

Verification of road lighting calculations performed by the program Ulysse 3 to CIE / CEN recommendations.

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Prepared for
R-Tech

In the framework of
WBS SLI0381

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Verification of road lighting calculations performed by the program Ulysse 3 to CIE / CEN recommendations.

Version number	Date	Description and modification history
LBE02987596 - 1.0	07/06/2013	New report.

The purpose of the report is to verify if the road lighting calculations performed by program « Ulysse 3 » provide valuable results in accordance with:

- Technical report CIE140 (2000): « Road Lighting Calculations » published by "Commision Internationale de l'Eclairage (CIE)"
- CEN standard EN 13201 – 3 (2003): "Road lighting - Part 3: Calculation of performance"

Different comparison methods were used to verify the obtained results of « Ulysse 3 »

As calculations executed by "Ulysse 3" give similar results as those:

- presented in the example §4.2 "Example of use of the computer program (Standard luminance program)" of CIE publication N° 30-2 (1982) : "Calculation and measurement of luminance and illuminance in road lighting",
- executed with the program "CLE-Road" (program, which performs calculations according CIE publication 30.2, fully consistent with the Fortran Program "STAN" printed in the CIE 30.2 publication,
- performed with the different sections of Ulysse 3 (Super Light, Standard, Standard Extended, Assistant) are used,
- obtained by different other programs calculating on base of CEN 13201-3 standard,

this report shows that the calculation program "Ulysse 3" is in conformity with the requirements of

- **Technical report CIE140 (2000): « Road Lighting Calculations » published by Commision Internationale de l'Eclairage (CIE)**
- **CEN standard EN 13201 – 3 (2003): "Road lighting - Part 3: Calculation of performance"**

General remarks:

- The obtained results show some iscrepancies depending on the number of digits used after decimal point
- For Surround Ratio (SR) and Threshold Increment (TI), a farther investigation through contacts with the program conceptions is advisable

13EG1151 Verification of road lighting calculations performed by the program Ulysse 3_1_1 to CIE and CEN recommendations

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13EG1151 Verification of road lighting calculations performed by the program Ulysse 3_1_1 to CIE and CEN recommendations

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13EG1151 Verification of road lighting calculations performed by the program Ulysse 3_1_1 to CIE and CEN recommendations

Version number	Date	Description and modification history
LBE03228278 - 0.3	12/12/2013	New report.

The purpose of the report is to verify if the road lighting calculations performed by program « Ulysse 3 » provide valuable results in accordance with:

- Technical report CIE140 (2000): « Road Lighting Calculations » published by "Commision Internationale de l'Eclairage (CIE)"
- CEN standard EN 13201 – 3 (2003): "Road lighting - Part 3: Calculation of performance"

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- executed with the program "CLE-Road" (program, which performs calculations according CIE publication 30.2, fully consistent with the Fortran Program "STAN" printed in the CIE 30.2 publication,
- performed with the different sections of Ulysse 3 (Super Light, Standard, Standard Extended, Assistant) are used,
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this report shows that the calculation program "Ulysse 3" is in conformity with the requirements of

- **Technical report CIE140 (2000): « Road Lighting Calculations » published by Commision Internationale de l'Eclairage (CIE)**
- **CEN standard EN 13201 – 3 (2003): "Road lighting - Part 3: Calculation of performance"**

General remarks:

- The obtained results show some iscrepancies depending on the number of digits used after decimal point by the different programs
- For Surround Ratio (SR) and Threshold Increment (TI), a farther investigation through contacts with the program conceptors is advisable