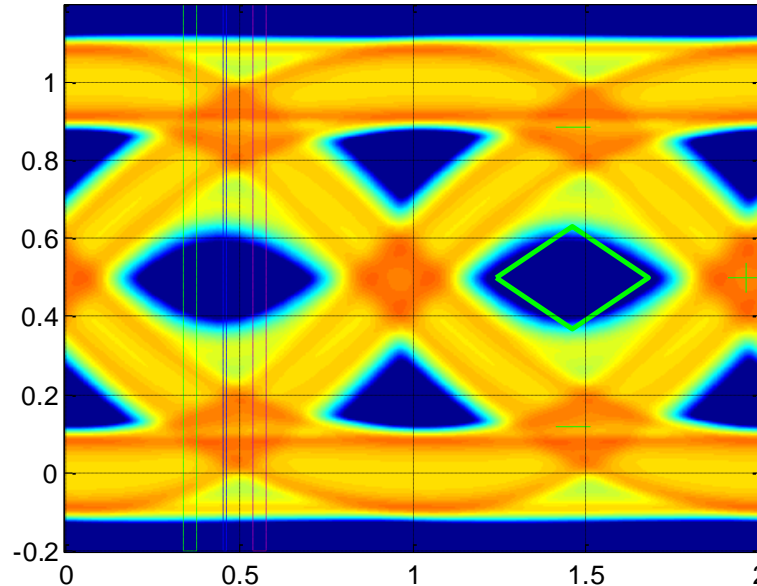# SRS generator update (revised)

Piers Dawe

Mellanox Technologies

Simulated D3.2 stressed eye

- Trying to meet D3.2 spec with ideal BT4 filters and wideband Gaussian noise   (Second low pass filter gives 2.1 dB SEC, the minimum allowed by D3.2)
- SEC = 4.9 dB   Target 4.9 dB
- J2 between 0.37 and 0.41 UI   Target 0.39 UI
- J4 between 0.53 and 0.59 UI   Target 0.53 UI
- J4-J2 = 0.16 to 0.18 UI   (target) 0.14 UI
- Too much Gaussian tails.   Eye is very shallow compared with mask

Another simulated D3.2 stressed eye
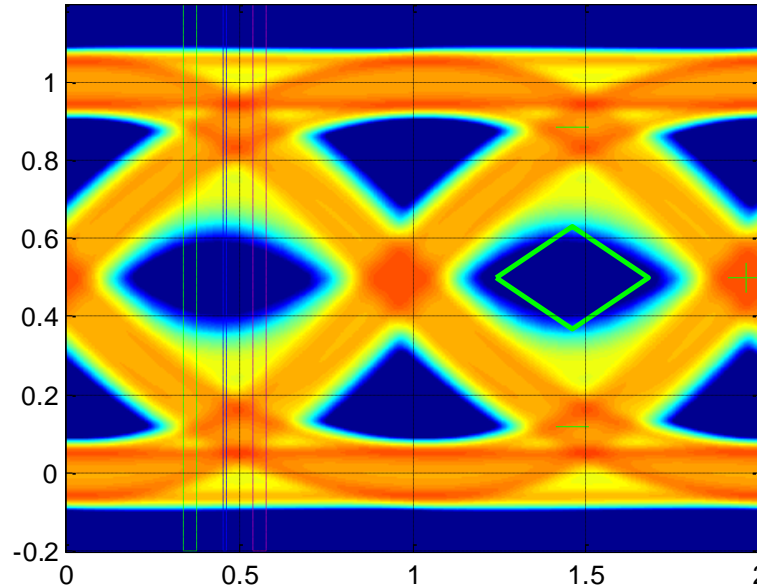
- Trying to meet D3.2 spec with ideal BT4 filters and low frequency Gaussian noise

- SEC = 4.9 dB   Target 4.9 dB
- J2 between 0.33 and 0.37 UI   Target 0.39 UI
- J4 between 0.52 and 0.60 UI   Target 0.53 UI
- J4-J2 = 0.19 to 0.23 UI   (target) 0.14 UI
- Even more Gaussian tails.   Eye is very shallow compared with mask

Simulated improved stressed eye
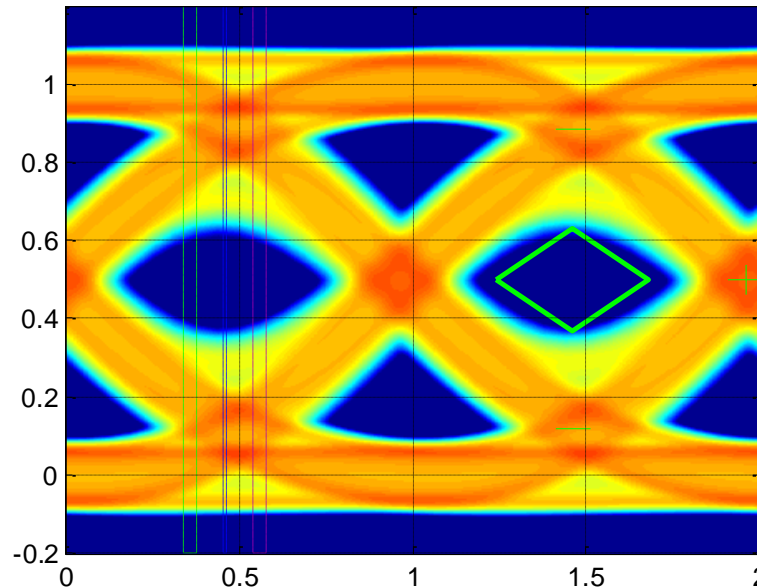
- Target 4.3 dB with ideal BT4 filters and wideband Gaussian noise
- SEC = 4.3 dB   Target 4.3 dB
- J2 between 0.33 and 0.36 UI   Target 0.39 UI
- J4 between 0.48 and 0.52 UI   Target 0.53 UI
- J4-J2 = 0.15 to 0.16 UI   (target) 0.14 UI
- Too much Gaussian tails.   Eye is still shallow compared with mask

Simulated worst case received signal
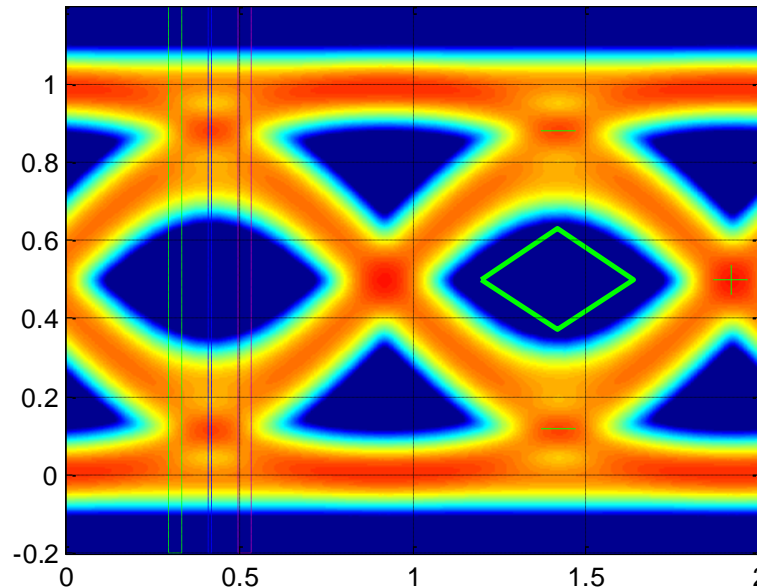
Preliminary

- Parameters partly as link model *(0.08 UI of high probability jitter, MPN and MN were missed out)*

- SEC = 3.4 dB   Target ? dB

- J2 between 0.28 and 0.31 UI   Target ? UI

- J4 between 0.40 and 0.44 UI   Target ? UI

- J4-J2 = 0.12 to 0.13 UI   (target) ? UI

-   Eye shape is more like the mask

Additional material

- The next three slides were added in response to questions at the meeting on 2 October 2014

Simulated worst case received signal
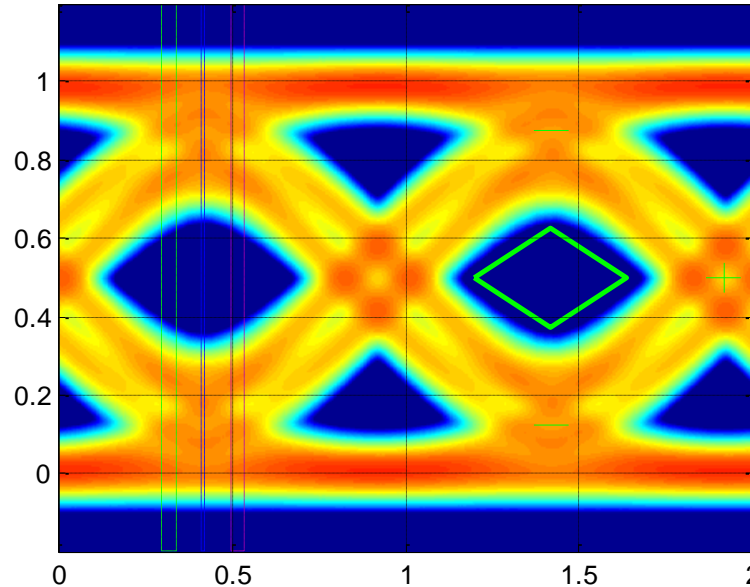

Corrected

SEC is still much less than 4.9 dB

- Parameters as link model *(missing items added, more aggressive periodic jitter)*
- SEC = 3.9 dB   Target ? dB
- J2 between 0.37 and 0.40 UI   Target ? UI
- J4 between 0.49 and 0.53 UI   Target ? UI
- J4-J2 = 0.12 to 0.13 UI   (target) ? UI
- More high probability jitter, less tails, than SRS   Eye shape is more like the mask
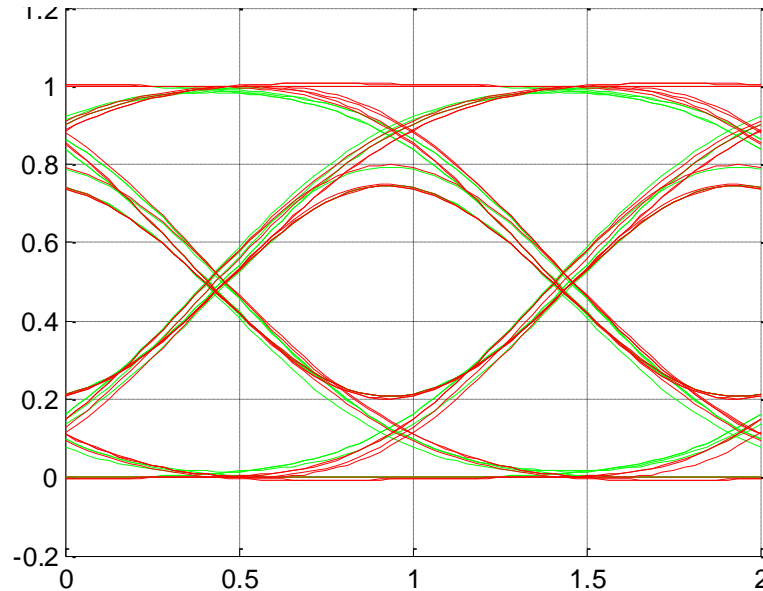
Simulation of ~TDEC analysis of worst case received signal
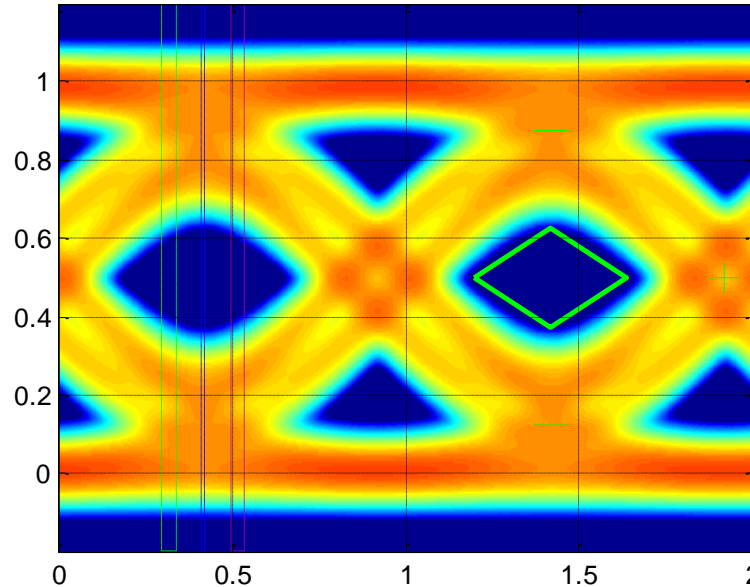
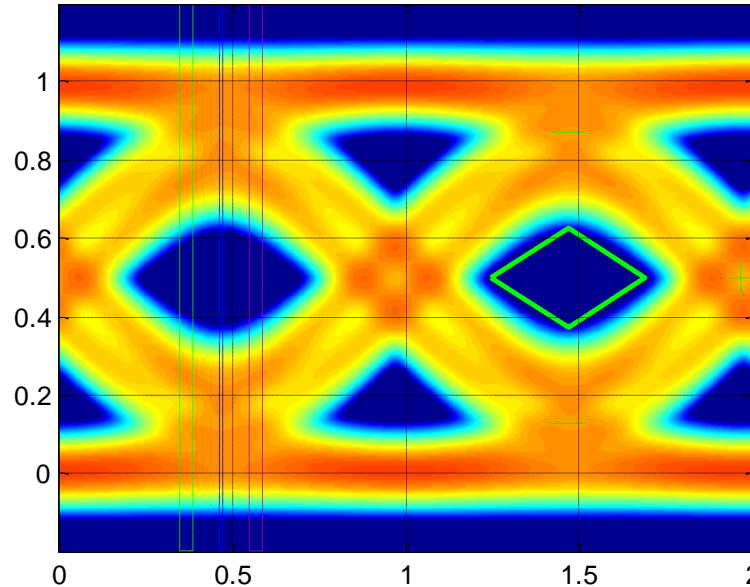*SEC "+ M" is still much less than 4.9 dB*

- Deterministic parameters and RIN as link model, estimated MPN and MN as TDEC algorithm   (In this case, TDEC estimates more MPN than model)
- SEC "+ M" = 4.3 dB   Target ? dB
- J2 between 0.40 and 0.43 UI   Target ? UI
- J4 between 0.53 and 0.59 UI   Target ? UI
- J4-J2 = 0.13 to 0.16 UI   (target) ? UI
- More high probability jitter than SRS   Eye shape is more like the mask

Checking the SRS filter

- Green: Gaussian laser and fibre models, Bessel-Thomson observation filter
- Red: Bessel-Thomson SRS filter, Bessel-Thomson observation filter
- Very good agreement

# Simulation of TDEC analysis of worst case transmitted signal

TDEC is still much less than 4.9 dB

- Tx parameters as link model, 12.6 GHz filter and estimated MPN and MN as TDEC algorithm   (In this case, TDEC estimates more MPN than model)

- TDEC = 4.4 dB   Target ? dB

- J2 between 0.40 and 0.44 UI   Target ? UI

- J4 between 0.54 and 0.59 UI   Target ? UI

- J4-J2 = 0.14 to 0.15 UI   (target) ? UI

- More high probability jitter than SRS   Eye shape is more like the mask

Simulated improved stressed eye 2
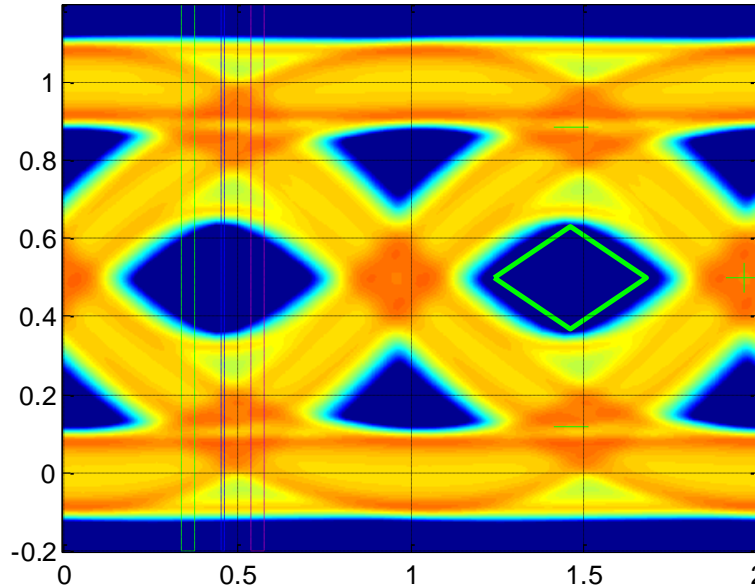
New slide
23 Oct 2014
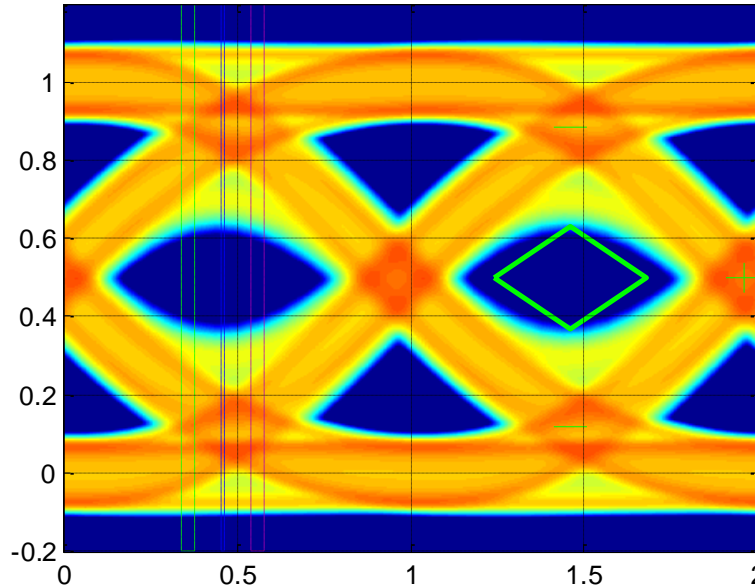
- Target 4.3 dB with ideal BT4 filters and slow Gaussian noise
- SEC = 4.33 dB   Target 4.3 dB
- J2 between 0.31 and 0.34 UI   Target 0.39 UI
- J4 between 0.44 and 0.47 UI   Target 0.53 UI
- J4-J2 = 0.13 to 0.14 UI   (target) 0.14 UI
- Gaussian tails OK?   Eye is still shallow compared with mask

Simulated improved stressed eye 3

New slide
23 Oct 2014

- Target 4.3 dB with ideal BT4 filters and Gaussian jitter
- SEC = 4.3 dB   Target 4.3 dB
- J2 between 0.37 and 0.40 UI   Target 0.39 UI
- J4 between 0.51 and 0.53 UI   Target 0.53 UI
- J4-J2 = 0.13 to 0.14 UI   (target) 0.14 UI
- Gaussian tails OK.   Eye is still shallow compared with mask