

## TRANSVERTERS

### TESTS USING SENDER CIRCUIT AND TEST SET CIRCUIT

#### SD-32271-01 (J38913A)

#### STEP-BY-STEP INTERTOLL DIALING OFFICES ARRANGED FOR CAMA

##### 1. GENERAL

**1.01** This section describes a method of testing the transverter circuit SD-32263-01 in step-by-step intertoll dialing offices arranged for CAMA using the sender circuit SD-32261-01, the manual test circuit SD-32270-01, and test set circuit SD-32271-01 (J38913A).

**1.02** This section is reissued to add Test I for called vacant and irregular codes.

**1.03** The tests covered are:

**A. Through D. Initial Entries:** These tests check the translation of initial entry information in the transverter and also check that a call completes on second trial.

**E. Code Match:** This test checks that the transverter sends a "reorder position" signal to the sender if the called and calling office codes match.

**F. Nonworking Calling Office Codes:** This test checks nonworking calling office codes and verifies that a reorder signal is given.

**G. Working Calling Office Codes:** This test checks working calling office codes. It also checks that the correct trunk number is entered on the AMA tape.

**H. Trunk Transmission Trouble Code:** This test verifies that the transverter will cause a trouble ticket to be printed and that the incoming trunk is set to reorder (indicating poor transmission has been detected on the incoming trunk) when a special code is keyed by the CAMA operator.

**I. Vacant Code Trap:** This test checks that the transverter causes a trouble ticket to be printed on called vacant and irregular codes when the VCT- key is operated. This test verifies that a regular release signal is sent to the sender.

**1.04** Tests of trouble detecting features, as well as miscellaneous tests of the transverter, are covered in Section 227-346-501.

**1.05** When a trouble ticket is printed, a minor alarm will result which may be released by momentarily operating the AR key at the trouble ticketer and test frame or by remote control at the frame under test. The latter is done by patching the AR jack to the SP jack at the trouble ticketer and test frame. To restore an alarm, momentarily insert a 349A plug into the SP jack associated with the frame at which the test is being made.

**1.06** Transverter trouble tickets are forced to determine information received in transverter and recorder.

**1.07** Tests A through D require action at the sender frame.

**1.08** Tests A through F require an operator position to be vacated for duration of test.

**1.09** In selecting trunks for Test G, make sure all recorders are used.

**1.10** The special code used in Test H is distinctive so that it is easily recognizable.

**1.11** DL (Display Lost) lamp lighting at the trouble ticketer and test frame indicates that a trouble ticket was requested but not printed due to trouble ticketer busy.

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**1.12 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.

**1.13** Local instructions should be followed for recording and reporting any register operations caused by performing these tests.

**2. APPARATUS**

**All Tests**

**2.01** Step-by-step CAMA manual test circuit, SD-32270-01.

**2.02** Step-by-step CAMA test set circuit, J38913A (SD-32271-01).

**2.03** Three testing cords, W20D cord, 10 feet long, equipped with one KS-13875 plug and one KS-13895 plug.

**Tests A Through D**

**2.04** Blocking and insulating tools, as required. Use tools and apply, as covered in Section 069-020-801.

**Tests A Through D, F, and H**

**2.05** Head telephone set.

**Tests A Through F**

**2.06** 258 (make-busy) plug, or equivalent.

**2.07** Three patching cords, P3D cord, 3 feet long, equipped with two 309 plugs (3P3C cord).

**Tests G and H**

**2.08** Two patching cords, P3D cord, 3 feet long, equipped with two 309 plugs (3P3C cord).

**2.09** 322A (make-busy) plug, or equivalent.

↳ **Test I**

↳ **2.10** Two patching cords, P3D cord, 3 feet long, equipped with 309 plugs (3P3C cord).

**3. PREPARATION**

**3.01** Miscellaneous keys shall be operated or restored, and digits or signals keyed or dialed in accordance with Test Chart and office records, unless otherwise indicated.

**3.02** Operation of CT key on the test set prevents operation of the TM timer in the sender when testing senders or trunks.

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**3. PREPARATION**

STEP	ACTION	VERIFICATION
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**All Tests**

- |   |   |  |
|---|---|--|
| 1 | At CAMA test set —<br>Patch A, B, C jacks of CAMA test set to A, B, C jacks of CAMA test circuit, respectively, using W20D cords. |  |
| 2 | Operate CT key.   |  |
| 3 | At trouble ticketer and test frame —<br>Patch TST TV jack to TVT- jack associated with transverter under test, using P3D cord.    |  |
| 4 | Operate trunk class information keys, if provided, in accordance with Test Chart.   |  |

STEP	ACTION	VERIFICATION
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**Tests A Through F**

- |   |   |  |
|---|---|--|
| 5 | Operate miscellaneous keys in accordance with Test Chart.   |  |
| 6 | Patch TST S jack to SDR T- jack of sender used for test, using P3D cord.  |  |
| 7 | Patch TST P jack to POS T- jack of vacated position, using P3D cord.  |  |
| 8 | At trunk finder frame —<br>Insert 258, or equivalent, make-busy plugs into make-busy jacks of trunk finders associated with sender used for test. |  |
| 9 | At CAMA test set —<br>Operate CI key.   |  |

**Tests A Through D, F, and H**

- |    |  |  |
|----|--|--|
| 10 | Patch head telephone sets into A, B jacks. |  |
|----|--|--|

**Tests A Through D**

- |    |   |  |
|----|---|--|
| 11 | At transverter under test —<br>Insulate 6B of OT relay. |  |
|----|---|--|

*Note:* This opens the TR lead between the transverter and the transverter connector.

**4. METHOD**

STEP	ACTION	VERIFICATION
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**A. Through D. Initial Entries**

- |    |   |  |
|----|---|--|
| 12 | At trouble ticketer and test frame —<br>Operate FT4 key.                  |  |
| 13 | At sender used for test —<br>Block nonoperated STT relay.                 |  |
| 14 | At CAMA test set —<br>Operate START key.                                  | BSY lamp lighted until sender is seized.           |
| 15 | When BSY lamp extinguishes —<br>Key called number as shown in Test Chart. | Double order tone heard.<br>RV, POS lamps lighted. |
| 16 | Key calling number as shown in Test Chart.                                |  |

*Caution:* At Steps 17 and 18, other senders are locked out of the transverter connectors.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
17	At sender used for test — Remove blocking tool from STT relay for 3 or 4 seconds only, and proceed to Step 18 immediately.	POS lamp extinguishes for balance of tests. At trouble ticketer and test frame — Trouble ticket for first line of entry. (See Table A.)
18	Block nonoperated STT relay.	
19	At trouble ticketer and test frame — Restore FT4 key.	
20	Operate FT3 key.	
21	Repeat Steps 17 through 20.  <i>Note:</i> Perform Steps 21 three times for 7-digit called numbers and four times for 10-digit called numbers; except that in Steps 19 and 20, restore and operate the next lower numbered FT- key. Use FTF key last in the series and only on 10-digit calls.	Trouble tickets for balance of lines of entry. (See Table A.)
22	Restore FTF or FT1 key.	
23	Remove blocking tool from STT relay.	IE lamp lighted.
24	At transverter under test — Remove insulator from 6B of OT relay.	
25	At CAMA test set — Restore all keys.	IE, RV lamps extinguished.
26a	If no further tests are to be made — Restore all keys, remove all patching cords, and remove make-busy plug.	

**E. Code Match**

10	At CAMA test set — Operate START key.	BSY lamp lights until sender is seized.
11	When BSY lamp extinguishes — Key called number as shown in Test Chart.	RV, POS lamps lighted.
12	Key calling number as shown in Test Chart. (Same number as in Step 11.)	POS lamp flashes at reorder rate (120 ipm).
13	Restore all keys.	RV, POS lamps extinguished.
14a	If no further tests are to be made — Restore all keys, remove all patching cords, and remove make-busy plug.	

STEP	ACTION	VERIFICATION
<b>F. Nonworking Calling Office Codes</b>		
11	At CAMA test set — Operate START key.	BSY lamp lights until sender is seized.
12	When BSY lamp extinguishes — Key called number as shown in Test Chart.	Double order tone heard. RV, POS lamps lighted.
13	Key calling number as shown in Test Chart.	POS lamp flashes at reorder rate (120 ipm).
14	Operate RS key.	POS lamp lights steadily.
15	Repeat Steps 13, 14 for other nonworking calling office codes to be tested, when re- quired.	
16	Restore all keys.	RV, POS lamps extinguished.
17a	If no further tests are to be made — Restore all keys, remove all patching cords, and remove make-busy plug.	
<b>G. Working Calling Office Codes</b>		
5	At trouble ticketer and test frame — Insert make-busy plug into TRK MB- jack of trunk selected for test.	
6	Patch TST T jack to TRK T- jack of trunk selected for test, using P3D cord.	
7	Operate FT2 key.	
8	At CAMA test set — Operate START key.	BSY lamp lights only if service call is in progress or until sender is seized.
9	Momentarily operate DC key.	
10a	If dial pulse trunk is used for test — When BSY lamp extinguishes — Dial called number as shown in Test Chart.	
11b	If multifrequency trunk is used for test — When BSY lamp extinguishes — Key called number as shown in Test Chart.	RV lamp lighted.
12c	If ANI trunk is used for test — Key calling number as shown in Test Chart.	IE lamp lighted. At trouble ticketer and test frame — Trouble ticket as shown in Table A.
13d	If trunk arranged for operator identifica- tion is used for test — Pass calling number, as shown in Test Chart, to CAMA operator.	Trouble ticket as shown in Table A.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
14	At trouble ticketer and test frame — Operate FT1 key.	
15	Repeat Steps 10a through 13d as required.	
16	Restore FT1 key.	
17	At CAMA test set — Restore all keys.	RV, IE lamps extinguished.
18e	If no further tests are to be made — Restore all keys, remove all patching cords, and remove make-busy plug.	
<b>H. Trunk Transmission Trouble Code</b>		
11	At trouble ticketer and test frame — Insert make-busy plug into TRK MB- jack of trunk selected for test.	
12	Patch TST T jack to TRK T- jack of se- lected trunk arranged for operator identifi- cation, using P3D cord.	
13	At CAMA test set — Operate START key.	BSY lamp lights only if service call is in progress or until sender is seized.
14	Momentarily operate DC key.	
15a	If dial pulse trunk is used for test — When BSY lamp extinguishes — Dial called number as shown in Test Chart.	
16b	If multifrequency trunk is used for test — When BSY lamp extinguishes — Key called number as shown in Test Chart.	RV lamp lights.
17	Pass trunk transmission trouble code to CAMA operator.	At trouble ticketer and test frame — Trouble ticket indicates trunk number, re- corder number, and trunk transmission trouble code. Reorder tone heard. BSY lamp flashes at 120 ipm.
18	Restore all keys.	RV lamp extinguished.
19c	If no other tests are to be made — Restore all keys, remove all patching cords, and remove make-busy plug.	

STEP	ACTION	VERIFICATION
Γ	<b>I. Vacant Code Trap</b>	
5	At trouble ticketer and test frame — Operate miscellaneous keys in accordance with Test Chart.	
6	Patch TST S jack to SDR T- jack of sender used for test, using P3D cord.	
7	At CAMA test set — Operate START key.	BSY lamp lighted until sender is seized.
8a	If non-ANI call is simulated — When BSY lamp extinguishes — Key called number as shown in Test Chart.	RV lamp lighted. If vacant code routing to reorder provided — BSY lamp flashes. If vacant code routing to intercept or announcement provided — Arbitrary digits displayed. At trouble ticketer and test frame — Transverter trouble ticket printed as shown in Table B.
9b	If ANI call is simulated — When BSY lamp extinguishes — Key called number as shown in Test Chart.	RV lamp lighted.
10b	When RV lamp lights — Key calling number as shown in Test Chart.	If vacant code routing to reorder provided — BSY lamp flashes. If vacant code routing to intercept or announcement provided — Arbitrary digits displayed. At trouble ticketer and test frame — Transverter trouble ticket printed as shown in Table B.
11	Restore START key.	All lamps extinguished.
12	Repeat Steps 4 (Preparation) 5, 7 through 11 for other called vacant or irregular codes to be tested.	
13	Repeat Steps 3 and 4 (Preparation) 5, 7 through 12 for other transverters to be tested.	
L 14c	If no further tests are to be made — Restore all keys and remove all patching cords.	



TABLE A

TROUBLE TICKET POSITION →	KEY	13	14	15	16	17	18	19	20	21	22	24	25	26	27	28	29	30	31	32	33	34	35	36	SEE NOTE	
Test  A Through D (10-Digit Call)	FT4																									
		Called Number				Called Number																				
		TH	H	T	U	0	TH	H	T	U	O															
	FT3				Called Office Code								0	0	1/4	Called Office Code										
	FTF												0	0	0	Called Area Code										
A Through D (7-Digit Call)	FT2												OI Units	Calling Number				Calling Office Code			Calling Number					
		0	0-9	TH	H	T	U	X	X	X	TH	H	T	U												
	FT1													MBI	OI Tens	Trunk No.										
	2	3/4	9	0/3/6	—	—																			1	
A Through D (7-Digit Call)	FT4				Called Number																					
		TH	H	T	U	0	TH	H	T	U	O															
	FT3	Called Office Code										0	0	1/4	Called Office Code											
	FT2												OI Units	Calling Number				Calling Office Code			Calling Number					
0	0-9	TH	H	T	U	X	X	X	TH	H	T	U														
G (7-Digit Call)	FT1													MBI	OI Tens	Trunk No.		Calling Office Code								
		2	3/4	0	0/3/6	0-9	0-9	Y	Y	Y															3	
	FT2												OI Units	Calling Number				Calling Office Code								
0	0-9	1	1	1	1	Y	Y	Y																		
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>The entry index printed in position 25 will be 5 with OD key operated and 6 with AD key operated.</li> <li>The entry index printed in position 25 will be 3 with OD key operated and 4 with AD key operated.</li> <li>The entry index printed in position 25 will be 3 when KP0 is keyed and 4 when KP3 is keyed.</li> </ol>																										

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TABLE B

TRANSVERTER TROUBLE TICKET POSITION	VCT TST	TRUNK NO.		CALLED NUMBER										CALLING NUMBER				SEE NOTES			
		6	7	AREA CODE			OFFICE CODE			TH	H	T	U	OFFICE CODE		TH	H		T	U	
	4			13	14	15	16	17	18	19	20	21	22	30	31	32	33	34	35	36	
Test I (10-Digit Call)	0	X	X	V	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1, 2, 3
	0	X	X	X	0/1	X	V	V	V	X	X	X	X								1, 2, 3
Test I (7-Digit Call)	0	X	X				V	V	V	X	X	X	X	X	X	X	X	X	X	X	1, 2, 3
	0	X	X				V	V	V	X	X	X	X								1, 2, 3

**Notes:**

1. VVV represents any called vacant or irregular code.
2. X represents any acceptable digit.
3. Calling number: printed out on ANI-calls.  
not printed out on OI calls.

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