

3 T889 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 T889.

Note: The T889 requires no RF tuning or alignment.

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 30A at 13.8V.
- Multimeter or DMM (e.g. Fluke 77).
- RF power meter (e.g. HP 435 series or Bird Wattmeter).
- 250W 40dB attenuator.
- 150W 3dB 50 ohm pad.
- 'BNC' to 'N' type adaptors (e.g. Amphenol, Greenpar).
- Appropriate trimming tools.

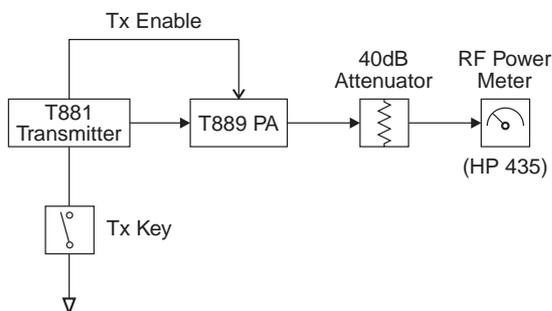


Figure 3.1 T889 Test Equipment Set-up



Caution: Do not connect attenuators or DC blocks between the T881 and T889 or the cyclic keying circuitry will not function correctly.

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 T889 to a 13.8V DC supply.

Check that the quiescent current is <50mA.

Key the transmitter by earthing the key line (D-range 1 [PL100] pin 13).

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.

3.3 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 T889 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 T889, ensure that the T881 transmitter 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 T889 and power meter set-up.

You will need appropriate extension leads if you wish to carry out the adjustment procedures with the T889 withdrawn from the rack in the latched position. Alternatively, disconnect and withdraw the T889 and reconnect it behind the rack.

Note 3: The actual power used may be limited by regulatory requirements.

Set the transmitter to the required operating frequency.

Connect the transmitter output to the PA input via a thru-line wattmeter with a 10W full scale reading. Special BNC/N leads will be required.

Connect an RF power meter to the PA output connector via a 40dB attenuator.

With the transmitter *not* keyed, set RV115 (driver power clamp) to maximum (fully clockwise).

Set RV109 (front panel power control) to maximum (fully clockwise).

Key on the transmitter.

Quickly (within 30 seconds) adjust RV115 to the required power setting, according to the values given in [Table 3.1](#).

Adjust RV109 to set the power output to the required level, according to [Table 3.1](#).



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 20W above the set output power.

Ambient Temperature (°C) ^a	Maximum Continuous Output Power (W)	Power Setting For RV115 (W)
≤+25	100	120
+30	96	116
+35	91	111
+40	87	107
+45	83	103
+50	78	98
+55	74	94
+60 ^b	70	90

- a. Ambient temperature is defined as the temperature of the air at the input to the cooling fan mounted on the heatsink.
- b. The T889 is also rated at 100W @ 55% duty cycle to +60°C.

Table 3.1 T889 Rated Output Power vs Ambient Temperature

3.4 High Temperature Shutdown Power Level

Set RV109 (front panel power control) to the required output power.

Earth pin 9 of IC101 (the pad at NTC R72 is convenient).

Adjust RV113 (shutdown power level) for an output power of 20W.

Remove the earth from pin 9 of IC101 (or the pad of R72).

3.5 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.

3.6 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.

3.7 Setting Alarm Levels

Note: If forward and reverse power metering is being used, set up their calibration ([Section 3.5](#) and [Section 3.6](#)) before setting the alarm levels.

3.7.1 Forward Power

Power up the T889 and adjust RV109 (front panel power control) so that the output power is at the alarm level required (e.g. 80W if the T889 normally operates at 100W).

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 the D-range connector.

3.7.2 Reverse Power

Power up the T889 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 150W 3dB pad to the PA output. This will result in a return loss of 6dB.

Note: Remote indication is available at pin 4 of the D-range connector.