



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G103858894

Date: March 13, 2019

REPORT NO. 103858894LAX-003

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

MODEL NO. DL- RLR- H/H- 35K- 4' (DOUBLE-LED RLR 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- RLR- H/H- 35K- 4' (DOUBLE-LED RLR 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 LAN1903051054-001C.

DATES OF TESTS: March 7, 2019 through March 8, 2019.



SUMMARY

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

Criteria	Result
Total Lumen Output (Lumens)	8349
Total Power (W)	109.3
Luminaire Efficacy (LPW)	76.39
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)	3457
Color Rendering Index (CRI - Ra)	81.6
Color Rendering Index (CRI - R9)	9.6
DUV	0.001
Chromaticity Coordinate (x)	0.407
Chromaticity Coordinate (y)	0.391
Chromaticity Coordinate (u')	0.237
Chromaticity Coordinate (v')	0.511

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBU	VBU	03/07/19
AC Source	CW1251P	000944	VBU	VBU	03/07/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	03/07/19
Tape Measure	33-428	001491	04/24/18	04/24/19	03/07/19
Magnetic Level	581-9	001610	10/31/18	10/31/19	03/07/19
Thermometer	DPI8-C24	001782	09/21/18	09/21/19	03/07/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	03/07/19
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.

RESULTS OF TEST

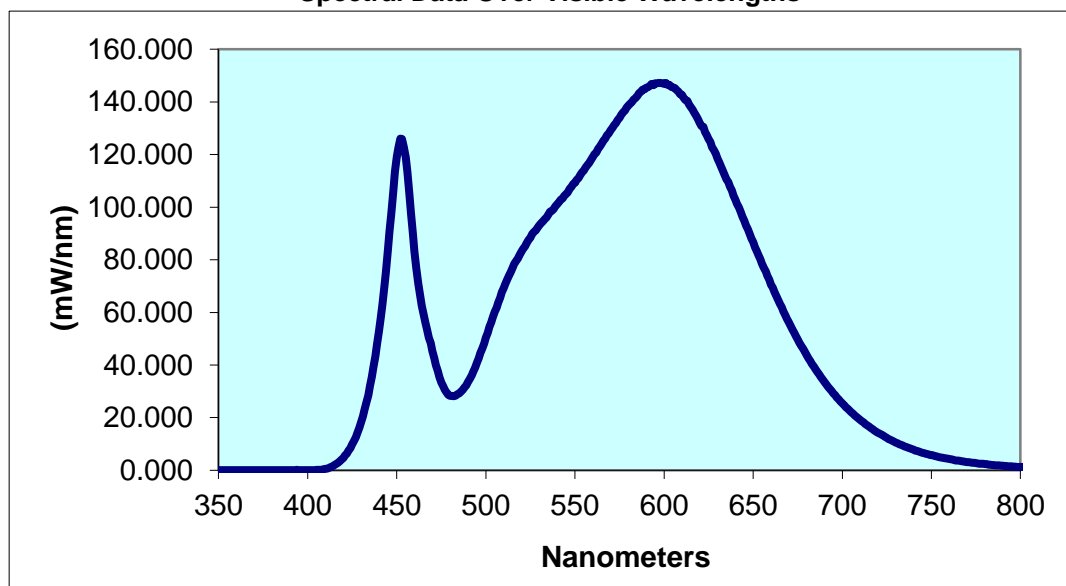
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

Intertek				Input	Input	Input	Input	Current
Sample No.		Base		Voltage	Current	Power	Power	ATHD (%)
		Orientation		{Vac}	(mA)	(Watts)	Factor	
LAN1903051054-001C		Up		120.0	918.5	110.0	0.998	5.92
				276.9	398.5	108.0	0.978	12.20
				CIE 31'		CIE 31'		CIE 76'
Correlated Color	CRI	CRI		Chromaticity	Chromaticity	Chromaticity		Chromaticity
Temperature (K)	-Ra	-R9	DUV	Coordinate (x)	Coordinate (y)	Coordinate (u')		Coordinate (v')
3457	81.6	9.6	0.001	0.407	0.391	0.237		0.511

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.000	440	52.71	530	93.13	620	132.1	710	19.12
355	0.000	445	83.62	535	97.14	625	125.9	715	16.58
360	0.000	450	119.2	540	101.1	630	118.5	720	14.33
365	0.000	455	118.9	545	105.0	635	110.6	725	12.36
370	0.000	460	83.03	550	109.4	640	102.9	730	10.55
375	0.000	465	59.63	555	113.9	645	94.82	735	9.044
380	0.000	470	45.28	560	119.1	650	86.64	740	7.779
385	0.000	475	33.31	565	124.1	655	78.45	745	6.645
390	0.000	480	28.31	570	129.2	660	70.63	750	5.749
395	0.000	485	29.17	575	133.9	665	63.33	755	4.930
400	0.000	490	33.52	580	138.7	670	56.18	760	4.248
405	0.117	495	40.76	585	142.4	675	49.69	765	3.623
410	0.576	500	50.41	590	145.5	680	43.69	770	3.113
415	1.921	505	60.23	595	147.1	685	38.45	775	2.650
420	4.683	510	69.29	600	146.9	690	33.63	780	2.285
425	9.781	515	77.05	605	145.5	695	29.26		
430	18.13	520	83.22	610	142.8	700	25.51		
435	32.01	525	88.40	615	138.0	705	22.04		

Spectral Data Over Visible Wavelengths



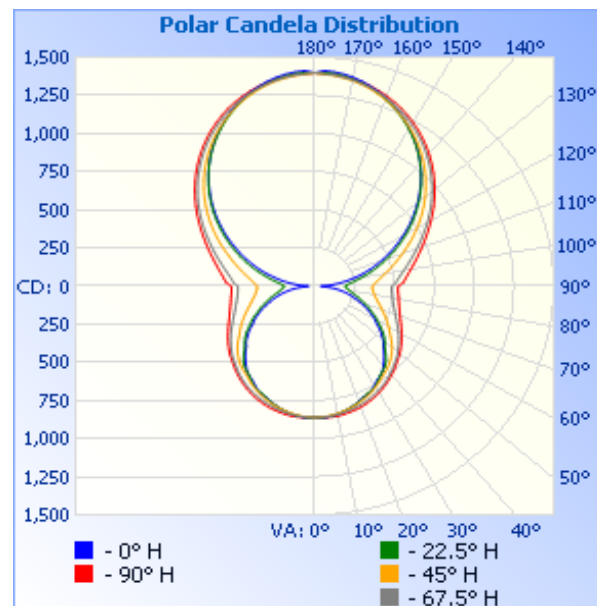
RESULTS OF TEST (cont'd)

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)
LAN1903051054-001C	Up	120.0	912.7	109.3	0.998	8349	76.39

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	862	862	862	862	862
5	862	860	856	860	864
10	850	849	846	853	863
15	830	830	832	842	855
20	805	807	813	830	844
25	785	778	790	814	828
30	751	758	764	794	806
35	718	717	733	770	782
40	672	686	707	742	754
45	616	630	675	711	724
50	564	574	634	680	696
55	501	521	581	643	663
60	436	457	536	606	629
65	370	393	493	569	597
70	300	334	450	538	570
75	234	282	413	513	549
80	166	237	385	496	535
85	99	206	368	485	525
90	40	193	362	483	525
95	114	224	396	524	571
100	208	287	443	564	610
105	309	366	503	615	656
110	413	457	573	674	710
115	521	552	651	740	772
120	628	652	735	812	839
125	737	752	820	887	911
130	841	850	904	961	982
135	940	944	985	1033	1053
140	1032	1032	1061	1101	1120
145	1116	1114	1132	1164	1182
150	1191	1186	1196	1221	1237
155	1257	1249	1253	1272	1286
160	1312	1302	1301	1314	1326
165	1356	1345	1339	1348	1357
170	1389	1377	1368	1373	1379
175	1409	1396	1386	1389	1392
180	1398	1398	1398	1398	1398

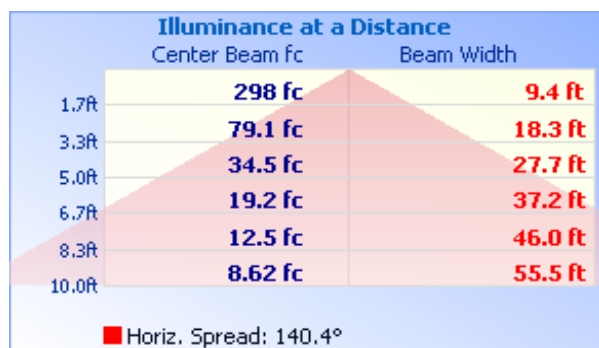


RESULTS OF TEST (cont'd)

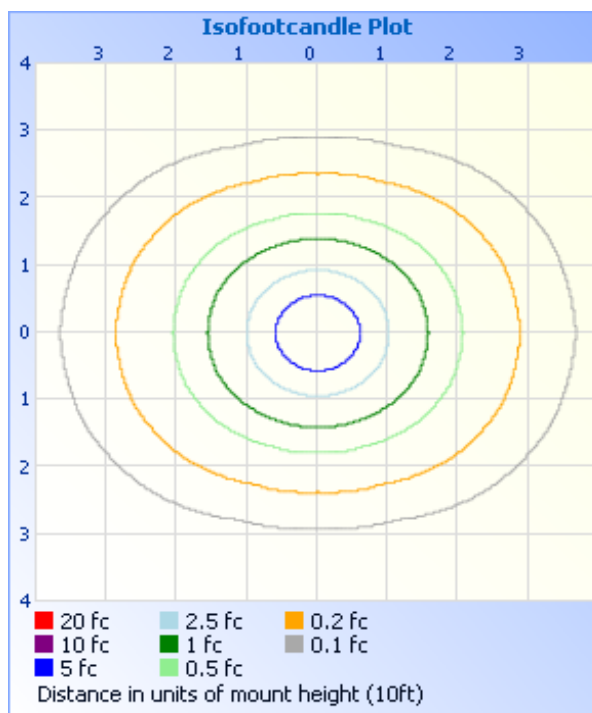
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	686.4	8.2
0-40	1152	13.8
0-60	2191	26.2
60-90	1281	15.3
0-90	3472	41.6
90-180	4876.0	58.4
0-180	8349	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	81.8	1.0
10-20	236.5	2.8
20-30	368.2	4.4
30-40	465.6	5.6
40-50	518.7	6.2
50-60	520.5	6.2
60-70	481.2	5.8
70-80	424.1	5.1
80-90	375.9	4.5
90-100	408.0	4.9
100-110	521.3	6.2
110-120	642.3	7.7
120-130	734.4	8.8
130-140	763.6	9.1
140-150	713.1	8.5
150-160	581.2	7.0
160-170	380.2	4.6
170-180	132.3	1.6

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:



Vladimir Kozak
Engineering Supervisor
Lighting Division

Attachment: None

Report Reviewed By:



Erik Linares
Associate Engineer
Lighting Division