

PSM4 draft tables

Tom Palkert

Luxtera

9/18/2012

Link Power budget

Illustrative link power budget

	100GBASE-LR4 10km	100GBASE-PSM4 2km	Unit
Power budget (for max TDP)	8.5	4.8	dB
Operating distance	10	2	km
Maximum fiber loss per km	0.43	0.43	dB/km
Optical connector loss	2	2	dB
Channel insertion loss (max)	6.3	2.9	dB
Channel insertion loss (min)	0	0	
Maximum discrete reflectance	-26	-26	dB
Allocation for penalties (for max TDP)	2.2	1.9	dB
Additional insertion loss allowed	0	0	dB

Note a: The channel insertion loss is calculated using the maximum distance specified in Table 87–6 and cabled optical fiber attenuation of 0.43 dB/km at 1295.0 nm plus an allocation for connection and splice loss given in 87.11.2.1.

Note b: Link penalties are used for link budget calculations. They are not requirements and are not meant to be tested.

Receive characteristics	100GBASE-LR4 10km	100GBASE- PSM4 2km	Unit	comments
Signaling rate, each lane (range)	25.78125 +/-100ppm	25.78125 +/-100ppm	GBd	
Lane wavelengths (range)	1294.53 to 1296.59 1299.02 to 1301.09 1303.54 to 1305.63 1308.09 to 1310.19	1310	nm	
Damage threshold	5.5	5.5	dBm	
Average receive power, each lane (max)	4.5	4.5	dBm	
Average receive power, each lane (min)	-10.6	-9.4 to -11	dBm	
Receive power, each lane (OMA) (max)	4.5	4.5	dBm	
Difference in receive power between any two lanes (OMA) (max)	5.5	5.5	dB	
Receiver reflectance (max)	-26	-26	dB	
Receiver sensitivity (OMA), each lane (max)	-8.6	-7.4 to -9	dBm	
Receiver 3 dB electrical upper cutoff frequency, each lane (max)	31		GHz	
Stressed receiver sensitivity (OMA), each lane (max)	-6.8	-5.6 to -7.2	dBm	
Vertical eye closure penalty, each lane	1.8	1.8	dB	
Stressed eye J2 Jitter, each lane	0.3	0.3	UI	
Stressed eye J9 Jitter, each lane	0.47	0.47	UI	
Note a: The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.				
Note b: Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.				
Note c: Receiver sensitivity (OMA), each lane (max) is informative.				
Note d: Measured with conformance test signal at TP3 (see 87.8.11) for BER = 10 ⁻¹² .				
Note e: Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.				

Transmit characteristics				
	100GBASE-LR4 10km	Consensus 100GBASE- PSM4 2km	Unit	comments
Signaling rate, each lane (range)	25.78125 +/-100ppm	25.78125 +/-100ppm	GBd	
Lane wavelengths (range)	1294.53 to 1296.59 1299.02 to 1301.09 1303.54 to 1305.63		nm	
Side-mode suppression ratio (SMSR), (min)	30	30	dB	
Total average launch power (max)	10.5	10.5	dBm	
Average launch power, each lane (max)	4.5	4.5	dBm	
Average launch power, each lane (min) ^a	-4.3	-6.5 to -8	dBm	= OMAMin - 3
Optical Modulation Amplitude (OMA), each lane (max)	4.5	4.5	dBm	
Optical Modulation Amplitude (OMA), each lane (min) ^b	-1.3	-3.5 to -5	dBm	= Launch Power OMA -TDP + 3
Difference in launch power between any two lanes (OMA)(max)	5	5	dB	= OMAMax - OMAMin
Launch power in OMA minus TDP, each lane (min)	-2.3	-4.5 to -6	dBm	
Transmitter and dispersion penalty (TDP), each lane (max)	2.2	1.9	dB	
Average launch power of OFF transmitter, each lane (max)	-30	-30	dBm	
Extinction ratio (min)	4	4.0	dB	
RIN20OMA (max)	-130	-130	dB/Hz	
Optical return loss tolerance (max)	20	20	dB	
Transmitter reflectance (max)	-12	-12	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}		
Note a: Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.				
Note b: Even if the TDP < 0.8 dB, the OMA (min) must exceed this value.				
Note c: Transmitter reflectance is defined looking into the transmitter.				