

**TECHNICAL MANUAL**

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

**FOR**

**TEST SET, RECEIVER TS-3565/TRS-2 (V)  
(NSN 6625-01-075-0046)**

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

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**29 July 1980**

**WARNING**  
**HIGH VOLTAGE**

is used in the associated test equipments.

**DEATH ON CONTACT**  
**MAY RESULT IF SAFETY PRECAUTIONS**  
**ARE NOT OBSERVED.**

Maintenance adjustments of this equipment are made with power applied, be careful when working near the interior of the equipment, or near the ac power distribution wiring.

**WARNING**

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

CHANGE }  
No. 2 }

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, DC, 17 August 1982

**Operator's, Organizational, Direct Support,  
and General Support Maintenance Manual  
For  
TEST SET, RECEIVER TS-3565/TRS-2(V)  
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TM 11-6625-2784-14, 29 July 1980, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

<i>Remove</i>	<i>Insert</i>
i and ii . . . . .	i and ii
1-1 and 1-2 . . . . .	1-1 and 1-2
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6-1 through 6-4 . . . . .	6-1 through 6-4
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2. File this change sheet in front of the publication manual for reference purposes.

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Change }  
No. 1 }

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, July 1981

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USAICS (3)  
MAAG (1)  
USARMIS (1)  
USAERDAA (1)  
USAERDAW (1)  
Ft Carson (5)  
Ft Gillem (10)  
Ft Gordon (10)  
Ft Richardson (CERCOM Ofc) (2)  
USA Dep (1)  
Sig Sec USA Dep (1)  
Units org under fol TOE:  
20-207 (2)  
29-610 (2)

NG: State AG ( ): Units—None  
USAR: None

For explanation of abbreviations used, see AR 310-50.

**OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT,  
AND  
GENERAL SUPPORT MAINTENANCE MANUAL  
FOR  
TEST SET, RECEIVER TS-3565/TRS-2(V)  
(NSN 6625-01-075-0046)**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can 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 the back of this manual direct to: Commander, US Army Communication-Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. In either case, a reply will be furnished direct to you.

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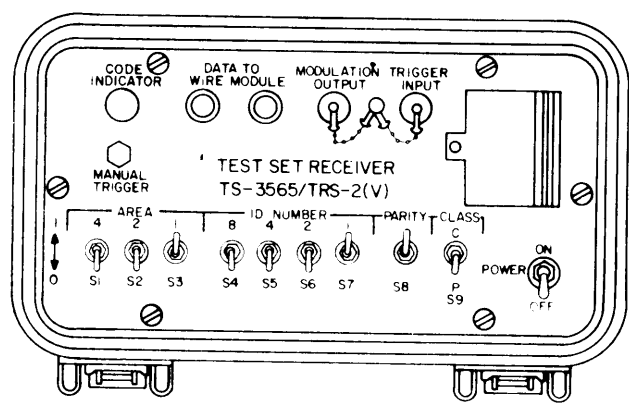
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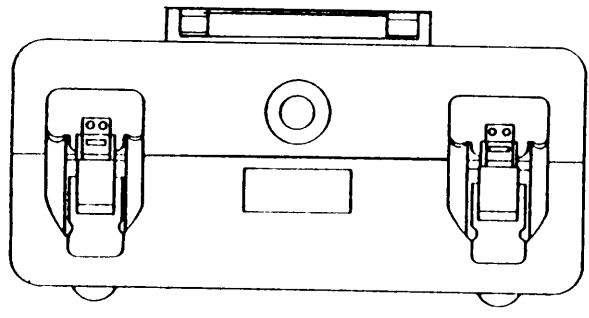
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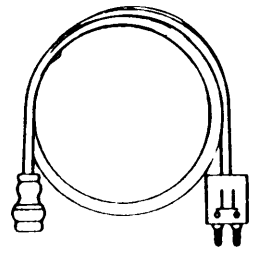




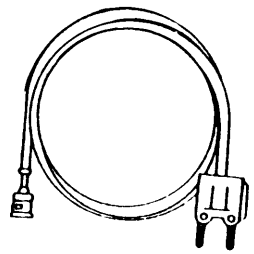
**TEST SET, RECEIVER  
TS-3565/TRS-2(V)**



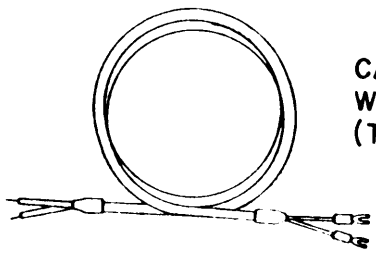
**TEST SET CASE**



**CABLE ASSEMBLY,  
SIGNAL GENERATOR  
(TEST CABLE NO. 1)**



**CABLE ASSEMBLY,  
TRIGGER INPUT  
(TEST CABLE NO. 2)**



**CABLE ASSEMBLY,  
WIRE MODULE  
(TEST CABLE NO. 3)**

**EL6GL001**

*Figure 1-1. Test Set, Receiver-3565/TRS-2(V).*

# CHAPTER 1 INTRODUCTION

## Section I. GENERAL

### 1-1. Scope

a. This manual describes Test Set, Receiver TS-3565/TRS-2(V) and covers its operation and maintenance (fig. 1-1).

b. Throughout this manual, references are made to manuals which describe the installation, operation and maintenance of Platoon Early Warning System (PEWS) AN/TRS-2(V). The TS-3565/TRS-2(V) is used to check Receiver, Radio R-1808(V)/TRS-2(V). A listing of applicable references is provided in appendix A.

c. The Maintenance Allocation Chart appears in appendix B, and the Components of End Item List appears in appendix C.

#### NOTE

Unless otherwise specified reference to the TS-3565/TRS-2(V), AN/TRS-2(V), R-1808(V)/TRS-2(V), and DT-577(V)/TRS-2 apply to all variations.

d. Throughout this manual references are made to the six variations of the PEWS. This also applies to the Receiver, Radio R-1808(V)/TRS-2(V). The variations are as follows:

R-1808(V)1/TRS-2(V)	139.100 MHz
R-1808(V)2/TRS-2(V)	139.250 MHz
R-1808(V)3/TRS-2(V)	141.100 MHz
R-1808(V)4/TRS-2(V)	148.925 MHz
R-1808(V)5/TRS-2(V)	149.600 MHz
R-1808(V)6/TRS-2(V)	150.600 MHz

### 1-2. 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 prescribed by TM 38-750, The Army Maintenance Management System.

b. *Reporting 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 4610.33B/AFR 400.54/MCO 4430.3E.

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 4610.33B/AFR 75-18/MCO

P4610.19C/DLAR 4500.15.

### 1-2.1 Index of Technical Publications

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. Destruction of Army Materiel to Prevent Enemy Use

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

### 1-4. 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 3-6.

### 1-5. Reporting Equipment Improvement Recommendations (EIR)

If the TS-3565/TRS-2(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. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703. We'll send you a reply.

#### 1-5.1. Hand Receipt

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 11-6625-2784-14-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the US Army Adjutant General Publications Center, Baltimore, MD, in accordance with the procedures in chapter 3, AR 310-2, and DA Pam 310-10-2.

## Section II. DESCRIPTION AND DATA

### 1-6. Purpose and Use.

a. Test Set, Receiver TS-3565/TRS-2(V), commonly referred to as the test set, is used with Platoon Early Warning System AN/TRS-2(V), specifically for benchtesting of Receiver, Radio R-1808(V)/TRS-2(V), commonly referred to as the receiver.

b. The test set is used to generate a frequency shift keyed (FSK) signal for checking the operation of the receiver. When testing the receiver in its radio frequency (RF) mode, the test set is used to modulate RF Signal Generator AN/URM-70, the output of which is connected to the receiver. In checking the receiver wire mode, the output of the test set is applied directly to the receiver through a wire link.

### 1-7. Description

a. The test set is housed in a portable metal carrying case. The cover of the carrying case is secured by two latches and has a rubber gasket which creates an airtight, watertight seal. An automatic relief valve is installed on the front of the case and is used to equalize internal and external pressures. A spring-loaded carrying handle is mounted on top. The main panel of the test set is also sealed by a rubber gasket, and is secured to the carrying case by six screws. A battery compartment is accessed through a cover on the right side of the panel. A printed circuit card assembly, containing the operating electronic components of the test set, is mounted beneath the panel inside the case.

b. Three test set cables are stored in a tray in the cover of the carrying case. The cables are identified as

follows:

- (1) Test Cable #1-Signal Generator
- (2) Test Cable #2-Trigger Input
- (3) Test Cable #3-Wire Module

### 1-8. Tabulated Data

Dimensions:	
Length	12 inches (30.48 cm) approx.
Width	9 1/2 inches (24.13 cm) approx.
Height	6 inches (15.24 cm) approx.
Weight	10 lbs. (5 kg) approx.
Operating Temperature Range	-25°F to +125°F (-30°C to +50°C)
Power Requirements	One BA-3090 or one BA-5090 Battery
Battery Life (5070 Trigger Cycle)	200 Hours, nominal
Output Type	FSK Data Signal, 1500 Hz ± 3% (Data Low) 1800 Hz ± 3% (Data High)
Output Impedance (Modulation output)	1800 ohms, typical
Output Impedance (Wire Module output)	5,000 ohms balanced, typical
Output Level (Modulation Output)	1.8 volts peak-to-peak across 1500 ohms 1.8 typical
Output Level (Wire Module output)	1.0 volt peak-to-peak single ended across 31,000 ohms, typical
Environmental (Cover Open)	Drip and waterproof
Environmental (Cover Closed)	Fully immersible to approx. 3 feet (1 meter of water)
Data Clock Rate	33.33 Hz ± 3%
Data Message Output	9 bits + start bit
Data Message Coding	Selectable by individual switches

## CHAPTER 2

### SERVICE UPON RECEIPT AND INSTALLATION

#### 2-1. Unpacking.

*a. Packaging Data.* The test set is completely assembled and packed in a corrugated carton when received. A typical packing arrangement is shown in figure 2-1.

*b. Removing Contents.*

(1) Position carton with its top facing UP.  
 (2) Open the carton and remove the pads from the top and sides.

(3) Lift the test set from the carton by grasping and lifting the handle on the top of the carrying case, save shipping carton and packing materials.

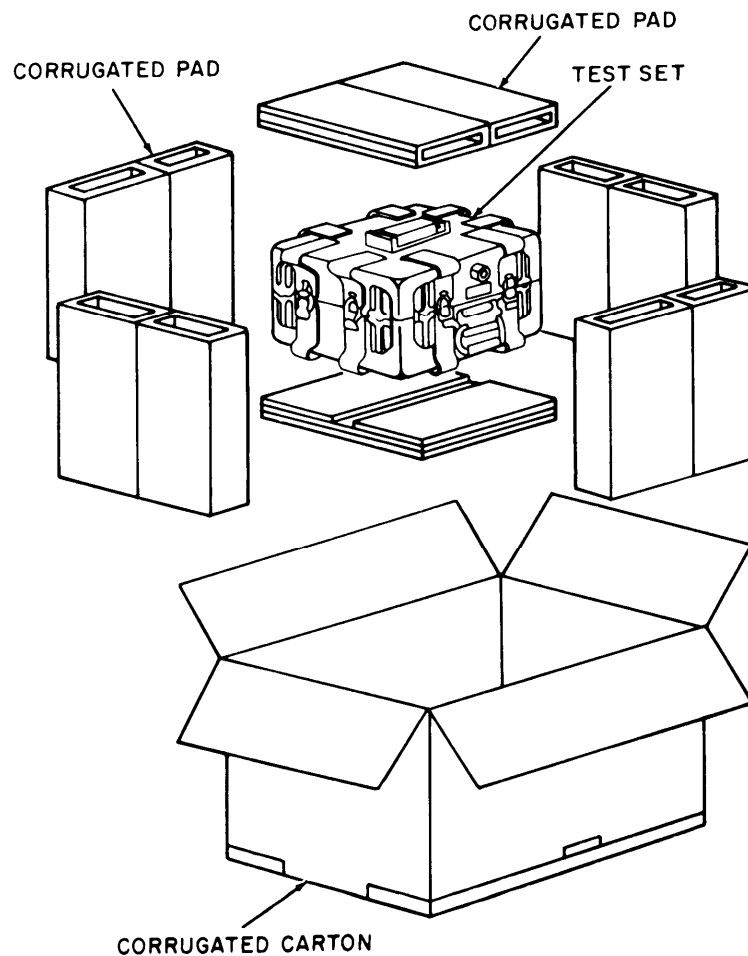
#### 2-2. Checking Unpacked Equipment.

*a.* Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the

damage on DD Form 6.

*b.* Check the equipment against the component listing in appendix C, and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750. The equipment can be placed in service even though a minor assembly or part, that does not affect proper functioning, is missing.

*c.* Check to see whether the equipment has been modified. (Equipment which has been modified will have the Modification Work Order (MWO) number on the case near the nomenclature plate.) Check also to see whether all currently applicable MWO's have been applied. (Current MWO's applicable to the equipment are listed in DA Pam 310-7.)



EL6GL002

*Figure 2-1. Typical Packaging Diagram.*



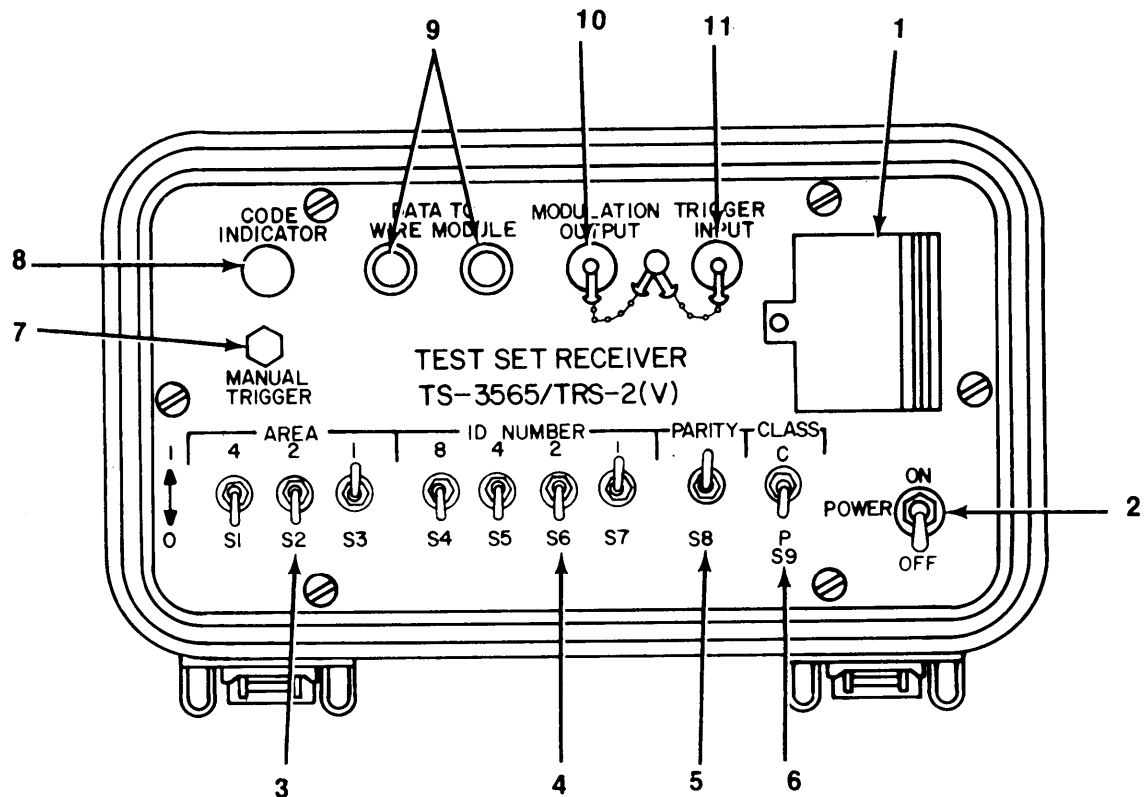
## CHAPTER 3 OPERATING INSTRUCTIONS

### Section I. CONTROLS AND INSTRUMENTS

#### 3-1. Operator's Control.

The controls and indicators of the test set are listed and 3-1.

described in table 3-1. The control panel is shown in figure



EL6GL003

Figure 3-1. Test Set TS-3565/TRS-2(V) Front Panel Controls and Indicators.

Table 3-1. Operator's Controls and Indicators

Item No. Fig. 3-1	Control, Indicator or Connector		Function
1	BATTERY COMPARTMENT	hinged cover	Houses battery used to power test set.
2	POWER ON/OFF	toggle switch	Turns the test set on and off.
3	AREA	toggle switches S1, S2 and S3	Used to encode the area number in the data message.
4	ID NUMBER	toggle switches S4, S5, S6, S7	Used to encode the ID number in the data message.
5	PARITY	toggle switch S8	Used to encode the parity bit in the data message.
6	CLASS	toggle switch S9	Used to encode the classification bit in the data message.
7	MANUAL TRIGGER	pushbutton switch	Triggers a single data message when pressed.
8	CODE INDICATOR	LED indicator	Shows that a data message is being produced and that the battery is functioning.
9	DATA TO WIRE	binding posts (2)	Provides the data signal for operating the Sensor Interface, Wire Link MX-9738/TRS-2(V).
10	MODULATION OUTPUT	BNC receptacle	Provides the data signal output for modulating the FM signal generator.
11	TRIGGER INPUT	BNC receptacle	Allows connection of an external repetitive trigger signal.

## Section II. OPERATION UNDER USUAL CONDITIONS

### 3-2. Preliminary Starting Procedures

**NOTE**

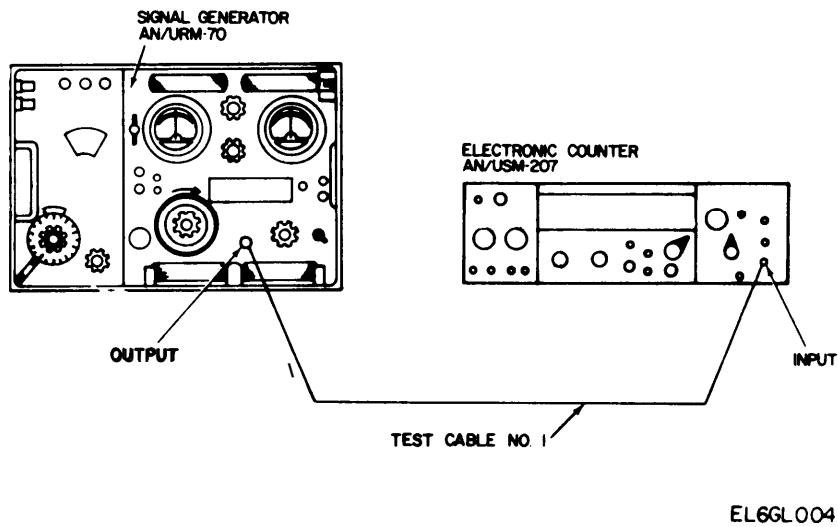
Signal Generator AN/URM-70 should be allowed to warm up for approximately two hours before performing any tests.

- a. Place the test set on the bench, unfasten the latches which hold the cover, and remove.
- b. Remove the three cable assemblies stored in the cover.
- c. Open the battery compartment on the front of the test set panel and install a BA-3090 or BA-5090. Close the battery compartment cover.
- d. Position the PEWS receiver to be tested, the

Signal Generator AN/URM-70, and the Electronic Counter AN/USM-207 on the test bench. Using test cable #1 (signal generator), connect the output of Signal Generator AN/URM-70 to Electronic Counter AN/USM-207 as shown in figure 3-2.

- e. Set the controls of Signal Generator AN/URM-70 as follows:

Control	Position
DEV. MULT switch	X1
MODULATION	OFF
POWER	ON
FREQ. RANGE	100-200
DEVIATION	Approx. 50% of rotation



EL6GL004

Figure 3-2. Preliminary Test Setup.

- f. Set the controls of Electronic Counter AN/USM-207 as follows:

Control	Position
SENSITIVITY	PLUG-IN
FUNCTION	FREQ
GATE TIME	10 <sup>3</sup>
DISPLAY	Approx. 9 o'clock or as desired
POWER	STORE
Mixing Frequency Selector	100
Converter Attenuator Switches	Both to left
Direct/Hetrodyne Switch	Hetrodyne

### 3-3. Initial Adjustments

The following procedures are performed to ensure that the output frequency of the signal generator matches the

receiver frequency.

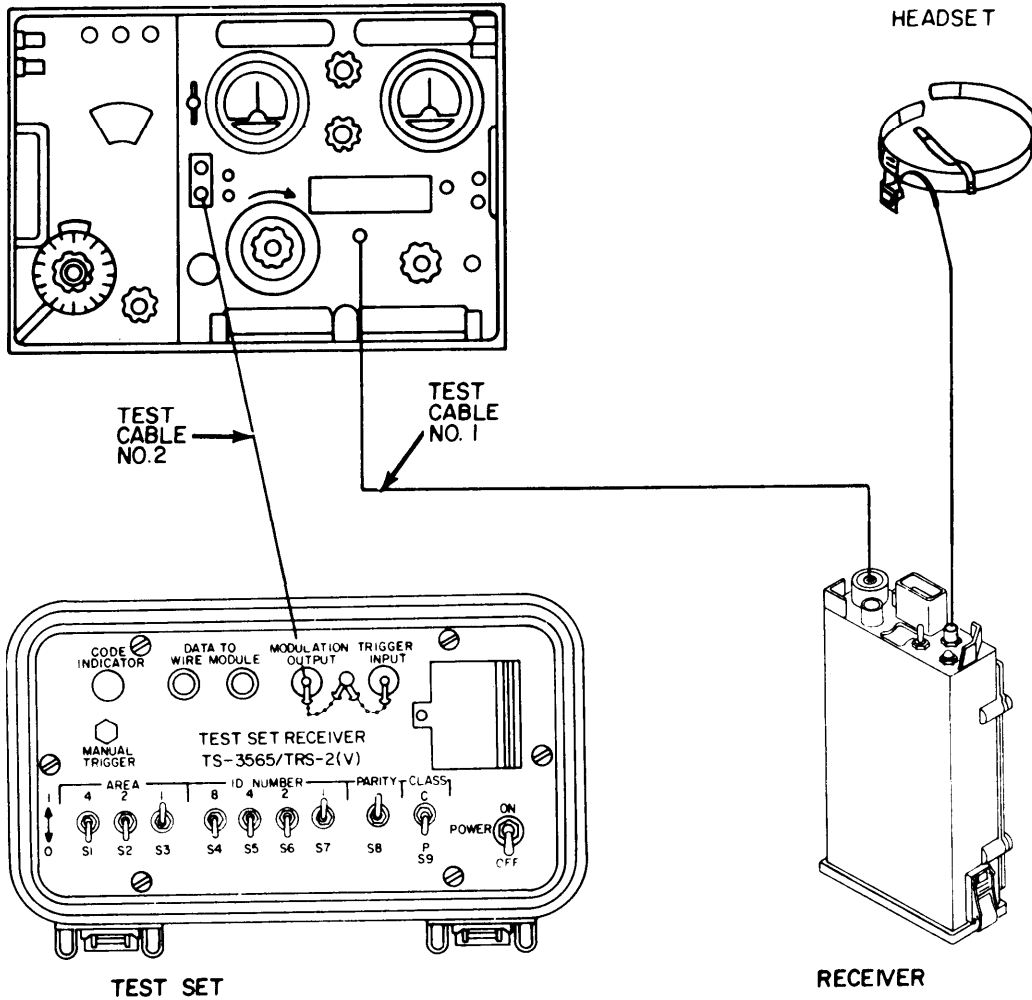
- a. Adjust the output level of the signal generator so that the level meter of the electronic counter reads in the green area.
- b. Determine the frequency of the receiver from the nomenclature plate.
- c. Using the TUNING and TRIMMER controls of the ANAJRM-70, adjust the signal generator output so that the electronic counter display indicates the difference frequency.

**NOTE**

The preceding procedures should be performed approximately every ten minutes during receiver testing to ensure the signal generator remains set to the proper frequency.

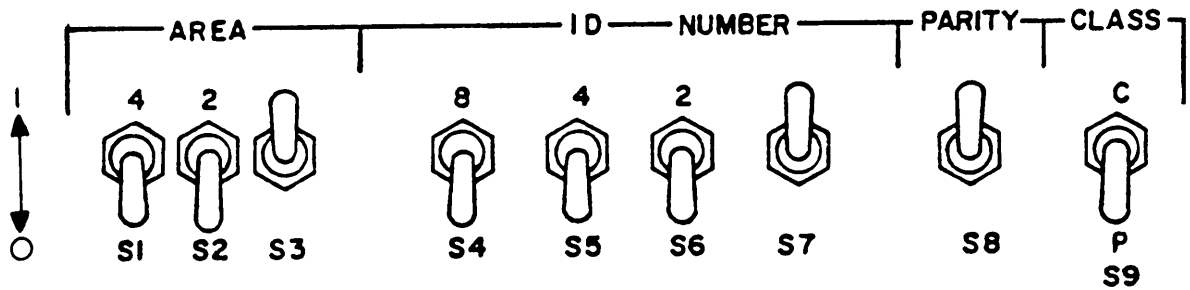


SIGNAL GENERATOR AN/URM-70



EL6GL005

Figure 3-3. Test Setup for Receiver Test (RF Mode).



SWITCH SETTINGS FOR "001-0001-I-P"

EL6GL006

Figure 3-4. Test Set Data Switch Positions.

### 3-4. Operating Procedure

a. Receiver Test (RF Mode).

**NOTE**

Receiver under test must have batteries installed prior to performing the tests outlined below.

(1) After performing the procedures in paragraph 3-3, disconnect RF cable from electronic counter and connect the test set, receiver, and signal generator shown in figure 3-3 (using RF cable) and #2 (trigger input)).

(2) Set the MODULATION switch of the signal generator to the EXT. MOD position.

(3) Turn on the test set by setting the POWER ON-OFF switch to the ON position.

(4) Adjust the DEVIATION control of the signal generator so that the DEVIATION meter reads 12 kHz deviation on the yellow scale.

(5) Calibrate the OUTPUT control of the signal generator using the procedure described in the Operator's Manual, TM 11-1258.

(6) Adjust the OUTPUT control of the signal generator to 0.4 microvolt.

(7) Set the AREA switch of the receiver being tested to position #1 and make sure that the receiver DSPLTONE-OFF switch is set to the DSPL position.

(8) Set the data switches of the test set as indicated in figure 3-4.

(a) The 0 condition is achieved by placing the designated toggle switch in the DOWN position.

(b) The 1 condition is achieved by placing the designated toggle switch in the UP position.

(9) Press the MANUAL-TRIGGER button on the test set and observe the display on the receiver. The display decimal points should momentarily light and the display should read 1P.

(10) Adjust the output of the signal generator to 1 microvolt.

(11) Perform (a) and (b) below for each individual setting of the receiver AREA switch and test set data switches listed in the chart below:

Receiver AREA switch Positions	Test Set Data Switch Positions			
	AREA	ID NO.	PARITY	CLASS
2	010	0001	1	P
3	011	0001	0	P
4	100	0001	1	P
5	101	0001	0	P
6	110	0001	0	P
7	111	0001	1	P
8	000	0001	0	P

(a) Press the receiver TEST-RESET button.

(b) Press the test set MANUAL-TRIGGER button. On each one, the display on the receiver should read 1P.

(12) Set the receiver AREA switch to position #1.

(13) Perform the following two procedures for each individual setting of the test set data switches listed in table 3-2. In each case, the receiver LED display should agree with the characters indicated in the table for that combination of data switch positions.

(a) Press the receiver TEST-RESET button.

(b) Press the test set MANUAL-TRIGGER button. Check the characters on the receiver display against those specified above.

(14) After checking displays for all settings listed in 13 above, press the TEST-RESET button on the receiver.

(15) Press the MANUAL TRIGGER button on

the test set while watching the receiver display and listening to the earphone. The display should read 16C and decimal points should light on the display face momentarily. At the same time, the alert tone should be heard in the earphone.

(16) Press the TEST RESET button on the receiver. The display should go blank.

(17) Set the DSPL-TONE-OFF switch of the receiver to the TONE position.

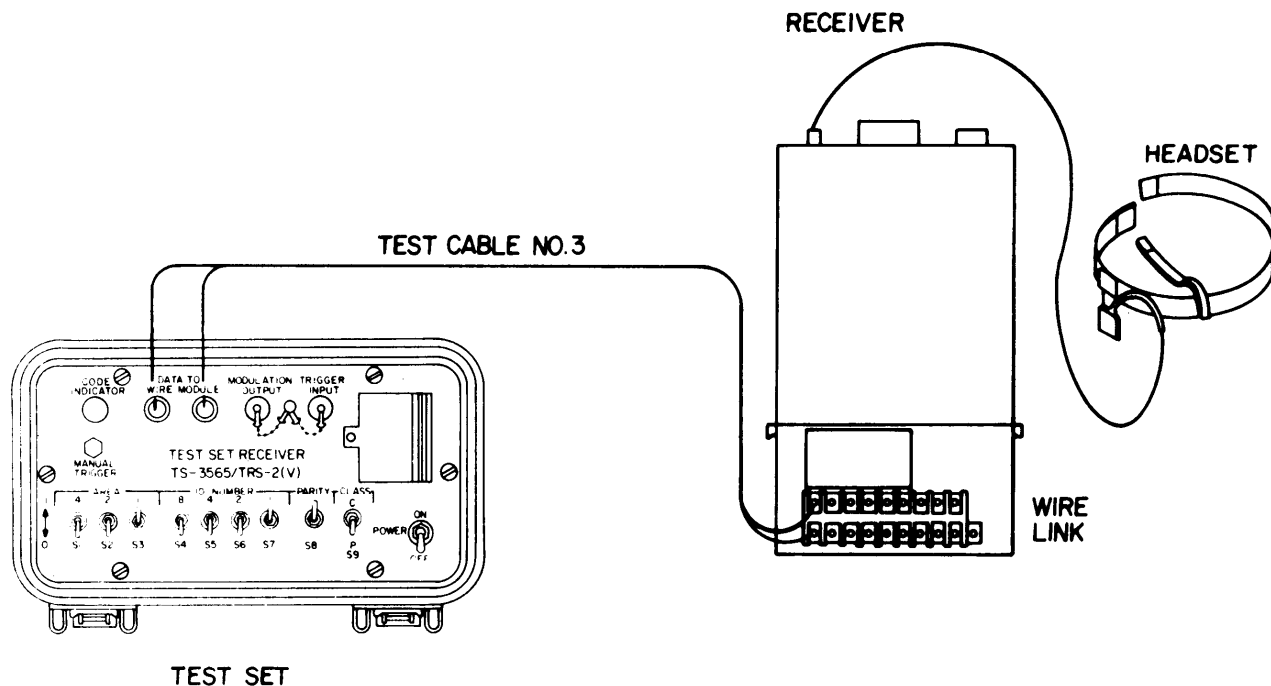
(18) While listening to the earphone, press the MANUAL TRIGGER button on the test set. The alert tone should be heard in the earphone.

(19) Turn the DSPL-TONE-OFF switch of the receiver to the DSPL position. The display should read 16C.

(20) After completing the above tests, turn the POWER switches of all equipment to the OFF position and disconnect cables.

Table 3-2. Test Set Data Switch Settings-Continued

DATA SWITCHES				RECEIVER DISPLAY
AREA	ID NO.	PARITY	CLASS	
001	0010	1	C	2C
001	0011	0	P	3P
001	0011	0	C	3C
001	0100	1	P	4P
001	0100	1	C	4C
001	0101	0	P	5P
001	0101	0	C	5C
001	0110	0	P	6P
001	0110	0	C	6C
001	0111	1	P	7P
001	0111	1	C	7C
001	1000	1	P	8P
001	1000	1	C	8C
001	1001	0	P	9P
001	1001	0	C	9C
001	1010	0	P	10P
001	1010	0	C	10C
001	1011	1	P	11P
001	1011	1	C	11C
001	1100	0	P	12P
001	1100	0	C	12C
001	1101	1	P	13P
001	1101	1	C	13C
001	1110	1	P	14P
001	1110	1	C	14C
001	1111	0	P	15P
001	1111	0	C	15C
001	0000	0	P	16P
001	0000	0	C	16C



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Figure 3-5. Test Setup for Receiver Test (Wire Mode).

**NOTE**

If an abnormal indication is observed during any of the procedures, the receiver being tested can be assumed to be defective and should be forwarded to depot level repair personnel.

*b. Receiver Test (Wire Link Mode).*

(1) Install the wire link on the bottom of the receiver using the procedure described in TM 11-5895-1047-10.

(2) Connect the equipment as shown in figure 3-5 using test cable #3. The cable should be connected to the No. 1 screw terminals on the wire link. Wire polarity is not important.

(3) Set the wire link REC-TEST switch to the REC position.

(4) Set the AREA switch of the receiver to position No. 1.

(5) Set the data switches of the test set as follows:

AREA	ID NO.	PARITY	CLASS
001	0001	1	P

(6) Set the POWER ON-OFF switch on the test set to ON and the receiver DSPL-TONE-OFF switch to DSPL.

(7) Press the test set MANUAL-TRIGGER button. The alert tone should be heard in the earphone; the display decimal points should light momentarily and a display of 1 P should appear.

(8) Repeat (1) through (7) above for each screw

terminal on the wire link. This consists of screw terminals 2 through 9.

**NOTE**

If the receiver is found to be operating correctly in the RF mode but the proper display is not obtained during wire link mode testing, the wire link can be assumed to be defective.

**3-5. Procedures for Shutdown**

*a.* Set the POWER ON-OFF switch on the test set to OFF and the receiver DSPL-TONE-OFF switch to the OFF position.

*b.* Disconnect test cable #3 from the test set and wire

*c.* Remove wire link.

*d.* Remove the batteries from the test set and receiver, and replace battery compartment covers.

*e.* Place the three test cables in the cover of the test set for storage.

*f.* Latch and secure the test cover to the case.

**3-6. Preparation for Movement**

*a.* When the test set is to be moved to a new location or placed in administrative storage, make sure that the cables are stored in the cover and that the battery has been removed.

*b.* Clean the test set case with a dry cloth to remove loose dirt or dust.

*c.* Repackage the test set in the original shipping carton or package in a suitable container, ensuring that damage will not occur during transit.

## CHAPTER 4 OPERATOR MAINTENANCE INSTRUCTIONS

### 4-1. General.

The direct support repairer of the PEWS is considered to be the operator of the test set. Operator maintenance is limited to inspection of the test set, cleaning, and replacement of the battery.

### 4-2. Routine Services.

Routine services are performed by the operator at all times. Routine services are not listed in the Preventive Maintenance Checks and Services Table 4-1, in order to separate the non-operational checks from the operational checks. Routine services include cleaning, inspecting for broken switches or knobs, and missing or unserviceable cables.

### 4-3. Preventive Maintenance Checks and Services (PMCS).

Table 4-1 contains PMCS for the test set. There are three

categories or intervals of PMCS: B, D, and A. They head the interval columns of the PMCS table. A dot in one or more of the interval columns indicates the check and/or service that should be performed by the operator at a particular time.

a. B stands for before. B-PMCS should be performed before operation to insure the equipment is operational.

b. D stands for during. D-PMCS are performed during operation to spot small problems before they become big problems.

c. A stands for after. A-PMCS are performed after operation to insure the equipment has not been damaged during use.

d. Use your PMCS table to get the number for the TM Item No. Column of DA Form 2404 (Equipment Inspection and Maintenance Work Sheet).

*Table 4-1. Operator Preventive Maintenance Checks and Services (PMCS)*

ITEM No.	INTERVAL					ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
	B	D	A	W	M			
1	•	•				Test Set	<p style="text-align: center;"><b>NOTE:</b></p> The following test equipment must be used in performing PMCS on the test set: 1. Operational PEWS 2. Signal Generator AN/-URM-70 3. Frequency Counter AN/-USM-207	Upon completion of PMCS checks, test set is inoperative. CODE INDICATOR does not light when power is applied.
2	•				Test Set	Install battery and set POWER ON-OFF switch to ON. CODE INDICATOR should light momentarily.		
3	•				Test Set	Perform preliminary starting procedures and initial adjustments as outlined in paragraphs 3-2 and 3-3.		
4		•				Test Set	Perform receiver test (RF MODE) as outlined in paragraph 3-4a.	Operational test or digital message test fails
5		•				Test Set	Perform receiver test (wire link MODE) as outlined in paragraph 3-4b.	Operational test or digital message test fails.



## CHAPTER 5

### FUNCTIONING OF EQUIPMENT

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#### 5-1. General.

The purpose and operation of the various circuits in the test set are explained in this chapter. Familiarity with the equipment, how it works, and why it works are valuable tools for troubleshooting the equipment rapidly and effectively.

#### 5-2. Functioning of Test Set, Receiver TS-3565/TRS-2(V).

*a. General Information.* The test set is used to test Receiver, Radio R-1808(V)/TRS-2(V) in the RF mode

or in the wire link mode of operation. Interconnections for each type of test are shown in figures 3-3 and 3-5. The test set generates two outputs. The MODULATION OUTPUT is connected to a signal generator. The output of the signal generator, routed to the receiver, is used to test the RF mode of operation. The DATA TO WIRE MODULE (balanced line) output, connected to the wire link, is used to test the wire mode of operation. The switches on the test set panel are used to select any area, ID or classification code for test transmission. Figure 5-1 is an overall block diagram of the test set.

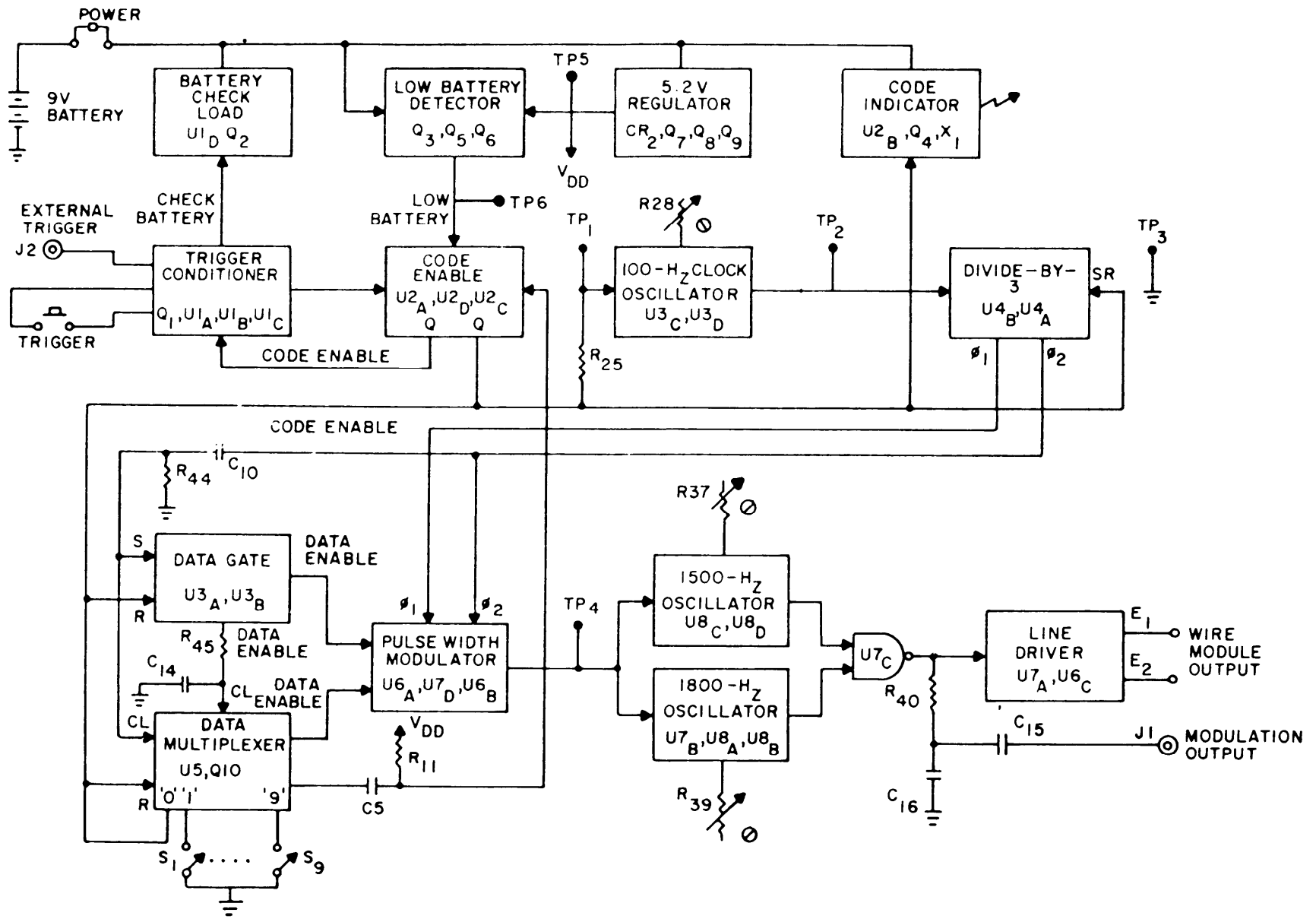


Figure 5-1. Test Set Block Diagram.



*b. Input/Code Enable Circuits.* The test set maybe triggered manually (using the MANUAL-TRIGGER button) or by an external 5 volt pulse. A square wave generator, used as the external trigger, is connected to the TRIGGER INPUT receptacle. The external input causes continuous triggering of the test set. Signals from either the manual or external trigger operate a trigger circuit. At this point, the trigger signal is used to set the latch circuit in the trigger conditioner which initiates the operation of the data generator. This condition continues until the rising edges of the final data bit appears and the latch circuit in the trigger conditioner clears, This action disables the data generator. The code enable circuit establishes the start bit. The code enable circuit is able to develop an inhibit signal to prevent the operation of the data generator system. The reason for this inhibit signal is described in *f* below.

*c. Data Generator.* The data generator is composed of a 100 Hz clock oscillator, a divide (+) by three stage, a data gate, a data multiplexer, and a pulse width modulator. The data generator develops the digital code used to test Receiver, Radio R-1808(V)/TRS-2(V).

(1) The 100 Hz clock oscillator is composed of two gates in an astable configuration. The frequency is adjusted by variable resistor R28. Test Point 1 (TP1) measures the 100 Hz oscillator input. While Test Point 2 (TP2) is the output. Test Point 3 (TP3) is a ground connection.

(2) The output of the 100 Hz clock oscillator is applied to the divide (+) by three circuit. The 33.33 Hz output drives the data multiplexer and the data gate. The data multiplexer senses the condition of the nine data switches (AREA, ID NUMBER, PARITY, and CLASS), and produces a train of pulses corresponding to the switch posi-

tions (closed or up = 1, open or down =0). This pulse train is applied to the pulse width modulator.

(3) The pulse width modulator produces the base-band digital code used for transmission. The Pulse Width Modulated (PWM) code is a (30ms) bit period. With the first (10ms) always high, the second (10ms) high for a 1 and low for a 0, and the third (10ms) always low. The output from the data generator can be measured at Test Point 4 (TP4) .

*d. Tone Generator.* The 1500 Hz and 1800 Hz tone oscillator circuits are the same as the 100 Hz oscillator except the same component values are smaller. Variable resistor R37 adjusts the 1500 Hz oscillator, and variable resistor R39 adjusts the 1800 Hz oscillator. The 1500 Hz oscillator is enabled when the PWM data signal is low, and the 1800 Hz oscillator is enabled when the data signal is high. The 1500 Hz tone is continuously present when no code sequence is being sent, and the code sequence always starts by a change to 1800 Hz. The output of the 1500 and 1800 Hz oscillators is a FSK data signal.

*e. Output Circuits.* The FSK output is then amplified by the output amplifier to provide two outputs, one to MODULATION OUTPUT, and the other is applied directly to the DATA TO WIRE MODULE terminals.

*f. Power Circuits.* The 5.2 volt series regulator provides power to all circuitry except the code indicator. This regulator also includes a voltage comparator to determine when the battery voltage is too low to allow proper system operation. When a low battery condition is detected, an inhibit signal is sent to the input trigger circuit to prevent operation of the data generator system. During the period that data is being generated, an indicator located on the top panel is lit. This indicates that the battery is good, and the system is working properly.



## CHAPTER 6 DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

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### Section L TOOLS AND EQUIPMENT

#### 6-1. Tools Required

Tools required for the test and repair functions authorized by the maintenance allocation chart are contained in Tool Kit, Electronic Equipment TK-105/G.

#### 6-2. Test Equipment Required

The following test equipment is required for

maintenance of the test set:

<i>Test Equipment</i>	<i>National Stock Number</i>
1. Multimeter, TS-352B/U	6625-00-553-0142
2. Counter, Electronic Digital Readout, AN/USM-207	6625-00-911-6368
3. Signal Generator, AN/URM-70	6625-00-519-2104
4. Oscilloscope, AN/USM-281C	6625-00-106-9622

### Section II. TROUBLESHOOTING

#### 6-3. General

The procedure, table 6-1, provides a step-by-step method of checking the test set functions. It also provides normal indications and suggested actions which may correct other than normal indications. Use table 6-1, test equipment listed, and the schematic diagram, figure 6-3, to troubleshoot the equipment.

#### 6-4. Troubleshooting Procedure

The preliminary procedures listed below must be performed prior to troubleshooting the test set.

- a. Place oscilloscope AN/USM-281C and Elec-

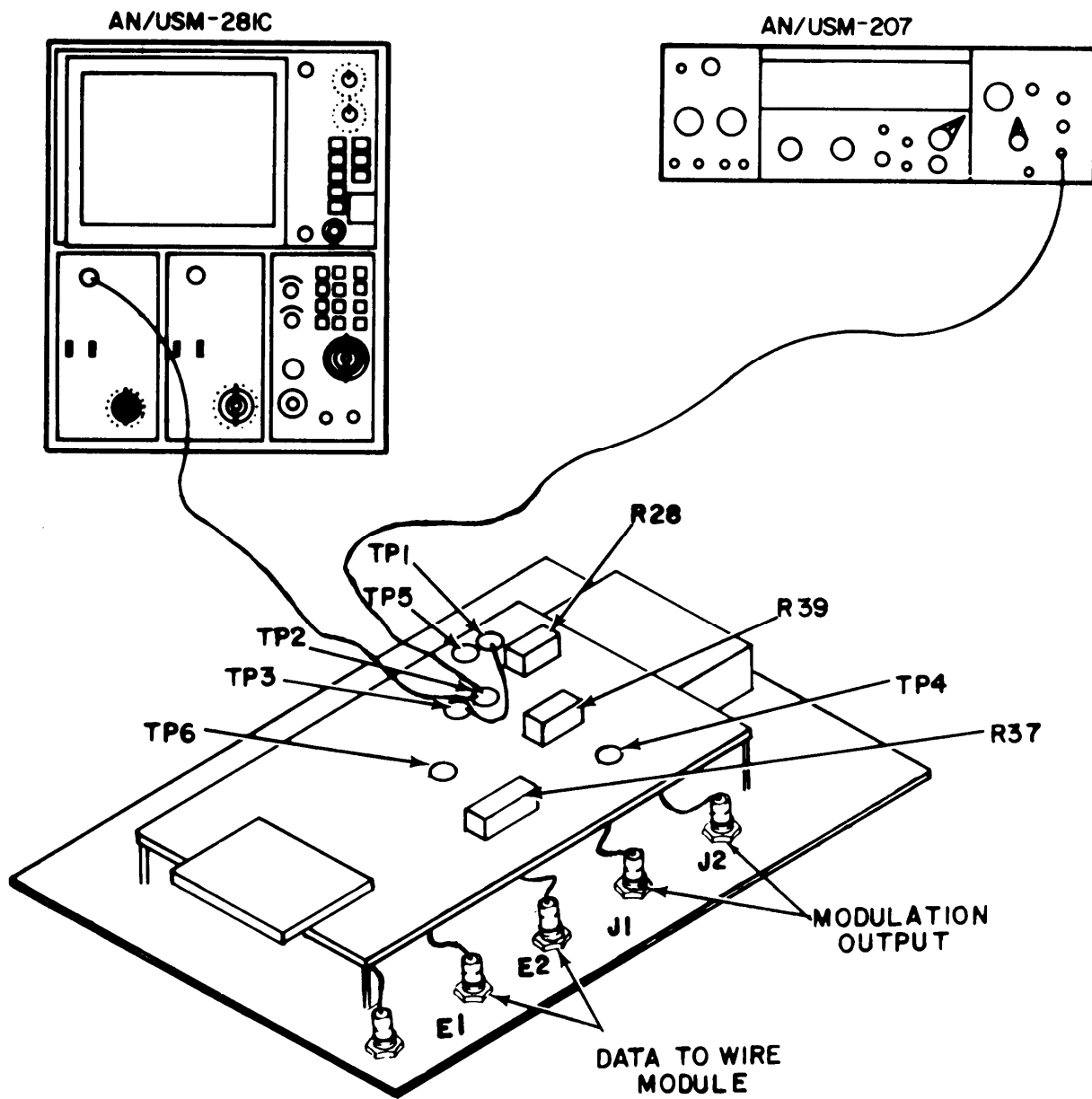
tronic Counter AN/USM-207 on the test bench, turn on, and allow a 15 minute warmup period.

- b. Place test set on bench and prepare as follows:

- (1) Open cover.
- (2) Remove panel assembly by removing the six panel screws.
- (3) Install battery.

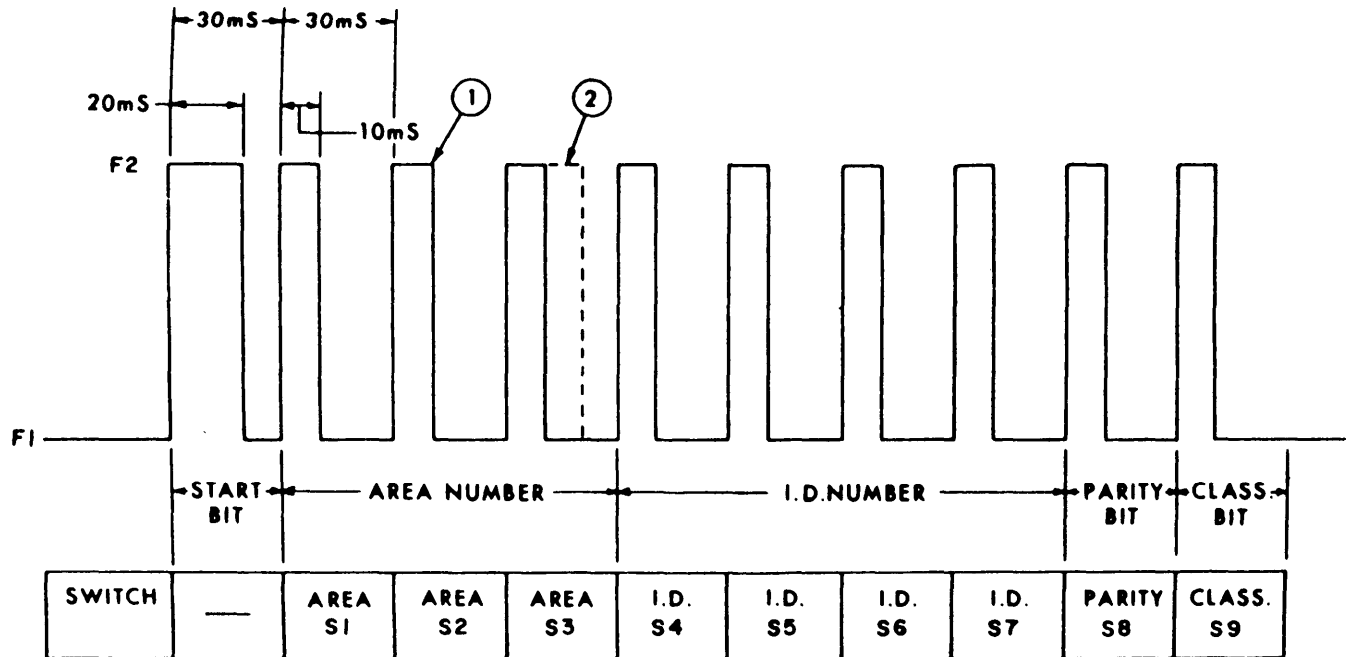
- c. Connect test equipment as shown in figure 6-1 and perform the steps outlined in table 6-1.

- d. Using the six panel screws, reinstall the panel assembly.



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Figure 6-1. Troubleshooting Test Setup.



NOTES: ① 10 ms WIDTH CORRESPONDS TO A "O" OR "P"  
 ② 20 ms WIDTH CORRESPONDS TO A "1" OR "C"  
 F1 - 1,500 Hz ± 3%  
 F2 - 1,800 Hz ± 3%

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Figure 6-2. Test Set Data Signal (TP4 Waveform).

Table 6-1. Fault Isolation and Correction Procedure

Step	Procedure	Normal Indication	Corrective Action
1	Turn test set on and press MANUAL-TRIGGER button of test set.	The panel CODE INDICATOR lamp will light momentarily,	Replace the test set battery and press MANUAL-TRIGGER button. If code indicator lamp still does not light replace circuit board.
<b>CAUTION</b>			
Be careful when making connections around TP1 and TP3. If TP5 is accidentally shorted to ground, the power supply will be damaged.			
2	Connect a jumper lead between TP1 and TP3 on the test set circuit board. Connect the oscilloscope and counter to TP2.	A 100 Hz ( $\pm 1$ H7) square wave will appear on oscilloscope. Frequency counter will indicate 100 Hz ( $\pm 3$ Hz).	Adjust resistor R28 on circuit board if frequency is out of tolerance. If no signal is seen, replace circuit board.
3	Disconnect jumper lead from TP1 and TP3. Disconnect oscilloscope and counter from TP2. Connect oscilloscope to TP4.		
4	Press the MANUAL-TRIGGER button on the test set panel and adjust the oscilloscope sweep, vertical display sensitivity and triggering to display the waveform shown in figure 6-2. Set all panel data switches (AREA, ID, PARITY, and CLASS.) to the down position. Initial settings of the oscilloscope include: NORM sweep, INT trigger, + slope, 50 ms sweep, MAIN sweep, and 0.1 V/DIV sensitivity.	Waveform shown in figure 6-2 will appear each time MANUAL-TRIGGER button is pressed.	If no signal is seen, replace test set circuit board.
5	Progressively go through data switches from left to right (S1-S9) setting each of them to the UP position. Press the MANUAL TRIGGER button after flipping each switch.	Bit width will change from 10 ms to 20 ms as you progress to the right. Refer to figure 6-2 to identify the particular bit that corresponds to each switch.	If correct signal is not seen, replace test set circuit board.
6	Disconnect oscilloscope from TP4. Connect oscilloscope and counter to the MODULATION OUTPUT receptacle. Place a 1500 OHM resistor across the oscilloscope to load the output.	A 1500 Hz ( $\pm 45$ Hz) rounded square wave with a peak-to-peak amplitude of at least 1.2 volts will appear on oscilloscope. Frequency counter will indicate 1500 Hz ( $\pm 45$ Hz).	Adjust resistor R37 on circuit board if frequency is out of tolerance. If no signal is seen, replace circuit board.
7	Connect a jumper lead between TP4 and TP5 on the test set circuit board.	A 1800 Hz ( $\pm 54$ Hz) rounded square wave with a peak-to-peak amplitude of at least 1.2 volts will appear on the oscilloscope. Frequency counter will indicate 1800 Hz ( $\pm 54$ Hz).	Adjust resistor R39 on circuit board if frequency is out of tolerance. If no signal is seen, replace circuit board.
8	Disconnect the jumper lead, oscilloscope, and counter.		
9	Connect the oscilloscope to data terminal post E1. The oscilloscope ground can be attached to one of the BNC receptacles or the dust cap lug.	A triangular wave with an amplitude greater than 0.8 volts peak-to-peak will appear on the oscilloscope.	If no signal is seen, replace the test set circuit board.
10	Connect the oscilloscope to data terminal post E2.	A triangular wave with an amplitude greater than 0.8 volts peak-to-peak will appear on the oscilloscope.	If no signal is seen, replace the test set circuit board.
<b>NOTE</b>			
A multimeter may be used to measure TP5 (supply voltage). Multimeter should read 5.2 VDC ( $\pm 0.2$ VDC). If less, replace battery and measure again. If still less, or significantly greater than normal, replace PC assembly. TP6 (low voltage gate) may also be measured. TP6 must read less than 2 VDC. If greater, switch testing to oscilloscope. If still greater than 2 VDC, replace PC assembly.			

### Section III. MAINTENANCE PROCEDURES

#### 6-5. Removal and Replacement of Panel Mounted Components and Circuit Card Assembly

*a.* Remove the six screws securing panel assembly to case and lift panel assembly out of case.

*b.* Loosen holding bracket and disconnect the circuit card plug.

*c.* Remove the four screws securing circuit card assembly to panel and remove circuit card.

*d.* Follow procedures listed below to remove panel components.

(1) Unsolder wires connected to defective component (switches, connectors, binding posts, and code indicator).

(2) Loosen and remove hardware securing components to panel assembly.

(3) Install new component and reconnect wires.

*e.* Replace circuit card and panel assembly removed in *a* and *b* above.

*f.* Refer to paragraph 3-4 and perform operational tests in insure test set is operational.

#### 6-6. Removal and Replacement of Battery Box Cover Assembly Handle

*a.* Open battery box cover assembly.

*b.* Remove retainer ring from bottom of battery box cover assembly by spreading with a screwdriver and sliding it off the stud.

*c.* Remove stud and nylon washer from battery box cover assembly.

*d.* Install a new nylon washer and a new stud in battery box cover assembly.

*e.* Secure stud by sliding a new retainer ring on bottom of battery box cover assembly.

*f.* Close battery box cover assembly and tighten stud.

#### 6-7. Removal and Replacement of Battery Box Cover Assembly

*a.* Remove six screws securing panel assembly to case and remove.

*b.* Remove hardware securing cover assembly to panel assembly.

*c.* Refer to paragraph 6-6 and replace battery cover handle.

*d.* Install new battery cover assembly and secure with hardware removed in *b* above.

*e.* Replace panel assembly and secure to case with hardware removed in *a* above.

#### 6-8. Removal and Replacement of Battery Box Assembly

*a.* Remove the six screws securing panel assembly to case and remove panel assembly.

*b.* Open battery box cover and remove the four screws securing battery box assembly to panel assembly.

*c.* Install new battery box assembly on panel assembly as follows:

(1) Place battery box assembly over opening in panel assembly.

(2) Apply adhesive, thread locking to screws and install three screws in panel assembly.

(3) Mount solder lug (part of battery box assembly ) between battery box assembly and panel assembly with remaining screw.

(4) Coat all screws with sealant, type III, Grade R.

*d.* Replace panel assembly and secure to case with hardware removed in *a* above.

*e.* Install battery and refer to paragraph 3-4 and perform operational tests to insure test set is operational.

#### 6-9. Removal and Replacement of Battery Box Gasket

*a.* Follow the procedures in paragraph 6-8 to remove panel and battery box assemblies.

*b.* Remove unserviceable gasket.

##### WARNING

ADEQUATE VENTILATION SHOULD BE PROVIDED WHILE USING TRICHLOROTRIFLUOROETHANE. PROLONGED BREATHING OF VAPOR SHOULD BE AVOIDED. THE SOLVENT SHOULD NOT BE USED NEAR HEAT OR OPEN FLAME; THE PRODUCTS OF DECOMPOSITION ARE TOXIC AND IRRITATING. SINCE TRICHLOROTRIFLUOROETHANE DISSOLVES NATURAL OILS, PROLONGED CONTACT WITH SKIN SHOULD BE AVOIDED. WHEN NECESSARY, USE GLOVES WHICH THE SOLVENT CANNOT PENETRATE. IF THE SOLVENT IS TAKEN INTERNALLY, CONSULT A PHYSICIAN IMMEDIATELY.

*c.* Use a cloth moistened with trichlorotrifluoroethane to clean surface of panel assembly.

*d.* Wipe surface dry with a clean lint-free cloth. DO NOT ALLOW LINT or FOREIGN MATTER to remain on surface.

*e.* Apply cement with general purpose adhesive (Type 1, Class 1) and place new gasket on panel assembly.

*f.* Refer to paragraph 6-7 and reinstall battery box and panel assemblies.

#### **6-10. Removal and Replacement of Test Set Case Pressure Relief Valve**

*a.* Remove test set cover.

*b.* Loosen nut securing pressure relief valve to cover and remove.

*c.* Install new pressure relief valve and secure with nut.

*d.* Replace cover on test set.

#### **6-11. Repair of Test Cable # 3 (Wire Module)**

*a.* Slit and remove two inches of insulation sleeving from both ends of new cable.

*b.* Install tubing heat shrink, (1 in.) to both ends of cable and heat shrink into place.

*c.* Strip and tin ends of each wire.

*d.* Install, crimp, and solder terminals on wires located at one end of cable.

*e.* Use a multimeter to make continuity checks on cable. This will insure cable is properly repaired.

### **Section V. DIRECT SUPPORT TESTING PROCEDURE**

#### **6-12. General**

The Testing procedures are used to determine if the equipment has been repaired, and meets the general requirements to be returned to service as operational. Use the procedure as a pre-repair or inspection operation prior to repair and also as a specification to determine if the equipment has been repaired.

#### **6-13. Tests and Performance Standards**

Performance standards and procedures are con-

tained in table 6-2. To set up the test set for testing proceed as follows:

*a.* Install battery and remove panel assembly.

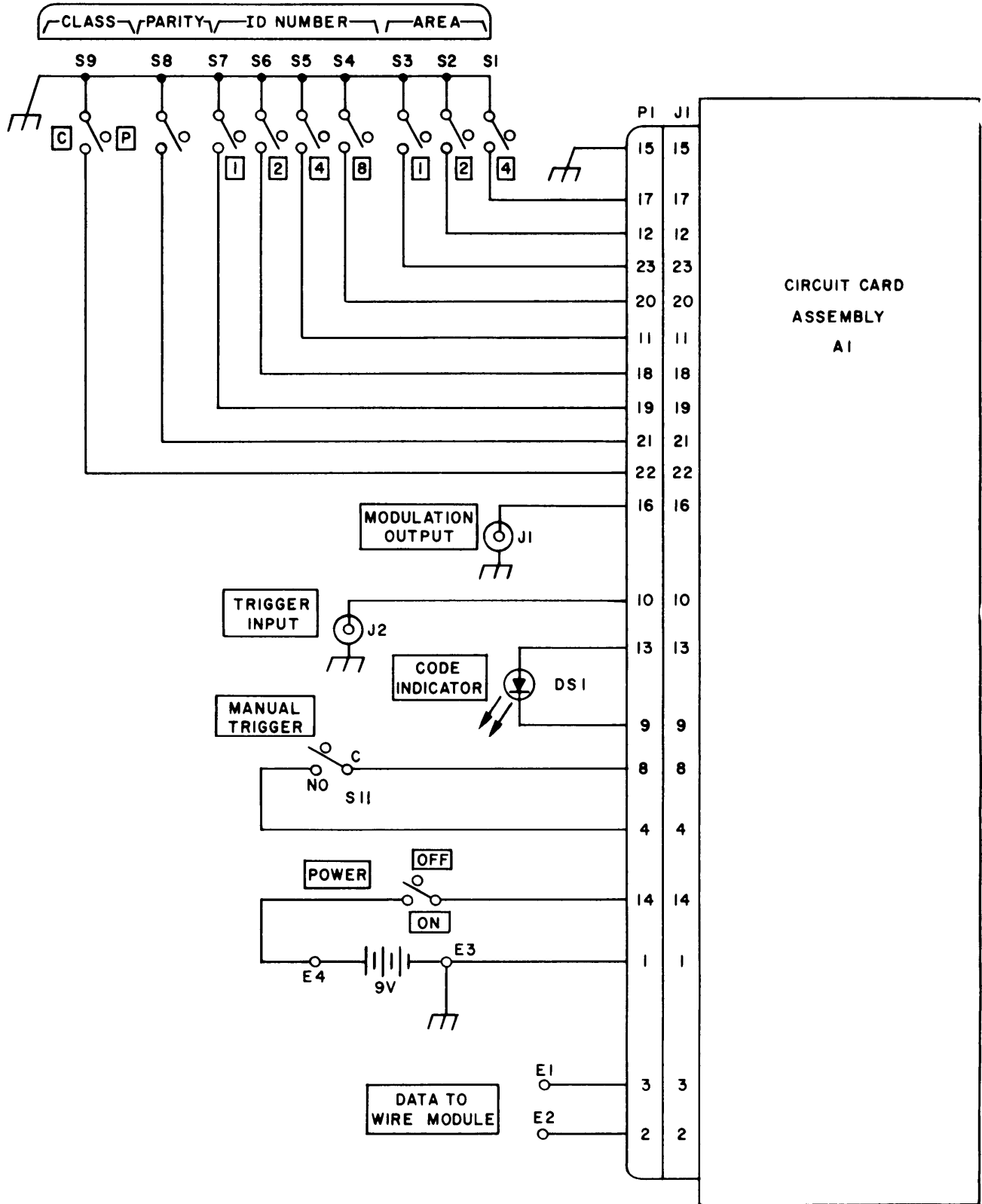
*b.* Arrange test equipment and test set panel assembly as shown in figure 6-1. Do not connect any leads.

*c.* Refer to table 6-2 and perform each test procedure in sequence to insure that repaired equipment meets the performance standard listed.



Table 6-2. Direct Support Testing Procedures and Standards

Step	Equipment Control Settings	Test Procedures	Performance Standard
1.	N/A	Check equipment for completeness: screws, washers, lockwashers, gaskets, lamps, etc.	Equipment is complete.
2.	POWER on. All message switches (AREA, ID NUMBER, PARITY, and CLASS) to the O (down) position.	Connect oscilloscope to TP4. Press MANUAL-TRIGGER switch on control panel repeatedly to produce waveform figure 6-2.	Individual pulse widths should be as shown on figure 6-2.
3.	POWER on. All message switches (AREA, ID NUMBER, PARITY, and CLASS) to the 1 (up) position.	Same as 2, above.	Individual pulse widths should be 20 milliseconds. Message length should be 270 ms ± 3 ms (leading edge of start bit to leading edge of class bit).
4.	POWER on.	Connect oscilloscope to MODULATION OUTPUT connector. Connect a 1500 ¼ watt carbon resistor across the oscilloscope input. Connect frequency counter to measure oscilloscope input.	Oscilloscope waveform is a symmetrical square wave minimum 1.2 volts. Frequency of output is 1500 Hz ± 45 Hz.
5.	POWER on.	Same as 4 above except TP4 and TP5 on printed circuit board are connected (shorted) together with a length of wire.	Oscilloscope waveform is a symmetrical square wave, minimum 1.2 volts peak to peak. Frequency of output is 1800 Hz ± 54 Hz.
6.	POWER on.	Connect 62 K ¼ watt carbon resistor across DATA TO WIRE MODULE terminals. Connect oscilloscope across the same terminals.	Oscilloscope waveform is a symmetrical triangle wave, minimum 0.8 volts peak to peak.



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Figure 6-3. Test Set Schematic Diagram.

## APPENDIX A REFERENCES

DA Pam 310-1 SB 11-573	Consolidated Index of Army Publications and Forms. Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 11-1258	Signal Generator AN/URM-70.
TM 11-5895-1047-10	Operator's Manual for Platoon Early Warning Systems AN/TRS-2(V)1 (NSN 5895-01-063-8103), AN/TRS-2(V)2 (NSN 5895-01-073-9032), AN/TRS-2(V)3 (NSN 5895-01-063-8104), AN/TRS-2(V)4 (NSN 5895-01-068-6747), AN/TRS-2(V)5 (NSN 5895-01-068-6748) and AN/TRS-2(V)6 (NSN 5895-01-068-6749).
TM 11-5895-1047-23	Organizational and Direct Support Maintenance Manual for Platoon Early Warning System AN/TRS-2(V)1 (NSN 5895-01-063-8103), AN/TRS-2(V)2 (NSN 5895-01-073-9032), AN/TRS-2(V)3 (NSN 5895-01-063-8104), AN/TRS-2(V)4 (NSN 5895-01-068-6747), AN/TRS-2(V)5 (NSN 5895-01-068-6748) and AN/TRS-2(V)6 (NSN 5895-01-068-6749).
TM 11--6625-366-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Multimeter TS-352B/U (NSN 6625-00-553-0142).
TM 11-6625-700-10	Operator's Manual: Digital Readout, Electronic Counter AN/USM207 (NSN 6625-00-911-6368).
TM 11-6625-2658-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual for Oscilloscope AN/USM-281C (NSN 6625-00-106-9622).
TM 11-6625 -2784-14-HR	Hand Receipt Covering Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for Test Set, Receiver TS-3565/TRS-2(V) (NSN 6625-01-075-0046).
TM 11-6625-2784-24P	Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Test Set TS-3565/TRS-2 (NSN 6625-01-075-0046).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).



## APPENDIX B MAINTENANCE ALLOCATION CHART

### Section I. INTRODUCTION

#### B-1. General.

This appendix provides a summary of the maintenance operations for Test Set, Receiver TS-3565/TRS-2(V). It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

#### B-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

*a. Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

*b. Test.* To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics of an item and comparing those characteristics with prescribed standards.

*c. Service.* Operations required periodically to keep an item in proper operating condition i.e.; to clean, preserve, drain, paint, or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

*d. Adjust.* Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters,

*e. Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

*f. Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of the comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compressed.

*g. Install.* The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

*h. Replace.* The act of substituting a serviceable like-type part, subassembly, model (component or assembly) for an unserviceable counterpart.

*i. Repair.* The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, end item or system.

*j. Overhaul.* That periodic maintenance effort (serv-

ice/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

*k. Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

#### B-3. Column Entries (Section II).

*a. Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

*b. Column 2, Component/Assembly.* Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized

*c. Column 3, Maintenance Functions.* Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

*d. Column 4, Maintenance Category.* Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

- C- Operator/Crew
- O- Organizational
- F- Direct Support

H - General Support

D - Depot

*e. Column 5, Tools and Equipment.* Column 5 specifies by code, those common tools sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

*f. Column 6, Remarks.* Column 6 contains an alphabetic code which leads to the remark in Section IV, Remarks, which is pertinent to the item opposite the particular code.

#### **B-4. Tool and Test Equipment Requirements (Section III).**

*a. Tool or Test Equipment Reference Code.* The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

*b. Maintenance Category.* The codes in this column in-

dicating the maintenance category allocated the tools or test equipment.

*c. Nomenclature.* This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

*d. National/NATO Stock Number.* This column lists the National/NATO stock number of the specific tools and test equipment.

*e. Tool Number.* This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for Manufacturers (5-digits) in parentheses.

#### **B-5. Remarks (Section IV).**

*a. Reference Code.* This code refers to the appropriate item in section II, column 6.

*b. Remarks.* This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II MAINTENANCE ALLOCATION CHART  
FOR  
TEST SET, RECEIVER TS-3565/TRS-2(V)

(1) GROUP NUMBER	(2) COMPONENT /ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	TEST SET, RECEIVER TS-3565/TRS-2(V)	Inspect Service Test Test Repair Rebuild	0.1 0.1		1.0		0.5	2,3,4 2 thru 8 1 1,5	A A B C
01	PANEL ASSEMBLY, TEST SET SM-D- 783452	Repair			0.2			1	H
0101	CIRCUIT CARD ASSEMBLY, TEST SET SM-D-783475	Inspect Adjust Test Replace Repair			0.1 0.2		1.0	1,3,4 5 1 1	I
02	CABLE ASSEMBLY, SIGNAL GENERATOR SM-D-783492	Repair Replace			0.2 0.1			1	E
	CABLE ASSEMBLY, TRIGGER INPUT 1584-24	Replace			0.1				F
03	CABLE ASSEMBLY, WIRE MODULE SM-D-783493	Repair Replace			0.1 0.1			1	G
04	CASE, TEST SET SM-D-783486, 11786	Repair					0.2	1	D

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS  
 FOR  
 TEST SET, RECEIVER TS-3565/TRS-2(V)

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
2	F,D	MULTIMETER TS-352B/U	6625-00-553-0142	
3	F,D	COUNTER, ELECTRONIC, DIGITAL READOUT AN/USM-207A	6625-00-044-3228	
4	F,D	OSCILLOSCOPE AN/USM-281C	6625-00-106-9622	
5	D	POWER SUPPLY HP-721		
6	D	FUNCTION GENERATOR (WAVETEK 184)		
7	D	MULTIMETER AN/USM-223		
8	D	FSK DETECTOR		



## SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	THE 26C REPAIRMAN OF THE AN/TRS-2(V)1 THRU 6 IS CONSIDERED TO BE THE OPERATOR OF THE TEST SET THEREFORE THE "C" MAINTENANCE CATEGORY, NORMALLY APPLIED TO OPERATOR LEVEL, REFERS IN THIS CASE TO DIRECT SUPPORT PERSONNEL.
B	TEST FOR PROPER OPERATION, DIGITAL MESSAGE, OUTPUT FREQUENCY, ALIGNMENT, AND CONTINUITY CHECK OF TEST CABLES.
C	REPAIR BY REMOVAL /REPLACEMENT OF BATTERY, PANEL COMPONENTS, GASKET AND CIRCUIT CARD ASSEMBLY.
D	REPAIR BY REPLACEMENT OF VACUUM BREAKER VALVE.
E	REPAIR BY REPLACEMENT OF CONNECTOR.
F	THIS CABLE IS NOT REPAIRABLE, BUT IS LISTED AS A FUNCTIONAL GROUP FOR IDENTIFICATION AS PART OF THE TEST SET.
G	THIS IS AN ASSEMBLED ITEM. REPAIR IS BY REPLACEMENT OF TERMINAL LUGS. CABLE IS A BULK ITEM.
H	REPAIR BY REPLACEMENT OF HARDWARE, DUST AND MOISTURE BOOT, BATTERY BOX ASSEMBLY, AND CIRCUIT CARD ASSEMBLY.
I	REPAIR BY REPLACEMENT OF ELECTRONIC COMPONENTS.



## APPENDIX C

### COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

---

#### Section I. INTRODUCTION

##### **C-1. Scope.**

This appendix lists components of end item and basic issue items for the TS-3565/TRS-2(V) to help you inventory items required for safe and efficient operation.

##### **C-2. General.**

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

*a. Section II. Components of End Item.* This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

*b. Section III. Basic Issue Items.* Not applicable.

##### **C-3. Explanation of Columns.**

The following provides an explanation of columns found in the tabular listings:

*a. Column (1)-Illustration Number (Illus. Number).*

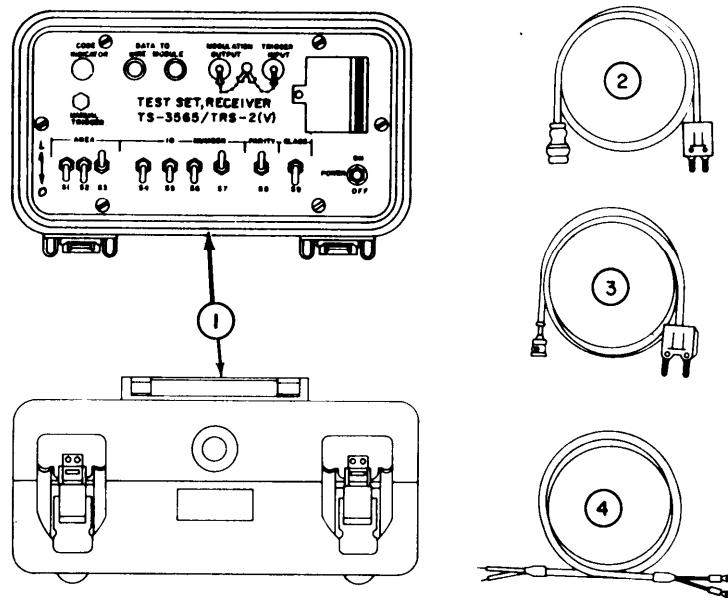
This column indicates the number of the illustration in which the item is shown.

*b. Column (2)-National Stock Number.* Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

*c. Column (3)-Description.* Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

*d. Column (4)-Unit of Measure (U/M).* Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

*e. Column (5)-Quantity Required (Qty Rqd).* Indicates the quantity of the item authorized to be used with/on the equipment.



SECTION II COMPONENTS OF END ITEM

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION  (FSCM) AND PART NUMBER	(4) U. M	(5) QTY REQD
1	6625-01-075-0046	TEST SET, RECEIVER TS-3565/TRS-2(V) (80058)	EA	1
2	5995-01-691-3415	CABLE ASSEMBLY, SIGNAL GENERATOR (TEST CABLE #1) (56977) SM-B-783492	EA	1
3	5145-01-691-3416	CABLE ASSEMBLY, TRIGGER INPUT (TEST CABLE #2) (56977) SM-C-783494	EA	1
4		CABLE ASSEMBLY, WIRE MODULE (TEST CABLE #3) (56977) SM-C-783493	EA	1

## APPENDIX D ADDITIONAL AUTHORIZATION LIST

---

### Section I. INTRODUCTION

**D-1. Scope.**

This appendix lists additional items you are authorized for the support of the TS-3565/TRS-2(V).

**D-2. General.**

This lists identifies items that do not have to accompany the TS-3565/TRS-2(V) and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

**D-3. Explanation of Listing.**

National stock number, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e. CTA, MTOE, TDA, or JTA) which authorizes the item (s) to you.

SECTION II ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION  PART NUMBER AND FSCM  USABLE ON CODE	(3) UNIT OF MEAS	(4) QTY AUTH
6135-00-850-3177	<u>MTOE AUTHORIZED ITEMS</u> BATTERY, DRY BA90 (80068) BATTERY, DRY BA3090 BATTERY, DRY BA5090	EA EA EA	1 1 1

## APPENDIX E

### EXPENDABLE SUPPLIES AND MATERIALS LIST

---

#### Section I. INTRODUCTION

##### E-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the TS-3565/TRS-2 (V). These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

##### E-2. Explanation of Columns.

*a. Column 1-Item Number.* This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., “use cleaning compound, item 5, app E”).

*b. Column 2-Level.* This column identifies the lowest level of maintenance that requires the listed item.

F-Direct Support Maintenance

*c. Column 3-National Stock Number.* This is the National stock number assigned to the item; use it to request or requisition the item.

*d. Column 4-Description.* Indicates Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

*e. Column 5-Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION  PART NO AND FSCM	(5) UNIT OF MEAS
1	F	8305-00-222-2423	CLOTH, LINT FREE CC-C-440 (81348)	YD
2	F	6850-00-984-5853	TRICHLOROTRIFLUOROETHANE, CLEANING COMPOUND FREON PCA MIL-C-81302 (81349)	GAL.
3	F	6145-00-160-7795	WIRE, FIELD WD-1/TT (81349)	FT
4	F		ADHESIVE GENERAL PURPOSE TYPE I CLASS I MIL-A-46050 (81349)	
5	F		ADHESIVE, THREAD LOCKING 222-31 MIL-S-22473 (81349)	
6	F		SEALANT TYPE III, GRADE R MIL-S-46163 (81349)	



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Svc Colleges (1)  
USASIGS (5)  
USAADS (2)  
USAFAS (2)  
USAARMS (2)  
USAIS (2)

AG: None

USAR: None

For explanation of abbreviation used, see AR 310-50

USAES (2)  
USAICS (3)  
MAAG (1)  
USARMIS (1)  
USAERDAA (1)  
USAERDAW (1)  
Ft Gordon (10)  
Ft Carson (5)  
Army Dep (1) except  
SAAD (30)  
TOAD (14)  
SHAD (2)  
Ft Gillem (10)  
USA Dep (1)  
Sig Sec USA Dep (1)  
Ft Richardson (CERCOM Ofc) (2)  
Units org under fol TOE  
29-207 (2)  
29-610 (2)



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PAGE NO	PARA GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			<p>Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.</p> <p>REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.</p>
3-10	3-3		3-1	<p>Item 5, Function column. Change "2 db" to "3db."</p> <p>REASON: The adjustment procedure the the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.</p>
5-6	5-8			<p>Add new step f.1 to read, "Replace cover plate removed in step e.1, above."</p> <p>REASON: To replace the cover plate.</p>
		F03		<p>Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."</p> <p>REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.</p>

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