SR Attribute Alignment

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Comments 31 & 32

Comment 31: In Table 86-6SR Tx attributes, Max TDP and 'Launch power in OMA minus TDP' should be updated due to the shift in TP1 jitter specs J2 (from 0.18 UI to 0.17 UI) and J9 (from 0.26 UI to 0.29 UI) in D3.1. This proposal will shift the benefit due to the reduced J2 jitter tolerance from the optical Tx to the optical Rx where the output J2 was reduced from 0.46 UI to 0.42 UI. No changes in Rx specs are required. Other attributes affected include Min OMA in Table 86-6, Min OMA in Table 86-7, and Power Budget and Allocation for penalties in Table 86-9.

Proposal: In Table 86-6 change Max TDP from 3.6 dB to 3.5 dB and 'Launch power in OMA minus TDP' from -6.7 dB to -6.5 dB. Change Min OMA in Table 86-6, Min OMA and min average power in Table 86-7, Power Budget and Allocation for penalties in Table 86-9 as appropriate and in coordination with a following comment to update these items.

Comment 32: In Table 86-6, SR Tx attribute Min OMA should be updated due to reduction in max TDP values in recent drafts. In D2.0, max TDP was 4.0 dB, min OMA for max TDP was assumed to be -3.0 dBm yielding a link budget for max TDP of 8.3 dB, and min OMA was -6 dBm leaving 1.0 dB of TDP in reserve. Since D2.0, TDP has been reduced largely due to changing allocations in jitter at TP1 and a better understanding of jitter metrics J2 and J9. Along with the reduction in TDP, the difference between 'OMA minus TDP' and min OMA has been reduced as has the power budget (Table 86-9) for max TDP. This is a proposal to bring the link budget from 8.2 dB back to 8.3 dB.

Proposal: In Table 86-6, change Min OMA from -6 to -5.8. In Table 86-7, for OM3 change min Average power from -9.9 dBm to -9.7 dBm and min OMA from -7.9 dBm to -7.7 dBm and for OM4 change min Average power from -9.5 dBm to to -9.3 dBm and min OMA from -7.5 dBm to -7.3 dBm. In Table 86.9, change the Power budget from 8.2 dB to 8.3 dB and 'Allocation for penalties' for OM3 from 6.3 dB to 6.4 dB and for OM4 from 6.4 dB to 6.5 dB. Coordinate with above comment on TDP.

Comments 31 & 32 Discussion

Comments 31 and 32 were made with the goals of 1) optimizing the alignment of TP1 jitter allocation with the Tx metric TDP and the Rx metric SRS and the SRS conditions VECP, J2 and J9 jitter and 2) returning to the 8.3 dB power budget based on a ‘Min Tx OMA at Max TDP’ of -3 dBm. The 8.3 dB power budget and ‘Min Tx OMA at Max TDP’ of -3 dBm was in place since D1.2 and changed with little discussion in D3.1. This results in several proposed actions.

• Update TDP (in Table 86-6) to reflect the D3.1 change in TP1 J2 from 0.18 UI to 0.17 UI.

• Update Min OMA & Min OMA minus TDP (in Table 86-6) to reflect the change in TDP from 3.7 dB to 3.6 dB in D3.1 and the currently proposed change from 3.6 dB to 3.5 dB in order to return to a ‘Min Tx OMA at Max TDP’ of -3 dBm.

• Update Min OMA & Min Average power (in Table 86-7) to reflect the above update in Min OMA.

• Update Power Budget and ‘Allocation for penalties’ (in Table 86-9) to reflect the above updates to Min OMA & Min OMA minus TDP thereby returning to the previous (D1.2 to D3.0) power budget and penalty allocations.

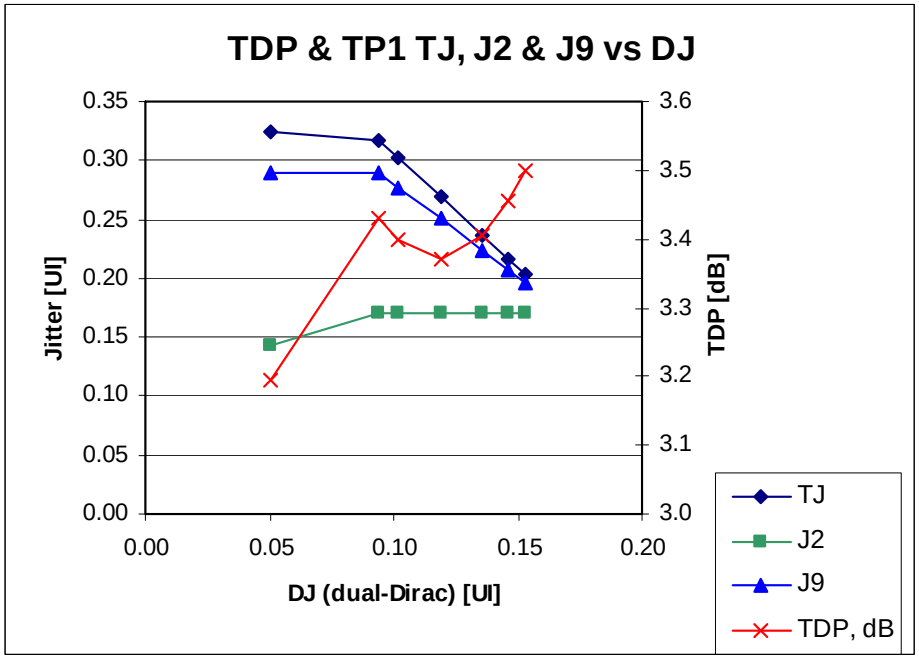
Unless there is a return to a ‘Min Tx OMA at Max TDP’ of -3 dBm and the 8.3 dB power budget, further adjustment to SRS and, perhaps, jitter allocations at TP4 will be required for optimum alignment.

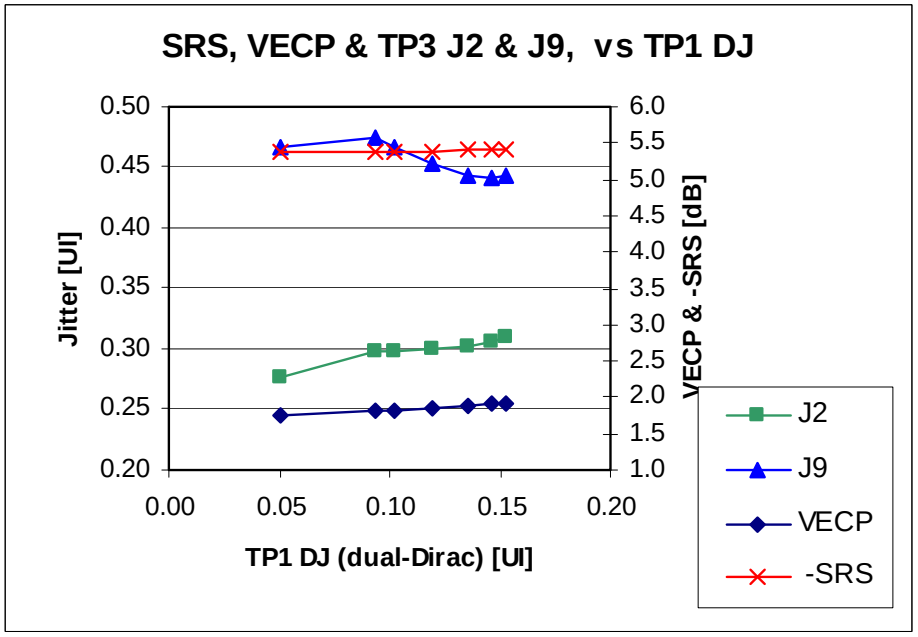
The proposed changes are summarized in the following table.

Tx Output & Link Attributes

	D3.0	D3.1	31, 32
Table 86-6			
Transmitter and dispersion penalty (TDP), each lane, Max, dB	3.7	3.6	3.5
Optical Modulation Amplitude (OMA), each lane, Min, dBm	-6	-6	-5.8
Launch power in OMA minus TDP, each lane, Min, dBm	-6.7	-6.7	-6.5
Table 86-7			
Average power, each lane , OM3, Min, dBm	-9.9	-9.9	-9.7
Average power, each lane, OM4, Min, dBm		-9.5	-9.3
Optical Modulation Amplitude (OMA), each lane, OM3 , Min, dBm	-7.9	-7.9	-7.7
Optical Modulation Amplitude (OMA), each lane, OM4 , Min, dBm		-7.5	-7.3
Table 86-7			
Power budget (for maximum TDP)	8.3	8.2	8.3
Allocation for penalties (for maximum TDP), OM3	6.4	6.3	6.4
Allocation for penalties (for maximum TDP), OM4		6.4	6.5

TP1 Jitter, TDP, VECP & SRS Alignment





TDP and TP1 jitter are shown in the top chart while SRS, VECP and TP3 jitter are shown in the bottom chart for various combinations of TP1 RJ and dual-Dirac DJ. These combinations yielded either the TP1 J2 or the TP1 J9 max limit for the previously described worst case Tx. The combinations ranged from RJ = 0.050 UI & DJ(dD) = 0.153 UI to RJ = 0.274 UI & DJ(dD) = 0.050 UI.

For these combinations, TDP can be seen to reach the proposed max limit of 3.5 dB for the max TP1 dual-Dirac DJ case while at TP3, VECP, J2 & J9 are quite close to the specified test condition with SRS reaching the -5.4 dBm limit.

Min OMA at max TDP was changed in D3.1 from -3 dBm to -3.1 dBm. While not included in the optical specifications, this is the entry in the link model that determines the power budget and affects SRS and RJ calculations. The value should be returned to -3 dBm or the SRS limit should be adjusted.

In summary, the proposed TDP limit of 3.5 dB combined with a return to -3 dBm as the min OMA at max TDP value yields a well aligned combination of TP1 J2 & J9, TP2 TDP and TP3 SRS, VECP, J2 & J9.