GEN4 PCIe Card and Drive Modules

Automate hot-plug, dual redundancy and fault injection testing for GEN4 PCIe card devices
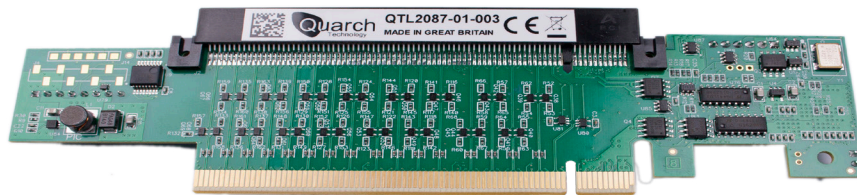
Quarch
Technology

GEN4 PCIe Card and Drive Modules

Automate hot-plug, dual redundancy and fault injection testing for GEN4 PCIe Card devices

Highlights

- Supports x1 to x16 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 Gen4 range is limited to slot based devices. Additional modules will be produced as more Gen4 equipment becomes available.

HS Modules also switch the PCIe lanes and have an additional injection port to allow power margining and measurement from our Programmable Power Module.

All modules support data rates up to 16GT/s.

Active signal driving is support for signals such as PERST, CLKREQ and WAKE. The exact signals driven varies from module to module

All the PCIe Card modules support some form of power monitoring; basic internal

measurement in the case of the 'Lite' module while the remaining devices have an injection port for the Power Module.

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.

Drive 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

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

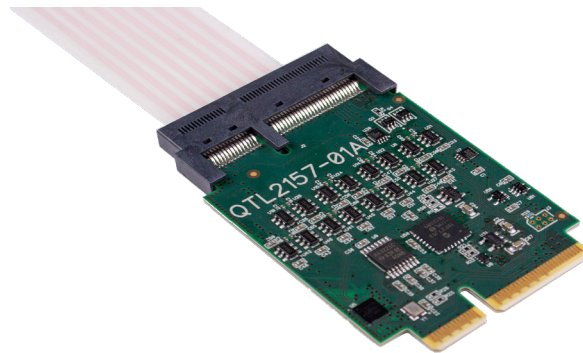| Product Code	Product Options
QTLXXXX	Product code, made up from options below
QTL2087	Gen4 PCIe x16 HS Card Module + Triggering
QTL2128	Gen4 PCIe x16 HS Card Module
QTL2161	Gen4 EDSFF x8 Card Module
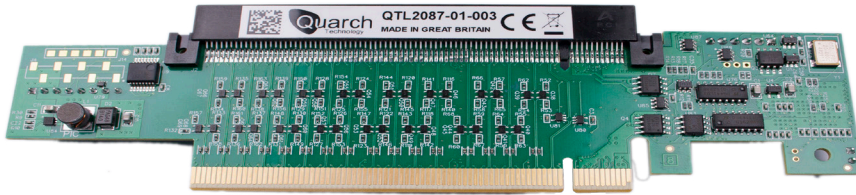
x16 Card Module

EDSFF x8 Module

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
QTL999	HD Programmable Power Module Power margining any uA range power measurement, ideal for PCIe devices
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	QTL2087	QTL2128	QTL2161
Host Side Connector	PCIe x16	PCIe x16	EDSFF x8
Device Side Connector	PCIe x16	PCIe x16	EDSFF x8
Max Speed	16GT/s		
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.

External Connections	QTL2087	QTL2128	QTL2161
Power Supply	Via Torridon Controller		
Control Ports	Torridon Connector		
Triggering	SMA IN/OUT	X	X
Power Injection Port	√	√	X

Physical Dimensions	QTL2087	QTL2128	QTL2161
Offsets Drive By	41.94mm		52.02mm
Length/Width	167.67mm		38.4mm
Height	-		
Compatible Devices	x1 - x16 PCIe Cards		x4 - x8 EDSFF Cards

Features	QTL2087	QTL2128	QTL2161
Basic (power only) hot/swap	√	√	√
Full hot-swap	√	√	√
Pin Bounce Simulation	Simple/Custom. 10uS minimum period		Simple/Custom. 1uS minimum period
Signal Glitch	Single/Cycle/PRBS. 50nS minimum length		
Voltage Monitoring	√	√	√
Power Monitoring	Requires Power Module		X
Active Signal Driving	CLKREQ, WAKE, PERST and similar (depending on the interface)		

Controllers	QTL2087	QTL2128	QTL2161
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		

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