DATE 5/23/60 SH. 1 OF 8 COMPILED BY	TMC SPECIFICATION NO. S -485	
	TITLE: TEST PROCEDURE, GPT-10K	JOB
APPROVED		

A. Mechanical and Electrical Inspection.

1. All three input phases should be checked to ground for possible shorts.

2. Check A.C. strips in auxiliary frame for possible shorts.

3. Check high voltage feed to plate and screen of power amplifier socket for possible shorts.

NOTE: High voltage shorting switch must be open for this check.

Screen - 35,000 ohms
Plate - 100,000 ohms

4. A mechanical inspection of the entire transmitter should be made by the tester before turning the unit ON. Particular attention must be paid to the following:

1. Lead and Cable dress
2. Dead man assembly.
3. All high voltage and R.F. connections must be secure.
4. Covers must be on all units.

B. Auxiliary Frame Check Out.

1. Turn on auxiliary circuit breaker, also all equipment in auxiliary frame, allow a ten minute warm up.

2. Observe the following:

1. Aux. frame fan should be operating.
2. Removing F-3000 at rear of aux. frame should make fan inoperative.
3. Check cycling of SBE, XFK, and VOX (outer ovens).

A. SBE and XFK ovens cycle after approx. ten (ten) minutes.
B. VOX outer - ten min.; inner - three hours.

C. Spectrum Analyzer Distortion Test.

F.S.A. Control Settings.

1. I.F. attenuator switch - 20 DB
2. Sweep selector - 10 KC
3. Amp. scale switch - log
4. Gain - Max.
5. Cal. osc. - OFF
6. A.F.C. - OFF

D. M.C.P. Control Settings.

1. Analyzer monitor switch to test.
2. VOX switch to FSA.

E. TTG Setting.

1. RF tone selector - two tone.

F. VOX Settings.

1. Mult. band switch - 2-4MC.
2. Mult. tuning - 2.5MC.
3. Counter - 2.5MC.
4. Meter switch - HFO pos.
5. HFO plate switch - ON.
6. Zero beat switch - OFF.
7. Output - .3 volts.

G. After the above settings have been made, a two-tone trace should appear on the F.S.A. scope.

NOTE: The VOX osc. may have to be moved slightly to either side of set frequency, to bring in trace.

1. Attenuate the input signal to the FSA, with the input atten. switches, as needed to adjust level of test tones to ODB ref. line.

2. Flip IF atten. switch to ODB.

3. FSA inherent distortion must be better than 55DB.

H. SBE Distortion Test.

SBE Settings.

1. Insert proper crystals in pos. 1, 2, and 3.
2. Set M.F. xtal selector to pos. (3) - 4.25 mc.
3. Set high frequency osc. selector to pos. (0) .25 mc.
4. LSB selector - OFF.
5. Carrier insert - counter clockwise.
6. Exciter on - standby to-on.
7. Output tuning 4-8 mc.
8. USB - selector to channel #1.
9. Meter switch to U.S.B.

I. MCP Settings.

1. VOX output to FSA.
2. Analyzer monitor to SBE.
3. Channel #1 to tone input.
4. Channel #2 to line input.
5. Mode to SSB.

J. VOX Settings.

1. Mult. bandswitch - 4-8mc.
2. Mult. tuning - 2.250mc.
3. Counter set to - 2.250mc.
4. Output - .3 Volts.

K. TTG Settings.

1. Audio tone selector - two tone.
2. Audio output - half turn clockwise.
3. RF tones - OFF.

L. Distortion Test.

1. Adjust USB gain for - 3DB.
2. Meter switch to M.F.
3. Turn M.F. dial to 4.25mc, for peak indication on meter.
4. Meter switch to R.F.
5. Output control to max.
6. Set main tuning dial at 4mc for peak indication on meter.
7. Adjust output for approx. -10.

8. FSA setting as per test C.
9. A two tone trace approx. 2 KC apart should appear on scope.
10. Attenuate tones to ODB reference.
11. IF atten. ODB.
12. 3rd order distortion, must be 45 DB or better.
13. Carrier suppression must be 55 DB or better.

NOTE: Above test should also be made in LSB position; also check proper position of side band filter.

M. SLM Calibration.

1. Adjust SBE USB audio level to - 3 DB.
2. Calibrate USB on SLM for - 3 DB.
3. Repeat above procedure for LSB.

N. Main Frame Check Out.

1. Turn on main breaker, and observe the following:

a. A.C. power light (I 1000) and aux. and main meter panel lights should be ON.
b. Rear fan and main blower should be operating.

NOTE: If main blower is running in reverse, reverse any two input phases.

c. Removing F-703 rear fan fuse, should make fan inoperative.
d. Removing F-700, 701, 702, should make main blower inoperative.
e. Adjust fil. adj. switch so that 230 volts is read on fil. primary meter.
f. After approx. one minute the P.A. and I.P.A. bias relays will energize; also, respective indicator lights will go out.
g. P.A. bias meter should read between -200-300 volts, depending on setting of P.A. bias pot. - #R-703.
h. IPA bias should indicate - 70-90 volts depending on setting of IPA bias pot..
i. Check bias voltage at 4CX5000 tube socket, -200-300 volts.
j. Set the P.A. bias pot R-703 for a reading of 220 volts on the PA bias meter.

O. Interlock System.

1. Engage the following interlocks: S-1006, 1007, 901, 1008, 1009, 1010, 1011.
2. Set timer - for (3) min.
3. Turn on main breaker, after (3) minutes dead man - should be activated.
4. Interlock test switch to normal pos., interlock indicator light should be ON.
5. Interlock switch to timer.
6. Rotate timer away from zero, indicator light should go out, and dead man deactivate.
7. The above test must be made on the following interlocks: relay deck, H.V. deck, right side, PA air switch, rear door, ext., IPA air switch, IPA band switch, PA band switch.

P. High Voltage Test.

1. Before high voltage is turned ON, H.V. rectifier tubes must have at least a 20 minute warm-up.
2. Turn on H.V..
3. PA screen on-off switch ON.
4. Tune-operate switch - operate.
5. PA screen voltmeter should indicate 1100-1250 volts.
6. PA plate voltmeter should indicate 7.5-8KV.
7. IPA EG should indicate 390-410 volts.
8. IPA EP should indicate 3.5KV.
9. Tune-operate switch - tune.
10. PA screen voltmeter should indicate 550-650 volts.
11. IPA EG should indicate 190-210 volts.
12. Turn HV and main breaker OFF.
13. Insert 4CX5000 into socket.
14. Close PA tube compartment.

Q. 70 ohms Unbalanced Tune-up.

1. Connect 70 ohms dummy load to trans.
2. Set the following controls for 4mc as per standard unbalanced tuning chart: IPA tune, IPA load, PA tune, PA load, PA bal., ant. load, PA bandswitch, VOX, IPA band, driver band.

3. FSA monitor switch to PA pos..
4. VOX monitor switch to F.S.A..
5. IPA meter switch to IPA-EG.
6. Advance SBE output control, tune driver (4mc) for peak on multi-meter.
7. SBE output to zero.
8. PA screen ON; tune-operate to operate.
9. Turn on H.V.
10. Adjust PA plate current for .5 amp. with PA bias adjust pot..
11. Tune-operate to tune.
12. Advance SBE output control until IPA plate current rises to approx. 300 M.A.; then dip and load.
13. SBE output zero; tune operate to operate.
14. Advance SBE output control until PA plate current rises to approx. lamp.; then dip and load until output meter indicates 8.2 amp., 10KW P.E.P..
15. 3rd order distortion must be .35 DB or better for 10KW output.
16. 3rd order distortion for 5KW P.E.P. (6 amps) must be 40DB or better.
17. Set the following overload adj.:
    a. IPA screen 30MA
    b. IPA plate 600MA
    c. PA screen 80MA
    d. PA plate 2amps

R. Parasitic Check.

1. PA band switch 4-6mc.
2. S.B.E. drive OFF.
3. Turn on main breaker -- allow a three minute warm-up.
4. Turn on high voltage.
5. Rotate PA tuning condenser from one end of its range to the other noting any sudden rise in PA. plate current which would indicate a parasitic oscillation.
6. The test procedure for parasitics as explained above should be repeated on the following P.A. band positions: 6-8MC, 8-11, 11-15, 15-19, 19-24, 24-28.
7. Turn off high voltage.

S. 700 ohms balance tune up.

1. Connect 700 ohms load to trans.
2. Set the following controls as per standard balance tuning chart:
IPA tune, IPA load, PA tune, PA load, PA bal., ant. load, PA bandswitch, VOX, IPA band, driver band.
3. FSA monitor switch to PA pos..
4. VOX monitor switch to FSA.
5. IPA meter switch to IPA EG.
6. Advance SBE output control, tune drive (4mc) for peak on multimeter.
7. SBE output to zero.
8. PA screen ON; tune-operate to tune.
9. Advance SBE output control until IPA plate current rises to approx. 300 MA; then dip and load.
10. SBE output to zero; tune-operate to operate.
11. Advance SBE output control until PA plate current rises to approx. 1 amp.; then dip and load, slowly advancing SBE output until both RF output meters indicate 2.8 amp., 10KW P.E.P..
12. 3rd order distortion must be 35DB or better.
13. 3rd order distortion for 5KW P.E.P. (2.1 amps) must be 40DB or better.
14. Turn H.V. OFF.

T. Keying Test.

A. Settings

1. SBE-MF in VMO pos..
2. MCP-SBE to XFK; VOX to XFK; mode switch to SBE.
3. XFK - band change to pos. #2; xtal switch to ext..
4. ISK Keying mode 50V.
5. Set up VOX for 4.050 mc.
6. Set up XFK for 4.250 mc.
7. Tune SBE 4 mc.
8. Connect S.W.G. to key line input E-3000.
9. Tune up trans. at 4 mc half power.

B. SBE - CW.

1. Change MCP mode switch to SBE-CW.
2. A keyed tone should be heard on test receiver.

C. XFK - CW.

1. Change MCP mode switch to XFK-CW.
2. Change XFK mode switch to CW.

NOTE: XFK plate current should osc. in accordance with keying freq..

3. Listen to keyed tone on receiver which should change in pitch as XFK freq. control is changed.

D. FAX.

1. Adjust SWG output to 5V.
2. MCP mode switch to FAX.
3. XFK mode switch to FAX.
4. Note pitch on receiver change in accordance with keying freq..
5. Turn OFF trans.