

# TMC SPECIFICATION

NO. S 1170

REV:  $\emptyset$

COMPILED: BN

CHECKED: *[Signature]*

APPD: *[Signature]*

SHEET 1 OF 11

TITLE:

3/1/67 jb/

TEST PROCEDURE FOR GPT-10KSA  
AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

# TMC SPECIFICATION

NO. 1170

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SHEET 2 OF 11

TITLE:

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AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

## TEST INSPECTION PROCEDURE

1. TEST EQUIPMENT REQUIRED:
  - A. TMC Model PTE Spectrum Analyzer.
  - B. Simpson Model 260 voltohmmeter or equivalent.
  - C. H-P Model 410B VTVM or equivalent.
2. PRELIMINARY SETUP FOR SIDE RACK
  - A. CHG-3 (RF Translator) RF Gain control mid range.
  - B. HFS-2        None
  - C. CMR-1 (Sideband Exciter).
    1. Channel Priority controls set to 100.
    2. Meter function set to A1.
    3. Carrier Suppression set to FULL.
    4. Power switch to ON.
  - D. AX-560A
    1. Standby/operate switch to OPERATE.
    2. Test key in normal or neutral position.
  - E. Place a jumper from 1 to 3 on TB3000 EXT. INTKS.
  - F. Place a jumper from 10 to 11 on TB3000 VOX (CHG).

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 3

OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

### 3. INSPECTION

All units in the auxiliary rack must be tested to meet specification before installation as a system. For proper inter-connection and termination refer to CK-1277.

#### A. MECHANICAL INSPECTION:

Give the rack a good visual inspection for obvious defects, check cabling to see that no strain exists when units are pulled out and tilted. Check slides for ease of operation sliding in and out. All units should line up in rack and no contact made between front panels.

#### B. PRELIMINARY ELECTRICAL INSPECTION:

1. Place circuit breaker CB-3000 to the "ON" position. This applies 230 VAC to HFP, CMR and SWCU. Front fan B-3000 should be operating. Removal of F-3000 must stop the fan. Because of the delay tube in the HFP a 90 second delay is necessary before fil., B+, etc. is applied to the CHG and HFS. This time delay must be checked.
2. Connect DC VTVM to TP8001 in the HFP. The voltage should be +200 VDC. If not adjust "voltage adjust" 'A' to maintain +200VDC. Connect DC VTVM to TP 8002 in HFP. This should be +200VDC. If not, adjust "voltage adjust" 'B' to maintain +200VDC.

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 4 OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

## C. SBG SYSTEM

### 1. CHG

Translates simultaneously or individually four separate IF freq. channels to desired RF frequency.

### 2. HFS-2

Generates a DC Control voltage to control oscillator in CHG by comparison of sample signal from CHG with signal of same frequency internally generated. Also supplies 1 MCS signal to CMR.

### 3. CMR

Translates audio signal into four separate and distinct IF frequench channels.

### 4. HFP

Supplies B+, C- and AC voltages for the CHG and HFS-2.

### 5. AX-560A CONTROL PANEL

Provides operate/standby switch for HFP and test key.

### 6. APP-10

Provides 115VAC utility outlets and ckt. breakers and monitoring facilities.

## D. INTERMODULATION DISTORTION SSB EXCITER ONLY

1. Connect two AF tones from PTE to channel A1 on TB 3002 with a shielded pair, or to the Audio Input Jacks on the APP-10. TB 3002 is located at rear of Exciter

# TMC SPECIFICATION

No. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 5 OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

Rack. TTG Power Switch to "ON". "AF TONE" switch to "ON". "RF TONE" switch to "OFF" tone control switch to "TWO TONES". Disconnect the output of J-3001 and connect 50 ohm, 2W load to J-3001 through a "T" connector. Connect the AC VTVM lead to same "T" connector. Connect the analyzer RF Input to the Monitor Jack on the APP-10 and set the switch to Driver.

2. Place the meter function switch on the CMR to A1 and adjust audio output for a -10dbm which can be read on the input level meter on the CMR.
3. The first frequency to be tuned will be 2 MCS. Set RF gain control on CHG to mid range. On the HFS place the MC switch in position #2, 100KC at zero, 10KC zero, 1KC zero, .1KC also at zero. The HFS nixie lights will indicate 2 MCS. Activate the Test Key on the AX560A to the lock position. Turn the bandswitch on the CHG to band #1, and the CHG TUNE to 2 MCS. When it reaches 2 MCS the sync, light on the CHG will light and there should be some output indicated on the CHG RF level meter. Adjust RF gain control on the CHG for an output of 2.5 volts as indicated on the AC VTVM.
4. Tune the VOX on the PTE to a frequency 500 KC higher

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 6 OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

than the RF signal to be displayed.

EXAMPLE: Desired freq. 2,000,000  
Intermediate freq. 500,000  
V.F.O. 2,500,000

- a. Set SWEEP selection to 14 KC.
  - b. MASTER OSCILLATOR Frequency to 2.5 MC.
  - c. Tuning switch 2.5 MC.
5. PTE Analyzer Controls set as follows:
- a. Set the VOX output for about .1 MA.
  - b. On analyzer.
  - c. Scale switch to Log.
  - d. IF attenuator switch to -20 db.
  - e. Input attenuator switch as required to place two tone signal peaks on the ZERO db reference line but maintaining the gain control at approximately full clockwise. Adjust the VOX freq. slightly to position of the two tone signal presentation in the center of the analyzer screen. The displayed signal in conjunction with the 2.5 volts across the 50 ohm load represents the rated PEP output on a scale from 0 to 40 db.
  - f. Place the IF attenuator switch to 0 db thus expanding the scale to 60 db (0 db line now becomes 20 db).

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 7 OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

- g. Read the 3rd order products from this presentation. The 3rd order products shall be not less than 40 db below either tone of the two tone signal at the rated output which is 2.5 volts RMS. Record what the distortion is on the sheet provided.
- h. Repeat the above procedure for all frequencies on the chart.
- i. Upon completion of the Channel A1 check, repeat the procedure at 2 MCS for Channels B1, B2 and A2. Audio connections for the channels can be made on TB 3002 for all channels. Connection to Channel B1 can also be made through the Audio Input Jacks on the SWCU.
- j. Record the results on the chart.
- E. CARRIER SUPPRESSION:**
1. Leaving the PTE set up as in Intermodulation check remove the A.F. tones from Channel A1 connection on the PTE.
  2. Turn carrier suppression control on the CMR to "0".
  3. Again adjust the output of the CHG to 2.5 volts RMS as indicated on the AC-VTVM with the RF gain control on the CHG and the CHG tuned to 2 Mcs.
  4. Adjust the displayed signal on the analyzer screen

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 8

OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

with the IF Attenuator in the -20db position to the 0 db line and center the signal in the screen with the VOX.

5. Vary the carrier reinsertion on the CMR from its zero position to 3, 6, 20, 30 and FULL and back to the other extreme. Note the value of carrier suppression as indicated on PTE.
6. The carrier suppression control should provide a variation from 0 to 30 db suppression and a maximum carrier suppression of not less than 55 db below the rated output on the PTE. Record carrier suppression on sheet provided.

## F. SPURIOUS CHECK:

1. Setup the SSB Exciter to 2 MCS to its rated output, 2.5 volts RMS across a 50 ohm load with carrier drive ONLY. Set carrier suppression to 0 on CMR. Set up the analyzer presentation as described in previous test to the 0 db reference line with IF attenuator to -20 db position.
2. Set the analyzer sweep frequency to 14 KC. Position the displayed signal so that the carrier is centered in the screen.
3. Set the IF attenuator to 0 db and read the level of all the spurious signals.



# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: BN

CHECKED:

APPD:

SHEET 9

OF 11

TITLE:

TEST PROCEDURE FOR GPT-10KSA

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

4. Spurious signals shall be at least 40 db below rated output .250 W PEP or 2.5 volts RMS. "Record results on sheet provided".

NOTE: Remove the external coaxial on J-3001.

Replace with coaxial from harness.

# TMC SPECIFICATION

NO. S 1170

REV:

COMPILED: **BN**      CHECKED:      APPD:      SHEET **10** OF **11**

TITLE:      **AUXILIARY FRAME SECTION WITH SBG3 SYSTEM**  
**TEST PROCEDURE FOR GPT-10KSA**

FREQ. in mc /s	VOX Setting	BAND SW	OUTPUT POWER	DISTORTION FULL OUT
2.0000	2500	1		
3.0000	3500	1		
3.0000	3500	2		
4.0000	2250	2		
4.0000	2250	3		
6.0000	3250	3		
6.0000	3250	4		
8.0000	2125	4		
8.0000	2125	5		
<del>12.0000</del>	3125	5		
12.0000	3125	6		
<del>16.0000</del>	2062.5	6		
16.0000	2062.5	7		
<del>24.0000</del>	3062.5	7		
24.0000	3062.5	8		
<del>28.0000</del>	3562	8		
<del>32.0000</del>				
Channel A2 2.0000	2500	1		
Channel B1 2.0000	2500	1		
Channel B2 2.0000	2500	1		

# TMC SPECIFICATION

NO. S 1170

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CHECKED: \_\_\_\_\_

APPD: \_\_\_\_\_

SHEET 11

OF 11

TITLE:

AUXILIARY FRAME SECTION WITH SBG3 SYSTEM

TEST PROCEDURE FOR GPT-10KSA

## SPURIOUS SIGNALS

FREQ. IN MCS.	VOX SETTING	BAND SW	OUTPUT POWER	db
2.0000		1		

## CARRIER SUPPRESSION

FREQ. IN MCS.	VOX SETTING	BAND SW	OUTPUT POWER	SUPPRESSION
2.0000		1		db

ACCEPT

MECHANICAL INSPECTION \_\_\_\_\_

PRELIMINARY ELECTRICAL INSPECTION \_\_\_\_\_

TESTER \_\_\_\_\_

INSPECTOR \_\_\_\_\_

FINAL APPROVAL \_\_\_\_\_

DATE \_\_\_\_\_

