1.0 PURPOSE

* This Test Procedure describes the methodology to be used to install the crystals and tune up the Digital TM Transmitters, 90339-16/74, 90341-16/74/99, 90341-10 and 90341-05

2.0 SCOPE

This Test Procedure applies to the testing of the Digital TM Transmitter, and should be used in conjunction with all applicable manufacturing procedures to test this assembly.

3.0 RESPONSIBILITY

It is the responsibility of the test technician to follow this procedure step by step and verify that the Unit Under Test conforms to the specification outlined here. It is the responsibility of the department manager to ensure that the test procedure is followed.

4.0 DEFINITION

UUT:	Unit Under Test
DMM:	Digital Multimeter. Also in some places the word DVM is used.
DVM:	Digital Voltmeter
P-P:	Peak to Peak
TFXXX:	Test Fixture Number XXX
or equivalent	equipment that is capable of performing all of the functions called for in the procedure with an accuracy that equals or exceeds the equipment specified

5.0 TEST EQUIPMENT REQUIRED

Digital Storage Scope, Tektronix 2211 or equivalent
Spectrum Analyzer Tektronix 2710 with options 01, 02, 03, or equivalent.
Frequency Counter Fluke 7260 or equivalent
RF Output Test Probe, TF548
10 MHz Frequency Standard, from the Loran C Receiver, Stanford Research Systems FS700
Lead Wire (012-0295-11)
9V DC Power Supply
Power Supply Test Cable, TF546
Fixture, Lead Prep, TM XTL, 066-0578-00 (Modified TF566)
* Tuning Tool Johanson 8762,Techni-Tool 88SC013, Voltronics TT200 or TT900 or equivalent
* 064-2321-00, Frequency Tables
* 1st LO frequency Test Fixture TF426
* BNC to BNC RG-58 Coax Cable
* 670-0787-10 PCBA, Interface, Source Box, 608-614MHz
* 670-0787-00 PCBA, Interface, Source Box, 465MHz

6.0 SET UP

6.1 Prepare the crystal according to Figure 6.2. or 6.3 as applicable. The crystal for the assigned channel frequency is installed in location X2. Install the prepared crystal and insulator 342-0100-00 (if the crystal is an HC35/U-1) on the UUT. Apply a bead of hot melt to the crystal per drawing 653-0005-00, TX Assy, Dig. TM.

6.2 Set up the test equipment per Figure 6.1.

6.3 Connect one lead wire to RA as an antenna.

6.4 Turn 9V DC power to ON.

7.0 Transmitter ID Switches

* 7.1 Set the transmitter Channel Identification and TT (Transmitter Type) switches per Frequency Tables, 064-2321-00. Set the Tx Type switches to 0000 for the TM receiver modules w/ sw V3.01.03 ONLY.

8.0 Set RF Signal Level

* 8.1 Set the spectrum analyzer to the assigned channel frequency with a span of 1 MHz/div, reference level at 0 dBm, with the video filter off, RF attenuation on auto, and the resolution bandwidth on auto. See Frequency Tables, 064-2321-00, for a list of available frequencies.

* 8.2 Connect the BNC to BNC Cable from the 670-0787-00 for the 90341 and 90341-10, for all other Tx's use 670-0787-10, to the Spectrum Analyzer.

8.3 Adjust C10 until the signal level is maximized.

* 8.4 Adjust C2 until the signal level is maximized (C2 is not installed on some assemblies). Then adjust C3 until the signal level is maximized.

8.5 Adjust C6 and C7 until the signal level is maximized. The signal level should be higher than -25dBm.

9.0 Set Assigned Center Frequency

9.1 Set the span to 1 Khz/div, reference level at 10 dBm, resolution bandwidth on 1 KHz, and the RF attenuation on auto.

9.4 Adjust C10 so that the two sideband peaks are symmetrical around the center frequency, see Figure 9.2.

9.5 Adjust R3 so the sideband peaks are ± 3 KHz from the center frequency.

9.6 Disconnect the coax cable from the spectrum analyzer and connect it to the frequency counter. Adjust R9 until the frequency is the assigned channel frequency ± 200 HZ.

END OF PROCEDURE

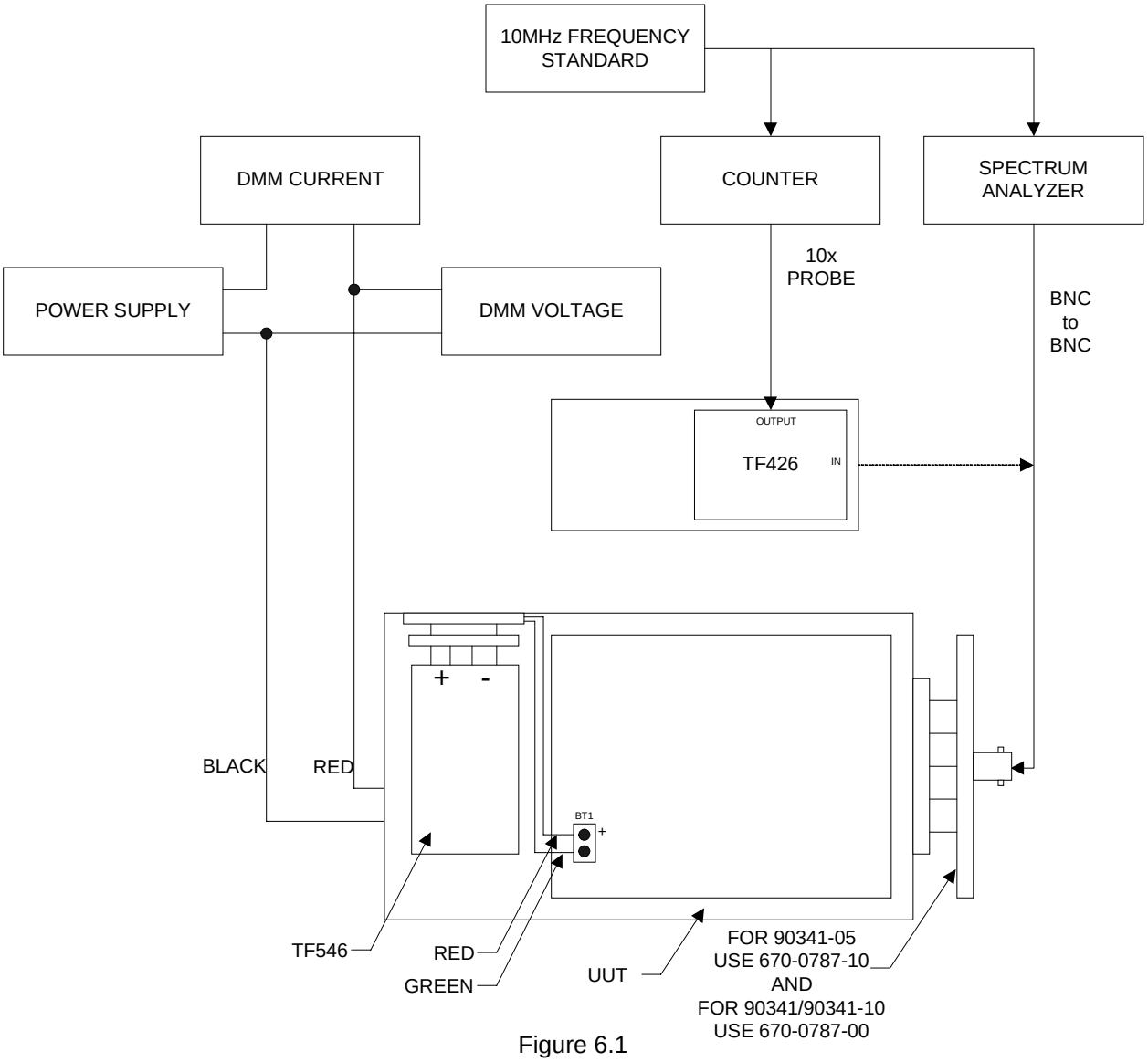
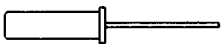

10MHz FREQUENCY STANDARD
DMM CURRENT
COUNTER
SPECTRUM ANALYZER
10x PROBE
BNC to BNC
POWER SUPPLY
DMM VOLTAGE
OUTPUT
TF426
IN
+
-
BLACK
RED
BT1
+
TF546
RED
GREEN
UUT
FOR 90341-05
USE 670-0787-10
AND
FOR 90341/90341-10
USE 670-0787-00

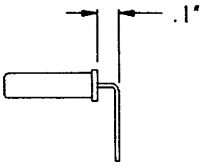
Figure 6.1

CRYSTAL LEAD PREPARATION FOR CASE STYLES HC18/U OR HC43/U-2

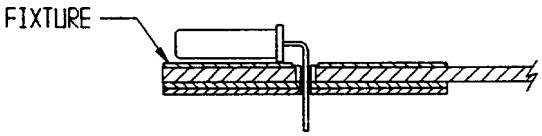
Cut the leads on the crystals to the approximate length shown (about 0.5 in).



Bend the leads 0.1 away from the case, away from the face which has the frequency stamp.



Insert the crystal on the fixture.



Cut the leads flush with the bottom of the fixture board.

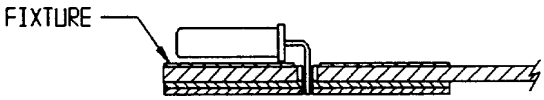


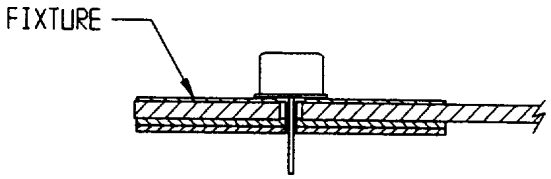
Figure 6.2

CRYSTAL LEAD PREPARATION FOR CASE STYLE HC35/U-1

Cut the third lead flush with the body of the crystal before installing the crystal on the PCB.

BOTTOM VIEW

Insert the crystal on the fixture.



Cut the leads flush with the bottom of the fixture board.

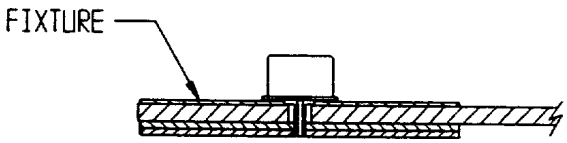


Figure 6.3

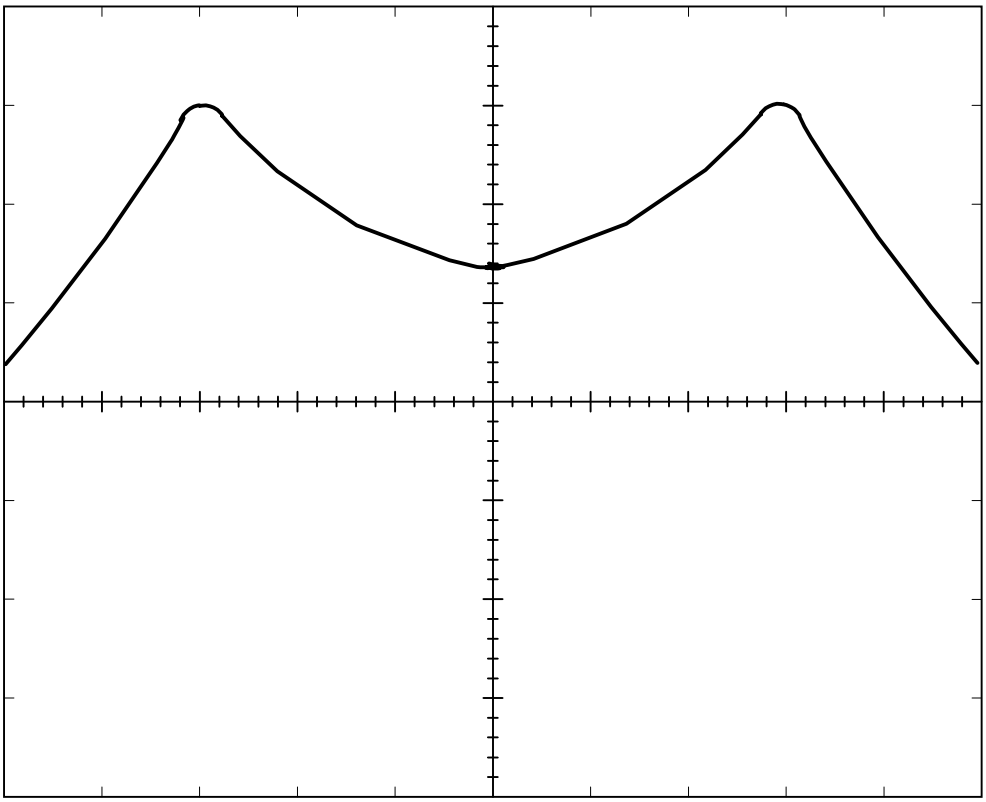


Figure 9.2