

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

MULTIPLEXER SET AN/FCC-97

(NSN 5805-01-0308)

This copy is a reprint which includes current pages
from changes 1 and 2.

DEPARTMENTS OF THE ARMY, AND THE AIR FORCE

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

AN/FCC-97 (NSN 5805-01-027-0308)
AN/FCC-97(V)1 (NSN 5805-01-129-2298)
AN/FCC-97(V)2 (NSN 5805-01-089-8143)
AN/FCC-97(V)3 (NSN 5805-01-096-8982)
AN/FCC-97(V)4 (NSN 5805-01-096-8981)

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 or DA Form 2028 (Recommended Changes to Publications and Blank Forms), direct to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN. AMSE-ME-MP, Fort Monmouth, New Jersey 07703-5007. For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with paragraph 6-5, Section VI, O. 00-5-1. Forward direct to prime ALC/MST. In either case, a reply will be furnished direct to you.

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CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual contains organizational support, direct support, and general support maintenance instructions for Multiplexer Set ANIFCC-97. Installation and operating instructions are also provided. Appendices give the pertinent references and Maintenance Allocation Chart. An index at the back of the manual enables quick reference to the major topics covered in text.

NOTE

Throughout the remainder of this manual, the designation AN/FCC-97 shall apply to all Multiplexer Set Configurations, including AN/FCC-97 and the AN/FCC-97(V)1 through (V)4 systems, except where otherwise specified to describe differences between the various configurations.

1-2. 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.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those described by DA Pam 738-750 as contained in the Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting.

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 P4610.19D/DLAR 4500.15.

1-4. Reporting Equipment Improvement Recommendations (EIR)

a. Army. If your Multiplexer Set AN/FCC-977 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 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-PA-MA-D, Fort Monmouth, New Jersey 07703-5023. We'll send you a reply.

b. Air Force. Air Force personnel are encouraged to submit EIR's in accordance with AFR 900-4.

1-5. Administrative Storage Administrative

Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness.

1-6. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION AND DATA

1-7. Purpose and Use

a. Multiplexer Sets AN/FCC-97 and AN/ FCC-97(V)1. These Multiplexer sets perform multiplexing and demultiplexing function between the transmission medium and a maximum of eight T1-Carrier terminals in a ground communications system. The signals from the T1-Carrier terminals.

arrive asynchronous and are time-division multiplexed into a serial data bit stream for transmission. Similarly, the transmitted data arrives serially from the communications receiver and is demultiplexed for presentation to respective T1-Carrier terminals. The multiplexing and demultiplexing circuits are completely redundant, with automatic switch over

occurring upon detection of a failure to maintain service. Each T1-Carrier signal is a pulse-code modulated (PCM) at a rate of 1.544 Megabits per second (Mbps). In a ground communications system, a Multiplexer Set is associated with each facility.

b. Multiplexer Sets AN/FCC-97(V)2 Through (V)4. These Multiplexer Sets perform the same functions as the ones described in paragraph 1-7a. They accept T1 bipolar PCM and non-return-to-zero (NRZ) polar square wave signals from external facilities. The PCM inputs are applied from T1-carrier terminals, each at a rate of 1.544 Mbps. The NRZ signals are clocked into the Multiplexer Set from the external facilities; each NRZ signal is at a predetermined multiple of the 1.544 Mbps rate (12.352 Mbps maximum). The bipolar and NRZ signals can be intermixed in a Multiplexer Set AN/FCC-97(V)2, (V)3, or (V)4, with a sum-total input/output rate not exceeding 12.352 Mbps.

c. Performance Monitor Capability. Multiplexer Sets AN/FCC-97(V)3 and (V)4 are equipped for performance monitoring. This capability permits maintenance personnel to measure peak-signal-to-rms noise ratio of the incoming baseband signal from the transmission medium. These Multiplexer Sets are

also equipped with the following additional capabilities:

(1) Reporting various alarms (T1 or NRZ receive channel failures, receiver misframe, and Multiplexer Set transmitter/receiver status) to external facilities via relay contact closures.

(2) External control of the Multiplexer Set transmitter and receiver (transfer of operation to Standby Multiplexer and reset to Normal Multiplexer).

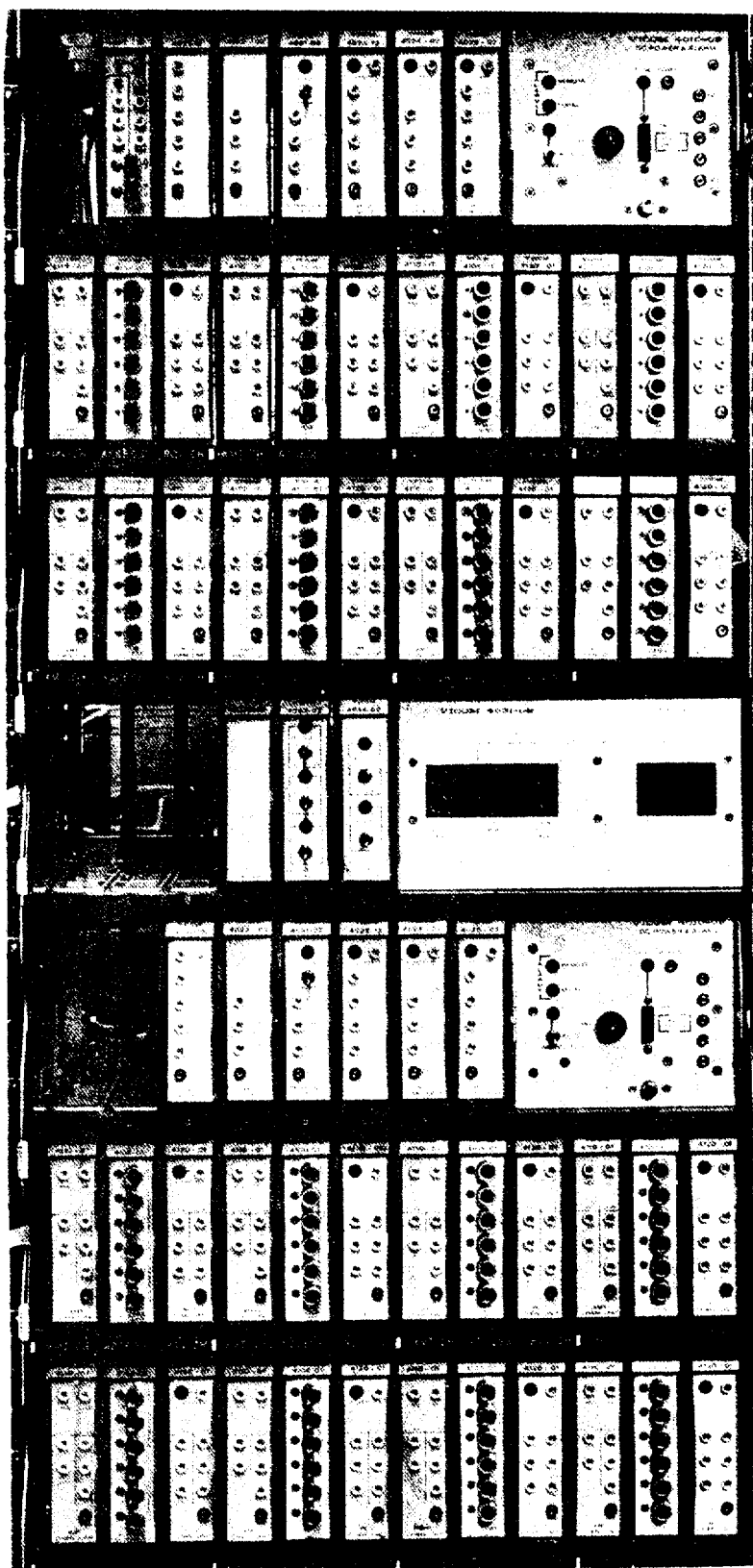
1-8. Description

a. Multiplexer Set AN/FCC-97 consists of two Time-Division Multiplexer-Demultiplexer Groups. hereinafter referred to as a Multiplexer, and one Multiplexer Protection Switch, hereinafter referred to as a Multiplexer Switch. Each unit consists of shelf housed plug-in modules and is designed for mounting in a 19-inch relay rack. Figures 1-1 and 1-2 present typical installations. The Normal Multiplexer handles all on-line system requirements until a failure occurs. Upon detection of a failure, the Multiplexer Switch transfers the on-line system to the standby Multiplexer.

TIME DIVISION
MULTIPLEXER-
DEMULTIPLEXER
GROUP
OB-84/FCC-97
(NORMAL)

MULTIPLEXER
PROTECTION
SWITCH
SA-2127/FCC-97

TIME DIVISION
MULTIPLEXER-
DEMULTIPLEXER
GROUP
OB-84/FCC-97
(STANDBY)



EL1KFOO1

Figure 1-1. Multiplexer Set AN/FCC-97 Typical Installation.

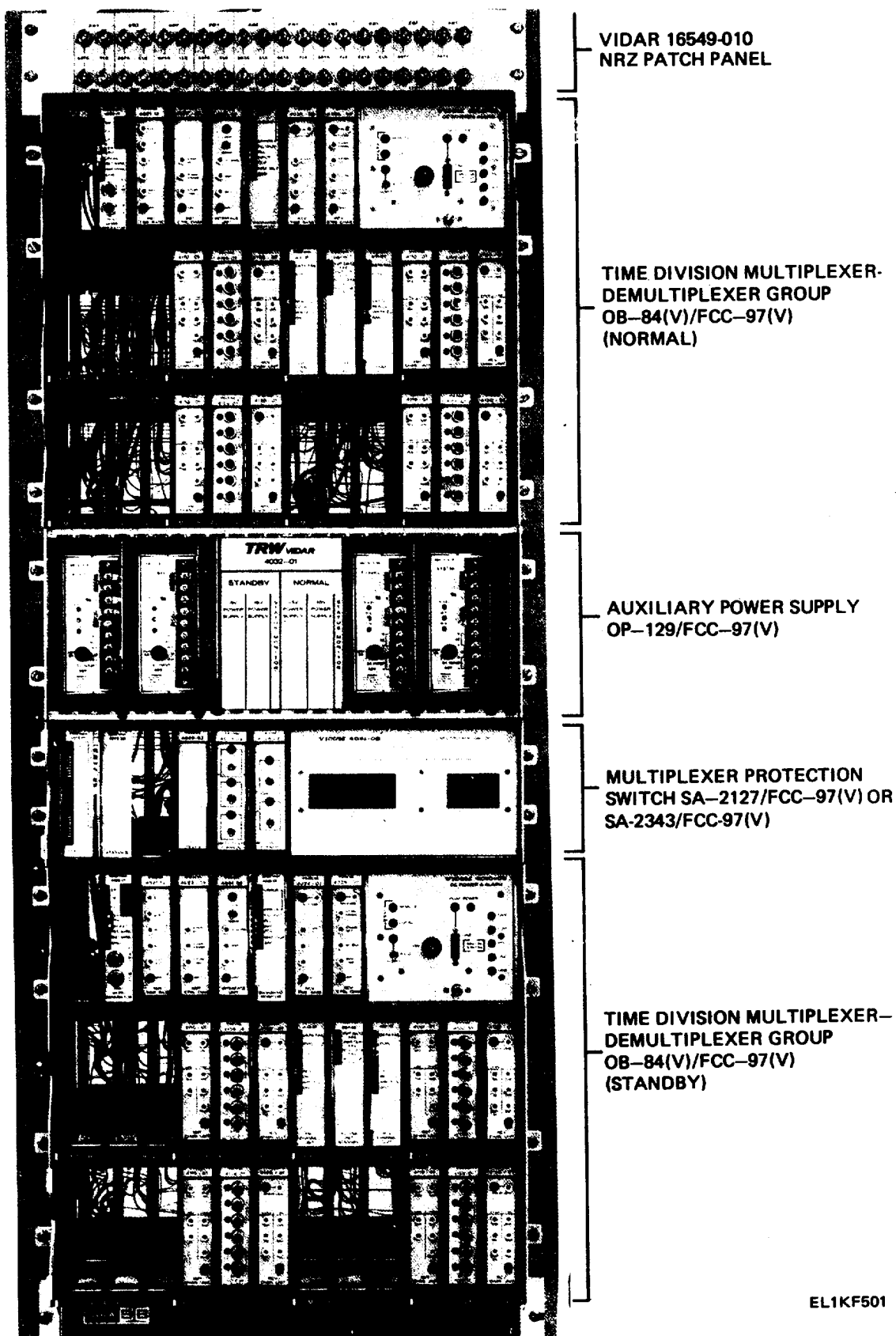


Figure 1-2. Multiplexer Set AN/FCC-97 Typical Installation with T1 and NRZ Terminal Interface.