

IC-756PRO Alignment Procedure

PLL Board

Reference Oscillator

- Connect Frequency counter to P81 on the PLL board
- Adjust L53 and R33 for 64.000000MHz
- Connect RF volt meter to P81 on the PLL board
- Adjust L81 and L82 for maximum level
-

LPL A

- Set display to 0.0300000MHz, LSB
- Connect multi-meter to check point LPA
- Adjust C154 for 2.0V

VCO A

- Connect multi-meter to check point LVA
- Set display to 7.999999MHz, USB
- Adjust C278 for 4.3V
- Set display to 19.999999MHz, USB
- Adjust C258 for 4.3V
- Set display to 44.999999MHz, USB
- Adjust C228 for 4.3V
- Set display to 60.000000MHz, USB
- Adjust C208 for 4.3V

1LOA

- Connect RF volt meter to P351
- Set display to 0.030000MHz
- Verify RF output level for 0dBm or higher
- Set display to 7.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 8.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 19.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 20.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 44.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 45.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 60.000000MHz
- Verify RF output level for 0dBm or higher

LPL B

- Connect multi-meter to check point LPB
- Set display to 0.030000MHz, USB
- Adjust C454 for 2.0V

VCO A

- Connect multi-meter to check point LVB
- Set display to 7.999999MHz, USB
- Adjust C578 for 4.3V
- Set display to 19.999999MHz, USB
- Adjust C558 for 4.3V
- Set display to 44.999999MHz, USB
- Adjust C528 for 4.3V
- Set display to 60.000000MHz, USB
- Adjust C508 for 4.3V

1LOA

- Connect RF volt meter to P651
- Set display to 0.030000MHz
- Verify RF output level for 0dBm or higher
- Set display to 7.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 8.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 19.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 20.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 44.999999MHz
- Verify RF output level for 0dBm or higher
- Set display to 45.000000MHz
- Verify RF output level for 0dBm or higher
- Set display to 60.000000MHz
- Verify RF output level for 0dBm or higher

3LO

- Connect RF volt meter to P701
- Verify RF output level for -16dBm or higher

S3LO

- Connect RF volt meter to P801
- Verify RF output level for -7dBm or higher

S2LO

- Connect RF volt meter to P901
- Verify RF output level for 0dBm or higher

Marker

- Connect oscilloscope to P851
- Verify output signals for 4Vpp or higher

PA Board

Driver idling current

- Set the mode to CW
- Open W29 leads, and connect current meter
- Transmit
- Adjust R11 for 100mA
- Close W29

Final idling current

- Set the mode to CW
- Open L8 side of R28 leads, and connect current meter
- Transmit
- Adjust R18 for 500mA
- Close R28

FAN

- Install multi-meter between J11-1 and ground
- Transmit
- Verify the voltage between 6V and 8V
- Receive
- Jumper between CP1 and CP2
- Verify the voltage for 12V

Main Board

Initial setup for alignment

- Reset the microprocessor (Hold "F-INP" and "M-CL" buttons and turning radio on)
- Setup the radio as below
 - Frequency: 14.100000MHz
 - Filter: 2.4KHz
 - Mode: USB
 - Pre-amp: P.AMP1
 - Antenna: ANT1
 - Meter: Po meter
 - Attenuater: OFF
 - AGC: MID
 - VOX: OFF
 - Tuner: OFF
 - Monitor: OFF
 - Noise Blanker: OFF
 - NR SW: OFF
 - RF/SQL: Center
 - Balance: Center
 - NR Level: CCW
 - MIC Gain: Center
 - RF Power: CW
 - COMP Level: Center
 - KEY Speed: Center
 - BK-IN Delay: Center
 - Notch: OFF
 - Notch Center
 - CW Pitch: Center
 - RIT: OFF
 - Delta TX: OFF

Transmitter

- Connect RF power meter to ANT connector
- Connect AF signal generator to mic connector
- Apply 1.5KHz/1mV signals to mic connector
- Transmit
- Adjust MIC GAIN pot on the front panel for 50W
- Adjust L261 for maximum RF output power

Transmit Total Gain

- Connect RF power meter to ANT connector
- Connect AF signal generator to mic connector
- Apply 1.5KHz/1mV signals to mic connector
- Set MIC GAIN pot on the front panel to center
- Adjust R263 for 50W

IC APC

- Connect RF power meter to ANT connector
- Set radio to 3.550000MHz, RTTY
- Ground CP501
- Transmit
- Adjust R545 for 23A

HF RF Power

- Connect RF power meter to ANT connector
- Set radio to 14.100000MHz, RTTY
- Transmit
- Adjust R507 for 105W

50MHz RF Power

- Connect RF power meter to ANT connector
- Set radio to 50.000000MHz, RTTY
- Transmit
- Adjust R509 for 100W

FM transmit modulation

- Set Radio to follows
 - Frequency: 29.60000MHz
 - Mode: FM
 - Filter: 15KHz
 - RF POWER: Maximum
 - Mic Gain: Center
- Connect Modulation analyzer to ANT connector
- Connect AF signal generator to mic connector
- Apply 1KHz/10mV signals to mic connector
- Transmit
- Adjust R2227 on DSP board for 4.5KHz
- Apply 1KHz/1mV signals to mic connector
- Verify transmit modulation for 3.5KHz

AM Carrier Power

- Set radio to 14.100000MHz AM
- Set RF POWER pot to maximum
- Connect RF Power meter to Antenna connector
- Connect AF signal generator mic connector
- Apply no signals to mic connector
- Transmit
- Adjust R510 for 40W
- Apply 1KHz/10mV signals to mic connector
- Adjust R2229 on DSP board for 90%

Speech processor

- Set R392 to Center

RX Receiver

- Set radio to follows
 - Frequency: 14.1015MHz
 - Mode: USB
 - Shift: 0
 - Filter 2.4KHz
- Connect RF signal generator to ANT connector
- Connect SINARDER to external SP Jack
- Receive
- Adjust L111, L112 and L113 for maximum level

RX Total Gain

- Set radio to follows
 - Frequency: 14.1015MHz
 - P AMP: OFF
 - Mode: USB
 - Shift: 0
 - Filter 2.4KHz
- Connect RF signal generator to ANT connector
- Connect SINARDER to external SP Jack
- Apply 14.1015MHz/54dBu signals to ANT connector
- Apply no signals to ANT connector
- Adjust R210 for 30dB between with signals and without signals

Noise Blanker

- Set radio to follows

- Frequency: 14.1015MHz
- P AMP: OFF
- NB: OFF
- Mode: USB
- Shift: 0
- Filter 2.4KHz

- Set R271 to center

- Connect noise generator to ANT connector
- Connect oscilloscope to CP271
- Apply noise signals to ANT connector
- Adjust L272 for maximum level
- Turns noise blanker on
- Apply 20dBu noise signals to ANT connector
- Adjust R271 for removing noise signals

RF board

- Setup the radio as below

- Frequency: 14.100000MHz
- Mode: USB
- Attenuater: OFF
- Dual watch: OFF
- RF/SQL: Center
- RF Power: Maximum
- R863: Center
- R872: Center

Transmitter

- Connect RF power meter to ANT connector
- Connect AF signal generator to mic connector
- Connect RF volt meter to J151
- Apply 1.5KHz/1mV signals to mic connector
- Transmit
- Adjust L713. L712 and L711 for maximum voltage

Receiver

- Set radio to follows
 - Frequency: 14.1015MHz
 - P AMP: ON
 - Mode: USB
 - Shift: 0
 - Filter 2.4KHz
- Connect RF signal generator to ANT connector
- Connect SINARDER to external SP Jack
- Apply 14.1015MHz signals to ANT connector
- Adjust L513, L721, L722 and L943 for maximum audio output
- Set radio to follows
 - Dual watch: ON
 - P AMP: ON
 - Mode: USB
 - Shift: 0
 - Filter 2.4KHz
- Set Balance controller to SUB Maximum
- Set sub frequency to 14.100000MHz
- Apply 14.1000MHz signals to ANT connector
- Adjust L613 for maximum RX sensitivity

Mixer balance

- Set radio to follows
 - Main Frequency: 0.03000000MHz
 - Sub Frequency: 0.03000000MHz
- Connect AF audio meter to external SP jack
- Apply no signals to ANT connector
- Set balance controller to MAIN maximum
- Adjust R516 for minimum audio output
- Set balance controller to Sub maximum
- Adjust R616 for minimum audio output

FM Distortion

- Set radio to follows
 - Main Frequency: 14.100000MHz
 - Sub Frequency: 14.100000MHz
 - Mode: FM
- Connect RF signal generator to ANT connector
- Connect AF audio meter to external SP jack
- Apply 14.100000MHz/54dBu with 1KHz/3.5KHz deviation to ANT connector
- Set balance controller to MAIN maximum
- Adjust C555 for minimum audio output
- Set balance controller to Sub maximum
- Adjust C655 for minimum audio output

Scope

- Set radio to follows
 - Main Frequency: 14.100000MHz
 - Mode: USB
 - Dual watch: OFF
 - P.AMP: OFF
- Connect RF signal generator to ANT connector
- Connect 2nd RF signal generator to J841
- Connect multi-meter to CP871
- Apply 14.101500MHz/0dBu to ANT connector
- Apply 12.890000MHz/-7dBm to J841
- Turn scope on the radio
- Adjust L812, L813 and L833 for minimum voltage
- Apply no signals to ANT connector
- Adjust R872 for 0.1V
- Apply 14.101500/94dBu to ANT connector
- Adjust 863 for 4.4V

Tuner Board

SWR

- Connect RF power meter
- Connect multi-meter to J14
- Set 29.7MHz, RTTY
- Ground J12 on the CTRL board
- Turn on the tuner
- Transmit
- Adjust C3 for minimum voltage
- Insert jumper plug to REMOTE jack
- Turn off the radio
- Hold both SSB and CW buttons, and turns radio back on (The radio should show "Setup Start menu")
- Reprress "F5: TUNER" button (The radio should show "F5: START")
- Reprress "F5: START" button (The radio should show "END")
- Remove jumper form J12