

10Gbps 40km DWDM Narrow Tunable SFP+ (Preliminary)

For use in Mobile Fronthaul Applications

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Key Features

- 5-part codes to cover the complete C-band (100GHz spacing) enables simplified sparing and configuration
- Up to 40km link length single mode fibre point-to-point and multi-point passive networks
- Supports data rates between 1Gbps and 11.3Gbps
- Operating temperature range -40°C to 85°C
- SFP+ Multi-Source Agreement compliant (SFF-8083, rev. 1.7)
- SFF Tunability Interface (SFF-8690, rev. 1.4)
- Support for digital diagnostics and monitoring (SFF-8472, rev. 12.2)
- Dual LC connector, hot pluggable with SFP+ footprint
- Limiting receiver electrical interface
- Power dissipation <2.0W
- Optional NarroWave® support enables Wavelength Auto-Tuning and Remote diagnostics

Overview

EFFECT's 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, 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's 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's 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 a Avalanche PhotoDiode Receiver (APD) and Trans-Impedance Amplifier (TIA) with Limiting output to the host.

The optional NarroWave® feature enables wavelength auto-tuning and remote diagnostics monitoring over fiber.

Typical 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

Compliance

- 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 1.4
- Telcordia GR-468-CORE
- Telcordia GR-63-CORE, NEBS
- IEC 60825-1Ed 2 Class 1
- FDA 21 CFR Ch1 Class 1
- RoHS 6/6 Lead Free

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Module Wavelength Assignments and Part Codes

The centre wavelengths of bands 1 to 5 are aligned to DWDM wavelength grid spaced 0.8nm (100 GHz) apart.

Band	Part Code	Wavelength (nm)	Frequency (GHz)	Spacing (GHz)	C-Band	No. of Channels
1	EPI0ISN1EB	1561.42 to 1555.75	192.00 to 192.70	100	C20 - C27	8
2	EPI0ISN2EB	1554.94 to 1549.32	192.80 to 193.50	100	C28 - C35	8
3	EPI0ISN3EB	1548.51 to 1542.94	193.60 to 194.30	100	C36 - C43	8
4	EPI0ISN4EB	1542.14 to 1536.61	194.40 to 195.10	100	C44 - C51	8
5	EPI0ISN5EB	1535.82 to 1530.33	195.20 to 195.90	100	C52 - C59	8

Part code options: EPI0ISNxEB - Generic version (where x - band option); EPI0INNxEB - Generic version with NarroWave enabled

Optical Characteristics

Transmit Characteristics

Parameter	Min	Typ	Max	Unit
Signalling rate	1.0		11.3	Gbps
Optical output power	-1		+3	dBm
Extinction ratio (10.709Gbps NRZ, filtered)	9.0	10.0		dB
Optical frequency minimum tuning grid	100			GHz

Receive Characteristics¹

Parameter	Min	Max	Unit
Receiver wavelength range	191.00 (1569.59)	197.00 (1521.79)	THz(nm)
Receiver power	-27	-7	dBm
Receiver optical reflectance		-27	dB
LOS assert	-35	-30	dBm
LOS assert/de-assert hysteresis	0.5	2.0	dB

¹ Measured with minimum ER; PRBS 231-1; over specified wavelength range; OSNR >30 dB; with external clock and data recovery (CDR) board

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All product specifications are subject to change without notice. Last updated: May 2020