

This check measures the weakest signal required to unsquelch the receiver when the squelch control is set at threshold. Perform this check immediately after the RECEIVER SENSITIVITY CHECK; the equipment is connected and set up as required to begin this check. This check is applicable to all types of receivers listed for the RECEIVER AUDIO POWER CHECK. It only needs to be performed on one channel; a mid-band channel such as 11 is satisfactory.

Squelch threshold sensitivity is measured in microvolts. The measured reading in microvolts should be equal to or less than the manufacturer's specification. Typically, squelch threshold sensitivity should be less than the specified 10 dB (S+N)/N sensitivity of the receiver which is usually 1 microvolt or less.

1. Set the transceiver squelch control to minimum.
2. Set the signal generator exactly on frequency with 30% modulation at 1000 Hz.
3. Set the generator output to minimum.
4. If audio output corresponding to the generator modulation is observed at minimum generator output, switch the transceiver channel selector to an adjacent channel so that only receiver noise is observed.
5. Set the transceiver volume control to a convenient output level as observed on the meter or at the speaker.
6. Adjust the receiver squelch control from minimum to threshold, that is, the point at which the receiver noise output just disappears. (Receiver noise should be reduced at least 20 db when the receiver squelches).
7. Switch the transceiver back to the test channel. If audio output corresponding to the signal generator modulation is observed, the threshold squelch level is less than the minimum generator output level.
8. If the receiver does not unsquelch, slowly increase the RF generator output level until it unsquelches and read the output level in microvolts from the attenuator of the RF generator. This is the squelch threshold sensitivity. Remember that any change in the RF generator output level may affect the frequency on most RF generators; be sure the RF generator is precisely on frequency. Repeat the check if there is any doubt that the most sensitive reading was obtained. This test is most efficiently performed with a crystal-controlled generator.

#### **TIGHT SQUELCH SENSITIVITY CHECK** (Refer to Fig. 12)

**NOTE:** This test requires an extremely stable signal generator, preferably crystal-controlled.

When the receiver is adjusted for tight squelch (squelch control fully clockwise), it should block weak signals but accept strong, locally transmitted signals. This check measures the signal strength required to unsquelch the receiver when the squelch control is set at tight squelch. The sensitivity should not exceed 1000 $\mu$ V but may be as low as 30 $\mu$ V for some receivers. This check should be

performed immediately after the SQUELCH THRESHOLD SENSITIVITY CHECK; the equipment is set up as required to start this check.

1. After performing the SQUELCH THRESHOLD SENSITIVITY CHECK, leave all controls as at the conclusion of that check. The RF generator should already be set for internal modulation at 30% and should be exactly on the test channel frequency.
2. Set the RF generator output level to minimum.
3. Set the receiver squelch control to tight squelch (fully clockwise). The observed receiver output will disappear.
4. Slowly increase the RF generator output level until the receiver unsquelches, at which time there will be audio output from the speaker, meter (1) or displayed on the oscilloscope. The signal generator level at this point is the tight squelch sensitivity of the receiver.

In step 4, the receiver may unsquelch at an unacceptably high signal level because the RF generator is pulled slightly off frequency during the measurement. To make sure that the most sensitive reading is obtained, use the following technique.

- a. Reduce the RF generator output level until the receiver squelches.
- b. Reduce the squelch control setting so the receiver unsquelches.
- c. Set the RF generator precisely on frequency.
- d. Return the squelch control to tight squelch and slowly increase the generator output until receiver audio output is observed.
- e. Read the tight squelch sensitivity in microvolts from the attenuator on the RF generator.

#### **AGC CHECK**

This check verifies proper operation of the receiver AGC (automatic gain control) circuit. As the input signal level is changed from 50,000 microvolts to 1 microvolt, the audio output level should not change more than 30 dB. This check can be performed after the RECEIVER SENSITIVITY CHECK or SQUELCH SENSITIVITY CHECKS and needs to be performed only for one channel.

1. Leave equipment connected as for the RECEIVER SENSITIVITY CHECK.
2. The RF generator should be on frequency and adjusted for 30% internal modulation, 1000 Hz.
3. Set RF generator output level to 50,000 microvolts and retune to set precisely on frequency.
4. Set receiver RF gain to maximum (if so equipped).
5. Set receiver volume for a convenient reference reading on audio meter (1), such as 0 dB.