

# IEC 63171-1 Copper LC connector interoperability

IEEE 802.3cg Task Force

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Related to draft 2.0 ballot comments 572, 573, 618, 619, 653

Antoine Pelletier, Intertek

Masood Shariff, CommScope

Jeff Oberski, CommScope

Mike Borgman, Panduit

# Supporters

| NAME              | COMPANY               |
|-------------------|-----------------------|
| Bob Voss          | Panduit               |
| Andrew Jimenez    | ANIXTER               |
| Robert Aekins     | LeGrand North America |
| Hans Lackner      | Qoscom                |
| Matthias Fritsche | Harting               |
| Jeff Oberski      | CommScope             |

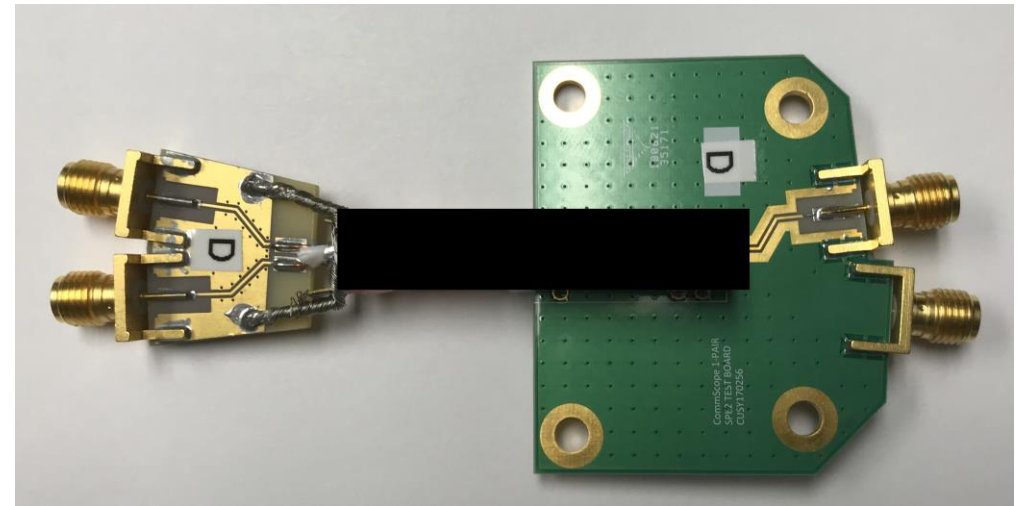
| NAME            | COMPANY           |
|-----------------|-------------------|
| Kamal Dalmia    | Drvy              |
| Brett McClellan | Marvell           |
| Peter Wu        | Marvell           |
| Chris Diminico  | MC Communications |
| Zhuangyan (Yan) | Huawei            |
|                 |                   |
|                 |                   |

# Test plan overview

- Two (2) manufacturers submitted four (4) pairs of copper LC plug and jack (MDI).
- Each connector pair from both manufacturer was measured (resulting in 8 measurements).
- The plug and jack specimen were interchanged between both manufacturers and the mated performance measured (resulting in another 8 measurements).
- The IL, RL, TCL and TCTL results were compared against the IEC 63171-1 draft standard.

# Test specimens and preparation

- The test specimens are prototype samples (not yet in production).
- The test specimens are shielded.
- Each specimen was mounted on a test board.
- Test boards of the same design and manufacturer were used for both connector manufacturers.
- The test boards are part of the whole DUT.



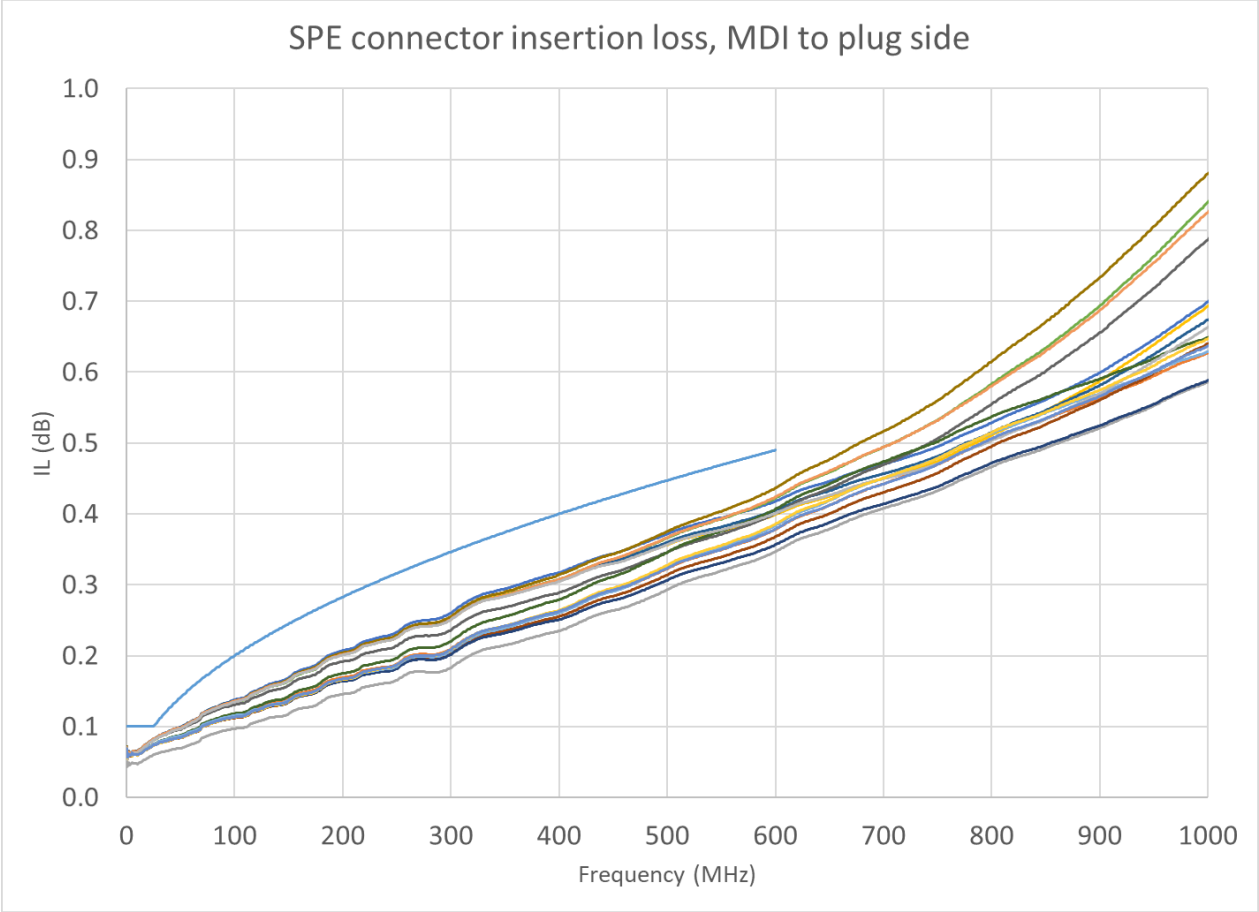
# Network analyzer settings

- Network analyzer: Keysight E5071C
- IF BW: 200 Hz
- Sweep type: Segment
  - 300 kHz – 900 kHz, 7 points
  - 1 MHz – 1 001 MHz, 1 001 points
- Power level: 10 dBm
- ECAL was used for calibration
- Note: The particular network analyzer used has a start frequency of 300 kHz which is greater than the 100 kHz minimum frequency of the draft standard. The connectors are expected to meet the requirements below 300 kHz.

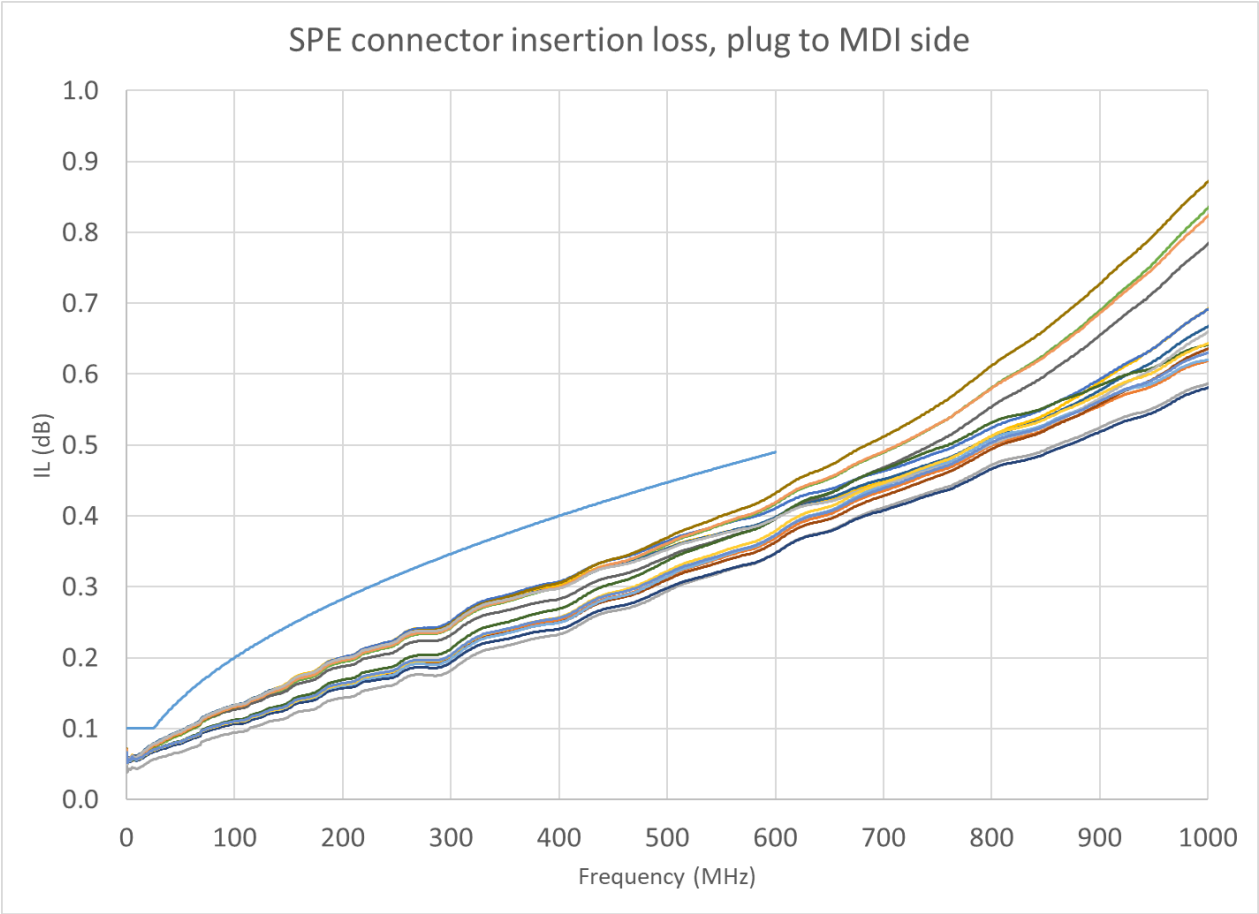
# Test results

- The test results are presented in the following eight (8) slides (4 parameters \* 2 directions).
- For each parameters, all sixteen (16) test results are superimposed.
- The test results are not identified as to which manufacturer combination they belong to.

# Test results (1/8)

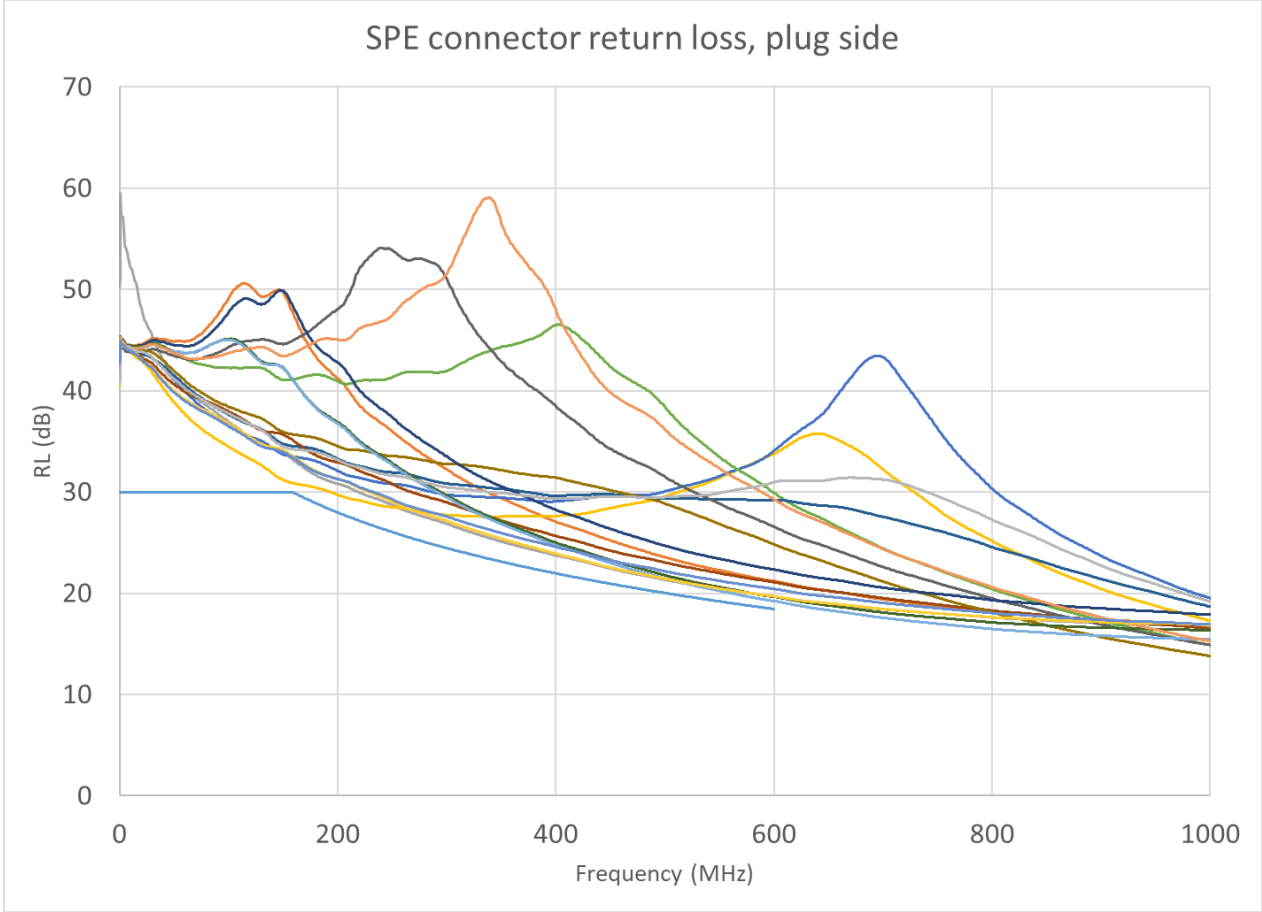


# Test results (2/8)

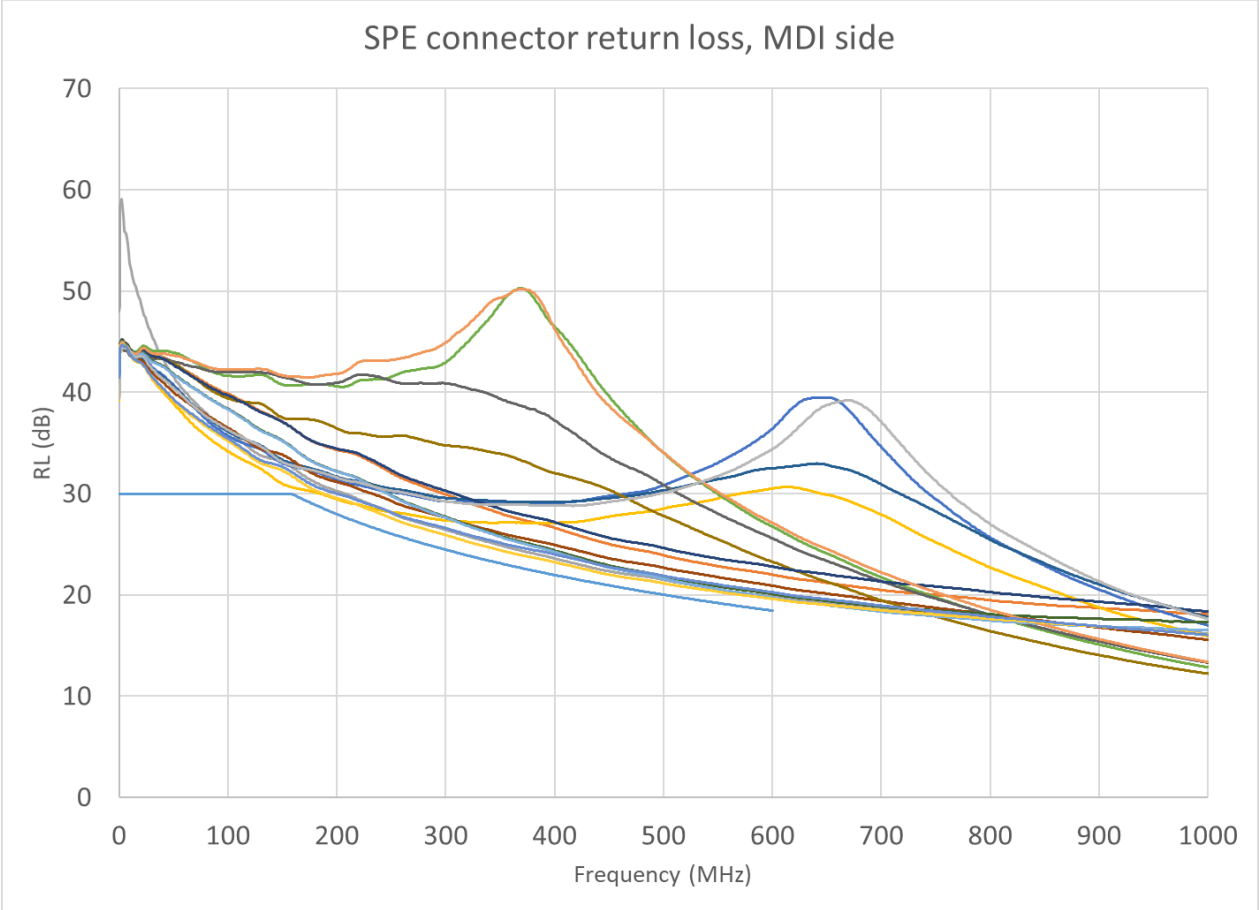




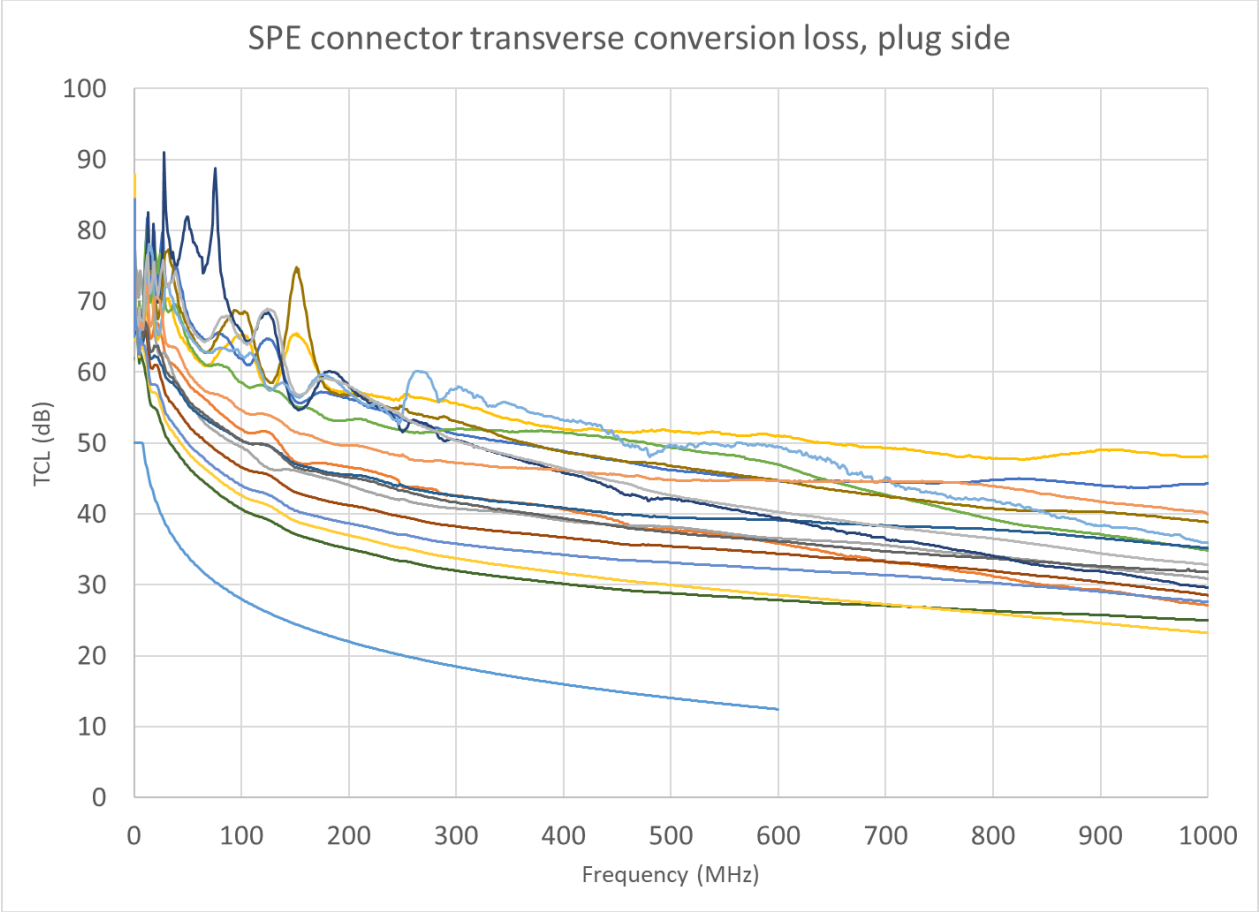
# Test results (3/8)



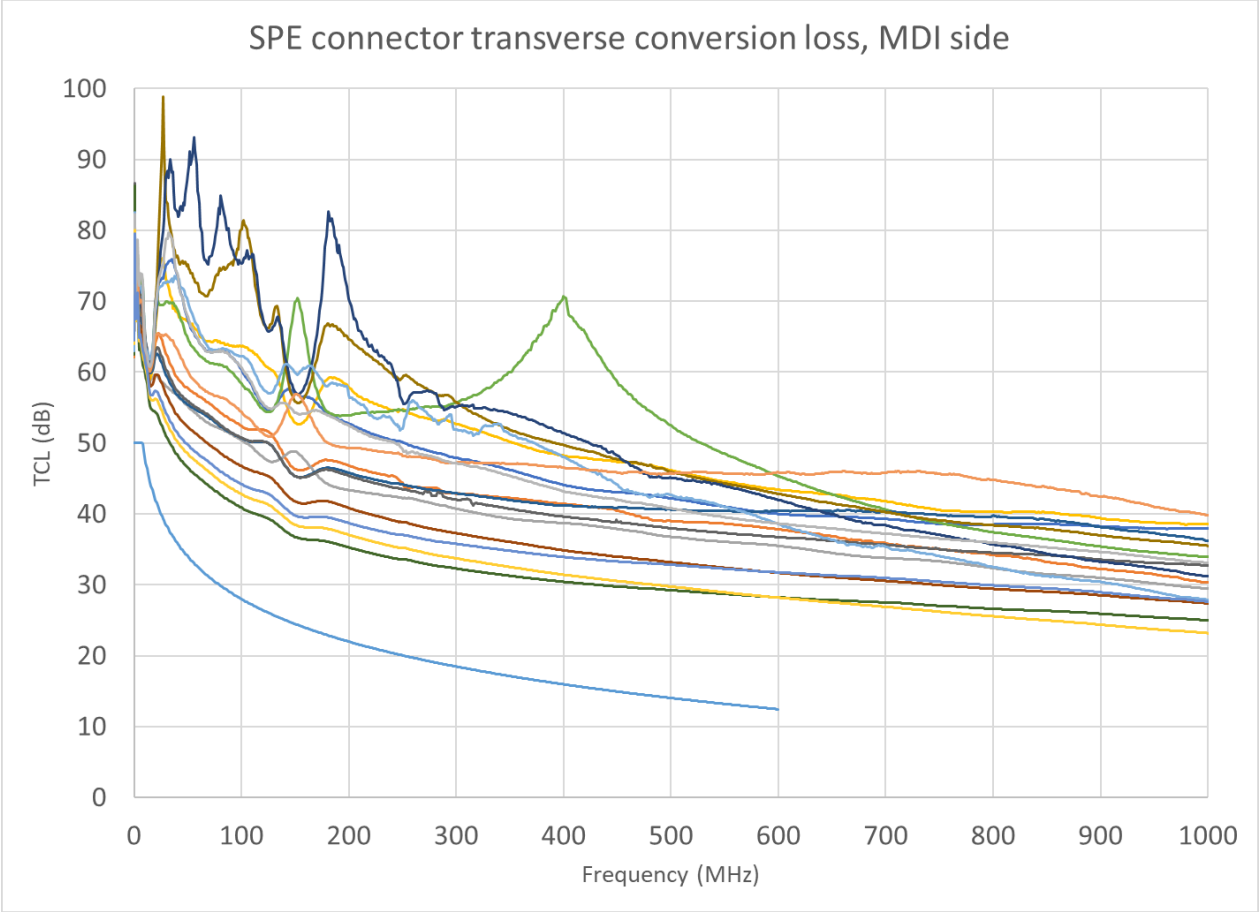
# Test results (4/8)



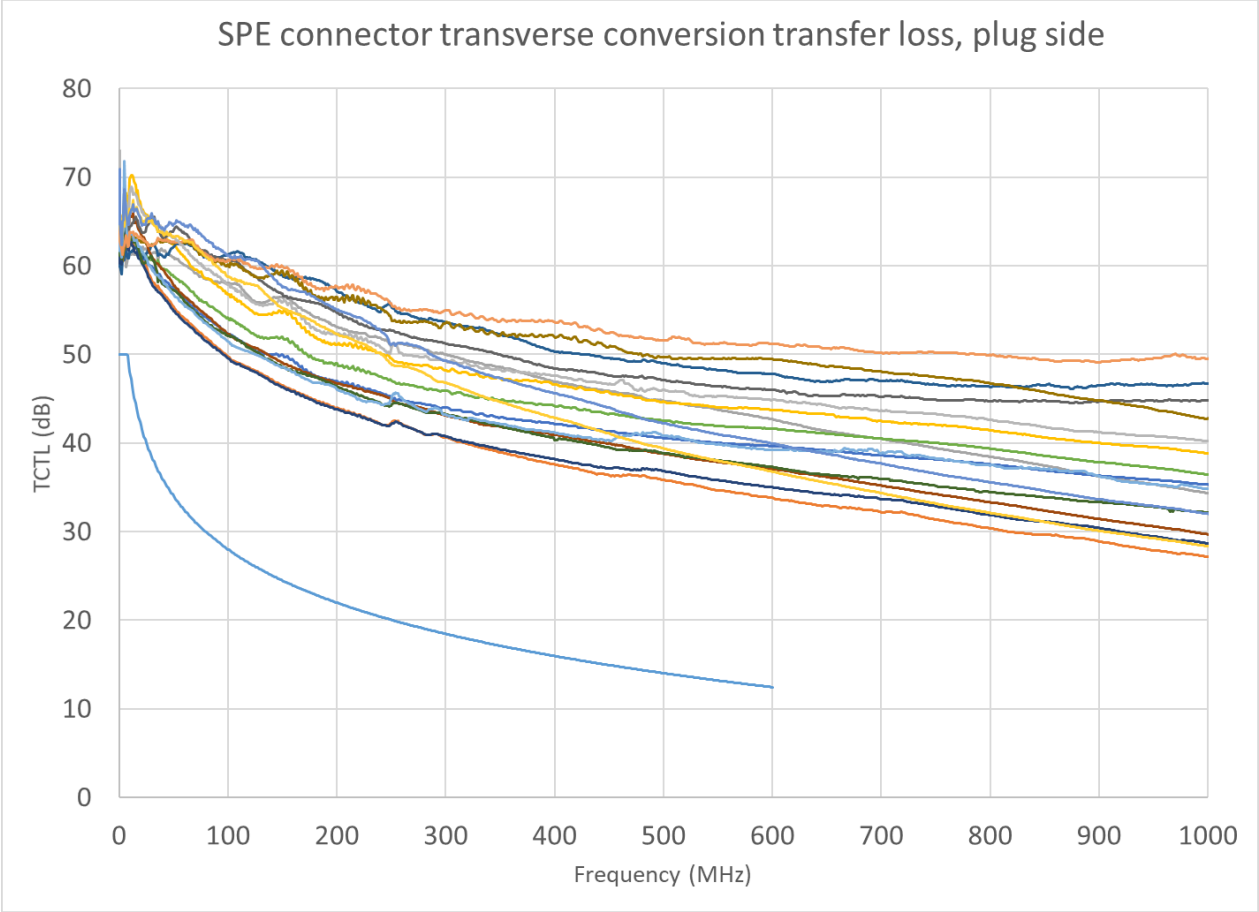
# Test results (5/8)



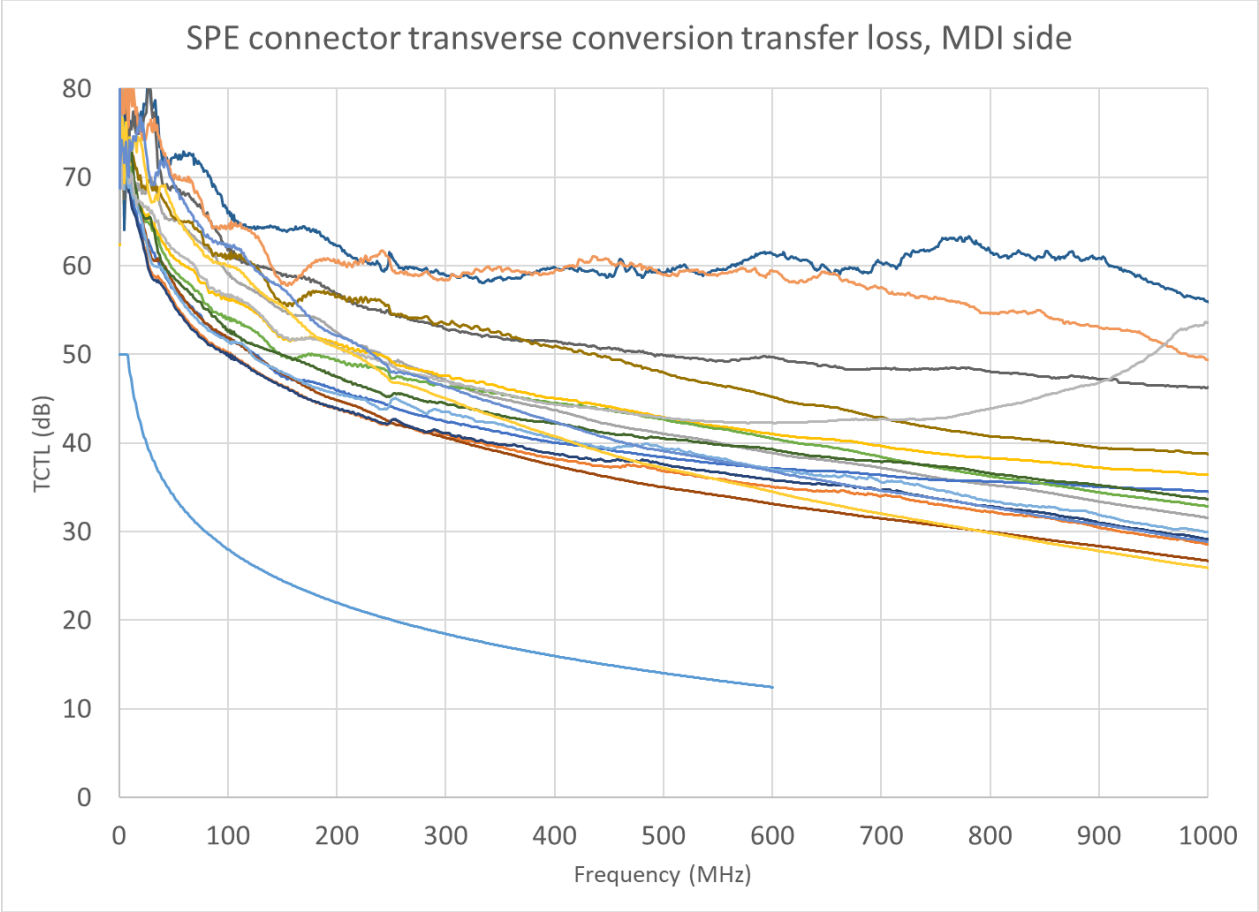
# Test results (6/8)



# Test results (7/8)



# Test results (8/8)



## Conclusion

- Two (2) different manufacturers made compliant copper LC connectors.
- The IEC 63171-1 limits for IL, RL, TCL and TCTL are met when plugs and jacks from the two (2) manufacturers are interchanged.