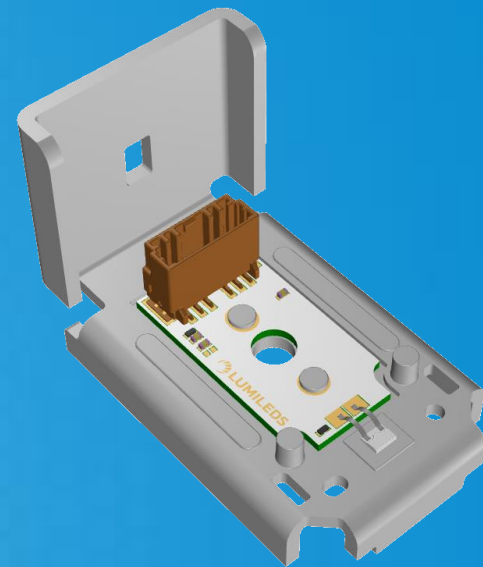


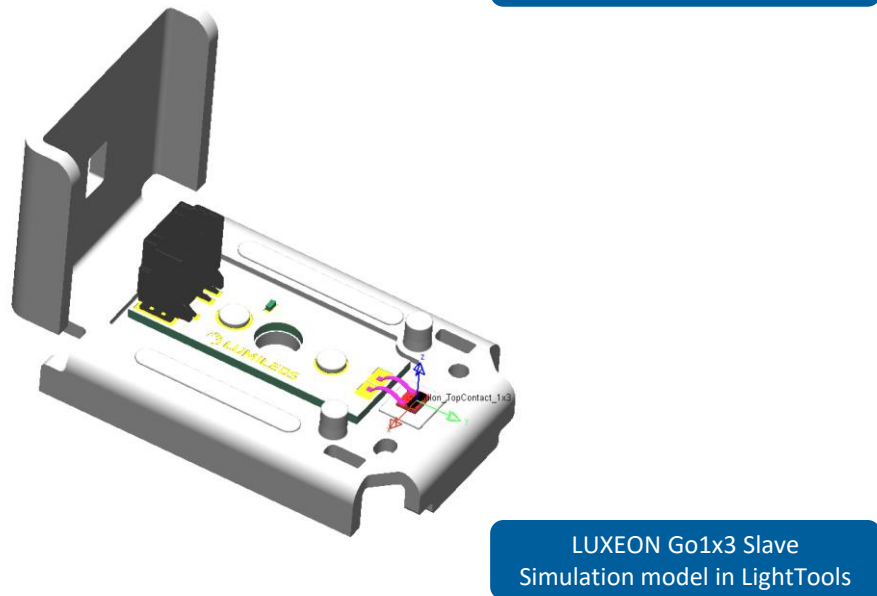
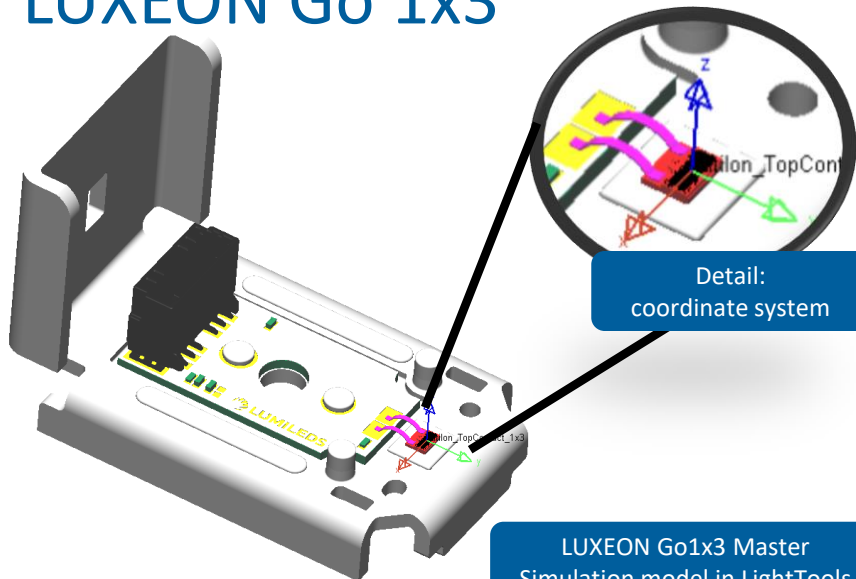
# LUXEON Go 1x3

## Optical Rayset Readme

April, 6th, 2020  
Download links updated on Nov,6<sup>th</sup>,2020



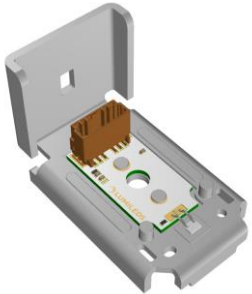
# LUXEON Go 1x3



## Coordinate System

- Rayfiles and CAD are defined in the same coordinate system
  - x-axis: red, y-axis: green, z-axis: blue
- xy center: center of light emitting area
- z=0 plane: top edge of light emitting area
- To use raydata and geometry together, you can follow these steps:
  - Import the CAD
  - Load the rayfile
  - The lamp geometry and rays are now oriented in the coordinate system as described above.
  - To re-align both, you can group both items and shift it to the desired coordinates and change the orientation of the group to match the desired orientation
- Alternative way:
  - Define a local coordinate system with correct origin and orientation
  - Import CAD and rayfile into this local coordinate system
- For optical design with the lamp we recommend to build a ray tracing model of the lamp from this CAD. Recommended model properties are described on the page: 'Model for Ray-Tracing' in this documentation

# LUXEON Go 1x3 – CAD Files Provided



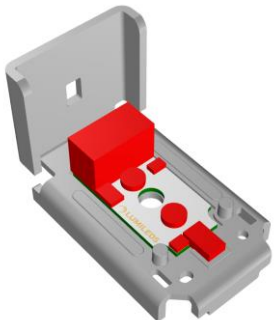
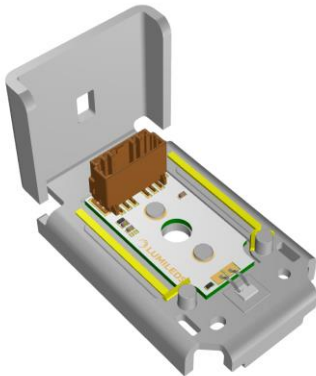
Shown as example:  
LUXEON Go1x3 Master

## CAD for Optical Design-In

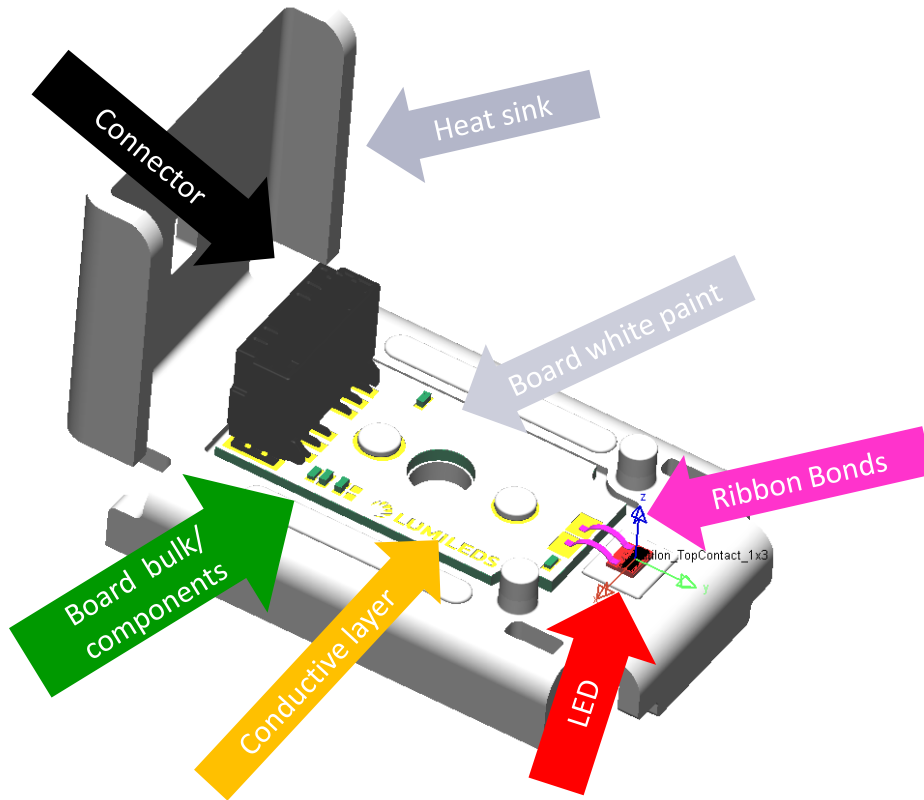
- Step files with all parts of lamp relevant for optical simulation
- Only lamp parts inside model
- Volumes are reduced to minimum number to facilitate building of optical model
  - 9298 003 032 00-LUXEON Go-1x3 chip master--optical --B0--REV03.stp
  - 9298 003 033 00-LUXEON Go-1x3 chip slave--optical --B0--REV03.stp

## CAD for Mechanical Design-In

- CAD file for supporting mechanical design containing:
  - lamp geometry
  - exemplary reference features for fitting (yellow)
  - precision surfaces on z-reference (not shown, refer to Application Brief/Data Sheet for detail)
  - ‘stay out volumes’ (red) . Any mechanical design of the luminaire should stay of these volumes to provide proper mounting and operation of the lamp.
    - 9298 003 032 00-LUXEON Go-1x3 chip master --B0--REV03.igs
    - 9298 003 032 00-LUXEON Go-1x3 chip master --B0--REV03.stp
    - 9298 003 033 00-LUXEON Go-1x3 chip slave --B0--REV03.igs
    - 9298 003 033 00-LUXEON Go-1x3 chip slave --B0--REV03.stp



## LUXEON Go 1x3



simulation model of lamp with  
recommended optical surface  
properties shown in false colors  
LUXEON Go 1x3 Master as example

## Model for Ray-Tracing

- We recommend to include the lamp geometry into ray-tracing when designing with LUXEON Go. This provides consideration of any stray light paths in the system interfering with the lamp.
- The table indicates practical optical properties for simulation of the lamp components.
- The parameters of the models are based on estimated values, typical for the used materials.

Element	Property
LED	95% diffuse reflectance
Ribbon bonds	80% specular reflectance with Gaussian distribution, sigma 3°
Board white paint	85% reflectance. Hereof: 30% diffuse, 70% specular Gaussian 5° sigma
Board conductive layer	75% diffuse reflectance
Board bulk and components	80% diffuse reflectance
Connector	absorbing
Heat sink	85% reflectance. Hereof: 70% diffuse, 30% specular Gaussian 5° sigma

# LUXEON Go 1x3 (Photometric Data)

photometric data taken from LUXEON Altilon TopContact 1x3

Link to download folder

<https://raysets.lumileds.com/index.php/s/kKWobQb4KW7BMZB>

## Files available for download

### Prosource

RS8	LUXEON_Altilon_TopContact_1x3_20200206_1249.rs8	378 MB
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### LightTools

Spectral Projected	LUXEON_Altilon_TopContact_1x3_20200206_40MRays_proj_spectral_LT.ray	1.19 GB	40MRays
Y-Component Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Y_LT.ray	532 MB	20MRays
Z-Component Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Z_LT.ray	531 MB	20MRays

### ASAP & LucidShape

Y-Component Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Y_ASAP.dis	532 MB	20MRays
Z-Component Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Z_ASAP.dis	531 MB	20MRays

### OPTIS SPEOS

Y-Component Spectral Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Y_spectral_Speos.ray	608 MB	20MRays
Z-Component Spectral Projected	LUXEON_Altilon_TopContact_1x3_20200206_20MRays_proj_Z_spectral_Speos.ray	607 MB	20MRays

### Zemax

Spectral Projected	LUXEON_Altilon_TopContact_1x3_20200206_40MRays_proj_spectral_zemax.dat	1.19 GB	40MRays
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### Far Field

IES	LUXEON_Altilon_TopContact_1x3_20200206_40MRays.ies	10.6 kB
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### Spectrum

Spectrum	LUXEON_Altilon_TopContact_1x3_20200206_spectrum.txt	10.2 kB
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# LUXEON Go 1x3 (CAD Lamp)

Link to download folder

<https://raysets.lumileds.com/index.php/s/AQnmTk3FrcyFD2w>

## Files available for download

### STEP lamp for raytracing

STEP	9298 003 032 00-LUXEON Go-1x3 chip master--optical --B0--REV03.stp	3 MB
STEP	9298 003 033 00-LUXEON Go-1x3 chip slave--optical --B0--REV03.stp	2 MB

### CAD lamp for construction

STEP	9298 003 032 00-LUXEON Go-1x3 chip master --B0--REV03.stp	5 MB
IGS	9298 003 032 00-LUXEON Go-1x3 chip master --B0--REV03.igs	15 MB
STEP	9298 003 033 00-LUXEON Go-1x3 chip slave --B0--REV03.stp	3 MB
IGS	9298 003 033 00-LUXEON Go-1x3 chip slave --B0--REV03.igs	11 MB

## Additional Application Notes

### Randomization

In some cases, reducing the number of rays in a rayset might be desirable. In order to facilitate the generation of reduced raysets, **all raysets mentioned in this readme file are randomized**. Hence, a rayset having 5 million rays (5M) can simply be generated by taking the first 5M rays from 20M rayset.

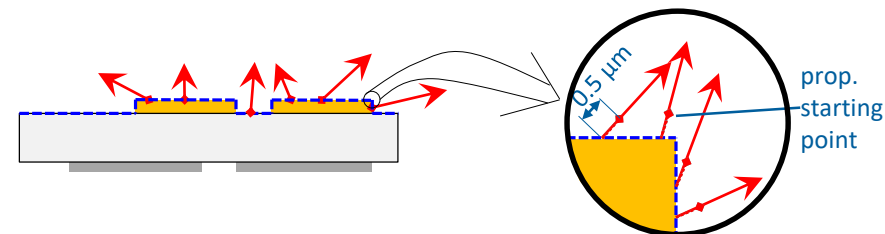
### Projected Raysets: Propagated ray starting points

For projected raysets, the following procedure is applied for obtaining the starting points:

- (1) Project rays on CAD surface (----) → ray starting points
- (2) Propagate rays by 0.5  $\mu\text{m}$  → propagated starting points (•)

**All raysets mentioned in this readme file provide propagated starting points.**

If raytracing includes the LED CAD, unpropagated rays are prone to be blocked at the surface. Rays with propagated starting points should not suffer from this problem.





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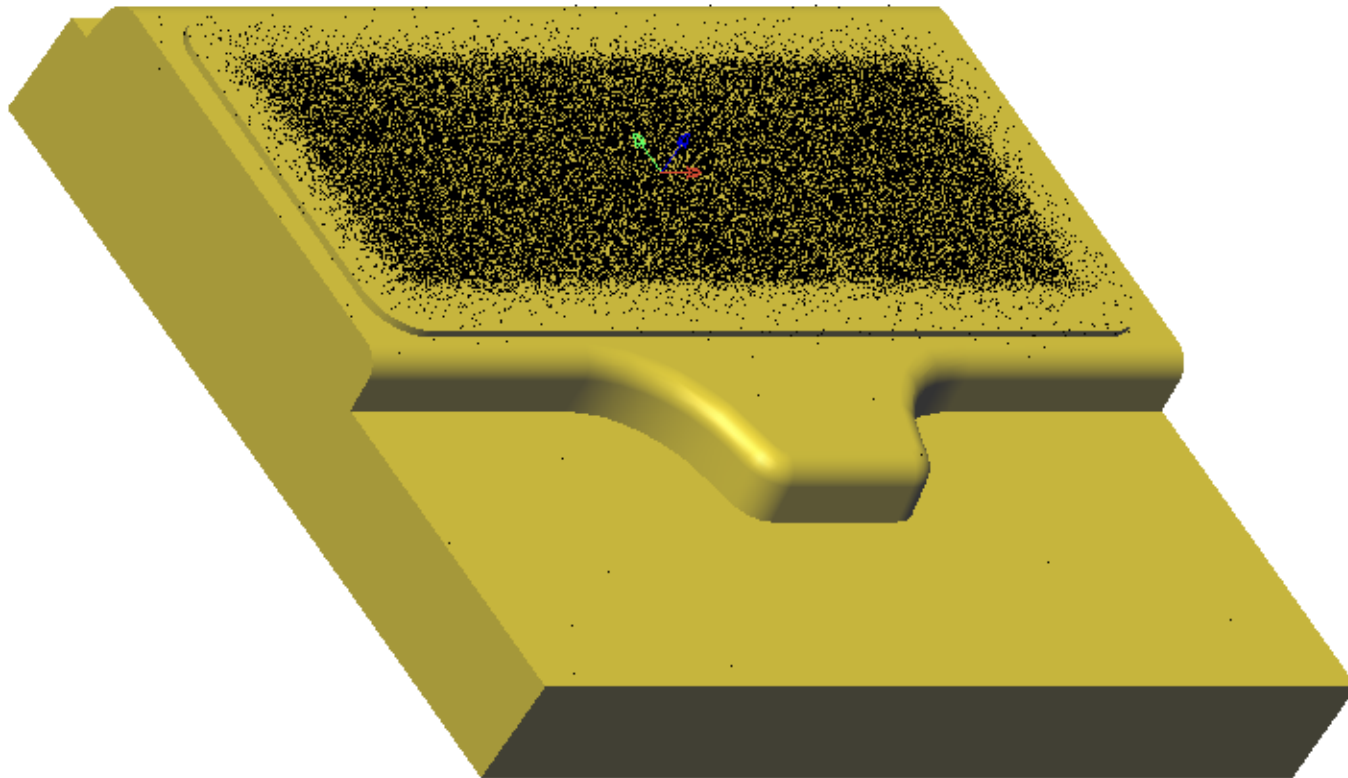
# Luxeon Go 1x3

Documentation of photometric data taken from measurement of  
LUXEON Altilon TopContact 1x3

# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

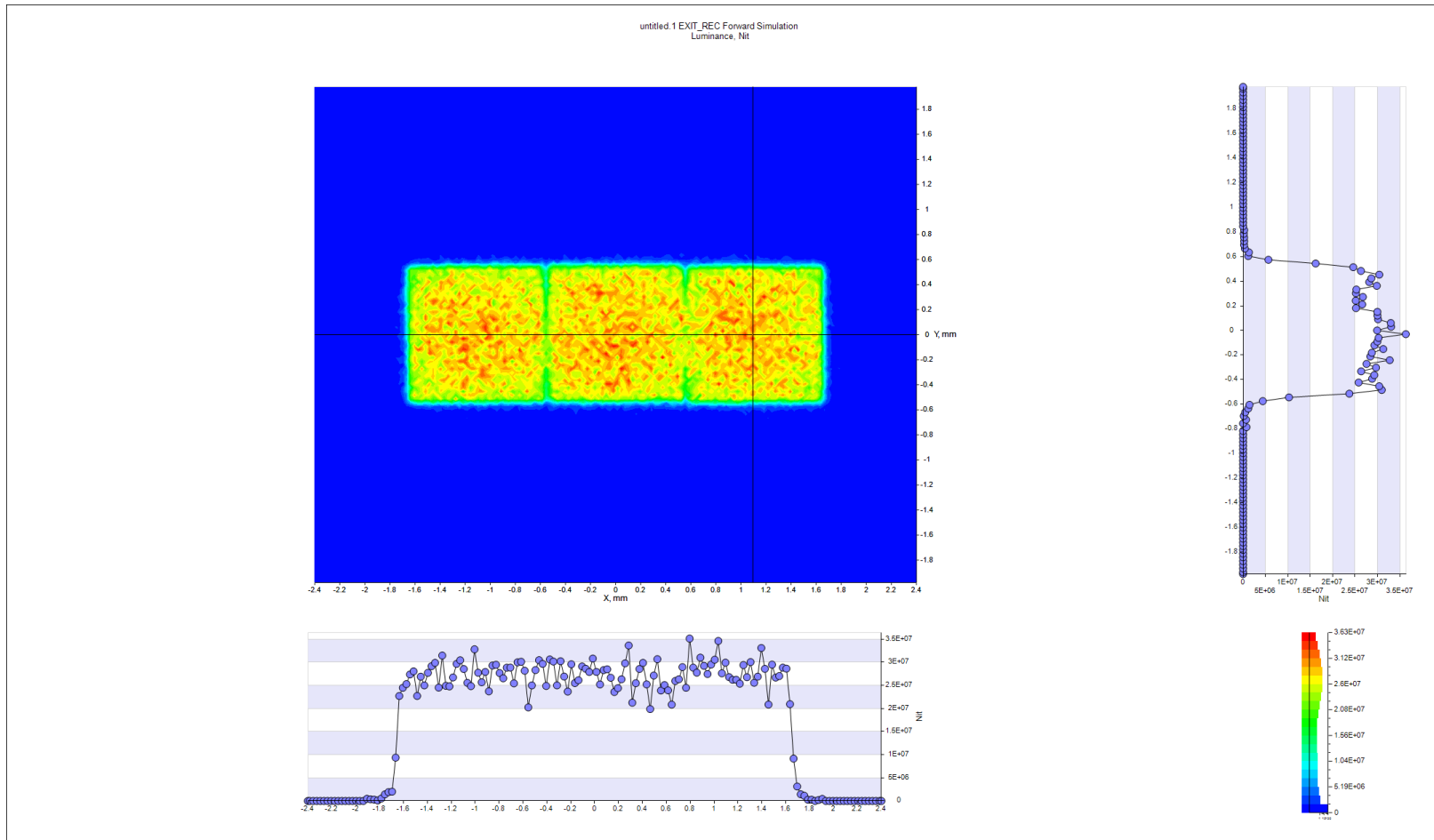
3D CAD view + ray starting points



# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

## Source Size



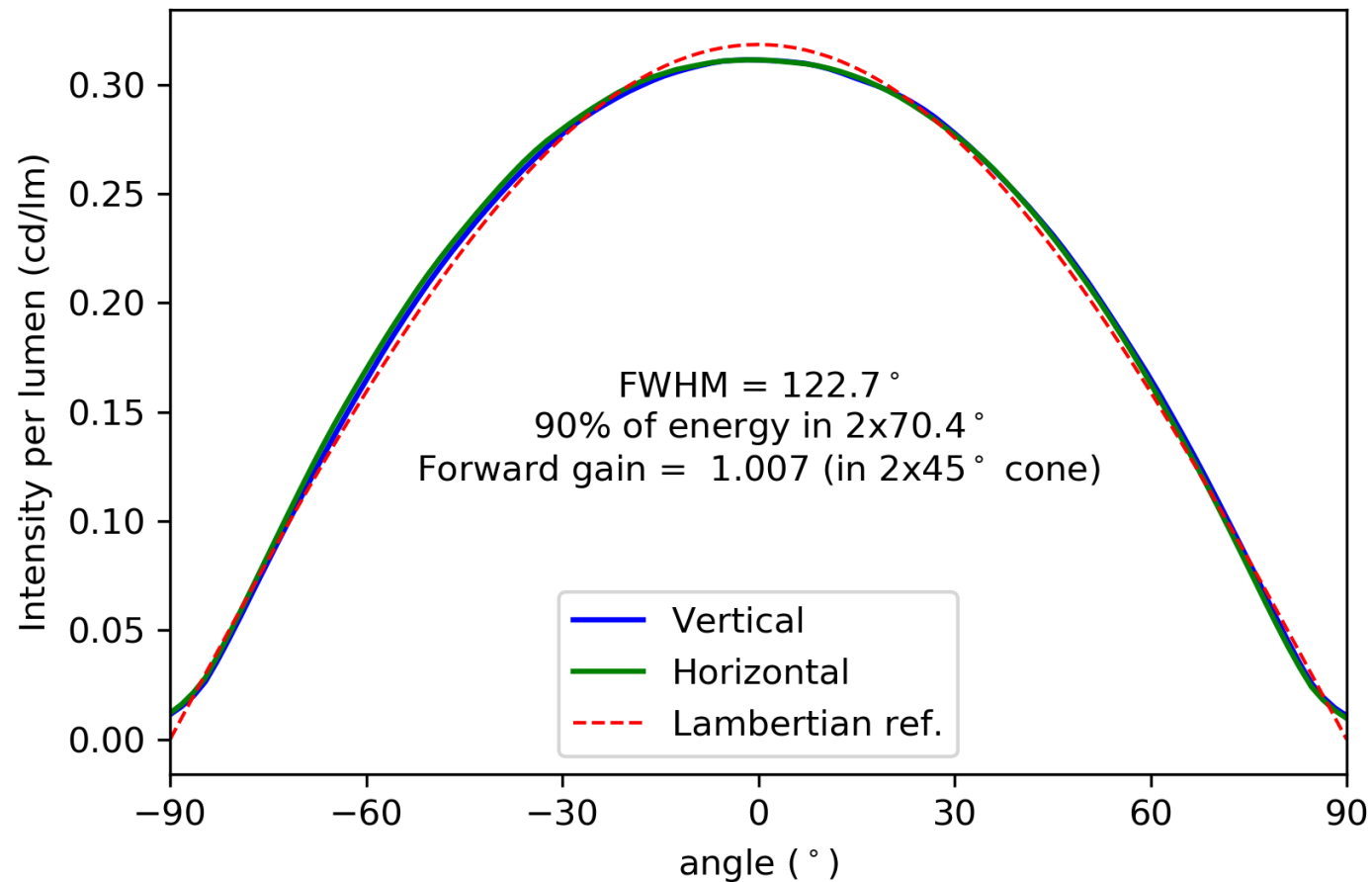
The two orthogonal lines in the luminance image mark the reference planes of the two luminance cross sections.

# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

## Luminous Intensity Distribution

Intensity per lumen over angle for vertical and horizontal slices  
with lambertian cosine as reference



# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

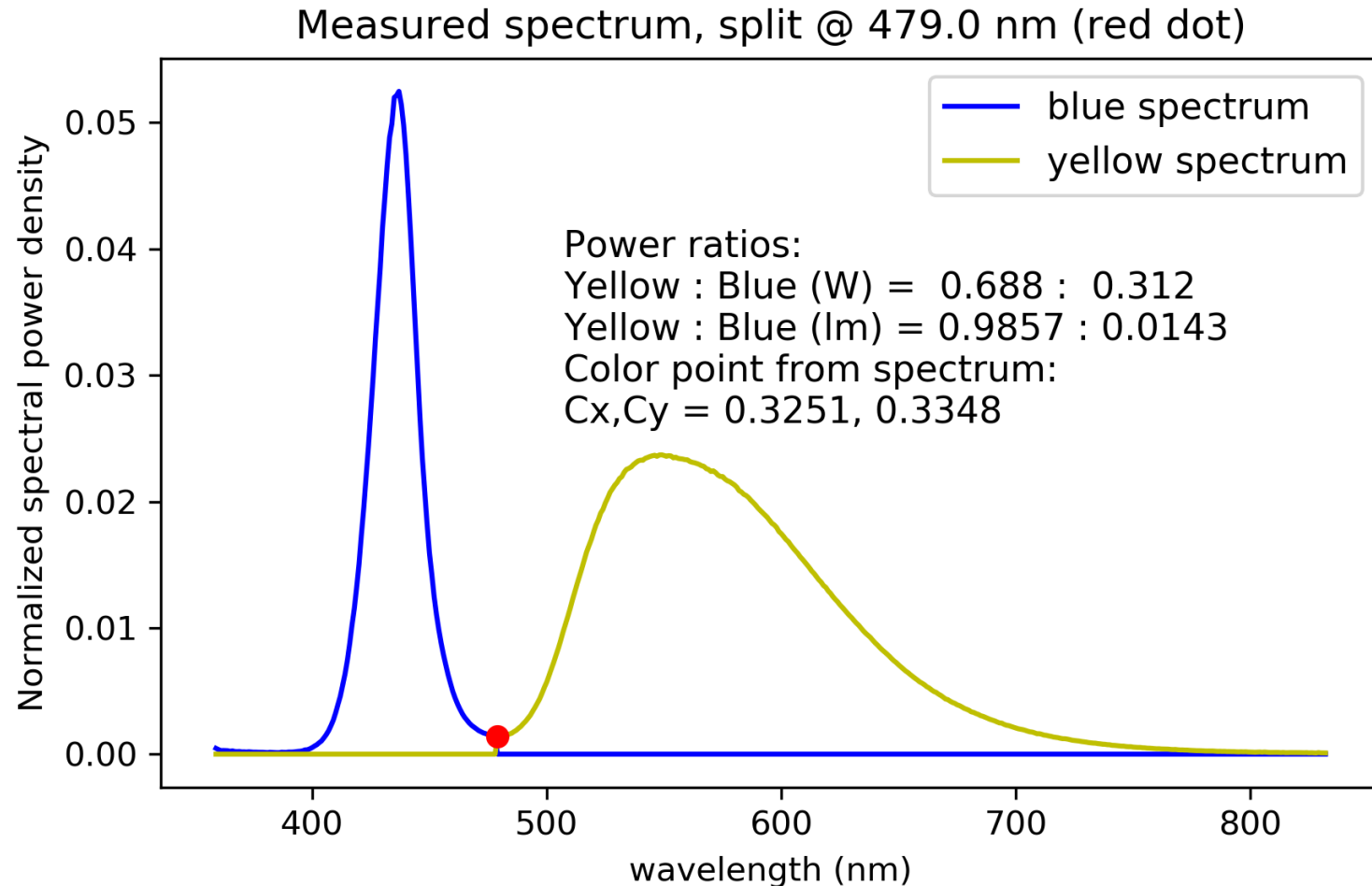
## Illuminance color chart (color over position)



# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

## Measured spectrum split in blue (Z) and yellow (Y) components



# LUXEON Go 1x3

photometric data taken from LUXEON Altilon TopContact 1x3

## Color data info

Parameter	Value
yellow : blue ratio (W) (from measured spectrum)	0.688 : 0.312
yellow : blue ratio (lm) (from measured spectrum)	0.9857 : 0.0143
Average color point Cx, Cy (from measured spectrum)	0.3251, 0.3348
Average color point Cx, Cy (from simulation)	0.3248, 0.3363
Color point Cx, Cy @ HV (from simulation)	0.323, 0.3273
Average CCT (K) (from simulation)	5.856e+03

# Download File Nomenclature

## Example

LUXEON\_Altilon\_SMD2\_1x4\_gen4plus\_20190206\_20Mray\_proj\_Z\_spectral\_LT.ray

**Product Name**

**Reference Date**

helps identifying underlying dataset

**Number of rays**

e.g. 20 M =  $20 \cdot 10^6$  rays

**Ray starting points**

'proj' indicates that ray starting points have been **projected** onto the CAD surface (---).

**Spectral range**

$\begin{Bmatrix} Y \\ Z \\ - \end{Bmatrix} = \begin{Bmatrix} \text{only yellow} \\ \text{only blue} \\ \text{full} \end{Bmatrix}$  spectrum taken into account

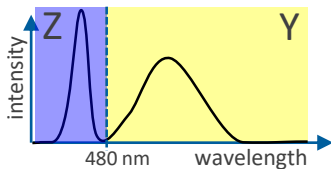
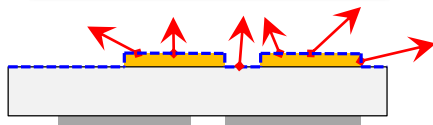
**Spectral Information**

$\begin{Bmatrix} \text{spectral} \\ - \end{Bmatrix} = \text{individual rays } \begin{Bmatrix} \text{do} \\ \text{don't} \end{Bmatrix} \text{ carry wavelength information}$

**Target Software Package**

LightTools (LT), ASAP, Zemax, ...

**File Extension**





Lumileds ref.: C25\_LUXEON Altilon TopContact 1x3\_20200206



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