

# Automated switching solution for testing multi-lane buses with an oscilloscope



Agilent's switch matrix software option for compliance applications, when used with switch matrix hardware, enables fully automated testing for multi-lane digital bus interfaces. The automated switching option will be available on compliance applications for multi-lane buses, which include DisplayPort, HDMI, PCI Express, MIPI D-PHY and M-PHY interfaces.

The benefits of this automated switching solution include:

- **Eliminate reconnections (and errors)**  
The new switch matrix capability saves time and makes testing simple by automating testing for each lane of a multi-lane bus.
- **Maintain accuracy**  
Use Agilent's unique N2809A PrecisionProbe and N5465A InfiniiSim to compensate switch path losses and skew.

- **Customize your testing**  
Extend the test application with remote programming hooks and the N5467A user-defined application for device control, equipment control, and test customization.

The automated switching solution is available for different test interfaces, which includes the coaxial (SMA, SMP) interface as well as direct probing through the Agilent InfiniiMax Series probes.





SMA connection test interface



Direct probing test interface

Table 1. Bus standard electrical characteristics and test interface

Bus standards	Number of lanes	Maximum signal bandwidth	Signal type	Test interface
DisplayPort	4	13 GHz	Differential	SMA
HDMI	4	8 GHz	Differential	SMA
PCI Express	1 - 16	12 GHz	Differential	SMA
MIPI D-PHY	1 - 4	6 GHz	Differential	SMA or direct probing
MIPI M-PHY	1 - 4	20 GHz	Differential	SMA or direct probing



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