



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G102328456

Date: April 1, 2016

REPORT NO. 102328456LAX-050

TEST OF ONE LED CHORUS

MODEL NO. DW CHORUS 12 CW

RENDERED TO

ELATION LIGHTING
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 Qu-00648726.

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 CHORUS 12 CW. The sample was received by Intertek on March 21, 2016, in undamaged condition and one sample was tested as received. The sample designation was LAN-1603210811-003.

DATES OF TESTS: March 29, 2016

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SUMMARY

Model No.:	DW CHORUS 12 CW
Description:	LED CHORUS

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2993	3118
Total Power (W)	64.75	63.65
Luminaire Efficacy (LPW)	46.22	48.99

Criteria	Result
Power Factor	0.948
Current ATHD %	28.05
Correlated Color Temperature (CCT - K)	6306
Color Rendering Index (CRI - Ra)	74.6
Color Rendering Index (CRI - R9)	-8.2
DUV	0.001
Chromaticity Coordinate (x)	0.317
Chromaticity Coordinate (y)	0.326
Chromaticity Coordinate (u')	0.202
Chromaticity Coordinate (v')	0.467

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	03/07/16	04/07/16
LabSphere Spectrometer	CDS-3020	000834	03/07/16	04/07/16
California Instruments Power Supply	CSW5550	001339	VBU	VBU
Yokogawa Power Meter	WT333	001320	06/03/15	06/03/16
Extech Instruments Stop Watch	365510	001379	11/19/15	11/16/16
Temp. & RH Meter	971	001380	12/17/15	12/17/16
DC Power Supply	LPS-100-0833	000836	05/07/15	05/07/16
LSI High Speed Mirror Goniometer	6440T	000943	03/08/16	04/08/16
California Instruments Power Supply	CSW5550	001339	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	12/04/15	12/04/16
Temp. & RH Meter	971	001380	12/17/15	12/17/16
Extech Instruments Stop Watch	9/23/2900	001379	11/19/15	11/19/16
Tape Measure	C1-25	000915	12/04/15	12/04/16

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

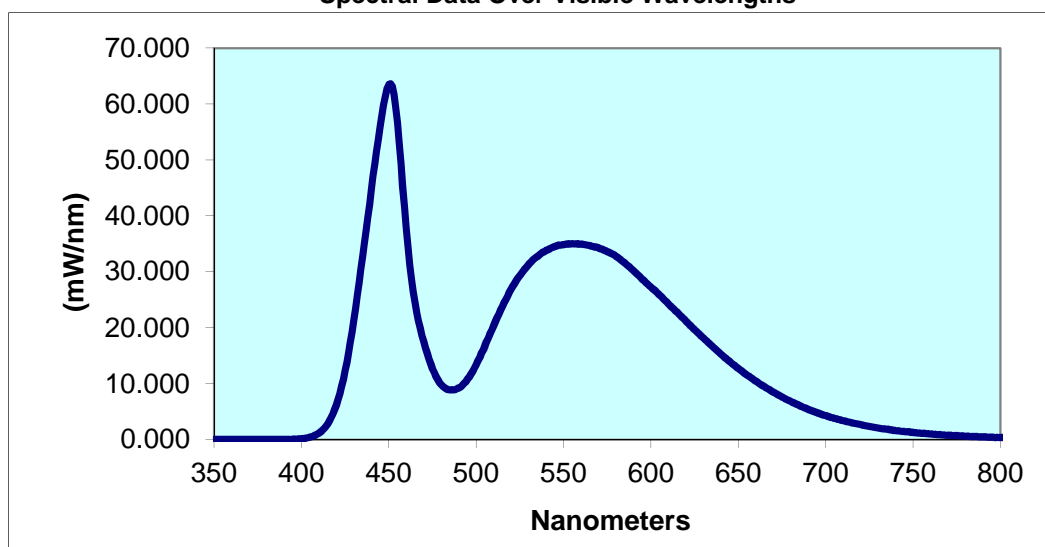
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN-1603210811-003	UP	120.0	569.0	64.75	0.9484	28.05	2993	46.22

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')
6306	74.6	-8.2	0.001	0.317	0.326	0.202	0.467

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.006	440	44.640	530	31.340	620	21.170	710	3.373
355	0.006	445	55.790	535	32.750	625	19.650	715	3.002
360	0.006	450	63.500	540	33.830	630	18.140	720	2.679
365	0.006	455	56.640	545	34.520	635	16.700	725	2.362
370	0.006	460	37.830	550	34.870	640	15.300	730	2.074
375	0.006	465	24.390	555	35.030	645	13.950	735	1.823
380	0.006	470	17.500	560	34.930	650	12.690	740	1.614
385	0.006	475	12.660	565	34.710	655	11.520	745	1.445
390	0.006	480	9.835	570	34.280	660	10.460	750	1.253
395	0.048	485	8.903	575	33.620	665	9.431	755	1.107
400	0.162	490	9.246	580	32.760	670	8.479	760	0.971
405	0.449	495	10.750	585	31.640	675	7.629	765	0.875
410	1.132	500	13.400	590	30.230	680	6.820	770	0.770
415	2.789	505	16.800	595	28.700	685	6.087	775	0.661
420	6.172	510	20.350	600	27.270	690	5.410	780	0.586
425	12.300	515	23.810	605	25.810	695	4.789		
430	21.250	520	26.880	610	24.290	700	4.276		
435	32.770	525	29.320	615	22.770	705	3.799		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

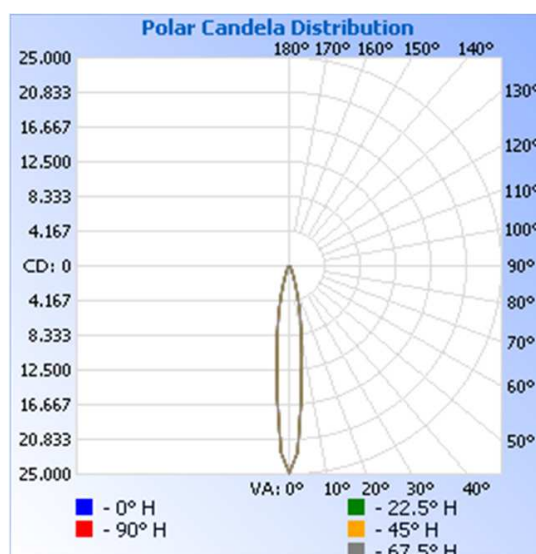
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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)
LAN-1603210811-003	UP	120.0	556.1	63.65	0.954	3118	48.99

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 24,845.3

Angle	0	22.5	45	67.5	90
0	24845	24845	24845	24845	24845
5	16068	16068	16068	16068	16068
10	8128	8128	8128	8128	8128
15	3878	3878	3878	3878	3878
20	1677	1677	1677	1677	1677
25	864	864	864	864	864
30	501	501	501	501	501
35	274	274	274	274	274
40	140	140	140	140	140
45	83	83	83	83	83
50	56	56	56	56	56
55	42	42	42	42	42
60	29	29	29	29	29
65	24	24	24	24	24
70	15	15	15	15	15
75	11	11	11	11	11
80	6	6	6	6	6
85	4	4	4	4	4
90	3	3	3	3	3

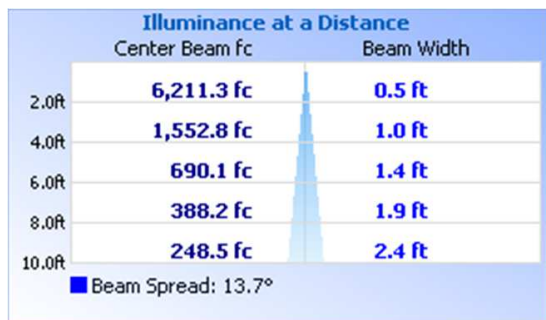


RESULTS OF TEST (cont'd)

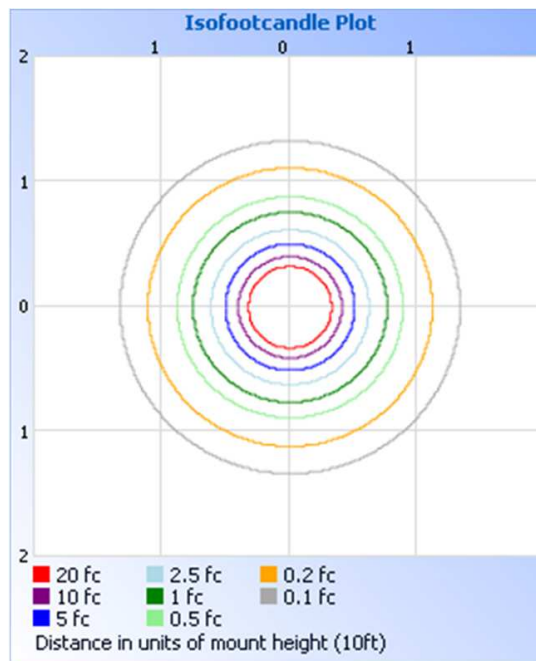
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	2798	89.7
0-40	2974	95.4
0-60	3079	98.8
60-90	38.1	1.2
0-90	3117	100.0
90-180	0.4	0.0
0-180	3118	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1269	40.7
10-20	1107	35.5
20-30	421.3	13.5
30-40	176.5	5.7
40-50	67.9	2.2
50-60	37.1	1.2
60-70	21.8	0.7
70-80	12.1	0.4
80-90	4.2	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
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Lighting Performance Team Lead
Lighting Division