

75GHz rectangular AWG for 400G-ZR without Nyquist shaping

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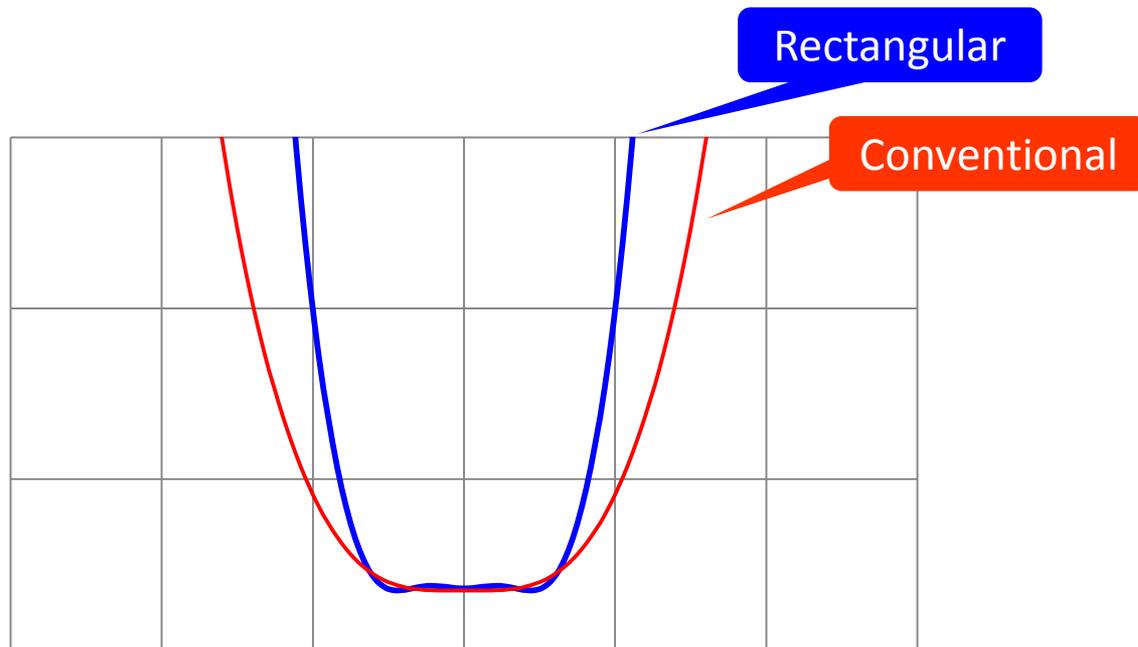
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Introduction

- Why the rectangular filter for 400ZR?
 - The availability of wideband filter had been confirmed at the report of “75 GHz Filter Data in support of 64 channel 400G Base ZR Links”
http://www.ieee802.org/3/ct/public/19_09/deandrea_3ct_01a_0919.pdf
 - However, 400G Base ZR signal should be generated without nyquist filter shaping in order to avoid power consumption increase in a small form factor pluggable. Then, the crosstalk from neighbor channel will be an issue.
- Availability of a rectangular filter
 - The wideband and high isolation can be achieved by AWG design.
 - A rectangular filter shape is simulated.

Simulated filter shape

- Simulated AWG filter achieved a rectangular shape by comparison with a conventional AWG
- Wideband and high Isolation will be available by rectangular AWG.



Center frequency accuracy

- Since the limited filter bandwidth for 60Gbaud signal transmission and assumed laser frequency accuracy of $\pm 1.8\text{GHz}$, the center frequency accuracy of the filter must be minimized.
- $\pm 2\text{GHz}$ is a target value in order to keep 60Gbaud signal transparent bandwidth.
- The technology option of achieving $\pm 2\text{GHz}$ frequency accuracy should be discussed for wider application capability and healthier eco-system in the industry.

Conclusion

- The rectangular filter will be needed for 400G-ZR without Nyquist shaping.
- The wideband and high Isolation filter is feasible by AWG with a rectangular filter shape.
- The frequency accuracy should be minimized for limited bandwidth. +/- 2GHz is the target accuracy.

Thank you

