NED-LMD M-Series Medium Field of View (MFOV) System

Reality X Verified®

The NED-LMD M-Series product range delivers the ideal all-in-one solution for high speed, high resolution, and high accuracy testing of near-eye displays. The M-80 model configuration is the world's first integrated medium field of view (MFOV) quality analysis solution that matches human eye resolution and is specifically designed for high volume product environments. It features a custom-designed motorized focus lens which covers 65° (H) by 48° (V) FOV for high fidelity 3D spatial and spectral characterization of Virtual Reality, Augmented Reality, Mixed Reality and Heads-Up Displays (VR, AR, MR, and HUDs). The systems conform to the latest standards being developed by the ICDM committee of the SID and IEC.

Design Validation and Quality Assurance of AR, VR, MR, and Heads-Up Displays

All -in-one: High Speed, High Resolution, and High Accuracy

- Wide-angle field of view objective lens with 80° diagonal FOV
- 3-5 mm entrance pupil to emulate the human eye
- 0 to 4 diopters motorized focus lens for AutoFocus control
- High sensitivity, high dynamic range for color and luminance measurements
- Optional fiber-coupled GS-1290 spectroradiometer for increased color accuracy
- Patented SLR viewing system with integrated LED measurement spot projector and autocollimator
- Easy to use software with quick test results, plots and pass/fail analysis

Original system calibration is performed in Gamma Scientific's NVLAP accredited laboratory (NVLAP Lab Code 200823-0) using NIST-traceable standards.

Measurement Parameters
Center Color and Luminance
Color Gamut Area
MTF and Contrast
FOFO or Sequential Contrast
Checkerboard Contrast
Color Uniformity
Luminance Uniformity
Field of View (FOV)
Geometric Distortion
Chromatic Aberration
Flicker
ANSI Contrast

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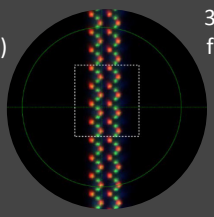
GAMMA SCIENTIFIC

Critical Enabling Design Features

65° x 48° MFOV
Motorized Focus Lens
(0 to 4 Diopters focus range)

Emulates Human Eye
3-5 mm entrance pupil; 2° foveal measurement spot

Periscope Lens Design
to easily fit in device's qualified viewing space



High Resolution Mapping
at human eye resolution

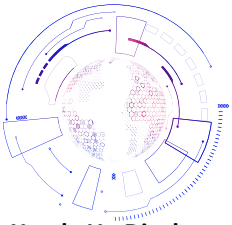
Spectral Precision
High sensitivity, dynamic range spectroradiometer

Complete Test Tool Device characterization in a single measurement sequence

Key Application Areas

Ensuring repeatable and reproducible photometric and colorimetric measurement results

Virtual Reality



Heads-Up Displays

Augmented and Mixed Reality

Leveraging more than 40 years of expertise in field-deployed HUD measurement systems for US military aircraft including the F-16, F-18, B1B, C-17 and F-35, Gamma Scientific has unmatched depth of expertise in virtual image display measurement.

Optical Specifications	
Field of View (HxV)	65 x 48 deg.
Angular Resolution	30 cycles/deg
Angular Pixel Density	144 pixels/deg, constant across the FOV
Distortion	<1%
Autofocus Range (Virtual Object Distance)	Infinity to 250 mm
System Specifications	
Luminance Test Range	0.1 - 25K cd/m^2
Dynamic Range Extension	Built-in ND filter
Image Sensor Architecture	CMOS, Global Shutter, 65 MegaPixels
Active Pixels	9344 (H) x 7000 (V)
Pixel Size	3.2 µm x 3.2 µm
Image Sensor Interface	CoaXPress V1.1.1 CXP3/6 - 4 lanes
Lens Front Barrel Diameter	52 mm
Color Measurement/Calibration Capability	Integrated spectrometer
Flicker Measurement	Built-in sensor with FBW 80kHZ (@-3dB)
Control Interface	USB 2.0, USB 2.0 over Ethernet (optional)
Input Power	110 - 240V AC, 50-60Hz 2.5A
Dimensions, LxWxH	317 x 230 x 470 mm

Specifications are subject to change without notice.

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