8/9/65	TMC SPECIFICATION	NO. S 942
REV: A		
COMPILED: RT	CHECKED: RT APPD: [illegible]	SHEET 1 OF 10
TITLE:		
Typed by CL		

COMPLETE TEST INSTRUCTION

FOR

VERY LOW FREQUENCY LINEAR AMPLIFIER

MODEL VLLA

TEST EQUIPMENT REQUIRED

A. VLLA LOAD (SEE SHEET THREE)

B. VTVM H.P. 410 OR EQUIVALENT

C. SPECTRUM ANALYZER, MODEL LP-1A WITH MODIFIED RACK

D. AUDIO OSCILLATOR

E. SBG 1LA SYSTEM OR EQUIVALENT

F. T.T.G. (TWO TONE GENERATOR)

G. SIMPSON 260 OR EQUIVALENT

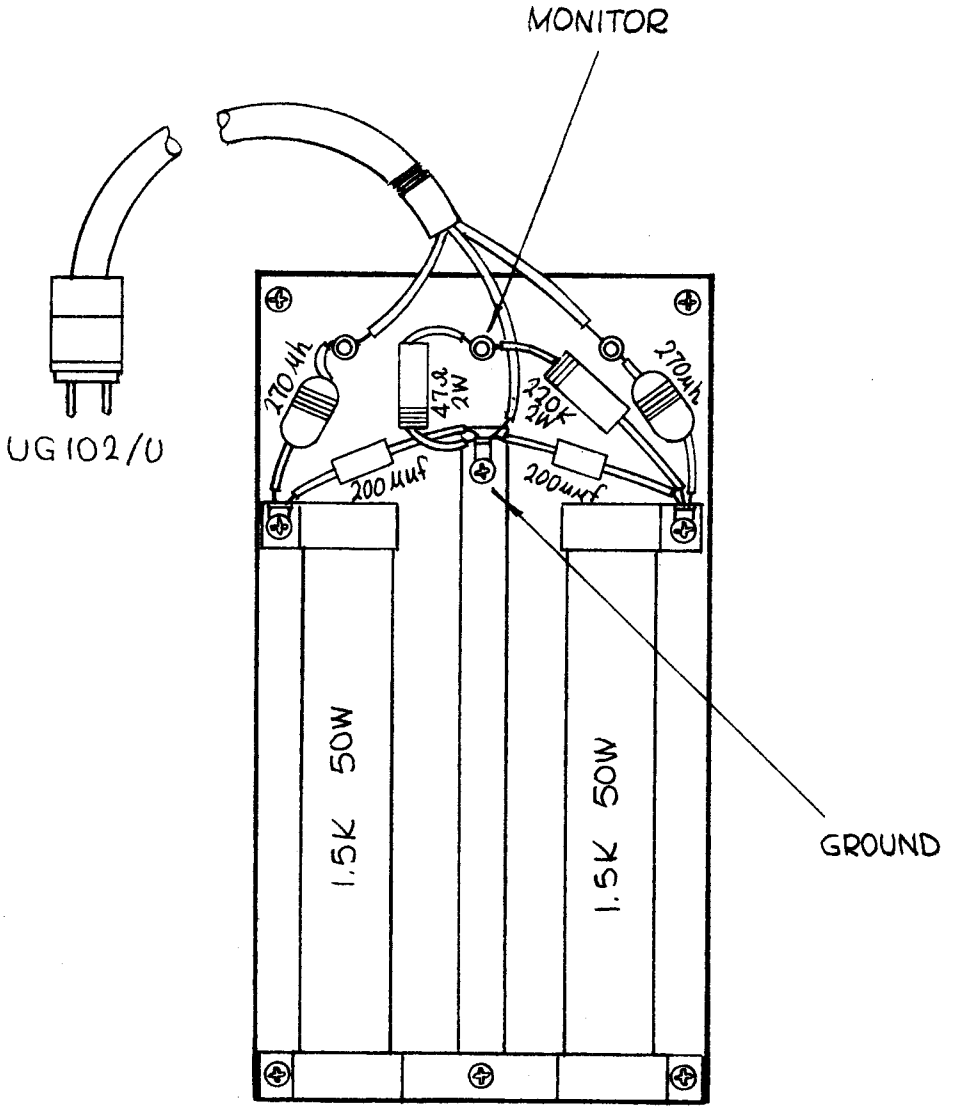
H. 10 db. PAD 50 ohm TO 50 ohm

typ d by CL	TMC SPECIFICATION		NO. S 942
REV: A			
COMPILED: RT	CHECKED:	APPD:	SHEET 3 OF 10

TITLE: VERY LOW FREQUENCY LINEAR AMPLIFIER

VLLA-1

VLLA LOAD



*A. MECHANICAL INSPECTION:

1. Check all knobs and switches in the unit for proper operation and alignment.

2. Carefully check the unit for good mechanical condition, obvious miswiring and loose connections.

B. PRELIMINARY ELECTRICAL INSPECTION:

1. Connect the power input connector to J2002. Because the unit when used in the GPT-10KLF, operates on a three phase input system, certain pins on the A.C. input connector have to BE jumped together in order to use two phase system on the b nch.

They are as follows:

a. PIN T 230 VAC INPUT

b. PIN P 230 VAC INPUT

c. PIN P to PIN V

d. PIN J to PIN W

e. PIN c to PIN d

f. PIN U to GND

DO NOT APPLY POWER TO UNIT AT THIS TIME

*2. With S2003 in the TEST position, check for short circuits to ground.

a. The two power input phases should read not less than infinite ohms.

b. R2009 should read not less than 80K ohms.

c. V2007 PIN 2 should read not less than 25K ohms.

d. V2010 PIN 1 should read not less than 100K ohms.

e. R2006 should read not less than 10K ohms.

NOTE: Indicate completion and acceptance of portion (s) of this test prece ded by (*) by recording r quired obs rved value or by check ( ) mark as requir d on attached test Data She ts.

*3. With S2003 in the NORMAL position, check for short circuits to ground. Same resistance readings should apply as in previous Part 2.

*4. Check unit for correct value of fuses.

5. Connect the load to J2000 and connect the VTVM across one resistor and Ground. Besure that the VTVM is on the 300V scale.

6. Turn Bias A Adj. and Bias B Adj. fully clock wise.

*C. LOW VOLTAGE CHECK:

1. With S2003 in the NORMAL position, apply power to the unit.

CAUTION CONNECT ONLY TO 230 VAC.

2. The following should be observed with power on the unit.

a. Blower should be running.

b. M2001 Multimeter should read in the following positions:

POSITION	DESCRIPTION	READING
2	DRIVER PLATE V x 10	290 to 375 D.C.
3	BIAS A	-35 to -45 D.C.
4	BIAS B	-35 to -45 D.C.

All other positions on the Multimeter should read ZERO.

c. K2001 should be in an energized position.

d. V2003 PIN 5 should read 10.0 to 15.0 VAC.

e. V2004 PIN 5 should read 10.0 to 15.0 VAC.

*3. Adj. Bias A and Bias B for a reading of 25V on the Multimet r M2002 in positions Bias A and Bias B.

NOTE: Indicate completion and acceptance of portion(s) of this test preceeded by (*) by recording required observe value or by check ( ) mark as required on attached test Data Sheets.

4. If any of the following measurements cannot be obtained, check unit for improper wiring or connections against schematic before proceding any further.

*D. LOW VOLTAGE CIRCUIT FUSING CHECK:

1. Remove Filament Fuse F2001, the voltages on Positions 2,3, and 4 of the Multimeter Switch S2001 removed. Replace th filament fuse.

2. Remove Bias Fuse F2003. Voltage on Positions 3 and 4 of the Multimeter Switch S2001, should be removed. Replace the Bias Fuse.

3. Remove Driver B+ Fuse F2005. Voltage on Position 2 of the Multimeter Switch S2001 should be removed. K2001 should also become deenergized. Replaced the Driver B+ fuse.

*E. HIGH VOLTAGE CHECK:

1. Place S2003 in the TEST position. The following should be observed on M2001 Multimeter:

POSITION	DESCRIPTION	READING
1	DRIVER PLATE MA	30 to 45 MA.
2	DRIVER PLATE VX10	315 to 340 VDC.
3	BIAS A	25VDC APPROX.
4	BIAS B	25VDC APPROX.
5	SG V X 10	240 to 300 VDC.
6	SG MA.	0 to 5 MA.
7	HV V X 10	800 to 950 VDC.

All other positions should read ZERO.

NOTE: Indicate completion and acceptance of portion(s) of this test preceeded by (*) by recording required observed value or by check ( ) mark as required on attached test Data Sheets.

*I. CARRIER TEST

1. Connect the output of the SBG-1LA system to J2001. Input thru a 10 db. pad.

2. Turn both channels of the CBE to OFF and insert CARRIER only.

3. Tune the system to give an output frequency of 250 KC. Be sure that the B Plus switch of the LFA-4 is in the OFF position and the output control turned fully counterclockwise.

NOTE: If not familiar with SBG-1LA system read S-540, Section 2B.

4. Place S2003 in the TEST position. Turn the LFA-4 B Plus switch ON and drive the VLLA untill a voltage of 160 V is achived on th VTVM across the load. Record on Data Sheet and repeat the same procedure for other frequencies on the Data She t.

5. When Part 4 is complete, place S2003 in the NORMAL position.

*J. DISTORTION TEST

1. Tune the system again for an output of 250 KC. Remove CARRIER and insert tones from TTG thru CBE. Use either Upper or Lower Sideband.

2. Connect the low frequency analyzer to the VLLA load as shown on Sheet 3 of this procedure.

3. Turn S2003 to TEST position and drive the VLLA untill a voltage of 100 volts appears on the VTVM across the load. Measure the third order distortion and record on the Data Sheet. Repeat this procedure for the other frequencies on the Data Sheet. All third order procucts must be at least 35 db. below the two tone test level.

NOTE: Indicate completion and acceptance of portion(s) of this test prec eded by (*) by recording required observed value or by check ( ) mark as r quired on attach d test Data Sheets.

2. Adj. Bias A for a reading of 25 MA on M2002 Driver Plate Current Meter, Position 1, Plate A.

3. Adj. Bias B for a reading of 25 MA on M2002 Driver Plate Current Meter, Position 3, Plate B.

*F. HIGH VOLTAGE CIRCUIT FUSING CHECK:

1. Remove Power B+ Fuse F2002, S2001 Multimeter Switch positions 5 and 7 should not read. M2002 Driver Plate Current Meter should not read in any position. Blower must stop running. Replace Power B+ fuse.

2. Remove IPA B+ fuse F2004, Multimeter position 5 should not read. M2002 Driver Plate Current Meter should not read in any positions. Replace IPA B+ fuse.

*G. AIR SWITCH INTERLOCK TEST:

1. Place S2003 in the NORMAL position. Remove the Power B+ Fuse F2002. Measure the voltage on PIN 6 and PIN 7 of E2000 in reference to Gnd. It should read 230 VAC approximately.

2. Place S2003 in the TEST position. Measure the voltage on PIN 6, PIN 8, and PIN 7 of E2000. PIN 6 should read 230 VAC approximately and PIN 7 and PIN 8 ZERO in reference to Gnd.

3. Place S2003 in the NORMAL position and replace to POWER B+ FUSE.

*H. IDLING PLATE CURRENT ADJUSTMENTS:

1. Place S2003 in the TEST position.

2. Place S2002, Driver Plate Current Meter Switch, in Position 1, Plate A adjust Bias B for a reading of 100 MA on the meter.

3. Place S2002, Driver Plate Current Meter Switch, the Position 3, Plate B Adjust Bias B for a reading for 100 MA on the meter.

4. Place S2002, Driver Plate Current meter switch, in Position 2, Plates. Adjust R2025 until meter reads 200 MA.

5. Positions 3 and 4 of S2001, Multimeter switch, should read between 10 and 25 VDC.

6. Place S2003 in the NORMAL position.

NOTE: Indicate compl tion and acc ptance of portion(s) of this t st pr c ded by (*) by recording required observ d value or by Check ( ) mark as r quired on attached t st Data She ts.

TEST DATA SHEET

1. MECHANICAL INSPECTION _____
2. SHORT CIRCUIT CHECK _____
3. FUSE CHECK _____
4. LOW VOLTAGE CHECK _____
   a. Bias A Voltage set at _____ VDC
   b. Bias B Voltage set at _____ VDC
5. LOW VOLTAGE CIRCUIT FUSING CHECK _____
6. HIGH VOLTAGE CHECK _____
   a. Driver Plate Voltage _____ VDC
   b. Driver Plate Current _____ MA
   c. Screen Voltage _____ VDC
   d. High Voltage _____ VDC
7. HIGH VOLTAGE CIRCUIT FUSING CHECK _____
8. AIR SWITCH INTERLOCK TEST _____
9. IDLING PLATE CURRENT
   a. Driver Plate Current A idling adjusted to _____ MA
   b. Driver Plate Current B idling adjusted to _____ MA
   c. Total Plate Current Meter adjusted to _____ MA
10. CARRIER TEST

FREQUENCY (KC)	VOLTAGE (AC)
5	
100	
250	
350	
500	
540	

TEST DATA SHEET

11. DISTORTION TEST

FREQUENCY (KC)	DISTORTION
30	_____ db.
250	_____ db.
350	_____ db.
500	_____ db.
540	_____ db.

Tested by _____ MFG. NO. _____

Approved by _____ DATE _____

REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

S 942
LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
2-10-66	Ø			ORIGINAL RELEASE FOR PRODUCTION	
3/31/66	A	all	16025	Revised per EMN	

TMC FORM MLR-1 2-65—AINS.