

Super-PON PMD Parameters Values

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Black Link, OLT to ONU

Parameter	10Gb/s		Unit
	G.698.2 value	Super-PON value	
Clear link passband		±15	GHz
Maximum ripple (within the clear link passband)	+2	+2	dB
Maximum (residual) chromatic dispersion	+800	+1000	ps/nm
Minimum (residual) chromatic dispersion	-300	0	ps/nm
Minimum optical return loss at transmitter	+24	+20	dB
Maximum discrete reflectance between transmitter and receiver	-27		dB
Maximum differential group delay	+30	+21	ps
Maximum inter-channel crosstalk	-16		dB
Maximum optical path power penalty		+1	dB
Maximum power excursion			dB

Black Link, ONU to OLT

Parameter	10Gb/s		2.5Gb/s		Unit
	G.698.2 value	Super-PON value	G.698 value	Super-PON value	
Clear link passband		±15		±15	GHz
Maximum ripple (within the clear link passband)	+2	+2	+2	+2	dB
Maximum (residual) chromatic dispersion	+800	+200	+2200	+1000	ps/nm
Minimum (residual) chromatic dispersion	-300	-400	-600	-400	ps/nm
Minimum optical return loss at transmitter	+24	+20	+24	+20	dB
Maximum discrete reflectance between transmitter and receiver	-27		-27		dB
Maximum differential group delay	+30	+21	+120	+21	ps
Maximum inter-channel crosstalk	-16		-16		dB
Maximum optical path OSNR penalty	+5	2	+5	1	dB
Maximum power excursion					dB

ONU Transmit

Parameter	10Gb/s	2.5Gb/s	Unit
	Super-PON value	Super-PON value	
Maximum spectral excursion (after turn-on time)	± 15	± 15	GHz
Maximum mean channel output power			dBm
Minimum mean channel output power			dBm
Minimum side-mode suppression ratio (SMSR)*	38	38	dB
Minimum channel extinction ratio			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}	{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}	UI
Maximum transmitter (residual) dispersion OSNR penalty -400 to +200 ps/nm residual CD -400 to +1000 ps/nm residual CD	1	0.5	dB
Average launch power of OFF transmitter (max)	-45	-45	dBm
RIN ₁₅ OMA (max)	-128	-128	dB/Hz
Turn-on time (max)	256		ns
Turn-off time (max)	256		ns

* It is assumed the SMSR is measured with only the DC laser bias (no data modulation).

OLT Receive

Parameter	10Gb/s	2.5Gb/s	Unit
	Super-PON value	Super-PON value	
Maximum mean input power	-6	-6	dBm
Minimum mean input power	-23	-26	dBm
Minimum OSNR			dB (0.1 nm)
Receiver OSNR tolerance			dB (0.1 nm)
Maximum reflectance of receiver	-12	-12	dB
Damage Threshold	-5	-5	dBm
Signal detect threshold (min)	-45	-45	dBm
$T_{\text{receiver_settling}}$ (max)	800	800	ns

OLT Transmit

Parameter	10Gb/s	Unit
	Super-PON value	
Maximum mean channel output power	2	dBm
Minimum mean channel output power	-3	dBm
Minimum side mode suppression ratio (SMSR)	35	dB
Minimum channel extinction ratio	8.2	dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}	UI
Transmitter and dispersion power penalty (TDP) 0 to 1000 ps/nm residual CD	0*	dB
RIN ₁₅ OMA (max)	-120	dB/Hz
Average launch power of OFF transmitter (max)	-39	dBm
Optical return loss tolerance (max)	15	dB
* A negative chirp transmitter is assumed, which results in a negative dispersion penalty in the positive dispersion region.		

ONU Receive

Parameter	10Gb/s	Unit
	Super-PON value	
Maximum mean input power	-8	dBm
Minimum mean input power	-29	dBm
Minimum OSNR	+22	dB (0.1 nm)
Receiver OSNR tolerance	+20	dB (0.1 nm)
Maximum reflectance of receiver	-12	dB
Damage Threshold	-2	dBm
Signal detect threshold (min)	-44	dBm

Thank you!