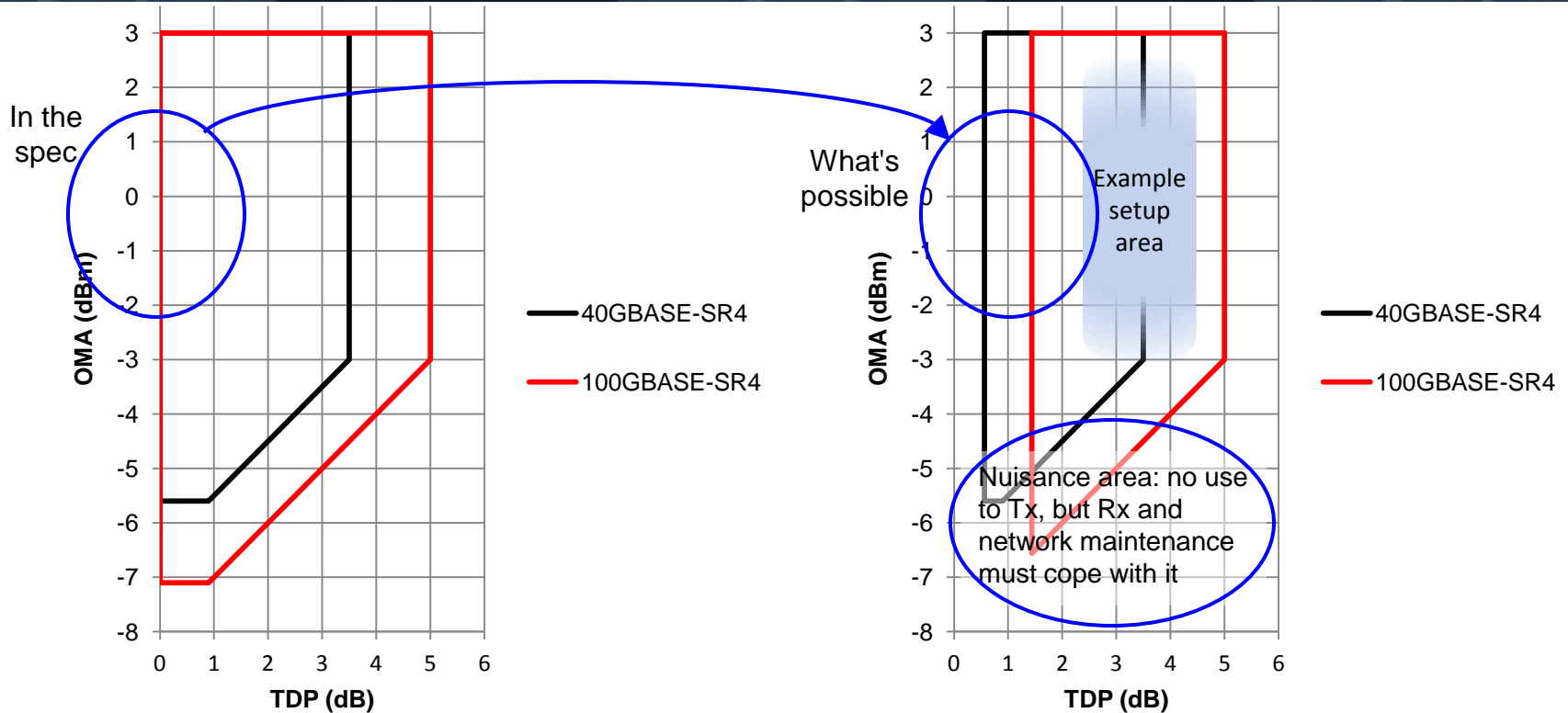


Maps of OMA, TDP and mean power

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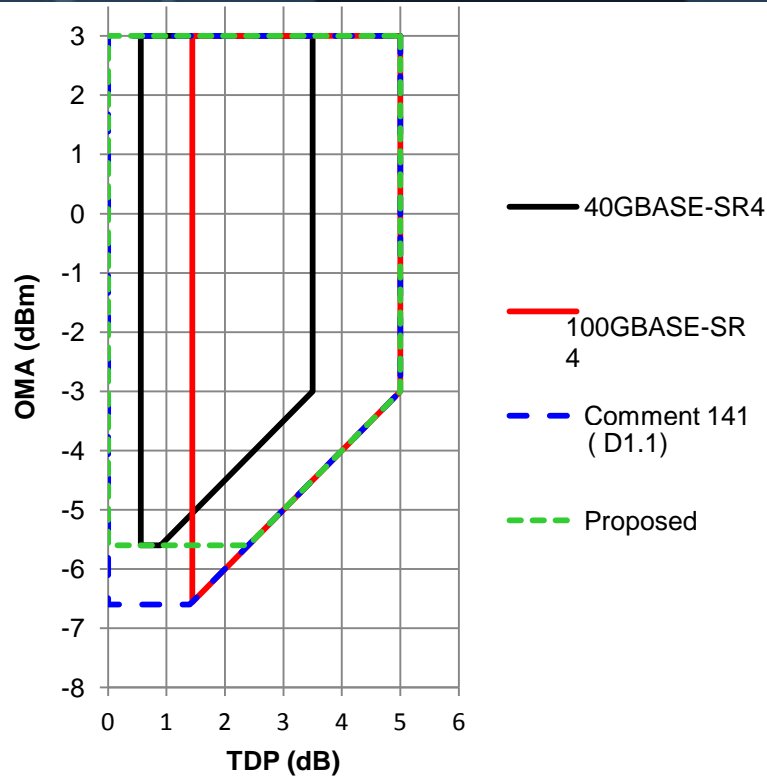
- The minimum average power and OMA limits are not appropriate for the TDP limit in the draft
- This presentation shows the present situation and describes how it could be improved
- The exact numbers would change as the TDP limits and methodology evolve

Map of OMA vs. TDP

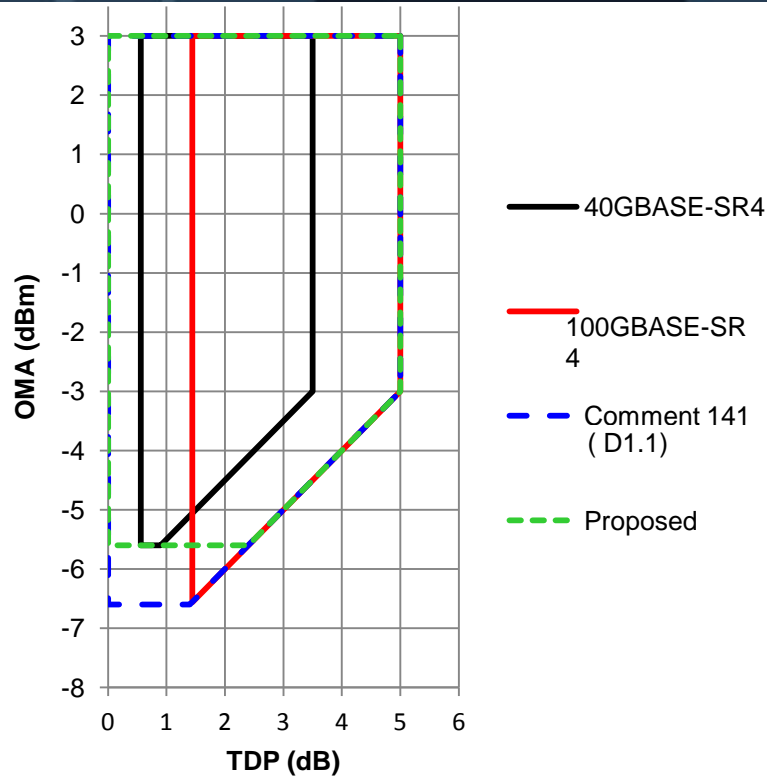


- Allowed Tx TDP and OMA in 40GBASE-SR4 and, for 100GBASE-SR4, in P802.3bm D2.0
- Transmitter is not given credit for $TDP < 0.9$ dB

- A noiseless Tx with 1 ps risetime would have TDP of 0.44 dB for 40GBASE-SR4 and 0.76 dB for 100GBASE-SR4 (from spreadsheet model: ISI at decision timing offsets)
- For 12 ps, this becomes 0.56 dB or 1.44 dB (illustrated)
- TDP is not likely to be below 1.5 dB
- Cutoff line for TDP credit needs revision

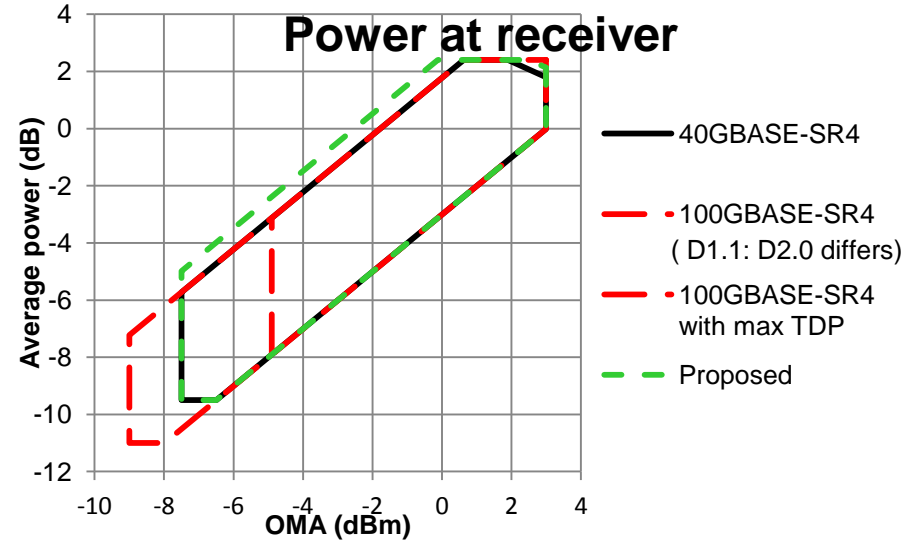
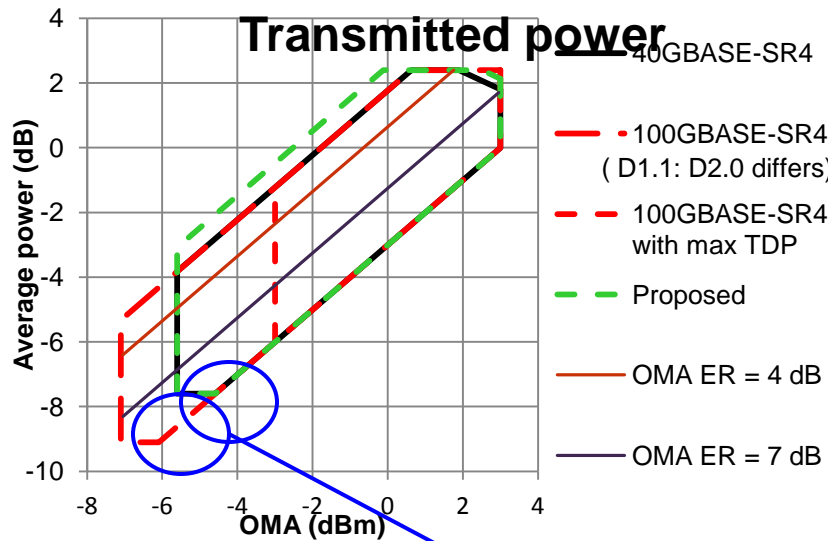


- We should raise the minimum OMA for low-TDP Tx until there is a moderate flat region at the bottom
- We might as well use the same limit as 40GBASE-SR4: -5.6 dBm
 - This makes operation and diagnostics of a mixed 40GBASE-SR4 / 100GBASE-SR4 network a little easier
 - No cost foreseen because this still offers an 8.4 dB tall setup window for any future low-TDP transmitter



- Table 95–6, 100GBASE-SR4 transmit characteristics, note b:
 - Even if the TDP < 0.9 dB, the OMA (min) must exceed this value.
- Instead of 0.9 dB, use 2.4 dB
- The minimum average power on each lane would also be increased
 - See next slide

Choosing minimum average input power at receiver



Minimum extinction ratio in D2.0 is lower than shown: this affects upper diagonal lines only

A directly modulated VCSEL is unlikely to have very high extinction ratio AND very low TDP

Power at receiver is 0 to 1.9 dB less than launch power

- Slide 4 shows that -5.6 dBm is a suitable Tx OMA minimum
- The draft -9.1 dBm minimum average launch power is unlikely to happen: it would need very high extinction ratio together with very low TDP
- -7.6 dBm, as in 40GBASE-SR4, looks suitable
- The minimum average input power at the receiver (TP3) would become -9.5 instead of -11 dBm
- Note: these maps assume that all ones and zeros are the same
 - No distinction between "OMA extinction ratio" and "SONET extinction ratio"
 - Peak power calculated as average power in ones – true peak can be higher because of overshoot

Thank You

