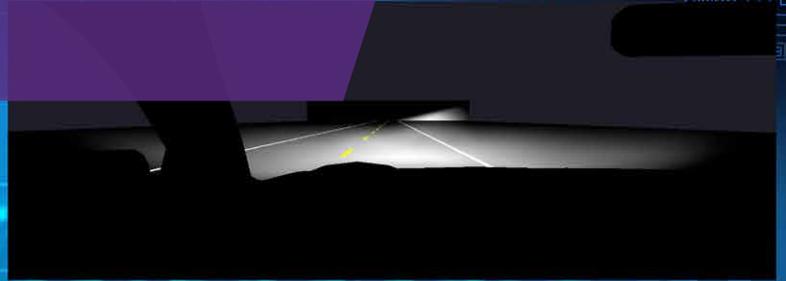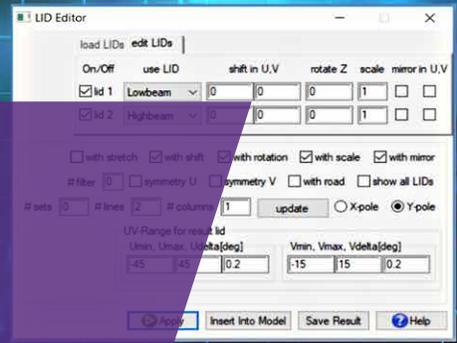# LucidShape Lite

Display and Analysis of Automotive Lighting Designs

Overview

LucidShape® Lite is a flexible tool for the display, analysis and manipulation of automotive lighting systems. Simulation results or goniometer measurements of real lighting fixtures can be viewed, edited and converted.

LucidShape Lite provides a subset of LucidShape's optical analysis functionality. It is ideal for developers who need powerful tools to analyze light data, but do not need all of LucidShape's broad geometric design and simulation capabilities.

Light Data Analysis

LucidShape Lite provides the following types of light data analysis.

Display of photometric data

- Light flux (lumen)
- Luminous intensity (candela)
- Illumination (lux)
- Luminance (candela/m^2)
- Color

Display of 3D and 4D photometric data

- Dynamic beam pattern for AFS
- Intensity distribution over a wavelength range
- BSDF data in 3D or 4D
- Complete color information
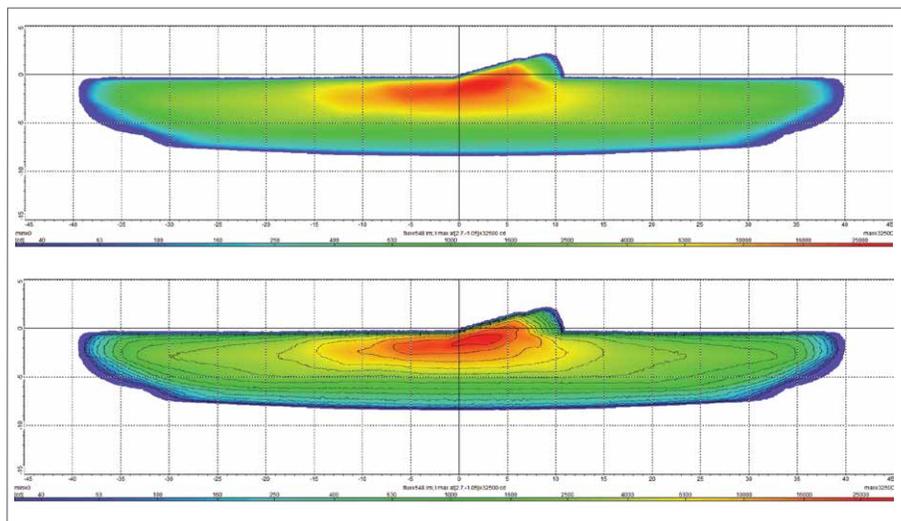- Tristimulus X,Y,Z; CIE x,y; red, green, blue

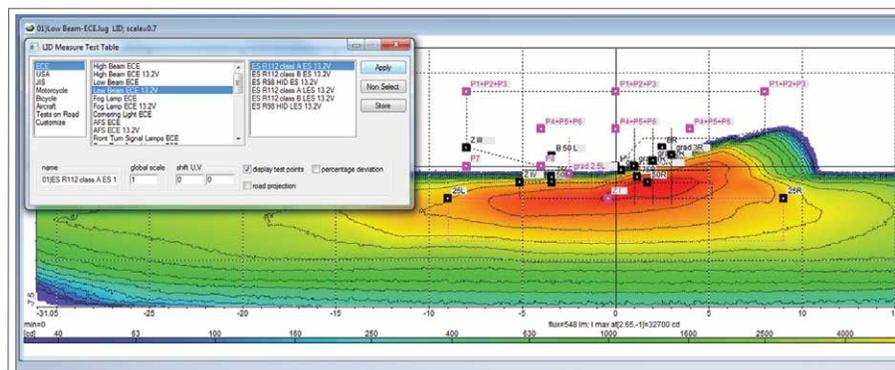

Figure 1: LID from low beam automotive headlamp

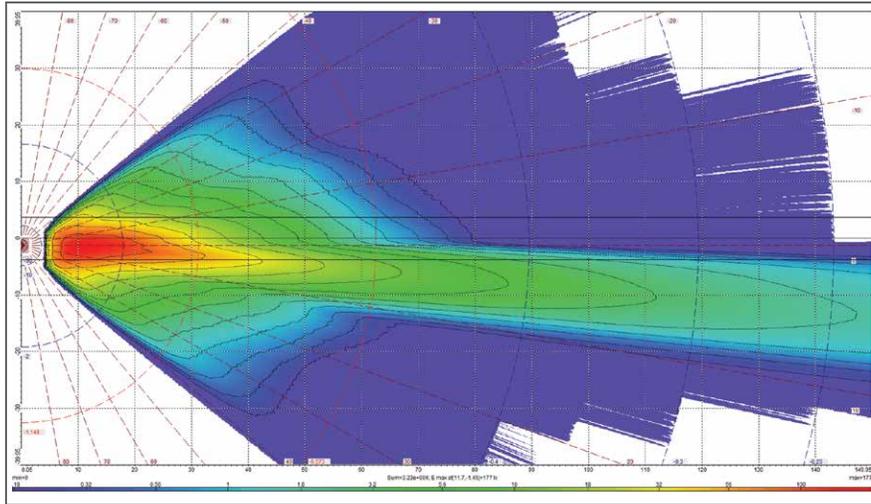Figure 2: Figure 2: LID measure test table

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Figure 3: AFS headlamp beam pattern with bird's eye view

LID File Types

LucidShape Lite supports the following light intensity distribution (LID) file formats.

Native lighting software formats

- LucidShape (.lid)
- ASAP [.din, .dis]

International standards

- IES (.ies)
- CIE (.cie)
- Eulumdat (.ldt)

Goniometer formats

- Excel (.csv)
- LMT (.lmt)
- Optronik (.krs)
- Kohzu (.kzu)
- InfInd Brasil (.prm)

Multidimensional LID

Besides static 2D data, LucidShape Lite can also operate on higher-dimensional data such as dynamic beam patterns for AFS (adaptive front lighting), BSDF data or luminous intensities over a wavelength range. Access to individual data layers is easy to handle, and entire data sets may be dynamically displayed as animated sequences.

LID Operations

LucidShape Lite offers a broad range of functions and operations for your light data. For example, you can subtract two light distributions to examine their similarities and differences. Another application is to smooth results for better real time simulations, or to mirror the results for left-hand traffic.

For headlamp assessments and comparisons, the TC4-45 benchmark is integrated into LucidShape Lite, as well as the consumer report benchmark.
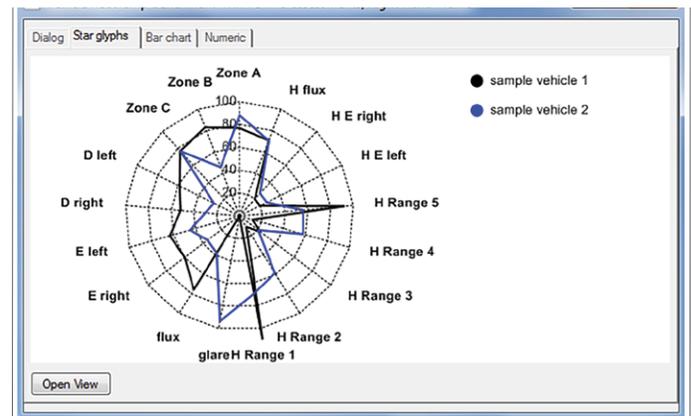

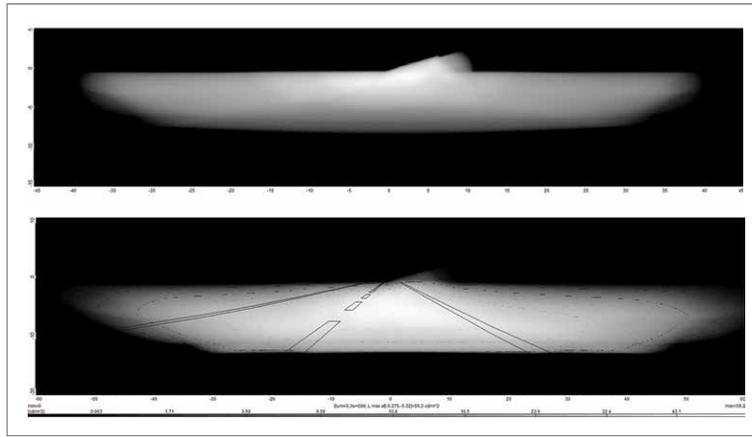Figure 4: Vehicle headlamp benchmark with TC4-45 assessments

Figure 5: Driver view luminance diagrams

Overview of LID Manipulations

- Filter (Smooth)
- Scale
- Stretch
- Add, Subtract
- Multiply, Divide
- Mirror
- Swap
- Make symmetric
- Shift range
- Rotate
- Convert angle system
- Cross-section curves
- LID as surface
- Bird's eye view
- Driver view

LID Editor

The LID editor is a unique tool to build the combined sum of existing light data files. In the combined sum, each component may be freely shifted, rotated, scaled or mirrored.

To build 3D beam patterns, you can move or blend components. Such theoretical AFS beam patterns can be loaded into LucidDrive® to simulate AFS drives.

To Learn More

For more information on LucidShape Lite and to request a demo, please contact Synopsys' Optical Solutions Group at (626) 795-9101 between 8:00am-5:00pm PST, visit https://www.synopsys.com/optical-solutions.html , or send an email to optics@synopsys.com.