DATE January 11, 1963 SHEET 1 OF 7	**TMC SPECIFICATION NO. S -742**
J. Stc COMPILED / CHECKED	TITLE:
APPROVED	

TEST PROCEDURE, SBT-350 I & J

OGILVIE PRESS, INC., BROOKLYN 17, N. Y. STOCK NO. 459M

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NOTE: THIS SPEC IS APPLICABLE TO THE SBT-350 I & J. THE ONLY DIFFERENCE BEING THE SBT-350 I USES THE SBE-2 AND THE SBT-350 J USES THE SBE-3.

A. INTRODUCTION

The SBT-350 I is a general purpose radio transmitter system providing SSB, ISB, DSB, AM, FSK, FAX, and CW operation throughout a frequency range of 2 to 32 MC. The rated power output of this unit is 350 WATTS PEP and 200 WATTS CW.

B. MAIN COMPONENTS

The SBT-350 I consists of separate units integrated to form the transmitter system. These components are:

1. rack assembly RAK-19D.
2. auxiliary power panel APP-5.
3. power supply PSP-350.
4. linear RF amplifier RFA-1.
5. mode selector SBE-2.
6. variable frequency oscillator VOX.
7. antenna tuning system ATS-2.
8. tune intelligence unit TIS-3.

C. TEST PROCEDURE

The test procedure for the SBT-350 I system is outlined on the following pages. Before the system can be tested correctly, all components except the RAK-19D rack assembly must be tested and passed by the test department as per the specific test requirements for each unit.

NOTE: ON ATS-2, OVERLOAD RELAY, K103, MUST BE RESET TO CUTOFF TRANSMITTER AT 400 WATTS BY ADJUSTING R121.

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I. EQUIPMENT REQUIRED

1. 52 ohm dummy load, 500 W 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 Chart, SBT-350 I.
9. Test cable assembly #106.
10. Voltmeter, Simpson 260 or equivalent. (VOM)
11. Square wave generator, Boonton Model 71.
12. Test receiver (GPR 90 or equivalent).

II. PROCEDURE

1. Install AC input power cable from J701 of RAK-19 to AC line.
2. Connect fanning strips of test cable assembly to E502 on rear of APP-5 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 analizer.
5. Connect cable from OUTPUT jack of CU-2 to dummy load input. Connect H.P. VTVM across dummy load.
6. Connect jumper from terminal 5 on test cable terminal board T601 to terminal 8. This completes external interlock circuits.
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-5 to ON position. The red MAIN POWER indicator lamp should light, and rack blowers should start running.

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9. Set MAIN LINE switch on PSP-350 to ON position. The MAIN POWER indicator lamp should light and RFA-1 blower should start running. NOTE: PSP-350 TRANSMITTER PLATES switch should be in STANDBY-REMOTE position; HV LINE switch in OFF position.

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. After a warm-up time of approximately 5 minutes, set the TRANSMITTER PLATES switch to ON position. The indicator lamp should light. The HV LINE OVERLOAD indicator should also light. Set TRANSMITTER PLATES switch to STANDBY-REMOTE position.

13. Set XMTR switch on SBE to ON position. The TRANSMITTER PLATES & HV LINE OVERLOAD indicator lamps on PSP-350 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 the 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 the SBE OUTPUT control to zero.

19. Set HV LINE switch on PSP-350 to ON position. Red indicator should light and amber OVERLOAD indicator should go out.

20. Using the tuning chart, adjust the RFA-1 for 350W PEP at required frequency (132 VRMS across 52 ohm load).

21. Adjust RFA-1 to obtain 40db third order distortion at 350W PEP.

22. Adjust RFA-1 to obtain 200W CW. (100 VRMS across 52 ohm load).

23. Place VOM across terminals 3 and 4 of T601 on test cable. Meter should read 115 volts AC. 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. HV LINE and TRANSMITTER PLATES indicators on PSP-350 should go out.

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25. Place jumper across terminals 1 and 2 on T601. TRANSMITTER PLATES and HV LINE indicators 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 10 ohms ±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 ohms ±20% between 24 and 25 should read ∞.

28. Turn the LEVEL ADJ. knob on the TIS-3 maximum clockwise.

29. Set the SHIFT CPS indicator to 850.

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

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

32. Turn the TEST selector switch to the LINE position.

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

34. Set the MULTIPLY by frequency selector on the SQUARE WAVE GENERATOR to 1 position.

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

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

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

38. Connect a piece of 2 conductor shielded cable from the two uppermost S.W. output terminals on the SQUARE WAVE GENERATOR to the test cable assembly terminal board T602 so that the upper S.W. output terminal is connected to terminal 27 on T-602 and the other S.W. output terminal connected to terminal 29 on T602.

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

40. Set the EXCITER switches, CHANNEL 1 and CHANNEL 2, to FSK FAX CW position.

41. Increase the LEVEL ADJ. knob for a fluctuating meter indication approximately 1/3 full scale reading.

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42. 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.

43. 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.

44. Set up test receiver to receive test frequency BFO on.

45. Adjust SBT-350 I system for approximately 200 watts CW at test frequency using USB, CHANNEL 1 or CHANNEL 2.

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

47. Reduce transmitter output to zero.

48. Turn FUNCTION selector switch on TIS-3 to the FSK position.

49. Increase transmitter output to 200 watts. A verying tone above and below the center frequency should be heard.

50. Vary the CENTER FREQ. CPS selector between 2550 and 1900 and listen for changes in pitch of varying tone. Set switch back to 2000.

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

52. Reduce transmitter output to zero.

53. Change the small OUTPUT selector on the SQUARE WAVE GENERATOR to the 10 position.

54. Disconnect the wires from terminals 27 and 29 of test cable assembly and connect to terminals 31 & 32. This connects the generator to the FAX input.

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

56. Increase transmitter output to 200 watts. A varying tone should be heard.

57. Reverse the output leads at the SQUARE WAVE GENERATOR and note a change in frequency of output tone of receiver.

58. Reduce transmitter output to zero.

59. Turn off all power switches and reduce all gain controls to zero. Remove AC connections to line.

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

61. This compl t s testing of system SBT-350 I.

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TEST CHART SBT-350 I

DATE

TEST BY

SBT 350 I Ser. No._____
OR
SBT 350 J Ser. No._____

ATS-2 Ser. No._____

CU Ser. No._____

MCU Ser. No._____

TU S r. No._____

RFA Ser. No._____

VOX Ser. No._____

SBE-2 Ser. No._____

SBE-3 Ser. No._____

TIS-3 Ser. No._____

PSP-350 Ser. No._____

APP-5 Ser. No._____

	350 WATTS PEP, SSB											200 WATTS, 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	MA, PA SCREEN	3rd ORDER DISTORTION -db	MA, PA PLATE CURRENT	MA, PA SCREEN CURRENT	FORWARD POWER WATTS	REFLECTED POWER WATTS	ACTUAL POWER WATTS	REMARKS
2																	
5																	
10																	
20																	
30																	

NOTE: 1. 350W, PEP, IS 132 VRMS ACROSS 52 ohm load.
2. 200W, CW, IS 100 VRMS ACROSS 52 ohm load.

ITEMS	ACCEPT	REJECT
1. A.C. power to APP-5		
2. A.C. power to PSP-350		
3. A.C. power to SBE-		
4. A.C. power to VOX		
5. A.C. power to TIS-3		
6. Interlock circuits		
7. Key Line Circuit		
8. Channel 1 Circuit		
9. Channel 2 Circuit		
10. Remote Xmitr Plate Circ.		
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

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TEST PROCEDURE CHART, SBT-350

DRAWN	CHECKED	FINAL APPROVAL
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ELEC. DES. APP. | MECH. DES. APP.

TMC FORM NO. 109

DEFIANCE NO. 1020 36845