20.5.2 Illuminance uniformity

To measure illuminance uniformity, a 0.25 m square grid of measurement points is established over the task area and its immediate surround at a number of representative positions. Task illuminance uniformity is assessed using the area-weighted arithmetic average of the measurement points within each task area and the minimum grid point illuminance value within that area. The lowest values of illuminance uniformity calculated from the measured values at the selected positions is taken as representative of the whole installation.

For measurement in an unfurnished area where there is no information on the task area and immediate surround dimensions, the grid should be applied to the whole working plane.

20.6 Luminance measurements

Luminance measurements are often made in response to complaints about glare. In these circumstances the conditions that are the subject of complaint should be established and luminance measurements made from the position of the people who are complaining. In this way the source of the complaints may be identified. When measuring the luminance of light sources or luminaires, the meter should be mounted on a tripod and it is essential that the area of interest must fill the complete photoreceptor aperture of the meter. If a luminance meter is not available, an estimate of the luminance of matte room surfaces can be obtained indirectly by measuring the reflectance of the surface and the illuminance (lux) on it and then calculating the luminance (cd/m^2).

20.7 Measurement of reflectance

Sometimes it is necessary to measure the reflectance of a surface, e.g. to determine if the reflectance is outside the recommended range or to establish if the reflectance assumed in a calculation is reasonable. There are a number of ways to do this. One is to measure the illuminance falling on the surface and the luminance of the surface at the same point. The reflectance is then given by the expression:

$$R = \frac{E\,\pi}{L}$$

where: R is the reflectance of the surface at the measurement point
E is the illuminance on the surface at the measurement point (lx)
L is the luminance of the surface at the measurement point (cd/m^2)

Another method is to use a luminance meter and a standard reflectance surface made from pressed barium sulphate or magnesium oxide. The luminances of the surface of interest and the standard reflectance surface are measured at the same appropriate position. Then the reflectance of the surface of interest is given by the expression:

$$R = R_s\,L_1/L_s$$

where: R is the reflectance of the surface of interest
L_1 is the luminance of the surface of interest (cd/m^2)
L_s is the luminance of the standard reflectance surface (cd/m^2)
R_s is the reflectance of the standard reflectance surface