

Gamma Scientific's Reflectance and Transmission Measurement Systems provide quick spectral measurement of anti-reflection, thin film coatings on polished substrates.

Controlled optical geometry and industry leading spectroradiometer performance offer accurate, repeatable reflection measurements for any glass or polished transmissive element.

When measuring reflectance, Gamma Scientific's unique technology allows manufacturers to perform **single sided inspection** on the first surface of any glass or polished, transmissive element while excluding the second surface.

The GS-191SA-1045 Semi-Automated Dual Angle Reflectance Measurement system captures complete spectral and colorimetric properties of thin film coatings with scan times typically less than one second.

Additional reflectance and transmission test systems from Gamma Scientific are available in several configurations for both off-line (R&D) and in-line (production) coating inspection.

Depending on the sample type and desired measurement result, a variety of system configurations are available for testing either polished (specular) or rough (diffuse) samples.

APPLICATIONS

- Anti-Reflection (AR) Coatings
- Flat Panel Display Glass
- Touchscreen Display Glass
- Optical Filters/Lens Coatings
- Physical Vapor Deposition (PVD)
- Pyrolytic Glass Coatings
- Chemical Vapor Deposition (CVD)

These systems are ideal for manufacturers who need to obtain fast and accurate measurements of flat panel display glass, anti-reflection coating inspection, photovoltaic (solar cell) coatings, optical filters, lens coatings, low-E architectural coatings, paint samples, diffuse plastics and more.

Regardless of the sample, Gamma Scientific offers a solution for your reflectance or transmission measurement needs.



GS-191SA- 1045 Semi-Automated Dual Angle Reflectance Measurement System

KEY FEATURES

- Isolated first surface measurement of thin glass substrates >500 μm thick
- Complete spectral analysis
- Test coating uniformity and colorimetric analysis
- Full cycle testing for R&D or production

TECHNOLOGY

- Gamma Scientific Model 191 Series Reflectometer Heads isolate the first surface reflection
- The second surface reflection is completely eliminated in a non-destructive manner
- Light reflecting off each surface is spatially filtered within the optical head
- System can be configured to measure total reflectance or isolate internal optical interfaces if required

SOFTWARE

- Programmable, multi-location reflectance measurement
- Real-time a^* , b^* color chart
- Pass/fail, color binning, and uniformity judgment built-in
- Automated calibration

GS-191SA-1045 SPECIFICATIONS

Optical Specifications		
191 Optical Head	10 Degree Optics	45 Degree Optics
Measurement Type	First Surface Specular Reflection	First Surface Specular Reflection
Sample Types	Glass	Glass
Illumination Angle	10°	45°
Viewing Angle	10°	45°
Minimum Sample Thickness (First Surface Reflectance Only)	0.5mm (transparent samples)	0.25mm (transparent samples)
Maximum Sample Thickness	6mm	6mm
Maximum Sample Size	400mm x 350mm Panel	400mm x 350mm Panel
Spectral Range	360nm-830nm	360nm-830nm
Illumination Spot Size (Area of Analysis)	1mm x 10µm	1mm x 10µm
Measurement Speed (Sample Dependent)	<1500ms	<1500ms
Calibration Reference Standard	Built in BK-7 Polished Glass	Built in BK-7 Polished Glass
Semi-Auto System Specifications		
191 Optical Head	191F-1045 Dual Angle Optics	
Measurement Program Types	- 5 selectable program types, individually configurable for up to 10 different panel sizes Program Types: - 40 Point Grid, 25 Point Grid, 5 Point Cross, 3 Point Diagonal, and 1 Point (all locations measured at 10° & 45° simultaneously)	
Measurement Locations	- Position coordinates can be individually set for 10 different panel sizes with 1mm resolution - Default settings have a grid starting 10mm in from each edge, with equal spacing between the corner locations	
Cycle Time	Program dependent, each measurement point takes ~1500ms	
System Dimensions	Height: 1.25m, Width: 1.0m, Depth: 1.0m Weight: approx. 300kg	
Measurement Accuracy		
Spectral Reflectance	± 0.5%	± 0.5%
Tristimulus (CIE 1931 X, Y, Z)	± 0.05	± 0.10
Chromaticity (CIE 1931 x, y)	± 0.005	± 0.005
LAB Color (CIE 1976 L*, a*, b*)	L* ± 2.0 a*, b* ± 0.8	L* ± 2.0 a*, b* ± 0.8
Average Reflectance	± 0.2	± 0.2
Reported Parameters		
Spectral Data	Reflectance as a function of wavelength	
Colorimetric Data	Tristimulus 1931 X, Y, Z	
	Tristimulus 1964 X, Y, Z	
	CIE 1931 x, y	
	CIE 1976 L*, a*, b*	
Wavelength Data	CIE 1976 L*, u*, v*	

- Standard Operating Range for Gamma Scientific Instruments- Temperature: Minimum: 0°C (32°F) - Maximum: 35°C (95°F); Relative Humidity (Non- Condensing): Minimum: 20% - Maximum 70%

- The information contained in this data sheet is based on Gamma Scientific's internal evaluation and is subject to change at any time without notice

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