

DOCUMENT NUMBER: TP1910175

DESCRIPTION: T-99-FG TEST PROCEDURE

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Proj Eng. _____

Man Mgr. _____

Documentation _____

Eng. Mgr. _____

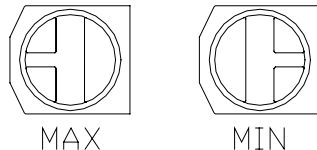
Transmitter Alignment

Test Equipment Required

- DC power supply: 1.5 volts, metered current 0-1000 mA
- DC voltmeter: 10 Megohm input impedance, 0-10 volt range
- Marconi 2955 test set
- 50-Ohm attenuator pads: as required
- Spectrum analyzer: 10 MHz - 2.0 GHz

Procedure

1. Preset the power supply to **1.5 VDC**, and turn off the supply. Connect the power supply to the BATT (+) and BATT (-) contacts, using clip leads with ferrite decoupling beads (FAIRRITE # 2643300101 DTC 8180044) carefully observing correct polarity.
2. Connect a BNC stub to the RF OUT and RF GND contacts. Connect the BNC stub to the Marconi RF input.
3. Connect a BNC stub to the AUDIO and GND. Connect the BNC stub to the Marconi audio output.
4. Set all trimmers to the center of their range.
5. Apply **1.5 VDC** to the transmitter.
6. Monitor the voltage at Q2 emitter. Adjust C17 and C21 for maximum voltage.
7. Adjust C26 and C29 for maximum RF power.
8. Adjust C17 and C21 for maximum RF power.
9. Repeat steps 7 and 8 as necessary to peak the power.
10. Set C50 for maximum capacitance (see diagram)



11. Adjust C46 for maximum power output.
12. Adjust C26 and C29 for maximum power output.
13. Repeat steps 11 and 12 as necessary to peak the power.

NOTE: C50 is used to set output power, C49 is always peaked for maximum power.

14. Peak C49 for maximum power.
15. Adjust C50 so the power output is 210mW +/- 5%.
16. Repeat 14 and 15 until the output power is within specifications with C49 peaked. (Data sheet)
17. Verify the current drain is less than 650mA.
18. Note the 50-ohm current drain, this value will be used later in tuning the antenna. (Data sheet)

Transmitter Deviation

19. Adjust C11 to tune the crystal frequency.
20. Verify the frequency is within 3ppm. (Data sheet)
21. Inject a 1mV, 1KHz sine wave into the AUDIO input.
22. Adjust R14 for a deviation of 3KHz.
23. Verify the audio distortion is less than 5%. (Data sheet)
24. Increase the frequency to 2KHz, ensuring the deviation is below 5KHz. (Data sheet)
25. Increase the frequency to 3KHz, ensuring the deviation is below 5KHz. (Data sheet)

Spectrum Check

26. Connect the unit under test to the spectrum analyzer via appropriate attenuator pads. Perform a frequency sweep from 10 MHz to 2.0 GHz, and verify that the conducted spurious emissions are attenuated greater than 45 dB below the level of the carrier. (Data sheet)
27. Turn off the power supply and remove the clip leads/ferrite beads from the unit.
28. Remove the RF output and AUDIO input BNC stub connectors from the unit.

NOTE: Send the unit to production for installation of the antenna circuit and pager housing.

Radiated Signal Checks

29. Insert the pager into test fixture DTC P/N 1087474. Connect the antenna output on the test fixture to the spectrum analyzer. Preset the power supply to **1.5 VDC**, and turn off the supply. Connect the power supply to the BATT (+) and BATT (-) contacts, using clip leads with ferrite decoupling beads (FAIRRITE # 2643300101 DTC 8180044) carefully observing correct polarity.
30. Apply 1.5VDC to the pager.
31. Adjust C62 for maximum signal strength, this should result in more current than noted in step 18.
32. Move C62 slightly in the increasing capacitance direction. The current should be decreasing and the signal strength should decrease only slightly, if at all. Continue adjusting C62 until the target current is reached; if the target current is not reached, note that the current will achieve a minimum which will be slightly higher than the target – set the antenna trimmer so the current is at this minimum. (The current should be no more than 650mA). (Data sheet)
33. Verify that the signal strength is only slightly lower than it was in step 29.
34. Verify that any harmonics and spurious signals are less than 45dBc. (Data sheet)
35. Connect the antenna output on the test fixture to the test set RF input.
36. Monitor the output frequency of the pager. If the frequency has drifted at all, adjust C11 until the frequency is within specification.
37. Apply 94dB SPL to the microphone (sound source output) and verify the deviation is a minimum of 3.5KHz. (Data sheet)
38. Turn off the power supply, remove clip leads/ferrite beads from the pager and disconnect the RF test set from the test fixture.

NOTE: Return the unit to production for final assembly.