

2. Set AUDIO SOURCE switch (9) to the 2-TONE position.
3. Set SPEAKER switch (11) to ON.
4. Set RF LOAD switch (18) to INT (internal).
5. Set RF POWER switch (19) to PEAK.
6. Set TRANSMITTER FUNCTION switch (16) to the FWD (forward) position.
7. Set RANGE switch (15) to the 50W position for class D Citizen's Band transceivers. For other transceivers and transmitters that have a rated peak power of 10 watts or less, select the 10W range. For transceivers and transmitters that have a rated peak power of over 50 watts, select the 100W range.
8. Select the desired channel on the transceiver or transmitter being checked. Any channel is satisfactory.
9. If the transceiver has adjustable microphone gain, adjust it to mid position.
10. Select USB (upper sideband) mode.
11. Place microphone of transceiver or transmitter being checked over the speaker of the CB ServiceMaster, face down, so it can be driven by the two-tone test signal.
12. Key the transmitter with the push-to-talk switch on the microphone.
13. Adjust the AUDIO GAIN control (10) for maximum reading on the RF meter (13). Starting at a low gain setting, increase gain until the meter reading no longer increases. The control should not be at its limit.
14. Read the transmitter RF power, in watts, from the selected watts scale on the RF meter (13). This is the transmitter peak envelope power (PEP). Power output should meet the transceiver or transmitter manufacturer's specification, and must not exceed any applicable FCC limit for the unit being checked. The peak RF output for class D Citizen's Band transceivers in SSB modes should not exceed 12 watts.
15. Select the LSB (lower sideband) mode. Transmitter RF power output should be the same as for the upper sideband.
16. Measure USB and LSB RF power for each channel. All channels should have approximately the same power output.

#### SSB TRANSMITTER MODULATION CHECK (Refer to Fig. 14)

This check of modulation quality displays the SSB transmitter modulation envelope for examination. This check applies to all types of transceivers and transmitters listed for the SSB TRANSMITTER RF POWER CHECK. It needs to be performed on only one channel.

For ease of understanding, this check is described as a separate test. However, in actual practice, the steps of the modulation check are often performed as part of the RF power check. Since the transmitter must be modulated to generate RF output, both can be checked simultaneously.

1. Perform steps 1 thru 12 of the SSB TRANSMITTER RF POWER CHECK.
2. With the AUDIO GAIN control (10) fully counter-clockwise, RF meter (13) should indicate zero output from the transmitter.
3. Place transceiver microphone over ServiceMaster speaker and slowly increase AUDIO GAIN (10).
4. As AUDIO GAIN is increased, the RF meter reading should increase and the modulation envelope should be displayed on the oscilloscope.
5. Adjust the oscilloscope for a stable display which should resemble that shown in Fig. 14 (normal modulation).
6. Continue increasing the AUDIO GAIN setting. When maximum power is approached, the amplitude of the waveform ceases to increase and the peaks flatten out. This is the Overmodulation condition of Fig. 14, which is called flat-topping.
7. There should be a smooth transition from no output to full output.
8. If the transceiver is equipped with adjustable microphone gain, return the AUDIO GAIN control to a position that produces  $\frac{1}{2}$  of the maximum measured RF power. Vary the microphone gain control from minimum to maximum and again note that there is a smooth transition from minimum power to full power output.

#### NOTE

The preceding tests are a convenient method for quickly verifying that the single-sideband performance is acceptable. If a detailed evaluation of sideband performance is required, such as that performed with a spectrum analyzer, the two-tone signal should be obtained at the AUDIO OUTPUT terminals (14) and connected directly to the audio pins of the transceiver microphone jack using a shielded cable. The push-to-talk leads of the microphone jack are then connected to a switch for keying the transmitter. All above instructions then apply, except that the modulation signal is not applied through the transceiver microphone from the ServiceMaster speaker.

#### SSB TRANSMITTER FREQUENCY CHECK (Refer to Fig. 15)

This check measures the transmitter operating frequency in the SSB modes. It should be performed immediately after the SSB TRANSMITTER RF POWER CHECK. It is applicable to all types of transmitters listed for that check.