

LUMINANCE AND RADIANCE FROM THE MALAYSIAN SKY

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ABSTRACT

Luminance and Radiance from the Malaysian Sky

In this study, the luminance and radiance of Shah Alam sky were measured using a sky scanner MS-321LR. The sky scanner was placed at a location with no obstructions. Therefore it was placed on top of a roof. The luminance and radiance were measured from 6.30am to 6.30pm for a week. The data were downloaded to a computer and analyzed using Excel Software. The illuminance and irradiance were then determined using a conversion factor. The ratio of illuminance to irradiance which is luminous efficacy, K was then determined. The relationship between illuminance and irradiance was also obtained. The illuminance was found to be directly proportional to the irradiance. The average illuminance of Shah Alam sky for that respective week is 19978.67 lm/m² while irradiance is 179.14 W/m². The luminous efficacy, K for that respective week is 111.52 lm/W.

CHAPTER 1

INTRODUCTION

1.1 Background of study

“Effort would be taken to encourage more buildings to use the low energy office concept, where the premium is on saving energy.”

Statement from the Prime Minister, Dato’ Seri Abdullah Ahmad Badawi on October 18th, 2005: Strategy to encounter oil price spiral.

It is obviously seen that conventional energy is depleting tremendously and man begin to consider renewable energy. Daylighting is a renewable energy which can be consumed directly without processing it to another form of energy. Daylight is the visible part of solar spectrum known as daylighting.

Daylighting is commonly used in designing building. It is recognized as an important and useful strategy in visual comfort and energy-efficient building designs. It is also considered as the best source of light for good color rendering in quality and most closely matches human visual response. In designing buildings to utilize daylighting for illuminating its interior is to acquire information on the amount of daylight available.