Preliminary TxVEC measurements

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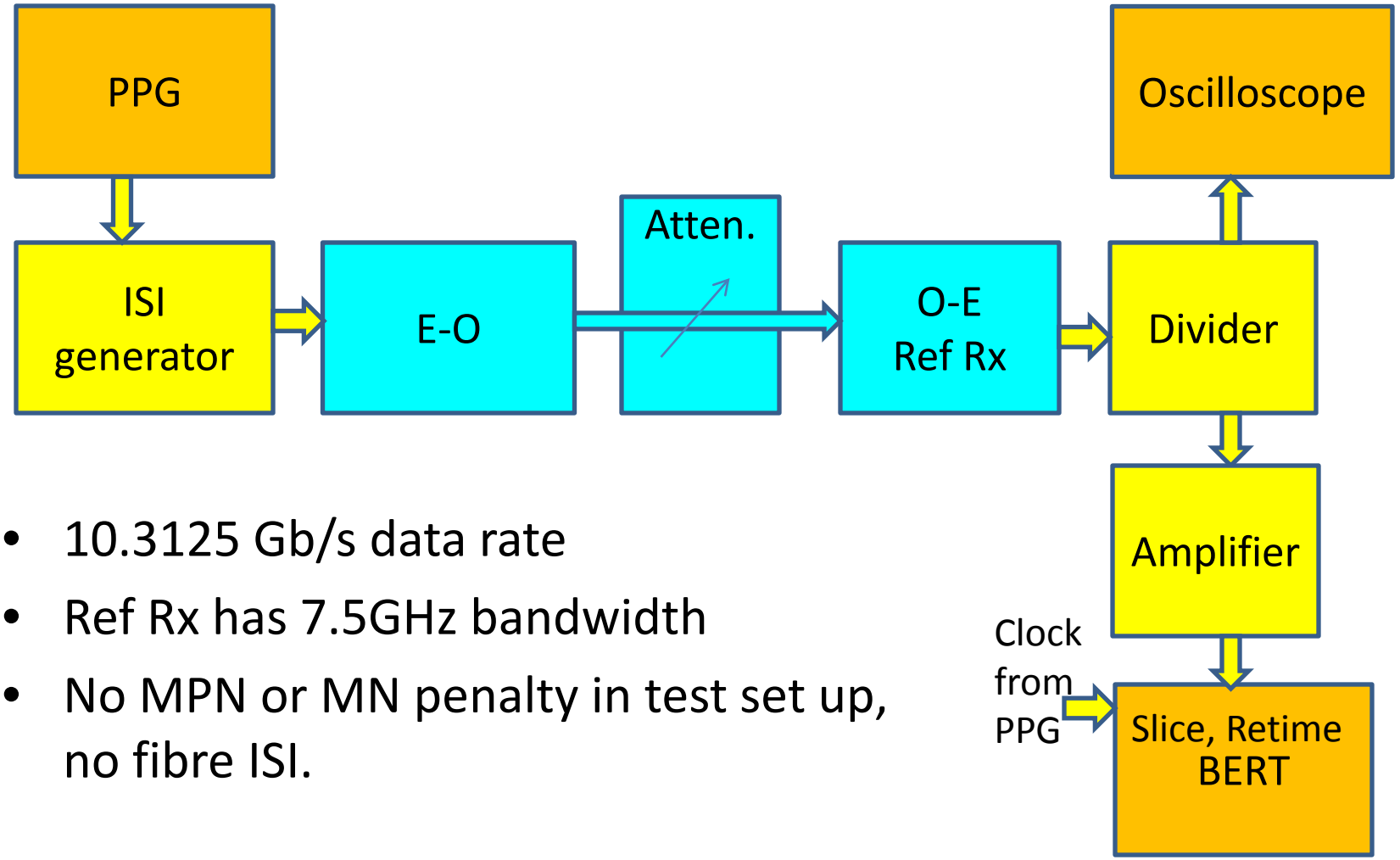
Test set up

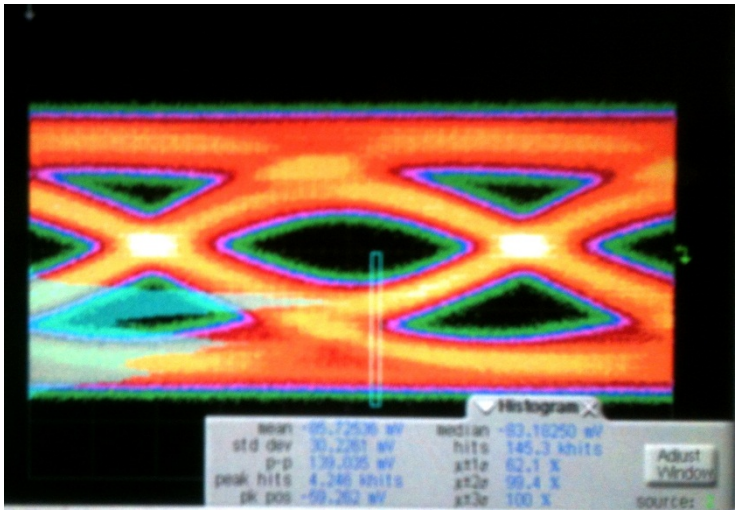


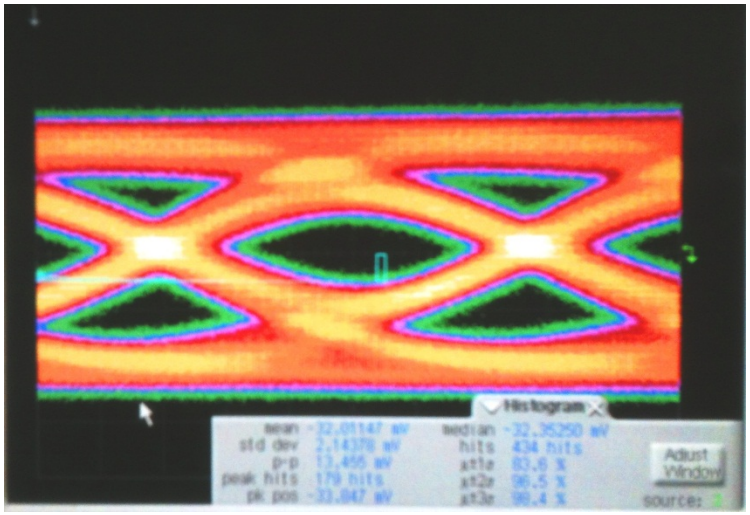
- 10.3125 Gb/s data rate
- Ref Rx has 7.5GHz bandwidth
- No MPN or MN penalty in test set up, no fibre ISI.

Experiment

- Rx sensitivity, OMA calibration and TxVEC
  - Eye-closure was varied by adjusting ISI in electrical drive.
  - For each ISI setting, the optical attenuation was increased from 0 dB, until BER=$5x10^{-5}$, and the attenuation noted.
  - To calibrate the relative OMA into the receiver, the optical attenuator was set to 0 dB attenuation, and the OMA measure on the oscilloscope, using an 8 zeroes, 8 ones square wave.
  - The histograms for TxVEC were measured at 0 dB optical attenuation, using a PRBS31 pattern and the eye mask mode of the oscilloscope.

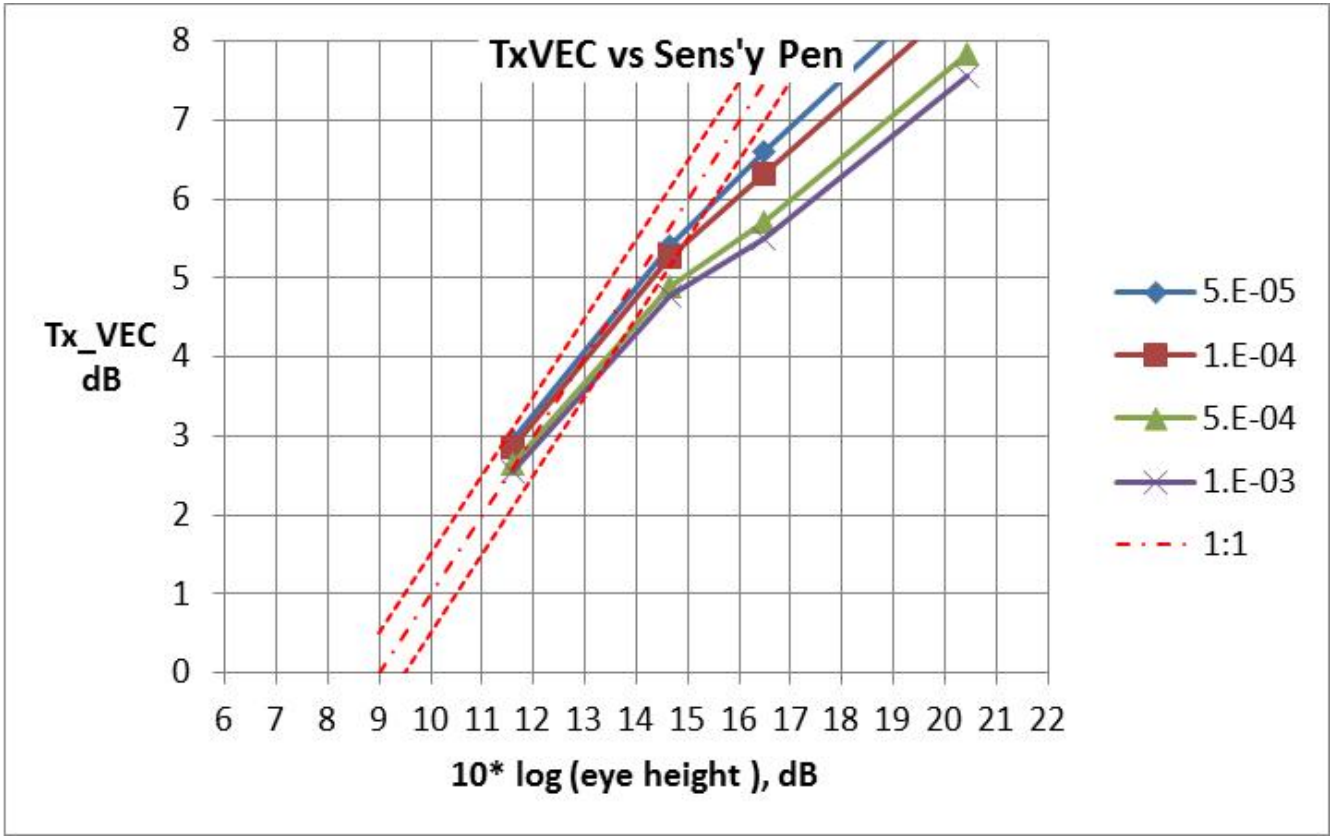
Example measured eyes





- Measuring the ‘all but’ histograms:
  1. Acquire eye
  2. Measure total hits for each quadrant by making histogram window span eye quadrant (~>50k hits total needed)
  3. Adjust histogram height to include 0 hits (ie histogram entirely within centre of eye), record hits as outer edge of histogram is moved further from AC centre of eye; calculate ratio

Plotted TxVEC results vs Rx sensitivity



- For TxVEC calculated with ‘all but 5e-5’ and ‘all but 1e-4’ histograms, the TxVEC tracks Rx sensitivity to within +/-0.5 dB TxVEC values up to 5.5 dB.
- In these experiments, increasing the ‘all but’ fraction produced poorer tracking of Rx penalty.