Wavelength plan for PtP WDM

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IEEE P802.3ca 100G-EPON Task Force

Plenary Meeting

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Topics

- Co-existence with legacy PON systems
- Greenfield
- Test results of DML+PIN for 25Gb/s
- Summary

Co-existence with legacy PON systems

- Coexists with 1G-EPON (DFB), 10G-EPON, RF Video
  Re-use of NG-PON2 wavelengths was considered.[1]

  100G-EPON
  – DS : 1596nm-1603 nm
  – US : 1524nm-1544 nm (Wide)
  1528nm-1540 nm (Reduced)
  1532nm-1540 nm (Narrow)

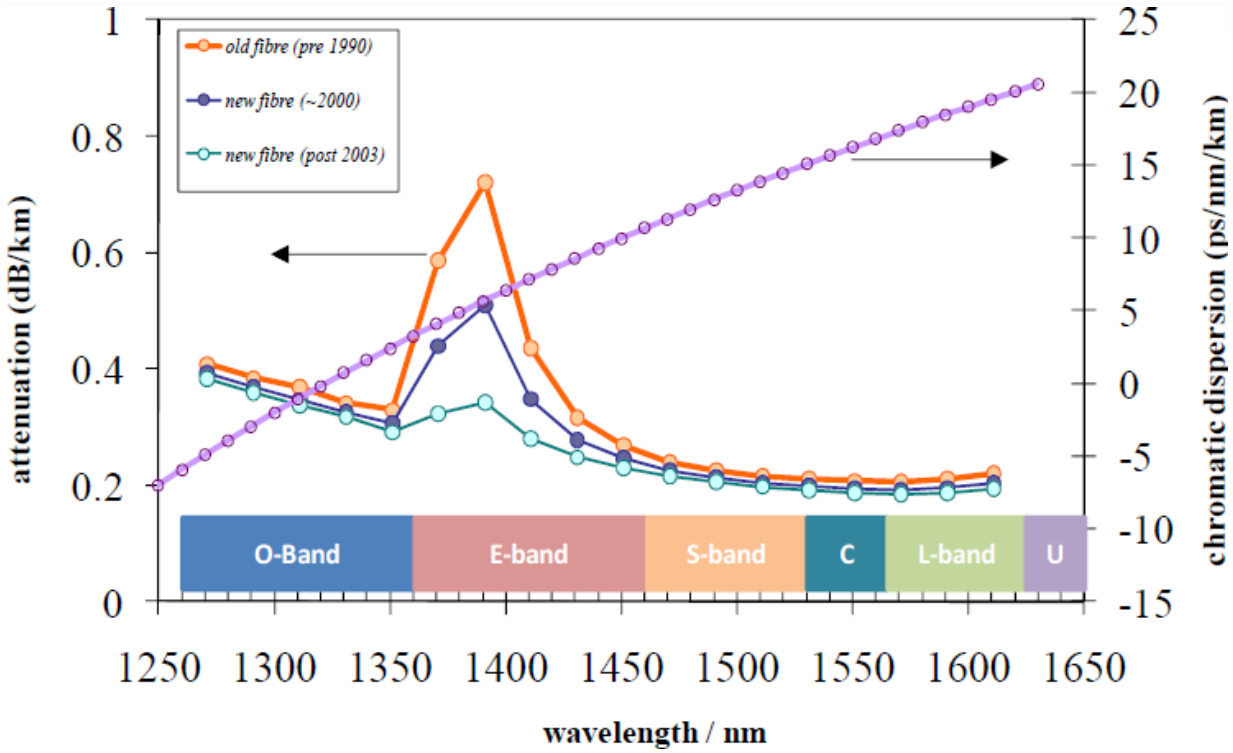
  PtP WDM-PON(US/DS)
  Shared Spectrum: 1603nm~1625nm

- Coexists with 10G-EPON, RF Video
  For 25/50/100G-EPON US,CWDM WLs around 1310nm are prefered.

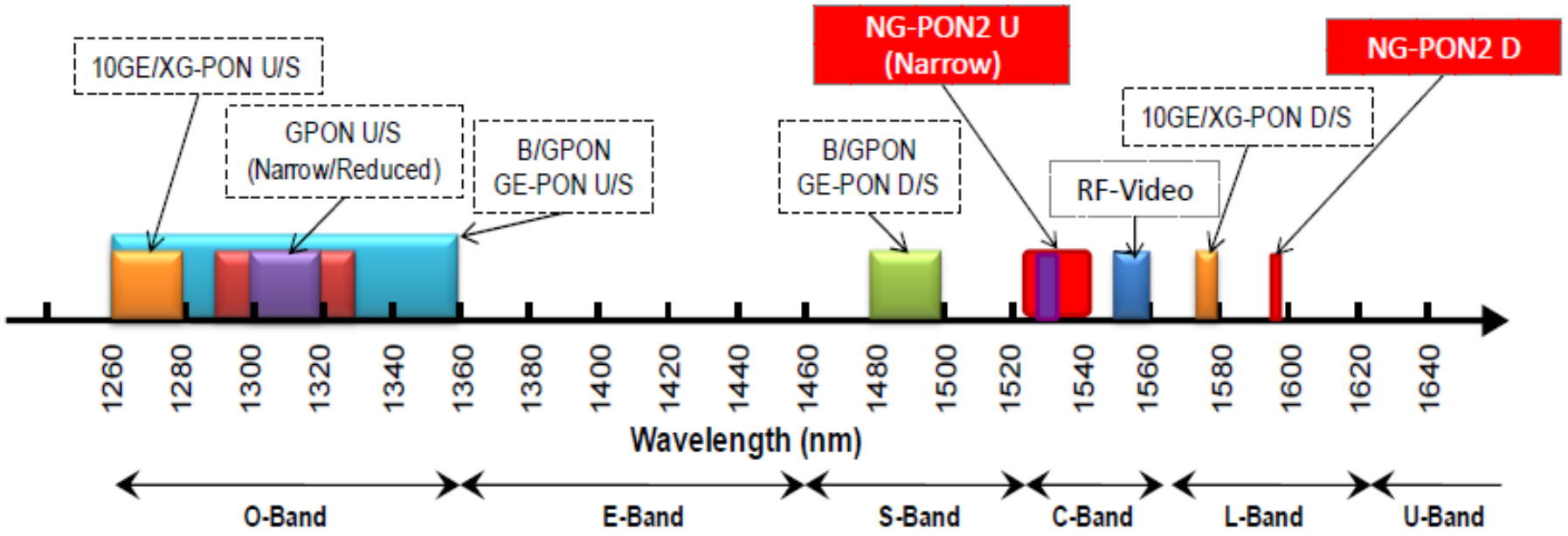
  100G-EPON
  – DS : 1524nm-1544 nm
  – US : O band

  PtP WDM-PON(US/DS)
  Shared Spectrum: 1596nm~1625nm
  1450nm~1500nm band can be selected also.

Single Mode Fibre Attenuation and Chromatic Dispersion[2]



Wavelength Allocations for PONs[3]

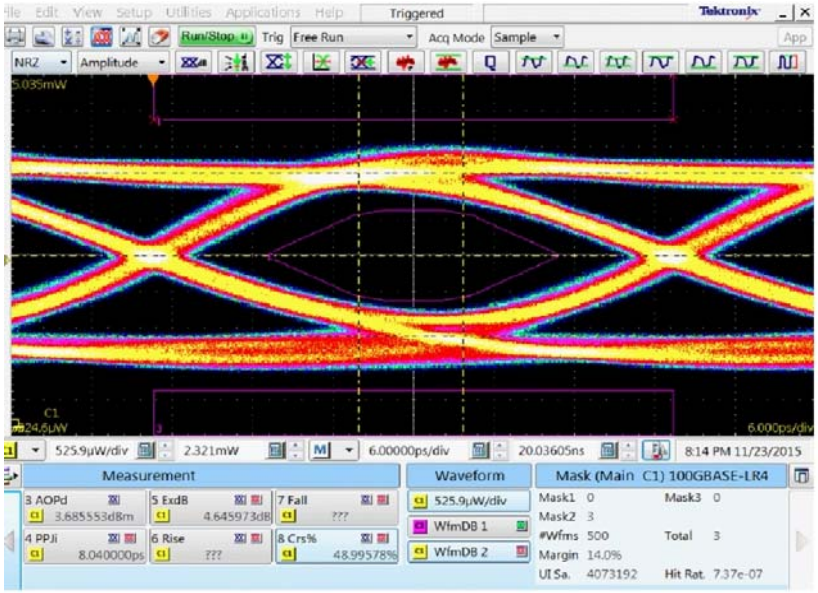


Greenfield

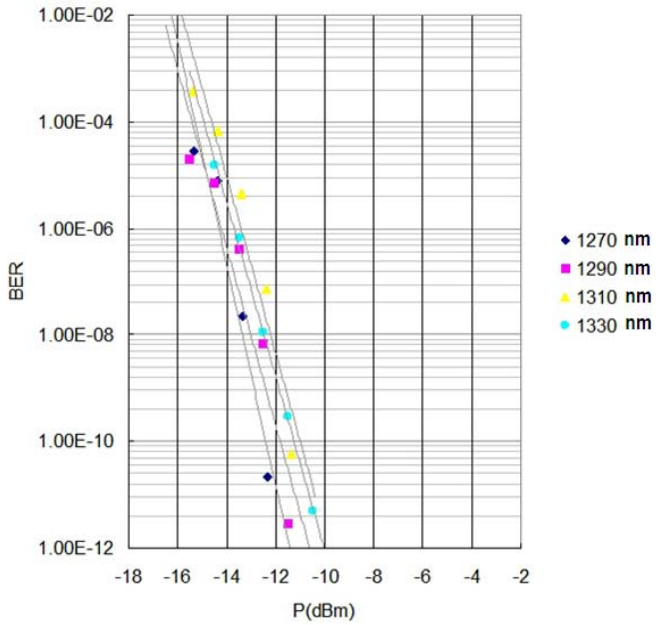
- **Option1: CWDM**
  - CWDM technology has already been used in mobile fronthaul by Telecom, yet bandwidth is limited mainly below the 10 Gbps operation.
  - 10Gbps components are cost-effective, reuse 10G-PR for CWDM scenario study.
  - 25Gbps CWDM of DML+PIN could be the lowest cost, yet the PMD features need to be researched further. 100G-LR4 or 32G FC-10km spec should be considered.
- **Option2: DWDM**
  - Reuse NG-PON2 : Full Spectrum 1524nm-1625 nm
- **Option3: CWDM (12 wls)+DWDM**
  - CWDM 10Gbps + DWDM 25Gbps

Test results of DML+PIN for 25Gb/s

DML Transmitter Eye Diagram(70℃)



PIN Receiver Sensitivity (70℃)



OMA: 3.68dBm; ER: 4.64dB; Mask margin>14%

Sensitivity is about -10dBm

Summary

- PtP WDM-PON can be deployed flexibly in legacy PON systems or Greenfield.
- Wavelength plans are suggested for the two scenario.

Bibliography

[1] Martin Carroll et al.,“FSAN Highlights & NG-PON2 Standards Update”，Joint Session，February 4, 2015

[2] Figure 8-1，ITU-T Rec. G.989.1, March 2013.

[3] Koichi Asatani ,“Trends and Issues of FTTH and G-PON”， 2015

Thank you