| DATE 1/24/61 SH. 1 OF 5 COMPILED BY | TMC SPECIFICATION NO. S 534 | |
|---|---|---|
| | TITLE: TEST PROCEDURE, SBT-1KN and O | JOB |
| APPROVED RK | | |

A. INTRODUCTION

The SBT-1KN is a general purpose radio transmitter system providing SSB, ISB, DSB, AM and CW operation throughout a frequency range of 2 to 32 MC. The rated power output of this unit is 1KW PEP and 1KW CW.

B. MAIN COMPONENTS

The SBT-1KN consists of six separate units integrated to form the transmitter system. These components are:

1. rack assembly RAK-9E.
2. auxiliary power panel APP-4.
3. hi-voltage power supply P.S.-5.
4. low-voltage power supply P.S.-4.
5. linear RF amplifier RFD-1.
6. mode selector SBE-2(SBT-1KN) or SBE-3(SBT-1KO)

C. TEST PROCEDURE

The test procedure for the SBT-1KN system is outlined on the following pages. Before the system can be tested correctly, all components except the RAK-9E rack assembly must be tested and passed by the test department as per the specific test requirements for each unit.

| DATE 1/24/61 SH. 2 OF 5 COMPILED BY | TMC SPECIFICATION NO. S534 | |
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## I. EQUIPMENT REQUIRED

1. 52 ohm dummy load, 1KW dissipation.
2. AC power cable.
3. Test equipment rack TMC model PTE.
4. RF output cable. RG-8/U.
5. MWC24(7)S3, cable insulated shielded, 5 ft.
6. CA-409 cable assembly, jumper 6 in.
7. H.P. VTVM, Model 410B, or equivalent.
8. Test cable assembly #106.
9. Test Chart, SBT-1KN (S534 page 5 (2 size Dwg.)).
10. Volmeter, Simpson 260 or equivalent.
11. Variable frequency Oscillator, TMC model VOX-3
12. RF cable, CA-480-6-10F (RG-59/U)

## II. PROCEDURE

1. Install AC input power cable from J601 of RAK-9E to AC line.
2. Connect Fanning strips of test cable assembly to E501 and E502 on rear of APP-4 chassis.
3. Connect shielded lead from output of TTG mounted in test equipment rack PTE to CHANNEL 1 and CHANNEL 2 input terminals on test cable assembly.
4. Connect dummy load MONITOR OUTPUT to SIGNAL INPUT jack of PTE analyzer.
5. Connect cable from J609 jack of AX-198 to dummy load input.
6. Connect jumper from terminal 5 on test cable terminal board T601 to terminal 8. This completes external interlock circuit.
7. Connect a jumper from terminal 21, T602 to terminal 22. This completes the KEY LINE circuit to the SBE.
8. Set MAIN POWER switch on APP-4 to ON position. The red MAIN POWER indicator lamp should light.
9. Set MAIN POWER switch on PS-4 to ON position. The green MAIN POWER indicator lamp should light and RFD-1 blower and PS-5 fan should start running. NOTE: PS-4 TRANSMITTER VOLTAGES switch should be in STANDBY position: FINAL VOLTAGES switch in OFF position and OVERLOAD breakers in ON position. Adjust line voltage to 115 volts, rack fan should start running.
10. Turn on POWER switch on SBE. The red lamp on power supply and OVEN lamp should light,
11. Connect an RG-59/U cable from J208 on VOX to J104 on SBE-2. Turn on POWER switch on VOX. The red MAIN POWER lamp and INNER OVEN and OUTER OVEN lamps should light.
12. After a warm-up time of approximately 5 minutes, set the TRANSMITTER VOLTAGES switch to ON position. The red indicator lamp should light. Set TRANSMITTER VOLTAGES switch to STANDBY position.

PROCEDURE CONT'D.

13. Set XMTR switch on SBE to ON position. The TRANSMITTER VOLTAGES red indicator lamp on PS-4 should light.
14. Turn VOX METER switch to HFO position.
15. Set VOX HFO switch to ON position.
16. Set VOX MASTER OSCILLATOR FREQUENCY as required.
17. With SBE MF XTAL SW in the VMO position, adjust the SBE for two tone test at req. output frequency using the TTG supplied with the PTE test equipment rack.
18. Set SBE OUTPUT control to zero.
19. Set FINAL VOLTAGES switch on PS-4 to ON position. Red indicator should light.
20. Using the tuning chart, adjust the RFD-1 for 1KW PEP at required frequency (225 VRMS across 52 ohms).
21. Adjust RFD-1 to obtain 40db third order distortion at 1KW PEP.
22. Adjust RFD-1 to obtain 1 KW CW. (225 VRMS @ 52 ohms).
23. Place voltmeter across terminals 3 and 4 of T601 on test cable. Meter should read 115 volts A. C. This is transmitter antenna relay voltage, and may vary ± 10%.
24. With voltmeter connected as in (23) above, set XMTR switch and EXCITER switch on SBE to OFF position.

    a. Voltmeter should read zero volts.

    b. FINAL VOLTAGE AND TRANSMITTER VOLTAGE indicators on P.S.-4 should go out.

25. Place a jumper across terminals 1 and 2 on T601. TRANSMITTER VOLTAGES AND FINAL VOLTAGES indicator should light. Remove jumper.
26. Place a jumper across terminals 9 and 10 on T601. TRANSMITTER VOLTAGES, FINAL VOLTAGES and EXCITER ON indicators should light. Remove jumper.
27. Place an ohmmeter across terminals 24 and 25 on T602. The ohmmeter should read 10ohm± 10% between 24 and 25 and ∞ between 23 and 24.
28. Place a jumper across terminals 9 and 10 to key the unit. An ohmmeter connected between 23 and 24 should read 10ohm± 20%; between 24 and 25 should read ∞ .
29. Turn all switches OFF. Remove AC input cable and test cable assembly.
30. This completes operational testing of system SBT-1KN

PROCEDURE CONT'D

31. Check cables, hardware and slides for ease of movement. Units should tilt without obstruction.

32. This completes testing of system SBT-1KN.

# TEST CHART SBT-1KN

DATE

TEST BY

SBT-1KN ser. no.
or
SBT-1KD ser. no.

RFD ser. no.

SBE-2 ser. no.
or
SBE-3 ser. no.

P.S.-4 ser. no.

P.S.-5 ser. no

APP-4 ser. no.

1KW PEP, SSB

| FREQ MC | VOX SETTING | SBE BAND | DRIVER BAND | 1st AMPL. TUNE | PA GRID TUNE | PA TUNING | PA LOADING | PA LOADING SWITCH | MA, PA PLATE CURRENT | MA, PA SCREEN CURRENT | 3rd ORDER DISTORTION -DB | MA, PA PLATE CURRENT | MA, PA SCREEN CURRENT | OUTPUT POWER WATTS | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | |

NOTE:
1. 1KW,PEP, is 225 VRMS across 52 ohm load.
2. 1KW, CW, is 225 VRMS across 52 ohm load.
3. 3rd ORDER DISTORTION REQUIRED AT 30MCS is 35 DB.

| ITEMS | ACCEPT | REJECT |
|---|---|---|
| 1. A.C. POWER TO APP-4 | | |
| 2. A.C. POWER TO PS-4 | | |
| 3. A.C. POWER TO SBE-2,3 | | |
| 4. INTERLOCK CIRCUITS | | |
| 5. KEY LINE CIRCUIT | | |
| 6. CHANNEL 1 CIRCUIT | | |
| 7. CHANNEL 2 CIRCUIT | | |
| 8. REMOTE XMTR PLATE CIRCUIT | | |
| 9. PUSH TO TALK CIRCUIT | | |
| 10. RECEIVER MUTING | | |
| 11. 115V ANTENNA RELAY | | |

| SYM | DESCRIPTION | DATE | CH. NO. | DRAFTS | CHECKER | ENG. APP. |
|---|---|---|---|---|---|---|
| | | | | | | |

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1/2°

SCALE:

MAXIMUM ALLOWABLE TOLERANCES HAVE BEEN DETERMINED AND ANY DEVIATIONS WILL BE CAUSE FOR REJECTION. REMOVE ALL BURRS AND SHARP EDGES

| REQ. PER UNIT | MODEL | SECTION | ASS'Y. NO. | DATE |
|---|---|---|---|---|
| | USED ON | | | |

| REQ. | ITEM | PART NO. | DESCRIPTION | SYMBOL |
|---|---|---|---|---|
| | | | | |

STOCK SIZE

MATERIAL

TYPE & TEMPER | HEAT TREAT. SPEC.

FINISH & SPEC. NO.

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

S-534, SHEET 5

TEST PROCEDURE CHART, SBT-1KN

| DRAWN | CHECKER | FINAL APPROVAL |
|---|---|---|
| RR | | S-534 SHEET 5 of 5 |

ELEC. DES. APP. | MECH. DES. APP.

TMC FORM NO. 109

DEFIANCE NO. 1020 38352