

TMC SPECIFICATION

NO. S 1188

REV: 0

COMPILED:

BN

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DM

APPD:

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SHEET

1

OF 11

TITLE:

4/25/67 /jb

1/11/67 5/1/67

TEST PROCEDURE

SBT-1KS6

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I. INTRODUCTION

The SBT-1KS6 is a general purpose transmitter providing AM, CW, FS, SSB, DSB and LSB operation throughout a frequency range of 2 to 32 Mc. The transmitter provides 1 KW output for AM, CW and FS operation and 1 KW PEP for sideband operation.

II. MAIN COMPONENTS

The SBE-1KS6 consists of nine separate units integrated to form the transmitter system. These components are:

1. Rack Assembly RAK-9G2.
2. Auxiliary Power Panel APP-4.
3. High Voltage Power Supply PS-5B.
4. Mid and Low Voltage Power Supply PS-4P.
5. Linear Power Amplifier RFD-1B.
6. Mode Selector SBE-8.
7. Variable Frequency Oscillator VOX-5.
8. Tone Intelligence System TIS-3A.
9. Antenna Tuning System ATS-2A.

III. TEST EQUIPMENT

1. Dummy Load 1 KW, 50 ohm.
2. Spectrum Analyzer, PTE.
3. VTVM, HP Model 410B or equivalent.

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4. Voltmeter, Simpson Model 260 or equivalent.
5. Square Wave Generator, Boonton Model 71 or equivalent.
6. Test Receiver, TMC Model GPR-90 or equivalent.

IV. TEST PROCEDURE

1. Turn all power switches to OFF or STANDBY.
2. Connect AC power to the rack.
3. Connect a shielded lead from the output of the TTG (P/O PTE) to Channel 1 or Channel 2 inputs on the APP-4.
4. Connect a RF cable from J609 (AX198) to the RF input of the TU-2A and from the RF output of the TU-2A to the dummy load.
5. Connect the dummy load Monitor Output to SIGNAL INPUT jack of the PTE.
6. Connect a jumper on Term. 5 & 6, 7 & 8 of the APP-4 (EXTERNAL INTERLOCKS). Connect a jumper between Terminals 22 and 21 (KEY LINE).
7. Set S100 on the PS-4B to NORMAL, TRANSMITTER VOLTAGES to STANDBY, FINAL VOLTAGES to OFF, OVERLOAD breakers to ON.
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-4B to ON position. The green MAIN POWER indicator lamp should light and RFD-1B blower and PS-5B fan should start running. Adjust

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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. Turn on POWER switch on VOX. The red MAIN POWER lamp and INNER OVEN and OUTER OVEN lamps should light.
12. Set the exciter switches CHANNEL 1 and CHANNEL 2 on the TIS-3 to LINE.
13. 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.
14. Set XMTR switch on SBE to ON position. The TRANSMITTER VOLTAGES red indicator lamp on PS-4B should light.
15. Turn VOX METER switch to HFO position.
16. Set VOX HFO switch to ON position.
17. Set VOX MASTER OSCILLATOR FREQUENCY. (See Chart)
18. 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.
19. Set SBE OUTPUT control to zero.
20. Set FINAL VOLTAGES switch on PS-4B to ON position. Red indicator should light.

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21. Using the tuning chart, adjust the RFD-1 for 1 KW PEP at required frequency (225 VRMS across 52 ohms). The ATS-2 should be adjusted for minimum standing wave ratios at test frequencies.
22. Adjust RFD-1 to obtain 40 db third order distortion at 1 KW PEP.
23. Adjust RFD-1 to obtain 1 KW CW. (225 VRMS @ 52 ohms.)
24. Place voltmeter across terminals 3 and 4 of APP-4 to test cable. Meter should read 115 volts A.C. This is transmitter antenna relay voltage, and may vary $\pm 10\%$.
25. With voltmeter connected as in (24) 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.-4B should go out.
26. Place a jumper across terminals 1 and 2 on the APP-4. TRANSMITTER VOLTAGES indicator should light. Remove jumper.
27. Place a jumper across terminals 9 and 10 on the APP-4, TRANSMITTER VOLTAGES, FINAL VOLTAGES and EXCITER ON indicators should light. Remove jumper.
28. Place an ohmmeter across terminals 24 and 25 on the APP-4. The ohmmeter should read $10\ \Omega \pm 20\%$ between 24 and 25, ∞ between 23 and 24. Place a jumper across terminals 9 and 10 to key the unit. An ohmmeter connected between 23 and 24 should read $10\ \Omega \pm 20\%$, between 24 and 25 should read ∞ .

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29. Turn the LEVEL ADJ. knob on the TIS-3 maximum clockwise.
30. Set the SHIFT CPS indicator to 850.
31. Turn the FUNCTION selector switch to the CW position.
32. Turn the CENTER FREQUENCY CPS selector switch to the 2000 position.
33. Turn the TEST selector switch to the LINE position.
34. Turn the KEY MODE selector switch to the 50V position.
35. Set the MULTIPLY by frequency selector on the SQUARE WAVE GENERATOR to 1 position.
36. Turn the CYCLES frequency selector maximum counter-clockwise and observe fluctuating meter reading.
37. Turn the control knob under the PEAK VOLTS meter maximum counter-clockwise.
38. Set the small OUTPUT selector switch to the 50 position.
39. Connect a piece of 2 conductor shielded cable from the two uppermost S.W. output terminals on the SQUARE WAVE GENERATOR to the APP-4 so that the upper S.W. output terminal is connected to terminal 27 and the other S.W. output terminal connected to terminal 29.
40. Set the B+ switch on TIS-3 to the ON position. The red B+ indicator should light.
41. Set the EXCITER switches CHANNEL 1 and CHANNEL 2 to the FSK FAX CW position.
42. Increase the LEVEL ADJ. knob for a fluctuating meter indication approximately one third full scale reading.

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43. Adjust the LSB section of the SBE for an indication of a fluctuating input on both CHANNEL 1 and CHANNEL 2.
44. Adjust the USB section of the SBE for an indication of a fluctuating input on both CHANNEL 1 and CHANNEL 2. Adjust USB GAIN control for approximately 1/3 scale deflection.
45. Set up test receiver to receive test frequency, BFO on.
46. Adjust SBT-1K system for approximately 500 watts CW at test frequency using USB, CHANNEL 1 or CHANNEL 2.
47. A keyed 1 KC tone should be heard in the receiver.
48. Reduce transmitter output to zero.
49. Turn FUNCTION selector switch on TIS-3 to the FSK position.
50. Increase transmitter output to 1000 watts. A varying tone above and below the center frequency should be heard.
51. Vary the CENTER FREQ. CPS selector between 2550 and 1900 and listen for changes in pitch of varying tone. Set switch back to 2000.
52. Vary the SHIFT CPS indicator to a lower value and note a narrower shift above and below the center frequency.
53. Reduce transmitter output to zero.
54. Change the small OUTPUT selector on the SQUARE WAVE GENERATOR to the 10 position.
55. Disconnect the wires from terminals 27 and 29 of the APP-4 and connect to terminals 31 and 32. This connects the generator to the FAX input.

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56. Set the FUNCTION selector switch on the TIS-3 to the FAX position.
57. Increase transmitter output to 1000 watts. A varying tone should be heard.
58. Reverse the output leads at the SQUARE WAVE GENERATOR and note a change in frequency of output tone of receiver.
59. Reduce transmitter output to zero.
60. Set the TRANSMITTER VOLTAGES switch to STANDBY.
61. Set the TIS, SBE and the Square Wave Generator as in Steps 29 thru 44.
62. Set S100 on the PS-4B to CW position.
63. Turn on the TRANSMITTER VOLTAGES switch. Adjust the transmitter for 1 KW output.
64. By shutting off the Square Wave Generator, the transmitter Plate Current should fall to 0. Turning on the generator should result in full output.
65. Set the TRANSMITTER VOLTAGES to STANDBY.
66. Turn S100 to PTT. Connect a jumper across Terminals 10 and 11 of E701 on the PS-4B.
67. Set the TRANSMITTER VOLTAGES to ON. The transmitter should be at full output with the Square Wave Generator on. Disconnecting the jumper on Terminals 10 and 11 should result in the PA Plate Current falling to 0.

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68. Turn off all power switches and reduce all gain controls to zero. Remove AC connections to line.
69. Check cables, hardware and slides for ease of movement. Units should tilt without obstruction.
70. This completes testing of system SBT-1KS6.

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TITLE: **TEST PROCEDURE SBT-1KS6**

TEST CHART SBT-1KS6

DATE	SBT-1KS6 Ser. No.	RFD Ser. No.
TEST BY	TIS-3A Ser. No.	VOX-5 Ser. No.
	ATS-2A Ser. No.	SBE-9 Ser. No.

1 KW PEP, SSB

FREQ. MC	VOX SETTING	SBE BAND	DRIVER BAND	1st. AMP TUNE	PA GRID TUNE	PA TUNING	PA LOADING	PA LOAD SW.	MA, PA PLATE CURRENT	MA, PA SCREEN CURRENT	3rd ORD. -DB

1 KW, CW

REMARKS

NOTE: 1. 1 KW, PEP, IS 225 VRMS ACROSS 52 Ω LOAD.
 2. 1 KW, CW IS 225 VRMS ACROSS 52 Ω LOAD.
 3. 3rd ORDER DISTORTION REQUIRED AT 30 MCS IS 35 DB.

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TEST	PARA.	ACCEPT
1. Main Power APP-4	8	_____
2. Main Power PS-4B	9	_____
3. Main Power SBE	10	_____
4. Main Power VOX	11	_____
5. Main Power TIS	40	_____
6. Interlocks		_____
7. Transmitter Voltages Test	13-14	_____
8. Final Voltages	20	_____
9. Antenna Relay Test	24-25	_____
10. Remote Transmitter Voltage	26	_____
11. PTT Test	27	_____
12. Receiver Muting	28	_____
13. TIS CW Test	29-47	_____
14. TIS FSK Test	49-52	_____
15. TIS FAX Test	54-58	_____
16. PS-4B CW Test	61-64	_____
17. PS-4B PTT Test	66-67	_____
18. Slide Operation	69	_____

APPROVED _____

TESTER _____

