

1) Set the 10.24 reference crystal roughly, don't worry about fine tuning yet. @ 435.00 set the VCO control voltage (R34 test point). Adjust the trimmer (C91, in the box) for Min V, then Max V. set at the mid point voltage. (mid Voltage varies, usually about 2.1 to 3.1v)

2) There are 430-439, and a 440 to 449 reference rocks, with coils for adjustments. Typically the cores are stuck in place, and soft... of course. I have learned to heat them a little with the tip of the soldering pencil, until they move with only a slight amount of pressure. The coils are supposedly no longer available. 430 rock > L1, 440 rock > L2

A little more info, there are 6 trimmers, in a row front to back (in a box), next to the VCO box. This is the 1st LO 9x (2 trippers) and BPF. If you didn't replace the plastic trimmers, I highly recommend not touching them, or you will probably have to replace the trimmers. Toward the rear of the strip (outside of the box), is a 2 pin test point. Adjust the trimmers for max level, usually 0Dbm min. (fyi the frequency is 283.48Mhz for the 430 band, and 293.48 for the 440 band) The next strip, to the right, is the PLL output BPF, again if the trimmers are still plastic, I wouldn't recommend adjusting them. You adjust this strip (6 trimmers) for 1Dbm ripple (2Dbm max) from 430 to 449, with a Min 0Dbm out (typical is +2Dbm to +6)

3) I "sniff" the reference crystal with the Service Monitor, for 30.72, (3rd over tone of the 10.24)\and set it +/-5Hz, once the PLL has warmed up. It will move with temp, so try to set it around 80F (degrees radio temp) if possible.

4) Monitor the "PLL" output. At P3, 435 is 364.5485 and 445 is 374.5485. Use L1/L2 for adjustment after the reference is set. (I use FM mode for all this)

That pretty much finishes the PLL alignment.

There is a 2nd LO rock (front left on the RF unit, in the metal box) set it for 59.7015. The Rx line is on the Left side of the RF unit, and the Tx line is the right side, and at the end of the RF unit it works over to the left side.

5) The output of the RF unit should be a Min. of +20Dbm, no more than 2Dbm ripple 430 to 449. Try for +24Dbm, +20Dbm is about 70w, usually, from the PA

6) Rx I just use the S-meter, and it gets real close, I usually end up at .16uv 12Db SINAD for FM, and about .12uv for 12Db SINAD for SSB/CW.

7) The 2nd IF (main unit) is 10.75Mhz, SSB is towards the rear of the main unit the trimmer cap is for LSB, 10.7515, usually USB falls into place with no adjustment needed at 10.7485, No FM Rx Adjustment, FM Tx is about the middle of the main unit toward the right side, 10.75Mhz with L1. The main unit is the same as the 271.

Note: The PA is not linear.... usually I have had as much as 10Db ripple from it! So don't be surprised if 448 is 85w, and 432 is 40w. There is a little alignment in the PA, but I usually end up using the RF unit to correct the error. I am not into re-designing a UHF PA.

That's about it.. Have fun

