

# Baseline Proposal for 1310/1490nm Bidirectional Point to Point Links for IEEE 802.3ah (EFM)

Jim Tatum

Larry Golob, Piers Dawe

Christian Urricariet

Paul Kolesar, John George

Jack Jewell

Hisashi Takada

Honeywell

Agilent

Finisar

OFS

Picolight

SEI

# Link Features

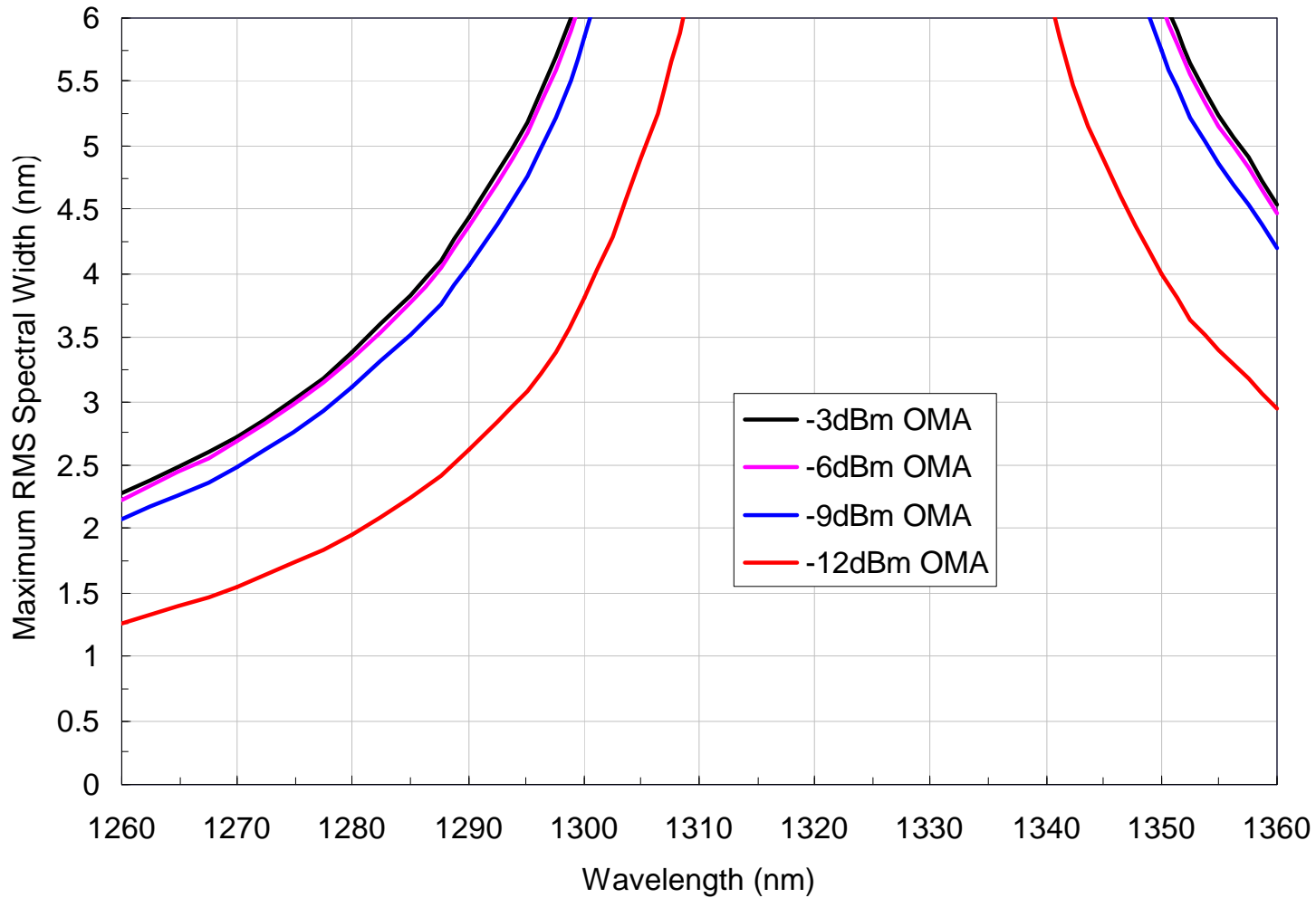
- Minimum reach is 10km
  - o 1310nm upstream
  - o 1490nm downstream
- 1.250 GBd operation
- K factor assumed to be 0.6
- Recommend the use of triple trade off curves
  - o Allows for the use of all types of laser sources

# Transmitter Specifications

| Description                | Upstream         | Downstream   | Units |
|----------------------------|------------------|--------------|-------|
| Transmitter Type           | Laser            | Laser        | -     |
| Signalling Speed           | 1.250 +/- 100ppm |              | GBd   |
| Operating distance         | 2m to 10km       |              |       |
| Trise/Tfall (20%-80%)      | 260              |              | ps    |
| Wavelength range           | 1260 to 1360     | 1480 to 1500 | nm    |
| RMS Spectral Width         | 2                | 0.4          | nm    |
| Average Launch Power (max) | -3               | -3           | dBm   |
| Average Launch Power (min) | -9               | -9           | dBm   |
| Average Launch Power (OFF) | -30              |              | dBm   |
| Extinction Ratio           | 9                |              | dB    |
| RIN                        | -120             |              | dB/Hz |

**Recommend the use of triple trade off curves for transmitters. This eliminates the yellow highlighted section and refers to the chart on the next page.**

# Triple Trade off curves



# Transmitter Specifications with Triple Trade-Off curves

| Description                | Upstream         | Downstream   | Units |
|----------------------------|------------------|--------------|-------|
| Transmitter Type           | Laser            | Laser        | -     |
| Signalling Speed           | 1.250 +/- 100ppm |              | GBd   |
| Operating distance         | 2m to 10km       |              |       |
| Trise/Tfall (20%-80%)      | 260              |              | ps    |
| Wavelength range           | 1260 to 1360     | 1480 to 1500 | nm    |
| RMS Spectral Width         | Note 1           | Note 1       | nm    |
| Average Launch Power (max) | Note 2           | Note 2       | dBm   |
| Average Launch Power (min) | Note 1           | Note 1       | dBm   |
| Average Launch Power (OFF) | -30              |              | dBm   |
| Extinction Ratio (Min)     | 3                |              | dB    |
| RIN                        | -120             |              | dB/Hz |

Note 1: Trade offs are available between spectral width, center wavelength, and Minimum optical modulation amplitude.

Note 2: The maximum launch power shall be the lesser of class 1 eye safety and the Maximum average receive power

# Receiver Specifications

| Description                  | Upstream         | Downstream   | Units |
|------------------------------|------------------|--------------|-------|
| Signaling Speed              | 1.250 +/- 100ppm |              | GBd   |
| Wavelength Range             | 1260 to 1360     | 1480 to 1500 | nm    |
| Average Receive Power (max)  | -3               | -3           | dBm   |
| Receive Sensitivity          | -20              |              | dBm   |
| Stressed Receive Sensitivity | -18.4            |              | dBm   |
| Minimum Return Loss          | 12               |              | dB    |

# Motion

- Adopt as a baseline for point to point links the presentation entitled tatum02.pdf for 1000BASE-BX.
- For:
- Against:
- Abstain: