

COMBINED AND COMPLETING MARKER CIRCUITS—PART 4
TESTS USING MASTER TEST FRAME
NO. 5 CROSSBAR OFFICES

1. GENERAL

PAGE

1.01 This section is Part 4 in a series of sections for testing combined and completing markers.

1.02 The reasons for reissuing this section are listed below. Revision arrows are used to emphasize the more significant changes. This issue does not affect Equipment Test Lists.

- (a) To revise test procedures to include offices arranged with Electronic Translation System (ETS).
- (b) To exclude under verification in all tests, reference to "class of test" lamps.
- (c) To make minor changes as required.

1.03 The tests covered are:

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O. Reverting Call Feature: This test checks that the marker completes a call to a called customer on the same line as the calling customer. **2**

P. False Cross and Ground Test Feature—FCG Relay: This test checks the marker false cross and ground test feature. It also checks that the marker cancels this test on calls from PBX customers and under heavy traffic conditions. **4**

Q. Continuity Test Feature—GT Relay Operate and Release Feature—2-Wire Switching: This test checks the linkage continuity test feature of the marker and the operate and release of the GT (ground test) relay for the 2-wire switching network. **9**

R. Continuity Test Feature—4-Wire Switching: This test checks the linkage continuity test feature of the marker for the 4-wire switching network. **11**

S. Called Line Ground Test Feature—GT Relay Hold Test—2-Wire Switching: This test checks the called line ground test feature under unfavorable operating conditions. **13**

1.04 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 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.

1.05 The manner of selecting some circuits and test conditions at the master test frame (MTF) and its associated circuits varies depending on the apparatus options furnished with these circuits. Therefore, where variable means of selection are provided, precise instructions for the selection of circuits and test conditions are not given. Precise instructions for the use of these variable means are given in Section 218-106-301.

1.06 The location statement, At MTF—, is used to refer to all apparatus located on the four basic bays of the MTF.

1.07 On issue 76D of SD-25800-01, a group of 18 "class of test" lamps was replaced by a single "start test" lamp designated STT. Since

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the designation given to the lamp is not specific, the lamp will not be called out in the section, as well as the 18 discontinued lamps, DT, ORIG, ITDO, ITNP, OGT, INC, OR, SDR, IR, MISC, IAO, MLV, LT, IMS, PTT, TVT, ATNT, and IMT.

1.08 When the office is arranged for LAMA-C or ETS, the distributors and scanners associated with the marker and trunk used in the test call must be in service or in a ***maintenance-busy*** condition—not in an ***out-of-service*** condition. To change a scanner or distributor from an ***out-of-service*** to a ***maintenance-busy*** condition, use the procedure given in the following sections for the office arrangement.

218-798-308—Taking LAMA-C Equipment Out-of-Service

218-799-701—Taking ETS Equipment Out-of-Service.

1.09 Additional test procedures are available for verification of leads between the completing marker and the distributor and scanner (DAS). Refer to Section 218-122-531 for DAS application to LAMA-C or Section 218-799-321 for DAS application to ETS.

3. METHOD

STEP	ACTION	VERIFICATION
	<i>Note:</i> Refer to paragraphs 1.05, 1.06, 1.08, 1.09 and 1.10.	

O. Reverting Call Feature

Reverting Trunk Provided

- | | | |
|---|---|-------------------------|
| 1 | At MTF—
Restore all keys and switches. | |
| 2 | Momentarily operate RL key. | All lamps extinguished. |
| 3 | Select line location as required for line identification of any ring party line that does not require charging on an intraoffice route. | |
| 4 | Select class of service and rate treatment as required for access to selected route. | |

1.10 When making tests in No. 5 crossbar offices arranged with Electronic Translation System and test verification requires a completing marker trace output (teletype printout or data dump) to determine the data used to process a call, operate the TCPO key at the master test frame (MTF). The data dump received at the maintenance teletypewriters (TTY) may be in a ***raw*** form (binary or hexadecimal numbering system), formatted into decimal and written text, or a combination of both. For additional information on data dumps and formats used, refer to Section 218-799-102.

2. APPARATUS

All Tests

2.01 Master test control circuit, SD-25800-01.

Tests P, Q, R, S

2.02 322A (make-busy) plugs as required.

Tests P, R

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

STEP	ACTION	VERIFICATION
5	Select A_ through G_ digits as required for office code and numerals of line selected in Step 3.	
6	Select ORIG class of test.	
7	Select OR class of call with LT translator indication.	
8	Select marker under test.	
9a	◆If ETS provided— Operate PCS key.◆	
10	Operate REC key.	
11b	◆If ETS provided and CM dump is required— Operate TCPO key.	
	Note: See paragraph 1.10.◆	
12	Momentarily operate ST key.	DIS1, MRL, RA1 lamps lighted. Trouble record taken. RV, LCH, NSO, GS_ designations perforated. TG_, TB_, FS_, TS_, LC_, LV_, FAK/FBK designations perforated indicating location of reverting trunk. ◆If ETS provided— GS_, TG_ designations not perforated.◆
13	Momentarily operate RL key.	All lamps extinguished.
14	Repeat Steps 3 through 13 using tip party line.	
15	Restore all keys and switches.	
Special Service Operator Assistance Trunks Provided		
16	At MTF— Restore all keys and switches.	
17	Momentarily operate RL key.	All lamps extinguished.
18	Select line location as required for line identification of any ring party line that requires charging on an intraoffice route.	
19	Select class of service and rate treatment as required for access to selected route.	

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STEP	ACTION	VERIFICATION
20	Select A_ through G_ digits as required for office code and numericals of line selected in Step 18.	
21	Select ORIG class of test.	
22	Select OR class of call with LT translator indication.	
23	Select marker under test.	
24a	◆If ETS provided— Operate PCS key.◆	
25	Operate REC key.	
26b	◆If ETS provided and CM dump is required— Operate TCPO key.◆	
27	Momentarily operate ST key.	MRL, RA1 lamps lighted. Trouble record taken. RV, NSO, GS_ designations perforated. TG_, TB_, FS_, TS_, LC_, LV_, FAK/FBK designations perforated indicating location of special service operator assistance trunk. ◆If ETS provided— GS_, TG_ designations not perforated.◆
28	Momentarily operate RL key.	All lamps extinguished.
29	Repeat Steps 18 through 28 using tip party line.	
30	Restore all keys and switches.	

P. False Cross and Ground Test Feature—FCG Relay

2-Wire Switching

1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Insert make-busy plug into MMB_ jack of marker under test.	

STEP	ACTION	VERIFICATION
4	Select A_ through K_ digits as required to direct call to outgoing route.	
5	Select line location as required for any line having access to selected route.	
6	Select class of service and rate treatment as required for non-PBX class of service.	
7b	◆If ETS provided— Operate PCS key.◆	
8	Select ORIG class of test.	
9	Select OR class of call with translator indication as required for selected route.	
10	Select marker under test.	
11	Operate FCG key.	
12	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. FCG designation perforated.
13	Momentarily operate RL key.	All lamps extinguished.
14	Select class of service and rate treatment as required for a dial selected (digit 9 access) PBX class of service having access to selected route.	
15	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
16	Momentarily operate RL key.	All lamps extinguished.
17	Select A_ through G_ digits as required to direct call through intraoffice route to individual line.	
18	Select class of service and rate treatment as required for non-PBX class of service.	
19	Insert make-busy plug into TRMB-M_ jack associated with marker under test.	
20	Momentarily operate ST key.	TRL lamp lighted.
21	Momentarily operate RL key.	All lamps extinguished.
22	Operate TR2 key.	

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STEP	ACTION	VERIFICATION
23	Momentarily operate ST key.	BT-OF lamp lighted.
24	Momentarily operate RL key.	All lamps extinguished.
25c	If HTR key is provided— Operate HTR key.	
26d	If HTR key is not provided— At marker frame— Block nonoperated HTT relay.	
27d	Block operated HTR relay.	
28	At MTF— Momentarily operate ST key.	MRL lamp lighted.
29	Momentarily operate RL key.	All lamps extinguished.
30	Restore TR2 key.	
31	Repeat Steps 28, 29.	
32d	If HTR key is not provided— At marker frame— Remove blocking tools from HTT, HTR relays.	
33	At MTF— Remove make-busy plug from TRMB-M_ jack.	
34a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Remove make-busy plug from MMB_ jack.	
35	Restore all keys and switches.	

4-Wire Switching

36	At MTF— Restore all keys and switches.	
37	Momentarily operate RL key.	All lamps extinguished.
38e	If wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Insert make-busy plug into MMB_ jack of marker under test.	
39	Select A_ through K_ digits as required to direct call to outgoing route.	

STEP	ACTION	VERIFICATION
40	Select line location as required for any line having access to selected route.	
41	Select class of service and rate treatment as required for access to selected route.	
42b	◆If ETS provided— Operate PCS key.◆	
43	Select route advance as required for access to selected route.	
44b	◆If ETS provided— Operate PTS key.◆	
45	Operate 4W key.	
46f	If office is arranged for multilevel preemption— Select CDP, CD control digits as required for access to selected route.	
47g	If polygrid route is selected— Operate JSQ_ as required for routing control.	
48	Select ORIG class of test.	
49	Select OR class of call with translator indication as required for selected route.	
50	Select marker under test.	
51	Operate FCG key.	
52	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. FCG designation perforated.
53	Momentarily operate RL key.	All lamps extinguished.
54	Restore FCG key.	
55	Operate FCGA key.	
56	Repeat Steps 52, 53.	
57	Select A_ through K_ digits as required to direct call through intraoffice route to line.	
58	Insert make-busy plug into TRMB-M_ jack associated with marker under test.	
59	Momentarily operate ST key.	TRL lamp lighted.

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STEP	ACTION	VERIFICATION
60	Momentarily operate RL key.	All lamps extinguished.
61	Operate TR2 key.	
62	Momentarily operate ST key.	BT-OF lamp lighted.
63	Momentarily operate RL key.	All lamps extinguished.
64	Restore FCGA key.	
65	Operate FCG key.	
66	Repeat Steps 62, 63.	
67	Restore TR2 key.	
68c	If HTR key is provided— Operate HTR key.	
69d	If HTR key is not provided— At marker frame— Block nonoperated HTT relay.	
70d	Block operated HTR relay.	
71	At MTF— Momentarily operate ST key.	MRL lamp lighted.
72	Momentarily operate RL key.	All lamps extinguished.
73	Restore FCG key.	
74	Operate FCGA key.	
75	Repeat Steps 71, 72.	
76d	If HTR key is not provided— At marker frame— Remove blocking tools from HTT, HTR relays.	
77	At MTF— Remove make-busy plug from TRMB-M_ jack.	
78e	If wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Remove make-busy plug from MMB_ jack.	
79	Restore all keys and switches.	

STEP	ACTION	VERIFICATION
Q.	Continuity Test Feature—GT Relay Operate and Release Feature—2-Wire Switching	
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Insert make-busy plug into MMB_ jack of marker under test.	
4	Select A_ through G_ digits as required to direct call through intraoffice route to ring party line.	
5	Select line location as required for access to selected route.	
6	Select class of service and rate treatment as required for access to selected route.	
7b	♦If ETS provided— Operate PCS key.♦	
8	Select ORIG class of test.	
9	Select OR class of call with LT translator indication.	
10	Select marker under test.	
11	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
12	Momentarily operate RL key.	All lamps extinguished.
13	Operate TC key.	
14	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
15	Momentarily operate RL key.	All lamps extinguished.
16	Restore TC key.	
17	Operate RV key.	
18	Momentarily operate ST key.	TRL lamp lighted. Trouble record taken. CON designation not perforated.

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STEP	ACTION	VERIFICATION
19	Momentarily operate RL key.	All lamps extinguished.
20	Operate CCT key.	
21	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
22	Momentarily operate RL key.	All lamps extinguished.
23	Restore CCT key.	
24	Operate TR2 key.	
25	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
26	Momentarily operate RL key.	All lamps extinguished.
27	Restore RV, TR2 keys.	
28	Operate TP key.	
29	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. CON designation not perforated.
30	Momentarily operate RL key.	All lamps extinguished.
31	Select A_ through G_ digits as required to direct call through intraoffice route to tip party line.	
32	Operate RV key.	
33	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
34	Momentarily operate RL key.	All lamps extinguished.
35	Release RV key.	
36	Operate CON key.	
37	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
38	Momentarily operate RL key.	All lamps extinguished.
39	Restore all keys and switches.	

◆Controlled Continuity Test—Ringling Voltage 86 Volts Minimum, 87 Volts Maximum◆

Note: Do not perform this test unless ringling voltage is within the prescribed limits.

STEP	ACTION	VERIFICATION
40	Operate TCT key.	
41	Select INC class of test.	
42	Select any trunk link frame.	
43	Select A_ through G_ digits as required to direct call to tip party line.	
44	Select INC class of call with translator indication as required for completion to called line.	
45	Select incoming trunk class as required for completion to called line.	
46	Select marker under test.	
47	Operate RV key.	
48	Momentarily operate ST key.	TP, DIS1, LK2, MRL lamps lighted.
49	Momentarily operate RL key.	All lamps extinguished.
50	Operate TC key.	
51	Momentarily operate ST key.	TP, DIS1, LK2, MRL lamps lighted.
52	Momentarily operate RL key.	
53	Restore all keys and switches.	
54a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Remove make-busy plug from MMB_ jack of marker tested.	

R. Continuity Test Feature—4-Wire Switching

1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Insert make-busy plug into MMB_ jack of marker under test.	
4	Select INC class of test.	
5	Select A_ through G_ digits as required to direct call to local office line.	

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STEP	ACTION	VERIFICATION
6	Select any trunk link frame.	
7	Select incoming trunk class as required for completion to called line.	
8	Select INC class of call with translator indication as required for completion to called line.	
9	Select marker under test.	
10	Operate 4W key.	
11a	If office is arranged for multilevel preemption— Select CDP, CDA, CD control digits as required for access to selected route.	
12b	If office is arranged for multilevel preemption and call is directed to line with multilevel preemption features— Operate AD key.	
13c	If office is arranged for multilevel preemption and call is directed to line without multilevel preemption features— Operate OD key.	
14	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
15	Momentarily operate RL key.	All lamps extinguished.
16	Operate CONA key.	
17	Repeat Steps 14, 15.	
18	At marker frame— Block nonoperated CONA relay.	
19	At MTF— Momentarily operate ST key.	TRL lamp lighted. Trouble record taken. CON designation not perforated.
20	Momentarily operate RL key.	All lamps extinguished.
21	Operate CCT key.	
22	Repeat Steps 14, 15.	
23	Restore CCT key.	
24	Operate TR2 key.	
25	Repeat Steps 14, 15.	

STEP	ACTION	VERIFICATION
26	Restore TR2 key.	
27	Remove blocking tool from CONA relay.	
28d	If ringing voltage is 86 volts minimum, 87 volts maximum— Operate TCT key.	
	Note: Before proceeding with this test, check that the ringing voltage is within the prescribed limits.	
29	Repeat Steps 14, 15.	
30	Restore CONA key.	
31	Repeat Steps 14, 15.	
32	Restore all keys and switches.	
33	Remove make-busy plug from MMB_ jack of marker tested.	
5. Called Line Ground Test Feature—GT Relay Hold Test—2-Wire Switching		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Insert make-busy plug into MMB_ jack of marker under test.	
4	Select A_ through G_ digits as required to direct call through intraoffice route to individual line.	
5	Select line location as required for line identification of any line having access to selected route.	
6	Select class of service and rate treatment as required for access to selected route.	
7b	♦If ETS provided— Operate PCS key.♦	

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STEP	ACTION	VERIFICATION
8	Select ORIG class of test.	
9	Select OR class of call with LT translator indication.	
10	Select marker under test.	
11	Operate GT key.	
12	Momentarily operate ST key.	TRL, TRL1 lamps lighted.
13	Momentarily operate RL key.	All lamps extinguished.
14	Operate TR2 key.	
15	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted. Trouble record taken. 2TR, GT5 designations perforated.
16	Momentarily operate RL key.	All lamps extinguished.
17	Operate CGT or CGT N PBX key as provided.	
18	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
19	Momentarily operate RL key.	All lamps extinguished.
20	Select A_ through G_ digits as required to direct call through intraoffice route to PBX line.	
21c	If LGT key is provided— Operate LGT key.	
22	Restore CGT or CGT N PBX key.	
23	Operate CLPT or CGT PBX key as provided.	
24	Momentarily operate ST key.	If LGT key is provided— BT-OF lamp lighted. If LGT key is not provided— MRL lamp lighted.
25	Momentarily operate RL key.	All lamps extinguished.
26	Restore TR2 key.	
27	Momentarily operate ST key.	TRL, TRL1 lamps lighted.
28	Momentarily operate RL key.	All lamps extinguished.
29	Restore CLPT or CGT PBX key.	

STEP	ACTION	VERIFICATION
30	Momentarily operate ST key.	TRL, TRL1 lamps lighted.
31	Momentarily operate RL key.	All lamps extinguished.
32	Operate TR2 key.	
33	Momentarily operate ST key.	BT-OF lamp lighted. Trouble record taken. GT5 designation perforated.
34	Momentarily operate RL key.	All lamps extinguished.
35	Restore all keys and switches.	
36	Select INC class of test.	
37	Select any trunk link frame.	
38	Select A_ through G_ digits as required to direct call to local office line arranged for PBX or ground start coin service.	
39	Select incoming trunk class as required for completion to called line.	
40	Select INC class of call with translator indication as required for completion to called line.	
41	Select marker under test.	
42	Operate GT key.	
43	Operate TR2 key.	
44c	If LGT key is provided— Operate LGT key.	
45	Momentarily operate ST key.	OFL, MRL lamps lighted. Trouble record taken. GT5 designation perforated.
46	Momentarily operate RL key.	All lamps extinguished.
47	Restore all keys and switches.	
48a	If nonwire-spring-relay type marker is under test or wire-spring-relay type marker is under test and option to guarantee light traffic operation on marker test calls is not provided— Remove make-busy plug from MMB_ jack.	