

## **7. ALIGNMENT PROCEDURES**

### **7.1 RECEIVER PART**

#### 1) BPF-101 and BPF-102 alignment

Since these parts are pre-tuned at the factory, so no need to re-align.

#### 2) FVR101 alignment

This is to adjust the squelch tight level.

#### 3) VCO alignment

The VCO has already been aligned at the factory, so needless to adjust. However, if you need to re-adjust after repair, set the VCO voltage at 10.5V by L303 at the highest sub band frequency.

## **7.2 TRANSMITTER PART**

### 1) FVR201 alignment

This potentiometer determines the modulation level. Carefully align this potentiometer to obtain flat deviation from the lowest to the highest frequency installed in the transmitter.

### 2) FVR202 alignment

This potentiometer determines the low frequency (below 300Hz) deviation. When POCSAG, CTCSS or DCS are used, necessary to align to have enough deviation at low frequency.

### 3) FVR203 alignment

This potentiometer sets the maximum deviation, normally set at 5KHz. 2KHz or 2.5KHz deviation for narrow spacing can be set by programming software.

### 4) FVR204 alignment

This is to adjust the transmitter output power.

### 5) VCO alignment

The VCO has been aligned at the factory, so needless to adjust. However, if you need to re-adjust after repair, set the VCO voltage at 10.5V at the highest sub band frequency.

## **7.3 POWER AMPLIFIER PART**

The power amplifier covers full sub band, from 29.5MHz to 40MHz and 39MHz to 50MHz without any re-adjustment. However, if alignment is required after repair, the following steps are recommended.

### 1) FVC505

This variable capacitor to be adjusted to gain the maximum efficiency as well as the maximum power output at the final transistor of the power amplifier.

### 2) FVR501

This potentiometer to be adjusted at the minimum reverse power detecting point When the antenna is terminated with 50 ohms load.

3) FVR502

This potentiometer to be set at the point where reverse power is detected.

4) FVR503

This potentiometer to be set at the point where low-power-alarm is detected.

5) FVR504

This potentiometer to be set at the maximum power from the final transistor, however, do not adjust exceeding 120 watts.

#### **7.4 LOGIC PART**

1) FVR1 alignment

This potentiometer is to obtain 600 ohm 0dBm output of the RF signal.

2) FVR2 alignment

This is to set the deviation level when KG510 is used for a repeater.

3) FVR3 alignment

This is to set the Tx output power level indicating on the LCD.

4) FVC1 alignment

This is to shift the CPU clock frequency when necessary. A beat interference sometimes happens at certain frequency. In such case, shifting the CPU clock frequency may eliminate the interference.

#### **7.5 FRONT CONTROL PANEL PART**

1) VR401 alignment

This is a volume controller.

2) VR402 alignment

This is a squelch level controller.

3) FVR401 alignment

This is to set the HI-POWER-LEVEL of the Tx output power.

4) FVR402 alignment

This is to set the LO-POWER=LEVEL of the Tx output power.

#### 5) FVR403 alignment

This is to set the contrast of the LCD back light.

### 8. SPECIFICATIONS

#### 8.1 General

Frequency Range	Sub band A 29.5MHz t- 40MHz Sub band B 39MHz – 50MHz
Number of Channels	99 channels with name
Channel Spacing	12.5/20/25/30KHz
Operation Mode	Simplex/Semi Duplex/Full Duplex
Antenna Impedance	50 ohm unbalanced
Power Supply	DC 13.6V negative ground only
Consumption	12 amperes or less
Enviromental Conditions	-30 to +60 degree C, 95% humidity @35C
Dimensions	462 (w) 88 (h) 360 (d) mm
Weight	11 kgs.

#### 9.2 Transmitter

Output Power	50W/110W continuous
Switchable Bandwidth	Full sub band
Frequency Deviation	5KHz(wide band) 2.5KHz(narrow band)
Frequency Stability	+/- 1KHz
Frequency Response	Within +1, -3dB, 300-3000Hz @1KHz ref.
Signal to Noise Ratio	50dB or more @1KHz 70% mod. (45dB at narrow)
Modulation Distortion	3% or less
Spurious & Harmonics	0.25uW or less

#### 9.3 Receiver

Switchable Bandwidth	1MHz
IF Frequencies	1 <sup>st</sup> IF 73.35MHz, 2 <sup>nd</sup> IF 455KHz
Frequency Stability	+/- 1KHz
Sensitivity	0.4uV or less for 20dB N.Q./ 0.3uV or less for 12dB SINAD
Squelch Sensitivity	0.25uV or less
Selectivity	70dB or more at 25KHz

Blocking	90dB or more
Intermodulation	70dB or more
Spurious Response	70dB or more
AF Response	Within +1, -3dB, 300-3000Hz @1KHz ref.
AF Distortion	5% or less @1KHz 70% mod
. Signal to Noise Ratio	50dB or more @1KHz 70% mod. (45dB at narrow)