MAINTENANCE MANUAL
FOR
MASTR REMOTE CONTROL STATIONS WITH SATELLITE RECEIVER
(OPTION 7687)

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DESCRIPTION

Option 7687 adds a Tone/Audio panel to a MASTR remote control station. This modification enables the station receiver to be used as a satellite receiver in a receiver voting system.

In receiver voting systems, the satellite receivers are located so that at least one receiver will receive a good quality signal from a Personal or Mobile two-way radio transmitting from a specified operating area. The satellite receiver output is applied to a centrally located Voting Selector which selects the receiver with the best audio quality to be heard. The satellite receiver output is connected to the Selector by RF link, AC or DC lines, or an E & M pair.

MODIFICATIONS

When the Receiver Voting Overlay Harness is added to the remote station, the station Interconnection Cable is modified as follows:

1. Removed wire #11 connected from TB1501-6 on the EA-24-A to TB703-7 on the KC-16-A control panel.

2. Removed wire #12 connected from TB1501-7 on the EA-24-A to TB703-8 on the KC-16-A control panel.

TONE/AUDIO PANEL

The tone/audio panel contains a 1950 Hz tone generator, a tone gate, and a line transformer. When the receiver is squelched, the 1950 Hz tone is applied to the telephone pair. When the receiver is unsquelched, the tone is removed and the receiver audio is applied to the telephone pair. The output of the tone/audio panel is connected to the Voting Selector panel.

Complete instructions for the tone/audio panel are contained in Maintenance Manual LBI-4294 for 19D413943G1 and LBI-4582 for 19D413943G3 & 5.

CONNECTIONS

In receiver voting systems, the output of the Tone/Audio panel must be connected to the Voting Selector by an audio pair. Connect the audio pair from the Selector to TB1-6 and TB1-7 on the Tone/Audio panel.

SATELLITE RECEIVER ADJUSTMENT

After the station has been installed and all connections and preliminary adjustments completed, it is necessary to set the satellite receiver output levels.

There are two methods for adjusting the output levels of the Satellite Receiver. The preferred method requires one man at the Satellite Receiver and one man at the Voting Selector. The alternate method allows one man to set up the system.

NOTE

If the frequency response of the telephone lines is relatively flat, the alternate method provides results identical to the preferred method.

EQUIPMENT REQUIRED

- Wide-band AC VTVM: Similar to Heath IM-38, Simpson 75 or HP400 Series
- Signal Generator: Similar to Measurements M800.

PREFERRED METHOD

1. At the base station, connect an AC VTVM across TB1-6 and TB1-7 on the Tone/Audio board.
2. Apply a 1000 microvolt signal modulated by 1000 Hz with +3.3 Hz deviation to the receiver antenna jack J441.
3. Set the Line Level adjust (R1501) on the Line Amplifier as follows:
   a. If the line loss is less than 10 dB, set R1501 for the maximum level allowed by the telephone company, but no greater than 0 dBm.
   b. If the line loss is greater than 10 dB, set R1501 for the maximum level allowed.
4. Remove the signal generator and unsquelch the receiver.
5. At the Voting Selector, connect a wide-band AC-VTVM to J1 on the front of the associated Receiver Module, and to the Ground Jack on the front of the power supply module.
6. With receiver noise on the line, adjust the Input level control (R1) on the front of the Receiver Module for -20 dBm.
7. At the base station, readjust the SQUELCH control on the EP-38-A for the desired setting.
8. Adjust R7 on the Tone/Audio panel for a reading of -20 dBm at J1 on the Voting Selector. Do not adjust R1 at the Receiver Module.

ALTERNATE METHOD

1. Connect an AC-VTVM across TB1-6 and TB1-7 on the Tone/Audio Board.
2. Apply a 1000 microvolt signal modulated by 1000 Hz with a +3.3 kHz deviation to the receiver antenna jack J441.
3. Set the Line Level Adjust (R1501) on the Line Amplifier as follows:
   a. If the line loss is less than 10 dB, set R1501 for the maximum level allowed by the telephone company, but no greater than 0 dBm.

b. If the line loss is greater than 10 dB, set R1501 for the maximum level allowed.

4. Remove the signal generator and squelch the receiver.

5. When using MASTR receivers, adjust R7 on the Tone/Audio panel for tone output that is 3 dB less than the output signal level in Step 3.

NOTE

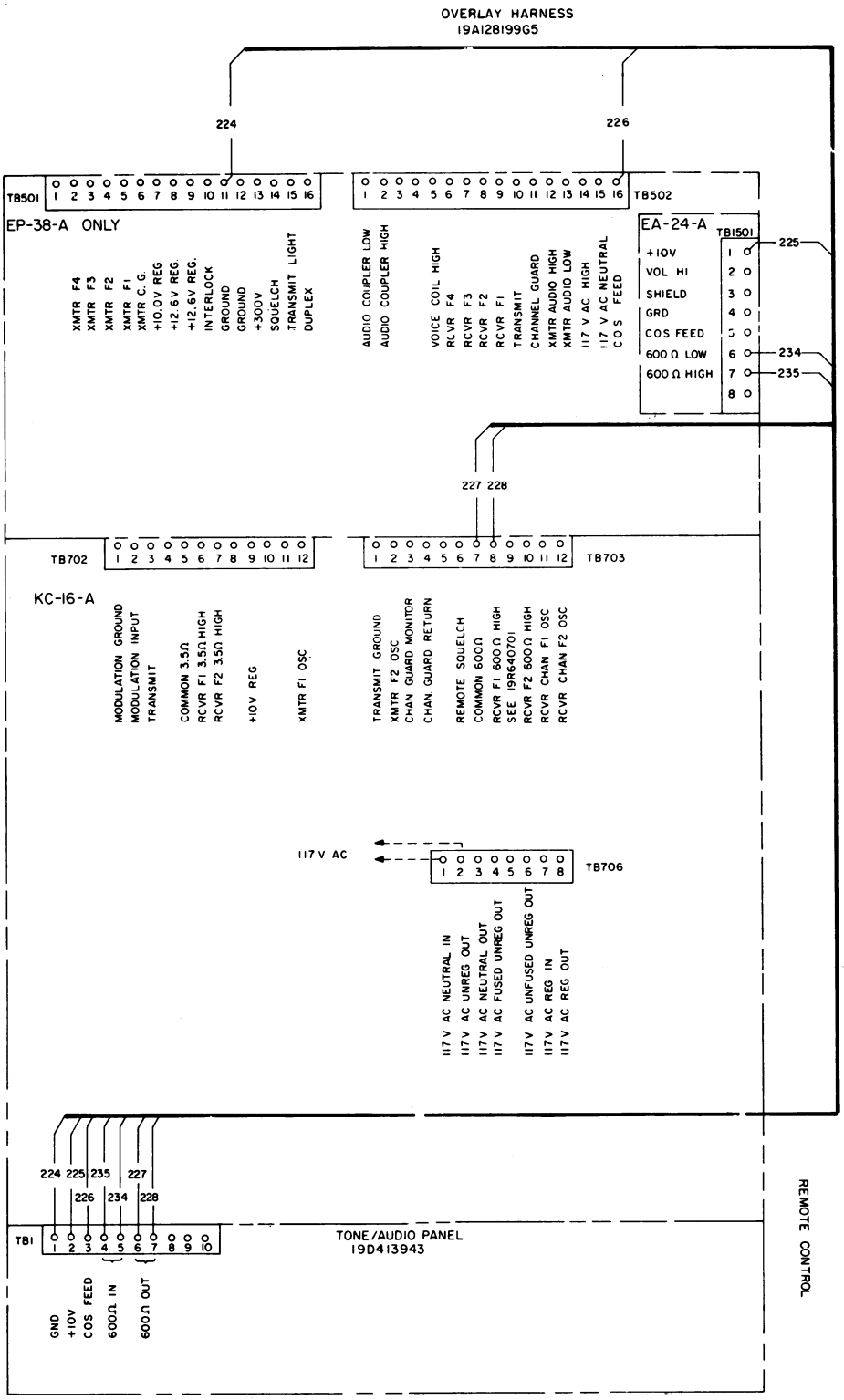
When MASTR receivers are not used, the receiver output on a standard signal and on unsquelched noise should be measured with a wide-band VTVM. The difference in these two readings should be used instead of 3 dB in setting up the tone output.

6. Return to the Voting Selector and adjust Input Level control R1 on the front of each Receiver Module for a reading of -20 dBm at J1 on the 1950 Hz tone.

INSTRUCTIONS:

1. CABLES SHOULD BE CONSTRUCTED IN ACCORDANCE WITH WIRING INSTRUCTIONS A4031623.
2. ALL WIRES ARE #16 AWG.
3. MARK WIRES IN CABLE ON BOTH ENDS WITH CORRESPONDING WIRE NUMBER USING MARKER STRIP 19B209090.
4. CABLE SHOULD BE CONSTRUCTED IN SUCH A WAY AS TO ALLOW ENOUGH SLACK TO PERMIT MOUNTING A 3.50" OPTION PANEL BETWEEN EP-38-A AND KC-16-A.
5. TERMINATE ALL WIRES WITH TERMINAL 19B209260P102.
6. THE FOLLOWING WIRES MUST BE REMOVED FROM EXISTING CABINET HARNESS WHEN THIS HARNESS IS INSTALLED; WIRE #11 FROM (EA-24-A) TB1501-6 TO (KC-16-A) TB703-7, WIRE #12 FROM (EA-24-A) TB1501-7 TO (KC-16-A) TB703-8.

(19D416023, Rev. 3)



INTERCONNECTION DIAGRAM

SATELLITE RECEIVER OVERLAY HARNESS FOR REMOTE CONTROL STATIONS

DF-9026

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