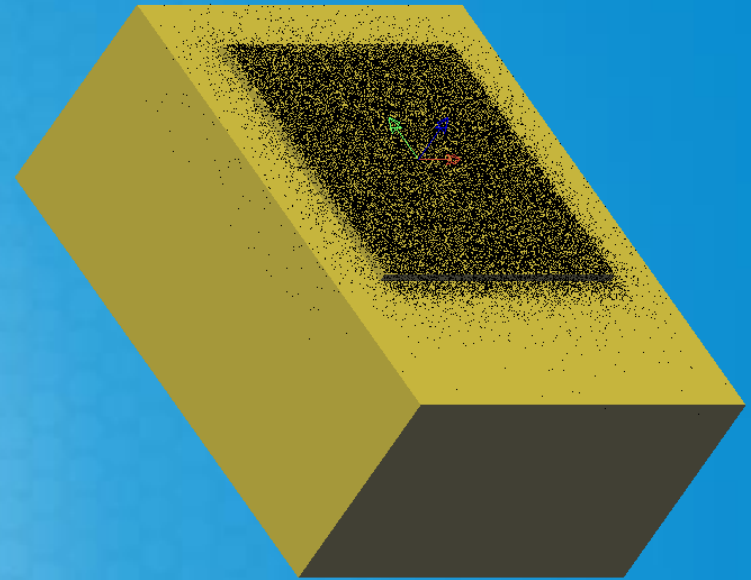


LUXEON FX2 PCA

Optical Rayset Readme

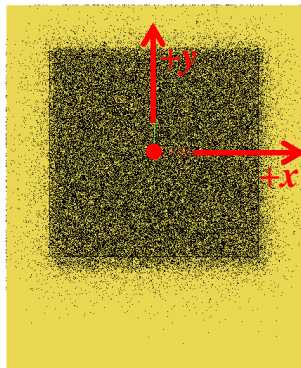
June 22nd, 2020



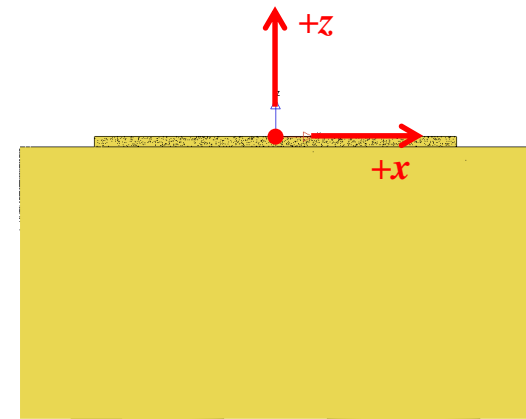
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Coordinate system

Top view



Side view

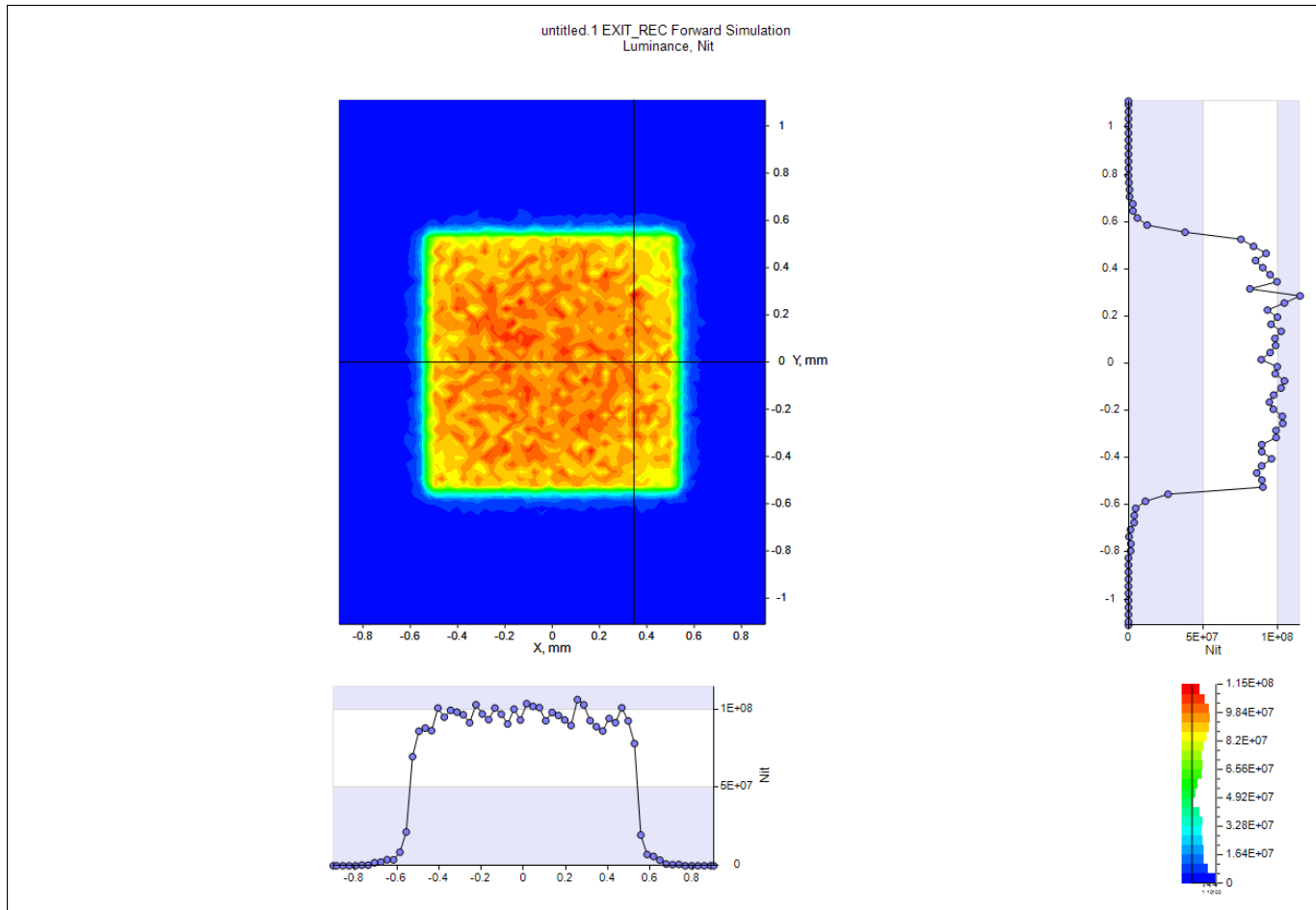


**CAD file and rayset files share the same coordinate system,
the origin is marked by the red dot in the sketches above:**

xy center == center of light emitting area
z=0 plane == top edge of light emitting area

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Source size



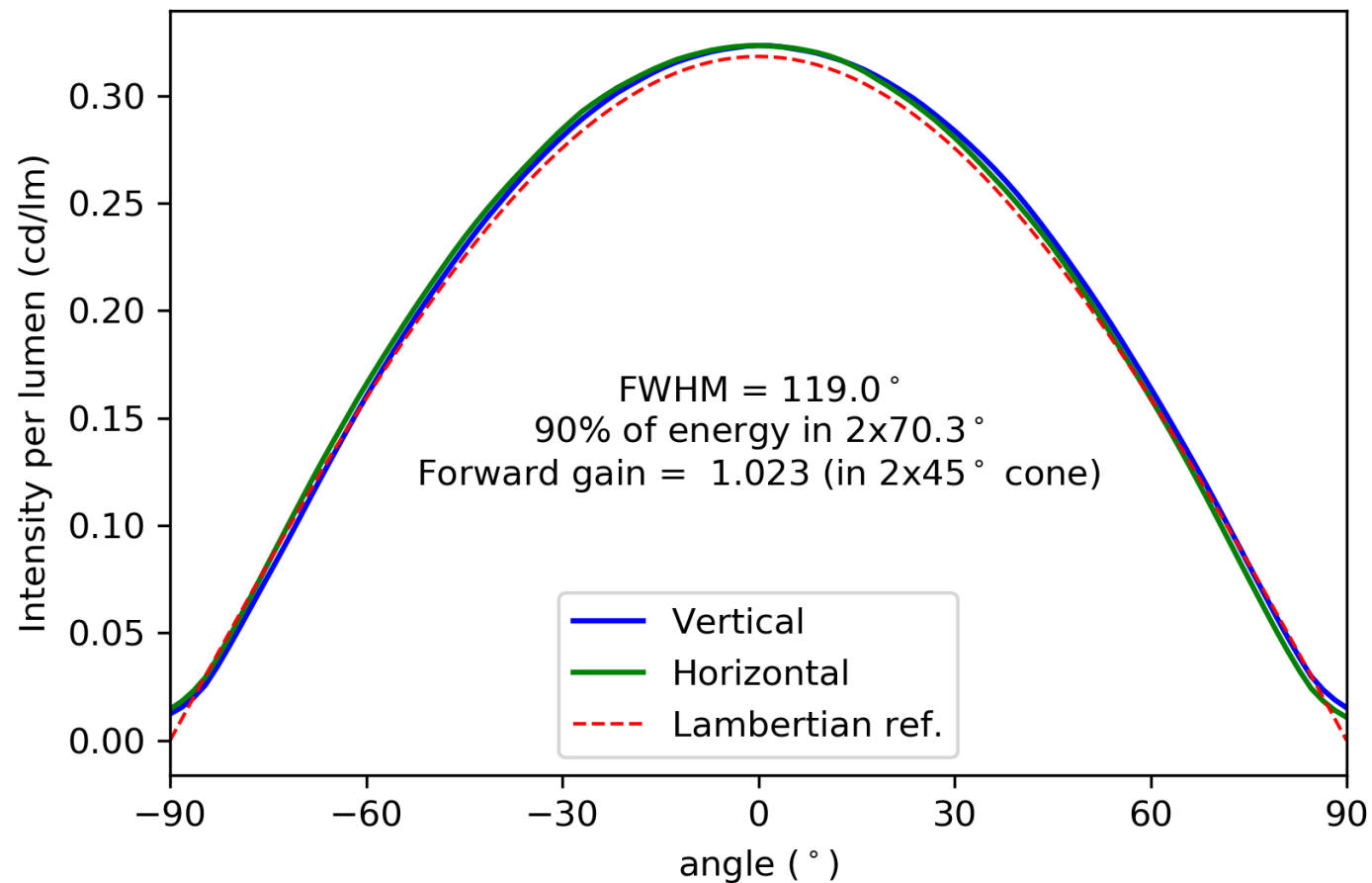
Source luminance (FWHM) = $1.07 \times 1.08 \text{ mm}^2$

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

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Luminous intensity distribution

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



Download File Nomenclature (see next slide)

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

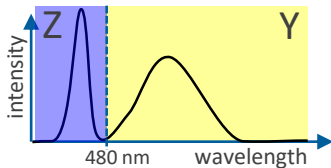
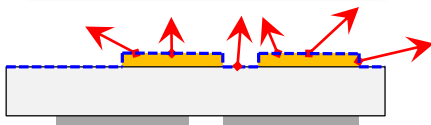
Spectral Information

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

Target Software Package

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

File Extension



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.

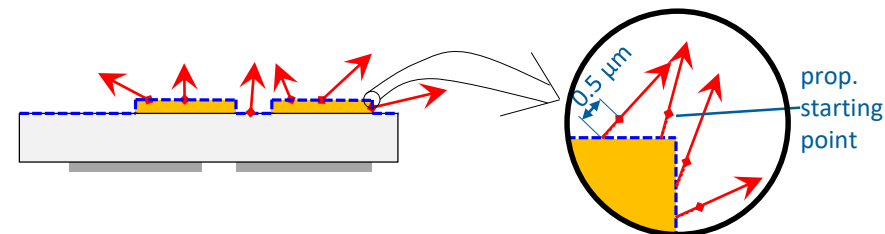
Projected Raysets: Propagated ray starting points

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 μm → 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.



LUXEON FX2 PCA

Link to download folder

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

Files available for download

Prosource

RS8	LUXEON_FX2_PCA_20200616_1297.rs8	630 MB
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LightTools

Spectral Projected	LUXEON_FX2_PCA_20200616_40MRays_proj_spectral_LT.ray	1.19 GB	40MRays
Y-Component Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Y_LT.ray	533 MB	20MRays
Z-Component Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Z_LT.ray	533 MB	20MRays

ASAP & LucidShape

Y-Component Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Y_ASAP.dis	533 MB	20MRays
Z-Component Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Z_ASAP.dis	533 MB	20MRays

OPTIS SPEOS

Y-Component Spectral Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Y_spectral_Speos.ray	610 MB	20MRays
Z-Component Spectral Projected	LUXEON_FX2_PCA_20200616_20MRays_proj_Z_spectral_Speos.ray	610 MB	20MRays

Zemax

Spectral Projected	LUXEON_FX2_PCA_20200616_40MRays_proj_spectral_zemax.dat	1.19 GB	40MRays
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Far Field

IES	LUXEON_FX2_PCA_20200616_40MRays.ies	10.7 kB
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Spectrum

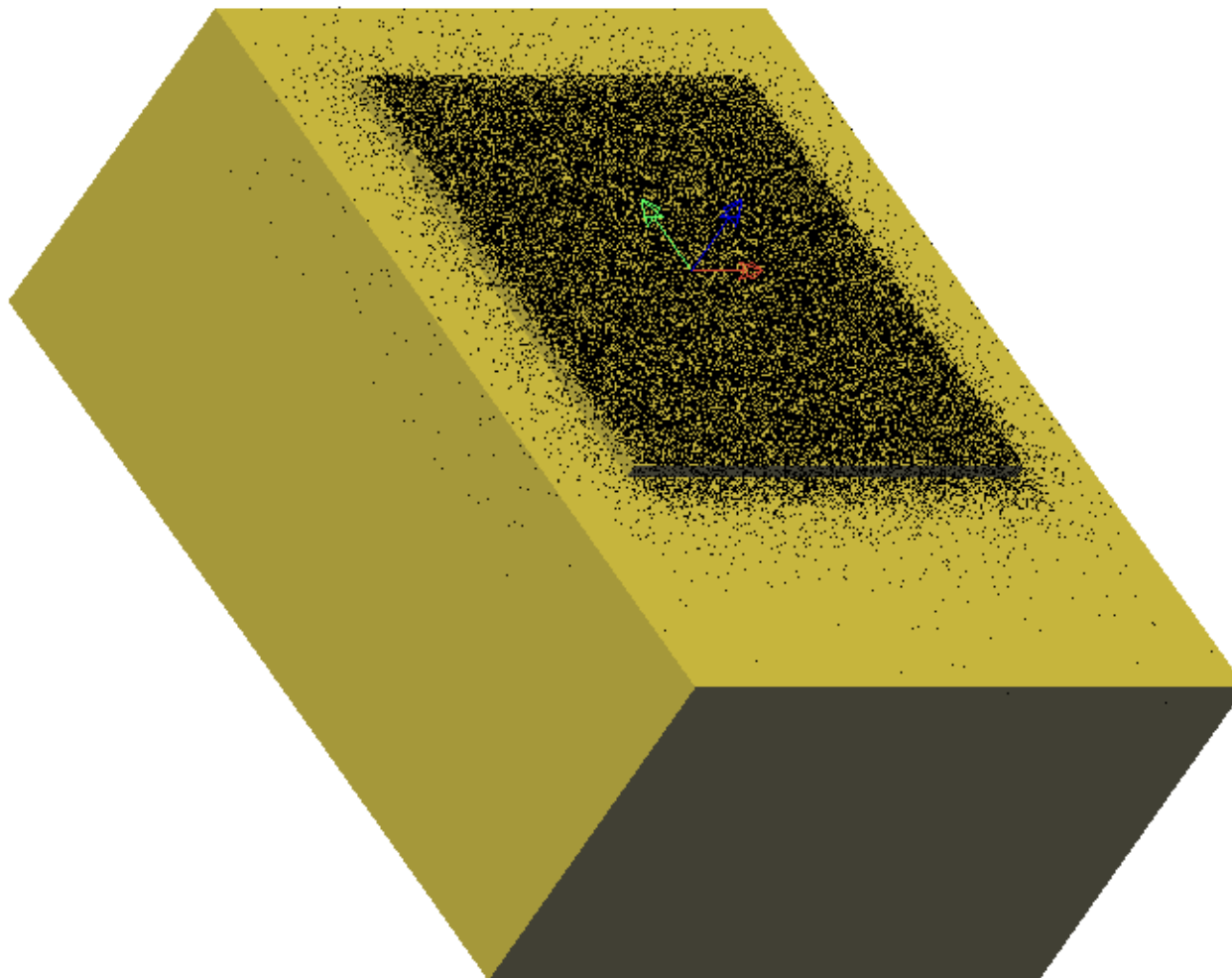
Spectrum	LUXEON_FX2_PCA_20200616_spectrum.txt	10.2 kB
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CAD

STEP	LUXEON_FX2_PCA_20200616_geometry.STEP	92.5 kB
IGES	LUXEON_FX2_PCA_20200616_geometry.IGS	73.0 kB

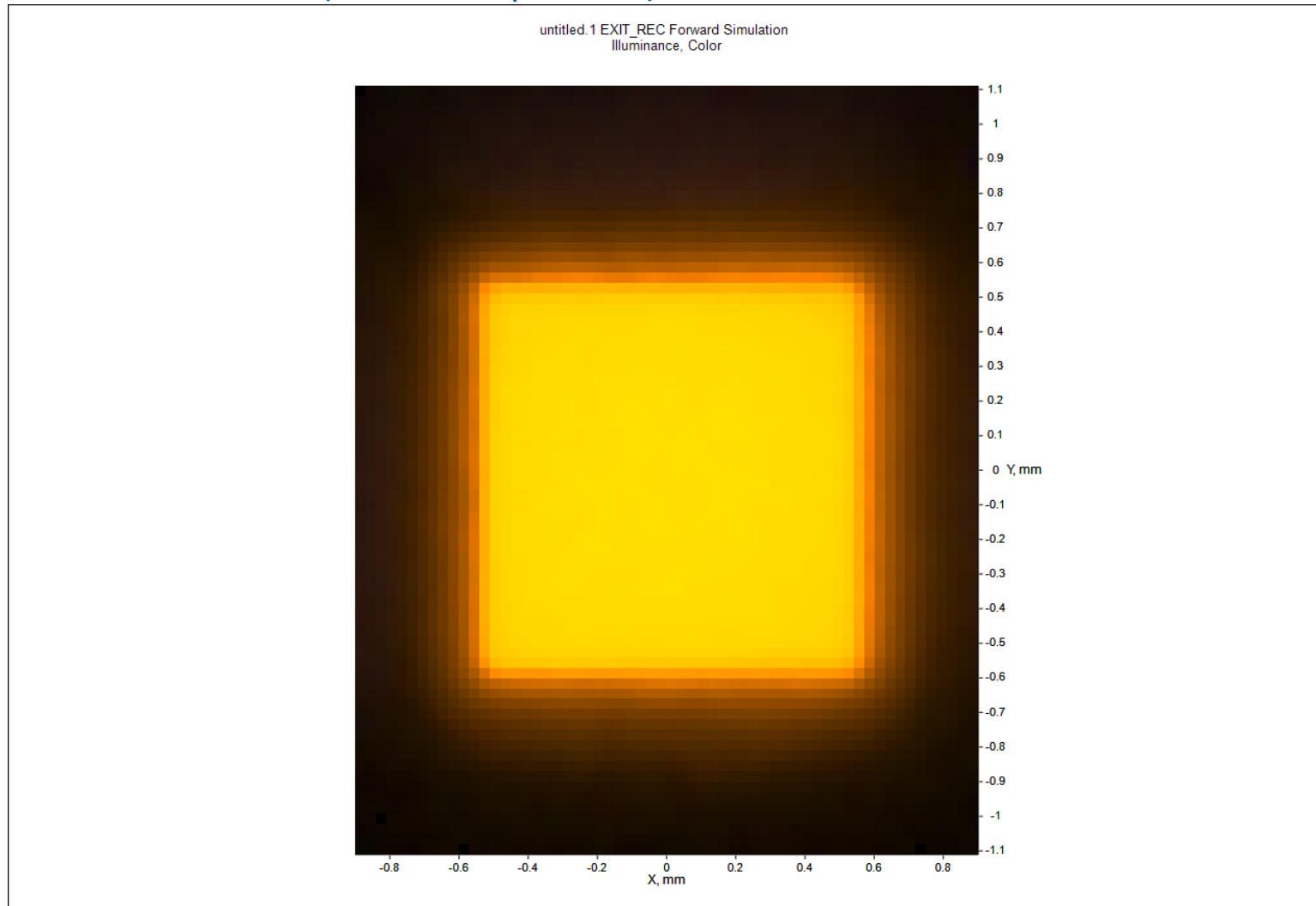
LUXEON FX2 PCA

3D CAD view + ray starting points



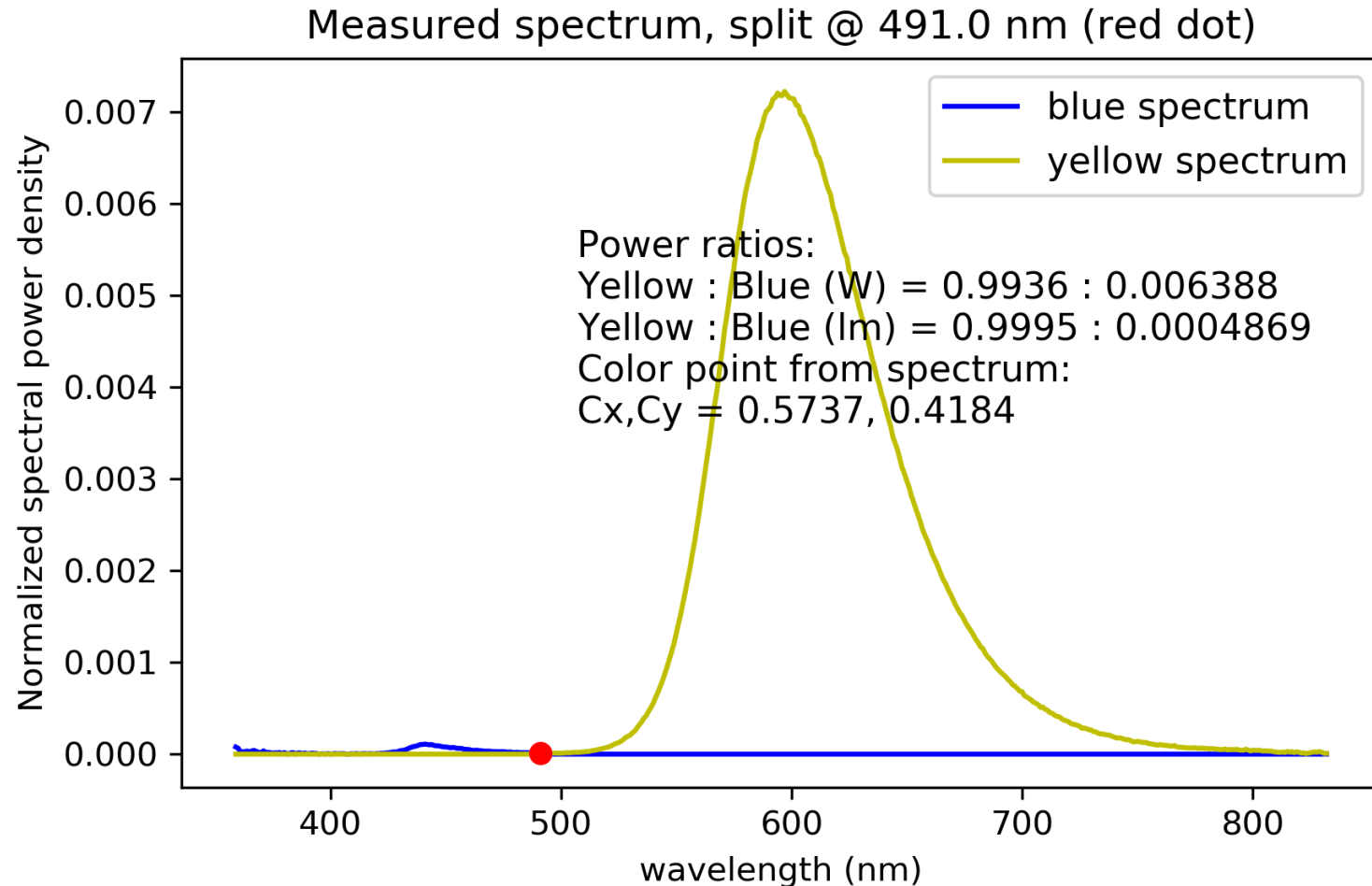
LUXEON FX2 PCA

Illuminance color chart (color over position)



LUXEON FX2 PCA

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



LUXEON FX2 PCA

Color data info

Parameter	Value
yellow : blue ratio (W) (from measured spectrum)	0.9936 : 0.006388
yellow : blue ratio (lm) (from measured spectrum)	0.9995 : 0.0004869
Average color point Cx, Cy (from measured spectrum)	0.5737, 0.4184
Average color point Cx, Cy (from simulation)	0.5723, 0.4199
Color point Cx, Cy @ HV (from simulation)	0.5713, 0.4206
Average CCT (K) (from simulation)	1.712e+03

Lumileds ref.: 1297_LUXEON FX2 PCA_20200622



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