

REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G103961645

Original Issue Date: July 8, 2019

Revision Date: July 16, 2019

REPORT NO. 103961645LAX-010A

TEST OF ONE LED LUMINAIRE

MODEL NO. ALD-R-300W-HV-30K-T4
LED MODEL NO. GWP9LR34.PM-M2M3
DRIVER MODEL NO. ESD-320S620DT
RETROFIT MODEL NO. LITHONIA KAD CONTOUR SERIES

RENDERED TO

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

Revision Note: July 16, 2019: Report was revised to correct driver in-situ temperature after retest.

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-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 4, 2019 through July 12, 2019.

SUMMARY

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

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	35350	35063
Total Power (W)	301.9	297.1
Luminaire Efficacy (LPW)	117.1	118.0

Criteria	Result
Power Factor at 277Vac	0.993
Power Factor at 480Vac	0.964
Current ATHD % at 277Vac	8.16
Current ATHD % at 480Vac	10.69
Correlated Color Temperature (CCT - K)	3081
Color Rendering Index (CRI - Ra)	71.2
Color Rendering Index (CRI - R9)	-40.0
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)	80.5
Maximum In-Situ Driver Case Temperature (°C)	70.4

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBU	VBU	07/08/19
AC Source	CW1251P	001334	02/19/19	02/19/20	07/08/19
Power Analyzer	WT210	000945	11/28/18	11/28/19	07/08/19
Thermometer	DPI8-C24	001782	09/21/18	09/21/19	07/08/19
3m Sphere	CSTM-LMS-3M-3020	000830	VBU	VBU	06/04/19
Spectrometer	CDS-3020-T	000834	VBU	VBU	06/04/19
Power Supply (AC 3P / DC)	CSW5550-208-LAN	001339	VBU	VBU	06/04/19
Power Meter	WT330	001319	08/13/18	08/13/19	06/04/19
DC Power Supply	LPS-100-0833	000832	01/31/19	01/31/20	06/04/19
Network TC Reader	iSD-TC	000824	02/01/19	02/01/20	06/04/19
AC Source	CW1251P-V	001336	VBU	VBU	07/12/19
Power Meter	WT330	001322	11/28/18	11/28/19	07/12/19
Thermometer	52 Series II	001265	10/04/18	10/04/19	07/12/19
True RMS Multimeter	87 III	000029	09/27/18	09/27/19	07/12/19
Temp. & RH Meter	971	001177	01/29/19	01/29/20	07/12/19
Variac 3 phase	6020E-3Y	001096	VBU	VBU	07/12/19

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

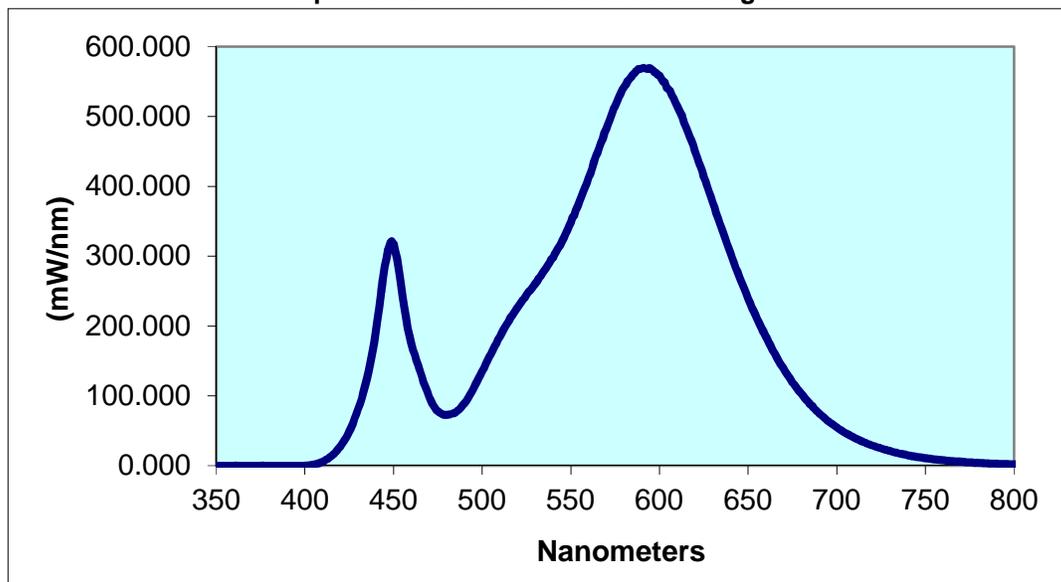
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

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)
LAN1903191345-010	UP	277.1	1097	301.9	0.993	8.16	35350	117.1
		479.9	652.9	302.1	0.964	10.69		
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')	
3081	71.2	-40.0	0.001	0.431	0.402	0.248	0.520	

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	0.000	440	192.1	530	260.8	620	451.2	710	40.02
355	0.000	445	285.3	535	279.1	625	413.7	715	34.16
360	0.000	450	318.0	540	297.7	630	377.1	720	29.15
365	0.000	455	242.9	545	320.8	635	340.1	725	24.78
370	0.000	460	175.8	550	348.0	640	304.6	730	21.20
375	0.000	465	135.6	555	378.8	645	271.4	735	17.80
380	0.000	470	99.21	560	412.3	650	239.4	740	15.00
385	0.000	475	78.12	565	447.6	655	210.7	745	12.80
390	0.000	480	72.90	570	482.2	660	185.0	750	10.77
395	0.000	485	76.54	575	514.5	665	160.6	755	9.125
400	0.056	490	89.51	580	542.5	670	138.7	760	7.954
405	1.895	495	109.6	585	559.8	675	119.4	765	6.619
410	5.964	500	135.2	590	568.8	680	103.3	770	5.625
415	14.01	505	160.4	595	568.9	685	87.99	775	4.909
420	27.47	510	184.9	600	558.9	690	75.45	780	4.026
425	49.42	515	207.1	605	539.0	695	63.93		
430	80.85	520	226.6	610	514.7	700	54.91		
435	124.2	525	244.4	615	485.2	705	46.58		

Spectral Data Over Visible Wavelengths



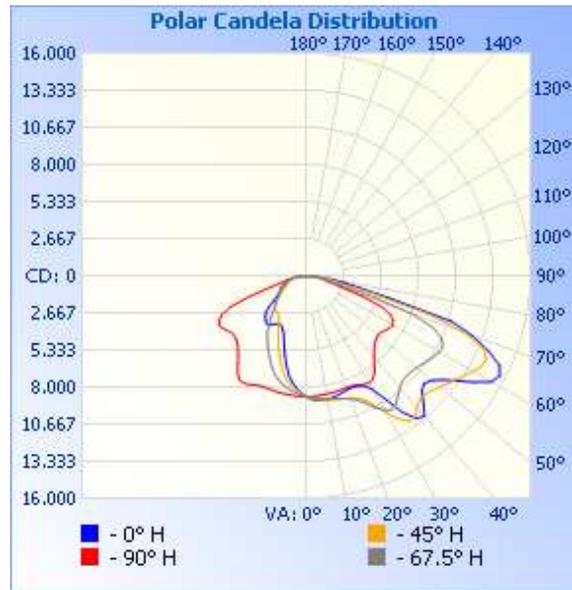
RESULTS OF TEST (cont'd)

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)
LAN1903191345-010	UP	277.0	1079	297.1	0.994	35063	118.0

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	25	45	67.5	90
0	8673	8673	8673	8673	8673
5	8996	8987	8931	8835	8660
10	9015	9070	9076	8968	8621
15	8858	9002	9180	9134	8576
20	8686	8930	9352	9426	8535
25	8725	9046	9815	10110	8662
30	9371	9959	11279	11132	8901
35	11958	12280	12763	11206	8517
40	13151	12571	12306	10416	7544
45	11668	11656	12023	10156	6932
50	11685	12037	12423	10283	6679
55	13141	12952	13028	10605	6854
60	15226	14412	13749	10969	7124
65	15228	14635	14190	10698	6654
70	12653	11413	12121	8144	4291
75	6204	5059	4998	2417	1756
80	2735	1934	1899	1436	1050
85	1024	810	1018	764	366
90	0	0	0	0	0



RESULTS OF TEST (cont'd)

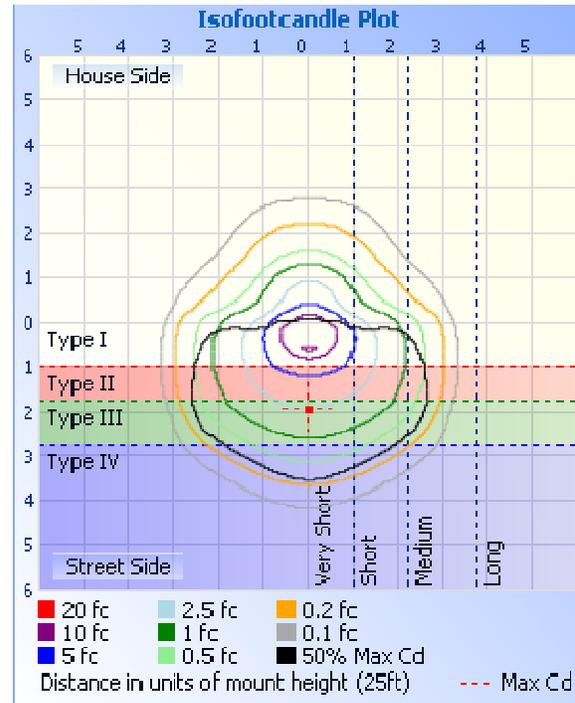
Illumination Plots

Mounting Height: 25 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	6513	18.6
0-40	11525	32.9
0-60	23846	68.0
60-90	11218	32.0
0-90	35063	100.0
90-180	0.0	0.0
0-180	35063	100.0

Luminaire Classification System (LCS)

LCS	Zone	Lumens	% Luminaire
FL	(0-30)	3930	11.2
FM	(30-60)	13165	37.5
FH	(60-80)	8682	24.8
FVH	(80-90)	470.4	1.3
BL	(0-30)	2584.8	7.4
BM	(30-60)	4166	11.9
BH	(60-80)	1779.0	5.1
BVH	(80-90)	288.7	0.8
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	812.6	2.3
10-20	2246	6.4
20-30	3455	9.9
30-40	5012	14.3
40-50	5740	16.4
50-60	6581	18.8
60-70	7116	20.3
70-80	3343	9.5
80-90	758.9	2.2

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

Parameter	Symbol	Values	Unit
Bezeichnung	Symbol	Werte	Einheit
"Electrical" thermal resistance junction / solder point (typ.)	R _{th JS el}	1.5	K/W
"Elektrischer" Wärmewiderstand Sperrschicht / Lötpad (with efficiency η _e = 59 %)			

Maximum Ratings

Grenzwerte

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

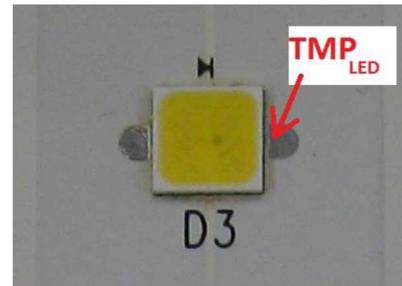


Fig. 2 DURIS S8 type LED model GW P9LT31.PM and temperature measurement point.

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 = 122.5mA

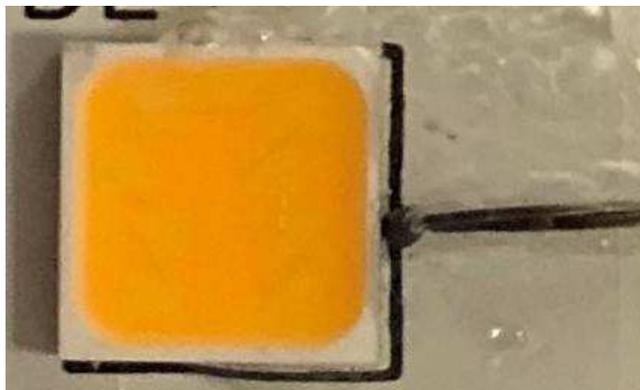
Calculated LED Wattage = V_f x Measured LED Current = 2.842W

Maximum Source Temperature (T_s) = T_j – (LED Wattage x Thermal Resistance) = 120.7°C

Maximum Measured Manufacturer Designated Source Temperature

Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1903191345-010	80.5	Per specs above	120.7

LED In-Situ Picture – T_s



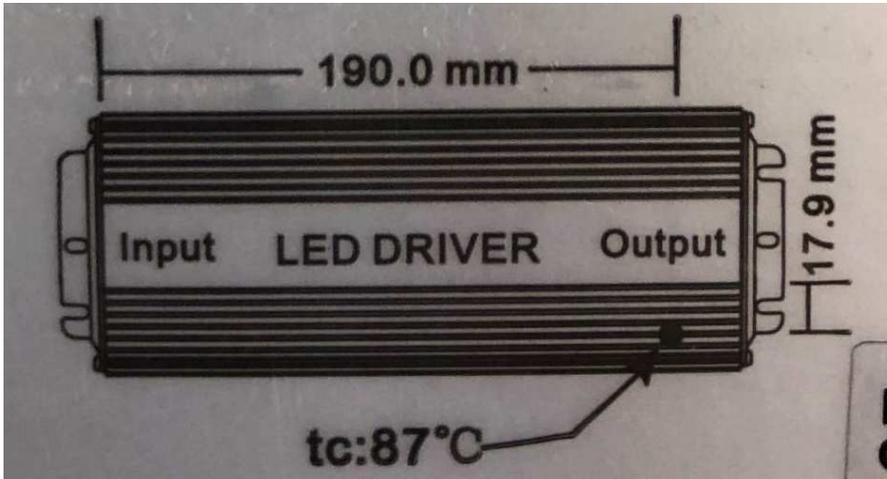
LED In-Situ Picture – T_s location



RESULTS OF TEST (cont'd)

In-Situ Maximum Measured Power Supply Case Temperature

Manufacturer Supplied Documentation:

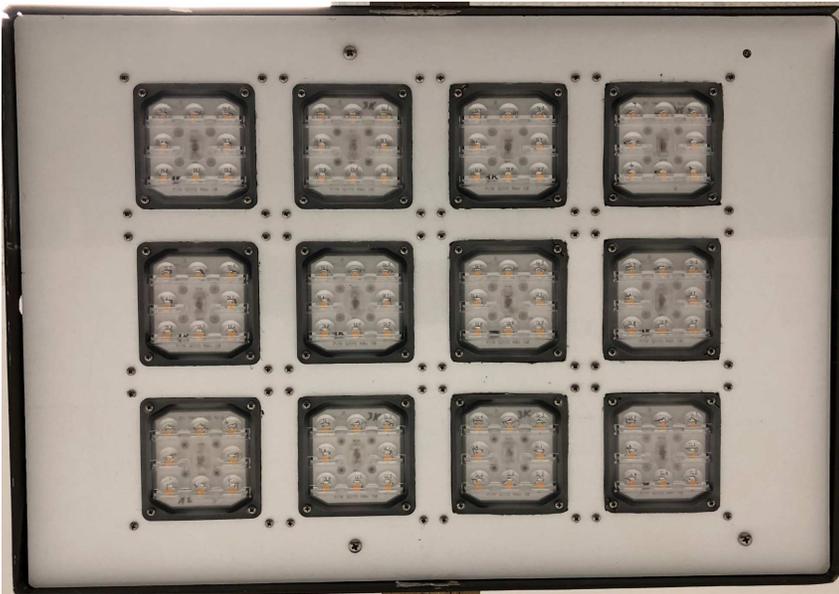


Sample No.	Maximum Measured Source Temperature (°C)	Location	Maximum Rated Source Temperature (°C)
LAN1903191345-010	70.4	Per specs above	87.0

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 in black ink.

Erik Linares
Associate Engineer
Lighting Division

Attachment: None

Report Reviewed By:

Handwritten signature of Vladimir Kozak in black ink.

Vladimir Kozak
Engineering Supervisor
Lighting Division