

## GS-1163 Multi-View Angle Spectroradiometer



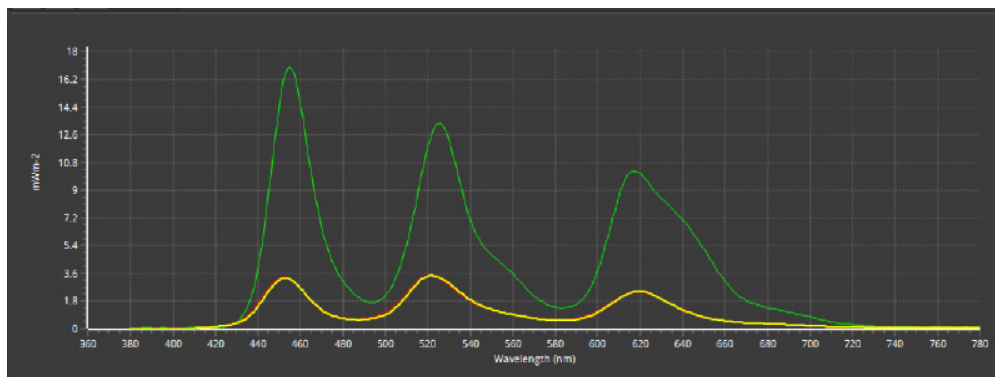
The GS-1163 multi-view angle display spectrometer is designed to measure color and luminance at three different angles simultaneously. As part of the Vector line of multi-view angle display spectrometers, the system integrates a flicker sensor and three spectrometers into one module at -60, 0 and 60 degrees for high-speed and accurate concurrent spectral measurements. Its innovative technology is superior to filter-based colorimeters and not susceptible to filter matching errors.

The system delivers true spectral based measurement accuracy that is required for high color saturation and wide color gamut OLED, micro LED and quantum dot displays. LightTouch uSpectrum and uFlicker software provide comprehensive color and flicker measurements and analysis.

## Simultaneous Multi-View Display Characterization

### Features

- Simultaneous color and luminance measurements at three different angles (-60, 0 and 60 degrees)
- Luminance, CIE 1931 x, y, CIE 1976 u, v, CIE 1931 XYZ, peak and dominant wavelength, SPD and CCT
- Integrated flicker sensor: 100K samples/second
- Powerful MCU for high speed measurements and data output
- Mechanical and electronic shutter
- USB 2.0 and RS232 SCPI command compliant and SDK/API library support
- Windows and MAC OSX compatible
- Laser positioning



Simultaneous 3 angle spectral measurement

In addition to our exceptional technical and functional capabilities, Gamma Scientific is ISO/IEC 17025 accredited by NVLAP (NVLAP lab code 200823-0).

Measurement System								
Sensor	CMOS Linear Image Sensor							
Wavelength Range	380 to 780 nm							
Wavelength Data Increment	1 nm							
Numbers of Angles	3 angles , -60/0/60 degrees							
Measurement Spot Size	12 mm at 65 mm distance at 0 degrees							
Wavelength Reproducibility	± 1 nm <sup>*6</sup>							
Spectrum- Single Angle Measurement Specifications								
Luminance <sup>*1*2</sup>	Measurement range	0.005~5,000 cd/m <sup>2</sup>						
	Accuracy	±1.5% 100 to 5,000 cd/m <sup>2</sup>						
		±2% 0.2 to 100 cd/m <sup>2</sup>						
		±4% 0.05 to 0.2 cd/m <sup>2</sup>						
		±8% 0.005 to 0.05 cd/m <sup>2</sup>						
	Repeatability (2σ) <sup>*3</sup>	0.2% 100 to 5,000 cd/m <sup>2</sup>						
0.5% 0.2 to 100 cd/m <sup>2</sup>								
0.8% 0.05 to 0.2 cd/m <sup>2</sup>								
±8% 0.005 to 0.05 cd/m <sup>2</sup>								
Color <sup>*1*2</sup>	Measurement range	0.01 ~ 5,000 cd/m <sup>2</sup>						
	Accuracy	±0.002 in CIE1931 x, y for white 100 to 5,000 cd/m <sup>2</sup>						
		±0.002 in CIE1931 x, y for white 0.2 to 100 cd/m <sup>2</sup>						
		±0.003 in CIE1931 x, y for white 0.05 to 0.2 cd/m <sup>2</sup>						
		±0.006 in CIE1931 x, y for white 0.01 to 0.05 cd/m <sup>2</sup>						
	Repeatability (2σ) <sup>*3</sup>	0.0005 in CIE1931 x, y for white 100 to 5,000 cd/m <sup>2</sup>						
0.001 in CIE1931 x, y for white 0.2 to 100 cd/m <sup>2</sup>								
0.002 in CIE1931 x, y for white 0.05 to 0.2 cd/m <sup>2</sup>								
0.006 in CIE1931 x, y for white 0.01 to 0.05 cd/m <sup>2</sup>								
Stray Light	-25 dB max <sup>*4</sup>							
Polarized Error	< 2%							
Integration Time Range	100 μs to 5,000 ms (fast mode/normal mode)							
Measurement Speed <sup>*5</sup>	1 to 2 samples/sec for Y at 0.5 cd/m <sup>2</sup>							
	15 to 30 samples/sec for Y at 10 cd/m <sup>2</sup>							
	20 to 30 samples/sec for Y at 50 cd/m <sup>2</sup>							
	20 to 30 samples/sec for Y at 100 cd/m <sup>2</sup>							
Digital Resolution	16 bits							
Flicker								
Measurement Range	5 to 5,000 cd/m <sup>2</sup>							
Sampling Rate	100k samples/sec (adjustable)							
Contrast	Accuracy	±1% (30 Hz AC/DC 10% sine wave)						
	Reproducibility	±2% (60 Hz AC/DC 10% sine wave)						
JEITA	Accuracy	1% (20 to 65 Hz AC/DC 10% sine wave)						
	Reproducibility	±0.5 dB (30 Hz AC/DC 10% sine wave)						
<table border="1"> <tr> <td>JEITA</td> <td>Accuracy</td> <td>±0.3 dB (30 Hz AC/DC 10% sine wave)</td> </tr> <tr> <td>JEITA</td> <td>Reproducibility</td> <td>±0.3 dB (30 Hz AC/DC 10% sine wave)</td> </tr> </table>			JEITA	Accuracy	±0.3 dB (30 Hz AC/DC 10% sine wave)	JEITA	Reproducibility	±0.3 dB (30 Hz AC/DC 10% sine wave)
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Features								
Capture Function	One time/Continuous							
Operation Mode	1. USB 2.0: High speed device , using LightTouch uSpectrum library. 2. RS-232: For PC and embedded purposes, using SCPI command.							
Integration Mode	Auto/Manual							
Dark Calibration	Yes (Auto)							
Measuring Parameters (Flicker)	Max/Min, Average, RMS, Frequency, JEITA, VESA, Flicker Percentage (IES) and Flicker Index (IES)							
System Configuration								
Dimensions	240 x 216.5 x 136.3 mm (H x W x D)							
Weight	3.8 ±0.2 kg							

\*1. Luminance and color testing are based on standard light source at 2856K, 6500K and 9300K.  
 \*2. Measure in normal mode with temperature 23 ±2° C and relative humidity 50% or less.  
 \*3. Repeatability test is based on the status of shutter opening  
 \*4. Input the 550 nm monochromatic light and measure the stray light ratio at 550 nm ± 40 nm.

\*5. Testing condition: Sync mode at 60 Hz. Sample speed depends on the measured sample. If the sample uses PWM, it will take longer  
 \*6. Input source must be a stable light source.  
 Specifications are subject to change without notice.