DSA SWITCHBOARDS
1000-CYCLE TRANSMISSION TESTS
USING PORTABLE TRANSMISSION MEASURING SET
STEP-BY-STEP SYSTEMS

1. GENERAL

1.01 This section describes a method of making 1000-cycle transmission tests on circuits associated with DSA switchboards in step-by-step offices.

1.02 The tests covered are:

A. Outgoing Trunks

B. Cord Circuits

C. Operator Telephone Circuits

1.03 These tests were formerly covered in Section 226-834-500.

1.04 The transmission requirements for the circuits are shown on the circuit drawings.

1.05 It is important that the nominal impedance of the transmission measuring set and the portable testing power or the 1MW be matched. The 23-type set has keys for preparing the TMS to measure circuits with either 600- or 900-ohm impedance. The 12-type set has an input circuit impedance of 600 ohms. If the 12-type set is being used to measure a circuit with 900-ohm impedance, a 2AB auxiliary transmission test set, or equivalent, is required to match the impedance of the circuit under test to the measuring set.

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

1.07 The transmission measuring set will be referred to in this section as TMS. Impedance matching test set (such as 2AB) will be referred to as TTS.

2. APPARATUS

All Tests

2.01 12-type or 23-type transmission measuring set. The 23-type should be used, if available.

2.02 Patching cord, P3F cord, 6 feet long, equipped with a 310 plug and a 309 plug (3P12E cord).

Tests A and B

2.03 2AB auxiliary transmission test set, J94002AB (SD-95253-01).

Test A

2.04 Head telephone set.

Test B

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

Test C

2.06 82A test set.

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
1	Calibrate TMS to 1-milliwatt supply jack in accordance with appropriate section.	
Tests A and B		
2a	If using 23-type TMS — Operate INPUT key to 900 position.	
3b	If using 12-type TMS — Connect TMS jack of TTS to MEAS jack of TMS, using P3E cord.	
4b	Operate TEST switch of TTS to REC 900 position.	

4. METHOD

STEP	ACTION	VERIFICATION
	A. Outgoing Trunks	
5	At idle DSA switchboard position — Connect DIAL jack of TMS to spare trunk jack which has 34-ohm sleeve resistance to ground, using P3F cord.	
6	Insert plug of head telephone set into position telephone circuit jacks.	
7	Insert plug of answering cord (of position cord circuit normally used with type of trunk to be tested) into MEAS jack of TMS or TTS.	
8	Insert plug of associated calling cord into jack of trunk under test.	
9	Prepare TMS for dialing as follows:	

TMS	KEY DESIGNATION	KEY POSITION
12-type	DIAL-SLV	DIAL
23-type	DIAL-MEAS-SLV	DIAL

10	Operate TALK key of cord circuit.	

STEP	ACTION	VERIFICATION
11	Dial or key number of transmission test line circuit in office in which trunk terminates.	1000-cycle tone heard.
12c	If trunk terminates at a switchboard — Request operator to connect to plant test line (SEND 1MW or 1000-0-600 for toll office or 1000-0-900 for local office) for transmission test and to restore TALK key.	1000-cycle tone heard.
13	Restore TALK key of cord circuit.	
14	Prepare TMS for measuring as follows:	TMS meter indicates transmission loss.

TMS	KEY DESIGNATION	KEY POSITION
12-type	DIAL-SLV	Normal (middle)
23-type	DIAL-MEAS-SLV	MEAS

Note: Loss includes connecting circuits such as dial train, 2AB TTS, etc, necessary to complete connection.

15	Remove plug of calling cord.	
16	Remove plug of answering cord.	
17d	If no further tests are to be made — Remove all cords and restore all keys.	

B. Cord Circuits

5c	If testing intercepting cord circuits — At cord circuit relays — Prepare cord circuit selected for test by blocking relays as shown in Table A. *Note:* Information as to relay blocking is given for circuits up to and including the issue number shown. Changes should be made locally, if necessary, when later issues of circuits are installed.	

TABLE A

CORD CIRCUIT	ISSUE	BLOCK OPERATED
SD-30311-01	14D	G Relay
SD-31208-01	11D	CT Relay
SD-31403-01	6D	RT and C Relays

STEP	ACTION	VERIFICATION
6d	If testing special service cord circuits — At switchboard position associated with cords to be tested — Connect DIAL jack of TMS to spare switchboard jack which has 34-ohm sleeve resistance to ground, using P3F cord.	
7e	If testing combination cord circuits SD-90454-01 or SD-90454-02 — At cord circuit relays — Block operated C relay.	
8e	At switchboard position — Connect DIAL jack of TMS to spare switchboard jack which has proper sleeve resistance, high or low, using P3F cord. *Note:* On a routine basis, the answering cord should be tested for both high and low sleeve conditions.	
9	Operate TALK key of cord circuit.	
10	Insert plug of calling cord under test into jack (SEND 1MW or 1000-0-900) of test line circuit for one-way transmission testing.	1000-cycle tone heard.
11	Insert plug of associated answering cord into MEAS jack of TMS or TTS.	
12	Restore TALK key of cord circuit.	
13	Prepare TMS for measuring as follows:	TMS meter indicates transmission loss.

TMS	KEY DESIGNATION	KEY POSITION
12-type	DIAL-SLV	Normal (middle)
23-type	DIAL-MEAS-SLV	MEAS

Note: Loss includes connecting circuits such as dial train, 2AB TTS, etc, necessary to complete connection.

14	Remove plug of answering cord.	
15	Remove plug of calling cord.	
16f	If no further tests are to be made — Remove all cords and restore all keys.	
17	Remove blocking tools, if being used.	

STEP	ACTION	VERIFICATION
	C. Operator Telephone Circuits	
2	At switchboard position — Connect MEAS jack of TMS to low sleeve jack (SEND 1MW or 1000-0-600) of plant test line for transmission testing using P3F cord.	
3	With TALK key of cord circuit normal, insert plug of calling cord into other MEAS jack of TMS.	
4	Prepare TMS for measuring as follows:	TMS meter indicates transmission loss of cord.
	TMS / KEY DESIGNATION / KEY POSITION 12-type DIAL-SLV Normal (middle) 23-type DIAL-MEAS-SLV MEAS	
5	Insert 289B plug of 82A test set into C-D jacks of operator telephone circuit.	
6	Operate TALK key of cord circuit being used.	TMS meter indicates transmission loss which is bridging loss of cord circuit and operator telephone circuit.
7c	If monitoring is accomplished by telephone circuit MON key — Operate MON key.	TMS meter indicates transmission loss which is bridging loss of cord circuit and operator telephone monitoring circuit.
8d	If monitoring is accomplished by cord circuit MON key — Operate MON key.	TMS meter indicates transmission loss which is bridging loss of cord circuit and operator telephone monitoring circuit.
9	Restore MON key.	
10e	If telephone circuit is equipped with repeating coil between C-D and A-B jacks — Remove 289B plug from C-D jacks and insert into A-B jacks of operator telephone circuits.	
11	Operate TALK key of cord circuit.	TMS meter indicates transmission loss which is bridging loss of cord circuit and operator telephone circuit from A-B jacks.
12	Remove calling cord from MEAS jack of TMS.	
13	Disconnect P3F cord.	

STEP	ACTION	VERIFICATION
14	Insert plug of calling cord into low sleeve jack of test line for one-way transmission testing.	
15	Insert 310 plug of 82A test set into MEAS jack of TMS.	
16	Operate T key of 82A test set.	TMS meter indicates transmitting loss of cord circuit and operator telephone circuit from A-B jack.
17	Remove 289B plug from A-B jacks and insert into C-D jacks of operator telephone circuit.	TMS meter indicates transmitting loss of cord circuit and operator telephone circuit from C-D jack.
18c	If monitoring is accomplished by telephone circuit MON key — Operate MON key.	
19d	If monitoring is accomplished by cord circuit MON key — Operate MON key.	
20	Operate R key of 82A test set.	TMS meter indicates receiving loss of cord circuit and operator telephone circuit from C-D jacks.
21f	If no other tests are to be made — Remove all cords and restore all keys.	