DATE 8 February 1965 SHEET 1 OF 9	TMC SPECIFICATION NO. S-918	0
COMPILED RE / CHECKED	TITLE:	
APPROVED	Typed by mtp	

TEST PROCEDURE

for

MSG SYSTEM

PART 1: MSGA RACK

PART 2: MSGA/DDR-5A
MSGC/DDRR-5B

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

TMC SPECIFICATION NO. S-918

0

COMPILED | CHECKED

TITLE: TEST PROCEDURE MSG SYSTEM

APPROVED

PART 1
(Typed by mtp)

I. INTRODUCTION

The TMC Model MSG-1 (independent AGC receiving system) is a four channel IF receiving adapter that provides AGC action separately within each channel of a 12KC or 15KC multiplexed signal. The MSG-1 system consists of TMC Models MSA-1, MNF-1, MCG-1 and associated power supplies HFP-1, MPS-1 and MFP-1.

The MSA-1 (Multiple Sideband Adapter), accepts a 1.75MC input from a DDR-5 RF tuner, and the complete processing of this signal from its comp site IF level to four audio output channels is accomplished in this unit.

The MNF-1 (Multiple Notch Filter), provides up to four plug-in filters, each one being tunable across one individual 3.5KC channel.

The MAF-1 (Multiple Audio Filter), is a passive filter with four plug-in drawers to provide audio bandpass from 100 to 2500 cps.

The MCG-1 (Multiple Carrier Generator), contains conversion fr qu ncy oscillator of 100.64KC and 2MC.

The TMC Model MSGA-1 contains two rack-mounted MSG-1 systems each performing, independently of one another, the functions described abov .

II. EQUIPMENT REQUIRED

1. Signal Generator Mod. 82, or equivalent.
2. AC VTVM Ballantine Mod. 314, or equivalent.
3. Sonic Analyzer LP-1A.
4. Frequency Counter, HP Mod. 524C.
5. TMC Model TTG-2.
6. Eight (8) 600 ohm resistors.
7. Eight (8) interconnect cables - RG174/U.
8. One AGC interconnect cable.

III. PRELIMINARY

1. Check unit for obvious mechanical and electrical defects.
2. Check for jumper across 6.3 on terminal box.
3. Connect main power cable. HFP-1 should be in STBY.
4. Check that ovens in both MCG-1's come on and cycle (HR-6001, 6002, and 6003). The MPS should be on.
5. Turn on both MSA-1's.
6. The bl wers should start, and the HFP-1 and MFP-1 should go into "time delay".
7. After a tim laps , the HFP-1 and MFP-1 should go into " perat ".
8. Conn ct 600 ohm loads across channels of t rminal box.

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

TMC SPECIFICATION NO. S-918

0

RE COMPILED | CHECKED

TITLE: TEST PROCEDURE MSG SYSTEM

APPROVED

PART I
(typed by mtp)

IV. PROCEDURE: MSG System #1

A. Set up units of MSG as follows:

1. MSA - AGC decay full CCW, squelch full CCW, line level full CCW.
2. MAF - all switches to OUT.
3. MNF - All notches OUT.
4. MCG - to INT.

B. MSA

1. Set signal generator to 250KC with 3mv output.
2. Connect generator to J6510 of MSA.
3. Disconnect cables on J6501 and J6502.
4. Connect AC VTVM to J102 of IF strip B2.
5. Vary generator around 250KC for peak indication on AC VTVM.
6. Adjust R116 on IF strip for .2v on AC VTVM.
7. Connect generator to J6508 and AC VTVM to J102 of IF strip B1.
8. Vary generator for peak on AC VTVM and set R116 for .2v.
9. Connect generator to J6506 and AC VTVM to J102 of IF strip A1.
10. Vary generator for peak on AC VTVM and set R116 for .2v.
11. Connect generator to J6504 and AC VTVM to J102 of IF strip A2.
12. Vary generator for peak on AC VTVM and set R116 for .2v.
13. Disconnect generator and AC VTVM. Re-connect all cables on MSA.

C. MAF/MNF

1-a. Slide out MNF#1, and remove bottom cover.
b. Connect counter to terminal B_1 of T6901, in MNF drawer of Channel B2.
c. Set NOTCH ADJUST to 0.
d. Tune slug of L6901 for 209.650KC.
e. Connect counter to terminal B1 of T6901 in MNF drawer of Chann 1 B1.
f. Set NOTCH ADJUST to 0.
g. Tune slug of L6901 for 206.640 KC.
h. Connect counter to terminal B1 of T6901 in MNF drawer of ChannelA1.
i. Set NOTCH ADJUST to 0.
j. Tune slug of L6901 for 203.360KC.
k. Connect counter to terminal B1 of T6901 in MNF drawer of Channel A2.
l. Set NOTCH ADJUST to 0.
m. Tune slug of L6901 for 200.350KC.
n. Replace MNF#1 in rack.

2-a. Set signal generator for 1.75MC with 10MV output.
b. C nnect g nerator t J8501 n terminal b x.
c. Set lin l v l of Chann 1 B2 to about 1/4CW.
d. V ry g n rator for an indication on B2 VU met r. S t line lev l for 0 VU. Ch ck output from ach side of 600 ohm l ad t gnd: 0.33 VAC.

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

2-e. Plug phones or speaker into monitor jack (600 ohms). Set monitor level full CW, and selector to B2.

f. Set MAF low cutoff switch through each of its positions. In ach case, tone should change slightly. Return to OUT.

g. Set MAF high cutoff switch through each of its positions. In ach case, tone should change slightly. Return to OUT.

h. Set MNF notch switch to IN position. VU indication remains within 2DB.

i. Vary NOTCH ADJUST. A definite notch on VU meter of MSA should occur between -1.5KC and +1.5 KC. Return to OUT.

NOTE: Due to the narrow bandpass of IF, the notch may not occur at 0 setting unless generator frequency is set to exact center of IF frequency.

j. Set LINE LEVEL on Channel B1 to about 1/4 CW.

k. Set monitor selector to B1.

l. Slowly decrease generator frequency until an indication appears on B1 BU meter. Set LINE LEVEL for 0 VU. Check output on 600 ohm load.

m. Repeat Steps f, g, h and i using MAF and MNF of Channel B1.

n. Set LINE LEVEL on Channel A1 to about 1/4 CW.

o. Set monitor selector to A1.

p. Slowly decrease generator frequency until an indication app ars on A1 VU meter. Set LINE LEVEL for 0 VU. Check output on 600 ohm load.

q. Repeat Steps f, g, h and i using MAF and MNF of Channel A1.

r. Set LINE LEVEL on Channel A2 to about 1/4 CW.

s. Set monitor selector to A2.

t. Slowly decrease generator frequency until an indication app ars on A2 VU meters. Set LINE LEVEL for 0 VU. Check output on 600 ohm load.

u. Repeat Steps f, g, h and i using MAF and MNF Channel A2.

v. Disconnect all test equipment.

D. <u>AF Distortion/Hum Level/Intermodulation (Adjacent Channel)</u>

1. AF Distortion:

a. Connect TTG RF tones through attenuator to J6501 on MSA. Set attenuator for 60 db in.

NOTE: The TTG should have such RF crystals as to produce a 1KC separation between tones; i.e. 2000KC and 2001KC.

b. Set up signal generator to 1.75MC with 1V output. Conn ct to J8501 of terminal box.

c. Connect Sonic Analyzer LP-1A to Channel B2 on terminal box, (gnd to cabinet/input to 600 ohm load).

d. Vary generator for indication on B2 VU meter. Set LINE LEVEL for 0 VU with one RF tone.

. Slowly vary gen rat r to c nter two ton s on analyzer.

f. S t ton s on analyz r for zero db ref renc .

g. Increase ton s 20 db. AF dist rtion should be 50 db or b tt r.

h. Leav equipm nt c nnect d. DO NOT CHANGE ANY SETTINGS.

D. Cont'd

2. Hum Level:

a. With equipment and settings the same as in previous st ps, turn off the RF tones on the TTG.
b. Hum level on analyzer should be down 50 db or better.
c. Turn on RF tones. DO NOT REMOVE EQUIPMENT.

3. Intermodulation (Adjacent Channel):

a. Vary signal generator to obtain an indication on the adjacent channels VU meter. Set for 0 VU.
b. Any tones on analyzer must be down 60 db or better.
c. Leave all test equipment connected.
d. Repeat parts D-1, 2, and 3 for Channels B1, A1 and A2.
e. Upon completion of Step d, disconnect all test equipment and re-connect all cables to proper jacks.

V. PROCEDURE: MSG System #2

A. Repeat Steps 1 - 4 of Part IV-A.

B. MSA - Repeat Steps 1 - 13 of Part IV-B.

C. MAF/MNF - Repeat Steps a - n of Part IV-C-1.
Repeat Steps a - v of Part IV-C-2.

D. AF Distortion - Repeat Steps a - h of Part IV-D-1.
(Connect signal generator to J8502.)
Hum Level - Repeat Steps a, b and c of Part IV-D-2.
Intermodulation - Repeat Steps a - e of Part IV-D-3.

NOTE: If the MSGA rack is to be tested with a DDR-5A, continue with Part 2 of this procedure at this time.

VI. TERMINAL BOX/INTERCONNECT

1. Set up signal generator to 1.75 MC with 10MV output. Connect to J8501 of terminal box.
2. Vary generator to obtain indication on MSA#1 B2 VU meter. S t for 0 VU.
3. Connect cabl s from MCG#2 J6004 to J8503, and from J6012 to J8504.
4. Switch MCG#1 to AFC. VU indication should remain.
5. Connect cables from MCG#2 J6004 t J8506, and from J6012 to J8507.

VI. Cont'd

6. Switch MCG#1 to SYN. VU indication should remain.
7. Disconnect all test equipment and cables.
8. Return MCG#1 to INT.
9. Connect signal generator to J8502.
10. Vary generator to obtain indication of MSA#2 B2 VU meter. Set f r 0 VU.
11. Connect cables from MCG#1 J6004 to J8505, and from J6012 to J8508.
12. Switch MCG#2 to AFC. VU indication should remain.

NOTE: When doing Steps 3, 5, 11 and 13, J6003 and J6005 should be disconnected from the MCG indicated. Re-connect aft r completing steps.

13. Connect cables from MCG#1 J6004 to J8506, and from J6012 to J8507.
14. Switch MCG#2 to SYN. VU indication should remain.
15. Disconnect all test equipment and cables from MSGA rack.
16. Check continuity between TP6501 (MSA#1) to #3 and TP6501 (MSA#2) to #1.

VII. MCG OSCILLATORS

1. Set MCG#1 to INT.
2. Connect frequency counter to J6003. Set C6002 for 250KC ±.2 cps.
3. Connect counter to J6012. Set C6010 for 2 MC ±2 cps.
4. Connect counter to Pin 1 of V6003.
5. Adjust Z6001 (accessible from rear) for 100.640KC ±.01 cps.
6. Repeat Steps 1 - 5 for MCG#2.

DATE 9 F bruary 1965 SHEET 7 OF 9	TMC SPECIFICATION NO. S- 918	0
RE COMPILED / CHECKED	TITLE: TEST PROCEDURE FOR MSG SYSTEM	
APPROVED	PART II - MSGA/DDR-5A/DDRR-5B (typed by mtp)	

1. Connect interconnect cables between the MSGA rack and DDR-5A/DDRR-5B rack as follows:

DDR-5A/DDRR-5B		MSGA/MSGC
HFR#1 J1312 (1.75MC)	to	J8501 (MSA#1 - J6502)
HFR#2 J1312 (1.75MC)	to	J8502 (MSA#2 - J6502)
AFC#1 J5002 (250KC)	to	J8503 (MCG#1 - J6001)
AFC#1 J5003 (2MC)	to	J8504 (MCG#1 - J6014)
AFC#2 J5002 (250KC)	to	J8505 (MCG#2 - J6001)
AFC#2 J5003 (2MC)	to	J8508 (MCG#2 - J6014)
HFS J3016 (250KC)	to	J8506 (MCG#1,2 - J6002)
HFS J3010 (2MC)	to	J8507 (MCG#1,2 - J6013)

NOTE: All connections made on DDR-5 should be with "TEE" connectors.

2. Connect 600 ohm resistors across A1, A2, B1 and B2 on terminal box f MSGA for both MSA#1 and MSA#2.
3. Connect AGC cable from DDR-5A/DDRR-5B to MSGA terminal box as follows:

HSP-2/A3860		MSGA/MSGC
RCVR#1 - AGC	to	AGC terminal #3
RCVR#1 - G	to	AGC terminal #2
RCVR#2 - AGC	to	AGC terminal #1
RCVR#2 - G	to	AGC terminal #2

4. Connect signal generator to J1001 (ANT) of HFR#1.
5. Set up generator for 2.5MC with attenuator set at 3UV.
6. Tune RCVR#1 for 2.5MC.
7. Set up the units of MSGA System #1 as follows:

MSA - All AGC Decays full CCW.
All Line Levels 1/4CW.
All Squelch Adjusts CW to where green light goes out.
All AGC delays full CW (top of unit).
MAF - All filters to OUT.
MNF - All OUT
MCG - to INT

8. Set the HFR to a point below 2.5MC.
9. Slowly sweep the HFR to a point above 2.5MC; as this is done, the MSA channels should activate in the following sequence: A2, A1, B1 and B2.
10. Retune HFR to 2.5MC.
11. Set the MCG switch to AFC.
12. Turn on DDR-5 AFC-3.

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

13. Using generator, set at 3 UV, lock AFC to signal.
14. Set AFC tuning to -3KC.
15. Slowly sweep AFC tuning to +3KC. As this is done, the MSA channels should activate in the following sequence: A2, A1, B1 and B2.

    NOTE: When the MSG(C) configuration is used, the BSP-6 (Bridging Speaker Panel) should be tested at this point. As the MSA channels are activated, the corresponding channel of the BSP-6 Receiver Selection Knob should be switched in, and a varying audio tone heard.

16. Turn off AFC-3.
17. Retune signal generator and HFR to 2.5MC.
18. Set generator attenuator for 3 UV.
19. Place MCG switch to SYN.
20. Set generator below 2.5MC.
21. Slowly sweep generator to a point above 2.5MC. As this is done, the MSA channels should activate in the following sequence: B2, B1, A1 and A2.
22. Retune HFR and signal generator to 2.5MC.
23. Set IF of DDR-5 HFI to blank positions.
24. Set generator for 1 UV output.
25. Vary generator to activate B2; peak with generator on VU meter. Adjust squelch and line level as required.
26. Set B2 AGC delay pot (R6531) to where RF level meter on HFR just starts to increase.
27. Vary generator for indication on B1 VU meter.
28. Set B1 AGC delay pot (R6539) to where RF level meter on HFR just starts to increase.
29. Vary generator for indication on A1 VU meter.
30. Set A1 AGC delay pot (R6533) to where RF level meter on HFR just starts to increase.
31. Vary generator for indication on A2 VU meter.
32. Set A2 AGC delay pot (R6541) to where RF level meter on HFR just starts to increase.
33. Repeat Steps 4 through 32 for MSGA System #2, using DDR-5A receiver #2 and all MSGA units associated with System #2.
34. Set MCG#1 to INT.
35. Connect frequency counter to J6003. Set C6002 for 250KC ±.2 cps.
36. Connect counter to J6012. Set C6010 to 2MC ±2cps.
37. Connect counter to Pin 1 of V6003.
38. Adjust Z6001 (accessible from rear) for 100.640KC ±.01 cps.
39. Repeat Steps 34 through 38 for MCG#2.

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

DATE 9 February 1965	TMC SPECIFICATION NO. S-918	0
SHEET 9 OF 9		
RE COMPILED / CHECKED	TITLE: TEST PROCEDURE FOR MSG SYSTEM	
APPROVED	(typed by mtp)	

TEST DATA SHEET
for
MSGA/MSGC

SERIAL NO._____

MFG. NO._____

I. **PRELIMINARY:**

1. Mechanical/Electrical _____ OK
2. Blower operation. _____ OK
3. Ovens Cycle. _____ OK

II. PRECEDURE:

		MSG#1	MSG#2
1. MSA-AGC levels (.2v)		_____ OK	_____ OK
2. MAF High/Low Cutoff		_____ OK	_____ OK
3. MNF Oscillator Frequencies	B2	_____ KC	_____ KC
	B1	_____ KC	_____ KC
	A1	_____ KC	_____ KC
	A2	_____ KC	_____ KC
4. MNF Notch Adjust		_____ OK	_____ OK
5. AF Distortion (50 db)	B2	_____ DB	_____ DB
	B1	_____ DB	_____ DB
	A1	_____ DB	_____ DB
	A2	_____ DB	_____ DB
6. Hum Level (50 db)	B2	_____ DB	_____ DB
	B1	_____ DB	_____ DB
	A1	_____ DB	_____ DB
	A2	_____ DB	_____ DB
7. Intermodulation (60 db) (Adjacent Channel)	B2	_____ DB	_____ DB
	B1	_____ DB	_____ DB
	A1	_____ DB	_____ DB
	A2	_____ DB	_____ DB
8. Terminal Box/Interconnect		_____ OK	_____ OK
9. MCG Frequency Injection	INT	_____ OK	_____ OK
	AFC	_____ OK	_____ OK
	SYN	_____ OK	_____ OK
10. MCG Oscillator Frequencies			
	100.64KC	_____ KC	_____ KC
	250 KC	_____ KC	_____ KC
	2000KC	_____ KC	_____ KC

11. BSP-6 (when used) RCVR#1 _____ OK RCVR#2 _____ OK

TESTER:_____

DATE:_____

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 439M

REVISION SHEET	THE TECHNICAL MATERIEL CORP. MAMARONECK NEW YORK	S-918 LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
2/11/65		1 of 9		O= ORIGINAL RELEASE FOR PRODUCTION.	