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Analysis of Test Case 5.14

CIE 171:2006

Test Cases to Assess the Accuracy of Lighting Computer Programs

The objective of Test Case 5.14, "SC+ERC for an unglazed façade opening with a continuous external vertical mask," is to "verify the capability of a lighting program to simulate the influence of an external vertical mask on the internal direct illuminance."

Unfortunately, this test case is fundamentally flawed. It assumes an external vertical mask of uniform luminance L_{ob} , which is derived in Section 5.14.1.1 from the external horizontal ground illuminance. It does not however consider the shadowing influence of the black room that it is illuminating through the façade opening.

As noted in *Validation of AGi32 against CIE 171:2006*, Dau Design and Consulting, 2007, pp. 41-42:

"The reference values and the test values are similar for all points for the 3m high canopy. For the 6m canopy, the test values for points A and B are lower than the reference values. This tends to become more pronounced for the 9m high canopy where the test values for points A, B, C, D, and E are lower than the reference values. This disparity in results that increases with the height of canopy suggests that the Sky Component is being partially blocked by the canopy. This blocking may not have been accounted for in the reference values."

As explained above, this empirical analysis is correct.

We thank Ilya Zimnovich of the scientific research group of Prof. Deomid V. Bakharev (www.bakharev.org – Russian language Web site) for bringing this issue to our attention.