

SunSet E20 Application Series:

ISDN NT Mode



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1. Introduction

The SunSet E20 is a relative new product evolved from and based on the experienced of the earlier E series products, such as E1 and E10 etc. aiming to provide an enriched protocol testing feature set. ISDN on Primary Rate Access testing is a common and popular test requirement for interworking of public and private networks.

The SunSet E20 features both emulation mode and monitor mode. The emulation

mode supports NT (network) and TE (terminal equipment, e.g. PBX) to enable testing towards the customer equipment and network respectively. The monitor mode allows in-service monitoring to facilitate trouble-shooting of circuit.

This application note outlines the application of the NT mode out of the three operating modes of the test set.

2. PBX Network Connection Functioning Check

2.1 General

Before connecting the trunk side of a PBX to the network or before the network connection is readily available you can use the SunSet E20 emulating the network to test the functioning of the PBX. This is done by

configuring the SunSet E20 to the NT mode. In this mode, calls can be placed to or received from the test set towards the PBX thus verifying the proper configuration and functioning of the PBX. Set up is as illustrated in Figure 1.

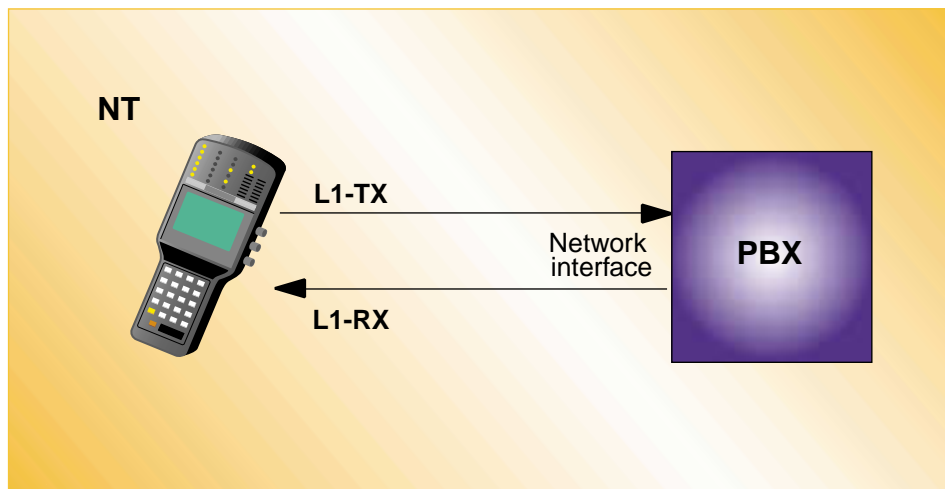


Figure 1 NT operating mode, testing towards a PBX

2.2 Layer 1 Configuration

Since the SunSet E20 supports both 75 Ohm BNC unbalance interface and also 120 Ohm balanced banana interface. The appropriate connection shall be made in accordance with the actual application. However, both interfaces can not be used at the same time.

Enter from the Main Menu the Test Configuration screen to set up Layer 1 configuration. Since only one E1 is to be tested therefore only one of the two E1 interfaces of the SunSet E20 shall be used. Simply configure the test set to E1SINGL mode so that redundant indication can be disabled. ISDN employs common channel signalling and normally time slot 16 is used to carry the signalling channel therefore PCM-31 framing should be selected. The SunSet E20 features framing detection function to ensure that the proper PCM-31 framing is configured for ISDN testing. The other settings can be configured under the ISDN Analysis ISDN Configuration screen.

2.3 ISDN Test Configuration

From the Main Menu enter the Protocols menu then enter ISDN Analysis screen as shown in Figure 2.

Bring up the Test Configuration screen to complete ISDN configuration. There are two screens for ISDN configuration.

Depending on whether the PBX supports CRC-4 or not the CRC-4 setting is turned to YES or NO as appropriate. The screen shown assumes the use of CRC-4. As the test set is emulating the network side therefore the TX CLOCK shall be set to INTERN to act as the master providing clocking to the PBX under test. You can enter a convenient number as My Phone Number to enable easy identification purpose only.

```

08:11:01
> <
> <
TEST CONFIGURATION

TEST MODE : E1SINGL
TX SOURCE : TESTPAT
FRAMING   : PCM-31
CRC-4     : YES
TEST RATE : 2.048M
L1-RX PORT : TERM
XMT CLOCK : INTERN

E1SINGL E1DUAL E1MUX MORE

```

Figure 2 Configuring Layer 1

```

08:11:01
> <
> <
ISDN

TEST CONFIGURATION
CALL SETUP
PROTOCOL ANALYSIS
BERT AND RESULTS
AUTOMATED TEST

```

Figure 3 ISDN Analysis section

```

08:11:01
> <
> <
ISDN CONFIGURATION

MODE           : NT
PROTOCOL       : ETSI
CRC-4          : YES
L1-RX          : TERM
TX CLOCK       : INTERN
MY PHONE NUMBER :
MY SUBADDRESS  : NONE
NEXT PAGE      :

TE NT MONITOR

```

Figure 4 ISDN Configuration screen 1

```

08:11:01
> <
> <
          ISDN MORE
PREVIOUS PAGE :
LAYER 2 TEI   : 0
SIGNALING T/S : 16
AUTO ANSWER  : OFF
ANSWER TYPE  : NORMAL

```

Figure 5 ISDN Configuration screen 2

```

08:11:01
> <
> <
          CALL CONTROL
--- CALL1 > ON HOOK   T/S: ---
CALLER NO:
CALL TYPE:
--- CALL2 > ON HOOK   T/S: ---
CALLER NO:
CALL TYPE:
--- CALL1 ---        --- CALL2 ---
          CALL        CALL

```

Figure 6 ISDN Configuration screen 2

```

08:11:01
> <
> <
          ISDN CALL SETUP
CALL TYPE      : SPEECH
B CHANNEL     : 1
TEST PATTERN  : 2047
UUS           : NONE
DIAL NUMBER   :
█
SUBADDRESS    : NONE

```

Figure 7 ISDN Call Setup screen

The second screen, accessible by the Next Page selection allows TEI (not significant to NT emulation) and Signalling Time Slot selections, etc.

After configuration is completed and the test set is connected to the PBX under test, check that the SIGNAL, PCM-31 and CRC DET (only if CRC-4 is expected) turn solid green indicating the proper Layer 1 functioning. If Layer 1 can not be established perform trouble shooting before proceed further. Otherwise the NotRdy indication shown on the first line of the screen should read In-svc.

2.4 Setting up a Call

Enter the Call Control screen, which is shown below:

Press either one of the [CALL] F-keys to bring up the ISDN Call Setup screen to setup a call towards the PBX.

Set Call Type to Speech to place a speech call to the PBX, of which it is assumed that a telephone set is connected to the extension side of the PBX.

You can select the B channel to be used for the call. Enter the Dial Number corresponding to the extension to be reached. If the Subaddress has been enabled for the extension enter also the appropriate Subaddress, otherwise leave it to NONE as shown. Test Pattern setting is only significant for a data call and is not applicable to a speech call.

Once dial number entry is done press the DONE F-key and a CALL F-key should be available to place the call. When the call is established you can talk on the phone with the other end to check the B channel connectivity, using the built-in speaker and microphone. When the test is completed, the call can be cleared down from the Call Control screen.

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