

MANUAL PBX ACCESS LINE CIRCUIT SD-1E047-01

IN-SERVICE TESTS

607A AND 607B PBX

1. GENERAL

1.01 This section provides in-service test procedures for the access line circuit (line circuit) used at a 607A or 607B manual PBX when the PBX operates with a 4-wire switching center as used initially in AUTOVON. These tests enable a confidence check to be made of the line circuit by establishing voice connections with appropriate test equipment at the switching center. Proper operation of the line circuit is verified by observing lamps at the PBX and *principal* relay operation at the line circuit. Additional verification is obtained by satisfactory transmission between the line circuit under test and the 4-wire switching center.

Note: The relays which are observed in these tests are not the only relays which may operate or release for a given functional operation. They are termed *principal* relays in these tests because their operation or release indicates receipt or transmission of principal signals by the equipment under test.

1.02 The tests provided in this section are as follows:

A. *Outgoing Call (TOUCH-TONE Dial):* This test checks the ability of the line circuit to function when a ROUTINE, TOUCH-TONE call is made toward the 4-wire switching center.

B. *Outgoing Call (Rotary Dial):* This test checks the ability of the line circuit to func-

tion when a ROUTINE, rotary dial call is made toward the 4-wire switching center.

C. *ROUTINE Incoming Call:* This test checks the ability of the line circuit to respond to steady off-hook signals from a 4-wire switching center.

D. *Precedence Incoming Call:* This test checks the ability of the line circuit to respond to the special signaling used in Precedence calls.

E. *Preemption of Existing Connection:* This test checks the ability of the line circuit to receive a preempt on-hook signal and a distinctive disconnect tone.

F. *Night and Through-Dial Operation:* This test checks the operation of the line circuit when it is used for night or through-dial operation.

1.03 These tests assume that the PBX and associated circuits, and the switching center, are all operating properly. Obvious station defects such as broken wires, loose connections, etc. should be corrected prior to performing these tests. Tests of TOUCH-TONE keying, including precedence keying, may be performed by dialing a preselected number which connects the line circuit to a TOUCH-TONE and ringing test circuit at the 4-wire switching center.

2. METHOD

STEP	ACTION	VERIFICATION
A. Outgoing Call (TOUCH-TONE Dial)		
1	At PBX — Insert call cord plug into access line trunk TALK jack and when dial tone is received, dial 4-wire testboard using TOUCH-TONE dial.	At PBX — Busy lamp lights, cord lamp lights then extinguishes when testboard answers. At line circuit — RS, DP relays operate; E relay operates when testboard answers.
2	Conduct talking test with 4-wire testboard.	At PBX — Conversation satisfactory.
3	Terminate call; restore PBX to normal.	Busy lamp extinguishes when testboard disconnects. At line circuit — RS, DP relays release; E relay releases when testboard disconnects.
B. Outgoing Call (Rotary Dial)		
1	At PBX — Insert call cord plug into access line trunk NIGHT & ROTARY jack.	At PBX — Busy lamp lights. At line circuit — NRS, DP relays operate.
2	When dial tone is received, dial 4-wire testboard.	DP relay follows rotary dial pulses; E relay operates when testboard answers.
3	When testboard answers, conduct talking test.	At PBX — Conversation satisfactory.
4	Terminate call; restore PBX to normal.	Busy lamp extinguishes when testboard disconnects. At line circuit — DP, NRS relays release; E relay releases when testboard disconnects.
C. ROUTINE Incoming Call		
1	At PBX — Contact 4-wire testboard and request that a ROUTINE call be placed to line circuit under test.	
2	Ensure PBX is on-hook and await incoming call.	At line circuit — When ringing signal is received from testboard, E relay operates causing R relay to operate and release repeatedly at regular intervals. R relay operated provides ringing current to PBX and optional return of audible signaling to calling party. At PBX — When ringing signal is received, line lamp lights.

STEP	ACTION	VERIFICATION
3	Insert answer cord into TALK jack.	Line lamp extinguishes, busy lamp lights. At line circuit — RS, DP relays operate.
4	Conduct talking test.	At PBX — Conversation satisfactory.
5	Terminate call; restore PBX to normal.	Busy lamp extinguishes when testboard disconnects. At line circuit — DP, RS relays release; E relay releases when testboard disconnects.

D. Precedence Incoming Call

1	At PBX — Contact 4-wire testboard and request that a Precedence call be placed to line circuit under test.	
2	Go on-hook and await incoming call.	At PBX — When precedence signaling is applied, line lamp flashes. At line circuit — When precedence signaling is applied, E relay operates and releases repeatedly until call is answered; E1 and P relays operate.
		<i>Note:</i> For a Precedence call, E relay is operated for approximately 1.6 seconds and released for 0.345 second. If P relay operates and locks for duration of call, timing interval may be considered satisfactory.
3	Insert answer cord into TALK jack.	RS, DP, and L relays operate. At PBX — Line lamp extinguishes.
4	Terminate call; restore PBX to normal.	Busy lamp extinguishes when testboard disconnects. At line circuit — DP, RS relays release.

E. Preemption of Existing Connection

1	At PBX — Contact 4-wire testboard and request that a preempt signal be applied toward line circuit under test.	At PBX — When preemption signal is applied: single flash of cord lamp occurs, distinctive tone is audible in head/handset, 4-wire switching center disconnects, cord lamp lights steadily. At line circuit — E relay releases for approximately 0.345 second, reoperates, then finally releases as switching center disconnects.
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STEP	ACTION	VERIFICATION
2	Restore PBX to normal.	
F. Night and Through-Dial Operation		
1	At PBX — Connect answer cord to desired extension jack and connect call cord to NIGHT & ROTARY jack.	At PBX — Busy lamp lights. At line circuit — NRS and NCT relays operate.
2	Operate NIGHT & THRU dial key.	
3	At extension — Go off-hook.	DP, D2 relays operate.
4	Dial 4-wire testboard.	If rotary dial is used, DP relay follows dial pulses; E and E1 relays operate when testboard answers.
5	Request testboard to place call to line circuit under test and then go on-hook.	At extension — When ringing signal is received, audible ringing occurs. At line circuit — When ringing signal is applied, E relay operates and R relay operates and releases repeatedly until extension answers.
6	Answer incoming call.	At line circuit — DP relay operates. At extension — Conversation satisfactory.
7	Request testboard to place Precedence call to line circuit under test and then go on-hook.	At extension — When precedence signal is received, audible ringing occurs (rings for 1.5 seconds, off for 0.345 second).
8	Answer incoming call.	Ringing ceases, conversation satisfactory.
9	Terminate call; place extension handset on-hook.	At line circuit — DP relay releases; E relay releases when testboard disconnects.
10	At PBX — Restore all circuits and equipment to normal.	