

**LINE MESSAGE REGISTER  
AND ANI-TYPE B LINE VERIFICATION TESTS  
LINE FINDER PANEL OFFICES**

**1. GENERAL**

**1.01** This section describes methods of testing line message registers and associated wiring and cross-connections in line finder panel offices. This section also describes methods for making line verification tests in line finder panel offices arranged for ANI-type B.

**1.02** This section is reissued for the following reasons:

- (a) To change title to restrict this section to line verification tests in offices equipped with ANI-type B.
- (b) To change title of Test F to ANI-type B line verification test.
- (c) To revise Test F to include ANI-type B line verification of arbitrary trunk number of PBX arranged for automatic identified outward dialing (AIOD).

**1.03** The tests covered are:

**A. Operation and Cross-Connection Test Using Test-Call Method:** This test checks that the line message register operates properly on a regular charge call; that the line under test has been assigned to the proper class of service; that the register is associated with the proper line group terminal; and with the exception of PBX lines, that the proper final multiple terminal is associated with the register and line group terminal.

**B. Cross-Connections Test Using Buzzer Circuit.**

**C. Cross-Connections Test Using Test Set at Line Finder Frame.**

**D. Cross-Connections Test Using Test Set at Message Register Rack Frame:** Tests B, C, and D check that the wiring and cross-connection of the message register is continuous and free from ground, that the register is associated with the proper line group terminal, and that the proper final multiple terminal is associated with the register and line group terminal.

**E. 100-Operation Test of Message Register:** This test makes an operate and nonoperate test of the subscriber message register and applies the operate test automatically for 100 operations.

**F. Line Verification Test in Offices Arranged for ANI-Type B:** This test checks that the subscriber line sleeve or PBX trunk line sleeve has been cross-connected to the correct number network and that the number network has been connected to the proper primary buses.

**1.04** For all tests covered by this section, office records should be consulted to determine the line group and terminal numbers for the final terminal number associated with the message register or line to be tested, and in offices where all lines are not permanently wired to message registers, the message register number. Also, for party lines or individual lines in 2-party groups, the tip or ring party station assigned to the final terminal number should be determined.

**1.05** Test C cannot be used for 2-party lines arranged for multiple registration.

**1.06** Test A or B is intended for use upon completion of a service order where registers are tested prior to assignment, or in connection with orders involving a change in group and terminal or class of service, or for intermediate distributing frame transfers made for traffic reasons.

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1.07 Test A or D is intended for use in combination with and in advance of Test E upon completion of a service order where registers are not pretested.

1.08 Test E is intended for pretesting of registers.

1.09 Test F may be performed at the message register rack frame or, when facilities are provided, at the number network frame

1.10 The directory number referred to in Test F consists of an office, thousand, hundred, ten, and unit digit. The office digit is the arbitrary digit used to represent a 3-digit office code. Cross-connections in the outpulser determine which digits are assigned to each central office.

1.11 In Test F, when verifying a PBX line arranged for AIOD service, the verified number is the AIOD office digit (or class mark) and an arbitrary 4-digit PBX trunk number.

1.12 In Test F, for lines in a PBX group not arranged for AIOD service, the directory number identified and displayed is the PBX group billing number.

1.13 In Test F, should there be physical and theoretical codes for a central office, the same office digit is used to represent both the physical and theoretical portion of the office. In this case, the 3-digit office code must be obtained from a combination of the office digit and either the numerical thousand or numerical thousand and hundred digits. Cross-connections in the outpulser determine which thousand and hundred digits are assigned to the physical and theoretical portions of the office.

1.14 **Lettered Steps:** A letter a, b, c, etc, added to a step number in Part 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.

1.15 During Tests A and E, the subscriber line message register will operate. A record of individual register readings should be taken and entered on the proper form before and after operating any register.

1.16 If a register fails on test and is replaced by a new register, record the reading of the old register and new register, as required, on local forms. This record should be forwarded in accordance with the local instructions for the purpose of correcting register records.

**2. APPARATUS**

2.01 The apparatus required for each test is shown in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.

**TABLE A**

APPARATUS	TESTS					
	A	B	C	D	E	F
32A (remote control) Test Set or 184B (make-busy) Plug	1	-	-	-	-	-
Test Set (2.02)	-	-	1	1	1	-
Cord (2.03)	-	-	1	1	1	-
Cord (2.04)	-	2	2	1	1*	-
Cord (2.05)	-	-	-	1	1	-
Cord (2.06)	1	1	1	1	1*	1
Test Set (2.07)	1	-	-	-	-	-
184B (make-busy) Plug	-	-	1	-	-	-
349A (make-busy) Plug	-	-	-	-	-	†
Tool (2.08)	-	-	†	-	-	-
*Refer to Part 3, Steps 1 and 2 for cord to be used.						
†As required.						

2.02 For message register test set, use ES-261119 or X-61229-A (SD-20054-01) for lines in GCO office, and use J24705A (SD-20173-01) or X-61229-B (SD-20173-01) for lines in BCO office.

- 2.03 Patching cord, P3E cord, 6 feet long, equipped with two 310 plugs (3P7A cord).
- 2.04 Testing cord, W1C cord, 20 feet long, equipped with 1C plug and 360B tool (1W6B cord); and a KS-6278 connecting clip with a 108 cord tip (insulated tubing) or 365 tool.
- 2.05 Patching cord, P4N cord, 6 feet long, equipped with two 289B plugs (4P8B cord).
- 2.06 Patching cord, P4L cord, 19 feet 6 inches long, equipped with 289B plug and 234 plug (4P6A cord).
- 2.07 1011G dial hand test set (handset) equipped with a 2W38A cord assembly consisting of a W2CK cord, 471A jack, and 310 plug.
- 2.08 Blocking and insulating tools as required. Use tools and apply as covered in Section 069-020-801.

### 3. PREPARATION

STEP	ACTION	VERIFICATION
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#### Tests A, D, E, and F

- 1 At VIDF —  
Insert 289B plug of P4L cord into test line circuit T, T1 jacks. Orient the plug so the male connector nearest the ridged part of the shell is inserted into T jack.
- 2 Attach 234 plug of P4L cord to line group terminals associated with message register of line under test.

*Note:* When Test E is applied to a register that has not been cross-connected for service, use W1C cord instead of P4L cord, inserting the plug into T1 jack and connecting 365 tool (or KS-6278 connecting clip) to message register terminal on the IDF.

#### Tests D and E

- 3 At message register rack frame —  
Using P3E cord, connect A jack (or B-GRD) of test set to A jack (battery and ground) of message register rack frame.

*Caution:* To avoid possible grounding of the battery supply lead, connect the cord to the test set A jack first; when disconnecting, remove the cord from the test set last.

## 4. METHOD

STEP	ACTION	VERIFICATION
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**A. Operation and Cross-Connection Test Using Test-Call Method**

*Caution: This test should not be made on a line connected in service except where tests are required by the commercial or accounting department.*

*Note:* In offices having more than one class of service employing message registers, a code should be assigned for the charge test call which will give a distinctive charge condition for the different class of service involved as, for example, one charge for one class and two charges for the other class. If such a code is not available, two codes should be employed, one of which will provide a charge condition to check register wiring and another which will check the class of service by the fact that it checks restriction or non-charge in one case and nonrestriction of charge in the other case. One call will be sufficient to check the class of service of lines obtaining a charge on calls to all zones. Two calls using different codes will be required to check the class of service of lines restricted to or charged on calls only to certain zones. Where only one class of service involving registers is employed and where a class-of-service check is therefore not required, the time bureau may be called; or if the time bureau is not provided, the call may be directed to the local test line from which an answer condition can be obtained.

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|----|--|------------------|
| 3  | At message register rack frame —<br>Read message register under test and enter reading on proper form.   |                  |
| 4  | With handset switch in MON position, insert plug into HS jack.   |                  |
| 5a | If testing on lines with tip ground not open at line circuit (noncoin and non-PBX lines) —<br>Listen on line and when idle operate handset switch to TALK. | Dial tone heard. |
| 6b | If testing coin lines which require deposit of a coin before dial tone is received, or trunks from dial PBX's with tip ground open at line circuit —       | Dial tone heard. |

STEP	ACTION	VERIFICATION
6b (Cont)	Depress red button of 32A test set and insert plug of test set into GRD jack or insert 184B plug into GRD jack. Listen on line and when idle operate handset switch to TALK.	
7b	Release red button of 32A test set or remove 184B plug.	
8c	If line is other than first or intermediate PBX line — Dial number of line with which register under test is associated.	Busy tone heard.
9d	If line is first or intermediate PBX line — Perform Test B to determine that proper final terminal is cross-connected to register under test.	
10	Operate handset switch to MON.	
11e	If register is associated with tip party station of 2-party line — Turn red button of 32A test set to its locking position and insert plug into GRD jack or insert 184B plug into GRD jack.	
12f	If register is associated with coin line where sender makes coin test — Operate red button of 32A test set and insert plug into GRD jack or insert 184B plug into GRD jack.	
13	Listen on line and when idle operate handset switch to TALK.	Dial tone heard.
14	Dial code and line number of charge test call or of local test line.	
15g	If local test line is called — When ringing induction is heard — Restore red button of 32A test set, if operated, or remove 184B plug from GRD jack if used.	
16g	Depress white button of 32A test set for about 5 seconds or insert 184B plug into ANS jack for about 5 seconds to cause an answer condition on line, then remove it.	
17	Operate handset switch to MON.	Register operated correct number of times for class of service indicated on service order.

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STEP	ACTION	VERIFICATION
17 (Cont)		<p><i>Note 1:</i> On multiple registration lines, the initial registration occurs when the answer condition is received. On other lines, registration is made after call is disconnected.</p> <p><i>Note 2:</i> When the register is associated with a coin line, a no-coin or stuck-coin signal will appear at the trouble supervisory position. Proceed to Step 18h.</p>
18h	If register is associated with coin line — Operate handset key to TALK.	
19h	When signal at trouble supervisory position is answered — Indicate that this is a test call; request that signal be disregarded and that circuit be released by priming.	
20h	Operate handset key to MON.	
21i	If necessary to make additional call to check that line is in proper class-of-service line group — Repeat Steps 11e through 20h.	
22	Disconnect handset and 32A test set. Remove 184B plug if used.	
23	Read register under test and enter reading on proper form.	
24j	If no further test is to be made — Remove P4L cord at VIDF.	

**B. Cross-Connections Test Using Buzzer Circuit**

1	At HIDF — Insert plug of W1C cord into BUZ 2 jack.	
2	At final multiple terminal strip — Connect clip of W1C cord to M terminal of line associated with message register under test.	
3	At VIDF — Insert plug of W1C cord into BUZ 1 jack.	
4a	If final terminal numbers are permanently wired to message registers — Momentarily touch clip of cord in BUZ 1 jack to M terminal (M1 terminal if for tip party) at line group terminal strip.	Buzzer momentarily sounded.

STEP	ACTION	VERIFICATION
5b	If final terminal numbers are not permanently wired to message registers — Momentarily touch clip of cord in BUZ 1 jack to terminal on VIDF to which message register is cabled.	Buzzer momentarily sounded.
6c	If no further test is to be made — Remove all cords.	

### C. Cross-Connections Test Using Test Set at Line Finder Frame

- 1 At line finder frame on which appear terminals of line circuit associated with message register under test —  
Using P3E cord, connect A jack (or B-GRD) of test set to A jack (battery and ground) on frame.  
  
*Caution: To avoid possible grounding of the battery supply lead, connect the cord to test set A jack first; when disconnecting, remove the cord from the test set last.*
- 2 Make busy a line finder (or associated district selector) which has access to line circuit.
- 3a If message register cross-connections are being tested in sender selector offices —  
Open H lead between multiple brush that will connect to line terminal and H relay by insulating proper cam spring of associated district selector sequence switch.
- 4a Block nonoperated E relay.
- 5 Manually raise line finder which has been made busy to line terminals associated with register under test. Trip multiple brush to connect with line.
- 6 Insert plug of W1C cord into T1 jack of test set.
- 7 Connect clip of W1C cord to "hunt" spring of multiple brush.
- 8b If cross-connections to be tested are for ring party message register —  
Block operated CO relay associated line circuit.

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STEP	ACTION	VERIFICATION
9c	If message register cross-connections to be tested are for tip party — Observe that CO relay is normal.	
10d	If office has 2-party message rate subscriber lines arranged for remote control zone registration — At test set — Operate key (--).	
11	Operate BUZ key.	SUB BUZ lamp lighted.
12e	If final terminal numbers are permanently wired to message registers — At HIDF — Insert plug of W1C cord into BUZ 2 jack nearest final multiple terminal associated with message register under test.	
13e	Momentarily touch M terminal at final multiple terminal strip with clip of cord in BUZ 2 jack.	Buzzer momentarily sounded.
14f	If final terminal numbers are not permanently wired to message registers — At VIDF — Insert plug of W1C cord into BUZ 2 jack nearest terminal strip to which message register is cabled.	
15f	Momentarily touch terminal to which message register is cabled on VIDF with clip of cord in BUZ 2 jack.	Buzzer momentarily sounded.
16	Restore BUZ key.	SUB BUZ lamp extinguished.
17g	If 100-operation test is to be made on register from line finder frame — At HIDF or VIDF — Remove W1C cord from BUZ 2 jack. Proceed as in Steps 9 through 23 of Test E.	Same as Steps 9 through 23 in Test E except that no line idle or busy indication will be obtained. Also, attempts to originate calls will not be indicated.
18	Disconnect test set from line finder.	
19	Manually operate down-drive magnet of line finder.	
20b	If cross-connections to be tested are for ring party message register — Remove blocking tool from CO relay.	
21a	If message register cross-connections are being tested in sender selector offices — Remove blocking tool from E relay.	

STEP	ACTION	VERIFICATION
22a	Remove insulating tool from sequence relay.	
23	Restore line finder or associated district selector to service.	
24h	If no further test is to be made — Remove all cords.	
<b>D. Cross-Connections Test Using Test Set at Message Register Rack Frame</b>		
4	At test set — Operate DISC ST key to DISC.	
5	Using P4N cord with male connector nearest notched part of shell of 289B plug in T jack, connect T, T1 jacks of test set to T, T1 jacks of test line circuit.	
6a	If office has 2-party message rate subscriber lines arranged for remote control zone registration — At test set — Operate key (—).	
7	Operate BUZ key.	SUB BUZ lamp lighted.
8	At HIDF — Insert plug of W1C cord into most convenient BUZ 2 jack.	
9b	If final terminal numbers are permanently wired to message registers — Momentarily touch M terminal at final multiple terminal strip with clip of cord in BUZ 2 jack.	Buzzers at IDF, message register rack momentarily sounded.
10c	If final terminal numbers are not permanently wired to message registers — At VIDF — Insert plug of W1C cord into BUZ 2 jack.	
11c	Momentarily touch terminal to which message register is cabled with clip of cord in BUZ 2 jack.	Buzzer at IDF momentarily sounded.
12	Restore BUZ key.	SUB BUZ lamp extinguished.
13d	If 100-operation test is to be made on register — At HIDF or VIDF — Remove W1C cord from BUZ 2 jack. At message register rack frame — Proceed according to Steps 8 through 23 of Test E.	

- 14e If no further test is to be made —  
Remove all cords.

#### E. 100-Operation Test of Message Register

**Caution: This test should not be made on a line connected in service except where tests are required by the commercial or accounting department.**

- 4 At test set —  
Operate DISC ST key to DISC.
- 5 Using P4N cord with plug nearest notched part of shell of 289B plug in T jack, connect T, T1 jacks of test set to T, T1 jacks of test line circuit.
- 6a If office has 2-party message rate customer lines arranged for remote control zone registration —  
At test set —  
Operate key (—).
- 7 Operate BUZ key. SUB BUZ lamp lighted.
- 8 Restore BUZ key. SUB BUZ lamp extinguished.
- 9 Read message register under test and enter reading on proper form.
- 10b If testing register cross-connected for service —  
At test set —  
Operate DISC key to PAS ST. TST lamp lighted.  
**Note:** If test set is not equipped with a TST lamp, disregard references to it in this and the following steps.
- 11b Operate PAS ST key to ST. If line is in use —  
TST lamp remained lighted.  
BY lamp lighted.  
**Caution: Do not continue test until TST and BY lamps are extinguished and SL (or S) lamp is lighted.**  
If line is idle —  
TST lamp extinguished.  
SL (or S) lamp lighted.  
Line made busy.  
**Note:** If the customer should attempt to originate a call while the test is being made, SUB BUZ lamp will light. Immediately operate ST key to PAS ST in order not to interfere with service. (If test set is not equipped with TST lamp, operate ST key to

STEP	ACTION	VERIFICATION
11b (Cont)		DISC.) SUB BUZ lamp will be extinguished. After 2 or 3 seconds, operate PAS ST key to ST. TST and BY lamps will light and remain lighted until the line becomes idle. Resume testing when TST and BY lamps are extinguished and SL (or S) lamp is lighted.
12	Set NO and OPR slides of test set rheostat to position where all resistance is cut in.  <i>Note:</i> On repeat test, slides may be left in position used on previous test.	
13	Operate OPR key.	
14	Set OPR slide for specified operate value of message register.	Message register scored once.
15	Release OPR key.	
16	Operate, release OPR key at least three times.	Message register scored once each time OPR key operated.
17	Operate NO key.	
18	Set NO slide for specified nonoperate value of message register.	
19	Release NO key.	
20	Operate, release NO key three times.	Message register not operated.
21	Read message register under test and enter reading on proper form.	
22	Operate interrupter level; allow it to return to normal without interference.	
23	Read message register under test and enter reading on proper form.	Message register reading 100 more than before interrupter lever operated.
24c	If no further test is to be made — Remove all cords.	
→	<b>F. Line Verification Test in Offices Arranged for ANI-Type B</b>	
3	At message register rack frame or number network frame — Insert make-busy plug into T or R jack according to Table B.	T or R lamp lighted.

TABLE B

IF LINE BEING VERIFIED IS	INSERT PLUG IN JACK
Individual line, ring party of a 2-party line, multiparty line or PBX line	R
Tip party of a 2-party line	T

→ If Line is Not a PBX Line or if it is a PBX Line but not Associated With a PBX Arranged for AIOD Service

STEP	ACTION	VERIFICATION
4a	<p>If more than one office is served at message register rack frame or number network frame location — Insert make-busy plug into OF- jack corresponding to office in which line being verified is located.</p> <p><i>Note:</i> In office arranged for physical-theoretical codes, only one OF- jack is provided for both the physical and theoretical portions of the office.</p>	
5b	<p>If number network frame access is provided — Insert make-busy plug into ST jack.</p>	ST lamp lighted.
6	<p>Insert make-busy plug into ANI or ANIG jack according to Table C.</p>	<p>For individual, 2-party, or PBX lines — OF-, TH-, H-, T-, and U- indicator tubes lighted corresponding to directory number of line being verified. For multiparty lines — MP lamp lighted.</p> <p><i>Note 1:</i> The indicator tubes (or MP lamp) are extinguished after an interval of approximately 30 seconds unless plug is removed from ANI or ANIG jack prior to this time.</p> <p><i>Note 2:</i> A mismatch may occur between the lighted indicator tubes and the subscriber directory number if the sleeve lead is improperly cross-connected, the number network is improperly connected to the primary buses, or the patching cord is improperly placed at the VIDF.</p> <p><i>Note 3:</i> If BY or BYI lamp lights, wait until lamp is extinguished, at which time verification proceeds.</p>

## STEP

## ACTION

## VERIFICATION

6  
(Cont)

*Note 4:* If TBL lamp lights, make a repeat verification. TBL lamp lights on any trouble which causes the outpulser to time out. This condition could be caused by a trouble in the outpulser or identifier during or after identification. Therefore, lighting of TBL lamp may be accompanied by a partial or complete display of the indicator tubes. In any case, when TBL lamp lights, disregard the display and make a repeat test.

*Note 5:* If TO lamp lights, make a repeat verification. TO lamp may light due to a heavy traffic condition or trouble in the outpulser connector. If TO lamp lights on successive repeat verifications, this is an indication of trouble in the outpulser connector. To permit tracing the connection, the line verification connector and display circuit is locked to the line verification trunk until released by removing the plug from ANI or ANIG jack.

*Note 6:* SUB lamp lighted if the customer goes off-hook during verification.

TABLE C

WHEN VERIFICATION IS INITIATED	TYPE OF OFFICE WHERE LINE BEING VERIFIED IS LOCATED	INSERT PLUG IN JACK
At message register rack frame	BCO or GCO	ANI
At number network frame that serves only BCO and GCO offices	BCO or GCO	ANI
At number network frame that serves both BCO and GCO offices	BCO	ANI
At number network frame that serves both BCO and GCO offices	GCO	ANIG

7c If necessary to make repeat verification of line under test —  
Remove plug from ANI or ANIG jack.

All lighted indicator tubes, lamps extinguished (except ST and T or R lamps).

8c Repeat Step 6.

STEP	ACTION	VERIFICATION
<p>↗ PBX Line Associated With a PBX Arranged for AIOD Service</p>		
9a	<p>If more than one office is served at message register rack frame or number network frame location — Insert make-busy plug in OF- jack corresponding to the office in which line being verified is located.</p> <p><i>Note:</i> In office arranged for physical-theoretical codes, only one OF- jack is provided for both the physical and theoretical portions of the office.</p>	
10b	<p>If number network frame access is provided — Insert make-busy plug into ST jack.</p>	ST lamp lighted.
↙ 11	<p>Insert make-busy plug into ANI or ANIG jack according to Table C.</p>	<p>OF- indicator tube lighted corresponding to PBX AIOD office digit. TH-, H-, T-, and U- indicator tubes lighted corresponding to arbitrary PBX trunk number.</p> <p><i>Note 1:</i> The indicator tubes are extinguished after an interval of approximately 30 seconds unless plug is removed from ANI or ANIG jack prior to this time.</p> <p><i>Note 2:</i> A mismatch may occur between the lighted indicator tubes and the arbitrary PBX trunk number if the sleeve lead is improperly cross-connected or the patching cord is improperly placed at the VIDF.</p> <p><i>Note 3:</i> If BY or BYI lamp lights, wait until lamp is extinguished, at which time verification proceeds.</p> <p><i>Note 4:</i> If TBL lamp lights, make a repeat verification. TBL lamp lights on any trouble which causes the outpulsor to time out. This condition could be caused by a trouble in the outpulsor or identifier during or after identification. Therefore, lighting of TBL lamp may be accompanied by a partial or complete display on the indicator tubes. In any case, when TBL lamp lights, disregard the display and make a repeat test.</p>

STEP	ACTION	VERIFICATION
Γ 11 (Cont)		<p><i>Note 5:</i> If TO lamp lights, make a repeat verification. TO lamp may light due to heavy traffic condition or trouble in the outpulser connector. If TO lamp lights on successive repeat verifications, this is an indication of trouble in the outpulser connector. To permit tracing the connection, the line verification connector and display circuit is locked to the line verification trunk until released by removing the plug from ANI or ANIG jack.</p> <p><i>Note 6:</i> SUB lamp lighted if PBX station seized incoming PBX trunk.</p>
12c	<p>If necessary to make repeat verification of line under test — Remove plug from ANI or ANIG jack.</p>	<p>All lighted indicator tubes, lamps extinguished (except ST and T or R lamps).</p>
L 13c	<p>Repeat Step 11.</p>	
14	<p>Remove plug from ST jack.</p>	<p>ST lamp extinguished.</p>
15	<p>Remove plug from ANI or ANIG jack.</p>	<p>All lighted indicator tubes, lamps extinguished (except T or R lamp).</p>
16	<p>Remove plug from T or R jack.</p>	<p>T or R lamp extinguished.</p>
17a	<p>If more than one office is served at message register rack frame or number network frame location — Remove plug from OF- jack.</p>	
18	<p>At VIDF — Remove patching cord.</p>	