OUTPULSER CIRCUITS

MISCELLANEOUS TESTS

NO. 1 CROSSBAR OFFICES

ARRANGED FOR ANI-TYPE B

1. GENERAL

1.01 This section describes a method of testing outpulser circuit SD-95811-01 in No. 1 crossbar offices using miscellaneous test equipment.

1.02 This section is reissued to: (1) change title to restrict this section to offices with ANI-type B, (2) reletter Tests G through L, and (3) add Tests G, N, O, and P to test outpulser circuits when arranged for PBX automatic identified outward dialing (AIOD). Since this reissue is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The tests covered are:

A. Outpulser Make-Busy Test: This test checks that a busy indication is given to the outpulser connector when the outpulser is busy or when a fuse is operated.

B. All Outpulsers Busy Alarm: This test checks that a lamp lights and the minor alarm occurs if all outpulsers are busy; or, when only one outpulser is provided, if it is busy for a continuous period of 41 to 60 seconds after which a major alarm occurs.

C. Work Timer — ETM1 Relay Test: This test checks the two work timing intervals provided for timing various functions of the outpulser circuit.

D. Party Test, Abandoned Call, and AIOD Timing — ETM2 Relay Test: This test checks the time delay allowed for party test, abandoned call, and AIOD class calls.

E. Overall Timing — TAL1 Relay Test: This test checks the overall timing interval between seizure and release of the outpulser.

F. Trouble Ticketer Timing — ETT Relay Test: This test checks the timing interval allowed for seizure of the trouble ticketer and completion of its functions.

G. Identified Outward Dialing Timer — IOD1 Relay Test — If Outpulser is Arranged for AIOD Class of Service: This test checks that overall timing requirements for AIOD class of service are met.

H. Digit Pulsing — Pulse Generator Test: This test checks that pulsing requirements for digit pulsing are met.

I. KP Signal Pulsing — Pulse Generator Test: This test checks that pulsing requirements for KP signal pulsing are met.

J. Outpulser Preference Chain — Transfer and Alarm Features — In Offices Where More Than One Outpulser is Furnished in An Identifier Group: This test checks the transfer and alarm features associated with the preference chain through which outpulsers bidding for an identifier are served in sequence. The regular and emergency preference chains are tested.

K. Outpulser Preference Chain — Preference Control — In Offices Where More Than One Outpulser is Furnished in an Identifier Group: This test checks the ability of the outpulser preference chain to advance the preference to the next higher numbered outpulser when the outpulser used on the preceding call has released its OP- relay. The regular and emergency preference chains are tested.

L. Trunk Information — Overregistration Check: This test checks the ability of the outpulser to make a 1-out-of-2 or 2-out-of-4 check of the trunk information relays and to sound a minor alarm and call in the trouble ticketer when an overregistration occurs.

M. Overall Timing Feature: This test checks that the overall timing feature is operative and is activated under the following conditions: seizure of the outpulser and false operation of one of the relays for which it provides a standing ground test.

N. Recognition of AIOD Class of Service and Translator Seizure Test — If Outpulser is Arranged for AIOD Class of Service: This test checks that the outpulser can recognize an AIOD class call and subsequently seize the translator circuits.

O. Translator Start Lead Cross Test — If More Than One Outpulser is Provided Arranged for AIOD Class of Service: This test checks that only one translator circuit can be seized by the outpulser; and, if more than one translator circuit should be seized, the AIOD functions of the outpulser are canceled.

P. Permanent Signal Cancellation of AIOD Class of Service Test — If Permanent Signal Trunks are Provided: This test checks that permanent signal testing will cancel AIOD functions of the outpulser.

1.04 During the performance of Tests B, J, and K all outpulsers in the preference chain may be denied access to an identifier.

1.05 During Test L the outpulser failure (OPF) register will score six times. Reporting of this register operation should be in accordance with local instructions.

1.06 *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.

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.

2.02 Blocking an dinsulating tools as required. Use tools and apply as covered in Section 069-020-801.

2.03 Test receiver, 716C receiver, or equivalent, attached to a W2AB cord equipped with two 360A tools (2W21A cord); a KS-6278 connecting clip; and a 411A (test pick) tool (for use in checking the presence of ground and for applying ground).

2.04 Test set for timing tests J24753A (SD-25707-01) with P3K cord, 6 feet long, equipped with two 310 plugs (3P15A cord); W3M cord, 6 feet long, equipped with 310 plug, 360A, B, and C tools (3W4A cord); one KS-6278 connecting clip; and two 624A (connector for wire-spring relay terminal) tools.

Note: Description of timing test set and method of operation for making timing tests are covered in Section 100-130-101.

2.05 Pulse checking test set J94723 (SD-96362-01) provided with (a) and (b) below or (a) and (c) below:

(a) W2W cord, 6 feet long, equipped with 310 plug, 360B and C tools (2W17A cord); two 639A (connector for fixed contact of wire-spring relay) tools; and two 651D (relay contact cover for test connection) tools.

(b) W3M cord, 6 feet long, equipped with 310 plug, 360A, B, and C tools (3W4A cord); two 364 or 365 tools (for use when battery and ground supply does not terminate at a jack).

(c) P3K cord equipped with two 310 plugs (for use when battery and ground supply terminates at a jack).

TABLE A

APPARATUS	TESTS											
	A	B	C THRU G	H	I	J	K	L	M	N	O	P
Miscellaneous Circuit — Trouble Ticketer Frame SD-95823-01	1	1	1	1	1	–	1	1	1	1	1	1
Miscellaneous Circuit — Outpulser Frame SD-95820-01	1	–	–	–	–	–	–	–	–	–	–	–
Outpulser Connector Circuit SD-95890-01	1	–	–	–	–	–	–	–	–	–	–	–
Outpulser Circuit SD-95811-01	–	–	1	1	1	–	–	–	–	–	–	–
Tool (2.02)	√	√	√	√	√	√	√	√	√	√	√	√
329A (make-busy) Plug	–	–	1	1	1	–	1	2	2	1	1	1
Test Receiver (2.03)	1	–	–	–	–	–	1	–	–	–	–	–
Test Set (2.04)	–	–	1	–	–	–	–	–	–	–	–	–
Test Set (2.05)	–	–	–	1	1	–	–	–	–	–	–	–
KS-3008 Stopwatch or equivalent	–	1	–	–	–	–	–	–	1	–	–	–

√ As required

3. PREPARATION

STEP	ACTION	VERIFICATION
Tests C Through I and K Through P		
1	At trouble ticketer frame — Insert make-busy plug into OP-B jack of outpulser under test.	

4. METHOD

STEP	ACTION	VERIFICATION
	A. Outpulser Make-Busy Test	
1	At outpulser frame — Momentarily operate FA relay.	At outpulser under test — AOPB relay operated. Fuse alarm occurred.

STEP	ACTION	VERIFICATION
2a	If more than one outpulser is furnished — Momentarily operate AR key.	AOPB relay released. Fuse alarm silenced.
3	Repeat Steps 1 and 2a for each outpulser.	
4	At outpulser under test — Block nonoperated STM1 and TAL relays.	
5	Block operated RL relay.	Ground present at 6 of MB relay.
6	Remove blocking tool from RL relay.	Ground absent at 6 of MB relay.
7	Block operated ST relay.	Ground present at 6 of MB relay.
8	Remove blocking tool from ST relay.	Ground absent at 6 of MB relay.
9	Remove blocking tool from TAL relay.	
10	Block nonoperated TAL1 relay.	
11	Operate ON relay.	AOPB relay operated. Ground present at 6 of MB relay.
12	Momentarily operate RL relay.	ON and AOPB relays released. Ground absent at 6 of MB relay.
13	Remove blocking tools from STM1 and TAL1 relays.	
14a	If more than one outpulser is furnished — Repeat Steps 4 through 13 for each outpulser.	

B. All Outpulsers Busy Alarm

Note: Complete this test as quickly as possible. (See 1.04.)

1	At outpulser — Block operated AOPB relay in each outpulser of preference chain.	At trouble ticketer frame — When last AOPB relay operated — AOB lamp lighted. After 40 to 60 seconds — AOBA lamp lighted. Minor alarm occurred.
2	Remove blocking tool from AOPB relay in one outpulser.	AOB lamp extinguished. *Note:* AOB lamp will light if outpulser is serving a call.
3	At trouble ticketer frame — Momentarily operate AR key.	AOBA lamp extinguished. Minor alarm retired.

STEP	ACTION	VERIFICATION
4	Block operated AOPB relay in outpulser selected in Step 2.	AOB lamp lighted. After 40 to 60 seconds — AOBA lamp lighted. Minor alarm occurred.
5	Repeat Steps 2 through 4 for each outpulser.	
6	Remove blocking tool from AOPB relay in all outpulsers.	AOB lamp extinguished.
7a	If one outpulser is furnished — At outpulser — Block operated AOPB relay.	At trouble ticketer frame — AOB lamp lighted. After 40 to 60 seconds — AOBA lamp lighted. Major alarm occurred.
8a	Remove blocking tool from AOPB relay.	AOB lamp extinguished. *Note:* AOB lamp will light if outpulser is serving a call.
9a	At trouble ticketer frame — Momentarily operate AR key.	AOBA lamp extinguished. Major alarm retired.
	C. Work Timer — ETM1 Relay Test	
2	At outpulser — Using test set for timing tests, make timing test of ETM1 relay timer in accordance with timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	D. Party Test, Abandoned Call, and AIOD Timing — ETM2 Relay Test	
2	At outpulser — Using test set for timing tests, make timing test of ETM2 relay timer in accordance with timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	E. Overall Timing — TAL1 Relay Test	
2	At outpulser — Using test set for timing tests, make timing test of TAL1 relay timer in accordance with timing requirements table in SD-95811-01.	Timing requirements met.

STEP	ACTION	VERIFICATION
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	F. Trouble Ticketer Timing — ETT Relay Test	
2	At outpulser — Using test set for timing tests, make timing test of ETT relay timer in accordance with timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	G. Identified Outward Dialing Timer — IOD1 Relay Test — If Outpulser is Arranged for AIOD Class of Service	
2	At outpulser — Using test set for timing tests, make timing test of IOD1 relay timer in accordance with timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	H. Digit Pulsing — Pulse Generator Test	
2	At outpulser — Make percent break and pulse per second tests using Section 163-653-501 and pulse generator timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	
	I. KP Signal Pulsing — Pulse Generator Test	
2	At outpulser — Make percent break and pulse per second tests using Section 163-653-501 and pulse generator timing requirements table in SD-95811-01.	Timing requirements met.
3	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
4	Repeat Steps 1 through 3 for each outpulser.	

STEP	ACTION	VERIFICATION
	J. Outpulser Preference Chain — Transfer and Alarm Features — In Offices Where More Than One Outpulser is Furnished in an Identifier Group	
	Note: Complete this test as quickly as possible. (See 1.04.)	
1	At outpulser frame — Block operated TR relay.	
2	At last outpulser in preference chain — Momentarily insulate 8B of OP- relay.	At outpulser frame — CH lamp lighted. Minor alarm occurred.
3	At outpulser frame — Momentarily operate AR key.	CH lamp extinguished. Minor alarm retired.
4	At first outpulser in preference chain — Momentarily insulate 12B of OP- relay.	CH lamp lighted. Minor alarm occurred.
5	At outpulser frame — Remove blocking tool from TR relay.	TR relay remains operated.
6	Momentarily operate AR key.	CH lamp extinguished. TR relay released. Minor alarm retired.
7	Block nonoperated TR relay.	
8	Operate TR key.	
9	At last outpulser in preference chain — Momentarily insulate 8B of E- relay.	CH lamp lighted. Minor alarm occurred.
10	At outpulser frame — Momentarily operate AR key.	CH lamp extinguished. Minor alarm retired.
11	At first outpulser in preference chain — Momentarily insulate 12B of E- relay.	CH lamp lighted. Minor alarm occurred.
12	At outpulser frame — Momentarily operate AR key.	CH lamp extinguished. Minor alarm retired.
13	Remove blocking tool from TR relay.	TR relay operated.
14	Restore TR key.	TR relay released.
15	When all outpulsers in preference chain are idle — At any outpulser — Momentarily insulate 8B of OP- relay.	CH lamp lighted. TR relay operated. Minor alarm occurred.
16	At outpulser frame — Momentarily operate AR key.	CH lamp extinguished TR relay released. Minor alarm retired.

STEP	ACTION	VERIFICATION
17	Operate TR key.	TR relay operated.
18	When all outpulsers in preference chain are idle — At any outpulser — Momentarily insulate 8B of any E- relay.	CH lamp lighted. TR relay released. Minor alarm occurred.
19	At outpulser frame — Momentarily operate AR key.	CH lamp extinguished. TR relay operated. Minor alarm retired.
20	Restore TR key.	TR relay released.

K. Outpulser Preference Chain — Preference Control — In Offices Where More Than One Outpulser is Furnished in an Identifier Group

Note: Complete this test as quickly as possible. (See 1.04.)

2	At outpulser under test — Block nonoperated STM1 and TAL relays.	
3	Block operated L1, PK, and ST relays.	At outpulser under test — OP- and OC (A-, B-, C-, D-, E-) relays operated. At all lower numbered outpulsers — Ground absent at 8B of OP- relay. At all higher numbered outpulsers — Ground absent at 12B of OP- relay.
4	Block operated IRL relay.	At outpulser under test — OP- and OC (A-, B-, C-, D-, E-) relays released.
5	At outpulser frame — Operate TR key.	
6	At outpulser under test — Remove blocking tool from IRL relay.	E- and OC (A-, B-, C-, D-, E-) relays operated. At all lower numbered outpulsers — Ground absent at 8B of E- relay. At all higher numbered outpulsers — Ground absent from 12B of E- relay.
7	Remove blocking tools from L1, PK, and ST relays.	At outpulser under test — E- and OC (A-, B-, C-, D-, E-) relays released.
8	Remove blocking tools from STM1 and TAL relays.	
9	At outpulser frame — Restore TR key.	
10	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	

STEP	ACTION	VERIFICATION
11	Repeat Steps 1 through 10 for each outpulser in preference chain.	

L. Trunk Information — Overregistration Check

2	At trouble ticketer frame — Insert make-busy plug into TTBOP- jack associated with outpulser under test.	
3	At outpulser — Block operated RP relay.	
4	Momentarily operate TP relay.	At outpulser — TTST relay momentarily operated. Minor alarm occurred. *Note:* If ZI option is provided and DL lamp lighted, a major alarm occurred.
5	At trouble ticketer frame — Momentarily operate AR key.	Alarm retired.
6	At outpulser — Remove blocking tool from RP relay.	
7	Insulate 4M of TTST relay.	
8	Perform the checks given in Table B.	

TABLE B

BLOCK OPERATED RELAY	MOMENTARILY OPERATE RELAY	VERIFICATION
I1	I2	TTST relay momentarily operated.
I1	I3	TTST relay momentarily operated.
I1	I4	TTST relay momentarily operated.
I2	I3	TTST relay momentarily operated.
I2	I4	TTST relay momentarily operated.
I3	I4	TTST relay momentarily operated.

STEP	ACTION	VERIFICATION
9	Remove blocking tool from I3 relay.	
10	Remove insulating tool from TTST relay.	
11	At trouble ticketer frame — Remove make-busy plugs from TTBOP- and OP-B jacks.	
12	Repeat Steps 1 through 11 for each outpulser.	
	M. Overall Timing Feature	
2	At trouble ticketer frame — Insert make-busy plug into TTBOP- jack associated with outpulser under test.	
3	At outpulser under test — Momentarily release CH1 relay.	At outpulser under test — TAL relay momentarily operated.
4	Momentarily release CH2 relay.	TAL relay momentarily operated.
5	Momentarily operate AIB relay.	TAL relay momentarily operated.
6	Momentarily operate CTT relay.	TAL relay momentarily operated.
7a	If operation with permanent signal trunks is provided — Momentarily operate PSK relay.	TAL relay momentarily operated.
8	Block nonoperated STM1 relay.	
9	Operate ON relay.	At outpulser frame — After 7 to 11 seconds — TA lamp lighted. Major alarm occurred.
10	At outpulser frame — Momentarily operate AR key.	TA lamp extinguished. Major alarm retired.
11	At outpulser under test — Remove blocking tool from STM1 relay.	
12	At trouble ticketer frame — Remove make-busy plugs from TTBOP- and OP-B jacks.	
13	Repeat Steps 1 through 12 for each outpulser.	
	N. Recognition of AIOD Class of Service and Translator Seizure Test — If Outpulser is Arranged for AIOD Class of Service	
2	At outpulser under test — Block nonoperated TTST relay.	

STEP	ACTION	VERIFICATION
3	Block operated IRL relay.	
4	Block nonoperated STM2 relay.	
5	Block operated OF- relay associated with AIOD PBX group.	At outpulser under test — IOD relay operated. IOD1 relay operated.
6	Momentarily operate TS- relay.	CON relay operated. IOD1 relay released. TS- relay operated. FTM relay operated.
7	Remove blocking tool from OF- relay.	IOD relay released. TS- relay released. CON relay released. FTM relay released.
8a	If more than one translator is furnished — Repeat Steps 5 through 7 for each TS relay.	
9	Remove blocking tools from STM2, IRL, and TTST relays.	
10	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
11	Repeat Steps 1 through 9 for each outpulser in preference chain.	

O. Translator Start Lead Cross Test — If More Than One Outpulser is Provided Arranged for AIOD Class of Service

2	At outpulser under test — Block nonoperated TTST relay.	
3	Block nonoperated STM2 relay.	
4	Block operated OF- relay associated with AIOD PBX group.	At outpulser under test — IOD relay operated.
5	Momentarily operate TS0 relay.	CON relay operated. TS0 relay operated.
6	Momentarily operate TS1 relay.	TSX relay operated. SNR relay operated. TS0 and TS1 relays released. CON relay released.
7	Remove blocking tool from OF- relay.	IOD relay released. TSX relay released. SNR relay released.
8	Block operated OF- relay associated with AIOD PBX group.	IOD relay operated.

STEP	ACTION	VERIFICATION
9	Momentarily operate TS1 relay.	CON relay operated. TS1 relay operated.
10	Momentarily operate TS2 relay.	TSX relay operated. SNR relay operated. TS1 and TS2 relays released. CON relay released.
11	Remove blocking tools from OF-, STM2, and TTST relays.	
12	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
13	Repeat Steps 1 through 12 for each outpulser in preference chain.	

P. Permanent Signal Cancellation of AIOD Class of Service Test— If Permanent Signal Trunks are Provided

2	At outpulser under test — Block nonoperated TTST relay.	
3	Block nonoperated STM2 relay.	
4	Block operated OF- relay associated with AIOD PBX group.	At outpulser under test — IOD relay operated.
5	Block operated PS relay.	SNR relay operated.
6	Remove blocking tool from OF- relay.	IOD relay released. SNR relay released.
7	Remove blocking tools from STM2 and TTST relays.	
8	At trouble ticketer frame — Remove make-busy plug from OP-B jack.	
9	Repeat Steps 1 through 8 for each outpulser in preference chain.	