DIMENSION® 600/2000 PBX
STATION TO TONE TEST CALL
(PROC 553)

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 553.

1.2 The attachment provides procedures for monitoring the eight tones generated by the LC04 and LC05 or LC204 circuit packs.

ATTACHMENT

PROC 553 (8 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

Printed in U.S.A.

PROCEDURE 553 - STATION TO TONE TEST CALL

A. DESCRIPTION

Procedure 553 provides the capability to transmit the eight tones contained on circuit pack(s) LC04 and LC05 or LC204 to a test line.

Procedure 553 is used to provide the means for listening to or measuring any of the tones for nonalarmed tone failures, such as attenuation or improper interruption rate problems.

Two tests are available:

- Test 1 - Sequentially transmits busy, reorder, audible ringback, special audible ringback, dial recall, miscellaneous, and intercept tones.
- Test 2 - Allows any subsequence of the above to be defined and transmitted.

TEST 1:	TEST 2:	NOTES:
TRANSMITS ALL TONES SEQUENTIALLY FROM THE SPECIFIED TONE PLANT.	TRANSMITS SELECTED TONES FROM THE SPECIFIED TONE PLANT. PLACE 1 IN THE FIELDS OF THE TONES TO BE TRANSMITTED. ORDER OF TONES TESTED MAY VARY. SEE ASM MANUAL.	1. A DEFAULT TEST LINE IS DISPLAYED. 2. IN TEST 2 THE TONES ARE TRANSMITTED IN THE ORDER SPECIFIED.
USE 'NEXT CIRCUIT' TO OBTAIN THE NEXT TONE PLANT. USE 'NEXT UNIT' TO OBTAIN THE FIRST TONE PLANT IN NEXT MODULE. USE 'NEXT DATA' TO TRANSMIT NEXT TONE.		SPECIAL ERROR CODES: 80-NO TONE SELECTED FOR TRANSMISSION 81-NO TONE PLANT IN THIS MODULE
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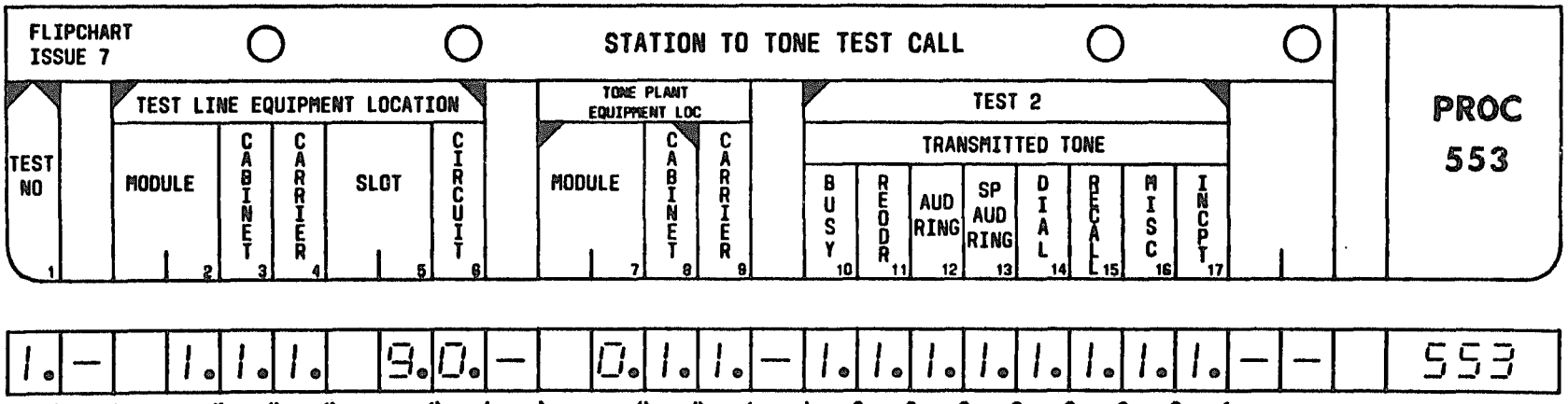

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1,2	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	Tone plant module number.
8	0-4	Tone plant cabinet number.
9	0-4	Tone plant carrier number.

Field	Code	Definition
In fields 10 through 17: 0 = Tone is not to be transmitted. 1 = Tone is to be transmitted. Flashing 1 = Tone is active (being transmitted).		
10	0,1	Busy tone.
11	0,1	Reorder tone.
12	0,1	Audible ringback tone.
13	0,1	Special audible ringback tone.
14	0,1	Dial tone.
15	0,1	Recall tone.
16	0,1	Miscellaneous tone.
17	0,1	Intercept tone.

*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.

C. TEST PROCEDURES

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

Call in Procedure 553:

PROC NO.; 553; ENTER

Test 1 is automatically selected.

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

Test 1:

Test 1 enables the craftsperson to sequentially transmit the following tones from a specified tone plant over a test line:

- Busy
- Reorder
- Audible ringback
- Special audible ringback
- Dial
- Recall
- Miscellaneous
- Intercept

NOTE

"Tone plant" refers to an LC04 and LC05 together or the LC204. "Tone circuit" refers to a tone generating circuit on either an LC04 or LC05.

Monitoring the test line can aid the craftsperson detecting failures.

When Test 1 is called in, default test line and tone plant equipment locations are displayed in fields 2 through 6 and 7 through 9, respectively. The module number in field 2 is flashed, indicating an optional entry field. Either the circuits displayed can be used or other circuits can be selected.

Circuit selection can be accomplished as follows:

1. To select another test line, enter the new test line equipment location in fields 2 through 6; eg:

   (Test line Module);ENTER;(Cabinet);ENTER;
   (Carrier);ENTER;(Slot);ENTER;(Circuit);
   ENTER

> **NOTE**
>
> The new test line must be in service and not busied out. If only field 2 is changed, a default test line for the new module will be provided.

2. To select both another test line and tone plant, enter their equipment locations in fields 2 through 6 and 7 through 9, respectively; eg:

   (Test Line Module);ENTER;(Cabinet);ENTER; (Carrier);ENTER;(Slot);ENTER;(Circuit); ENTER;(Tone plant Module);ENTER;(Cabinet); ENTER;(Carrier);ENTER;

3. To select another tone plant, use the change field sequence to enter the new tone plant equipment location; eg:

   CHANGE FIELD;7;ENTER;(Tone Plant Module); ENTER;(Cabinet);ENTER;(Carrier);ENTER

Depressing the NEXT CIRCUIT key repeatedly increments the test through all the tone plants in the system. Depressing the NEXT UNIT key increments the test to the first tone plant in the next module.

When Test 1 is called in, fields 10 through 17 all contain 1s. The 1s indicate that the tone associated with each field is selected for transmission during the test.

To start the test, depress the EXECUTE key. EXECUTE initiates transmission of the first tone (Busy). As the tone is transmitted, either a 0 or 1 is flashed in the associated field (field 10). A 0 indicates the tone is not being transmitted, a 1 indicates it is.

Depressing the NEXT DATA key initiates transmission of the next tone in sequence. Depressing NEXT DATA repeatedly sequences through the transmission of all the tones associated with fields 10 through 17. Depressing NEXT DATA during transmission of the last tone (Intercept) sequences the test back to the first tone (Busy), which is again transmitted.

Test 2:

Test 2 enables the craftsperson to transmit selected tones from a specified tone plant over a test line. Monitoring the test line can aid the craftsperson in detecting failures.

When Test 2 is called in, default test line and tone plant equipment locations are displayed in fields 2 through 6 and 7 through 9 respectively. Either the circuits displayed

C. TEST PROCEDURES (Contd)

can be used or others can be selected as described for Test 1. The NEXT CIRCUIT and NEXT UNIT keys can be used to aid in selection as described for Test 1.

When Test 2 is called in, fields 10 through 17 all contain 0s. The 0s indicate that the tone associated with each field is not selected for for transmission during the test.

The 0 in field 10 is flashed, indicating an optional entry field. To select the tone associated with field 10 (Busy) for transmission, a 1 must be entered in the field (eg, 1;ENTER). To leave the tone not selected for transmission, the ENTER key can be depressed to increment to the field. Each tone that is to be transmitted during Test 2 must be selected by entering a 1 in the associated field. The order in which the tones are selected to be tested (corresponding field set to 1) is the order that the tones are tested.

To start the test, depress the EXECUTE key.

NOTE
Depressing EXECUTE with no tones selected for transmission (fields 10 through 17 all contain 0s), causes special error code 80 to be displayed.

EXECUTE causes the first field selected containing a 1 to flash, indicating that the associated tone is being transmitted. Depressing the NEXT DATA key sequences the test to the next field containing a 1 and begins transmitting the associated tone. As described for Test 1, repeated use of NEXT DATA sequences through all the selected to and back to the first, which is again transmitted.

D. REPAIR GUIDE

When a tone failure is suspected, the following steps should be performed in the order shown to isolate and repair the faulty unit:

Step	Isolation Procedure
1.	Execute Test 1 and listen to each tone (using a 249A adapter and 1013 type handset) or measure the voltage of each tone (using a KS-20599.L4 digital voltmeter). Voltage values for each tone, as measured across an off-hook 500-type telephone set, are provided in Table 553-1.
2.	If more than one tone, but less than all tones are defective, use Test 2 to inhibit the transmission of the fault-free tones during the repair procedure.
3.	Refer to Table 553-2 for various symptoms that may occur and the recommended corrective action.

D. REPAIR GUIDE (Contd)

Table 553-1. Voltage Value for Tones Contained on Circuit Packs LC04 and LC05 and Circuit Pack LC204

Tone	Type (I=Interrupted) (S=Steady)	Circuit Pack	Level*
Busy	I (0.5 second on, 0.5 second off)	LC05/LC204	0,(0.04-0.07)
Reorder	I (0.2 second on, 0.2 second off)	LC05/LC204	(0.015-0.025) (0.038-0.062)
Audible Ringback	I (0.8 second on, 3.2 seconds off)	LC05/LC204	0, (0.075-0.125)
Special Audible Ringback	I (1 second on, 3 seconds off)	LC05/LC204	0, (0.075-0.125)
Dial	S	LC05/LC204	(0.13-0.22)
Recall	I (0.1 second on, 0.1 second off)	LC05/LC204	(0.065-0.11)
Miscellaneous	S	LC05/LC204	(0.09-0.15)
Intercept	S	LC05/LC204	(0.065-0.11)

*Level measured with digital voltmeter KS-20599.L4 (10 Vac scale) across an off-hook, 500-type telephone set (or 600 ohms). For some of the interrupted tones, the measured value varies between the two values given in the table.

D. REPAIR GUIDE (Contd)

Table 553-2. Station to Tone Test Call Repair Procedure

Symptom	Corrective Action
Invalid or missing frequency	At the test points on circuit packs LC04 and LC05 or LC204, measure the oscillator voltage levels for 2.6 +0.5 volts: A. Invalid oscillator levels: 1. Replace LC04, LC05 or LC204, as indicated. 2. If the trouble is not cleared, replace the other circuit pack. 3. If the trouble still is not cleared, investigate the 440Hz and 660Hz wiring between LC04 and LC05 or LC204. B. Valid oscillator levels: 1. If all tones have improper levels, the fault is in the PAM network. 2. If not all tones have improper levels, replace the circuit pack associated with the faulty tone or tones:

Symptom	Corrective Action				
Invalid or missing frequency (Contd)	Tone	Frequency Components			
		LC204			
		LC04		LC05	
		350Hz	440Hz	480Hz	620Hz
	Busy			X	X
	Reorder			X	X
	Audible Ringback		X	X	
	Special Audible Ringback		X	X	
	Dial	X	X		
	Recall	X	X		
	Misc.		X		
	Intercept		X		X
Invalid interruption rate	Replace LC05/LC204				

D. REPAIR GUIDE (Contd)

Table 553-2. Station to Tone Test Call Repair Procedure (Contd)

Symptom	Corrective Action
Invalid oscillator frequency	Listen to the dial tone and busy tone. If the dial tone sounds wrong, replace LC04/204. If the busy tone sounds wrong, replace LC05/204.
A tone in all time slots	Replace the circuit pack that contains the valid tone.

Hz - Hertz; a unit of frequency.
PAM - Pulse amplitude modulation.

END