



# Power budget estimation using DML for 10km & 4km reach in 100G SMF

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- ◆ An additional reach option for 4km in 100Gb/s SMF is again triggered in last Atlanta meeting and continues.
- ◆ From the view point of device architecture feasibility, the selection of DML/EML option is the key issue.
- ◆ Fujitsu OCU proposed the DML option in 10km reach in Atlanta plenary.
- ◆ Here the power budget estimation for 10km (in comparison with 4km reach option) is tentatively reviewed and reported.  
25Gb x 4 lane configuration is assumed.

## Power budget estimation using DML

Estimated Diagram	unit	10km	4km	Note
Rx Sensitivity	dBm	-10	-10	Exr 3.5dB assumed
Loss over Fiber	dB	5.0	2.0	0.5dB/km assumed
Opt Mux/Demux loss	dB	3.5	3.5	Ref. Jiang_01_0907
Path Penalty (Dispersion)	dB	3.0	1.0	Ref. Isono_01_1107
Other penalty	dB	0.5	0.5	Ref. Jiang_01_0907
Transmitter Penalty	dB	2.0	2.0	
Tx Power required	dBm	+4.0	-1.0	

25Gb x 4 lane is assumed

- ◆ Under above estimations, both diagrams (10km and 4km) using DML seem to be within feasible range.
- ◆ The point is the same DML technology is applicable for both 10km and 4km reach options.

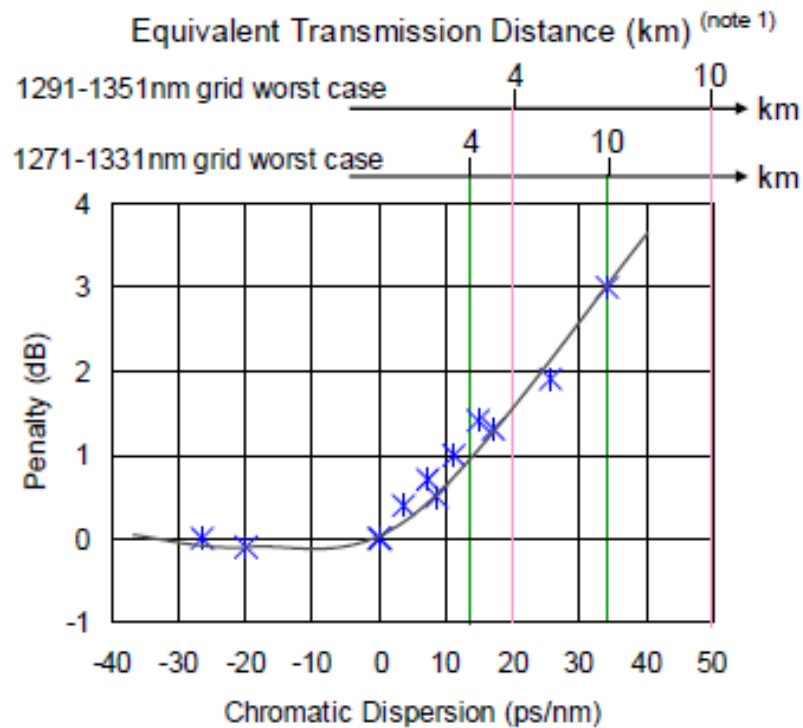
- ◆ General performance (including temp dependency) below will be reported in the next March plenary meeting in Orland.
  - 4km reach using Uncooled DML
  - 10km reach using Cooled DML
- ◆ In future options, 10km Uncooled DML will be studied.

## 100GE (4x25G WDM) Link Power Budget

	10 km	40 km
RX Sensitivity (dB)	-10	-10
SOA Gain (dB)		18
Loss over Fiber (dB)	5	20
Optical mux/demux loss (dB)	3.5	3.5
Path penalty (dB)	1.5	3.5
Other penalty (dB)	0.5	1.5
TX Power Required (dBm)	0.5	0.5

*Referece ; jiang 01\_0907*

## Power Penalty dependence on CD



(note 1) Reference: traverso\_01\_0907.pdf

- CD penalty: 1dB(4km), 3dB(10km) @ 1271-1331nm CWDM grid set