



TWDP Summary

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Options for TWDP Going Forward

1. Do nothing
 - Leave TWDP alone. It can be used to predict link closure, though in some cases it will be conservative, and in other cases it can pass signals difficult to equalize. Leave it to the receiver vendor to ensure that their receiver performs within x dB of the reference equalizer across wide spectrum of transmitted waveforms.
2. Remove scaling of OMA.
 - Use SNR at the reference equalizer slicer as the pass/fail criterion. This is, after all, our primary indicator of link closure. (Normalization obscures this basic result.) Allows distortion/transmit power tradeoff.
3. Add a separate distortion metric
 - Something like gamma introduced in Swenson_05_05.pdf. Separate SNR measurement from distortion measurement.
4. Move to reasonable finite length equalizer as reference equalizer
 - This mitigates problems with infinite length equalizer. It also helps to bound implementation penalty, since EDC vendors have a realistic performance target.
 - Still need to settle on an appropriate length -- consensus may be elusive.
 - Introduces timing sensitivity, so code will need to optimize over sampling phase
5. Remove TWDP altogether
 - Must show that an eye-mask-compliant transmitter can close the link with a TP-3 compliant receiver.
 - Not true with current eye mask
 - Work needs to be done to find the right eye mask
 - Likely to overconstrain the transmitted waveform

Note: These options are not all mutually exclusive. The right approach may be some combination of the above.



Consensus from Last Night

- Normalization needs a careful look
- Focus on finite length DFE as reference receiver



Recommended Approach

- Use DFE slicer SNR as pass/fail criterion
 - Quantitatively and directly relates to link closure & BER
 - Encourages tradeoffs, properly accounts for power and distortion
 - Minor (and simplifying) change from current TWDP
 - Remove normalization of OMA
 - Eliminates need to measure/enter OMA (and baseline), avoids related errors
- Use equalizer of reasonable finite length as reference receiver
 - Candidate: 14 feedforward T/2 taps, 6 feedback taps -- longest of Ewen finite equalizers
 - Set minimum required SNR for TP-2 compliance of y dB
 - Set threshold equal to SNR of 14,6 DFE with TP-3 test signal
 - Allows implementation penalty of $6.5-y$ dB for compliant receiver
 - Mitigates need for a separate distortion metric
 - Implementation penalty between a given receiver design and a 14,6 equalizer can be reasonably controlled

Planning...

- Agree on direction
- Modify and publish code to implement alternative metrics
- Committee members investigate code performance against measured waveforms
 - Are the results as expected?
 - Do the results support link closure with compliant receivers?
 - If results are questionable, recommend changes
- Report results, modify code if necessary