

6. Slowly reduce the RF generator output level to 1 microvolt, noting that the meter reading drops smoothly, without sharp dips or peaks. The meter reading at 1 microvolt should not be more than 30 dB below the reference reading at 50,000 microvolts. As the meter reading approaches -20 dB of the reference reading, retune the RF generator to keep it precisely on frequency.

DISTORTION CHECK (Refer to Fig. 13)

This check measures the percentage of audio distortion of a 1000 Hz test signal. The distortion specification for most transceivers and receivers is rated in percentage at a given audio output level (for example, less than 10% at 2 watts). Distortion can be accurately measured only if the modulating signal is undistorted. The CB ServiceMaster supplies a 1000 Hz test signal with less than 1% distortion. This signal should be used to externally modulate the RF generator, if the internal modulation of the RF generator is excessively distorted.

This check can be performed after the RECEIVER SENSITIVITY CHECK, SQUELCH SENSITIVITY CHECK, or AGC CHECK. In each case the equipment is set up as required to begin this check. The check needs to be made on only one channel.

1. After performing the RECEIVER SENSITIVITY CHECK, leave all connections and controls as at the conclusion of that check.
2. Set RECEIVE FUNCTION switch (4) to the 10 WATTS position.
3. Set SPEAKER switch (11) to OFF.
4. Set AUDIO SOURCE switch (9) to 1 kHz.
5. Connect a shielded audio test cable from the AUDIO OUTPUT jacks (21) of the CB ServiceMaster to the external modulation jack of the RF generator.
6. Set the RF generator to operate with external modulation.
7. Adjust the AUDIO GAIN control (10) and the modulation control on the RF generator for 30% modulation.
8. Set the RF generator output level to 1000 microvolts and tune to the receiver frequency.
9. Adjust receiver volume for the rated audio power in the distortion specification (in watts), as read on audio meter (1).
10. Set RECEIVER FUNCTION switch (4) to the SET FULL SCALE position.
11. Adjust the SET FULL SCALE control (5) for a full scale meter reading on audio meter (1).
12. Set RECEIVER FUNCTION switch (4) to the ADJ FOR MIN position.
13. Adjust NULL control (6) for minimum meter reading on audio meter (1).

14. Read the percentage of distortion on the % DISTORTION scale of audio meter (1).

Notes on Distortion Measurement

Be sure to use only 1000±100 Hz test signal for distortion measurement.

The audio waveform for which distortion is being measured is displayed on the oscilloscope. Distortion can be observed on the oscilloscope display as any characteristic which tends to make the waveform non-sinusoidal. Note any change in the distortion characteristics as adjustments are varied, such as receiver volume control, receiver RF gain (if so equipped), input signal level or fine tuning of the RF generator frequency. Perhaps distortion can be reduced by the proper combination of control settings.

If distortion is greater than 30%, it will not be possible to get an on-scale reading in step 13. However, it is always possible that an error in procedure or hasty setting of controls caused the off-scale reading. It may be helpful to repeat steps 10 and 11, but adjust for less than full-scale reference. Choose an alternate reference point such as the 20% distortion mark. Now, when steps 12 and 13 are repeated, it should be possible to set the NULL control for minimum meter reading. If this reading is higher than the reference point, distortion is indeed more than 30%. If the reading is lower than the reference point, it should now be possible to repeat the standard procedure beginning at step 10 and obtain the distortion measurement.

SSB TRANSMITTER RF POWER CHECK (Refer to Fig. 14)

This check measures peak envelope power (PEP) of single sideband (SSB) transceivers and transmitters in the 27 MHz band. It may be used to check the SSB modes of operation for class D Citizen's Band transceivers or any other SSB transmitters in the approximate 27 MHz band with PEP ratings up to 100 watts. This is normally the first transmitter check made in the SSB modes, which is usually performed after all transmitter checks have been performed in the AM mode of operation.

In SSB operation, the carrier signal and one sideband are suppressed and all RF power is carried on one sideband. Therefore, there is no RF output when the transmitter is unmodulated. The CB ServiceMaster provides a two-tone test signal for modulating SSB transmitters. This two-tone test signal conforms to the industry standard for SSB transmitter checks.

NOTICE

FCC regulations require that all checks, adjustments and repairs which affect transmitter power and frequency be performed by or under the immediate supervision of persons holding a valid First or Second Class Radiotelephone License.

1. Perform transmitter checks for the AM mode of operation and leave equipment connected as at the conclusion of those checks, or hook up equipment in the basic test set-up shown in Fig. 5.