

CWDM4 MSA

Presented by:
Mitchell Fields (mitch.h.fields@avagotech.com)
Spokesperson for the CWDM4 MSA

Objective of the CWDM4 MSA

Specify a 100G optical interface for duplex single-mode fiber applications using low-cost low-power CWDM technology via a multisource agreement with broad end-user, OEM, and transceiver manufacturer feedback.

Why an MSA and not an “alliance”?

An MSA creates a legal framework for membership and spec negotiation in which all parties have an equal voting weight.

CWDM4 MSA Members

The CWDM4 MSA members are five established transceiver companies whose combined 40G-LR4 and 100G-LR4 component and transceiver shipments represent the VAST majority of world-wide shipments.

AVAGO
TECHNOLOGIES

Finisar



JDSU

OCLARO



SUMITOMO

CWDM4 MSA focus areas

- **Cost... cost... cost... cost...**
Don't aggressively specify parameters such as link budget and receiver sensitivity.
- **End product applicability**
Broad open industry review of the CWDM4 target specification by end users, OEMs, and component manufacturers to ensure we address the broadest set of user applications.

CWDM4 MSA Spec Review

The CWDM4 MSA specification is on its second round of external review by major end-users, OEMs, and transceiver manufacturers.

Draft 1 Public Reviewers

Arista
Brocade
Ciena
Cisco
Dell
Huawei
Juniper
Oracle

Draft 2 Public Reviewers

All Draft 1 reviewers
CommScope
Facebook
Infinera
Kaia
Microsoft
Oplink
Skorpios

Targeting cost: Spec focus areas

- Use **FEC** to reduce optical parameter requirements, not to increase performance!
- Set **loss budget** to minimum acceptable in order to reduce optical parameter requirements.
- Relax **transmitter** requirements compared to 100GBASE-LR4.
- Relax **receiver** requirements compared to 100GBASE-LR4.

Key findings of review process

- **Total loss budget:**
5-dB loss budget accounts for vast majority of applications and has minimal impact on cost.
- **Receiver sensitivity:**
For highest yield, specification should be less aggressive than that for 100G-LR4.
- **Transmitter launch power:**
For highest yield, specification should be less aggressive than that for 100G-LR4.

CWDM4 MSA Specification Status

Item	Value	Item	Value
Rate (Gbps)	25.8	Tx OMA (dBm min, @ TDP max)	-2
Reach (km max)	2	TDP (dB max, w/o MPI penalty)	3
FEC	RS(528,514) per Clause 91	TX OMA – TDP (dBm min)	-5
BER	5e-5	Loss budget (dB min, w/o penalties)	5
L Grid	Clause 87 CWDM	Rx Sens OMA (dBm max)	-10
ER (dB)	3.5	Tx OMA (dB min, @ TDP ≤ 1 dB)	-4

Note: A non-FEC specification is in development

Next steps for the CWDM4 MSA

- **~ Two weeks:**
Finalize specification based upon broad industry review process.
- **~ Three weeks:**
Once the final specification is developed with appropriate link models, engage the CLR4 Alliance to reconcile the specifications.
- **~Four weeks:**
Publically release final specification in concert with CLR4 Alliance and open CWDM4 MSA to new members.