JDSU HST-3000 PRI Trunk Testing Guide

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Scope

This document covers PRI Trunk testing procedures used for Business Services customer activation, fault isolation, and troubleshooting using the JDSU HST-3000 portable business services tester. This document provides procedures to place and receive calls on ISDN PRI trunks.

Revision History

Revision	*Description*	*Name*
1.0	*Initial Draft*	*Dave Baker, JDSU*
1.1	*Added instructions to save D-Channel capture file.*	*Dave Baker, JDSU*
1.2	*Added User Interface Description*	*Dave Baker, JDSU*

1. Overview

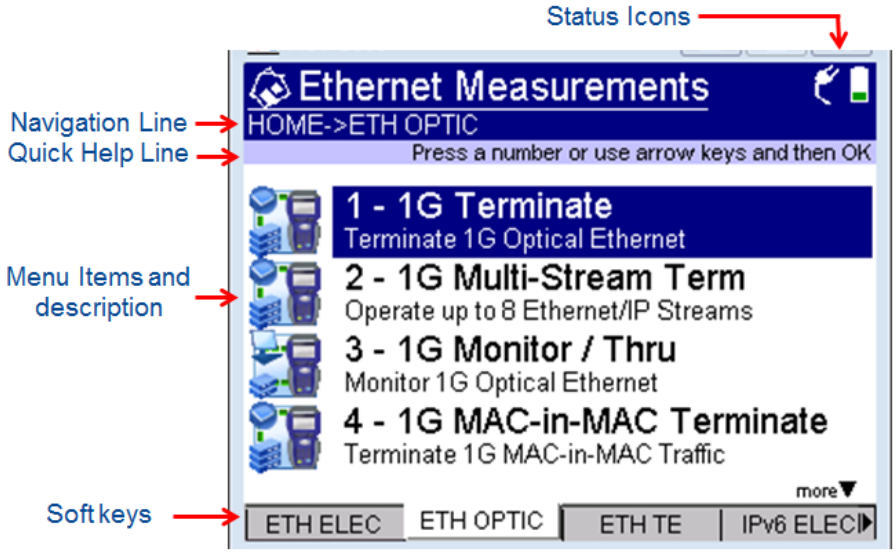
This document covers PRI Trunk testing procedures used for Business Services customer activation, fault isolation and troubleshooting. At customer activation, this test equipment is used to emulate the customer's PBX and validate the performance of a PRI trunk.

1.1 Hardware Description

The HST-3000 is a portable test tool for PRI testing. . The product supports a variety of subscriber interface modules (SIMs) to support Ethernet, T1/T3, Copper/DSL and other access technologies. A T1 SIM is required for this test. Menu selections are made from the HST-3000 front panel by using the keypad to select the option number or by using the arrow keys to scroll to the desired selection and pressing the **OK** key.

HST-3000 Front Panel:

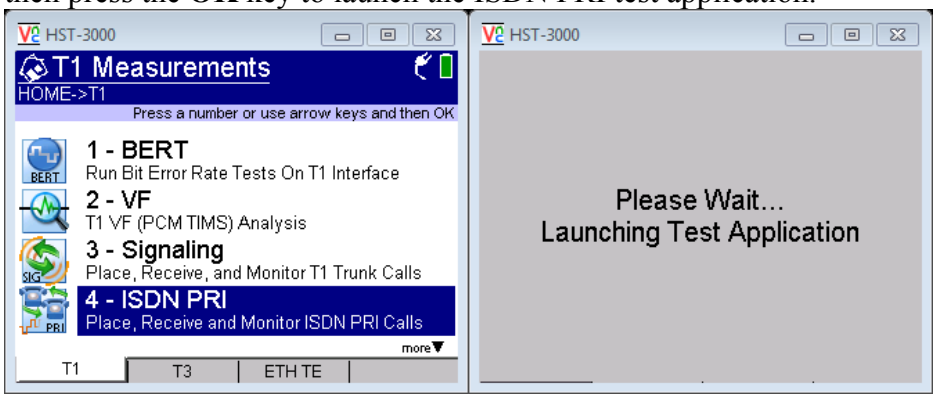
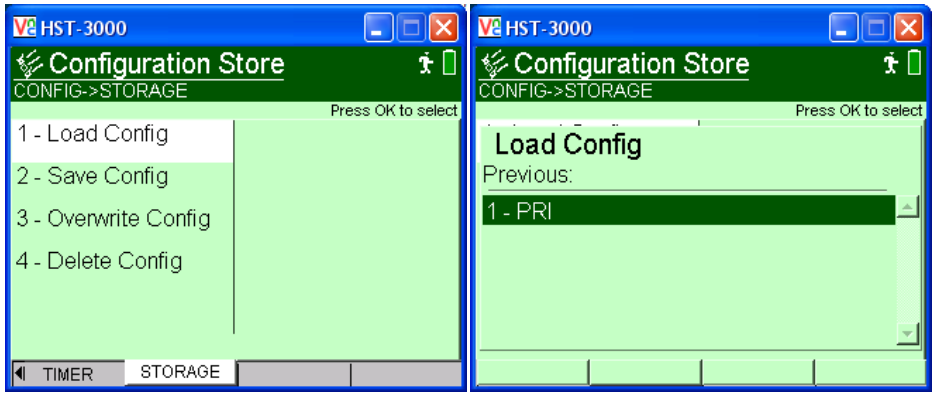
User Interface:



2. PRI Trunk Test Procedures

The following procedures describe how to test a PRI trunk using the HST-3000.

2.1 Configure Test

Step	*Action*	*Det-ails*
1.	Install SIM	Install T1 SIM on the HST-3000
2.	Power On	Press the green Power Key to turn on the HST-3000.
3.	Launch Test App	Press the **T1** Soft key. Press the **Down Arrow** key to select **ISDN PRI**, then press the **OK** key to launch the ISDN PRI test application. 
4.	Load Config	Press the **Configure** Navigation key to configure ISDN test setting. If a configuration template has been previously stored, press the Left Arrow key to select the **STORAGE** tab and display the **Config Store** menu. Select **Load Config**, select the desired Configuration template, and press **OK**. 

5. Configure Test

Using the **Right Arrow** key to scroll through menus, configure ISDN PRI test setting as follows. Leave all other values at default, unless specified in the Work Order:

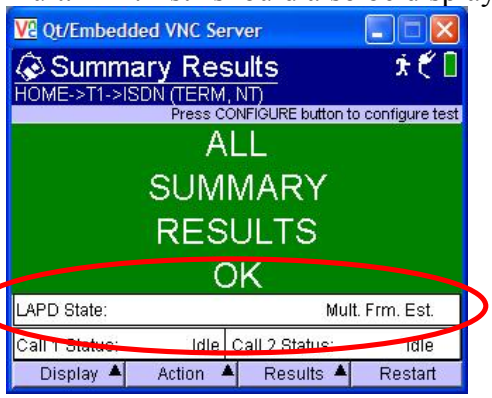
Menu	Option	Value	Comment
DS1	Test Mode	Terminate	
	Rx Input	Terminate	
	Framing	ESF	
	LBO Level	0	
	Line Code	B8ZS	
	Tx Clock	Recovered	
	Single/NFAS	Single	
ISDN	Emulation	TE Emulation	
	Call Control	See Work Order	If not specified, select “National”
	Numbering Type	Auto	
	Numbering Plan	ISDN	
	PRI D Channel	24	
	D Channel Rate	64K	
CALL	Dial Mode	Dual Call	
	Bearer Capability	Voice	
	Channel	Any	
	Directory Number	See Work Order	Enter Billing Telephone Number for the PBX
	Number To Call	Enter your 10 digit cell phone number	
	Call Answer Mode	Prompt	
	Pres. Ind. Status	Disabled	
DECODE	Decode Filter	Enable	Suppresses the capture of RR Frames.
	L2 Filter	Enable	
	All Other Filters	Disable	

2.2 Connecting to the Circuit

Step	*Action*	*Details*
1.	Connect	Connect the HST-3000 to the Network Termination (NT) or Integrated Access Device (IAD) using the RJ-48c to Dual bantam cable and the primary T1 connectors on the right side of the SIM. • If a straight through cable is required, connect the Blue bantam labeled **TRANSMIT** to the Primary Tx port of the T1 SIM. Connect the Red bantam labeled **RECEIVE** to the Primary Rx port of the T1 SIM. Connect the RJ-48c cable to the configured T1 port on the IAD/NT. • If a cross-over cable is required, connect the Blue bantam labeled **TRANSMIT** to the Primary Rx port of the T1 SIM. Connect the Red bantam labeled **RECEIVE** to the Primary Tx port of the T1 SIM. Connect the RJ-48c cable to the configured T1 port on the IAD/NT.

2.	View Results	Press the **Home** key to display ISDN PRI Summary Results
3.	Check LED	A **Green** Sync LED indicates the HST-3000 has detected the T1 signal.

4.	Restart	Press the **Restart** soft key to reset counter and alarms. **ALL SUMMARY RESULTS OK** should be displayed. "LAPD State: Mult. Frm. Est" should also be displayed.



5. Troubleshoot

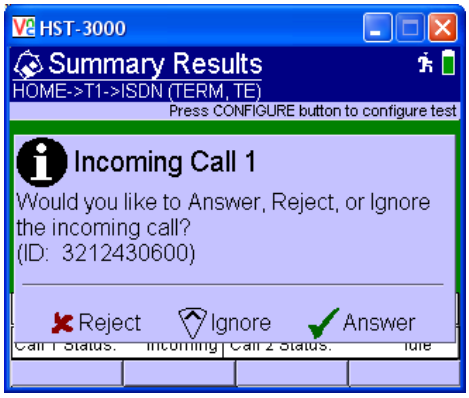
If the **Sync** LED is not green or "LAPD State: Mult. Frm. Est." is not displayed, verify the following:

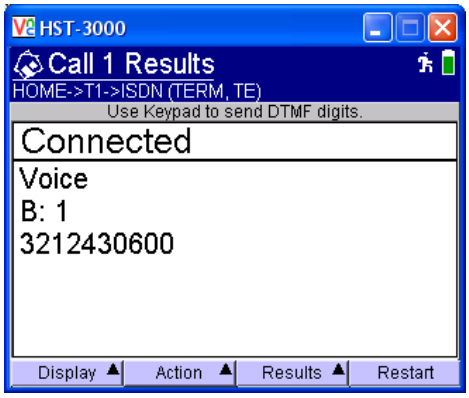
- The HST-3000 is configured correctly, as outlined above.
- The Port is configured properly and enabled in the IAD/NT.
- Cables are good quality and properly connected.
  - If a straight through cable is required, connect the Blue bantam labeled **TRANSMIT** to the Primary Tx port of the T1 SIM. Connect the Red bantam labeled **RECEIVE** to the Primary Rx port of the T1 SIM. Connect the RJ-48c cable to the configured T1 port on the IAD/NT.
  - If a cross-over cable is required, connect the Blue bantam labeled **TRANSMIT** to the Primary Rx port of the T1 SIM. Connect the Red bantam labeled **RECEIVE** to the Primary Tx port of the T1 SIM. Connect the RJ-48c cable to the configured T1 port on the IAD/NT.

If the **Sync** LED is still not green or "LAPD State: Mult. Frm. Est." is still not displayed, the HST-3000 failed to establish a datalink with the IAD/NT. Contact PRI Technical Support.

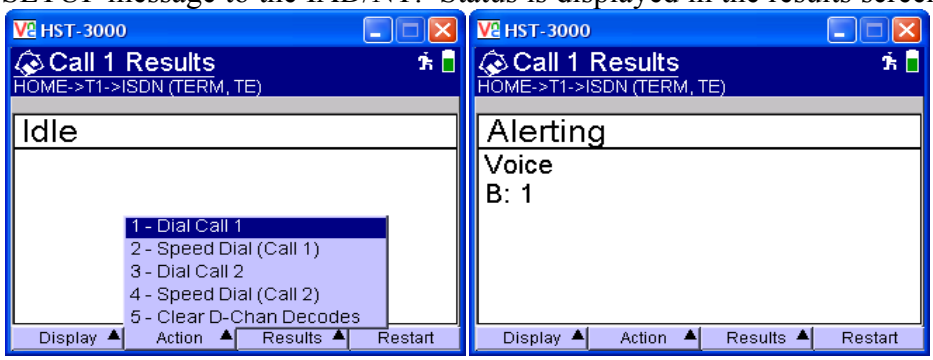
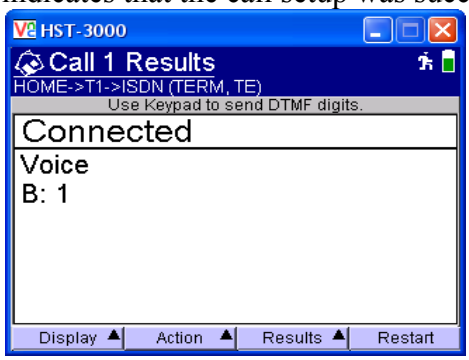
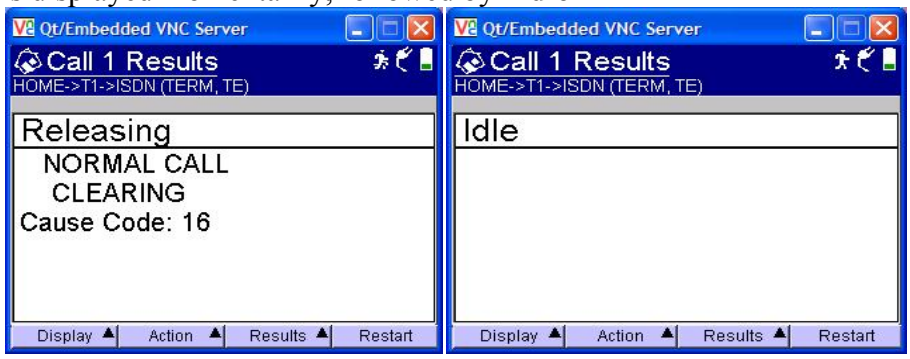
2.3 Inbound Call Testing

Step	*Action*	*Details*
1.	Dial	Using your cell phone, dial the Billing Telephone Number for the PBX.
2.	Answer	When an inbound call reaches the HST-3000, allow the call to ring at least 2 times. Confirm the Ring back tone is heard on your cell phone, and press the **OK** key to answer to call. "CONNECTED" indicates that the call setup was successful.
3.	Converse	Confirm that Voice is heard and Voice Quality is good on the HST-3000 and on the Cell Phone.
4.	Disconnect Call	Hang up the call from your cell phone. Verify that the call state on the HST-3000 changes to **IDLE**

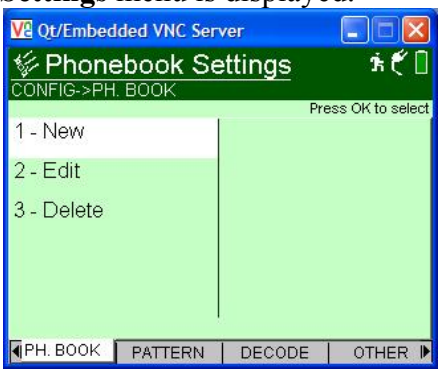




2.4 Outbound Call Testing

Step	*Action*	*Details*
1.	Dial	Press the **Action** soft key and select **Dial Call 1.** The HST-3000 sends a SETUP message to the IAD/NT. Status is displayed in the results screen. 
2.	Answer	Answer the incoming call on your cell phone. "CONNECTED" indicates that the call setup was successful. 
3.	Converse	Confirm that Voice is heard and Voice Quality is good on the HST-3000 and on the Cell Phone.
4.	Troubleshoot	If "**CONNECTED"** is not displayed in step 2 or voice is not heard in step 3, verify that the HST-3000 setup is correct and that your cell phone is working properly and repeat step 1. If "**CONNECTED"** is still not displayed, the test has failed. Contact PRI Technical Support.
5.	Disconnect Call	Press the **Action** soft key and select **Disconnect Call 1**. The Cause Code is displayed momentarily, followed by "**Idle**" 

2.5 Call Plan Testing

Step	*Action*	*Details*
1.	Phonebook	If Phonebook settings haven't been added yet, press the **Configure** Navigation key. Press the Right Arrow key until the **Phonebook Settings** menu is displayed. 
2.	Add Entries	Select **1 –New**, enter a descriptive name at the prompt, and press the **OK** button. At subsequent prompts, enter a Phone Number, Numbering Type , and Numbering Plan. Repeat this step for the desired numbers in your Call Plan. Numbers may include the following:
3.	Results	Press the **Home** key to return to the Results screen.

Name	*Number*	*Numbering Type*	*Numbering Plan*
Toll_Free	1800xxxxxxx	National	ISDN
Off_network	xxxxxxxxxx	Local	ISDN
On_network	xxxxxxx	Local	ISDN
Long_Distance	1xxxxxxxxxx	National	ISDN
International	011xxxxxxxxx	International	ISDN
Blocked_Call	xxxxxxxxx	National	ISDN
Community_services	211	Local	ISDN
Government_services	311	Local	ISDN
Directory_assistance	411	Local	ISDN
Traffic	511	Local	ISDN
Police_non-emergency_services	511	Local	ISDN
Customer service	611	Local	ISDN
TDD_relay	711	Local	ISDN
Public_utilities	811	Local	ISDN
Emergency_services	911	Local	ISDN

4. Dial

Press the **Action** soft key and select **Speed Dial (Call 1),** select the first entry in the dial plan and press **OK**. The HST-3000 sends an SETUP message to set up the call. Call status is displayed in the **Call 1 Results** screen. Verify that you hear a ring back tone before the call is connected.

5. Converse

Talk to the Called party and verify that voice quality is good for a period of at least 15 seconds.

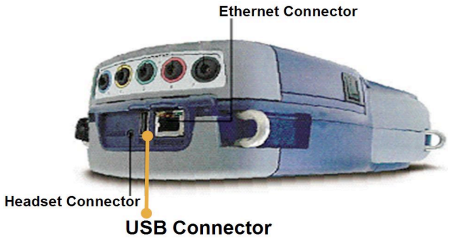
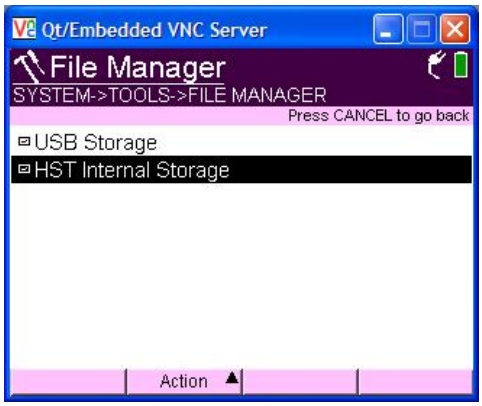
6. Disconnect Call

Press the **Action** soft key and select **Disconnect Call 1**. The Cause Code is displayed momentarily, followed by "**Idle**"

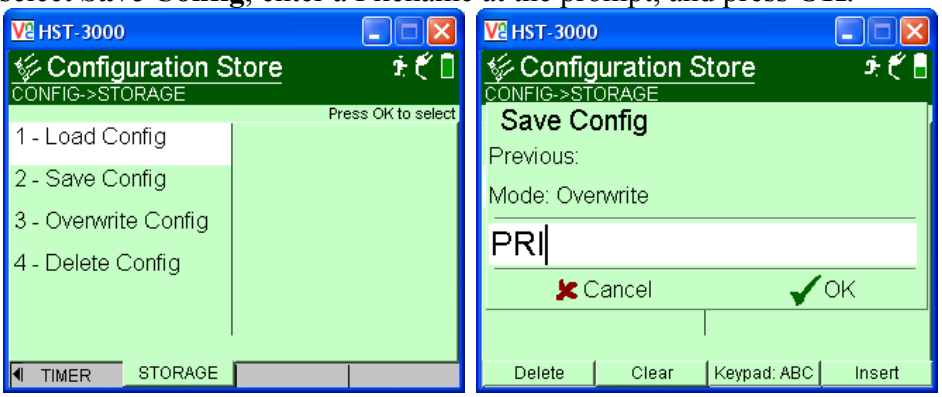
7. Repeat

Repeat steps 4 through 6 for all numbers in the Speed Dial list.

2.6 Saving Test Results

Step	*Action*	*Details*
1.	Save Results	Press the **Results** soft key, select **Save,** and enter a filename to save the test results. Press **OK** after "<filename> was saved successfully" is displayed. Press the **Results** soft key again, select **Capture D-Chan decodes,** and enter a filename to save the Capture file. Press **OK** after "<filename> was saved successfully" is displayed. The files are saved to the /results/T1 folder.
2.	Connect	Connect the USB Flash Drive to the HST-3000's USB port on the top of the mainframe.  
3.	System Tools	Press the **System** Navigation key, and press the **TOOLS** soft key. Press the **OK** key to launch the **File Manager.**  
4.	Copy File(s)	Using the **OK** key, **Up Arrow** key, and **Down Arrow** key, navigate to the desired files in the /results/T1 folder. Press the **Action** Soft key and select "Copy to USB".

2.7 Saving Configuration Template

Step	*Action*	*Details*
1.	Save Config	If a configuration template has not been previously stored, press the **Home** Navigation key, then press the **Configure** Navigation key. Press the **Right Arrow** key several times to display the **Config Store** menu, select **Save Config**, enter a Filename at the prompt, and press **OK**. 
2.	Shutdown	Press the green power button to turn the unit off.
3.	Disconnect	Disconnect the USB Flash Drive from the HST-3000's USB port on the top of the mainframe.