

Clause 139 optical TBDs

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Proposals for transmit characteristics TBDs

- Average launch power (min) should correspond to min OMA at max (infinite) ER
- Average launch power min = $OMA_{outer} (min) - 3 \text{ dBm}$

Table 139–6—50GBASE-FR and 50GBASE-LR transmit characteristics

Description	50GBASE-FR	50GBASE-LR	Unit
Signaling rate (range)	26.5625 ± 100 ppm		GBd
Modulation format	PAM4		—
Wavelengths (range)	1304.5 to 1317.5		nm
Side-mode suppression ratio (SMSR), (min)	30		dB
Total average launch power (max)	3	4.2	dBm
Average launch power ^a (min)	-5.0	-4.0	dBm
Outer Optical Modulation Amplitude (OMA_{outer}) (max)	2.8	4.0	dBm
Outer Optical Modulation Amplitude (OMA_{outer}) (min) ^b	-2.0	-1.0	dBm
Launch power in OMA_{outer} minus TDECQ (min)	-3.0	-2.0	dBm
Transmitter and dispersion eye closure for PAM4 (TDECQ) (max)	2.3	2.5	dB
Average launch power of OFF transmitter (max)	-30		dBm
Extinction ratio (min)	4.5		dB

Proposals for receiver characteristics TBDs

- Set damage threshold 1dB above highest average power max of FR and LR
 - ensures accidental plug in of LR into FR won't permanently damage FR module
- Set Average Receive power (max) and Receive power OMA_{outer} max to equal corresponding transmit specs
- Set Average Receive power (min) = Average Transmit power (min) – max IL
- Set SRS to "Launch power in OMA_{outer} minus TDECQ (min)" + "TDECQ (max)" – max IL

Table 139–7—50GBASE-FR and 50GBASE-LR receive characteristics

Description	50GBASE-FR	50GBASE-LR	Unit
Signaling rate (range)	26.5625 ± 100 ppm		GBd
Modulation format	PAM4		—
Wavelengths (range)	1304.5 to 1317.5		nm
Damage threshold ^a	+5.2		dBm
Average receive power (max)	+3	+4.2	dBm
Average receive power ^b (min)	-9.0	-10.3	dBm
Receive power (OMA_{outer}) (max)	+2.8	+4.0	dBm
Receiver reflectance (max)	-26		dB
Receiver sensitivity (OMA_{outer}) ^c (max)	-7.3	-8.8	dBm
Stressed receiver sensitivity (OMA_{outer}) ^d (max)	-4.7	-5.8	dBm
Conditions of stressed receiver sensitivity test: ^e			
Stressed eye closure for PAM4 (SECQ)	2.3	2.5	dB

Back up

- Link budget

Table 139–8—50GBASE-FR and 50GBASE-LR illustrative link power budgets

Parameter	50GBASE-FR	50GBASE-LR	Unit
Power budget (for maximum TDECQ)	6.6	9.3	dB
Operating distance	2	10	km
Channel insertion loss	4 ^a	6.3 ^b	dB
Maximum discrete reflectance	See 139.10.2.2	See 139.10.2.2	dB
Allocation for penalties ^c (for maximum TDECQ)	2.6	3	dB
Additional insertion loss allowed	0	0	dB