2nd Converter Cal Procedure

1. TEST EQUIPMENT

8620C Sweep Oscillator
86290B RF Plug In 2.0 - 18.6GHz
8410 Polar display
8746B S-parameter test set .5 - 12.4GHz
7613 Main Frame
7L13 Spectrum Analyzer
492 Power Supply Box
Phaselocked 2nd LO with 3rd Converter test fixture
536A Frequency Meter

2. TEST EQUIPMENT HOOK UP

8620C: 2-6GHz Band
Mode (Auto)
Trigger (Line)
Time -01 sec knob FCW
ΔF x1 & ON
CW ON set marker to ≈ 2.05GHz
Markers OFF
CW Vernier OFF & x.1

86290B: 2.0 - 6.2GHz Light ON
RF - ON
ALC - int
Power Level 2 O'clock position

8410:

Freq. Range	Auto
Sweep stability	FCW
Amplitude vernier	Center trace in 1db/Div
Phase vernier	NA
Amplitude	≈ 21db
Mode	AMPL
Phase offset	-
Amp/Div	10/Div
Degrees	-0-
Phase Degrees/Div	-90-
BW (KHz)	10

8476B

Ref plane ext	990
S parameter	S-11
Incedent Atten	0
Port 1	536A Frequency Meter
Port 2	2nd Converter test fixture input

7613

Vert mode	Left
Trig Source	Right
Non store	In

Adjust intensity and focus for best display

2. TEST EQUIPMENT HOOK UP (cont.)

7L13 Left side
Log 2dB/Div
Ref -30
RF/dB 0
RF in cable from 110MHz of 2nd Converter
Center Frequency 0110 MHz
Trigger Source Free run
Trigger Mode Normal
Video Filter 30KHz in
Time/Div 10m.s.
Freq Span/Div 300KHz Filter
500KHz Span

492 Power Supply (Plug in)

Phaselocked 2nd LO with 3rd converter test fixture (Ø Locked LO)
Set the fixture with the phaselocked 2nd LO down, put SMA connector into port 2, bolt down the fixture to the bench and insert the power lead into the 492 power supply connector. Turn on power. (Push in)

536A Hook up to port 1, set frequency to 2072

3. SETTING UP STANDARD

Push S11 button on the 8746B S paratmeter test set. Turn C.W. marker knob slowly and watch for a signal change on 8410. This is the 2072 signal. Center it in the middle of the display, push the S22 button. Then install a 2nd converter. It will only insert one way. Screw 2nd conv. LO cable to Ø Locked LO. Clamp down clamp, plug in supply cable and finally plug in 110MHz out to 7L13 input. See Fig. 1.

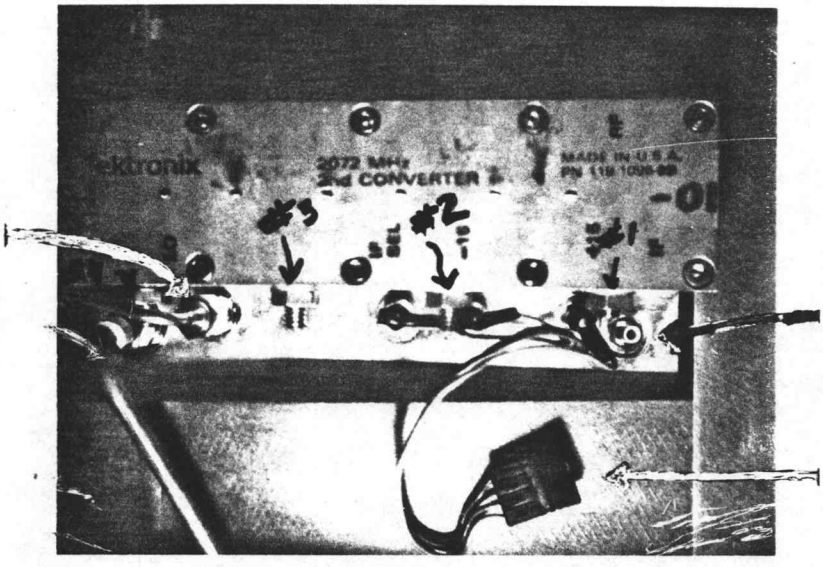
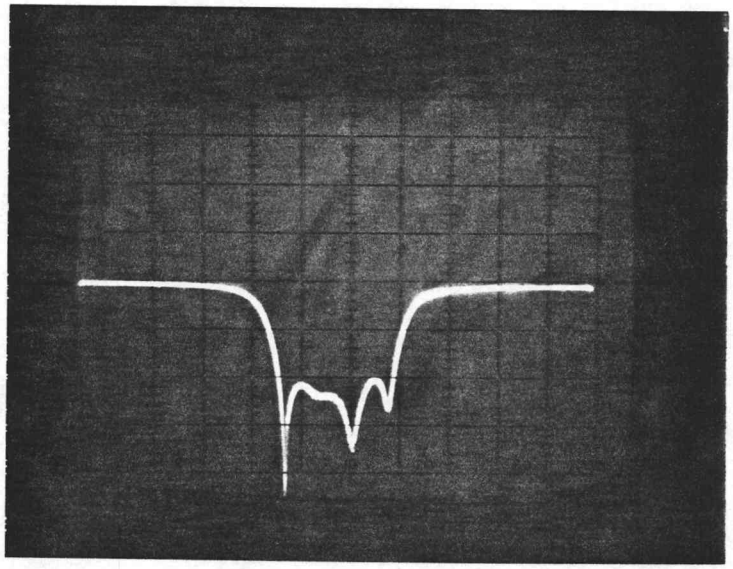


Fig. 1

3. SETTING UP STANDARD (cont.)

Your view of the 8410's display should look like Fig. 2



10dB/Div
20db down

Fig. 2

If it doesn't, check all steps prior to this one. Make sure power supply is on and there are no bad connections. Figure 2 is now your reference.

You now need to set your reference on the 7L13. That is done by pushing the incident attenuation button 20 on the 8410. Now push the CW marker on the 8620C sweeper. This will give you a display like that of figure 3. Use the Var Ref Level to adjust the signal to 1 div from the top of the screen.

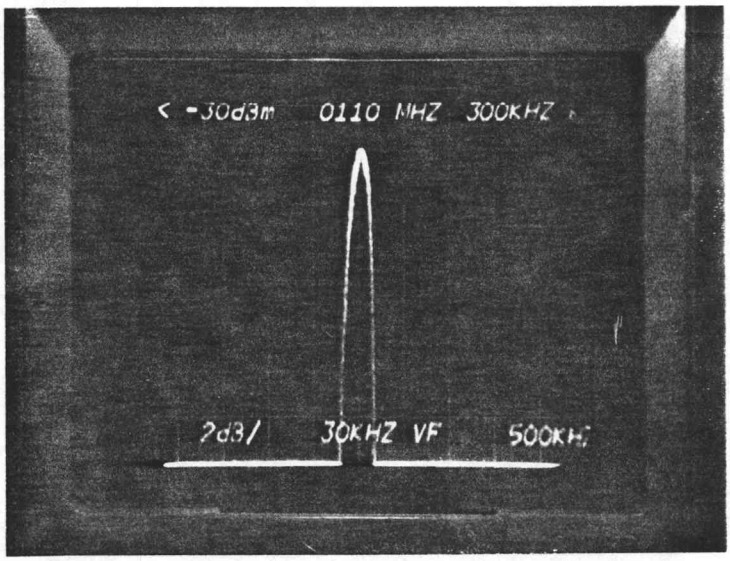


Fig. 3

3. SETTING UP STANDARD (cont.)

Put the 7L13 into 10db/Div by pushing the proper button the display should look like Figure 4. There is a switch on the right side of the test fixture, turn it to the off position. The display should look like Figure 5. By turning this switch the mixer is effectively shut off. This is the check for the IF select.

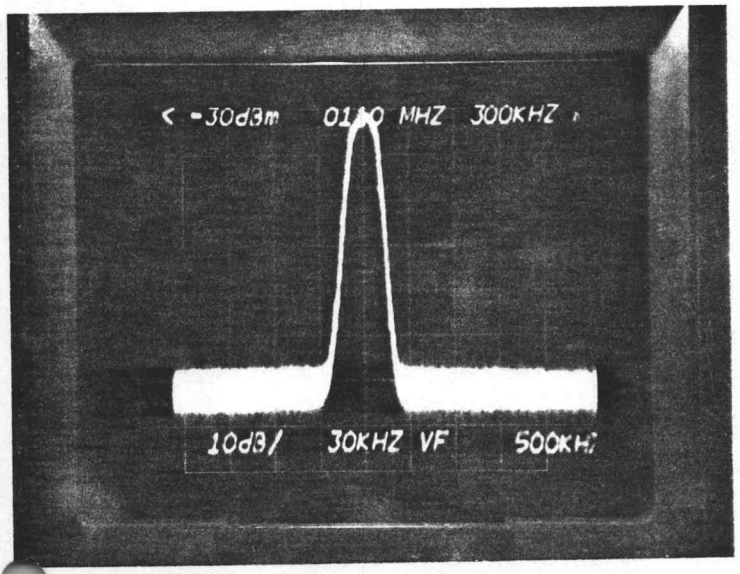


Fig. 4

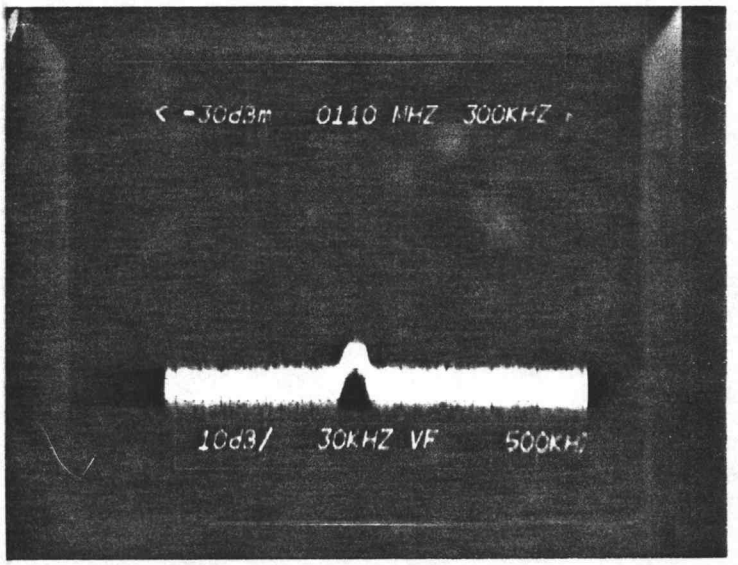


Fig. 5

You are now ready to test!! Remove standard 2nd Conv.

4. Install a new 2nd Conv. according to the procedure previously set forth. Return all instruments to their previous positions that is back to 2db/Div, ΔF back on and 0dB incident attenuator: Also reset to 1dB/Div on the 8410.

Insert 5/64 Hex Allen wrench into tuning screw #1, See Fig. 1. While holding nut with 7/16" open end wrench, slowly turn allen wrench CCW until Fig. 6 appears on 8410, display the depth of the signal should be about 1dB. Tighten down the nut while keeping the display centered.

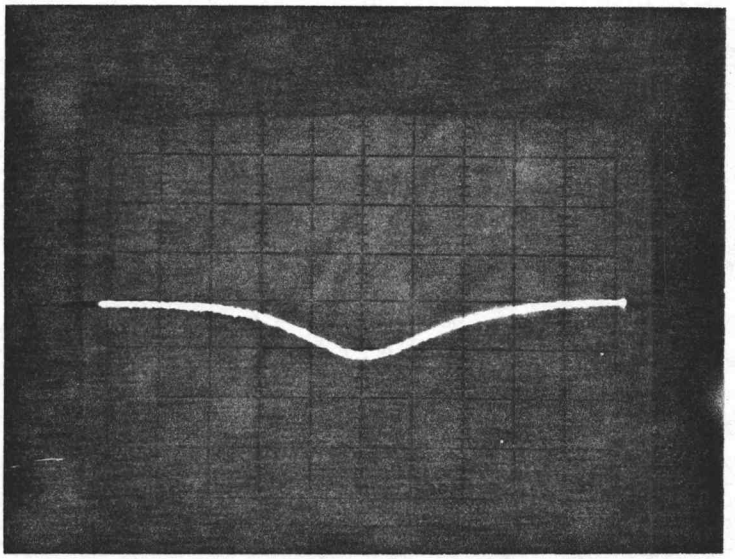


Fig. 6

Insert 5/64 allen into #2 tuning screw, turn CCW until display looks like Fig. 7. Tighten down nut keeping the display looking the same.

1db/Div

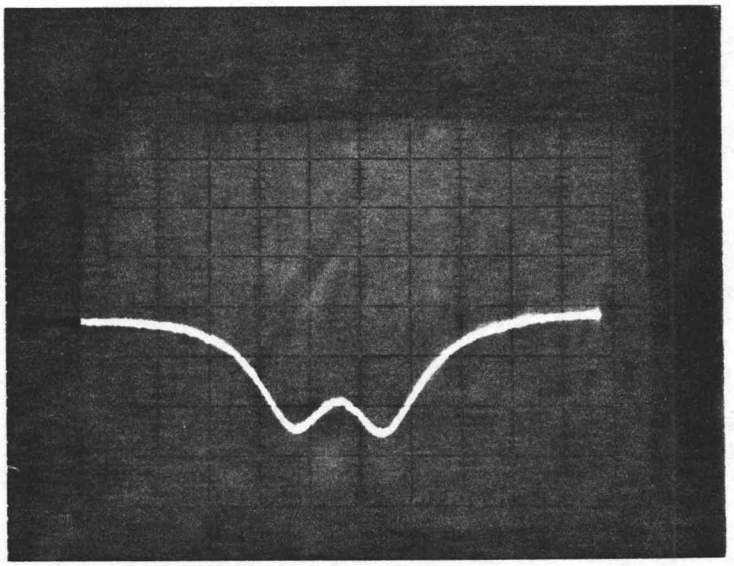


Fig. 7

Insert 5/64 allen into #3 tuning screw, turn CCW until display looks like Fig. 8. Tighten down nut keeping the display centered and looking the same.

1db/Div

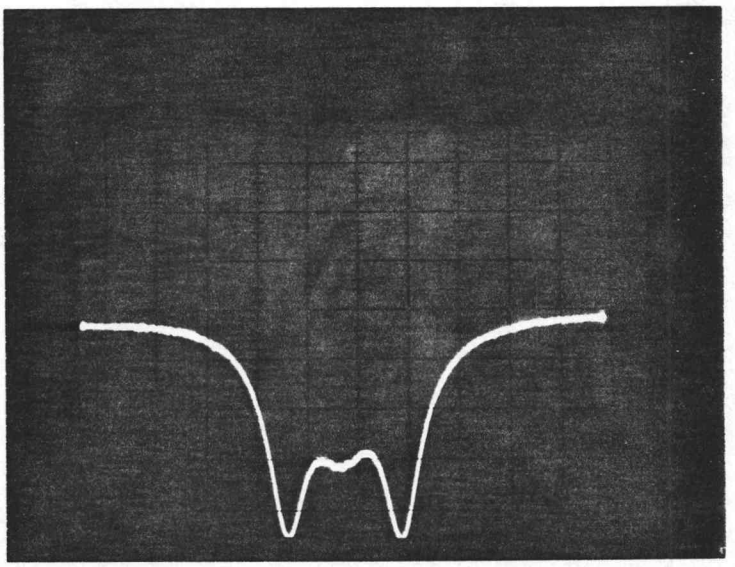


Fig. 8

Insert 5/64 allen into #4 tuning screw, turn CCW until display looks like Fig. 9. Tighten down keeping the display centered and looking the same. Most likely you won't be able to get this display but do your best.

10db/Div

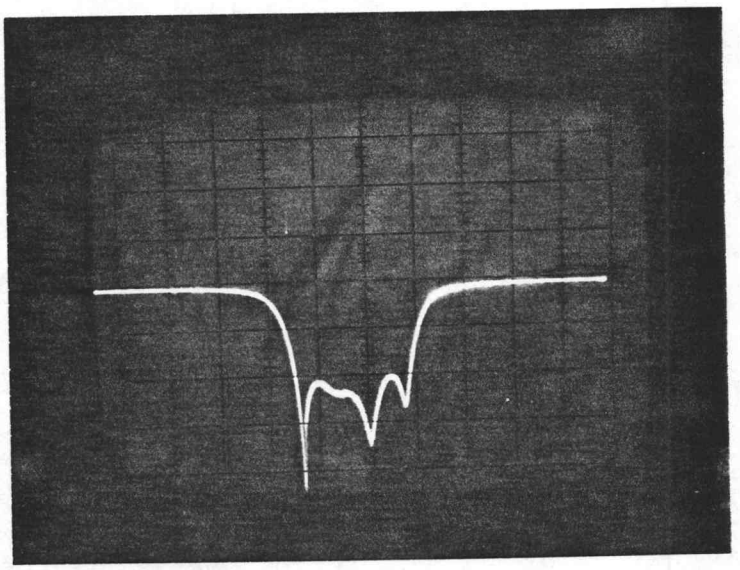


Fig. 9

5. Push incident attenuation button 20 on the 8410. Now push the cw marker. This should give you a display of somewhat lower amplitude than that of Fig. 3 maybe, 2-6db lower. Refer to Fig. 10. This is what the circuit board inside the cavity looks like. With your tweeker, turn the pots for a peak on the 7L13 display.

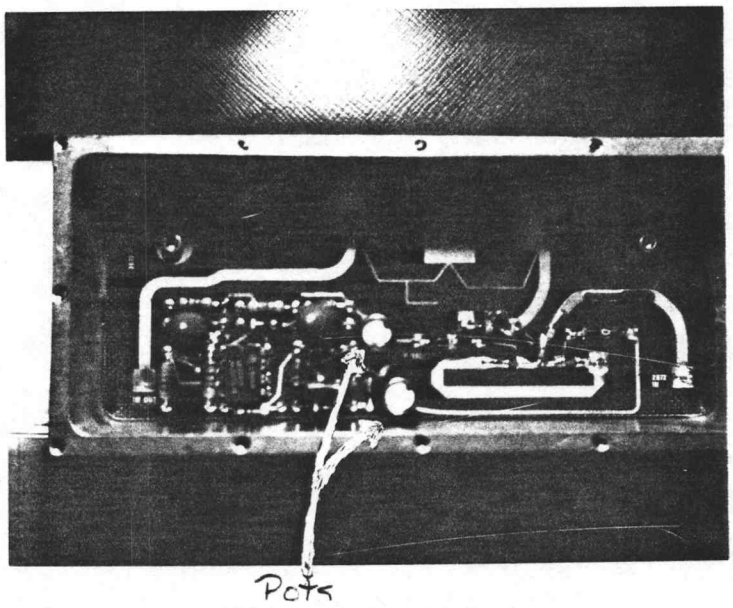


Fig. 10

Once these are peaked you need to check and see if the IF select turns the 2nd conv off. Follow the same procedure as set forth in (Step 3) setting up the standard, it should look like Fig. 4 and 5 when you flip the switch. If it doesn't you have a problem and you should troubleshoot. (See troublehsooting hints)

6. All of the equipment must return back to their previous positions, see (Step 3).
The display most likely won't look like Fig. 9 anymore so reset all of the tuning screws starting with #4 and working back (if they need it).

Repeat Step 5. Rock in the pots for the most displayed signal (see specs) (No need to see if it still works) it does.

TROUBLESHOOTING HINTS & CALIBRATION SPECS

1. If 8410 doesn't look right, check all connectors.

2. If 8410 doesn't look right, check all power supplies.

3. If #1 Tuning screw looks to deep more than 1½db, it's probably the RF input post hat needs to be moved in or out or maybe just reset.

4. If #4 Tuning screw won't tweek down to at least 17db it could be one of the following:

   A. The RF input hat
   B. The Rf output hat
   C. The 2072 cable approx. 12" long
   D. The board itself
   E. The diodes
   F. A capacitor
   G. Bad connector
   H. Bad lid out of spec holes
   I. In short just about anything

Calibration Specs.

Filter

Center Freq 2072GHz ± 1MHz
Return loss 17-20db 20 nominal
Conversion loss 5 to 6¼db 5.5db nominal