DIMENSION® 600/2000 PBX
NETWORK CONTROL OPERATIONS
SUPPORT SYSTEM PORT TEST
(PROC 528)

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 528.

1.2 The attachment provides test procedures for checking the receive and transmit capability of a data channel within the PBX control cabinet.

ATTACHMENT

PROC 528 (6 pages)

Reason for Issue:
New Section

Manager, Denver PBX PECC

PRIVATE

THE INFORMATION CONTAINED HEREIN SHOULD NOT BE DISCLOSED TO UNAUTHORIZED PERSONS. IT IS MEANT SOLELY FOR USE BY AUTHORIZED BELL SYSTEM EMPLOYEES.

Printed in U.S.A.

PROCEDURE 528 - NETWORK CONTROL OPERATIONS SUPPORT SYSTEM PORT TEST

A. DESCRIPTION

Procedure 528 is used to:

- Display failures associated with the I/O data channel and NCOSS port.
- Send a loop-around test to the data channel (LC34B, LC366, or LC171B) and run an echo test with the SMDR equipment.

Five tests are available:

- Test 1 - Disabled
- Test 2 - Sends a loop-around test to the data channel and runs an echo test on the NCOSS equipment.
- Test 3 - Sends an alternating one-zero pattern continuously to the NCOSS equipment.
- Test 4 - Sends 16 messages to the NCOSS equipment testing most digits in each digit's position.
- Test 5 - Sends a single data word to the NCOSS equipment allowing manual entry of operation codes and data words.

TEST 1:	TEST 2:	TEST 3:	TEST 4:	TEST 5:	FAILURE CODES (FIELDS 7,8):
NO FAILURE HISTORY AVAILABLE FOR NCOSS EQUIPMENT.	LOOP AROUND AND ECHO TESTS (RESULTS IN FIELDS 7 & 8).	SENDS AN ALTERNATING ONE-ZERO PATTERN CONTINUOUSLY.	SENDS A 16 MESSAGE PATTERN.	SENDS 1 TEST WORD. USE 'NEXT DATA' TO SELECT FROM LIST OF 10 TEST WORDS OR ENTER A TEST WORD.	0=PASS 1=DATA CHAN ADDR 2=BAD REPLY PARITY 3=1&2 4=ECHO MISMATCH 5=1&4 6=2&4 7=1,2&4 8=DATA CHAN LOOP 9=NCOSS EQPT

NOTES: 1. NCOSS CALL RECORDING IS BLOCKED WHEN TEST 3, 4, OR 5 IS EXECUTING AND EXTENDS 2 MINUTES AFTER TEST 5 HAS SENT A TEST WORD.

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TEST NO	TEST WORD (TEST 5)		DATA CHANNEL EQPT. LOCATION			FAILURE CODE	
	OP CODE	DATA	CARR	SLOT	CIRCUIT	ONCE	LAST
1	2	3	4	5	6	7	8

FIELD 1	FIELD 2	FIELD 3	FIELD 4	FIELD 5	FIELD 6	FIELD 7	FIELD 8		
2.	- -.	- - - -.	0.	3 3.	0.	0.	0.	- - - - - - - - - - - -	528

B. FIELD DEFINITIONS AND CODES

Field	Code	Definition
1	1-5	Test number
2†		Operation code (octal):
	0	Normal data word
	3	No operation
	4	Retransmit normal data word
	10	Last word in message
	14	Retransmit last word in message
3†	0000-7777	Data word (octal)
4	0	Basic control carrier
5	33	Slot number
6	0	Circuit number
7‡		Failure code-once: Accumulative "OR"ing of all failure codes that occurred at least once during a test.
	0	Pass
	1	Data channel address not acknowledged
	2	No data reply (echo) from NCOSS equipment in all cases.
	3	Failures 1 and 2
	4	Echo mismatch
	5	Failures 1 and 4
	6	Failures 2 and 4
	7	Failures 1, 2, and 4
	8	Data channel loop test failure
	9	Equipment failure (reported by NCOSS).
8‡	0-9	Failure code-last: Failure code indicating one or more failures occurring during the last transmission to the NCOSS equipment before the test ended or was stopped.

† Fields 2 and 3 are displayed in Tests 3 and 5.
‡ Fields 7 and 8 are displayed in Tests 2 through 5.

C. TEST PROCEDURES

CAUTION

NCOSS call recording is blocked under the following conditions:

- **While Test 3 is executing.**
- **While Test 4 (16 message pattern sent in less than 1 second) is executing.**
- **When Test 5 is executed. Extend blockage for 2 minutes after EXECUTE key is operated.**

Call in Procedure 528:

PROC NO.; 528; ENTER

Test 2 is automatically selected. Depressing the NEXT TEST key repeatedly advances the procedure to the desired test.

Test 1:

Test 1 is disabled.

Test 2:

Test 2 sends a loop-around test to the data channel associated with the NCOSS equipment, and runs an echo test with the NCOSS equipment. Test 2 does not interfere with call processing recording of calls. A no operation code is sent with each data transmission to the NCOSS equipment. An alternating one-zero pattern is used for the first data word transmission. A complementing one-zero pattern is used for the second data word transmission. Both data words are sent again for the echo test.

To start the test, select Test 2, and depress the EXECUTE key. The MAAP-WAIT indicator will light momentarily while the test is run. The results of test 2 are displayed in fields 7 and 8. Successful completion of the test is indicated by a 0 displayed in fields 7 and 8. To isolate failures using this test, record the failures in fields 7 and 8 and refer to the repair procedure in Section D.

Test 3:

Test 3 sends a continuous alternating one-zero pattern in the format of a call record message to the NCOSS equipment. This test is normally used with a logic probe to check test points in failed NCOSS equipment.

To start the test, select Test 3, and depress the EXECUTE key. The MAAP-WAIT indicator lights momentarily; while the test is run, the following fields are displayed.

Field	Contents
2,3	Operation code and data word currently transmitted to the SMDR equipment.
4,5,6	Data channel equipment location
7,8	Failure codes-once and last
15	Message length encode

The one-zero pattern data word is complemented each time it is sent with 0.5 second between words. Between the last word transmitted (normally word 18) and the start of the next message is a 2-second delay to allow stopping the test. To stop the test after the end of a message, depress the STOP key.

Test 4:

Test 4 sends 16 messages in either 12-, 15-, or 18-word message formats to the SMDR equipment. Four of the NCOSS operation codes are exercised by this test; normal word transmission, last word of message transmission, retransmit normal word, and retransmit last word.

To start the test, select Test 4 and depress the EXECUTE key. The MAAP-WAIT indicator lights for less than 1 second while the test is run; the results of the test are displayed in the following fields.

Field	Contents
4,5,6	Data channel equipment location
7,8	Failure code-once and last

Test 5:

Test 5 sends a single data word to the NCOSS equipment. This test allows sending most words or messages to the NCOSS port by manually entering it in fields 2 and 3. To start the test, select Test 5, and depress the EXECUTE key. The MAAP-WAIT indicator lights momentarily; while the test is run the following fields are displayed.

Field	Contents
2,3	Operation code and data word
4,5,6	Data channel equipment location
7,8	Failure codes-once and last

Each time the EXECUTE key is pressed, the operation code and data word displayed in fields 2 and 3 are transmitted to the NCOSS equipment. Depressing the NEXT DATA key selects the next of ten operation codes and data words that are available (Fig. 528-1). Operation codes and data words can be manually entered into fields 2 and 3 using the CHANGE FIELD sequence; eg:

CHANGE FIELD; 2; ENTER; (Operation code); ENTER; (Data word); ENTER

D. REPAIR GUIDE

The repair guide is not available at the time of this printing.

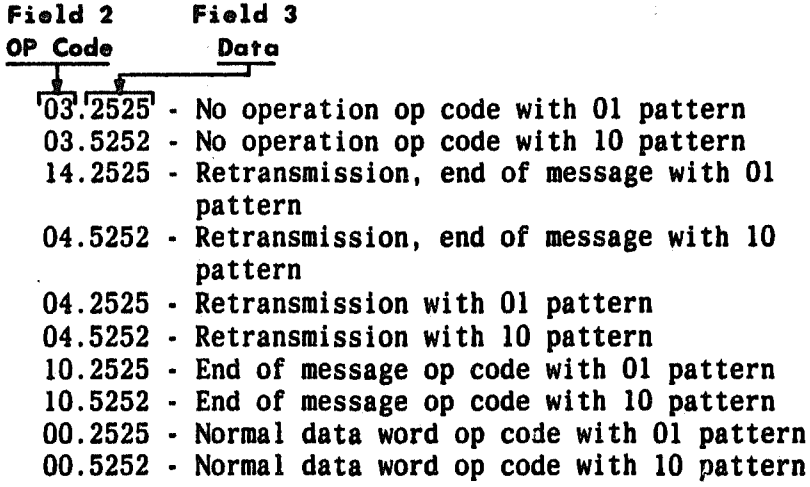

Fig. 528-1 – List of Op Codes and Data Words Available Using the NEXT DATA Key in Test 5

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         1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18         Word Number

      ****  FILE  0001     RECORD  00005     LENGTH = 001024      ****
 1    1417201223550678 29AB0CDE0F01223425670891011 12EF00123245627890ABC0DEF2012A345    ┌─ 4555 is Retransmitted
 2    14170123045627890ABC2DEF20120345067829A222220F0122340567089A2BCD2EF045558456   ◄─┘   Middle Word
 3    1417023405572 89A0BCD2EF02123045607892AB32333001223450 67809AB2CDE2F010234C999  ◄──── E999 is Retransmitted
 4    141723452658 09AB2CDE0F0102342567289A0BC40444212304562 7892ABC0DEF00122345A678          Last Word
 5    1417045607592ABC0DEF201223450678 09AB2CD52555023425670 89A0BCD2EF0212304568789
 6    14172567285A0BCD2EF00123045627892ABC0DE60666234506782 9AB2CDE0F0102342567A89A
 7    14172678295B0CDE2F0102340567289A2BCD0EF70777245607892ABC2DEF001203452678A9AB
 8    141707890A5C2DEF0012234506780 9AB0CDE2F082888056728 9A0BCD0EF0212324560789 8ABC
 9    1417089A0B5D2EF00123245627890ABC0DEF20192999067829AB0CDE0F01223425670 89A8BCD
10    141729AB2C5E0F0122340567089A2BCD2EF0012A0AAA27890ABC2DEF20120345067829ABACDE
11    14172ABC2D5F00122345067809AB2CDE2F01023B0BBB289A0BCD2EF02123045607892ABCADEF
12    14170BCD0E5021230456278 92ABC0DEF0012234C2CCC09AB2CDE0F0102342567289A0BCD8EF0
13    14172CDE2F5102342567089A0BCD2EF02123045D0DDD2ABC0DEF20122345067809AB2CDEAF01
14    14170DEF0052234506782 9AB2CDE0F010234256E2EEE0BCD2EF0012304562 7892ABC0DEF8012
15    14170EF00153245607892ABC2DEF00120345267F2FFF0CDE2F0102340567289A2BCD0EF08123
16    14172F0122540567289A0BCD0EF021232456078000002DEF00122345267809AB0CDE2F01A234
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Normal Word Op Code — Condition Code — Calling Station

NOTE

Bit 2 of the Op Code (parity bit) may be incorrect in this table.

Fig. 528-2 – Hexadecimal Dump for Test 4 Test Call (18-Word Format)