
ALIGNMENT PROCEDURES

3.1 VCO check

- a) Set the frequency to 136.975MHz. Adjust CV303 so that the VCO voltage (TP303) is $3.5 \pm 0.3V$ in the receiving state.
- b) Set the frequency to 118MHz. Check that the VCO voltage is $1.5 \pm 0.5V$ in the receiving state.
- c) Set the frequency at 117.975MHz. Adjust CV302 so that the VCO voltage is $3.5 \pm 0.3V$ in the receiving state.
- d) Set the frequency at 108MHz. Check that the VCO voltage is $2.3 \pm 0.5V$ in the receiving state.

3.2 CPU check

- a) All elements of the LCD are turned on just after the power supply to the CPU unit is turned on. Check the LCD for a defect during this time
- b) Press keys on the keypad and check that the display on the LCD changes as you press them

3.3 TX check

- a) Set the frequency to 127.5MHz $\pm$ 200Hz.
- b) Set the communication analyzer (HP8920A) as below

Mode:	TX
AF ANL IN:	AM Demod
AF Gen Level:	OFF

- c) Press "PTT" button. The value of power is $1.25W \pm 20\%$. (for about 15 seconds)
- d) Set the frequency to 118.000MHz, 136.975MHz. The value of power must be $IW \sim 1.5W$. (for about 15 seconds)
- e) Set the power in low power and reset the frequency to 127.5MHz
- f) Press "PTT" button. The value of power is $0.25W \sim 0.40W$
- g) High power: $I = 1000mA$
Low power: $I < 650mA$
(I = current of power supply)

3.4 RX Check

a) Set the communication analyzer (HP8920A) as below

Mode: RX

Mod: AM 1kHz

Depth: 30%

Frequency: 118MHz

Amplitude: 3dBuV

- b) Set the frequency of the transceiver to 118MHz. Connect EXT SPK of the transceiver to HP8920A AF IN.
- c) Turn the volume knob to the middle
- d) Find the value of SINAD if it is higher than 6dB?
- e) Set the frequency to 108MHz. 136.975MHz. Find the value of SINAD. It should be higher than 6 dB
- f) Set the frequency to 118MHz Turn the squelch knob clockwise until it is tight. Increase RF level. The squelch is turned on when the RF level is -102 ~ -107dBm. (AF ON)
- g) Decrease RF level. The squelch is turned off when the RF level is -106 ~ -112dBm. (AF OFF)
- h) Set RF level to 1mV. Turn the volume knob clockwise until it is tight. The value of AF output is higher than 2V . The value of "Distortion" is lower than 10% when AF output is 2V.
- i) Press "F" key. Press "WX" key. The LCD shows "WX-01".
- j) Set the communication analyzer (HP8920A) as below:

Mod: FM

Frequency: 162.55MHz

AF: 1kHz

Deviation: 3.5kHz

RF input level: 0dBuV

Turn the volume knob to the middle. The value of SINAD should be higher than 12dB.

- k) Press "F" key "WX" key. The LCD shows 118MHz.

3.5 MOD check

- a) Set the communication analyzer as below

Mode: TX

Mod: AM 1K

RF Output: 13.8mV (-35dBm)

- b) Set the frequency of the transceiver to 127.5MHz. Set the power in Hi.
c) Press "PTT" button. Adjust RVIO5 to the middle. Modulation is 60% $\pm 10\%$. The value of "Distortion" should be lower than 10%.
d) Set the AF output to 24mV (-30dBm). Modulation is 90% ~ 100%. The value of "Distortion" should be lower than 20%
e) Repeat 3.5. and check 118MHz. 136.975MHz. The value of "Distortion" should be lower than 8% when MOD is 60% $\pm 5\%$ (15mV). The value of "Distortion" should be lower than 20% when MOD is 95% ~ 105% (24mV).

3.6 Side Tone Check

- a) Set the communication analyzer (HP8920A) as below

Mode: TX

Mod: AM 1K

RF Output: 13.8mV (-35dBm)

- b) Set the frequency of the transceiver to 127.5MHz and the power in High.
c) Connect EXT SPK to VTVM.
d) Press "PTT" button. VTVM shows 89mV ± 10 mV (0dBm).

3.7 **VOR** (only for RHP-520)

a) Set the MARCONI 2031 Signal Generator as below:

Press **Utility:** Press **Modulation mode** —> Press **Avionics modes**
—> Press **VOR** —> Press **SIG GEN**

Press **Frequency:** Press **Carrier Frequency** —> **113MHz**

Press **RF Level:** Press —> **-77dBm**

Press **Ident Comms:** Press **AM2 ON/OFF** —> **ON**

Press **AM2 Depth:** Press —> **30%**

Press **Select Source:** Press **Select Internal** —> Press **Internal F4**
—> Press **SIG GEN**

b) Set the frequency of the transceiver to 113MHz.

c) The LCD of RHP-520 shows $180^{\circ} \pm 2^{\circ}$