100G-EPON:
Wavelength plan

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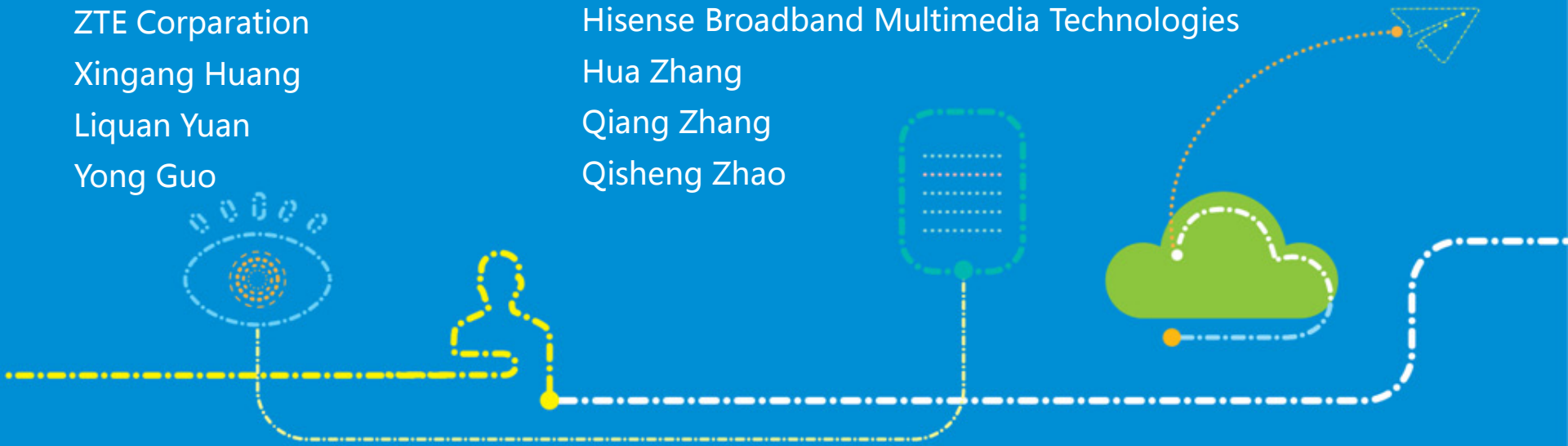

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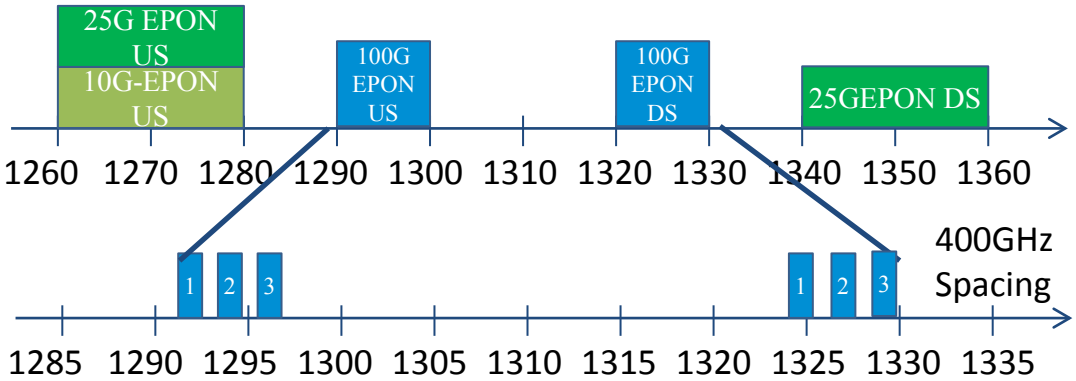
Introduction

In Macau, ZTE proposed 25G single channel use uncooled laser, and all wavelength in O band, which can keep the 25G ONU low cost.

On the meeting discussion, the group discussed the possibility of uncooled laser for outdoor operation.

For an uncooled laser, the output power is limited at higher temperature.

We suggest another wavelength plan for industrial environment which may be some more expensive for 25G single channel.



NGEPON Wavelength Plan

All wavelength in O-Band

DS at 1340~1360nm and US at 1290~1310nm with 800GHz channel spacing

– Lane 0 for 25G, Lane 0 and Lane 1 for 50G

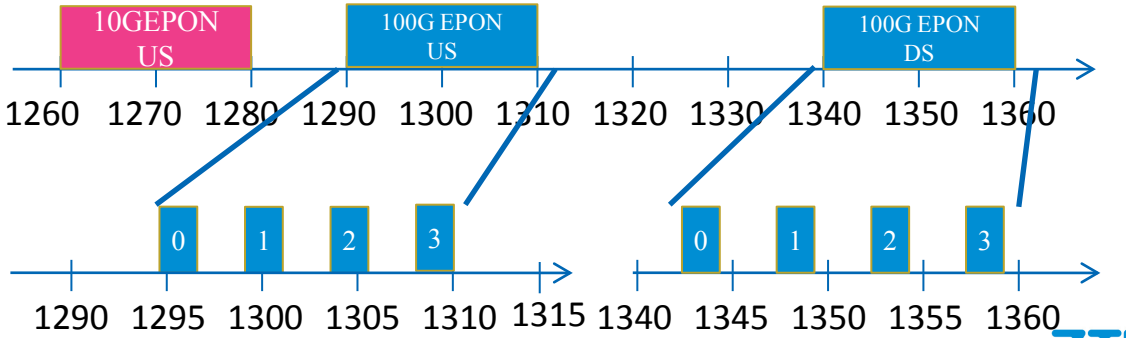
Avoid complex modulation and equalizations

Share some optics industrial chain

DML is a possible choice which need more study

Compatible with industrial environment

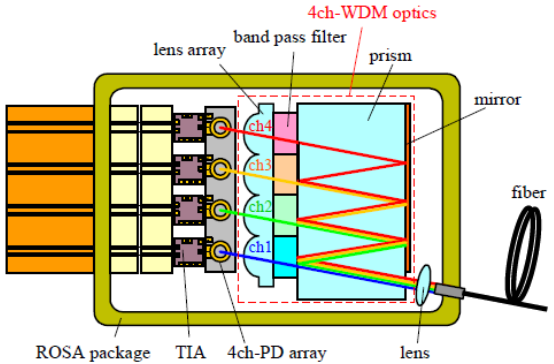
Coexists with Sym-10G-EPON



Wavelength Mux/Demux

TFF solution

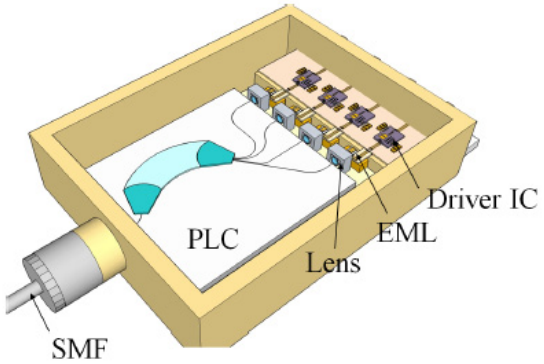
- Small insertion loss
- Small size
- Small temperature drift coefficient
- Channel pass band can be difference



Mitsubishi Electric Corporation

AWG solution

- High insertion loss
- Big size
- Large temperature drift coefficient
- Channel pass band must be equal



Mitsubishi Electric Corporation NTT, OFC 2013

Up/Down WDM

◆For 25G single channel

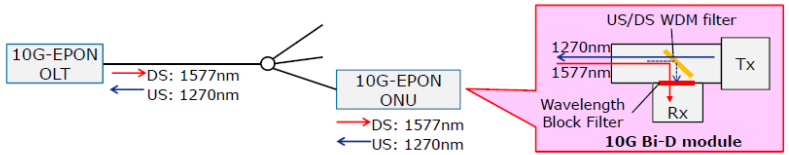
45° filter with non-collimated light can be used for more than 40nm separation of up/down wavelength

◆For 100G

45° filter with collimated light can be used for more than 20nm separatic of up/down wavelength

Wavelength allocation
-US/DS gap, Rx guard band -

- Existing access network and ONU Bi-D module structure.



- Large part of system cost comes from ONU, keep familiar and economical Bi-D structure for NG-EPON ONU as far as possible.

Light coupling scheme of Bi-D	US/DS Gap	Rx guar band
Non-collimated light	>35nm	>10nm
Collimated light	>20nm	>5nm

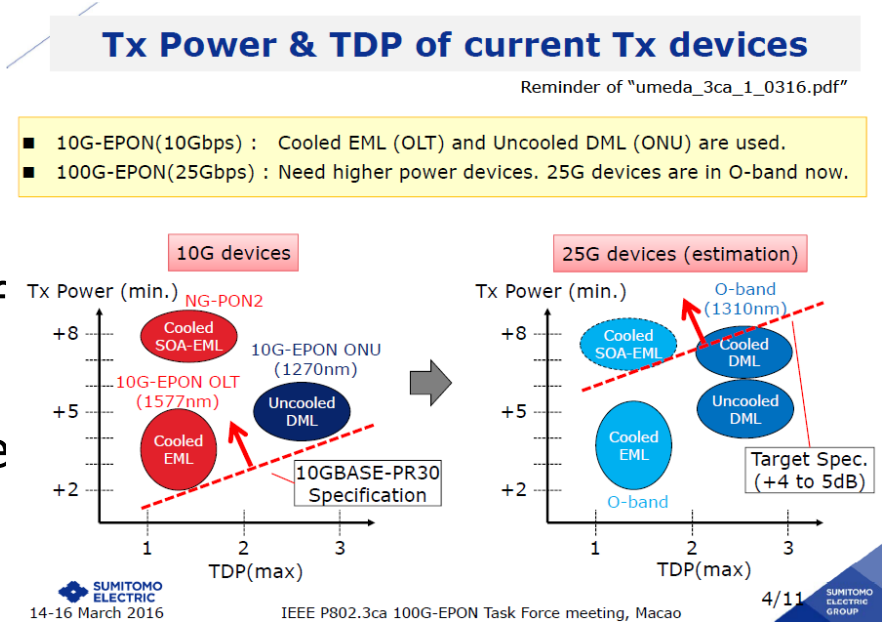
This brings us efficient wavelength usage

25G Laser

◆Present uncooled 25G DML Laser working at commercial temperature range

◆It’ s hard to produce uncooled industrial 25G laser, not only because of wavelength shift but also output power

◆Can we choose uncooled ONU for the most popular commercial application and cooled ONU for the rest industrial environment application?



Conclusion

Propose to adopt the wavelength plan as the contribution proposed for 802.3ca

- All NG-EPON channels in O band

Question

- Do we need commercial or just industrial temperature ONU?

Thank you

Tomorrow never waits