LINK SEGMENT ALIEN CROSSTALK MEASUREMENT RESULTS

HARSH PATEL 03/23/2021



- To consider crosstalk parameters for the IEEE 802.3CY standard to limit the communication between the pairs.
- It is assumed in the presentation as a starting point that crosstalk spec of IEEE802.3CY will be an extension of the IEEE802.3CH to 10GHz.



CROSSTALK LIMIT ASSUMPTION

• IEEE802.3CH

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PSANEXT: Min(75, 80-20log₁₀f/100)dB, frequency: 1MHz to 4000MHz
PSAACRF: Min(75, 86-20log₁₀f/100)dB, frequency: 1MHz to 4000MHz



• IEEE802.3CY (extended from IEEE802.3CH)

 PSANEXT: Min(75, 80-20log₁₀f/100)dB, frequency: 1MHz to 10000MHz
 PSAACRF: Min(75, 86-20log₁₀f/100)dB, frequency: 1MHz to 10000MHz



TESTED SAMPLE CONFIGURATION

6m 1x2 Connector with 1 Inline



9m 1x2 Connector with 2 Inlines





PCB DETAILS

• PCB: 4 Layers

• Trace:

- Single-ended stripline in 3rd Layer
- Width (W): 10.5mil, GAP (G): 63 mil
- Length: 984.25mil
- Space between diff. pairs: 60mil





VNA TEST SETUP

- Vector Network Analyzer: Agilent N5230C 10MHz 20GHz PNA-L
- SI Testing Setup:
 - Start Freq: 10MHz
 - Stop Freq: 20GHz
 - IFBW: 100Hz
 - Points: 3999
 - Scale: Linear



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CABLE INSERTION LOSS NOTE

- The 26AWG STP cable is rated up to 8GHz and the sample shown in the picture is 6m in length with one inline.
- There is resonance between 9GHz and 10GHz region, which will be resolved in future revisions of the cable.





ANEXT AND AACRF SETUP



Note: When AACRF_S1 is measured, AACRF_S2 is terminated with 50 ohm load. When AACRF_S2 is measured, AACRF_S1 is terminated with 50 ohm load.

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ANEXT AND AACRF: 6M WITH 1 INLINE





ANEXT AND AACRF: 9M WITH 2 INLINES





SUMMARY

- Crosstalk measurement results of 6m 1x2 Connector with 1 Inline & 9m 1x2 Connector with 2 Inlines were presented.
- 802.3CY working group can consider extending limits of 802.3ch for PSANEXT & PSAACRF.
 - This will have to be done with careful consideration of things like PCB trace routing at these speeds amongst other things such as no suck-out IL performance at higher frequency for the raw cable.



