If an unusually high audio level is required for 100% modulation (or 100% modulation cannot be attained), perform the PA mode check. If rated audio power is possible in the PA mode, troubleshoot the audio input portion of circuit No. 25. If low audio power is measured on the PA mode check, troubleshoot the microphone amplifier (circuit No. 14) for low gain, and the microphone for low output.

If overmodulation is prevalent, troubleshoot the modulation limiting circuitry which is usually part of circuit No. 25.

TROUBLESHOOTING PROCEDURE FOR "ABNORMAL SSB TRANSMITTER OPERATION" SYMPTOM

Use this troubleshooting procedure for any abnormal SSB transmit condition; no output, low power, improper modulation, or incorrect frequency. The AM mode is normal. It includes symptoms in which the SSB transmitter and receiver both show abnormal operation.

1. If there is no SSB transmitter RF power output, check SSB receiver audio power.
2. If both modes are inoperative, the trouble could be in the ring modulator/product detector (circuit No. 28) or narrow band 7.8 MHz bandpass filter (circuit No. 30).
   a. Apply a two-tone test signal to the microphone and measure the RF output of the ring modulator (circuit No. 28).
   b. If no output is measured, troubleshoot the ring modulator circuit.
   c. If output is measured, troubleshoot the 7.8 MHz bandpass filter.
3. If receiver operation is normal, the SSB transmitter RF amplifiers are the suspected stages (circuits No. 31 and 32). Apply a two-tone test signal to the microphone and measure RF voltages in circuits 31 and 32. Troubleshoot the area where RF voltage is first missing.
4. If there is no transmitter and receiver operation on one sideband only, the problem is probably in the 7.8015/7.7985 MHz oscillator (circuit No. 21). It uses one crystal in the AM and one sideband mode and another crystal in the opposite sideband mode. Troubleshoot the crystal and mode selector switch.
5. If transmitter RF power is low, troubleshoot the transmitter RF amplifiers for low gain (circuits No. 31 and 32).

TROUBLESHOOTING PROCEDURE FOR "ABNORMAL SSB RECEIVER OPERATION" SYMPTOM

Use this troubleshooting procedure for any abnormal SSB receive condition; no output, poor sensitivity, or poor adjacent sideband rejection. The AM mode and SSB transmit modes are normal.

1. If there is no receiver audio or poor sensitivity, set up test equipment for an SSB receiver sensitivity check.
2. Disable the SSB AGC circuit (circuit No. 27). If normal operation is restored, troubleshoot the AGC circuit.
3. Troubleshoot the 7.8 MHz IF amplifier (circuit No. 29).
4. If adjacent sideband rejection does not meet specification, troubleshoot the narrow band 7.8 MHz bandpass filter (circuit No. 30).

TROUBLESHOOTING PROCEDURE FOR "RECEIVER DISTORTION" SYMPTOM

Use this procedure when receiver audio will not meet the distortion specification or there is a symptom of distorted audio in the AM mode.

Measure distortion in the PA mode.

1. If distortion is measured in the same degree in the PA mode, measure audio signals in circuits 15 thru 18 (see Figs. 22 and 23) on the oscilloscope. Starting at circuit No. 15 and working toward the speaker, observe waveforms for a point where change in the waveform occurs.
2. If distortion meets specification in the PA mode, check distortion with 1 kHz test signal injected at the detector.
   a. If the same degree of distortion is measured, measure audio waveforms in circuit No. 12 and look for the point where the waveform changes.
   b. If distortion meets specification, check receiver for off-frequency condition, lack of AGC action, and IF amplifier distortion.

TROUBLESHOOTING PROCEDURE FOR "ABNORMAL PA MODE OPERATION" SYMPTOM

Use this troubleshooting procedure only when the PA mode is inoperative but all other modes are normal. With the transceiver shown in Figs. 22 and 23, this symptom could be caused only by faulty PA jack wiring or the PA mode select switch.

TROUBLESHOOTING PROCEDURE FOR "ADJACENT CHANNEL INTERFERENCE" SYMPTOM

Use this troubleshooting procedure when the receiver will not meet the adjacent channel rejection specification in the AM mode, but all other performance specifications are normal.

1. Recheck receiver alignment.
2. Check the bandpass filter and all tuned circuits in the RF and IF stages as follows: