

GROUP-BUSY CIRCUITS
FOR ORIGINATING AND INCOMING REGISTERS AND FOR SENDERS
TESTS USING OFFICE TEST FRAME TEST CIRCUIT SD-27633-01 (J23260)
NO. 5 CROSSBAR OFFICES

1. GENERAL

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1.01 This section describes a method of testing (a) group-busy circuit SD-25795-01 for use with originating and incoming registers; (b) sender group-busy alarm control circuit SD-27638-01 used in offices arranged for line link pulsing; and (c) sender group-busy alarm circuit SD-25500-01 in No. 5 crossbar offices equipped with the office test frame test circuit (OTF) SD-27633-01, Issue 2D and subsequent issues and the trouble indicator and connector circuit SD-27634-01, Issue 2D and subsequent issues.

checked: (1) Start of timing when a marker encounters all originating registers busy. (2) Timing recycle during time-out interval when another all-registers-busy condition occurs. (3) Time-out within specified time limits. (4) Start of timing by each marker when it encounters all originating registers busy. (5) Ungating of originating and incoming registers in the marker connector circuit when all originating registers are busy

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1.02 This section is reissued for the following reasons:

- (a) To add information covering the EADAS/NM (Engineering and Administration Data Acquisition System/Network Management) feature if provided.
- (b) To furnish procedures covering testing of the ED and TM relays for signaling sender group busy conditions to the EADAS/NM scanner.
- (c) To revise Part 2 Apparatus.

B. Group-Busy Timing Recycle and Time-Out for Incoming Registers: The following features are checked: (1) Start of timing when all incoming registers in the associated link group become busy. (2) Timing recycle during time-out interval when another all-registers-busy condition occurs. (3) Time-out within specified time limits

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This reissue does not affect Equipment Test Lists.

1.03 The tests covered are:

GROUP-BUSY CIRCUIT FOR USE WITH ORIGINATING AND INCOMING REGISTERS SD-25795-01

SENDER GROUP-BUSY ALARM CONTROL CIRCUIT SD-27638-01

C. Sender Group Busy: This test checks that a minor alarm sounds and the proper lamp indications are given at the jack, lamp, and key circuit when all the senders in the same group are busy. This test also checks continuity of each sender SIO lead and outgoing sender link SG- leads.

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A. Group-Busy Timing Recycle and Time-Out for Originating Registers: The following features are

D. False Sender Busy (for Offices Arranged for LLP): This test checks that the major alarm sounds and a lamp indication is given at the sender

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group-busy alarm control circuit in offices arranged for line link pulsing only. This test also checks the continuity of the outgoing sender link AL lead. . . . 8

E. Tests for Continuity, Crosses, and Grounds of LLP Overflow Peg Count Leads (When More Than One Sender Group is Served): This test checks for continuity, crosses, and grounds on the SIO and SIE leads to the odd and even markers. . . . 8

F. Tests for Continuity, Crosses, and Grounds of LLP All-Senders-Busy Leads: This test checks for continuity, crosses, and grounds on the ASB- leads. 9

SENDER GROUP-BUSY ALARM CIRCUIT SD-25500-01

G. Sender Group Busy: This test checks that a minor alarm sounds and proper lamp indications are given at the jack, lamp, and key circuit and switchboard when all the senders in the same group are busy. The test also checks the continuity of each sender SIO lead. 10

1.04 Tests should be performed without delay because test conditions require all registers or senders in a group to be made busy and could result in service interference. Tests should, therefore, be performed during periods of light traffic.

1.05 If a regular alarm is received during a test, the test should be immediately discontinued. Proper notifications should be made that a regular alarm has originated.

1.06 Tests B, C, and F require action and verification at the switchboard if an auxiliary signal circuit is provided.

1.07 ♦If only one sender group is served, unused SB- relays must be blocked operated in order to prevent a permanent operate path being closed thru to the AL alarm relay. Do not remove the blocking tools. Refer to SD-27638-01, Note 305.♦

1.08 Local instructions should be followed for recording and reporting register operations caused by making the following tests.

- (a) Test A—The all-originating-registers-busy register will score.
- (b) Test B—The all-incoming-registers-busy register will score.
- (c) Test F—A traffic register or traffic data registration will be made on the ASB- leads associated with the SG- terminals used in the test.
- (d) Test G—The all-senders-busy register will score.
- (e) ♦If EADAS/NM is provided the EADAS/NM center should be notified before tests are performed.♦

1.09 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.

2. APPARATUS

Test A

2.01 Office test frame test circuit (OTF), SD-27633-01.

Tests A, B, C, G

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

2.03 KS-3008 stopwatch or equivalent.

2.04 ♦Testing cord, 893 cord, 6 foot long, equipped with two 360 tools (1W13B cord), one KS6278 connecting clip, and 419A tool.♦

Tests A, E, F

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

Tests A, E, F, G

2.05 67C test set or equivalent, equipped with
one KS-6278 connecting clip (for checking
the presence or absence of ground).

3. METHOD

STEP	ACTION	VERIFICATION
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**GROUP-BUSY CIRCUIT FOR USE WITH ORIGINATING
AND INCOMING REGISTERS SD-25795-01**

**A. Group-Busy Timing Recycle and Time-Out for
Originating Registers**

1	At OTF— Restore all keys.	All lamps extinguished.
2	At TIC— Momentarily operate RLS key.	All lamps extinguished.
3	At OTF— Operate OTL key.	
4	Set CST, CSU switches to select class of service having access to route selected.	
5	Operate FS- key for frame containing originating register.	
6	Set RSG switch to ORB to select originating register group.	If make-busy guard lamp is provided— MBG lamp lighted.
7	Set RSS switch to select particular register.	
8	At jack, lamp, and key circuit— Insert make-busy plug into ORMB- jack associated with selected register.	
9a	If dial tone markers are provided— Insert make-busy plug into M-D-MB jack associated with dial tone marker selected for test.	
10b	If originating line identifiers are provided— Insert make-busy plug into M-C-MB jack for completing marker associated with originating line identifier to be used for test.	
11	At OTF— Operate MKR- key for marker selected for test.	

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STEP	ACTION	VERIFICATION
12	At marker selected for test— Block nonoperated MT13 relay.	
13c	If both line load control cabinet and ungating feature are provided— At master traffic control circuit— Block nonoperated RFC, RFC1 relays.	
14c	At OTF— Operate ST key.	At jack, lamp, and key circuit— ORST-DP lamp lighted. At line load control cabinet— ORST lamp lighted. At group-busy circuit— RB1 relay operated. At master traffic control circuit— RFC, RFC1 relays energized. Ground present on terminal 37 of terminal strip A.
15d	If ungating feature without line load control cabinet is provided— At master traffic control circuit— Block nonoperated RFC, RFC1 relays.	
16d	At OTF— Operate ST key.	At jack, lamp, and key circuit— ORST-DP lamp lighted. At group-busy circuit— RB1 relay operated. At master traffic control circuit— RFC, RFC1 relays energized. Ground present on terminal 37 of terminal strip A.
17e	If line load control cabinet without ungating feature is provided— At OTF— Operate ST key.	At line load control cabinet— ORST-, DP lamps lighted.
18f	If line load control cabinet and ungating feature are <i>not</i> provided— At OTF— Operate ST key.	At jack, lamp, and key circuit— ORST-DP lamp lighted.
19	At OTF— Restore ST key.	If ungating feature is provided— At jack, lamp, and key circuit— ORST-DP lamp remains lighted. If line load control cabinet is provided— At line load control cabinet— ORST-DP lamp remains lighted— If line load control cabinet and ungating feature are <i>not</i> provided—

STEP	ACTION	VERIFICATION
		At jack, lamp, and key circuit— ORST-DP lamp remains lighted.
20	Momentarily operate ST key five times at approximately 5-second intervals.	
21	At OTF— When ST key is momentarily operated for the fifth operation; <i>start timing</i> .	At jack, lamp, and key circuit— In 9 to 17 seconds— ORST-DP lamp extinguished. If line load control cabinet is provided— At line load control cabinet— In 9 to 15 seconds— ORST- lamp extinguished.
22	At marker selected for test— Remove blocking tool from MT13 relay.	
23	Repeat Steps 4 through 22 for other dial tone marker or originating line identifier.	
24	At master traffic control circuit— Remove blocking tools from RFC, RFC1 relays.	
25	At jack, lamp, and key circuit— Remove make-busy plug from M-D-MB or M-C-MB, ORMB- jacks.	
26	At OTF— Restore all keys and switches not required in next test.	
B. Group-Busy Timing Recycle and Time-Out for Incoming Registers		
1	At jack, lamp, and key circuit— Insert make-busy plugs into IRMB- jacks of all registers in link group associated with circuit under test. When last plug is inserted, <i>start timing</i> .	Minor alarm sounds immediately or in 7 to 15 seconds— If circuit under test is associated with dial pulse or revertive pulse incoming registers— IRST- lamp associated with circuit under test lighted.
2	At jack, lamp, and key circuit— Remove two make-busy plugs from IRMB- jacks.	
3	After approximately 5 seconds— Replace make-busy plugs.	
4	Repeat Steps 2 and 3 five times.	IRST- lamp remains lighted.
5	Remove all make-busy plugs. When first plug is removed; <i>start timing</i> .	After 9 to 15 seconds— IRST- lamp extinguished.

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STEP	ACTION	VERIFICATION
6	Momentarily operate TR-AR key.	Minor alarm silenced. IRGB- lamp extinguished.
7a	If group-busy alarm is extended to switchboard— At switchboard— Momentarily operate RL key.	LR- lamp extinguished.

**SENDER GROUP-BUSY ALARM CONTROL CIRCUIT
SD-27638-01**

◆**Note:** Refer to 1.04, 1.05, 1.07, and 1.08.◆

C. Sender Group Busy

1	At jack, lamp, and key circuit— Operate SDA key.	
2	Insert make-busy plugs into SMB- jacks of all senders of the two sender subgroups associated with circuit under test.	SGB- lamp associated with circuit under test lighted. Minor alarm sounds. At outgoing LLP sender link frame— SB- relays in all senders associated with circuit under test operated. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR- lamp associated with circuit under test lighted.
3	At jack, lamp, and key circuit— Remove make-busy plug from one SMB- jack.	
4	Momentarily operate TR-AR key.	SGB- lamp extinguished. Minor alarm silenced. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR lamp extinguished.
		Note: A service call will cause the SGB- lamp to remain lighted. Hold TR-AR key operated while awaiting release of sender.
5	At jack, lamp, and key circuit— Replace make-busy plug in SMB- jack.	SGB- lamp associated with circuit under test lighted. Minor alarm sounds. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR- lamp associated with circuit under test lighted.

STEP	ACTION	VERIFICATION
6	Repeat Steps 3, 4, and 5 until all make-busy plugs have been removed and replaced.	
7	At jack, lamp, and key circuit— Remove make-busy plug from one SMB- jack.	
8	Momentarily operate TR-AR key.	SGB- lamp extinguished. Minor alarm silenced. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR- lamp extinguished.
9	At jack, lamp, and key circuit— Restore SDA key.	
10	Replace make-busy plug in SMB- jack; start timing.	In 7 to 15 seconds— SGB- lamp associated with circuit under test lighted. Minor alarm sounds. At circuit under test— DL- (or DL) relay operated. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR- lamp associated with circuit under test lighted.
11	At jack, lamp, and key circuit— Remove all make-busy plugs from SMB- jacks used in test.	
12	Momentarily operate TR-AR key.	SGB- lamp extinguished. Minor alarm silenced. If sender group-busy load alarm leads are extended to switchboard locations— At switchboard— LR- lamp extinguished.
13	♦If EADAS/NM is provided— Connect direct ground to 6 fixed of the ED relay; start timing.	In 7 to 14 seconds— ED relay operates.
14	At supplementary sender group busy alarm unit— Check for ground present on TSA terminal 32.	Ground present.
15	At ED relay— Remove ground.	ED relay released.♦

STEP	ACTION	VERIFICATION
D. False Sender Busy (for Offices Arranged for LLP)		
1	At outgoing sender link frame— When all SG- relays at sender group-busy relay rack frame are released— Manually operate any SB- relay associated with sender group-busy alarm circuit under test.	At sender group-busy alarm control circuit— FSB lamp lighted. Major alarm sounds.
2	Momentarily operate FB-AR key.	FSB lamp extinguished. Major alarm silenced.
3	Repeat Steps 1 and 2 until all SB- relays associated with sender group under test have been operated.	
E. Tests for Continuity, Crosses, and Grounds of LLP Overflow Peg Count Leads (When More Than One Sender Group is Served)		
1	At jack, lamp, and key circuit— Operate SDA key.	
2a	If circuit under test is arranged with double ground chain through make contacts of SB-relays— At relay rack frame— When all SB- relays are operated— Insulate 1M and 2M of lowest numbered SB-relay. <i>Note:</i> If a minor alarm sounds while performing Steps 2a and 3b, silence the alarm by momentarily operating the TR-AR key at the jack, lamp, and key circuit.	Ground present on 1 and 2 of SB- relay under test. Ground absent on terminals 54 and 55 of terminal strip A.
3b	If circuit under test is arranged with single ground chain through contacts of SB- relays— At relay rack frame— When all SB- relays are operated— Insulate 2M of lowest numbered SB- relay.	Ground present on 2 of SB- relay under test. Ground absent on terminal 54 of terminal strip A.
4	Remove insulators from contacts of SB- relays under test.	If circuit under test is arranged with double ground chain through make contacts of SB-relays— Ground present on terminals 54 and 55 of terminal strip A. If circuit under test is arranged with a single ground chain through make contacts of SB-relays— Ground present on terminal 54 of terminal strip A.

- | STEP | ACTION | VERIFICATION |
|--|---|--|
| 5 | Repeat Steps 2a, 3b, and 4 for next higher SB- relay until all SB- relays have been tested. | |
| 6 | At jack, lamp, and key circuit—
Restore SDA key if not required in next test. | |
| F. Tests for Continuity, Crosses, and Grounds of LLP All-Senders-Busy Leads | | |
| 1 | At relay rack frame—
Insulate 11B of SB0 relay.

<i>Note:</i> If a minor alarm sounds while performing this step, silence the alarm by momentarily operating the TR-AR key at the jack, lamp, and key circuit. | |
| 2 | Block nonoperated SB0 relay. | |
| 3 | Connect ground to terminal 18 of terminal strip E. | Ground present on all terminals of terminal strip E as indicated in Table A. |

TABLE A
SB- RELAY TEST TERMINALS

SB-RELAY	TERMINAL STRIP E
	TERMINAL NUMBER
0	31
1	32
2	33
3	34
4	35
5	36

- | | | |
|---|--|--|
| 4 | Block operated SB0 relay. | Ground absent on associated terminal for SB-relay under test in accordance with Table A. |
| 5 | Remove blocking tool from SB0 relay. | |
| 6 | Remove insulator from SB0 relay. | |
| 7 | Repeat Steps 1, 4, 5, 6 for remaining SB-relays. | |

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STEP	ACTION	VERIFICATION
8	Remove ground connection from terminal 18 of terminal strip E.	
SENDER GROUP-BUSY ALARM CIRCUIT SD-25500-01		
G. Sender Group Busy		
1	At jack, lamp, and key circuit— Operate SDA key.	
2	Insert make-busy plugs into SMB- jacks of all senders of the two sender subgroups associated with circuit under test.	SGB- lamp associated with circuit under test lighted. Minor alarm sounds. If switchboard auxiliary signal circuit is provided— At switchboard— LR- lamp lighted.
3	At jack, lamp, and key circuit— Remove make-busy plug from one SMB- jack.	
4	Momentarily operate TR-AR key.	SGB- lamp extinguished. Minor alarm silenced. Note: A service call will cause the SGB- lamp to remain lighted. Hold TR-AR key operated while awaiting release of sender.
5	Replace make-busy plug in SMB- jack.	SGB- lamp lighted. Minor alarm sounds.
6	Repeat Steps 3, 4, 5 until all make-busy plugs associated with circuit under test have been removed and replaced.	
7	Restore SDA key; <i>start timing</i> .	SGB- lamp extinguished. Minor alarm silenced. In 7 to 15 seconds— SGB- lamp lighted. Minor alarm sounds. If circuit is equipped with 227-type terminal strip— Ground present on terminal 26. If circuit is equipped with a D-type terminal strip— Ground present on terminal 27.
8	Remove all make-busy plugs used for test.	
9	Momentarily operate TR-AR key.	SGB- lamp extinguished. Minor alarm silenced.

STEP	ACTION	VERIFICATION
10a	If switchboard auxiliary signal circuit is provided— At switchboard— Momentarily operate RL key.	LR- lamp extinguished.
11	◆If EADAS/NM is provided— Connect direct ground to contact 6 fixed of the ED relay; <i>start timing</i> .	In 7 to 14 seconds— ED relay operates.
12	At supplementary sender group busy alarm unit— Check for ground present on TSA, terminal 32.	Ground present.
13	At ED relay— Remove ground.	ED relay released.◆

