

TM 11-6625-2949-14

TECHNICAL MANUAL

**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE MANUAL**

RADIO INTERFERENCE MEASURING SET

AN/URM-200 (NSN 6625-00-776-0595)

-01-083-9446

AND

ELECTROMETRICS MODEL EMC-25

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1979

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 31 October 1979

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AN/URM-200 (NSN 6625-00-776-0595)
AND
ELECTROMETRIC MODEL EMC-25**

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know.

Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Forms 2028-2 located in the back of this manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

A reply will be sent to you.

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SECTION I

Introduction and Specifications

1.1 THE MANUAL

This manual includes all relevant information for the successful operation, maintenance and repair of Interference Analyzer EMC-25.

1.2 THE EMC-25

The EMC-25 Interference Analyzer is designed for use as the major component of interference analysis systems for the 10 kHz to 1 GHz range. The instrument itself is a programmable selective RF voltmeter, compatible with a wide variety of peripheral equipment. A selection of antennas permits the measurement of radiated electric and magnetic field intensity, while various output devices are available to simplify data reduction and extend the EMC-25's usefulness as a system component.

The EMC-25 is used as an RFI/EMC meter, a field strength meter, a frequency-selective two-terminal voltmeter, and for other applications requiring a highly sensitive, shielded receiving instrument.

Frequency tuning, band selection, internal sweep voltage, impulse generator operation and level, bandwidth selection, detector dwell operation, and vernier gain (Cal) all can be externally programmed. Outputs are provided for the pre-IF and post-IF, DC-coupled AM and FM video, audio, voltage analog of frequency, voltage analog of amplitude, binary band indication, and for the impulse generator.

Instructions for operating accessory equipment are Supplied with each accessory. Specific applications are discussed in separate application notes. Field intensities are determined by the simple addition of the calibration factors supplied in the respective instruction manual for the antenna being employed.

1.3 UNPACKING

1.3.1 Remove the instrument carefully from the shipping carton and examine thoroughly for shipping damage. If there is any damage, replace the instrument in the shipping carton and immediately inform the manufacturer and the shipping company of the nature of the damage, the serial number of the instrument, the delivery date, and the invoice number.

1.3.2 Check contents of the carton against shipping slip to be sure that all components and accessory items ordered are present. Notify the manufacturer immediately of any missing items.

1.4 ELECTRONIC SHIPPING DAMAGE

1.4.1 Before leaving the factory, this instrument was subjected to a complete operational check. However, it is possible that electronic damage may have occurred in transit. It is desirable, therefore, to check the operation of the instrument as soon as possible after unpacking.

To do so, perform the calibration tests outlined in paragraph 3.2. If the instrument does not calibrate using the referenced procedures, inform our Customer Service Dept. (518) 843-2600, giving the basic information required in paragraph 1.3.1.

1.5 INSTALLATION

1.5.1 The EMC-25 is designed for bench-top operation, field-portable operation, or for installation in a conventional 19-inch equipment rack.

1.5.2 Rack mounting requires the use of two adapter mounting brackets (ABM-25). Using these brackets, install the instrument by the following procedure. (See Figure 1-1.)

- a. Remove the four plastic feet.
- b. With six 3/8-inch No. 8-32 binder head screws, fasten brackets to sides of instrument at matching screw holes.
- c. Before installing in equipment rack, provide underneath support sufficient to carry the weight of the instrument.

1.6 ELECTRICAL SPECIFICATIONS

1.6.1 FREQUENCY RANGE. The usable frequency range extends from 10 kHz to 1 GHz in 15 bands.

Each band provides a minimum of two percent overlap at each end with respect to adjacent bands.

1.6.2 FREQUENCY ACCURACY. Frequency accuracy is within plus or minus two percent of indicated frequency. (With FINE TUNE control at mid-rotation).

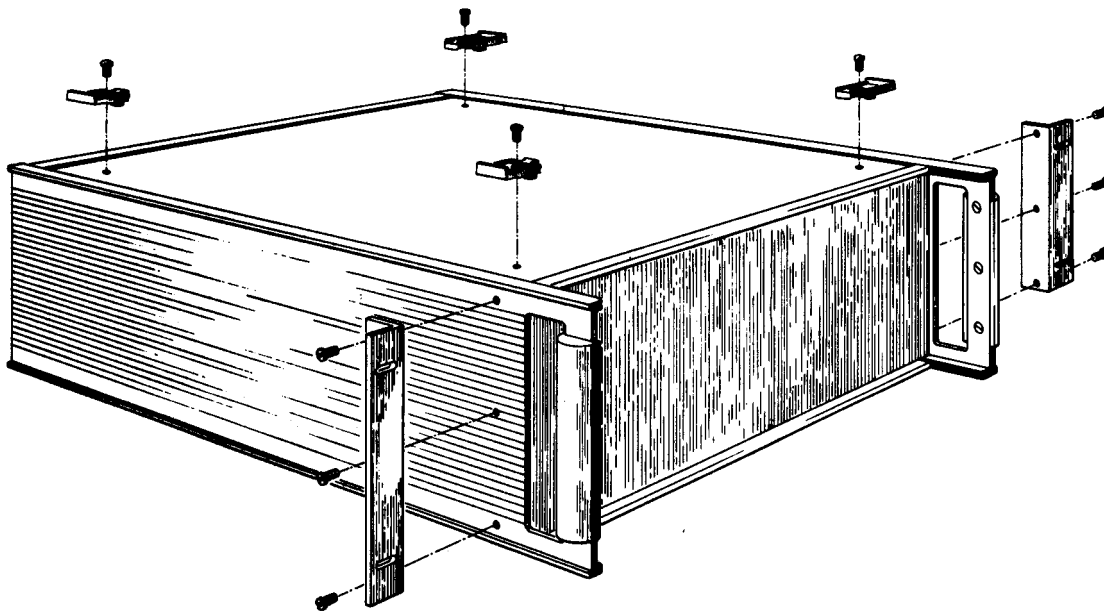


Figure 1.1 Interference Analyzer (Inverted), Installation Drawing

NOTE: The 4 feet screws are 3/8" No. 6-32 and the 6 rack mount screws are 3/8" No. 8-32 Binder Head.

1.6.3 **INPUT IMPEDANCE.** Input impedance is a nominal 50 ohms.

1.6.4 **VOLTAGE ACCURACY.** Two-terminal CW voltage measurements, referenced against the internal calibrator, are accurate within ± 2.0 dB.

1.6.5 **SENSITIVITY/BANDWIDTH.** Table 1-1 shows the sensitivity and bandwidth of the EMC-25 Interference Analyzer.

1.6.6 **SPURIOUS REJECTION.** Rejection to Image and IF, and other spurious frequencies typically exceeds 60 dB and is never worse than 45 dB throughout the entire 10 kHz to 1000 MHz range.

1.6.7 **VOLTAGE RANGE.** The analyzer is capable of measuring signals as large as 1.0 V rms. Voltage ranges are obtained by means of a 20 dB per step attenuator. Overall front panel meter range is 60 dB. Front-end attenuation is inserted in all I positions except the most sensitive (0 dB). Remote position is used in conjunction with the programmable attenuator, Model PSA-25/ESC-125 Programmer.

1.6.8 **FREQUENCY CONTROL.** The analyzer is tunable over any single band by means of a front panel control, or by the application of a suitable voltage to a rear panel connector.

Frequency bands are switched by a dual front panel pushbutton control or, remotely thru J4. Band indication to the remote location is accomplished by means of binary switch closures.

1.6.9 DETECTOR FUNCTIONS

1.6.9.1 **CARRIER.** Responding to the rms value of an unmodulated sine wave and having nominal 600 milliseconds charge and discharge times.

1.6.9.2 **QUASI-PEAK.** As in CARRIER except nominal charge time is one millisecond and discharge time 600 milliseconds.

1.6.9.3 **PEAK.** As in CARRIER except charge time is $\leq 1\mu\text{S}$ and discharge time is sufficiently long to read an impulse of 10 PPS rep rate with less than 0.1 dB decrease in accuracy.

1.6.9.4 **SLIDEBACK.** A metered indication of the detector biasing required for aural extinction of signals.

1.6.10 OUTPUTS

1.6.10.1 **POST-IF:** 3.0 mV rms nominal into 50 ohms for Bands 1-10, 1.0 mV rms nominal into 50 ohms for Bands 11-15.

1.6.10.2 **PRE-IF:** 50 μV rms nominal into 50 ohms.

1.6.10.3 **AM VIDEO:** 50 mV PEAK nominal into 91 ohms. **FM VIDEO:** 100 mV PEAK nominal into 91 ohms.

1.6.10.4 **AUDIO:** 100 mV nominal into 600 ohms.