6A-C Alignment Procedure

1, Test Equipment

Service Monitor	(HP8920B or equivalent)
Spectrum Analyzer	(HP8561E or equivalent)
DC Voltmeter	(Input Impedance > 1Megohms)
DC Power Supply	(13.6 Volts at 15A)
IBM Personal Computer	(or compatible equivalent)
Programming Interface	(TQ3370)
KME Radio Programming Software	(_____)
KME Programming Cable	(_____)
KME DC Power Cable	(U-PK-2223B)
KME Microphone Cable	(_____)
BNC-BNC Cable	
50 ohm RF Power Attenuator	(10dB, 100watts)

<Initial setup>

Attach DC Power Cable to Radio and Power Supply.
Attach Programming Cable to Radio.
Attach Interface Cable to Programming Interface and personal Computer.
Set power supply to 13.6 Volts dc.
Apply power to Radio, and turn radio on/off switch to on position.
Execute radio programming software.
Under software direction, program radio for the following conventional test channels. See the Figure 1.
If test channel always set to figure 1, then it is not need to execute radio programming.

Turn radio on/off switch to off position. Remove programming cable. Attach test cable.
Remove the Top Cover, Bottom Cover and TRX shield Cover.
Attach RF coaxial cable (50 ohms) between antenna connector and RF power attenuator.
Attach second coaxial cable between attenuator and service monitor(RF port).
Attach Microphone Cable to Radio. Attach BNC-BNC Cable between Programming Interface (RX AUDIO and TX AUDIO) and Service Monitor.
Turn radio on/off switch to on position.

Figure 1

	FREQ(MHz)		Band/Tx Power			
	RX	TX	W/N	Power (w)	CTCSS (Hz)	CDCSS Oct
CH 1	935.1000	896.0125	N	26		
CH 2	938.2500	899.0000	N	26		
CH 3	940.9000	901.9875	N	26		
CH 4	935.1000	935.0125	N	26		
CH 5	938.2500	938.0000	N	26		
CH 6	940.9000	940.9875	N	26		
CH 7	935.1000	896.0125	N	26		
CH 8	938.2500	899.0000	N	26		
CH 9	940.9000	901.9875	N	26		
CH10	935.1000	935.0125	N	26		
CH11	938.2500	938.0000	N	26		
CH12	940.9000	940.9875	N	26		
CH13	939.4500	900.7000	N	26		627
CH14	939.4500	939.7000	N	26	100	
CH15	939.4500	939.7000	N	26		627
CH16	939.3000	939.3000	N	26		

2, Tx VCO Adjustment
a, Set the Radio to CH6.
b, Push PTT-key on Programming Interface.
b, Monitor DC Voltage at test point TP301
c, Adjust Tx VCO CV301 to 6.0 +/- 0.2V

3, Tx Modulation Adjustment
a. Set the Radio to CH5.
b. Set AF generator output level to 410mV.
c. Push PTT-key on Programming Interface.
d. Adjust TX Modulation RV305 until the FM Deviation is 2.2±0.1kHz.
e. Set the Radio to CH14 (CTCSS Tone 100 Hz).
f. Set AF generator output level to zero.
g. Push PTT-key on Programming Interface.
h. Adjust TX Modulation RV304 until the FM Deviation is 0.45±0.1kHz.

4, Tx Frequency Adjustment
a. Set the Radio to CH4.
b. Push PTT-key on Programming Interface.
c. Adjust Tx Frequency RV303 until the Frequency is f0+/-0.1kHz.

5, Transmitter Power Adjustment.
a, No tuning for the operation.

6, Rx VCO Adjustment
a, Set the Radio to CH3.
b, Monitor DC Voltage at test point TP301.
c, Adjust Rx VCO RV302 to 6.0 +/- 0.1V.

7, Rx 2'nd Local Frequency Adjustment
a, Set the Radio to CH3.
b, Set Center frequency of Spectrum Analyzer to 81.745 MHz and Band width to 1 kHz.
c, Monitor 2'nd Local frequency at test point TP202.
d, Adjust 2'nd Local CV204 to 81.745 MHz +/- 100 Hz.

8, Rx Noise Squelch Tuning
a. Monitor DC voltage at test point TP208.
b. Set the Radio to CH2.
c. Set RF generator frequency to CH2 in figure 1, deviation to 3 kHz and Tone to 1kHz.
d. Set RF generator level until the Rx SINAD is 8+2dB at RX AUDIO.

Adjust Noise Squelch RV201 until the DC voltage at TP210 is 0.75 volts.

CIRCUIT AND DEVICE DESCRIPTION

(10) Oscillator and other Frequency Stabilizing Circuit Descriptions:

The frequency reference is a self-contained quartz crystal oscillator (TCXO) module, operating 12.8MHz.

The TCXO is compensated by internal temperature compensating circuit providing 1.5PPM stability from -30°C to +60°C.

(11) Circuit or devices employed for suppression of spurious radiation:

a. The radio has metal cover and metal cabinet.

b. Extensive use of discrete bypass capacitors in the Option and Remote Control Connector of the radio reduces radiation from remote cables.

c. Low pass harmonic filter follows power amplifier output.

d. Internal shields surround synthesizer, power amplifier and System Control logic circuitry.

e. In addition the Control Unit package is metallized to suppress microprocessor radiation.

f. During acquisition of the synthesizer phase lock loop, the transmitter output is inhibited by an RF gate and the removal of DC voltage to the gain control stage of the RF power chain.

(12) Circuit or Devices employed for limiting modulation:

a. Reference is made to the schematic diagram XD00-TC-0099 in Exhibit 4.

b. Instantaneous audio limiting is accomplished Audio IC (IC501).
The Audio IC provides both limiting and Post-Limiting filtering. The Audio IC runs from a regulated supply voltage, which prevents deviation changes vs. changes in radio power supply voltage. Following the Limiter, a summing amplifier is used to add in any optional tone modulation, such as CTCSS and CDCSS modulation, which is also temperature and voltage stable. The output from the summing amplifier then passes through the post-limiting filter to a modulation level adjust liner attenuator (also contain IC501), which is in turn coupled to the FM modulated oscillators. The attenuator insures maximum deviation $\pm$ 2.25KHz.

(13) Circuit or devices employed for suppression of spurious radiation:

a. The radio has metal cover and metal cabinet.

b. Extensive use of discrete bypass capacitors in the Option and Remote Control Connector of the radio reduces radiation from remote cables.

c. Low pass harmonic filter follows power amplifier output.

d. Internal shields surround synthesizer, power amplifier and System Control logic circuitry.

e. In addition the Panel Control Unit package is metallized to suppress microprocessor radiation.

f. During acquisition of the synthesizer phase lock loop, the transmitter output is inhibited by an RF gate and the removal of DC voltage to the gain control stage of the RF power chain.