7.0 ALIGNMENT PROCEDURES

7.1 RECEIVER PART

1) Pre-selector and Post selector

Both selector has pre-tuned at the factory, so no alignment is required.

2) FVR001 Alignment

This is to adjust Squelch tight level.

3) VCO Alignment

The VCO has already aligned at the factory to cover full sub-band. However, if you need to re-adjust VCO when you repair, set the VCO voltage at 10.5v by L303 at the high end of the sub band.

7.2 TRASNMITTER PART

1) FVR201 Alignment

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

3) FVR203 Alignment

This is to determine the carrier frequency tolerance.

4) FVR204 Alignment]

This is to adjust transmitter output power.

5) VCO alignment

The VCO has already been aligned at the factory, however, if you need to re-adjust, set the VCO voltage at 10.5v at the highest sub band frequency.

7.3 POWER AMPLIFIER PART

1) FVR501 Alignment

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

2) FVR502 Alignment

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

3) FVR503 Alignment

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

4) FVR504 Alignment

   This potentiometer to be set at the maximum power from the final power amplifier, however, do not set exceeding 120w.

7.4 FRONT PANEL PART

1) VR1 Alignment

   This is to set the Hi-Power-Level of the transmitter output power.

2) VR2 Alignment

   This is to set the Lo-Power-Level of the transmitter output power.

3) VR3 Alignment

   This is to set volume level and squelch level by pulse code switch.

7.5 DIGITAL LOGIC PART

The digital logic part has no point to adjust nor tune.

7.6 DESCRIPTION OF CIRCUITS TO STABILIZE OUTPUT FREQUENCY

The transmitter uses a TCVXO (Temperature and Voltage Controlled Crystal Oscillator) to generate 12.00MHz reference frequency for the transmitter PLL and VCO circuit. The accuracy of the TCVXO is less than +/- 0.00015% over the range of –30 degree C and +60 degree C.

7.7 DESCRIPTION OF CIRCUIT TO SUPPRESS SPURIOUS EMMISSIONS AND LIMIT MODULATIONS

A multiple pole Low Pass Filter is used after the final power amplifier stage. It is designed to sharply attenuate spurious and harmonics frequencies above the highest frequency in the sub-band of the radio.

Modulation limiting is performed by Tx audio processor CMX7041 located in the analog logic part.　Internal limiting/compression amplifier provides excellent limiting with minimum distortion.

In addition to modulation limiting, this device contains all circuitry to perform Pre-emphasis, band pass shaping and CTCSS encoder.