



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101607677

Date: June 6, 2014

REPORT NO. 101607677LAX-010

TEST OF ONE FULL ON 17 BEAM ANGLE

MODEL NO. DW FRESNEL

RENDERED TO

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

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 500519256.

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 prototype sample of model number DW FRESNEL. The sample was received by Intertek on May 29, 2014, in undamaged condition and one sample was tested as received. The sample designation was LAN1405291015-001.

DATES OF TESTS: June 5, 2014 through June 6, 2014.

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SUMMARY

Model No.:	DW FRESNEL
Description:	Full ON 17 Beam Angle

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	7614	7701
Total Power (W)	270.4	270.5
Luminaire Efficacy (LPW)	28.16	28.47

Criteria	Result
Power Factor	0.991
Current ATHD %	5.61
Correlated Color Temperature (CCT - K)	4833
Color Rendering Index (CRI - Ra)	92.7
Color Rendering Index (CRI - R9)	91.6
DUV	0.004
Chromaticity Coordinate (x)	0.349
Chromaticity Coordinate (y)	0.346
Chromaticity Coordinate (u')	0.216
Chromaticity Coordinate (v')	0.483

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Variac	Powerstat	000396	VBU	VBU
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	05/12/14	06/12/14
LabSphere Spectrometer	CDS-3020	000834	05/12/14	06/12/14
California Instruments Power Supply	CSW5550	001338	VBU	VBU
Power Meter, Digital	WT210	000912	03/14/14	03/14/15
Extech Instruments Stop Watch	365510	001380	11/05/13	11/05/14
Omega Environmental Monitor	iBTHX-W	000886	09/10/13	09/10/14
LSI High Speed Mirror Goniometer	6440T	000943	05/12/14	06/12/14
Elgar Power Supply	CW1251	000944	N/A	N/A
Yokogawa Power Analyzer	WT210	000945	11/14/13	11/14/14
Omega Environmental Monitor	iBTHX-W	000882	09/09/13	09/09/14
Extech Instruments Stop Watch	365510	001380	11/05/13	11/05/14
Tape measure	33-428	000678	12/09/13	12/09/14

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

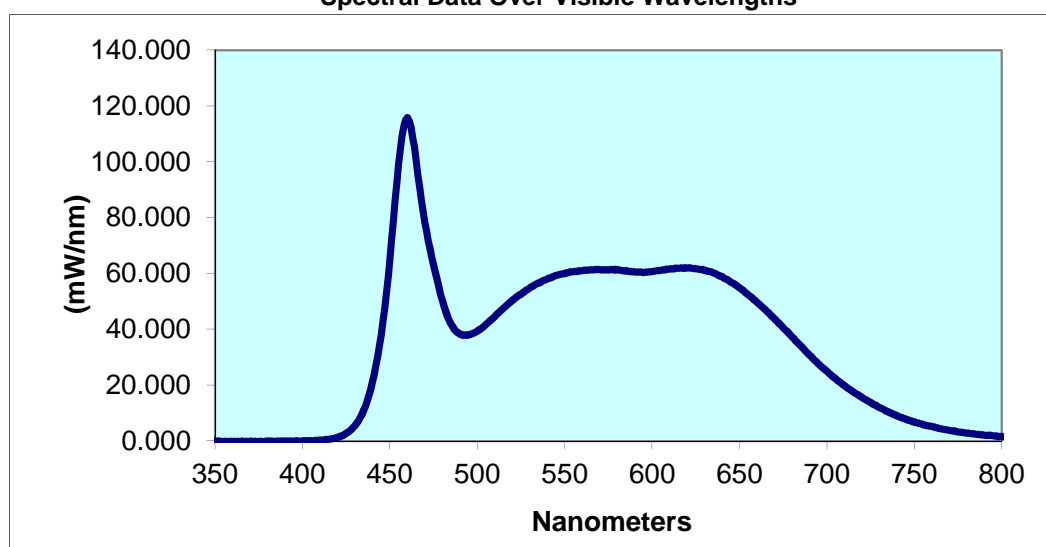
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1405291015-001	LINEAR	120.0	2275	270.4	0.991	5.61	7614	28.16

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')
4833	92.7	91.6	0.004	0.349	0.346	0.216	0.483

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.039	440	21.050	530	54.840	620	61.890	710	19.810
355	-0.156	445	37.970	535	56.540	625	61.730	715	17.560
360	-0.199	450	65.190	540	58.060	630	61.180	720	15.590
365	-0.126	455	99.250	545	59.250	635	60.230	725	13.740
370	-0.141	460	115.900	550	59.980	640	58.850	730	11.990
375	-0.169	465	100.400	555	60.630	645	56.930	735	10.410
380	-0.140	470	78.350	560	61.000	650	54.780	740	9.024
385	-0.090	475	62.760	565	61.250	655	52.320	745	7.828
390	-0.094	480	50.380	570	61.410	660	49.670	750	6.786
395	-0.053	485	41.880	575	61.310	665	46.770	755	5.868
400	0.033	490	38.360	580	61.260	670	43.740	760	5.176
405	0.078	495	38.070	585	61.030	675	40.520	765	4.419
410	0.257	500	39.340	590	60.600	680	37.310	770	3.856
415	0.596	505	41.770	595	60.340	685	34.020	775	3.259
420	1.274	510	44.650	600	60.650	690	30.750	780	2.818
425	2.715	515	47.570	605	61.170	695	27.670		
430	5.508	520	50.360	610	61.580	700	24.860		
435	10.980	525	52.570	615	61.880	705	22.210		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

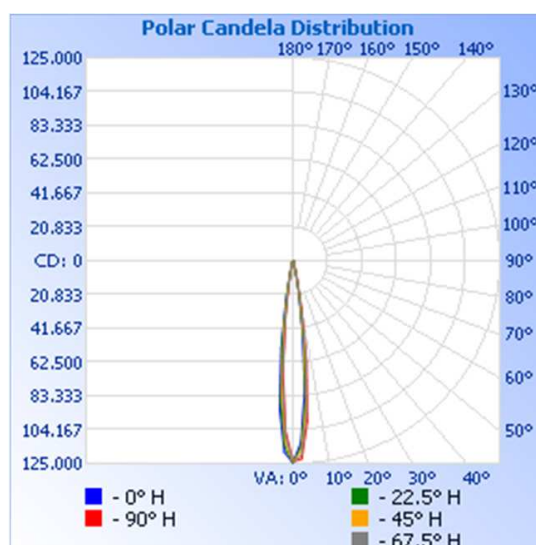
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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)
LAN1405291015-001	UP	120.0	2274	270.5	0.991	7701	28.47

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value:123758

Angle	0	22.5	45	67.5	90
0	124703	124418	124227	123850	123758
5	80781	85648	89468	94995	99136
10	19620	21783	23429	26665	29573
15	3088	3299	3380	3782	4059
20	932	1023	1069	1206	1218
25	173	315	282	366	305
30	142	258	129	85	25
35	264	153	174	0	94
40	185	25	50	63	157
45	54	138	54	17	94
50	60	120	3	5	0
55	37	167	52	0	168
60	0	11	124	103	0
65	0	0	0	0	67
70	11	0	0	81	148
75	150	14	155	193	172
80	0	72	41	104	0
85	0	79	0	0	47
90	76	176	46	81	148

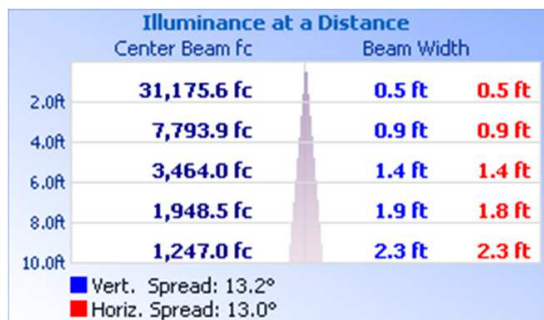


RESULTS OF TEST (cont'd)

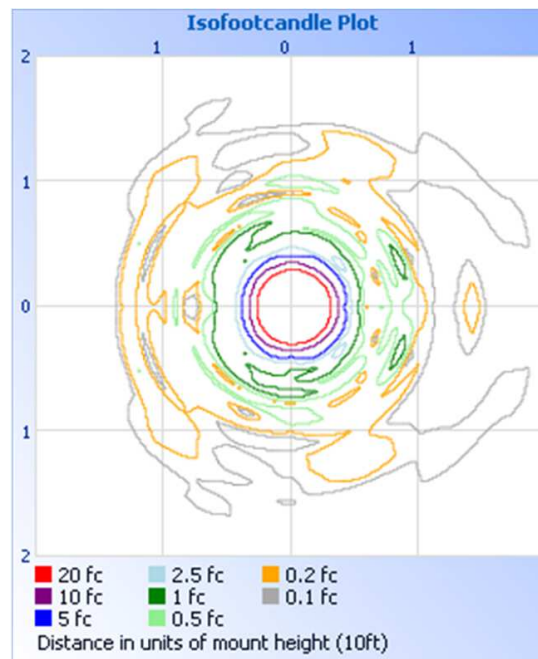
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	7386	95.9
0-40	7457	96.8
0-60	7578	98.4
60-90	114.0	1.5
0-90	7692	99.9
90-180	8.3	0.1
0-180	7701	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	5779	75.0
10-20	1409	18.3
20-30	197.8	2.6
30-40	71.3	0.9
40-50	66.6	0.9
50-60	54.6	0.7
60-70	24.3	0.3
70-80	56.7	0.7
80-90	33.1	0.4
90-100	8.3	0.1

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:



Erik Linares
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Engineer
Lighting Division