



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G102328456

Date: April 1, 2016

REPORT NO. 102328456LAX-041

TEST OF ONE LED CHORUS

MODEL NO. DW CHORUS 72 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 72 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-1603210811-001.

DATES OF TESTS: March 24, 2016 through March 28, 2016.

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SUMMARY

Model No.:	DW CHORUS 72 CW
Description:	LED CHORUS

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	18993	19152
Total Power (W)	365.6	357.2
Luminaire Efficacy (LPW)	51.95	53.62

Criteria	Result
Power Factor	0.967
Current ATHD %	15.80
Correlated Color Temperature (CCT - K)	5967
Color Rendering Index (CRI - Ra)	69.2
Color Rendering Index (CRI - R9)	-15.9
DUV	0.003
Chromaticity Coordinate (x)	0.323
Chromaticity Coordinate (y)	0.328
Chromaticity Coordinate (u')	0.206
Chromaticity Coordinate (v')	0.469

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

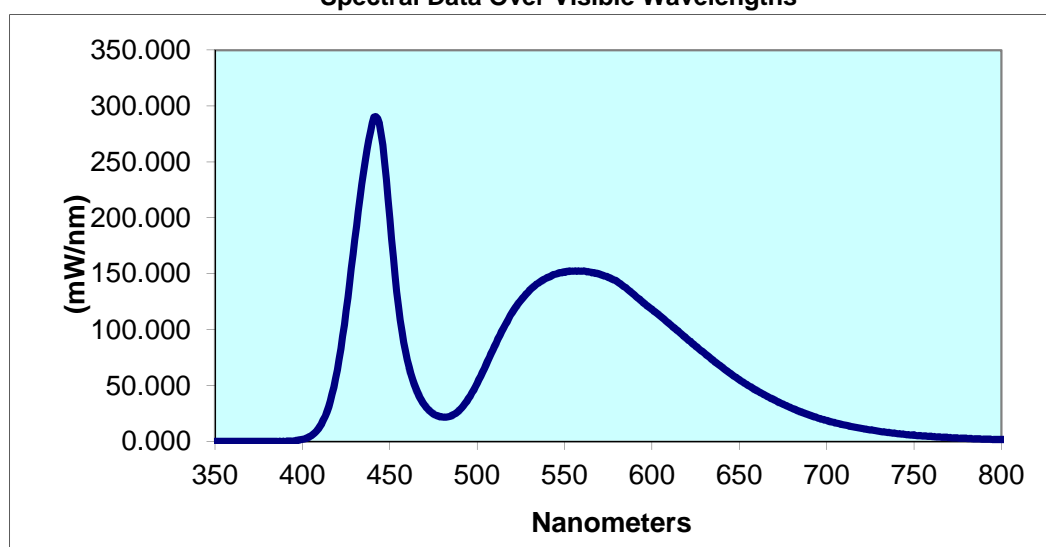
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN-1603210811-001	UP	120.0	3151	365.6	0.9668	15.80	18993	51.95

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')
5967	69.2	-15.9	0.003	0.323	0.328	0.206	0.469

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.007	440	285.300	530	135.40	620	91.900	710	14.860
355	0.007	445	275.600	535	141.70	625	85.330	715	13.180
360	0.007	450	199.100	540	146.60	630	78.950	720	11.760
365	0.007	455	120.600	545	149.80	635	72.620	725	10.400
370	0.007	460	73.330	550	151.50	640	66.600	730	9.137
375	0.007	465	46.930	555	152.40	645	60.570	735	8.117
380	0.007	470	32.360	560	152.40	650	55.300	740	7.116
385	0.007	475	24.690	565	151.40	655	50.160	745	6.337
390	0.126	480	21.910	570	149.70	660	45.550	750	5.648
395	0.611	485	23.050	575	146.70	665	41.250	755	4.997
400	1.922	490	28.340	580	143.00	670	37.170	760	4.591
405	5.250	495	38.320	585	137.80	675	33.420	765	3.920
410	13.500	500	52.110	590	131.10	680	29.910	770	3.447
415	31.230	505	68.520	595	124.20	685	26.650	775	3.030
420	64.120	510	85.290	600	118.10	690	23.670	780	2.735
425	116.900	515	101.300	605	111.90	695	21.030		
430	180.300	520	115.400	610	105.30	700	18.760		
435	241.700	525	126.300	615	98.71	705	16.730		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

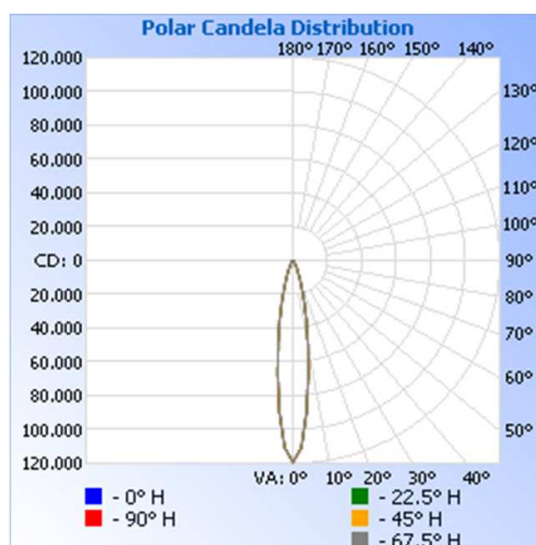
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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-1603210811-001	UP	120.0	3086	357.2	0.968	19152	53.62

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 119,271.6

Angle	0	22.5	45	67.5	90
0	119272	119272	119272	119272	119272
5	90004	90004	90004	90004	90004
10	49785	49785	49785	49785	49785
15	24963	24963	24963	24963	24963
20	11666	11666	11666	11666	11666
25	5829	5829	5829	5829	5829
30	3146	3146	3146	3146	3146
35	1627	1627	1627	1627	1627
40	872	872	872	872	872
45	556	556	556	556	556
50	344	344	344	344	344
55	262	262	262	262	262
60	240	240	240	240	240
65	174	174	174	174	174
70	122	122	122	122	122
75	46	46	46	46	46
80	40	40	40	40	40
85	49	49	49	49	49
90	24	24	24	24	24

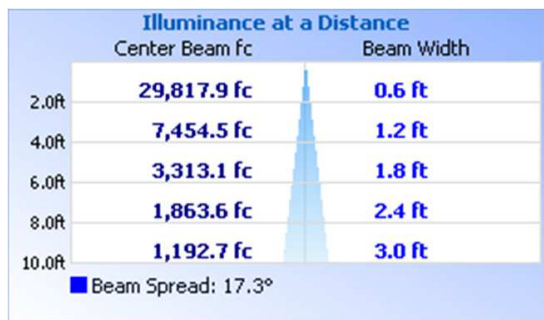


RESULTS OF TEST (cont'd)

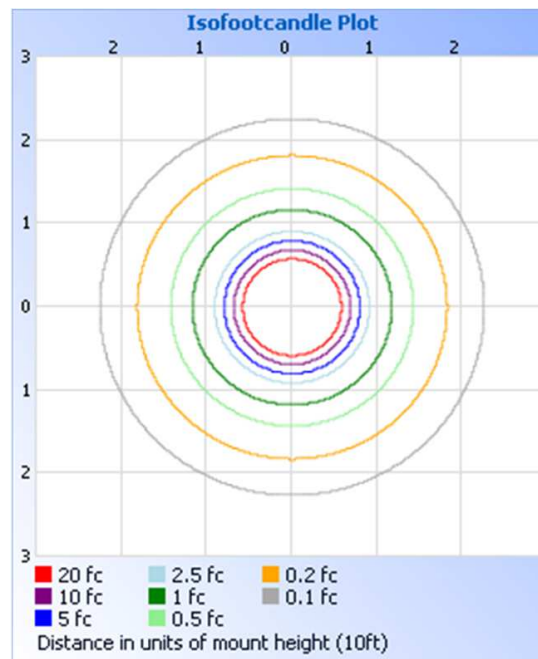
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	17135	89.5
0-40	18209	95.1
0-60	18891	98.6
60-90	257.0	1.3
0-90	19148	100.0
90-180	3.3	0.0
0-180	19152	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	7196	37.6
10-20	7089	37.0
20-30	2850	14.9
30-40	1074	5.6
40-50	422.5	2.2
50-60	259.3	1.4
60-70	149.0	0.8
70-80	78.1	0.4
80-90	29.9	0.2
90-100	3.3	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