UHF RECEIVER ALIGNMENT

1. Receiver Frequency Calculations:
   Where:
   f_o = Channel Element Frequency
   f_c = Carrier Frequency
   f_{inj} = Injection Frequency

10.7 MHz Receivers	10.8 MHz Receivers
$f_{inj} = f_c - 10.7$ MHz	$f_{inj} = f_c - 10.8$ MHz
$f_o = (f_c - 10.7\text{ MHz})/3$	$f_o = (f_c - 10.8\text{ MHz})/3$

2. For multi-channel stations:

   F_{LO} = Lowest receive channel frequency, and
   F_{HI} = Highest receive channel frequency.
   For single channel stations: $F_{LO} = F_{HI}$.

3. Receiver Meter Reading:

   When the receiver is properly aligned, meter deflections should fall within the following limits.

Switch Position	M1	M2	M3
Meter Reading (no signal)	12 uA (min.) 30 uA (max.)	20 uA (min.) 30 uA (max.)	10 uA (min.) —
Function Metered	Limiter/Detector	Detector Alignment	Receiver Injection

4. The receiver alignment procedure should be performed using Model TRN5080A DC Metering Chassis, or Motorola TEK-5F (or modified TEK-5B through TEK-5E) Metering Panel, or Motorola S1056-1059 Portable Test Set (used with Motorola TEK-37A Test Set Adapter). Connect the metering cable to the receiver metering socket (J4 for RCVR1 or J6 for RCVR2) on the rear of the backplane interconnect board.

   If using the dc metering chassis, put the FORWARD-REVERSE switch to the FORWARD position. If using the meter panel, put the FUNCTION switch to position C and the M1, 2 POLARITY switch to the NORMAL position. If using the portable test set, place the A/B switch in the A position and the FUNCTION SELECT switches to the RCVR and METER REVERSE positions.

   NOTE

   For stations with two receivers, align each receiver individually using this same procedure.

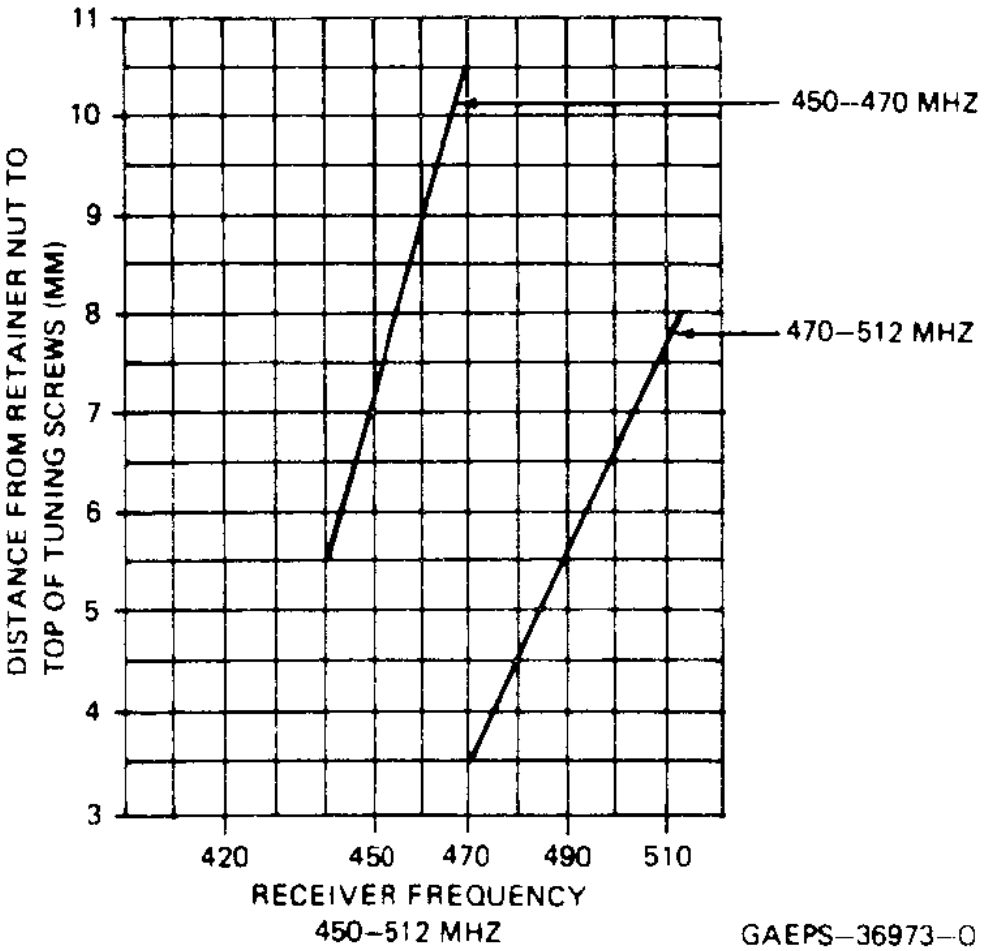

Figure 1. Preselector (L1 thru L6) Cavity Preset Chart

Receiver Alignment Procedure

Step	Metering Cable Connection	Test Switch Position (Meter)	Freq.	Adjust	Procedure
1a	None	None	None	L1 thru L6	Set preselector tuning screws per Preselector Cavity Preset Chart (Fig. 1).
1b				L7, L8	Set injection filter tuning screws 15mm (9/16") above each retainer nut (Fig. 2).
1c				L101, L102	Set injection amplifier coil slugs flush with top of coil form. Then set each 16 turns down.
2	Receiver J4	M3	F_{LO}	L101, L102 & Channel Select	Peak L101, then peak L102. Repeat until no further M3 improvment (typically twice).
If aligning 1-frequency receivers, or if channel separation in less than 1 MHz, skip to Step 7. Otherwise, continue on to Step 3.					
3	Receiver J4	M3	F_{LO} & F_{HI}	Channel Select and L101 & L102	Record M3 reading for F_{LO} and F_{HI}. F_{LO} M3 = _____. F_{HI} = _____. Adjust either L101 or L102, or both, so as to obtain highest possible balanced M3 reading between F_{LO} and F_{HI}. Make low reading higher.
4	Receiver J4	M3	F_{HI}	L7 and Channel Select	Adjust CW for Dip.
5	Receiver J4	M3	F_{HI}	L8 and Channel Select	Adjust CW for Peak.
6	Receiver J4	M3	F_{HI}	L8	Adjust slowly CW for a 2 uA decrease.
DO **NOT** repeat Steps 4, or 5, or 6. Skip to Step 9.					
7	Receiver J4	M3	F_{HI}	L7	Adjust CW for Dip.
8	Receiver J4	M3	F_{HI}	L8	Adjust CW for Peak.
DO **NOT** repeat Steps 7 and 8. Continue on to Step 9.					
9	Receiver J4	M1	F_{LO}	Rf Generator & L1 thru L6	Set rf generator to F_{LO} ± 100 Hz, without modulation, and adjust its output level for 35 uA. (If unable to obtain a reading between 30 and 40 uA initially turn each tuning screw 1/2-turn CW. Repeat this adjustment until M1 Peaks between 30 and 40 uA.) Then, adjust (each) L1 thru L6 **once,** in that order, CW for Peak. While making each screw adjustment, readjust the rf generator output as necessary to maintain an output between 30 and 40 uA.
10a	—	—	F_{HI}	L1 thru L6	For F_{HI} = 400 to 460 MHz or 470 to 494 MHz; adjust L1 through L5 1/4-turn CCW, and adjust L6 1/2-turn CCW.
10b			F_{HI}	L1 thru L6	For F_{HI} = 460 to 470 or 494 to 512 MHz; adjust L1 through L5 1/2-turn CCW, and adjust L6 1-turn CCW.
11	Receiver J4	M1	F_{LO}	RF Generator & L1 thru L6	Set Rf generator to F_{LO} ± 100 MHz, without modulation, and adjust its output leve for 35 uA. Adjust (each) L1 thru L6 **once,** in that order, cw for Peak. While making each screw adjustment, readjust the rf generator output as necessary to maintain an output between 30 and 40 uA. Do **NOT** repeat this Step unless having FIRST repeated Steps 1a, 9, and 10.
12 Audio Zero Beat	Control J2	SPKR	ALL	RF Generator, Signal Source, & Channel Element	For each receiver frequency, set rf generator on frequency ± 75 Hz, without modulation. Monitor speaker. using a wire connected to a 1 mV, 10.7 MHz signal source (or 10.8 MHz for receivers with shifted i-f), "spray" signal near i-f circuitry (via L201 access hole). Simultaneously, warp channel element for an audio zero beat. Repeat Step 14 for all receive frequencies.
This completes the alignment for all UHF receivers.					

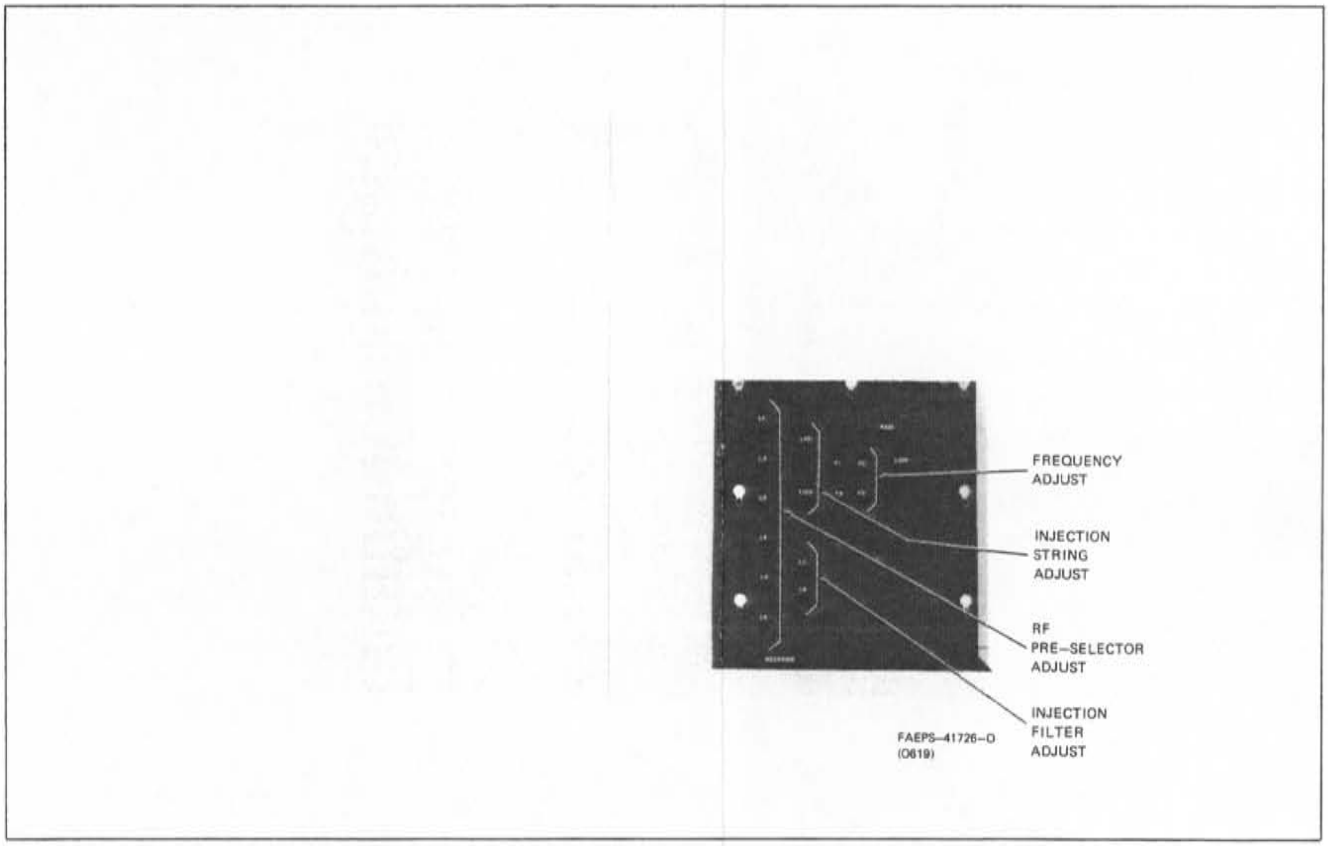

Figure 2. Receiver Alignment Adjustment Locations