

A.1 Shelf Specifications

This section provides specifications for shelf bandwidth; a list of topologies; Cisco Transport Controller (CTC) specifications; LAN, TL1, modem, alarm, and electrical interface assembly (EIA) interface specifications; database, timing, power, and environmental specifications; and shelf dimensions.

A.1.1 Bandwidth

The ONS 15454 SDH has the following bandwidth specifications:

- Total bandwidth: 240 Gbps
- Data plane bandwidth: 160 Gbps
- SDH plane bandwidth: 80 Gbps

A.1.2 Configurations

The ONS 15454 SDH can be configured as follows:

- Digital cross-connect
- Terminal mode
- Linear add-drop multiplexer (ADM)
- Two-fiber multiplex section-shared protection ring (MS-SPRing)
- Four-fiber MS-SPRing
- Multiring interconnection
- Subnetwork connection protection (SNCP)
- Extended SNCP
- Virtual rings
- Hybrid SDH network topology
- Regenerator mode
- Wavelength multiplexer

A.1.3 Cisco Transport Controller

CTC, the ONS 15454 SDH craft interface software, has the following specifications:

- 10BaseT
- TCC2/TCC2P access: RJ-45 connector
- Front Mount Electrical Connection (FMEC) access: LAN connector on MIC-C/T/P faceplate

A.1.4 External LAN Interface

The ONS 15454 SDH external LAN interface has the following specifications:

- 10BaseT Ethernet
- FMEC access: LAN connector on MIC-C/T/P faceplate

A.1.5 Alarm Interface

The ONS 15454 SDH alarm interface has the following specifications:

- Visual: Critical, Major, Minor, Remote
- Audible: Critical, Major, Minor, Remote
- Alarm inputs: Common 32-VDC output for all alarm-inputs, closed contact limited to 2 mA
- Control outputs: Open contact maximum 60 VDC, closed contact maximum 100 mA
- FMEC access: 62-Pin DB connector on the MIC-A/P faceplate

A.1.6 Database Storage

The ONS 15454 SDH has the following database storage specifications:

- Nonvolatile memory: 128 MB, 3.0 V flash memory

A.1.7 Timing Interface

The ONS 15454 SDH timing interface has the following specifications:

- 2 coaxial inputs
- 2 coaxial outputs
- FMEC access: 1.0/2.3 miniature coax connectors on the MIC-C/T/P faceplate

A.1.8 System Timing

The ONS 15454 SDH has the following system timing specifications:

- Stratum 3E, per ITU-T G.813
- Free running accuracy: +/- 4.6 ppm
- Holdover stability: $3.7 \exp -7/\text{day}$, including temperature (< 255 slips in first 24 hours)
- Reference: External building integrated timing supply (BITS), line, internal

A.1.9 System Power

The ONS 15454 SDH has the following power specifications:

- Input voltage: -48 VDC
- Power consumption: Configuration dependent, 130 W (fan tray only)
- Power requirements:
 - Nominal: -48 VDC

- Tolerance limits: -40.5 to -57.0 VDC
- Power terminals: 3WK3 Combo-D power cable connector (MIC-A/P and MIC-C/T/P faceplates)
- Fusing: 100 A fuse panel; minimum 30 A fuse per shelf

A.1.10 System Environmental Specifications

The ONS 15454 SDH has the following environmental specifications:

- Operating temperature: 0 to +40 degrees Celsius (32 to 104 degrees Fahrenheit)
- Operating humidity: 5 to 95 percent, noncondensing

A.1.11 Dimensions

The ONS 15454 SDH shelf assembly has the following dimensions:

- Height: 616.5 mm (24.27 in.)
- Width: 535 mm (17 in.) without mounting ears attached
- Depth: 280 mm (11.02 in.)
- Weight: 26 kg (57.3 lb) empty

A.2 SFP and XFP Specifications

[Table A-1](#) lists the specifications for the available Small Form-factor Pluggables (SFPs) and 10 Gbps Pluggables (XFPs). In the table, the following acronyms are used:

- ESCON = Enterprise System Connection
- FICON = fiber connectivity
- GE = Gigabit Ethernet
- FC = Fibre Channel
- HDTV = high definition television
- DWDM = dense wavelength division multiplexing
- CWDM = coarse wavelength division multiplexing

Table A-1 SFP and XFP Specifications			
SFP/XFP Product ID	Interface	Transmitter Output Power Min/Max (dBm)	Receiver Input Power Min/Max (dBm)
15454-SFP-LC-SX/ 15454E-SFP-LC-SX	GE	-9.5 to -4	-17 to 0
15454-SFP-LC-LX/ 15454E-SFP-LC-LX	GE	-9.5 to -3	-19 to -3

15454-SFP3-1-IR=	OC-3	-15 to -8	-23 to -8
15454E-SFP-L.1.1=	STM-1	-15 to -8	-34 to -10
15454-SFP12-4-IR=	OC-12, D1 Video	-15 to -8	-28 to -7
15454E-SFP-L.4.1=	STM-4, D1 Video	-15 to -8	-28 to -8
15454-SFP-OC48-IR=	OC-48, DV6000 (C-Cor)	-5 to +0	-18 to +0
ONS-SE-2G-S1=	OC-48, STM-16	-10 to -3	-18 to -3
15454E-SFP-L.16.1=	STM-16, DV6000 (C-Cor)	-5 to +0	-18 to +0
15454-SFP-200/ 15454E-SFP-200	ESCON	-8 to -4	-28 to -3
15454-SFP-GEFC-SX=/ 15454E-SFP-GEFC-S=	FC (1 and 2 Gbps), FICON, GE	-10 to -3.5	-17 to 0 (1FC and 1GE) -15 to 0 (2FC)
15454-SFP-GE+-LX=/ 15454E-SFP-GE+-LX=	FC (1 and 2 Gbps), FICON, GE, HDTV	-9.5 to -3.0	-20 to -3 (1FC, 1GE, and 2FC)
ONS-SE-200-MM=	ESCON	-20.5 to -15	-14 to -29 ¹
ONS-SE-G2F-SX=	Fibre Channel (1 and 2 Gbps), GE	-9.5 to 0 (GE) -10 to -3.5 (1G and 2G FC/FICON)	-17 to 0 ² (GE) -22 (1G FC/FICON) -20 (2G FC/FICON)
ONS-SE-G2F-LX=	Fibre Channel (1 and 2 Gbps), FICON, GE, HDTV	-9.5 to -3 (GE) -10 to -3.5 (1FC, 2FC, and FICON)	-19 to -3 ³ (GE) -22 (1G FC/FICON) -21 (2G FC/FICON)
ONS-SC-GE-SX=	GE	-9.5 to 0	-17 to 0 ²
ONS-SC-GE-LX=	GE	-9.5 to -3	-19 to -3 ³
ONS-SI-2G-S1	OC-48 SR	-10 to -3	-18 to -3
ONS-SI-2G-I1	OC-48 IR1	-5 to 0	-18 to 0
ONS-SI-2G-L1	OC-48 LR1	-2 to 3	-27 to -9
ONS-SI-2G-L2	OC-48 LR2	-2 to 3	-28 to -9
ONS-SC-2G-30.3 through ONS-SC-2G-60.6	OC-48 DWDM	0 to 4	-28 to -9

ONS-SI-622-I1	OC-3/OC-12 IR1 Dual rate	-15 to -8	-28 to -8
ONS-SI-622-L1	OC-21 LR1	-3 to 2	-28 to -8
ONS-SI-622-L2	OC-12 LR2	-3 to 2	-28 to -8
ONS-SE-622-1470 through ONS-SE-622-1610	OC-12 CWDM	0 to 5	-28 to -7
ONS-SI-155-I1	OC-3 IR1	-15 to -8	-28 to -8
ONS-SI-155-L1	OC-3 LR1	-5 to 0	-34 to -10
ONS-SI-155-L2	OC-3 LR2	-5 to 0	-34 to -10
ONS_SE-155-1470 through ONS-SE-155-1610	OC-3 CWDM	0 to 5	-34 to -7
ONS-XC-10G-S1	OC-192 SR1	-6 to -1	-11 to -1
ONS-XC-10G-I2	OC-192 IR2	-1 to +2	-14 to +2
ONS-XC-10G-L2	OC-192 LR2	0 to 4	-24 to -7
ONS-SE-100-FX	Fast Ethernet	-20 to -14	-30 to -14
ONS-SE-100-LX10	Fast Ethernet	-15 to -8	-25 to -8

¹ Based on any valid 8B/10B code pattern measured at, or extrapolated to, 10E-15 BER measured at center of eye

² Minimum Stressed Sensitivity (10-12): -12.5(62.5um) and -13.5(50um) dBm

³ Minimum Stressed Sensitivity (10⁻¹²): -14.4 dBm