TMC SPECIFICATION			NO. S1398
REV:			
COMPILED:	CHECKED:	APPD:	SHEET / OF
TITLE:			

ACCEPTANCE TEST PROCEDURE

FOR

4079992-1, 4079993-2 & 4079994-1

ASSEMBLIES

REVISIONS

REV.	SHEET(S)	DATE	APPR.
A	SHT 2,7,13,18,19	7-9-82	
B	SHT 8 THRU 11,15,16 (ESK UPDATED)	11-10-82	

ACCEPTANCE TEST PROCEDURE FOR 4079992-1 (A5793 SIDEBAND ASSEMBLY)
4079993-2 (A5795 FSK ASSEMBLY)
4079994-1 (A5794 CARRIER GEN. ASSEMBLY)

I INTRODUCTION

This test set is used to test the various boards required. It is designed to operate with either an external or an optional internal 1 MHZ standard. A switch is provided at the rear of the test set to properly switch in the desired standard. If an external 1 MHZ standard is used its amplitude should be at least 1^{V}P.P.. If an internal 1 MHZ standard is used a $+12^{V}$ @ 1A. DC power source must be connected to the NF120 $+12^{V}$ terminals at the rear of the test set. At least 30 minutes warm up time must be given for the proper operation of the internal 1 MHZ standard.

NOTE: Record data and results of tests on the test data sheet provided. If there are any failures record them on the log of failure sheet. Also record the corrective action taken if any.

II TEST EQUIPMENT REQUIRED

NOTE: All test equipment must be calibrated. Record Serial numbers and Cal. dates on the appropiate test data sheets.

A. OSCILLOSCOPE - H.P. Type 541 or Equivalent

B. $+12^{V}$D.C. POWER SUPPLIES AS REQUIRED

C. $+24^{V}$D.C. POWER SUPPLY (FS ONLY)

D. FREQUENCY COUNTER - H.P. 5244L or Equivalent

E. AUDIO GENERATOR - H.P. 200CD or Equivalent

F. VTVM - Ballantine 314 or Equivalent

G. AX5253 - LOCKHEED TEST SET

H. H P 141 T Spectrum Analyzer with 8552B Head or Equivalent.

III INITIAL SET UP

1. Refer to the appropiate HOOK-UP DIAGRAM for testing the desired assembly and interconnecting the required test equipment.

2. Connect +12VDC power source to +12V NF120 input terminals at top rear of test set. Turn ON power source to allow NF120 (1 MHZ STANDARD) oven heater sufficient warm up (approx. 30 min).

3. Connect +12VDC power source to +12V PWR input terminals at top rear of test set. Turn ON power source (Test set power is now controlled by its own PWR switch which should be OFF-OUT).

4. Refer to the proper section for instructions on testing each assembly.

IV CARRIER ASSEMBLY 4079994-1 (A5794)

A. Set front panel controls as follows:

1. MODE - AM
2. TEST - CARR
3. TMC - OFF (OUT)
4. LSB and USB LINE/MIKE controls set to mid point
5. USB/LSB switch - USB (IN)
6. PTT - OFF (OUT)
7. PWR - OFF (OUT)

B. Insert Carrier Assembly 4079994-1 into J1 connector and set MON CNTL switch at top rear of test set to 2.75 MHZ.

C. Set PWR switch to ON (IN).

D. Monitor the 2.75 MHZ. Check for the following:

1. FREQUENCY - 2.75 MHZ

2. VERIFY LEVEL IS ADJUSTABLE TO 50MVP.P. (ADJUSTED BY R47)
3. READJUST TO 30MVP.P. (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM). RECORD RESULTS ON DATA SHEET.

E. Set MODE control to CW and insert a key plug into the KEY jack.

F. Set the MON CNTL to OUT 1. There should be no signal present on scope until the key line is grounded.

G. Ground the key line (Key plug switch ON) and check for the following:

1. FREQUENCY - 250 KHZ
2. VERIFY LEVEL IS ADJUSTABLE TO 50 MVP.P. (adjusted by R20)
3. READJUST TO 30 MVP.P. (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM) RECORD RESULTS ON TEST DATA SHEET.

H. Set the MON CNTL to OUT 2. There should be no signal present on scope until the key line is grounded (Key plug switch ON).

I. With the key line grounded check for the following:

1. FREQUENCY - 250 KHZ
2. VERIFY LEVEL IS ADJUSTABLE TO 50MVP.P. (adjusted by R27)
3. READJUST TO 30MVP.P. (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM) RECORD RESULTS ON TEST DATA SHEET.

J. Set MODE control to AM.

K. Apply a 1 KHZ audio signal to AUDIO IN terminals at rear of test set. Set the audio level from audio generator to read 10 MV on the VTVM. ""

L. Set the MON CNTL to AM and check for the following:

1. FREQUENCY - Amplitude Modulated signal of 250 KHZ & 1 KHZ
2. LEVEL Approximately 30 mv (adjusted by R69) Record results (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM)

M. Set the PWR switch to OFF (OUT) and remove the carrier assembly 4079994-1 from J1 connector.

N. Test is now completed.

V SIDEBAND ASSEMBLY 4079992-1 (A5793)

A. Set front panel controls as follows:

1. MODE - USB
2. TEST - SSB
3. PWR - OFF (OUT)
4. USB/LSB switch - USB (IN)
5. PTT - OFF (OUT)
6. TMC - OFF (OUT)
7. LSB and USB LINE/MIKE controls set to mid point

B. Insert Sideband Assembly 4079992-1 into J2 connector.

C. Connect Audio Generator to USB input terminals at rear of test set. Adjust the Audio Generator frequency to 1 KHZ at a level of 78 millivolts (RMS).

D. Set PWR switch to ON (IN).

E. Adjust USB LINE/MIKE control on LINE side for a full scale reading on LEVEL meter (adjusted to 5) Record results on data sheet.

F. Set the MON CNTL to SB and observe the following:

1. Frequency of 251 KHZ at approximately 50 mv P.P. (adjusted by R34). Record results on data sheet (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM) Return USB LINE control to its mid point.

G. Connect Audio Generator to LSB input terminals at rear of test set. Adjust the Audio Generator frequency to 1 KHZ at a level of 78 millivolts (RMS).

H. Set MODE switch to LSB and USB/LSB switch to LSB (OUT).

I. Adjust LSB LINE/MIKE control on LINE side for a full scale reading on LEVEL meter (adjust to 5) Record results on data sheet.

J. With the MON CNTL set to SB, observe a frequency of 249 KHZ at approximately 50 mv P.P. (adjusted by R60). Record results on test data sheet.

(TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM)

Return LSB LINE control to its midpoint.

K. Connect the Audio Generator to the MIKE input plug. Set audio frequency to 1KHZ at a 1 mv level (RMS).

L. Insert the MIKE plug into the MIKE jack.

M. Set the PTT switch to ON (IN) and adjust LSB LINE/MIKE control on MIKE side for a full scale reading on LEVEL meter (adjust to 5). Level is also controlled by R9.

N. Monitor the MON OUT jack for a frequency of 249 KHZ at approximately a level of 50 mv P.P.. Record results on data sheet.

Return the LSB MIKE control to its midpoint.

O. Set the MODE switch to USB and USB/LSB switch to USB (IN).

P. Adjust USB LINE/MIKE control on MIKE side for a full scale reading on LEVEL meter (adjusted to 5), with the PTT switch ON (IN).

Q. Monitor the MON OUT jack for a frequency of 251 KHZ at approximately a level of 50 mv.P.P.. Record results on data sheet

Return the USB MIKE control to its midpoint.

R. Set the PWR switch to OFF (OUT) and remove the Sideband Assembly 4079992-1 from J2 connector.

S. Test for frequency response (Ripple) Test on Sideband Assembly A5793 4079992-1.

Set audio generator to obtain reference level on output (Analyzer). Record db levels within Bandpass limits of filters. The ripple within the upper and lower limits of the Sidebands should be within 2.7 db. Maintain input level at 78 $\pm$ 0.5 mv.

T. Test is now completed.

VI FREQUENCY SHIFT ASSEMBLY 4079993-2 (A5795)

A. PRELIMINARY SET UP

1. Connect +24 volt power supply to +24v AO121 terminals.
2. Set +24 volt power supply to ON, and allow the AO121, 3.0 MHZ frequency standard at least 30 minutes of warm up time before proceeding with test.

B. SET FRONT PANEL CONTROLS AS FOLLOWS:

1. MODE - CW
2. TEST - FS
3. TMC - OFF (OUT)
4. LSB and USB LINE/MIKE controls set to mid point.
5. USB/LSB switch - USB (IN)
6. PTT - OFF (OUT)
7. PWR - OFF (OUT)

C. SET TOP REAR PANEL CONTROLS AS FOLLOWS:

1. MON CNTL - FS/FAX
2. FS LOOP - CONT
3. SHIFT switch - $\pm$ 425
4. FAX ADJ - FULLY CCW
5. SENSE +
6. SHIFT pot - 0 (mid range)
7. CONT - UNKEYED

D. INSERT FREQUENCY SHIFT ASSEMBLY 4079993-2 INTO J3 CONNECTOR

E. SET PWR SWITCH TO ON (IN)

F. MONITOR THE MON OUT JACK AND CHECK FOR THE FOLLOWING:

1. FREQUENCY - 3.0 MHZ
2. Verify level is adjustable to .4v P.P. (adjusted by R8)
3. Readjust to .4v P.P. (TRUE LEVEL AS DESIRED IS DETERMINED IN ACTUAL SYSTEM) Record results on data sheet.
4. Set the MODE switch to FSK and adjust output level to .07 volts P.P. (ADJUSTED BY R48)

NOTE: The frequency and voltage levels desired are based upon the original board which was used as a standard. If during subsequent tests the recordings deviate out of spec., the original board must be retested and new parameters established. Frequencies are given as reference only. Careful attention is given to the D.C. voltages required.

G. MONITOR TERMINAL 10 FOR A LEVEL OF +7.47 VOLTS (ADJUSTED BY R38).

H. MONITOR TERMINAL H AND PERFORM THE FOLLOWING ADJUSTMENTS.

1. Adjust R36 for a level of +16.76 volts with the CONT sw off.
2. Set the CONT sw to KEY and adjust R45 for a level of +15.94 volts. Repeat steps 1 & 2 until the proper adjustments are obtained.

   Set the CONT sw to OFF.

I. OBSERVE THE FOLLOWING VOLTAGES AND FREQUENCIES AND RECORD RESULTS ON THE TEST DATA SHEET.

FSK MONITOR OUT FREQUENCY REF. ONLY	SHIFT POS	SENSE MODE	DC OUT (PIN 4) VOLTAGE±.05v
3,000,858	425	+	+9.29
3,000,764	425	-	+8.84
3,000,209	170	-	+6.55
3,000,275	170	+	+6.78
2,999,941	85	+	+5.54
2,999,914	85	-	+5.42

FSK MONITOR OUT FREQUENCY REF. ONLY	SHIFT POS	SENSE MODE	DC OUT (PIN 4) VOLTAGE ±.05v
2,999,783	42.5	-	+4.86
2,999,797	42.5	+	+4.92

Reset SHIFT switch to 425 position

J. SET THE MODE SWITCH TO FAX AND CONNECT +12VDC TO THE +12v FAX TERMINAL AT REAR OF TEST SET.

K. MONITOR THE FAX IN TERMINAL WITH A D.C. VOLTMETER.

L. ADJUST THE FAX ADJ CONTROL FOR AN INPUT OF +| vDC.

M. MONITOR PIN 13 AND ADJUST R76 FOR A LEVEL OF + 5.32 VDC.

N. READJUST THE FAX ADJ CONTROL FOR AN INPUT OF +10 VDC.

O. ADJUST R73 FOR A LEVEL OF +2.97 VDC.

P. REPEAT STEPS K THRU O UNTIL PROPER ADJUSTMENTS ARE OBTAINED.

Q. OBSERVE THE FOLLOWING VOLTAGES AND FREQUENCIES AND RECORD RESULTS ON THE TEST DATA SHEET.

FAX DC INPUT	DC OUT PIN 13 ±.05v	OUTPUT MHz FREQUENCY REF. ONLY
+1V	+5.32V	2,999,895
+2V	+5.05V	2,999,832
+3V	+4.80V	2,999,770
+4V	+4.53V	2,999,708
+5V	+4.28V	2,999,644
+6V	+4.01V	2,999,579
+7V	+3.75V	2,999,513
+8V	+3.49V	2,999,447
+9V	+3.23V	2,999,378
+10V	+2.97V	2,999,309

R. SET THE MODE SWITCH TO FSK. OUTPUT FREQUENCY SHOULD BE APPROXIMATELY 3,000,855 Hz.

S. SET THE CONT SWITCH AT REAR OF UNIT TO KEY. FREQUENCY SHOULD SHIFT TO APPROXIMATELY 3,000,767 Hz. RECORD RESULTS ON TEST DATA SHEET.

T. SET THE PWR SWITCH TO OFF (OUT) AND REMOVE THE FREQUENCY SHIFT ASSEMBLY 4079993-2 FROM J3 CONNECTOR.

U. TEST IS NOW COMPLETED.

FIGURE 1

TEST HOOK-UP FOR 4079994-1 (A5794 CARRIER GEN. ASS'Y)

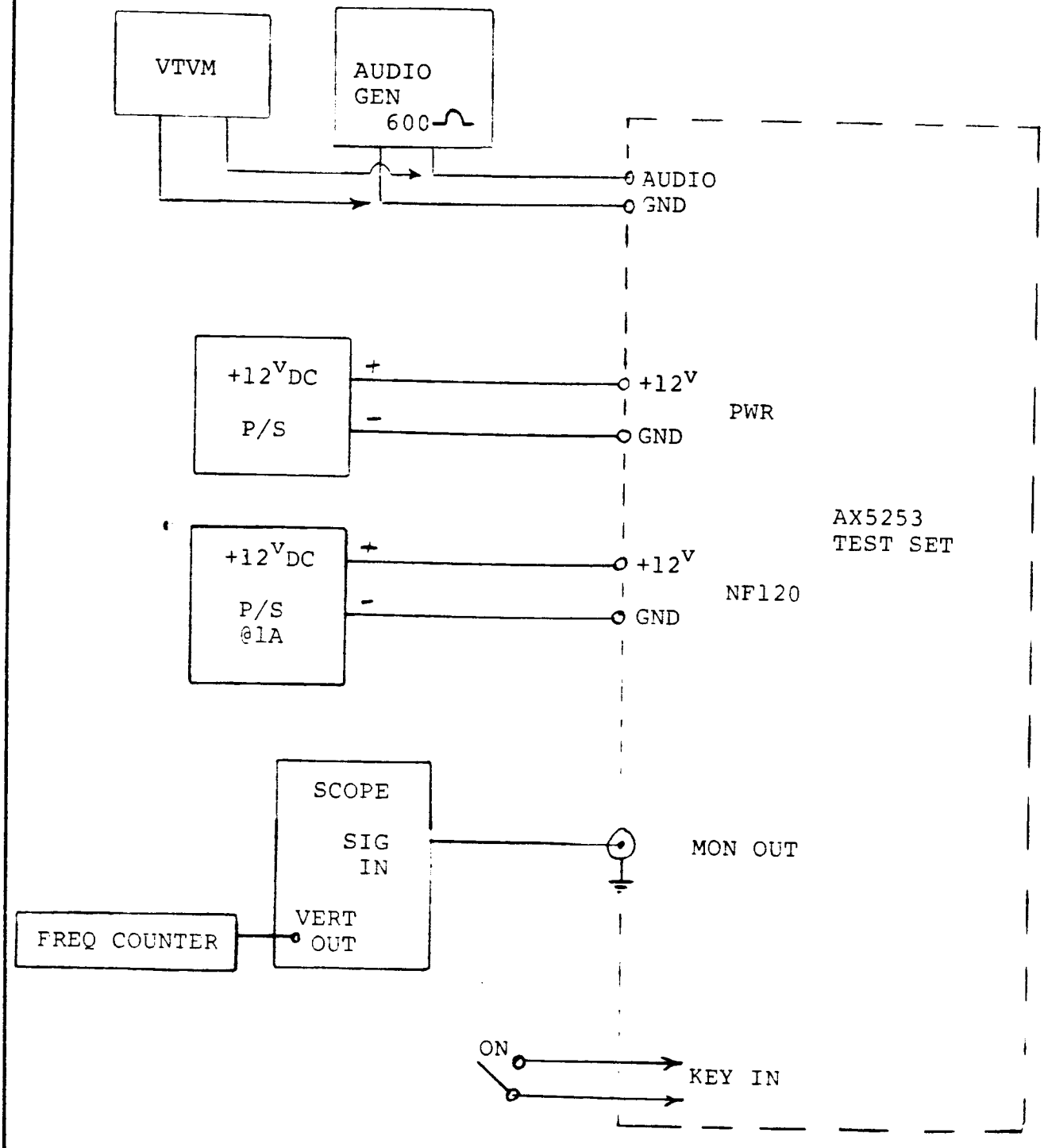


FIGURE 2

TEST HOOK-UP FOR 4079992-1 (A5793 SIDEBAND ASS'Y)

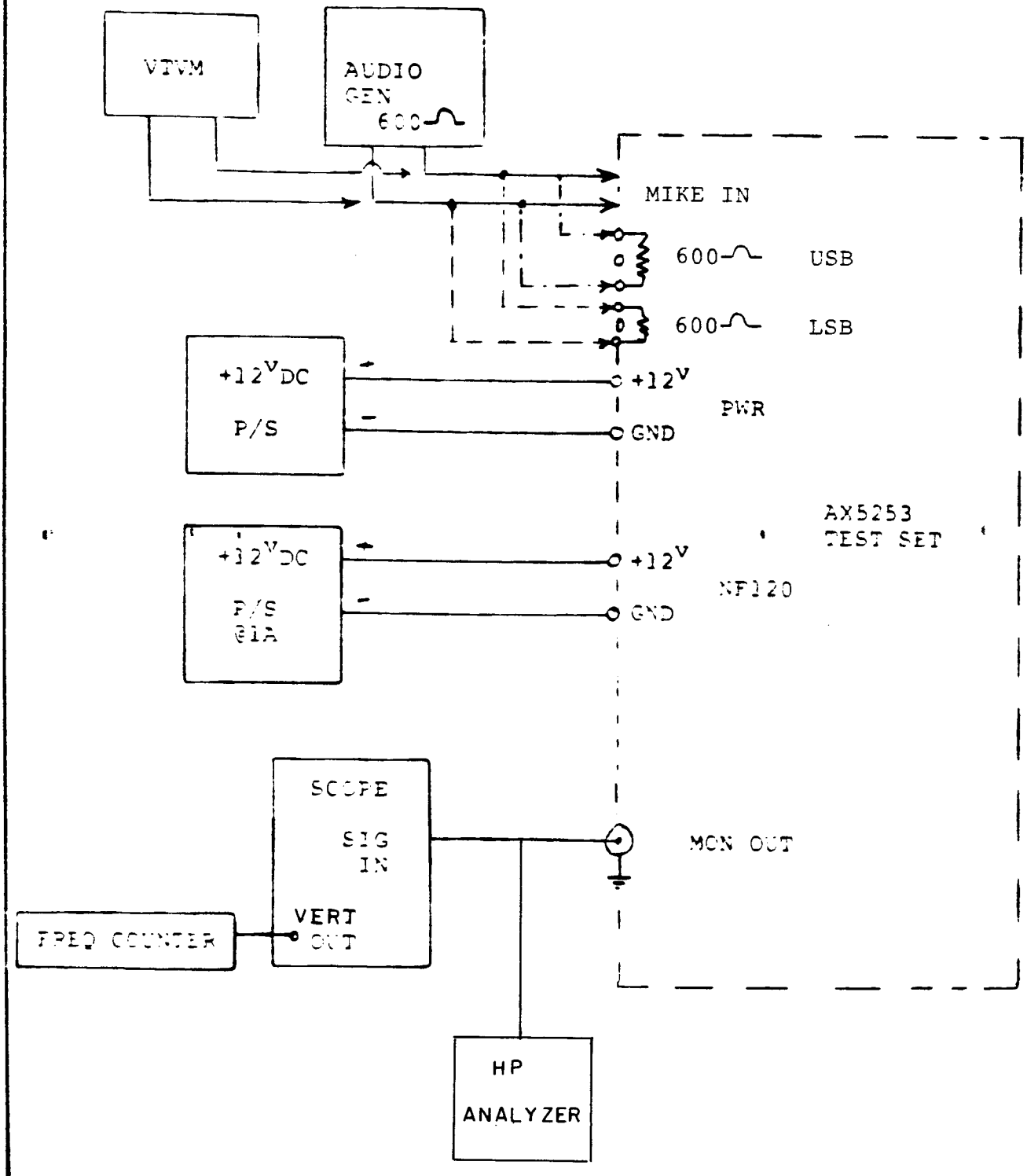
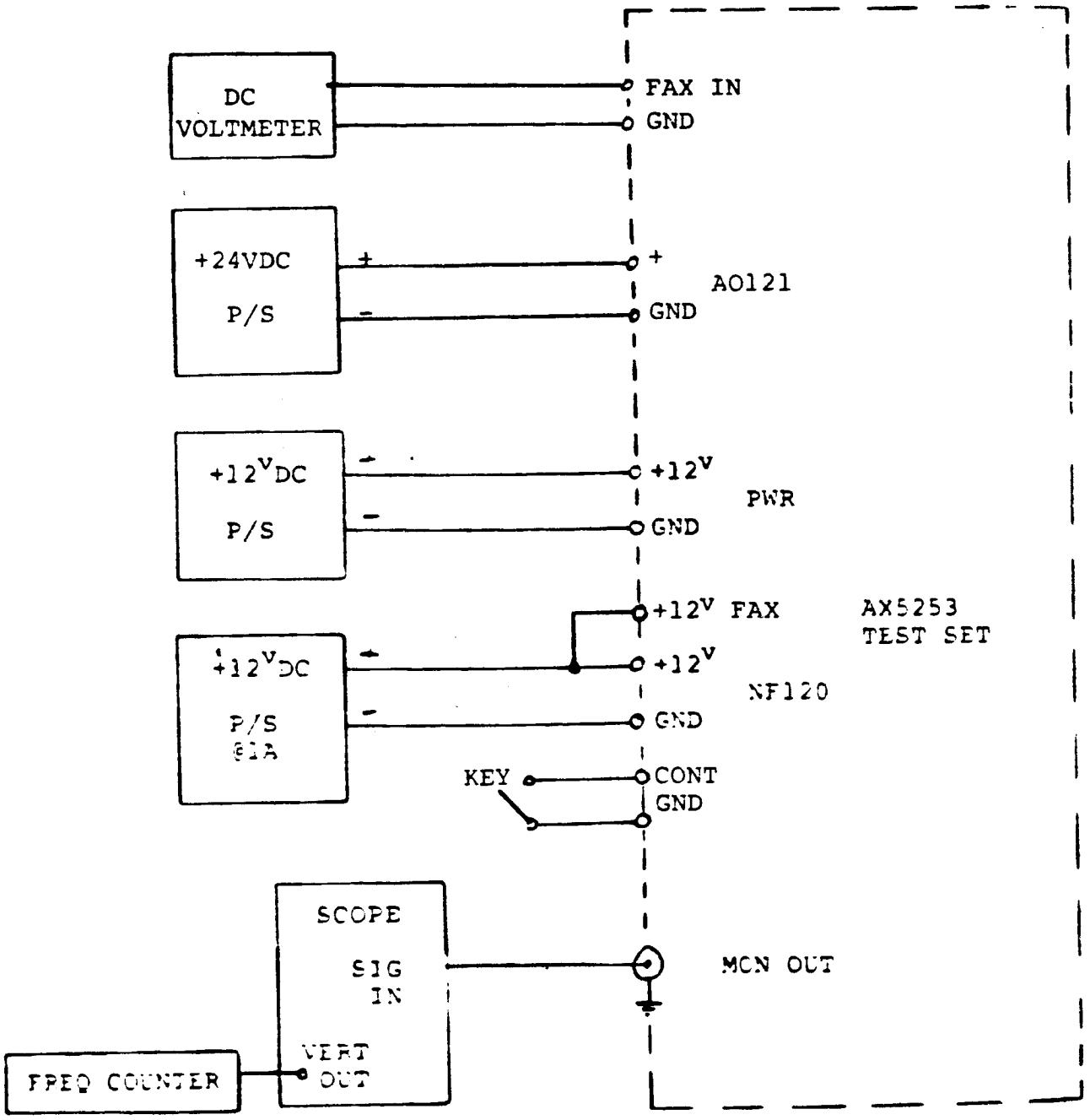


FIGURE 3

TEST HOOK-UP FOR 4079993-2 (A5795 FSK ASS'Y)



TEST DATA SHEET

FREQUENCY SHIFT ASSEMBLY 4079993-2 (A5795)

SERIAL NO. _____

SECTION	STEP	TEST	FREQUENCY	LEVEL	ACCEPT
VI	F	CW 3 MHz OUT	3.0 MHz	.4vP.P.	_____
		FSK		.07vP.P.	_____
	I	FSK OUT			

SHIFT POS	SENSE POS	DC OUT ±.05v	
425	+	+9.29	_____
425	-	+8.84	_____
170	-	+6.55	_____
170	+	+6.78	_____
85	+	+5.54	_____
85	-	+5.42	_____
42.5	-	+4.86	_____
42.5	+	+4.92	_____

Q FAX OUT

FAX DC INPUT	DC OUT PIN 13 ±.05V	
+1V	+5.32V	_____
+2V	+5.05V	_____
+3V	+4.80V	_____
+4V	+4.53V	_____
+5V	+4.28V	_____
+6V	+4.01V	_____
+7V	+3.75V	_____
+8V	+3.49V	_____
+9V	+3.23V	_____
+10V	+2.97V	_____

S CONT KEY _____

TEST DATA SHEET (CONT)

NOTE: ALL TEST EQUIPMENT MUST BE CALIBRATED	DUE DATE	CAL. DATE	ACCEPT.
II			
A. OSCILLOSCOPE-H.P. TYPE 541 OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
B. +12vD.C. POWER SUPPLIES AS REQUIRED TMC ID NO. _____	_____	_____	_____
C. +24vD.C. POWER SUPPLIES AS REQUIRED TMC ID NO. _____	_____	_____	_____
D. FREQUENCY COUNTER-H.P. 524L OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
E. AX5253 TEST SET DATE_____(1 YEAR CYCLE)			
F. D.C. VOLTMETER FLUKE MODEL 8020 B OR EQUV.	_____	_____	_____

TESTED BY _____ DATE _____

ACCEPTED BY _____ DATE _____

NCR - NO CALIBRATION REQUIRED

TEST DATA SHEET

CARRIER ASSEMBLY 4079994-1 (A5794)

SERIAL NO. _____

SECTION	STEP	TEST	FREQUENCY	LEVEL	ACCEPT
IV	D.	2.75 MHZ OUTPUT	2.75 MHZ	30 MV	
	G.	250 KHZ CW KEYED	250 KHZ	30 MV	
	I.	250 KHZ OUTPUT	250 KHZ	30 MV	
	L.	250 KHZ AM SIGNAL	250 KHZ	30 MV	
			1 KHZ		

NOTE: ALL TEST EQUIPMENT MUST BE CALIBRATED II	DUE DATE	CAL. DATE	ACCEPT.
A. OSCILLOSCOPE-H.P. TYPE 541 OR EQUIVALENT TMC ID NO. _____			
B. +12VD.C. POWER SUPPLIES AS REQUIRED TMC ID NO. _____			
C. FREQUENCY COUNTER-H.P. 5244L OR EQUIVALENT TMC ID NO. _____			
D. AUDIO GENERATOR-H.P. 200CD OR EQUIVALENT TMC ID NO. _____			
E. VTVM-BALLANTINE 314 OR EQUIVALENT TMC ID NO. _____			

F. AX5253 TEST SET DATE _____ (1 YEAR CYCLE)

TESTED BY _____ DATE _____

ACCEPTED BY _____ DATE _____

NCR - NO CALIBRATION REQUIRED

TEST DATA SHEET

SIDEBAND ASSEMBLY 4079992-1 (A5793)

SERIAL NO. _____

SECTION	STEP	TEST	FREQUENCY	LEVEL	ACCEPT
V	E.	USB 600Ω - LINE INPUT			_____
V	F.	USB OUTPUT (LINE IN)	251 KHZ	50 M^V	_____
V	I.	LSB 600 Ω - LINE INPUT			_____
V	J.	LSB OUTPUT (LINE IN)	249 KHZ	50 M^V	_____
V	N.	LSB OUTPUT (MIKE IN)	249 KHZ	50 M^V	_____
V	Q.	USB OUTPUT (MIKE IN)	251 KHZ	50 M^V	_____

NOTE: ALL TEST EQUIPMENT MUST BE CALIBRATED II	DUE DATE	CAL. DATE	ACCEPT.
A. OSCILLOSCOPE-H.P. TYPE 541 OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
B. +12^{V}D.C. POWER SUPPLIES AS REQUIRED TMC ID NO. _____	_____	_____	_____
C. FREQUENCY COUNTER-H.P. 5244L OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
D. AUDIO GENERATOR-H.P. 200CD OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
E. VTVM-BALLANTINE 314 OR EQUIVALENT TMC ID NO. _____	_____	_____	_____
F. AX5253 TEST SET DATE _____ (1 YEAR CYCLE)			
G. H P 141 T Spectrum Analyzer with 855B Head OR EQUIVALENT.	_____	_____	_____

TESTED BY _____ DATE _____

ACCEPTED BY _____ DATE _____

NCR - NO CALIBRATION REQUIRED

TEST DATA SHEET

SIDEBAND ASSEMBLY 4079992-1 (A5793)

USB FX # 270 _____

LSB FX # 269 _____

Board Serial # _____

USB

		Total Ripple
Frequency High	_____	_____
Frequency Low	_____	_____

LSB

Frequency High	_____	_____
Frequency Low	_____	_____

4079994-1 Serial No. _____

I LOG OF COMPONENT FAILURES

COMPONENT	USED ON	REASON	NOTES

II LOG OF FAILURES NOT COMPONENT RELATED

TYPE OF FAILURE	USED ON	REASON	CORRECTIVE ACTION

4079992-1 Serial No. _____

I LOG OF COMPONENT FAILURES

COMPONENT	USED ON	REASON	NOTES

II LOG OF FAILURES NOT COMPONENT RELATED

TYPE OF FAILURE	USED ON	REASON	CORRECTIVE ACTION