

## 400G QSFP-DD LR4 20km CL400GQDDL4-20

### Product Features:

- Compliant with 100G Lambda MSA:  
-400GBASE-LR4-20 optical interface
- Compliant with IEEE 802.3bs standard:  
-400GAUI-8 electrical interface
- Compliant with QSFP-DD MSA HW Rev 5.1 type 2 housing with duplex LC connector
- Compliant with QSFP-DD CMIS Rev 5.0
- Operating distance at engineering link of up to 10km
- Maximum power consumption 9 W
- Case operating temperature 0°C to 70°C
- Two wire serial Interface with digital diagnostic monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser

### Functional Characteristics (Optical)

The following tables list the performance specifications for the various functional blocks of the integrated optical transceiver module.

**Table 1 – Transmitter Optical Specifications**

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Wavelength L0	$\lambda C0$	1264.5	1271	1277.5	nm	
Wavelength L1	$\lambda C1$	1284.5	1291	1297.5	nm	
Wavelength L2	$\lambda C2$	1304.5	1311	1317.5	nm	
Wavelength L3	$\lambda C3$	1324.5	1331	1337.5	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Launch Power, each lane	AOPL	-2.7	-	5.1	dBm	1
Outer Optical Modulation Amplitude (OMA <sub>outer</sub> ), each lane	TOMA	-	-	4.4	dBm	
Outer Optical Modulation Amplitude (OMA <sub>outer</sub> ) each lane: for TDECQ <1.4dB for 1.4 ≤ TDECQ ≤ 3.4dB	TOMA	0.3 -1.1+TDECQ				
Difference in launch power between any two lanes (OMA <sub>outer</sub> )	DP	-	-	4	dB	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ	-	-	3.9	dB	
Transmitter eye closure for PAM4(TECQ)	TECQ	-	-	3.9	dB	
TDECQ - TECQ	-	-	-	2.5	dB	
Over/under-shoot	-	-	-	25	%	
Transmitter peak-to-peak power	-	-	-	5.2	dBm	
Average Launch Power of OFF Transmitter, each lane	TOFF	-	-	-16	dBm	
Extinction Ratio, each lane	ER	3.5	-	-	dB	



Transmitter transition time	-	-	-	17	ps	
RIN15.6OMA	RIN	-	-	-136	dB/Hz	
Optical Return Loss Tolerance	ORL	-	-	15.6	dB	
Transmitter Reflectance	TR	-	-	-26	dB	

Note 1: Average launch power, each lane (min) is informative and not the principal indicator of signal strength

**Table 2 – Receiver Optical Specifications**

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Wavelength L0	$\lambda C0$	1264.5	1271	1277.5	nm	
Wavelength L1	$\lambda C1$	1284.5	1291	1297.5	nm	
Wavelength L2	$\lambda C2$	1304.5	1311	1317.5	nm	
Wavelength L3	$\lambda C3$	1324.5	1331	1337.5	nm	
Damage Threshold, each lane	AOPD	6.1	-	-	dBm	
Average Receive Power, each lane	AOPR	-9	-	5.1	dBm	1
Receive Power (OMA <sub>outer</sub> ), each lane	OMAR	-	-	4.4	dBm	
Difference in receive power between any two lanes (OMA <sub>outer</sub> )	DR	-	-	4.3	dB	
Receiver Reflectance	RR	-	-	-26	dB	
Receiver Sensitivity (OMA <sub>outer</sub> ), each lane for TECQ <1.4dB for 1.4 ≤ TECQ ≤ 3.4dB	SOMA	-	-	-6.8 -8.2+TECQ	dBm	
Stressed Receiver Sensitivity (OMA <sub>outer</sub> ), each lane	SRS	-	-	-4.3	dBm	
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4 (SECQ)	-	-	3.9	-	dB	
OMA <sub>outer</sub> of each aggressor lane	-	-	-0.4	-	dBm	

Note 1: Average receive power, (min) is informative and not the principal indicator of signal strength

## Ordering Information

**Table 3 - Ordering Information**

Part No.	Application	Data Rate	Laser Source	Fiber Type
CL400GQDDL4-20	400GBASE-LR4-20	400GB Ethernet	EML	Single Mode Fiber

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