TMC SPECIFICATION			NO. S 958
REV: 0			
COMPILED: JZ	CHECKED: LEA	APPD: [signature] 5/20/65	SHEET COVER OF 7
TITLE:			

TEST PROCEDURE

for

MSAA-1

I. TEST EQUIPMENT REQUIRED

A. 1-AC VTVM Ballantine Model 314 (or equiv.).
B. 1-RF VTVM Hewlett Packard 410B (or equiv.).
C. 2-RF Generators, Measurements Corporation Model 82 (or equiv.).
D. 1-Audio Generator, Hewlett Packard (or equiv.).
E. 1-Counter, Hewlett-Packard (or equiv.).
F. 12-BNC cables, 4" or longer, 50 ohms (R174/U).
G. 4-600 1/2 watt resistors.
H. 1-100K 1/2 watt resistor.
I. 600 ohms headphone.
J. Simpson 260 (or equiv.).

ADDITIONAL INFORMATION:

Supporting test specifications S-635, HFP-1 Power Supply; S-626, 250 KC Plug-in IF Strip; S819 Audio Module (AX-469).

II. PRELIMINARY

A. Inspect the unit for mechanical imperfections such as loose screws, terminal boards, etc.
B. Inspect for obvious wiring errors.
C. Check for B+ shorts with an ohmmeter.
D. Turn Power Switch to STAND-BY position, then plug in HFP-1 unit into AC outlet. STAND-BY lights should go on immediately.
E. Turn power switch from STAND-BY to ON at the MSAA-1. The filaments of the power supply tubes, V-8001 thru V-8004, should be on, as well at TIME DELAY light. 60 seconds ±20 seconds aft r applying AC to the unit, the fan and B+ should be on. POWER ON light should go on immediately, and STAND-BY light should go off.
F. Check B+ on TP-8001 and TP-8002. It should be +200 volts.
G. Inter-connect the following with BNC Cables:

J-6509 to J-6510
J-6507 to J-6508
J-6505 to J-6506
J-6503 to J-6504
J-6518 to J-6519
J-6521 to J-6522
J-6524 to J-6525
J-6527 to J-6528

Add 600 ohms loads E-6501 - 5 to 6, 7 to 8, 9 to 10, 11 to 12.

III. AGC ALIGNMENT

A. Connect a zero centered VTVM at the AVC (TP-6501) test point. Use the lowest scale without over loading the meter.
B. Turn AGC DECAY for channels B2, B1, A1, A2 counterclockwise.
C. Turn AGC delay for channels B2 (R-6531), B1 (R-6539), A1 (R-6533), A2 (R-6541) fully clockwise.
D. Adjust AGC delay B2 (R-6531) for zero center.
E. Adjust B1 R-6539 until the AVC test point voltage becomes slightly negative then adjust B1 R-6539 for zero center.
F. Repeat step E. for channel A1 (R-6533).
G. Repeat step E. for channel A2 (R-6541).
H. Turn B2 AGC DECAY clockwise adjust B2 AGC DELAY R-6531 for zero.
I. Repeat step 1 for B1, A1, and A2.
J. AGC test point voltage is not to exceed 0.1 volts with any variation of the B2, B1, A1, A2 decay controls.
K. If AGC test point voltage change exceeds ± 0.1 volts readjust AGC DELAY Pot for channel causing AGC DECAY variation. (For example: B2 AGC DELAY (R-6531) for B2 DECAY variation).

IV. CONVERTER ALIGNMENT

A. Set signal generator to 250 KC at 50 mv output.
B. Connect generator to J-6502.
C. Connect AC-VTVM thru 100K resistor pin 1 of V-6501.
D. Connect ground jumper to green dot of T-6502.
E. Tune top core of T-6502 for maximum indication of VTVM.
F. Remove ground jumper and tune bottom core of T-6502 for minimum indication on VTVM.
G. Reduce generator output to 20 mv.
H. Connect ground jumper to pin 5 of J-6511.
I. Connect AC-VTVM to pin 2 of J-6511.
J. Set generator to 245. 3KC and adjust T-6503 for maximum indication on VTVM.
K. Voltage at pin 2 of J-6511 should be .3v minimum.
L. Vary generator ± 1.5 KC, output should remain within 0.5 db.
M. Repeat H to L using J-6512, T-6504 and center frequency of 248.4 KC.
N. Repeat H to L using J-6513, T-6505 and center frequency of 251.6 KC.
O. Repeat H to L using J-6514, T-6506 and center frequency of 254.7 KC.
P. Remove all ground jumpers.

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V. 250 KC IF ALIGNMENT

A. Plug in four tested IF strips.
B. Connect signal generator, set at 2 mc with 1v output, to J-6501.
C. Connect a second generator, set at 1.75 mc with 3 mv output, to J-6502.
D. Connect 50 ohm load Frequency Counter and AC-VTVM to J1Q2 of B2 IF Strip
E. Vary 1.75 mc generator for peak on AC-VTVM.
F. Adjust R-116 on IF Strip for 0.2 VAC.
*G. Check bandwidth if IF Strip at 3db points: 243.960 KC or less to 246.735 KC, or more.
H. Repeat steps D to G for IF Strip B1; BW: 249.750 KC or more to 246.975 KC, or less.
I. Repeat steps D to G for IF Strip A1; BW: 250.250 KC or less to 253.025 KC, or more.
J. Repeat steps D to G for IF Strip A2; BW: 256.040 KC or more to 253.265 KC, or less.

* NOTE: When taking bandwidth, ground AVC of IF strip being tested.

VI. AUDIO AND PRODUCT DETECTOR

A. Plug in four tested audio strips.
B. Connect signal generator #1 to J-6502 set at 250 KC with .20 mv output.
C. Connect second generator to J-6537 set at 243.71 KC with 1 volt output.
D. Vary 250 KC generator #1 for indication on B2 line level meter and set line level for 0VU.
E. Connect AC-VTVM from terminals 11 and 12 to ground of E-6501, in both cases voltage should be 0.33 VRMS ± 10%
F. Plug phones or speaker (600 ohm) into monitor jack, set selector to B2. A changing clear tone should be heard as generator #1 is varied.
G. Connect generator #2 to J-6539 set at 250 KC with 1 volt output.
H. Repeat steps D to F for channel B1 using E-6501 term 9 and 10.
I. Connect generator #2 to J-6541 set at 250 KC with 1 volt output.
J. Repeat steps D to F for channel A1 using E-6501 term 7 and 8.
K. Connect generator #2 to J-6543 set at 256.9 KC with 1 volt output.
L. Repeat steps D to F for channel A2 using E-6501 term 5 and 6.
M. This completes preliminary testing of the MSA-1.

VII. RESISTANCE TEST OF REMOTE WIRING

All external leads (incl. Power Supplies) must be disconnected.

	POLARITY OF VOM	COMMON LEAD	POSITIVE LEAD	RESISTANCE
1.	Positive Reverse	J6544-K "	J6517-F "	Less than 20 ohms Greater than 1 megohm
2.	Positive Reverse	J6544-K "	J6520-F "	Less than 20 ohms Greater than 1 megohm
3.	Positive Reverse	J6544-K "	J6523-F "	Less than 20 ohms Greater than 1 megohm
4.	Positive Reverse	J6544-K "	J6526-F "	Less than 20 ohms Greater than 1 megohm
5.	Positive	J6544-M	TP6501	180K ±5%
6.	Positive	J6544-A	J6515-E	0 ohms
7.	Positive	J6544-C	J6517-H	0 ohms
8.	Positive	J6544-F	J6520-H	0 ohms
9.	Positive	J6544-E	J6523-H	0 ohms
10.	Positive	J6544-J	J6526-H	0 ohms
11.	Positive	Ground	J6544-B	0 ohms
12.	Positive	Ground	J6544-H	0 ohms
13.	Positive	Ground	J6544-D	0 ohms
14.	Positive	Ground	J6544-P	0 ohms
15.	Negative	Ground	E6502-1	Greater than 90K. See Note 1.
16.	Positive	Ground	J6544-A	INF.
17.	Positive	Ground	J6544-C	INF.
18.	Positive	Ground	J6544-F	INF.
19.	Positive	Ground	J6544-E	INF.
20.	Positive	Ground	J6544-J	INF.

VII. RESISTANCE TEST OF REMOTE WIRING - Cont'd

	POLARITY OF VOM	COMMON LEAD	POSITIVE LEAD	RESISTANCE
21.	Positive	Ground	J6544-K	INF.
22.	Positive	Ground	J6544-M	INF.

NOTE: If resistance at this point is less than 90K, disconnect each lead at:

J6517-F
J6520-F
J6523-F
J6526-F

Check the resistance of each lead to their respective shields to determine which of these wires are shorted.

DATE 3/10/64 SHEET 7 OF 7	TMC SPECIFICATION NO. S-958	0
COMPILED	CHECKED	TITLE: MSAA-1 TEST PROCEDURE
APPROVED		

TEST DATA SHEET
MSAA-1

SERIAL NO. _____

MFG. NO. _____

I. PRELIMINARY

A. MECHANICAL ---------- OK
B. ELECTRICAL ---------- OK
C. B+ LINE ---------- OK

II. AGC ALIGNMENT	B2	B1	A1	A2
A. AGC DELAY	OK	OK	OK	OK
B. AGC DECAY	OK	OK	OK	OK

III. CONVERTER ALIGNMENT

A. OUTPUT	V	V	V	V
B. FREQUENCY RESPONSE	DB	DB	DB	DB

IV. 250 KC IF ALIGNMENT

A. OUTPUT	V	V	V	V

B. BANDWIDTH 3 db pts.

B2 ---------- cps to ---------- -cps
B1 ----------cps to ---------- cps
A1 ---------- cps to ---------- cps
A2 ---------- cps to ----------cps

V. AUDIO AND PRODUCT DETECTORS

A. OUTPUT

B2 #11 -------v #12 -------v
B1 # 9 -------v #10 -------v
A1 # 7 -------v # 8 -------v
A2 # 5 -------v # 6 -------v

B. MONITOR

B2---------- OK
B1---------- OK
A1---------- OK
A2---------- OK

VI. REMOTE WIRING RESISTANCE TEST _____ OK

TESTER _____

DATE _____

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REVISION SHEET

THE TECHNICAL MATERIEL CORP.
MAMARONECK NEW YORK

S-958 Ø
LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
5/20/65		1of 7		O=ORIGINAL RELEASE FOR PRODUCTION.	