



Report No.: GZE160886-O

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

High-bay Luminaires for Commercial and Industrial Buildings

Model name(s): UHB-300-XX

Remark: The letter "X" in the model name stands for CCT as bellow :
4=4000K, 5=5000K; "YY" stands for mounting option as bellow : YK=
Yoke, PD=Knuckle ; "ZZ" stands for housing color as bellow :
BR=Bronze, BK=Black, WH=White, GY=Gray.

Representative (Tested) Model: UHB-300-NW

UHB-300-CW

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Review By:

Johnson Sun

Tommy Liang

Engineer: Johnson Sun

Manager: Tommy Liang

Update: Sep.14, 2016

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co. Ltd Testing Center

NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

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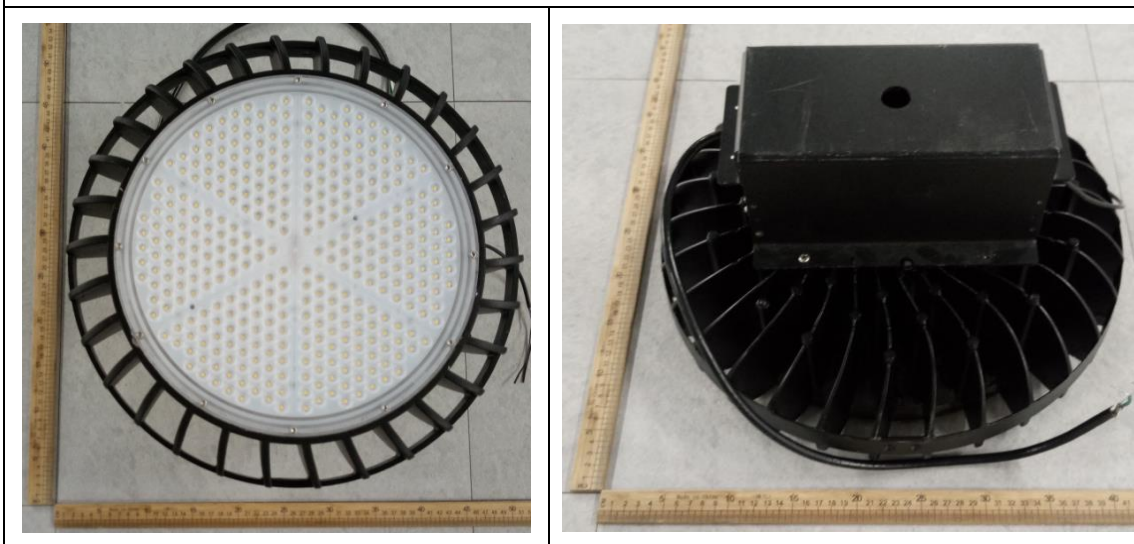
Fax: 8620-32290422

<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	WESTGATE MFG.	
Brand Name		
Model Number	UHB-300-XX	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-bay Luminaires for Commercial and Industrial Buildings	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	300W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	GZE160886-O1(4000K);O2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	: Sep.08,2016
Date of Test	: Sep.10,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 ° vertical intervals and 22.5 ° horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2016-09-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	UHB-300-NW		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	2.452	293.0	0.9957	3.87
O1	277.0	60	1.120	287.4	0.9264	17.68
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

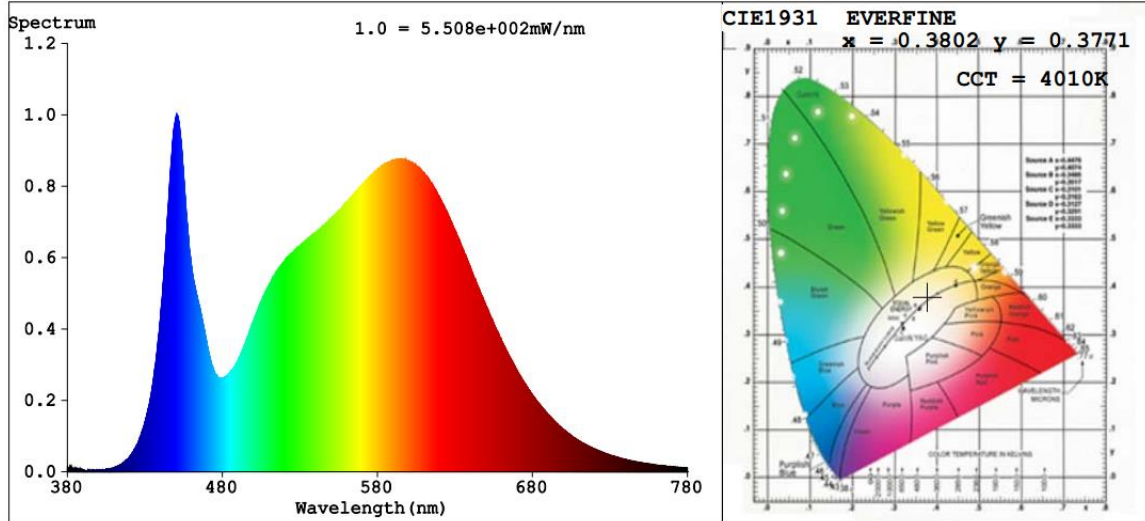
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	13
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	4010	R3	95	R11	82
Duv	0.0002	R4	83	R12	63
Chromaticity (x, y)	x=0.3802 y=0.3771	R5	82	R13	84
Chromaticity (u', v')	u'=0.2248 v'=0.5017	R6	85	R14	97
Color Rendering Index (CRI)	83.8	R7	87	R15	77
R9	13	R8	66	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	38586	38102	$\geq 10000 (-10\%)$	
Luminous Efficacy (lm/W)	131.69	132.57	Standard: $\geq 105(-3\%)$	Premium: $\geq 130(-3\%)$
Zonal lumens in the 20-50 °zone (%)	56.3	--	$\geq 30(-10)$	
Beam Angle (°)	92.1	--	--	
Center Beam Candle Power (cd)	18827	--	--	

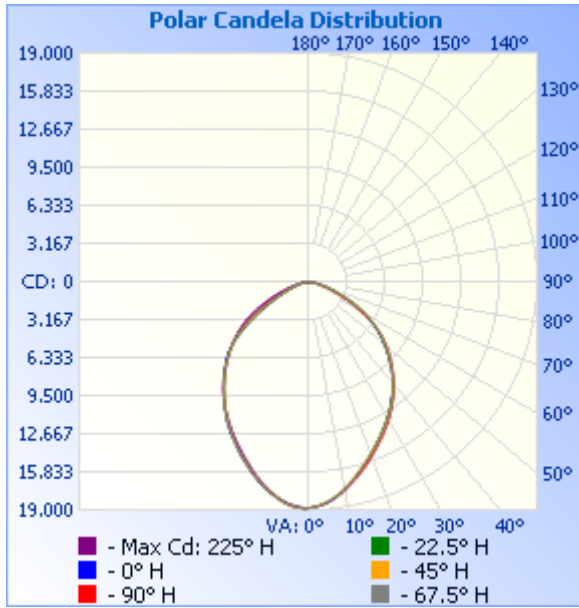
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	13,068.8	33.9%
0-40	20,666.6	53.6%
0-60	34,119.9	88.4%
60-90	4,460.6	11.6%
70-100	1,286.1	3.3%
90-120	0	0%
0-90	38,580.5	100%
90-180	0	0%
0-180	38,580.5	100%

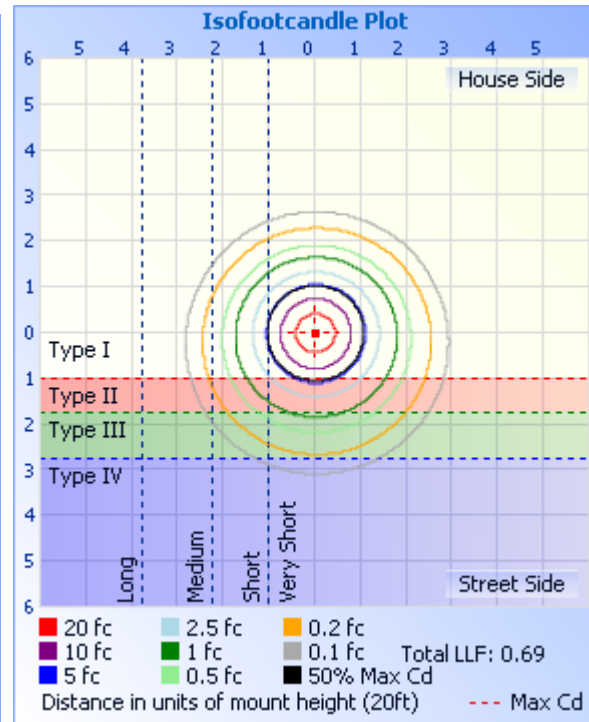
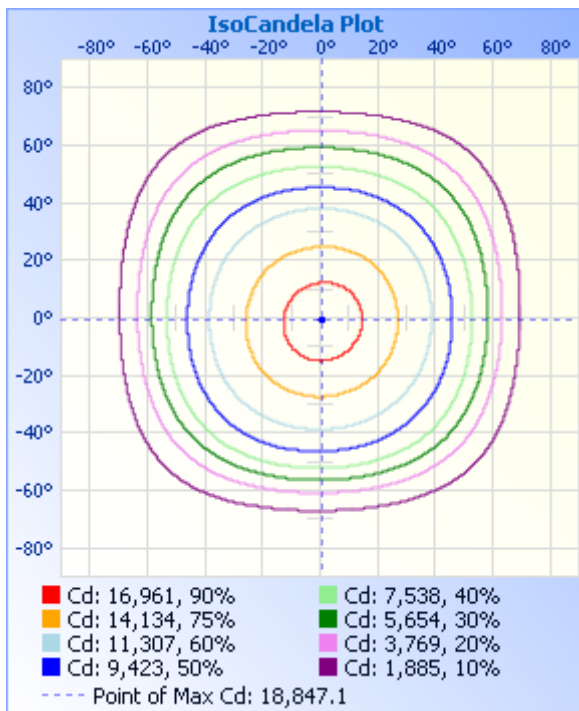
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,741.0	4.5%	90-100	0	0%
10-20	4,684.0	12.1%	100-110	0	0%
20-30	6,643.9	17.2%	110-120	0	0%
30-40	7,597.8	19.7%	120-130	0	0%
40-50	7,466.8	19.4%	130-140	0	0%
50-60	5,986.5	15.5%	140-150	0	0%
60-70	3,174.5	8.2%	150-160	0	0%
70-80	1,080.9	2.8%	160-170	0	0%
80-90	205.2	0.5%	170-180	0	0%



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	65.1 fc	35.2 ft	35.3 ft
34.0ft	16.3 fc	70.4 ft	70.6 ft
51.0ft	7.2 fc	105.6 ft	105.9 ft
68.0ft	4.1 fc	140.8 ft	141.2 ft
85.0ft	2.6 fc	176.0 ft	176.5 ft
102.0ft	1.8 fc	211.1 ft	211.8 ft

■ Vert. Spread: 92.0°
■ Horiz. Spread: 92.1°



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C (DEG) \ γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883
5	1860	1857	1854	1847	1843	1837	1838	1840	1844	1847	1852	1856	1859	1862	1864	1863
10	1787	1783	1775	1765	1755	1748	1748	1752	1759	1768	1775	1782	1785	1783	1782	1786
15	1681	1677	1668	1653	1640	1634	1634	1641	1655	1671	1681	1685	1687	1685	1681	1682
20	1566	1558	1549	1535	1525	1521	1524	1531	1545	1563	1571	1572	1573	1570	1568	1570
25	1451	1445	1438	1425	1417	1413	1419	1426	1438	1452	1461	1460	1457	1456	1456	1455
30	1338	1332	1326	1315	1312	1310	1315	1323	1333	1341	1352	1346	1342	1340	1340	1342
35	1219	1221	1216	1208	1205	1205	1211	1217	1223	1227	1230	1220	1215	1210	1208	1215
40	1090	1096	1096	1093	1093	1093	1099	1103	1104	1103	1104	1094	1088	1085	1082	1086
45	957	959	964	965	967	966	973	977	983	986	985	977	969	961	956	957
50	823	825	830	832	834	838	847	852	857	859	855	843	831	827	824	824
55	678	687	693	696	700	705	710	715	713	694	664	630	611	613	632	659
60	485	519	541	551	556	560	560	550	524	485	445	409	390	395	412	448
65	302	338	369	387	395	396	388	367	338	298	265	237	223	228	239	266
70	168	193	219	236	243	243	232	214	191	163	146	130	123	127	130	145
75	88.4	101	116	127	131	131	123	112	98.9	84.6	79.3	71.4	67.7	71.8	69.7	75.8
80	43.1	47.2	54.1	58.9	60.5	61.1	57.3	52.9	48.1	42.3	41.4	37.4	35.4	38.2	35.7	37.8
85	16.0	16.7	18.3	19.2	19.6	20.4	20.2	19.6	18.4	16.5	15.8	13.7	12.6	13.6	13.4	14.4
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BUG Rating: B5-U0-G2

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	6486.8	16.8
FM - Front-Medium(30-60)	10617	27.5
FH - Front-High(60-80)	2480.9	6.4
FVH - Front-Very High(80-90)	116.54	0.3
Total Forward Light	19701	51.1

BL - Back-Low(0-30)	6583	17.1
BM - Back-Medium(30-60)	10439	27.1
BH - Back-High(60-80)	1774.6	4.6
BVH - Back-Very High(80-90)	88.638	0.2
Total Back Light	18885	48.9

UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

BUG(Back,Up,Glare) Rating	B5-U0-G2
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	18885	0	18885
Street Side	19701	0	19701

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-09-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TLHBF3005YKKBK		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	2.419	288.9	0.9953	4.02
O2	277.0	60	1.1036	283.1	0.9261	17.81
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

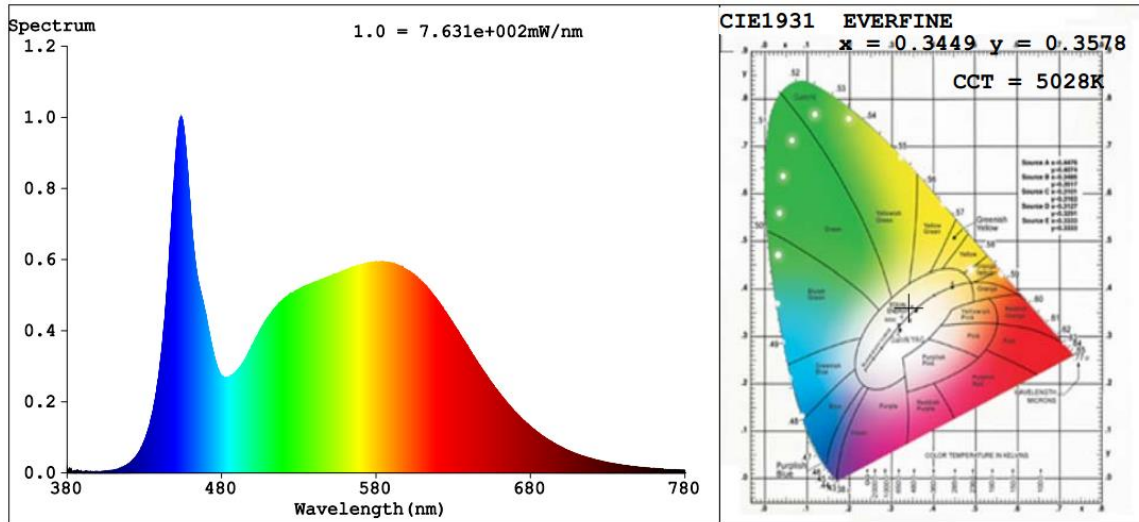
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	11
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	5028	R3	94	R11	81
Duv	0.0032	R4	82	R12	61
Chromaticity (x, y)	x=0.3449 y=0.3578	R5	83	R13	85
Chromaticity (u', v')	u'=0.2089 v'=0.4876	R6	86	R14	97
Color Rendering Index (CRI)	84.0	R7	87	R15	77
R9	11	R8	67	--	--

Photometric Measurement – Sphere-Spectroradiometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	39108	38612	>=10000 (-10%)	
Luminous Efficacy (lm/W)	135.37	136.39	Standard: >= 105(-3%)	Premium: >= 130(-3%)

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******