

## OUTGOING DIAL PULSE SENDERS TESTS USING OFFICE TEST FRAME NO. 5 CROSSBAR OFFICES

### 1. GENERAL

**1.01** This section describes a method of testing dial pulse outgoing senders using the office test frame in No. 5 crossbar offices.

**1.02** This section is reissued to add the 2TR key for second trial displays when making AMA tests and to add the TV-key for transverter selection.

**1.03** The tests covered are:

**A. Regular Call:** This test checks that the sender records information from a marker and that it outpulses interoffice calls on an AMA or non-AMA basis. The transmitting of information to the transverter is checked on AMA class calls.

**B. Trunk Test — Open Trunk:** This test checks that the sender detects an open trunk during trunk test and causes a trouble indication during light traffic.

**C. Abandoned Call — AMA:** This test checks that the sender waits until the initial AMA entry has been made before releasing.

**D. Abandoned Call — Non-AMA:** This test checks that the sender releases at any stage of a call.

**E. Transverter Trouble Release:** This test checks that the sender operates its RO relay, sets the trunk to overflow, and releases when the transverter fails on both first and second trial on a detail-billed call.

**F. Delay Pulsing of Last Digit — AMA:** This test checks that the sender delays sending the last digit until AMA functions are completed.

**G. No-Digits Call — AMA:** This test checks that the sender releases without pulsing on a no-digits AMA call. It also checks that,

when the sender is set to reorder, it does not release on an abandoned intraoffice call until the transverter releases.

**H. Trunk Reversed — Off Hook to On Hook:**

This test checks that the sender recognizes a change in trunk supervision from on hook to off hook after the start pulse signal as a reversed trunk; the sender then sets the trunk to overflow.

**I. Trunk Reversed — Initial Off Hook:** This

test checks that the sender recognizes an off-hook condition on initial closure of a trunk to a step-by-step office as a reversed trunk; the sender then sets the trunk to overflow.

**J. Stop Dial Signal:** This test checks that the sender recognizes an off-hook condition, after the first digit has been pulsed, as a stop dial signal.

**K. Distant Trunk Reversed or Busy:** This test checks that the sender recognizes an off-hook condition after a stop dial signal has been received on a call to a step-by-step office as an all paths busy condition. The sender will then set the trunk to overflow, except for CL2 class calls.

**L. Battery and Ground Pulsing:** This test checks that the sender supplies battery and ground pulsing.

**M. Timing Test:** This test checks that the sender releases and sets the trunk to overflow, in 20 to 32 seconds, if it cannot complete its functions. It also checks, when the sender is arranged for reduced timing for transverter operations, that the sender sets the trunk to return overflow and that the sender releases if the transverter has not completed its functions within 7 to 11 seconds.

**N. Cancel Time Release and Alarm Test:**

This test checks that, with the associated CTR key operated, the sender will not release

when it times out and that it will operate the stuck sender alarm. It also checks that if the call is abandoned at this time, the sender will not release. When the alarm sending circuit is provided, this test checks that when the alarms are transferred the sender cancel timed release feature is disabled.

**O. Antiglare Test:** This test checks that, when connected to a CX 2-way trunk or to a CX intertoll trunk (CL2 and CL6 relays operated in sender) with customer access, the sender will time properly for changes in supervision before pulsing and during interdigital timing. It also checks that when supervision changes a second time, the sender will set the trunk to overflow and release.

**P. Intersender Timing:** This test checks that, when start pulsing polarity is not returned within 4 to 8 seconds and the marker finds that all the senders of the group are busy, the trunk is set to overflow and the sender is released.

**Q. Sender Busy:** This test checks that the sender appears busy when it is in service or when it is made busy at the associated MB jack.

**1.04** Test Q requires making all senders within a subgroup busy.

**1.05 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.

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

## 2. APPARATUS

### All Tests Except Q

**2.01** Office test frame (OTF).

**2.02** Patching cords, as required, P3D cord, 6 feet long, equipped with two 309 plugs (3P3A cord) (for use in selecting sender under test).

### Tests B, C, F, G, M, N, P, and Q

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

### Tests C, D, F, G, M, and P

**2.04** 32A test set.

### Tests C, K, M, and N

**2.05** KS-3008 stop watch, or equivalent.

### Tests A, B, P, and Q

**2.06** 322A make-busy plugs, as required.

### Test A

**2.07** 329A make-busy plug.

**2.08** Patching cord, P3E cord, 8 feet long, equipped with two 310 plugs (3P6E cord).

**2.09** Testing cord, W2W cord, 10 feet long, equipped with one 310 plug (2W17C cord), one 360B tool, one 360C tool, one 624A (terminal connector) tool, and one 624B (terminal connector) tool.

## 3. PREPARATION

STEP	ACTION	VERIFICATION
<b>All Tests Except Q</b>		
1	At OTF — Restore all keys.	
2	At jack, lamp and key circuit — Patch SDR jack in MB2 jack field to SMB-jack for sender to be tested.	

STEP	ACTION	VERIFICATION
3	Patch 0-9 jack in MB1 jack field to SMB-jacks of all other senders in same sender group.	
4	At OTF — Operate MCB and MKR- keys to select completing marker.	
5	Operate OTL, and CL- keys.	
6	When preliminary digit is needed, operate Prel. Digit switch.	
7	Operate A- through K- DIAL switches, as required, to select AMA or ANI route served by sender under test and numerals to be tested.	
8a	If test call is 3 or 7 digits — Operate 3D or 7D keys, depending on number of digits required for call.	
9b	If trunk used in test requires wink signal — Operate WK key.	
10c	If trunk used in test requires immediate closure of pulsing loop — Operate CL2S key.	
11	Release (push in) CTR key associated with sender under test.	

#### 4. METHOD

STEP	ACTION	VERIFICATION
<b>A. Regular Call</b>		
12	At OTF — Operate OGT and DPS keys.	
13d	If 4, 5, or 7 digits are to be outpulsed by sender — Operate one of the following keys: 4SD, 5SD, or 7SD, depending on number of digits outpulsed.	
14	Operate A- through K- SDR switches, as required, corresponding to digits outpulsed by sender.	
15e	If AMA class of service is being used — At OTF — Operate FS- and NT keys and insert 329A plug into TS- jack associated with trunk.	
16e	At jack, lamp and key circuit — Insert make-busy plug into OGT-MB jack associated with trunk.	

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STEP	ACTION	VERIFICATION
17	At OTF — Operate FS-, and NT keys and insert 329A plug into TS- jack to select trunk made busy.	
18	Where flat rate class of service is used — Operate NCH key.	
19	Operate ST key.	OS lamp lights. ED lamp lights. At completion of sender outpulsing — EP and CS lamps light. High tone heard. TOK lamp lights.
20	Restore ST key.	OS, EP, CS, ED, and TOK lamps extinguished. Tone removed.
21	Repeat Steps 12 through 20, substituting office codes and numerals, as required, to test all digits.	
22g	If AMA class of service is being used and transverter transmitting leads are to be tested — Operate TI, TV- and TVR- keys.	
23g	Operate ST key.	At TIC — Display registered. FU2/5, VG2/6, HG2/5, VF1/5, TH-, HN-, T-, U-, OFF-, DR-, RP or TP, MB2/5, RN2/5, A2/5 through K2/5, T2/5, and U2/5 lamps light identifying originating test line, trunk used, and message billing index. <b>Note:</b> Disregard XP1 lamp if it lights.
24g	Restore ST key.	
25g	At TIC — Operate RLS key momentarily.	All lamps extinguished.
26g	Operate 2TR key, if equipped.	
27g	Operate ST key.	At TIC — Display registered. FU2/5, VG2/6, HG2/5, VF1/5, TH-, HN-, T-, U-, OFF-, TV-, RPT or TPT, MB2/5, RN2/5, A2/5 through K2/5, T2/5 and U2/5 lamps light identifying originating test line, transverter, trunk used, and message billing index. <b>Note:</b> Disregard XP1 lamp if it lights.
28g	Restore ST key.	
29g	At TIC — Operate RLS key momentarily.	All lamps extinguished.

STEP	ACTION	VERIFICATION
30	At OTF — Restore all keys not required for next test.	
31	At jack, lamp and key circuit — Remove patching cords and make-busy plugs from OGT- MB jacks not required for next test.	
<b>B. Trunk Test — Open Trunk</b>		
12	At jack, lamp and key circuit — Insert make-busy plug into M-C-MB jack associated with operated MKR- key.	
13	At marker used in test — Block nonoperated HTR relay.	
14	At OTF — Operate OGT and RTL keys.	
15	Operate ST key.	OS lamp lights. ED and TGT lamps light. Overflow tone heard. At TIC — Display registered. DR, TGT, FS-, TS-, TB, OSG-, SSA/SSB, and OS- lamps light identifying trunk se- lected and sender under test.
16	Restore ST key.	At OTF — All lamps extinguished. Tone removed.
17	At TIC — Operate RLS key momentarily.	At TIC — Display released.
18	At OTF — Restore all keys not required for next test.	
19	At marker used in test — Remove blocking tool from HTR relay.	
20	At jack, lamp and key circuit — Remove make-busy plug from M-C-MB jack.	
21	Remove patching cords not required for next test.	
<b>C. Abandoned Call — AMA</b>		
12	At sender under test — Insert plug of 32A test set into RC jack.	
13	Insulate contacts 1M and 10M of STT relay.	
14	Operate white key on 32A test set.	At sender under test — ON1 relay operates.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
15	Immediately after ON1 relay operates — Operate red key on 32A test set, and <i>start timing</i> .	ON1 relay remains operated. In 6 to 11 seconds. ON1 relay releases.
16	Remove insulators from STT relay.	
17	Remove plug of 32A test set from RC jack.	
18	At OTF — Restore all keys not required for next test.	
19	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**D. Abandoned Call — Non-AMA**

12	At sender under test — Insert plug of 32A test set into RC jack.	
13	Operate white key on 32A test set.	At sender under test — ON1 and SP relays operate.
14	Immediately after sender SP relay operates — Operate red key on 32A test set.	ON1 relay releases. EP relay does not operate.
15	Remove plug of 32A test set from RC jack.	
16	At OTF — Restore all keys not required for next test.	
17	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**E. Transverter Trouble Release**

12	At OTF — Operate A- through K- DIAL switches, as required, to select a route with an MB-9 charge and any test line number.	
13	At AMA translator — Remove jumper of originating test line.	
14	Operate TV- key.	
15	At OTF — Operate ST key.	At TIC — Display registered. TV- lamp lights. DNK lamp does not light. DL- lamp lights. At OTF — Overflow tone heard.
16	Restore ST key.	Tone removed.
17	At TIC — Operate RLS key momentarily.	At TIC — Display released.

STEP	ACTION	VERIFICATION
18	At AMA translator — Replace jumper for OTL.	
19	At OTF — Restore all keys not required for next test.	
20	At jack, lamp and key circuit — Remove patching cords not required for next test.	
<b>F. Delay Pulsing of Last Digit — AMA</b>		
12	At sender under test — Insulate contacts 1M and 10M of STT relay.	
13	Insert plug of 32A test set into RC jack.	
14	Operate white key on 32A test set.	At sender under test — ON1 and AMA relays operate and lock.
15	Remove insulator from contact 1M of STT relay.	AMA relay releases and sender outpulses last digit and releases.
16	Operate red key on 32A test set.	
17	Remove insulator from contact 10M of STT relay.	
18	Remove plug of 32A test set from RC jack.	
19	At OTF — Restore all keys not required for next test.	
20	At jack, lamp, and key circuit — Remove patching cords not required for next test.	
<b>G. No-Digits Call — AMA</b>		
12	At OTF — Operate A- through G- DIAL switches, as required, to select intraoffice code and any test line number.	
13	At sender under test — Insert plug of 32A test set into RC jack.	
14	Operate white key on 32A test set.	At sender under test — ON1 and STT relays operate. RLT relay operates and sender releases without pulsing.
15	Operate red key on 32A test set.	
16	Insulate contacts 1M and 10M of STT relay.	
17	Block TM relay nonoperated.	

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
18	Operate white key on 32A test set.	ON1 relay operates.
19	Operate R0 relay.	RO relay remains operated.
20	Operate red key on 32A test set.	ON1 and RO relays remain operated.
21	Remove blocking tool from TM relay.	ON1 and RO relays release. Sender releases.
22	Remove insulators from STT relay.	
23	At OTF — Restore all keys not required for next test.	
24	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**H. Trunk Reversed — Off Hook to On Hook**

12	Operate OF, DPS, and OGT keys.	
13	Operate ST key.	A-, B-, C-, and TF lamps light. Overflow tone heard.
14	Operate DL key.	Tone removed.
15	Restore ST key.	A-, B-, C-, and TF lamps extinguished.
16	Restore all keys not required for next test.	
17	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**I. Trunk Reversed — Initial Off Hook**

12	At OTF — Operate OGT, DPS, and RVT keys.	
13	Operate ST key.	After completion of dialing — Overflow tone heard.
14	Operate DL key.	Tone removed.
15	Restore ST key.	
16	At OTF — Restore all keys not required for next test.	
17	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**J. Stop Dial Signal**

12	At OTF — Operate OGT and DPS keys.	
13	Operate ST key.	TGT lamp lights momentarily.

STEP	ACTION	VERIFICATION
14	Before EP lamp lights and between digits — Operate RVT key momentarily.	Sender stops outpulsing while RVT key is operated. CS lamp lights.
15	Restore ST key.	All lamps extinguished.
16	Restore all keys not required for next test.	
17	At jack, lamp and key circuit — Remove patching cords not required for next test.	

#### K. Distant Trunk Reversed or Busy

12	At OTF — Operate OGT and DPS keys.	
13	Operate ST key.	TGT lamp lights momentarily.
14	Before EP lamp lights, operate RVT key and <i>start timing</i> .	Sender stops outpulsing. In 19 to 37 seconds — Overflow tone heard.
15	Restore ST key.	Tone removed.
16	Restore all keys not required for next test.	
17	At jack, lamp and key circuit — Remove patching cords not required for next test.	

#### L. Battery and Ground Pulsing

12	At OTF — Operate OGT, NCH, and DPS keys.	
13d	If 4, 5, or 7 digits are to be outpulsed by sender — Operate one of the following keys: 4SD, 5SD, or 7SD, depending on number of digits outpulsed.	
14	Operate A- through K- SDR switches, as required, corresponding to digits outpulsed by sender.	
15	Operate ST key.	OS lamp lights. At completion of pulsing — EP and CS lamps light. High tone heard. TOK lamp lights.
16	Restore ST key.	All lamps extinguished.
17	Restore all keys not required for next test.	
18	At jack, lamp and key circuit — Remove patching cords not required for next test.	

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STEP	ACTION	VERIFICATION
<b>M. Timing Test</b>		
12	At jack, lamp and key to circuit — Operate (pull out) CTR key associated with sender under test.	
13	At sender under test — Insert plug of 32A test set into RC jack.	
14	Block nonoperated ES relay.	
15	Operate white key on 32A test set.	At sender under test — ON1 relay operates.
16	Immediately after ON1 relay operates, <i>start timing.</i>	In 20 to 32 seconds — TM relay operates. At jack, lamp and key circuit — TO lamp associated with sender lights.
17	At jack, lamp and key circuit — Release (push in) CTR key.	TO lamp extinguished.
18	Operate red key on 32A test set.	
19d	If AMA is provided — Insulate contacts 1M and 10M of STT relay.	
20d	Operate white key on 32A test set.	At sender under test — ON1 relay operates.
21d	Immediately after ON1 relay operates, <i>start timing.</i>	In 7 to 11 seconds — TM relay operates momentarily ON1 relay releases.
22d	Operate red key on 32A test set.	
23	Remove blocking tool from ES relay.	
24	Remove plug of 32A test set from RC jack.	
25	At OTF — Restore all keys not required for next test.	
26	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**N. Cancel Time Release and Alarm Test**

12	At jack, lamp and key circuit — Operate (pull out) CTR key of sender under test.	
13	At sender under test — Block nonoperated ES relay.	
14	At OTF — Operate ST key.	TGT lamp lights.

STEP	ACTION	VERIFICATION
15	Immediately after TGT lamp lights, <i>start timing</i> .	In 20 to 32 seconds — At jack, lamp and key circuit — TO lamp lights. At OTF — Overflow tone heard.
16	Operate DL key.	Tone removed.
17	At jack, lamp and key circuit — Remove patching cord from SMB- jack of sender under test.	At jack, lamp and key circuit — In 10 to 15 seconds — R-S-TOA lamp lights. Major alarm sounds.
18	Replace patching cord into SMB- jack of sender under test.	R-S-TOA lamp extinguished. Major alarm silenced.
19d	If alarm sending circuit is provided — Operate transfer to DB or SB position.	T0 lamp extinguished.
20d	Operate alarm transfer key to NTR position.	
21d	Operate RS key momentarily.	
22	At sender under test — Remove blocking tool from ES relay.	
23	At OTF — Restore ST key.	All lamps extinguished.
24	Restore all keys not required for next test.	
25	At jack, lamp and key circuit — Release (push in) CTR key of sender being tested.	
26	Remove patching cords not required for next test.	

#### O. Antiglare Test

12	At OTF — Operate OGT and DPS keys.	
13d	If 4, 5, or 7 digits are to be outputted by sender — Operate one of the following keys: 4SD, 5SD, or 7SD, depending on number of digits outputted.	
14	Operate A- through K- SDR switches, as required, corresponding to digits outputted by sender.	
15e	If route selected is AMA or flat rate — Operate NCH key.	
16	Operate ST key.	OS lamp lights. TGT lamp lights.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
17	Immediately after TGT lamp lights and before sender outpulsing starts, operate RVT key momentarily.	At completion of sender outpulsing — EP and CS lamps light. High tone heard. TOK lamp lights.
18	Restore ST key.	All lamps extinguished.
19	Operate ST key.	OS lamp lights. TGT lamp lights.
20	Immediately after TGT lamp lights and before sender outpulsing starts, operate and restore RVT key twice.	Overflow tone heard.
21	Restore ST key.	All lamps extinguished. Tone removed.
22	Restore all keys not required for next test.	
23	At jack, lamp and key circuit — Remove patching cords not required for next test.	

**P. Intersender Timing**

12	At jack, lamp and key circuit — Remove patching cord and insert make-busy plug into SMB- jack associated with sender under test.	
13	At sender under test — Block operated ATM and ATC1 relays.	
14	Insert plug of 32A test set into RC jack.	
15	Operate white key momentarily.	At sender under test — RO relay operates momentarily.
16	Operate red key momentarily.	
17	Remove 32A test set from RC jack.	
18	Remove blocking tools from ATM and ATC1 relays.	
19	At OTF — Restore all keys not required for next test.	
20	At jack, lamp and key circuit — Remove patching cords and make-busy plug not required for next test.	

**Q. Sender Busy**

1	At sender under test — Block operated SB relay.  <i>Caution: Perform the following steps as rapidly as possible to minimize service re-action.</i>	
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STEP	ACTION	VERIFICATION
2	At jack, lamp and key circuit — Insert make-busy plugs into SMB- jacks of all other senders in same subgroup as sender under test.	
3	At sender under test — Test for presence of ground on terminals A16, A26, and B17 on sender control unit terminal strip.	At sender under test — Ground not present.
4	At jack, lamp and key circuit — Insert make-busy plug into SMB- jack of sender under test.	
5	At sender under test — Remove blocking tool from SB relay.	
6	Repeat Step 3.	
7	At jack, lamp and key circuit — Remove make-busy plug from SMB- jack of sender under test.	
8	At sender under test — Repeat Step 3.	Ground present.
9	At jack, lamp and key circuit — Remove make-busy plugs from all SMB- jacks of senders made busy in Step 2.	