



Flash Memory Summit



Compatibility Testing Environment for NVMeTM SSDs

Miki Takahashi
Executive Vice President of Engineering
Granite River Labs

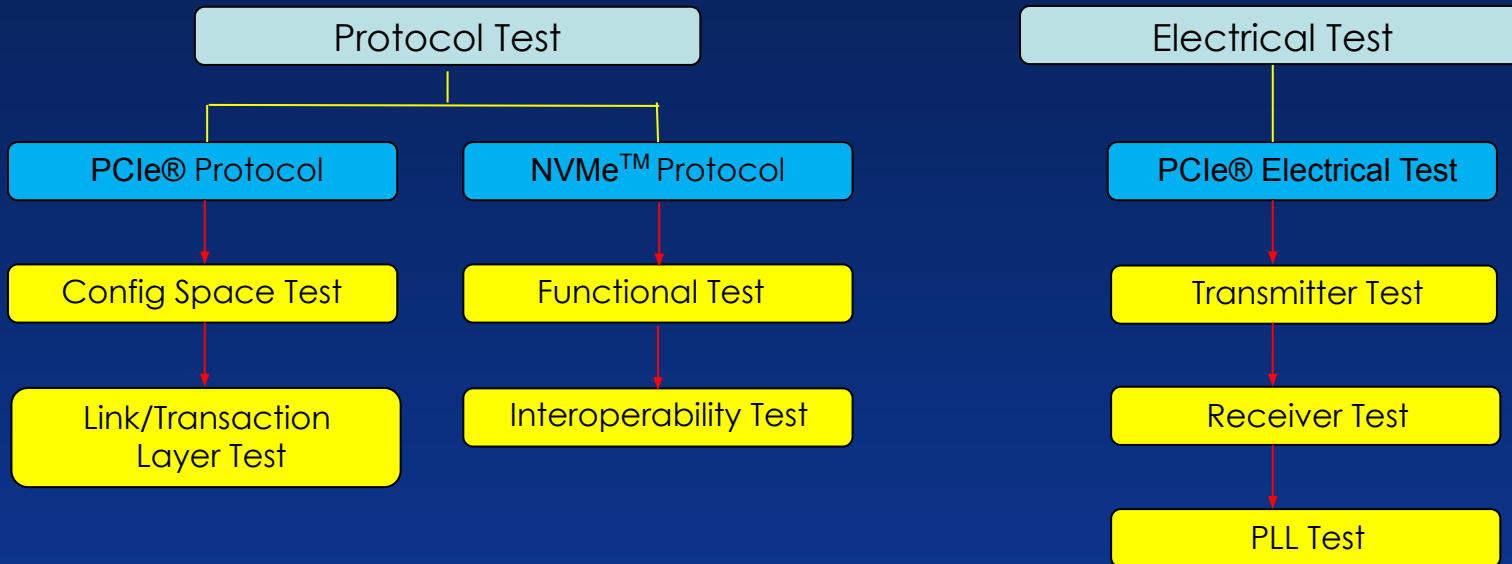


PCIe[®] and NVM Express[™] compatibility testing is robust and available

- Both PCI-SIG[®] and NVM Express[™] organizations define robust tests that:
 - Are validated by members
 - Are then used to validate compliance of products to the specification
- These tests are implemented by Test Manufacturers where:
 - The test equipment is validated by the organization and members to match the specified tests
 - The test equipment is then used to validate compliance of products

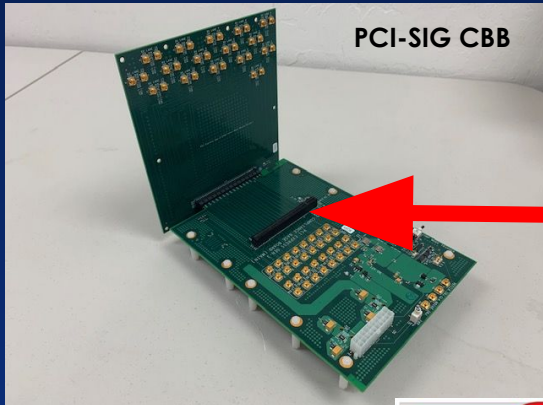


What tests needs to be done?





PCIe® Electrical Test (For Device)



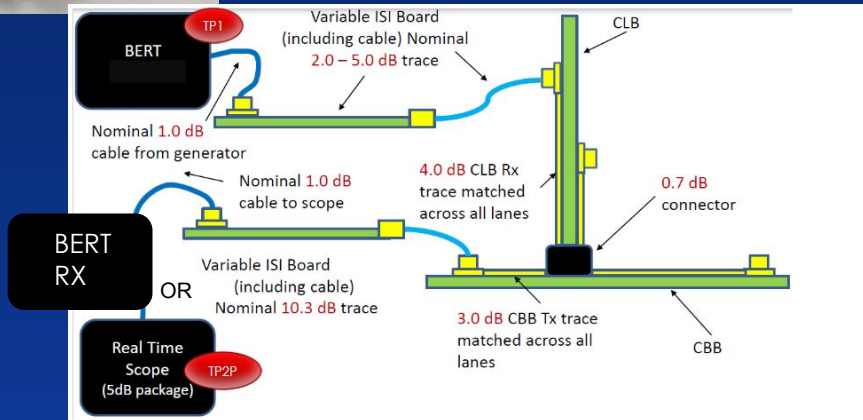
PCI-SIG CBB

Adapter goes to CEM connector on CBB

Test Fixture Concept
(XFMEXPRESS™ to PCIe® Add-In Card adapter)



PCIe® Add-In Card Edge





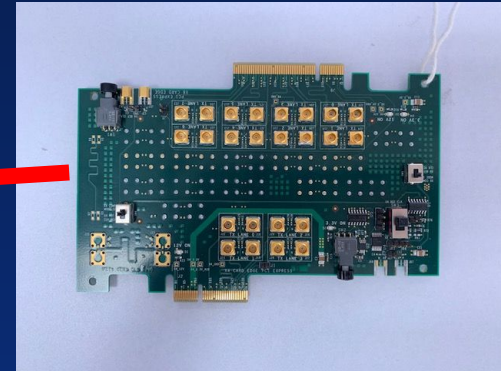
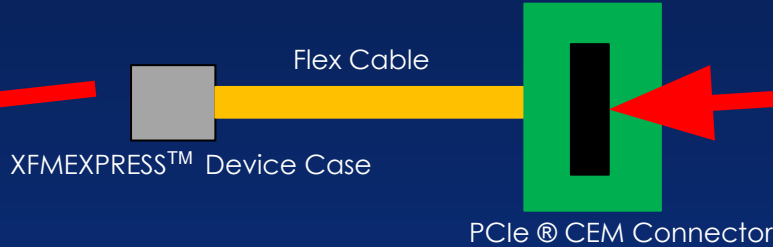
PCIe® Electrical Test (For Host)

Flash Memory Summit

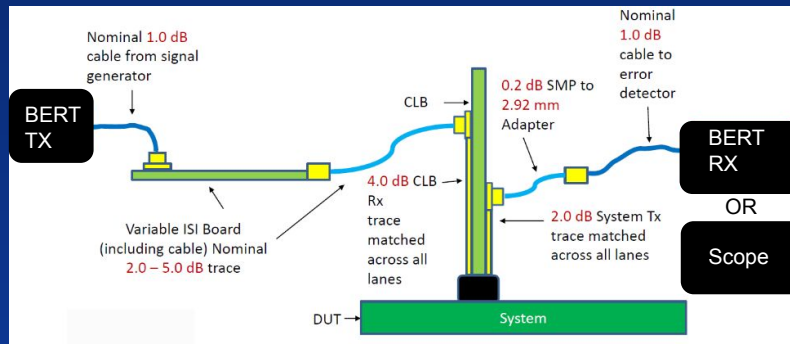
Test Fixture Concept (XFMEXPRESS™ to PCIe® CEM Adapter)



Adapter goes to Host System



PCI-SIG CLB goes to Host Test Adapter





Flash Memory Summit

Protocol Test (For Device)

Test Fixture Concept
(XFMEXPRESS™ to PCIe® Add-In Card Adapter)



Adapter goes to CEM Slot on
Exerciser, Analyzer or PCIe®
Protocol Test Platform



PCIe® Add-In Card Edge

PCIe® Exerciser and Analyzer are available in the market and they have test suites for PCIe®/NVMe™ .

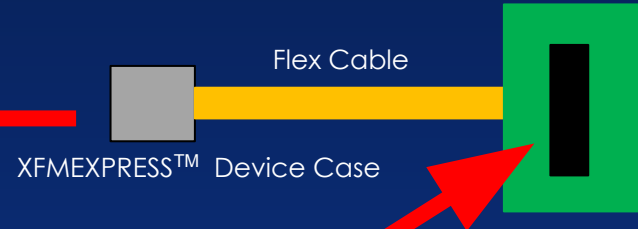


Protocol Test (For Host)



Adapter goes to CEM Slot on Host System

Test Fixture Concept
(XFMEXPRESS™ to PCIe® CEM Adapter)



Exerciser, Analyzer or PCIe® Test Platform goes to CEM Slot on Host Test Adapter





Conclusion

- Minimize the effort/the cost to built XFMEXPRESS™ Test Platform by leveraging existing PCIe® /NVMe™ Test Solution as much as possible
- Need to define XFMEXPRESS™ unique test items, if required (Performance and Reliability)
- Make sure that additional electrical loss from Test Adapter gives reasonable margin (not excessive)



Flash Memory Summit

Thank you!

Point to Booth 307, Toshiba Memory