

TRANSLATORS
TESTS USING OFFICE TEST FRAME SD-27633-01 (H-595-590)
NO. 5 CROSSBAR OFFICES ARRANGED FOR LAMA OR ANI

1. GENERAL

PAGE

1.01 This section describes a method of testing translator circuits in No. 5 crossbar offices arranged for local automatic message accounting (LAMA) or automatic number identification (ANI), using office test frame test circuit (OTF) SD-27633-01 (H-595-590), Issue 1 and trouble indicator and connector circuit (TIC) SD-27634-01.

1.02 This section is reissued for the following reasons:

- (a) To add the SD- and H- numbers in the title to identify the OTF as an Issue 1
- (b) To revise Tests A, B, C, and E
- (c) To make minor changes as required.

Since this reissue is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The tests covered are:

A. Operate Test of Directory Number Cold Cathode Tubes and Check of Directory Number Coils and Alternate Surge Start: This test checks the operation of the directory number coils and the associated cold cathode tubes with a test-operate current flow condition. A check is also made that both surge start circuits are used alternately. . . .

3

B. Transposition Test of VF and SW Leads: This test checks for transpositions in the vertical file and switch leads to transverter connectors. . . .

5

C. Vertical File Lead Cross Detection:

This test checks the ability of the translator to detect crosses or false grounds on the vertical file leads that cause two or more VF- relays to operate. . . .

7

D. Equipment Terminal Cross or Ground Detection: This test checks

the ability of the translator to detect crosses between, or false grounds on, translator equipment terminals. . . .

9

E. Translator Identification: This

test checks the translator identification information on a trouble indicator for the translator number and vertical group number. . . .

10

F. Make Busy: This test checks the

ability of the translator to transmit the translator make-busy indication to each transverter. . . .

12

G. Transverter Preference Chain Transfer and Alarm: This test

checks the transfer and alarm features associated with the transverter preference chains. . . .

14

H. TB Lead Ground Detection: This

test checks the ability of the translator to detect a false ground on the TB (translator-busy) lead to the transverters. . . .

14

I. Overlap: This test checks the overlap

feature of the translator to delay the operation of the connector relays until the vertical group relay used in a preceding call has released. . . .

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- 1.04 Tests A, B, and E require actions at the transverters and line link frames.
- 1.05 Test A requires action at the translator under test.
- 1.06 Test D requires action at sender selected for test.
- 1.07 Tests A through E require verification at the trouble indicator frame.
- 1.08 Cold cathode tubes that fail during performance of Test A should be replaced, whether or not they operate satisfactorily, when checked with the cold cathode tube test set per J94731A or the replaced J24754A.

1.09 Lettered Steps: A letter a, b, c, etc, added to a step number in Parts 3 and 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 listed in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.
- 2.02 A minimum of five shields is required, but if desired and if sufficient tube shields are available, the tubes on a portion of or on the entire frame may be equipped with shields to facilitate making this test.
- 2.03 67C test set or equivalent, equipped with a KS-6278 connecting clip (for use in checking the presence or absence of battery or ground).
- 2.04 Patching cord, P3D cord, 6 feet long, equipped with two 309 plugs (3P3A cord) (used for patching from MB1 and MB2 jack field).

TABLE A

APPARATUS	TESTS								
	A	B	C	D	E	F	G	H	I
KS-14378 Shield (2.02)	√								
Test Set (2.03)									1
322A (make-busy) Plug	1	1	1	2	1	2			1
Patching Cord (2.04)			√						
Patching Cord (2.05)	1	1	1		1	1			
Patching Cord (2.06)	1	1	1		1	1			
Testing Cord (2.07)			1						
Testing Cord (2.08)				1				1	
Tools (2.09)	√			√			√		√
Meter (2.10)				1					

√ As required.

- 2.05 Patching cord, P3E cord, 8 feet long, equipped with two 310 plugs (3P63 cord) (used for patching SP jack to OTL jack on jack, lamp, and key circuit).
- 2.06 Patching cord, P3U cord, 7 feet long, equipped with one 310 plug and one 351A plug (used for patching SP jack to line location on line link frame).
- 2.07 Testing cord, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord) and two 624B (terminal connector) tools (used when interconnecting punchings on terminal strips).
- 2.08 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one KS-6278 connecting clip, and one 411A (test pick) tool (for use in applying momentary ground on terminal strip punchings).
- 2.09 Blocking and insulating tools as required. Use tools and apply as covered in Section 069-020-801.
- 2.10 KS-14510 L5 meter or equivalent (used for measuring resistance values).

3. PREPARATION

- 3.01 *Test A:* From local records, obtain the line equipment numbers and associated directory

or billing numbers for lines served by the translator under test, selecting lines that use, at least once, each of digits 0 through 9 in each of the directory or billing number thousands, hundreds, tens, and units positions. In addition, select these lines to use each equipped office digit position, including each office coil when two office coils serve the same office digit.

3.02 Test B: From local records, obtain the line equipment numbers and associated directory or billing numbers for lines served by the translator under test, selecting lines that use, at least once, each of vertical files 0 through 4 and horizontal groups (switches) 0, 1, 3, and 6.

3.03 Test C: From local records, obtain the line equipment number and the associated directory or billing number for any line served by the translator under test.

3.04 Test E: From local records, obtain the line equipment numbers and associated directory or billing numbers for lines served by the translator under test, selecting a line for each vertical group served by the translator.

3.05 Test G: From local records, obtain the line equipment number and the associated directory or billing number for any line served by the translator under test.

3. PREPARATION (Cont)

STEP	ACTION	VERIFICATION
Tests A, B, C, E		
1	At OTF— Restore all keys and switches.	All lamps extinguished.
2	At TIC— Momentarily operate RLS key.	All lamps extinguished.
3a	If office is equipped with more than one transverter— At jack, lamp, and key circuit— Insert make-busy plug into TVMB- jack of transverter used for test.	
4	At OTF— Operate TV-, TVR, MCB, MKR-, CL-, OTLP, OGT, MFS, FS- keys.	
5b	If trunk is arranged for wink start— Operate WK key.	

4. METHOD

STEP	ACTION	VERIFICATION
A. Operate Test of Directory Number Cold Cathode Tubes and Check of Directory Number Coils and Alternate Surge Start		
6	At translator frame under test— Block operated TOP relay.	

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STEP	ACTION	VERIFICATION
7	Place KS-14378 shields on all tubes or on tubes corresponding to directory or billing number. (Refer to 1.08 and 2.02.)	
8	At line link frame— Patch SP jack to line switch vertical as determined in 3.01.	
9	At OTF— Patch SP jack to OTL jack.	
10	Set PREL D switch as required for preliminary digit.	
11	Operate 7D key. <i>Note:</i> If call is 10-digit, do not operate any -D key.	
12c	If office is arranged for AMA— Set A- through K- DIAL switches as required to select an AMA route to a distant office test number.	
13c	Set A- through K- SDR switches as required corresponding to digits that sender will output.	
14c	Operate -SD key for number of digits sender will output. <i>Note:</i> If call is 10-digit, do not operate any -SD key.	
15d	If office is arranged for ANI— Set A- through K- DIAL switches as required to select an ANI route to any distant office test number.	
16d	Set A- SDR switch as required for preliminary digit.	
17d	Set B- through H- SDR switches for directory number of line used in test.	
18d	Operate ANI, 8SD keys.	
19	Operate ST key.	At TIC— TV-, TLR-, FU2/5, VG2/6, HG2/5, VF1/5, TH-, HN-, T-, U- lamps lighted corresponding to directory or billing number of line link location.

STEP	ACTION	VERIFICATION
20	At OTF— Restore ST key.	
21	At TIC— Momentarily operate RLS key.	All lamps extinguished.
22	Repeat Steps 6 through 21 for each line as determined in 3.01.	
	Note: While tests are being performed at the translator frame, note that W1 and Z relays are both operated and then released on alternate calls.	
23	At translator frame— Remove all shields from tubes.	
24	Remove blocking tool from TOP relay.	
25	At line link frame— Remove patching cord.	
26	At OTF— Remove patching cord.	
27a	If office is equipped with more than one transverter— At jack, lamp, and key circuit— Remove make-busy plug from TVMB- jack.	
28	At OTF— Restore all keys and switches not required in next test.	

B. Transposition Test of VF and SW Leads

- | | | |
|---|---|--|
| 6 | At line link frame—
Patch SP jack to line switch vertical as determined in 3.02. | |
| 7 | At OTF—
Patch SP jack to OTL jack. | |
| 8 | Set PREL D switch as required for preliminary digit. | |
| 9 | Operate 7D key. | |

Note: If call is 10-digit, do not operate any -D key.

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STEP	ACTION	VERIFICATION
10c	If office is arranged for AMA— Set A- through K- DIAL switches as required to select an AMA route to a distant office test number.	
11c	Set A- through K- SDR switches as required corresponding to digits that sender will output.	
12c	Operate -SD key for number of digits sender will output.	
	<i>Note:</i> If call is 10-digit, do not operate any -SD key.	
13d	If office is arranged for ANI— Set A- through K- DIAL switches as required to select an ANI route to any distant office test number.	
14d	Set A- SDR switch as required for preliminary digit.	
15d	Set B- through H- SDR switches for directory number of line used in test.	
16d	Operate ANI, 8SD keys.	
17	Operate ST key.	At TIC— TV-, TLR-, FU2/5, VG2/6, HG2/5, VF1/5 lamps lighted corresponding to line link location.
18	At OTF— Restore ST key.	
19	At TIC— Momentarily operate RLS key.	All lamps extinguished.
20	Repeat Steps 6 through 19 for each directory or billing number and line location as determined in 3.02.	
21a	If office is equipped with more than one transverter— At jack, lamp, and key circuit— Remove make-busy plug from TVMB- jack.	
22a	Repeat Steps 3a through 21a for other transverters.	
23	At line link frame— Remove patching cord.	

STEP	ACTION	VERIFICATION
24	At OTF— Remove patching cord.	
25	Restore all keys and switches not required in next test.	

C. Vertical File Lead Cross Detection

6	At line link frame— Patch SP jack to line switch vertical as determined in 3.03.	
7	At OTF— Patch SP jack to OTL jack.	
8	Patch SDR jack in MB2 jack field to SMB-jack for sender to be used for test.	
9	Patch 0 through 9 jacks, as required, in MB1 jack field to SMB- jacks of all other senders in same sender group.	
10	Set PREL D switch as required for preliminary digit.	
11	Operate 7D key. <i>Note:</i> If call is 10-digit, do not operate any -D key.	
12c	If office is arranged for AMA— Set A- through K- DIAL switches as required to select an AMA route to a distant office test number.	
13c	Set A- through K- SDR switches as required corresponding to digits that sender will output.	
14c	Operate -SD key for number of digits sender will output. <i>Note:</i> If call is 10-digit, do not operate any -SD key.	
15d	If office is arranged for ANI— Set A- through K- DIAL switches as required to select an ANI route to any distant office test number.	
16d	Set A- SDR switch as required for preliminary digit.	

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- | STEP | ACTION | VERIFICATION |
|-------------|--|---------------------|
| 17d | Set B- through H- SDR switches for directory number of line used for test. | |
| 18d | Operate ANI, 8SD keys. | |
| 19 | At selected sender—
Using testing cord, connect VF- terminal associated with vertical file location, as noted in Step 6, to any other VF- terminal listed in Table B. | |

TABLE B	
VF TERMINAL (TERMINAL STRIP L)	VERTICAL FILE
14	0
24	1
34	2
44	3
54	4

- | | | |
|-----|--|---|
| 20 | At OTF—
Operate ST key. | At TIC—
XVF, TV-, TLR- lamps lighted.
More than 1/5 lamps lighted for VF- location. |
| 21 | At OTF—
Restore ST key. | |
| 22 | At TIC—
Momentarily operate RLS key. | All lamps extinguished. |
| 23 | At selected sender—
Remove testing cord. | |
| 24 | Repeat Steps 19 through 23 until all VF terminals have been connected for test. | |
| 25a | If office is equipped with more than one transverter—
At jack, lamp, and key circuit—
Remove make-busy plug from TVMB- jack. | |
| 26a | Repeat Steps 19 through 24 for other transverters. | |
| 27 | At line link frame—
Remove patching cord. | |

STEP	ACTION	VERIFICATION
28	At OTF— Remove patching cord.	
29	Restore all keys and switches not required in next test.	

D. Equipment Terminal Cross or Ground Detection

- 1 At jack, lamp, and key circuit—
Insert make-busy plug into AMAT- or TRNSL-jack for translator under test.

Caution: *The bulk billed calls made by the customers served by this translator being tested will be completed without a charge record and detail billed calls will be routed to overflow. In ANI offices, calls made by customers served by translator will require operator identification. Therefore, perform this test as rapidly as possible.*

- 2 Operate KS-14510, L5 meter selector to RX100 position.
- 3 At translator—
Momentarily connect red and black leads of meter to resistors and relays listed in Table C and observe meter readings.
- 4 At jack, lamp, and key circuit—
Insert make-busy plug into TVMB- jack for transverter to be used in test.
- 5 At translator—
Block operated TVD- relay associated with transverter made busy.
- 6 Momentarily ground center terminal of XD0 resistor.
- 7 Momentarily operate RLS key.
- 8 Repeat Steps 6 and 7, momentarily grounding center terminals of XD1, XD2, XD3, XD4 resistors.
- 9 At translator—
Remove blocking tool from TVD- relay.
- 10 At jack, lamp, and key circuit—
Remove make-busy plug from TVMB- jack.

At TIC—
TV-, DR- lamps lighted.

All lamps extinguished.

STEP

ACTION

VERIFICATION

TABLE C			
RED LEAD TO CENTER TERMINAL OF RESISTOR	BLACK LEAD TO CONTACT OF RELAY		METER READING
XD0	2F	ESW	50 (5000 ohms)
XD0	2F	OSW	50 (5000 ohms)
XD0	4F	VF3	50 (5000 ohms)
XD1	4F	ESW	50 (5000 ohms)
XD1	4F	OSW	50 (5000 ohms)
XD1	4F	VF4	50 (5000 ohms)
XD2	6F	ESW	50 (5000 ohms)
XD2	6F	OSW	50 (5000 ohms)
XD2	4F	VF1	50 (5000 ohms)
XD3	8F	ESW	50 (5000 ohms)
XD3	8F	OSW	50 (5000 ohms)
XD3	4F	VF2	50 (5000 ohms)
XD4	10F	ESW	50 (5000 ohms)
XD4	10F	OSW	50 (5000 ohms)
XD4	4F	VFO	50 (5000 ohms)

- 11 Insert make-busy plug into TVMB- jack for other transverters if provided.
- 12 Repeat Steps 5 through 10.
- 13 Remove make-busy plug from AMAT- or TRNSL- jack.

E. Translator Identification

- 6 At line link frame—
Patch SP jack to line switch vertical as determined in 3.04.
- 7 At OTF—
Patch SP jack to OTL jack.
- 8 Set PREL D switch as required for preliminary digit.
- 9 Operate 7D key.

Note: If call is 10-digit, do not operate any -D key.

STEP	ACTION	VERIFICATION
10c	If office is arranged for AMA— Set A- through K- DIAL switches as required to select an AMA route to a distant office test number.	
11c	Set A- through K- SDR switches as required corresponding to digits that sender will outpulse.	
12c	Operate -SD key for number of digits sender will outpulse.	
	Note: If call is 10-digit, do not operate any -SD key.	
13d	If office is arranged for ANI— Set A- through K- DIAL switches as required to select an ANI route to any distant office test number.	
14d	Set A- SDR switch as required for preliminary digit.	
15d	Set B- through H- SDR switches for directory number of line used in test.	
16d	Operate ANI, 8SD keys.	
17	Operate ST key.	At TIC— TV-, TLR- lamps lighted. FU2/5, VG2/6, HG2/5, VF1/5 lamps lighted corresponding to directory or billing number of line link location.
18	At OTF— Restore ST key.	
19	At TIC— Momentarily operate RLS key.	All lamps extinguished.
20	Repeat Steps 6 through 19 for each line as determined in 3.04.	
21	At line link frame— Remove patching cord.	
22a	If office is equipped with more than one transverter— At jack, lamp, and key circuit— Remove make-busy plug from TVMB- jack.	
23	At OTF— Remove patching cord.	

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STEP	ACTION	VERIFICATION
24	Restore all keys and switches not required in next test.	
F. Make Busy		
<i>Caution: The bulk billed calls made by the customers served by this translator being tested will be completed without a charge record and detail billed calls will be routed to overflow. In ANI offices, calls made by customers served by translator will require operator identification. Therefore, perform this test as rapidly as possible.</i>		
1	At OTF— Restore all keys and switches.	All lamps extinguished.
2	At TIC— Momentarily operate RLS key.	All lamps extinguished.
3	At OTF— Operate MCB, MKR-, CL-, TV- keys.	
4a	If office is equipped with one translator— Operate OTL key.	
5b	If office is equipped with more than one translator— Operate OTLP key.	
6b	At line link frame— Patch SP jack to line switch vertical of any working line in translator under test.	
7b	At OTF— Patch SP jack to OTL jack.	
8	Set PREL D switch as required for preliminary digit.	
9	Operate 7D key. <i>Note:</i> If call is 10-digit, do not operate any -D key.	
10	At jack, lamp, and key circuit— Insert make-busy plug into AMAT- or TRNSL-jack for translator being tested.	AMAT lamp lighted.
11c	If office is arranged for AMA— At OTF— Set A- through K- DIAL switches as required	

STEP	ACTION	VERIFICATION
	to select an AMA route having a message billing other than 9 to any distant office test number.	
12c	Operate ST key.	Call completed to test number. At jack, lamp, and key circuit— AMAT- lamp associated with translator made busy remains lighted.
13c	At OTF— Restore ST key.	Connection released.
14c	Change A- through K- DIAL switch settings to select an AMA route having a message billing 9 to any distant office test number.	
15c	Operate ST key.	Overflow tone heard. At jack, lamp, and key circuit— AMAT- lamp associated with translator made busy remains lighted.
16c	At OTF— Restore ST key.	Overflow tone silenced.
17d	If office is arranged for ANI— At OTF— Set A- through K- DIAL switches as required to select an ANI route to any distant office test number.	
18d	Set A- SDR switch as required for preliminary digit.	
19d	Set B- through H- SDR switches for directory number of line in test.	
20d	Operate ANI, 8SD keys.	
21d	Operate ST key.	Call completed to CAMA operator.
22d	Restore ST key.	Connection released.
23	At jack, lamp, and key circuit— Remove make-busy plug from AMAT- or TRNSL- jack.	AMAT lamp extinguished.
24b	If office is equipped with more than one translator— Repeat Steps 10 through 23 until all translators have been tested.	
25	Repeat Steps 3 through 24b for all transverters.	

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STEP	ACTION	VERIFICATION
26b	If office is equipped with more than one translator— At line link frame— Remove patching cord.	
27b	At OTF— Remove patching cord.	
28	Restore all keys and switches not required in next test.	
G. Transverter Preference Chain Transfer and Alarm		
1	At translator frame under test— Restore TR key if operated.	TRT, TR- relays released.
2	Insulate 8B of TRT relay.	CH relay momentarily operated. CH, aisle pilot lamps lighted. Minor alarm sounds.
3	Remove insulator from TRT relay.	
4	Momentarily operate (push in) AR key.	CH, aisle pilot lamps extinguished. Minor alarm silenced.
5	Insulate 4B of TRT relay.	CH1 relay momentarily operated. CH, aisle pilot lamps lighted. Minor alarm sounds.
6	Remove insulator from TRT relay.	
7	Momentarily operate (push in) AR key.	CH, aisle pilot lamps extinguished. Minor alarm silenced.
8	Insulate 6B of TRT relay.	CH, CH1 relays operated. CH, aisle pilot lamps lighted. Minor alarm sounds.
9	Remove insulator from TRT relay.	
10	Momentarily operate (push in) AR key.	CH, aisle pilot lamps extinguished. Minor alarm silenced.
11	Operate TR key.	TRT, TR- relays operated.
12	Restore TR key.	TRT, TR- relays released.
H. TB Lead Ground Detection		
1	At translator frame under test— Momentarily connect ground to punching 20 on terminal strip A.	XTB, aisle pilot lamps lighted. Minor alarm sounds.

STEP	ACTION	VERIFICATION
2	Momentarily operate RXTB key.	XTB, aisle pilot lamps extinguished. Minor alarm silenced.
I. Overlap		
<i>Caution: The bulk billed calls made by the customers served by this translator being tested will be completed without a charge record and detail billed calls will be routed to overflow. Therefore, perform this test as rapidly as possible.</i>		
1	At jack, lamp, and key circuit— Insert make-busy plug into AMAT- or TRNSL-jack for translator under test.	
2	Momentarily operate manually GAA0 through GAA19 and GBA0 through GBA19 relays in succession.	GON relay momentarily operated for each GAA-, GBA- relay.
3	Block operated GON relay.	Battery absent on 1B through 10B of GON relay.
4	Remove blocking tool from GON relay.	
5	At jack, lamp, and key circuit— Remove make-busy plug from AMAT- jack.	

