

## MDT-205L Projection Panel Characterization System

The MDT-205L projection panel characterization system provides a solution designed to meet the QA/QC needs of a company that uses microdisplays in its product line. By selecting optimum optics and lens assemblies for these measurements, the DisplayCheck microdisplay inspection solutions provide unequaled performance in defect inspection technology. This technology has been in production use since 2000, thus providing an additional value to the user by including this experience in the overall solution. The hardware assembly is designed for bench-top use in order to allow for maximum flexibility for use of varying drive electronics and display devices.

### Tester Electronics

- Main MDT Processing Computer
- 12 bit 1024x1024 CCD camera and frame grabber
- DC-controlled light source with up to eight user-selectable color filters
- DUT Interface and Control Computer w/ communications to drive electronics
- Monitor and KVM Switch



Typical MDT-205L Components

### Example MDT-205L Configuration



### Mechanical Items

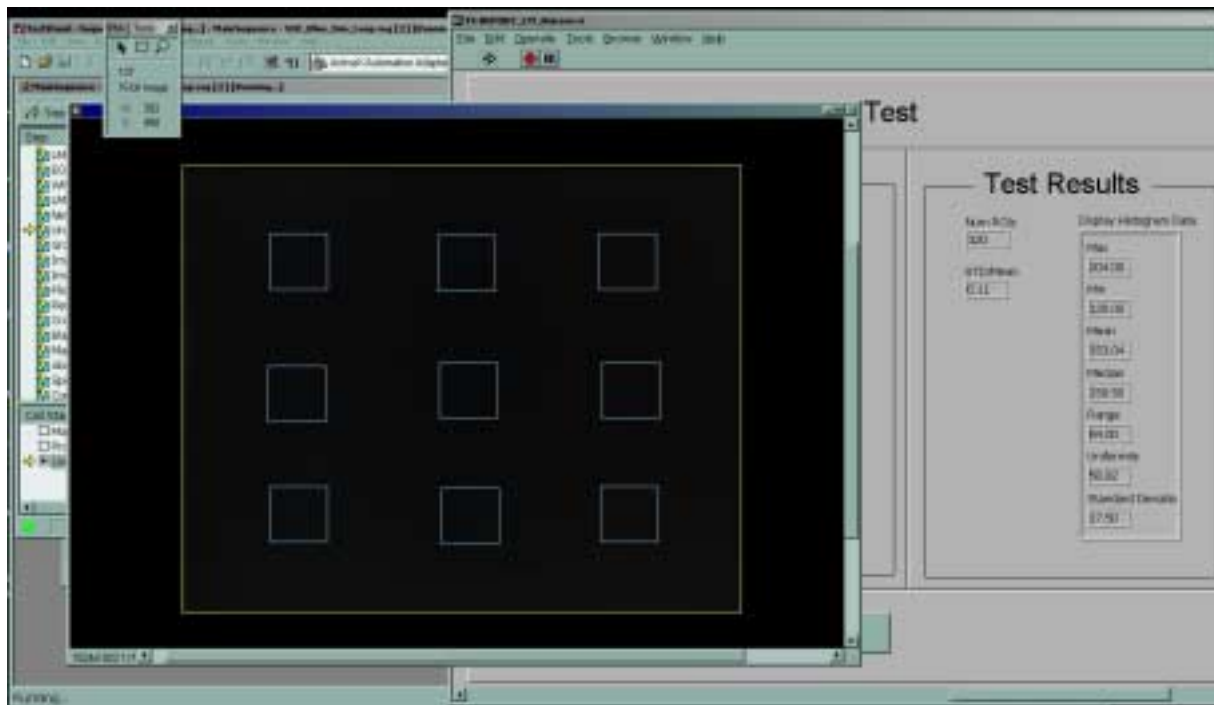
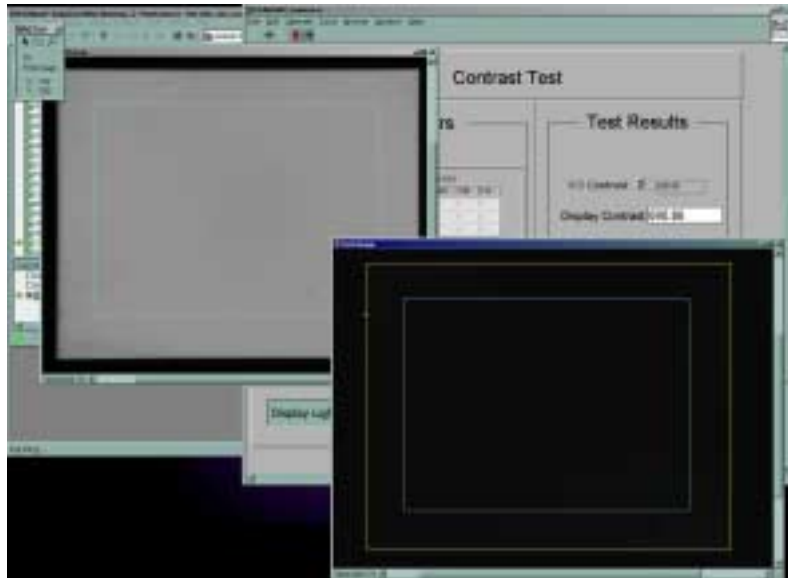
- Base plate to hold camera stanchion and DUT fixture
- Camera stanchion
- High System-Contrast PBS Optics assembly
- Holder for DUT Electronics
- Light shielding enclosure
- Calibration and DUT Fixtures

### Standard Microdisplay Assessments

- **Blemishes** – Bubbles, particles, and scratches.
- **Contrast** – Ratio of bright to dark state at user defined ROI's on the panel.
- **Contrast Uniformity** – Variance of contrast at user defined ROI's on the panel.
- **EO Curve** – Throughput vs. commanded gray level.
- **Image Retention** – Residual or latent image fade time.
- **Newton Fringes** – Interference rings.
- **Throughput** – Reflectance or transmission at user defined ROI's on the panel.
- **Uniformity** – Variance of throughput at user defined ROI's on the panel.

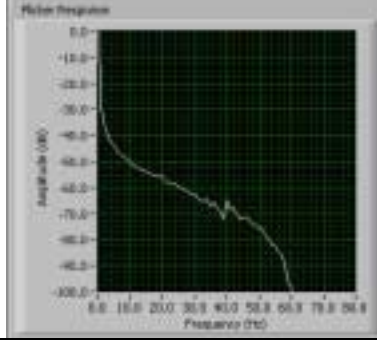
**Fast and accurate characterization of the panel in a single field of view.**


Proprietary normalization and processing technology allow the contrast ratio measurement to be made without having to scan the device to overcome limits in the test optics. These same images can be used for both large and small area contrast measurements as well as characterization of the contrast uniformity. A high system contrast ratio (typically greater than 10,000:1 over the DUT area and over the visible region 400-700nm) allows for measurement of new high contrast microdisplay panels.

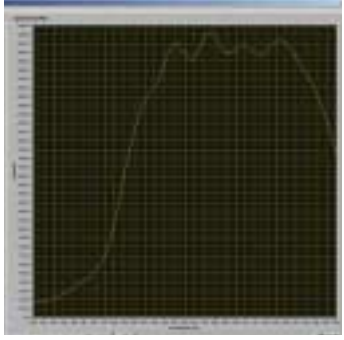



The same processing technology that enables the full device contrast measurements also lets the panel's uniformity be fully characterized. The MDT-205 can perform the standard VESA FPD uniformity (shown above in blue) as well as characterize the uniformity of the entire panel (shown above in yellow), thus capturing the areas not traditionally included. This uniformity measurement allows the user to select the number of regions to analyze in order to provide the necessary statistics.

### Optional Microdisplay Assessments

Option	MDT-200L-P	
Description	<p><b>This option provides the necessary hardware and software to perform macroscopic assessments for flicker and response time.</b></p> <ul style="list-style-type: none"> <li>○ Flicker dominant frequency.</li> <li>○ Flicker dominant frequency amplitude.</li> <li>○ Rise and Fall Time.</li> </ul>	 <p>MDT-200L-F Configuration Example</p>

Option	MDT-200LH-R	
Description	<p><b>This option provides the necessary hardware and software to perform rotational alignment of the DUT.</b></p> <ul style="list-style-type: none"> <li>○ Minimum darkness angle used for Contrast Ratio measurement.</li> <li>○ Contrast vs. angle.</li> </ul>	 <p>MDT-200LH-R Configuration Example</p>

Option	MDT-200L-S	
Description	<p><b>This option provides the necessary hardware and software to perform spectrometer measurements.</b></p> <ul style="list-style-type: none"> <li>○ CIE color co-ordinates.</li> <li>○ Maximum response wavelength.</li> <li>○ Throughput vs. wavelength.</li> <li>○ Contrast vs. wavelength.</li> </ul>	 <p>MDT-200L-S Configuration Example</p>

Option	MDT-200LH-T	
Name	Optional Temperature Controlled Assessment Fixture	
Description	<p><b>This option provides a heated fixture (room temperature to 100 degrees C) for the MDT-200 family of microdisplay inspection systems.</b></p>	 <p>MDT-200LH-T Configuration Example</p>

Option	MDT-200L-V
Description	<p><b>This option provides the necessary hardware and software to set the drive electronics voltages based upon user-defined criteria.</b></p>

Option	MDT-205L-XY
Description	<p><b>This option provides the necessary hardware and software for the X-Y translations needed for color uniformity measurements when combined with the spectrometer option.</b></p>

**DisplayCheck's mission is to provide the best possible service to our customers in the display industry so they may deliver the highest-quality display devices.**

**We shall accomplish this by designing, building, and supporting the most accurate, repeatable, and reliable display inspection solutions.**

**For more information, please contact:**

**Lewis Collier, President and CEO**  
**DCI Acquisition Corporation**  
<mailto:lcollier@DisplayCheck.com>  
<http://www.DisplayCheck.com>

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