Upstream power budget proposal for PRX30

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Consideration of upstream power budget for PRX30(1)

- We have already proposed IEEE_Rx_Str_Sen_OMA as **-27.6 dBm** (See 3av_0705_effenberger_1.pdf and msg00450.html). So we should use this value.

- If PRX_U3 uses DFB-LDs, optical path penalty (OPP) is estimated as 0.5 dB that is the same as that of Class B+. Therefore, TDP and ECP should be small compared with those of PX20 (1.8 dB and 1.9 dB).
  - Note that ECP for PRX30 can be roughly estimated as **1.4 dB** (~ ECP@PX20 – (OPP@PX20-OPP@PRX30))

Consideration of upstream power budget for PRX30(2)

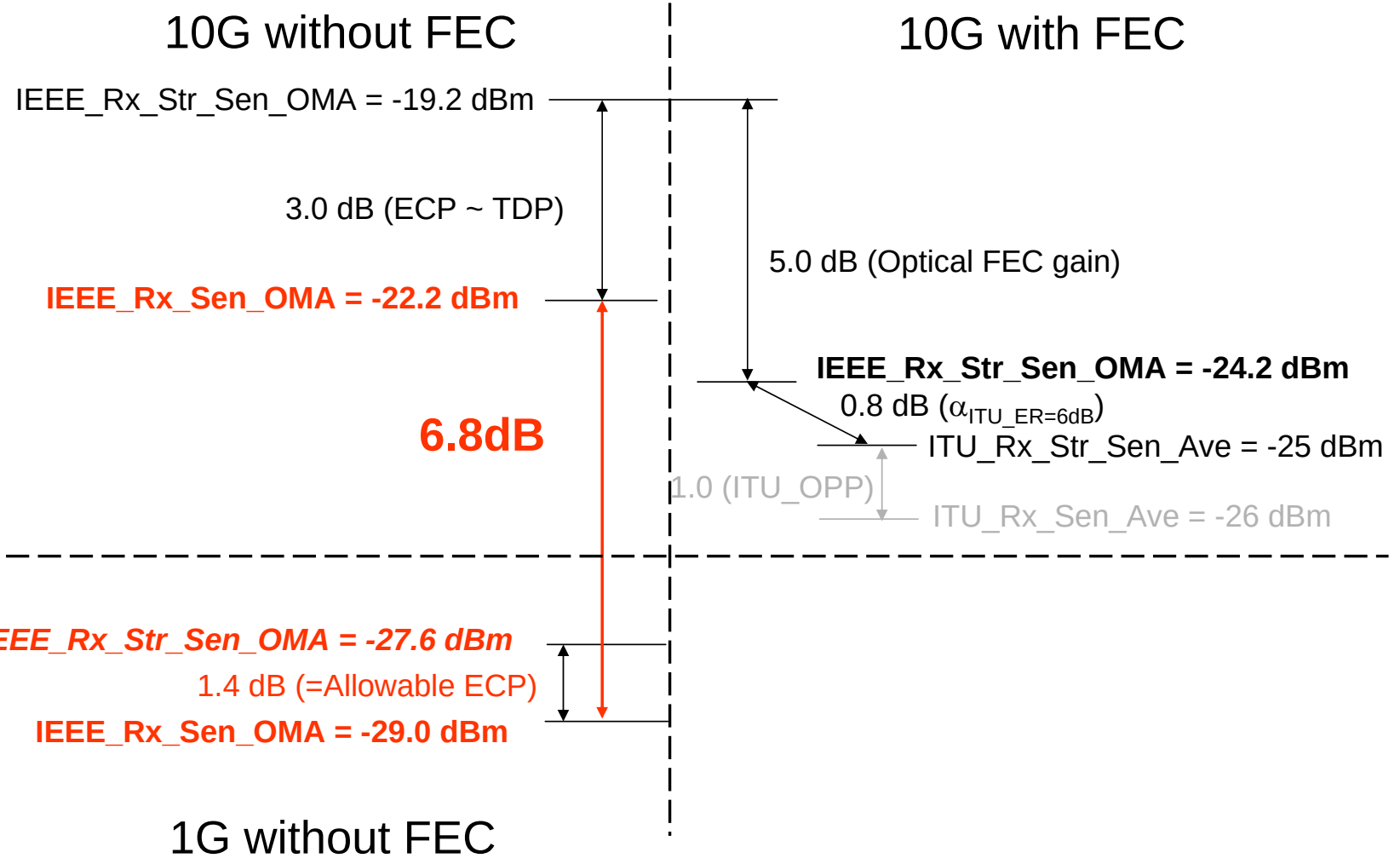
- If we use the APD parallel technology as a dual rate receiver, the sensitivity difference between 10G and 1G should be less than 6.8 dB (See 3av_0703_effenberger_4.pdf).
- Allowable ECP for PRX30 is estimated as **1.4 dB** assuming the ECP for upstream 10G receivers is 3.0 dB (See slide 5).
  - Note that ECP value is nearly equal to TDP value and 3.0 dB TDP value for upstream 10G transmitter is already proposed and adopted.

Upstream power budget proposal for PRX30

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)	*TBD (or 1.4 dB)*	-
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) ECP(=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



Conclusion

- IEEE_Rx_Str_Sen_OMA value should be **-27.6 dBm** for PRX30. Related parameter should be defined using this value.

- Recommended ECP value for PRX30 should be **1.4 dB** to use the APD parallel technology as a dual rate receiver. If DFB-LD is used for PRX_U3, it is reasonable value.