T850 Series II

Base Station Equipment



400-520MHz

Service Manual

Issue 202

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About This Manual

Scope

This manual contains general, technical and servicing information on T850 Series II 25W, 50W and 100W base stations which comprise the following equipment:

25W base station	T855 receiver T856 25W transmitter
50W base station	T855 receiver T857 exciter T858 50W power amplifier
100W base station	T855 receiver T857 exciter T859 100W power amplifier

Format

We have published this manual in a ring binder so that "revision packages" containing additional information pertaining to new issues of PCBs can be added as required.

Revision Packages

Revision packages will normally be published to coincide with the release of information on a new PCB, and may also contain additions or corrections pertaining to other parts of the manual.

You may order as many packages as you require from your local Tait Dealer or Customer Service Organisation. Revision packages are supplied ready-punched for inclusion in your manual.

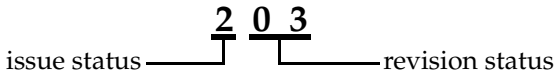
Revision Control

Each page in this manual has a date of issue. This is to comply with various Quality Standards, but will also serve to identify which pages have been updated and when. Each page and its publication date is listed in the "List of Effective Pages", and a new list containing any new/revised pages and their publication dates will be sent with each revision package.



Any portion of text that has been changed is marked by a vertical line (as shown at left) in the outer margin of the page or column. Where the removal of an entire paragraph means there is no text left to mark, an arrow (as shown at left) will appear in the outer margin. The number beside the arrow will indicate how many paragraphs have been deleted. Changes to diagrams that cannot be marked by these methods will be explained in an Amendments Box added to the diagram.

The manual issue and revision status are indicated by the last three digits of the manual product code. These digits start at 200 and will increment through 201, 202, 203, etc., as revision packages are published, e.g:



Thus, issue 203 indicates the third revision to issue 2 and means that three packages should have been added to the manual. The issue digit will only change if there is a major product revision, or if the number of revision packages to be included means that the manual becomes difficult to use, at which point a new issue manual will be published in a new ring binder.

PCB Information PCB information is provided for all current issue PCBs, as well as all previous issue PCBs manufactured in production quantities, and is grouped according to PCB. Thus, you will find the parts list, grid reference index (if necessary), PCB layouts and circuit diagram(s) for each individual PCB grouped together.

Errors If you find an error in this manual, or have a suggestion on how it might be improved, please do not hesitate to contact Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand (full contact details are on page 2).

Updating Equipment And Manuals

In the interests of improving performance, reliability or servicing, Tait Electronics Ltd reserve the right to update their equipment and/or manuals without prior notice.

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You can order additional copies of this service manual from your nearest Tait Dealer or Customer Service Organisation. When ordering, make sure you quote the correct Tait product code ("M" number). Note that only the latest issue of the manual will be available for order.

Publication Information

T850 Series II Service Manual			
Issue	Publication Date	Product Code	Incorporates Revision Package
200	October 1998	M850-00-200	—
201	February 1999	M850-00-201	R850-00-201
202	March 2000	M850-00-202	R850-00-202

Table Of Contents

This manual is divided into nine parts as listed below, with each part being further sub-divided into sections. There is a detailed table of contents at the start of each part and/or section.

Part	Title
A	Introduction To Servicing
B	T855 Receiver
C	T856 Transmitter & T857 Exciter
D	T858 & T859 Power Amplifiers
E	T850 VCO PCB Information
F	Installation
G	System Configurations
H	T800 Ancillary Equipment
I	Using T850 Series II Equipment In A Series I Rack Frame

List Of Effective Pages

The total number of pages in this Manual is 568, as listed below.

Page	Issue Date
1	29/02/00
2	29/02/00
3	31/01/99
4	29/02/00
5	31/09/98
6	29/02/00
7	29/02/00
8	29/02/00
9	29/02/00
10	29/02/00
11	29/02/00
12	29/02/00
Part A	
I	29/02/00
II	31/09/98 (blank)
1.1	31/09/98
1.2	31/09/98
2.1	31/09/98
2.2	31/09/98
2.3	31/01/99
2.4	29/02/00
3.1	31/09/98
3.2	31/09/98
4.1	31/09/98
4.2	31/09/98
Part B	
I	31/09/98
II	31/09/98 (blank)
1.1	31/09/98
1.2	31/09/98 (blank)
1.3	31/09/98 (fold-out)
1.4	31/09/98 (fold-out)
1.5	31/09/98
1.6	31/09/98
1.7	29/02/00
1.8	29/02/00
1.9	29/02/00
1.10	31/09/98
1.11	31/09/98
1.12	31/09/98
1.13	31/09/98
1.14	31/09/98 (blank)
2.1	31/09/98
2.2	31/09/98 (blank)
2.3	31/09/98
2.4	29/02/00
2.5	31/09/98
2.6	31/09/98
2.7	31/09/98
2.8	29/02/00
2.9	29/02/00
2.10	31/09/98
2.11	31/09/98
2.12	31/09/98
3.1	31/09/98
3.2	31/09/98
3.3	31/09/98
3.4	31/09/98
3.5	29/02/00
3.6	29/02/00
3.7	29/02/00
3.8	31/01/99
3.9	31/09/98
3.10	29/02/00
3.11	29/02/00
3.12	29/02/00
3.13	29/02/00
3.14	29/02/00
4.1	31/09/98
4.2	31/09/98 (blank)
4.3	29/02/00
4.4	31/09/98
4.5	31/09/98
4.6	31/09/98
4.7	31/09/98
4.8	31/09/98 (blank)
4.9	31/09/98 (fold-out)
4.10	31/09/98 (fold-out) (blank)

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Page	Issue Date
5.1	31/09/98
5.2	31/09/98
5.3	31/09/98
5.4	31/09/98
5.5	31/09/98
5.6	29/02/00
5.7	31/09/98
5.8	31/09/98
5.9	31/09/98
5.10	31/09/98
5.11	31/09/98
5.12	31/09/98
5.13	31/09/98
5.14	31/09/98
5.15	31/09/98
5.16	31/09/98
5.17	31/09/98
5.18	31/09/98
5.19	31/09/98
5.20	31/09/98 (blank)
6.1.1	31/01/99
6.1.2	31/09/98 (blank)
6.1.3	31/09/98
6.1.4	31/09/98
6.1.5	29/02/00
6.1.6	31/09/98
6.2.1	31/09/98
6.2.2	31/09/98 (blank)
6.2.3	29/02/00
6.2.4	31/09/98
6.2.5	31/09/98
6.2.6	31/09/98
6.2.7	31/09/98 (fold-out)
6.2.8	31/09/98 (fold-out) (blank)
6.3.1	31/01/99
6.3.2	31/09/98 (blank)
6.3.3	31/01/99
6.3.4	31/09/98
6.3.5	31/09/98
6.3.6	31/09/98
6.3.7	31/09/98
6.3.8	31/09/98
6.3.9	31/09/98 (blank)
6.3.10	31/09/98
6.3.11	31/09/98 (fold-out)
6.3.12	31/09/98 (fold-out) (blank)
6.3.13	31/09/98
6.3.14	31/09/98
6.3.15	31/09/98
6.3.16	31/09/98 (blank)
6.3.17	31/09/98 (fold-out)
6.3.18	31/09/98 (fold-out)
6.3.19	31/09/98 (fold-out)
6.3.20	31/09/98 (fold-out)
6.3.21	31/09/98 (fold-out)
6.3.22	31/09/98 (fold-out)
6.3.23	31/09/98 (fold-out)
6.3.24	31/09/98 (fold-out)
6.3.25	31/09/98 (fold-out)
6.3.26	31/09/98 (fold-out)
6.3.27	31/09/98 (fold-out)
6.3.28	29/02/00 (fold-out)
6.3.29	31/09/98 (fold-out)
6.3.30	31/09/98 (fold-out) (blank)
6.3.31	29/02/00
6.3.32	31/01/99
6.3.33	31/01/99
6.3.34	31/01/99
6.3.35	31/01/99
6.3.36	31/01/99
6.3.37	31/01/99 (blank)
6.3.38	31/01/99
6.3.39	31/01/99 (fold-out)
6.3.40	31/01/99 (fold-out) (blank)
6.3.41	31/01/99
6.3.42	31/01/99
6.3.43	31/01/99
6.3.44	31/01/99 (blank)
6.3.45	31/01/99 (fold-out)
6.3.46	31/01/99 (fold-out)
6.3.47	31/01/99 (fold-out)
6.3.48	31/01/99 (fold-out)
6.3.49	31/01/99 (fold-out)
6.3.50	31/01/99 (fold-out)
6.3.51	31/01/99 (fold-out)
6.3.52	31/01/99 (fold-out)
6.3.53	31/01/99 (fold-out)
6.3.54	31/01/99 (fold-out)
6.3.55	31/01/99 (fold-out)
6.3.56	31/01/99 (fold-out)
6.3.57	31/01/99 (fold-out)
6.3.58	31/01/99 (fold-out) (blank)

Part C

I	31/09/98
II	31/09/98 (blank)
1.1	31/09/98
1.2	31/09/98 (blank)

Page	Issue Date	Page	Issue Date
1.3	31/09/98 (fold-out)	4.8	31/09/98 (blank)
1.4	31/09/98 (fold-out)	4.9	31/09/98 (fold-out)
1.5	31/09/98 (fold-out)	4.10	31/09/98 (fold-out) (blank)
1.6	31/09/98 (fold-out)	4.11	31/09/98 (fold-out)
1.7	31/09/98	4.12	31/09/98 (fold-out) (blank)
1.8	29/02/00		
1.9	29/02/00	5.1	31/09/98
1.10	29/02/00	5.2	31/09/98
1.11	29/02/00	5.3	31/09/98
1.12	29/02/00	5.4	31/09/98
1.13	29/02/00	5.5	31/09/98
1.14	29/02/00	5.6	31/09/98
1.15	29/02/00	5.7	31/09/98
1.16	31/09/98 (blank)	5.8	31/09/98
		5.9	31/09/98
2.1	31/09/98	5.10	31/09/98
2.2	31/09/98	5.11	31/09/98
2.3	31/09/98	5.12	31/09/98
2.4	29/02/00	5.13	31/09/98
2.5	31/09/98	5.14	31/09/98
2.6	29/02/00	5.15	31/09/98
2.7	31/09/98	5.16	31/09/98
2.8	29/02/00	5.17	31/09/98
2.9	29/02/00	5.18	31/09/98
2.10	29/02/00	5.19	31/09/98
2.11	29/02/00	5.20	29/02/00
2.12	31/09/98		
2.13	29/02/00	6.1.1	29/02/00
2.14	31/09/98 (blank)	6.1.2	31/09/98 (blank)
		6.1.3	31/09/98
3.1	29/02/00	6.1.4	31/09/98
3.2	29/02/00	6.1.5	29/02/00
3.3	31/09/98	6.1.6	31/09/98
3.4	31/09/98		
3.5	29/02/00	6.2.1	31/09/98
3.6	29/02/00	6.2.2	31/09/98 (blank)
3.7	29/02/00	6.2.3	29/02/00
3.8	31/09/98	6.2.4	31/09/98
3.9	31/09/98	6.2.5	31/09/98
3.10	31/09/98	6.2.6	31/09/98
3.11	29/02/00	6.2.7	31/09/98
3.12	29/02/00	6.2.8	31/09/98
3.13	29/02/00	6.2.9	29/02/00
3.14	29/02/00	6.2.10	31/09/98
		6.2.11	31/09/98 (fold-out)
4.1	31/09/98	6.2.12	31/09/98 (fold-out) (blank)
4.2	31/09/98 (blank)	6.2.13	31/09/98
4.3	31/09/98	6.2.14	31/09/98
4.4	29/02/00	6.2.15	31/09/98
4.5	29/02/00	6.2.16	31/09/98
4.6	31/09/98	6.2.17	31/09/98 (fold-out)
4.7	31/09/98	6.2.18	31/09/98 (fold-out)

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Page	Issue Date
6.2.19	31/09/98 (fold-out)
6.2.20	31/09/98 (fold-out)
6.2.21	31/09/98 (fold-out)
6.2.22	31/09/98 (fold-out)
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6.2.24	31/09/98 (fold-out)
6.2.25	31/09/98 (fold-out)
6.2.26	31/09/98 (fold-out)
6.2.27	31/09/98 (fold-out)
6.2.28	31/01/99 (fold-out)
6.2.29	31/09/98 (fold-out)
6.2.30	31/09/98 (fold-out) (blank)
6.3.1	29/02/00
6.3.2	31/09/98 (blank)
6.3.3	29/02/00
6.3.4	31/09/98
6.3.5	31/09/98
6.3.6	31/09/98
6.3.7	29/02/00
6.3.8	31/09/98
6.3.9	31/09/98 (fold-out)
6.3.10	31/09/98 (fold-out) (blank)
6.3.11	31/09/98
6.3.12	31/09/98
6.3.13	31/09/98
6.3.14	31/09/98 (blank)
6.3.15	31/09/98 (fold-out)
6.3.16	31/09/98 (fold-out)
6.3.17	31/09/98 (fold-out)
6.3.18	31/09/98 (fold-out)
6.3.19	31/09/98 (fold-out)
6.3.20	31/09/98 (fold-out)
6.3.21	31/09/98 (fold-out)
6.3.22	31/09/98 (fold-out)
6.3.23	31/09/98 (fold-out)
6.3.24	31/09/98 (fold-out)
6.3.25	31/09/98 (fold-out)
6.3.26	29/02/00 (fold-out)
6.3.27	31/09/98 (fold-out)
6.3.28	31/09/98 (fold-out) (blank)
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6.3.30	29/02/00
6.3.31	29/02/00
6.3.32	29/02/00
6.3.33	29/02/00
6.3.34	29/02/00
6.3.35	29/02/00
6.3.36	29/02/00
6.3.37	29/02/00 (fold-out)
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6.3.43	29/02/00 (fold-out)
6.3.44	29/02/00 (fold-out)
6.3.45	29/02/00 (fold-out)
6.3.46	29/02/00 (fold-out)
6.3.47	29/02/00 (fold-out)
6.3.48	29/02/00 (fold-out)
6.3.49	29/02/00 (fold-out)
6.3.50	29/02/00 (fold-out)
6.3.51	29/02/00 (fold-out)
6.3.52	29/02/00 (fold-out)
6.3.53	29/02/00 (fold-out)
6.3.54	29/02/00 (fold-out)
6.3.55	29/02/00 (fold-out)
6.3.56	29/02/00 (fold-out) (blank)

Part D

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II	31/09/98 (blank)
1.1	29/02/00
1.2	29/02/00 (blank)
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1.4	29/02/00 (blank)
1.5	29/02/00 (fold-out)
1.6	29/02/00 (fold-out)
1.7	29/02/00 (fold-out)
1.8	29/02/00 (fold-out)
1.9	29/02/00 (fold-out)
1.10	29/02/00 (fold-out)
1.11	29/02/00 (fold-out)
1.12	29/02/00 (fold-out)
1.13	29/02/00
1.14	29/02/00
1.15	29/02/00
1.16	29/02/00
1.17	29/02/00
1.18	29/02/00
2.1	29/02/00
2.2	29/02/00
2.3	29/02/00
2.4	29/02/00
2.5	29/02/00
2.6	29/02/00
2.7	29/02/00
2.8	29/02/00
2.9	29/02/00

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Page	Issue Date	Page	Issue Date
2.10	29/02/00	4.22	29/02/00 (fold-out)
2.11	29/02/00	4.23	29/02/00
2.12	29/02/00	4.24	29/02/00
2.13	29/02/00	4.25	29/02/00
2.14	29/02/00	4.26	29/02/00
2.15	29/02/00	4.27	29/02/00
2.16	29/02/00 (blank)	4.28	29/02/00
		4.29	29/02/00
3.1	29/02/00	4.30	29/02/00
3.2	29/02/00	4.31	29/02/00
3.3	29/02/00	4.32	29/02/00
3.4	29/02/00		
3.5	29/02/00	5.1.1	29/02/00
3.6	29/02/00	5.1.2	31/09/98 (blank)
3.7	29/02/00	5.1.3	31/09/98
3.8	29/02/00	5.1.4	31/09/98
3.9	29/02/00	5.1.5	29/02/00
3.10	29/02/00	5.1.6	31/09/98
3.11	29/02/00		
3.12	29/02/00	5.2.1	29/02/00
3.13	29/02/00	5.2.2	31/09/98 (blank)
3.14	29/02/00 (blank)	5.2.3	29/02/00
3.15	29/02/00 (fold-out)	5.2.4	29/02/00
3.16	29/02/00 (fold-out) (blank)	5.2.5	31/09/98
3.17	29/02/00 (fold-out)	5.2.6	31/09/98
3.18	29/02/00 (fold-out) (blank)	5.2.7	31/09/98 (blank)
3.19	29/02/00 (fold-out)	5.2.8	31/09/98
3.20	29/02/00 (fold-out) (blank)	5.2.9	31/09/98 (fold-out)
3.21	29/02/00 (fold-out)	5.2.10	31/09/98 (fold-out) (blank)
3.22	29/02/00 (fold-out) (blank)	5.2.11	31/09/98
		5.2.12	31/09/98 (blank)
4.1	29/02/00	5.2.13	31/09/98 (fold-out)
4.2	29/02/00	5.2.14	31/09/98 (fold-out)
4.3	29/02/00	5.2.15	31/09/98 (fold-out)
4.4	29/02/00	5.2.16	31/09/98 (fold-out)
4.5	29/02/00 (fold-out)	5.2.17	29/02/00
4.6	29/02/00 (fold-out) (blank)	5.2.18	29/02/00
4.7	29/02/00	5.2.19	29/02/00
4.8	29/02/00	5.2.20	29/02/00
4.9	29/02/00	5.2.21	29/02/00 (blank)
4.10	29/02/00	5.2.22	29/02/00
4.11	29/02/00	5.2.23	29/02/00 (fold-out)
4.12	29/02/00	5.2.24	29/02/00 (fold-out) (blank)
4.13	29/02/00	5.2.25	29/02/00
4.14	29/02/00	5.2.26	29/02/00
4.15	29/02/00	5.2.27	29/02/00 (fold-out)
4.16	29/02/00	5.2.28	29/02/00 (fold-out)
4.17	29/02/00	5.2.29	29/02/00 (fold-out)
4.18	29/02/00	5.2.30	29/02/00 (fold-out)
4.19	29/02/00		
4.20	29/02/00 (blank)	5.3.1	29/02/00
4.21	29/02/00 (fold-out)	5.3.2	31/09/98 (blank)

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Page	Issue Date
5.3.3	29/02/00
5.3.4	29/02/00
5.3.5	31/09/98
5.3.6	31/09/98
5.3.7	31/09/98 (blank)
5.3.8	31/09/98
5.3.9	31/09/98 (fold-out)
5.3.10	31/09/98 (fold-out) (blank)
5.3.11	31/09/98
5.3.12	31/09/98
5.3.13	31/09/98 (fold-out)
5.3.14	31/09/98 (fold-out)
5.3.15	31/09/98 (fold-out)
5.3.16	31/09/98 (fold-out)
5.3.17	29/02/00
5.3.18	29/02/00
5.3.19	29/02/00
5.3.20	29/02/00
5.3.21	29/02/00 (blank)
5.3.22	29/02/00
5.3.23	29/02/00 (fold-out)
5.3.24	29/02/00 (fold-out) (blank)
5.3.25	29/02/00
5.3.26	29/02/00
5.3.27	29/02/00 (fold-out)
5.3.28	29/02/00 (fold-out)
5.3.29	29/02/00 (fold-out)
5.3.30	29/02/00 (fold-out)

Part E

I	29/02/00
II	31/09/98 (blank)
1.1	31/09/98
1.2	31/09/98
2.1	31/09/98
2.2	31/09/98 (blank)
2.3	29/02/00
2.4	31/09/98
2.5	31/09/98
2.6	31/09/98
2.7	31/09/98 (fold-out)
2.8	31/09/98 (fold-out) (blank)

Part F

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II	31/01/99
1.1	31/09/98 (fold-out)
1.2	29/02/00 (fold-out)
2.1	31/09/98 (fold-out)
2.2	29/02/00 (fold-out)
3.1	31/01/99 (fold-out)
3.2	29/02/00 (fold-out)
4.1	31/01/99
4.2	31/01/99

Part G

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II	31/09/98
1.1	31/09/98
1.2	29/02/00
1.3	31/09/98
1.4	31/09/98 (blank)
2.1	31/09/98
2.2	31/09/98
2.3	31/09/98
2.4	31/09/98 (blank)
3.1	31/09/98
3.2	31/09/98 (blank)
4.1	31/09/98
4.2	31/09/98
5.1	31/09/98
5.2	31/09/98

Part H

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II	31/09/98 (blank)
1	31/09/98
2	31/09/98
3	31/09/98
4	31/09/98
5	31/09/98
6	31/09/98
7	31/09/98
8	31/09/98
9	31/09/98

Page	Issue Date
10	31/09/98
11	31/09/98
12	31/09/98
13	31/09/98
14	31/09/98

Part I

I	29/02/00
II	31/09/98 (blank)
1.1	31/09/98
1.2	31/09/98 (blank)
2.1	31/09/98
2.2	31/09/98
2.3	31/09/98
2.4	31/09/98
2.5	31/09/98
2.6	31/09/98
2.7	31/09/98
2.8	31/09/98 (blank)
3.1	29/02/00
3.2	29/02/00
3.3	31/09/98
3.4	31/09/98 (blank)
3.5	29/02/00
3.6	29/02/00
3.7	29/02/00
3.8	29/02/00

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Part A Introduction To Servicing

This part of the manual is divided into the sections listed below. These sections provide some general and advisory information on servicing procedures, and a brief history of PGM800Win programming software.

Section	Title	Page
1	**General**	**1.1**
1.1	Additional Technical Information	1.1
1.2	Caution: CMOS Devices	1.1
1.3	Caution: Aerial Load	1.2
1.4	Caution: Beryllium Oxide & Power Transistors	1.2
2	**Mechanical**	**2.1**
2.1	Torx Recess Head Screws	2.1
2.2	Pozidriv & Philips Recess Head Screws	2.2
2.3	Disassembly/Reassembly	2.3
2.3.1	Receivers/Exciters/Transmitters	2.3
2.3.2	Power Amplifiers	2.3
2.4	Cover Screw Torques	2.3
2.5	Chassis & Cover Compatibility	2.4
3	**Component Replacement**	**3.1**
3.1	Leaded Components	3.1
3.1.1	Desoldering Iron Method	3.1
3.1.2	Component Cutting Method	3.1
3.2	Surface Mount Devices	3.2
3.3	Cased Mica Capacitors	3.2
4	**Software History**	**4.1**
4.1	PGM800Win V1.0	4.1
4.2	PGM800Win V2.00	4.1

Figure	Title	Page
1.1	Typical Product Code & Serial Number Labels	1.1
1.2	Typical Anti-static Bench Set-up	1.2
2.1	Torx Screw Identification	2.1
2.2	Pozidriv & Philips Screw & Screwdriver Identification	2.2
2.3	Identification Of New-Design Chassis & Covers	2.4

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1 General

1.1 Additional Technical Information

If you have any questions about this manual or the equipment it describes, please contact your nearest Tait Dealer or Customer Service Organisation. If necessary, you can get additional technical help from Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand (full contact details are on page 2).

When requesting information, please quote either the manual product code (e.g. M850-00-200), or the equipment product code and serial number which are printed on a label on the back of the product (as shown in Figure 1.1).

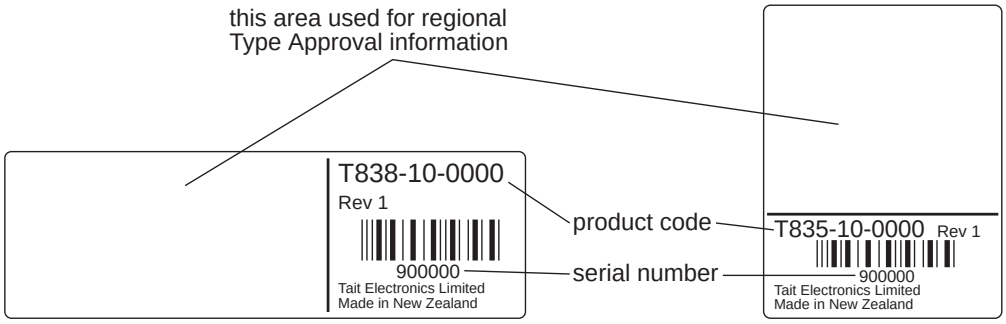


Figure 1.1 Typical Product Code & Serial Number Labels

If you require information about a particular PCB, please quote the full PCB internal part number (IPN) which is screen printed onto the top side of the board (refer to the appropriate PCB Information section in this manual for more details).

1.2 Caution: CMOS Devices

This equipment contains CMOS Devices which are susceptible to damage from static charges. Care when handling these devices is essential. For correct handling procedures refer to the manufacturers' data books, e.g. Philips data books covering CMOS devices, or Motorola CMOS data books, Section 5 'Handling', etc.

An anti-static bench kit (refer to Figure 1.2) is available from Tait Electronics Ltd under the following product codes:

- KS0001 - 1 conductive rubber bench mat
  - 1 earth lead to connect the mat to ground
- KS0004 - 1 wrist strap.

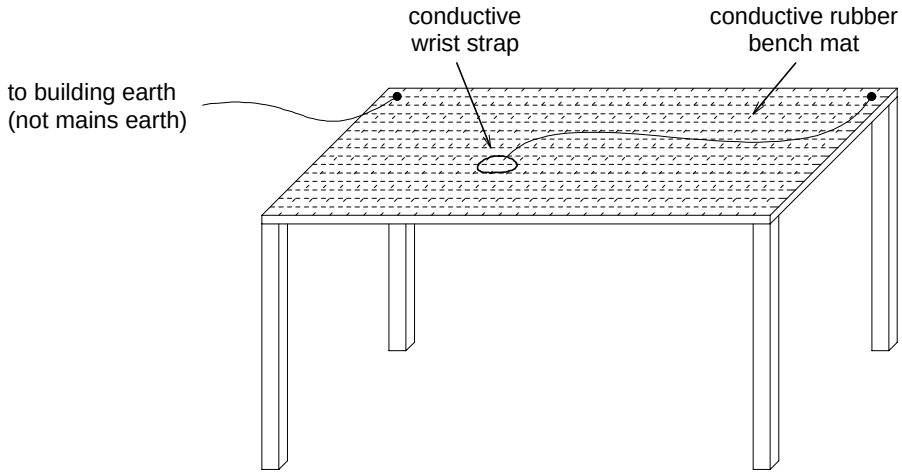


Figure 1.2 Typical Anti-static Bench Set-up

1.3 Caution: Aerial Load

The equipment has been designed to operate safely under a wide range of aerial loading conditions. However, we strongly recommend that the transmitter should always be operated with a suitable load to prevent damage to the transmitter output power stage.

1.4 Caution: Beryllium Oxide & Power Transistors

The RF power transistors in current use all contain some beryllium oxide. This substance, while perfectly harmless in its normal solid form, can become a severe health hazard when it has been reduced to dust. For this reason the RF power transistors should not be broken open, mutilated, filed, machined, or physically damaged in any way that can produce dust particles.

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2 Mechanical

2.1 Torx Recess Head Screws

Torx recess head screws are becoming the standard screw head type in all T800 Series II equipment, with Pozidriv and Philips recess head screws being used in fewer applications.

The Torx recess head has the advantage of improved screwdriver tip location, reducing the chances of screw head damage caused by the driver tip rotating within the recess. In addition, using a ball-tip Torx screwdriver allows you to drive a Torx head screw with the driver on a slight angle, which can be useful in situations where access is restricted.

It is important that you use the correct Torx screwdriver tip:

M3 screws - T10
M4 screws - T20.

Figure 2.1 below shows a typical Torx recess head screw (actual hardware may differ slightly from this illustration due to variations in manufacturing techniques).

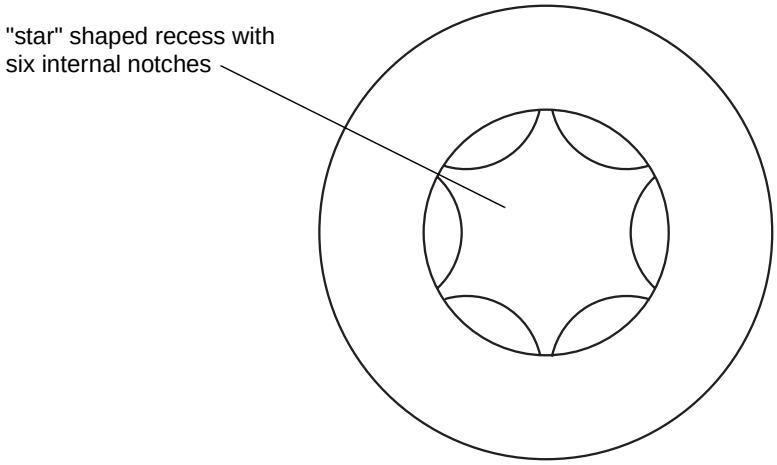


Figure 2.1 Torx Screw Identification

2.2 Pozidriv & Philips Recess Head Screws

Pozidriv and Philips recess head screws will continue to be used in T800 Series II equipment in a few special applications. It is important that you use the correct type and size screwdriver for each screw type to avoid damaging the screw head.

It is particularly important that you do not use Philips screwdrivers on Pozidriv screw heads as the tapered driving flutes of the Philips screwdriver do not engage correctly with the parallel-sided slots in the Pozidriv screw head. This can result in considerable damage to the screw head if the screwdriver tip turns inside the recess.

Note: If you find you need excessive downwards pressure to keep the screwdriver tip in the Pozidriv screw head, you are probably using the wrong type and/or size screwdriver.

Figure 2.2 below shows the main differences between typical Pozidriv and Philips screw heads and screwdriver tips (actual hardware may differ slightly from these illustrations due to variations in manufacturing techniques).

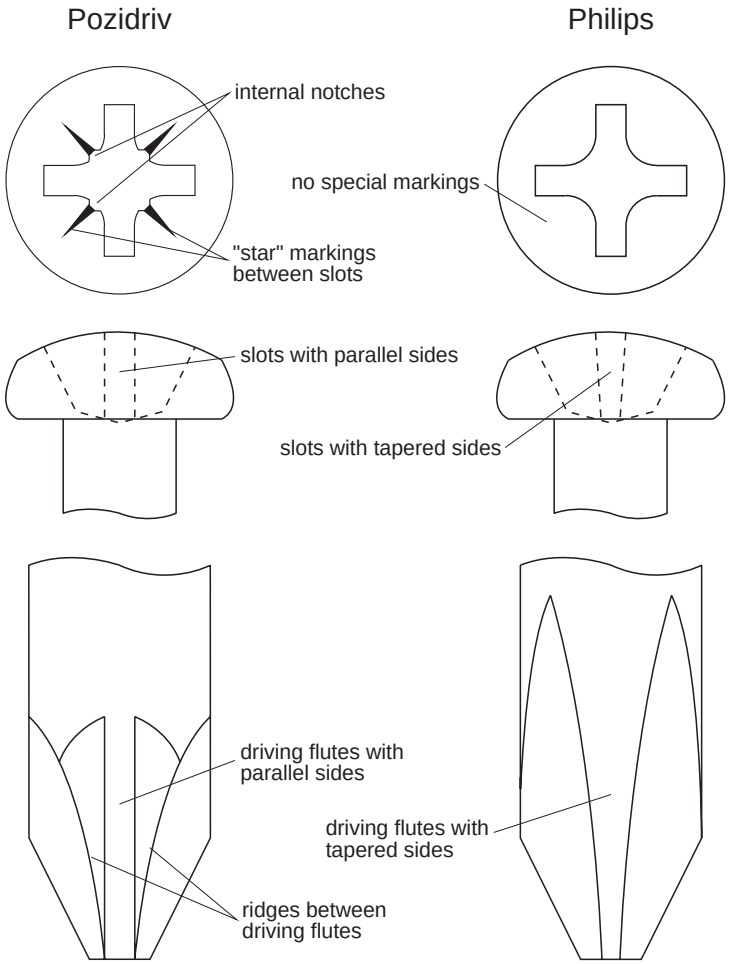


Figure 2.2 Pozidriv & Philips Screw & Screwdriver Identification

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2.3 Disassembly/Reassembly

2.3.1 Receivers/Exciters/Transmitters

To carry out alignment or change option links, you need to remove only the top cover, i.e. the one adjacent to the front panel handle and on the opposite side to the main D-range connector (D-range 1/PL100).

You need to remove the bottom cover to:

- access transmitter RF power transistors and many SMD components
- change solder blob links
- fit test leads to circuit block access points.

2.3.2 Power Amplifiers

You should carry out the tuning and power output level setting procedures with the cover on.

2.4 Cover Screw Torques

Receivers/Exciters/Transmitters	..	1.36Nm/12in.lbf.
Power Amplifiers	..	0.9Nm/8in.lbf.

2.5 Chassis & Cover Compatibility

The chassis and covers used in T800 Series II modules incorporate a number of design changes to improve Electro-Magnetic Compatibility (EMC) performance. It is important that only the new-design covers are fitted to the new chassis to ensure correct mechanical fit and continued compliance with appropriate EMC Type Approval regulations.

Figure 2.3 below shows some of the main features which can be used to identify the new-design chassis and covers.

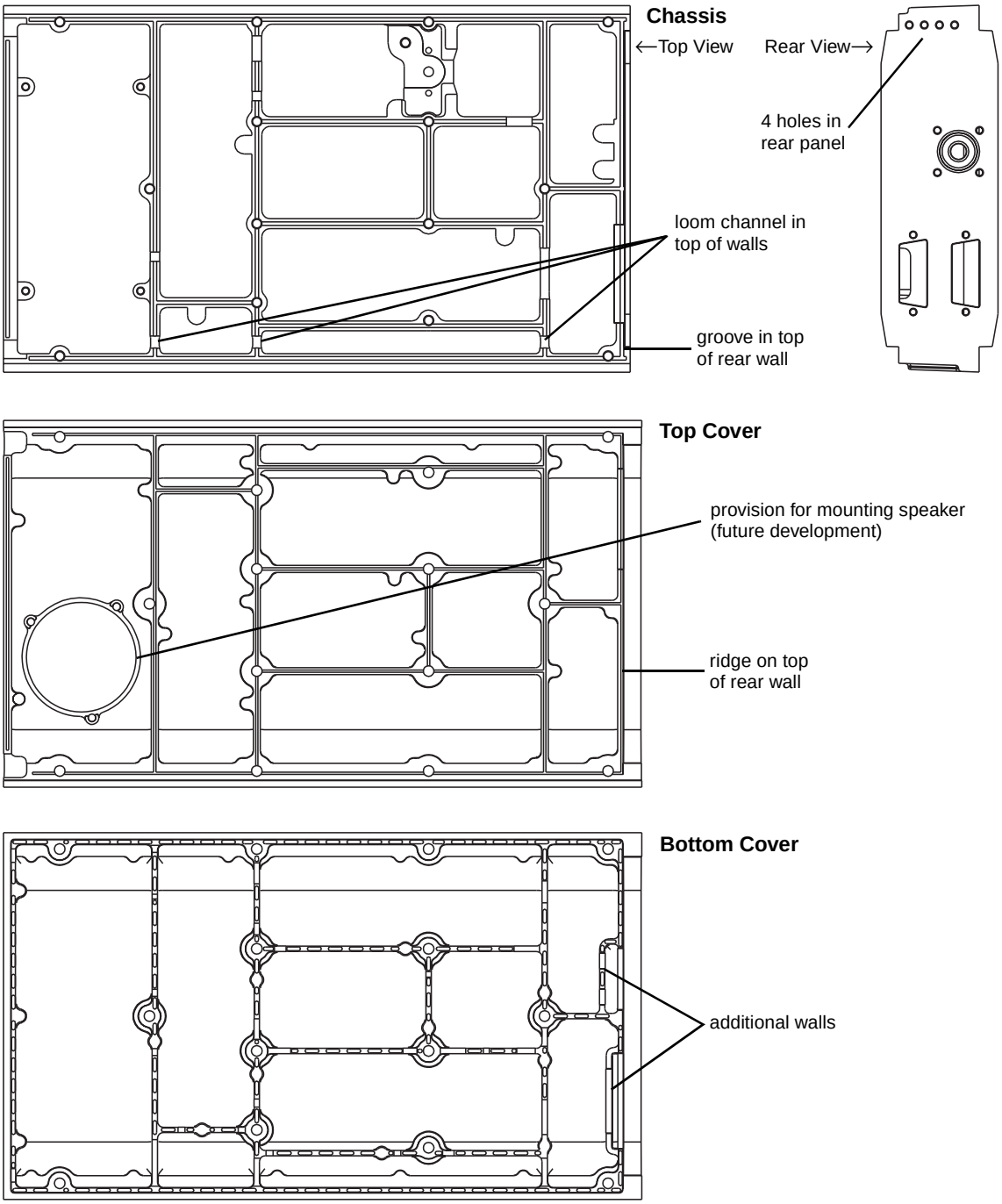


Figure 2.3 Identification Of New-Design Chassis & Covers

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3 Component Replacement

3.1 Leaded Components

Whenever you are doing any work on the PCB that involves removing or fitting components, you must take care not to damage the copper tracks. The two satisfactory methods of removing components from plated-through hole (PTH) PCBs are detailed below.

Note: The first method requires the use of a desoldering station, e.g. Philips SBC 314 or Pace MBT-100E.

3.1.1 Desoldering Iron Method

Place the tip over the lead and, as the solder starts to melt, move the tip in a circular motion.

Start the suction and continue the movement until 3 or 4 circles have been completed.

Remove the tip while continuing suction to ensure that all solder is removed from the joint, then stop the suction.

Before pulling the lead out, ensure it is not stuck to the plating.

If the lead is still not free, resolder the joint and try again.

Note: The desoldering iron does not usually have enough heat to desolder leads from the ground plane. Additional heat may be applied by holding a soldering iron on the tip of the desoldering iron (this may require some additional help).

3.1.2 Component Cutting Method

Cut the leads on the component side of the PCB.

Heat the solder joint ***sufficiently*** to allow ***easy*** removal of the lead by drawing it out from the component side: do ***not*** use undue force.

Fill the hole with solder and then clear with solderwick.

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3.2 Surface Mount Devices



Caution: **Surface mount devices (SMDs) require special storage, handling, removal and replacement techniques. This equipment should be serviced only by an approved Tait Dealer or Customer Service Organisation equipped with the necessary facilities. Repairs attempted with incorrect equipment or by untrained personnel may result in permanent damage. If in doubt, contact your nearest Tait Dealer or Customer Service Organisation.**

3.3 Cased Mica Capacitors

Cased mica capacitors can be removed by heating the top with a heavy-duty soldering iron and gently lifting the capacitor off the PCB with a solder-resistant spike or equivalent.

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4 Software History

28/06/96	PGM800Win Version 1.0
18/08/97	PGM800Win Version 2.00

4.1 PGM800Win V1.0

PGM800Win V1.0 is different in concept from DOS versions of PGM800 in that it is Windows[1] based. It also includes many new and improved features over DOS versions of PGM800.

The major changes are outlined below:

- The Windows™ environment makes data entry and editing significantly easier.
- PGM800Win includes several new radio models which are not programmable with DOS versions of PGM800.
- Out of range frequencies will result in warning messages and will not be accepted for entry into the standard library module. User defined modules can be created, however, allowing variation from the standard library module.
- Channel numbers default to 0-127 to match the EPROM memory locations. However, the user can change this setting so that the channel numbers run from 1-128 to suit his/her particular needs.

Note: The data files produced by BASEPROG V1.0 and all DOS versions of PGM800 are still compatible with PGM800Win V1.0.

4.2 PGM800Win V2.00

PGM800Win V2.00 is an upgraded and expanded version of PGM800Win V1.0. It has been developed specifically for T800 Series II base stations, but retains the ability to program Series I equipment.

The major changes are outlined below:

- PGM800Win V2.0 will program T800 Series II base station modules via serial communications.
- Deviation and reference modulation settings are written automatically to the radio.

1. Windows is a registered trademark of the Microsoft Corporation.

- Extra information that is not stored in the radio (but which is still relevant to the radio) can be saved to a file on disk (e.g. note field, auxiliary pin names, etc.).

Note: The data files produced by BASEPROG V1.0, all DOS versions of PGM800, and PGM800Win V1.0 are still compatible with PGM800Win V2.00.

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Part B T855 Receiver

This part of the manual is divided into six sections, as listed below. There is a detailed table of contents at the start of each section.

Section	Title
1	General Information
2	Circuit Operation
3	Initial Tuning & Adjustment
4	Functional Testing
5	Fault Finding
6	PCB Information

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1 T855 General Information

This section provides a brief description of the T855 receiver, along with detailed specifications and a list of types available.

The following topics are covered in this section.

Section	Title	Page
1.1	**Introduction**	**1.5**
1.2	**Specifications**	**1.6**
1.2.1	Introduction	1.6
1.2.2	General	1.7
1.2.3	RF Section	1.7
1.2.4	Audio Section	1.9
1.2.4.1	General	1.9
1.2.4.2	CTCSS	1.9
1.2.4.3	Mute Operation	1.10
1.2.5	Microprocessor Controller	1.10
1.2.6	Test Standards	1.10
1.2.6.1	European Telecommunication Standard (ETS)	1.10
1.2.6.2	DTI CEPT Recommendation T/R-24-01	1.11
1.2.6.3	Telecommunications Industry Association	1.11
1.3	**Product Codes**	**1.12**
1.4	**Standard Product Range**	**1.13**

Figure	Title	Page
1.1	T855 Main Circuit Block Identification	1.4
1.2	T855 Front Panel Controls	1.4

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replace A4 pages B1.3/B1.4 with A3 pages B1.3/B1.4

replace A4 pages B1.3/B1.4 with A3 pages B1.3/B1.4

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1.1 Introduction

The T855 is a high performance microprocessor controlled FM base station receiver designed for single or multichannel operation in the 400 to 530MHz frequency range[1].

The receiver is a dual conversion superhet with a synthesised local oscillator. The first IF is 45.0MHz, allowing exceptionally high spurious signal rejection to be achieved in the receiver front end. The second IF section (455kHz) combines amplitude limiting, detection and audio preamplification within a single integrated circuit. It also drives carrier and noise level detectors for signal strength indication and gating the audio output. RSSI can be used to drive a carrier mute for audio output gating (link selectable) when the optional T800-04-0000 RSSI PCB is fitted.

The audio section output can be adjusted to deliver >+10dBm to a 600 ohm balanced output, and 1W to a local monitor speaker. A flat or de-emphasised audio response is link selectable.

The synthesiser frequency is programmed via the serial communications port. Eight channel select lines are accessible via an additional D-range connector (D-range 2 - T800-03-0000) at the rear of the set.

All components except those on the VCO board are mounted on a single PCB. This is secured to a die-cast chassis which is divided into compartments to individually shield each section of circuitry. Access to both sides of the main PCB is obtained by removing each of the two chassis covers. There is provision within the chassis to mount small option PCBs.

The front panel controls include gating sensitivity, line level, monitor volume and a monitor mute switch.

The T855 has a width of 60mm and occupies a single space in a Tait rack frame, which has the ability to accommodate up to seven standard modules.

1. Although capable of operating over the 400-530MHz frequency range, the T855 has a 5MHz switching range (see Section 1.2.3 and Section 3.1).

1.2 Specifications

1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment tuned with the maximum switching range and operating at standard room temperature (+22°C to +28°C) and standard test voltage (13.8V DC).

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA and ETS specifications. However, there are several parameters for which performance according to the CEPT specification is given. Refer to Section 1.2.6 for details of test standards.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

The terms "wide bandwidth", "mid bandwidth" and "narrow bandwidth" used in this and following sections are defined in the following table.

	Channel Spacing	Modulation 100% Deviation	Receiver IF Bandwidth
Wide Bandwidth	25kHz	±5.0kHz	15.0kHz
Mid Bandwidth	20kHz	±4.0kHz	12.0kHz
Narrow Bandwidth	12.5kHz	±2.5kHz	7.5kHz

Sensitivity and distortion figures are stated for standard operating conditions which includes audio de-emphasis. Note that the sensitivity and distortion figures will be degraded when flat audio is selected.

	Link PL210[a]	Link PL220[a]
De-emphasised Audio	1-2 (A-B)	2-3 (E-F)
Flat Audio	2-3 (B-C)	1-2 (D-E)

a. The letters in this column refer to the identification letters screen printed onto the PCB beside each set of links.

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1.2.2 General

Number Of Channels	..	128 (standard)[1]
Supply Voltage:		
Operating Voltage	..	10.8 to 16V DC
Standard Test Voltage	..	13.8V DC
Polarity	..	negative earth only
Polarity Protection	..	crowbar diode
Supply Current:		
Standby	..	350mA
Full Audio	..	800mA
Operating Temperature Range	..	-20°C to +60°C
Dimensions:		
Height	..	183mm
Width	..	60mm
Length	..	322mm
Weight	..	2.13kg

1.2.3 RF Section

Frequency Range	..	400-530MHz
Type	..	dual conversion superheterodyne
Frequency Increment	..	5 or 6.25kHz
Switching Range	..	5MHz (i.e. ±2.5MHz from the centre frequency)
Input Impedance	..	50 ohms
Frequency Stability (see also Section 1.4)	..	±1ppm, -20°C to +60°C
Signal Strength Indicator (RSSI optional)	..	-115dBm to -70dBm, 0 to 5V at approx. 10dB/V

1. Additional channels may be factory programmed. Contact your nearest Tait Dealer or Customer Service Organisation.

IF Amplifiers:

Frequencies	..	45MHz and 455kHz
Bandwidths-		
Narrow Bandwidth (NB)	..	7.5kHz
Mid Bandwidth (MB)	..	12kHz
Wide Bandwidth (WB)	..	15kHz

Sensitivity (De-emphasised Response):

Single Channel	..	-117dBm
Bandspread (12dB Sinad)	..	-115dBm (across switching range)

Sensitivity (Flat Response):

Single Channel	..	-111dBm
Bandspread (12dB Sinad)	..	-109dBm (across switching range)

Signal+Noise To Noise Ratio (Typical):

		De-emphasised	Flat
RF Level -107dBm	..	30dB (WB) 25dB (NB)	20dB (WB) 15dB (NB)
RF Level -83dBm (CEPT)	..	54dB (MB) 50dB (NB)	49dB (MB) 45dB (NB)
RF Level -57dBm (EIA)	..	55dB (WB)	55dB (WB)

Selectivity:

Narrow Bandwidth (±12.5kHz)	..	83dB minimum, 85dB typical (CEPT)
Mid Bandwidth (±20kHz)	..	87dB minimum, 90dB typical (CEPT)
Wide Bandwidth (±25kHz)	..	87dB minimum, 90dB typical (CEPT)

Offset Selectivity (Canada only)	..	20dB
Spurious Response Attenuation	..	100dB (typical)

Intermodulation Response Attenuation:

Narrow Bandwidth	..	80dB CEPT (typical)
Mid Bandwidth	..	75dB CEPT (typical)
Wide Bandwidth	..	85dB EIA (typical)

Blocking	..	100dB
Co-channel Rejection	..	6dB
Amplitude Characteristic	..	3dB

Spurious Emissions:

Conducted	..	-90dBm to 4GHz
Radiated	..	-57dBm to 1GHz -47dBm to 4GHz

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1.2.4 Audio Section

1.2.4.1 General

Outputs Available .. line and monitor

Frequency Response .. flat or de-emphasised (750µs)
(link selectable)

Flat Response:

Bandwidth .. 67 to 3400Hz
Response .. within +1, -2dB of output level
at 1kHz

De-emphasised Response:

Bandwidth .. 300 to 3400Hz
Response .. within +1, -3dB of a -6dB/octave
de-emphasis characteristic (ref. 1kHz)

Line Output:

Power .. adjustable to >+10dBm
Load Impedance .. 600 ohms
Distortion (@ -70dBm signal level):

		De-emphasised	Flat
Wide Bandwidth	..	≤2%	≤2%
Mid & Narrow Bandwidth	..	≤2%	≤4%

Monitor Output:

Power .. 1W
Speaker Impedance .. 4 ohms
Distortion .. ≤3%
(@ -70dBm signal level, links set to de-emphasis)

1.2.4.2 CTCSS

Linkable High Pass Filter:

Bandwidth .. 350 to 3400Hz
Response .. within +1, -3dB of level at 1kHz
Hum And Noise .. 30dB min. at 250.3Hz
(1kHz at 60% system deviation 35dB typical (67 to 240Hz)
CTCSS at 10% system deviation)

Tone Detect:

Tone Squelch Opening .. better than 6dB sinad
3dB sinad at 250.3Hz (typical)
4dB sinad at 100Hz (typical)

Tone Detect Bandwidth .. ±2.1Hz accept (typical)
±3.0Hz reject (typical)

Response Time .. 150ms open and close (typical)

1.2.4.3 Mute Operation

Systems Available .. noise mute and carrier mute

Noise Mute:

Operating Range	.. 6-20dB sinad
Hysteresis	.. 1.5 to 6dB
Threshold	.. adjustable to -105dBm
Opening Time	.. 20ms
Closing Time	.. 50ms

Carrier Mute (Optional):

Operating Range	.. -115 to -80dBm
Hysteresis	.. 2 to 10dB
Opening Time	.. 5ms
Closing Time	.. 50ms

Note: The opening and closing times given above are for the standard setup (SL210 linked and SL220 not linked - refer to Section 3.8).

1.2.5 Microprocessor Controller

Auxiliary Ports:

Open Drain Type	.. capable of sinking 2.25mA via 2k2Ω
V_{ds} max.	.. 5V

1.2.6 Test Standards

Where applicable, this equipment is tested in accordance with the following standards.

1.2.6.1 European Telecommunication Standard

ETS 300 086 January 1991

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech.

ETS 300 113 March 1996

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector.

ETS 300 219 October 1993

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment transmitting signals to initiate a specific response in the receiver.

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ETS 300 279 February 1996

Radio equipment and systems; electromagnetic compatibility (EMC) standard for private land mobile radio (PMR) and ancillary equipment (speech and/or non-speech).

1.2.6.2 DTI CEPT Recommendation T/R-24-01

Annex I: 1988

Technical characteristics and test conditions for radio equipment in the land mobile service intended primarily for analogue speech.

Annex II: 1988

Technical characteristics of radio equipment in the land mobile service with regard to quality and stability of transmission.

1.2.6.3 Telecommunications Industry Association

ANSI/TIA/EIA-603-1992

Land mobile FM or PM communications equipment measurement and performance standards.

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1.3 Product Codes

The three groups of digits in the T850 Series II product code provide information about the model, type and options fitted, according to the conventions described below.

The following explanation of T850 Series II product codes is not intended to suggest that any combination of features is necessarily available in any one product. Consult your nearest Tait Dealer or Customer Service Organisation for more information regarding the availability of specific models, types and options.

Model

The Model group indicates the basic function of the product, as follows:

T85X-XX-XXXX
- T855 receiver
- T856 25W transmitter
- T857 exciter
- T858 50W power amplifier
- T859 100W power amplifier

Type

The Type group uses two digits to indicate the basic RF configuration of the product.

The first digit in the Type group designates the frequency range:

T85X-**X**X-XXXX
- '1' for 400-440MHz
- '2' for 440-480MHz
- '3' for 480-520MHz

The second digit in the Type group indicates the channel spacing:

T85X-X**X**-XXXX
- '0' for wide bandwidth (25kHz)
- '3' for mid bandwidth (20kHz)
- '5' for narrow bandwidth (12.5kHz)

Options

T85X-XX-**XXXX**

The Options group uses four digits and/or letters to indicate any options that may be fitted to the product. This includes standard options and special options for specific customers. '0000' indicates a standard Tait product with no options fitted. The large number of options precludes listing them here.

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1.4 Standard Product Range

The following table lists the range of standard T855 types (i.e. no options fitted) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Frequency Range (MHz)		400-440		
IF Bandwidth (kHz)		7.5	12	15
TCXO	±1ppm -20°C to +60°C	●	●	●
Receiver Type: T855-		15-0000	13-0000	10-0000

Frequency Range (MHz)		440-480		
IF Bandwidth (kHz)		7.5	12	15
TCXO	±1ppm -20°C to +60°C	●	●	●
Receiver Type: T855-		25-0000	23-0000	20-0000

Frequency Range (MHz)		480-530	
IF Bandwidth (kHz)		7.5	15
TCXO	±1ppm -20°C to +60°C	●	●
Receiver Type: T855-		35-0000	30-0000

You can identify the receiver type by checking the product code printed on a label on the rear of the chassis (Figure 1.1 in Part A shows typical labels). You can further verify the receiver type by checking the placement of an SMD resistor in the table that is screen printed onto the PCB (refer to Section 6.1 for more details).

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2 T855 Circuit Operation

This section provides a basic description of the circuit operation of the T855 receiver.

Note: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section.

Section	Title	Page
2.1	**Introduction**	**2.3**
2.2	**Receiver Front End**	**2.4**
2.3	**Mixer**	**2.5**
2.4	**IF Circuitry**	**2.5**
2.5	**Noise Mute (Squelch)**	**2.6**
2.6	**Carrier Mute**	**2.6**
2.7	**Audio Processor**	**2.7**
2.8	**Power Supply And Regulators**	**2.8**
2.9	**Microcontroller**	**2.9**
2.10	**Synthesised Local Oscillator**	**2.10**
2.11	**VCO**	**2.11**
2.12	**Received Signal Strength Indicator (RSSI)**	**2.12**

Figure	Title	Page
2.1	T855 High Level Block Diagram	2.3
2.2	T855 Front End, IF and Mute Block Diagram	2.4
2.3	T855 Audio Processor Block Diagram	2.7
2.4	T855 Power Supply And Regulators Block Diagram	2.8
2.5	T855 Microcontroller Block Diagram	2.9
2.6	T855 Synthesiser Block Diagram	2.10
2.7	T855 RSSI Block Diagram (T800-04-0000 RSSI PCB)	2.12

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2.1 Introduction

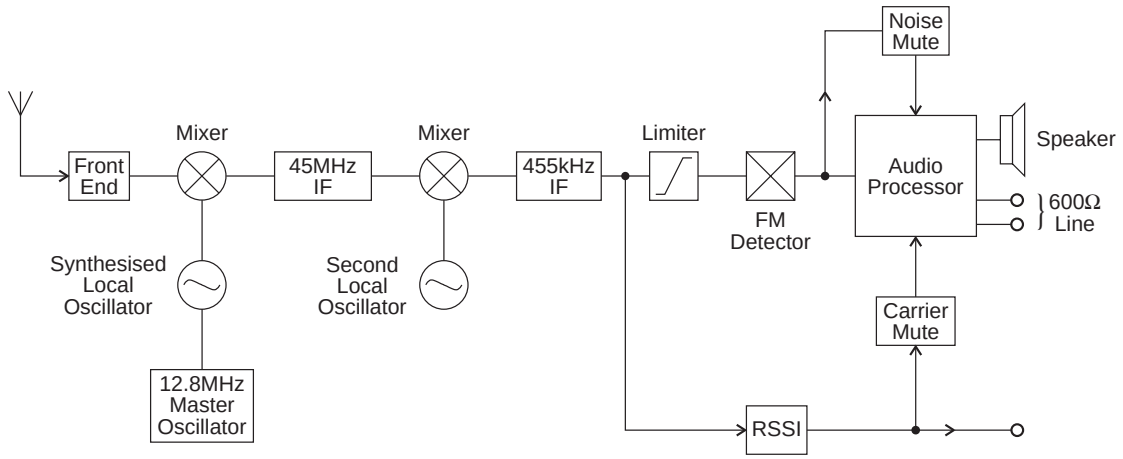


Figure 2.1 T855 High Level Block Diagram

The T855 receiver consists of a number of distinct stages:

- front end
- mixer
- synthesised local oscillator
- IF
- audio processor
- mute (squelch)
- regulator circuits
- received signal strength indicator (RSSI).

These stages are clearly identifiable in Figure 2.1. Refer to the circuit diagrams in Section 6 for further detail.

2.2 Receiver Front End

(Refer to the front end, IF section and audio processor circuit diagrams (sheets 4, 3 and 2 respectively) in Section 6.3.)

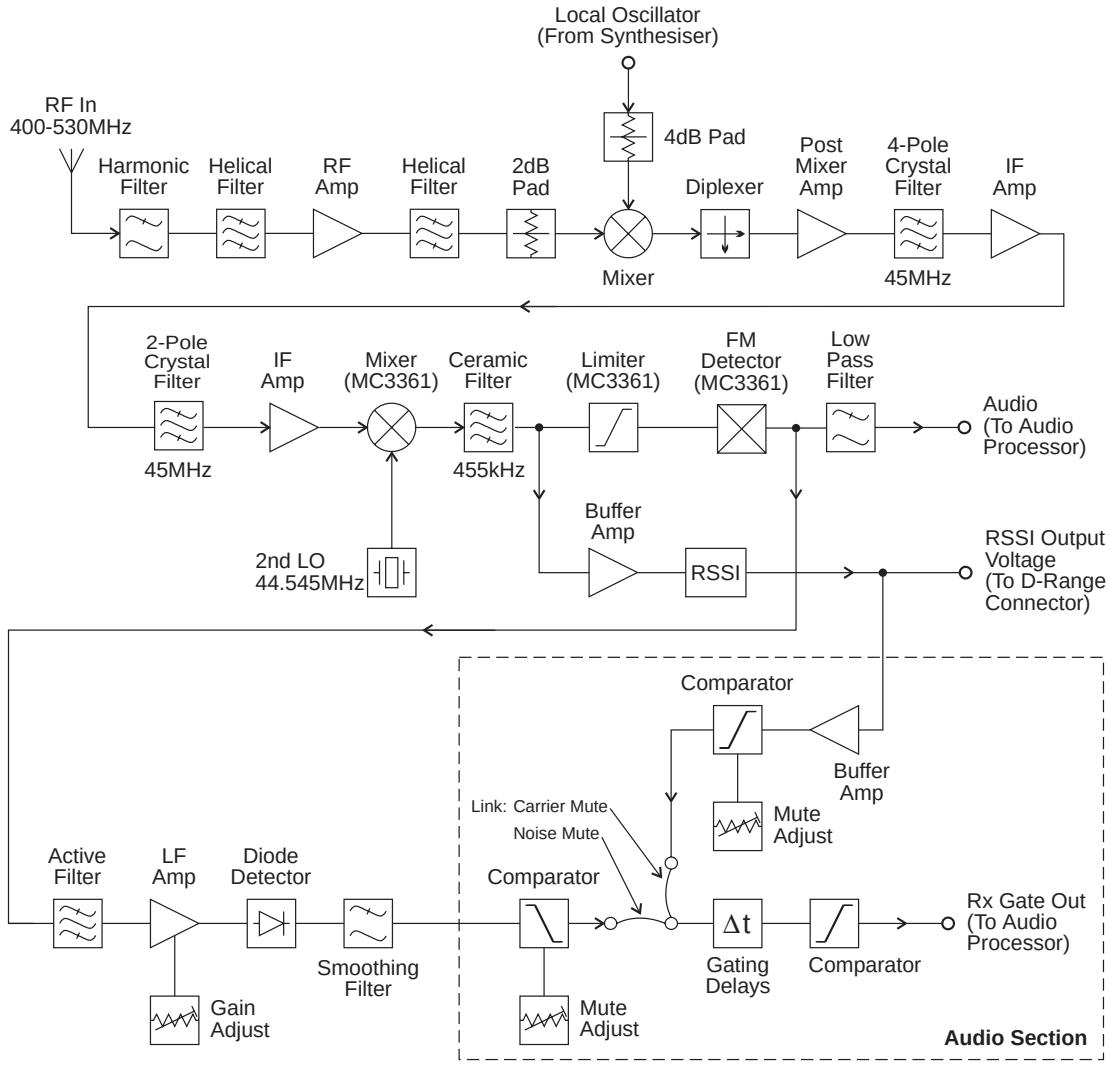


Figure 2.2 T855 Front End, IF and Mute Block Diagram

The incoming signal from the N-type antenna socket is fed through a 9-pole, low pass filter with a cut frequency of approximately 600MHz. This low loss filter (typically less than 0.5dB over 400-530MHz) provides excellent immunity to interference from high frequency signals.

The signal is then further filtered, using a high performance helical resonator doublet (FL410) which provides exceptional image rejection, before being amplified by approximately 8dB (Q410). The signal is then passed through a further helical filter doublet (FL420) before being presented to the mixer via a 2dB attenuator pad.

Each sub-block within the front end has been designed with 50 ohm terminations for ease of testing and fault finding. The overall gain from the antenna socket to the mixer input is approximately 2dB.

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2.3 Mixer

(Refer to the front end circuit diagram (sheet 4) in Section 6.3 and Figure 2.2.)

IC410 is a high level mixer requiring a local oscillator (LO) drive level of +17dBm (nominal). The voltage controlled oscillator (VCO) generates a level of +21dBm (typical) and this is fed to the mixer via a 5dB attenuator pad. A diplexer terminates the IF port of the mixer in a good 50 ohms, thus preventing unnecessary intermodulation distortion.

2.4 IF Circuitry

(Refer to the IF section circuit diagram (sheet 3) in Section 6.3 and Figure 2.2.)

Losses in the mixer are made up for in a tuned, common gate, post mixer amplifier (Q310). Several stages of amplification and filtering are employed in the IF circuitry. The first crystal filter is a 4-pole device (&XF300) which is matched into 50 ohms on both its input and output ports. This stage is followed by a common base amplifier (Q320) whose output is matched into a 2-pole crystal filter (&XF301). The signal is then amplified using a high gain MOSFET amplifier (Q330), after which the signal is mixed down to 455kHz with the second crystal local oscillator (44.5455MHz).

The 455kHz signal is filtered using a 6-pole ceramic filter (&XF302) before being limited and detected. Q340 provides a buffered 455kHz output for use with the optional RF level detector (RSSI)

The second IF mixer, limiter and detector is in a 16-pin IC (IC310). Quadrature detection is employed, using L390, and the recovered audio on pin 9 of IC310 is typically 1V p-p for 60% system deviation.

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2.5 Noise Mute (Squelch)

(Refer to the audio processor and IF section circuit diagrams (sheets 2 and 3 respectively) in Section 6.3 and Figure 2.2.)

The noise mute operates on the detected noise outside the audio bandwidth. An operational amplifier in IC310 is used as an active band pass filter centred on 70kHz to filter out audio components. The noise spectrum is then further amplified in a variable gain, two-stage amplifier (Q350 & Q360) with additional filtering. The noise is then rectified (D310) and filtered to produce a DC voltage proportional to the noise amplitude. The lowest average DC voltage corresponds to a high RF signal strength and the highest DC voltage corresponds to no signal at the RF input.

The rectified noise voltage is compared with a threshold voltage set up on RV230, the front panel "Gating Sensitivity" potentiometer. Hysteresis is provided by the feedback resistor (R267) to prevent the received message from being chopped when the average noise voltage is close to the threshold. R281 and R280 determine the mute opening and closing times and, in combination with solder links SL210 and SL220, provide three time delay options (SL210 is linked as standard - refer to Section 3.8). The mute control signal at pin 7 of IC270 is used to disable the speaker and line audio outputs. The speaker output can be separately enabled for test purposes by operating the front panel mute disable switch, SW201.

2.6 Carrier Mute

(Refer to the audio processor and IF section circuit diagrams (sheets 2 and 3 respectively) in Section 6.3 and Figure 2.2.)

A high level carrier mute facility is also available. The RSSI (refer to Section 2.12) provides a DC voltage proportional to the signal strength. This voltage is compared with a preset level, set up on RV235, and may be linked into the mute timing circuit using PL250. PL250 selects either the noise mute or the carrier mute. From this point both the noise and carrier mute circuits operate in the same manner, using common circuitry.

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2.7 Audio Processor

(Refer to the audio processor circuit diagram (sheet 2) in Section 6.3.)

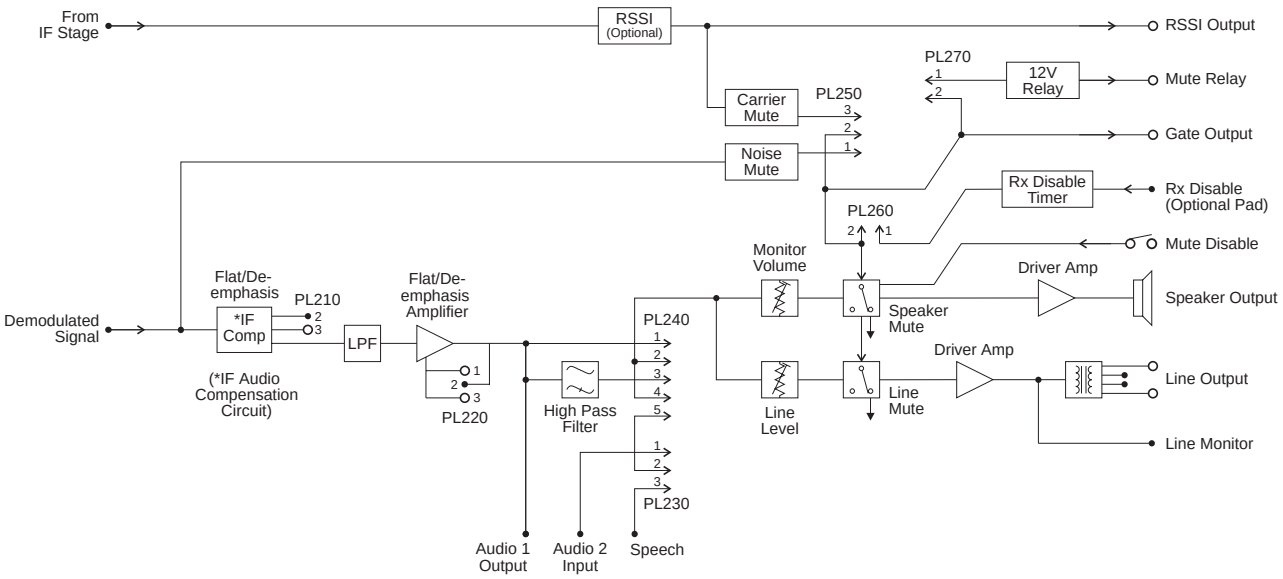


Figure 2.3 T855 Audio Processor Block Diagram

The recovered audio on pin 9 of IC310 is passed through a compensation network and processed in a third order elliptic active filter to give the required response. Linking (PL220 & PL210) is available to give either a flat or de-emphasised audio response, with de-emphasis giving a -6dB/octave roll off. The output of IC210 is split to provide separate paths for the speaker and line outputs. The "Audio 1", Audio 2" and "Speech" lines allow access to the receiver's audio path for external signalling purposes (refer to Section 3.5).

The signals are passed to audio drive amplifiers IC240 and IC260. Under muted conditions the inputs of these amplifiers are shunted to ground via transistors Q230 and Q290 respectively. The audio output of IC240 has a DC component which is removed by C249, and this then drives a speaker directly. The output of IC260 is fed into a line transformer to provide a balanced 2-wire or 4-wire, 600 ohm output.

The speaker volume is set using the front panel "Monitor Volume" knob (RV205) and the line level is set using the recessed "Line Level" potentiometer (RV210).

The red front panel "Gate" LED (D250) indicates the status of the mute circuit. When a signal above the mute threshold is received, the LED is illuminated. The "Monitor Mute" switch (SW201) on the front panel opens the mute, allowing continuous monitoring of the audio signal (on = audio muted; off = audio unmuted).

The mute control line is available on pad 234 ("RX GATE OUT") for control of external circuitry. A high (9V) on pad 234 indicates that the audio is disabled and a low (0V) indicates that a signal above the mute threshold level is being received.

The audio can also be disabled using the "RX-DISABLE" inputs, pads 225 or 228, having connected the "RX-DISABLE" link between pins 1 & 2 of PL260. An adjustable time delay (RV220) is provided on these lines. In order to disable the audio, either pad must be pulled to 0V (refer to Section 1.4 in Part G).

An undedicated relay is provided (RL210) for transmitter keying or other functions and this can be operated from the mute line by linking PL270.

2.8 Power Supply And Regulators

(Refer to the regulators circuit diagram (sheet 6) in Section 6.3.)

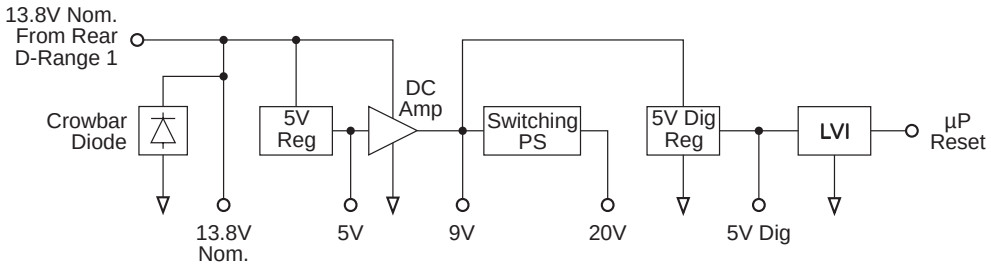


Figure 2.4 T855 Power Supply And Regulators Block Diagram

The T855 is designed to operate off a 10.8-16V DC supply (13.8V nominal). A 5.3V regulator (IC630) runs directly from the 13.8V rail, driving much of the synthesiser circuitry. It is also used as the reference for a DC amplifier (IC640, Q630 & Q620) which provides a medium current capability 9V supply.

A switching power supply, based on Q670 and Q660, runs off the 9V supply and provides a low current capability +20V supply. This is used to drive the synthesiser loop filter (IC740), giving a VCO control voltage of up to 20V.

The 13.8V supply drives both output audio amplifiers without additional regulation. A separate 5V regulator (IC610) drives the microprocessor and associated digital circuitry. The output of this regulator is monitored by the Low Voltage Interrupt (LVI) circuit (IC650).

A crowbar diode is fitted for protection against connection to a power supply of incorrect polarity. It also provides transient overvoltage protection.

Note: A fuse must be fitted in the power supply line for the diode to provide effective protection.

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2.9 Microcontroller

(Refer to the microcontroller circuit diagram (sheet 8) in Section 6.3.)

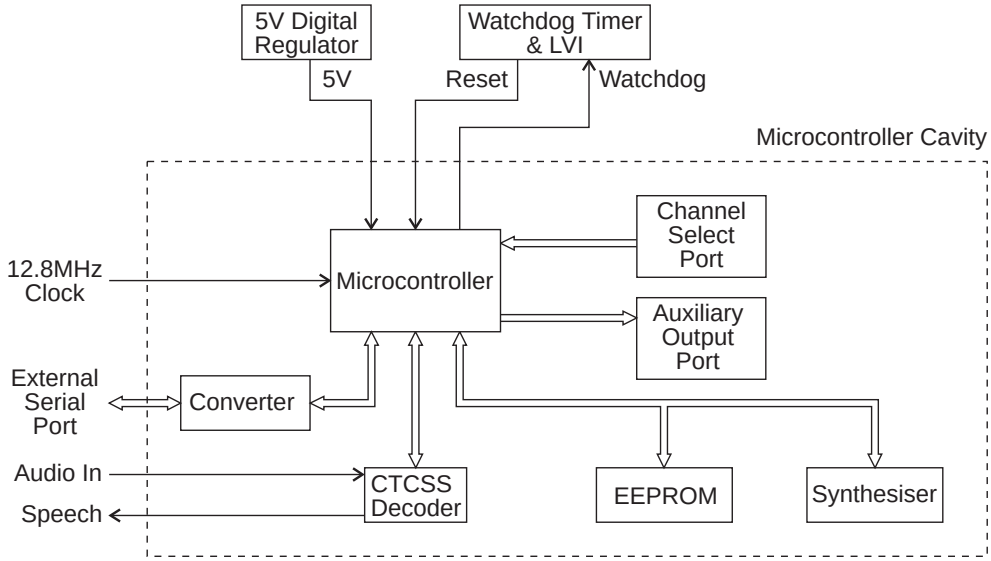


Figure 2.5 T855 Microcontroller Block Diagram

Overall system control of the T855 is accomplished by the use of a member of the 80C51 family of microcontrollers (IC810) which runs from internal ROM and RAM. Four ports are available for input/output functions.

Non-volatile data storage is achieved by serial communication with a 16kBit EEPROM (IC820). This serial bus is also used by the microcontroller to program the synthesiser (IC740).

The main tasks of the microcontroller are as follows:

- program the synthesiser;
- interface with the PGM800Win programming software at 9600 baud via the serial communication lines on D-range 1 (PL100) & D-range 2;
- monitor channel change inputs from D-range 2;
- generate timing waveforms for CTCSS detection;
- coordinate and implement timing control of the receiver;
- control the front panel "Supply" LED (refer to Section 5.3).

2.10 Synthesised Local Oscillator

(Refer to the synthesiser circuit diagram (sheet 7) in Section 6.3 and the VCO circuit diagram in Part E.)

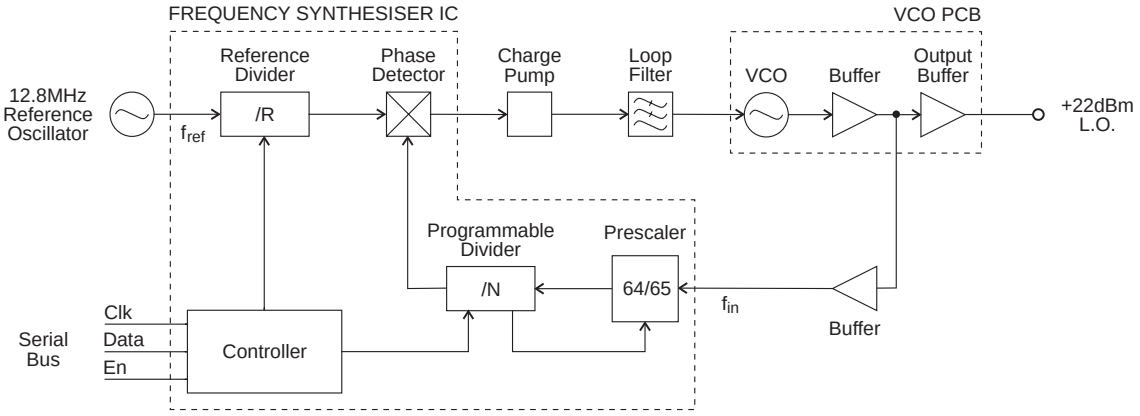


Figure 2.6 T855 Synthesiser Block Diagram

The synthesiser (IC740) employs a phase-locked loop (PLL) to lock a voltage controlled oscillator (VCO) to a given reference frequency. The synthesiser receives the divider information from the control microprocessor via a 3-wire serial bus (clock, data, enable). When the data has been latched in, the synthesiser processes the incoming signals from the VCO buffer (f_{in}) and the reference oscillator (f_{ref}).

A reference oscillator at 12.8MHz (IC700) is buffered (IC710) and divided down to 6.25kHz or 5kHz within the synthesiser IC (IC740).

A buffered output of the VCO is divided with a prescaler and programmable divider which is incorporated into the synthesiser chip (IC740). This signal is compared with the reference signal at the phase detector (also part of the synthesiser chip). The phase detector outputs drive a balanced charge pump circuit (Q760, Q770, Q775, Q780, Q785) and active loop filter (IC750, Q790) which produces a DC voltage between 0V and 20V to tune the VCO. This VCO control line is further filtered to attenuate noise and other spurious signals. Note that the VCO frequency increases with increasing control voltage.

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2.11 VCO

(Refer to the VCO circuit diagram in Part E.)

The VCO transistor (Q1) operates in a common emitter, and uses a transmission line resonator (TL1). The transmission line is used in a two port configuration with varicaps positioned at one end. The VCO control voltage from the loop filter (IC750) is applied to the varicaps (D1 & D2) to facilitate tuning. The VCO output is coupled into a cascode amplifier stage (Q2 & Q3) which supplies +10dBm (nominal) output. Further amplification in Q5 brings the output drive level to +20dBm to drive the mixer.

A low level "sniff" is taken from the input to Q5 to drive the divider buffer to the synthesiser (IC740).

The VCO operates at the actual frequency required by the first mixer, i.e. there are no multiplier stages.

The VCO frequency spans from either 355-395MHz, 395-435MHz or 435-485MHz according to product type (refer to Section 1.4). The VCO is tuned to 45MHz below the desired receive frequency (low side injection) to produce a 45MHz IF signal at the output of the mixer.

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2.12 Received Signal Strength Indicator (RSSI)

(Refer to the T800-04-0000 RSSI PCB circuit diagram in Section 6.2 and the IF section circuit diagram (sheet 3) in Section 6.3.)

The RSSI option PCB plugs directly into the main PCB (support circuitry being fitted as standard). It is fitted to the T855 whenever receiver signal strength monitoring is required, e.g. trunking or voting. Its function is to provide a DC voltage proportional to the signal level at the receiver input. The DC voltage is available at D-range 1 (PL100 pin 5).

The RSSI also provides the capability for high level signal strength muting, which may be selected on PL250 (refer to Section 3.5). The mute threshold may be set between -115dBm and -70dBm by RV235.

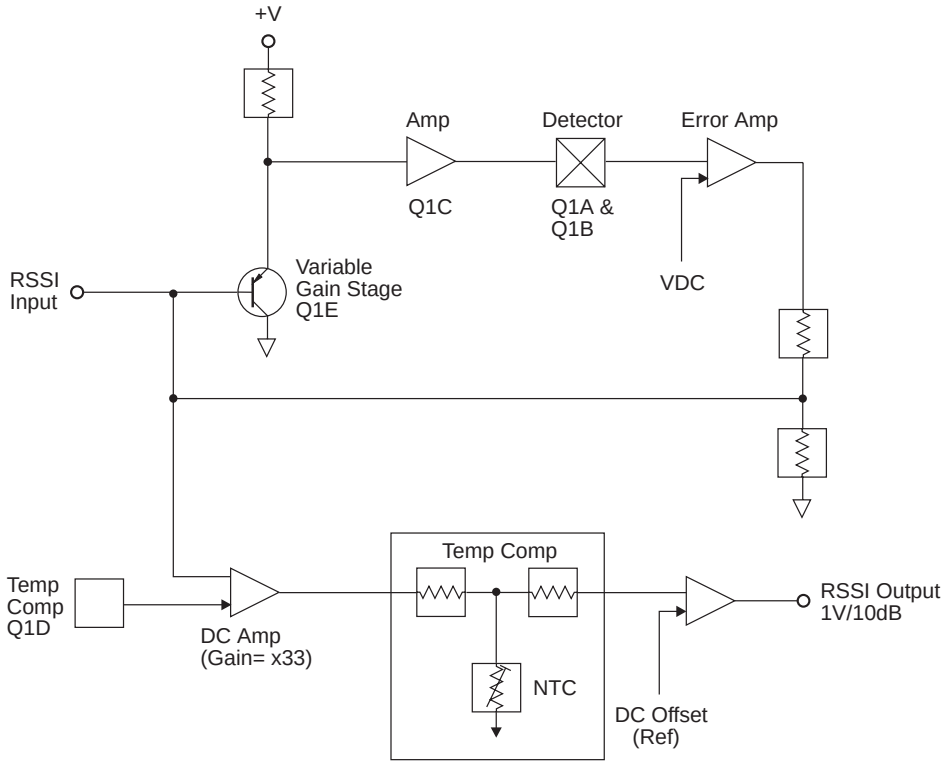


Figure 2.7 T855 RSSI Block Diagram (T800-04-0000 RSSI PCB)

The variable gain stage (Q1A) is a common emitter amplifier with its emitter grounded and the AGC control loop voltage applied to its base. Since the AGC loop will maintain a constant signal level at the collector, the gain of Q1 must be proportional to the incoming 455kHz signal level. The gain of Q1 is linearly proportional to its collector current which itself is exponentially related to the base-emitter voltage. Thus there is a logarithmic relationship between the base-emitter voltage and the gain. The circuit therefore produces a feedback voltage, and an output voltage, logarithmically related to the RF input signal.

The AGC loop is followed by a DC amplifier which provides level shifting, temperature compensation and gain to give a nominal 1V/10dB at the RSSI output. RV320 on the main PCB is used to set the RSSI voltage to a fixed value at a given RF input signal strength.

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3 T855 Initial Tuning & Adjustment

Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following section describes both short and full tuning and adjustment procedures and provides information on:

- channel programming
- selecting the required audio links
- synthesiser alignment
- receiver front end and IF alignment
- noise and carrier level mute adjustment
- setting the line and monitor output levels
- setting up the RSSI.

Note: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Figure 4.3 which shows the location of the main tuning and adjustment controls. Refer also to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

Section	Title	Page
3.1	**Introduction**	**3.3**
3.2	**Channel Programming**	**3.3**
3.3	**Test Equipment Required**	**3.4**
3.4	**Short Tuning Procedure**	**3.5**
3.4.1	Introduction	3.5
3.4.2	Synthesiser Alignment	3.5
3.4.3	Front End Alignment	3.5
3.4.4	Mute Adjustment	3.6
3.4.4.1	Noise Mute	3.6
3.4.4.2	Carrier Level Mute	3.6
3.4.5	Line Amplifier Output	3.6
3.4.6	CTCSS	3.7
3.4.6.1	Decoder Operation	3.7
3.4.6.2	Opening Sinad	3.7
3.4.6.3	High Pass Filter	3.7
3.4.7	RSSI (If Fitted)	3.8

Section	Title	Page
3.5	**Audio Processor Links**	**3.8**
3.5.1	General	3.8
3.5.2	Audio Processor Linking Details For CTCSS	3.9
3.6	**Synthesiser Alignment**	**3.10**
3.7	**Alignment Of Receiver Front End And IF**	**3.10**
3.8	**Gating Delay**	**3.12**
3.9	**Noise Mute Adjustment**	**3.12**
3.10	**Carrier Level Mute**	**3.12**
3.11	**Audio Processor**	**3.13**
3.11.1	Line Amplifier Output	3.13
3.11.2	Monitor Amplifier Output (Speaker Output)	3.13
3.12	**CTCSS**	**3.13**
3.12.1	Decoder Operation	3.13
3.12.2	Opening Sinad	3.13
3.12.3	High Pass Filter	3.14
3.13	**RSSI**	**3.14**

Figure	Title	Page
3.1	T855 Test Equipment Set-up For Short Tuning Procedure	3.4
3.2	T855 Test Equipment Set-up For Full Tuning & Adjustment Procedure	3.4

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3.1 Introduction

When you receive your T855 receiver it will be run up and working on a particular frequency (the "default channel")[1]. If you want to switch to a frequency that is within the 5MHz switching range (i.e. ±2.5MHz from the factory programmed frequency), you should only need to reprogram the receiver with the PGM800Win software (refer to the PGM800Win programming kit and Section 3.2 below).

However, if you want to switch to a frequency outside the 5MHz switching range, you will have to reprogram and re-tune the receiver to ensure correct operation. In this case you should carry out the short tuning procedure described in Section 3.4.

If you have carried out repairs or other major adjustments, you must carry out the full tuning and adjustment procedure described in this section (except for Section 3.4).

3.2 Channel Programming

You can program up to 128 channel frequencies into the receiver's EEPROM memory (IC820) by using the PGM800Win software package and an IBM™ PC. You can also use PGM800Win to select the receiver's current operating frequency (or "default channel").

If the receiver is installed in a rack frame, you can program it via the programming port in the speaker panel. However, you can also program the receiver before it is installed in a rack frame as follows:

- by using a T800-01-0010 calibration test unit;
- via D-range 1;
- via D-range 2 (standard T800-03-0000 auxiliary D-range only);
- via SK805 (internal Micromatch connector).

If you do not use the T800-01-0010, you will have to connect the PC to the receiver via a module programming interface (such as the T800-01-0004).

For a full description of the channel programming procedure, refer to the PGM800Win programming software user's manual.

Note: When an auxiliary D-range kit (D-range 2 - T800-03-0000) is fitted, you can also select a channel with an external switch, such as the DIP switch on the rack frame backplane PCB. Refer to Part C in the T800 Series Ancillary Equipment Service Manual (M800-00-101 or later issue) or consult your nearest Tait Dealer or Customer Service Organisation for further details.

1. Use the "Read Module" function in PGM800Win to find out what the default channel is.

3.3 Test Equipment Required

You will need the following test equipment:

- computer with PGM800Win installed
- T800 programming kit
- module programming interface (e.g. T800-01-0004 - optional)
- 13.8V power supply
- digital multimeter
- audio signal generator
- RF signal generator
- audio voltmeter
- sinad meter

  } or RF test set (optional)

- oscilloscope
- distortion meter

  } not needed for short tuning procedure

- T800-01-0010 calibration test unit (optional)
- 4Ω speaker (not needed if the calibration test unit is used)

Figure 3.1 and Figure 3.2 show typical test equipment set-ups (with and without a T800-01-0010 calibration test unit).

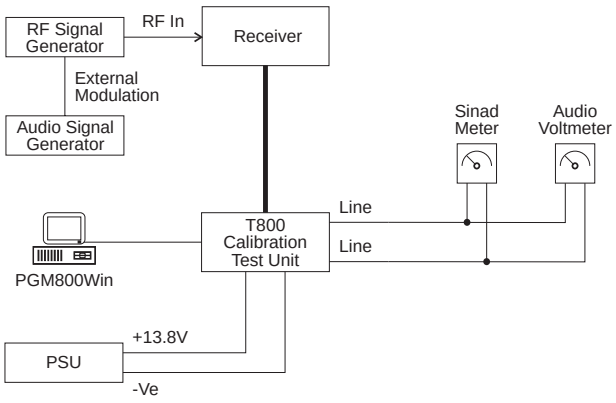


Figure 3.1 T855 Test Equipment Set-up For Short Tuning Procedure

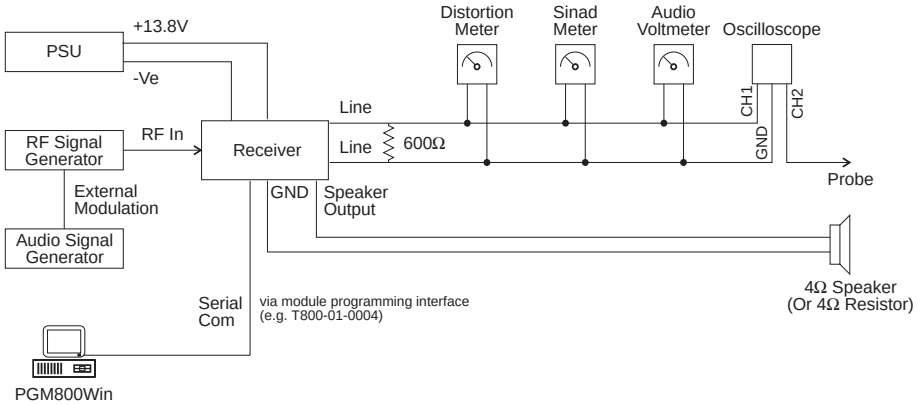


Figure 3.2 T855 Test Equipment Set-up For Full Tuning & Adjustment Procedure

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3.4 Short Tuning Procedure

Use this procedure only if you want to reprogram the receiver to a frequency outside the 5MHz switching range and do not intend to carry out any other major adjustments or repairs.

3.4.1 Introduction

Reprogram the operating frequency as described in the PGM800Win programming kit (refer to Section 3.2).

Remove the top cover (nearest the handle).

Set up the test equipment as described in Section 3.3.

Set the links in the audio processor section as required (refer to Section 3.5).

3.4.2 Synthesiser Alignment

- Connect a high impedance voltmeter to the long lead of L1 in the VCO (this measures the synthesiser loop voltage).

- **Single Channel** Tune VCO trimmer C6 for a synthesiser loop voltage of 10V.

  Multichannel Tune VCO trimmer C6 for a synthesiser loop voltage of 10V on the middle channel.

  If there is no middle channel, tune C6 so that the channels are symmetrically placed around a loop voltage of 10V.

  All channels should lie within the upper and lower limits of 16V and 3V respectively.

  Do not attempt to program channels with a greater frequency separation than the specified switching range of 5MHz.

3.4.3 Front End Alignment

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: For multichannel operation align the receiver on a frequency in the middle of the required band.

Set RV230 (front panel gating sensitivity) fully clockwise.

Inject a strong on-channel RF signal with ±3kHz deviation (±2.4kHz) [±1.5kHz] at

1kHz into the antenna socket and adjust the helical resonators #FL410 & #FL420 to give best sinad.

Continually decrease the RF level to maintain 12dB sinad.

Readjust FL410 and FL420 to give best sinad.

With PL210 and PL220 connected for de-emphasised audio response, the receiver sensitivity should be better than -117dBm, assuming that the audio levels are not being overdriven (refer to Section 3.4.5).

3.4.4 Mute Adjustment

3.4.4.1 Noise Mute

Connect pins 1 & 2 of PL250 to enable the noise mute.

Set the RF level to -105dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Set RV230 (front panel gating sensitivity) fully anticlockwise.

Adjust RV310 (noise mute gain) fully clockwise to close the mute (if necessary turn off the RF signal and then turn it on again).

Rotate RV310 anticlockwise until the mute just opens.

Reset the signal generator for the required opening sinad and adjust RV230 clockwise until the mute just opens.

3.4.4.2 Carrier Level Mute

Connect pins 2 & 3 of PL250 to enable the carrier mute and disable the noise mute.

Apply an on-channel signal from the RF generator at the required mute opening level with ±3kHz deviation (±2.4kHz) [±1.5kHz] at ±1kHz.

Adjust RV235 (carrier mute) anticlockwise to close the mute (if necessary, momentarily turn off the RF), then slowly adjust it clockwise until the mute just opens. The mute should now open at this preset level.

3.4.5 Line Amplifier Output

Apply an on-channel signal from the RF generator at a level of -70dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust RV210 (front panel line level) to set the line level to the required output level.

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3.4.6 CTCSS

3.4.6.1 Decoder Operation

Program a CTCSS tone on the default channel using PGM800Win.

Set the RF signal generator output to -70dBm.

Modulate the generator with both:

- a 1kHz tone at ±3kHz deviation (±2.4kHz) [±1.5kHz]
- and a CTCSS tone at the programmed frequency at ±500Hz deviation (±400Hz) [±300Hz].

Check that the receiver gate opens and the front panel "Gate" LED is on.

3.4.6.2 Opening Sinad

Adjust RV230 (front panel gating sensitivity) fully clockwise.

Reduce the RF signal level to -110dBm.

Observe the sinad meter and reduce the RF level until the receiver mute closes.

Slowly increase the signal level until the receiver mute just opens and stays open.

With PL240 pins 1 & 2 linked (G - H; high pass filter bypassed), check that the sinad is less than 6dB.

Reset the signal generator for the required opening sinad, adjust RV230 fully anti-clockwise, then clockwise until the mute just opens.

3.4.6.3 High Pass Filter

Set the audio processor links as follows:

Plug	Link		Function
PL210	1 - 2	A - B	de-emphasised response
PL230	2 - 3	N - P	audio from internal CTCSS speech filter
PL240	4 - 5	K - L	audio input via PL230 or I/O pad

Reset the RF signal generator output to -70dBm and note the line level (measurement A).

Reduce the 1kHz generator to zero output and measure the line level again (measurement B).

Check that measurement B is at least 30dB below measurement A.

3.4.7 RSSI (If Fitted)

The T800-04-0000 RSSI is an optional PCB which adds signal strength monitoring and high level mute facilities to the basic receiver.

Ensure the T800-04-0000 PCB is fitted in SK320 and SK330 in the IF compartment.

Apply an on-channel signal from the RF generator at a level of -110dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust RV320 (RSSI level) to give 2.0V RSSI output on pin 5 of D-range 1 (PL100) when measured with a high impedance DMM.

3.5 Audio Processor Links

3.5.1 General

Use the following table to set up the audio processor to the configuration you require. You should set the audio processor links before carrying out the receiver alignment. The factory settings are shown in brackets [ ].

Plug	Link[a]		Function
PL210	[1 - 2] 2 - 3	[A - B] B - C	de-emphasised response flat response
PL220	1 - 2 [2 - 3]	D - E [E - F]	flat response de-emphasised response
PL230[b]	1 - 2 [2 - 3] 3 - 4	M - N [N - P] P - Q	audio input via AUDIO-2 pad audio from internal CTCSS speech filter audio input via I/O pad P250
PL240[b]	1 - 2 [2 - 3] or 3 - 4 4 - 5	G - H [H - J] or J - K K - L	bypass high pass filter 300Hz high pass filter in circuit audio input via PL230 or I/O pad
PL250	[1 - 2] 2 - 3	[R - S] S - T	noise mute carrier mute
PL260[c]	1 - 2 [2 - 3]	U - V [V - W]	RX-DISABLE link not connected
PL270	[1 - 2] 2 - 3	[X - Y] Y - Z	relay link not connected

a. The letters in this column and in the table in Section 3.5.2 below refer to the identification letters screen printed onto the PCB beside each set of pins.

b. Refer to Section 3.5.2 for further details.

c. Refer to Section 1.4 in Part G for further details.

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3.5.2 Audio Processor Linking Details For CTCSS

You must connect the audio processor links correctly according to the CTCSS option used, as shown in the table below.

CTCSS Option	PL230		PL240	
standard, no CTCSS	2 - 3	N - P	2 - 3	H - J
received CTCSS + speech passed to line output	3 - 4	P - Q	1 - 2	G - H
high pass filtered speech, internal CTCSS detection	2 - 3	N - P	4 - 5	K - L
external CTCSS detection	1 - 2	M - N	4 - 5	K - L

The conditions stated in the above table are defined as follows:

- standard, no CTCSS
  - no CTCSS or other sub-audio signalling used
  - audio bandwidth 300Hz to 3kHz
  - hum & noise -55dB
- received CTCSS tone + speech to line output
  - tone and speech transmitted down 600 ohm line
  - audio bandwidth 10Hz to 3kHz
  - hum & noise -45dB
- high pass filtered speech + internal CTCSS detection
  - 400Hz to 3kHz
  - hum & noise -30dB with 250.3Hz tone present
- external CTCSS detection
  - decoding performed through the receiver (but externally)
  - speech injected back into receiver via "AUDIO-2" and sent down 600 ohm line

Note 1: AUDIO-2 is available on D-range 1 (PL100) pin 7 via the link resistor R160. Although PL100 pin 7 is already assigned to SERIAL-COM, this can be disabled by removing R808.

Note 2: External CTCSS units can connect in series with the audio chain via AUDIO-1 and AUDIO-2.

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3.6 Synthesiser Alignment

- Ensure that the receiver has been programmed with the required frequencies using the PGM800Win software.
- Connect a high impedance voltmeter to the long lead of L1 in the VCO (this measures the synthesiser loop voltage).
- **Single Channel** Tune VCO trimmer C6 for a synthesiser loop voltage of 10V.

  Multichannel Tune VCO trimmer C6 for a synthesiser loop voltage of 10V on the middle channel.

  If there is no middle channel, tune C6 so that the channels are symmetrically placed around a loop voltage of 10V.

  All channels should lie within the upper and lower limits of 16V and 3V respectively.

  Do not attempt to programme channels with a greater frequency separation than the specified switching range of 5MHz.
- The TCXO =(IC700) output frequency should be trimmed when the IF is tuned - refer to Section 3.7.

3.7 Alignment Of Receiver Front End And IF

Note: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Align the synthesiser as instructed in Section 3.6. For multichannel operation align the receiver on a frequency in the middle of the required band.

Set RV230 (front panel gating sensitivity) fully clockwise.

Inject a strong on-channel RF signal with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz into the antenna socket and adjust the helicals (#FL410 and #FL420) to give the best sinad.

Continually decrease the RF level to maintain 12dB sinad.

Roughly tune IF coils L310, L320, L330, L340, L350, L360, L370, L380, L385 and L390 for best sinad.

While maintaining a low level unmodulated RF input to the receiver, loosely couple into the first IF an additional high level signal at 45MHz - you will hear a beat note.

Trim the synthesiser TCXO (=IC710) for zero beat.

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While maintaining the low level RF input to the receiver, loosely couple into the second IF an additional high level signal at 455kHz - you will hear a beat note.

Tune L385 for zero beat.

Note: If a second oscillator is not available, you can connect a frequency counter to IC710 pin 8 (i.e. after the TCXO buffer) via an oscilloscope probe to measure the TCXO frequency directly (12.8MHz). At this point the voltage level is approximately 4V p-p.

Readjust the front end helicals (#FL410 and #FL420) to give the best sinad.

Change the RF signal level to -75dBm and modulate with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Connect an oscilloscope probe to SK320 pin 3 (RSSI 455kHz input) and connect plugs PL210 and PL220 to give a flat audio response (refer to Section 3.5).

Readjust L310, L320, L330, L340, L350, L360, L370 and L380 to give a maximum amplitude response on the oscilloscope with minimal amplitude modulation.

Note: If you would like a more accurate method of tuning the IF, refer to the sweep tuning method described in Section 5.5.5.

Further adjust these coils, along with L390, for minimum audio distortion, ensuring that the 455kHz level (on the oscilloscope) does not fall significantly.

Check that the distortion reading is:

wide bandwidth	≤2%
mid and narrow bandwidth	≤4%.

If required, reconnect plugs PL210 and PL220 to give a de-emphasised audio response and check that the distortion reading is ≤2% (all bandwidths).

Reduce the RF level until 12dB sinad is reached. The receiver sensitivity should be better than -117dBm (de-emphasised) or -111dBm (flat), assuming that the audio levels are not being overdriven (refer to Section 3.11).

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3.8 Gating Delay

Two solder links (SL210 & SL220) are provided on the bottom of the PCB to allow three gate delay time options, as shown in the table below.

SL210	SL220	Closing Delay
linked	not linked	<50ms*
not linked	linked	<25ms
not linked	not linked	<20ms

*Factory setting.

3.9 Noise Mute Adjustment

Connect pins 1 & 2 of PL250 to enable the noise mute.

Align the receiver as instructed in Section 3.6 and Section 3.7.

Set the RF level to -105dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Set RV230 (front panel gating sensitivity) fully anticlockwise.

Adjust RV310 (noise mute gain) fully clockwise to close the mute (if necessary turn off the RF signal and then turn it on again).

Rotate RV310 anticlockwise until the mute just opens.

Reset the signal generator for the required opening sinad and adjust RV230 clockwise until the mute just opens.

3.10 Carrier Level Mute

Connect pins 2 & 3 of PL250 to enable the carrier mute and disable the noise mute.

Apply an on-channel signal from the RF generator at the required mute opening level with ±3kHz deviation (±2.4kHz) [±1.5kHz] at ±1kHz.

Adjust RV235 (carrier mute) anticlockwise to close the mute (if necessary, momentarily turn off the RF), then slowly adjust it clockwise until the mute just opens. The mute should now open at this preset level.

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3.11 Audio Processor

3.11.1 Line Amplifier Output

Apply an on-channel signal from the RF generator at a level of -70dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust RV210 (front panel line level) to give an output of +10dBm on the 600 ohm line.

Check for any clipping or distortion on the oscilloscope.

Set the line level to the required output level.

3.11.2 Monitor Amplifier Output (Speaker Output)

Adjust RV205 (front panel monitor volume) to give an output of 2V rms into a 4 ohm resistive load.

Check for any clipping or distortion on the oscilloscope.

Switch to a 4 ohm speaker and adjust RV205 to the required level.

3.12 CTCSS

3.12.1 Decoder Operation

Program a CTCSS tone on the default channel using PGM800Win.

Set the RF signal generator output to -70dBm.

Modulate the generator with both:

- a 1kHz tone at ±3kHz deviation (±2.4kHz) [±1.5kHz]
- and a CTCSS tone at the programmed frequency at ±500Hz deviation (±400Hz) [±300Hz].

Check that the receiver gate opens and the front panel "Gate" LED is on.

3.12.2 Opening Sinad

Adjust RV230 (front panel gating sensitivity) fully clockwise.

Reduce the RF signal level to -110dBm.

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Observe the sinad meter and reduce the RF level until the receiver mute closes.

Slowly increase the signal level until the receiver mute just opens and stays open.

With PL240 pins 1 & 2 linked (G - H; high pass filter bypassed), check that the sinad is less than 6dB.

Reset the signal generator for the required opening sinad, adjust RV230 fully anti-clockwise, then clockwise until the mute just opens.

3.12.3 High Pass Filter

Set the audio processor links as follows:

Plug	Link		Function
PL210	1 - 2	A - B	de-emphasised response
PL230	2 - 3	N - P	audio from internal CTCSS speech filter
PL240	4 - 5	K - L	audio input via PL230 or I/O pad

Reset the RF signal generator output to -70dBm and note the line level (measurement A).

Reduce the 1kHz generator to zero output and measure the line level again (measurement B).

Check that measurement B is at least 30dB below measurement A.

3.13 RSSI

The T800-04-0000 RSSI is an optional PCB which adds signal strength monitoring and high level mute facilities to the basic receiver.

Ensure the T800-04-0000 PCB is fitted in SK320 and SK330 in the IF compartment.

Align the receiver as instructed in Section 3.6 and Section 3.7.

Apply an on-channel signal from the RF generator at a level of -110dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust RV320 (RSSI level) to give 2.0V RSSI output on pin 5 of D-range 1 (PL100) when measured with a high impedance DMM.

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4 T855 Functional Testing

Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following test procedures will confirm that the T855 has been tuned and adjusted correctly and is fully operational.

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Figure 4.3 for the location of the main tuning and adjustment controls, and to Section 3.3 for the test equipment set-up. Refer also to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section.

Section	Title	Page
4.1	**Current Consumption**	**4.3**
4.2	**Sensitivity**	**4.3**
4.3	**Switching Range**	**4.3**
4.4	**Audio Distortion**	**4.4**
4.5	**Ultimate Signal-To-Noise Ratio**	**4.4**
4.6	**De-emphasised Audio Frequency Response**	**4.5**
4.7	**Noise Mute (If Linked In)**	**4.6**
4.8	**RSSI (If Fitted)**	**4.6**
4.9	**Carrier Level Mute (RSSI Fitted & Carrier Mute Linked In)**	**4.7**

Figure	Title	Page
4.1	T855 De-emphasised Audio Frequency Response	4.5
4.2	T855 RSSI Voltage vs Signal Strength	4.6
4.3	T855 Main Tuning & Adjustment Controls	4.9

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4.1 Current Consumption

Connect the T855 to a 13.8V power supply.

Rotate RV230 (front panel gating sensitivity) anticlockwise until the "Gate" LED is extinguished.

Set switch SW201 (front panel monitor mute) to the ***on*** position.

Check that the current in the 13.8V power cable is less than 350mA.

Rotate the RV230 clockwise until the "Gate" LED is lit.

Rotate RV210 (front panel line level) and RV205 (front panel monitor volume) to give maximum outputs.

Check that the current is less than 800mA.

Reset the front panel controls to the required settings.

4.2 Sensitivity

If CTCSS is enabled, disable the CTCSS tone by either programming the T855 for "No Tone" on the set channel, or by pulling pin 10 of D-range 2 (CTCSS ENABLE) low.

Apply an on-channel signal from the RF generator with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust the RF level to give 12dB audio sinad.

Check that the sensitivity is -117dBm or better.

4.3 Switching Range

Apply an on-channel signal from the RF generator at various frequencies within the 5MHz switching range (front end bandwidth), corresponding to pre-programmed channels.

Measure the sensitivity at each frequency as described in Section 4.2.

Ensure that the sensitivity is -115dBm or better across the whole switching range.

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4.4 Audio Distortion

The level of distortion measured at the line output (refer to Figure 1.3 in Part F) gives an indication of the accuracy of the IF alignment.

Apply an accurate on-channel signal from the RF generator at a level of -70dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Adjust RV210 (front panel line level) to give +10dBm into 600 ohms.

Check that the distortion is approximately 1% THD.

Note: For a flat response, the distortion should always be better than 2% for wide bandwidth sets or 4% for mid and narrow bandwidth sets.

Adjust RV205 (front panel monitor volume) to give 2V rms into a 4 ohm resistive load.

Check that the distortion at the monitor output is better than 2% THD.

Reset the controls before proceeding to the next set of tests.

4.5 Ultimate Signal-To-Noise Ratio

Apply a signal from the RF generator at a level of -57dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Select de-emphasis on the links provided in the audio processor (refer to Section 3.5), and link pins 2 & 3 of PL240 to include the 300Hz filter.

Adjust RV210 (front panel line level) to provide +10dBm output.

Switch off the modulation, checking that the residual noise is lower than -45dBm (-43dBm) [-39dBm] at the line output (this corresponds to S/N of 55dB (53dB) [49dB] and is in accordance with EIA measurement conditions).

Note: You can make the measurement without the 300Hz high pass filter, but the result will be 10dB worse.

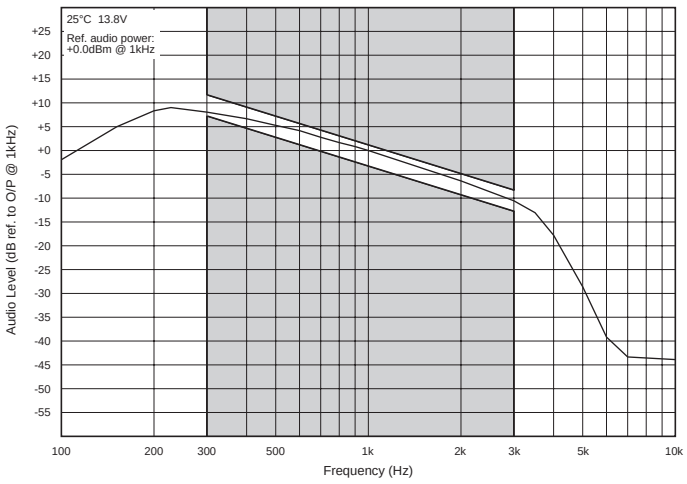
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4.6 De-emphasised Audio Frequency Response

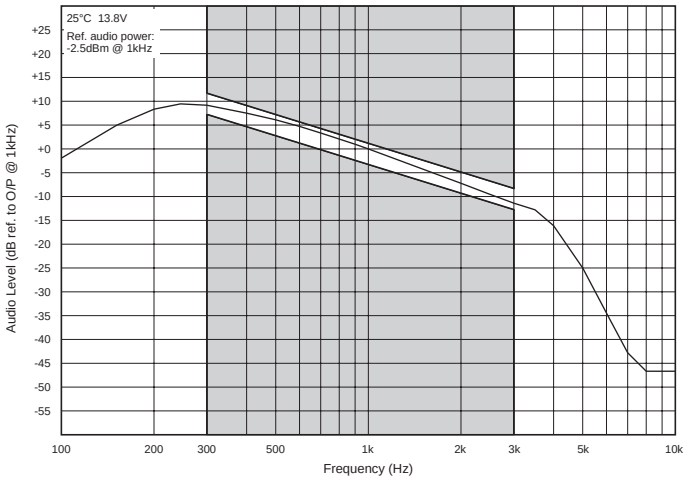
Set RV210 (front panel line level) to provide 0dBm output at 1kHz modulating frequency.

Sweep the modulating frequency, checking that the line audio response closely follows that shown in Figure 4.1 - the limits should not be exceeded.

Wide Bandwidth



Mid Bandwidth



Narrow Bandwidth

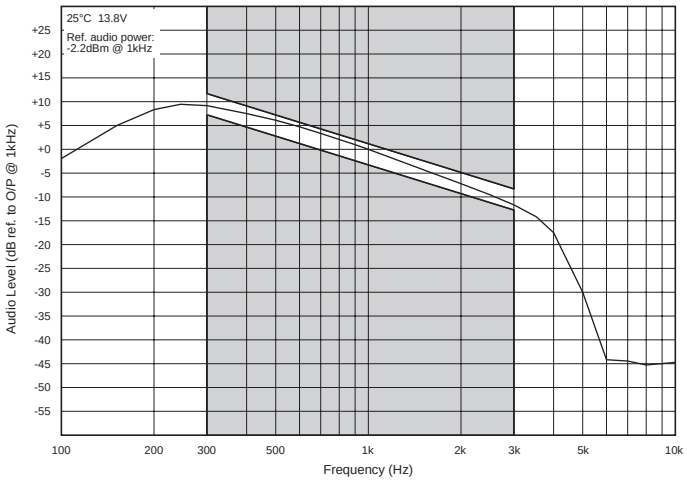


Figure 4.1 T855 De-emphasised Audio Frequency Response

4.7 Noise Mute (If Linked In)

Rotate RV230 (front panel gating sensitivity) fully anticlockwise.

Apply an on-channel signal from the RF generator at a level of -110dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Increase the RF level in 1dB steps, checking that the mute opens for an RF input level of approximately -105dBm.

Turn the RF off and check that the mute closes.

Rotate RV230 clockwise and check that the mute opens.

Reset RV230 to give the required opening sinad.

Caution: **Some RF generators can cause a false opening of the mute because the generator produces a burst of noise when the attenuation range changes. To correct the problem you will have to change generators.**

4.8 RSSI (If Fitted)

Apply an on-channel signal from the RF generator at a level of -110dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Using a high impedance DMM, check that the RSSI output voltage on pin 5 of D-range 1 (PL100) is 2V (nominal).

Vary the RF level in 5dB steps and check that the RSSI output voltage changes at a rate of approximately 10dB/V over the range of -115dBm to -70dBm (refer to Figure 4.2 for RSSI voltage vs signal strength).

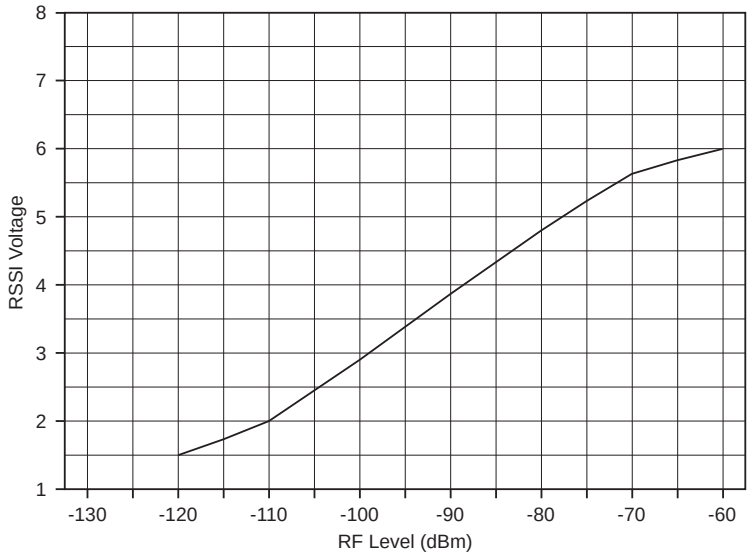


Figure 4.2 T855 RSSI Voltage vs Signal Strength

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4.9 Carrier Level Mute (RSSI Fitted & Carrier Mute Linked In)

Apply an on-channel signal from the RF generator at a level of -120dBm with ±3kHz deviation (±2.4kHz) [±1.5kHz] at 1kHz.

Increase the RF level in 2dB steps and check that the mute opens at an RF level which corresponds with the preset level on RV235 (carrier mute), i.e. between -115dBm and -70dBm.

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5 T855 Fault Finding



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following test procedures and fault finding flow charts may be used to help locate a hardware problem, however they are by no means a complete fault finding procedure. If you still cannot trace the fault after progressing through them in a logical manner, contact your nearest Tait Dealer or Customer Service Organisation. If necessary, you can get additional technical help from Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand (full contact details are on page 2).

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section.

Section	Title	Page
5.1	**Visual Checks**	**5.3**
5.2	**Component Checks**	**5.3**
5.3	**Front Panel LED Indicator**	**5.3**
5.4	**DC Checks**	**5.4**
5.4.1	Power Rails	5.4
5.4.2	VCO Locking	5.4
5.4.3	Mute Operation	5.4
5.5	**RF Checks**	**5.5**
5.5.1	VCO Frequency	5.5
5.5.2	RF Sensitivity	5.5
5.5.3	Oscillator Stability	5.6
5.5.3.1	TCXO	5.6
5.5.3.2	Second IF	5.6
5.5.4	Demodulator Output	5.6
5.5.5	IF Distortion	5.6

Section	Title	Page
5.6	**PGM800Win Generated Errors**	**5.8**
5.7	**Fault Finding Charts**	**5.9**
5.7.1	Microcontroller (IC810)	5.9
5.7.1.1	Basic Checks	5.9
5.7.1.2	Serial Communication	5.10
5.7.1.3	CTCSS Decode	5.11
5.7.2	Regulator	5.12
5.7.3	Synthesiser	5.13
5.7.4	Noise Mute	5.16
5.7.5	Carrier Mute	5.17
5.7.6	Receiver	5.18
5.7.7	Audio	5.19

Figure	Title	Page
5.1	RF Test Cable	5.5
5.2	IF Swept Response	5.7
5.3	Ceramic Filter Swept Response	5.7

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5.1 Visual Checks

Remove the covers from the T855 and inspect the PCB for damaged or broken components, paying particular attention to the surface mounted devices (SMDs).

Check for defective solder joints. If repair or replacement of components is considered necessary, refer to Section 3 of Part A.

5.2 Component Checks

If you suspect a transistor is faulty, you can assess its performance by measuring the forward and reverse resistance of the junctions. Unless the device is completely desoldered, first make sure that the transistor is not shunted by some circuit resistance. Use a good quality EVM (e.g. Fluke 75) for taking the measurements (or a 20k ohm/V or better multimeter, using only the medium or low resistance ranges).

The collector current drawn by multi-junction transistors is a further guide to their performance.

If an IC is suspect, the most reliable check is to measure the DC operating voltages. Due to the catastrophic nature of most IC failures, the pin voltages will usually be markedly different from the recommended values in the presence of a fault. The recommended values can be obtained from either the circuit diagram or the component data catalogue.

5.3 Front Panel LED Indicator

The green "Supply" LED on the receiver front panel will flash according to the conditions described in the following table:

Flash Rate		Condition
fast	(⅓ sec. on/⅓ sec. off approx.)	receiver is linked with PGM800Win
slow	(1 sec. on/1 sec. off approx.)	VCO is out of lock - refer to Section 5.4.2
unequal	(⅓ sec. on/1 sec. off approx.)	microcontroller has detected an internal communications error - refer to Section 5.7.1

Where two or more conditions occur at the same time, the precedence is in the order shown above (i.e. receiver linked has the highest priority, followed by VCO error, then internal error).

5.4 DC Checks

5.4.1 Power Rails

Refer to the test points & options diagrams in Section 6 for test point locations, and to the regulator fault finding chart (Section 5.7.2) for fault diagnosis.

Check the 9V (TP602) and 13.8V (TP601) power supply test points in the regulator compartment with a DMM.

Check the 20V regulator output at the test point (TP603) in the regulator compartment.

Check the 5V regulator output at the test point (TP604) in the regulator compartment and on IC310 pin 4.

Check the 5V digital regulator output at the junction of C611A (+) and IC610 pin 2 in the regulator compartment.

5.4.2 VCO Locking

Using a DMM, monitor the VCO control voltage on the long lead of L1 on the VCO PCB.

If the synthesiser is locked and the VCO aligned, the voltage at this point should be between 3 and 16V.

If the VCO is not locked, refer to the synthesiser fault finding charts (Section 5.7.3).

5.4.3 Mute Operation

The front panel "Gate" LED will show the status of the mute circuitry and will turn on when a signal is received above the threshold level.

Check that PL250 is linked correctly:

noise mute	1-2
carrier mute	2-3.

Check that the mute gate opens as follows:

noise mute -	rotate RV230 (front panel gating sensitivity) fully clockwise and check that the front panel "Gate" LED turns on;
carrier mute -	rotate RV235 (carrier mute) fully clockwise and check that the front panel "Gate" LED turns on.

If the mute fails to operate correctly, refer to the noise mute fault finding chart (Section 5.7.4) or the carrier mute fault finding chart (Section 5.7.5).

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5.5 RF Checks

5.5.1 VCO Frequency

Check that the VCO is phase locked (refer to Section 5.4.2).

Connect a frequency counter (level +20dBm) to the VCO input to the mixer (IC410).

Monitor the local oscillator frequency and check that it is 45MHz ***below*** the required receive frequency.

Refer to the synthesiser fault finding charts (Section 5.7.3) for further information.

5.5.2 RF Sensitivity

Ensure that the VCO is on the correct frequency and the receiver correctly aligned.

Check that the 12dB sinad sensitivity into the front end is as follows:

-117dBm (de-emphasised response)
-111dBm (flat response).

If the sensitivity is poor, you can trace the fault by measuring the sensitivity into successive circuit blocks. Prepare a test cable by connecting a 1nF capacitor to the end of a length of coax cable as shown in Figure 5.1.

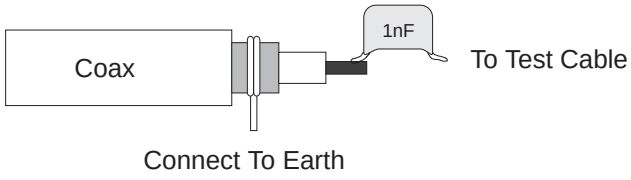


Figure 5.1 RF Test Cable

Note: Before using the test cable, ensure the coax braid is connected to an earth point on the PCB.

Using the RF test cable, apply a modulated 45MHz signal to the test breaks in the IF section, or an on-channel RF signal to the front end test breaks.

Check that the sensitivity at each test break is within 2dB of the levels shown on the circuit diagram.

Poor sensitivity indicates a fault in one of the circuit blocks following the test break.

Note: Poor sensitivity into the mixer can be caused by lack of drive level from the VCO (the drive level should be >+17dBm).

Refer to the receiver fault finding charts (Section 5.7.6) for further information.

5.5.3 Oscillator Stability

5.5.3.1 TCXO

While maintaining a low level unmodulated RF input to the receiver, loosely couple into the first IF an additional high level signal at 45MHz - you should now hear a constant low frequency beat note.

Tap the TCXO with a finger and replace it if the beat note permanently changes.

5.5.3.2 Second IF

While maintaining a low level unmodulated RF input to the receiver, loosely couple into the second IF an additional high level signal at 455kHz - you should now hear a constant low frequency beat note.

Adjust L385 for "zero beat".

5.5.4 Demodulator Output

Apply an on-channel RF signal modulated by 1kHz with ±3kHz (±2.4kHz) [±1.5kHz] deviation at an amplitude of -65dBm.

Connect an oscilloscope probe (DC coupled) to TP314 (audio output).

Check that an audio signal of approximately 800mV peak to peak is present.

Optimum tuning of the quad coil (L390) for minimum audio distortion (with a "flat" audio response) should coincide with maximum audio amplitude and a DC level of approximately 1.7V.

5.5.5 IF Distortion

If the audio distortion is still high after careful IF alignment (Section 3.7), sweep the IF to investigate the bandpass response.

Apply an on-channel RF signal modulated at 10Hz (sine wave) with ±12kHz (±9kHz) [±6kHz] deviation at an amplitude of -80dBm.

Connect the modulating 10Hz audio signal to the "X" input of an oscilloscope and observe the 455kHz IF input to SK320 pin 3 via a suitable RF probe on the "Y" input. Alternatively, if you have an RSSI PCB fitted, use an oscilloscope probe for the "Y" input to monitor the RSSI output voltage at pad P238 (RSSI test point) or pin 5 of D-range 1 (PL100). This will give a demodulated log response and only the top half of the wave forms shown in Figure 5.2 and Figure 5.3 will be displayed on the oscilloscope screen.

Note: The "X" input should be DC coupled.

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Check that the swept response has a rounded top and no sharp non-linearities (refer to Figure 5.2).

Increase the RF level to -50dBm; the trace will now show the shape of the 455kHz ceramic filter (&XF302).

Check that the response has no sharp non-linearities.

If sharp non-linearities do occur, replace the filter and sweep again to confirm a satisfactory solution (refer to Figure 5.3).

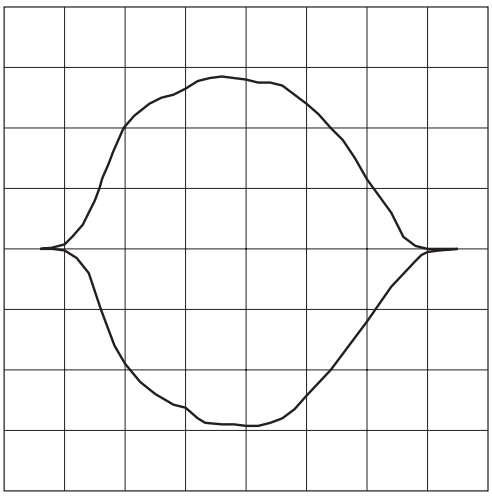


Figure 5.2 IF Swept Response

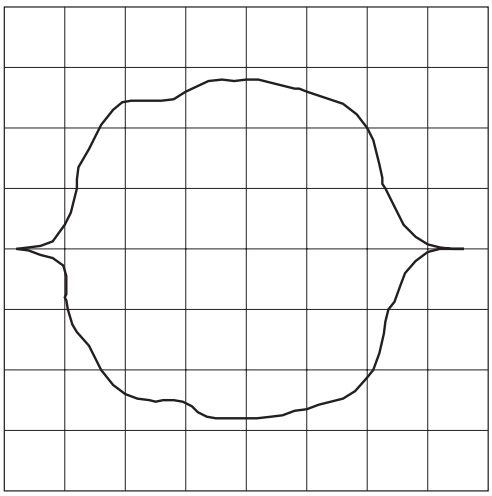


Figure 5.3 Ceramic Filter Swept Response

5.6 PGM800Win Generated Errors

The following errors are those most likely to occur using PGM800Win. Refer to the PGM800Win software user's manual for a complete list of error messages.

Channel Switch Set

The (programmed) default channel change was not accepted by the base station because a channel is selected externally. Try turning the external channel switch off to change the default channel in PGM800Win.

Synth Out Of Lock

The synthesiser received incorrect data, or the data was corrupted. Enter a frequency within the VCO switching range, or tune the VCO.

Internal Error

Data could not be read from the base station due to an internal error. Check for shorts or open circuits on the SDA, SCK, SYNTH and EPOT lines. The SDA, SCK and SYNTH are normally high.

Write/Read To An Unlinked Module

The link to the module does not exist. Undefined error.

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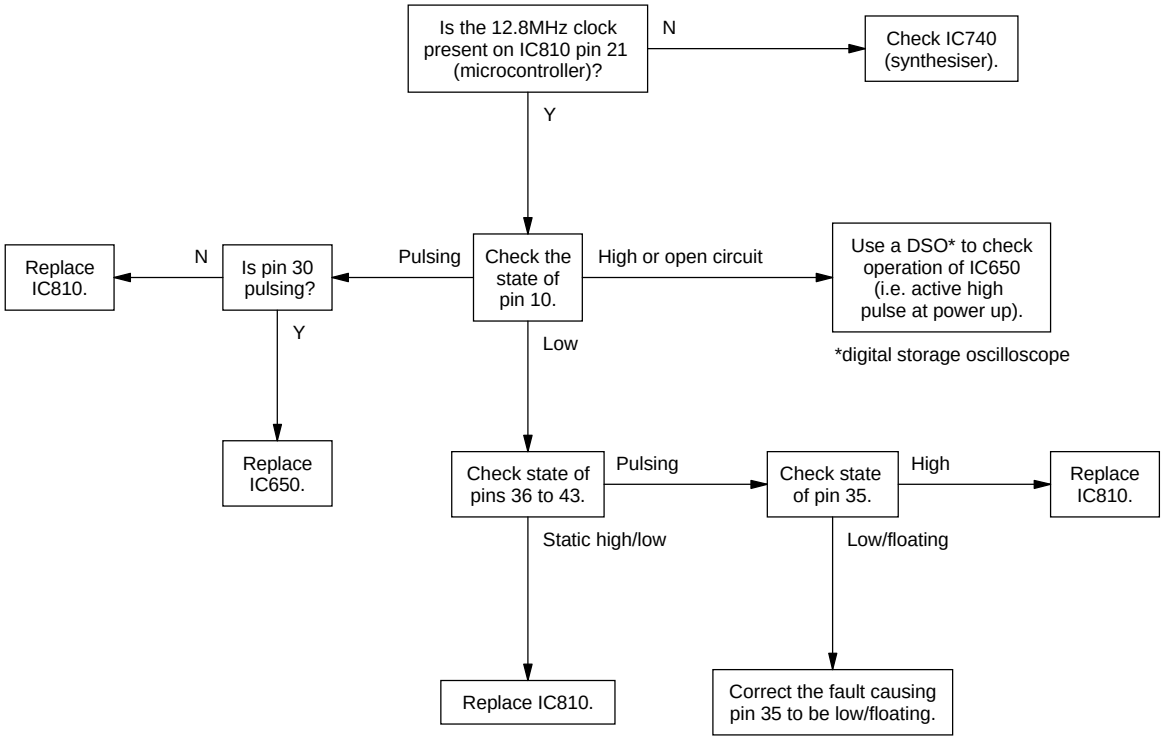
5.7 Fault Finding Charts

Note: The standard test point designations used in this section are as follows:

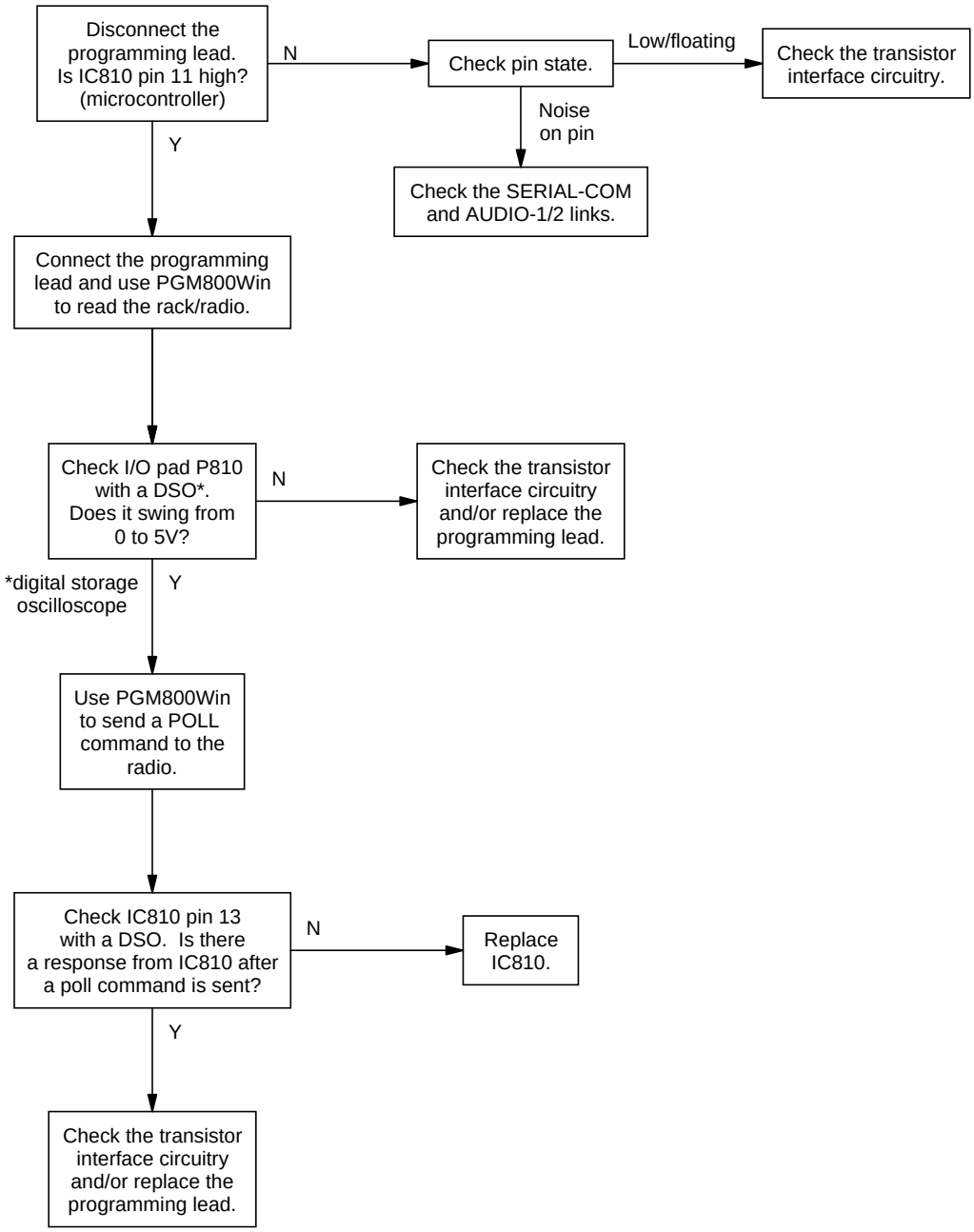
TP601	13.8V
TP602	9V
TP603	20V
TP604	5V

5.7.1 Microcontroller (IC810)

5.7.1.1 Basic Checks

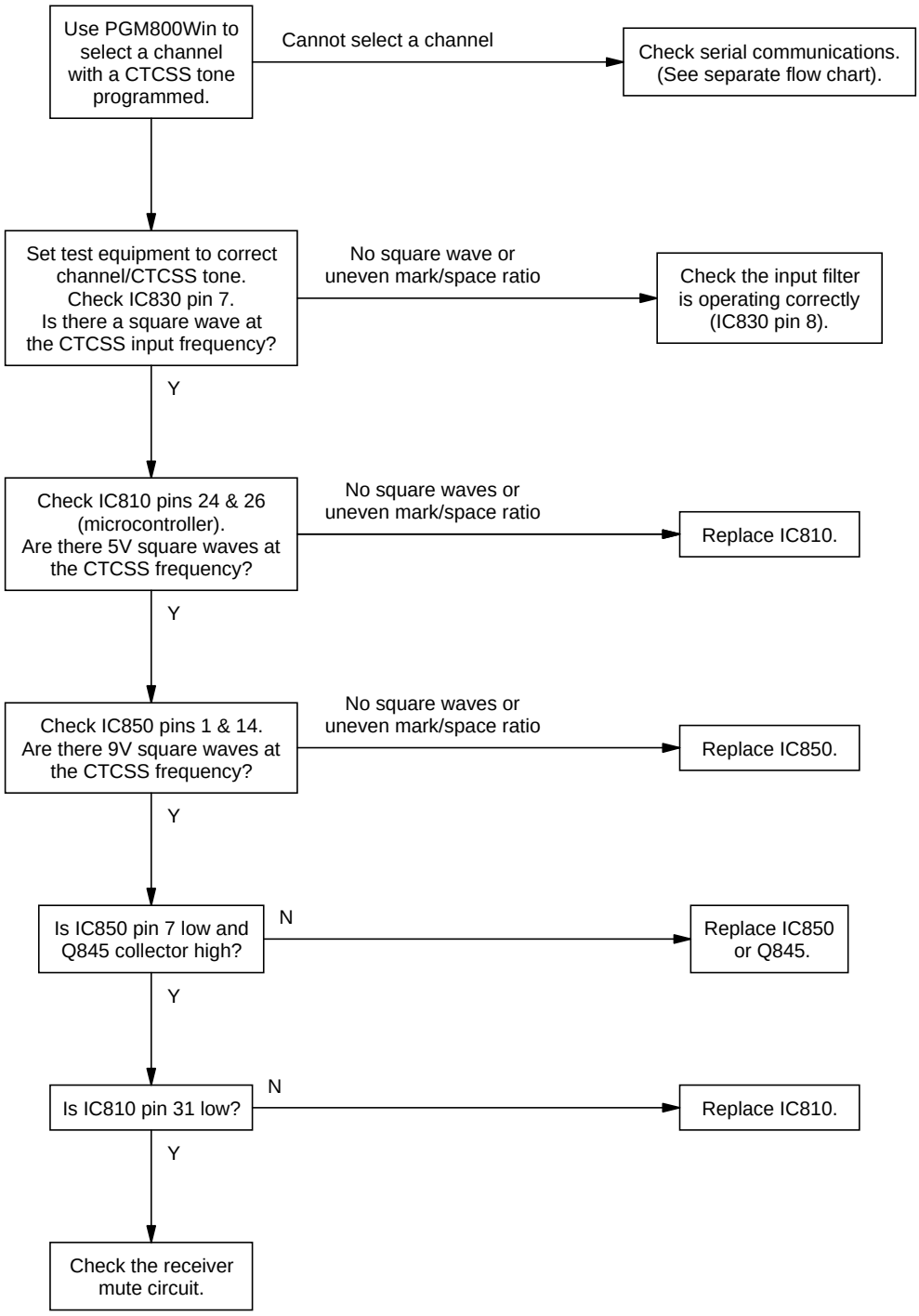


5.7.1.2 Serial Communication

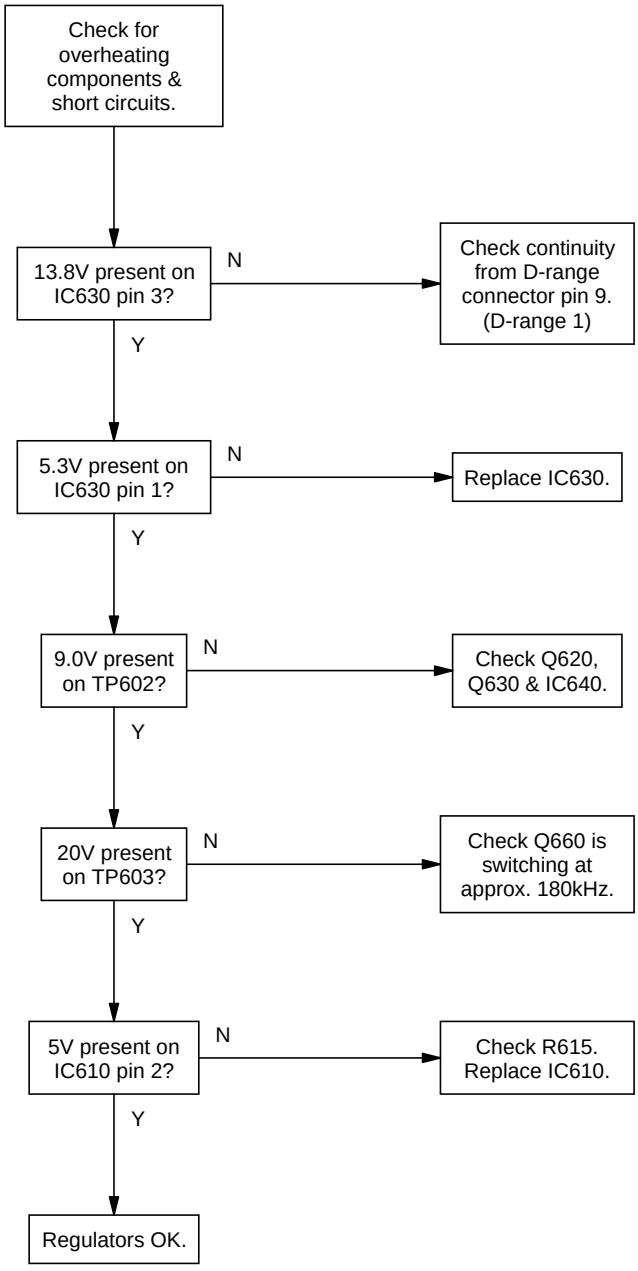


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5.7.1.3 CTCSS Decode



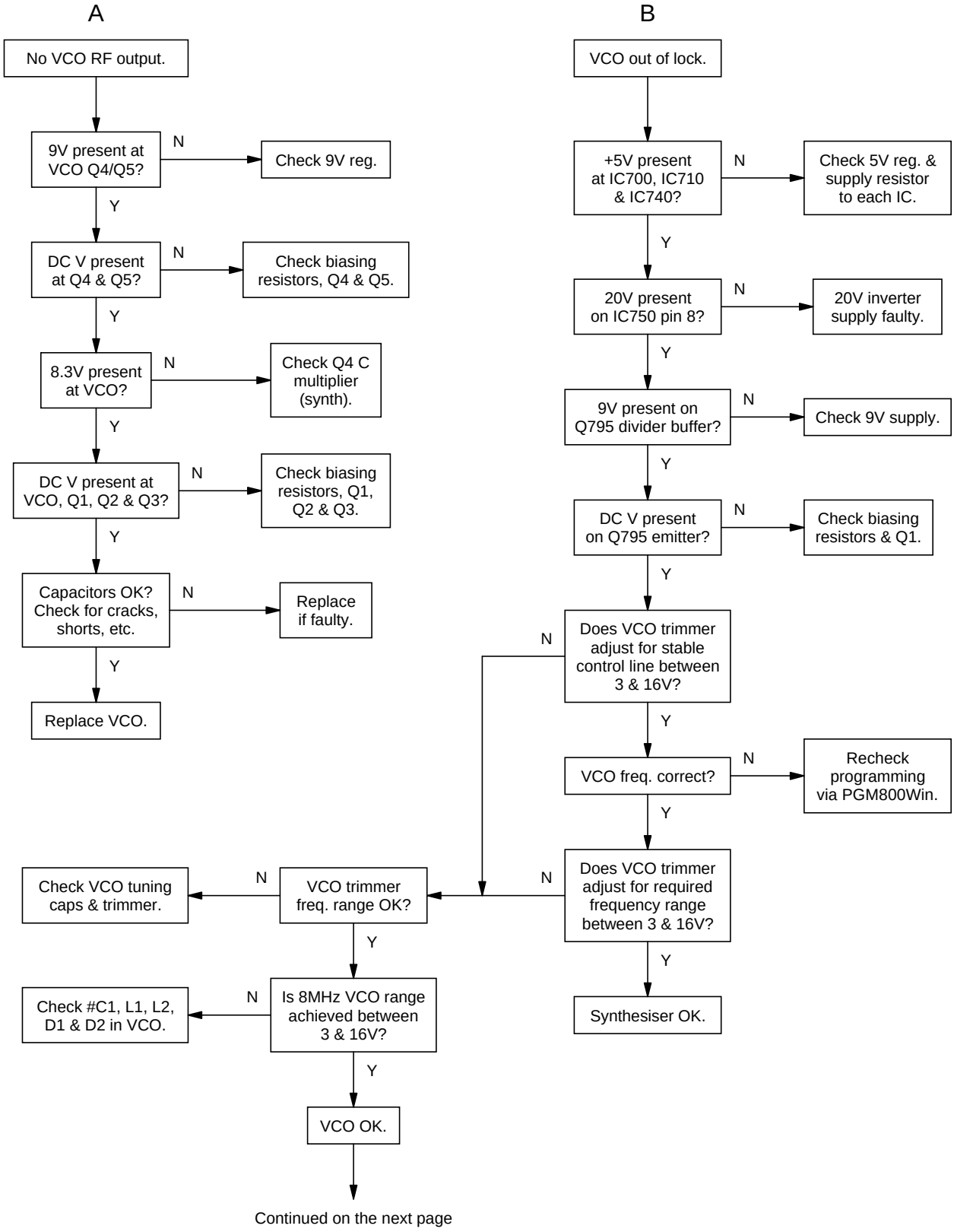
5.7.2 Regulator



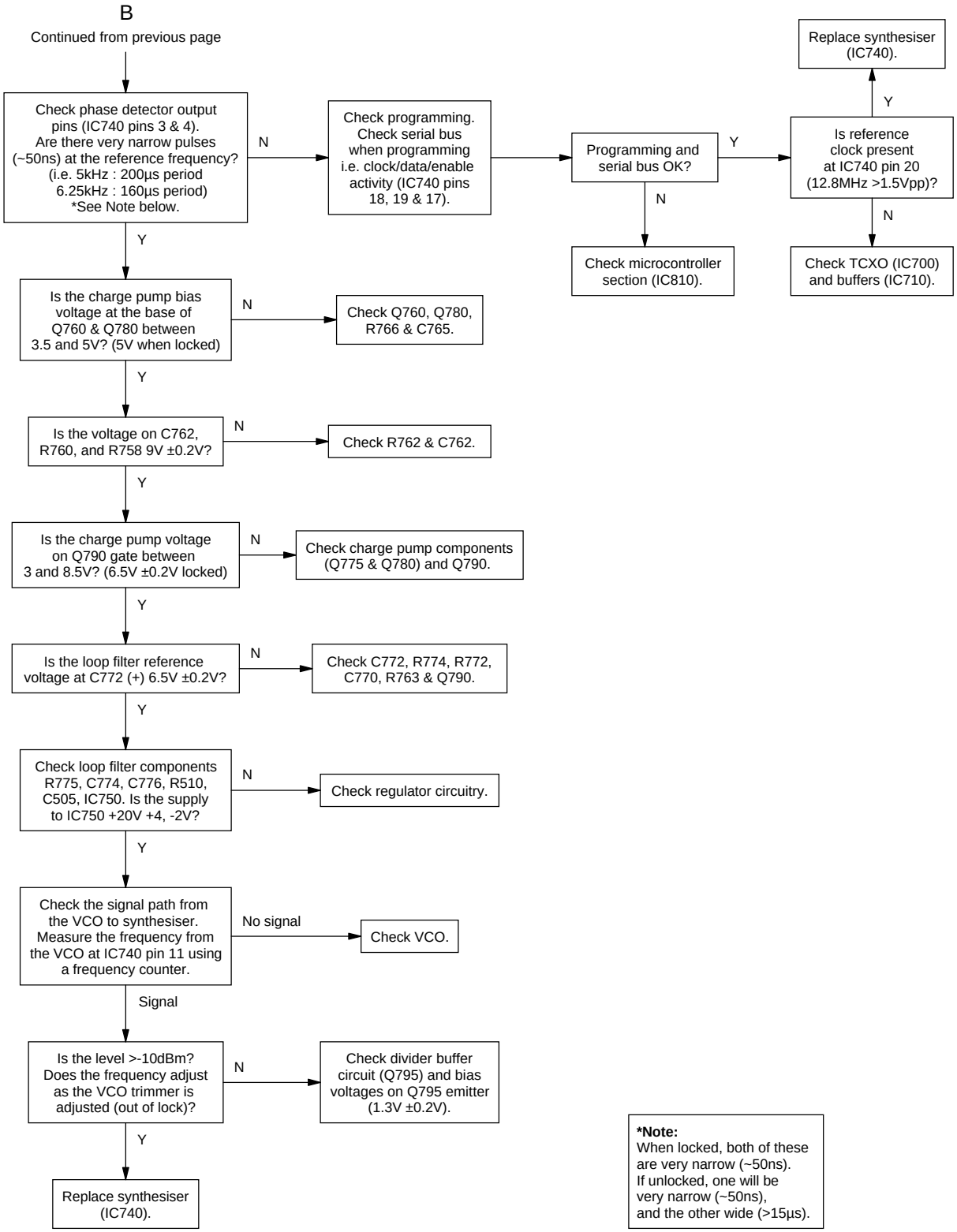
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5.7.3 Synthesiser

Refer to the synthesiser circuit diagram (sheet 7) in Section 6 and the VCO circuit diagram in Part E.

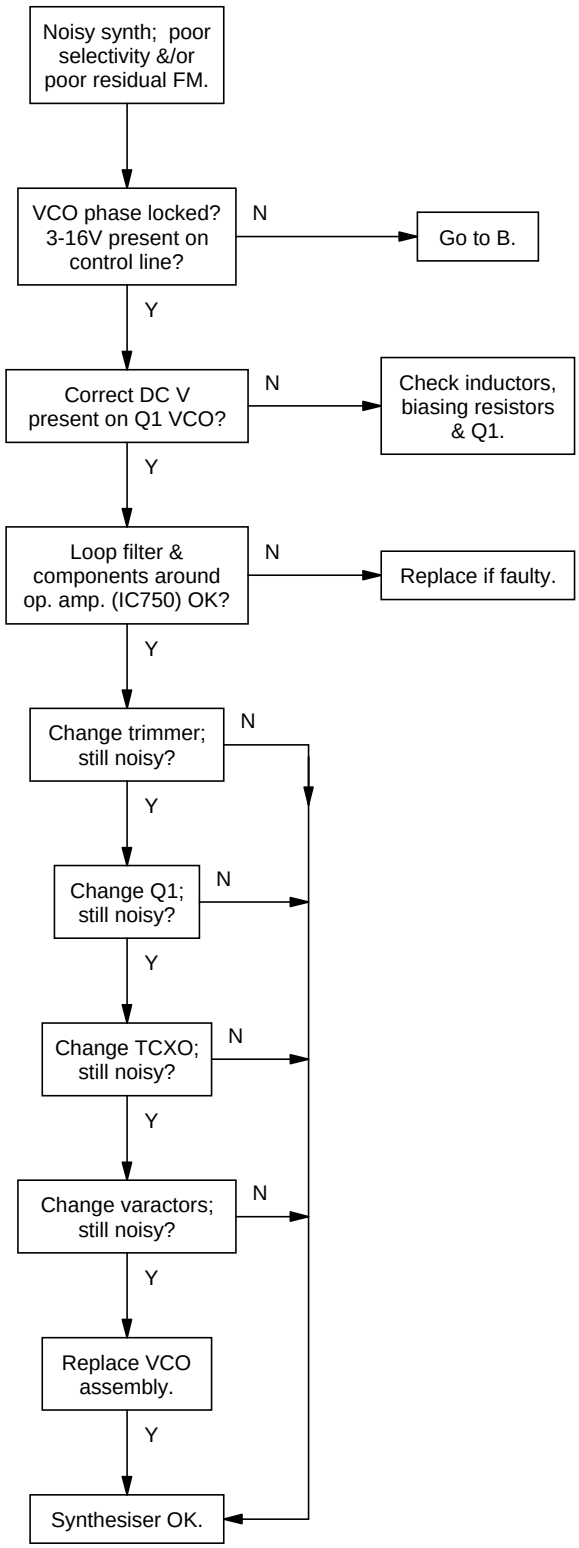


Continued on the next page

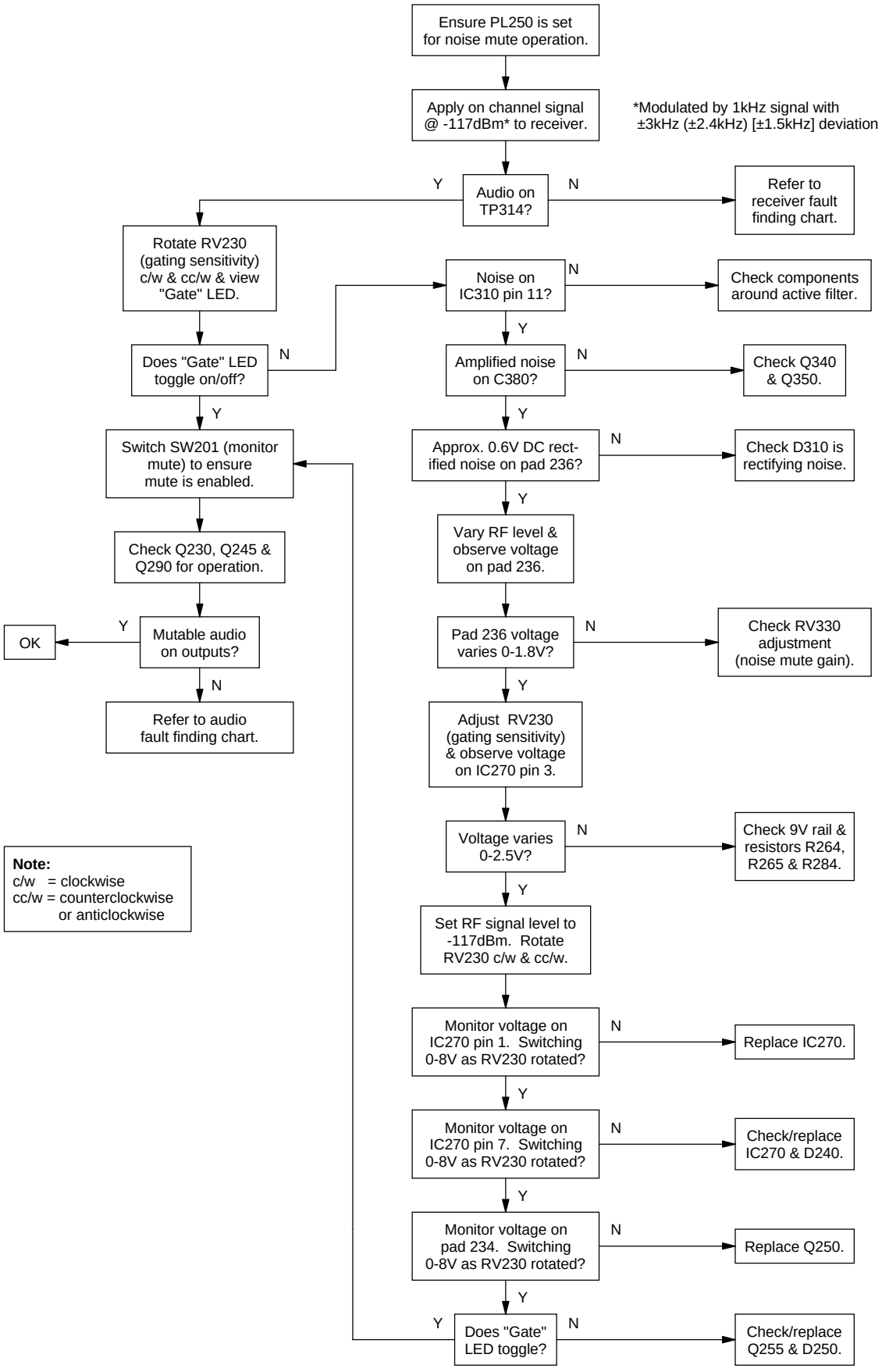


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C

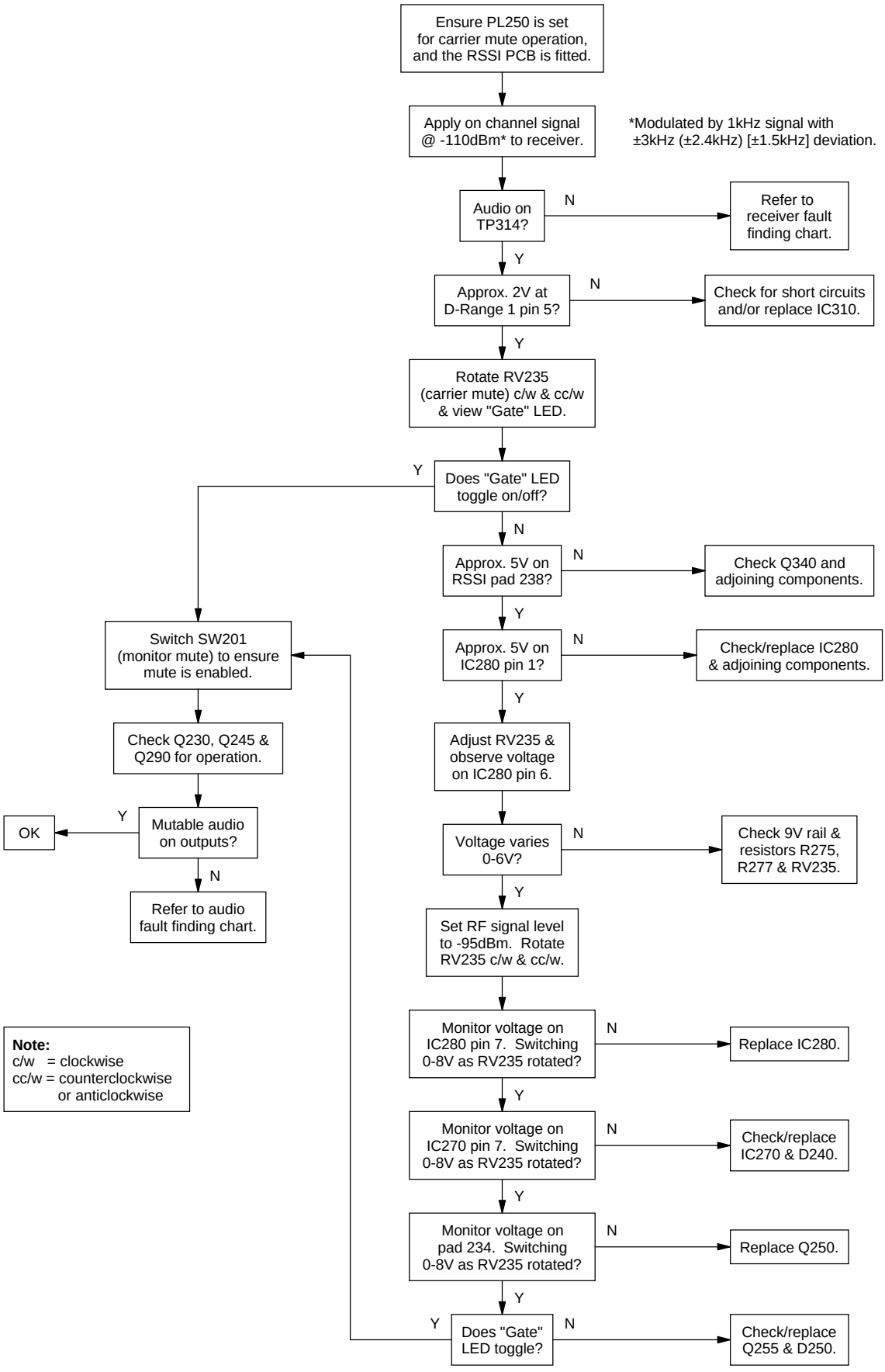

Noisy synth; poor selectivity &/or poor residual FM.
VCO phase locked? 3-16V present on control line?
N
Go to B.
Y
Correct DC V present on Q1 VCO?
N
Check inductors, biasing resistors & Q1.
Y
Loop filter & components around op. amp. (IC750) OK?
N
Replace if faulty.
Y
Change trimmer; still noisy?
N
Y
Change Q1; still noisy?
N
Y
Change TCXO; still noisy?
N
Y
Change varactors; still noisy?
N
Y
Replace VCO assembly.
Y
Synthesiser OK.

5.7.4 Noise Mute



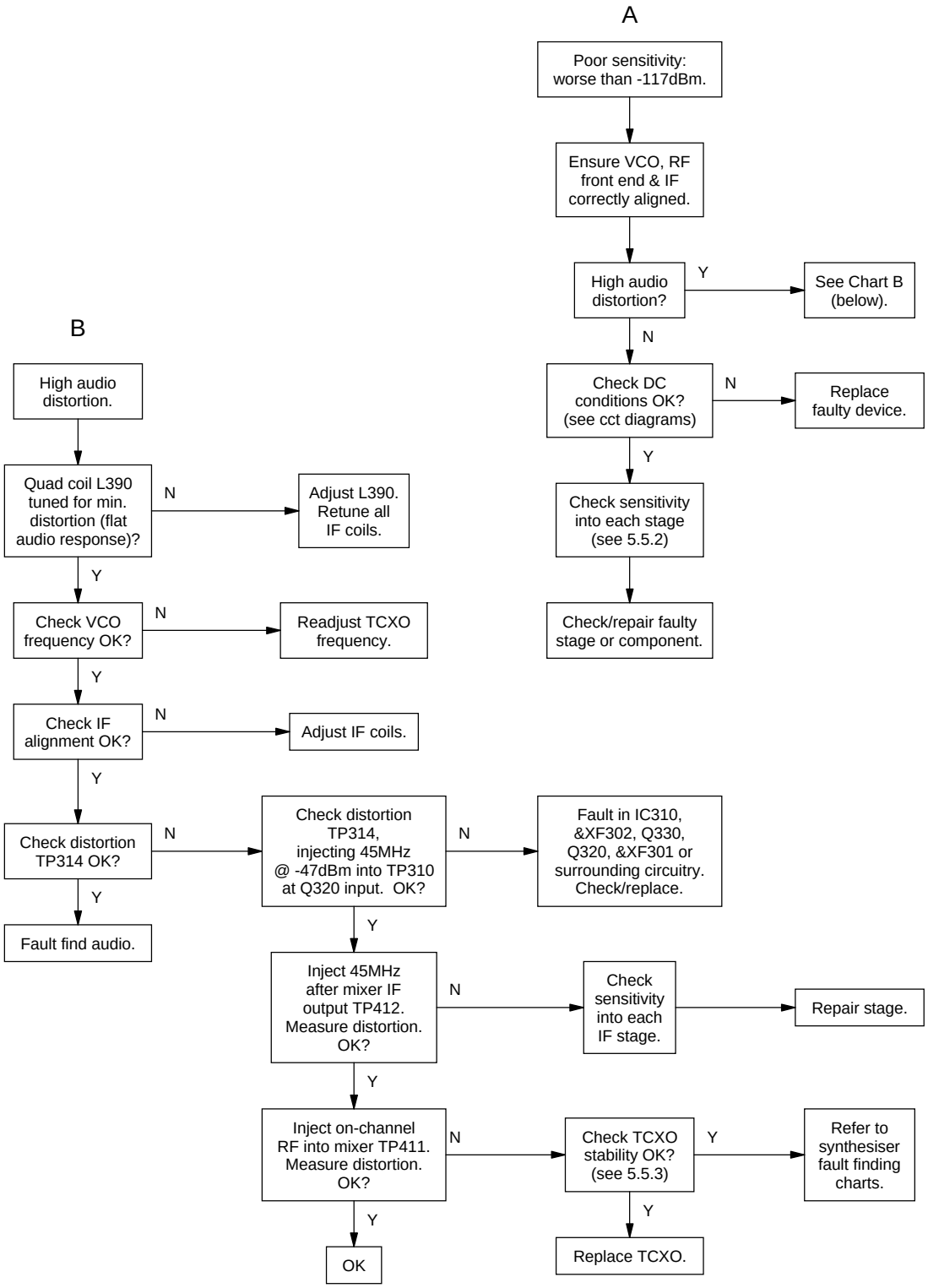
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5.7.5 Carrier Mute



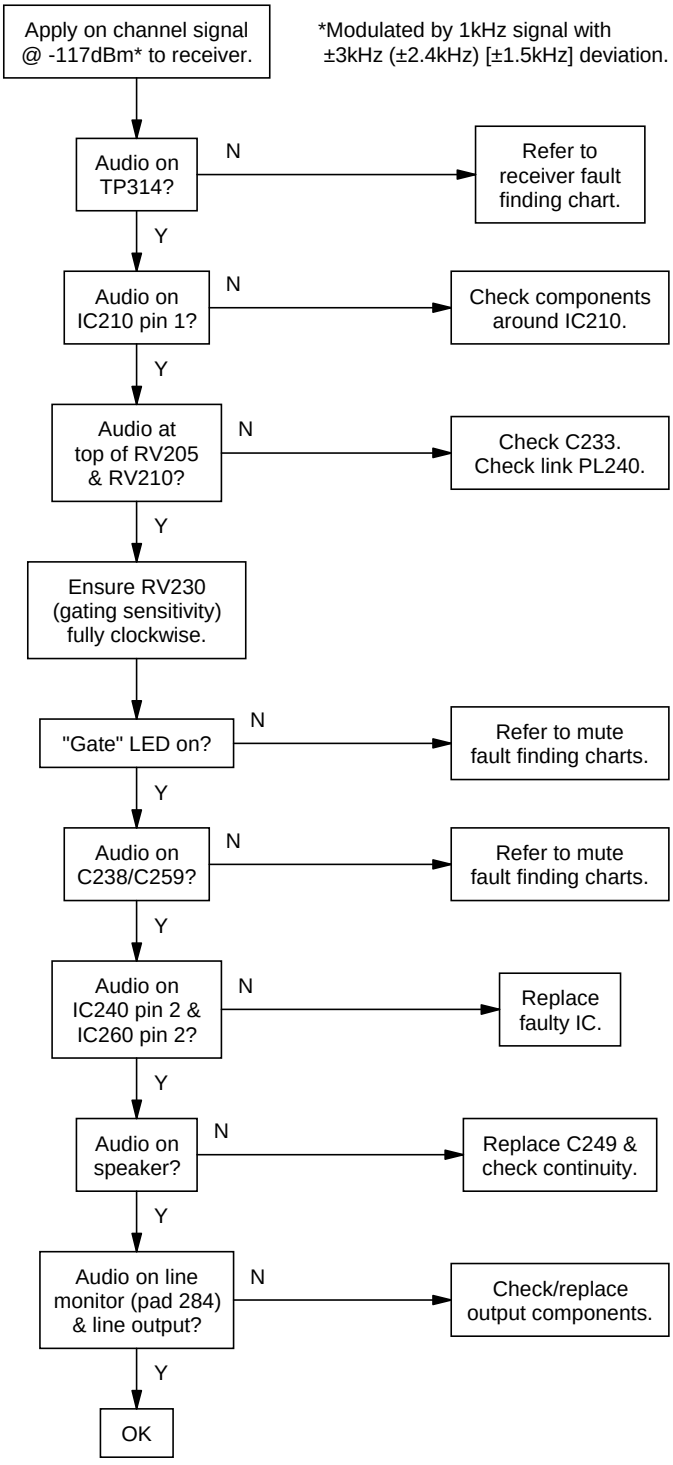
5.7.6 Receiver

Refer to the receiver IF and front end circuit diagrams (sheets 3 & 4) in Section 6.



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5.7.7 Audio


Apply on channel signal @ -117dBm* to receiver.
*Modulated by 1kHz signal with ±3kHz (±2.4kHz) [±1.5kHz] deviation.
Audio on TP314?
N
Refer to receiver fault finding chart.
Y
Audio on IC210 pin 1?
N
Check components around IC210.
Y
Audio at top of RV205 & RV210?
N
Check C233. Check link PL240.
Y
Ensure RV230 (gating sensitivity) fully clockwise.
"Gate" LED on?
N
Refer to mute fault finding charts.
Y
Audio on C238/C259?
N
Refer to mute fault finding charts.
Y
Audio on IC240 pin 2 & IC260 pin 2?
N
Replace faulty IC.
Y
Audio on speaker?
N
Replace C249 & check continuity.
Y
Audio on line monitor (pad 284) & line output?
N
Check/replace output components.
Y
OK

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6 T855 PCB Information



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

This section provides the following information on the T855 receiver:

- parts lists
- grid reference indexes
- mechanical assembly drawings
- PCB layouts
- test points & options connections drawings
- circuit diagrams.

Section	Title	IPN	Page
6.1	**Introduction**		**6.1.3**
6.2	**T800-04-0000 RSSI PCB**	**220-01138-00**	**6.2.1**
6.3	**T855 Receiver PCB**	**220-01396-02** **220-01396-03**	**6.3.1** **6.3.31**

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6.1 Introduction

Product Type Identification

You can identify the receiver type by checking the product code printed on a label on the rear of the chassis (product codes are explained in Section 1.3 in this Part of the manual, and Figure 1.1 in Part A shows typical labels). You can further verify the product type by checking the placement of an SMD resistor in the table that is screen printed onto the top side of the PCB, similar to the example drawn below. In this example, the resistor indicates that the product was built as a T855-10-XXXX.

855-30	
855-35	
855-	
PRODUCT TYPE	

PRODUCT TYPE	
855-10	855-20
855-13	855-23
855-15	855-25

Note: The only function of this resistor is to indicate the product type. It has no effect on the circuitry or operation of the receiver.

PCB Identification

All PCBs are identified by a unique 10 digit "internal part number" (IPN), e.g. 220-01390-02, which is screen printed onto the PCB (usually on the top side), as shown in the example below:



The last 2 digits of this number define the issue status, which starts at 00 and increments through 01, 02, 03, etc. as the PCB is updated. Some issue PCBs never reach full production status and are therefore not included in this manual. A letter following the 10 digit IPN has no relevance in identifying the PCB for service purposes.

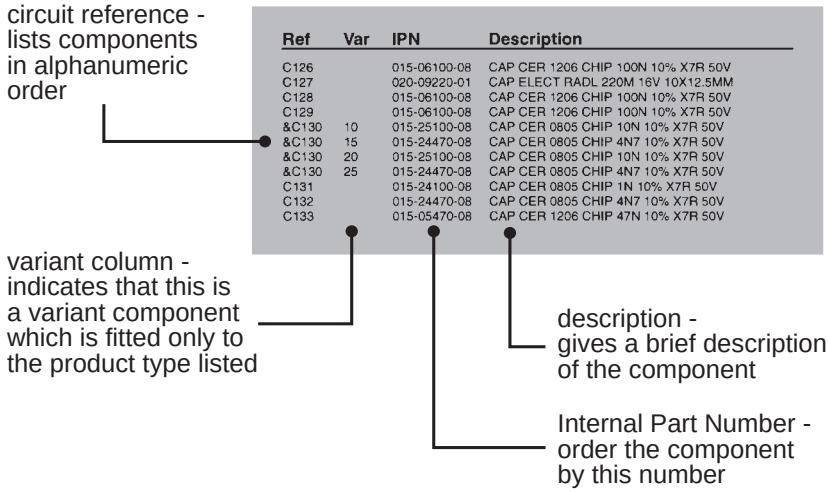
Note: It is important that you identify which issue PCB you are working on so that you can refer to the appropriate set of PCB information.

Parts Lists

The 10 digit numbers (000-00000-00) in this Parts List are "internal part numbers" (IPNs). We can process your spare parts orders more efficiently and accurately if you quote the IPN and provide a brief description of the part.

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

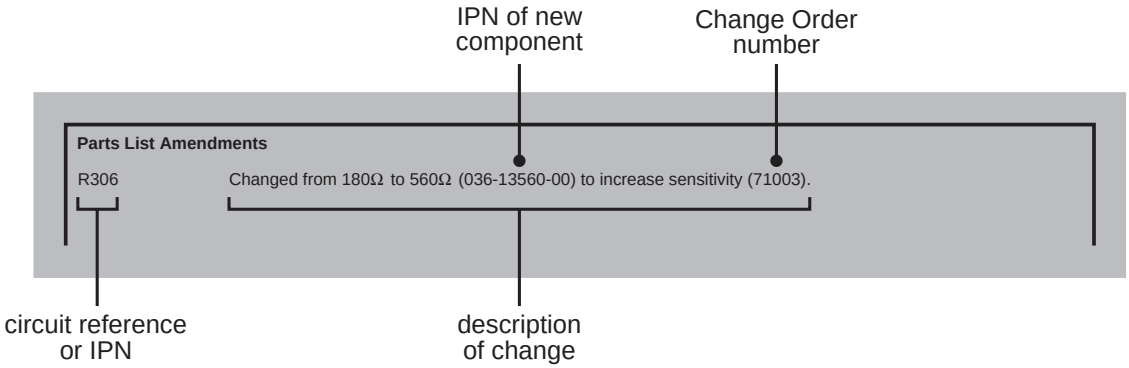
Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns, as shown below:



The miscellaneous and mechanical section lists the variant and common parts in IPN order.

Parts List Amendments

At the front of the parts list is the Parts List Amendments box (an example of which is shown below). This box contains a list of component changes which took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order. The number in brackets at the end of each entry refers to the Tait internal Change Order document.



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Variant Components

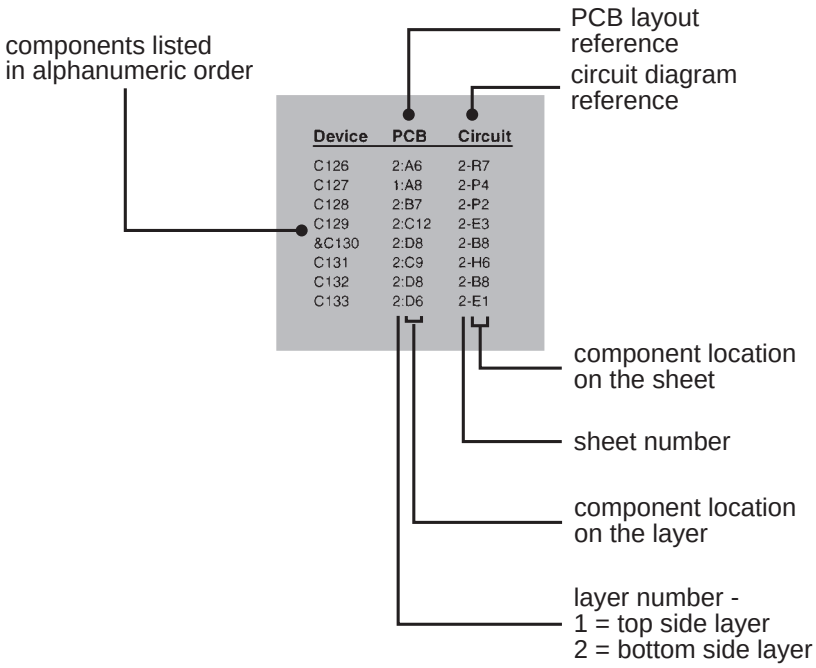
A variant component is one that has the same circuit reference but different value or specification in different product types. Where two products share the same PCB, the term "variant" is also used to describe components unplaced in one product. Variant components have a character prefix, such as "&", "=" or "#", before the circuit reference (e.g. &R100).

The table below explains the variant prefixes used in T800 Series II products:

If the variant prefix is. . .	the component will. . .
&	change according to channel spacing
=	change according to frequency stability
#	change according to frequency range
%	change or be placed/unplaced for special applications
*	be unplaced in one product (where two products share the same PCB)

Grid Reference Index

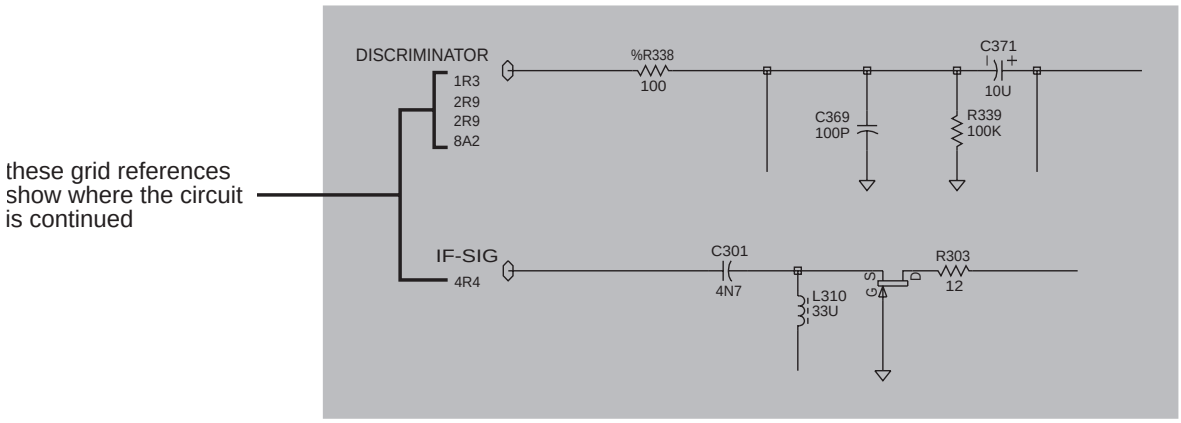
This section contains a component grid reference index to help you find components and labelled pads on the PCB layouts and circuit diagrams. This index lists the components and pads in alpha-numeric order, along with the appropriate alphanumeric grid references, as shown below:



Using CAD Circuit Diagrams

Reading a CAD circuit diagram is similar to reading a road map, in that both have an alphanumeric border. The circuit diagrams in this manual use letters to represent the horizontal axis, and numbers for the vertical axis. These circuit diagram "grid references" are useful in following a circuit that is spread over two or more sheets.

When a line representing part of the circuitry is discontinued, a reference will be given at the end of the line to indicate where the rest of the circuitry is located, as shown below. The first digit refers to the sheet number and the last two characters refer to the location on that sheet of the continuation of the circuit (e.g. 1R3).



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6.2 T800-04-0000 RSSI PCB

This section contains the following information.

IPN	Section	Page
220-01138-00	Parts List	6.2.3
	PCB Layout - Top Side	6.2.5
	PCB Layout - Bottom Side	6.2.6
	Circuit Diagram	6.2.7

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T800-04-0000 Parts List (IPN 220-01138-00)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three columns: the circuit reference, IPN and description. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical parts are listed in IPN order at the end of the parts list.

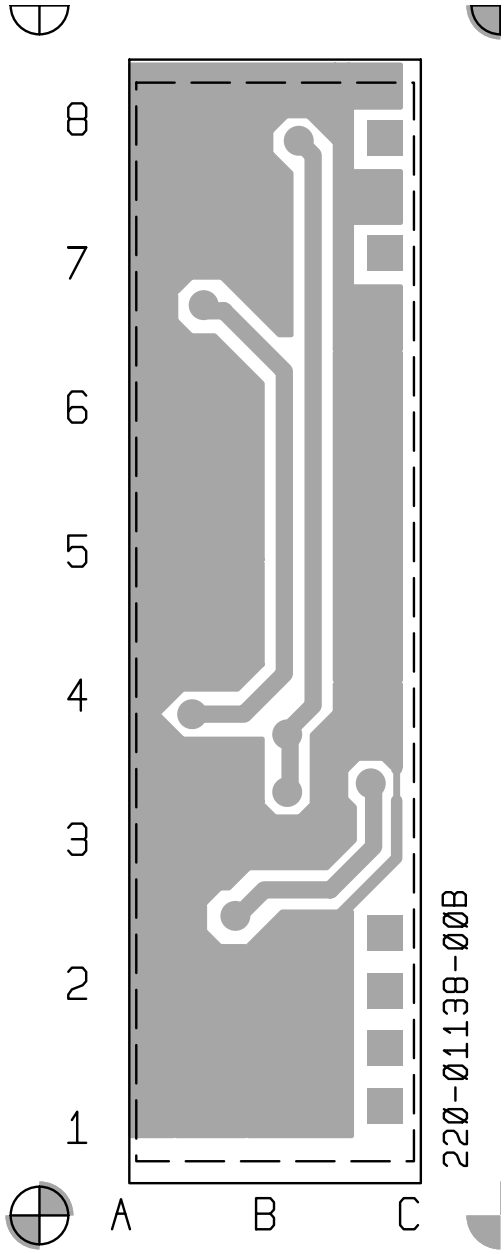
The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

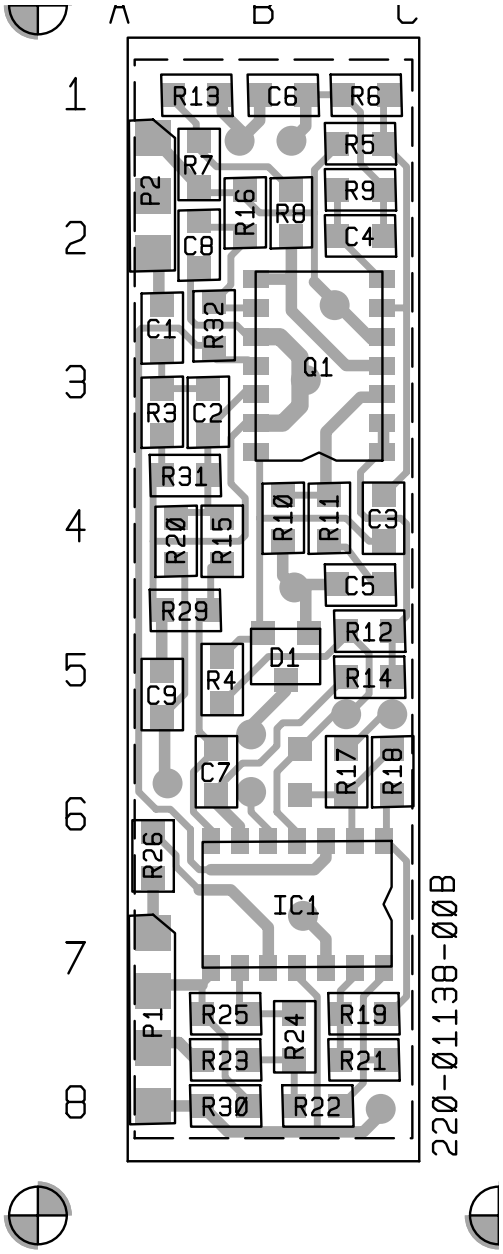
PCB Issues 01, 02 & 03	The T800-04-0000 RSSI PCB has been updated from issue 00 to 01 (720371), 01 to 02 (740091) and from 02 to 03 (770177). However, these updates involved mechanical changes only - there were no electronic or component changes. You can therefore use this issue 00 PCB information for issue 01, 02 and 03 PCBs.

Ref	Var	IPN	Description
C1		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C2		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C3		015-23330-08	CAP CER 0805 CHIP 330P 10% X7R 50V
C4		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C5		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C6		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C7		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C8		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C9		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
D1		001-10000-99	(S) DIODE SMD BAV99 DUAL SWTCH SOT23
IC1		002-10003-24	(S) IC SMD 324 QUAD OP AMP SO14
Q1		002-10033-46	(S) IC SMD MC3346D XSTR ARRAY SO14
R3		036-14100-00	RES M/F 0805 CHIP 1K 5%
R4		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R5		036-15560-00	RES M/F 0805 CHIP 56K 5%
R6		036-15390-00	RES M/F 0805 CHIP 39K 5%
R7		036-15100-00	RES M/F 0805 CHIP 10K 5%
R8		036-13680-00	RES M/F 0805 CHIP 680E 5%
R9		036-14820-00	RES M/F 0805 CHIP 8K2 5%
R10		036-16220-00	RES M/F 0805 CHIP 220K 5%
R11		036-13470-00	RES M/F 0805 CHIP 470E 5%
R12		036-16330-00	RES M/F 0805 CHIP 330K 5%
R13		036-16100-00	RES M/F 0805 CHIP 100K 5%
R14		036-16180-00	RES M/F 0805 CHIP 180K 5%
R15		036-15220-00	RES M/F 0805 CHIP 22K 5%
R16		036-17100-00	RES M/F 0805 CHIP 1M 5%
R17		036-15330-00	RES M/F 0805 CHIP 33K 5%
R18		036-14100-00	RES M/F 0805 CHIP 1K 5%
R19		036-15100-00	RES M/F 0805 CHIP 10K 5%
R20		036-15100-00	RES M/F 0805 CHIP 10K 5%
R21		036-16330-00	RES M/F 0805 CHIP 330K 5%
R22		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R23		036-15100-00	RES M/F 0805 CHIP 10K 5%
R24		036-16150-00	RES M/F 0805 CHIP 150K 5%
R25		036-16180-00	RES M/F 0805 CHIP 180K 5%
R26		036-15820-00	RES M/F 0805 CHIP 82K 5%
R29		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R30		036-15100-00	RES M/F 0805 CHIP 10K 5%
R31		036-15220-00	RES M/F 0805 CHIP 22K 5%
R32		036-14470-00	RES M/F 0805 CHIP 4K7 5%
		220-01138-00	PCB T700 RSSI
		356-00010-52	PIN EDGE MTG 0.8MM PCB WAKO

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T800-04-0000 PCB (IPN 220-01138-00) - Top Side



T800-04-0000 PCB (IPN 220-01138-00) - Bottom Side

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6.3 T855 Receiver PCB

This section contains the following information.

IPN	Section	Page
220-01396-02	Parts List	6.3.3
	Mechanical & Miscellaneous Parts	6.3.10
	Mechanical Assembly	6.3.11
	Grid Reference Index	6.3.13
	PCB Layout - Top Side	6.3.17
	PCB Layout - Bottom Side	6.3.18
	Test Points & Options Connections - Top Side	6.3.19
	Test Points & Options Connections - Bottom Side	6.3.20
	Receiver Overview Diagram	6.3.21
	Audio Processor Circuit Diagram	6.3.22
	IF Section Circuit Diagram	6.3.23
	Front End Circuit Diagram	6.3.24
	VCO Section Circuit Diagram	6.3.25
	Regulators Circuit Diagram	6.3.26
	Synthesiser Circuit Diagram	6.3.27
	Microcontroller Circuit Diagram	6.3.28
	Harmonic Filter Circuit Diagram	6.3.29
220-01396-03	Parts List	6.3.31
	Mechanical & Miscellaneous Parts	6.3.38
	Mechanical Assembly	6.3.39
	Grid Reference Index	6.3.41
	PCB Layout - Top Side	6.3.45
	PCB Layout - Bottom Side	6.3.46
	Test Points & Options Connections - Top Side	6.3.47
	Test Points & Options Connections - Bottom Side	6.3.48
	Receiver Overview Diagram	6.3.49
	Audio Processor Circuit Diagram	6.3.50
	IF Section Circuit Diagram	6.3.51
	Front End Circuit Diagram	6.3.52
	VCO Section Circuit Diagram	6.3.53
	Regulators Circuit Diagram	6.3.54
	Synthesiser Circuit Diagram	6.3.55
	Microcontroller Circuit Diagram	6.3.56
	Harmonic Filter Circuit Diagram	6.3.57

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T855 Parts List (IPN 220-01396-02)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

C302	Changed from 120pF (IPN 015-23120-01) to 100pF (IPN 015-23100-01)	to improve the input match to the post-mixer buffer (Q310) (710264).
C304	Deleted	
C711, C712	Changed from 100pF (IPN 015-23100-01) to 22pF (IPN 015-22220-01)	to reduce residual FM (710311).
C776	Changed from 4n7 (IPN 015-24470-08) to 6n8 (IPN 015-24680-08)	
Additional Capacitor	4p7 chip capacitor (IPN 015-21470-01 - no circuit reference) added in parallel with L380 (on top of R328) to improve the input match to the post-mixer buffer (Q310) (710264).	
IC710	Changed from 74HCV04 (IPN 002-74910-04) to 74HC04 (IPN 002-74900-04) to reduce quiescent current (710311).	
L380	Changed from Tait coil #621 (IPN 050-00016-21) to #622 (IPN 050-00016-22) to improve the input match to the post-mixer buffer (Q310) (710264).	
R510	Changed from 1k5 (IPN 036-14150-00) to 2k2 (IPN 036-14220-00)	to reduce residual FM (710311).
R707	Changed from 100k (IPN 036-16100-00) to 47k (IPN 036-15470-00)	
R775	Changed from 22k (IPN 036-15220-00) to 18k (IPN 036-15180-00)	
303-11169-03	T800 chassis: replaced by 303-11169-04	New chassis and lid tooling introduced, incorporating mechanical improvements and better RF shielding (750027, 750028 & 750029). Note that the new lids should be used only with the new chassis.
312-01052-01	T800 top lid: replaced by 312-01052-02	
312-01053-01	T800 bottom lid: replaced by 312-01053-02	

Ref	Var	IPN	Description
C201		020-08100-04	CAP ELE RA 10M 16V 4X7MM
&C203	10	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	13	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	15	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C203	20	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	23	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	25	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C203	30	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	35	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	10	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	13	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	15	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C205	20	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	23	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	25	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C205	30	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	35	015-25100-08	CAP CER 0805 10N 10% X7R 50V
C207		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C209		020-08470-02	CAP ELE RA 47M 16V 6X11MM
C210		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C211		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C213		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C215		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C217		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C219		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C221		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C222		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C227		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C229		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C231		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C233		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C235		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C237		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C238		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C239		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C240A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C240B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C240C		020-09220-01	CAP ELE RA 220M 16V 10X12.5MM
C249		020-09470-05	CAP ELE RAD 470M 16V 10X12.5MM
C251		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C253		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C255		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C257		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C259		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C260A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C260B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C260C		020-09220-01	CAP ELE RA 220M 16V 10X12.5MM
C261		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C262		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C264		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C266		020-07470-91	CAP ELE RA 4M7 63V 6X11MM BI-P
C268		020-07470-91	CAP ELE RA 4M7 63V 6X11MM BI-P
C270		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C272		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C274		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C276		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C278		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C280		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C286		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C302		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C306		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C308		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C310		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C312		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C314		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C316		015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C318	10	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	13	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	15	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C320	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	13	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	15	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	23	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	25	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	35	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C322	10	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	13	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C322	15	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	20	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C322	25	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	30	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	35	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C324	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	13	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	15	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	23	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	25	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	35	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C326	10	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	13	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	15	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C328		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C330		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C332		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C334	10	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	13	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	15	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	20	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	23	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	25	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	30	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	35	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C336	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	15	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C336	20	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	23	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	25	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C336	30	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	35	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C338	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	15	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C338	20	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	23	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	25	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C338	30	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	35	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C340	10	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	13	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	15	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C340	20	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	23	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	25	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C340	30	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	35	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C342		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C344		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C346		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C348		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C350		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C351		015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
C352		015-22150-01	CAP CER 0805 15P 5% NPO 50V
C353		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C354		025-08100-02	CAP TANT BEAD 10M 10% 16V
C356		015-22150-01	CAP CER 0805 15P 5% NPO 50V
C357		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C358		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C360		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C362		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C364		015-22390-01	CAP CER 0805 39P 5% NPO 50V
C366		015-22390-01	CAP CER 0805 39P 5% NPO 50V
C368		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C370		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C372		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C374		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C376		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C378		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C380		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C382		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C384		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C386		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C388		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C390		025-08100-02	CAP TANT BEAD 10M 10% 16V
C392		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C394		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C410		015-21180-01	CAP CER 0805 1P8+-1/4P NPO 50V
C420		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C430		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C440		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C450		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C470		015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
C480		015-22560-01	CAP CER 0805 56P 5% NPO 50V
C505		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C515		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C530		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C535		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C610A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C610B		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611A		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C623		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C625		020-09470-07	CAPEL470M16V20%V 8*20 3.5L.ESR
C626		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C628		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C630		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631B		025-08100-02	CAP TANT BEAD 10M 10% 16V
C637		015-23120-01	CAP CER 0805 120P 5% NPO 50V

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Ref	Var	IPN	Description
C640		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C651		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C658		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C660		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C665		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C670		025-07330-01	CAP TANT BEAD 3M3 35V
C673		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C677		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C681		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C684		025-08100-02	CAP TANT BEAD 10M 10% 16V
C687		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C690		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C693		025-08100-02	CAP TANT BEAD 10M 10% 16V
C700		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C702		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C703		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C705		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C707		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C708		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C709		015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
C710A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C710B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C710C		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C711		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C712		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C713		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C735		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C736		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C740A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C740B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C741A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C741B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C742A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C742B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C743		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C745		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C750		025-08100-03	CAP 10M 35V 20% TANT 5MM L/S
C757		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C759		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C761		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C762		014-08220-01	(L)CAP TANT 22UF10V276MSER
C764		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C765		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C767		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C769		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C770		014-08220-01	(L)CAP TANT 22UF10V276MSER
C772		014-08220-01	(L)CAP TANT 22UF10V276MSER
C774		022-06100-16	CAP METAL POLY 100N +-10% 100V
C776		015-24680-08	CAP CER 0805 6N8 10% X7R 50V
C782		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C784		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C786		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C788		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C791		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C792		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C810		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C812		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C813		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C814		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C815		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C816		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C818		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C819		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C820		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C822		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C824		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C826		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C828		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C830		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C832		016-07100-01	CAP EL 6X4 1M 20% 50V
C833		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C834		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C836		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C837		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C838		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C840		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C842		016-07100-01	CAP EL 6X4 1M 20% 50V
C844		016-07100-01	CAP EL 6X4 1M 20% 50V
C846		016-07100-01	CAP EL 6X4 1M 20% 50V
C848		016-07100-01	CAP EL 6X4 1M 20% 50V
C850		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C873		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C876		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C879		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C910		015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
C920		015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
C930		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C940		015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
C950		015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
D111		001-00011-60	S) DIODE SR2607 -- USE MR750
D220		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D230		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D240		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D260		001-10084-33	S) DIODE ZEN SMD 0.3W 3V3SOT23
D270		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D285		001-00011-70	S) DIODE 1N4001 1A/50V
D289		001-00011-70	S) DIODE 1N4001 1A/50V

Ref	Var	IPN	Description
D290		001-00011-70	S) DIODE 1N4001 1A/50V
D295		001-00011-70	S) DIODE 1N4001 1A/50V
D310		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D610		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D640		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D730		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D740		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D820		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D860		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D880		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
#FL410	10	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	13	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	15	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	20	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	23	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	25	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	30	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL410	35	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL420	10	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	13	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	15	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	20	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	23	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	25	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	30	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL420	35	051-00578-00	COIL HELIC 480-530MHz T855SII
IC210		002-00012-40	S) IC 358 DUAL O-AMP
IC240		002-00014-05	S) IC TDA7231 1.6W AF PWR
IC260		002-00014-05	S) IC TDA7231 1.6W AF PWR
IC270		002-00012-40	S) IC 358 DUAL O-AMP
IC280		002-00012-40	S) IC 358 DUAL O-AMP
IC310		002-00014-73	S) IC MC3361CP IF AMP
IC320		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC410		002-00022-01	S) MIXER DOUBLE BLNCD 2-750MHZ
IC610		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC630		002-00014-62	S) IC 317L 100MA REG 3TER TO92
IC640		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC650		002-10012-32	SMD DS1232LPS-2 LP RESET&W-DOG
=IC700		539-00010-50	TCXO 12.8MHZ +-1PPM -20 +70C
IC710		002-74900-04	S) IC SMD 74HC04D 6X INV BUFFD
IC740		002-14519-10	S) IC MC145191F SMD SYNTH
IC750		002-10330-78	S) IC MC33078D 2X AMP LO NOISE
IC810		002-08951-20	S) IC AT89C51 PLCC44 MIC 12MHZ
IC820		002-12416-00	SMD AT24C16N-10SC EEPROM
IC830		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC840		002-10040-53	S)MC14053B SMD BREAK B4 MAKE
IC850		002-10003-24	S) IC SMD 324 4X O-AMP SO14
L230		056-00021-02	IND FXD 100UH AX
L310		050-00016-22	COIL TAIT NO 622 20-120M
L320		050-00016-22	COIL TAIT NO 622 20-120M
L330		050-00016-22	COIL TAIT NO 622 20-120M
L340		050-00016-22	COIL TAIT NO 622 20-120M
L350		050-00016-22	COIL TAIT NO 622 20-120M
L360		050-00016-22	COIL TAIT NO 622 20-120M
L370		050-00016-22	COIL TAIT NO 622 20-120M
L380		050-00016-22	COIL TAIT NO 622 20-120M
L385		050-00016-22	COIL TAIT NO 622 20-120M
L390		050-00016-31	COIL TAIT NO 631 455KHZ
L420		056-00021-04	IND FXD 330NH AX
L440		056-00021-04	IND FXD 330NH AX
L740		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L910		052-08125-25	COIL A/W 2.5T/2.5MM HOR 0.8MM
L920		052-08140-15	COIL A/W 1.5T/4.0MM HOR 0.8MM
L930		052-08140-15	COIL A/W 1.5T/4.0MM HOR 0.8MM
L940		052-08125-25	COIL A/W 2.5T/2.5MM HOR 0.8MM
PL210		240-00020-59	HEADER 3 W 1 R PCB MTG
PL220		240-00020-59	HEADER 3 W 1 R PCB MTG
PL230		240-00020-63	HEADER 4 W X1R PCB MTG
PL240		240-00020-58	HEADER 5 WX1 R PCB MTG
PL250		240-00020-59	HEADER 3 W 1 R PCB MTG
PL260		240-00020-59	HEADER 3 W 1 R PCB MTG
PL270		240-00020-59	HEADER 3 W 1 R PCB MTG
Q210		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q220		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q230		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q240		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q245		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q250		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q255		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q260		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q270		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q280		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q290		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q310		000-50020-18	S) XSTR AI BF247A JFETTO92 VHF
Q320		000-10008-92	S) XSTR SMD BFS17 NPN SOT23
Q330		000-10009-91	S) XSTR SMD BF991 DG MFET
Q340		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q350		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q360		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q410		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q540		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q620		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q630		000-50011-30	S) XSTR AI BC557B PNP TO92 AF

Ref	Var	IPN	Description
Q660		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q670		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q750		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q760		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q770		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q775		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q780		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q785		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q790		000-10003-12	S) XSTR SMD BFR31 N JFET SOT23
Q795		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q810		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q820		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q840		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q850		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q860		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q870		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q880		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q890		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q895		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
R160		036-12100-00	RES M/F 0805 10E 5%
R201		036-14470-00	RES M/F 0805 4K7 5%
&R202	10	036-14470-00	RES M/F 0805 4K7 5%
&R202	13	036-14470-00	RES M/F 0805 4K7 5%
&R202	15	036-14330-00	RES M/F 0805 3K3 5%
&R202	20	036-14470-00	RES M/F 0805 4K7 5%
&R202	23	036-14470-00	RES M/F 0805 4K7 5%
&R202	25	036-14330-00	RES M/F 0805 3K3 5%
&R202	30	036-14470-00	RES M/F 0805 4K7 5%
&R202	35	036-14330-00	RES M/F 0805 3K3 5%
R204		036-15100-00	RES M/F 0805 10K 5%
R205		036-16220-00	RES M/F 0805 220K 5%
R207		036-14820-00	RES M/F 0805 8K2 5%
&R209	10	036-15220-00	RES M/F 0805 22K 5%
&R209	13	036-15220-00	RES M/F 0805 22K 5%
&R209	15	036-15180-00	RES M/F 0805 18K 5%
&R209	20	036-15220-00	RES M/F 0805 22K 5%
&R209	23	036-15220-00	RES M/F 0805 22K 5%
&R209	25	036-15180-00	RES M/F 0805 18K 5%
&R209	30	036-15220-00	RES M/F 0805 22K 5%
&R209	35	036-15180-00	RES M/F 0805 18K 5%
R210		036-15150-00	RES M/F 0805 15K 5%
R211		036-15390-00	RES M/F 0805 39K 5%
R213		036-14270-00	RES M/F 0805 2K7 5%
R215		036-15150-00	RES M/F 0805 15K 5%
R218		036-14390-00	RES M/F 0805 3K9 5%
&R219	10	036-14820-00	RES M/F 0805 8K2 5%
&R219	13	036-14820-00	RES M/F 0805 8K2 5%
&R219	15	036-14470-00	RES M/F 0805 4K7 5%
&R219	20	036-14820-00	RES M/F 0805 8K2 5%
&R219	23	036-14820-00	RES M/F 0805 8K2 5%
&R219	25	036-14470-00	RES M/F 0805 4K7 5%
&R219	30	036-14820-00	RES M/F 0805 8K2 5%
&R219	35	036-14470-00	RES M/F 0805 4K7 5%
R221		036-15470-00	RES M/F 0805 47K 5%
R222		036-16100-00	RES M/F 0805 100K 5%
%R223		036-12100-00	RES M/F 0805 10E 5%
R224		036-14390-00	RES M/F 0805 3K9 5%
R225		036-13470-00	RES M/F 0805 470E 5%
R227		036-14100-00	RES M/F 0805 1K 5%
R229		036-14470-00	RES M/F 0805 4K7 5%
R230		036-14470-00	RES M/F 0805 4K7 5%
R232		036-15470-00	RES M/F 0805 47K 5%
R233		036-14820-00	RES M/F 0805 8K2 5%
R234		036-15470-00	RES M/F 0805 47K 5%
R236		036-15470-00	RES M/F 0805 47K 5%
R238		036-11470-00	RES M/F 0805 4E7 10%
R239		036-14100-00	RES M/F 0805 1K 5%
R241		036-14100-00	RES M/F 0805 1K 5%
R242		036-13100-00	RES M/F 0805 100E 5%
R244		036-14680-00	RES M/F 0805 6K8 5%
R245		036-14100-00	RES M/F 0805 1K 5%
R247		036-14220-00	RES M/F 0805 2K2 5%
R249		036-15100-00	RES M/F 0805 10K 5%
R251		036-15390-00	RES M/F 0805 39K 5%
R252		036-14470-00	RES M/F 0805 4K7 5%
R254		036-14820-00	RES M/F 0805 8K2 5%
R255		036-15470-00	RES M/F 0805 47K 5%
R256		036-14470-00	RES M/F 0805 4K7 5%
R258		036-15470-00	RES M/F 0805 47K 5%
R260		036-11470-00	RES M/F 0805 4E7 10%
R261		036-13150-00	RES M/F 0805 150E 5%
R262		036-14100-00	RES M/F 0805 1K 5%
R264		036-15270-00	RES M/F 0805 27K 5%
R265		036-13100-00	RES M/F 0805 100E 5%
R266		036-15220-00	RES M/F 0805 22K 5%
R267		036-16330-00	RES M/F 0805 330K 5%
R269		036-14220-00	RES M/F 0805 2K2 5%
R271		036-16100-00	RES M/F 0805 100K 5%
R272		036-15470-00	RES M/F 0805 47K 5%
R273		036-15150-00	RES M/F 0805 15K 5%
R275		036-13100-00	RES M/F 0805 100E 5%
R277		036-14560-00	RES M/F 0805 5K6 5%
R278		036-16220-00	RES M/F 0805 220K 5%
R280		036-16100-00	RES M/F 0805 100K 5%
R281		036-14470-00	RES M/F 0805 4K7 5%
R282		036-16100-00	RES M/F 0805 100K 5%
R284		036-13100-00	RES M/F 0805 100E 5%

Ref	Var	IPN	Description
R285		036-15470-00	RES M/F 0805 47K 5%
R287		036-15100-00	RES M/F 0805 10K 5%
R288		036-14470-00	RES M/F 0805 4K7 5%
R289		036-14680-00	RES M/F 0805 6K8 5%
R290		036-14100-00	RES M/F 0805 1K 5%
R292		036-14680-00	RES M/F 0805 6K8 5%
R293		036-13560-00	RES M/F 0805 560E 5%
R294		036-14100-00	RES M/F 0805 1K 5%
R295		036-14680-00	RES M/F 0805 6K8 5%
R296		036-14120-00	RES M/F 0805 1K2 5%
R297		030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
R298		036-15470-00	RES M/F 0805 47K 5%
R299		036-15470-00	RES M/F 0805 47K 5%
R302		036-12390-00	RES M/F 0805 39E 5%
R304		036-14270-00	RES M/F 0805 2K7 5%
R306		036-12100-00	RES M/F 0805 10E 5%
R308		036-12100-00	RES M/F 0805 10E 5%
R310		036-10000-00	RES M/F 0805 ZERO OHM
R312		036-14330-00	RES M/F 0805 3K3 5%
R314		036-14470-00	RES M/F 0805 4K7 5%
R316		036-12470-00	RES M/F 0805 47E 5%
R318		036-15100-00	RES M/F 0805 10K 5%
R320		036-14390-00	RES M/F 0805 3K9 5%
R322		036-14820-00	RES M/F 0805 8K2 5%
R323		036-15100-00	RES M/F 0805 10K 5%
R324		036-15220-00	RES M/F 0805 22K 5%
R326		036-15100-00	RES M/F 0805 10K 5%
R328		036-14100-00	RES M/F 0805 1K 5%
R330		036-12470-00	RES M/F 0805 47E 5%
R332		036-13330-00	RES M/F 0805 330E 5%
R334		045-03150-01	RES NTC 150E 0.5W 5MM DISC
R336		036-13470-00	RES M/F 0805 470E 5%
R338		036-14100-00	RES M/F 0805 1K 5%
R339		036-15100-00	RES M/F 0805 10K 5%
R340		036-10000-00	RES M/F 0805 ZERO OHM
R341		036-10000-00	RES M/F 0805 ZERO OHM
R342		036-16150-00	RES M/F 0805 150K 5%
&R344	10	036-15560-00	RES M/F 0805 56K 5%
&R344	13	036-15560-00	RES M/F 0805 56K 5%
&R344	15	036-15820-00	RES M/F 0805 82K 5%
&R344	20	036-15560-00	RES M/F 0805 56K 5%
&R344	23	036-15560-00	RES M/F 0805 56K 5%
&R344	25	036-15820-00	RES M/F 0805 82K 5%
&R344	30	036-15560-00	RES M/F 0805 56K 5%
&R344	35	036-15820-00	RES M/F 0805 82K 5%
R346		036-12100-00	RES M/F 0805 10E 5%
R348		036-13220-00	RES M/F 0805 220E 5%
R351		036-15100-00	RES M/F 0805 10K 5%
R352		036-16390-00	RES M/F 0805 390K 5%
R354		036-17100-00	RES M/F 0805 1M 5%
R356		036-13180-00	RES M/F 0805 180E 5%
R358		036-12470-00	RES M/F 0805 47E 5%
R360		036-15150-00	RES M/F 0805 15K 5%
R362		036-14330-00	RES M/F 0805 3K3 5%
R364		036-14100-00	RES M/F 0805 1K 5%
R366		036-14330-00	RES M/F 0805 3K3 5%
R368		036-15220-00	RES M/F 0805 22K 5%
R370		036-16100-00	RES M/F 0805 100K 5%
R372		036-14270-00	RES M/F 0805 2K7 5%
R374		036-14100-00	RES M/F 0805 1K 5%
R376		036-10000-00	RES M/F 0805 ZERO OHM
R378		036-16100-00	RES M/F 0805 100K 5%
R380		036-15100-00	RES M/F 0805 10K 5%
R382		036-15470-00	RES M/F 0805 47K 5%
R384		036-15470-00	RES M/F 0805 47K 5%
R386		036-15120-00	RES M/F 0805 12K 5%
R388		036-15100-00	RES M/F 0805 10K 5%
R390		045-05100-01	RES NTC 10K 5% 5MM DISC
R392		036-10000-00	RES M/F 0805 ZERO OHM
R393		036-15100-00	RES M/F 0805 10K 5%
R394		036-12470-00	RES M/F 0805 47E 5%
R395		036-10000-00	RES M/F 0805 ZERO OHM
R396		036-13390-00	RES M/F 0805 390E 5%
R397		036-13820-00	RES M/F 0805 820E 5%
R398		036-14220-00	RES M/F 0805 2K2 5%
R399		045-05100-01	RES NTC 10K 5% 5MM DISC
R405		036-10000-00	RES M/F 0805 ZERO OHM
R410		036-10000-00	RES M/F 0805 ZERO OHM
R415		036-13330-00	RES M/F 0805 330E 5%
R420		036-12100-00	RES M/F 0805 10E 5%
R425		036-14100-00	RES M/F 0805 1K 5%
R430		036-13150-00	RES M/F 0805 150E 5%
R435		036-12100-00	RES M/F 0805 10E 5%
R440		036-10000-00	RES M/F 0805 ZERO OHM
R445		036-13470-00	RES M/F 0805 470E 5%
R450		036-12100-00	RES M/F 0805 10E 5%
R455		036-13470-00	RES M/F 0805 470E 5%
R460		036-13180-00	RES M/F 0805 180E 5%
R465		036-12330-00	RES M/F 0805 33E 5%
R470		036-13180-00	RES M/F 0805 180E 5%
R475		036-12470-00	RES M/F 0805 47E 5%
R510		036-14220-00	RES M/F 0805 2K2 5%
R515		036-12560-00	RES M/F 0805 56E 5%
R555		036-14100-00	RES M/F 0805 1K 5%
R615		036-13100-00	RES M/F 0805 100E 5%
R617		036-10000-00	RES M/F 0805 ZERO OHM
R619		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM
R621		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM

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Ref	Var	IPN	Description
R625		036-14100-00	RES M/F 0805 1K 5%
R629		032-33270-00	RES M/F PWR 270E 5% 1W 12X4.5
R633		036-14680-00	RES M/F 0805 6K8 5%
R636		036-12330-00	RES M/F 0805 33E 5%
R637		036-12330-00	RES M/F 0805 33E 5%
R641		036-14150-00	RES M/F 0805 1K5 5%
R645		036-13470-00	RES M/F 0805 470E 5%
R649		036-14470-00	RES M/F 0805 4K7 5%
R653		036-15100-00	RES M/F 0805 10K 5%
R681		036-13100-00	RES M/F 0805 100E 5%
R685		036-15150-00	RES M/F 0805 15K 5%
R689		036-12100-00	RES M/F 0805 10E 5%
R693		036-16100-00	RES M/F 0805 100K 5%
R696		036-15560-00	RES M/F 0805 56K 5%
R701		036-12220-00	RES M/F 0805 22E 5%
R702		036-17100-00	RES M/F 0805 1M 5%
R703		036-17100-00	RES M/F 0805 1M 5%
R706		036-15150-00	RES M/F 0805 15K 5%
R707		036-15470-00	RES M/F 0805 47K 5%
R708		036-13100-00	RES M/F 0805 100E 5%
R709		036-13100-00	RES M/F 0805 100E 5%
R710		036-13100-00	RES M/F 0805 100E 5%
R711		036-13100-00	RES M/F 0805 100E 5%
R712		036-12100-00	RES M/F 0805 10E 5%
R742		036-13150-00	RES M/F 0805 150E 5%
R743		036-13150-00	RES M/F 0805 150E 5%
R744		036-12220-00	RES M/F 0805 22E 5%
R746		036-12220-00	RES M/F 0805 22E 5%
R747		036-12220-00	RES M/F 0805 22E 5%
R748		036-15470-00	RES M/F 0805 47K 5%
R749		036-15470-00	RES M/F 0805 47K 5%
R750		036-12220-00	RES M/F 0805 22E 5%
R752		036-12220-00	RES M/F 0805 22E 5%
R753		036-17100-00	RES M/F 0805 1M 5%
R754		036-14100-00	RES M/F 0805 1K 5%
R756		036-16470-00	RES M/F 0805 470K 5%
R757		036-16470-00	RES M/F 0805 470K 5%
R758		036-14120-00	RES M/F 0805 1K2 5%
R759		036-13330-00	RES M/F 0805 330E 5%
R760		036-13180-00	RES M/F 0805 180E 5%
R762		036-13100-00	RES M/F 0805 100E 5%
R763		036-13100-00	RES M/F 0805 100E 5%
R765		036-13680-00	RES M/F 0805 680E 5%
R766		036-14100-00	RES M/F 0805 1K 5%
R767		036-13680-00	RES M/F 0805 680E 5%
R769		036-13180-00	RES M/F 0805 180E 5%
R771		036-14820-00	RES M/F 0805 8K2 5%
R772		036-15220-00	RES M/F 0805 22K 5%
R774		036-14820-00	RES M/F 0805 8K2 5%
R775		036-15180-00	RES M/F 0805 18K 5%
R780		036-12680-00	RES M/F 0805 68E 5%
R782		036-12180-00	RES M/F 0805 18E 5%
R784		036-13120-00	RES M/F 0805 120E 5%
R785		036-14330-00	RES M/F 0805 3K3 5%
R786		036-12100-00	RES M/F 0805 10E 5%
R787		036-12100-00	RES M/F 0805 10E 5%
R790		036-13390-00	RES M/F 0805 390E 5%
R791		036-14100-00	RES M/F 0805 1K 5%
R804		036-15470-00	RES M/F 0805 47K 5%
R805		036-13470-00	RES M/F 0805 470E 5%
R808		036-12100-00	RES M/F 0805 10E 5%
R809		036-14470-00	RES M/F 0805 4K7 5%
R810		036-14470-00	RES M/F 0805 4K7 5%
R811		036-14470-00	RES M/F 0805 4K7 5%
R812		036-14470-00	RES M/F 0805 4K7 5%
R813		036-14470-00	RES M/F 0805 4K7 5%
R815		036-15470-00	RES M/F 0805 47K 5%
R816		036-16150-00	RES M/F 0805 150K 5%
R818		036-14470-00	RES M/F 0805 4K7 5%
R819		036-14470-00	RES M/F 0805 4K7 5%
R820		036-15470-00	RES M/F 0805 47K 5%
R821		036-15470-00	RES M/F 0805 47K 5%
R822		036-15470-00	RES M/F 0805 47K 5%
R823		036-15470-00	RES M/F 0805 47K 5%
R824		036-14220-00	RES M/F 0805 2K2 5%
R825		036-14220-00	RES M/F 0805 2K2 5%
R826		036-14220-00	RES M/F 0805 2K2 5%
R827		036-14220-00	RES M/F 0805 2K2 5%
R828		036-14220-00	RES M/F 0805 2K2 5%
R829		036-14220-00	RES M/F 0805 2K2 5%
R830		036-14220-00	RES M/F 0805 2K2 5%
R831		036-14220-00	RES M/F 0805 2K2 5%
R832		036-14220-00	RES M/F 0805 2K2 5%
R833		036-14220-00	RES M/F 0805 2K2 5%
R835		036-14220-00	RES M/F 0805 2K2 5%
R836		036-14220-00	RES M/F 0805 2K2 5%
R837		036-14220-00	RES M/F 0805 2K2 5%
R840		036-14220-00	RES M/F 0805 2K2 5%
R841		036-14220-00	RES M/F 0805 2K2 5%
R842		036-14220-00	RES M/F 0805 2K2 5%
R843		036-14220-00	RES M/F 0805 2K2 5%
R844		036-15470-00	RES M/F 0805 47K 5%
R845		036-16150-00	RES M/F 0805 150K 5%
R846		036-14470-00	RES M/F 0805 4K7 5%
R847		036-14470-00	RES M/F 0805 4K7 5%
R848		036-13470-00	RES M/F 0805 470E 5%
R849		036-13470-00	RES M/F 0805 470E 5%
R850		036-13470-00	RES M/F 0805 470E 5%

Ref	Var	IPN	Description
R851		036-13470-00	RES M/F 0805 470E 5%
R852		036-14470-00	RES M/F 0805 4K7 5%
R853		036-13470-00	RES M/F 0805 470E 5%
R854		036-16330-00	RES M/F 0805 330K 5%
R855		036-15470-00	RES M/F 0805 47K 5%
R856		036-16150-00	RES M/F 0805 150K 5%
R857		036-16150-00	RES M/F 0805 150K 5%
R858		036-15270-10	RES M/F 0805 27K 1%
R859		036-17120-10	RES MF 0805 CHIP 1M2 1%
R860		036-16820-10	RES MF 0805 CHIP 820K 1%
R861		036-14510-10	RES MF 0805 CHIP 5K1 1%
R863		036-14470-00	RES M/F 0805 4K7 5%
R865		036-14270-00	RES M/F 0805 2K7 5%
R866		036-16820-00	RES M/F 0805 820K 5%
R867		036-16820-00	RES M/F 0805 820K 5%
R868		036-14470-00	RES M/F 0805 4K7 5%
R869		036-15270-10	RES M/F 0805 27K 1%
R870		036-17120-10	RES MF 0805 CHIP 1M2 1%
R871		036-16820-10	RES MF 0805 CHIP 820K 1%
R872		036-14510-10	RES MF 0805 CHIP 5K1 1%
R873		036-14220-00	RES M/F 0805 2K2 5%
R875		036-14470-00	RES M/F 0805 4K7 5%
R876		036-16100-00	RES M/F 0805 100K 5%
R877		036-16100-00	RES M/F 0805 100K 5%
R878		036-16100-00	RES M/F 0805 100K 5%
R879		036-16100-00	RES M/F 0805 100K 5%
R881		036-15470-00	RES M/F 0805 47K 5%
R882		036-15470-00	RES M/F 0805 47K 5%
R884		036-16150-00	RES M/F 0805 150K 5%
R885		036-16150-00	RES M/F 0805 150K 5%
R886		036-15100-10	RES M/F 0805 10K 1%
R887		036-14100-10	RES M/F 0805 CHIP 1K 1%
R888		036-14820-10	RES M/F 0805 8K2 1%
R889		036-16100-00	RES M/F 0805 100K 5%
R890		036-16150-00	RES M/F 0805 150K 5%
R891		036-16100-00	RES M/F 0805 100K 5%
R892		036-16330-00	RES M/F 0805 330K 5%
R894		036-14470-00	RES M/F 0805 4K7 5%
R895		036-15100-00	RES M/F 0805 10K 5%
R897		036-15100-00	RES M/F 0805 10K 5%
R898		036-16470-00	RES M/F 0805 470K 5%
RL210		237-00010-22	RELAY 12V DPDT 8PIN DIL PCB MT
RV205		040-05100-22	POT 10K LOG DUAL PCB 6 OD SFT
RV210		040-05100-23	POT 10K LOG PCB 15MM SLOT SFT
RV220		042-05100-06	RES PRE 10K CAR 6MM FLAT
RV230		040-05100-21	POT 10K LIN PCB 15MM SLOT SFT
RV235		042-05100-06	RES PRE 10K CAR 6MM FLAT
RV310		042-04220-06	RES PRE 2K2 CAR 6MM FLAT
RV320		042-04220-06	RES PRE 2K2 CAR 6MM FLAT
SHLD610		062-00010-13	CAN 10MM SQ X 11MM CAN A4M1017
SK320		240-04020-64	SKT JACK 0.98MM PCB MTG 64 WAY
SK330		240-04020-64	SKT JACK 0.98MM PCB MTG 64 WAY
SK501		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK502		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK503		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK504		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK505		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK513		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK522		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK531		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK532		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK533		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK534		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK535		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK805		240-10000-07	CONN SMD SKT 16W 2R M-MATCH
SK810		240-04020-42	SKT 44 PIN SMD PLCC
SW201		230-00010-30	SWITCH TOG SPDT R-ANG PCB MTG
T210		053-00010-17	XFMR T4030 LINE MATCH POTCORE
T610		050-00016-50	COIL TAIT NO 650 455KHZ
&XF300A	10	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	13	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	15	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300A	20	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	23	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	25	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300A	30	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	35	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	10	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	13	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	15	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	20	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	23	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	25	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	30	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	35	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF301	10	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	13	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	15	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE
&XF301	20	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	23	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P

Ref	Var	IPN	Description	Ref	Var	IPN	Description
&XF301	25	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE				
&XF301	30	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P				
&XF301	35	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE				
&XF302	10	276-00010-14	FLTR CER 455KHZ 15KHZ B/W				
&XF302	13	276-00010-76	FLTR CER 455KHZ 12KHZ B/W				
&XF302	15	276-00010-13	FLTR CER 455KHZ 9KHZ B/W				
&XF302	20	276-00010-14	FLTR CER 455KHZ 15KHZ B/W				
&XF302	23	276-00010-76	FLTR CER 455KHZ 12KHZ B/W				
&XF302	25	276-00010-13	FLTR CER 455KHZ 9KHZ B/W				
&XF302	30	276-00010-14	FLTR CER 455KHZ 15KHZ B/W				
&XF302	35	276-00010-13	FLTR CER 455KHZ 9KHZ B/W				
X310		274-00010-22	XTAL 44.545MHZ TE/22 HC45/U				

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T855 Mechanical & Miscellaneous Parts (220-01396-02)

IPN	Legend	Description
066-00010-20	1	SLUG BRASS A4M764 HELIC RESNTR
070-01001-00	15/28	D-RANGE 15 WAY COMPL T800
070-02001-00		LED RED COMPL T800 RX/TX/EX
070-02002-00		LED GREEN COMPL T800 RX/TX/EX
200-00010-04		WIRE T/C 0.7
220-01145-02	2	PCB T855/856/857 VCO
220-01396-02	3	PCB T855 SERIES II
230-00010-31	4	SWITCH COVER FOR 230-00010-30
240-02100-06	5	SKT COAX N TYPE PNL MTG OP-TER
240-04020-62		SKT 2 W RECEP SHORTING LINK PL210/220/230/240/250/260/270
303-11169-03	6	CHASSIS PAINTED T800 SERIES
303-23118-00	7	COVER A3M2247 D RANGE T855/7
303-50074-00	8	CLIP A3M2246 SPRING CLAMP T857
308-01007-01	9	HANDLE BASE STATION SERIES II
308-01048-00	10	HOUSING A3M2378 DOUBLET H/RES
311-01015-00	11	KNOB 15MM & SKIRT 6MM SFT
312-01052-01	12	LID TOP PNTD A1M2364 T800
312-01053-01	13	LID BOTTOM PNTD A1M2364 T800
316-06622-00	14	PNL FRT RX T800 SERIES II
345-00040-10	16	SCRW M3X6MM P/POZ ST BZ
349-00020-36	17	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	18	SCRW T/T M4X12MM P/POZ BZ
349-00020-45	19	SCRW T/T M4X20MM P/POZ BZ
350-00016-42	20	SPACER 5MM HI 8MM ST 2.5MM HO
352-00010-08	21	NUT M3 COLD FORM HEX ST BZ
352-00010-29	22	NUT M4 NYLOC HEX
352-00010-54	23	NUT BRASS HEX 1/4" UNF 3MM
353-00010-10	24	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-13	25	WSHR M3 S/PROOF INT BZ
356-00010-03		TAG SOLDER 3MM LONG M614/3.2 Main PCB to chassis earth strap (via D-range shield).
362-00010-23	26	GASKET SIL TO-220 CLIP MTG.
362-00010-33	27	GROMMET LED MTG 3MM
365-00011-53		LABEL 104X37MM
365-00100-20		LABEL WHITE S/A 28X11MM
365-01541-00		LABEL TX/RX/EX TYPE APR/SER NO
399-00010-51		BAG PLASTIC 75X100MM
410-01081-01		CRT T800 SERIES II
410-01082-01		CRTN 10 T800 KIWI 423X410X360

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replace A4 pages B6.3.11/B6.3.12 with A3 pages B6.3.11/B6.3.12

replace A4 pages B6.3.11/B6.3.12 with A3 pages B6.3.11/B6.3.12

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T855 Grid Reference Index (IPN 220-01396-02)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit
C201	1:D7	2-B9
&C203	2:C6	2-B8
&C205	2:C6	2-B8
C207	1:D6	2-C8
C209	1:C7	2-E8
C210	2:C7	2-C7
C211	2:C7	2-D7
C213	2:C7	2-E7
C215	2:C7	2-E7
C217	2:C7	2-E7
C219	2:C6	2-H6
C221	2:C6	2-H6
C222	1:C6	2-J9
C223	2:C6	2-J8
C225	2:C6	2-J8
C227	2:C6	2-J8
C229	1:C6	2-K8
C231	1:B3	2-K8
C233	1:B7	2-J7
C235	2:C5	2-M6
C237	2:C6	2-M5
C238	2:C5	2-N7
C239	1:C5	2-P6
C240A	2:B5	2-Q8
C240B	2:B5	2-R8
C240C	1:C5	2-R8
C249	1:B5	2-Q7
C251	2:A5	2-R7
C253	1:C8	2-G5
C255	2:B7	2-L2
C257	2:B6	2-M2
C259	2:B6	2-M3
C260A	2:B6	2-P4
C260B	2:B6	2-P4
C260C	1:B6	2-P4
C261	1:C6	2-N2
C262	1:B5	2-P3
C264	2:B5	2-P2
C266	1:D2	2-R3
C268	1:D3	2-R3
C270	2:B8	2-E3
C272	2:B8	2-D1
C274	2:B8	2-E1
C276	2:C4	2-B0
C278	2:C4	2-C0
C280	2:C4	2-F1
C286	2:B8	2-F1
C302	2:F8	3-C9
C304	2:F8	3-D9
C306	2:F8	3-D8
C308	2:F8	3-E8
C310	2:F8	3-E8
C312	1:F7	3-F8
C314	2:F8	3-F8
C316	2:F9	3-F9
&C318	2:E8	3-A5
&C320	2:E8	3-B5
&C322	2:E8	3-C5
&C324	2:E7	3-E5
&C326	2:E7	3-E5
C328	2:E7	3-F5
C330	2:F7	3-F6
C332	2:E7	3-G4
&C334	2:F7	3-H5
&C336	2:E7	3-H5
&C338	2:E7	3-J5
&C340	2:E7	3-J5
C342	2:E6	3-K5
C344	2:E6	3-K6
C346	2:E6	3-M5
C348	2:E6	3-M5
C350	2:E6	3-M6
C351	2:E4	3-M6
C352	2:E4	3-N5
C353	2:F4	3-N6
C354	1:F5	3-N6
C356	2:E5	3-P6
C357	2:E5	3-Q6
C358	2:F5	3-Q6
C360	2:F4	3-R6
C362	2:E6	3-R4
C364	2:E5	3-A2
C366	2:E5	3-B2
C368	2:F5	3-C2
C370	2:E4	3-C1
C372	2:F3	3-E1
C374	2:F3	3-E3
C376	2:E3	3-E2
C378	2:F3	3-E2
C380	2:E3	3-F2
C382	1:F3	3-G3
C384	2:E4	3-H2
C386	2:E4	3-J2
C388	2:E5	3-M2
C390	1:E6	3-M2
C392	2:E4	3-N2
C394	2:F3	3-P2
C410	2:L8	4-E4
C420	2:L8	4-F5
C430	2:L8	4-G6
C440	1:M7	4-H6
C450	2:K8	4-G5
%C460	2:K8	4-H4
C470	2:G7	4-P5
C480	2:G8	4-Q5
C505	1:K6	5-L8
C515	1:H5	5-F3
C530	1:K5	5-K1
C535	1:K5	5-L1
C610A	1:M5	6-C8
C610B	1:M5	6-D8
C611A	1:L5	6-E8
C611B	1:M5	6-F8
C623	1:M6	6-N8
C625	1:M6	6-Q8
C626	1:M6	6-R8
C628	1:M6	6-R8
C630	1:M5	6-K4
C631A	1:M5	6-M6
C631B	1:N5	6-M6
C637	1:M6	6-P5
C640	1:M5	6-R5
C651	1:M5	6-M4
C658	1:M5	6-J1
C660	1:L5	6-K1
C665	1:L5	6-K1
C670	1:L6	6-L1
C673	1:L5	6-P2
C677	1:M6	6-P1
C681	1:M5	6-R3
C684	1:M6	6-R3
C687	1:L6	6-Q1
C690	1:L6	6-R1
C693	1:L6	6-R1
C700	1:J4	7-A8
C702	1:J4	7-B8
C703	1:J3	7-B7
C705	1:J3	7-B7
C707	1:J3	7-B5
C708	1:J3	7-B5
C709	1:H3	7-C5
C710A	1:H3	7-D8
C710B	1:H4	7-D8
C710C	1:J3	7-F8
C711	1:J2	7-E7
C712	1:H2	7-E7
C713	1:H2	7-F7
C735	1:J2	7-A1
C736	1:J2	7-B1
C740A	1:H2	7-B4
C740B	1:H2	7-B3
C741A	1:H2	7-C4
C741B	1:G2	7-C3
C742A	1:H2	7-D4
C742B	1:H3	7-D3
C743	1:H2	7-B1
C745	1:G3	7-D1
C750	1:H4	7-H7
C757	1:G4	7-G5
C759	1:G4	7-G4
C761	1:H3	7-J4
C762	1:G3	7-J4
C764	1:H3	7-J2
C765	1:G3	7-J2
C767	1:H3	7-K3
C769	1:H4	7-M4
C770	1:H3	7-N4
C772	1:G4	7-M2
C774	1:H4	7-N2
C776	1:H4	7-N1
C782	1:G2	7-N0
C784	1:G2	7-Q1
C786	1:G2	7-R1
C788	1:G3	7-P0
C791	1:G4	7-Q0
C792	1:G4	7-R0
C810	1:L4	8-K8
C812	1:K2	8-E5
C813	1:J3	8-H5
C814	1:L2	8-Q4
C815	1:N3	8-B2
C816	1:N3	8-B2
C818	1:N3	8-C1
C819	1:N3	8-D1
C820	1:N4	8-E1
C822	1:N3	8-D2
C824	1:N3	8-D2
C826	1:N3	8-D0
C828	1:N3	8-D0
C830	1:M4	8-F1
C832	1:M3	8-G2
C833	1:M4	8-G1
C834	1:M3	8-H2
C836	1:M3	8-G0
C837	1:M3	8-G0
C838	1:N4	8-H0
C840	1:M2	8-K1
C842	1:N2	8-L0
C844	1:N3	8-L0
C846	1:M2	8-M0
C848	1:N2	8-M0
C850	1:M2	8-N0
C873	1:M4	8-N2
C876	1:M4	8-P2
C879	1:M3	8-Q0
C910	2:P6	9-E6
C920	2:P6	9-F6
C930	2:P7	9-G6
C940	2:P7	9-H6
C950	2:N8	9-J6
D111	1:P4	1-R1
D220	2:D8	2-E4
D220	2:D8	2-E4
D230	2:C6	2-J4
D230	2:C6	2-J5
D240	2:C8	2-D2
D240	2:C8	2-D3
D250	1:B7	2-H1
D260	2:A7	2-H1
D270	2:B7	2-H1
D270	2:B7	2-J1
D280	1:B7	2-K1
D285	1:D2	2-L1
D289	1:C2	2-K0
D290	1:C2	2-L0
D295	1:C2	2-L0
D310	2:E4	3-G1
D310	2:E4	3-G2
D610	1:N5	6-L6
D610	1:N5	6-M6
D640	1:L5	6-M1
D640	1:L5	6-M2
D730	1:H3	7-H1
D740	1:H3	7-J2
D820	1:J3	8-B7

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Device	PCB	Circuit
D860	1:M2	8-N0
D860	1:M2	8-N0
D880	1:M2	8-R2
D880	1:M2	8-R2
#FL410	1:M8	4-C5
#FL420	1:J8	4-K5
IC210	1:C7	2-G7
IC210	1:C7	2-C7
IC210	1:C7	2-F7
IC240	1:B5	2-P7
IC260	1:B6	2-N2
IC270	1:B8	2-F3
IC270	1:B8	2-E2
IC270	1:B8	2-B2
IC280	1:C4	2-E1
IC280	1:C4	2-B0
IC280	1:C4	2-D0
IC310	1:E5	3-Q5
IC310	1:E5	3-N5
IC310	1:E5	3-C2
IC320	1:F3	3-N2
IC410	1:G7	4-P5
IC610	1:M5	6-D8
IC630	1:N5	6-K5
IC640	1:M5	6-N5
IC640	1:M5	6-J0
IC640	1:M5	6-Q5
IC650	1:L5	6-E5
=IC700	1:J3	7-A8
IC710	1:H3	7-D7
IC710	1:H3	7-J0
IC710	1:H3	7-C6
IC710	1:H3	7-D6
IC710	1:H3	7-D6
IC710	1:H3	7-C6
IC710	1:H3	7-E8
IC740	1:H2	7-D1
IC750	1:H4	7-M3
IC750	1:H4	7-H6
IC750	1:H4	7-H5
IC820	1:L4	8-N5
IC830	1:N4	8-J0
IC830	1:N4	8-F1
IC830	1:N4	8-F0
IC830	1:N4	8-H2
IC830	1:N4	8-E2
IC840	1:M2	8-L0
IC850	1:M3	8-N1
IC850	1:M3	8-Q2
IC850	1:M3	8-M2
IC850	1:M3	8-M2
IC850	1:M3	8-M0
L230	1:D2	2-K2
L310	1:F8	3-D9
L320	1:F8	3-E8
L330	1:E8	3-B5
L340	1:E8	3-C5
L350	1:E7	3-E5
L360	1:F6	3-G5
L370	1:E7	3-J5
L380	1:E6	3-L6
L385	1:E4	3-N6
L390	1:F5	3-Q6
L410	2:L9	4-F5
L420	1:M7	4-F6
L430	2:K8	4-H5
L440	1:G8	4-Q5
L740	1:G3	7-Q0
L910	1:P6	9-E7
L920	1:P6	9-F7
L930	1:P7	9-G7
L940	1:P8	9-H7

Device	PCB	Circuit
P100	1:Q6	1-R8
P160	1:P2	1-Q4
P170	1:P2	1-R4
P201	1:D4	2-A9
P204	1:D7	2-A9
P207	1:D6	2-A8
P210	1:D6	2-C7
P213	1:D3	2-A7
P216	1:B2	2-A7
P219	1:D7	2-A7
P222	1:C5	2-A6
P225	1:C8	2-A4
P228	1:D8	2-A4
P231	1:C7	2-A4
P234	1:B7	2-A3
P236	1:C8	2-A1
P238	1:D3	2-A1
P240	1:C8	2-G2
P242	1:C7	2-G1
P244	1:C7	2-G8
P246	1:C6	2-H9
P248	1:C6	2-H9
P250	1:B3	2-K8
P252	1:B2	2-L9
P254	1:B2	2-L9
P256	1:B2	2-L8
P258	1:D3	2-P8
P260	1:D3	2-P7
P263	1:B2	2-R6
P266	1:D2	2-R5
P268	1:B2	2-R5
P270	1:B2	2-R5
P280	1:B2	2-R4
P282	1:B2	2-R4
P284	1:B3	2-R4
P287	1:B2	2-R0
P810	1:K2	8-A5
P815	1:L4	8-C4
P820	1:K4	8-M8
P825	1:K4	8-M8
P830	1:K4	8-M8
P835	1:K4	8-M7
P840	1:K4	8-M7
PL100	1:P3	1-F0
PL210	1:C6	2-B8
PL220	1:C6	2-H7
PL230	1:B2	2-L8
PL240	1:B6	2-K7
PL250	1:C8	2-C2
PL260	1:C8	2-H3
PL270	1:C2	2-L1
Q210	2:C6	2-J8
Q220	2:C5	2-M6
Q230	2:C5	2-N6
Q240	2:C8	2-H4
Q245	2:B6	2-J4
Q250	2:B8	2-G2
Q255	2:B7	2-H2
Q260	2:B7	2-K0
Q270	2:C2	2-K0
Q280	2:B7	2-L2
Q290	2:B6	2-M2
Q310	1:F9	3-D9
Q320	2:F7	3-F5
Q330	2:E6	3-L5
Q340	2:E5	3-Q5
Q350	2:F4	3-D2
Q360	2:E3	3-F2
Q410	2:L8	4-G5
Q540	1:K5	5-K2
Q620	1:N6	6-P8
Q630	1:M6	6-P5
Q660	1:L5	6-N1
Q670	1:L6	6-Q2

Device	PCB	Circuit
Q750	1:G4	7-G3
Q760	1:G3	7-H3
Q770	1:H3	7-H1
Q775	1:H3	7-K3
Q780	1:H3	7-K3
Q785	1:H3	7-K2
Q790	1:H4	7-L3
Q795	1:G3	7-P0
Q810	1:K2	8-C5
Q820	1:K2	8-C6
Q840	1:K2	8-F5
Q850	1:L2	8-G5
Q860	1:K4	8-B4
Q870	1:L4	8-C4
Q880	1:L2	8-L5
Q890	1:L4	8-K3
Q895	1:M3	8-P2
R160	1:P2	1-Q4
R201	2:D6	2-B8
&R202	2:D6	2-B7
R204	2:C6	2-C9
R205	2:C7	2-C8
R207	2:C7	2-D8
&R209	2:C7	2-D8
R210	2:C7	2-D8
R211	2:C7	2-E8
R213	2:C7	2-G6
R215	2:C6	2-G9
R218	2:C7	2-G8
&R219	2:C7	2-G7
R221	2:C7	2-H7
R222	2:C7	2-H7
%R223	2:D6	2-J9
R224	2:C6	2-J8
R225	2:C6	2-J8
R227	2:B7	2-J7
R229	2:C5	2-L6
R230	2:C6	2-M5
R232	2:B5	2-M7
R233	2:C5	2-M7
R234	2:C5	2-N7
R236	2:B5	2-N7
R238	2:A5	2-R6
R239	2:B5	2-R7
R241	2:D8	2-F5
R242	2:C8	2-F4
R244	2:C8	2-G4
R245	2:C8	2-G5
R247	2:B7	2-J4
R249	2:B6	2-J3
R251	2:B7	2-L3
R252	2:B7	2-L3
R254	2:B7	2-L3
R255	2:B7	2-M3
R256	2:B6	2-M3
R258	2:B6	2-N3
R260	2:B5	2-P2
R261	2:B4	2-Q3
R262	2:B3	2-Q3
R264	2:B8	2-A3
R265	2:B8	2-A2
R266	2:B8	2-B2
R267	2:C8	2-C3
R269	2:C8	2-B1
R271	2:D3	2-A0
R272	2:C4	2-B1
R273	2:C4	2-C1
R275	2:C4	2-C1
R277	2:C4	2-C0
R278	2:C4	2-C1
R280	2:C8	2-D3
R281	2:C8	2-D2
R282	2:B8	2-E2
R284	2:C8	2-F3
R285	2:B8	2-F2

Device	PCB	Circuit
R287	2:B8	2-F2
R288	2:B8	2-F1
R289	2:B7	2-G3
R290	2:B7	2-G3
R292	2:C8	2-G2
R293	2:B7	2-H1
R294	2:C3	2-H0
R295	2:B7	2-J1
R296	2:A7	2-K1
R297	1:B2	2-M0
R298	2:D7	2-J0
R299	2:C7	2-J0
R302	2:F8	3-D8
R304	2:F8	3-E9
R306	2:F8	3-F8
R308	2:F7	3-F8
R310	2:E9	3-A5
R312	2:F7	3-F5
R314	2:E7	3-F4
R316	2:F7	3-G6
R318	2:F7	3-G5
R320	2:F7	3-H5
R322	2:E7	3-K5
R323	2:E6	3-K5
R324	2:E6	3-L5
R326	2:E6	3-L6
R328	2:E6	3-M6
R330	2:E6	3-M6
R332	2:E6	3-L5
R334	1:E6	3-M4
R336	2:E6	3-M4
R338	2:F4	3-N6
R339	2:E5	3-N5
R340	2:F5	3-P5
R341	2:F5	3-Q5
R342	2:E5	3-Q6
&R344	2:F5	3-R6
R346	2:F5	3-R7
R348	2:E6	3-R5
%R349	2:E6	3-R4
R350	2:E5	3-A2
R351	2:E6	3-A2
R352	2:E5	3-B2
R354	2:E5	3-B2
R356	2:F4	3-C2
R358	2:F3	3-D3
R360	2:F3	3-D2
R362	2:E4	3-D1
R364	2:F3	3-D1
R366	2:F3	3-D2
R368	2:E4	3-E1
R370	2:E3	3-E2
R372	2:E3	3-F3
R374	2:E4	3-G2
R376	2:E4	3-F1
R378	2:E3	3-G3
R380	2:E4	3-G2
R382	2:E4	3-H2
R384	2:E4	3-H2
R386	2:E5	3-L3
R388	2:E5	3-L3
R390	1:E5	3-L2
R392	2:E5	3-L2
R393	2:E5	3-Q3
R394	2:E5	3-M2
R395	2:F3	3-N2
R396	2:E3	3-P2
R397	2:E3	3-Q2
R398	2:E3	3-Q1
R399	1:E3	3-P1
R405	2:N8	4-B5
R410	2:L8	4-E5
R415	2:L8	4-F4
R420	2:L8	4-G4
R425	2:L8	4-G5
R430	2:L8	4-G6

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Device	PCB	Circuit
R435	2:M7	4-G6
R440	2:K8	4-J5
R445	2:H8	4-N4
R450	2:H8	4-N5
R455	2:H8	4-N4
R460	2:G7	4-P6
R465	2:G7	4-P6
R470	2:G7	4-P6
R475	2:G7	4-P4
R510	1:K6	5-J9
R515	1:H6	5-J5
R555	1:K5	5-K1
R615	1:M5	6-C9
R617	1:M5	6-F8
R619	1:M6	6-L8
R621	1:M6	6-L8
R625	1:N6	6-L7
R629	1:M5	6-P6
R633	1:M5	6-Q8
R636	1:N5	6-K6
R637	1:N5	6-K5
R641	1:N5	6-L4
R645	1:N5	6-L5
R649	1:M5	6-M5
R653	1:M5	6-Q4
R681	1:L5	6-L2
R685	1:L5	6-N2
R689	1:L6	6-Q3
R693	1:L6	6-Q1
R696	1:L6	6-Q1
R701	1:J4	7-A9
R702	1:J4	7-C9
R703	1:J4	7-C8
R706	1:J3	7-B6
R707	1:J3	7-C7
R708	1:J2	7-D7
R709	1:H2	7-E7
R710	1:J3	7-B6
R711	1:H3	7-B6
R712	1:J4	7-E9
R742	1:H2	7-B4
R743	1:H2	7-C5
R744	1:G2	7-D4
R746	1:H3	7-E4
R747	1:H3	7-E5
R748	1:J2	7-A1
R749	1:J2	7-B1
R750	1:H4	7-H7
R752	1:G4	7-F5
R753	1:G4	7-F3
R754	1:G3	7-F3
R756	1:G3	7-G5
R757	1:G4	7-H4
R758	1:H3	7-H4
R759	1:H3	7-J4
R760	1:H3	7-K4
R762	1:H3	7-K4
R763	1:H4	7-L4
R765	1:H3	7-H2
R766	1:G3	7-J3
R767	1:H3	7-K2
R769	1:H3	7-K3
R771	1:H4	7-L3
R772	1:G4	7-L2
R774	1:H4	7-L2
R775	1:H4	7-N2
R780	1:G2	7-P1
R782	1:G3	7-P0
R784	1:G3	7-P1
R785	1:G3	7-Q1
R786	1:G2	7-R1
R787	1:G2	7-R1
R790	1:G3	7-P0
R791	1:G3	7-Q0
R804	1:J3	8-C7
R805	1:J3	8-C7
R808	1:K2	8-B6
R809	1:K2	8-C6
R810	1:L2	8-D6
R811	1:L2	8-D6
R812	1:K2	8-C6
R813	1:K2	8-C5
R815	1:K2	8-E4
R816	1:K2	8-F4
R818	1:K2	8-F5
R819	1:L2	8-F5
R820	1:K4	8-B4
R821	1:L4	8-C4
R822	1:L4	8-D3
R823	1:L4	8-D4
R824	1:K4	8-L8
R825	1:K4	8-L8
R826	1:K4	8-L8
R827	1:K4	8-L7
R828	1:K4	8-L7
R829	1:K4	8-P9
R830	1:K3	8-P9
R831	1:K3	8-P9
R832	1:K3	8-P8
R833	1:K3	8-P8
R835	1:K3	8-P8
R836	1:K3	8-P8
R837	1:K3	8-P7
R840	1:K3	8-P7
R841	1:K3	8-P7
R842	1:K3	8-P6
R843	1:K3	8-P6
R844	1:L2	8-M5
R845	1:L2	8-M5
R846	1:L4	8-L6
R847	1:L4	8-M6
R848	1:L4	8-Q5
R849	1:J2	8-Q5
R850	1:J2	8-Q4
R851	1:L4	8-Q4
R852	1:L2	8-N4
R853	1:L2	8-Q4
R854	1:N3	8-C1
R855	1:N3	8-C2
R856	1:N3	8-D2
R857	1:N4	8-D2
R858	1:N3	8-C0
R859	1:N3	8-D0
R860	1:N3	8-E0
R861	1:M3	8-F0
R863	1:N3	8-F2
R865	1:M3	8-G2
R866	1:M3	8-H2
R867	1:M3	8-G1
R868	1:N4	8-G0
R869	1:M3	8-G0
R870	1:M3	8-H0
R871	1:N3	8-H0
R872	1:N4	8-H0
R873	1:N4	8-K0
R875	1:M4	8-J1
R876	1:M3	8-K1
R877	1:M2	8-K1
R878	1:M2	8-K0
R879	1:M2	8-K0
R881	1:M4	8-K2
R882	1:M4	8-L3
R884	1:M3	8-N3
R885	1:M3	8-N2
R886	1:M3	8-P3
R887	1:M3	8-P3
R888	1:M3	8-P2
R889	1:M3	8-M1
R890	1:M3	8-N1
R891	1:M2	8-M1
R892	1:M2	8-N0
R894	1:M2	8-P0
R895	1:M2	8-Q1
R897	1:M2	8-Q1
R898	1:M2	8-Q2
RL210	1:C2	2-P4
RL210	1:C2	2-K1
RL210	1:C2	2-P5
RV205	1:B5	2-M7
RV210	1:B7	2-K3
RV220	1:D7	2-F5
RV230	1:B8	2-A2
RV235	1:C4	2-C0
RV310	1:F4	3-E1
RV320	1:E3	3-Q2
SHLD610	1:L6	6-J3
SK320	1:E5	3-L1
SK330	1:E3	3-Q1
SK501	1:G6	5-D6
SK502	1:G6	5-D5
SK503	1:G6	5-D4
SK504	1:G5	5-D3
SK505	1:G5	5-D2
SK513	1:H5	5-G3
SK522	1:H6	5-K5
SK531	1:K6	5-N6
SK532	1:K5	5-N5
SK533	1:K5	5-N4
SK534	1:K5	5-N3
SK535	1:K5	5-N2
SK805	1:K3	8-Q9
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7
SK805	1:K3	8-Q5
SK805	1:K3	8-Q7
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q6
SK810	1:L3	8-H5
SL210	2:B8	2-E2
SL220	2:B8	2-D2
SW201	1:B4	2-A6
T210	1:C3	2-Q2
T610	1:L6	6-N2
TP201	1:D3	2-P8
TP202	1:D7	2-D9
TP309	1:E9	3-A5
TP310	1:E7	3-E5
TP311	1:E4	3-M6
TP313	1:E4	3-J2
TP314	1:E5	3-R5
TP408	2:N8	4-B5
TP409	2:L7	4-D5
TP410	2:J8	4-J5
TP411	2:H8	4-M5
TP412	1:G8	4-Q5
TP601	1:N5	6-K9
TP602	1:L6	6-R9
TP603	1:L5	6-J2
TP604	1:L4	6-N6
TP607	1:L4	6-F9
TP710	1:H4	7-J5
X310	1:F4	3-N6
&XF300A	1:E8	3-C5
&XF300B	1:E8	3-D5
&XF301	1:E7	3-H5
&XF302	1:F5	3-P5

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T855 Parts List (IPN 220-01396-03)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

Capacitor IPN Change	The IPN of the 8p2 chip capacitors used in the T855 has been changed from 015-21820-01 to 015-21820-02. The components themselves have not changed (780047/48/49/50).
D111	Changed from MR750 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).
#FL410, #FL420	Two metal shields (IPN 319-01231-00) were added on the bottom side of the PCB to cover the helical pins to improve spurious response (710988).
Q310	Changed from BF247A (IPN 000-50020-18) to J310 (IPN 000-00033-10) as BF247A obsolete (710889).
Q540	Changed from BCW60 (IPN 000-10008-48) to BC817-25 (IPN 000-10008-17) as BCW60 is underrated (711093).
R302	Changed from 39Ω (IPN 036-12390-00) to 100Ω (IPN 036-13100-00) when Q310 changed to J310 (710889).
R306	Changed from 10Ω (IPN 036-12100-00) to 39Ω (IPN 036-12390-00) when Q310 changed to J310 (710889).
070-02001-00	Red front panel LED: replaced by 008-00014-79 (see D250) (710928).
070-02002-00	Green front panel LED: replaced by 008-00014-80 (see D280) (710928).
303-11169-03	T800 chassis: replaced by 303-11169-04
312-01052-01	T800 top lid: replaced by 312-01052-02
312-01053-01	T800 bottom lid: replaced by 312-01053-02
	New chassis and lid tooling introduced, incorporating mechanical improvements and better RF shielding (750027, 750028 & 750029). Note that the new lids should be used only with the new chassis.
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).

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Ref	Var	IPN	Description
C201		020-08100-04	CAP ELE RA 10M 16V 4X7MM
&C203	10	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	13	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	15	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C203	20	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	23	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	25	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C203	30	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C203	35	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	10	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	13	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	15	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C205	20	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	23	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	25	015-25100-08	CAP CER 0805 10N 10% X7R 50V
&C205	30	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C205	35	015-25100-08	CAP CER 0805 10N 10% X7R 50V
C207		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C209		020-08470-02	CAP ELE RA 47M 16V 6X11MM
C210		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C211		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C213		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C215		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C217		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C219		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C221		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C222		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C227		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C229		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C231		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C233		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C235		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C237		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C238		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C239		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C240A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C240B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C240C		020-09220-01	CAP ELE RA 220M 16V 10X12.5MM
C249		020-09470-05	CAP ELE RAD 470M 16V 10X12.5MM
C251		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C253		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C255		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C257		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C259		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C260A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C260B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C260C		020-09220-01	CAP ELE RA 220M 16V 10X12.5MM
C261		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C262		020-09100-03	CAP ELE RA 100M 16V 8X11MM
C264		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C266		020-07470-91	CAP ELE RA 4M7 63V 6X11MM BI-P
C268		020-07470-91	CAP ELE RA 4M7 63V 6X11MM BI-P
C270		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C272		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C274		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C276		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C278		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C280		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C286		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C302		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C306		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C308		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C310		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C312		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C314		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C316		015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C318	10	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	13	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	15	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C318	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C320	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	13	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	15	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	23	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	25	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C320	35	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C322	10	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	13	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	15	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	20	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	23	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	25	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	30	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C322	35	015-22150-01	CAP CER 0805 15P 5% NPO 50V
&C324	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	13	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	15	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	23	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	25	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C324	35	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
&C326	10	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	13	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	15	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
&C326	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C328		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C330		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C331		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C332		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C334	10	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	13	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	15	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C334	20	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	23	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	25	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C334	30	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C334	35	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C336	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	15	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C336	20	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	23	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	25	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C336	30	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C336	35	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C338	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	15	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	20	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	23	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	25	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
&C338	30	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C338	35	015-22120-01	CAP CER 0805 12P 5% NPO 50V
&C340	10	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	13	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	15	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C340	20	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	23	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	25	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C340	30	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C340	35	015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C342		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C344		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C346		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C347		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C348		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C349		015-21270-01	CAP CER 0805 2P7+-1/4P NPO 50V
C350		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C352		015-22270-01	CAP CER 0805 27P 5% NPO 50V
C354		025-08100-04	(L) CAP10M 35V 10%TANT2.5L/S
C355		025-08100-04	(L) CAP10M 35V 10%TANT2.5L/S
C356		015-22120-01	CAP CER 0805 12P 5% NPO 50V
C357		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C358		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C359		025-08100-04	(L) CAP10M 35V 10%TANT2.5L/S
C360		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C361		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C362		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C364		015-22390-01	CAP CER 0805 39P 5% NPO 50V
C366		015-22390-01	CAP CER 0805 39P 5% NPO 50V
C367		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C368		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C370		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C372		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C374		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C376		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C378		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C380		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C382		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C384		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C386		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C388		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C390		025-08100-02	CAP TANT BEAD 10M 10% 16V
C392		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C394		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C410		015-21180-01	CAP CER 0805 1P8+-1/4P NPO 50V
C420		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C430		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C440		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C450		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C470		015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
C480		015-22560-01	CAP CER 0805 56P 5% NPO 50V
C505		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C515		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C530		014-08220-01	(L)CAP TANT 22UF10V276MSER
C535		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C610A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C610B		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611A		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C623		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C625		020-09470-07	CAPEL470M16V20%V 8*20 3.5L.ESR
C626		015-24470-08	CAP CER 0805 4N7 10% X7R 50V

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Ref	Var	IPN	Description
C628		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C630		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631B		025-08100-02	CAP TANT BEAD 10M 10% 16V
C637		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C640		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C651		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C658		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C660		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C665		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C670		025-07330-01	CAP TANT BEAD 3M3 35V
C673		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C677		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C681		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C684		025-08100-02	CAP TANT BEAD 10M 10% 16V
C687		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C690		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C693		025-08100-02	CAP TANT BEAD 10M 10% 16V
C700		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C702		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C703		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C705		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C707		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C708		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C709		015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
C710A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C710B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C710C		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C711		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C712		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C713		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C735		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C736		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C740A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C740B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C741A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C741B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C742A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C742B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C743		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C745		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C750		025-08100-03	CAP 10M 35V 20% TANT 5MM L/S
C757		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C759		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C761		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C762		014-08220-01	(L)CAP TANT 22UF10V276MSER
C764		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C765		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C767		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C769		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C770		014-08220-01	(L)CAP TANT 22UF10V276MSER
C772		014-08220-01	(L)CAP TANT 22UF10V276MSER
C774		022-06100-16	CAP METAL POLY 100N +-10% 100V
C776		015-24680-08	CAP CER 0805 6N8 10% X7R 50V
C782		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C784		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C786		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C788		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C791		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C792		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C810		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C812		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C813		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C814		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C815		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C816		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C818		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C819		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C820		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C822		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C824		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C826		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C828		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C830		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C832		016-07100-01	CAP EL 6X4 1M 20% 50V
C833		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C834		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C836		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C837		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C838		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C840		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C842		016-07100-01	CAP EL 6X4 1M 20% 50V
C844		016-07100-01	CAP EL 6X4 1M 20% 50V
C846		016-07100-01	CAP EL 6X4 1M 20% 50V
C848		016-07100-01	CAP EL 6X4 1M 20% 50V
C850		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C873		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C876		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C879		020-08100-04	CAP ELE RA 10M 16V 4X7MM
C910		015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
C920		015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
C930		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C940		015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
C950		015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
D111		001-00011-60	S) DIODE MR750 OR SR2607
D220		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D230		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D240		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D250		008-00014-79	S)LED 3MM RED WITH WIRE
D260		001-10084-33	S)DIODE ZENSMD BZX84C3V3 SOT23
D270		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D280		008-00014-80	S)LED 3MM GREEN WITH WIRE
D285		001-00011-70	S) DIODE 1N4001 1A/50V
D289		001-00011-70	S) DIODE 1N4001 1A/50V
D290		001-00011-70	S) DIODE 1N4001 1A/50V
D295		001-00011-70	S) DIODE 1N4001 1A/50V
D310		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D350		001-10000-17	S) DIODE SMD DUAL BAT-17 SOT23
D610		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D640		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D730		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D740		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D820		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D860		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D880		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
#FL410	10	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	13	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	15	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL410	20	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	23	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	25	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL410	30	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL410	35	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL420	10	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	13	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	15	051-00576-00	COIL HELIC 400-440MHz T855SII
#FL420	20	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	23	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	25	051-00577-00	COIL HELIC 440-480MHz T855SII
#FL420	30	051-00578-00	COIL HELIC 480-530MHz T855SII
#FL420	35	051-00578-00	COIL HELIC 480-530MHz T855SII
IC210		002-00012-40	S) IC 358 DUAL O-AMP
IC240		002-00014-05	S) IC TDA7231 1.6W AF PWR
IC260		002-00014-05	S) IC TDA7231 1.6W AF PWR
IC270		002-00012-40	S) IC 358 DUAL O-AMP
IC280		002-00012-40	S) IC 358 DUAL O-AMP
IC310		002-00014-73	S) IC MC3361CP IF AMP
IC320		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC410		002-00022-01	S)MIXER DBLE TAK BLNCD2-750MHZ
IC610		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC630		002-00014-62	S) IC 317L 100MA REG 3TER TO92
IC640		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC650		002-10012-32	SMD DS1232LPS-2 LP RESET&W-DOG
=IC700		539-00010-50	TCXO 12.8MHZ +-1PPM -20 +70C
IC710		002-74900-04	S) IC SMD 74HC04D 6X INV BUFFD
IC740		002-14519-10	S) IC MC145191F SMD SYNTH
IC750		002-10330-78	S) IC MC33078D 2X AMP LO NOISE
IC810		002-08951-20	S) IC AT89C51 PLCC44 MIC 12MHZ
IC820		002-12416-00	S)IC SMD AT24C16N-10SC EEPROM
IC830		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC840		002-10040-53	S)MC14053B SMD BREAK B4 MAKE
IC850		002-10003-24	S) IC SMD 324 4X O-AMP SO14
L230		056-00021-02	IND FXD 100UH AX
L310		050-00016-22	COIL TAIT NO 622 20-120M
L320		050-00016-22	COIL TAIT NO 622 20-120M
L330		050-00016-22	COIL TAIT NO 622 20-120M
L340		050-00016-22	COIL TAIT NO 622 20-120M
L350		050-00016-22	COIL TAIT NO 622 20-120M
L360		050-00016-22	COIL TAIT NO 622 20-120M
L370		050-00016-22	COIL TAIT NO 622 20-120M
L380		050-00016-22	COIL TAIT NO 622 20-120M
L385		050-00016-22	COIL TAIT NO 622 20-120M
L390		050-00016-31	COIL TAIT NO 631 455KHZ
L420		056-00021-04	IND FXD 330NH AX
L440		056-00021-04	IND FXD 330NH AX
L740		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L910		052-08125-25	COIL A/W 2.5T/2.5MM HOR 0.8MM
L920		052-08140-15	COIL A/W 1.5T/4.0MM HOR 0.8MM
L930		052-08140-15	COIL A/W 1.5T/4.0MM HOR 0.8MM
L940		052-08125-25	COIL A/W 2.5T/2.5MM HOR 0.8MM
PL200		240-00020-72	HEADER 2W PCB MG ULTREX
PL210		240-00020-59	HEADER 3 W 1 R PCB MTG
PL220		240-00020-59	HEADER 3 W 1 R PCB MTG
PL230		240-00020-63	HEADER 4 W X1R PCB MTG
PL240		240-00020-58	HEADER 5 WX1 R PCB MTG
PL250		240-00020-59	HEADER 3 W 1 R PCB MTG
PL260		240-00020-59	HEADER 3 W 1 R PCB MTG
PL270		240-00020-59	HEADER 3 W 1 R PCB MTG
Q210		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q220		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q230		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q240		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q245		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q250		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q255		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q260		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q270		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q280		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q290		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q310		000-50020-18	S) XSTR AI BF247A JFETTO92 VHF

Ref	Var	IPN	Description
Q320		000-10008-92	S) XSTR SMD BFS17 NPN SOT23
Q330		000-10009-91	S) XSTR SMD BF991 DG MFET
Q340		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q350		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q360		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q410		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q540		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q620		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q630		000-50011-30	S) XSTR AI BC557B PNP TO92 AF
Q660		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q670		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q750		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q760		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q770		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q775		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q780		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q785		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q790		000-10003-12	S) XSTR SMD BFR31 N JFET SOT23
Q795		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q810		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q820		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q840		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q850		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q860		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q870		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q880		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q890		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q895		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
R160		036-12100-00	RES M/F 0805 10E 5%
R201		036-14470-00	RES M/F 0805 4K7 5%
&R202	10	036-14470-00	RES M/F 0805 4K7 5%
&R202	13	036-14470-00	RES M/F 0805 4K7 5%
&R202	15	036-14330-00	RES M/F 0805 3K3 5%
&R202	20	036-14470-00	RES M/F 0805 4K7 5%
&R202	23	036-14470-00	RES M/F 0805 4K7 5%
&R202	25	036-14330-00	RES M/F 0805 3K3 5%
&R202	30	036-14470-00	RES M/F 0805 4K7 5%
&R202	35	036-14330-00	RES M/F 0805 3K3 5%
R204		036-15100-00	RES M/F 0805 10K 5%
R205		036-16220-00	RES M/F 0805 220K 5%
R207		036-14820-00	RES M/F 0805 8K2 5%
&R209	10	036-15220-00	RES M/F 0805 22K 5%
&R209	13	036-15220-00	RES M/F 0805 22K 5%
&R209	15	036-15180-00	RES M/F 0805 18K 5%
&R209	20	036-15220-00	RES M/F 0805 22K 5%
&R209	23	036-15220-00	RES M/F 0805 22K 5%
&R209	25	036-15180-00	RES M/F 0805 18K 5%
&R209	30	036-15220-00	RES M/F 0805 22K 5%
&R209	35	036-15180-00	RES M/F 0805 18K 5%
R210		036-15150-00	RES M/F 0805 15K 5%
R211		036-15390-00	RES M/F 0805 39K 5%
R213		036-14270-00	RES M/F 0805 2K7 5%
R215		036-15150-00	RES M/F 0805 15K 5%
R218		036-14390-00	RES M/F 0805 3K9 5%
&R219	10	036-14820-00	RES M/F 0805 8K2 5%
&R219	13	036-14820-00	RES M/F 0805 8K2 5%
&R219	15	036-14470-00	RES M/F 0805 4K7 5%
&R219	20	036-14820-00	RES M/F 0805 8K2 5%
&R219	23	036-14820-00	RES M/F 0805 8K2 5%
&R219	25	036-14470-00	RES M/F 0805 4K7 5%
&R219	30	036-14820-00	RES M/F 0805 8K2 5%
&R219	35	036-14470-00	RES M/F 0805 4K7 5%
R221		036-15470-00	RES M/F 0805 47K 5%
R222		036-16100-00	RES M/F 0805 100K 5%
%R223		036-12100-00	RES M/F 0805 10E 5%
R224		036-14390-00	RES M/F 0805 3K9 5%
R225		036-13470-00	RES M/F 0805 470E 5%
R227		036-14100-00	RES M/F 0805 1K 5%
R229		036-14470-00	RES M/F 0805 4K7 5%
R230		036-14470-00	RES M/F 0805 4K7 5%
R232		036-15470-00	RES M/F 0805 47K 5%
R233		036-14820-00	RES M/F 0805 8K2 5%
R234		036-15470-00	RES M/F 0805 47K 5%
R236		036-15470-00	RES M/F 0805 47K 5%
R238		036-11470-00	RES M/F 0805 4E7 10%
R239		036-14100-00	RES M/F 0805 1K 5%
R241		036-14100-00	RES M/F 0805 1K 5%
R242		036-13100-00	RES M/F 0805 100E 5%
R244		036-14680-00	RES M/F 0805 6K8 5%
R245		036-14100-00	RES M/F 0805 1K 5%
R247		036-14220-00	RES M/F 0805 2K2 5%
R249		036-15100-00	RES M/F 0805 10K 5%
R251		036-15390-00	RES M/F 0805 39K 5%
R252		036-14470-00	RES M/F 0805 4K7 5%
R254		036-14820-00	RES M/F 0805 8K2 5%
R255		036-15470-00	RES M/F 0805 47K 5%
R256		036-14470-00	RES M/F 0805 4K7 5%
R258		036-15470-00	RES M/F 0805 47K 5%
R260		036-11470-00	RES M/F 0805 4E7 10%
R261		036-13150-00	RES M/F 0805 150E 5%
R262		036-14100-00	RES M/F 0805 1K 5%
R264		036-15270-00	RES M/F 0805 27K 5%
R265		036-13100-00	RES M/F 0805 100E 5%
R266		036-15220-00	RES M/F 0805 22K 5%
R267		036-16330-00	RES M/F 0805 330K 5%
R269		036-14220-00	RES M/F 0805 2K2 5%
R271		036-16100-00	RES M/F 0805 100K 5%
R272		036-15470-00	RES M/F 0805 47K 5%
R273		036-15150-00	RES M/F 0805 15K 5%
R275		036-13100-00	RES M/F 0805 100E 5%
R277		036-14560-00	RES M/F 0805 5K6 5%
R278		036-16220-00	RES M/F 0805 220K 5%
R280		036-16100-00	RES M/F 0805 100K 5%
R281		036-14470-00	RES M/F 0805 4K7 5%
R282		036-16100-00	RES M/F 0805 100K 5%
R284		036-13100-00	RES M/F 0805 100E 5%
R285		036-15470-00	RES M/F 0805 47K 5%
R287		036-15100-00	RES M/F 0805 10K 5%
R288		036-14470-00	RES M/F 0805 4K7 5%
R289		036-14680-00	RES M/F 0805 6K8 5%
R290		036-14100-00	RES M/F 0805 1K 5%
R292		036-14680-00	RES M/F 0805 6K8 5%
R293		036-13560-00	RES M/F 0805 560E 5%
R294		036-14100-00	RES M/F 0805 1K 5%
R295		036-14680-00	RES M/F 0805 6K8 5%
R296		036-14120-00	RES M/F 0805 1K2 5%
R297		030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
R298		036-15470-00	RES M/F 0805 47K 5%
R299		036-15470-00	RES M/F 0805 47K 5%
R302		036-12390-00	RES M/F 0805 39E 5%
R304		036-14270-00	RES M/F 0805 2K7 5%
R306		036-12100-00	RES M/F 0805 10E 5%
R308		036-12100-00	RES M/F 0805 10E 5%
R310		036-10000-00	RES M/F 0805 ZERO OHM
R312		036-14330-00	RES M/F 0805 3K3 5%
R314		036-14470-00	RES M/F 0805 4K7 5%
R316		036-12470-00	RES M/F 0805 47E 5%
R318		036-15100-00	RES M/F 0805 10K 5%
R320		036-14390-00	RES M/F 0805 3K9 5%
R322		036-14820-00	RES M/F 0805 8K2 5%
R323		036-15100-00	RES M/F 0805 10K 5%
R324		036-15220-00	RES M/F 0805 22K 5%
R326		036-15100-00	RES M/F 0805 10K 5%
R328		036-14100-00	RES M/F 0805 1K 5%
R330		036-12470-00	RES M/F 0805 47E 5%
R332		036-13330-00	RES M/F 0805 330E 5%
R334		045-03150-01	RES NTC 150E 0.5W 5MM DISC
R336		036-13470-00	RES M/F 0805 470E 5%
R337		036-13220-00	RES M/F 0805 220E 5%
R338		036-14100-00	RES M/F 0805 1K 5%
R339		036-15100-00	RES M/F 0805 10K 5%
R340		036-10000-00	RES M/F 0805 ZERO OHM
R341		036-10000-00	RES M/F 0805 ZERO OHM
&R344	10	036-15560-00	RES M/F 0805 56K 5%
&R344	13	036-15560-00	RES M/F 0805 56K 5%
&R344	15	036-15820-00	RES M/F 0805 82K 5%
&R344	20	036-15560-00	RES M/F 0805 56K 5%
&R344	23	036-15560-00	RES M/F 0805 56K 5%
&R344	25	036-15820-00	RES M/F 0805 82K 5%
&R344	30	036-15560-00	RES M/F 0805 56K 5%
&R344	35	036-15820-00	RES M/F 0805 82K 5%
R346		036-12100-00	RES M/F 0805 10E 5%
R348		036-13220-00	RES M/F 0805 220E 5%
R350		036-15180-00	RES M/F 0805 18K 5%
R351		036-15100-00	RES M/F 0805 10K 5%
R352		036-16390-00	RES M/F 0805 390K 5%
R353		036-10000-00	RES M/F 0805 ZERO OHM
R354		036-17100-00	RES M/F 0805 1M 5%
R356		036-13180-00	RES M/F 0805 180E 5%
R358		036-12470-00	RES M/F 0805 47E 5%
R360		036-15150-00	RES M/F 0805 15K 5%
R362		036-14330-00	RES M/F 0805 3K3 5%
R364		036-14100-00	RES M/F 0805 1K 5%
R365		036-16150-00	RES M/F 0805 150K 5%
R366		036-14330-00	RES M/F 0805 3K3 5%
R367		036-16150-00	RES M/F 0805 150K 5%
R368		036-15220-00	RES M/F 0805 22K 5%
R370		036-16100-00	RES M/F 0805 100K 5%
R372		036-14270-00	RES M/F 0805 2K7 5%
R374		036-14100-00	RES M/F 0805 1K 5%
R376		036-10000-00	RES M/F 0805 ZERO OHM
R378		036-16100-00	RES M/F 0805 100K 5%
R380		036-15100-00	RES M/F 0805 10K 5%
R382		036-15470-00	RES M/F 0805 47K 5%
R384		036-15470-00	RES M/F 0805 47K 5%
R386		036-15120-00	RES M/F 0805 12K 5%
R388		036-15100-00	RES M/F 0805 10K 5%
R390		045-05100-01	RES NTC 10K 5% 5MM DISC
R392		036-10000-00	RES M/F 0805 ZERO OHM
R393		036-15100-00	RES M/F 0805 10K 5%
R394		036-12470-00	RES M/F 0805 47E 5%
R395		036-10000-00	RES M/F 0805 ZERO OHM
R396		036-13390-00	RES M/F 0805 390E 5%
R397		036-13820-00	RES M/F 0805 820E 5%
R398		036-14220-00	RES M/F 0805 2K2 5%
R399		045-05100-01	RES NTC 10K 5% 5MM DISC
R405		036-10000-00	RES M/F 0805 ZERO OHM
R410		036-10000-00	RES M/F 0805 ZERO OHM
R415		036-13330-00	RES M/F 0805 330E 5%
R420		036-12100-00	RES M/F 0805 10E 5%
R425		036-14100-00	RES M/F 0805 1K 5%
R430		036-13150-00	RES M/F 0805 150E 5%
R435		036-12100-00	RES M/F 0805 10E 5%
R440		036-10000-00	RES M/F 0805 ZERO OHM
R445		036-13470-00	RES M/F 0805 470E 5%

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Ref	Var	IPN	Description
R450		036-12100-00	RES M/F 0805 10E 5%
R455		036-13470-00	RES M/F 0805 470E 5%
R460		036-13180-00	RES M/F 0805 180E 5%
R465		036-12330-00	RES M/F 0805 33E 5%
R470		036-13180-00	RES M/F 0805 180E 5%
R475		036-12470-00	RES M/F 0805 47E 5%
R510		036-14220-00	RES M/F 0805 2K2 5%
R515		036-12560-00	RES M/F 0805 56E 5%
R555		036-13470-00	RES M/F 0805 470E 5%
R615		036-13100-00	RES M/F 0805 100E 5%
R617		036-10000-00	RES M/F 0805 ZERO OHM
R619		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM
R621		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM
R625		036-14100-00	RES M/F 0805 1K 5%
R629		032-33270-00	RES M/F PWR 270E 5% 1W 12X4.5
R633		036-14680-00	RES M/F 0805 6K8 5%
R636		036-12330-00	RES M/F 0805 33E 5%
R637		036-12330-00	RES M/F 0805 33E 5%
R641		036-14150-00	RES M/F 0805 1K5 5%
R645		036-13470-00	RES M/F 0805 470E 5%
R649		036-14470-00	RES M/F 0805 4K7 5%
R653		036-15100-00	RES M/F 0805 10K 5%
R681		036-13100-00	RES M/F 0805 100E 5%
R685		036-15150-00	RES M/F 0805 15K 5%
R689		036-12100-00	RES M/F 0805 10E 5%
R693		036-16100-00	RES M/F 0805 100K 5%
R696		036-15560-00	RES M/F 0805 56K 5%
R701		036-12220-00	RES M/F 0805 22E 5%
R702		036-17100-00	RES M/F 0805 1M 5%
R703		036-17100-00	RES M/F 0805 1M 5%
R706		036-15150-00	RES M/F 0805 15K 5%
R707		036-15470-00	RES M/F 0805 47K 5%
R708		036-13100-00	RES M/F 0805 100E 5%
R709		036-13100-00	RES M/F 0805 100E 5%
R710		036-13100-00	RES M/F 0805 100E 5%
R711		036-13100-00	RES M/F 0805 100E 5%
R712		036-12100-00	RES M/F 0805 10E 5%
R742		036-13150-00	RES M/F 0805 150E 5%
R743		036-13150-00	RES M/F 0805 150E 5%
R744		036-12220-00	RES M/F 0805 22E 5%
R746		036-12220-00	RES M/F 0805 22E 5%
R747		036-12220-00	RES M/F 0805 22E 5%
R748		036-15470-00	RES M/F 0805 47K 5%
R749		036-15470-00	RES M/F 0805 47K 5%
R750		036-12220-00	RES M/F 0805 22E 5%
R752		036-12220-00	RES M/F 0805 22E 5%
R753		036-17100-00	RES M/F 0805 1M 5%
R754		036-14100-00	RES M/F 0805 1K 5%
R756		036-16470-00	RES M/F 0805 470K 5%
R757		036-16470-00	RES M/F 0805 470K 5%
R758		036-14120-00	RES M/F 0805 1K2 5%
R759		036-13330-00	RES M/F 0805 330E 5%
R760		036-13180-00	RES M/F 0805 180E 5%
R762		036-13100-00	RES M/F 0805 100E 5%
R763		036-13100-00	RES M/F 0805 100E 5%
R765		036-13680-00	RES M/F 0805 680E 5%
R766		036-14100-00	RES M/F 0805 1K 5%
R767		036-13680-00	RES M/F 0805 680E 5%
R769		036-13180-00	RES M/F 0805 180E 5%
R771		036-14820-00	RES M/F 0805 8K2 5%
R772		036-15220-00	RES M/F 0805 22K 5%
R774		036-14820-00	RES M/F 0805 8K2 5%
R775		036-15180-00	RES M/F 0805 18K 5%
R780		036-12680-00	RES M/F 0805 68E 5%
R782		036-12180-00	RES M/F 0805 18E 5%
R784		036-13120-00	RES M/F 0805 120E 5%
R785		036-14330-00	RES M/F 0805 3K3 5%
R786		036-12100-00	RES M/F 0805 10E 5%
R787		036-12100-00	RES M/F 0805 10E 5%
R790		036-13390-00	RES M/F 0805 390E 5%
R791		036-14100-00	RES M/F 0805 1K 5%
R804		036-15470-00	RES M/F 0805 47K 5%
R805		036-13470-00	RES M/F 0805 470E 5%
R808		036-12100-00	RES M/F 0805 10E 5%
R809		036-14470-00	RES M/F 0805 4K7 5%
R810		036-14470-00	RES M/F 0805 4K7 5%
R811		036-14470-00	RES M/F 0805 4K7 5%
R812		036-14470-00	RES M/F 0805 4K7 5%
R813		036-14470-00	RES M/F 0805 4K7 5%
R815		036-15470-00	RES M/F 0805 47K 5%
R816		036-16150-00	RES M/F 0805 150K 5%
R818		036-14470-00	RES M/F 0805 4K7 5%
R819		036-14470-00	RES M/F 0805 4K7 5%
R820		036-15470-00	RES M/F 0805 47K 5%
R821		036-15470-00	RES M/F 0805 47K 5%
R822		036-15470-00	RES M/F 0805 47K 5%
R823		036-15470-00	RES M/F 0805 47K 5%
R824		036-14220-00	RES M/F 0805 2K2 5%
R825		036-14220-00	RES M/F 0805 2K2 5%
R826		036-14220-00	RES M/F 0805 2K2 5%
R827		036-14220-00	RES M/F 0805 2K2 5%
R828		036-14220-00	RES M/F 0805 2K2 5%
R829		036-14220-00	RES M/F 0805 2K2 5%
R830		036-14220-00	RES M/F 0805 2K2 5%
R831		036-14220-00	RES M/F 0805 2K2 5%
R832		036-14220-00	RES M/F 0805 2K2 5%
R833		036-14220-00	RES M/F 0805 2K2 5%
R835		036-14220-00	RES M/F 0805 2K2 5%
R836		036-14220-00	RES M/F 0805 2K2 5%
R837		036-14220-00	RES M/F 0805 2K2 5%
R840		036-14220-00	RES M/F 0805 2K2 5%
R841		036-14220-00	RES M/F 0805 2K2 5%
R842		036-14220-00	RES M/F 0805 2K2 5%
R843		036-14220-00	RES M/F 0805 2K2 5%
R844		036-15470-00	RES M/F 0805 47K 5%
R845		036-16150-00	RES M/F 0805 150K 5%
R846		036-14470-00	RES M/F 0805 4K7 5%
R847		036-14470-00	RES M/F 0805 4K7 5%
R848		036-13470-00	RES M/F 0805 470E 5%
R849		036-13470-00	RES M/F 0805 470E 5%
R850		036-13470-00	RES M/F 0805 470E 5%
R851		036-13470-00	RES M/F 0805 470E 5%
R852		036-14470-00	RES M/F 0805 4K7 5%
R853		036-13470-00	RES M/F 0805 470E 5%
R854		036-16330-00	RES M/F 0805 330K 5%
R855		036-15470-00	RES M/F 0805 47K 5%
R856		036-16150-00	RES M/F 0805 150K 5%
R857		036-16150-00	RES M/F 0805 150K 5%
R858		036-15270-10	RES M/F 0805 27K 1%
R859		036-17120-10	RES MF 0805 CHIP 1M2 1%
R860		036-16820-10	RES MF 0805 CHIP 820K 1%
R861		036-14510-10	RES MF 0805 CHIP 5K1 1%
R863		036-14470-00	RES M/F 0805 4K7 5%
R865		036-14270-00	RES M/F 0805 2K7 5%
R866		036-16820-00	RES M/F 0805 820K 5%
R867		036-16820-00	RES M/F 0805 820K 5%
R868		036-14470-00	RES M/F 0805 4K7 5%
R869		036-15270-10	RES M/F 0805 27K 1%
R870		036-17120-10	RES MF 0805 CHIP 1M2 1%
R871		036-16820-10	RES MF 0805 CHIP 820K 1%
R872		036-14510-10	RES MF 0805 CHIP 5K1 1%
R873		036-14220-00	RES M/F 0805 2K2 5%
R875		036-14470-00	RES M/F 0805 4K7 5%
R876		036-16100-00	RES M/F 0805 100K 5%
R877		036-16100-00	RES M/F 0805 100K 5%
R878		036-16100-00	RES M/F 0805 100K 5%
R879		036-16100-00	RES M/F 0805 100K 5%
R881		036-15470-00	RES M/F 0805 47K 5%
R882		036-15470-00	RES M/F 0805 47K 5%
R884		036-16150-00	RES M/F 0805 150K 5%
R885		036-16150-00	RES M/F 0805 150K 5%
R886		036-15100-10	RES M/F 0805 10K 1%
R887		036-14100-10	RES M/F 0805 CHIP 1K 1%
R888		036-14820-10	RES M/F 0805 8K2 1%
R889		036-16100-00	RES M/F 0805 100K 5%
R890		036-16150-00	RES M/F 0805 150K 5%
R891		036-16100-00	RES M/F 0805 100K 5%
R892		036-16330-00	RES M/F 0805 330K 5%
R894		036-14470-00	RES M/F 0805 4K7 5%
R895		036-15100-00	RES M/F 0805 10K 5%
R897		036-15100-00	RES M/F 0805 10K 5%
R898		036-16470-00	RES M/F 0805 470K 5%
RL210		237-00010-22	RELAY 12V DPDT 8PIN DIL PCB MT
RV205		040-05100-22	POT 10K LOG DUAL PCB 6 OD SFT
RV210		040-05100-23	POT 10K LOG PCB 15MM SLOT SFT
RV220		042-05100-06	RES PRE 10K CAR 6MM FLAT
RV230		040-05100-21	POT 10K LIN PCB 15MM SLOT SFT
RV235		042-05100-06	RES PRE 10K CAR 6MM FLAT
RV310		042-04220-06	RES PRE 2K2 CAR 6MM FLAT
RV320		042-04220-06	RES PRE 2K2 CAR 6MM FLAT
SHLD610		062-00010-13	CAN 10MM SQ X 11MM CAN A4M1017
SK320		240-04020-64	SKT JACK 0.98MM PCB MTG 64 WAY
SK330		240-04020-64	SKT JACK 0.98MM PCB MTG 64 WAY
SK501		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK502		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK503		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK504		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK505		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK513		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK522		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK531		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK532		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK533		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK534		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK535		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK805		240-10000-07	CONN SMD SKT 16W 2R M-MATCH
SK810		240-04020-42	SKT 44 PIN SMD PLCC
SW201		230-00010-30	SWITCH TOG SPDT R-ANG PCB MTG
T210		053-00010-17	XFMR T4030 LINE MATCH POTCORE
T610		050-00016-50	COIL TAIT NO 650 455KHZ
&XF300A	10	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	13	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	15	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300A	20	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	23	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	25	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300A	30	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300A	35	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	10	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR

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Ref	Var	IPN	Description
&XF300B	13	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	15	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	20	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	23	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	25	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF300B	30	276-00010-58	FLTR XTAL 45MHZ 15K 4POLE 1PR
&XF300B	35	276-00010-57	FLTR XTAL 45MHZ 7.5K 4POLE 1PR
&XF301	10	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	13	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	15	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE
&XF301	20	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	23	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	25	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE
&XF301	30	276-00010-56	FLTR XTAL 45MHZ 14KHZ BW 2 P
&XF301	35	276-00010-54	FLTR XTAL 45MHZ 7.5KHZ 2POLE
&XF302	10	276-00010-14	FLTR CER 455KHZ E 15KHZ B/W
&XF302	13	276-00010-76	FLTR CER 455KHZ F 12KHZ B/W
&XF302	15	276-00010-13	FLTR CER 455KHZ G 9KHZ B/W
&XF302	20	276-00010-14	FLTR CER 455KHZ E 15KHZ B/W
&XF302	23	276-00010-76	FLTR CER 455KHZ F 12KHZ B/W
&XF302	25	276-00010-13	FLTR CER 455KHZ G 9KHZ B/W
&XF302	30	276-00010-14	FLTR CER 455KHZ E 15KHZ B/W
&XF302	35	276-00010-13	FLTR CER 455KHZ G 9KHZ B/W
X310		274-00010-22	XTAL 44.545MHZ TE/22 HC45/U

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T855 Mechanical & Miscellaneous Parts (220-01396-03)

IPN	Legend	Description
066-00010-20	1	SLUG BRASS A4M764 HELIC RESNTR
070-01001-00	15/28	D-RANGE 15 WAY COMPL T800
070-02001-00		LED RED COMPL T800 RX/TX/EX
070-02002-00		LED GREEN COMPL T800 RX/TX/EX
200-00010-04		WIRE T/C 0.7
220-01145-02	2	PCB T855/856/857 VCO
220-01396-02	3	PCB T855 SERIES II
230-00010-31	4	SWITCH COVER FOR 230-00010-30
240-02100-06	5	SKT COAX N TYPE PNL MTG OP-TER
240-04020-62		SKT 2 W RECEP SHORTING LINK PL210/220/230/240/250/260/270
303-11169-03	6	CHASSIS PAINTED T800 SERIES
303-23118-00	7	COVER A3M2247 D RANGE T855/7
303-50074-00	8	CLIP A3M2246 SPRING CLAMP T857
308-01007-01	9	HANDLE BASE STATION SERIES II
308-01048-00	10	HOUSING A3M2378 DOUBLET H/RES
311-01015-00	11	KNOB 15MM & SKIRT 6MM SFT
312-01052-01	12	LID TOP PNTD A1M2364 T800
312-01053-01	13	LID BOTTOM PNTD A1M2364 T800
316-06622-00	14	PNL FRT RX T800 SERIES II
345-00040-10	16	SCRW M3X6MM P/POZ ST BZ
349-00020-36	17	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	18	SCRW T/T M4X12MM P/POZ BZ
349-00020-45	19	SCRW T/T M4X20MM P/POZ BZ
350-00016-42	20	SPACER 5MM HI 8MM ST 2.5MM HO
352-00010-08	21	NUT M3 COLD FORM HEX ST BZ
352-00010-29	22	NUT M4 NYLOC HEX
352-00010-54	23	NUT BRASS HEX 1/4" UNF 3MM
353-00010-10	24	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-13	25	WSHR M3 S/PROOF INT BZ
356-00010-03		TAG SOLDER 3MM LONG M614/3.2 Main PCB to chassis earth strap (via D-range shield).
362-00010-23	26	GASKET SIL TO-220 CLIP MTG.
362-00010-33	27	GROMMET LED MTG 3MM
365-00011-53		LABEL 104X37MM
365-00100-09		LABEL WHITE VINYL 15X11MM S/A
365-00100-20		LABEL WHITE S/A 28X11MM
365-01541-00		LABEL TX/RX/EX TYPE APR/SER NO
399-00010-51		BAG PLASTIC 75X100MM
410-01081-01		CRT T800 SERIES II
410-01082-01		CRTN 10 T800 KIWI 423X410X360

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replace A4 pages B6.3.39/B6.3.40 with A3 pages B6.3.39/B6.3.40

replace A4 pages B6.3.39/B6.3.40 with A3 pages B6.3.39/B6.3.40

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T855 Grid Reference Index (IPN 220-01396-03)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C201	1:D7	2-B9	&C326	2:E7	3-E5	C611B	1:M5	6-F8	C784	1:G2	7-Q1
&C203	2:C6	2-B8	C328	2:E7	3-F5	C623	1:M6	6-N8	C786	1:G2	7-R1
&C205	2:C6	2-B8	C330	2:F7	3-F6	C625	1:M6	6-Q8	C788	1:G3	7-P0
C207	1:D6	2-C8	C331	2:F7	3-H5	C626	1:M6	6-R8	C791	1:G4	7-Q0
C209	1:C7	2-E8	C332	2:E7	3-G4	C628	1:M6	6-R8	C792	1:G4	7-R0
C210	2:C7	2-C7	&C334	2:F7	3-H5	C630	1:M5	6-K4	C810	1:L4	8-K8
C211	2:C7	2-D7	&C336	2:E7	3-H5	C631A	1:M5	6-M6	C812	1:K2	8-E5
C213	2:C7	2-E7	&C338	2:E7	3-J5	C631B	1:N5	6-M6	C813	1:J3	8-H5
C215	2:C7	2-E7	&C340	2:E7	3-J5	C637	1:M6	6-P5	C814	1:L2	8-Q4
C217	2:C7	2-E7	C342	2:E6	3-K5	C640	1:M5	6-R5	C815	1:N3	8-B2
C219	2:C6	2-H6	C344	2:E6	3-K6	C651	1:M5	6-M4	C816	1:N3	8-B2
C221	2:C6	2-H6	C346	2:E6	3-L5	C658	1:M5	6-J1	C818	1:N3	8-C1
C222	1:C6	2-J9	C347	2:E4	3-M5	C660	1:L5	6-K1	C819	1:N3	8-D1
C223	2:C6	2-J8	C348	2:E6	3-M5	C665	1:L5	6-K1	C820	1:N4	8-E1
C225	2:C6	2-J8	C349	2:E6	3-L6	C670	1:L6	6-L1	C822	1:N3	8-D2
C227	2:C6	2-J8	C350	2:E6	3-M6	C673	1:L5	6-P2	C824	1:N3	8-D2
C229	1:C6	2-K8	C351	2:E4	3-M6	C677	1:M6	6-P1	C826	1:N3	8-D0
C231	1:B3	2-K8	C352	2:E4	3-N5	C681	1:M5	6-R3	C828	1:N3	8-D0
C233	1:B7	2-J7	C354	1:F5	3-N6	C684	1:M6	6-R3	C830	1:M4	8-F1
C235	2:C5	2-M6	C355	1:F4	3-P6	C687	1:L6	6-Q1	C832	1:M3	8-G2
C237	2:C6	2-M5	C356	2:E5	3-N6	C690	1:L6	6-R1	C833	1:M4	8-G1
C238	2:C5	2-N7	C357	2:E5	3-Q5	C693	1:L6	6-R1	C834	1:M3	8-H2
C239	1:C5	2-P6	C358	2:F5	3-Q6	C700	1:J4	7-A8	C836	1:M3	8-G0
C240A	2:B5	2-Q8	C359	1:F4	3-P6	C702	1:J4	7-B8	C837	1:M3	8-G0
C240B	2:B5	2-R8	C360	2:F4	3-R6	C703	1:J3	7-B7	C838	1:N4	8-H0
C240C	1:C5	2-R8	C361	2:F5	3-Q6	C705	1:J3	7-B7	C840	1:M2	8-K1
C249	1:B5	2-Q7	C362	2:E6	3-R4	C707	1:J3	7-B5	C842	1:N2	8-L0
C251	2:A5	2-R7	C364	2:E5	3-A2	C708	1:J3	7-B5	C844	1:N3	8-L0
C253	1:C8	2-G5	C366	2:E5	3-B2	C709	1:H3	7-C5	C846	1:M2	8-M0
C255	2:B7	2-L2	C367	2:E5	3-Q5	C710A	1:H3	7-D8	C848	1:N2	8-M0
C257	2:B6	2-M2	C368	2:F5	3-C2	C710B	1:H4	7-D8	C850	1:M2	8-N0
C259	2:B6	2-M3	C370	2:E4	3-C1	C710C	1:J3	7-F8	C873	1:M4	8-N2
C260A	2:B6	2-P4	C372	2:F3	3-E1	C711	1:J2	7-E7	C876	1:M4	8-P2
C260B	2:B6	2-P4	C374	2:F3	3-D3	C712	1:H2	7-E7	C879	1:M3	8-Q0
C260C	1:B6	2-P4	C376	2:E3	3-E2	C713	1:H2	7-F7	C910	2:P6	9-E6
C261	1:C6	2-N2	C378	2:F3	3-E2	C735	1:J2	7-A1	C920	2:P6	9-F6
C262	1:B5	2-P3	C380	2:E3	3-F2	C736	1:J2	7-B1	C930	2:P7	9-G6
C264	2:B5	2-P2	C382	1:F3	3-G3	C740A	1:H2	7-B4	C940	2:P7	9-H6
C266	1:D2	2-R3	C384	2:E4	3-H2	C740B	1:H2	7-B3	C950	2:N8	9-J6
C268	1:D3	2-R3	C386	2:E4	3-J2	C741A	1:H2	7-C4			
C270	2:B8	2-E3	C388	2:E5	3-M2	C741B	1:G2	7-C3	D111	1:P4	1-R1
C272	2:B8	2-D1	C390	1:E6	3-M2	C742A	1:H2	7-D4	D220	2:D8	2-E4
C274	2:B8	2-E1	C392	2:E4	3-N2	C742B	1:H3	7-D3	D220	2:D8	2-E4
C276	2:C4	2-B0	C394	2:F3	3-P2	C743	1:H2	7-B1	D230	2:C6	2-J4
C278	2:C4	2-C0	C410	2:L8	4-E4	C745	1:G3	7-D1	D230	2:C6	2-J5
C280	2:C4	2-F1	C420	2:L8	4-F5	C750	1:H4	7-H7	D240	2:C8	2-D2
C286	2:B8	2-F1	C430	2:L8	4-G6	C757	1:G4	7-G5	D240	2:C8	2-D3
C302	2:F8	3-C9	C440	1:M7	4-H6	C759	1:G4	7-G4	D250	1:B7	2-H1
C304	2:F8	3-C9	C450	2:K8	4-G5	C761	1:H3	7-J4	D260	2:A7	2-H1
C306	2:F8	3-D8	%C460	2:K8	4-H4	C762	1:G3	7-J4	D270	2:B7	2-H1
C308	2:F8	3-E8	C470	2:G7	4-P5	C764	1:H3	7-J2	D270	2:B7	2-J1
C310	2:F8	3-E8	C480	2:G8	4-Q5	C765	1:G3	7-J2	D280	1:B7	2-K1
C312	1:F7	3-F8	C505	1:K6	5-L8	C767	1:H3	7-K3	D285	1:D2	2-L1
C314	2:F8	3-F8	C515	1:H5	5-F3	C769	1:H4	7-M4	D289	1:C2	2-K0
C316	2:F9	3-F9	C530	1:K5	5-K1	C770	1:H3	7-N4	D290	1:C2	2-L0
&C318	2:E8	3-A5	C535	1:K5	5-L1	C772	1:G4	7-M2	D295	1:C2	2-L0
&C320	2:E8	3-B5	C610A	1:M5	6-C8	C774	1:H4	7-N2	D310	2:E4	3-G2
&C322	2:E8	3-C5	C610B	1:M5	6-D8	C776	1:H4	7-N1	D310	2:E4	3-G1
&C324	2:E7	3-E5	C611A	1:L5	6-E8	C782	1:G2	7-N0	D350	2:E4	3-M4

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Device	PCB	Circuit
D350	2:E4	3-M4
D610	1:N5	6-L6
D610	1:N5	6-M6
D640	1:L5	6-M1
D640	1:L5	6-M2
D730	1:H3	7-H1
D730A	1:H3	7-G0
D740	1:H3	7-J2
D740A	1:H3	7-H0
D820	1:J3	8-B7
D820A	1:J3	8-N0
D860	1:M2	8-N0
D860	1:M2	8-N0
D880	1:M2	8-R2
D880	1:M2	8-R2
#FL410	1:M8	4-C5
#FL420	1:J8	4-K5
IC210	1:C7	2-C7
IC210	1:C7	2-F7
IC210	1:C7	2-G7
IC240	1:B5	2-P7
IC260	1:B6	2-N2
IC270	1:B8	2-F3
IC270	1:B8	2-E2
IC270	1:B8	2-B2
IC280	1:C4	2-E1
IC280	1:C4	2-B0
IC280	1:C4	2-D0
IC310	1:E5	3-Q5
IC310	1:E5	3-N5
IC310	1:E5	3-B2
IC320	1:F3	3-N2
IC410	1:G7	4-P5
IC610	1:M5	6-D8
IC630	1:N5	6-K5
IC640	1:M5	6-N5
IC640	1:M5	6-J0
IC640	1:M5	6-Q5
IC650	1:L5	6-E5
=IC700	1:J3	7-A8
IC710	1:H3	7-D7
IC710	1:H3	7-J0
IC710	1:H3	7-C6
IC710	1:H3	7-D6
IC710	1:H3	7-D6
IC710	1:H3	7-C6
IC710	1:H3	7-E8
IC740	1:H2	7-D1
IC750	1:H4	7-M3
IC750	1:H4	7-H6
IC750	1:H4	7-H5
IC820	1:L4	8-N5
IC830	1:N4	8-J0
IC830	1:N4	8-F1
IC830	1:N4	8-F0
IC830	1:N4	8-H2
IC830	1:N4	8-E2
IC840	1:M2	8-L0
IC850	1:M3	8-N1
IC850	1:M3	8-M2
IC850	1:M3	8-Q2
IC850	1:M3	8-M0
IC850	1:M3	8-M2
L230	1:D2	2-K2
L310	1:F8	3-D9
L320	1:F8	3-E8
L330	1:E8	3-B5
L340	1:E8	3-C5
L350	1:E7	3-D5
L360	1:F6	3-G5
L370	1:E7	3-J5
L380	1:E6	3-L6
L385	1:E4	3-M6

Device	PCB	Circuit
L390	1:F5	3-R6
L410	2:L9	4-F5
L420	1:M7	4-F6
L430	2:K8	4-H5
L440	1:G8	4-Q5
L740	1:G3	7-Q0
L910	1:P6	9-E7
L920	1:P6	9-F7
L930	1:P7	9-G7
L940	1:P8	9-H7
P100	1:Q6	1-R8
P160	1:P2	1-Q4
P170	1:P2	1-R4
P201	1:D4	2-A9
P204	1:D7	2-A9
P207	1:D6	2-A8
P210	1:D6	2-C7
P213	1:D3	2-A7
P216	1:B2	2-A7
P219	1:D7	2-A7
P222	1:C5	2-A6
P225	1:C8	2-A4
P228	1:D8	2-A4
P231	1:C7	2-A4
P234	1:B7	2-A3
P236	1:C8	2-A1
P238	1:D3	2-A1
P240	1:C8	2-G2
P242	1:C7	2-G1
P244	1:C7	2-G8
P246	1:C6	2-H9
P248	1:C6	2-H9
P250	1:B3	2-K8
P252	1:B2	2-L9
P254	1:B2	2-L9
P256	1:B2	2-L8
P258	1:D3	2-P8
P260	1:D3	2-P7
P263	1:B2	2-R6
P266	1:D2	2-R5
P268	1:B2	2-R5
P270	1:B2	2-R5
P280	1:B2	2-R4
P282	1:B2	2-R4
P284	1:B3	2-R4
P287	1:B2	2-R0
P810	1:K2	8-A5
P815	1:L4	8-C4
P820	1:K4	8-M8
P825	1:K4	8-M8
P830	1:K4	8-M8
P835	1:K4	8-M7
P840	1:K4	8-M7
PL100	1:P3	1-F0
PL200	1:A3	2-R7
PL210	1:C6	2-B8
PL220	1:C6	2-H7
PL230	1:B2	2-L8
PL240	1:B6	2-K7
PL250	1:C8	2-C2
PL260	1:C8	2-H3
PL270	1:C2	2-L1
Q210	2:C6	2-J8
Q220	2:C5	2-M6
Q230	2:C5	2-N6
Q240	2:C8	2-H4
Q245	2:B6	2-J4
Q250	2:B8	2-G2
Q255	2:B7	2-H2
Q260	2:B7	2-K0
Q270	2:C2	2-K0
Q280	2:B7	2-L2
Q290	2:B6	2-M2

Device	PCB	Circuit
Q310	1:F9	3-D9
Q320	2:F7	3-F5
Q330	2:E6	3-L5
Q340	2:E5	3-P5
Q350	2:F4	3-D2
Q360	2:E3	3-F2
Q410	2:L8	4-G5
Q540	1:K5	5-K2
Q620	1:N6	6-P8
Q630	1:M6	6-P5
Q660	1:L5	6-N1
Q670	1:L6	6-Q2
Q750	1:G4	7-G3
Q760	1:G3	7-H3
Q770	1:H3	7-H1
Q775	1:H3	7-K3
Q780	1:H3	7-K3
Q785	1:H3	7-K2
Q790	1:H4	7-L3
Q795	1:G3	7-P0
Q810	1:K2	8-C5
Q820	1:K2	8-C6
Q840	1:K2	8-F5
Q850	1:L2	8-G5
Q860	1:K4	8-B4
Q870	1:L4	8-C4
Q880	1:L2	8-L5
Q890	1:L4	8-K3
Q895	1:M3	8-P2
R160	1:P2	1-Q4
R201	2:D6	2-B8
&R202	2:D6	2-B7
R204	2:C6	2-C9
R205	2:C7	2-C8
R207	2:C7	2-D8
&R209	2:C7	2-D8
R210	2:C7	2-D8
R211	2:C7	2-E8
R213	2:C7	2-G6
R215	2:C6	2-G9
R218	2:C7	2-G8
&R219	2:C7	2-G7
R221	2:C7	2-H7
R222	2:C7	2-H7
%R223	2:D6	2-J9
R224	2:C6	2-J8
R225	2:C6	2-J8
R227	2:B7	2-J7
R229	2:C5	2-L6
R230	2:C6	2-M5
R232	2:B5	2-M7
R233	2:C5	2-M7
R234	2:C5	2-N7
R236	2:B5	2-N7
R238	2:A5	2-R6
R239	2:B5	2-R7
R241	2:D8	2-F5
R242	2:C8	2-F4
R244	2:C8	2-G4
R245	2:C8	2-G5
R247	2:B7	2-J4
R249	2:B6	2-J3
R251	2:B7	2-L3
R252	2:B7	2-L3
R254	2:B7	2-L3
R255	2:B6	2-M3
R256	2:B6	2-M3
R258	2:B6	2-N3
R260	2:B5	2-P2
R261	2:B4	2-Q3
R262	2:B3	2-Q3
R264	2:B8	2-A3
R265	2:B8	2-A2
R266	2:B8	2-B2
R267	2:C8	2-C3

Device	PCB	Circuit
R269	2:C8	2-B1
R271	2:D3	2-A0
R272	2:C4	2-B1
R273	2:C4	2-C1
R275	2:C4	2-C1
R277	2:C4	2-C0
R278	2:C4	2-C1
R280	2:C8	2-D3
R281	2:C8	2-D2
R282	2:B8	2-E2
R284	2:C8	2-F3
R285	2:B8	2-F2
R287	2:B8	2-F2
R288	2:B8	2-F1
R289	2:B7	2-G3
R290	2:B7	2-G3
R292	2:C8	2-G2
R293	2:B7	2-H1
R294	2:C3	2-H0
R295	2:B7	2-J1
R296	2:A7	2-K1
R297	1:B2	2-M0
R298	2:D7	2-J0
R299	2:C7	2-J0
R302	2:F8	3-D8
R304	2:F8	3-E9
R306	2:F8	3-E8
R308	2:F7	3-F8
R310	2:E9	3-A5
R312	2:F7	3-F5
R314	2:E7	3-F4
R316	2:F7	3-G6
R318	2:F7	3-G5
R320	2:F7	3-G5
R322	2:E7	3-K5
R323	2:E6	3-K5
R324	2:E6	3-K5
R326	2:E6	3-K6
R328	2:E6	3-L6
R330	2:E6	3-M7
R332	2:E6	3-L5
R334	1:E6	3-L4
R336	2:E6	3-M4
R337	2:E4	3-M5
R338	2:F4	3-N6
R339	2:E5	3-N5
R340	2:F5	3-N5
R341	2:F5	3-Q5
&R344	2:F5	3-R6
R346	2:F5	3-R7
R348	2:E6	3-R5
%R349	2:E6	3-R4
R350	2:E5	3-A2
R351	2:E6	3-A2
R352	2:E5	3-B2
R353	2:F4	3-N6
R354	2:E5	3-B2
R356	2:F4	3-C2
R358	2:F3	3-D3
R360	2:F3	3-D2
R362	2:E4	3-D1
R364	2:F3	3-D1
R365	2:E5	3-Q4
R366	2:F3	3-D2
R367	2:E5	3-Q4
R368	2:E4	3-E1
R370	2:E3	3-E2
R372	2:E3	3-F3
R374	2:E4	3-F2
R376	2:E4	3-F1
R378	2:E3	3-G3
R380	2:E4	3-G2
R382	2:E4	3-H2
R384	2:E4	3-H2
R386	2:E5	3-L3
R388	2:E5	3-L3

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Device	PCB	Circuit
R390	1:E5	3-L2
R392	2:E5	3-L2
R393	2:E5	3-P3
R394	2:E5	3-M2
R395	2:F3	3-N2
R396	2:E3	3-P2
R397	2:E3	3-Q2
R398	2:E3	3-Q1
R399	1:E3	3-P1
R405	2:N8	4-B5
R410	2:L8	4-E5
R415	2:L8	4-F4
R420	2:L8	4-G4
R425	2:L8	4-G5
R430	2:L8	4-G6
R435	2:M7	4-G6
R440	2:K8	4-J5
R445	2:H8	4-N4
R450	2:H8	4-N5
R455	2:H8	4-N4
R460	2:G7	4-P6
R465	2:G7	4-P6
R470	2:G7	4-P6
R475	2:G7	4-P4
R510	1:K6	5-J9
R515	1:H6	5-J5
R555	1:K5	5-K1
R615	1:M5	6-C9
R617	1:M5	6-F8
R619	1:M6	6-L8
R621	1:M6	6-L8
R625	1:N6	6-L7
R629	1:M5	6-P6
R633	1:M5	6-Q8
R636	1:N5	6-K6
R637	1:N5	6-K5
R641	1:N5	6-L4
R645	1:N5	6-L5
R649	1:M5	6-M5
R653	1:M5	6-Q4
R681	1:L5	6-L2
R685	1:L5	6-N2
R689	1:L6	6-Q3
R693	1:L6	6-Q1
R696	1:L6	6-Q1
R701	1:J4	7-A9
R702	1:J4	7-C9
R703	1:J4	7-C8
R706	1:J3	7-B6
R707	1:J3	7-C7
R708	1:J2	7-D7
R709	1:H2	7-E7
R710	1:J3	7-B6
R711	1:H3	7-B6
R712	1:J4	7-E9
R742	1:H2	7-B4
R743	1:H2	7-C5
R744	1:G2	7-D4
R746	1:H3	7-E4
R747	1:H3	7-E5
R748	1:J2	7-A1
R749	1:J2	7-B1
R750	1:H4	7-H7
R752	1:G4	7-F5
R753	1:G4	7-F3
R754	1:G3	7-F3
R756	1:G3	7-G5
R757	1:G4	7-H4
R758	1:H3	7-H4
R759	1:H3	7-J4
R760	1:H3	7-K4
R762	1:H3	7-K4
R763	1:H4	7-L4
R765	1:H3	7-H2
R766	1:G3	7-J3
R767	1:H3	7-K2
R769	1:H3	7-K3
R771	1:H4	7-L3
R772	1:G4	7-L2
R774	1:H4	7-L2
R775	1:H4	7-N2
R780	1:G2	7-P1
R782	1:G3	7-P0
R784	1:G3	7-P1
R785	1:G3	7-Q1
R786	1:G2	7-R1
R787	1:G2	7-R1
R790	1:G3	7-P0
R791	1:G3	7-Q0
R804	1:J3	8-C7
R805	1:J3	8-C7
R808	1:K2	8-B6
R809	1:K2	8-C6
R810	1:L2	8-D6
R811	1:L2	8-D6
R812	1:K2	8-C6
R813	1:K2	8-C5
R815	1:K2	8-E4
R816	1:K2	8-F4
R818	1:K2	8-F5
R819	1:L2	8-F5
R820	1:K4	8-B4
R821	1:L4	8-C4
R822	1:L4	8-D3
R823	1:L4	8-D4
R824	1:K4	8-L8
R825	1:K4	8-L8
R826	1:K4	8-L8
R827	1:K4	8-L7
R828	1:K4	8-L7
R829	1:K4	8-P9
R830	1:K3	8-P9
R831	1:K3	8-P9
R832	1:K3	8-P8
R833	1:K3	8-P8
R835	1:K3	8-P8
R836	1:K3	8-P8
R837	1:K3	8-P7
R840	1:K3	8-P7
R841	1:K3	8-P7
R842	1:K3	8-P6
R843	1:K3	8-P6
R844	1:L2	8-M5
R845	1:L2	8-M5
R846	1:L4	8-L6
R847	1:L4	8-M6
R848	1:L4	8-Q5
R849	1:J2	8-Q5
R850	1:J2	8-Q4
R851	1:L4	8-Q4
R852	1:L2	8-N4
R853	1:L2	8-Q4
R854	1:N3	8-C1
R855	1:N3	8-C2
R856	1:N3	8-D2
R857	1:N4	8-D2
R858	1:N3	8-C0
R859	1:N3	8-D0
R860	1:N3	8-E0
R861	1:M3	8-F0
R863	1:N3	8-F2
R865	1:M3	8-G2
R866	1:M3	8-H2
R867	1:M3	8-G1
R868	1:N4	8-G0
R869	1:M3	8-G0
R870	1:M3	8-H0
R871	1:N3	8-H0
R872	1:N4	8-H0
R873	1:N4	8-K0
R875	1:M4	8-J1
R876	1:M3	8-K1
R877	1:M2	8-K1
R878	1:M2	8-K0
R879	1:M2	8-K0
R881	1:M4	8-K2
R882	1:M4	8-L3
R884	1:M3	8-N3
R885	1:M3	8-N2
R886	1:M3	8-P3
R887	1:M3	8-P3
R888	1:M3	8-P2
R889	1:M3	8-M1
R890	1:M3	8-N1
R891	1:M2	8-M1
R892	1:M2	8-N0
R894	1:M2	8-P0
R895	1:M2	8-Q1
R897	1:M2	8-Q1
R898	1:M2	8-Q2
RL210	1:C2	2-P4
RL210	1:C2	2-K1
RL210	1:C2	2-P5
RV205	1:B5	2-M7
RV210	1:B7	2-K3
RV220	1:D7	2-F5
RV230	1:B8	2-A2
RV235	1:C4	2-C0
RV310	1:F4	3-E1
RV320	1:E3	3-Q2
SHLD610	1:L6	6-J3
SK320	1:E5	3-L1
SK330	1:E3	3-Q1
SK501	1:G6	5-D6
SK502	1:G6	5-D5
SK503	1:G6	5-D4
SK504	1:G5	5-D3
SK505	1:G5	5-D2
SK513	1:H5	5-G3
SK522	1:H6	5-K5
SK531	1:K6	5-N6
SK532	1:K5	5-N5
SK533	1:K5	5-N4
SK534	1:K5	5-N3
SK535	1:K5	5-N2
SK805	1:K3	8-Q9
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7
SK805	1:K3	8-Q5
SK805	1:K3	8-Q7
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q6
SK810	1:L3	8-H5
SL210	2:B8	2-E2
SL220	2:B8	2-D2
SW201	1:B4	2-A6
T210	1:C3	2-Q2
T610	1:L6	6-N2
TP201	1:D3	2-P8
TP202	1:D7	2-D9
TP309	1:E9	3-A5
TP310	1:E7	3-E5
TP311	1:E4	3-M6
TP313	1:E4	3-J2
TP314	1:E5	3-R5
TP408	2:N8	4-B5
TP409	2:L7	4-D5
TP410	2:J8	4-J5
TP411	2:H8	4-M5
TP412	1:G8	4-Q5
TP601	1:N5	6-K9
TP602	1:L6	6-R9
TP603	1:L5	6-J2
TP604	1:L4	6-N6
TP607	1:L4	6-F9
TP710	1:H4	7-J5
X310	1:F4	3-M6
&XF300A	1:E8	3-C5
&XF300B	1:E8	3-D5
&XF301	1:E7	3-J5
&XF302	1:F5	3-P5

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Part C T856 Transmitter & T857 Exciter

This part of the manual is divided into six sections, as listed below. There is a detailed table of contents at the start of each section.

Section	Title
1	General Information
2	Circuit Operation
3	Initial Tuning & Adjustment
4	Functional Testing
5	Fault Finding
6	PCB Information

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1 T856/857 General Information

This section provides a brief description of the T856 transmitter and T857 exciter, along with detailed specifications and a list of types available.

The following topics are covered in this section.

Section	Title	Page
1.1	**Introduction**	**1.7**
1.2	**Specifications**	**1.8**
1.2.1	Introduction	1.8
1.2.2	General	1.8
1.2.3	RF Section	1.9
1.2.4	Audio Processor	1.10
1.2.4.1	Inputs	1.10
1.2.4.2	Modulation Characteristics	1.11
1.2.4.3	CTCSS	1.11
1.2.5	Microcontroller	1.11
1.2.6	Test Standards	1.12
1.2.6.1	European Telecommunication Standard	1.12
1.2.6.2	DTI CEPT Recommendation T/R-24-01	1.12
1.2.6.3	Telecommunications Industry Association	1.12
1.3	**Product Codes**	**1.13**
1.4	**T856 Standard Product Range**	**1.14**
1.5	**T857 Standard Product Range**	**1.15**

Figure	Title	Page
1.1	T856 Main Circuit Block Identification	1.4
1.2	T856 Front Panel Controls	1.4
1.3	T857 Main Circuit Block Identification	1.6
1.4	T857 Front Panel Controls	1.6

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replace A4 pages C1.3/C1.4 with A3 pages C1.3/C1.4

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replace A4 pages C1.5/C1.6 with A3 pages C1.5/C1.6

replace A4 pages C1.5/C1.6 with A3 pages C1.5/C1.6

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1.1 Introduction

The T856 is a synthesised, microprocessor controlled FM base station transmitter designed for single or multichannel operation in the 400 to 520MHz frequency range[1] with a standard power output of 25W. The RF section of the transmitter comprises a frequency synthesiser which provides 100mW of frequency modulated RF drive to a two stage, wide band output driver followed by a 25W power amplifier. A thermal shutdown feature is provided in the T856 in case operating temperatures exceed acceptable levels.

The T857 is a synthesised, microprocessor controlled FM base station exciter designed for single or multichannel operation in the 400 to 520MHz frequency range[1]. With a standard power output of only 1W, the exciter is designed for use with the T858 50W or T859 100W power amplifiers. The RF section of the exciter comprises a frequency synthesiser which provides 100mW of frequency modulated RF drive to a two stage, wide band output amplifier.

A wide selection of audio characteristics may be obtained from the audio processor. Optional circuit blocks are an audio compressor and a pre-emphasis stage. They can be bypassed or linked to one or both audio inputs, and then back into the remaining audio circuitry in almost any combination. All audio processor options are link selectable.

The synthesiser frequency is programmed via the serial communications port. Eight channel select lines are accessible via an optional D-range connector (D-range 2 - T800-03-0000) at the rear of the set.

All components except those of the VCO are mounted on a single PCB. This is secured to a die-cast chassis which is divided into compartments to individually shield each section of circuitry. Access to both sides of the main circuit board is obtained by removing each of the chassis lids. There is provision within the chassis to mount small option PCBs.

The front panel controls include line sensitivity, microphone socket and carrier switch. This switch turns on the carrier (unmodulated) as an aid to servicing.

The T856 and T857 are both 60mm wide and each occupies a single space in a Tait rack frame, which has the ability to accommodate up to seven standard modules.

1. Although capable of operating over the 400-520MHz frequency range, the T856 and T857 have an 8MHz switching range (see Section 1.2.3 and Section 3.1).

1.2 Specifications

1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment tuned with the maximum switching range and operating at standard room temperature (+22°C to +28°C) and standard test voltage (13.8V DC).

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA and ETS specifications. However, there are several parameters for which performance according to the CEPT specification is given. Refer to Section 1.2.6 for details of test standards.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

The terms "wide bandwidth", "mid bandwidth" and "narrow bandwidth" used in this and following sections are defined in the following table.

	Channel Spacing	Modulation 100% Deviation	Receiver IF Bandwidth
Wide Bandwidth	25kHz	±5.0kHz	15.0kHz
Mid Bandwidth	20kHz	±4.0kHz	12.0kHz
Narrow Bandwidth	12.5kHz	±2.5kHz	7.5kHz

1.2.2 General

Number Of Channels .. 128 (standard)[1]

Supply Voltage:

Operating Voltage	..	10.8 to 16V DC
Standard Test Voltage	..	13.8V DC
Polarity	..	negative earth only
Polarity Protection	..	crowbar diode
Line Keying Supply (if required)	..	-50V DC

Supply Current:

Transmit	- T856	..	5.5A (typical)
	- T857	..	750mA
Standby	- T856	..	165mA (typical)
	- T857	..	150mA (typical)

Operating Temperature Range .. -20°C to +60°C

1. Additional channels may be factory programmed. Contact your nearest Tait Dealer or Customer Service Organisation.

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Dimensions:

Height	..	183mm
Width	..	60mm
Length	..	322mm

Weight	..	2.1kg
Time-Out Timer (optional)	..	0 to 5 minutes[1] adjustable in 10 second steps
Tail Timer	..	0 to 5 seconds adjustable in 100ms[2] steps
Transmit Key Time	..	<30ms
Transmit Lockout Timer	..	0 to 1 minute adjustable in 10 second steps

1.2.3 RF Section

Frequency Range	..	400-520MHz (refer to Section 1.4 and Section 1.5)
Modulation Type	..	FM
Frequency Increment	..	5 or 6.25kHz
Switching Range	..	8MHz (i.e. ±4MHz from the centre frequency)
Load Impedance	..	50 ohms
Frequency Stability (see also Section 1.4 and Section 1.5)	..	±1ppm, -20°C to +60°C

Adjacent Channel Power (full deviation):

Wide Bandwidth (WB) (±25kHz/15kHz B/W)	..	-75dBc
Mid Bandwidth (MB) (±20kHz/12kHz B/W)	..	-70dBc
Narrow Bandwidth (NB) (±12.5kHz/7.5kHz B/W)	..	-65dBc

Transmitter Switching	..	complies with ETS 300 113

1. Adjustable from 0 to 10 minutes in PGM800Win version 2.12 and later.
2. Adjustable in 20ms steps in PGM800Win version 2.12 and later.

Transmitter Side Band Noise:
(no modulation, 15kHz bandwidth)

At ±25kHz	.. -95dBc
At ±1MHz	.. -105dBc

Intermodulation	.. -40dBc with interfering signal of -30dBc .. -70dBc with 25dB isolation & interfering signal of -30dBc (PA with output isolator)

T856 Mismatch Capability:

Ruggedness	.. refer to your nearest Tait Dealer or Customer Service Organisation
Stability	.. 3:1 VSWR (all phase angles)

Radiated Spurious Emissions:

Transmit	.. -36dBm to 1GHz -30dBm 1GHz to 4GHz
Standby	.. -57dBm to 1GHz -47dBm 1GHz to 4GHz

Conducted Spurious Emissions: (T856 Only)

Transmit	.. -36dBm to 1GHz -30dBm 1GHz to 4GHz
Standby	.. -57dBm to 1GHz -47dBm 1GHz to 4GHz

Power Output:

T856 - Rated Power	.. 25W (see Duty Cycle)
- Range Of Adjustment	.. 5-25W
T857	.. 1W ±300mW

Duty Cycle (T856 Only)	.. 100% @ 25W at +25°C .. 25% @ 25W at +60°C .. 100% @ 10W at +40°C

1.2.4 Audio Processor

1.2.4.1 Inputs

Inputs Available	.. line, microphone and CTCSS

Line Input:

Impedance	.. 600 ohms (balanced)
Sensitivity (60% modulation @ 1kHz)-	
With Compressor	.. -50dBm
Without Compressor	.. -30dBm

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Microphone Input:

Impedance	..	600 ohms
Sensitivity (60% modulation @ 1kHz)-		
With Compressor	..	-70dBm
Without Compressor	..	-50dBm

1.2.4.2 Modulation Characteristics

Frequency Response (below limiting)	..	flat or pre-emphasised (optional)

Line And Microphone Inputs:

Pre-emphasised Response-		
Bandwidth	..	300Hz to 3kHz (WB & MB)
	..	300Hz to 2.55kHz (NB)
Below Limiting	..	within +1, -3dB of a 6dB/octave pre-emphasis characteristic
Flat Response	..	within +1, -2dB of output at 1kHz
Above Limiting Response	..	within +1, -2dB of a flat response (ref. 1kHz)
Distortion	..	2% max.

Hum And Noise:

Wide Bandwidth	..	-55dB (300Hz to 3kHz [EIA]) typical
Mid Bandwidth	..	-54dB (CEPT)
Narrow Bandwidth	..	-50dB (CEPT)

Compressor (optional):

Attack Time	..	10ms
Decay Time	..	800ms
Range	..	50dB

1.2.4.3 CTCSS

Standard Tones	..	all 37 EIA group A, B and C tones plus 13 commonly used tones
Frequency Error (from EIA tones)	..	0.08% max.
Generated Tone Distortion	..	1.2% max.
Generated Tone Flatness	..	flat across 67 to 250.3Hz to within 1dB
Modulation Level	..	adjustable
Modulated Distortion	..	<5%

1.2.5 Microcontroller

Auxiliary Ports:

Open Drain Type	.. capable of sinking 2.25mA via 2k2Ω
V_{ds} max.	.. 5V

1.2.6 Test Standards

Where applicable, this equipment is tested in accordance with the following standards.

1.2.6.1 European Telecommunication Standard

ETS 300 086 January 1991

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech.

ETS 300 113 March 1996

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector.

ETS 300 219 October 1993

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment transmitting signals to initiate a specific response in the receiver.

ETS 300 279 February 1996

Radio equipment and systems; electromagnetic compatibility (EMC) standard for private land mobile radio (PMR) and ancillary equipment (speech and/or non-speech).

1.2.6.2 DTI CEPT Recommendation T/R-24-01

Annex I: 1988

Technical characteristics and test conditions for radio equipment in the land mobile service intended primarily for analogue speech.

Annex II: 1988

Technical characteristics of radio equipment in the land mobile service with regard to quality and stability of transmission.

1.2.6.3 Telecommunications Industry Association

ANSI/TIA/EIA-603-1992

Land mobile FM or PM communications equipment measurement and performance standards.

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1.3 Product Codes

The three groups of digits in the T850 Series II product code provide information about the model, type and options fitted, according to the conventions described below.

The following explanation of T850 Series II product codes is not intended to suggest that any combination of features is necessarily available in any one product. Consult your nearest Tait Dealer or Customer Service Organisation for more information regarding the availability of specific models, types and options.

Model

The Model group indicates the basic function of the product, as follows:

T85X-XX-XXXX
- T855 receiver
- T856 25W transmitter
- T857 exciter
- T858 50W power amplifier
- T859 100W power amplifier

Type

The Type group uses two digits to indicate the basic RF configuration of the product.

The first digit in the Type group designates the frequency range:

T85X-**X**X-XXXX
- '1' for 400-440MHz
- '2' for 440-480MHz
- '3' for 480-520MHz

The second digit in the Type group indicates the channel spacing:

T85X-X**X**-XXXX
- '0' for wide bandwidth (25kHz)
- '3' for mid bandwidth (20kHz)
- '5' for narrow bandwidth (12.5kHz)
- '6' for United States market only

Options

T85X-XX-**XXXX**

The Options group uses four digits and/or letters to indicate any options that may be fitted to the product. This includes standard options and special options for specific customers. '0000' indicates a standard Tait product with no options fitted. The large number of options precludes listing them here.

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1.4 T856 Standard Product Range

The following table lists the range of standard T856 types (i.e. no options fitted) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Frequency Range (MHz)		400-440			
Deviation (kHz)		2.5	2.5	4	5
TCXO	±1ppm -20°C to +60°C	●	●	●	●
Transmitter Type: T856-		16-0000[a]	15-0000	13-0000	10-0000

Frequency Range (MHz)		440-480			
Deviation (kHz)		2.5	2.5	4	5
TCXO	±1ppm -20°C to +60°C	●	●	●	●
Transmitter Type: T856-		26-0000[a]	25-0000	23-0000	20-0000

Frequency Range (MHz)		480-520		
Deviation		2.5	2.5	5
TXCO	±1ppm -20° to +60°C	●	●	●
Transmitter Type: T856-		36-0000[a]	35-0000	30-0000

a. United States market only.



Caution: **T856-1X-XXXX Product Types**

The 406 to 406.1MHz frequency range is reserved worldwide for use by Distress Beacons. Do *not* program transmitters to operate in this frequency range.

You can identify the transmitter type by checking the product code printed on a label on the rear of the chassis (Figure 1.1 in Part A shows typical labels). You can further verify the transmitter type by checking the placement of an SMD resistor in the table that is screen printed onto the PCB (refer to Section 6.1 for more details).

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1.5 T857 Standard Product Range

The following table lists the range of standard T857 types (i.e. no options fitted and cyclic keying disabled) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Frequency Range (MHz)		400-440			
Deviation (kHz)		2.5	2.5	4	5
TCXO	±1ppm -20°C to +60°C	●	●	●	●
Exciter Type: T857-		16-0000[a]	15-0000	13-0000	10-0000

Frequency Range (MHz)		440-480			
Deviation (kHz)		2.5	2.5	4	5
TCXO	±1ppm -20°C to +60°C	●	●	●	●
Exciter Type: T857-		26-0000[a]	25-0000	23-0000	20-0000

Frequency Range (MHz)		480-520		
Deviation		2.5	2.5	5
TXCO	±1ppm -20° to +60°C	●	●	●
Exciter Type: T857-		36-0000[a]	35-0000	30-0000

a. United States market only.

Caution: **T857-1X-XXXX Product Types**

The 406 to 406.1MHz frequency range is reserved worldwide for use by Distress Beacons. *Do not* program exciters to operate in this frequency range.

You can identify the exciter type by checking the product code printed on a label on the rear of the chassis (Figure 1.1 in Part A shows typical labels). You can further verify the exciter type by checking the placement of an SMD resistor in the table that is screen printed onto the PCB (refer to Section 6.1 for more details).

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2 T856/857 Circuit Operation

This section provides a basic description of the circuit operation of the T856 transmitter and T857 exciter.

Note: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section.

Section	Title	Page
2.1	**Introduction**	**2.3**
2.2	**Microcontroller**	**2.4**
2.3	**Synthesised Local Oscillator**	**2.5**
2.3.1	Two Point Modulation	2.6
2.4	**VCO**	**2.7**
2.4.1	VCO Supply	2.7
2.5	**Audio Processor**	**2.8**
2.5.1	General	2.8
2.5.2	Audio Inputs	2.8
2.5.3	Keying Inputs	2.9
2.5.4	Compressor (Automatic Level Control (ALC))	2.9
2.5.5	Outputs To Modulators	2.9
2.6	**Power Supply & Regulator Circuits**	**2.10**
2.7	**Transmit Timers**	**2.11**
2.8	**T856 Drive Amplifier & PA**	**2.12**
2.9	**T857 Exciter Drive Amplifier**	**2.13**

Figure	Title	Page
2.1	T856 High Level Block Diagram	2.3
2.2	T857 High Level Block Diagram	2.3
2.3	T856/857 Microcontroller Block Diagram	2.4
2.4	T856/857 Synthesiser Block Diagram	2.5
2.5	T856/857 Two Point Modulation	2.6
2.6	T856/857 Audio Processor Block Diagram	2.8
2.7	T856/857 Power Supply & Regulators Block Diagram	2.10
2.8	T856/857 Transmit Timers	2.11

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2.1 Introduction

The individual circuit blocks which make up the T856 and T857 are:

- synthesiser
- VCO
- audio processor
- drive amplifier
- power amplifier (T856 only)
- voltage regulators.

Each of these circuit blocks is set in its own shielded compartment, formed as an integral part of the main chassis.

The configuration of the circuit blocks may be seen on a functional level in Figure 2.1 and Figure 2.2. Refer to the circuit diagrams in Section 6.2 (T856) or 6.3 (T857) for more detail.

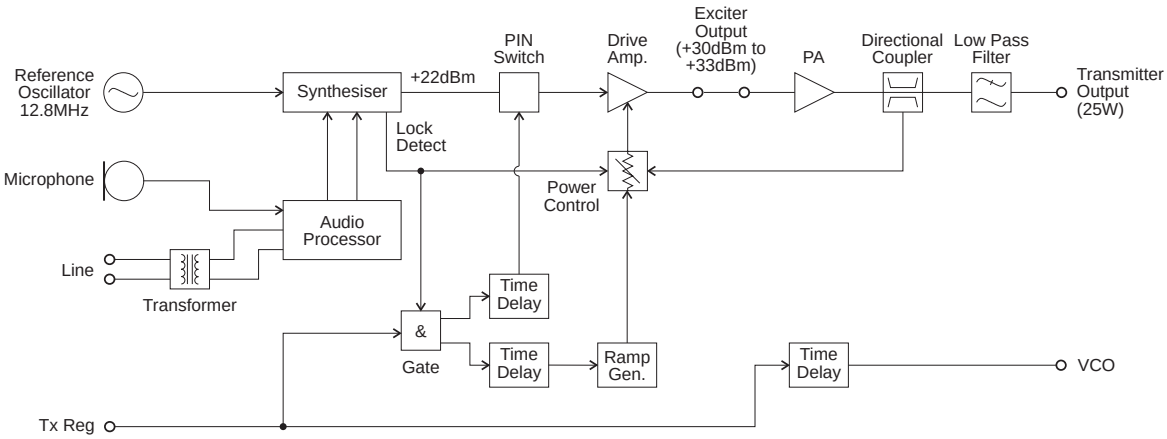


Figure 2.1 T856 High Level Block Diagram

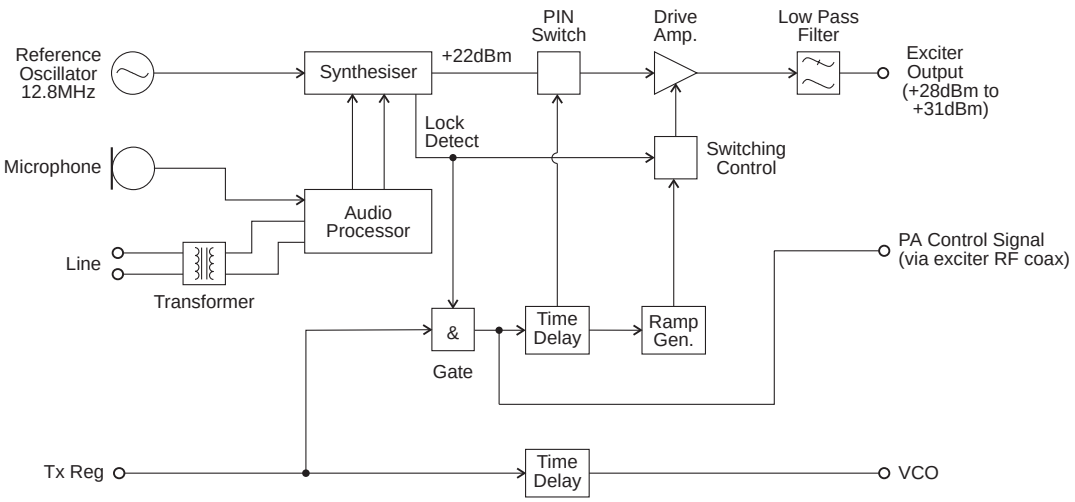


Figure 2.2 T857 High Level Block Diagram

2.2 Microcontroller

(Refer to the microcontroller circuit diagram (sheet 8) in Section 6.2 or 6.3.)

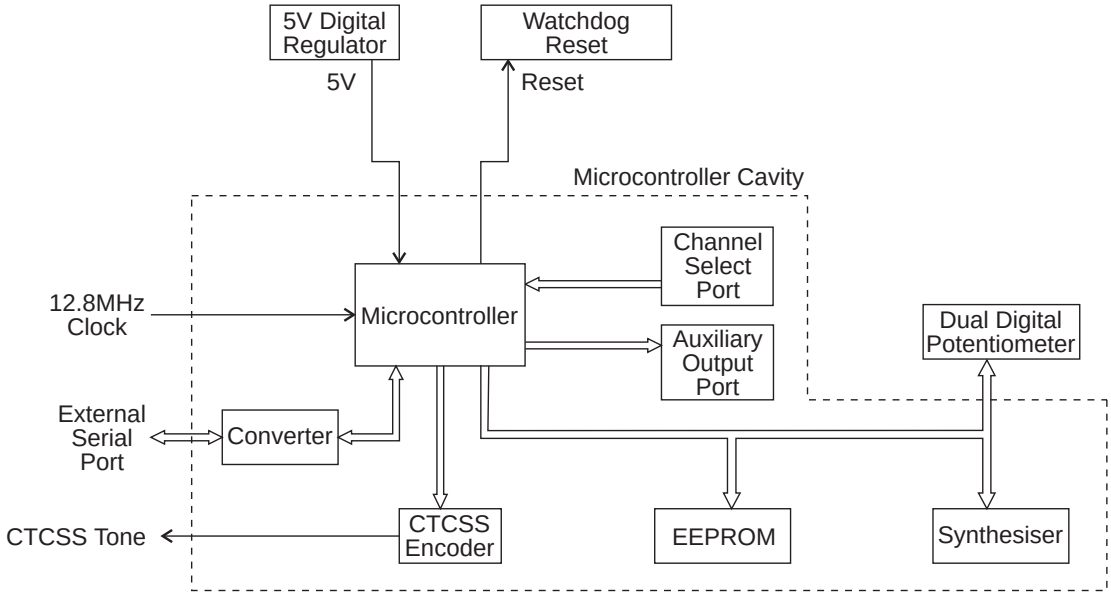


Figure 2.3 T856/857 Microcontroller Block Diagram

Overall system control of the T856/857 is accomplished by the use of a member of the 80C51 family of microcontrollers (IC810). It runs from internal ROM and RAM, thus leaving all four ports free for input/output functions.

Non-volatile data storage is achieved by serial communication with a 16kBit EEPROM (IC820). This serial bus is also used by the microcontroller to program the synthesiser (IC740) and deviation control EPOTS (IC220).

The main tasks of the microcontroller are as follows:

- program the synthesiser and EPOT;
- interface with the PGM800Win programming software at 9600 baud via the serial communication lines on D-range 1 (PL100) & D-range 2;
- monitor channel change inputs from D-range 2;
- generate timing waveforms for CTCSS encoding;
- coordinate and implement timing control of the exciter/transmitter.
- control the front panel "Supply" LED (refer to Section 5.3).

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2.3 Synthesised Local Oscillator

(Refer to the synthesiser circuit diagram (sheet 7) in Section 6.2 or 6.3 and the VCO circuit diagram in Part E.)

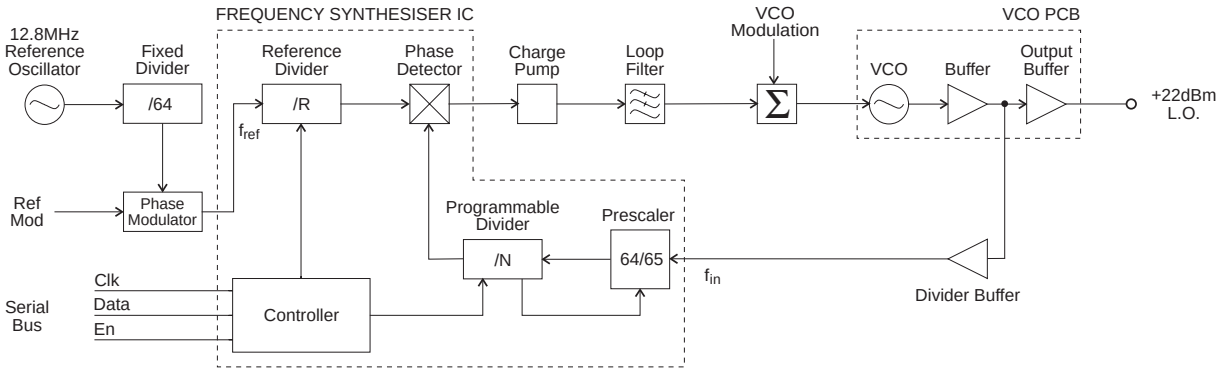


Figure 2.4 T856/857 Synthesiser Block Diagram

The synthesiser (IC740) employs a phase-locked loop (PLL) to lock a voltage controlled oscillator (VCO) to a given reference frequency. The synthesiser receives the divider information from the control microprocessor via a 3 wire serial bus (clock, data, enable). When the data has been latched in, the synthesiser processes the incoming signals from the VCO buffer (f_{in}) and the phase modulator (f_{ref}).

A reference oscillator at 12.8MHz (=IC700) is buffered (IC710 pins 3 & 4) and divided down to 200kHz (IC730). This 200kHz square wave is then summed with the modulating audio and passed to an integrator (IC720 pins 9 & 8, Q710, Q720). This produces a ramping waveform which is centred around a DC level determined by the incoming audio. IC720 pins 5 & 6 perform as a comparator, ultimately producing a phase-modulated 200kHz square wave. This is followed by another phase shifting stage (IC720 pins 3 & 4, Q730, Q740), before being divided down to 6.25kHz or 5kHz within the synthesiser IC (IC740).

A buffered output of the VCO (Q795) is divided with a prescaler and programmable divider which is incorporated into the synthesiser chip (IC740). This signal is compared with the phase modulated reference signal at the phase detector (also part of the synthesiser chip). The phase detector outputs drive a balanced charge pump circuit (Q760, Q770, Q775, Q780, Q785) and active loop filter (IC750 pins 5, 6 & 7, Q790) which produces a DC voltage between 0V and 20V to tune the VCO. This VCO control line is further filtered to attenuate noise and other spurious signals. Note that the VCO frequency increases with increasing control voltage.

If the synthesiser loop loses lock, a pulsed signal appears at LD (pin 2) of IC740. This signal is filtered and buffered by IC750 pins 1, 2 & 3, producing the Lock-Detect signal used to shut off the power supply to the drive amplifier. IC750 pin 1 is at 20V when the synthesiser is out of lock.

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2.3.1 Two Point Modulation

Frequency modulation occurs by modulating both the VCO input and the synthesiser reference input. This process is called two point modulation and ensures a flat modulation response from 67Hz to 3kHz (2.55kHz for narrow bandwidth).

The PLL has a fast response time, allowing a Tx key-up time of <30ms. Because of this fast response time the PLL sees lower modulation frequencies superimposed on the VCO as an error and corrects for it, resulting in no modulation on the carrier. At modulation frequencies greater than 300Hz the loop cannot correct fast enough and modulation is seen on the carrier. The response of the loop to VCO modulation is shown by f_2 in Figure 2.5 below.

To achieve low frequency modulation, the reference oscillator is also modulated so that the phase detector of IC740 detects no frequency error under modulation. Thus, the synthesiser loop will not attempt to correct for modulation and the audio frequency response of the transmitter remains unaffected. The response of the loop to reference frequency modulation is shown by f_1 in Figure 2.5.

The reference modulation is controlled by a 256-step 10k electronic potentiometer (EPOT) which is adjustable via PGM800Win. The EPOT is made up of 256 resistive sections (representing approximately 39Ω each) which can be individually addressed by the microcontroller. Each section can be switched in or out of circuit to achieve the required total resistance, thus giving control of the reference modulation.

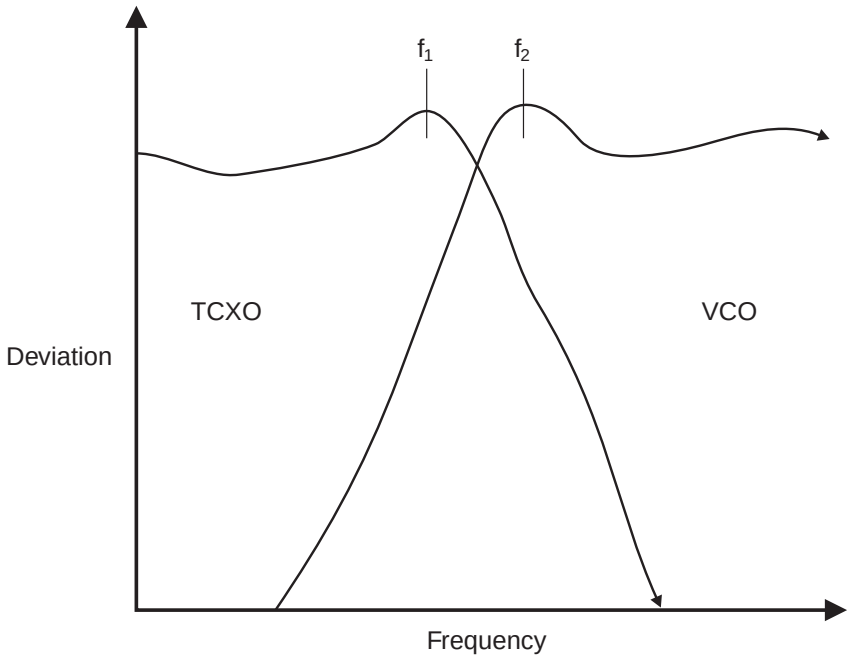


Figure 2.5 T856/857 Two Point Modulation

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2.4 VCO

(Refer to the VCO circuit diagram in Part E.)

The VCO transistor (Q1) operates in a common emitter configuration, with an LC tank circuit coupled between its gate and drain to provide the feedback necessary for oscillation. The VCO control voltage from the loop filter (IC750) is applied to the varicaps (D1-D2) to facilitate tuning within an 8MHz band of frequencies. A trimcap (C6) is used for coarse tuning of the VCO. The output from the oscillator circuit drives a cascode amplifier stage (Q2, Q3) which supplies +10dBm (typically) to a further stage of amplification, Q5. This is the final amplifier on the VCO PCB, and delivers +20dBm (typically) to the exciter drive amplifier.

A low level "sniff" is taken from the input to Q5 and used to drive the divider buffer for the synthesiser (IC740).

The VCO operates at the actual output frequency of the exciter, i.e. there are no multiplier stages. It is modulated by superimposing the audio signal onto the control voltage and by phase modulating the reference signal.

2.4.1 VCO Supply

The VCO is supplied from two switched +9V supplies under the control of the Tx-Reg. supply.

The VCO and buffer amplifier are supplied from one +9V switched supply by Q540 via the C multiplier (Q550, C530 on the T856 and C550 on the T857).

The output amplifier is supplied from the other +9V supply by Q520, Q530, and Q510.

A delay circuit holds the VCO on for a short time after the Tx-Reg. supply has been switched off. This is to allow the RF power circuits (both exciter and PA) to ramp down in the correct manner before the VCO is switched off.

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2.5 Audio Processor

(Refer to the audio processor circuit diagram (sheet 2) in Section 6.2 or 6.3.)

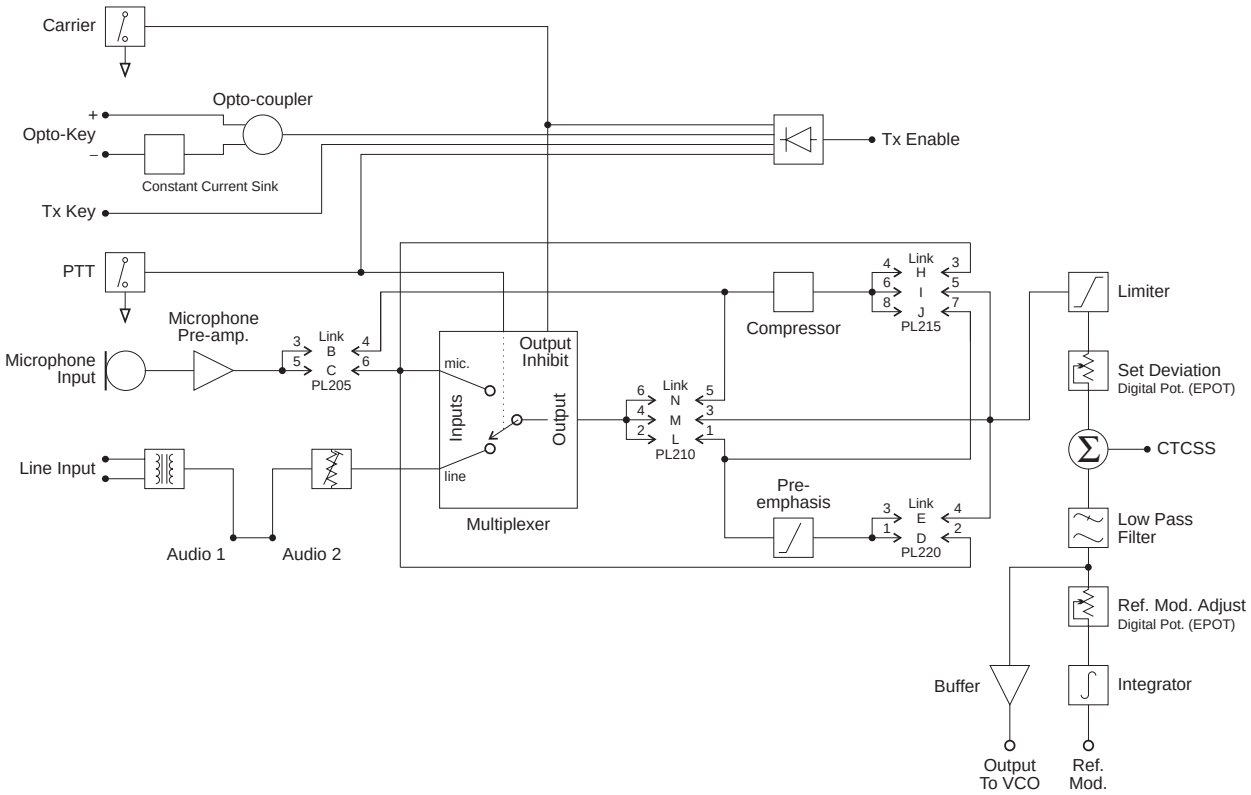


Figure 2.6 T856/857 Audio Processor Block Diagram

2.5.1 General

The audio processor comprises several link selectable circuit blocks which may be configured in a variety of combinations to suit individual requirements. The pre-emphasis network and compressor may be linked individually or cascaded between either or both audio inputs and the limiter.

Refer to Section 3.5.1 for linking details.

2.5.2 Audio Inputs

Two audio inputs are available: one from a 600 ohm balanced (or unbalanced) line, and the other from a local microphone. The microphone signal is passed first to a pre-amplifier (Q210) and ultimately to a multiplexer (IC240), but in between may pass through the compressor (depending on the linking details). The line transformer is also connected to the multiplexer and is disabled by the microphone PTT switch.

A third input for external CTCSS tones is also provided.

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2.5.3 Keying Inputs

There are four ways to key the exciter:

- pulling the Tx-Key line low (pin 13 on D-range 1 [PL100]) at the rear of the set);
- pushing the "Carrier" button on the front panel - this will inhibit all audio;
- using the PTT button on the local microphone, disabling audio from the line;
- via the opto-key inputs (pins 11 and 12 on D-range 1 [PL100]) when electrical isolation is required. This features a constant current sink (Q270) to ensure reliable activation of the opto-coupler (IC250) at low keying voltages.

2.5.4 Compressor (Automatic Level Control (ALC))

The input signal is fed via a current controlled attenuator (Q230, Q220) to a high gain stage (IC230) from which the output signal is taken. This signal is passed to a comparator (IC230) which toggles whenever the audio signal exceeds a DC threshold determined by RV220. Thus, the comparator produces a square wave whose mark-space ratio is determined by the amplitude of the audio signal. This square wave pumps up the reservoir capacitor (C233) which controls the attenuator (Q230, Q220), thus completing the feedback loop.

The compression level is set by adjustment of the comparator threshold (RV220).

Note: Although the high dynamic range of the compressor allows the use of very low audio signal levels, such conditions will be accompanied by a degradation of the signal-to-noise ratio. Very low audio input levels should therefore be avoided where possible.

2.5.5 Outputs To Modulators

The output signal from the limiter (IC210, IC230) is summed with a CTCSS tone at a summing amplifier (IC260). The signal is then low pass filtered (IC260) and split to supply the two modulators.

Since the VCO modulator is a true frequency modulator, its audio is simply buffered (IC260). The reference modulator, however, is a phase modulator and its audio must first be integrated (IC210).

It is vital that the audio levels to the modulators are accurately set, ***relative to each other***. Hence the inclusion of level adjustment in the reference modulator path. Once set, adjustments to absolute deviation may be made only by IC220, a 256-step 10k electronic potentiometer (EPOT), which is controlled via PGM800Win. The EPOT is made up of 256 resistive sections (representing approximately 39Ω each) which can be individually addressed by the microcontroller. Each section can be switched in or out of circuit to achieve the required total resistance, thus adjusting the absolute deviation level.

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2.6 Power Supply & Regulator Circuits

(Refer to the regulators circuit diagram (sheet 6) in Section 6.2 or 6.3.)

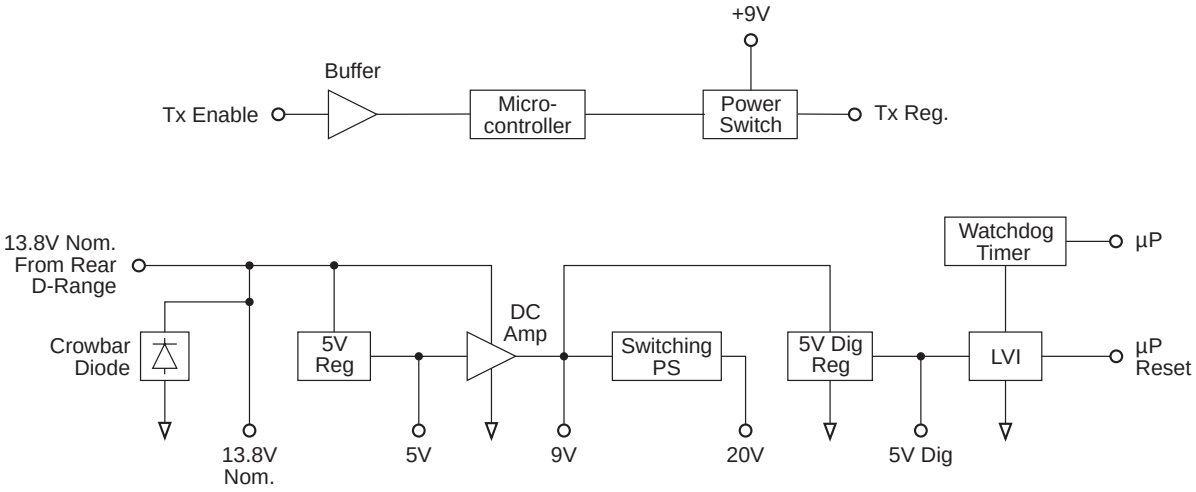


Figure 2.7 T856/857 Power Supply & Regulators Block Diagram

The T856 and T857 are designed to operate from a 10.8-16V DC supply (13.8V nominal). A 5.3V regulator (IC630) runs directly from the 13.8V rail, driving much of the synthesiser circuitry. It is also used as the reference for a DC amplifier (IC640, Q630, Q620) which provides a medium current capability 9V supply. The T856 has a regulator (IC370) which produces 9V for use in the exciter and audio circuits.

A switching power supply (Q660, Q670) runs from the 9V supply and provides a low current capability +20V supply. This is used to drive the synthesiser loop filter (IC750), giving a VCO control voltage range of up to 20V.

Ultimate control of the transmitter is via the Tx-Reg. supply, switched from 9V by Q610. This is enabled via the Tx-Enable signal from the audio processor, and microprocessor.

A crowbar diode is fitted for protection against connection to a power supply of incorrect polarity. It also provides transient overvoltage protection.

Note: A fuse must be fitted in the power supply line for the diode to provide effective protection.

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2.7 Transmit Timers

The transmit tail timer, transmit timeout timer and transmit lockout timer can all be set from PGM800Win. The fields for setting these are found on the system information page. These three timers operate as follows (refer also to Figure 2.8):

Timer	Function	Adjustment
Transmit Tail	Sets the tail time during which the transmitter stays keyed after the external key source has been removed.	0-5 seconds in 100ms steps[a]
Transmit Timeout	Sets the maximum continuous transmission time. Once the timer has timed out, the transmitter must be keyed again, unless prevented by the transmit lockout timer.	0-300 seconds[b] in 10 second steps
Transmit Lockout	Sets the period of time that must elapse after a timeout before the transmitter can re-transmit. Once the timer has timed out, the transmitter can be keyed again.	0-60 seconds in 10 second steps

a. Adjustable in 20ms steps in PGM800Win version 2.12 and later.
b. Adjustable from 0 to 600 seconds in PGM800Win version 2.12 and later.

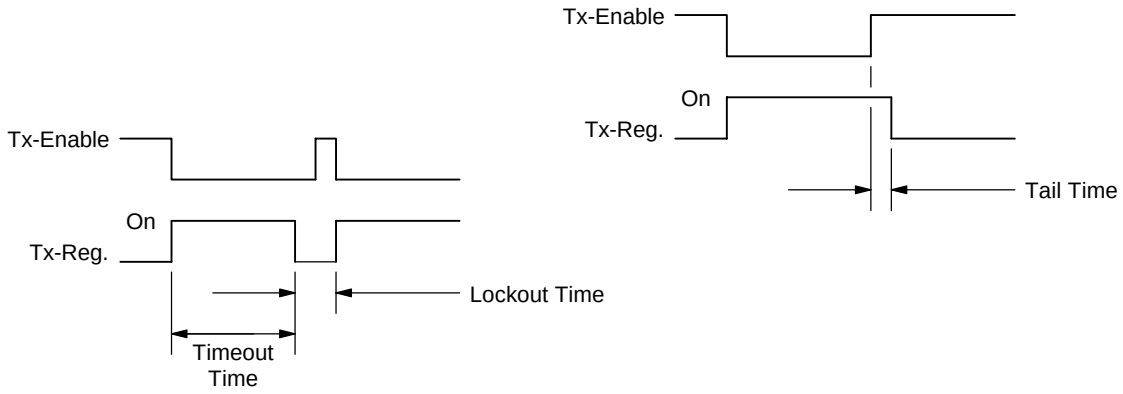


Figure 2.8 T856/857 Transmit Timers

2.8 T856 Drive Amplifier & PA

(Refer to Figure 2.1 and the exciter and PA circuit diagrams (sheets 3 & 4) in Section 6.2.)

The output power of the PA is maintained at a constant level via a power control loop applied to the two-stage, wide band exciter amplifier (Q350, Q355). The forward and reverse RF power levels are sensed via a dual directional coupler and detector diodes (D440, D420 in the PA cavity). The detected DC signals are buffered (IC330 pins 3 & 5) and then summed with the 'power control' level and fed to the control integrator (IC350 pin 6). The output control voltage is buffered by Q310 and Q315, and applied to the collector of the wide band exciter amplifier.

Note: Forward and reflected power signals are summed so that, under high VSWR, the power control will turn the output RF level down.

To reduce the spurious output level when the synthesiser is out-of-lock, the Tx-Reg. and Lock-Detect signals are gated to inhibit the PA control circuit and to switch off the RF signal at the input to the drive amplifier. This is achieved by a PIN switch attenuator (D340, D380, D360).

Cyclic keying control is provided by additional circuitry consisting of several time delay, ramp and gate stages:

- Q325, IC350 power ramping
- Q355, Q325 Tx-Reg. and $\overline{\text{Lock-Detect}}$ gate
- Q335, Q340, Q345 delay and PIN switch drive.

This is to allow the RF power circuits (both exciter and PA) to ramp up and down in a controlled manner so that minimal adjacent channel interference is generated during the transition.

The output of the wide band amplifier is approximately 1W (+30dBm) for an input of 100mW (+20dBm) from the VCO, when the power control is set to maximum.

A temperature sensor (R481) is provided so that the RF output power can be reduced to a preset level when a set temperature is exceeded. This is a protection circuit (IC350 pin 1, Q320) to prevent overheating, as the unit is ***not*** rated for continuous operation (refer to Section 1.2.3 for duty cycle specifications).

#R517, #R518 and #R519 form an attenuator to provide good VCO/exciter isolation as well as the correct exciter drive level.

The attenuator (#R395, #R396 and #R397) aids in producing the correct exciter drive level to the PA over the three frequency ranges.

The RF output from the exciter is fed to the driver stage (Q410) and then to the final (Q420). DC is fed to the final via a low pass filter with special low frequency decoupling. CV475 tunes the output matching across the entire band.

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2.9 T857 Exciter Drive Amplifier

(Refer to Figure 2.2 and the exciter circuit diagram (sheet 3) in Section 6.3.)

A two-stage, wide band amplifier (Q304, Q305) provides an output level of approximately 1W (+30dBm) for an input of 100mW (+20dBm) from the VCO. IC300 pin 1, Q302, and Q303 provide a 9V regulated supply for the exciter.

To reduce the spurious output level when the synthesiser is out-of-lock, the Tx-Reg. and Lock-Detect signals are gated to inhibit the exciter control circuit and to switch off the RF signal at the input to the drive amplifier. This is achieved by a PIN switch attenuator (D201, D202, D203).

Cyclic keying control is provided by additional circuitry consisting of several time delay, ramp and gate stages:

- Q301, Q302, Q303, IC300 — power ramping
- Q310, Q311 — Tx-Reg. and $\overline{\text{Lock-Detect}}$ gate
- Q306, Q307, Q308, Q309 — delay and PIN switch drive.

This is to allow the RF power circuits (both exciter and PA) to ramp up and down in a controlled manner so that minimal adjacent channel interference is generated during the transition.

R517, R518 and R519 form a 3dB attenuator to provide good VCO/drive amplifier isolation as well as the correct exciter drive level

Note: The exciter provides a DC control signal to the PA via the RF coax. This is injected via L314.

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3 T856/857 Initial Tuning & Adjustment

Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following section describes both short and full tuning and adjustment procedures and provides information on:

- channel programming
- selecting required audio links
- synthesiser alignment
- PA alignment (T856 only)
- modulator adjustment
- limiter adjustment
- setting line level
- compressor adjustment
- timer adjustment.

Note: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Figure 4.4 and Figure 4.5 which show the location of the main tuning and adjustment controls. Refer also to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

Section	Title	Page
3.1	**Introduction**	**3.3**
3.2	**Channel Programming**	**3.3**
3.3	**Test Equipment Required**	**3.4**
3.4	**Short Tuning Procedure**	**3.5**
3.4.1	Introduction	3.5
3.4.2	Synthesiser Alignment	3.5
3.4.3	Output Power Adjustment (T856 Only)	3.5
3.4.4	Two Point Modulation Adjustment	3.6
3.4.5	CTCSS Encoder (If Used)	3.7
3.4.6	FM Deviation (Limiter) Adjustment	3.7
3.4.7	Line-in Level Adjustment	3.7

Section	Title	Page
3.5	**Audio Processor Links**	**3.8**
3.5.1	Link Details	3.8
3.5.2	Typical Options	3.8
3.6	**Synthesiser Alignment**	**3.9**
3.7	**PA Alignment (T856 Only)**	**3.10**
3.8	**Thermal Shutdown (T856 Only)**	**3.10**
3.9	**Audio Processor & CTCSS**	**3.11**
3.9.1	Two Point Modulation	3.11
3.9.2	Modulator Adjustment	3.11
3.9.3	CTCSS Encoder (If Used)	3.12
3.9.4	Limiter Adjustment	3.12
3.9.5	Line Level Without Compressor	3.13
3.9.6	Compressor	3.13
3.9.6.1	Compressor On Line Input Only	3.13
3.9.6.2	Compressor On Microphone Input Only	3.13
3.9.6.3	Compressor On Both Line & Microphone Inputs	3.14

Figure	Title	Page
3.1	T856/857 Test Equipment Set-up With T800-01-0010	3.4
3.2	T856/857 Test Equipment Set-up Without T800-01-0010	3.4

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3.1 Introduction

When you receive your T856 transmitter or T857 exciter it will be run up and working on a particular frequency (the "default channel")[1]. If you want to switch to a frequency that is within the 8MHz switching range (i.e. ±4MHz from the factory programmed frequency), you should only need to reprogram the transmitter/exciter with the PGM800Win software (refer to the PGM800Win programming kit and Section 3.2 below).

However, if you want to switch to a frequency outside the 8MHz switching range, you will have to reprogram and re-tune the transmitter/exciter to ensure correct operation. In this case you should carry out the short tuning procedure described in Section 3.4.

If you have carried out repairs or other major adjustments, you must carry out the full tuning and adjustment procedure described in this section (except for Section 3.4).

3.2 Channel Programming

You can program up to 128 channel frequencies into the transmitter/exciter's EEPROM memory (IC820) by using the PGM800Win software package and an IBM™ PC. You can also use PGM800Win to select the transmitter/exciter's current operating frequency (or "default channel").

If the transmitter/exciter is installed in a rack frame, you can program it via the programming port in the speaker panel. However, you can also program the transmitter/exciter before it is installed in a rack frame as follows:

- by using a T800-01-0010 calibration test unit;
- via D-range 1;
- via D-range 2 (standard T800-03-0000 auxiliary D-range only);
- via SK805 (internal Micromatch connector).

If you do not use the T800-01-0010, you will have to connect the PC to the transmitter/exciter via a module programming interface (such as the T800-01-0004).

For a full description of the channel programming procedure, refer to the PGM800Win programming software user's manual.

Note: When an auxiliary D-range kit (D-range 2 - T800-03-0000) is fitted, you can also select a channel with an external switch, such as the DIP switch on the rack frame backplane PCB. Refer to Part C in the T800 Series Ancillary Equipment Service Manual (M800-00-101 or later issue) or consult your nearest Tait Dealer or Customer Service Organisation for further details.

1. Use the "Read Module" function in PGM800Win to find out what the default channel is.

3.3 Test Equipment Required

You will need the following test equipment:

- computer with PGM800Win installed
- T800 programming kit
- module programming interface (e.g. T800-01-0004 - optional)
- 13.8V power supply
- digital multimeter
- audio signal generator
- RF power meter
- audio voltmeter x 2
- modulation meter
- oscilloscope (digital preferred)
- 20dB or 40dB pad

  } or RF test set (optional)

- T800-01-0010 calibration test unit (optional)

Figure 3.1 and Figure 3.2 show typical test equipment set-ups.

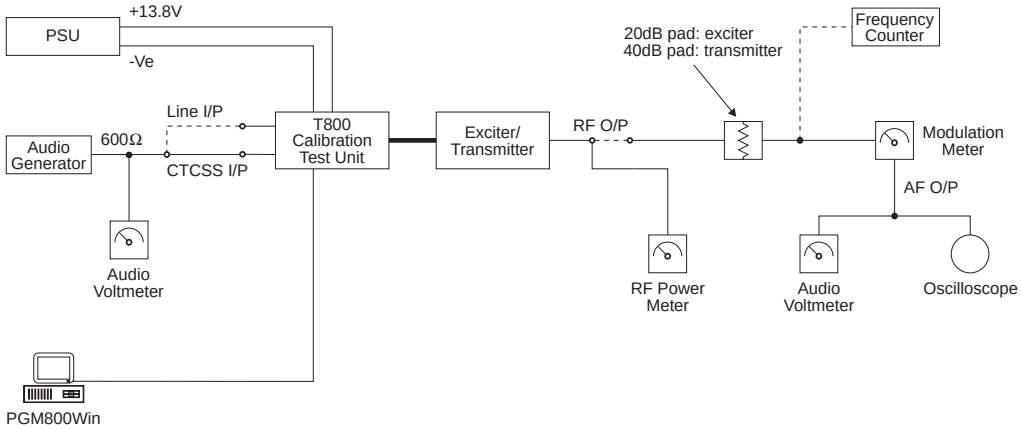


Figure 3.1 T856/857 Test Equipment Set-up With T800-01-0010

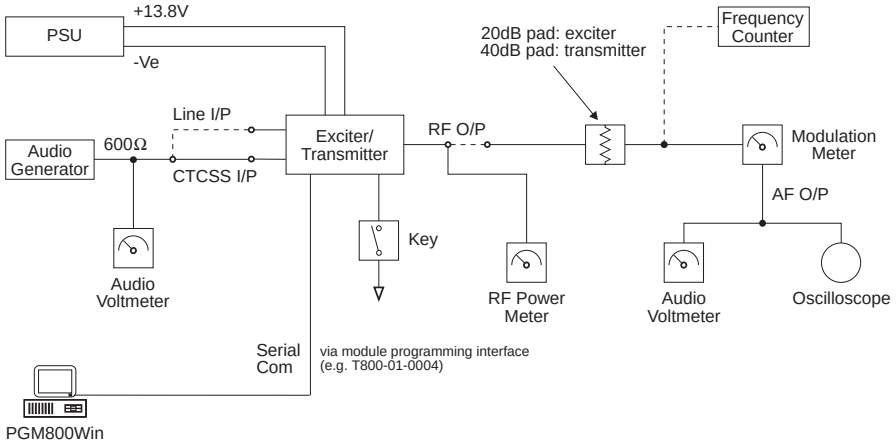


Figure 3.2 T856/857 Test Equipment Set-up Without T800-01-0010

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3.4 Short Tuning Procedure

Use this procedure only if you want to reprogram the T856/857 to a frequency outside the 8MHz switching range and do not intend to carry out any other major adjustments or repairs.

3.4.1 Introduction

Reprogram the operating frequency as described in the PGM800Win programming kit (refer to Section 3.2).

Remove the top cover (nearest the handle).

Set up the test equipment as described in Section 3.3.

Set the links in the audio processor section as required (refer to Section 3.5).

3.4.2 Synthesiser Alignment

- Connect a high impedance voltmeter to the long lead of L1 in the VCO (this measures the synthesiser loop voltage).
- Key the transmitter by earthing the Tx-Key line.
- **Single Channel** Tune VCO trimmer C6 for a synthesiser loop voltage of 10V.

  Multichannel Tune VCO trimmer C6 for a synthesiser loop voltage of 10V on the middle channel.

  If there is no middle channel, tune C6 so that the channels are symmetrically placed around a loop voltage of 10V.

  All channels should lie within the upper and lower limits of 16V and 3V respectively.

  Do not attempt to program channels with a greater frequency separation than the specified switching range of 8MHz.

3.4.3 Output Power Adjustment (T856 Only)

Connect an RF power meter with suitable attenuation to the output socket and key the transmitter.

Turn RV310 (power control) fully clockwise.

Tune #CV475 (output power trim) for maximum output power and check that this is >30W.

Adjust RV310 for the required output power (between 5 and 25W).

Readjust #CV475 to reduce the supply current by up to 0.5A.

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3.4.4 Two Point Modulation Adjustment

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: The reference modulation and limiter adjustments are controlled by 256-step electronic potentiometers (EPOTs), which are adjusted via the "Reference Modulation" and "Deviation" settings in PGM800Win. This allows the two point modulation and deviation settings to be adjusted for each channel.

Note 3: To optimise the modulation response across the switching range, repeat steps 1-4 below for each channel that will be used (usually needed only for data applications). In applications where the modulation response is less critical (e.g. voice use only), carry out steps 1-4 below on the middle channel and use the "EPOT Fill" option[1] in PGM800Win to copy the value to the other channels.

Note 4: If you are using an RF test set, turn the low pass filter off and set the high pass filter to 15kHz ***before*** beginning this procedure.

1. Inject an audio signal of 300Hz 1.5V rms (+5dBm) into the CTCSS input (D-range 1 (PL100) pin 8).

   Key the transmitter by earthing the Tx-Key line.

2. Adjust the output from the audio generator to obtain ±3kHz (±2.4kHz) [±1.5kHz] deviation at 300Hz.

3. Change the input frequency to 100Hz and, using PGM800Win, adjust the value of the "Reference Modulation" EPOT setting for the current channel to obtain ±3kHz (±2.4kHz) [±1.5kHz] deviation (you can use either the mouse or up and down arrow keys).

4. Change the input frequency back to 300Hz.

   Repeat steps 2 and 3 above until the deviations achieved at the two input frequencies are within 0.2dB of each other. You will need to do this at least four times.

5. Sweep the audio between 50 and 300Hz for peaks.

Note: A peak between 50 and 300Hz will indicate a fault condition, i.e:

- incorrect set-up

or - modulation circuitry fault.

The specification window is ±1dB relative to 150Hz from 67 to 260Hz.

1. Use the "EDIT FILL" button on the tool bar or go to "Edit", "Fill", "Epot Settings" on the menu bar.

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3.4.5 CTCSS Encoder (If Used)

Program a CTCSS tone on the default channel using PGM800Win.

If you are using an RF test set, turn off the 300Hz high pass filter.

Key the T856/857 with the front panel "Carrier" switch.

Adjust RV805 (CTCSS level adjust) to give ±500Hz (±350Hz) [±250Hz] deviation.

Set the maximum deviation as per Section 3.4.6.

3.4.6 FM Deviation (Limiter) Adjustment

Note: If the T856/857 will be used over the whole 8MHz switching range, you must set the deviation for each channel. However, if the module will be used on frequencies that cover only a 1MHz (or less) switching range, you can set the deviation on the middle channel and use this value for all other channels with the “EPOT Fill” option in PGM800Win.

Inject 1kHz at -10dBm into the line input (D-range 1 (PL100) pins 1 & 4; pins 2 & 3 shorted; refer to Section 2.2 of Part F).

Adjust RV210 (line sensitivity) fully clockwise and key the transmitter by earthing the Tx-Key line. Using PGM800Win, adjust the value of the “Deviation” EPOT setting for the current channel to obtain a deviation limit of ±4.7kHz (±3.8kHz) [±2.3kHz] (you can use either the mouse or up and down arrow keys).

Sweep the audio frequency from 100Hz to 4kHz and ensure that the maximum deviation does not exceed ±4.7kHz (±3.8kHz) [±2.3kHz]. Readjust “Deviation” if necessary via PGM800Win.

3.4.7 Line-in Level Adjustment

Remove the CTCSS signal (if used).

Set the injected signal at the line input to the required line level (typically -10 to -20dBm).

Adjust RV210 (line sensitivity) to provide ±3kHz (±2.4kHz) [±1.5kHz] deviation.

Reapply the CTCSS signal (if required).

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3.5 Audio Processor Links

3.5.1 Link Details

Use the following table to set up the audio processor to the configuration you require. You should set the audio processor links before carrying out any of the tuning and adjustment procedures. The factory settings are shown in brackets [ ].

Plug	Link[a]		Function
PL205	1-2	A	not connected
	[3-4]	B	microphone pre-amp. output to compressor input
	5-6	C	microphone pre-amp. output to multiplexer input
PL210	[1-2]	L	multiplexer output to pre-emphasis input
	3-4	M	multiplexer output to limiter input
	5-6	N	multiplexer output to compressor input
PL215	1-2	G	not connected
	[3-4]	H	compressor output to multiplexer input
	5-6	I	compressor output to limiter input
	7-8	J	compressor output to pre-emphasis input
	9-10	K	not connected
PL220	1-2	D	pre-emphasis output to multiplexer input
	[3-4]	E	pre-emphasis output to limiter input
	5-6	F	not connected

a. The letters in this column and in the table in Section 3.5.2 below refer to the identification letters screen printed onto the PCB beside each pair of pins.

3.5.2 Typical Options

	PL205	PL210	PL215	PL220
microphone pre-amp. compressed and pre-emphasised; line input pre-emphasised (standard set-up)	[3-4] B	[1-2] L	[3-4] H	[3-4] E
microphone pre-amp. compressed and pre-emphasised; line input unprocessed	3-4 B	3-4 M	7-8 J	1-2 D
line and microphone compressed and pre-emphasised	5-6 C	5-6 N	7-8 J	3-4 E
microphone pre-amp. compressed; line and microphone flat response	3-4 B	3-4 M	3-4 H	5-6 F

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3.6 Synthesiser Alignment

- Ensure that the T856/857 has been programmed with the required frequencies using PGM800Win software.

- **Single Channel** Select a channel using PGM800Win.

  Multichannel Select the middle channel via PGM800Win.

- Connect a high impedance voltmeter to the long lead of L1 in the VCO (this measures the synthesiser loop voltage).

- Key the transmitter by earthing the Tx-Key line.

  Single Channel Tune VCO trimmer C6 for a synthesiser loop voltage of 10V.

  Multichannel Tune VCO trimmer C6 for a synthesiser loop voltage of 10V on the middle channel.

  If there is no middle channel, tune C6 so that the channels are symmetrically placed around a loop voltage of 10V.

  All channels should lie within the upper and lower limits of 16V and 3V respectively.

  Do not attempt to program channels with a greater frequency separation than the specified switching range (8MHz).

- Check that the exciter output power is 1W ±300mW (**T857 only**).

- Measure the exciter output frequency and adjust the TCXO (=IC700) trimmer if required.



Caution: **This trimmer is susceptible to physical damage. Do not exert a downward force of more than 500g (1lb) when adjusting.**

3.7 PA Alignment (T856 Only)

Check that the exciter is connected to the PA with the coaxial link.

Connect an RF power meter to the PA output (use an appropriate attenuator as necessary).

Turn RV310 (power control) fully clockwise.

Note: Before the following measurement is taken, ensure the heatsink is at ambient temperature (20-25°C).

Measure and record the voltage (VL) at L481; perform this measurement at room temperature so that the NTC (R481) is close to 25°C.

Key the transmitter by earthing the Tx-Key line.

Tune #CV475 until maximum power is obtained. Check that the power exceeds 30W.

Adjust RV310 (power control) to 25W.

Readjust #CV475 to reduce the supply current by up to 0.5A.

3.8 Thermal Shutdown (T856 Only)

Key the transmitter by earthing the Tx-Key line and set the output power to 25W as described in Section 3.7.

Short L481 to ground.

Set RV330 (shutdown power level) for an output power of 5W.

Set RV320 (shutdown temperature) to 0.16VL volts (measured at IC350 pin 3), where VL is the voltage measured at L481 in Section 3.7. This sets the thermal shutdown at 85°C at NTC R481.

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3.9 Audio Processor & CTCSS

3.9.1 Two Point Modulation

The T856 and T857 utilise two point modulation to obtain a wide audio bandwidth independent of the synthesiser loop filter response. This is achieved by simultaneously frequency modulating the VCO and phase modulating the synthesiser reference frequency. The relative signal levels fed to the two modulators are quite critical and cause interaction when setting up.

Both modulating signals require readjustment when the exciter is shifted in frequency greater than the switching range (i.e. $\Delta F > \pm 4MHz$).

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: The reference modulation and limiter adjustments are controlled by 256-step electronic potentiometers (EPOTs), which are adjusted via the "Reference Modulation" and "Deviation" settings in PGM800Win. This allows the two point modulation and deviation settings to be adjusted for each channel.

Note 3: To optimise the modulation response across the switching range, repeat steps 1-4 below for each channel that will be used (usually needed only for data applications). In applications where the modulation response is less critical (e.g. voice use only), carry out steps 1-4 below on the middle channel and use the "EPOT Fill" option[1] in PGM800Win to copy the value to the other channels.

Note 4: If you are using an RF test set, turn the low pass filter off and set the high pass filter to 15kHz ***before*** beginning this procedure.

3.9.2 Modulator Adjustment

1. Inject an audio signal of 300Hz 1.5V rms (+5dBm) into the CTCSS input (D-range 1 (PL100) pin 8).

   Key the transmitter by earthing the Tx-Key line.

2. Adjust the output from the audio generator to obtain ±3kHz (±2.4kHz) [±1.5kHz] deviation at 300Hz.

3. Change the input frequency to 100Hz and, using PGM800Win, adjust the value of the "Reference Modulation" EPOT setting for the current channel to obtain ±3kHz (±2.4kHz) [±1.5kHz] deviation (you can use either the mouse or up and down arrow keys).

1. Use the "EDIT FILL" button on the tool bar or go to "Edit", "Fill", "Epot Settings" on the menu bar.

4. Change the input frequency back to 300Hz.

   Repeat steps 2 and 3 above until the deviations achieved at the two input frequencies are within 0.2dB of each other. You will need to do this at least four times.

5. Sweep the audio between 50 and 300Hz for peaks.

Note: A peak between 50 and 300Hz will indicate a fault condition, i.e:

- incorrect set-up

or - modulation circuitry fault.

The specification window is ±1dB relative to 150Hz from 67 to 260Hz.

3.9.3 CTCSS Encoder (If Used)

Program a CTCSS tone on the default channel using PGM800Win.

If you are using an RF test set, turn off the 300Hz high pass filter.

Key the T856/857 with the front panel "Carrier" switch.

Adjust RV805 (CTCSS level adjust) to give ±500Hz (±350Hz) [±250Hz] deviation.

Set the maximum deviation as per Section 3.9.4.

3.9.4 Limiter Adjustment

Note: If the T856/857 will be used over the whole 8MHz switching range, you must set the deviation for each channel. However, if the module will be used on frequencies that cover only a 1MHz (or less) switching range, you can set the deviation on the middle channel and use this value for all other channels with the “EPOT Fill” option in PGM800Win.

Set the links in the audio processor section as required (refer to Section 3.5).

Inject 1kHz at -10dBm into the line input (D-range 1 (PL100) pins 1 & 4; and pins 2 & 3 shorted; refer to Section 2.2 of Part F).

Adjust RV210 (line sensitivity) fully clockwise and key the transmitter by earthing the Tx-Key line. Using PGM800Win, adjust the value of the “Deviation” EPOT setting for the current channel to obtain a deviation limit of ±4.7kHz (±3.8kHz) [±2.3kHz] (you can use either the mouse or up and down arrow keys).

Sweep the audio frequency from 100Hz to 4kHz and ensure that the maximum deviation does not exceed ±4.7kHz (±3.8kHz) [±2.3kHz]. Readjust “Deviation” if necessary via PGM800Win.

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3.9.5 Line Level Without Compressor

This section assumes that the compressor is not used. If the compressor is required, refer to Section 3.9.6.

Remove the CTCSS signal (if used).

Adjust the line sensitivity as follows:

- set the injected signal at the line input to the required line level (typically -10 to -20dBm);
- adjust RV210 (line sensitivity) to provide ±3kHz (±2.4kHz) [±1.5kHz] deviation.

Reapply the CTCSS signal (if required).

3.9.6 Compressor

The compressor may be used on the line input only, the microphone input only, or on both the line and microphone inputs. If the compressor is used, refer to one of the following sections as appropriate.

3.9.6.1 Compressor On Line Input Only

Set RV210 (line sensitivity) fully clockwise and key the transmitter by earthing the Tx-Key line.

Reduce the line level to -50dBm at 1kHz and set RV220 (compression level) fully clockwise.

Check that ±3kHz deviation (±2.4kHz) [±1.5kHz] is still available.

Slowly increase the audio input level until the demodulated waveform shows significant signs of clipping (approximately ±4.5kHz (±3.6kHz) [±2.3kHz] deviation).

Adjust RV220 anticlockwise until the demodulated waveform is just clipping (approximately ±4kHz (±3.2kHz) [±2kHz] deviation).

Increase the input level to -10dBm and check that the test tone is still held just into clipping. The input line level should be typically -10 to -20dBm.

3.9.6.2 Compressor On Microphone Input Only

Key the transmitter by earthing the Tx-Key line and plug a microphone jack into the front panel socket.

Adjust RV220 (compression level) fully clockwise.

Acoustically couple the microphone to a tone box (1kHz) and close the PTT switch.

Increase the audio level until the demodulated waveform shows significant signs of clipping (approximately ±4.5kHz (±3.6kHz) [±2.3kHz] deviation).

Adjust RV220 anticlockwise until the demodulated waveform is just clipping (approximately ±4kHz (±3.2khz) [±2kHz] deviation).

Increase the audio level by 10dB and verify that the test tone is held just into clipping.

Whistle steadily into the microphone, checking that approximately ±4kHz (±3.2khz) [±2kHz] deviation is produced. The modulated waveform should be basically sinusoidal.

Speak into the microphone, checking that the modulation peaks reach about ±5kHz (±4kHz) [±2.5kHz] deviation.

As the line is to be used without compression, set RV210 (line sensitivity) as described in Section 3.9.5.

3.9.6.3 Compressor On Both Line & Microphone Inputs

Set up as described in Section 3.9.6.1.

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4 T856/857 Functional Testing



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following test procedures will confirm that the T856/857 has been tuned and adjusted correctly and is fully operational.

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Figure 4.4 and Figure 4.5 for the location of the main tuning and adjustment controls, and to Section 3.3 for the test equipment set-up. Refer also to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section.

Section	Title	Page
4.1	**Current Consumption**	**4.3**
4.2	**Output Power**	**4.3**
4.3	**Output Frequency**	**4.3**
4.4	**Timers**	**4.3**
4.5	**Frequency Response**	**4.4**
4.6	**Audio Level Input Sensitivity**	**4.7**

Figure	Title	Page
4.1	T856/857 Transmit Timers	4.4
4.2	T856/857 Pre-emphasis Response	4.5
4.3	T856/857 Limiting Response	4.6
4.4	T856 Main Tuning & Adjustment Controls	4.9
4.5	T857 Main Tuning & Adjustment Controls	4.11

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4.1 Current Consumption

Connect the T856/857 to a 13.8V power supply.

Connect an RF power meter to the T856/857 output socket.

Check that the current in the 13.8V power cable is less than 150mA.

Key the T856/857 by earthing the Tx-Key line (the carrier "On" LED should light).

T856 Only: Adjust RV310 (power control) to obtain 25W output power.

Check that the current is as follows:

T856	<5.5A
T857	<750mA.

4.2 Output Power

Connect an RF power meter with suitable attenuation to the T856/857 output socket.

Key the T856/857 by earthing the Tx-Key line.

Check that:

T856	the output power adjusts to ≥25W with RV310 (power control) turned fully clockwise
T857	the output power is 1W ±300mW.

4.3 Output Frequency

Connect the T856/857 output to a frequency counter via an attenuator pad:

T856	40dB pad
T857	20dB pad.

Measure the output frequency and, if necessary, adjust the TCXO (=IC700) to trim to the nominal frequency (±100Hz).

4.4 Timers

The transmit tail timer, transmit timeout timer and transmit lockout timer can all be set from PGM800Win. The fields for setting these are found on the system information page. These three timers operate as follows (refer also to Figure 4.1):

Timer	Function	Adjustment
Transmit Tail	Sets the tail time during which the transmitter stays keyed after the external key source has been removed.	0-5 seconds in 100ms steps[a]
Transmit Timeout	Sets the maximum continuous transmission time. Once the timer has timed out, the transmitter must be keyed again, unless prevented by the transmit lockout timer.	0-300 seconds[b] in 10 second steps
Transmit Lockout	Sets the period of time that must elapse after a timeout before the transmitter can re-transmit. Once the timer has timed out, the transmitter can be keyed again.	0-60 seconds in 10 second steps

a. Adjustable in 20ms steps in PGM800Win version 2.12 and later.
b. Adjustable in 20ms steps in PGM800Win version 2.12 and later.

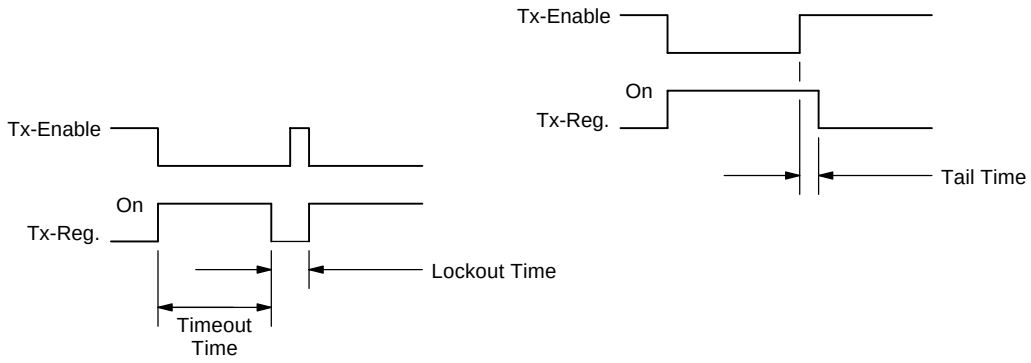


Figure 4.1 T856/857 Transmit Timers

4.5 Frequency Response

If the T856/857 has been correctly adjusted, the pre-emphasis and limiting responses should closely match those shown in Figure 4.2 and Figure 4.3 respectively.

Note: The limits shown on these graphs should not be exceeded.

- If you are using an RF test set, turn off all filters.
- Measure the pre-emphasis response as follows:

  Reduce the line level to give ±1kHz (±0.8kHz) [±0.5kHz] deviation at 1kHz.

  Sweep the modulation frequency.

  The response should closely match that shown in Figure 4.2.
- Measure the limiting response as follows:

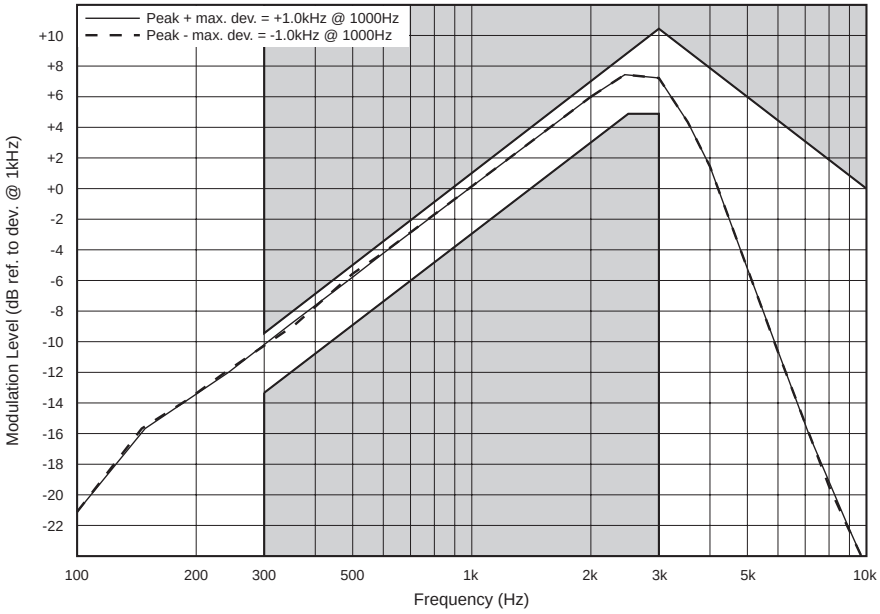
  Set the line level to give ±3kHz (±2.4kHz) [±1.5kHz] deviation at 1kHz.

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Increase the line level 20dB and sweep the modulation frequency.

The response should closely match that shown in Figure 4.3.

Wide Bandwidth



Mid Bandwidth

The mid bandwidth graph is the same shape as the wide bandwidth graph. The deviation figures are as follows:

peak + max. deviation = +0.8kHz
peak - max. deviation = -0.8kHz.

Narrow Bandwidth

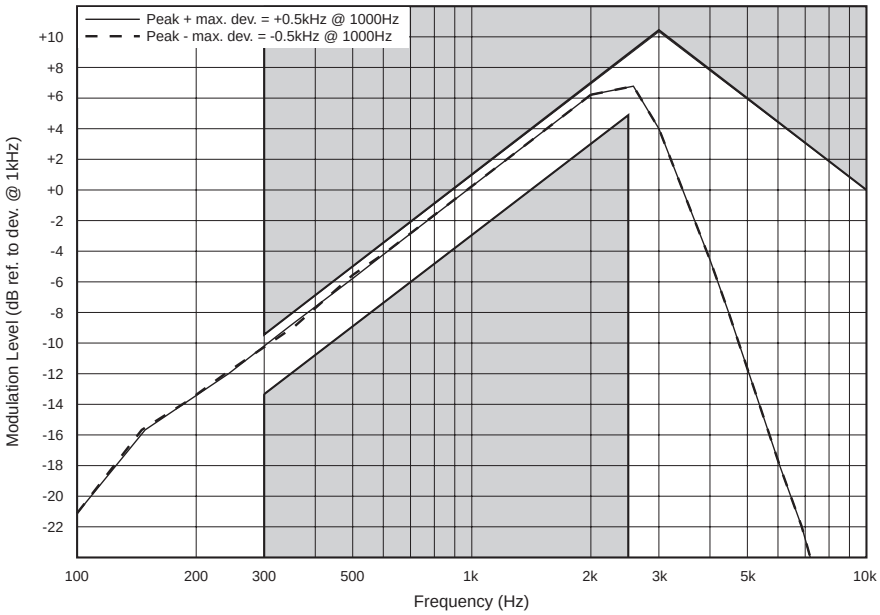
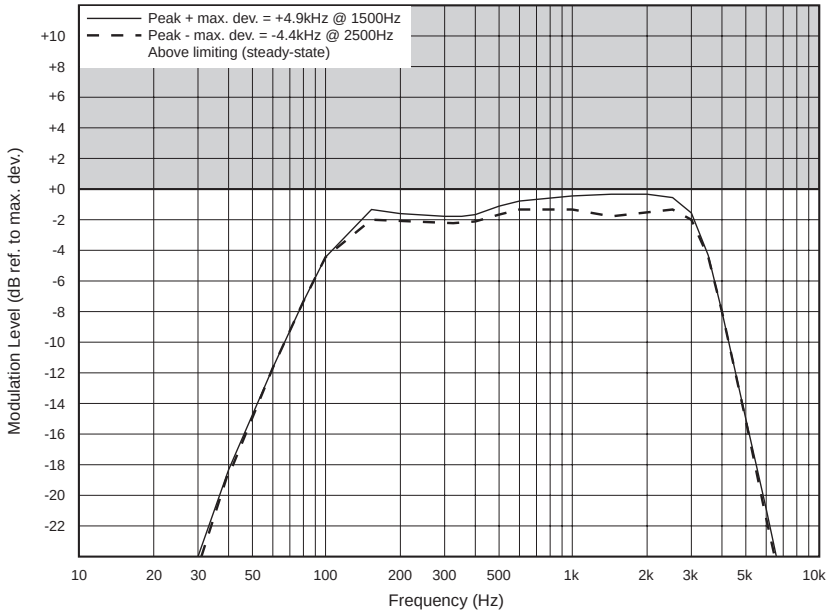


Figure 4.2 T856/857 Pre-emphasis Response

Wide Bandwidth



Mid Bandwidth

The mid bandwidth graph is the same shape as the wide bandwidth graph. The deviation figures are as follows:

peak + max. deviation = +4kHz
peak - max. deviation = -4kHz.

Narrow Bandwidth

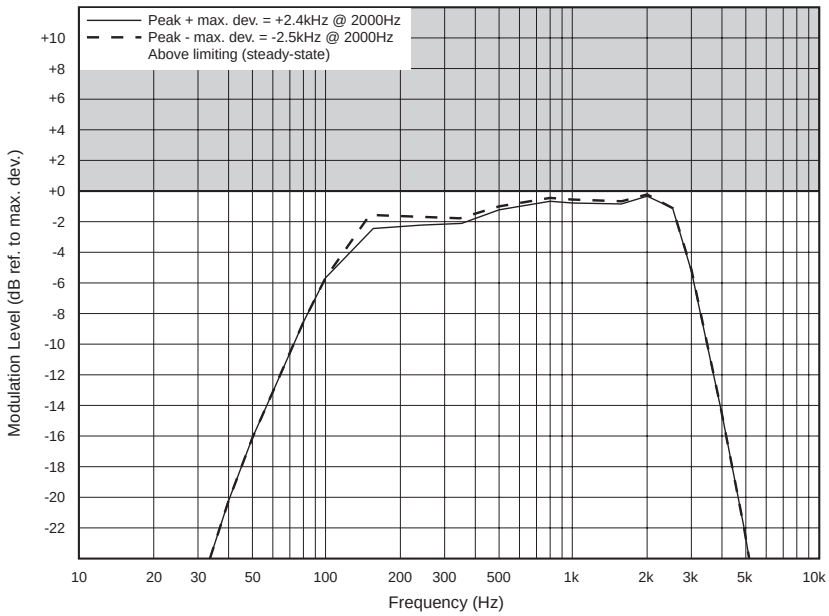


Figure 4.3 T856/857 Limiting Response

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4.6 Audio Level Input Sensitivity

- Adjust RV210 (line sensitivity) fully clockwise.
- Check that the input sensitivities are better than those specified below:

Line Input	600 ohms, ±3kHz (±2.4kHz) [±1.5kHz] deviation at 1kHz:	
	with compressor	-50dBm
	without compressor	-30dBm
Microphone Input	600 ohms, ±3kHz (±2.4kHz) [±1.5kHz] deviation at 1kHz:	
	with compressor	-75dBm
	without compressor	-55dBm
CTCSS Input	1kHz deviation at 150Hz	500mV rms

Note: A degraded signal to noise ratio can be expected with the compressor selected. The extent of the degradation is dependent on the audio input level.

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5 T856/857 Fault Finding



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following test procedures and fault finding flow charts may be used to help locate a hardware problem, however they are by no means a complete fault finding procedure. If you still cannot trace the fault after progressing through them in a logical manner, contact your nearest Tait Dealer or Customer Service Organisation. If necessary, you can get additional technical help from Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand (full contact details are on page 2).

Note 1: In this and following sections deviation settings are given first for wide bandwidth sets, followed by settings in brackets for mid bandwidth sets ( ) and narrow bandwidth sets [ ].

Note 2: Unless otherwise specified, the term "PGM800Win" used in this and following sections refers to version 2.00 and later of the software.

Refer to Section 6 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components and test points on the main PCB. The parts list and diagrams for the VCO PCB are in Part E.

The following topics are covered in this section

Section	Title	Page
5.1	**Visual Checks**	**5.3**
5.2	**Component Checks**	**5.3**
5.3	**Front Panel LED Indicator**	**5.3**
5.4	**DC Checks**	**5.4**
5.4.1	Power Rails	5.4
5.4.2	VCO Locking	5.4
5.5	**RF Checks**	**5.5**
5.5.1	T856 Drive Power	5.5
5.5.2	T856 PA Output Power	5.5
5.5.3	T857 Output Power	5.5
5.5.4	Audio And Modulation	5.6
5.6	**PGM800Win Generated Errors**	**5.7**

Section	Title	Page
5.7	**Fault Finding Charts**	**5.8**
5.7.1	Microcontroller	5.8
5.7.1.1	Basic Checks	5.8
5.7.1.2	Serial Communications	5.9
5.7.1.3	CTCSS Encode	5.10
5.7.2	Regulator	5.11
5.7.3	Synthesiser	5.12
5.7.4	T856 Drive Amplifier	5.15
5.7.5	T856 PA & Power Control	5.16
5.7.6	T857 Exciter Drive Amplifier	5.17
5.7.7	Audio Processor	5.18
5.8	**To Replace The T856 PA Transistors (Q410 & Q420)**	**5.19**

Figure	Title	Page
5.1	RF Diode Probe Circuit	5.5
5.2	Typical Transistor/Capacitor Spacing (Not To Scale)	5.19

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5.1 Visual Checks

Remove the covers from the T856/857 and inspect the PCB for damaged or broken components, paying particular attention to the surface mounted devices (SMD's).

Check for defective solder joints. If repair or replacement is considered necessary, refer to Section 3 of Part A.

5.2 Component Checks

If you suspect a transistor is faulty, you can assess its performance by measuring the forward and reverse resistance of the junctions. Unless the device is completely desoldered, first make sure that the transistor is not shunted by some circuit resistance. Use a good quality EVM (e.g. Fluke 75) for taking the measurements (or a 20k ohm/V or better multimeter, using only the medium or low resistance ranges).

The collector current drawn by multi-junction transistors is a further guide to their performance.

If an IC is suspect, the most reliable check is to measure the DC operating voltages. Due to the catastrophic nature of most IC failures, the pin voltages will usually be markedly different from the recommended values in the presence of a fault. The recommended values can be obtained from either the circuit diagram or the component data catalogue.

5.3 Front Panel LED Indicator

The green "Supply" LED on the T856/857 front panel will flash according to the conditions described in the following table:

Flash Rate	Condition
fast (⅓ sec. on/⅓ sec. off approx.)	T856/857 is linked with PGM800Win
unequal (⅓ sec. on/1 sec. off approx.)	microcontroller has detected an internal communications error - refer to Section 5.7.1

Where two or more conditions occur at the same time, the precedence is in the order shown above (i.e. T856/857 linked has the highest priority, followed by internal error).

5.4 DC Checks

5.4.1 Power Rails

Refer to the test points and options diagrams in Section 6 for test point locations, and to the regulator fault finding chart (Section 5.7.2) for fault diagnosis.

Check the 13.8V (TP601) and 9V (TP602) supplies at their test points in the regulator compartment with a DMM.

Check the 5V (TP604) and 20V (TP603) rails at their respective test points in the regulator compartment.

Check that Tx-Reg. (TP305 in the exciter compartment) comes up to 8.8V when the exciter is keyed.

Check the +5V digital regulator output (TP607 in the regulator compartment).

T856 Only: Check the 9V supply (IC370 pin 1) with a DMM.

Check for short circuits.

5.4.2 VCO Locking

Key the exciter.

Using a DMM, monitor the VCO control voltage on the long lead of L1 on the VCO PCB.

If the synthesiser is locked and the VCO aligned, the voltage at this point should be between 3 and 16V.

If the VCO is not locked, refer to the synthesiser fault finding chart (Section 5.7.3).

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5.5 RF Checks

In-circuit RF levels may be measured with an RF probe on which the earth lead has been shortened to a minimum (i.e. 13mm). Refer to the circuit diagrams for typical levels.

Figure 5.1 shows a suitable RF probe circuit..

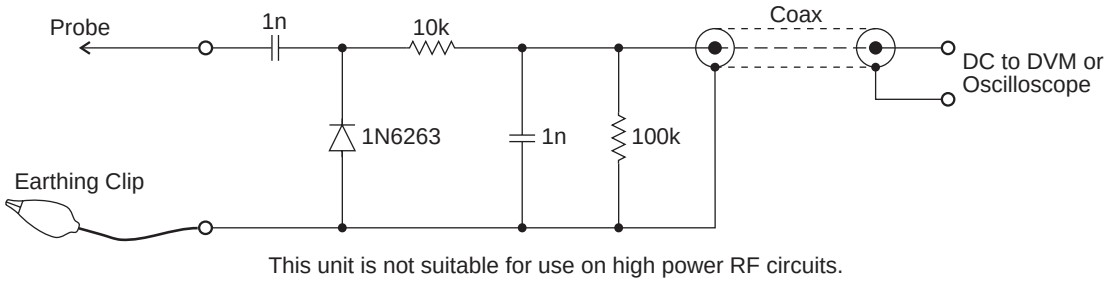


Figure 5.1 RF Diode Probe Circuit

5.5.1 T856 Drive Power

Refer to the drive amplifier fault finding chart (Section 5.7.4).

Ensure that the VCO locks (refer to Section 5.4.2).

Connect the drive output to a power meter and key the transmitter.

Check that the exciter output power (SK310) is >1.5W.

Note: If the synthesiser is out of lock, the lock detector (synthesiser IC740 and comparator IC750) will prevent the RF signal from reaching the PA by switching the supply to the exciter amplifier (Q350, Q355).

5.5.2 T856 PA Output Power

Reconnect the drive output to the PA input.

Connect the PA to a power meter and key the transmitter.

Check that the output power is >30W with RV310 (power control) adjusted fully clockwise.

5.5.3 T857 Output Power

Refer to the exciter drive amplifier fault finding chart (Section 5.7.6).

Ensure that the VCO locks (refer to Section 5.4.2).

Connect the exciter output to a power meter and key the exciter.

Check that the output power is 1W ±300mW.

Note: If the synthesiser is out of lock, the lock detector (synthesiser IC740 and comparator IC750) will prevent the RF signal from reaching the PA by switching the supply to the exciter amplifier (Q301, IC300, Q302, Q303).

5.5.4 Audio And Modulation

Refer to the audio processor fault finding chart (Section 5.7.7).

Set up the audio processor as described in Section 3.9.

Check that the demodulated RF output has the frequency response referred to in Section 4.5 with at least ±5kHz (±4kHz) [±2.5kHz] deviation available at 1kHz modulating frequency.

If the above result is not achieved, either the two modulators are incorrectly adjusted or a fault condition exists.

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5.6 PGM800Win Generated Errors

The following errors are those most likely to occur using PGM800Win. Refer to the PGM800Win software user's manual for a complete list of error messages.

Channel Switch Set

The programmed default channel change was not accepted by the base station because a channel is selected externally. Try turning the external channel switch off to change the default channel in PGM800Win.

Synth Out Of Lock

The synthesiser received incorrect data, or the data was corrupted. Enter a frequency within the VCO switching range, or tune the VCO.

Internal Error

Data could not be read from the base station due to an internal error. Check for shorts or open circuits on the SDA, SCK, SYNTH and EPOT lines. The SDA, SCK and SYNTH are normally high, and the EPOT is normally low.

Write/Read To An Unlinked Module

The link to the module does not exist. Undefined error.

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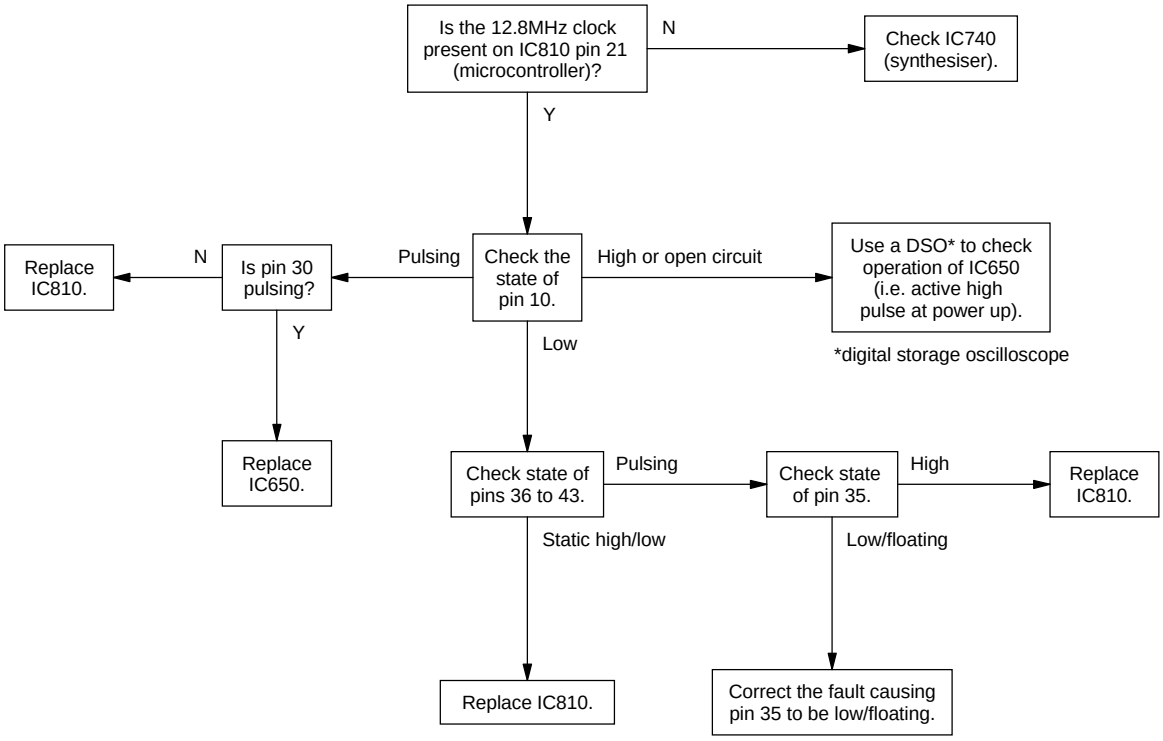
5.7 Fault Finding Charts

Note: The standard test point designations used in this section are as follows:

TP601	13.8V
TP602	9V
TP603	20V
TP604	5V

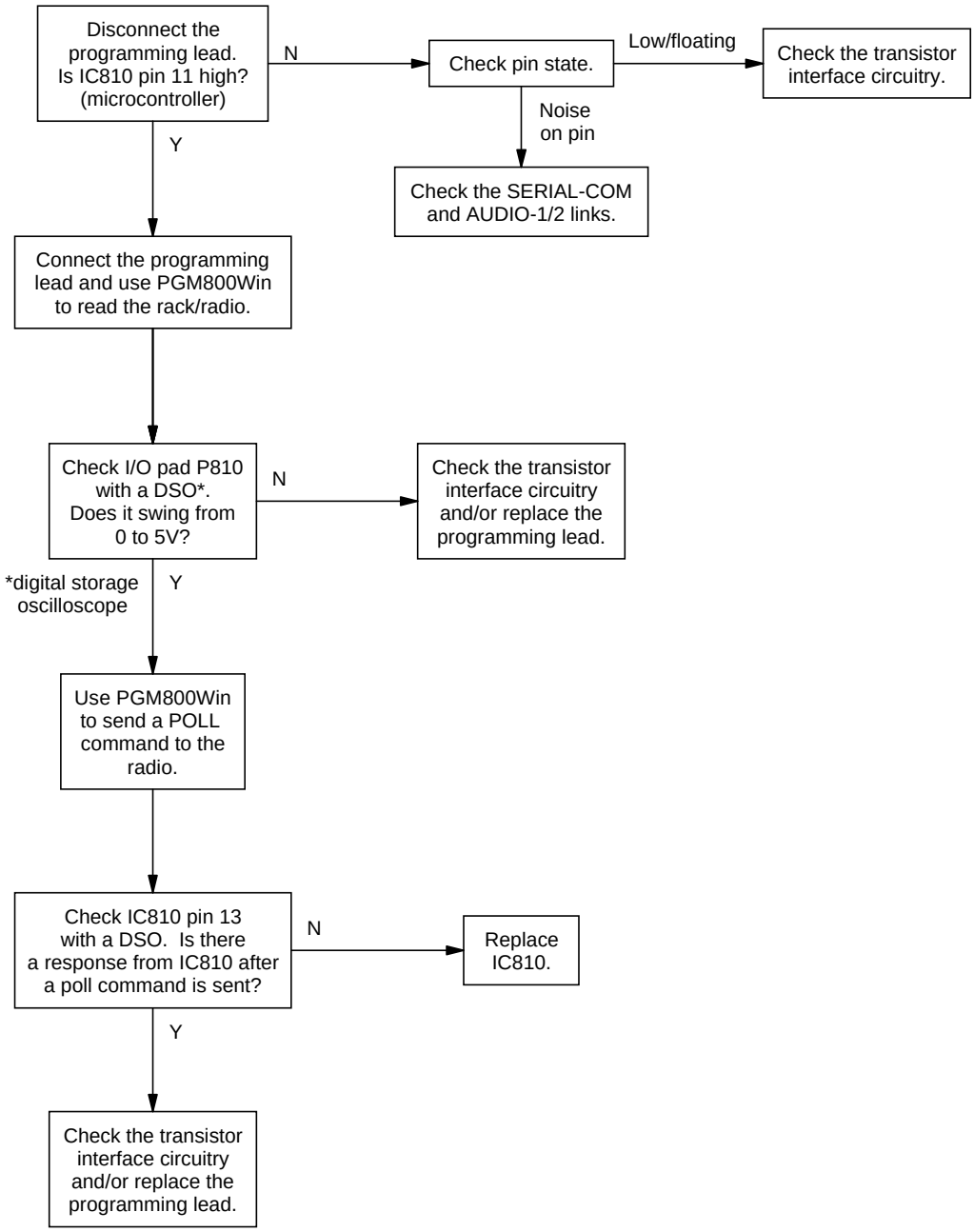
5.7.1 Microcontroller (IC810)

5.7.1.1 Basic Checks

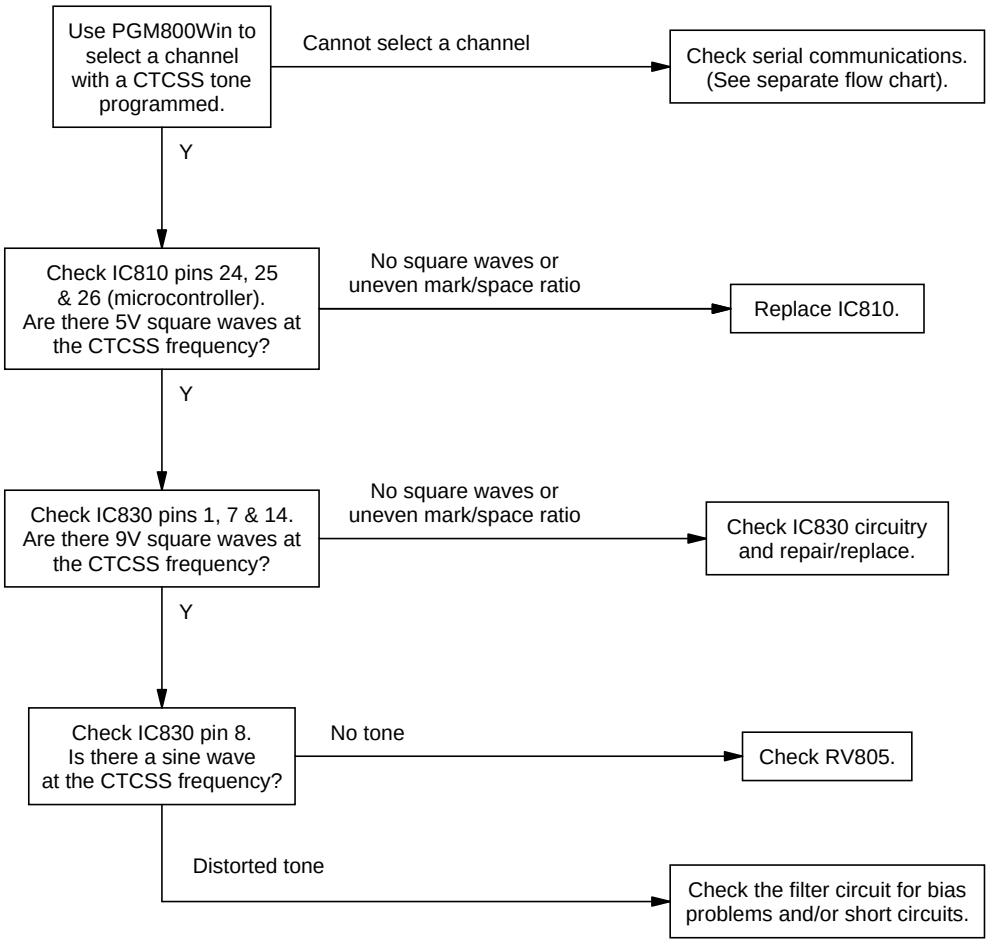


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5.7.1.2 Serial Communication

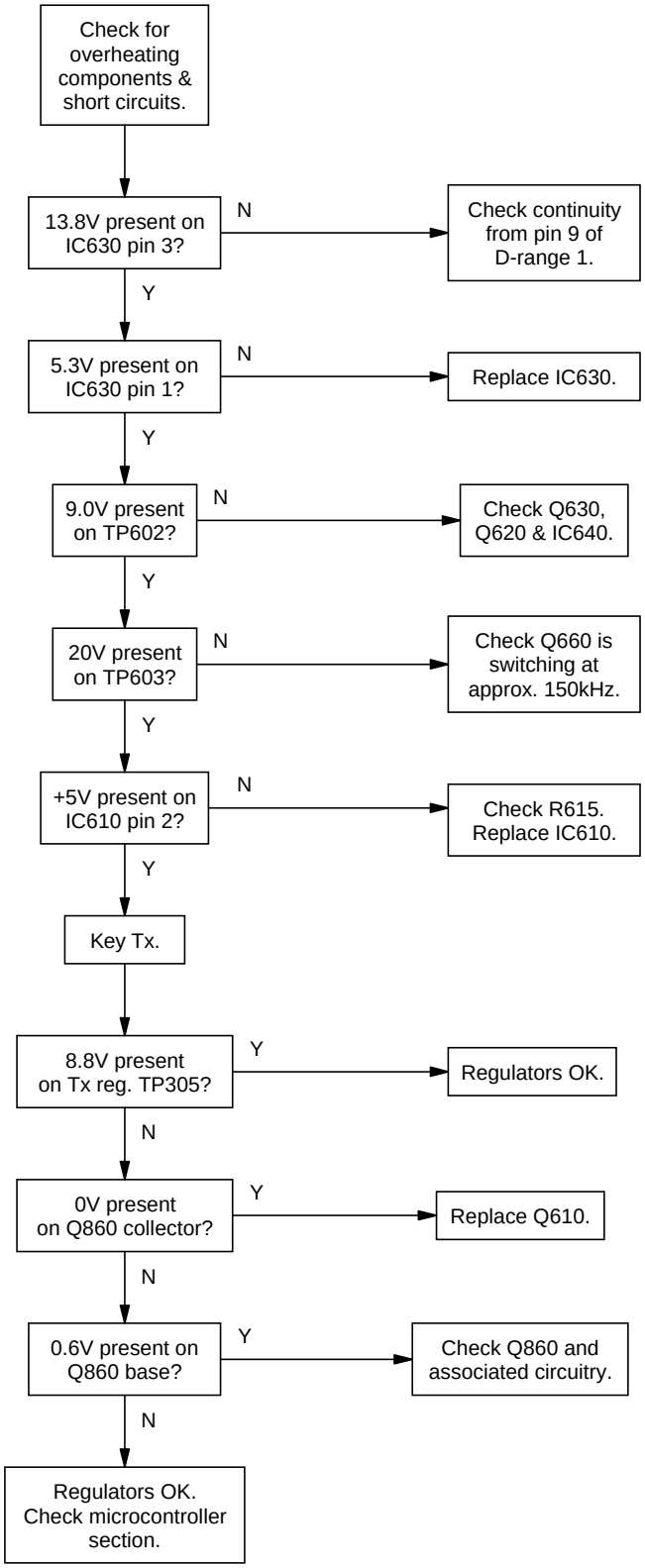


5.7.1.3 CTCSS Encode



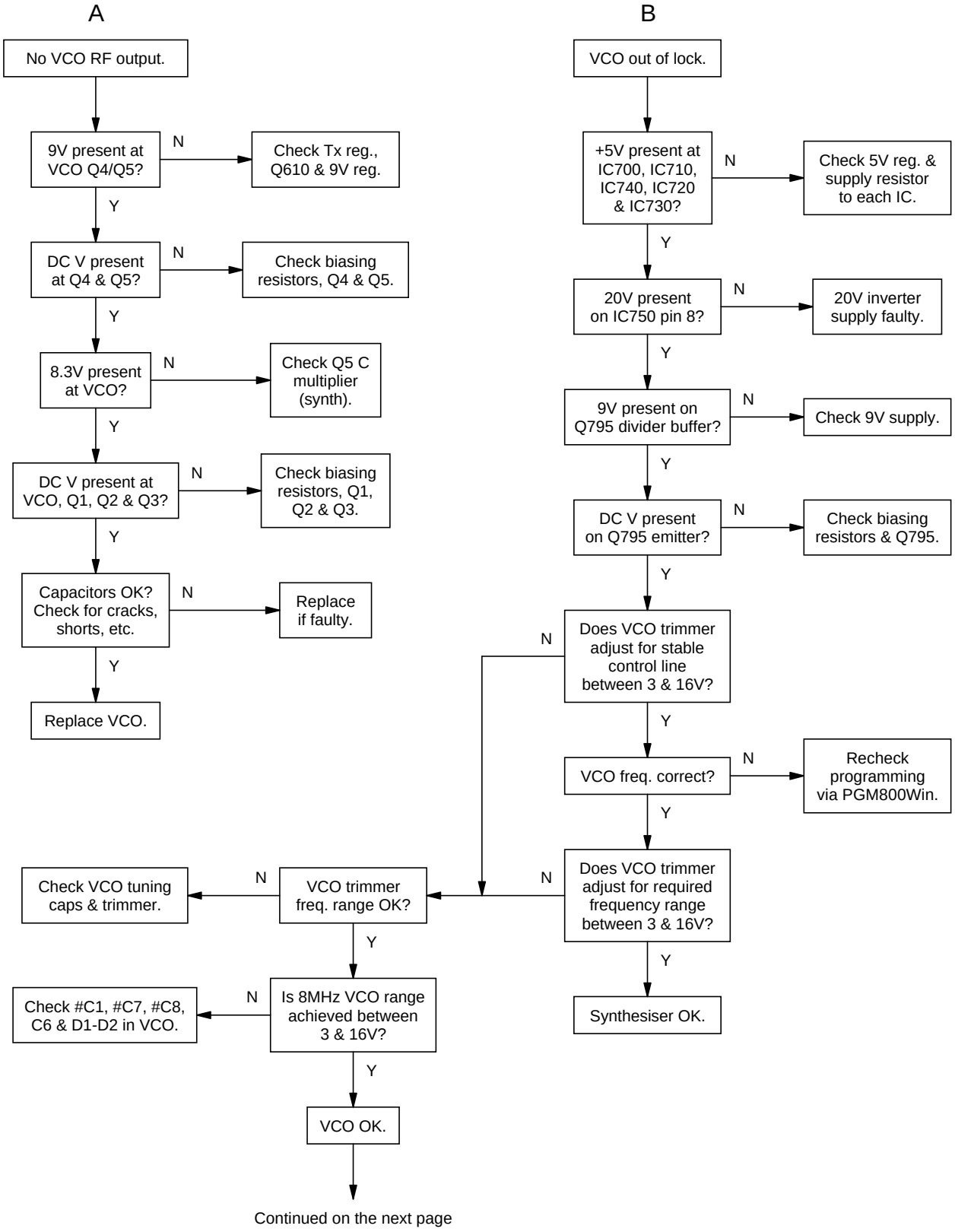
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5.7.2 Regulator

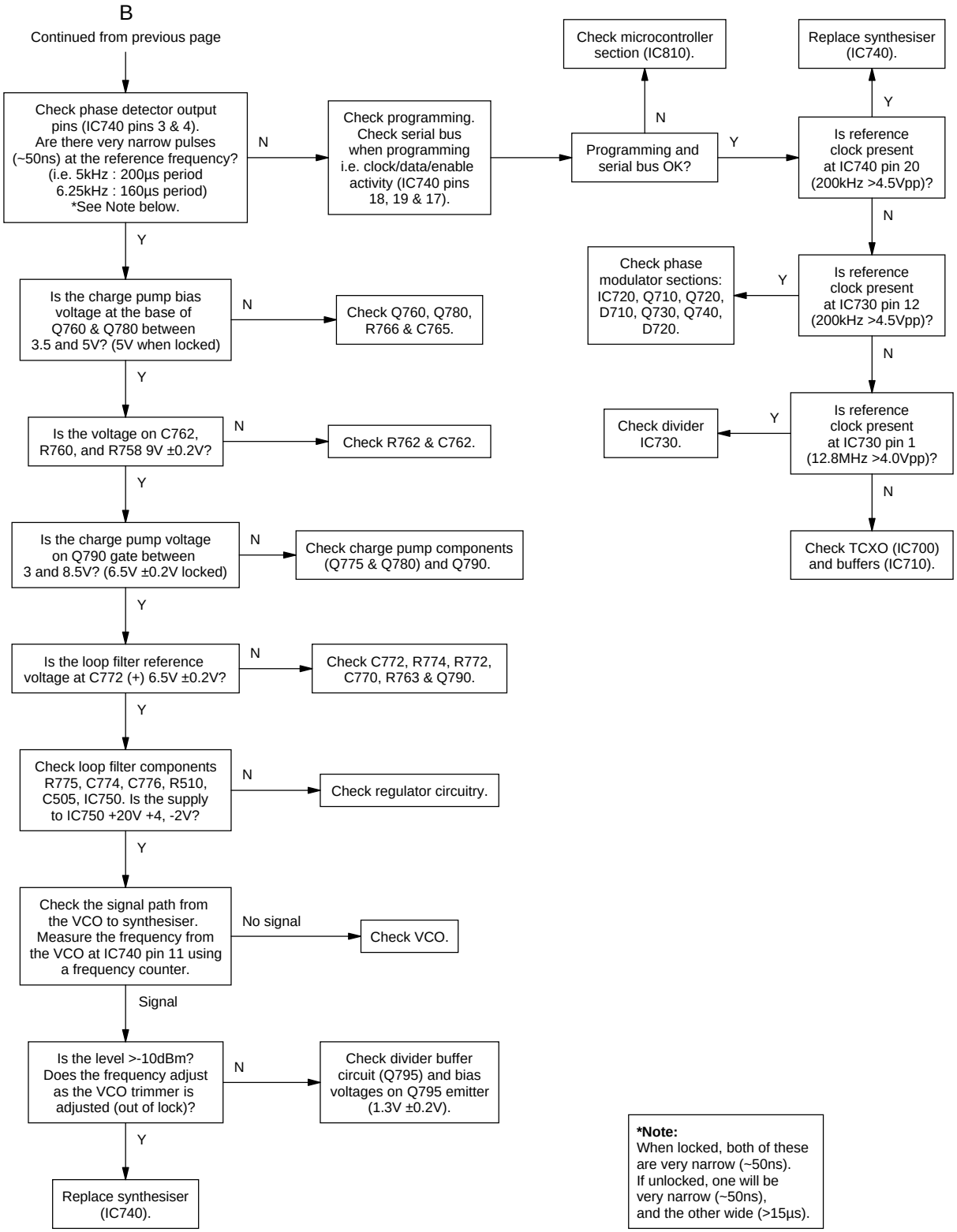


5.7.3 Synthesiser

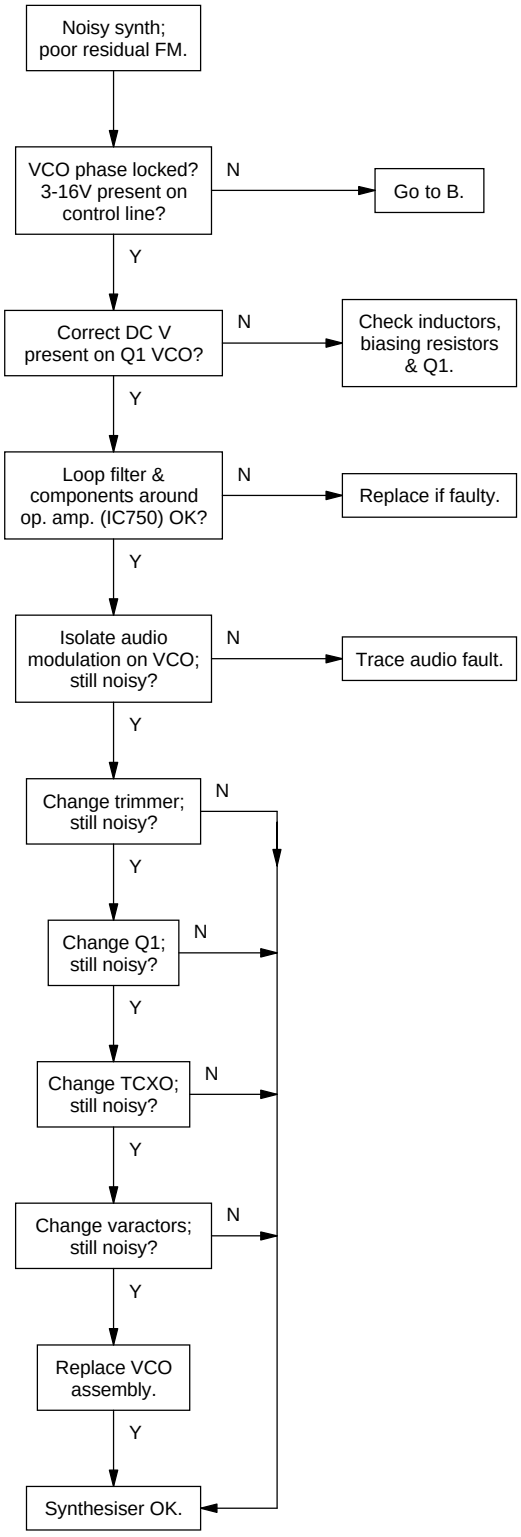
Refer to the synthesiser circuit diagram (sheet 7) in Section 6 and the VCO circuit diagram in Part E.



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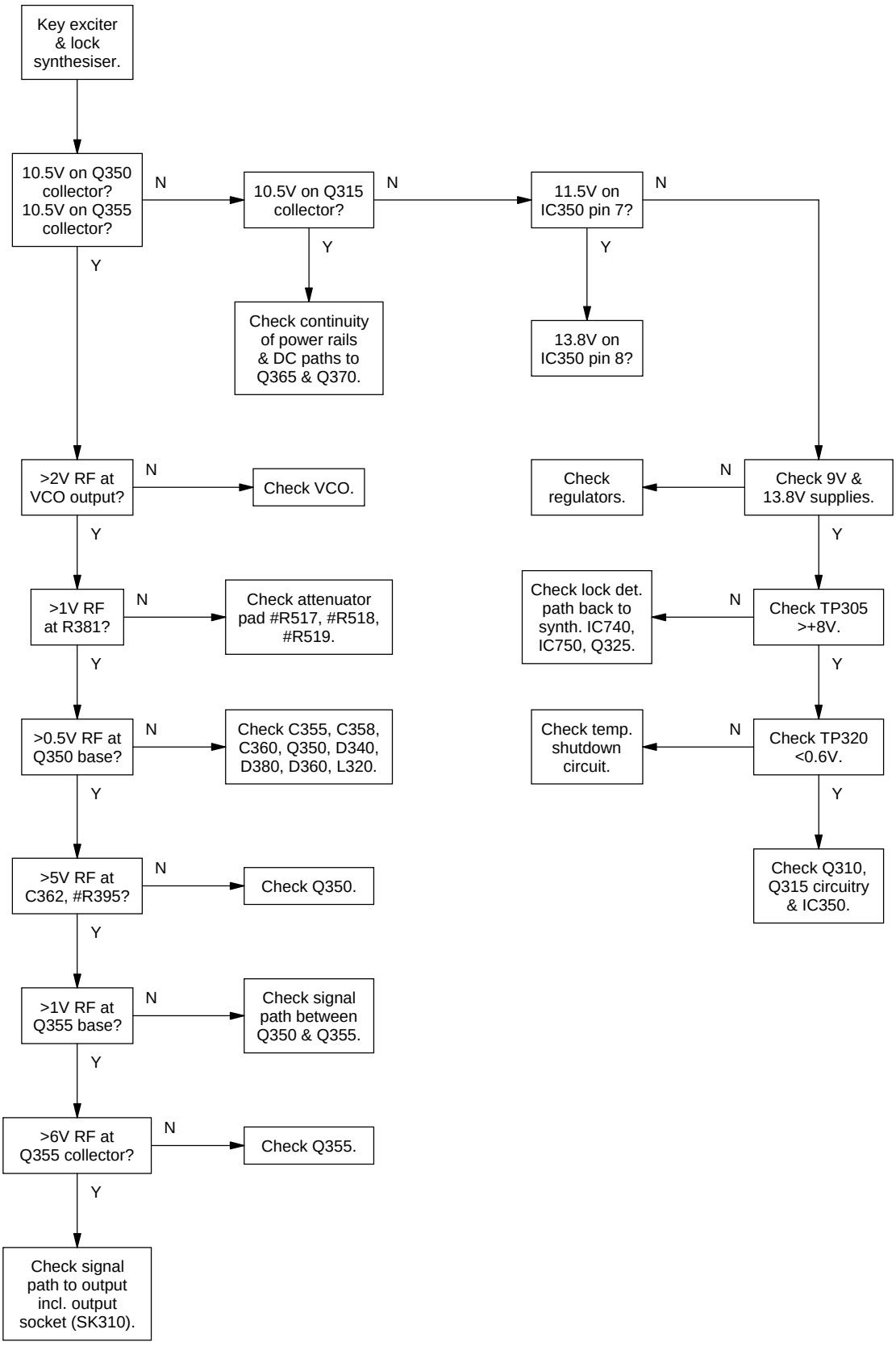

B
Continued from previous page
Check phase detector output pins (IC740 pins 3 & 4). Are there very narrow pulses (~50ns) at the reference frequency? (i.e. 5kHz : 200µs period 6.25kHz : 160µs period) *See Note below.
N
Check programming. Check serial bus when programming i.e. clock/data/enable activity (IC740 pins 18, 19 & 17).
Programming and serial bus OK?
N
Check microcontroller section (IC810).
Y
Is reference clock present at IC740 pin 20 (200kHz >4.5Vpp)?
Y
Replace synthesiser (IC740).
N
Is reference clock present at IC730 pin 12 (200kHz >4.5Vpp)?
Y
Check phase modulator sections: IC720, Q710, Q720, D710, Q730, Q740, D720.
N
Is reference clock present at IC730 pin 1 (12.8MHz >4.0Vpp)?
Y
Check divider IC730.
N
Check TCXO (IC700) and buffers (IC710).
Y
Is the charge pump bias voltage at the base of Q760 & Q780 between 3.5 and 5V? (5V when locked)
N
Check Q760, Q780, R766 & C765.
Y
Is the voltage on C762, R760, and R758 9V ±0.2V?
N
Check R762 & C762.
Y
Is the charge pump voltage on Q790 gate between 3 and 8.5V? (6.5V ±0.2V locked)
N
Check charge pump components (Q775 & Q780) and Q790.
Y
Is the loop filter reference voltage at C772 (+) 6.5V ±0.2V?
N
Check C772, R774, R772, C770, R763 & Q790.
Y
Check loop filter components R775, C774, C776, R510, C505, IC750. Is the supply to IC750 +20V +4, -2V?
N
Check regulator circuitry.
Y
Check the signal path from the VCO to synthesiser. Measure the frequency from the VCO at IC740 pin 11 using a frequency counter.
No signal
Check VCO.
Signal
Is the level >-10dBm? Does the frequency adjust as the VCO trimmer is adjusted (out of lock)?
N
Check divider buffer circuit (Q795) and bias voltages on Q795 emitter (1.3V ±0.2V).
Y
Replace synthesiser (IC740).
*Note:
When locked, both of these are very narrow (~50ns).
If unlocked, one will be very narrow (~50ns), and the other wide (>15µs).

C

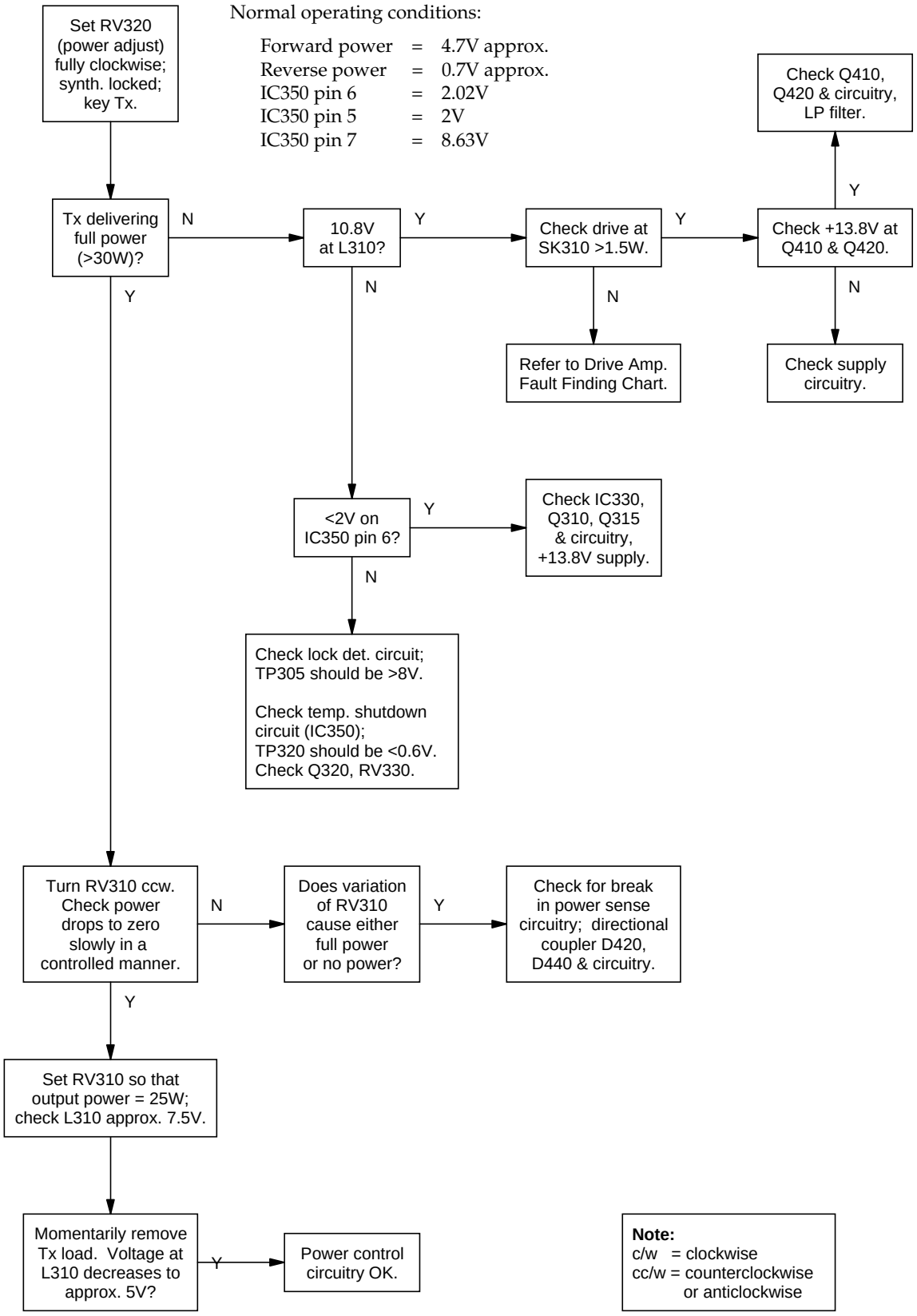


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5.7.4 T856 Drive Amplifier

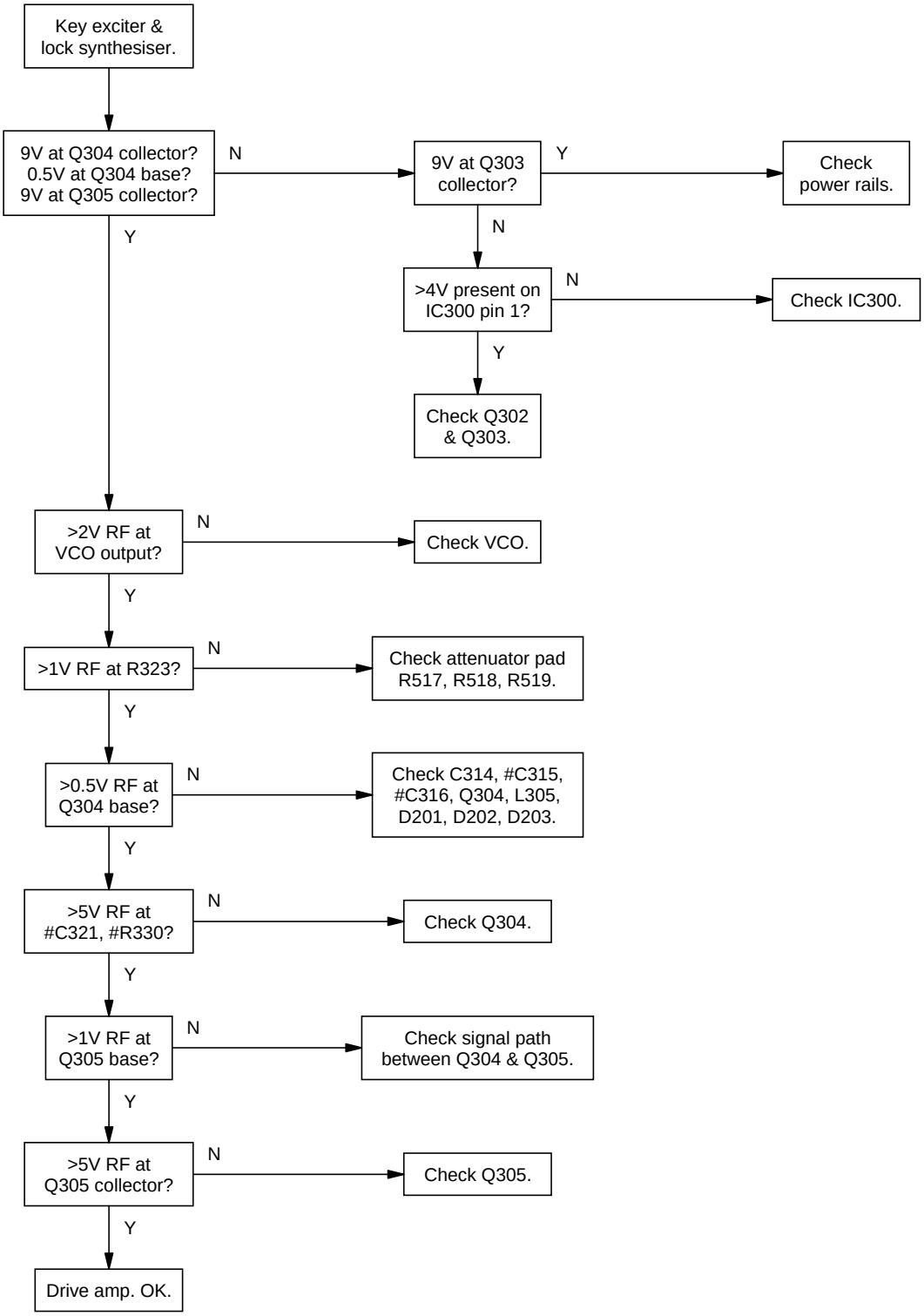


5.7.5 T856 PA & Power Control

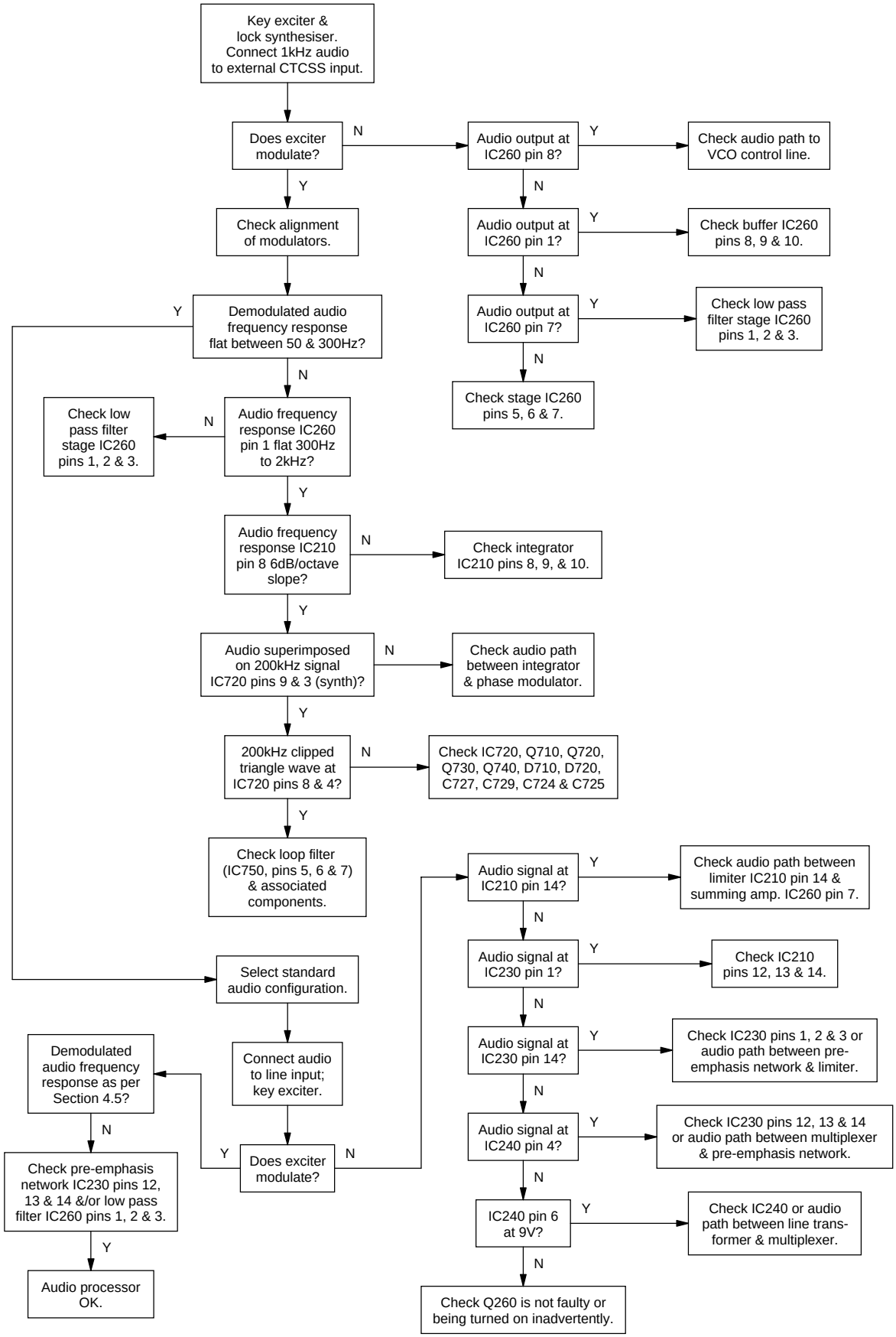


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5.7.6 T857 Exciter Drive Amplifier



5.7.7 Audio Processor



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5.8 To Replace The T856 PA Transistors (Q410 & Q420)

Caution: **Failure to comply with the following procedure can result in failure of the device due to poor heatsinking, or worse, can endanger the health of the assembler if the beryllium oxide die carrier is smashed during assembly.**

Caution: **As the location of certain components in the PA is critical to performance, it is important that any components removed or disturbed are refitted in *exactly* the same position.**

Before attempting to remove a transistor, measure the distance between the capacitors and transistor body to the nearest 0.5mm (measurement "A" in Figure 5.2) so that the capacitors can be replaced in *exactly* the same position. These measurements are shown in Figure 5.2 for the 6LFL package, however the same procedure applies for the SOE (stud) package.

Caution: **Do not apply too much heat or pressure to the PCB pads and tracks as you may damage them or lift them from the PCB, causing permanent damage to the transmitter.**

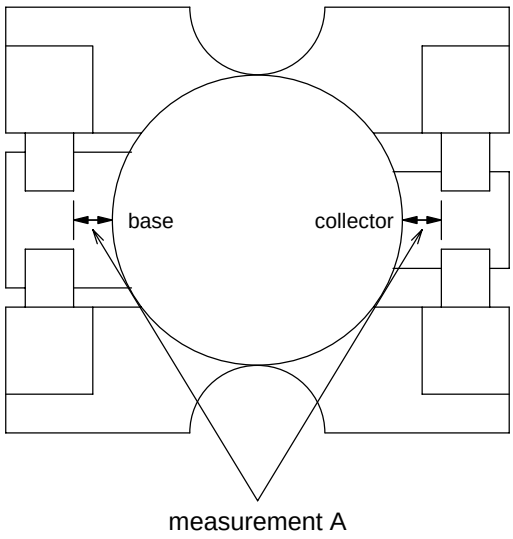


Figure 5.2 Typical Transistor/Capacitor Spacing (Not To Scale)

Desolder and remove the components from around the transistor.

Q420 Only: Desolder and remove the two solder tags.

Desolder the transistor tabs by heating with a soldering iron and lifting away from the PCB with a screwdriver or thin stainless steel spike, then remove the device.

Q410 Only: Unscrew the transistor stud nut and remove the device.

Remove any excess solder from the PCB pads with solder wick.

Trim the tabs of the replacement transistor so that the device sits neatly on the PCB pads provided.

Lightly tin the underside of the transistor tabs. Remove any excess solder to leave a thin, even layer on the tabs.

Apply a small amount of heatsink compound (Dow-Corning 340 or equivalent) to the transistor mounting surface. Sufficient compound should be used to ensure an even film over the entire mounting surface.

Place the transistor on the PCB in the correct orientation and ensure the tabs are flush to the surface.

Q410 Only: Lightly solder one tab to the PCB, then torque down the retaining nut to the correct torque (0.7Nm/6in.lbf.).



Caution: **Do not solder all the tabs before torquing down otherwise the device may be broken.**

Q420 Only: Refit the solder tags.

Solder all transistor tabs to the PCB.

Replace each component in exactly the same position as noted previously.

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6 T856/857 PCB Information

Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

This section provides the following information on the T856 transmitter and T857 exciter:

- parts lists
- grid reference indexes
- mechanical assembly drawings
- PCB layouts
- test points & options connections drawings
- circuit diagrams.

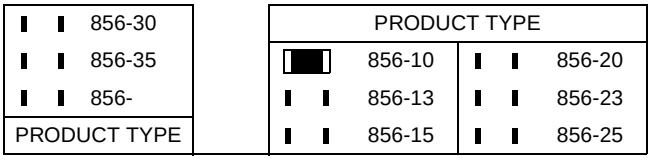
Section	Title	IPN	Page
6.1	Introduction		6.1.3
6.2	T856 Transmitter PCB	220-01397-01	6.2.1
6.3	T857 Exciter PCB	220-01398-02 220-01398-04	6.3.1 6.3.29

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6.1 Introduction

Product Type Identification

You can identify the transmitter or exciter type by checking the product code printed on a label on the rear of the chassis (product codes are explained in Section 1.3 in this Part of the manual, and Figure 1.1 in Part A shows typical labels). You can further verify the product type by checking the placement of an SMD resistor in the table that is screen printed onto the top side of the PCB, similar to the example drawn below. In this example, the resistor indicates that the product was built as a T856-10-XXXX.



Note: The only function of this resistor is to indicate the product type. It has no effect on the circuitry or operation of the transmitter or exciter.

PCB Identification

All PCBs are identified by a unique 10 digit "internal part number" (IPN), e.g. 220-01390-02, which is screen printed onto the PCB (usually on the top side), as shown in the example below:



The last 2 digits of this number define the issue status, which starts at 00 and increments through 01, 02, 03, etc. as the PCB is updated. Some issue PCBs never reach full production status and are therefore not included in this manual. A letter following the 10 digit IPN has no relevance in identifying the PCB for service purposes.

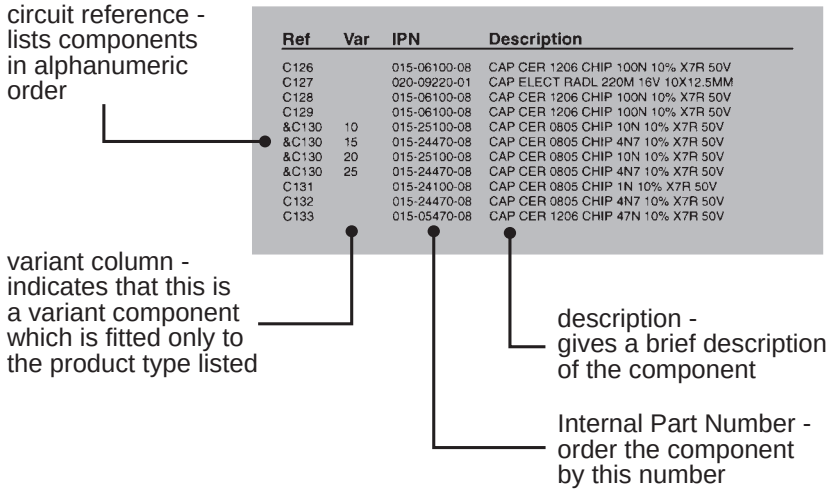
Note: It is important that you identify which issue PCB you are working on so that you can refer to the appropriate set of PCB information.

Parts Lists

The 10 digit numbers (000-00000-00) in this Parts List are "internal part numbers" (IPNs). We can process your spare parts orders more efficiently and accurately if you quote the IPN and provide a brief description of the part.

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

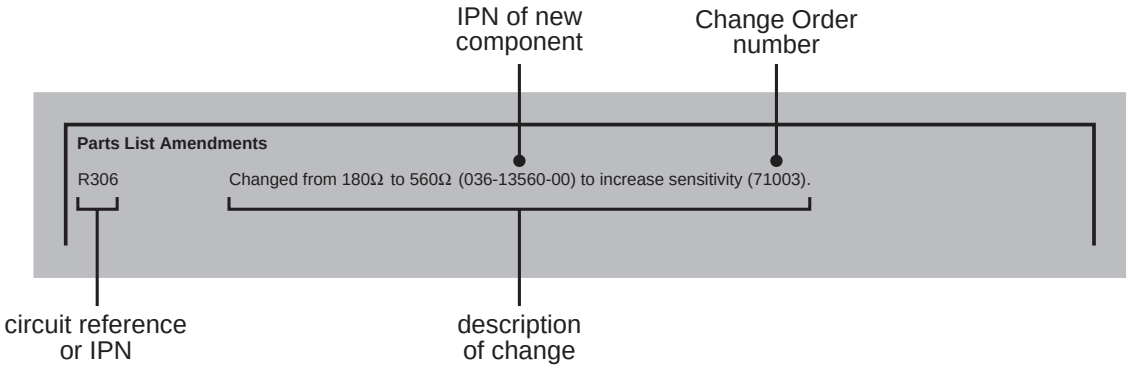
Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns, as shown below:



The miscellaneous and mechanical section lists the variant and common parts in IPN order.

Parts List Amendments

At the front of the parts list is the Parts List Amendments box (an example of which is shown below). This box contains a list of component changes which took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order. The number in brackets at the end of each entry refers to the Tait internal Change Order document.



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Variant Components

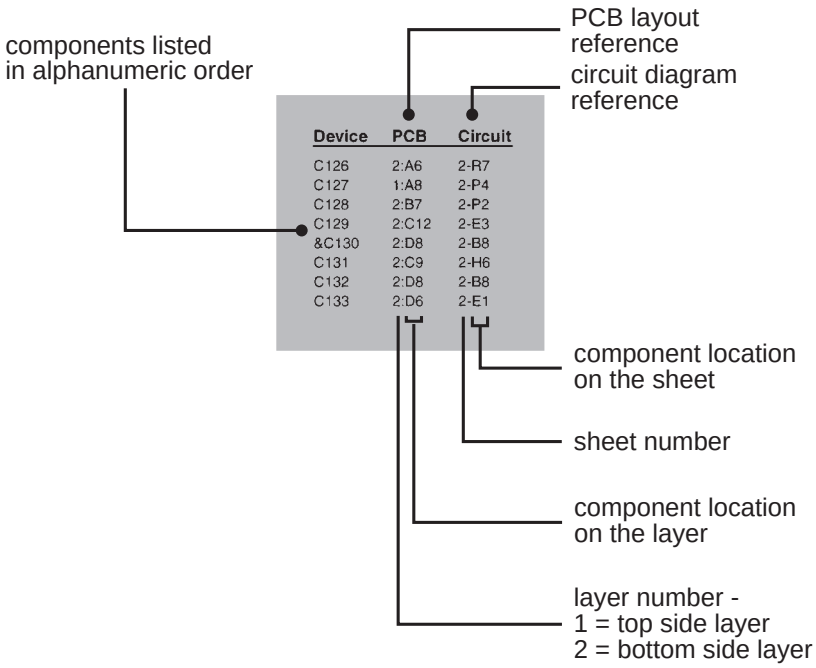
A variant component is one that has the same circuit reference but different value or specification in different product types. Where two products share the same PCB, the term "variant" is also used to describe components unplaced in one product. Variant components have a character prefix, such as "&", "=" or "#", before the circuit reference (e.g. &R100).

The table below explains the variant prefixes used in T800 Series II products:

If the variant prefix is. . .	the component will. . .
&	change according to channel spacing
=	change according to frequency stability
#	change according to frequency range
%	change or be placed/unplaced for special applications
*	be unplaced in one product (where two products share the same PCB)

Grid Reference Index

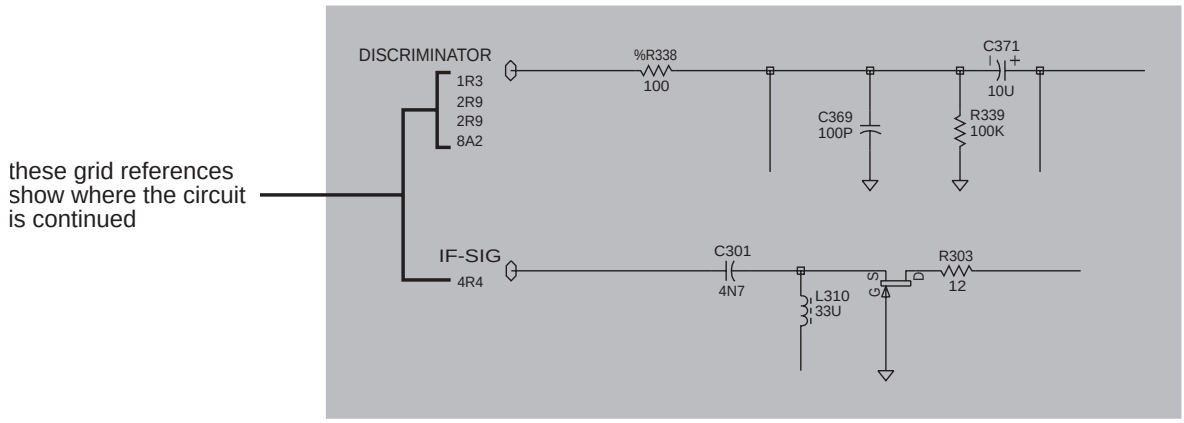
This section contains a component grid reference index to help you find components and labelled pads on the PCB layouts and circuit diagrams. This index lists the components and pads in alpha-numeric order, along with the appropriate alphanumeric grid references, as shown below:



Using CAD Circuit Diagrams

Reading a CAD circuit diagram is similar to reading a road map, in that both have an alphanumeric border. The circuit diagrams in this manual use letters to represent the horizontal axis, and numbers for the vertical axis. These circuit diagram "grid references" are useful in following a circuit that is spread over two or more sheets.

When a line representing part of the circuitry is discontinued, a reference will be given at the end of the line to indicate where the rest of the circuitry is located, as shown below. The first digit refers to the sheet number and the last two characters refer to the location on that sheet of the continuation of the circuit (e.g. 1R3).



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6.2 T856 Transmitter PCB

This section contains the following information.

IPN	Section	Page
220-01397-01	Parts List	6.2.3
	Mechanical & Miscellaneous Parts	6.2.10
	Mechanical Assembly	6.2.11
	Grid Reference Index	6.2.13
	PCB Layout - Top Side	6.2.17
	PCB Layout - Bottom Side	6.2.18
	Test Points & Options Connections - Top Side	6.2.19
	Test Points & Options Connections - Bottom Side	6.2.20
	Transmitter Overview Diagram	6.2.21
	Audio Processor Circuit Diagram	6.2.22
	Exciter Circuit Diagram	6.2.23
	PA Circuit Diagram	6.2.24
	VCO Section Circuit Diagram	6.2.25
	Regulators Circuit Diagram	6.2.26
	Synthesiser Circuit Diagram	6.2.27
	Microcontroller Circuit Diagram	6.2.28
	Harmonic Filter Circuit Diagram	6.2.29

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T856 Parts List (IPN 220-01397-01)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

Capacitor IPN Change	The IPN of the 8p2 chip capacitors used in the T856 has been changed from 015-21820-01 to 015-21820-02. The components themselves have not changed (780047/48/49/50).
#C930, #C960	400-440MHz (-10, -13 & -15): deleted to improve output power (710296 and 710359).
D111	Changed from MR750 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).
=IC700	-16, -26, -36: changed to -30/+70°C VCTCXO (IPN 539-00010-45) to meet FCC Type Approval (710893).
IC710	Changed from 74HCV04 (IPN 002-74910-04) to 74HC04 (IPN 002-74900-04) to increase the gain of the TCXO buffer (710312).
L345	-10 type only: rewired and placed on its side to improve output power (710296).
L355	400-440MHz (-10, -13 & -15): changed from 1.5T/2.5mm coil (052-08125-15) to 1.5T/3.5mm coil (052-08135-15) to regulate output power; circuit reference also changed to #L355 (710284).
Q550	Changed from BCW60 (IPN 000-10008-48) to BC817-25 (IPN 000-10008-17) as BCW60 is underrated (711093).
R713	Changed from 22Ω (IPN 036-12220-00) to 0Ω (IPN 036-10000-00) to improve hum & noise performance (710837/839/840/841).
New Product Types	The following component changes apply to the T856-16-0000/26-0000/36-0000 Product Types: &C269 changed to 4p7 (IPN 015-21470-01) C271 changed to 56p (IPN 015-22560-01) - circuit reference changed to &C271 C289 changed to 68n (IPN 015-25680-08) - circuit reference changed to &C289 R290 changed to 680Ω (IPN 036-13680-00) - circuit reference changed to &R290.
070-02001-00	Red front panel LED: replaced by 008-00014-79 (710928).
070-02002-00	Green front panel LED: replaced by 008-00014-80 (710928).
303-11169-03	T800 chassis: replaced by 303-11169-04
312-01052-01	T800 top lid: replaced by 312-01052-02
312-01053-01	T800 bottom lid: replaced by 312-01053-02
	New chassis and lid tooling introduced, incorporating mechanical improvements and better RF shielding (750027, 750028 & 750029). Note that the new lids should be used only with the new chassis.
319-01173-00	D-range shield: deleted
319-01174-00	N-type connector shield: deleted
	no longer required with new chassis and lids (710427).
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).
Chassis Screws	The Pozidriv screws securing the rear panel connectors and cover plate were replaced by Torx head screws when the shields were deleted.

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Note: %D205 and %D210 are optional level limiting diodes for special applications.

=R705 (47 ohm) and =SK710 are fitted in place of =IC700 when an external frequency reference is used. These two components are supplied with the auxiliary D-range kits (T800-06-0000 & T800-06-0001).

Ref	Var	IPN	Description
C201		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C202		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C204		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C205		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C207		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C209		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C210		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C211		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C213		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C215		014-08220-01	(L)CAP TANT 22UF10V276MSER
C217		015-24220-08	CAP CER 0805 2N2 10% X7R 50V
C219		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C221		014-08220-01	(L)CAP TANT 22UF10V276MSER
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C227		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C229		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C230		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C232		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C233		016-08470-01	CAP EL SMD 6*4 47U 16V
C235		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C237		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C239		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C241		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C242		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C243		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C245		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C247		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C249		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C251		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C253		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C255		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C257		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C259		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C260		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C261		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C263		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C265		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C267		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C269	10	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	13	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	15	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	20	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	23	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	25	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	30	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	35	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C271		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C273		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C275		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C277		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C279		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C281		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C283		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C285		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C287		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C289		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C291		014-08220-01	(L)CAP TANT 22UF10V276MSER
C293		015-27100-10	CAP CER 0805 1M+80-20% Y5V 16V
%C294		015-22470-01	CAP CER 0805 47P 5% NPO 50V
%C295		022-06470-02	CAP MYLAR 470N 10% 50V
C300		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C301		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C302		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C303		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C304		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C305		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C306		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C307		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C308		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C309		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C310		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C311		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C312		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C313		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C314		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C315		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C316		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C317		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C318		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C320		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C324		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C326		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C327		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C328		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C329		020-07470-04	CAP ELE RA 4M7 25V 20%8X13 SOL
C330A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C330B		016-08100-01	CAP EL 6X4 10M 20% 16V
C331		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C332		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C333		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C334		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C335		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C336		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C337		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C338		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C339		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C340		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C341		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C342		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C343		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C344		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C345		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C346		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C347		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C348		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C349		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C350A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C350B		016-08100-01	CAP EL 6X4 10M 20% 16V
C351		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C352		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C353		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C354		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C355		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C356		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C358		015-22120-01	CAP CER 0805 12P 5% NPO 50V
C360		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C362		015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
C364		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C366		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C368		015-22120-01	CAP CER 0805 12P 5% NPO 50V
C370A		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C370B		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C370C		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C371		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C372		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C373		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C380		015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C382	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C382	13	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C382	15	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C382	20	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C382	23	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C382	25	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C382	30	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C382	35	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C383		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C384	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C384	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C384	15	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C384	20	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C384	23	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C384	25	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C384	30	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C384	35	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
C385		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C405		015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C410	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	13	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	15	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	20	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	23	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	25	029-02390-02	CAP MICA 5 CASE 39P 5%
#C410	30	029-02330-02	CAP MICA 5 CASE 33P 5%
#C410	35	029-02330-02	CAP MICA 5 CASE 33P 5%
C415		029-02330-02	CAP MICA 5 CASE 33P 5%
C419		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C420		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C421		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C430		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C435		016-08470-01	CAP EL SMD 6*4 47U 16V
C438		029-02680-02	CAP MICA 5 CASE 68P 5%
#C440	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	13	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	15	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	20	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	23	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	25	029-02390-02	CAP MICA 5 CASE 39P 5%
#C440	30	029-02330-02	CAP MICA 5 CASE 33P 5%
#C440	35	029-02330-02	CAP MICA 5 CASE 33P 5%
#C445	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C445	13	029-02390-02	CAP MICA 5 CASE 39P 5%
#C445	15	029-02390-02	CAP MICA 5 CASE 39P 5%
#C445	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C445	23	029-02330-02	CAP MICA 5 CASE 33P 5%
#C445	25	029-02330-02	CAP MICA 5 CASE 33P 5%
#C445	30	029-02330-02	CAP MICA 5 CASE 33P 5%
#C445	35	029-02330-02	CAP MICA 5 CASE 33P 5%
C450		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
C455		020-07470-02	CAP ELE RAD 4M7 50V 5X11MM
#C460	10	029-02220-02	CAP MICA 5 CASE 22P 5%
#C460	13	029-02220-02	CAP MICA 5 CASE 22P 5%

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Ref	Var	IPN	Description
#C460	15	029-02220-02	CAP MICA 5 CASE 22P 5%
#C460	20	029-02270-02	CAP MICA 5 CASE 27P 5%
#C460	23	029-02270-02	CAP MICA 5 CASE 27P 5%
#C460	25	029-02270-02	CAP MICA 5 CASE 27P 5%
#C460	30	029-02220-02	CAP MICA 5 CASE 22P 5%
#C460	35	029-02220-02	CAP MICA 5 CASE 22P 5%
#C465	10	029-02220-02	CAP MICA 5 CASE 22P 5%
#C465	13	029-02220-02	CAP MICA 5 CASE 22P 5%
#C465	15	029-02220-02	CAP MICA 5 CASE 22P 5%
#C465	20	029-02270-02	CAP MICA 5 CASE 27P 5%
#C465	23	029-02270-02	CAP MICA 5 CASE 27P 5%
#C465	25	029-02270-02	CAP MICA 5 CASE 27P 5%
#C465	30	029-02220-02	CAP MICA 5 CASE 22P 5%
#C465	35	029-02220-02	CAP MICA 5 CASE 22P 5%
C470		015-03100-03	CAP CER 100P 5% NPO500V GRH111
#C480	10		NOT PLACED
#C480	13		NOT PLACED
#C480	15		NOT PLACED
#C480	20	015-01470-02	CAP CER HIQ1210 4P7 5% NPO200V
#C480	23	015-01470-02	CAP CER HIQ1210 4P7 5% NPO200V
#C480	25	015-01470-02	CAP CER HIQ1210 4P7 5% NPO200V
#C480	30		NOT PLACED
#C480	35		NOT PLACED
C481		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C485		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C490		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C493		015-03100-03	CAP CER 100P 5% NPO500V GRH111
C496		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C499		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C501		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C502		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C503		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C504		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C505		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C507		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C508		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C509		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C510		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C512		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C513		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C514		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C516		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C517		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C519		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C525		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C530		014-08220-01	(L)CAP TANT 22UF10V276MSER
C535		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C537		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C605		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C610A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C610B		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611A		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C620		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C621		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C623		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C625		020-09470-07	CAPEL470M16V20%V 8*20 3.5L.ESR
C626		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C628		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C630		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C634		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C636		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C638		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C640		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C655		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C660		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C665		020-58100-03	CAP ELE AI RDL 10M 50V 5X11MM
C670		025-07330-01	CAP TANT BEAD 3M3 35V
C673		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C677		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C681		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C684		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C687		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C690		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C693		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C700		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C701		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C703		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C705		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C706		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C708		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C709		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C710		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C712		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C720		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C722		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C724		014-08220-01	(L)CAP TANT 22UF10V276MSER
C725		014-08220-01	(L)CAP TANT 22UF10V276MSER
C726		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C727		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C729		015-23220-01	CAP CER 0805 220P 5% NPO 50V
%C733		015-23470-08	CAP CER 0805 470P 10% X7R 50V
C735		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C736		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C740A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C740B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C741A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C741B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C742A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C742B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C743		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C745		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C750A		025-08100-03	CAP 10M 35V 20% TANT 5MM L/S
C750B		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C757		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C759		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C761		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C762		014-08220-01	(L)CAP TANT 22UF10V276MSER
C763		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C764		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C765		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C766		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C767		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C768		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C769		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C770		014-08220-01	(L)CAP TANT 22UF10V276MSER
C772		014-08220-01	(L)CAP TANT 22UF10V276MSER
C774		022-06100-16	CAP METAL POLY 100N +-10% 100V
C776		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C782		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C784		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C786		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C788		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C790		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C792		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C810		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C812		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C813		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C822		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C823		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C824		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C826		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C827		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C828		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C830		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C838		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C841		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C844		015-25100-08	CAP CER 0805 10N 10% X7R 50V
#C900	10	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C900	13	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C900	15	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C900	20	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C900	23	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C900	25	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C900	30	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C900	35	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
C910		015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C920	10	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C920	13	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C920	15	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C920	20	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C920	23	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C920	25	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C920	30	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C920	35	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C930	10	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C930	13	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C930	15	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C930	20		NOT PLACED
#C930	23		NOT PLACED
#C930	25		NOT PLACED
#C930	30		NOT PLACED
#C930	35		NOT PLACED
C940		015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C950	10	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C950	13	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C950	15	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C950	20	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C950	23	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C950	25	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C950	30	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C950	35	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C960	10	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C960	13	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C960	15	015-21100-01	CAP CER 0805 1PO+-1/4P NPO 50V
#C960	20		NOT PLACED
#C960	23		NOT PLACED
#C960	25		NOT PLACED
#C960	30		NOT PLACED
#C960	35		NOT PLACED
C970		015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C980	10	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C980	13	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C980	15	015-01470-06	CAP CER 1210 4P7 NPO500VGRM42
#C980	20	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C980	23	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C980	25	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C980	30	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C980	35	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C990	10	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C990	13	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C990	15	015-01560-06	CAP CER 1210 5P6 NPO500VGRM42
#C990	20	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C990	23	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C990	25	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42

Ref	Var	IPN	Description
#C990	30	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#C990	35	015-01390-06	CAP CER 1210 3P9 NPO500VGRM42
#CV475	10	028-02160-03	CAP TRM 2/16P
#CV475	13	028-02160-03	CAP TRM 2/16P
#CV475	15	028-02160-03	CAP TRM 2/16P
#CV475	20	028-02100-03	CAP TRM 2/10P
#CV475	23	028-02100-03	CAP TRM 2/10P
#CV475	25	028-02100-03	CAP TRM 2/10P
#CV475	30	028-02100-03	CAP TRM 2/10P
#CV475	35	028-02100-03	CAP TRM 2/10P
D111		001-00011-60	S) DIODE SR2607 -- USE MR750
D220		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D230		001-00010-40	S) DIODE ZENER 33V 1.3W
D240		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D250		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D260		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D270		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D340		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D360		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D380		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D420		001-00013-45	S) DIODE SCHTTKY 1SS97/2
D440		001-00013-45	S) DIODE SCHTTKY 1SS97/2
D510		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D610		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D620		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D630		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D635		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D640		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D710		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D720		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D730		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D740		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D810		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
IC210		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC220		002-10126-70	S) IC SMD DS1267S10K 2XDIG POT
IC230		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC240		002-10040-53	S)MC14053B SMD BREAK B4 MAKE
IC250		002-00020-50	S) IC 4N25A OPTOCOUPLER
IC260		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC330		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC350		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC370		002-12951-00	IC SMD LP2951CM ADJ VLTGE REG
IC610		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC630		002-00014-62	S) IC 317L 100MA REG 3TER TO92
IC640		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC650		002-10012-32	SMD DS1232LPS-2 LP RESET&W-DOG
=IC700		539-00010-50	TCXO 12.8MHZ +-1PPM -20 +70C
IC710		002-74900-04	S) IC SMD 74HC04D 6X INV BUFFD
IC720		002-74910-04	S) IC SMD 74HCU04 6X INV
IC730		002-10045-20	S) IC SMD 74HC4520T 2XCTR 4BIT
IC740		002-14519-10	S) IC MC145191F SMD SYNTH
IC750		002-10330-78	S) IC MC33078D 2X AMP LO NOISE
IC810		002-08951-20	S) IC AT89C51 PLCC44 MIC 12MHZ
IC820		002-12416-00	S)IC SMD AT24C16N-10SC EEPROM
IC830		002-10003-24	S) IC SMD 324 4X O-AMP SO14
L302		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L303		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L304		056-10330-02	(L) IND SMD 330NH
L305		065-00010-04	BEAD FERR F8 4X2X5MM
L310		065-00010-04	BEAD FERR F8 4X2X5MM
L315		052-08130-65	COIL A/W 6.5T/3.0MM HOR 0.8MM
L320		056-10330-02	(L) IND SMD 330NH
L333		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L334		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L335		052-08130-25	COIL A/W 2.5T/3.0MM HOR 0.8MM
L345		065-00010-01	BEAD FERR 3B 6 HOLE
L355		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L405		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L410		052-08160-15	COIL A/W 1.5T/6.0MM HOR 0.8MM
L415		065-00010-04	BEAD FERR F8 4X2X5MM
L420		065-00010-04	BEAD FERR F8 4X2X5MM
L425		056-00021-04	IND FXD 330NH AX
L430		065-00010-04	BEAD FERR F8 4X2X5MM
L435		052-08160-15	COIL A/W 1.5T/6.0MM HOR 0.8MM
L445		052-08130-35	COIL A/W 3.5T/3.0MM HOR 0.8MM
L450		065-00010-04	BEAD FERR F8 4X2X5MM
L460		065-00010-04	BEAD FERR F8 4X2X5MM
L465		051-00005-53	COIL TAIT NO553 A/W 10MM LINK
L475		051-00005-56	COIL NO556 13MM FRMD COP STRP
L480		056-10330-02	(L) IND SMD 330NH
L481		056-10330-02	(L) IND SMD 330NH
L485		056-10330-02	(L) IND SMD 330NH
L520		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L610		056-00021-04	IND FXD 330NH AX
L620		065-00010-04	BEAD FERR F8 4X2X5MM
L750		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
#L910	10	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L910	13	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L910	15	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L910	20	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L910	23	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L910	25	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L910	30	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L910	35	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
L920		052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L930	10	052-08155-15	COIL A/W 1.5T/5.5MM HOR 0.8MM
#L930	13	052-08155-15	COIL A/W 1.5T/5.5MM HOR 0.8MM
#L930	15	052-08155-15	COIL A/W 1.5T/5.5MM HOR 0.8MM
#L930	20	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L930	23	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L930	25	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L930	30	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L930	35	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L940	10	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L940	13	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L940	15	052-08150-15	COIL A/W 1.5T/5.0MM HOR 0.8MM
#L940	20	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L940	23	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L940	25	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L940	30	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
#L940	35	052-08145-15	COIL A/W 1.5T/4.5MM HOR 0.8MM
PL205		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL210		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL215		240-00020-44	HEADER 10W X2R PCB MTG 5*2
PL220		240-00020-67	HEADER 6W 2X3 PCB MTG STD
Q210		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q220		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q230		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q240		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q250		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q260		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q270		000-00011-91	S) XSTR BD139 NPN AF PWR TO126
Q310		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q315		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q320		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q325		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q330		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q335		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q340		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q345		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q350		000-00005-55	S) XSTR MRF555 NPN RF L/PWR
Q355		000-00032-56	S) XSTR MRF630 NPN T039 UHF 3W
Q410		000-00022-75	S) XSTR SD1433 NPN S-MTG 10W
Q420		000-00022-80	S) XSTR SD1488 NPN 6LFL 40W
Q505		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q510		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q520		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q530		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q540		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q550		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q610		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q620		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q630		000-50011-30	S) XSTR AI BC557B PNP TO92 AF
Q660		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q670		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q710		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q720		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q730		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q740		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q750		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q760		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q770		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q775		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q780		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q785		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q790		000-10003-12	S) XSTR SMD BFR31 N JFET SOT23
Q795		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q810		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q820		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q830		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q840		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q850		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q860		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
R160		036-12100-00	RES M/F 0805 10E 5%
R201		036-13560-00	RES M/F 0805 560E 5%
R202		036-14100-00	RES M/F 0805 1K 5%
R204		036-14220-00	RES M/F 0805 2K2 5%
R205		036-13220-00	RES M/F 0805 220E 5%
R206		036-14100-00	RES M/F 0805 1K 5%
R207		036-14390-00	RES M/F 0805 3K9 5%
R208		036-13560-00	RES M/F 0805 560E 5%
R209		036-15100-00	RES M/F 0805 10K 5%
R210		036-14220-00	RES M/F 0805 2K2 5%
R212		036-16100-00	RES M/F 0805 100K 5%
R213		036-15100-00	RES M/F 0805 10K 5%
R214		036-14820-00	RES M/F 0805 8K2 5%
R215		036-16100-00	RES M/F 0805 100K 5%
R216		036-16100-00	RES M/F 0805 100K 5%
R217		036-14100-00	RES M/F 0805 1K 5%
R218		036-16150-00	RES M/F 0805 150K 5%
R219		036-14220-00	RES M/F 0805 2K2 5%
R221		036-14150-00	RES M/F 0805 1K5 5%
R223		036-17100-00	RES M/F 0805 1M 5%
R224		036-14680-00	RES M/F 0805 6K8 5%
R225		036-17100-00	RES M/F 0805 1M 5%
R226		036-15100-00	RES M/F 0805 10K 5%
R227		036-14220-00	RES M/F 0805 2K2 5%
R229		036-16470-00	RES M/F 0805 470K 5%
R230		036-16100-00	RES M/F 0805 100K 5%

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Ref	Var	IPN	Description
R231		036-15100-00	RES M/F 0805 10K 5%
R232		036-16330-00	RES M/F 0805 330K 5%
R233		036-16100-00	RES M/F 0805 100K 5%
R235		036-14470-00	RES M/F 0805 4K7 5%
R237		036-15470-00	RES M/F 0805 47K 5%
R238		036-15470-00	RES M/F 0805 47K 5%
R239		036-14150-00	RES M/F 0805 1K5 5%
R241		036-14470-00	RES M/F 0805 4K7 5%
R242		036-14220-00	RES M/F 0805 2K2 5%
R244		036-15100-00	RES M/F 0805 10K 5%
R245		036-16100-00	RES M/F 0805 100K 5%
R247		036-15100-00	RES M/F 0805 10K 5%
R248		036-16100-00	RES M/F 0805 100K 5%
R249		036-16100-00	RES M/F 0805 100K 5%
R251		036-16100-00	RES M/F 0805 100K 5%
R253		036-16100-00	RES M/F 0805 100K 5%
R254		036-16100-00	RES M/F 0805 100K 5%
R255		036-15100-00	RES M/F 0805 10K 5%
R256		036-15470-00	RES M/F 0805 47K 5%
R257		036-16330-00	RES M/F 0805 330K 5%
R258		036-16150-00	RES M/F 0805 150K 5%
R259		036-15220-00	RES M/F 0805 22K 5%
R260		036-15470-00	RES M/F 0805 47K 5%
R262		036-15470-00	RES M/F 0805 47K 5%
R263		036-14470-00	RES M/F 0805 4K7 5%
&R264	10	036-15220-00	RES M/F 0805 22K 5%
&R264	13	036-15220-00	RES M/F 0805 22K 5%
&R264	15	036-15270-00	RES M/F 0805 27K 5%
&R264	20	036-15220-00	RES M/F 0805 22K 5%
&R264	23	036-15220-00	RES M/F 0805 22K 5%
&R264	25	036-15270-00	RES M/F 0805 27K 5%
&R264	30	036-15220-00	RES M/F 0805 22K 5%
&R264	35	036-15270-00	RES M/F 0805 27K 5%
&R265	10	036-15150-00	RES M/F 0805 15K 5%
&R265	13	036-15150-00	RES M/F 0805 15K 5%
&R265	15	036-15180-00	RES M/F 0805 18K 5%
&R265	20	036-15150-00	RES M/F 0805 15K 5%
&R265	23	036-15150-00	RES M/F 0805 15K 5%
&R265	25	036-15180-00	RES M/F 0805 18K 5%
&R265	30	036-15150-00	RES M/F 0805 15K 5%
&R265	35	036-15180-00	RES M/F 0805 18K 5%
&R266	10	036-15470-00	RES M/F 0805 47K 5%
&R266	13	036-15470-00	RES M/F 0805 47K 5%
&R266	15	036-15560-00	RES M/F 0805 56K 5%
&R266	20	036-15470-00	RES M/F 0805 47K 5%
&R266	23	036-15470-00	RES M/F 0805 47K 5%
&R266	25	036-15560-00	RES M/F 0805 56K 5%
&R266	30	036-15470-00	RES M/F 0805 47K 5%
&R266	35	036-15560-00	RES M/F 0805 56K 5%
R267		036-14220-00	RES M/F 0805 2K2 5%
R268		036-13100-00	RES M/F 0805 100E 5%
R269		036-15100-00	RES M/F 0805 10K 5%
R270		036-14120-00	RES M/F 0805 1K2 5%
R271		036-17100-00	RES M/F 0805 1M 5%
R272		036-13560-00	RES M/F 0805 560E 5%
R273		036-15120-00	RES M/F 0805 12K 5%
R274		036-15150-00	RES M/F 0805 15K 5%
R275		036-14270-00	RES M/F 0805 2K7 5%
R277		036-16100-00	RES M/F 0805 100K 5%
R278		036-16120-00	RES M/F 0805 120K 5%
R279		036-17100-00	RES M/F 0805 1M 5%
R280		036-15100-00	RES M/F 0805 10K 5%
R282		036-15560-00	RES M/F 0805 56K 5%
R283		036-15560-00	RES M/F 0805 56K 5%
R284		036-17100-00	RES M/F 0805 1M 5%
R285		036-10000-00	RES M/F 0805 ZERO OHM
R286		036-14220-00	RES M/F 0805 2K2 5%
R287		036-15100-00	RES M/F 0805 10K 5%
R288		036-15150-00	RES M/F 0805 15K 5%
R289		036-16100-00	RES M/F 0805 100K 5%
R290		036-13560-00	RES M/F 0805 560E 5%
R291		036-10000-00	RES M/F 0805 ZERO OHM
R292		036-14470-00	RES M/F 0805 4K7 5%
R293		036-15470-00	RES M/F 0805 47K 5%
R294		036-14470-00	RES M/F 0805 4K7 5%
R295		036-14270-00	RES M/F 0805 2K7 5%
R296		036-14100-00	RES M/F 0805 1K 5%
R297		036-14560-00	RES M/F 0805 5K6 5%
%R298		036-16100-00	RES M/F 0805 100K 5%
R299		036-14270-00	RES M/F 0805 2K7 5%
R300		036-14100-00	RES M/F 0805 1K 5%
R301		036-15100-00	RES M/F 0805 10K 5%
R302		036-14100-00	RES M/F 0805 1K 5%
R303		036-15100-00	RES M/F 0805 10K 5%
R304		036-15470-00	RES M/F 0805 47K 5%
R305		036-15330-00	RES M/F 0805 33K 5%
R306		036-15100-00	RES M/F 0805 10K 5%
R307		036-14470-00	RES M/F 0805 4K7 5%
R309		036-12100-00	RES M/F 0805 10E 5%
R311		036-14470-00	RES M/F 0805 4K7 5%
R315		036-15100-00	RES M/F 0805 10K 5%
%R317		036-15470-00	RES M/F 0805 47K 5%
R319		036-15470-00	RES M/F 0805 47K 5%
R321		036-16100-00	RES M/F 0805 100K 5%
R323		036-16220-00	RES M/F 0805 220K 5%
R324		036-13220-00	RES M/F 0805 220E 5%
R325		036-14220-00	RES M/F 0805 2K2 5%
R327		036-13100-00	RES M/F 0805 100E 5%
R329		036-14100-00	RES M/F 0805 1K 5%
R330		036-12220-00	RES M/F 0805 22E 5%
R333		030-03470-10	RES FILM 470E 5% 0.5W 7X2.5
R334		036-12680-00	RES M/F 0805 68E 5%
R335		036-12100-00	RES M/F 0805 10E 5%
R337		036-12100-00	RES M/F 0805 10E 5%
R338		036-13120-00	RES M/F 0805 120E 5%
R339		036-14100-00	RES M/F 0805 1K 5%
R341		036-16220-00	RES M/F 0805 220K 5%
R343		036-15100-00	RES M/F 0805 10K 5%
R345		036-14220-00	RES M/F 0805 2K2 5%
R347		036-16330-00	RES M/F 0805 330K 5%
R349		036-15100-00	RES M/F 0805 10K 5%
R350		036-12220-00	RES M/F 0805 22E 5%
R351		036-15150-00	RES M/F 0805 15K 5%
R352		036-12680-00	RES M/F 0805 68E 5%
R353		036-15150-00	RES M/F 0805 15K 5%
R354		036-14560-00	RES M/F 0805 5K6 5%
R355		036-16100-00	RES M/F 0805 100K 5%
R357		036-15100-00	RES M/F 0805 10K 5%
R359		036-15220-00	RES M/F 0805 22K 5%
R360		036-14150-00	RES M/F 0805 1K5 5%
R361		036-12680-00	RES M/F 0805 68E 5%
R362		036-16100-00	RES M/F 0805 100K 5%
R363		036-15470-00	RES M/F 0805 47K 5%
R365		036-15220-00	RES M/F 0805 22K 5%
R367		036-15100-00	RES M/F 0805 10K 5%
R368		036-15220-00	RES M/F 0805 22K 5%
R369		036-16100-00	RES M/F 0805 100K 5%
R370		036-13100-00	RES M/F 0805 100E 5%
R371		036-16100-00	RES M/F 0805 100K 5%
R372		036-14680-00	RES M/F 0805 6K8 5%
R373		036-13820-00	RES M/F 0805 820E 5%
R374		036-14120-00	RES M/F 0805 1K2 5%
R376		036-14100-00	RES M/F 0805 1K 5%
R381		036-14100-00	RES M/F 0805 1K 5%
R382		036-12470-00	RES M/F 0805 47E 5%
R383		036-14100-00	RES M/F 0805 1K 5%
R384		036-13560-00	RES M/F 0805 560E 5%
R385		036-12470-00	RES M/F 0805 47E 5%
R386		036-14100-00	RES M/F 0805 1K 5%
R387		036-13470-00	RES M/F 0805 470E 5%
R389		036-16150-00	RES M/F 0805 150K 5%
R390		036-16150-00	RES M/F 0805 150K 5%
R391		036-16150-00	RES M/F 0805 150K 5%
R392		036-16150-00	RES M/F 0805 150K 5%
R393		036-14100-00	RES M/F 0805 1K 5%
R394		036-14100-00	RES M/F 0805 1K 5%
#R395	10	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R395	13	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R395	15	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R395	20	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R395	23	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R395	25	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R395	30	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R395	35	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R396	10	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R396	13	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R396	15	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R396	20	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R396	23	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R396	25	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R396	30	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R396	35	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R397	10	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R397	13	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R397	15	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R397	20	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R397	23	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R397	25	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R397	30	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R397	35	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
R399		036-12470-00	RES M/F 0805 47E 5%
#R410	10	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	13	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	15	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	20	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	23	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	25	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	30	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R410	35	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R420	10	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R420	13	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R420	15	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R420	20	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R420	23	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R420	25	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R420	30	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R420	35	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R430	10	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	13	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	15	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	20	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	23	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	25	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	30	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R430	35	030-52100-20	RES FILM AI 10E 5% 0.4W 4X1.6
#R440	10	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6

Ref	Var	IPN	Description
#R440	13	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R440	15	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R440	20	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R440	23	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R440	25	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R440	30	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
#R440	35	030-53820-20	RES FILM AI 820E 5% 0.4W 4X1.6
R450		032-32220-00	RES M/F PWR 22E 5% 1W 12X4.5MM
R460		036-14470-00	RES M/F 0805 4K7 5%
R470		036-13100-00	RES M/F 0805 100E 5%
R480		036-13100-00	RES M/F 0805 100E 5%
R481		045-04470-01	RES NTC 4K7 5% 5MM DISC
R490		036-14470-00	RES M/F 0805 4K7 5%
R500		036-12680-00	RES M/F 0805 68E 5%
R501		036-15100-00	RES M/F 0805 10K 5%
R502		036-15100-00	RES M/F 0805 10K 5%
R503		036-14560-00	RES M/F 0805 5K6 5%
R504		036-13330-00	RES M/F 0805 330E 5%
R505		036-15150-00	RES M/F 0805 15K 5%
R510		036-14150-00	RES M/F 0805 1K5 5%
R514		036-12330-00	RES M/F 0805 33E 5%
R515		036-12560-00	RES M/F 0805 56E 5%
#R517	10	036-13150-00	RES M/F 0805 150E 5%
#R517	13	036-13150-00	RES M/F 0805 150E 5%
#R517	15	036-13150-00	RES M/F 0805 150E 5%
#R517	20	036-13330-00	RES M/F 0805 330E 5%
#R517	23	036-13330-00	RES M/F 0805 330E 5%
#R517	25	036-13330-00	RES M/F 0805 330E 5%
#R517	30	036-13330-00	RES M/F 0805 330E 5%
#R517	35	036-13330-00	RES M/F 0805 330E 5%
#R518	10	036-12330-00	RES M/F 0805 33E 5%
#R518	13	036-12330-00	RES M/F 0805 33E 5%
#R518	15	036-12330-00	RES M/F 0805 33E 5%
#R518	20	036-12180-00	RES M/F 0805 18E 5%
#R518	23	036-12180-00	RES M/F 0805 18E 5%
#R518	25	036-12180-00	RES M/F 0805 18E 5%
#R518	30	036-12180-00	RES M/F 0805 18E 5%
#R518	35	036-12180-00	RES M/F 0805 18E 5%
#R519	10	036-13150-00	RES M/F 0805 150E 5%
#R519	13	036-13150-00	RES M/F 0805 150E 5%
#R519	15	036-13150-00	RES M/F 0805 150E 5%
#R519	20	036-13330-00	RES M/F 0805 330E 5%
#R519	23	036-13330-00	RES M/F 0805 330E 5%
#R519	25	036-13330-00	RES M/F 0805 330E 5%
#R519	30	036-13330-00	RES M/F 0805 330E 5%
#R519	35	036-13330-00	RES M/F 0805 330E 5%
R520		036-13150-00	RES M/F 0805 150E 5%
R523		036-16120-00	RES M/F 0805 120K 5%
R525		036-15470-00	RES M/F 0805 47K 5%
R530		036-15220-00	RES M/F 0805 22K 5%
R535		036-15100-00	RES M/F 0805 10K 5%
R540		036-14220-00	RES M/F 0805 2K2 5%
R545		036-14470-00	RES M/F 0805 4K7 5%
%R550		036-14120-00	RES M/F 0805 1K2 5%
R555		036-14470-00	RES M/F 0805 4K7 5%
R560		036-13470-00	RES M/F 0805 470E 5%
R609		036-14100-00	RES M/F 0805 1K 5%
R613		036-13560-00	RES M/F 0805 560E 5%
R615		036-13100-00	RES M/F 0805 100E 5%
R617		036-10000-00	RES M/F 0805 ZERO OHM
R619		036-01100-10	RES 1 OHM 1 WATT 2512 CHIP
R621		036-01100-10	RES 1 OHM 1 WATT 2512 CHIP
R625		036-14100-00	RES M/F 0805 1K 5%
R629		036-03270-10	RES 270 OHM 1 WATT 2512 CHIP
R633		036-14680-00	RES M/F 0805 6K8 5%
R637		036-12220-00	RES M/F 0805 22E 5%
R641		036-14150-00	RES M/F 0805 1K5 5%
R645		036-13470-00	RES M/F 0805 470E 5%
R649		036-14470-00	RES M/F 0805 4K7 5%
R653		036-15100-00	RES M/F 0805 10K 5%
R657		036-15100-00	RES M/F 0805 10K 5%
R661		036-15100-00	RES M/F 0805 10K 5%
R665		036-16100-00	RES M/F 0805 100K 5%
R669		036-15470-00	RES M/F 0805 47K 5%
R673		036-16100-00	RES M/F 0805 100K 5%
R677		036-15470-00	RES M/F 0805 47K 5%
R681		036-13100-00	RES M/F 0805 100E 5%
R685		036-15150-00	RES M/F 0805 15K 5%
R689		036-12100-00	RES M/F 0805 10E 5%
R693		036-16100-00	RES M/F 0805 100K 5%
R696		036-15560-00	RES M/F 0805 56K 5%
R701		036-12220-00	RES M/F 0805 22E 5%
R702		036-17100-00	RES M/F 0805 1M 5%
R703		036-17100-00	RES M/F 0805 1M 5%
R706		036-15150-00	RES M/F 0805 15K 5%
R708		036-16100-00	RES M/F 0805 100K 5%
R710		036-13100-00	RES M/F 0805 100E 5%
R711		036-13100-00	RES M/F 0805 100E 5%
R712		036-12100-00	RES M/F 0805 10E 5%
R713		036-12220-00	RES M/F 0805 22E 5%
%R715		036-14100-00	RES M/F 0805 1K 5%
R717		036-14270-00	RES M/F 0805 2K7 5%
R718		036-16150-00	RES M/F 0805 150K 5%
R719		036-16150-00	RES M/F 0805 150K 5%
R720		036-15390-00	RES M/F 0805 39K 5%
R721		036-15100-00	RES M/F 0805 10K 5%
R722		036-15100-00	RES M/F 0805 10K 5%
R723		036-14270-00	RES M/F 0805 2K7 5%
R725		036-15390-00	RES M/F 0805 39K 5%
%R726		036-13100-00	RES M/F 0805 100E 5%
R727		036-15100-00	RES M/F 0805 10K 5%
R728		036-15100-00	RES M/F 0805 10K 5%
R742		036-13150-00	RES M/F 0805 150E 5%
R743		036-13150-00	RES M/F 0805 150E 5%
R744		036-12220-00	RES M/F 0805 22E 5%
R746		036-12220-00	RES M/F 0805 22E 5%
R747		036-12220-00	RES M/F 0805 22E 5%
R748		036-15470-00	RES M/F 0805 47K 5%
R749		036-15470-00	RES M/F 0805 47K 5%
R750		036-12220-00	RES M/F 0805 22E 5%
R752		036-12220-00	RES M/F 0805 22E 5%
R753		036-17100-00	RES M/F 0805 1M 5%
R754		036-14100-00	RES M/F 0805 1K 5%
R756		036-16100-00	RES M/F 0805 100K 5%
R757		036-16100-00	RES M/F 0805 100K 5%
R758		036-14120-00	RES M/F 0805 1K2 5%
R759		036-13330-00	RES M/F 0805 330E 5%
R760		036-13180-00	RES M/F 0805 180E 5%
R762		036-13100-00	RES M/F 0805 100E 5%
R763		036-13100-00	RES M/F 0805 100E 5%
R765		036-13680-00	RES M/F 0805 680E 5%
R766		036-14100-00	RES M/F 0805 1K 5%
R767		036-13680-00	RES M/F 0805 680E 5%
R769		036-13180-00	RES M/F 0805 180E 5%
R771		036-14820-00	RES M/F 0805 8K2 5%
R772		036-15220-00	RES M/F 0805 22K 5%
R774		036-14820-00	RES M/F 0805 8K2 5%
R775		036-15180-00	RES M/F 0805 18K 5%
R777		036-14220-00	RES M/F 0805 2K2 5%
R780		036-12680-00	RES M/F 0805 68E 5%
R782		036-12180-00	RES M/F 0805 18E 5%
R784		036-13120-00	RES M/F 0805 120E 5%
R785		036-14330-00	RES M/F 0805 3K3 5%
R786		036-12100-00	RES M/F 0805 10E 5%
R787		036-12100-00	RES M/F 0805 10E 5%
R790		036-13390-00	RES M/F 0805 390E 5%
R791		036-14100-00	RES M/F 0805 1K 5%
R801		036-16150-00	RES M/F 0805 150K 5%
R802		036-15470-00	RES M/F 0805 47K 5%
R808		036-12100-00	RES M/F 0805 10E 5%
R809		036-14470-00	RES M/F 0805 4K7 5%
R810		036-14470-00	RES M/F 0805 4K7 5%
R811		036-14470-00	RES M/F 0805 4K7 5%
R812		036-14470-00	RES M/F 0805 4K7 5%
R813		036-14470-00	RES M/F 0805 4K7 5%
R815		036-15470-00	RES M/F 0805 47K 5%
R816		036-16150-00	RES M/F 0805 150K 5%
R818		036-14470-00	RES M/F 0805 4K7 5%
R819		036-14470-00	RES M/F 0805 4K7 5%
R821		036-15470-00	RES M/F 0805 47K 5%
R822		036-15470-00	RES M/F 0805 47K 5%
R824		036-14220-00	RES M/F 0805 2K2 5%
R825		036-14220-00	RES M/F 0805 2K2 5%
R826		036-14220-00	RES M/F 0805 2K2 5%
R827		036-14220-00	RES M/F 0805 2K2 5%
R828		036-14220-00	RES M/F 0805 2K2 5%
R829		036-14220-00	RES M/F 0805 2K2 5%
R830		036-14220-00	RES M/F 0805 2K2 5%
R831		036-14220-00	RES M/F 0805 2K2 5%
R832		036-14220-00	RES M/F 0805 2K2 5%
R833		036-14220-00	RES M/F 0805 2K2 5%
R835		036-14220-00	RES M/F 0805 2K2 5%
R836		036-14220-00	RES M/F 0805 2K2 5%
R837		036-14220-00	RES M/F 0805 2K2 5%
R840		036-14220-00	RES M/F 0805 2K2 5%
R841		036-14220-00	RES M/F 0805 2K2 5%
R842		036-14220-00	RES M/F 0805 2K2 5%
R843		036-14220-00	RES M/F 0805 2K2 5%
R845		036-13470-00	RES M/F 0805 470E 5%
R846		036-13470-00	RES M/F 0805 470E 5%
R847		036-13470-00	RES M/F 0805 470E 5%
R848		036-14470-00	RES M/F 0805 4K7 5%
R849		036-13470-00	RES M/F 0805 470E 5%
R850		036-13470-00	RES M/F 0805 470E 5%
R853		036-14470-00	RES M/F 0805 4K7 5%
R854		036-14470-00	RES M/F 0805 4K7 5%
R855		036-14470-00	RES M/F 0805 4K7 5%
R859		036-16150-00	RES M/F 0805 150K 5%
R861		036-16150-00	RES M/F 0805 150K 5%
R863		036-16150-00	RES M/F 0805 150K 5%
R865		036-16100-00	RES M/F 0805 100K 5%
R867		036-16100-00	RES M/F 0805 100K 5%
R871		036-15470-00	RES M/F 0805 47K 5%
R872		036-14470-00	RES M/F 0805 4K7 5%
R873		036-15330-00	RES M/F 0805 33K 5%
R874		036-14470-00	RES M/F 0805 4K7 5%
R875		036-15470-00	RES M/F 0805 47K 5%
R876		036-14470-00	RES M/F 0805 4K7 5%
R877		036-14470-00	RES M/F 0805 4K7 5%
R879		036-15100-00	RES M/F 0805 10K 5%
RV210		040-05100-23	POT 10K LOG PCB 15MM SLOT SFT
RV220		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
RV310		042-05100-05	RES PRESET SMD 10K CER 4MM SQ
RV320		042-04220-05	RES PRESET SMD 2K CER 4MM SQ
RV330		042-06500-05	RES PRESET SMD 500K CER 4MM SQ

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Ref	Var	IPN	Description
RV805		042-05200-05	RES PRESET SMD 20K CER 4MM SQ
SK205		240-02020-05	SKT STEREO PHONE JACK PCB MTG
SK310		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK410		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK501		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK502		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK503		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK504		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK505		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK513		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK522		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK531		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK532		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK533		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK534		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK535		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK805		240-10000-07	CONN SMD SKT 16W 2R M-MATCH
SK810		240-04020-42	SKT 44 PIN SMD PLCC
SW230		232-00010-26	SWITCH PUSH SPDT R-ANG PCB MTG
T210		053-00010-17	XFMR T4030 LINE MATCH POTCORE
T610		050-00016-50	COIL TAIT NO 650 455KHZ

Ref	Var	IPN	Description

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T856 Mechanical & Miscellaneous Parts (220-01397-01)

IPN	Legend	Description
070-01001-00	14/37	D-RANGE 15 WAY COMPL T800
070-02001-00		LED RED COMPL T800 RX/TX/EX
070-02002-00		LED GREEN COMPL T800 RX/TX/EX
200-00010-05		WIRE T/C 0.5 For ferrite beads.
206-00010-11		COAX 50 OHM RG316-U PTFE Connects SK310 to SK410.
220-01145-02	1	PCB T855/856/857 VCO
220-01397-01	2	PCB T856 SERIES II
232-00020-26	3	BUTTON 232-00010-26 SWITCH
240-00100-43		PLG COAX MINI PIN CRIMP 1.5D For coax connecting SK310 to SK410.
240-02100-06	4	SKT COAX N TYPE PNL MTG OP-TER
240-04020-62		SKT 2 W RECEP SHORTING LINK PL205/210/215/220.
303-11169-03	5	CHASSIS PAINTED T800 SER II
303-23118-00	6	COVER A3M2247 D RANGE
303-50074-00	7	CLIP A3M2246 SPRING CLAMP
303-50078-00	8	CLIP A4M2630 SPR. CABLE CLAMP
308-01007-01	9	HANDLE BASE STATION SERIES II
308-13090-00	10	HSINK A4M2361 BRKT COPPER T856
312-01052-01	11	LID TOP T800 SER II PTND
312-01053-01	12	LID BOTTOM T800 SER II PNTD
316-06621-00	13	PNL FRT TX T800 SERIES II
319-01173-00	15	SHIELD A3M2880 D-RANGE T856
319-01174-00	16	SHIELD A4M2881 N-CONN T856
345-00040-08	17	SCRW M3X12MM P/POZ ST BZ
345-00040-10	18	SCRW M3X6MM P/POZ ST BZ
349-00020-09	19	SCRW T/T 4-40X3/8 IN P/POZ BLK
349-00020-31	20	SCRW T/T M3X10MM P/POZ BZ
349-00020-34	21	SCRW M3X12 P/POZ T/T BZ
349-00020-36	22	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	23	SCRW T/T M4X12MM P/POZ BZ
349-00020-45	24	SCRW T/T M4X20MM P/POZ BZ
350-00016-42	25	SPACER 5MM HI 8MM ST 2.5MM HO
352-00010-08	26	NUT M3 COLD FORM HEX ST BZ
352-00010-29	27	NUT M4 NYLOC HEX
352-00010-35	28	NUT 8-32 UNC HEX XSTR MTG
353-00010-10	29	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-12	30	WSHR M3 SPRING BZ OR Z/C
353-00010-13	31	WSHR M3 S/PROOF INT BZ
353-00010-24	32	WSHR M4 FLAT ST BZ A4M1957
356-00010-01	33	TAG SOLDER 3MM SHORT M6132/3.2
356-00010-05	34	TAG SOLDER 4MM LONG M6144/4.2
362-00010-23	35	GASKET SIL TO-220 CLIP MTG.
362-00010-33	36	GROMMET LED MTG 3MM
365-00011-53		LABEL 104X37MM
365-00100-09		LABEL WHITE VINYL 15X11MM S/A
365-00100-20		LABEL WHITE S/A 28X11MM
365-01541-00		LABEL TX/RX/EX TYPE APR/SER NO
399-00010-51		BAG PLASTIC 75X100MM
410-01081-01		CRT T800 SERIES II
410-01082-01		CRTN 10 T800 KIWI 423X410X360

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replace A4 pages C6.2.11/C6.2.12 with A3 pages C6.2.11/C6.2.12

replace A4 pages C6.2.11/C6.2.12 with A3 pages C6.2.11/C6.2.12

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T856 Grid Reference Index (IPN 220-01397-01)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C201	1:C1	2-B8	C305	1:F7	3-E5	C372	1:F9	3-P7	C628	1:M6	6-R8
C202	1:C1	2-C8	C306	1:F7	3-F7	C373	1:F9	3-P7	C630	1:M5	6-K4
C204	1:A2	2-E8	C307	1:F7	3-F7	C380	1:E6	3-P1	C631A	1:M5	6-M5
C205	1:A2	2-E8	C308	1:F8	3-G7	#C382	1:E6	3-Q1	C634	1:N5	6-M4
C207	1:C7	2-B6	C309	1:F8	3-J7	C383	1:F3	3-B2	C636	1:M5	6-M4
C209	1:C6	2-D6	C310	1:F8	3-K7	#C384	1:E6	3-R2	C638	1:M6	6-P5
C210	1:C7	2-K0	C311	1:F8	3-G6	C385	1:F3	3-D0	C640	1:M5	6-R5
C211	1:B7	2-F8	C312	1:F8	3-G5	C405	2:H8	4-D4	C655	1:M4	6-C1
C213	1:B6	2-G8	C313	1:E9	3-C8	#C410	2:J8	4-E3	C660	1:L5	6-K1
C215	1:B6	2-G8	C314	1:F8	3-G5	C415	2:J7	4-F3	C665	1:L5	6-K1
C217	1:C6	2-H8	C315	1:E8	3-C7	C419	1:G8	4-C6	C670	1:L6	6-L1
C219	1:C6	2-H7	C316	1:F8	3-H6	C420	1:G8	4-D6	C673	1:L5	6-P2
C221	1:D5	2-G6	C317	1:F8	3-H5	C421	1:G8	4-D6	C677	1:L6	6-P1
C223	1:C5	2-J6	C318	1:F8	3-J5	C430	1:J7	4-H6	C681	1:M5	6-R3
C225	1:C3	2-K7	C320	1:F5	3-P5	C435	1:M7	4-J6	C684	1:M6	6-R3
C227	1:B4	2-K7	C324	1:F6	3-Q5	C438	2:K8	4-G4	C687	1:L6	6-Q1
C229	1:B3	2-L7	C326	1:F6	3-Q4	#C440	2:K8	4-H4	C690	1:L6	6-R1
C230	1:B4	2-J0	C327	1:F7	3-C3	#C445	2:K7	4-J4	C693	1:L6	6-R1
C232	1:A4	2-M7	C328	1:F6	3-R4	C450	1:L7	4-K5	C700	1:K4	7-A8
C233	1:A5	2-N7	C329	1:F6	3-R4	C455	1:M7	4-L5	C701	1:J3	7-B8
C235	1:B5	2-K5	C330A	1:E8	3-G8	#C460	2:L7	4-K4	C703	1:J3	7-B7
C237	1:C4	2-K5	C330B	1:E8	3-G8	#C465	2:L8	4-L4	C705	1:J3	7-B7
C239	1:C4	2-L4	C331	1:F3	3-B2	C470	2:L8	4-M4	C706	1:J2	7-B5
C241	1:B4	2-M6	C332	1:F8	3-B3	#C480	2:M8	4-N4	%C707	1:K4	7-C8
C242	1:B4	2-L6	C333	1:F3	3-B0	C481	1:J8	4-P7	C708	1:J2	7-C9
C243	1:B4	2-P6	C334	1:F7	3-C3	C485	1:M9	4-M5	C709	1:K4	7-D9
C245	1:C5	2-A4	C335	1:F7	3-F5	C490	1:M9	4-N5	C710	1:J3	7-E8
C247	1:D4	2-B4	C336	1:F7	3-F5	C493	2:M8	4-N4	C712	1:H2	7-E7
C249	1:D4	2-C4	C337	1:E7	3-F3	C496	1:N7	4-P3	%C713	1:H2	7-E6
C251	1:C3	2-E4	C338	1:E7	3-F2	C499	1:N7	4-Q3	C720	1:J3	7-F8
C253	1:D3	2-E3	C339	1:E7	3-F3	C501	1:K4	5-B6	C722	1:J4	7-G8
C255	1:D3	2-D2	C340	1:E7	3-H4	C502	1:K4	5-C6	C724	1:J4	7-H6
C257	1:D3	2-F2	C341	1:F3	3-G3	C503	1:K6	5-L9	C725	1:J4	7-J6
C259	1:C6	2-J2	C342	1:F3	3-H3	C504	1:K6	5-M6	C726	1:K4	7-J6
C260	1:D8	2-H0	C343	1:F3	3-J3	C505	1:K6	5-N6	C727	1:J3	7-J8
C261	1:C6	2-K2	C344	1:F3	3-J4	C507	1:K6	5-B5	C729	1:J3	7-M8
C263	1:D6	2-L3	C345	1:F3	3-K4	C508	1:K6	5-C0	%C733	1:J3	7-M5
C265	1:D6	2-N4	C346	1:F3	3-K4	C509	1:K6	5-D0	C735	1:J2	7-A1
C267	1:C8	2-P3	C347	1:F3	3-L4	C510	1:J5	5-D1	C736	1:J2	7-B1
&C269	1:C8	2-P3	C348	1:F3	3-M4	C512	1:J5	5-E1	C740A	1:H2	7-B4
C271	1:C8	2-Q3	C349	1:F3	3-M4	C513	1:J5	5-H1	C740B	1:H2	7-B3
C273	1:C8	2-Q4	C350A	1:F7	3-J8	C514	1:J5	5-J1	C741A	1:H2	7-C4
C275	1:D3	2-E1	C350B	1:F7	3-J8	C516	1:H5	5-H4	C741B	1:G2	7-C3
C277	1:C4	2-G1	C351	1:F4	3-H1	C517	1:H5	5-H4	C742A	1:H2	7-D4
C279	1:B4	2-G1	C352	1:F4	3-J0	C519	1:H5	5-J5	C742B	1:H3	7-D3
C281	1:B5	2-J1	C353	1:F4	3-J0	C525	1:K4	5-K5	C743	1:H2	7-B1
C283	1:B5	2-K0	C354	1:F4	3-K0	C530	1:K5	5-L4	C745	1:G3	7-D1
C285	1:D7	2-L0	C355	1:F4	3-K1	C535	1:K5	5-L2	C750A	1:H4	7-Q7
C287	1:C6	2-M1	C356	1:F3	3-K2	C537	1:K5	5-N2	C750B	1:H4	7-R7
C289	1:C8	2-N1	C358	1:E4	3-K1	C605	1:L6	6-D8	C757	1:G4	7-F5
C291	1:D7	2-P1	C360	1:E4	3-L1	C610A	1:M5	6-F8	C759	1:G4	7-G4
C293	1:D7	2-Q1	C362	1:E5	3-N2	C610B	1:M5	6-G8	C761	1:G3	7-J4
%C294	1:D7	2-Q0	C364	1:E4	3-M2	C611A	1:L5	6-H8	C762	1:G3	7-J4
%C295	1:D6	2-Q0	C366	1:F4	3-N2	C611B	1:M5	6-J8	C763	1:H3	7-K4
C300	1:F8	3-B8	C368	1:E5	3-N1	C620	1:N5	6-K9	C764	1:H3	7-H2
C301	1:F9	3-B7	C370A	1:F8	3-K7	C621	1:N5	6-L9	C765	1:G3	7-J2
C302	1:E8	3-A6	C370B	1:F8	3-L7	C623	1:N6	6-N7	C766	1:G3	7-J2
C303	1:E8	3-A6	C370C	1:F8	3-L7	C625	1:M6	6-Q8	C767	1:H3	7-K3
C304	1:E8	3-C6	C371	1:F8	3-N7	C626	1:M6	6-R8	C768	1:H4	7-L4

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Device	PCB	Circuit
C769	1:H4	7-M4
C770	1:H4	7-N4
C772	1:G4	7-M2
C774	1:H4	7-P2
C776	1:H4	7-N1
C782	1:G2	7-N1
C784	1:G2	7-R1
C786	1:G2	7-R1
C788	1:G3	7-P0
C790	1:G3	7-R0
C792	1:G4	7-R0
C810	1:L3	8-K8
C812	1:L2	8-F5
C813	1:K2	8-H5
C822	1:M2	8-B2
C823	1:M3	8-C2
C824	1:M2	8-C1
C826	1:N3	8-C0
C827	1:N3	8-D0
C828	1:N3	8-E0
C830	1:N3	8-R1
C838	1:N4	8-F0
C841	1:N2	8-K2
C844	1:M2	8-L2
#C900	2:N8	9-C6
C910	2:P8	9-D6
#C920	2:P8	9-E6
#C930	2:P8	9-E7
C940	2:P7	9-F6
#C950	2:P7	9-G6
#C960	2:P7	9-G7
C970	2:P7	9-H6
#C980	2:P6	9-J6
#C990	2:P6	9-K6
#CV475	1:M8	4-M4
D111	1:P4	1-R1
%D205	1:B2	2-D9
%D210	1:B2	2-E9
D220	1:B4	2-P7
D220	1:B4	2-P6
D230	1:B7	2-R5
D240	1:D4	2-C4
D240	1:D4	2-B2
D250	1:D3	2-E2
D250	1:D3	2-D3
D260	1:C2	2-C2
D260	1:C2	2-C2
D270	1:D2	2-C1
D270	1:D2	2-C1
D340	1:F4	3-J1
D360	1:F4	3-J1
D380	1:F4	3-J1
D420	1:M8	4-N5
D440	1:N7	4-P4
D510	1:K6	5-K8
D510	1:K6	5-K9
D610	1:N6	6-L6
D610	1:N6	6-K6
D620	1:N4	6-B1
D620	1:N4	6-B2
D630	1:M5	6-G2
D630	1:M5	6-G3
D635	1:M4	6-G3
D640	1:L5	6-M1
D640	1:L5	6-M2
D710	1:J3	7-L8
D710	1:J3	7-L8
D720	1:H3	7-P8
D720	1:H3	7-P8
D730	1:H3	7-H1
D740	1:H3	7-J2
D810	1:M2	8-B7
IC210	1:C7	2-J0
IC210	1:C7	2-Q0

Device	PCB	Circuit
IC210	1:C7	2-K2
IC210	1:C7	2-L1
IC210	1:C7	2-C6
IC220	1:D6	2-P0
IC220	1:D6	2-M3
IC220	1:D6	2-D5
IC230	1:B4	2-H0
IC230	1:B4	2-G1
IC230	1:B4	2-N6
IC230	1:B4	2-J0
IC230	1:B4	2-L5
IC240	1:D4	2-F3
IC250	1:D3	2-E1
IC260	1:D8	2-N0
IC260	1:D8	2-H0
IC260	1:D8	2-Q2
IC260	1:D8	2-Q3
IC260	1:D8	2-N3
IC330	1:E8	3-D8
IC330	1:E8	3-H8
IC330	1:E8	3-D7
IC350	1:F7	3-K8
IC350	1:F7	3-C4
IC350	1:F7	3-F6
IC370	1:F9	3-M6
IC610	1:M5	6-G8
IC630	1:N5	6-K5
IC640	1:M5	6-F1
IC640	1:M5	6-Q5
IC640	1:M5	6-N5
IC650	1:L5	6-F4
=IC700	1:K3	7-A8
IC710	1:J2	7-E8
IC710	1:J2	7-C6
IC710	1:J2	7-G0
IC710	1:J2	7-D6
IC710	1:J2	7-D7
IC710	1:J2	7-D6
IC710	1:J2	7-C6
IC720	1:J3	7-P6
IC720	1:J3	7-J0
IC720	1:J3	7-N7
IC720	1:J3	7-M7
IC720	1:J3	7-K7
IC720	1:J3	7-F8
IC720	1:J3	7-K0
IC730	1:J4	7-H8
IC730	1:J4	7-G7
IC740	1:H2	7-D1
IC750	1:H4	7-M3
IC750	1:H4	7-H5
IC750	1:H4	7-Q7
IC820	1:L4	8-N2
IC830	1:N3	8-J0
IC830	1:N3	8-Q1
IC830	1:N3	8-J0
IC830	1:N3	8-J1
IC830	1:N3	8-C0
L302	1:F9	3-B5
L303	1:F8	3-L8
L304	1:F5	3-P5
L305	1:F5	3-P4
L310	1:F6	3-Q5
L315	1:F6	3-Q4
L320	1:F4	3-K2
L325	1:E4	3-K1
L330	1:E4	3-L1
L333	1:F3	3-H4
L334	1:F3	3-C0
L335	1:E4	3-M2
L340	1:E5	3-N2
L345	1:E5	3-P1
L350	1:E5	3-Q2
L355	1:E6	3-Q2
L405	1:H8	4-C3

Device	PCB	Circuit
L410	1:H7	4-D4
L415	1:G7	4-D3
L418	2:H8	4-F4
L420	1:G8	4-D6
L425	1:G7	4-C6
L430	1:J7	4-G6
L435	1:J7	4-F5
L440	2:K8	4-G4
L445	1:K7	4-G4
L450	1:J7	4-G3
L455	2:K8	4-J4
L460	1:M7	4-J6
L465	1:L7	4-J5
L470	2:L8	4-K4
L475	2:L8	4-L4
L480	1:M9	4-N6
L481	1:J9	4-Q7
L485	1:N7	4-Q4
L520	1:K6	5-C1
L610	1:N5	6-L9
L620	1:N6	6-L9
L750	1:G3	7-Q0
#L910	1:P8	9-C8
L920	1:P8	9-E8
#L930	1:P7	9-G8
#L940	1:P6	9-J8
P100	1:Q6	1-R8
P150	1:P2	1-Q4
P160	1:P2	1-Q4
P170	1:P2	1-Q3
P204	1:D1	2-A8
P208	1:D1	2-A8
P215	1:D4	2-A2
P217	1:D4	2-A2
P219	1:D2	2-A1
P225	1:D2	2-A0
P230	1:C5	2-B0
P231	1:D8	2-B0
P233	1:C1	2-R9
P235	1:C1	2-R9
P237	1:B7	2-R8
P239	1:C7	2-R8
P240	1:C7	2-R8
P243	1:B7	2-R7
P244	1:B7	2-R7
P245	1:B8	2-R6
P247	1:B8	2-R6
P248	1:B7	2-R6
P249	1:C7	2-R5
P251	1:C7	2-R5
P255	1:D4	2-R4
P257	1:C2	2-R4
P259	1:B8	2-R3
P261	1:B8	2-R3
P263	1:B2	2-R2
P267	1:C8	2-N2
P269	1:D8	2-P2
P271	1:C9	2-N1
P273	1:D9	2-P0
P275	1:D7	2-Q0
P805	1:M2	8-A7
P810	1:L3	8-A5
P820	1:L4	8-M8
P825	1:L4	8-M8
P830	1:L4	8-M8
P835	1:L4	8-M7
P840	1:L4	8-M7
PL100	1:P3	1-F0
PL205	1:C5	2-J8
PL210	1:C3	2-H4
PL215	1:C4	2-K3
PL220	1:C4	2-H2
Q210	1:C6	2-J8

Device	PCB	Circuit
Q220	1:B3	2-L7
Q230	1:A4	2-M8
Q240	1:B7	2-Q7
Q250	1:B7	2-R5
Q260	1:C4	2-F3
Q270	1:D2	2-D1
Q310	1:F8	3-H5
Q315	1:F8	3-J6
Q320	1:E7	3-E4
Q325	1:E7	3-E3
Q330	1:E7	3-G3
Q335	1:F3	3-J4
Q340	1:F3	3-L4
Q345	1:F3	3-M3
Q350	1:E4	3-M1
Q355	2:E6	3-Q2
Q410	2:J8	4-F4
Q420	2:L8	4-J4
Q505	1:J6	5-K8
Q510	1:J5	5-E1
Q520	1:H5	5-J4
Q530	1:K5	5-H1
Q540	1:K5	5-L3
Q550	1:K5	5-L4
Q610	1:L6	6-E8
Q620	1:N6	6-P8
Q630	1:M6	6-P5
Q660	1:L5	6-N1
Q670	1:L6	6-Q2
Q710	1:J3	7-K8
Q720	1:J3	7-K8
Q730	1:H3	7-N8
Q740	1:H3	7-N8
Q750	1:G4	7-F3
Q760	1:H3	7-H3
Q770	1:H3	7-H1
Q775	1:H3	7-K3
Q780	1:H3	7-K3
Q785	1:H3	7-K2
Q790	1:H4	7-L3
Q795	1:G3	7-P0
Q810	1:M2	8-E7
Q820	1:L2	8-D5
Q830	1:L2	8-D5
Q840	1:L2	8-F5
Q850	1:M2	8-G5
Q860	1:L4	8-B3
%R150	1:P2	1-R4
R160	1:P2	1-R3
R201	1:B2	2-E9
R202	1:C1	2-F9
R204	1:C7	2-B6
R205	1:C7	2-D6
R206	1:B7	2-G8
R207	1:B6	2-G8
R208	1:B6	2-G8
R209	1:C6	2-H8
R210	1:B6	2-H7
R212	1:D4	2-F6
R213	1:C4	2-G6
R214	1:D4	2-G6
R215	1:C4	2-H6
R216	1:C3	2-K7
R217	1:A4	2-M8
R218	1:B4	2-N7
R219	1:B4	2-N8
R221	1:B7	2-R7
R223	1:B4	2-K6
R224	1:C4	2-K5
R225	1:B4	2-L5
R226	1:B4	2-L4
R227	1:B4	2-M4
R229	1:B4	2-M7
R230	1:B4	2-M6
R231	1:B4	2-M6

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Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
R232	1:B4	2-M5	R329	1:F5	3-P5	R525	1:J5	5-D1	R767	1:H3	7-K2
R233	1:B4	2-M6	R330	1:E8	3-H9	R530	1:J5	5-E1	R769	1:H3	7-K3
R235	1:B4	2-P6	R333	1:F6	3-P4	R535	1:J5	5-F1	R771	1:H4	7-L3
R237	1:B7	2-Q7	R334	1:F3	3-C1	R540	1:H5	5-K4	R772	1:G4	7-M2
R238	1:B7	2-R7	R335	1:F6	3-R4	R545	1:K5	5-H0	R774	1:H4	7-M3
R239	1:B8	2-R6	R337	1:F5	3-R5	%R550	1:K5	5-K2	R775	1:H4	7-N2
R241	1:B8	2-Q6	R338	1:F9	3-B4	%R551	1:K5	5-L2	R777	1:H4	7-R2
R242	1:B7	2-Q5	R339	1:E7	3-B4	R555	1:K5	5-L3	R780	1:G2	7-P1
R244	1:C6	2-A5	R341	1:F7	3-C4	R560	1:K4	5-L5	R782	1:G3	7-P1
R245	1:D4	2-D4	R343	1:F7	3-D4	R609	1:L6	6-B8	R784	1:G3	7-P1
R247	1:D3	2-E4	R345	1:E7	3-D4	R613	1:L6	6-C8	R785	1:G3	7-Q1
R248	1:C3	2-E3	R347	1:F7	3-E3	R615	1:M5	6-F9	R786	1:G2	7-R1
R249	1:D4	2-F3	R349	1:E7	3-F3	R617	1:M5	6-J8	R787	1:G2	7-R2
R251	1:C4	2-G4	R350	1:F8	3-K9	R619	1:M6	6-L8	R790	1:G3	7-P0
R253	1:C6	2-J2	R351	1:E7	3-F2	R621	1:M6	6-L7	R791	1:G3	7-Q0
R254	1:C6	2-K3	R352	1:F3	3-B2	R625	1:N6	6-L7	R801	1:M2	8-D7
R255	1:C7	2-K2	R353	1:E7	3-G2	R629	1:M6	6-P6	R802	1:M2	8-D7
R256	1:D8	2-M3	R354	1:F3	3-C2	R633	1:M5	6-Q8	R808	1:L2	8-B4
R257	1:D8	2-N5	R355	1:E7	3-G3	R637	1:N5	6-K5	R809	1:L2	8-D5
R258	1:D8	2-N4	R357	1:E7	3-G4	R641	1:N5	6-L4	R810	1:L2	8-D6
R259	1:D5	2-P4	R359	1:E7	3-H3	R645	1:N5	6-L5	R811	1:L2	8-E6
R260	1:D8	2-N4	R360	1:F3	3-H3	R649	1:M5	6-M5	R812	1:L2	8-D5
R262	1:D8	2-N3	R361	1:F3	3-H3	R653	1:M5	6-Q4	R813	1:L2	8-D4
R263	1:C8	2-P3	R362	1:F3	3-J4	R657	1:M5	6-D1	R815	1:L2	8-F4
&R264	1:C8	2-P3	R363	1:F3	3-J4	R661	1:M5	6-E3	R816	1:L2	8-F4
&R265	1:C8	2-P3	R365	1:F3	3-J3	R665	1:M5	6-E2	R818	1:M2	8-F5
&R266	1:C8	2-P3	R367	1:F3	3-K4	R669	1:M5	6-E2	R819	1:M2	8-F5
R267	1:C8	2-R2	R368	1:F4	3-L3	R673	1:M5	6-E0	R821	1:M4	8-B3
R268	1:D2	2-C0	R369	1:F3	3-L4	R677	1:M4	6-F4	R822	1:M4	8-E3
R269	1:C2	2-C1	R370	1:F8	3-K8	R681	1:L5	6-L2	R824	1:L4	8-L8
R270	1:C2	2-D1	R371	1:E8	3-N7	R685	1:L5	6-N2	R825	1:L4	8-L8
R271	1:C3	2-E1	R372	1:E8	3-N7	R689	1:L6	6-Q3	R826	1:L4	8-L8
R272	1:C4	2-F2	R373	1:E8	3-N7	R693	1:L6	6-Q1	R827	1:L4	8-L7
R273	1:B5	2-G2	R374	1:E9	3-N6	R696	1:M6	6-Q1	R828	1:L4	8-L7
R274	1:C4	2-G1	R376	1:F3	3-L2	R701	1:K4	7-A9	R829	1:L4	8-P9
R275	1:C4	2-H0	R381	1:F4	3-H1	R702	1:K4	7-C9	R830	1:L3	8-P9
R277	1:B5	2-J1	R382	1:F4	3-J1	R703	1:J3	7-C8	R831	1:L3	8-P9
R278	1:B5	2-J0	R383	1:F4	3-J0	=R705	1:K3	7-A7	R832	1:L3	8-P8
R279	1:B5	2-K0	R384	1:F4	3-J1	R706	1:J3	7-B6	R833	1:L3	8-P8
R280	1:B5	2-K0	R385	1:E4	3-L1	R708	1:H3	7-C7	R835	1:L3	8-P8
R282	1:D7	2-K1	R386	1:F4	3-L2	R710	1:H2	7-E7	R836	1:L3	8-P8
R283	1:D7	2-L1	R387	1:E4	3-M2	R711	1:J2	7-B6	R837	1:L3	8-P7
R284	1:D7	2-L0	R389	1:E4	3-M2	R712	1:J3	7-D9	R840	1:L3	8-P7
R285	1:C8	2-M0	R390	1:E4	3-M2	R713	1:J4	7-F8	R841	1:L3	8-P7
R286	1:C7	2-M0	R391	1:E4	3-M2	%R715	1:K4	7-H6	R842	1:L3	8-P6
R287	1:D9	2-M0	R392	1:E4	3-M2	R717	1:J4	7-H7	R843	1:L3	8-P6
R288	1:C6	2-M2	R393	1:F4	3-N2	R718	1:J4	7-H7	R845	1:M4	8-P5
R289	1:D9	2-M0	R394	1:F4	3-P2	R719	1:J4	7-J6	R846	1:K2	8-P4
R290	1:C8	2-N2	#R395	1:E5	3-N1	R720	1:J3	7-K7	R847	1:K2	8-P4
R291	1:C8	2-N1	#R396	1:E5	3-N2	R721	1:J3	7-K9	R848	1:L2	8-J4
R292	1:D8	2-Q2	#R397	1:E5	3-N1	R722	1:J3	7-K8	R849	1:M4	8-P3
R293	1:D9	2-Q2	R399	1:E6	3-P1	R723	1:J3	7-M7	R850	1:K2	8-P4
R294	1:D9	2-Q1	#R410	1:H8	4-B4	R725	1:J4	7-N7	R853	1:M4	8-N3
R295	1:D8	2-R1	#R420	1:H8	4-B3	%R726	1:J3	7-N6	R854	1:M4	8-N3
R296	1:D6	2-P0	#R430	1:H8	4-B3	R727	1:H3	7-N9	R855	1:M2	8-B0
R297	1:D7	2-P1	#R440	1:H8	4-C3	R728	1:H3	7-N8	R859	1:N2	8-C1
%R298	1:D7	2-Q0	R450	1:G7	4-D3	R742	1:H2	7-B4	R861	1:N2	8-D1
R299	1:C7	2-R0	R460	1:M8	4-P5	R743	1:H2	7-C5	R863	1:N3	8-E1
R300	1:F8	3-B9	R470	2:N8	4-P5	R744	1:G2	7-D4	R865	1:N4	8-E0
R301	1:E9	3-C8	R480	2:M8	4-N4	R746	1:H3	7-E4	R867	1:N3	8-E1
R302	1:F9	3-B7	R481	1:J9	4-P7	R747	1:H3	7-E5	R871	1:N3	8-G2
R303	1:E8	3-C7	R490	1:N7	4-P3	R748	1:J2	7-A1	R872	1:M4	8-H1
R304	1:E8	3-E9	R500	1:J4	5-C6	R749	1:J2	7-B1	R873	1:N3	8-G1
R305	1:E8	3-E7	R501	1:J6	5-J8	R750	1:H4	7-Q7	R874	1:N3	8-H0
R306	1:E8	3-B6	R502	1:J6	5-J8	R752	1:G4	7-F5	R875	1:N3	8-G0
R307	1:E8	3-B6	R503	1:J6	5-K8	R753	1:G4	7-F3	R876	1:N3	8-H0
R309	1:E8	3-C6	R504	1:K6	5-K9	R754	1:G3	7-F3	R877	1:M2	8-K2
R311	1:E7	3-D6	R505	1:K6	5-L8	R756	1:G3	7-G5	R879	1:N2	8-L3
R315	1:E7	3-D6	R510	1:K6	5-L8	R757	1:G4	7-G4			
%R317	1:F7	3-D5	R514	1:K6	5-N6	R758	1:H3	7-H4	RV210	1:B7	2-F9
R319	1:F7	3-E5	R515	1:H6	5-H5	R759	1:H3	7-H4	RV220	1:A4	2-M6
R321	1:F7	3-G5	#R517	1:G5	5-F2	R760	1:H3	7-K4	RV310	1:E7	3-D6
R323	1:F8	3-G7	#R518	1:G5	5-F3	R762	1:H3	7-K4	RV320	1:E8	3-B4
R324	1:F7	3-F5	#R519	1:G5	5-G2	R763	1:H4	7-L4	RV330	1:F7	3-E5
R325	1:F8	3-G5	R520	1:K6	5-C1	R765	1:H3	7-H2	RV805	1:N4	8-F1
R327	1:F8	3-H7	R523	1:J5	5-D1	R766	1:G3	7-J3			

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
SK200	1:D5	2-F0									
SK205	1:B5	2-A5									
SK310	1:E6	3-R2									
SK410	1:G8	4-A4									
SK501	1:G6	5-E7									
SK502	1:G6	5-E6									
SK503	1:G6	5-E5									
SK504	1:G5	5-E4									
SK505	1:G5	5-E3									
SK513	1:H5	5-H3									
SK522	1:H6	5-L6									
SK531	1:K6	5-P7									
SK532	1:K5	5-P6									
SK533	1:K5	5-P5									
SK534	1:K5	5-P4									
SK535	1:K5	5-P3									
=SK710	1:K3	7-A7									
SK805	1:K3	8-Q9									
SK805	1:K3	8-Q7									
SK805	1:K3	8-Q6									
SK805	1:K3	8-Q9									
SK805	1:K3	8-Q6									
SK805	1:K3	8-Q9									
SK805	1:K3	8-Q7									
SK805	1:K3	8-Q8									
SK805	1:K3	8-Q6									
SK805	1:K3	8-Q5									
SK805	1:K3	8-Q7									
SK805	1:K3	8-Q8									
SK805	1:K3	8-Q7									
SK805	1:K3	8-Q8									
SK805	1:K3	8-Q6									
SK805	1:K3	8-Q8									
SK810	1:M3	8-H5									
SL201	2:D1	2-B9									
SL202	2:D1	2-B8									
SL203	2:D2	2-B1									
SL204	2:D2	2-B1									
SL501	2:J5	5-G1									
SL810	1:M2	8-C7									
SW230	1:B8	2-B4									
T210	1:B2	2-C8									
T610	1:L5	6-N2									
TP206	1:C5	2-H7									
TP302	1:D9	3-B7									
TP305	1:E3	3-H3									
TP306	1:F9	3-B8									
TP307	1:F8	3-B9									
TP310	1:D7	3-G2									
TP312	1:F9	3-A5									
TP401	1:M7	4-G7									
TP601	1:N5	6-M9									
TP602	1:L6	6-R9									
TP603	1:L5	6-J2									
TP604	1:L5	6-M6									
TP607	1:L4	6-J9									
TP710	1:H4	7-H5									
TP715	1:J2	7-C6									

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6.3 T857 Exciter PCB

This section contains the following information.

IPN	Section	Page
220-01398-02	Parts List	6.3.3
	Mechanical & Miscellaneous Parts	6.3.8
	Mechanical Assembly	6.3.9
	Grid Reference Index	6.3.11
	PCB Layout - Top Side	6.3.15
	PCB Layout - Bottom Side	6.3.16
	Test Points & Options Connections - Top Side	6.3.17
	Test Points & Options Connections - Bottom Side	6.3.18
	Exciter Overview Diagram	6.3.19
	Audio Processor Circuit Diagram	6.3.20
	Exciter Circuit Diagram	6.3.21
	VCO Section Circuit Diagram	6.3.23
	Regulators Circuit Diagram	6.3.24
	Synthesiser Circuit Diagram	6.3.25
	Microcontroller Circuit Diagram	6.3.26
	Harmonic Filter Circuit Diagram	6.3.27
220-01398-04	Parts List	6.3.29
	Mechanical & Miscellaneous Parts	6.3.36
	Mechanical Assembly	6.3.37
	Grid Reference Index	6.3.39
	PCB Layout - Top Side	6.3.43
	PCB Layout - Bottom Side	6.3.44
	Test Points & Options Connections - Top Side	6.3.45
	Test Points & Options Connections - Bottom Side	6.3.46
	Exciter Overview Diagram	6.3.47
	Audio Processor Circuit Diagram	6.3.48
	Exciter Circuit Diagram	6.3.49
	VCO Section Circuit Diagram	6.3.51
	Regulators Circuit Diagram	6.3.52
	Synthesiser Circuit Diagram	6.3.53
	Microcontroller Circuit Diagram	6.3.54
	Harmonic Filter Circuit Diagram	6.3.55

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T857 Parts List (IPN 220-01398-02)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

#C315	Changed from 12p (IPN 015-22120-01) to 8p2 (IPN 015-21820-01)	T857-2X-XXXX Only: to improve power output & flatness across the band (710389).
#C316	Changed from 33p (IPN 015-22330-01) to 27p (IPN 015-22270-01)	
#L313	Changed from 1.5T/3.0 (IPN 052-08130-15) to 1.5T/2.5 (IPN 052-08125-15)	
D111	Changed from MR750 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).	
=IC700	-16, -26, -36: TCXO changed to IPN 539-00010-55 to meet FCC Type Approval requirements (710923/36).	
R307	T857-2X-XXXX Only: changed from 470Ω (IPN 036-13470-00) to 150Ω (IPN 036-13150-00) to increase average output power to 1W (710755).	
R326	T857-2X-XXXX Only: chip resistor deleted - fitted as a leaded component across the emitter/base leads of Q304 to improve power output & flatness across the band (710389).	
R713	Changed from 22Ω (IPN 036-12220-00) to 0Ω (IPN 036-10000-00) to improve hum & noise performance (710837/839/840/841).	
RV220	Changed to IPN 042-05470-07 (47k preset) because IPN 042-05470-06 no longer available (710793/96/97/98).	
New Product Types	The following component changes apply to the T857-16-0500/26-0500/36-0500 Product Types:	
	&C269 changed to 4p7 (IPN 015-21470-01) C271 changed to 56p (IPN 015-22560-01) - circuit reference changed to &C271 C289 changed to 68n (IPN 015-25680-08) - circuit reference changed to &C289 R290 changed to 680Ω (IPN 036-13680-00) - circuit reference changed to &R290.	
070-02001-00	Red front panel LED: replaced by 008-00014-79 (710928).	
070-02002-00	Green front panel LED: replaced by 008-00014-80 (710928).	
303-11169-03	T800 chassis: replaced by 303-11169-04	New chassis and lid tooling introduced, incorporating mechanical improvements and better RF shielding (750027, 750028 & 750029). Note that the new lids should be used only with the new chassis.
312-01052-01	T800 top lid: replaced by 312-01052-02	
312-01053-01	T800 bottom lid: replaced by 312-01053-02	
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).	

Note: %D205 and %D210 are optional level limiting diodes for special applications.

=R705 (47 ohm) and =SK710 are fitted in place of =IC700 when an external frequency reference is used. These two components are supplied with the auxiliary D-range kits (T800-06-0000 & T800-06-0001).

Ref	Var	IPN	Description
C201		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C202		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C204		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C205		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C207		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C209		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C210		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C211		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C213		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C215		014-08220-01	(L)CAP TANT 22UF10V276MSER
C217		015-24220-08	CAP CER 0805 2N2 10% X7R 50V
C219		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C221		014-08220-01	(L)CAP TANT 22UF10V276MSER
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C227		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C229		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C230		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C232		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C233		020-08470-02	CAP ELE RA 47M 16V 6X11MM
C235		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C237		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C239		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C241		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C242		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C243		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C245		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C247		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C249		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C251		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C253		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C255		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C257		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C259		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C260		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C261		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C263		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C265		020-07470-92	CAP BI-P RA 4M7 50V 6X11 5 LS
C267		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C269	10	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	13	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	15	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	20	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	23	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	25	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	30	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	35	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C271		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C273		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C275		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C277		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C279		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C281		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C283		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C285		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C287		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C289		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C291		014-08220-01	(L)CAP TANT 22UF10V276MSER
C293		015-27100-10	CAP CER 0805 1M+80-20% Y5V 16V
%C294		015-22470-01	CAP CER 0805 47P 5% NPO 50V
%C295		022-06470-02	CAP MYLAR 470N 10% 50V
C300A		016-08100-01	CAP EL 6X4 10M 20% 16V
C300B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C301		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C302		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C303		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C304		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C305		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C306		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C307		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C308		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C310		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C311		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C312		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C313		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C314		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C315	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	15	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	20	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	23	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	25	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	30	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C315	35	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C316	10	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	13	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	15	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	20	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	23	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	25	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	30	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C316	35	015-22220-01	CAP CER 0805 22P 5% NPO 50V
C317		020-07470-04	CAP ELE RA 4M7 25V 20%8X13 SOL
C318		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C319		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C320		015-24100-08	CAP CER 0805 1N 10% X7R 50V
#C321	10	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	13	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	15	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	20	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	23	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	25	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	30	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C321	35	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	10	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	13	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	15	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	20	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	23	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	25	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C322	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C323		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C324		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C325		015-06100-08	CAP CER 1206 100N 10% X7R 50V
#C326	10	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	13	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	15	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	20	015-22150-01	CAP CER 0805 15P 5% NPO 50V
#C326	23	015-22150-01	CAP CER 0805 15P 5% NPO 50V
#C326	25	015-22150-01	CAP CER 0805 15P 5% NPO 50V
#C326	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C327	10	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	13	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	15	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	20	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	23	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	25	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	30	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C327	35	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
C328		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C329		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C330		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C331		015-25150-08	CAP CER 0805 15N 10% X7R 50V
C332		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C333		015-05100-07	CAP 1206 CHIP NPO 10nF 25V
C340		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C341		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C342		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C354		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C503		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C505		015-05470-08	CAP CER 1206 47N 10% X7R 50V
C510		015-25150-08	CAP CER 0805 15N 10% X7R 50V
C513		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C535		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C550		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C605		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C610A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C610B		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611A		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C611B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C623		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C625		020-09470-07	CAPEL470M16V20%V 8*20 3.5L.ESR
C626		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C628		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C630		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C634		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C636		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C638		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C640		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C655		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C660		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C665		020-08100-03	CAP ELE RAD 10UF 50V 5X11MM
C670		025-07330-01	CAP TANT BEAD 3M3 35V
C673		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C677		020-07100-02	CAP ELE RA 1M 50V 5X11MM
C681		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C684		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C687		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C690		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C693		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C700		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C703		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C705		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C706		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C708		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C709		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C710		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C712		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C720		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C722		015-06100-08	CAP CER 1206 100N 10% X7R 50V

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Ref	Var	IPN	Description
C724		014-08220-01	(L)CAP TANT 22UF10V276MSER
C725		014-08220-01	(L)CAP TANT 22UF10V276MSER
C726		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C727		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C729		015-23220-01	CAP CER 0805 220P 5% NPO 50V
%C733		015-23470-08	CAP CER 0805 470P 10% X7R 50V
C735		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C736		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C740A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C740B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C741A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C741B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C742A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C742B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C743		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C745		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C750		025-08100-03	CAP 10M 35V 20% TANT 5MM L/S
C757		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C759		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C761		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C762		014-08220-01	(L)CAP TANT 22UF10V276MSER
C764		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C765		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C767		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C769		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C770		014-08220-01	(L)CAP TANT 22UF10V276MSER
C772		014-08220-01	(L)CAP TANT 22UF10V276MSER
C774		022-06100-16	CAP METAL POLY 100N +-10% 100V
C776		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C782		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C784		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C786		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C788		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C790		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C792		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C810		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C812		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C813		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C822		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C823		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C824		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C826		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C827		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C828		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C830		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C838		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C841		020-09100-04	CAP ELE RA 100M 10V 6.3X9MM
C844		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C910		015-01680-06	CAP CER 1210 6P8 NPO500VGRM42
C920		015-02100-06	CAP CER 1210 10P NPO500VGRM42
C930		015-01680-06	CAP CER 1210 6P8 NPO500VGRM42
D111		001-00011-60	S) DIODE SR2607 -- USE MR750
D201		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D202		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D203		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D220		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D230		001-00010-40	S) DIODE ZENER 33V 1.3W
D240		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D250		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D260		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D270		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D510		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D610		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D620		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D630		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D635		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D640		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D710		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D720		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D730		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D740		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
D810		001-10065-00	DIODE BAT65 SCHOTTKEY SOD123
IC210		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC220		002-10126-70	S) IC SMD DS1267S10K 2XDIG POT
IC230		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC240		002-10040-53	S)MC14053B SMD BREAK B4 MAKE
IC250		002-00020-50	S) IC 4N25A OPTOCOUPLER
IC260		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC300		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC610		002-00014-58	S) IC 78L05 5V 100MA REG TO92
IC630		002-00014-62	S) IC 317L 100MA REG 3TER TO92
IC640		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC650		002-10012-32	SMD DS1232LPS-2 LP RESET&W-DOG
=IC700		539-00010-50	TCXO 12.8MHZ +-1PPM -20 +70C
IC710		002-74900-04	S) IC SMD 74HC04D 6X INV BUFFD
IC720		002-74910-04	S) IC SMD 74HCU04 6X INV
IC730		002-10045-20	S) IC SMD 74HC4520T 2XCTR 4BIT
IC740		002-14519-10	S) IC MC145191F SMD SYNTH
IC750		002-10330-78	S) IC MC33078D 2X AMP LO NOISE
IC810		002-08951-20	S) IC AT89C51 PLCC44 MIC 12MHZ
IC820		002-12416-00	S)IC SMD AT24C16N-10SC EEPROM
IC830		002-10003-24	S) IC SMD 324 4X O-AMP SO14
L300		065-00010-04	BEAD FERR F8 4X2X5MM
L302		056-10330-02	(L) IND SMD 330NH
L303		065-00010-04	BEAD FERR F8 4X2X5MM

Ref	Var	IPN	Description
L305		056-10330-02	(L) IND SMD 330NH
#L307	10	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	13	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	15	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	20	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	23	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	25	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	30	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L307	35	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
L309		065-00010-01	BEAD FERR 3B 6 HOLE
L312		052-08130-65	COIL A/W 6.5T/3.0MM HOR 0.8MM
#L313	10	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	13	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	15	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	20	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	23	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	25	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	30	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	35	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
L314		056-10330-02	(L) IND SMD 330NH
L750		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L910		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
L920		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
PL205		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL210		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL215		240-00020-44	HEADER 10W X2R PCB MTG 5*2
PL220		240-00020-67	HEADER 6W 2X3 PCB MTG STD
Q210		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q220		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q230		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q240		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q250		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q260		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q270		000-00011-91	S) XSTR BD139 NPN AF PWR TO126
Q301		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q302		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q303		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q304		000-00005-55	S) XSTR MRF555 NPN RF L/PWR
Q305		000-00032-56	S) XSTR MRF630 NPN T039 UHF 3W
Q306		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q307		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q308		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q309		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q310		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q311		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q505		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q510		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q520		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q530		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q540		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q550		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q610		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q620		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q630		000-50011-30	S) XSTR AI BC557B PNP TO92 AF
Q660		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q670		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q710		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q720		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q730		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q740		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q750		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q760		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q770		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q775		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q780		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q785		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q790		000-10003-12	S) XSTR SMD BFR31 N JFET SOT23
Q795		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q810		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q820		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q830		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q840		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q850		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q860		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
R160		036-12100-00	RES M/F 0805 10E 5%
R201		036-13560-00	RES M/F 0805 560E 5%
R202		036-14100-00	RES M/F 0805 1K 5%
R204		036-14220-00	RES M/F 0805 2K2 5%
R205		036-13220-00	RES M/F 0805 220E 5%
R206		036-14100-00	RES M/F 0805 1K 5%
R207		036-14390-00	RES M/F 0805 3K9 5%
R208		036-13560-00	RES M/F 0805 560E 5%
R209		036-15100-00	RES M/F 0805 10K 5%
R210		036-14220-00	RES M/F 0805 2K2 5%
R212		036-16100-00	RES M/F 0805 100K 5%
R213		036-15100-00	RES M/F 0805 10K 5%
R214		036-14820-00	RES M/F 0805 8K2 5%
R215		036-16100-00	RES M/F 0805 100K 5%
R216		036-16100-00	RES M/F 0805 100K 5%
R217		036-14100-00	RES M/F 0805 1K 5%
R218		036-16150-00	RES M/F 0805 150K 5%
R219		036-14220-00	RES M/F 0805 2K2 5%
R221		036-14150-00	RES M/F 0805 1K5 5%
R223		036-17100-00	RES M/F 0805 1M 5%
R224		036-14680-00	RES M/F 0805 6K8 5%

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Ref	Var	IPN	Description
R225		036-17100-00	RES M/F 0805 1M 5%
R226		036-15100-00	RES M/F 0805 10K 5%
R227		036-14220-00	RES M/F 0805 2K2 5%
R229		036-16470-00	RES M/F 0805 470K 5%
R230		036-16100-00	RES M/F 0805 100K 5%
R231		036-15100-00	RES M/F 0805 10K 5%
R232		036-16330-00	RES M/F 0805 330K 5%
R233		036-16100-00	RES M/F 0805 100K 5%
R235		036-14470-00	RES M/F 0805 4K7 5%
R237		036-15470-00	RES M/F 0805 47K 5%
R238		036-15470-00	RES M/F 0805 47K 5%
R239		036-14150-00	RES M/F 0805 1K5 5%
R241		036-14470-00	RES M/F 0805 4K7 5%
R242		036-14220-00	RES M/F 0805 2K2 5%
R244		036-15100-00	RES M/F 0805 10K 5%
R245		036-16100-00	RES M/F 0805 100K 5%
R247		036-15100-00	RES M/F 0805 10K 5%
R248		036-16100-00	RES M/F 0805 100K 5%
R249		036-16100-00	RES M/F 0805 100K 5%
R251		036-16100-00	RES M/F 0805 100K 5%
R253		036-16100-00	RES M/F 0805 100K 5%
R254		036-16100-00	RES M/F 0805 100K 5%
R255		036-15100-00	RES M/F 0805 10K 5%
R256		036-15470-00	RES M/F 0805 47K 5%
R257		036-16330-00	RES M/F 0805 330K 5%
R258		036-16150-00	RES M/F 0805 150K 5%
R259		036-15220-00	RES M/F 0805 22K 5%
R260		036-15470-00	RES M/F 0805 47K 5%
R262		036-15470-00	RES M/F 0805 47K 5%
R263		036-14470-00	RES M/F 0805 4K7 5%
&R264	10	036-15220-00	RES M/F 0805 22K 5%
&R264	13	036-15220-00	RES M/F 0805 22K 5%
&R264	15	036-15270-00	RES M/F 0805 27K 5%
&R264	20	036-15220-00	RES M/F 0805 22K 5%
&R264	23	036-15220-00	RES M/F 0805 22K 5%
&R264	25	036-15270-00	RES M/F 0805 27K 5%
&R264	30	036-15220-00	RES M/F 0805 22K 5%
&R264	35	036-15270-00	RES M/F 0805 27K 5%
&R265	10	036-15150-00	RES M/F 0805 15K 5%
&R265	13	036-15150-00	RES M/F 0805 15K 5%
&R265	15	036-15180-00	RES M/F 0805 18K 5%
&R265	20	036-15150-00	RES M/F 0805 15K 5%
&R265	23	036-15150-00	RES M/F 0805 15K 5%
&R265	25	036-15180-00	RES M/F 0805 18K 5%
&R265	30	036-15150-00	RES M/F 0805 15K 5%
&R265	35	036-15180-00	RES M/F 0805 18K 5%
&R266	10	036-15470-00	RES M/F 0805 47K 5%
&R266	13	036-15470-00	RES M/F 0805 47K 5%
&R266	15	036-15560-00	RES M/F 0805 56K 5%
&R266	20	036-15470-00	RES M/F 0805 47K 5%
&R266	23	036-15470-00	RES M/F 0805 47K 5%
&R266	25	036-15560-00	RES M/F 0805 56K 5%
&R266	30	036-15470-00	RES M/F 0805 47K 5%
&R266	35	036-15560-00	RES M/F 0805 56K 5%
R267		036-14220-00	RES M/F 0805 2K2 5%
R268		036-13100-00	RES M/F 0805 100E 5%
R269		036-15100-00	RES M/F 0805 10K 5%
R270		036-13470-00	RES M/F 0805 470E 5%
R271		036-16390-00	RES M/F 0805 390K 5%
R272		036-13560-00	RES M/F 0805 560E 5%
R273		036-15120-00	RES M/F 0805 12K 5%
R274		036-15150-00	RES M/F 0805 15K 5%
R275		036-14270-00	RES M/F 0805 2K7 5%
R277		036-16100-00	RES M/F 0805 100K 5%
R278		036-16120-00	RES M/F 0805 120K 5%
R279		036-17100-00	RES M/F 0805 1M 5%
R280		036-15100-00	RES M/F 0805 10K 5%
R282		036-15560-00	RES M/F 0805 56K 5%
R283		036-15560-00	RES M/F 0805 56K 5%
R284		036-17100-00	RES M/F 0805 1M 5%
R285		036-10000-00	RES M/F 0805 ZERO OHM
R286		036-14220-00	RES M/F 0805 2K2 5%
R287		036-15100-00	RES M/F 0805 10K 5%
R288		036-15150-00	RES M/F 0805 15K 5%
R289		036-16100-00	RES M/F 0805 100K 5%
R290		036-13560-00	RES M/F 0805 560E 5%
R291		036-10000-00	RES M/F 0805 ZERO OHM
R292		036-14470-00	RES M/F 0805 4K7 5%
R293		036-15470-00	RES M/F 0805 47K 5%
R294		036-14470-00	RES M/F 0805 4K7 5%
R295		036-14270-00	RES M/F 0805 2K7 5%
R296		036-14100-00	RES M/F 0805 1K 5%
R297		036-14560-00	RES M/F 0805 5K6 5%
%R298		036-16100-00	RES M/F 0805 100K 5%
R299		036-14270-00	RES M/F 0805 2K7 5%
R300		036-12220-00	RES M/F 0805 22E 5%
R301		036-15100-00	RES M/F 0805 10K 5%
R302		036-15220-00	RES M/F 0805 22K 5%
R303		036-14270-00	RES M/F 0805 2K7 5%
R304		036-16100-00	RES M/F 0805 100K 5%
R305		036-15220-00	RES M/F 0805 22K 5%
R306		036-14150-00	RES M/F 0805 1K5 5%
R307		036-13470-00	RES M/F 0805 470E 5%
R308		036-14220-00	RES M/F 0805 2K2 5%
R309		036-15100-00	RES M/F 0805 10K 5%
R310		036-13470-00	RES M/F 0805 470E 5%
R311		036-13470-00	RES M/F 0805 470E 5%
R312		036-14100-00	RES M/F 0805 1K 5%

Ref	Var	IPN	Description
R313		036-12220-00	RES M/F 0805 22E 5%
R314		036-13470-00	RES M/F 0805 470E 5%
R323		036-14150-00	RES M/F 0805 1K5 5%
R324		036-12470-00	RES M/F 0805 47E 5%
R325		036-13560-00	RES M/F 0805 560E 5%
R326		036-12470-00	RES M/F 0805 47E 5%
R327		036-14100-00	RES M/F 0805 1K 5%
R328		036-13470-00	RES M/F 0805 470E 5%
R329		036-12100-00	RES M/F 0805 10E 5%
#R330	10	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	13	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	15	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	20	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	23	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	25	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R330	30	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R330	35	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R331	10	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	13	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	15	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	20	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	23	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	25	030-52180-20	RES FILM AI 18E 5% 0.4W 4X1.6
#R331	30	030-52220-20	RES FILM AI 22E 5% 0.4W 4X1.6
#R331	35	030-52220-20	RES FILM AI 22E 5% 0.4W 4X1.6
#R332	10	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	13	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	15	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	20	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	23	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	25	030-53270-20	RES FILM AI 270E 5% 0.4W 4X1.6
#R332	30	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R332	35	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
R333		036-12470-00	RES M/F 0805 47E 5%
R334		032-33100-10	RES M/F PWR 100E 5% 2W 12X4.5
R335		036-12100-00	RES M/F 0805 10E 5%
R340		036-14150-00	RES M/F 0805 1K5 5%
R341		036-15470-00	RES M/F 0805 47K 5%
R342		036-15100-00	RES M/F 0805 10K 5%
R343		036-15150-00	RES M/F 0805 15K 5%
R344		036-15470-00	RES M/F 0805 47K 5%
R345		036-16120-00	RES M/F 0805 120K 5%
R346		036-15100-00	RES M/F 0805 10K 5%
R347		036-14100-00	RES M/F 0805 1K 5%
R348		036-14100-00	RES M/F 0805 1K 5%
R349		036-16100-00	RES M/F 0805 100K 5%
R355		036-14100-00	RES M/F 0805 1K 5%
R356		036-15150-00	RES M/F 0805 15K 5%
R357		036-15150-00	RES M/F 0805 15K 5%
R358		036-14470-00	RES M/F 0805 4K7 5%
R359		036-14100-00	RES M/F 0805 1K 5%
R501		036-15100-00	RES M/F 0805 10K 5%
R502		036-15100-00	RES M/F 0805 10K 5%
R503		036-14560-00	RES M/F 0805 5K6 5%
R504		036-13330-00	RES M/F 0805 330E 5%
R505		036-15150-00	RES M/F 0805 15K 5%
R510		036-14150-00	RES M/F 0805 1K5 5%
R514		036-12330-00	RES M/F 0805 33E 5%
R515		036-12560-00	RES M/F 0805 56E 5%
R517		036-13330-00	RES M/F 0805 330E 5%
R518		036-12180-00	RES M/F 0805 18E 5%
R519		036-13330-00	RES M/F 0805 330E 5%
R520		036-16120-00	RES M/F 0805 120K 5%
R525		036-15470-00	RES M/F 0805 47K 5%
R530		036-15220-00	RES M/F 0805 22K 5%
R535		036-15100-00	RES M/F 0805 10K 5%
R540		036-14220-00	RES M/F 0805 2K2 5%
R545		036-14470-00	RES M/F 0805 4K7 5%
R550		036-14470-00	RES M/F 0805 4K7 5%
R555		036-14470-00	RES M/F 0805 4K7 5%
R560		036-14270-00	RES M/F 0805 2K7 5%
R609		036-14100-00	RES M/F 0805 1K 5%
R613		036-13560-00	RES M/F 0805 560E 5%
R615		036-13100-00	RES M/F 0805 100E 5%
R617		036-10000-00	RES M/F 0805 ZERO OHM
R619		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM
R621		032-31100-00	RES M/F PWR 1E0 5% 1W 12X4.5MM
R625		036-14100-00	RES M/F 0805 1K 5%
R629		032-33270-00	RES M/F PWR 270E 5% 1W 12X4.5
R633		036-14680-00	RES M/F 0805 6K8 5%
R637		036-12220-00	RES M/F 0805 22E 5%
R641		036-14150-00	RES M/F 0805 1K5 5%
R645		036-13470-00	RES M/F 0805 470E 5%
R649		036-14470-00	RES M/F 0805 4K7 5%
R653		036-15100-00	RES M/F 0805 10K 5%
R657		036-15100-00	RES M/F 0805 10K 5%
R661		036-15100-00	RES M/F 0805 10K 5%
R665		036-16100-00	RES M/F 0805 100K 5%
R669		036-15470-00	RES M/F 0805 47K 5%
R673		036-16100-00	RES M/F 0805 100K 5%
R677		036-15470-00	RES M/F 0805 47K 5%
R681		036-13100-00	RES M/F 0805 100E 5%
R685		036-15150-00	RES M/F 0805 15K 5%
R689		036-12100-00	RES M/F 0805 10E 5%
R693		036-16100-00	RES M/F 0805 100K 5%
R696		036-15560-00	RES M/F 0805 56K 5%
R701		036-12220-00	RES M/F 0805 22E 5%
R702		036-17100-00	RES M/F 0805 1M 5%

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Ref	Var	IPN	Description
R703		036-17100-00	RES M/F 0805 1M 5%
R706		036-15150-00	RES M/F 0805 15K 5%
R708		036-16100-00	RES M/F 0805 100K 5%
R710		036-13100-00	RES M/F 0805 100E 5%
R711		036-13100-00	RES M/F 0805 100E 5%
R712		036-12100-00	RES M/F 0805 10E 5%
R713		036-12220-00	RES M/F 0805 22E 5%
%R715		036-14100-00	RES M/F 0805 1K 5%
R717		036-14270-00	RES M/F 0805 2K7 5%
R718		036-16150-00	RES M/F 0805 150K 5%
R719		036-16150-00	RES M/F 0805 150K 5%
R720		036-15390-00	RES M/F 0805 39K 5%
R721		036-15100-00	RES M/F 0805 10K 5%
R722		036-15100-00	RES M/F 0805 10K 5%
R723		036-14270-00	RES M/F 0805 2K7 5%
R725		036-15390-00	RES M/F 0805 39K 5%
%R726		036-13100-00	RES M/F 0805 100E 5%
R727		036-15100-00	RES M/F 0805 10K 5%
R728		036-15100-00	RES M/F 0805 10K 5%
R742		036-13150-00	RES M/F 0805 150E 5%
R743		036-13150-00	RES M/F 0805 150E 5%
R744		036-12220-00	RES M/F 0805 22E 5%
R746		036-12220-00	RES M/F 0805 22E 5%
R747		036-12220-00	RES M/F 0805 22E 5%
R748		036-15470-00	RES M/F 0805 47K 5%
R749		036-15470-00	RES M/F 0805 47K 5%
R750		036-12220-00	RES M/F 0805 22E 5%
R752		036-12220-00	RES M/F 0805 22E 5%
R753		036-17100-00	RES M/F 0805 1M 5%
R754		036-14100-00	RES M/F 0805 1K 5%
R756		036-16470-00	RES M/F 0805 470K 5%
R757		036-16470-00	RES M/F 0805 470K 5%
R758		036-14120-00	RES M/F 0805 1K2 5%
R759		036-13330-00	RES M/F 0805 330E 5%
R760		036-13180-00	RES M/F 0805 180E 5%
R762		036-13100-00	RES M/F 0805 100E 5%
R763		036-13100-00	RES M/F 0805 100E 5%
R765		036-13680-00	RES M/F 0805 680E 5%
R766		036-14100-00	RES M/F 0805 1K 5%
R767		036-13680-00	RES M/F 0805 680E 5%
R769		036-13180-00	RES M/F 0805 180E 5%
R771		036-14820-00	RES M/F 0805 8K2 5%
R772		036-15220-00	RES M/F 0805 22K 5%
R774		036-14820-00	RES M/F 0805 8K2 5%
R775		036-15180-00	RES M/F 0805 18K 5%
R777		036-14220-00	RES M/F 0805 2K2 5%
R780		036-12680-00	RES M/F 0805 68E 5%
R782		036-12180-00	RES M/F 0805 18E 5%
R784		036-13120-00	RES M/F 0805 120E 5%
R785		036-14330-00	RES M/F 0805 3K3 5%
R786		036-12100-00	RES M/F 0805 10E 5%
R787		036-12100-00	RES M/F 0805 10E 5%
R790		036-13390-00	RES M/F 0805 390E 5%
R791		036-14100-00	RES M/F 0805 1K 5%
R801		036-16150-00	RES M/F 0805 150K 5%
R802		036-15470-00	RES M/F 0805 47K 5%
R808		036-12100-00	RES M/F 0805 10E 5%
R809		036-14470-00	RES M/F 0805 4K7 5%
R810		036-14470-00	RES M/F 0805 4K7 5%
R811		036-14470-00	RES M/F 0805 4K7 5%
R812		036-14470-00	RES M/F 0805 4K7 5%
R813		036-14470-00	RES M/F 0805 4K7 5%
R815		036-15470-00	RES M/F 0805 47K 5%
R816		036-16150-00	RES M/F 0805 150K 5%
R818		036-14470-00	RES M/F 0805 4K7 5%
R819		036-14470-00	RES M/F 0805 4K7 5%
R821		036-15470-00	RES M/F 0805 47K 5%
R822		036-15470-00	RES M/F 0805 47K 5%
R824		036-14220-00	RES M/F 0805 2K2 5%
R825		036-14220-00	RES M/F 0805 2K2 5%
R826		036-14220-00	RES M/F 0805 2K2 5%
R827		036-14220-00	RES M/F 0805 2K2 5%
R828		036-14220-00	RES M/F 0805 2K2 5%
R829		036-14220-00	RES M/F 0805 2K2 5%
R830		036-14220-00	RES M/F 0805 2K2 5%
R831		036-14220-00	RES M/F 0805 2K2 5%
R832		036-14220-00	RES M/F 0805 2K2 5%
R833		036-14220-00	RES M/F 0805 2K2 5%
R835		036-14220-00	RES M/F 0805 2K2 5%
R836		036-14220-00	RES M/F 0805 2K2 5%
R837		036-14220-00	RES M/F 0805 2K2 5%
R840		036-14220-00	RES M/F 0805 2K2 5%
R841		036-14220-00	RES M/F 0805 2K2 5%
R842		036-14220-00	RES M/F 0805 2K2 5%
R843		036-14220-00	RES M/F 0805 2K2 5%
R845		036-13470-00	RES M/F 0805 470E 5%
R846		036-13470-00	RES M/F 0805 470E 5%
R847		036-13470-00	RES M/F 0805 470E 5%
R848		036-14470-00	RES M/F 0805 4K7 5%
R849		036-13470-00	RES M/F 0805 470E 5%
R850		036-13470-00	RES M/F 0805 470E 5%
R853		036-14470-00	RES M/F 0805 4K7 5%
R854		036-14470-00	RES M/F 0805 4K7 5%
R855		036-14470-00	RES M/F 0805 4K7 5%
R859		036-16150-00	RES M/F 0805 150K 5%
R861		036-16150-00	RES M/F 0805 150K 5%
R863		036-16150-00	RES M/F 0805 150K 5%
R865		036-16100-00	RES M/F 0805 100K 5%
R867		036-16100-00	RES M/F 0805 100K 5%
R871		036-15470-00	RES M/F 0805 47K 5%
R872		036-14470-00	RES M/F 0805 4K7 5%
R873		036-15330-00	RES M/F 0805 33K 5%
R874		036-14470-00	RES M/F 0805 4K7 5%
R875		036-15470-00	RES M/F 0805 47K 5%
R876		036-14470-00	RES M/F 0805 4K7 5%
R877		036-14470-00	RES M/F 0805 4K7 5%
R879		036-15100-00	RES M/F 0805 10K 5%
RV210		040-05100-23	POT 10K LOG PCB 15MM SLOT SFT
RV220		042-05470-06	RES PRE 47K CAR 6MM FLAT T/ADJ
RV805		042-05220-07	RES PRE 22K CAR 6MM FLAT D/ADJ
SK205		240-02020-05	SKT STEREO PHONE JACK PCB MTG
SK310		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK420		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK501		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK502		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK503		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK504		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK505		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK513		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK522		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK531		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK532		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK533		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK534		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK535		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK805		240-10000-07	CONN SMD SKT 16W 2R M-MATCH
SK810		240-04020-42	SKT 44 PIN SMD PLCC
SW230		232-00010-26	SWITCH PUSH SPDT R-ANG PCB MTG
T210		053-00010-17	XFMR T4030 LINE MATCH POTCORE
T610		050-00016-50	COIL TAIT NO 650 455KHZ

1

T857 Mechanical & Miscellaneous Parts (220-01398-02)

IPN	Legend	Description
070-01001-00	13/25	D-RANGE 15 WAY COMPL T800
070-02001-00		LED RED COMPL T800 RX/TX/EX
070-02002-00		LED GREEN COMPL T800 RX/TX/EX
206-00010-11		COAX 50 OHM RG316-U PTFE Connects SK310 to SK420.
220-01145-02	1	PCB T85X VCO
220-01398-02	2	PCB T857 SERIES II TOP
232-00020-26	3	BUTTON 232-00010-26 SWITCH
240-00100-43		PLG COAX MINI PIN CRIMP 1.5D For coax connecting SK310 to SK420.
240-02100-06	4	SKT COAX N TYPE PNL MTG OP-TER
240-04020-62		SKT 2 W RECEP SHORTING LINK PL205/210/215/220.
303-11169-03	5	CHASSIS PAINTED T800 SERIES
303-23118-00	6	COVER A3M2247 D RANGE T855/7
303-50074-00	7	CLIP A3M2246 SPRING CLAMP T857
303-50078-00	8	CLIP A4M2630 SPR. CABLE CLAMP
308-01007-01	9	HANDLE BASE STATION SERIES II
312-01052-01	10	LID TOP PNTD A1M2364 T800
312-01053-01	11	LID BOTTOM PNTD A1M2364 T800
316-06619-00	12	PNL FRT EX, NO EX OUT SER II
345-00040-10	14	SCRW M3X6MM P/POZ ST BZ
349-00020-36	15	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	16	SCRW T/T M4X12MM P/POZ BZ
349-00020-45	17	SCRW T/T M4X20MM P/POZ BZ
350-00016-42	18	SPACER 5MM HI 8MM ST 2.5MM HO
352-00010-08	19	NUT M3 COLD FORM HEX ST BZ
352-00010-29	20	NUT M4 NYLOC HEX
353-00010-10	21	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-13	22	WSHR M3 S/PROOF INT BZ
362-00010-23	23	GASKET SIL TO-220 CLIP MTG.
362-00010-33	24	GROMMET LED MTG 3MM
365-00011-53		LABEL 104X37MM
365-00100-20		LABEL WHITE S/A 28X11MM
365-01541-00		LABEL TX/RX/EX TYPE APR/SER NO
399-00010-51		BAG PLASTIC 75X100MM
410-01081-01		CRT T800 SERIES II
410-01082-01		CRTN 10 T800 KIWI 423X410X360

IPN	Legend	Description

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replace A4 pages C6.3.9/C6.3.10 with A3 pages C6.3.9/C6.3.10

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T857 Grid Reference Index (IPN 220-01398-02)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C201	1:C1	2-B8	C304	1:F8	3-C7	C677	1:L6	6-P1	C826	1:N3	8-C0
C202	1:C1	2-C8	C305	1:F8	3-D7	C681	1:M5	6-R3	C827	1:N3	8-D0
C204	1:A2	2-E8	C306	1:F8	3-E6	C684	1:M6	6-R3	C828	1:N3	8-E0
C205	1:A2	2-E8	C307	1:F8	3-E7	C687	1:L6	6-Q1	C830	1:N3	8-R1
C207	1:C7	2-B6	C308	1:F8	3-G8	C690	1:L6	6-R1	C838	1:N4	8-F0
C209	1:C6	2-D6	C310	1:F5	3-B4	C693	1:L6	6-R1	C841	1:N2	8-K2
C210	1:C7	2-K0	C311	1:F4	3-C1	C700	1:K4	7-A8	C844	1:M2	8-L2
C211	1:B7	2-F8	C312	1:F5	3-D3	C703	1:J3	7-B7	C910	1:P7	9-E6
C213	1:B6	2-G8	C313	1:F4	3-D1	C705	1:J3	7-B7	C920	1:P7	9-G6
C215	1:B6	2-G8	C314	1:F4	3-E4	C706	1:J2	7-B5	C930	1:P6	9-H6
C217	1:C6	2-H8	#C315	1:F4	3-E3	%C707	1:K4	7-C8			
C219	1:C6	2-H7	#C316	1:E4	3-F3	C708	1:J2	7-C9	D111	1:P4	1-R1
C221	1:D5	2-G6	C317	1:F7	3-H5	C709	1:K4	7-D9	D201	1:F5	3-C3
C223	1:C5	2-J6	C318	1:F7	3-H5	C710	1:J3	7-E8	D202	1:F5	3-C4
C225	1:C3	2-K7	C319	1:F5	3-H4	C712	1:H2	7-E7	D203	1:F4	3-D3
C227	1:B4	2-K7	C320	1:E5	3-J4	%C713	1:H2	7-E6	%D205	1:B2	2-D9
C229	1:B3	2-L7	#C321	1:E5	3-H4	C720	1:J3	7-F8	%D210	1:B2	2-E9
C230	1:B4	2-J0	#C322	1:E6	3-J3	C722	1:J4	7-G8	D220	1:B4	2-P7
C232	1:A4	2-M7	C323	1:E6	3-L3	C724	1:J4	7-H6	D220	1:B4	2-P6
C233	1:A5	2-N7	C324	1:F7	3-M5	C725	1:J4	7-J6	D230	1:B7	2-R5
C235	1:B5	2-K5	C325	1:F7	3-N5	C726	1:K4	7-J6	D240	1:D4	2-C4
C237	1:C4	2-K5	#C326	1:E8	3-M4	C727	1:J3	7-J8	D240	1:D4	2-B2
C239	1:C4	2-L4	#C327	1:E8	3-M3	C729	1:H3	7-M8	D250	1:D3	2-E2
C241	1:B4	2-M6	C328	1:E4	3-G1	%C733	1:J3	7-M5	D250	1:D3	2-D3
C242	1:B4	2-L6	C329	1:E4	3-H2	C735	1:J2	7-A1	D260	1:C2	2-C2
C243	1:B4	2-P6	C330	1:E3	3-J2	C736	1:J2	7-B1	D260	1:C2	2-C2
C245	1:C5	2-A4	C331	1:E3	3-K2	C740A	1:H2	7-B4	D270	1:D2	2-C1
C247	1:D4	2-B4	C332	1:E4	3-L2	C740B	1:H2	7-B3	D270	1:D2	2-C1
C249	1:D4	2-C4	C333	1:E3	3-J0	C741A	1:H2	7-C4	D510	1:K6	5-K8
C251	1:C3	2-E4	C340	1:E9	3-P2	C741B	1:G2	7-C3	D510	1:K6	5-K8
C253	1:D3	2-E3	C341	1:E8	3-P2	C742A	1:H2	7-D4	D610	1:N6	6-L6
C255	1:D3	2-D2	C342	1:E8	3-R3	C742B	1:H3	7-D3	D610	1:N6	6-K6
C257	1:D3	2-F2	C354	1:E3	3-R1	C743	1:H2	7-B1	D620	1:N4	6-B1
C259	1:C6	2-J2	C503	1:K6	5-L9	C745	1:G3	7-D1	D620	1:N4	6-B2
C260	1:D8	2-H0	C505	1:K6	5-M6	C750	1:H4	7-Q7	D630	1:M5	6-G2
C261	1:C6	2-K2	C510	1:J5	5-C0	C757	1:G4	7-F5	D630	1:M5	6-G3
C263	1:D6	2-L3	C513	1:H5	5-G2	C759	1:G4	7-G4	D635	1:M4	6-G3
C265	1:D6	2-N4	C535	1:K5	5-M2	C761	1:G3	7-J4	D640	1:L5	6-M1
C267	1:C8	2-P3	C550	1:K4	5-L0	C762	1:G3	7-J4	D640	1:L5	6-M2
&C269	1:C8	2-P3	C605	1:L6	6-D8	C764	1:H3	7-H2	D710	1:J3	7-L8
C271	1:C8	2-Q3	C610A	1:M5	6-F8	C765	1:G3	7-J2	D710	1:J3	7-L8
C273	1:C8	2-Q4	C610B	1:M5	6-G8	C767	1:H3	7-K3	D720	1:H3	7-P8
C275	1:D3	2-E1	C611A	1:L5	6-H8	C769	1:H4	7-M4	D720	1:H3	7-P8
C277	1:C4	2-G1	C611B	1:M5	6-J8	C770	1:H4	7-N4	D730	1:H3	7-H1
C279	1:B4	2-G1	C623	1:M6	6-N8	C772	1:G4	7-M2	D740	1:H3	7-J2
C281	1:B5	2-J1	C625	1:M6	6-Q8	C774	1:H4	7-P2	D810	1:M2	8-B7
C283	1:B5	2-K0	C626	1:M6	6-R8	C776	1:H4	7-N1			
C285	1:D7	2-L0	C628	1:M6	6-R8	C782	1:G2	7-N1	IC210	1:C7	2-J0
C287	1:C6	2-M1	C630	1:M5	6-K5	C784	1:G2	7-R1	IC210	1:C7	2-Q0
C289	1:C8	2-N1	C631A	1:M5	6-M6	C786	1:G2	7-R1	IC210	1:C7	2-K2
C291	1:D7	2-P1	C634	1:N5	6-M4	C788	1:G3	7-P0	IC210	1:C7	2-L1
C293	1:D7	2-Q1	C636	1:M5	6-M4	C790	1:G3	7-R0	IC210	1:C7	2-C6
%C294	1:D7	2-Q0	C638	1:M6	6-P5	C792	1:G4	7-R0	IC220	1:D6	2-P0
%C295	1:D6	2-Q0	C640	1:M5	6-R6	C810	1:L3	8-K8	IC220	1:D6	2-M3
C300A	1:F9	3-J8	C655	1:M4	6-C1	C812	1:L2	8-F5	IC220	1:D6	2-D5
C300B	1:F8	3-K8	C660	1:L5	6-K1	C813	1:K2	8-H5	IC230	1:B4	2-H0
C301	1:E9	3-B8	C665	1:L5	6-K1	C822	1:M2	8-B2	IC230	1:B4	2-J0
C302	1:E8	3-B7	C670	1:L6	6-L1	C823	1:M3	8-C2	IC230	1:B4	2-L5
C303	1:E9	3-C8	C673	1:L5	6-P2	C824	1:M2	8-C1	IC230	1:B4	2-N6

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Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
IC230	1:B4	2-G1	P235	1:C1	2-R9	Q820	1:L2	8-D5	R284	1:D7	2-L0
IC240	1:D4	2-F3	P237	1:B7	2-R8	Q830	1:L2	8-D5	R285	1:C8	2-M0
IC250	1:D3	2-E1	P239	1:C7	2-R8	Q840	1:L2	8-F5	R286	1:C7	2-M0
IC260	1:D8	2-N0	P240	1:C7	2-R8	Q850	1:M2	8-G5	R287	1:D9	2-M0
IC260	1:D8	2-H0	P243	1:B7	2-R7	Q860	1:L4	8-B3	R288	1:C6	2-M2
IC260	1:D8	2-Q2	P244	1:B7	2-R7				R289	1:D9	2-M0
IC260	1:D8	2-Q3	P245	1:B8	2-R6	%R150	1:P2	1-R4	R290	1:C8	2-N2
IC260	1:D8	2-N3	P247	1:B8	2-R6	R160	1:P2	1-R3	R291	1:C8	2-N1
IC300	1:F8	3-D7	P248	1:B7	2-R6	R201	1:B2	2-E9	R292	1:D8	2-Q2
IC300	1:F8	3-J8	P249	1:C7	2-R5	R202	1:C1	2-F9	R293	1:D9	2-Q2
IC300	1:F8	3-L0	P251	1:C7	2-R5	R204	1:C7	2-B6	R294	1:D9	2-Q1
IC610	1:M5	6-G8	P255	1:D4	2-R4	R205	1:C7	2-D6	R295	1:D8	2-R1
IC630	1:N5	6-K5	P257	1:C2	2-R4	R206	1:B7	2-G8	R296	1:D6	2-P0
IC640	1:M5	6-F1	P259	1:B8	2-R3	R207	1:B6	2-G8	R297	1:D7	2-P1
IC640	1:M5	6-Q6	P261	1:B8	2-R3	R208	1:B6	2-G8	%R298	1:D7	2-Q0
IC640	1:M5	6-N6	P263	1:B2	2-R2	R209	1:C6	2-H8	R299	1:C7	2-R0
IC650	1:L5	6-F4	P267	1:C8	2-N2	R210	1:B6	2-H7	R300	1:F8	3-J8
=IC700	1:K3	7-A8	P269	1:D8	2-P2	R212	1:D4	2-F6	R301	1:E8	3-B8
IC710	1:J2	7-E8	P271	1:C9	2-N1	R213	1:C4	2-G6	R302	1:E8	3-A7
IC710	1:J2	7-C6	P273	1:D9	2-P0	R214	1:D4	2-G6	R303	1:E8	3-B7
IC710	1:J2	7-G0	P275	1:D7	2-Q0	R215	1:C4	2-H6	R304	1:F8	3-B8
IC710	1:J2	7-D6	P805	1:M2	8-A7	R216	1:C3	2-K7	R305	1:F8	3-C7
IC710	1:J2	7-D7	P810	1:L3	8-A5	R217	1:A4	2-M8	R306	1:F8	3-D5
IC710	1:J2	7-D6	P820	1:L4	8-M8	R218	1:A4	2-N7	R307	1:F8	3-D5
IC710	1:J2	7-C6	P825	1:L4	8-M8	R219	1:B4	2-N8	R308	1:F8	3-E7
IC720	1:J3	7-P6	P830	1:L4	8-M8	R221	1:B7	2-R7	R309	1:F8	3-D5
IC720	1:J3	7-J0	P835	1:L4	8-M7	R223	1:B4	2-K6	R310	1:F8	3-E6
IC720	1:J3	7-N7	P840	1:L4	8-M7	R224	1:C4	2-K5	R311	1:F8	3-F6
IC720	1:J3	7-M7	PL100	1:P3	1-F0	R225	1:B4	2-L5	R312	1:F8	3-F8
IC720	1:J3	7-K7	PL205	1:C5	2-J8	R226	1:B4	2-L4	R313	1:F8	3-F8
IC720	1:J3	7-F8	PL210	1:C3	2-H4	R227	1:B4	2-M4	R314	1:F8	3-G6
IC720	1:J3	7-K0	PL215	1:C4	2-K3	R229	1:B4	2-M7	R323	1:F5	3-C3
IC730	1:J4	7-H8	PL220	1:C4	2-H2	R230	1:B4	2-M6	R324	1:F4	3-C2
IC730	1:J4	7-G7				R231	1:B4	2-M6	R325	1:F4	3-D2
IC740	1:H2	7-D1	Q210	1:C6	2-J8	R232	1:B4	2-M5	R326	1:E4	3-F3
IC750	1:H4	7-M3	Q220	1:B3	2-L7	R233	1:B4	2-M6	R327	1:E4	3-G3
IC750	1:H4	7-H5	Q230	1:A4	2-M8	R235	1:B4	2-P6	R328	1:F5	3-G4
IC750	1:H4	7-Q7	Q240	1:B7	2-Q7	R237	1:B7	2-Q7	R329	1:F7	3-H5
IC820	1:L4	8-N2	Q250	1:B7	2-R5	R238	1:B7	2-R7	#R330	1:E5	3-H3
IC830	1:N3	8-J0	Q260	1:C4	2-F3	R239	1:B8	2-R6	#R331	1:E5	3-H4
IC830	1:N3	8-Q1	Q270	1:D2	2-D1	R241	1:B8	2-Q6	#R332	1:E6	3-J3
IC830	1:N3	8-J0	Q301	1:E8	3-B7	R242	1:B7	2-Q5	R333	1:E6	3-K3
IC830	1:N3	8-C0	Q302	1:F8	3-F7	R244	1:C6	2-A5	R334	1:E7	3-L4
IC830	1:N3	8-J1	Q303	1:F8	3-G8	R245	1:D4	2-D4	R335	1:F7	3-M5
			Q304	1:E5	3-G4	R247	1:D3	2-E4	R340	1:E4	3-G1
L300	1:F5	3-G5	Q305	2:E6	3-L4	R248	1:C3	2-E3	R341	1:E4	3-H1
L302	1:F5	3-C3	Q306	1:E4	3-G1	R249	1:D4	2-F3	R342	1:E3	3-J2
L303	1:F7	3-M5	Q307	1:E3	3-H2	R251	1:C4	2-G4	R343	1:E3	3-K1
L305	1:F4	3-E3	Q308	1:E3	3-K2	R253	1:C6	2-J2	R344	1:E3	3-K2
L306	1:F4	3-E4	Q309	1:E3	3-J0	R254	1:C6	2-K3	R345	1:E4	3-K2
#L307	1:F5	3-H4	Q310	1:E9	3-Q2	R255	1:C7	2-K2	R346	1:E3	3-H0
L307	1:F4	3-F4	Q311	1:E9	3-Q3	R256	1:D8	2-M3	R347	1:E3	3-J1
L308	1:E6	3-J4	Q505	1:K5	5-J8	R257	1:D8	2-N5	R348	1:D3	3-J0
L309	1:E6	3-K3	Q510	1:J5	5-D1	R258	1:D8	2-N4	R349	1:E3	3-J0
L310	1:E6	3-L4	Q520	1:J5	5-H2	R259	1:D5	2-P4	R355	1:E8	3-P2
L312	1:E7	3-M4	Q530	1:J5	5-H0	R260	1:D8	2-N4	R356	1:E9	3-P3
#L313	1:E7	3-M4	Q540	1:K5	5-L2	R262	1:D8	2-N3	R357	1:E8	3-P2
L314	1:E8	3-R4	Q550	1:K5	5-L0	R263	1:C8	2-P3	R358	1:E8	3-Q2
L750	1:G3	7-Q0	Q610	1:L6	6-E8	&R264	1:C8	2-P3	R359	1:E8	3-R3
L910	1:P7	9-F7	Q620	1:N6	6-P8	&R265	1:C8	2-P3	R501	1:K5	5-H8
L920	1:P7	9-H7	Q630	1:M6	6-P5	&R266	1:C8	2-P3	R502	1:K5	5-J8
LK302	1:E3	3-J0	Q660	1:L5	6-N1	R267	1:C8	2-R2	R503	1:K5	5-J8
			Q670	1:L6	6-Q2	R268	1:D2	2-C0	R504	1:K6	5-K9
P100	1:P6	1-R8	Q710	1:J3	7-K8	R269	1:C2	2-C1	R505	1:K6	5-L8
P150	1:P2	1-Q4	Q720	1:J3	7-K8	R270	1:C2	2-D1	R510	1:K6	5-L7
P160	1:P2	1-Q4	Q730	1:H3	7-N8	R271	1:C3	2-E1	R514	1:K6	5-M5
P170	1:P2	1-Q3	Q740	1:H3	7-N8	R272	1:C4	2-F2	R515	1:H6	5-J5
P204	1:D1	2-A8	Q750	1:G4	7-F3	R273	1:B5	2-G2	R517	1:G5	5-E2
P208	1:D1	2-A8	Q760	1:H3	7-H3	R274	1:C4	2-G1	R518	1:G5	5-F2
P215	1:D4	2-A2	Q770	1:H3	7-H1	R275	1:C4	2-H0	R519	1:G5	5-F2
P217	1:D4	2-A2	Q775	1:H3	7-K3	R277	1:B5	2-J1	R520	1:J5	5-C1
P219	1:D2	2-A1	Q780	1:H3	7-K3	R278	1:B5	2-J0	R525	1:J5	5-D1
P225	1:D2	2-A0	Q785	1:H3	7-K2	R279	1:B5	2-K0	R530	1:J5	5-D0
P230	1:C5	2-B0	Q790	1:H4	7-L3	R280	1:B5	2-K0	R535	1:J5	5-E1
P231	1:D8	2-B0	Q795	1:G3	7-P0	R282	1:D7	2-K1	R540	1:K5	5-H2
P233	1:C1	2-R9	Q810	1:M2	8-E7	R283	1:D7	2-L1	R545	1:K5	5-J1

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Device	PCB	Circuit
R550	1:K5	5-K2
R555	1:K5	5-K1
R560	1:K5	5-M0
R609	1:L6	6-B8
R613	1:L6	6-C8
R615	1:M5	6-F9
R617	1:M5	6-J8
R619	1:M6	6-L8
R621	1:M6	6-L8
R625	1:N6	6-L7
R629	1:M5	6-P6
R633	1:M5	6-Q8
R637	1:N5	6-K6
R641	1:N5	6-L4
R645	1:N5	6-L5
R649	1:M5	6-M5
R653	1:M5	6-Q4
R657	1:M5	6-D1
R661	1:M5	6-E3
R665	1:M5	6-E2
R669	1:M5	6-E2
R673	1:M5	6-E0
R677	1:M4	6-F4
R681	1:L5	6-L2
R685	1:L5	6-N2
R689	1:L6	6-Q3
R693	1:L6	6-Q1
R696	1:M6	6-Q1
R701	1:K4	7-A9
R702	1:K4	7-C9
R703	1:J3	7-C8
=R705	1:K3	7-A7
R706	1:J3	7-B6
R708	1:H3	7-C7
R710	1:H2	7-E7
R711	1:J2	7-B6
R712	1:J3	7-D9
R713	1:J4	7-F8
%R715	1:K4	7-H6
R717	1:J4	7-H7
R718	1:J4	7-H7
R719	1:J4	7-J6
R720	1:J3	7-K7
R721	1:J3	7-K9
R722	1:J3	7-K8
R723	1:H3	7-M7
R725	1:J4	7-N7
%R726	1:J3	7-N6
R727	1:H3	7-N9
R728	1:H3	7-N8
R742	1:H2	7-B4
R743	1:H2	7-C5
R744	1:G2	7-D4
R746	1:H3	7-E4
R747	1:H3	7-E5
R748	1:J2	7-A1
R749	1:J2	7-B1
R750	1:H4	7-Q7
R752	1:G4	7-F5
R753	1:G4	7-F3
R754	1:G3	7-F3
R756	1:G3	7-G5
R757	1:G4	7-G4
R758	1:H3	7-H4
R759	1:H3	7-H4
R760	1:H3	7-K4
R762	1:H3	7-K4
R763	1:H4	7-L4
R765	1:H3	7-H2
R766	1:G3	7-J3
R767	1:H3	7-K2
R769	1:H3	7-K3
R771	1:H4	7-L3
R772	1:G4	7-M2
R774	1:H4	7-M3
R775	1:H4	7-N2

Device	PCB	Circuit
R777	1:H4	7-R2
R780	1:G2	7-P1
R782	1:G3	7-P1
R784	1:G3	7-P1
R785	1:G3	7-Q1
R786	1:G2	7-R1
R787	1:G2	7-R2
R790	1:G3	7-P0
R791	1:G3	7-Q0
R801	1:M2	8-D7
R802	1:M2	8-D7
R808	1:L2	8-B4
R809	1:L2	8-D5
R810	1:L2	8-D6
R811	1:L2	8-E6
R812	1:L2	8-D5
R813	1:L2	8-D4
R815	1:L2	8-F4
R816	1:L2	8-F4
R818	1:M2	8-F5
R819	1:M2	8-F5
R821	1:M4	8-B3
R822	1:M4	8-E3
R824	1:L4	8-L8
R825	1:L4	8-L8
R826	1:L4	8-L8
R827	1:L4	8-L7
R828	1:L4	8-L7
R829	1:L4	8-P9
R830	1:L3	8-P9
R831	1:L3	8-P9
R832	1:L3	8-P8
R833	1:L3	8-P8
R835	1:L3	8-P8
R836	1:L3	8-P8
R837	1:L3	8-P7
R840	1:L3	8-P7
R841	1:L3	8-P7
R842	1:L3	8-P6
R843	1:L3	8-P6
R845	1:M4	8-Q5
R846	1:K2	8-Q4
R847	1:K2	8-Q4
R848	1:L2	8-J4
R849	1:M4	8-Q3
R850	1:K2	8-Q4
R853	1:M4	8-N3
R854	1:M4	8-N3
R855	1:M2	8-B0
R859	1:N2	8-C1
R861	1:N2	8-D1
R863	1:N3	8-E1
R865	1:N4	8-E0
R867	1:N3	8-E1
R871	1:N3	8-G2
R872	1:M4	8-H1
R873	1:N3	8-G1
R874	1:N3	8-H0
R875	1:N3	8-G0
R876	1:N3	8-H0
R877	1:M2	8-K2
R879	1:N2	8-L3
RV210	1:B7	2-F9
RV220	1:A4	2-M6
RV805	1:N4	8-F1
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK200	1:D5	2-F0
SK205	1:B5	2-A5

Device	PCB	Circuit
SK310	1:E8	3-N4
SK420	1:M8	1-M8
SK501	1:G6	5-D6
SK502	1:G6	5-D5
SK503	1:G6	5-D4
SK504	1:G5	5-D3
SK505	1:G5	5-D2
SK513	1:H5	5-H3
SK522	1:H6	5-K5
SK531	1:K6	5-N6
SK532	1:K5	5-N5
SK533	1:K5	5-N4
SK534	1:K5	5-N3
SK535	1:K5	5-N2
=SK710	1:K3	7-A7
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q5
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK810	1:M3	8-H5
SL201	2:D1	2-B9
SL202	2:D1	2-B8
SL203	2:D2	2-B1
SL204	2:D2	2-B1
SL501	2:J5	5-F0
SL810	1:M2	8-C7
SW230	1:B8	2-B4
T210	1:B2	2-C8
T610	1:L5	6-N2

Device	PCB	Circuit

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T857 Parts List (IPN 220-01398-04)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

Capacitor IPN Change	The IPN of the 8p2 chip capacitors used in the T857 has been changed from 015-21820-01 to 015-21820-02. The components themselves have not changed (780047/48/49/50).
&C289	T857-16-0500: T857-26-0500: T857-36-0500: changed from 68nF (IPN 015-25680-08) to 100nF (IPN 015-26100-08) to meet FCC Type Approval specification (710994).
#C315	T857-1X-XXXX Only: changed from 12pF (IPN 015-22120-01) to 8p2 (IPN 015-21820-02)
#C316	T857-1X-XXXX Only: changed from 33pF (IPN 015-22330-01) to 27pF (IPN 015-22270-01)
#C322	T857-1X-XXXX Only: changed from 6p8 (IPN 015-21680-01) to 8p2 (IPN 015-21820-02)
#C326	T857-1X-XXXX Only: changed from 22pF (IPN 015-22220-01) to 4p7 (IPN 015-21470-01)
#C327	T857-1X-XXXX Only: changed from 2p2 (IPN 015-21220-01) to 3p3 (IPN 015-21330-01) to improve output power flatness across the band 400-440MHz (711073).
C600	Deleted
C601	Changed from 1nF (IPN 015-24100-08) to 22pF (IPN 015-22220-01)
C757	Changed from 22nF (IPN 015-25220-08) to 47nF (IPN 015-25470-08) to improve cyclic keying (710980).
C727, C729	Changed from 220pF (IPN 015-23220-01) to 100pF (IPN 015-23100-01): phase modulation revised to reduce low frequency jitter to improve signal-to-noise specification (wide bandwidth method) (711145).
=IC700	-16, -26, -36: TCXO changed to IPN 539-00010-55 to meet FCC Type Approval requirements (710923/36).
Q550	Changed from BCW60 (IPN 000-10008-48) to BC817-25 (IPN 000-10008-17) as BCW60 is underrated (711093).
R256	Changed from 47k (IPN 036-15470-10) to 56k (IPN 036-15560-00): audio levels revised to centralise EPOT settings (711145).
R257	Changed from 330k (IPN 036-16330-00) to 560k (IPN 036-16560-00) to allow CTCSS to be set more easily (711145).
&R264	T857-16-0500: T857-26-0500: T857-36-0500: changed from 22k (IPN 036-15220-00) to 18k (IPN 036-15180-00) to meet FCC Type Approval Specification (710994).
R288	Changed from 12k (IPN 036-15120-00) to 18k (IPN 036-15180-00): audio levels revised to centralise EPOT settings (711145).

Parts List Amendments - Continued

#R307	T857-1X-XXXX Only: changed from 470Ω (IPN 036-13470-00) to 680Ω (IPN 036-13680-00)	to improve output power flatness across the band 400-440MHz (711073).
#R331	T857-1X-XXXX Only: changed from 12Ω (IPN 030-52120-20) to 22Ω (IPN 030-52220-20)	
#R330/#R332	T857-1X-XXXX Only: changed from 470Ω (IPN 030-53470-20) to 220Ω (IPN 030-53220-20)	
R718, R719	Changed from 150k (IPN 036-16150-00) to 27k (IPN 036-15270-00): phase modulation revised to reduce low frequency jitter to improve signal-to-noise specification (wide bandwidth method) (711145).	
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).	

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Note: %D205 and %D210 are optional level limiting diodes for special applications.

=R705 (47 ohm) and =SK710 are fitted in place of =IC700 when an external frequency reference is used. These two components are supplied with the auxiliary D-range kits (T800-06-0000 & T800-06-0001).

Ref	Var	IPN	Description
C201		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C202		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C204		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C205		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C207		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C209		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C210		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C211		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C213		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C215		014-08220-01	(L)CAP TANT 22UF10V276MSER
C217		015-24220-08	CAP CER 0805 2N2 10% X7R 50V
C219		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C221		014-08220-01	(L)CAP TANT 22UF10V276MSER
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C227		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C229		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C230		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C232		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C233		016-08470-03	CAP SMD ELEC 47mF 20% 25v 8.3m
C235		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C237		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C239		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C241		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C242		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C243		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C245		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C247		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C249		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C251		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C253		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C255		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C257		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C259		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C260		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C261		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C263		016-09100-05	CAP SMD ELECT 100U 25V 20%
C265		016-07470-06	CAP SMD ELECT BI-P 4U7 50V 20%
C267		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
&C269	10	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	13	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	15	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	16	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	20	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	23	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	25	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	26	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	30	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
&C269	35	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C269	36	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
&C271	10	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	13	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	15	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	16	015-22560-01	CAP CER 0805 56P 5% NPO 50V
&C271	20	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	23	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	25	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	26	015-22560-01	CAP CER 0805 56P 5% NPO 50V
&C271	30	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	35	015-22470-01	CAP CER 0805 47P 5% NPO 50V
&C271	36	015-22560-01	CAP CER 0805 56P 5% NPO 50V
C273		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C275		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C277		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C279		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C281		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C283		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C285		015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
C287		016-09100-05	CAP SMD ELECT 100U 25V 20%
&C289	10	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	13	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	15	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	16	015-25680-08	CAP CER 0805 68N 10% X7R 50V
&C289	20	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	23	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	25	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	26	015-22560-01	CAP CER 0805 56P 5% NPO 50V
&C289	30	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	35	015-25470-08	CAP CER 0805 47N 10% X7R 50V
&C289	36	015-25680-08	CAP CER 0805 68N 10% X7R 50V
C291		014-08220-01	(L)CAP TANT 22UF10V276MSER
C293		015-27100-10	CAP CER 0805 1M+80-20% Y5V 16V
%C294		015-22470-01	CAP CER 0805 47P 5% NPO 50V
%C295		013-06470-00	CAP SMD POLYESTER 470N 63V 10%
C300A		016-08100-01	CAP EL 6X4 10M 20% 16V
C300B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C301		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C302		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C303		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C304		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C305		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C306		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C307		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C308		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C309		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C310		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C311		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C312		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C313		015-22220-01	CAP CER 0805 22P 5% NPO 50V
C314		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C315	10	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	13	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	15	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	16	015-22120-01	CAP CER 0805 12P 5% NPO 50V
#C315	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C315	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C315	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C315	26	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C315	30	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C315	35	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C315	36	015-21560-01	CAP CER 0805 5P6+-1/4P NPO 50V
#C316	10	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	13	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	15	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	16	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C316	20	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C316	23	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C316	25	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C316	26	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C316	30	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C316	35	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C316	36	015-22220-01	CAP CER 0805 22P 5% NPO 50V
C317		020-07470-04	CAP ELE RA 4M7 25V 20%8X13 SOL
C318		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C319		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C320		015-24100-08	CAP CER 0805 1N 10% X7R 50V
#C321	10	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	13	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	15	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	16	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	20	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	23	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	25	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	26	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C321	30	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C321	35	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C321	36	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	10	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	13	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	15	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	16	015-21680-01	CAP CER 0805 6P8+-1/4P NPO 50V
#C322	20	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	23	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	25	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	26	015-22100-01	CAP CER 0805 10P+-1/2P NPO 50V
#C322	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C322	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C322	36	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C323	10	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	13	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	15	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	16	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	20	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	23	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	25	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	26	015-22330-01	CAP CER 0805 33P 5% NPO 50V
#C323	30	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C323	35	015-22270-01	CAP CER 0805 27P 5% NPO 50V
#C323	36	015-22270-01	CAP CER 0805 27P 5% NPO 50V
C324		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C325		015-06100-08	CAP CER 1206 100N 10% X7R 50V
#C326	10	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	13	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	15	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	16	015-22220-01	CAP CER 0805 22P 5% NPO 50V
#C326	20	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	23	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	25	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	26	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	30	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	35	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C326	36	015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
#C327	10	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	13	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	15	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	16	015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C327	20	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
#C327	23	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
#C327	25	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
#C327	26	015-21150-01	CAP CER 0805 1P5+-1/4P NPO 50V
#C327	30	015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
#C327	35	015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
#C327	36	015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V

Ref	Var	IPN	Description
C328		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C329		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C330		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C331		015-25150-08	CAP CER 0805 15N 10% X7R 50V
C332		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C333		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C334		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C336		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C337		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C340		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C341		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C342		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C345	10	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	13	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	15	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	16	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	20	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	23	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	25	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	26	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	30	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	35	015-23120-01	CAP CER 0805 120P 5% NPO 50V
#C345	36	015-23120-01	CAP CER 0805 120P 5% NPO 50V
C350		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C351		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C354		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C360		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C503		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C505		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C510		015-25150-08	CAP CER 0805 15N 10% X7R 50V
C513		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C514		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C515		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C516		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C535		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C536		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C537		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C545		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C546		015-23150-01	CAP CER 0805 150P 5% NPO 50V
C550		014-08220-01	(L)CAP TANT 22UF10V276MSER
C600		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C601		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C605		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C610A		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C610B		014-09100-00	CAP TANT SMD 100U 16V 20%
C611A		014-09100-00	CAP TANT SMD 100U 16V 20%
C611B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C615		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C616		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C623		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C625		020-09470-07	CAPEL470M16V20%V 8*20 3.5L.ESR
C626		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C628		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C630		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C631A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C634		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C636		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C638		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C640		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C655		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C660		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C665		014-08100-03	CAP TANT SMD 10U 35V 20%
C670		014-07330-10	CAP TANT SMD 3U3 35V 10%
C673		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C677		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C681		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C684		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C687		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C690		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C693		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C700		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C703		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C706		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C708		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C709		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C710		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C711		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C712		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C714		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C719		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C720		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C722		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C724		014-08220-01	(L)CAP TANT 22UF10V276MSER
C725		014-08220-01	(L)CAP TANT 22UF10V276MSER
C726		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C727		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C729		015-23220-01	CAP CER 0805 220P 5% NPO 50V
%C733		015-23470-08	CAP CER 0805 470P 10% X7R 50V
C735		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C736		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C740A		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C740B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C741A		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C741B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C742A		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C742B		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C743		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C745		015-23120-01	CAP CER 0805 120P 5% NPO 50V

Ref	Var	IPN	Description
C750		014-08100-03	CAP TANT SMD 10U 35V 20%
C757		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C759		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C761		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C762		014-08220-01	(L)CAP TANT 22UF10V276MSER
C764		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C765		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C767		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C769		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C770		014-08220-01	(L)CAP TANT 22UF10V276MSER
C772		014-08220-01	(L)CAP TANT 22UF10V276MSER
C774		013-06100-10	CAP SMD PPS 100N 100V 10%
C776		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C782		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C784		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C786		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C788		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C790		015-21820-01	CAP CER 0805 8P2+-1/4P NPO 50V
C792		015-23120-01	CAP CER 0805 120P 5% NPO 50V
C810		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C812		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C813		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C822		014-07470-00	CAP TANT CHIP 4U7 3.5 X 2.8MM
C823		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C824		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C826		015-23220-01	CAP CER 0805 220P 5% NPO 50V
C827		015-22330-01	CAP CER 0805 33P 5% NPO 50V
C828		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C830		015-25470-08	CAP CER 0805 47N 10% X7R 50V
C838		014-09100-00	CAP TANT SMD 100U 16V 20%
C841		014-09100-00	CAP TANT SMD 100U 16V 20%
C844		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C910		015-01680-06	CAP CER 1210 6P8 NPO500VGRM42
C920		015-02120-06	CAP CER 1210 12P NPO500VGRM42
C930		015-01680-06	CAP CER 1210 6P8 NPO500VGRM42
D111		001-00012-90	S) DIODE MR2520L O-VOLT SUPP
D111A		001-10024-00	DIODE LDP24M 24V SUR-PROT SMD
D220		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D230		001-10010-40	DIODE SMD ZENER 33V BZG03-C33
D240		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D250		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D260		001-10000-56	S) DIODE SMD BAW56 D-SW SOT23
D270		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D301		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D302		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D303		001-10000-18	S) DIODE SMD BAT18 S-SW SOT23
D510		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D610		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D620		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D630		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D635		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D640		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D645		001-10010-40	DIODE SMD ZENER 33V BZG03-C33
D710		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D720		001-10000-99	S) DIODE SMD BAV99 D-SW SOT23
D730		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D740		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
D810		001-10065-00	DIODE SHTKY SOD123 BAT65 BAT54
IC210		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC220		002-10126-70	S) IC SMD DS1267S10K 2XDIG POT
IC230		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC240		002-10040-53	S)MC14053B SMD BREAK B4 MAKE
IC250		002-10020-50	IC SMD 4N25A OPTOCOUPLER
IC260		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC300		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC610		002-10078-05	S) IC SMD 78L05 5V REG
IC630		002-10003-17	(S) IC LM317L REG S0-8 100MA
IC640		002-10003-58	S) IC SMD LM358 DUAL O-AMP
IC650		002-10012-32	SMD DS1232LPS-2 LP RESET&W-DOG
=IC700		539-00010-50	TCXO 12.8MHZ +-1PPM -20 +70C
IC710		002-74900-04	S) IC SMD 74HC04D 6X INV BUFFD
IC720		002-74910-04	S) IC SMD 74HCU04 6X INV
IC730		002-10045-20	S) IC SMD 74HC4520T 2XCTR 4BIT
IC740		002-14519-10	S) IC MC145191F SMD SYNTH
IC750		002-10330-78	S) IC MC33078D 2X AMP LO NOISE
IC810		002-08951-20	S) IC AT89C51 PLCC44 MIC 12MHZ
IC820		002-12416-00	S)IC SMD AT24C16N-10SC EEPROM
IC830		002-10003-24	S) IC SMD 324 4X O-AMP SO14
L300		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L302		056-10330-02	(L) IND SMD 330NH
L303		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L305		056-10330-02	(L) IND SMD 330NH
#L307	10	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	13	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	15	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	16	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	20	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	23	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	25	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	26	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L307	30	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L307	35	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L307	36	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
L309		065-00010-01	BEAD FERR 3B 6 HOLE
L312		052-08130-65	COIL A/W 6.5T/3.0MM HOR 0.8MM

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Ref	Var	IPN	Description
#L313	10	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	13	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	15	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	16	052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
#L313	20	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	23	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	25	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	26	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	30	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	35	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
#L313	36	052-08120-15	COIL A/W 1.5T/2MM HOR 0.8MM
L314		056-10330-02	(L) IND SMD 330NH
L350		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L535		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L600		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L615		057-10120-03	IND 805 EMI SUP 120E@100M 0.2A
L750		052-08125-15	COIL A/W 1.5T/2.5MM HOR 0.8MM
L910		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
L920		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM
PL100		070-01001-00	D-RANGE 15 WAY COMPL T800
PL205		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL210		240-00020-67	HEADER 6W 2X3 PCB MTG STD
PL215		240-00020-44	HEADER 10W X2R PCB MTG 5*2
PL220		240-00020-67	HEADER 6W 2X3 PCB MTG STD
Q210		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q220		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q230		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q240		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q250		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q260		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q270		000-10004-10	S) XSTR SMD MJD41C NPN SW DPAK
Q301		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q302		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q304		000-00005-55	S) XSTR MRF555 NPN RF L/PWR
Q305		000-00032-56	S) XSTR MRF630 NPN T039 UHF 3W
Q306		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q307		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q308		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q309		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q310		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q311		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q315		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q505		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q510		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q520		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q530		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q540		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q550		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q610		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q620		000-00012-15	S) XSTR BD234 PNP AF PWR TO126
Q630		000-10003-00	S) XSTR BSR30 PNP AF SOT-89
Q660		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q670		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q710		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q720		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q730		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q740		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q750		000-10008-07	S) XSTR SMD BC807 PNP SOT23 AF
Q760		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q770		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q775		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q780		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q785		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q790		000-10003-12	S) XSTR SMD BFR31 N JFET SOT23
Q795		000-10057-10	S) XSTR SMD BR571 NPN SOT23
Q810		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q820		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q830		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q840		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q850		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q860		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
R160		036-12100-00	RES M/F 0805 10E 5%
R201		036-13560-00	RES M/F 0805 560E 5%
R202		036-14100-00	RES M/F 0805 1K 5%
R204		036-14220-00	RES M/F 0805 2K2 5%
R205		036-13220-00	RES M/F 0805 220E 5%
R206		036-14100-00	RES M/F 0805 1K 5%
R207		036-14390-00	RES M/F 0805 3K9 5%
R208		036-13560-00	RES M/F 0805 560E 5%
R209		036-15100-00	RES M/F 0805 10K 5%
R210		036-14220-00	RES M/F 0805 2K2 5%
R211		036-13470-00	RES M/F 0805 470E 5%
R212		036-16100-00	RES M/F 0805 100K 5%
R213		036-15100-00	RES M/F 0805 10K 5%
R214		036-14820-00	RES M/F 0805 8K2 5%
R215		036-16100-00	RES M/F 0805 100K 5%
R216		036-16100-00	RES M/F 0805 100K 5%
R217		036-14100-00	RES M/F 0805 1K 5%
R218		036-16150-00	RES M/F 0805 150K 5%
R219		036-14220-00	RES M/F 0805 2K2 5%
R220		036-13470-00	RES M/F 0805 470E 5%
R221		036-14150-00	RES M/F 0805 1K5 5%
R223		036-17100-00	RES M/F 0805 1M 5%
R224		036-14680-00	RES M/F 0805 6K8 5%
R225		036-17100-00	RES M/F 0805 1M 5%

Ref	Var	IPN	Description
R226		036-15100-00	RES M/F 0805 10K 5%
R227		036-14220-00	RES M/F 0805 2K2 5%
R228		036-13120-00	RES M/F 0805 120E 5%
R229		036-16470-00	RES M/F 0805 470K 5%
R230		036-16100-00	RES M/F 0805 100K 5%
R231		036-15100-00	RES M/F 0805 10K 5%
R232		036-16330-00	RES M/F 0805 330K 5%
R233		036-16100-00	RES M/F 0805 100K 5%
R235		036-14470-00	RES M/F 0805 4K7 5%
R237		036-15470-00	RES M/F 0805 47K 5%
R238		036-15470-00	RES M/F 0805 47K 5%
R239		036-14150-00	RES M/F 0805 1K5 5%
R241		036-14470-00	RES M/F 0805 4K7 5%
R242		036-14220-00	RES M/F 0805 2K2 5%
R244		036-15100-00	RES M/F 0805 10K 5%
R245		036-16100-00	RES M/F 0805 100K 5%
R247		036-15100-00	RES M/F 0805 10K 5%
R248		036-16100-00	RES M/F 0805 100K 5%
R249		036-16100-00	RES M/F 0805 100K 5%
R251		036-16100-00	RES M/F 0805 100K 5%
R253		036-16100-00	RES M/F 0805 100K 5%
R254		036-16100-00	RES M/F 0805 100K 5%
R255		036-15100-00	RES M/F 0805 10K 5%
R256		036-15470-00	RES M/F 0805 47K 5%
R257		036-16330-00	RES M/F 0805 330K 5%
R258		036-16150-00	RES M/F 0805 150K 5%
R259		036-15220-00	RES M/F 0805 22K 5%
R260		036-15470-00	RES M/F 0805 47K 5%
R262		036-15470-00	RES M/F 0805 47K 5%
R263		036-14470-00	RES M/F 0805 4K7 5%
&R264	10	036-15220-00	RES M/F 0805 22K 5%
&R264	13	036-15220-00	RES M/F 0805 22K 5%
&R264	15	036-15270-10	RES M/F 0805 27K 1%
&R264	16	036-15220-00	RES M/F 0805 22K 5%
&R264	20	036-15220-00	RES M/F 0805 22K 5%
&R264	23	036-15220-00	RES M/F 0805 22K 5%
&R264	25	036-15270-10	RES M/F 0805 27K 1%
&R264	26	036-15220-00	RES M/F 0805 22K 5%
&R264	30	036-15220-00	RES M/F 0805 22K 5%
&R264	35	036-15270-10	RES M/F 0805 27K 1%
&R264	36	036-15220-00	RES M/F 0805 22K 5%
&R265	10	036-15150-00	RES M/F 0805 15K 5%
&R265	13	036-15150-00	RES M/F 0805 15K 5%
&R265	15	036-15180-10	RES M/F 0805 18K 1%
&R265	16	036-15150-00	RES M/F 0805 15K 5%
&R265	20	036-15150-00	RES M/F 0805 15K 5%
&R265	23	036-15150-00	RES M/F 0805 15K 5%
&R265	25	036-15180-10	RES M/F 0805 18K 1%
&R265	26	036-15150-00	RES M/F 0805 15K 5%
&R265	30	036-15150-00	RES M/F 0805 15K 5%
&R265	35	036-15180-10	RES M/F 0805 18K 1%
&R265	36	036-15150-00	RES M/F 0805 15K 5%
&R266	10	036-15470-10	RES M/F 0805 47K 1%
&R266	13	036-15470-10	RES M/F 0805 47K 1%
&R266	15	036-15560-00	RES M/F 0805 56K 5%
&R266	16	036-15470-10	RES M/F 0805 47K 1%
&R266	20	036-15470-00	RES M/F 0805 47K 5%
&R266	23	036-15470-10	RES M/F 0805 47K 1%
&R266	25	036-15560-00	RES M/F 0805 56K 5%
&R266	26	036-15470-10	RES M/F 0805 47K 1%
&R266	30	036-15470-10	RES M/F 0805 47K 1%
&R266	35	036-15560-00	RES M/F 0805 56K 5%
&R266	36	036-15470-10	RES M/F 0805 47K 1%
R267		036-14220-00	RES M/F 0805 2K2 5%
R268		036-13100-00	RES M/F 0805 100E 5%
R269		036-15100-00	RES M/F 0805 10K 5%
R270		036-14120-00	RES M/F 0805 1K2 5%
R271		036-17100-00	RES M/F 0805 1M 5%
R272		036-13560-00	RES M/F 0805 560E 5%
R273		036-15120-00	RES M/F 0805 12K 5%
R274		036-15150-00	RES M/F 0805 15K 5%
R275		036-14270-00	RES M/F 0805 2K7 5%
R277		036-16100-00	RES M/F 0805 100K 5%
R278		036-16120-00	RES M/F 0805 120K 5%
R279		036-17100-00	RES M/F 0805 1M 5%
R280		036-15100-00	RES M/F 0805 10K 5%
R282		036-15560-00	RES M/F 0805 56K 5%
R283		036-15560-00	RES M/F 0805 56K 5%
R284		036-17100-00	RES M/F 0805 1M 5%
R285		036-10000-00	RES M/F 0805 ZERO OHM
R286		036-14220-00	RES M/F 0805 2K2 5%
R287		036-15100-00	RES M/F 0805 10K 5%
R288		036-15120-00	RES M/F 0805 12K 5%
R289		036-16100-00	RES M/F 0805 100K 5%
&R290	10	036-13560-00	RES M/F 0805 560E 5%
&R290	13	036-13560-00	RES M/F 0805 560E 5%
&R290	15	036-13560-00	RES M/F 0805 560E 5%
&R290	16	036-13680-00	RES M/F 0805 680E 5%
&R290	20	036-13560-00	RES M/F 0805 560E 5%
&R290	23	036-13560-00	RES M/F 0805 560E 5%
&R290	25	036-13560-00	RES M/F 0805 560E 5%
&R290	26	036-13680-00	RES M/F 0805 680E 5%
&R290	30	036-13560-00	RES M/F 0805 560E 5%
&R290	35	036-13560-00	RES M/F 0805 560E 5%
&R290	36	036-13680-00	RES M/F 0805 680E 5%
R291		036-10000-00	RES M/F 0805 ZERO OHM
R292		036-14470-00	RES M/F 0805 4K7 5%
R293		036-15470-00	RES M/F 0805 47K 5%

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Ref	Var	IPN	Description
R294		036-14470-00	RES M/F 0805 4K7 5%
R295		036-14270-00	RES M/F 0805 2K7 5%
R296		036-14100-00	RES M/F 0805 1K 5%
R297		036-14560-00	RES M/F 0805 5K6 5%
%R298		036-16100-00	RES M/F 0805 100K 5%
R299		036-14270-00	RES M/F 0805 2K7 5%
R300		036-12220-00	RES M/F 0805 22E 5%
R301		036-15100-00	RES M/F 0805 10K 5%
R302		036-15220-00	RES M/F 0805 22K 5%
R303		036-14270-00	RES M/F 0805 2K7 5%
R304		036-16100-00	RES M/F 0805 100K 5%
R305		036-15220-00	RES M/F 0805 22K 5%
#R306	10	036-14150-00	RES M/F 0805 1K5 5%
#R306	13	036-14150-00	RES M/F 0805 1K5 5%
#R306	15	036-14150-00	RES M/F 0805 1K5 5%
#R306	16	036-14150-00	RES M/F 0805 1K5 5%
#R306	20	036-14220-00	RES M/F 0805 2K2 5%
#R306	23	036-14220-00	RES M/F 0805 2K2 5%
#R306	25	036-14220-00	RES M/F 0805 2K2 5%
#R306	26	036-14220-00	RES M/F 0805 2K2 5%
#R306	30	036-14150-00	RES M/F 0805 1K5 5%
#R306	35	036-14150-00	RES M/F 0805 1K5 5%
#R306	36	036-14150-00	RES M/F 0805 1K5 5%
#R307	10	036-13470-00	RES M/F 0805 470E 5%
#R307	13	036-13470-00	RES M/F 0805 470E 5%
#R307	15	036-13470-00	RES M/F 0805 470E 5%
#R307	16	036-13470-00	RES M/F 0805 470E 5%
#R307	20	036-13150-00	RES M/F 0805 150E 5%
#R307	23	036-13150-00	RES M/F 0805 150E 5%
#R307	25	036-13150-00	RES M/F 0805 150E 5%
#R307	26	036-13150-00	RES M/F 0805 150E 5%
#R307	30	036-13470-00	RES M/F 0805 470E 5%
#R307	35	036-13470-00	RES M/F 0805 470E 5%
#R307	36	036-13470-00	RES M/F 0805 470E 5%
R308		036-14220-00	RES M/F 0805 2K2 5%
R309		036-15100-00	RES M/F 0805 10K 5%
R310		036-13470-00	RES M/F 0805 470E 5%
R311		036-13470-00	RES M/F 0805 470E 5%
R312		036-14100-00	RES M/F 0805 1K 5%
R313		036-12220-00	RES M/F 0805 22E 5%
R314		036-13470-00	RES M/F 0805 470E 5%
R315		036-03110-10	RES 10R 1W SMD 2512
R322		036-12100-00	RES M/F 0805 10E 5%
R323		036-14150-00	RES M/F 0805 1K5 5%
R324		036-12470-00	RES M/F 0805 47E 5%
R325		036-13560-00	RES M/F 0805 560E 5%
R326		036-12470-00	RES M/F 0805 47E 5%
R327		036-14100-00	RES M/F 0805 1K 5%
R328		036-13470-00	RES M/F 0805 470E 5%
R329		036-12100-00	RES M/F 0805 10E 5%
#R330	10	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	13	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	15	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	16	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	20	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	23	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	25	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	26	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R330	30	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R330	35	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R330	36	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R331	10	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	13	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	15	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	16	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	20	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	23	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	25	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	26	030-52120-20	RES M/F 12E 5% 4X1.6 0.2"
#R331	30	030-52220-20	RES FILM AI 22E 5% 0.4W 4X1.6
#R331	35	030-52220-20	RES FILM AI 22E 5% 0.4W 4X1.6
#R331	36	030-52220-20	RES FILM AI 22E 5% 0.4W 4X1.6
#R332	10	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	13	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	15	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	16	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	20	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	23	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	25	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	26	030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6
#R332	30	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R332	35	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
#R332	36	030-53220-20	RES FILM AI 220E 5% 0.4W 4X1.6
R333		036-12470-00	RES M/F 0805 47E 5%
R334		032-33100-10	RES M/F PWR 100E 5% 2W 12X4.5
R335		036-12100-00	RES M/F 0805 10E 5%
R336		036-16150-00	RES M/F 0805 150K 5%
R337		036-16150-00	RES M/F 0805 150K 5%
R338		036-16150-00	RES M/F 0805 150K 5%
R339		036-16150-00	RES M/F 0805 150K 5%
R340		036-14150-00	RES M/F 0805 1K5 5%
R341		036-15100-00	RES M/F 0805 10K 5%
R342		036-15100-00	RES M/F 0805 10K 5%
R343		036-15150-00	RES M/F 0805 15K 5%
R344		036-15470-00	RES M/F 0805 47K 5%
R345		036-16120-00	RES M/F 0805 120K 5%
R346		036-15100-00	RES M/F 0805 10K 5%
R347		036-14100-00	RES M/F 0805 1K 5%

Ref	Var	IPN	Description
R348		036-14100-00	RES M/F 0805 1K 5%
R349		036-16100-00	RES M/F 0805 100K 5%
R350		036-12220-00	RES M/F 0805 22E 5%
R355		036-14100-00	RES M/F 0805 1K 5%
R356		036-15150-00	RES M/F 0805 15K 5%
R357		036-15150-00	RES M/F 0805 15K 5%
R358		036-14470-00	RES M/F 0805 4K7 5%
R359		036-14100-00	RES M/F 0805 1K 5%
R501		036-15100-00	RES M/F 0805 10K 5%
R502		036-15100-00	RES M/F 0805 10K 5%
R503		036-14560-00	RES M/F 0805 5K6 5%
R504		036-13330-00	RES M/F 0805 330E 5%
R505		036-15150-00	RES M/F 0805 15K 5%
R510		036-14150-00	RES M/F 0805 1K5 5%
R514		036-12330-00	RES M/F 0805 33E 5%
R515		036-12560-00	RES M/F 0805 56E 5%
R517		036-13330-00	RES M/F 0805 330E 5%
R518		036-12180-00	RES M/F 0805 18E 5%
R519		036-13330-00	RES M/F 0805 330E 5%
R520		036-16120-00	RES M/F 0805 120K 5%
R525		036-15470-00	RES M/F 0805 47K 5%
R530		036-15220-00	RES M/F 0805 22K 5%
R535		036-15100-00	RES M/F 0805 10K 5%
R540		036-14220-00	RES M/F 0805 2K2 5%
R545		036-14470-00	RES M/F 0805 4K7 5%
%R550		036-14470-00	RES M/F 0805 4K7 5%
R555		036-14470-00	RES M/F 0805 4K7 5%
R560		036-13470-00	RES M/F 0805 470E 5%
R609		036-14100-00	RES M/F 0805 1K 5%
R613		036-13560-00	RES M/F 0805 560E 5%
R615		036-13100-00	RES M/F 0805 100E 5%
R617		036-10000-00	RES M/F 0805 ZERO OHM
R619		036-01100-10	RES 1 OHM 1 WATT 2512 CHIP
R621		036-01100-10	RES 1 OHM 1 WATT 2512 CHIP
R625		036-14100-00	RES M/F 0805 1K 5%
R629		036-03270-10	RES 270 OHM 1 WATT 2512 CHIP
R633		036-14680-00	RES M/F 0805 6K8 5%
R637		036-12220-00	RES M/F 0805 22E 5%
R638		036-12220-00	RES M/F 0805 22E 5%
R640		036-12100-00	RES M/F 0805 10E 5%
R641		036-14150-00	RES M/F 0805 1K5 5%
R645		036-13470-00	RES M/F 0805 470E 5%
R649		036-14470-00	RES M/F 0805 4K7 5%
R653		036-15100-00	RES M/F 0805 10K 5%
R655		036-10000-00	RES M/F 0805 ZERO OHM
R656		036-10000-00	RES M/F 0805 ZERO OHM
R657		036-15100-00	RES M/F 0805 10K 5%
R661		036-15100-00	RES M/F 0805 10K 5%
R665		036-16100-00	RES M/F 0805 100K 5%
R669		036-15470-00	RES M/F 0805 47K 5%
R673		036-16100-00	RES M/F 0805 100K 5%
R677		036-15470-00	RES M/F 0805 47K 5%
R681		036-13100-00	RES M/F 0805 100E 5%
R685		036-15150-00	RES M/F 0805 15K 5%
R689		036-12100-00	RES M/F 0805 10E 5%
R693		036-16100-00	RES M/F 0805 100K 5%
R696		036-15560-00	RES M/F 0805 56K 5%
R701		036-12220-00	RES M/F 0805 22E 5%
R702		036-17100-00	RES M/F 0805 1M 5%
R703		036-17100-00	RES M/F 0805 1M 5%
R704		036-15180-00	RES M/F 0805 18K 5%
R706		036-12100-00	RES M/F 0805 10E 5%
R708		036-17100-00	RES M/F 0805 1M 5%
R710		036-13100-00	RES M/F 0805 100E 5%
R711		036-13100-00	RES M/F 0805 100E 5%
R712		036-12100-00	RES M/F 0805 10E 5%
R713		036-10000-00	RES M/F 0805 ZERO OHM
R714		036-12100-00	RES M/F 0805 10E 5%
%R715		036-14100-00	RES M/F 0805 1K 5%
R717		036-14270-00	RES M/F 0805 2K7 5%
R718		036-16150-00	RES M/F 0805 150K 5%
R719		036-16150-00	RES M/F 0805 150K 5%
R720		036-15390-00	RES M/F 0805 39K 5%
R721		036-15100-00	RES M/F 0805 10K 5%
R722		036-15100-00	RES M/F 0805 10K 5%
R723		036-14270-00	RES M/F 0805 2K7 5%
R725		036-15390-00	RES M/F 0805 39K 5%
%R726		036-13100-00	RES M/F 0805 100E 5%
R727		036-15100-00	RES M/F 0805 10K 5%
R728		036-15100-00	RES M/F 0805 10K 5%
R734		036-13470-00	RES M/F 0805 470E 5%
R735		036-13470-00	RES M/F 0805 470E 5%
R736		036-13470-00	RES M/F 0805 470E 5%
R742		036-13150-00	RES M/F 0805 150E 5%
R743		036-13150-00	RES M/F 0805 150E 5%
R744		036-12220-00	RES M/F 0805 22E 5%
R746		036-12220-00	RES M/F 0805 22E 5%
R747		036-12220-00	RES M/F 0805 22E 5%
R748		036-15470-00	RES M/F 0805 47K 5%
R749		036-15470-00	RES M/F 0805 47K 5%
R750		036-12220-00	RES M/F 0805 22E 5%
R752		036-12220-00	RES M/F 0805 22E 5%
R753		036-17100-00	RES M/F 0805 1M 5%
R754		036-14100-00	RES M/F 0805 1K 5%
R756		036-15120-00	RES M/F 0805 12K 5%
R757		036-15120-00	RES M/F 0805 12K 5%
R758		036-14120-00	RES M/F 0805 1K2 5%
R759		036-13330-00	RES M/F 0805 330E 5%

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Ref	Var	IPN	Description
R760		036-13180-00	RES M/F 0805 180E 5%
R762		036-13100-00	RES M/F 0805 100E 5%
R763		036-13100-00	RES M/F 0805 100E 5%
R765		036-13680-00	RES M/F 0805 680E 5%
R766		036-14100-00	RES M/F 0805 1K 5%
R767		036-13680-00	RES M/F 0805 680E 5%
R769		036-13180-00	RES M/F 0805 180E 5%
R771		036-14820-00	RES M/F 0805 8K2 5%
R772		036-15220-00	RES M/F 0805 22K 5%
R774		036-14820-00	RES M/F 0805 8K2 5%
R775		036-15180-00	RES M/F 0805 18K 5%
R777		036-14220-00	RES M/F 0805 2K2 5%
R780		036-12680-00	RES M/F 0805 68E 5%
R782		036-12180-00	RES M/F 0805 18E 5%
R784		036-13120-00	RES M/F 0805 120E 5%
R785		036-14330-00	RES M/F 0805 3K3 5%
R786		036-12100-00	RES M/F 0805 10E 5%
R787		036-12100-00	RES M/F 0805 10E 5%
R790		036-13390-00	RES M/F 0805 390E 5%
R791		036-14100-00	RES M/F 0805 1K 5%
R801		036-16150-00	RES M/F 0805 150K 5%
R802		036-15470-00	RES M/F 0805 47K 5%
R808		036-12100-00	RES M/F 0805 10E 5%
R809		036-14470-00	RES M/F 0805 4K7 5%
R810		036-14470-00	RES M/F 0805 4K7 5%
R811		036-14470-00	RES M/F 0805 4K7 5%
R812		036-14470-00	RES M/F 0805 4K7 5%
R813		036-14470-00	RES M/F 0805 4K7 5%
R815		036-15470-00	RES M/F 0805 47K 5%
R816		036-16150-00	RES M/F 0805 150K 5%
R818		036-14470-00	RES M/F 0805 4K7 5%
R819		036-14470-00	RES M/F 0805 4K7 5%
R821		036-15470-00	RES M/F 0805 47K 5%
R822		036-15470-00	RES M/F 0805 47K 5%
R824		036-14220-00	RES M/F 0805 2K2 5%
R825		036-14220-00	RES M/F 0805 2K2 5%
R826		036-14220-00	RES M/F 0805 2K2 5%
R827		036-14220-00	RES M/F 0805 2K2 5%
R828		036-14220-00	RES M/F 0805 2K2 5%
R829		036-14220-00	RES M/F 0805 2K2 5%
R830		036-14220-00	RES M/F 0805 2K2 5%
R831		036-14220-00	RES M/F 0805 2K2 5%
R832		036-14220-00	RES M/F 0805 2K2 5%
R833		036-14220-00	RES M/F 0805 2K2 5%
R835		036-14220-00	RES M/F 0805 2K2 5%
R836		036-14220-00	RES M/F 0805 2K2 5%
R837		036-14220-00	RES M/F 0805 2K2 5%
R840		036-14220-00	RES M/F 0805 2K2 5%
R841		036-14220-00	RES M/F 0805 2K2 5%
R842		036-14220-00	RES M/F 0805 2K2 5%
R843		036-14220-00	RES M/F 0805 2K2 5%
R845		036-13470-00	RES M/F 0805 470E 5%
R847		036-13470-00	RES M/F 0805 470E 5%
R848		036-14470-00	RES M/F 0805 4K7 5%
R849		036-13470-00	RES M/F 0805 470E 5%
R850		036-13470-00	RES M/F 0805 470E 5%
R853		036-14470-00	RES M/F 0805 4K7 5%
R854		036-14470-00	RES M/F 0805 4K7 5%
R855		036-14470-00	RES M/F 0805 4K7 5%
R859		036-16150-00	RES M/F 0805 150K 5%
R861		036-16150-00	RES M/F 0805 150K 5%
R863		036-16150-00	RES M/F 0805 150K 5%
R865		036-16100-00	RES M/F 0805 100K 5%
R867		036-16100-00	RES M/F 0805 100K 5%
R871		036-15470-00	RES M/F 0805 47K 5%
R872		036-14470-00	RES M/F 0805 4K7 5%
R873		036-15330-00	RES M/F 0805 33K 5%
R874		036-14470-00	RES M/F 0805 4K7 5%
R875		036-15470-00	RES M/F 0805 47K 5%
R876		036-14470-00	RES M/F 0805 4K7 5%
R877		036-14470-00	RES M/F 0805 4K7 5%
R879		036-15100-00	RES M/F 0805 10K 5%
RV210		040-05100-23	POT 10K LOG PCB 15MM SLOT SFT
RV220		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
RV805		042-05200-05	RES PRESET SMD 20K CER 4MM SQ
SK200		240-10000-05	CONN SMD SKT 8W 2R M-MATCH
SK205		240-02020-05	SKT STEREO PHONE JACK PCB MTG
SK310		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK410		240-02100-44	SKT COAX MINI JACK PCB MT ANG.
SK501		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK502		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK503		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK504		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK505		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK513		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK522		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK531		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK532		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK533		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK534		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK535		240-04021-77	SKT JACK 1.3 PCB MT 64W
SK805		240-10000-07	CONN SMD SKT 16W 2R M-MATCH
SK810		240-04020-42	SKT 44 PIN SMD PLCC
SW230		232-00010-26	SWITCH PUSH SPDT R-ANG PCB MTG

Ref	Var	IPN	Description
T210		053-00010-17	XFMR T4030 LINE MATCH POTCORE
T610		050-00016-50	COIL TAIT NO 650 455KHZ

T857 Mechanical & Miscellaneous Parts (220-01398-04)

IPN	Legend	Description
008-00014-79		S)LED 3MM RED WITH WIRE
008-00014-80		S)LED 3MM GREEN WITH WIRE
070-01001-00	1	D-RANGE 15 WAY COMPL T800
219-02610-00		COAX 220MM 2 MINI PIN CRIMP Connects SK310 to SK410.
220-01145-02	2	PCB T85X VCO
220-01398-04	3	PCB T857 SERIES II TOP
232-00020-26	4	BUTTON 232-00010-26 SWITCH
240-02100-06	5	SKT COAX N TYPE PNL MTG OP-TER
240-04020-62		SKT 2 W RECEP SHORTING LINK PL205/210/215/220.
303-11169-04	6	CHASSIS PAINTED T800 SERIES
303-23118-00	7	COVER A3M2247 D RANGE T855/7
303-50074-00	8	CLIP A3M2246 SPRING CLAMP T857
303-50078-00	9	CLIP A4M2630 SPR. CABLE CLAMP
308-01007-01	10	HANDLE BASE STATION SERIES II
312-01052-02	11	LID TOP T800 SER II PTND
312-01053-02	12	LID BOTTOM T800 SER II PNTD
316-06619-00	13	PNL FRT EX, NO EX OUT SER II
345-00040-10	14	SCRW M3X6MM P/POZ ST BZ
349-00020-36	15	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	16	SCRW T/T M4X12MM P/POZ BZ
349-00020-45	17	SCRW T/T M4X20MM P/POZ BZ
350-00016-42	18	SPACER 5MM HI 8MM ST 2.5MM HO
352-00010-08	19	NUT M3 COLD FORM HEX ST BZ
352-00010-29	20	NUT M4 NYLOC HEX
353-00010-10	21	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-13	22	WSHR M3 S/PROOF INT BZ
353-00010-24	23	WSHR M4X8MM FLAT
362-00010-23	24	GASKET SIL TO-220 CLIP MTG.
362-00010-33	25	GROMMET LED MTG 3MM
365-00011-53		LABEL 104X37MM
365-00100-20		LABEL WHITE S/A 28X11MM
365-01541-00		LABEL TX/RX/EX TYPE APR/SER NO
399-00010-51		BAG PLASTIC 75X100MM
410-01081-01		CRT T800 SERIES II
410-01082-01		CRTN 10 T800 KIWI 423X410X360

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replace A4 pages C6.3.37/C6.3.38 with A3 pages C6.3.37/C6.3.38

replace A4 pages C6.3.37/C6.3.38 with A3 pages C6.3.37/C6.3.38

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T857 Grid Reference Index (IPN 220-01398-04)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C201	1:C1	2-B8	C304	1:F8	3-C7	C610B	1:L5	6-G8	C761	1:G3	7-J4
C202	1:C1	2-C8	C305	1:F8	3-D7	C611A	1:M6	6-H8	C762	1:G3	7-J4
C204	1:B3	2-E8	C306	1:F8	3-E6	C611B	1:M5	6-J8	C764	1:H3	7-H2
C205	1:A3	2-E8	C307	1:F8	3-E7	C615	1:M6	6-R8	C765	1:G3	7-J2
C207	1:C7	2-B6	C308	1:F8	3-G8	C616	1:M6	6-R8	C767	1:H3	7-K3
C209	1:C6	2-D6	C309	1:E8	3-A7	C623	1:N6	6-N8	C769	1:H4	7-M4
C210	1:C7	2-K0	C310	1:F5	3-B4	C625	1:M6	6-Q8	C770	1:H4	7-N4
C211	1:B7	2-F8	C311	1:F4	3-C1	C626	1:M6	6-Q8	C772	1:G4	7-M2
C213	1:B6	2-G8	C312	1:F5	3-D3	C628	1:M6	6-R8	C774	1:H4	7-P2
C215	1:B6	2-G8	C313	1:F4	3-D1	C630	1:N5	6-K5	C776	1:H4	7-N1
C217	1:C6	2-H8	C314	1:F4	3-E4	C631A	1:N5	6-M6	C782	1:G2	7-N1
C219	1:C6	2-H7	#C315	1:F4	3-E3	C634	1:M5	6-M5	C784	1:G2	7-R1
C221	1:D5	2-G6	#C316	1:E4	3-F3	C636	1:M5	6-M5	C786	1:G2	7-R1
C223	1:C5	2-J6	C317	1:F7	3-H5	C638	1:M5	6-P6	C788	1:G3	7-P0
C225	1:C3	2-K7	C318	1:F7	3-H5	C640	1:M5	6-R6	C790	1:G3	7-R0
C227	1:B4	2-K7	C319	1:F5	3-H4	C655	1:M4	6-C1	C792	1:G4	7-R0
C229	1:B3	2-L7	C320	1:E5	3-J4	C660	1:L5	6-K1	C810	1:L3	8-K8
C230	1:B4	2-J0	#C321	1:E5	3-H4	C665	1:L5	6-K1	C812	1:L2	8-F5
C232	1:A4	2-M7	#C322	1:E6	3-J3	C670	1:L5	6-L1	C813	1:K2	8-J5
C233	1:B5	2-N7	#C323	1:E6	3-L3	C673	1:L5	6-P2	C822	1:M2	8-B2
C235	1:B5	2-K5	C324	1:F7	3-M5	C677	1:L6	6-P1	C823	1:M3	8-C2
C237	1:C4	2-K5	C325	1:F7	3-N5	C681	1:L6	6-R3	C824	1:M2	8-C1
C239	1:C4	2-L4	#C326	1:E8	3-M4	C684	1:L6	6-R3	C826	1:N3	8-C0
C241	1:B4	2-M6	#C327	1:E8	3-M3	C687	1:L6	6-Q1	C827	1:N3	8-D0
C242	1:B4	2-L6	C328	1:E4	3-G1	C690	1:L6	6-R1	C828	1:N3	8-E0
C243	1:B4	2-P6	C329	1:E4	3-H2	C693	1:L6	6-R1	C830	1:N3	8-R1
C245	1:C5	2-A4	C330	1:E3	3-J2	C700	1:K4	7-A8	C838	1:N4	8-F0
C247	1:C6	2-B4	C331	1:E3	3-K2	C703	1:J3	7-B7	C841	1:N2	8-L2
C249	1:D4	2-C4	C332	1:E4	3-L2	C706	1:J2	7-B5	C844	1:M2	8-L2
C251	1:C3	2-E4	C333	1:E3	3-J0	%C707	1:K4	7-C8	C910	1:P8	9-E6
C253	1:D3	2-E3	C334	1:F8	3-C7	C708	1:J2	7-C9	C920	1:P7	9-G6
C255	1:D3	2-D2	#C335	1:E4	3-E3	C709	1:K4	7-D9	C930	1:P6	9-H6
C257	1:D3	2-F2	C336	1:F3	3-H0	C710	1:J3	7-D8			
C259	1:C6	2-J2	C337	1:E3	3-K2	C711	1:J3	7-C5	D111	1:P4	1-R1
C260	1:D8	2-H0	C340	1:E9	3-P2	C712	1:H2	7-E7	D111A	1:P5	1-Q1
C261	1:C6	2-K2	C341	1:E8	3-P1	%C713	1:H2	7-E6	%D205	1:B2	2-D9
C263	1:D6	2-L3	C342	1:E8	3-R3	C714	1:J3	7-E8	%D210	1:B2	2-D9
C265	1:D6	2-N4	#C345	1:E6	3-J4	C719	1:J3	7-F8	D220	1:B4	2-P6
C267	1:C8	2-P3	C350	1:E9	3-N2	C720	1:J3	7-F8	D220	1:B4	2-P7
&C269	1:C8	2-P3	C351	1:E9	3-N2	C722	1:J4	7-G8	D230	1:B7	2-R5
&C271	1:C8	2-Q3	C354	1:E3	3-R0	C724	1:J4	7-H6	D240	1:D4	2-C4
C273	1:C8	2-Q4	C360	1:E4	3-R8	C725	1:J4	7-J6	D240	1:D4	2-B2
C275	1:C3	2-E1	C503	1:K6	5-L9	C726	1:K4	7-J6	D250	1:D3	2-E2
C277	1:C4	2-G1	C505	1:K6	5-M6	C727	1:J3	7-J8	D250	1:D3	2-D3
C279	1:B4	2-G1	C510	1:J5	5-C0	C729	1:H3	7-M8	D260	1:C3	2-C2
C281	1:B5	2-J1	C513	1:H5	5-G2	%C733	1:H2	7-E3	D260	1:C3	2-C2
C283	1:B5	2-K0	C514	1:H5	5-G2	C735	1:J2	7-A1	D270	1:C2	2-C1
C285	1:D7	2-L0	C515	1:J5	5-F1	C736	1:J2	7-B1	D270	1:C2	2-C1
C287	1:C6	2-M1	C516	1:J5	5-H1	C740A	1:H2	7-B4	D301	1:F5	3-C3
&C289	1:C8	2-N1	C535	1:K5	5-M2	C740B	1:H2	7-B3	D302	1:F5	3-D4
C291	1:D7	2-P1	C536	1:K5	5-L2	C741A	1:H2	7-C4	D303	1:F4	3-D3
C293	1:D7	2-Q1	C537	1:K5	5-L2	C741B	1:G2	7-C3	D510	1:K6	5-K8
%C294	1:D7	2-Q0	C545	1:J5	5-K1	C742A	1:H2	7-D4	D510	1:K6	5-K8
%C295	1:C7	2-Q0	C546	1:K5	5-K0	C742B	1:H3	7-D3	D610	1:N6	6-L6
C300A	1:F9	3-J8	C550	1:K4	5-L0	C743	1:H2	7-B1	D610	1:N6	6-K6
C300B	1:F8	3-K8	C600	1:L6	6-D8	C745	1:G3	7-D1	D620	1:N4	6-B1
C301	1:E9	3-B8	C601	1:L6	6-D8	C750	1:H4	7-Q7	D620	1:N4	6-B2
C302	1:E8	3-B8	C605	1:L6	6-C8	C757	1:G4	7-F5	D630	1:M5	6-G2
C303	1:E9	3-C8	C610A	1:M5	6-F8	C759	1:G4	7-G4	D630	1:M5	6-G3

Device	PCB	Circuit
D635	1:M4	6-G3
D635A	1:M5	6-H3
D640	1:L5	6-M2
D640	1:L5	6-M1
D645	1:M5	6-R6
D710	1:J3	7-L8
D710	1:J3	7-L8
D720	1:H3	7-P8
D720	1:H3	7-P8
D730	1:H3	7-H1
D730A	1:H3	7-F0
D740	1:H3	7-J2
D740A	1:H3	7-F0
D810	1:M2	8-B7
D810A	1:M2	8-B7
IC210	1:C7	2-J0
IC210	1:C7	2-Q0
IC210	1:C7	2-K2
IC210	1:C7	2-L1
IC210	1:C7	2-C6
IC220	1:C6	2-P0
IC220	1:C6	2-M3
IC220	1:C6	2-D5
IC230	1:B4	2-J0
IC230	1:B4	2-J0
IC230	1:B4	2-L5
IC230	1:B4	2-N6
IC230	1:B4	2-G1
IC240	1:D4	2-F3
IC250	1:D3	2-E1
IC260	1:D8	2-N0
IC260	1:D8	2-H0
IC260	1:D8	2-Q2
IC260	1:D8	2-Q3
IC260	1:D8	2-N3
IC300	1:F8	3-A0
IC300	1:F8	3-J8
IC300	1:F8	3-D7
IC610	1:L5	6-G8
IC630	1:N5	6-K5
IC640	1:M5	6-N5
IC640	1:M5	6-R6
IC640	1:M5	6-F1
IC650	1:L5	6-F4
=IC700	1:K3	7-A8
IC710	1:J2	7-D8
IC710	1:J2	7-C6
IC710	1:J2	7-C5
IC710	1:J2	7-D6
IC710	1:J2	7-D7
IC710	1:J2	7-D6
IC710	1:J2	7-C6
IC720	1:J3	7-P6
IC720	1:J3	7-G0
IC720	1:J3	7-N7
IC720	1:J3	7-M7
IC720	1:J3	7-K7
IC720	1:J3	7-E8
IC720	1:J3	7-G0
IC730	1:J4	7-H8
IC730	1:J4	7-G7
IC740	1:H2	7-D1
IC750	1:H4	7-M3
IC750	1:H4	7-H5
IC750	1:H4	7-Q7
IC820	1:L4	8-N2
IC830	1:N3	8-J0
IC830	1:N3	8-Q1
IC830	1:N3	8-J0
IC830	1:N3	8-C0
IC830	1:N3	8-J1
L300	1:F5	3-G5
L302	1:F5	3-C3
L303	1:F7	3-M5

Device	PCB	Circuit
L305	1:F4	3-E3
L306	1:F4	3-E4
L307	1:F4	3-F4
#L307	1:F5	3-G4
L308	1:E6	3-K4
L309	1:E6	3-K3
L310	1:E6	3-L4
L312	1:E7	3-M4
#L313	1:E7	3-M4
L314	1:E8	3-R4
#L315	1:E5	3-H3
L350	1:E9	3-N2
L535	1:K5	5-L2
L600	1:L6	6-D8
L615	1:M6	6-R8
L750	1:G3	7-Q0
L910	1:P7	9-F7
L920	1:P7	9-H7
LINK1	2:B2	2-E9
LINK2	2:A2	2-E8
LK302	1:E3	3-J0
P100	1:P6	1-R8
P150	1:P2	1-Q4
P160	1:P2	1-Q4
P170	1:P2	1-Q3
P204	1:D1	2-A8
P208	1:D1	2-A8
P210	1:D3	2-A3
P215	1:D4	2-A2
P217	1:D4	2-A2
P219	1:D2	2-A1
P225	1:D2	2-A0
P230	1:C5	2-B0
P231	1:D8	2-B0
P233	1:C1	2-R9
P235	1:C1	2-R9
P237	1:B7	2-R8
P239	1:C7	2-R8
P240	1:C7	2-R8
P243	1:B7	2-R7
P244	1:B7	2-R7
P245	1:B8	2-R6
P247	1:B8	2-R6
P248	1:B7	2-R6
P249	1:C7	2-R5
P251	1:C7	2-R5
P255	1:D4	2-R4
P257	1:C2	2-R4
P259	1:B8	2-R3
P261	1:B8	2-R3
P263	1:B1	2-R2
P267	1:C8	2-N2
P269	1:D8	2-P2
P271	1:C9	2-N1
P273	1:D9	2-P0
P275	1:D7	2-Q0
P290	1:D5	2-E0
P291	1:D5	2-G0
P805	1:M2	8-A7
P810	1:L3	8-A5
P820	1:L4	8-M8
P825	1:L4	8-M8
P830	1:L4	8-M8
P835	1:L4	8-M7
P840	1:L4	8-M7
PL100	1:P3	1-F0
PL205	1:C5	2-J8
PL210	1:C3	2-H4
PL215	1:C4	2-K3
PL220	1:C4	2-H2
Q210	1:C6	2-J8
Q220	1:B3	2-L7

Device	PCB	Circuit
Q230	1:A4	2-M8
Q240	1:B7	2-Q7
Q250	1:B7	2-R6
Q260	1:C4	2-F3
Q270	1:D2	2-D1
Q301	1:E8	3-B7
Q302	1:F8	3-F7
Q304	1:E5	3-G4
Q305	2:E6	3-L4
Q306	1:E4	3-G1
Q307	1:E3	3-H2
Q308	1:E3	3-J2
Q309	1:E3	3-J0
Q310	1:E9	3-Q1
Q311	1:E8	3-Q2
Q315	1:F8	3-G8
Q505	1:K5	5-J8
Q510	1:J5	5-D1
Q520	1:J5	5-H2
Q530	1:J5	5-H0
Q540	1:K5	5-L2
Q550	1:K5	5-L0
Q610	1:L6	6-D8
Q620	1:N6	6-P8
Q630	1:M6	6-P5
Q660	1:L5	6-N1
Q670	1:M6	6-Q2
Q710	1:J3	7-K8
Q720	1:J3	7-K8
Q730	1:H3	7-N8
Q740	1:H3	7-N8
Q750	1:G4	7-F3
Q760	1:H3	7-H3
Q770	1:H3	7-H1
Q775	1:H3	7-K3
Q780	1:H3	7-K3
Q785	1:H3	7-K2
Q790	1:H3	7-L3
Q795	1:G3	7-P0
Q810	1:M2	8-E7
Q820	1:L2	8-D5
Q830	1:L2	8-D5
Q840	1:L2	8-F5
Q850	1:M2	8-G5
Q860	1:L4	8-B3
%R150	1:P2	1-R4
R160	1:P2	1-R3
%R200	1:B2	2-C9
R201	1:B3	2-E9
R202	1:C1	2-F9
%R203	1:B3	2-C8
R204	1:C7	2-B6
R205	1:C7	2-D6
R206	1:B7	2-G8
R207	1:B6	2-G8
R208	1:B6	2-G8
R209	1:C6	2-H8
R210	1:B6	2-H7
R211	1:B2	2-D9
R212	1:D4	2-F6
R213	1:C4	2-G6
R214	1:D4	2-G6
R215	1:C4	2-H6
R216	1:C3	2-K7
R217	1:A4	2-M8
R218	1:A5	2-N7
R219	1:B4	2-N8
R220	1:B2	2-E9
R221	1:B7	2-R7
R223	1:B4	2-K6
R224	1:C4	2-K5
R225	1:B4	2-L5
R226	1:B4	2-L4
R227	1:B4	2-M4
R228	1:A2	2-E9

Device	PCB	Circuit
R229	1:B4	2-M7
R230	1:B4	2-M6
R231	1:B4	2-M6
R232	1:B4	2-M5
R233	1:B4	2-M6
R235	1:B4	2-P6
R237	1:B7	2-Q7
R238	1:B7	2-R7
R239	1:B8	2-R6
R241	1:B8	2-Q6
R242	1:B7	2-Q5
R244	1:C6	2-A5
R245	1:D4	2-D4
R247	1:D3	2-E4
R248	1:C3	2-E3
R249	1:D4	2-F3
R251	1:C4	2-G4
R253	1:C6	2-J2
R254	1:C7	2-K3
R255	1:C7	2-K2
R256	1:D8	2-M3
R257	1:D8	2-N5
R258	1:D8	2-N4
R259	1:D6	2-P4
R260	1:D8	2-N4
R262	1:D8	2-N3
R263	1:C8	2-P3
&R264	1:C8	2-P3
&R265	1:C8	2-P3
&R266	1:C8	2-P3
R267	1:C8	2-R2
R268	1:D2	2-C0
R269	1:D3	2-C1
R270	1:D3	2-D1
R271	1:C3	2-E1
R272	1:C4	2-F2
R273	1:B5	2-G2
R274	1:C4	2-G1
R275	1:C4	2-H0
R277	1:B5	2-J1
R278	1:B5	2-J0
R279	1:B5	2-K0
R280	1:B5	2-K0
R282	1:D7	2-K1
R283	1:D7	2-L1
R284	1:D7	2-L0
R285	1:C8	2-M0
R286	1:C7	2-M0
R287	1:D9	2-M0
R288	1:C6	2-M2
R289	1:D9	2-M0
&R290	1:C8	2-N2
R291	1:C8	2-N1
R292	1:D8	2-Q2
R293	1:D9	2-Q2
R294	1:D9	2-Q1
R295	1:D8	2-R1
R296	1:D7	2-P0
R297	1:D7	2-P1
%R298	1:D7	2-Q0
R299	1:C7	2-R0
R300	1:F8	3-J8
R301	1:E8	3-B8
R302	1:E8	3-A7
R303	1:E8	3-B7
R304	1:F8	3-B8
R305	1:F8	3-C7
#R306	1:F8	3-D5
#R307	1:F8	3-D5
R308	1:F8	3-E7
R309	1:F8	3-D5
R310	1:F8	3-E6
R311	1:F8	3-F6
R312	1:F8	3-F8
R313	1:F8	3-F8
R314	1:F8	3-G6

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Device	PCB	Circuit
R315	1:F5	3-G5
R322	1:F4	3-C1
R323	1:F5	3-C3
R324	1:F4	3-C2
R325	1:F4	3-D2
R326	1:E4	3-G3
R327	1:E4	3-F3
R328	1:F5	3-G4
R329	1:F7	3-H5
#R330	1:E5	3-J3
#R331	1:E5	3-J4
#R332	1:E6	3-J3
R333	1:E6	3-K3
R334	1:E7	3-L4
R335	1:F7	3-M5
R336	1:E5	3-G3
R337	1:E5	3-H3
R338	1:E5	3-H3
R339	1:E5	3-H3
R340	1:E4	3-G1
R341	1:E4	3-H1
R342	1:E3	3-J2
R343	1:E3	3-J1
R344	1:E3	3-K2
R345	1:E4	3-K2
R346	1:E3	3-H0
R347	1:E3	3-J1
R348	1:D3	3-J0
R349	1:E3	3-J0
R350	1:E4	3-L3
R355	1:E8	3-P2
R356	1:E9	3-P2
R357	1:E8	3-P1
R358	1:E8	3-Q1
R359	1:E8	3-R3
R501	1:K5	5-H8
R502	1:K5	5-J8
R503	1:K5	5-J8
R504	1:K6	5-K9
R505	1:K6	5-L8
R510	1:K6	5-L7
R514	1:K6	5-M5
R515	1:H6	5-J5
R517	1:G5	5-E2
R518	1:G5	5-F2
R519	1:G5	5-F2
R520	1:J5	5-C1
R525	1:J5	5-D1
R530	1:J5	5-D0
R535	1:J5	5-E1
R540	1:J5	5-H2
R545	1:J5	5-J1
%R550	1:J5	5-J2
%R553	1:K5	5-J1
R555	1:K5	5-K1
R560	1:K5	5-M0
R609	1:L6	6-B8
R613	1:L6	6-C8
R615	1:M5	6-F9
R617	1:M5	6-J8
R619	1:N6	6-L8
R621	1:N6	6-L8
R625	1:N6	6-L7
R629	1:N6	6-P6
R633	1:M5	6-Q8
R637	1:M5	6-K6
R638	1:M5	6-K6
R640	1:M5	6-R6
R641	1:N5	6-L5
R645	1:N5	6-L5
R649	1:M5	6-M5
R653	1:M5	6-Q5
R655	1:L4	6-D4
R656	1:L4	6-D4
R657	1:M5	6-D1
R661	1:M5	6-E3

Device	PCB	Circuit
R665	1:M5	6-E2
R669	1:M5	6-E2
R673	1:M5	6-E0
R677	1:M4	6-F4
R681	1:L5	6-L2
R685	1:L5	6-N2
R689	1:L6	6-Q3
R693	1:L5	6-Q1
R696	1:L6	6-Q1
R701	1:K4	7-A9
R702	1:K4	7-C9
R703	1:J3	7-C8
R704	1:J3	7-C5
=R705	1:K3	7-A7
R706	1:H3	7-C5
R708	1:J3	7-B5
R710	1:H2	7-E7
R711	1:J2	7-B6
R712	1:J2	7-D8
R713	1:J4	7-F8
R714	1:J3	7-D9
%R715	1:K4	7-H6
R717	1:J4	7-H7
R718	1:J4	7-H7
R719	1:J4	7-J6
R720	1:J3	7-K7
R721	1:J3	7-K9
R722	1:J3	7-K8
R723	1:H3	7-M7
R725	1:J4	7-N7
%R726	1:J3	7-N6
R727	1:H3	7-N9
R728	1:H3	7-N8
R734	1:K2	7-A2
R735	1:K2	7-A2
R736	1:K2	7-A2
R742	1:H2	7-B4
R743	1:H2	7-C5
R744	1:G2	7-D4
R746	1:H3	7-E4
R747	1:H3	7-E5
R748	1:J2	7-A1
R749	1:J2	7-B1
R750	1:H4	7-Q7
R752	1:G4	7-F5
R753	1:G4	7-F3
R754	1:G3	7-F3
R756	1:G3	7-G5
R757	1:G4	7-G4
R758	1:H3	7-H4
R759	1:H3	7-H4
R760	1:H3	7-K4
R762	1:H3	7-K4
R763	1:H3	7-L4
R765	1:H3	7-H2
R766	1:G3	7-J3
R767	1:H3	7-K2
R769	1:H3	7-K3
R771	1:H4	7-L3
R772	1:G4	7-M2
R774	1:H4	7-M3
R775	1:H4	7-N2
R777	1:H4	7-R2
R780	1:G2	7-P1
R782	1:G3	7-P1
R784	1:G3	7-P1
R785	1:G3	7-Q1
R786	1:G2	7-R1
R787	1:G2	7-R2
R790	1:G3	7-P0
R791	1:G3	7-Q0
R801	1:M2	8-D7
R802	1:M2	8-D7
R808	1:L2	8-B4
R809	1:L2	8-D5
R810	1:L3	8-D6

Device	PCB	Circuit
R811	1:L2	8-E6
R812	1:L2	8-D5
R813	1:L2	8-D4
R815	1:L2	8-F4
R816	1:L2	8-F4
R818	1:M2	8-F5
R819	1:M2	8-F5
R821	1:M4	8-B3
R822	1:M4	8-E3
R824	1:L4	8-L8
R825	1:L4	8-L8
R826	1:L4	8-L8
R827	1:L4	8-L7
R828	1:L4	8-L7
R829	1:L4	8-P9
R830	1:L3	8-P9
R831	1:L3	8-P9
R832	1:L3	8-P8
R833	1:L3	8-P8
R835	1:L3	8-P8
R836	1:L3	8-P8
R837	1:L3	8-P7
R840	1:L3	8-P7
R841	1:L3	8-P7
R842	1:L3	8-P6
R843	1:L3	8-P6
R845	1:M4	8-Q5
R847	1:L2	8-Q4
R848	1:L2	8-J4
R849	1:L2	8-Q4
R850	1:K2	8-Q4
R853	1:M4	8-N3
R854	1:M4	8-N3
R855	1:M2	8-B0
R859	1:N2	8-C1
R861	1:N2	8-D1
R863	1:N3	8-E1
R865	1:N4	8-E0
R867	1:N3	8-E1
R871	1:N3	8-G2
R872	1:M4	8-H1
R873	1:N3	8-G1
R874	1:N3	8-H0
R875	1:N3	8-G0
R876	1:N3	8-H0
R877	1:M2	8-K2
R879	1:N2	8-L3
RV210	1:B7	2-F9
RV220	1:A4	2-M6
%RV300	1:E8	3-C5
RV805	1:N4	8-F1
SK200	1:D5	2-F0
SK205	1:B5	2-A5
SK310	1:E8	3-N4
SK410	1:M8	1-M8
SK501	1:G6	5-D6
SK502	1:G6	5-D5
SK503	1:G6	5-D4
SK504	1:G5	5-D3
SK505	1:G5	5-D2
SK513	1:H5	5-H3
SK522	1:H6	5-K5
SK531	1:K6	5-N6
SK532	1:K5	5-N5
SK533	1:K5	5-N4
SK534	1:K5	5-N3
SK535	1:K5	5-N2
=SK710	1:K3	7-A7
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q5
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q7

Device	PCB	Circuit
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q6
SK805	1:K3	8-Q9
SK805	1:K3	8-Q7
SK805	1:K3	8-Q8
SK805	1:K3	8-Q6
SK810	1:M3	8-H5
SL201	2:D1	2-B9
SL202	2:D1	2-B8
SL203	2:D2	2-B1
SL204	2:D2	2-B1
SL501	2:J5	5-F0
SL810	1:M2	8-C7
SW230	1:B8	2-A3
T210	1:B2	2-C8
T610	1:L6	6-N2
TP206	1:C5	2-H7
TP305	1:E9	3-M2
TP601	1:N6	6-K9
TP602	1:M6	6-R9
TP603	1:L5	6-J2
TP604	1:L4	6-M6
TP607	1:L5	6-J9
TP710	1:G4	7-H5
TP715	1:J2	7-C6

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Part D T858 & T859 Power Amplifiers



Caution: **There are no user serviceable components in these power amplifiers. Refer all servicing to your nearest Tait Dealer or Customer Service Organisation.**

This part of the manual is divided into five sections, as listed below. These sections describe both the older design T858/859 without RF power modules, and the newer design T858/859 with RF power modules. Figure 1.1 shows how to identify your PA design without having to remove the side cover. There is a detailed table of contents at the start of each section.

Section	Title
1	General Information
2	Circuit Operation
3	Initial Adjustment
4	Fault Finding
5	PCB Information

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1 T858/859 General Information

This section provides a brief description of the T858 & T859 power amplifiers, both with and without RF power modules, along with detailed specifications and a list of types available. Figure 1.1 shows how to identify whether your PA was built with or without RF power modules.

The following topics are covered in this section.

Section	Title	Page
1.1	**Identifying T858/859 PAs With Or Without RF Power Modules**	**1.3**
1.2	**Introduction**	**1.13**
1.3	**Specifications**	**1.14**
1.3.1	Introduction	1.14
1.3.2	General	1.14
1.3.3	Test Standards	1.15
1.3.3.1	European Telecommunication Standard	1.15
1.3.3.2	DTI CEPT Recommendation T/R-24-01	1.16
1.3.3.3	Telecommunications Industry Association	1.16
1.4	**Product Codes**	**1.17**
1.5	**Standard Product Range**	**1.18**

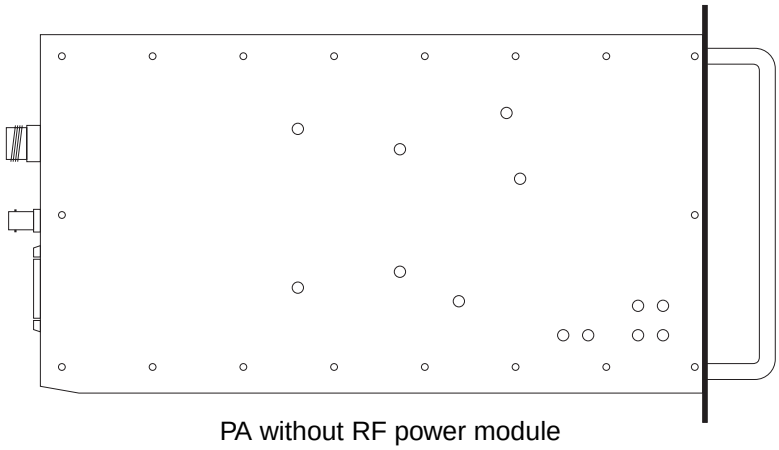
Figure	Title	Page
1.1	Identifying T858/859 PAs With Or Without RF Power Modules	1.3
1.2	T858 Main Circuit Block Identification (Without RF Power Module)	1.6
1.3	T858 Main Circuit Block Identification (With RF Power Module)	1.8
1.4	T859 Main Circuit Block Identification (Without RF Power Module)	1.10
1.5	T859 Main Circuit Block Identification (With RF Power Module)	1.12
1.6	T858/859 Front Panel Controls	1.12

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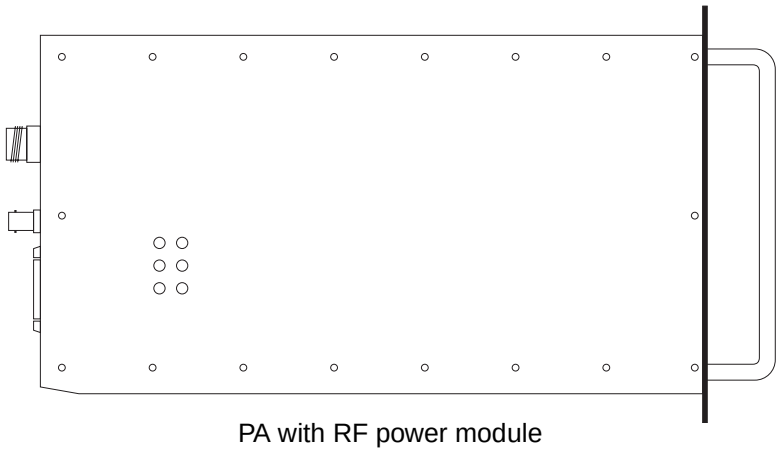
1.1 Identifying T858/859 PAs With Or Without RF Power Modules

The newer design T858/859 PAs use both RF power modules and RF power transistors, whereas the older design T858/859 PAs used RF power transistors only.

If the side cover is still fitted to your PA, you can quickly identify which type you have by checking the number of access holes in the side cover. As shown in Figure 1.1 below, the older design PAs have numerous holes spread over the side cover, whereas the newer design PAs have only six in a group near the rear of the chassis.



PA without RF power module



PA with RF power module

Figure 1.1 Identifying T858/859 PAs With Or Without RF Power Modules

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1.2 Introduction

The T858 and T859 are FM base station power amplifiers designed for single or multichannel operation in the 400 to 520MHz frequency range. The output power capabilities are as follows:

T858 - 10 to 60W
T859 - 20 to 110W.

The older design T858/859 PAs (without RF power modules) comprise a broad band, three stage drive amplifier whose output is split to drive two separate output stages. The outputs from these final stages are then recombined and filtered before being fed to the output socket. This type of balanced output stage offers two advantages over single ended types:

- improved intermodulation performance in the presence of high signal levels from adjacent transmitters;
- enhanced reliability: if one of the two output stages fails, the transmitter can still produce one quarter of its rated power.

The newer design T858 PA (with RF power module) comprises a broad band, two stage drive amplifier whose output is filtered before being fed to the output connector.

The newer design T859 PA (with RF power module) comprises a broad band, two stage drive amplifier whose output is split to drive two separate output stages. The outputs from these final stages are then recombined and filtered before being fed to the output socket. This type of balanced output stage offers two advantages over single ended types:

- improved intermodulation performance in the presence of high signal levels from adjacent transmitters;
- enhanced reliability: if one of the two output stages fails, the transmitter can still produce one quarter of its rated power.

VSWR and thermal protection are incorporated into the basic design of all T858/859 PAs, while monitoring and alarm signals are available for both forward and reverse power. The output power is adjustable from the front panel.

The main PCB is mounted directly on a die-cast chassis/heatsink. Extensive use is made of the latest surface mount technology. Effective RF isolation between the PA control circuitry and RF stages in the newer design T858/859 PAs is achieved by internal metal shields.

Forced air cooling for the heatsink is provided on the T859 by a fan, which is activated whenever the transmitter is keyed. Thermal sensors will also activate the fan automatically if the internal temperature reaches an unacceptable level.

The T858 has a width of 60mm and occupies a single space in a Tait rack frame, which has the ability to accommodate up to seven standard modules. The T859 has a width of 120mm and occupies a double space.

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1.3 Specifications

1.3.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment operating at standard room temperature (+22°C to +28°C) and standard test voltage (13.8V DC).

Ambient temperature is defined as the temperature of the air at the input to the cooling fan mounted on the heatsink, or immediately surrounding the heatsink if a fan is not fitted.

Where applicable, the test methods used to obtain the following performance figures are those described in the ETS specification. Refer to Section 1.3.3 for details of test standards.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

1.3.2 General

Power Output:

T858	- Rated Power	.. 50W
	- Range Of Adjustment	.. 10 to 60W (typical)
T859	- Rated Power	.. 100W
	- Range Of Adjustment	.. 20 to 110W (typical)

Input Power .. 700 to 1300mW

Duty Cycle Rating:

T858	.. 50W continuous to +60°C ambient temperature
	.. 60W continuous to +40°C ambient temperature
T859	.. 100W continuous to +60°C ambient temperature

Intermodulation (PA with output isolator) .. -70dBc or -40dBi[1] with 25dB isolation & interfering signal of -30dBc

Mismatch Capability:

Ruggedness	.. refer to your nearest Tait Dealer or Customer Service Organisation
Stability	.. 5:1 VSWR (all phase angles)

1. dBi denotes the level of intermodulation product relative to the interfering signal.

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Supply Voltage:

Operating Voltage	..	10.8 to 16V DC
Standard Test Voltage	..	13.8V DC
Polarity	..	negative earth only
Polarity Protection	..	crowbar diode

Maximum Supply Current (T858 @ 50W, T859 @ 100W):

Standby		..	50mA
Transmit	- T858 without power module	..	11A
	- T858 with power module	..	12A (11A typical)
	- T859 without power module	..	22A
	- T859 with power module	..	23A (21A typical)

Spurious Emissions:

Conducted	- Transmit	..	-36dBm to 1GHz -30dBm 1GHz to 4GHz
	- Standby	..	-57dBm to 1GHz -47dBm 1GHz to 4GHz
Radiated	- Transmit	..	-36dBm to 1GHz -30dBm 1GHz to 4GHz
	- Standby	..	-57dBm to 1GHz -47dBm 1GHz to 4GHz

Operating Temperature Range .. -30°C to +60°C ambient temperature

Dimensions:

Height		..	183mm
Width	- T858	..	60mm
	- T859	..	120mm
Length		..	340mm

Weight:

T858	..	3.1kg
T859	..	3.5kg

1.3.3 Test Standards

Where applicable, this equipment is tested in accordance with the following standards.

1.3.3.1 European Telecommunication Standard

ETS 300 086 January 1991

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech.

ETS 300 113 March 1996

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector.

ETS 300 219 October 1993

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment transmitting signals to initiate a specific response in the receiver.

ETS 300 279 February 1996

Radio equipment and systems; electromagnetic compatibility (EMC) standard for private land mobile radio (PMR) and ancillary equipment (speech and/or non-speech).

1.3.3.2 DTI CEPT Recommendation T/R-24-01

Annex I: 1988

Technical characteristics and test conditions for radio equipment in the land mobile service intended primarily for analogue speech.

Annex II: 1988

Technical characteristics of radio equipment in the land mobile service with regard to quality and stability of transmission.

1.3.3.3 Telecommunications Industry Association

ANSI/TIA/EIA-603-1992

Land mobile FM or PM communications equipment measurement and performance standards.

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1.4 Product Codes

The three groups of digits in the T850 Series II product code provide information about the model, type and options fitted, according to the conventions described below.

The following explanation of T850 Series II product codes is not intended to suggest that any combination of features is necessarily available in any one product. Consult your nearest Tait Dealer or Customer Service Organisation for more information regarding the availability of specific models, types and options.

Model

The Model group indicates the basic function of the product, as follows:

T85X-XX-XXXX
T855 receiver
T856 25W transmitter
T857 exciter
T858 50W power amplifier
T859 100W power amplifier

Type

The Type group uses two digits to indicate the basic RF configuration of the product.

The first digit in the Type group designates the frequency range:

T85X-**X**X-XXXX
'1' for 400-440MHz
'2' for 440-480MHz
'3' for 480-520MHz

The second digit in the Type group indicates the channel spacing and is not applicable to power amplifiers:

T85X-X**X**-XXXX '0' for all power amplifiers

Options

T85X-XX-**XXXX** The Options group uses four digits and/or letters to indicate any options that may be fitted to the product. This includes standard options and special options for specific customers. '0000' indicates a standard Tait product with no options fitted. The large number of options precludes listing them here.

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1.5 Standard Product Range

The following table lists the range of standard T858 and T859 types (i.e. no options fitted) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Output Power (W)	50			100		
Frequency Range (MHz)	400-440	440-480	480-520	400-440	440-480	480-520
PA Type: T858-	10-0000	20-0000	30-0000			
PA Type: T859-				10-0000	20-0000	30-0000

You can identify the PA type by checking the product code printed on a label on the rear of the heatsink (Figure 1.1 in Part A shows typical labels).

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2 T858/859 Circuit Operation

This section provides a basic description of the circuit operation of the T858 and T859 power amplifiers, both with and without RF power modules.

Section 2.1 describes the older design T858/859 without RF power modules, while Section 2.2 describes the newer design T858/859 with RF power modules. Figure 1.1 shows how to identify your PA design without having to remove the side cover.

The following topics are covered in this section.

Section	Title	Page
2.1	**T858/859 Without RF Power Modules**	**2.3**
2.1.1	Introduction	2.3
2.1.2	RF Circuitry	2.4
2.1.3	Control Circuitry	2.5
2.1.3.1	Power Control	2.6
2.1.3.2	T859 Driver Power Level	2.6
2.1.3.3	Thermal Protection	2.6
2.1.3.4	Forward And Reverse Power Alarms	2.6
2.1.3.5	Forward And Reverse Power Metering	2.7
2.1.3.6	T859 Fan Control Circuitry	2.7
2.1.4	Power Supply & Regulator Circuits	2.8
2.2	**T858/859 With RF Power Modules**	**2.9**
2.2.1	Introduction	2.9
2.2.2	RF Circuitry	2.10
2.2.3	Control Circuitry	2.11
2.2.3.1	Power Control	2.13
2.2.3.2	Driver Power Level	2.13
2.2.3.3	Thermal Protection	2.13
2.2.3.4	Forward And Reverse Power Alarms	2.13
2.2.3.5	Forward And Reverse Power Metering	2.14
2.2.3.6	T859 Fan Control Circuitry	2.14
2.2.4	Power Supply & Regulator Circuits	2.15

Figure	Title	Page
	T858/859 Without RF Power Modules	
2.1	T858/859 High Level Block Diagram	2.3
2.2	T858/859 RF Circuitry Block Diagram	2.4
2.3	T858/859 Control Circuitry Block Diagram	2.5
2.4	T859 Fan Control Logic Diagram	2.7
2.5	T858/859 Power Supply & Regulator Circuitry Block Diagram	2.8
	T858/859 With RF Power Modules	
2.6	T858 High Level Block Diagram	2.9
2.7	T859 High Level Block Diagram	2.9
2.8	T858 Control Circuitry Block Diagram	2.11
2.9	T859 Control Circuitry Block Diagram	2.12
2.10	T859 Fan Control Logic Diagram	2.14
2.11	T858/859 Power Supply & Regulator Circuitry Block Diagram	2.15

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2.1 T858/859 Without RF Power Modules

Refer to Section 5 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components. Refer also to Figure 3.4 and Figure 3.6 which show the location of the main tuning and adjustment controls.

2.1.1 Introduction

T858	0.7-1W	2-3dB	2W	8-10W	20-30W	35-40W	60-70W
T859	0.7-1W	2dB	5W	15-20W	40-50W	60-70W	105-120W
T878	0.7-1.8W	4dB	5W		20-35W	35-40W	60-80W

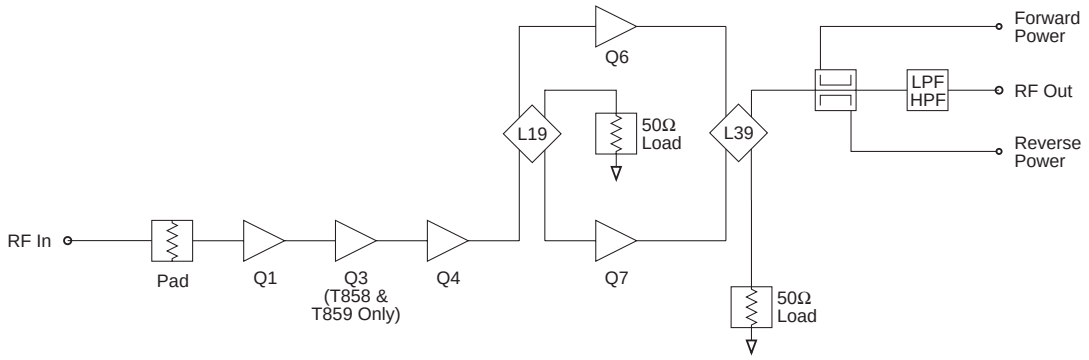


Figure 2.1 T858/859 High Level Block Diagram

The T858 and T859 comprise a five-stage RF power amplifier, the final two stages of which are combined, and extensive control circuitry.

Figure 2.1 shows the configuration of each of the main circuit blocks on a functional level, while the fold-outs Figure 1.2 and Figure 1.4 show their location on the PCB.

2.1.2 RF Circuitry

(Refer to the RF section circuit diagram in Section 5.)

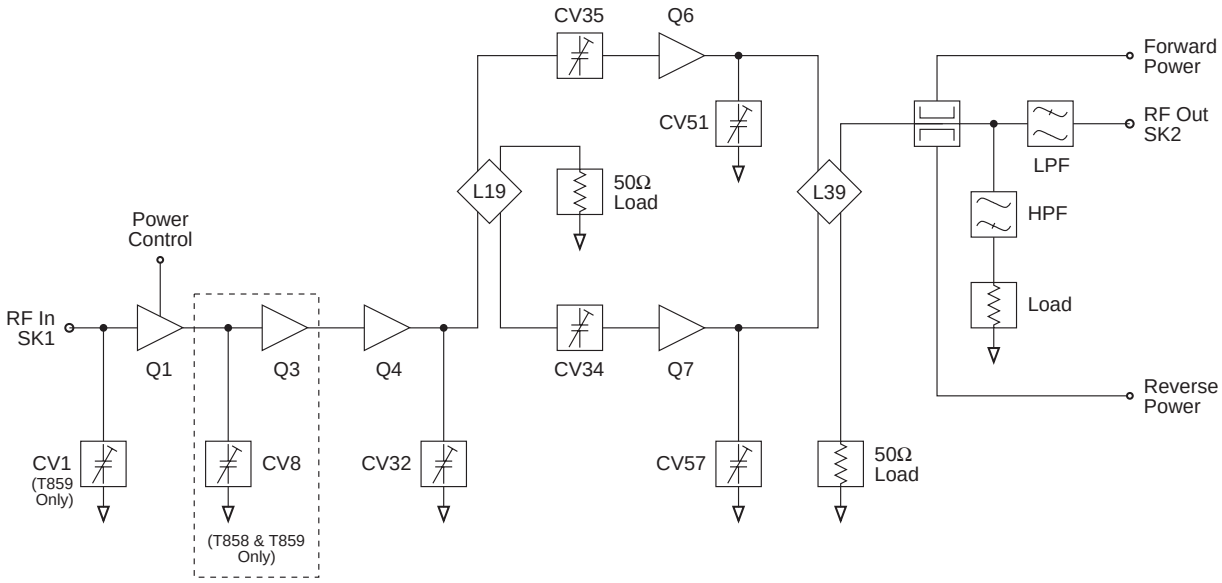


Figure 2.2 T858/859 RF Circuitry Block Diagram

The driver stage of the T858/859 consists of a three-stage transistor amplifier (Q1, Q3 & Q4) which delivers 30W in the T858 and 50W in the T859. This signal is split via a 3dB coupler (L19) and used to drive the two final amplifiers (Q6 & Q7). The outputs from the finals are passed to the antenna socket via the harmonic filter.

The diplexer presents the final amplifiers with a good load at harmonic frequencies, which helps to achieve the expected harmonic attenuation in the output filter.

The directional coupler senses forward and reflected power, which is rectified (D1 & D2) and passed to the control circuitry for metering, alarm and power control purposes.

Power control is via a series pass transistor (Q16), which controls the supply voltage on the collector of the driver transistor (Q1).

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2.1.3 Control Circuitry

(Refer to the control section circuit diagram in Section 5.)

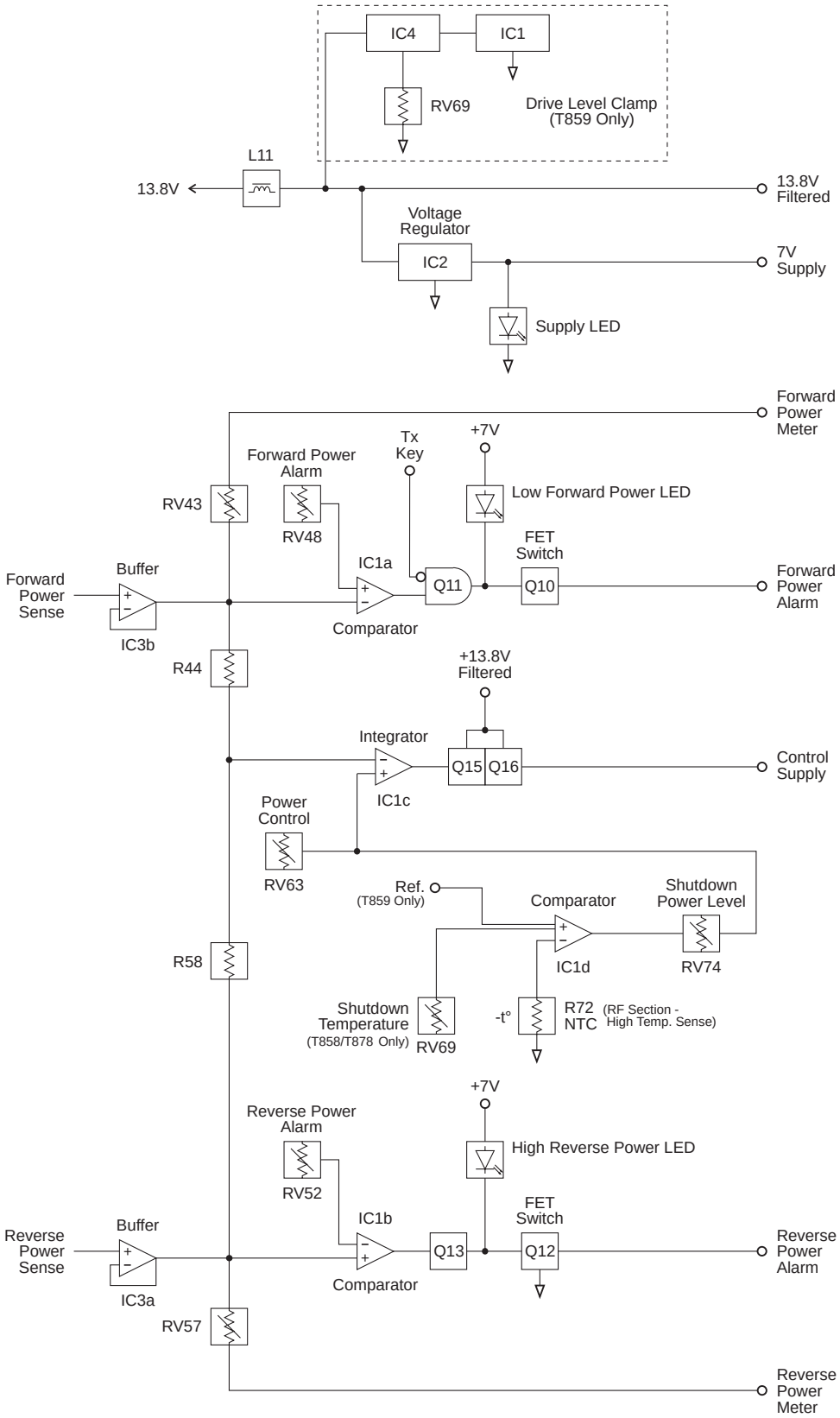


Figure 2.3 T858/859 Control Circuitry Block Diagram

2.1.3.1 Power Control

The DC voltages from the directional coupler representing forward and reflected power are buffered by the two voltage followers IC3 pins 1, 2 & 3 and pins 5, 6 & 7. Their outputs are summed at an integrator (IC1 pins 8, 9 & 10), which drives the series pass control element (Q16).

Forward and reflected power are summed so that, under high output VSWR, the power control turns the PA down. This is because the control loop adjusts for the same DC voltage from the directional coupler that would have been present if there were no reflected power.

2.1.3.2 T859 Driver Power Level

A ceiling is placed on the output power available from driver stages Q1, Q3 and Q4 to ensure final stages Q6 and Q7 are not overdriven. This is achieved by RV69 and IC4 controlling the reference voltage of power control error amplifier IC1c, which in turn limits the maximum supply voltage that can be applied to driver Q4 by power control transistor Q16.

Note: T859 PAs with serial numbers prior to 217262 do not have this feature.



Caution: **The driver power level clamp (RV69) is factory set to give a maximum power output of 110W in the T859. The unit may be damaged if this level is increased.**

2.1.3.3 Thermal Protection

At excessively high temperatures, the output power will automatically reduce to a preset level, thus preventing the PA from overheating.

A thermistor controlled voltage divider (R68, R72) applies a voltage to a comparator with hysteresis (IC1 pins 12, 13 & 14).

Note: In all T858 PAs and T859 PAs with serial numbers prior to 217262, the threshold of the comparator is independently set by RV69 which sets the shutdown temperature. On later model T859 PAs this threshold is fixed.

The output current from the comparator is summed into the power control network via RV74 so that the power level to which the PA must turn down may be set.

2.1.3.4 Forward And Reverse Power Alarms

If forward power drops below, or reverse power rises above, presettable limits, alarms may be triggered.

The alarm outputs are open drain configuration and are low under normal conditions (i.e. forward and reverse power levels are normal).

IC1 pins 1, 2 & 3 and pins 5, 6 & 7 form comparators with thresholds adjusted via RV48

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(forward power) and RV52 (reverse power) respectively. The inputs are from the forward and reverse power signals generated by the directional coupler, buffered by IC3 pins 1, 2 & 3 and pins 5, 6 & 7. Thus, the power levels at which the forward and reverse power alarms are triggered are defined by RV48 and RV52 respectively.

2.1.3.5 Forward And Reverse Power Metering

Forward and reverse power signals from the two IC3 buffers are available for metering purposes. The output currents are adjustable via RV43 (forward power) and RV57 (reverse power).

2.1.3.6 T859 Fan Control Circuitry

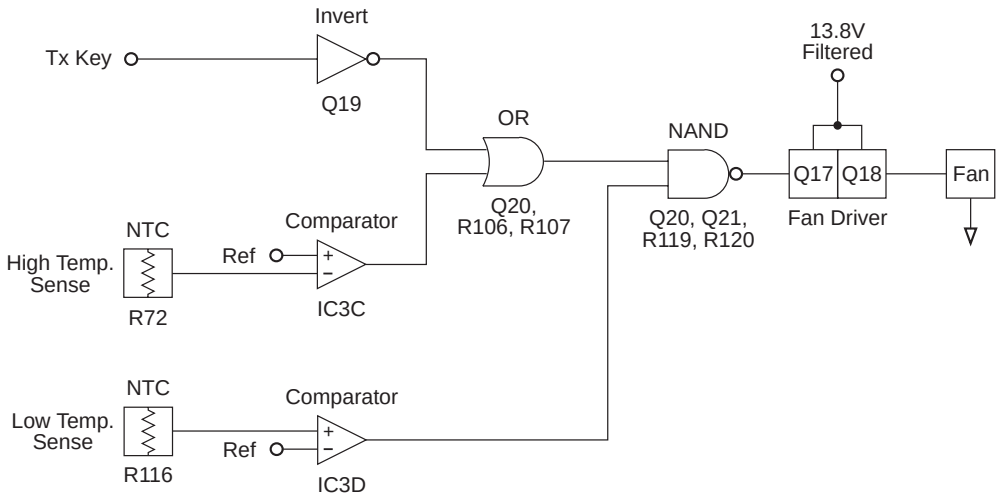


Figure 2.4 T859 Fan Control Logic Diagram

Comparator IC3 pins 8, 9 & 10 are set to trigger at heatsink temperatures greater than +70°C, and pins 12, 13 & 14 at temperatures greater than -10°C.

A logic AND function is applied to the comparator outputs by Q20 and Q21, thereby turning on the fan unconditionally (via Q17 and Q18) if the heatsink temperature exceeds +70°C.

A logic OR function is applied to the comparator IC3 pins 8, 9 & 10 and Tx-Key signals, thereby turning on the fan when the transmitter is keyed and the temperature is between -10°C and +70°C.

If the temperature drops below -10°C, Q21 is turned off, preventing either Q19 or Q20 from activating the fan.

Fan operation may be summarised as follows:

T < -10°C	- fan unconditionally turned off
-10°C < T < +70°C	- fan turned on only when transmitter keyed
T > +70°C	- fan unconditionally turned on.

2.1.4 Power Supply & Regulator Circuits

(Refer to the control section circuit diagram in Section 5.)

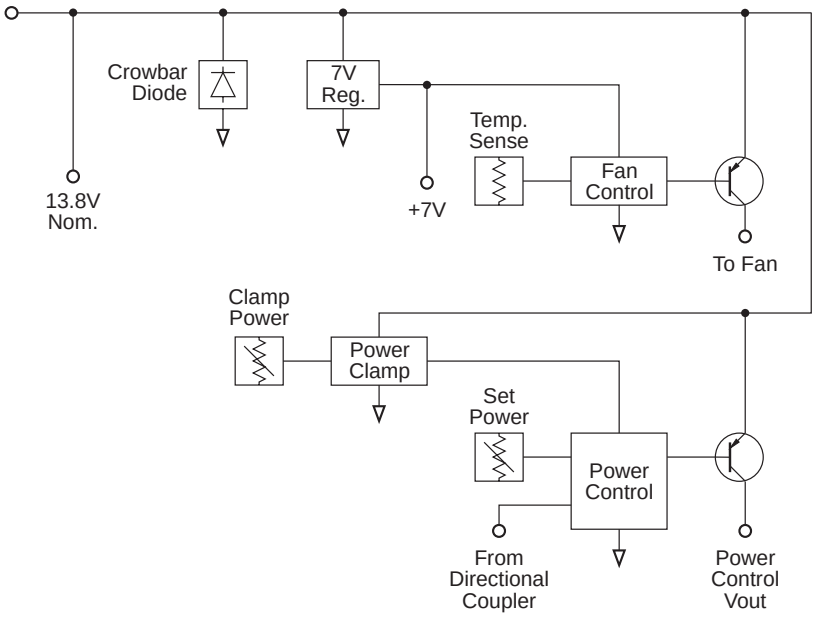


Figure 2.5 T858/859 Power Supply & Regulator Circuitry Block Diagram

The T858/859 are designed to operate off a 10.8-16V DC supply (13.8V nominal). A 7V supply runs directly off the 13.8V rail, driving the fan control, power control and alarm circuitry.

A crowbar diode is fitted for protection against connection to a power supply of incorrect polarity. It also provides transient overvoltage protection.

Note: A fuse must be fitted in the power supply line for the diode to provide effective protection.

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2.2 T858/859 With RF Power Modules

Refer to Section 5 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components. Refer also to Figure 3.5 and Figure 3.7 which show the location of the main adjustment controls.

Note: Where the same component has different circuit references in the T858 and T859, in this and following sections the T858 circuit reference is given first, followed by the T859 circuit reference in brackets, e.g. Q137 [Q128].

2.2.1 Introduction

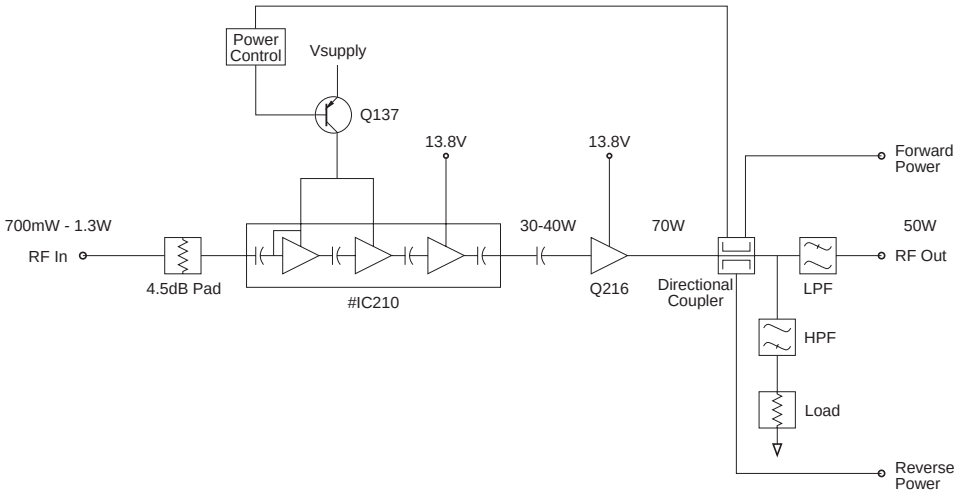


Figure 2.6 T858 High Level Block Diagram

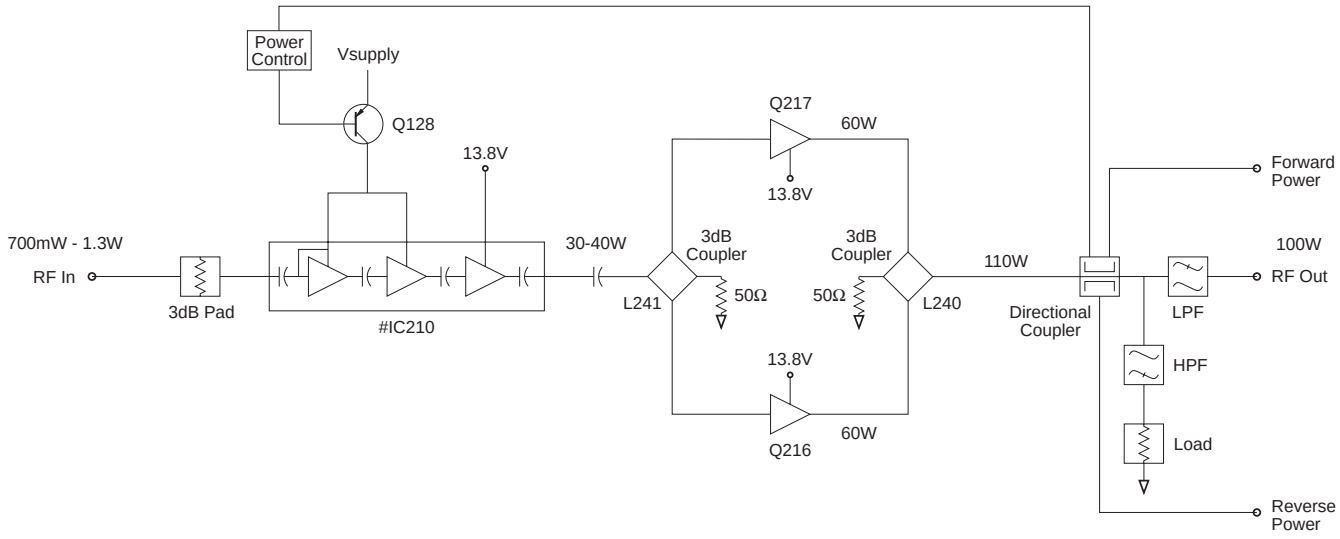


Figure 2.7 T859 High Level Block Diagram

The T858 and T859 comprise a two-stage RF power amplifier with extensive control circuitry:

- the input stage consists of a single, three-stage RF power module which increases the drive level to approx. 30W (40W typical);

- the final stage in the T858 is composed of a single transistor (Q216) which provides the rated output power; the final stage in the T859 is composed of two transistors (Q216, Q217) whose outputs are combined to provide the rated output power.

Figure 2.6 and Figure 2.7 show the configuration of each of the main circuit blocks on a functional level, while fold-outs Figure 1.3 and Figure 1.5 show their location on the PCB.

2.2.2 RF Circuitry

(Refer to Figure 2.6, Figure 2.7 and the RF section circuit diagrams in Section 5.)

The driver stage of the T858 consists of a three-stage RF power module (#IC210) which delivers 30-40W to the final amplifier (Q216). The output from the final is passed to the antenna socket via the harmonic filter.

The driver stage of the T859 consists of a three-stage RF power module (#IC210) which delivers 30-40W to the final transistors. The signal is split via a 3dB quadrature hybrid (L241) and used to drive the two final amplifiers (Q216, Q217). The outputs from these final stages are recombined by L240 and passed to the antenna socket via the harmonic filter.

The diplexer presents the final amplifiers with a good load at harmonic frequencies, which helps to achieve the expected harmonic attenuation in the output filter.

The directional coupler senses forward and reflected power, which is rectified (D205 & D206) and passed to the control circuitry for metering, alarm and power control purposes.

Power control is via a series pass transistor (Q137 [Q128]), which controls the supply voltage on the first two-stage of #IC210.

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2.2.3 Control Circuitry

(Refer to the control section circuit diagrams in Section 5.)

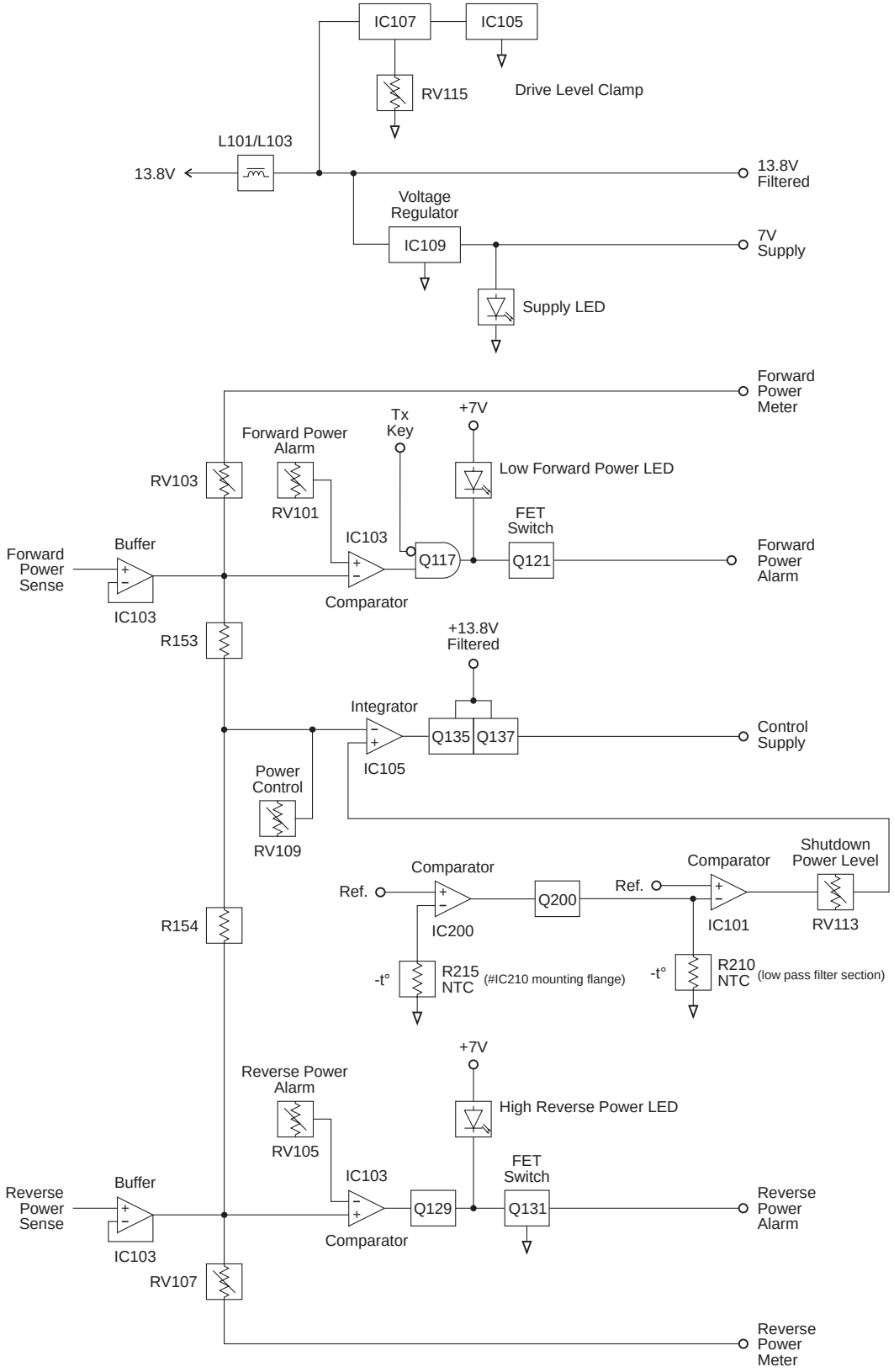


Figure 2.8 T858 Control Circuitry Block Diagram

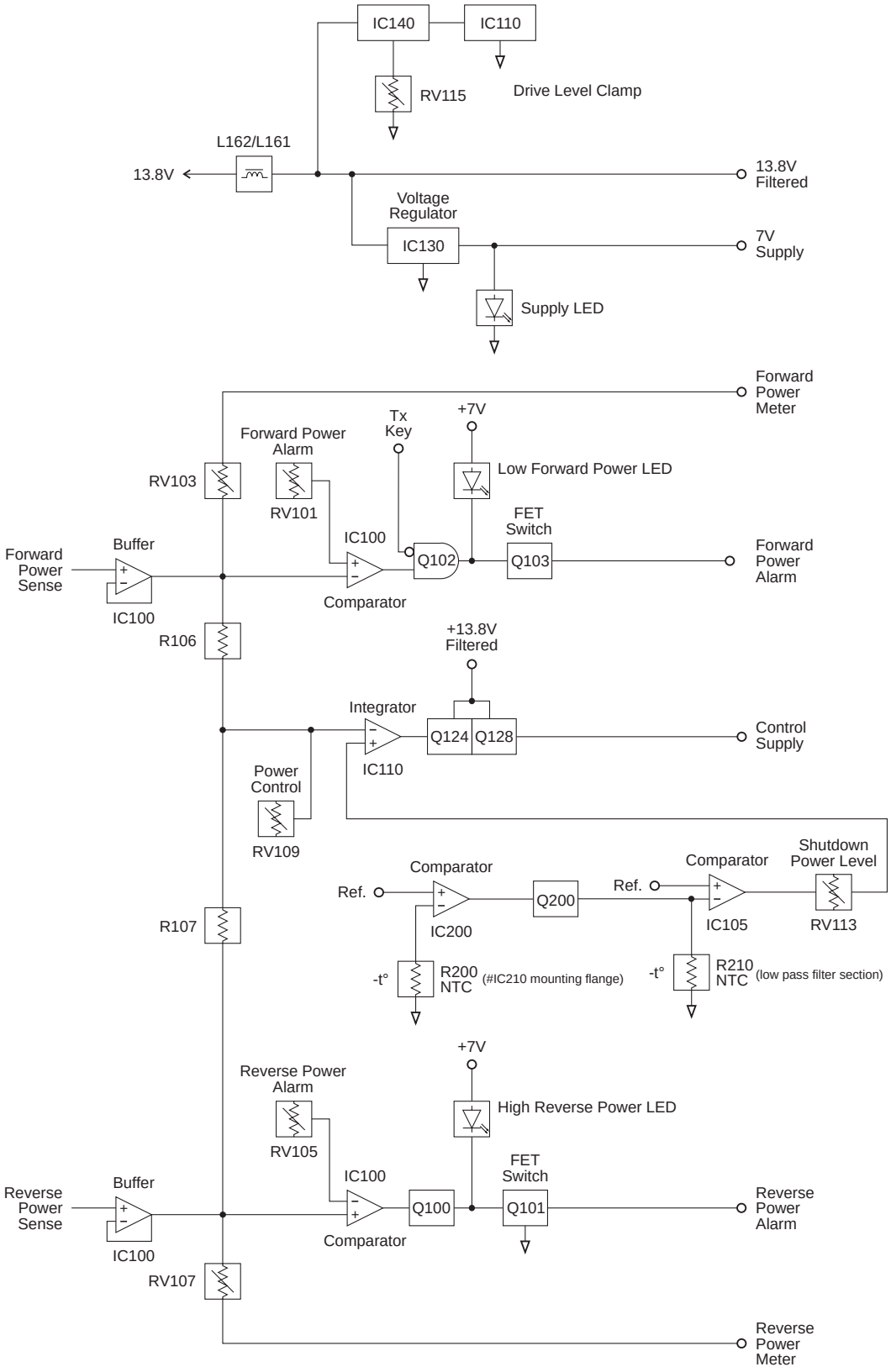


Figure 2.9 T859 Control Circuitry Block Diagram

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2.2.3.1 Power Control

The DC voltages from the directional coupler representing forward and reflected power are buffered by the two voltage followers, IC103 [IC100] pins 1, 2 & 3 and pins 12, 13 & 14. Their outputs are summed at an integrator (IC105 [IC110] pins 1, 2 & 3), which drives the series pass control elements (Q135 & Q137 [Q124 & Q128]).

Forward and reflected power are summed so that, under high output VSWR, the power control turns the PA down. This is because the control loop adjusts for the same DC voltage from the directional coupler that would have been present if there were no reflected power.

2.2.3.2 Driver Power Level

The maximum output power of the T858/859 can be limited by placing a ceiling on the driver output power level using RV115 (accessible through the side cover). For example, if RV115 is set for a maximum output power of 50W, the range of adjustment using RV109 (front panel power adjust) will be 20 to 50W.



Caution: **The driver power level clamp (RV115) is factory set to give a maximum power output at room temperature of 60W for the T858 and 110W for the T859. The unit may be damaged if this level is increased.**

2.2.3.3 Thermal Protection

At excessively high temperatures, the output power will automatically reduce to a preset level (set by RV113), thus preventing the PA from overheating.

Ambient temperature within the PA is measured by a thermistor controlled voltage divider (R168 [R177], R210) which applies a voltage to a comparator with hysteresis (IC101 [IC105] pins 8, 9 & 10). This thermistor is located on the PCB in the low pass filter cavity.

Thermal protection is also provided for the RF power module to prevent the module itself from overheating. This protection consists of a thermistor controlled voltage divider (R203, R215 [R200]) which sets a voltage on a comparator with hysteresis (IC200 pins 1, 2 & 3). The thermistor is located on the module flange.

The output current from all comparators is summed into the power control network via RV113 so that the power level to which the PA must turn down may be set.

2.2.3.4 Forward And Reverse Power Alarms

If forward power drops below, or reverse power rises above, presettable limits, alarms may be triggered.

The alarm outputs are open drain configuration and are low under normal conditions (i.e. forward and reverse power levels are normal).

IC103 [IC100] pins 5, 6 & 7 and pins 8, 9 & 10 form comparators with thresholds

adjusted via RV101 (forward power) and RV105 (reverse power) respectively. The inputs are from the forward and reverse power signals from the directional coupler, buffered by IC103 [IC100] pins 1, 2 & 3 and pins 12, 13 & 14. Thus, the power levels at which the forward and reverse power alarms are triggered are defined by RV101 and RV105 respectively.

2.2.3.5 Forward And Reverse Power Metering

Forward and reverse power signals from the two IC103 [IC100] buffers are available for metering purposes. The output currents are adjustable via RV103 (forward power) and RV107 (reverse power).

2.2.3.6 T859 Fan Control Circuitry

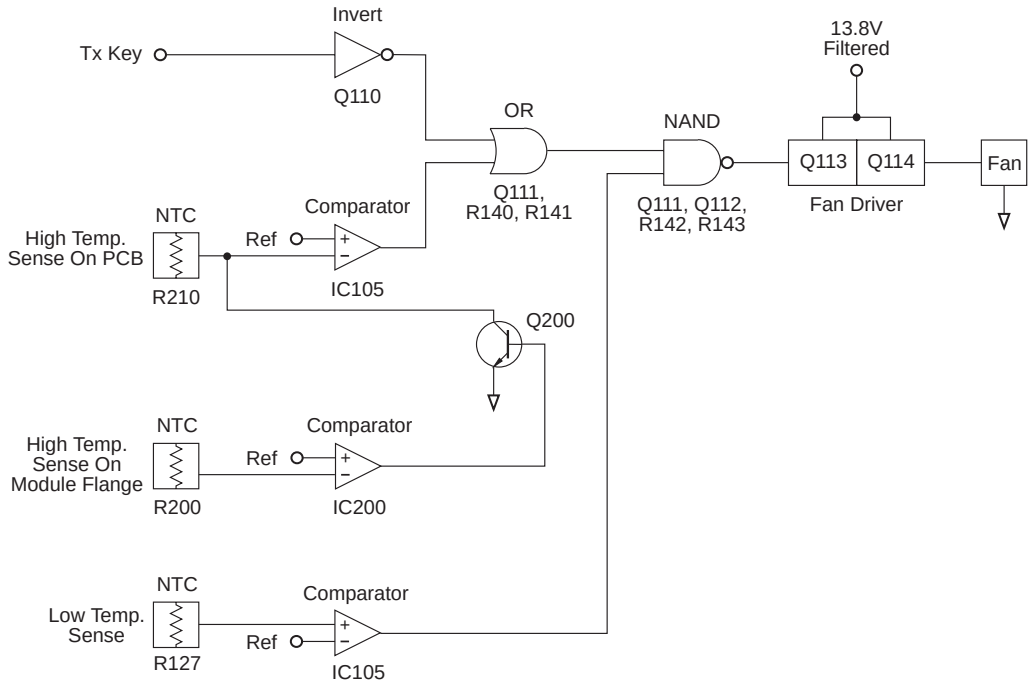


Figure 2.10 T859 Fan Control Logic Diagram

Comparator IC105 pins 12, 13 & 14 are set to switch at heatsink temperatures greater than +90°C or RF power module flange temperatures greater than +110°C, and pins 1, 2 & 3 at temperatures less than -10°C.

A logic AND function is applied to the comparator outputs by Q111 and Q112, thereby turning on the fan unconditionally (via Q113 and Q114) if the heatsink temperature exceeds +90°C or the module flange temperatures exceed +110°C.

A logic OR function is applied to comparator IC105 pins 12, 13 & 14 and Tx KEY signals, thereby turning on the fan when the transmitter is keyed and the temperature is between -10°C and +90°C (or +110°C for the module flanges).

If the temperature drops below -10°C, Q112 is turned off, preventing Q111 from activating the fan.

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2.2.4 Power Supply & Regulator Circuits

(Refer to the control section circuit diagram in Section 5.)

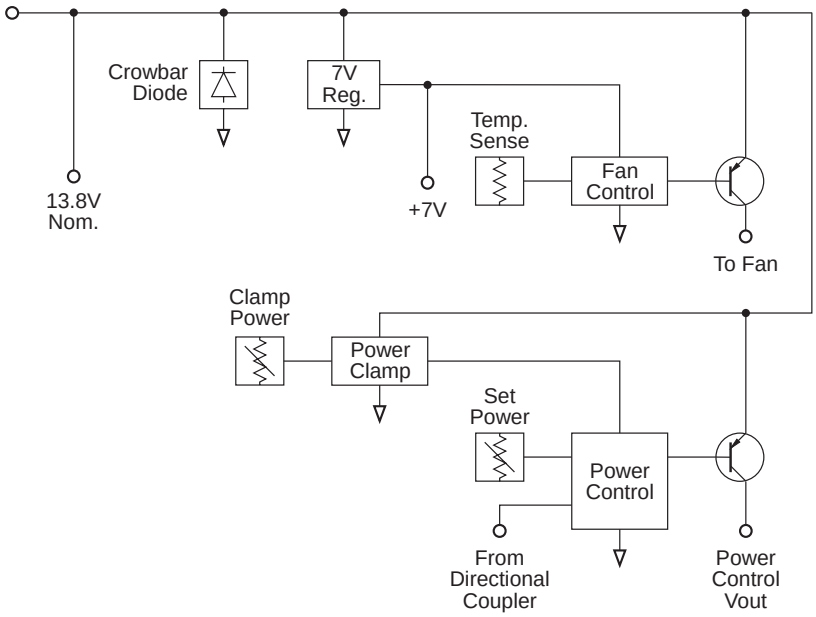


Figure 2.11 T858/859 Power Supply & Regulator Circuitry Block Diagram

The T858/859 are designed to operate off a 10.8-16V DC supply (13.8V nominal). A 7V supply runs directly off the 13.8V rail, driving the fan control, power control and alarm circuitry.

A crowbar diode is fitted for protection against connection to a power supply of incorrect polarity. It also provides transient overvoltage protection.

Note: A fuse must be fitted in the power supply line for the diode to provide effective protection.

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3 T858/859 Initial Adjustment



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following section describes the full adjustment procedure to be carried out before operating the T858/859, both with and without RF power modules.

Section 3.1 describes the older design T858/859 without RF power modules, while Section 3.2 describes the newer design T858/859 with RF power modules. Figure 1.1 shows how to identify your PA design without having to remove the side cover.

The following topics are covered in this section.

Section	Title	Page
3.1	**T858/859 Without RF Power Modules**	**3.3**
3.1.1	Test Equipment Required	3.3
3.1.2	Preliminary Checks	3.4
3.1.3	RF Alignment	3.4
3.1.3.1	Standard Tuning Procedure	3.4
3.1.3.2	Tuning Control Settings	3.5
3.1.3.3	Tuning For Best Efficiency	3.5
3.1.4	Setting The Output Power	3.6
3.1.5	T858 High Temperature Shutdown Power Level	3.7
3.1.6	T859 High Temperature Shutdown Power Level	3.7
3.1.7	Remote Forward Power Meter Calibration	3.8
3.1.8	Remote Reverse Power Meter Calibration	3.8
3.1.9	Setting Alarm Levels	3.8
3.1.9.1	Forward Power	3.8
3.1.9.2	Reverse Power	3.8
3.2	**T858/859 With RF Power Modules**	**3.9**
3.2.1	Test Equipment Required	3.9
3.2.2	Shorting Links	3.10
3.2.3	Preliminary Checks	3.10
3.2.4	Setting The Output Power	3.11
3.2.5	High Temperature Shutdown Power Level	3.12
3.2.6	Remote Forward Power Meter Calibration	3.12
3.2.7	Remote Reverse Power Meter Calibration	3.12

Section	Title	Page
3.2.8	Setting Alarm Levels	3.13
3.2.8.1	Forward Power	3.13
3.2.8.2	Reverse Power	3.13

Figure	Title	Page
	T858/859 Without RF Power Modules	
3.1	T858/859 Test Equipment Set-up	3.3
3.2	T858/859 Tuning Control Settings	3.5
	T858/859 With RF Power Modules	
3.3	T858/859 Test Equipment Set-up	3.9
	Main Adjustment Control Fold-out Pages	
3.4	T858 Main Adjustment Controls (Without RF Power Module)	3.15
3.5	T858 Main Adjustment Controls (With RF Power Module)	3.17
3.6	T859 Main Adjustment Controls (Without RF Power Module)	3.19
3.7	T859 Main Adjustment Controls (With RF Power Module)	3.21

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3.1 T858/859 Without RF Power Modules

Refer to Section 5 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components. Refer also to Figure 3.4 and Figure 3.6 which show the location of the main tuning and adjustment controls.

3.1.1 Test Equipment Required

- DC power supply capable of delivering the following at 13.8V:

  T858 >16A (e.g. Tait T807)
  T859 >25A (e.g. Tait T808).

- Multimeter or DMM (e.g. Fluke 77).
- RF power meter (e.g. HP 435 series or Bird Wattmeter).
- 250W 30dB 50 ohm pad (e.g. Weinschel 40-20-34), or other suitable load.
- 300W 3dB 50 ohm pad (e.g. Weinschel 40-3-34).
- 'BNC' to 'N' type adaptors (e.g. Amphenol, Greenpar).
- Appropriate trimming tools.

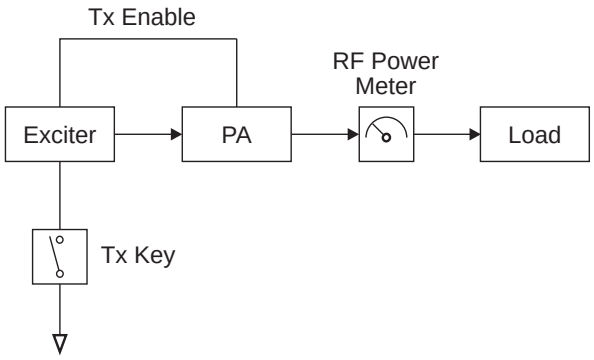


Figure 3.1 T858/859 Test Equipment Set-up

3.1.2 Preliminary Checks

Check for short circuits between the positive rail and earth.

Set up the test equipment as in Figure 3.1.

Connect the T858/859 to a 13.8V DC supply.

Check that the quiescent current is approximately 45mA.

To key the transmitter, earth the key line (D-range 1 pin 13) on the exciter.

Check that the power supply is still at 13.8V under load.

Check that the regulated power control supply is approximately 7V (pin 1 of IC2).

Note: The output power and alarm levels should be set with the cover shield on. If the cover is removed for other adjustment procedures, make a final check of the output power and alarm levels with the cover shield on.

3.1.3 RF Alignment

3.1.3.1 Standard Tuning Procedure

T859 Only: For sets with serial numbers following 217262, set RV69 (driver power level) fully clockwise.

Preset the tuning controls as shown in Figure 3.2.

Set RV63 (front panel power control) fully clockwise.

Key on the drive source.

T859 Only: Adjust CV1 for maximum output.

Adjust CV8 for maximum output.

Adjust CV32 for maximum output.

Adjust CV51 and CV57 for maximum output.

Adjust CV34 and CV35 for maximum output.

Recheck all settings. The power output should exceed:

T858	60W
T859	110W.

T859 Only: For sets with serial numbers following 217262, adjust RV69 (driver power level) until the output power drops to 110W.

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Adjust RV63 to reduce the power output to the required level (e.g. 50W for T858, 100W for T859).

3.1.3.2 Tuning Control Settings

After alignment the settings of the tuning controls should approximate those shown in Figure 3.2

	450MHz	485MHz	520MHz
CV32, CV51, CV57			
CV34, CV35			
CV8, CV1			

Figure 3.2 T858/859 Tuning Control Settings

3.1.3.3 Tuning For Best Efficiency

Retune CV32, CV51 and CV57 towards maximum capacitance to obtain minimum supply current, but do not exceed a maximum drop of 0.5A per control.

Check that the supply current is:

T858 <12A for 50W output power
T859 <22A for 100W output power.

Note: These control settings are normally very close to minimum supply current. If the current is reduced too far, maximum power output will drop and 2f rejection may degrade.

3.1.4 Setting The Output Power

Caution: **If the high temperature shutdown power level has not yet been set or is unknown, check that the unit does not overheat while setting the output power.**

Note 1: Cables and connectors can easily cause a power loss of several watts if either too long or poorly terminated. Always use the shortest possible leads (or connectors instead of leads) between the T858/859 and power meter set-up.

Note 2: You will need appropriate extension leads if you wish to carry out the adjustment procedures with the T858/859 withdrawn from the rack in the latched position. Alternatively, disconnect and withdraw the T858/859 and reconnect it behind the rack.

Note 3: The actual power used may be limited by regulatory requirements.

Connect the exciter output to the PA input via a thru-line wattmeter with a 5W full scale reading. Special BNC/N leads will be required.

Connect an RF power meter to the PA output.

Set RV63 (front panel power control) fully clockwise.

Key on the drive source.

Check that the exciter power is 700mW to 1.3W.

Check that the power output exceeds:

T858	60W
T859	110W.

Adjust RV63 to reduce the power output to the required level (e.g. 50W for T858, 100W for T859).

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3.1.5 T858 High Temperature Shutdown Power Level

Note 1: The temperature shutdown circuit is factory set to approximately 130°C and 20W. RV69 and RV74 should not be readjusted if normal operation is required.

Note 2: This Section applies ***only*** to T858 PAs, and T859 PAs with serial numbers prior to 217262.

Power up the T858 and adjust RV63 (front panel power control) for the normal operating power level.

Turn RV69 (shutdown temperature) fully anticlockwise to avoid RF power cycling between the levels set by RV63 and RV74.

Apply heat to the NTC (R72) with the tip of a soldering iron.

Adjust RV74 (shutdown power level) to the desired level. For continuous operation during fault conditions, set the shutdown power to 20W.

Adjust RV69 so that the voltage at IC1 pin 13 is 380mV.

3.1.6 T859 High Temperature Shutdown Power Level

Note 1: The temperature shutdown circuit is factory set to approximately 130°C and 40W. RV74 should not be readjusted if normal operation is required. Temperature adjustment is not provided on the T859.

Note 2: This Section applies ***only*** to T859 PAs with serial numbers from 217263 onwards. For T859s with serial numbers prior to this refer to Section 3.1.5 above.

Power up the T859 and adjust RV69 (driver power level) and RV63 (front panel power control) for the normal operating power level.

Apply heat to the NTC (R72) with the tip of a soldering iron.

Adjust RV74 (shutdown power level) to the desired level. For continuous operation during fault conditions, set the shutdown power to 40W

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3.1.7 Remote Forward Power Meter Calibration

If a remote meter is connected, adjust RV43 (forward power meter calibration control) for the remote reading to agree with the RF power meter reading.

3.1.8 Remote Reverse Power Meter Calibration

If a remote meter is connected, connect a 50 ohm 3dB pad (with the output open circuit) to the PA output.

Apply RF drive and Tx-Key.

Adjust RV57 (reverse power meter calibration control) for a quarter of the forward power reading.

3.1.9 Setting Alarm Levels

Note: If forward and reverse power metering is being used, set up their calibration (Section 3.1.7 and Section 3.1.8) before setting the alarm levels.

3.1.9.1 Forward Power

Power up the T858/859 and adjust RV63 (front panel power control) so that the output power is at the alarm level required (e.g. 40W if the PA normally operates at 50W).

Adjust RV48 (forward power alarm set) so that the forward power alarm LED lights.

Check the alarm level setting by adjusting the power up and down and observing the alarm LED. A few watts hysteresis can be expected.

Readjust RV63 for the normal operating level.

Note: Remote indication is available at D-range pin 3.

3.1.9.2 Reverse Power

Power up the T858/859 and adjust RV63 (front panel power control) for the normal operating power level.

Place a known mismatch of the required value (e.g. 3:1 VSWR) and adjust RV52 (reverse power alarm set) so that the reverse power alarm LED lights.

Example: A VSWR of 3:1 can be simulated by connecting an unterminated 3dB pad to the PA output. This will result in a return loss of 6dB.

Note: Remote indication is available at D-range pin 4.

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3.2 T858/859 With RF Power Modules

Refer to Section 5 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components. Refer also to Figure 3.5 and Figure 3.7 which show the location of the main adjustment controls.

Note 1: The T858/859 with RF power modules require no RF tuning or alignment.

Note 2: Where the same component has different circuit references in the T858 and T859, in this and following sections the T858 circuit reference is given first, followed by the T859 circuit reference in brackets, e.g. Q137 [Q128].

3.2.1 Test Equipment Required

- DC power supply capable of delivering >16A (T858) or >20A (T859) at 13.8V.
- Multimeter or DMM (e.g. Fluke 77).
- RF power meter (e.g. HP 435 series or Bird Wattmeter).
- 150W 30dB attenuator (T858) or 250W 50dB attenuator (T859).
- 150W 3dB 50 ohm pad.
- 'BNC' to 'N' type adaptors (e.g. Amphenol, Greenpar).
- Appropriate trimming tools.

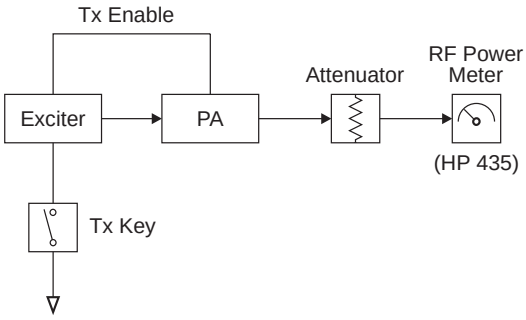


Figure 3.3 T858/859 Test Equipment Set-up

Caution: **Do not connect attenuators or DC blocks between the T857 and T858/859 or the cyclic keying circuitry will not function correctly.**

3.2.2 Shorting Links

There are seven shorting links on PL110 in the control section circuitry, as described in the table below. Ensure that these links are set as standard before starting and after completing the adjustment procedure.

Link Pins	Standard Setting	Function
1-2, 3-4, 7-8, 9-10	not linked	Not used.
5-6	not linked	Pins 5-6 are provided for simulating high operating temperatures during initial adjustment. Bridging this link shorts out R215 [R200] and R210 (NTCs), thus turning on the thermal protection circuitry. They should not be linked for normal operation.
11-12 13-14	linked	Pins 11-12 and 13-14 are provided for factory testing only. The PA will not function correctly if these settings are changed.

3.2.3 Preliminary Checks

Check for short circuits between the positive rail and earth.

Set up the test equipment as in Figure 3.3.

Connect the T858/859 to a 13.8V DC supply.

Check that the quiescent current is <50mA.

To key the transmitter, earth the key line (pin 13) on the exciter.

Check that the power supply is still at 13.8V under load.

Check that the regulated power control supply is approximately 7V.

Note: The output power and alarm levels should be set with the side cover on. If the cover is removed for other adjustment procedures, make a final check of the output power and alarm levels with the side cover on.

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3.2.4 Setting The Output Power



Caution: **If the high temperature shutdown power level has not yet been set or is unknown, check that the unit does not overheat while setting the output power.**

Note 1: You must set up the T858/859 according to the following instructions ***before*** operation in a radio system. ***Do not*** use the factory default settings as they may not suit your operating frequency.

To obtain optimum performance from the T858/859, ensure that the exciter used in this set-up procedure is the one that will be used with the PA in the radio system.

Note 2: Cables and connectors can easily cause a power loss of several watts if either too long or poorly terminated. Always use the shortest possible leads (or connectors instead of leads) between the T858/859 and power meter set-up.

You will need appropriate extension leads if you wish to carry out the adjustment procedures with the T858/859 withdrawn from the rack in the latched position. Alternatively, disconnect and withdraw the T858/859 and reconnect it behind the rack.

Note 3: The actual power used may be limited by regulatory requirements.

Set the exciter to the required operating frequency.

Connect the exciter output to the PA input via a thru-line wattmeter with a 1W full scale reading. Special BNC/N leads will be required.

Connect an RF power meter to the PA output connector via a suitable attenuator:

T858 - 30dB
T859 - 50dB.

With the exciter ***not*** keyed, remove the label over the adjustment hole for RV115 (driver power clamp) and set RV115 to maximum (fully clockwise).

Set %RV109 (front panel power control) to maximum (fully clockwise).

Key on the exciter.

Quickly (within 30 seconds) adjust RV115 until the output power is:

T858 - 60W
T859 - 110W.

Adjust %RV109 to set the power output to the following levels (or less if required):

T858 - 50W
T859 - 100W.

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Caution: ***Do not*** **allow the output power to exceed these levels as this will seriously reduce the reliability of the PA.**

Do not **use RV115 to set the output power as this will disable the thermal protection circuitry. The power clamp must always be 10W (T858)/ 20W (T859) above the set output power.**

Replace the label over the adjustment hole for RV115.

3.2.5 High Temperature Shutdown Power Level

Set %RV109 (front panel power control) to the required output power.

Simulate high operating temperatures by placing a shorting link on PL110 pins 5-6 (***do not*** use either of the links from PL110 pins 11-12 or 13-14 to do this).

Adjust RV113 (shutdown power level) for an output power of:

T858 - 20W
T859 - 40W.

Remove the shorting link from PL110 pins 5-6 to return the PA to normal operation.

3.2.6 Remote Forward Power Meter Calibration

If a remote meter is connected, adjust RV103 (forward power meter calibration) for the remote reading to agree with the RF power meter reading.

3.2.7 Remote Reverse Power Meter Calibration

If a remote meter is connected, connect a 50 ohm 3dB pad (with the output open circuit) to the PA output.

Apply RF drive and Tx-Key.

Adjust RV107 (reverse power meter calibration) for a quarter of the forward power reading.

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3.2.8 Setting Alarm Levels

Note: If forward and reverse power metering is being used, set up their calibration (Section 3.2.6 and Section 3.2.7) before setting the alarm levels.

3.2.8.1 Forward Power

Power up the T858/859 and adjust %RV109 (front panel power control) so that the output power is at the alarm level required (e.g. 40W if the T858 normally operates at 50W).

Adjust RV101 (forward power alarm set) so that the forward power alarm LED lights.

Check the alarm level setting by adjusting the power up and down and observing the alarm LED. A few watts hysteresis can be expected.

Readjust %RV109 for the normal operating level.

Note: Remote indication is available at pin 3 of D-range 1.

3.2.8.2 Reverse Power

Power up the T858/859 and adjust %RV109 (front panel power control) for the normal operating power level.

Place a known mismatch of the required value (e.g. 3:1 VSWR) and adjust RV105 (reverse power alarm set) so that the reverse power alarm LED lights.

Example: A VSWR of 3:1 can be simulated by connecting an unterminated 3dB pad (50W) to the PA output. This will result in a return loss of 6dB.

Note: Remote indication is available at pin 4 of D-range 1.

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4 T858/859 Fault Finding



Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

The following test procedures and fault finding flow charts may be used to help locate a hardware problem, however they are by no means a complete fault finding procedure. If you still cannot trace the fault after progressing through them in a logical manner, contact your nearest Tait Dealer or Customer Service Organisation. If necessary, you can get additional technical help from Customer Support, Radio Systems Division, Tait Electronics Ltd, Christchurch, New Zealand (full contact details are on page 2).

Section 4.1 describes the older design T858/859 without RF power modules, while Section 4.2 describes the newer design T858/859 with RF power modules. Figure 1.1 shows how to identify your PA design without having to remove the side cover.

Refer to Section 5 where the parts lists, grid reference index and diagrams will provide detailed information on identifying and locating components.

The following topics are covered in this section.

Section	Title	Page
4.1	**T858/859 Without RF Power Modules**	**4.3**
4.1.1	Visual Checks	4.3
4.1.2	Component Checks	4.3
4.1.3	DC Checks	4.3
4.1.4	RF Checks	4.4
4.1.4.1	General	4.4
4.1.4.2	PA Faults	4.4
4.1.5	Voltage Chart	4.7
4.1.6	Fault Finding Charts	4.8
4.1.6.1	T858 PA	4.8
4.1.6.2	T858 Power Control	4.9
4.1.6.3	T859 PA	4.10
4.1.6.4	T859 Power Control	4.11
4.1.6.5	T859 Fan Control Circuitry	4.12
4.1.7	Replacing RF Power Transistors	4.13
4.1.8	Removing The PCB From The Heatsink	4.15

Section	Title	Page
4.2	**T858/859 With RF Power Modules**	**4.17**
4.2.1	Visual Checks	4.17
4.2.2	Shorting Links	4.17
4.2.3	Component Checks	4.18
4.2.4	DC Checks	4.18
4.2.5	RF Checks	4.19
4.2.5.1	T858	4.19
4.2.5.2	T859	4.19
4.2.6	Fault Finding Charts	4.23
4.2.6.1	T858 PA	4.23
4.2.6.2	T859 PA	4.24
4.2.6.3	T858 Power Control	4.25
4.2.6.4	T859 Power Control	4.26
4.2.6.5	T859 Fan Control Circuitry	4.27
4.2.7	Replacing RF Power Transistors	4.28
4.2.8	Replacing RF Power Modules	4.30
4.2.9	Removing The PCB From The Heatsink	4.31

Figure	Title	Page
	T858/859 Without RF Power Modules	
4.1	T858/859 Test Break Point Location	4.5
4.2	Typical Transistor/Capacitor Spacing (Not To Scale)	4.13
	T858/859 With RF Power Modules	
4.3	T858 Test Break Point Location	4.21
4.4	T859 Test Break Point Location	4.22
4.5	Typical Capacitor Positioning On T858/859 RF Power Transistors	4.28

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4.1 T858/859 Without RF Power Modules

4.1.1 Visual Checks

Remove the side cover from the T858/859 and inspect the PCB for damaged or broken components, paying particular attention to the surface mounted devices (SMDs). Also check for defective solder joints.

Refer to Section 4.1.7, Section 4.1.8 and Section 3 of Part A for more details on repair and replacement of components.

4.1.2 Component Checks

If you suspect a transistor is faulty, you can assess its performance by measuring the forward and reverse resistance of the junctions. Unless the device is completely desoldered, first make sure that the transistor is not shunted by some circuit resistance. Use a good quality EVM (e.g. Fluke 75) for taking the measurements (or a 20k ohm/V or better multimeter, using only the medium or low resistance ranges).

The collector current drawn by multi-junction transistors is a further guide to their performance.

If an IC is suspect, the most reliable check is to measure the DC operating voltages. Due to the catastrophic nature of most IC failures, the pin voltages will usually be markedly different from the recommended values in the presence of a fault. The recommended values can be obtained from either the circuit diagram or the component data catalogue.

4.1.3 DC Checks

Note: No RF power is to be applied during these checks.

Check that +13.8V is present on the collectors of Q3, Q4, Q5, Q6 and Q7. Make this measurement when the transmitter is not keyed.

Check that approximately 12-13V is present on the collector of Q1 (in the T859 the level is dependent on RV69 being set to maximum).

T858 Only Check that +13.8V is present at pin 4 of IC1 and pin 8 of IC3.

T859 Only Check that +13.8V is present at pin 4 of IC3.

Check that approximately +12V is present at pin 4 of IC1 (the level is dependent on RV69 being set to maximum).

Check that +7.0V is present at the output of regulator IC2.

4.1.4 RF Checks

4.1.4.1 General

You can measure in-circuit RF levels around Q1 and Q3 with an RF probe on which the earth lead has been shortened to a minimum (i.e. 13mm); refer to the PA Fault Finding Charts (Section 4.1.6.1 or Section 4.1.6.3 as appropriate). You must measure all other stages with a power meter at the 50Ω points in the circuit.

For problems with the power control circuitry, refer to the Power Control Fault Finding Charts (Section 4.1.6.2 or Section 4.1.6.4 as appropriate).

4.1.4.2 PA Faults

If a PA fault has occurred, or is suspected, it is easier to find if the various stages are isolated by use of the test breaks (refer to Figure 4.1) and each stage analysed individually. These 50Ω test break points have been included throughout the RF circuitry to enable individual transistor stages to be tested.

Note 1: Use good quality 50Ω coax for the "flying" test leads.

Note 2: Ensure each output is terminated in a 50Ω load of the correct power rating.

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replace A4 pages D4.5/D4.6 with A3 pages D4.5/D4.6

Figure 4.1 T858/859 Test Break Point Location

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4.1.5 Voltage Chart

Test conditions:

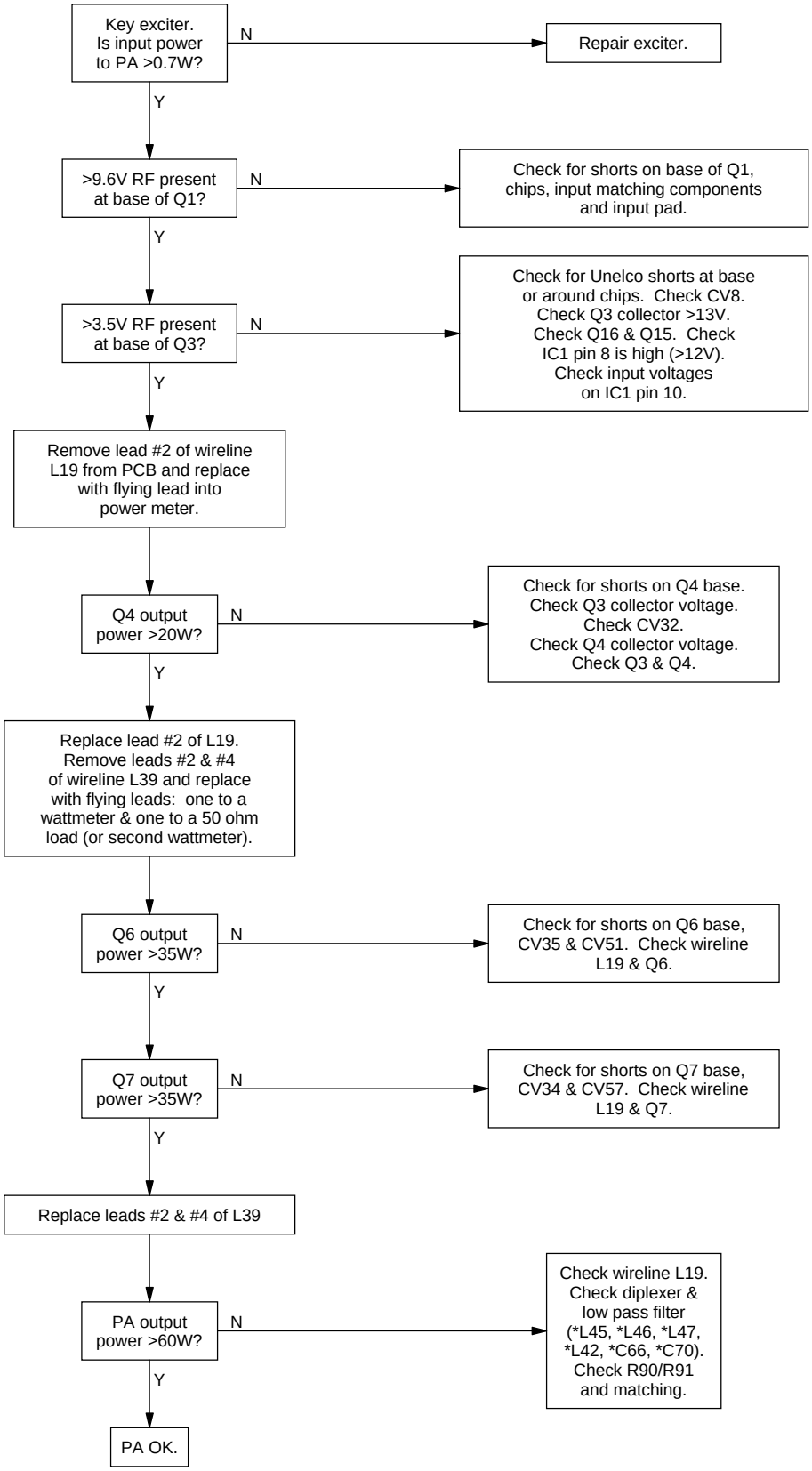
- typical DC voltages measured with Fluke 77 DVM
- supply voltage 13.8V at socket
- transmitter unkeyed
- allow ±20% for spread of transistor characteristics.

Device	Emitter	Base	Collector
Q1	0.0V	0.0V	13.0V
Q3	0.0V	0.0V	13.8V
Q4	0.0V	0.0V	13.8V
Q6	0.0V	0.0V	13.8V
Q7	0.0V	0.0V	13.8V
Q11	1.8V	2.2V	5.9V
Q13	0.0V	0.0V	5.9V
Q15	13.0V	13.6V	13.6V
Q16	13.8V	13.6V	13.0V

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4.1.6 Fault Finding Charts

4.1.6.1 T858 PA

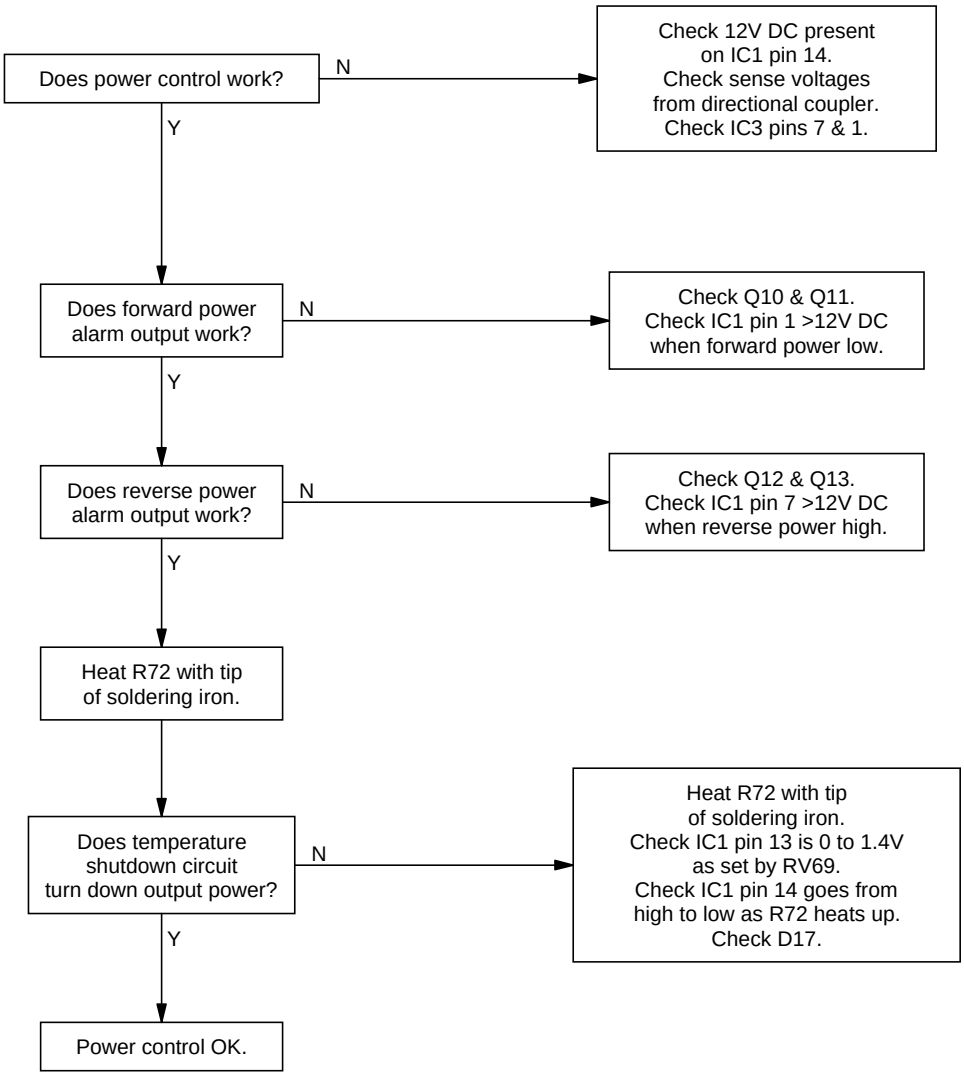


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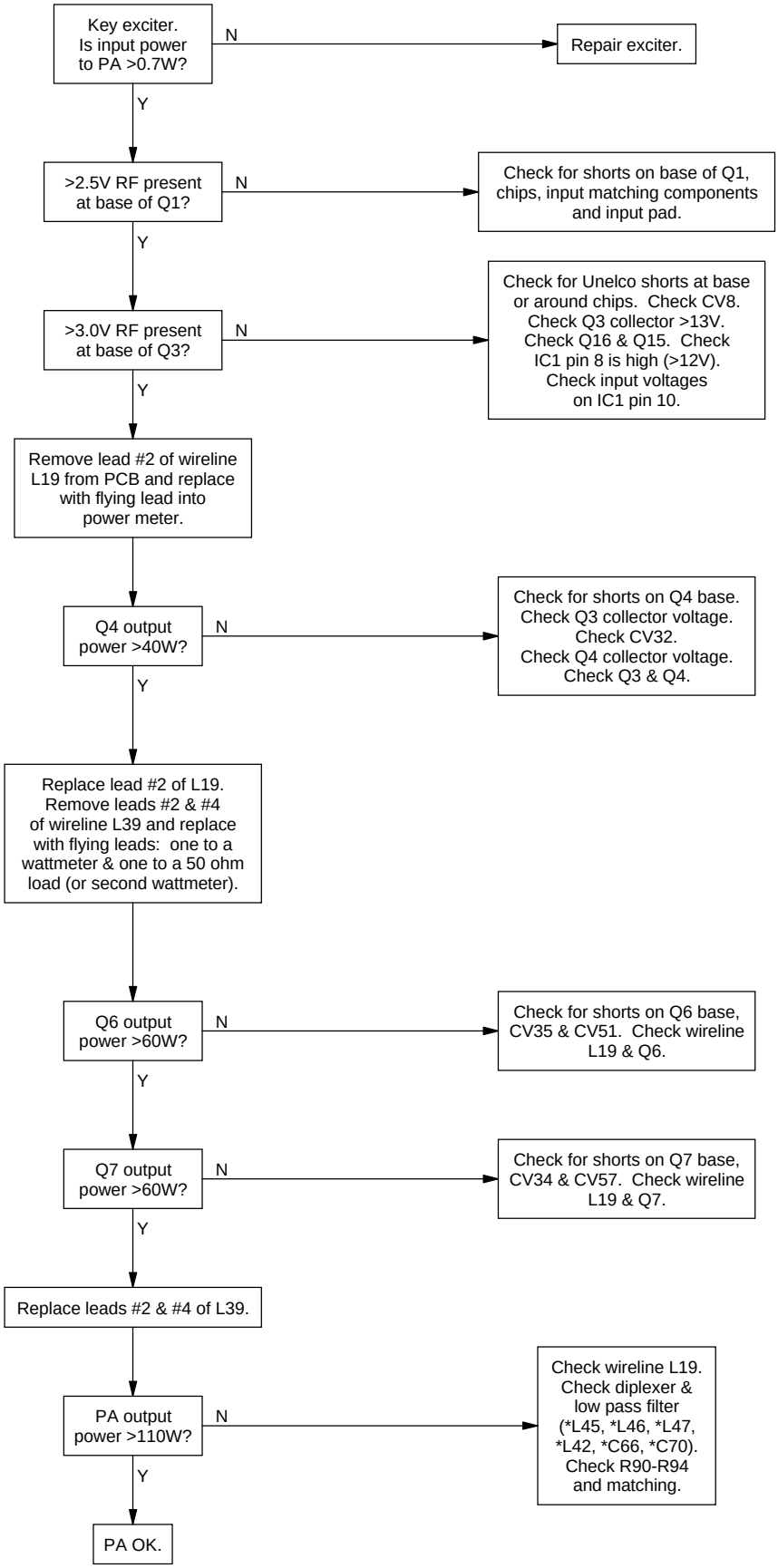
4.1.6.2 T858 Power Control

Approximate voltages under normal operating conditions:

Measurement	Output Power	
	20W	50W
forward power at "FWD-PWR" pad (beside IC3)	2.5V	4V
RV63/R64 (RV63 wiper)	1.4V	2.1V



4.1.6.3 T859 PA

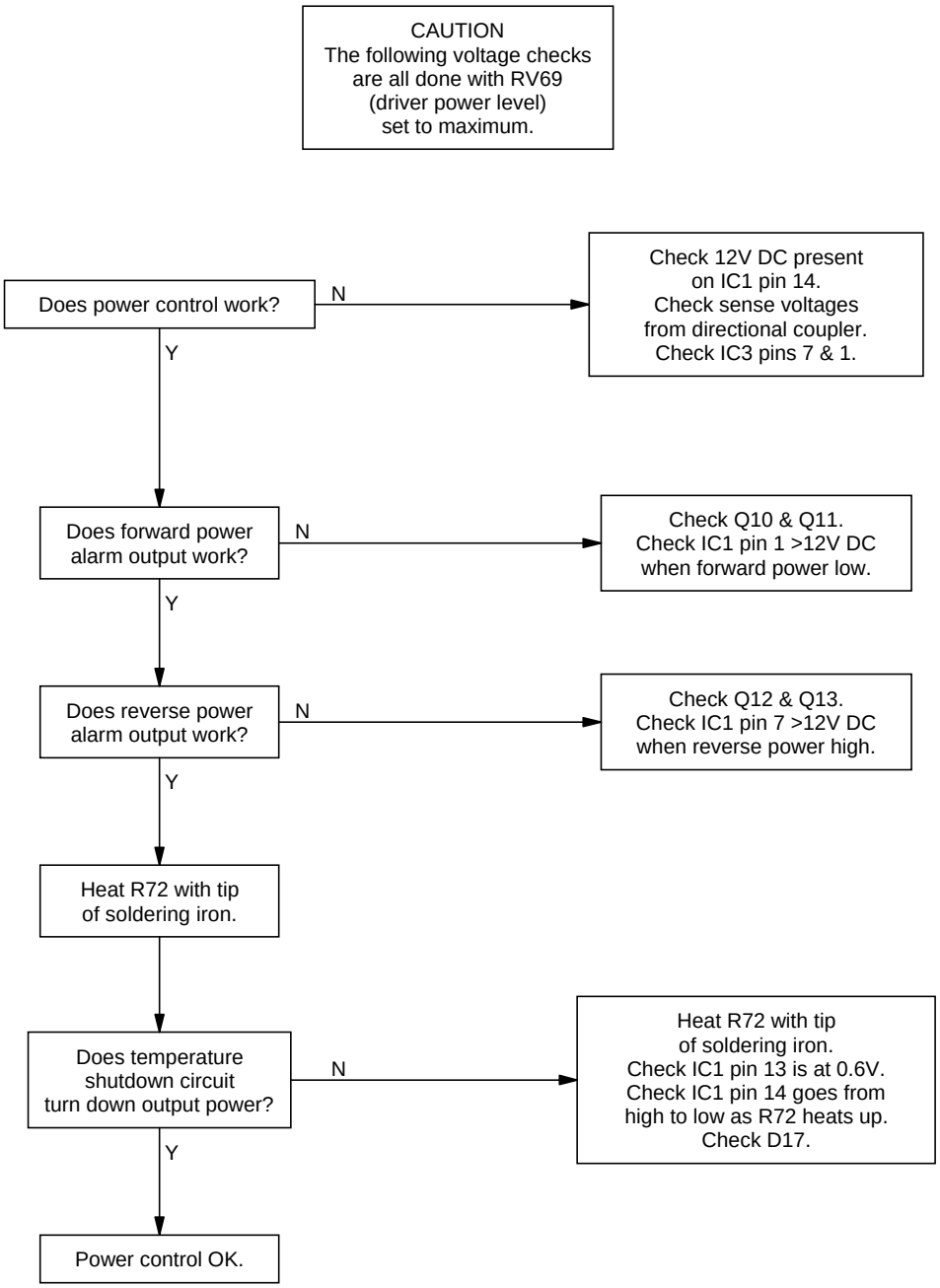


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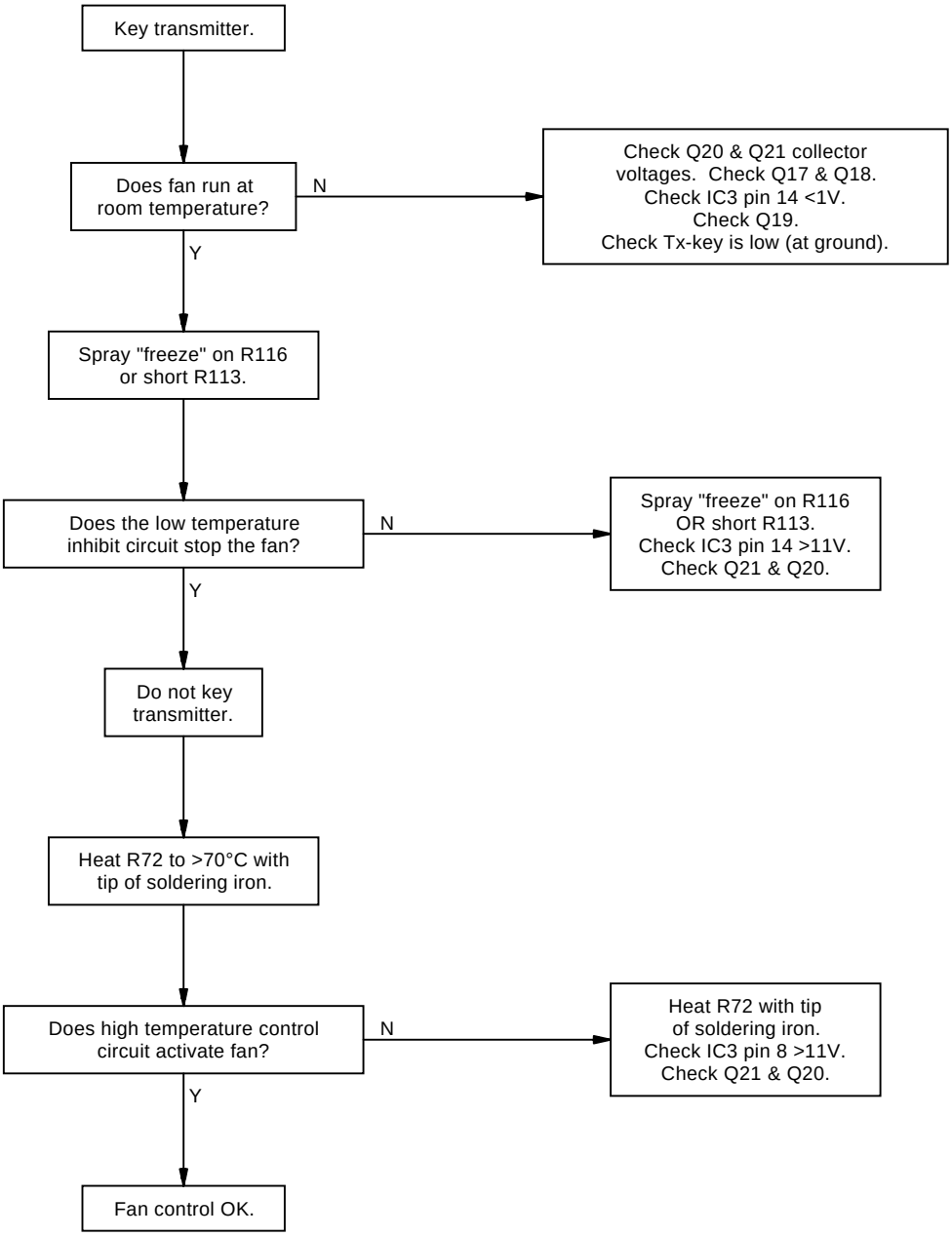
4.1.6.4 T859 Power Control

Approximate voltages under normal operating conditions:

Measurement	Output Power	
	20W	50W
forward power at "FWD-PWR" pad (beside IC3)	2.5V	4V
RV63/R64 (RV63 wiper)	1.4V	2.1V



4.1.6.5 T859 Fan Control Circuitry



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4.1.7 Replacing RF Power Transistors

Caution: **Failure to comply with the following procedure can result in failure of the device due to poor heatsinking, or worse, can endanger the health of the assembler if the beryllium oxide die carrier is smashed during assembly.**

Caution: **As the location of certain components in the PA is critical to performance, it is important that any components removed or disturbed are refitted in *exactly* the same position.**

Before attempting to remove a transistor, measure the distance between the capacitors and transistor body to the nearest 0.5mm (measurement "A" in Figure 4.2) so that the capacitors can be replaced in *exactly* the same position. These measurements are shown in Figure 4.2 for the 6LFL package, however the same procedure applies for the SOE (stud) package.

Caution: **Do not apply too much heat or pressure to the PCB pads and tracks as you may damage them or lift them from the PCB, causing permanent damage to the PA.**

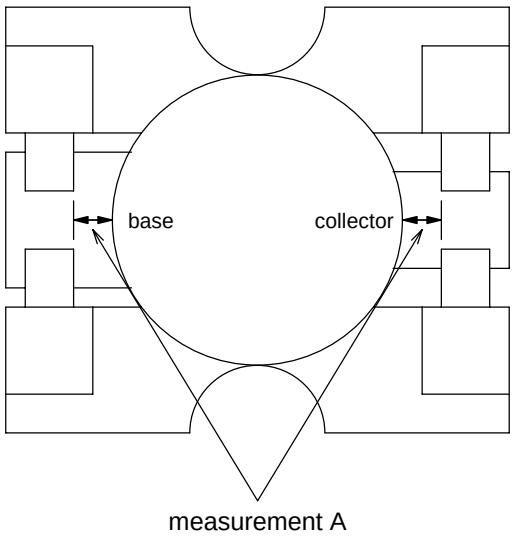


Figure 4.2 Typical Transistor/Capacitor Spacing (Not To Scale)

Desolder and remove the components from around the transistor.

Q4/Q6/Q7 Only: Desolder and remove the two solder tags.

Desolder the transistor tabs by heating with a soldering iron and lifting away from the PCB with a screwdriver or thin stainless steel spike, then remove the device.

Q1/Q3 Only: Unscrew the transistor stud nut and remove the device. In the T859 you will need to remove the fan to access the stud nuts.

Remove any excess solder from the PCB pads with solder wick.

Trim the tabs of the replacement transistor so that the device sits neatly on the PCB pads provided.

Lightly tin the underside of the transistor tabs. Remove any excess solder to leave a thin, even layer on the tabs.

Apply a small amount of heatsink compound (Dow-Corning 340 or equivalent) to the transistor mounting surface. Sufficient compound should be used to ensure an even film over the entire mounting surface.

Place the transistor on the PCB in the correct orientation and ensure the tabs are flush to the surface.

Q1/Q3 Only: Lightly solder one tab to the PCB, then torque down the retaining nut to the correct torque (0.7Nm/6in.lbf.). Refit the fan to the T859.



Caution: **Do not solder all the tabs before torquing down otherwise the device may be broken.**

Q4/Q6/Q7 Only: Refit the solder tags.

Solder all transistor tabs to the PCB.

Replace each component in exactly the same position as noted previously.

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4.1.8 Removing The PCB From The Heatsink

Note: This is a lengthy procedure and should be considered only after all other checks have been carried out. There are no components on the bottom of the PCB.

Remove the harmonic filter shield lid.

T859 Only: Desolder the power feed to the fan from the PCB.

Remove the 50 ohm output N-type connector by unscrewing it from the heatsink casting and desoldering it from the PCB.

Unplug the 50 ohm input coaxial cable from the PCB, unscrew the BNC connector from the heatsink, and remove the connector and cable (cutting cable ties as required).

Desolder the positive and negative power feed wires from the PCB.

Desolder the alarm and metering wires from the PCB.

Remove the 2 screws securing the D-range connector and PCB to the heatsink and withdraw the assembly and wires from the heatsink (cutting cable ties as required).

Remove the transistor stud nuts and mounting screws. In the T859 you will need to remove the fan to access the stud nuts.

Remove the mounting screws for the TO-220 devices:

T858/859	Q16, R89, R90 and R91
T859	R92, R93 and R94.

Remove the retaining screws for the wireline couplers (L19 and L39).

Remove the PCB retaining screws:

T858	14
T859	11.

Push the three LEDs out of their front panel grommets.

Lift the PCB gently from the heatsink to gain access to the underside of the board.

Note: R89-94 and Q1-Q7 may be stuck down with heatsink compound. You may need to carefully prise them away from the heatsink with a small screw-driver.



Caution: **Keep the heatsink compound clean while the PCB is detached. Any objects caught in the heatsink compound underneath the device which prevent effective earthing and/or heatsinking may cause the device to fail.**



Caution: **Do not operate the PA with the PCB detached as the heatsink is used for earthing and heat dissipation.**

To replace the PCB, reverse the order of removal, taking care that the wiring is correctly positioned and not 'pinched'.

Q1/Q3 Only: Torque down the retaining nut to the correct torque (0.7Nm/ 6in.lbf.).

Make sure that the heatsink compound has stayed clean, and that the insulating pad for Q16 is not damaged.

If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screwdriver or spike.

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4.2 T858/859 With RF Power Modules

Note: Where the same component has different circuit references in the T858 and T859, in this and following sections the T858 circuit reference is given first, followed by the T859 circuit reference in brackets, e.g. Q137 [Q128].

4.2.1 Visual Checks

Remove the side cover from the T858/859 and inspect the PCB for damaged or broken components, paying particular attention to the surface mounted devices (SMDs). Also check for defective solder joints.

Refer to Section 4.2.7, Section 4.2.8, Section 4.2.9 and Section 3 of Part A for more details on repair and replacement of components.

4.2.2 Shorting Links

There are seven shorting links on PL110 in the control section circuitry, as described in the table below. Ensure that these links are set as standard before starting and after completing the adjustment procedure.

Link Pins	Standard Setting	Function
1-2, 3-4, 7-8, 9-10	not linked	Not used.
5-6	not linked	Pins 5-6 are provided for simulating high operating temperatures during initial adjustment. Bridging this link shorts out R215 [R200] and R210 (NTCs), thus turning on the thermal protection circuitry. They should not be linked for normal operation.
11-12 13-14	linked	Pins 11-12 and 13-14 are provided for factory testing only. The PA will not function correctly if these settings are changed.

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4.2.3 Component Checks

If you suspect a transistor is faulty, you can assess its performance by measuring the forward and reverse resistance of the junctions. Unless the device is completely desoldered, first make sure that the transistor is not shunted by some circuit resistance (e.g. a base choke). Use a good quality EVM (e.g. Fluke 75) for taking the measurements (or a 20k ohm/V or better multimeter, using only the medium or low resistance ranges).



Caution: **Before operating the PA, replace any RF base chokes removed while making measurements.**

The collector current drawn by multi-junction transistors is a further guide to their performance.

If an IC is suspect, the most reliable check is to measure the DC operating voltages. Due to the catastrophic nature of most IC failures, the pin voltages will usually be markedly different from the recommended values in the presence of a fault. The recommended values can be obtained from either the circuit diagram or the component data catalogue.

4.2.4 DC Checks

Note: No RF power is to be applied during these checks.

Check that +13.8V is present on the collectors of Q216 (T858) or Q216 and Q217 (T859). Make this measurement when the transmitter is not keyed.

Check that approximately 8-13.8V is present on pin 2 of #IC210 (the level is dependent on RV115 being set to maximum).

Check that +13.8V is present at pin 4 of IC100.

Check that approximately +12V is present at pin 8 of IC110 (the level is dependent on RV115 being set to maximum).

Check that +7.0V is present at the output of regulator IC130.

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4.2.5 RF Checks

4.2.5.1 T858

The T858 PA Fault Finding Chart (Section 4.2.6.1) provides a systematic approach for locating a fault in the RF circuitry. Use this chart in conjunction with Figure 4.3 on page 4.21, which shows the locations of the 50Ω input and output test points for RF module #IC210 and RF transistor Q216.

Device	Input Connection	Output Connection
#IC210	input BNC connector or SK201	C249
Q216	C249	C250

Note 1: Use good quality 50Ω coax for the "flying" test leads.

Note 2: Ensure each output is terminated in a 50Ω load of the correct power rating.

For problems with the power control circuitry, refer to the T858 Power Control Fault Finding Chart (Section 4.2.6.3).

4.2.5.2 T859

The T859 PA Fault Finding Chart (Section 4.2.6.2) provides a systematic approach for locating a fault in the RF circuitry. Use this chart in conjunction with Figure 4.4 on page 4.22, which shows the locations of the 50Ω input and output test points for RF module #IC210 and RF transistors Q216 and Q217.

Device	Input Connection	Output Connection
#IC210	input BNC connector or SK201	C274
Q216 & Q217	L241	C250, C262

Note 1: Use good quality 50Ω coax for the "flying" test leads.

Note 2: Ensure each output is terminated in a 50Ω load of the correct power rating.

For problems with the power control circuitry, refer to the T859 Power Control Fault Finding Chart (Section 4.2.6.4).

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replace A4 pages D4.21/D4.22 with A3 pages D4.21/D4.22

Figure 4.3 T858 Test Break Point Location

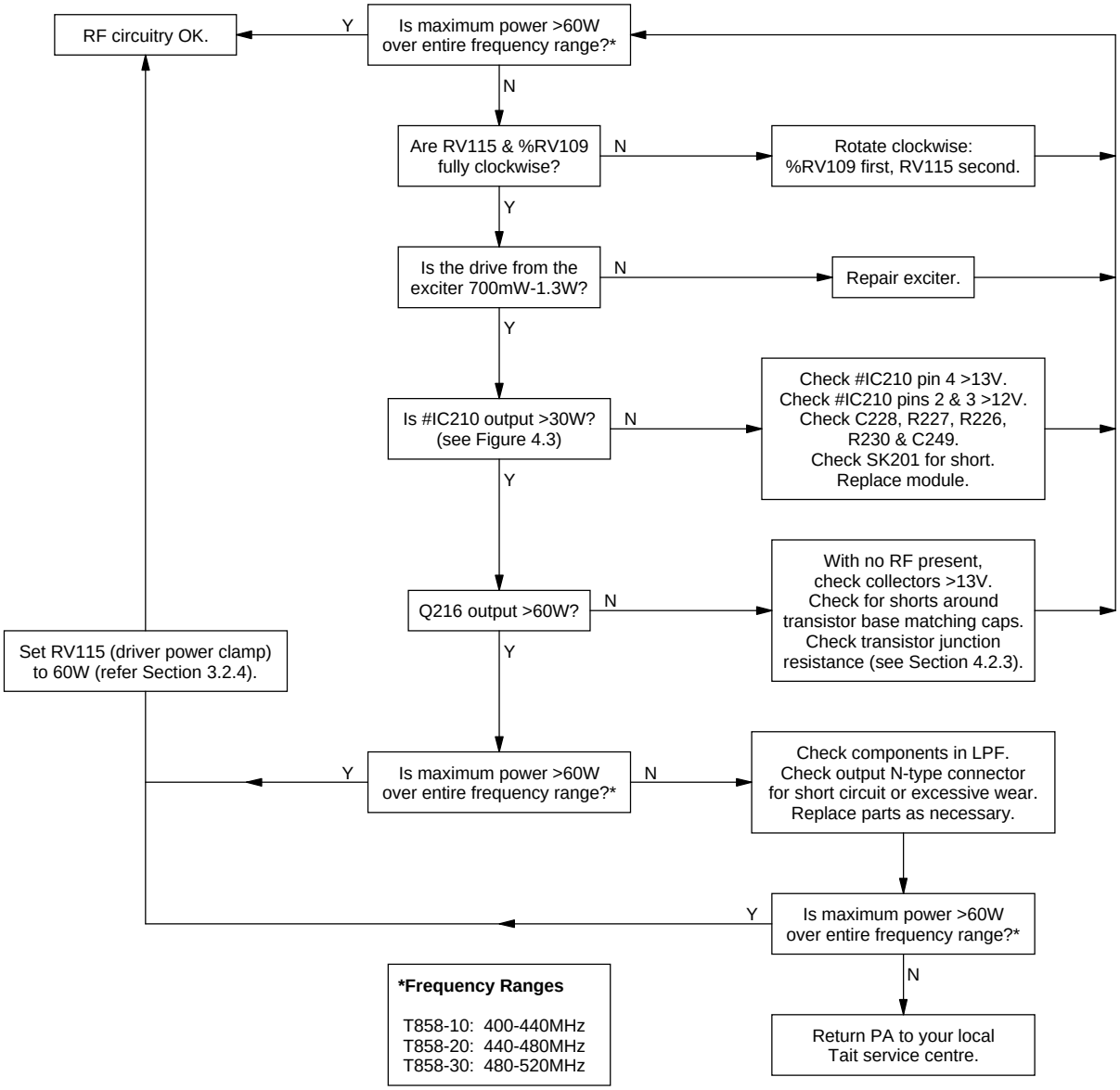
replace A4 pages D4.21/D4.22 with A3 pages D4.21/D4.22

Figure 4.4 T859 Test Break Point Location

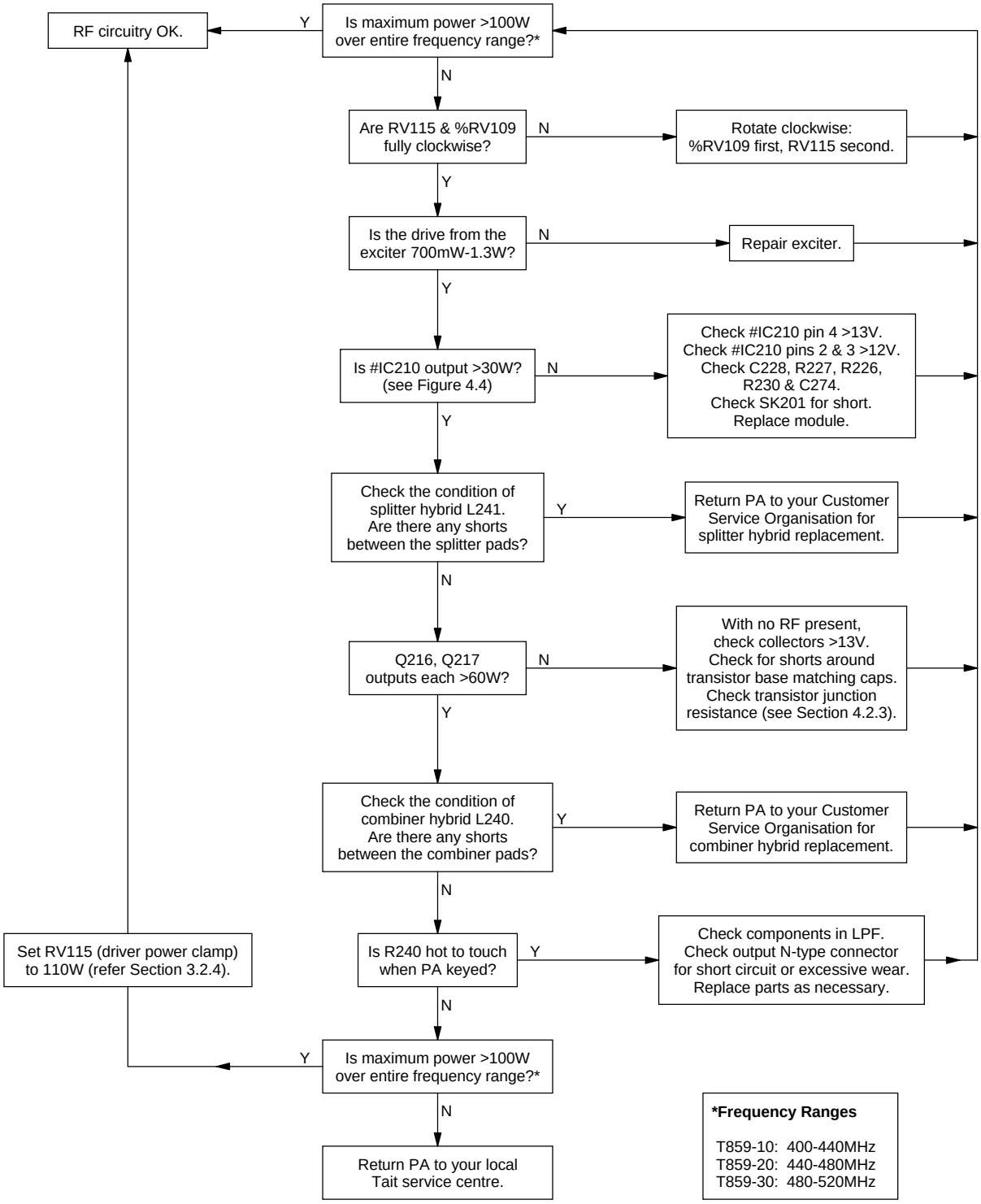
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4.2.6 Fault Finding Charts

4.2.6.1 T858 PA



4.2.6.2 T859 PA



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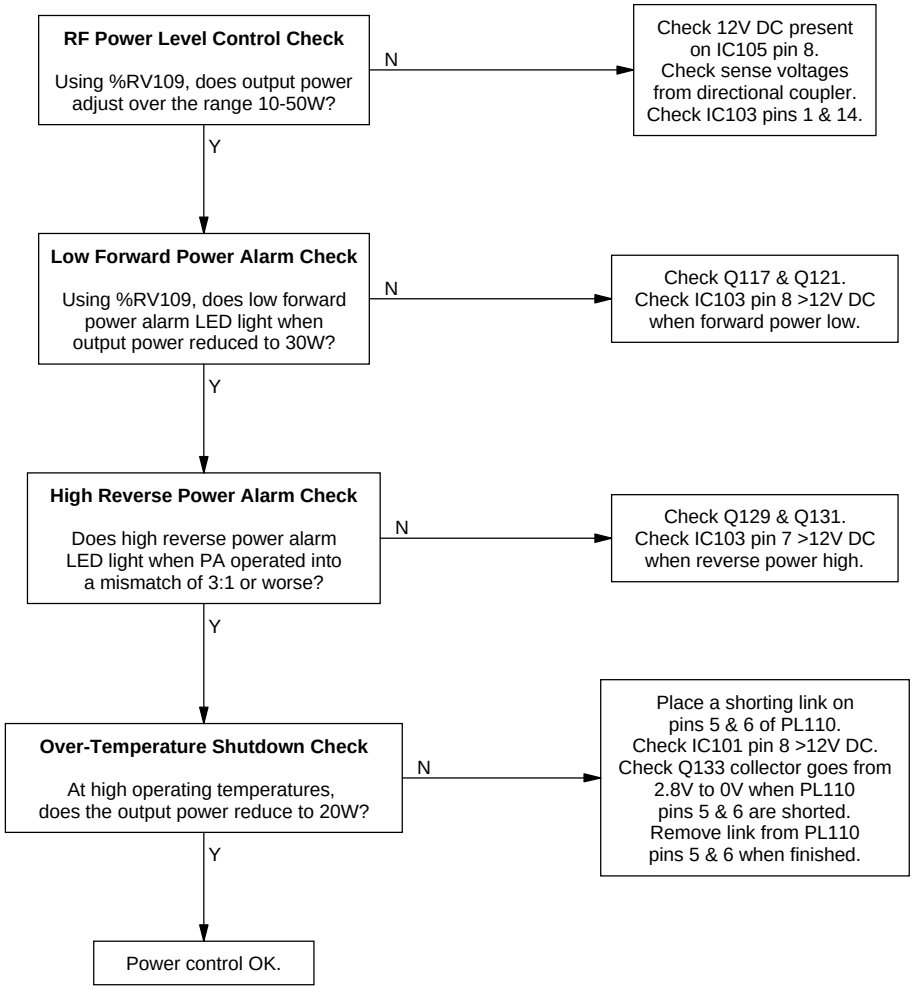
4.2.6.3 T858 Power Control

Approximate voltages (@ 480MHz) under normal operating conditions:

Forward & Reverse Power Measurement	Output Power	
	20W	50W
forward power at IC100 pin 14	1.8V	2.9V
reverse power at IC100 pin 1	0.6V	0.6V

Caution

The following voltage checks are all done with RV115 (driver power clamp) set to maximum. When these tests are finished, reset RV115 to 60W.



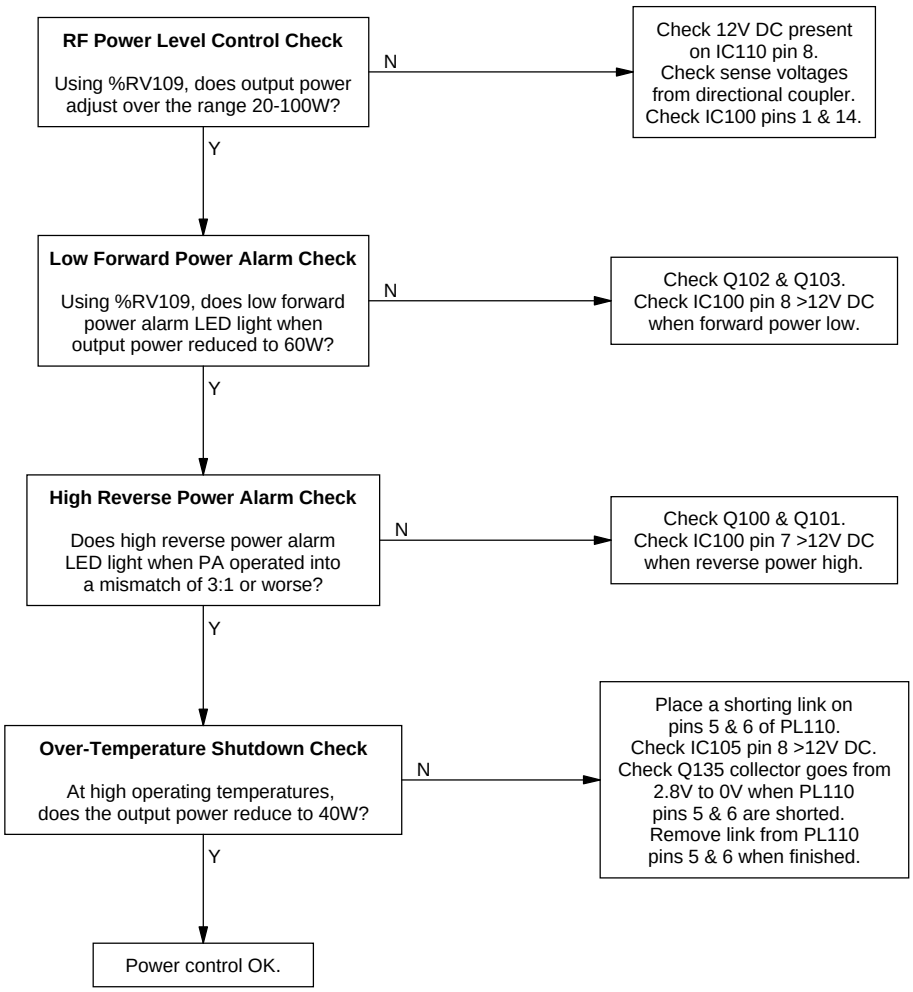
4.2.6.4 T859 Power Control

Approximate voltages (@ 480MHz) under normal operating conditions:

Forward & Reverse Power Measurement	Output Power	
	40W	100W
forward power at IC100 pin 14	2.5V	4.2V
reverse power at IC100 pin 1	0.6V	0.6V

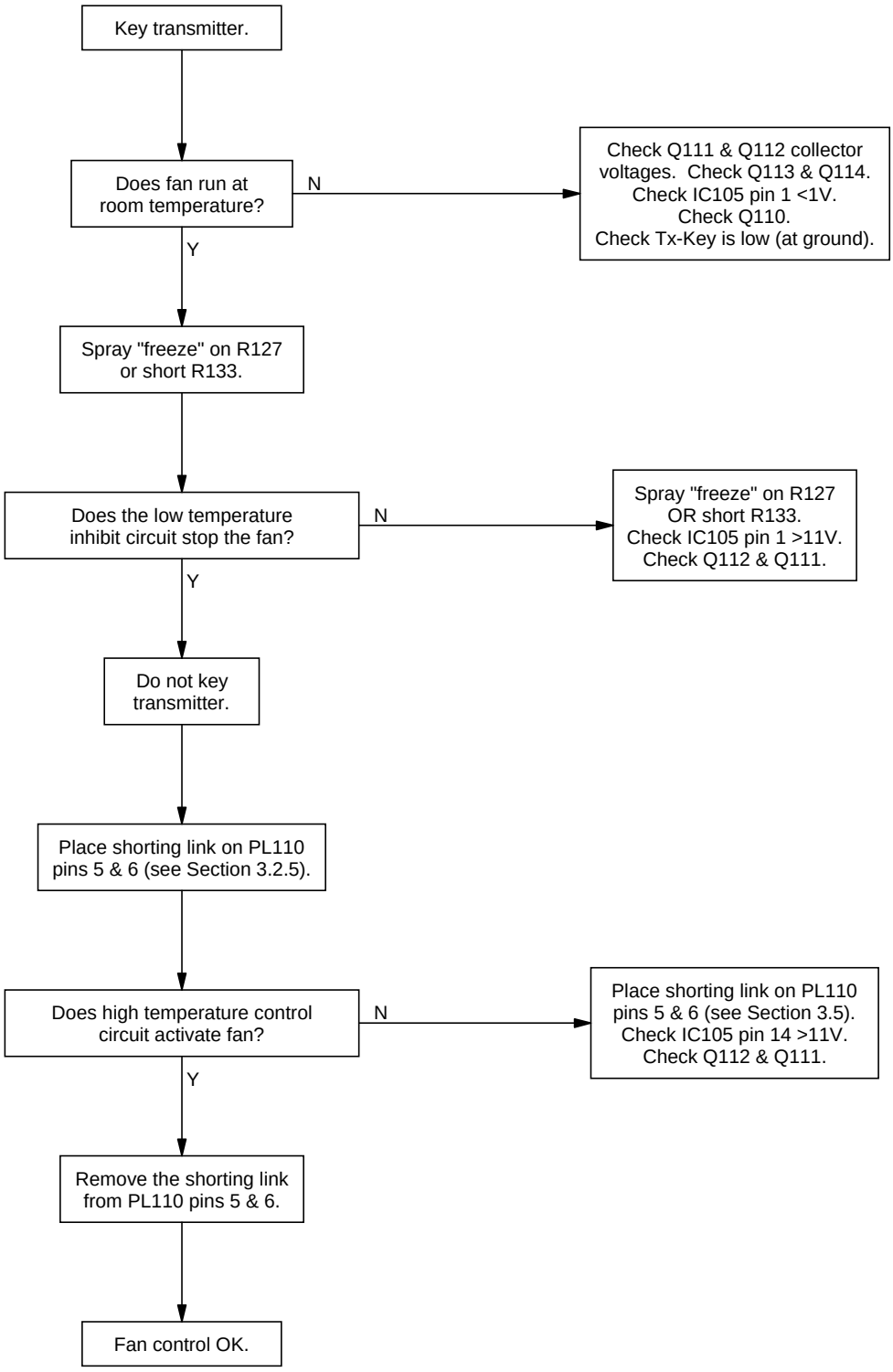
Caution

The following voltage checks are all done with RV115 (driver power clamp) set to maximum. When these tests are finished, reset RV115 to 110W.



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4.2.6.5 T859 Fan Control Circuitry



4.2.7 Replacing RF Power Transistors

Caution: **Failure to comply with the following procedure can result in failure of the device due to poor heatsinking, or worse, can endanger the health of the assembler if the beryllium oxide die carrier is smashed during assembly.**

Caution: **As the location of certain components in the PA is critical to performance, it is important that any components removed or disturbed are refitted in *exactly* the same position.**

Before attempting to remove a transistor, note the position, type and value of each capacitor. Measure the distance between each capacitor and the transistor body to the nearest 0.5mm (measurement "A" in Figure 4.5) so that it can be replaced in *exactly* the same position. These measurements are shown for the T858, however the same procedure applies for the T859.

Caution: **Do not apply too much heat or pressure to the PCB pads and tracks as you may damage them or lift them from the PCB, causing permanent damage to the PA.**

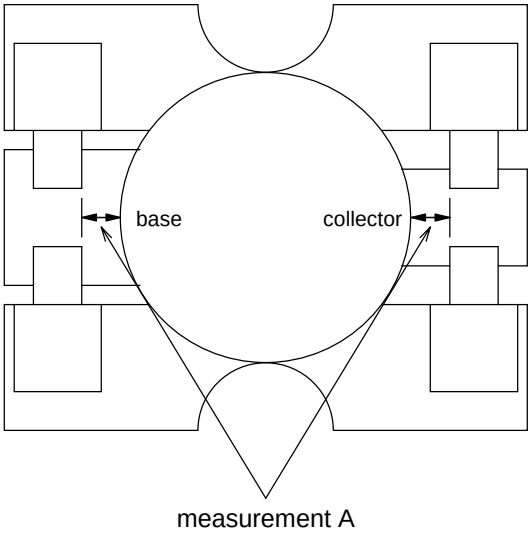


Figure 4.5 Typical Capacitor Positioning On T858/859 RF Power Transistors (Not To Scale)

Desolder and remove the capacitors from around the transistor.

Remove the two mounting screws, then desolder and remove the two solder tags.

Desolder the transistor tabs by heating with a soldering iron and lifting away from the PCB with a screwdriver or thin stainless steel spike, then remove the device.

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Remove any excess solder from the PCB pads with solder wick.

Trim the tabs of the replacement transistor so that the device sits neatly on the PCB pads provided.

Lightly tin the underside of the transistor tabs. Remove any excess solder to leave a thin, even layer on the tabs.

Apply a small amount of heatsink compound (Dow-Corning 340 or equivalent) to the transistor mounting surface. Sufficient compound should be used to ensure an even film over the entire mounting surface.

Place the transistor on the PCB in the correct orientation and ensure the tabs are flush to the surface.

Solder all transistor tabs to the PCB.

Refit the solder tags and mounting screws. Tighten the screws to a torque of 90N.cm/8in.lbf.

Replace each capacitor in exactly the same position as noted previously.

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4.2.8 Replacing RF Power Modules



Caution: **Follow these instructions carefully, otherwise the module can fail because of poor heatsinking or cracked substrates.**

Desolder the module legs by heating with a soldering iron and lifting away from the PCB with a screwdriver or thin stainless steel spike.

Undo the module screws and remove the thermistor assembly.

Desolder and remove both earth tags.

Gently lift the module away from the heatsink.

Note: The module may be stuck down quite firmly with heatsink compound. You may need to carefully prise it away from the heatsink with a small screwdriver. Keep the heatsink compound clean while the module is detached.

Apply a small amount of heatsink compound (Dow-Corning 340 or equivalent) to the replacement module mounting surface. Use enough compound to ensure an even film over the entire mounting surface.

Reposition the module in the correct orientation and ensure it is well pasted to the heatsink.

Replace the earth tags and thermistor assembly in their original positions and hand-tighten the screws, ensuring the tags and thermistor remain in place. Alternately tighten each screw evenly, finally torquing them down to 56N.cm/5in.lbf. with an accurate torque driver.



Caution: **It is essential that you apply the correct torque to these screws to allow the module flange to expand and contract under temperature cycling. Also, do not solder any module legs before torquing down otherwise the device may be broken.**

Solder the earth tags and all module legs to the PCB.

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4.2.9 Removing The PCB From The Heatsink

Note: This is a lengthy procedure and should be considered only after all other checks have been carried out. There are no components on the bottom of the PCB.

Remove the harmonic filter shield lid.

T859 Only: Desolder the power feed to the fan from the PCB.

Remove the 50 ohm output N-type connector by unscrewing it from the heatsink casting and desoldering it from the PCB.

Unplug the 50 ohm input coaxial cable from the PCB, unscrew the BNC connector from the heatsink, and remove the connector and cable.

Desolder the positive and negative power feed wires from the D-range PCB.

Disconnect the ribbon cable from the D-range PCB.

Remove the two screws securing the D-range connector and PCB to the heatsink and withdraw the assembly from the heatsink.

Remove the mounting screws for the TO-220 devices:

T858	Q137
T859	Q128, R231 and R240.

Remove the two screws securing the power module (#IC210).

Remove the mounting screws for the power transistors:

T858	Q216
T859	Q216 and Q217.

Remove the PCB retaining screws:

T858	13
T859	17.

Push the three LEDs out of their front panel grommets.

Lift the PCB gently from the heatsink to gain access to the underside of the board.

Note: R231, R240 and #IC210 may be stuck down with heatsink compound. You may need to carefully prise them away from the heatsink with a small screwdriver.



Caution: **Keep the heatsink compound clean while the PCB is detached. Any objects caught in the heatsink compound underneath the device which prevent effective earthing and/or heatsinking may cause the device to fail.**



Caution: **Do not operate the PA with the PCB detached as the heatsink is used for earthing and heat dissipation.**

To replace the PCB, reverse the order of removal, taking care that the wiring is correctly positioned and not 'pinched'.

Make sure that the heatsink compound has stayed clean, and that the insulating pad for Q137 [Q128] is not damaged.

If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screwdriver or spike.

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5 T858/859 PCB Information

Caution: **This equipment contains CMOS devices which are susceptible to damage from static charges. Refer to Section 1.2 in Part A for more information on anti-static procedures when handling these devices.**

This section provides the following information on the T858 and T859 power amplifiers:

- parts lists
- grid reference indexes
- mechanical assembly drawings
- PCB layouts
- circuit diagrams.

Section	Title	IPN	Page
5.1	**Introduction**		**5.1.3**
5.2	**T858 PA PCB**	**220-01141-01** **220-01423-02**	**5.2.1** **5.2.17**
5.3	**T859 PA PCB**	**220-01159-01** **220-01422-03**	**5.3.1** **5.3.17**

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5.1 Introduction

Product Type Identification

You can identify the PA type by checking the product code printed on a label on the rear of the chassis/heatsink (product codes are explained in Section 1.4 in this Part of the manual, and Figure 1.1 in Part A shows typical labels).

PCB Identification

All PCBs are identified by a unique 10 digit "internal part number" (IPN), e.g. 220-01390-02, which is screen printed onto the PCB (usually on the top side), as shown in the example below:



The last 2 digits of this number define the issue status, which starts at 00 and increments through 01, 02, 03, etc. as the PCB is updated. Some issue PCBs never reach full production status and are therefore not included in this manual. A letter following the 10 digit IPN has no relevance in identifying the PCB for service purposes.

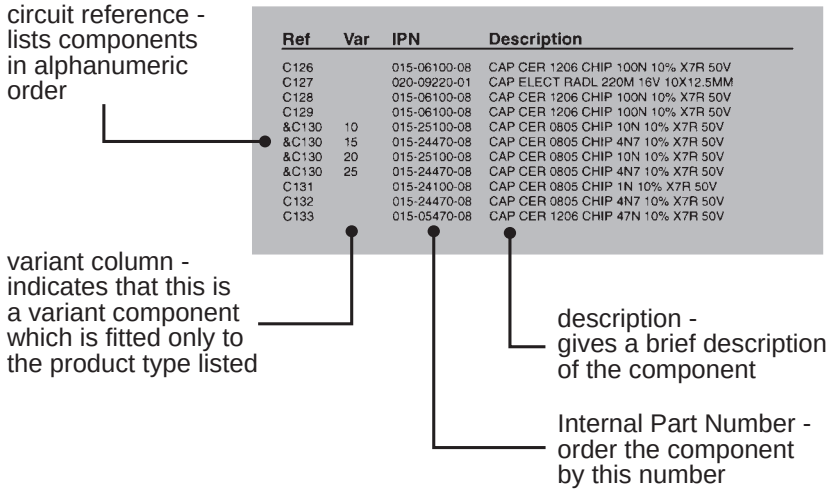
Note: It is important that you identify which issue PCB you are working on so that you can refer to the appropriate set of PCB information.

Parts Lists

The 10 digit numbers (000-00000-00) in this Parts List are "internal part numbers" (IPNs). We can process your spare parts orders more efficiently and accurately if you quote the IPN and provide a brief description of the part.

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

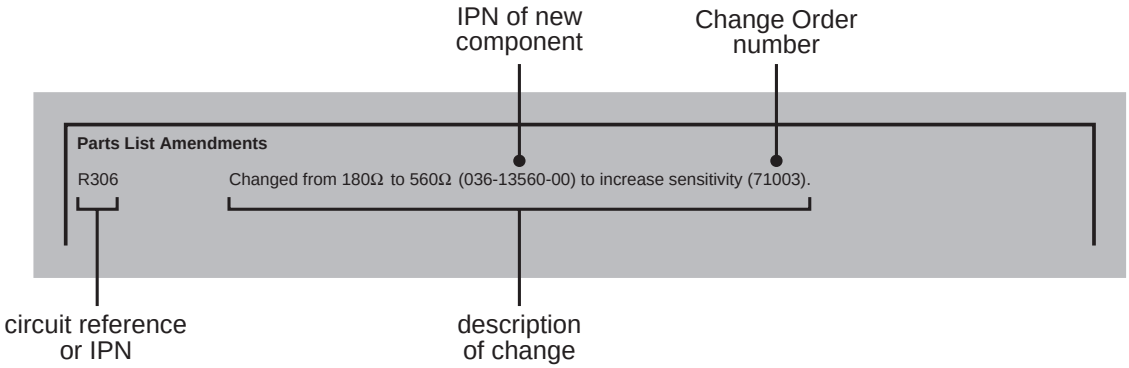
Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns, as shown below:



The miscellaneous and mechanical section lists the variant and common parts in IPN order.

Parts List Amendments

At the front of the parts list is the Parts List Amendments box (an example of which is shown below). This box contains a list of component changes which took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order. The number in brackets at the end of each entry refers to the Tait internal Change Order document.



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Variant Components

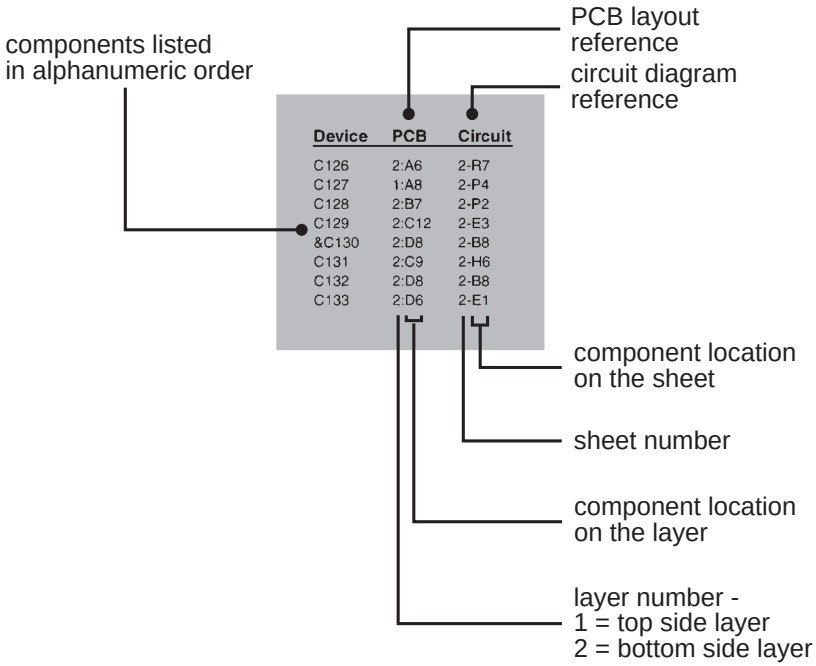
A variant component is one that has the same circuit reference but different value or specification in different product types. Where two products share the same PCB, the term "variant" is also used to describe components unplaced in one product. Variant components have a character prefix, such as "&", "=" or "#", before the circuit reference (e.g. &R100).

The table below explains how these variant prefixes are used in the latest model T858 and T859 PAs fitted with RF power modules. Note that the earlier transistor-based T858 and T859 PAs may not conform to this table.

If the variant prefix is. . .	the component will. . .
&	change according to channel spacing
=	change according to frequency stability
#	change according to frequency range
%	change or be placed/unplaced for special applications
*	be unplaced in one product (where two products share the same PCB)

Grid Reference Index

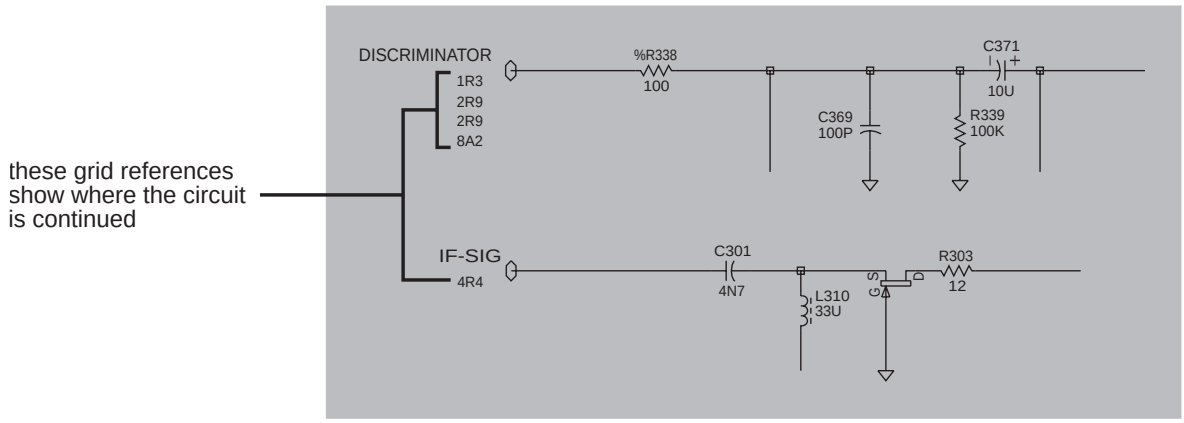
This section contains a component grid reference index to help you find components and labelled pads on the PCB layouts and circuit diagrams. This index lists the components and pads in alpha-numeric order, along with the appropriate alphanumeric grid references, as shown below:



Using CAD Circuit Diagrams

Reading a CAD circuit diagram is similar to reading a road map, in that both have an alphanumeric border. The circuit diagrams in this manual use letters to represent the horizontal axis, and numbers for the vertical axis. These circuit diagram "grid references" are useful in following a circuit that is spread over two or more sheets.

When a line representing part of the circuitry is discontinued, a reference will be given at the end of the line to indicate where the rest of the circuitry is located, as shown below. The first digit refers to the sheet number and the last two characters refer to the location on that sheet of the continuation of the circuit (e.g. 1R3).



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5.2 T858 Power Amplifier PCB

This section contains the following information.

IPN	Section	Page
220-01141-01	Parts List	5.2.3
	Mechanical & Miscellaneous Parts	5.2.8
	Mechanical Assembly	5.2.9
	Grid Reference Index	5.2.11
	PCB Layout - Bottom Side	5.2.13
	PCB Layout - Top Side	5.2.14
	RF Section Circuit Diagram	5.2.15
	Control Section Circuit Diagram	5.2.16
220-01423-02	Parts List	5.2.17
	Mechanical & Miscellaneous Parts	5.2.22
	Mechanical Assembly	5.2.23
	Grid Reference Index	5.2.25
	PCB Layout - Bottom Side	5.2.27
	PCB Layout - Top Side	5.2.28
	Control Section Circuit Diagram	5.2.29
	RF & Thermistor Control Sections Circuit Diagram	5.2.30

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T858 Parts List (IPN 220-01141-01)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

C6	100n mylar capacitor (IPN 022-56100-10) and 10Ω resistor (IPN 030-52100-20) - no circuit references - added in series across C6 to inhibit power control instabilities (710813).
C33, C52 & C58	(Low Band) changed from 8p2 (029-01820-02) to 10p (89/06-341). (Mid Band) changed from 3p3 (015-01330-02) to 3p9 Case Mica type (89/08-460).
C62	(Low Band) changed from 3p3 (015-01330-02) to 3p9 (89/07-411).
C63 & C65	(Low Band) changed from 10p (029-02100-01) to 12p (89/07-411).
C66	(Low Band) changed from 4p7 (029-01470-02) to 5p6 (89/07-411).
C70	(Low Band) changed from 3p9 (015-01390-02) to 4p7 (89/07-411).
C80 & C86	150p deleted. To prevent 800kHz instability (94/05-234).
D3	Changed from MR750/SR2607 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).
L1	(Low Band) changed from 1T/3.0mm (052-08330-10) to 1T/4.0mm. To meet rated power (90/10-534).
L14, L15 & L23	Inductor Tait No.545 added. To remove heat sources from PCB (89/08-438).
L27 & L31	Changed from 1.5T/6.0mm (052-08160-15) to 2.5T/6.0mm. To reduce heating in base ferrite beads (89/10-568).
L42	(Low Band) changed from 1T/3.0mm (052-08330-10) to 1T/4.0mm (89/07-411).
L45	(Low Band) changed from 2T/3.5mm (052-08335-20) to 2T/4.5mm (89/07-411).
L46	(Low Band) changed from 2T/4.0mm (052-08330-10) to 2T/4.5mm (89/07-411).
L47	(Low Band) changed from 2T/3.5mm (052-08335-20) to 2T/4.0mm (89/07-411).
R1 & R3	(Low Band) changed from 270e (030-03270-00) to 150e. To reduce power into the driver (90/07-341).
R2	(Low Band) changed from 18e (030-02180-00) to 39e. To reduce power into the driver (90/07-341).
R11	Changed from 100e (030-03100-00) to SOT (Min value 22e). To reduce gain in drive stage (96/07-7104).
R47	Changed from 100k (036-16100-00) to 47k. To improve control range of forward power alarm (89/09-506).
R67	Changed from 4k7 (036-14470-00) to 10k (89/06-341).
R93	Change from 10k (036-15100-00) to 4k7. To raise limits of reverse power alarm switching point (3/10/89).
R99	2k7 added in series with RV63 (89/06-341).
R100	4k7 added in series with RV63 (89/06-341).

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Parts List Amendments - Continued

349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).

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Note

LOW = 400-440MHZ
MID = 440-480MHZ
HI = 480-520MHZ

Ref	Var	IPN	Description
C1		015-02120-02	CAP CER HIQ 1210 CHIP 12P 5% NPO 200V
C2		015-02180-02	CAP CER HIQ 1210 CHIP 18P 5% NPO 200V
C3		015-02220-02	CAP CER HIQ 1210 CHIP 22P 5% NPO 200V
C6		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C7		015-02150-02	CAP CER HIQ 1210 CHIP 15P 5% NPO 200V
CV8		028-02200-01	CAP TRIM 4/20P N750 TOP ADJ RED MUR TZ
C11		015-02220-02	CAP CER HIQ 1210 CHIP 22P 5% NPO 200V
C12		015-02180-02	CAP CER HIQ 1210 CHIP 18P 5% NPO 200V
C15		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C16		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C17		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C18		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C19		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C20		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C22		015-02680-02	CAP CER HIQ 1210 CHIP 68P 5% NPO 200V
C23		029-02270-02	CAP MICA 5MM CASE 27P 5%
C24		029-02330-02	CAP MICA 5MM CASE 33P 5%
*C27	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C27	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C27	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C28	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C28	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C28	HI	029-02220-02	CAP MICA 5MM CASE 22P 5%
C29		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV32		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C33	LOW	029-02100-02	CAP MICA 5MM CASE 10P 5%
*C33	MID	029-01390-02	CAP MICA 5MM CASE 3P9 5%
*C33	HI		NOT FITTED
CV34		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
CV35		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
C36		029-02270-02	CAP MICA 5MM CASE 27P 5%
C37		029-02270-02	CAP MICA 5MM CASE 27P 5%
C40		029-02270-02	CAP MICA 5MM CASE 27P 5%
C41		029-02270-02	CAP MICA 5MM CASE 27P 5%
*C42	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C42	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C42	HI	029-02220-02	CAP MICA 5MM CASE 22P 5%
*C43	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C43	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C43	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C45		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C46		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
*C47	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C47	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C47	HI	029-02220-02	CAP MICA 5MM CASE 22P 5%
*C49	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C49	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C49	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C50		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV51		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C52	LOW	029-02100-02	CAP MICA 5MM CASE 10P 5%
*C52	MID	029-01390-02	CAP MICA 5MM CASE 3P9 5%
*C52	HI		NOT FITTED
C54		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C55		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C56		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV57		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C58	LOW	029-02100-02	CAP MICA 5MM CASE 10P 5%
*C58	MID	029-01390-02	CAP MICA 5MM CASE 3P9 5%
*C58	HI		NOT FITTED
C60		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C61		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
*C62	LOW	015-01390-02	CAP CER HIQ 1210 CHIP 3P9 5% NPO 200V
*C62	MID	015-01330-02	CAP CER HIQ 1210 CHIP 3P3 5% NPO 200V
*C62	HI	015-01330-02	CAP CER HIQ 1210 CHIP 3P3 5% NPO 200V
*C63	LOW	029-02120-01	CAP MICA 10MM CASE 12P 5%
*C63	MID	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C63	HI	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C65	LOW	029-02120-01	CAP MICA 10MM CASE 12P 5%
*C65	MID	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C65	HI	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C66	LOW	029-01560-02	CAP MICA 5MM CASE 5P6 5%
*C66	MID	029-01470-02	CAP MICA 5MM CASE 4P7 5%
*C66	HI	029-01470-02	CAP MICA 5MM CASE 4P7 5%
C67		015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
C68		015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
*C70	LOW	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
*C70	MID	015-21390-01	CAP CER 0805 CHIP 3P9 +/-0.25P NPO 50V
*C70	HI	015-21390-01	CAP CER 0805 CHIP 3P9 +/-0.25P NPO 50V
C72		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C73		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C76		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C77		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C78		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C81		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C84		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C85		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C87		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C90		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C91		025-08100-02	CAP TANT BEAD 10M 10% 16V
C92		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C93		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C95		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C96		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C97		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C98		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C99		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C100		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C101		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C102		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C103		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C104		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C105		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C106		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C107		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C108		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C109		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C110		015-01470-02	CAP CER HIQ 1210 CHIP 4P7 5% NPO 200V
C111		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C112		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C113		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
D1		001-00013-45	(S) DIODE SCHOTTKY 1SS97/2
D2		001-00013-45	(S) DIODE SCHOTTKY 1SS97/2
D3		001-00011-60	(S) DIODE SR2607 6A/30V
D5		008-00013-32	(S) LED 3MM RED LO CURRENT NO MTG
D6		001-10000-70	(S) DIODE SMD BAV70 DUAL SW SOT-23 COMCTH
D10		008-00013-35	(S) LED 3MM GREEN LO CURRENT NO MTG
D11		008-00013-32	(S) LED 3MM RED LO CURRENT NO MTG
D13		001-10000-70	(S) DIODE SMD BAV70 DUAL SW SOT-23 COMCTH
D17		001-10000-70	(S) DIODE SMD BAV70 DUAL SW SOT-23 COMCTH
IC1		002-10003-24	(S) IC SMD 324 QUAD OP AMP SO14
IC2		002-00014-62	(S) IC 317L 100MA REG 3 TERMINAL TO-92
IC3		002-10003-58	(S) IC SMD LM358 DUAL OP AMP
*L1	LOW	052-08340-10	COIL A/W 1T/4.0MM SMD 0.8MM WIRE
*L1	MID	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
*L1	HI	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L2		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L3		065-00010-04	BEAD FERRITE F8 4X2X5MM
L5		065-00010-04	BEAD FERRITE F8 4X2X5MM
L6		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L7		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L8		065-00010-04	BEAD FERRITE F8 4X2X5MM
L11		065-00010-04	BEAD FERRITE F8 4X2X5MM
L12		065-00010-04	BEAD FERRITE F8 4X2X5MM
L13		052-08160-15	COIL A/W 1.5T/6.0MM HOR 0.8MM WIRE
L14		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L15		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L16		065-00010-04	BEAD FERRITE F8 4X2X5MM
L17		065-00010-04	BEAD FERRITE F8 4X2X5MM
L18		051-00005-53	COIL TAIT NO 553 A/W 10MM LINK T858/9
L19		051-00005-39	COUPLER WIRELINE TAIT COIL DWG NO 539
L21		052-08160-15	COIL A/W 1.5T/6.0MM HOR 0.8MM WIRE
L22		065-00010-04	BEAD FERRITE F8 4X2X5MM
L23		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L25		052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L26		052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L27		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L28		065-00010-04	BEAD FERRITE F8 4X2X5MM
L31		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L32		065-00010-04	BEAD FERRITE F8 4X2X5MM
L35		051-00005-53	COIL TAIT NO 553 A/W 10MM LINK T858/9
L36		065-00010-04	BEAD FERRITE F8 4X2X5MM
L37		065-00010-04	BEAD FERRITE F8 4X2X5MM
L38		051-00005-53	COIL TAIT NO 553 A/W 10MM LINK T858/9
L39		051-00005-39	COUPLER WIRELINE TAIT COIL DWG NO 539
L41		056-00021-04	IND FXD 330NH AXIAL
*L42	LOW	052-08340-10	COIL A/W 1T/4.0MM SMD 0.8MM WIRE
*L42	MID	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
*L42	HI	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L43		052-08335-10	COIL A/W 1T/3.5MM SMD 0.8MM WIRE
*L45	LOW	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM WIRE
*L45	MID	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L45	HI	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L46	LOW	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM WIRE
*L46	MID	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L46	HI	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L47	LOW	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L47	MID	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L47	HI	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
L49		056-00021-04	IND FXD 330NH AXIAL
L51		056-00021-04	IND FXD 330NH AXIAL
L52		051-00005-53	COIL TAIT NO 553 A/W 10MM LINK T858/9
Q1		000-00022-70	(S) XSTR SD1134 NPN STUD MTG UHF PWR 2W
Q3		000-00022-75	(S) XSTR SD1433 NPN STUD MTG UHF PWR 10W
Q4		000-00022-80	(S) XSTR SD1488 NPN 6LFL UHF PWR 40W
Q6		000-00022-80	(S) XSTR SD1488 NPN 6LFL UHF PWR 40W
Q7		000-00022-80	(S) XSTR SD1488 NPN 6LFL UHF PWR 40W
Q10		000-00020-70	(S) XSTR BS170 JFET TO-92 SMALL SIG
Q11		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q12		000-00020-70	(S) XSTR BS170 JFET TO-92 SMALL SIG
Q13		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q15		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q16		000-00030-95	(S) XSTR 2N6107 PNP TO-220 AF PWR

Ref	Var	IPN	Description
*R1	LOW	032-33150-02	RES M/F PWR 150E 5% 1W 8X2.5MM 12MML/S
*R1	MID	030-03270-00	RES FILM 270E 5% 0.25W 7X2.5MM
*R1	HI	030-03470-00	RES FILM 470E 5% 0.25W 7X2.5MM
*R2	LOW	032-32390-02	RES M/F PWR 39E 5% 1W 8X2.5MM 12MML/S
*R2	MID	030-02180-00	RES FILM 18E 5% 0.25W 7X2.5
*R2	HI	030-02120-00	RES FILM 12E 5% 0.25W 7X2.5W
*R3	LOW	030-03150-00	RES FILM 150E 5% 0.25W 7X2.5MM
*R3	MID	030-03270-00	RES FILM 270E 5% 0.25W 7X2.5MM
*R3	HI	030-03470-00	RES FILM 470E 5% 0.25W 7X2.5MM
R7		030-02100-00	RES FILM 10E 5% 0.25W 7X2.5MM
R8		032-33100-00	RES M/F PWR 100E 5% 1W 10X4MM
R11		030-03100-00	RES FILM 100E 5% 0.25W 7X2.5MM
R30		030-03100-00	RES FILM 100E 5% 0.25W 7X2.5MM
R31		030-03100-00	RES FILM 100E 5% 0.25W 7X2.5MM
R32		030-02820-00	RES FILM 82E 5% 0.25W 7X2.5MM
R33		030-02820-00	RES FILM 82E 5% 0.25W 7X2.5MM
R36		036-13680-00	RES M/F 0805 CHIP 680E 5%
R38		036-17100-00	RES M/F 0805 CHIP 1M 5%
R39		036-16100-00	RES M/F 0805 CHIP 100K 5%
R42		036-15100-00	RES M/F 0805 CHIP 10K 5%
RV43		042-05470-09	RES PRESET 50K CERMET 9.5MM SQ FLAT
R44		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R47		036-15470-00	RES M/F 0805 CHIP 47K 5%
RV48		042-04500-08	RES PRESET 5K CERMET 9.5MM SQ FLAT
R49		036-13680-00	RES M/F 0805 CHIP 680E 5%
R50		036-13680-00	RES M/F 0805 CHIP 680E 5%
RV52		042-04500-08	RES PRESET 5K CERMET 9.5MM SQ FLAT
R55		036-17100-00	RES M/F 0805 CHIP 1M 5%
R56		036-15100-00	RES M/F 0805 CHIP 10K 5%
RV57		042-05470-09	RES PRESET 50K CERMET 9.5MM SQ FLAT
R58		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R61		036-13220-00	RES M/F 0805 CHIP 220E 5%
R62		036-14100-00	RES M/F 0805 CHIP 1K 5%
RV63		044-04200-03	RES PRESET MULTITURN 2K 10T PNL MTG
R64		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R67		036-15100-00	RES M/F 0805 CHIP 10K 5%
R68		036-14470-00	RES M/F 0805 CHIP 4K7 5%
RV69		042-04220-02	RES PRESET 2K CERMET 9.5MM SQ FLAT
R72		045-04470-01	RES NTC 4K7 20% 5MM DISC
R73		036-16220-00	RES M/F 0805 CHIP 220K 5%
RV74		042-05100-10	RES PRESET 10K CERMET 9.5MM SQ FLAT
R77		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R78		036-14100-00	RES M/F 0805 CHIP 1K 5%
R80		036-13100-00	RES M/F 0805 CHIP 100E 5%
R81		036-14100-00	RES M/F 0805 CHIP 1K 5%
R82		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R83		036-14100-00	RES M/F 0805 CHIP 1K 5%
R84		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R85		036-14100-00	RES M/F 0805 CHIP 1K 5%
R86		036-14100-00	RES M/F 0805 CHIP 1K 5%
R87		036-15100-00	RES M/F 0805 CHIP 10K 5%
R88		036-15100-00	RES M/F 0805 CHIP 10K 5%
R89		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R90		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R91		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R92		036-14100-00	RES M/F 0805 CHIP 1K 5%
R93		036-15100-00	RES M/F 0805 CHIP 10K 5%
R94		036-14100-00	RES M/F 0805 CHIP 1K 5%
R95		036-14100-00	RES M/F 0805 CHIP 1K 5%
R96		036-14100-00	RES M/F 0805 CHIP 1K 5%
R97		036-14100-00	RES M/F 0805 CHIP 1K 5%
R98		036-12100-00	RES M/F 0805 CHIP 10E 5%
R99		036-14270-00	RES M/F 0805 CHIP 2K7 5%
R100		036-14470-00	RES M/F 0805 CHIP 4K7 5%
SK1		240-02100-44	SKT COAX MINI JACK PCB MTG ANGLED

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T858 Mechanical & Miscellaneous Parts (220-01141-01)

IPN	Legend	Description
065-00010-20		BEAD FERRITE BALUN 4B1 PHILIPS Placed on DC+ power cables.
070-01001-00	22	D-RANGE 15 WAY COMPL T800
070-02003-00		LED RED COMPL T800 PA “High Rev/Low Fwd Power” LEDs - D11/D5
070-02004-00		LED GREEN COMPL T800 PA “Supply” LED - D10
201-00030-01		WIRE T/C 7/0.2 PVC BROWN Forward power alarm.
201-00030-03		WIRE T/C 7/0.2 PVC ORANGE Reverse power meter.
201-00030-04		WIRE T/C 7/0.2 PVC YEL Reverse power.
201-00030-05		WIRE T/C 7/0.2 PVC GRN Forward power meter.
201-00030-06		WIRE T/C 7/0.2 PVC BLUE Tx-Key.
201-00030-07		WIRE T/C 7/0.2 PVC VIOLET Reverse power alarm.
201-00030-09		WIRE T/C 7/0.2 PVC WHITE Temperature sense.
201-00030-10		WIRE T/C 7/0.2 PVC BLACK Forward power.
201-00050-12		AUTO 152 RED 28/0.3 PVC DC+ from D-range PCB.
201-00050-20		AUTO 152 BLACK 28/0.3 PVC DC- from D-range PCB.
219-02592-00		CABLE ASSY RG223/U N TO BNC Exciter/PA connecting cable.
219-02599-00		CABLE ASSY PA INPUT REAR DRIVE RF input cable/connector assembly.
220-01141-01	1	PCB T858 50W PA
220-01152-00	2	PCB T858/859 DIRNL COUPLER
240-02100-06	25	SKT COAX N TYPE PNL MTG OP-TER
240-02100-17	27	SKT COAX BNC PNL JAC CRP RG316 Part of 219-02599-00 sub-assembly.
240-06010-15	24	BLOCK LATCHING 15W D RANGE
303-23117-00	38	COVER SIDE COMPL A2M2223
303-23120-00	28	COVER A3M2288 HOLE BLANKING
303-50005-00	30	CONTACT A4M2311 SPRING EARTH
308-01007-01	32	HANDLE BASE STATION SERIES II
308-13085-01	4	HSINK DIECAST T858 50W PA
308-13086-00	19	HSINK A3M2271 2MM W/LINE PA
316-06617-00	31	PNL PA NO INP DRV SER II SNGL
316-85018-00	26	PIN A4M1397 COAX CONDUCTOR
319-01147-00	3	SHIELD A3M2224 WALL T859 PA
319-01148-00	29	SHIELD A3M2225 LID T859 PA
319-30033-00	13	SPACER A4M1339 UHF PA
345-00040-16	23	SCRW M3X20MM P/POZ ST BZ

IPN	Legend	Description
349-00020-07	6	SCRW 4-40 X 5/16 P/POZ T/T BLK
349-00020-09	11	SCRW T/T 4-40X3/8 IN P/POZ BLK
349-00020-36	37	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-50	21	SCRW T/T 4-40x5/8 P/POZ BLK
352-00010-29	34	NUT M4 NYLOC HEX
352-00010-35	15	NUT 8-32 UNC HEX XSTR MTG
353-00010-10	10	WSHR M3 FLAT 7MMx0.6MM ST BZ
353-00010-24	33	WSHR M4x8mm Flat
356-00010-01	18	TAG SOLDER 3MM SHORT M6132/3.2
356-00010-03	5	TAG SOLDER 3MM LONG M614/3.2
360-00010-41	36	BUSH SHORTY BLK
362-00010-07	7	GASKET SIL INSULATING TO-220
362-00010-13	9	BUSH INSULATING 1.1MM TOP HAT
362-00010-33	35	GROMMET LED MTG 3MM
365-00100-20		LABEL WHITE S/A 28X11MM
365-01540-00		LABEL PA TYPE APPL/SERIAL NO
369-00010-14		TIE CABLE NYLON 100*2.6MM
399-00010-51		BAG PLASTIC 75*100MM
400-00020-09		SLEEVING 3MM SIL RUBBER
410-01081-01		CRT T800 SERIES II

Note

The following electrical components are also included in the mechanical assembly drawing to help identify certain mechanical components.

000-00022-70	14	(S) XSTR SD1134 NPN STUD MTG UHF PWR 2W - Q1
000-00022-75	16	(S) XSTR SD1433 NPN STUD MTG UHF PWR 10W - Q3
000-00022-80	17	(S) XSTR SD1488 NPN 6LFL UHF PWR 40W - Q4, Q6, Q7
000-00030-95	8	(S) XSTR 2N6107 PNP TO-220 AF PWR Q16
039-02500-01	12	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM - R90, R91
051-00005-39	20	COUPLER WIRELINE TAIT COIL DWG NO 539 - L19, L39

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T858 Grid Reference Index (IPN 220-01141-01)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit
C1	1:Q9	1-C7
C2	1:Q9	1-C6
C3	1:R9	1-C6
C6	1:S8	1-D7
C7	1:Q7	1-E7
CV8	1:R7	1-E7
C11	1:R6	1-A1
C12	1:Q6	1-A1
C15	1:S5	1-B2
C16	1:S5	1-C3
C17	1:T6	1-C3
C18	1:S2	1-D3
C19	1:T3	1-D3
C20	1:S3	1-E3
C22	1:Q5	1-B2
C23	1:Q5	1-C2
C24	1:R5	1-C2
*C27	1:Q3	1-D2
*C28	1:R3	1-D2
C29	1:P3	1-E2
CV32	1:P2	1-E2
*C33	1:P3	1-F2
CV34	1:M4	1-G2
CV35	1:M8	1-G5
C36	1:L8	1-G4
C37	1:L8	1-H4
C40	1:L4	1-G2
C41	1:L3	1-H2
*C42	1:K4	1-J2
*C43	1:K3	1-J2
C45	1:K4	1-J3
C46	1:K7	1-J4
*C47	1:K8	1-J4
*C49	1:K8	1-J4
C50	1:H8	1-K5
CV51	1:H8	1-L4
*C52	1:J8	1-K4
C54	1:K6	1-K3
C55	1:K6	1-K3
C56	1:H4	1-L2
CV57	1:H3	1-L2
*C58	1:J3	1-K2
C60	1:E9	1-N4
C61	1:F9	1-N4
*C62	See Note	1-P4
*C63	1:C9	1-P5
*C65	1:C9	1-Q5
*C66	1:B8	1-Q4
C67	See Note	1-P4
C68	1:D7	1-P4
*C70	1:D6	1-Q4
C72	1:E6	1-M6
C73	1:F6	1-M5
C76	1:V10	2-B7
C77	1:V10	2-C7
C78	1:U10	2-D6
C80	1:V5	2-F7
C81	1:U2	2-G6
C84	1:V9	2-C5
C85	1:V9	2-C5
C86	1:V5	2-F4
C87	1:S2	2-G3
C90	1:V7	2-K5
C91	1:W8	2-N5
C92	1:U5	2-N5
C93	1:U5	2-N5
C95	1:V5	2-H1
C96	1:U5	2-N3
C97	1:K10	1-J1
C98	1:L10	1-J1
C99	1:U5	2-M2
C100	1:T5	2-N4
C101	1:V3	2-P2
C102	1:U8	2-Q5
C103	1:U8	2-Q4
C104	1:U7	2-R6
C105	1:T9	2-R5
C106	1:T8	2-R5
C107	1:U4	2-H8
C108	1:T4	2-J7
C109	1:T4	2-J4
C110	1:G3	1-L3
C111	1:W10	2-A7
C112	1:V9	2-B5
C113	1:V3	2-N4
D1	1:F6	1-M5
D2	1:E9	1-N4
D3	1:T2	2-A2
D5	1:W9	2-C7
D6	1:U2	2-G6
		2-G6
D10	1:W10	2-C5
D11	1:W9	2-D5
D13	1:R2	2-F3
		2-F3
D17	1:V3	2-N4
		2-M4
IC1	1:U5	2-H1
		2-F7
		2-E5
		2-N5
		2-N3
IC2	1:V8	2-K5
IC3	1:T4	2-J8
		2-H7
		2-H4
* L1	1:R9	1-C6
L2	1:P8	1-D6
L3	1:P9	1-D5
L5	1:T8	1-D8
L6	1:R7	1-D7
L7	1:P7	1-E6
L8	1:P8	1-E6
L11	1:T7	1-B4
L12	1:S5	1-B3
L13	1:R5	1-B2
L14	1:Q3	1-E2
L15	1:K8	1-K5
L16	1:S4	1-D3
L17	1:S3	1-D3
L18	1:R3	1-D2
L19	1:N6	1-F3
L21	1:P5	1-C1
L22	1:P6	1-C1
L23	1:K4	1-K2
L25	1:M3	1-F2
L26	1:M9	1-F4
L27	1:L9	1-G4
L28	1:M9	1-G4
L31	1:M3	1-G2
L32	1:M2	1-G1
L35	1:J7	1-J4
L36	1:J6	1-J4
L37	1:J5	1-J3
L38	1:J4	1-J3
L39	1:H6	1-L4
L41	1:F9	1-N4
*L42	1:D7	1-P4
L43	1:C6	1-Q4
*L45	1:C8	1-P5
*L46	1:C9	1-P5
*L47	1:B8	1-Q5
L49	1:F6	1-M6
L51	1:L10	1-J1
L52	1:C7	1-P4
PL1	1:G5	2-A3
		2-A2
		2-A2
		2-A2
		2-A3
		2-A8
		2-A8
		2-A1
		2-A1
		2-A1
		2-A1
		2-A5
		2-A3
		2-A7
Q1	1:Q8	1-D7
Q3	1:Q6	1-B2
Q4	1:Q4	1-D2
Q6	1:K8	1-H5
Q7	1:K4	1-H2
Q10	1:V10	2-B7
Q11	1:V10	2-D7
Q12	1:V9	2-C5
Q13	1:V9	2-D5
Q15	1:U8	2-Q5
Q16	1:T10	2-R5
*R1	1:R10	1-B6
*R2	1:R10	1-B7
*R3	1:R9	1-B6
R7	1:R8	1-C6
R8	1:S7	1-D7
R11	1:R6	1-F7
R30	1:G9	1-M4
R31	1:E7	1-N5
R32	1:D6	1-Q4
R33	1:D6	1-Q4
R36	1:W9	2-C6
R38	1:V5	2-E7
R39	1:V5	2-E6
R42	1:V5	2-F7
RV43	1:V1	2-G7
R44	1:U4	2-H6
R47	1:V4	2-F6
RV48	1:W1	2-F6
R49	1:W10	2-C6
R50	1:W8	2-D6
RV52	1:T1	2-F5
R55	1:V5	2-E4
R56	1:V5	2-F4
RV57	1:S1	2-F4
R58	1:U5	2-H5
R61	1:V8	2-L5
R62	1:V8	2-L5
RV63	1:V6	2-M5
R64	1:T5	2-N5
R67	1:V3	2-M4
R68	1:U4	2-L3
RV69	1:V2	2-M3
R72	1:K10	1-H1
R73	1:U4	2-N2
RV74	1:W2	2-P2
R77	1:U6	2-P6
R78	1:U8	2-Q5
R80	1:U8	2-Q6
R81	1:V4	2-D7
R82	1:V4	2-D7
R83	1:V5	2-D4
R84	1:V5	2-D5
R85	1:U4	2-F4
R86	1:U4	2-G7
R87	1:T4	2-J7
R88	1:T5	2-J4
R89	1:N10	1-F3
R90	1:G1	1-M3
R91	1:F1	1-M3
R92	1:S1	2-D3
R93	1:U1	2-F6
R94	1:U2	2-F8
R95	1:U4	2-M2
R96	1:T4	2-K7
R97	1:T5	2-K5
R98	1:W8	2-M5
R99	1:W7	2-M5
R100	1:W7	2-M5
SK1	1:R10	1-A7

Note:
*C62 & C67 are mounted on the Directional Coupler PCB (220-01152-00).

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T858 Parts List (IPN 220-01423-02)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

C188	Deleted - not required for circuit performance (711141).
D113	Changed from MR750/SR2607 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).
R146	Changed from 6k8 (IPN 036-14680-10) to 10k (IPN 036-15100-10) } to adjust the control voltage to slow down the release time for cyclic keying (711060).
R154	Changed from 6k8 (IPN 036-14680-10) to 4k7 (IPN 036-14470-10) }
R195	Changed to a variant component with values as listed below to decrease the control voltage of #IC210 to prevent Q216 being overdriven - circuit reference changed to #R195 (710991/92). T858-10-XXXX: value unchanged at 2k2 (IPN 036-14220-00) T858-20-XXXX: changed from 2k2 (IPN 036-14220-00) to 2k4 (IPN 036-14240-10) T858-30-XXXX: changed from 2k2 (IPN 036-14220-00) to 2k4 (IPN 036-14240-10)
R196	Changed from 100Ω (IPN 036-13100-10) to 150Ω (IPN 036-13150-10) to decrease the control voltage of #IC210 to prevent Q216 being overdriven (710991/92).
R226	Changed from 30Ω (IPN 036-02030-10) to 27Ω (IPN 036-03127-10) to increase #IC210 input drive (710993).
R227, R230	Changed from 180Ω (IPN 036-03180-10) to 240Ω (IPN 036-03224-10) to increase #IC210 input drive (710993).
N-type connector	The N-type connector (IPN 240-02100-06), hood (IPN 240-06010-44) and semi-rigid coax (IPN 051-00641-01) have been replaced by a single sub-assembly (IPN 219-02709-00) (711022).
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).

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Parts List Amendments - Continued

This page is provided for entering future amendments to the parts list.

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Ref	Var	IPN	Description
%C101		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C103		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C105		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C107		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C109		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C111		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C113		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C115		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C117		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C119		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C121		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C123		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C124		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C125		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C127		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C129		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C131		015-27100-10	CAP CER 0805 1M+80-20% Y5V 16V
C132		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C133		015-23100-01	CAP CER 0805 100P 5% NPO 50V
%C134		015-06100-08	CAP CER 1206 100N 10% X7R 50V
%C135		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C137		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C138		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C139		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C141		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C143		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C145		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C146		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C147		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C148		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C149		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C150		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C151		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C153		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C154		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C155		015-25680-08	CAP CER 0805 68N 10% X7R 50V
C159		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C161		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C162		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C164		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C165		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C167		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C169		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C170		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C171		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C172		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C173		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C174		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C176		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C177		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C178		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C179		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C180		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C181		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C182		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C183		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C184		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C185		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C186		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C187		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C188		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C189		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C190		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C191		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C192		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C193		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C194		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C195		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C196		014-07470-03	L) CAP TANT SMD 4U7 35V 20%
C197		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C198		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C200		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C201		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C202		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C203		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C204		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C205		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C206		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C207		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C208		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C211		014-07470-04	CAP TANT SMD 4U7 50V 20%
C212		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C213		015-03100-06	CAP CER 1210 100P NPO500VGRM42
C215		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C216		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C220		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C221		015-03100-06	CAP CER 1210 100P NPO500VGRM42
C222		015-03100-06	CAP CER 1210 100P NPO500VGRM42
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C224		014-07470-04	CAP TANT SMD 4U7 50V 20%
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C226		015-03100-06	CAP CER 1210 100P NPO500VGRM42
C227		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C228		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
C249		015-03100-03	CAP CER 100P 5% NPO500V GRH111
C250		029-03100-02	CAP MICA 5 CASE 100P 5%
#C251	10	029-02100-02	CAP MICA 5 CASE 10P 5%
#C251	20	029-01750-02	CAP MICA 5 CASE 7P5 5%
#C251	30	029-01750-02	CAP MICA 5 CASE 7P5 5%
#C252	10	029-02470-02	CAP MICA 5 CASE 47P 5%
#C252	20	029-02390-02	CAP MICA 5 CASE 39P 5%
#C252	30	029-02360-02	CAP MICA 5 CASE 36P 5%
#C253	10	029-02560-02	CAP MICA 5 CASE 56P 5%
#C253	20	029-02390-02	CAP MICA 5 CASE 39P 5%
#C253	30	029-02360-02	CAP MICA 5 CASE 36P 5%
#C254	10	029-01390-02	CAP MICA 5 CASE 3P9 5%
#C254	20	029-01470-02	CAP MICA 5 CASE 4P7 5%
#C254	30	029-01470-02	CAP MICA 5 CASE 4P7 5%
#C256	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C256	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C256	30	029-02240-02	L) CAP MICA 5 CASE 24P 5%
#C257	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C257	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C257	30	029-02240-02	L) CAP MICA 5 CASE 24P 5%
C258		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
C259		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C272		014-07470-04	CAP TANT SMD 4U7 50V 20%
C275		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C276		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C277	10	029-02120-01	CAP MICA 10 CASE 12P 5%
#C277	20	029-02100-01	CAP MICA 10 CASE 10P 10%
#C277	30	029-02100-01	CAP MICA 10 CASE 10P 10%
#C278	10	029-02120-01	CAP MICA 10 CASE 12P 5%
#C278	20	029-02100-01	CAP MICA 10 CASE 10P 10%
#C278	30	029-02100-01	CAP MICA 10 CASE 10P 10%
#C280	10	029-01560-02	CAP MICA 5 CASE 5P6 5%
#C280	20	029-01470-02	CAP MICA 5 CASE 4P7 5%
#C280	30	029-01470-02	CAP MICA 5 CASE 4P7 5%
C282		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C283	10	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
#C283	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C283	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
C284		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C285	10	015-01390-02	CAP CER HIQ1210 3P9 5% NPO200V
#C285	20	015-01330-02	CAP CER HIQ1210 3P3 5% NPO200V
#C285	30	015-01330-02	CAP CER HIQ1210 3P3 5% NPO200V
C286		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C287		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C291		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C292		015-06100-08	CAP CER 1206 100N 10% X7R 50V
#CV255	10	029-02120-02	CAP MICA 5 CASE 12P 5%
#CV255	20	029-01750-02	CAP MICA 5 CASE 7P5 5%
#CV255	30	029-01680-02	CAP MICA 5 CASE 6P8 5%
D101		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D105		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
%D110		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D113		001-00011-60	S) DIODE MR750 OR SR2607
%D115		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D205		001-10066-00	DIODE SCHOTTKY HSMS2815
D206		001-10066-00	DIODE SCHOTTKY HSMS2815
IC101		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC103		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC105		002-10006-62	S)IC SMD LMC662CM 2X O-AMP
IC107		002-12951-00	IC SMD LP2951CM ADJ VLTGE REG
IC109		002-10003-17	(S) IC LM317L REG S0-8 100MA
IC200		002-10003-58	S) IC SMD LM358 DUAL O-AMP
#IC210	10	004-00687-62	MODULE M68762L 400-450MHZ 30W
#IC210	20	004-00687-61	MODULE M68762H 440-490MHZ 30W
#IC210	30	004-00687-63	MODULE M68762SH 470-520MHZ 30W
L101		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L103		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L105		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L200		056-10330-02	(L) IND SMD 330NH
L201		056-10330-02	(L) IND SMD 330NH
L202		056-10330-02	(L) IND SMD 330NH
L205		056-10330-02	(L) IND SMD 330NH
L207		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L209		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM
L210		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM
L211		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L212		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM
%L213		056-10330-02	(L) IND SMD 330NH
L235		051-00005-60	IND HAIRPIN 10MM TALL T859
#L236	10	052-08340-10	COIL A/W 1T/4.0MM SMD 0.8MM
#L236	20	052-08340-10	COIL A/W 1T/4.0MM SMD 0.8MM
#L236	30	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM
L237		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L238		065-10009-20	BEAD FER SMD BDS 3/3/8.9-4S2
L239		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L240		051-00653-00	FLAT STRIP INDUCTOR
L253		056-10330-02	(L) IND SMD 330NH
#L254	10	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L254	20	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L254	30	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L255	10	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM
#L255	20	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L255	30	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L256	10	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L256	20	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L256	30	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
L257		056-10330-02	(L) IND SMD 330NH
#L258	10	052-08325-10	COIL A/W 1T/2.5MM SMD 0.8MM

Ref	Var	IPN	Description
#L258	20	052-08320-10	COIL A/W 1T/2.0MM SMD 0.8MM
#L258	30	052-08320-10	COIL A/W 1T/2.0MM SMD 0.8MM
L259		051-00005-53	COIL TAIT NO553 A/W 10MM LINK
L260		052-08335-10	COIL A/W 1T/3.5MM SMD 0.8MM
LINK102		036-10000-00	RES M/F 0805 ZERO OHM
P200		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
P201		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
PL101		070-01001-00	D-RANGE 15 WAY COMPL T800
PL110		240-00021-03	LIM) HEADER 2X7 WAY SMD
%Q101		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
%Q103		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
%Q105		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
%Q107		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
%Q109		000-10008-69	S) XSTR SMD BC869 PNP 1W SOT89
Q111		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q113		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q115		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q117		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q119		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q121		000-10017-00	LS) XSTR SMD BF170LT1 SOT23
Q123		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q125		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q127		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q129		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q131		000-10017-00	LS) XSTR SMD BF170LT1 SOT23
Q133		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q135		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q136		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q137		000-00030-95	S) XSTR 2N6107 PNP TO220 AF
Q200		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q216		000-00006-58	S)XSTR MRF658 UHF 65W 6FL
R101		036-14100-10	RES M/F 0805 1K 1%
%R102		036-16220-00	RES M/F 0805 220K 5%
R103		036-15330-00	RES M/F 0805 33K 5%
R104		036-16470-00	RES M/F 0805 470K 5%
%R105		036-15150-00	RES M/F 0805 15K 5%
%R106		036-15150-00	RES M/F 0805 15K 5%
%R107		036-14390-10	RES M/F 0805 3K9 1%
%R108		036-14330-10	RES M/F 0805 3K3 1%
%R109		036-15100-10	RES M/F 0805 10K 1%
%R111		036-14820-10	RES M/F 0805 8K2 1%
%R112		036-14680-10	RES M/F 0805 6K8 1%
%R113		036-14100-10	RES M/F 0805 1K 1%
%R114		036-16100-00	RES M/F 0805 100K 5%
%R115		036-16220-00	RES M/F 0805 220K 5%
%R116		045-04470-00	RES NTC SMD 4K7 5% 20MW
R117		036-16220-00	RES M/F 0805 220K 5%
R118		036-15270-00	RES M/F 0805 27K 5%
R119		036-16470-00	RES M/F 0805 470K 5%
%R120		036-10000-00	RES M/F 0805 ZERO OHM
%R121		036-15150-00	RES M/F 0805 15K 5%
%R122		036-14390-10	RES M/F 0805 3K9 1%
R123		036-14100-10	RES M/F 0805 1K 1%
R124		036-16100-00	RES M/F 0805 100K 5%
R125		036-15100-10	RES M/F 0805 10K 1%
R126		036-14100-10	RES M/F 0805 1K 1%
R127		036-15100-10	RES M/F 0805 10K 1%
R128		036-15220-00	RES M/F 0805 22K 5%
R129		036-17100-10	RES M/F 0805 1M 1%
R130		036-14220-00	RES M/F 0805 2K2 5%
R131		036-16180-00	RES M/F 0805 180K 5%
R132		036-14100-10	RES M/F 0805 1K 1%
R133		036-15100-10	RES M/F 0805 10K 1%
R134		036-13470-00	RES M/F 0805 470E 5%
R135		036-13680-00	RES M/F 0805 680E 5%
R136		036-15100-10	RES M/F 0805 10K 1%
R137		036-13470-00	RES M/F 0805 470E 5%
R138		036-15100-10	RES M/F 0805 10K 1%
%R139		036-10000-00	RES M/F 0805 ZERO OHM
%R140		036-10000-00	RES M/F 0805 ZERO OHM
R141		036-15100-10	RES M/F 0805 10K 1%
R142		036-15100-10	RES M/F 0805 10K 1%
R143		036-15100-10	RES M/F 0805 10K 1%
R144		036-15220-00	RES M/F 0805 22K 5%
R145		036-15470-10	RES M/F 0805 47K 1%
R146		036-14680-10	RES M/F 0805 6K8 1%
%R147		036-10000-00	RES M/F 0805 ZERO OHM
R148		036-14820-10	RES M/F 0805 8K2 1%
R149		036-13470-00	RES M/F 0805 470E 5%
R150		036-12220-00	RES M/F 0805 22E 5%
R151		036-15100-10	RES M/F 0805 10K 1%
R152		036-15100-10	RES M/F 0805 10K 1%
R153		036-14680-10	RES M/F 0805 6K8 1%
R154		036-14680-10	RES M/F 0805 6K8 1%
R155		036-13220-00	RES M/F 0805 220E 5%
R156		036-13100-10	RES M/F 0805 100E 1%
R157		036-12220-00	RES M/F 0805 22E 5%
R158		036-14100-10	RES M/F 0805 1K 1%
R159		036-15100-10	RES M/F 0805 10K 1%
R160		036-14470-10	RES M/F 0805 4K7 1%
R161		036-14100-10	RES M/F 0805 1K 1%
R162		036-17100-10	RES M/F 0805 1M 1%
R163		036-13680-00	RES M/F 0805 680E 5%

Ref	Var	IPN	Description
R164		036-14220-00	RES M/F 0805 2K2 5%
R165		036-14100-10	RES M/F 0805 1K 1%
R166		036-13680-00	RES M/F 0805 680E 5%
R167		036-14220-00	RES M/F 0805 2K2 5%
R168		036-15100-10	RES M/F 0805 10K 1%
R169		036-14100-10	RES M/F 0805 1K 1%
R170		036-14100-10	RES M/F 0805 1K 1%
R171		036-14100-10	RES M/F 0805 1K 1%
R172		036-15100-10	RES M/F 0805 10K 1%
R173		036-13470-00	RES M/F 0805 470E 5%
R174		036-13220-00	RES M/F 0805 220E 5%
R175		036-16220-00	RES M/F 0805 220K 5%
R176		036-15100-10	RES M/F 0805 10K 1%
R177		036-14470-10	RES M/F 0805 4K7 1%
R178		036-16100-00	RES M/F 0805 100K 5%
R179		036-15100-10	RES M/F 0805 10K 1%
R180		036-16150-00	RES M/F 0805 150K 5%
R181		036-14560-00	RES M/F 0805 5K6 5%
R182		036-16100-00	RES M/F 0805 100K 5%
R183		036-14470-10	RES M/F 0805 4K7 1%
R184		036-14220-00	RES M/F 0805 2K2 5%
R185		036-03100-02	RES 100E 1206 200V 250MW RC01
R186		036-13100-10	RES M/F 0805 100E 1%
R187		036-03180-10	RES 180R 1W SMD 2512
R188		036-16100-00	RES M/F 0805 100K 5%
R189		036-12220-00	RES M/F 0805 22E 5%
R190		036-14150-00	RES M/F 0805 1K5 5%
R191		036-14100-10	RES M/F 0805 1K 1%
R192		036-13220-00	RES M/F 0805 220E 5%
R193		036-12100-00	RES M/F 0805 10E 5%
R194		036-03180-10	RES 180R 1W SMD 2512
R195		036-14220-00	RES M/F 0805 2K2 5%
R196		036-13100-10	RES M/F 0805 100E 1%
R198		036-14100-10	RES M/F 0805 1K 1%
R200		036-14470-10	RES M/F 0805 4K7 1%
R201		036-14680-10	RES M/F 0805 6K8 1%
R202		036-13390-00	RES M/F 0805 390E 5%
R203		036-14470-10	RES M/F 0805 4K7 1%
R204		036-13390-00	RES M/F 0805 390E 5%
R205		036-13100-10	RES M/F 0805 100E 1%
R207		036-15100-10	RES M/F 0805 10K 1%
R209		036-14470-10	RES M/F 0805 4K7 1%
R210		045-04470-00	RES NTC SMD 4K7 5% 20MW
R211		036-13560-00	RES M/F 0805 560E 5%
R215		045-05100-02	RES NTC 10K 2% Metal tagged
R223		036-11330-00	RES M/F 0805 3E3 5%
R224		036-11330-00	RES M/F 0805 3E3 5%
R225		036-11330-00	RES M/F 0805 3E3 5%
R226		036-02030-10	RES 30E 1W SMD 2512
R227		036-03180-10	RES 180R 1W SMD 2512
R230		036-03180-10	RES 180R 1W SMD 2512
R235		036-13100-10	RES M/F 0805 100E 1%
R236		036-13100-10	RES M/F 0805 100E 1%
R237		036-03100-02	RES 100E 1206 200V 250MW RC01
R238		036-03100-02	RES 100E 1206 200V 250MW RC01
R245		036-02030-10	RES 30E 1W SMD 2512
R247		036-11330-00	RES M/F 0805 3E3 5%
RV101		042-04500-05	RES PRESET SMD 5K CER 4MM SQ
RV103		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
RV105		042-04500-05	RES PRESET SMD 5K CER 4MM SQ
RV107		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
RV109		044-04200-06	RES PRE MULT 2K 15T PNL MTG
*RV111		044-04200-02	RES PRE MULT 2K VERT CER 10MM
RV113		042-06500-05	RES PRESET SMD 500K CER 4MM SQ
RV115		042-05200-05	RES PRESET SMD 20K CER 4MM SQ
SK101		240-10000-05	CONN SMD SKT 8W 2R M-MATCH
SK103		240-10000-05	CONN SMD SKT 8W 2R M-MATCH
SK201		240-02100-44	SKT COAX MINI JACK PCB MT ANG.

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T858 Mechanical & Miscellaneous Parts (220-01423-02)

IPN	Legend	Description
008-00014-79		S)LED 3MM RED WITH WIRE
008-00014-80		S)LED 3MM GREEN WITH WIRE
051-00641-01	2	COAX T859 SEMI-RIG N-TYPE EXTN
070-01001-00	3	D-RANGE 15 WAY COMPL T800 PL101
201-00050-25		AUTO 154 RED 41/0.3 PVC DC+ from D-range PCB.
201-00050-26		AUTO 154 BLACK 41/0.3 PVC DC- from D-range PCB.
219-02591-01	4	LOOM RIBBON 8 WAY FOR T839PA
219-02599-00		CABLE ASSY PA INPUT REAR DRIVE
219-02612-00		RG316 CABLE ASSY T869PA BNC to SK201 cable assembly with connectors.
219-02639-00		CABLE ASSEMBLY RG223/U N TO BNC Exciter/PA connecting cable assembly.
219-02709-00		T858/T859 N-TYPE CONNECTOR SUB
220-01423-02	5	PCB T858 PA SERIES II
220-01442-03	6	PCB T858SII DRNL COUPLER
240-02100-06	7	SKT COAX N TYPE PNL MTG OP-TER
240-02100-17	8	SKT COAX BNC PNL JAC CRP RG316
240-06010-15	9	BLOCK LATCHING 15W D RANGE
240-06010-44	10	HOOD CONN UHF & N-TYPE
303-23120-00	12	COVER A3M2288 HOLE BLANKING
303-23146-00	13	COVER SIDE T869 PA
308-01007-01	14	HANDLE BASE STATION SERIES II
308-13131-02	15	HEATSINK T859 PA DRILLED DCST
316-06617-00	16	PNL PA NO INP DRV SER II SNGL
319-01190-01	17	SHIELD WALL HARM. FILTER 869PA
319-01201-00	18	SHIELD LID HARM. FILTER 869PA
319-01202-00	19	SHIELD T869PA CONTROL CIRCUIT
319-30061-00	20	SPACER PLATE T889 WIRELINE
319-30064-00	21	SPACER HSINK RF MODULE 869PA
345-00040-16	22	SCRW M3X20MM P/POZ ST BZ
349-00010-59	23	SCRW 6-32 * 3/8 P/PH T/T ZP
349-00020-07	24	SCRW 4-40 X 5/16 P/POZ T/T BLK
349-00020-09	25	SCRW T/T 4-40X3/8 IN P/POZ BLK
349-00020-36	26	SCREW TT M3X8m PANTORX BLK
352-00010-29	27	NUT M4 NYLOC HEX
353-00010-10	28	WSHR M3 FLAT 7MM*0.6MM ST BZ
353-00010-24		WSHR M4x8MM FLAT Fits under M4 Nyloc nut securing handle.
356-00010-01	29	TAG SOLDER 3MM SHORT M6132/3.2
356-00010-03	30	TAG SOLDER 3MM LONG M614/3.2
356-00010-05	31	TAG SOLDER 4MM LONG M6144/4.2
356-00010-26		PIN TRACK HARWIN FOR 1.6MM PCB
360-00010-41	32	BUSH SHORTY BLK
362-00010-07	33	GASKET SIL INSULATING TO-220
362-00010-13	34	BUSH INSULATING 1.1MM TOP HAT
362-00010-33	35	GROMMET LED MTG 3MM
365-01538-00		LABEL WARNING 60W/PWR CLAMP
399-00010-51		BAG PLASTIC 75X100MM

Note

The following electrical components are also included in the mechanical assembly drawing.

000-00006-58	37	S)XSTR MRF658 UHF 65W 6FL Q216
000-00030-95	11	S) XSTR 2N6107 PNP TO220 AF Q137
004-00687-XX	36	#IC210
045-05100-02	1	RES NTC 10K 2% METAL TAGGED R215

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replace A4 pages D5.2.23/D5.2.24 with A3 pages D5.2.23/D5.2.24

replace A4 pages D5.2.23/D5.2.24 with A3 pages D5.2.23/D5.2.24

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T858 Grid Reference Index (IPN 220-01423-02)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit
%C101	1:D5	1-B8
%C103	1:D5	1-B9
%C105	1:B5	1-C8
%C107	1:B5	1-D9
%C109	1:B5	1-D8
%C111	1:B6	1-D8
%C113	1:B5	1-F8
%C115	1:B5	1-F8
%C117	1:B5	1-F9
%C119	1:A5	1-F8
%C121	1:C4	1-B6
%C123	1:D6	1-B6
C124	1:F2	1-C6
%C125	1:C5	1-D7
%C127	1:C6	1-D6
C129	1:B4	1-H5
C131	1:B4	1-J6
C132	1:B4	1-K7
C133	1:F5	1-K8
%C134	1:A5	1-M9
%C135	1:A6	1-M9
C137	1:F5	1-K8
C138	1:A3	1-L8
C139	1:B4	1-M6
C141	1:B3	1-L8
C143	1:D2	1-E7
C145	1:D2	1-E7
C146	1:B2	1-C5
C147	1:D3	1-F6
C148	1:F6	1-B5
C149	1:C3	1-F7
C150	1:E6	1-B3
C151	1:E6	1-D5
C153	1:E5	1-D3
C154	1:B1	1-C3
C155	1:D3	1-G3
C159	1:C3	1-H2
C161	1:E4	1-L4
C162	1:F4	1-L4
C164	1:B2	1-L4
C165	1:B3	1-M4
C167	1:Q4	1-P3
C169	1:Q3	1-P3
C170	1:Q4	1-Q3
C171	1:Q4	1-Q3
C172	1:D4	1-A0
C173	1:D4	1-B0
C174	1:D4	1-B0
C176	1:D3	1-E0
C177	1:E4	1-J5
C178	1:E5	1-E0
C179	1:D3	1-G2
C180	1:F1	1-H0
C181	1:F1	1-G0
C182	1:D1	1-H1
C183	1:B2	1-E2
C184	1:C5	1-G0
C185	1:E2	1-H1
C186	1:E2	1-J0
C187	1:F2	1-J1
C188	1:E2	1-J1
C189	1:D2	1-L1
C190	1:D2	1-M1
C191	1:F2	1-K0
C192	1:B1	1-N1
C193	1:B1	1-Q0
C194	1:G1	1-Q1
C195	1:C1	1-Q0
C196	1:F4	1-M1
C197	1:F3	1-N1
C198	1:E3	1-N0
C200	1:F3	2-J9
C201	1:E3	2-H8
C202	1:M4	2-E7
C203	1:M4	2-E7
C204	1:F2	2-F7
C205	1:E2	2-F7
C206	1:F3	2-L7
C207	1:B6	2-M7
C208	1:C6	2-N7
C211	1:U9	2-B3
C212	1:B2	2-H7
C213	1:S8	2-B3
C215	1:D6	2-N7
C216	1:C6	2-P7
C220	1:R7	2-C5
C221	1:R6	2-D5
C222	1:R6	2-E5
C223	1:Q7	2-F5
C224	1:Q7	2-F5
C225	1:S7	2-C3
C226	1:S6	2-C3
C227	1:T8	2-B2
C228	1:T7	2-B2
C249	1:N6	2-F5
C250	1:H7	2-M5
#C251	1:L6	2-G5
#C252	1:J7	2-J5
#C253	1:J6	2-K5
#C254	1:H6	2-L5
#C256	1:K6	2-H5
#C257	1:K7	2-H5
C258	1:H5	2-J4
C259	1:H4	2-L4
C272	1:H4	2-L4
C275	1:F7	2-J2
C276	1:F7	2-J1
#C277	1:C9	2-Q4
#C278	1:B8	2-R4
#C280	1:A7	2-R3
C282	1:D7	2-Q3
#C283	1:D7	2-R3
C284	1:E9	2-K0
#C285	2:D8	2-P3
C286	2:D7	2-Q3
C287	1:F9	2-L0
C291	1:D3	2-Q1
C292	1:E3	2-R1
#CV255	1:H8	2-L5
D101	1:C4	1-G4
D101	1:C4	1-G5
D103	1:V9	1-K9
D105	1:C3	1-J2
D105	1:C3	1-J2
D107	1:V9	1-K5
D109	1:V8	1-L5
%D110	1:F5	1-F5
%D110	1:F5	1-F5
D113	1:J4	1-R2
%D115	1:E5	1-G3
%D115	1:E5	1-G3
D205	1:G7	2-H1
D206	1:E9	2-K0
IC101	1:D5	1-B6
IC101	1:D5	1-N0
IC101	1:D5	1-B8
IC101	1:D5	1-C1
IC101	1:D5	1-F0
IC103	1:E5	1-D3
IC103	1:E5	1-H8
IC103	1:E5	1-F0
IC103	1:E5	1-J5
IC103	1:E5	1-D4
IC105	1:E3	1-F2
IC105	1:E3	1-N0
IC105	1:E3	1-P0
IC107	1:E2	1-K1
IC109	1:B1	1-P1
IC200	1:E3	2-J7
IC200	1:E3	2-R1
IC200	1:E3	2-P1
#IC210	1:R5	2-C2
L101	1:Q4	1-P3
%L102	1:A5	1-M9
L103	1:Q3	1-Q3
L105	1:F2	1-K0
L200	1:M4	2-E7
L201	1:F2	2-F7
L202	1:B6	2-N8
L205	1:D6	2-P8
L207	1:S7	2-C5
L209	1:R6	2-D5
L210	1:Q6	2-E5
L211	1:S7	2-C3
L212	1:S6	2-C3
%L213	1:T8	2-B2
L235	1:J6	2-K5
#L236	1:M6	2-G5
L237	1:L7	2-G5
L238	1:L8	2-G4
L239	1:J4	2-K4
L240	2:	2-L5
L253	1:F7	2-J2
#L254	1:D9	2-Q4
#L255	1:C8	2-Q4
#L256	1:A8	2-R4
L257	1:E9	2-K0
#L258	1:D7	2-P3
L259	1:D7	2-Q3
L260	1:C7	2-Q3
LINK102	1:V7	1-C1
P101	1:A6	1-R9
P103	1:P3	1-R0
P105	1:R3	1-R0
P200	1:F7	2-N4
P201	1:E9	2-P3
P202	1:J6	2-J5
P203	1:L6	2-J5
PL101	2:Q5	3-K3
PL110	1:C2	3-H2
%Q101	1:B5	1-C9
%Q103	1:B6	1-E8
%Q105	1:C6	1-D7
%Q107	1:B5	1-F8
%Q109	1:A5	1-G9
Q111	1:B3	1-J7
Q113	1:B4	1-K6
Q115	1:B4	1-L7
Q117	1:F5	1-K8
Q119	1:B4	1-L6
Q121	1:A3	1-L8
Q123	1:D2	1-E7
Q125	1:D3	1-F7
Q127	1:C4	1-G7
Q129	1:F4	1-L4
Q131	1:B3	1-M4
Q133	1:C4	1-D0
Q135	1:F1	1-H0
Q136	1:F1	1-G0
Q137	1:D2	1-J0
Q200	1:F3	2-L8
Q216	1:K6	2-J5
R101	1:D5	1-A8
%R102	1:D5	1-A9
R103	1:D5	1-A8
R104	1:D5	1-B9
%R105	1:D5	1-C8
%R106	1:B5	1-C8
%R107	1:B6	1-D7
%R108	1:B5	1-D9
%R109	1:B5	1-E9
%R111	1:B5	1-E8
%R112	1:B5	1-E9
%R113	1:A5	1-F9
%R114	1:C5	1-A6
%R115	1:E6	1-A6
%R116	1:C5	1-A7
R117	1:D6	1-A6

Device	PCB	Circuit
R118	1:C4	1-B6
R119	1:C5	1-C7
%R120	1:F2	1-H7
%R121	1:C5	1-C7
%R122	1:C6	1-C6
R123	1:F5	1-G7
R124	1:F4	1-H8
R125	1:E5	1-H8
R126	1:B4	1-H6
R127	1:B3	1-H7
R128	1:B3	1-J7
R129	1:F5	1-J9
R130	1:F4	1-J8
R131	1:B4	1-J7
R132	1:F5	1-J8
R133	1:B4	1-K7
R134	1:B4	1-K6
R135	1:V8	1-K9
R136	1:C4	1-K7
R137	1:B4	1-K6
R138	1:B4	1-L6
%R139	1:A5	1-M9
%R140	1:F5	1-E5
R141	1:D2	1-C6
R142	1:D2	1-E7
R143	1:D2	1-E6
R144	1:D4	1-F6
R145	1:D3	1-F7
R146	1:C4	1-G7
%R147	1:E6	1-G4
R148	1:F5	1-B5
R149	1:E5	1-B3
R150	1:E5	1-F0
R151	1:F6	1-C5
R152	1:E5	1-C3
R153	1:E4	1-F4
R154	1:E4	1-E3
R155	1:E4	1-F2
R156	1:D3	1-F3
R157	1:C5	1-F0
R158	1:C3	1-H3
R159	1:E4	1-H4
R160	1:E4	1-J5
R161	1:B3	1-J3
R162	1:E4	1-K4
R163	1:V9	1-K5
R164	1:E4	1-K4
R165	1:E4	1-K4
R166	1:V7	1-L5
R167	1:E4	1-G1
R168	1:D4	1-A1
R169	1:D4	1-A0
R170	1:D4	1-B1
R171	1:D4	1-B0
R172	1:D4	1-B1
R173	1:V7	1-C1
R174	1:V7	1-C1
R175	1:D5	1-C0
R176	1:C5	1-C0
R177	1:C4	1-D0
R178	1:C3	1-D1
R179	1:C3	1-E0
R180	1:C3	1-E0
R181	1:E4	1-E2
R182	1:D3	1-E0
R183	1:D3	1-E1
R184	1:E4	1-G1
R185	1:E1	1-H0
R186	1:E2	1-H1
R187	1:F1	1-H0
R188	1:D2	1-L1
R189	1:E3	1-N1
R190	1:E2	1-L0
R191	1:B1	1-P0
R192	1:B1	1-P1
R193	1:C1	1-Q1
R194	1:E1	1-H0
R195	1:E1	1-J0
R196	1:F1	1-J0
R198	1:D1	1-B4
R200	1:D3	2-H9
R201	1:F3	2-J8
R202	1:F3	2-H8
R203	1:D3	2-G8
R204	1:F3	2-H8
R205	1:D3	2-G7
R207	1:F3	2-K8
R209	1:F3	2-K7
R210	1:B6	2-M7
R211	1:D3	2-G7
R215	2:	2-D7
R223	1:R8	2-C4
R224	1:Q8	2-F4
R225	1:S7	2-C3
R226	1:T6	2-C2
R227	1:T7	2-B1
R230	1:T6	2-C1
R235	1:E7	2-L1
R236	1:G9	2-J0
R237	1:D6	2-R3
R238	1:D6	2-R3
R245	1:H4	2-K4
R247	1:H4	2-L3
RV101	1:C4	1-G8
RV103	1:C4	1-G6
RV105	1:C3	1-J5
RV107	1:C2	1-J3
RV109	1:V6	1-C2
*RV111	1:V6	1-C2
RV113	1:C3	1-D1
RV115	1:C2	1-L1
SK101	1:Q4	3-K2
SK103	1:A4	3-H3
SK201	1:S8	2-A2

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5.3 T859 Power Amplifier PCB

This section contains the following information.

IPN	Section	Page
220-01159-01	Parts List	5.3.3
	Mechanical & Miscellaneous Parts	5.3.8
	Mechanical Assembly	5.3.9
	Grid Reference Index	5.3.11
	PCB Layout - Bottom Side	5.3.13
	PCB Layout - Top Side	5.3.14
	RF Section Circuit Diagram	5.3.15
	Control Section Circuit Diagram	5.3.16
220-01422-03	Parts List	5.3.17
	Mechanical & Miscellaneous Parts	5.3.22
	Mechanical Assembly	5.3.23
	Grid Reference Index	5.3.25
	PCB Layout - Bottom Side	5.3.27
	PCB Layout - Top Side	5.3.28
	Control Section Circuit Diagram	5.3.29
	RF & Thermistor Control Sections Circuit Diagram	5.3.30

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T859 Parts List (IPN 220-01159-01)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

C2, C3	Changed from 27pF (IPN 015-02270-02) to 22pF (IPN 015-02220-06) to improve input matching and thus input sensitivity (710942).
C6	(Hi Band) 100n mylar capacitor and 10e resistor added in series across C6 to improve low power stability and eliminate 3MHz instabilities (710294).
C11 & C12	(Hi Band) 10p added across base & emitters of Q3. To ensure adequate drive power on hi band versions (90/08-390). (Hi Band) deleted to improve low power stability and eliminate 3MHz instabilities (710294).
C22	(Low Band) changed from 100p (015-03100-02) to 33p. To eliminate instability & improve power out (90/01-023). (Mid & Hi Bands) changed from 100p (015-03100-02) to 22p. To eliminate instability & improve power out (90/01-023).
C23	(Low Band) changed from 47p (029-02470-02) to 27p. To eliminate instability & improve power out (90/01-023). (Hi Band) changed from 47p (029-02470-02) to 39p. To accommodate power variations across the band (89/10-547) (Mid & Hi Bands) changed from 39p (029-02390-02) to 18p. To eliminate instability & improve power out (90/01-023).
C24	(Low Band) changed from 39p (029-02390-02) to 22p. To eliminate instability & improve power out (90/01-023). (Mid Band) changed from 39p (029-02390-02) to 18p. To eliminate instability & improve power out (90/01-023). (Hi Band) changed from 33p (029-02330-02) to 18p. To eliminate instability & improve power out (90/01-023).
C27,C43 & C47	(Hi Band) changed from 33p (029-02330-02) to 27p. To accommodate power variations across the band (89/10-547)
C28 & C49	(Mid & Hi Bands) changed from 33p (029-02330-02) to 27p. To eliminate instability & improve power out (90/01-023).
C27, C28, C42 C43, C47 & C49	Changed from mica case type to ceramic chip type. All values remain the same. To eliminate 3MHz & 90MHz instabilities (95/08-7040 & 96/07-7106)).
C42, C43, C47 & C49	(All Bands) changed from ceramic chip to cased mica. All values remain the same. To improve power output and reduce excessive heating around the collectors of the final transistors (710656, 711052).
C69	10u added. To eliminate instability & improve power out (90/01-023).
C70A	100n added. To eliminate instability & improve power out (90/01-023).
C80 & C86	150p deleted. To prevent 800kHz instability (93/03-155).
C102	150p deleted. To prevent 800kHz instability of Q15 & Q16 (95/08-7040 & 96/08-7113).
C130 & C131	150p added. To eliminate instability & improve power out (90/01-023).

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Parts List Amendments

D3	Changed from MR750/SR2607 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92).
IC4	LM317L added. To eliminate instability & improve power out (90/01-023).
L18, L35 & L38	Changed from coil 1.5T/8.0mm (052-08180-15) to Inductor Hairpin 10mm Tall (89/10-566).
L21	Changed from coil 1.5T/6.0mm (052-08160-15) to 2.5T/6.0mm (90/01-023).
L27 & L31	Changed from coil 1.5T/6.0mm (052-08160-15) to 2.5T/6.0mm (89/10-566).
R7	(Hi Band) changed from 33e (030-02330-20) to 68e. To ensure adequate drive power on hi band versions (90/08-390).
R11	(Hi Band) changed from 10e (032-32100-00) to 22e. To improve power output from driver stages (90/06-240).
R34 & R35	(Low & Mid Bands) 180e added across base & emitter of Q6. To eliminate instability & improve power out (90/01-023).
R37	1k added. To eliminate instability & improve power out (90/01-023).
R69	10e added. To eliminate instability & improve power out (90/01-023).
R70	220e added. To eliminate instability & improve power out (90/01-023).
R81	1k deleted. To ensure forward power alarm operates under all expected conditions (97/01-0012).
R82 & R84	Changed from 4k7 (036-14470-00) to 2k2. To ensure proper operation of alarm circuits (92/07-501).
R96	Changed from 10k (036-15100-00) to 4k7. To raise limits of reverse power alarm switching point (3/10/89).
R98	Changed from 1k (036-14100-00) to 3k9. To provide adequate setting margin for forward power alarm (89/11-581).
349-00020-36	The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).
356-00010-03	Solder tag fitted under R92 mounting screw and soldered to the PCB earth plane near R1/R2 junction to improve power alarm operation (710384).

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Note

LOW = 400-440MHZ
MID = 440-480MHZ
HI = 480-520MHZ

Ref	Var	IPN	Description
BRKT		012-04100-05	CAP F/THRU 1N SUPPR FLTR STUD MTG
CV1		028-02100-06	CAP TRIM 3/10P NPO TOP ADJ BLUE MUR TZ
C2		015-02270-02	CAP CER HIQ 1210 CHIP 27P 5% NPO 200V
C3		015-02270-02	CAP CER HIQ 1210 CHIP 27P 5% NPO 200V
C6		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C7		015-02220-02	CAP CER HIQ 1210 CHIP 22P 5% NPO 200V
CV8		028-02200-01	CAP TRIM 4/20P N750 TOP ADJ RED MUR TZ
*C11	LOW		NOT FITTED
*C11	MID		NOT FITTED
*C11	HI	015-02100-02	CAP CER HIQ 1210 CHIP 10P 5% NPO 200V
*C12	LOW		NOT FITTED
*C12	MID		NOT FITTED
*C12	HI	015-02100-02	CAP CER HIQ 1210 CHIP 10P 5% NPO 200V
C15		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C16		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C17		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C18		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C19		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C20		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
*C22	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C22	MID	029-02220-02	CAP MICA 5MM CASE 22P 5%
*C22	HI	029-02220-02	CAP MICA 5MM CASE 22P 5%
*C23	LOW	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C23	MID	029-02180-02	CAP MICA 5MM CASE 18P 5%
*C23	HI	029-02180-02	CAP MICA 5MM CASE 18P 5%
*C24	LOW	029-02220-02	CAP MICA 5MM CASE 22P 5%
*C24	MID	029-02180-02	CAP MICA 5MM CASE 18P 5%
*C24	HI	029-02180-02	CAP MICA 5MM CASE 18P 5%
*C27	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C27	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C27	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C28	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C28	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C28	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C29		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV32		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C33	LOW	015-01560-02	CAP CER HIQ 1210 CHIP 5P6 5% NPO 200V
*C33	MID		NOT FITTED
*C33	HI		NOT FITTED
CV34		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
CV35		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C36	LOW	029-02390-02	CAP MICA 5MM CASE 39P 5%
*C36	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C36	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C37		029-02330-02	CAP MICA 5MM CASE 33P 5%
*C40	LOW	029-02390-02	CAP MICA 5MM CASE 39P 5%
*C40	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C40	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C41		029-02330-02	CAP MICA 5MM CASE 33P 5%
*C42	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C42	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C42	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C43	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C43	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C43	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C45		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
C46		015-03100-02	CAP CER HIQ 1210 CHIP 100P 5% NPO 200V
*C47	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C47	MID	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C47	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C49	LOW	029-02330-02	CAP MICA 5MM CASE 33P 5%
*C49	MID	029-02270-02	CAP MICA 5MM CASE 27P 5%
*C49	HI	029-02270-02	CAP MICA 5MM CASE 27P 5%
C50		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV51		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C52	LOW	015-01560-02	CAP CER HIQ 1210 CHIP 5P6 5% NPO 200V
*C52	MID		NOT FITTED
*C52	HI		NOT FITTED
C54		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C55		020-07470-04	CAP ELECT RADL 4M7 25V 20% 8X13MM SOLID
C56		029-03100-02	CAP MICA 5MM CASE 100P 5%
CV57		028-02100-03	CAP TRIM 2/10P JOHNSON 187-0106-175
*C58	LOW	015-01560-02	CAP CER HIQ 1210 CHIP 5P6 5% NPO 200V
*C58	MID		NOT FITTED
*C58	HI		NOT FITTED
C60		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C61		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
*C62	LOW	015-01390-02	CAP CER HIQ 1210 CHIP 3P9 5% NPO 200V
*C62	MID	015-01330-02	CAP CER HIQ 1210 CHIP 3P3 5% NPO 200V
*C62	HI	015-01330-02	CAP CER HIQ 1210 CHIP 3P3 5% NPO 200V
*C63	LOW	029-02120-01	CAP MICA 10MM CASE 12P 5%
*C63	MID	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C63	HI	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C65	LOW	029-02120-01	CAP MICA 10MM CASE 12P 5%
*C65	MID	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C65	HI	029-02100-01	CAP MICA 10MM CASE 10P 10%
*C66	LOW	029-01560-02	CAP MICA 5MM CASE 5P6 5%
*C66	MID	029-01470-02	CAP MICA 5MM CASE 4P7 5%
*C66	HI	029-01470-02	CAP MICA 5MM CASE 4P7 5%

Ref	Var	IPN	Description
C67		015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
C68		015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
C69		025-08100-02	CAP TANT BEAD 10M 10% 16V
*C70	LOW	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
*C70	MID	015-21390-01	CAP CER 0805 CHIP 3P9 +/-0.25P NPO 50V
*C70	HI	015-21390-01	CAP CER 0805 CHIP 3P9 +/-0.25P NPO 50V
C70A		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C72		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C73		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C76		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C77		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C78		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C81		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C84		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C85		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C87		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C90		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C91		025-08100-02	CAP TANT BEAD 10M 10% 16V
C92		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C93		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C96		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C97		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C98		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C99		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C100		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C101		015-25100-08	CAP CER 0805 CHIP 10N 10% X7R 50V
C102		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C103		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C104		015-24470-08	CAP CER 0805 CHIP 4N7 10% X7R 50V
C105		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C106		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C108		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C109		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C110		015-01680-02	CAP CER HIQ 1210 CHIP 6P8 5% NPO 200V
C111		015-01560-02	CAP CER HIQ 1210 CHIP 5P6 5% NPO 200V
C112		015-01820-06	CAP CER 1210 CHIP 8P2 NPO 500V GRM42-2
C113		015-01820-06	CAP CER 1210 CHIP 8P2 NPO 500V GRM42-2
C114		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C115		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C116		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C117		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C118		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C119		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C120		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C121		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C122		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C123		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C124		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C125		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C126		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C127		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C128		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C129		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C130		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
C131		015-23150-01	CAP CER 0805 CHIP 150P 5% NPO 50V
D1		001-00013-45	(S) DIODE SCHOTTKY 1SS97/2
D2		001-00013-45	(S) DIODE SCHOTTKY 1SS97/2
D3		001-00011-60	(S) DIODE SR2607 6A/30V
D5		008-00013-32	(S) LED 3MM RED LO CURRENT NO MTG
D6		001-10000-70	(S) DIODE SMD BAV70 DUAL SW SOT-23 COM CA
D10		008-00013-35	(S) LED 3MM GREEN LO CURRENT NO MTG
D11		008-00013-32	(S) LED 3MM RED LO CURRENT NO MTG
D13		001-10000-70	(S) DIODE SMD BAV70 DUAL SWSOT-23 COM CA
D17		001-10000-70	(S) DIODE SMD BAV70 DUAL SW SOT-23 COM CA
IC1		002-10003-24	(S) IC SMD 324 QUAD OP AMP SO14
IC2		002-00014-62	(S) IC 317L 100MA REG 3 TERMINAL TO-92
IC3		002-10003-24	(S) IC SMD 324 QUAD OP AMP SO14
IC4		002-00014-62	(S) IC 317L 100MA REG 3 TERMINAL TO-92
L1		052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L2		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L3		065-00010-04	BEAD FERRITE F8 4X2X5MM
L5		065-00010-04	BEAD FERRITE F8 4X2X5MM
L6		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L7		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L8		065-00010-04	BEAD FERRITE F8 4X2X5MM
L11		065-00010-04	BEAD FERRITE F8 4X2X5MM
L12		065-00010-04	BEAD FERRITE F8 4X2X5MM
L13		052-08160-15	COIL A/W 1.5T/6.0MM HOR 0.8MM WIRE
L14		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L15		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L16		065-00010-04	BEAD FERRITE F8 4X2X5MM
L17		065-00010-04	BEAD FERRITE F8 4X2X5MM
L18		051-00005-60	IND HAIRPIN 10MM TALL T859
L19		051-00005-39	COUPLER WIRELINE TAIT COIL DWG NO 539
L20		052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
L21		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L22		065-00010-04	BEAD FERRITE F8 4X2X5MM
L23		051-00005-45	COIL IND 18MM FORMED COPPER STRIP
L24		052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
L25		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM WIRE
L26		052-08130-15	COIL A/W 1.5T/3.0MM HOR 0.8MM WIRE
L27		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L28		065-00010-04	BEAD FERRITE F8 4X2X5MM
L31		052-08160-25	COIL A/W 2.5T/6.0MM HOR 0.8MM WIRE
L32		065-00010-04	BEAD FERRITE F8 4X2X5MM

Ref	Var	IPN	Description
L35		051-00005-60	IND HAIRPIN 10MM TALL T859
L36		065-00010-04	BEAD FERRITE F8 4X2X5MM
L37		065-00010-04	BEAD FERRITE F8 4X2X5MM
L38		051-00005-60	IND HAIRPIN 10MM TALL T859
L39		051-00005-54	COUPLER WIRELINE TAIT COIL DWG NO 554
L41		056-00021-04	IND FXD 330NH AXIAL
*L42	LOW	052-08340-10	COIL A/W 1T/4.0MM SMD 0.8MM WIRE
*L42	MID	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
*L42	HI	052-08330-10	COIL A/W 1T/3.0MM SMD 0.8MM WIRE
L43		052-08335-10	COIL A/W 1T/3.5MM SMD 0.8MM WIRE
*L45	LOW	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM WIRE
*L45	MID	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L45	HI	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L46	LOW	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM WIRE
*L46	MID	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L46	HI	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L47	LOW	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM WIRE
*L47	MID	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
*L47	HI	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM WIRE
L49		056-00021-04	IND FXD 330NH AXIAL
L51		056-00021-04	IND FXD 330NH AXIAL
L52		051-00005-53	COIL TAIT NO 553 A/W 10MM LINK T858/9
Q1		000-00022-71	(S) XSTR SD1135 NPN STUD MTG UHF PWR 5W
Q3		000-00032-79	(S) XSTR MRF654 UHF PWR 15W STUD
Q4		000-00032-67	(S) XSTR MRF648 UHF PWR 60W 6LFL
Q6		000-00032-67	(S) XSTR MRF648 UHF PWR 60W 6LFL
Q7		000-00032-67	(S) XSTR MRF648 UHF PWR 60W 6LFL
Q10		000-00020-70	(S) XSTR BS170 JFET TO-92 SMALL SIG
Q11		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q12		000-00020-70	(S) XSTR BS170 JFET TO-92 SMALL SIG
Q13		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q15		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q16		000-00030-95	(S) XSTR 2N6107 PNP TO-220 AF PWR
Q17		000-10008-57	(S) XSTR SMD BCW70/BC857-215 PNP SOT23 AF
Q18		000-00011-70	(S) XSTR BD136 PNP AF PWR TO126
Q19		000-10008-57	(S) XSTR SMD BCW70/BC857-215 PNP SOT23 AF
Q20		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
Q21		000-10008-17	(S) XSTR SMD BC817-25 NPN SOT-23 AF LO PWR
R1		030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6MM
R2		030-02120-20	RES FILM 12E 5% 0.4W 4X1.6MM
R3		030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6MM
*R7	LOW	030-52330-20	RES FILM AI 33E 5% 0.4W 4X1.6MM
*R7	MID	030-52330-20	RES FILM AI 33E 5% 0.4W 4X1.6MM
*R7	HI	030-52680-20	RES FILM AI 68E 5% 0.4W 4X1.6MM
R8		032-33100-00	RES M/F PWR 100E 5% 1W 10X4MM
*R11	LOW	032-32100-00	RES M/F PWR 10E 5% 1W 10X4MM
*R11	MID	032-32100-00	RES M/F PWR 10E 5% 1W 10X4MM
*R11	HI	032-32220-00	RES M/F PWR 22E 5% 1W 12X4.5MM
R30		030-53100-20	RES FILM AI 100E 5% 0.4W 4X1.6MM
R31		030-53100-20	RES FILM AI 100E 5% 0.4W 4X1.6MM
R32		030-02820-20	RES FILM 82E 5% 0.4W 4X1.6MM
R33		030-02820-20	RES FILM 82E 5% 0.4W 4X1.6MM
*R34	LOW	032-33180-01	RES M/F PWR 180E 5% 2.5W 17X5MM
*R34	MID	032-33180-01	RES M/F PWR 180E 5% 2.5W 17X5MM
*R34	HI		NOT FITTED
*R35	LOW	032-33180-01	RES M/F PWR 180E 5% 2.5W 17X5MM
*R35	MID	032-33180-01	RES M/F PWR 180E 5% 2.5W 17X5MM
*R35	HI		NOT FITTED
R36		036-13680-00	RES M/F 0805 CHIP 680E 5%
R37		036-14100-00	RES M/F 0805 CHIP 1K 5%
R38		036-17100-00	RES M/F 0805 CHIP 1M 5%
R42		036-15100-00	RES M/F 0805 CHIP 10K 5%
RV43		042-05470-09	RES PRESET 50K CERMET 9.5MM SQ FLAT
R44		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R47		036-16100-00	RES M/F 0805 CHIP 100K 5%
RV48		042-04500-08	RES PRESET 5K CERMET 9.5MM SQ FLAT
R49		036-13680-00	RES M/F 0805 CHIP 680E 5%
R50		036-13680-00	RES M/F 0805 CHIP 680E 5%
RV52		042-04500-08	RES PRESET 5K CERMET 9.5MM SQ FLAT
R55		036-17100-00	RES M/F 0805 CHIP 1M 5%
R56		036-15100-00	RES M/F 0805 CHIP 10K 5%
RV57		042-05470-09	RES PRESET 50K CERMET 9.5MM SQ FLAT
R58		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R61		036-13220-00	RES M/F 0805 CHIP 220E 5%
R62		036-14100-00	RES M/F 0805 CHIP 1K 5%
*RV63	LOW	044-04200-03	RES PRESET MULTITURN 2K 10T PNL MTG
*RV63	MID	044-04200-03	RES PRESET MULTITURN 2K 10T PNL MTG
*RV63	HI	044-04200-03	RES PRESET MULTITURN 2K 10T PNL MTG
R64		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R67		036-15100-00	RES M/F 0805 CHIP 10K 5%
R68		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R69		036-12100-00	RES M/F 0805 CHIP 10E 5%
RV69		042-04220-02	RES PRESET 2K CERMET 9.5MM SQ FLAT
R70		036-13220-00	RES M/F 0805 CHIP 220E 5%
R72		045-04470-01	RES NTC 4K7 20% 5MM DISC
R73		036-16220-00	RES M/F 0805 CHIP 220K 5%
RV74		042-05100-10	RES PRESET 10K CERMET 9.5MM SQ FLAT
R77		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R78		036-14100-00	RES M/F 0805 CHIP 1K 5%
R80		036-13100-00	RES M/F 0805 CHIP 100E 5%
R81		036-14100-00	RES M/F 0805 CHIP 1K 5%
R82		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R83		036-14100-00	RES M/F 0805 CHIP 1K 5%
R84		036-14220-00	RES M/F 0805 CHIP 2K2 5%
R85		036-14100-00	RES M/F 0805 CHIP 1K 5%
R86		036-14100-00	RES M/F 0805 CHIP 1K 5%
R87		036-15100-00	RES M/F 0805 CHIP 10K 5%
R88		036-15100-00	RES M/F 0805 CHIP 10K 5%
R89		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R90		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R91		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R92		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R93		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R94		039-02500-01	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM
R95		036-14100-00	RES M/F 0805 CHIP 1K 5%
R96		036-14470-00	RES M/F 0805 CHIP 4K7 5%
R97		036-14100-00	RES M/F 0805 CHIP 1K 5%
R98		036-14390-00	RES M/F 0805 CHIP 3K9 5%
R99		036-14100-00	RES M/F 0805 CHIP 1K 5%
R100		036-14100-00	RES M/F 0805 CHIP 1K 5%
R101		036-12100-00	RES M/F 0805 CHIP 10E 5%
R102		036-16220-00	RES M/F 0805 CHIP 220K 5%
R103		036-15330-00	RES M/F 0805 CHIP 33K 5%
R104		036-15150-00	RES M/F 0805 CHIP 15K 5%
R105		036-16470-00	RES M/F 0805 CHIP 470K 5%
R106		036-15150-00	RES M/F 0805 CHIP 15K 5%
R107		036-14390-00	RES M/F 0805 CHIP 3K9 5%
R108		036-15100-00	RES M/F 0805 CHIP 10K 5%
R109		036-14330-00	RES M/F 0805 CHIP 3K3 5%
R110		036-16100-00	RES M/F 0805 CHIP 100K 5%
R111		036-16220-00	RES M/F 0805 CHIP 220K 5%
R112		036-16220-00	RES M/F 0805 CHIP 220K 5%
R113		036-15270-00	RES M/F 0805 CHIP 27K 5%
R115		036-16470-00	RES M/F 0805 CHIP 470K 5%
R116		045-04470-01	RES NTC 4K7 20% 5MM DISC
R117		036-15150-00	RES M/F 0805 CHIP 15K 5%
R118		036-14390-00	RES M/F 0805 CHIP 3K9 5%
R119		036-14820-00	RES M/F 0805 CHIP 8K2 5%
R120		036-14680-00	RES M/F 0805 CHIP 6K8 5%
R121		036-14100-00	RES M/F 0805 CHIP 1K 5%
R122		036-14100-00	RES M/F 0805 CHIP 1K 5%
R123		036-13470-00	RES M/F 0805 CHIP 470E 5%
R124		036-13220-00	RES M/F 0805 CHIP 220E 5%
SK1		240-02100-44	SKT COAX MINI JACK PCB MTG ANGLED

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T859 Mechanical & Miscellaneous Parts (220-01159-01)

IPN	Legend	Description
012-04100-05	30	CAP F/THRU 1N SUPPR FLTR S-MTG
065-00010-20		BEAD FERRITE BALUN 4B1 PHILIPS Placed on DC+ power cables.
070-01001-00	23	D-RANGE 15 WAY COMPL T800
070-02003-00		LED RED COMPL T800 PA “High Rev/Low Fwd Power” LEDs - D11/D5
070-02004-00		LED GREEN COMPL T800 PA “Supply” LED - D10
201-00030-01		WIRE T/C 7/0.2 PVC BROWN Forward power alarm.
201-00030-03		WIRE T/C 7/0.2 PVC ORANGE Reverse power meter.
201-00030-04		WIRE T/C 7/0.2 PVC YEL Reverse power.
201-00030-05		WIRE T/C 7/0.2 PVC GRN Forward power meter.
201-00030-06		WIRE T/C 7/0.2 PVC BLUE Tx-Key.
201-00030-07		WIRE T/C 7/0.2 PVC VIOLET Reverse power alarm.
201-00030-09		WIRE T/C 7/0.2 PVC WHITE Temperature sense.
201-00030-10		WIRE T/C 7/0.2 PVC BLACK Forward power.
201-00050-12		AUTO 152 RED 28/0.3 PVC DC+ from D-range PCB.
201-00050-20		AUTO 152 BLACK 28/0.3 PVC DC- from D-range PCB.
219-02592-00		CABLE ASSY RG223/U N TO BNC Exciter/PA connecting cable.
219-02599-00		CABLE ASSY PA INPUT REAR DRIVE RF input cable/connector assembly.
220-01152-00	2	PCB T858/859 DIRNL COUPLER
220-01159-01	1	PCB T859 100W PA A1C674
240-02100-06	26	SKT COAX N TYPE PNL MTG OP-TER
240-02100-17	27	SKT COAX BNC PNL JAC CRP RG316 Part of 219-02599-00 sub-assembly.
240-06010-15	25	BLOCK LATCHING 15W D RANGE
258-00010-03	31	FAN 12V 119X119X25MM TUBE AX
302-05204-00	29	BRKT A3M2314 F/THRU MTG T859
303-23117-00	44	COVER SIDE COMPL A2M2223
303-50005-00	36	CONTACT A4M2311 SPRING EARTH
308-01007-01	38	HANDLE BASE STATION SERIES II
308-13085-01	4	HSINK DIECAST T858 50W PA
308-13086-00	19	HSINK A3M2271 2MM W/LINE PA
316-06651-00	37	PNL PA NO INP DRV SER II DBL
316-85018-00	27	PIN A4M1397 COAX CONDUCTOR
319-01147-00	3	SHIELD A3M2224 WALL T859 PA
319-01148-00	35	SHIELD A3M2225 LID T859 PA
319-30033-00	13	SPACER A4M1339 UHF PA
345-00040-16	24	SCRW M3X20MM P/POZ ST BZ
349-00020-07	6	SCRW 4-40 X 5/16 P/POZ T/T BLK
349-00020-09	11	SCRW T/T 4-40X3/8 IN P/POZ BLK
349-00020-36	43	LIM)SCREW TT M3X8m PANTORX BLK
349-00020-43	34	SCRW T/T M4X12MM P/POZ BZ
349-00020-49	32	SCRW T/T M4X35MM P/POZ BZ
349-00020-50	21	SCRW T/T 4-40 * 5/8 P/POZ BLK
352-00010-29	40	NUT M4 NYLOC HEX
352-00010-35	15	NUT 8-32 UNC HEX XSTR MTG
353-00010-10	10	WSHR M3 FLAT 7MM*0.6MM ST BZ
353-00010-24	39	WSHR M4x8mm Flat
356-00010-01	18	TAG SOLDER 3MM SHORT M6132/3.2
356-00010-03	5	TAG SOLDER 3MM LONG M614/3.2
357-00010-45	33	CLAMP CABLE 4.8MM P CLIP
360-00010-41	42	BUSH SHORTY BLK
362-00010-07	7	GASKET SIL INSULATING TO-220
362-00010-13	9	BUSH INSULATING 1.1MM TOP HAT
362-00010-33	41	GROMMET LED MTG 3MM
365-00100-20		LABEL WHITE S/A 28X11MM
365-01540-00		LABEL PA TYPE APPL/SERIAL NO
369-00010-14		TIE CABLE NYLON 100*2.6MM
399-00010-51		BAG PLASTIC 75*100MM
400-00020-07		SLEEVING 2MM SIL RUBBER
400-00020-09		SLEEVING 3MM SIL RUBBER
400-00020-30		HEATSHRINK 3MM
410-00010-43		PKG T296 AMPAC REF 73-46

Note

The following electrical components are also included in the mechanical assembly drawing to help identify certain mechanical components.

000-00022-71	14	(S) XSTR SD1135 NPN STUD MTG UHF PWR 5W - Q1
000-00030-95	8	(S) XSTR 2N6107 PNP TO-220 AF PWR - Q16
000-00032-79	16	(S) XSTR MRF654 UHF PWR 15W STUD - Q3
000-00032-67	17	(S) XSTR MRF648 UHF PWR 60W 6LFL Q4, Q6, Q7
039-02500-01	12	DUMMY LOAD 50E 1% 10W TO-220 NIKKOHM - R89/90/91/92/93/94
051-00005-39	20	COUPLER WIRELINE TAIT COIL DWG NO 539 - L19
051-00005-54	22	COUPLER WIRELINE TAIT COIL DWG NO 554 - L39

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replace A4 pages D5.3.9/D5.3.10 with A3 pages D5.3.9/D5.3.10

replace A4 pages D5.3.9/D5.3.10 with A3 pages D5.3.9/D5.3.10

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T859 Grid Reference Index (IPN 220-01159-01)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit
CV1	1:Q9	1-E7
C2	1:Q8	1-E7
C3	1:R8	1-E7
C6	1:S8	1-B8
C7	1:Q7	1-C8
CV8	1:R7	1-B7
C15	1:S5	1-B2
C16	1:S5	1-B3
C17	1:S6	1-C3
C18	1:T3	1-C3
C19	1:S2	1-D3
C20	1:S3	1-E3
*C22	1:Q5	1-B2
*C23	1:Q5	1-C2
*C24	1:R5	1-C1
*C27	1:Q3	1-D2
*C28	1:R3	1-E2
C29	1:P3	1-E2
CV32	1:P2	1-E1
*C33	1:P3	1-F1
CV34	1:M4	1-G2
CV35	1:M8	1-G5
*C36	1:L8	1-G5
C37	1:L8	1-H5
*C40	1:L4	1-G1
C41	1:L3	1-H1
*C42	1:K4	1-J1
*C43	1:K3	1-J1
C45	1:K4	1-J3
C46	1:K7	1-J6
*C47	1:K8	1-J5
*C49	1:K8	1-J5
C50	1:H8	1-K5
CV51	1:H8	1-L5
*C52	1:J8	1-K5
C54	1:K6	1-K3
C55	1:K6	1-K3
C56	1:H4	1-L2
CV57	1:H3	1-L1
*C58	1:J3	1-K1
C60	1:E9	1-N5
C61	1:F9	1-N5
*C62	See Note	1-P5
*C63	1:C9	1-P5
*C65	1:C9	1-Q5
*C66	1:B8	1-R5
C67	See Note	1-P4
C68	1:D7	1-Q4
C69	1:W6	2-G1
*C70	1:D6	1-Q4
C70A	See Note	2-J1
C72	1:E6	1-L6
C73	1:F6	1-L6
C76	1:V10	2-B8
C77	1:V10	2-B8
C78	1:U10	2-C7
C80	1:U6	2-H8
C81	1:U2	2-F6
C84	1:V9	2-B4
C85	1:V9	2-B4
C86	1:W6	2-G3
C87	1:T2	2-E2
C90	1:V7	2-C0
C91	1:W8	2-M2
C92	1:U6	2-P2
C93	1:U6	2-N2
C96	1:U5	2-K0
C97	1:J10	1-Q8
C98	1:K10	1-R8
C99	1:U6	2-L0
C100	1:U6	2-N1
C101	1:V3	2-N0
C102	1:U8	2-Q2
C103	1:U8	2-Q1
C104	1:T6	2-R3
C105	1:T9	2-R2
C106	1:T8	2-R1
C108	1:T4	2-J8
C109	1:T4	2-H3
C110	1:E3	1-N3
C111	1:N8	1-F5
C112	1:F3	1-M1
C113	1:D3	1-P1
C114	1:V10	2-A8
C115	1:V9	2-A4
C116	1:V3	2-N1
C117	1:W5	2-P8
C118	1:V4	2-P8
C119	1:U4	2-P7
C120	1:U4	2-P6
C121	1:V4	2-P5
C122	1:V4	2-P5
C123	1:T5	2-Q7
C124	1:U5	2-Q7
C125	1:T5	2-R8
C126	1:U3	2-N6
C127	1:U3	2-M7
C128	1:V3	2-M4
C129	1:U3	2-N5
C130	1:V10	2-C8
C131	1:V9	2-C4
D1	1:F6	1-M6
D2	1:E9	1-N5
D3	1:S3	2-B1
D5	1:W9	2-C8
D6	1:U2	2-G6
D10	1:W10	2-B5
D11	1:W9	2-C5
D13	1:T2	2-E2
D17	1:V3	2-N1
		2-N1
IC1	1:V6	2-E8
		2-D5
		2-P2
		2-L1
		2-G1
IC2	1:V8	2-D0
IC3	1:U4	2-H8
		2-G4
		2-N6
		2-N5
		2-F1
IC4	1:V5	2-H1
L1	1:R9	1-E7
L2	1:P9	1-D7
L3	1:P9	1-D7
L5	1:T8	1-D9
L6	1:R7	1-C8
L7	1:P7	1-B7
L8	1:P8	1-B7
L11	1:S7	1-A4
L12	1:S5	1-A3
L13	1:R5	1-A2
L14	1:Q3	1-E2
L15	1:K8	1-K5
L16	1:S4	1-C3
L17	1:S3	1-D3
L18	1:R3	1-D2
L19	1:N6	1-F3
L20	1:F3	1-M2
L21	1:P5	1-B2
L22	1:P6	1-B1
L23	1:K4	1-K2
L24	1:D3	1-P2
L25	1:M3	1-F1
L26	1:M8	1-F5
L27	1:L9	1-G5
L28	1:M9	1-G5
L31	1:M3	1-G2
L32	1:M2	1-G1
L35	1:J7	1-J6
L36	1:J6	1-J6
L37	1:J5	1-J3
L38	1:J4	1-J2
L39	1:H6	1-L4
L41	1:F9	1-N5
*L42	1:D7	1-P4
L43	1:C7	1-Q4
*L45	1:C8	1-P5
*L46	1:C9	1-Q5
*L47	1:B8	1-Q5
L49	1:F6	1-M6
L51	1:K10	1-Q9
L52	1:C7	1-P4
PL1	1:J5	2-A2
		2-A1
		2-A2
		2-A2
		2-A1
		2-A9
		2-A6
		2-A0
		2-A0
		2-A1
		2-A1
		2-A0
		2-A5
		2-A3
		2-A8
Q1	1:Q8	1-C7
Q3	1:Q6	1-A2
Q4	1:Q4	1-D2
Q6	1:K8	1-H5
Q7	1:K4	1-H2
Q10	1:V10	2-B8
Q11	1:U10	2-C8
Q12	1:V9	2-B5
Q13	1:U9	2-C4
Q15	1:U8	2-Q2
Q16	1:T10	2-R2
Q17	1:T5	2-R7
Q18	1:T5	2-R8
Q19	1:V4	2-P8
Q20	1:U5	2-Q7
Q21	1:V4	2-Q5
R1	1:R10	1-F7
R2	1:R9	1-F7
R3	1:R9	1-F7
R7	1:R9	1-D7
R8	1:S7	1-C8
R11	1:R6	1-A7
R30	1:G9	1-M5
R31	1:E7	1-N6
R32	1:D6	1-Q4
R33	1:D6	1-R4
*R34	See Note	1-G5
*R35	See Note	1-H5
R36	1:W9	2-C7
R37	1:W4	2-K0
R38	1:W5	2-E8
R42	1:V5	2-F8
RV43	1:V1	2-G6
R44	1:U6	2-G6
R47	1:W5	2-F8
RV48	1:W1	2-F8
R49	1:W10	2-B6
R50	1:W8	2-C5
RV52	1:T1	2-F5
R55	1:V6	2-D4
R56	1:V6	2-E4
RV57	1:S1	2-E3
R58	1:U6	2-G5
R61	1:V8	2-E0
R62	1:V8	2-D0
*RV63	1:V6	2-M2
R64	1:U6	2-N2
R67	1:W5	2-K2
R68	1:U5	2-L2
R69	1:V6	2-G1
RV69	1:V2	2-H1
R70	1:V5	2-G1
R72	1:J10	1-Q8
R73	1:U5	2-L0
RV74	1:W2	2-M0
R77	1:V6	2-P3
R78	1:U8	2-Q2

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Device	PCB	Circuit
R80	1:U8	2-Q3
R81	1:W5	2-D7
R82	1:V5	2-D8
R83	1:V6	2-C4
R84	1:V6	2-C4
R85	1:T6	2-E3
R86	1:W3	2-G7
R87	1:T3	2-J8
R88	1:T4	2-H3
R89	1:N10	1-E5
R90	1:G1	1-M1
R91	1:F1	1-N1
R92	1:P10	1-D5
R93	1:D1	1-P2
R94	1:C1	1-Q2
R95	1:S1	2-C3
R96	1:U2	2-F5
R97	1:U2	2-D6
R98	1:U3	2-J9
R99	1:T4	2-H4
R100	1:U5	2-L2
R101	1:W8	2-M2
R102	1:U2	2-N8
R103	1:U2	2-N6
R104	1:U4	2-P7
R105	1:U3	2-N7
R106	1:U4	2-P7
R107	1:U4	2-P6
R108	1:W4	2-N8
R109	1:V3	2-P9
R110	1:U3	2-M5
R111	1:U3	2-M4
R112	1:U2	2-M4
R113	1:U3	2-N4
R115	1:V3	2-N5
R116	1:V3	2-M5
R117	1:V3	2-P5
R118	1:V4	2-P4
R119	1:U5	2-Q7
R120	1:U5	2-Q8
R121	1:T5	2-Q8
R122	1:V5	2-M6
R123	1:W7	2-M3
R124	1:W7	2-M2
SK1	1:R10	1-G7

Device	PCB	Circuit

Device	PCB	Circuit

Device	PCB	Circuit

Note:

*C62 & C67 are mounted on the Directional Coupler PCB (220-01152-00).

C70A with the grid references of: **PCB** 1:V5 & **Circuit** 2-J1 is incorrectly shown in the artwork as C70.

*R34 & *R35 are mounted across the base and emitter of Q6.

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T859 Parts List (IPN 220-01422-03)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A number in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical section lists the variant and common parts in IPN order. Where possible, a number in the legend column indicates their position in the mechanical assembly drawing.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

C142		Changed from 4n7 (IPN 015-24470-08) to 33nF (IPN 015-25330-08) to improve cyclic keying (711105).
C147		Changed from 1nF (IPN 015-24100-08) to 33nF (IPN 015-25330-08) to improve cyclic keying (711104).
C173		Deleted - not required for circuit performance (711141).
#C247, #C273	T859-10-0000:	changed from 15pF (IPN 015-02150-03) to 12pF (IPN 015-02120-03) to reduce the maximum output power and reduce excessive power at the top of the frequency band (711138).
#C256, #C257, #C269, #C270	T859-10-0000:	changed from 39pF (IPN 029-02390-02) to 47pF (IPN 029-02470-02) to reduce the maximum output power and reduce excessive power at the top of the frequency band (711138).
#C257, #C270	T859-30-0000:	changed from 22pF (IPN 029-02220-02) to 33pF (IPN 029-02330-02) to reduce the maximum output power and instabilities across the 480-520MHz frequency band (711140).
	T859-30-0000:	changed from 33pF (IPN 029-02330-02) to 27pF (IPN 029-02270-02) to reduce the maximum output power and instabilities across the 480-520MHz frequency band (711158).
D101		Changed from MR750/SR2607 (IPN 001-00011-60) to MR2520L (IPN 001-00012-90) to provide overvoltage transient suppression (750087/88/89/90/91/92 and 711129).
Resistors Added		Two 4E7 mylar film resistors (IPN 032-31470-01 - no circuit references) were added, one from Q217 base to ground (L247) and the other from Q216 base to ground (L238) to reduce the maximum output power and instabilities across the 400-520MHz frequency band (711158).
R144		Changed from 1k (IPN 036-14100-10) to 18k (IPN 036-15180-00) to improve cyclic keying (711104).
R158		Changed from 22k (IPN 036-15220-00) to 18k (IPN 036-15180-00) to improve cyclic keying (711105).
R168		Changed from 2k7 (IPN 036-14270-10) to 4k7 (IPN 036-14470-10) to reduce the maximum output power and reduce excessive power at the top of the frequency band (711138/39/40). Changed from 4k7 (IPN 036-14470-10) to 5k1 (IPN 036-14510-10) to limit the maximum output power and reduce instabilities (711181/82/83).
R170		Changed from 2k2 (IPN 036-14220-00) to 5k6 (IPN 036-14560-00) to reduce the maximum output power and reduce excessive power at the top of the frequency band (711138/39/40). T859-10-0000: changed from 5k6 (IPN 036-14560-00) to 4k7 (IPN 036-14470-10) T859-30-0000: changed from 5k6 (IPN 036-14560-00) to 5k1 (IPN 036-14510-10) } to limit the maximum output power and reduce instabilities - circuit reference changed to #R170 (711182/83). T859-20-0000: value unchanged; circuit reference changed to #R170
349-00020-36		The two M3x8 Torx screws which secure the module into the rack frame have been replaced by M3x8 Pozidriv screws (IPN 349-00020-55) (750101/2/3/5/6).

Parts List Amendments - Continued

This page is provided for entering future amendments to the parts list.

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Ref	Var	IPN	Description
C100		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C101		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C102		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C103		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C104		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C105		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C107		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C108		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C109		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C110		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C111		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C112		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C113		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C114		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C115		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C116		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C117		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C119		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C120		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C121		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C122		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C123		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C124		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C125		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C126		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C127		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C128		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C129		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C130		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C131		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C132		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C133		015-06100-08	CAP CER 1206 100N 10% X7R 50V
%C134		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C136		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C137		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C138		015-25220-08	CAP CER 0805 22N 10% X7R 50V
C139		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C140		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C141		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C142		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C143		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C144		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C145		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C146		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C147		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C148		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C149		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C150		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C151		015-27100-10	CAP CER 0805 1M+80-20% Y5V 16V
C152		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C153		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C154		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C156		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C157		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C158		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C159		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C161		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C162		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C163		014-18220-02	L)CAP TANT SMD 22U 20% 35V
C164		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C166		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C167		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C168		014-08100-00	CAP TANT CHIP 10M 16VW +-20%
C169		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C172		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C173		014-07100-02	CAP TANT CHIP 1U0 3.2 X 1.6MM
C174		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C175		015-26100-08	CAP CER 0805 100N 10% X7R 50V
C176		014-07470-03	L) CAP TANT SMD 4U7 35V 20%
C177		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C178		015-22470-01	CAP CER 0805 47P 5% NPO 50V
C197		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C198		015-25100-08	CAP CER 0805 10N 10% X7R 50V
C200		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C201		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C202		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C203		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C204		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C205		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C206		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C207		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C208		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C209		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C210		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C211		015-24100-08	CAP CER 0805 1N 10% X7R 50V
C214		015-23680-08	CAP CER 0805 680P 10% X7R 50V
C215		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C218		015-03100-06	CAP CER 1210 100P NPO500VGRM42
C219		014-07470-04	CAP TANT SMD 4U7 50V 20%
C220		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C221		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
C222		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
C223		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C224		014-07470-04	CAP TANT SMD 4U7 50V 20%
C225		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C226		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
C227		015-23100-01	CAP CER 0805 100P 5% NPO 50V
C228		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
#C247	10	015-02150-03	CAP CER 15P 5% 500V HIQ GRH111
#C247	20	015-02120-03	CAP CER 12P 5% 500V HIQ GRH111
#C247	30	015-02120-03	CAP CER 12P 5% 500V HIQ GRH111
C249		015-02150-03	CAP CER 15P 5% 500V HIQ GRH111
C250		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
#C252	10	029-02560-02	CAP MICA 5 CASE 56P 5%
#C252	20	029-02560-02	CAP MICA 5 CASE 56P 5%
#C252	30	029-02470-02	CAP MICA 5 CASE 47P 5%
#C253	10	029-02560-02	CAP MICA 5 CASE 56P 5%
#C253	20	029-02560-02	CAP MICA 5 CASE 56P 5%
#C253	30	029-02470-02	CAP MICA 5 CASE 47P 5%
C254		029-02150-02	CAP MICA 5 CASE 15P 5%
#C256	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C256	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C256	30	029-02220-02	CAP MICA 5 CASE 22P 5%
#C257	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C257	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C257	30	029-02220-02	CAP MICA 5 CASE 22P 5%
C258		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
C259		015-06100-08	CAP CER 1206 100N 10% X7R 50V
C260		014-07470-04	CAP TANT SMD 4U7 50V 20%
C261		015-03100-02	CAP CER HIQ1210 100P 5%NPO200V
C262		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
C263		029-02150-02	CAP MICA 5 CASE 15P 5%
#C264	10	029-02560-02	CAP MICA 5 CASE 56P 5%
#C264	20	029-02560-02	CAP MICA 5 CASE 56P 5%
#C264	30	029-02470-02	CAP MICA 5 CASE 47P 5%
#C265	10	029-02560-02	CAP MICA 5 CASE 56P 5%
#C265	20	029-02560-02	CAP MICA 5 CASE 56P 5%
#C265	30	029-02470-02	CAP MICA 5 CASE 47P 5%
C268		015-02150-03	CAP CER 15P 5% 500V HIQ GRH111
#C269	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C269	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C269	30	029-02220-02	CAP MICA 5 CASE 22P 5%
#C270	10	029-02390-02	CAP MICA 5 CASE 39P 5%
#C270	20	029-02330-02	CAP MICA 5 CASE 33P 5%
#C270	30	029-02220-02	CAP MICA 5 CASE 22P 5%
C272		014-07470-04	CAP TANT SMD 4U7 50V 20%
#C273	10	015-02150-03	CAP CER 15P 5% 500V HIQ GRH111
#C273	20	015-02120-03	CAP CER 12P 5% 500V HIQ GRH111
#C273	30	015-02120-03	CAP CER 12P 5% 500V HIQ GRH111
C274		015-03100-03	CAP CER 100P 5% 500VHIQ GRH111
C275		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C276		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C277	10	029-02120-01	CAP MICA 10 CASE 12P 5%
#C277	20	029-02100-01	CAP MICA 10 CASE 10P 10%
#C277	30	029-02100-01	CAP MICA 10 CASE 10P 10%
#C278	10	029-02120-01	CAP MICA 10 CASE 12P 5%
#C278	20	029-02100-01	CAP MICA 10 CASE 10P 10%
#C278	30	029-02100-01	CAP MICA 10 CASE 10P 10%
#C280	10	029-01560-02	CAP MICA 5 CASE 5P6 5%
#C280	20	029-01470-02	CAP MICA 5 CASE 4P7 5%
#C280	30	029-01470-02	CAP MICA 5 CASE 4P7 5%
C282		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
#C283	10	015-21470-01	CAP CER 0805 4P7+-1/4P NPO 50V
#C283	20	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C283	30	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
C284		015-23150-01	CAP CER 0805 150P 5% NPO 50V
#C285	10	015-21390-01	CAP CER 0805 3P9+-1/4P NPO 50V
#C285	20	015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
#C285	30	015-21330-01	CAP CER 0805 3P3+-1/4P NPO 50V
C286		015-21220-01	CAP CER 0805 2P2+-1/4P NPO 50V
C287		015-24470-08	CAP CER 0805 4N7 10% X7R 50V
C293		029-03100-02	CAP MICA 5 CASE 100P 5%
D101		001-00011-60	S) DIODE MR750 OR SR2607
D105		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D110		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D112		008-00014-79	S)LED 3MM RED WITH WIRE
D114		008-00014-79	S)LED 3MM RED WITH WIRE
D115		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D120		001-10000-70	S) DIODE SMD BAV70 D-SW SOT23
D190		008-00014-80	S)LED 3MM GREEN WITH WIRE
D205		001-10066-00	DIODE SCHOTTKY HSMS2815
D206		001-10066-00	DIODE SCHOTTKY HSMS2815
IC100		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC105		002-10003-24	S) IC SMD 324 4X O-AMP SO14
IC110		002-10006-62	S)IC SMD LMC662CM 2X O-AMP
IC130		002-10003-17	(S) IC LM317L REG S0-8 100MA
IC140		002-12951-00	IC SMD LP2951CM ADJ VLTGE REG
IC200		002-10003-58	S) IC SMD LM358 DUAL O-AMP
#IC210	10	004-00687-62	MODULE M68762L 400-450MHZ 30W
#IC210	20	004-00687-61	MODULE M68762H 440-490MHZ 30W
#IC210	30	004-00687-63	MODULE M68762SH 470-520MHZ 30W
L120		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L161		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L162		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L200		056-10330-02	(L) IND SMD 330NH
L201		056-10330-02	(L) IND SMD 330NH
L202		056-10330-02	(L) IND SMD 330NH
L203		056-10330-02	(L) IND SMD 330NH
L208		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L209		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM
L210		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM
L211		065-10004-20	BEAD FE SMD CBD 4.6/3/3-4S2
L212		052-08340-40	COIL A/W 4T/4.0MM SMD 0.8MM

Ref	Var	IPN	Description
%L213		056-10330-02	(L) IND SMD 330NH
L235		051-00005-60	IND HAIRPIN 10MM TALL T859
L237		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L238		065-10009-20	BEAD FER SMD BDS 3/3/8.9-4S2
L239		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L240		051-00649-10	HYBRID COUPLER 0.4-1G 100W 3DB
L241		051-00649-10	HYBRID COUPLER 0.4-1G 100W 3DB
L242		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L243		051-00005-60	IND HAIRPIN 10MM TALL T859
L246		052-08340-50	COIL A/W 5T/4.0MM SMD 0.8MM
L247		065-10009-20	BEAD FER SMD BDS 3/3/8.9-4S2
L253		056-10330-02	(L) IND SMD 330NH
#L254	10	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L254	20	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L254	30	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L255	10	052-08345-20	COIL A/W 2T/4.5MM SMD 0.8MM
#L255	20	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L255	30	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L256	10	052-08340-20	COIL A/W 2T/4.0MM SMD 0.8MM
#L256	20	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
#L256	30	052-08335-20	COIL A/W 2T/3.5MM SMD 0.8MM
L257		056-10330-02	(L) IND SMD 330NH
#L258	10	052-08325-10	COIL A/W 1T/2.5MM SMD 0.8MM
#L258	20	052-08320-10	COIL A/W 1T/2.0MM SMD 0.8MM
#L258	30	052-08320-10	COIL A/W 1T/2.0MM SMD 0.8MM
L259		052-08320-10	COIL A/W 1T/2.0MM SMD 0.8MM
L260		052-08335-10	COIL A/W 1T/3.5MM SMD 0.8MM
LINK200		051-00640-02	LNK 65.5 COP STPL C/W SLCN SLV
P200		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
P201		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
P250		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
P260		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
P270		356-00010-26	PIN TRACK HARWIN FOR 1.6MM PCB
PL101		070-01001-00	D-RANGE 15 WAY COMPL T800
PL110		240-00021-03	LIM) HEADER 2X7 WAY SMD
Q100		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q101		000-10017-00	LS) XSTR SMD BF170LT1 SOT23
Q102		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q103		000-10017-00	LS) XSTR SMD BF170LT1 SOT23
Q110		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q111		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q112		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q113		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q114		000-10008-69	S) XSTR SMD BC869 PNP 1W SOT89
Q120		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q121		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q122		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q123		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q124		000-10008-17	S) XSTR SMD BC817-25 NPN SOT23
Q125		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q126		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q127		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q128		000-00030-95	S) XSTR 2N6107 PNP TO220 AF
Q129		000-10008-57	S) XSTR SMD BCW70 PNP SOT23 SS
Q135		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q200		000-10008-48	S) XSTR SMD BCW60 NPN SOT23 SS
Q216		000-00031-02	S)XSTR 2SC3102 UHF 60W 6LFL
Q217		000-00031-02	S)XSTR 2SC3102 UHF 60W 6LFL
R100		036-14820-10	RES M/F 0805 8K2 1%
R101		036-13470-00	RES M/F 0805 470E 5%
R102		036-14100-10	RES M/F 0805 1K 1%
R103		036-15100-10	RES M/F 0805 10K 1%
R104		036-15100-10	RES M/F 0805 10K 1%
R105		036-14100-10	RES M/F 0805 1K 1%
R106		036-14680-10	RES M/F 0805 6K8 1%
R107		036-14470-10	RES M/F 0805 4K7 1%
R109		036-14100-10	RES M/F 0805 1K 1%
R111		036-14100-10	RES M/F 0805 1K 1%
R112		036-15100-10	RES M/F 0805 10K 1%
R113		036-14100-10	RES M/F 0805 1K 1%
R114		036-14470-10	RES M/F 0805 4K7 1%
R115		036-17100-10	RES M/F 0805 1M 1%
R116		036-14100-10	RES M/F 0805 1K 1%
R117		036-14220-00	RES M/F 0805 2K2 5%
R118		036-16100-10	RES M/F 0805 100K 1%
R119		036-15100-10	RES M/F 0805 10K 1%
R120		036-13680-00	RES M/F 0805 680E 5%
R121		036-17100-10	RES M/F 0805 1M 1%
R122		036-14220-00	RES M/F 0805 2K2 5%
R123		036-14100-10	RES M/F 0805 1K 1%
R124		036-13680-00	RES M/F 0805 680E 5%
R125		036-16100-10	RES M/F 0805 100K 1%
R126		036-16220-00	RES M/F 0805 220K 5%
R127		045-04470-00	RES NTC SMD 4K7 5% 20MW
R128		036-16220-00	RES M/F 0805 220K 5%
R129		036-15100-10	RES M/F 0805 10K 1%
R130		036-16220-00	RES M/F 0805 220K 5%
R131		036-15330-10	RES M/F 0805 33K 1%
R132		036-14100-10	RES M/F 0805 1K 1%
R133		036-15270-10	RES M/F 0805 27K 1%
R134		036-14330-10	RES M/F 0805 3K3 1%
R135		036-16470-00	RES M/F 0805 470K 5%
R136		036-16470-00	RES M/F 0805 470K 5%

Ref	Var	IPN	Description
R137		036-15150-00	RES M/F 0805 15K 5%
R138		036-15150-00	RES M/F 0805 15K 5%
R139		036-14390-10	RES M/F 0805 3K9 1%
R140		036-15150-00	RES M/F 0805 15K 5%
R141		036-14390-10	RES M/F 0805 3K9 1%
R142		036-14820-10	RES M/F 0805 8K2 1%
R143		036-14680-10	RES M/F 0805 6K8 1%
R144		036-14100-10	RES M/F 0805 1K 1%
%R145		036-10000-00	RES M/F 0805 ZERO OHM
R146		036-13470-00	RES M/F 0805 470E 5%
R147		036-13220-10	RES 0805 220E 1%
R148		036-10000-00	RES M/F 0805 ZERO OHM
R149		036-14560-00	RES M/F 0805 5K6 5%
R150		036-14470-10	RES M/F 0805 4K7 1%
R151		036-13220-10	RES 0805 220E 1%
R152		036-13100-10	RES M/F 0805 100E 1%
R153		036-14220-00	RES M/F 0805 2K2 5%
R154		036-14220-00	RES M/F 0805 2K2 5%
R155		036-15100-10	RES M/F 0805 10K 1%
R156		036-14180-00	RES M/F 0805 1K8 5%
R157		036-15470-10	RES M/F 0805 47K 1%
R158		036-15220-00	RES M/F 0805 22K 5%
R159		036-13470-00	RES M/F 0805 470E 5%
R160		036-03180-10	RES 180R 1W SMD 2512
R161		036-15100-10	RES M/F 0805 10K 1%
R162		036-15100-10	RES M/F 0805 10K 1%
R163		036-13100-10	RES M/F 0805 100E 1%
R164		036-03180-10	RES 180R 1W SMD 2512
R165		036-03100-02	RES 100E 1206 200V 250MW RC01
R166		036-15100-10	RES M/F 0805 10K 1%
R167		036-13470-00	RES M/F 0805 470E 5%
R168		036-14270-10	RES M/F 0805 2K7 1%
R169		036-15100-10	RES M/F 0805 10K 1%
R170		036-14220-00	RES M/F 0805 2K2 5%
R171		036-13150-10	RES M/F 0805 150E 1%
R172		036-16180-00	RES M/F 0805 180K 5%
R173		036-15100-10	RES M/F 0805 10K 1%
R175		036-15220-00	RES M/F 0805 22K 5%
R176		036-15100-10	RES M/F 0805 10K 1%
R177		036-15100-10	RES M/F 0805 10K 1%
R178		036-14100-10	RES M/F 0805 1K 1%
R179		036-14100-10	RES M/F 0805 1K 1%
R180		036-14100-10	RES M/F 0805 1K 1%
R181		036-15100-10	RES M/F 0805 10K 1%
R182		036-16220-00	RES M/F 0805 220K 5%
R183		036-15100-10	RES M/F 0805 10K 1%
R184		036-14470-10	RES M/F 0805 4K7 1%
R185		036-16100-10	RES M/F 0805 100K 1%
R186		036-15100-10	RES M/F 0805 10K 1%
R187		036-16150-00	RES M/F 0805 150K 5%
R188		036-16100-10	RES M/F 0805 100K 1%
R189		036-14100-10	RES M/F 0805 1K 1%
R190		036-13220-10	RES 0805 220E 1%
R191		036-12100-10	RES M/F 0805 10E 1%
R192		036-13680-00	RES M/F 0805 680E 5%
R193		036-16100-10	RES M/F 0805 100K 1%
R194		036-14150-10	RES M/F 0805 1K5 1%
R195		036-12220-00	RES M/F 0805 22E 5%
R197		036-12220-00	RES M/F 0805 22E 5%
R198		036-12220-00	RES M/F 0805 22E 5%
R200		045-05100-02	RES NTC 10K 2% Metal tagged
R201		036-13100-10	RES M/F 0805 100E 1%
R202		036-13560-10	RES M/F 0805 560E 1%
R203		036-14470-10	RES M/F 0805 4K7 1%
R204		036-14470-10	RES M/F 0805 4K7 1%
R205		036-13390-10	RES M/F 0805 390E 1%
R206		036-13390-10	RES M/F 0805 390E 1%
R207		036-14680-10	RES M/F 0805 6K8 1%
R208		036-15100-10	RES M/F 0805 10K 1%
R209		036-14470-10	RES M/F 0805 4K7 1%
R210		045-04470-00	RES NTC SMD 4K7 5% 20MW
R223		036-11330-00	RES M/F 0805 3E3 5%
R224		036-11330-00	RES M/F 0805 3E3 5%
R225		036-11330-00	RES M/F 0805 3E3 5%
R226		036-03118-10	RES 18R 1W SMD 2512
R227		036-03270-10	RES 270 OHM 1 WATT 2512 CHIP
R230		036-03270-10	RES 270 OHM 1 WATT 2512 CHIP
R231		039-50500-00	RES TERM 50E 50W RFP50-50TCG
R235		036-13100-10	RES M/F 0805 100E 1%
R236		036-13100-10	RES M/F 0805 100E 1%
R237		036-03100-02	RES 100E 1206 200V 250MW RC01
R238		036-03100-02	RES 100E 1206 200V 250MW RC01
R240		039-50500-00	RES TERM 50E 50W RFP50-50TCG
R245		036-03130-10	RES 30E 1W SMD 2512
R246		036-03130-10	RES 30E 1W SMD 2512
R247		036-11330-00	RES M/F 0805 3E3 5%
RV101		042-04500-05	RES PRESET SMD 5K CER 4MM SQ
RV103		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
RV105		042-04500-05	RES PRESET SMD 5K CER 4MM SQ
RV107		042-05500-05	RES PRESET SMD 50K CER 4MM SQ
%RV109		044-04200-06	RES PRE MULT 2K 15T PNL MTG
RV113		042-06500-05	RES PRESET SMD 500K CER 4MM SQ
RV115		042-05200-05	RES PRESET SMD 20K CER 4MM SQ
SK101		240-10000-05	CONN SMD SKT 8W 2R M-MATCH
SK103		240-10000-05	CONN SMD SKT 8W 2R M-MATCH
SK201		240-02100-44	SKT COAX MINI JACK PCB MT ANG.

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T859 Mechanical & Miscellaneous Parts (220-01422-03)

IPN	Legend	Description
012-04100-05	1	CAP F/THRU 1N SUPPR FLTR S-MTG
044-04200-07	2	RES POT COVER H-83P
045-05100-02	3	RES NTC 10K 2% METAL TAGGED R200
070-01001-00	4	D-RANGE 15 WAY COMPL T800
201-00030-02		WIRE T/C WIRE 7/0.2 PVC RED Power feed for fan.
201-00050-25		AUTO 154 RED 41/0.3 PVC DC+ from D-range PCB.
201-00050-26		AUTO 154 BLACK 41/0.3 PVC DC- from D-range PCB.
219-02591-01	5	LOOM RIBBON 8 WAY FOR T839PA
219-02612-00		RG316 CABLE ASSY T869PA BNC to SK201 cable assembly with connectors.
219-02639-00		CABLE ASSEMBLY RG223/U N TO BNC Exciter/PA connecting cable assembly.
219-02709-00	6	T858/T859 N-TYPE CONNECTOR SUB
220-01422-03	7	PCB T859PA SERIES II
220-01442-03	41	PCB T858/T859 SII DRNL COUPLER
240-02100-17	8	SKT COAX BNC PNL JAC CRP RG316
240-04020-62		SKT 2 W RECEP SHORTING LINK PL110
240-06010-15	9	BLOCK LATCHING 15W D RANGE
258-00010-08	10	FAN 12V 119 x 119 x 25 (PAPST)
302-05204-00	11	BRKT A3M2314 F/THRU MTG T859
303-23146-00	12	COVER SIDE T869PA
308-01007-01	13	HANDLE BASE STATION SERIES II
308-13131-02	14	HEATSINK T859 PA DRILLED DCST
316-06651-00	15	PNL PA NO INP DRV SER II DBL
319-01190-01	16	SHIELD WALL HARM. FILTER 869PA
319-01201-00	17	SHIELD LID HARM. FILTER 869PA
319-01202-00	18	SHIELD T869PA CONTROL CIRCUIT
319-30061-00	19	SPACER PLATE T889 WIRELINE
319-30064-00	20	SPACER HSINK RF MODULE 869PA
319-30068-00	21	SPACER, T859 PCB HYBRID
345-00040-16	22	SCRW M3X20MM P/POZ ST BZ
349-00010-59	23	SCRW 6-32 X 3/8 P/PH T/T ZP
349-00020-07	24	SCRW 4-40 X 5/16 P/POZ T/T BLK
349-00020-09	25	SCRW T/T 4-40X3/8 IN P/POZ BLK
349-00020-36	26	SCREW TT M3X8m PANTORX BLK
349-00020-43	27	SCRW T/T M4X12MM P/POZ BZ
349-00020-49	28	SCRW T/T M4X35MM P/POZ BZ
349-00020-55	29	SCRW M3X8 P/P T/T BLCKZNC CHRM
352-00010-29	30	NUT M4 NYLOC HEX
353-00010-10	31	WSHR M3 FLAT 7MMX0.6MM ST BZ
353-00010-24	32	WSHR M4x8MM FLAT
356-00010-01	33	TAG SOLDER 3MM SHORT M6132/3.2
356-00010-03	34	TAG SOLDER 3MM LONG M614/3.2
356-00010-05	35	TAG SOLDER 4MM LONG M6144/4.2
357-00010-45	36	CLAMP CABLE 4.8MM P CLIP
360-00010-41	37	BUSH SHORTY BLK
362-00010-07	38	GASKET SIL INSULATING TO-220
362-00010-13	39	BUSH INSULATING 1.1MM TOP HAT
362-00010-33	40	GROMMET LED MTG 3MM
399-00010-51		BAG PLASTIC 75X100MM
400-00020-30		HEATSHRINK 3MM
410-00010-43		PKG T296 AMPAC REF 73-46

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replace A4 pages D5.3.23/D5.3.24 with A3 pages D5.3.23/D5.3.24

replace A4 pages D5.3.23/D5.3.24 with A3 pages D5.3.23/D5.3.24

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T859 Grid Reference Index (IPN 220-01422-03)

How To Use This Grid Reference Index

The first digit in the PCB layout reference is a "1" or "2", indicating the top or bottom side layout respectively, and the last two characters give the location of the component on that diagram.

The first digit in the circuit diagram reference is the sheet number, and the last two characters give the location of the component on that sheet.

Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C100	1:F6	1-B7	C164	1:T3	1-C1	#C273	1:H3	2-L1	L209	1:R5	2-D4
C101	1:E6	1-B6	C166	1:B1	1-G0	C274	1:P3	2-E3	L210	1:R4	2-D4
C102	1:B2	1-C7	C167	1:B1	1-I0	C275	1:F7	2-C9	L211	1:Q6	2-C5
C103	1:B1	1-C6	C168	1:C1	1-I0	C276	1:F7	2-C8	L212	1:R6	2-C4
C104	1:E6	1-D7	C169	1:J1	1-J5	#C277	1:C9	2-Q3	%L213	1:S9	2-B3
C105	1:E5	1-D6	C172	1:F2	1-J0	#C278	1:B8	2-Q3	L235	1:K7	2-K4
C107	1:B4	1-E8	C173	1:E2	1-K0	#C280	1:A7	2-R3	L237	1:M8	2-H4
C108	1:C3	1-F5	C174	1:D2	1-L0	C282	1:D7	2-Q2	L238	1:M9	2-H4
C109	1:E4	1-G6	C175	1:D2	1-M0	#C283	1:D7	2-Q2	L239	1:K6	2-K3
C110	1:E4	1-H6	C176	1:F4	1-M0	C284	1:E9	2-D6	L240	1:H5	2-M3
C111	1:F4	1-I6	C177	1:E3	1-N0	#C285	1:D8	2-P3	L241	1:N5	2-F3
C112	1:B2	1-I6	C178	1:F3	1-N0	C286	1:D7	2-P2	L242	1:K5	2-K3
C113	1:F5	1-J8	C197	1:E5	1-P0	C287	1:F9	2-E6	L243	1:K4	2-K3
C114	1:B3	1-J6	C198	1:C5	1-Q0	C293	1:G7	2-M3	L246	1:M2	2-H1
C115	1:F5	1-K8	C200	1:Q2	2-H7				L247	1:M2	2-H1
C116	1:A3	1-K8	C201	1:Q1	2-H7	D101	1:M5	1-B0	L253	1:F7	2-C9
C117	1:B3	1-L8	C202	1:F2	2-K7	D105	1:C4	1-F8	#L254	1:D9	2-P3
C119	1:C4	1-O7	C203	1:E2	2-K7	D105	1:C4	1-F8	#L255	1:C8	2-Q3
C120	1:D6	1-O7	C204	1:B2	2-L7	D110	1:F5	1-G8	#L256	1:A8	2-R3
C121	1:D5	1-O8	C205	1:E3	2-M7	D110	1:F5	1-G8	L257	1:E9	2-D7
C122	1:D5	1-O8	C206	1:F3	2-M7	D112	1:V9	1-I4	#L258	1:D7	2-P2
C123	1:B5	1-P9	C207	1:F3	2-N7	D114	1:V8	1-I4	L259	1:D7	2-Q2
C124	1:B5	1-P9	C208	1:B6	2-P7	D115	1:E5	1-F5	L260	1:C7	2-Q2
C125	1:C5	1-Q7	C209	1:C6	2-Q7	D115	1:E5	1-F5			
C126	1:B5	1-Q8	C210	1:D6	2-Q7	D120	1:C3	1-F5	LINK200	1:N5	2-M0
C127	1:B6	1-Q8	C211	1:C6	2-Q7	D120	1:C3	1-G4			
C128	1:C6	1-Q7	C214	1:D3	1-Q0	D190	1:V9	1-J4	P105	1:U5	1-B1
C129	1:B5	1-R8	C215	1:E3	1-R0	D205	1:G7	2-C8	P110	1:U3	1-B0
C130	1:B5	1-R8	C218	1:Q5	2-C5	D206	1:E9	2-D7	P130	1:A6	1-U8
C131	1:A5	1-S8	C219	1:R4	2-B5				P200	1:F7	2-N3
C132	1:B5	1-S9	C220	1:R5	2-C4	IC100	1:E5	1-D7	P201	1:E9	2-P3
C133	1:A5	1-T8	C221	1:R4	2-C3	IC100	1:E5	1-I8	P210	1:M7	2-G4
%C134	1:A6	1-T8	C222	1:R4	2-E3	IC100	1:E5	1-D7	P212	1:M3	2-G1
C136	1:B2	1-M4	C223	1:Q4	2-E4	IC100	1:E5	1-O0	P214	1:M7	2-J4
C137	1:D3	1-M3	C224	1:Q4	2-E5	IC100	1:E5	1-H6	P216	1:M3	2-J1
C138	1:D3	1-M3	C225	1:Q6	2-C4	IC105	1:D5	1-O7	P218	1:K7	2-J5
C139	1:B4	1-N6	C226	1:R6	2-C3	IC105	1:D5	1-S0	P220	1:K3	2-J2
C140	1:F1	1-N2	C227	1:S8	2-A3	IC105	1:D5	1-P0	P222	1:K7	2-K5
C141	1:C3	1-O4	C228	1:R8	2-B3	IC105	1:D5	1-I2	P224	1:K3	2-K2
C142	1:D3	1-O4	#C247	1:H7	2-L4	IC105	1:D5	1-P8	P226	1:K7	2-L5
C143	1:E1	1-O2	C249	1:N7	2-G4	IC110	1:E3	1-T0	P228	1:K3	2-L2
C144	1:F1	1-O2	C250	1:H7	2-L4	IC110	1:E3	1-N0	P250	1:E7	2-N0
C145	1:D1	1-O3	#C252	1:K7	2-K4	IC110	1:E3	1-M3	P260	1:G9	2-P0
C146	1:D2	1-O4	#C253	1:K7	2-K4	IC130	1:B1	1-H0	P270	1:D7	2-Q2
C147	1:B4	1-P6	C254	1:J7	2-L4	IC140	1:E2	1-K0			
C148	1:E2	1-P3	#C256	1:M7	2-H4	IC200	1:E3	1-U0	PL101	2:S4	1-B0
C149	1:E1	1-P2	#C257	1:M7	2-J4	IC200	1:E3	1-Q0	PL110	1:C2	
C150	1:D2	1-P4	C258	1:K6	2-L3	IC200	1:E3	2-M8			
C151	1:B4	1-P5	C259	1:L5	2-K3	#IC210	1:S5	2-C3	Q100	1:F4	1-I6
C152	1:E2	1-Q2	C260	1:L6	2-J3				Q101	1:B3	1-J6
C153	1:F2	1-Q4	C261	1:K4	2-L3	%L100	1:A5	1-T8	Q102	1:F5	1-J8
C154	1:F2	1-Q2	C262	1:H3	2-L2	L120	1:F2	1-Q2	Q103	1:A3	1-K8
C156	1:D4	1-G1	C263	1:J3	2-L1	L161	1:U4	1-B1	Q110	1:B5	1-Q9
C157	1:D4	1-H1	#C264	1:K3	2-K1	L162	1:T3	1-C1	Q111	1:B6	1-Q8
C158	1:D4	1-I1	#C265	1:K3	2-K1	L200	1:Q1	2-H8	Q112	1:C6	1-Q7
C159	1:D3	1-K1	C268	1:N3	2-G1	L201	1:F2	2-K8	Q113	1:B5	1-R8
C161	1:T3	1-B1	#C269	1:M3	2-H1	L202	1:B6	2-P7	Q114	1:A5	1-S8
C162	1:U4	1-B1	#C270	1:M3	2-J1	L203	1:D6	2-Q7	Q120	1:B4	1-N6
C163	1:U3	1-C1	C272	1:L6	2-J3	L208	1:Q5	2-D5	Q121	1:C4	1-N4

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Device	PCB	Circuit
Q122	1:F1	1-O2
Q123	1:B4	1-O6
Q124	1:F1	1-O3
Q125	1:D3	1-O4
Q126	1:D2	1-P4
Q127	1:B4	1-P5
Q128	1:D2	1-P3
Q129	1:B3	1-Q6
Q135	1:C4	1-K2
Q200	1:F3	2-P7
Q216	1:L7	2-J4
Q217	1:L3	2-J1
R100	1:F5	1-C7
R101	1:E5	1-C6
R102	1:D1	1-C7
R103	1:F6	1-D7
R104	1:E5	1-D6
R105	1:B4	1-E8
R106	1:E4	1-F7
R107	1:E4	1-F6
%R108	1:E6	1-F6
R109	1:F5	1-F8
%R110	1:F5	1-F8
R111	1:C3	1-F5
R112	1:E4	1-G6
R113	1:B3	1-G5
R114	1:E4	1-G6
R115	1:E4	1-H6
R116	1:E4	1-H5
R117	1:E4	1-H6
R118	1:F4	1-H8
R119	1:E5	1-H8
R120	1:V7	1-I5
R121	1:F5	1-I8
R122	1:F4	1-I8
R123	1:F5	1-I8
R124	1:V8	1-I5
R125	1:C5	1-N7
R126	1:E6	1-N7
R127	1:C5	1-N7
R128	1:D6	1-N7
R129	1:B5	1-O9
R130	1:D5	1-O8
R131	1:D5	1-O8
R132	1:D5	1-O8
R133	1:C4	1-O7
R134	1:B5	1-O9
R135	1:C5	1-P7
R136	1:D5	1-P8
R137	1:C5	1-P7
R138	1:D5	1-P8
R139	1:C6	1-P7
R140	1:B5	1-Q8
R141	1:B6	1-Q8
R142	1:B5	1-Q8
R143	1:B5	1-R9
R144	1:A5	1-R9
%R145	1:A5	1-T8
R146	1:V7	1-K4
R147	1:V7	1-K4
R148	1:V7	1-K4
R149	1:E4	1-M4
R150	1:D3	1-M2
R151	1:E4	1-M4
R152	1:D3	1-N4
R153	1:E4	1-N3
R154	1:E4	1-N2
R155	1:B4	1-O6
R156	1:C4	1-O4
R157	1:D3	1-O4
R158	1:D4	1-O4
R159	1:B4	1-O6
R160	1:E1	1-O2
R161	1:C4	1-O6
R162	1:D2	1-O4
R163	1:E2	1-P3
R164	1:E1	1-P2
R165	1:E1	1-P2
R166	1:B4	1-P6
R167	1:B4	1-P5
R168	1:E1	1-P2
R169	1:D2	1-P4
R170	1:E2	1-P2
R171	1:F1	1-P2
R172	1:B4	1-P6
R173	1:D2	1-Q4
%R174	1:F2	1-Q6
R175	1:B3	1-Q6
R176	1:B3	1-Q6
R177	1:D4	1-H2
R178	1:D4	1-H2
R179	1:D4	1-H1
R180	1:D4	1-I1
R181	1:D4	1-I2
R182	1:D5	1-J2
R183	1:C5	1-J2
R184	1:C4	1-J1
R185	1:C3	1-K2
R186	1:C3	1-K2
R187	1:C3	1-K2
R188	1:D3	1-L1
R189	1:B1	1-H0
R190	1:B1	1-H0
R191	1:C1	1-I0
R192	1:V9	1-J5
R193	1:D2	1-L0
R194	1:E2	1-L0
R195	1:E3	1-N0
R197	1:E5	1-O0
R198	1:C5	1-P0
R200	1:T2	2-H7
R201	1:D3	2-L8
R202	1:D3	2-L6
R203	1:D3	2-L8
R204	1:D3	2-L8
R205	1:F3	2-L7
R206	1:F3	2-L7
R207	1:F3	2-M7
R208	1:F3	2-N7
R209	1:F3	2-N7
R210	1:B6	2-P7
R223	1:R5	2-C4
R224	1:Q4	2-E4
R225	1:Q6	2-C4
R226	1:R7	2-B3
R227	1:R8	2-B2
R230	1:R7	2-B2
R231	1:N9	2-F3
R235	1:E7	2-E8
R236	1:G9	2-C7
R237	1:D6	2-R2
R238	1:D6	2-R2
R240	1:G1	2-M3
R245	1:K6	2-L3
R246	1:K4	2-L3
R247	1:L6	2-K3
RV101	1:C4	1-H8
RV103	1:C4	1-F8
RV105	1:C3	1-G6
RV107	1:C2	1-F5
%RV109	1:V6	1-K5
%RV111	1:V7	1-K4
RV113	1:C3	1-K2
RV115	1:C2	1-M0
SK101	1:T4	1-C0
SK103	1:A4	1-C0
SK201	1:R9	2-A3

Device	PCB	Circuit

Device	PCB	Circuit

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Part E T850 VCO PCB Information

This part of the manual provides the parts list, PCB layouts and circuit diagram for the T850 VCO PCB. There is a detailed table of contents at the start of Section 2.

Section	Title	IPN	Page
1	Introduction		1.1
2	T850 VCO PCB	220-01145-02 220-01145-03[a]	2.1 2.1

a. The PCB information provided for issue 220-01145-02 of the VCO PCB can also be used for issue 220-01145-03 as the two PCBs are electronically identical. The only difference between the two issues of PCB is a minor mechanical change which is described in the Parts List Amendments on page 2.3.

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1 Introduction

PCB Identification

All PCBs are identified by a unique 10 digit "internal part number" (IPN), e.g. 220-12345-00, which is screen printed onto the PCB (usually on the top side), as shown in the example below:



The last 2 digits of this number define the issue status, which starts at 00 and increments through 01, 02, 03, etc. as the PCB is updated. Some issue PCBs never reach full production status and are therefore not included in this manual. A letter following the 10 digit IPN has no relevance in identifying the PCB for service purposes.

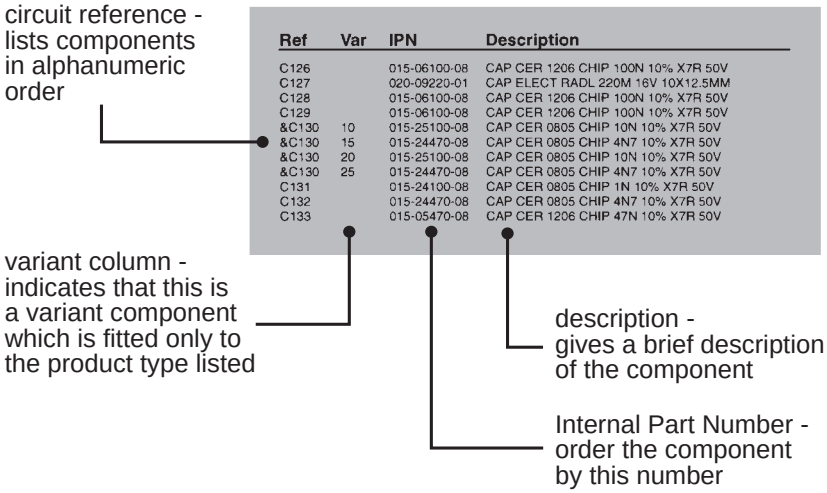
Note: It is important that you identify which issue PCB you are working on so that you can refer to the appropriate set of PCB information.

Parts Lists

The 10 digit numbers (000-00000-00) in this Parts List are "internal part numbers" (IPNs). We can process your spare parts orders more efficiently and accurately if you quote the IPN and provide a brief description of the part.

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

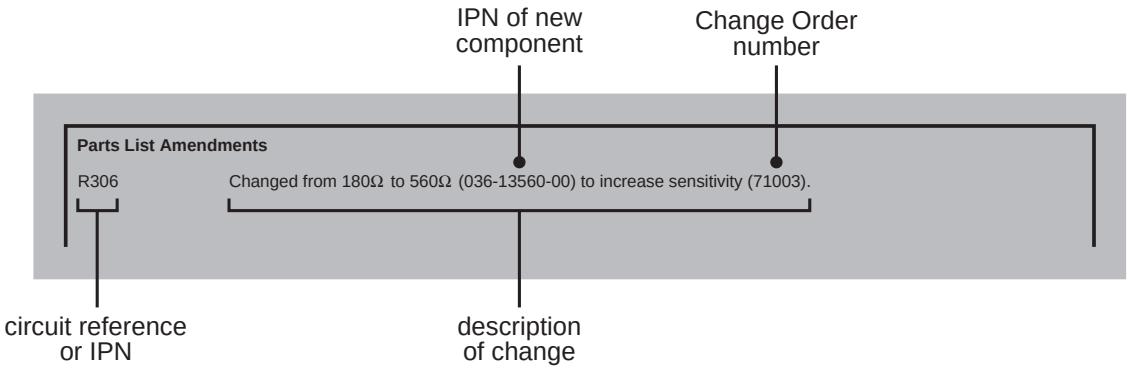
Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns, as shown below:



The mechanical and miscellaneous section lists the variant and common parts in IPN order.

Parts List Amendments

At the front of the parts list is the Parts List Amendments box (an example of which is shown below). This box contains a list of component changes which took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order. The number in brackets at the end of each entry refers to the Tait internal Change Order document.



Variant Components

A variant component is one that has the same circuit reference but different value or specification in different product types. Variant components have a character prefix, such as "&", "=" or "#", before the circuit reference (e.g. &R100).

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2 T850 VCO PCB

This section contains the following information.

IPN	Section	Page
220-01145-02	Parts List	2.3
	PCB Layout - Bottom Side	2.5
	PCB Layout - Top Side	2.6
	Circuit Diagram	2.7

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T850 VCO Parts List (IPN 220-01145-02)

How To Use This Parts List

The components listed in this parts list are divided into two main types: those with a circuit reference (e.g. C2, D1, R121, etc.) and those without (miscellaneous and mechanical).

Those with a circuit reference are grouped in alphabetical order and then in numerical order within each group. Each component entry comprises three or four columns: the circuit reference, variant (if applicable), IPN and description. A letter in the variant column indicates that this is a variant component which is fitted only to the product type listed. Static sensitive devices are indicated by an (S) at the start of the description column.

The miscellaneous and mechanical parts are listed in IPN order at the end of the parts list.

The Parts List Amendments box below lists component changes that took place after the parts list and diagrams in this section were compiled. These changes (e.g. value changes, added/deleted components, etc.) are listed by circuit reference in alphanumeric order and supersede the information given in the parts list or diagrams. Components without circuit references are listed in IPN order.

Parts List Amendments

Capacitor IPN Change	The IPN of the 8p2 chip capacitors used in the T850 VCO has been changed from 015-21820-01 to 015-21820-02. The components themselves have not changed (780047/48/49/50).	
*C1, C4, *C7 *C8, C10, C11	Rx mid/low/high:	component values unchanged but tolerances changed to ±0.1p to ensure consistent low noise performance from oscillators and to improve selectivity (710286, 710287, 710288).
C6	A length of 0.5mm tinned copper wire was soldered from the PCB via at the rear of the trimcap to the trimcap body to improve selectivity and signal-to-noise ratio (9/98).	
R6	Rx low:	changed from 120Ω (IPN 036-13120-00) to 82Ω (IPN 036-12820-00) to reduce the VCO noise floor (97/04-7078).
	Rx mid/high:	changed from 82Ω (IPN 036-12820-00) to 68Ω (IPN 036-12680-00) to ensure consistent low noise performance from oscillators and to improve selectivity (710286, 710287).
Mechanical Modification	Two plated-through holes were added to the PCB either side of C6 to allow earth straps to be fitted to improve transient adjacent channel power. PCB IPN updated to 220-01145-03 (760076).	

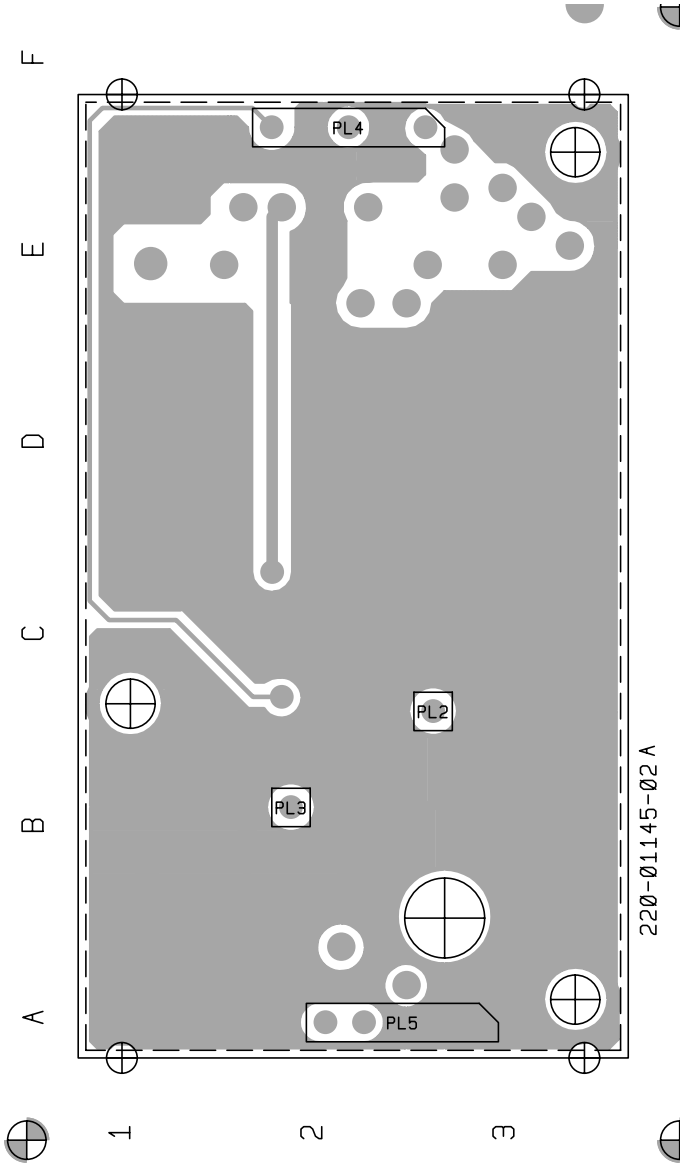
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Variant Code	Description	T855 (MHz)	T856/857 (MHz)
A	Tx High	-	480-500
B	Tx Mid/Rx High	480-520	440-480
C	Tx Low/Rx Mid	440-480	400-440
D	Rx Low	400-440	-

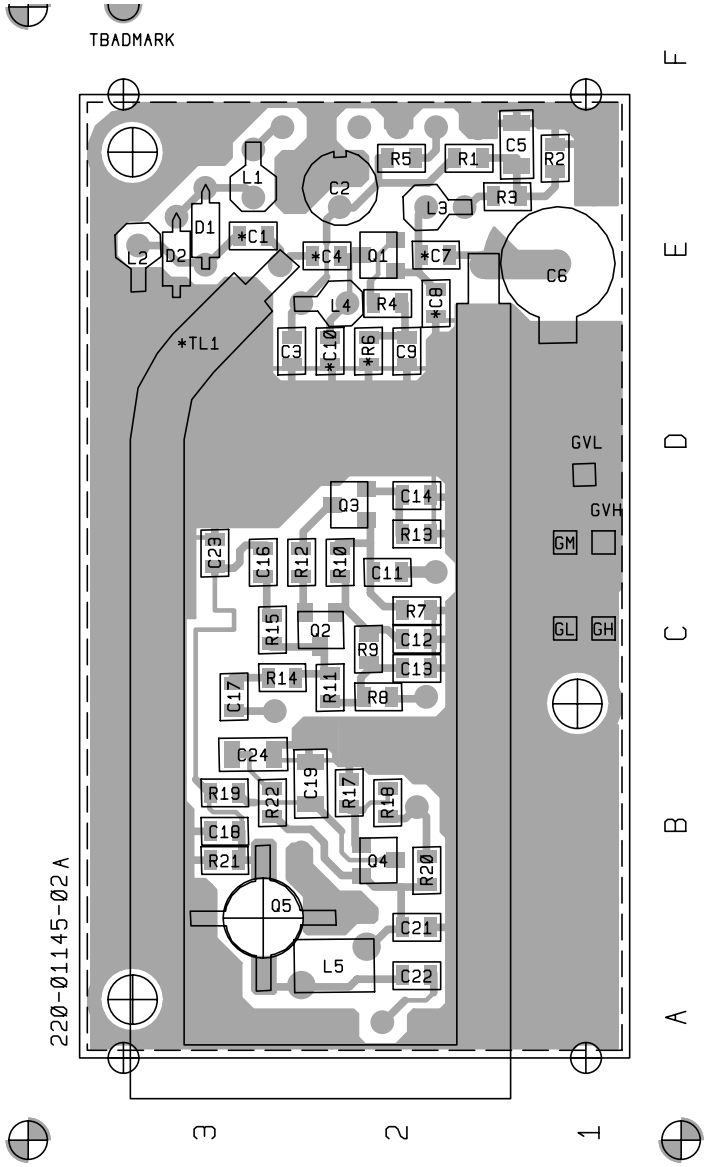
Ref	Var	IPN	Description
*C1	A	015-21150-01	CAP CER 0805 CHIP 1P5 +/-0.25P NPO 50V
*C1	B	015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V
*C1	C	015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
*C1	D	015-21220-01	CAP CER 0805 CHIP 2P2 +/-0.25P NPO 50V
C2		025-08100-02	CAP TANT BEAD 10M 10% 16V
C3		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C4		015-21100-01	CAP CER 0805 CHIP 1PO +/-0.25P NPO 50V
C5		015-06100-08	CAP CER 1206 CHIP 100N 10% X7R 50V
C6		028-02110-00	LH)CAPTRM1.2-11P10T PISTONPREC
*C7	A	015-21680-01	CAP CER 0805 CHIP 6P8 +/-0.25P NPO 50V
*C7	B	015-21470-01	CAP CER 0805 CHIP 4P7 +/-0.25P NPO 50V
*C7	C	015-21680-01	CAP CER 0805 CHIP 6P8 +/-0.25P NPO 50V
*C7	D	015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V
*C8	A	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V
*C8	B	015-22270-01	CAP CER 0805 CHIP 27P 5% NPO 50V
*C8	C	015-22330-01	CAP CER 0805 CHIP 33P 5% NPO 50V
*C8	D	015-22330-01	CAP CER 0805 CHIP 33P 5% NPO 50V
C9		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C10		015-21180-01	CAP CER 0805 CHIP 1P8 +/-0.25 NPO 50V
C11		015-21330-01	CAP CER 0805 CHIP 3P3 +/-0.25P NPO 50V
C12		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C13		015-24100-08	CAP CER 0805 CHIP 1N 10% X7R 50V
C14		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C16		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C17		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C18		015-22220-01	CAP CER 0805 CHIP 22P 5% NPO 50V
C19		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
C21		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C22		015-23120-01	CAP CER 0805 CHIP 120P 5% NPO 50V
C23		015-21820-01	CAP CER 0805 CHIP 8P2 +/-0.25P NPO 50V
C24		015-05470-08	CAP CER 1206 CHIP 47N 10% X7R 50V
D1		001-00012-63	(S) DIODE VARICAP BB809
D2		001-00012-63	(S) DIODE VARICAP BB809
L1		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET
L2		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET
L3		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET
L4		056-00021-60	IND FXD 330NH 6.6X2.7MM AXIAL NON MAGNET
L5		052-08135-35	COIL A/W 3.5T/3.5MM HOR 0.8MM WIRE
PL2		240-00025-36	PLUG 32WAY 1ROW PC MTG HARWIN
PL3		240-00025-36	PLUG 32WAY 1ROW PC MTG HARWIN
PL4		240-00025-36	PLUG 32WAY 1ROW PC MTG HARWIN
PL5		240-00025-36	PLUG 32WAY 1ROW PC MTG HARWIN
Q1		000-10057-10	(S) XSTR SMD MMBR571 NPN SOT-23 UHF LO PW
Q2		000-10057-10	(S) XSTR SMD MMBR571 NPN SOT-23 UHF LO PW
Q3		000-10057-10	(S) XSTR SMD MMBR571 NPN SOT-23 UHF LO PW
Q4		000-10008-57	(S) XSTR SMD BCW70/BC857-215 PNP SOT23AF
Q5		000-00032-47	(S) XSTR MRF559 NPN XPACK UHF PWR 0.5W
R1		036-14390-00	RES M/F 0805 CHIP 3K9 5%
R2		036-14100-00	RES M/F 0805 CHIP 1K 5%
R3		036-13100-00	RES M/F 0805 CHIP 100E 5%
R4		036-12220-00	RES M/F 0805 CHIP 22E 5%
R5		036-12270-00	RES M/F 0805 CHIP 27E 5%
*R6	A	036-12820-00	RES M/F 0805 CHIP 82E 5%
*R6	B	036-12820-00	RES M/F 0805 CHIP 82E 5%
*R6	C	036-12820-00	RES M/F 0805 CHIP 82E 5%
*R6	D	036-13120-00	RES M/F 0805 CHIP 120E 5%
R7		036-14100-00	RES M/F 0805 CHIP 1K 5%
R8		036-12220-00	RES M/F 0805 CHIP 22E 5%
R9		036-14270-00	RES M/F 0805 CHIP 2K7 5%
R10		036-14120-00	RES M/F 0805 CHIP 1K2 5%
R11		036-13150-00	RES M/F 0805 CHIP 150E 5%
R12		036-12100-00	RES M/F 0805 CHIP 10E 5%
R13		036-12560-00	RES M/F 0805 CHIP 56E 5%
R14		036-13330-00	RES M/F 0805 CHIP 330E 5%
R15		036-12100-00	RES M/F 0805 CHIP 10E 5%
R17		036-14680-00	RES M/F 0805 CHIP 6K8 5%
R18		036-14180-00	RES M/F 0805 CHIP 1K8 5%
R19		036-14100-00	RES M/F 0805 CHIP 1K 5%
R20		036-12180-00	RES M/F 0805 CHIP 18E 5%
R21		036-13330-00	RES M/F 0805 CHIP 330E 5%
R22		036-12100-00	RES M/F 0805 CHIP 10E 5%
*TL1	A	051-00005-43	RESNTR TAIT NO 543 480-520MHZ T855/7
*TL1	B	051-00005-42	RESNTR TAIT NO 542 435-480MHZ T855/7
*TL1	C	051-00005-41	RESNTR TAIT NO 541 395-440MHZ T855/7
*TL1	D	051-00005-40	RESNTR TAIT NO 540 355-395MHZ T855/7

Ref	Var	IPN	Description
		065-00010-13	BEAD FERRITE 7D 1.9*0.9*3.8MM STACK POLE Place On Lead Of L4, Secure With Loctite 454-16 Gel
		220-01145-00	PCB T855/856/857 VCO
		240-00026-32	PLUG 32WAY 1ROW PC MTG HARWIN
		345-00040-10	SCREW M3*6MM PAN POZI ST BZ
		350-00016-42	SPACER 5MM HI 8MM X M3 STUD 2.5MM X M3
		353-00010-10	WASHER M3 FLAT 7MM*0.6MM ST BZ
		353-00010-13	WASHER M3 SHAKEPROOF INT BZ

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T850 VCO PCB (IPN 220-01145-02) - Bottom Side



T850 VCO PCB (IPN 220-01145-02) - Top Side

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Part F Installation

This part of the manual is divided into the sections listed below. These sections give a brief description of the basic rack mounting and wiring procedures for the T855 receiver, T856 transmitter, T857 exciter and T858/859 power amplifiers.

Section	Title	Page
1	**T855 Installation**	**1.1**
1.1	Rack Mounting	1.1
1.2	Rack Wiring	1.1
1.3	Power Supply	1.2
1.4	Reverse Polarity & Overvoltage Protection	1.2
2	**T856/857 Installation**	**2.1**
2.1	Rack Mounting	2.1
2.2	Rack Wiring	2.1
2.3	Power Supply	2.2
2.4	Reverse Polarity & Overvoltage Protection	2.2
3	**T858/859 Installation**	**3.1**
3.1	Rack Mounting	3.1
3.2	Rack Wiring	3.1
3.3	Power Supply	3.2
3.4	Reverse Polarity & Overvoltage Protection	3.2
4	**N-Type Connector Assembly**	**4.1**

Figure	Title	Page
1.1	T800-41-0002 Double Guide Kit	1.1
1.2	T855 Chassis Connectors	1.1
1.3	T855 D-Range 1 Wiring - Rear View	1.1
1.4	T855 D-Range 2 Wiring - Rear View (T800-03-0000 Kit)	1.1
2.1	T800-41-0002 Double Guide Kit	2.1
2.2	T856/857 Chassis Connectors	2.1
2.3	T856/857 D-Range 1 Wiring - Rear View	2.1
2.4	T856/857 D-Range 2 Wiring - Rear View (T800-03-0000 Kit)	2.1

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Figure	Title	Page
3.1	T800-45-0001 PA Guide Kit	3.1
3.2	T858/859 Chassis Connectors	3.1
3.3	T858/859 PA In Latched Position	3.1
3.4	T858/859 D-Range Wiring - Rear View	3.1
4.1	N-Type Plug Assembly Details	4.1

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4 N-Type Connector Assembly

Make sure that any N-type plugs connected to Tait equipment are assembled according to the manufacturer's instructions. It is particularly important that the centre pin in the plug is positioned correctly:

- if the pin is positioned too far back in the plug, it may not make good contact with the socket;
- if the pin protrudes too far (as shown in Figure 4.1), or is not straight, it may damage the socket when the plug is screwed in.

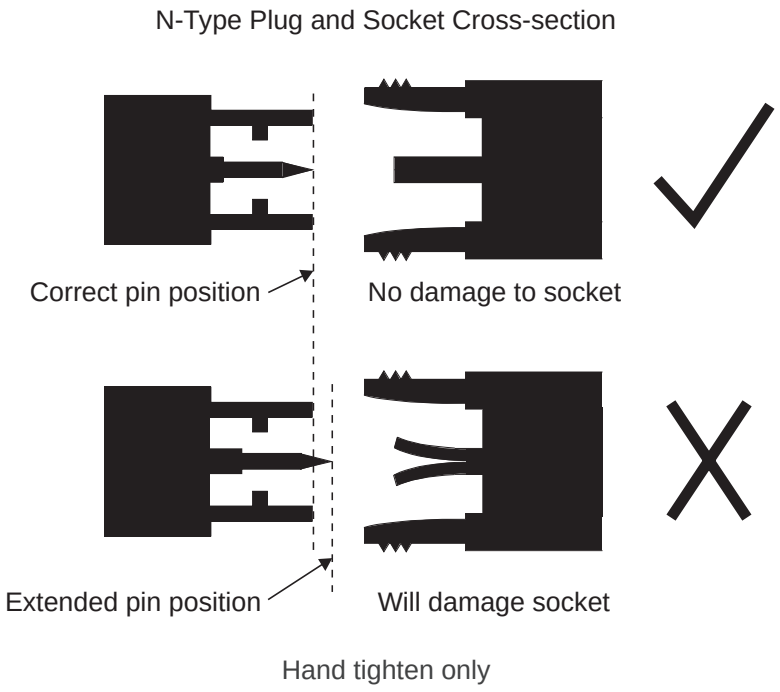


Figure 4.1 N-Type Plug Assembly Details

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Part G System Configurations

This part of the manual is divided into the sections listed below. These sections provide some brief information on basic system types and how to configure T850 Series II equipment for use in them.

Section	Title	Page
1	**T855 Link Selectable Features**	**1.1**
1.1	Flat Or De-emphasised Response	1.1
1.2	Mute Relay Control	1.1
1.3	Mute Selection	1.1
1.4	Receiver Disable	1.1
1.5	CTCSS Configuration	1.1
1.6	300Hz High Pass Filter	1.2
1.7	Audio Processor Links	1.2
1.7.1	General	1.2
1.7.2	Audio Processor Linking Details For CTCSS	1.3
2	**T856/857 Optional Features**	**2.1**
2.1	Audio Processor	2.1
2.1.1	Link Details	2.1
2.1.2	Typical Options	2.2
2.2	Line Transformer Inputs And Outputs	2.2
2.3	Opto Key	2.2
2.4	Relay Driver	2.2
2.5	Local Microphone	2.3
2.6	Keying With Option PCBs	2.3
2.7	Transmit Key Time	2.3
3	**Talk Through Repeater**	**3.1**
4	**Line Controlled Base Without Talk Through**	**4.1**
4.1	General	4.1
4.2	Transmitter Tail Timer	4.2
5	**DC Line Keying**	**5.1**

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Figure	Title	Page
3.1	Talk Through Repeater	3.1
4.1	Basic Configuration	4.1
4.2	Remote Line Controlled Base Station	4.1
4.3	4-Wire to 2-Wire Converter	4.2
4.4	Receiver Disable Time vs Tail Time	4.2
5.1	DC Loop Keying With Common Earth	5.1
5.2	Isolated Constant Current Loop Current Detector	5.1
5.3	Isolated Loop Current Switch	5.2
5.4	Typical System	5.2

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1 T855 Link Selectable Features

1.1 Flat Or De-emphasised Response

The links of PL210 and PL220 may be set to give either a flat or de-emphasised audio frequency response (refer to Section 1.7 for further details).

1.2 Mute Relay Control

A relay with undedicated contacts (RL210) is available in the audio processor circuit block for various switching applications. A link (PL270) is available for control of the relay from the mute circuit (refer to Section 1.7). This makes the relay suitable for controlling the keying of a transmitter in repeater applications.

1.3 Mute Selection

Link PL250 may be set to operate with noise mute or carrier mute (refer to Section 1.7).

1.4 Receiver Disable

The receiver audio can be disabled by pulling the RX-DISABLE line low. When the circuit is pulled from low to high, the receiver audio cannot be re-enabled until the disable timer completes its operation. This time is variable from 15ms to 200ms by adjusting RV220 in the audio processor section.

If required, the operation of this circuit can be disabled by changing the link of PL260 from 1-2 to 2-3.

Typical applications of the receiver disable are as an extra mute for signalling purposes, or when the T855 is configured as a line controlled base station (refer to Section 4).

1.5 CTCSS Configuration

Links PL230 & PL240 select various CTCSS options (refer to Section 1.7.2).

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1.6 300Hz High Pass Filter

Link PL240 also allows the insertion of this filter to improve ultimate signal-to-noise performance.

1.7 Audio Processor Links

The tables in this section are the same as those in Section 3.5 in Part B. They have been repeated here for ease of reference.

1.7.1 General

Use the following table to set up the audio processor to the configuration you require. You should set the audio processor links before carrying out the receiver alignment. The factory settings are shown in brackets [ ].

Plug	Link[a]		Function
PL210	[1 - 2] 2 - 3	[A - B] B - C	de-emphasised response flat response
PL220	1 - 2 [2 - 3]	D - E [E - F]	flat response de-emphasised response
PL230*	1 - 2 [2 - 3] 3 - 4	M - N [N - P] P - Q	audio input via AUDIO-2 pad audio from internal CTCSS speech filter audio input via I/O pad P250
PL240[b]	1 - 2 [2 - 3] or 3 - 4 4 - 5	G - H [H - J] or J - K K - L	bypass high pass filter 300Hz high pass filter in circuit audio input via PL230 or I/O pad
PL250	[1 - 2] 2 - 3	[R - S] S - T	noise mute carrier mute
PL260	1 - 2 [2 - 3]	U - V [V - W]	RX-DISABLE link not connected
PL270	[1 - 2] 2 - 3	[X - Y] Y - Z	relay link not connected

a. The letters in this column and in the table in Section 1.7.2 below refer to the identification letters screen printed onto the PCB beside each set of pins.

b. Refer to Section 1.7.2 for further details.

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1.7.2 Audio Processor Linking Details For CTCSS

You must connect the audio processor links correctly according to the CTCSS option used, as shown in the table below.

CTCSS Option	PL230		PL240	
standard, no CTCSS	2 - 3	N - P	2 - 3	H - J
received CTCSS + speech passed to line output	3 - 4	P - Q	1 - 2	G - H
high pass filtered speech, internal CTCSS detection	2 - 3	N - P	4 - 5	K - L
external CTCSS detection	1 - 2	M - N	4 - 5	K - L

The conditions stated in the above table are defined as follows:

- standard, no CTCSS
  - no CTCSS or other sub-audio signalling used
  - audio bandwidth 300Hz to 3kHz
  - hum & noise -55dB
- received CTCSS tone + speech to line output
  - tone and speech transmitted down 600 ohm line
  - audio bandwidth 10Hz to 3kHz
  - hum & noise -45dB
- high pass filtered speech + internal CTCSS detection
  - 400Hz to 3kHz
  - hum & noise -30dB with 250.3Hz tone present
- external CTCSS detection
  - decoding performed through the receiver (but externally)
  - speech injected back into receiver via "AUDIO-2" and sent down 600 ohm line

Note 1: AUDIO-2 is available on D-range 1 (PL100) pin 7 via the link resistor R160. Although PL100 pin 7 is already assigned to SERIAL-COM, this can be disabled by removing R808.

Note 2: External CTCSS units can connect in series with the audio chain via AUDIO-1 and AUDIO-2.

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2 T856/857 Optional Features

2.1 Audio Processor

The T856 and T857 come with a number of link selectable features which give added system flexibility.

Note: The tables in this section are the same as those in Section 3.5 in Part C. They have been repeated here for ease of reference.

2.1.1 Link Details

Use the following table to set up the audio processor to the configuration you require. You should set the audio processor links before carrying out any of the tuning and adjustment procedures. The factory settings are shown in brackets [ ].

Plug	Link[a]		Function
PL205	1-2	A	not connected
	[3-4]	B	microphone pre-amp. output to compressor input
	5-6	C	microphone pre-amp. output to multiplexer input
PL210	[1-2]	L	multiplexer output to pre-emphasis input
	3-4	M	multiplexer output to limiter input
	5-6	N	multiplexer output to compressor input
PL215	1-2	G	not connected
	[3-4]	H	compressor output to multiplexer input
	5-6	I	compressor output to limiter input
	7-8	J	compressor output to pre-emphasis input
	9-10	K	not connected
PL220	1-2	D	pre-emphasis output to multiplexer input
	[3-4]	E	pre-emphasis output to limiter input
	5-6	F	not connected

a. The letters in this column and in the table in Section 2.1.2 below refer to the identification letters screen printed onto the PCB beside each pair of pins.

2.1.2 Typical Options

	PL205	PL210	PL215	PL220
microphone pre-amp. compressed and pre-emphasised; line input pre-emphasised (standard set-up)	[3-4] B	[1-2] L	[3-4] H	[3-4] E
microphone pre-amp. compressed and pre-emphasised; line input unprocessed	3-4 B	3-4 M	7-8 J	1-2 D
line and microphone compressed and pre-emphasised	5-6 C	5-6 N	7-8 J	3-4 E
microphone pre-amp. compressed; line and microphone flat response	3-4 B	3-4 M	3-4 H	5-6 F

2.2 Line Transformer Inputs And Outputs

The line transformer (T210) is designed to provide a balanced interface to 600 ohm lines. For normal operation the two centre connections (LINE I/P 2, LINE I/P 3) are shorted together, and the 600 ohm line is connected between LINE I/P 1 and LINE I/P 4.

The secondary winding of the transformer is connected via 1k and 10Ω (R160) resistors to pin 6 (AUDIO-2) of D-range 1 and may be used to monitor audio on the line. Pin 7 of D-range 1 can be reconfigured as AUDIO-1 by removing R808 and R160, and placing %R150 (refer to Section 2 in Part I for more details).

2.3 Opto Key

The keying circuitry may be completely isolated from the rest of the system by means of the optocoupler (IC250) connected between pins 11 and 12 of the D-range connector. A constant current source (Q270) allows keying voltages between 6 and 50V.

2.4 Relay Driver

A dedicated transistor (Q250) is provided for the purpose of switching an external (e.g. coaxial) relay. The output is open collector and is activated by the Tx-Reg rail. This output is available on pin 9 of the T800-03-0000 auxiliary D-range connector (D-range 2).

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2.5 Local Microphone

Use of the local microphone (via the front panel stereo socket) will disable the audio input from the line. The audio switching occurs when the PTT switch is closed.

2.6 Keying With Option PCBs

If an option PCB is fitted, the exciter may be keyed via the TX-ENB-OPT pad in the audio processor. The line must be pulled low to key.

2.7 Transmit Key Time

(Refer to the appropriate test points & options connections drawing in Section 6 of Part C.)

A solder link (SL501) is provided on the bottom of the PCB to allow two transmit key time options, as shown in the table below.

Transmit Key Time	SL501
standard - 30ms (approx.)	not linked
short* - <5ms	linked

*In this configuration the standby spurious emissions should be <-65dBm.

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3 Talk Through Repeater

In this configuration the receiver directly keys the transmitter when the signal is received. The demodulated audio is fed via 600 ohm lines to the transmitter to modulate the carrier. The receiver and transmitter operate simultaneously and must therefore be on different frequencies. The minimum frequency separation depends on the duplexer used.

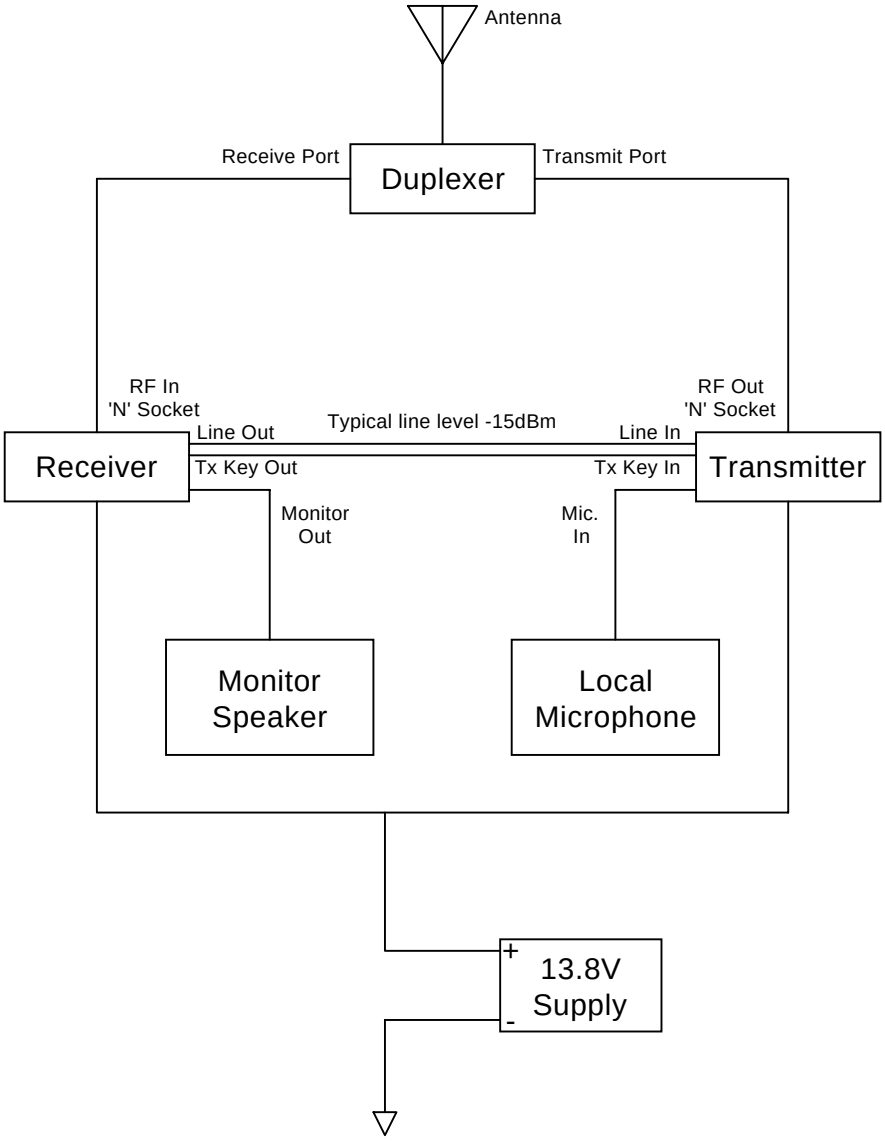


Figure 3.1 Talk Through Repeater

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4 Line Controlled Base Without Talk Through

4.1 General

This installation contains a transmitter and receiver which may or may not be on the same frequency, thus simultaneous transmission and reception is not possible. When the transmitter is keyed, the coaxial relay is also energised. When the relay is in its rest position, signals from the aerial are passed to the receiver and the demodulated output is fed via 600 ohm lines to the RCU.

The receiver is disabled when the transmitter is energised to prevent the receiver mute opening from RF due to lack of isolation in the relay, direct radiation or the noise skirt of the dual frequency link.

Since the base station may be controlled via a 2-wire line and a 4-wire to 2-wire hybrid, there is a possibility of system oscillation if the receiver is not disabled during transmit. This occurs when the transmit energy enters the receiver and produces an audio response which can pass from the receive to the transmit audio part of the hybrid (impedance imbalance, etc).

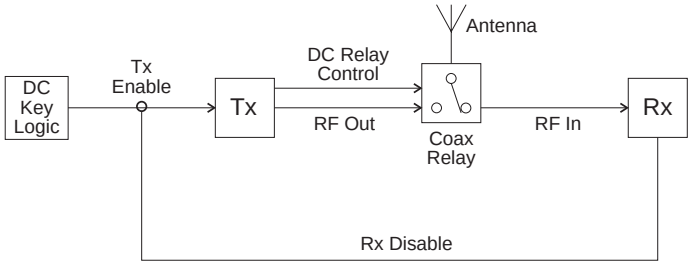


Figure 4.1 Basic Configuration

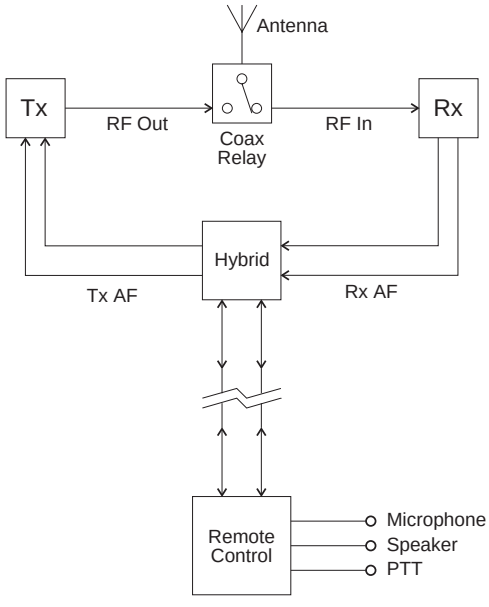


Figure 4.2 Remote Line Controlled Base Station

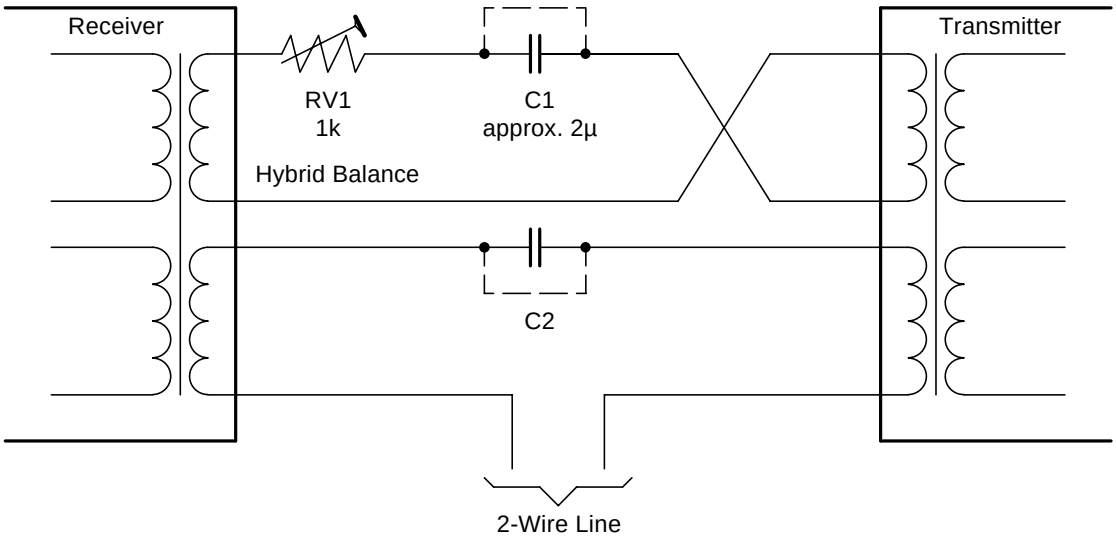


Figure 4.3 4-Wire to 2-Wire Converter

4.2 Transmitter Tail Timer

If the transmitter has the tail timer enabled:

- the receiver disable timer must be set so that ^{t}Rx/Dis > ^{t}Tx/Tail;

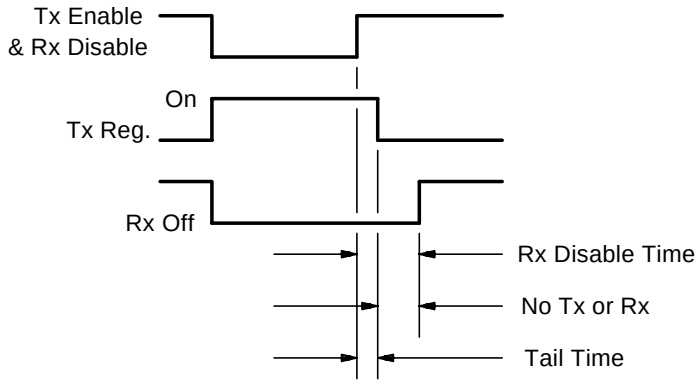


Figure 4.4 Receiver Disable Time vs Tail Time

- if the system configuration also uses an aerial changeover relay as well as the tail timer, the changeover relay must be driven from the relay driver (Q250) in the audio processor, rather than by Tx-Key or Tx-Enable; this output is available on pin 9 of the T800-03-000 auxiliary D-range (D-range 2);

- depending on tail time requirements, it is possible for the transmitter tail time to exceed the receiver disable time capability; in this situation the receiver disable line should also be driven from relay driver Q250 (D-range 2 pin 9).

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5 DC Line Keying

Where the transmitter and receiver are separated by only a short distance and DC isolation is not required, DC loop keying may be employed.

A small DC current (usually less than 10mA) can be fed via the balanced 2-wire line to provide remote control of various functions.

In a duplex system the receiver mute is used to key a transmitter, provided there is a common earth between the two units (refer to Figure 5.1).

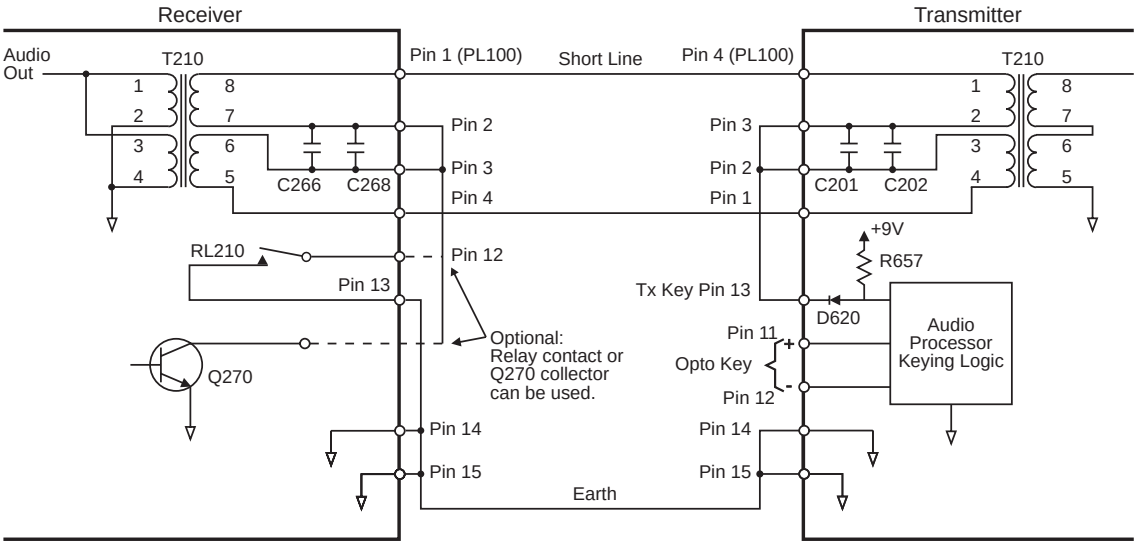


Figure 5.1 DC Loop Keying With Common Earth

Where the receiver and transmitter (or remote control) are distant, DC loop keying is provided by an isolated supply, driver and detector because an earth cannot be relied on (refer to Figure 5.2, Figure 5.3 & Figure 5.4).

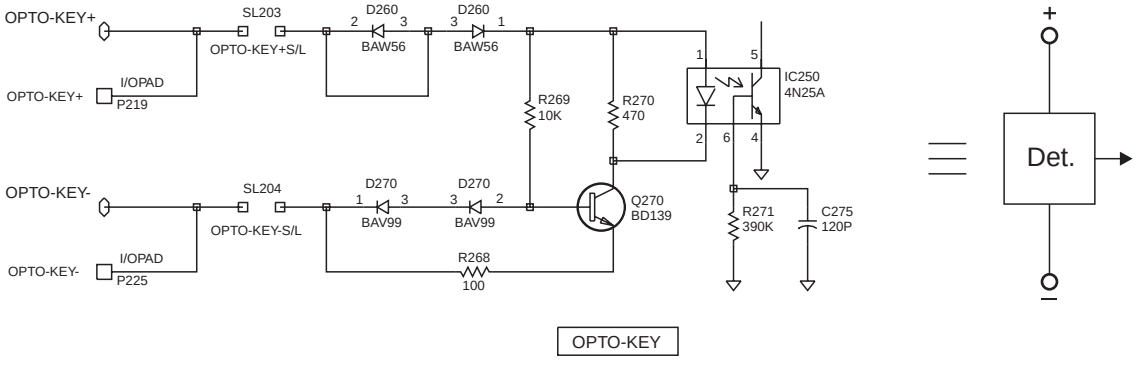


Figure 5.2 Isolated Constant Current Loop Current Detector (Opto-key input on T856 & T857)

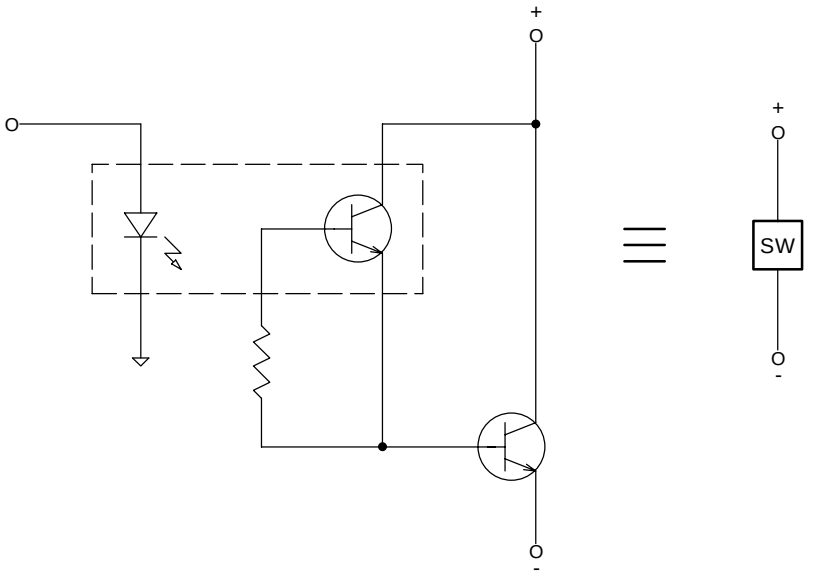


Figure 5.3 Isolated Loop Current Switch

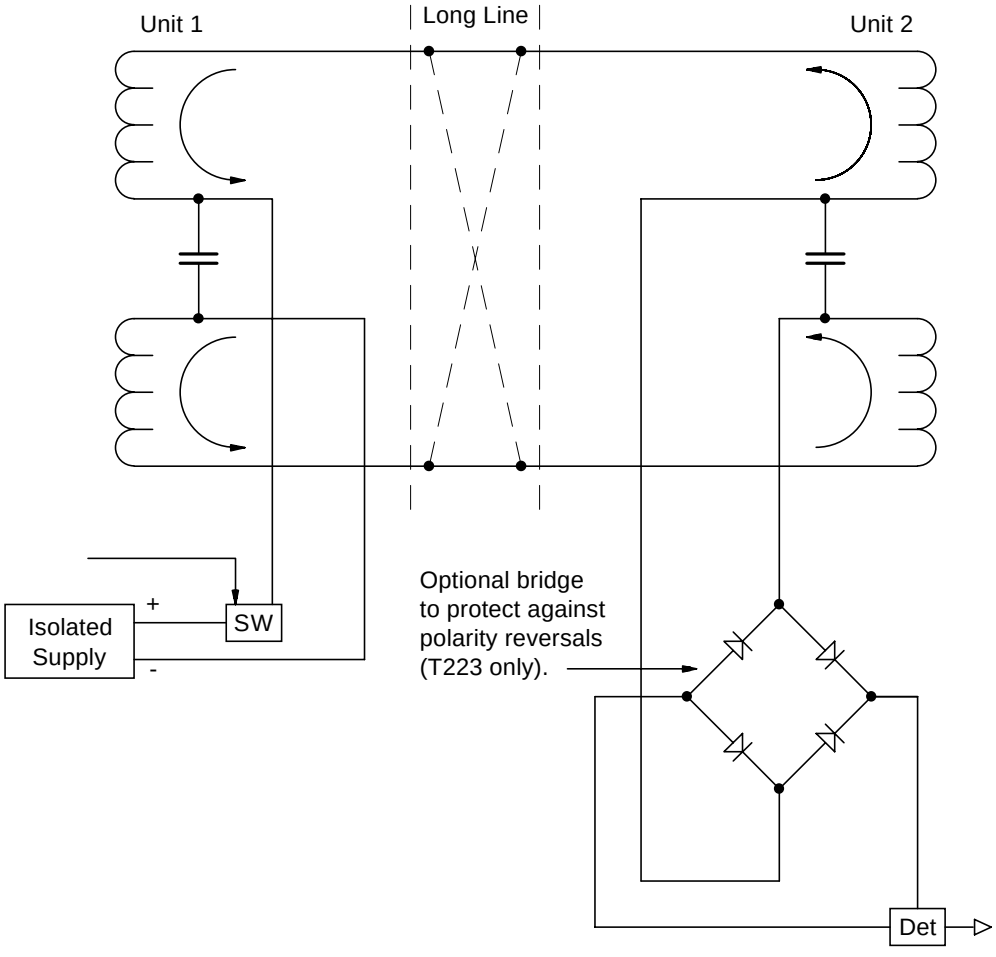


Figure 5.4 Typical System

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Part H T800 Ancillary Equipment

This Part of the manual features a brief description of the major ancillaries that may be used with T800 Series II equipment. For a comprehensive list of available ancillary equipment, please contact your nearest Tait Dealer or Customer Service Organisation.

Section	Page
Programming Kits	**1**
General Ancillaries	**2**
Paging	**5**
External Frequency Reference	**6**
Rack Frames	**7**
Rack Frame Guides	**9**
Rack Frame PCBs	**11**
Rack Frame Ancillaries	**12**
Front Panels	**13**
Power Supplies	**14**

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T800 Ancillary Equipment

Programming Kits

T800-01-0000

The T800-01-0000 kit is used for programming T800 Series II base station equipment using a standard IBM™ (or compatible) PC.

The kit comprises the following items:

PGM800Win programming software user's manual
PGM800Win Windows™ based programming software on 3½" floppy discs
T800-01-0002 programming cable.

T800-01-0001

The T800-01-0001 kit is the same as the T800-01-0000 kit described above, but with the addition of the T800-01-0004 module programming interface.

T800-01-0002

The T800-01-0002 programming cable connects the PC directly to the programming socket on the T800 Series II rack frame speaker panel or backplane PCB, thus enabling T800 Series II modules to be read or programmed while in the rack frame. It can also connect to the programming socket on the T800-01-0004 programming module interface if the module is to be read or programmed while out of the rack frame.

T800-01-0003

The T800-01-0003 programming kit contains a T800-01-0002 programming cable and a T800-01-0004 programming module interface.

T800-01-0004

The T800-01-0004 programming module interface is designed to allow a PC to connect directly to a T800 Series II module. It comprises a small PCB on which is mounted a D-range socket, a programming socket, a Micromatch socket and a DC input connector.

The T800-01-0004 plugs directly into D-range 1 or D-range 2 (selected by a switch on the PCB), or into SK805 in the microcontroller compartment via the supplied ribbon cable loom, and is then connected to the PC with a T800-01-0002 programming cable.

Refer to the T800 Ancillary Equipment Service Manual for more information.

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General Ancillaries

T004-72 RF Coaxial Relay

The T004-72 is an RF coaxial relay assembly fitted with three female N-type connectors, and comes complete with a mounting bracket and two coaxial cables terminated in male N-type connectors. It can be used, for example, in base station applications where the receiver and transmitter share the same antenna, in which case it can be driven by the T800 Series II transmitter/exciter relay driver (refer to Section 2.4 in Part G for more information).

T800-01-0010 Calibration Test Unit

The T800-01-0010 provides all inputs and outputs necessary to carry out the full tuning and adjustment procedure for T800 Series I and II receivers, exciters and transmitters. It provides a convenient method of connecting test equipment, including a PC and power supply, to a T800 Series I or II module (via D-range 1) without the need to construct custom wiring looms.

The T800-01-0010 also has a built-in speaker, a switch for selecting Series I or II modules, and uses standard BNC and "banana plug" sockets.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T800-03 Auxiliary D-Range

The T800-03 is an additional D-range kit comprising one D-range plug assembly and two locating pins, nuts & washers. Although originally a T800 Series I ancillary, it can be used in T800 Series II products for special applications requiring custom internal wiring.

T800-03-0000 Auxiliary D-Range

The T800-03-0000 is an additional D-range kit (normally fitted as D-range 2) comprising one D-range plug assembly complete with connecting loom and mounting screws. The ribbon cable loom connects the D-range PCB to the Micromatch socket (SK805) in the microcontroller compartment. Typical uses of the T800-03-0000 are in paging applications and where external channel control is required. Refer to Figure 1.4 and Figure 2.4 in Part F for the T800-03-0000 pin connections.

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T800-04-0000 RSSI

The T800-04 RSSI option PCB plugs directly into the main PCB (support circuitry being fitted as standard). It is fitted to the T855, T875 and T885 whenever receiver signal strength monitoring is required, e.g. trunking or voting. Its function is to provide a DC voltage proportional to the signal level at the receiver input.

Refer to the appropriate service manual.

T800-08-0000 Ancillary Chassis

The T800-08-0000 is a general purpose chassis designed to be mechanically and electronically compatible with a T800 Series II rack frame. It comprises the following items:

- top and bottom chassis rails
- side panels
- rear panel
- PCB mounting brackets
- double D-range plug assembly (for mounting directly on a PCB)
- T800 Series II blank front panel complete with handle.

Custom designed PCBs for special applications can be mounted in several positions inside the chassis to provide a convenient, plug-in module that interfaces directly with a T800 Series II rack frame.

Refer to Application Note AN-RSD-002 for further information.

T800-10-0000 Channel Select PCB

The T800-10-0000 is a small PCB that plugs into the Micromatch connector (SK805) in the microcontroller compartment of a T800 Series II receiver, exciter or transmitter. It is fitted with an eight-switch DIP switch which allows the manual selection of any one of the channels already programmed into the module by PGM800Win. The T800-10-0000 is also fitted with a Micromatch socket to provide access to SK805 for programming purposes.

T800-80 Local Microphone

A 600Ω microphone complete with 300mm cord terminated in a ¼" stereo plug.

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T818-01-0000 Receiver/Transmitter Monitor

The T818-01-0000 (formerly T318-02) is designed to monitor the basic operational functions of one T800 receiver and transmitter. The meter and selector switches for monitoring the required functions are mounted on the front panel, as is the monitor speaker which is driven by a built-in amplifier. An optional mute circuit may be used to silence the audio when no carrier is present.

Refer to M318-02.

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Paging

T800-30-0000 & T800-30-0002 DFSK Modulators

The T800-30-0000 (formerly T800-30) and T800-30-0002 (formerly T800-35) are DFSK modulators for T800 Series II transmitters, suitable for POCSAG or similar paging data formats. Analogue transmissions (e.g. tone or speech) are still possible by disabling the data path via a control line. 512 or 1200 baud data rates are link selectable. The T800-30-0002 is adapted for use with an external reference oscillator for simulcast transmission. The T800-30-0000 and T800-30-0002 are not designed for use with 66 to 88MHz equipment.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T800-32-0000 & T800-32-0010 DFSK Modulators

The T800-32-0000 and T800-32-0010 are DFSK modulator PCBs which can be fitted to T800 Series II transmitters to enable them to function as low-speed paging transmitters. These new PCBs have been specifically designed for Series II transmitters and will be much easier to fit into the latest design transmitters.

Both PCBs are suitable for POCSAG or similar paging data formats, but are not designed for analogue transmissions (e.g. tone or speech). The T800-32-0010 is adapted for use with an external reference oscillator for simulcast transmission. The T800-32-0000 and T800-32-0010 are not designed for use with 66 to 88MHz equipment.

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External Frequency Reference

T800-06-0000 External Frequency Reference Kit

The T800-06-0000 kit provides an additional D-range plug/PCB assembly which incorporates a miniature RF connector to carry an externally generated 12.8MHz reference signal into a T800 Series II module. This enables the use of very high stability external reference oscillators for special applications.

The D-range PCB is also fitted with a Micromatch socket which can be connected to SK805 in the microcontroller section via the supplied loom to provide access to the channel change lines.

The kit comes complete with fitting instructions and all installation hardware.

T800-06-0001 External Frequency Reference Kit

The T800-06-0001 is the same as the T800-06-0000 kit with the addition of a special coax cable for external frequency reference input. One end of this coax is terminated with a miniature RF connector which fits into the D-range socket in an appropriate backplane PCB (e.g. T800-52-0000) to connect to a T800 Series II module fitted with a T800-06-0000 kit. The other end is terminated with a BNC connector which can be mounted on the rack frame.

T801-00 Frequency Reference Module

The T801-00 frequency reference module provides a high stability frequency source to which the synthesiser within a T800 Series II base station can be locked. The master standard within the T801-00 is primarily intended to be rubidium, although high quality ovenised crystal oscillators can also be used in applications where more frequent readjustment of frequency is acceptable. The T801-00 converts the output frequency from its master standard to the 12.8MHz required by the T800 Series II base station.

Refer to M801-00.

T801-10 OCXO Module

The T801-10 OCXO module provides a high stability frequency source to which the synthesiser within a T800 Series II base station can be locked. This will provide T800 Series II transmitters with the frequency stability required for simulcast transmission. The master standard within the T801-10 is a high quality ovenised crystal oscillator (OCXO). Three outputs are provided on the rear panel, which allows up to three T800 Series II transmitters to be referenced to the source oscillator.

Refer to M801-10.

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Rack Frames

T800-22-0000

The T800-22-0000 is a standard 5U high rack frame complete with wiring loom which is designed to accommodate one 25, 50 or 100W base station or repeater. It comes fully assembled with the following items:

T800-15-0000 speaker panel with programming port
T800-40-0001 blank panel (x2)
T800-41-0002 double module guide
T800-44-0000 power supply guide
T800-45-0000 PA guide
T800-50-0000 standard rack frame backplane PCB.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T800-22-0001

The T800-22-0001 is the same as the T800-22-0000, but is supplied packed flat in disassembled form for ease of transport. The wiring loom and backplane PCB are, however, supplied complete and ready for installation.

T800-22-0002

The T800-22-0002 is a standard 5U high rack frame without wiring loom which is designed to accommodate one 25, 50 or 100W base station or repeater. It comes fully assembled with the following items:

T800-15-0000 speaker panel with programming port
T800-40-0001 blank panel (x2)
T800-41-0002 double module guide
T800-44-0000 power supply guide
T800-45-0000 PA guide.

T800-22-0003

The T800-22-0003 is the same as the T800-22-0002, but is supplied packed flat in disassembled form for ease of transport.

T800-22-0004

The T800-22-0004 is a standard 5U high rack frame without wiring loom, guides or front panels which comes fully assembled.

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T800-22-0005

The T800-22-0005 is the same as the T800-22-0004, but is supplied packed flat in disassembled form for ease of transport.

T800-23-0000 Slimline Repeater Mounting Kit

The T800-23-0000 Slimline Repeater kit enables one T800 Series II receiver and one T800 Series II transmitter to be mounted horizontally side-by-side in a standard 483mm rack frame. The kit contains a front panel complete with speaker, programming port, an options tray (for mounting a power supply, duplexer, etc.), and a wiring loom to connect the two T800 modules to the terminal blocks mounted on the rear of the options tray. The T800-23-0010 mains power supply (available separately) is designed for use with the T800-23-0000. The rack height of the assembled unit is 2U.

T800-23-0001 Slimline Repeater Mounting Kit

The T800-23-0001 Slimline Repeater kit is the same as the T800-23-0000, but is supplied with a T800-23-0010 power supply and no options tray.

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Rack Frame Guides

T800-41-0001

The T800-41-0001 rack frame guide is designed to fit into a T800 Series II rack frame and will accept one T800 Series II module (except for power supplies and power amplifiers which must use their own guides). It is supplied disassembled and comprises a top and bottom rail, a rear panel, two D-range sockets and mounting screws.

T800-41-0002

The T800-41-0002 rack frame guide is designed to fit into a T800 Series II rack frame and will accept two T800 Series II modules (except for power supplies and power amplifiers which must use their own guides). It is supplied disassembled and comprises two top and bottom rails, a double width rear panel, four D-range sockets and mounting screws.

T800-41-0003

The T800-41-0003 rack frame guide is designed to fit into a T800 Series II rack frame and will accept three T800 Series II modules (except for power supplies and power amplifiers which must use their own guides). It is supplied disassembled and comprises three top and bottom rails, a triple width rear panel, six D-range sockets and mounting screws.

T800-41-0004

The T800-41-0004 rack frame guide is designed to fit into a T800 Series II rack frame and will accept four T800 Series II modules (except for power supplies and power amplifiers which must use their own guides). It is supplied disassembled and comprises four top and bottom rails, a four-module wide rear panel, eight D-range sockets and mounting screws.

T800-42-0000

The T800-42-0000 rack frame guide will allow a duplexer to be mounted in a T800 Series II rack frame. It occupies a single module space and comprises a folded metal chassis, mounting brackets and screws.

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T800-42-0001

The T800-42-0001 rack frame guide is the same as the T800-42-0000 described above, but with the addition of a duplexer front panel.

T800-42-0002

The T800-42-0002 rack frame guide is the same as the T800-42-0000 described above, but with the addition of a blank front panel.

T800-43-0000

The T800-43-0000 rack frame guide is designed to fit into a T800 Series II rack frame and will accept one T300 or T1500 Series module (e.g. T318-02, T1511). It is supplied disassembled and comprises a top and bottom rail, two T300 D-range socket boxes and mounting screws. The T800-43-0000 is not compatible with the T800 Series II rack frame backplane PCB. Consult your nearest Tait Dealer or Customer Service Organisation for more details about T300/T1500 Series compatibility with T800 Series II rack frames.

T800-43-0001

The T800-43-0001 is the same as the T800-43-0000 but is supplied with only one D-range socket box.

T800-44-0000

The T800-44-0000 rack frame guide is designed to fit into a T800 Series II rack frame and will accept one T800 Series II power supply. It comprises a top and bottom rail and mounting screws.

T800-45-0000

The T800-45-0000 rack frame guide is designed to fit into a T800 Series II rack frame and will accept one T800 Series II 50W power amplifier. It comprises a top guide stop, a bottom guide rail and mounting screws.

T800-45-0001

The T800-45-0001 rack frame guide is designed to fit into a T800 Series II rack frame and will accept one T800 Series II 100W power amplifier. It comprises a top guide stop, a bottom guide rail, extra mounting brackets for the double width front panel and mounting screws.

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Rack Frame PCBs

T800-50-0000

The T800-50-0000 backplane PCB is designed to allow a T800-22-0000 rack frame to be easily configured as either a base station or repeater. The PCB mounts across the rear panel of the T800-41-0002 double module rack frame guide, enabling a T800 Series II receiver and exciter/transmitter to plug directly into the D-range sockets provided on the inner side of the PCB (both D-range 1 and D-range 2 are provided for). The other side of the PCB features a programming port, D-range connectors which provide all module inputs and outputs, and two DIP switches for external channel selection.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T800-50-0001

The T800-50-0001 is similar in function and design to the T800-50-0000, but is designed to allow connection of TA087 or TA387 channel select panels. It has one 25-way OEM D-range connector, but will not accept personality PCBs.

T800-52-0000

The T800-52-0000 is similar in function and design to the T800-50-0000, but is designed for use in Quasi-Sync applications. The PCB has an external reference D-range fitted and has provision for connecting TA087 or TA387 channel change/speaker panels and a TA136 alarm panel. The T800-52-0000 will not accept personality PCBs.

T800-60-0000

The T800-60-0000 personality PCB is designed to plug into the two 25-way D-range sockets on the T800-50-0000 backplane PCB. The T800-60-0000 provides channel selection for both receiver and exciter/transmitter via a single DIP switch, remote channel selection and alarm monitoring via Micromatch sockets, and receiver and exciter/transmitter inputs and outputs via a 25-way D-range socket.

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Rack Frame Ancillaries

T800-13-0000 Extender Rail

The T800-13-0000 extender rail allows a T800 Series II receiver, exciter or transmitter to be operated out of the rack frame with the covers off for tuning purposes. It is fitted with two 15-way D-range connectors.

T800-14-0000 Extender Rail

The T800-14-0000 extender rail is the same as the T800-13-0000, but is intended for equipment using an external reference (e.g. Quasi-Sync). It thus has one 15-way D-range, and one 11-way D-range incorporating a miniature RF connector.

T800-19-0000 Rack Mounting Fan

The T800-19-0000 fan is designed to fit into the base of any standard 483mm rack frame without affecting its ability to house seven modules. The two mounting rails are secured to the rack frame side panels, and the fan is screwed onto the rails under the required module. The kit contains all mounting hardware.

T800-19-0010 Rack Mounting Fan

The T800-19-0010 fan is designed to fit into the base of any standard 483mm rack frame without affecting its ability to house seven modules. The fan is mounted directly onto the underside of the bottom guide rails with two mounting brackets. The kit contains all mounting hardware.

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Front Panels

T800-15-0000 Speaker Panel

A 60mm speaker panel fitted with a 4Ω speaker and programming socket. It comes complete with mounting hardware and a cable to connect the programming socket to the backplane PCB.

T800-15-0001 Speaker Panel

A 60mm speaker panel fitted with a 4Ω speaker, complete with mounting hardware.

T800-17-0010 Circuit Breaker Panel

A 60mm front panel fitted with a 10A magnetic circuit breaker. The circuit breaker also functions as an on/off switch to control the supply of power to the rack frame. The T800-17-0010 is intended primarily for use with rack frames powered by batteries (or with a battery back-up supply) and comes complete with mounting hardware.

T800-17-0020 Circuit Breaker Panel

The same as the T800-17-0010, but fitted with a 20A circuit breaker.

T800-40-0000 Blank Panel Fitting Kit

The mounting brackets and screws necessary to fit a T800 Series II 60mm blank front panel into a T800 Series II rack frame.

T800-40-0001 Blank Panel

A T800 Series II 60mm blank panel complete with mounting brackets and screws.

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Power Supplies

T800-23-0010 Mains Power Supply

The T800-23-0010 mains power supply is designed to power the T800-23-0000/0001 Slimline Repeaters and mounts on the front panel instead of the options tray. It requires a mains input voltage (auto range) of 85-132/170-264V AC at 47-440Hz.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T807-10-0000 Mains Power Supply

The T807-10-0000 is a switching power supply capable of supplying up to 15A at 11-14V DC. It requires a mains supply of 230V/50Hz or 115V/60Hz (nominal values) which can be internally selected with a switch. The T807-10-0000 is designed to power T800 Series II 50W transmitters (plus receivers, etc.) and requires a T800-44-0000 guide to fit into a T800 Series II rack frame.

Refer to the T800 Ancillary Equipment Service Manual for more information.

T808-10-0000 Mains Power Supply

The T808-10-0000 is a switching power supply capable of supplying up to 25A at 11-14V DC. It requires a mains supply of 230V/50Hz or 115V/60Hz (nominal values) which can be internally selected with a switch. The T808-10-0000 is designed to power T800 Series II 100W transmitters (plus receivers, etc.) and requires a T800-44-0000 guide to fit into a T800 Series II rack frame.

Refer to the T800 Ancillary Equipment Service Manual for more information.

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Part I Using T850 Series II Equipment In A Series I Rack Frame

This part of the manual describes how to modify T850 Series II equipment for operation in a T800 Series I rack frame.

Section	Title	Page
1	**Tools Required**	**1.1**
2	**T855/856/857 SII - SI Conversion**	**2.1**
2.1	Introduction	2.1
2.2	Method	2.2
3	**T858/859 SII - SI Conversion**	**3.1**
3.1	T858/859 Without RF Power Modules	3.1
3.1.1	Introduction	3.1
3.1.2	Method	3.2
3.2	T858/859 With RF Power Modules	3.5
3.2.1	Introduction	3.5
3.2.2	Method	3.6

Figure	Title	Page
2.1	T855 Component Changes	2.3
2.2	T856/857 Component Changes	2.5
2.3	T857 RF Output Coax Routing	2.7
	T858/859 Without RF Power Modules	
3.1	T858/859 Front RF Input Coax Routing	3.3
	T858/859 With RF Power Modules	
3.2	T858/859 Component Changes	3.7
3.3	T858 Front RF Input Coax Routing	3.8
3.4	T859 Front RF Input Coax Routing	3.8

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1 Tools Required

Tool	Size
Allen Head Screwdriver	2mm AF
Flat Blade Screwdriver	3mm AF
Pozidriv Screwdrivers	No. 1 for M3 screws No. 2 for M4 screws
Torx Screwdrivers	T10 for M3 screws T20 for M4 screws
Spanners	1/4″ AF for D-range locating pins 5.5mm AF for M3 nuts[a] 6mm AF for SMC connector 7mm AF for M4 nuts
Solder	
Soldering Iron	

a. If you do not have a 5.5mm spanner, you can use long-nosed pliers to carefully grip the M3 nuts on the D-range securing screws and locating pins.

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2 T855/856/857 SII - SI Conversion

2.1 Introduction

You must make a number of modifications to enable a T850 Series II receiver, exciter or transmitter to operate in a Series I rack frame. These changes can be split into two groups, mechanical and electrical, as described below.

Mechanical	These changes involve: • putting on a new front panel because of the differences in height and width between a Series II and Series I panel; • adding D-range locating pins as the Series I rack requires them for alignment.
Electrical	These changes involve: • making sure there is pin compatibility for D-range 1 pin 7 between the Series II module and the Series I rack frame; in Series I, pin 7 is allocated to audio 1 for the transmitter/exciter, and audio 2 for the receiver; • converting the exciter from rear RF output to front RF output; • disabling cyclic keying in the exciter.

This procedure assumes you have already purchased the appropriate Series I conversion kit:

- T855 - T800-70-0055
- T856 - T800-70-0056
- T857 - T800-70-0057.

If not, you should purchase one from your nearest Tait Dealer or Customer Service Organisation before beginning the procedure.

It should take approximately 15-20 minutes per module to perform these steps.

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2.2 Method

Step	Action
1	Remove the Series II front panel from the module as follows: • remove the volume knob (T855 only); • remove the four screws using a Torx screwdriver; • push the LEDs from the front of the panel to remove them from their grommets.
2	Remove both covers from the module.
3	Remove the M3 screws, spring washers, and M3 nuts from D-range 1. ***Note:*** If you have a chassis with threaded holes, you will need to remove only the M3 screws and spring washers.
4	Replace the M3 screws with locating pins, M3 spring washers (and nuts if necessary).
5	**If you are modifying a T855, follow this step; otherwise go to Step 6.** Remove R808 (10Ω), as shown in Figure 2.1. Ensure that R160 (10Ω) is placed, as shown in Figure 2.1. This will convert D-range 1 pin 7 from serial com to audio 2. Go to Step 8.

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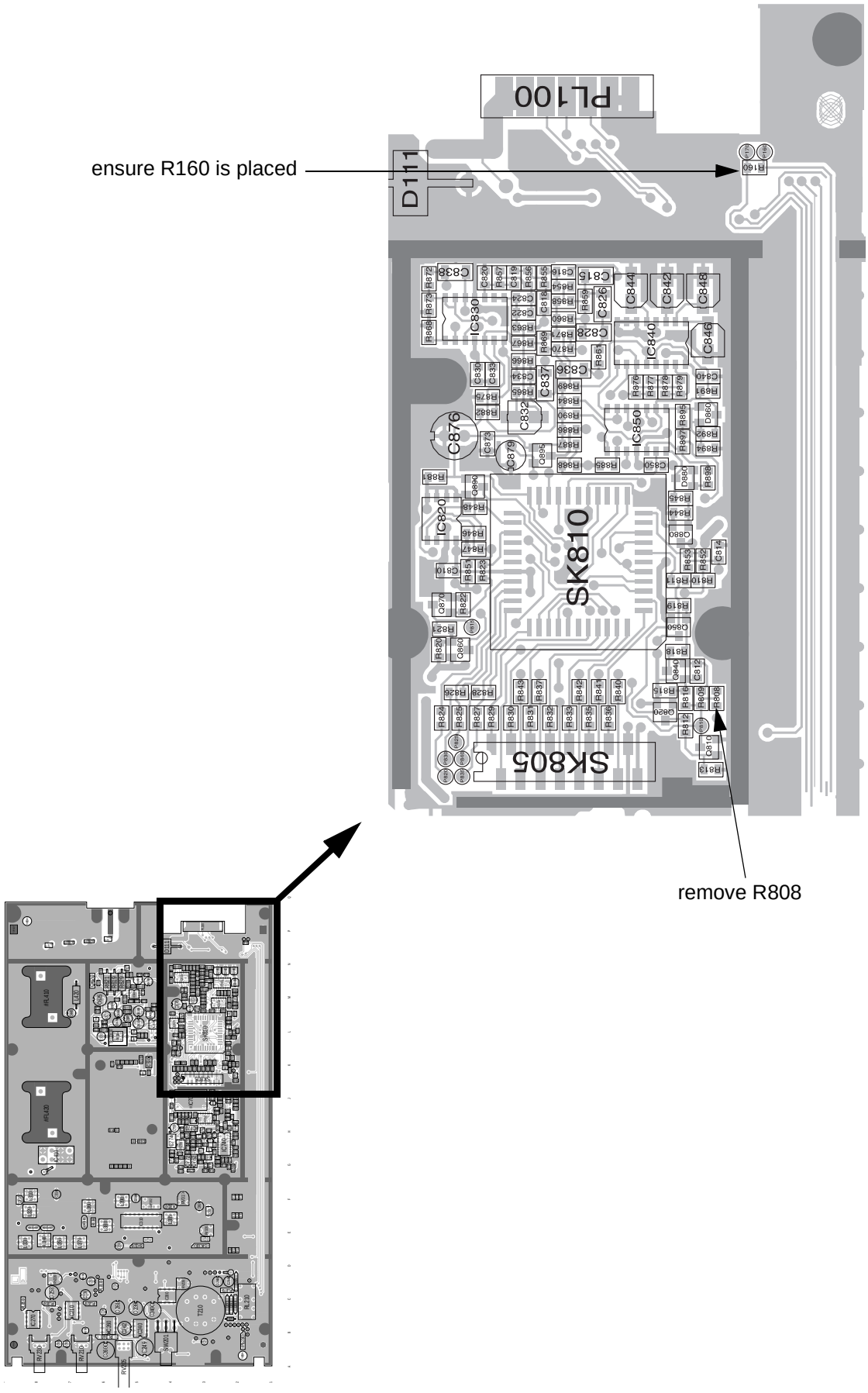


Figure 2.1 T855 Component Changes

Step	Action
6	**If you are modifying a T856, follow these steps (refer to Figure 2.2):** • remove R808 (10Ω) • remove R160 (10Ω) • place %R150 (10Ω). } converts D-range 1 pin 7 from serial com to audio 1 Continue with Step 8. **If you are modifying a T857, follow these steps (refer to Figure 2.2):** • remove R808 (10Ω) • remove R160 (10Ω) • place %R150 (10Ω) } converts D-range 1 pin 7 from serial com to audio 1 • remove L314; this will disable cyclic keying to enable the T857 to work with a Series I PA. Continue with Step 7.

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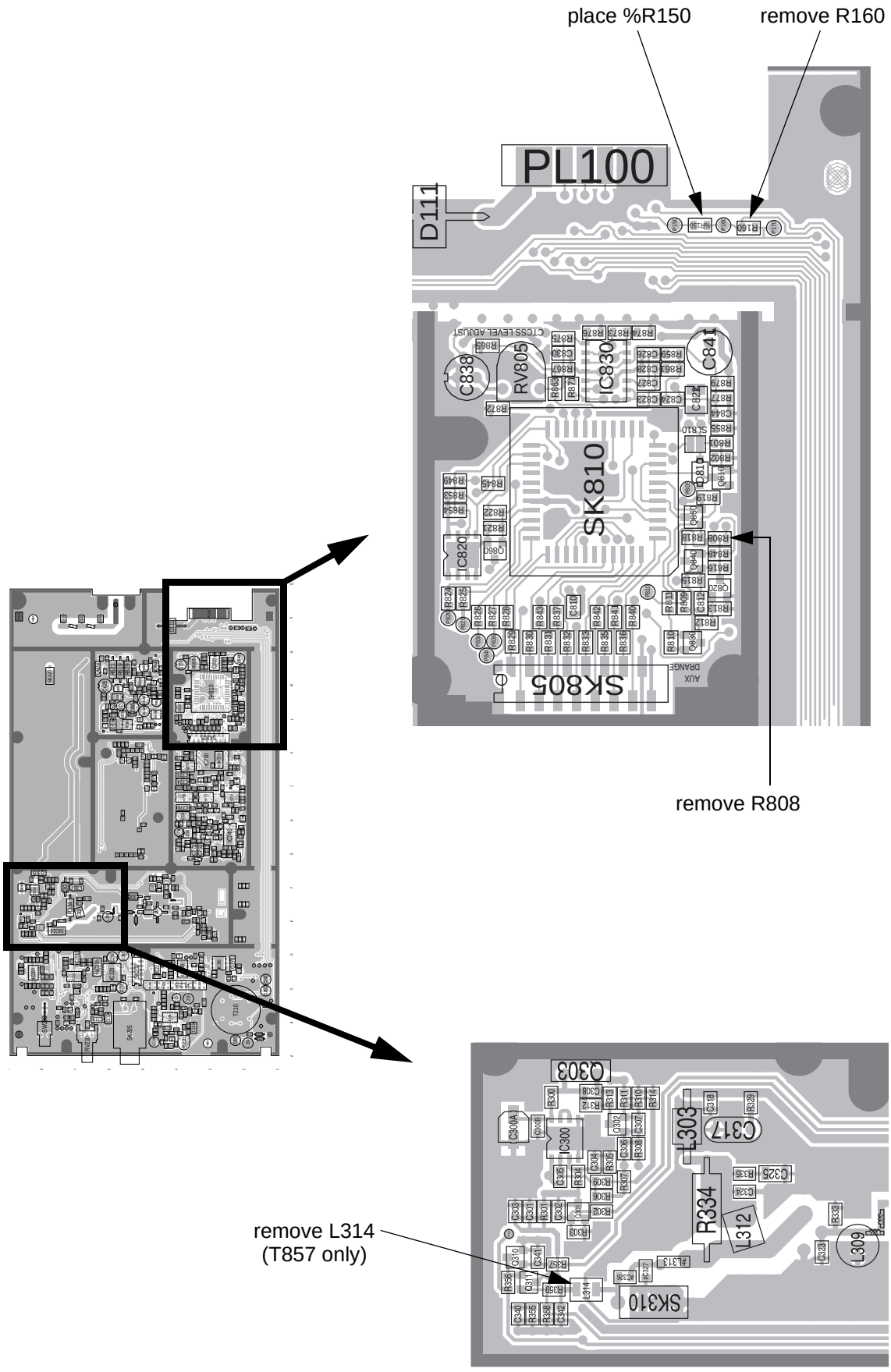


Figure 2.2 T856/857 Component Changes

Step	Action
7	**Converting the T857 from rear panel RF output to front panel RF output.** Desolder, unscrew and remove the rear panel N-type connector. Fit the blanking plate over the hole in the chassis from which the N-type connector has been removed. Unplug the existing coax from SK310 and SK420, retaining the spring clip for the new coax cable. Fit the front panel SMC connector: • insert the coax fitted with the brass SMC connector through the hole in the front of the chassis and secure with the brass nut and washer; • connect the coax from the SMC connector into SK310, securing the coax in the groove provided in the chassis wall with the spring clip (refer to Figure 2.3).
8	Fit all parts of the Series I front panel, following Step 1 in reverse order. ***Note:*** If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screwdriver or spike. Be very careful while doing this as the legs of the LED are very easy to break.
9	Replace the covers.
10	**Programming** Once you have carried out this conversion procedure, you will no longer be able to program the T850 Series II module via D-range 1. In order to program the module now, you will need to use a programming module interface, such as the T800-01-0004. This device is fitted with a programming socket and can be connected to the module via SK805 in the microcontroller section. You will have to remove the top cover (closest to the handle) to gain access to SK805. ***Note:*** You may still be able to program the module by connecting the T800-01-0004 to a T800-03-0000 auxiliary D-range fitted as D-range 2, but only if pins 8 (ground) and 12 (serial com) of D-range 2 are not used in the Series I configuration.

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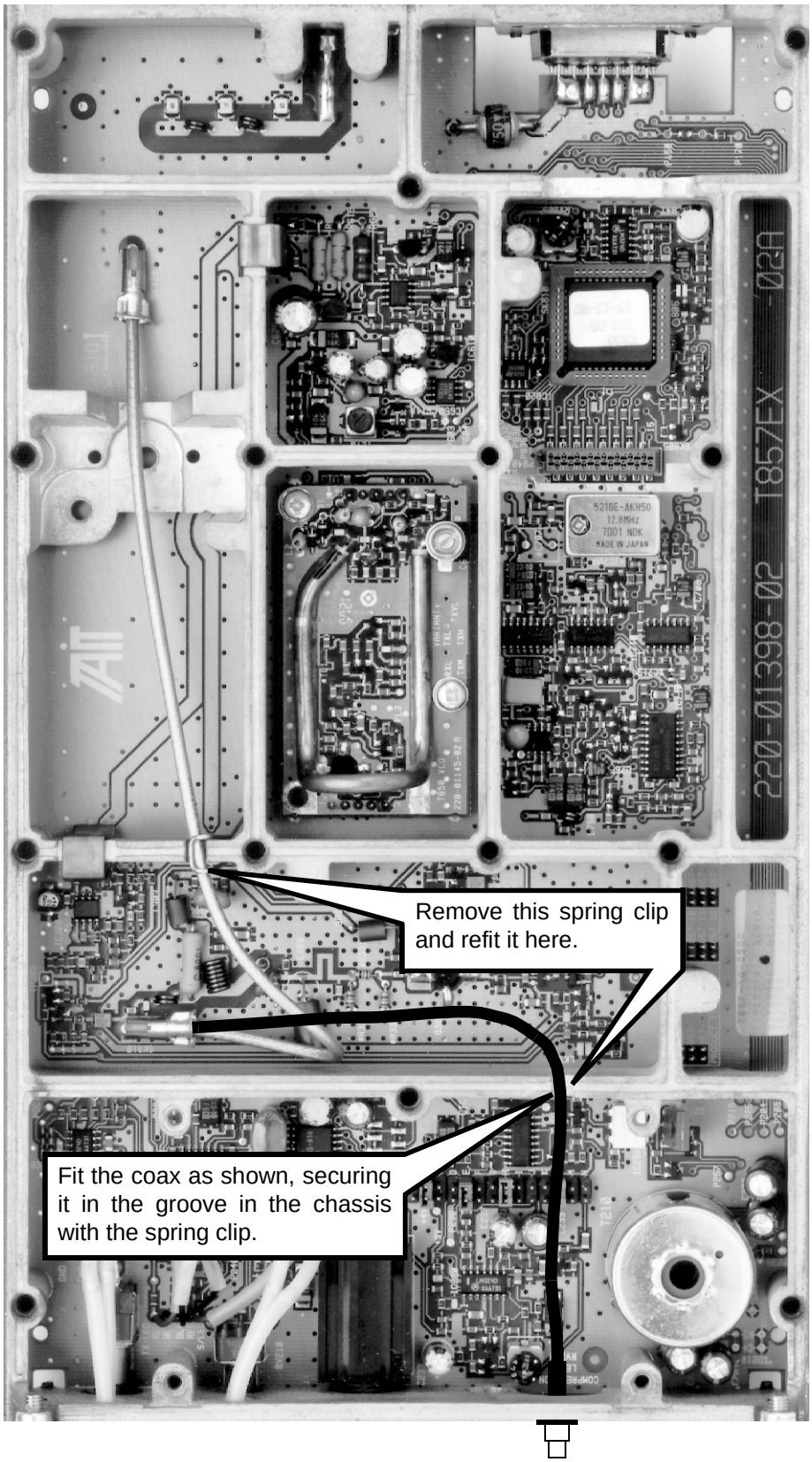


Figure 2.3 T857 RF Output Coax Routing

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3 T858/859 SII - SI Conversion

Section 3.1 describes the older design T858/859 without RF power modules, while Section 3.2 describes the newer design T858/859 with RF power modules. Figure 1.1 shows how to identify your PA design without having to remove the side cover.

3.1 T858/859 Without RF Power Modules

3.1.1 Introduction

You must make a number of modifications to enable a T850 Series II PA without RF power modules to operate in a Series I rack frame. These changes can be split into two groups, mechanical and electrical, as described below.

Mechanical	These changes involve putting on a new front panel because of the differences in height and width between a Series II and Series I panel.
Electrical	These changes involve converting the PA from rear RF input to front RF input.

This procedure assumes you have already purchased the appropriate Series I conversion kit:

- T858 - T800-70-0058
- T859 - T800-70-0059.

If not, you should purchase one from your nearest Tait Dealer or Customer Service Organisation before beginning the procedure.

It should take approximately 15-20 minutes per module to perform these steps.

3.1.2 Method

Step	Action
1	Remove the Series II front panel from the PA as follows: • remove the four screws using a Torx screwdriver; • push the LEDs from the front of the panel to remove them from their grommets.
2	Remove the side cover.
3	Remove the rear panel BNC connector: • unplug the RF input coax from the socket on the PCB; • unscrew the BNC connector from the chassis; • carefully withdraw the coax from the PA through the hole in the rear of the chassis (cutting cable ties as required); • fit the blanking plate over the hole in the chassis from which the BNC connector has been removed; • replace any cable ties previously cut and ensure the wiring is secured under the restraints provided. Fit the front panel SMC connector: • insert the coax fitted with the brass SMC connector through the hole in the front of the chassis and secure with the brass nut and washer; • connect the coax from the SMC connector into SK1, feeding it over RV63 and under the LED legs and cable restraint, as shown in Figure 3.1.
4	Refit the side cover.
5	Fit all parts of the Series I front panel, following Step 1 in reverse order. ***Note:*** If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screwdriver or spike. Be very careful while doing this as the legs of the LED are very easy to break.

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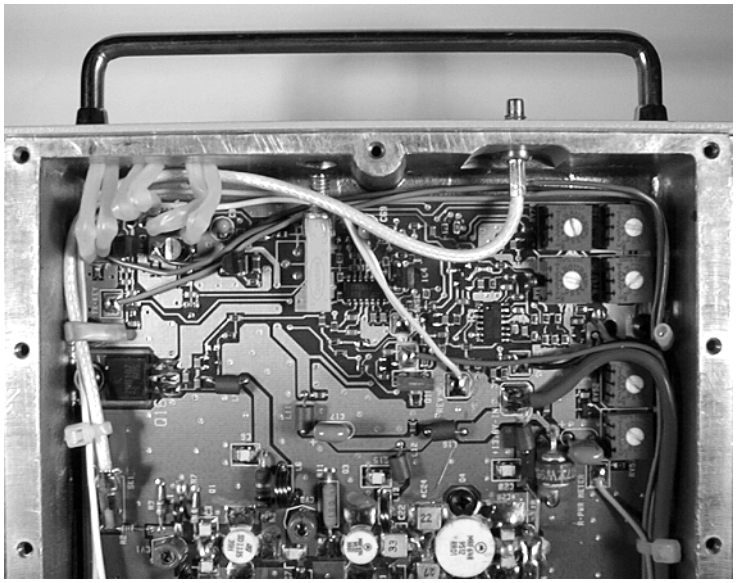


Figure 3.1 T858/859 Front RF Input Coax Routing (T859 Shown)

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3.2 T858/859 With RF Power Modules

3.2.1 Introduction

You must make a number of modifications to enable a T850 Series II PA with RF power modules to operate in a Series I rack frame. These changes can be split into two groups, mechanical and electrical, as described below.

Mechanical	These changes involve putting on a new front panel because of the differences in height and width between a Series II and Series I panel.
Electrical	These changes involve converting the PA from rear RF input to front RF input, and modifying the circuitry to: • ensure the power alarms operate correctly in a T800 Series I system; • key the PA from the Tx-Key line; • disable cyclic keying.

This procedure assumes you have already purchased the appropriate Series I conversion kit:

- T858 - T800-70-0058
- T859 - T800-70-0059.

If not, you should purchase one from your nearest Tait Dealer or Customer Service Organisation before beginning the procedure.

It should take approximately 15-20 minutes per module to perform these steps.

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3.2.2 Method

Note: Where the same component has different circuit references in the T858 and T859, in this section the T858 circuit reference is given first, followed by the T859 circuit reference in brackets, e.g. Q137 [Q128].

Step	Action
1	Remove the Series II front panel from the PA as follows: • remove the four screws using a Torx screwdriver; • push the LEDs from the front of the panel to remove them from their grommets.
2	Remove the side cover.
3	Remove the rear panel BNC connector: • disconnect the D-range PCB loom from the main PCB; • unplug the RF input coax from the socket on the PCB; • unscrew the BNC connector from the chassis; • carefully withdraw the coax from the PA through the hole in the rear of the chassis; • fit the blanking plate over the hole in the chassis from which the BNC connector has been removed; • reconnect the D-range PCB loom to the main PCB.
4	Remove %L213 to disable cyclic keying (refer to Figure 3.2).
5	Fit the following zero Ω resistors (refer to Figure 3.2): • %R120 [%R174] (PA is now keyed from the Tx-key line); • %R140 [%R108] } enables the power alarms to operate • %R147 [%R110] } correctly in a T800 Series I system
6	Fit the front panel SMC connector: • insert the coax fitted with the brass SMC connector through the hole in the front of the chassis and secure with the brass nut and washer; • connect the coax from the SMC connector into SK201, as shown in Figure 3.3 and Figure 3.4.
6	Refit the side cover.
7	Fit all parts of the Series I front panel, following Step 1 in reverse order. ***Note:*** If you have difficulty refitting the LEDs, try pushing the body of the LED back into the grommet with a thin screw-driver or spike. Be very careful while doing this as the legs of the LED are very easy to break.

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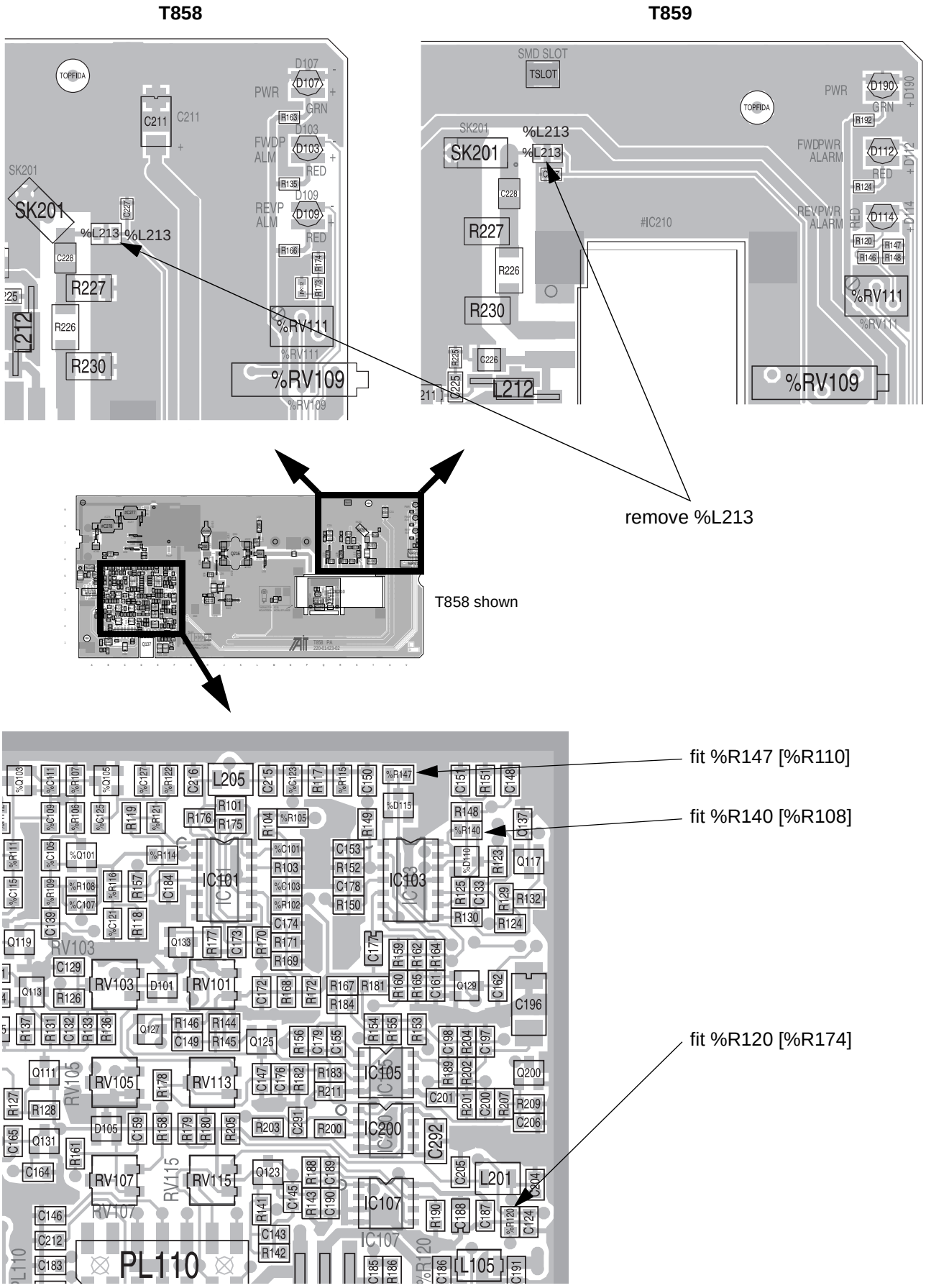


Figure 3.2 T858/859 Component Changes

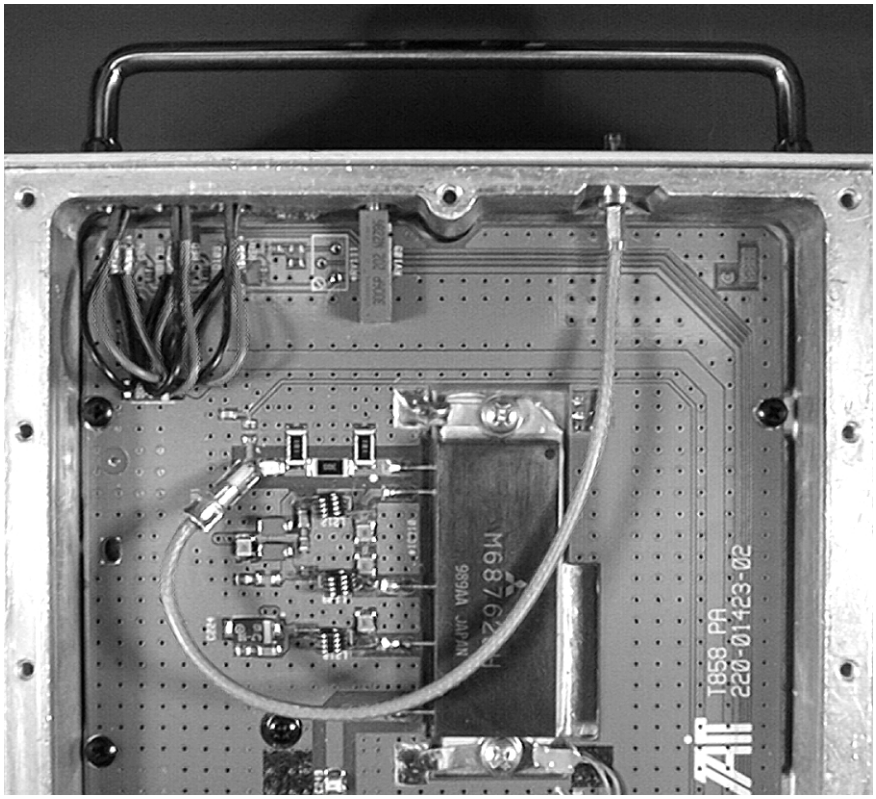


Figure 3.3 T858 Front RF Input Coax Routing

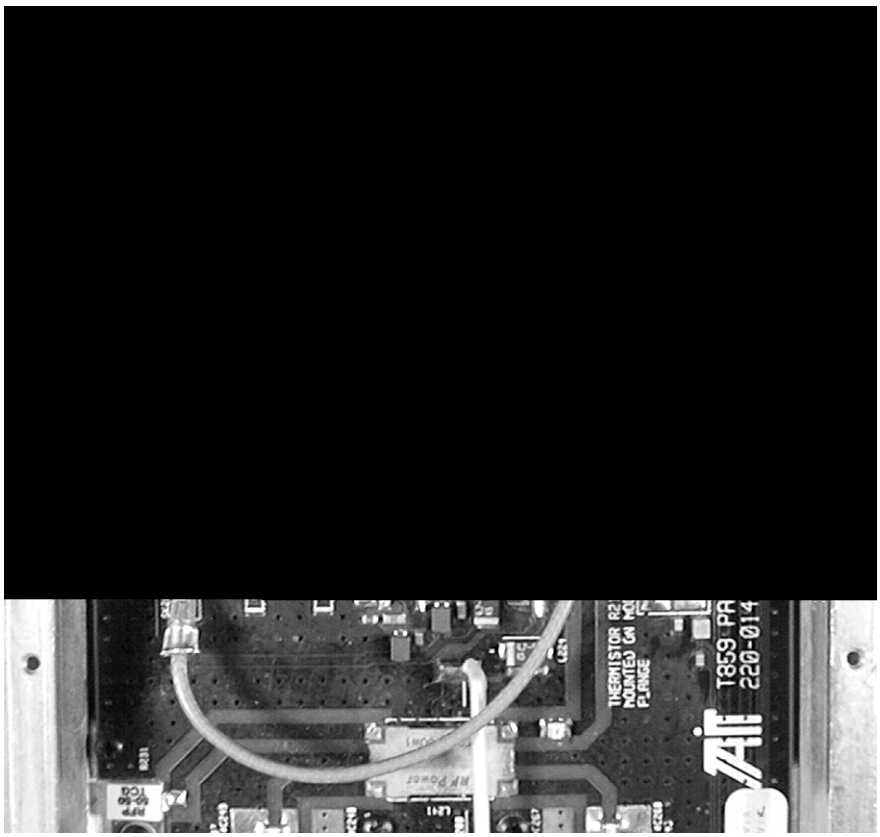


Figure 3.4 T859 Front RF Input Coax Routing

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