

TDECQ Modeling for 400GBase-DR4

Brian Welch

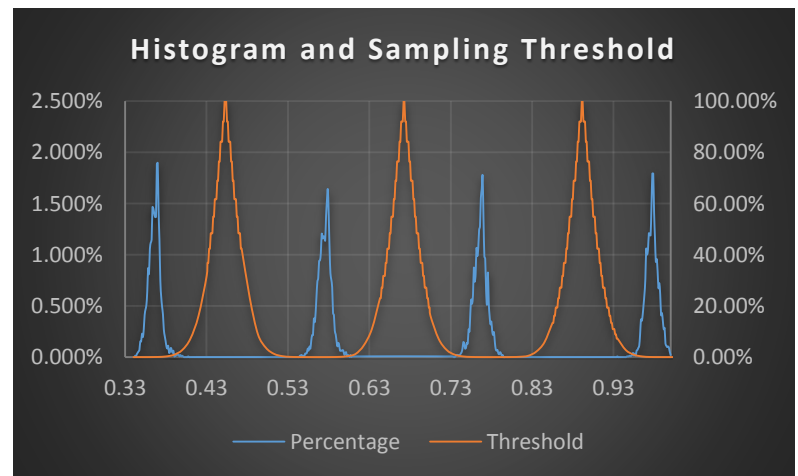
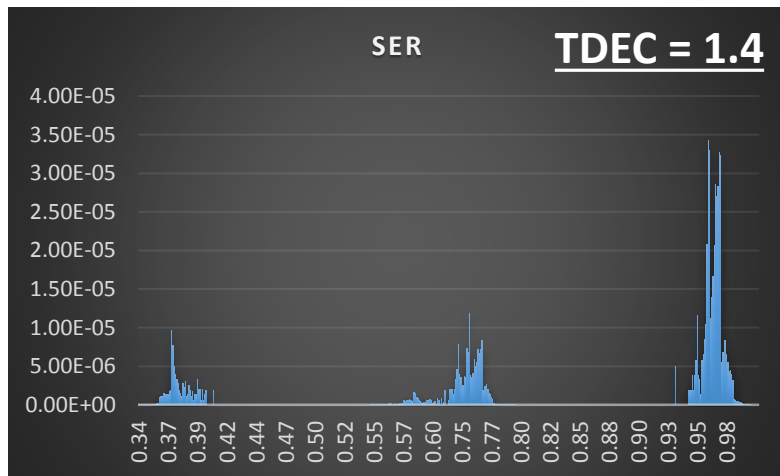
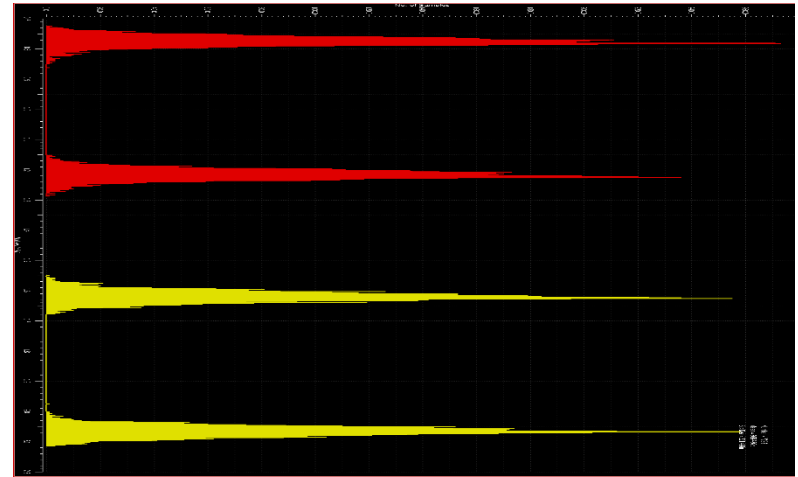
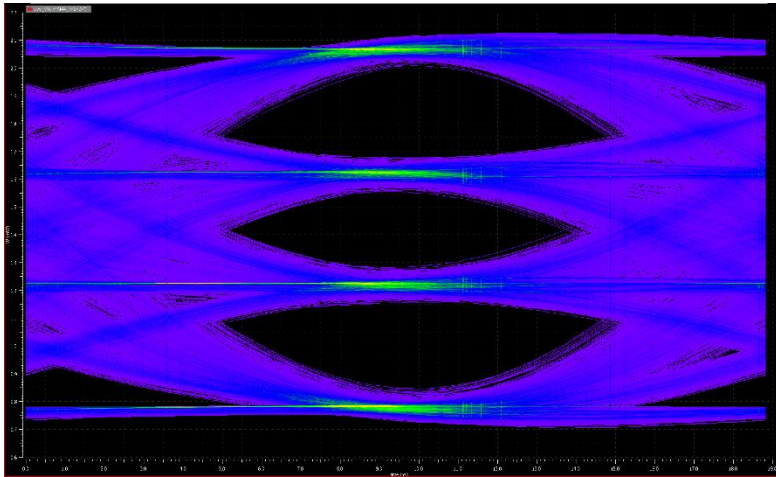
TDECQ Modeling for 400GBase-DR4

- Expands on TP2 eye modeling/simulations done in:
http://www.ieee802.org/3/bs/public/15_09/welch_3bs_01a_0915.pdf
 - Looks only at the high jitter case (Jitter Amplitude 5)
- Applies the TDECQ technique from:
http://www.ieee802.org/3/bs/public/adhoc/smf/16_05_03/king_02_0516_smf.pdf

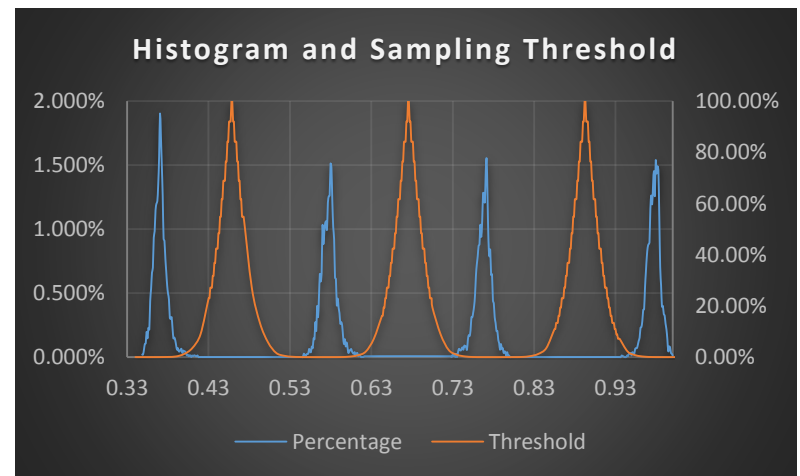
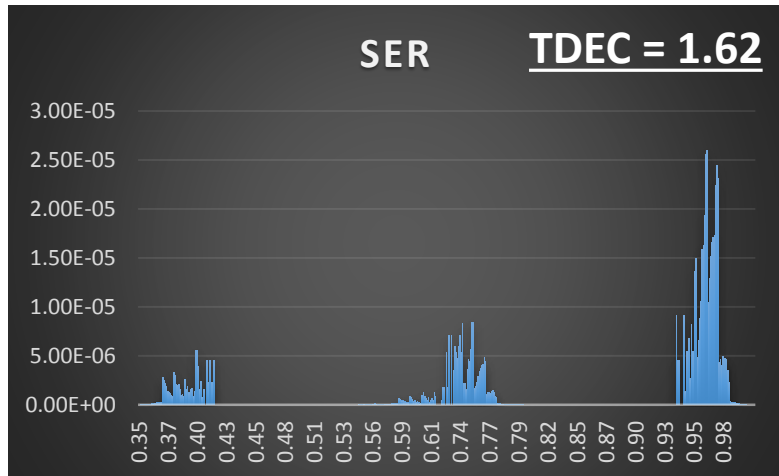
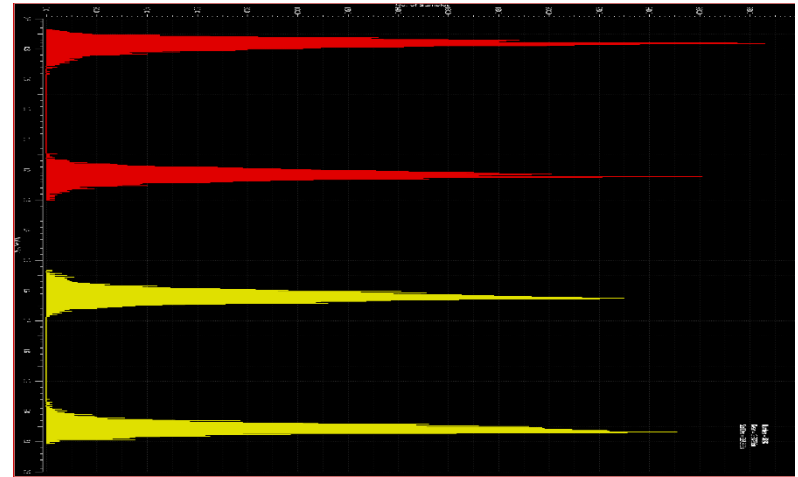
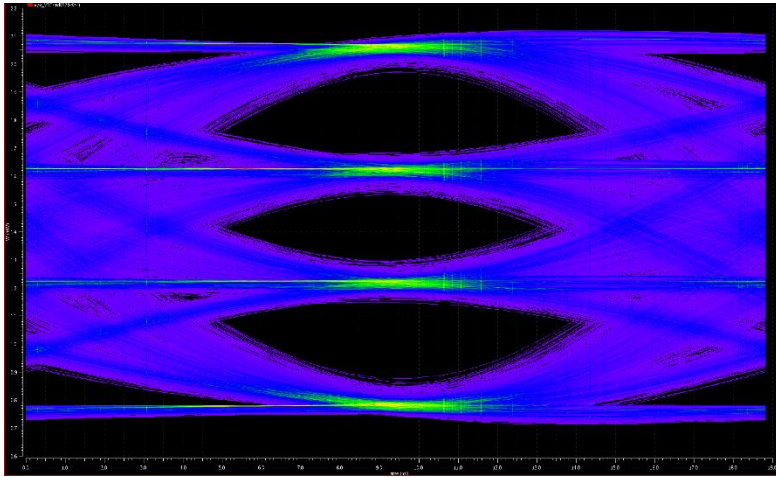
TDECQ Uncorrected

Direct observation of optical output

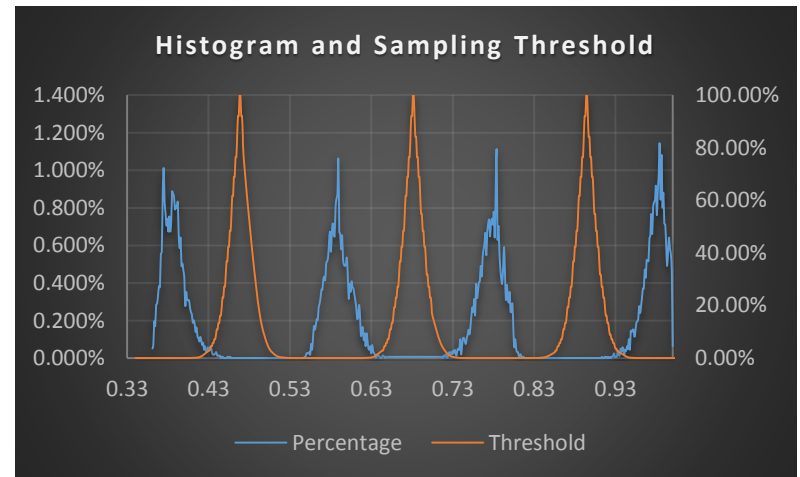
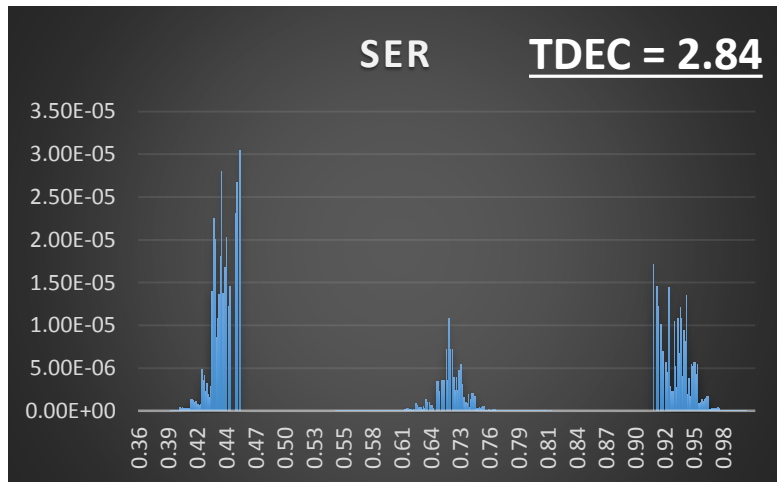
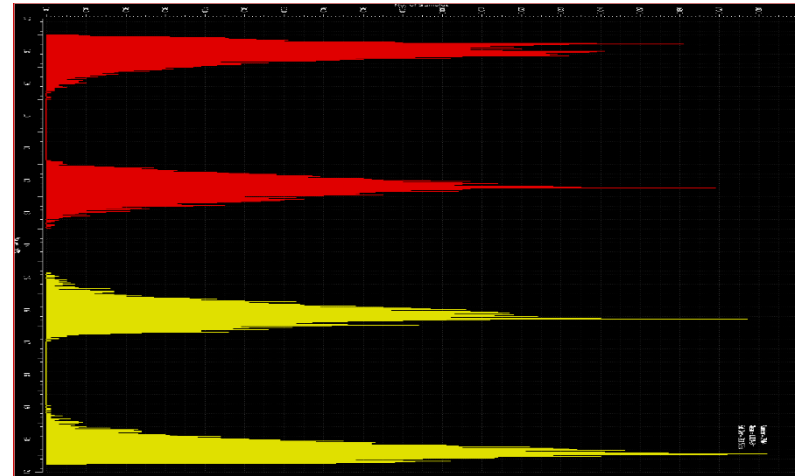
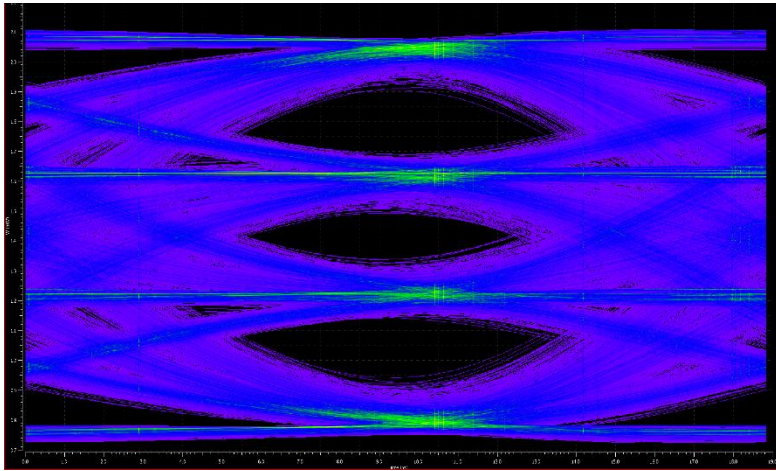
TDECQ: 32 GHz BW: Direct



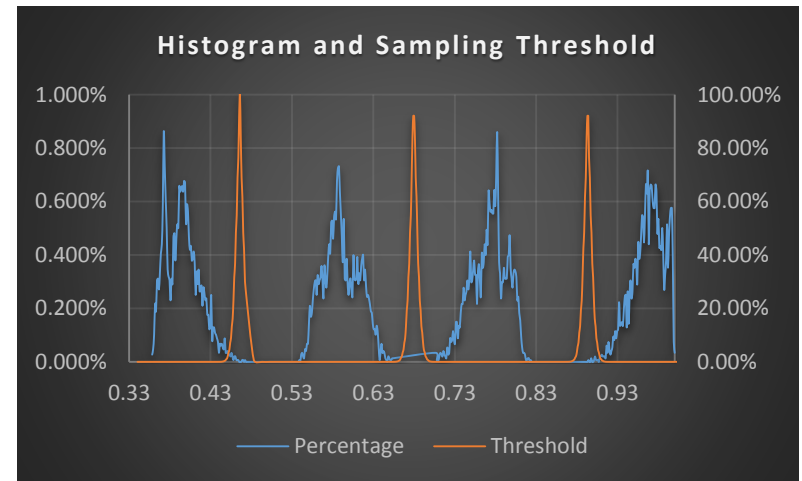
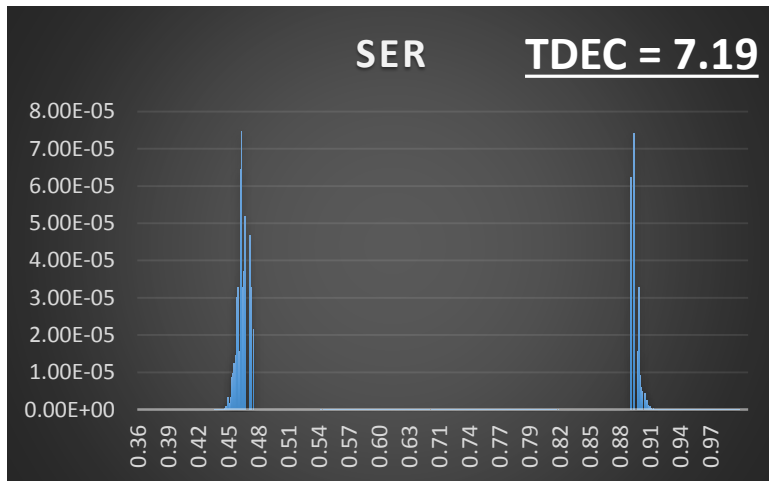
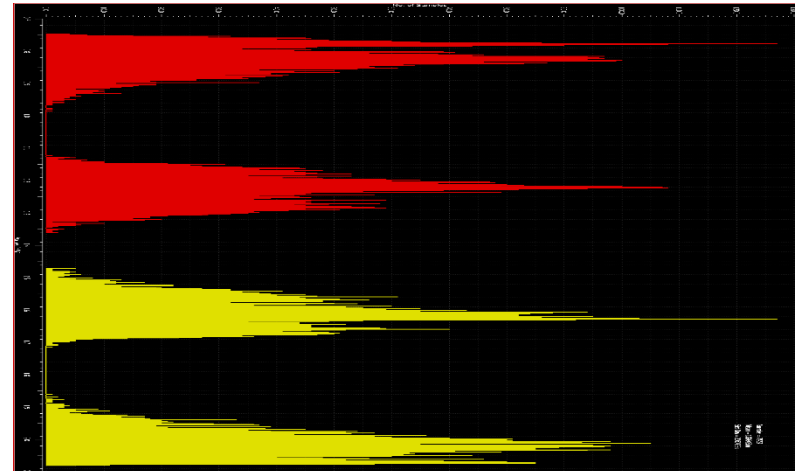
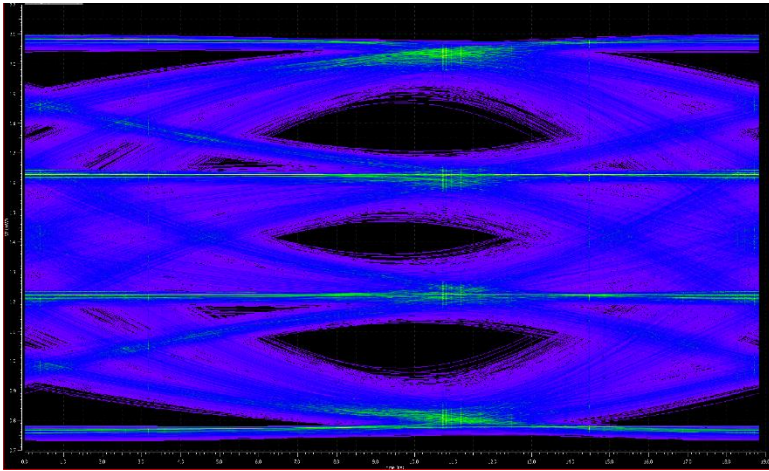
TDECQ: 28 GHz BW: Direct



TDECQ: 25 GHz BW: Direct



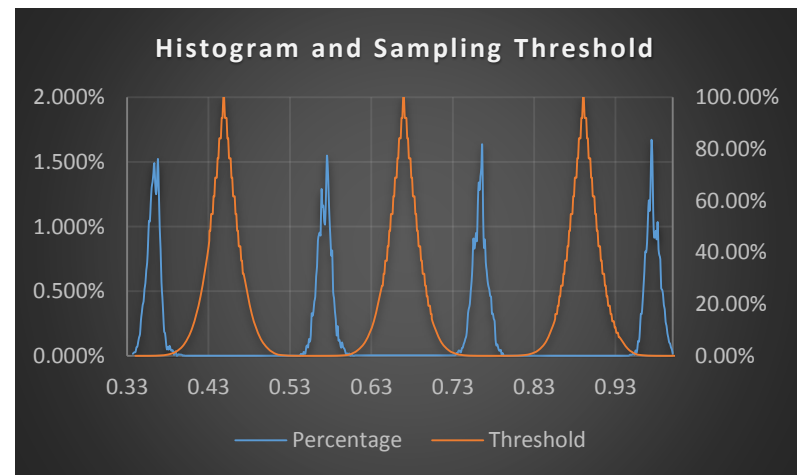
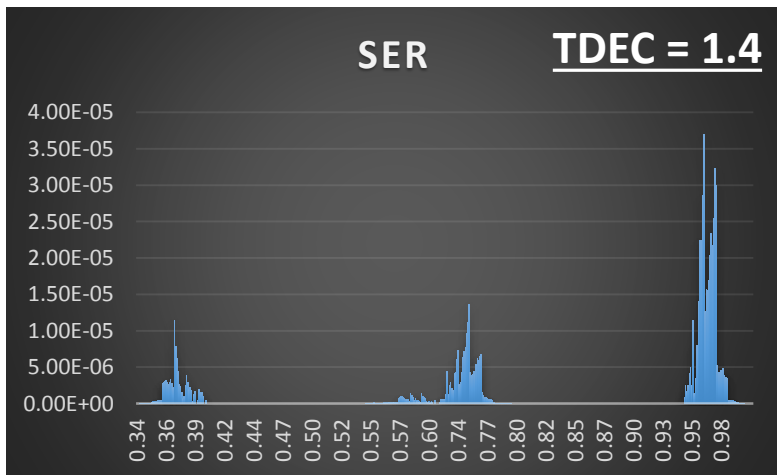
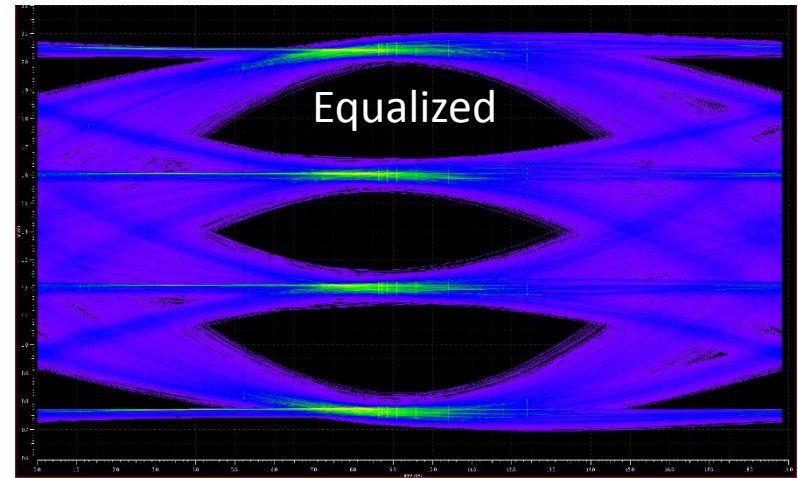
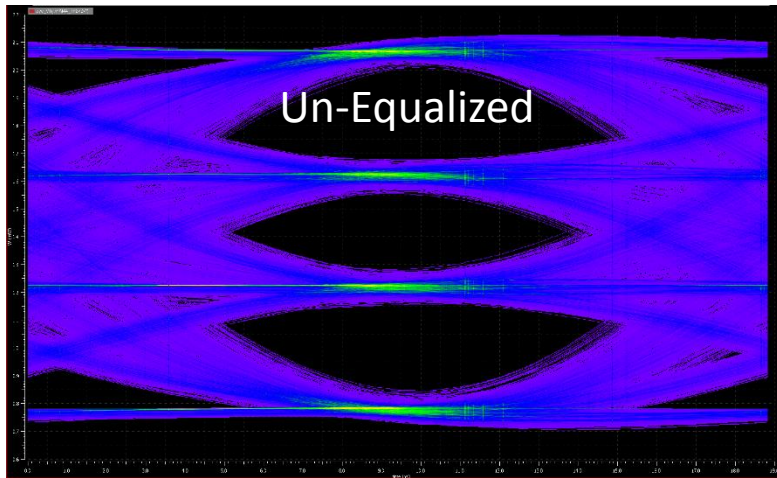
TDECQ: 22 GHz BW: Direct



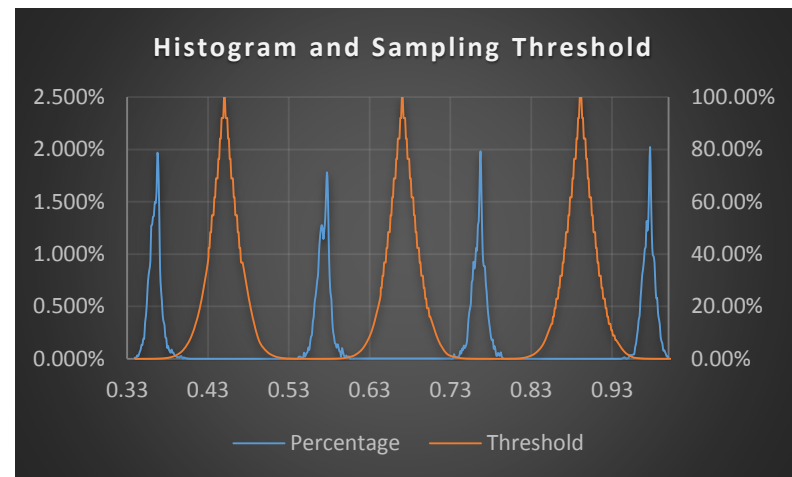
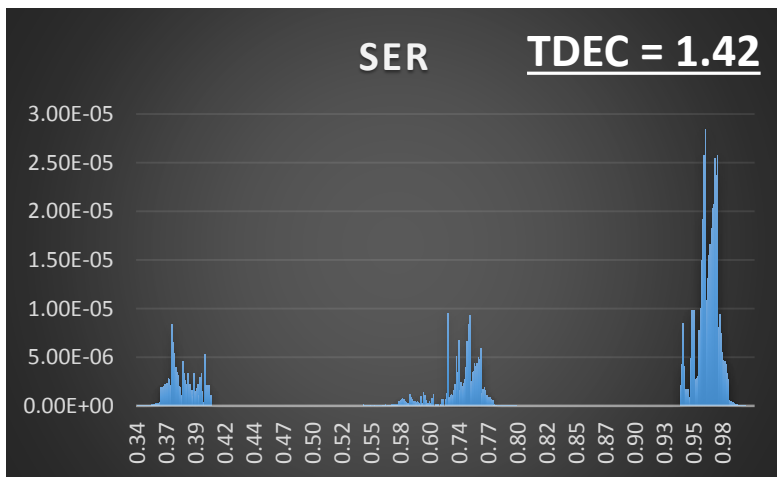
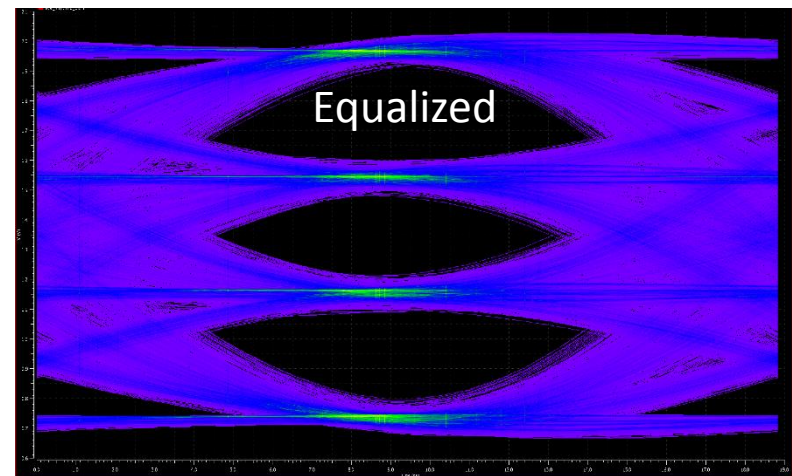
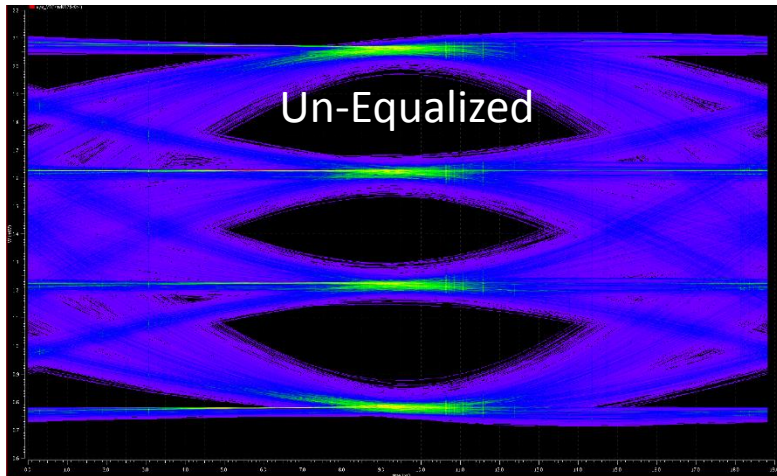
TDECQ Corrected

Observation with 3-Tap T/2 FFE

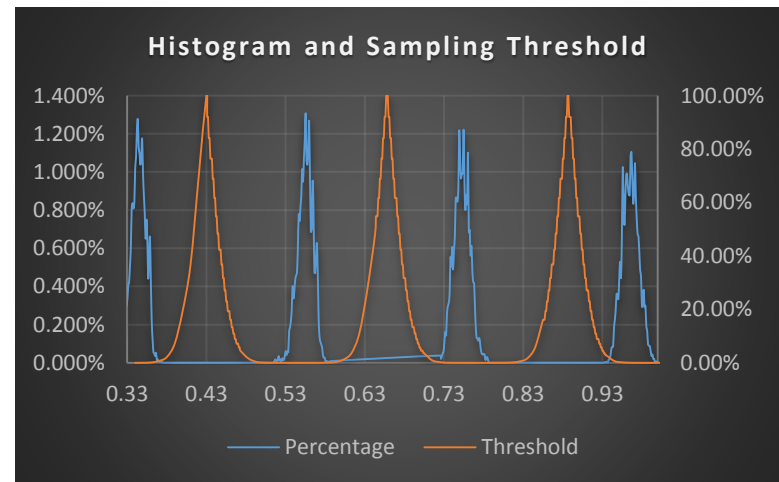
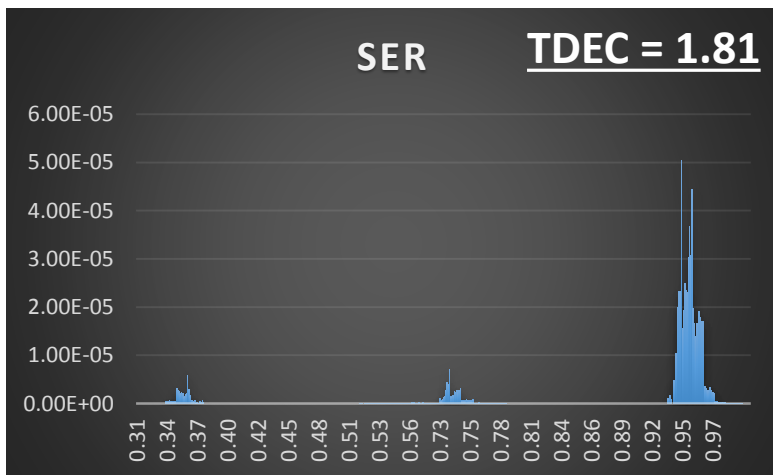
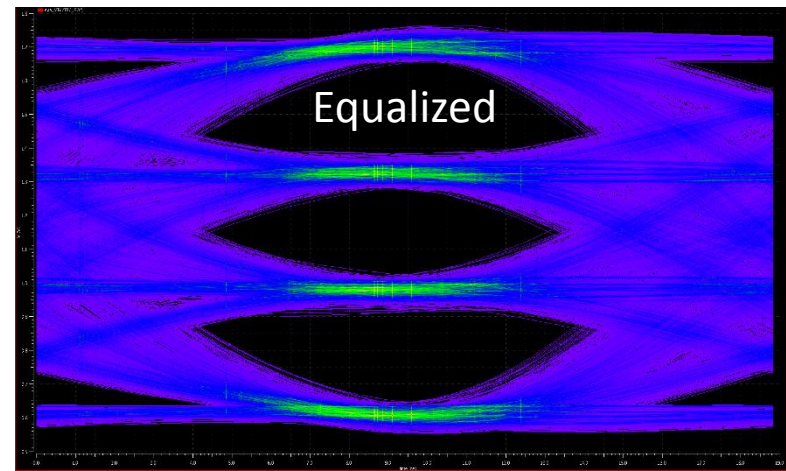
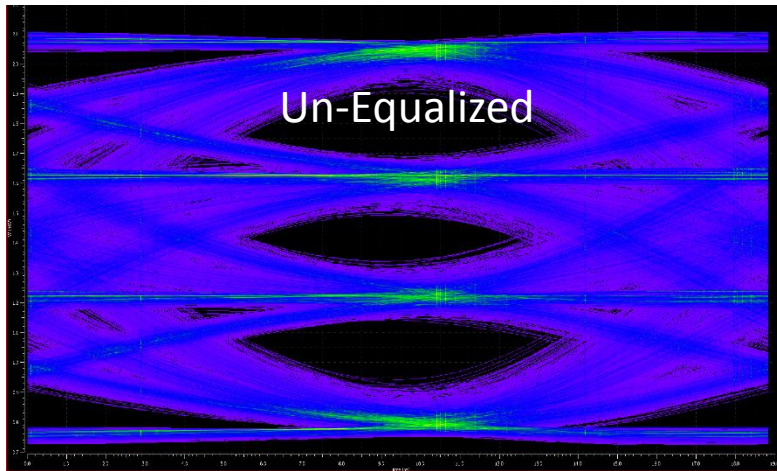
TDECQ: 32 GHz BW: Direct



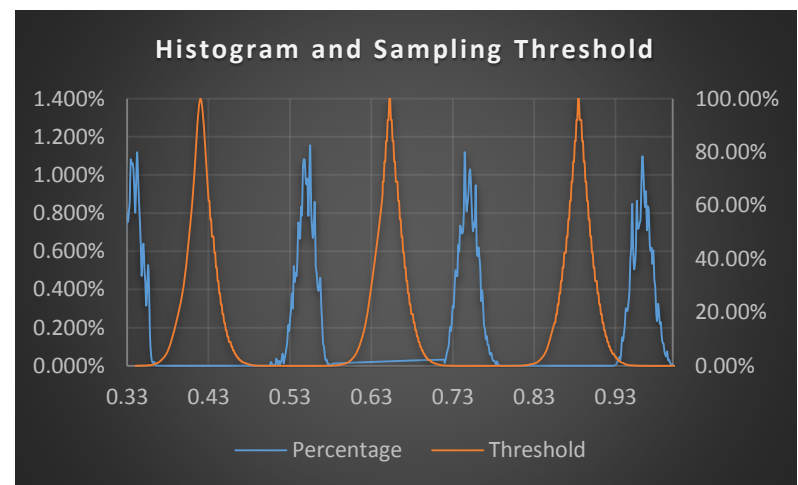
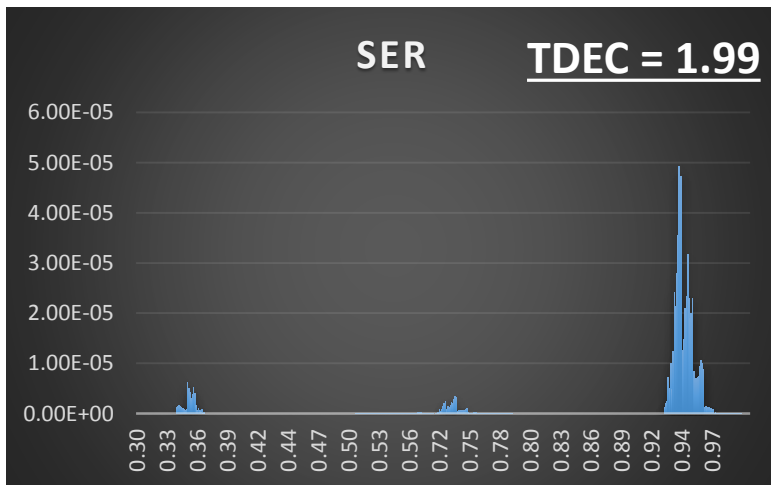
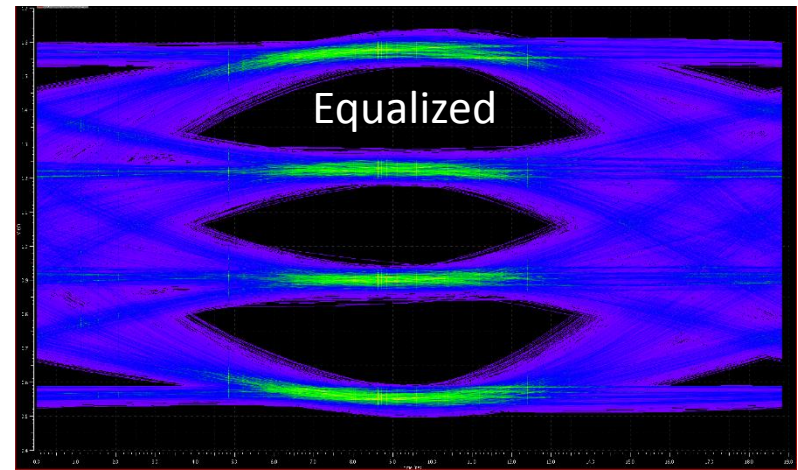
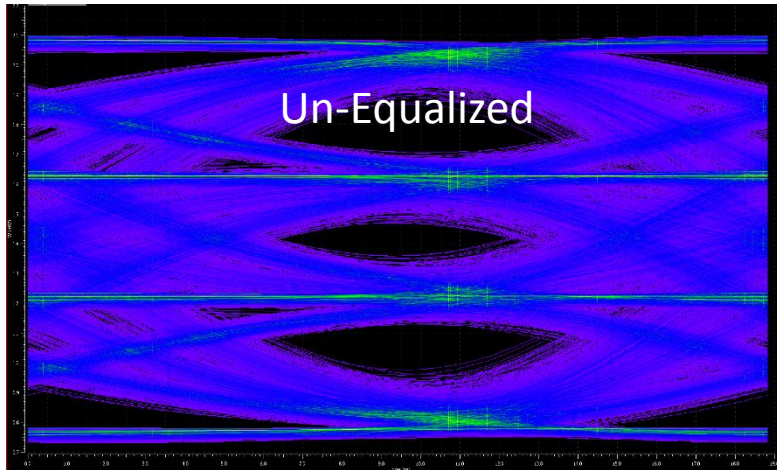
TDECQ: 28 GHz BW: Corrected



TDECQ: 25 GHz BW: Corrected

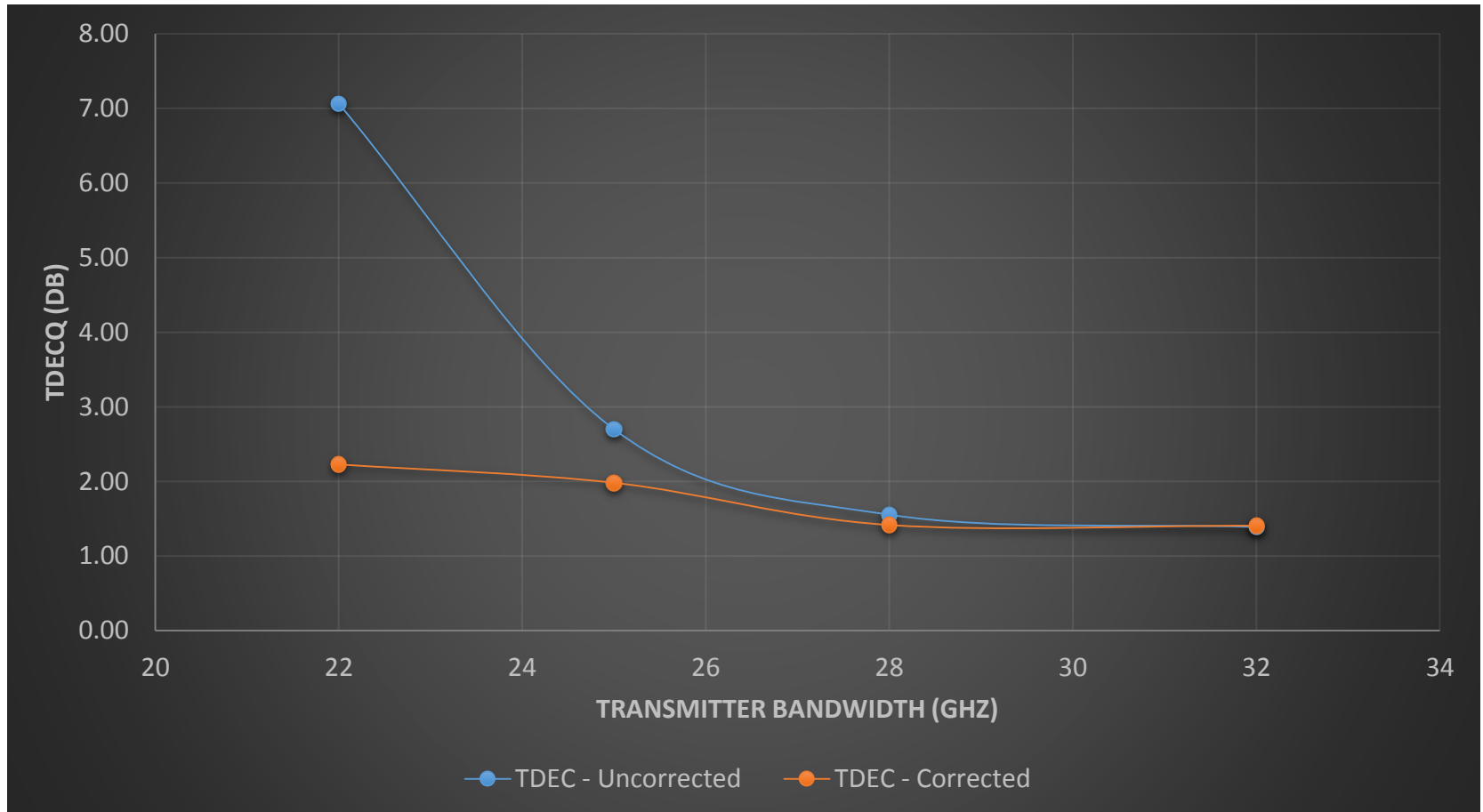


TDECQ: 22 GHz BW: Corrected



Observations

TDECQ Results



Observations

- With appropriate equalization, transmitters with bandwidths over 22 GHz should realize TDECQ values < 2.5 dB
 - Modeled results use 3-Tap T/2 FFE
 - 5-Tap T/2 FFE anticipated as reference EQ
- Bandwidths < 22 GHz may also meet, although not investigated here