(NAVSHIPS 93053.42A)

(Non-Registered)

0967 063 2050 FORMERLY
0280 447 1004

MAINTENANCE STANDARDS BOOK

for

(RADIO RECEIVER R-390A/URR)

SERIAL_____

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

TEMPORARY CORRECTION T-1(A) TO MAINTENANCE STANDARDS BOOK FOR RADIO RECEIVER R-390A/URR NAVSHIPS 93053.42A

This temporary correction revises the Maintenance Standards Book to reflect the equipment changes made by Field Change 3-R-390A/URR. The purpose of this field change is to alter the electrical access at the rear of the receiver from terminal boards to "AN" type connectors. If the receiver must be removed from its cabinet, it will be necessary only to unfasten connectors instead of the individual wires at the terminal boards. The field change applies to all shipboard R-390A/URR Receivers, all serial numbers.

Maintenance Support Activities shall make this correction in the Maintenance Standards Book immediately but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment accompanied by Maintenance Standards Books shall not make this correction in the books until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction in the Maintenance Standards Books immediately after the front cover.

PAGE NO	CHANGE IN EFFECT	PARA & LINE or FIG & LOCATION	ACTION
1-2	Original	Step No. 1	Insert: "Line voltage cannot be measured externally at the receiver. Measure it at a point where the receiver power cable joins the ship's power source."
1-9	Original	Step No. 11	In the area of the illustration where it says, "TO DIODE LOAD," insert: "The diode voltage must be measured at the rear of the TB103."
2-2	Original	Step No. 2	Same as for Page 1-9, Step No. 11.

TEMPORARY CORRECTION T-1 TO MAINTENANCE STANDARDS BOOK FOR RADIO RECEIVER R-390A/URR NAVSHIPS 93053.42A

This temporary correction revises the book to reflect the equipment changes made by Field Change 3-R-390A/URR. The purpose of this field change is to alter the electrical access at the rear of the receiver from terminal strips (TB102, TB103) to "AN" type connectors. If the receiver must be removed from its cabinet, it will be necessary only to unfasten three connectors instead of the individual wires at the terminal strips. The field change applies to all R-390A/URR receivers, all serial numbers.

Maintenance Support Activities shall make this correction in the book immediately but shall keep the superseded data intact for support of equipments that have not been modified.

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1-9	Original	Step No. 11	In the area of the illustration where it says, "TO DIODE LOAD", insert: "The diode voltage must be measured at the rear of TB103."
2-2	Original	Step No. 2	Same as for Page 1-9, Step No. 11.

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Original		
ii thru x	Original		
1-0 thru 1-10	Original		
2-0 thru 2-8	Original		

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY REFER TO
Code 242-100

From: Chief, Bureau of Ships
To: All Activities concerned with the Installation, Operation, and Maintenance of the Subject Equipment

Subj: Maintenance Standards Book for Radio Receiver R-390A/URR, NAVSHIPS 93053.42A

1. This is the Maintenance Standards Book for the subject equipment and is in effect upon receipt. This publication applies only to the equipment, the serial number and designation of which appear on the cover and title page. It supersedes the Maintenance Standards Book NAVSHIPS 93053.42. Upon receipt hereof, this publication shall be destroyed.

2. When superseded by a later edition, this publication shall be destroyed.

3. Extracts from this publication may be made to facilitate the preparation of other Department of Defense publications.

4. Errors found in this publication (other than obvious typographical errors), which have not been corrected by means of Temporary Corrections or Permanent Changes, should be reported. Such report should include the complete title of the publication and the publication number (short title); identify the page and line or figure and location of the error; describe the error or indicate what change should be made; and be forwarded to the Publications Section of the Bureau of Ships.

5. All Navy requests for Bureau of Ships electronic publications should be directed to the Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pennsylvania.

R. K. JAMES
Chief of Bureau

CORRECTION OR CHANGE	PURPOSE OF REVISION	ENTERED BY	DATE

FRONT MATTER

EFFECT OF FIELD CHANGES

* (Field changes considered in preparation of this book: NONE)

FIELD CHANGE	PAGE NUMBER	CHANGE IN EFFECT	TESTS AFFECTED	IF FIELD CHANGE IS NOT ACCOMPLISHED

INTRODUCTION

Note. - If a ship cannot obtain a copy of the Maintenance Standards Book at the time of installation or major overhaul, and the Industrial activity has a library copy on hand, the library copy shall be used to accomplish the required measurements, and locally reproduced summary sheets may be used to record the results. When this procedure is followed, a copy of the required Maintenance Standards Book shall be requisitioned for the ship, and a completed summary sheet shall be provided the ship (in addition to the copy for the Bureau of Ships) together with written instructions to record the reference standards in the proper locations in the book, and to insert the summary sheet at the front of the book as the official record of accomplishment.

General

This Maintenance Standards Book is to be assigned permanently to the specific installation of Radio Receiver R-390A/URR indicated on the Cover and Title Page.

The test prescribed herein provide a systematic and efficient method for checking and performing routine preventive maintenance on the above equipment. This book contains specific test procedures which, when accomplished on the above equipment when it is operating properly, will provide a series of reference standards representing proper performance of the specified equipment. It also contains a series of periodic maintenance check-off procedures which, when performed as directed, will detect areas of subnormal performance. Comparison of preventive-maintenance results with the reference standards, and proper analysis and correction of any abnormal results, will serve to avert impending equipment failure.

The book is divided in two parts: Part I - Tests for Establishing Reference Standards, and Part II - Preventive Maintenance Check-Off. Part I contains a block diagram subdivided into functional sections, a list of tests which, when performed and recorded, will provide the reference standards for the assigned equipment, and the procedures and illustrations necessary for accomplishing certain of these tests. Collectively, these reference standards indicate the equipment capability. Part II contains a series of preventive-maintenance tests and procedures (with necessary instructions, illustrations, and charts) arranged by time periods. When properly performed, these tests and procedures indicate the performance of individual circuits and also provide for systematic preventive maintenance of the equipment. All procedure designated by step numbers enclosed in stars (1), (2), etc.) are referred to in the Performance Standards Sheet for this equipment. The performance standard sheet for this equipment is contained in NAVSHIPS 93000.

The test equipments and times required to perform the tests are listed on page ix.

Part I - Tests for Establishing Reference Standards

The maintenance standards tests are given in the "List of Maintenance Standards Procedures" on page 1-1. These tests are divided into functional sections which agree with the functional sections of the block diagram on page 1-0. The procedures and illustrations for performing each step are located throughout Part I and Part II, and are referred to in the list.

Part II - Preventive Maintenance Check-Off

Part II of the book contains test procedures in table form (procedure table), to be performed by the maintenance technician or operator; these procedures are scheduled for regular periods (daily, weekly, etc.) Accompanying each step or group of steps is a two-year check-off chart.

Those tests that are designated "O. M." may be performed as part of the Operational Maintenance Program by operating personnel. At the top of each procedure table is a list of operating conditions and control settings which apply to the entire table unless noted otherwise in the procedures of a given step.

The step numbers of the procedures correspond to the "step" numbers on the accompanying illustrations. Arrows leading from a given "step" number on the illustration graphically present certain basic information given in the associated step of the procedure table, as follows: The point where the test equipment is to be connected, and the "indicator" from which the test is to be taken.

Instructions

Upon receipt of this book, record in ink, in the space provided on both the cover and the title page, the serial number, and if applicable, the model number of the equipment to which tnis book is assigned.

Enter field changes that have been made to the equipment that alter any of the steps of the book on page v. The steps affected must be changed, in ink, on the applicable pages, so as to provide maintenance (or operating) personnel with an accurate method for testing the equipment. These entries should be followed by the initials of the person who made the field change, or, if unknown, by the initials of the person making the entry.

Establish the Reference Standards upon receipt of this book, and reestablish them after equipment overhaul. Prior to establishing the initial reference standards, the equipment shall first be checked to insure that the equipment is operating within its design capabilities. After it has been ascertained that the equipment is operating properly, the prescribed tests listed in Part I (page 1-1) shall be made, and the results recorded in ink in the spaces provided in the procedure tables for the appropriate steps. Care must be taken to follow the instructions given for each maintenance standard so that the reference standard obtained provides for a valid comparison when the preventive-maintenance values are subsequently compared with it.

Upon completion and entry of the reference standards, these standards are to be transcribed onto the Reference Standards Summary Sheet contained in the front of the book. This page should be completely filled out, signed, and dated, and then forwarded to the Chief, Bureau of Ships, Washington 25, D.C.

After the maintenance standards tests have been completed and the results properly entered, the book is to be used to augment the preventive-maintenance schedule. Each day except when in port, the daily checks shall be accomplished; each week the weekly checks shall be accomplished; etc.

Upon completing each test as prescribed in the procedure tables, the results should be entered and properly dated in the check-off chart accompanying the instructions. These entries are of prime importance, for they indicate whether or not the equipment is performing at maximum efficiency. Comparison of a given indication with indications previously obtained, and with the initial reference standard, will quickly reveal any significant change. It is expected that the readings will show nominal variances from time to time. This does not necessarily mean that the equipment is operating improperly. If, however, a particular step oroduces an indication which varies progressively each time the check is made, it indicates improper operation or impending failure, and corrective measures should be taken.

IN-PORT PROCEDURES: The equipment should not be energized daily for the sole purpose of making daily checks. The equipment should, however, be energized at least twice a week, and at least two days before getting underway. Enter "IN-PORT" in the check-off chart as appropriate.

FIELD CHANGES: Any information concerning field changes that are made on the equipment subsequent to the recording of the reference standards must be entered on page v by the person making the field change; this entry should be followed with his initials, in the space provided. If the field change should require a change in any of the steps in this book, correct the book in accordance with instructions in the applicable temporary correction or permanent change. When the affected step is a maintenance standard, a new reference standard should be obtained and entered. Whenever this book is completed and a new book is obtained for a second two-year period, all field changes entered in this book shall be transcribed in the replacement book.

REORDER NOTICE: Upon completion of the second year third-quarterly check, order a new copy of this book for the next two-year period in accordance with instructions contained in Index of Forms and Publications, Cognizance Symbol "I" (NAVSANDA PUBLICATION 2002). The end of the third quarter may be construed to mean the ninth month, 36th week, etc.

TEST EQUIPMENT	PART - I SECTION					
	A	B	C	D	E	F
Signal Generator AN/URM-25						X
Antenna Simulator SM-35/URM-25						X
Audio Test Oscillator TS-382/U						
Multimeter AN/PSM-4	X					
Electronic Voltmeter AN/USM-34						X
Insulation Test Set AN/PSM-2					X	
Adapter, BNC to C (UG-636A/U)						X

PART II - PERIOD						
M	Q	S	A			
	X					
	X					
	X					
	X					
	X					
	X					
	X					

NS - Non-Scheduled Tests

ESTIMATED TIME REQUIRED TO PERFORM POMSEE

PART I	
SECTION	TIME REQ'D.
A	15 Mins.
B	45 Mins.
C	15 Mins.
D	15 Mins.
E	15 Mins.
F	90 Mins.
TOTAL	3.25 Hrs.

PART II	
PERIODIC CHECKS	ESTIMATED TIME REQ'D.
Daily	- - - - - - - -
Weekly	- - - - - - - -
Monthly	- - - - - - - -
Quarterly	90 Mins.
Semi-Annual	30 Mins.
Annual	
TOTAL REQ'D.	120 Mins.
Average/Day	2 Mins.

SPECIAL PROCEDURES AND ADJUSTMENTS

1. Energize Radio Receiver R-390A/URR as instructed in the operating procedure given in the Technical Manual. Allow 15 minutes warm-up time after energizing the equipment.

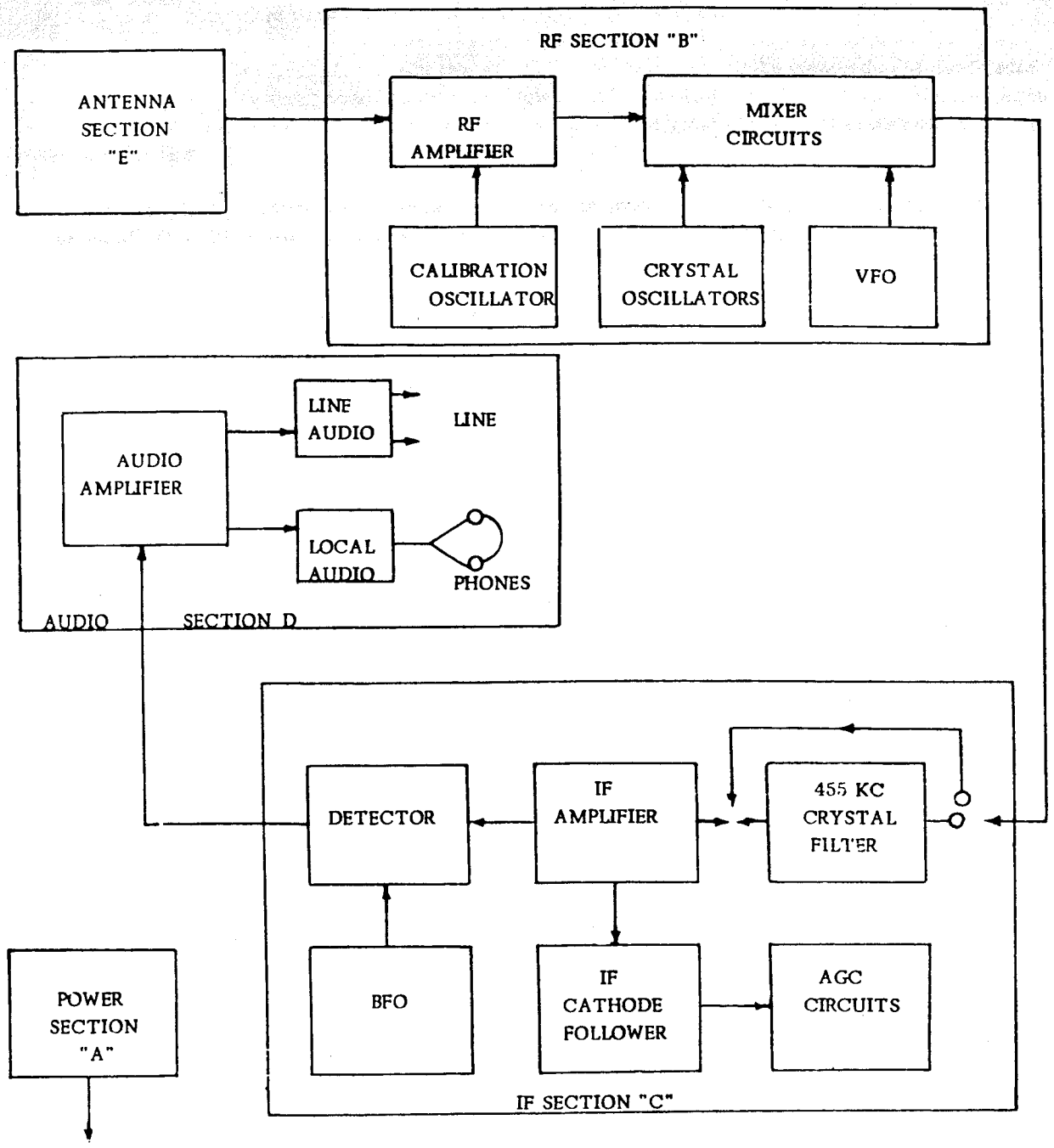
2. Unless otherwise specified, all test equipment should be disconnected at the completion of a reference standard. All cables, terminal board connections, tubes, etc., that have been disconnected or removed in the course of a reference standard test should be restored to their original position at the completion of the reference standard.

3. Unless specifically instructed in a reference standard test procedure, the following controls should be set in the indicated position before proceeding with the maintenance standards tests:

BFO switch (S-101):	OFF
FUNCTION switch (S-102):	MGC
BREAK IN ON-OFF switch (S-103):	OFF
AUDIO RESPONSE switch (S-104):	WIDE
LINE METER switch (S-105):	OFF
OVENS ON-OFF switch (S-106):	OFF
AGC switch (S-107):	MED
LIMITER switch (S-108):	OFF
BANDWIDTH KC switch (S-501):	8 KC
ANT TRIM control (C-225):	Peaked for each frequency
BFO PITCH control (L-508):	0
RF GAIN control (R-103):	10
LINE GAIN control (R-104):	0
LOCAL GAIN control (R-105):	Adjusted to the Operator
DIAL LOCK control:	Counterclockwise

4. If any of the preceeding settings are changed in the course of a reference standard measurement, the control should be returned to the specified position upon completion of the reference standard.

PART I - TESTS FOR ESTABLISHING REFERENCE STANDARDS



RECEIVER FUNCTIONAL SECTIONS

"A"	Power	"D"	Audio
"B"	RF	"E"	Antenna
"C"	IF	"F"	Receiver

LIST OF MAINTENANCE STANDARDS PROCEDURES

The tests listed below are the maintenance standards tests for the R-390A/URR receiving set. Information regarding Special Procedures and Adjustments of these tests is given on page x. The tests are subdivided by functional groups. In addition to the subdivision by group, the tests are listed in a suggested sequence performing the tests; deviation from the listed order will in no way affect the result or utility of the reference standard, unless otherwise noted. The test equipment required for performing the maintenance standards tests for each section is listed on page ix.

SECTION	STEP	ACTION REQUIRED	REFER TO		
			PERIOD	STEP	PAGE
"A" POWER	1	Measure input line voltage	NS	1	1-2
	2	Measure regulated +150 volt supply	NS	2	1-2
	3	Measure audio plate voltage	NS	3	1-3
	4	Measure relay supply voltage across Rectifier CR-102	NS	4	1-3
	5	Measure RF-IF plate voltage	NS	5	1-4
"B" RF	6	Perform RF tuner noise check	*NS	6	1-5
"E" ANTENNA	7	Transmission line continuity	Q	4	2-6
	8	Record insulation resistance of transmission line	Q	5	2-6
"F"	9	Perform receiver operational check	*NS	9	1-7
	10	Measure and record receiver sensitivity	Q	1	2-0
	11	Measure receiver bandwidth	Q	2	2-3
	12	Measure AGC level against carrier level	Q	3	2-5

NS - Non-scheduled tests are to be performed and recorded on the Reference Standards Summary sheet and at other times when equipment operation indicates the necessity for these tests. Those tests which are marked with an asterisk should be performed daily.

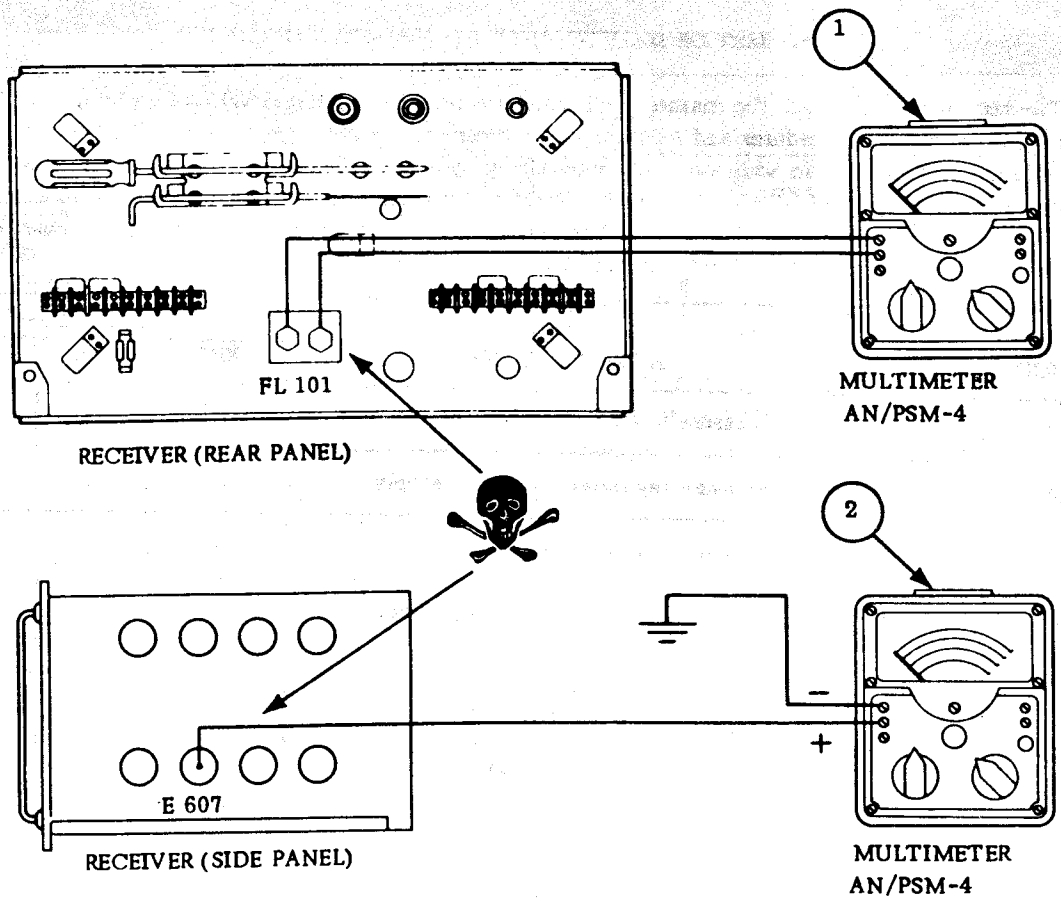
Maint. Stds. Performed by _____

Approved by _____

Title-Position _____

Activity _____

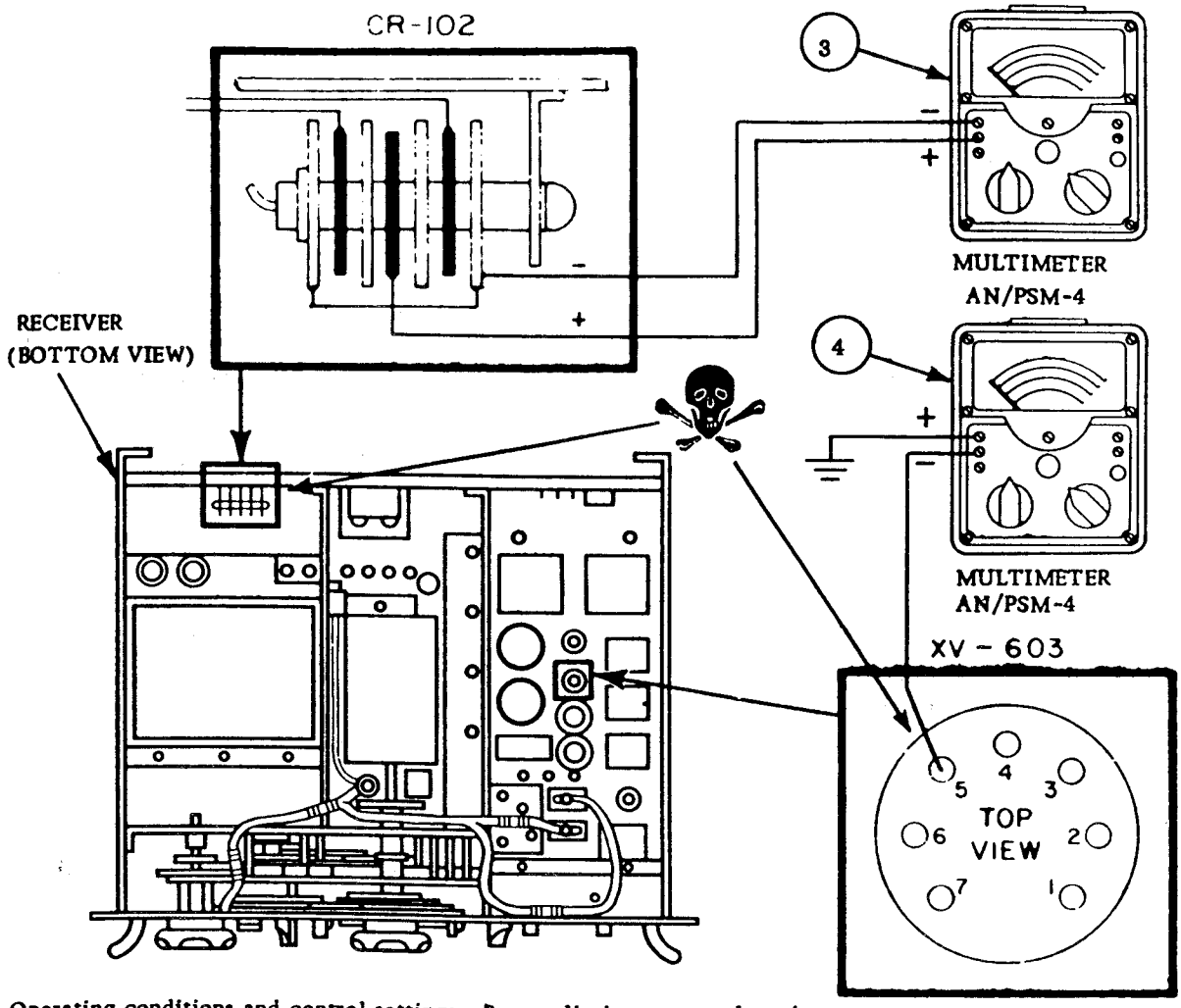
Date _____



Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(1)	Measure input line voltage	Multimeter AN/PSM-4	_____VAC (110 to 120) (210 tc 250)
	PROCEDURE: Remove the cover, labeled POWER (FL-101), of the Receiver. Connect as shown above. Observe Multimeter AN/PSM-4 voltage reading and record.		
(2)	Measure regulated +150 volt supply	Multimeter AN/PSM-4	_____VDC (148 to 152)
	PROCEDURE: Connect the positive lead of Multimeter AN/PSM-4 to test point E-607 and the negative lead to chassis ground. Observe the voltage reading and record.		

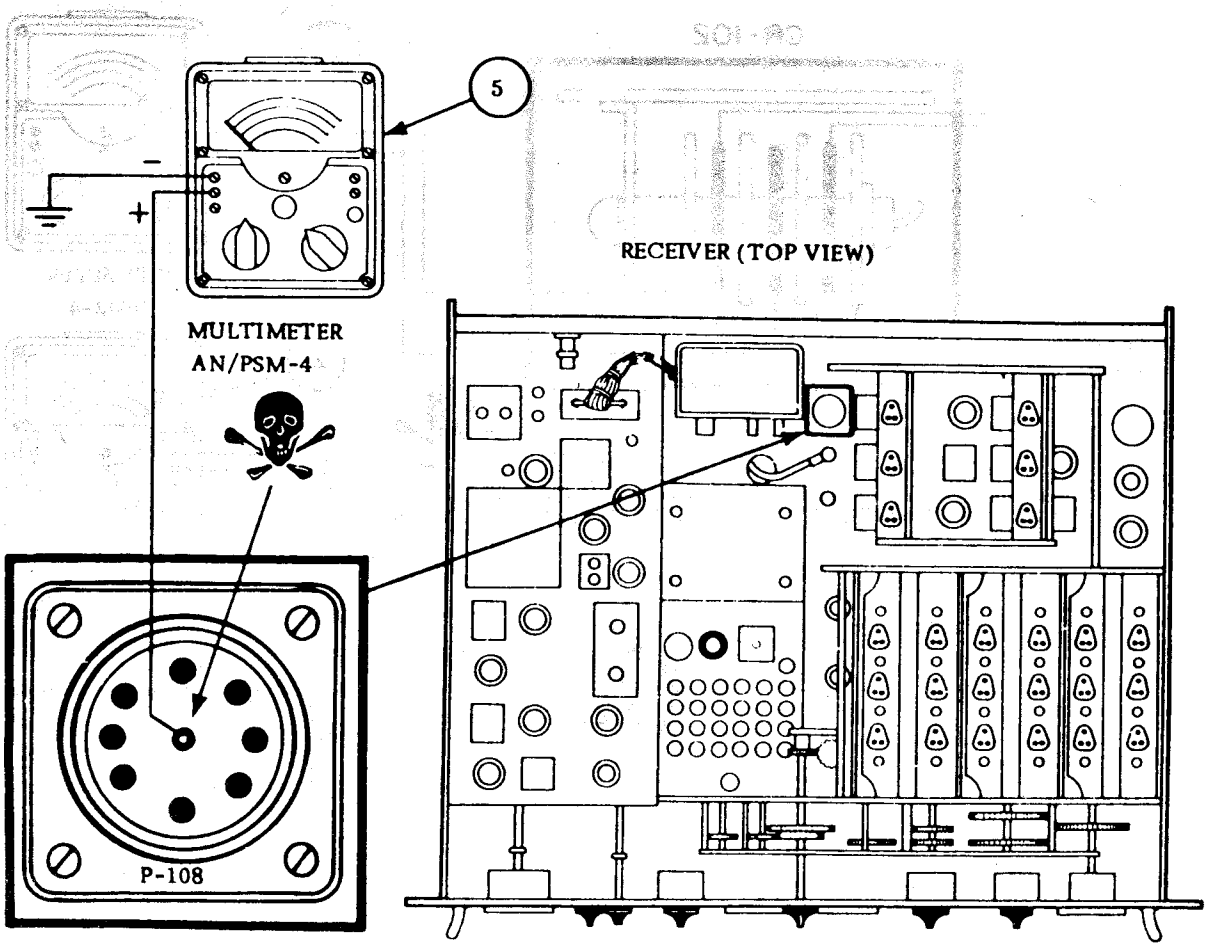
CAUTION: CONNECT GROUND LEAD FIRST.



Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(3)	Measure audio plate voltage.	Multimeter AN/PSM-4	_____ VDC (210 to 230)
	PROCEDURE: Pull tube V-603. Connect the negative lead of Multimeter AN/PSM-4 to chassis ground and the positive lead to pin 6 of tube socket XV-603. Observe Multimeter indication and record.		
(4)	Measure relay supply voltage across rectifier CR-102.	Multimeter AN/PSM-4	_____ VDC (18 Minimum)
	PROCEDURE: Connect the Multimeter leads as shown above. Set Multimeter AN/PSM-4 to proper scale and observe the reading.		

CAUTION: CONNECT GROUND LEAD FIRST.

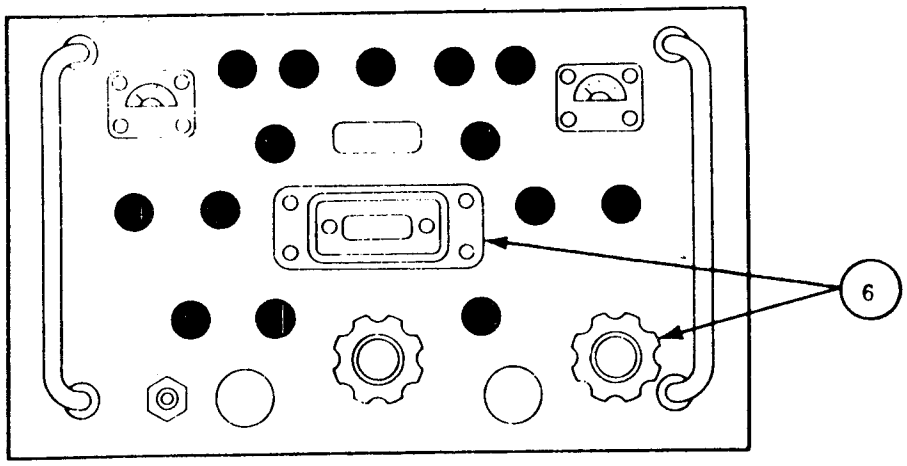


Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(5)	Measure RF-IF plate voltage	Multimeter AN/PSM-4	_____ VDC (200 to 220)

PROCEDURE: Remove plug P-108. Connect the negative lead of Multimeter AN/PSM-4 to chassis ground and the positive lead to pin K. Observe Multimeter indication and record.

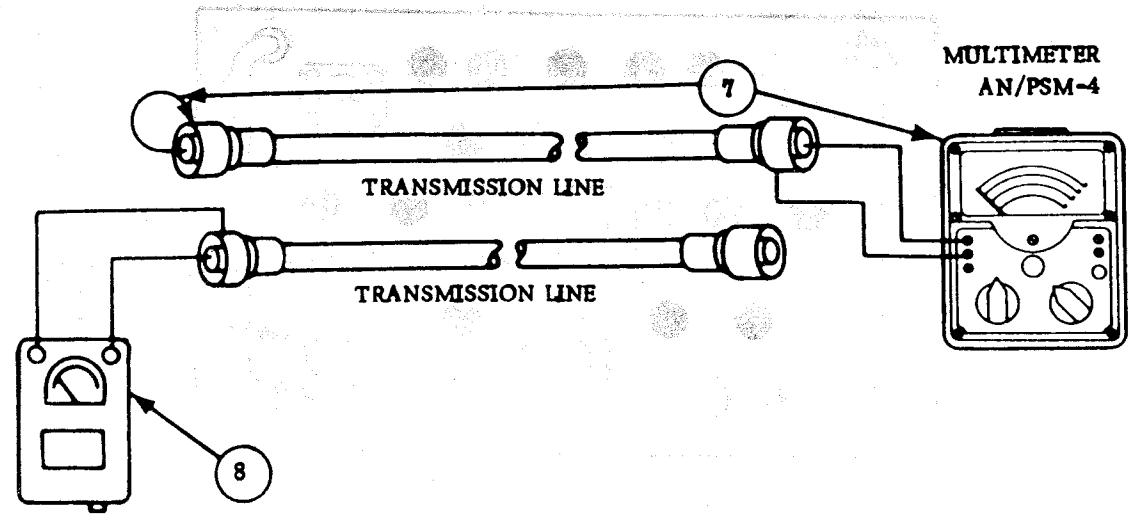
CAUTION: CONNECT GROUND LEAD FIRST.



RECEIVER (FRONT PANEL)

Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED
(6) O. M.	Perform RF tuner noise test.
	PROCEDURE: Disconnect the antenna and adjust the controls for an audible noise in the headphones. Set the megacycle frequency counter to 02 and increase the MEGACYCLE CHANGE control thru its range while listening to the noise. There should be a sharp and pronounced increase in noise output as the control is seated in each detent position. Across the tuning range; some adjustment of ANT. TRIM control C-225 will be necessary to produce maximum noise. Between detent positions, the noise should show a pronounced drop in level. From one detent setting to the next (except between the settings where RF coil ranges are to be switched), the noise level should be almost constant. RF coils are switched between the following settings; 03 and 04, 07 and 08, 15 and 16. If noise at any point across the range is not maximum with the knob in the detent position, mistracking at that point is possible. If the result of the above test is satisfactory, the RF tuner is operating properly. O. M. Operator Maintenance

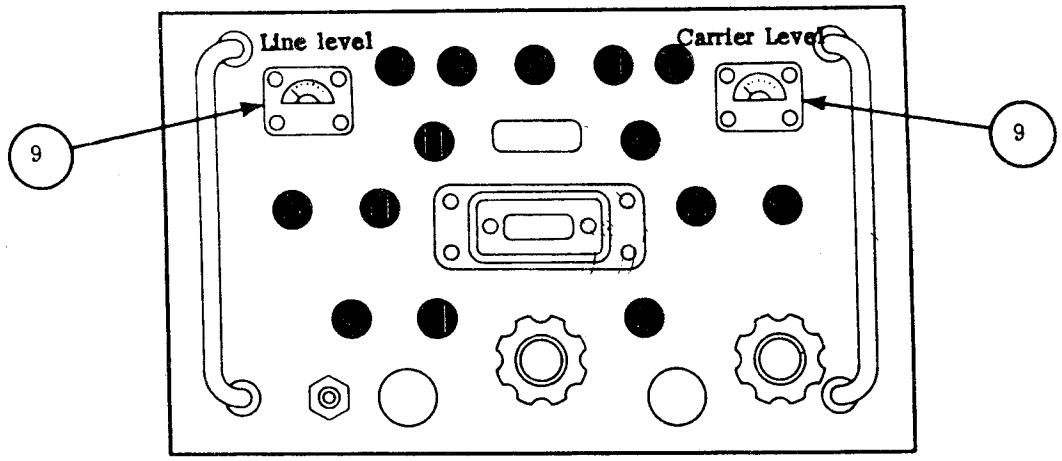


*When checking the resistance of the transmission line, the inner and outer conductors shall be shorted at one end of provide continuity for measurement at the other end. In normal installations, this reading will be below one OHM.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(7)	Transmission line continuity	Multimeter AN/PSM-4	* _____ OHM (See above.)
	PROCEDURE: Disconnect Transmission Line from Receiver and connect as shown above. Set Multimeter AN/PSM-4 function switch to Rx1*.		
(8)	Record insulation resistance of transmission line.	Insulation Test Set AN/PSM-2	_____ MEGOHM (50 or more)
	PROCEDURE: Disconnect Transmission Line from Receiver and connect as shown above. Observe the reading and record.		

NOTE

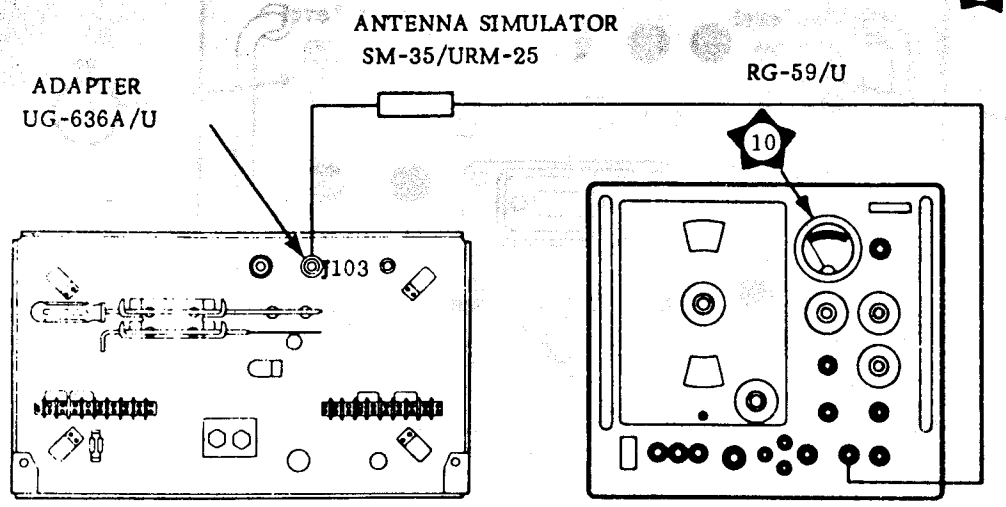
In the event an Antenna Patch Panel is used, perform steps (7) and (8) from Receiver to Patch Panel only.



RECEIVER (FRONT PANEL)

Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED
(9) O. M.	Perform receiver operational check.
	PROCEDURE: Disconnect the antenna and set the controls to the following positions: BFO switch S-101 to ON; BFO PITCH control L-508 to +2; LINE GAIN control R-104 to 5; LOCAL GAIN control R-105 to 10; BANDWIDTH KC switch S-501 to 4 KC; LINE METER switch S-105 to 0; FUNCTION switch S-102 to CAL. Tune KILOCYCLE CHANGE control to any 100 KC calibration point for maximum indication on CARRIER LEVEL meter M-102. Starting at 00, tune MEGACYCLE CHANGE control to each of the bands. Adjust ANT. TRIM control C-225 for maximum indication on CARRIER LEVEL meter M-102 for each band. The signal produced by the calibration oscillator should be approximately the same level on all bands. The minimum indication on LINE LEVEL meter M-102 should be 0 vu on all bands. Rotate the BANDWIDTH control through its range stopping at each step from .1kc to 16kc, there should be an increase in carrier level at each step when increasing bandwidth. This test indicates the condition of the IF section. This test indicates which bands may be inoperative. With the controls and switches set as above, turn BFO switch S-101 to OFF and listen for hum in the headset. Excessive hum indicates a need for maintenance of the receiver power supply.

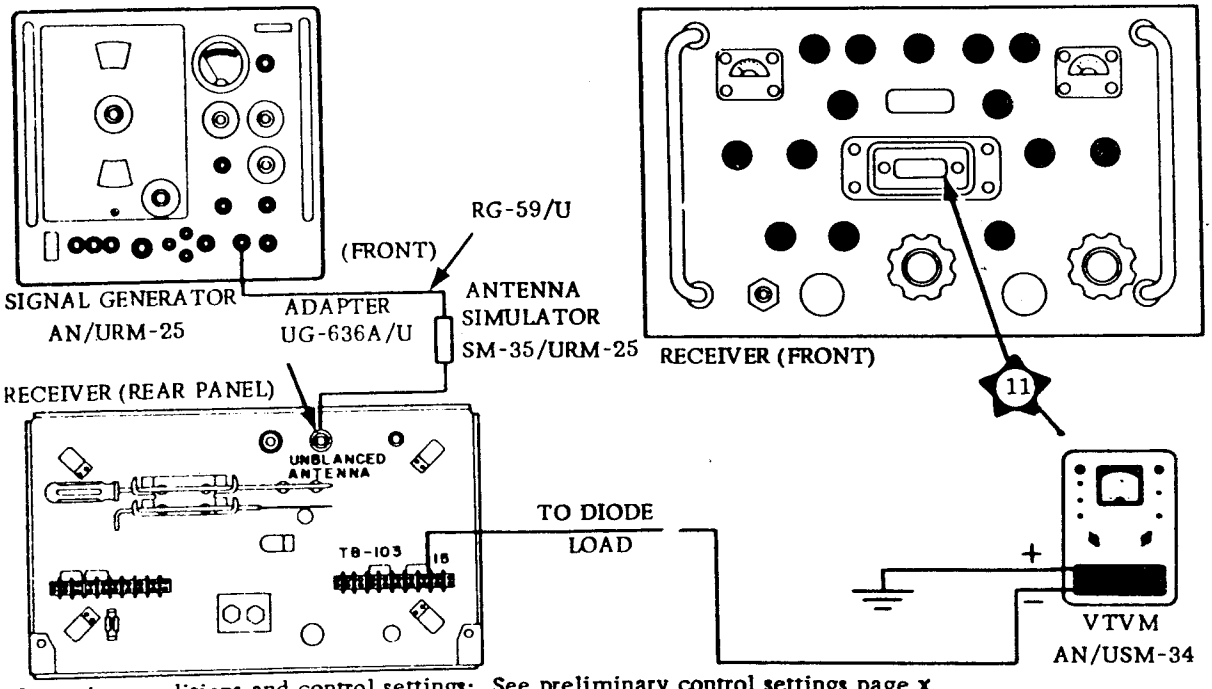


Operating conditions and Control settings:
See preliminary control settings on page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
10	Measure and record receiver sensitivity.	Signal Generator AN/URM-25	_____ μV (5 μV maximum) See chart below.
	PROCEDURE: (a.) Connect equipment as shown above. (b.) Tune the signal generator and receiver to 750kc. (c.) Set BFO PITCH control L-508 to 0 and turn BFO switch S-101 to ON. (d.) With modulation off, tune signal generator to zero beat with the receiver. (e.) To zero beat, turn LINE METER switch S-105 to 0 and LINE GAIN control R-104 for an indication on LINE LEVEL meter M-101. (f.) Turn BANDWIDTH KC Switch S-501 to 8. (g.) Tune the signal generator frequency until LINE LEVEL meter M-101 is zeroed between the two peaks. (h.) Turn BFO switch S-101 to OFF. (i.) Turn output of signal generator to minimum. (j.) Adjust LINE GAIN Control R-104 for -10vu reading on LINE LEVEL meter M-101. (k.) Adjust the output of the signal generator for 30% modulation at 1000 cycles. (l.) Increase the signal generator output and adjust ANT TRIM control C-255 until a 0vu indication is read on the LINE LEVEL meter. (m.) Record the signal generator output. (n.) Repeat for all frequencies on the chart below.		

FREQUENCY (MC)	REFERENCE STANDARD	FREQUENCY (MC)	REFERENCE STANDARD	FREQUENCY (MC)	REFERENCE STANDARD
0.75	μV	13.25	μV	23.25	μV
3.25	μV	15.75	μV	25.75	μV
8.25	μV	18.25	μV	28.25	μV
10.75	μV	20.75	μV	30.75	μV

Step (11)



Operating conditions and control settings: See preliminary control settings page x.

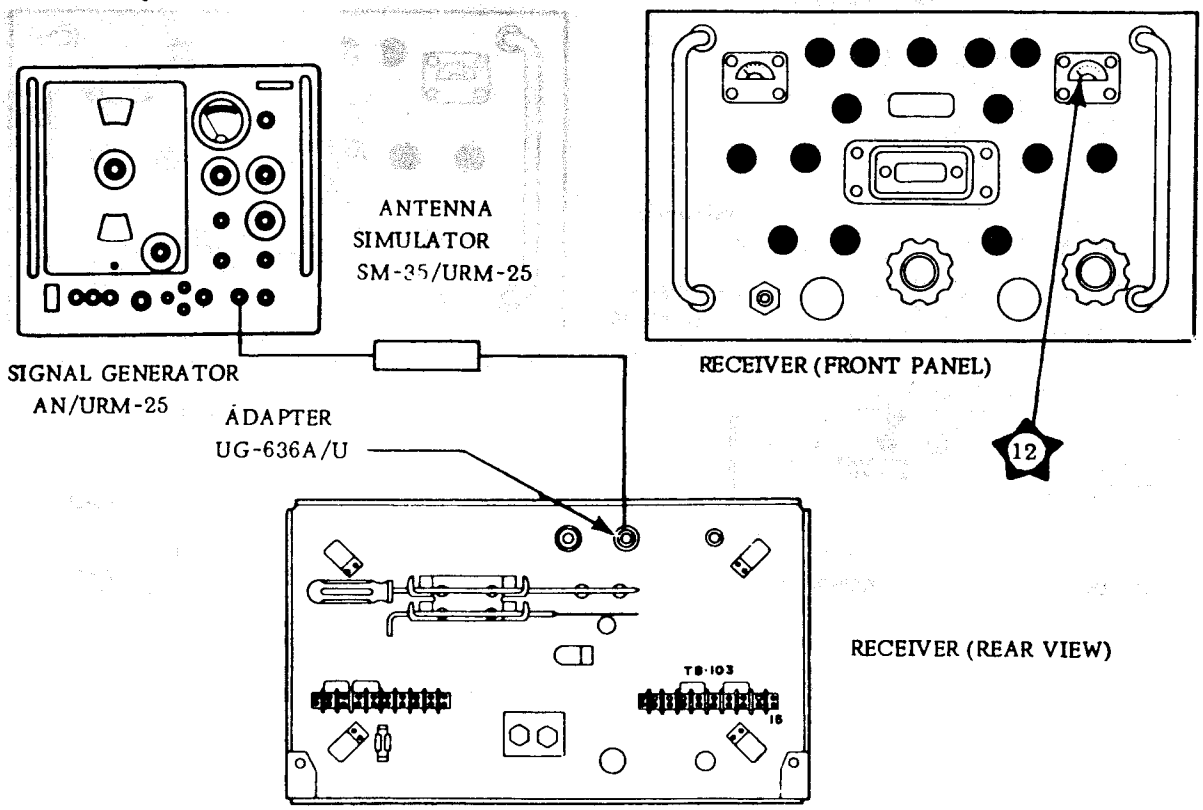
STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(11)	Measure receiver bandwidth.	Kilocycle Counter	See chart below.

PROCEDURE: Connect equipment as shown above. Set BANDWIDTH KC switch to position 1. Tune the Receiver to some frequency between 0.5 and 32 MC ending in an even 10 KC. Tune the Signal Generator to the same frequency. Turn BFO switch (S-101) to ON and zero beat the Signal Generator to the Receiver. Adjust the Signal Generator output for a -5.0 volt indication on the VTVM. Detune the KILOCYCLE CHANGE dial to one side of the center frequency for a -2.5 volt indication on the VTVM. Read the frequency on the kilocycle counter. Detune the KILOCYCLE CHANGE dial to the other side of the center frequency for a -2.5 volt indication on the VTVM. Read the frequency and subtract the two for Receiver bandwidth. Repeat for BANDWIDTH KC settings on the following chart.

*BANDWIDTH CONTROL SETTINGS (S-501)	REFERENCE STANDARDS	RECEIVER BANDWIDTH
1	0.8 to 1.3	KC
2	1.9 to 2.3	KC
4	3.6 to 4.4	KC
8	Not less than 7.5	KC
16	Not less than 13	KC

*Note: No Bandwidth test is required for 0.1 KC setting

Step (12)



Operating conditions and control settings: See preliminary control settings page x.

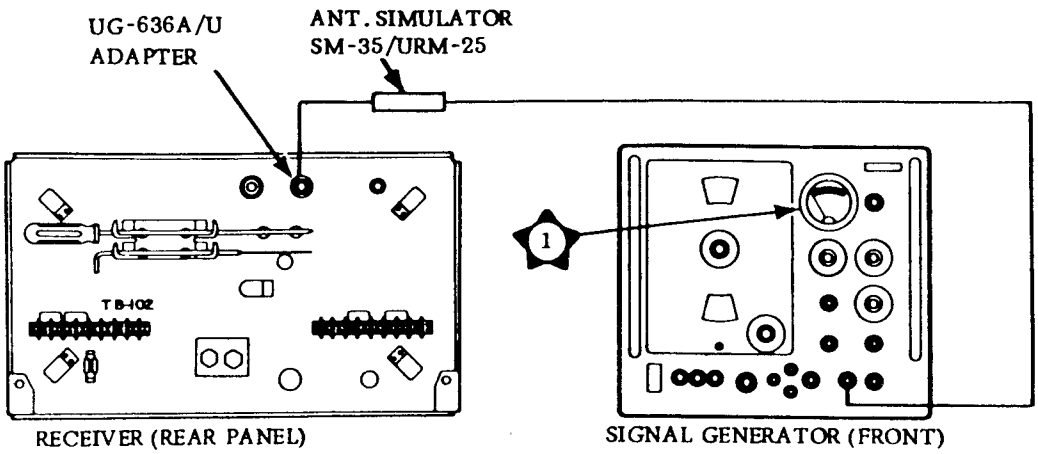
STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(12)	Measure AGC level against CARRIER LEVEL.	CARRIER LEVEL Meter (M-102)	See chart below.
	PROCEDURE: Connect as shown above. Turn the FUNCTION switch to AGC and tune Signal Generator to 15 MC. Increase Signal Generator output until a 20 DB reading is indicated on CARRIER LEVEL meter (M-102). Record this as reference. Increase the Signal Generator output in 20 DB steps (10 times previous output) and record CARRIER LEVEL meter reading for each change as indicated on the chart below.		

SIGNAL GENERATOR SETTINGS	*LIMITS (DB)	SIGNAL INPUT RECORDING
Reference Setting	20 DB Reference	DB
10 times reference	40 DB	DB
100 times reference	58 DB	DB
1000 times reference	78 DB	DB
10,000 times reference	100 DB	DB
1/10 times reference	0 DB	DB

*Limits are only approximations due to inadequacy of meter.

Step ①

PART II PREVENTIVE MAINTENANCE CHECK-OFF



RECEIVER (REAR PANEL) SIGNAL GENERATOR (FRONT)

AN/URM-25

Operating conditions and Control settings:
See preliminary control settings on page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
①	Measure and record receiver sensitivity	Signal Generator AN/URM-25	____ μV (5 μV maximum) See chart below.

PROCEDURE: (a.) Connect equipment as shown above. (b.) Tune the signal generator and receiver to 750kc. (c.) Set BFO PITCH control L-508 to 0 and turn BFO switch S-101 to ON. (d.) With modulation off, tune signal generator to zero beat with the receiver. (e.) To zero beat, turn LINE METER switch S-105 to 0 and LINE GAIN control R-104 for an indication on LINE LEVEL meter M-101. (f.) Turn BANDWIDTH KC Switch S-501 to 8. (g.) Tune the signal generator frequency until LINE LEVEL meter M-101 is zeroed between the two peaks. (h.) Turn BFO switch S-101 to OFF. (i.) Turn output of signal generator to minimum. (j.) Adjust LINE GAIN Control R-104 for -10vu reading on LINE LEVEL meter M-101. (k.) Adjust the output of the signal generator for 30% modulation at 1000 cycles. (l.) Increase the signal generator output and adjust ANT TRIM control C-255 until a Ovu indication is read on the LINE LEVEL meter. (m.) Record the signal generator output. (n.) Repeat for all frequencies on the chart below.

FREQUENCY (MC)	REFERENCE STANDARD	FREQUENCY (MC)	REFERENCE STANDARD	FREQUENCY (MC)	REFERENCE STANDARD
0.75	μV	13.25	μV	23.25	μV
3.25	μV	15.75	μV	25.75	μV
8.25	μV	18.25	μV	28.25	μV
10.75	μV	20.75	μV	30.75	μV

TIME SCHEDULE: QUARTERLY

FIRST YEAR OF OPERATION

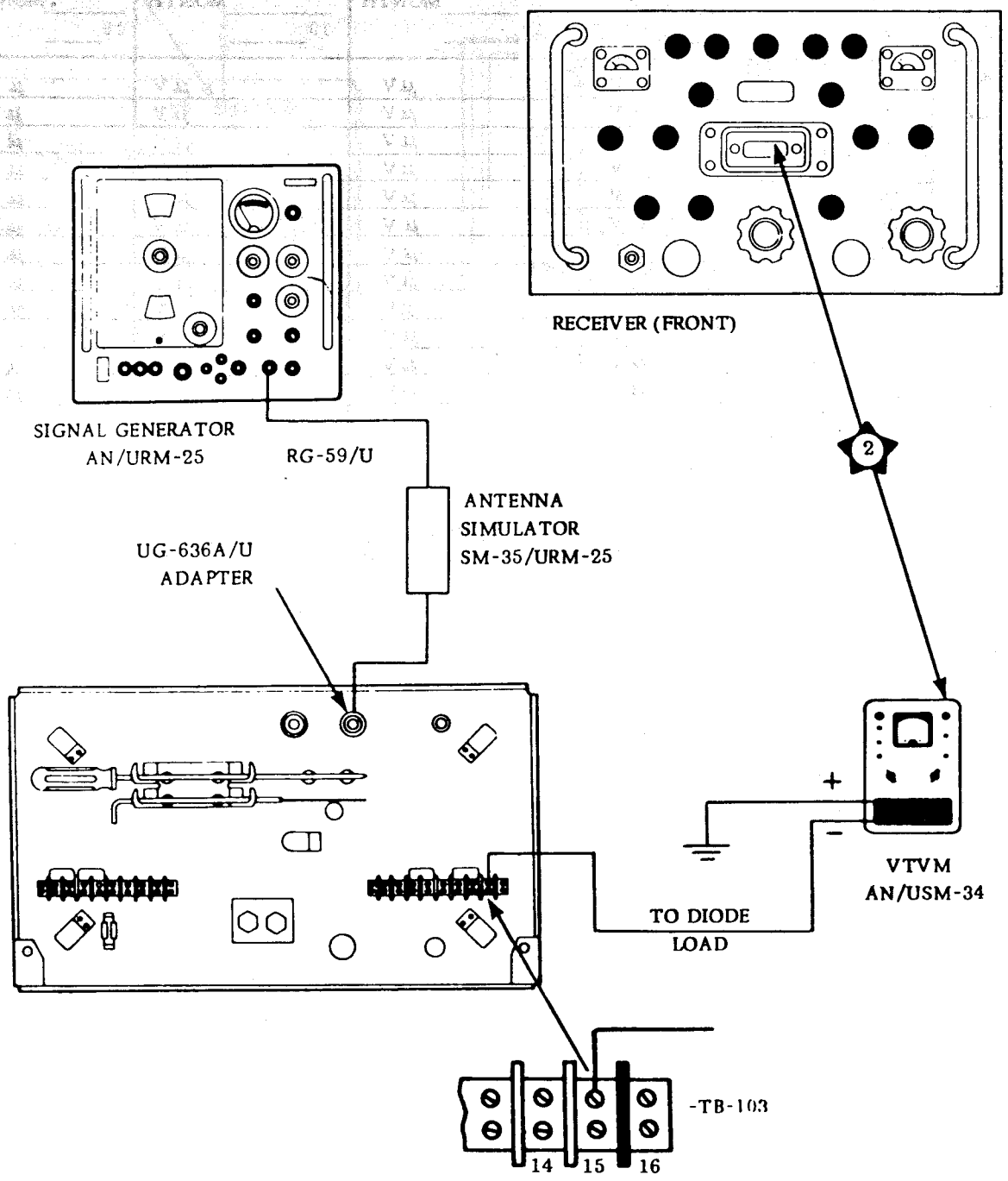
STEP	FREQ. MCS	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
① •	0.75	μV	μV	μV	μV
	3.25	μV	μV	μV	μV
	8.25	μV	μV	μV	μV
	10.75	μV	μV	μV	μV
	13.25	μV	μV	μV	μV
	15.75	μV	μV	μV	μV
	18.25	μV	μV	μV	μV
	20.75	μV	μV	μV	μV
	23.25	μV	μV	μV	μV
	25.75	μV	μV	μV	μV
	28.25	μV	μV	μV	μV
	30.75	μV	μV	μV	μV
Initial					

SECOND YEAR OF OPERATION

STEP	FREQ. MCS	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
① •	0.75	μV	μV	μV	μV
	3.25	μV	μV	μV	μV
	8.25	μV	μV	μV	μV
	10.75	μV	μV	μV	μV
	13.25	μV	μV	μV	μV
	15.75	μV	μV	μV	μV
	18.25	μV	μV	μV	μV
	20.75	μV	μV	μV	μV
	23.25	μV	μV	μV	μV
	25.75	μV	μV	μV	μV
	28.25	μV	μV	μV	μV
	30.75	μV	μV	μV	μV
Initial					

RECORD AND INITIAL

• See "IN PORT PROCEDURE", Page vii


RECEIVER (FRONT)
SIGNAL GENERATOR
AN/URM-25
RG-59/U
ANTENNA
SIMULATOR
SM-35/URM-25
UG-636A/U
ADAPTER
2
+
−
VTVM
AN/USM-34
TO DIODE
LOAD
-TB-103
14
15
16

Step (2)

Operating conditions and control settings: See preliminary control settings page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(2)	Measure receiver bandwidth.	Kilocycle Counter	**See chart below.
	Procedure: Connect equipment as shown above. Set BANDWIDTH KC switch to position 1. Tune the Receiver to some frequency between 0.5 and 32 MC ending in an even 10 KC. Tune the Signal Generator to the same frequency. Turn BFO switch S-101 to ON and zero beat the Signal Generator to the Receiver. Adjust the Signal Generator output for a -5.0 volt indication on the VTVM. Detune the KILOCYCLE CHANGE dial to one side of the center frequency for a -2.5 volt indication on the VTVM. Read the frequency on the kilocycle counter. Detune the KILOCYCLE CHANGE dial to the other side of the center frequency for a -2.5 volt indication on the VTVM. Read the frequency and subtract the two for Receiver bandwidth. Repeat for BANDWIDTH KC settings on the following chart.		

* BANDWIDTH SETTINGS	REFERENCE STANDARDS	RECEIVER BANDWIDTH
1	0.8 to 1.3	KC
2	1.9 to 2.3	KC
4	3.6 to 4.4	KC
8	Not less than 7.5	KC
16	Not less than 13	KC

*Note: No Bandwidth test is required for 0.1 KC setting.

TIME SCHEDULE: QUARTERLY
RECORD AND INITIAL

FIRST YEAR OF OPERATION (QUARTERLY)

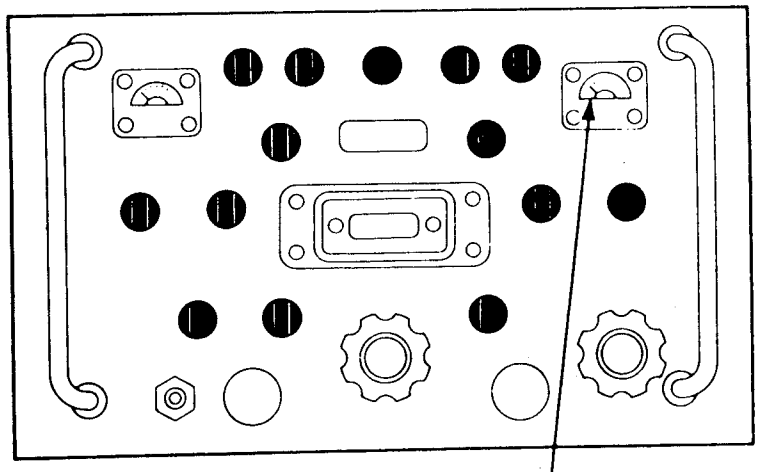
STEP	CONTROL SETTING	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
(2)	1				
	2				
	4				
	8				
	16				
Initial					

SECOND YEAR OF OPERATION (QUARTERLY)

STEP	CONTROL SETTING	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
(2)	1				
	2				
	4				
	8				
	16				
Initial					

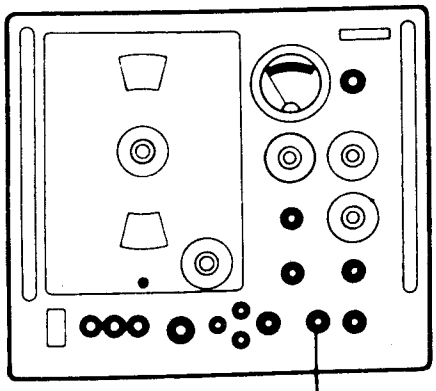
** See "IN PORT PROCEDURE", page vii

Step 3



RECEIVER (FRONT PANEL)

3

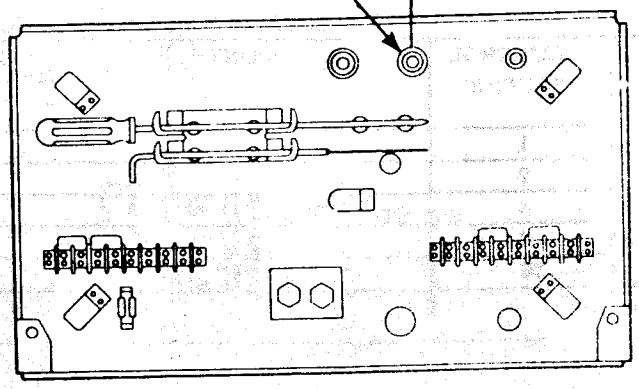


SIGNAL GENERATOR
AN/URM-25

RG-59/U

SM-35/URM-25
ANTENNA
SIMULATOR

ADAPTER
UG-636A/U



Step ③

Operating conditions and control settings:
See preliminary control settings page x.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
③	Measure AGC level against CARRIER LEVEL	CARRIER LEVEL Meter M-102	See chart below. **

PROCEDURE: Connect as shown at left. Turn the FUNCTION switch to AGC and tune Signal Generator to 15 MC. Increase Signal Generator output until a 20 DB reading is indicated on CARRIER LEVEL meter M-102. Record this as reference. Increase the Signal Generator output in 20 DB steps (10 times previous output) and record CARRIER LEVEL meter reading for each change as indicated on the chart below.

SIGNAL GENERATOR SETTINGS	*LIMITS (DB)	SIGNAL INPUT RECORDING
Reference Setting	20 DB Reference	DB
10 times reference	40 DB	DB
100 times reference	58 DB	DB
1000 times reference	78 DB	DB
10,000 times reference	100 DB	DB
1/10 times reference	0 DB	DB

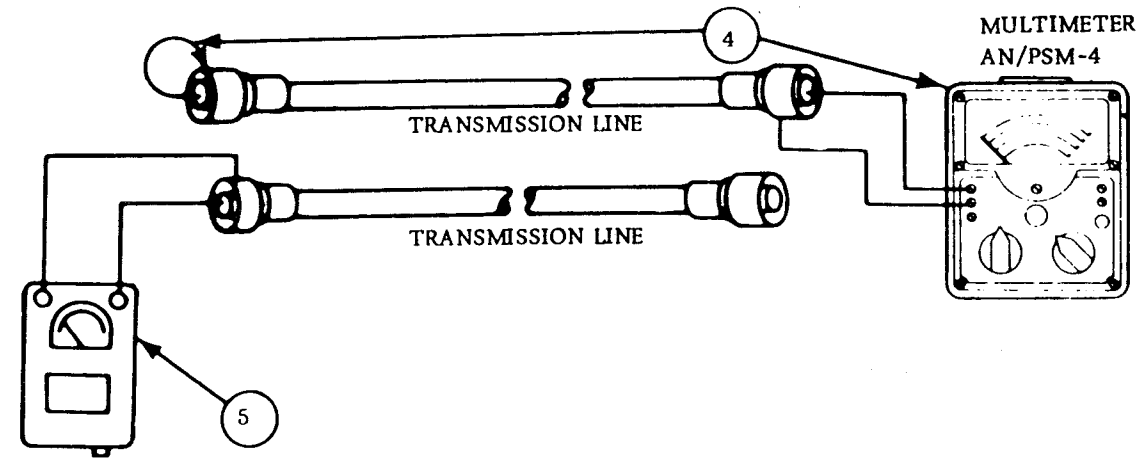
*Limits are only approximations due to inadequacy of meter.
** See "IN PORT PROCEDURES", page vii.
TIME SCHEDULE: RECORD AND INITIAL

FIRST YEAR OF OPERATION

QUARTER	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
③	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
Initial				

SECOND YEAR OF OPERATION

QUARTER	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____	_____ MONTH 19_____
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
	_____ DB	_____ DB	_____ DB	_____ DB
Initial				



*When checking the continuity of the transmission line, the inner and outer conductors shall be shorted at one end to provide continuity for measurement at the other end. In normal installations, this reading will be below one OHM.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(4)	Transmission line continuity	Multimeter AN/PSM-4	*_____OHM (See above.)
	PROCEDURE: Disconnect Transmission Line from Receiver and connect as shown above. Set Multimeter AN/PSM-4 function switch to Rx1*.		
(5)	Record insulation resistance of transmission line.	Insulation Test Set AN/PSM-2	_____MEGOHM (50 or more)
	PROCEDURE: Disconnect Transmission Line from Receiver and connect as shown above. Observe the reading and record.		

NOTE

In the event an Antenna Patch Panel is used, perform steps (4) and (5) from Receiver to Patch Panel only.

	1st Year of Operation				2nd Year of Operation			
Quarter	___Quarter 19___	___Quarter 19___	___Quarter 19___	___Quarter 19___	___Quarter 19___	___Quarter 19___	___Quarter *19___	___Quarter 19___
Step (4)								
Step (5)								
Initial								

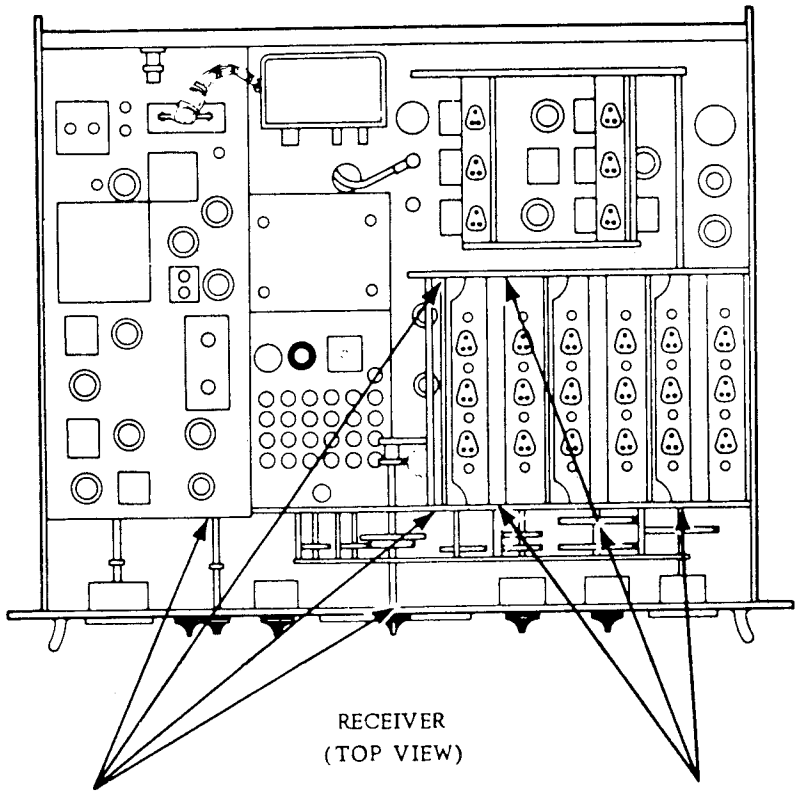
*REORDER NOTICE: Upon completion of second year third-quarterly check, order a new copy of this book for next two-year period in accordance with instructions contained in Index of Forms and Publications, Cognizance Symbol "I" (NAVSANDA PUBLICATION 2002). The end of third Quarter may be construed to mean the ninth month, 36th week, etc.

STEP NO.	ACTION REQUIRED
(1)	Clean and inspect receiver.
O. M.	PROCEDURE: Use a clean, dry, lint-free cloth or a dry brush to remove dirt and accumulated matter from receiver parts. Use cleaning solvent, Navy Type 140-F, for especially stubborn deposits. Use clean dry air from portable blower unit for lighter sediments in hard to reach areas. Tighten all screws, bolts, and nuts properly. Inspect all cables and wiring for frayed, cut, deteriorated, or cracked insulation. Replace or correct all such conditions found. All tubes should be checked for looseness by firm pressure applied downward. All tube shields and clamps must be locked in position. Replace all bulged or leaking capacitors and remove all residue deposited by the faulty unit. Inspect resistors and wiring for indications of overheating. If such indication is observed, further maintenance is necessary. Refer to the appropriate Technical Manual and correct the condition.

TIME SCHEDULE: SEMI-ANNUAL
INSPECT AND INITIAL.

	FIRST YEAR OF OPERATION		SECOND YEAR OF OPERATION	
SEMI-ANNUAL	____ HALF 19__	____ HALF 19__	____ HALF 19__	____ HALF 19__
Initial				

O. M. Operator Maintenance



RECEIVER
(TOP VIEW)

MIL-L-7870
CAM ROLLERS AND
SHAFT BEARINGS, ONE
DROP, OPERATE TO
SPREAD

MIL-G-7421
GUIDE SLOTS AND GEARS
APPLY EVENLY BUT NOT
EXCESSIVELY. OPERATE
TO SPREAD.

STEP NO.	ACTION REQUIRED
(2)	Inspect and lubricate the mechanical tuning system.
O. M.	PROCEDURE: Inspect the gear trains and cam racks for lubrication. Turn the MEGACYCLE CHANGE and the KILOCYCLE CHANGE controls throughout their ranges and observe that all gears, cams and shafts, bearings and guide slots operate smoothly. Check the operation of BFO PITCH control (L-508). If it does not operate freely, check the lubrication of the control shaft bearing. Lubricate as often as necessary for proper operation.

TIME SCHEDULE: INSPECT LUBRICATE AND INITIAL

	FIRST YEAR OF OPERATION		SECOND YEAR OF OPERATION	
SEMI-ANNUAL	_____ HALF 19__	_____ HALF 19__	_____ HALF 19__	_____ HALF 19__
Initial				

O. M. Operator Maintenance