

3 T858/859 Initial Adjustment

The following section describes the full adjustment procedure to be carried out before operating the T858/859.

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.

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3.1 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 usable 400-520MHz (e.g. Bird 43 with 5 & 100W elements for the T858 or 5 & 250W elements for the T859).
- 150W 20dB 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.
- Special connector 50 ohm BNC to SMC female.

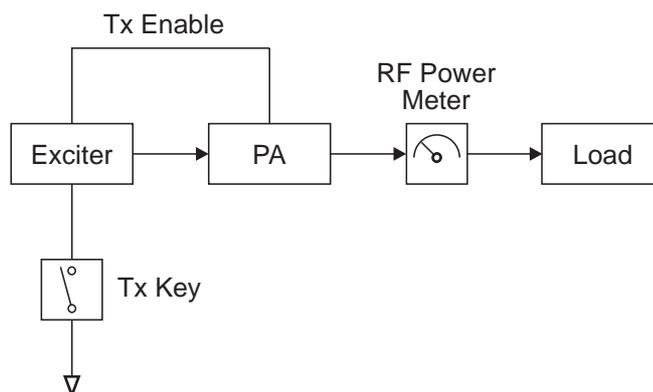


Figure 3.1 Test Equipment Set-up

3.2 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 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.

3.3 RF Alignment

T859 Only: For sets with serial numbers following 217262, set RV69 (driver power level) fully clockwise.

Preset all trimmers as shown in Figure 3.1.

Set RV63 (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.

Adjust RV63 to reduce the power output to the required level (e.g. 50W for T858, 100W for T859).

3.3.1 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

3.3.2 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.

3.4 Setting The Output Power



Caution: If the 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 lead between the T858/859 and power meter.

Note 2: With the T858/859 partially withdrawn from the rack frame for tuning, the T006-80 (formerly TA-068) lead is required to connect the T858/859 to the T857 exciter.

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 SMC/BNC leads will be required.

Connect an RF power meter to the PA output. Set the front panel power control preset (RV63) 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).

3.5 Limiting The Maximum Output Power (T858 Only)

Refer to the control section circuit diagram in Section 5.

Two chip resistors are provided on the PCB if there is a requirement to limit the maximum output power. These two resistors are normally bypassed by a section of track.

Cut the track as shown in Figure 3.3 to bring R99 & R100 into circuit.

Set the maximum output power by selecting the values of R99 & R100 according to the table on the control section circuit diagram.

Note: The values of R99 & R100 are factory set for 50W maximum output power.

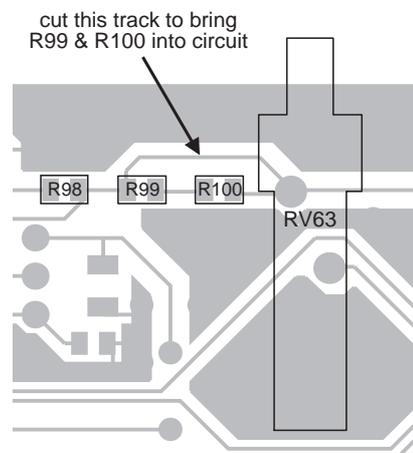


Figure 3.3 Modifications To Limit Maximum Output Power

3.6 Temperature Shutdown (T858 Only)

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 the power control pot (RV63) for the normal operating power level.

Turn the temperature set pot. (RV69) 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 the shutdown power level pot. (RV74) 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.

3.7 Temperature Shutdown (T859 Only)

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 T859s with serial numbers from 217263 onwards. For T859s with serial numbers prior to this refer to Section 3.6 above.

Power up the T859 and adjust the drive level clamp (RV69) and the power control pot (RV63) for the normal operating power level.

Apply heat to the NTC (R72) with the tip of a soldering iron.

Adjust the shutdown power level pot. (RV74) to the desired level. For continuous operation during fault conditions, set the shutdown power to 40W

3.8 Remote Forward Power Meter Calibration

If a remote meter is connected, adjust the forward power meter calibration control (RV43) for the remote reading to agree with the RF power meter reading.

3.9 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 the reverse power meter calibration control (RV57) for a quarter of the forward power reading.

3.10 Setting Alarm Levels

Note: If forward and reverse power metering is being used, set up their calibration (Section 3.8 and Section 3.9) before setting the alarm levels.

3.10.1 Forward Power

Power up the T858/859 and adjust the front panel power control (RV63) so that the output power is at the alarm level required (e.g. 40W if the PA normally oper-

ates at 50W).

Adjust the forward power alarm set control (RV48) 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.

3.10.2 Reverse Power

Power up the T858/859 and adjust the front panel power control (RV63) for the normal operating power level.

Place a known mismatch of the required value (e.g. 5:1 VSWR) and adjust the reverse power alarm set control (RV52) 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.

