TECHNICAL MANUAL

DEPOT MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

RECEIVING SET, RADIO
AN PRR-9 (XE-9)

HEADQUARTERS, DEPARTMENT OF THE ARMY
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RECEIVING SET, RADIO AN/PRR-9(XE-9)

CHAPTER 1

FUNCTIONING OF EQUIPMENT

1-1. Scope

a. This manual contains instructions for depot maintenance of Receiving Set, Radio AN/ PRR-9(XE-9) and depot overhaul standards. No direct support (DS) or general support (GS) maintenance is authorized for this equipment. The instructions include functioning of the equipment, troubleshooting, repair, alinement, and testing. The manual also lists tools, materials, and test equipment necessary to accomplish the maintenance.

b. Operation and organizational maintenance for the AN/PRR-9(XE-9) are covered in TM 11-5820-549-12-1.

1-2. Indexes of Equipment Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether these are modification work orders (MWO'S) pertaining to the equipment.

1-3. Reporting of Equipment Manual Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forward direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMPAD, Fort Monmouth, NJ 07703.

Section II. FUNCTIONING OF RECEIVING SET, RADIO AN/PRR-9(XE-9)

NOTE

Reference designations in this section are abbreviated. See schematic diagram, fig. 4-10, for complete reference designations.

1-4. Block diagram, AN/PRR-9(XE-9) (fig. 1-1)

Receiving Set, Radio AN/PRR-9(XE-9) is capable of receiving a voice-modulated or tone-modulated frequency-modulated (fm) signal within the frequency range of 47 to 57 megahertz (MHz). The specific frequency of operation is crystal-controlled, and a change in the frequency is accomplished by changing the internal oscillator crystal. The set has the capability of either un-squelched or 150 Hz tone squelch operation. The signal path is shown in the block diagram (fig. 1-1) and is discussed in a. through f. below. For complete circuit details, refer to the overall schematic diagram (fig. 4-10).

a. The AN/PRR-9(XE-9) employs integrated circuits and electronic component assemblies for many of its functions. The rf integrated circuit module Z1 includes circuitry which, with associated external discrete components, performs the function of rf amplifier, first mixer and local oscillator. Z2, the i.f. integrated circuit module, with associated external components, performs the functions of 10.7 MHz i.f. amplifier, second mixer, second oscillator, and 455 kHz, i.f. amplifier. The detector integrated circuit module Z5, with other associated components, provides the limiter, squelch and audio amplifier functions. Z3 contains diodes, resistors and capacitors of the discriminator circuitry. Z4 contains the 150 Hz notch filter portion of the squelch circuit. For signals or functions of the integrated circuit connection points, refer to the following descriptions and the summary in paragraph 1-16.

b. A signal received in the antenna of the receiver is increased in amplitude by radio frequency (rf) amplifier. The amplifier signal is applied to the first mixer where it is mixed with the output of the local oscillator, which is crystal-controlled. The first oscillator frequency is 10.7 MHz below the frequency of the incoming signal, and as a result of mixing, a 10.7 MHz intermediate frequency (i.f.) is developed.