RadOMA-DMS Display Measurement Spectroradiometer

PRODUCT SUMMARY

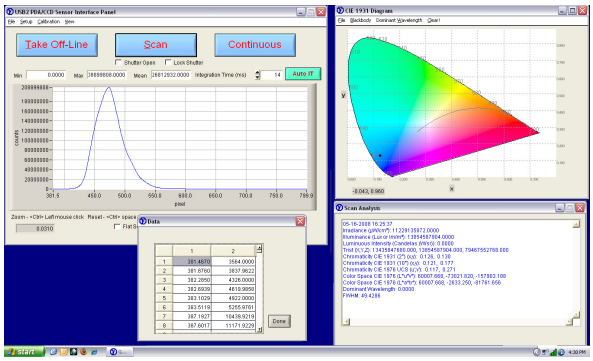
The Gamma Scientific RadOMA-DMS series of display measurement spectroradiometers represent the state-of-the-art in speed and accuracy in a commercially available instrument.

As the flat-panel display industry grows, there is an ever increasing demand for high-resolution, true to life images. To achieve this, displays must have darker blacks to get that true feel. The RadOMA-DMS offers the highest dynamic range in an array-type spectroradiometer available, now achieving 300,000:1 contrast measurements for a single measurement aperture, as well as extremely good sensitivity, with luminance measurements down to 0.0015 cd/m^2.

Spectral measurements of displays can be repeatedly taken in milliseconds with ultra-low uncertainty. In addition, any application that demands high sensitivity in the blue-light region, for example LED backlit displays, will benefit from this system's back-thinned CCD technology – its sensitivity is at least two times greater than front-illuminated CCD-based systems.

The optical viewing system utilizes the Gamma Scientific AVS Cam – an optical system that back projects the measurement aperture, superimposing the measurement spot on the DUT, which is both visible on the DUT or on the host computer via a USB 2.0 camera. Also available is a Reflex Viewing System.

Continuing on the RadOMA platform family – a durable opto-electrical design proven in hundreds of facilities world-wide – the RadOMA-DMS shares the same feature-rich functionality as its siblings. This includes three models covering a wide spectral range from visible to the near infrared; interchangeable system components for easy customization and integration; automatic dynamic range optimization that ensures system electrical gains are always set for the best results; USB 2.0 interface; and Gamma Scientific's powerful Light Touch spectral data acquisition and analysis software package, available in both engineering/R&D and QC/production line versions.



RadOMA-DMS shown with Reflex Viewing Optics

FEATURES

- *Luminance measurements down to 0.0015 cd/m^2*
- ***Contrast measurements to 300,000:1***
- *Superior wavelength and color accuracy via low thermal expansion coefficient materials*
- *Near-real-time measurement*
- *High resolution: 0.4 nm/pixel*
- *Spectral ranges: 310-930 nm, 350-1100 nm, and 380-800 nm*
- *Cooled, back-thinned high-end CCD Array*
- *Low polarization error*
- *User-selectable half power bandwidth*
- *Six different measurement apertures*
- *AVS Viewing System or Reflex Viewing System*
- *USB interface*
- *Windows-based control/analysis software*
- *NIST-traceable accuracy.*
- *Self-calibrated* ***The system never has to be returned for calibration eliminating weeks of downtime.***

AVS Cam showing measurement spot on the "A"

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RadOMA-DMS Display Measurement Spectroradiometer

SPECIFICATIONS

Detector and Wavelength Specifications			
Model Number	**GS-1290-DMS-1**	**GS-1290-DMS-2**	**GS-1290-DMS-3**
Spectral Range (nominal)	380-930 nm 310-930nm with opt. quartz optics	380-1100 nm 350-1100nm with opt. quartz optics	380-800 nm
Wavelength Resolution	0.6 nm/element	0.9 nm/element	0.4 nm/element
Spectral Bandwidth	Built-In User Selectable Half-Power Bandwidth (HPBW) **Bold is factory setting**		
	10 nm	20 nm	10 nm
	5.0 nm	10 nm	5.0 nm
	2.5 nm	5.0 nm	**2.5 nm**
	1.8 nm	**2.7 nm**	1.4 nm
	1.2 nm	1.8 nm	1.0 nm
Wavelength Repeatability	0.02 nm	0.03 nm	0.02 nm
Wavelength Accuracy	+/- 0.25 nm	+/- 0.25 nm	+/- 0.25 nm
Spectral Sensor	Temperature-Stabilized, cooled, Back-Thinned 1024x128 element CCD Array		
Stray Light	Less than 1 x 10^{-4} (at 8 times the HPBW from a HeNe laser line)		
Polarization Error[1]	< 1%		
Measuring Angle	5°, 2°, 1°, 0.5°, 0.3°, or 0.1° (user-selectable)		
Min. measuring distance	43.2 mm with macro lens		

Sensitivity and Accuracy Chart[2]						
Measuring Aperture	**5°**	**2°**	**1°**	**0.5°**	**0.3°**	**0.1°**
Sensitivity (cd/m²)	0.0015 to 36500	0.0022 to 53,600	0.009 to 220,000	0.034 to 829,000	0.16 to 3,900,000	0.9 to 21,900,000
Chromaticity Accuracy (GS-1290-DMS-1)	x,y : +/-0.0020 (0.0015-0.05 cd/m²) x,y : +/-0.0015 (0.05-800 cd/m²) x : +/-0.0015 y : +/-0.001 (800-36500 cd/m²)	x,y : +/-0.0025 (0.002-0.07 cd/m²) x,y : +/-0.0015 (0.07-1150 cd/m²) x : +/-0.0015 y : +/-0.001 (1150-53600 cd/m²)	x,y : +/-0.0025 (0.009-0.3 cd/m²) x,y : +/-0.0015 (0.3-4700 cd/m²) x : +/-0.0015 y : +/-0.001 (4700-220k cd/m²)	x,y : +/-0.0025 (0.03-1.1 cd/m²) x,y : +/-0.0015 (1.1-17750 cd/m²) x : +/-0.0015 y : +/-0.001 (17750-829k cd/m²)	x,y : +/-0.0025 (0.16-5.1 cd/m²) x,y : +/-0.0015 (5.1-83500 cd/m²) x : +/-0.0015 y : +/-0.001 (83500-3.9M cd/m²)	x,y : +/-0.0025 (0.9-29 cd/m²) x,y : +/-0.0015 (29-470k cd/m²) x : +/-0.0015 y : +/-0.001 (470k-21.9M cd/m²)
Chromaticity Accuracy (GS-1290-DMS-2)	x,y : +/-0.0040 (0.0015-0.05 cd/m²) x,y : +/-0.0030 (0.05-800 cd/m²) x : +/-0.0030 y : +/-0.002 (800-36500 cd/m²)	x,y : +/-0.0050 (0.002-0.07 cd/m²) x,y : +/-0.0030 (0.07-1150 cd/m²) x : +/-0.0030 y : +/-0.002 (1150-53600 cd/m²)	x,y : +/-0.0050 (0.009-0.3 cd/m²) x,y : +/-0.0030 (0.3-4700 cd/m²) x : +/-0.0030 y : +/-0.002 (4700-220k cd/m²)	x,y : +/-0.0050 (0.03-1.1 cd/m²) x,y : +/-0.0030 (1.1-17750 cd/m²) x : +/-0.0030 y : +/-0.002 (17750-829k cd/m²)	x,y : +/-0.0050 (0.16-5.1 cd/m²) x,y : +/-0.0030 (5.1-83500 cd/m²) x : +/-0.0030 y : +/-0.002 (83500-3.9M cd/m²)	x,y : +/-0.0050 (0.9-29 cd/m²) x,y : +/-0.0030 (29-470k cd/m²) x : +/-0.0030 y : +/-0.002 (470k-21.9M cd/m²)
Chromaticity Accuracy (GS-1290-DMS-3)	x,y : +/-0.0020 (0.0015-0.05 cd/m²) x,y : +/-0.0015 (0.05-800 cd/m²) x : +/-0.0015 y : +/-0.001 (800-36500 cd/m²)	x,y : +/-0.0025 (0.002-0.07 cd/m²) x,y : +/-0.0015 (0.07-1150 cd/m²) x : +/-0.0015 y : +/-0.001 (1150-53600 cd/m²)	x,y : +/-0.0025 (0.009-0.3 cd/m²) x,y : +/-0.0015 (0.3-4700 cd/m²) x : +/-0.0015 y : +/-0.001 (4700-220k cd/m²)	x,y : +/-0.0025 (0.03-1.1 cd/m²) x,y : +/-0.0015 (1.1-17750 cd/m²) x : +/-0.0015 y : +/-0.001 (17750-829k cd/m²)	x,y : +/-0.0025 (0.16-5.1 cd/m²) x,y : +/-0.0015 (5.1-83500 cd/m²) x : +/-0.0015 y : +/-0.001 (83500-3.9M cd/m²)	x,y : +/-0.0025 (0.9-29 cd/m²) x,y : +/-0.0015 (29-470k cd/m²) x : +/-0.0015 y : +/-0.001 (470k-21.9M cd/m²)
Measurement Spot Size @ 43.2 mm (1.7 inches)	ø 4.24 mm (0.17″)	ø 1.69 mm (0.067″)	ø 0.85 mm (0.033″)	ø 0.42 mm (0.017″)	ø 0.28 mm (0.011″)	ø 0.084 mm (0.003″)
Measurement Spot Size @ 305 mm (1 foot)	ø 28.0 mm (1.1″)	ø 11.2 mm (0.44″)	ø 5.59 mm (0.22″)	ø 2.79 mm (0.11″)	ø 1.96 mm (0.073″)	ø 0.56 mm (0.022″)
Measurement Spot Size @ 305 m (1000 feet)	ø 28.0 m (92′)	ø 11.2 m (36.7′)	ø 5.59 m (18′)	ø 2.79 m (9.2′)	ø 1.96 m (6.4′)	ø 555 mm (21.9″)
Integration Time	0.008 to 520 seconds					
Computer Interface	USB 2.0					
Control Software	Analysis in CIE1931 XYZ and xy; CIE1976 UCS u′v′; CIE1976 L*u*v* and L*a*b*; CIE 1964 XYZ					
Operating Temp / Humidity	5 to 35°C / relative humidity 0 to 90%, non-condensing					
Size	12.1″ L x 6″ W x 11.8″ H (30.8 cm L x 15.1 cm W x 29.9 cm H)					
Weight	10 lbs. (4.6 kg)					
Power	AC Adapter (100-240 V~, 50-60 Hz)					

1: Measuring 100% linearly polarized light through a Glan-Thompson Prism
2: Sensitivities are for a 100:1 signal-to-noise ratio based on the percent coefficient of variance measuring the luminance of a CIE Illuminant A source.

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