In Support of OMA and TDECQ min comments: r03-5, r03-6, r03-8, r03-7

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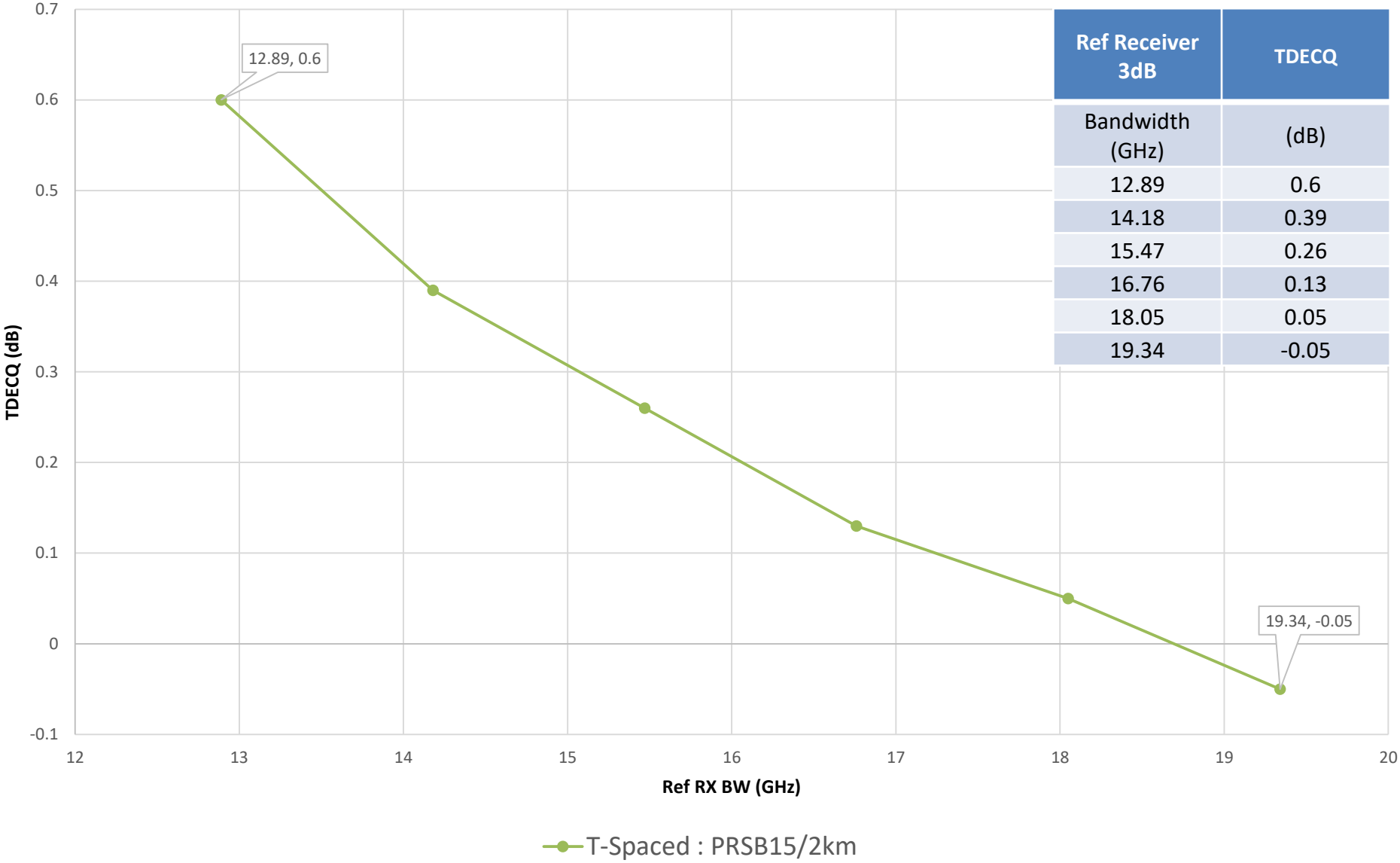
In Support of OMA and TDECQ min comments

- Current effective min TDECQ set at 1.9 dB for 802.3bs SMF specifications
- Transmitters of sufficient bandwidth can achieve lower TDECQ values, however the current spec will not allow them to continue to reduce OMA(min)
- Proposal is to reduce effective min TDECQ value to 0.9 dB to allow for OMA reductions in high bandwidth transmitters

TDECQ Measurements

- Measurements provided for TDECQ vs. Ref BW (0.5x – 0.75x Baud rate)
  - Measurements taken on a 26GBD-PAM4 transmitter
  - Two PRBS15 NRZ data paths multiplexed onto a single fiber
    - 23UI skew between PRBS15 signals
    - Grey coding on optical interface
  - Nominal SMF28 fiber
    - 2km reach
    - Minimal dispersion (1309nm transmitter with 1311nm fiber)
  - Measured using a Keysight N1092A DCA-M
    - SIRC enabled
    - iterative optimization
  - No SSPR pattern available with pattern generator in use
    - PRBS31 won't allow for equalized eye measurements
  - See also welch_01a_0717_smf and welch_01_0817_smf

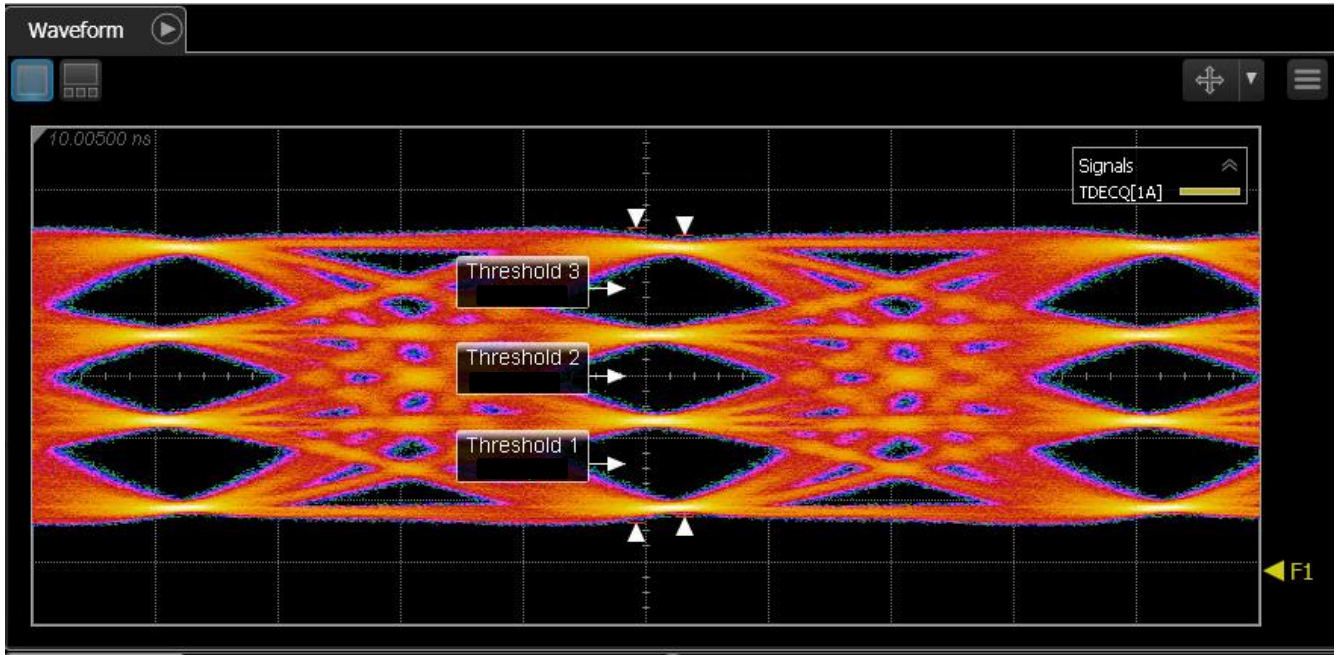
TDECQ Measurements



Ref Receiver 3dB	TDECQ
Bandwidth (GHz)	(dB)
12.89	0.6
14.18	0.39
15.47	0.26
16.76	0.13
18.05	0.05
19.34	-0.05

TDECQ Measurements

Equalized, Ref 3dB B/W: 12.89 GHz



Results

Measurement		Current	Minimum	Maximum	Count
TDECQ	F1	0.61 dB	0.54 dB	0.61 dB	57
Outer ER	F1	7.131 dB	7.128 dB	7.142 dB	57

Tap Values:

0.005067, -0.062306, 1.044927, 0.010887, -0.000367

Conclusions

- TDECQ values ≤ 0.9 dB possible with high bandwidth transmitters
  - Above measurements show 0.6 dB with current TDECQ methodology
  - Worst case dispersion would add additional penalty, expected less than 0.3 dB