MICROVISION

SS410 Display Measurement System

APPLICATIONS

- OLED, LCD, DLP, LCOS, Micro-Displays, Plasma

AUTOMATED TEST SUITES

- TCO 9.0
- ISO 9241-300 Series
- VESA FPDM 2.0
- Custom User Defined Test Suites

SS410 MEASUREMENTS

CMOS Camera

- Spot Analysis
- Line Width
- Fast Fourier Transforms (FFTs)
- MTF
- Convergence
- TCO Luminance Contrast Character

SPECTROMETER

- Luminance
- Chromaticity and Color Temperature
- Luminance/Color Uniformity
- Spectral Pl
- Gamma
- Contrast Ratio
- Illuminance

RTM

- Motion Blur/Motion Artifacts/MPRT
- Response Time & Flicker
- Gray Scale Transition Times

SS410 FEATURES

- High Resolution 5.1 Megapixel Camera
- Up to Three Sensor Technologies
- Automatic Measurements

SS410 System with computer and SS30 positioner

SS410 SYSTEM OVERVIEW

The SS410 measurement module offers a wide range of testing capability. It can be configured with up to three sensors, a CMOS camera, a spectrometer and a response time monitor (RTM). The CMOS Camera is used for spatial measurements including spot analysis line width, convergence, time variance, MTF, etc. It can also be used to measure luminance and contrast if the spectrometer is not installed.
The spectrometer is used to measure luminance, chromaticity, uniformity, spectral plots, gamma, contrast, etc. The RTM is used for temporal measurements including motion/blur, rise-time, fall-time, gray scale transition time, flicker, etc.

AUTOMATED TEST SUITES

The system offers many test suites such including TCO, ISO and VESA. Spreadsheets are included which automatically calculate all pass/fail criteria. Microvisions proprietary MATL software allows users to create custom tests suites to meet specific testing requirements.

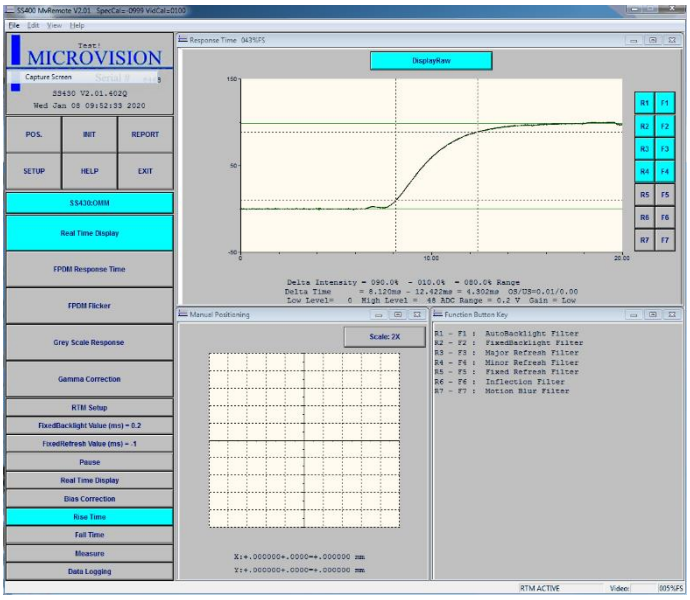
SYSTEM COMPONENTS:

System Software

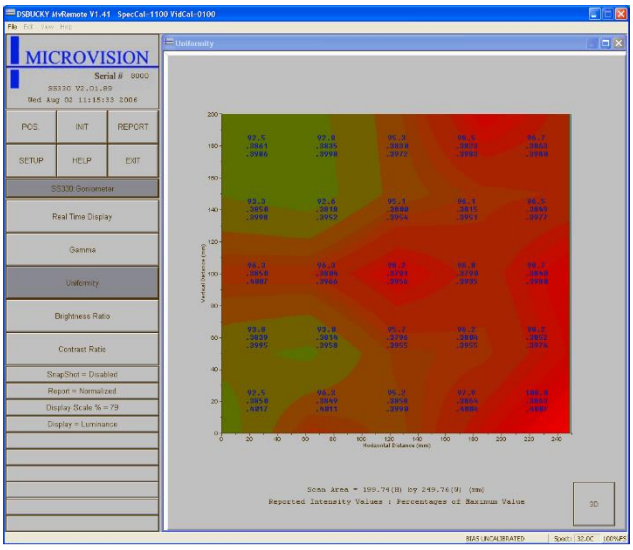
The SS400 Series Software runs on a Windows computer which controls the complete test system including the SS410, the positioner and pattern generation using a standard PC graphics card or through an external pattern generator. The system can also be controlled from another computer via a Remote Interface Function.

Configurations

The SS410 can be used on a stationary stand for fast single point measurements. Or Microvision provides a range of 3-axis positioners for automatic measurements at any location on the test display. Each positioner is fully integrated with the drive electronics, power supply and interface contained in the horizontal axis. Control of the positioner is automatic through software control or manually using the mouse or keyboard. Various positioner sizes are available for testing small handheld devices all the way up to 93-inch diagonal TVs.



Rise Time Test Results



Luminance Uniformity Test Results

SPECIFICATIONS

CMOS Camera

Image Sensor:	2464x2056 elements
Digital Video:	12-bit
Element Size:	3.45µm
Dynamic Range:	73.02 dB
Filters:	CIE Photopic, 50, 25, 10 & 1% ND
Standard Lens:	25mm C Mount, f1.6 to f22
Field of View:	11mm Standard, adjustable
Digital Zoom:	up to 32x
Luminance Accuracy:	+/- 4% @2856k standard
Luminance Range:	0.05 to 10^6 cd/m^2 with ND filters

Spectrometer

Spectral Range:	380 to 780nm (1000nm optional)
Luminance Range:	0.01 to 500K cd/m^2
Luminance Accuracy:	+/-3% @ 2856K illuminant A
Lum. Repeatability:	RSD over 30 minutes < 0.5% 0.01 cd/m^2 sensitivity is specified at 3% RSD
Color Accuracy (x&y):	+/- 0.002 @ 2856K
Color Repeatability:	+/- 0.0005 @ 2856K
Thermal Regulation:	Computer Controlled
Optics:	12mm Collimated System
Acceptance Angle:	1.5°
Digital Resolution:	16-bit A/D
Optical Resolution:	3.8nm FWHM, slit width: 100 µm

RTM

Sensor Type:	High-speed Photodiode
Sample Rate:	100khz or 1Mhz (RTM-HS)
Resolution:	16-bit A/D
Detector Response:	10khz or 100khz (RTM-HS)
Transition Time:	0.1ms to 4sec or 0.01ms to 4sec (RTM-HS)
Standard Lens:	25mm C Mount, f1.6 to f22
Repeatability:	3%
Interface:	USB