Updated baseline proposals for 200GBASE-FR4 and 200GBASE-LR4

Peter Stassar

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HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI

Introduction

- During the SMF Ad Hoc on 19 April a first baseline proposal was made in stassar_01_0416_smf, including some considerations on options for associated wavelength specifications.

- Considering that no comments have been provided on stassar_01_0416_smf, an updated proposal is being made in this presentation for 200GBASE-FR4 and 200GBASE-LR4 optical specifications, so that we can start working on consensus for the Whistler meeting in May.

Introduction-2

- As noted in stassar_01_0416_smf, the details of the proposal are intended to be consistent with 400GBASE-FR8 and 400GBASE-LR8 specifications in Draft 1.3

- In the following tables, only the parameters with values being different from 400GBASE-FR8 and 400GBASE-LR8 are shown

- A specific proposal for FR4 and LR4 wavelengths is made, including further considerations about the proposed specification

WDM terminology

- Some people appear confused by used of term “DWDM”.
- Some expressed preference for using LAN-WDM or LWDM
- BUT…..
- The term LAN-WDM is NOT mentioned in any in-force optical standard
- Reference Recommendation ITU-T G.671, http://www.itu.int/rec/T-REC-G.671-201202-I

3.2.1.17.1 coarse WDM (CWDM) device: A class of WDM devices that have a channel wavelength spacing less than 50 nm but greater than 1000 GHz (about 8 nm at 1 550 nm and 5.7 nm at 1 310 nm). Devices within this class can cover several spectral bands.

3.2.1.17.2 dense WDM (DWDM) device: A class of WDM devices that have a channel spacing less than or equal to 1000 GHz. Devices within this class can cover one or more spectral bands.

3.2.1.17.3 wide WDM (WWDM) device: A class of WDM devices that have a channel wavelength spacing greater than or equal to 50 nm. This device class typically separates a channel in one conventional transmission window (e.g., 1 310 nm) from another (e.g., 1 550 nm).

800GHz spaced WDM configuration is clearly DWDM

Proposed wavelength choice

CWDM for 2km and DWDM (popularly called LAN-WDM) for 10km

- Low risk and high confidence technical feasibility for both 2km and 10km
- Allows for lowest cost solutions at 2km
- Allows development of higher loss 2km variants (msa-style) , e.g. 6.3 dB, for data center applications without burden of 10km dispersion requirement
- Removes concerns about too high TDP at 10km due to chromatic dispersion @1337.5 nm (upper wavelength for 1331nm nominal wavelength).
- No technical obstacles for adoption in May Whistler meeting and subsequently moving into WG ballot in July, at least from 200GE perspective

Baseline proposal for 200GBASE-FR4 wavelengths

200GBASE-FR4 wavelength specification as in Table 87-5
CWDM grid:

Table 87–5—Wavelength-division-multiplexed lane assignments

Lane	Center wavelength	Wavelength range
L_0	1271 nm	1264.5 to 1277.5 nm
L_1	1291 nm	1284.5 to 1297.5 nm
L_2	1311 nm	1304.5 to 1317.5 nm
L_3	1331 nm	1324.5 to 1337.5 nm

Baseline proposal for 200GBASE-LR4 wavelengths

200GBASE-LR4 wavelength specification as in Table 88-5
800 GHz spacing
(often referred as LAN-WDM):

Table 88–5—Wavelength-division-multiplexed lane assignments

Lane	Center frequency	Center wavelength	Wavelength range
L_0	231.4 THz	1295.56 nm	1294.53 to 1296.59 nm
L_1	230.6 THz	1300.05 nm	1299.02 to 1301.09 nm
L_2	229.8 THz	1304.58 nm	1303.54 to 1305.63 nm
L_3	229 THz	1309.14 nm	1308.09 to 1310.19 nm

Baseline proposal for 200GBASE-FR4 and LR4

Parameter	200G-FR4	200G-LR4	Unit
Transmitter:			
Total average launch power (max)	9.7	9.7	dBm
Average launch power, each lane (max)	3.7	3.7	dBm
Average launch power, each lane (min)	–3.5	–2.8	dBm
OMA_{outer}, each lane (max)	5	5.2	dBm
OMA_{outer}, each lane (min)	–0.5	0.2	dBm
Launch power in OMA_{outer} minus TDP, each lane (min)	–1.5	–0.8	dBm
Receiver:			
Damage threshold, each lane	4.7	4.7	dBm
Average receive power, each lane (max)	3.7	3.7	dBm
Average receive power, each lane (min)	–7.5	–9.1	dBm
Receive power, each lane (OMA_{outer}) (max)	5.2	5.2	dBm
Receiver sensitivity (OMA_{inner}), each lane (max)	–10.6	–12.4	dBm

Q & A

Thank you