100m MMF reach objective Tx and Rx parameters

working document

8th November 2012

MMF ad hoc

Transmitter characteristics (each lane)

Description	Type	Unit	Petrilla_02a_0912	dawe_01a_0912	Table 86-6, Cl. 86	Fibre Channel	Proposed
Signal rate		GBd	25.78125 100ppm			28.05 100ppm	25.78125 100ppm
Center wavelength	range	nm	*TBD*	840 to 860	840-860	840-860	840-860
RMS spectral width	max	nm	0.6	0.65 / 0.6	0.65	0.57	0.6
Average launch power	max	dBm	*TBD*	2.4	2.4		*TBD (2.4)*
Average launch power	min	dBm	*TBD*	-7.6	-7.6		*TBD*
Optical Modulation Amplitude (OMA)	max	dBm	*TBD*	3	3		*TBD (3)*
OMA	min	dBm	*TBD*	-5.6	-5.6		*TBD*
OMA at max TDP	min	dBm	-3.0	TBD	-3.0	-3.2	-3.0
Launch power in OMA minus TDP			*TBD*	-6.5	-6.5		*TBD*
Difference in launch power between any two lanes (OMA)	max	dB	*TBD*	TBD	4		*TBD*
Transmitter & dispersion penalty (TDP) at target BER before FEC			*TBD*	TBD	3.5		*TBD*
Extinction ratio (min)		dB	4	3	3		3
$RIN_{12}OMA$ (max)		dB/Hz	-130	No spec	No spec	-129	no spec
Transmitter reflectance		dB	-12	No spec	none		no spec
Optical return loss tolerance (max)		dB	12	12	12		12
Encircled Flux			*TBD*	**>= 86% at 19 µm, <= 30% at 4.5 µm**	> 86% @ 19um, < 30% at 4.5um		> 86% @ 19um, < 30% at 4.5um
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}, 5 10^{-5} hits/sample			*TBD*	Around 0.25/0.21, 0.36/0.32, 0.45, 0.27, 0.35, 0.4	0.23, 0.34, 0.43, 0.27, 0.35, 0.4	TBD	*TBD*
Average launch power of OFF transmitter	max	dBm	-30	-30	-30		-30

Receiver characteristics (each lane)

Description	Type	Unit	Petrilla_02a_0912 Link model values	dawe_01a _0912	Table 86-6, Cl. 86	Fibre Channel Link model values	Proposed
Signal rate		GBd	25.78125 100ppm			28.05 100ppm	25.78125 100ppm
Center wavelength	range	nm	840-860	840 to 860	840-860	840-860	840-860
Damage threshold	min	dB	*TBD*	+3.4	+3.4		*TBD (3.4)*
Average power at receiver	max	dBm	*TBD*	2.4	2.4		*TBD (2.4)*
Average power at receiver	min	dBm	*TBD*	-9.3/-9.5	-9.5		*TBD*
Optical Modulation Amplitude (OMA)	max	dBm	*TBD*	3	3		*TBD (3)*
Stressed receiver sensitivity in OMA	max	dBm	*TBD*	-5.4	-5.4		*TBD*
Unstressed Rx sensitivity BER=$5x10^{-5}$, (BER=10^{-12})	max	dBm	-10.5 (-7.8)	No spec	NA	-10.2 (-8.5)	No spec
SRS test conditions			*TBD*				*TBD*
Receiver reflectance		dB	-12	-12	-12		-12

Notes: Jitter tolerance test – starting point is scaled version of clause 86

Link and Cable Characteristic

Parameter	Unit	Petrilla_02a_0912	dawe_01a_0912	Proposed
Supported fiber types		**OM4**	**OM4, OM3**	**OM4, OM3**
Effective Modal Bandwidth	MHz*km	**4700**	**4700, 2000**	*TBD (4700, 2000)*
Power Budget	dB	**7.3[1]**	**8.0[2] to 9.5[1]**	*TBD (7.3)*
Operating Range	m	**0.5-120**	**TBD (20 to 100)**	*TBD (120)*
Channel insertion loss	dB	**1.9**	**1.6 to 1.9**	*TBD*

Note 1: with KR4 FEC – power budget depends on required uncorrected BER and is for further study
Note 2: without KR4 FEC, BER = 10^{-12}