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**TEST PROCEDURE AND LIMITS
FOR THE
BEAT FREQUENCY OSCILLATOR PART
OF R-390A/URR**

1.0 SCOPE

The purpose of this procedure is to provide a procedure for testing the Beat Frequency Oscillator for R.F. Output and Frequency Linearity vs. Shaft Rotation.

2.0 REFERENCE INFORMATION

2.1 Specification

2.1.1 Equipment Specification MIL-R-13947(SigC).

2.2 Publications

2.2.1 R-390A Instruction Book (TM11-856A).

3.0 TEST EQUIPMENT REQUIRED

3.1 Power Supply SM-D-58791.

3.2 BFO Test Fixture and Oscillator SM-D-58790.

3.3 Vacuum Tube Volt Meter (HP 410B or equal).

3.4 Frequency Counter (HP 523 or equal).

3.5 Standard Beat Frequency Oscillator.

Sheet 1 of 6 sheets

Unless otherwise specified Dimensions are in inches Tolerances on Fractions decimals angles	AUTHENTICATION	TEST PROCEDURE AND LIMITS FOR THE BEAT FREQUENCY OSCILLATOR PART OF R-390A/URR	U. S. Army Signal Material Support Agency Fort Monmouth, New Jersey
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	REVIEWED <i>[Signature]</i>	SCALE	SC-A-46584A
DATE <i>11/2/60</i>			

DRAWING FORMAT

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4.0 STANDARD TEST CONDITIONS

4.1 Unless otherwise specified, all tests shall be conducted under the following conditions:

4.1.1 Temperature: Normal room ambient.

4.1.2 Humidity: Normal room ambient.

4.1.3 Power Supply Voltages:

4.1.3.1 6.3V AC 60 cps

4.1.3.2 215V DC.

5.0 TEST CONNECTIONS

5.1 Connect the AC power cord into the back of the power supply and plug the other end into a 115V 60 cps receptacle.

5.2 Connect one end of the power cord to the receptacle on the power supply marked 'OUTPUT' and the other end of the power plug on the oscillator chassis.

5.3 Connect one end of the co-axial cable to the 'OUTPUT' jack on the oscillator chassis and the other end to the frequency counter (Hewlett Packard 523 or equal.)

5.4 Insert the BFO, under test, into the holding fixture so that the three pins are fully inserted into the oscillator chassis and clamp in place.

CAUTION: DO NOT TIGHTEN EXCESSIVELY AS IT WILL COLLAPSE THE BFO SHIELD CAN.

5.5 Turn on all associated equipment (Power Supply, Frequency Counter, etc.), and set the controls for proper operation.

6.0 TEST PROCEDURE

6.1 Calibration

6.1.1 With the tuning shaft lock loosened, rotate the tuning shaft until the slotted shaft of the BFO is properly engaged in the test fixture.

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6.1.2 Allow the BFO to stabilize before attempting to perform any tests.

6.1.3 Rotate the tuning shaft until a frequency of 455 KC \pm 15 cycles is indicated on the frequency counter.

NOTE: Approach this frequency in a clockwise direction.

6.1.4 Tighten the tuning shaft lock. Recheck the frequency and reset if necessary.

6.1.5 Rotate the phenolic dial (with the degree markings) until the '0' lines up with the index line on the adjacent metal dial.

CAUTION: ROTATE THE PHENOLIC DIAL BY TURNING THE DIAL ITSELF. DO NOT ATTEMPT TO TURN THE KNURLED KNOB.

6.1.6 Loosen the tuning shaft lock.

6.1.7 Rotate the tuning shaft clockwise to 126°.

6.1.8 Note the frequency deviation from 455 KC.

6.1.9 Rotate the tuning shaft counter-clockwise until a frequency of 455 KC \pm 15 cycles is indicated on the frequency counter.

6.1.10 Tighten the tuning shaft lock. Recheck the frequency and reset if necessary.

6.1.11 Rotate the dial with the degree markings counter-clockwise until the '0' lines up with the index line on the adjacent dial.

6.1.12 Loosen the tuning shaft lock.

6.1.13 Rotate the tuning shaft counter-clockwise to 126°.

6.1.14 Note the frequency deviation from 455 KC.

6.1.15 Check deviations against the limits specified in paragraph 7.1.

6.2 R. F. Output

6.2.1 Rotate the tuning shaft until a frequency of 455 KC \pm 50 cycles is indicated on the frequency counter.

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D.V.

6.2.1 Connect the AC probe of the VTVM (HP 410B or equal) to the jack marked 'RF VTVM' on the test fixture.

6.2.3 Note the voltage output.

6.2.4 Check the voltage output against the limits specified in paragraph 7.2.

7.0 BFO DATA SHEET

*BFO Serial No. 3219

7.1 Calibration

			Test Limits
	Clockwise 126°	<u>2.724</u>	KC)
Counter	Clockwise 126°	<u>3.005</u>	KC)
			2.4 to 3.6 KC

The frequency at the 126° points must be balanced within 500 cycles.

7.2 R.F. Output

455 KC 23.6 Volts

Test Limits

21.0 Volts minimum

* Typical Data

8.0 CALIBRATION INSTRUCTIONS FOR TEST FIXTURES

8.1 To check the gage for proper operation and calibration, use the standard BFO furnished with the gage as the 'unit under test' and test according to paragraph 5.0 thru 7.0.

9.0 MAINTENANCE INSTRUCTIONS FOR TEST FIXTURES

9.1 Preservation of metal parts subject to corrosion and wear.

9.1.1 A drop of watch oil or light machine oil should be applied to moving parts and threads approximately every six (6) months.

9.2 Electrical repair

9.2.1 In the event that the gage should become electrically inoperative, the standard furnished with the gage should be tested to ascertain that the gage is inoperative and not the unit under test.

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9.2.2 Replace the fuse with the spare fuse mounted on the front panel.

9.2.3 Should the gage still prove inoperative the voltages in the test fixture chassis and the power supply should be compared to the voltage readings as they appear on the schematics.

9.3 Accessibility of the Test Fixture Chassis

9.3.1 Remove the two allen head cap screws from the bottom of the base plate holding the tuning shaft assembly.

9.3.2 Remove the tuning shaft assembly.

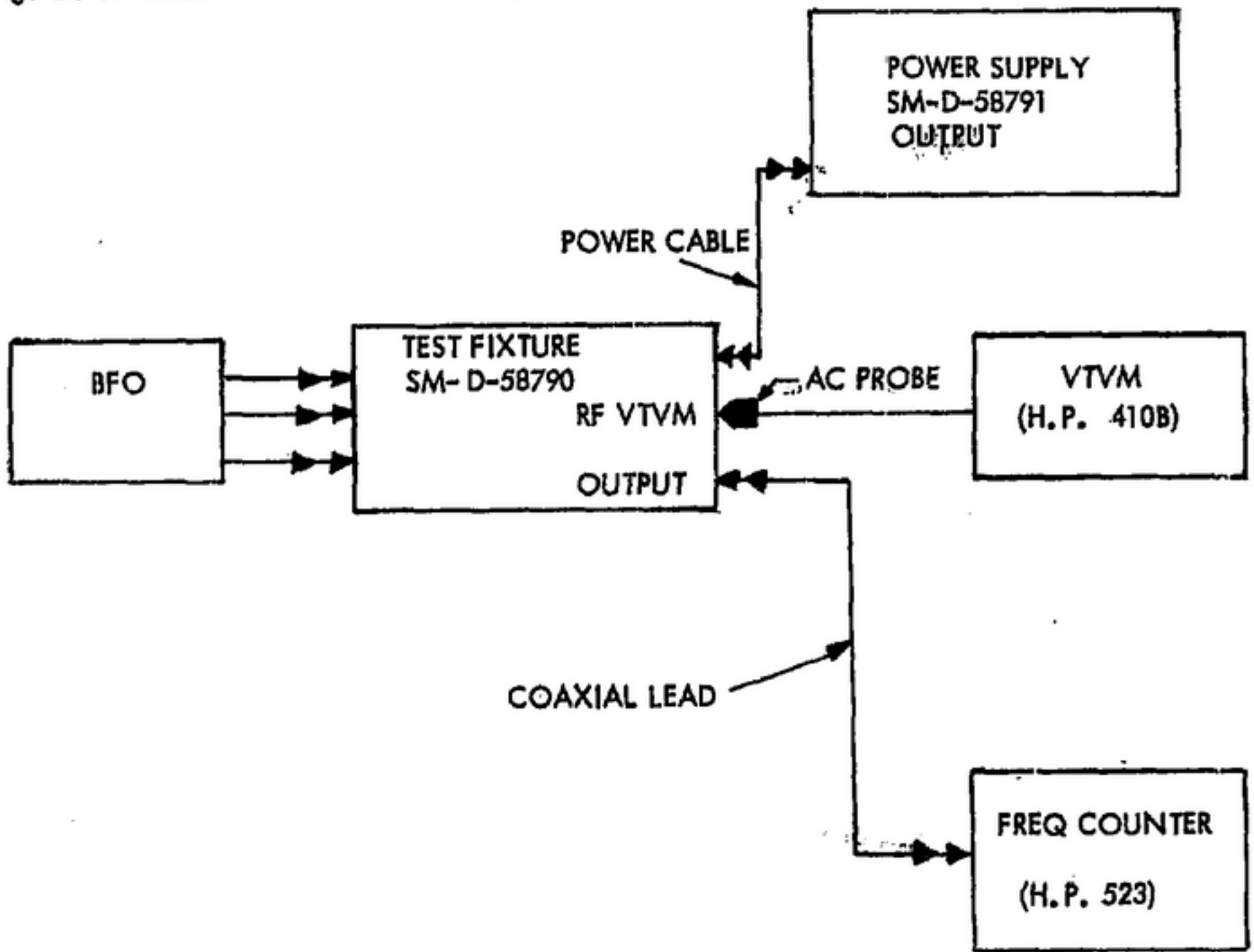
9.3.3 Remove the screws holding the chassis cover and then remove the cover.

9.3.4 Reverse the process to reassemble.

9.4 Accessibility of the Power Supply Chassis

9.4.1 Remove the screws from around the outer edge of the front panel and remove the one screw from the back of the cabinet.

9.4.2 The front panel with the chassis attached can now be removed from the cabinet, exposing the component parts for voltage check or replacement.



BLOCK DIAGRAM HOOK UP
FOR
BFO ELECTRICAL TESTS