Comparison of TDECQ vs Reference Bandwidth

Marlin Viss
Greg LeCheminant

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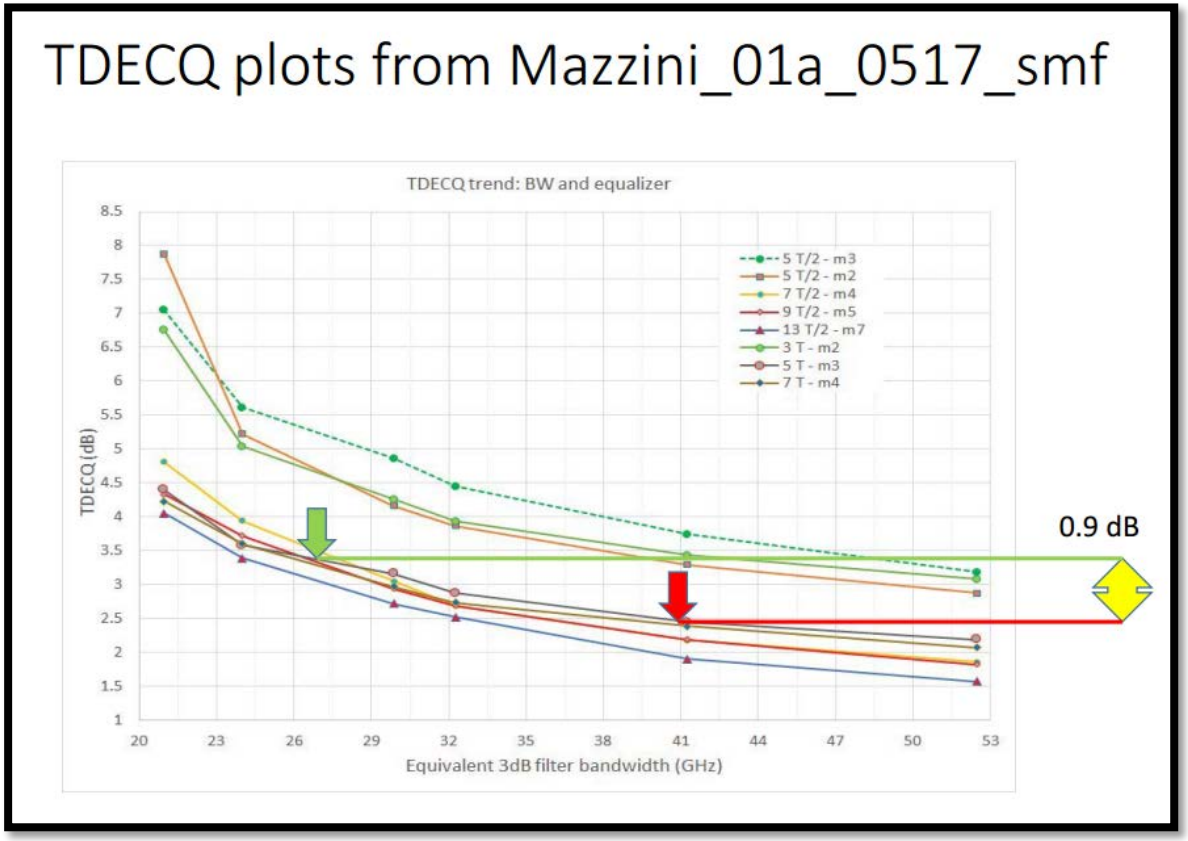
KEYSIGHT TECHNOLOGIES

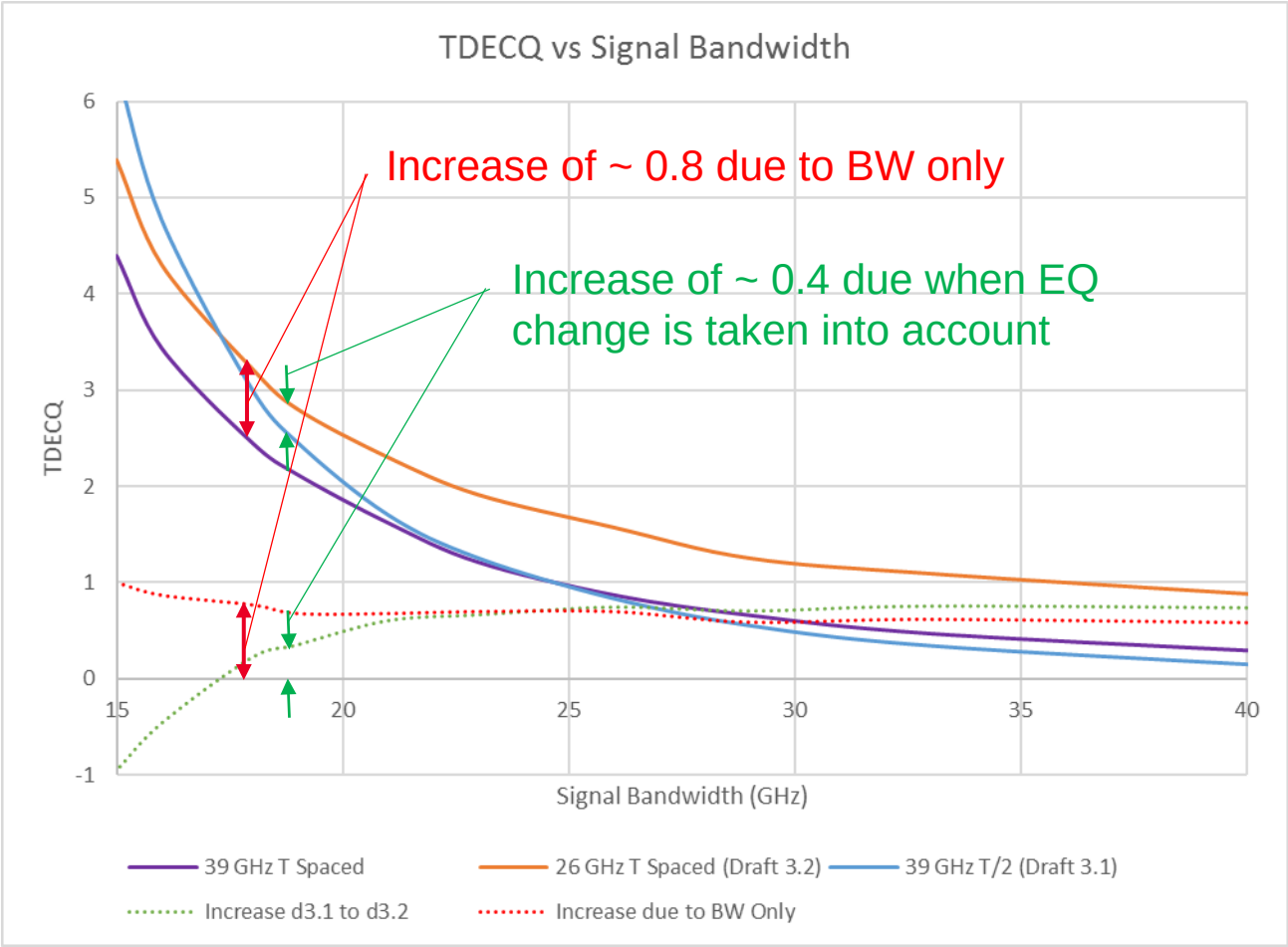
Previously Proposed Increase to TDECQ

- Data at right taken from mazzini_01a_0517_smf
- Annotations and proposed increase from king_01a_0617_smf
- Value of 0.9 only takes into account the increase due to the bandwidth reduction from 39 GHz to 26 GHz
- We attempted to validate this number with additional measurements and take into account the change from T/2 to T spaced equalization



Expected TDECQ increase from simulation

- T/2 is superior for a Tx that requires little equalization
- The longer response of a T spaced equalizer is superior if the Tx requires much equalization
- If you take the equalizer change and the scope BW changes into account, the expected increase from draft 3.1 to draft 3.2 is not as large



Confirming simulations with measurements

- Used a Keysight M8196A Arbitrary Waveform Generator driving a 81490A Reference transmitter to generate PAM4 at 26.56 GBd
- This setup allows generating various Tx waveform shapes
- Tuned a Keysight N1092A Scope to 19.3 GHz and 13.3 GHz bandwidth
- Measured TDECQ according to draft 3.1 and draft 3.2 for various waveform shapes
- Measurements are consistent with simulations and support an increase of 0.4 to 0.5 dB.