EVM definitions and updates

Mike Sluyski, - Cisco

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Introduction

- The 802.3cw D2.1 EVM definitions and algorithms are obsolete, and in one instance incorrect.

- These definitions and algorithms originated from the OIF 400ZR-01.0

- These definitions were updated in the OIF 400ZR-02.0 (1st maintenance release)

- Additional changes to the test methodology may/may not be included in OIF 400ZR-03.0 (2nd maintenance release).

- IEEE 802.3cw should petition OIF to copy/update the definitions and test methodology per IEEE requirements or,

- IEEE 802.3cw should include pointer to the relevant clauses in OIF 400ZR-02.0

EVM Definition changes:

802.3cw D2p1 Clause 156.10.9.10 2nd paragraph

Change **EVMmax** definition from:

"EVMmax is the RMS addition of the EVM values of the sampled symbols for each polarization divided by the maximum amplitude of the theoretical constellation."

To:

"The Error Vector Magnitude (EVMmax) is measured using a reference receiver as defined in Section 156.10.1.2.7. EVMmax shall use the peak reference constellation point magnitudes for normalization."

EVM Definition changes

Add: **EVMrms**

EVMrms is similar to EVMmax, except that the RMS value of the reference constellation point magnitudes are use for normalization instead of the maximum constellation point magnitudes.

EVM Measurement Cont. (recommended changes)

Recommend IEEE 802.3cw request from OIF permission to copy/re-publish EVM measurement and methodology from OIF 400ZR-02.0 Appendix C: Error Vector Magnitude.

Recommend the following changes to OIF 400ZR Clause 20.3.2 be included in 802.3cw:

Change processing step: Equalization training to include noise loading.

Change processing step: "Apply a ~~7-tap~~ 15-tap T-spaced FIR filter with the tap coefficients optimized for BER. The sum of all filter-taps is equal to one, and the largest coefficient can be for any of the ~~7-taps~~ 15-taps.

Change processing step: EVM evaluation be done noise ~~loaded~~ unloaded.

EVM Measurement Cont.

For further discussion:

400ZR EVM Test Vectors are available to OIF members only. The OIF 400ZR-02.0 IA includes a hyperlink to the EVM test vector file (requires membership login).

Is this something that is needed?

Thanks