HST Ethernet Quick Card

The product comes in Ethernet only or Ethernet/T1/T3 variations and works in conjunction with a fiber cleaning and inspection kit to help turn-up and maintain Ethernet backhaul links from the cell site.

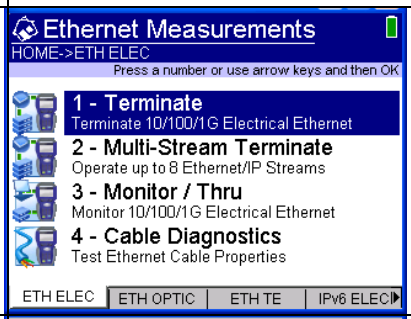
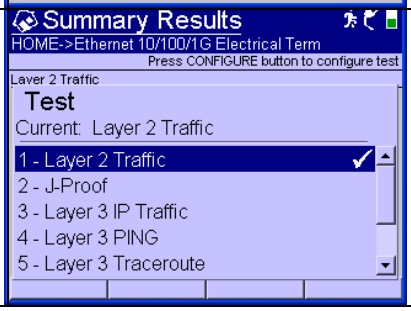
When connecting to an optical link first make sure the link is clean using the proper inspection probes. Then connect the HST-3000 to the line under test using the proper SFP connector into port 1 on the HST Ethernet SIM.

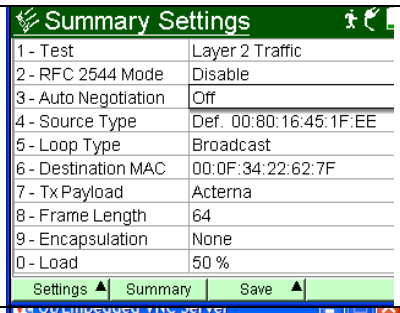
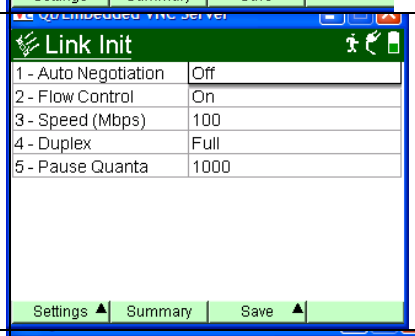
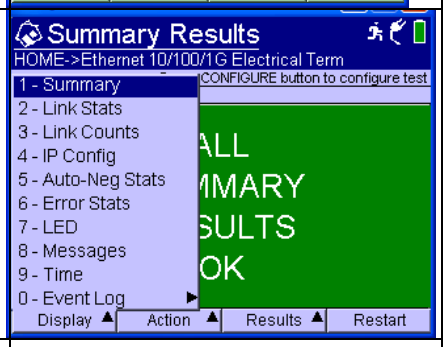
1 Testing with the HST-3000

This section describes testing using the HST-3000 located in the field. The first two sections (Setting up an Electrical Link and Setting up an Optical Link) describe how one will connect the unit to the link under test. Technicians serving as the loop unit (tests will be run by a far end HST-3000, TB6000A, TB8000, or QT-600) can stop at this point. However, if the technician is responsible for validating the link he or she must complete the next two sections of Quick Testing and RFC 2544 testing. The final section details how to offload the RFC 2544 results from the HST for storage or further analysis.

1.1 Setup for Testing an Electrical Link with the HST-3000

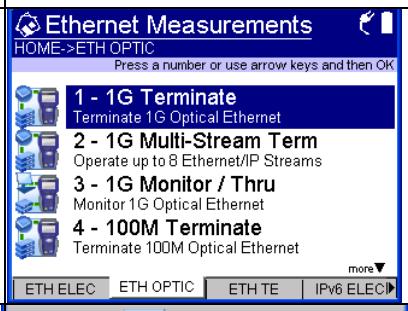
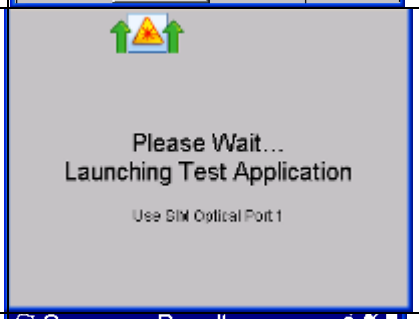
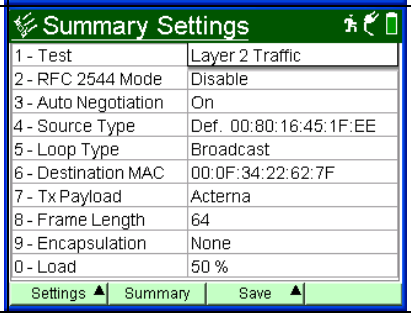
This section describes setup and testing to a RJ-45 connection located in the field. If testing to an optical connection, proceed to the next section for instructions.

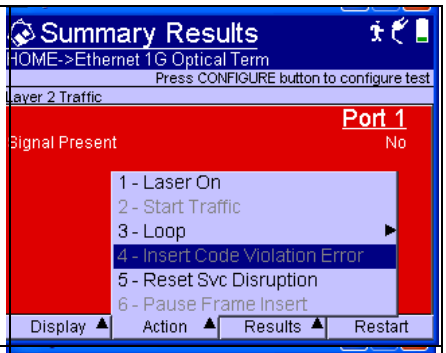
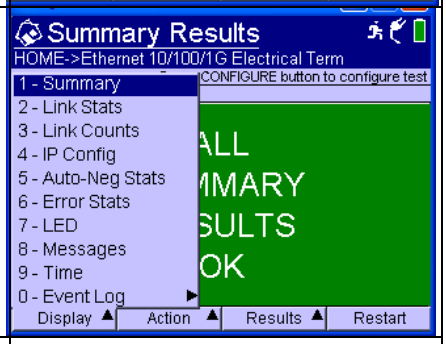
Step	Directions	
1	The first step is turning the unit on and then hitting the **home key**. Then select the **Eth Elec** tab and select option 1 **Terminate**.	
2	The unit will now boot up. Make sure to insert the cable into the location (Port 1) on the left side of the unit. Do not plug into the electrical cable on the top of the unit.	
3	The next step is to select Layer 2 Traffic as your **Test** selection.	

4	Now press the **configure** button on the tester. Then select **Auto Negotiation** and depending on the network select **On** or **Off.** This will most likely be set to **Off**. Set the **RFC 2544 Mode** to **Disable.**	
5	Next press the **right** arrow key until you get to the **Link Init** screen. Then set the speed to **100Mbps** and the **Duplex** to **Full**. Next press the **home** key.	
6	You should see the screen turn green. If not, select the **display** key and then select the **summary** result pane. Then select the **restart** key on the right side. If you cannot get to this step check the settings and the physical connection.	
7	The tester is now ready to receive loop commands or proceed to Quick Testing using the HST-3000 (Section 4.3)	

1.2 Setup for Testing an Optical Link with the HST-3000

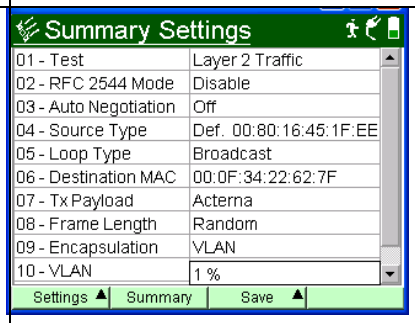
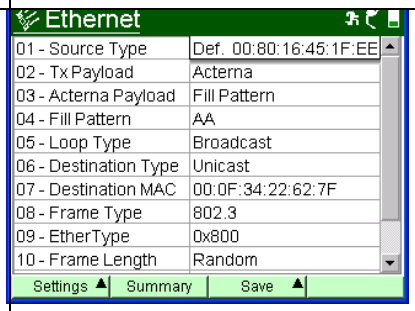
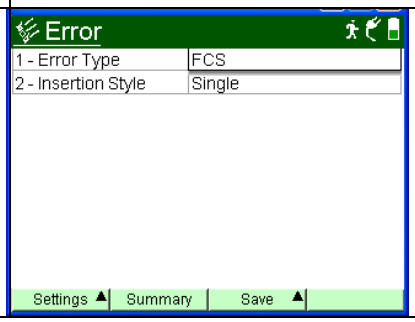
This section describes setup and testing when the location in the field is an optical drop. If there is instead an electrical RJ-45 handoff then the method detailed previously should be used.

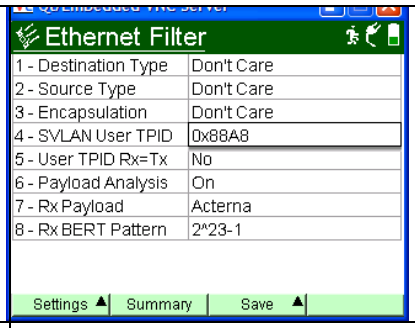
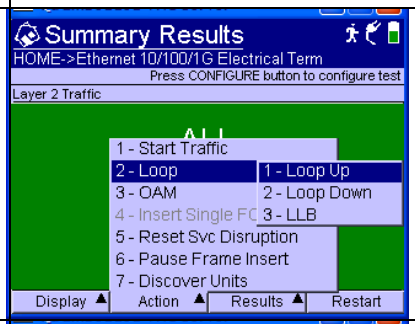
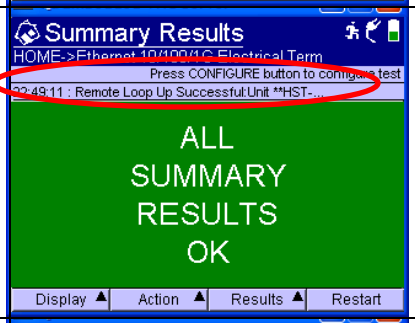
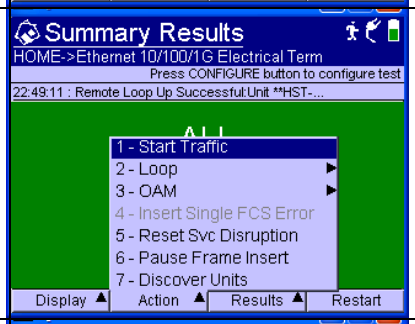
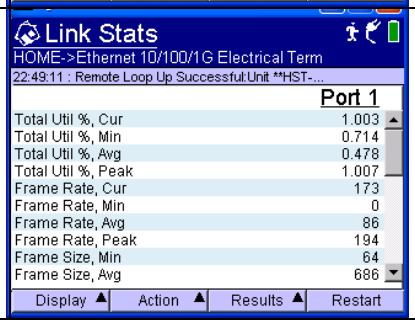
Step	Directions	
1	The first step is turning the unit on and then hitting the **home key**. Then select the **Eth Optical** tab and select option 1 **1G Terminate**.	
2	The unit will now boot up. Make sure to insert the proper SFP into the R/T 1 slot (top left of the unit). The proper SFP will be either a 1310nm or 850nm optical SFP depending on the handoff.	
3	The next step is to select Layer 2 Traffic as your **Test** selection.	
4	Now press the **configure** button on the tester. Then select **RFC 2544 Mode = Disable** and **Auto Negotiation** and depending on the network select **On** or Off (most likely this will be set to on). Next press the **home** key.	

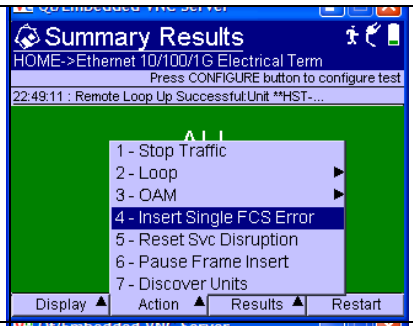
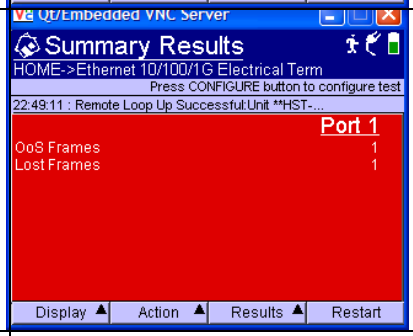
5	Now select the **Action** tab and then select **Laser On**.	
6	You should see the screen turn green. If not, select the **display** key and then select the **summary** result pane. Then select the **restart** key on the right side.	
7	The tester is now ready to receive loop commands or proceed to Quick Testing using the HST-3000 (Section 4.3)	

1.3 Quick Testing Using the HST-3000

This section describes how to quickly check an active link exists between two test sets. This test proves that the link exists and will detect if errors occur. After this section is complete one can safely run the RFC 2544 test to validate the pipe.

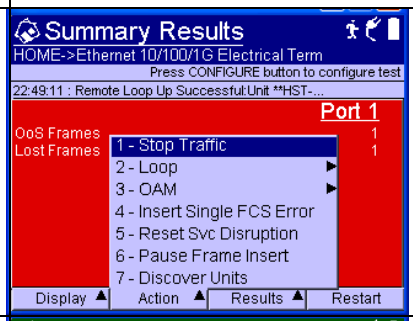
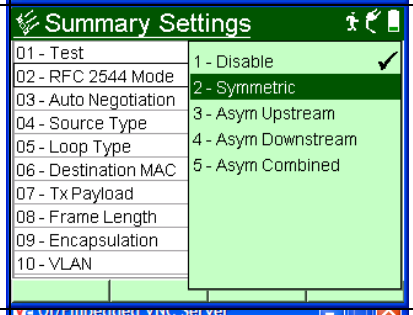
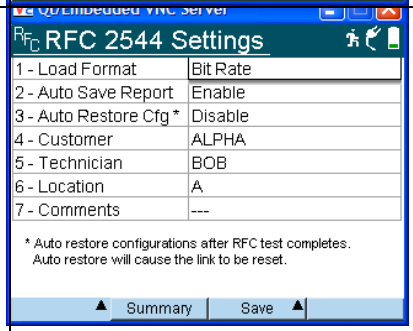
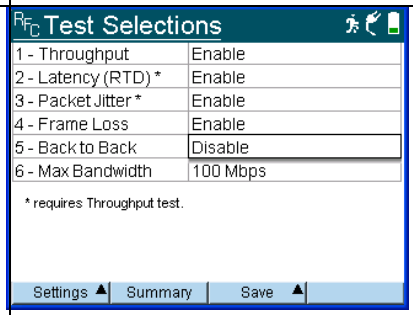
Step	Directions	
1	This section continues from either section 4.1 or 4.2. If you have not completed the appropriate section, please do so at this time.	
2	Press the **configure** button. Tap the left and right arrows until you get to the **Summary Settings** Screen. Then Select: • Loop Type -> Broadcast • Tx Payload -> Acterna • Frame Length -> Random • Encapsulation -> Most Likely this will be VLAN tagged though it depends on the location and network • VLAN ID and Priority -> Depends on Network, see work order • Traffic Load -> again depends on network, see work order. If unknown enter 1%.	
3	Tap the Right arrow until you get the Ethernet Tab. • Frame Type -> 802.3 Please note that if you are running across a switched service you have to set the Destination MAC equal to the far end's Source MAC address on both testsets.	
4	Tab right to select the Error Page. Make sure that • Error Type -> FCS • Insertion Type -> Single	

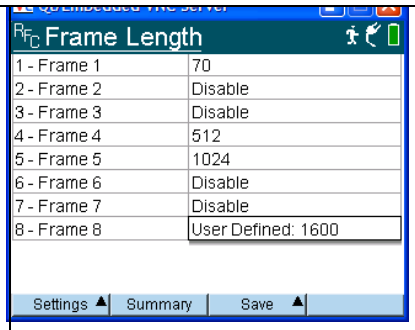
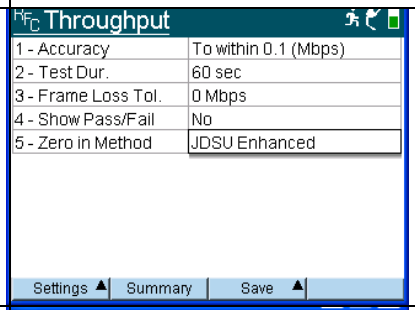
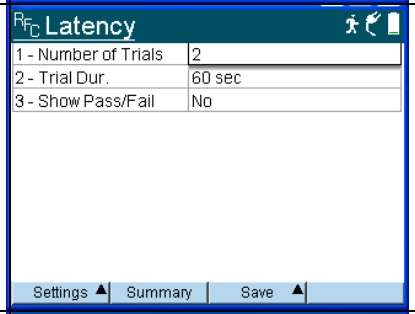
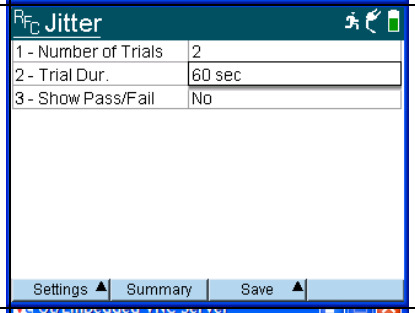
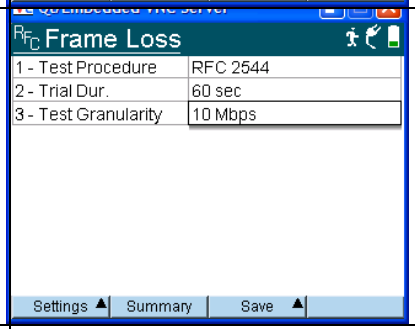
5	Tap right to select the **Ethernet Filter Tab**. Make sure that • Destination Type -> Don't Care • Source Type -> Don't Care • Encapsulation -> Don't Care • Payload Analysis -> On • Rx Payload -> Acterna	
6	Next press the **home** key. Then select **Restart**.	
7	Now to Loop up the far end select the **Action** Key, then select **#2 Loop** and then Select **#1 Loop Up**.	
8	You should see a message at the top stating "Remote Loop Up Successful…"… If you do not see this message please double-check your settings. If the message still does not appear repeat steps 1-6 for a far end HST and if using a TB6000A or TB8000 do steps 1-6 in section 3.3.	
9	Now select the **Action** key and then select **Start Traffic**. Check that the Frame LED on the top of the unit becomes illuminated.	
10	Press the **right arrow** to see the **Link Stats** and ensure that frames are being received (Total Util % Cur is >0).	

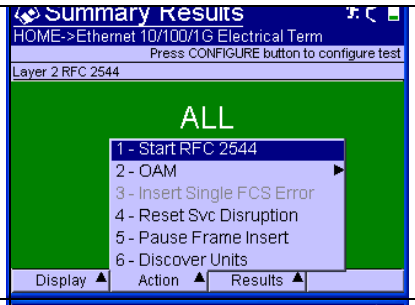
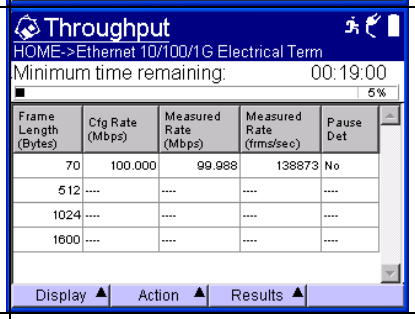
11	Now press the **left arrow** to go back to the summary page. Check that the summary page remains green. Select the **Action** button and select **Insert Single FCS Error**.	
12	Check that the screen has turned red and a single error has appeared on the screen.	
13	Quick test is now complete. Please proceed to the next section RFC 2544 testing.	

1.4 RFC 2544 Testing Using the HST-3000

This section describes how to validate the link between two locations. The output of this test is a go or no go on the quality of the link and the results can be saved for further analysis. This section is expected to take approximately 25 minutes for testing.

Step	Directions	
1	This section continues from 4.3. If you have not completed that section, please do so at this time. If you are ready to proceed, press the **action** key and select **Stop traffic**.	
2	Press the **configure** button. Tap the left and right arrows until you get to the **Summary Settings** Screen. Then select **RFC 2544 Mode** and press **Symmetric**.	
3	Tap right to select the **RFC 2544 Settings**. Make sure that • Load Format -> Bit Rate • Auto Save Report -> Enable • Auto Restore Cfg* -> Disable You can also enter the customer, location, technician and any comments you have that you wish to be stored on the final report.	
4	Tap right to select the **Test Selections**. Make sure that • Throughput -> Enable • Latency (RTD)* -> Enable • Packet Jitter * -> Enable • Frame Loss -> Enable • Back to Back -> Disable • Max Bandwidth -> this will change at each location but should be the CIR for the circuit.	

5	Tap right to select the **Frame Length Tab**. Make sure that • The smallest possible Frame Length is selected (this will be either 64, 68, 70, or 72 depending on the settings). To do this go to Frame Length 1 and select the value. • Select 512 and 1024 in entries 4 and 5. • Select User Defined for 1600 in entry 8. • Make all the rest of the entries disabled • Please see picture for a correct sample setup.	
6	Tap right to select the **Throughput**. Make sure that • Accuracy -> To within 0.1 (Mbps) • Test Dur. -> 60 sec • Frame Loss Tol -> 0Mbps • Show Pass/Fail -> No • Zero in Method -> JDSU Enhanced	
7	Tap right to select the **Latency**. Make sure that • Number of Trials -> 2 • Trial Dur. -> 60 sec • Show Pass/Fail -> No	
8	Tap right to select the **Jitter**. Make sure that • Number of Trials -> 2 • Trial Dur. -> 60 sec • Show Pass/Fail -> No	
9	Tap right to select the **Frame Loss**. Make sure that • Test Procedure -> RFC 2544 • Trial Dur. -> 60 sec • Test Granularity -> 10 Mbps	
10	Next press the **home** key. Then select **Restart**.	

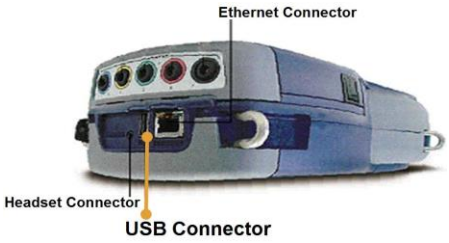
11	Now select the **Action** key and then select **Start Traffic**.	
12	The RFC 2544 test will automatically run through all of its tests and save results to the unit. A bar at the top will diplay the minimum time remaining for the test to be completed.	
13	The link has now been fully tested. In the next section one can download the results to USB and view them on a laptop to determine if the link passed or failed final inspection.	

1.5 Downloading Results on the HST-3000 (via USB)

This section describes how to download results via USB from the HST-3000

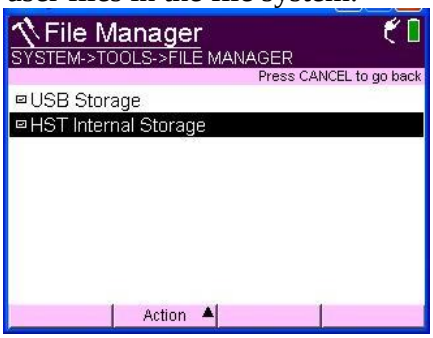
Part 1: Connecting the USB Flash Drive to the HST-3000

Step	*Action*	*Details*
1.	Connect	Connect the USB Flash Drive to the HST-3000's USB port on the top of the mainframe.

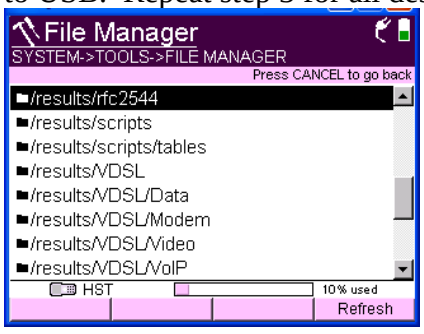


Part 2: Transferring files from the HST-3000

Step	*Action*	*Details*
1.	Power On	Press the green Power Key to turn on the HST-3000.
2.	Launch System Tools	Press the **System** Navigation key, and press the **TOOLS** soft key. Press the **Up Arrow** or **Down Arrow** key to select **File Manager**, then press the **OK** key to manage user files in the file system.



3.	Copy File(s)	Using the **OK** key, **Up Arrow** key, and **Down Arrow** key, navigate to the desired file. To go to RFC 2544 results select results/rfc 2544 folder. Press the **Action** Soft key and select Copy to USB. Repeat step 3 for all desired files.



Part 3: Ending File Transfer

Step	*Action*	*Details*
1.	Shutdown HST-3000	Power cycle the HST-3000 by Pressing the green power button to turn the unit off.
2.	Disconnect	Disconnect the USB Flash Drive from the HST-3000's USB port on the top of the mainframe.