DATE 10/24/63 SHEET 1 OF 6	TMC SPECIFICATION NO. S 785	0
RK COMPILED	Roy Kaye 28 OCT 63 CHECKED	TITLE: PRODUCTION TEST PROCEDURE FOR TMC MODEL AX-413 POWER SUPPLY
APPROVED		

PRODUCTION TEST PROCEDURE FOR TMC MODEL AX-413 POWER SUPPLY

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 459M 8444

DATE 10/24/63 SHEET 2 OF 6	TMC SPECIFICATION NO. S 785	0
RK COMPILED / RON KOHN 28 OCT. 63 CHECKED	TITLE: PRODUCTION TEST PROCEDURE FOR TMC MODEL AX-413	
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I INTRODUCTION

The AX-413 power supply is used with TMC model TTR-10 rec iver-transmitter when the TTR-10 is to be operated from an AC power source. The AX-413 is designed to operate from nominal AC line voltages of 115, 208 or 230 volts, single phase, 50 thru 400 cycles per second. The AX-413 provides all the A, B+, B-, C- and internal oven voltage for the TTR-10 unit. The power supply is installed in the TTR-10 by sliding it into the main chassis from the rear and is secured with six screws. Detailed descriptions of the TTR-10 systems, including the AX-413, are contained in TMC specification S-786. This specification includes theory of operation and trouble shooting data and should be referred to in the event of malfunction during test. The check sheet should be filled out during test.

II EQUIPMENT REQUIRED

1. Schematic Diagrams CK-659, sketch (4) E-3037-101.
2. Power Supply Test Jig. (TMC)
3. Simpson 260 multi-meter or equivalent.
4. Metered Variac model W10MT3W, or equivalent.
5. Line cord, TMC CA-555-4.
6. Ballantine AC VTVM model 314, or equivalent.

III PROCEDURE

A. Nominal Voltage Check.

1. Check the AX-413 for mechanical defects and wiring errors.
2. Check that all fuses are installed and are of the specified value.
3. Set all the toggle switches on the TEST JIG to the OFF position.
4. Set the OVEN VOLTAGE switch on the AX-413 to the center, OFF position.
5. Set the AX-413 on the bench upside down so that the circuitry is exposed.
6. Plug the TEST JIG into the AX-413 at J903.
7. Plug the Variac into the AC line and adjust the Variac output voltage to 115 volts.
8. Set the RANGE switch on the Variac to LOW and the LINE switch to OFF.
9. Connect the line cord between J900 on the AX-413 and the VARIAC output.
10. Set the LINE switch on the VARIAC to ON.

NOTE: READINGS NOTED AS "APPROXIMATELY" ARE ± 10%.

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11. Set the OVEN VOLTAGE switch on the AX-413 to the INT. position. The OVEN indicator on the TEST JIG should light.
12. Set S1 on the TEST JIG to ON. The POWER indicator should light and the VARIAC should read approximately 20 watts on its power meter.
13. Connect the Simpson 260 between the LV+ test jack and ground. The meter should read 12.5 volts DC + 5%. Leave met r connected
14. Set S-6 on the TEST JIG to the ON position. The meter reading should not vary more than 1 volt. Remove meter.
15. Connect the meter between the MV- test jack and ground. The meter should read -36 volts DC + 10%. Leave meter connected.
16. Set S8 on the TEST JIG to the $\overline{\text{ON}}$ position. The meter reading should not vary more than 1 volt. Remove meter.
17. Connect the meter between the LV- test jack and ground. The meter should read -12.5 volts DC + 5%. Leave meter connected.
18. Set S-7 on the TEST JIG to the $\overline{\text{ON}}$ position. The meter reading should not vary more than 1 volt. Remove meter.
19. Check the VARIAC power reading, it should be approximately 55 watts.
20. Set S-3 on the TEST JIG to ON. The FIL, C-, and ANT. RELAY indicators should light. The VARIAC power should read approximately 100 watts.
21. Set S-2 on the TEST JIG to the ON position. The antenna relay within the AX-413 should energize and the ANT. RELAY indicator on the TEST JIG should go out.
22. Set the Simpson 260 to read AC VOLTS on the 10 volt scale and connect between the two FIL. test jacks. The meter should read 6.3 volts, minimum. Remove meter.
23. Set the Simpson to read -DC VOLTS on the 250 volt scale and connect the meter between the C- test jack and ground. The meter should read 105 $\pm$ 5% volts. Remove meter.
24. Connect the meter between the PA BIAS test jack and ground. Varying the PA BIAS ADJ. knob should vary the meter reading between -25 and -80 volts. Remove meter.
25. Set the meter to read +DC VOLTS on the 10 volt scale and connect between the HV test jack and ground. The meter should read 0 volts $\pm$ .2 volts.
26. Set the meter to the 1000 volt scale and connect to the IPA B+ test jack. The meter should read 400 volts $\pm$ 20 volts. Leave meter.
27. Set S-4 on the Test Jig to ON. The meter reading should drop to 290 + 20 volts. Remove meter.
28. Connect the meter between the PAG_2 test jack and ground. The meter should read 315 volts + 5%. Leave meter connected.
29. Set S-5 on the Test Jig to $\overline{\text{ON}}$. The meter reading should not vary more than 5 volts. The VARIAC power reading at this time should be approximately 135 watts. Leave meter connected.

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III cont'd

B. Voltage Regulation Check

1. Vary the AC LINE VOLTAGE as measured on the VARIAC between 105 and 125 volts. The meter reading should not vary more than 1**5** volts. Remove meter and set line voltage at 115.
2. Set meter to read -DC volts on the 250 volt scale and connect between C- test jack and ground.
3. Vary the line voltage between 105 and 125 volts. The meter reading should not change more than 2 volts. Remove meter, set line voltage at 115.
4. Set the meter to the 50 volt scale and connect between the LV- test jack and ground.
5. Vary the line voltage between 105 and 125 volts. The meter reading should not vary more than .5 volt. Remove meter and set line voltage to 115.
6. Set the meter to read +DC volts and connect between the LV+ test jack and ground.
7. Vary the line voltage between 105 and 125 volts. The meter reading should not vary more than .5 volt. Remove meter and set the line voltage at 115.
8. Connect the meter between the MV- test jack and ground.
9. Vary the line voltage between 105 and 125 volts. The meter reading should not vary more than 1 volt. Remove meter and set the line voltage at 115 volts.

III

C. Ripple Voltage Check

1. With the line voltage at 115 volts, connect the BALLANTINE AC VTVM between the MV- test jack and ground. The meter should read less than 7.5MV RMS ripple. Remove meter.
2. Connect the BALLANTINE between the LV- test jack and ground. The meter should read less than 1MV. Remove meter.
3. Connect the BALLANTINE between the LV+ test jack and ground. The meter should read less than 1 MV. Remove meter.
4. Connect the BALLANTINE between the PAG_2 test jack and ground. The meter should read less than 40 MV. Remove meter.
5. Connect the BALLANTINE between the IPA B+ test jack and ground. The meter should read less than 300MV. Remove meter.
6. Connect the BALLANTINE between the HV test jack and ground. The meter should read less than 20MV. Remove meter.
7. Connect the BALLANTINE between the C- test jack and ground. The meter should read less than 3MV. Remove meter.

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III .

D. Shut-Down

1. Set S-2 on TEST JIG to OFF. The ANT. RELAY indicator should light.
2. Set S-1 on TEST JIG to OFF. All the indicators should go out except the OVEN indicator, and the power indicated on the VARIAC should reduce to 15watts.
3. Disconnect the line cord from J900 on the AX-413 and connect to J901. The OVEN indicator on the TEST JIG should go out.
4. Set the OVEN VOLTAGE switch on the AX-413 to the EXT. position. The OVEN indicator on the TEST JIG should light.
5. Set the OVEN voltage switch on the AX-413 to OFF. The OVEN indicator on the TEST JIG should go out.
6. Remove the TEST JIG and line cord. This completes testing of the AX-413 power supply.

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1. MECHANICAL ASSEMBLY CHECK. _____OK

2. WIRING CHECK. _____OK

3. FUSE INSTALLATION CHECK. _____OK

4. ELECTRICAL OPERATIONAL CHECK

   a: INTERNAL OVEN VOLTAGE _____OK

   b: POWER LIGHT _____OK

   c: EXTERNAL OVEN VOLTAGE _____OK

   d: OUTPUT VOLTAGES (SEE CHART BELOW)

REVISIONS						
SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD

S-785

SERIAL NO._____

MFG. NO._____

POWER SUPPLY OUTPUT	TEST JIG JACK	TESTS AND REFERENCE SECTIONS											
		REFERENCE SECTION	MINIMUM LOAD OUTPUT VOLTAGE NOMINAL	MINIMUM LOAD OUTPUT VOLTAGE MEASURED	REFERENCE SECTION	VOLTAGE VARIATION NO LOAD TO FULL LOAD MAXIMUM	VOLTAGE VARIATION NO LOAD TO FULL LOAD MEASURED	REFERENCE SECTION	VOLTAGE VARIATION W/AC LINE AT FULL LOAD MAXIMUM	VOLTAGE VARIATION W/AC LINE AT FULL LOAD MEASURED	REFERENCE SECTION	RMS RIPPLE VOLTAGE AT TEST LOAD MAXIMUM	RMS RIPPLE VOLTAGE AT TEST LOAD MEASURED
LOW VOLTAGE B+, REG.	LV B+	III:A:13	+12.5±5%		III:A:14	1.0		III:B:6,7	0.5		III:C:3	1.0 MV	
MID VOLTAGE B+, REG.	MV B+	III:A:15	+36±10%		III:A:16	1.0		III:B:8,9	1.0		III:C:1	7.5 MV	
LOW VOLTAGE B-, REG.	LV B-	III:A:17	-12.5±5%		III:A:18	1.0		III:B:4,5	0.5		III:C:2	1.0 MV	
IPA & PA FILAMENT	FIL.	III:A:22	6.3 MIN		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PA BLOCKING BIAS, REG.	C-	III:A:23	-105±5%		N/A	N/A	N/A	III:B:2,3	2.0		III:C:7	3.0 MV	
PA Ib ADJ. (PA BIAS)	PA BIAS	III:A:24	-25 THRU -80		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IPA PLATE & SCREEN B+	IPA B+	III:A:26	400±20		III:A:27	120					III:C:5	300 MV	
PA PLATE VOLTAGE (Vx100)	HV	III:A:25	+8.0±.2		N/A	N/A	N/A	N/A	N/A	N/A	III:C:6	20 MV	
PA SCREEN VOLTAGE, REG.	PAG_2	III:A:28	315±5%		III:A:29	5.0		III:B:1	15.0		III:C:4	40 MV	

NOTE: N/A DENOTES NON-APPLICABLE

DATE: _____

TESTED BY: _____

NOTES

QTY./UNIT	MODEL USED ON	ASS'Y. NO.
SCALE	CODE	

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMB L

LIST OF MATERIAL

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

DECIMALS .X ± .05, .XX ± .01, .XXX ± .005 — TOLERANCES — FRACTIONS ± 1/64, ANGLES ± 0° 30'

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE
TEST DATA SHEET, AK-413

DRAWN K. Chenault	DATE 10-25-63	FINAL APPROVAL	DATE
CHECKED N. Petrakos	DATE 10-31-63		
ELECT. DES. RKOHN	DATE 10-28-63	S-785	
MECH. DES. —	DATE —	SHEET 6 OF 6	REV. LTR.

TMC FORM 109

STOCK NO. 440H