Suggestion on channel frequency of 100GbE/400GbE 80km objective

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Outline

- Various of channel frequency ranges

- Advantages of OIF channel frequency range

- Recommendation

Summary of channel frequency ranges

	OIF 400ZR		ITU-T G.698.1	ITU-T G.698.2	Cablelabs	Open ROADM
Spacing(GHZ)	75	100	100	100	100	50
Min ch(THZ)	191.375	191.4	191.5	191.5	191.3	191.35
Max ch(THZ)	196.1	196.1	196.2	196.2	196.2	196.1
Channel Count	64	48	48	48	50	96

- Motion #6, Mar 2019 – 100 GHz spacing selected for 100 GbE and 400 GbE objectives - Approved

- Strawpoll #1, Mar 2019 – Support for 191.3 /196.1 – Y: 12 N: 1 Need info: 17 Abstain: 5

- Strawpoll #2, Mar 2019 - Support for 191.5 / 196.1 - Y: 11 N: 0 Need info: 10 Abstain: 9

- Strawpoll#7, Nov 2018 – For the 400GbE–80km objective I would support the following channel spacing (Chicago Rules): 75GHz – 0   100 GHz – 51   Need more information – 4 Abstain – 9

- Strawpoll#8, Nov 2018 – For the 100GbE–80km objective I would support the following channel spacing (Chicago Rules): 50GHz – 6   75GHz – 0   100 GHz – 37 Need more information – 11   Abstain – 9

Advantages of OIF channel frequency range

Advantages:

- mature industrial chain, currently doing 400ZR module

- maintain consistent selection with FEC of 400GbE 80km (OIF 400ZR)

- has the same application scenarios with OIF 400ZR

Recommendation for 100G and 400G options:

Considering the OIF range as a compromise:

Recommend IEEE adopt the start channel at 191.3THZ
Recommend IEEE adopt the end channel at 196.1THZ

IA # OIF-400ZR 0.11-Draft:
Table 13.1.1 Optical channel specifications – Black Link

Ref.	Parameter	Default	Min	Max	Unit	Conditions/Comments
13.1.100	Channel frequency	193.7	191.3	196.1	THz	
13.1.110	Channel spacing†		100		GHz	See Section 18.1
13.1.111 (optional)			75		GHz	See Section 18.2
13.1.112 (optional)			100		GHz	See Section 18.3

Recommendation for 100G and 400G options:

OIF describes as follows:

For channel spacing of 100 GHz or more on a fiber, the allowed channel frequencies (in THz) are defined by 193.1 + n × 0.1 where n is a positive or negative integer including 0. For 400ZR modules, n = 30 to -18 in steps of 1.

For channel spacing of 75 GHz or more on a fiber, the allowed channel frequencies (in THz) are defined by 193.1 + 3n × 0.025 where n is a positive or negative integer including 0. For 400ZR modules, 3n = 120 to -72.

The required 48 x 100GHz DWDM application channels and the reference 64 × 75GHz DWDM application channels are defined as below.

index	n(from ITU-T G.694.1)	freq(THZ)
1	30	196.100
2	29	196.000
3	28	195.900
...	...	...
46	−15	191.600
47	−16	191.500
48	−17	191.400

100GHz channel spacing

index	n(from ITU-T G.694.1)	freq(THZ)
1	120	196.100
2	117	196.025
3	114	195.950
...	...	...
62	−63	191.525
63	−66	191.450
64	−69	191.375

75GHz channel spacing

Thanks!