

FDDI Channel Modeling: understanding OM1 & OM2 fiber distributions

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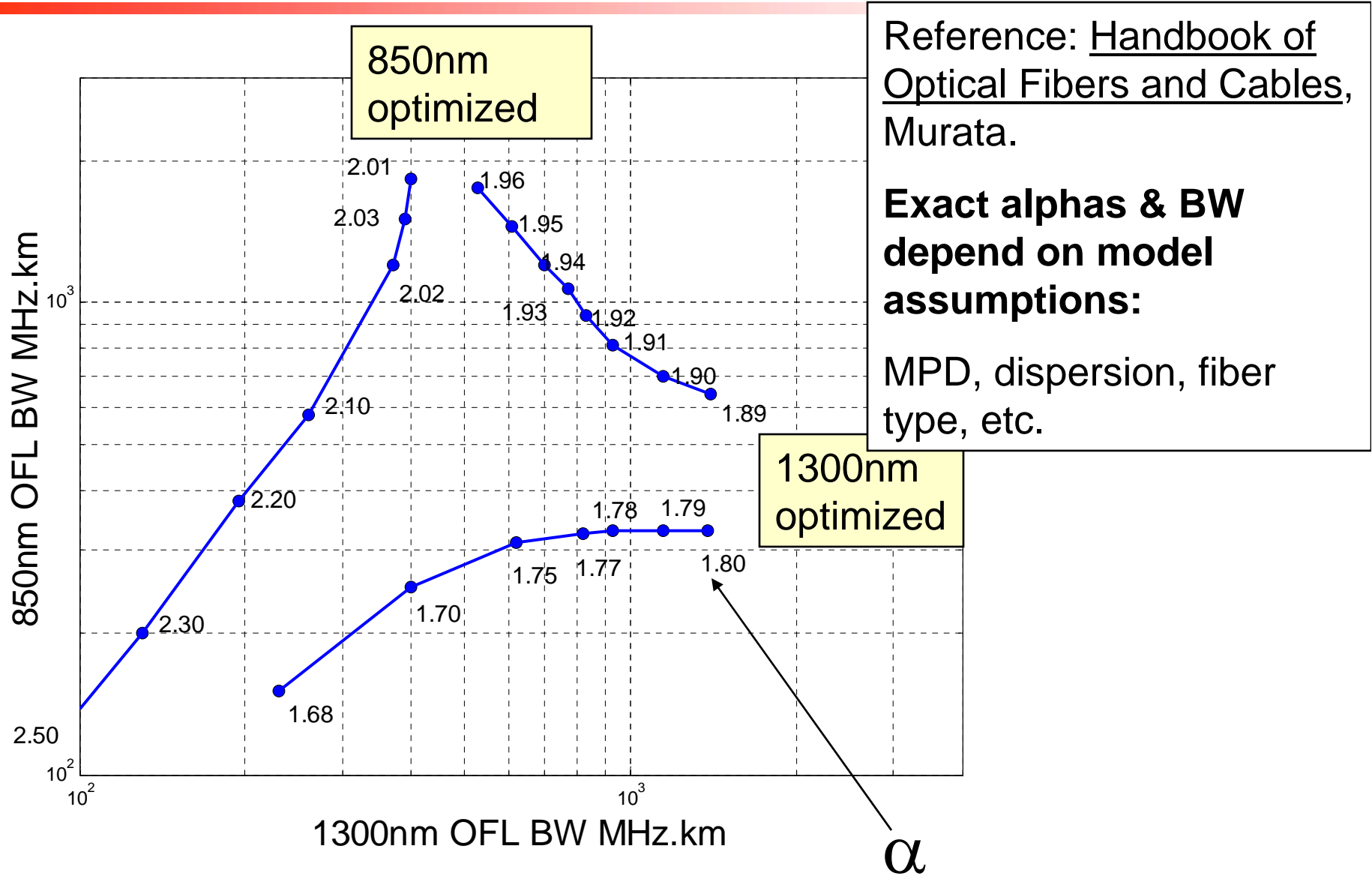


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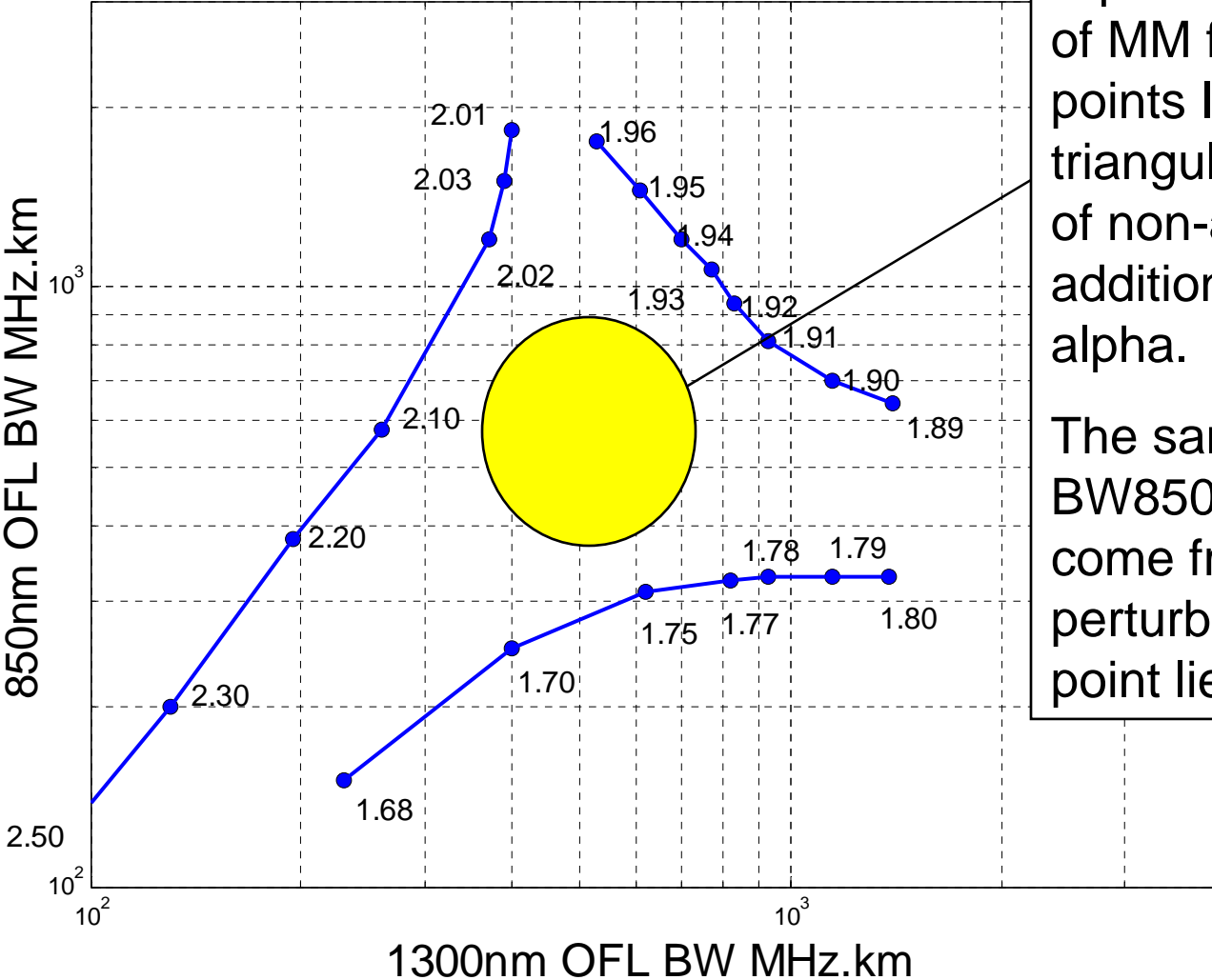
Summary

1. Explanation of differences between OM1 & OM2 distribution using a scatter plot of OFL BW850 vs OFL BW 1300.
2. Implications for 802.3aq -- OM2 fiber has distinctly different profile perturbations.

Theoretical OFL BW as alpha changes

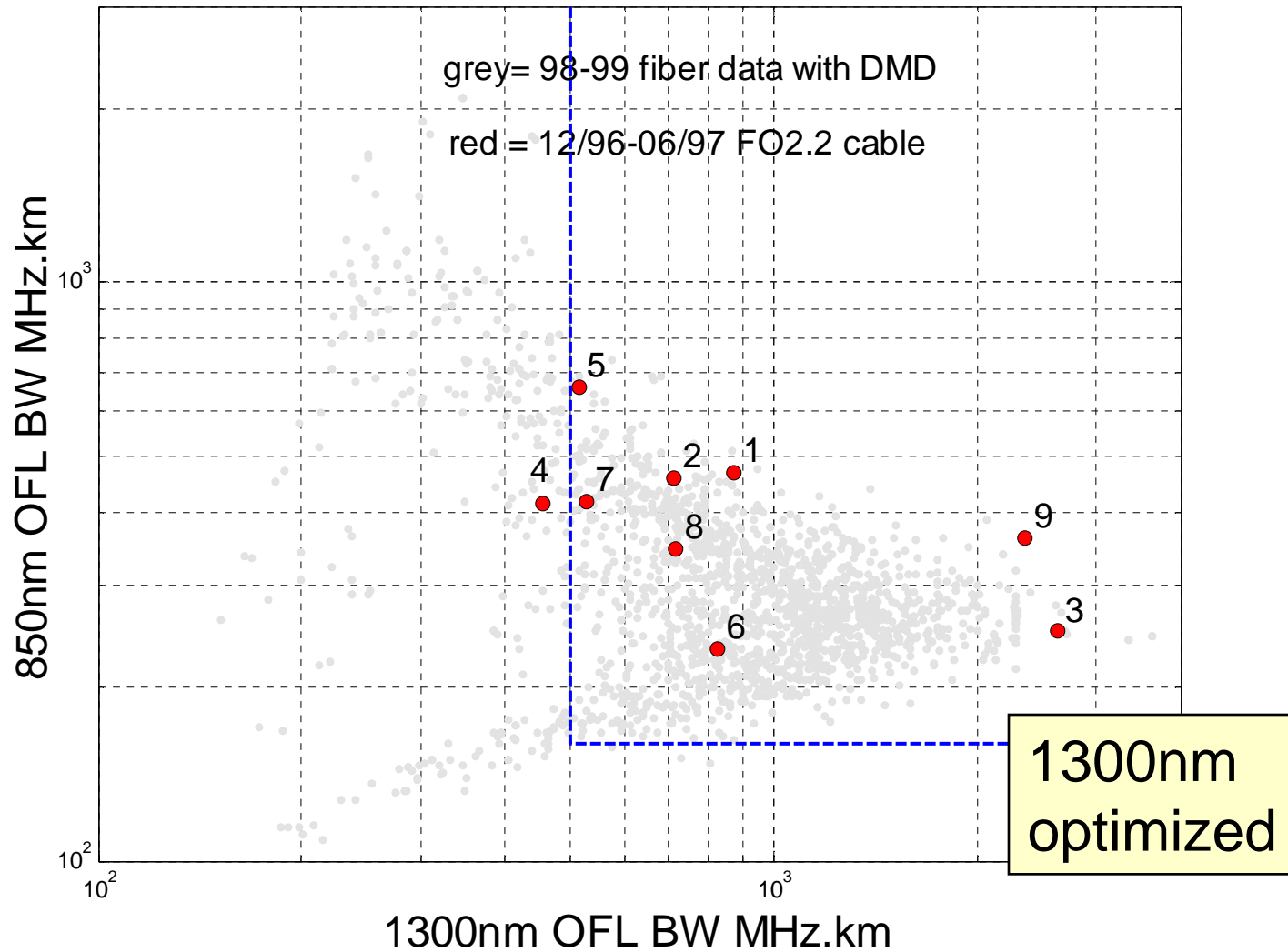


Expected OFL BW distribution



OM1 data: OFL BW850 vs OFL BW1300

850nm vs 1300nm OFL BW



OM1:

1=1 Orange

2=1 Green

3=1 Blue

4=2 Orange

5=2 Green

6=2 Blue

7=3 Aqua

8=3 Blue

9=3 Violet

OM2:

10=4 Orange

11=4 Green

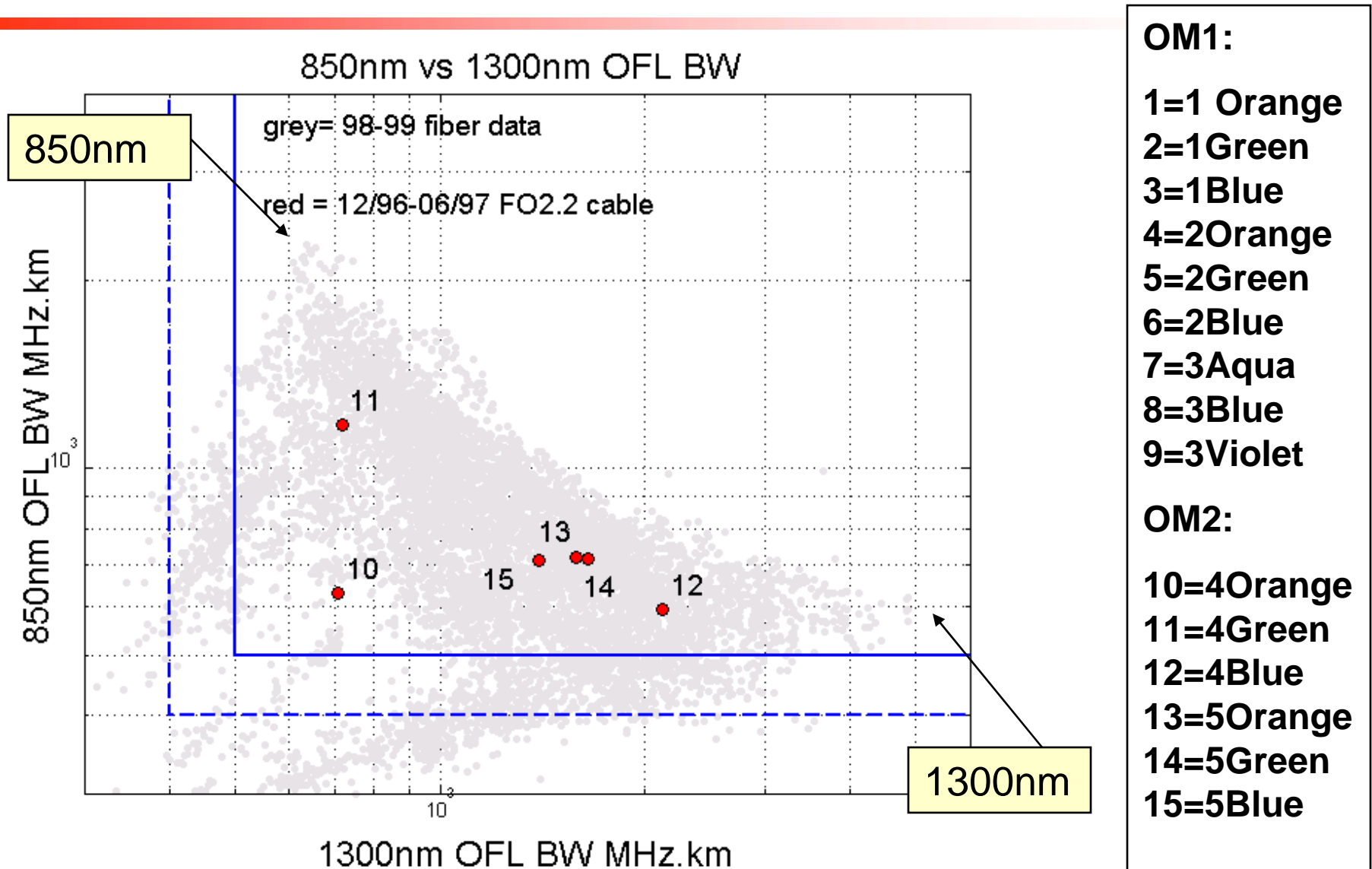
12=4 Blue

13=5 Orange

14=5 Green

15=5 Blue

OM2 data: OFL BW850 vs OFL BW1300



Differences between OM1 & OM2

The OM2 production distribution includes fibers which are optimized over a broad wavelength range. The 500/500 or 400/400 specification can be met by fibers optimized above 1300nm or below 850nm or at intermediate wavelengths. The 500/500 spec can be met with fiber optimized for wavelengths well below 850nm.

In contrast, the OM1 production distribution does not include fibers optimized at 850nm; in order to meet the 1300nm 500MHz.km specification the fiber has to be optimized closer to 1300nm. This is also reflected in the product specification (i.e. 160/500)

Implications for 802.3aq work.

The manufacturing distribution shows a variation in OFL850/OFL1300 consistent with a variation in alpha.

The installed base of OM2 fiber has a broader distribution of “alphas” than OM1. To understand PIE-D or BER results on OM2 fiber it may be helpful to use the OFL BWs to locate the fiber in the “triangle”.

The optimize the specification for OM2 fiber, modeling and experimentation specifically on OM2 fiber is needed.