

SCIENCE MUSEUM GROUP

Building ONE | The Science Museum Group at Wroughton | December 2017



Lighting Strategy



Science Museum Group

Building ONE

Wroughton

External Lighting Assessment Statement

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Issue No. 05

RIBA Stage 2 Ref:

1643-60-RPT-01

Edition	Date	Issue	Amendments
01	12/12/2017	Preliminary	For comment
02	13/12/2017	Final Issue	Incorporate comments
03	14/12/2017	Final Issue	Amended results following removal of lighting column
04	14/12/2017	Final Issue	Final comments incorporated
05	14/12/2017	Final Issue	Client comments incorporated

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EXTERNAL LIGHTING ASSESMENT STATEMENT

1.0 Introduction

The following design note is intended to clarify how the façade lighting design and associated lighting controls strategy achieves the lighting requirements, as stipulated within the Institute of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

The building is located in an area of Outstanding Natural Beauty (AONB). From Table 1 of the guidance this equates to environmental zone E1. As a result the lighting installation is required to meet the requirements for zone E1 as identified within Table 2 of the Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

The proposed development has been designed to reduce the adverse impact of any light spill and light pollution. This statement shall be read in conjunction with the following drawings and documents:

- 1643-R-63-LAY-01 – External Services – External Lighting Layout
- Holophane D Series luminaire product data sheet.
- Holophane Denver Elite luminaire data sheet.
- ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2011
- CIBSE Lighting Guide6 the Outdoor Environment.

The following measures have been accommodated into the scheme design:

2.0 External Car park and building perimeter lighting summary

- 1) It is proposed that column mounted luminaires will be used to illuminate the car park and entrance road.
- 2) Wall mounted luminaires will be used to illuminate the service road entrance area to the service yard, the service yard, perimeter paths and exits and entry points to and from the building to achieve the required general lighting lux levels and emergency lighting lux levels.
- 3) Lighting Columns shall be 6 and 7 metres height with hinged base for maintenance.
- 4) Wall mounted lights shall be at 3, 5 & 7 metres height.
- 5) All general lighting luminaires have 0% ULOR
- 6) All emergency standby emergency exit luminaires over exit doors are used only in the event of an emergency and therefore provide no impact on the lighting assessment. The 6No provide an ULOR of 2.5%, but would only generate this in emergency situations ie power failure or in the event of a fire evacuation signal from the fire alarm system.

EXTERNAL LIGHTING ASSESMENT STATEMENT

- 7) All Luminaires will utilise energy efficient long life LED light sources with total power used in external lighting of 1376 Watts.
- 8) It is proposed that the lux levels and uniformities will comply with CIBSE Lighting Guide6 the Outdoor Environment.
- 9) It is proposed that in terms of obtrusive light and light pollution the design will comply with the ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2011. It is assumed that the development area is an environmental zone E1 classification.
- 10) The lighting control strategy of luminaires to the plant enclosure will be as set out below:
 - i. Manual control when maintenance is required to the mechanical plant
 - ii. Photocell to hold lighting off during daylight hours
 - iii. Time clock control to prevent lighting from operating outside of the curfew times of 21:00 to 07:00 hours
 - iv. The lighting to this area is for access only to maintain the equipment during the hours of darkness, generally maintenance would be carried out during daylight hours and lighting to these areas would remain off throughout a normal working day.
- 11) The lighting control strategy of luminaries to the front of the building: front entrance, vehicle approach and loading bay area's will be provided as set out below:
 - i. Manual control when maintenance is required
 - ii. Photocell to hold lighting off during daylight hours
 - iii. Time clock control to prevent lighting from operating outside of the curfew times of 21:00 to 07:00 hours
 - iv. Dimming of lighting columns when turned on and no activity / presence detected around the loading / vehicle areas.
 - v. Sensors will be provided to detect the presence of vehicles / persons within the loading bay entrance areas and only bring to full illumination during detection. On standby the lighting will be dimmed down to a reduced level of 50%.

3.0 Upward Light Output Ratio (ULOR)

The upward light output ratio of the façade lighting scheme has been calculated as 0% with a Sky Glow ULOR of 0% as defined in the Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

4.0 Light Intrusion

There is not light intrusion into surrounding properties.

EXTERNAL LIGHTING ASSESMENT STATEMENT

5.0 Luminaire Intensity

Luminaires have been selected to meet the luminance requirements required for safe operations by operatives around the vehicular entrance loading areas. The ULOR from these luminaires is 0% as stated in section 3.0.

Due to the wide vehicular turning area and loading bay entrance area the positioning of closely spaced low intensity lighting is not possible. To provide uniform luminance across the vehicular turning area and loading bay area more powerful output luminaires will be provided mounted on the building façade projecting across the vehicular turning circle and loading bay area. The luminaire cut-off shape of the reflector prevents light spill to adjacent areas.

The manufacturer's photometric data identify the maximum intensities for the specified luminaires as follows:

Type	MANUFACTURER	DESCRIPTION	CATALOGUE	Candela
EX1	Holophane Europe Ltd	D-Series 1	DSX1.2.LA054.AY	2801
EX2	Holophane Europe Ltd	D-Series 1	DSX1.2.LA224.FW	14652.1
EX4	Holophane Europe Ltd	D-Series 1	DSX1.2.LA084.FW	5508
EX5	Holophane Europe Ltd	Denver Elite	DEW.LA014.N.R.CGL	798.6
EX6	Holophane Europe Ltd	D-Series 2	DSX2.2.LA364.FW	23462.7
EX7	Holophane Europe Ltd	D-Series 1	DSX1.2.LA224.FW	14652.1
EX8	Holophane Europe Ltd	D-Series 1	DSX1.2.LA164.FW	9505.7

Calculations of luminaire intensity outside of the building area being lit has been calculated at 50 metres from the building envelope. The results present a maximum intensity of 256 candelas during pre-curfew which is within the 2,500 candelas pre-curfew for E1.

During post-curfew all lighting will be extinguished providing zero candelas, which is the set requirement of E1.

6.0 Building Luminance

The lighting design provides lighting only to the surrounding areas and / or directly below the building façade. The measurement of building luminance is not calculated or considered as applicable for this application.

EXTERNAL LIGHTING ASSESMENT STATEMENT

7.0 Luminaire Specification

The efficacy values for the external luminaires installed are detailed in the table below:

Type	Manufacturer	Type	Catalogue	Qty	Watts	Candela	Lumen	UGL	Efficacy (lm/cct W)
EX1	Holophane Europe Ltd	D-Series 1	DSX1.2.LA05 4.AY	7	36	2801	4720.2	0.0%	131.11
EX2	Holophane Europe Ltd	D-Series 1	DSX1.2.LA22 4.FW	2	208	14652.1	22207.2	0.0%	106.76
EX4	Holophane Europe Ltd	D-Series 1	DSX1.2.LA08 4.FW	5	68	5508	8348	0.0%	122.76
EX5	Holophane Europe Ltd	Denver Elite	DEW.LA014. N.R.CGL	8	12	798.6	1226.2	2.7%	102.18
EX6	Holophane Europe Ltd	D-Series 2	DSX2.2.LA36 4.FW	2	328	23462.7	35560.8	0.0%	108.41
EX7	Holophane Europe Ltd	D-Series 1	DSX1.2.LA22 4.FW	2	208	14652.1	22207.2	0.0%	106.76
EX8	Holophane Europe Ltd	D-Series 1	DSX1.2.LA16 4.FW	1	131	9505.7	16020.3	0.0%	122.29

The calculated average initial luminous efficacy of the external light fittings for the façade lighting installation is 118.69lm/W.

All light fittings installed utilise lamps with a colour rendering of 80 (Ra).

8.0 External Lighting Controls

- 1) The external lighting will be controlled via a photocell and time clock, complete with manual override. The lighting control strategy of luminaires to the side of the building will be provided as set out below:
 - i. Manual control when maintenance is required to the mechanical plant
 - ii. Photocell to hold lighting off during daylight hours
 - iii. Time clock control to prevent lighting from operating outside of the curfew times of 21:00 to 07:00 hours
 - iv. The lighting to this area is for access only to maintain the equipment during the hours of darkness, generally maintenance would be carried out during daylight hours and lighting to these areas would remain off throughout a normal working day.
- 2) The lighting control strategy of luminaries to the front of the building: front entrance, vehicle approach and loading bay area's will be provided as set out below:
 - i. Manual control when maintenance is required
 - ii. Photocell to hold lighting off during daylight hours

EXTERNAL LIGHTING ASSESMENT STATEMENT

- iii. Time clock control to prevent lighting from operating outside of the curfew times of 21:00 to 07:00 hours
- iv. Dimming of lighting columns when turned on and no activity / presence detected around the loading / vehicle areas.
- v. Sensors will be provided to detect the presence of vehicles / persons within the loading bay entrance areas and only bring to full illumination during detection. The lighting will be dimmed down to a reduced level of 50% when vehicular or pedestrian detection is not detected.

At handover the time clock will be set up to allow the external lighting to be switched off between the curfew hours of 21:00 hrs and 07:00 hrs.

Automatic controls from automatic presence, passive infrared (PIR) or microwave (MD) detection will be disabled between the set curfew hours to avoid nuisance illumination from wildlife.

9.0 Illuminated Signage

Illuminated signage has not been provided as part of the scheme.

10.0 Appendix 1 – Luminaire Data Sheets

- Denver Elite Luminaire Data Sheet
- D Series Luminaire Data Sheet
- Luminaire Photometry Data Sheets



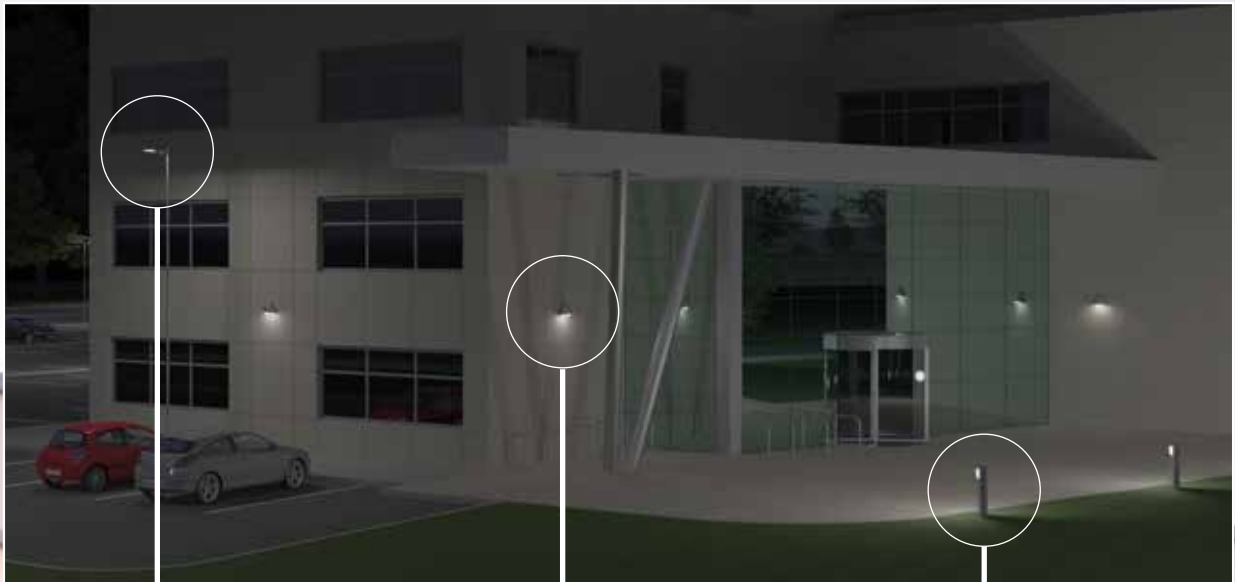
DENVER™
elite system 
wall

DENVER™
elite system



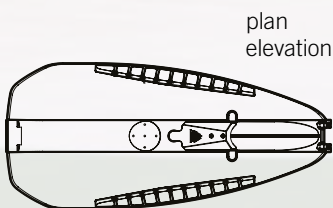
denver™ elite wall
REGISTERED EUROPEAN DESIGN





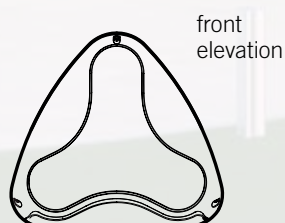
Denver™ Elite Pole

A fusion of contemporary styling and dynamic design, developed with the latest technology. The Denver™ Elite Pole completes the family range of luminaires.



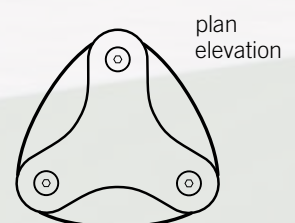
Denver™ Elite Wall

The design keeps the trilobular profile associated with the Denver™ Elite family and is a progression of everything learnt from our existing wall mounted products whilst taking new technologies and environmental issues into consideration.



Denver™ Elite Bollard

Combines a palette of design variables, which deliver aesthetic appeal, quality, durability and performance. The Denver™ Elite bollard is a modern aesthetic design that incorporates LEDs in addition to standard white light sources.





The **Denver™ Elite Wall** combines aesthetic appeal, quality, durability and performance.

The Denver™ Elite wall is a modern aesthetic design that incorporates LEDs in addition to standard white light sources. With its stylised design and prismatic glass optic, providing a high performance asymmetric distribution, with wide spacings and high efficiency. This makes the Denver™ Elite Wall an industry leading wall mount product.

The design keeps the trilobular profile associated with the Denver™ Elite family and is a progression of everything we've learnt from our existing wall mounted products whilst taking new technologies and environmental issues into consideration. Denver™ Elite Wall is offered with electronic gear only (to help you reduce your energy costs) and the latest LED technology - offering a contemporary or conventional light source that does not compromise its optical performance.

optics / light source

- > 1000 - 3000 lumen package LED options
- > 35W - 100W ceramic metal halide
- > 26W - 42W compact fluorescent
- > 45W - 90W CosmoPolis

approvals

IP65
EN60598
CE

For further information please visit the Holophane website
www.holophane.co.uk



typical luminaire performance

Configuration	Delivered Lumens†	Power Consumption	Drive Current	Rated Life of LED Module (L70B50 @Tq 20°C)*
.LA014	c. 1,000	12W	350mA	100,000 hours
.LA024	c. 2,000	24W	700mA	100,000 hours
.LM014	c. 1,000	17W	350mA	73,000 hours
.LM024	c. 2,000	22W	500mA	75,000 hours
.LM034	c. 3,000	31W	700mA	70,000 hours

Note: Data is correct at time of print.

* For other life metric data in line with IEC PAS62722-2-1 and 62717 contact your Holophane Representative for details.

† Based on the average of all the optical distribution options.



REGISTERED EUROPEAN DESIGN



External ribs on the housing to allow air flow and ensure cool running of electronic control gear.



Photocell option



Cable 'Knock Out' points allow simple and flexible installation and through wiring.

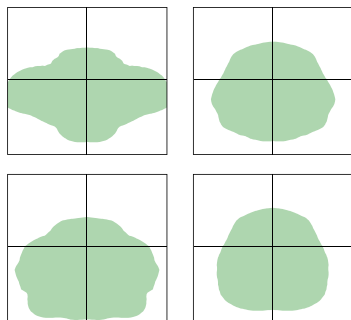
specification

The luminaire shall consist of a high pressure LM6 die-cast aluminium body, with integrated thermal management design. Denver™ Elite Wall incorporates integral electronic control gear or an LED driver to suit a wide choice of LED, high intensity discharge, or compact fluorescent light sources. The optical arrangement consists of an aluminium internal reflector and a prismatic glass lens providing an asymmetric distribution. Three stainless steel screws maintain uniform compression on a closed cell silicon gasket to ensure an IP65 rating at all times. The luminaire shall be suitable for wall mounting with rear, top, side and through wiring options via 20mm Ø knockout cable entry/exit points. Denver™ Elite Wall complies with the requirements of EN60598 with a choice of additional options and accessories.

applications

Frontages, Building Perimeters, Amenity Areas Walkways, Passage Ways, Precincts

light distribution



weight & thermal data

Lamp Type	Weight (kg)	Min. Operating Temperature (°C)	Max. Ambient Temperature (°C)
35W Metal Halide	4.7	-20	55
70W Metal Halide	4.7	-20	45
100W Metal Halide	4.7	-20	40
26W Compact Fluorescent	4.2	-10	45
32W Compact Fluorescent	4.2	-10	45
42W Compact Fluorescent	4.2	-10	40
LA014	6.4	TBC	40
LA024	6.4	TBC	40
LM014	6.4	-25	40
LM024	6.4	-25	40
LM034	6.4	-25	40
45W CosmoPolis	5.1	-30	35
60W CosmoPolis	5.2	-30	35
90W CosmoPolis	5.2	-30	25

*The maximum ambient temperatures stated are for exterior use only. For interior use deduct 10°C from the temperature stated.

features and benefits

Contemporary styling

- > Unique 'registered' trilobular design giving an aesthetic appeal that complements today's modern architecture and continues the Denver™ Elite family range

High quality construction

- > Durability ensured by a high pressure die cast LM6 aluminium housing and glass optic.
- > The housing is designed to include thermal management features.
- > Designed to IP65 to provide a fully weather sealed rating.

Optional photocell

- > Photocell option discretely designed into the casting to ensure clean aesthetics.

Flexibility during installation

- > A variety of improved cable 'knock-out' points allow simple and flexible installation and through wiring.

Emergency options

- > Available for CFL and LED options.

Low ULOR option available

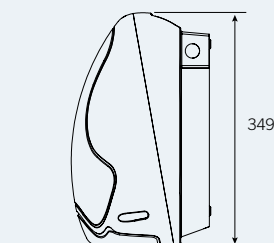
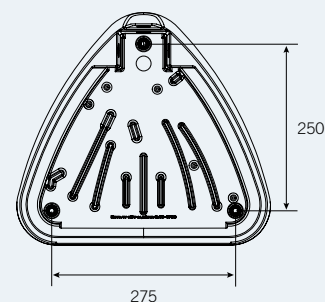
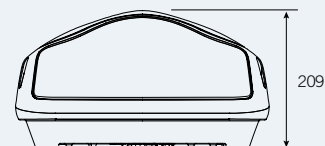
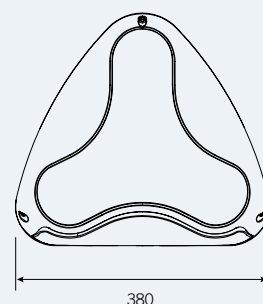
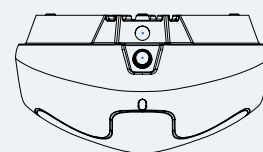
- > LED version has circa <3% ULOR as standard.
- > Upward light shield available providing <5% ULOR with the HID or CFL option

Vandal resistant

- > Robust design and construction offering a vandal resistant product.



dimensions in mm




Note: The specifications of the Holophane luminaire and columns represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

ordering details

To find out more
please visit
www.holophane.co.uk

Code

DEW Denver™ Elite Wall

Code	Lamp Type (required)	
.LA014	LED light engine producing c.1000 lm with a nominal 4000°K colour temperature	
.LA024	LED light engine producing c.2000 lm with a nominal 4000°K colour temperature	
.LM014	LED light engine producing c.1000 lm with a nominal 4000°K colour temperature	
.LM024	LED light engine producing c.2000 lm with a nominal 4000°K colour temperature	
.LM034	LED light engine producing c.3000 lm with a nominal 4000°K colour temperature	
.35CDMTF3	35W Clear CDM-T 3000°K Ceramic Metal Halide lamp (G12 base)	
.70CDMTF3	70W Clear CDM-T 3000°K Metal Halide lamp (G12 base)	
.100CDMTF3	100W Clear CDM-T 3000°K Metal Halide lamp (G12 base)	
.26PL4	26W 4000°K Compact Fluorescent 4 Pin lamp (G24q-3 base)	
.32PL4	32W Triple Tube 4000°K Compact Fluorescent 4 Pin lamp (GX24q-3 base)	
.42PL4	42W Triple Tube 4000°K Compact Fluorescent 4 Pin lamp (GX24q-4 base)	
.45CW	45W Philips CosmoWhite lamp (PGZ12 base)	
.60CW	60W Philips CosmoWhite lamp (PGZ12 base)	
.90CW	90W Philips CosmoWhite lamp (PGZ12 base)	
Code	Lens (required)	
.PGL	Prismatic Glass Lens	
.CGL	Clear Glass Lens*	
Code	Distribution (optional)	
.NR	Long and narrow light distribution*	
.AY	Asymmetric light distribution**	
.SY	Symmetrical light distribution***	
Code	Colour (required)	
.C1	Smooth White (RAL 9016)	
.C4	Textured Graphite (RAL 7011)	
.C6	Smooth Grey (RAL 7035)	
.C7	Black (RAL 9005)	
.C9	Metallic Silver (RAL 9006)	
.RAL****	RAL Colour (customer choice)	
Code	Paint Finish	
.C	Enhanced Paint Finish	
Code	Optics	
.ULS	Upward light shield (for HID & CFL lamp options only)	
Code	Photocell	
.T	Photocell fitted	
Code	Emergency	
.EM3	3hr maintained emergency IP65****	
Code	HF Control Gear	
.SDI	6 hour stepped dimming	
.LRD	DALI Enabled	
Code	Less Lamp	
.LL	Less Lamp	
.LS	Lamp Specific	
Example	DEW .26PL4 .PGL .ULS .C7 .C .ULS .T .EM3 .SDI .LL	

*Available with .LA014 and .LA024 lamp options only. ** Not available with .LMXXX options *** Available with .LM014, .LM024 and .LM034 options only.
**** Available with 26PL4, 32PL4, 42PL4 options only.



luminaire accessories

Code

GL.M20 1 x M20 IP68 plastic gland for cable entry suitable for cables between 6mm - 13mm Ø

Note: For specific LED variant data please contact Holophane for Denver™ Elite Wall LED data sheet



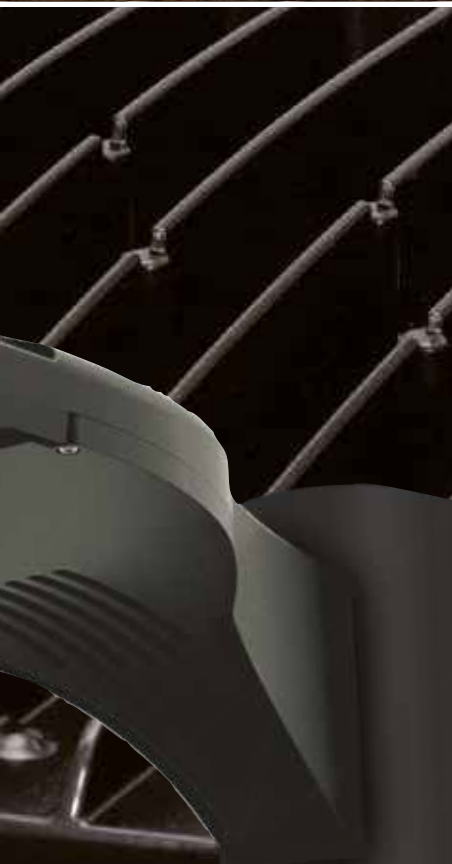
AcuityBrands.
Expanding the boundaries of lighting™



D-SERIES

D-Series





The modern styling of the **D-Series** is striking yet unobtrusive - making a bold, progressive statement as it blends seamlessly with its environment. **D-Series** takes all the benefits of LED technology and moulds it into a high performance, high efficacy and long life area lighting luminaire.

With its exceptional 'finned' thermal management system, D-Series is capable of delivering over 100,000 hours LED module life. Offering a wide range of lumen packages and optical distributions, D-Series delivers optimised lighting application designs.

With the integrated DALI option D-Series delivers a controllable luminaire that helps you realise energy consumption goals and demonstrate environmental responsibility. With its unique optics placed below each LED it ensures light is delivered where it needs to be, providing a uniform Nighttime Friendly environment with minimal light pollution.

optics / light source

- > 30, 60, 80 & 100 LED options available.
- > Fully soak tested light engines ensuring LED reliability and eliminating early failures.
- > 4000°K colour temperature.
- > Eight lumen packages available (5,000, 6,000, 8,000 11,000, 16,000, 22,000, 30,000 & 36,000).

approvals

Complies with EN60598



IP IP65 luminaire* and LED optic

Ta -40°C to +40°C

* .TLS option is IP43 rated with IP65 LED optics

For further information please visit the Holophane website
www.holophane.co.uk



Typical Luminaire Performance

Configuration	Delivered Lumens	Power Consumption	Drive Current	Rated Life of LED Module (L70B50 @Tq 20°C)*
DSX1.LA054	4870	36W	350mA	100,000+ hrs
DSX1.LA064	6653	52W	525mA	100,000+ hrs
DSX1.LA084	8450	68W	700mA	100,000+ hrs
DSX1.LA114	11557	105W	1050mA	100,000+ hrs
DSX1.LA164	16437	131W	700mA	100,000+ hrs
DSX1.LA224	22479	208W	1050mA	100,000+ hrs
DSX2.LA304	30188	282W	1050mA	100,000+ hrs
DSX2.LA364	36500	328W	1000mA	100,000+ hrs

Note: Data is correct at time of print.

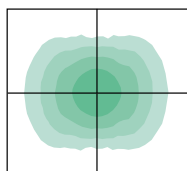
* For other life metric data in line with IEC PAS62722-2-1 and 62717 contact your Holophane Representative for details.

specification

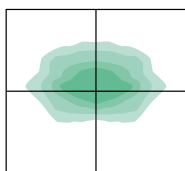
Single-piece die-cast aluminium housing, that conforms to EN1706 AC-46500, with integral heat sink fins to optimise thermal management through conductive cooling. LED modules are IP65 with individual lenses, and high grade aluminium housing to transfer heat away from the LEDs and dissipate through the finned housing for cooling. The LED driver is mounted in direct contact with the finned housing for cooling to promote low operating temperature and long system life. Housing is completely sealed against moisture and environmental contaminants (IP65). Installation is via the integrated mounting block and integral arm that facilitate a quick and easy installation.

light distribution

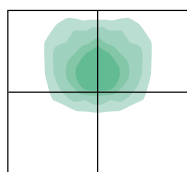
Symmetric



Asymmetric



Forward Throw



features and benefits

System Longevity

- > The D-Series's diecast aluminium housing acts as its primary heat sink. Its longitudinal fins employ conductive cooling techniques to dissipate heat away from the key LED components and driver that extends the life of the luminaire.
- > Light engine(s) consist of either 20 or 30 high efficacy LEDs (subject to chosen configuration) mounted to a metal-core circuit board to maximize heat dissipation and promote long life.

Exceptional Performance

- > Offering six lumen packages ranging from 5000 lm to 36,000 lm with efficiencies of up to 130 lpw (Lumens Per Watts).
- > Three optimised distributions (asymmetric, symmetric and forward throw) delivered by quality LEDs and bespoke UV stabilised optics.
- > LED light engines with 0% ULOR ensuring night time friendly.

Complete Light Package

- > Available with DALI compatible driver and photocell options enabling control compatability.
- > Fully integrated into Holophane standard column range.

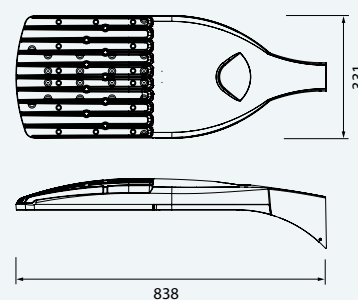
applications

Landscaped areas
Car parks
Amenity areas
Town squares
Retail parks
Entrance roads
Parks

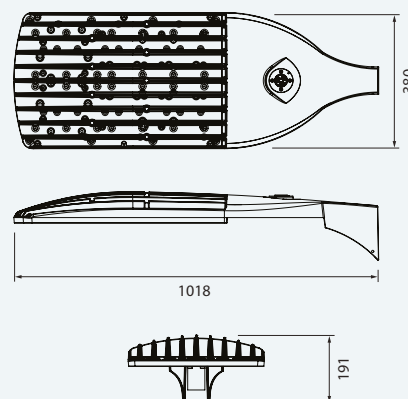


dimensions in mm

D-Series 1



D-Series 2



weight (with control gear)

DSX 1	12.2kg
DSX 2	15.0kg

windage (effective projected area)

DSX1	0.07m ²
DSX2	0.10m ²

TA

-40°C to 40°C

ordering details - luminaire

Code

DSX1 D-Series 1 Luminaire

DSX2 D-Series 2 Luminaire

Code Lamp Type (required)

.LA054*	LED light engine producing c 5,000 lumens with a nominal 4000°K colour temperature
.LA064*	LED light engine producing c 6,000 lumens with a nominal 4000°K colour temperature
.LA084*	LED light engine producing c 8,000 lumens with a nominal 4000°K colour temperature
.LA114*	LED light engine producing c 11,000 lumens with a nominal 4000°K colour temperature
.LA164*	LED light engine producing c 16,000 lumens with a nominal 4000°K colour temperature
.LA224*	LED light engine producing c 22,000 lumens with a nominal 4000°K colour temperature
.LA304**	LED light engine producing c 30,000 lumens with a nominal 4000°K colour temperature
.LA364**	LED light engine producing c 36,000 lumens with a nominal 4000°K colour temperature

Code Light Distribution (required)

.AY	Asymmetric
.SY	Symmetric
.FW	Forward throw

Code Colour (required)

.C1	White RAL9016
.C4	Graphite RAL7011
.C6	Grey RAL7035
.C7	Black RAL9005
.C9	Metallic Silver RAL9006
.RAL****	RAL Colour (customer choice)

Code Photocell (option)

.T	Mini Photocell
.T1	Complete with NEMA socket (To accept standard NEMA Photocell, available from Holophane)
.T5	Complete with 5-pin dimming NEMA ANSI C136.41 socket (suitable photocell/node supplied by others) without locking top
.T7	Complete with 7-pin dimming NEMA ANSI C136.41 socket (suitable photocell/node supplied by others) without locking top
.T5T	Complete with 5-pin dimming NEMA ANSI C136.41 socket (photocell/node supplied by others) with weather proof locking top
.T7T	Complete with 7-pin dimming NEMA ANSI C136.41 socket (photocell/node supplied by others) with weather proof locking top

Code Control Gear (option)

.CL7	Programmed to deliver 70% of the initial lumens over the life of the luminaire
.CL8	Programmed to deliver 80% of the initial lumens over the life of the luminaire
.CL9	Programmed to deliver 90% of the initial lumens over the life of the luminaire
.D2	DALI HF electronic control gear

Code Dimming Outputs (option)

.LRT56	Pre-set to dim to 50% between 12am to 6am
.LRT66	Pre-set to dim to 60% between 12am to 6am
.LRT76	Pre-set to dim to 70% between 12am to 6am

Code Controls (option)

.TSK	Integrated Wireless Lighting Controller & Antennae
------	--

Code Paint Finish (option)

.C	Enhanced Paint Finish
----	-----------------------



Example	DSX1	.LA224	.AY	.C7	.T1	.CL7	.LRT56	.TSK	.C
---------	------	--------	-----	-----	-----	------	--------	------	----

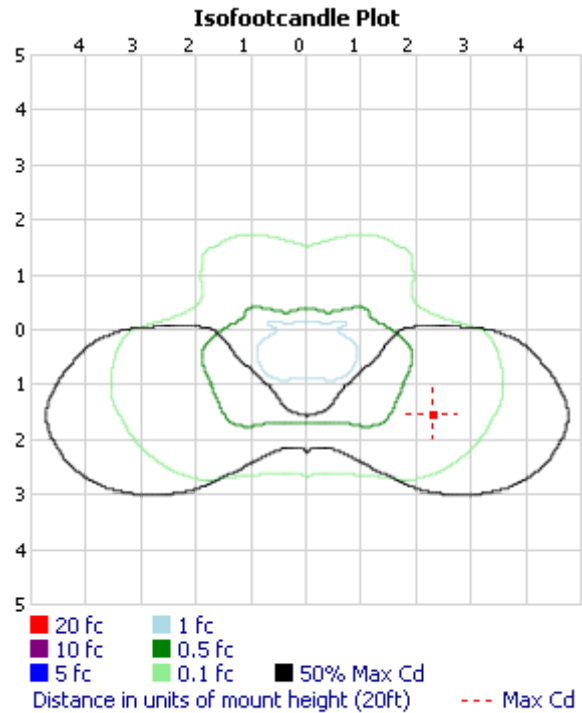
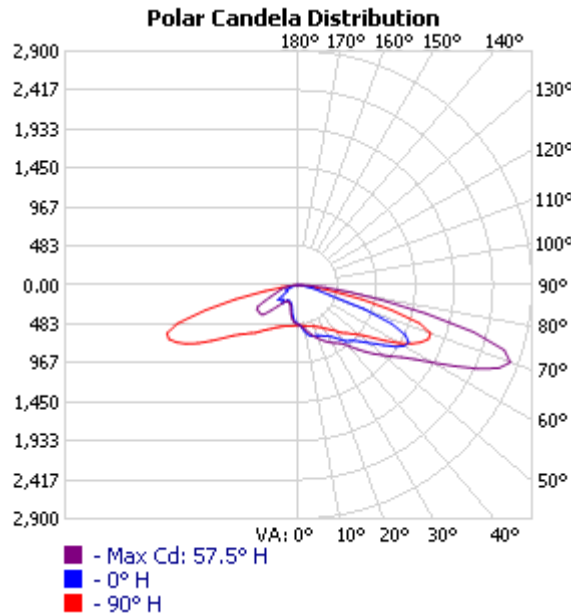
* DSX1 only

** DSX2 only

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DSX1.2.LA054.AY

TEST #: LTL22434P4003
 TEST LAB: ACUITY BRANDS LIGHTING CONYERS LAB
 TEST DATE: 3/22/2016
 CATALOG: DSX1.2.LA054.AY
 DESCRIPTION: D-SERIES 1 LUMINAIRE
 SERIES: DSX1
 LAMP CATALOG: LA054
 LAMP: LED C.5000LM-4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 4720.4, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 36
 LUMINOUS OPENING: RECTANGLE (L: 11.04", W: 9.72")
 MAX CD: 2,801.0 AT HORIZONTAL: 57.5°, VERTICAL: 70°
 ROADWAY CLASS: MEDIUM, TYPE IV




*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

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 VISUAL PHOTOMETRIC TOOL

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OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA054.AY

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	446.6	9.5%
0-40	832.8	17.6%
0-60	2,377.6	50.4%
60-90	2,342.7	49.6%
70-100	1,068.2	22.6%
90-120	0.000	0%
0-90	4,720.4	100%
90-180	0.000	0%
0-180	4,720.4	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	48.8	1.0%	90-100	0.000	0%
10-20	148.3	3.1%	100-110	0.000	0%
20-30	249.5	5.3%	110-120	0.000	0%
30-40	386.2	8.2%	120-130	0.000	0%
40-50	608.1	12.9%	130-140	0.000	0%
50-60	936.7	19.8%	140-150	0.000	0%
60-70	1,274.6	27.0%	150-160	0.000	0%
70-80	881.8	18.7%	160-170	0.000	0%
80-90	186.4	3.9%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE IV, MEDIUM	
MAX CD, 90 DEG VERT:	0.000	
MAX CD, 80 TO <90 DEG:	1,096.0	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	3,521.2	74.6%
DOWNWARD HOUSE SIDE:	1,199.0	25.4%
DOWNWARD TOTAL:	4,720.2	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	4,720.2	100%

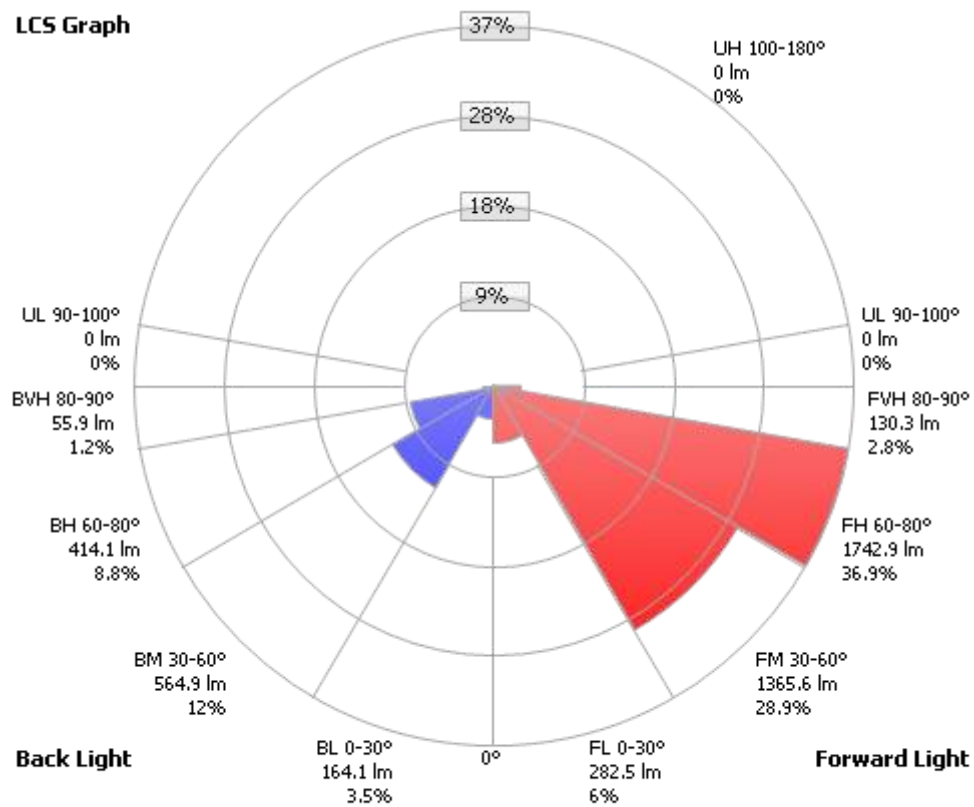
LCS TABLE
BUG RATING
B1 - U0 - G2

FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	282.5	6%
MEDIUM(30-60):	1,365.6	28.9%
HIGH(60-80):	1,742.9	36.9%
VERY HIGH(80-90):	130.3	2.8%
BACK LIGHT		
LOW(0-30):	164.1	3.5%
MEDIUM(30-60):	564.9	12%
HIGH(60-80):	414.1	8.8%
VERY HIGH(80-90):	55.9	1.2%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.2	0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA054.AY



LCS Graph



Scale = Max LCS %

Trapped Light: 0.2lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA054.AY

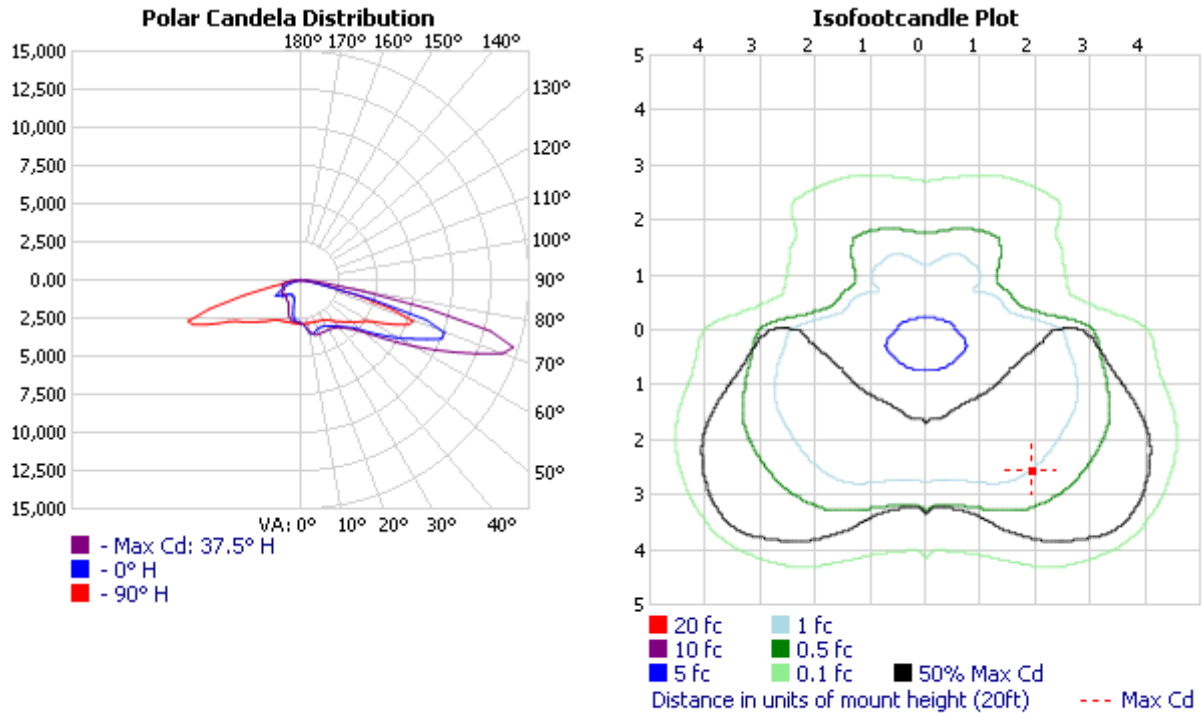
CANDELA TABLE - TYPE C

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492
5	538	550	547	542	538	531	524	516	509	502	495	490	484	480	475	469	467	464	460
10	618	625	623	619	610	592	570	549	530	514	501	491	481	467	450	433	420	412	396
15	653	658	664	670	672	658	629	588	553	527	509	497	467	424	386	362	345	334	317
20	668	680	691	707	719	717	694	639	581	543	530	510	430	359	312	283	272	267	260
25	693	709	726	742	766	773	757	701	619	570	577	530	389	303	265	252	247	242	236
30	729	749	770	784	803	819	820	772	675	614	653	549	380	285	252	238	235	233	231
35	797	825	844	860	871	877	877	845	753	672	741	589	399	283	249	243	239	232	227
40	902	933	965	998	1012	1008	985	945	866	750	808	656	418	283	268	273	276	269	277
45	973	1012	1069	1153	1182	1183	1152	1089	999	840	826	708	422	311	344	383	412	338	280
50	1107	1148	1213	1336	1381	1368	1327	1240	1143	951	786	717	438	414	506	548	428	321	267
55	1297	1339	1432	1645	1694	1609	1534	1446	1376	1143	747	696	497	584	711	561	469	371	314
60	1514	1531	1666	2057	2188	1991	1893	1864	1798	1440	695	559	539	724	661	580	405	248	184
65	1466	1426	1650	2269	2703	2537	2419	2386	2235	1675	555	457	575	739	591	423	275	183	147
70	867	766	1091	1859	2602	2785	2790	2743	2496	1741	404	421	578	519	420	296	219	189	160
75	261	252	400	802	1531	2051	2289	2384	1963	1200	281	350	506	387	285	227	195	145	104
80	101	108	197	343	603	878	1062	1085	784	428	181	273	330	242	197	167	128	87	58
85	51	58	100	138	213	314	362	374	232	108	105	174	182	122	113	89	67	35	21
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DSX1.2.LA224.FW

TEST #: LTL22428P4023
 TEST LAB: SCALED PHOTOMETRY
 TEST DATE: 3/22/2016
 CATALOG: DSX1.2.LA224.FW
 DESCRIPTION: D-SERIES 1 LUMINAIRE
 SERIES: DSX1
 LAMP CATALOG: LA224
 LAMP: LED C.22000LM-4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 22207.3, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 208
 LUMINOUS OPENING: RECTANGLE (L: 14.52", W: 11.04")
 MAX CD: 14,652.1 AT HORIZONTAL: 37.5°, VERTICAL: 72.5°
 ROADWAY CLASS: SHORT, TYPE IV




*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

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 VISUAL PHOTOMETRIC TOOL

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OUTDOOR PHOTOMETRIC REPORT
CATALOG: DSX1.2.LA224.FW



ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	2,350.1	10.6%
0-40	4,119.1	18.5%
0-60	10,548.3	47.5%
60-90	11,659.1	52.5%
70-100	5,752.6	25.9%
90-120	0.000	0%
0-90	22,207.3	100%
90-180	0.000	0%
0-180	22,207.3	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	278.5	1.3%	90-100	0.000	0%
10-20	820.9	3.7%	100-110	0.000	0%
20-30	1,250.7	5.6%	110-120	0.000	0%
30-40	1,769.0	8.0%	120-130	0.000	0%
40-50	2,552.0	11.5%	130-140	0.000	0%
50-60	3,877.2	17.5%	140-150	0.000	0%
60-70	5,906.5	26.6%	150-160	0.000	0%
70-80	4,985.0	22.4%	160-170	0.000	0%
80-90	767.6	3.5%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE IV, SHORT	
MAX CD, 90 DEG VERT:	0.000	
MAX CD, 80 TO <90 DEG:	5,282.0	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	17,034.2	76.7%
DOWNWARD HOUSE SIDE:	5,173.0	23.3%
DOWNWARD TOTAL:	22,207.2	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	22,207.2	100%

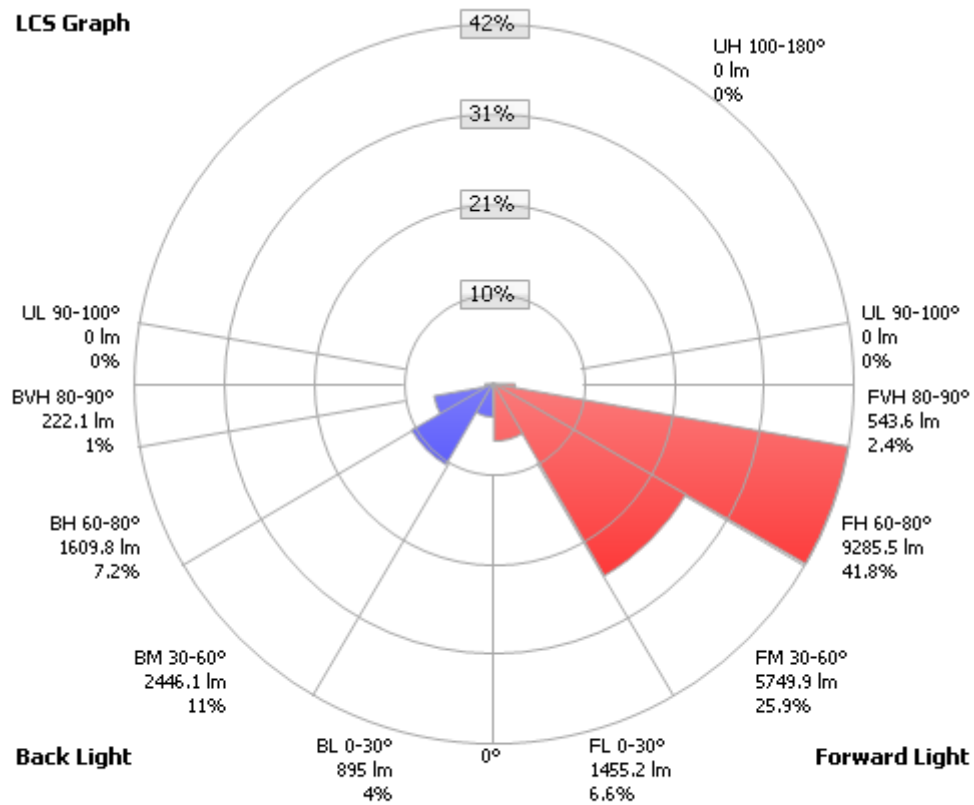
LCS TABLE

BUG RATING	B3 - U0 - G4	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	1,455.2	6.6%
MEDIUM(30-60):	5,749.9	25.9%
HIGH(60-80):	9,285.5	41.8%
VERY HIGH(80-90):	543.6	2.4%
BACK LIGHT		
LOW(0-30):	895.0	4%
MEDIUM(30-60):	2,446.1	11%
HIGH(60-80):	1,609.8	7.2%
VERY HIGH(80-90):	222.1	1%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.1	0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA224.FW



LCS Graph



Back Light

Forward Light

Scale = Max LCS %

Trapped Light: 0.1lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA224.FW

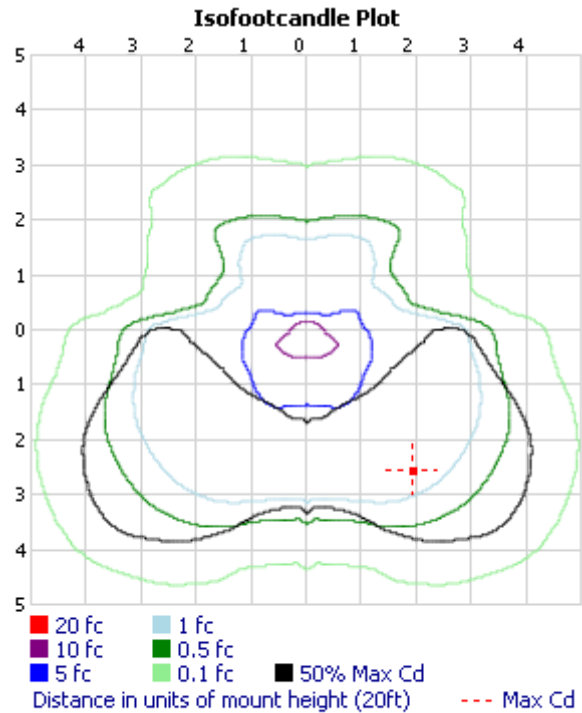
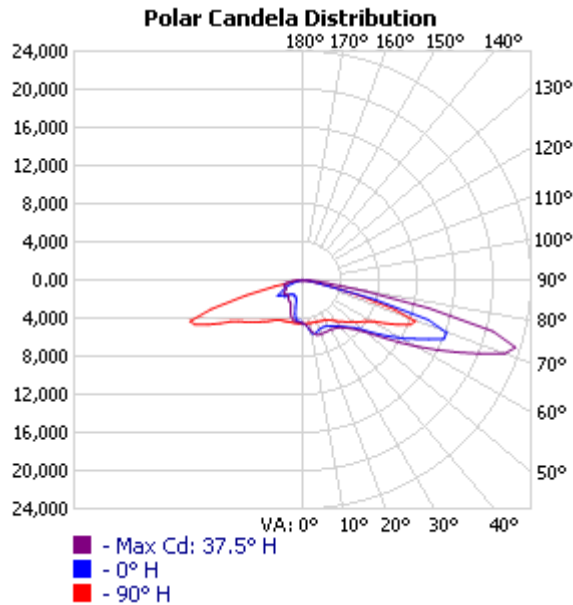
CANDELA TABLE - TYPE C

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5	3000	3063	3047	3024	2998	2960	2926	2896	2869	2849	2826	2805	2789	2771	2758	2744	2740	2733	2725
10	3509	3541	3528	3478	3387	3254	3110	2983	2900	2850	2811	2780	2758	2736	2709	2670	2640	2617	2562
15	3554	3541	3618	3694	3720	3615	3371	3124	2941	2858	2803	2759	2707	2598	2439	2252	2104	1999	1824
20	3373	3400	3502	3629	3766	3838	3700	3317	3032	2893	2809	2727	2536	2183	1784	1489	1355	1312	1276
25	3362	3413	3505	3618	3763	3902	3927	3566	3155	2940	2816	2649	2265	1689	1344	1249	1185	1158	1142
30	3463	3514	3574	3667	3776	3902	4002	3796	3323	3010	2843	2653	2181	1516	1234	1124	1130	1141	1136
35	3681	3707	3753	3792	3853	3917	4016	3959	3573	3195	3006	2981	2273	1423	1128	1089	1101	1112	1130
40	3948	3946	3999	4066	4072	4067	4139	4173	3887	3517	3258	3368	2346	1278	1108	1171	1264	1264	1237
45	4369	4334	4408	4500	4494	4414	4448	4490	4218	3857	3481	3391	2308	1244	1320	1551	1591	1508	1497
50	5007	5170	5267	5337	5220	5068	5009	4969	4636	4272	3660	3199	2254	1467	1823	2037	2035	1782	1521
55	6207	6452	6775	6815	6613	6302	6082	5858	5292	4749	3525	2498	1647	1668	2253	2299	2217	1964	1799
60	7628	7859	8646	8990	8601	8144	7728	7198	6232	5419	2966	1492	1230	1482	2294	2682	2467	2072	1743
65	9164	9448	10706	11514	10979	10376	9914	9381	8037	6899	2105	1139	1102	1327	2500	2435	1926	1507	1271
70	10053	10100	12520	14261	13936	13195	12793	11756	9474	7863	1362	968	1124	1384	2165	1787	1470	1152	936
75	4869	4455	7681	11611	13129	12915	11997	9083	5518	3874	819	758	1039	1454	1439	1251	929	697	556
80	870	917	1785	2955	4660	5115	4266	2756	1429	900	507	624	910	1003	1029	841	603	407	299
85	342	368	701	823	1114	1362	1255	945	488	279	299	487	646	656	652	520	360	176	118
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DSX2.2.LA364.FW

TEST #: LTL22428P1473
 TEST LAB: ACUITY BRANDS LIGHTING CONYERS LAB
 TEST DATE: 3/22/2016
 CATALOG: DSX2.2.LA364.FW
 DESCRIPTION: D-SERIES 2 LUMINAIRE
 SERIES: DSX2
 LAMP CATALOG: LA364
 LAMP: LED C.36000LM-4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 35560.9, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 328
 LUMINOUS OPENING: RECTANGLE (L: 14.52", W: 11.04")
 MAX CD: 23,462.7 AT HORIZONTAL: 37.5°, VERTICAL: 72.5°
 ROADWAY CLASS: SHORT, TYPE IV



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

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 LTL22428P1473
 VISUAL PHOTOMETRIC TOOL

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OUTDOOR PHOTOMETRIC REPORT
CATALOG: DSX2.2.LA364.FW



ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	3,763.2	10.6%
0-40	6,595.9	18.5%
0-60	16,891.1	47.5%
60-90	18,669.8	52.5%
70-100	9,211.7	25.9%
90-120	0.000	0%
0-90	35,560.9	100%
90-180	0.000	0%
0-180	35,560.9	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	445.9	1.3%	90-100	0.000	0%
10-20	1,314.4	3.7%	100-110	0.000	0%
20-30	2,002.8	5.6%	110-120	0.000	0%
30-40	2,832.7	8.0%	120-130	0.000	0%
40-50	4,086.6	11.5%	130-140	0.000	0%
50-60	6,208.5	17.5%	140-150	0.000	0%
60-70	9,458.1	26.6%	150-160	0.000	0%
70-80	7,982.6	22.4%	160-170	0.000	0%
80-90	1,229.2	3.5%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE IV, SHORT	
MAX CD, 90 DEG VERT:	0.000	
MAX CD, 80 TO <90 DEG:	8,458.2	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	27,277.2	76.7%
DOWNWARD HOUSE SIDE:	8,283.6	23.3%
DOWNWARD TOTAL:	35,560.8	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	35,560.8	100%

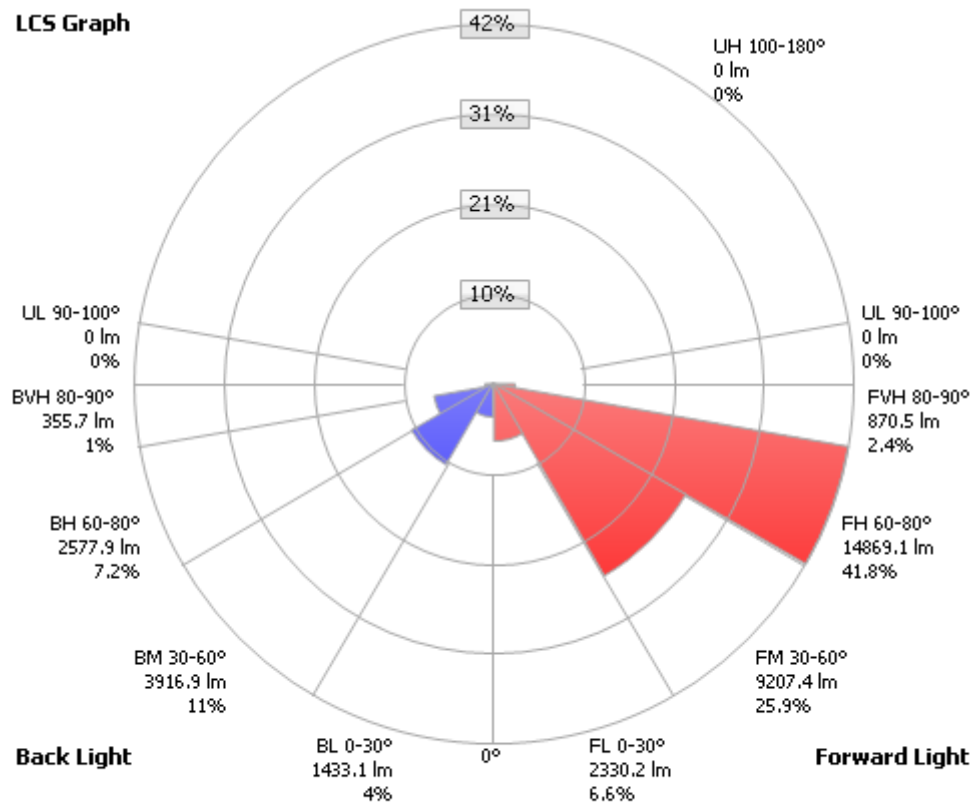
LCS TABLE

BUG RATING	B4 - U0 - G5	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	2,330.2	6.6%
MEDIUM(30-60):	9,207.4	25.9%
HIGH(60-80):	14,869.1	41.8%
VERY HIGH(80-90):	870.5	2.4%
BACK LIGHT		
LOW(0-30):	1,433.1	4%
MEDIUM(30-60):	3,916.9	11%
HIGH(60-80):	2,577.9	7.2%
VERY HIGH(80-90):	355.7	1%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.1	0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DSX2.2.LA364.FW



LCS Graph



Back Light

Forward Light

Scale = Max LCS %

Trapped Light: 0.1lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX2.2.LA364.FW

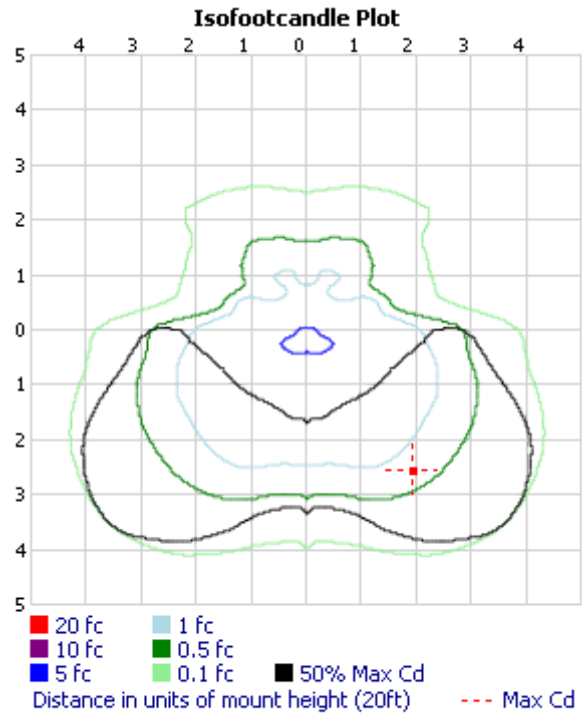
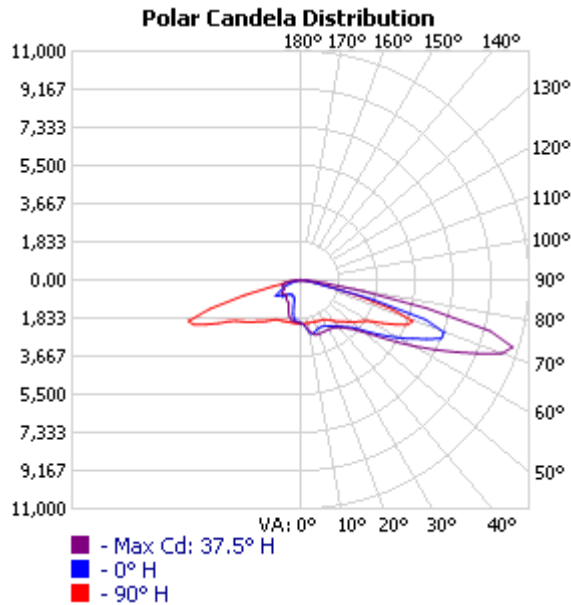
CANDELA TABLE - TYPE C

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533	4533
5	4804	4904	4879	4842	4801	4740	4686	4637	4595	4563	4525	4492	4466	4437	4416	4395	4387	4376	4364
10	5619	5671	5649	5569	5423	5211	4980	4777	4643	4564	4501	4452	4416	4381	4338	4276	4228	4191	4103
15	5690	5671	5794	5915	5957	5789	5398	5003	4710	4577	4489	4417	4335	4161	3906	3607	3369	3202	2921
20	5401	5445	5608	5812	6030	6146	5924	5311	4856	4633	4498	4367	4061	3496	2857	2384	2170	2100	2044
25	5384	5466	5613	5794	6026	6249	6288	5710	5052	4707	4510	4241	3627	2704	2152	2000	1898	1854	1829
30	5545	5627	5724	5872	6047	6249	6408	6079	5322	4819	4552	4249	3493	2428	1976	1800	1809	1827	1819
35	5894	5936	6009	6073	6170	6273	6431	6340	5721	5117	4813	4774	3640	2279	1806	1744	1763	1780	1809
40	6322	6319	6404	6511	6520	6513	6628	6683	6225	5631	5217	5393	3757	2047	1774	1876	2024	2024	1980
45	6997	6941	7059	7206	7196	7068	7123	7190	6754	6176	5574	5429	3696	1992	2114	2484	2548	2414	2398
50	8018	8279	8434	8546	8360	8115	8021	7957	7423	6841	5860	5123	3610	2349	2920	3262	3258	2853	2435
55	9939	10332	10850	10913	10590	10091	9739	9381	8473	7604	5645	4000	2637	2671	3608	3681	3551	3146	2880
60	12215	12584	13845	14396	13772	13041	12375	11526	9979	8677	4750	2388	1970	2373	3674	4294	3950	3317	2791
65	14675	15129	17144	18437	17581	16614	15875	15023	12869	11047	3370	1824	1765	2124	4003	3900	3083	2413	2035
70	16099	16173	20048	22836	22315	21129	20485	18825	15171	12592	2181	1551	1800	2215	3467	2862	2354	1845	1499
75	7797	7133	12300	18593	21024	20681	19211	14545	8836	6203	1311	1214	1663	2328	2305	2003	1487	1115	891
80	1393	1469	2859	4731	7463	8191	6832	4413	2288	1442	812	998	1457	1605	1648	1347	965	652	480
85	548	589	1123	1319	1785	2181	2009	1513	781	446	480	780	1035	1050	1044	833	577	282	190
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DSX1.2.LA164.FW

TEST #: LTL22428P4014
 TEST LAB: SCALED PHOTOMETRY
 TEST DATE: 3/22/2016
 CATALOG: DSX1.2.LA164.FW
 DESCRIPTION: D-SERIES 1 LUMINAIRE
 SERIES: DSX1
 LAMP CATALOG: LA164
 LAMP: LED C.16000LM-4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 16238, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 131
 LUMINOUS OPENING: RECTANGLE (L: 14.52", W: 11.04")
 MAX CD: 10,713.7 AT HORIZONTAL: 37.5°, VERTICAL: 72.5°
 ROADWAY CLASS: SHORT, TYPE IV



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

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 VISUAL PHOTOMETRIC TOOL

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OUTDOOR PHOTOMETRIC REPORT
CATALOG: DSX1.2.LA164.FW



ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	1,718.4	10.6%
0-40	3,011.9	18.5%
0-60	7,712.9	47.5%
60-90	8,525.1	52.5%
70-100	4,206.3	25.9%
90-120	0.000	0%
0-90	16,238.0	100%
90-180	0.000	0%
0-180	16,238.0	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	203.6	1.3%	90-100	0.000	0%
10-20	600.2	3.7%	100-110	0.000	0%
20-30	914.5	5.6%	110-120	0.000	0%
30-40	1,293.5	8.0%	120-130	0.000	0%
40-50	1,866.0	11.5%	130-140	0.000	0%
50-60	2,835.0	17.5%	140-150	0.000	0%
60-70	4,318.8	26.6%	150-160	0.000	0%
70-80	3,645.0	22.4%	160-170	0.000	0%
80-90	561.3	3.5%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE IV, SHORT	
MAX CD, 90 DEG VERT:	0.000	
MAX CD, 80 TO <90 DEG:	3,862.2	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	12,455.5	76.7%
DOWNWARD HOUSE SIDE:	3,782.5	23.3%
DOWNWARD TOTAL:	16,238.0	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	16,238.0	100%

LCS TABLE

BUG RATING

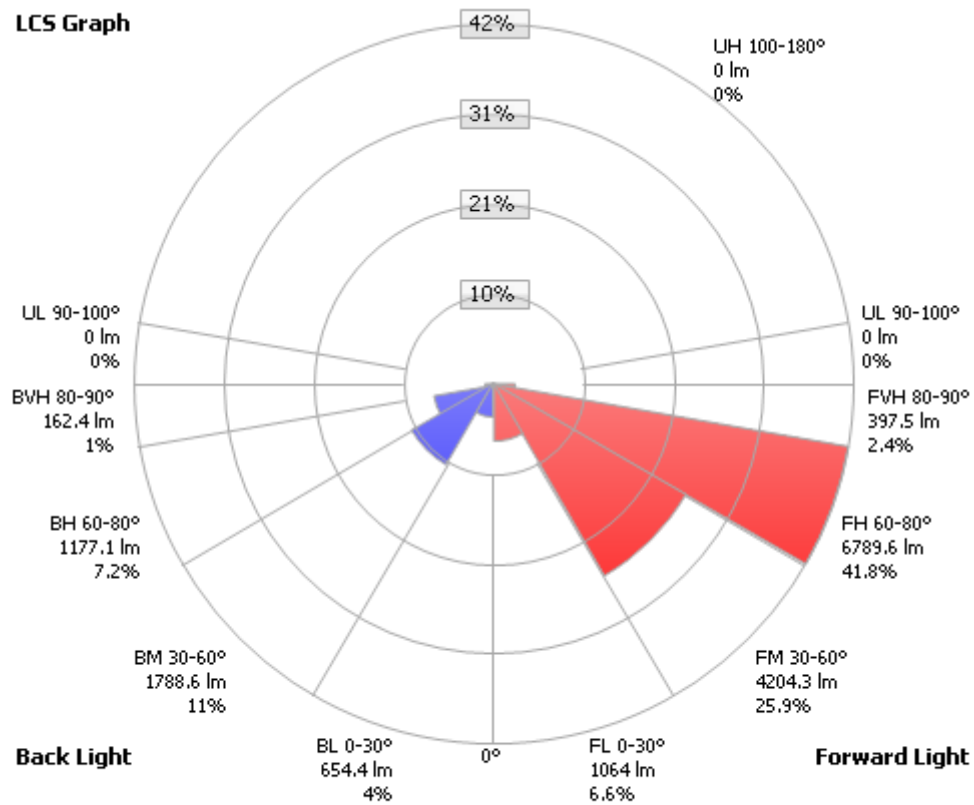
B3 - U0 - G3

FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	1,064.0	6.6%
MEDIUM(30-60):	4,204.3	25.9%
HIGH(60-80):	6,789.6	41.8%
VERY HIGH(80-90):	397.5	2.4%
BACK LIGHT		
LOW(0-30):	654.4	4%
MEDIUM(30-60):	1,788.6	11%
HIGH(60-80):	1,177.1	7.2%
VERY HIGH(80-90):	162.4	1%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.1	0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA164.FW



LCS Graph



Back Light

Forward Light

Scale = Max LCS %

Trapped Light: 0.1lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA164.FW

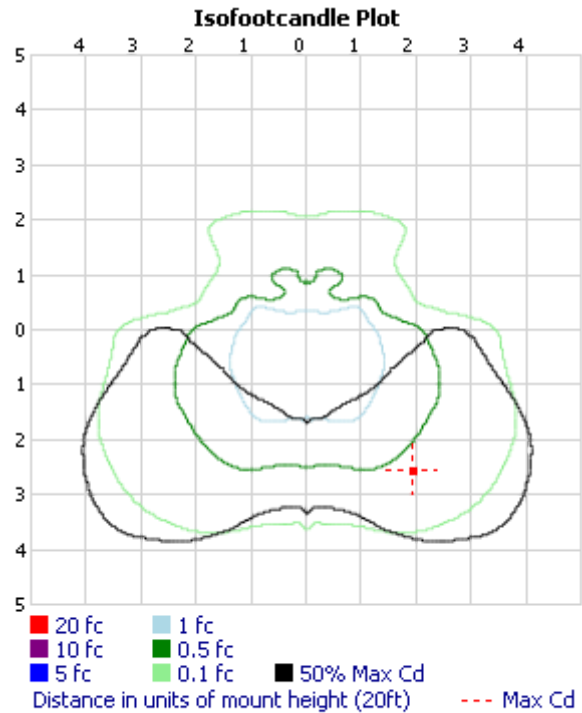
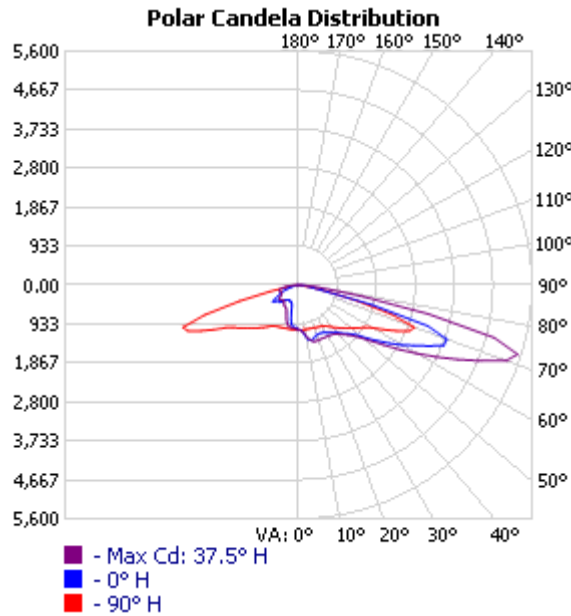
CANDELA TABLE - TYPE C

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070
5	2194	2239	2228	2211	2192	2165	2140	2118	2098	2084	2066	2051	2039	2026	2016	2007	2003	1998	1993
10	2566	2589	2580	2543	2476	2379	2274	2181	2120	2084	2055	2033	2016	2000	1981	1953	1930	1914	1874
15	2598	2589	2646	2701	2720	2643	2465	2285	2151	2090	2050	2017	1980	1900	1784	1647	1538	1462	1334
20	2466	2486	2561	2654	2754	2806	2705	2425	2217	2115	2054	1994	1854	1596	1305	1089	991	959	933
25	2458	2496	2563	2646	2752	2853	2871	2607	2307	2149	2059	1937	1656	1235	983	913	867	847	835
30	2532	2569	2614	2682	2761	2853	2926	2776	2430	2201	2079	1940	1595	1109	902	822	826	834	831
35	2691	2711	2744	2773	2817	2864	2937	2895	2612	2336	2198	2180	1662	1041	825	796	805	813	826
40	2887	2885	2924	2973	2977	2974	3027	3052	2842	2571	2382	2463	1716	935	810	856	924	924	904
45	3195	3169	3223	3291	3286	3228	3252	3283	3084	2820	2545	2479	1688	910	965	1134	1163	1102	1095
50	3661	3780	3851	3902	3817	3706	3663	3634	3390	3124	2676	2339	1648	1073	1333	1490	1488	1303	1112
55	4539	4718	4954	4983	4836	4608	4447	4284	3869	3472	2578	1826	1204	1220	1648	1681	1621	1436	1315
60	5578	5746	6322	6574	6289	5955	5651	5263	4557	3962	2169	1091	899	1084	1678	1961	1804	1515	1274
65	6701	6908	7828	8419	8028	7587	7249	6860	5877	5044	1539	833	806	970	1828	1781	1408	1102	929
70	7351	7385	9155	10427	10190	9648	9354	8596	6928	5750	996	708	822	1012	1583	1307	1075	843	685
75	3560	3257	5617	8490	9600	9444	8772	6641	4035	2833	599	554	759	1063	1053	915	679	509	407
80	636	671	1305	2160	3408	3740	3119	2015	1045	658	371	456	665	733	752	615	441	298	219
85	250	269	513	602	815	996	917	691	357	204	219	356	473	479	477	380	263	129	87
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DSX1.2.LA084.FW

TEST #: LTL22428P4012
 TEST LAB: SCALED PHOTOMETRY
 TEST DATE: 3/22/2016
 CATALOG: DSX1.2.LA084.FW
 DESCRIPTION: D-SERIES 1 LUMINAIRE
 SERIES: DSX1
 LAMP CATALOG: LA084
 LAMP: LED C.8000LM-4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 8348.1, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 68
 LUMINOUS OPENING: RECTANGLE (L: 11.04", W: 9.72")
 MAX CD: 5,508.0 AT HORIZONTAL: 37.5°, VERTICAL: 72.5°
 ROADWAY CLASS: SHORT, TYPE IV



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

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 LTL22428P4012
 VISUAL PHOTOMETRIC TOOL

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OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA084.FW

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	883.4	10.6%
0-40	1,548.4	18.5%
0-60	3,965.2	47.5%
60-90	4,382.8	52.5%
70-100	2,162.5	25.9%
90-120	0.000	0%
0-90	8,348.1	100%
90-180	0.000	0%
0-180	8,348.1	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	104.7	1.3%	90-100	0.000	0%
10-20	308.6	3.7%	100-110	0.000	0%
20-30	470.2	5.6%	110-120	0.000	0%
30-40	665.0	8.0%	120-130	0.000	0%
40-50	959.3	11.5%	130-140	0.000	0%
50-60	1,457.5	17.5%	140-150	0.000	0%
60-70	2,220.3	26.6%	150-160	0.000	0%
70-80	1,873.9	22.4%	160-170	0.000	0%
80-90	288.6	3.5%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE IV, SHORT	
MAX CD, 90 DEG VERT:	0.000	
MAX CD, 80 TO <90 DEG:	1,985.6	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	6,403.4	76.7%
DOWNWARD HOUSE SIDE:	1,944.6	23.3%
DOWNWARD TOTAL:	8,348.0	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	8,348.0	100%

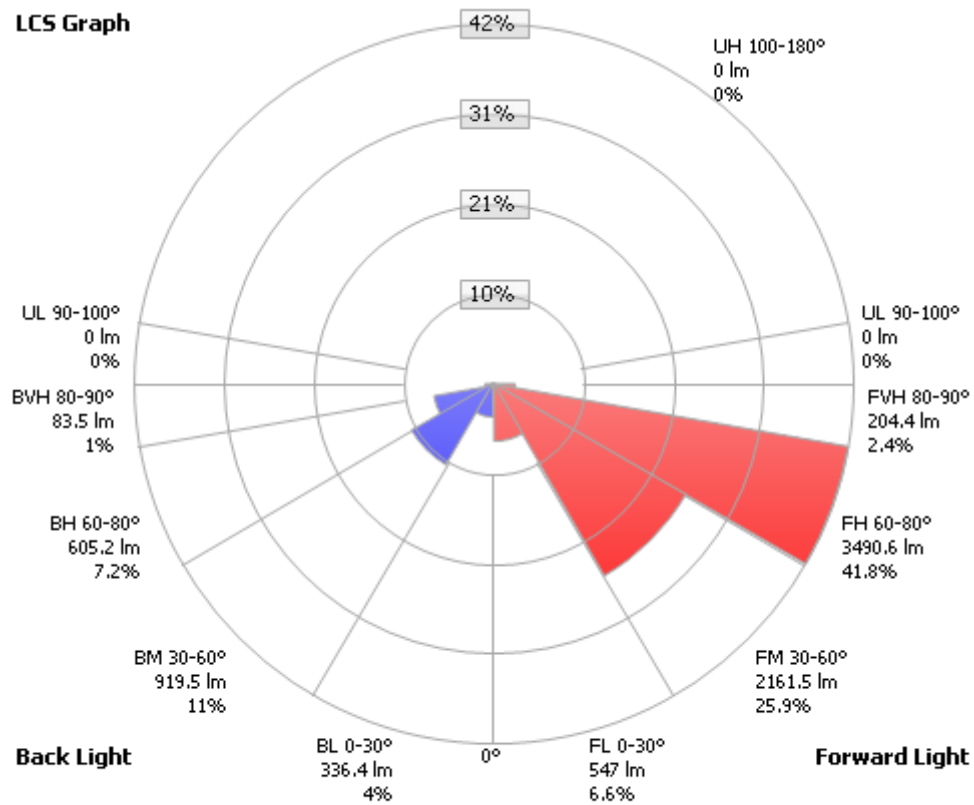
LCS TABLE
BUG RATING
B2 - U0 - G2

FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	547.0	6.6%
MEDIUM(30-60):	2,161.5	25.9%
HIGH(60-80):	3,490.6	41.8%
VERY HIGH(80-90):	204.4	2.4%
BACK LIGHT		
LOW(0-30):	336.4	4%
MEDIUM(30-60):	919.5	11%
HIGH(60-80):	605.2	7.2%
VERY HIGH(80-90):	83.5	1%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.0	0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA084.FW



LCS Graph



Back Light

Forward Light

Scale = Max LCS %

Trapped Light: 0lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DSX1.2.LA084.FW

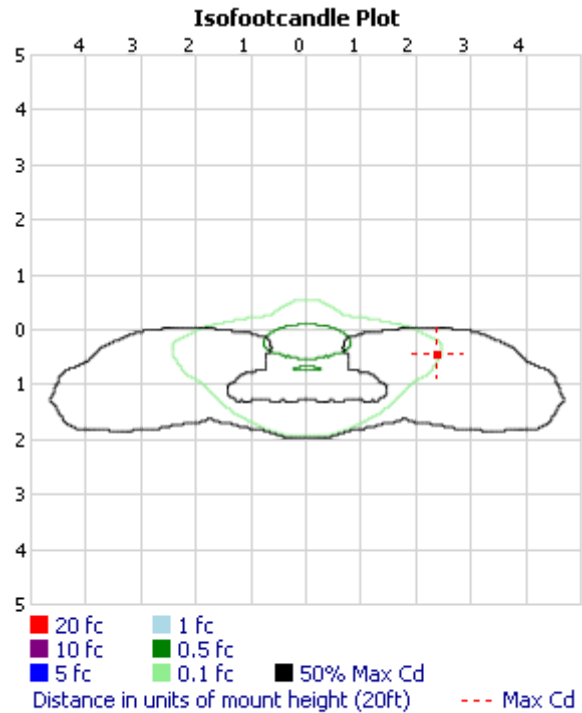
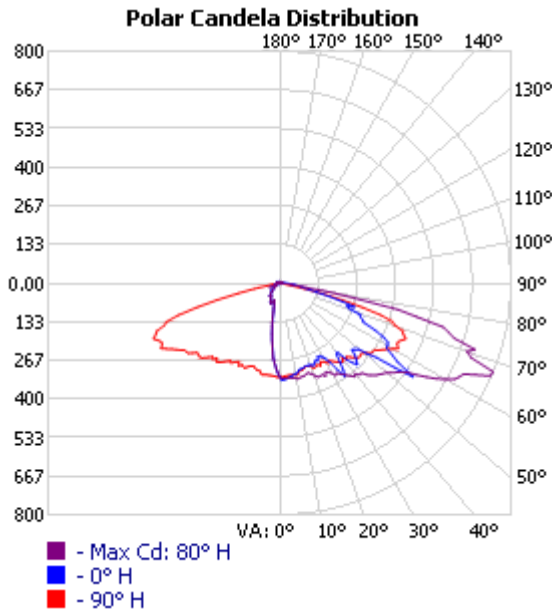
CANDELA TABLE - TYPE C

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064	1064
5	1128	1151	1145	1137	1127	1113	1100	1089	1079	1071	1062	1054	1048	1042	1037	1032	1030	1027	1025
10	1319	1331	1326	1307	1273	1223	1169	1121	1090	1072	1057	1045	1037	1028	1018	1004	992	984	963
15	1336	1331	1360	1389	1399	1359	1267	1174	1106	1074	1054	1037	1018	977	917	847	791	752	686
20	1268	1278	1317	1364	1416	1443	1391	1247	1140	1088	1056	1025	953	821	671	560	509	493	480
25	1264	1283	1318	1360	1415	1467	1476	1340	1186	1105	1059	996	851	635	505	470	446	435	429
30	1302	1321	1344	1379	1420	1467	1504	1427	1249	1131	1069	997	820	570	464	422	425	429	427
35	1384	1394	1411	1426	1448	1473	1510	1488	1343	1201	1130	1121	855	535	424	409	414	418	425
40	1484	1483	1503	1529	1531	1529	1556	1569	1461	1322	1225	1266	882	481	416	440	475	475	465
45	1643	1629	1657	1692	1689	1659	1672	1688	1586	1450	1308	1275	868	468	496	583	598	567	563
50	1882	1944	1980	2006	1962	1905	1883	1868	1743	1606	1376	1203	847	551	685	766	765	670	572
55	2333	2426	2547	2562	2486	2369	2286	2202	1989	1785	1325	939	619	627	847	864	834	738	676
60	2868	2954	3250	3380	3233	3061	2905	2706	2343	2037	1115	561	462	557	862	1008	927	779	655
65	3445	3552	4025	4328	4127	3900	3727	3527	3021	2593	791	428	414	499	940	915	724	566	478
70	3779	3797	4706	5361	5239	4960	4809	4419	3562	2956	512	364	422	520	814	672	553	433	352
75	1830	1675	2888	4365	4935	4855	4510	3414	2074	1456	308	285	390	546	541	470	349	262	209
80	327	345	671	1111	1752	1923	1604	1036	537	338	191	234	342	377	387	316	227	153	113
85	129	138	264	310	419	512	472	355	183	105	113	183	243	247	245	196	135	66	45
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OUTDOOR PHOTOMETRIC REPORT

CATALOG: DEW.LA014.NR.CGL

TEST #: B16069 + S16609(S)
 TEST LAB: HOLOPHANE EUROPE PHOTOMETRIC LAB
 TEST DATE: 7/10/2017
 CATALOG: DEW.LA014.NR.CGL
 DESCRIPTION: DENVER ELITE WALL
 SERIES: DENVER ELITE WALL
 LAMP CATALOG: LA014
 LAMP: LED C.1000LM - 4000K
 LAMP OUTPUT: TOTAL LUMINAIRE LUMENS: 1226.2, **ABSOLUTE PHOTOMETRY ***
 INPUT WATTAGE: 12
 LUMINOUS OPENING: RECTANGLE W/LUMINOUS SIDES (L: 4.68", W: 12.6", H: 1.8")
 MAX CD: 798.6 AT HORIZONTAL: 80°, VERTICAL: 67.5°
 ROADWAY CLASS: MEDIUM, TYPE III



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.

*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

VISUAL PHOTOMETRIC TOOL 1.2.46 COPYRIGHT 2017, ACUITY BRANDS LIGHTING.

THIS PHOTOMETRIC REPORT HAS BEEN GENERATED USING METHODS RECOMMENDED BY THE IESNA. CALCULATIONS ARE BASED ON PHOTOMETRIC DATA PROVIDED BY THE MANUFACTURER, AND THE ACCURACY OF THIS PHOTOMETRIC REPORT IS DEPENDENT ON THE ACCURACY OF THE DATA PROVIDED. END-USER ENVIRONMENT AND APPLICATION (INCLUDING, BUT NOT LIMITED TO, VOLTAGE VARIATION AND DIRT ACCUMULATION) CAN CAUSE ACTUAL PHOTOMETRIC PERFORMANCE TO DIFFER FROM THE PERFORMANCE CALCULATED USING THE DATA PROVIDED BY THE MANUFACTURER. THIS REPORT IS PROVIDED WITHOUT WARRANTY AS TO ACCURACY, COMPLETENESS, RELIABILITY OR OTHERWISE. IN NO EVENT WILL ACUITY BRANDS LIGHTING BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF THIS REPORT.

B16069 + S16609(S)
 VISUAL PHOTOMETRIC TOOL

PUBLISH
 PAGE 1 OF 4

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DEW.LA014.NR.CGL

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	195.4	15.9%
0-40	335.9	27.4%
0-60	746.7	60.9%
60-90	446.7	36.4%
70-100	202.7	16.5%
90-120	22.7	1.9%
0-90	1,193.4	97.3%
90-180	32.8	2.7%
0-180	1,226.2	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	28.0	2.3%	90-100	9.9	0.8%
10-20	66.5	5.4%	100-110	5.3	0.4%
20-30	100.8	8.2%	110-120	7.6	0.6%
30-40	140.5	11.5%	120-130	7.0	0.6%
40-50	179.4	14.6%	130-140	2.3	0.2%
50-60	231.4	18.9%	140-150	0.4	0%
60-70	253.9	20.7%	150-160	0.3	0%
70-80	160.0	13.0%	160-170	0.001	0%
80-90	32.8	2.7%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE III, MEDIUM	
MAX CD, 90 DEG VERT:	32.2	
MAX CD, 80 TO <90 DEG:	241.9	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	1,012.1	82.5%
DOWNWARD HOUSE SIDE:	181.3	14.8%
DOWNWARD TOTAL:	1,193.4	97.3%
UPWARD STREET SIDE:	16.7	1.4%
UPWARD HOUSE SIDE:	16.1	1.3%
UPWARD TOTAL:	32.8	2.7%
TOTAL LUMENS:	1,226.2	100%

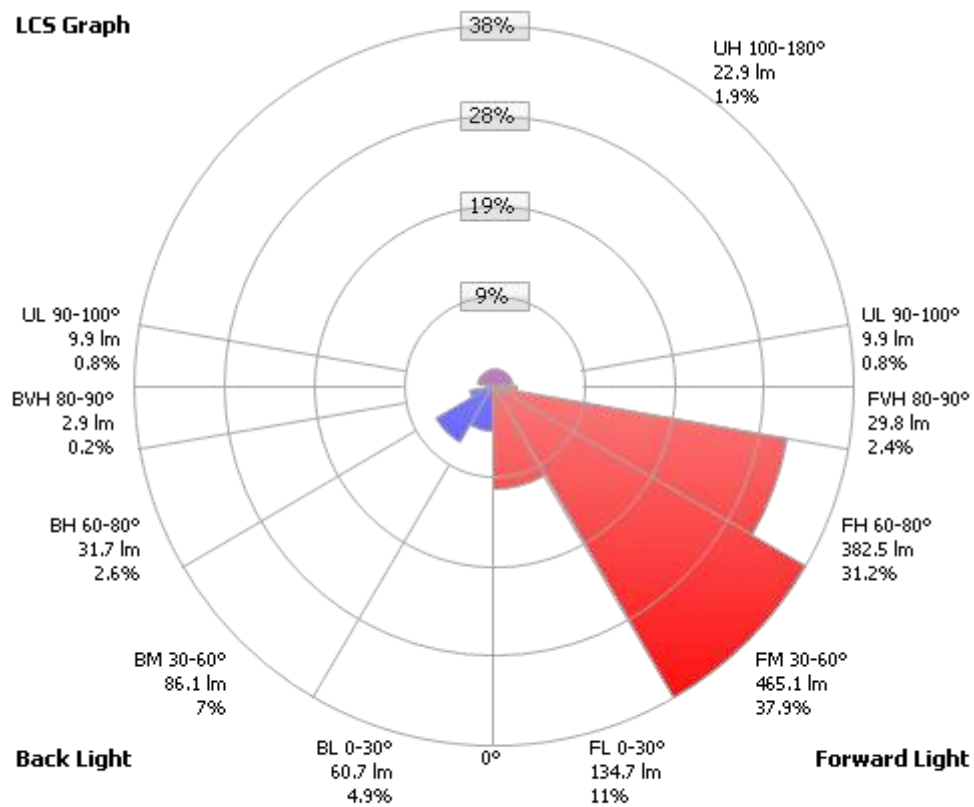
LCS TABLE
BUG RATING
B0 - U2 - G1

FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	134.7	11%
MEDIUM(30-60):	465.1	37.9%
HIGH(60-80):	382.5	31.2%
VERY HIGH(80-90):	29.8	2.4%
BACK LIGHT		
LOW(0-30):	60.7	4.9%
MEDIUM(30-60):	86.1	7%
HIGH(60-80):	31.7	2.6%
VERY HIGH(80-90):	2.9	0.2%
UPLIGHT		
LOW(90-100):	9.9	0.8%
HIGH(100-180):	22.9	1.9%
TRAPPED LIGHT:	0.0	0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DEW.LA014.NR.CGL



LCS Graph



Back Light

Forward Light

Scale = Max LCS %

Trapped Light: 0lm, 0%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: DEW.LA014.NR.CGL
**CANDELA TABLE - TYPE C**

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323
5	329	329	333	332	333	332	333	333	328	320	313	303	294	284	277	267	261	259	258
10	318	320	323	323	325	328	334	337	334	321	299	275	248	217	195	176	164	152	149
15	305	306	307	305	309	315	323	328	331	309	277	233	189	144	112	89	81	74	74
20	301	304	303	305	308	315	324	335	336	305	259	191	134	87	72	66	68	67	66
25	294	298	299	305	314	327	337	350	348	310	241	154	91	69	69	70	73	72	73
30	294	299	296	298	312	332	348	363	358	314	219	120	75	67	66	64	65	61	61
35	393	384	331	335	317	343	380	399	385	330	200	96	73	62	57	56	57	53	54
40	311	305	291	357	342	368	396	425	408	337	172	76	56	46	47	46	48	46	44
45	375	385	358	325	341	408	443	470	449	364	169	65	48	45	46	43	39	37	33
50	355	349	325	330	331	365	471	532	481	373	161	48	57	46	39	37	27	22	38
55	564	555	455	388	323	350	484	598	535	402	142	46	39	41	36	25	18	13	11
60	430	438	442	452	425	369	450	675	663	453	108	50	35	35	21	13	11	10	7
65	320	310	322	366	405	449	517	627	749	466	66	30	22	15	11	8	6	6	2
70	254	243	243	224	246	332	671	579	688	424	40	18	7	10	4	3	2	2	4
75	179	202	184	177	177	173	366	695	586	226	14	5	5	4	0	8	16	12	13
80	78	76	84	97	95	115	201	209	170	27	3	1	1	3	3	4	4	7	6
85	42	45	48	62	74	70	64	38	14	3	7	5	6	8	7	8	9	10	10
90	20	20	23	32	20	18	32	13	3	4	7	5	5	6	6	5	8	8	9
95	10	11	12	18	12	10	19	7	4	6	8	5	6	7	7	6	8	9	10
100	1	2	2	4	4	2	5	1	4	7	9	6	6	8	9	7	9	10	11
105	6	6	6	7	11	11	6	10	2	0	0	0	0	0	0	0	1	1	1
110	2	4	1	7	10	5	1	1	6	7	10	4	8	11	8	9	7	8	8
115	3	4	2	7	9	6	3	3	6	7	10	5	8	10	8	9	7	8	8
120	4	4	4	7	9	7	5	4	7	8	10	6	8	9	8	9	8	9	9
125	5	5	5	7	8	8	7	6	8	8	10	6	7	9	8	9	8	9	9
130	6	5	7	8	8	8	9	8	9	8	9	7	7	8	8	9	9	9	10
135	3	3	3	2	1	1	2	1	1	1	2	1	1	2	2	2	2	2	2
140	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	1	2	1	1	1	1	0	0	1	1	0	1	1	0	1	0	0	0	0
150	2	4	2	2	2	2	1	2	4	2	2	3	2	1	2	1	1	1	1
155	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0