

TBCs in Clause 138

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TBCs in Clause 138 draft 1.3

- Hazard Level is **TBD**
 - Addressed in a separate contribution in this ad hoc
- OM3 link budget values are in **magenta** text
 - Comment submitted against D1.3 proposing to change to black text, since the OM3 reach and insertion loss values are consistent with the 100m reach capability and insertion loss values of OM4.
- Transmitter specs marked **TBC**:
 - OMA_{outer} (min)
 - Launch power in OMA_{outer} minus TDECQ (min)
 - TDECQ (max)
- Receiver specs marked **TBC**:
 - Stressed receiver sensitivity (OMA_{outer}) (max)
 - Receiver sensitivity (OMA_{outer}) (max)
 - Stressed eye closure SECQ
- Illustrative link power budget parameters marked **TBC**:
 - Power budget for max TDECQ
 - Allocation for penalties

Proposal: replace TBCs with editors notes

- 802.3cd is making progress towards working group ballot. Magenta text has no formal meaning in working group.
- It is proposed to remove the 8 TBCs in the transmitter, receiver and link power budget sections (Tables 138-8, 138-9, 138-10) and replace them with editors notes which indicate that these values require confirmation
- All parameters with values marked TBC were in the baseline proposal for 50GBASE-SR ad 200GBASE-SR4 (king_3cd_01a_0516.pdf)
 - Baseline proposal was adopted 1 year ago
 - No contributions have been made to confirm or change the baseline values.

Back up: Tables 138-8, 138-9, 138-10

Transmitter TBCs

Table 138-8—Transmit characteristics

Description	Value	Unit
Signaling rate, each lane (range)	26.5625 ± 100 ppm	GBd
Modulation format	PAM4	
Center wavelength (range)	840 to 860	nm
RMS spectral width ^a (max)	0.6	nm
Average launch power, each lane (max)	4	dBm
Average launch power, each lane (min)	-6	dBm
Outer Optical Modulation Amplitude (OMA _{outer}), each lane (max)	3	dBm
Outer Optical Modulation Amplitude (OMA _{outer}), each lane (min) ^b	-4 <i>TBC</i>	dBm
Launch power in OMA _{outer} minus TDECQ (min)	-5 <i>TBC</i>	dBm
Transmitter and dispersion eye closure (TDECQ), each lane (max)	4 <i>TBC</i>	dB
Average launch power of OFF transmitter, each lane (max)	-30	dBm
Extinction ratio (min)	3	dB
Optical return loss tolerance (max)	12	dB
Encircled flux ^c	≥ 86% at 19 μm ≤ 30% at 4.5 μm	

^aRMS spectral width is the standard deviation of the spectrum.

^bEven if the TDECQ < 1 dB, the OMA (min) must exceed this value.

^cIf measured into type A1a.2 or type A1a.3, 50 μm fiber, in accordance with IEC 61280-1-4, or fiber compliant to TIA-492AAAE.

Receiver TBCs

Table 138–9—Receive characteristics

Description	Value	Unit
Signaling rate, each lane (range)	26.5625 ± 100 ppm	GBd
Modulation format	PAM4	
Center wavelength (range)	840 to 860	nm
Damage threshold ^a (min)	5	dBm
Average receive power, each lane (max)	4	dBm
Average receive power, each lane ^b (min)	-7.9	dBm
Receive power, each lane (OMA _{outer}) (max)	3	dBm
Receiver reflectance (max)	-12	dB
Stressed receiver sensitivity (OMA _{outer}), each lane ^c (max)	-3 <i>TBC</i>	dBm
Receiver sensitivity (OMA _{outer}), each lane ^d (max)	-7 <i>TBC</i>	
Conditions of stressed receiver sensitivity test: ^e		
Stressed eye closure (SECQ), lane under test	4 <i>TBC</i>	dB
OMA _{outer} of each aggressor lane ^f	3	dBm

^aThe receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level on one lane. The receiver does not have to operate correctly at this input power.

^bAverage 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.

^cMeasured with conformance test signal at TP3 (see 138.8.8) for the BER specified in 138.1.1.

^dReceiver sensitivity is informative.

^eThese test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

^fOnly applies to 100GBASE-SR2 and 200GBASE-SR4.

Illustrative link power budget TBCs

Table 138–10—Illustrative link power budget

Parameter	OM3	OM4	Wideband MMF (TIA-492AAAE)	Unit
Effective modal bandwidth at 850 nm ^a	2000	4700		MHz.km
Power budget (for max TDECQ)	6 <i>TBC</i>			dB
Operating distance	0.5 to 70	0.5 to 100		m
Channel insertion loss ^b	1.8	1.9		dB
Allocation for penalties ^c (for max TDECQ)	4.1 <i>TBC</i>			dB
Additional insertion loss allowed	0.1	0		dB

^aPer IEC 60793-2-10.

^bThe channel insertion loss is calculated using the maximum distance specified in Table 138–7 and cabled optical fiber attenuation of 3.5 dB/km at 850 nm plus an allocation for connection and splice loss given in 138.10.2.2.1.

^cLink penalties are used for link budget calculations. They are not requirements and are not meant to be tested.