TECHNICAL SUPPORT
Alignment Procedures

RCI-6300 - FHP & FTB

PLL Alignment - **Transmitter Alignment** - **Receiver Alignment**

Equipment required for Alignment procedure:

- DC Power Supply (13.8 Vdc, 20A)
- RF Wattmeter (25~60 MHz, 100W)
- Digital voltmeter or Multimeter.
- Automatic Modulation Meter.
- Audio Signal Generator
- Digital voltmeter or Multimeter.
- Frequency Counter - 100 MHz
- RF Signal Generator - 100 MHz
- Automatic Distortion Meter
- Oscilloscope (50 MHz), with X10 probe
- SINAD Meter
- 50 Ω dummy load

To view proper test equipment setup for both the receiver and transmitter portion of the alignment procedures, please see this drawing - **6300 Setup**. After viewing, press "back" to return to this page.

To view Main PCB Adjustment Location of adjustment points, please see this drawing - **6300 Main PCB**. After viewing, press "back" to return to this page.

The following steps are required to re-align the RCI-6300.
Caution: Alignment should only be attempted by personnel trained in RF product testing and alignment.

6300 PLL Synthesizer Alignment:

1. VCO Voltage:
Disconnect the "short PCB" from TP7, TP8, and TP9. Set radio to Fr Pool 6, CH 40 AM RX mode, set the +10KHz switch to OFF position, connect multimeter to TP2, connect oscilloscope to TP3.
Adjust L14 for 6.5 Vdc ± 0.1. Adjust L15 for maximum output and balance (CH1 & CH40).

2. AM Frequency:
Set radio to Fr Pool 1, CH 1 AM RX mode, Set radio to Pool 6, CH 40 AM RX mode, connect frequency counter to TP3.
Adjust L20 to 17.5500 MHz ± 20Hz. Adjust L17 to 18.9600 MHz ± 20Hz.

3. TX Frequency:
Set radio to Fr Pool 1, CH 1 AM TX mode, connect frequency counter to TP3.
Adjust VR7 to 17.5500 MHz ± 20Hz.

4. AM OSC:

Set radio to Fr Pool 1, CH 1 AM TX mode, connect frequency counter to TP5.
Adjust L23 to 10.6950 MHz ± 20Hz.

This completes the PLL alignment procedure.

6300 Transmitter Alignment:

1. TX Power:
Set radio to Fr Pool 2, CH 19 AM TX mode, connect the "short PCB" to TP7, TP8, and TP9, connect RF power meter to antenna jack, Set RF power fully clockwise.
Adjust L40, L42, L43 power MAX. Adjust L44 for minimum spurious emission.
Adjust L40, L42 to balance power between CH1 and CH 40.

2. AM TX Power:
Set radio to Fr Pool 2, CH 19 AM TX mode, modulation off.
Adjust VR14 for 10W on the RCI-6300F HP or 50W on the RCI-6300F TB.

3. RF Power Meter:
Set radio to Fr Pool 2, CH 19 AM TX mode, set SWR/S-RF switch to S/RF position, set modulation OFF.
Adjust VR9 until RF Power Meter is in-between the green and red bar on PWR scale.

4. AM Modulation:
Set radio to Fr Pool 2, CH 19 AM TX mode, set Mic gain fully clockwise, AF signal 30 mV, 1 KHz to microphone.
Adjust VR16 for 90%.

5. FM Deviation:
Set radio to Fr Pool 2, CH 19 FM TX mode, set Mic gain fully clockwise, AF signal 30 mV, 1 KHz to microphone.
Adjust VR5 for 4KHz.

6. Frequency Counter Adjust:
Set radio to Fr Pool 2, CH 19 AM TX mode, set DIM/BRT switch to BRT.
Adjust VC1 on frequency counter for 28.9150 MHz.

This completes the Transmitter stage of the alignment procedure.

6300 Receiver Alignment:

1. AM Sensitivity:
Set radio to Fr Pool 2, CH 19 AM RX mode, RF gain fully clockwise, SQ fully counter clockwise, VOL control at 2 o'clock, NB-ANL/OFF switch to OFF, connect RF SG to antenna jack, (Frequency 28.915 MHz, 1 µV. Mod 30%)
Adjust L2, 3, 5, 6, 7, 8, 9, 10 for Audio Output > 2V S/N > 10db.
Set radio to Pool 6, CH 40 AM mode, RF SG setting to 29.655 MHZ.
Adjust L5, L6 for balance between CH 1 and CH 40.
Set radio to Pool 1, CH 1 AM mode, RF SG setting to 28.245 MHZ.
Adjust L5, L6 for balance between CH 1 and CH 40.

2. FM Sensitivity:
Set radio to Fr Pool 2, CH 19 FM RX mode, mode switch to FM, RF SG setting 28.915 MHz 0.5µV, mod 3KHz.
Adjust L4 for audio output max, S/N > 20db.

3. NB Adjust:
Set radio to Fr Pool 2, CH 19 AM RX mode, RF SG setting 28.915 MHz 100 µV, mod OFF, NB-ANL/OFF switch to NB/ANL position, connect voltmeter to TP1.
Adjust L1 for DC Voltage to max (> 2.0V).

4. AM Squelch:
Set radio to Fr Pool 2, CH 19 AM RX mode, SQ control fully clockwise, RF SG setting 28.915 MHz 1 mV, mod 30%
Adjust VR4 very slowly until squelch just opens.

5. AM S/RF Meter:
Set radio to Fr Pool 2, CH 19 AM RX mode, SWR/S-RF switch to S/RF position, RF SG setting 28.915 MHz 100 µV, mod 30%.
Adjust VR1 so that meter needle goes to S9 on the S scale.

This completes the Receiver stage of the alignment procedure

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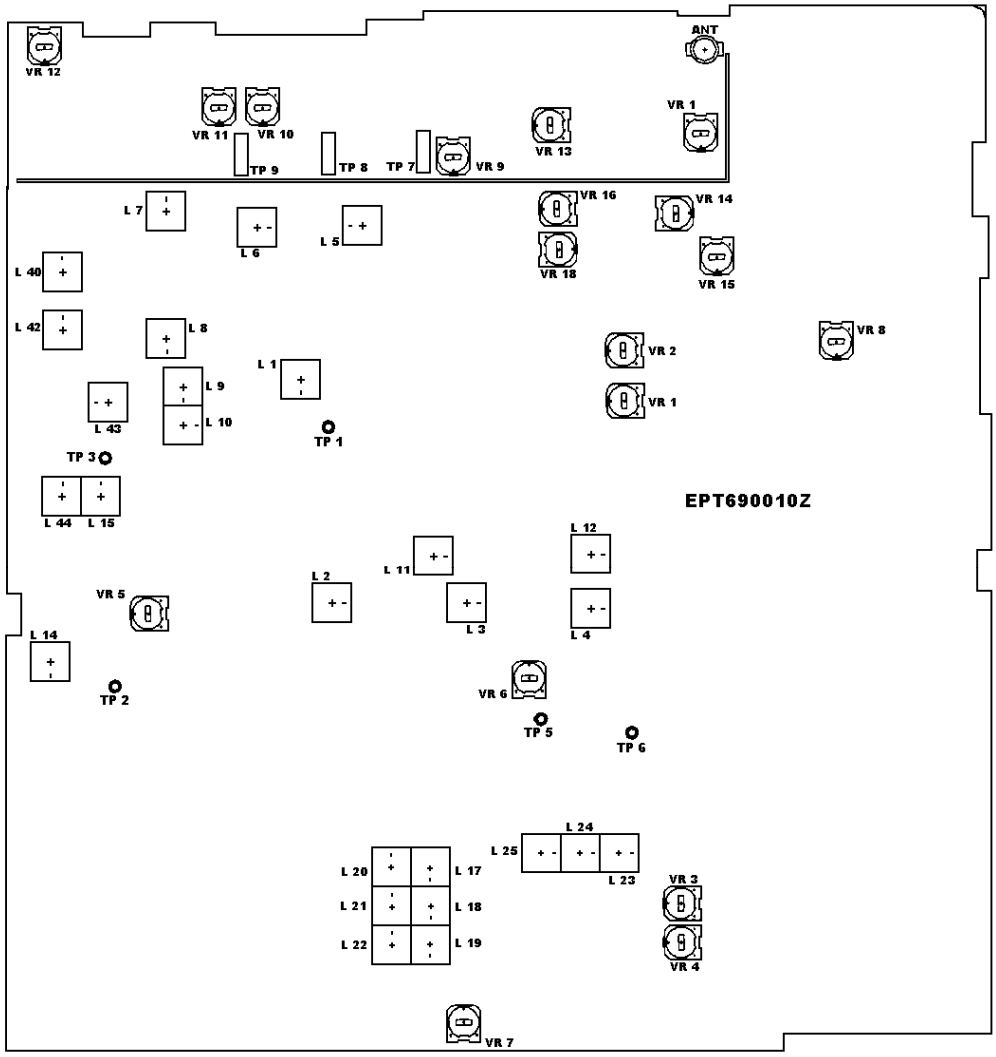
The following steps are required to re-align the RCI-6300.
Caution: **Alignment should only be attempted by personnel trained in RF product testing and alignment.**

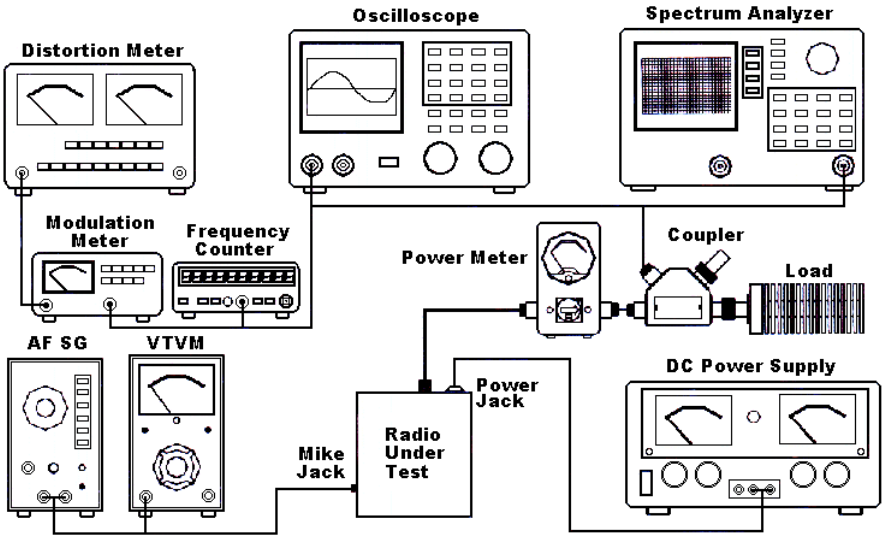
To view Main PCB Adjustment Location of adjustment points, please see the following drawing - **6300 Main PCB**. After viewing, press "back" to return to this page.



RCI-6300 Main PCB Adjustment Location

To view proper test equipment setup for both the receiver and transmitter portion of the alignment procedures, please see this drawing - **6300 Setup**. After viewing, press "back" to return to this page

Transmitter Test Setup



Receiver Test Setup