



Report No.: GZE160746-E-R1

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

Beyond LED Technology (Brand Name: Beyond LED)

1939 Parker Ct Suite C
Stone Mountain, GA 30087

Outdoor Pole/Arm-mounted Area and Roadway Luminaires

Model name(s): BLT-NSB-150WAT3

Remark: The Y can be AM, YM, DM,FM,IM or TM
represents the different Pole Mounting Bracket

Representative (Tested) Model: SNC-S150HLT3YA1 4000K
SNC-S150HLT3YA1 5700K

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

Test & Report By:

Jamie Lin

Engineer: Jamie Lin

Date: Aug.08,2016

Update:Jan.14,2017

Update: Aug.08,2017

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

Review By:

Tommy Liang

Manager: Tommy Liang

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

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

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Revision Details

Report No.Revision	Revised Item	Revised Reason	Issue date
GZE160746-E-R	Photo and BUG Rating	For manufacturer's requirement, add Pole Mounting Bracket photos and BUG Rating.	Jan.14,2017
GZE160746-E-R1			Aug.08,2017

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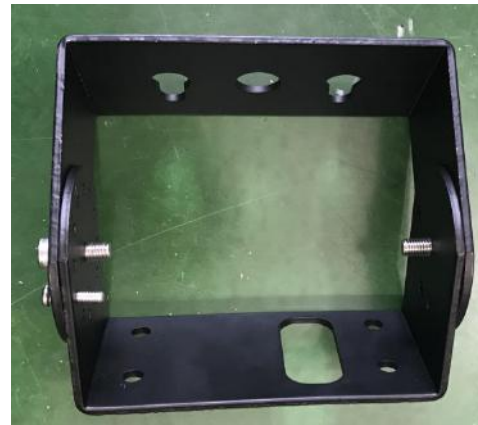
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1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED	
Model Number	BLT-NSB-150WAT3	
SKU (if available)	110787	
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,60 Hz	
Nominal Power	150W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K, 5000K,5700K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-xyy003000W21	
Sample Number	GZE160746-E1(4000K),E2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

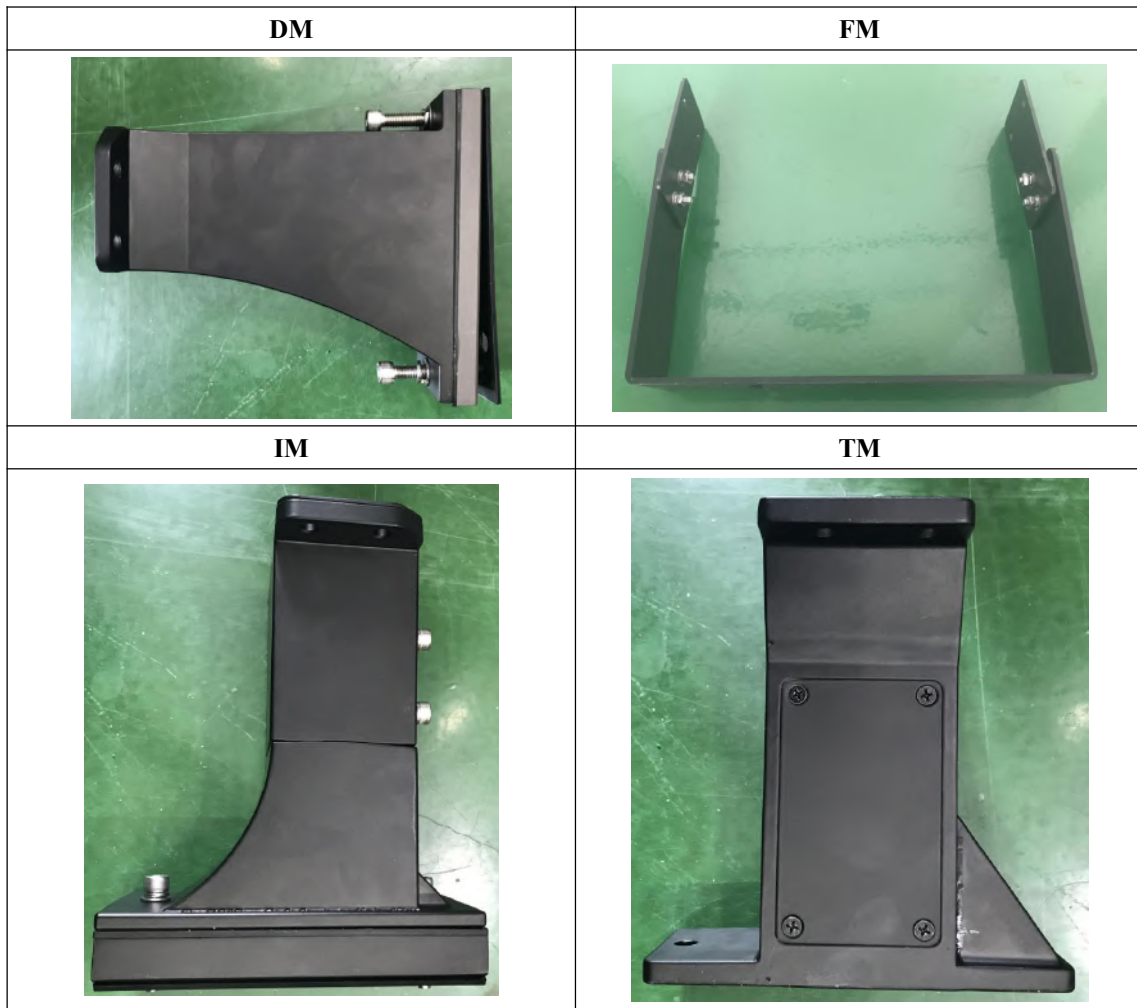
AM

YM

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1.2 Test Specifications:

Date of Receipt	Jul.30,2016
Date of Test	Aug.01,2016
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	2016-08-01	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-NSB-150WAT3		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160746-E1	120.0	60	1.248	148.7	0.9930	7.95
	277.0	60	0.5714	146.6	0.9262	14.29
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

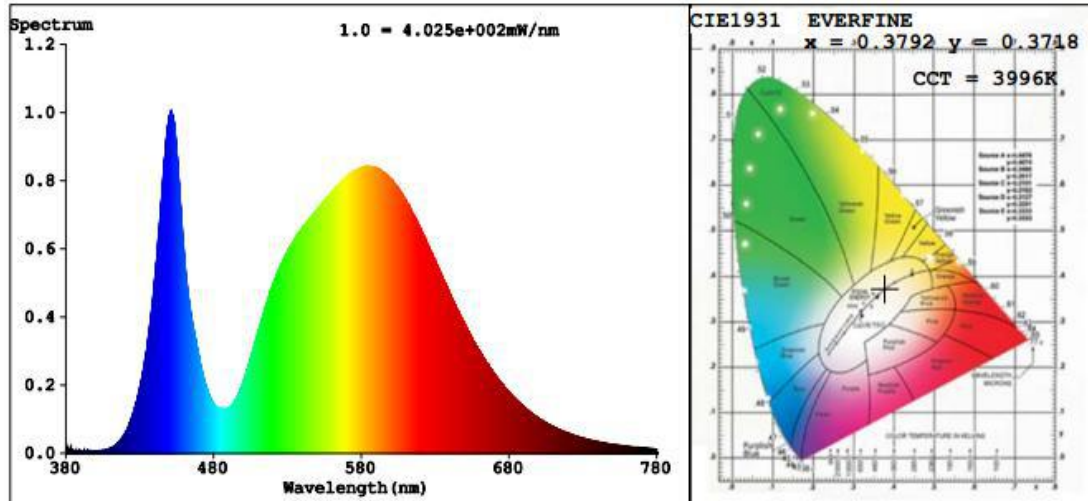
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	81	R10	53
CCT (K)	3996	R3	87	R11	67
Duv	-0.0020	R4	72	R12	43
Chromaticity (x, y)	x=0.3792 y=0.3718	R5	71	R13	74
Chromaticity (u', v')	u'=0.2263 v'=0.4992	R6	72	R14	92
Color Rendering Index (CRI)	74.1	R7	82	R15	68
R9	0	R8	56	--	--

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)	19355	19130	$\geq 10000(-10\%)$	
Luminous Efficacy (lm/W)	130.16	130.49	Standard: $\geq 100(-3\%)$	Premium: $\geq 120(-3\%)$
Zonal lumens in the 0-90° zone (%)	99.8	--	$\geq 100(-1)$	
Zonal lumens in the 80-90° zone (%)	0.4	--	$\leq 10(+3)$	
Beam Angle (°)	115.5	--	--	
Center Beam Candle Power (cd)	5000	--	--	

Spectral Power Distribution & Chromaticity Diagram

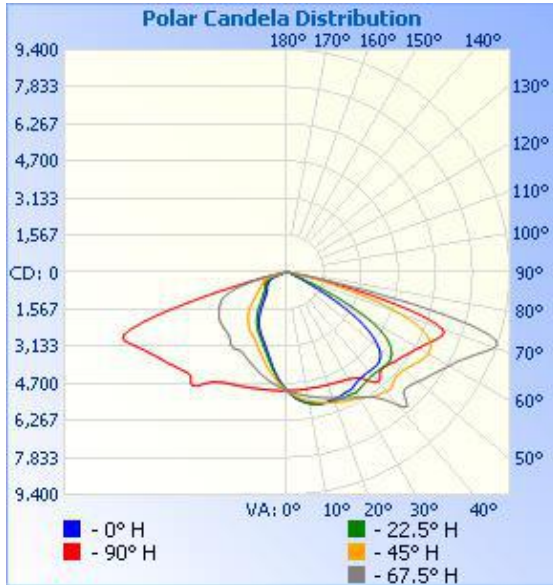


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,956.0	20.4%
0-40	6,824.7	35.3%
0-60	13,996.9	72.3%
60-90	5,314.1	27.5%
70-100	1,802.6	9.3%
90-120	15.6	0.1%
0-90	19,311.0	99.8%
90-180	41.4	0.2%
0-180	19,352.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	471.1	2.4%	90-100	3.0	0%
10-20	1,349.8	7.0%	100-110	5.4	0%
20-30	2,135.1	11.0%	110-120	7.1	0%
30-40	2,868.7	14.8%	120-130	7.4	0%
40-50	3,422.6	17.7%	130-140	6.2	0%
50-60	3,749.6	19.4%	140-150	4.9	0%
60-70	3,514.5	18.2%	150-160	3.8	0%
70-80	1,730.6	8.9%	160-170	2.4	0%
80-90	68.9	0.4%	170-180	1.0	0%

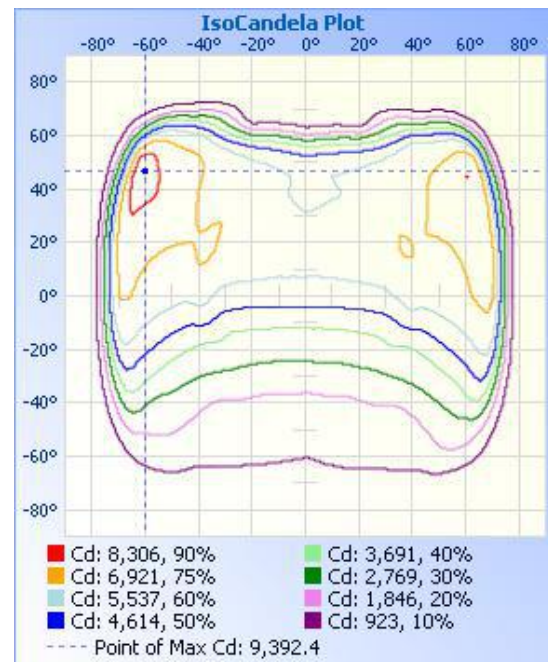
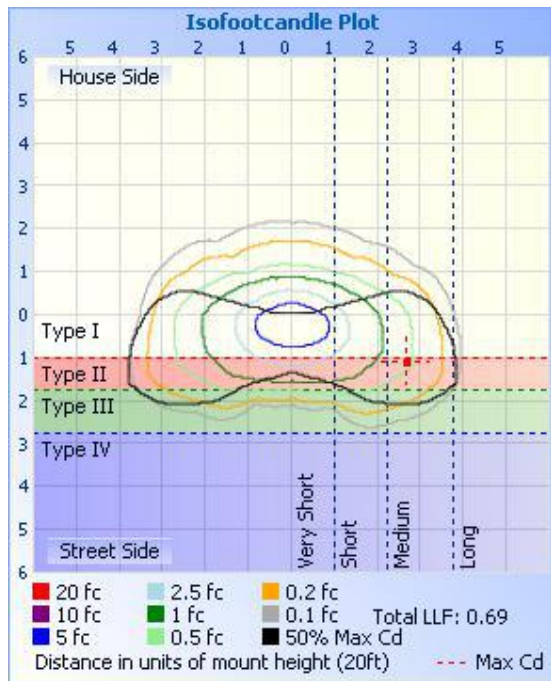
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	17.30 fc	29.5 ft	85.3 ft
34.0ft	4.32 fc	59.0 ft	170.5 ft
51.0ft	1.92 fc	88.5 ft	255.8 ft
68.0ft	1.08 fc	118.0 ft	341.0 ft
85.0ft	0.69 fc	147.5 ft	426.3 ft
102.0ft	0.48 fc	177.0 ft	511.5 ft

■ Vert. Spread: 81.9°
■ Horiz. Spread: 136.5°



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γ (DEG) \ C (DEG)	C (DEG)															
	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
5	5016	5180	5305	5372	5398	5378	5291	5160	4997	4815	4626	4499	4460	4508	4628	4812
10	5045	5353	5535	5603	5637	5618	5521	5317	5000	4592	4212	3944	3860	3954	4226	4618
15	5084	5524	5702	5730	5741	5747	5692	5485	5025	4355	3771	3446	3349	3467	3813	4416
20	5156	5694	5830	5753	5715	5789	5851	5659	5061	4115	3405	3074	2990	3093	3456	4195
25	5250	5877	5947	5764	5670	5830	6001	5860	5120	3885	3127	2796	2700	2822	3177	4011
30	5383	6093	6055	5772	5607	5852	6135	6105	5215	3718	2917	2501	2355	2542	2977	3866
35	5678	6444	6245	5631	5449	5726	6402	6451	5473	3786	2735	2122	1913	2190	2804	3921
40	6231	7112	6277	5542	5439	5653	6559	7350	6023	3552	2439	1677	1479	1758	2539	3728
45	5980	6817	6133	5599	5449	5705	6426	7014	5721	3385	2086	1371	1217	1434	2251	3582
50	6188	6964	6192	5522	5105	5710	6437	7197	5900	3273	1704	1195	1092	1240	1857	3537
55	6434	7160	6403	4909	4075	5293	6684	7514	6107	3144	1432	1071	1027	1112	1502	3484
60	6761	7428	6429	3415	2092	4030	6880	7910	6419	2941	1268	996	923	1041	1286	3298
65	7219	7874	5831	1150	553	1572	6600	8484	6837	2588	1128	906	796	973	1124	3103
70	6994	8397	3724	273	268	302	5053	9319	6973	2111	950	607	429	642	1017	2665
75	2205	5597	923	167	173	180	1968	6783	3551	1484	537	168	186	190	550	1523
80	203	422	173	93.8	86.8	97.5	286	898	447	513	95.9	75.6	96.2	76.4	96.4	377
85	46.2	78.2	42.3	27.6	21.2	33.0	55.8	85.4	58.7	41.9	28.2	28.7	34.4	28.5	26.1	40.8
90	4.53	4.66	1.86	0.00	0.00	0.05	2.08	5.27	4.21	3.71	0.59	0.00	0.00	0.00	1.71	5.27
95	7.04	3.28	0.91	0.00	0.00	0.00	1.12	3.88	5.49	6.68	1.97	0.00	0.00	0.00	3.57	8.61
100	10.5	3.49	0.85	0.05	0.00	0.21	1.17	4.14	8.54	10.2	4.89	0.21	0.00	0.22	6.44	12.0
105	12.8	4.70	1.22	0.48	0.31	0.37	1.38	5.52	11.1	11.5	7.07	1.65	0.59	2.30	8.72	13.0
110	14.6	6.29	1.49	0.69	0.53	0.85	1.91	6.90	12.7	12.9	7.70	3.71	2.13	4.59	9.68	14.7
115	15.3	7.25	2.18	0.85	0.85	1.22	2.55	8.02	13.0	15.0	8.82	4.19	3.56	5.65	10.7	15.8
120	15.8	7.56	2.97	1.38	1.22	1.49	3.51	6.43	13.2	15.2	10.5	6.43	5.16	7.42	11.6	14.8
125	15.5	8.14	3.13	2.07	2.12	2.13	3.83	8.97	12.2	14.3	9.93	8.38	8.08	9.12	10.6	13.5
130	14.6	8.09	3.19	2.39	2.28	2.93	3.88	8.98	11.8	12.4	9.82	9.81	9.51	10.7	11.1	11.8
135	12.3	7.25	3.45	2.97	2.91	3.36	4.09	7.86	10.7	11.0	9.28	10.1	9.88	10.6	10.5	11.1
140	11.9	7.19	3.77	3.50	3.13	3.84	4.20	7.91	10.3	11.0	8.65	9.49	9.77	9.75	9.09	11.4
145	10.9	6.19	4.61	3.92	3.55	4.52	3.93	7.44	9.90	10.3	8.98	9.18	9.51	9.70	9.84	10.7
150	10.2	6.08	6.36	4.77	4.78	5.11	5.31	7.49	9.69	10.0	9.93	10.2	10.1	9.97	11.7	10.5
155	8.12	6.50	7.32	5.94	5.68	5.59	6.69	7.96	8.53	9.68	9.34	10.0	9.23	9.80	11.0	9.29
160	8.32	7.08	7.75	6.52	6.26	6.23	7.28	8.07	7.96	8.83	8.92	9.86	9.13	9.27	9.83	9.35
165	8.48	7.25	8.49	7.37	6.80	7.20	8.08	7.70	8.80	8.20	8.60	9.86	9.08	9.27	9.57	9.57
170	9.06	8.72	10.3	9.12	8.49	9.22	10.0	8.18	10.1	10.1	10.5	12.4	11.9	11.9	11.5	12.4
175	9.64	10.1	11.2	9.92	10.6	10.2	11.3	8.87	10.7	10.5	10.9	12.3	11.9	12.3	11.5	12.4
180	9.12	10.2	10.9	10.1	10.9	10.5	11.2	8.98	9.32	9.31	9.98	10.8	10.1	11.0	10.5	11.4

BUG Rating: B3-U2-G2

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	2384.5	12.3
FM - Front-Medium(30-60)	6985.2	36.1
FH - Front-High(60-80)	3626.4	18.7
FVH - Front-Very High(80-90)	36.332	0.2
Total Forward Light	13048	67.4

BL - Back-Low(0-30)	1571.6	8.1
BM - Back-Medium(30-60)	3058.1	15.8
BH - Back-High(60-80)	1619	8.4
BVH - Back-Very High(80-90)	32.586	0.2
Total Back Light	6307.7	32.6

UL - Uplight-Low(90-100)	3.0793	0.0
UH - Uplight-High(100-180)	38.338	0.2
Total Up Light	41.417	0.2

BUG(Back,Up,Glare) Rating	B3-U2-G2
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	6281.2	26.408	6307.7
Street Side	13033	15.01	13048

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-01	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-NSB-150WAT3		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160746-E2	120.0	60	1.253	149.5	0.9943	7.16
	277.0	60	0.5737	147.4	0.9275	13.87
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

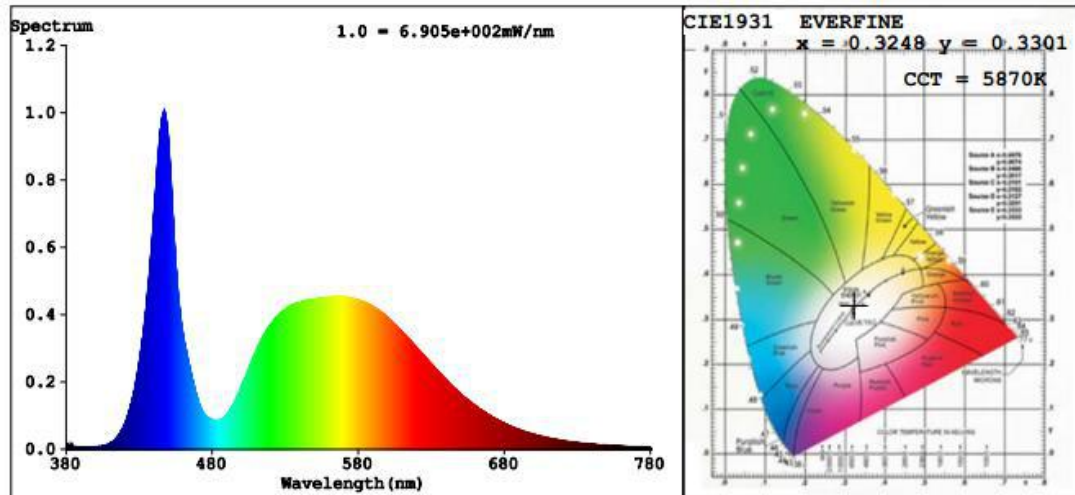
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	74	R9	0
Frequency (Hz)	60	R2	77	R10	44
CCT (K)	5870	R3	77	R11	76
Duv	0.0026	R4	77	R12	47
Chromaticity (x, y)	x=0.3248 y=0.3301	R5	75	R13	74
Chromaticity (u', v')	u'=0.2058 v'=0.4707	R6	69	R14	87
Color Rendering Index (CRI)	74.2	R7	80	R15	71
R9	0	R8	64	--	--

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)	19589	19361	$\geq 10000(-10\%)$	
Luminous Efficacy (lm/W)	131.03	131.35	Standard: $\geq 100(-3\%)$	Premium: $\geq 120(-3\%)$

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 *******