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# 40G and 100G Products



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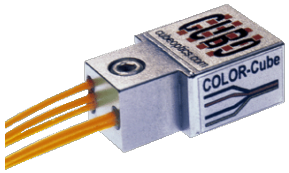
# WDM components / sub-assemblies for transceivers

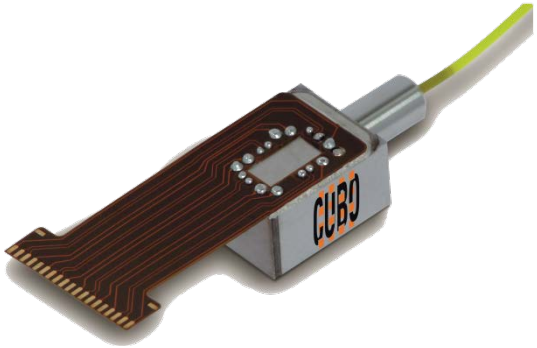
## Purely passive fiber based WDM components

- Miniaturized mux/demux to be spliced to single lasers and/or detectors
- Transparent to any bit rate, CWDM grid for 40Gbps, LAN WDM grid for 100Gbps




## WDM Receiver Optical Sub-Assemblies (ROSA)

- Integrated multi-l WDM + Detectors
- 10 (11.3) Gbps or 25 (28) Gbps per channel
- CWDM or LAN WDM grid




## WDM Transmitter Optical Sub-Assemblies (TOSA)

- Integrated multi-l WDM + Lasers
- 10 (11.3) Gbps or 25 (28) Gbps per channel
- CWDM or LAN WDM grid
- Based on DFB, EML or VCSEL lasers

# 4 channel CWDM 40G ROSA

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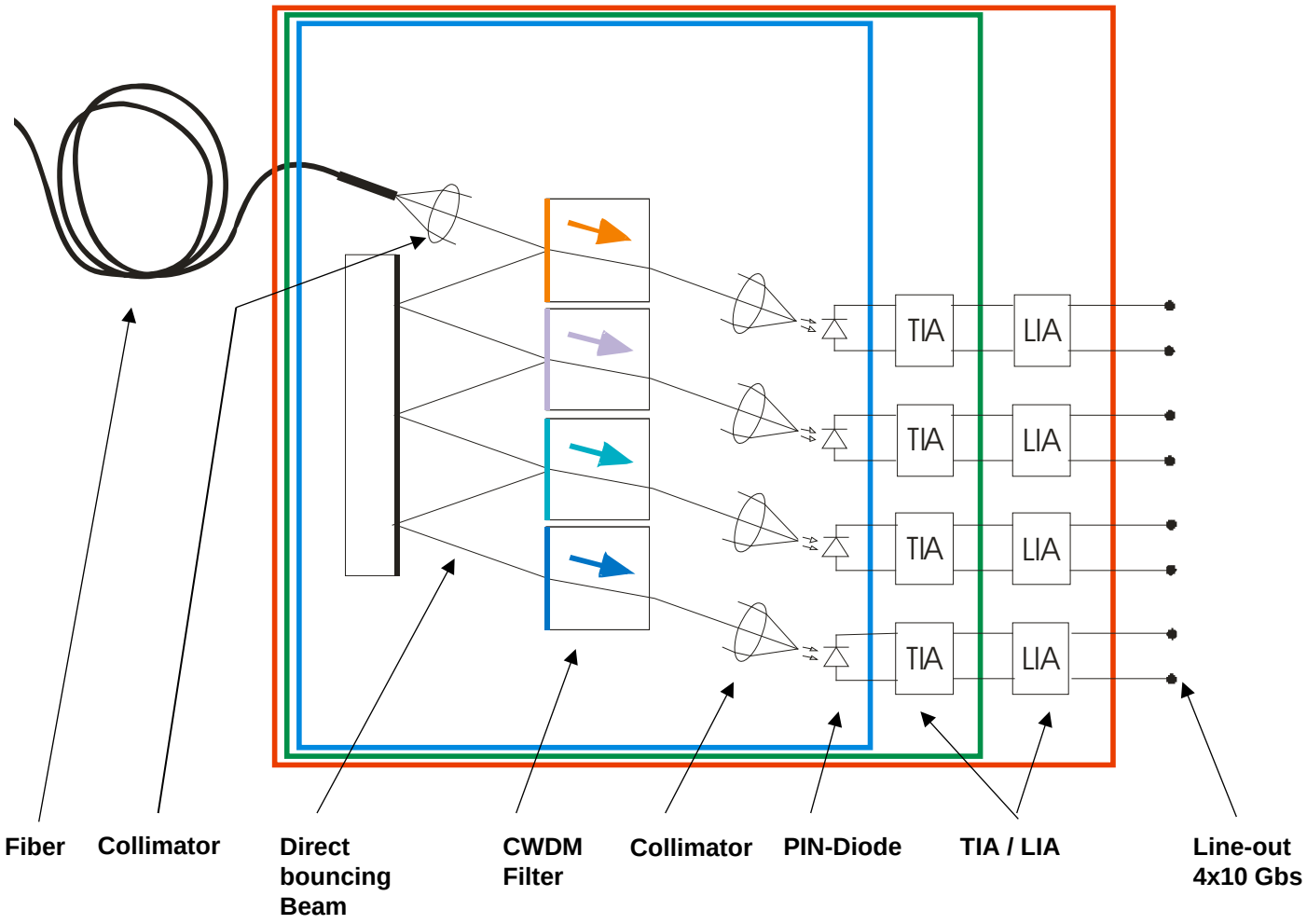
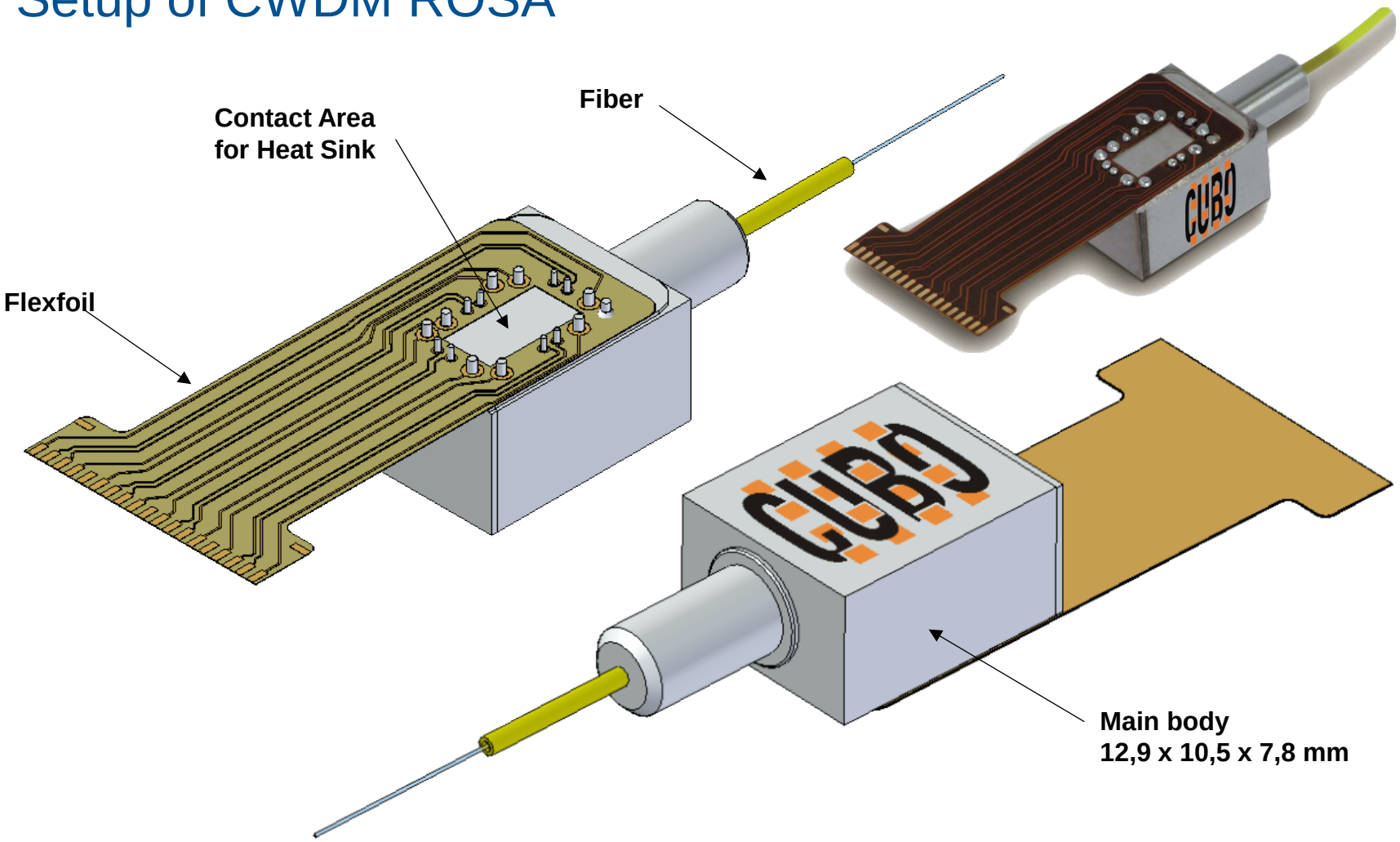
# Functional Blocks of CWDM - ROSA

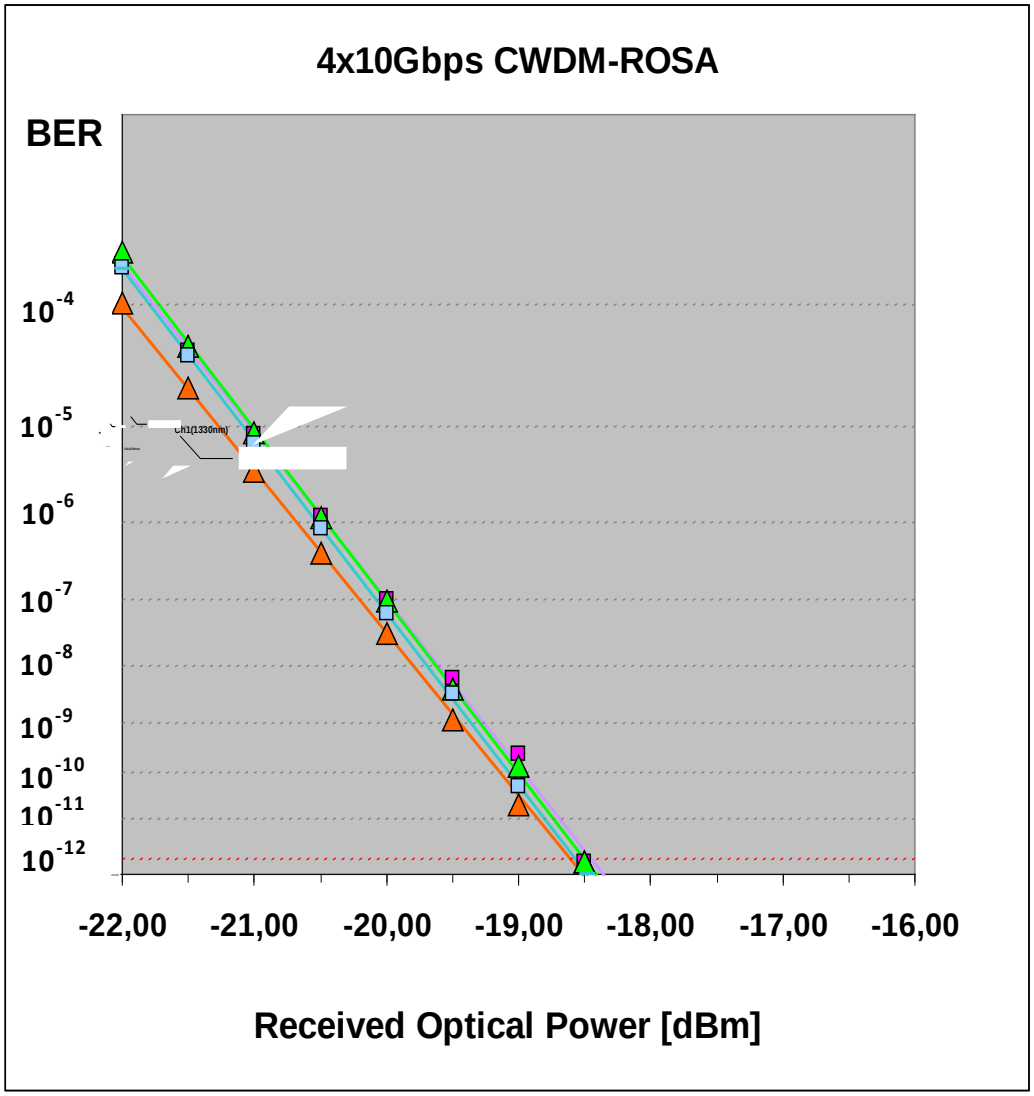


# Setup of CWDM ROSA




**Beta samples of 4x10Gbps CWDM ROSA available in Oct. 2008**

# Sensitivity of 40Gbps CWDM-ROSA Prototype




**Sensitivity:**

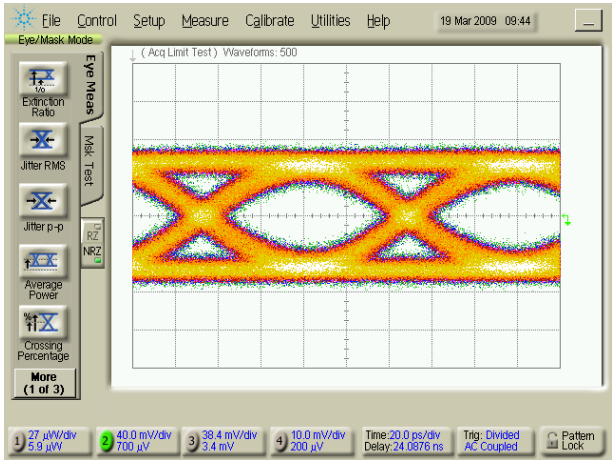
**Ch1 (1270nm) = -18,5dBm**

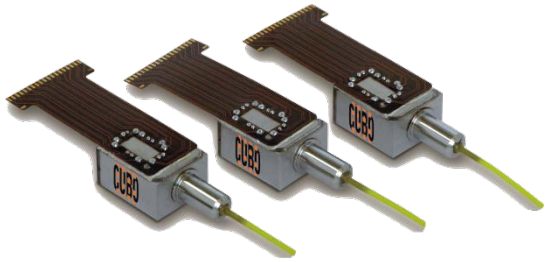
**Ch2 (1290nm) = -18,6dBm**

**Ch3 (1310nm) = -18,5dBm**

**Ch4 (1330nm) = -18,6dBm**

**(Measured at ER=9dB)**



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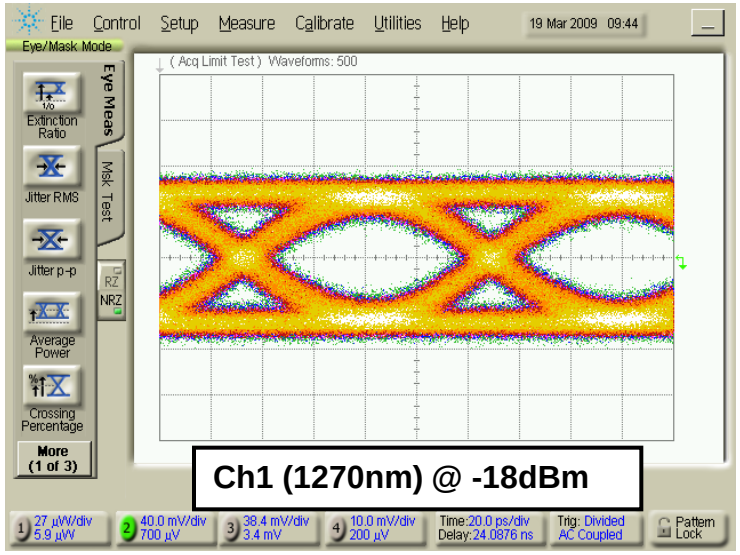
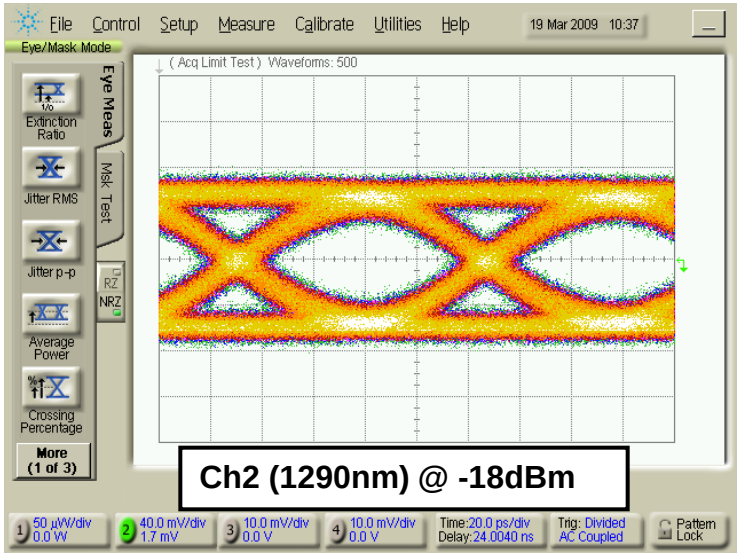
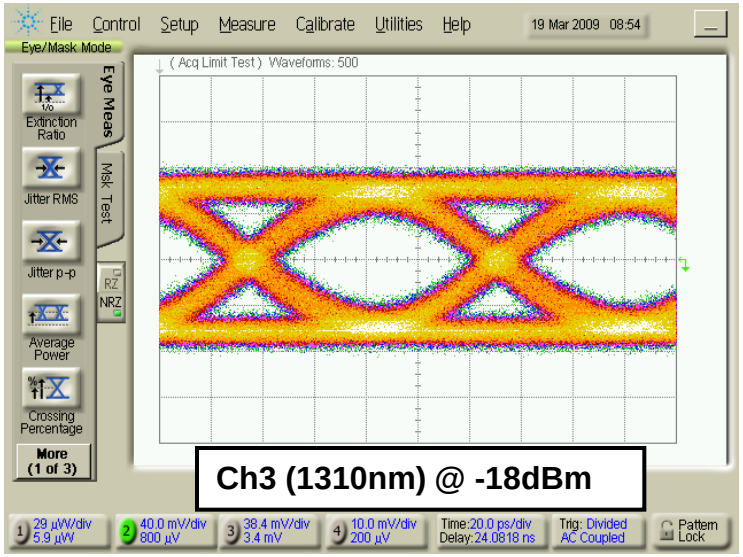
# Eye Diagram of 40Gbps CWDM-ROSA Prototype



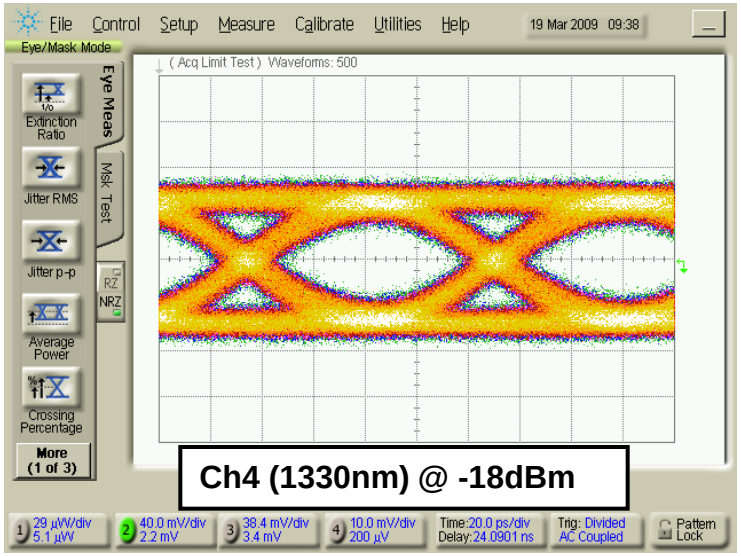

Ch1 (1270nm) @ -18dBm




Ch2 (1290nm) @ -18dBm




Ch3 (1310nm) @ -18dBm




Ch4 (1330nm) @ -18dBm

(Measured @ ER=9dB)

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# LAN WDM passive mux/demux

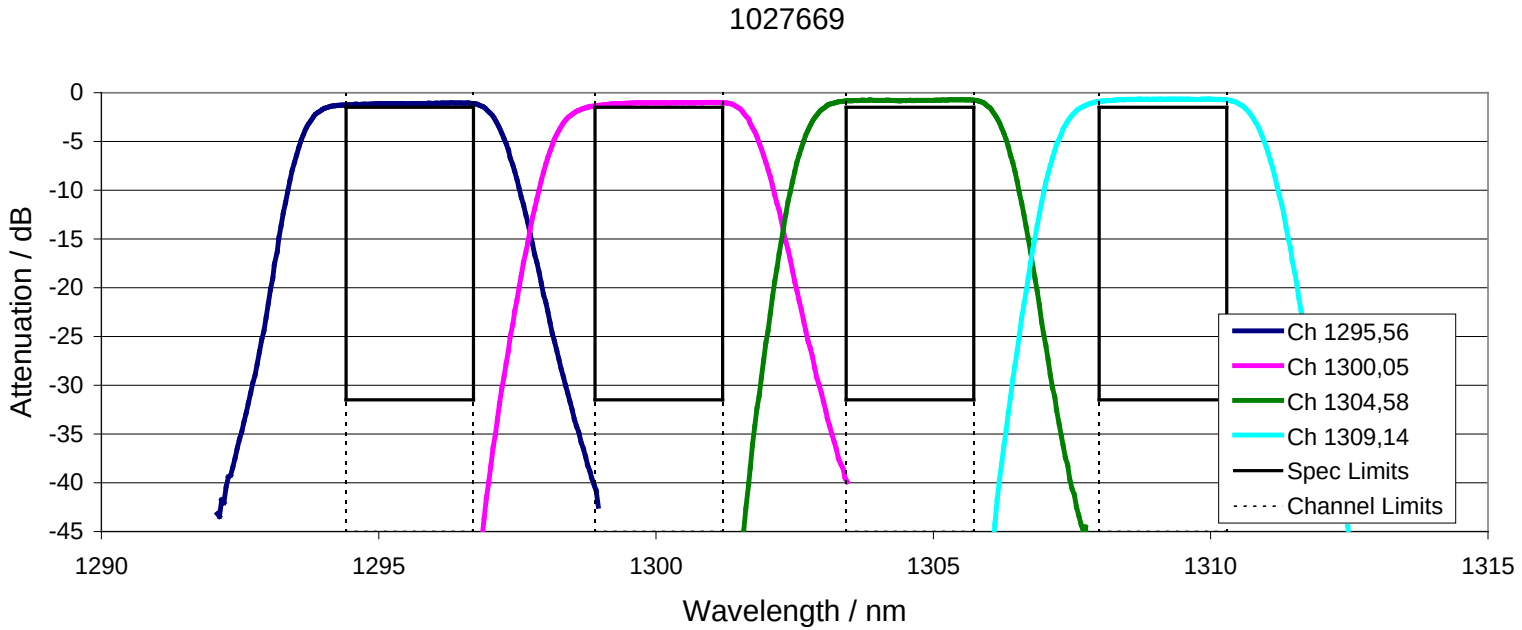
# LAN WDM Proposed Specification Outline

LAN WDM mux/demux as proposed to IEEE in Orlando: cole_02_0308

| | |
|---|---|
| Thin Film (TFF) Zig-Zag Mux/DeMux | LAN WDM ≥800GHz |
| Insertion Loss Max | 1.5 dB (0.9 dB typical) |
| Adjacent channel Isolation | 30 dB |
| Non-adjacent channel Isolation | 40 dB |
| Operating Temperature | -40ºC to +85ºC |
| Size: Mux | 11 x 13 x 6.5 mm3 |
| Size: Mux/DeMux | 13 x 13 x 9 mm3 |
| Reliability | Telcordia 1221 |
| Cost |  |
| Availability | Q2, 2008 |

# Optical LAN WDM Mux/Demux: Passband

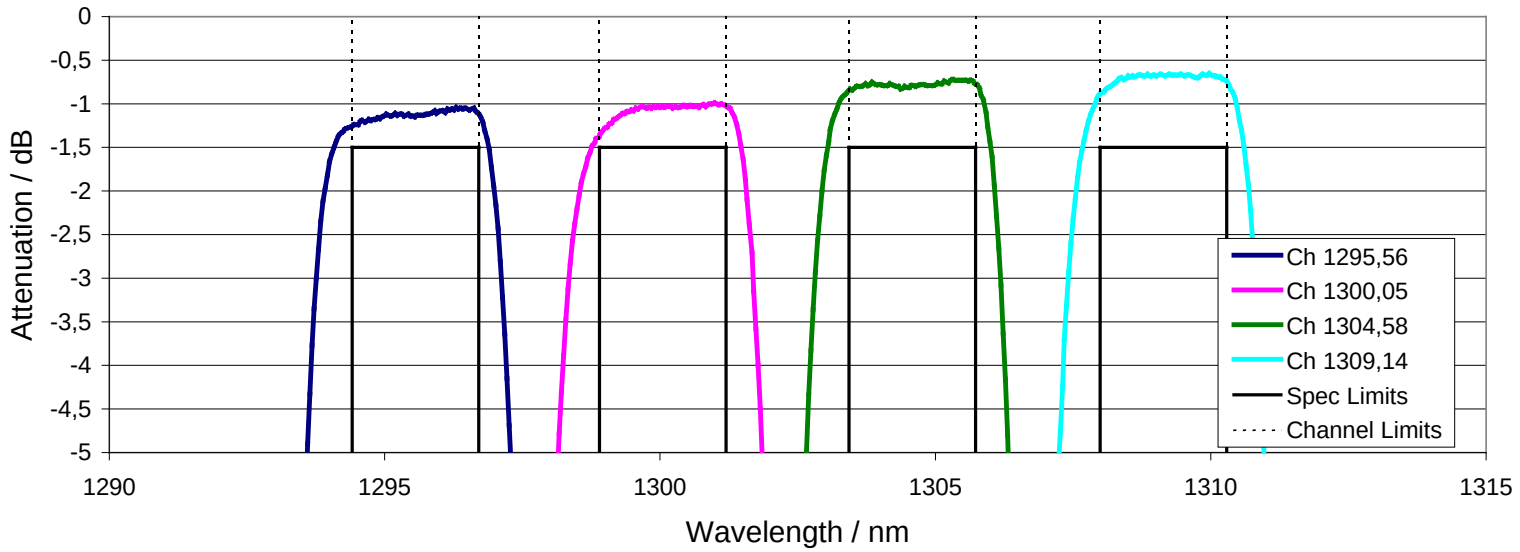
LAN WDM, 4 Channel, July 2008




- Passband width set to 2.3nm around nominal center wavelength 1295.56, 1300.05, 1304.58, 1309.14nm
- Assumed limits for passband width, insertion loss and isolation are shown by black rectangles

# Optical LAN WDM Mux/Demux: Insertion Loss

LAN WDM, 4 Channel, July 2008 1027669

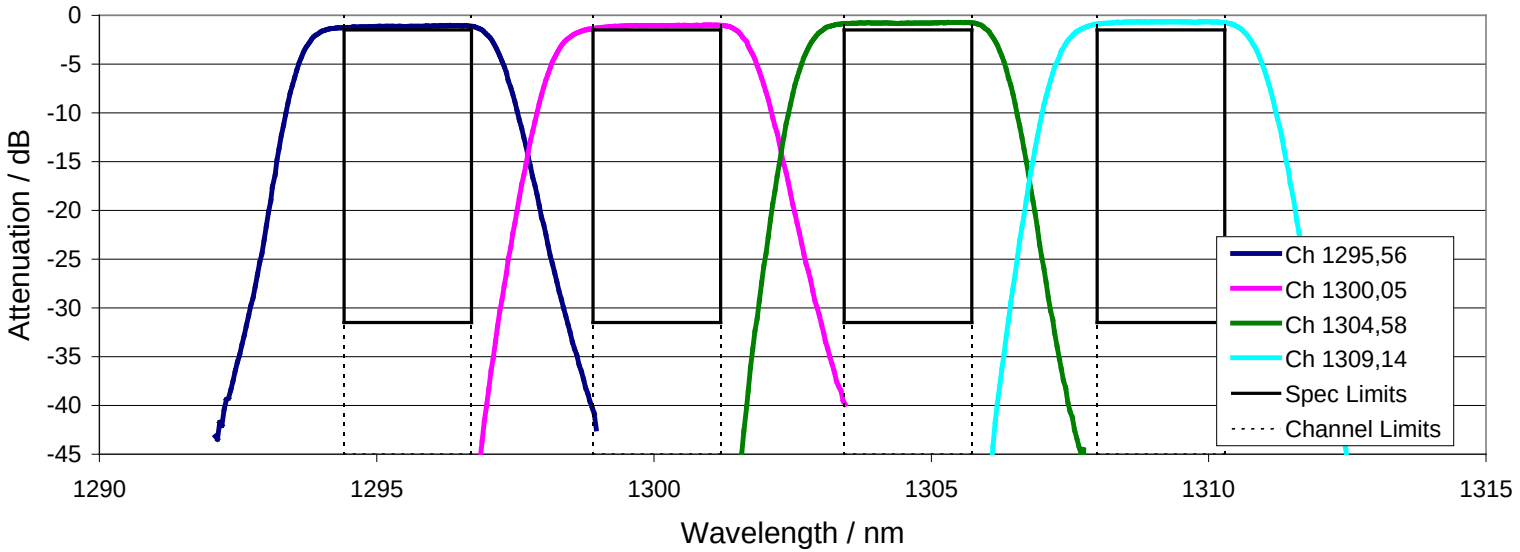



| **Wavelength [nm]** | **1295.56** | **1300.05** | **1304.58** | **1309.14** |
|---|---|---|---|---|
| Insertion Loss at 25°C [dB] | -1.26 | -1.37 | -0.87 | -0.91 |
| Insertion Loss (0°…70°C) [dB] | -1.38 | -1.48 | -0.90 | -0.91 |

Meets target insertion loss < 1.5 dB

# Optical LAN WDM Mux/Demux: Isolation

LAN WDM, 4 Channel, July 2008 1027669




| **Wavelength [nm]** | **1295.56** | **1300.05** | **1304.58** | **1309.14** |
|---|---|---|---|---|
| Isolation [dB] | 39 | 38 | >50 | >50 |

Meets target isolation > 30 dB (adjacent channel)

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