

# 20m MMF reach objective Tx and Rx parameter tracking tables

7<sup>th</sup> March 2013

# Optical Transmitter characteristics (each lane)

Description	Type	Unit	dawe_01a_0113_optx, dawe_01a_0213_mmf	Strawman proposal
Signal rate		GBd	25.78125	25.78125 ±100 ppm
Center wavelength	range	nm	840 to 860	840 to 860
RMS spectral width	max	nm	0.65	tbc (0.6 to 0.8)
Average launch power	max	dBm	2.4	2.4
	min		-7.6	TBD { $T_{x_{OMAmin}}-2$ }
Optical Modulation Amplitude (OMA)	max	dBm	3	3
OMA	min	dBm	-5.6	TBD { $T_{x_{OMA@TDP}}-TDP+1$ }
OMA at max TDP	min	dBm		TBD {-3}
Launch power in OMA minus TDP	min	dBm	TBD	TBD { $T_{x_{OMA@TDP}}-TDP$ }
Difference in launch power between any two lanes (OMA)	Max	dB	4	( $T_{x_{OMAmax}}-T_{x_{OMA@TDPmax}}$ )
Transmitter and dispersion penalty (TDP) at target BER before FEC	Max	dB	TBD	TBD {5}
Extinction ratio	Min	dB	3	3
Optical return loss tolerance	Max	dB	12	12
Encircled Flux				≥ 86% at 19 um, ≤ 30% at 4.5 um
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}, 5×10 <sup>-5</sup> hits/sample			Around 0.25, 0.36, 0.45, 0.27, 0.35, 0.4	TBD {ffs}
Average launch power of OFF transmitter	Max	dBm	-30	-30

Values/expressions in {} are from 100 m baseline.

Gray text items in the strawman proposal have not been reviewed yet.

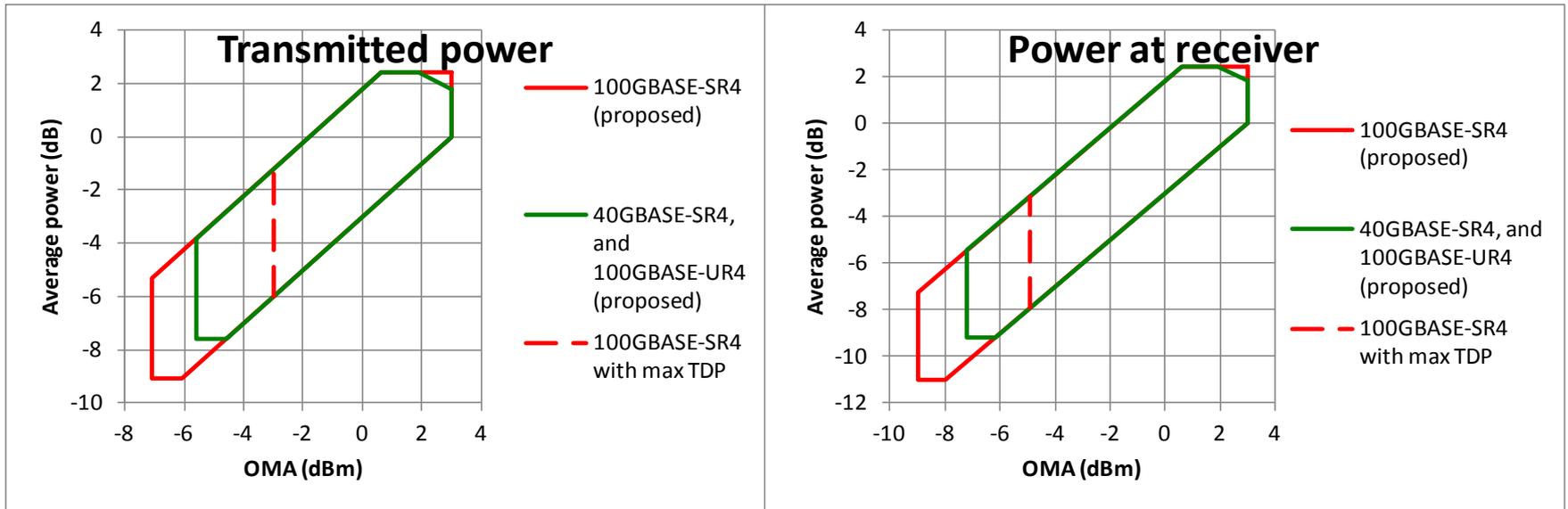
# Optical Receiver characteristics (each lane)

Description	Type	Unit	dawe_01a_0113_optx, dawe_01a_0213_mmf	Strawman
Signal rate		GBd	25.78125	25.78125 ±100 ppm
Center wavelength	range	nm	840 to 860	840 to 860
Damage threshold	min	dBm	3.4	3.4
Average power at receiver	max	dBm	2.4	2.4
	min		-9.2	TBD { $T_{x_{av\_min}}-1$ }
Optical Modulation Amplitude (OMA)	max	dBm	3	3
Stressed receiver sensitivity (OMA)	max	dBm	TBD	ffs
SRS test conditions			See dawe_01a_0113_optx	ffs
Receiver reflectance	max	dB	-12	-12

Values/expressions in {} are from 100 m baseline

Gray text items in the strawman proposal have not been reviewed yet.

# OMA – average power maps



- Visual representation of dawe\_01a\_0113 (from Piers Dawe)

# Link and Cable Characteristics

Parameter	Type	Unit	Strawman
Supported fiber types			50μm OM4, OM3
Effective Modal Bandwidth		MHz*km	4700 <sup>1</sup> , (2000 <sup>1</sup> )
Power budget		dB	TBD
Operating range		m	0.5 to TBD (20) <sup>2</sup>
Channel insertion loss		dB	TBD (1.6)

*Note 1: With launch as specified in clause 86*

*Note 2: Reach on OM4; equivalent reach on OM3 is for further study in the task force*

Gray text items in the strawman proposal have not been reviewed yet.

# TP1a specifications (each lane)

Description	Type	Unit	XLPP1	dawe_01a_0113_optx, dawe_01a_0213_mmf	CPPI-4 Strawman
Signal rate		GBd	10.3125	25.78125	25.78125 ±100 ppm
J2 Jitter	Max	UI	0.17	0.19	TBD(0.19)
J4 Jitter	Max	UI		0.23	TBD(0.23)
DDPWS	Max	UI	0.07	0.1	(no spec?)
Equalized J2*	Max	UI		0.1	TBD(0.1)
Equalized J4*	Max	UI		0.14	TBD(0.14)
Equalized DDPWS*	Max	UI		0.05	TBD(0.05)
CTLE peaking*	Max	dB			TBD
	Min				TBD(1)
Equalized eye mask definition {X1, X2, Y1, Y2}, 5×10 <sup>-5</sup> hits/sample		UI, mV	0.11, 0.31 95, 350	0.13, 0.33 95, 350	TBD
Peak-to-peak voltage	Max	mV			TBD(350)
Qsq	Min	V/V	45	45	TBD(45)
Single ended output voltage		V	-0.3 to 4		TBD(-0.3 to 4)
AC common-mode output voltage	Max	mV	15	20	TBD(20)
Transition time, 20% to 80%	Max	ps	28	~10 TBD	TBD(13)

*\* Similar methodology to CEI-28G-VSR; CTLE is part of the test equipment used to verify the electrical signal compliance*

# TP4 specifications (each lane)

Description	Type	Unit	XLPP1	dawe_01a_0113_optx, dawe_01a_0213_mmf	Strawman
Signal rate		GBd	10.3125	25.78125	25.78125±100 ppm
J2 Jitter	Max	UI	0.42	0.6	TBD (0.6)
Equalized J2*	Max	UI		0.5	TBD (0.5)
Equalized J4*	Max	UI		0.64	TBD (0.64)
CTLE peaking*	Max	dB			TBD(3)
	Min				TBD(1)
Equalized eye mask definition {X1, X2, X3, Y1, Y2, Y3}, 5×10 <sup>-5</sup> hits/sample		UI, mV	0.29, 0.5 150, 425	~ 0.45, 0.5 40, 250	TBD
Single ended output voltage tolerance **		V	-0.3 to 4		TBD(-0.3 to 4)
AC common-mode output voltage	Max	mV	7.5	18	TBD(18)
Transition time, 20% to 80%	Max	ps	28	Around 8 to 10	TBD (10)

\* *Similar methodology to CEI-28G-VSR; CTLE is part of the test equipment used to verify the electrical signal compliance*

\*\* DC common-mode voltage is set by host