ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120V AC. Allow a 15-minute warm-up period.
Adjustments made with 13.8-volt DC input.
Connect low sides of test equipment to ground unless specified otherwise.
Connect 50-ohm dummy load or antenna before keying transmitter.
Suggested Alignment Tools: GC ELECTRONICS:

L6, L7, L8, L10, L11, L12, L15 5009
L1,L2,L3,L4,L5,L16,L17,L18,L20,L21,L24 9440
VC1 5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP1.	Ch. 19	L5	Adjust for maximum.
Input of frequency counter to TP1.	Ch. 19	VC1	Adjust for 10.240MHz.
Input of DC meter to TP5.	Ch. 19	L20	Adjust for 3.00 volts.
Input of oscilloscope to TP6.	Ch. 19	L21	Adjust for maximum.
Input of frequency counter to TP6.	Ch. 19	L24	Adjust for 37.880MHz.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enough to prevent AGC limiting.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP10. 455kHz, 1000Hz @ 30% modulation.	Ch. 19 RF Gain - Max.	L8,L7,L6	Adjust for maximum output.
Output of signal generator thru .01uF to TP11. 10.695, 1000Hz, @ 30% modulation.	Ch. 19	L4, L3	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L2, L1	Adjust for maximum output. Repeat above steps, if necessary.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz, @ 30% modulation. Output .9uV.	Ch. 19 RF Gain - Max Volume - Max	VR2	AGC Adjust VR2 for 2 volts audio.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 500uV.	Ch. 19	VR3	SQUELCH RANGE Set squelch control VR302 fully clockwise. Adjust VR3 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR1	S METER Adjust for 9 on scale of meter.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

NOTE: Be sure to check transmitter frequency and power on all active channels after adjustments of transmitter.

See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of DC meter to TP12. Modulation meter to antenna jack. Inject a 1000Hz 10mv signal at Mike input.	Ch. 19 Mike Gain - Max	VR5	AMC Adjust VR5 for 95% modulation.
	Ch. 19 Mike Gain - Max	VR4	RF PANEL METER Adjust VR4 so that RF Panel meter agrees with RF wattmeter.
	Ch. 19	VR201	VOLT REG Adjust VR201 for 13.8V DC. Voltage should not vary when keying transmitter.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

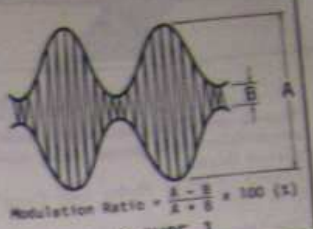
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP3.	Ch. 19	L18, L17	Adjust for maximum.
	Ch. 19	L16, L15, L12, L11	Adjust for maximum.
	Ch. 19	L12	Adjust for 3.8 watts.
Input of spectrum analyzer to antenna jack.	Ch. 19	L10	Adjust for MINIMUM at 54MHz.

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment.
Maintain line voltage at 120V AC. Allow a 15-minute warm-up period.
Adjustments made with 13.8 volts at TP10 (TR201, Emitter).
Connect low sides of test equipment to ground unless specified otherwise.
Connect 50-ohm dummy load or antenna before keying transmitter.
Connect microphone.

Suggested Alignment Tools: GC ELECTRONICS
L6, L7, L8 . . . . . .5009, 8728-A, 8728
L10, L13, L16. . . . . .9091, 8728-A, 8728
L1, L2, L3, L5, L17 thru L21, L23, L24, L25. . .9440



Modulation Ratio = $\frac{A - B}{A + B} \times 100$ (%)

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP6.	Ch. 19	L23	Adjust for maximum.
Input of frequency counter to TP6.	Ch. 19	L21	Adjust for 10.240MHz.
Input of DC meter to TP4.	Ch. 1	L20	Adjust for 1.25 volts. Check for approximately 2.1 volts on Ch. 40.
	Ch. 1, XMT		Check for 2.10 volts. Check for approximately 3.3 volts on Ch. 40.
Input of oscilloscope to TP11 (IC2, pin 4).	Ch. 19	L19	Adjust for maximum at 15.360MHz.
Input of oscilloscope to TP2.	Ch. 19	L18	Adjust for maximum.
Input of frequency counter to TP2.	Ch. 1		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.)
	Ch. 1, XMT		Check for 16.725MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP5.	Ch. 1		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.)
	Ch. 1, XMT		Check for 1.365MHz. Check all channels. (See Truth Chart for correct frequencies.)

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enough to prevent AGC limiting.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP12 (TR4 gate). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L8,L7,L6	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L5,L3,L2,L1	Adjust for maximum output. If necessary readjust L6, L7, and L8.

Connect an AC VTVM or [illegible]
Adjust volume control to obtain a [illegible]
Squelch MINIMUM, RF Gain Maximum, ANL Off

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output .4uV.	Ch. 19 Volume Maximum	VR1	IF GAIN Adjust for 2 volts audio.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	VR3	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR2	S METER Adjust for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19	L24,L25,L17, L16,L13	Adjust for maximum.
Input of RF wattmeter to antenna input.	Ch. 19	L13	Adjust for 3.8 watts.
Input of spectrum analyzer or harmonic meter to antenna input.	Ch. 19	L10	Adjust for MINIMUM at 54MHz.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter. Inject a 1000Hz, 100mV signal at MIC input.	Ch. 19 Mic Gain Maximum	VR6	AMC Adjust for 95% modulation. (See Figure 1)
Input of RF wattmeter to antenna input.	Ch. 19	VR4	RF PWR METER Adjust so that RF PWR meter agrees with RF wattmeter.