Radiant Vision Systems TrueTest™ Software provides a comprehensive set of tests for image analysis within a flexible framework that enables evaluation using a single test, or multiple tests in sequence. Test sequencing and pass/fail reporting functionality make TrueTest the ideal software package for production environments. TrueTest Software can be combined with any Radiant ProMetric® Imaging Colorimeter or Photometer to create a complete testing system for light and color measurement or machine vision.

The TT-HUD™ module for TrueTest Software provides a test suite to efficiently perform light, color, and dimensional measurements used to evaluate the quality of augmented projections, such as those emitted by head-up display (HUD) systems.

Software module with tests for evaluating the quality of HUD system projections

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The TT-HUD software module includes:

- **Light Measurement**
  Characterize luminance, chromaticity, and evaluate values including contrast and uniformity.

- **Image Distortion**
  Characterize distortion of the projected image using Distortion Dot Grid and Distortion Line Grid Analysis.

- **Modulation Transfer Function (MTF)**
  Includes line pair algorithms to evaluate image clarity.
Test Library

TT-HUD™ System Requirements

• ProMetric® Imaging Photometer (16, 29, 43MP) or Colorimeter (16 or 29MP)
• 200 mm lens
• Windows® 10, 64 bit
• Additional system requirements vary by camera. See hardware specification sheet for more information.

Examples of TT-HUD analyses:

Captures dimensional measurements for projected image size and x,y position.
Software converts camera focal distance to real distance units to test image location.

Apply tests separately or in sequence to evaluate all critical display quality parameters. Using a TrueTest Software device interface, TT-HUD can integrate with the HUD system to control display test images in conjunction with the test sequence for production-level automation.

Modulation Transfer Function (MTF) line pair algorithms calculate contrast at different spatial frequencies to determine image clarity. Testing is done using horizontal and vertical pairs of black and white lines.

Detect duplicate projections caused by ghosting effects using Ghosting Analysis.

Measure values between black and white areas of the HUD projection using Checkerboard Contrast to test contrast.

Test distortion using Distortion Dot Grid to measure the spatial offset between dots of the primary image and a test pattern.