

REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G103961645

Original Issue Date: June 27, 2019

Revision Date: July 8, 2019

REPORT NO. 103961645LAX-002A

TEST OF ONE LED LUMINAIRE

MODEL NO. ALD-R-300W-LV-30K-T4

LED MODEL NO. GWP9LR34.PM-M2M3

DRIVER MODEL NO. EUD-320S670DT

RETROFIT MODEL NO. LITHONIA KAD CONTOUR SERIES

RENDERED TO

SIMPLYLEDs LLC

111 W. 34TH STREET

GARDEN CITY, IDAHO, 83714

Revision Note July 8, 2019: Report was revised to correct the measured LED current from 483mA to 120.8mA.

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

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

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

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number ALD-R-300W-LV-30K-T4. The sample was received by Intertek on June 27, 2019, in undamaged condition and one sample was tested as received. The sample designation was LAN1906271312-001.

DATES OF TESTS: June 3, 2019 through June 27, 2019.

SUMMARY

Model No.: ALD-R-300W-LV-30K-T4
Description: LED Luminaire

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	34973	34140
Total Power (W)	301.6	297.8
Luminaire Efficacy (LPW)	116.0	114.6

Criteria	Result
Power Factor at 120Vac	0.999
Power Factor at 277Vac	0.952
Current ATHD % at 120Vac	4.38
Current ATHD % at 277Vac	11.55
Correlated Color Temperature (CCT - K)	3080
Color Rendering Index (CRI - Ra)	71.2
Color Rendering Index (CRI - R9)	-39.9
DUV	0.001
Chromaticity Coordinate (x)	0.431
Chromaticity Coordinate (y)	0.402
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.520
BUG Rating	B4-U0-G4
IES Classification	Type IV
Longitudinal Classification	Very Short
Maximum In-Situ Source Temperature Point (°C)	86.2
Maximum In-Situ Driver Case Temperature (°C)	68.4

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBU	VBU	06/03/19
AC Source	CW1251P	000944	VBU	VBU	06/03/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	06/03/19
Thermometer	DPi8-C24	001782	09/21/18	09/21/19	06/03/19
3m Sphere	CSTM-LMS-3M-3020	000830	VBU	VBU	06/03/19
Spectrometer	CDS-3020-T	000834	VBU	VBU	06/03/19
Power Supply (AC 3P / DC)	CSW5550-208-LAN	001339	VBU	VBU	06/03/19
Power Meter	WT330	001319	08/13/18	08/13/19	06/03/19
DC Power Supply	LPS-100-0833	000832	01/31/19	01/31/20	06/03/19
Network TC Reader	iSD-TC	000824	02/01/19	02/01/20	06/03/19
AC Source	CW1251P	000944	VBU	VBU	06/27/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	06/27/19
Power Analyzer	WT333	001320	08/14/18	08/14/19	06/27/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	06/27/19
Thermometer	52 Series II	001265	10/04/18	10/04/19	06/27/19

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.

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

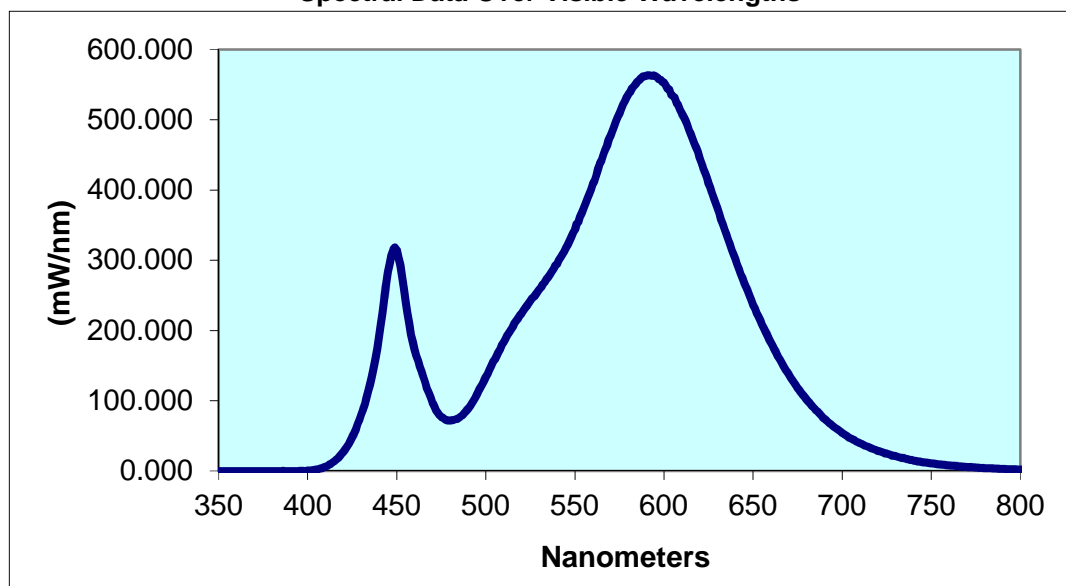
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1906271312-001	UP	120.0 277.0	2517 1109.0	301.6 292.4	0.999 0.952	4.38 11.55	34973	116.0
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')	
3080	71.2	-39.9	0.001	0.431	0.402	0.248	0.520	

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.000	440	190.2	530	258.6	620	446.6	710	39.57
355	0.000	445	283.2	535	276.1	625	409.5	715	33.91
360	0.000	450	314.7	540	294.7	630	374.2	720	28.63
365	0.000	455	240.1	545	317.4	635	336.8	725	24.83
370	0.000	460	173.4	550	343.8	640	301.9	730	21.09
375	0.000	465	133.9	555	374.5	645	268.7	735	18.20
380	0.000	470	97.88	560	407.9	650	236.9	740	14.95
385	0.000	475	76.85	565	442.7	655	208.7	745	12.73
390	0.000	480	71.87	570	477.2	660	183.1	750	10.86
395	0.095	485	75.78	575	509.2	665	159.0	755	9.301
400	0.576	490	88.61	580	536.6	670	137.4	760	8.083
405	2.330	495	108.8	585	553.9	675	118.3	765	6.873
410	6.159	500	133.7	590	562.5	680	102.1	770	5.794
415	13.86	505	158.6	595	562.7	685	87.21	775	4.974
420	27.25	510	183.3	600	552.8	690	74.54	780	4.112
425	48.76	515	205.0	605	533.7	695	63.77		
430	79.61	520	224.5	610	509.4	700	54.08		
435	123.0	525	242.0	615	480.3	705	46.42		

Spectral Data Over Visible Wavelengths



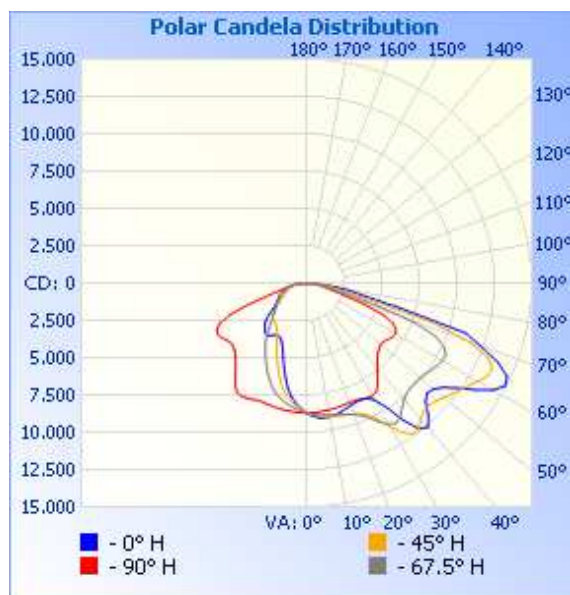
RESULTS OF TEST (cont'd)

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)
LAN1906271312-001	UP	120.0	2486	297.8	0.999	34140	114.6

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	25	45	67.5	90
0	8688	8688	8688	8688	8688
5	9047	9016	8946	8852	8671
10	9087	9099	9086	8976	8624
15	8916	9018	9173	9114	8558
20	8685	8905	9316	9362	8488
25	8607	8939	9745	9982	8578
30	9028	9705	11089	10902	8726
35	11193	11842	12335	10887	8284
40	12598	12148	11842	10128	7331
45	11223	11308	11559	9831	6717
50	11034	11607	11925	9875	6431
55	12248	12382	12474	10132	6584
60	14325	13786	13172	10454	6829
65	14736	14154	13642	10126	6354
70	12356	10995	11645	7605	4050
75	6478	5021	4780	2471	1743
80	2936	1906	1856	1422	1047
85	1159	799	988	772	398
90	0	0	0	0	0



RESULTS OF TEST (cont'd)

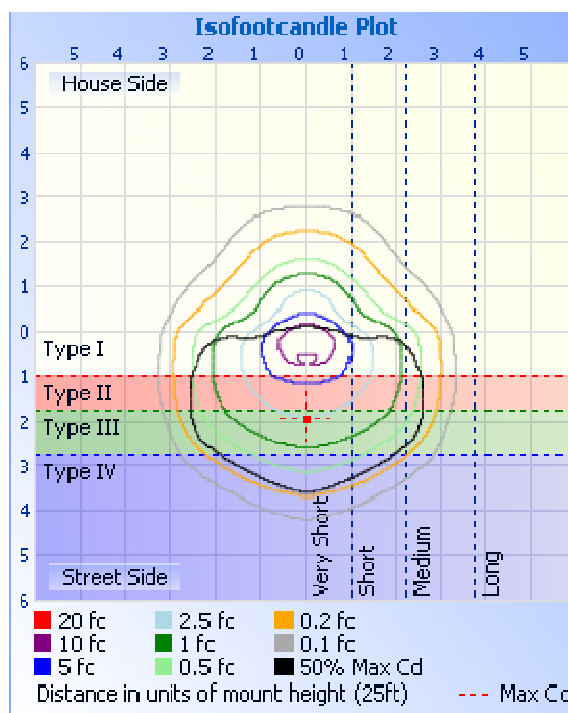
Illumination Plots

Mounting Height: 25 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	6486	19.0
0-40	11368	33.3
0-60	23227	68.0
60-90	10912	32.0
0-90	34140	100.0
90-180	0.0	0.0
0-180	34140	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	3901	11.4
FM	(30-60)	12638	37.0
FH	(60-80)	8346	24.4
FVH	(80-90)	467.0	1.4
BL	(0-30)	2587.2	7.6
BM	(30-60)	4102	12.0
BH	(60-80)	1791.3	5.2
BVH	(80-90)	310.0	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	814.5	2.4
10-20	2245	6.6
20-30	3426	10.0
30-40	4882	14.3
40-50	5548	16.3
50-60	6311	18.5
60-70	6857	20.1
70-80	3278	9.6
80-90	776.8	2.3

BUG Rating: B4-U0-G4

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 _{th JS el}	1.5	K/W

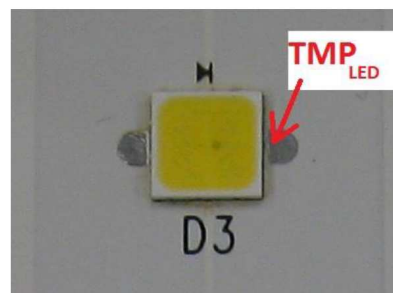


Fig. 2 DURIS S8 type LED model GW P9LT31.PM and temperature measurement point.

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 = 120.8mA

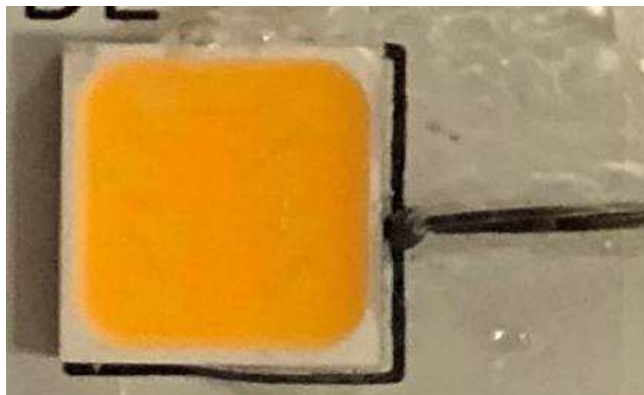
Calculated LED Wattage = V_f x Measured LED Current = 2.802W

Maximum Source Temperature (T_s) = T_j – (LED Wattage x Thermal Resistance) = 120.8°C

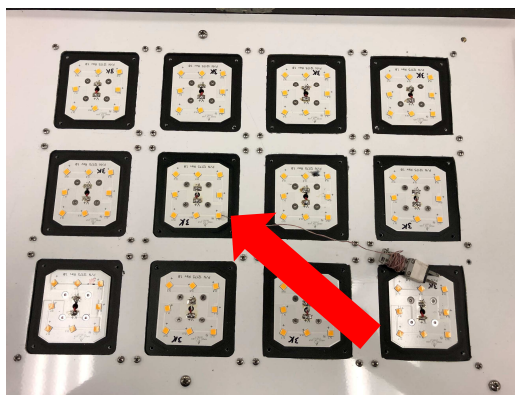
Maximum Measured Manufacturer Designated Source Temperature

Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1906271312-001	86.2	Per specs above	120.8

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:

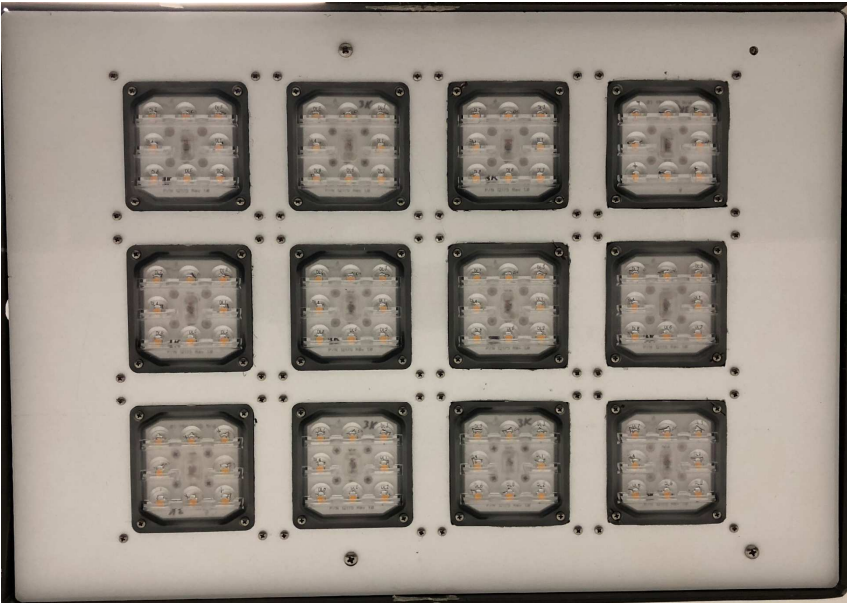


Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1906271312-001	68.4	Per specs above	89.0

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:

Erik Linares
Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:

Vladimir Kozak
Engineering Supervisor
Lighting Division