

from 0% to 100% modulation. See Fig. 8 for interpretation of waveforms.

10. Return AUDIO GAIN control (10) to mid-position. If the radio is equipped with adjustable microphone gain, vary the control from its minimum to its maximum setting. The observed modulation percentage will vary as the microphone gain control is adjusted.

Normally, the MODULATION CHECK is necessary on only one channel. However, if a complete check is desired, merely leave the equipment set up as in step 9 and adjust for 50% modulation. Select each channel in turn and observe the oscilloscope display for any change. Unkey the transmitter while changing channels.

#### RECEIVER AUDIO POWER CHECK (Refer to Fig. 9)

This is normally the first receiver check performed. It will quickly determine if the receiver is totally dead, and, if not, checks the receiver's ability to deliver adequate audio power to the speaker. It also accomplishes all the preliminary set-up steps necessary for a receiver sensitivity check which should be performed next if the results of this check are satisfactory. The check may be used for transceivers and receivers in class D Citizen's band service in the 27 MHz band, and any other AM or AM/SSB receiver with a 50-ohm antenna input and 4-ohm, 8-ohm or 16-ohm speaker output in virtually any frequency band. For receivers with both AM and SSB capability, this check should be performed in the AM mode before making subsequent SSB mode checks.

1. Hook up equipment in the basic test set-up shown in Fig. 5 and set all controls as instructed under INITIAL OPERATING INSTRUCTIONS.
2. Set LOAD switch (3) to match the normal speaker load of the receiver under test: 4 ohms, 8 ohms or 16 ohms.
3. Be sure the RECEIVER FUNCTION switch (4) is in the 10 WATTS position.
4. Leave the AUDIO SOURCE switch (9) in the RECVR AUDIO position.
5. Start with the AUDIO GAIN control (10) in mid-position. Readjust as required to maintain a comfortable listening level throughout the remaining steps of this procedure.
6. Leave SPEAKER switch (11) set to ON.
7. If the receiver is capable of operation in both AM and SSB modes, select the AM mode.
8. Select the desired channel on the transceiver or receiver being checked. The check can be performed on any channel, and normally needs checking on only one channel.
9. Set the receiver volume control to maximum and the receiver squelch control to the fully unsquelched position (fully counterclockwise).
10. If the receiver is equipped with adjustable RF gain, set it to maximum.

11. If the receiver is equipped with accessory circuits such as a noise limiter or ignition noise blanker, switch all such accessory circuits off. This precaution may exclude some circuits as a possible source of trouble. Accessory circuit operation should be tested after all basic checks are performed.
12. Receiver noise should be heard from speaker (12).
13. Set the RF generator to the approximate frequency of the receiver channel being checked, as close as the dial setting will quickly permit. A table of carrier frequencies for the CB channels is given in the previous TRANSMITTER FREQUENCY CHECK procedure.
14. Set the RF generator output level to 1000 microvolts.
15. Set the RF generator for internal modulation and adjust for 30% modulation. Some RF generators use 400 Hz internal modulation while others use 1000 Hz; either is satisfactory for this check. If both frequencies are available, the 1000 Hz is preferred.
16. Most RF generator dials are not calibrated to sufficient degree to permit adjustment to the exact desired frequency from the dial setting alone. Set the RF generator to the exact receiver frequency as follows:
  - a. Slowly adjust the fine frequency control of the RF generator back and forth about the correct frequency point as indicated on the frequency dial.
  - b. When the correct frequency is approached, an audio tone will be heard from the speaker (12) and a reading will be obtained on the receiver audio output meter (1). The receiver audio output will also be displayed on the oscilloscope. The tuning range over which the tone and meter reading occurs may be very narrow, and the frequency tuning control of the RF generator may need very careful adjustment.
  - c. Carefully adjust the frequency control for peak meter reading and peak audio output on the speaker. This should coincide with minimum observed distortion on the oscilloscope display.

If the receiver is completely "dead", no tone or meter reading will be obtainable. Repeat test on another channel, but with the RF generator output level set at maximum.

17. Adjust the oscilloscope for a stable display of a few cycles of audio.
18. Read the receiver audio output power level on the watts scale of meter (1). This reading should equal or exceed the receiver manufacturer's specification. All CB transceivers should provide at least 2 watts and some are rated substantially higher.

Receiver audio power specifications usually include a maximum distortion figure (for example, 2 watts at less than 10% distortion). This check does not include distortion measurement, but does provide a quick indication of audio power. Complete procedures for a distortion check are given later, but should be performed after sensitivity checks are completed.