

LINE CONCENTRATOR ASSOCIATED WITH 520-TYPE PBX

TESTS USING TEST CIRCUIT SD-98067-01

EMERGENCY REPORTING SYSTEM

1. GENERAL

1.01 This section describes a method of testing lines, trunks, and senders associated with a controller at the concentrator location of a 520-type PBX using test circuit SD-98067-01.

1.02 This section is reissued to provide for the testing of two concentrators using one test circuit SD-98067-01. Other miscellaneous changes are also included in this issue.

1.03 This issue is based on the following drawings:

SD-98057-01, Issue 12AC

SD-98058-01, Issue 11B

SD-98060-01, Issue 10AR

SD-98061-01, Issue 15AR

SD-98062-01, Issue 5B

SD-98063-01, Issue 9D

SD-98067-01, Issue 19AR.

If this section is to be used with equipment or apparatus reflecting later issues of the drawings, reference should be made to the CDs and SDs to determine the extent of the changes and the manner in which the section may be affected.

1.04 ♦ Test circuit SD-98067-01 can be equipped to test two concentrators and associated emergency telephone stations. During manual tests, the CONT key must be operated to the 0 or 1 position to test the concentrator selected for test.

1.05 If a *trouble should occur* while performing these tests, the test circuit will stop the test at that point, time out, and lock in certain lamp indications. When the test circuit times out,

a major or minor alarm will be sounded depending on the trouble encountered. Operate the ACO key to silence the audible alarm and refer to Section 067-302-301 for recording, analysis, and handling trouble indications.♦

1.06 The circuits on which these tests are performed are part of a Fire and Police Emergency Reporting System and *precautions must be taken* that service from station lines is not affected.

1.07 The tests covered are:

A. Automatic Test of All Lines: This test checks each line through each line switch crosspoint having an outgoing trunk appearance to which the line under test has access. This test also checks individual lead continuity, line circuit relay operation, station loop continuity, and minimum leak on the station loop conductors.

B. Test of an Individually Selected Line Through an Individually Selected Outgoing Trunk Line Switch Appearance: This test checks an individual line and switch appearance for the same features as Test A.

C. Test of All Outgoing Trunks: This test checks each trunk circuit for continuity and all supervisory and control functions on both the incoming end toward station lines and the outgoing end toward the headquarters incoming trunk circuit.

D. Test of an Individually Selected Outgoing Trunk Circuit: This test checks an individual trunk circuit for the same features as Test C.

E. Test of Sender Circuit: This test checks the sender for all possible digit combinations under maximum pulsing loop conditions.

F. Automatic Call Through Test: This test checks, on an automatic test call basis, the

circuits to each headquarters of the selected type (fire or police) to which outgoing trunks have access.

G. Test Call to Particular Headquarters:

This test checks the overall operations of the emergency reporting system concentrator circuits by using the hand telephone set located at the test circuit frame to call a selected headquarters, the same as a call is made from an emergency reporting station.

H. Test Call to Local Central Office: This test checks the ability to make outside local calls from the telephone set located at the test circuit frame.

1.08 Tests A and C permit checking all line and trunk circuits associated with the controller.

1.09 Tests B and D permit checking an individual line or trunk circuit primarily for verification and not as a scheduled test.

1.10 In making the tests covered in this section it may be necessary to set up a talking circuit with other locations, such as test desks or maintenance centers in the same or distant buildings, headquarters locations, and other offices. Telephone jacks are provided at the concentrator equipment and test circuit frames for setting up a talking circuit within the office using a hand telephone set. For talking to a headquarters location, Test G covers the procedure for establishing a talking circuit to the desired headquarters. For talking to locations reached through the central office facilities, Test H covers the procedure for setting up a connection through the regular telephone plant facilities.

1.11 The test circuit automatically bypasses busy lines and trunks and halts line test while

the controller is busy with a service call. If during sender testing the sender is required for a service call, the test circuit releases the sender and restarts the test after the service call has been handled. If it appears that any tests may be interfering with service calls or an alarm condition occurs during testing, the tests shall be stopped until the service calls are completed or the alarm condition cleared.

1.12 When an individual line is to be tested (Test B), office records, or a chart, as suggested in Table A, must be consulted to determine the switch (G-) and level (SM-) on which the line to be tested appears, as well as the vertical file appearance (HM-) through which the test is to be made.

1.13 When an individual trunk is to be tested (Test D), office records or chart, as suggested in Table A, must be consulted to determine the test circuit trunk number (TRK-) of the desired trunk.

1.14 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 or 4 of this section, indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

2.01 Central office test circuit SD-98067-01 associated with 520-type PBX emergency reporting system circuits to be tested.

3. PREPARATION

STEP	ACTION	VERIFICATION
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Tests A Through F

1a	If test circuit is in use on automatic test cycle— Wait until test cycle has been completed before start of test.	
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TABLE A
SUGGESTED CHART ARRANGEMENTS FOR RECORDING LINE AND TRUNK
ASSIGNMENTS ON LINE AND SWITCH UNITS

CHART 1 – FOR ONE-LINE GP PER SWITCH UNIT (NONSPILT SWITCH)						
LINE & SWITCH UNIT G-	LINE ASSIGNMENT		TRUNK ASSIGNMENT			
	EQPT NO. GP- SM-	STA BOX NO.	SW VERT HM-	TRK UNIT NO. TRK-	TO H.Q.	
0	00	(4234)	0	(0)	(FHQ1)	
	01		1	(1)	(FHQ1)	
	02		2	(2)	(FHQ1)	
	03		3			
	04		4			
	05		5	(3)	(PHQ1)	
	06		6	(4)	(PHQ1)	
	07		7	(5)	(PHQ1)	
	08		8			
1	10		0	(0)	(FHQ1)	
	11		1	(1)	(FHQ1)	
	12		2	(2)	(FHQ1)	
	13		3			
	14		4			
	15		5	(6)	(PHQ2)	
	16		6	(7)	(PHQ2)	
	17		7	(8)	(PHQ2)	
	18		8			
	19					

CHART 2 – FOR 2-LINE GPs PER SWITCH UNIT (SPLIT SWITCH)						
LINE & SWITCH UNIT G-	LINE ASSIGNMENT		TRUNK ASSIGNMENT			
	EQPT NO. GP- SM-	STA BOX NO.	SW VERT HM-	TRK UNIT NO. TRK-	TO H.Q.	
0	00	(4234)	0	(0)	(FHQ1)	
	01		1	(1)	(FHQ1)	
	02		2	(2)	(PHQ1)	
	03		3	(3)	(PHQ1)	
	04					
	05					
	06					
	07					
	08					
1	10			5	(0)	(FHQ1)
	11			6	(1)	(FHQ1)
	12			7	(2)	(PHQ1)
	13			8	(3)	(PHQ1)
	14					
	15					
	16					
	17					
	18					
	19					

4. METHOD

STEP

ACTION

VERIFICATION

A. Automatic Test of All Lines

- | | | |
|----|---|---|
| 2 | Operate LINE TST key. | LT lamp lights. |
| 3b | ◆If CONT key is provided—
Operate CONT key to the controller with
which the lines under test are associated.◆ | |
| 4 | Operate MAN ST key momentarily. | ◆CN-lamp lights associated with controller
under test (Step 3b).◆
G- lamp lights, corresponding to switch on
which first line to be tested appears.
SM- lamp lights, corresponding to switch
horizontal on which line appears.
HM- lamp lights, corresponding to first vertical |

STEP	ACTION	VERIFICATION
		<p>file to which lines have access. TH-, H-, T-, U- lamps light, corresponding to box number of line under test. If "G" option is provided— HM- lamp advances as line is tested on each crosspoint. If "F" option is provided only— One crosspoint will be tested per cycle. If two line groups appear on switch (split switch)— Box number displayed with HM (0-3) OR HM 1/0-3 lamps will change to new box number when testing through verticals HM 5 through 8 OR HM 1/5-8. At completion of testing through all crosspoints on a level— SM- lamp advances to indicate switch level of next line or lines. TH-, H-, T-, U- lamps indicate box number of line being tested. At completion of tests of all lines on switch— G- lamp advances to next switch. All lines appearing on switch are tested through all verticals as indicated by SM-, HM-lamps. Box number of line sender test is indicated by TH-, H-, T-, U- lamps. When last line is tested— Test stops. ELT lamp lights.</p> <p>Note: As the test progresses, OR, LPF, and LKF lamps flash momentarily during the line tests through each crosspoint.</p>
5	Operate RN key momentarily.	All lamps extinguish except LT lamp.
6b	◆If CONT key is provided, return CONT key to normal if test is complete, or repeat Steps 3b through 6b to test the other controller.◆	
7	Restore LINE TST key to normal.	LT lamp extinguishes.
B. Test of an Individually Selected Line Through an Individually Selected Outgoing Trunk Line Switch Appearance		
2	Operate LINE TST key.	LT lamp lights.
3	Operate REP key.	

STEP	ACTION	VERIFICATION
4b	◆If CONT key is provided, operate CONT key to the controller with which the line and trunk under test are associated.◆	
5	Operate GPC key momentarily.	G0, SM-0, HM-0 lamps light.
6c	If line to be tested is not on switch 0 (G0)— Operate GPC key momentarily, as required, to select desired switch.	G- lamps advance one each time GPC key is operated.
7d	If line to be tested is not on level (0) (SM-0)— Operate SPC key momentarily, as required, to select desired level.	SM- lamps advance one each time SPC key is operated.
8e	If desired trunk crosspoints are not at vertical 0 (HM-0)— Operate HPC key momentarily, as required, to select desired vertical.	HM- lamps advance one each time HPC key is operated.
9f	Operate MAN ST key momentarily.	Line circuit, station loop tested repeatedly. ◆CN-lamp lights associated with controller under test (Step 4b). OR, LPF, and LKF lamps flash momentarily.◆ TH-, H-, T-, U- lamps show box number of line under test.
10	Operate RN key momentarily and return to normal.	Test stops. All lamps extinguish except LT lamp.
11b	◆If CONT key is provided, return CONT key to normal.◆	
12	Restore LINE TST key to normal.	LT lamp extinguishes.

C. Test of All Outgoing Trunks

2	Operate TRK TST key.	TT, TRK-0 lamps light.
3b	◆If CONT key is provided, operate CONT key to the controller with which the trunks under test are associated.◆	
4	Operate MAN ST key momentarily.	Trunk test starts. TRK- lamp advances as each trunk is tested. AR, LOF, DFO/ID lamps flash momentarily during each trunk test. When last trunk is tested— ETT lamp lights. Test stops. TRK- lamp extinguishes.

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STEP	ACTION	VERIFICATION
5	Operate RN key momentarily.	ETT lamp extinguishes. TRK-0 lamp lights.
6b	◆If CONT key is provided, return CONT key to normal if test is complete, or repeat Steps 3b through 6b to test the other controller.◆	
7	Restore TRK TST key to normal.	TT, TRK-0 lamps extinguish.
D. Test of an Individually Selected Outgoing Trunk Circuit		
2	Operate TRK TST key.	TT, TRK-0 lamps light.
3	Operate REP key.	
4b	◆If CONT key is provided, operate CONT key to the controller with which the trunk under test is associated.◆	
5e	If trunk to be tested is not first trunk (TRK-0)— Operate HPC key momentarily, as required, to select desired trunk.	TRK- lamps advance one each time HPC key is operated.
6	Operate MAN ST key momentarily.	Trunk circuit tested repeatedly. AR, LOF, DFO/ID lamps flash momentarily during each test.
7	Operate RN key momentarily and restore to normal.	Test stops.
8	Restore TRK TST key and ◆CONT key (if provided)◆ to normal.	TT and TRK-0 lamps extinguish.
E. Test of Sender Circuit		
2	Operate SDR key.	SDT lamp lights. ◆If two controllers are provided, S0 lamp lights.◆
3b	◆If CONT key is provided, operate CONT key to the controller with which the sender under test is associated.	If operated to CONT 1 position, SDT lamp extinguishes and lights in Step 4. S0 lamp extinguishes.◆
4	Operate MAN ST key momentarily.	◆SDT and S1 lamps light if controller 1 of a 2-controller system is under test.◆ TH-1, H1, T1, U1 lamps light indicating number in sender (11111) with exception of CL digit which is not indicated. CL, 0, 1 lamps light followed by TH, 0, 1; H, 0, 1; T, 0, 1; U, 0, 1 lamps indicating

STEP	ACTION	VERIFICATION
		<p>digits received by test circuit receiver on a 2-out-of-5 basis.</p> <p>TH-2, H2, T2, U2 lamps then light to show new number in sender (22222), CL, 0, 2 lamps light followed by TH, 0, 2; H, 0, 2; T, 0, 2; U, 0, 2 lamps indicating digits received by test circuit receiver.</p> <p>Sequence repeated with sender lamps TH-4, H4, etc, receiver lamps CL, 0, 4; TH, 0, 4, etc, for number 44444; TH-7, H7, etc, sender lamps, receiver lamps CL, 0, 7; TH, 0, 7, etc, for number 77777; then TH-8, H8, etc, sender lamps, receiver lamps CL, 1, 7; TH, 1, 7, etc, for number 88888.</p> <p>When test is completed— Test stops.</p> <p>◆All lamps extinguish except SDT and S0 or S1 (if provided).◆</p> <p><i>Note:</i> When digits 4, 7, and 8 are received, the 4, 7, and 8 lamps illumination will be faint or out due to the short time the lamp circuit is energized.</p>
5	Operate RN key momentarily.	◆If two controllers are provided and controller 1 is under test, SDT and S1 lamps extinguish.◆
6b	◆If CONT key is provided, restore CONT key to normal if test is complete, or operate to other position and repeat Steps 4 through 6b to test the other controller.	If CONT key is moved from the 1 position to the 0 or normal position, S0 lamp lights.◆
7	Restore SDR key to normal.	◆SDT and S0 (if provided) lamps extinguish.◆
F. Automatic Call Through Test		
2b	◆If CONT key is provided, operate CONT key to the controller which is to process the call.◆	
3	<p>If test is to be made to fire headquarters— Operate TEST FIRE key.</p> <p>If test is to be made to police headquarters— Operate TEST POLICE key.</p>	
4	Operate MAN ST key momentarily.	<p>At test circuit— If TEST FIRE key is operated— F and HQ-1 lamps light.</p> <p>If TEST POLICE key is operated— P and HQ-1 lamps light.</p> <p>Call is originated to headquarters.</p> <p>At headquarters—</p>

STEP	ACTION	VERIFICATION
		<p>Call received at switchboard, test ticket printed. Operator answers, test line number and station class number 1 displayed. Operator releases. When there are trunks to other headquarters locations of the same type (fire or police)— At test circuit— HQ- lamp advances. Call originated to next headquarters. At headquarters— Call received at switchboard, test ticket printed. Operator answers, test line number and station class number 1 displayed. Operator releases. When call is originated, answered, released at last headquarters of type being tested— Test stops. All lamps extinguish.</p>
5	Operate RN key momentarily.	
6	Restore TEST FIRE or TEST POLICE key to normal if test is complete or operate to other headquarter position and repeat Steps 4 through 6.	
7b	◆If CONT key is provided, return CONT key to normal, if test is complete, or operate to other controller position and repeat Steps 3 through 7b to test the other controller.◆	
G. Test Call to Particular Headquarters		
2b	◆If CONT key is provided— Operate CONT key to the controller over which the call is to be placed. Operate MAN ST key momentarily.◆	
3	At test circuit— Remove handset from hanger; operate FHQ- or PHQ- key for desired headquarters.	<p>Call originated to selected test headquarters. At headquarters— Call received at switchboard. Test ticket printed.</p>
4	At headquarters— Attendant answers.	<p>Transmission satisfactory. Test number and station class number i displayed.</p>
5	At test circuit— Release FHQ- or PHQ- key.	<p>At headquarters— Release signal received. No transmission.</p>

STEP	ACTION	VERIFICATION
6b	◆If CONT key is provided— Return CONT key to normal. Operate RN key momentarily.◆	
7	At test circuit— Replace handset on hanger.	
8	At headquarters— Disconnect.	All circuits normal.

H. Test Call to Local Central Office

1	At test circuit— Remove handset from hanger.	
2f	If head telephone set is used— Connect to CO TRK jacks.	
3	Operate CO TRK key.	Dial tone heard.
4	Dial desired number.	Called station signaled.
5	Called station answers.	Transmission satisfactory.
6	Restore CO TRK key to normal.	Connection releases.
7	Replace handset on hanger.	
8f	If head telephone set is used— Remove from CO TRK jacks.	