

LM-79-08 Test Report

For

**DONGGUAN THAILIGHT
SEMICONDUCTOR LIGHTING CO.,LTD****(Brand Name: THAILIGHT)**

Sanhui Ind. Area, Cunwei, Hengli, Dongguan, China.

**Outdoor Pole/Arm-mounted Area and Roadway
Luminaires**Model name(s): TLSTB300XYZZ
TLSTB300XYZZ(PC)

Remark: X=CCT(4=4000K,5=5000K,6=5700K)

YY=Mounting Option(SA=Street Arm)

ZZ=Housing Color (use 2 digits to indicate all of color)

The data of TLSTB300XYZZ comes from TLFLI300XYZZ in
GZE161105-AV;The only difference of these two models is the mounting option
(PC) represents the product with occupancy sensor or photocontrol.Representative (Tested) Model: TLSTB3004SAZZ
TLSTB3006SAZZ

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

Test & Report By:

*Johnson Sun*Engineer: Johnson Sun
Update: Nov.16, 2016

Review By:

Tommy Liang

Manager: Tommy Liang

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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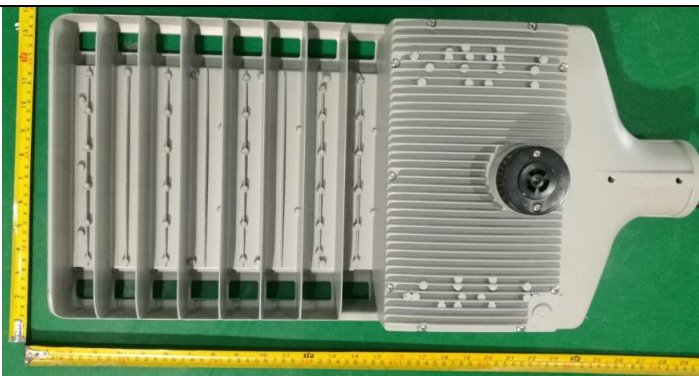
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1.1 Product Information:

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name	THAILIGHT	
Model Number	TLSTB300XYZZ, TLSTB300XYZZ(PC)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-mounted Area and Roadway Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	300W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K,5700K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BD1(4000K),BD2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

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1.2 Test Specifications:

Date of Receipt	: Nov.11,2016
Date of Test	: Nov.12,2016
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TLSTB3004SAZZ		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BD1	120.0	60	2.611	312.1	0.9963	7.59
	277.0	60	1.173	302.0	0.9297	10.36
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	80	R9	9
Frequency (Hz)	60	R2	87	R10	70
CCT (K)	4073	R3	93	R11	82
Duv	0.0024	R4	83	R12	61
Chromaticity (x, y)	x=0.3789 y=0.3808	R5	81	R13	82
Chromaticity (u', v')	u'=0.2224 v'=0.5031	R6	82	R14	96
Color Rendering Index (CRI)	82.4	R7	87	R15	74
R9	9	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)	35839	35021	>=1000 (-10%)	
Luminous Efficacy (lm/W)	114.83	115.96	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Zonal lumens in the 0-90 °zone (%)	100	--	>=100(-1)	
Zonal lumens in the 80-90 °zone (%)	1.7	--	<=10(3)	
Beam Angle (°)	108.6	--	--	
Center Beam Candle Power (cd)	12411	--	--	

Laboratory: Standard-Tech Co. Ltd Testing Center**NVLAP CODE: 201011-0**

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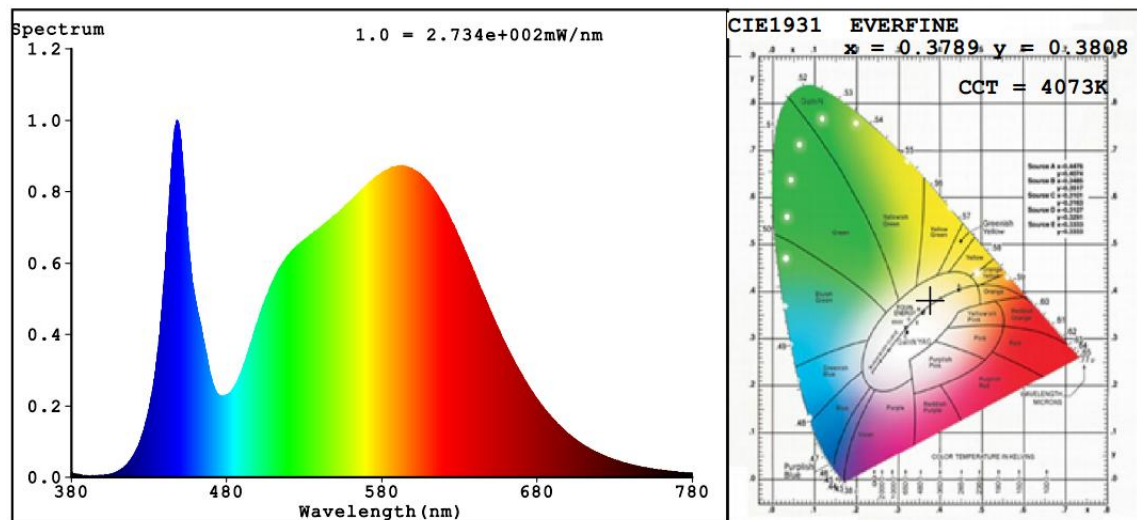
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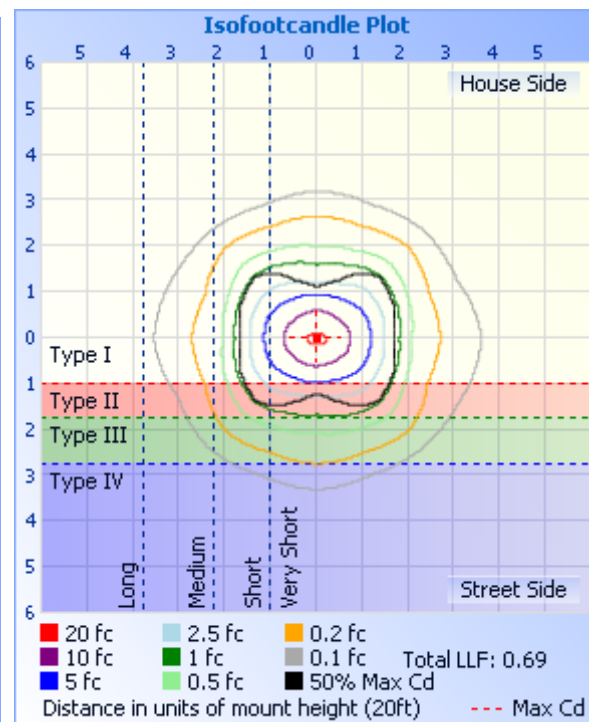
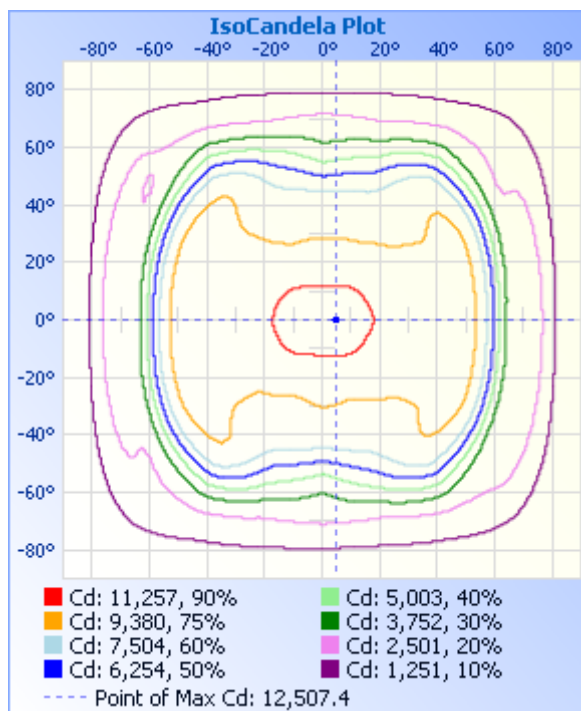
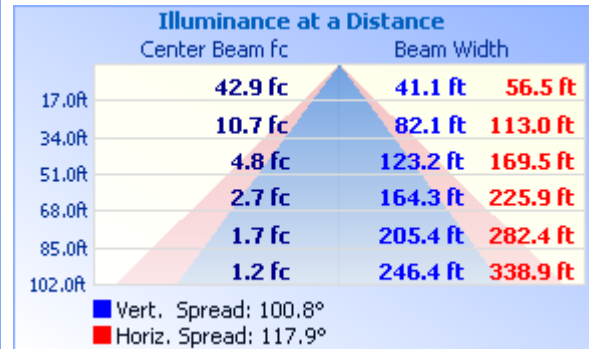
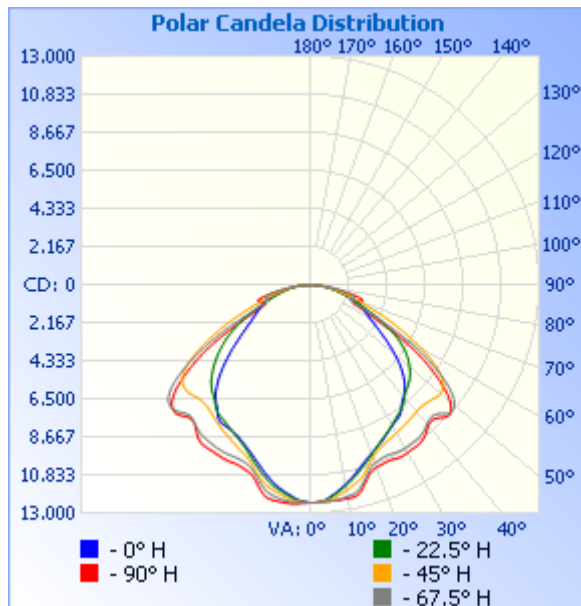
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	9,045.5	25.2%
0-40	15,116.5	42.2%
0-60	28,919.6	80.7%
60-90	6,916.9	19.3%
70-100	2,867.2	8%
90-120	0	0%
0-90	35,836.6	100%
90-180	0	0%
0-180	35,836.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,160.5	3.2%	90-100	0	0%
10-20	3,168.5	8.8%	100-110	0	0%
20-30	4,716.4	13.2%	110-120	0	0%
30-40	6,071.0	16.9%	120-130	0	0%
40-50	7,012.3	19.6%	130-140	0	0%
50-60	6,790.9	18.9%	140-150	0	0%
60-70	4,049.8	11.3%	150-160	0	0%
70-80	2,255.3	6.3%	160-170	0	0%
80-90	611.8	1.7%	170-180	0	0%



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Table--1 UNIT: x10cd

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	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	
5	1251	1247	1237	1224	1218	1223	1231	1238	1236	1228	1219	1211	1208	1216	1229	1241	
10	1244	1224	1194	1167	1154	1162	1188	1224	1236	1213	1181	1157	1152	1167	1189	1219	
15	1169	1156	1135	1101	1082	1095	1134	1166	1183	1161	1130	1091	1078	1098	1129	1145	
20	1112	1085	1056	1036	1022	1027	1045	1080	1106	1078	1045	1016	1007	1020	1046	1079	
25	1107	1068	1013	983	975	969	1000	1067	1099	1064	995	958	959	966	1006	1072	
30	1099	1058	973	935	929	926	975	1076	1105	1066	954	925	939	929	971	1069	
35	1090	1045	932	890	894	885	958	1067	1096	1059	927	903	915	902	938	1057	
40	1026	1013	897	827	828	833	942	1034	1046	1043	910	845	836	847	909	1024	
45	1050	996	888	779	754	792	945	1039	1069	1038	921	781	724	795	909	1030	
50	1023	1024	898	704	637	739	966	1069	1039	1058	943	684	585	713	926	1049	
55	840	930	875	599	505	659	911	918	844	940	902	573	457	612	879	921	
60	563	692	726	481	401	540	733	648	562	694	736	460	370	494	719	660	
65	310	413	512	362	340	390	517	358	315	406	513	348	315	363	512	370	
70	289	251	334	264	284	264	329	242	280	250	326	248	259	246	325	254	
75	284	233	219	190	197	182	207	260	293	237	206	175	189	167	203	257	
80	143	165	131	124	109	122	125	174	156	174	126	119	110	113	122	159	
85	40.0	60.1	54.0	54.9	36.6	59.0	53.3	63.2	46.7	67.7	57.8	55.0	36.7	57.6	53.2	53.1	
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-G3**IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	4535.5	12.7
FM - Front-Medium(30-60)	9956.9	27.8
FH - Front-High(60-80)	3188.3	8.9
FVH - Front-Very High(80-90)	306.48	0.9
Total Forward Light	17987	50.2

BL - Back-Low(0-30)	4510.1	12.6
BM - Back-Medium(30-60)	9920.2	27.7
BH - Back-High(60-80)	3116.6	8.7
BVH - Back-Very High(80-90)	305.27	0.9
Total Back Light	17852	49.8

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-G3
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	17852	0	17852
Street Side	17987	0	17987

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

Test date	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TLSTB3006SAZZ		

Electrical Measurement :

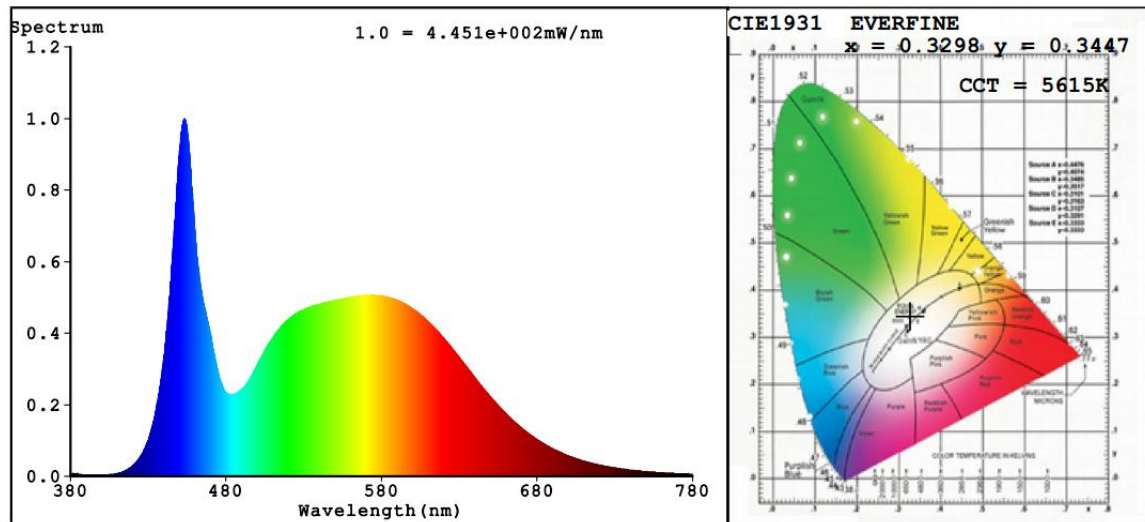
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BD2	120.0	60	2.583	308.6	0.9958	7.64
	277.0	60	1.160	298.6	0.9291	10.41
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	10
Frequency (Hz)	60	R2	89	R10	72
CCT (K)	5615	R3	92	R11	81
Duv	0.0030	R4	82	R12	58
Chromaticity (x, y)	x=0.3298 y=0.3447	R5	82	R13	84
Chromaticity (u', v')	u'=0.2037 v'=0.4790	R6	83	R14	96
Color Rendering Index (CRI)	83.3	R7	88	R15	77
R9	10	R8	69	--	--

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)	38394	37518	>=1000 (-10%)	
Luminous Efficacy (lm/W)	124.41	125.65	Standard: >= 100(-3%)	Premium: >= 120(-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 *******

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