

spectraval 1501

VIS Spectroradiometer

spectraval 1501 is a compact spectroradiometer for the visible spectral range. It can be used for spectral Radiance and Irradiance* measurements with a viewing angle of 2.1°. The actual measuring area is marked by a red circle.

There are special versions of **spectraval 1501** available: spectraval 1501-HiRes (with increased optical resolution), spectraval 1501-NIR (with a wavelength range up to 1000 nm), spectraval 1501-LAN (with additional LAN interface instead of Bluetooth) and spectraval 1501-focus (compatible with add-on optics).

spectraval 1501 is delivered with the radiometric software JETI LiVal (demo version see jeti.com), but it can also be used with special programs for monitor calibration (CalMAN, ColourSpace, ChromaPure).

Highlights:

- Optimized operation routines
- Piezo-electric shutter for dark signal compensation
- Suited for HDR (Luminance values up to 140 000 cd/m² can be measured)
- Implementation into customer specific applications possible using:
Radiometric DLLs (Windows applications) or
Serial commands (SCPI-like syntax) (Windows and Linux applications)



Advantages:

- Bluetooth and USB interfaces
- USB or battery powered
- Compact solution
- Fast measurement
- Precise results due to high quality spectrograph and NIST traceable calibration
- Comfortable handling due to Bluetooth interface
- Measurement of source repetition rate

Software JETI LiVal:

- Intuitive operation
- Weighting the obtained spectrum with an action function
- Classification of samples
- Easy data export to Excel and CSV
- Automatic detection of attached accessories
- Specific calculations as PAR, circadian metrics and metamerism according to ISO 23603

Examples for application are the following:

- Calibration of broadcast monitors
- Color adjustment of digital projectors
- Color characterization of LED displays
- Color measurement of video walls
- spectraval 1501-HiRes: measurement of RGB Laser projectors
- spectraval 1501-NIR: remote sensing, spectral measurement of plant lighting
- spectraval 1501-LAN: spectral measurements in production and production environment
- spectraval 1501-focus: measurement of small symbols and display segments

*For measurements of spectral Irradiance/Illuminance an optional diffusor is required (available at jeti.com).

Specifications

Optical parameters

Spectral range	380 ... 780 nm / spectraval 1501-NIR: 380 ... 1000 nm
spectraval 1501	
Optical bandwidth	≤ 4.5 nm (FWHM) / spectraval 1501-HiRes: ≤ 2 nm ¹ (FWHM)
spectraval 1501	
Wavelength resolution	1 nm
Digital electronic resolution	16 bit ADC
Viewing angle	2.1° (Radiance mode)
Measuring distance/ diameter	15 cm - Ø 5 mm; 50 cm - Ø 20 mm; 100 cm - Ø 38 mm; 200 cm - Ø 74 mm (measured from front end of the device)

Measuring values

Spectral Radiance, Luminance, total Radiance, x,y, u',v', CCT, CRI, color purity, RGB and others

Measuring ranges and typical measuring uncertainties (according to CIE TN 009:2019)

Luminance measuring range	0.2 ... 180 000 cd/m ² (Illuminant A) 0.2 ... 140 000 cd/m ² (typical warm white LED) (higher values with optional filter)
Luminance accuracy	± 4.4 % (Illuminant A @ 100 cd/m ² , k=2)
Luminance reproducibility	± 1 % (Illuminant A)
Chromaticity accuracy	± 0.002 x, y (Illuminant A, k=2)
Color reproducibility	± 0.0005 x, y (Illuminant A)
Illuminance* measuring range	1 ... 1 800 000 lx (Illuminant A) 1 ... 1 500 000 lx (typical warm white LED)
CCT reproducibility	± 20 K (Illuminant A)
Max. wavelength error	± 0.2 nm (HgAr line source)
Polarization error f8	< 2 %

Other technical data

Dispersive element	Imaging grating (flat field)
Light receiving element	CCD line array 2048 pixels (binned) (4096 pixels at spectraval 1501-HiRes)
Power supply	Battery and USB powered
Interfaces	USB 2.0 full speed Bluetooth, alternatively LAN
Dimensions	140 mm x 80 mm x 70 mm
Weight	400 g
Operating conditions	Temperature 10 ... 40 °C Humidity < 85 % relative humidity at 35 °C
Accessories (included)	PC software JETI LiVal for Windows 10/ 11, operating instructions and software development kit on USB flash drive USB cable, tripod, carrying bag and battery charger Calibration certificate
Calibration	NIST traceable
Recommended interval	1 year

¹ About 4 times higher measuring time compared to standard version.