

AUXILIARY SENDER

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1. GENERAL INFORMATION

1.1 This section describes a method of performing routine and supplementary tests on auxiliary sender circuit SD-96479-01.

1.2 Parts of the test are performed by means of the facilities provided by the subscriber sender test circuit in panel and #1 crossbar offices.

1.3 The sender test circuit sets up a call in a subscriber sender so that the sender connects to an auxiliary sender. The auxiliary sender receives the digits via PC1 pulses and transmits the digits by MF pulses to the test circuit for check.

2. RECORDS AND REQUIREMENTS

2.1 Records: SD-4-1313 is required for recording results of these tests and should be summarized on SD-4-1315 or per local instructions.

2.2 Requirements: For requirements see Section 0.1 of this Handbook.

3. TEST EQUIPMENT

3.1 Test Sets and Accessories

<u>Amt</u>	<u>Code</u>	<u>Description</u>
1	ITE-4029	Pulse Checking Set
1	KS-3008	Stop Watch

3.2 Cords

<u>Amt</u>	<u>ITE</u>	<u>Lgth</u>	<u>Cdrs</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
1	9547	12	1	ITE-2455	ITE-2455	4023
1	9598	12	2	310 Plug	310 Plug	4023

4. FUSING

4.1 Fusing tests shall be made on all job wired circuits and on shop wired circuits only where fuses have not been placed by the shop.

4.2 Check with a voltmeter or a test receiver connected to a grounded battery, that all fuse posts are free of foreign battery and ground.

4.3 Using fuses of correct type as indicated by circuit drawings and fuse panel designations, install fuses one at a time. Check at one point in the circuit that each fuse is associated with its proper equipment as shown in Figure CAD2 on SD-96479-01 G1 and is free from crosses with other fuse posts on the fuse panel.

4.4 When fuses are installed by the shop, observe each fuse block and fuse panel equipped with alarm type fuses and check that the fuses are correctly positioned, that the fuses are of the correct type and current carrying capacity and that there are no loose screws or caps.

5. CONTACT PROTECTION

- 5.1 Contact protection tests need only be made on job wired equipment as described in Handbook 61 Section 0.2 or Handbook 52, Section 2.

6. CAPACITOR TIMED RELAYS6.1 TS1 Relay6.11 Test Preparation

- 6.111 Connect battery and ground to ITE-4029 test set using an ITE-9598 cord between the A jacks of the test set and the sender frame.

- 6.112 Connect the P jack of the test set as outlined on SD-96479-01-F3. Test Note 2.

6.12 Test Operation

NOTE: It is essential that the test set meter needle be set at zero before calibration. If the pointer is off zero, turn the zero adjusting screw as required with the R-1005. Jeweler's screwdriver.

- 6.121 Make calibration and adjustment tests as outlined in Handbook 50, Section 5, Paragraph 4.

- 6.122 Make pulse speed and percent break tests as shown on SD-96479-01-F3. Notes 1, 3, 4 and 5.

6.2 TA Interrupter

- 6.21 Operate ON relay, with a KS-3008 stop watch, check that the BK relay operates 6 to 12 seconds after the ON relay is operated.

- 6.22 Release ON relay.

7. MAKE BUSY FEATURES

- 7.1 At the sender make busy frame, insert a 322A make busy plug into the auxiliary sender MB jack. Check that the SS lamp lights and the MB relay operates. Block operated the BK relay and check that the SS lamp changes from steady to flashing.

- 7.2 Remove the MB plug and release the BK relay.

8. RELAY OPERATION8.1 Pulse Counting

- 8.11 Block operated RA and ON relays.

- 8.12 Perform the following operations and check the results.

Operation		Result	
Operate	Release	Operate	Release
PZ		P1	
	PZ	P2	P1
PZ		P3	P2
	PZ	P4	P3
PZ		P5	P4
	PZ	P6	P5
PZ		P1,P6	
	PZ	P2,P6	P1
PZ		P3,P6	P2
	PZ	P4,P6	P3
	RA,ON		P4,P6

8.2 Digit Control

- 8.21 Block operated relay(s) ON and TD (ZT opt).

- 8.22 Perform the following operations and check the results.

Operation		Result	
Operate	Release	Operate	Release
Z		CO	
	Z	ACA	CO
Z		CE	
	Z	ACB	CE
Z		CO	
	Z	ACC	CO
Z		CE	
	Z	A	CE
Z		CO	
	Z	B	CO
Z		CE	
	Z	C	CE
Z		CO	
	Z	TH,THA	CO
Z		CE	
	Z	H	CE
Automatic Advance under Control of Relay's TM and TS		CO	
		T	CO
		CE	
		U	CE
		CO	
		STS	CO

- 8.23 Release ON and TD relays and check that all operated relays release.

9. TRAFFIC REGISTERS9.1 PD Register

9.11 Block operated TZ relay. Operate and release ON1 relay and check at the traffic register rack that the PD register associated with sender group operates.

9.12 Remove block from TZ relay.

9.2 SS Register

9.21 Block operated TZ and UD relays.

9.22 Operate and release ON1 relay. Check that the SS registers at the SMB and traffic register rack operate.

9.23 Release UD relay and block operated 7DG relay.

9.24 Repeat test in Paragraph 9.21 to 9.23.

9.25 Remove blocks from TZ and 7DG relays.

9.3 Traffic Usage Recorder Leads

9.31 At the traffic usage recorder frame, check for resistance battery on the SBM terminal associated with the sender and that the SB terminal is clear of battery and ground.

9.32 Insert a Make Busy Plug into the sender jack at the SMB frame. Check that SB and SBM terminals are grounded.

10. MISCELLANEOUS10.1 Fuse Alarm

10.11 Remove the FA lamp cap and lamp.

10.12 With a test receiver, apply 48V battery to the alarm terminal of one of the 70 type fuse holders and observe that the red aisle and main aisle pilot lamps light and the major alarm sounds.

10.13 Repeat test in Paragraph 10.12 to the PF fuse with the same result.

10.14 Replace the FA lamp and lamp cap, repeat test in Paragraph 10.13 and check that the FA lamp also lights.

10.2 Test Battery Supply

10.21 With a volt-ohmmeter, check for 48V battery on the 48V terminals on the front and rear of the frame and on the tip of the A jack.

10.22 Check for direct ground on the ground terminals on front and rear of the frame and on the sleeve of the A jack.

10.23 Check the HRG terminals on front and rear of the frame for 12,000 ohm ground.

10.3 Spare Jack B

10.31 Make a continuity test of the B jack to the MDF and to each sender frame appearance.

10.4 RC Jack

10.41 Check that the sender test circuit can be controlled with a 32A remote control cord.

11. SUPPLEMENTARY TESTS11.1 General

11.11 The following tests are made with the sender test circuit and should be performed before the routine tests in Paragraph 12.

11.2 Timing Tests11.21 Partial Dial

11.211 Set up a ten digit test call from the test call chart with the CTR key (Auxiliary Sender) in normal (IN) position, and with a plug in the T0 jack.

11.212 Select A subscriber sender having access to the auxiliary sender to be tested.

11.213 Operate PAS-key corresponding to the auxiliary sender.

11.214 Operate ST key to start test.

11.22 Trouble Time Out - Dialing Completed

11.221 Set up a ten digit test call with the CTR key (Auxiliary Sender) in normal position (IN), and with a plug in the T0-1 jack.

11.222 Select a subscriber sender having access to the auxiliary sender to be tested.

11.223 Operate PAS-key corresponding to the auxiliary sender.

11.224 Operate ST key to start test.

ROUTINE TESTS

	Area Code			A	B	C	TH	H	T	U	STA	FA	F	CS	Off CR	Test CL	Dial Speed	Misc
	A	B	C															
10 Digit No Skip	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	PDG-
10 Digit Skip 3	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	7 DG-PL JK, PDG-
10 DIGIT RECONSTR'D AREA CODE **	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	PDG- RCV
10 DIGIT RECYCLE NO CLDE COMP	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	PDG-, CCB
7 Digit No. STA*	N	N	N	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	7 DG-DL JK, PDG-
7 Digit STA *	N	N	N	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	7 DG-DL JK, SD, PDG-
7 Digit Skip 2*	N	N	N	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	7 DG-DL, 5DG-PL JK, PDG-
7 Digit Skip 3*	N	N	N	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	7DG-DL, 4DG-PL JK, PDG-
10 Digit Aban After 9 Digits	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	W0 JK, PDG-
10 Digit Aban Dialing Comp	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	W01 JK, PDG-
10 Digit Aban MF Pulsing	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	W02 JK, PDG-
ODN 10 Digit	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	ODN, JK, PDG-, ID0 JK
Service OBS ODN 10 Digit	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	ODN JK, PDG-, LO, ID3JK
ODN 7 Digit	-	-	-	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	ODN JK, 7DG PL, PDG-ID0, 7DG DL
ODN "0" Oper	-	-	-	X	-	-	-	-	-	-	NST	X	X	X	X	17	X	OJK, ODN, ID0 JK
ODN Multi-pty	-	-	-	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	ODN JK, PDG, ID1 JK
Service OBS ODN Multi-pty	-	-	-	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	LO, ODN JK, PDG-, ID4JK
Identification ODN Failure	-	-	-	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	ODN JK, PDG-, ID2 JK
Service OBS ODN Identification Failure	-	-	-	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	PDG-, ODN JK LO, ID5 JK
10 Digit ODN No CAMA Rev	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	X	17	X	PDG-
"0" OPER ODN No CAMA Rev	-	-	-	X	X	X	-	-	-	-	NST	X	X	X	X	9	X	
10 Digit TBL Time-Out Partial Dial	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	T0 TK, CTR(AS) IN, PDG-
10 Digit TBL Time-Out Dialing Comp	X	0-1	X	X	X	X	X	X	X	X	NST	X	X	X	S0	17	X	T01 JK, CTR(AS) IN, PDG-
10 Digit Stuck Aux Sender Prime	X	0-1	X	X	X	X	X	X	X	X	X	X	X	X	S0	17	X	T01 JK, CTR(AS) OUT, CTR (SS) OUT, PDG-
10 Digit No Aux Sender Avail.	X	0-1	X	X	X	1	1	1	1	1	NST	X	X	X	S0	17	26 MIN	T0 JK, PAS-, MB-(AS) PDG-
10 Digit Incoming Trunk Reversed	X	0-1	X	X	X	1	1	1	1	1	NST	X	X	X	S0	17	26 MIN	RUT, PDG-
Emergency Opr. ODN	-	-	-	-	-	-	-	-	-	-	NST	X	X	X	S0	17	X	0-JK ODN ID0-JK PDG0
Universal Info.	-	-	-	4	1	1	-	-	-	-	NST	X	X	X	S0	17	X	CID PDG1
	X	0-1	X	4	1	1	-	-	-	-	NST	X	X	X	S0	17	X	7DG-PL CID PDG1

\* All 7 digit codes using Auxiliary Sender should have Sender Delay B.

\*\* Use only Area Codes Compressed.

11.23 Stuck Sender - Primed Release

11.231 Set up a ten digit test call with CTR keys (subscriber and auxiliary sender used for test) in operated position (out), and with a plug in the TO-1 jack.

11.232 Operate PAS-key corresponding to the auxiliary sender to be tested.

11.233 Operate ST key test advances and blocks with EP lamp lighted.

11.234 With a KS-3008 stop watch, check for an interval of 6 to 12 seconds from lighting of EP lamp to start of flash of auxiliary sender SS lamp.

11.235 Momentarily place a 322A plug in auxiliary sender MB jack. SS lamp changes from flash to steady.

11.236 Restore ST key and momentarily operate CA key to restore senders and test circuit.

11.3 Incoming Trunk Reversed

11.31 Set up a test call and operate the RVT key. Operate PAS-key corresponding to the auxiliary sender to be tested. Operate ST key to start test.

11.4 Major Alarm - Two Auxiliary Senders Stuck

11.41 At the sender make-busy frame make an auxiliary sender busy by inserting a 322A plug into its associated MB jack. Associated SS lamp is lighted.

11.42 At the auxiliary sender selected block operated relays ON, BK and CTR.

11.43 At the sender test frame select a subscriber sender which has access to the selected auxiliary sender group. Select area and/or office code which requires use of an auxiliary sender. Operate keys TO1, REP, PNS, CTR(AS)(SS) and Class 17. Operate key PAS- to select another auxiliary sender in the same group.

11.44 Operate key ST. Lamp SS- corresponding to operated PAS- key is lighted. In 14 to 20 seconds from start of test SS lamp changes to flashing and the major alarm sounds.

11.45 Restore key ST and momentarily operate key RN. The test circuit restores to normal, major alarm is silenced and lamp SS is extinguished.

11.46 Change key PAS- as required and repeat Paragraphs 11.44 and 11.45 to test remaining senders in the same group.

11.47 Remove blocking tools from auxiliary sender relays ON, BK and CTR. Remove make busy plug at the sender make-busy frame.

11.48 Repeat Paragraphs 11.41 thru 11.47 for each auxiliary sender group.

12. ROUTINE TESTS

NOTE: Routine tests are performed by setting up test calls on the subscribers senders, and in turn, to auxiliary senders. By completing a cycle of test, (one test call), on all subscribers senders, each auxiliary sender will be tested approximately the same number of times. The number of cycles of test of the auxiliary senders will be the number of subscribers senders divided by the number of auxiliary senders. A specific auxiliary sender may be selected by operating its corresponding PAS- key.

12.1 General

12.11 Prepare a test call chart to meet the following requirements.

12.12 Include calls to check features specified in performance requirements BSP AA634.007. (Section 0.1 of this handbook).

12.13 Area codes for 10 digit calls should have 0 or 1 for B digit.

12.14 Change numbers for TH, H, T and U digits on successive calls so that all numbers are used.

12.15 Set up the area codes with plugs in the ACA, ACB and ACC jacks.

12.16 Set test class switch to position 17.

12.17 Operate key PDG0 or PDG1, as required for prefix digits.

12.2 10 Digit - No Skip

12.21 Set up a 10 digit call.

12.22 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

12.23 Operate ST key to start test.

- 12.3 10 Digit - Skip Three
- 12.31 Set up a 10 digit call arranged to skip 3 digits.
- 12.32 Place plug in 7 DG-PL jack.
- 12.33 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.34 Operate ST key to start test.
- 12.4 10 Digit - Reconstructed Area Code
- 12.41 Set up a 10 digit call using an area code which is compressed.
- 12.42 Place plug in RCY jack.
- 12.43 Set the necessary code, numerical, frame, class of service, compensating resistance and miscellaneous keys.
- 12.44 Operate ST key to start test.
- 12.5 10 Digit - No Code Compressor Available
- 12.51 Set up a 10 digit call using an area code which is compressed.
- 12.52 Set the necessary code, numericals, frame, class of service, compensating resistance and miscellaneous keys.
- 12.53 Operate ST key to start test.
- 12.6 7 Digit Call
- 12.61 Set up a 7 digit call.
- 12.62 Place plug in 7 DG-DL jack.
- 12.63 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.64 Operate ST key to start test.
- 12.7 7 Digit Call Skip Two
- 12.71 Set up a 7 Digit Call arranged to skip 2 digits.
- 12.72 Place plugs in 7 DG-DL and 5 DG-PL jacks.
- 12.73 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.74 Operate ST key to start test.
- 12.8 Abandoned Calls
- 12.81 10 Digit Abandoned After 9 Digits
- 12.811 Set up a 10 digit call.
- 12.812 Place plug in W0 jack.
- 12.813 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.814 Operate ST key to start test.
- 12.82 10 Digit Abandoned After Dialing
- 12.821 Set up a 10 digit call.
- 12.822 Place plug in W01 jack.
- 12.823 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.824 Operate ST key to start test.
- 12.83 10 Digit Abandoned During Outputting
- 12.831 Set up a 10 digit call.
- 12.832 Place plug in W02 jack.
- 12.833 Set the necessary code, numerical, frame, class of service and compensating resistance keys.
- 12.834 Operate ST key to start test.
- 12.84 Outputting Directory Numbers
- 12.841 *Set up ODN test calls as indicated in the chart.*
- 12.842 Operate ST key to start test.
- 12.843 On Identification Failure test calls, verify that call completes satisfactorily and that a trouble record is taken at the TVTI.
- 12.844 While making ODN tests, use all special transverters by operating proper TV- key at the sender test frame.

Lines presented in Script indicate new or changed information.

Reason for Reissue:

To make minor corrections.

To update to current engineering standards.

Manager, Crossbar Product Engineering  
Control Center