

REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G103961645

Date: July 2, 2019

REPORT NO. 103961645LAX-016A

TEST OF ONE LED LUMINAIRE

MODEL NO. ALD-R-200W-HV-30K-T4
LED MODEL NO. GWP9LR34.PM-M2M3
DRIVER MODEL NO. ESD-240S460DT
RETROFIT MODEL NO. LITHONIA KAD CONTOUR SERIES

RENDERED TO

SIMPLYLEDs LLC
111 W. 34TH STREET
GARDEN CITY, IDAHO, 83714

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

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-00983281.

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

UL 1598-2009: Underwriters Laboratories Inc. Standard for Safety - Luminaires

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number ALD-R-200W-HV-30K-T4. The sample was received by Intertek on March 19, 2019, in undamaged condition and one sample was tested as received. The sample designation was LAN1903191345-010.

DATES OF TESTS: June 6, 2019 through July 2, 2019.

SUMMARY

Model No.: ALD-R-200W-HV-30K-T4 Description: LED Luminaire

Criteria	Result
Total Lumen Output (Lumens)	24737
Total Power (W)	199.55
Luminaire Efficacy (LPW)	124
BUG Rating	B3-U0-G3
IES Classification	Type IV
Longitudinal Classification	Very Short
Maximum In-Situ Source Temperature Point (°C)	64
Maximum In-Situ Driver Case Temperature (°C)	55.5

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBV	VBV	06/06/19
AC Source	CW1251P	001334	02/19/19	02/19/20	06/06/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	06/06/19
Thermometer	DPI8-C24	001782	09/21/18	09/21/19	06/06/19
AC Source	CW1251P-V	001336	VBV	VBV	07/02/19
Power Meter	WT330	001322	11/28/18	11/28/19	07/02/19
Thermometer	52 Series II	001265	10/04/18	10/04/19	07/02/19
True RMS Multimeter	87 III	000029	09/27/18	09/27/19	07/02/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	07/02/19
Variac 3 phase	6020E-3Y	001096	VBV	VBV	07/02/19

TEST METHODS

Seasoning in Sample Orientation – LED Products

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

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.

BUG Ratings (Backlight, Uplight, Glare) – for Outdoor Fixtures Only

Zonal Lumens were calculated and grouped using the formula in IESNA TM-15-11 for each zone as defined in the BUG addendum. The maximum lumen rating in each zone was compared against the BUG zonal requirements of Energy Star. Photometric Toolbox software was used to calculate results.

In-Situ Maximum Measured Power Supply Case and LED Source Point Temperature

Power supply case and/or LED source operating temperature measurements were taken on one test sample per model with a thermocouple and Fluke 87 temperature meter. The SSL sample was allowed to reach thermal equilibrium for seven and a half hours before measurements were taken. Power supply or source temperature measurements were measured at the TMPPS or TS point as indicated by the included diagram in accordance with manufacturers declared hot spot location, or at a hot spot location found with a thermal camera when no diagram from the manufacturer is given. The maximum temperature was recorded for the sample. A simulated ceiling or other enclosure may be used in accordance to UL 1598 or UL 153 as applicable.

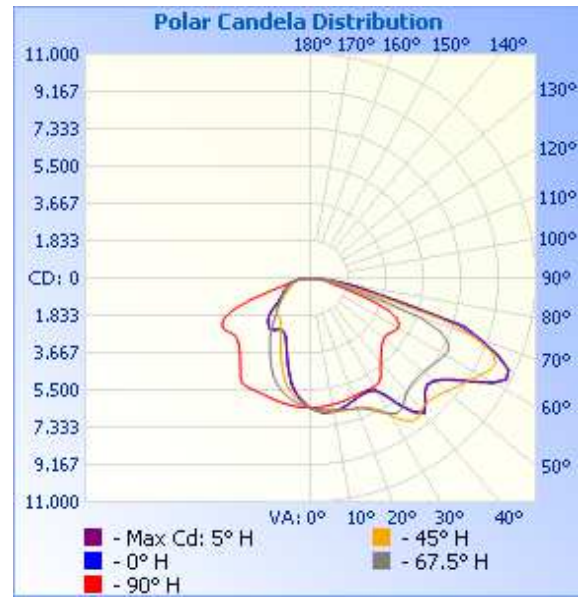
RESULTS OF TEST (cont'd)

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

Intertek Sample No.	Base Orient ation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD	Absolute Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1903191345-010	UP	277.1	726.1	199.6	0.992	8.5	24737	124
		480.1	442.6	201.3	0.947	10.99		

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	25	45	67.5	90
0	6374	6374	6374	6374	6374
5	6612	6607	6574	6497	6345
10	6642	6665	6670	6580	6304
15	6525	6607	6723	6669	6248
20	6344	6506	6804	6816	6176
25	6230	6468	7026	7147	6153
30	6355	6805	7753	7682	6174
35	7573	7988	8600	7797	5963
40	8645	8458	8441	7325	5332
45	7884	8120	8377	7160	4904
50	7844	8401	8652	7176	4658
55	8702	8946	9043	7339	4716
60	10253	9954	9549	7574	4922
65	10689	10344	9964	7399	4632
70	8880	7984	8582	5784	3128
75	4732	3673	3641	1840	1291
80	2154	1394	1350	1027	764
85	742	524	672	546	279
90	0	0	0	0	0



RESULTS OF TEST (cont'd)

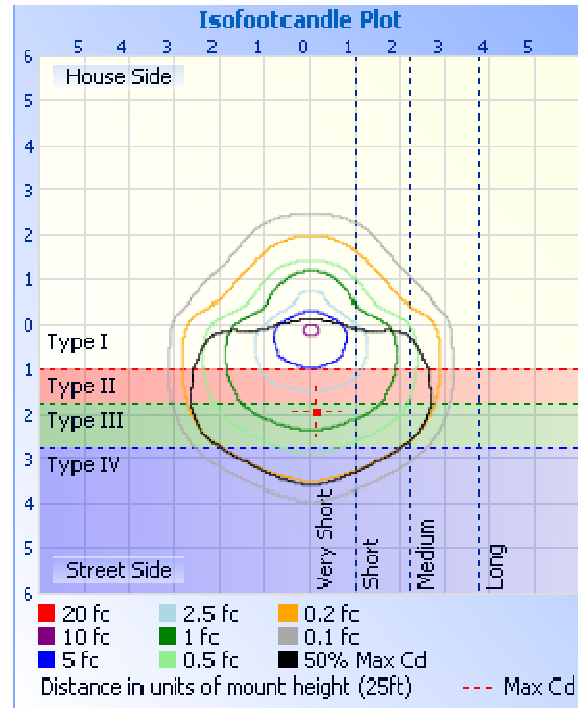
Illumination Plots

Mounting Height: 25 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4721	19.1
0-40	8172	33.0
0-60	16759	67.7
60-90	7978	32.3
0-90	24737	100.0
90-180	0.0	0.0
0-180	24737	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	2823	11.4
FM	(30-60)	9031	36.5
FH	(60-80)	6135	24.8
FVH	(80-90)	323.3	1.3
BL	(0-30)	1899.3	7.7
BM	(30-60)	3007	12.2
BH	(60-80)	1291.1	5.2
BVH	(80-90)	230.7	0.9
UL	(90-100)	0.0	0.0
UH	(100-180)	0.0	0.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	597.6	2.4
10-20	1648	6.7
20-30	2475	10.0
30-40	3451	14.0
40-50	4017	16.2
50-60	4570	18.5
60-70	4994	20.2
70-80	2430	9.8
80-90	553.9	2.2

BUG Rating: B3-U0-G3

IES Classification: Type IV

Longitudinal Classification: Very Short

RESULTS OF TEST (cont'd)

In-Situ Maximum Measured LED Source Temperature

Manufacturer Supplied Documentation:

Forward Voltage Groups ^{1) page 43}
Durchlassspannungsgruppen ^{1) Seite 23}

Group Gruppe	(min.) V_F [V]	(max.) V_F [V]
K8	20.80	21.60
T8	21.60	22.40
28	22.40	23.20

Maximum Ratings Grenzwerte

Parameter Bezeichnung	Symbol Symbol	Values Werte	Unit Einheit
Junction temperature Sperrschichttemperatur	T_j	125	°C

Parameter Bezeichnung	Symbol Symbol	Values Werte	Unit Einheit
"Electrical" thermal resistance junction / solder point (typ.) "Elektrischer" Wärmewiderstand Sperrschicht / Lötpad (with efficiency $\eta_e = 59\%$)	R_{thJSel}	1.5	K/W

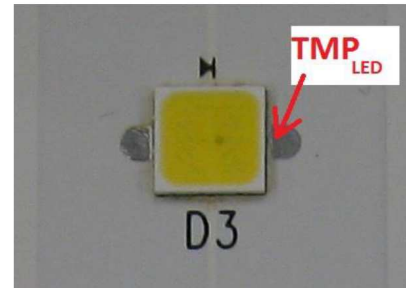


Fig. 2 DURIS S8 type LED model GW P9LT31.PM and temperature measurement point.

Maximum Junction Temperature from LED specification (T_j) = 125°C

Thermal Resistance Formula from LED specification = 1.5°C/W

Maximum Forward Voltage (V_f) from LED specification = 23.2V

Measured LED Current = 99.9mA

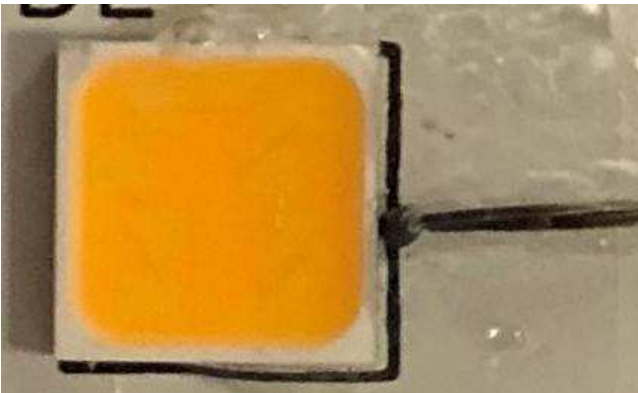
Calculated LED Wattage = $V_f \times$ Measured LED Current = 2.317W

Maximum Source Temperature (T_s) = $T_j - (\text{LED Wattage} \times \text{Thermal Resistance}) = 121.5^\circ\text{C}$

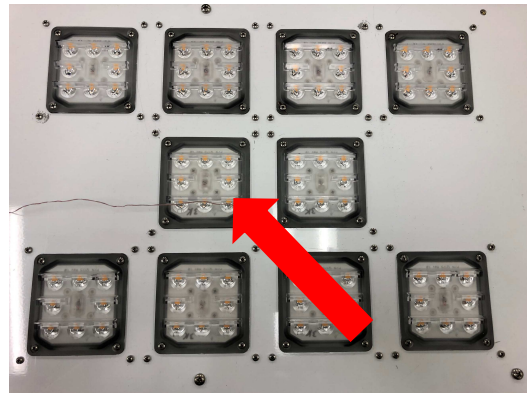
Maximum Measured Manufacturer Designated Source Temperature

Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1903191345-010	64.0	Per specs above	121.5

LED In-Situ Picture – T_s



LED In-Situ Picture – T_s location



RESULTS OF TEST (cont'd)

In-Situ Maximum Measured Power Supply Case Temperature

Manufacturer Supplied Documentation:



Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1903191345-010	55.5	Per specs above	89.0

Driver In-Situ Picture – Ts Location



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:

Handwritten signature of Erik Linares.

Erik Linares
Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:

Handwritten signature of Vladimir Kozak.

Vladimir Kozak
Engineering Supervisor
Lighting Division