

# Host Backplane Channel Update

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IEEE 802.3ck 100 Gb/s, 200 Gb/s and 400 Gb/s  
Electrical Interfaces Task Force

# Summary

- This contribution provides an update to our previously contributed cabled backplane channels:
  - 3FEXT, 4FEXT aggressors
  - Loss ranging from 16dB to 28dB
  - 0.575m & 0.995m cable length
  - 85Ω-100Ω PCB
- Corrects an error in our prior channel contribution.
  - Channels with 0.995m cable had 4dB less insertion loss than we stated.
- Thank you to Mau-Lin Wu for pointing out the error to us.

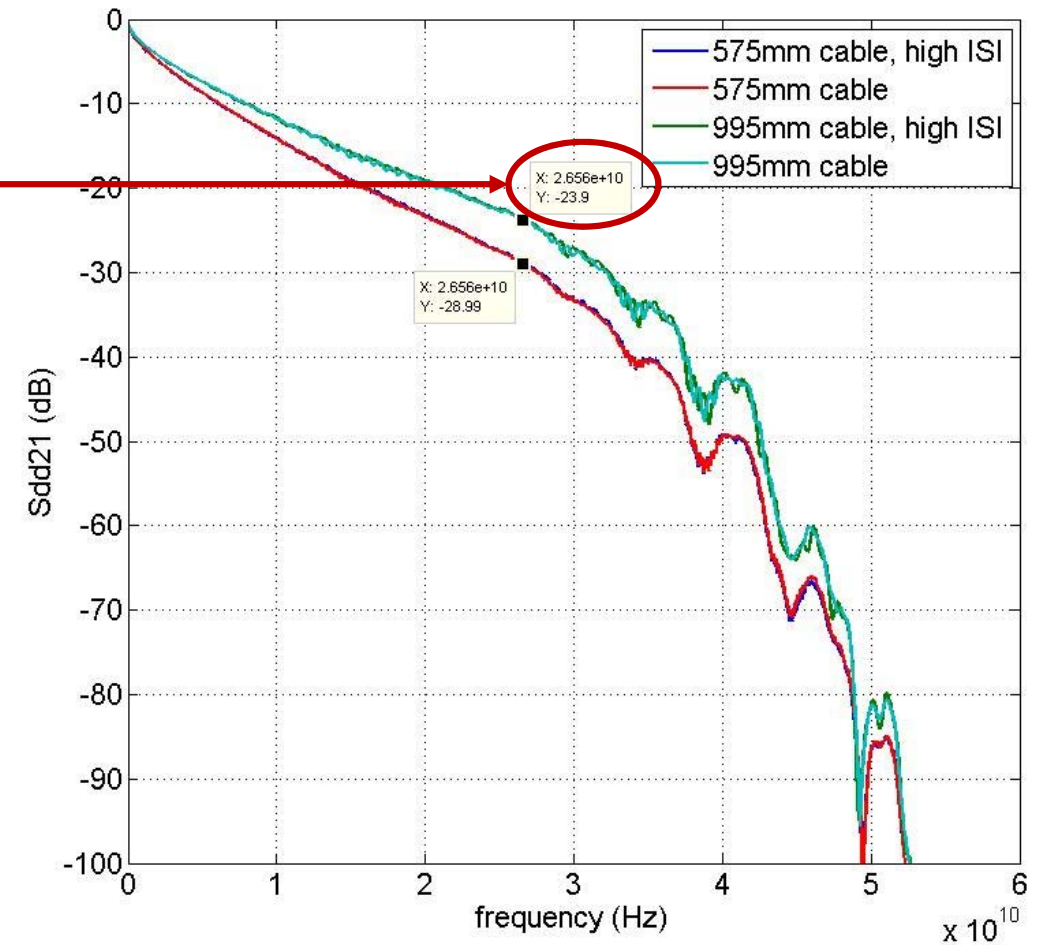
# Outline

- Problem
- Cabled Backplane
  - Description
  - Update to Contributed Channels
  - Frequency Responses

# Problem

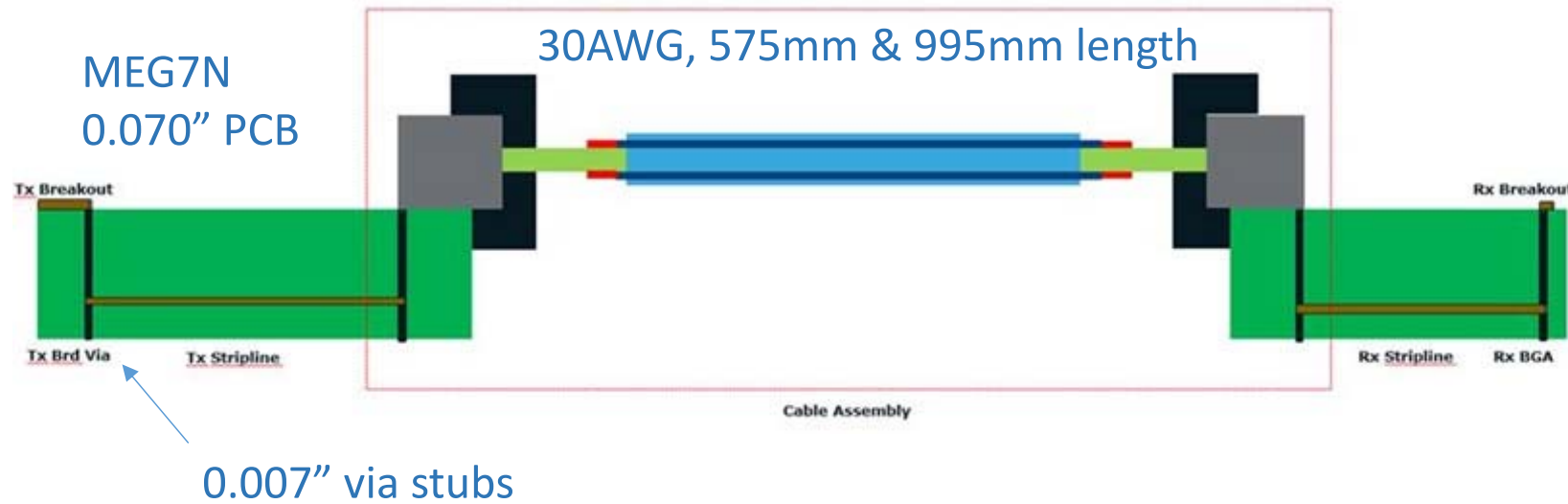
- Wu raised question regarding insertion loss of the 28dB, 995mm cable-based channels.
- Investigation showed us that all of our 995mm cable channels were off by ~4dB.

Stated IL (dB)	Actual IL (dB)
28	24
24	20
20	16
16	12



- Remedy: Update our channel contribution

# Cabled Backplane Channels



- TP0-TP5 (pkg ball-to-pkg ball)
- Symmetric Tx/Rx PCB trace lengths
- 3 FEXT, 4 NEXT aggressors
- No P/N skew
- PCB impedance mismatch: half of trace @ 85Ω, half @ 100Ω

IL (dB)	Cable (m)	Z <sub>PCB</sub> mismatch
16	0.575	No
20	0.995	Yes
24		
28		

(4x2x2)=16 channels

# Contributed Cabled Backplane Channels

IL (dB)	Cable (mm)	Z <sub>PCB</sub> mismatch	Previous file		Updated File
16	575	No	Cable_BKP_16dB_0p575m.zip		Cable_BKP_16dB_0p575m.zip
		Yes	Cable_BKP_16dB_0p575m_more_isi.zip		Cable_BKP_16dB_0p575m_more_isi.zip
	995	No	<del>Cable_BKP_16dB_0p995m.zip</del>		Cable_BKP_16dB_0p995m_updated.zip
		Yes	<del>Cable_BKP_16dB_0p0p995m_more_isi.zip</del>		Cable_BKP_16dB_0p0p995m_more_isi_updated.zip
20	575	No	Cable_BKP_20dB_0p575m.zip		Cable_BKP_20dB_0p575m.zip
		Yes	Cable_BKP_20dB_0p575m_more_isi.zip		Cable_BKP_20dB_0p575m_more_isi.zip
	995	No	Cable_BKP_20dB_0p995m.zip		Cable_BKP_20dB_0p995m_updated.zip
		Yes	Cable_BKP_20dB_0p0p995m_more_isi.zip		Cable_BKP_20dB_0p0p995m_more_isi_updated.zip
24	575	No	Cable_BKP_24dB_0p575m.zip		Cable_BKP_24dB_0p575m.zip
		Yes	Cable_BKP_24dB_0p575m_more_isi.zip		Cable_BKP_24dB_0p575m_more_isi.zip
	995	No	Cable_BKP_24dB_0p995m.zip		Cable_BKP_24dB_0p995m_updated.zip
		Yes	Cable_BKP_24dB_0p0p995m_more_isi.zip		Cable_BKP_24dB_0p0p995m_more_isi_updated.zip
28	575	No	Cable_BKP_28dB_0p575m.zip		Cable_BKP_28dB_0p575m.zip
		Yes	Cable_BKP_28dB_0p575m_more_isi.zip		Cable_BKP_28dB_0p575m_more_isi.zip
	995	No	Cable_BKP_28dB_0p995m.zip		Cable_BKP_28dB_0p995m_updated.zip
		Yes	Cable_BKP_28dB_0p0p995m_more_isi.zip		Cable_BKP_28dB_0p0p995m_more_isi_updated.zip

New

# Updated Cabled Backplane Channels

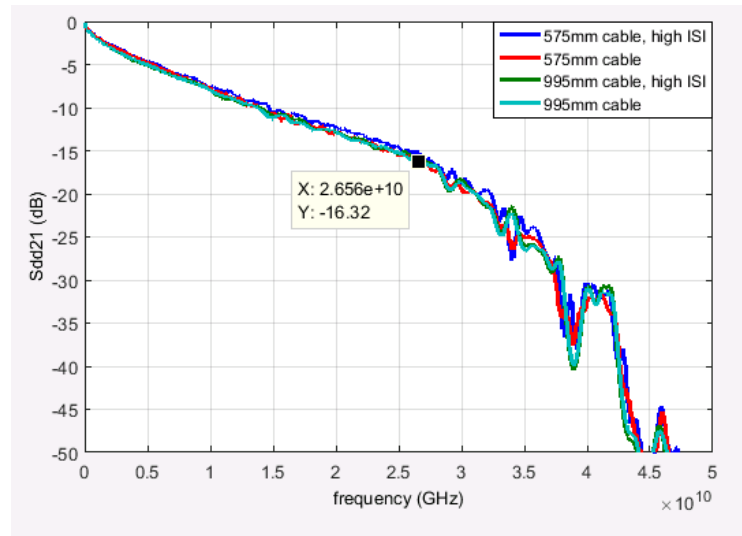
IL (dB)	Cable (mm)	Z <sub>PCB</sub> mismatch	Updated File
16	575	No	Cable_BKP_16dB_0p575m_updated.zip
		Yes	Cable_BKP_16dB_0p575m_more_isi_updated.zip (L)
	995	No	Cable_BKP_16dB_0p995m_updated.zip
		Yes	Cable_BKP_16dB_0p0p995m_more_isi_updated.zip
20	575	No	Cable_BKP_20dB_0p575m_updated.zip
		Yes	Cable_BKP_20dB_0p575m_more_isi_updated.zip
	995	No	Cable_BKP_20dB_0p995m_updated.zip
		Yes	Cable_BKP_20dB_0p0p995m_more_isi_updated.zip
24	575	No	Cable_BKP_24dB_0p575m_updated.zip
		Yes	Cable_BKP_24dB_0p575m_more_isi_updated.zip
	995	No	Cable_BKP_24dB_0p995m_updated.zip
		Yes	Cable_BKP_24dB_0p0p995m_more_isi_updated.zip
28	575	No	Cable_BKP_28dB_0p575m_updated.zip
		Yes	Cable_BKP_28dB_0p575m_more_isi_updated.zip (R)
	995	No	Cable_BKP_28dB_0p995m_updated.zip
		Yes	Cable_BKP_28dB_0p0p995m_more_isi_updated.zip

## Notes:

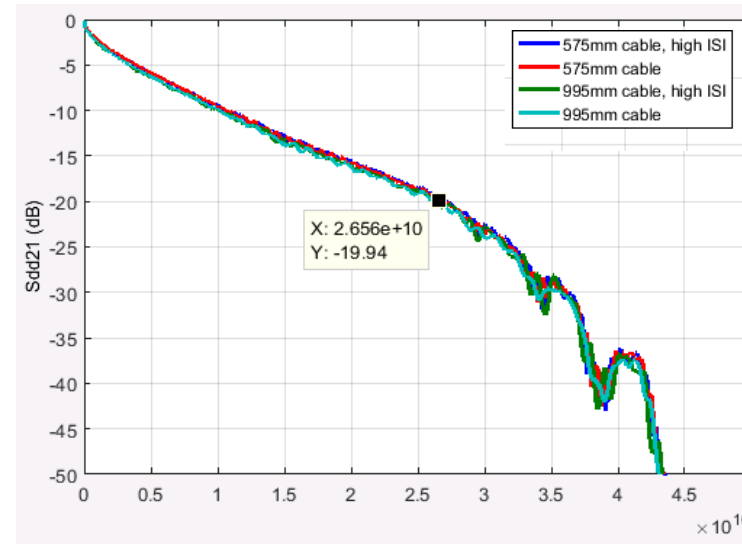
- Each zip contains 8 S4P files:
  - thru: \*\_thru1
  - FEXT: \*\_xtalk1\_Fext  
\*\_xtalk2\_Fext  
\*\_xtalk3\_Fext
  - NEXT: \*\_xtalk4\_Next  
\*\_xtalk5\_Next  
\*\_xtalk6\_Next  
\*\_xtalk7\_Next
- Recommended boundary cases:
  - (L) Maximum loss
  - (R) Maximum reflection
 These are the same channels that we recommended at the 11/2018 Interim meeting.

# Insertion Loss

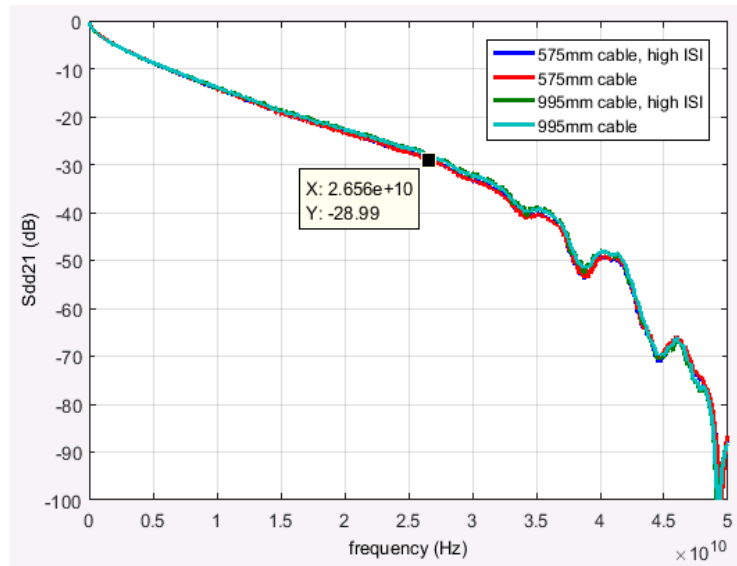
16dB



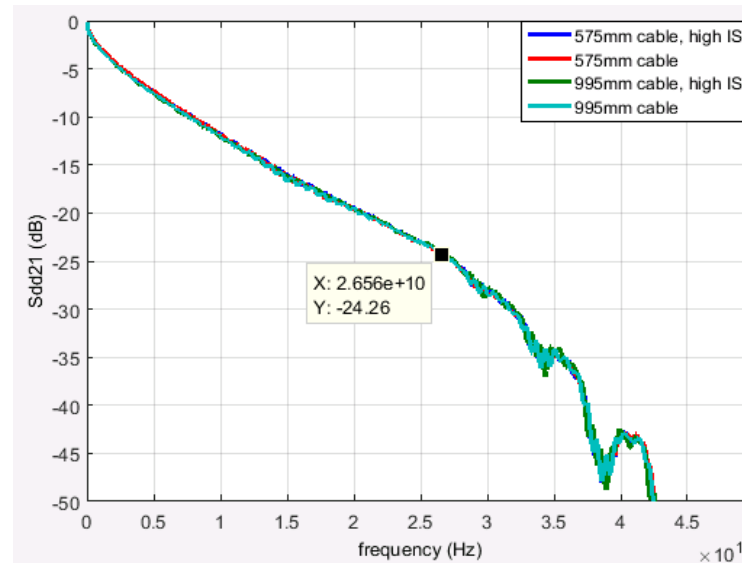
20dB



28dB



24dB

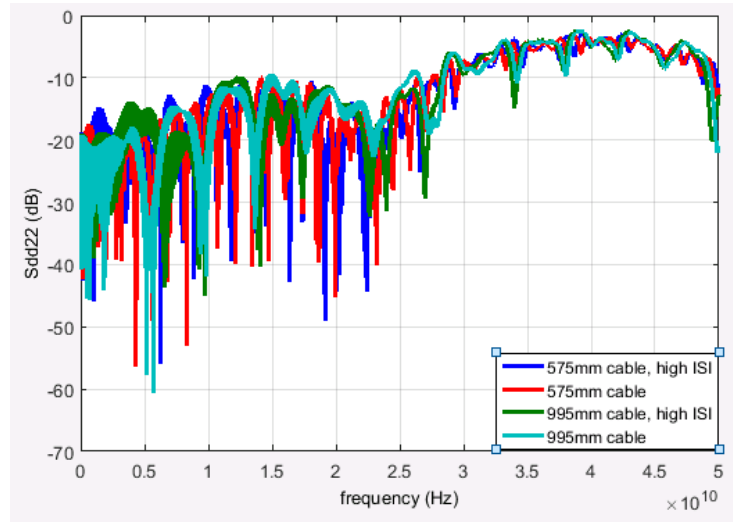


“high ISI” means PCB mismatch is included (both Tx & Rx PCBs).

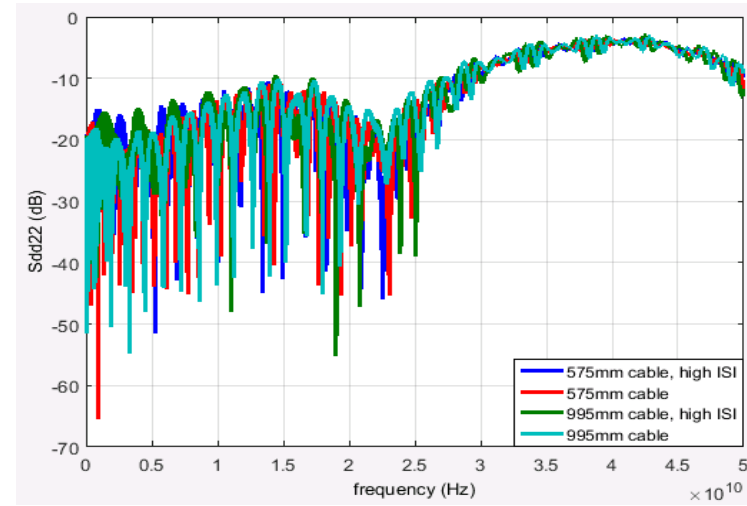


# Return Loss

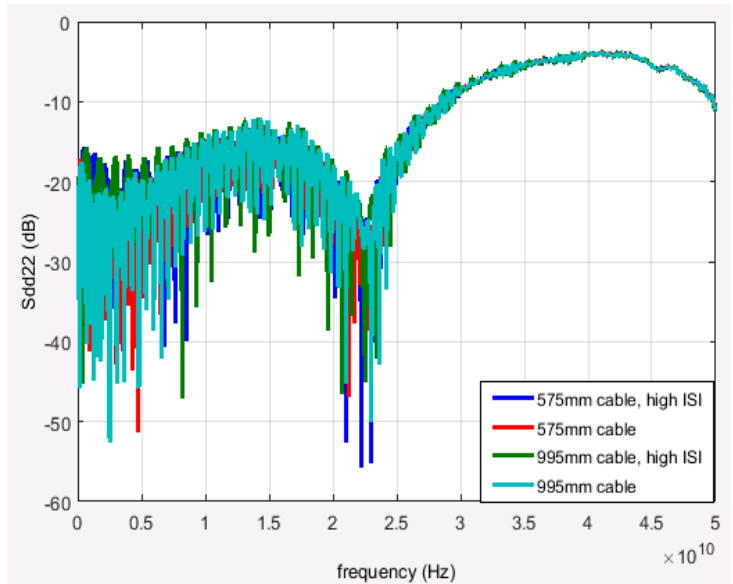
16dB



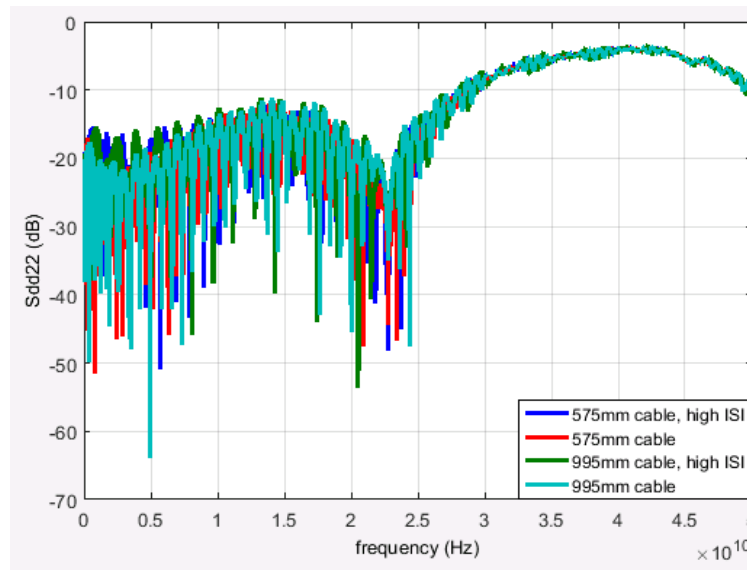
20dB



28dB

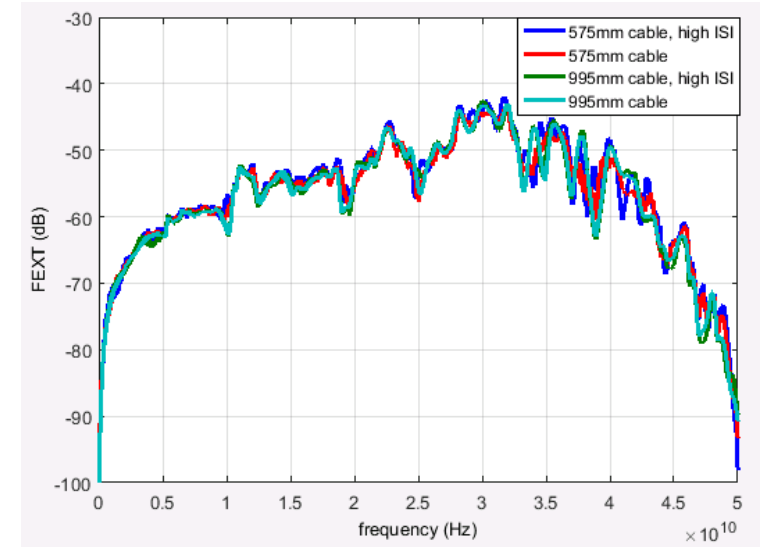
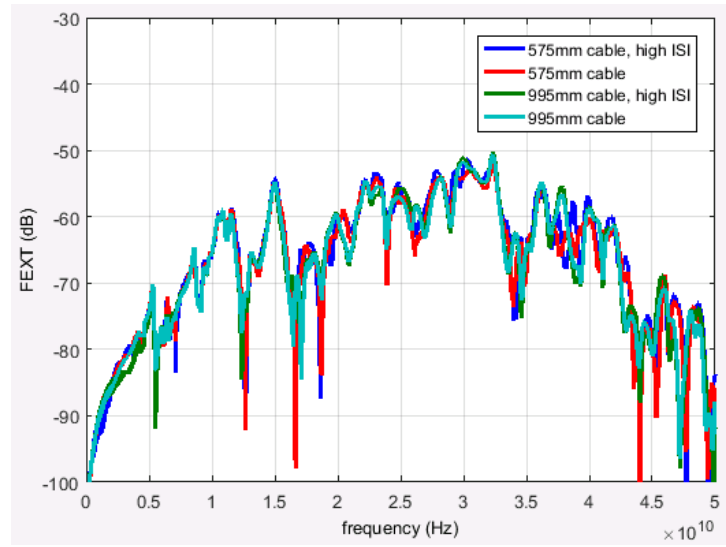
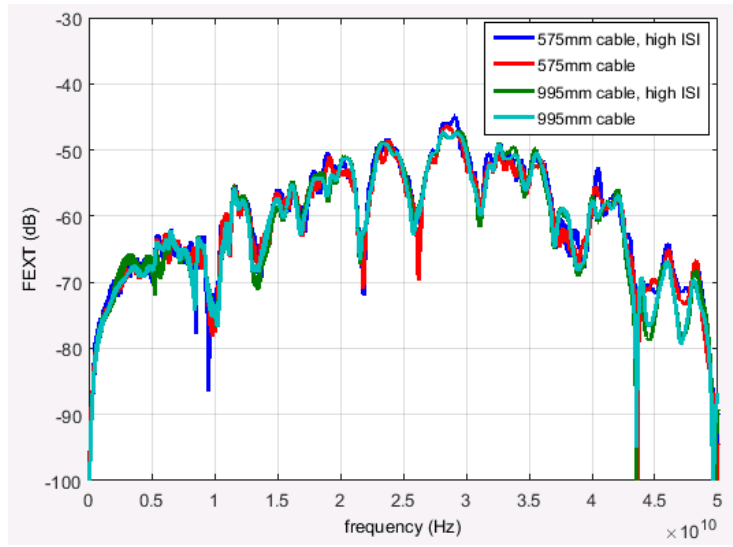


24dB

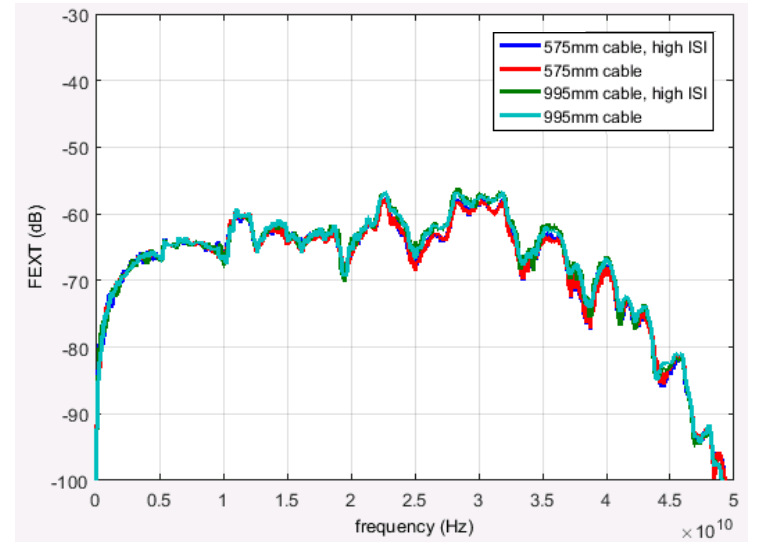
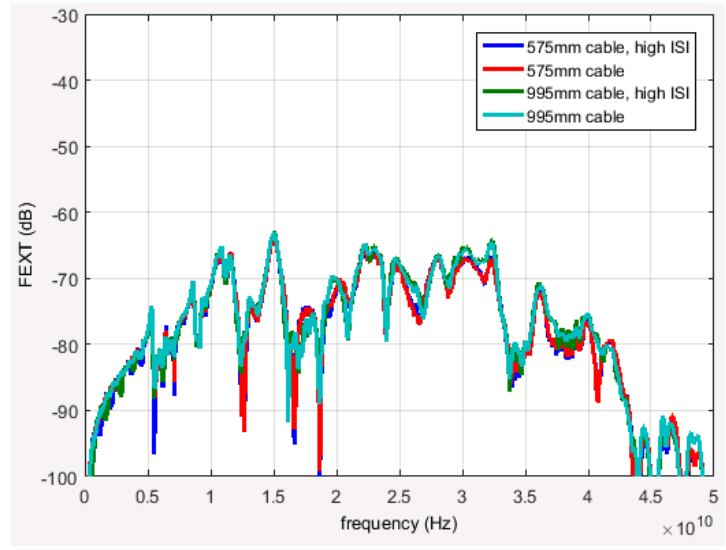
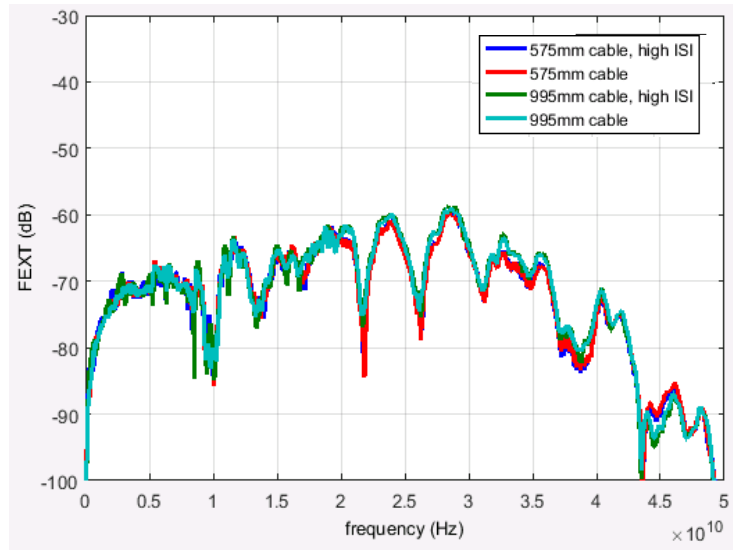


# FEXT Response

16dB

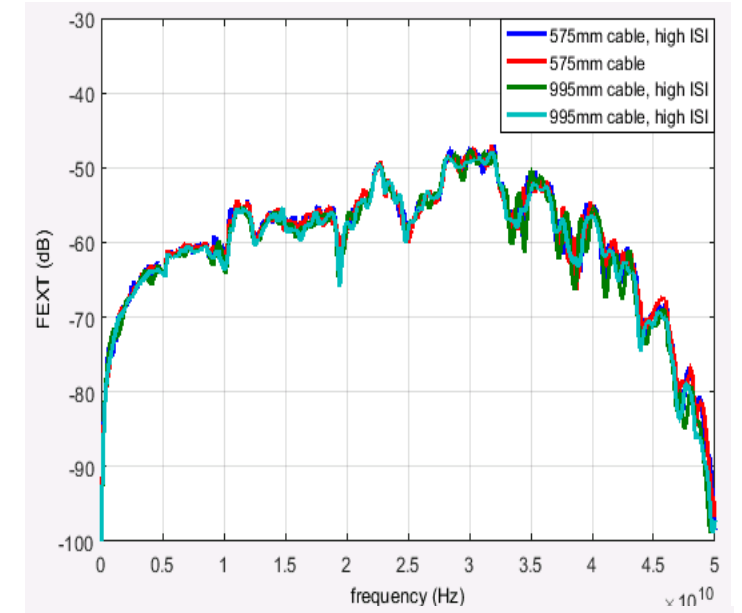
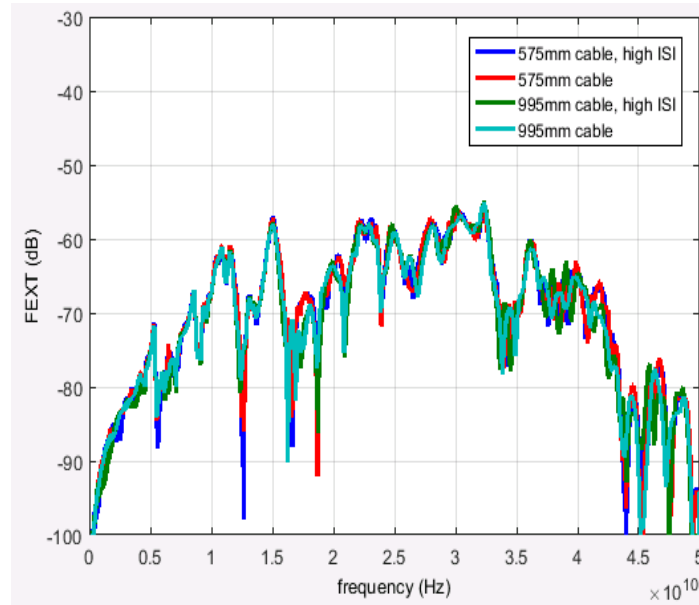
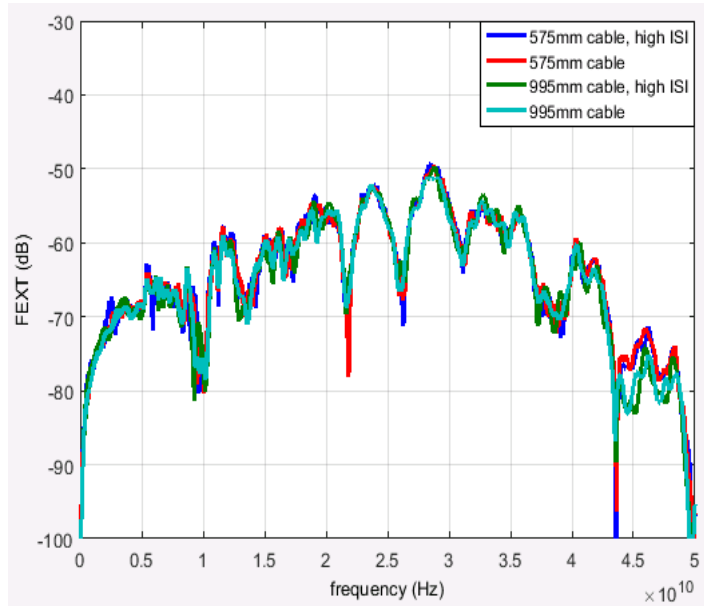


28dB

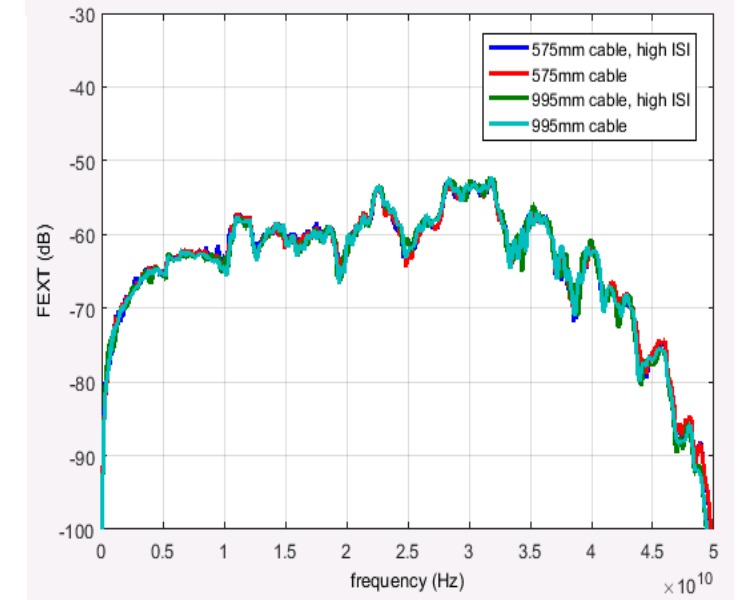
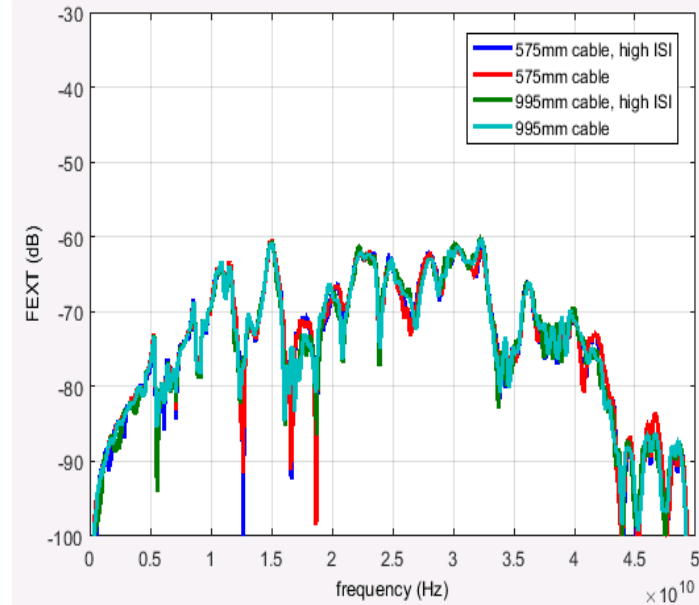
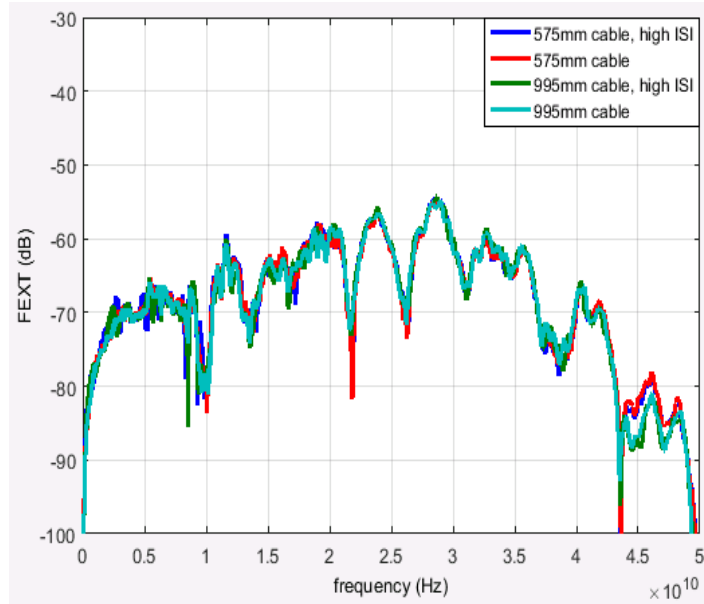


# FEXT Response

20dB

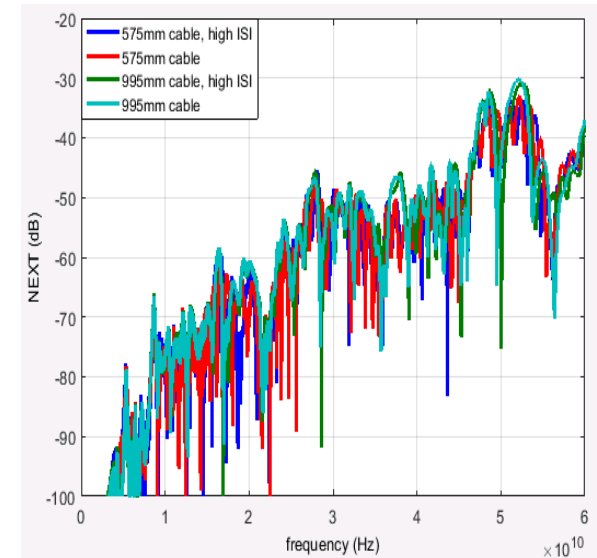
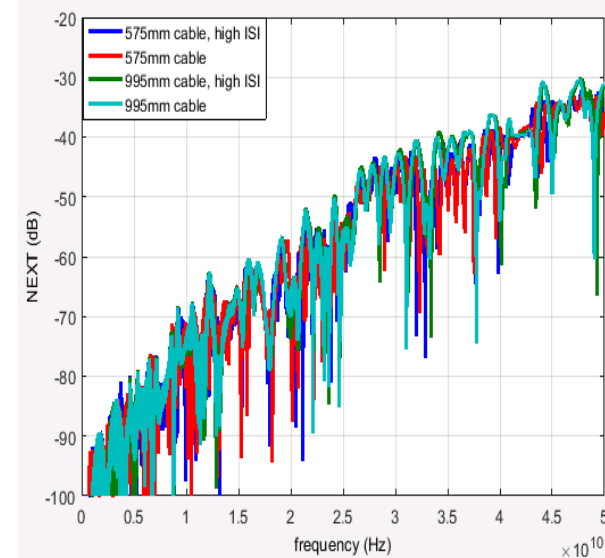
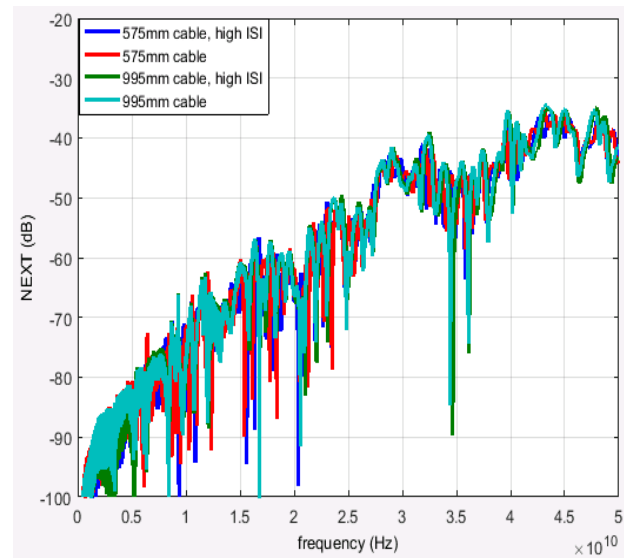
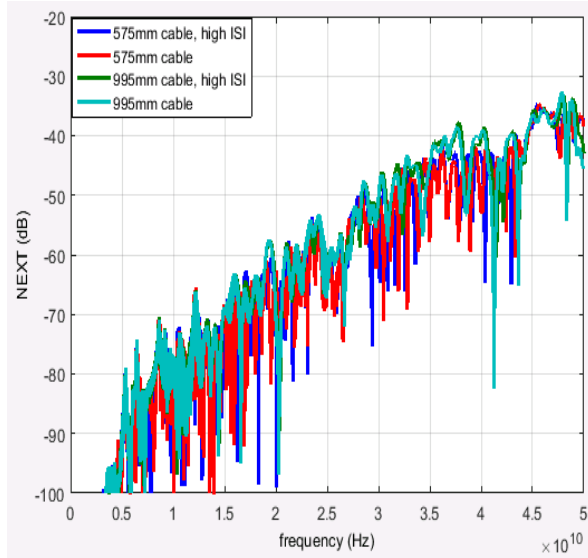


24dB

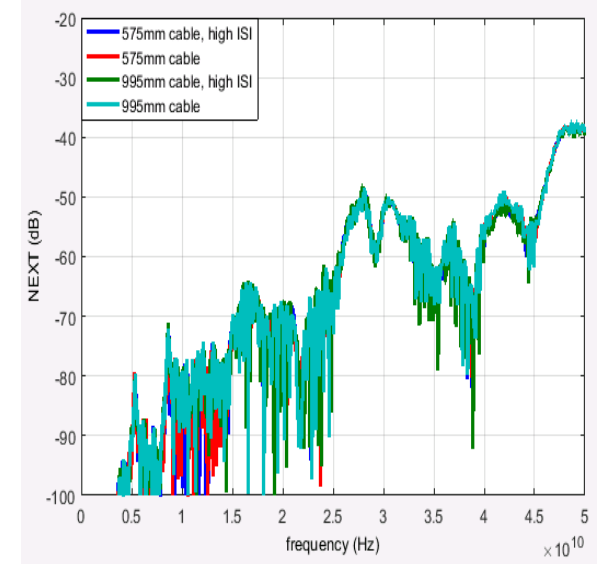
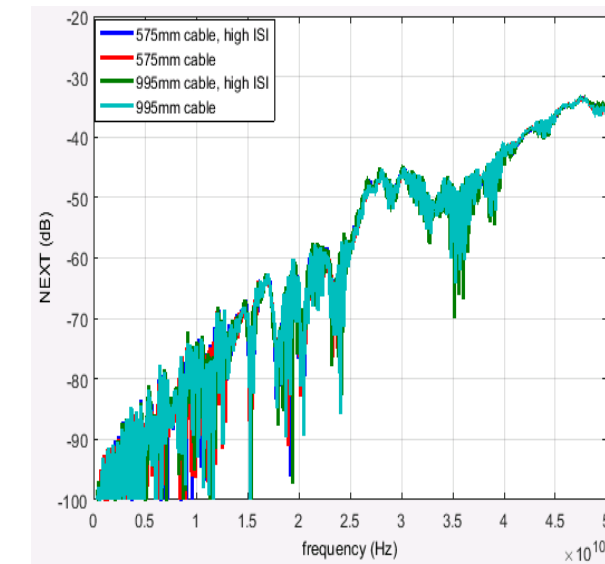
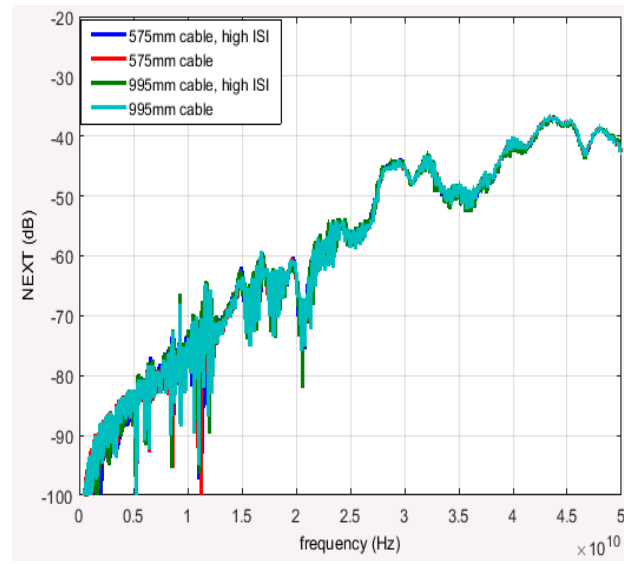
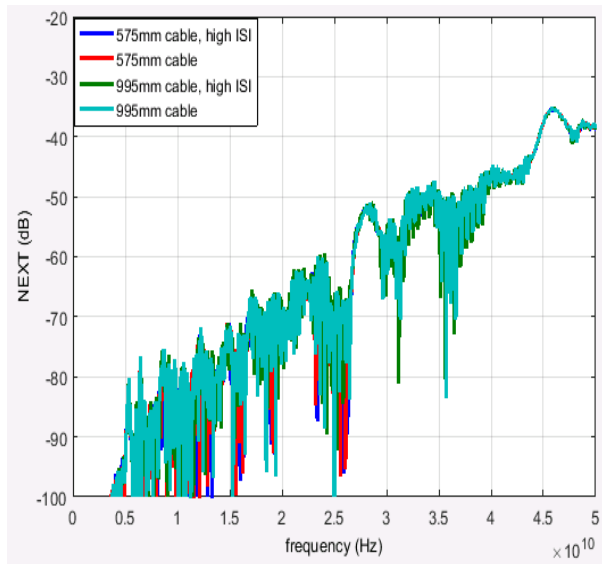


# NEXT Response

16dB

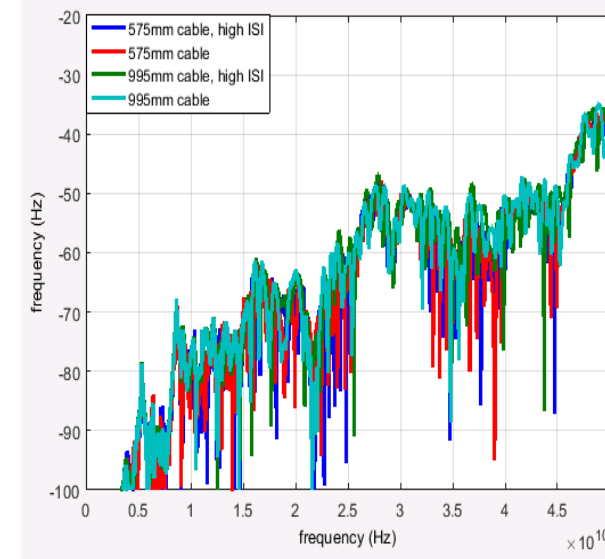
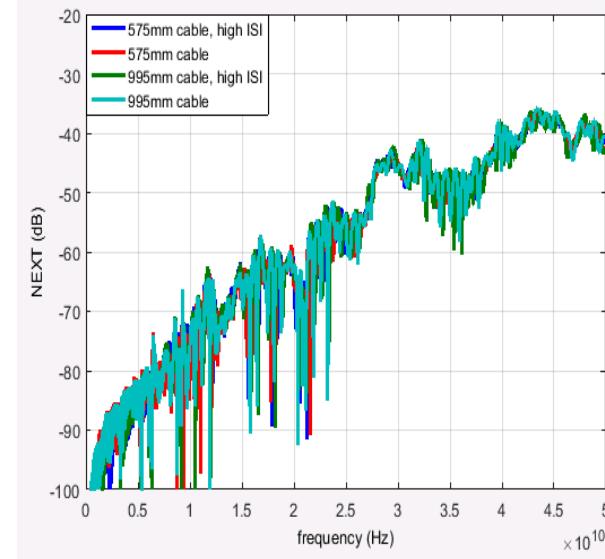
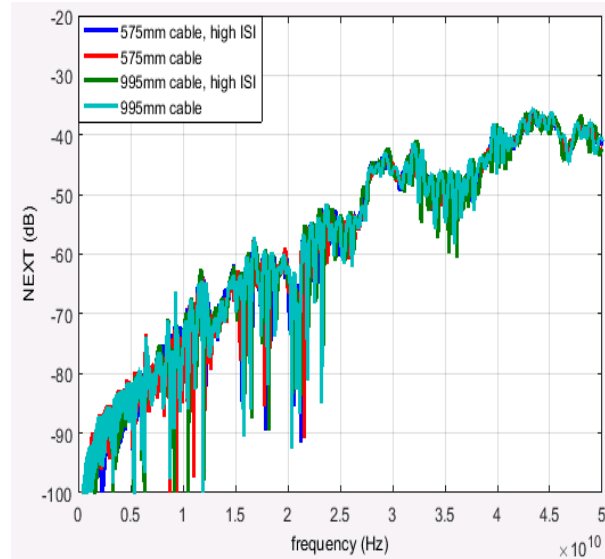
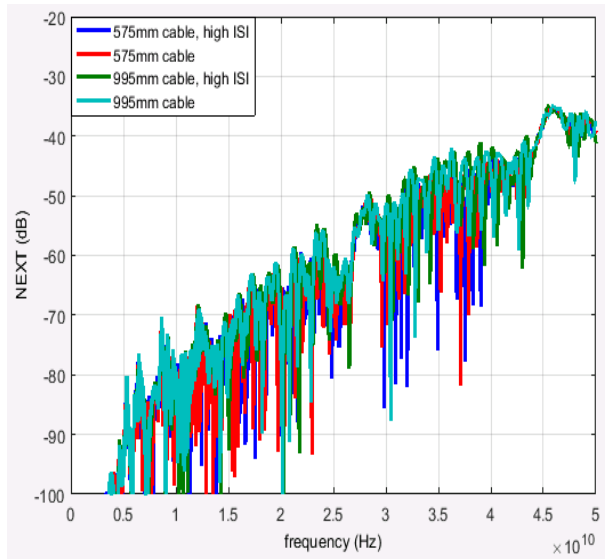


28dB

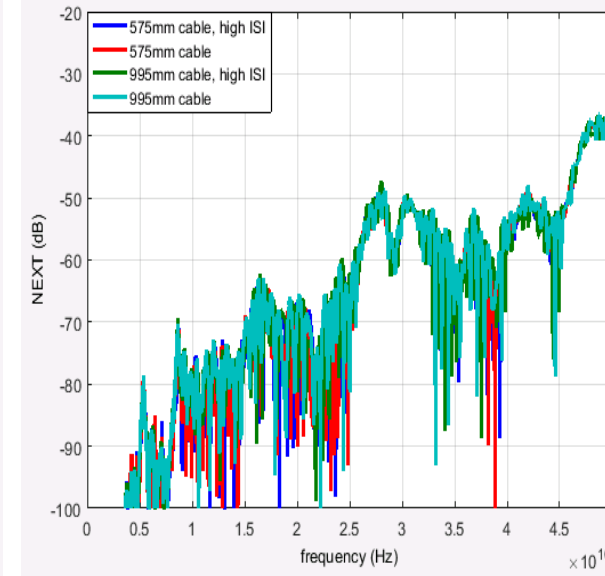
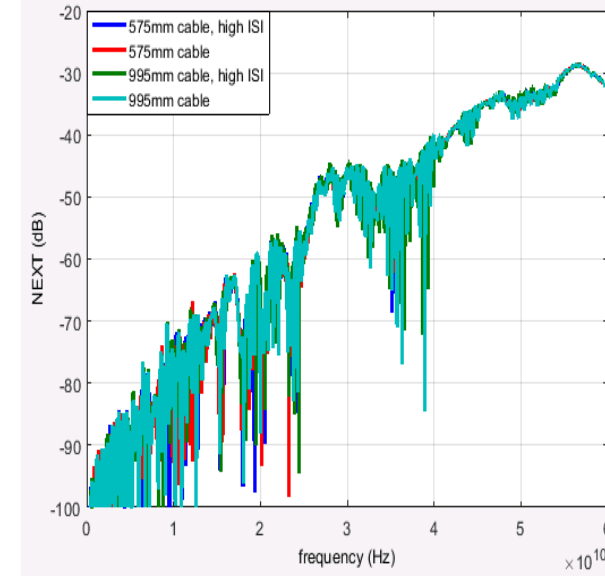
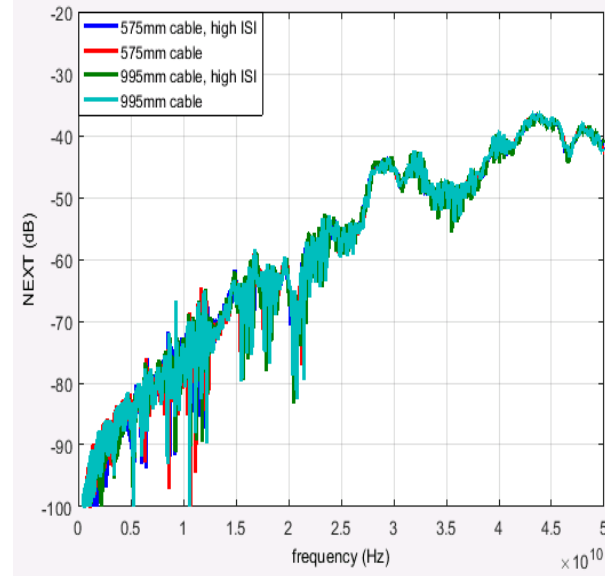
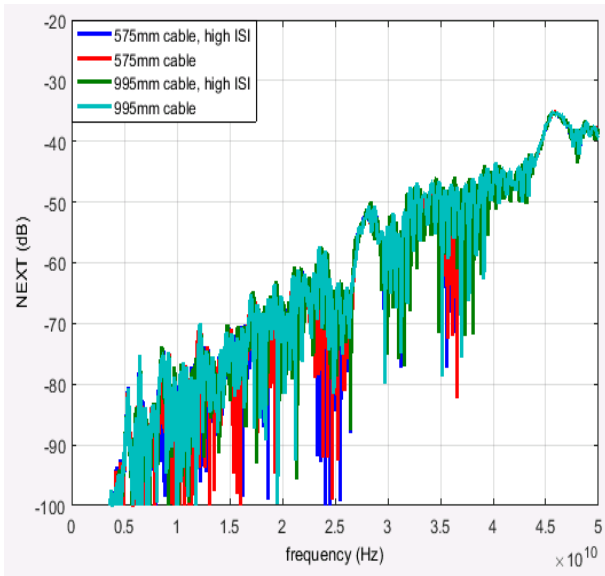


# NEXT Response

20dB



24dB



# Contributed Cabled Backplane Channel

IL (dB)	Cable (mm)	Z <sub>PCB</sub> mismatch	file
16	575	No	Cable_BKP_16dB_0p575m.zip
		Yes	Cable_BKP_16dB_0p575m_more_isi.zip(L)
	995	No	Cable_BKP_16dB_0p995m.zip
		Yes	Cable_BKP_16dB_0p0p995m_more_isi.zip
20	575	No	Cable_BKP_20dB_0p575m.zip
		Yes	Cable_BKP_20dB_0p575m_more_isi.zip
	995	No	Cable_BKP_20dB_0p995m.zip
		Yes	Cable_BKP_20dB_0p0p995m_more_isi.zip
24	575	No	Cable_BKP_24dB_0p575m.zip
		Yes	Cable_BKP_24dB_0p575m_more_isi.zip
	995	No	Cable_BKP_24dB_0p995m.zip
		Yes	Cable_BKP_24dB_0p0p995m_more_isi.zip
28	575	No	Cable_BKP_28dB_0p575m.zip
		Yes	Cable_BKP_28dB_0p575m_more_isi.zip(R)
	995	No	Cable_BKP_28dB_0p995m.zip
		Yes	Cable_BKP_28dB_0p0p995m_more_isi.zip

## Notes:

- Each zip contains 8 S4P files:
  - thru: \*\_thru1
  - FEXT: \*\_xtalk1\_Fext  
\*\_xtalk2\_Fext  
\*\_xtalk3\_Fext
  - NEXT: \*\_xtalk4\_Next  
\*\_xtalk5\_Next  
\*\_xtalk6\_Next  
\*\_xtalk7\_Next
- Recommended boundary cases:
  - (L) Maximum loss
  - (R) Maximum reflection

Thank you!