

Appendix

1

Professional Lighting Guide

PLG 05/23

The brightness of illuminated advertisements including digital displays

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Requirements for illuminated advertisements including digital displays

10.5 The following details the limiting performance requirements for external and internal outward facing illuminated advertisements, including digital displays.

Vertical illuminance

10.6 This is a measure of the illuminance (measured in Lux) that falls on any vertical surface, in general it is used as a measure when considering obtrusive light / light nuisance from the perspective of an observer within a premises, and the assessment is undertaken on all relevant windows. The night-time limiting values based upon environmental zone and curfew considerations are provided in Table 10.3, reference ILP GN01 Guidance notes on the reduction of obtrusive light.

Table 10.3: (ILP GN01) Maximum values of vertical illuminance on premises.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (Ev)	Pre-curfew	0	2 lx	5 lx	10 lx	25 lx

Note:

1. The values indicated in Table 10.3 are the summation of all lighting sources that impact on the surface. If an additional light source has the likelihood of taking the existing illuminance on the surface over the limit, then it may require the designers to consider the other impacting sources, and through design reduce the impact of these to aid the inclusion of the new installation.
2. Curfew times are not defined within the guidance and are for Local Authorities to agree on a case by case basis if required in the interests of amenity. For media owners it is generally considered to be between 00.00hrs and 05.00hrs.

Advertisement luminance

10.7 The luminance of the advertisement needs to relate to ambient lighting levels, as too high a luminance can impact the day and/or night scape unacceptably and cause annoyance, distraction or even visual discomfort, whereas too low a luminance can result in the information, effect or message that it is intended for display being indecipherable.

10.8 Tables 10.4 and 10.5 are derived from research undertaken by the panel members, members of Outsmart and an understanding of research being undertaken by the Commission Internationale De L'Eclairage (CIE), through their technical committee TC4-58 investigating the effects of colourful dynamic lighting (including digital displays) on the day and night-time environment, and the controls that need to be followed to mitigate any adverse impact.

Table 10.4: Recommended maximum night-time permitted values of display luminance

Light Technical Parameter	Maximum sign luminance (L _s) cd/m ²				
	Environmental zones				
Sign surface area	E0	E1	E2	E3	E4
0 to < 5 m ²	0	25	200	300	300
5 to < 20 m ²	0	0	200	300	300
≥ 20 m ²	0	0	100	200	300

Notes:

1. The values in Table 10.4 apply to pre-curfew. The post-curfew levels shall generally be the display being off, unless (in zones E2 to E4 inclusive) the installation is still required to be operational, in which case the performance level shall be 50% of the pre-curfew level.
 2. Where a digital display is split into separate areas, or displays are placed adjacent to each other with differing images, the assessment shall be made on the total possible display area.
 3. The values indicated are recommended maxima, and in practice these may be required to be lower depending upon the proximity of adjacent / opposite premises with a view of the display. The reason is that for premises within fairly close proximity of the display, i.e. across the road, the vertical illuminance on the premises caused by the display, may exceed the limits advised in Table 10.3. A methodology for assessing the impact of display luminance on vertical surfaces is advised in Appendix 2.
 4. The values for signs in Table 10.4 do not apply to signs for traffic control purposes.
- 10.9 During daytime, the background ambient lighting level is generally considerably higher than at night, and therefore the recommended maximum permitted value of sign luminance needs to be increased, as indicated in Table 10.5 below.

Table 10.5 – Recommended maximum daytime permitted values of sign luminance.

Daylight ambient Illuminance (Eh) [lux]	Sign Luminance [cd/m ²]
Up to 3,500	≤ 400
3,501 to 8,500 (overcast day)	≤ 1,000
8,501 to 15,000 (bright day with cloud cover)	≤ 2,500
15,001 to 25,000 (bright sunny day)	≤ 3,500
25,001 to 42,000 (direct sunlight)	≤ 5,000
42,001 and above	> 5,000

7. No advertisement shall be sited or displayed so as to:
 - a) Endanger persons using any highway, railway, waterway, dock, harbour or aerodrome (civil or military).
 - b) Obscure, or hinder the ready interpretation of, any traffic sign, railway signal, or aid to navigation by water or air.
 - c) Hinder the operation of any device used for the purpose of security, or surveillance, or for measuring the speed of any vehicle.

Reason: To accord with Schedule 2 of the Town and Country Planning (Control of Advertisements) (England) Regulations 2007.

8. There shall be no moving images, animation, video or full motion images displayed unless otherwise permitted by this consent.

Reason: In the interests of amenity and in order to retain effective planning control.

9. In the hours of darkness, the advertisement display luminance shall be no greater than the recommended maximum night time luminance value set out in Table 10.4 within the Institution of Lighting Professionals - Professional Lighting Guide (PLG 05) 'Brightness of Illuminated Advertisements including Digital Displays' (or its equivalent in a replacement guide) in cd/m^2 . The environmental zone to be agreed with the Local Planning Authority.

Reason: In the interests of amenity, public safety and in order to retain effective planning control.

10. In daylight hours, the advertisement display luminance shall be controlled in order to reflect ambient light conditions (to ensure it is neither too bright or too dull), and shall at all times be no greater than the recommended maximum daytime luminance values set out in Table 10.5 within the Institution of Lighting Professionals - Professional Lighting Guide (PLG 05) 'Brightness of Illuminated Advertisements including Digital Displays' (or its equivalent in a replacement guide) in cd/m^2 .

Reason: In the interests of amenity, public safety and in order to retain effective planning control.

11. Unless otherwise permitted, the minimum display time for each advertisement shall be 10 seconds and the advertisement shall not include any features which would result in interactive messages / advertisements being displayed.

Reason: In the interests of amenity, public safety and in order to retain effective planning control.

12. The interval between successive advertisements shall be no greater than 1 second and the complete display shall change without effect. The display to include a mechanism to default to a blank or black screen in the event of malfunction, or if the advertisement is not in use.

Reason: In the interests of amenity, public safety and in order to retain effective planning control.

13. No images displayed shall resemble official road traffic signs, traffic lights or traffic matrix signs.

Reason: In the interests of amenity and in order to retain effective planning control.

Appendix 2 Approximate method to calculate illuminance at point facing a sign

- 14.1 It is possible to estimate the illuminance at a point due to an illuminated advertisement by treating the advertisement as a single light source and using the inverse square law. This approach is best when the advertisement is a long distance from the point being illuminated. As most illuminated advertisements provide a diffuse light in all directions, the method is a reasonable approximation if the point being illuminated is more than twice the maximum dimension of the advertisement. In most cases this is taken as the diagonal of the advertisement rectangle.

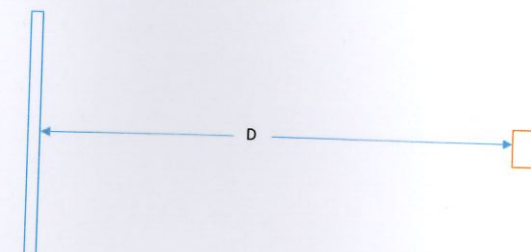
- 14.2 The diagonal (d) may be calculated from the length (L) and width (W) using the following formula:

$$d = \sqrt{L^2 + W^2}$$

- 14.3 Procedure

- Check the 2 to 1 ratio holds
- Calculate the intensity of the sign by multiplying the area by the luminance
- Calculate the illuminance by dividing the intensity by the distance squared
- Correct the results using cosines of the angles involved if the sign and point receiving the light are not facing each other.

- 14.4 Examples



- 14.5 In this example the sign and the surface being illuminated are facing each other. The sign has length 4m and width 3m, the distance between the sign and point being illuminated (D) is 12m. The luminance of the sign is 400 cd/m^2

- 14.6 First check that the distance D is greater than maximum dimension of the sign (d).

$$d = \sqrt{L^2 + W^2} = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = 5$$

As D is more than twice d the method may be used.