

Imaging Sphere for View Angle Performance Measurement

IS-VA™



Applications

- View angle performance measurement for LCD, PDP, and OLED flat panel displays
- View angle performance measurement of 3D displays
- Technology evaluation and characterization in display R&D
- Production quality control in display manufacturing

Benefits

- Accurate and reliable measurement of intensity and color as a function of angle
- Lower cost than conoscopic and goniometric systems
- Accuracy of angular distribution unaffected by light source fluctuations
- Easy to use measurement control and analysis software simplifies assessment process

Fast, accurate, low cost view angle performance measurement for LCD, PDP, and OLED FPDs

The IS-VA™ (Imaging Sphere for View Angle Performance Measurement) measures color, luminance (brightness) and contrast as a function of view angle for flat panel displays and display components. The IS-VA™ captures a full hemisphere of view angle data in a single measurement, providing quick, accurate results, making the system ideal for both R&D projects as well as real-time production quality control. It is well suited to a wide range of display types including those based on LCD, PDP, and OLED technologies, as well as backlights.

The IS-VA™ also supports view angle performance measurement of emerging 3D displays, providing 3D luminance measurements, chromaticity coordinates, contrast ratio, and uniformity.

The IS-VA™ incorporates patented Imaging Sphere™ technology developed by Radiant Vision Systems jointly with Royal Philips Electronics. Using unique, precision calibrated optics, the IS-VA™ acquires hundreds of thousands of data points over a complete hemisphere (2π steradians) in a single measurement, taking just seconds or less. In the Imaging Sphere the DUT and the imaging colorimeter are fixed – they do not move relative to each other – resulting in greater measurement accuracy than traditional goniometric methods. Overall, the IS-VA™ delivers excellent accuracy, flexibility, and reliability and it is a lower cost alternative to traditional conoscopes and goniometric view angle measurement devices.

The IS-VA™ system combines an approximately 500 mm diameter, hemispherical, measurement chamber along with a Radiant Vision Systems IC-PM03 Imaging Colorimeter (512 x 512 pixel resolution) or an IC-PM13 (1024 x 1024 pixel resolution).

The IS-VA™ is provided with Radiant Vision Systems sophisticated IS control and analysis software. This software is built on the ProMetric® Software engine, and supports measurement set-up plus automated and customized measurement sequences. Extensive data analysis and display functions are also supported, including isometric plots, cross-sectional graphs, radar plots, bit maps and color graphs.



Key Features

- Proven accuracy in luminance and color coordinate measurement as a function of view angle for any FPD
- High speed operation, capturing data for all angles simultaneously
- Multiple imaging system resolution options for photopic or colorimetric measurement
- Easy-to-use measurement control and analysis software

Specifications*

Optical Specifications

CCD type	Full-frame, cooled and temperature stabilized
CCD bit depth	16-bit (>65K graylevels)
CCD resolution	512 x 512 (PM03) or 1024 x 1024 (PM13) pixels
Field of view	Approximately 2π steradians
Color measurement	CIE 1931 matched XYZ filters (or photopic only)
Neutral density filters	Integrated ND0, 1, and 2 filters standard
Luminance range	From 0.1 to 1 x 10 ⁶ nit
Angular resolution	0.5° or 0.25°, depending on CCD resolution
Angular range	Azimuth: 0° - 360°; Inclination: 0° - 85°
System accuracy ₁	Luminous intensity: ±5% Chromaticity coordinates (x,y): ±0.005
Short term repeatability ₁	Luminous intensity: ±0.5% Chromaticity coordinates (x,y): ±0.0006

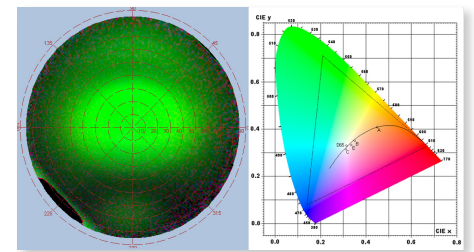
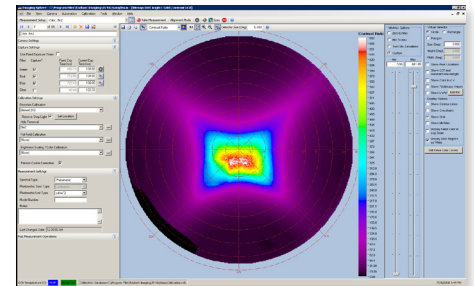
Mechanical Specifications

Overall size (WxHxD)	66 cm x 66 cm x 89 cm
Orientation	Rotatable to vertical, face-down, or face-up
Weight	32 kg
Construction	Integrated imaging dome and colorimeter
Minimum measurement time	Photopic: 1 sec Color: 5 sec

Control and Analysis Software Specifications

Measurement capabilities	Luminous Intensity Distribution, Radiant Intensity Distribution, Color: CCT; CIE x,y; u',v'; E
IS 1.x software function	Measurement set-up and image capture control Gray scale and false color display Intensity and chromaticity cross-sections 3D surface plot of intensity or chromaticity Isometric plot of intensity or chromaticity Graph and image comparison for multiple captures Process measurements (rotate, add, threshold, etc.)

* Specifications subject to change without notice



System Requirements

- 2.0 GHz or faster processor
- 1GB or greater RAM
- Windows® 7, Vista or XP
- USB 2.0 interface

¹ Based on a virtual detector size of 100 pixels.