

MESSENGER 123-A PRODUCTION TEST PROCEDURE

OPERATION

- 100 All receiver input levels are measured into a 6 db - 50 ohm pad.
- 101 Power supply at 13.8 VDC, zero "S" meter by adjusting R81 pot.
- 102 With RF Heterodyne Voltmeter (tuned to 26.8 MHz) probe on junction of CR14 and CR15, channel selector on CH 23, adjust T7 for $\frac{1}{2}$ turn into can past the oscillator starting point.
- 103 Roughly peak T9, then T8 for maximum injection on channel 12. Check all channels for starting, and a minimum of 80 mV injection.
- 201 Key transmitter on channel 12. With RF Heterodyne probe on case of Q15, peak T8, T9, T10, and T11 for maximum RF indication (T10 peak is quite sharp).
- 202 Adjust T12 1/8" from top and T13 5/16" from top and then repeak T10 and T11 for maximum RF output on wattmeter.
- 203 Peak L6 and L7 for maximum of 3.8 watts and a minimum of 2.8 watts. L6 may be detuned into coil to reduce final RF transistor current and to keep power within spec. (Repeat steps 201 and 202 as necessary).
- 204 Power output to be $\pm .5$ watt of channel 12 power out on all channels. (T8 and T9 may be adjusted to get proper balance).
- 205 Modulation must be 50% minimum with -33 db audio input into a 6800 pf series capacitor, and 80% minimum 100% maximum, with -17 db input. (Audio generator set at 1000 Hz and "internal load".)
- 206 Check for distortion and "latching" with 3:1 SWR fixture (all phase angles) RF load on channels 1, 12 and 23 at 13.8 VDC and 11 VDC. All distortion must be tuned out by adjusting T13 and then T10, T11, T12 as required. L6 and L7 must not be adjusted to remove distortion or latching.
- 207 Relative power output (RPO) meter to read 2.5 to 3.0 watts on transmit. *0.059.* *chan 12* *Theraway*
- 208 Transmit frequency to be ~~1400~~ Hz of nominal, [^] checked on channels 1, 6, 11, 16, 20, & 23.
- 209 Talk into mike and check for normal modulation on scope.
- 301 With unit in receive mode, channel selector on channel 12, feed in RF signal (modulated 30% at 1000 Hz) and peak T1, T2, T3, and T4 for maximum audio output with a minimum amount of RF signal input. Detune T1 by turning core into transformer until audio output level drops by 1 dB. (This is to improve image response.)

OPERATION

- 302 AGC rolloff check at +10 db reference from 1000 uV to 1uV minimum of 13 db - maximum of 17 db. Adjust R7 (IF gain pot) to bring into spec.
- 303 Minimum audio output gain of 0 db.
- 304 With 1 uV input, adjust volume control for 0 db reading on channel 12. Then check channels 1 & 23 for balance. The maximum difference in balance between the strongest and the weakest channels is 6 db.
- 305 • Check S/N at 0 db reference for 8 db minimum with 1 uV input.
- 306 Squelch must be able to squelch out 60 uV minimum, but open at less than 2000 uV.
- 307 Meter to read approximately S9 with 100 uV input. Must read a minimum of S7 and a maximum of 10 db above S9.
- 401 Receiver to receive 1 uV signal and transmitter to have modulated RF output at 11 VDC input.

HEAT RUN:

- 501 Heat run unit in cabinet at 15 VDC - cycling on transmit 30 seconds and then on receive 30 seconds for a minimum of $\frac{1}{2}$ hour.
- 502 Check transmitter, receiver, meter, squelch operation, lights, external speaker jack, etc., completely for normal operation. Reject any units that fail any test on heat run.
- 503 Check units over for appearance before passing.