TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL

RADIO TRANSMITTER (T-1373/TRQ-35(V)) MODEL TCS-4B (NSN5820-01-005-4248)

HEADQUARTERS, DEPARTMENT OF THE ARMY
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Technical Manual

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RADIO TRANSMITTER MODEL TCS-4B T-1373/TRQ-35(v) (NSN 5820-01-005-4248)

REPORTING 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 Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN : AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007.

In either case, a reply will be furnished direct to you.

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SECTION 0

GENERAL

0-1. SCOPE. This manual covers Radio Transmitter T-1373/TRQ-35(V). The manual provides instructions for installation, operation, and maintenance for operator, organizational, and direct support repair personnel.

0-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS. Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

0-3. MAINTENANCE FORMS, RECORDS, AND REPORTS.

a. Report of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/ NAVMATINST 4355.73A/AFR 400-54/MCO 4430. 3F.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/ NAVSUPINST 4610.33C/AFR 75-18/MCO P461O. 19D/DLAR 4500.15.

0-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your Radio Transmitter T-1373/TRQ-35(V) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

0-5. ADMINISTRATIVE STORAGE. Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraph 2-22.

0-6. DESTRUCTION OF ARMY ELECTRONICS MATERIEL. Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

SECTION 1

GENERAL INFORMATION

1-1. INTRODUCTION

1-2. This manual provides operating and service instructions for the TCS-4B transmitter. The information is presented in seven sections. Section 1 provides a brief description of the equipment and operating specifications. Unpacking instructions, site requirements, cabling data and installation instructions are included in Section 2. Section 3 provides information on operator controls and indicators and describes operating procedures. In Section 4 are functional descriptions of transmitter circuits. Section 5 describes preventive and corrective maintenance procedures for the transmitter and gives a performance verification checkout. Section 6 contains the wire lists for reference during maintenance. All oversize drawings, such as schematics, are grouped in the back of this manual as a foldout (FO) section.

1-3. GENERAL DESCRIPTION

1-4. The TCS-4B transmitter (figure 1-1) is one part of an HF Radio Sounder Set used for frequency management of HF circuits. It is used at one end of an HF radio circuit and transmits a CW signal which is swept in an upward linear ramp between 2-16 or 2-30 MHz in 4 minutes and 40 seconds. The RCS-4B radio receiver is a companion unit to the TCS-4B transmitter and is located at the other end of the circuit. When properly synchronized with a TCS-4B , the RCS-4B receives all radio energy emitted by the transmitter that ionospheric propagation permits. One RCS-4B can be synchronized with up to three TCS-4B transmitters.

1-5. A third part of the set is the Model RSS-4 Spectrum Monitor. The RSS-4 permits a frequency manager to know the occupancy of all 6 kHz channels in the 2-30 MHz band for the last 30 minutes. Thus, the TCS-4B/RCS-4B sounder system tells the frequency manager what band of frequencies will propagate over a given path, and the RSS-4 indicates which channels within the propagating band are free from interference.

1-6. The TCS-4B has up to 100 watts RF output power for transmission directly by a broadband antenna (required but not supplied). The TCS-4B signal can also be diplexed onto the same antenna employed for the user’s communication transmitter (up to 2.5 kW PEP) using the diplexer assembly that is part of the TCS-4B . In the diplexed mode, only 2 percent of the TCS-4B power (2 watts) is coupled onto the user’s antenna; the remaining power (along with about 2 percent of the communications transmitter power) goes to an internal dummy load. If the communications transmitter is used on the same circuit being sounded by the TCS-4B, then the propagation data obtained in the sounding accounts for all radiation characteristics of the user’s antenna.

1-7. The TCS-4B transmitter may be programmed to blank transmissions in up to sixteen bands, up to 60 kHz wide. The center blanking frequency of each band is programmed via front panel thumbwheel switches. Frequency blanking is usually not an important consideration when operating in a diplexed configuration because of the low radiated power. However, it is a useful feature to reduce potential interference effects on communications receivers co-located with the TCS-4B transmitter.

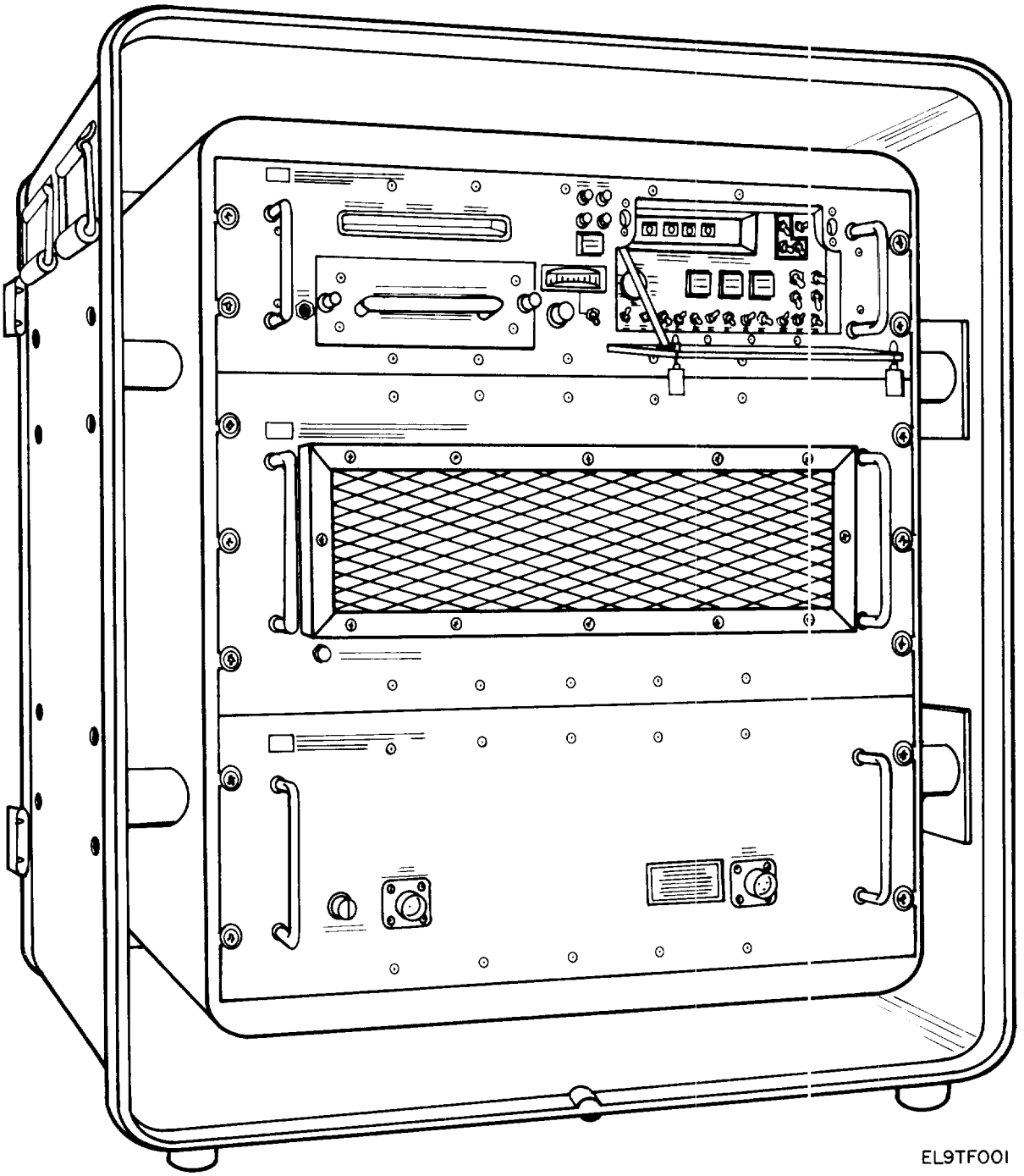

FIGURE 1-1. TCS - 4B Transmitter.