AIR-GROUND RADIO

PRIVATE SYSTEMS

ECHO-FOX UHF RADIO SYSTEM

TESTS

BASE RECEIVER GE-MASTR PROGRESS LINE

This section contains the tests necessary to determine the operational status of the Echo-Fox station receiver prior to making any adjustments. Three checks are performed: frequency, sensitivity, and receiver output. The sensitivity of a radio receiver determines the minimum RF signal strength at which a usable intelligence signal is available at the receiver output.

This section is reissued to reflect the deletion of wideband service.

Equipment Test Lists are affected.

CHART **PAGE**

APPARATUS:

The following test apparatus is required for the performance of tests outlined in this section. Before performing any tests or adjustments, ensure that each item of test apparatus is properly calibrated in accordance with the manufacturer's specifications.

1—FM Signal Generator, equipped with 6-dB pad

1—FM Deviation Meter, scope type

1—Transmission Measuring Set J94021A (21A TMS)

1—Test Cable Set, Amphenol C133-216

1—FA40843 Drawing

5—258-type Dummy Plugs

1—Frequency Counter, 1 part in 10 million accuracy (locally obtained)

MAINTENANCE LOG

ECHO-FOX BASE STATION RECEIVER

Date_____

Technician_____

Station_____

SQUELCH		INITIAL	FINAL
OPERATE (UNMUTE)	μV / dBm		
RELEASE (MUTE)	μV / dBm		
SENSITIVITY			
S+N/N	dB		
RF LEVEL	μV / dBm		
RECEIVER OUT			
	dBm		
LIMITER SATURATION			
C 1st LIM	DC V		
RF LEVEL	μV / dBm		
FUNCTION			
A DISC 0	FREQ		
A DISC IDLE	NOTE 1		
B 2nd IF	DC V		
C 1st LIM	DC V		
D MULT 1	DC V		
E MULT 2	DC V		
G AUDIO PA	DC V		
J REG 10 VDC	DC V		

Remarks:
Reason for maintenance, trouble, or routine description of trouble and remedy

Note: Enter the number of minor divisions above and below (±) zero.

Fig. 1—Sample Maintenance Log

CHART 2 (Cont)

STEP	PROCEDURE
	Note: Do not change the receiver squelch and volume settings during the procedures in this chart except as noted in Step 17. Check the discriminator zero indication periodically to ensure that the signal generator is on the station receiver frequency.
3	Increase the output of the signal generator until the receiver limiter is saturated. Record on the maintenance log (Fig. 1). ***Saturation:*** Limiter current does not increase with an increase in carrier output level from the generator.
4	Connect the transmission measuring set (TMS) to the receiver audio EQUIP jack on the jack field.
5	Measure the receiver audio level output on the TMS and record indication.
6	Remove the 1-kHz modulating tone from the carrier.
7	Reduce the unmodulated carrier output of the signal generator until the receiver squelch mutes the receiver output. An indication of the cutoff condition will be seen on the TMS, and the COR lamp on the jack field will no longer be lighted. Record the carrier output level on the maintenance log (Fig. 1).
8	Increase the output of the signal generator slowly until the squelch releases and the receiver is activated (unmuted). Record the signal generator level (TMS) on the maintenance log (Fig. 1).
9	Note the generator carrier level and increase the level by 1 dB. ***Example:*** If the level in Step 8 is −116 dB, increase the level to −115 dB.
10	With the signal generator unmodulated carrier at the level established in Step 9, measure and record the noise at the receiver output jack with the TMS.
11	With the signal generator carrier at the level established in Step 9, modulate the carrier with the 1-kHz tone at ±10 kHz deviation.
12	Measure and record the signal plus noise at the receiver output jack with the TMS.
13	Compare the levels recorded in Steps 10 and 12 and determine the difference between the two [signal plus noise to noise ratio (S+N/N)]. ***Example:*** Step 10, −26 dBm; Step 12, −1 dBm. The difference is 25 dB. ***Requirement:*** The level recorded in Step 8 is −114 dBm or less (−115 dBm is less) and the figure obtained in Step 13 is 25 dB. Record on the maintenance log (Fig. 1).

CHART 3 (Cont)	
STEP	**PROCEDURE**
4	Increase the signal generator output level until the receiver limiter is saturated. ***Note:*** Refer to the discriminator voltage (meter switch in position A) throughout the test to keep the signal generator on the station frequency. ***Saturation:*** Limiter current does not increase with an increase in carrier output level from the generator.
5	Observe the output as indicated on the TMS. Record on the maintenance log (Fig. 1). ***Requirement:*** +3 dBm.
6	If the requirement in Step 5 is not met, adjust volume control on the station power supply until the requirement is met.
7	Remove the test equipment and return the receiver to standby condition. Complete the maintenance log information.

CHART 4 FILTERS AND BLOWERS	
STEP	**PROCEDURE**
1	Check filters for cleanliness. Check blowers for operation. Refer to Section 406-116-501 for specific inspection and replacement procedures.