

# CABLE ASSEMBLY ERL & MTF PERFORMANCE

BRUCE CHAMPION, TE

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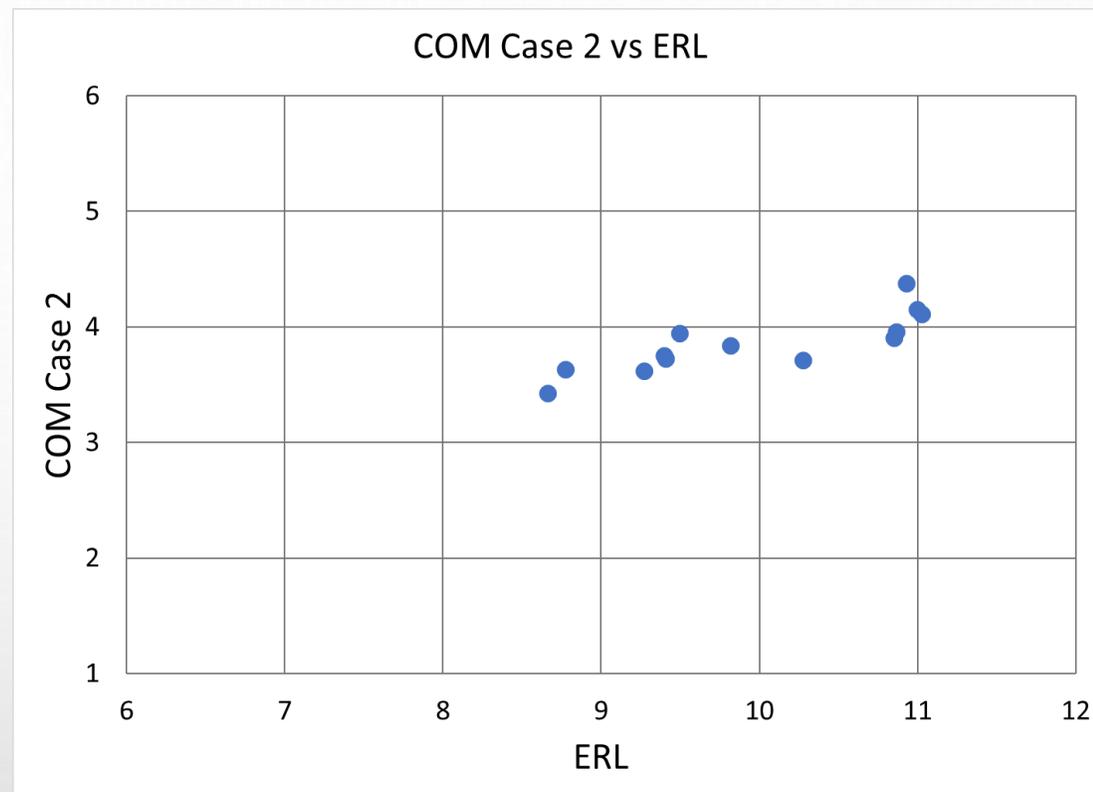
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# INTRODUCTION

- Method for setting CR ERL limit
- What is needed to accomplish this
  - Defining MTF RL characteristics
  - Acquiring more data from various form factors and vendors
- Summary/Questions

# METHOD FOR SETTING CR ERL LIMIT

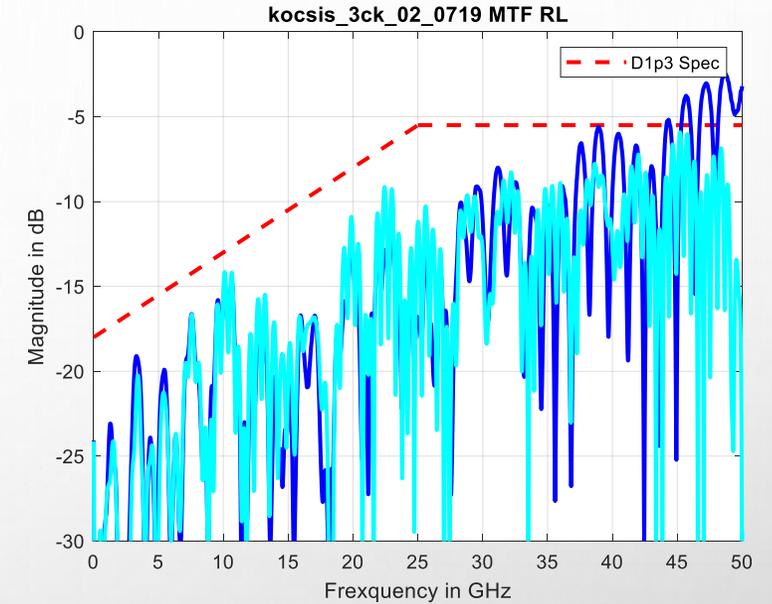
- It is difficult to correlate ERL to COM for CR channels, but some correlation can be seen
  - If we have a channel with a passing COM value, it is challenging to determine the ERL value that would cause that channel to fail
  - It is recommended in mellitz\_3ck\_01\_0320 to set ERL limit close to the lowest ERL for channels near 3 dB COM
  - Our goal is to determine an ERL limit based on the data available
    - Multiple form factors & vendors need to be considered
    - MTF RL requirements need to be considered
    - Budget for channel degradation due reflections needs to be considered



- Data represents Tp1-Tp4 measurements
- All channels have  $-19.5 < IL < -19.75$  dB
- COM is lowered almost linearly for lower ERL values
- No XT included in channels
- More info is needed before determining ERL Limit

# MTF RL LIMIT

- Quality of MCB will affect CR channel ERL
- Compliant CR channels should set the standard for MCB requirements, and be consistent with MTF requirements
- Current RL mask defined in draft 1.3 (limit line on plot)
- This mask can be hard to achieve, especially at frequencies  $> 40$  GHz
  - RF connector and test fixture itself can make a difference at these higher frequencies
- Do we need to look at ERL for MTF to determine validity of high frequency limit lines
  - One option is to base the RL mask on a compatible ERL target with CR and KR
  - One option is to use ERL as limit for MTF and RL mask as informative limit



# VARIOUS VENDOR/FORM FACTORS

- Most of the data to date has used OSFP as the form factor in looking at ERL, but other form factors should also be taken into consideration
- For example, QSFP-DD and OSFP have different paddle card dimensions and features (This can lead to varying performance)
- Table 162D-1 lists 6 different form factors
- To set the ERL limit, results from various vendors and form factors should be considered

Table 162D-1—Host receptacles and cable assembly plugs

Receptacle/Plugs	Reference
SFP+	162C.2.1
SFP-DD	162C.2.2
DSFP	162C.2.3
QSFP+	162C.2.4
QSFP-DD800	162C.2.5
OSFP	162C.2.6

# SUMMARY

- Reviewed method for setting CR ERL limit
- Discussed what is needed to accomplish this
  - Defining MTF RL characteristics
  - Acquiring more data from various form factors and vendors
- Questions