

QDD-200G-DAC-XM-AO

Juniper Networks® Compatible and TAA Compliant - 200GBase-CU QSFP-DD to QSFP-DD NRZ Direct Attach Cable (Passive Twinax, Up to 2.5m)

Features

- Compliant with QSFP-DD MSA Specification Rev 3.4
- SFF-8679 electrical interface compliant
- SFF-8636 management interface support
- Compliant with IEEE802.3Bj, By, IEEE802.3CD Standard
- Support 25G (PAM4) electrical data rates/channel
- I2C for EEPROM communication
- Pull to Release latch design
- Excellent EMI/EMC performance 360-degree cable shield termination
- Advantage dual side pre-solder automated assembly technologies
- Low loss, stronger mechanical features, more flexible
- QSFP-DD modules will be backwards compatible, allowing them to support existing QSFP modules and provide flexibility for end users and system designers
- ROHS Compliant



Applications

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers

Product Description

This is a Juniper Networks® compatible TAA compliant 200GBase-CU QSFP-DD to QSFP-DD NRZ direct attach cable that operates over passive copper with a maximum reach up to 2.5m (8.2ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's direct attach cables are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



Order Information

Part Number	Description
QDD-200G-DAC-1M-AO	Juniper Networks® QDD-200G-DAC-1M Compatible and TAA Compliant - 200GBase-CU QSFP-DD to QSFP-DD NRZ Direct Attach Cable (Passive Twinax, 1m)
QDD-200G-DAC-2M-AO	Juniper Networks® QDD-200G-DAC-2M Compatible and TAA Compliant - 200GBase-CU QSFP-DD to QSFP-DD NRZ Direct Attach Cable (Passive Twinax, 2m)
QDD-200G-DAC-2-5M-AO	Juniper Networks® QDD-200G-DAC-2-5M Compatible and TAA Compliant - 200GBase-CU QSFP-DD to QSFP-DD NRZ Direct Attach Cable (Passive Twinax, 2.5m)

Regulatory Compliance

Certification	Standard
Laser Eye Safety	IEC: 60825-1, 3 rd Edition FDA: CFR-21 Sections 1040.10 and 1040.11
Product Safety	TUV: EN62368-1 UL/CSA 60950-1
EMC/EMI	FCC: Part 15 sb.B EN: 55032/55024

Wiring Table

PORT1		PORT2		PORT1		PORT2	
SHELL		SHELL		SHELL		SHELL	
GND(TX) P1		P20 GND		GND(TX) P39		P58 GND(RX)	
TX2n- P2		P21 RX2n-		TX6n- P40		P59 RX6n-	
TX2p+ P3		P22 RX2p+		TX6p+ P41		P60 RX6p+	
GND(TX) P4		P23 GND		GND(TX) P42		P61 GND(RX)	
TX4n- P5		P24 RX4n-		TX8n- P43		P62 RX8n-	
TX4p+ P6		P25 RX4p+		TX8p+ P44		P63 RX8p+	
GND(TX) P7		P26 GND		GND(TX) P45		P64 GND(RX)	
GND(RX) P13		P32 GND		GND(RX) P51		P70 GND(TX)	
RX3p+ P14		P33 TX3p+		RX7p+ P52		P71 TX7p+	
RX3n- P15		P34 TX3n-		RX7n- P53		P72 TX7n-	
GND(RX) P16		P35 GND		GND(RX) P54		P73 GND(TX)	
RX1p+ P17		P36 TX1p+		RX5p+ P55		P74 TX5p+	
RX1n- P18		P37 TX1n-		RX5n- P56		P75 TX5n-	
GND(RX) P19		P38 GND		GND(RX) P57		P76 GND(TX)	
GND(RX) P20		P1 GND		GND(RX) P58		P39 GND(TX)	
RX2n- P21		P2 TX2n-		RX6n- P59		P40 TX6n-	
RX2p+ P22		P3 TX2p+		RX6p+ P60		P41 TX6p+	
GND(RX) P23		P4 GND		GND(RX) P61		P42 GND(TX)	
RX4n- P24		P5 TX4n-		RX8n- P62		P43 TX8n-	
RX4p+ P25		P6 TX4p+		RX8p+ P63		P44 TX8p+	
GND(RX) P26		P7 GND		GND(RX) P64		P45 GND(TX)	
GND(TX) P32		P13 GND		GND(TX) P70		P51 GND(RX)	
TX3p+ P33		P14 RX3p+		TX7p+ P71		P52 RX7p+	
TX3n- P34		P15 RX3n-		TX7n- P72		P53 RX7n-	
GND(TX) P35		P16 GND		GND(TX) P73		P54 GND(RX)	
TX1p+ P36		P17 RX1p+		TX5p+ P74		P55 RX5p+	
TX1n- P37		P18 RX1n-		TX5n- P75		P56 RX5n-	
GND(TX) P38		P19 GND		GND(TX) P76		P57 GND(RX)	

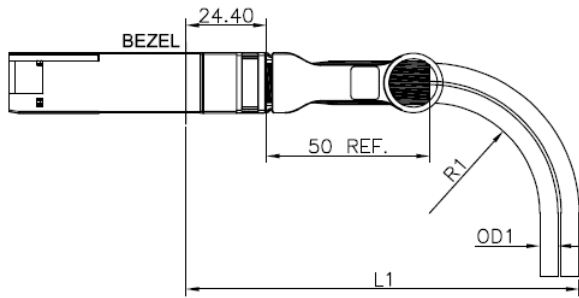
Low Speed Signals

SIDE PORT1 & PORT2

P8	ModselL
P9	ResetL
P10	VccRx
P11	SCL
P12	SDA
P27	ModPrsL
P28	IntL
P29	VccTx
P30	Vcc1
P31	InitMode

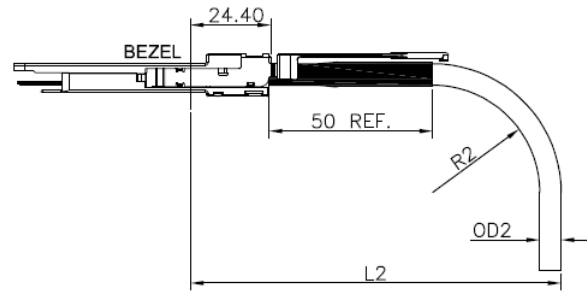
P46	Reserved
P47	VS1
P48	VccRx1
P49	VS2
P50	VS3
P65	NC
P66	Reserved
P67	VccTx1
P68	Vcc2
P69	Reserved

Wire Gauge



ASSEMBLY BEND RADIUS & INSTALL RADIUS

U-QSFP-DD			
CABLE GAUGE	DIAMETER "OD1"	MIN. BEND RADIUS "R1"	MIN. BEND SPACE "L1"
28AWG	7.9mm	39.5mm	130mm



ASSEMBLY BEND RADIUS & INSTALL RADIUS

U-QSFP-DD			
CABLE GAUGE	DIAMETER "OD2"	MIN. BEND RADIUS "R2"	MIN. BEND SPACE "L2"
28AWG	7.9mm	39.5mm	122mm

Pin Descriptions

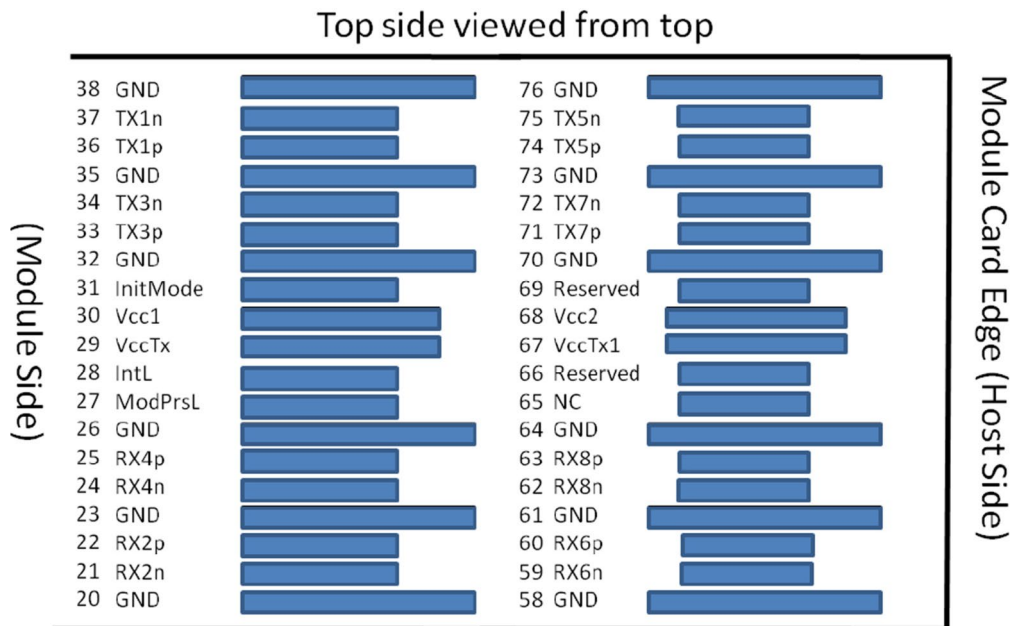
PIN	Logic	Symbol	Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTTL-I	ModSelL	Module Select	
9	LVTTTL-I	ResetL	Module Reset	
10		VccRx	+3.3V Power Supply Receiver	2
11	LVC MOS-I/O	SCL	2-wire serial interface clock	
12	LVC MOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTTL-O	ModPrsL	Module Present	
28	LVTTTL-O	IntL	Interrupt	
29		VccTx	+3.3V Power Supply Transmitter	2
30		VccI	+3.3V Power Supply	2
31	LVTTTL-I	InitMode	Initialization mode; In legacy QSFP applications, the InitMode pad is called LPMODE	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

PIN		Symbol	Description	Notes
39		GND	Ground	1
40	CML-I	Tx6n	Transmitter Inverted Data Input	
41	CML-I	Tx6p	Transmitter Non-Inverted Data Input	
42		GND	Ground	1
43	CML-I	Tx8n	Transmitter Inverted Data Input	
44	CML-I	Tx8p	Transmitter Non-Inverted Data Input	
45		GND	Ground	1
46		Reserved	For future use	3
47		VSI	Module Vendor Specific 1	3
48		VccRx1	3.3V Power Supply	2
49		VS2	Module Vendor Specific 2	3
50		VS3	Module Vendor Specific 3	3
51		GND	Ground	1
52	CML-O	Rx7p	Receiver Non-Inverted Data Output	
53	CML-O	Rx7n	Receiver Inverted Data Output	
54		GND	Ground	1
55	CML-O	Rx5p	Receiver Non-Inverted Data Output	
56	CML-O	Rx5n	Receiver Inverted Data Output	
57		GND	Ground	1
58		GND	Ground	1
59	CML-O	Rx6n	Receiver Inverted Data Output	
60	CML-O	Rx6p	Receiver Non-Inverted Data Output	
61		GND	Ground	1
62	CML-O	Rx8n	Receiver Inverted Data Output	
63	CML-O	Rx8p	Receiver Non-Inverted Data Output	
64		GND	Ground	1
65		NC	No Connect	3
66		Reserved	For future use	3
67		VccTx1	3.3V Power Supply	2
68		Vcc2	3.3V Power Supply	2
69		Reserved	For future use	3
70		GND	Ground	1
71	CML-I	Tx7p	Transmitter Non-Inverted Data Input	
72	CML-I	Tx7n	Transmitter Inverted Data Input	
73		GND	Ground	1
74	CML-I	Tx5p	Transmitter Non-Inverted Data Input	
75	CML-I	Tx5n	Transmitter Inverted Data Input	
76		GND	Ground	1

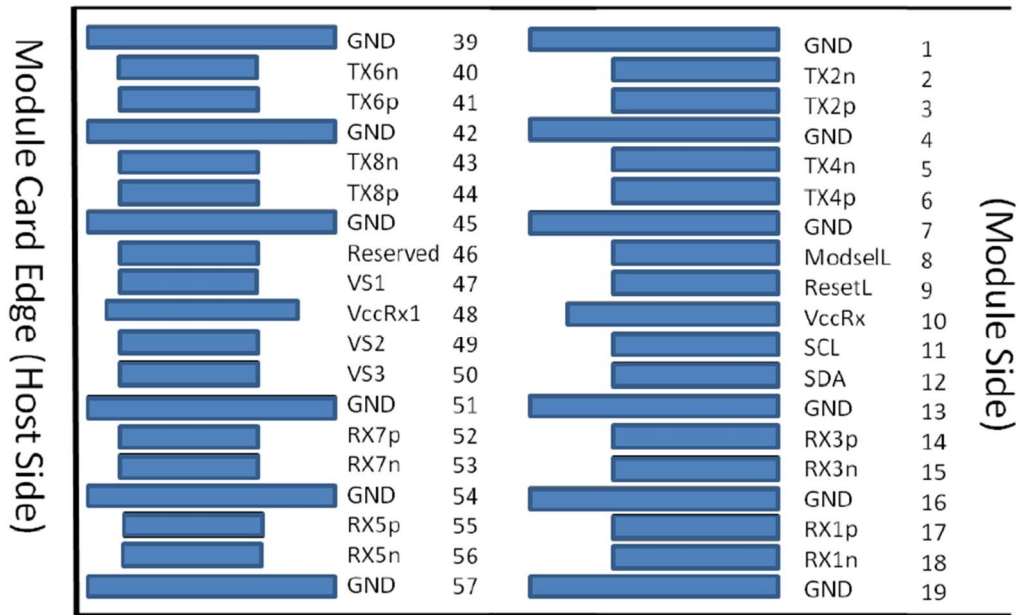
Notes:

1. QSFP-DD uses common ground (GND) for all signals and supply (power). All are common within the QSFP-DD module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 shall be applied concurrently. Requirements defined for the host side of the Host Card Edge Connector are listed in Table 6. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 may be internally connected within the module in any combination. The connector Vcc pins are each rated for a maximum current of 1000 mA.
3. All Vendor Specific, Reserved and No Connect pins may be terminated with 50 ohms to ground on the host. Pad 65 (No Connect) shall be left unconnected within the module. Vendor specific and Reserved pads shall have an impedance to GND that is greater than 10 kOhms and less than 100 pF.
4. Plug Sequence specifies the mating sequence of the host connector and module. The sequence is 1A, 2A, 3A, 1B, 2B, 3B. (see Figure 2 for pad locations) Contact sequence A will make, then break contact with additional QSFP-DD pads. Sequence 1A, 1B will then occur simultaneously, followed by 2A, 2B, followed by 3A,3B.

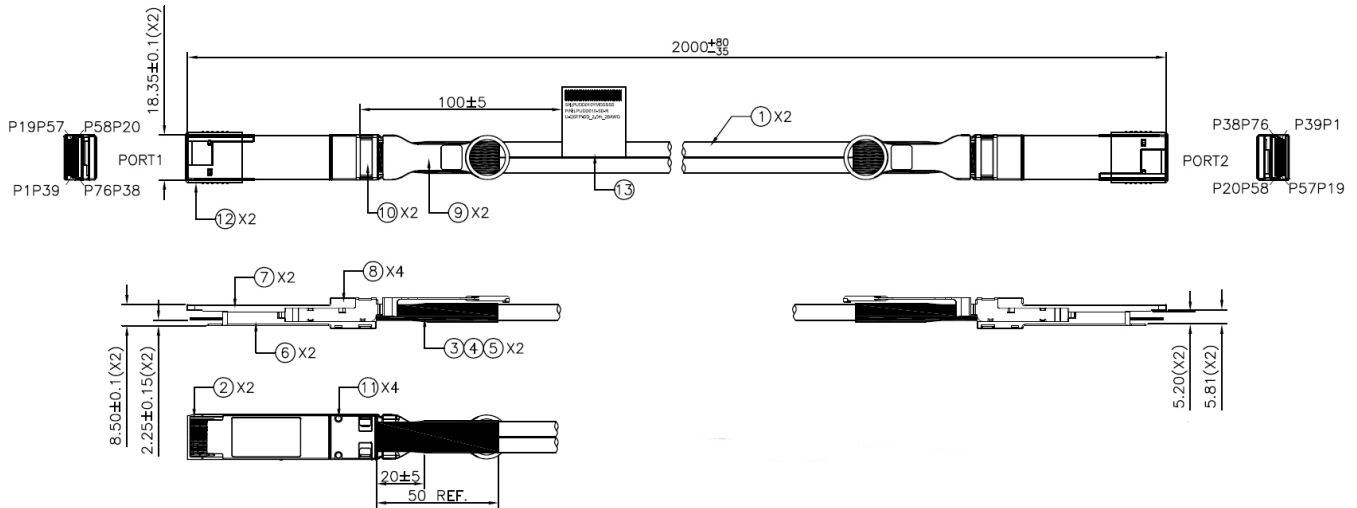
Electrical Pin-out Details



Bottom side viewed from bottom



Mechanical Specifications



Item	Name	Description	Quantity	Unit
1	Raw Cable	28AWG, 8 Pairs, 100ohm, PVC Jacket	A/R	mm
2	PCBA	U-QSFP-DD PCBA, 76P Au 30u" Min	2	PCS
3	Acetate Tape	Acetate Tape, Black	A/R	mm
4	HST	Heat shrink tube, OD13mm, Black	A/R	mm
5	Copper Foil	Double-sided conductive, W=8.5mm	A/R	mm
6	Bottom Shell	ZN Alloy, NI 120U" over 280U" min.	2	PCS
7	Top Shell	ZN Alloy, NI 120U" over 280U" min.	2	PCS
8	Spring	Left-handed rotation, SWP-B	4	PCS
9	Pull Tap	SUS301 + PA66, Black	2	PCS
10	Lock	Stainless Steel	2	PCS
11	Rivet	Stainless Steel	4	PCS
12	Anti-Static Cap	PVC, Blue, Anti-Static	2	PCS
13	Label	PP, LXW=57x26mm, White	1	PCS

Notes:

- 100% conductor test, test condition, voltage 5V, insulation resistance 10MΩ, conductor resistance 2Ω Max.
- 100% High-frequency test according to IEEE802.3bj Standard
- Differential Impedance:
Rise Time: 35ps (20%~80%)
Raw Cable: 100 +10/-5 ohm
Cable termination: 100 ± 10 ohm
- 100% EEPROM Check, 100% Latch Function Check
- All materials comply with RoHS 2.0

Electrical Test Characteristics

Item	Requirement	Test Condition
Differential Impedance	Cable Impedance	100 +10/-5 Ω
	Paddle Card Impedance	100 ± 10 Ω
	Cable Termination Impedance	100 +10 / -15 Ω
		Rise time of 35ps (at the SMA) (20 % - 80 %).

Other Electrical Performance Requirement

Item	Description	Test condition	Judgment
3.2.1	Insulation Resistance	EIA-364-21, DC 300V 1 minute.	Meet Spec. 10M ohm (Min.)
3.2.2	Dielectric Withstanding Voltage	EIA-364-20, apply a voltage of 300V DC for 1 minute between adjacent terminals, and between adjacent terminals and ground.	Meet Spec. NO disruptive discharge.
3.2.3	Low Level Contact Resistance (LLCR)	EIA-364-23, apply a maximum voltage of 20mV and a current of 100mA.	Meet Spec. 70 milliohms Max. From initial.
3.2.4	Continuity	Verify the continuous electrical path of all expected connections	No unexpected opens, shorts, or high resistance areas.

Mechanical Test Characteristics

#	Item	Industry Spec	Test Condition	Requirement
3.3.1	Vibration	EIA-364-28	Clamp & vibrate per EIA-364-28F,TC-VII, Test condition letter – D, 15 minutes in X, Y & Z axis.	No evidence of physical damage
3.3.2	Mechanical Shock	EIA-364-27C	Clamp and Shock per EIA-364-27C, TC-G,3 times in 6 directions, 100g, 6ms	No evidence of physical damage
3.3.3	Cable Flex	EIA-364-41C	Flex cable 180° for 20 cycles (±90° from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90° in each direction from vertical. Per EIA-364-41C	No evidence of physical damage
3.3.4	Cable Plug Retention in Cage	EIA-364-38B	Cable plug is clamped with the cable hanging vertically. A 90N load is applied (gradually) to the cable jacket for a 1-minute duration. Force to be applied axially with no damage to plug latch. Per EIA-364-38B	90N Min. No evidence of physical damage per QSFP-DD MSA
3.3.5	Cable Retention in Plug	EIA-364-38B	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B	90N Min. No evidence of physical damage
3.3.6	Cable Plug Insertion	EIA-364-13B	Per EIA-364-13B	90N Max per QSFP-DD MSA
3.3.7	Cable Plug Extraction	EIA-364-13B	Place axial load on latch pull to de-latch	30N Max. per QSFP-DD MSA

			plug. Per EIA-364-13B,	
3.3.8	Latch Pull Strength	EIA-364-38B	Per EIA-364-38B	90N Min. No evidence of physical damage
3.3.9	Durability	EIA-364-09	EIA-364-09, perform plug & unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for QSFP-DD module (CONNECTOR TO PCB)	50 cycles, No evidence of physical damage

Environmental Test Characteristics

#	Item	Industry Spec	Test condition	Requirement
3.4.1	Operating Temperature	/	Cable operating temperature range.	-20°C to +80°
3.4.2	Storage Temp. Range (in packed condition)	/	Cable storage temp. range in packed condition.	-40°C to +80°C
3.4.3	Thermal Shock	EIA-364-32D	EIA-364-32D: method A, TC-1, -55°C to 85°C, 100 cycles	1. No Physical Damage 2. Meet ΔLLCR 3. Meet 3.1 SDD21
3.4.4	Cyclic Temperature & Humidity	EIA-364-31	EIA-364-31 Method III, Test condition B	1. No Physical Damage 2. Meet ΔLLCR 3. Meet 3.1 SDD21
3.4.5	Salt spraying	EIA-364-26B	48 hours salt spraying after shell corrosive area less than 5%	no physical crack
3.4.6	Mixed Flowing Gas	EIA-364-65	EIA-364-65 Class IIA 14 days	1. Meet ΔLLCR 2. Meet 3.1 SDD21
3.4.7	Temperature Life	EIA-364-17B	EIA-364-17B, With 85±2°C and 85±2% RH condition for 500 hours	1. No Physical Damage 2. Meet ΔLLCR 3. Meet 3.1 SDD21 stressing
3.4.8	Cold bend	/	Condition: -20°C±2°C, mandrel diameter is 6 times the cable diameter.	4h, no physical crack
3.4.9	Flame Retardant Grade	VW-1	/	VW-1

About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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