

# COMBINED AND COMPLETING MARKER CIRCUITS—PART 21

## TESTS USING MASTER TEST FRAME

### NO. 5 CROSSBAR OFFICES

#### 1. GENERAL

PAGE

1.01 This section is Part 21 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 affects Equipment Test Lists.

- (a) To revise test procedures to include offices arranged with Electronic Translation System (ETS).
- (b) To exclude under verification reference to ringing code lamps.
- (c) To indicate that Test CF does not apply in offices equipped with Electronic Translation System (ETS).
- (d) To make minor changes as required.

1.03 The tests covered are:

PAGE

**CD. Range Extension for Unigauged Cabling Feature:** This test checks that the marker recognizes a long-loop customer in a horizontal group equipped with range extension for unigauged and enables the range extender unit when its use is required. It also checks that the marker recognizes a nonlong-loop customer in a horizontal group so equipped and omits enabling of the range extender unit.

**CE. Glare Detection Feature:** This test checks that a trunk glare condition will be recognized by the marker.

**CF. Route Advance Feature—Automatic Conferencing ♦ETS Not Provided:** ♦ This test checks that the marker functions properly for route advance from the automatic conferencing route. . . . . 12

1.04 The statement between asterisks (\*-\*) after action statements is added to clarify the function being simulated in the test procedures in Part 3.

1.05 **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.

1.06 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.

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

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

#### NOTICE

Not for use or disclosure outside the Bell System except under written agreement

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.

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.

1.11 When the trunk under test is arranged for ETS, the first completed test call from the MTF will cause the TST bit to be set in the trunk register associated with the selected trunk, enabling trunk supervisory scanning to be repeated on the FT, CS, and S1 lamps at the MTF trunk test circuit. As long as the TST bit is set in the trunk register, supervision will continue to be repeated on the lamps, even on service calls. The TST bit will remain set in the trunk register until (1) a test call is made from the MTF to another trunk, or (2) the command *STOP:TRK TST* is entered at the maintenance TTY.¶

## 2. APPARATUS

### All Tests

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

### Test CE

2.02 Trunk test circuit, SD-25918-01.

## 3. METHOD

STEP	ACTION	VERIFICATION
------	--------	--------------

*Note:* Refer to paragraphs 1.04 through 1.11.

### CD. Range Extension for Unigauge Cabling Feature

#### Subscriber Outgoing Call

- |   |   |                         |
|---|---|-------------------------|
| 1 | At MTF—<br>Restore all keys and switches.   |                         |
| 2 | Momentarily operate RL key.   | All lamps extinguished. |
| 3 | Select ORIG class of test.  |                         |
| 4 | Select A_ through K_ digits as required for an outgoing route.  |                         |
| 5 | Select line location for a nonlong-loop line in a horizontal group with range extension for unigauge cabling. |                         |

STEP	ACTION	VERIFICATION
6	Select class of service and rate treatment as required for access to selected route.	
7a	◆If ETS provided— Operate PCS key.◆	
8	Select OR class of call with translator indication as required for access to selected route.	
9	Select marker under test.	
10	Operate REC key.	
11b	◆If ETS provided and CM dump is required— Operate TCPO key.	
	<b>Note:</b> See paragraph 1.10.◆	
12	Momentarily operate ST key.	DIS1, MRL lamps lighted. Trouble record taken. LOLL designation not perforated.
13	Momentarily operate RL key.	All lamps extinguished.
14	Select line location as required for a long-loop line.	
15	Operate LOLL key.	
16	Momentarily operate ST key.	DIS1, MRL lamps lighted. Trouble record taken. LOLL designation perforated.
17	Momentarily operate RL key.	All lamps extinguished.
18	Restore REC key.	
19	Operate NLL key.	
20	Momentarily operate ST key.	TRL lamp lighted. Trouble record taken. LOLL, DCT1 designations not perforated.
21	Momentarily operate RL key.	All lamps extinguished.
22	Operate TR2 key.	
23	Momentarily operate ST key.	DIS1, LK2, MRL lamps lighted.
24	Momentarily operate RL key.	All lamps extinguished.
25	Restore all keys and switches.	

STEP	ACTION	VERIFICATION
<b>Incoming Call (Non-PBX)</b>		
26	At MTF— Restore all keys and switches.	
27	Momentarily operate RL key.	All lamps extinguished.
28	Select INC class of test.	
29	Select A_ through G_ digits as required to direct call to a nonlong-loop, individual flat-rate line in a horizontal group equipped with range extension for unigauge cabling.	
30	Select INC class of call with translator indication as required for completion to called line.	
31	Select incoming trunk class as required for completion to called line.	
32	Select any trunk link frame.	
33	Select marker under test.	
34	Operate REC key.	
35b	If ETS provided and CM dump is required— Operate TCPO key.	
	<i>Note:</i> See paragraph 1.10.4	
36	Momentarily operate ST key.	RP, MRL lamps lighted. Trouble record taken. FTT_, FUT_, VGT_, HGT_, VFT_ designations perforated indicating location of called line. LOLL designation not perforated. RCT1, RS0, RS6 designations perforated.
37	Momentarily operate RL key.	All lamps extinguished.
38	Select A_ through G_ digits as required to direct call to a long-loop individual flat-rate line arranged for range extension for unigauge cabling.	
39	Momentarily operate ST key.	RP, MRL lamps lighted. Trouble record taken. FTT_, FUT_, HGT_, VGT_, VFT_ designations perforated indicating location of called line. LOLL designation perforated. If specific ringing combinations in the number group are assigned—

STEP	ACTION	VERIFICATION
		RCT4, RS0, RS4 designations perforated. If standard ringing combinations in the number group are assigned— RCT1, RS0, RS4 designations perforated. ◆If ETS provided— RCT1, RS0, RS4 designations perforated.◆
40	Momentarily operate RL key.	All lamps extinguished.
41	Restore all keys and switches.	
<b>Incoming Call (PBX)</b>		
42	At MTF— Restore all keys and switches.	
43	Momentarily operate RL key.	All lamps extinguished.
44	Select INC class of test.	
45	Select A_ through G_ digits as required to direct call to a long-loop line in a PBX hunting group arranged for range extension for unigauge cabling.	
46	Select INC class of call with translator indication as required for completion to called line.	
47	Select incoming trunk class as required for completion to called line.	
48	Select any trunk link frame.	
49	Select marker under test.	
50	Operate REC key.	
51b	◆If ETS provided and CM dump is required— Operate TCPO key.	
	<b>Note:</b> See paragraph 1.10.◆	
52	Momentarily operate ST key.	PBX, RP, MRL lamps lighted. Trouble record taken. FTT_, FUT_, HGT_, VGT_, VFT_ designations perforated indicating location of called line. LOLL, RCT10, RS0, RS4 designations perforated.
53	Momentarily operate RL key.	All lamps extinguished.
54	Restore all keys and switches.	

SECTION 218-122-521

STEP	ACTION	VERIFICATION
<b>Call to Long-Loop Line—Range Extension Unit Not Required</b>		
55	At MTF— Restore all keys and switches.	
56	Momentarily operate RL key.	All lamps extinguished.
57	Select INC class of test.	
58	Select A_ through G_ digits as required to direct call to a long-loop line.	
59	Select INC class of call with translator indication as required for completion to called line.	
60	Select incoming trunk class as required for completion to called line.	
61	Select any trunk link frame.	
62	Select marker under test.	
63	Operate NT, SPL, REC keys.	
64b	♦If ETS provided and CM dump is required— Operate TCPO key.	
	<b>Note:</b> See paragraph 1.10.♦	
65	Momentarily operate ST key.	DIS1, MRL lamps lighted. Trouble record taken. FTT_ FUT_ VGT_ HGT_ VFT_ designations perforated indicating location of called line. LOLD designation perforated.
66	Momentarily operate RL key.	All lamps extinguished.
67	Operate NTL key.	
68	Momentarily operate ST key.	DIS1, LOLP, MRL lamps lighted. Trouble record taken. FTT_ FUT_ VGT_ HGT_ VFT_ designations perforated indicating line location of called line. LOLD designation perforated.
69	Momentarily operate RL key.	All lamps extinguished.
70	Restore REC key.	
71	Operate NLP key.	

STEP	ACTION	VERIFICATION
72	Momentarily operate ST key.	TRL lamp lighted. Trouble record taken. HMS1 designation not perforated. LOLD designation perforated.
73	Momentarily operate RL key.	All lamps extinguished.
74	Operate TR2 key.	
75	Momentarily operate ST key.	DIS1, MRL lamps lighted. LOLP lamp not lighted.
76	Momentarily operate RL key.	All lamps extinguished.
77	Restore all keys and switches.	

**CE. Glare Detection Feature**

*Note:* Refer to paragraph 1.04.

**Subscriber Outgoing Call**

1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Select OGT class of test.	
4	Select A_ through K_ digits as required to direct call to outgoing route having 2-way trunks with glare detection.	
5	Select originating class of call with translator indication as required for access to selected route.	
6	Select class of service and rate treatment as required for access to selected route.	
7	Select route advance as required for access to selected trunk group.	
8a	◆If ETS provided— Operate PCS, PTS keys.◆	
9b	If 4-wire switching route is selected— Operate 4W key.	
10c	If office is arranged for multilevel preemption— Select CDP, CD control digits as required to select P-4 priority.	

STEP	ACTION	VERIFICATION
11	Select marker under test.	
12	Operate E-M, TLK, KY, ANS, GLMN keys.	
13	Momentarily operate ST key. *Immediate glare condition.*	BTOF, RBT1, GL lamps lighted. If 4-wire switching route is selected— 4W lamp lighted.
14	◆Restore ANS key.◆	
15	Momentarily operate RL key.	All lamps extinguished.
16	Operate GLR, ◆ANS◆ key.	
17	Momentarily operate ST key. *Immediate glare condition.*	TRL, GL lamps lighted. Trouble record taken. GLA (SNG), RO' designations perforated. If 4-wire switching route is selected— 4W lamp lighted.
18	◆Restore ANS key.◆	
19	Momentarily operate RL key.	All lamps extinguished.
20	Restore GLR key.	
21	Momentarily operate ST key. *Minimum glare condition.*	AS, MRL lamps lighted. ◆If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted.◆ Overflow tone heard. If 4-wire switching route is selected— 4W lamp lighted.
		<b>Note:</b> If glare timer in MTF operates before marker selects a channel, the test will appear as immediate glare (Step 13). Repeat Steps 19 and 21 until a minimum glare condition exists.
22	Restore TLK key.	AS lamp extinguished. ◆If LAMA-C provided— S1 lamp extinguished. If ETS provided— FT, S1 lamps extinguished.◆ GL lamp lighted. Overflow tone silenced.
23	Momentarily operate RL key.	All lamps extinguished.
24	Operate GLR, TLK keys.	

STEP	ACTION	VERIFICATION
25	Momentarily operate ST key. *Minimum glare condition.*	AS, MRL lamps lighted. ♦If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted.♦ Trouble record taken. GLB (NGKI) designation perforated. If 4-wire switching route is selected— 4W lamp lighted.
26	Momentarily operate RL key.	All lamps extinguished.
27	Restore GLMN, GLR keys.	
28	Operate GLMX key.	
29	Momentarily operate ST key. *Maximum glare condition.*	AS, MRL lamps lighted. ♦If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted.♦ If 4-wire switching route is selected— 4W lamp lighted.
30	Within 4 seconds— Restore TLK key.	AS lamp extinguished. ♦If LAMA-C provided— S1 lamp extinguished. If ETS provided— FT, S1 lamps extinguished.♦ GL lamp momentarily lighted.
31	Momentarily operate RL key.	All lamps extinguished.
32	Operate GLR, TLK keys.	
33	Momentarily operate ST key. *Maximum glare condition.*	AS, MRL lamps lighted. ♦If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted.♦ No trouble record taken. If 4-wire switching route is selected— 4W lamp lighted.
34	Momentarily operate RL key.	All lamps extinguished.
35	Restore all keys and switches.	
<b>Tandem Outgoing Route</b>		
36	At MTF— Restore all keys and switches.	

SECTION 218-122-521

STEP	ACTION	VERIFICATION
37	Momentarily operate RL key.	All lamps extinguished.
38	Select OGT class of test.	
39	Select A_ through K_ digits as required to direct call to outgoing tandem route having 2-way trunks with glare detection.	
40	Select TOL incoming class of call with translator indication as required for access to selected route.	♦TOL lamp lighted.♦
41b	If 4-wire switching route is selected— Operate 4W key.	
42c	If office is arranged for multilevel preemption— Select CDP, CD, CDA control digits as required for access to selected route.	
43	Select route advance for access to selected trunk group.	
44a	♦If ETS provided— Operate PTS key.♦	
45	Select marker under test.	
46	Operate E-M, TLK, KY, ANS, GLMN keys.	
47	Momentarily operate ST key. *Immediate glare condition.*	BTOF, RBT1, GL lamps lighted. If 4-wire switching route is selected— 4W lamp lighted.
48	♦Restore ANS key.♦	
49	Momentarily operate RL key.	All lamps extinguished ♦except TOL.♦
50	Momentarily operate ST key. *Minimum glare condition.*	MRL, OFL, GL lamps lighted. ♦If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted. If ETS <i>not</i> provided— TNK lamp lighted if equipped.♦ If 4-wire switching route is selected— 4W lamp lighted.
51	Momentarily operate RL key.	All lamps extinguished ♦except TOL.♦
52	Operate GLR key.	

STEP	ACTION	VERIFICATION
53	Momentarily operate ST key. *Minimum glare condition.*	TRL, GL lamps lighted. ◆If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted. If ETS <i>not</i> provided— TNK lamp lighted if equipped.◆ Trouble record taken. RO', RNG, GLA (SNG) designations perforated. If 4-wire switching route is selected— 4W lamp lighted.
54	Momentarily operate RL key.	All lamps extinguished ◆except TOL.◆
55	Restore GLR, GLMN keys.	
56	Operate GLMX key.	
57	Momentarily operate ST key. *Maximum glare condition.*	MRL, TAS lamps lighted. ◆If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted. If ETS <i>not</i> provided— TNK lamp lighted if equipped.◆ If 4-wire switching route is selected— 4W, CPO lamps lighted.
58	Within 4 seconds— Restore TLK key.	TAS lamp extinguished. ◆If LAMA-C provided— S1 lamp extinguished. If ETS provided— FT, S1 lamps extinguished.◆ GL lamp momentarily lighted.
59	Momentarily operate RL key.	All lamps extinguished ◆except TOL.◆
60	Operate TLK, GLR keys.	
61	Momentarily operate ST key. *Maximum glare condition.*	MRL, TAS lamps lighted. ◆If LAMA-C provided— S1 lamp lighted. If ETS provided— FT, S1 lamps lighted. If ETS <i>not</i> provided— TNK lamp lighted if equipped.◆ No trouble record taken. If 4-wire switching route is selected— 4W, CPO lamps lighted.
62	Momentarily operate RL key.	All lamps extinguished ◆except TOL.◆

SECTION 218-122-521

STEP	ACTION	VERIFICATION
63	Restore all keys and switches.	♦TOL lamp extinguished.♦
<b>CF. Route Advance Feature—Automatic Conferencing—♦ETS Not Provided♦</b>		
<i>Note:</i> Determine from office records the route and number of route advances for route to be used in test.		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Select ORIG class of test.	
4	Select A_ through K_ digits as required to direct call to route used in test.	
5	Select OR class of call with translator indication for access to selected route.	
6	Select line location having access to selected route.	
7	Select class of service and rate treatment as required for access to selected route.	
8a	If office is arranged for multilevel preemption— Select CDP, CD control digits as required for access to selected route.	
9b	If polygrid route is selected— Select JSQ_ as required for routing control.	
10	Select route advance one higher than the number of routes available.	
11	Select marker under test.	
12	Operate 4W, CCM, REC keys.	
13	Momentarily operate ST key.	BRL, 4W lamps lighted. Trouble record taken. CE', BRL designations perforated.
14	Momentarily operate RL key.	All lamps extinguished.
15	Restore all keys and switches.	