REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G103858894 | Date: March 13, 2019

REPORT NO. 103858894LAX-004

TEST OF ONE DL SQL H/H 35K 4'

MODEL NO. DL- SQL- H/H- 35K- 4' (DOBLE-LED SQL LENS)
LED MODEL NO. OSRAM SYLVANIA
DRIVER MODEL NO. OSRAM SYLVANIA

RENDERED TO

PRIMUS LIGHTING INC
3570 LEXINGTON AVE
EL MONTE, CA 91731

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00958862-6.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number DL- SQL- H/H- 35K- 4' (DOBLE-LED SQL LENS). The sample was received by Intertek on March 5, 2019, in undamaged condition and one sample was tested as received. The sample designation was LAN1903051054-001D.

DATES OF TESTS: March 8, 2019 through March 12, 2019.

SUMMARY

Model No.:	DL- SQL- H/H- 35K- 4' (DOBLE-LED SQL LENS)
Description:	DL SQL H/H 35K 4'

Criteria	Result
Total Lumen Output (Lumens)	8745
Total Power (W)	109.1
Luminaire Efficacy (LPW)	80.16
Power Factor at 120Vac	0.998
Power Factor at 277Vac	0.978
Current ATHD % at 120Vac	5.92
Current ATHD % at 277Vac	12.20
Correlated Color Temperature (CCT - K)	3462
Color Rendering Index (CRI - Ra)	81.6
Color Rendering Index (CRI - R9)	9.4
DUV	0.001
Chromaticity Coordinate (x)	0.407
Chromaticity Coordinate (y)	0.391
Chromaticity Coordinate (u')	0.237
Chromaticity Coordinate (v')	0.512

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBU	VBU	03/12/19
AC Source	CW1251P	000944	VBU	VBU	03/12/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	03/12/19
Tape Measure	33-428	001491	04/24/18	04/24/19	03/12/19
Magnetic Level	581-9	001610	10/31/18	10/31/19	03/12/19
Thermometer	DPi8-C24	001782	09/21/18	09/21/19	03/12/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	03/12/19
3m Sphere	CSTM-LMS-3M-3020	000830	VBU	VBU	03/08/19
Spectrometer	CDS-3020-T	000834	VBU	VBU	03/08/19
Power Supply (AC 3P / DC)	CSW5550-208-LAN	001339	VBU	VBU	03/08/19
Power Meter	WT330	001319	08/13/18	08/13/19	03/08/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	03/08/19
DC Power Supply	LPS-100-0833	000832	01/31/19	01/31/20	03/08/19
Network TC Reader	iSD-TC	000824	02/01/19	02/01/20	03/08/19

TEST METHODS

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS-3020 High Sensitivity Multi Channel Spectrometer and Two Meter or Three Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

Intertek

RESULTS OF TEST

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

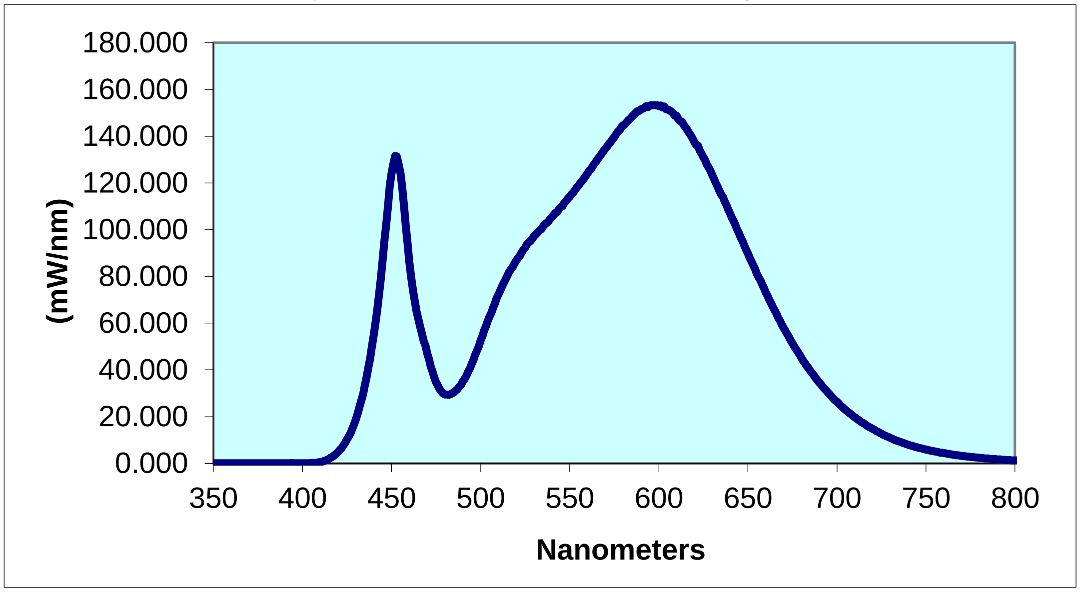
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)
LAN1903051054-001D	Up	120.0	918.5	110.0	0.998	5.92
		276.9	398.5	108.0	0.978	12.20

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
3462	81.6	9.4	0.001	0.407	0.391	0.237	0.512

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.000	440	54.95	530	97.21	620	137.5	710	19.75
355	0.000	445	87.30	535	101.3	625	131.2	715	17.10
360	0.000	450	124.4	540	105.5	630	123.5	720	14.77
365	0.000	455	123.9	545	109.6	635	115.1	725	12.74
370	0.000	460	86.34	550	114.2	640	106.9	730	10.89
375	0.000	465	62.07	555	118.8	645	98.39	735	9.312
380	0.000	470	47.07	560	124.1	650	89.84	740	8.033
385	0.000	475	34.63	565	129.4	655	81.34	745	6.862
390	0.000	480	29.46	570	134.6	660	73.26	750	5.923
395	0.000	485	30.39	575	139.7	665	65.55	755	5.067
400	0.000	490	34.91	580	144.6	670	58.11	760	4.356
405	0.137	495	42.53	585	148.5	675	51.41	765	3.709
410	0.602	500	52.54	590	151.5	680	45.18	770	3.209
415	1.984	505	62.92	595	153.2	685	39.75	775	2.730
420	4.903	510	72.30	600	153.0	690	34.71	780	2.344
425	10.18	515	80.37	605	151.4	695	30.22		
430	18.84	520	86.84	610	148.8	700	26.39		
435	33.33	525	92.30	615	143.7	705	22.78		

Spectral Data Over Visible Wavelengths



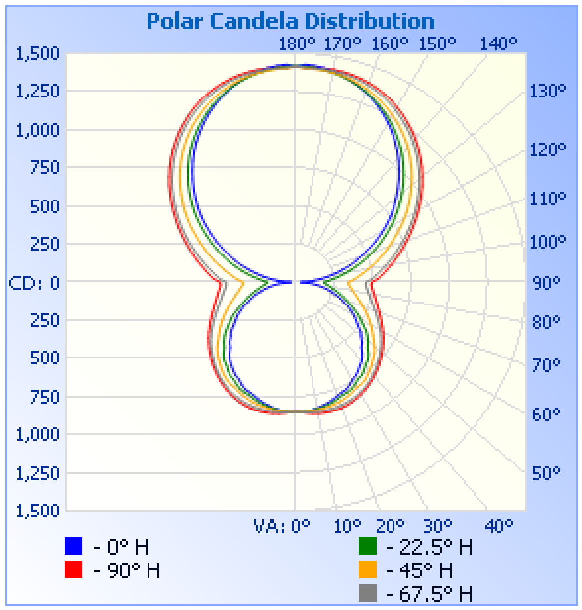
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1903051054-001D	Up	120.0	911.3	109.1	0.998	8745	80.16

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	850	850	850	850	850
5	850	850	849	856	862
10	838	843	850	862	875
15	818	830	844	864	879
20	792	812	834	861	877
25	777	796	819	852	868
30	738	772	798	836	850
35	708	747	784	814	827
40	669	707	750	786	798
45	604	668	712	752	766
50	553	614	670	716	731
55	494	558	614	678	694
60	439	487	566	634	655
65	374	417	516	590	615
70	307	353	466	549	578
75	240	297	421	514	547
80	174	246	383	485	521
85	109	207	356	463	500
90	32	186	343	456	495
95	120	243	407	524	565
100	215	320	475	587	626
105	316	410	550	657	693
110	425	506	632	732	765
115	531	605	720	811	841
120	642	707	810	892	919
125	753	808	899	973	1000
130	852	904	984	1052	1077
135	951	995	1066	1125	1150
140	1044	1080	1140	1192	1216
145	1128	1157	1206	1252	1275
150	1204	1224	1263	1302	1324
155	1270	1283	1311	1344	1363
160	1326	1331	1349	1375	1391
165	1370	1368	1377	1395	1408
170	1404	1394	1395	1407	1415
175	1424	1410	1403	1408	1412
180	1414	1414	1414	1414	1414

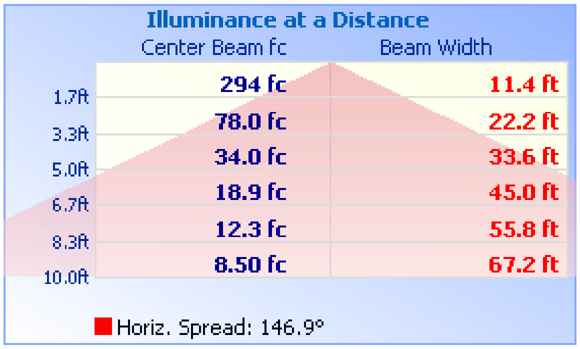


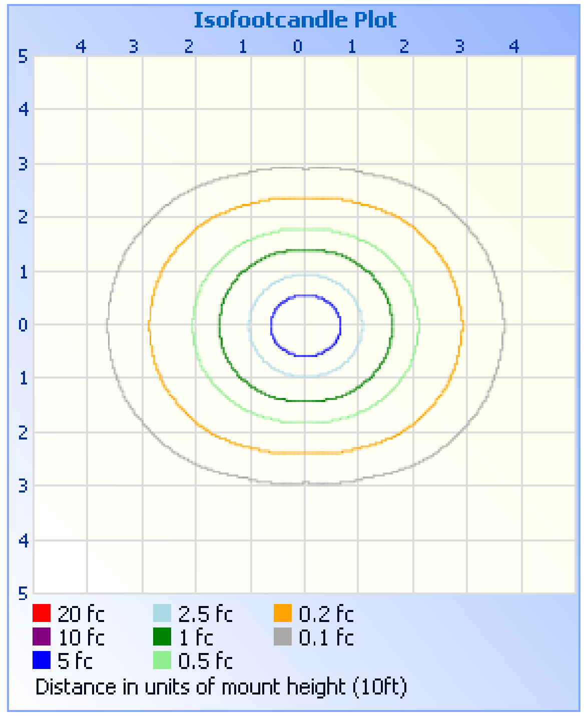
RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light	Isoillumination Plot





Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	699.9	8.0
0-40	1186	13.6
0-60	2277	26.0
60-90	1296	14.8
0-90	3573	40.9
90-180	5172.0	59.1
0-180	8745	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	81.4	0.9
10-20	239.4	2.7
20-30	379.0	4.3
30-40	486.2	5.6
40-50	544.1	6.2
50-60	546.7	6.3
60-70	500.5	5.7
70-80	430.6	4.9
80-90	364.6	4.2
90-100	415.1	4.7
100-110	561.7	6.4
110-120	699.5	8.0
120-130	795.2	9.1
130-140	817.2	9.3
140-150	753.4	8.6
150-160	605.6	6.9
160-170	390.5	4.5
170-180	134.3	1.5

PICTURES (not to scale)

CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

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Report Reviewed By:

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Lighting Division

Attachment: None