

FPM-505R

Reflective Display Measurement System

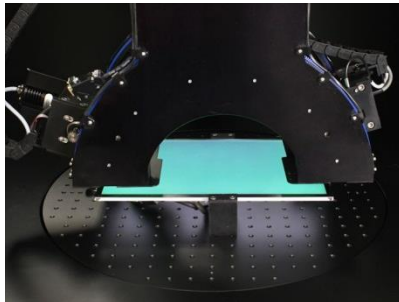
Ideal for optical performance assessment of reflective, transreflective, emissive, and transmissive displays



Overview

The FPM-505R Reflective Display Measurement System is designed for reflective measurements and other standard optical performance tests of reflective, transreflective, emissive, and transmissive displays.

Whether you need to test sunlight readability of a cell phone or tablet display, ambient contrast ratio of a laptop display, or optical properties of e-paper or other reflective displays, the FPM-505R can handle it all.



Easy to Use

The FPM-505R verifies critical optical performance parameters of the display in an easy to use automated fashion. The graphical user interface allows the operator to select a pre-defined test configuration, start, and stop the test.

Standard and Custom Tests

The FPM-505R can be setup to run many standard VESA, ICDM, TCO, ISO, SPWG and other display measurement tests as well as many customized tests; too many to list. We offer test sequences that cover most display measurement requirements or you can write your own.

Features

Complete Measurement Solution

- Optimized for displays up to 19" diagonal.
- Quick and accurate reflection measurements
- Full Optical characterization
- Spectrometer included with optional Westar TRD-200
- Supports popular LCD testers and test pattern generators
- Westar ViewPoint software for manual system control
- NI Teststand for automated test sequences
- Excel data reports
- Fully automated 5-axis motion base with 6th axis light source
- Light-safe enclosure

Key Measurements

- Brightness
- Contrast
- Color
- Uniformity
- Cross-talk
- Color Gamut
- Reflection
- Viewing Angle
- Flicker (optional)
- Response Time (optional)
- Gamma
- Custom test
- Voltage and Current (optional)
- Warm Up Time

Delivery, Setup and Training

A certified Westar installer will arrive at your facility to install the FPM-505R. After setting up the system, the installer will provide up to 3 days of training on system operation.

Warranty and Support

The FPM-505R comes with 1 year warranty, 1 year of technical support and ViewPoint software upgrades.

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Software

TestStand Automated Test Sequencer

For automated test scripts, the FPM-505R can be controlled using NI TestStand. Any controls in ViewPoint are available via test objects (steps) in TestStand making it easy to build elaborate test sequences. Westar offers many standard test sequences and can help you design your own custom test sequences depending on your display metrology needs.

Features

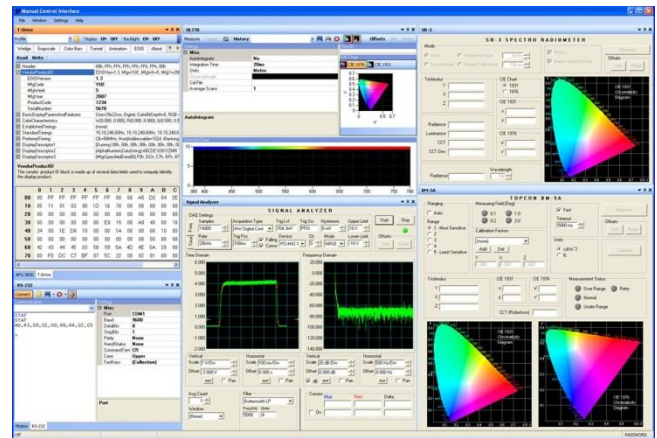
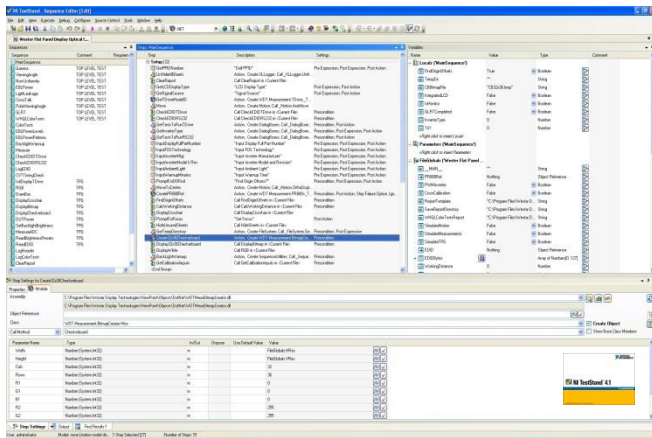
- Access motion base, instruments, test pattern generators, and other supported devices using test objects.
- Structure test steps into sequences and subsequences with global and local parameters.
- Powerful development interface for sequence design and debugging.
- Easy to user interface for sequence operation and control.
- Access Microsoft Excel for data reporting.

ViewPoint Manual Control Interface

The FPM-505R comes with a sleek user interface for manual control called ViewPoint. In a single interface, the user can control the instruments, light sources, test pattern generators, and motion base. ViewPoint can be customized with software controls for your specific instruments, test pattern generators, and power supplies. See spec summary for list of supported devices

Features

- Multi-view dockable GUI windows – arrange multiple DUT Control, Motion Control, and LMD GUIs
- Property grids for easy parameter input
- Unified LMD GUI “look and feel” and improved ease-of-use for photometers and spectroradiometers
- Enhanced CIE chromaticity charts (NTSC reference gamut, multiple measurement points, print graphs)
- Enhanced measurement history and reporting tools (print standard measurement reports from the MCI)



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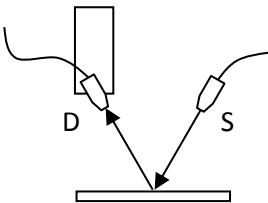
Reflection Measurement Configurations

Directed Illumination Reflection Coefficient - (DIRC)

Directed Illumination Reflection Coefficient is measured using an LED based point light source and (diffuse and optional specular) reflection standards.

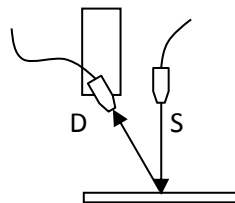
This method follows principles described in ICDM 11.6 and 11.7.

- Light source projection optics on gimbal.
- Calibrated Diffuse Reflection Standards for use during reflection test set up.
- Light source angle: -70° to 70°
- Measurement angle: 0° to 70° continuously adjustable.
- Illumination level : >1000 Lux



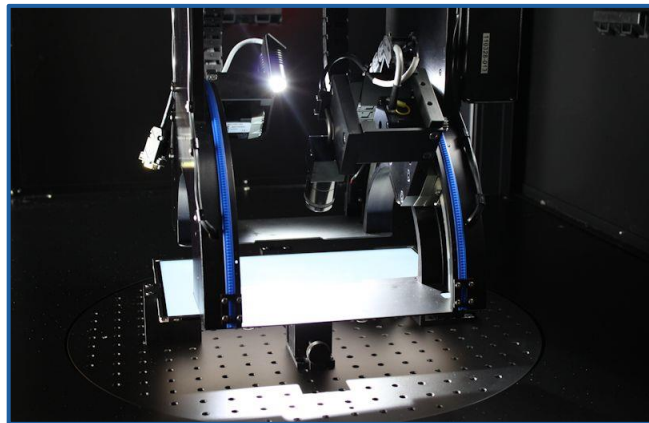
Specular Reflection Set-Up

Detector D is positioned at the complimentary angle from the light source S.



Diffuse Reflection Set-Up

Detector D is positioned at the scatter angle while the light source S remains at a non-complementary angle.

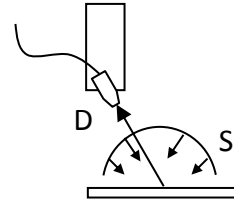


Diffuse Hemispherical Reflection Coefficient - (DHRC)

Diffuse reflection Factor is measured using a uniformly illuminated 6" hemisphere. The hemisphere is illuminated by white LEDs and monitored by a photodiode.

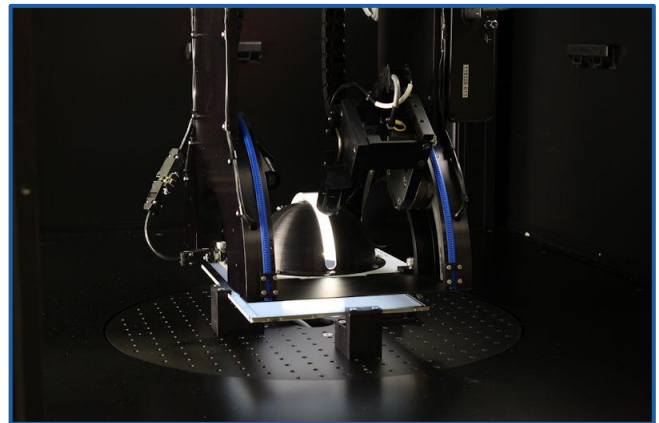
This method follows principles described in ICDM 11.2 and 11.3.

- 6" Hemisphere illuminated by white LEDs
- Slit viewport in hemisphere
- Removable slit cover for specular included / excluded
- Measurement angles from 8° to 70°
- Illumination level : >1000 Lux



Diffuse Reflection Set-Up

Detector D is positioned at an angle off display normal while measuring through slit in the hemispherical light source S.



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Spec Summary

5-Axis Motion Base	Specification
X Axis Range (Left – Right)	~20" (~50 cm)
Y Axis Range (Front –Back)	~20" (~50 cm)
Z Axis Range (Up – Down)	~6" (~15 cm)
X, Y, Z Accuracy	0.0016" (0.041 mm)
X, Y, Z Precision	±0.0006" (0.0015 mm)
Inclination Range (Gimbal)	0° to 70°
Azimuth Range (Optional)	±180°
Inc. / Azimuth Accuracy	0.25°
Inc. / Azimuth Precision	±0.10°
Directed Illumination	Specification
Light Source	LED
Illumination Range	1000 Lux – 10,000 Lux
Light Source Angle	-70° to 70°
Measurement Angle	0° to 70°
Diffuse Illumination	Specification
Light Source	6" Hemisphere illuminated by white LEDs
Illumination Range	1000 Lux – 10,000 Lux
Measurement Angle	8° to 70°
Display Under Test (DUT)	Specification
Maximum Width / Height	17" (43.2 cm) / 17" (43.2 cm)
Maximum Diagonal (16:9)	19" (48.2 cm)
Maximum Diagonal (4:3)	21" (53.3 cm)
Max Weight	30 lbs. (13.6 kg)
Fixturing	Optional Standard Universal Fixture (SUF) for LCMs p to 1" thick
Test Capabilities	Specification
Center Screen	Luminance, Color, Contrast Ratio, Gamma, CIE Chromaticity, Color Gamut and %NTSC, CCT
Uniformity	Luminance Uniformity Color Uniformity Contrast Ratio Uniformity
Viewing Angle	Luminance vs. Viewing Angle Contrast vs. Viewing Angle Color vs. Viewing Angle
Temporal (Optional)	Gray Level Response Time, Flicker
Reflection	Specular Reflection, Diffuse Reflection
Other	Shadowing (Cross-Talk), Image Retention, Warm-Up time
Standardized Test Suites	VESA FPDM 2.0, ICDM, TCO '99/'03/'05, ISO 13406-2
Custom Tests	Yes, Contact Westar

Spectrometer (included)	Specification
Detector Type	Back thinned CCD Array TE cooled (-10C)
Pixels	512
Optics	Fiber optically coupled lens
Measurement Spot Size	3.5 mm
Spectral Range	380 – 750 nm
Spectral Resolution	<4nm FWHM
Luminance Range	0.05 – 2000 cd/m2 (illuminant A)
Luminance Accuracy	±3% (>0.3 cd/m ² , illuminant A)
Color Accuracy	±0.003 u'v' (illuminant A)
Instrument Options	Specification
Optional Instruments (Direct View Measurements)	Westar TRD-200
Display Drive Options	Specification
Optional LCD Tester / TPG Interfaces	Westar T Drive Series, Astro VG Series, Quantum Data QD Series
Optional Power Supplies	Sorensen DLM Series
System Controller PC	Specification
Processor / Motherboard	19" Rack Mounted Industrial PC
Operating System	Microsoft Windows 7
Ports	7X USB, 6X RS-232, 2X Ethernet
Monitor	22" LCD Flat Panel
Peripherals	Keyboard, Mouse, Joystick
Software	Microsoft Office National Instruments TestStand, Westar ViewPoint
System	Specification
Outside Dimensions	140cm (W) x 100cm (D) x 200 cm (H)
Weight	Contact Westar
Power	120 VAC, 15A, 60Hz
System Support & Warranty	Specification
Installation and Training	On-site system set-up, Up to three (3) days on-site training
Warranty and Support	1 Year Limited Warranty, 1 Year Tech support

Contact Us to Get Started

Call us for additional product information and pricing. We will work with you one-on-one to deliver a measurement system that meets your unique requirements!

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Thermal Chamber Option



	Specification
Type	Forced Air
Temperature Range	-40C to +85C
Control	Software controlled through NI TestStand SW interface
Chamber Dimensions	Specification
Diameter	24"
Height	3"
Utilities	Specification
Power	230V, 30A, 1 phase
Air	Dry Air – 90-110 psi, 25 SCFM
System Controller PC	Specification
Processor / Motherboard	19" Rack Mounted Industrial PC
Operating System	Microsoft Windows 7
Ports	7X USB, 6X RS-232, 2X Ethernet
Monitor	22" LCD Flat Panel
Peripherals	Keyboard, Mouse, Joystick
Software	Microsoft Office National Instruments TestStand, Westar ViewPoint
System	Specification
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