



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G102328456

Date: April 1, 2016

REPORT NO. 102328456LAX-049

TEST OF ONE LED CHORUS

MODEL NO. DW CHORUS 12 WW

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 WW. 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 WW
Description:	LED CHORUS

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2253	2264
Total Power (W)	64.24	63.18
Luminaire Efficacy (LPW)	35.07	35.83

Criteria	Result
Power Factor	0.951
Current ATHD %	27.88
Correlated Color Temperature (CCT - K)	2685
Color Rendering Index (CRI - Ra)	80.6
Color Rendering Index (CRI - R9)	9.3
DUV	0.000
Chromaticity Coordinate (x)	0.461
Chromaticity Coordinate (y)	0.412
Chromaticity Coordinate (u')	0.263
Chromaticity Coordinate (v')	0.528

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

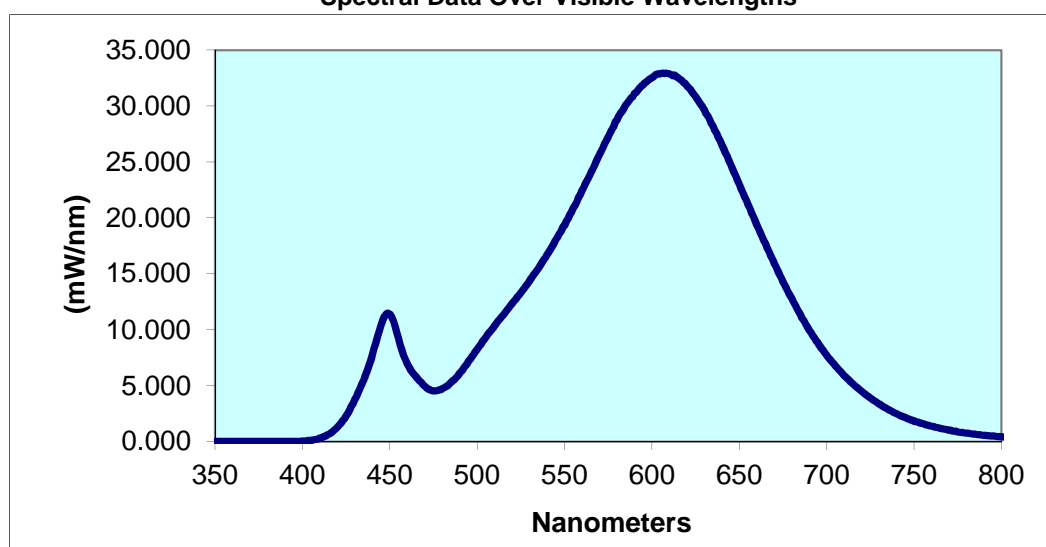
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN-1603210811-003	UP	120.0	562.8	64.24	0.9512	27.88	2253	35.07

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')
2685	80.6	9.3	0.000	0.461	0.412	0.263	0.528

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.002	440	7.762	530	14.400	620	31.810	710	5.903
355	0.002	445	10.410	535	15.490	625	30.850	715	5.143
360	0.002	450	11.400	540	16.730	630	29.640	720	4.494
365	0.002	455	9.223	545	18.020	635	28.170	725	3.902
370	0.002	460	6.955	550	19.360	640	26.560	730	3.360
375	0.002	465	5.785	555	20.880	645	24.770	735	2.893
380	0.002	470	4.946	560	22.410	650	22.990	740	2.486
385	0.002	475	4.523	565	24.040	655	21.180	745	2.147
390	0.002	480	4.737	570	25.680	660	19.390	750	1.834
395	0.002	485	5.299	575	27.250	665	17.650	755	1.592
400	0.020	490	6.116	580	28.780	670	15.950	760	1.374
405	0.098	495	7.155	585	30.100	675	14.300	765	1.186
410	0.322	500	8.261	590	31.150	680	12.780	770	1.016
415	0.652	505	9.347	595	31.900	685	11.330	775	0.866
420	1.281	510	10.360	600	32.560	690	9.968	780	0.745
425	2.294	515	11.350	605	32.940	695	8.785		
430	3.711	520	12.340	610	32.900	700	7.707		
435	5.510	525	13.310	615	32.530	705	6.760		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

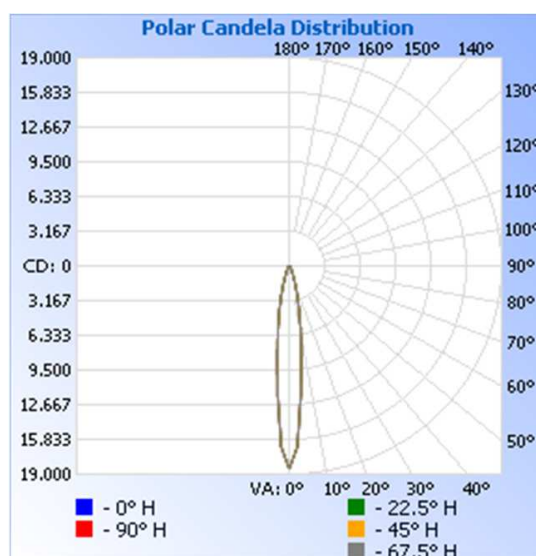
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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	551.8	63.18	0.954	2264	35.83

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 18,487.7

Angle	0	22.5	45	67.5	90
0	18488	18488	18488	18488	18488
5	11832	11832	11832	11832	11832
10	5789	5789	5789	5789	5789
15	2760	2760	2760	2760	2760
20	1217	1217	1217	1217	1217
25	630	630	630	630	630
30	362	362	362	362	362
35	190	190	190	190	190
40	101	101	101	101	101
45	64	64	64	64	64
50	44	44	44	44	44
55	33	33	33	33	33
60	24	24	24	24	24
65	19	19	19	19	19
70	13	13	13	13	13
75	8	8	8	8	8
80	7	7	7	7	7
85	4	4	4	4	4
90	3	3	3	3	3

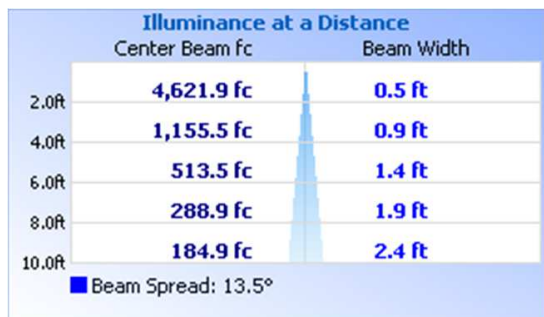


RESULTS OF TEST (cont'd)

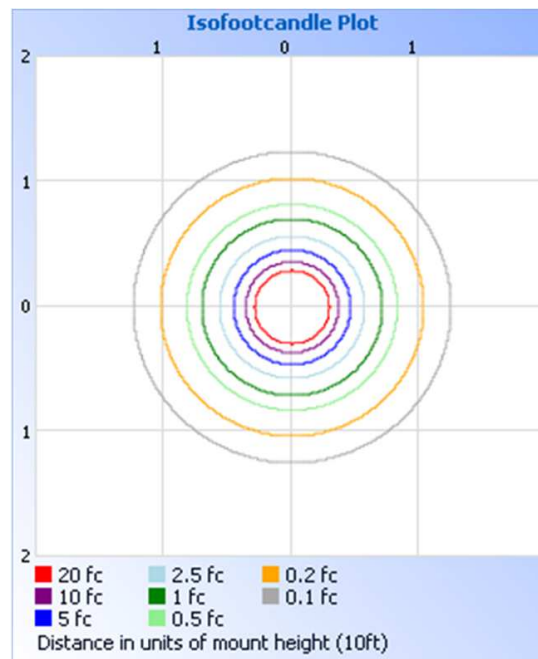
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	2023	89.4
0-40	2149	94.9
0-60	2229	98.5
60-90	34.6	1.5
0-90	2263	100.0
90-180	0.4	0.0
0-180	2264	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	926.8	40.9
10-20	789.5	34.9
20-30	306.5	13.5
30-40	125.9	5.6
40-50	51.1	2.3
50-60	28.8	1.3
60-70	20.4	0.9
70-80	9.5	0.4
80-90	4.7	0.2
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