

1600- OR 2000-CYCLE SINGLE FREQUENCY SIGNALING CIRCUIT
OVER-ALL PULSING AND SUPERVISORY TESTS
USING NO. 2A OR 2B SIGNALING TEST SET ON E AND M LEADS

1. GENERAL

- 1.01 This section describes over-all pulsing and supervisory test for intertoll trunks using (1) 1600- or 2000-cycle signaling circuits per SD-55954-01, SD-55954-02, or SD-56202-01, and (2) 2400- or 2600-cycle signaling circuits per SD-56202-02 or SD-56292-01. These tests are made with the No. 2A or No. 2B signaling test set.
- 1.02 This section is reissued to include the single-frequency signaling circuit SD-56202-02 (1600- or 2000-cycle circuit modified for 2400- or 2600-cycle operation). Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.
- 1.03 The tests cover the following features:
- (a) Idle Condition
 - (b) Seizure
 - (c) Answering Supervision and Stop Pulsing
 - (d) Start Pulsing
 - (e) Pulsing
 - (f) Rering
 - (g) Locating Rering Trouble (1600 or 2000 Single-frequency Circuits Only)
- 1.04 The tests are for use under the following conditions:
- (a) Before the circuit is placed in service. In this case, make the tests after the transmission requirements have been met and after the test of 1600- and 2000-cycle single-frequency signaling circuits in accordance with Section 179-215-501 or 179-217-501, or after tests of 2400- or 2600-cycle single-frequency signaling circuit in accordance with Section 179-312-501, or after test in accordance with Section 179-310-501 of a former 1600- or 2000-cycle unit modified for 2400- or 2600-cycle operation.
 - (b) Where trouble has been reported. In this case, if tests are made at the signaling bay, they are usually made after an operational test has been made from testboard to testboard.
- 1.05 An assistant is required at both ends of the intertoll trunk, and the tests are made in each direction. They are made at the single-frequency signaling bay, at the circuit patching bay, or at the patch bay associated with the toll testboard. However, the 2400- or 2600-cycle unit per SD-56292-01 cannot be tested at the single-frequency signaling bay. The tests are made as follows:
- (a) By sending supervisory signals from the "home" end of the trunk and observing the response to these signals at the "distant" end of the trunk.
 - (b) By sending dial pulses, with different per cent break values, from the "home" end of the trunk and measuring the per cent break values received at the "distant" end of the trunk.
- 1.06 All relay covers should be in place during the tests.
- 1.07 Lettered Steps: The letters a, b, c, etc., are added to a step number to indicate that the step covers an action which may or may not be required, depending on local conditions. The conditions under which a lettered step or a series of steps should be made are given in the action column, and all steps governed by the same condition are designated by the same letter. Where a condition does not apply, the associated steps should be omitted.

2. APPARATUS

At Both Offices

- 2.01 No. 2B signaling test set J64730B (SD-56134-02) or the No. 2A signaling test set J64730A (SD-56134-01).
- 2.02 Patching cord, two P2A cords, 6 feet long, equipped with two No. 347A plugs (2P1D cord) (for patching E and M jacks of

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test set to miscellaneous jack equipment on signaling bay. This cord is not required for testing 2400- or 2600-cycle units per SD-56292-01.

2.03 Patching cord, one P3E cord, 6 feet long, equipped with two No. 310 plugs (3P7A cord) (for patching L jack of test set to the jack at the toll testboard or at the circuit patching bay).

2.04 No. 310 plug with tip and ring shorted required only when testing 1600- or 2000-cycle signaling units (for use when rearing test is not met, to determine at which end of the trunk the faulty circuit is located).

2.05 No. 258D dummy plug (red) (for use in P jack of test set when checking full scale reading of PER CENT BREAK meter).

3. METHOD

3.01 In case of failure to receive supervision or pulses at distant office when tests are made from the toll testboard, a check may be made for tone at the carrier or voice repeater bay by monitoring output and input of single-frequency signaling circuit, as follows:

(a) Where a direct trunk from the toll testboard is available, patch it to monitoring jacks of the carrier or voice frequency repeater associated with the intertoll trunk.

(b) Where a direct trunk is not available, patch the monitoring jacks instead to a trunk to the testboard, such as the transmission measuring trunk used for making multifrequency tests on repeaters.

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
1	Establish talking circuit between offices	
2	At both offices - Remove the associated intertoll trunk from service	
3	On signaling test set - Restore all keys	
4a	When testing 1600- or 2000-cycle signaling circuits or similar circuit modified for 2400- or 2600-cycle operation per SD-56202-02 at miscellaneous jack equipment of signaling bay - Patch E jack of test set to EQ E jack Patch M jack of test set to EQ M jack	
5b	When testing at No. 17B or No. 18B toll testboard, or at circuit patching bay associated with No. 17C toll testboard - Patch L jack of test set to SIG LINE jack of patch bay	
6c	When testing at No. 4 or 5 toll testboard or at No. 8 test and control board - Patch L jack of test set to DSL jack of patch bay	
7	Operate SCALE SEL switch to PPS	
8	Connect TST BAT (-24 + 130) cord to TST BAT B jack	
9	Connect TST BAT A (-48) cord to TST BAT A jack	Wait one minute for set to warm
10d	When using No. 2B test set - Operate CONT PLS key to DIAL PLS	PER CENT BREAK and PULSES PER SECOND meters read 0 on black scales

Note: If either meter reads other than 0, turn pointer adjustment screw until meter reads 0.

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
11e	When using No. 2A test set - Operate PPS key to DIAL SUPV	Same as Step 10d
12	Insert No. 258D dummy plug (red) into P jack of test set	PER CENT BREAK meter reads 100 on black scale Note: If PER CENT BREAK meter reads other than 100, unlock and adjust CAL % BK control until meter reads 100. Relock CAL % BK control taking care to not disturb setting.
13	Remove dummy plug	
14	Restore CONT PLS or PPS key	
<u>Idle Condition</u>		
15	On signaling test set - Operate TWD L and TWD D keys to ON HK	L lamp lighted on No. 2B test set or extinguished on No. 2A (Signaling tone heard when monitoring, see 3.01.)
<u>Seizure</u>		
16	At home office - Operate TWD L key to OFF HK	At distant office - L lamp extinguished on No. 2B test set or lighted on No. 2A At home office - (No signaling tone heard when monitoring on transmitting branch, see 3.01.)
<u>Answering Supervision and Stop Pulsing</u>		
17	At distant office - Operate TWD L key to OFF HK	At home office - L lamp extinguished on No. 2B test set or lighted on No. 2A (No signaling tone heard when monitoring, see 3.01.)
<u>Supervision Only (No Pulsing)</u>		
18	When testing SD-55954-01 with "ZE" option, or SD-55954-02 with "J" option - Proceed as in Steps 30 through 50	
<u>Supervision and Pulsing</u>		
19	When testing SD-55954-01 with "ZB" option, or SD-55954-02 with "K" option, SD-56202-01, SD-56202-02, or SD-56292-01 - Proceed as in Steps 20 through 50	
<u>Start Pulsing</u>		
20	At distant office - Operate TWD L key to ON HK	At home office - L lamp lighted on No. 2B test set or extinguished on No. 2A (At home office, on receiving branch and at distant office, on transmitting branch - Signaling tone, which begins at high level and decreases to low level, heard when monitoring, see 3.01.)
<u>Pulsing</u>		
21f	At home office - Turn ADJ PPS control until PULSES PER SECOND meter reads 10 on 0 to 20 scale	

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<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
22f	Turn ADJ % BK switch to M	
23f	Turn ADJ % BK control until PER CENT BREAK meter reads 45 on black scale <u>Note:</u> Make per cent break adjustments slowly to avoid sudden change in rate of vibration of pointer on PER CENT BREAK meter. If rate of vibration of this pointer is slower (one half as fast) than rate of vibration on pointer on PULSES PER SECOND meter, turn ADJ % BK control fully counterclockwise. Then turn it slowly clockwise to produce desired per cent break.	
24f	Operate PLS key to LINE	(At home office, on transmitting branch - Short spurts of high-level signaling tone, corresponding to the dial pulses, heard when monitoring, see 3.01.)
25f	At distant office - Operate MEAS % BK key to LINE	At distant office - PER CENT BREAK meter reads between 48 and 62 on red scale
26f	At home office - Restore PLS key	
27f	Turn ADJ % BK control until PER CENT BREAK meter reads 70 on black scale (see note in Step 23c)	
28f	Operate PLS key to LINE	At distant office - PER CENT BREAK meter reads between 56 and 70 on red scale (At home office, on transmitting branch - Short spurts of high-level signaling tone corresponding to the dial pulses, heard when monitoring, see 3.01.)
29f	Restore PLS key	

Rering

30	At distant office - Operate TWD L key to OFF HK	At home office - L lamp extinguished on No. 2B test set or lighted on No. 2A (No signaling tone heard when monitoring, see 3.01.)
31	At home office - Turn ADJ PPS control until PULSES PER SECOND meter reads 10 on 0 to 20 scale	
32	Turn ADJ % BK control until PER CENT BREAK meter reads 45 on black scale (see note in Step 23c)	
33d	When using No. 2B test set - Operate CONT PLS key to DIAL PLS	
34e	When using No. 2A test set - Operate PPS key to DIAL SUPV	
35	Operate PLS key to LINE	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
36	Dial digit 1	At distant office - Pointer of PER CENT BREAK meter kicks (At home office, on transmitting branch - Short spurt of high-level signaling tone heard when monitoring, see 3.01.)
37	Repeat Step 36 at least 3 times, allowing minimum of 3 seconds between each digit	Same as Step 36
38	If requirement in Step 36 is met - Proceed to Steps 49 through 52	
39	In the case only 1600- or 2000-cycle sig- naling circuits if requirement in Step 36 is not met - Proceed as in Steps 40 through 52	
<u>Locating Rering Trouble (1600- or 2000-cycle Signaling Circuits Only)</u>		
40	Restore PLS key and CONT PLS or PPS key	
41	Insert No. 310 plug, with shorted tip and ring, into DC jack of signaling circuit	
42	Turn ADJ PPS control until PULSES PER SECOND meter reads 4 on its 0 to 20 scale	
43	Turn ADJ % BK switch to L	
44	Turn ADJ % BK control until meter reads 64 on its black scale (see note in Step 23c)	
45	Repeat Step 33a or 34b	
46	Operate PLS key to LINE	
47	Dial digit 1	At distant office - Pointer of PER CENT BREAK meter kicks
48	Repeat Step 47 at least 3 times, allowing minimum of 3 seconds between steps	Same as Step 47 <u>Note:</u> If pointer of meter kicks, trouble is in control relays at home office. If pointer of meter does not kick, trouble is in receiver at distant office.
49	To send and receive pulses, supervision, and rering signals in opposite direction - Restore PLS key and repeat Steps 15 through 48, transposing the procedures at the home and distant offices	
50	At both offices - Remove patching cords from EQ E, and EQ M, or SIG LINE or DSL jacks	
51	To test other signaling circuits - Proceed as in Steps 2 and 4, 5 or 6, and 15 through 50	
52	When tests on all signaling circuits are completed - Remove all patches and restore all keys	