



BN-CKM-SP-ZR-DW4851-OPC

IBM® BN-CKM-SP-ZR-DW4851 Compatible TAA 10GBase-DWDM SFP+ Transceiver C-Band Channel DW36 100GHz (SMF, 1548.52nm, 80km, LC, DOM)

Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Temperature-stabilized EML transmitter and APD receiver
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 10x Gigabit Ethernet over DWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

Product Description

This IBM® BN-CKM-SP-ZR-DW4851 compatible SFP+ transceiver provides 10GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1548.51nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent IBM® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers 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.")



Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Wavelength Guide (100GHz ITU-T Channel)

ITU Channel #	Frequency (THz)	Center Wavelength (nm)
61	196.1	1528.77
60	196.0	1529.55
59	195.9	1530.33
58	195.8	1531.12
57	195.7	1531.90
56	195.6	1532.68
55	195.5	1533.47
54	195.4	1534.25
53	195.3	1535.04
52	195.2	1535.82
51	195.1	1536.61
50	195.0	1537.40
49	194.9	1538.19
48	194.8	1538.98
47	194.7	1539.77
46	194.6	1540.56
45	194.5	1541.35
44	194.4	1542.14
43	194.3	1542.94
42	194.2	1543.73
41	194.1	1544.53
40	194.0	1545.32
39	193.9	1546.12
38	193.8	1546.92
37	193.7	1547.72
36	193.6	1548.51
35	193.5	1549.32
34	193.4	1550.12
33	193.3	1550.92
32	193.2	1551.72
31	193.1	1552.52
30	193.0	1553.33
29	192.9	1554.13
28	192.8	1554.94
27	192.7	1555.75
26	192.6	1556.55

25	192.5	1557.36
24	192.4	1558.17
23	192.3	1558.98
22	192.2	1559.79
21	192.1	1560.61
20	192.0	1561.42
19	191.9	1562.23
18	191.8	1563.05
17	191.7	1563.86

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	V _{CC}	-0.5	4.0	V
Storage Temperature	T _S	-40	+85	°C
Operating Case Temperature	T _C	0	70	°C
Operating Humidity	RH	5	85	%
Receiver Power	R _{MAX}		-1	dBm
Maximum Bitrate	B _{max}		11.3	Gbps

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Current		I _{CC}		300	450	mA	
Power Dissipation		P _D		1.0	1.5	W	
Transmitter							
Input Differential Impedance		Z _{IN}		100		Ω	
Differential Data Input Swing		V _{IN, P-P}	180		700	mV _{P-P}	
TX_FAULT	Transmitter Fault	V _{OH}	2.0		V _{CCHOST}	V	
	Normal Operation	V _{OL}	0		0.8	V	
TX_DISABLE	Transmitter Disable	V _{IH}	2.0		V _{CCHOST}	V	
	Transmitter Enable	V _{IL}	0		0.8	V	
Receiver							
Output Differential Impedance		Z _O		100		Ω	
Differential Data Output Swing		V _{OUT, P-P}	300		850	mV _{P-P}	1
Data Output Rise Time, Fall Time		t _r , t _f	28			ps	2
RX_LOS	Loss of signal (LOS)	V _{OH}	2.0		V _{CCHOST}	V	3
	Normal Operation	V _{OL}	0		0.8	V	3

Notes:

1. Internally AC coupled, but requires a external 100Ω differential load termination.
2. 20–80%.
3. LOS is an open collector output. Should be pulled up with 4.7KΩ on the host board.

Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Transmitter						
Launch Optical Power	P _o	+1.0		+4.0	dBm	1
Center Wavelength Range	λ _c	1528.77		1563.86	nm	
Center Wavelength Spacing			100		GHz	
Center Wavelength Tolerance	Δλ _c	-100		100	pm	
Extinction Ratio	EX	9.0			dB	2
Side Mode Suppression Ratio	SMSR	30			dB	
Spectral Width （-20dB）				1	nm	
Transmitter and Dispersion Penalty	TDP			4.0	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Optical Return Loss Tolerance	ORLT			21	dB	
P _{out} @TX-Disable Asserted	P _{off}			-30	dBm	1
Eye Diagram	IEEE Std 802.3-2005 10Gb Ethernet 10GBASE-ZR compatible					
Receiver						
Center Wavelength	λ _c	1528		1565	nm	
Receiver Sensitivity (P _{avg})	S			-26	dBm	3
Receiver Overload (P _{avg})	P _{OL}	-7.0			dBm	3
Optical Return Loss	ORL			-27	dB	
OSNR		27			dB	4
Max OSNR Path Penalty				4	dB	4
Dispersion Limited Distance				100	Km	
LOS De-Assert	LOS _D			-26	dBm	
LOS Assert	LOS _A	-35			dBm	
LOS Hysteresis		0.5			dB	

Notes:

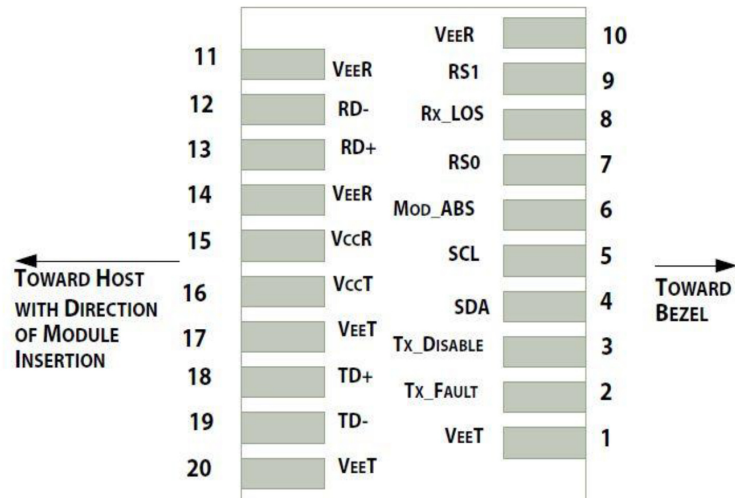
1. The optical power is launched into 9/125μm SMF.
2. Measured with a PRBS 2³¹-1 test pattern @10.3125Gbps.
3. Measured with PRBS 2³¹-1 test pattern, 10.3125Gb/s, BER<10⁻¹².
4. Receiver power@ -7~-18dBm, 10.3125Gb/s, BER<10⁻¹².

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTTTL-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0. Not used	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not used	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

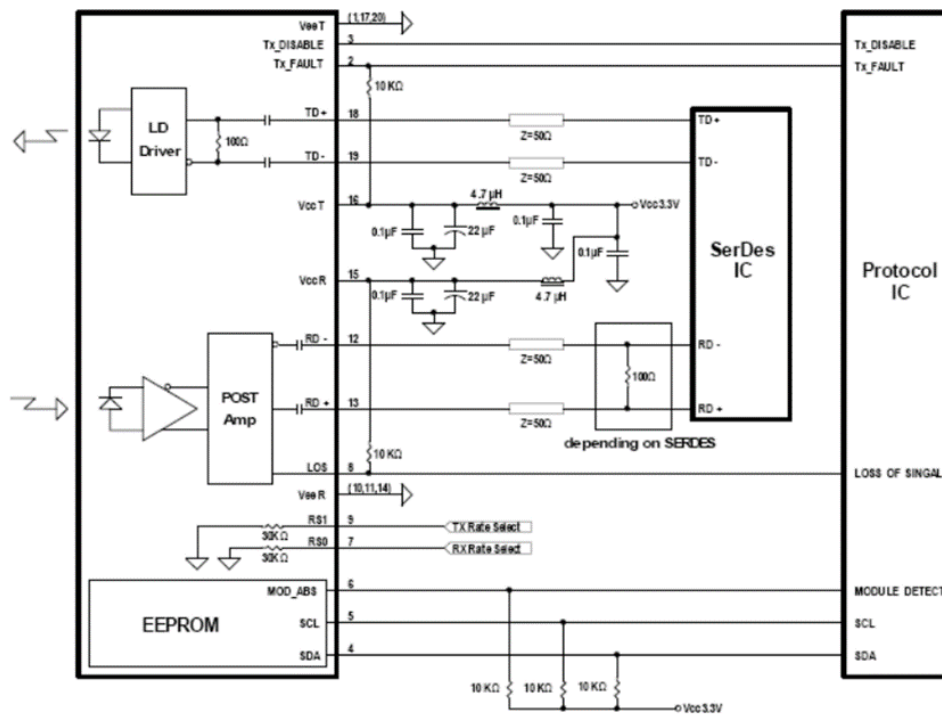
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resistor in the range 4.7KΩ to 10KΩ. Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R+0.5.V.
3. Tx_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



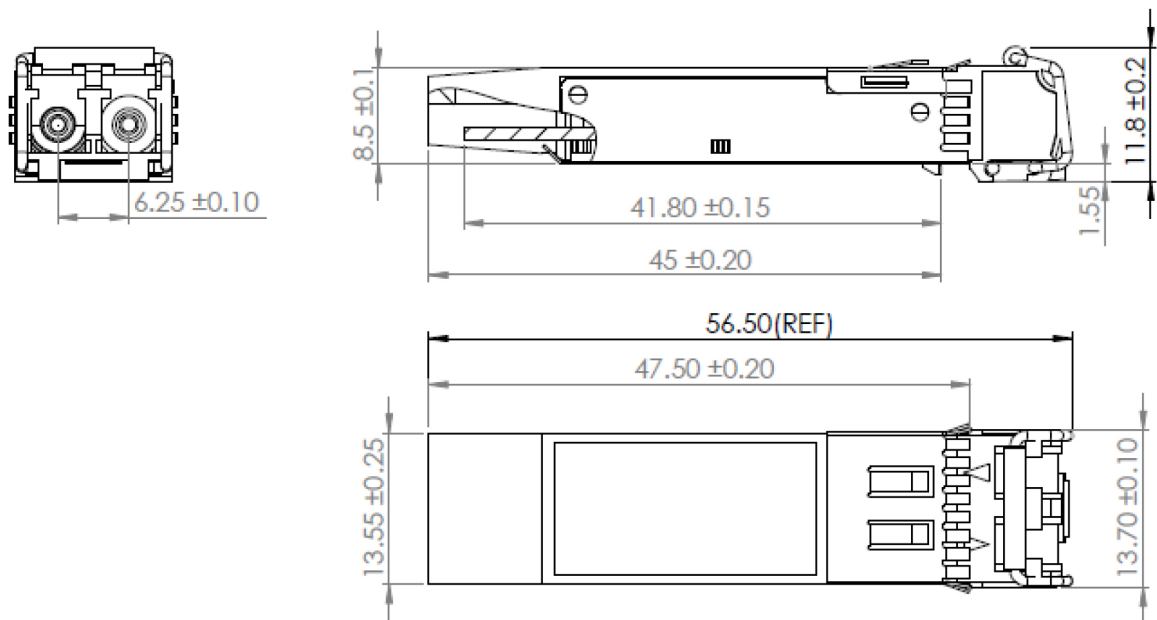
Pin-out of connector Block on Host board

Recommended Circuit Schematic



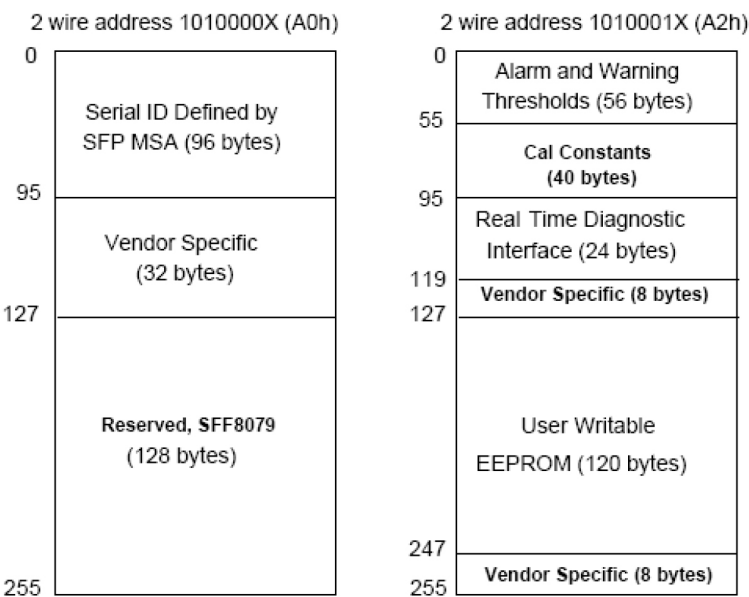
Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



EEPROM Information

EEPROM memory map specific data field description is as below:



OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

www.optioconnect.com | info@optioconnect.com

