



ACT EMC Performance Update

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Introduction

- This presentation provides the update of the EMC performance of a physical ACT device at 10Gbps downstream with Coaxial cable
- All tests performed according to CISPR 25 (2021) and ISO 11452
- DUT operates in **crystal-less** mode with **Power over Coax**
- **No Metal Enclosure on DUT side and Load Simulator side**
- **No Echo Cancellation and No CMC used**
- **No Spread-Spectrum Clock in ACT Device**
- **Standard PCB design** (no special material / absorber)
- PSD according to proposed ACT definition in IEEE 802.3dm
- RE is retested with a low noise floor setup to show ACT devices can pass CISPR 25 Class 5 limit with **>= 6dB** margin
- The device also passed **Portable Transmitter Immunity** (PTI) with **>= 3dB** margin
- All data presented are from the worst scenarios in terms of measurement setup.

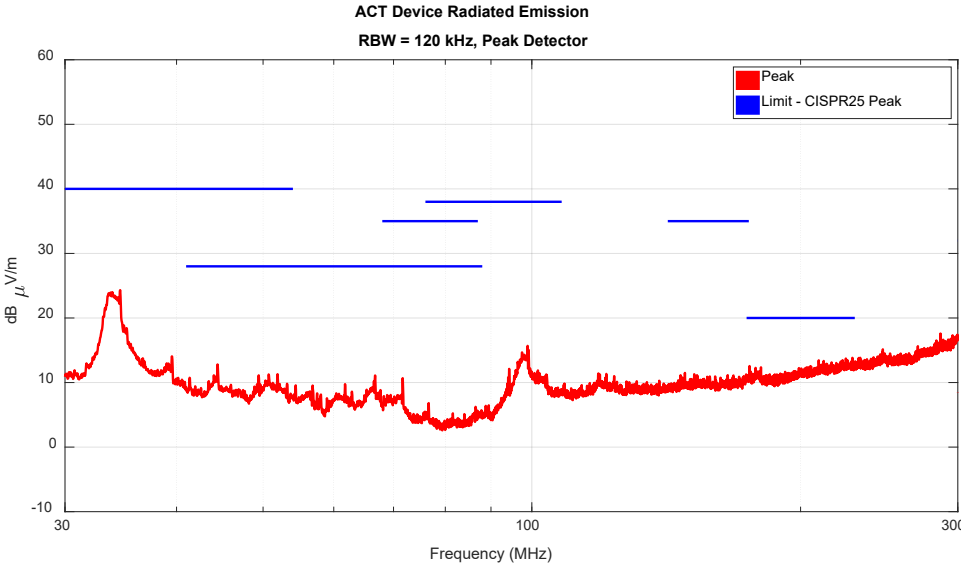
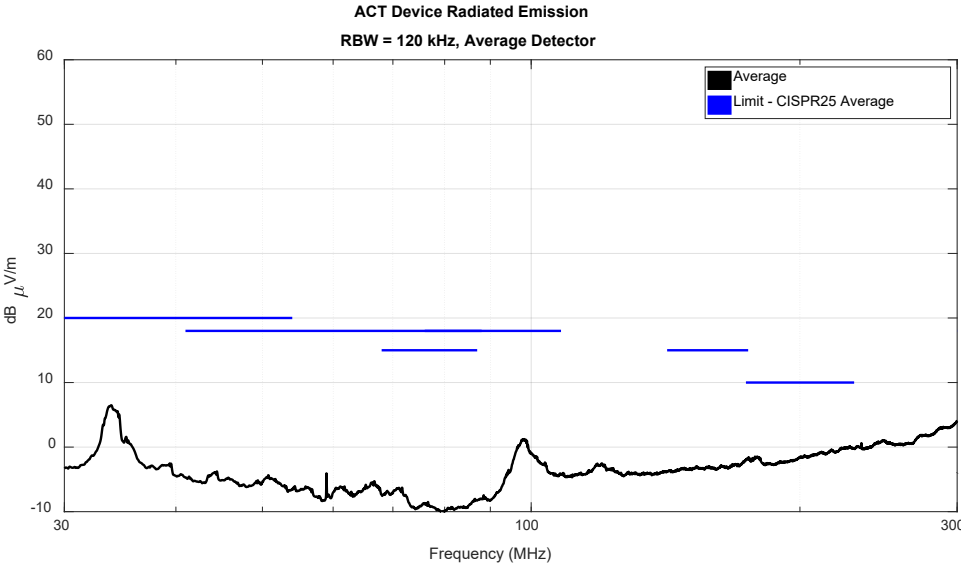
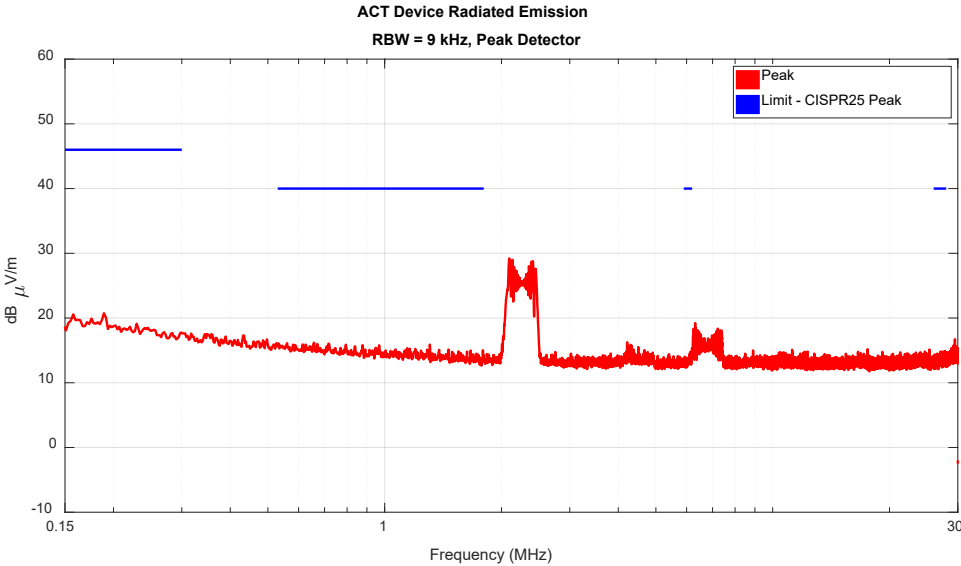
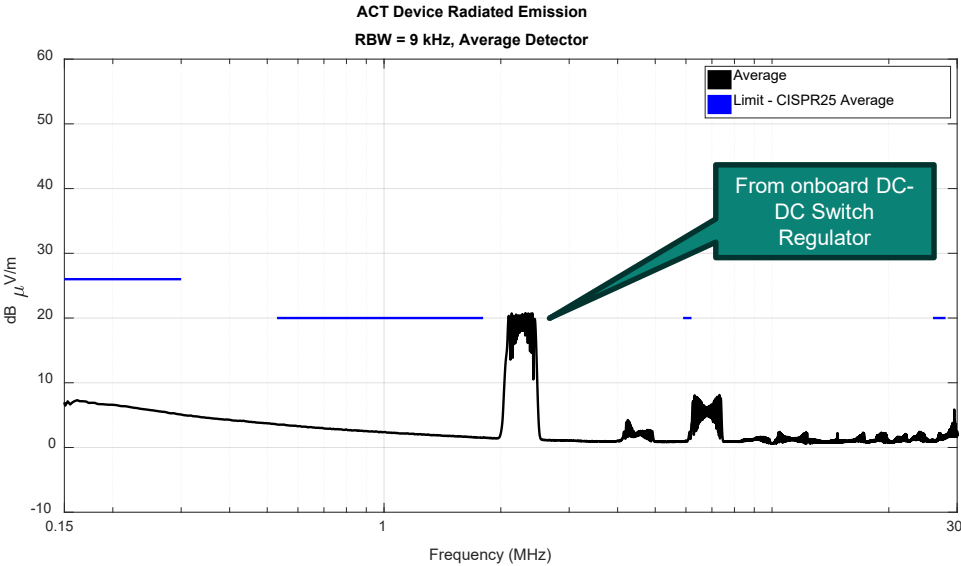
Radiated Emission CISPR 25

Radiated Emission Measurement Setup

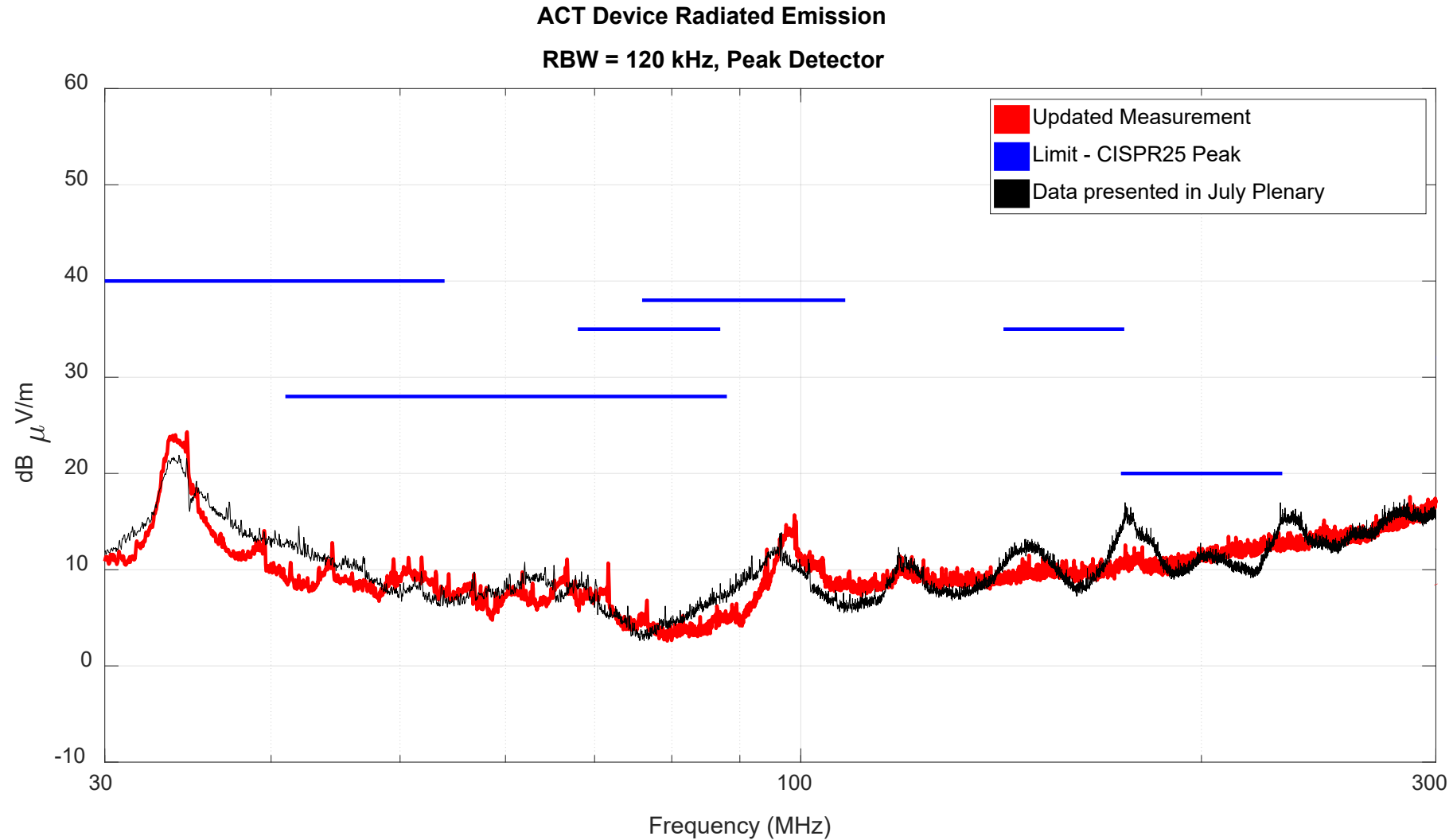
- ACT Mode
 - Upstream – 100Mbps DME
 - Downstream – 10Gbps PAM4
- EMC Setup
 - Standard **CISPR 25** setup
 - Coaxial cable type: cx031
 - Cable length: 1.8 m



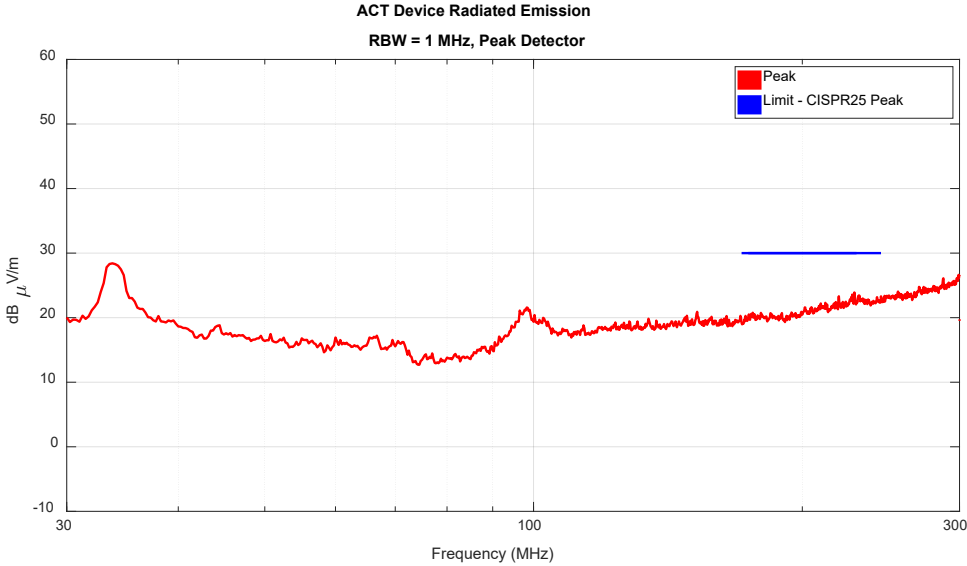
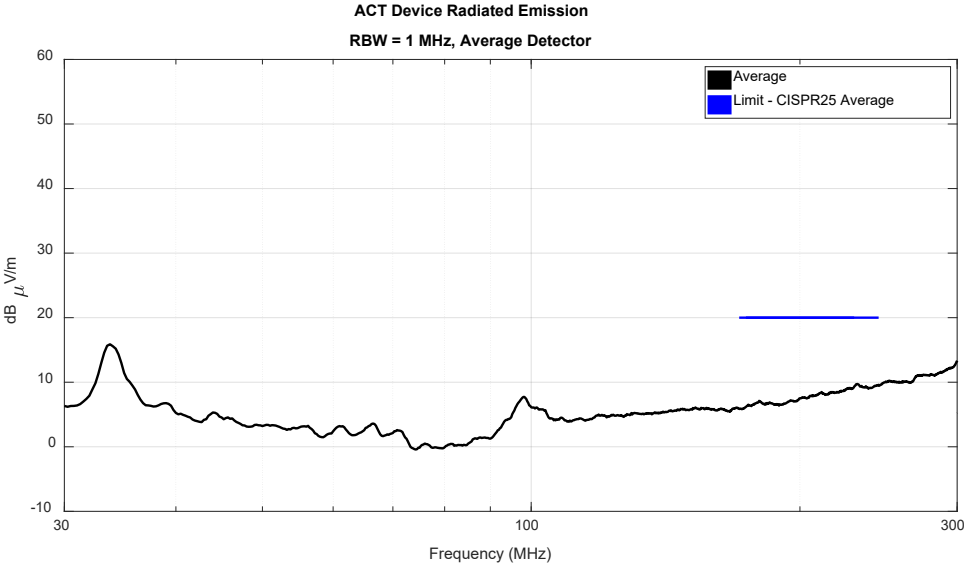
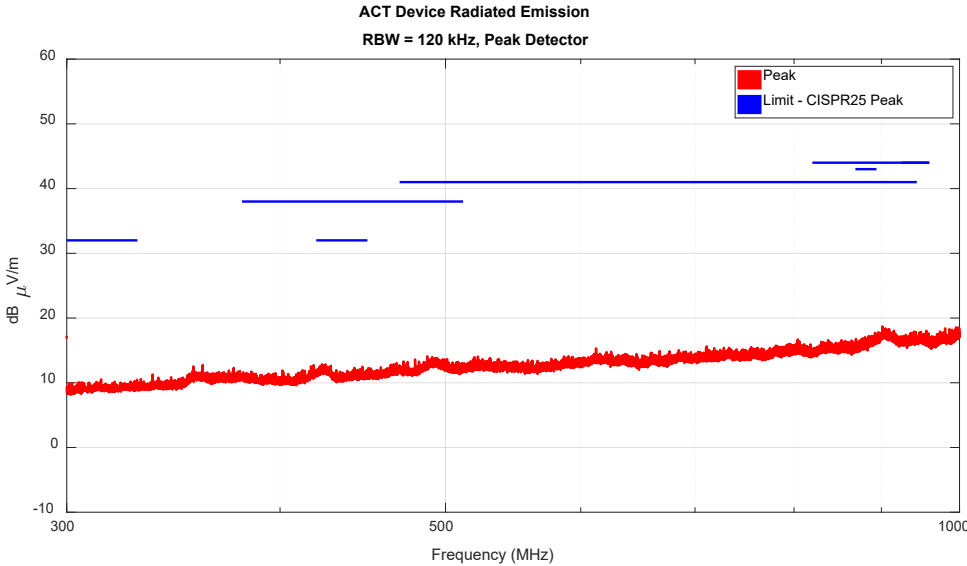
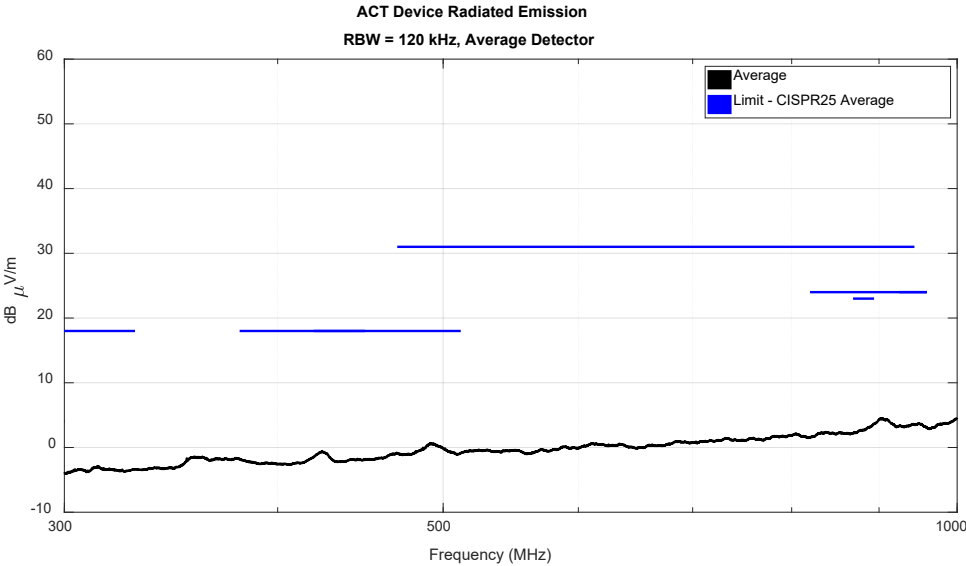
RE Measurement Results



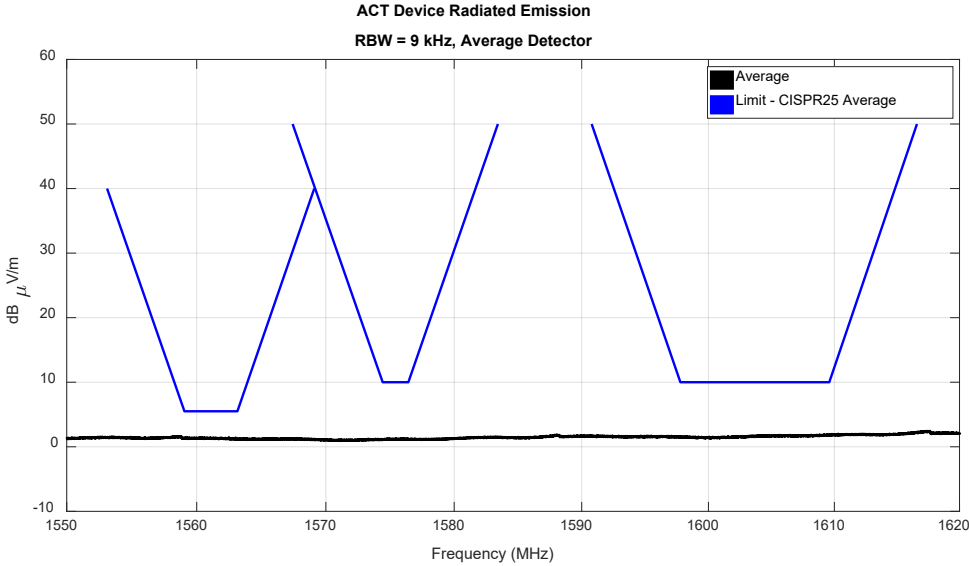
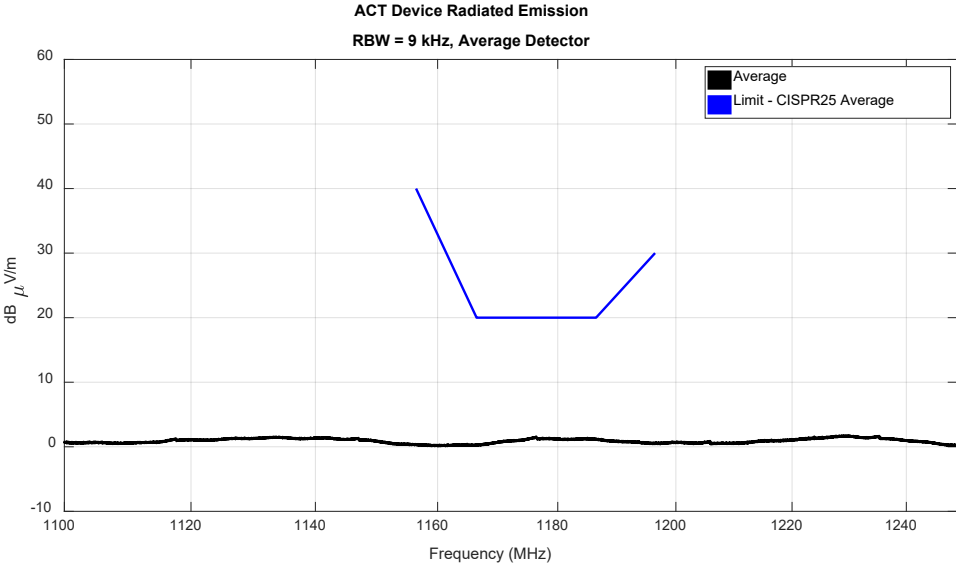
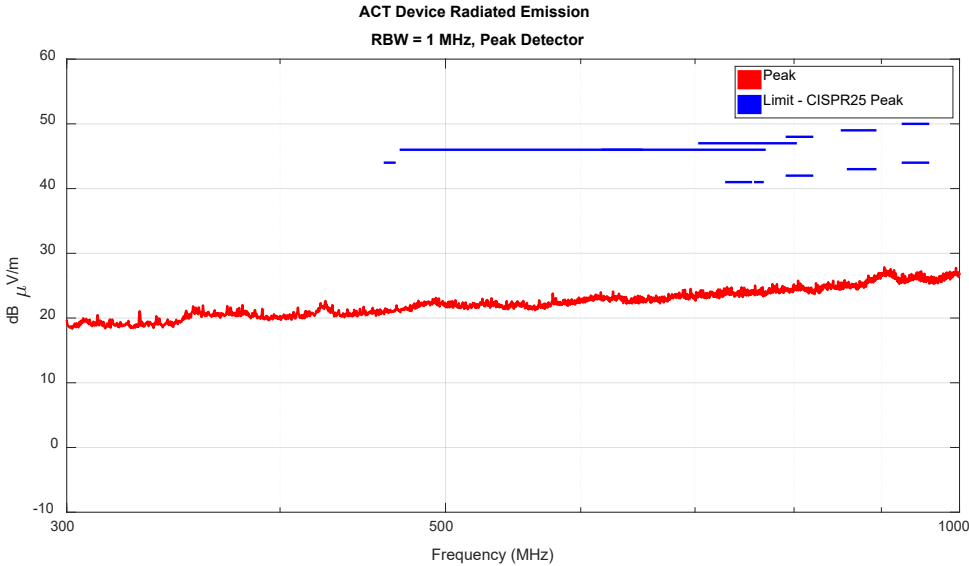
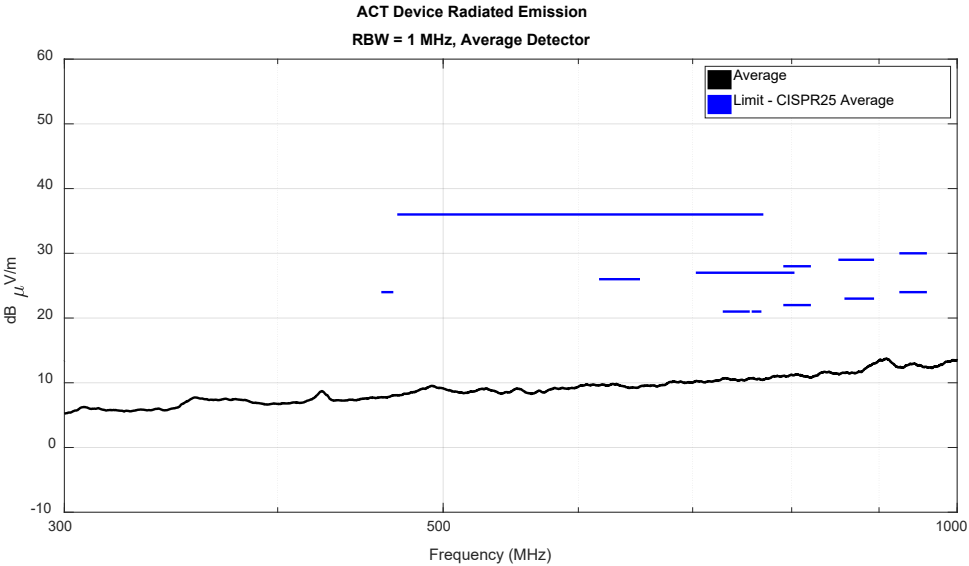
RE Measurement Results



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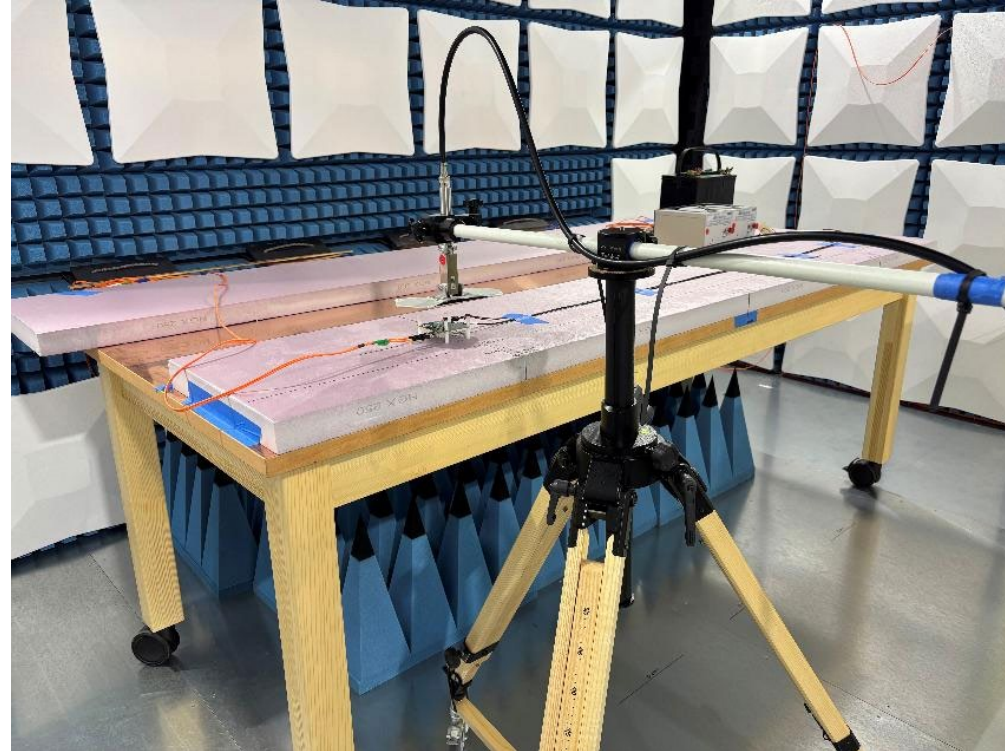


Portable Transmitter Immunity

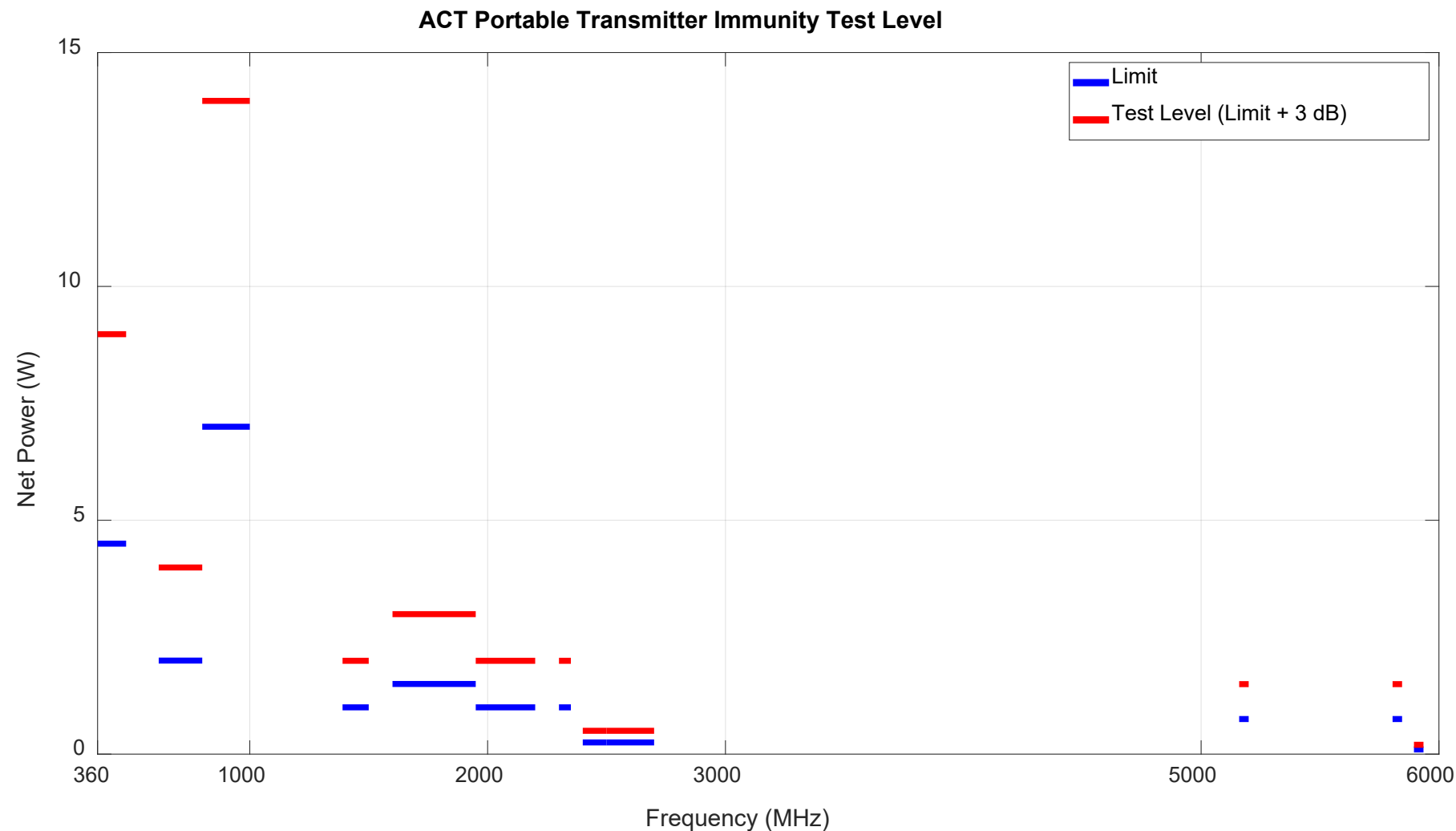
ISO 11452-9

Portable Transmitter Immunity Evaluation Setup

- ACT Mode
 - Upstream – 100Mbps DME
 - Downstream – 10Gbps PAM4
- EMC Setup
 - Standard **ISO 11452-9** setup
 - Coaxial cable type: cx031
 - Cable length: 1.8 m



Portable Transmitter Immunity Evaluation Result



Passing Criteria: No Link Drop / Traffic Loss

Conclusion

- The radiated emission from a physical ACT device based on previously proposed ACT PSD on a coaxial channel has **≥ 6 dB** margin to pass stringent automotive requirement.
- The ACT device tolerates **Portable Transmitter Immunity** test with at least **+3 dB** margin relative to ECU-level test specification.

