

MESSENGER 124M TEST PROCEDURE

OPERATION

- 101           Preset adjustments as follows:
- "Mike Gain" full clockwise.  
              "Tone" mid range (affects S/N and gain).  
              L11 slug 3/8 inch from top of form.  
              L10 slug 1/16 inch from top of form.  
              T14 slug 9/32 inch from top of form.  
              T13 top slug 7/32 inch from top of form.  
              T13 bottom slug 11/32 inch from bottom of form.  
              Noise limiter switch "ON".  
              Auto-Alert switch on "AUTO".  
              Monitor switch "OFF".
- 201           Check power supply at junction of C202 and L7 with 117  
              VAC input 15.4 VDC maximum, 13.6 VDC minimum.
- 202           With RF probe on Q2 emitter, selector switch on channel  
              23, adjust T9 for exactly 1/4 turn past 2nd peak, turning  
              slug in.
- 203           Channel 11, peak both slugs of T8 for maximum injection.
- 204           Check all channels for minimum of 60 microvolts synthe-  
              sizer output and balance within 50 microvolts.
- 205           Adjust T1 for maximum gain with best S/N ratio, while  
              peaking T2, L1, T3, T4, T5, T6, and T7 for maximum gain.
- 206           With input level of 1 uV (mod 30% at 1000 Hz) audio gain  
              should be minimum of +2 db.
- 207           Output balance on 1, 11, and 23 to be  $\pm$  3 db. If out  
              of tolerance go to step 205.
- 208           S/N should be a minimum of 8 db at 0 db reference.
- 209           AGC rolloff with 1000 uV to 1 uV at 10 db reference  
              should be 18 db maximum and 6 db minimum. Adjust R22  
              as required.
- 210           With 1 uV unmodulated input, audio output shall increase  
              at least 4 db, but not more than 10 db when noise limiter  
              is switch to OFF position.
- 211           Tight squelch should squelch out 30 uV minimum and  
              should open by 300 uV.
- 212           Vary tone control and check for normal audio tone change  
              at 1 uV input.

OPERATION

- 213 Zero "S" meter by adjusting R48 with no signal in. Increase input to 10 uV and adjust R49 for "S5" reading. Increase signal to 100 uV and "S" meter should read "S9"  $\pm 1$  division.
- 301 Key transmitter and peak T12, T13, T14, L10 and L11 on channel 11 for maximum power out of 4 watts and minimum of 3 watts. Balance on channels 1 to 23 to be within .5 watts.
- 302 Adjust relative power output to 4 on "S" meter with R25 pot. (SW4 in "PWR" position).
- 303 With -50 db (750 pf series capacitor) into mike jack, modulation must be a minimum of 50% undistorted.
- 304 Increase audio generator 16 db and modulation should be 80% minimum and 100% maximum.
- 305 Set % of modulation on "S" meter to agree with scope measurement in step #304 with R23 control and SW4 in the "MOD" position.
- 306 Rotate mike gain control CCW to check if modulation decreases normally.
- 307 Connect 3:1 VSWR fixture (all phase angles) across antenna and tune out any distortion on all channels.
- 308 Check frequency for ~~1005~~ <sup>1005% of Channel freq</sup> Hz on Channels 1, 6, 11, 16, 20, and 23.
- 309 With SW4 in "SWR" position and 3:1 SWR connected, check SWR reading for normal indication.
- 310 Check operation of receiver and transmitter with DC input of 11 volts and 13.8 volts.

MONITOR BOARD TEST PROCEDURE

- 401 Set Monitor switch (SW 301) to "A" position. (Channel 9) "M" squelch fully counter-clockwise. Mode switch (SW 302) to "Auto" position.
- 402 Adjust T303 for starting.
- 403 Peak T301, T302, T304, and T305 for maximum audio output with minimum signal input.
- 404 S/N to be 8 db with 6 uV, 30% modulated input. -0 db reference.
- 405 Tight "M" squelch to be 180 uV minimum and 500 uV maximum.
- 406 "M" squelch set at threshold with no signal input. Relay to switch to Monitor with 6 uV input.

OPERATION

- 407 With 10 uV input, the Messenger 124 audio and the Monitor audio output must be equal to + 3 db. Adjust R320 as needed.
- 408 "M" squelch at threshold, SW302 at "Alert" position, inject 6 uV and Monitor light only should come on. Relay shouldn't key.