DIMENSION® 600/2000 PBX

STATION TO TRUNK TEST CALL

(PROC 551)

1. GENERAL

1.1 This section is issued in order to make available the information contained in the Administration and Maintenance Manual, 500-497, PROC 551.

1.2 The attachment provides procedures for testing trunks by placing calls from any station in the system.

ATTACHMENT

PROC 551 (9 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

PROCEDURE 551 - STATION TO TRUNK TEST CALL

A. DESCRIPTION

Procedure 551 should be used to check trunks by allowing calls to be placed from any line via any outgoing trunk.

Three tests are available:

- Test 1 - Tests all trunks.
- Test 2 - Tests a specific trunk.
- Test 3 - Tests all trunks in a specific trunk group.

TEST 1: TESTS ALL TRKS HAVING SPECIFIED PRIMARY TRUNK DIAL ACCESS CODE (FLD 12-14). USE 'NEXT CIRCUIT' TO OBTAIN THE NEXT UNTESTED TRUNK TO BE TESTED. USE 'NEXT UNIT' TO OBTAIN 1ST UNTESTED TRUNK OF THIS ACCESS CODE IN NEXT MODULE. USE TEST 2 OR 3 TO TEST VOICE SWITCH GAIN (VSG) TRUNKS	TEST 2: TESTS A SPECIFIED TRUNK. PROVIDE THE TRK EQUIPMENT LOCATION FIELDS (7-11).	TEST 3: TESTS ALL TRUNKS IN A SPECIFIED TRUNK GROUP (FLD 15). USE 'NEXT CIRCUIT' TO OBTAIN THE NEXT UNTESTED TRUNK. USE 'NEXT UNIT' TO OBTAIN 1ST UNTESTED TRUNK OF THIS TRUNK GROUP IN NEXT MODULE.	NOTES: 1. A DEFAULT TEST LINE IS DISPLAYED. ERROR CODES: 80-ONLY TESTING 63 TRUNKS AT A TIME 81-NO DAC FOR VSG TRKS	STATE ENCODES: (FLD 18): 0=TEST LINE OR TRK NOT AVAILABLE 1=TEST LINE ON HOOK 2=DIAL TONE THRU DIAL COMPLETION 3=CO RESPONSE (DIAL TONE OR BUSY) 4=WRONG ACCESS CODE 5=END OF GROUP TEST 6=CALL ABORTED 7=NO REGISTER OR NO TIME SLOT AVAILABLE 8=NO TRUNK AVAILABLE 9=TRUNK SEIZED INCOMING VSG AMP STATE ENCODES (FLD 17): 0=INACTIVE 1=GAIN IN 2=GAIN OUT 3=VSG MODE

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	TEST LINE EQUIPMENT LOC					TEST 2					TEST 1			TEST 3					
						TRUNK EQUIPMENT LOC					TRUNK DIAL ACCESS CODE								
TEST NO	MODULE	CABINET	CARRIER	SLOT	CIRCUIT	MODULE	CAB	CARR	SLOT	CKT	FIRST DIGIT	SECOND DIGIT	THIRD DIGIT	TRUNK GROUP	TRUNK TYPE	AMP STATE	STATE		PROC 551
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
2.	0.	1.	1.	9.	0.	0.	1.	0.	6.	0.	9.	-.	-.	1	8.	1	9.	1.	3.		551
FIELD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1-3	Test number.
2	0-24	Test line module number.
3	0-4	Test line cabinet number.
4		Test line carrier number:
	0	Line group control carrier.
	1-4	Line port carrier.
5		Test line slot number†:
	5,7-10, 12-18	In line group control carrier.
	2-9, 11-18	In line port carrier.
6	0-3	Test line circuit number.
7	0-24	Trunk module number.
8	0-4	Trunk cabinet number.
9	0-4	Trunk carrier number.
10	8-25	Trunk slot number.
11	0,1	Trunk circuit number.

† A default test line is provided when the procedure is called in. The test line may be changed, if desired. The new test line must be in service and not busied out. If field 2 is changed, a default test line for the new module is provided.

Field	Code	Definition
12		First digit of trunk dial access code:
	1-9,	1-9
	11,	TOUCH-TONE *
	12	TOUCH-TONE #
13	0-9	Second digit of trunk dial access code.
14	0-9	Third digit of trunk dial access code.
15	11-99	Trunk group number.
16		Trunk type:
		All two-way CCSA/APLT CO trunks:
	12	Delay dial in/(wink start or delay dial) and dial tone out.
	13	Wink start in/(wink start or delay dial) and dial tone out.
	14	Delay dial in/dial tone out.
	15	Wink start in/dial tone out
		Regular CO trunks:
	17	1-way outgoing DOD, dial tone and ground start.
	18	1-way out DOD with party test, dial tone and ground start.
	19	2-way automatic in/DOD, dial tone and ground start.
	20	2-way automatic in/dial tone and ground start out with party test.

B. FIELD DEFINITIONS AND CODES (Contd)

Field	Code	Definition
16 (Contd)		Foreign exchange CO trunks:
	22	1-way outgoing DOD, dial tone and ground start.
	23	1-way out DOD with party test, dial tone and ground start.
	24	2-way automatic in/DOD, dial tone and ground start.
	25	2-way automatic in/dial tone and ground start out with party test.
		WATS CO trunks:
	27	1-way outgoing DOD or toll terminal access for TSPS, ground start and dial tone.
	28	1-way out DOD with party test, ground start and dial tone.
		Tie trunks:
	33	1-way automatic out.
	34	1-way dial tone out.
	36	2-way dial in/dial tone out.
	37	2-way dial tone in/automatic out.
	38	2-way automatic in/dial tone out.
	39	2-way automatic in/automatic out.
	44	2-way dial tone or delay dial in/ dial tone out.
	45	2-way dial tone or delay dial in/ automatic out.

Field	Code	Definition
17		VSG amplifier states:
	0	Inactive.
	1	Gain in.
	2	Gain out.
	3	VSG mode.
		State of trunk test call:
	0	Test line or specific trunk not idle.
	1	Test line on-hook and trunk idle.
	2	Dial tone through dial completion.
	3	CO response (dial tone or busy).
	4	Wrong access code or time-out.
	5	End of group test.
	6	Call dropped.
	7	No register or no time slot available.
	8	No trunk available.
	9	Trunk seized incoming.

APLT - Advanced private line termination
CCSA - Common control switching arrangement
CO - Central office
DOD - Direct outward dialing
TSPS - Traffic service position system
WATS - Wide area telecommunication service
VSG - Voice switched gain

C. TEST PROCEDURES

A list of station-to-trunk test call tests, what each one does and how each is run follows:

Call in Procedure 551:

PROC NO.; 551; ENTER

Test 1 is automatically selected.

Depressing the NEXT TEST key repeatedly advances the procedure to the desired test.

NOTE

- The EXECUTE key should be used before going off-hook and dialing from the test line. EXECUTE must be depressed before each test call is placed even when repetitive calls are attempted through the same trunk.
- If an intercept tone is received when making the test call, check the class of service of the test line and either change it to the least restricted class of service, or key in an unrestricted line into these fields. An ECTS telephone set ***cannot*** be used for this procedure.

Test 1:

Test 1 is used to test all trunks in a trunk group for the trunk dial access code specified.

When Test 1 is called in, a default test line equipment location is displayed in fields 2 through 6. This circuit can be used or another test line can be selected.

The module field of the test line equipment (field 2) is flashed, indicating it is an optional entry field. To select another test line, enter its equipment location in fields 2 through 6; eg:

(Test Line Module); ENTER; (Cabinet); ENTER; CARRIER; ENTER; (Slot); ENTER; (Circuit); ENTER

NOTE

If field 2 alone is changed, a new default test line is displayed in fields 3 through 6.

Next, a trunk dial access code must be entered. If a new test line has been entered, field 12 is blanked and the decimal point in that field flashed. This indicates a mandatory entry field. The trunk dial access code must now be entered in fields 12 through 14.

If the displayed test line is to be used, a trunk dial access code still must be entered in fields 12 through 14. This can be done using the change field sequence.

To start the test, depress the EXECUTE key.

NOTE

If the number of trunks in the group exceeds the size of the group buffer (63), an error code of 80 is displayed to indicate that the sorted group of trunks is not complete. Proceed with the test until all additional trunks are tested.

C. TEST PROCEDURES (Contd)

If the test line is on-hook and available, and if the selected trunk is available, a "1" is displayed in field 18; if either the test line or the trunk is busy, a "0" is displayed in field 18. The trunk group number and type are displayed in fields 15 and 16, respectively.

Next, go off-hook with the test line (field 18 changes to a 2*) and dial the trunk dial access code displayed. Field 18 displays the 2 during the dial access code dialing phase and changes to a 3 at various times depending on several things (eg, TOUCH TONE/rotary test line, SMDR, trunk type, etc). The minimum change time after the trunk dial access code is dialed is about 1 second. The maximum change time after the last digit is dialed to complete the call is about 10 seconds.

If a failure occurs, a 4, 6, 7, or 8 displays in field 18.
If another trunk equipment location is to be selected, the NEXT CIRCUIT and NEXT UNIT keys can be used. NEXT CIRCUIT sequences the test to the next untested trunk equipment location in the module. NEXT UNIT sequences the test to the first untested trunk equipment location in the next module.

Sequencing the test beyond the end of the list of trunks in the trunk group buffer causes trunk equipment location fields 7 through 11 to be dashed. If all the trunks in the buffer were tested beyond state 1, depressing NEXT CIRCUIT or NEXT UNIT causes one more search for untested trunks. If any are found, a 5 is displayed in field 18 to indicate that all trunks with the displayed dial access code and trunk group number have been tested.

If any trunks in the trunk group buffer were not tested, and the trunk equipment location fields are dashed (as described previously), depressing NEXT CIRCUIT or NEXT UNIT displays the lowest untested trunk, from the trunk group buffer, in fields 7 through 11.

NOTE
A trunk is considered to be tested after the EXECUTE key is pressed, the call progresses to state 2 and either terminates by going on-hook or completes the testing sequence. The tested trunk is then removed from the untested trunk list for either Test 1 or Test 3. If the NEXT CIRCUIT or NEXT UNIT keys are operated after test execution but before the test line goes off-hook, the trunk is not considered to be tested.

After all the trunks assigned to the displayed trunk dial access code and displayed trunk group have been tested, a 5 displays in field 18. If the size of a trunk group exceeds the capacity of the trunk group buffer, the buffer is loaded again with the untested trunks when all of the first group of trunks in the buffer have been tested. These trunks are then sorted in ascending order. When NEXT CIRCUIT or NEXT UNIT is depressed to search for the first

* If field 18 does not change to a 2 at this time, the trunk under test has been siezed by an incoming CO, FX, or WATS call. Wait until tie trunk is idle and try again or go on to the next trunk.

C. TEST PROCEDURES (Contd)

untested trunk exceeding the capacity of the buffer, special error code 80 is displayed. This code indicates that the trunk group is exceptionally large and that the next group of untested trunks has been loaded for testing.

> **NOTE**
> The sorted group of trunks from the second trunk group buffer load may be overlapped with the sorted first buffer load. This condition is indicated by special error code 80 when an incomplete trunk group is loaded into the group buffer.

Test 2:

Test 2 is used to test a single trunk.

When Test 2 is called in, field 7 is blanked and the decimal point in that field is flashed, indicating a mandatory entry field. The equipment location of the trunk to be tested must be entered in fields 7 through 11.

To start the test, depress the EXECUTE key. The trunk testing sequence is the same as described for Test 1.

Test 3:

Test 3 is used to test all trunks in a specific trunk group.

When Test 3 is called in, field 15 is blanked and the decimal point in that field is flashed, indicating a mandatory entry field. The number of the trunk group to be tested must be entered in field 15.

To start the test, depress the EXECUTE key. If the test line is on-hook and available, the following is displayed on the MAAP:

Field	Contents
1	Test number.
2-6	Test line.
7-11	Equipment location of the lowest numbered trunk in the trunk group.
12-14	Trunk dial access code.
15	Trunk group number.
16	Trunk type.
17	State of the test.

The trunk testing sequence is similar to that described for Test 1.

D. REPAIR GUIDE

When the use of a station-to-trunk test call is indicated, the following steps should be performed in the order shown:

> **CAUTION**
>
> **The central office must be notified prior to making outgoing calls on incoming trunks!!!**

Step **Procedure**

1. Make a test call through various trunks as follows:

   (a) Depress EXECUTE.

   (b) At the test line, go off-hook* and dial the displayed trunk dial access code.

   (c) Dial the appropriate number of digits to complete the call.

2. If a single trunk fails (field 18 equals 6 or is stuck in state 2), replace the associated circuit pack.

3. If more than one trunk fails (field 18 equals 6 or is stuck in state 2):

   (a) Replace LC49 in the associated carrier.
   (b) Replace LC50.

4. A test call stuck at state 2 indicates a possible failure for CO, foreign exchange, and WATS trunks.

5. A test call can stick at state 2 for valid CCSA/APLT and tie trunks:

   (a) Listen to the test call to determine whether it is completed successfully.
   (b) If the call cannot be completed, replace the associated circuit pack.

6. Use the NEXT DATA key to step through the VSG amplifier states. Pressing NEXT DATA causes the amplifier to toggle between 0 (amp inactive) and all of the other individual amplifier states (1,2,3).

7. Using NEXT DATA, step to the amplifier state desired.

8. If the central office test tone (1000 Hz) has been dialed and the test tone is applied, the amplifier can be heard switching through its states as the NEXT DATA key is depressed. The amplitude of the tone heard depends on the amount of gain/loss provided by the LC07 Voice Switch Gain amplifier (see 2000 A&M Manual Volume 2). If a Transmissio.. Test Set is available (see Fig. 551-1 and 551-2), transmission measurements can be made to assure the appropriate amplifier gain/loss level.

9. If the proper amplifier gain/loss level cannot be achieved using the option switches located on the circuit pack, replace the circuit pack (refer to Fig. 551-3).

* If field 18 does not change to a 2 at this time, the trunk under test has been seized by an incoming CO, FX, or WATS call. Wait until the trunk is idle and try again or go on to the next trunk.

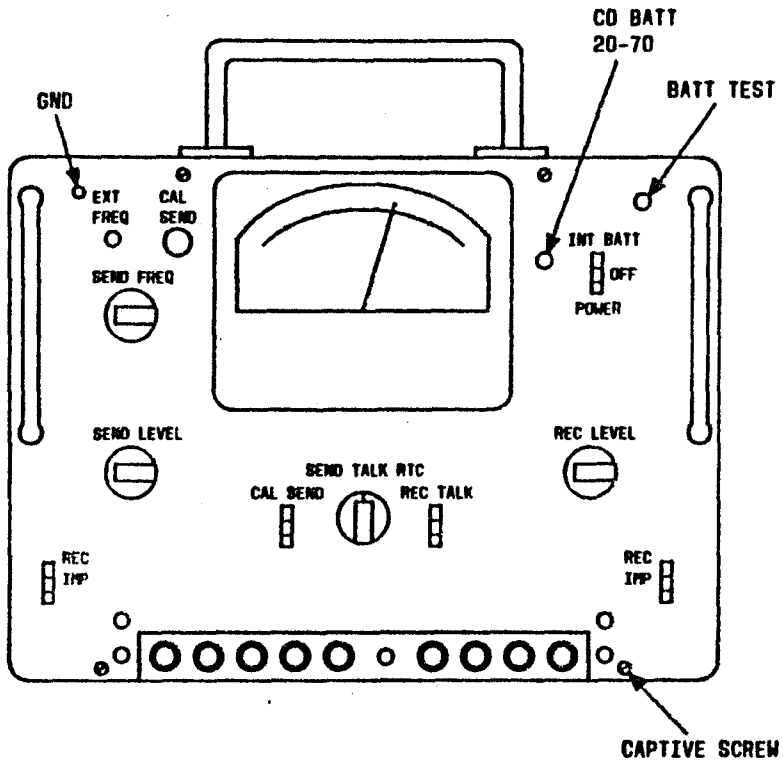
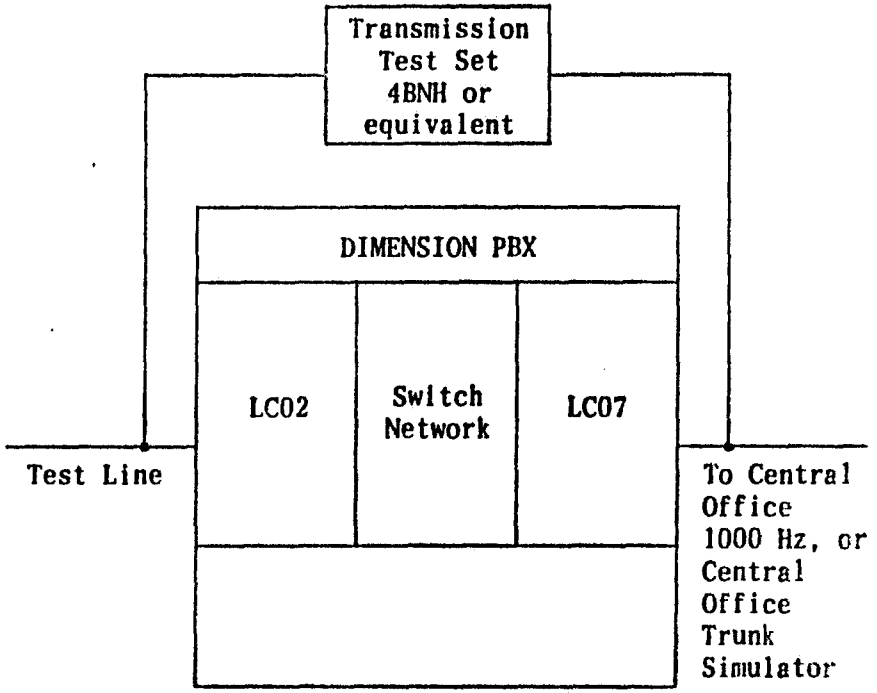
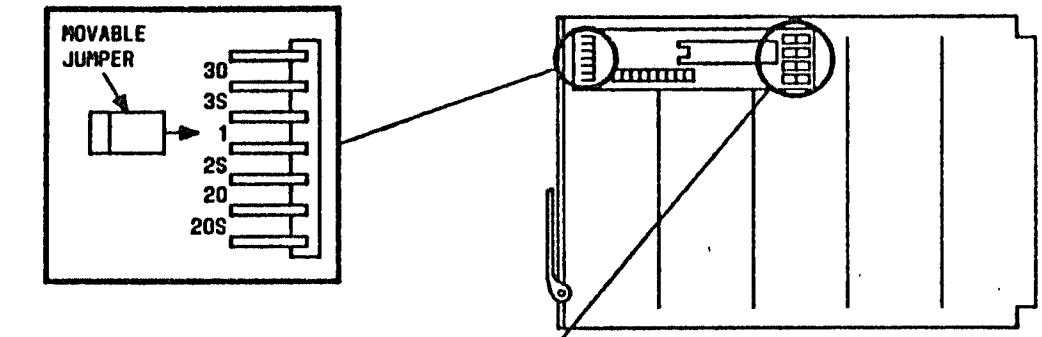


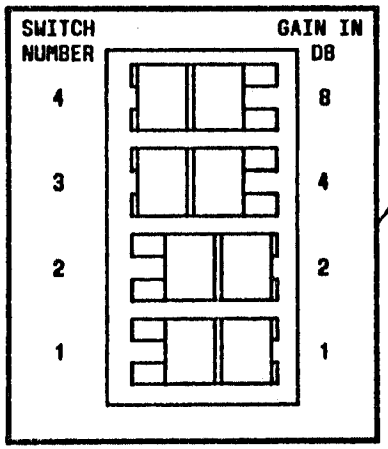
Fig. 551-1 – Model 4BNH Transmission Test Set (or Equivalent)



1. Establish the coneection to the test trunk using Procedure 551.
2. Dial the appropriate number to complete the call.
3. Using the Transmission Test Set either by itself or in conjunction with the central office 1000 Hz test tone, make the gain/loss measurements.
4. Tip and ring connections to the test line and trunk can be made at the wall field or the front of the circuit pack.

Fig. 551-2 – Example of VSO Measurements Using PROC 551





Options For Office and PBX Turn-On Levels On The LC07 w/VSG

Option	Change IN Turn-On Levels (dB)		Typical 1 kHz Turn-On Levels (dBm)	
	Office Side	Subscriber Side	Office Side	Subscriber Side
1	–	–	-44	-44
2S	-2	+4	-42	-48
20	+4	-2	-48	-42
3S	-3	+7	-41	-51
30	+7	-3	-51	-41
20S	+10	+10	-54	-54

VSG Settings

Gain (dB)	Switch Numbers
1	1
2	2
3	1+2
4	3
5	1+3
6	2+3
7	1,2,+3
8	4
9	1+4
10	2+4
11	1,2,+4
12	3+4
13	1,3,+4
14	2,3,+4
15	1,2,3,+4

Fig. 551-3 – LC07 Remote Access Trunk Circuit w/VSG