

~~UNCLASSIFIED~~

NAVELEX 0967-385-0040

MAINTENANCE STANDARDS BOOK

*for*

RADIO RECEIVING SETS

AN/URR-64(V) 1

AN/URR-64 (V) 2

AN/URR-64 (V) 3

SERIAL \_\_\_\_\_

OF MODEL \_\_\_\_\_

DEPARTMENT OF THE NAVY  
NAVAL ELECTRONIC SYSTEMS COMMAND

~~UNCLASSIFIED~~

~~UNCLASSIFIED~~

NAVELEX 0967-385-0040

MAINTENANCE STANDARDS BOOK

*for*

RADIO RECEIVING SETS

AN/URR-64(V)1

AN/URR-64(V)2

AN/URR-64(V)3

SERIAL \_\_\_\_\_

OF MODEL \_\_\_\_\_

DEPARTMENT OF THE NAVY  
NAVAL ELECTRONIC SYSTEMS COMMAND

~~UNCLASSIFIED~~

*Approval: 23 July 1970*

## LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title	Original		
ii thru ix	Original		
0 thru 41	Original		

The Technical Materiel  
Corporation

700 Fenimore Road  
Mamaroneck, New York

CONTRACT NO.  
N00039-66-C-0161

Errors found in this publication (other than obvious typographical errors) which have not been corrected by means of Temporary or Permanent Changes should be reported on the User Activity Technical Manual Comment Sheet located at the back of this book. 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, and forward report to the Fleet Electronics Effectiveness Branch, Electronics Publication Section, Naval Electronic Systems Command, Washington, D. C. 20360.



RADIO RECEIVING SET  
 AN/URR-64(V)1  
 AN/URR-64(V)2  
 AN/URR-64(V)3

NAVELEX 0967-385-0040

REFERENCE STANDARDS SUMMARY

Input Voltage \_\_\_\_\_ vac  
 Input Frequency \_\_\_\_\_ cps  
 (When reference standards tests  
 are made).

Date \_\_\_\_\_  
 Serial No. \_\_\_\_\_  
 Installed in (Ship or Station) \_\_\_\_\_  
 Length of Transmission Line \_\_\_\_\_

Record on this summary sheet the test indications which have been entered in this book.  
 Retain this sheet in this book until required by the bureau or agency concerned.

<u>Step No.</u>		<u>Ref. Std.</u>	<u>Step No.</u>		<u>Ref. Std.</u>
	<u>RF TUNER</u>			<u>RF TUNER - Continued</u>	
	<u>Section A</u>			<u>Section A</u>	
1.	a.	_____ vac	15.	c.	_____ vrms _____ mc
	b.	_____ vac	(cont)	1.1	a. _____ vrms _____ mc
2.		_____ vdc		b.	_____ vrms _____ mc
3.		_____ mvrms		c.	_____ vrms _____ mc
4.		_____ vdc	1.2	a.	_____ vrms _____ mc
5.		_____ mvrms		b.	_____ vrms _____ mc
6.		_____ vdc		c.	_____ vrms _____ mc
7.		_____ mvrms	1.3	a.	_____ vrms _____ mc
8.		_____ vdc		b.	_____ vrms _____ mc
9.		_____ vac		c.	_____ vrms _____ mc
10.	a.	_____ mv ac	1.4	a.	_____ vrms
	b.	_____ mv ac		b.	_____ mc
	c.	_____ mv ac		c.	_____ vrms
11.	a.	_____ mv ac		d.	_____ mc
	b.	_____ mv ac		e.	_____ vrms
	c.	_____ mv ac		f.	_____ vrms
12.	a.	_____ mv ac	16.	a.	_____ mv
	b.	_____ mv ac		b.	_____ mv
	c.	_____ mv ac		c.	_____ mv
13.	a.	_____ mv ac		d.	_____ kc
	b.	_____ mv ac		e.	_____ kc
	c.	_____ mv ac		f.	_____ kc
14.	a.	_____ vac		g.	_____ mv
	b.	_____ vac		h.	_____ mv
	c.	_____ vac		i.	_____ mv
15.	a.	_____ vrms _____ mc		j.	_____ kc
	b.	_____ vrms _____ mc		k.	_____ kc



REFERENCE STANDARDS SUMMARY

<u>Step No.</u>	<u>Ref. Std.</u>	<u>Step No.</u>	<u>Ref. Std.</u>
RF TUNER - Continued		RF TUNER - Continued	
<u>Section A</u>		<u>Section A</u>	
16. 1.	_____ kc	23. i.	_____ phase
(cont) m.	_____ mv	(cont)	_____ holding
n.	_____ mv	j.	_____ range
o.	_____ mv		_____ output
p.	_____ kc		_____ drive
q.	_____ kc	23. a.	_____ volt
r.	_____ kc	b.	_____ mc
s.	_____ mv	c.	_____ vp-p
t.	_____ mv		_____ funct.
u.	_____ mv	d.	_____ sw to
v.	_____ kc	e.	_____ sync
w.	_____ kc	f.	_____ mc
x.	_____ kc	g.	_____ vp-p
17. a.	_____ vp-p	24. a.	_____ vp-p
b.	_____ cps	b.	_____ kc
18. a.	_____ vp-p	c.	_____ vp-p
b.	_____ kc	d.	_____ kc
c.	_____ vp-p	e.	_____ vp-p
d.	_____ mc	f.	_____ kc
e.	_____ vp-p	1.1 a.	_____ kc
f.	_____ mc	b.	_____.mvp-p
g.	_____ vp-p	c.	_____ kc
h.	_____ mc	d.	_____.mvp-p
19. _____ mv		e.	_____ kc
20. _____ mv		f.	_____.mvp-p
21. a.	_____ mvrms	g.	_____ kc
b.	_____ mvrms	h.	_____.mvp-p
c.	_____ mvrms	i.	_____ volt
d.	_____ db	25. a.	_____ mc
e.	_____ mvrms	b.	_____ vp-p
22 a.	_____ kc	1.1 a.	_____ vp-p
b.	_____ vp-p	b.	_____ pulses
c.	_____ kc	1.2 a.	_____ vp-p
d.	_____ vp-p	b.	_____ vp-p
e.	_____ kc	c.	_____ vp-p
f.	_____ vp-p	d.	_____ vp-p
g.	_____ kc	1.3 a.	_____ kc
h.	_____ vp-p	b.	_____ kc

## REFERENCE STANDARDS SUMMARY

<u>Step No.</u>		<u>Ref. Std.</u>	<u>Step No.</u>	<u>Ref. Std.</u>
RF TUNER - Continued				
<u>Section A</u>				
25.	1.3	c.	5.	a.
(cont)		d.		b.
		e.	6.	a.
		f.		b.
	1.4	a.		c.
		b.		d.
26.	a.		7.	a.
	b.			b.
	c.			c.
	d.			d.
	e.		8.	a.
	1.1			b.
	1.2	a.		c.
		b.		d.
	1.3	a.	9.	a.
		b.		b.
27.	a.			c.
	b.			d.
28.				e.
29.	a.		10.	a.
	b.			b.
	c.			c.
	d.			d.
30.				e.
				f.
DEMULTIPLEXER				
<u>Section B</u>				
1.	a.		11.	a.
	b.			b.
	c.		12.	a.
	d.			b.
2.	a.		REFERENCE SIGNAL GENERATOR	
	b.		<u>Section C</u>	
	c.		1.	a.
	d.			b.
3.				c.
4.	a.		2.	a.
	b.			b.
	c.			c.
				d.

REFERENCE STANDARDS SUMMARY

<u>Step No.</u>	<u>Ref. Std.</u>	<u>Step No.</u>	<u>Ref. Std.</u>
REFERENCE SIGNAL GENERATOR		REFERENCE SIGNAL GENERATOR	
<u>Section C</u>		<u>Section C</u>	
2. e.	_____ vp-p	5. h.	_____ mc
(cont) f.	_____ mc	(cont) i.	_____ vp-p
g.	_____ vp-p	j.	_____ mc
h.	_____ mc	k.	_____ vp-p
3. a.	_____ meter check	l.	_____ mc
b.	_____ mv	m.	_____ vp-p
4. a.	_____ vp-p	n.	_____ mc
b.	_____ mc	o.	_____ vp-p
c.	_____ vp-p	p.	_____ mc
d.	_____ mc	q.	_____ vp-p
e.	_____ vp-p	r.	_____ mc
f.	_____ mc	s.	_____ vp-p
g.	_____ vp-p	t.	_____ mc
h.	_____ mc	u.	_____ vp-p
i.	_____ vp-p	v.	_____ mc
j.	_____ mc	6.	_____ TP3 _____ TP4
k.	_____ vp-p	a.	_____ mc _____ mc
l.	_____ mc	b.	_____ vp-p _____ vp-p
m.	_____ vp-p	c.	_____ mc _____ mc
n.	_____ mc	d.	_____ vp-p _____ vp-p
o.	_____ vp-p	e.	_____ mc _____ mc
p.	_____ mc	f.	_____ vp-p _____ vp-p
q.	_____ vp-p	g.	_____ mc _____ mc
r.	_____ mc	h.	_____ vp-p _____ vp-p
s.	_____ mc	i.	_____ mc _____ mc
t.	_____ vp-p	j.	_____ vp-p _____ vp-p
u.	_____ mc	k.	_____ mc _____ mc
v.	_____ vp-p	l.	_____ vp-p _____ vp-p
w.	_____ mc	m.	_____ mc _____ mc
x.	_____ vp-p	n.	_____ vp-p _____ vp-p
y.	_____ mc	o.	_____ mc _____ mc
z.	_____ vp-p	p.	_____ vp-p _____ vp-p
5. a.	_____ vp-p	q.	_____ mc _____ mc
b.	_____ mc	r.	_____ vp-p _____ vp-p
c.	_____ vp-p	s.	_____ mc _____ mc
d.	_____ mc	t.	_____ vp-p _____ vp-p
e.	_____ vp-p	7.	_____ TP3 _____ TP4
f.	_____ mc	a.	_____ mc _____ mc
g.	_____ vp-p	b.	_____ vp-p _____ vp-p



REFERENCE STANDARDS SUMMARY

<u>Step No.</u>	<u>Ref. Std.</u>	<u>Step No.</u>	<u>Ref. Std.</u>
REFERENCE SIGNAL GENERATOR (continued)		REFERENCE SIGNAL GENERATOR (continued)	
<u>Section C</u>		<u>Section C</u>	
7.	c. _____ mc _____ mc	9.	A9 A10 A11 A12
	d. _____ vp-p _____ vp-p	TP-4	_____ mc
	e. _____ mc _____ mc		_____ vp-p
	f. _____ vp-p _____ vp-p	TP-15	_____ mc
	g. _____ mc _____ mc		_____ vp-p
	h. _____ vp-p _____ vp-p	TP-8	_____ mc
	i. _____ mc _____ mc		_____ vp-p
	j. _____ vp-p _____ vp-p	TP-23	_____ mc
	k. _____ mc _____ mc		_____ vp-p
	l. _____ vp-p _____ vp-p	TP-13	_____ mc
	m. _____ mc _____ mc		_____ vp-p
	n. _____ vp-p _____ vp-p	TP-13	_____ mc
	o. _____ mc _____ mc		_____ vp-p
	p. _____ vp-p _____ vp-p	10. TP-6	a _____ mc _____ vp-p
	q. _____ mc _____ mc		b _____ mc _____ vp-p
	r. _____ vp-p _____ vp-p		c _____ mc _____ vp-p
	s. _____ mc _____ mc		d _____ mc _____ vp-p
	t. _____ vp-p _____ vp-p	TP-8	e _____ mc _____ vp-p
8.	a. _____ mc _____ mc		f _____ mc _____ vp-p
	b. _____ vp-p _____ vp-p	TP-10	g _____ mc _____ vp-p
	c. _____ mc _____ mc		h _____ mc _____ vp-p
	d. _____ vp-p _____ vp-p		i _____ mc _____ vp-p
	e. _____ mc _____ mc		j _____ mc _____ vp-p
	f. _____ vp-p _____ vp-p	TP-12	k _____ mc _____ vp-p
	g. _____ mc _____ mc		l _____ mc _____ vp-p
	h. _____ vp-p _____ vp-p		m _____ mc _____ vp-p
	i. _____ mc _____ mc	TP-15	n _____ kc _____ vp-p
	j. _____ vp-p _____ vp-p		o _____ kc _____ vp-p
	k. _____ mc _____ mc		p _____ mc _____ vp-p
	l. _____ vp-p _____ vp-p	TP-16	q _____ kc _____ vp-p
	m. _____ mc _____ mc		r _____ kc _____ vp-p
	n. _____ vp-p _____ vp-p		s _____ mc _____ vp-p
	o. _____ mc _____ mc		
	p. _____ vp-p _____ vp-p		
	q. _____ mc _____ mc		
	r. _____ vp-p _____ vp-p		
	s. _____ mc _____ mc		
	t. _____ vp-p _____ vp-p		

REFERENCE STANDARDS SUMMARY

Field Changes Accomplished on This Equipment \_\_\_\_\_

Reference Standards Performed by \_\_\_\_\_

Date \_\_\_\_\_ Approved by \_\_\_\_\_

Title Position \_\_\_\_\_ Activity \_\_\_\_\_





## GENERAL

Assignment. This maintenance standards book is to be assigned permanently to a specific installation of Radio Receiving Set AN/URR-64(V).

Purpose. The purpose of this book is to describe a carefully selected series of reference standards tests and preventive maintenance procedures which serve to: (a) indicate optimum equipment performance, (b) reveal areas of deteriorated performance, and (c) extend operational equipment life.

Utilization. The contents of the book are to be utilized as follows:

For check-out validation. Satisfactory completion of the tests and procedures in this book and entry of the results on the reference standards summary sheets shall serve as validation of equipment check-out.

For periodic maintenance tests. These tests verify the operational readiness of the equipment and establish the scheduling of preventive maintenance procedures.

For corrective maintenance. The results of the reference standards tests and the test procedures in the text portion of the book will serve as valuable sources of information for troubleshooting, repair, or other corrective maintenance.

Safety. Because of the extensive electrical shock hazards which confront the electronic technician in the performance of his duties, he must discipline himself to employ proper safety work practices and precautions at all times. NAVSHIPS 250-660-42, Electric Shock--Its Causes and Its Prevention, which contains a discussion of the fundamental principles of electrical safety, shall be made available to all personnel engaged in this work.

## CONTENTS AND INSTRUCTIONS

Title Page. The serial number and, if applicable, the model number of the particular equipment which this book is assigned must be entered on this page.

Reference Standards Summary Sheets. One copy of the Reference Standards Summary sheet(s) is provided on which is to be transcribed the results of the reference standards tests. Retain this copy in this book until required by the bureau or agency concerned.

Revisions. A field change and revisions sheet is included where all revisions to the book and field changes affecting the steps in the book shall be entered.

Special Procedures and Adjustments. Included is a list of special procedures and adjustments required to perform certain steps.

Block Diagram. A block diagram has been drawn showing the functional relationship of the equipment, and indicating the basic subdivisional designations of the book sections.

List of Reference Standards Tests. Also included is a list of reference standards tests for quick reference as to the number and content of the reference standards tests. The procedures for performing the tests are located throughout the book and are referred to in the list. All procedures designated by step numbers enclosed in stars are referred to on the performance standards sheet.

Test Equipment Required. A list of test parameters and the equipment required to satisfy these parameters is furnished. Alternate test equipment and the period in which the test equipment is required is also listed. In addition, a chart is furnished which shows the estimated times for completion of the periodic tests. Refer to NAVSHIPS 95719 T/E Index.

Reference Standards Tests. These tests are subdivided into functional groups to facilitate accomplishment of equipment check-out-validation. The reference standards tests indications are to be established and recorded upon completion of installation, and these recorded values should be altered only when a yard overhaul or major field change necessitates such revision. Before establishing the test indications, the equipment shall be completely and satisfactorily checked out on ships own power by personnel well-qualified on this equipment to insure optimum equipment operation. The test indications are then to be entered in ink in the reference standards column of the book. Ships own test equipment shall be used to establish initial Reference Standards.

## CONTENTS AND INSTRUCTIONS - Continued

Note: The reference standard tolerances indicate the maximum and minimum limits of a test within which satisfactory operation can be expected for units of the same model. The tolerances are not to be construed as absolute limits, since they are not necessarily developed from a complete evaluation. However, if any tolerance appears unreasonable when compared with the result of the test, the accomplishment of the test shall be certified as accurate by an electronics engineer, and the Naval Electronic Systems Command shall be so notified by a note on the User Activity Technical Manual Comment Sheet, located at the back of this book.

Illustrations. The written procedures explain in detail the method of making each test and the necessary test equipment setup for performance of the test. Illustrations are used only when the procedure is of such a complex nature that it precludes a clear verbal description.

Operating Conditions and Control Settings. Each page includes a list of operating conditions and control settings that apply to the entire page unless noted otherwise within the respective step. After performing the procedures, reset all operating controls, switches, etc., to their normal positions.

Instructions. The recommended periodic maintenance schedule includes those checks that are indicative of equipment performance levels (e.g., transmitter power output, receiver i-f bandwidth, receiver sensitivity) and the required lubrication and cleaning procedures. The schedule briefly describes the steps to be performed, the detailed procedures of which can be found by referring to the section and step numbers listed in the SECTION & STEP column. Additional "unscheduled" maintenance tests have been included in the book. These tests are to be performed only at the time of installation or overhaul, or when the results from a related scheduled procedure indicate trouble.

Following the successful accomplishment of the periodic maintenance tests, the equipment should be in proper operating condition. Differences from normal indications shall receive corrective action.

The Naval Electronic Systems Command requirement for this schedule is cancelled when the Electronics Planned Maintenance System is implemented for this equipment.

## TEST EQUIPMENT REQUIRED

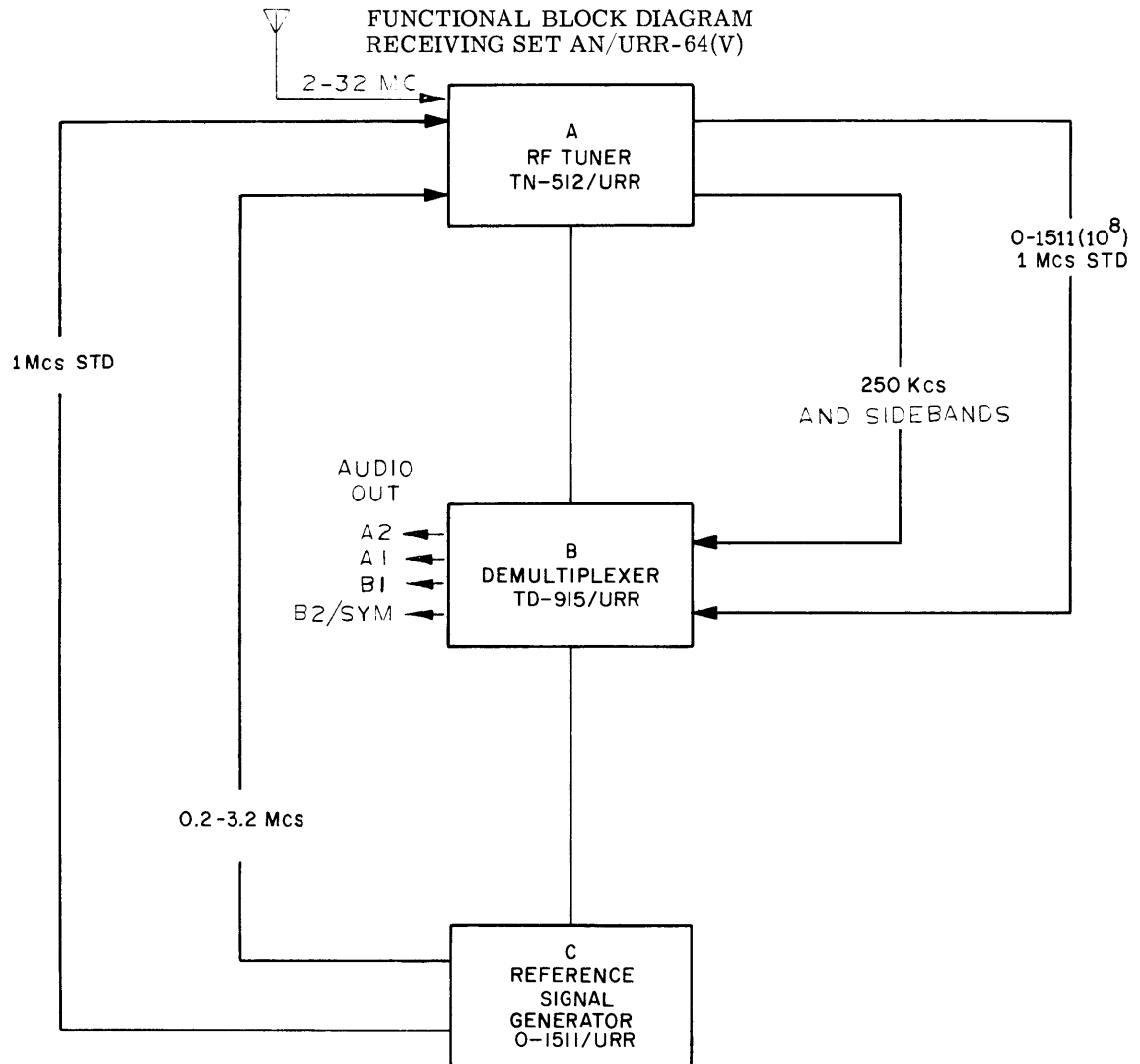
CATEGORY	RECOMMENDED	ALTERNATE	PARAMETERS	SECTION			PERIOD				
				A	B	C	W	M	Q	SA	
Signal Generator	AN/URM-25 ( )	HP-606B	50 kc to 65 mc in six bands. .1 uv to 3 volts into 50 ohm resistive load. Ext mod dc to 20 kc int mod 400 to 1000 cps.	X	X				X		X
Step Attenuator	HP-355C and D	Daven Model 651-50	Attenuation from 0 to 100 db in 1.0 db steps.	X					X		X
Frequency Standard Comparator	AN/URQ-9	AN/URQ-10	Stability $1 \times 10^9$ per 24 hours.			X					X
Multimeter	AN/PSM-4C	CSV-260	0-5000 VDC 0 to inf. ohms 0-5000 VAC	X	X	X			X		
Oscilloscope	AN/USM-281A	Tektronic Model 543A with type CA Dual Trace Plug-in.	Dual channel 50 mc at 5 MV/CM rise time - 7 usec with 8 cm input step; deflection factor .005V/CM to 20V/CM.	X	X	X	X	X			X
Frequency Counter	AN USM-207	CAQ1-5245-L	.5 kc to 30 mc 0.1 vrms 50 ohms input.	X	X	X	X	X			X
Vacuum Tube Volt Meter	AN/USM-106A	Millivac Model 28B	1 MV to 1000 volts with probe 10 meg ohms shunted by 7.5 pf with probe.	X	X				X		X
Vacuum Tube Volt Meter	ME-303/U	Millivac Model 28B	AC Range 0.5V to 300V Full Scale Frequency Range 20 cps to 700 mc	X					X		X



ESTIMATED TIME REQUIRED TO PERFORM  
PERIODIC MAINTENANCE TESTS

PERIODIC CHECKS	TIME REQUIRED*
Weekly	20 minutes
Monthly	45 minutes
Quarterly	15 minutes
Semiannually	60 minutes
<b>TOTAL REQUIRED</b> Per quarter	<b>410 minutes</b>

\*Estimated time is based only on making the test connections and performing the written procedures.



SECTION A : RF TUNER  
SECTION B : DEMULTIPLEXER  
SECTION C : REFERENCE SIGNAL GENERATOR

LIST OF REFERENCE STANDARD TESTS

SECTION	STEP	ACTION REQUIRED
<p>A TN-512/URR RF TUNER</p>	1	Record AC Input Voltage
	2	Record +24 VDC Power Supply Output
	3	Record +24 VDC Power Supply Output Ripple Voltage
	4	Record -24 VDC Power Supply Output
	5	Record -24 VDC Power Supply Output Ripple Voltage
	6	Record +5 VDC Power Supply Output
	7	Record +5 VDC Power Supply Output Ripple Voltage
	8	Record +200 VDC Power Supply Output
	9	Record +200 VDC Power Supply Output Ripple Voltage
	10	Record RF Gain of BAND 1
	11	Record RF Gain of BAND 2
	12	Record RF Gain of BAND 3
	13	Record RF Gain of BAND 4
	14	Record Local Oscillator out at 1A8TP-1
	15	Record Local Oscillator Divider out at 1A8TP-20
	15-1.1	Record Local Oscillator Divider out at 1A8TP-16
	15-1.2	Record Local Oscillator Divider out at 1A8TP-10
	15-1.3	Record Local Oscillator Divider out at 1A8TP-7
	15-1.4	Record Local Oscillator Input to 1A1A1-TP-2
	16	Record Total Gain of RF and 1st IF Stages
	17	Record 1 Mc Voltage and Frequency at 1A6TP-1
	18	Record Output Voltage and Frequency of Sub-Synthesizer 1A6
	19	Record Input Attenuator Trip Level
	20	Record Signal Level for Full Scale RF/AFC Meter Deflection
	21	Record the Second IF Output Voltage and AGC Range
	22	Record the Phase Detector injection frequency and Voltage. Check the Phase Detector Holding Range. Record Phase Detector Output Voltage.
	23	Record the PHASE Detector Driver 1 Mc Switching Frequency and Voltage
	24	Record the Phase Detector Driver Local Oscillator Divider Frequency and Voltage
	24-1.1	Record the Phase Detector Driver Synthesizer Divider Frequency and Voltage.
	25	Record the Local Oscillator Divider Frequency and Amplitude
25-1.1	Record the Counter Clock Circuit Voltage	
25-1.2	Record the Receiver Count Mode Divider Switching Voltage	
25-1.3	Check Receiver Mode Counter Readout	
25-1.4	Check External Count Mode	
26	Record the AFC Oscillator Frequency and Voltage	
26-1.1	Check the AFC Carrier Level Sensitivity on the RF/AFC Level Meter	
26-1.2	Check the Lock-In Range of the AFC	
26-1.3	Record the AFC Filter Bandpass	
27	Record Receiver Sensitivity and Signal to Signal plus Noise Ratio	
28	Record Receiver AGC Dynamic Range	
29	Record the Audio Bandpass of Channels B2, B1, A1, and A2	
30	Record the IF Output Bandpass	
<p>B TD-915/URR</p>	1	Record the Output of the +24 VDC, +15 VDC, +5 VDC and -24 VDC Power Supplies
	2	Record the Output Ripple Voltage of the +24 VDC, +15 VDC, +5 VDC and -24 VDC Power Supplies
	3	Record the Peak to Peak Voltage and Frequency of the 1 Mc at 2A3TP-1

## LIST OF REFERENCE STANDARD TESTS - Continued

SECTION	STEP	ACTION REQUIRED
<p style="text-align: center;">B</p> <p>TD-915/URR - Continued</p>	<p style="text-align: center;">4</p> <p style="text-align: center;">5</p> <p style="text-align: center;">6</p> <p style="text-align: center;">7</p> <p style="text-align: center;">8</p> <p style="text-align: center;">9</p> <p style="text-align: center;">10</p> <p style="text-align: center;">11</p> <p style="text-align: center;">12</p>	<p>Record the Peak to Peak Voltage of the 250 kc at 2A3-TP-5, Pin 8 and Pin L</p> <p>Record the Peak to Peak Voltage of the Sub-Carriers on 2A3-TP-6 and TP-7</p> <p>Record the AGC Dynamic Range Variation of ISB Channels</p> <p>Record the AGC Dynamic Range Variation of Symmetrical channels</p> <p>Record the Audio Output Level for ISB Channels</p> <p>Record the Audio Output Levels of Speaker and Monitor Circuits</p> <p>Record the BFO Frequency Range and Amplitude</p> <p>Record the Audio Output Level at 2J15</p> <p>Record the Calibration of the RF/AFC Level Meter</p>
<p style="text-align: center;">C</p> <p>0-1511/URR</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">2</p> <p style="text-align: center;">3</p> <p style="text-align: center;">4</p> <p style="text-align: center;">5</p> <p style="text-align: center;">6</p> <p style="text-align: center;">7</p> <p style="text-align: center;">8</p> <p style="text-align: center;">9</p> <p style="text-align: center;">10</p> <p style="text-align: center;">11</p>	<p>Record the Output of the +25VDC, +15VDC, and +5VDC Power Supplies</p> <p>Record the Frequency and Amplitude of the 1 Mc on 3A3</p> <p>Check the Locking Action of the Internal 1 Mc Standard to an External 1 Mc Standard</p> <p>Record the Frequencies and Amplitudes on the 3A4 Card (1 Mc Harmonic Distribution)</p> <p>Record the Frequencies and Amplitudes on the 3A5 Card (100 kc Spectrum Generator)</p> <p>Record the Frequencies and Amplitudes on the 3A6 Card (0.1 and 1.0 kc Frequency Selector)</p> <p>Record the Frequencies and Amplitudes on the 3A7 Card (10 and 100 kc Frequency Selector)</p> <p>Record the Frequencies and Amplitudes on the 3A8 Card (1 Mc Frequency Selector)</p> <p>Record the Frequencies and Amplitudes on the Mixer Amplifier Cards 3A9, 3A10, 3A11, and 3A12</p> <p>Record the Frequencies and Amplitudes Produced on the 3A13 (Final Mixer)</p> <p>Clean the air filters.</p>



RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
A1	Record the primary AC input voltage on the bottom of line filters FL1 and FL2.	Multimeters AN/PSM-4C	a. _____ vac 105-125 vac b. _____ vac 210-250 vac
	PROCEDURE: Connect Multimeter AN/PSM-4C using the 250 Vac scale, to line filter capacitors FL1 and FL2 and record reading.		
A2	Record the output of the +24 volt dc power supply on card A-2.	VTVM AN/USM-106A	_____ vdc +23.5 vdc - +24.5 vdc
	PROCEDURE: Place card A-2 on extender card A-4 and insert them into socket. Place FUNCTION switch of VTVM to +DC position, the RANGE switch to 50V. Connect common lead of VTVM AN/USM-106A to test point TP-2. Connect DC VOLTAGE probe to test point TP-3, and record reading.		
A3	Record the ripple voltage of the +24 volt dc power supply, on card A-2.	VTVM AN/USM-106A	_____ mvrms 0 - 1 mvrms
	PROCEDURE: Place VOLTS FULL SCALE switch, to the .01 position. Place ground lead of probe on test point TP-2. Place probe on test point TP-3 and record reading.		
A4	Record the output of the -24 volt dc power supply on card A-2.	VTVM ME-303/U	_____ vdc -23.5 to -24.5 vdc
	PROCEDURE: Place FUNCTION switch of VTVM ME-303/U on -DC position, RANGE switch to 50V. Connect common lead to test point, TP-8. Connect DC voltage probe to test point, TP-9, and record the reading.		
A5	Record the ripple voltage of the -24 volt dc power supply.	VTVM AN/USM-106A	_____ mvrms 0 - 1 mvrms
	PROCEDURE: Place VOLTS FULL SCALE switch to .01 position. Connect ground lead of probes to test point TP-8. Connect probe to test point TP-9 and record reading.		
A6	Record the output of the +5 volt dc power supply on card A-2.	VTVM ME-303/U	_____vdc 4.5 to 5.5 vdc
	PROCEDURE: Place FUNCTION switch of VTVM ME-303/U on +DC position, RANGE switch to 15V. Connect common lead to test point TP-6 and record reading.		

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
A7	Record the ripple voltage of the +5 vdc power supply.	VTVM AN/USM-106A	_____ mvrms 0 to 1 mvrms
	PROCEDURE: Place VOLTS FULL SCALE switch to .01 position. Connect ground lead of probe to test point TP-5. Connect probe to test point TP-6 and record reading.		
A8	Record the output of the +200 volt dc power supply on card A-2.	VTVM ME-303/U	_____ vdc 180 - 220 vdc
	PROCEDURE: Place FUNCTION switch of VTVM, ME-303/U on +DC position, RANGE switch to 500V. Connect common lead of VTVM to test point TP-8. Connect DC voltage probe to test point TP-11 and record reading.		
A9	Record ripple voltage of +200 vdc power supply	VTVM AN/USM-106A	_____ vac 0 to 5 vac
	PROCEDURE: Place VOLTS FULL SCALE to position 10. Connect ground lead of probe to test point TP-8. Connect probe to test point TP-11.		

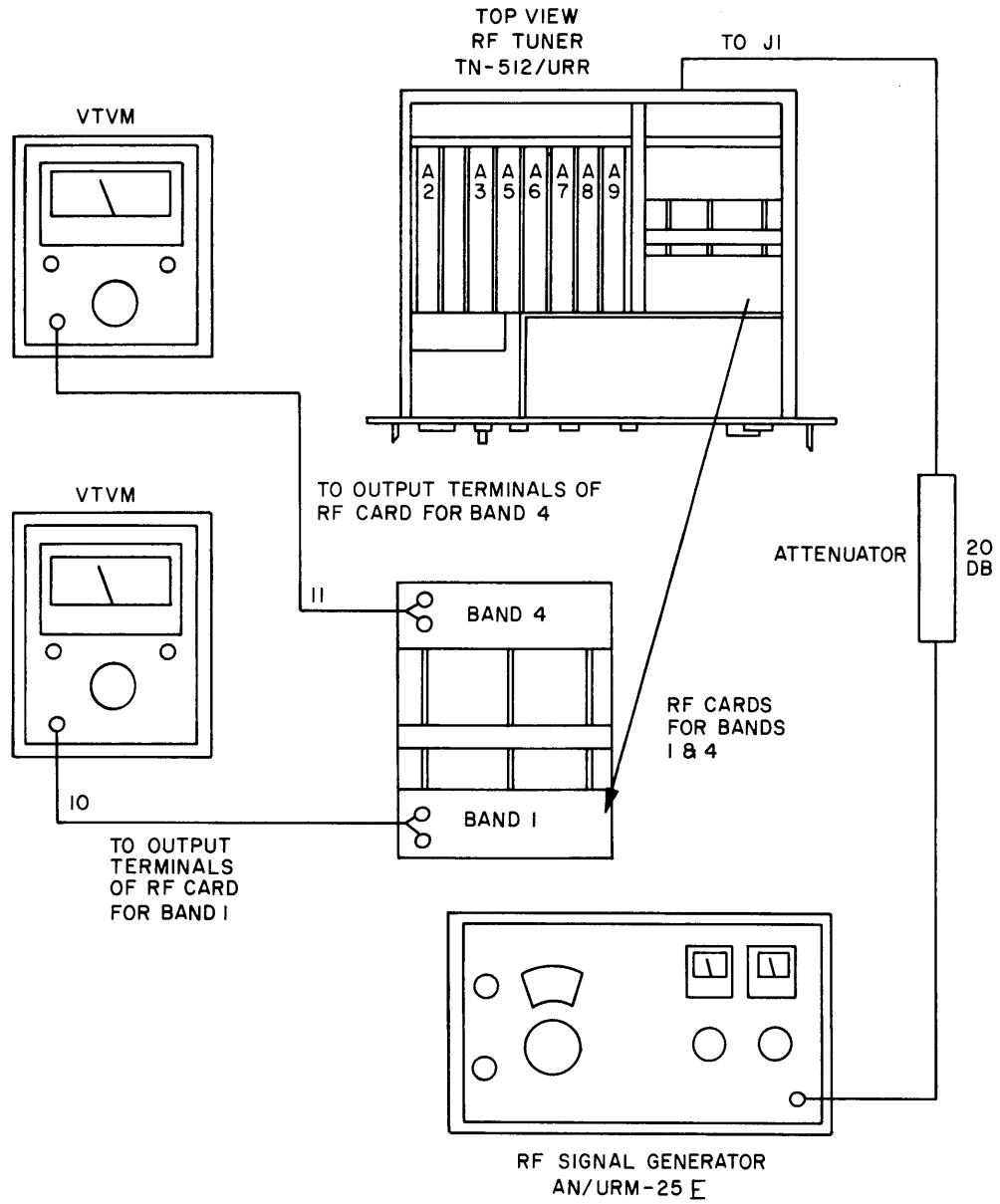
RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

RF GAIN: Max CW  
SILENCER: Down (OFF)  
FUNCTION SELECTOR: LOCAL  
POWER: ON

COUNTER MODE: REC  
INPUT ATTENUATOR: UP (20 db placed  
in circuit)  
BANDSWITCH: 2 - 4 mcs

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A10)</p>	<p>Record RF GAIN of Band 1, on printed circuit card 1A10A3A1, for low, medium and high frequency ranges.</p>	<p>VTVM ME-303/U</p>	<p>a. _____ mv ac 2mc min 31.5 mv b. _____ mv ac 3mc min 31.5 mv c. _____ mv ac 4mc min 31.5 mv</p>
	<p>PROCEDURE: Remove card A8 from RF TUNER. Set the RF TUNER, to a frequency of 2 megacycles.</p> <p>Set the signal generator FREQUENCY CONTROL to 2 megacycles.</p> <p>Set the signal generator MODULATION SELECTOR to CW.</p> <p>Set the signal generator to the 0.1 volt scale, and increase the output until meter reads 100 mv.</p> <p>Connect the output from the signal generator to the ATTENUATOR, set to 20 db.</p> <p>Connect the output of the ATTENUATOR to jack J1 on the rear panel of the RF TUNER.</p> <p>Connect probe of VTVM to OUTPUT of PC card, and connect probe ground lead to ground terminal on PC card.</p> <p>Adjust RANGE control on VTVM and record reading.</p> <p>Perform the same procedure above for the 3 mc and 4 mc frequencies as stated in Reference Standard Column.</p>		



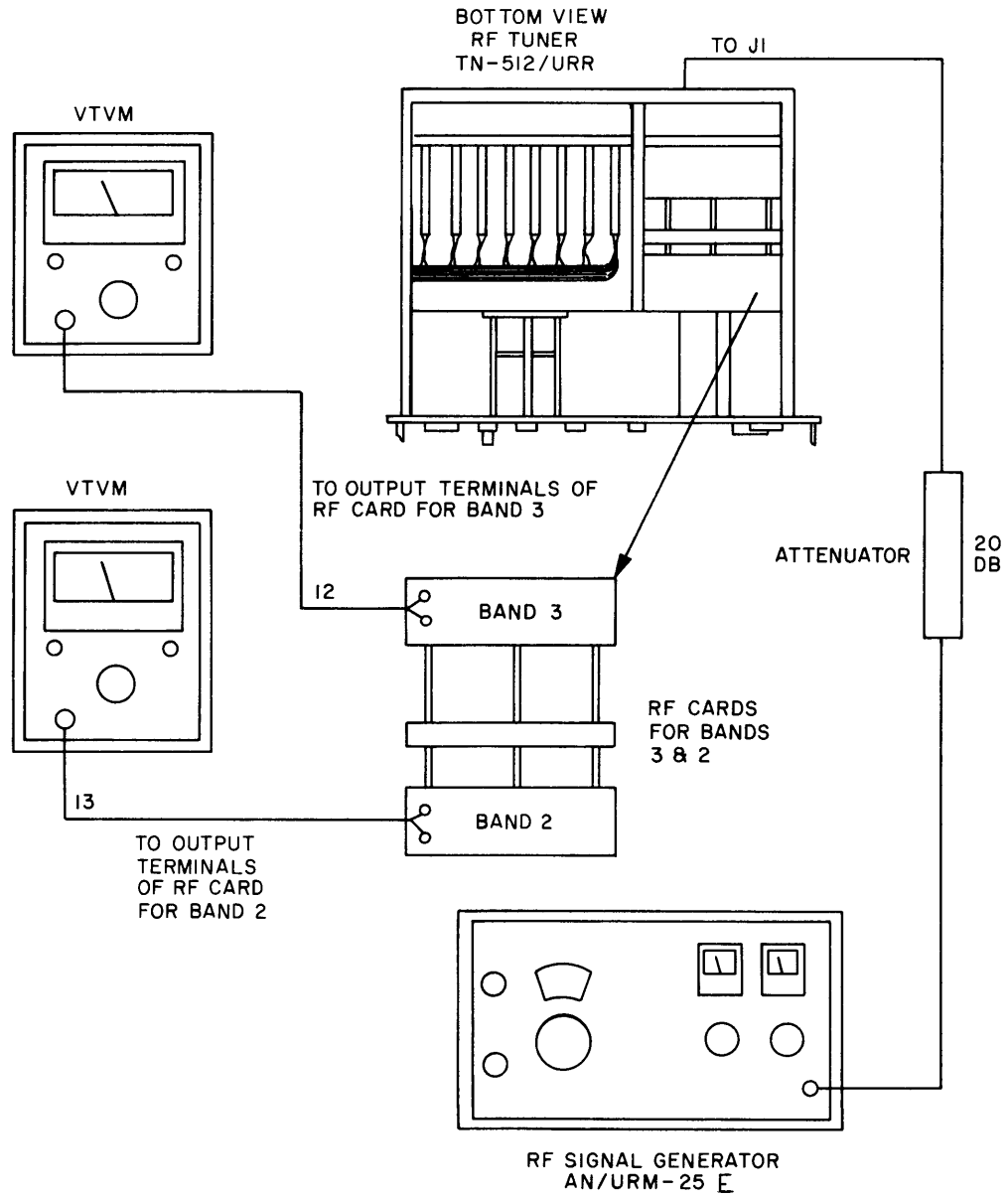
RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

RF GAIN: Max CW  
 SILENCER: Down (OFF)  
 FUNCTION: LOCAL  
 POWER: ON

COUNTER MODE: REC  
 INPUT ATTENUATOR: UP (20 db placed in  
 the circuit)  
 BANDSWITCH: 4 - 8 mcs

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(A11)          1.1	<p>Record RF GAIN of Band 2 on Printed Circuit card 1A10A3A2, for low, medium and high frequency ranges.</p> <p>PROCEDURE: Set the RF TUNER to a frequency of 4 megacycles.            Set the signal generator FREQUENCY CONTROL to 4 megacycles.            Leave the signal generator and ATTENUATOR setup as in step A10.</p> <p>Connect probe from VTVM, ME-303/U to output of PC card 1A10A3A2 and connect probe ground lead to ground terminal on PC card.</p> <p>Adjust RANGE control on VTVM and record reading.</p>	VTVM ME-303/U	a. _____ mv ac 4 mc min 31.5 mv b. _____ mv ac 6 mc min 31.5 mv c. _____ mv ac 8 mc min 31.5 mv
(A12)	<p>Record the RF GAIN of Band 3 on Printed Circuit card 1A10A3A3 for low, medium and high ranges. (Put BANDSWITCH to 8-16 mc)</p>	VTVM ME-303/U	a. _____ mv ac 8 mc min 31.5 mv b. _____ mv ac 12 mc min 31.5 mv c. _____ mv ac 16 mc min 31.5 mv
1.1	<p>PROCEDURE: Set the RF TUNER to a frequency of 8 megacycles.            Set the signal generator FREQUENCY CONTROL to 8 megacycles.            Leave the signal generator and ATTENUATOR setup as in step A10.</p> <p>Connect probe from VTVM to output of PC card, and connect probe ground lead to ground terminal on PC board.</p> <p>Adjust RANGE control on VTVM and record reading.</p>		
1.1	<p>PROCEDURE: Leave test setup as in step A12 above, and perform test for 12 mc and 16 megacycles.</p>		



RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

RF GAIN: Max CW  
 SILENCER: Down (OFF)  
 FUNCTION: LOCAL  
 POWER: ON

COUNTER MODE: REC  
 INPUT ATTENUATOR: UP (20 db placed in the circuits)  
 BANDSWITCH: 16-32

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD																												
<p>(A13)</p> <p>1.1</p>	<p>Record the RF GAIN of Band 4 on Printed Circuit card 1A1A3A4 for low, medium and high ranges.</p> <p>PROCEDURE: Set the RF TUNER to a frequency of 16 megacycles.</p> <p>Set signal generator FREQUENCY CONTROL to 16 megacycles.</p> <p>Leave the signal generator and ATTENUATOR setup as in step A10.</p> <p>Connect probe from VTVM to output of PC card A4676 and connect probe ground lead to ground terminal on PC board.</p> <p>Adjust RANGE control on VTVM and record reading.</p> <p>PROCEDURE: Leave test setup as in step A13 above, and perform test for 24 mc and 32 megacycles.</p>	<p>VTVM ME-303/U</p>	<p>a. _____ mv ac 16 mc min 31.5 mv</p> <p>b. _____ mv ac 24 mc min 31.5 mv</p> <p>c. _____ mv ac 32 mc min 31.5 mv</p>																												
<p>(A14)</p>	<p>Record the amplitude of the local oscillator at TP1 on card A8 with the receiver tuned to 16, 24, and 32 mcs.</p> <p>PROCEDURE: Turn RF TUNER BANDSWITCH to 16-32 mc position. Place card A8 of RF TUNER on the extender card, and insert them into socket.</p> <p>Connect probe of VTVM, ME-303/U to test point TP1, and the ground lead of probe to test point TP-2 of card A8.</p> <p>Set RF TUNER to 16, 24, and 32 megacycles and record voltage readings on VTVM, at each position.</p>	<p>VTVM ME-303/U</p>	<table border="0"> <tr> <td></td> <td>mc</td> <td>volt</td> </tr> <tr> <td>a.</td> <td>_____</td> <td>vac</td> </tr> <tr> <td></td> <td>16</td> <td>0.5 - 1.5</td> </tr> <tr> <td>b.</td> <td>_____</td> <td>vac</td> </tr> <tr> <td></td> <td>24</td> <td>0.5 - 1.5</td> </tr> <tr> <td>c.</td> <td>_____</td> <td>vac</td> </tr> <tr> <td></td> <td>32</td> <td>0.5 - 1.5</td> </tr> </table>		mc	volt	a.	_____	vac		16	0.5 - 1.5	b.	_____	vac		24	0.5 - 1.5	c.	_____	vac		32	0.5 - 1.5							
	mc	volt																													
a.	_____	vac																													
	16	0.5 - 1.5																													
b.	_____	vac																													
	24	0.5 - 1.5																													
c.	_____	vac																													
	32	0.5 - 1.5																													
<p>(A15)</p>	<p>Record local Oscillator Divider amplitude and frequency at TP-20 on card A8 with the receiver tuned to 16, 24 and 32 megacycles.</p> <p>PROCEDURE: Connect probe of VTVM to test point TP-20 and ground lead of probe to test point TP-9 of card A8. Connect AN/USM-207 frequency counter in the same manner.</p> <p>Set RF TUNER to 16, 24, and 32 megacycles and record voltage readings on VTVM at each position, and AN/USM-207 counter readings.</p>	<p>VTVM ME-303/U</p> <p>Frequency Counter AN/USM-207</p>	<p>RCVR READ-OUT</p> <table border="0"> <tr> <td></td> <td>(mc)</td> <td>volt rms</td> <td>FREQ</td> </tr> <tr> <td>a.</td> <td>_____</td> <td>vac</td> <td>_____</td> </tr> <tr> <td></td> <td>16</td> <td>.35-.45</td> <td>21 mc</td> </tr> <tr> <td>b.</td> <td>_____</td> <td>vac</td> <td>_____</td> </tr> <tr> <td></td> <td>24</td> <td>.35-.45</td> <td>29 mc</td> </tr> <tr> <td>c.</td> <td>_____</td> <td>vac</td> <td>_____</td> </tr> <tr> <td></td> <td>32</td> <td>.35-.45</td> <td>37 mc</td> </tr> </table>		(mc)	volt rms	FREQ	a.	_____	vac	_____		16	.35-.45	21 mc	b.	_____	vac	_____		24	.35-.45	29 mc	c.	_____	vac	_____		32	.35-.45	37 mc
	(mc)	volt rms	FREQ																												
a.	_____	vac	_____																												
	16	.35-.45	21 mc																												
b.	_____	vac	_____																												
	24	.35-.45	29 mc																												
c.	_____	vac	_____																												
	32	.35-.45	37 mc																												

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

BANDSWITCH: 8 - 16 mcs

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(A15) Cont 1.1	Record the local oscillator divider amplitude and frequency on card A8 for 8, 12, and 16 megacycles.	VTVM ME-303/U Frequency Counter AN/USM-207	RCVR READOUT (mc)    volt rms    mc a.    _____ mc 8    .35-.45    10.5 b.    _____ mc 12    .35-.45    14.5 c.    _____ mc 16    .35-.45    18.5
	PROCEDURE: Connect the VTVM, ME-303/U probe to test point TP-16, and the ground lead of probe to test point TP-9.  Connect the input lead of the frequency counter also to TP-16.  Set the RF TUNER to 8, 12 and 16 megacycles and record the readings obtained from the VTVM and the frequency counter at each position.		
1.2	Record the local oscillator divider amplitude and frequency on card A8 at 4, 6, and 8 mc.	VTVM ME-303/U Frequency Counter AN/USM-207	RCVR READOUT (mc)    volt rms    mc a.    _____ v _____ mc 4    .35-.45    5.25 b.    _____ v _____ mc 6    .35-.45    7.25 c.    _____ v _____ mc 8    .35-.45    9.25
	PROCEDURE: Connect the VTVM, ME-303/U probe to test point TP-10, and the ground lead of probe to test point TP-9.  Connect the input lead of the frequency counter also to test point TP-10. Set the RF TUNER first to 4, then 6, and then 8 megacycles and record readings.		
1.3	Record the local oscillator divider amplitude and frequency on card A8 at 2, 3, and 4 mcs.	VTVM ME-303/U Frequency Counter AN/USM-207	RCVR READOUT (mc)    volt rms    mc a.    _____ v _____ mc 2    .35-.45    2.625 b.    _____ v _____ mc 3    .35-.45    3.625 c.    _____ v _____ mc 4    .35-.45    4.625
	PROCEDURE: Connect the VTVM Probe to test point TP-7, and the lead of probe to test point TP-6. Connect the input lead of the frequency counter AN/USM-207 also to test point TP-7.  Set the RF TUNER to 2, 3, and 4 megacycles and record the readings at each position.		
1.4	Record the amplitude and frequency of the local oscillator output to the input Standard card 1A1A1.  PROCEDURE: Turn RF TUNER BANDSWITCH to 16-32 mc position. Place card 1A1A1 on Riser card 1A4A3. Connect probe of VTVM, ME-303/U to TP-2 of card 1A1A1, and the ground lead of probe to TP-6. Connect Frequency Counter AN/USM-207 also to TP-2 of card 1A1A1. Set the SENSITIVITY control of the counter to .1V rms, the TIMEBASE to .1 second, and the FUNCTION control to FREQUENCY. Tune the RF TUNER to 16.0000 mc. Set the FUNCTION switch of the VTVM to the 10 scale and record the reading. Record the reading on the Frequency Counter. Tune the RF TUNER to 24 mc, and record frequency and amplitude.  Tune the RF TUNER to 32 mc, and record frequency and amplitude.	VTVM ME-303/U Frequency Counter AN/USM-207	16 mc a. _____ vrms Ampl 1 - 1.5 vrms b. _____ mc Freq 21.0000 mc 24 mc c. _____ vrms Ampl 1 - 1.5 vrms d. _____ mc Freq 29.0000 mc 32 mc e. _____ vrms Ampl 1 - 1.5 vrms f. _____ mc Freq 37.0000 mc



RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

RF GAIN: Max Clockwise  
SILENCER: OFF  
COUNTER MODE: REC

INPUT ATTENUATOR: Up (ON) 20 db placed in circuit.  
POWER: OFF  
BANDSWITCH: 2 - 4 mcs

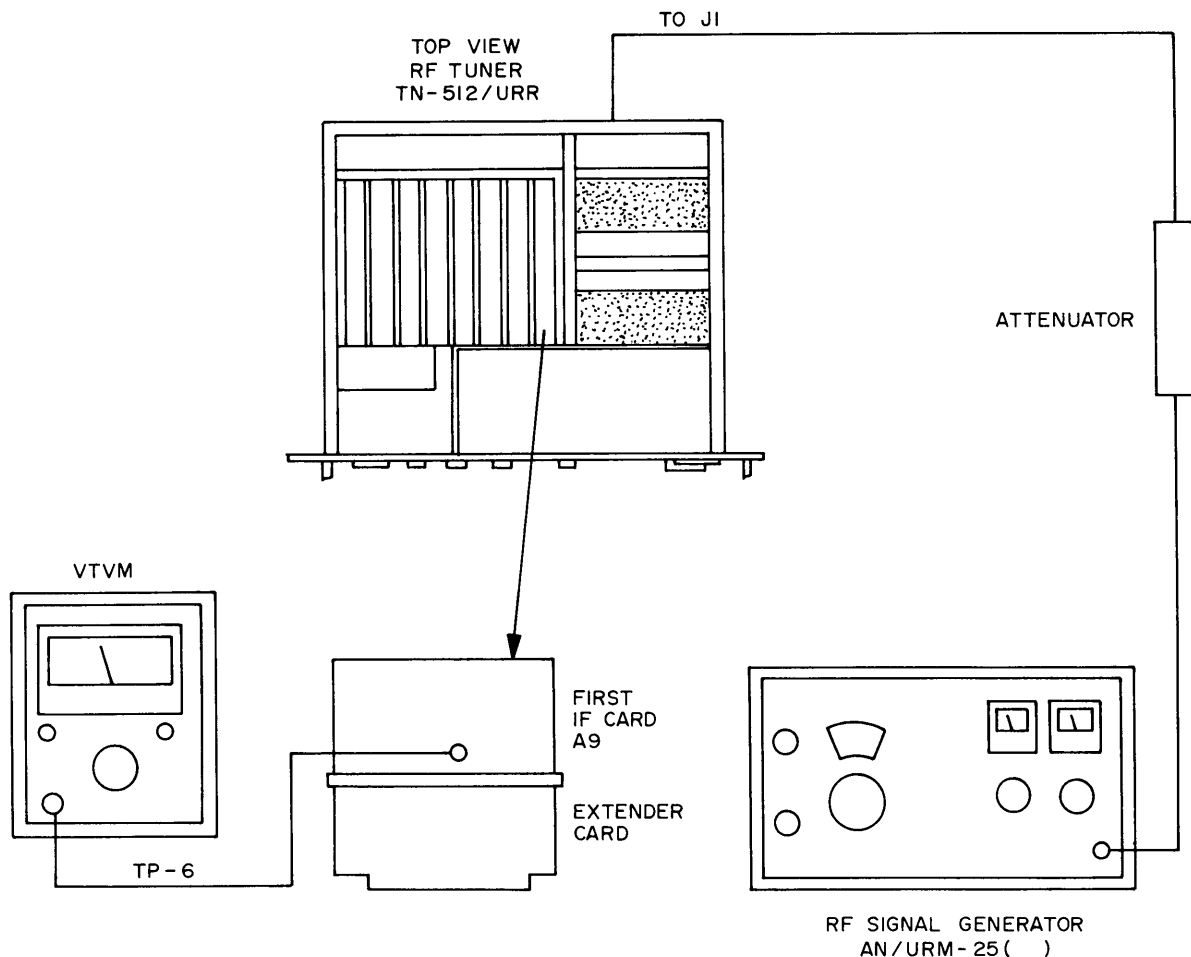
STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
A16	<p>Record the total gain of the RF, and first IF stages and the bandpass on card A9, for bands 1, 2, 3, and 4.</p> <hr/> <p>PROCEDURE: Remove card A6 from RF TUNER.</p> <p>Place card A9 on extender card and insert them into socket A9.</p> <p>Connect 50 ohm rf output from signal generator AN/URM-25 to the Attenuator, set to 20 db. Connect the output of the attenuator to the ANTENNA jack J1 on the rear panel of the RF TUNER.</p> <p>Turn RF TUNER power switch to ON.</p> <p>Set Signal Generator frequency to 2 megacycles, the MODULATION SELECTOR to CW. The ATTENUATOR control to .1 volt scale, and adjust VERNIER control for full scale reading of 100 mv.</p> <p>Adjust RF TUNER until 2 megacycles is displayed on front panel.</p> <p>Connect probe of VTVM, ME-303/U on TP-6 of card A9, and the ground lead of the probe to the chassis ground.</p> <p>Connect the Frequency Counter AN/USM-207 also to TP-6.</p> <p>Set SENSITIVITY control of counter to .1V rms, the TIME BASE to 1 second and the FUNCTION control to FREQUENCY.</p> <p>Tune the rf Signal Generator to indicate 625 kc on the frequency counter. Set the FUNCTION switch of the VTVM to the appropriate scale and record indication on VTVM meter.</p> <p><b>BANDPASS CHECK OF FIRST IF FILTERS</b></p> <p>Slowly tune the RF Signal Generator lower in frequency, until the amplitude observed at TP-6 drops 3 db. Observe reading on the Frequency Counter.</p> <p>Slowly tune the Signal Generator higher in frequency to a point above 625 kc, where the output observed at TP-6 drops 3 db. Observe the reading on the Frequency Counter. Calculate the difference between the High and Low frequencies. The difference must be greater than 16 kc.</p>	<p>VTVM ME-303/U</p> <p>Frequency Counter AN/USM-207</p>	<p>Band 1 GAIN</p> <p>a. _____ mv</p> <p>2 63.1 mv min.</p> <p>b. _____ mv</p> <p>3 63.1 mv min.</p> <p>c. _____ mv</p> <p>4 63.1 mv min.</p> <p>Band 1 Bandpass</p> <p>d. _____ kc</p> <p>2 min 16 kc</p> <p>e. _____ kc</p> <p>3 min 16 kc</p> <p>f. _____ kc</p> <p>4 min 16 kc</p> <p>Band 2 GAIN</p> <p>g. _____ mv</p> <p>4 63.1 mv min</p> <p>h. _____ mv</p> <p>6 63.1 mv min</p> <p>i. _____ mv</p> <p>8 63.1 mv min</p> <p>Band 2 Bandpass</p> <p>j. _____ kc</p> <p>4 16 kc min</p> <p>k. _____ kc</p> <p>6 16 kc min</p> <p>l. _____ kc</p> <p>8 16 kc min</p> <p>Band 3 GAIN</p> <p>m. _____ mv</p> <p>8 63.1 mv min</p> <p>n. _____ mv</p> <p>12 63.1 mv min</p> <p>o. _____ mv</p> <p>16 63.1 mv min</p> <p>Band 3 Bandpass</p> <p>p. _____ kc</p> <p>8 16 kc min</p> <p>q. _____ kc</p> <p>12 16 kc min</p> <p>r. _____ kc</p> <p>16 16 kc min</p>

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A16) Cont.</p>	<p>Perform the above procedures for Band 2 at 4, 6, and 8 mcs. Use 1.25 mc as a center frequency when checking bandpass.</p> <p>Perform the above procedures for Band 3 at 8, 12, and 16 mcs. Use 2.5 mcs as a center frequency when checking bandpass.</p> <p>Perform the above procedures for Band 4 at 16, 24, and 32 mcs. Use 5 mc as a center frequency when checking bandpass.</p>		<p>Band 4 GAIN</p> <p>s. _____ mv 16 63.1 mv min</p> <p>t. _____ mv 24 63.1 mv min</p> <p>u. _____ mv 32 63.1 mv min</p> <p>Band 4 Bandpass</p> <p>v. _____ kc 16 16 kc min</p> <p>w. _____ kc 24 16 kc min</p> <p>x. _____ kc 32 16 kc min</p>



RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
FUNCTION: LOCAL  
BANDSWITCH: 2 - 4 mc

STEP NO.	ACTION REQUIRED	READ INDICATION	REFERENCE STANDARD
<p>(A17)</p>	<p>Record the voltage and frequency of the one mega-cycle standard on card A6 for band one.</p>	<p>Oscilloscope AN/USM-281A</p>	<p>a. _____ vp-p Volt 4 - 8 vp-p</p>
	<p>PROCEDURE: Connect scope probe to test point TP-1 of card A6. Connect the ground lead of probe to test point TP-2.</p> <p>Connect input lead of frequency counter to VERTICAL SIGNAL output on scope, and record the voltage and frequency indicated by the scope and counter.</p>	<p>Frequency Counter AN/USM-207</p>	<p>b. _____ cps Freq 1000,000 cps</p>
<p>(A18)</p>	<p>Record amplitude and frequency of the sub-synthesizer on card A6 for Bands 1, 2, 3, and 4.</p>	<p>Oscilloscope AN/USM-281A</p>	<p>Band 1 2 - 4 mc a. _____ vp-p Volt 1.8 - 2.2 vp-p</p>
	<p>PROCEDURE: Place card A6 on extender card and insert them back into socket</p> <p>Connect Oscilloscope to test point TP-19 of card A6.</p> <p>Set the VOLTS/CM to display 1 volt/cm. Set the TIME/CM to 1 micro second. Connect input lead of frequency counter to VERTICAL SIGNAL output of scope. Set SENSITIVITY of counter to .1V rms. Set TIME BASE to 1 second. Set FUNCTION to frequency.</p> <p>Record the amplitude and frequency for each Band in the reference standard column.</p>	<p>Frequency Counter AN/USM-207</p>	<p>b. _____ kc Freq 875 kc</p> <p>Band 2 4 - 8 mc c. _____ vp-p Volt 1.8 - 2.2 vp-p</p> <p>d. _____ mc Freq 1.5 mc</p> <p>Band 3 8 - 16 mc e. _____ vp-p Volt 1.8 - 2.2 vp-p</p> <p>f. _____ mc Freq 2.75 mc</p> <p>Band 4 16 - 32 mc g. _____ vp-p Volt 1.3 - 1.7 vp-p</p> <p>h. _____ mc Freq 5.25 mc</p>

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

FUNCTION: LOCAL  
RF GAIN: Max CCW, passed switch detent  
METER FUNCTION: RF HIGH

INPUT ATTENUATOR: Down (OUT)  
SILENCER: Down (OFF)  
COUNTER MODE: REC

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(A19)	Record INPUT ATTENUATOR trip level.	Signal Generator AN/URM-25	_____ mv 25 mv - 35 mv
	<p>PROCEDURE: Connect signal generator to jack J1, the antenna input of RF TUNER.</p> <p>Set signal generator to 3 megacycles. Set RF TUNER to the 2 - 4 mc band, and tune for 3 megacycles. Connect VTVM to test point TP-23 on card A7. Set VTVM FUNCTION switch to -DC. Set RANGE switch to 50 volt scale. Slowly set the signal generator to the 100 mv scale. Increase signal generator output until VTVM drops to zero volts, and record level of signal generator.</p>		
(A20)	Record signal level for full scale RF/AFC meter deflection.	Signal Generator AN/URM-25	_____ mv 270 - 330 mv
	<p>PROCEDURE: Connect signal generator to jack J1, the antenna input of RF TUNER. Set signal generator to 3 megacycles. Set RF TUNER to the 2 - 4 mc band, and tune for 3 megacycles. Set the signal generator on the 1000 mv scale, increase the output of the signal generator slowly until RF/AFC meter indicates full scale. Record indication on signal generator meter.</p>		
(A21)	Record the second IF output voltage, the AGC Dynamic Range, the second IF monitor voltage, and the second IF to AFC circuit voltage, reserve gain voltage.	VTVM AN/USM-106A	TP-6 Sec IF output a. _____ mvrms 25 - 35 mvrms TP-15 Sec IF Mon out b. _____ mvrms 25 - 35 mvrms TP-6 Reserve Gain Volt c. _____ mvrms 250 - 350 mvrms TP-6 AGC Dynamic d. _____ db max 4 db TP-16 Sec IF to AFC Volt e. _____ mvrms 60 - 80 mvrms
	<p>PROCEDURE: Turn POWER switch to OFF position. Set FUNCTION switch to RF HIGH. Replace card A6 in socket A6 of the unit. Place card A7 on the extender card and insert in socket A7 of the unit. Turn the RF TUNER POWER switch to ON. Connect the output from the Signal Generator to the RF TUNER ANTENNA input jack J1. Tune the Signal Generator AN/URM-25 to 3 megacycles. Tune the RF TUNER to 03.0000 mc.</p> <p><b>SECOND IF OUTPUT VOLTAGE CHECK</b></p> <p>Connect VTVM AN/USM-106A, and the Frequency Counter AN/USM-207 to TP-1 of card A7. Set the VTVM FUNCTION switch to the 100 mv scale. Set the Frequency Counter controls as follows: FUNCTION switch to FREQUENCY, SENSITIVITY control to .1V rms, TIME BASE control to .1s.</p> <p>Retune the Signal Generator, for a reading of 625 kc on the Frequency Counter AN/USM-207. Adjust the RF OUTPUT of the Signal Generator until the VTVM indicates 30 mvrms at TP-1. Remove the counter and VTVM from TP-1 and connect at TP-6. Record the second IF output voltage at TP-6. Frequency Counter AN/USM-207 should now read 250 kc. Disconnect Counter from TP-6.</p>		

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A21) Cont.</p>	<p>SECOND IF MONITOR OUTPUT. Remove the VTVM from TP-6 and connect to TP-15 of card A7 and record reading.</p> <p>SECOND IF RESERVE GAIN VOLTAGE Check Turn RF GAIN control on the RF TUNER maximum clockwise. Remove the VTVM from TP-15, and connect to TP-6.</p> <p>Set FUNCTION switch of VTVM to the 1 volt scale. Record the reserve gain at TP-6 of card A7.</p> <p>AGC DYNAMIC RANGE. Check</p> <p>Leave VTVM connected to TP-6. Turn the RF TUNER, RF GAIN control maximum counter-clockwise. Vary the Signal Generator output very slowly from 500 uv to 30 mv.</p> <p>Record the difference in db on the VTVM AN/USM-106A, between the lowest voltage observed at TP-6 and the highest voltage at TP-6.</p> <p>SECOND IF TO AFC CIRCUIT VOLTAGE Remove VTVM from TP-6 and connect to TP-16 of card A7.</p> <p>Set the VTVM FUNCTION switch to the 100 mv scale and record the reading.</p>		

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF  
 FUNCTION: SYN  
 RF GAIN: Max CCW pass  
 switch detent

COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc  
 METER FUNCTION: RF HIGH  
 REFERENCE SIGNAL GENERATOR: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p style="text-align: center;">(A22)</p>	<p>Record the Phase Detector Reference Frequency, and Voltage. Record the Phase Detector Injection Frequency and voltage. Observe the Phase Detector Holding Range. Record Phase Detector Output voltage.</p>	<p>Oscilloscope AN/USM-281A  Frequency Counter AN/USM-207</p>	<p>Phase Detector Freq and Volt a. _____ kc TP-7 62.5 kc</p>
	<p><b>PROCEDURE:</b> Place card A5 on extender card. Insert extender card into socket A5 of the unit. Turn RF TUNER power switch to ON. Connect the Oscilloscope AN/USM-281A to TP-7 of card A5.</p> <p>Set the VOLTS/CM control on the Oscilloscope to 5 volts/cm. Connect the Frequency Counter AN/USM-207, to TP-7. Set the Frequency Counter controls as follows: TIMEBASE to .1s, FUNCTION switch to FREQUENCY, SENSITIVITY control to .1.</p> <p>Record the frequency and voltage at TP-7. Remove Oscilloscope and counter from TP-7 and connect to TP-11 and record the voltage and frequency.</p> <p><b>PHASE DETECTION INJECTION FREQUENCY AND VOLTAGE</b></p> <p>Remove the Oscilloscope and Counter from TP-11 and connect to TP-8. Tune the RF TUNER to 03.0000 mc. Set the REFERENCE SIGNAL GENERATOR to 03.0000 mc. Tune the RF TUNER until SYNC light on front panel is ON. The PHASE DIFFERENCE METER needle should then be in the center of the meter. Record the voltage and frequency at TP-8. Remove Oscilloscope and Counter from TP-8 and connect to TP-13 and record the frequency and voltage. Remove Oscilloscope and Counter from TP-13.</p> <p><b>PHASE DETECTOR HOLDING RANGE</b></p> <p>The following test will be to observe the PHASE DIFFERENCE meter on the RF TUNER, the point at which the phase detector drops out of SYNC. Carefully turn the RF TUNER TUNING control Counter Clockwise, the PHASE DIFFERENCE meter needle will move to the left. Observe the point at which the needle swings back to center scale. This should occur in the RED region. The SYNC light on the RF TUNER should then go OUT. The above test will now be performed by turning the TUNING control in the clockwise direction. The RF TUNER must first be tuned to 3 mc with SYNC light ON. The PHASE DIFFERENCE meter needle should move to the right.</p> <p><b>PHASE DETECTOR OUTPUT DRIVE VOLTAGE</b></p> <p>Tune the RF TUNER to 3 mc. The PHASE DIFFERENCE meter needle should be at center scale, and the SYNC light ON. Connect the Oscilloscope AN/USM-281A to TP-10 on card A5. Set the Oscilloscope controls to a DC function, and VOLTS/CM control to 1 volt/cm. Turn the RF TUNER TUNING control clockwise. Oscilloscope display should rise a minimum of 2 volts before it drops to zero. Turn the RF TUNER TUNING control counterclockwise, oscilloscope display should fall a minimum of 2 volts before it returns to zero.</p>	<p>RF TUNER PHASE DIFFERENCE meter</p>	<p>b. _____ vp-p 8-10 vp-p c. _____ kc TP-11 62.5 kc d. _____ vp-p 8-10 vp-p Phase Detector Injection Frequency and voltage e. _____ kc TP-8 62.5 kc f. _____ vp-p 4-5 vp-p g. _____ kc TP-13 62.5 kc h. _____ vp-p 4-5 vp-p Phase Detector Holding Range Check i. _____ (✓) Output Drive Volt Check j. _____ (✓)</p>

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF  
FUNCTION: LOCAL  
RF GAIN: MAX CCW  
COUNTER MODE: REC

BANDSWITCH: 2 - 4 mc  
METER FUNCTION: RF HIGH  
INPUT ATTENUATOR: Down (out)  
REFERENCE SIGNAL GENERATOR: OFF

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A23)</p>	<p>Record the Phase Detector Driver 1 mc switching frequency and voltage.</p>	<p>Oscilloscope AN/USM-281A Frequency Counter AN/USM-207</p>	<p>FUNC SW LOCAL a. _____ mc TP-6 1 mc b. _____ vp-p 6 - 8 vp-p FUNC Sw to SYNC check c. _____ (✓) FUNC Sw AFC d. _____ mc TP-6 1 mc e. _____ vp-p 6 - 8 vp-p FUNC Sw SYN f. _____ mc TP-6 1 mc g. _____ vp-p 6 - 8 vp-p</p>
	<p>PROCEDURE: The RF TUNER and the Reference Signal Generator must be connected in the system.</p> <p>Place card 1A1A2 on the extender card and insert them into socket 1A1A2. Connect the Oscilloscope AN/USM-281A to TP-6. Connect the ground lead of probe to the chassis. Set the VOLTS/CM control to 2 volts/cm. Connect the Frequency Counter AN/USM-207 to TP-6 of card 1A1A2.</p> <p>Set the Frequency Counter controls as follows: TIMEBASE to .1s, FUNCTION switch to FREQUENCY, SENSITIVITY control to .1. Record the frequency and amplitude at TP-6.</p> <p>Turn the FUNCTION switch on the RF TUNER to SYN. Observe the Oscilloscope screen, signal should disappear. Turn the FUNCTION switch on the RF TUNER to AFC and record voltage and frequency.</p> <p>Turn the REFERENCE Signal Generator POWER switch to ON. Turn the FUNCTION switch on the RF TUNER to SYN. Record the amplitude and frequency.</p> <p>NOTE: Frequency should be displayed as a clean sine wave.</p>		
<p>(A24)</p>	<p>Record the Phase Detector Driver Local Oscillator Divider frequency and voltage.</p>	<p>Oscilloscope AN/USM-281A Frequency Counter AN/USM-207</p>	<p>2 mc a. _____ vp-p TP-2 3 - 4 vp-p b. _____ kc 262.5 kc 3 mc c. _____ vp-p TP-2 3 - 4 vp-p d. _____ kc 362.5 kc 4 mc e. _____ vp-p TP-2 3 - 4 vp-p f. _____ kc 462.5 kc</p>
	<p>PROCEDURE: Card 1A1A2 should still be on the extender card from the previous check.</p> <p>Connect the Oscilloscope AN/USM-281A to TP-2.</p> <p>Connect the Frequency Counter also to TP-2. Tune the RF TUNER to 02.0000 mc.</p> <p>Record the amplitude and frequency at TP-2.</p> <p>Tune the RF TUNER to 03.0000 mc and record the frequency and amplitude.</p> <p>Tune the RF TUNER to 04.0000 mc and record the frequency and amplitude.</p>		

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
 FUNCTION: SYN  
 COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc

RF GAIN: MAX CCW  
 SILENCER: OFF  
 METER FUNCTION: RF HIGH  
 INPUT AT TENUATOR Down (out)

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(A24) Cont. 1.1	<p>Record the Phase Detector Driver Synthesizer Divider frequency and amplitude of IAIA2.</p> <p>PROCEDURE: Connect the Oscilloscope AN/USM-281A and the Frequency Counter AN/USM-207 to TP-11. Turn Reference Signal Generator POWER switch to ON.</p> <p>Set Reference Signal Generator frequency selector controls to 03.0000.</p> <p>Turn the TUNE control until front panel of RF TUNER displays 03.0000 mc. Record the frequency and amplitude at TP-11.</p> <p>Turn the BANDSWITCH on the RF TUNER to 4 - 8 mc.</p> <p>Set Reference Signal Generator to 06.0000 mc. Turn the RF TUNER tuning control until front panel displays 06.0000 mc and record the frequency and amplitude at TP-11.</p> <p>Turn the BANDSWITCH on the RF TUNER to 8 - 16 mc. Turn the RF TUNER tuning control until front panel displays 12.0000 mc.</p> <p>Set Reference Signal Generator to 120000 mc and record the frequency and amplitude at TP-11.</p> <p>Turn the BANDSWITCH on the RF TUNER to 16 - 32 mc. Turn the RF TUNER tuning control until front panel displays 24.0000 mc.</p> <p>Set the Reference Signal Generator to 24.0000 mc and record the frequency and amplitude at TP-11.</p> <p>Retune the receiver until the front panel display is 18.5 mc.</p> <p>Record the signal at TP-1.</p>		<p>3 mc</p> <p>a. _____ kc            TP-11 300 kc</p> <p>b. _____ mvp-p            150 - 250 mvp-p</p> <p>6 mc</p> <p>c. _____ kc            TP-11 300 kc</p> <p>d. _____ mvp-p            150-25- mvp-p</p> <p>12 mc</p> <p>e. _____ kc            TP-11 300 kc</p> <p>f. _____ mvp-p            150-250 mvp-p</p> <p>24 mc</p> <p>g. _____ kc            TP-11 300 kc</p> <p>h. _____ mvp-p            150-250 mvp-p</p> <p>18.5 mc</p> <p>i. _____ (✓)            TP-1 0 volt</p>



RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF  
 FUNCTION: SYN  
 COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc  
 REFERENCE SIGNAL GENERATOR: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A25)</p>	<p>Record the Local Oscillator Divider frequency and amplitude.</p>	<p>Oscilloscope AN/USM-281A</p>	<p>Local Osc. Div. a. _____ mc TP-3 1.45 mc</p>
	<p>PROCEDURE: Place card 1A1A1 on extender card 1A4A3 and insert into socket 1A1A1.</p> <p>Turn RF TUNER POWER switch to ON. Turn the RF TUNER to 03.0000 mc.</p> <p>Set the Reference Signal Generator to 03.0000 mc</p> <p>Connect the Oscilloscope AN/USM-281A to TP-3. Set the VOLTS/CM control to 1 volt/cm.</p> <p>Connect the Frequency Counter AN/USM-207 to TP-3. Set the Frequency Counter controls as follows: FUNCTION switch to FREQUENCY, SENSITIVITY control to .1V rms, TIMEBASE control to .1s. Record the frequency and amplitude at TP-3.</p>	<p>Frequency Counter AN/USM-207</p>	<p>b. _____ vp-p 2.5 - 4 vp-p</p>
<p>1.1</p>	<p>Record the Counter Clock Circuit voltage and amplitude.</p>		<p>Counter Clock TP-1 a. _____vp-p 2 - 3 vp-p 20 sec b. _____ (✓) pulses</p>
	<p>PROCEDURE: Place card 1A1A3 on extender card 1A4A2, and insert into socket 1A1A3. Connect the Oscilloscope and Frequency Counter to TP-1. Record the amplitude and frequency at TP-1.</p> <p>NOTE: The trailing edge of 1 pulse to the leading edge of the next pulse is 200 msec.</p>		
<p>1.2</p>	<p>Record the REC Count mode Divider Switching voltage.</p>		<p>REC Count mode Divider switching. TP-4 3 - 4 vp-p a. Band 1 _____vp-p b. 2 _____vp-p c. 3 _____vp-p d. 4 _____vp-p</p>
	<p>PROCEDURE: Connect Oscilloscope to TP-4 of card 1A1A3.</p> <p>Record the voltage in all four bands.</p>		

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(A25) Cont. 1.3	<p>Observe REC mode center readout.</p> <p>PROCEDURE: RF TUNER frequency displayed should be 03.0000, as set from previous test.</p> <p>Turn RF TUNER FUNCTION switch to LOCAL.</p> <p>Very carefully tune the FINE TUNE control on the RF TUNER max CCW. Carefully and slowly turn the FINE TUNE control until the 100 cycles digit changes in 100 cycle increments from 0 - 9.</p> <p>Carefully and slowly turn the TUNE control until the 1 kc digit changes from 0 - 9.</p> <p>Perform the above procedures for the 10 kc, 100 kc and 1 mc digits changing bands accordingly to get proper readout.</p> <p>The 10 mc digit should be checked only from 0 - 3.</p>	RF TUNER front panel MEGACYCLE DISPLAY window	a. .1 kc check ____ ( ) b. 1 kc check ____ ( ) c. 10 kc check ____ ( ) d. 100 kc check ____ ( ) e. 1 mc check ____ ( ) f. 10 mc check ____ ( )
1.4	<p>External Count Mode check.</p> <p>PROCEDURE: Connect the RF Signal Generator AN/URM-25 output to the RF TUNER COUNTER input jack on the front panel. Place counter mode switch on RF TUNER in HIGH position.</p> <p>Set the Signal Generator to 35 mc. Increase the output from the Signal Generator from 0 towards 250 mv.</p> <p>The RF TUNER Frequency Counter, should start counting at 250 mv or less, to the nearest 100 cycles at 35 megacycles. Decrease frequency of Signal Generator to 100 kc, and reduce the output.</p> <p>Increase output of Signal Generator and RF TUNER Frequency Counter should count stability prior to reaching 250 mv.</p> <p>The frequency on RF TUNER Frequency Counter should be 00.1000 (to the nearest 100 cycles).</p> <p>Place COUNTER MODE switch in the LOW position. The RF TUNER frequency counter should display 0.10000 (to the nearest 10 cycles).</p>	a. 35 mc check ____ ( ) b. 100 kc check ____ ( )	

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF  
FUNCTION: AFC  
RF GAIN: CCW  
SILENCER: DOWN

COUNTER MODE: REC  
BANDSWITCH: 2 - 4 mc  
METER FUNCTION: AFC CARRIER  
INPUT ATTENUATOR: DOWN (OUT)

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A26)</p>	<p>Record the AFC Oscillator frequency and voltage on card A3.</p>	<p>VTVM AN/USM-106A</p>	<p>AFC OSC Volt a. _____ mvrms TP-7 80-95 mvrms</p>
	<p>PROCEDURE: Prior to beginning the test, check voltage at TP-19 and TP-20 with VTVM. TP-19 should be +10 vdc, TP-20 should be -10 vdc. First place card A3 on the extender card, and insert extender card into socket A3. Turn the RF TUNER POWER switch to ON. Connect VTVM AN/USM-106A to TP-7 of card A3. Set FUNCTION switch of VTVM to 100 mv scale.</p> <p>Tune the RF TUNER to 03.0000 mc. Record the voltage reading on VTVM. Disconnect VTVM and connect Frequency Counter to TP-7. Frequency Counter controls are set as in previous tests.</p> <p>Disconnect VTVM and counter from TP-7. Connect VTVM to TP-8 of card A3. Set FUNCTION switch 10 volt scale, and record the reading. Disconnect VTVM from TP-8 and connect it to TP-10. Record the reading.</p>	<p>Frequency Counter AN/USM-207</p>	<p>AFC OSC Freq b. _____ kc TP-7 250 kc + 5 cycles c. _____ vrms TP-8 .8-1.2 vrms d. _____ vrms TP-10 .8-1.2 vrms RFC/AFC meter Green check e. _____ ( )</p>
<p>1.1</p>	<p>Observe the AFC Carrier level sensitivity.</p>	<p>RF/AFC meter</p>	<p>_____ check</p>
<p>1.2</p>	<p>PROCEDURE: Connect RF Signal Generator to ANTENNA jack J1 on rear panel of RF TUNER. Tune Signal Generator to 3 mc at 1 uv output.</p> <p>Depress the AFC TUNE switch on RF TUNER. Tune the RF TUNER carefully until RF/AFC level meter indicates above the static value, then fine tune the receiver, until the PHASE DIFFERENCE meter indicates center scale. RF/AFC level meter needle should be in the green.</p>		
	<p>Observe the Lock in Range of the AFC.</p> <p>PROCEDURE: Turn FINE TUNE control fully clockwise.</p>	<p>PHASE DIFFERENCE meter and RF/AFC meter</p>	<p>PHASE DIFF meter Red check a. _____ ( ) RF/AFC 1 kc check</p>
	<p>Depress the AFC TUNE switch, and adjust the RF TUNER, TUNING control carefully until RF/AFC level meter indicates in the green, and the PHASE DIFFERENCE meter indicates center scale.</p>		<p>b. _____ ( )</p>

RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(A26) 1.2 Cont.</p>	<p>Release the AFC TUNE switch, observe the RF TUNER frequency counter display in MEGA-CYCLE window. Slowly turn FINE TUNE control counterclockwise until SYNC lamp goes OUT. Observe dropout point of SYNC lamp on PHASE DIFFERENCE meter. Needle on PHASE DIFFERENCE meter should be in red region.</p> <p>Depress the AFC TUNE switch and record the difference in frequency from the time the AFC TUNE switch was released and depressed. Approximately a 1 kc difference should be observed on RF/AFC meter.</p> <p>The above test should now be performed with the FINE TUNE control maximum counterclockwise.</p>		
<p>1.3</p>	<p>Record the AFC Filter Bandpass.</p>		<p>AFC Filter Bandpass TP-16</p>
	<p>PROCEDURE: Card A3 should still be on extender card from previous test.</p> <p>Connect the VTVM AN/USM-106A and Frequency Counter AN/USM-207 to TP-16.</p> <p>RF Signal Generator should still be connected to jack J1 on rear panel of RF TUNER.</p>		<p>a. _____ ( ) greater than 210 kc</p> <p>TP-16</p> <p>b. _____ ( ) less than 290 kc</p>
	<p>Set the Signal Generator AN/URM-25 output to 100 mv. Tune the Signal Generator to 250 kc and note the VTVM voltage.</p> <p>Carefully tune the Signal Generator until the voltage drops 3 db.</p> <p>Record the reading on the Frequency Counter.</p> <p>Tune the rf Signal Generator carefully in the opposite direction, and note 3 db drop in voltage on the VTVM.</p> <p>Record the reading on Frequency Counter.</p>		


RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
 FUNCTION SWITCH: SYN  
 COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc  
 METER FUNCTION: RF HIGH  
 SILENCER: DOWN (OFF)  
 INPUT ATTENUATOR: DOWN (OUT)  
 AGC TIME CONSTANTS: FAST  
 LINE LEVEL ADJUSTS: MAX clockwise  
 POWER SWITCH: ON

DEMULTIPLEXER  
 MODE SWITCH: ISB  
 METER SENSITIVITY: Zero  
 MONITOR SELECTOR: B2  
 AGC SOURCE SWITCHES: B2 - manual  
 B1 - manual  
 A1 - manual  
 A2 - manual

The Receiver System must be fully interconnected to perform the following checks.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD																
 A27	<p>Record Receiver Sensitivity and Signal to Signal + Noise Ratio.</p> <hr/> <p>PROCEDURE: Disconnect ANTENNA input to Receiver System at jack J8 on the interconnect panel. Connect 50 ohm resistive non-inductive load to J8.</p> <p>Adjust RF GAIN control on the RF TUNER for -10 dbm on the DEMULTIPLEXER LINE DBM meter.</p> <p>Remove the 50 ohm dummy load from jack J8, and connect RF Signal Generator AN/URM-25.</p> <p>Insert headphones into DEMULTIPLEXER PHONE jack. Turn up LOCAL GAIN control for an audible noise level. Tune Signal Generator to approximately 2 mc at a 1 mv output. Tune Signal Generator for approximately 1 kc tone in headphones. Turn Reference Signal Generator POWER switch to ON. Set Reference Signal Generator frequency selector controls to 02.0000mc. Tune RF TUNER until SYNC light comes on and PHASE DIFFERENCE meter indicates center scale. Decrease output of Signal Generator until Line DBM meter on Demultiplexer reads zero dbm. Record level of RF Signal Generator.</p> <p>The above procedure for Sensitivity, should be performed for all four channels at the following frequencies:</p> <table data-bbox="346 1444 1222 1554" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 0 20px;">2 mc</td> <td style="padding: 0 20px;">3 mc</td> <td style="padding: 0 20px;">4 mc</td> <td style="padding: 0 20px;">Band 1</td> </tr> <tr> <td style="padding: 0 20px;">4 mc</td> <td style="padding: 0 20px;">6 mc</td> <td style="padding: 0 20px;">8 mc</td> <td style="padding: 0 20px;">Band 2</td> </tr> <tr> <td style="padding: 0 20px;">8 mc</td> <td style="padding: 0 20px;">12 mc</td> <td style="padding: 0 20px;">16 mc</td> <td style="padding: 0 20px;">Band 3</td> </tr> <tr> <td style="padding: 0 20px;">16 mc</td> <td style="padding: 0 20px;">24 mc</td> <td style="padding: 0 20px;">32 mc</td> <td style="padding: 0 20px;">Band 4</td> </tr> </table> <p>The only controls that should be changed after each frequency is checked are the following:</p> <p>The MONITOR SELECTOR on the Demultiplexer;</p> <p>The RF TUNER BANDSWITCH when required for Band 1, 2, 3, and 4;</p> <p>and RF Signal Generator Frequencies.</p>	2 mc	3 mc	4 mc	Band 1	4 mc	6 mc	8 mc	Band 2	8 mc	12 mc	16 mc	Band 3	16 mc	24 mc	32 mc	Band 4	<p>DEMULTI-                      PLEXER LINE                      DBM meter                      and Signal Gen-                      erator                      AN/URM-25</p>	<p>Signal to Signal + Noise Ratio all bands</p> <p>a. _____ dbm                      -10 dbm</p> <p>Sensitivity</p> <p>b. _____ ( )                      .5 uv or less</p>
2 mc	3 mc	4 mc	Band 1																
4 mc	6 mc	8 mc	Band 2																
8 mc	12 mc	16 mc	Band 3																
16 mc	24 mc	32 mc	Band 4																


RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
 FUNCTION SWITCH: SYN  
 COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc

METER FUNCTION: RF HIGH  
 SILENCER: DOWN (OFF)  
 INPUT ATTENUATOR: DOWN (OUT)

The Receiver System must be fully interconnected to perform the following checks.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
 <p>A28</p>	<p>Observe Receiver AGC Dynamic Range.</p> <p>PROCEDURE: Signal Generator AN/URM-25 should still be connected to jack J8 as in step A27. Insert headphones into Demultiplexer PHONE jack.</p> <p>Turn LOCAL GAIN on Demultiplexer up for an audible noise level.</p> <p>Tune Signal Generator to 3 mc at a 1 uv output.</p> <p>Tune Signal Generator for a 1 kc tone in headphones.</p> <p>Turn Reference Signal Generator POWER switch to ON.</p> <p>Set Reference Signal Generator frequency selector controls to 030000 mc.</p> <p>Set the Demultiplexer controls to the following positions.</p> <p>LINE LEVEL ADJUST controls, max ccw; AGC SOURCE switches to:</p> <p style="margin-left: 40px;">B2 - B2                      B1 - B1                      A1 - A1                      A2 - A2</p> <p>And MONITOR SELECTOR switch to B2.</p> <p>Turn RF GAIN control on RF TUNER to max ccw past AGC detent.</p> <p>Adjust B2 LINE LEVEL ADJUST for zero dbm on Demultiplexer LINE DBM meter.</p> <p>Increase Signal Generator output slowly to 1 volt.</p> <p>LINE DBM meter should not vary more than ±1.5 db.</p>	<p>LINE DBM meter on Demultiplexer</p>	<p>±1.5 db                      AGC Dynamic Range                      _____ db</p>


RF TUNER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
 FUNCTION SWITCH: SYN  
 COUNTER MODE: REC  
 BANDSWITCH: 2 - 4 mc  
 METER FUNCTION: RF HIGH  
 SILENCER: DOWN (OFF)  
 INPUT ATTENUATOR: DOWN (OUT)  
 AGC TIME CONSTANTS: FAST  
 LINE LEVEL ADJUSTS: MAX clockwise  
 POWER SWITCH: ON

DEMULTIPLEXER  
 MODE SWITCH: ISB  
 MONITOR SELECTOR: B2  
 METER SENSITIVITY: Zero  
 AGC SOURCE SWITCHES: B2 - manual  
 B1 - manual  
 A1 - manual  
 A2 - manual

The Receiver System must be fully interconnected to perform in the following checks.


STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
 <p>A29</p>	<p>Record the Audio Bandpass of Channels B2, B1, A1 and A2.</p>	<p>VTVM AN/USM-106A</p>	<p>a. _____ db B1 1 db or less</p>
	<p>PROCEDURE: Disconnect ANTENNA input to receiver system at jack J8 on the chassis. Connect 50 ohm resistive non-inductive load to J8.</p> <p>Adjust RF GAIN control on the RF TUNER for -10 dbm on the Demultiplexer LINE DBM meter.</p> <p>Remove the 50 ohm dummy load from jack J8 and connect RF Signal Generator AN/URM-25.</p> <p>Insert headphones into Demultiplexer PHONE jack. Tune LOCAL GAIN control up for an audible noise level.</p> <p>Tune RF TUNER for 03.0000 mc. Tune Signal Generator for 3 mc at 1 uv output. Tune Signal Generator for approximately 1 kc tone in headphones.</p> <p>Set Reference Signal Generator frequency selector controls for 03.0000 mc.</p> <p>Tune RF TUNER until SYNC light comes on and Phase Difference meter indicates center scale. Decrease output of Signal Generator until LINE DBM meter in Demultiplexer indicates zero dbm. Connect a 600 ohm resistive non-inductive load to the following jacks on the rear panel of the Demultiplexer as each channel is checked.</p> <p style="padding-left: 40px;">B2 - J15 pins E and C                  B1 - J16 pins E and C                  A1 - J17 pins E and C                  A2 - J18 pins E and C</p> <p>Connect VTVM AN/USM-106A across 600 ohm load of jack J15. Set the FUNCTION switch of VTVM to 1 volt scale. Connect the Frequency Counter AN/USM-207 to 600 ohm load of jack J15.</p> <p>Vary the Signal Generator until the Frequency Counter indicates 1000 cycles and VTVM indicates 775 mvrms. The Signal Generator should be varied so counter will display from 420 - 2990 cycles for channels B2 and A2. It should vary from 300 to 2975 cycles in channels A1 and B1.</p> <p>Note the highest amplitude and the lowest amplitude. Find the difference between the two in db. Should be 1 db or less.</p> <p>Perform the above procedures for all four channels.</p>		<p>b. _____ db B2 1 db or less</p> <p>c. _____ db A1 1 db or less</p> <p>d. _____ db A2 1 db or less</p>

## RF TUNER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER SWITCH: ON  
RF GAIN: MAX CLOCKWISE  
SILENCER: OFF

COUNTER MODE: REC  
INPUT ATTENUATOR: UP (on) 20 db placed in circuit  
BANDSWITCH: 2 - 4 mc

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
 A30	Record the IF output Bandpass	Frequency Counter AN/USM-207	Bandpass greater than 16 kc _____ kc
	<p>PROCEDURE: Disconnect IF output cable at jack J8 on rear panel of Demultiplexer and connect a 50 ohm resistive non-inductive load.</p> <p>Connect 50 ohm rf output from signal generator AN/URM-25 to the Attenuator; set to 20 db.</p> <p>Connect the output of attenuator to the ANTENNA jack J1 on the rear panel of the RF TUNER.</p> <p>Set the Signal Generator to 2 mc and the following Signal Generator controls as follows: MODULATION SELECTOR to CW, the ATTENUATOR control to .1 volt scale. Adjust VERNIER control for full scale reading of 100 mv.</p> <p>Adjust RF TUNER until 2 megacycles is displayed on the front panel.</p> <p>Connect VTVM AN/USM-106A to 50 ohm load. Connect the Frequency Counter AN/USM-207 to 50 ohm load. Counter should read 250 kc on all bands.</p> <p>Lower the Signal Generator output frequency until a 3 db drop is observed on the VTVM, note the frequency at this point on the Frequency Counter.</p> <p>Increase the Signal Generator frequency to a point above the 250 kc counter reading where the output drops 3 db on VTVM. Calculate and record the difference between the higher and lower frequency</p>		



DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD									
<p>(B1)</p>	<p>Record the output of the +24 vdc, +15 vdc, +5 vdc, and -24 vdc power supplies on card A-1.</p>	<p>Multimeter AN/PSM-4C</p>	<p>a. _____ vdc TP-3 +21.6+26.4 vdc b. _____ vdc TP-6 +13.5+16.5 vdc c. _____ vdc TP-9 +4.5+5.5 vdc d. _____ vdc TP-12 -21.6-26.9 vdc</p>									
	<p>PROCEDURE: Remove all PC cards from their sockets in the unit. Insert extender card into socket A-1 of the unit, and insert card A-1 into extender card.</p> <p>Turn POWER switch to the ON position, set Multimeter, AN/PSM-4, to the 50 volt +DC scale. Connect common lead to chassis ground. Connect positive lead to the following test points on card A-1; TP-3, TP-6, TP-9, and record the readings. Set Multimeter, AN/PSM-4 to -DC volt, and connect positive lead to TP-12 and record the readings.</p>											
<p>(B2)</p>	<p>Record the output ripple voltage of the +24 vdc, +15 vdc, +5 vdc, and -24 vdc power supplies on card A-1.</p>	<p>VTVM AN/USM-106A</p>	<p>a. _____ mvac TP-3 less than .3MV b. _____ mvac TP-6 less than .3MV c. _____ mvac TP-9 less than .3MV d. _____ mvac TP-12 less than .3MV</p>									
	<p>PROCEDURE: The following ripple voltage test must be performed in a shielded area to obtain a true reading.</p> <p>Connect a shielded coaxial lead with a BNC connector to the input on the VTVM, AN/USM-106A. Select the 1 MV scale (without a probe) on FUNCTION switch.</p> <p>Connect the shielded (coaxial cable) to the following test points on card A-1, and the ground lead of the test cable to the associated test points.</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Test Lead</u></th> <th style="text-align: center;"><u>Ground</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">TP-3</td> <td style="text-align: center;">TP-2</td> </tr> <tr> <td style="text-align: center;">TP-6</td> <td style="text-align: center;">TP-5</td> </tr> <tr> <td style="text-align: center;">TP-9</td> <td style="text-align: center;">TP-8</td> </tr> <tr> <td style="text-align: center;">TP-12</td> <td style="text-align: center;">TP-11</td> </tr> </tbody> </table> <p>Record the readings.</p> <p>Turn Demultiplexer POWER switch to OFF. Remove card extender from socket A-1. Remove card A-1 from extender card and replace in socket A-1.</p>		<u>Test Lead</u>	<u>Ground</u>	TP-3	TP-2	TP-6	TP-5	TP-9	TP-8	TP-12	TP-11
<u>Test Lead</u>	<u>Ground</u>											
TP-3	TP-2											
TP-6	TP-5											
TP-9	TP-8											
TP-12	TP-11											
<p>(B3)</p>	<p>Record the peak-to-peak voltage of the 1 mc frequency at test point TP-1 of the subcarrier generator card A3.</p>	<p>Oscilloscope AN/USM-281A</p>	<p>_____ vp-p TP-1 +2.52+3.08 vp-p</p>									
	<p>PROCEDURE: Insert extender card into the A-3 socket of the Demultiplexer. Insert card A-3 into the extender card. Turn POWER switch to the ON position. Connect Oscilloscope AN/USM-281A, probe to TP-1, and ground lead of probe to chassis. Set VOLTS/CM control to 1, and record the reading.</p>											

## DEMULTIPLEXER

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

RF TUNER FUNCTION: AFC

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
B4	Record the peak-to-peak voltage of the 250 kc frequency at test point TP-5, pin 8, and pin L of subcarrier generator card A-3.	Oscilloscope AN/USM-281A	a. _____ vp-p TP-5 .36-.44 vp-p
	<p>PROCEDURE: Connect oscilloscope AN/USM-281A probe to TP-5, and ground lead of probe to the chassis.</p> <p>Set VOLTS/CM control to .5 and record the reading.</p> <p>Connect scope probe to pin 8 and record the reading.</p> <p>Connect scope probe to pin L and record the reading.</p>		b. _____ vp-p Pin 8 0.9-1.0 vp-p c. _____ vp-p Pin L 0.9-1.1 vp-p
B5	Record the peak-to-peak voltage of the subcarriers at test point TP-6 and TP-7 of subcarrier generator card A-3.	Oscilloscope AN/USM-281A	a. _____ vp-p TP-6 .5 - 2 vp-p
	<p>PROCEDURE: Connect oscilloscope AN/USM-281A, probe to TP-6, and ground lead of probe to the chassis.</p> <p>Set VOLTS/CM control to .5, and record the reading.</p> <p>Turn Demultiplexer POWER switch to OFF.</p> <p>Remove card extender from socket A3. Remove card A-3 from card extender and replace in socket A3 of Demultiplexer.</p>		b. _____ vp-p TP-7 .5 - 2 vp-p
B6	Record the AGC dynamic range variation of the ISB channels A1, A2, B1 and B2.	VTVM AN/USM-106A	a. A1 _____ db 0 - 2
	<p>PROCEDURE: Set MODE switch to ISB. Set AGC TIME CONSTANT switches to MEDIUM. Set AGC source switches as follows:</p> <p style="text-align: center;">A1        A1 A2        A2 SYM/B2   B2 B1        B1</p> <p>Insert extender card into the A7 socket of the Demultiplexer. Insert the A7 card into the extender card socket. Connect a T-connector to RF OUTPUT jack of Signal Generator, AN/URM-25( ). Connect a 50 ohm load and an output cable to the T-connector.</p> <p>Connect signal generator output cable to IF input jack J9 on the Demultiplexer. Turn Demultiplexer POWER switch to On.</p> <p>Set FUNCTION switch of VTVM to 100 MV scale.</p>		b. A2 _____ db 0 - 2 c. B1 _____ db 0 - 2 d. B2 _____ db

DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON.

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(B6) Cont.</p>	<p>Connect probe of VTVM to test point TP-9, and ground lead of probe to chassis. Set the output frequency of the Signal Generator at 245.405 KC (mid frequency of filter card A7).</p> <p>Adjust Signal Generator output level to 60 uv and record the reading on VTVM.</p> <p>Increase output of Signal Generator slowly from 60 uv to 100 mv and observe the voltage at TP-9 on VTVM; it should not vary more than 2 db.</p> <p>Perform the above step with the AGC TIME CONSTANT switch in FAST and SLOW positions.</p> <p>Perform the above procedures for card A9, A11 and A13. The mid-frequencies of the filters on cards A9, A11 and A13 are:</p> <p style="margin-left: 40px;">A9      248.355 KC A11     251.645 KC A13     254.595 KC</p> <p>As each card is tested, turn the POWER switch to OFF. Remove card extender from socket and place the card in the card extender in its appropriate socket.</p>		
<p>(B7)</p>	<p>Record the AGC dynamic range variation of the symmetrical channels.</p> <p><b>PROCEDURE:</b> Set AGC TIME CONSTANT switches to MEDIUM. Set AGC Source switch to B2. Insert extender card into the A5 socket of the Demultiplexer.</p> <p>Insert the A5 card into the extender card.</p> <p>Connect a T-connector to the RF OUTPUT jack of Signal Generator AN/URM-25. Connect a 50 ohm load and an output cable to IF input jack J9 on the Demultiplexer.</p> <p>Connect probe of VTVM AN/USM-106A, to test point TP-8 and ground lead of probe to chassis. Set FUNCTION switch on VTVM to 100 MV scale.</p> <p>Turn the MODE switch to 2.5 KC AM position.</p> <p>Turn Demultiplexer POWER switch to ON.</p> <p>Set the output frequency of the Signal Generator at 250 KC. Adjust Signal Generator output level to 60 uv and record the reading on the VTVM.</p> <p>Increase output of Signal Generator slowly from 60 uv to 100 mv and observe the voltage at TP-8 on the VTVM. It should not vary more than 2 db.</p> <p>Perform the above step with the AGC TIME CONSTANT switch in FAST and SLOW positions.</p> <p>Perform the above procedures with the MODE switch in the 6 KC AM, 2.5 KC CW and 6 KC CW positions.</p>	<p>VTVM AN/USM-106A</p>	<p>AM 2.5 kc a. _____ db    0-2</p> <p>AM 6 kc b. _____ db    0-2</p> <p>CW 2.5 kc c. _____ db    0-2</p> <p>CW 6 kc d. _____ db    0-2</p>

DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:


POWER: OFF

AGC Source Switches: SYM B2 B2  
B1 B1  
A1 A1  
A2 A2

AGC TIME CONSTANT switches: B2 FAST  
B1 FAST  
A1 FAST  
A2 FAST

METER SENSITIVITY: +10  
LOCAL GAIN: Fully CCW  
MONITOR SELECTOR: B2

MODE: ISB  
LINE LEVEL ADJUST: Maximum CCW  
(4 channels)

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
	<p>Record the audio output levels for channels B2, B1, A1, and A2 in ISB at rear panel jacks J15, J16, J17, and J18.</p> <p>PROCEDURE: Insert all PC boards into their proper sockets in Demultiplexer. Turn Demultiplexer power switch ON. Connect a 600 ohm load to pins E and C of jack J15. Connect Pin D to chassis ground. Set the RF TUNER FUNCTION switch to SYM to inject a 1 mc signal into Demultiplexer.</p> <p>Connect a T-connector to Signal Generator AN/URM-25. Connect 50 ohm load and an output cable to the T-connector.</p> <p>Connect Signal Generator to IF input jack J9.</p> <p>Set Signal Generator to 245.5 KC at a 60 uv output level.</p> <p>Set VTVM FUNCTION switch to 10 volts scale.</p> <p>Connect VTVM across one end of the 600 ohm load and pin D, center tap of output transformers.</p> <p>Adjust LINE LEVEL ADJUST until LINE-DBM meter reads 0 dbm. Record readings on VTVM.</p> <p>Perform the above procedures for jacks J16, J17, and J18.</p> <p>Set the Signal Generator to the following frequencies as each jack is tested.</p> <p style="text-align: center;">Jack J16, set Signal Generator to 248 KC Jack J17, set Signal Generator to 252 KC Jack J18, set Signal Generator to 254.5 KC</p> <p>Set the MONITOR SELECTOR switch to B1, A1, and A2 as each channel is checked.</p>	<p>VTVM AN/USM-106A</p>	<p>a. _____ vrms J15 1.12-1.38 vrms</p> <p>b. _____ vrms J16 1.12-1.38 vrms</p> <p>c. _____ vrms J17 1.12-1.38 vrms</p> <p>d. _____ vrms J18 1.12-1.38 vrms</p>

DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON		MODE: AM 2.5 KC
AGC SOURCE Switches:	A1      A1	MONITOR SELECTOR: SYM
	A2      A2	METER SENSITIVITY: +10
	B1      B1	SYM BFO: Maximum Cw
	SYM/B2    B2	LINE LEVEL ADJUST Controls: Mid-Range
LOCAL GAIN: Fully CCW		AGC Switches: MEDIUM

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(B9)</p>	<p>Record the audio output levels of the speaker circuit in AM, CW and ISB modes for channels B2, B1, A1, and A2 at jack J14.</p> <p><b>PROCEDURE:</b> Connect a 4 ohm load to pins E and B of jack J14.</p> <p>Set the RF TUNER FUNCTION switch to SYN to inject a 1 mc signal into Demultiplexer.</p> <p>Connect a T-connector to Signal Generator RF OUTPUT jack. Connect 50 ohm load to T-connector and an output cable to the T-connector. Connect Signal Generator to IF input jack J9. Set Signal Generator to 250 KC, and internally modulate the Signal Generator with the 1000 cps tone at 75 percent.</p> <p>Set Signal Generator output for an amplitude of 30 mvrms. Connect VTVM AN/USM-106A across one end of the 4 ohm load and ground. Turn VTVM FUNCTION switch to the 10 volt scale. Adjust LOCAL GAIN control max CW and record the reading. Remove internal modulation from the Signal Generator by placing it in the CW mode.</p> <p>Place the MODE switch to the CW 6 KC position on the Demultiplexer. Adjust the LOCAL GAIN control max CW and record the reading. Place the MODE switch in the ISB position and the MONITOR SELECTOR in the B2 position.</p> <p>Set the Signal Generator to 2455 KC at a 30 mv output level. Adjust LOCAL GAIN control max CW and record the reading.</p> <p>Perform the above procedures for channels B1, A1, and A2. In the ISB mode, set the Signal Generator at the following frequencies.</p> <p style="text-align: center;">B1 - 248 KC A1 - 252 KC A2 - 254.5 KC</p> <p>Turn MONITOR SELECTOR switch to each channel as the frequency is changed.</p>	<p>VTVM AN/USM-106A</p>	<p>a. _____ vrms AM 2-2.5 vrms</p> <p>b. _____ vrms CW 2-2.5 vrms</p> <p>c. B2 _____ vrms</p> <p>d. B1 _____ vrms ISB 2-2.5 vrms</p> <p>e. A1 _____ vrms</p> <p>f. A2 _____ vrms</p>
<p>(B10)</p>	<p>Record the BFO frequency range and voltage.</p> <p><b>PROCEDURE:</b> Insert extender card into socket for card A-4. Insert card A-4 into extender card. Connect Oscilloscope AN/USM-281A probe to TP-8. Set the VOLTS/CM control to 1 volt/cm. Connect Frequency Counter AN/USM-207 to TP-8. Set the FUNCTION switch to FREQUENCY. Set the SENSITIVITY switch to .1 vrms. Place Demultiplexer POWER switch to ON. Record the readings on the Oscilloscope and Frequency Counter. Turn the SYMMETRICAL BFO switch counterclockwise and record the reading on the Oscilloscope and Counter. Turn POWER switch to OFF. Remove all test leads from card A-4. Remove card extender from socket A-4. Replace cover on card A-4, and insert into appropriate socket in the unit.</p>	<p>Frequency Counter AN/USM-207</p> <p>Oscilloscope AN/USM-281A</p>	<p>a. _____ freq range</p> <p>b. _____ vp-p +3 KC 253-254 KC Ampl. 8.0 vp-p</p> <p>c. _____ freq range -3 KC 246-247 KC</p> <p>d. _____ vp-p Ampl. 8.0 vp-p</p>

DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:

AGC Source Switch: SYM/B2 B2  
 POWER: OFF  
 AGC TIME CONSTANT switch B2: MEDIUM  
 MODE: AM 2.5 KC

LINE LEVEL ADJUST B2: Max CCW  
 METER SENSITIVITY: +10  
 LOCAL GAIN: Fully CCW  
 MONITOR SELECTOR: B2

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(B11)</p>	<p>Record the audio output level of AM and CW modes of operation at rear panel jack J15.</p>	<p>VTVM AN/USM-106A</p>	<p>a. _____vrms AM - J15 1.12 - 1.38 vrms</p>
	<p><b>PROCEDURE:</b> Insert all PC boards into their proper sockets in Demultiplexer. Turn Demultiplexer power switch to ON.</p> <p>Connect a 600 ohm load to pins E and C of jack J15. Connect pin D of J15 to chassis ground. Set the RF TUNER FUNCTION switch to SYNTH to inject a 1 mc signal into Demultiplexer.</p> <p>Connect a T-connector to Signal Generator AN/URM-25 RF OUTPUT jack. Connect a 50 ohm load and an output cable to the T-connector. Connect Signal Generator to IF input jack J9.</p> <p>Set Signal Generator to 250 KC and internally modulate the Signal Generator with the 1000 cps tone at 75 percent.</p> <p>Set Signal Generator output for an amplitude of 30 mvrms.</p> <p>Connect VTVM AN/USM-106A across one end of the 600 ohm load, and pin D (center tap of output transformer).</p> <p>Set VTVM FUNCTION to 10 volts scale.</p> <p>Adjust LINE-LEVEL ADJUST switch B2 until LINE-DBM meter reads 0 dbm. Record reading on VTVM.</p> <p>Turn MODE switch to the CW 6 KC position. Turn line level adjust maximum CCW. Set SYM BFO switch to +1 kc.</p> <p>Set Signal Generator to 250 KC unmodulated with a 30 mvrms output.</p> <p>Adjust LINE LEVEL ADJUST switch B2 until LINE DBM meter indicates 0 DBM.</p> <p>Record the reading on VTVM.</p> <p>Remove all leads and test equipment from the unit.</p>		<p>b. _____vrms CW - J15 1.12 - 1.38 vrms</p>

DEMULTIPLEXER

OPERATING CONDITIONS AND CONTROL SETTINGS:

AGC SOURCE SWITCH: A-2                    A-2                    POWER: ON  
 MODE: ISB                                    MONITOR SELECTOR: A-2  
 LOCAL GAIN: CCW                            RF TUNER  
 SYM BFO: CW                                POWER: OFF  
 AGC Switches: MEDIUM                    METER FUNCTION: LOW

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(B12)</p>	<p>Record the calibration of the RF LEVEL meter on the RF TUNER, in ISB and SYN modes.</p>	<p>RF LEVEL meter on RF TUNER</p>	<p>a. _____ ( ) 20 db above 1 uv(ISB) b. _____ ( ) 20 db above 1 uv(SYM)</p>
	<p><b>PROCEDURE:</b> Set the RF TUNER FUNCTION switch to SYN to inject a 1 mc signal into Demultiplexer. Connect a T-connector to Signal Generator AN/URM-25 RF OUTPUT jack. Connect 50 ohm load to T-connector. Connect Signal Generator to IF input jack.</p> <p>Set the Signal Generator level to 1 MVRMS, and to a frequency of approximately 250 KC.</p> <p>Tune the Signal Generator for an output in the A-2 channel by monitoring the LINE DBM meter on the Demultiplexer. Adjust LINE LEVEL ADJUST and METER SENSITIVITY switch as needed.</p> <p>RF LEVEL meter on RF TUNER should read 20 db above 1 uv.</p> <p>Increase the Signal Generator output 10 db. The RF LEVEL indication should increase by 10 db.</p> <p>Set Signal Generator to 1 MV.</p> <p>Turn MODE switch to CW 2.5 KC.</p> <p>Turn MONITOR switch to SYM.</p> <p>Place SYM BFO control to zero.</p> <p>Tune the Signal Generator for an output in the approximate center of the SYMMETRICAL channel by monitoring the LINE DBM meter on the Demultiplexer.</p> <p>Adjust LINE LEVEL ADJUST and METER SENSITIVITY switch as needed. Record the reading on RF LEVEL meter on RF TUNER. It should be 20 db above 1 uv.</p>		

REFERENCE SIGNAL GENERATOR

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

FREQUENCY SELECTORS: 00.0000

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(C1)</p>	<p>Record the output of the +25 vdc, +15 vdc and +5 vdc power supplies on card A2.</p>	<p>Multimeter AN/PSM-4C</p>	<p>a. _____ vdc TP-2 22.5-27.5 vdc b. _____ vdc TP-5+ 13.5 +16.5 vdc c. _____ vdc TP-8+4.5+5.5 vdc</p>
	<p>PROCEDURE: Remove all PC cards from the unit. Remove covers from all cards. Connect a 50 ohm load to J3, J4, and J6 on the rear panel. Insert card extender socket A3, and insert card A2 into extender card.</p> <p>Turn POWER switch to ON. Set Multimeter, AN/PSM-4, to the 50 volt +DC volt scale. Connect the common lead to chassis ground. Connect the positive lead to the following test points on card A2, and record the readings: TP-2, TP-5 and TP-8.</p> <p>Turn the POWER switch OFF. Remove the test leads from card A2, and the extender card. Replace cover and insert card A2 into socket A2.</p>		
<p>(C2)</p>	<p>Record the frequency and amplitude of the 1 MC signal on 1 MC Distribution card A3.</p>	<p>Frequency Counter AN/USM-207 Oscilloscope AN/USM-281A</p>	<p>a. _____ vp-p b. _____ mc TP-2 3.24 - 3.96 vp-p 1 MC c. _____ vp-p d. _____ mc TP-15 2.52 - 3.08 vp-p 1 MC e. _____ vp-p f. _____ mc TP-16 2.52 - 3.08 vp-p 1 MC g. _____ vp-p h. _____ mc TP-17 2.52 - 3.08 vp-p 1 MC</p>
	<p>PROCEDURE: Insert extender card into socket A3. Insert card A3 into extender card.</p> <p>Turn POWER switch to ON. Connect the probe of Oscilloscope AN/USM-281A, to TP-2.</p> <p>Set Frequency Counter TIME BASE control to .1s. Set the FUNCTION switch to FREQUENCY, set the Sensitivity to .1.</p> <p>Connect Frequency Counter, AN/USM-207, to TP-2. Set VOLTS/CM control on Oscilloscope to 1 volt/cm, and record the reading.</p> <p>Perform the above procedures for test points TP-15, TP-16, TP-17, and record the readings.</p>		



REFERENCE SIGNAL GENERATOR

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON  
FREQUENCY DIFFERENCE/  
PHASE COMPARATOR SWITCH: FREQUENCY DIFFERENCE

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
C3	<p>Check the action of the 1 MC comparator on the front panel Frequency Difference Meter, and check external alarm lamp.</p> <p>PROCEDURE: Connect lead from RF OUTPUT jack of Signal Generator AN/URM-25 to rear interconnect panel 1 MC EXTERNAL input jack J10. (For greater stability use Model AN/URQ-9 with Step Attenuator HP-455C and D)</p> <p>Connect Oscilloscope, AN/USM-281A, to TP-1. Adjust output of Signal Generator to 700 MV. EXTERNAL STANDARD lamp should go out when generator exceeds 700 mv.</p> <p>Below 700 MV, EXTERNAL STANDARD lamp should light. Record voltage at which light goes out. Oscilloscope should read 1.96 vp-p. Adjust Signal Generator output for 1.0 volt. Oscilloscope should read 2.8 vp-p. Adjust Signal Generator for 1 MC. Connect Frequency Counter AN/USM-207 to TP-1 to ensure Signal Generator is at 1 MC.</p> <p>The needle on the FREQUENCY DIFFERENCE meter should swing right and left slowly. If the Signal Generator is at exactly 1,000,000 cycles, the needle should come to rest.</p> <p>Turn Power switch OFF.</p> <p>Remove all test equipment leads from card A3. Remove extender card from A3 socket. Replace cover on the card and insert card A3 into A3 socket.</p>	Frequency Difference meter	<p>a. _____ ( ) Meter Check. No needle movement or slow oscillation.</p> <p>b. _____ mv 700 mvrms <math>\pm</math> 50 mv</p>
C4	<p>Record the frequencies and amplitudes produced on the 1 MC Harmonic Generator card A4.</p> <p>PROCEDURE: Insert extender card into socket. Insert card A4 into extender card.</p> <p>Turn POWER switch to ON. Connect the probe of Oscilloscope AN/USM-218A to TP-4.</p> <p>Connect Frequency Counter AN/USM-207 to TP-4. Set Oscilloscope VOLTS/CM control to 1 volt/cm, and record the readings.</p> <p>Set Frequency Counter TIME BASE control to .1s.</p> <p>Set the FUNCTION control to FREQUENCY, and record the reading. Set the SENSITIVITY to .1.</p> <p>Connect the Oscilloscope and Counter to the following test points and record the readings:</p> <p>TP-5, TP-6, TP-12, TP-11, TP-9, TP-10, TP-13, TP-7.</p>	<p>Frequency Counter AN/USM-207</p> <p>Oscilloscope AN/USM-281A</p>	<p>TP-4</p> <p>a. _____ vp-p 1.4 vp-p - 2.0 v</p> <p>b. _____ mc 1MC</p> <p>TP-5</p> <p>c. _____ vp-p 4 - 5 vp-p</p> <p>d. _____ mc 1 MC</p> <p>TP-6</p> <p>e. _____ vp-p 0.7 - 1.0 vp-p</p> <p>f. _____ mc 11 MC</p> <p>TP-12</p> <p>g. _____ vp-p 1.2 - 1.5 vp-p</p> <p>h. _____ mc 17 MC</p>

## REFERENCE SIGNAL GENERATOR

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(C4) Cont.</p>	<p>After connecting the Oscilloscope and Counter to test point TP-8, set the front panel 10 MC switch to 0 and record the reading.</p> <p>Set the front panel 10 MC switch to 1, 2, 3, and record the reading at each position.</p> <p>Turn POWER switch to OFF. Disconnect the test leads from card A4. Remove extender card from socket.</p> <p>Replace the covers of card A4 and insert card A4 into its proper socket in the unit.</p>		<p>TP-11 i. _____ vp-p 1 - 1.5 vp-p</p> <p>j. _____ mc 16 MC</p> <p>TP-9 k. _____ vp-p 1 - 1.5 vp-p</p> <p>l. _____ mc 10 MC</p> <p>TP-10 m. _____ vp-p 1.5 - 2.3 vp-p</p> <p>n. _____ mc 12 MC</p> <p>TP-13 o. _____ vp-p 1.5 - 2 vp-p</p> <p>p. _____ mc 14 MC</p> <p>TP-7 q. _____ vp-p .5-1.0 vp-p</p> <p>r. _____ mc 1.4 MC</p> <p>TP-8 pos. 0 s. _____ mc 3 MC</p> <p>t. _____ vp-p .6 - 1.2 vp-p pos. 1</p> <p>u. _____ mc 4 MC</p> <p>v. _____ vp-p .6 - 1.2 vp-p pos. 2</p> <p>w. _____ mc 5 MC</p> <p>x. _____ vp-p .6 - 1.2 vp-p pos. 3</p> <p>y. _____ mc 6 MC</p> <p>z. _____ vp-p .6 - 1.2 vp-p</p>

REFERENCE SIGNAL GENERATOR

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

FREQUENCY SELECTORS: 00.0000

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>(C5)</p>	<p>Record the frequencies and amplitudes produced on the 100 KC Spectrum Generator card A5.</p> <p><b>PROCEDURE:</b> Insert extender card into socket A5. Insert card A5 into extender card.</p> <p>Turn POWER switch to ON.</p> <p>Connect the probe of Oscilloscope AN/USM-281A to TP-3.</p> <p>Connect Frequency Counter AN/USM-281A to TP-3.</p> <p>Set Oscilloscope VOLTS/CM control to 1 volt/cm and record the reading.</p> <p>Set the Frequency Counter TIME BASE control to .1s, set the FUNCTION control to FREQUENCY and record the readings.</p> <p>Connect the Oscilloscope and Counter to the following test points and record the readings: TP-5, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, TP-12, TP-13, TP-14.</p> <p>Turn POWER switch to OFF. Remove test equipment leads from card A5. Remove card extender from socket A5. Replace cover for card A5 and place A5 in its appropriate socket.</p>	<p>Frequency Counter AN/USM-207</p> <p>Oscilloscope AN/USM-281A</p>	<p>TP-3 a. _____ vp-p 1.4 - 2 vp-p</p> <p>b. _____ mc 1.4 MC</p> <p>TP-5 c. _____ vp-p 2.4 - 2.8 vp-p</p> <p>d. _____ mc 100 KC</p> <p>TP-6 e. _____ vp-p .72 - .88 vp-p</p> <p>f. _____ mc 16.2 MC</p> <p>TP-7 g. _____ vp-p .9 - 1.1 vp-p</p> <p>h. _____ mc 16.6 MC</p> <p>TP-8 i. _____ vp-p 1.58 - 1.92 vp-p</p> <p>j. _____ mc 16.9 MC</p> <p>TP-9 k. _____ vp-p 1.17 - 1.43 vp-p</p> <p>l. _____ mc 16.4 MC</p> <p>TP-10 m. _____ vp-p 1.58 - 1.92 vp-p</p> <p>n. _____ mc 16.1 MC</p> <p>TP-11 o. _____ vp-p .72 - .88 vp-p</p> <p>p. _____ mc 16.5 MC</p> <p>TP-12 q. _____ vp-p .9 - 1.1 vp-p</p> <p>r. _____ mc 16.8 mc</p>

## REFERENCE SIGNAL GENERATOR

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD																																																																										
(C5) Cont.			TP-13 s. _____ vp-p 1.17 - 1.43 vp-p t. _____ mc 16.3 MC TP-14 u. _____ vp-p .72 - .88 vp-p v. _____ mc 16.7 MC																																																																										
(C6)	<p>Record the frequencies and amplitudes for 0.1 KC and 1.0 KC Frequency Selector Matrix's on card A6.</p> <hr/> <p>PROCEDURE; Insert extender card into socket A6. Insert card A6 into extender card.</p> <p>Turn POWER switch to ON.</p> <p>Connect the probe of the Oscilloscope AN/USM-281A to TP-3.</p> <p>Connect the Frequency Counter AN/USM-207 to TP-3.</p> <p>Set the VOLTS/CM control on the oscilloscope to 1 volt/cm.</p> <p>Set the Frequency Counter TIME BASE control to .1s. Set the FUNCTION control to FREQUENCY. Set the SENSITIVITY control to .1.</p> <p>Turn the 100 cps switch on the front panel of the Reference Signal Generator through the following positions: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.</p> <p>Record the frequency and amplitude at each of the 10 positions above in 100 cps steps.</p> <p>Connect the Oscilloscope and Counter to TP-4 and record the frequency and amplitude for each of the 10 positions, using the 1 KC switch in the Reference Signal Generator.</p> <p>Turn Reference Signal Generator POWER switch to OFF. Remove test equipment leads and card extender from card A6.</p> <p>Replace cover on A6 and insert card A6 into its proper socket in the unit.</p>	Frequency Counter AN/USM-207  Oscilloscope AN/USM-281A	<table border="0"> <tr> <td>TP3</td> <td>TP4</td> </tr> <tr> <td>16.0 MC</td> <td>16.0 MC</td> </tr> <tr> <td>a. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>b. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.1 MC</td> <td>16.1 MC</td> </tr> <tr> <td>c. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>d. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.2 MC</td> <td>16.2 MC</td> </tr> <tr> <td>e. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>f. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.3 MC</td> <td>16.3 MC</td> </tr> <tr> <td>g. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>h. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.4 MC</td> <td>16.4 MC</td> </tr> <tr> <td>i. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>j. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.5 MC</td> <td>16.5 MC</td> </tr> <tr> <td>k. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>l. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.6 MC</td> <td>16.6 MC</td> </tr> <tr> <td>m. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>n. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.7 MC</td> <td>16.7 MC</td> </tr> <tr> <td>o. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>p. _____ vp-p</td> <td>_____ vp-p</td> </tr> <tr> <td>16.8 MC</td> <td>16.8 MC</td> </tr> <tr> <td>q. _____ mc</td> <td>_____ mc</td> </tr> <tr> <td>min 1.5vp-p</td> <td>min 1.5vp-p</td> </tr> <tr> <td>r. _____ vp-p</td> <td>_____ vp-p</td> </tr> </table>	TP3	TP4	16.0 MC	16.0 MC	a. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	b. _____ vp-p	_____ vp-p	16.1 MC	16.1 MC	c. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	d. _____ vp-p	_____ vp-p	16.2 MC	16.2 MC	e. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	f. _____ vp-p	_____ vp-p	16.3 MC	16.3 MC	g. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	h. _____ vp-p	_____ vp-p	16.4 MC	16.4 MC	i. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	j. _____ vp-p	_____ vp-p	16.5 MC	16.5 MC	k. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	l. _____ vp-p	_____ vp-p	16.6 MC	16.6 MC	m. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	n. _____ vp-p	_____ vp-p	16.7 MC	16.7 MC	o. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	p. _____ vp-p	_____ vp-p	16.8 MC	16.8 MC	q. _____ mc	_____ mc	min 1.5vp-p	min 1.5vp-p	r. _____ vp-p	_____ vp-p
TP3	TP4																																																																												
16.0 MC	16.0 MC																																																																												
a. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
b. _____ vp-p	_____ vp-p																																																																												
16.1 MC	16.1 MC																																																																												
c. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
d. _____ vp-p	_____ vp-p																																																																												
16.2 MC	16.2 MC																																																																												
e. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
f. _____ vp-p	_____ vp-p																																																																												
16.3 MC	16.3 MC																																																																												
g. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
h. _____ vp-p	_____ vp-p																																																																												
16.4 MC	16.4 MC																																																																												
i. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
j. _____ vp-p	_____ vp-p																																																																												
16.5 MC	16.5 MC																																																																												
k. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
l. _____ vp-p	_____ vp-p																																																																												
16.6 MC	16.6 MC																																																																												
m. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
n. _____ vp-p	_____ vp-p																																																																												
16.7 MC	16.7 MC																																																																												
o. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
p. _____ vp-p	_____ vp-p																																																																												
16.8 MC	16.8 MC																																																																												
q. _____ mc	_____ mc																																																																												
min 1.5vp-p	min 1.5vp-p																																																																												
r. _____ vp-p	_____ vp-p																																																																												

REFERENCE SIGNAL GENERATOR

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
<p>Ⓢ Cont.</p>			<p>16.9 MC      16.9 MC s. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p t. ____ vp-p      ____ vp-p</p>
<p>Ⓢ</p>	<p>Record the frequencies and amplitudes for the 10 KC and 100 KC Frequency Selection Matrix's on card A-7.</p> <hr/> <p>PROCEDURE: Insert extender card into socket A7. Insert card A7 into extender card.</p> <p>Turn Reference Signal Generator, POWER switch to ON.</p> <p>Connect Oscilloscope AN/USM-281A to TP-4. Connect Frequency Counter AN/USM-207 to TP-4.</p> <p>Set the Frequency Counter TIME BASE control to .1s. Set the FUNCTION switch to FREQUENCY. Set the SENSITIVITY control to .1.</p> <p>Set the VOLTS/CM control on the oscilloscope to 1 volt/cm.</p> <p>Turn the 10 KC switch on the front panel of the Reference Signal Generator through the following positions: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Record the frequency and amplitude for each of the 10 positions of the 10 KC switch. Connect oscilloscope and counter to TP-3 and record the frequency and amplitude using the 100 KC switch with Reference Signal Generator.</p> <p>Turn Reference Signal Generator POWER switch OFF. Remove test equipment leads. Remove card extender. Replace cover and insert card A7 into its proper socket in the unit.</p>	<p>Frequency Counter AN/USM-207</p> <p>Oscilloscope AN/USM-281A</p>	<p>TP3              TP4</p> <p>16.0 MC      16.0 MC a. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p b. ____ vp-p      ____ vp-p</p> <p>16.1 MC      16.1 MC c. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p d. ____ vp-p      ____ vp-p</p> <p>16.2 MC      16.2 MC e. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p f. ____ vp-p      ____ vp-p</p> <p>16.3 MC      16.3 MC g. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p h. ____ vp-p      ____ vp-p</p> <p>16.4 MC      16.4 MC i. ____ mc      ____ mc min 1.5vp-p    ____ vp-p j. ____ vp-p      ____ vp-p</p> <p>16.5 MC      16.5 MC k. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p l. ____ vp-p      ____ vp-p</p> <p>16.6 MC      16.6 MC m. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p n. ____ vp-p      ____ vp-p</p> <p>16.7 MC      16.7 MC o. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p p. ____ vp-p      ____ vp-p</p> <p>16.8 MC      16.8 MC q. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p r. ____ vp-p      ____ vp-p</p> <p>16.9 MC      16.9 MC s. ____ mc      ____ mc min 1.5vp-p    min 1.5vp-p t. ____ vp-p      ____ vp-p</p>

## REFERENCE SIGNAL GENERATOR

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF


STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
C8	Record the frequencies and amplitudes for the 1 MC Frequency Selection Matrix on card A8.	Frequency Counter AN/USM-207	TP-3 a. _____ mc 17.0 MC
	<p>PROCEDURE: Insert extender card into socket A8. Insert card A8 into extender card.</p> <p>Turn Reference Signal Generator, POWER switch to ON.</p> <p>Connect Oscilloscope AN/USM-281A to TP-3.</p> <p>Connect Frequency Counter, AN/USM-207 to TP-3. Set the Frequency Counter TIME BASE control to .1s. Set the FUNCTION control to FREQUENCY. Set the SENSITIVITY control to .1.</p> <p>Set the VOLTS/CM control on the oscilloscope to 1 volt/cm.</p> <p>Turn the 1.0 MC switch on the front panel of the Reference Signal Generator through the following positions: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Record the frequency and amplitude for each of the positions above.</p> <p>Turn Reference Signal Generator POWER switch OFF. Remove test equipment leads from card A8. Remove card extender from socket. Replace the cover on card A8, and place in its proper socket in the unit.</p>	Oscilloscope AN/USM-281A	b. _____ vp-p .40 - .50 vp-p c. _____ mc 16.9 MC d. _____ vp-p .40 - .50 vp-p e. _____ mc 16.8 MC f. _____ vp-p .40 - .50 vp-p g. _____ mc 16.7 MC h. _____ vp-p .40 - .50 vp-p i. _____ mc 16.6 MC j. _____ vp-p .40 - .50 vp-p k. _____ mc 16.5 MC l. _____ vp-p .40 - .50 vp-p m. _____ mc 16.4 MC n. _____ vp-p .40 - .50 vp-p o. _____ mc 16.3 MC p. _____ vp-p .40 - .50 vp-p q. _____ mc 16.2 MC r. _____ vp-p .40 - .50 vp-p s. _____ mc 16.1 MC t. _____ vp-p .40 - .50 vp-p



## REFERENCE SIGNAL GENERATOR

## OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: ON

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD																																																				
 Cont.	<p>Set the 10 MC front panel SELECTOR switch on the Reference Signal Generator to the following positions and record the frequencies and amplitudes: 0, 1, 2, 3, (All other SELECTOR controls should be at 0.) Record the readings.</p> <p>Connect the Oscilloscope and Counter to TP-8. Record reading. Set 100 KC, 10 KC, 1 KC and .1 KC selectors to 9. Record readings.</p> <p>Connect the Oscilloscope and Counter to TP-10. Set the 10 MC SELECTOR switch to the following positions: 0, 1, 2, 3 (all other SELECTOR switches should be at 0). Record the readings.</p> <p>Connect the Oscilloscope and Counter to TP-12. Set the 1 MC SELECTOR switch to the following positions: 0, 4, 9 (all other SELECTOR switches should be at 0). Record the readings.</p> <p>Connect the Oscilloscope and Counter to TP-15. Set the front panel SELECTORS to the following positions: 02.5000, 07.7050, 17.7050. Record the readings.</p> <p>Connect the Oscilloscope and Counter to TP-16 and perform the same procedures as for TP-15.</p> <p>Remove the test leads from card A13. Turn POWER switch to OFF. Remove card A13 from extender card and place cover on card A3. Remove extender card from socket A13 and place card A13 into its proper socket in the unit.</p>		<table> <tbody> <tr> <td>TP-10 g. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>17 MC</td> <td>0.9 - 1.1 vp-p</td> </tr> <tr> <td>h. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>18 MC</td> <td>0.9 - 1.1 vp-p</td> </tr> <tr> <td>i. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>19 MC</td> <td>0.9 - 1.1 vp-p</td> </tr> <tr> <td>j. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>20 MC</td> <td>0.9 - 1.1 vp-p</td> </tr> <tr> <td>TP-12 k. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>17 MC</td> <td>.13 - .17 vp-p</td> </tr> <tr> <td>l. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>16.6 MC</td> <td>.13 - .17 vp-p</td> </tr> <tr> <td>m. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>16.1 MC</td> <td>.13 - .17 vp-p</td> </tr> <tr> <td>TP-15 n. ___ kc</td> <td>_____ vp-p</td> </tr> <tr> <td>250 KC</td> <td>2.52 - 3.08 vp-p</td> </tr> <tr> <td>o. ___ kc</td> <td>_____ vp-p</td> </tr> <tr> <td>770.5 KC</td> <td>2.52 - 3.08 vp-p</td> </tr> <tr> <td>p. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>1.7705 MC</td> <td>2.52 - 3.08 vp-p</td> </tr> <tr> <td>TP-16 q. ___ kc</td> <td>_____ vp-p</td> </tr> <tr> <td>250 kc</td> <td>2.52 - 3.08 vp-p</td> </tr> <tr> <td>r. ___ kc</td> <td>_____ vp-p</td> </tr> <tr> <td>770.5 KC</td> <td>2.52 - 3.08 vp-p</td> </tr> <tr> <td>s. ___ mc</td> <td>_____ vp-p</td> </tr> <tr> <td>1.7705 MC</td> <td>2.52 - 3.08 vp-p</td> </tr> </tbody> </table>	TP-10 g. ___ mc	_____ vp-p	17 MC	0.9 - 1.1 vp-p	h. ___ mc	_____ vp-p	18 MC	0.9 - 1.1 vp-p	i. ___ mc	_____ vp-p	19 MC	0.9 - 1.1 vp-p	j. ___ mc	_____ vp-p	20 MC	0.9 - 1.1 vp-p	TP-12 k. ___ mc	_____ vp-p	17 MC	.13 - .17 vp-p	l. ___ mc	_____ vp-p	16.6 MC	.13 - .17 vp-p	m. ___ mc	_____ vp-p	16.1 MC	.13 - .17 vp-p	TP-15 n. ___ kc	_____ vp-p	250 KC	2.52 - 3.08 vp-p	o. ___ kc	_____ vp-p	770.5 KC	2.52 - 3.08 vp-p	p. ___ mc	_____ vp-p	1.7705 MC	2.52 - 3.08 vp-p	TP-16 q. ___ kc	_____ vp-p	250 kc	2.52 - 3.08 vp-p	r. ___ kc	_____ vp-p	770.5 KC	2.52 - 3.08 vp-p	s. ___ mc	_____ vp-p	1.7705 MC	2.52 - 3.08 vp-p
TP-10 g. ___ mc	_____ vp-p																																																						
17 MC	0.9 - 1.1 vp-p																																																						
h. ___ mc	_____ vp-p																																																						
18 MC	0.9 - 1.1 vp-p																																																						
i. ___ mc	_____ vp-p																																																						
19 MC	0.9 - 1.1 vp-p																																																						
j. ___ mc	_____ vp-p																																																						
20 MC	0.9 - 1.1 vp-p																																																						
TP-12 k. ___ mc	_____ vp-p																																																						
17 MC	.13 - .17 vp-p																																																						
l. ___ mc	_____ vp-p																																																						
16.6 MC	.13 - .17 vp-p																																																						
m. ___ mc	_____ vp-p																																																						
16.1 MC	.13 - .17 vp-p																																																						
TP-15 n. ___ kc	_____ vp-p																																																						
250 KC	2.52 - 3.08 vp-p																																																						
o. ___ kc	_____ vp-p																																																						
770.5 KC	2.52 - 3.08 vp-p																																																						
p. ___ mc	_____ vp-p																																																						
1.7705 MC	2.52 - 3.08 vp-p																																																						
TP-16 q. ___ kc	_____ vp-p																																																						
250 kc	2.52 - 3.08 vp-p																																																						
r. ___ kc	_____ vp-p																																																						
770.5 KC	2.52 - 3.08 vp-p																																																						
s. ___ mc	_____ vp-p																																																						
1.7705 MC	2.52 - 3.08 vp-p																																																						



REFERENCE SIGNAL GENERATOR

OPERATING CONDITIONS AND CONTROL SETTINGS:

POWER: OFF

STEP NO.	ACTION REQUIRED
C11	<p data-bbox="265 527 533 554">CLEAN AIR FILTERS</p> <p data-bbox="265 611 1339 688">PROCEDURE: The air filter is located on the rear panel of the Unit. Remove Phillips head screws on filter frame. Remove air filter. Vacuum filter, causing air to reverse-flow through filter.</p> <p data-bbox="265 716 1301 768">NOTE: If filter is cleaned by this method, reinstall in the equipment; if not, proceed with the following steps.</p> <p data-bbox="265 800 1384 877">Wash filter in warm water and detergent, and rinse in clean water. Blow excess water from filter with low-pressure air or shake out excess water, whichever is desirable. Allow filter to dry thoroughly, then reinstall.</p>

RECOMMENDED PERIODIC MAINTENANCE SCHEDULE\*

WEEKLY

TIME REQD 20 MIN

STEP NO.	ACTION REQUIRED	SECTION & STEP
1	Clean Air Filters	C11

MONTHLY

TIME REQD 45 MIN

1	Record output of +24 vdc power supply	A2
2	Record output of -24 vdc power supply	A4
3	Record output of +5 vdc power supply	A6
4	Record output of +200 vdc power supply	A8
5	Record RF gain of bands	A10, A11, A12, A13
6	Record sensitivity and signal-to-signal and noise ratio	A27
7	Record output of +24 vdc, +15 vdc, +5 vdc, and -24 vdc power supplies	B1
8	Record peak-to-peak voltage of 250 kc frequency	B4
9	Record BFO frequency	B10
10	Record output of +25 vdc, +15 vdc and +5 vdc power supplies	C1

SEMIANNUALLY

TIME REQD 120 MIN

1	Record gain of RF and IF	A16
2	Record frequency of 1 MC standard	A17
3	Record gain and AGC range of second IF amplifiers	A21
4	Record Receiver AGC range	A29
5	Record IF bandpass of channels B2, B1, A1 and A2	A30
6	Record output signal voltage on ISB	B6
7	Record output signal voltage of symmetrical IF	B7
8	Record calibration of RF level meter	B12
9	Record frequency and amplitude of the 2MC signal	C2
10	Record frequency and amplitude of the 1MC signal card A4	C4
11	Record frequency and amplitude of the mixer amplifiers	C9
12	Record the frequency and amplitude of the final mixer and output	C10

\*The Naval Electronics Systems Command requirement for this schedule is cancelled when the Electronics Planned Maintenance System is implemented for this equipment.

Note: Steps not listed under this schedule are "Unscheduled Steps". (See page v).





Fold

---

DEPARTMENT OF THE NAVY  
NAVAL ELECTRONIC SYSTEM COMMAND  
WASHINGTON, D.C. 20360

POSTAGE AND FEES PAID  
NAVY DEPARTMENT

COMMANDER, NAVAL ELECTRONICS  
TECHNICAL PUBLICATIONS BRANCH  
DEPARTMENT OF THE NAVY  
WASHINGTON, D.C. 20360