

# Updated considerations and test results on 8x50G PAM4

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# Supporters

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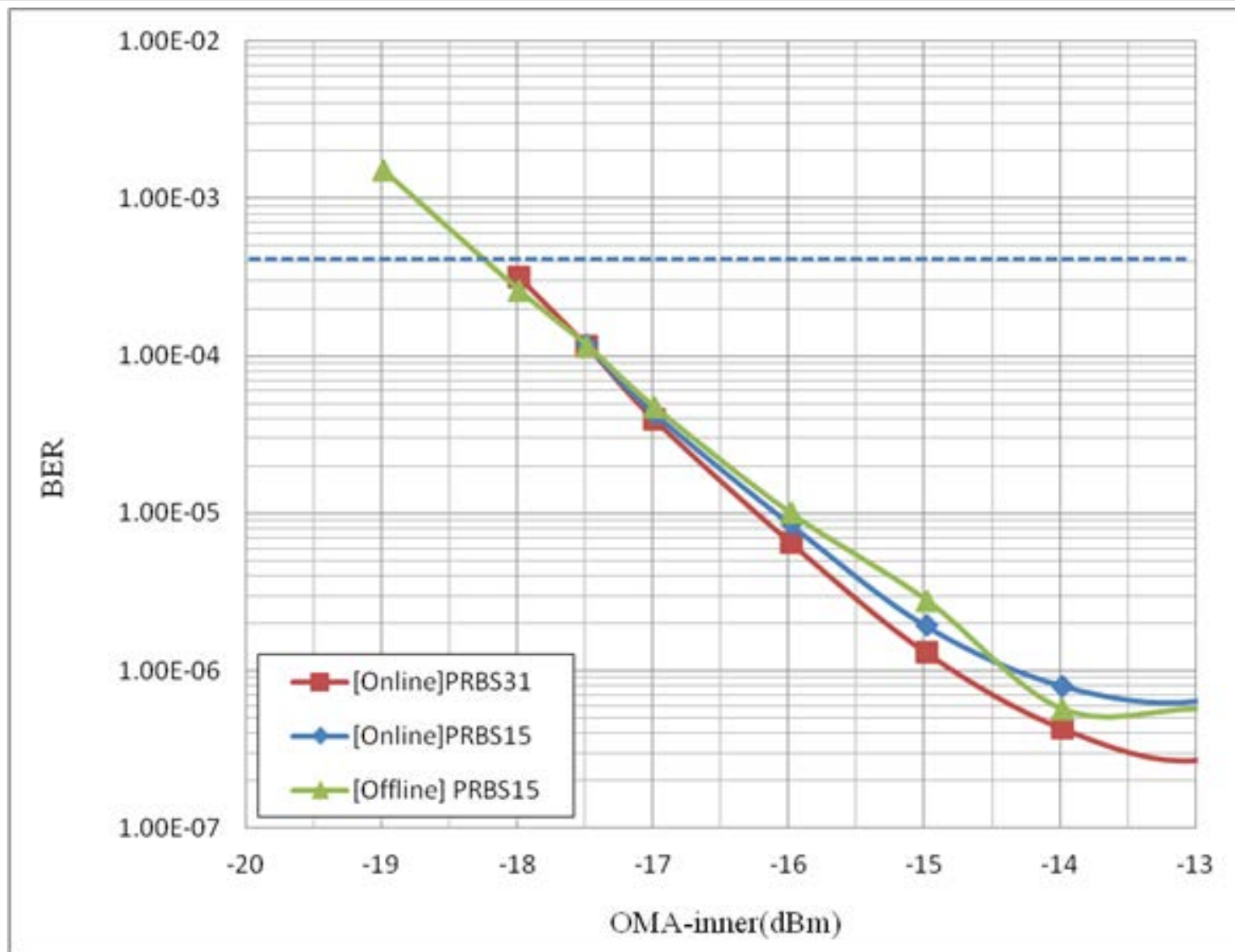
- TBD

# Introduction

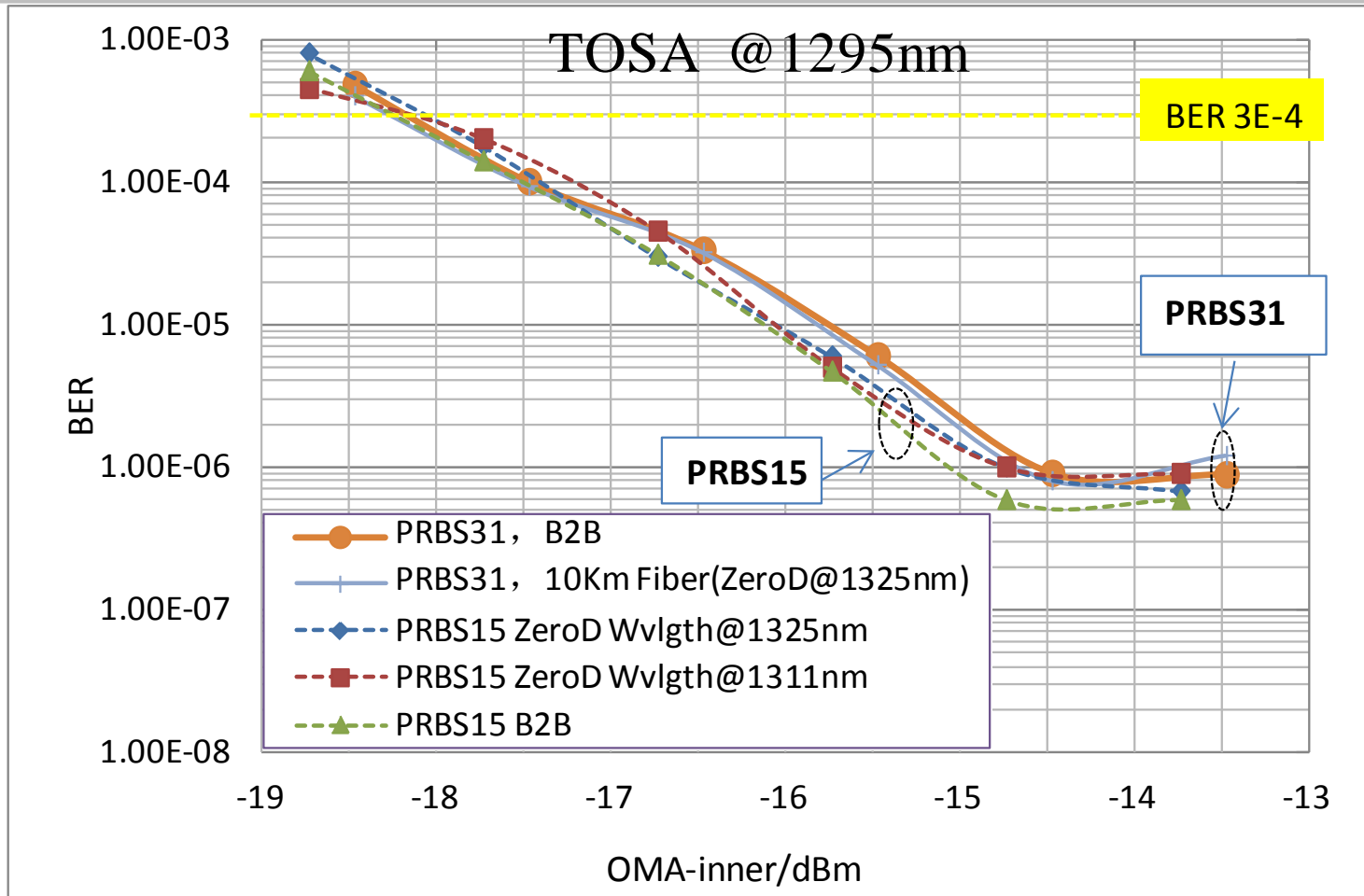
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- This presentation provides:
  - Updated test results for PRBS31 dispersion penalty
  - Considerations to support 50G PAM4 bitrate and modulation format for both 2km and 10km duplex SMF

# Test results 50G PAM4 receiver sensitivity shown in Berlin



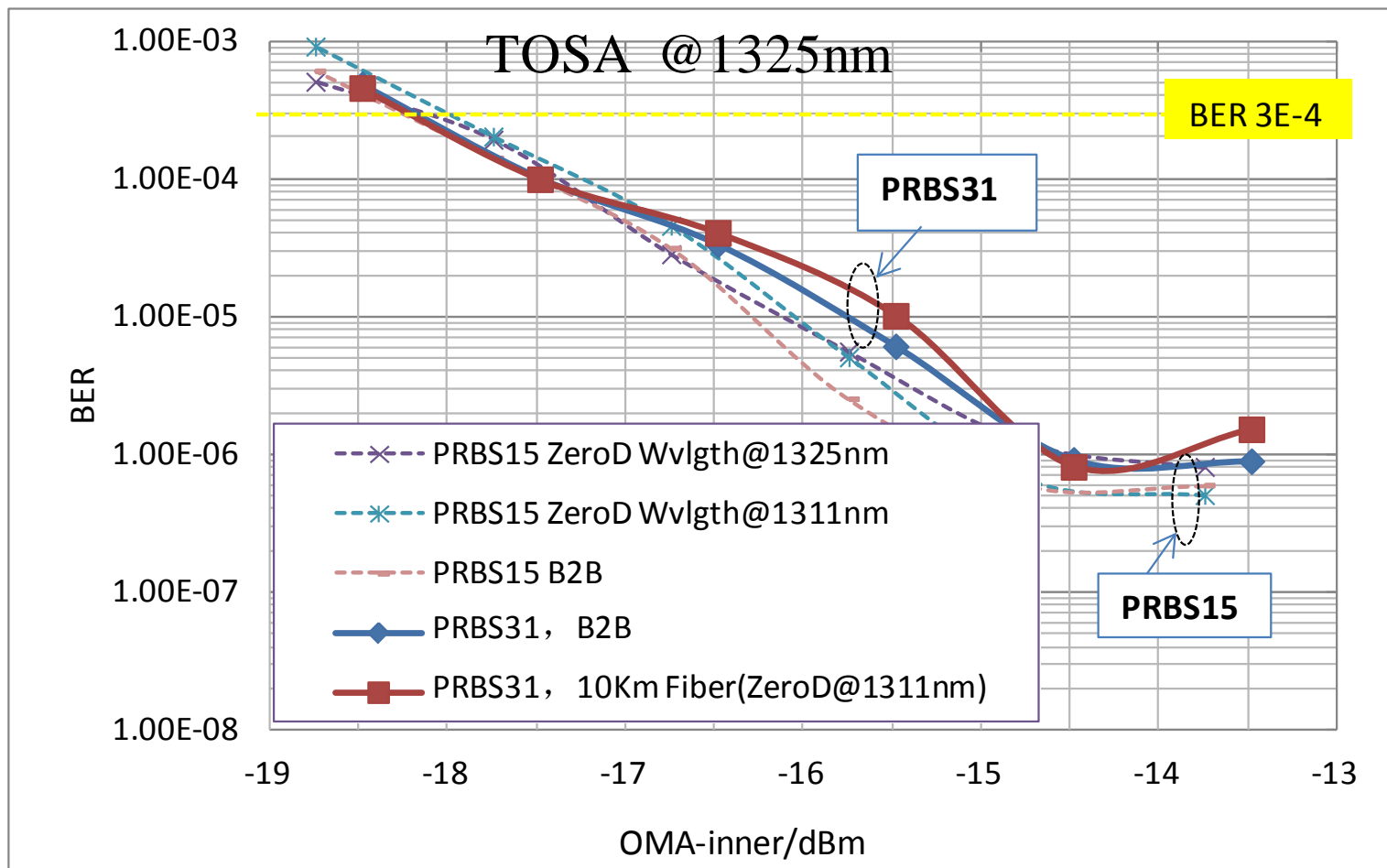
# Updated results testing chromatic dispersion penalty



2 Test points with negative dispersion

*Thanks to Corning for making characterized fibers available*

# Updated results testing chromatic dispersion penalty



1 Test point with positive dispersion

*Thanks to Corning for making characterized fibers available*

## Preferred approach for 10km duplex SMF

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- ❑ As shown in stassar\_3bs\_01b\_0914 (Ottawa, Sept 2014) there is a lot of support using 8x50G to address the 10km SMF duplex objective.
- ❑ Comparing only the optical test results of 50G NRZ with 50G PAM4, NRZ provides more optical margin than PAM4.
- ❑ However there are other, economically and technically related, reasons to prefer PAM4 over NRZ:
  - ❑ PAM4 will permit reuse of devices developed for 100GBASE-LR4
  - ❑ Usage of 50G PAM4 provide many benefits over 50G NRZ in the electrical (copper) layer:
    - ❑ Reuse of existing 25G package technology, without need to develop a 50G flex cable for inside package connections
    - ❑ Aligns perfectly with current developments in 50G PAM4 ASICs

## Preferred approach for 10km duplex SMF, continued

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- 8x50G PAM4 for 10km duplex SMF enables lowest cost, minimum investment solutions for early adoption applications



## Preferred approach for 2km duplex SMF

- If 8x50G PAM4 is preferred over 8x50G NRZ for 10km then it makes a lot of sense to specify a lower cost 2km solution using 8x50G PAM4 as well.
- This solution will have a lot of optical margin, extremely necessary to enable highest yield manufacturing and lowest cost.
- The alternative 4x100G CWDM configuration proposed in lewis\_3bs\_01a\_0315 (Berlin) for 2km duplex SMF provides negligible margin in testing and negative margin from a manufacturing point of view:
  - It has to deal with 5dB higher loss than the configuration proposed in welch\_3bs\_01b\_0315 for 500m PSM4 100G PAM4
  - Proposed Rx sensitivity in OMA: -8.8dBm (before demux), suggesting -10.8 dBm (OMA) after demux. Highest value shown in testing sofar -11.3 dBm (OMA) in way\_3bs\_01a\_0115, leaving ONLY 0.5dB optical margin, hardly sufficient to cover measurement accuracy and reproducibility

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# Q & A

**Thank you**