REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101918458 Date: March 17, 2014

REPORT NO. 101918458LAX-023

TEST OF ONE LED PROFILE

MODEL NO. WW PROFILE 36°

RENDERED TO

ELATION PROFESSIONAL
6122 S. EASTERN AVE
COMMERCE, CA 90040 USA

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

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number Q500519256.

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

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number WW PROFILE 36°. The sample was received by Intertek on March 10, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1503101019-003.

DATES OF TESTS: March 16, 2015 through March 17, 2015.

SUMMARY

Model No.:	WW PROFILE 36°
Description:	LED Profile

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	4831	4973
Total Power (W)	173.9	173.4
Luminaire Efficacy (LPW)	27.78	28.68

Criteria	Result
Power Factor	0.974
Current ATHD %	3.80
Correlated Color Temperature (CCT - K)	3069
Color Rendering Index (CRI - Ra)	94.6
Color Rendering Index (CRI - R9)	76.7
DUV	0.001
Chromaticity Coordinate (x)	0.430
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.518

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LabSphere Power Supply	LPS-100-0833	000832	05/23/13	05/20/15
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	02/25/15	03/25/15
LabSphere Spectrometer	CDS-3020	000834	02/25/15	03/25/15
California Instruments Power Supply	CSW5550	001338	VBU	VBU
Yokogawa Power Meter	WT333	001319	05/10/13	05/15/15
Extech Instruments Stop Watch	C-510	000351	09/25/14	09/25/15
Temperature Humidity Meter	971	001178	12/22/14	12/22/15
LSI High Speed Mirror Goniometer	6440T	000943	02/25/15	03/25/15
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	11/26/14	11/26/15
Temp. & RH Meter	971	001178	12/22/14	12/22/15
Extech Instruments Stop Watch	365510	001390	12/08/14	12/08/15
Tape Measure	33-430	001491	12/08/14	12/08/15

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 CDS 3020 Spectrometer and 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 Yokogawa Power Analyzer.

The calibration of the sphere spectrometer 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 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

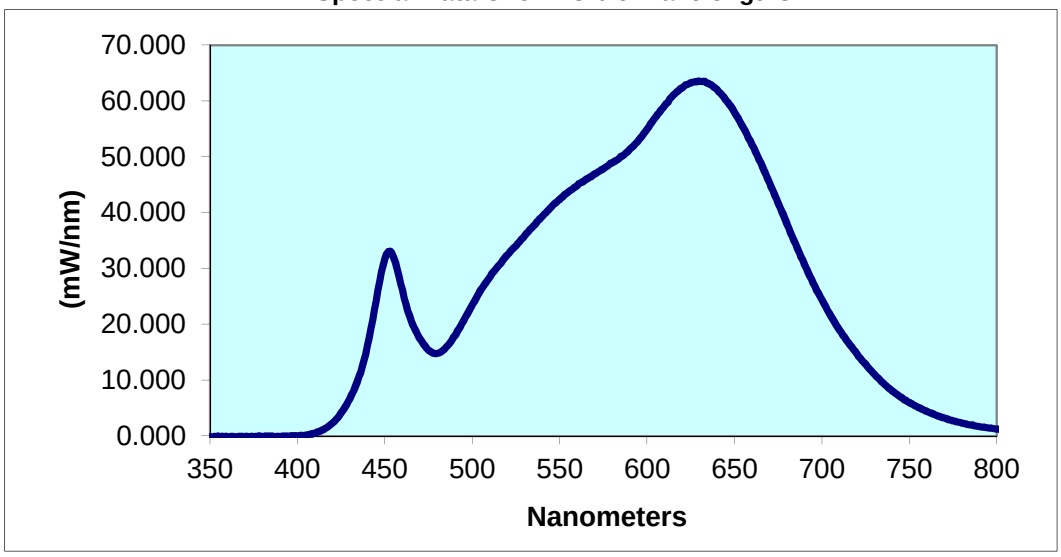
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1503101019-003	UP	120.0	1488	173.9	0.974	3.80	4831	27.78

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
3069	94.6	76.7	0.001	0.430	0.399	0.248	0.518

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	-0.140	440	16.100	530	35.910	620	62.320	710	19.000
355	-0.073	445	24.230	535	37.610	625	63.260	715	16.710
360	-0.148	450	31.790	540	39.370	630	63.510	720	14.680
365	-0.142	455	32.080	545	40.950	635	63.130	725	12.830
370	-0.136	460	26.130	550	42.390	640	62.040	730	11.020
375	-0.257	465	20.660	555	43.740	645	60.160	735	9.472
380	-0.091	470	17.450	560	44.870	650	57.880	740	8.101
385	-0.077	475	15.310	565	45.970	655	55.190	745	6.924
390	-0.087	480	14.790	570	46.970	660	52.190	750	5.969
395	-0.054	485	15.910	575	47.850	665	48.840	755	5.095
400	0.028	490	17.980	580	48.920	670	45.330	760	4.439
405	0.188	495	20.660	585	50.050	675	41.650	765	3.749
410	0.536	500	23.490	590	51.360	680	37.940	770	3.198
415	1.171	505	26.200	595	52.910	685	34.290	775	2.717
420	2.318	510	28.460	600	54.940	690	30.690	780	2.323
425	4.135	515	30.500	605	57.170	695	27.370		
430	6.731	520	32.410	610	59.200	700	24.310		
435	10.500	525	34.080	615	61.080	705	21.530		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

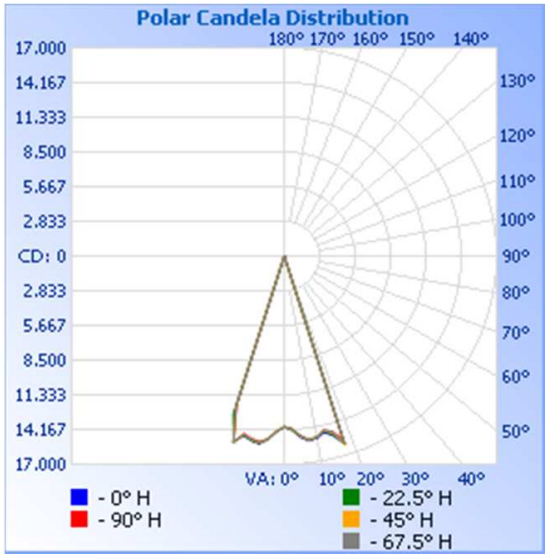
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
LAN1503101019-003	UP	120.0	1534	173.4	0.942	4973	28.68

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 16,139.5

Angle	0	22.5	45	67.5	90
0	13939	13939	13939	13939	13939
5	14827	14768	14732	14698	14708
10	15072	15011	15006	14989	14999
15	15153	15089	14924	14854	14805
20	31	43	27	34	29
25	10	30	14	8	13
30	10	5	16	2	9
35	29	12	0	19	3
40	8	11	0	14	4
45	0	16	5	0	8
50	0	0	6	0	0
55	3	0	0	0	0
60	4	0	0	16	9
65	1	3	5	0	2
70	2	11	0	0	0
75	0	14	0	2	0
80	0	0	7	9	0
85	0	0	0	0	4
90	0	0	0	19	0

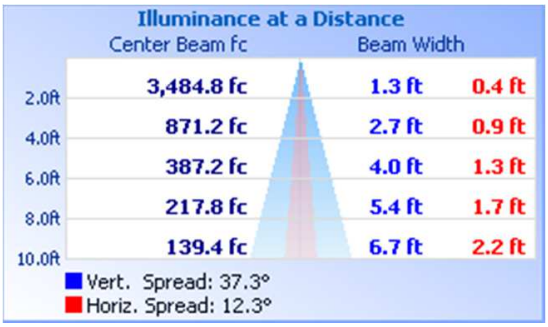


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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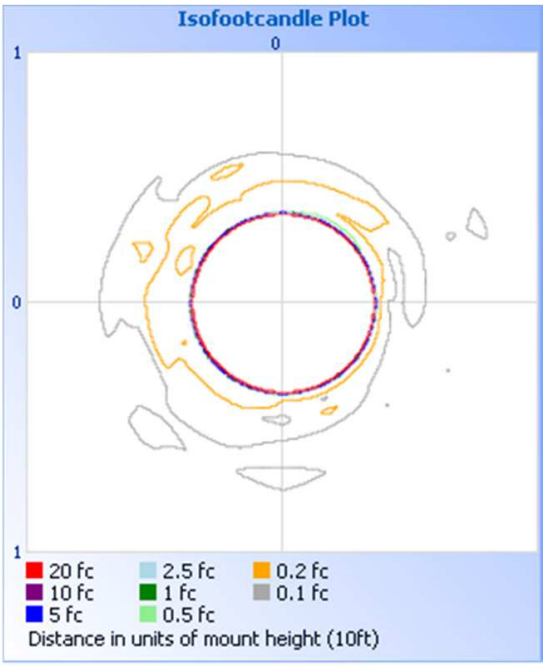

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4950	99.5
0-40	4956	99.7
0-60	4962	99.8
60-90	10.8	0.2
0-90	4973	100.0
90-180	0.4	0.0
0-180	4973	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1429	28.7
10-20	3509	70.6
20-30	11.7	0.2
30-40	6.6	0.1
40-50	2.9	0.1
50-60	3.1	0.1
60-70	3.8	0.1
70-80	3.5	0.1
80-90	3.5	0.1
90-100	0.4	0.0

PICTURE (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:

Ameet Alawi
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Lighting Division

Report Reviewed By:

Kenda Branch
Lighting Performance Team Lead
Lighting Division

Attachment: None