



REPORT

25800 COMMERCE DRIVE, LAKE FOREST, CA 92630

Project No. G102328456

Date: April 1, 2016

REPORT NO. 102328456LAX-040

TEST OF ONE LED CHORUS

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

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

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SUMMARY

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

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	14348	14426
Total Power (W)	368.1	360.8
Luminaire Efficacy (LPW)	38.98	39.98

Criteria	Result
Power Factor	0.972
Current ATHD %	15.83
Correlated Color Temperature (CCT - K)	2712
Color Rendering Index (CRI - Ra)	80.8
Color Rendering Index (CRI - R9)	10.6
DUV	0.001
Chromaticity Coordinate (x)	0.458
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.262
Chromaticity Coordinate (v')	0.526

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

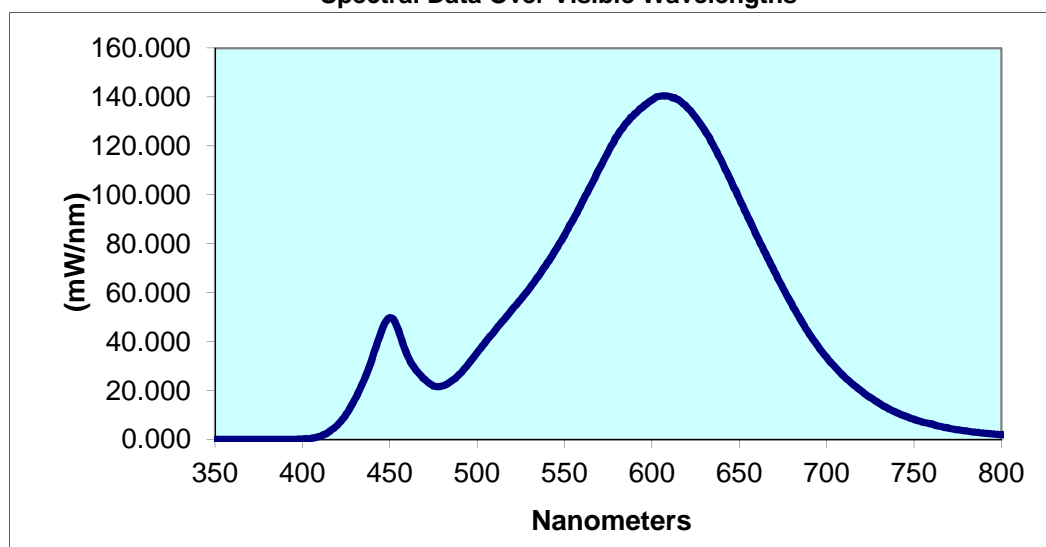
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN-1603210811-001	UP	120.0	3157	368.1	0.9716	15.83	14348	38.98

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')
2712	80.8	10.6	0.001	0.458	0.409	0.262	0.526

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.023	440	33.400	530	61.97	620	135.800	710	25.780
355	0.023	445	43.700	535	66.74	625	131.800	715	22.540
360	0.023	450	49.870	540	72.06	630	126.600	720	19.720
365	0.023	455	44.630	545	77.61	635	120.500	725	17.090
370	0.023	460	34.580	550	83.58	640	113.600	730	14.790
375	0.023	465	28.270	555	90.11	645	106.000	735	12.760
380	0.023	470	24.540	560	96.81	650	98.400	740	11.000
385	0.023	475	21.910	565	103.80	655	90.760	745	9.534
390	0.023	480	21.910	570	110.90	660	83.270	750	8.255
395	0.023	485	23.770	575	117.70	665	75.990	755	7.118
400	0.213	490	26.860	580	124.00	670	68.810	760	6.391
405	0.539	495	30.950	585	129.40	675	61.920	765	5.376
410	1.371	500	35.550	590	133.20	680	55.300	770	4.642
415	3.112	505	40.140	595	136.00	685	49.040	775	3.973
420	5.871	510	44.400	600	138.80	690	43.240	780	3.477
425	10.360	515	48.810	605	140.50	695	38.090		
430	16.350	520	53.140	610	140.30	700	33.520		
435	24.010	525	57.300	615	139.00	705	29.500		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

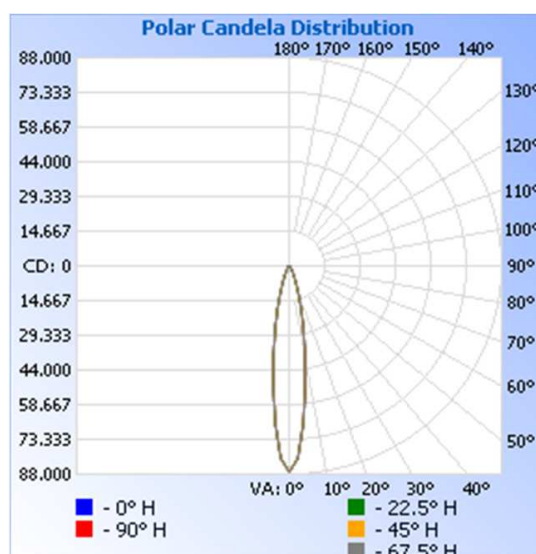
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

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	3126	360.8	0.969	14426	39.98

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 87,036.5

Angle	0	22.5	45	67.5	90
0	87036	87036	87036	87036	87036
5	66813	66813	66813	66813	66813
10	37451	37451	37451	37451	37451
15	19024	19024	19024	19024	19024
20	8963	8963	8963	8963	8963
25	4456	4456	4456	4456	4456
30	2432	2432	2432	2432	2432
35	1234	1234	1234	1234	1234
40	629	629	629	629	629
45	395	395	395	395	395
50	264	264	264	264	264
55	202	202	202	202	202
60	128	128	128	128	128
65	70	70	70	70	70
70	75	75	75	75	75
75	76	76	76	76	76
80	21	21	21	21	21
85	29	29	29	29	29
90	50	50	50	50	50

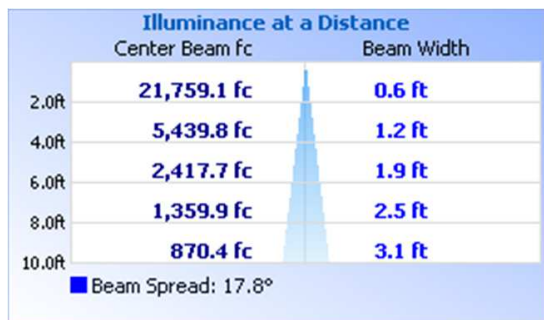


RESULTS OF TEST (cont'd)

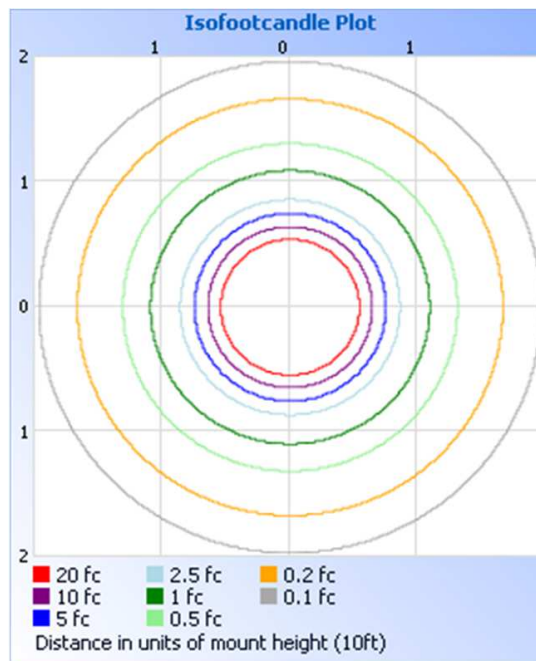
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	12926	89.6
0-40	13754	95.3
0-60	14245	98.7
60-90	174.0	1.2
0-90	14419	100.0
90-180	6.9	0.0
0-180	14426	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	5358	37.1
10-20	5385	37.3
20-30	2184	15.1
30-40	828.0	5.7
40-50	311.6	2.2
50-60	178.7	1.2
60-70	94.5	0.7
70-80	54.7	0.4
80-90	24.8	0.2
90-100	6.9	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