DIMENSION® 2000 PBX
STATION TO AUXILIARY TONE TEST CALL
(PROC 554)

CONTENTS

1. GENERAL

1.1 This procedure should be called in when the three Centralized Attendant Service (CAS) tones (Immediate Audible Ring, ZIP Tone, and Remote Hold) are to be tested. It provides the capability to listen to the three CAS tones through LC17B and on the test line.

1.2 Two tests that are available:

Test 1 (field 1, Fig. 1) - This test sequentially transmits the three CAS tones to the test line. Fields 10-12 will be displaying ones. This test is default test, occurring when this procedure is called for the first time or 'RESET' key is operated.

Test 2 (field 1) - This test sequentially transmits selected CAS tone(s) which are defined by the craftsperson. Fields 10-12 will be displaying zeros before craftsperson enters the selected tone(s) to be tested. The craftsperson enters '1' in any or all of the field(s) 10-12 corresponding to the tone(s) to be tested.

1.3 This test will run without the test line defined in fields 2-6 being connected.

1.4 Passing or failing of any or all of the CAS tones under the test can only be detected by listening to them through a telephone set or measuring the voltage with a Digital Multimeter, DMM.

1.5 This test will run without the Tone Plant C (LC17B) plugged in (note 1). Insure the Tone Plant C (LC17B) board is installed.

Note: 1 - Refer to Customer Order Document (COD) to find out the proper location for any circuit pack.

2. RECORD

2.1 Form SD-97-1313 is required for recording the results of this test.

3. TEST EQUIPMENT

AMT.	ITE	DESCRIPTION
1	5632 or 5250 or 5356	Digital Multimeter (KS-20599-L4 or equivalent)
1	4208A	Telephone Handset
1	9153L	Cord Assembly
1	5654	Logic Probe (or HP 10525T-605)

4. CIRCUIT PACKS THAT MAY BE REQUIRED

AMT.	ITE	DESCRIPTION
1	LC204 (or LC04 and LC5B)	Tone Plant A/B (See Notes 2 & 3)
1	LC17B	Tone Plant C
1	LC121	Network Clock

Notes: 2 - Tone Plant A/B (LC204) board has replaced LC04 and LC5B. 440 and 480 HZ tones are generated on LC04 and LC5B respectively.

3 - Refer to COD to find out the location of LC204.

5. VALID MAAP KEY SEQUENCE

5.1 PROC NO., 5, 5, 4, ENTER - Loads program into memory from tape. When program is fully loaded into memory, the WAIT lamp will extinguish. Test 1 will be called in (default test).

FIELD AND KEY DESCRIPTION:

FIELD	DESCRIPTION (Fig. 1)
1	Test number (1 or 2). Value of this field can be changed by either approach A or B: A. Operate 'NEXT TEST' key; which increments the test number or changes it from 2 to 1. B. 'CHANGE FIELD', '1', 'ENTER', 1 or 2, 'ENTER'.
2 - 6	Test line equipment location. This line must be in service and not busied out. A default test line is provided, when the procedure is first read from tape. Field 2 will be blinking (see note 4). If field 2 is changed by: 'CHANGE FIELD', '2', 'ENTER', Module number, 'ENTER' A default test line for the new module will be displayed. Also, test line equipment location (fields 2-6) can be changed to any valid (translated) equipment location by using change sequence:

FIELD AND KEY DESCRIPTION - continued

FIELD	DESCRIPTION
2 - 6	'CHANGE FIELD', '2', 'ENTER', Module number, 'ENTER' 'CHANGE FIELD', '3', 'ENTER', Cabinet number, 'ENTER' 'CHANGE FIELD', '4', 'ENTER', Carrier number, 'ENTER' 'CHANGE FIELD', '5', 'ENTER', Circuit number, 'ENTER'
7 - 9	LC17B equipment location. A default location for LC17B is provided when the procedure is first read from tape. To change the location, only the module and cabinet need be specified by craftsperson: 'CHANGE FIELD', '7', 'ENTER', Module number, 'ENTER' 'CHANGE FIELD', '8', 'ENTER', Cabinet number, 'ENTER' '1' will be displayed in field 9. Also, NEXT UNIT, and/or NEXT CIRCUIT key can be used. NEXT UNIT - This key is used to advance to the first LC17B in the next module. NEXT CIRCUIT - This key is used to advance to the next LC17B (if provided) in the same module.
10 - 12	Transmitted tone. The information displayed in these fields depends upon the test (1 or 2). Test 1: '1's will be displaying in these fields. Flashing field indicates active tone. Test 2: Tones may be selectively transmitted in this test by entering '1' in the field of the desired tone. 0 = Tone is not to be transmitted 1 = Tone is to be transmitted A flashing field indicates active tone. The order in which tone(s) are selected by the craftsperson is the order of transmission. Note: 4 - Flashing field in any test (1 or 2, except fields 10 - 12 in Test 1) means that the values in this field can be changed without using 'CHANGE FIELD' key. Enter the desired value and operate 'ENTER' key which will cause the next field that can be changed to flash. If the value in the flashing field is not desired to be changed, then operate 'ENTER' key. If no change is required, then operate 'EXECUTE' key.

5.2 EXECUTE - This key is used to initiate testing for each test (1 or 2). After this key is operated:

Test 1: '1' in field 10 will start flashing (Immediate Audio Ring is being transmitted). To transmit ZIP tone (field 11), operate 'NEXT DATA' (see step 5.3) key.

Test 2: The first '1' that was entered by the craftsperson in field 10-12 will start flashing. Operation of 'NEXT DATA' key will start transmitting the next tone, in order tones were entered.

5.3 NEXT DATA - This key allows the test to move to another tone for testing. Each operation of this key will cause the next tone to be transmitted. This key can be operated as many times as required.

6. METHODS OF TESTING

6.1 Different testing methods are:

1 - Audible testing method: Craftsperson listens to the three CAS tones corresponding to the fields 10-12 either on the designated test line (TST L) or on any unrestricted and available LC02B other than the designated test line by connecting the handset with the Cord Assembly (ITE-9153L) to the chosen test line, see step 6.1.1 for detail.

2 - DMM testing method: Craftsperson uses a DMM to check the voltage for each tone available on LC17B and/or LC204 (or LC04 and LC5B), do step 6.1.2, or step 6.2, if using Logic Probe.

6.1.1 Set the handset to MON. (or go on-hook). Operate EXECUTE key. Set the handset to TALK (or go off-hook), and listen to the tone(s). If the three CAS tones have passed, this will conclude the test. However, if abnormal tone(s) (note 5) were heard, do step 7.1.

Note: 5 - Abnormal tones are: Improper level and/or improper sound (missing frequency); Interruption rate too fast or too slow; and tone in all time slots (garbled or multiple tones).

6.1.2 Set the DMM at 10 Vac scale. Check the voltage for each desired tone (Fig. 2, Table B) on the LC17B. If the voltage readings do not fall within the range given in Fig. 2, do step 7.2. Otherwise do step 7.3.

6.2 Connect the logic probe. Check the proper test point (TP) per Table A. The logic probe will flash for all the TP on LC204 (or LC04 and 5B), except for GRD. The logic probe will flash at TP1 on LC17B and will go dark for TP 2, 3, and 4 of LC17B.

Note: Use logic probe for a fast testing; for detail testing, use any of the other two methods explained.

TABLE A

TEST POINTS DEFINITION OF EACH CIRCUIT PACK

TEST POINT (TP)	CIRCUIT PACK	FREQUENCY (HZ)				25 MSEC.	GRD.
		350	440	480	620		
1	LC204 LC04 LC5B	X X		 X			
2	LC204 LC04 LC5B		X X		 X		
3	LC204 LC04 LC5B			X			 X X
4	LC204 LC04 LC5B				X	 X	
5	LC204					X	
6	LC204						X

TABLE B

LC204 (or LC04 and LC5B)
VOLTAGE MEASUREMENT

FREQUENCY HZ	Vac*
350	2.1-3.1
440	2.1-3.1
480	2.1-3.1
620	2.1-3.1

*Set at 10 Vac Scale

7. TROUBLESHOOTING AIDS

Note: 6 - Some of the common error codes:

ERROR CODE	DESCRIPTION
00	Wrong control key ('NEXT DATA' before 'EXECUTE')
10	Wrong specification (test line or LC17B equipment location)
11	Is not assigned (test line equipment location)
20	Test line busied out (test line equipment location)
74	Equipment not part of system
80	No tone selected for transmission in test 2 (special tone)

7.1 The possible problem(s) and their solution are shown in Table C.

TABLE C

TROUBLES AND SOLUTIONS

POSSIBLE TROUBLES	POSSIBLE SOLUTION
Improper level and/or improper sound (missing frequency).	Replace LC17B, and retest (note 7). If problem is not cleared, assume trouble is in 440 and 620 HZ wiring from LC204 (or LC04 and LC5B) to LC17B; see SD-1E480-01. END. Otherwise see step 7.3.
Interruption rate too fast or too slow.	Replace LC204 (or LC5B), and retest (note 7). If trouble is not cleared, replace LC121 and retest (note 7). If trouble still exists, assume trouble is in 25 Msec. clock lead between LC121 and LC204 (or LC5B), refer to SD-1E480. END. Otherwise see step 7.3.
Tone in all time slots (garbled or multiple tones).	Replace LC204 (if LC04 and LC5B is used, replace the circuit pack with the tone that was not garbled, see Table A) and retest (note 7). If trouble is not cleared, assume the trouble is in the wiring associated with LC204 (or LC04 and/or LC5B), refer to SD-1E480. END. Otherwise see step 7.3.
Wrong generic tape has been loaded.	Load the correct tape and retest (note 7). If the trouble is not cleared, refer to Table C. Otherwise see step 7.3.
Handset is connected to a wrong LC02B.	Make sure the handset is connected to the test line corresponding to the address displayed in fields 2-6, retest (note 7). If the trouble is not cleared, see Table C. Otherwise see step 7.3.

POSSIBLE TROUBLES	POSSIBLE SOLUTION
Handset (or Telset) was on TALK (or off-hook) before EXECUTE key was operated.	Set handset to MON. (or go on-hook) before EXECUTE is operated.
LC17B is not in location displayed in fields 7-9.	Install a LC17B.
LC17B wiring problem.	See SD-1E480-01.

Note: 7 - Operate EXECUTE key. Set the handset to TALK (or go off-hook) and listen to the tone(s). If the problem still exists, always reinstall the original circuit pack back. Otherwise, this concludes the trouble-shooting.

7.2 At Basic Line Carrier, replace LC204 (or LC04 and/or LC5B per Table A). Retest (see note 7). If trouble still exists, assume problem is in wiring associated with the respective tone on LC204 (see notes 8 and 9) to LC17B. Refer to SD-1E480-01. END.

Notes: 8 - If LC04 and LC5B is still being used instead of LC204, do step 7.2.1.

9 - Check 440 and 620 HZ wiring between LC04 and LC5B, SD-1E480-01.

7.2.1 Replace the circuit pack which was not replaced in step 7.2 (i.e. if LC04 only was replaced and trouble still exists, now replace LC5B). Retest. If the trouble still exists, assume it is in wiring associated with LC04 and LC5B, check 440 and 620 HZ wiring between LC04 and LC5B, see SD-1E480. Otherwise see step 7.3.

7.3 Disconnect DMM (if it was used). If 'OTHER' lamp on the Alarm Panel is lighted, do step 7.3.1. Otherwise this concludes the test.

7.3.1 Enter PROC 515 (see Section 515 of Handbook 281). If '1' does not appear in any field, this concludes the test. However, if '1' is displayed in fields 1-18, do the instruction displayed in fields 19-21 of PROC. 515. This concludes the test.

TEST 1:	TEST 2:	NOTES:
TRANSMITS ALL TONES SEQUENTIALLY FROM THE SPECIFIED AUXILIARY TONE PLANT.	TRANSMITS SELECTED TONES FROM THE SPECIFIED AUXILIARY TONE PLANT. PLACE 1 IN THE FIELDS OF THE TONES TO BE TRANSMITTED.	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 ASSIGNED AUXILIARY TONE PLANT. USE 'NEXT UNIT' TO OBTAIN THE FIRST ASSIGNED AUXILIARY TONE PLANT IN A SUBSEQUENT MODULE. USE 'NEXT DATA' TO TRANSMIT NEXT TONE.		SPECIAL ERROR CODE: 80-NO TONE SELECTED FOR TRANSMISSION.

ISSUE L8.3
FLIPCHART

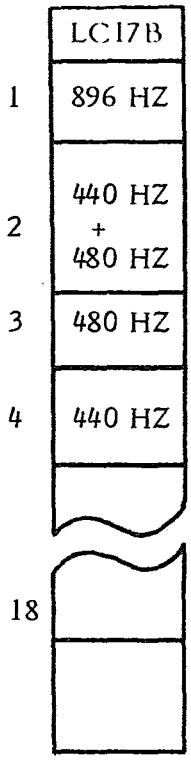
PROC 554

FLIPCHART
ISSUE L8.3

STATION TO AUXILIARY TONE TEST CALL

TEST NO 1	TEST LINE EQUIPMENT LOCATION					AUXILIARY TONE PLANT EQUIPMENT LOCATION			TEST 2			PROC 554
	MODULE 2	CABINET 3	CARRIER 4	SLOT 5	CIRCUIT 6	MODULE 7	CABINET 8	CARRIER 9	TRANSMITTED TONE: IMM. AUD. RING 10	ZIP TONE 11	REM. HOLD 12	

Fig. 1 - FLIPCHART 554



Use the digital multimeter for all tests.

896 HZ: Tone used for chime paging. On the 10 Vac scale, it will read 1.3V to 2.2V to ground.

440 HZ + 480 HZ: Tone is used for immediate ringback. On the 1 Vac scale, it will read 0.19 to 0.31V to ground.

480 HZ: Tone is used for remote hold. On the 1 Vac scale, it will read 0.19V to 0.31V to ground.

440 HZ: Tone is used for zip tone. On the 1 Vac scale, it will read 0.19V to 0.31V to ground.

Note: LC17B is intended for use primarily with centralized attendant service. Only the 896-HZ tone is generated on this board; the 440-HZ and 480-HZ tones are generated on LC04 and LC5B, respectively (or LC204). Therefore, if trouble is encountered with the 440-HZ or 480-HZ tones, remember to check the LC04 and LC5B boards (LC204) as well as LC17B.

Fig. 2 - LC17B TONE PLANT C

Reason for Issue:
New Section

Manager, Denver PBX PECC