External PCIe Modules

Automate hot-plug, dual redundancy and fault injection testing for external PCIe interfaces

Quarch
Technology

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Highlights

- Supports multi lane PCIe devices
- Removes manual intervention, for fully automated testing
- Precise and consistent timing control over hot-swap scenarios
- Completely transparent at the protocol layer
- Create and test many different fault conditions
- Simple to control with your existing test automation system

Use Cases

System Qualification	Run repeated test cycles with bounds testing of all possible hot-swap and lane width scenarios
Regression Testing	Automated regression tests spot issues earlier during development
RAID Testing	Force drive rebuilds, single/double RAID faults
Failover Testing	Test dual redundancy, fault monitoring and performance during a failure
Fault Injection	Simulate a large number of fault scenarios

Hot Swap

PCIe data is switched with high speed RF switches, ensuring that our modules are almost totally transparent to the storage system. Host/Device connections will appear as if they are directly attached.

Individual control over each pin allows us to create almost any possible hot-swap or fault scenario. Precise timing ensures that every test can be exactly re-created. Versions are available with inrush current limits, to help high power devices hot-plug on hosts with limited power supply capacity.

The modules can be manually controlled for bench testing, or easily integrated into your existing test automation system as part of a fully automated test solution.

Module Range

Currently the external PCIe range is limited to devices compatible with the "PCI Express External Cabling Specification Revision 3.0" and OCulink

Modules have individual control over every power, sideband and PCIe data signal.

For PCIe External Cables which have dual EEPROMs and which can communicate via a side-channel, we supply an 0.5m custom cable with each module. This has every pin directly connected, so our module will be totally transparent to the link

Interface options depend on the controller you chose, but include simple Serial, USB and LAN options. These can be accessed from almost any scripting language. You will need to purchase a separate controller to use this module.

These modules can be combined with other Torridon modules as part of a full test-automation system.

Supplied Parts

Drive Module - The main unit: Comes with a fixed 40cm Interface Cable to connect to a Torridon Controller.
- QTL2058 Is also sppplied with an 0.5m custom cable for use on one side of the link, to ensure it is transparent to the cable EEPROMs

Also Required

Controller - You will require one slot on a Torridon Controller for each Cable Module

Downloads - Our website contains many useful downloads to help you get started: www.quarch.com
   USB Drivers
   Technical Manuals
   Quick Start Guides
   Example Scripts
   TestMonkey GUI

Support

Quarch provides direct support to all customers, regardless of the sales channel you use to purchase our equipment. We are available over email, or by phone during UK office hours. Our regional partners are also trained to handle many of the most common questions you might have.

Our support is normally free, though there may be charges if you require on-site training or significant development work. Please contact us if there is anything we can do to help.

Please see our website for access to drivers, technical manuals, quick-start guides, example scripts and more.

Email	**Phone**	**Web**
support@quarch.com	+44 1343 508 140	www.quarch.com/support

Ordering

Quarch have a network of specialist partners around the world. Please contact our partner in your region if you require a quote.

We recommend evaluating our products before purchase, so our partners will be happy to arrange a free evaluation unit.

Regional Contact Details

China, Hong Kong
Saniffer
Hong Kong

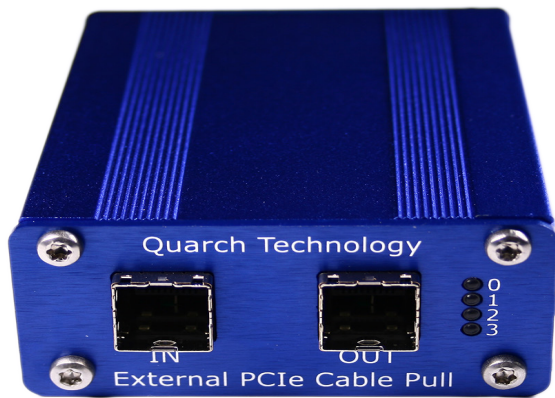| Email	sales@saniffer.com
Web	www.saniffer.com
Phone	+86 21-58480285

Products Versions

Product Code	Product Options
QTLXXXX	Product code, made up from options below
	QTL2058 GEN3 External PCIe Cable Module with 0.5m Custom Cable
	QTL2146 OCulink Cable Module

External PCIe Cable Module - Main Unit

Required Controllers - One port on a controller is required for each module

Product Code	Description
QTL1260	**Torridon Interface Kit** Simple USB and Serial control options for bench testing
QTL1461	**4 Port Torridon Controller** Control up to 4 modules via Serial/LAN/USB connection
QTL1079	**28 Port Torridon Controller** Control up to 28 modules via Serial, LAN or USB connection

Accessories

Product Code	Description
QTL1558	40cm Torridon Double Ended Interface Cable (Female to Female) Replacement cable for Card Modules, connects Module to Controller
QTL1870	100cm Torridon Double Ended Interface Cable (Female to Female) Replacement cable for Card Modules, connects Module to Controller
QTL1381	100cm Torridon Extension Cable (Male to Female) Extends an existing Double Ended Torridon cable or fixed Drive Module Cable

Technical Information

Connections	QTL2058	QTL2146
Host Side Connector	External PCIe	OCulink Internal
Device Side Connector	External PCIe	OCulink Internal
Max Speed	8GT/s	8GT/s, 16GT/s[*2]
Protocols	PCIe	
Signals Switched	All[*1]	

[*1] All power, high speed data, mated and sideband pins are individually switched. GND pins are directly routed through the module.
[*2] Designed for, but not tested at GEN4 speeds, as equipment is not available yet

External Connections	QTL2058	QTL2146
Power Supply	Via Torridon Controller	
Control Ports	Torridon Connector	
Triggering	X	X
Power Injection Port	√	√

Physical Dimensions	QTL2058	QTL2146
Length	84mm	
Width	63.5mm	
Height	30mm	

Features	QTL2058	QTL2146
Basic (power only) hot/swap	√	√
Full hot-swap	√	√
Pin Bounce Simulation	Simple/Custom. 10uS minimum period	
Signal Glitch	Single/Cycle/PRBS. 50nS minimum length	
Voltage Monitoring	X	√
Power Monitoring	N/A	N/A
Active Signal Driving	X	X

Controllers	QTL2058	QTL2146
Serial Control	Supported on all Controllers	
USB Control	Supported on all Controllers	
REST Control	Supported on QTL1079 and QTL1461	
Telnet Control	Supported on QTL1079 and QTL1461	