
Upstream power budget proposal for PRX30

**Ken-Ichi Suzuki
Akihiro Otaka**

**December 2007
NTT Access Network Service Systems
Laboratories, NTT corporation**

Consideration of upstream power budget for PRX30

- NTT has already proposed IEEE_Rx_Str_Sen_OMA as **-27.6 dBm**. So I think we should use this value.
- If PRX_U3 use a DFB-LD, optical path penalty is estimated as 0.5 dB that is the same as that of Class B+. Therefore, TDP and ECP (eye closure penalty) should be small compared with those of PR20 (1.8 dB and 1.9 dB). So I think TDP and ECP should be reduced to **1.4 dB** ($\sim \text{ECP}_{\text{PR20}} - (\text{OPP}_{\text{PR20}} - \text{OPP}_{\text{PRX30}})$).
- If the sensitivity difference between 10G and 1G is less than 6.8 dB, we can use the APD parallel technology as a dual rate receiver. In my proposal, the sensitivity (IEEE_Rx_Sen_OMA (Ideal sensitivity)) difference between 1G and 10G is 6.8 dB.

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No.	Description	PRX_U3 (ONU)	PRX_D3 (OLT)
1	Minimum extinction ratio (ITU_ER)	6 dB	-
2	Eye closure penalty (ECP)(Note 1)	-	1.4 dB
3	TDP (Note 1)	<i>TBD (or 1.4 dB)</i>	-
4	Ch.loss_Min - Ch.loss_Max	15 - 29 dB	
5	Power_range	5 dB	-
6	IEEE_Rx_Str_Sen_OMA	-	-27.6 dBm
7	IEEE_Rx_Sen_OMA (IEEE_Rx_Str_Sen_OMA –ECP)	-	-29.0 dBm
8	IEEE_Tx_OMA_min (= IEEE_Rx_Str_Sen_OMA + Ch.loss_Max)	1.4 dB	-
9	IEEE_Tx_OMA_max (= IEEE_Tx_OMA_min + Power_range)	6.4 dBm	-
10	Overload (= ITU_Tx_max –Ch.loss_min)(Note 2)	-	-9.4 dBm

(Note 1) Sensitivity difference between IEEE_Rx_Str_Sen_OMA and IEEE_Rx_Sen_OMA(Ideal) that nearly equals to TDP value.

(Note 2) $ITU_Tx_max (= IEEE_Tx_OMA_max - \alpha_{ITU_ER=6dB})$, $\alpha_{ITU_ER=6dB} = 0.8$ dB

Sensitivity (IEEE_Rx_Sen_OMA) difference between 1G and 10G

