Upstream Power Relaxation

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High-Power ONU Transmitter

>+4 dBm upstream launch power is required
for 10GBASE-PR-U3 (10G ONU) transmitter

New developments are necessary for high-power DMLs

- Technically feasible, but no requests existed before
- Still requires money, time, and motivation of LD suppliers

EML transmitter option may relax launch power

- Will NOT be a permanent option:
  - Cost and Temp. control are undesirable for ONU
- But CAN be a temporary candidate:
  - >+1dBm EMLs are widely available today

ONU Launch Power Relaxation

Launch power relaxation possibility (DML to EML)

Higher ER: 6dB to 9dB → 1.13 dB relaxation

Lower TDP: 3.0dB to 1.5dB → 1.5 dB relaxation

>+1.37 dBm launch power is allowable with EML

Flexibility to allow wide options is preferable for standard

No change for current specification tables

Small additional footnote about TDP works

(Not like 802.3ae, which specifies the same idea using the description 'Launch power (min) in OMA minus TDP')

802.3ae Launch Power Description

Table 52–12—10GBASE-L transmit characteristics

Description	10GBASE-LW	10GBASE-LR	Unit
Signaling speed (nominal)	9.95328	10.3125	GBd
Signaling speed variation from nominal (max)	± 20	± 100	ppm
Center wavelength (range)	1260 to 1355		nm
Side Mode Suppression Ratio (min)	30		dB
Average launch power (max)	0.5		dBm
Average launch power[a] (min)	–8.2		dBm
Launch power (min) in OMA minus TDP[b]	–6.2		dBm
Optical Modulation Amplitude[c] (min)	–5.2		dBm
Transmitter and dispersion penalty (max)	3.2		dB
Average launch power of OFF transmitter[d] (max)	–30		dBm
Extinction ratio (min)	3.5		dB
$RIN_{12}OMA$ (max)	–128		dB/Hz
Optical Return Loss Tolerance (max)	12		dB
Transmitter Reflectance[e] (max)	–12		dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	{0.25, 0.40, 0.45, 0.25, 0.28, 0.40}		