Overview

EFFECT Photonics’ 10Gbps Narrow Tunable SFP+ optical transceiver module is designed to operate at transmission rates from 1Gbps to 11.3Gbps, compatible with multiple network applications and transmission formats: CPRI, OTN, Fibre Channel, etc. Hot pluggable, and with narrow band tunability, it significantly reduces sparing and configuring costs in optical networks. The module is optimised for Local Area Networks (LAN), Mobile Fronthaul and 10G Ethernet (10GbE), over single-mode fibre (SMF) optical links, P2P and passive networks.

On the transmit side, the serial data path from the host enters the module through the electrical connector and enters the modulator driver. The modulator driver accurately biases and efficiently modulates EFFECT Photonics’ Optical System-on-Chip which contains the tunable 1550nm cooled laser and Mach-Zehnder Interferometer (MZI) modulator and transmits the optical signal through an industry standard LC connector. Wavelength control to 100GHz ITU grid and optical power monitoring over life is also integrated within EFFECT Photonics’ Optical System-on-Chip and packaging technology.

On the receive path, DC balanced serial NRZ data is efficiently converted into the electrical domain through the Receiver Optical Sub-Assembly (ROSA) which contains an Avalanche PhotoDiode Receiver (APD) and Trans-Impedance Amplifier (TIA) with Limiting output to the host.

Optional NarroWave feature enables wavelength auto-tuning and remote diagnostics monitoring over Fibre.

Applications

- Mobile Fronthaul
- CPRI 2 - 8 and eCPRI (10G)
- 10G DWDM Point-to-Point links
- Multi-point networks
- Local area networks (LAN)
- 10GBase-ER Ethernet applications
- 1G FC to 10G FC
- 10G OTN
- Storage area networks (SAN)

Standards

- SFF-8083, rev.1.7
- SFF-8418, rev.1.4
- SFF 8419, rev.1.3
- SFF-8432, rev.5.1
- SFF-8472, rev.12.2
- SFF-8690, rev.14
- IEEE 802.3x
- ITU-T G.709
- ITU-T G.694.1

Compliances

- Telcordia GR-468-CORE
- Telcordia GR-20-CORE
- Telcordia GR-63-CORE, NEBS
- Telcordia GR-326-CORE
- IEC 60825-1 Ed 2 Class 1
- FDA 21 CFR Ch1 Class I
- RoHS 6/6 Lead Free

All product specifications are subject to change without notice. Last change: CR-002240 PB-00006-02
Optical Characteristics

**Transmit Characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data rate</td>
<td>1.0</td>
<td>11.3</td>
<td>Gbps</td>
</tr>
<tr>
<td>Optical output power</td>
<td>-1</td>
<td>+5</td>
<td>dBm</td>
</tr>
<tr>
<td>Extinction ratio (NRZ, filtered)</td>
<td>9.0</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Optical Frequency Tuning Range (6 bands)</td>
<td>191.20 (1567.95)</td>
<td>196.00 (1531.12)</td>
<td>THz(nm)</td>
</tr>
</tbody>
</table>

**Receive Characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data rate</td>
<td>1.0</td>
<td>11.3</td>
<td>Gbps</td>
</tr>
<tr>
<td>Receiver wavelength range</td>
<td>191.00 (1569.59)</td>
<td>197.00 (1521.79)</td>
<td>THz(nm)</td>
</tr>
<tr>
<td>Receiver optical reflectance</td>
<td>-27</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>LOS assert</td>
<td>-35</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>LOS assert/de-assert hysteresis</td>
<td>0.5</td>
<td></td>
<td>dB</td>
</tr>
</tbody>
</table>

*1 Measured with minimum ER; PRBS 2^21−1; over specified wavelength range; OSNR >30 dB; with external clock and data recovery (CDR) board.*

Contact information

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