Network & Service Companion (NSC-100/200)

VIAVI Solutions

QUICK CARD

Ethernet Layer 2 Traffic Loopback

This quick card describes how to set the NSC-100 or NSC-200 Network & Service Companion (NSC) up as a Layer 2 Loopback device for another VIAVI test instrument.

- Mobile Device (Smartphone or Tablet) with VIAVI Mobile Tech App
- Network & Service Companion equipped with the following:
  - Software release V4.2.19 or greater
  - **NSC-LOOPBACK-1G** option for up to 1 Gigabit Ethernet loopback
  - **NSC-LOOPBACK-10G** option for 10 Gigabit Ethernet loopback
  - **NSC-OPTICAL ETHERNET** for loopback using the SFP port
- Optical Transceiver supporting the line rate to be tested:
  - **NSC-SFP-ELEC-10G** 10G Electrical Ethernet SFP+
  - **NSC-SFP-ELEC-1-2.5-5-10G** 1G, 2.5G, 5G and 10G Electrical Ethernet SFP+
  - **NSC-SFP-ELEC-AUTO-10G** 2.5G, 5G and 10G Auto-neg Electrical Ethernet SFP+
  - **NSC-SFP-850-1G-10G** 1G and 10G Optical Ethernet SFP+ 850 nm SR
  - **NSC-SFP-1310-1G-10G** 1G and 10G Optical Ethernet SFP+ 1310 nm LR
  - **NSC-SFP-1550-1G-10G** 1G and 10G Optical Ethernet SFP+ 1550 nm ER
- Cables to match the optical transceiver and the line under test
- Fiber optic inspection microscope (P5000i or FiberChek Probe)
- Fiber optic cleaning supplies

Figure 1: Equipment Requirements

PAIRING THE NSC TO YOUR MOBILE DEVICE

On the Network & Service Companion:

1. Press the Power button to turn on the unit. The Power indicator will turn solid green when the NSC is on.
2. Press and hold the Pair button on the NSC for 3 seconds to enter pairing mode. The blue Pair indicator blinks.

Figure 2: Front View

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On the Mobile Device:

1. Go to the Settings menu, enable Bluetooth, and scan for available devices.
2. Pair with **VIAVI NSC**.
3. Launch the VIAVI Mobile Tech App and tap **LOCAL MODE**.
4. Press CONNECT to connect to VIAVI NSC.
5. Press **show more** to view device information, including **MAC Addresses** of the RJ45 port and SFP port. Provide this information to the operator of the Traffic Generator upon request.
6. Press Companion to view the Companion menu. You can now control the instrument through the **Mobile Tech App** and run all tests on the Companion.
7. Press ‹ to exit Job View.

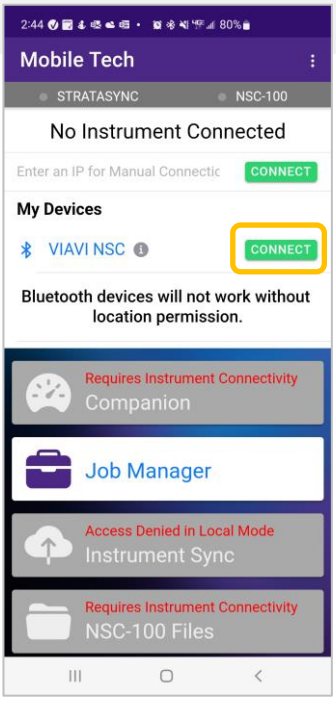

Figure 3: Mobile Tech App

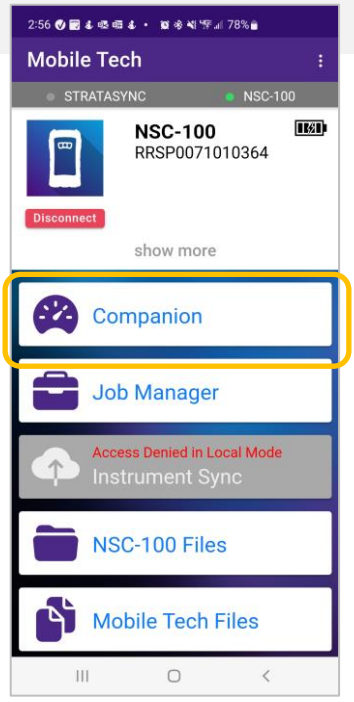

Figure 4: NSC Mobile Tech

CONFIGURE PROFILE

► The following Information is needed to configure the Loopback Profile:

- Interface Type (RJ-45 or SFP)
- Interface Rate (1G, 10G)
- Interface Protocol (Layer 2 VIAVI LB or Port LB)
- VLAN Filter (ID and/or Priority)

Figure 5: Work Order

1. Press Profile Manager to display the Profile Manager screen.
2. Press CREATE NEW PROFILE to create a new profile.
3. Select **New Loopback Profile** and, if prompted, **ACCEPT TERMS OF USE**.
4. Configure Interface settings as follows:

Interface	Interface Type	Interface Rate
1G Copper	RJ45	1G
10G Copper	SFP	10G
1G Optical	SFP	1G
10G Optical	SFP	10G

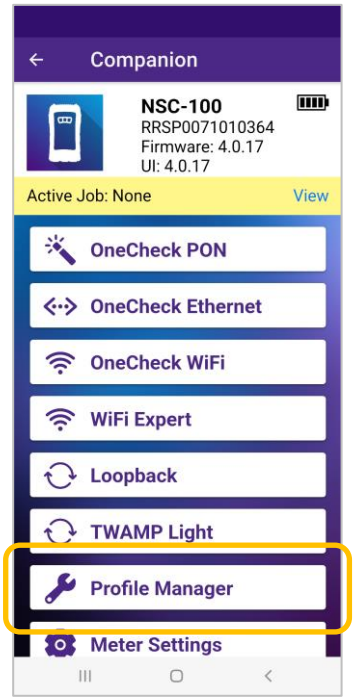

Figure 6: Profile Manager

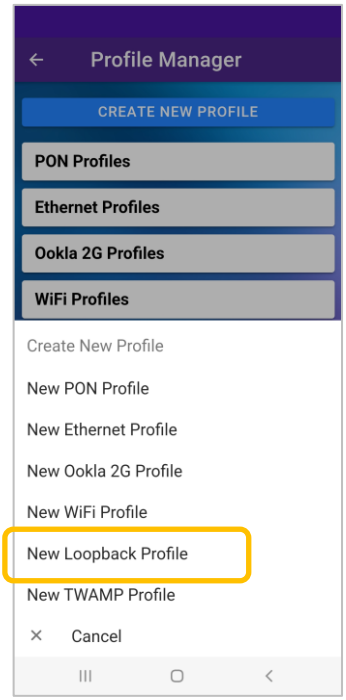

Figure 7: Create New Profile

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5. Disable **Persist on Boot** if do not want the NSC to resume loopback testing again after a shutdown and startup.
6. Set **Interface Protocol** to **LAYER2-VIAVI-LB**.
7. Enable **VLAN Filter** and enter a **VLAN ID** and **VLAN Priority** to limit loopback to a single VLAN ID or Priority.
8. Press SAVE AND RUN to initiate the test.

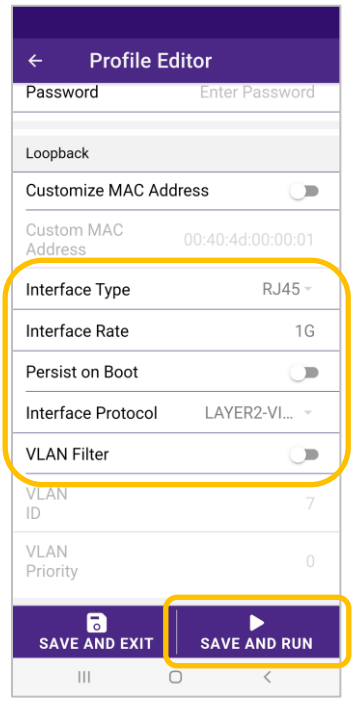

Figure 8: Profile Editor

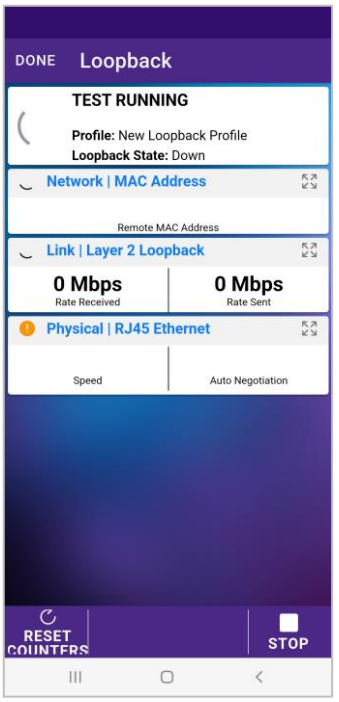

Figure 9: Test Running

CONNECT TO LINE UNDER TEST

Figure 10: Network and Service Companion Interfaces

► **For 1G Copper RJ45 interfaces**:

1. Connect the **RJ45** jack to the port under test using **CAT 5E** or better cable..
2. Verify the following:
   - **Speed** is **1 Gbps**
   - **Auto-Negotiation** is **On**.

► **For 10G Copper SFP interfaces**:

1. Insert desired 10G Copper SFP into the SFP cage on the bottom of the NSC.
2. Connect the SFP to the port under test using **CAT 6A** or better cable..
3. Verify the following:
   - **Speed** is **10 Gbps**
   - **Auto-Negotiation** is **Off**.

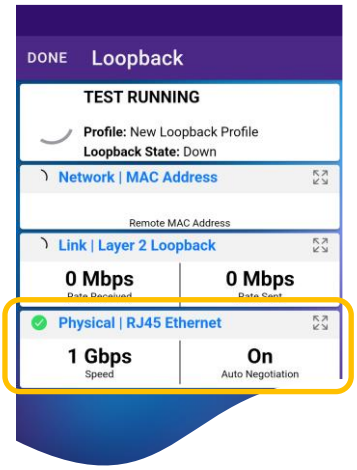

Figure 11: 1G Copper RJ45

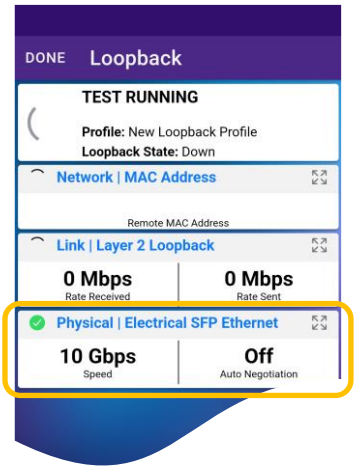

Figure 12: 10G Copper SFP

CONNECT TO LINE UNDER TEST (Continued)

► **For Optical Interfaces:**

1. Insert desired Optical Transceiver into the SFP port on the bottom of the NSC.
2. Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
   - Focus the fiber on the screen.
   - If it appears dirty, clean the fiber end-face and re-inspect.
   - If it appears clean, run the inspection test.
   - If it fails, clean the fiber and re-run inspection test. Repeat until it passes.
3. Connect the SFP to the port under test using a jumper cable compatible with the line under test..
4. Verify the following:
   - **Tx Power** is within the limits of the port under test.
   - **Rx Power** is within the limits of the SFP in the NSC.
5. If necessary, insert optical attenuators into the SFP TX and/or RX ports.

Figure 13: Inspect Before You Connect

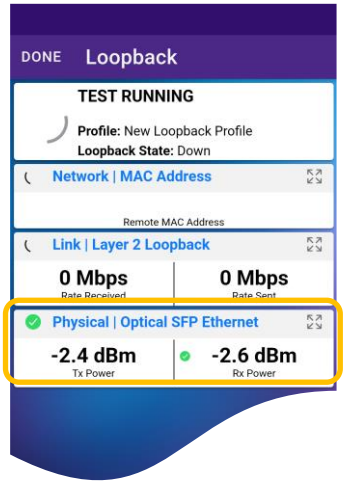

Figure 14: 1G or 10G Optical SFP

LOOP UP

1. The NSC may be looped up by either of the following methods.
   - **Broadcast Loop up message**: NSC will respond to VIAVI **Loop up** messages received via Broadcast MAC address and will enter Loopback state.
   - **Unicast Loop up message**: The NSC will respond to VIAVI **Loop up** messages received via Unicast MAC address and will enter Loopback state.
2. Once looped, the NSC will reflect all received test packet after inverting Source and Destination MAC addresses.
3. When the test is finished, press STOP to stop the test.

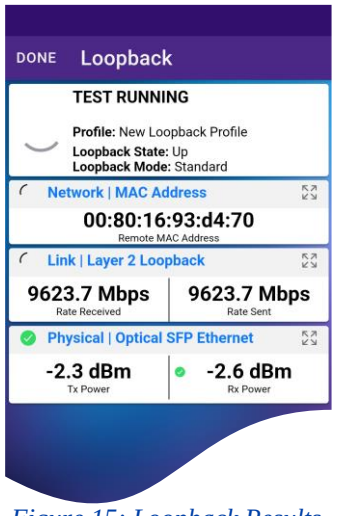

Figure 15: Loopback Results

Contact Us **+1 844 GO VIAVI (+1 844 468-4284)**

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