

A. METERING NOTE

Alignment may be performed using a Motorola S1056B thru S1059B Portable Test Set or optional built-in station metering.

The test set adapter should be in the 100 mV position for all metering.

B. FREQUENCY CALCULATIONS

For the 25-30 MHz range:

$$f_o = \frac{f_c + 5.26 \text{ MHz}}{2} \text{ or } \frac{f_c + 5.36 \text{ MHz}}{2}$$

For the 30-36 or 36-42 MHz range:

$$f_o = \frac{f_c + 5.26 \text{ MHz}}{3} \text{ or } \frac{f_c + 5.36 \text{ MHz}}{3}$$

For the 42-50 MHz range:

$$f_o = \frac{f_c - 5.26 \text{ MHz}}{3} \text{ or } \frac{f_c - 5.36 \text{ MHz}}{3}$$

Where:

f_o = channel element frequency

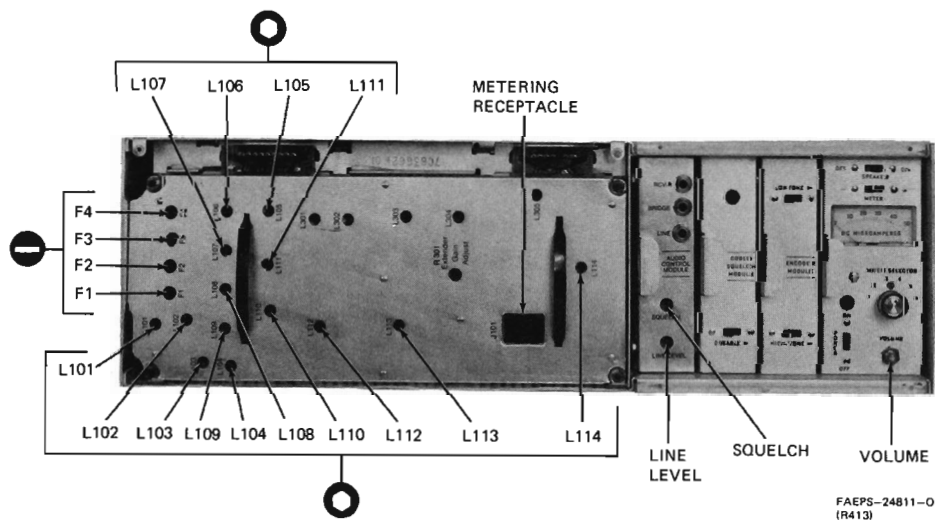
f_c = rf carrier frequency

2 or 3 = channel element harmonic

5.26 = mixer output frequency (i-f frequency)

5.36 = mixer output frequency (shifted i-f frequency of some receivers)

C. ADJUSTMENT LOCATIONS



D. TYPICAL RECEIVER METER READINGS

(NO SIGNAL INPUT)

TEST SET SELECTOR SWITCH POSITION	READING (uA)	CIRCUIT METERED
3	25 Min 42-50 MHz	Channel Element Output
	20 Min 25-42 MHz	
4	0 \pm 2	Discriminator Output
5	2 to 10	3rd IF Amplifier and Limiter

E. RECEIVER ALIGNMENT PROCEDURE

STEP	ADJUST	SELECTOR SWITCH POSITION	OSC. & METER REV. SWITCH	STAGE AND PROCEDURE
1	L101, L102, L103, L104	3	METER REV.	CHANNEL ELEMENT OUTPUT - If coils have been completely misaligned or the frequency is being changed, pre-position the coil slugs flush with the board. Adjust L101 and L102 for a peak indication on meter position 3.
2	L103, L104	3	METER REV.	INJECTION AMPLIFIER OUTPUT - Adjust L103 for a dip and L104 for a peak on meter position 3. Repeat alignment procedure steps 1 and 2.
3		6 (If Receiver Service Kit is used.)*	A or B (Test Set must be equipped with 5.26 MHz crystal in corresponding socket (or with 5.36 MHz crystal if receiver i-f is shifted)	DISCRIMINATOR - Unsquelch the receiver by turning the squelch control fully counterclockwise. "Private-Line" stations must also be PL disabled. Note meter indication. Insert 5.26 MHz (or 5.36 MHz) injection probe of test set into L113 opening of receiver shield being careful not to contact circuit board. Insert probe into hole far enough to obtain reading lower than 1/10 of that noted at beginning of this step (signal is "sprayed" into radio).
	L114	4		Adjust L114 for 0 center reading on top scale with selector switch of test set in position 4. Adjustment is critical and should be <u>exactly</u> on 0. Remove probe.
4	L110, L111, L112, L113	5	METER REV.	INTERMEDIATE FREQUENCY - If the i-f has been completely misaligned, pre-position slugs approximately 1/4 inch from the board, otherwise, proceed as follows. Connect a signal generator to the antenna input and apply and carefully maintain an on-frequency signal sufficient for an indication of about 20 micro-amperes on meter position 5. Peak L110 thru L113. Lower signal generator output level while peaking these coils to maintain a meter 5 indication between 20 and 30 micro-amperes. Repeat.

* If the receiver service kit is not used, connect an ac voltmeter across pins 1 and 18 of the audio control module.

E. RECEIVER ALIGNMENT PROCEDURE (Cont'd.)

STEP	ADJUST	SELECTOR SWITCH POSITION	OSC. & METER REV. SWITCH	STAGE AND PROCEDURE
5	L105, L106, L107, L108, L109	5	METER REV.	RF PRESELECTOR - If the preselector has been completely misaligned or the frequency is being changed, pre-position the slugs to the tops of the preselector cans (away from the board). Connect a signal generator to the antenna input and apply and carefully maintain an on-frequency signal sufficient for an indication of about 20 microamperes on meter position 5. Peak L105 thru L109. Lower signal generator output level while peaking these coils to maintain a meter 5 indication between 20 and 30 microamperes. Repeat.
6	L103, L104, L110	5	METER REV.	INJECTION AMPLIFIER OUTPUT - Adjust L103, L104 and L110 for a peak on meter position 5. Repeat.
7	F1, F2, F3, F4	5	METER REV.	ON-FREQUENCY ADJUSTMENT - Disconnect signal generator and transmit carrier signal from transmitter normally received. If transmitter is known to be on frequency, meter position 5 should indicate a rise when transmitter is keyed (if necessary connect an antenna to the station). Check position 4 reading with transmitter keyed. A "0" indicates an on-frequency condition. Adjust F1, warp capacitor for exact 0 reading. DO NOT READJUST L101 OR L102 AFTER THESE ADJUSTMENTS ARE MADE.
8	---	---	---	Perform 20 dB quieting sensitivity measurement as check of alignment.