



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G102406056

Date: December 28, 2015

REPORT NO. 102406056LAX-004

TEST OF ONE BRILLIANT 2700K 80CRI 7.5W 25 DEGREE

MODEL NO. SM16GW-07-25D-827-03-S3

RENDERED TO

SORAA INC
6500 KAISER DR
FREMONT, CA 94555-3661

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-00660665.

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 production sample of model number SM16GW-07-25D-827-03-S3. The sample was received by Intertek on December 18, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1512180812-004.

DATES OF TESTS: December 22, 2015

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SUMMARY

Model No.:	SM16GW-07-25D-827-03-S3
Description:	Brilliant 2700K 80CRI 7.5W 25 degree

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	469.6	478.9
Total Power (W)	7.620	7.635
Luminaire Efficacy (LPW)	61.63	62.72

Criteria	Result
Power Factor	0.754
Current ATHD %	41.94
Correlated Color Temperature (CCT - K)	2633
Color Rendering Index (CRI - Ra)	83.1
Color Rendering Index (CRI - R9)	8.7
DUV	0.001
Chromaticity Coordinate (x)	0.463
Chromaticity Coordinate (y)	0.408
Chromaticity Coordinate (u')	0.266
Chromaticity Coordinate (v')	0.527

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	11/30/15	12/30/15
LabSphere Spectrometer	CDS-3020	000834	11/30/15	12/30/15
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	11/19/16
Temperature Humidity Meter	971	001180	05/26/15	05/26/16
DC Power Supply	LPS-100-0833	000836	05/07/15	05/07/16
LSI High Speed Mirror Goniometer	6440T	000943	12/07/15	01/07/16
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	12/04/15	12/04/16
Temperature Humidity Meter	971	001180	05/26/15	05/26/16
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

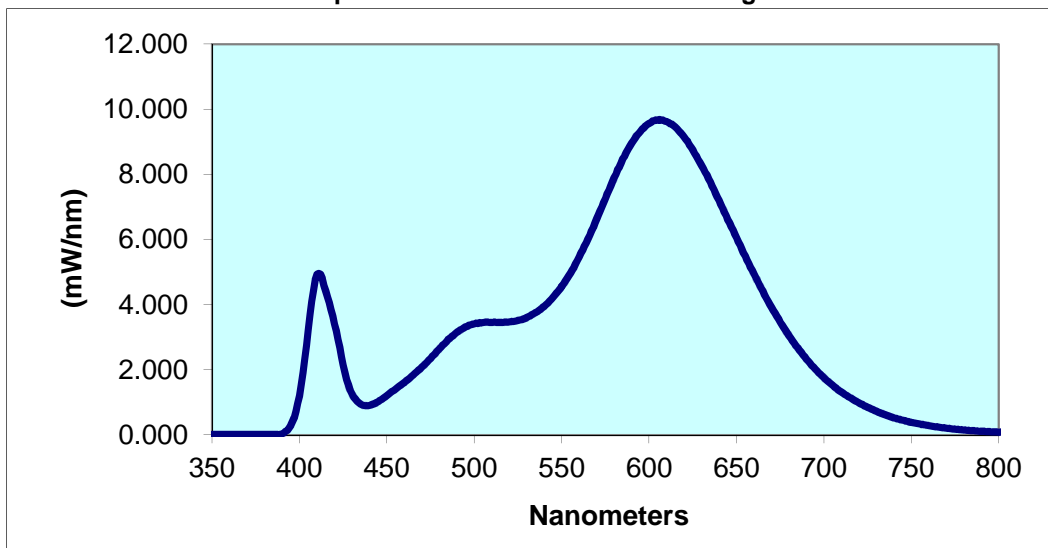
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1512180812-004	UP	230.0	43.99	7.620	0.754	41.94	469.6	61.63

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')
2633	83.1	8.7	0.001	0.463	0.408	0.266	0.527

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.008	440	0.904	530	3.611	620	9.141	710	1.317
355	0.008	445	1.019	535	3.756	625	8.745	715	1.137
360	0.008	450	1.209	540	3.956	630	8.276	720	0.984
365	0.008	455	1.412	545	4.228	635	7.753	725	0.850
370	0.008	460	1.615	550	4.557	640	7.197	730	0.729
375	0.008	465	1.837	555	4.977	645	6.611	735	0.619
380	0.008	470	2.083	560	5.462	650	6.043	740	0.525
385	0.008	475	2.348	565	6.022	655	5.481	745	0.449
390	0.030	480	2.647	570	6.641	660	4.943	750	0.384
395	0.292	485	2.928	575	7.261	665	4.413	755	0.332
400	1.204	490	3.154	580	7.895	670	3.918	760	0.283
405	3.216	495	3.321	585	8.483	675	3.466	765	0.244
410	4.932	500	3.416	590	8.967	680	3.047	770	0.208
415	4.414	505	3.453	595	9.323	685	2.674	775	0.175
420	3.415	510	3.455	600	9.567	690	2.325	780	0.153
425	2.156	515	3.454	605	9.667	695	2.022		
430	1.258	520	3.474	610	9.626	700	1.754		
435	0.946	525	3.517	615	9.454	705	1.520		

Spectral Data Over Visible Wavelengths



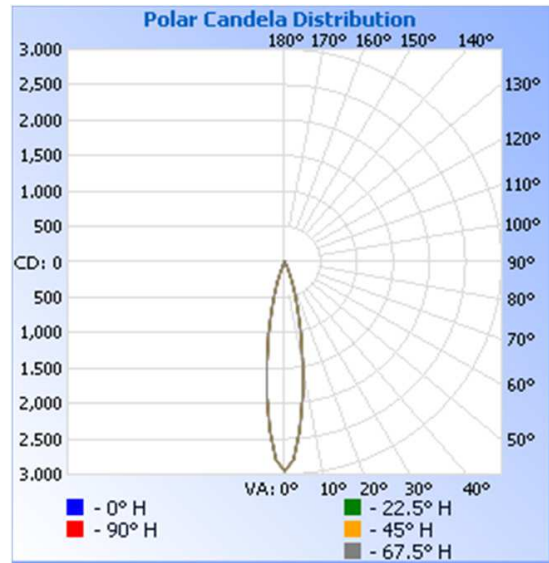
RESULTS OF TEST (cont'd)

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)
LAN1512180812-004	UP	230.0	44.10	7.635	0.753	478.9	62.72

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	2952	2952	2952	2952	2952
5	2380	2380	2380	2380	2380
10	1425	1425	1425	1425	1425
15	701	701	701	701	701
20	289	289	289	289	289
25	79	79	79	79	79
30	30	30	30	30	30
35	19	19	19	19	19
40	14	14	14	14	14
45	13	13	13	13	13
50	11	11	11	11	11
55	8	8	8	8	8
60	7	7	7	7	7
65	5	5	5	5	5
70	4	4	4	4	4
75	2	2	2	2	2
80	1	1	1	1	1
85	1	1	1	1	1
90	0	0	0	0	0

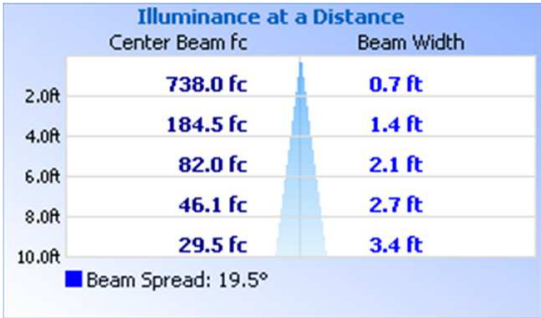


RESULTS OF TEST (cont'd)

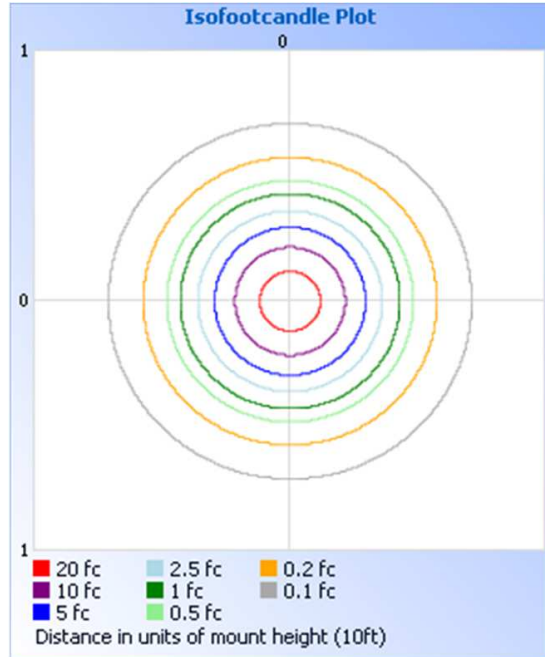
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	440.2	91.9
0-40	452.8	94.5
0-60	470.6	98.3
60-90	8.2	1.7
0-90	478.8	100.0
90-180	0.0	0.0
0-180	478.9	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	194.7	40.7
10-20	198.5	41.5
20-30	47.0	9.8
30-40	12.5	2.6
40-50	10.2	2.1
50-60	7.7	1.6
60-70	5.2	1.1
70-80	2.4	0.5
80-90	0.7	0.1

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