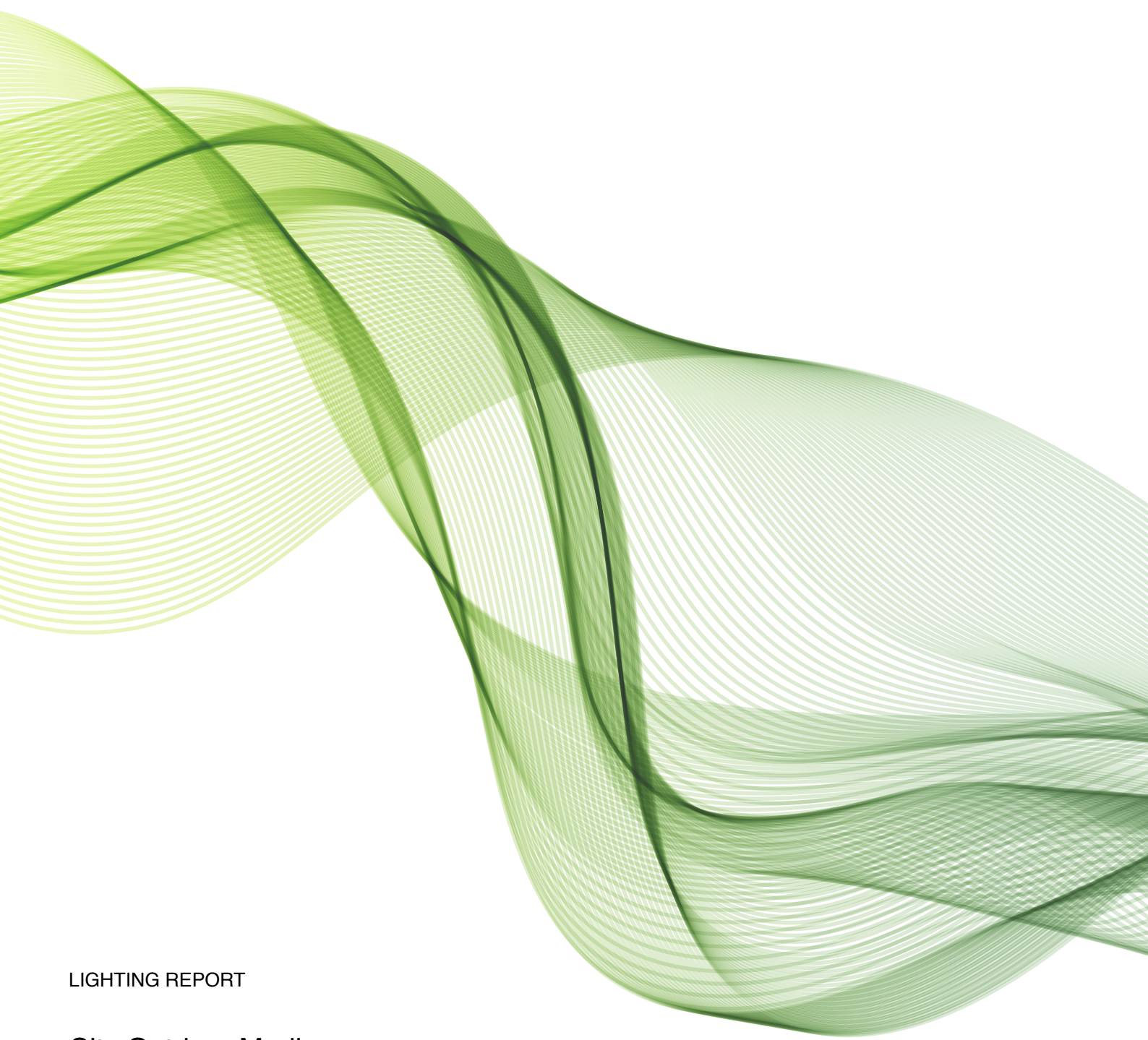




LIGHTING REPORT

City Outdoor Media

29th May 2024

01 Summary

Thank you for your consideration towards EcoVista to assist City Outdoor assess the brightness of an LED display system and traditional backlit display during the hours of darkness.

EcoVista draws from a wealth of knowledge and experience of out of home advertising digital assets and management across EMEA.

We have provided the following analysis fully aligned with the required scope of works per our discussions to date.

Relevant Experience

David Neale & Sean Morrough who jointly own EcoVista Solutions Ltd have advised on and built multiple iconic LED display installations for the OOH market. Notable examples being the Birmingham Media Eyes and XL sites for Ocean Outdoor, Stratford Tower for JCDecaux, and nationwide roll outs for Global Outdoor and JCDecaux on rail and roadside infrastructure.

Additionally we have recently delivered significant sports installations for Leicester City FC at the King Power stadium (in-bowl main LED displays), and new large format scoreboards and ribbon displays at the Twickenham Stoop for Harlequins Rugby.

In the mall / retail sphere, we have successfully delivered large format NPP LED displays at, the Trafford Centre, intu Merry Hill, Manchester Arndale, Drake's Circus Plymouth, Meadowhall, Grand Central Birmingham, and the Liverpool Central mall.

Brief

To carry out light meter assessments on a 18m2 traditional Lightbox and a 18m2 digital billboard during the hours of darkness.

Yours sincerely,

EcoVista

02 Method & Equipment

Equipment:

Lycebell LC-881E Digital Lux Meter (measure range 1-400,000 Lux). Light meter measured display brightness in Lux which was then converted to candelas/m²

Position:

Operative stood 5m back from each display for consistency of each measurement

Conversation Lux to Candela's:

Lux to candela calculation with distance in feet

The luminous intensity I_v in candela (cd) is equal to 0.09290304 times the illuminance E_v in lux (lx), times the square distance from the light source d^2 in square feet (ft²):

$$I_{v(cd)} = 0.09290304 \times E_{v(lx)} \times (d_{(ft)})^2$$

Lux to candela calculation with distance in meters

The luminous intensity I_v in candela (cd) is equal to the illuminance E_v in lux (lx), times the square distance from the light source d^2 in square meters (m²):

$$I_{v(cd)} = E_{v(lx)} \times (d_{(m)})^2$$

03 18 sqm LED Display in darkness



Size of display:	18sqm
Light Meter reading	8.92 Lux
Conversion to candelas:	223 candelas

04 18 sqm Backlit Display in darkness



Size of display:	18sqm
Light Meter reading	14.24 Lux
Conversion to candelas:	356 Candelas

04 Conclusion

Light meter Lux readings taken at the same distance from each 18sqm display indicate that LED displays operate slightly lower/dimmer than backlit displays during the hours of darkness.

LED display systems employ an intelligent managed brightness system which alters brightness according to ambient light conditions. Backlit billboard displays have a consistent illumination across the canvas.