4 T838 Fault Finding

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 the fault still exists after having progressed through them in a logical manner, contact your nearest authorised Tait Dealer or Service Centre. Further assistance may be obtained from the Customer Support Group, Radio Infrastructure Division, Tait Electronics Ltd, Christchurch, New Zealand.

The following topics are covered in this section.

Section	Title	Page
4.1	**Visual Checks**	**4.3**
4.2	**Component Checks**	**4.3**
4.3	**DC Checks**	**4.3**
4.4	**RF Checks**	**4.4**
4.4.1	General	4.4
4.4.2	PA Faults	4.4
4.5	**Voltage Chart**	**4.5**
4.6	**Fault Finding Charts**	**4.6**
4.6.1	PA	4.6
4.6.2	Power Control	4.7

4.1 Visual Checks

Remove the cover from the T838 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 Sections 3, 4 and 5 of Part A.

4.2 Component Checks

If a transistor is suspected of faulty operation, an indication of its performance can be assessed by measuring the forward and reverse resistance of the junctions. First make sure that the transistor is not shunted by some circuit resistance (unless the device is completely desoldered). A 20k ohm/V or better multimeter should be used for taking the measurements, 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.

4.3 DC Checks

Check that +13.8V is present on the collectors of Q8, Q9, Q12 and Q14. Make this measurement when the transmitter is not keyed.

Check that 7.0V is present at the output of regulator IC2 and at pin 3 of IC1.

4.4 RF Checks

4.4.1 General

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 PA Fault Finding Chart (Section 4.6.1).

For problems with the power control circuitry, refer to the Power Control Fault Finding Chart (Section 4.6.2).

4.4.2 PA Faults

If a PA fault has occurred, or is suspected, it is easier to isolate if the PA is split into three separate amplifiers.

The first two stages can be observed by removing R56 and attaching a power meter via a flying lead.

Q12 and Q14 can be observed individually by using a flying lead input before L41 or L26 and a flying lead output after C97 or C77 (i.e. remove R69, L34 and L49).

The first two stages should produce 10W for 0.5W drive. Each of the SRFH1001's (Q12 & Q14) should produce approx. 40W for 4W drive.

4.5 Voltage Chart

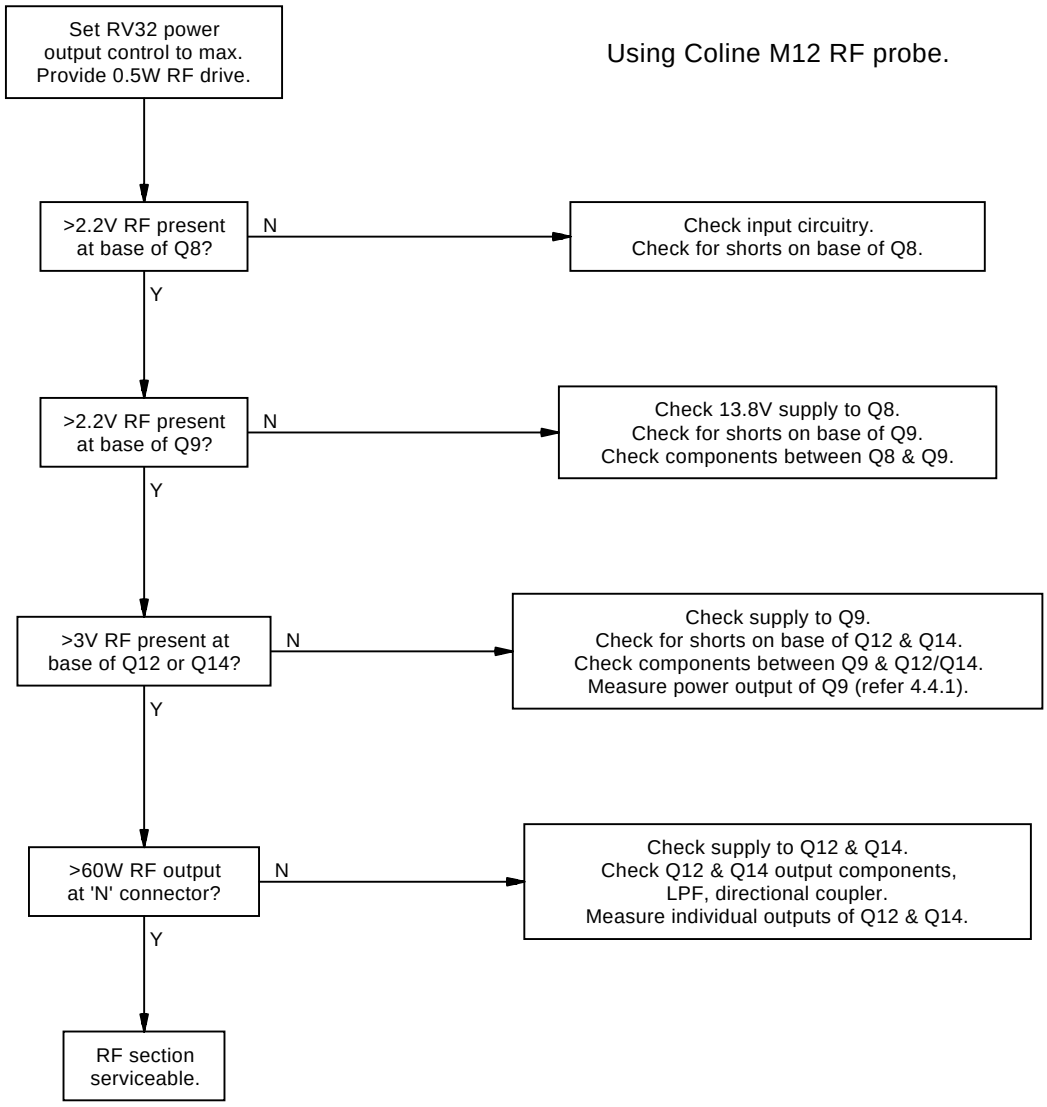
Test conditions:

- 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	8.7V	7.0V	6.6V
Q2	0.0V	0.5V	5.5V
Q5	13.8V	13.0V	13.8V
Q5A	13.8V	12.5V	13.8V
Q8	0.0V	0.0V	13.8V
Q9	0.0V	0.0V	13.8V
Q12	0.0V	0.0V	13.8V
Q14	0.0V	0.0V	13.8V

4.6 Fault Finding Charts

4.6.1 PA



4.6.2 Power Control

Normal operating conditions:

FP at R17	=	2.8V (RV16 fully ccw)
RP at R9	=	0.3V (RV8 fully ccw)
IC1 pin 1	=	0.4V
R33 / RV32	=	7V
L13	=	13V