



Report No.: BLC1804018E-I

LM-79-08 Test Report

For

ASmart LIGHT CO., LTD

(Brand Name: ASmart)

506 N GARFIELD AVE SUITE#210 ALHAMBRA CA 91801

Replacement Lamps for Outdoor Pole/Arm-Mounted

Decorative Luminaires (UL Type B)

Model name(s): AST-TCLW-P-30WACA1Z-aaK

Remark: "Z" refers to lamp base, "-E" is E39 lamp base, "-EX" is EX39 lamp base.
"aaK" refers to CCT, can be 30K, 35K,40K, 45K, 50K, 57K.

Representative (Tested) Model: AST-TCLW-P-30WACA1Z-30K
AST-TCLW-P-30WACA1Z-57K

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: May 10, 2018

Review By:

Tommy Liang

Manager: Tommy Liang



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1.1 Product Information:

Organization Name	ASmart LIGHT CO., LTD	
Brand Name	ASmart	
Model Number	AST-TCLW-P-30WACA1Z-aaK	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for Outdoor Pole/Arm-Mounted Decorative Luminaires (UL Type B)	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Hongli Zhihui Group Co.,Ltd.	
LED Model	HL-AS-PU2835DW-S1-08-PCT-HR3	
Sample Number	BLC1804018E-I1(3000K),I2(5700K)	
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	May 03,2018
Date of Test	May 09,2018
Test item	<ol style="list-style-type: none">1. Total Luminous Flux2. Luminous Distribution Intensity3. Luminous Efficacy4. Correlated Color Temperature5. Color Rendering Index6. Chromaticity Coordinate7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none">1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources4. CIE 15-2004 Technical Report Colorimetry5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

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 BL-QP-033)*

Test date	2018-5-09	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-TCLW-P-30WACA1Z-30K		

Electrical Measurement in King Luminaire K400 Series (Mogul Socket Version) :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180401	120.0	60	0.2417	28.79	0.9927	8.88
8E-II	277.0	60	0.1152	29.52	0.9248	9.32
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in King Luminaire K400 Series (Mogul Socket Version) :

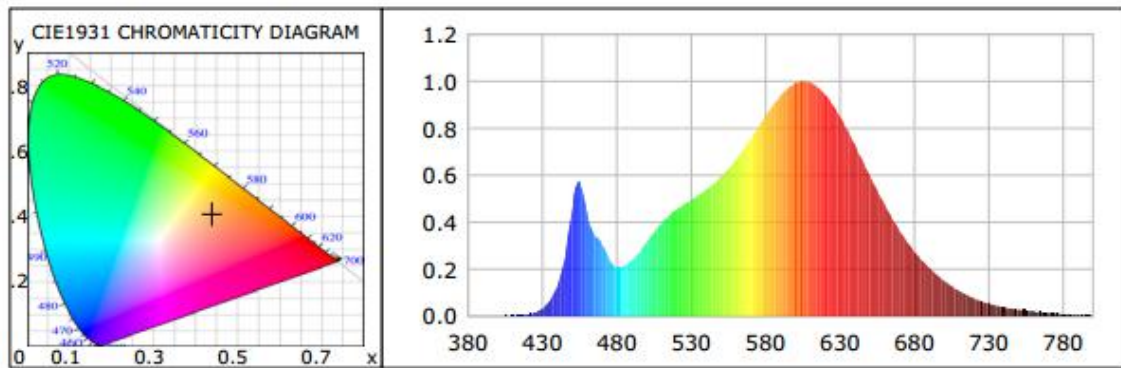
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	0
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	2969	R3	95	R11	81
Duv	0.00032	R4	81	R12	72
Chromaticity (x, y)	x=0.4387 y=0.4039	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2518 v'(v')=0.5216	R6	92	R14	98
Color Rendering Index (CRI)	83.7	R7	82	R15	75
R9	0	R8	60	--	--

Photometric Measurement – Goniophotometer Method in King Luminaire K400 Series (Mogul Socket Version) :

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2860.39	2798.90	250-5000(-10%)
Luminous Efficacy (lm/W)	99.35	94.81	>= 90(-3%)
Most worst Luminous/Highest Watts	94.81		
Zonal lumens in the 0-90° zone (%)	74.2	--	= 65(-3%)
Beam Angle (°)	208	--	--
Center Beam Candle Power (cd)	446	--	--



Spectral Power Distribution & Chromaticity Diagram

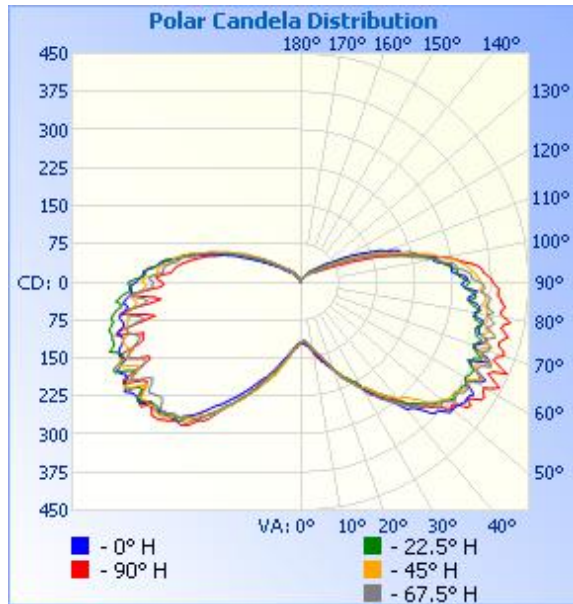


Zonal Lumen Tabulation

Zonal Lumen Summary				Lumens Per Zone					
Zone	Lumens	% Lamp	% Luminaire	Zone	Lumens	% Total	Zone	Lumens	% Total
0-30	167.4	5.9%	5.9%	0-10	12.7	0.4%	90-100	321.4	11.2%
0-40	356.1	12.4%	12.4%	10-20	48.4	1.7%	100-110	217.9	7.6%
0-60	980.6	34.3%	34.3%	20-30	106.4	3.7%	110-120	113.8	4%
60-90	1,142.4	39.9%	39.9%	30-40	188.7	6.6%	120-130	48.0	1.7%
70-100	1,082.6	37.8%	37.8%	40-50	278.5	9.7%	130-140	22.2	0.8%
90-120	653.2	22.8%	22.8%	50-60	346.1	12.1%	140-150	10.0	0.3%
0-90	2,122.9	74.2%	74.2%	60-70	381.2	13.3%	150-160	3.4	0.1%
90-180	737.7	25.8%	25.8%	70-80	388.0	13.6%	160-170	0.8	0%
0-180	2,860.7	100%	100%	80-90	373.2	13.0%	170-180	0.1	0%



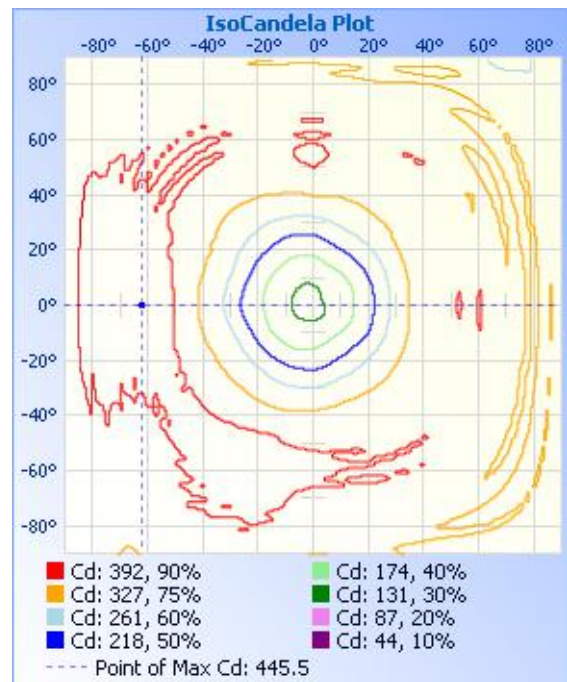
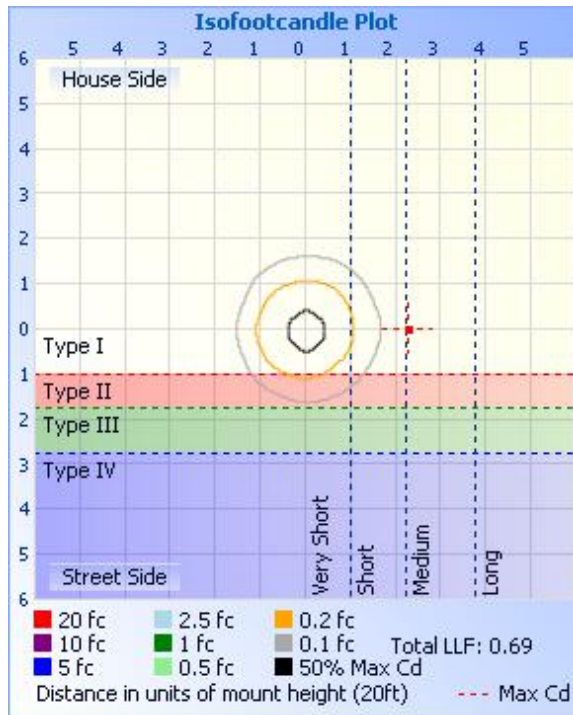
Photometric Data



Illuminance at a Distance

Distance (ft)	Center Beam fc	Beam Width
17.0ft	0.42 fc	11.0 ft
34.0ft	0.10 fc	22.0 ft
51.0ft	0.05 fc	32.9 ft
68.0ft	0.03 fc	43.9 ft
85.0ft	0.02 fc	54.9 ft
102.0ft	0.01 fc	65.9 ft

■ Horiz. Spread: 35.8°





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Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
1	120	119	119	118	119	119	120	121	121	121	121	121	123	122	122	121	120
2	121	119	118	117	117	118	120	121	122	123	124	123	126	127	125	122	121
3	121	119	117	116	116	118	120	122	124	125	126	125	130	131	128	125	121
4	123	119	117	117	116	120	121	124	125	126	128	128	131	131	132	129	123
5	125	120	119	119	119	122	125	127	129	130	131	131	133	133	133	130	125
6	126	122	121	121	122	126	128	131	133	134	135	135	136	134	134	131	126
7	129	124	124	124	127	128	132	134	137	137	140	138	140	139	137	132	129
8	132	127	128	128	131	131	134	137	140	141	146	143	145	142	141	134	132
9	135	130	133	132	135	135	136	140	144	146	152	148	150	144	144	139	135
10	137	132	134	136	141	139	140	144	147	152	157	152	154	148	147	143	137
11	141	136	136	139	145	142	145	149	153	160	162	156	159	149	150	146	141
12	145	140	139	142	152	147	150	154	156	165	168	161	163	154	155	152	145
13	149	142	143	146	154	150	153	157	162	170	172	166	168	160	159	157	149
14	155	146	147	148	155	152	157	163	167	178	178	172	173	167	166	164	155
15	160	151	151	151	162	156	162	166	173	186	190	177	179	174	174	173	160
16	163	157	155	156	164	161	167	169	178	190	193	182	184	180	178	178	163
17	167	162	160	162	170	166	172	175	183	198	197	187	186	183	182	184	167
18	173	167	167	169	174	174	180	181	189	203	203	191	193	189	189	191	173
19	178	172	177	176	177	183	185	187	195	207	208	196	200	195	195	196	178
20	184	178	181	178	181	189	193	193	200	213	213	206	206	202	200	203	184
21	189	184	187	186	186	197	203	200	204	220	223	212	212	208	207	207	189
22	194	190	195	196	192	205	211	210	210	226	229	218	219	216	215	213	194
23	200	196	199	204	197	209	213	217	216	231	235	228	226	225	223	220	200
24	206	203	201	208	204	217	220	224	223	238	239	236	233	231	229	225	206
25	212	208	211	214	207	222	231	228	230	245	245	242	242	239	236	234	212
26	218	212	217	218	211	230	232	238	237	252	255	250	252	248	239	240	218
27	223	217	223	224	220	242	239	240	244	258	262	256	258	253	247	244	223
28	226	222	226	233	226	243	250	243	251	264	265	266	264	259	254	250	226
29	233	226	237	236	230	250	258	250	259	272	274	273	275	268	258	255	233

Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
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30	240	237	242	246	241	262	264	262	265	280	282	277	281	274	268	262	240
31	249	244	242	256	248	270	272	270	272	290	289	284	288	285	278	268	249
32	257	248	248	263	252	277	281	272	280	298	299	294	300	298	282	278	257
33	266	254	256	267	262	283	293	278	288	305	306	304	313	306	290	281	266
34	274	261	259	275	267	291	299	287	294	311	312	314	326	314	299	289	274
35	280	269	271	282	275	293	306	294	302	318	320	322	334	321	308	300	280
36	286	275	275	288	282	301	315	303	311	328	325	331	337	331	321	308	286
37	295	282	286	292	292	311	317	311	321	338	329	338	345	339	323	311	295
38	303	290	285	303	292	320	320	318	330	342	337	345	357	343	320	317	303
39	315	297	292	311	302	322	327	326	338	343	345	357	363	345	329	322	315
40	327	303	303	314	311	328	336	335	345	348	351	360	368	350	338	325	327
41	329	315	303	323	317	335	334	342	351	365	356	358	367	360	346	329	329
42	334	324	306	332	327	335	344	343	359	366	357	359	368	364	350	339	334
43	343	326	312	329	333	335	353	350	368	363	360	360	373	362	356	346	343
44	353	333	322	340	344	345	353	361	371	361	368	360	379	366	360	347	353
45	366	341	326	347	346	353	358	374	370	370	375	367	384	371	363	350	366
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54	403	373	373	380	415	386	405	407	394	398	389	370	390	370	388	368	403
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57	407	379	385	391	426	400	407	411	399	381	373	348	360	344	379	367	407
58	394	385	390	387	427	395	408	414	409	399	392	356	365	341	370	359	394
59	380	379	382	383	420	395	423	421	403	404	405	373	382	351	368	354	380
60	389	376	383	394	418	400	428	426	400	395	393	386	403	365	385	360	389
61	407	380	396	407	433	408	415	417	391	370	379	376	399	375	406	380	407

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62	413	382	405	400	444	399	405	409	390	372	361	353	366	351	401	382	413
63	394	382	391	389	427	380	410	416	398	385	361	344	333	332	375	369	394
64	374	374	379	388	411	383	425	424	401	407	377	345	334	323	358	348	374
65	365	369	384	392	420	402	421	428	393	405	394	356	356	323	352	340	365
66	386	373	410	411	446	389	399	414	379	389	392	370	369	327	365	348	386
67	406	387	409	396	426	368	400	403	379	383	367	370	384	332	383	373	406
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75	365	356	384	394	423	368	380	396	371	388	356	357	367	352	382	339	365
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84	332	336	366	373	400	348	378	383	349	366	330	312	289	259	313	308	332
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92	326	314	348	337	369	303	353	335	314	311	301	296	285	263	310	297	326
93	308	311	344	335	362	298	350	337	311	306	285	285	274	257	304	289	308

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94	299	310	337	324	358	293	347	332	309	306	283	272	256	244	294	277	299
95	299	304	332	311	353	284	335	319	299	303	282	271	253	237	289	274	299
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97	293	287	317	303	324	262	315	297	282	275	275	266	247	232	279	263	293
98	276	281	310	283	313	251	305	286	279	272	261	260	241	228	271	257	276
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102	246	242	264	233	250	199	245	234	238	242	236	234	214	206	253	236	246
103	236	235	244	222	237	184	222	222	228	235	231	224	208	199	239	223	236
104	235	227	227	214	216	174	209	205	216	224	229	214	200	191	230	215	235
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106	208	197	208	184	190	155	187	185	195	206	206	201	187	182	219	204	208
107	204	194	194	177	173	151	176	172	183	197	196	191	176	174	210	193	204
108	202	181	186	167	162	142	170	158	177	186	191	181	168	166	204	188	202
109	190	170	178	160	145	133	156	149	166	173	185	174	163	158	198	182	190
110	177	165	167	153	127	125	145	137	153	163	173	168	158	150	188	173	177
111	173	152	155	139	118	108	142	128	146	156	162	157	152	144	180	163	173
112	164	137	142	129	105	103	120	121	137	148	159	149	144	137	176	158	164
113	151	133	131	117	91	89	108	109	123	136	150	142	138	132	172	152	151
114	141	122	121	108	83	79	104	100	115	130	138	134	134	126	157	142	141
115	133	110	116	97	72	73	86	91	107	124	132	124	128	120	151	135	133
116	124	105	103	82	66	67	78	83	98	114	124	115	123	118	151	127	124
117	115	95	91	74	59	64	72	80	93	104	115	109	120	107	141	118	115
118	106	87	80	67	54	57	64	71	81	96	110	102	104	99	130	110	106
119	98	81	73	60	50	52	60	66	77	89	103	95	97	90	120	104	98
120	90	77	70	58	45	47	52	58	70	83	98	88	92	84	111	98	90
121	82	68	63	51	42	45	47	52	65	77	93	86	86	80	101	92	82
122	75	69	57	46	39	40	41	50	62	70	82	76	82	75	95	85	75
123	69	57	50	42	37	37	38	46	56	65	74	70	76	71	88	79	69
124	65	55	47	39	35	35	36	42	53	60	67	66	71	66	81	72	65
125	62	51	40	36	34	34	34	39	49	56	60	61	65	62	74	65	62

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126	57	44	38	34	33	33	32	36	44	52	61	56	60	58	66	60	57
127	52	42	34	33	31	31	31	34	40	49	50	52	56	54	60	55	52
128	49	39	33	31	30	30	30	32	38	45	46	48	52	52	56	51	49
129	46	36	31	30	29	29	28	31	35	42	43	45	48	53	50	48	46
130	42	34	30	29	28	28	27	29	33	39	41	43	45	46	45	45	42
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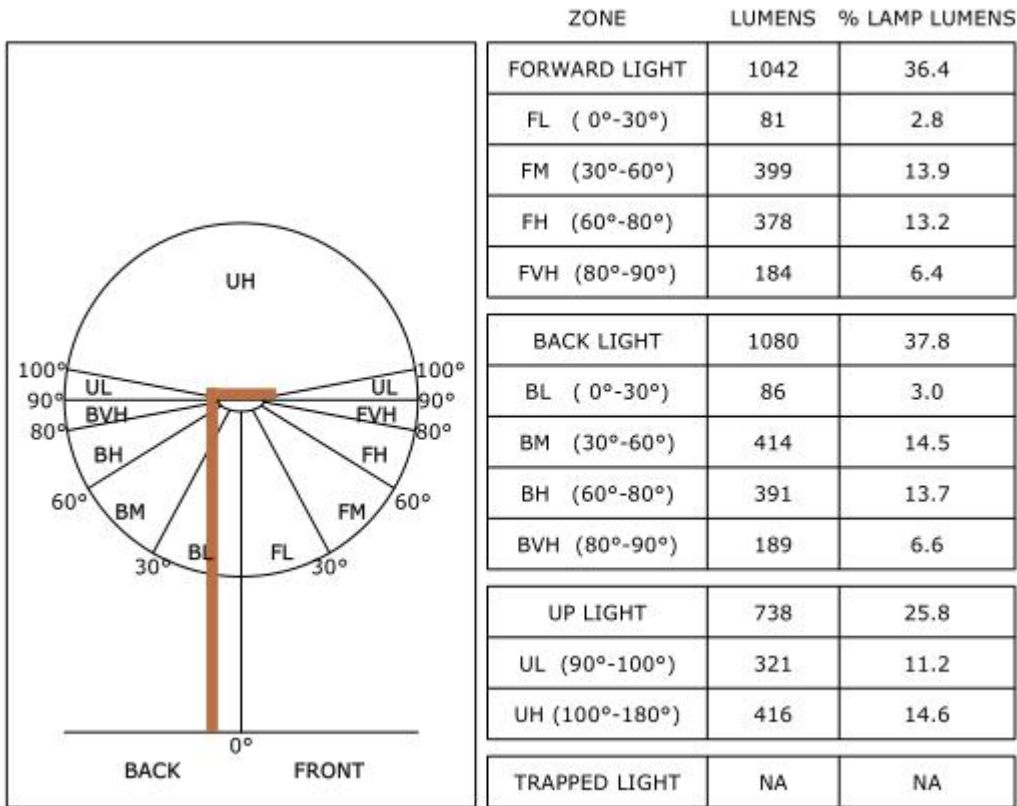


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**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction BL-QP-033)*

Test date	2018-5-9	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-TCLW-P-30WACA1Z-57K		

Electrical Measurement in King Luminaire K400 Series (Mogul Socket Version) :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180401	120.0	60	0.2509	29.91	0.9933	8.7
8E-I2	277.0	60	0.1191	30.64	0.9291	8.89
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method in King Luminaire K400 Series (Mogul Socket Version) :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	0
Frequency (Hz)	60	R2	89	R10	74
CCT (K)	5718	R3	93	R11	81
Duv	0.00233	R4	82	R12	58
Chromaticity (x, y)	x=0.3276 y=0.3411	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2035 v'(v')=0.4769	R6	84	R14	97
Color Rendering Index (CRI)	83	R7	86	R15	76
R9	0	R8	67	--	--

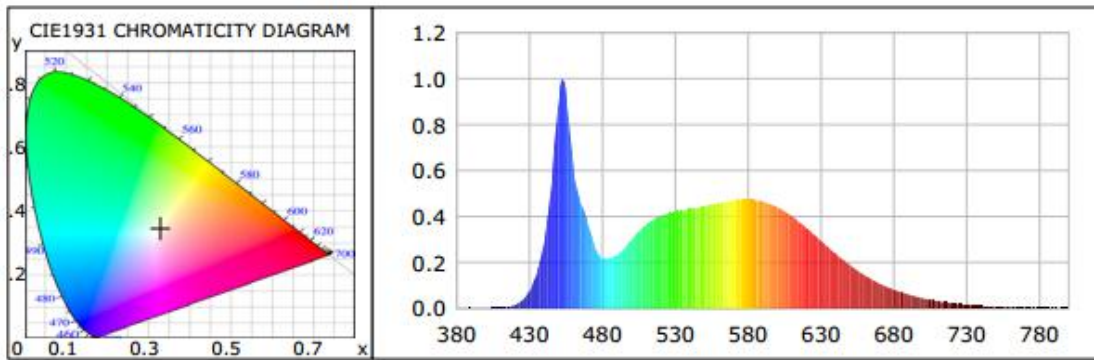
Photometric Measurement – Sphere-Spectroradiometer Method in King Luminaire K400 Series (Mogul Socket Version) :

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	3147.73	3120.68	250-5000(-10%)
Luminous Efficacy (lm/W)	105.24	101.85	>= 90(-3%)
Most worst Luminous/Highest Watts	101.85		



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Spectral Power Distribution & Chromaticity Diagram





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Calculated Efficacy Data for family models (3500K,4000K,4500K and 5000K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
AST-TCLW-P-30WACA1Z-30K	2860.39	28.79	99.35
AST-TCLW-P-30WACA1Z-35K	2932.22	29.35	99.91
AST-TCLW-P-30WACA1Z-40K	2980.11	29.35	101.54
AST-TCLW-P-30WACA1Z-45K	3028.00	29.35	103.17
AST-TCLW-P-30WACA1Z-50K	3075.89	29.35	104.80
AST-TCLW-P-30WACA1Z-57K	3147.73	29.91	105.24



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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2019-01-15
AC Power Source	CHP-500C	N/A	2019-01-14
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2019-01-22
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Integral Sphere (2M)	2M	DYJCE120067	2019-01-15
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2019-01-15

Expand Uncertainty:
Photometric Measurement (Sphere): 2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.7%, k=2

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