

2200

BROADBAND SOURCE

FLS-2200

R&D AND MANUFACTURING



Compact, rugged and highly reliable—
an essential lab testing building block

- Covers all bands
- Single SLED: 980 nm, 1300 nm, 1485 nm, 1550 nm and 1610 nm
- Dual SLED: 1300 nm/1550 nm and CWDM range (1460 nm to 1620 nm)
- Variable output power
- Optimized for power stability

Broad Spectral Range, Impressive Power

The high-power, SLED-based FLS-2200 Broadband Source family covers all the bands needed for telecommunications applications. It provides a broader spectral range and more spectral density in a singlemode fiber than a white light source. The highly stable FLS-2200 is ideal for broadband applications, CWDM network testing, CWDM and PON component manufacturing and testing, as well as fiber-optic sensing and spectroscopy.

Two Sources, One Box

For CWDM testing, the dual-SLED option, covering the S, C and L bands, enables accurate characterization of fiber links and their passive components, with a very cost-effective test setup. Use the 1300 nm/1550 nm source for dual-window couplers and for PON components.

Designed for Component Testing

EXFO's FLS-2200 offers enough power along the spectrum to measure high-level insertion loss. By combining the FLS-2200 with an optical spectrum analyzer (OSA), you can efficiently qualify your components during development or perform Pass/Fail testing during production.

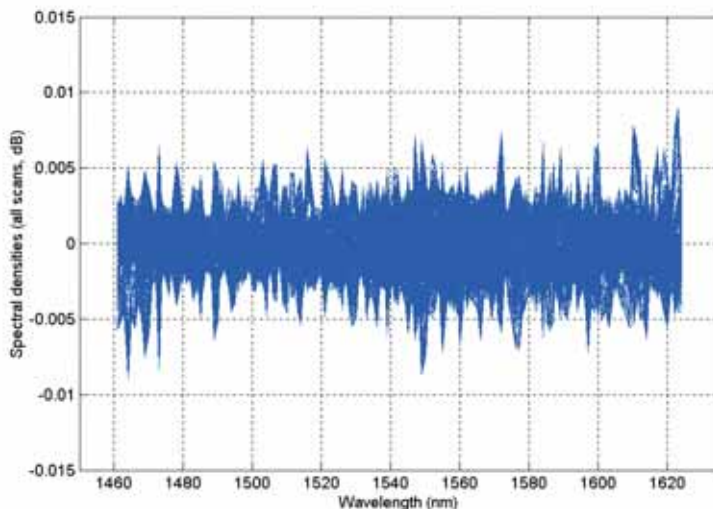
Depolarization

As sources are naturally polarized, it is possible to take advantage of EXFO's M9700 and IQS-9700 Passive Depolarizers, to bring the degree of polarization to less than 5%. This is especially useful when measuring the average insertion loss, or counteracting the polarization dependency of an OSA.

High Spectral Density Stability

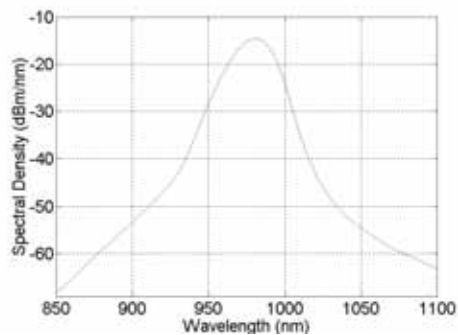
High spectral density stability is essential to ensure that the test setup produces accurate measurements, time and again. The more stable the spectrum, the less often a reference trace has to be acquired. This translates into better productivity.

After a reference trace is acquired with the OSA, it can be subtracted to all subsequent traces. With no device under test (DUT) in the system, the resulting traces, centered around the averaged value, present the typical spectral fluctuations of the source. This is what is represented in figure below.

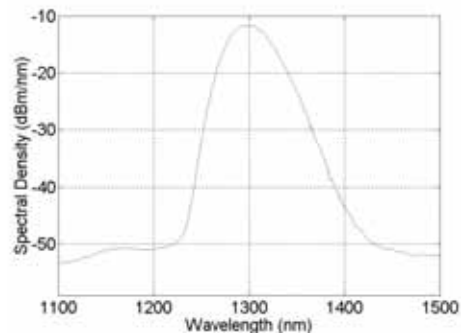


Impressive spectral density stability of the FLS-2200 Broadband Source (compilation of 30 scans, one per minute).

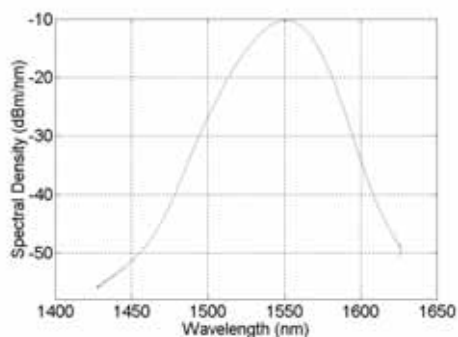
Take a look at the spectra* of our FLS-2200 models!



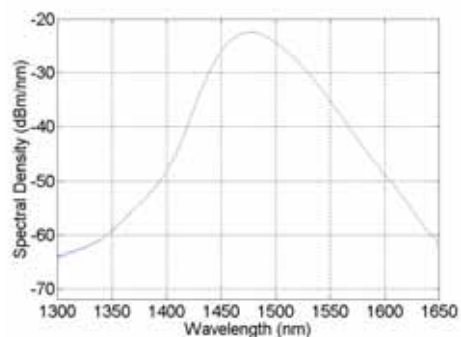
FLS-2200-06-P1



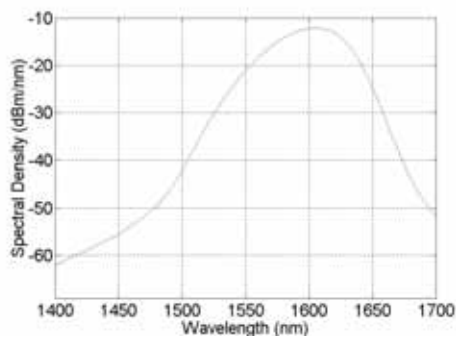
FLS-2200-02-P1-IS



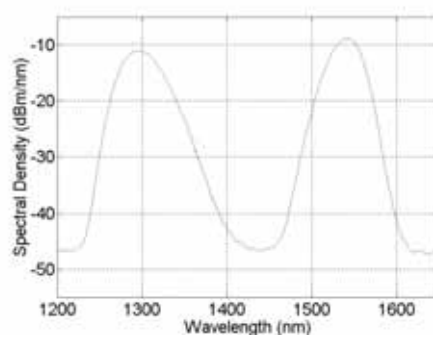
FLS-2200-03-P1-IS



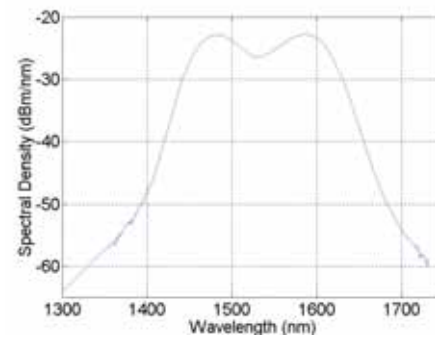
FLS-2200-05-P1-IS



FLS-2200-04-P1-IS



FLS-2200-23-P1-IS



FLS-2200-SCL-P1-IS

* These are typical spectra.

SPECIFICATIONS¹

Single SLED

Parameter	FLS-2200-06 ³	FLS-2200-02	FLS-2200-05	FLS-2200-03	FLS-2200-04
Center wavelength (nm)	980 ± 10	1300 ± 20	1485 ± 15	1550 ± 10	1610 ± 15
3 dB spectral width (nm)	≥ 20 (25 typ.)	≥ 40 (45 typ.)	≥ 50 (60 typ.)	≥ 33 (35 typ.)	≥ 50 (55 typ.)
Output power (dBm)	0	4	-3.5	5	5
Minimum spectral density (dBm/nm) ²	-18 (970-990 nm)	-25 (1260-1360 nm)	-27 (1450-1510 nm)	-27 (1510-1590 nm)	-20 (1565-1640 nm)
Peak spectral density (dBm/nm) ²	-13	-12	-21	-8	-10
Total power stability (dB) ⁴					
15 min	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01
8 hours	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01
Spectral density stability (dB) ^{2,4,5}					
15 min	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01
8 hours	± 0.015	± 0.015	± 0.015	± 0.015	± 0.015
Ripple (dB) ⁵	0.3	0.3	0.3	0.3	0.3
Fiber type (µm)	5/125	9/125	9/125	9/125	9/125

Dual SLED

Parameter	FLS-2200-23	FLS-2200-SCL
Center wavelength (nm)	1300 ± 20/1550 ± 10	1485 ± 15/1570 ± 10
Output power (dBm) ⁶	≥ 8	≥ -3.5
Minimum spectral density (dBm/nm) ²	-28 (1260-1360, 1510-1590 nm)	-29 (1460-1625 nm)
Peak spectral density (dBm/nm) ²	-9	-23
Total power stability (dB) ⁴		
15 min	± 0.01	± 0.01
8 hours	± 0.015	± 0.015
Spectral density stability (dB) ^{2,4,5}		
15 min	± 0.01	± 0.01
8 hours	± 0.01	± 0.01
Ripple (dB) ⁵	0.3	0.3
Fiber type (µm)	9/125	9/125

Notes

- Specifications are valid at 23 °C ± 2 °C, at maximum power after warmup time (30 minutes), with isolator, for return loss of ≥ 30 dB.
- Typical value.
- Specifications for the 980 nm source are set without an isolator.
- Stability is expressed as ± half the difference between the maximum and minimum values measured in the period.
- Measured in a 0.1 nm resolution bandwidth.
- Output power of dual SLED source is the sum of the power output of each individual SLED.
- Isolator is not available at 980 nm.

GENERAL SPECIFICATIONS

Size (H x W x D)	11.7 cm x 22.2 cm x 33.3 cm (4 5/8 in x 8 3/4 in x 13 1/8 in)
Weight	2.7 kg (5.9 lb)
Temperature	
operating	0 °C to 40 °C (32 °F to 104 °F)
storage	-40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	0 % to 80 % non-condensing

SAFETY

IEC 60825-1: A2: 2001
Class 1M LED Product

ORDERING INFORMATION

FLS-2200-XX-P1-XX-XX

Wavelength

- 02 = 1300 nm
- 03 = 1550 nm
- 04 = 1610 nm
- 05 = 1485 nm
- 06 = 980 nm
- 23 = 1300 nm/1550 nm dual-window SLEDs
- SCL = 1460 nm to 1620 nm dual SLED

Example: FLS-2200-03-P1-IS-EA-EUI-89

Connector

- EI-EUI-28 = UPC/DIN 47256
- EI-EUI-76 = UPC/HMS-10/AG (EI only)
- EI-EUI-89 = UPC/FC narrow key
- EI-EUI-90 = UPC/ST (EI only)
- EI-EUI-91 = UPC/SC
- EI-EUI-95 = UPC/E-2000
- EA-EUI-28 = APC/DIN 47256
- EA-EUI-89 = APC/FC narrow key
- EA-EUI-91 = APC/SC
- EA-EUI-95 = APC/E-2000

Isolator

- 00 = without isolator
- IS = with double stage isolator⁷

Find out more about EXFO's extensive line of high-performance portable instruments by visiting our website at www.exfo.com.

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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. **Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.** For the most recent version of this spec sheet, please go to the EXFO website at <http://www.exfo.com/specs>. In case of discrepancy, the Web version takes precedence over any printed literature.