



The Agilent N4217A Packet Analysis Probe for InfiniBand 1x or 4x

Data Sheet

The Agilent Technologies N4217A packet probe captures InfiniBand traffic and, in combination with the Agilent Technologies 16700 Series logic analysis systems, provides triggering, cross-correlation, and detailed measurements. Together they provide digital design engineers who design InfiniBand products with a complete system for debugging InfiniBand hardware and software. The probe connects to a copper InfiniBand 4x cable, allowing the logic analyzer to trace and trigger on InfiniBand traffic from the physical 10b level, through 8b logical, and on to high-level InfiniBand protocol-based measurements. The N4217A probe also offers SFP (small form factor pluggable) connectors with copper InfiniBand 1x SFP modules. Design engineers may also insert optical InfiniBand 1x SFP modules for optical 1x connections.

Key Benefits

- Reliably probe 2.5 GHz InfiniBand 4x or 1x fabrics - with copper connections
- Ability to probe 1x optical links
- Allows time-correlated measurements across multiple points in the InfiniBand fabric and across multiple buses in InfiniBand systems
- LEDs provide loss-of-signal information
- Detects 8b/10b coding, disparity, framing and control symbol errors
- Records skip ordered sets

Key Features

- Protocol Aware Triggering
- Sequential Triggering
- Packet Decode
- Post process system performance analysis
 - Link Utilization (SPA tool)
 - Packet Latency through Components

Compatibility

The Agilent N4217A is compatible with the Agilent 16700A/B, 16701A/B, and 16702A/B logic analysis mainframes and 16715/16/17/18/19A or 16740/41/42A or 16750/51/52A/B or 16753/54/55/56A logic analysis modules. The N4217A requires 16700 Series operating software version 2.70 or higher.



Figure 1. With the Agilent N4217A packet analysis probe, you can reliably probe 2.5 GHz InfiniBand 4x or 1x fabrics.



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Benefits and Features

Applications

Validate InfiniBand Traffic

Trigger, capture, and decode InfiniBand 1x or 4x traffic at 2.5 Gbit/s (gigabits per second) per lane. All fields in the InfiniBand protocol up to the transport layer are supported in the trigger macro.

Filters enable different views of the data (filtering on idles and payload data).

The N4217A is capable of capturing either 1x or 4x InfiniBand traffic. The N4217A records 10b or 8b data. The 16700 series' operating software provides packet decode. For InfiniBand 4x links, the N4217A performs lane-to-lane link de-skew and displays packet data striped across four lanes.

System Level Debug

For efficient development of InfiniBand systems, you can extract useful information from a crowded stream of traffic, and accurately identify and selectively record what interests you most. Setting up complex recording, triggering and filtering options is easy and powerful.

Capture and view time-correlated measurements across multiple system buses or multiple nodes of the InfiniBand fabric. The complex triggering capabilities of the 16700 series logic analysis systems enable cross-bus triggering and sequential triggering of series of packets or events. Global markers allow measurements between system buses or InfiniBand nodes enabling latency measurements through system components.

Product Structure

N4217A includes:

N4217A analysis probe

One copper InfiniBand 4x cable

One copper InfiniBand 1x cable

Two InfiniBand 1x SFP copper modules

Operating software CD

User's manual

Not Included:

The N4217A requires probes to connect between the 100-pin Samtec connectors and the logic analyzer modules. The E5385A or E5378A probes are purchased separately from the N4217A.

E5385A 100-pin probe required for use with 16715/16/17/18/19A, 16740/41/42A, or 16750/51/52A/B modules.

E5378A single-ended probe required for use with 16753/54/55/56A logic analyzer modules.

SFP 1X optical modules

Logic Analysis System/Probe Configurations

InfiniBand 1x configuration

One N4217A packet analysis probe

One mainframe:
16700A/B
or 16702A/B

One logic analyzer module:	with two probes (purchased separately):
16715/16/17/18/19A	with two E5385A 100-pin probes
or 16740/41/42A	with two E5385A 100-pin probes
or 16750/51/52A/B	with two E5385A 100-pin probes
or 16753/54/55/56A	with two E5378A single-ended probes

InfiniBand 4x solution configuration

One N4217A packet analysis probe

One mainframe:
16700A/B
or 16702A/B

Four logic analyzer modules:	with eight probes (purchased separately):
16715/16/17/18/19A	with eight E5385A 100-pin probes
or 16740/41/42A	with eight E5385A 100-pin probes
or 16750/51/52A/B	with eight E5385A 100-pin probes
or 16753/54/55/56A	with eight E5378A single-ended probes

Technical Specifications

Agilent Technologies N4217A specifications and characteristics

N4217A mechanical characteristics

Package dimensions	132.08 mm (5.200 in) height 425.45 mm (16.750 in) width 416.15 mm (16.384 in) depth
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Weight	13.7 lbs (6.2 kg)
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Connectors

InfiniBand inputs	Two InfiniBand 4x copper connectors Two InfiniBand 1x copper connectors in replaceable SFP modules InfiniBand rate supported is 2.5 Gb/s per lane
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Logic analyzer outputs	Ten 100-pin Samtec connectors (eight used, two spare)
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Serial port	RJ12 connector, RS-232 DCE to 115.2 kbaud
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LAN port	IEEE 802.3 Type 10/100Base-TX LAN Port RJ-45 connector is compatible with both 10 Mbps (10Base-T) and 100 Mbps (100Base-TX) twisted-pair ethernet LANs
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Electrical Characteristics

Power Requirements	115-230 Vac, 47-63 Hz, 150 W power supply is built into the analysis probe. Line selection is autoranging. CAT II (Line voltage in appliance and to wall outlet) Pollution degree 2
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Environmental Characteristics (Operating)

Temperature	20° to + 30° C (+68° to +86° F)
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Altitude	4,600 m (15,000 ft)
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Humidity	Up to 50% noncondensing. Avoid sudden, extreme temperature changes which could cause condensation on the circuit board. For indoor use only.
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Product Regulations

EMC	IEC 61326-2:2002 / EN 61326-1:1997 CISPR 11:1997+A1:1999 / EN 55011:1991-Group 1 Class A IEC 61000-4-2:1995+A1:1998+A2:2000 / EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD) Performance Criteria A IEC 61000-4-3:1995+A1:1998+A2:2000 / EN 61000-4-3:1995 (3V/m 80% AM) Performance Criteria A IEC 61000-4-4:1995+A1:2000+A2:2001 / EN 61000-4-4:1995 (EFT 0.5kV line-line, 1kV line-earth) Performance Criteria A IEC 61000-4-5:1995 / EN 61000-4-5:1995 (Surge 0.5kV line-line, 1kV line-earth) Performance Criteria A
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Technical Specifications (continued)

IEC 61000-4-6:1996+A1:2000 /
 EN 61000-4-6:1996 (3V 80% AM, power line)
 Performance Criteria B
 IEC 61000-4-11:1994 /
 EN 61000-4-11:1994 (Dips 1 cycle, 100%)
 Performance Criteria A

Regulatory Information for Canada

ICES/NMB-001:1998
 This ISM device complies with ICES-001.
 Cet appareil ISM est conforme a la norme
 NMB-001 du Canada

Regulatory Information for Australia/New Zealand

This ISM device complies with
 Australian/New Zealand AS/NZS 2064.1

Safety	IEC 61010-1:1990+A1:1992+A2:1995 / EN 61010-1:1993+A2:1995 Canada: CSA C22.2 No. 1010.1:1992
Additional information	The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC (including 93/68/EEC) and carries the CE Marking accordingly (European Union).
Sound pressure level	Less than 60 dBA

¹ Performance Criteria
 A Pass: Normal operation, no effect
 B Pass: Temporary degradation, self recoverable
 C Pass: Temporary degradation, operator intervention required
 D Fail: Not recoverable, component damage

Basic Trigger and Decoded Events

Conditions	Training sequences Cable connect/disconnect Data Packet Link Packet Management Datagrams (MAD) Decodes (Subn LID) Subnet Management class (LID routed) (Subn directed) Subnet Management class (Directed route) (SubnAdm) Subnet Administration class (Perf) Performance Management class (BM) Baseboard Management class (DevMgt) Device Management class (CommMgt) Communication Management class (SNMP) SNMP Tunneling class (Vendor) Vendor Specific generic classes (Application) Application Specific generic classes (DTA) Device Test Application class Add-On Decodes – SRP – SDP
Errors	Invalid 10b codes Wrong running disparity of 10b codes End of bad packet Packet delimiters violations

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Get more information about Agilent Technologies InfiniBand products:

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