

# Category 6

# Alien Crosstalk Measurements

IEEE Next-Generation Enterprise  
Access BASE-T Study Group

Pete Cibula, Intel Corporation

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# Purpose

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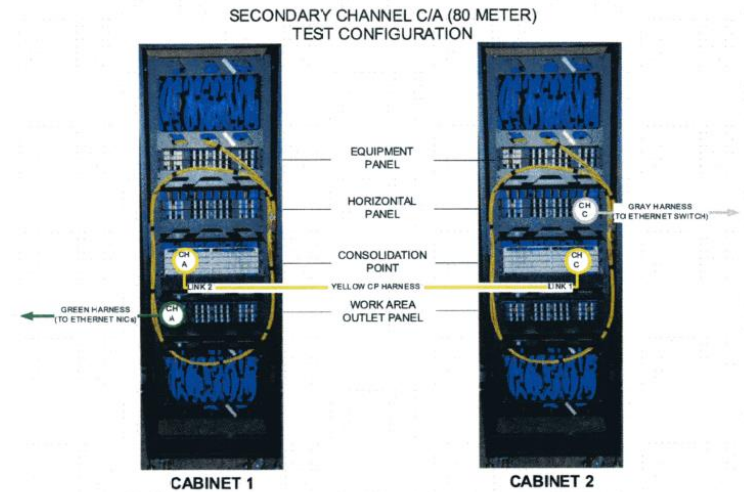
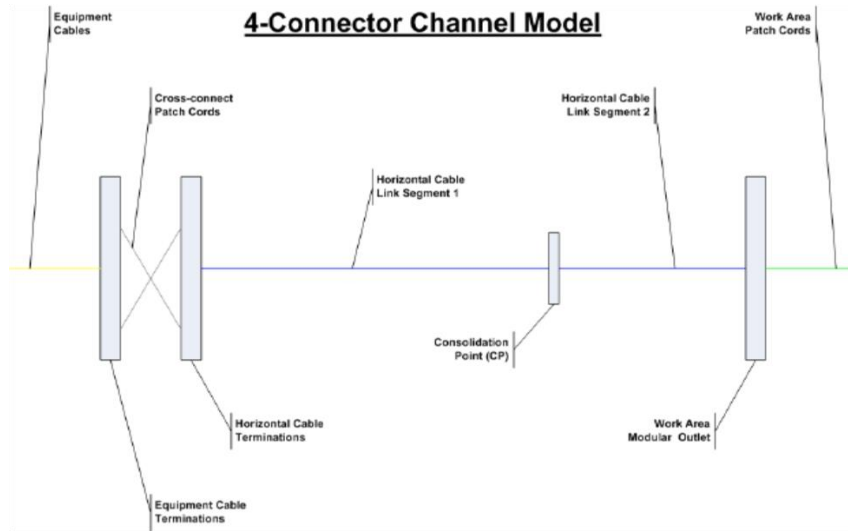
- Measure alien crosstalk of Cat6 cabling in what are believed to be “worst-case” 6-around-1, 4-connector channel configurations
- Characterize Cat6 alien crosstalk to support NGEABT link segment definition and specifications

# Channels Used in this Investigation

- Eight channels from 30m to 135m are evaluated
  - 30m, 55m, 60m, 80m, 90m, 100m, 110m, 135m
- Four-connector channels are constructed using off-the-shelf patch cords, modular jacks and cabling (“vintage” c.2006 )
- Seven channels are arranged in a six-around-one configuration with ~100% of the patch cord and cable length bundled
- Testing performed to TIA Cat6a channel (10GBASE-T) limits

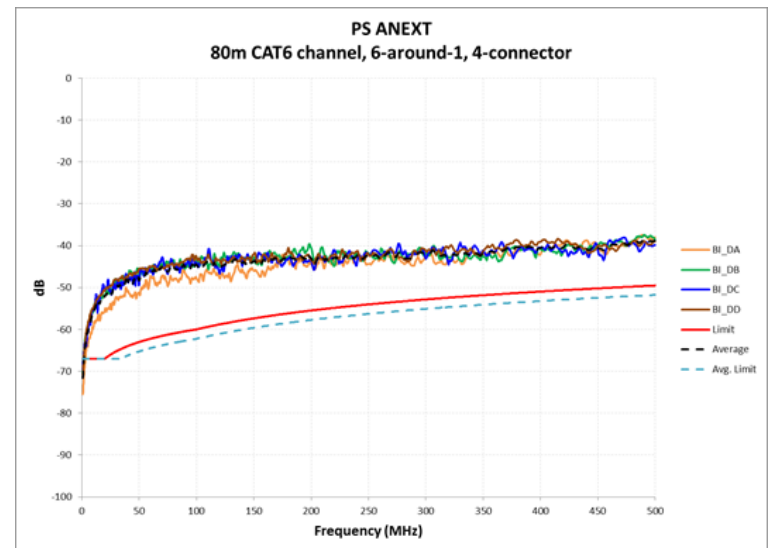
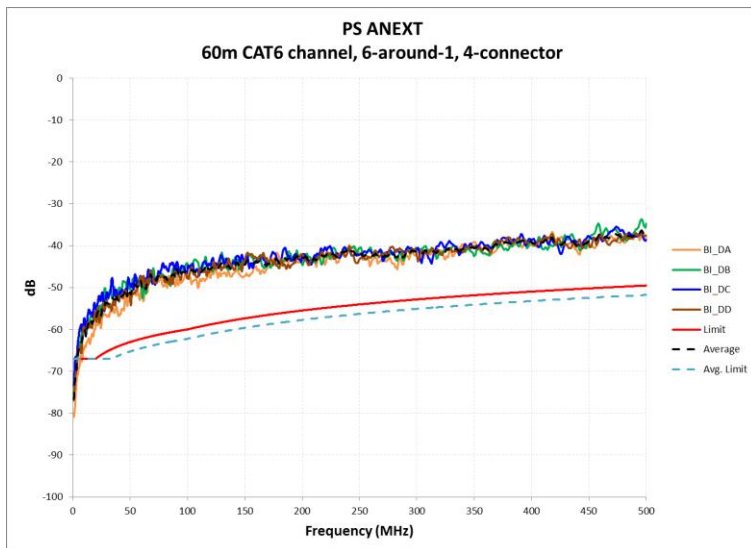
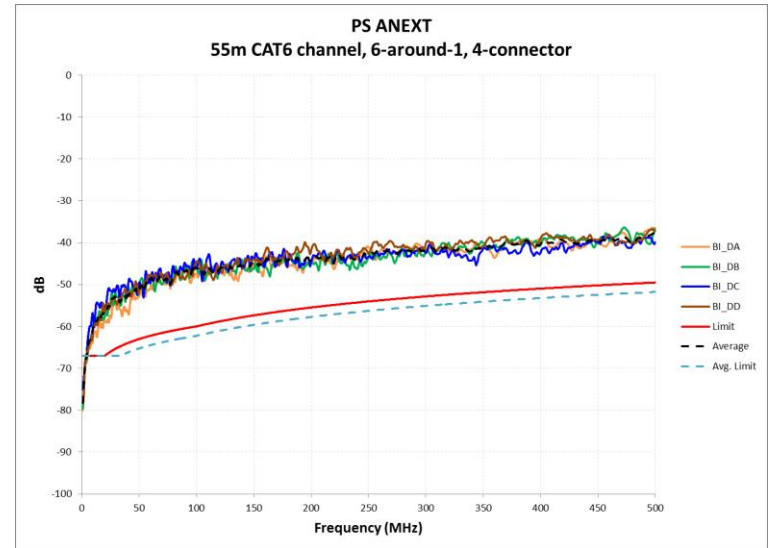
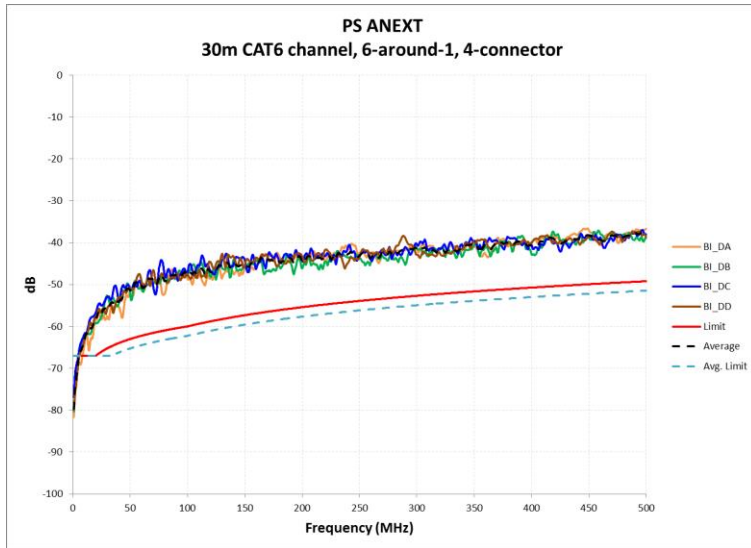


# Channel Configurations

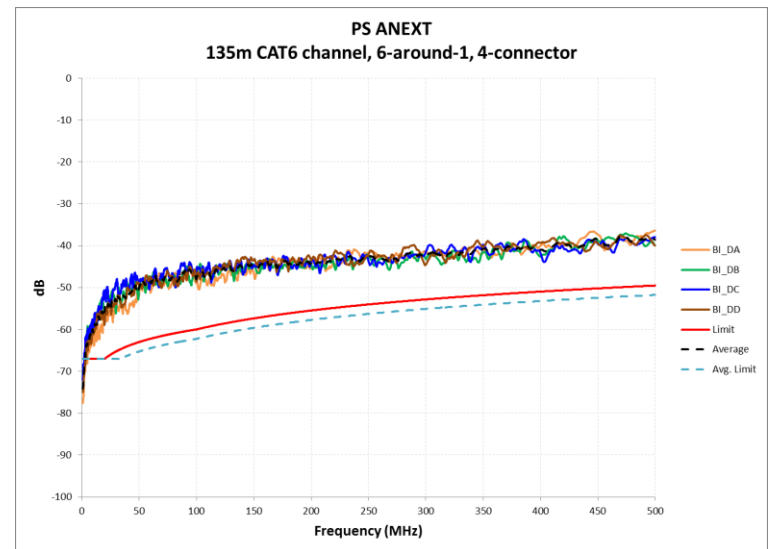
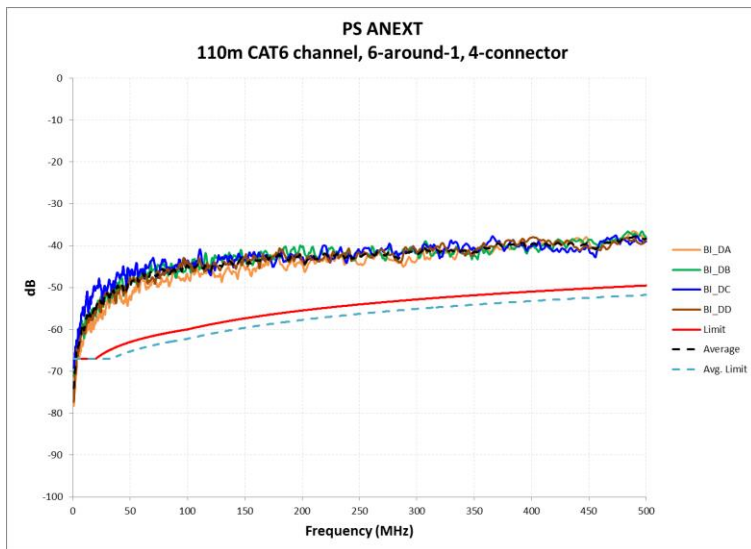
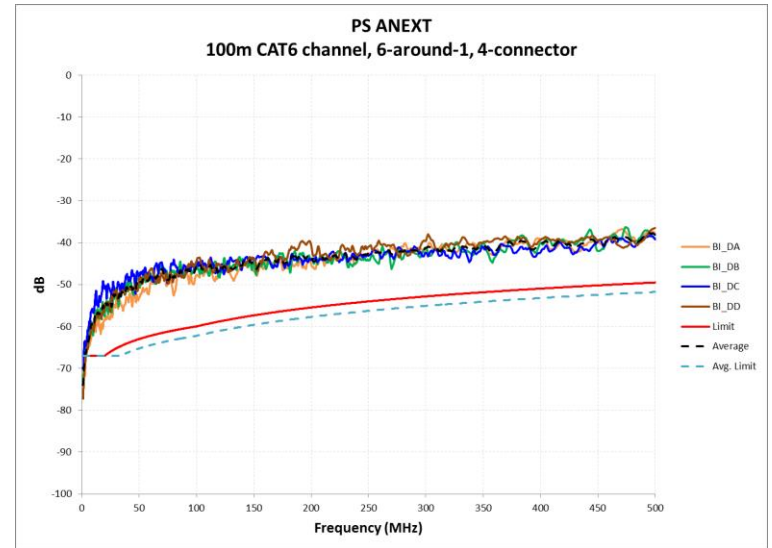
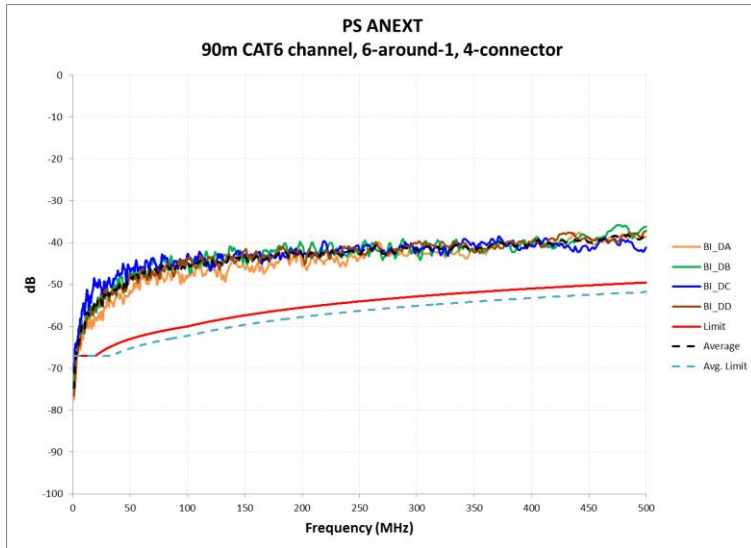


Total Length (m)	Equipment Cable	Cross-Connect Patch Cord	Link Segment #1	Consolidation Point Patch Cord	Link Segment #2	Work Area Patch Cable
30	4	3	15	0	5	3
55	4	3	30	0	15	3
60	0	3	15	4	35	3
80	0	3	65	4	5	3
90	0	3	65	4	15	3
100	4	3	65	0	25	3
110	0	3	65	4	35	3
115	0	3	90	4	15	3
135	4	3	90	0	35	3

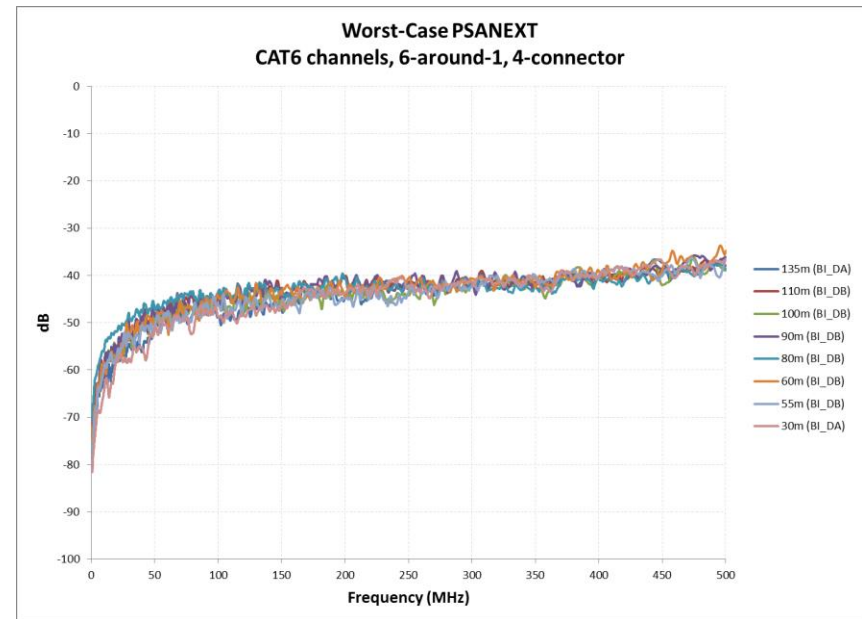
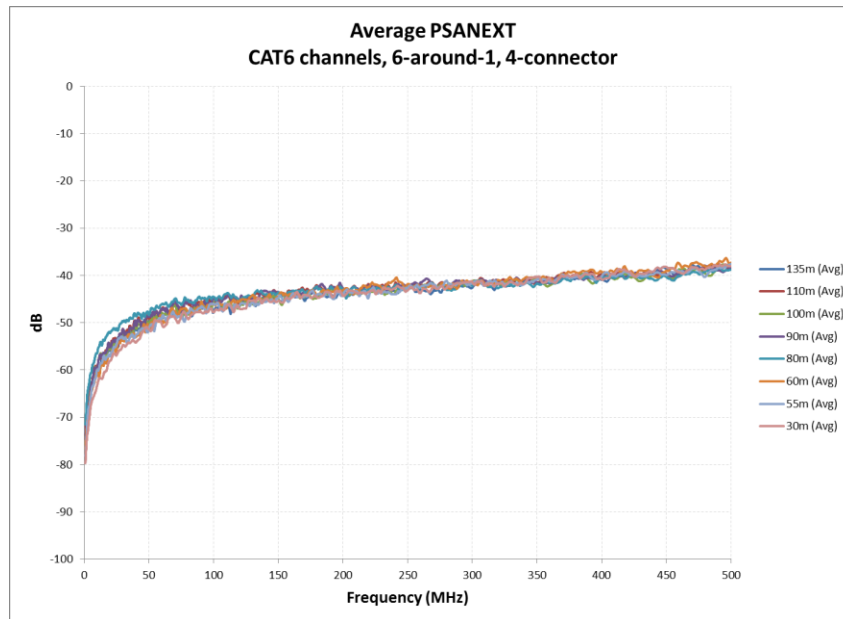
# PS ANEXT, 30m-80m



# PS ANEXT, 90m-135m

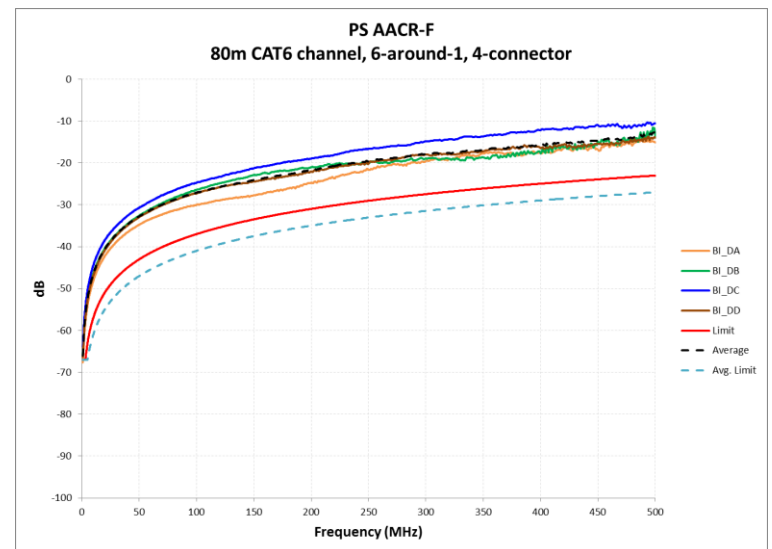
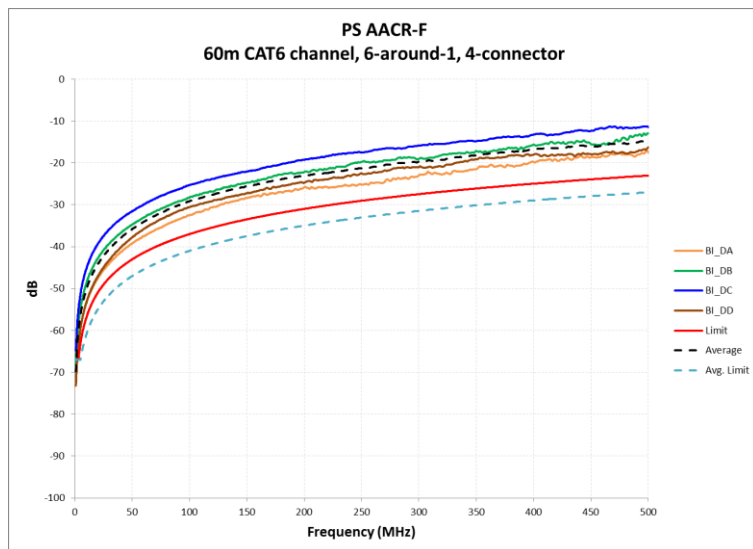
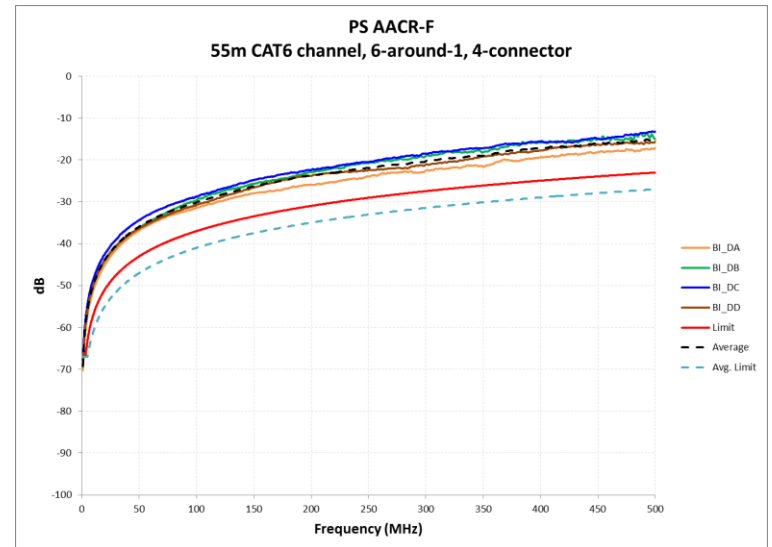
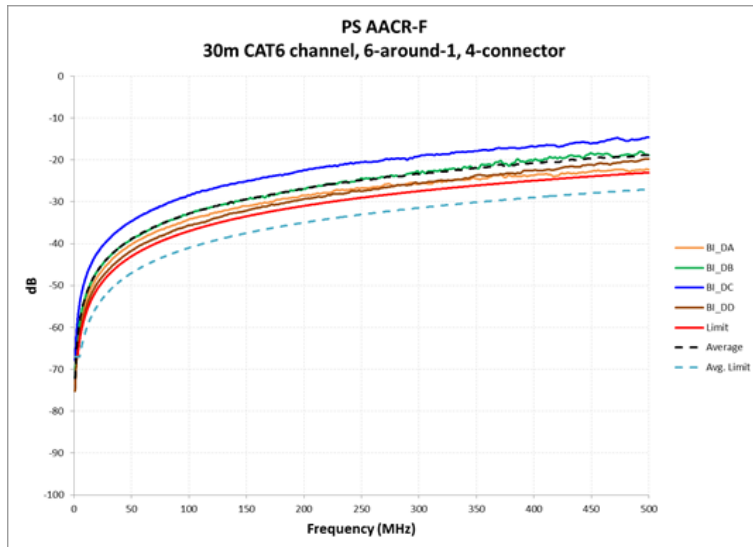


# Average & Worst-Case PS ANEXT



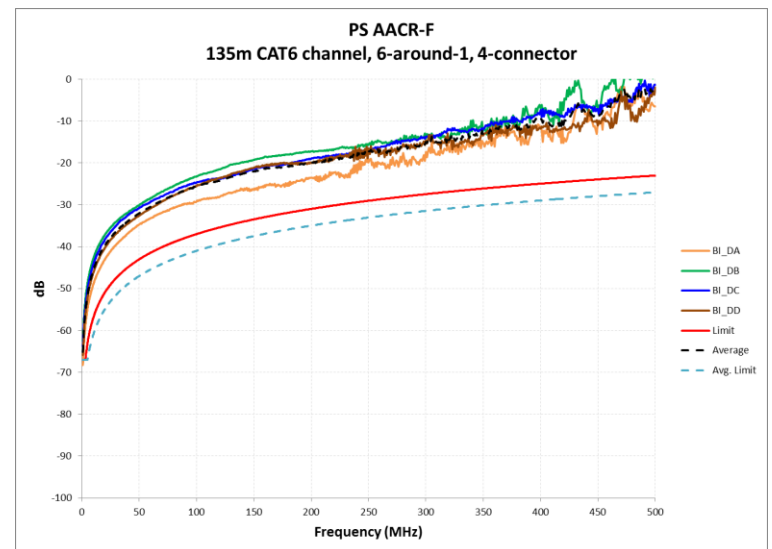
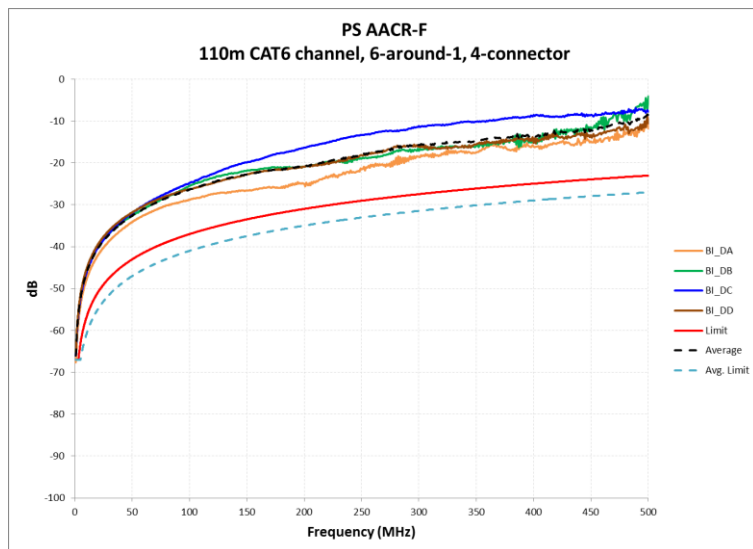
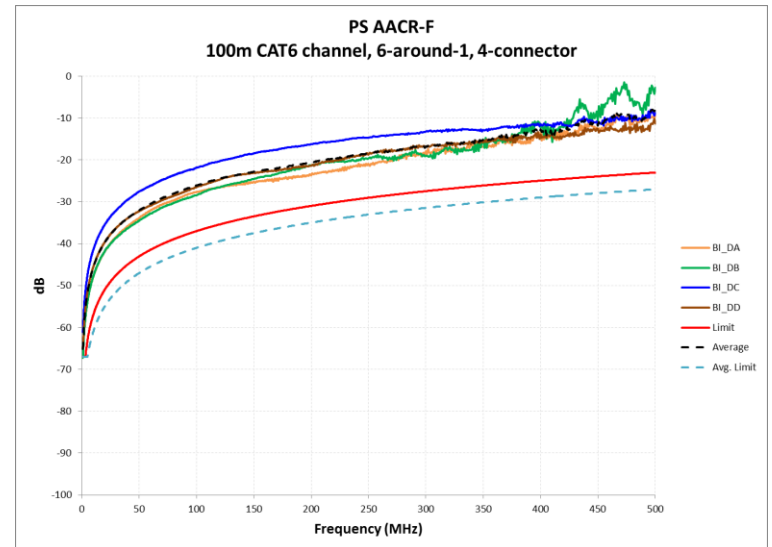
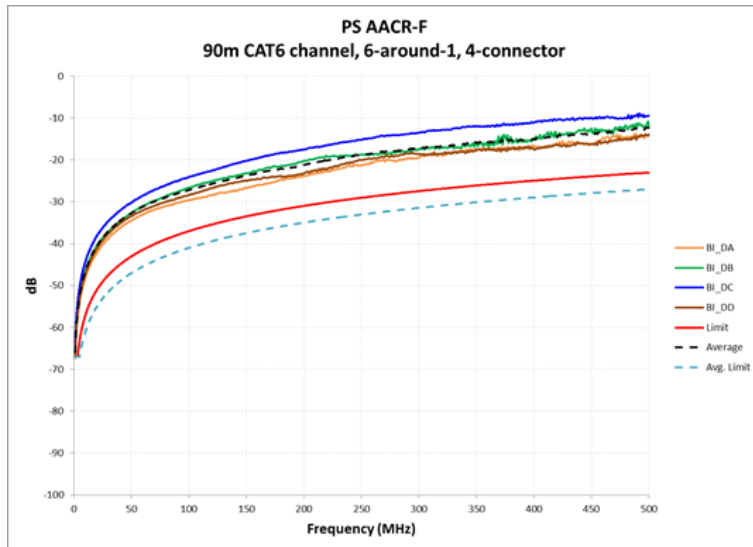
- Plots show average and worst-case pair (maximum measured PS ANEXT) for all channels
- Measured PS ANEXT is relatively consistent for ~100% bundling with some slight variation with length between ~1MHz and ~300MHz

# PS AACR-F 30m-80m

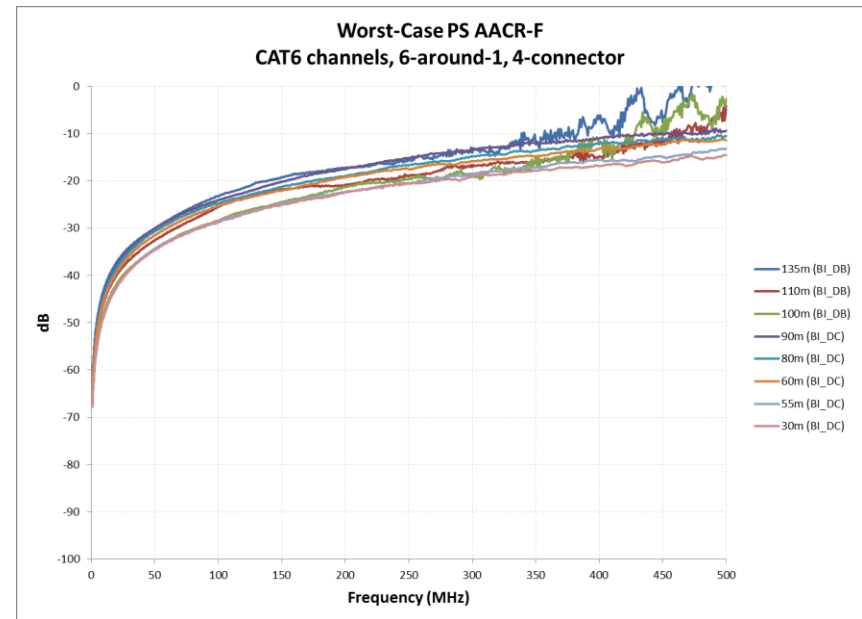
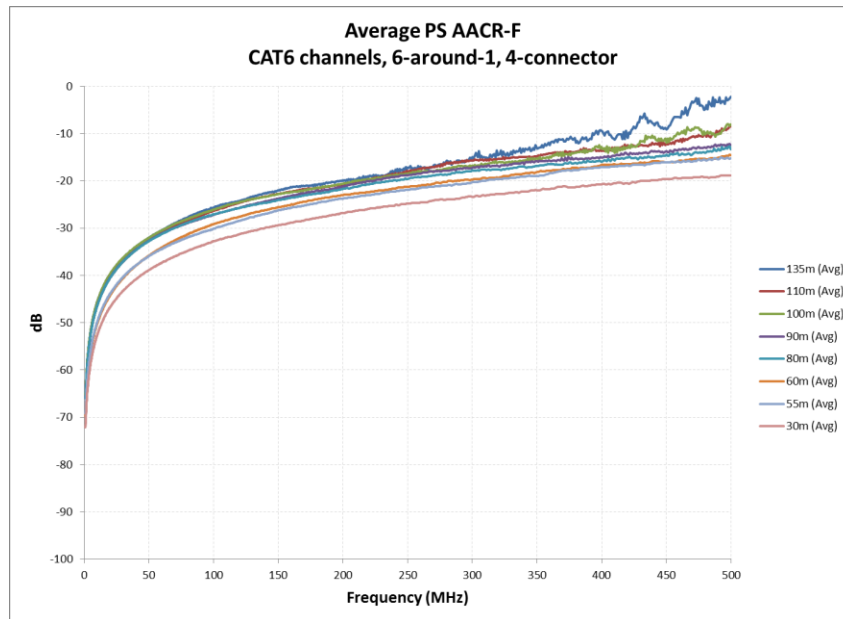




# PS AACR-F 90m-135m



# Average & Worst-Case PS AACR-F



- Plots show average and worst-case pair (maximum measured PS AACR-F) for all channels
- Between ~7dB and ~10dB difference between 30m and 135m channels up to ~300MHz; more variability between 300MHz and 500MHz

# Summary

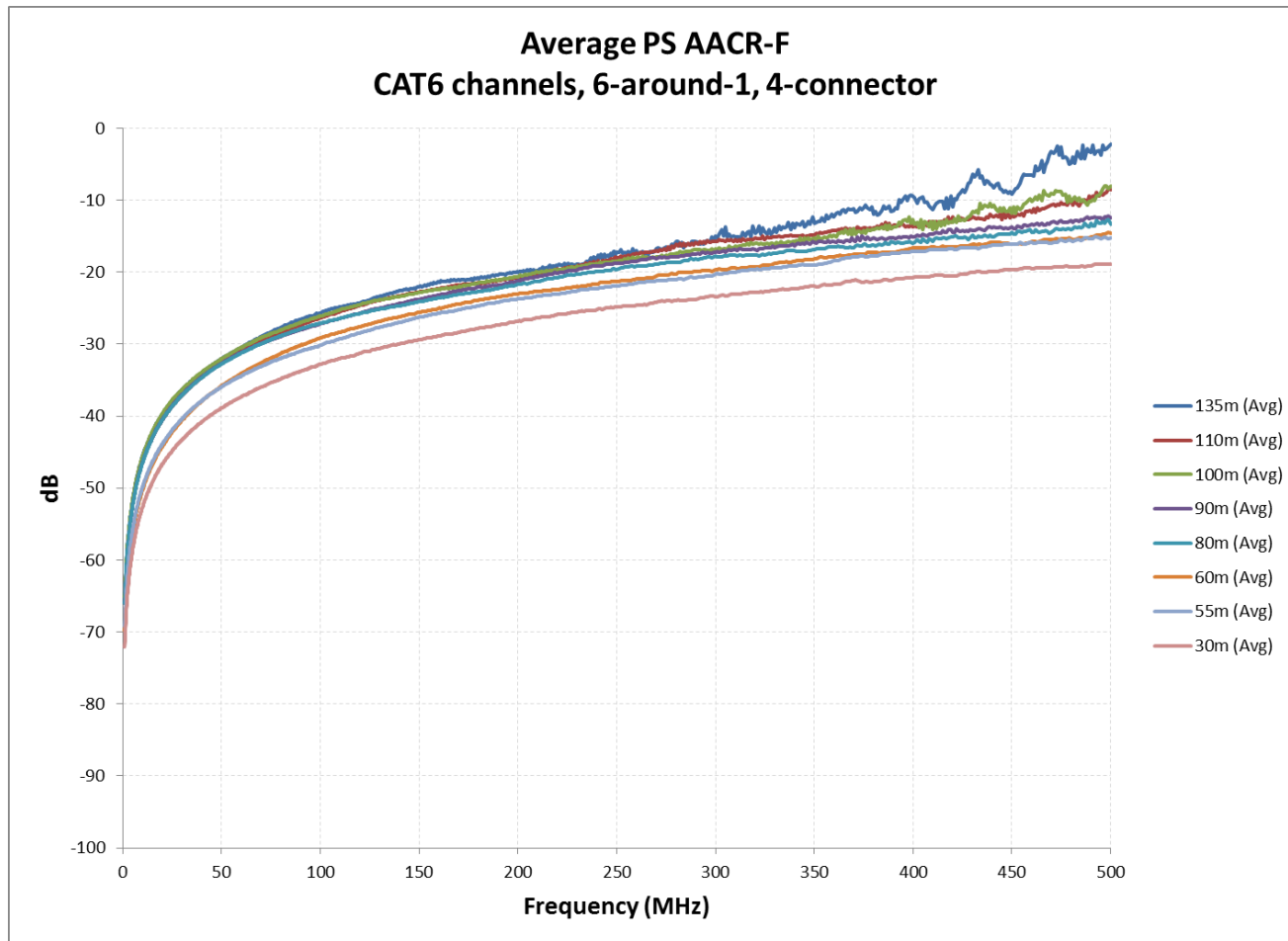
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- Channel measurements are presented for Cat6 cords, cabling and interconnects configured in a “worst-case” 6-around-1 configuration (~100% bundling)
  - Measured PS ANEXT is relatively length-independent for 100% bundling, suggesting that an upper bound for this parameter may be established
  - Measured PS AACR-F varies with channel length for 100% bundling, with longer channels demonstrating ~10dB more crosstalk as compared to shorter channels
- These characteristics should be considered when defining NGEABT link segment specifications

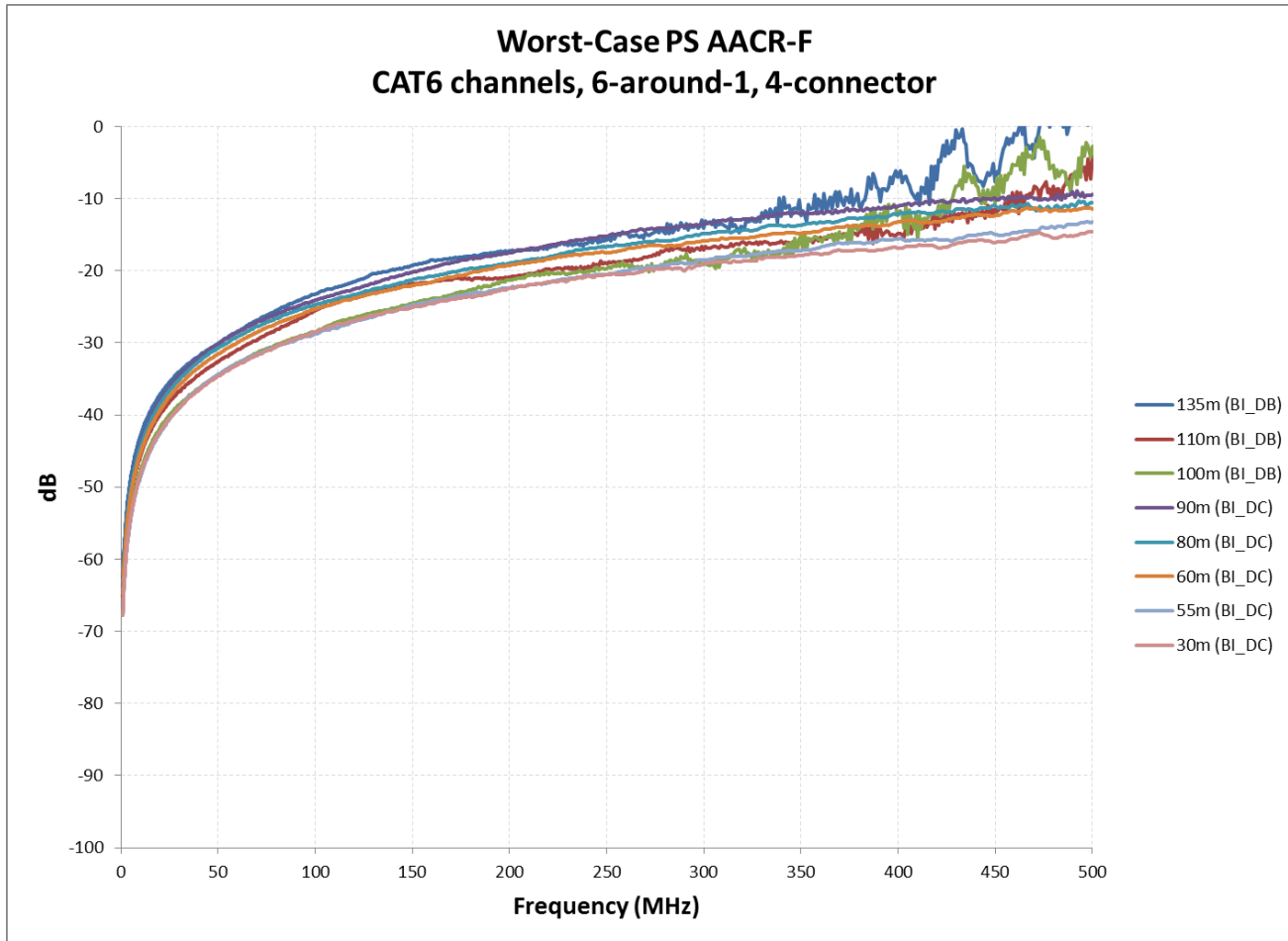
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# Thank You!

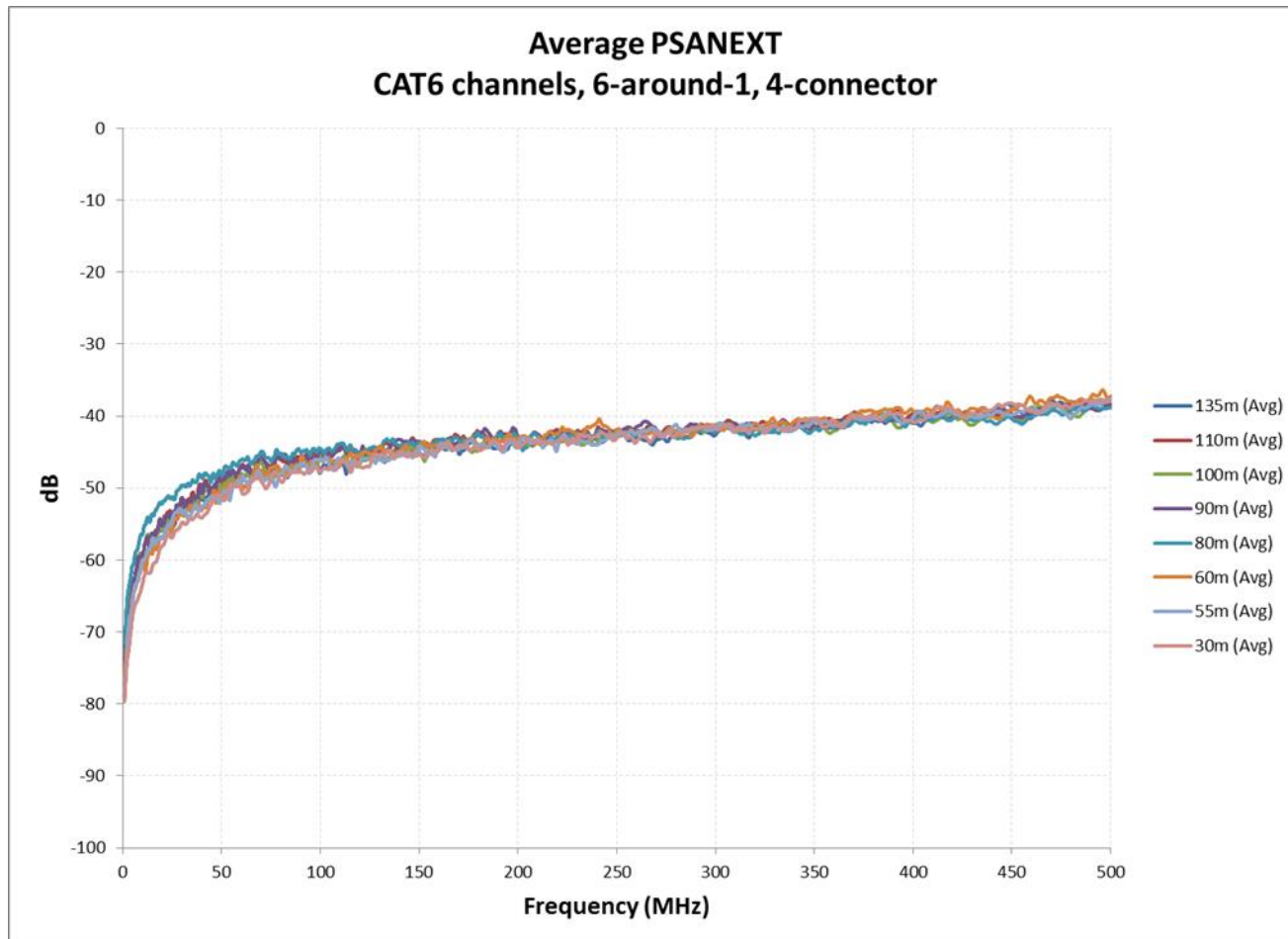
# Average PS AACR-F, all channels



# Worst-Case PS AACR-F, all channels



# Average PS ANEXT, all channels



# Worst-Case PS ANEXT, all channels

