TMC SPECIFICATION			NO. S-1160
REV:			
COMPILED: LB	CHECKED: LB	APPD: LB	SHEET 1 OF 7
TITLE:			

jb 12/8/66

TEST PROCEDURE, SBT-1KSX2

A. Introduction

The SBT-1KSX2 is a general purpose transmitter for use as a hi-speed simplex switched transmit/receive sideband system for Voice, CW, FSK and FAX operation. The Electronic TR switch is rated to handle 1 kw average and 4 kw PEP over the frequency range of 3.5 to 30 mcs. The transmitter provides 1 kw output for AM, CW and FS and 1 kw PEP for sideband service over the frequency range of 2-32 mcs range but is limited to the specifications of the TR switch. Frequency coverage can be extended down to 2 mcs at a reduced rating. A detector is provided to sample the radio frequency output and produce a negative voltage used for squelching a receiver during the transmit mode of operation.

B. Main Components

1.	RAK 9X2	Rack Assembly
2.	APP-4	Auxiliary Power Panel
3.	PS-5	High Voltage Power Supply
4.	PS-4A	Mid and Low Voltage Power Supply
5.	RFD	Linear Power Amplifier
6.	SBE	Side Band Exciter
7.	VOX	Variable Freq. Oscillator
8.	TIS	Tone Intelligence System
9.	SWR-1K	Standing Wave Ratio Indicator

C. Equipment Required

1. 50 ohm load, 1 kw dissipation
2. H.P. VTVM
3. TMC Model PTE
4. Square Wave Generator
5. Test Receiver (GPR90RXD)
6. VOM, Simpson 260

D. Test Procedure (Schematic ref CK)

CAUTION

EXTREMELY HAZARDOUS VOLTAGES EXIST.

REMOVE ALL POWER FOR MAINTENANCE.

The test procedure for the SBT-1KS2 system is outlined on the following pages. Before the system can be tested correctly, all major components must be tested and passed by the specific test requirements for each unit.

1. Install AC Input power cable of RAK 9 to AC line.

2. Connect Two Tone Generator of PTE to Channel 1 on the rear of APP-4.

3. Connect Dummy Load to the Output of the transmitter.

4. Connect monitor jack of Dummy Load to rf input of PTE.

5. Place Main Power switch on APP-4 to ON position. The red Main Power indicator lamp should light.

6. Place Main Power switch on PS-4 to On position. The green Main Power indicator should light and the RFD blower and PS-5 fan should start running.

   Note: TRANSMITTER VOLTAGES switch should be in STANDBY position; FINAL VOLTAGE switch in OFF position and OVERLOAD breakers in ON position. Adjust line voltage to 115 volts.

7. Place Power switch on SBE to ON position. The red lamp on power supply and over lamp should light.

8. Place POWER switch on VOX to ON position. The red MAIN POWER lamp and INNER OVEN and OUTER OVEN Lamps should light.

9. Place the exciter switch CHANNEL 1 and CHANNEL 2 on the TIS-3 to line.

10. 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 VOLTAGE switch to STANDBY position.

11. Place XMTR switch on SBE to ON position. The TRANSMITTER VOLTAGE red indicator lamp on PS-4 should light.

12. Turn VOX METER to HFO position.

13. Place VOX HFO switch to ON position.

14. Set VOX MASTER OSCILLATOR FREQUENCY (Refer to Test Data Sheet).

15. With SBE, Mid-frequency Xtal switch in the VMO position, adjust the SBE for two tone test at required output frequency.

16. Place SBE OUTPUT control to zero.

17. Place FINAL VOLTAGE switch on PS-4 to ON position. Red indicator should light.

18. Referring to Test Data Sheet, Tune the RFD-1 for 1 kw PEP at the required frequencies. (1 kw = 225 VRMS across 50 ohms. The SWR-1K should read ± 10% of the forward power and approximately no reflected power.

19. Check Channel 2 at one of the test frequencies.

20. Remove the tones and insert carrier, tune the RFD to obtain 1 kw cw.

21. Check the 115 VAC across terminal 3 and 4 in back of APP-4. Removal of Transmitter Plate voltage should remove the 115 VAC.

22. By placing a jumper across terminals 1 and 2 on APP-4 the TRANSMITTER Plates should go on.

23. By placing a jumper across terminals 9 and 10 of APP-4, the TRANSMITTER PLATES should go on.

24. Turn the leval adjust knob on the TIS to maximum clockwise position.

25. Set the shift CPS indicator to 850.

26. Turn the FUNCTION selector switch to the CW position.

27. Turn the CENTER FREQUENCY CPS selector switch to the 2000 position.

28. Turn the TEST selector switch to the line position.

29. Turn the KEY MODE selector switch to the 50V position.

30. Set the Multiply by frequency selector on the SQUARE WAVE GENERATOR to 1 position.

31. Turn the CYCLES frequency selector maximum counter-clockwise and observe fluctuating meter reading.

32. Turn the control knob under the PEAK VOLTS meter maximum counter-clockwise.

33. Set the small OUTPUT selector switch to the 50 position.

34. Connect the output of the SQUARE WAVE GENERATOR to terminal 27 and 29 on rear of APP-4.

35. Set the B+ switch on TIS-3 to the ON position. The Red B+ indicator should light.

36. Set the EXCITER SWITCHES CHANNEL 1 and CHANNEL 2 to the FSK, FAX, CW position.

37. Increase the LEVEL ADJ. knob for a fluctuating meter indication approximately one third full scale reading.

38. Adjust the LSB section of the SBE for an indication of a fluctuating input on both CHANNEL 1 and CHANNEL 2. Turn LSB section OFF.

39. Adjust the USB for same condition as previous step for approximately one third scale deflection.

40. Set up test receiver to receive test frequency.

41. Adjust SBT-1K system for approximately 500 watts CW at test frequency using USB, CHANNEL 1 or CHANNEL 2.

42. A keyed 1KC tone should be heard on the receiver.

43. Turn the function selector switch on TIS-3 to the FSK position.

44. Increase transmitter output to 500 watts. A varying tone above and below the center frequency should be heard.

45. By varying the CENTER FREQ. CPS selector between 2550 and 1900 and listen for changes in pitch. Set switch back to 2000.

46. Vary the SHIFT CPS indicator to a lower value and note a narrower shift above and below the center frequency.

47. Reduce transmitter output to zero.

48. Change the small Output selector on the SQUARE WAVE GENERATOR to the 10 position.

49. Disconnect the wires from 27 and 29 of APP-4 and connect to terminal 31 and 32 of APP-4. This connects the generator to the FAX input.

50. Set the FUNCTION selector switch on the TIS-3 to the FAX position.

51. Increase transmitter output to 500 watts. A varying tone should be heard on the test receiver.

52. Tune the transmitter to 1 kw cw. With a VTVM measure the squelch output on the bottom of AX 650. By varying R2001 you should read a minus voltage (0-20 vdc ± 20%).

53. Remove all power connections.

54. Check cables, hardware and slides for ease of movement. Unit should tilt without obstructions.

55. This completes testing of system, record all Test Data.

REVISION SHEET	THE TECHNICAL MATERIEL CORP. MAMARONECK NEW YORK	S 1160 LIST NO.

DATE	REV.	SHEET	EMN #	DESCRIPTION	APP.
12/19/66	Ø			ORIGINAL RELEASE FOR PRODUCTION	

TMC FORM MLR-1 2-65—AINS.

TEST CHART SBT-1KSX2

DATE:

TEST BY:

SBT-1KSX2 Ser. No.

TIS-3 Ser. No.

SWR-1K50 Ser. No.

RFD Ser. No.

VOX-5 Ser. No.

SBE-8 Ser. No.

REVISIONS						
SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD

	1 kw PEP, SSB										1 kw, cw					
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	FORWARD POWER WATTS	REFLECTED POWER WATTS	ACTUAL POWER WATTS	REMARKS
3																	
5																	
10																	
20																	
30																	

NOTE: 1. 1kw, PEP, IS 225 VRMS ACROSS 52 LOAD.

2. 1kw, CW IS 225 VRMS ACROSS 52 LOAD.

3. 3rd ORDER DISTORTION REQUIRED AR 30 MCS IS 35DB.

ITEMS	ACCEPT	REJECT
1. A.C. POWER TO APP		
2. A.C. POWER TO PS-4		
3. A.C. POWER TO SBE-8		
4. A.C. POWER TO VOX-5		
5. A.C. POWER TO TIS-3		
6. INTERLOCK CIRCUITS		
7. KEY LINE CIRCUIT		

ITEMS	ACCEPT	REJECT
8. CHANNEL 1 CIRCUIT		
9. CHANNEL 2 CIRCUIT		
10. REMOTE XMTR PLATE CONTROL		
11. PUSH TO TALK CIRCUIT		
12. SQUELCH VOLTAGE		
13. 115V ANTENNA RELAY		
14. TR SWITCH		

NO. S-1160
Sheet 7 of 7

NOTES

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL

LIST OF MATERIAL

MATERIAL

FINISH

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE
TEST PROCEDURE CHART, SBT1KSX2

Q'TY./UNIT	MODEL USED ON	ASS'Y. NO.
SCALE	CODE	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

DECIMALS .X ± .05 .XX ± .01 .XXX ± .005 TOLERANCES FRACTIONS ± 1/64 ANGLES ± 0° 30'

DRAWN	DATE	FINAL APPROVAL	DATE 12/9/64
CHECKED	DATE		
ELECT. DES.	DATE		
MECH. DES.	DATE	SHEET	REV. LTR.