

# Module TX eye measurement method proposal

In support of comment #148

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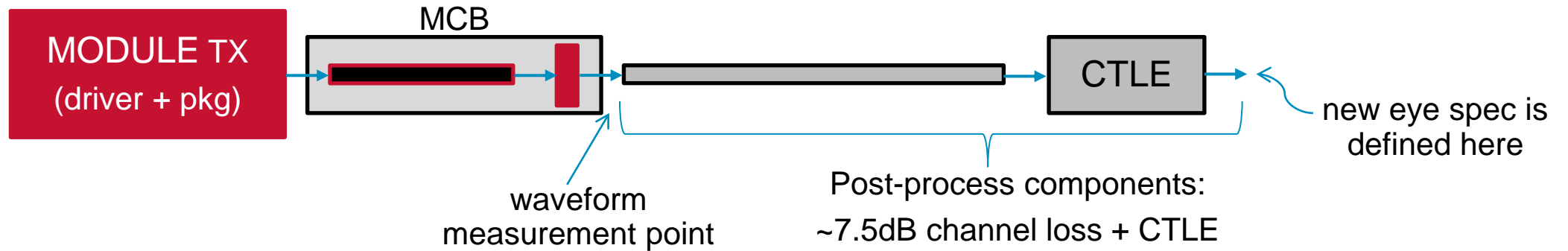
IEEE 802.3bs 400 Gb/s Task Force

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# CDAUI-8 C2M Module output specification

- The current spec at TP4 does not allow the pre-cursor component necessary in the module TX to close the link budget
  - Eye measurement is done at the MCB
  - HCB-MCB loss budget is only ~2.5dB to 4.8dB
- An update is needed to include the module TX pre-cursor component
  - Keep the measurement point same as before
  - Define a ‘near-end’ eye and a ‘far-end’ eye
- Far-end eye
  - In the post processing phase, include a ‘channel’ to represent the remainder of the loss budget
  - Update the eye-spec such that the TX would have to provide the desired pre-cursor component
- Near-end eye
  - Represents the short length case
  - Measured and post processed as before

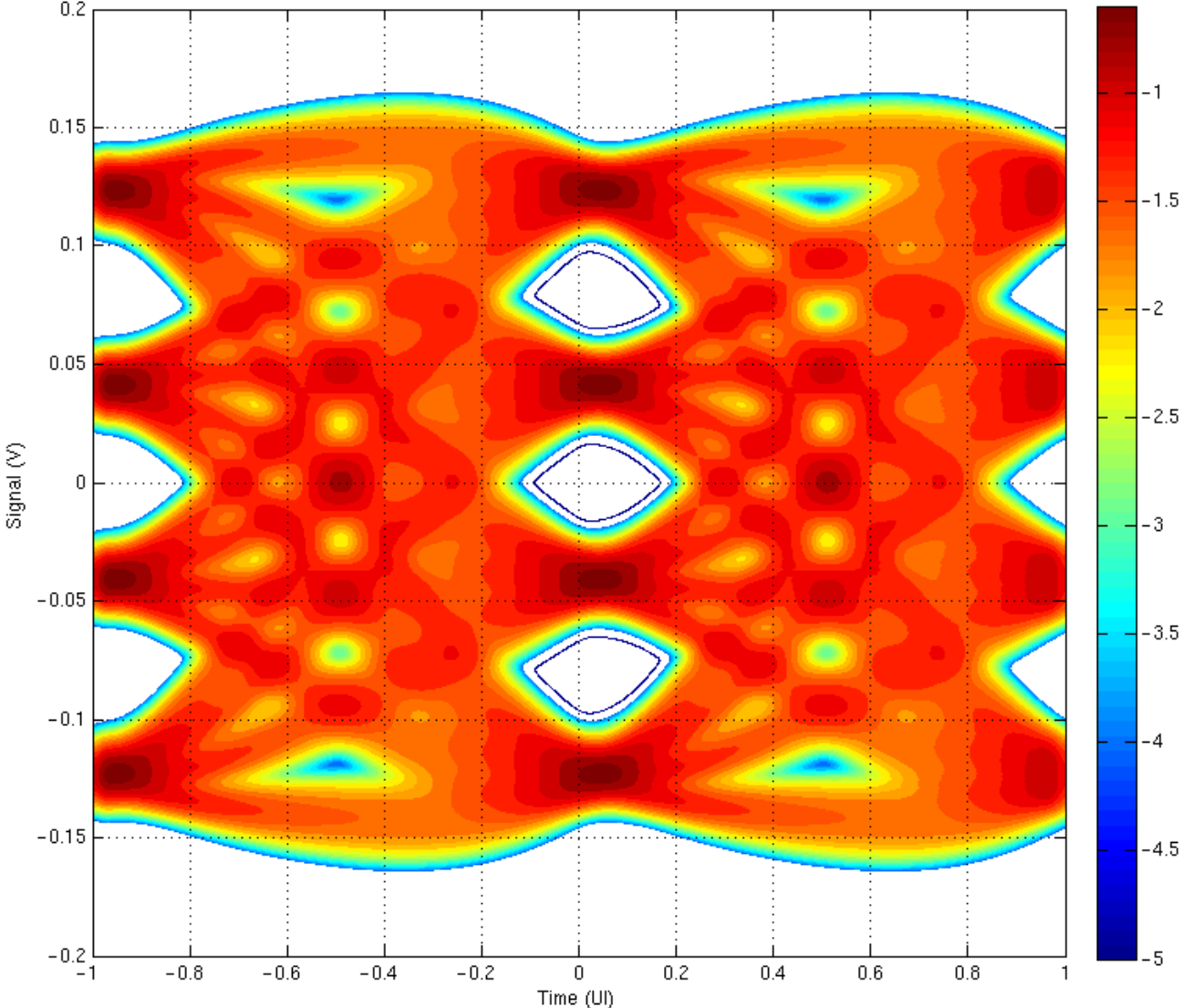
# Far-end eye: o/p measurement + post processing setup



- Short channel model (~2.5dB loss at Nyquist/2) from CDAUI-8 is used to represent the MCB trace
- Driver+Pkg representative of a typical module, TX coef. = [-0.1 0.9]
- CDAUI-8 C2C jitter parameters
- Post processing:
  - ~7.5dB channel loss to represent the far-end scenario
  - 4<sup>th</sup> order Bessel-Thomson low-pass with 33GHz 3dB b/w
  - Search over all CTLE settings to obtain the best eye opening

# Far-end eye parameters

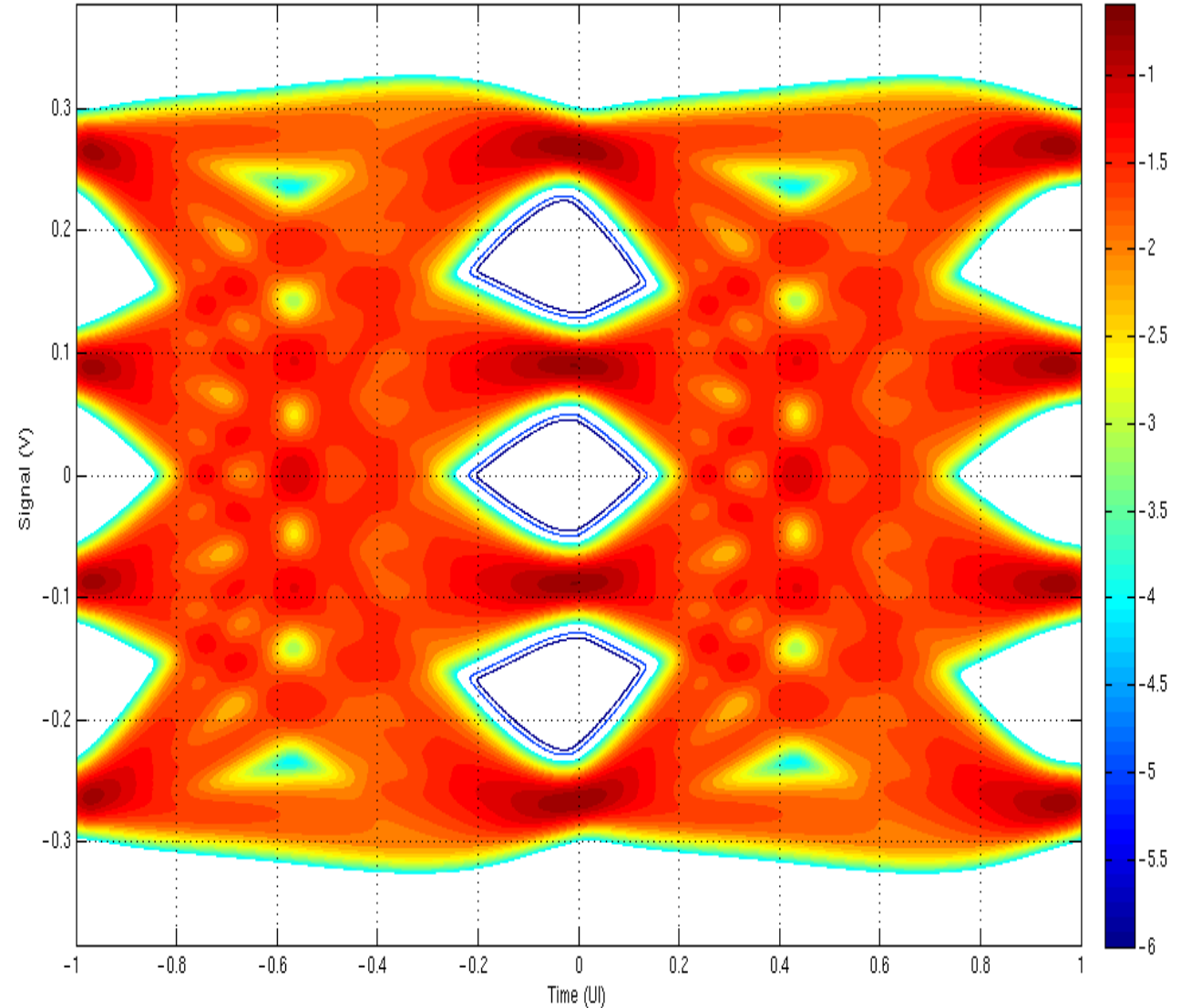
Parameter	Value
ESMW	220mUI
Eye Width	250mUI
Eye Height	30mV



# Near-end eye parameters

Short channel model (~2.5dB) from CDAUI-8 and CTLE sweep

Parameter	Value
ESMW	265mUI
Eye Width	325mUI
Eye Height	90mV



# Summary

- The proposal accommodates the pre-cursor ISI component without explicitly specifying an FIR filter in the module
- Extension of the current TP4 based eye-margin methodology
  - Near-end and far-end specifications defined to cover both ends of the channel loss range.
- Enables a 'C2C capable' receiver to be employed in the host for C2M application