

IL and RL Limit Proposal for IEEE 802.3dm

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Contribution to IEEE 802.3dm

Definitions & Assumptions (Starting points)

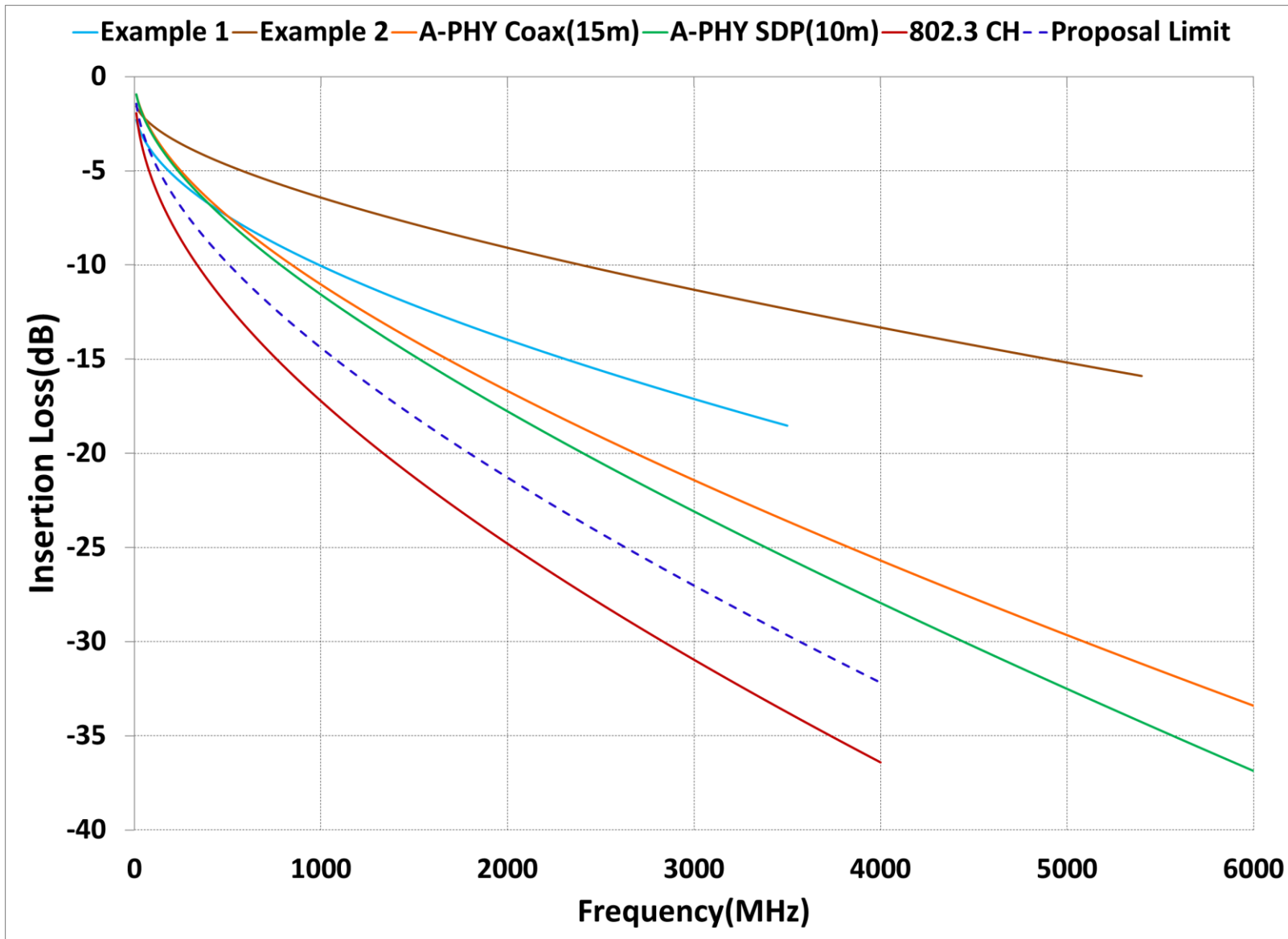
- Camera device XMIT high data rate REC low data rate.
- Network device XMIT the low data rate REC high data rate.
- Network device needs more complex DSP to process incoming data.
- Considered use of 802.3ch. (PAM4, $1 V_{\text{pk-pk}}$ for DP 149.5.2.5 and $0.5 V_{\text{pk-pk}}$ coax)
- Having one IL for both DP and coax can simplify the implementation of the technology.
- Approach is to trade off on how much IC can handle while being a competitive choice in the market to the existing and future cable, connector, and assembly combinations.
- Wanted to see what is possible. Can always tighten limits as we move forward.

Some Reasoning Behind Limit Proposals

- Consider the asynchronous comm. to be simplified compared to 802.3ch.
- Camera does not need complex DSP for the incoming low data rate. Similar DSP in the Upstream device as 802.3ch.
- Low data rate direction tolerates higher IL and RL.
- Having higher allowable IL and or RL;
 - Makes for more robust implementations for all links less than max length.
 - Allows for more freedom in vehicle architecture design now and into the future.
 - Future implementations may use other t-line technologies.
 - More freedom in links that pass through different temp zones and flex areas.
 - More cable and connector choices.
 - More margin for aging, 2x live.
- More options for PCB.
- More allowable IL and RL gives value prop over existing technologies.

Link IL Proposal

IL Limit = $0.002 * f + 0.58 * f^{0.45}$ where f is in MHz

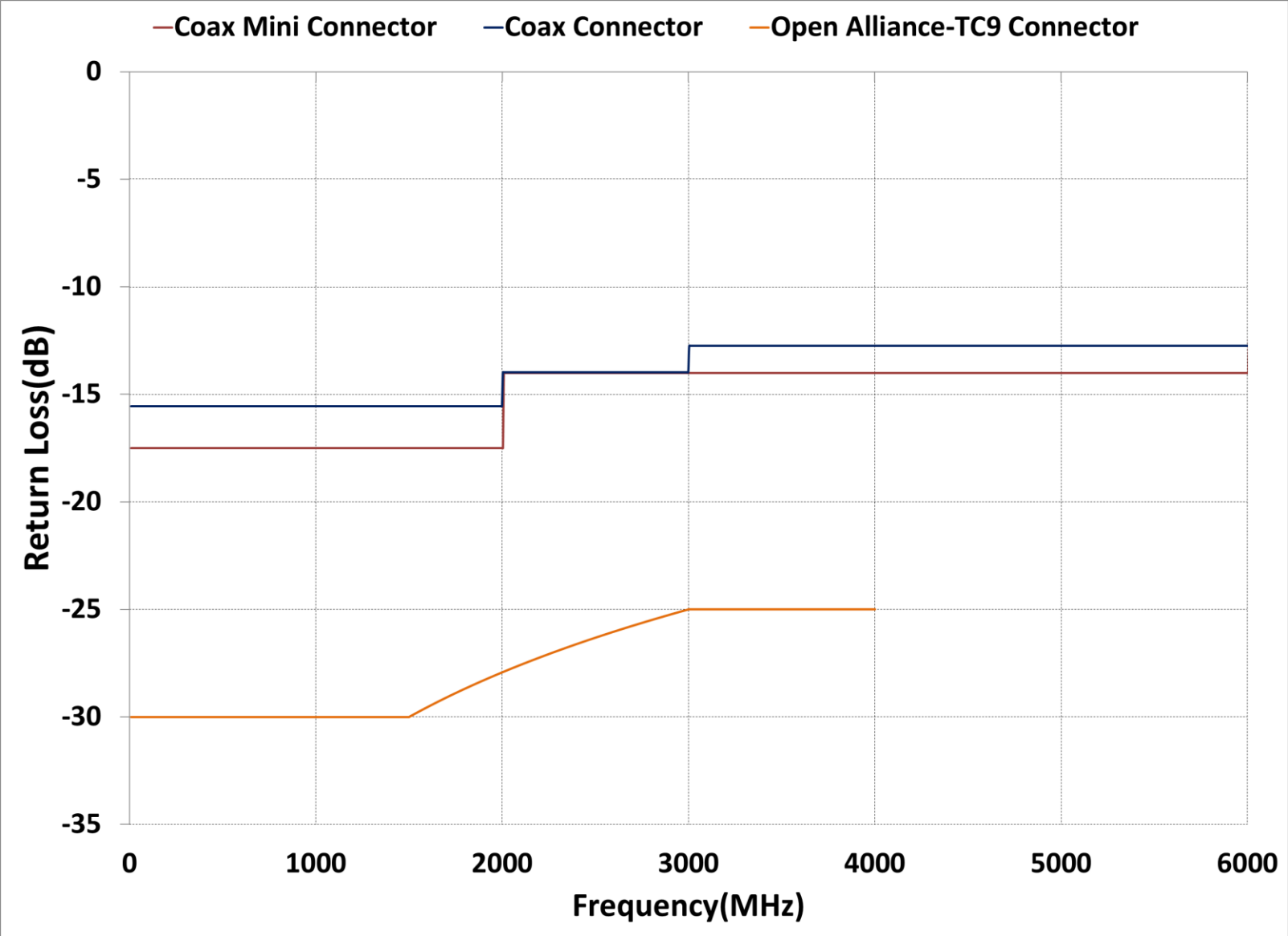


Also propose that upper frequency of limit stop at the data rate chosen. For example, if 2.5 Gb/s camera used then limit stops at 1 GHz like the 802.3ch.

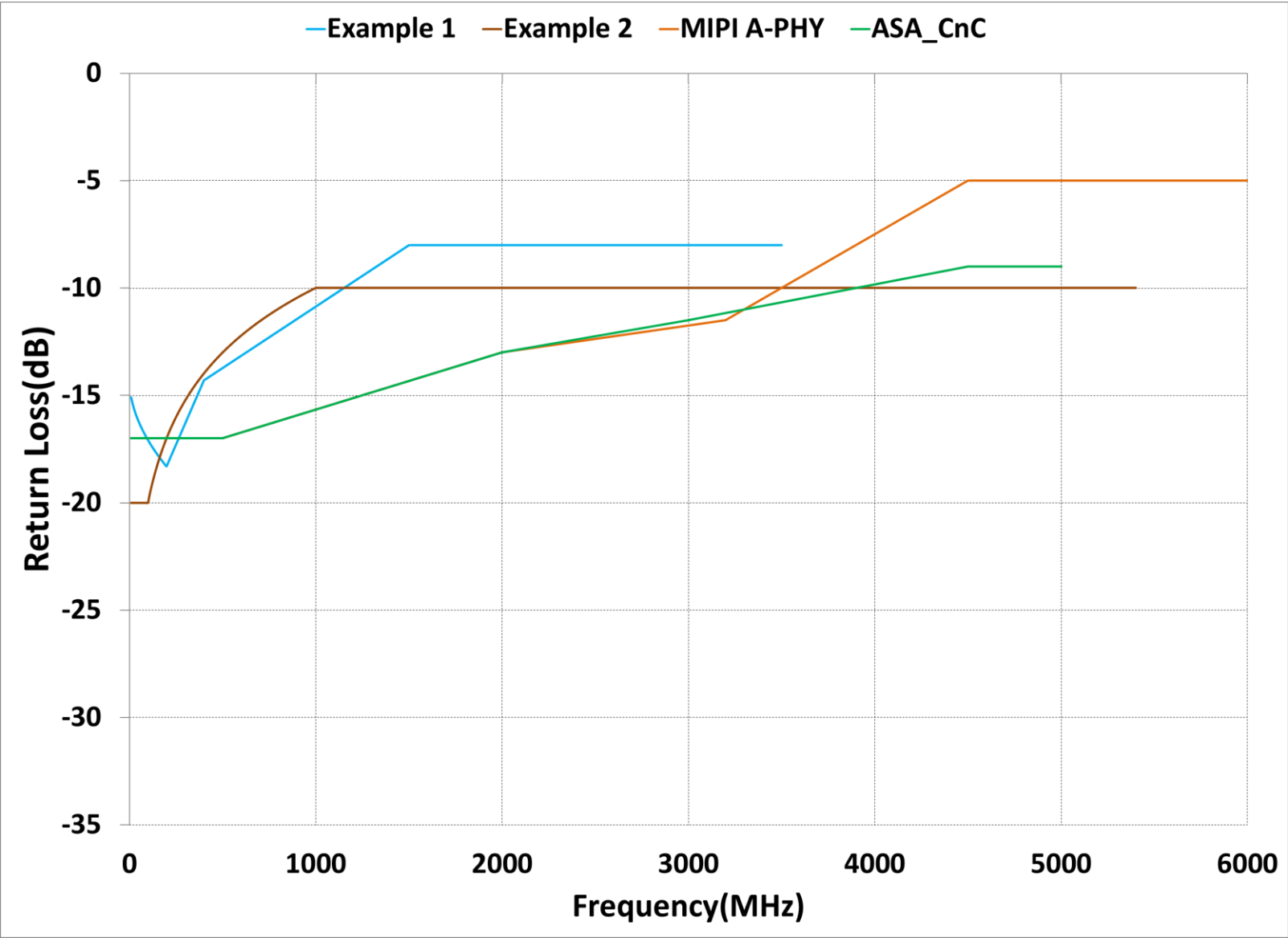
This applies to RL limits.

These stop points can be determined as standard is developed.

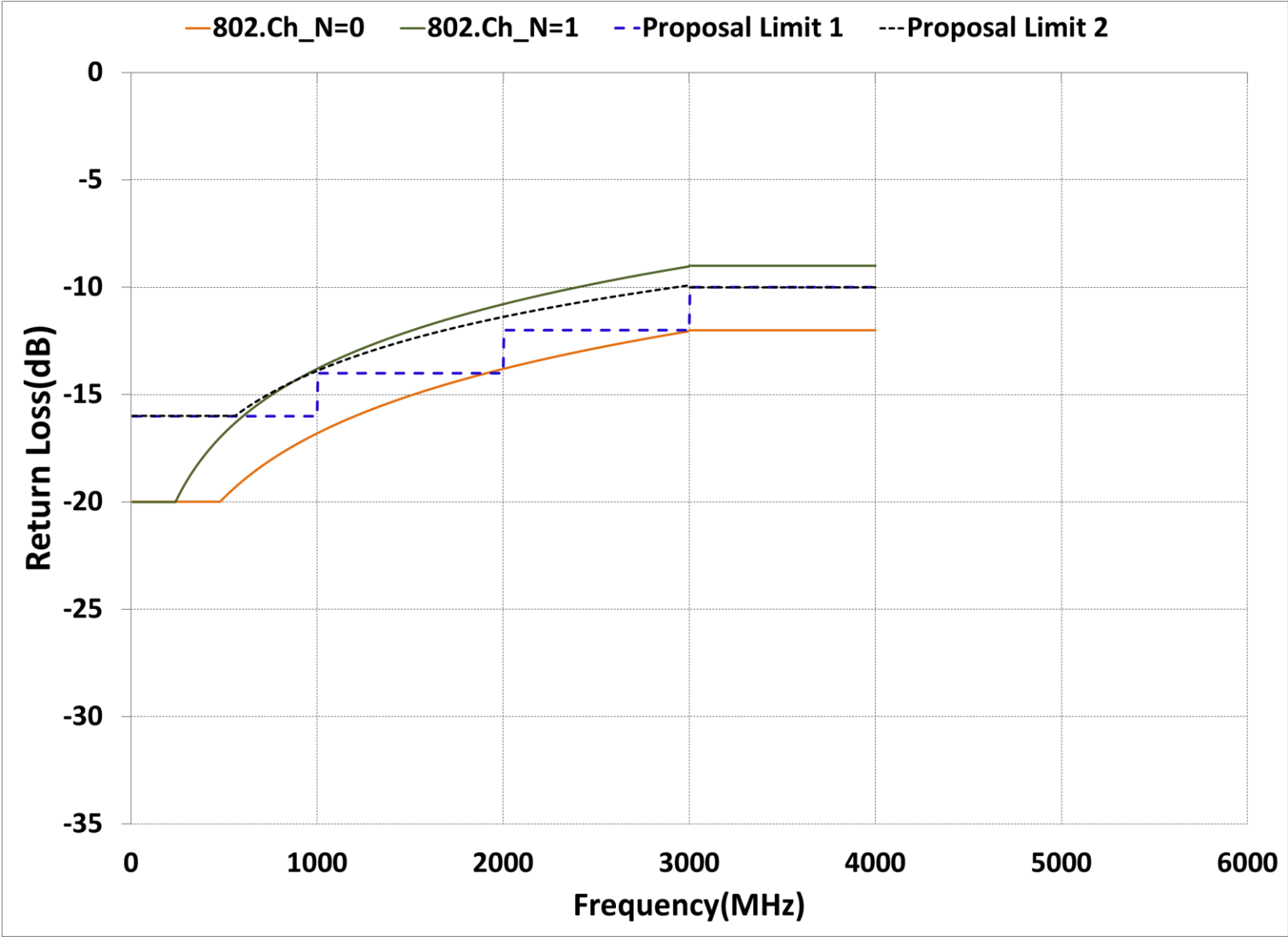
RL Requirements for Connectors



RL Requirements for Existing PoC Solutions



Link RL Proposal



RL Proposed Curve

16	$1 \leq f < 560$
$16 - 8.4 \log_{10}(f/565)$	$565 \leq f < 3000$
10	$3000 \leq f \leq 4000$
	<i>f is in MHz</i>

RL Proposed Stepped

- 16 dB 1 MHz to 1 GHz
- 14 dB 1 GHz to 2 GHz
- 12 dB 2 GHz to 3 GHz
- 10 dB 3 GHz to 4 GHz.

Note: from 802.3ch, N = 0 is higher IL and N=1 is lower IL.

Thank You