



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G101607677

Date: June 6, 2014

REPORT NO. 101607677LAX-009

TEST OF ONE 6000K COOL WHITE 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 LAN1405291025-001.

DATES OF TESTS: June 2, 2014 through June 4, 2014.

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SUMMARY

Model No.:	DW FRESNEL
Description:	6000K Cool White 17 Beam Angle

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	4519	4730
Total Power (W)	138.2	138.9
Luminaire Efficacy (LPW)	32.7	34.05

Criteria	Result
Power Factor	0.977
Current ATHD %	10.30
Correlated Color Temperature (CCT - K)	6787
Color Rendering Index (CRI - Ra)	90.2
Color Rendering Index (CRI - R9)	67.1
DUV	0.002
Chromaticity Coordinate (x)	0.308
Chromaticity Coordinate (y)	0.324
Chromaticity Coordinate (u')	0.196
Chromaticity Coordinate (v')	0.465

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

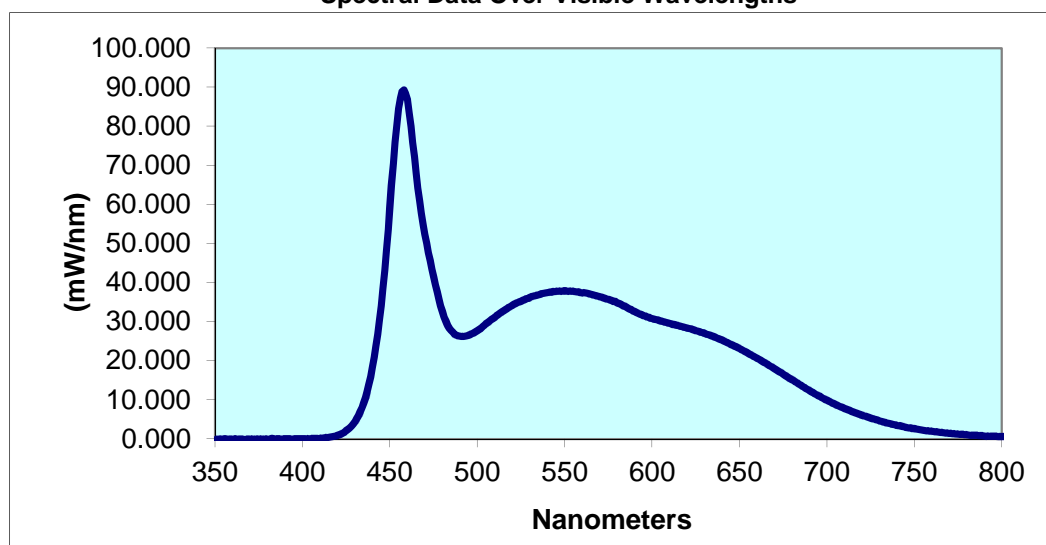
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1405291025-001	LINEAR	120.0	1185	138.2	0.977	10.30	4519	32.7

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')
6787	90.2	67.1	0.002	0.308	0.324	0.196	0.465

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	-0.319	440	18.270	530	36.220	620	28.360	710	7.821
355	-0.022	445	34.080	535	36.880	625	27.720	715	6.922
360	-0.054	450	59.170	540	37.460	630	27.000	720	6.098
365	-0.092	455	84.530	545	37.790	635	26.220	725	5.365
370	-0.092	460	86.750	550	37.840	640	25.280	730	4.632
375	-0.037	465	68.000	555	37.740	645	24.190	735	4.017
380	-0.111	470	52.340	560	37.400	650	23.110	740	3.491
385	-0.019	475	41.370	565	37.020	655	21.890	745	2.994
390	-0.010	480	32.630	570	36.420	660	20.650	750	2.598
395	-0.014	485	27.770	575	35.720	665	19.310	755	2.237
400	0.020	490	26.270	580	34.840	670	17.950	760	1.958
405	0.069	495	26.540	585	33.830	675	16.530	765	1.645
410	0.180	500	27.740	590	32.630	680	15.140	770	1.433
415	0.411	505	29.470	595	31.580	685	13.750	775	1.224
420	0.928	510	31.170	600	30.790	690	12.380	780	1.080
425	2.151	515	32.760	605	30.180	695	11.090		
430	4.447	520	34.200	610	29.580	700	9.896		
435	9.201	525	35.220	615	29.000	705	8.814		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

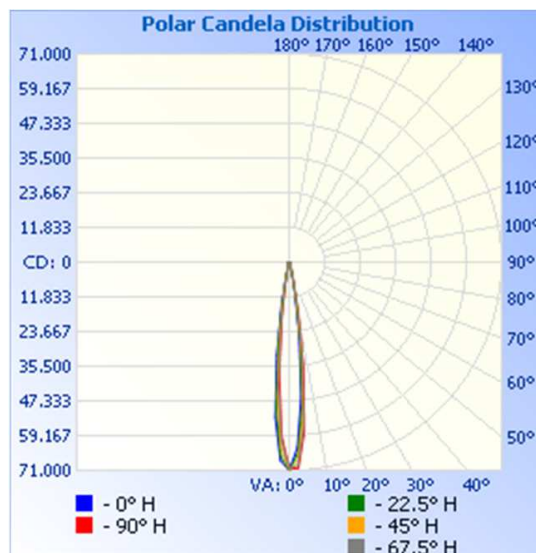
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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)
LAN1405291025-001	UP	120.1	1184	138.9	0.977	4730	34.05

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value:70441

Angle	0	22.5	45	67.5	90
0	70948	70958	70870	70470	70441
5	45643	48910	52494	55588	57822
10	11156	12753	14309	16329	17300
15	1792	2096	2071	2140	2417
20	721	553	686	582	696
25	168	209	218	135	320
30	155	133	285	257	59
35	95	159	0	49	50
40	1	231	125	49	125
45	0	22	219	110	132
50	146	118	81	66	70
55	86	31	141	42	43
60	88	13	17	156	7
65	37	48	72	25	64
70	11	82	0	56	23
75	0	130	0	24	81
80	18	21	70	128	121
85	0	0	38	77	2
90	18	68	178	192	20

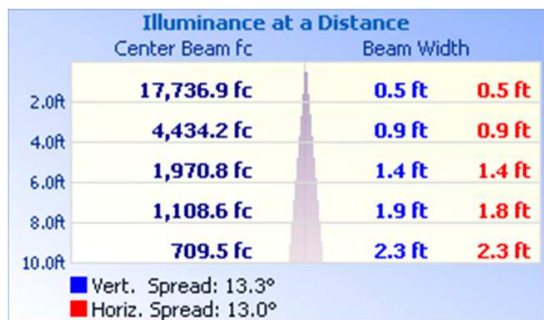


RESULTS OF TEST (cont'd)

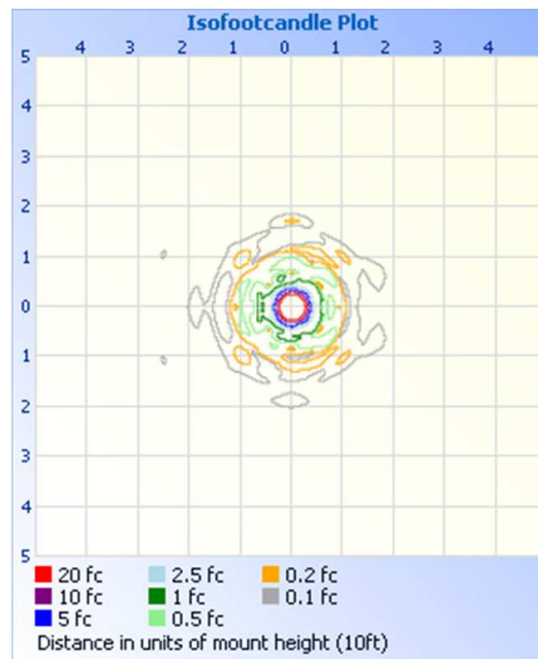
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4323	91.4
0-40	4399	93.0
0-60	4528	95.7
60-90	186.7	3.9
0-90	4715	99.7
90-180	14.8	0.3
0-180	4730	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	3350	70.8
10-20	840.7	17.8
20-30	132.3	2.8
30-40	75.4	1.6
40-50	75.1	1.6
50-60	54.3	1.1
60-70	63.1	1.3
70-80	53.2	1.1
80-90	70.4	1.5
90-100	14.8	0.3

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