

TRUNKS TERMINATING ON NO. 1 TRUNK CONCENTRATOR

INCOMING TRUNK FRAME

TRUNK TRANSMISSION TESTS

1. GENERAL

1.01 This section describes the methods used when making transmission measurements on incoming trunk circuits to the No. 1 Trunk Concentrator (No. 1 TC) from the local offices. The transmission measurements covered in this section include loss, message circuit noise, and frequency response. The originating end procedures are intended for use at the local outgoing intercept trunk circuits, whereas the terminating end procedures are for use at the No. 1 TC incoming trunk circuits.

1.02 This issue affects the Equipment Test List.

1.03 The tests covered are:

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AB. Two-Way Frequency Response Measurement—Originating End Procedures	5
AC. Message Circuit Noise Measurement—Originating End Procedures	6
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BB. Two-Way Frequency Response Measurement—Terminating End Procedures	8
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1.04 The tests and procedures in this section are identified by a special designation plan. Double test letters AA through AZ are reserved for originating end test procedures that require assistance at the terminating end. Double test letters BA through BZ are reserved for the terminating end test procedures to give assistance required by the originating end.

1.05 Test Procedures AA, AB and AC cover the general method of making transmission tests on outgoing trunks from various type offices to a No. 1 Trunk Concentrator. Tests on these trunks will normally be originated at the various offices and would normally use originating end procedures found in the associated trunk transmission section for that office. As an interim arrangement, generalities of these procedures are provided in Tests AA, AB and AC of this section. They should be used in conjunction with the associated section for that office for test frame setup and operation. Procedures to be followed at the No. 1 Trunk Concentrator are found in Terminating End Procedures BA, BB, and BC of this section.

1.06 Transmission requirements for trunks are shown on circuit layout cards, on local trunk records, or in the appropriate Bell System Practice.

1.07 The transmission loss indicated by the transmission measuring set (TMS) meter is the actual measured loss (AML) in dB of the circuit under test and is made under the same conditions as the expected measured loss (EML) was computed.

1.08 The results of these tests should be entered on the proper form.

1.09 Precautions should be taken when performing these tests so that normal traffic will not be adversely affected.

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1.10 For Tests AB and BB, caution should be taken when using a continuously variable oscillator not to sweep through 2400 or 2600 Hz on a trunk that uses a single frequency signaling unit.

1.11 After a trunk has been connected for testing, all tests in this section can be performed on the trunk before releasing it.

1.12 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 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

2.01 The apparatus required for each test performed at the terminating end is shown in Table A. A more descriptive name and additional information on each item are covered in the paragraph indicated by the number in parentheses. Because of the variety of test circuits and option in the local offices, the apparatus required is omitted for originating end procedures. The calibration and operating procedures for each test set listed may be found in the section listed with the test set. It is important that the transmission test equipment is known to be accurately calibrated.

2.02 TC portable trunk test set SD-97576-01.

2.03 23A transmission measuring set (TMS) (Section 103-223-100).

2.04 3A or 3C noise measuring set (NMS) (Sections 103-611-100 or 103-611-101).

2.05 KS-19353, L1 or L4 oscillator (OSC) (Sections 103-302-105 or 103-302-106).

2.06 Patching cord, P3E cord, 6 feet long, equipped with 310 plugs on each end (3P7A cord).

2.07 Patching cord, P2AE cord, 4 feet long equipped with a 310 plug and a 289B plug (2P16A cord).

2.08 Patching cord, P3E cord, 3 feet long, equipped with 310 plugs on each end (3P7B cord).

2.09 Testing cord, 898 cord, 6 feet long, equipped with two 360A tools (1W13B cord) and two KS-6278 connecting clips for connecting ground to 3A, 3C, NMS.

2.10 52M head telephone set.

TABLE A

APPARATUS	TESTS		
	BA	BB	BC
TC Test Set (2.02)	1	1	1
23A TMS (2.03)	1	1	
3A or 3C NMS (2.04)			1
KS-19353 Oscillator (2.05)		1	
Patching Cord (2.06)	6	5	5
Patching Cord (2.07)			1*
Patching Cord (2.08)	1	2	1*
Testing Cord (2.09)			1
Head Telephone Set (2.10)	1	1	1

* 2P16A Cord required for connection to 3A NMS.

3P7A Cord required for connection to 3C NMS.

3. PREPARATION

3.01 Each test set should be calibrated in accordance with the appropriate Bell System Practice before it is used (see Part 2).

STEP	ACTION	VERIFICATION
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Tests AA, AB and AC

Note: Refer to 1.05

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| 1 | Using the appropriate apparatus and test measuring equipment, set up to perform the transmission test on the intercept trunks to the No. 1 trunk concentrator. | |
| 2 | Check the trunk to be tested for idle condition. | |
| 3 | Make busy the trunk to be tested. | |
| 4 | Contact the maintenance personnel at the No. 1 trunk concentrator (far end). | |
| 5 | Request far end to prepare for trunk transmission tests to the incoming trunk at the No. 1 trunk concentrator, to be tested. | |
| 6 | Cause the trunk to be tested to be seized. | |
| 7 | Connect a telephone set to the trunk to be tested. | |

Tests BA, BB and BC (Fig. 1)

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|----|---|--|
| 8 | At TC test set—
Restore all keys and switches to normal. | |
| 9 | Plug head telephone set into TEL A and TEL B jacks. | |
| 10 | Using 3P7A cord, connect RCV1 jack to RCV-IN jack on incoming trunk frame associated with trunk to be tested. | |
| 11 | Using 3P7A cord, connect TRT2 jack to TRMT-OUT jack on incoming trunk frame associated with trunk to be tested. | |

Caution: To avoid possible grounding of battery supply lead, connect cord to test set first, and when disconnecting, remove cord from test set last.

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| 12 | Using 3P7A cord, connect -48V jack to -48V supply jack on incoming trunk frame. | |
| 13 | Using 3P7A cord, connect TRK jack to TRK jack on incoming trunk frame associated with trunk to be tested. | |

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STEP	ACTION	VERIFICATION
14	Using 3P7A cord, connect TT jack to TT jack on incoming trunk frame associated with trunk to be tested.	
15	At incoming trunk frame jack, key and lamp panel— Operate BCO key.	BCO lamp lighted.
16	At TC test set— Operate -48V key.	-48V lamp lighted.
17	Rotate TTS switch to 4WT.	
18a	If the trunk being tested is an ONI-1 E&M type trunk— Block OPT relay operated.	
19	At TC test set— Operate TT key.	TT lamp lighted.
20	Request the local office to seize the incoming trunk under test.	ON lamp lighted.
21	Within 10 seconds after the ON lamp is lighted— Momentarily operate the SIG-B key.	SIG lamp lights and extinguishes. CT lamp lighted.
22	Momentarily operate SIG-G key.	SIG and OHI-OP lamps light and extinguish.
23b	If the trunk under test is an ONI trunk— Momentarily reoperate the SIG-G key.	SIG and OHI-OP lamps light and extinguish.
24	Operate TALK key.	TALK lamp lighted.
25	Momentarily operate TSZ key.	TSZ lamp lighted. Talk circuit is established to local office.

Tests BA and BC

26	At TC test set— Using 3P7A cord, connect RCV2 jack to 310 MEAS jack of 23A TMS.
27	At TMS— Operate DIAL-MEAS-SLV key to MEAS.
28	Operate INPUT key to 600.
29	Set ADD DBM switch to -5.

STEP	ACTION	VERIFICATION
4. METHOD		
AA. Two-Way 1000-Hz Loss Measurement—Originating End Procedures		
8	When the talk circuit is established on the trunk, request far end to send the 1000-Hz tone for an agreed upon interval.	
9	Connect a transmission measuring set (TMS) to the trunk.	
10	Read and record TMS indication.	
11	After the agreed interval, reestablish the talk circuit and request the far end to receive and measure the 1000-Hz tone for an agreed upon interval.	
12	Connect a 1000-Hz 0dB tone to the trunk.	
13	After the agreed interval, reestablish the talk circuit and request the TMS indication received at the far end.	
14	Record the TMS indication received at the far end.	
15	Repeat Steps 2 through 14 for other trunks to be tested.	
16c	If no other tests are to be performed— Inform the far end that tests are complete and remove all test equipment.	
AB. Two-Way Frequency Response Measurement—Originating End Procedures		
8	When the talk circuit is established on the trunk, request far end to send the first frequency tone for an agreed upon interval.	
9	Connect a transmission measuring set (TMS) to the trunk.	
10	Read and record TMS indication.	
11	After the agreed interval, reestablish the talk circuit and request next frequency tone to be sent.	

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STEP	ACTION	VERIFICATION
12	Repeat Steps 9 through 11 for other frequencies to be tested.	
13	Request far end to receive and measure the tones to be sent for an agreed upon interval.	
14	Connect an oscillator adjusted to the first frequency tone to be tested.	
15	After the agreed interval, reestablish the talk circuit and request the TMS indication received at the far end.	
16	Record the TMS indication received at the far end.	
17	Repeat Steps 13 through 16 for other frequencies.	
18	Repeat Steps 2 through 17 for other trunks to be tested.	
19a	If no other tests are to be performed— Inform the far end that tests are complete and remove all test equipment.	

AC. Message Circuit Noise Measurement—Originating End Procedures

8	When the talk circuit is established on the trunk, request far end to make a noise measurement on the trunk for an agreed upon interval.	
9	Provide a balance termination on the trunk to be tested.	
10	After the agreed interval, reestablish the talk circuit and request the noise measurement and noise character.	
11	Record the noise measurement and character received from far end.	
12	Request far end to provide a balance termination on the trunk for an agreed upon interval.	
13	Connect a noise measuring test set with a test receiver to the trunk to be tested.	
14	Record the noise measurement and the character received.	

STEP	ACTION	VERIFICATION
15	Repeat steps 2 through 14 for other trunks to be tested.	
16a	If no other tests are to be performed— Inform the far end that tests are complete and remove all test equipment.	
BA. Two-Way 1000-Hz Loss Measurement Terminating End Procedures		
30	At TC test set— Using 3P7A cord, connect TRT1 jack to MW0 jack on incoming trunk frame, jack, key and lamp panel.	
31	When requested by originating end to connect 0 dBm 1000-Hz tone— Momentarily operate RL key.	TSZ lamp extinguished. Talk circuit is removed.
32c	If incoming trunk under test is remotely located from the ACD— Operate TRT1 key.	TRT1 lamp lighted.
33d	If incoming trunk under test is colocated with the ACD— Operate 10 DB key.	10 DB lamp lighted.
34d	Operate TRT2 key.	TRT2 lamp lighted.
35	After agreed upon interval— Restore TRT1 or TRT2 and 10 DB keys to normal.	TRT1 or TRT2 and 10 DB lamps extinguished.
36	Momentarily operate TSZ key.	TSZ lamp lighted. Talk circuit is reestablished.
37	When requested by originating end to measure 0 dBm 1000-Hz tone applied to trunk under test from originating end— Momentarily operate RL key.	TSZ lamp extinguished. Talk circuit is removed.
38c	If incoming trunk under test is remotely located from the ACD— Operate RCV1 key.	RCV1 lamp lighted.
39d	If incoming trunk under test is colocated with the ACD— Operate 10 DB key.	10 DB lamp lighted.
40d	Operate RCV2 key.	RCV2 lamp lighted.
41	Read TMS meter.	

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STEP	ACTION	VERIFICATION
42	Restore RCV1 or RCV2 and 10 DB keys to normal.	RCV1 or RCV2 and 10 DB lamps extinguished.
43	Momentarily operate TSZ key.	TSZ lamp lighted. Talk circuit is reestablished.
44	Report meter reading to originating end.	
45e	If no further tests are to be made— Remove head telephone set and all patching cords; restore all keys.	
BB. Two-Way Frequency Response Measurement— Terminating End Procedures		
26	At TC test set— Using 3P7A cord, connect TRT1 jack to OUTPUT 310 jack of portable oscillator.	
27	At portable oscillator— Set FUNCTION switch to 600.	
28	When directed by originating end to send— Adjust oscillator to send 0 dBm at requested frequency.	
29	Momentarily operate RL key.	TSZ lamp extinguished. Talk circuit is removed.
30c	If incoming trunk under test is remotely located from the ACD— Operate TRT1 key.	TRT1 lamp lighted.
31d	If incoming trunk under test is colocated with the ACD— Operate 10 DB key.	10 DB lamp lighted.
32d	Operate TRT2 key.	TRT2 lamp lighted.
33	After agreed upon interval— Restore TRT1 or TRT2 and 10 DB keys to normal.	TRT1 or TRT2 and 10 DB lamps lighted.
34	Momentarily operate TSZ key.	TSZ lamp lighted. Talk circuit is reestablished.
35	Repeat Steps 25 through 31 at other frequencies as directed by originating end.	
36	When requested by originating end to measure tone applied to trunk under test— Momentarily operate the RL key.	TSZ lamp extinguished. Talk circuit is removed.

STEP	ACTION	VERIFICATION
37c	If incoming trunk under test is remotely located from the ACD— Operate RCV1 key.	RCV1 lamp lighted.
38d	If incoming trunk under test is colocated with the ACD— Operate 10 DB key.	10 DB lamp lighted.
39d	Operate RCV2 key.	RCV2 lamp lighted.
40	Read TMS meter.	
41	Restore RCV1 or RCV2 and 10 DB keys to normal.	RCV1 or RCV2 and 10 DB lamps extinguished.
42	Momentarily operate TSZ key.	TSZ lamp lighted. Talk circuit is reestablished.
43	Report meter reading and repeat Steps 25 through 39 at other frequencies as directed by originating end.	
44e	If no further tests are to be made— Remove head telephone set and all patching cords; restore all keys.	

BC. Message Circuit Noise Measurement—Terminating End Procedures

30c	If using 3C NMS— At TC test set— Using 3P7A cord, connect RCV2 jack to IN jack of 3C NMS.
31c	At 3C NMS— Set FUNCTION switch to NM600/900.
32d	If using 3A NMS— At TC test set— Using 2P16A cord, connect RCV2 jack to IN jack of 3A NMS.
33d	Set FUNCTION switch to NM 600.
34	At 3A or 3C NMS— Using 893 cord, connect GND binding post to ground.
35	Connect 723A receiver to AC MON jack

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STEP	ACTION	VERIFICATION
36	When requested by originating end to make a noise measurement— Operate RCV1 key.	RCV1 lamp lighted.
37	Read NMS meter and note the character of noise heard in 716c receiver.	
38	Restore RCV1 key and report noise reading and character of noise to originating end.	RCV1 lamp extinguished.
39	When requested by originating end to provide a balance termination— Operate RCV2 key.	RCV2 lamp lighted.
40	Monitor with 716C receiver.	
41	When requested by terminating end to remove balance termination— Restore RCV2 key.	RCV2 lamp extinguished.
42e	If no further tests are to be made— Remove head telephone set and all patching cords; restore all keys.	

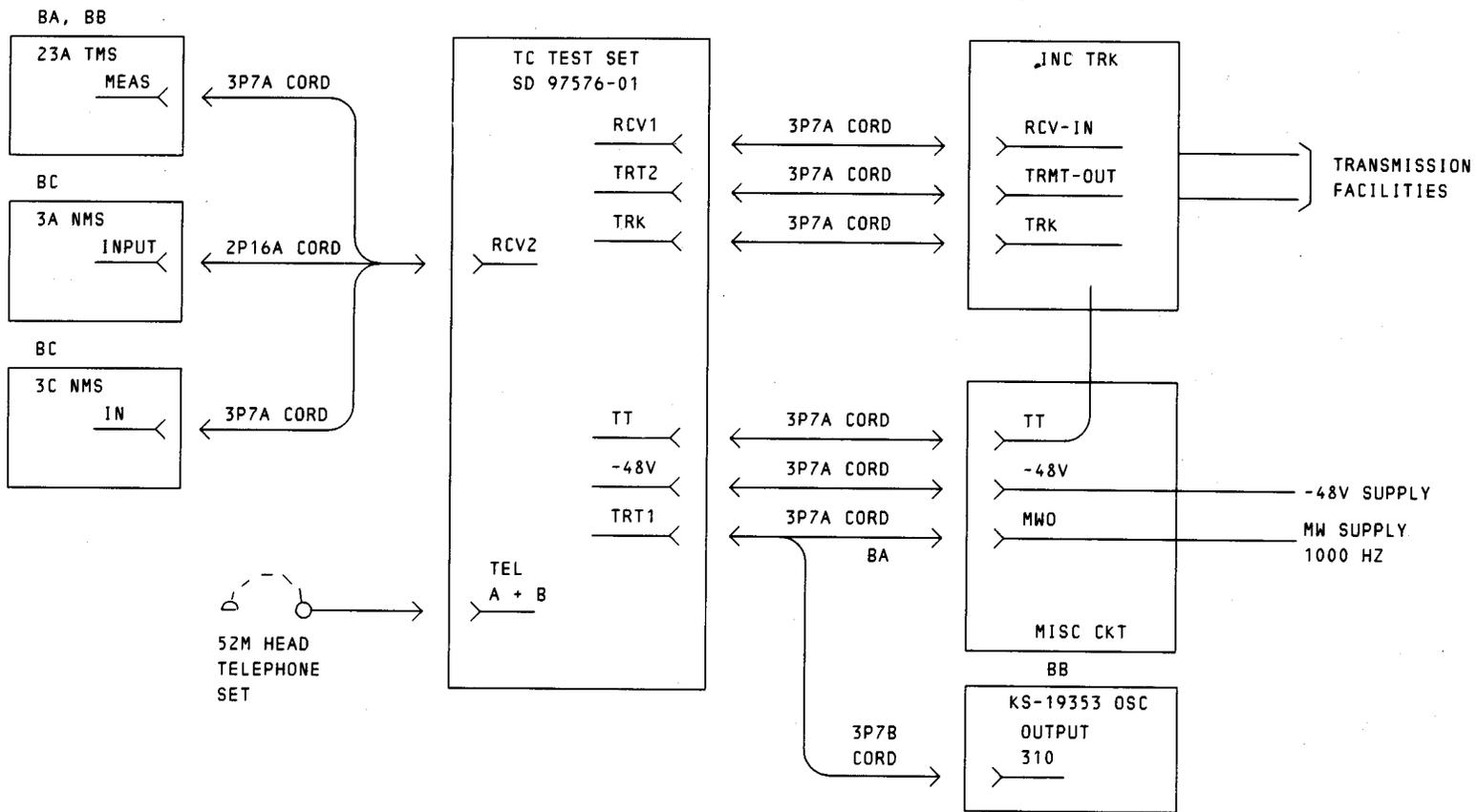


Fig. 1—Equipment Diagram for Tests BA, BB and BC