

VGUV"TGRTV"

Hqt'Ego r cp{<

Beyond LED Technology

O qf gn'A19 15W 120V E26 ED G4 850"

Tgr qt vV{ r g<'	Vgukpi "cpf "Tgr qt vCeeqtf kpi "vq" GP GTI ["UVCT"Rtqi tco "Tgs vkt go gpw" hqt "Nco r u" X4B" Vguvtgr qt v' hqt "hco kn{ 'r tqf wewu'y kj "EEV"xctkckqp" hqt "NGF" Nco r u"
Rt ql gev' Gpi kpggt <'	J km'Nkw"
Tgr qt vP wo dgt <'	T3MU43244233; /32/O 3"
Vguv'F c v g<'	4243/24/46"vq"4243/25/23"
Tgr qt vF c v g<'	4243/27/32"
Tgxkgf 'D{ <'	Dkm'Zkqpi "TGG"Gpi kpggt"
Tgxkgf 'P qvg<'	Vj g'r tgxkqwu'tgr qt v'T3MU43244233; /32'ku'tgr ræg f "d{ "j ku" tgr qt v'qp"4243/27/32"
Ceet gf kckvqp<'	Vj g'KUCeet gf kckvqp"P wo dgt "VN/6820"



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1. Product Description

General Information:

13PCS samples were received on 2021-02-20 and used for testing. Samples were numbered R1KS210220119-S01 through R1KS210220119-S13.

Model Tested:	A19 15W 120V E26 ED G4 850
Manufacturer:	Beyond LED Technology
Brand Name:	Red100
Lamp Shape:	A19
Lamp Type:	Omnidirectional LED Lamp
Lamp Base:	E26
Dimming:	Dimmable
Dimming Range:	20%-100%
Application Exceptions:	None
Restricted Position:	None.
Connectable:	No
Color Tunable:	No
CCT Range(2700K-6500K):	N/A
Default Setting:	N/A
The Most Consumptive Setting:	N/A

Rated Values:

Rated Voltage/Frequency:	AC 120V 60 Hz
Rated Power:	15W
Nominal Light Output:	1600lm
Nominal CCT:	5000K
Rated Life:	25000hours
Wattage Equivalency Claims:	100W

LED Light Source Information:

LED Type:	LED Package
LED Model Number:	9V100mA
Number of LED Source:	34
LED Manufacturer:	Shenzhen MTC Lighting Co., Ltd.



Declaration of Product Variations:

Model Number	Test report No.	Variation
A19 15W 120V E26 ED G4 850	R1KS200616103-10-6000-M1	2700K
A19 15W 120V E26 ED G4 850	R1KS210220119-10-M1	5000K

2. Statement of Traceability

Bay Area Compliance Laboratories Corp. (Dongguan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).



3. Summary of Test Results

Criteria Item	Measured Value (Avg.)	Reported Value	Result	Reference Standard	Accreditation	Requirement
Efficacy (lm/W)	127.14	127.1	10/10 Pass	IES LM-79-08	YES	8 of the 10 lamps and reported value: ≥ 80 lm/W
Light Output (lm)	1781.0	1780	10/10 Pass	IES LM-79-08	YES	8 of the 10 lamps and reported value: 1600-1999 lm
Zonal Lumen Density	6.88%	N/A	Pass	IES LM-79-08	YES	≥ 5% in 130° - 180° zone
Luminous Intensity Distribution	See tables	N/A	Pass	IES LM-79-08	YES	In 0° - 130° : 80% of candelas vary ≤ 35% from the average intensity; no candelas vary more than 60%
CCT (K)	4964	5000	10/10 Pass	IES LM-79-08	YES	9 of the 10 lamps: fall within a 7-step ANSI quadrangle
R _a	85.2	85	Pass	IES LM-79-08	YES	Average R _a ≥ 80, less than 3 units R _a < 77 and none lower than 75
R _g	18	18	Pass	IES LM-79-08	YES	R _g > 0

4. Family Product Performance Comparison

Criteria Item	Representative Model	Variant Model	Status	Requirement
Input Voltage(V)	120	120	Pass	Have the same rated input voltage(s).
TMP _{LED} (°C)	90.4	88.8	Pass	No greater than 2.5°C above the temperatures of tested representative model, and the maximum case temperature tested in the corresponding IES LM-80 report.
TMP _C (°C)	88.9	87.4	Pass	No greater than 2.5°C above the temperatures of tested representative model
T _{capacitors} (°C)	99.4	98.0	Pass	No greater than 2.5°C above the temperatures of tested representative model
T _{fuses} (°C)	103.7	102.1	Pass	No greater than 2.5°C above the temperatures of tested representative model
Input Current(A)	0.1466	0.1465	Pass	Varies by no more than ± 10%
Input Wattage(W)	14.01	14.05	Pass	Varies by no more than ± 10%
Power Factor	0.7962	0.7992	Pass	Varies by no more than ± 5%
Overall Length(mm)	115.70 ⁱ	115.94 ⁱ	Pass	Varies by no more than ± 5%
Overall Diameter(mm)	59.70	60.03	Pass	Varies by no more than ± 5%

Note:

i. A -5% tolerance was applied to the measured maximum overall length (MOL).

5. Detailed Test Methods and Test Results

5.1. In situ Temperature Measurement Test

Test Method:

ANSI/UL 1993-2012 Standard for Safety of Self-Ballasted Lamps and Lamp Adapters

Performance Requirements:

It is required for early interim certification to calculate the projected L_{70} life. The projected lumen maintenance life shall be greater than or equal to the lamp rated life value to be claimed on product packaging.

For family products, the average of up to five *in situ* temperatures of critical components shall be no greater than 2.5°C above the same average of *in situ* temperatures in a sample of up to five units of the tested representative model. Critical components include the highest temperature LED package/array/module measured at TMP_{LED} , LED driver measured at TMP_{C} , capacitors and fuses. The TMP_{LED} should not be greater than the maximum case temperature tested in the corresponding IES LM-80 report.

Test Procedure:

Tests were conducted at $25 \pm 5^{\circ}\text{C}$. Thermocouples and hybrid recorder were used to test the temperature of highest temperature LED measured at TMP_{LED} , LED driver measured at TMP_{C} , capacitors and fuses. According to ANSI/UL 1993, the lamp was operated base up at rated voltage in temperature test box. The bottom of box shall be closed off with a 2.5 mm (0.1 in) thick piece of window glass of appropriate size, except lamps labeled "not for use in enclosed or recessed fixtures" or equivalent. The reported temperature value for each point should be the readings of the hybrid recorder after the temperature of each point is stabilized and constant. A temperature is considered constant if the test has been running for at least 3 hours; and three successive readings, taken at 15-minute intervals, are within 1 degree C of one another and are not rising. Or the test was run for a minimum of 7.5 h. Ambient temperature variations above or below 25°C have been respectively subtracted from or added to temperatures recorded at points on the device.

The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

Test Equipment:

Device	Manufacturer	Model No	Serial No	Calibration date	Calibration due date
Multimeter	FLUKE	17B	1573 1328	2020-10-30	2021-10-29
Hybrid Recorder	YOKOGAWA	DR240	10#	2021-02-24	2022-02-23
AC POWER SUPPLY	HengPu	HPA 1103	0003394	2021-01-04	2022-01-03

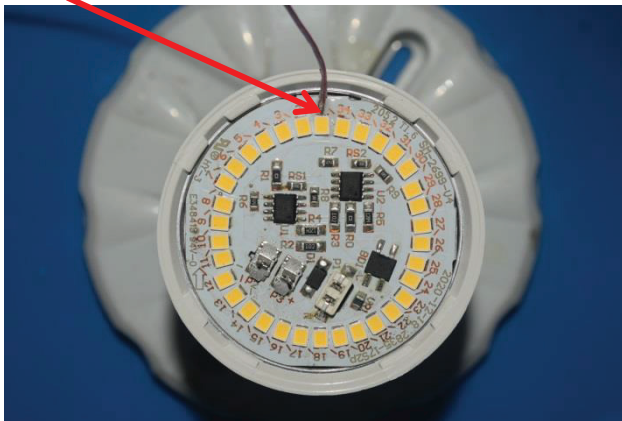
Uncertainty:

The uncertainty of the temperature is $U=0.8^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

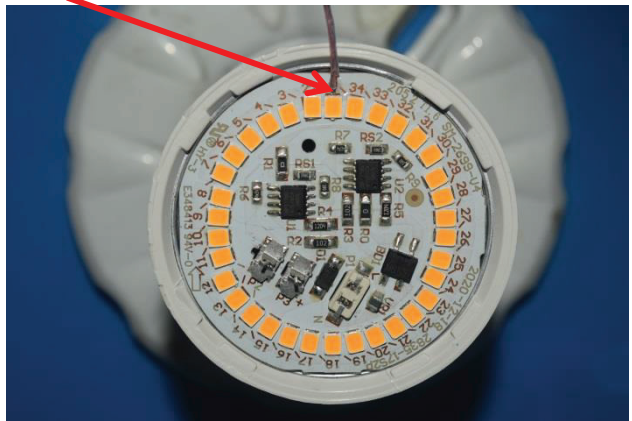
Test Data:

Photo of test location:

TMP_{LED} for Model: A19 15W 120V E26 ED G4 850



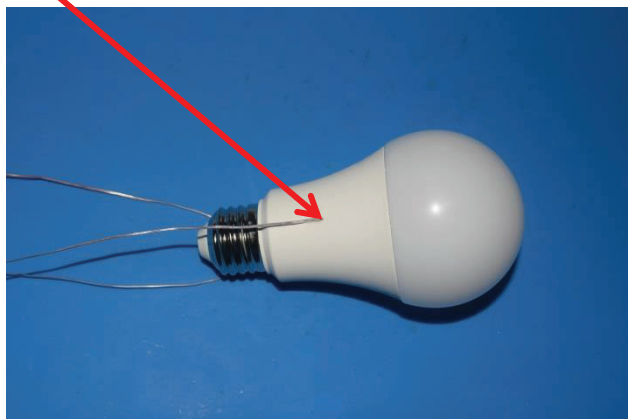
TMP_{LED} for Model: A19 15W 120V E26 ED G4 827



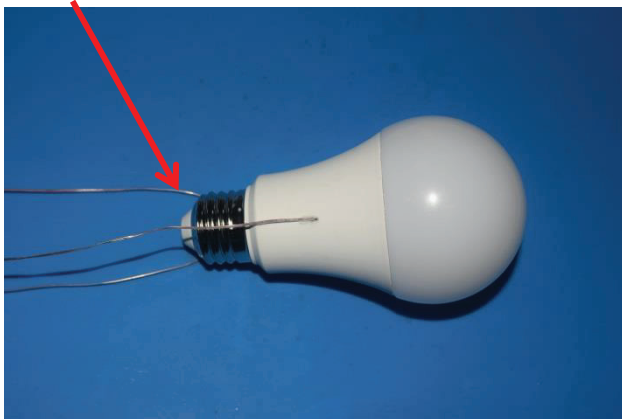
TMP_C for Model: A19 15W 120V E26 ED G4 850



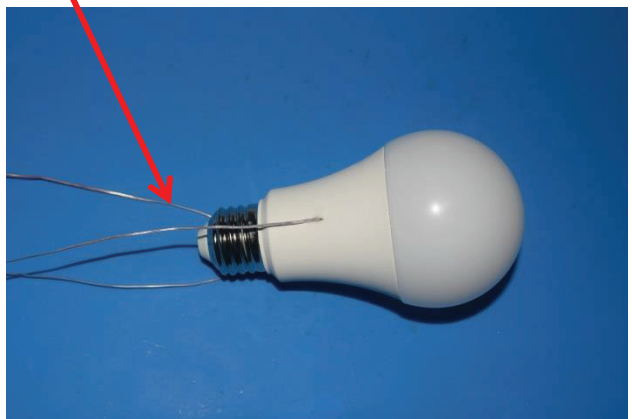
TMP_C for Model: A19 15W 120V E26 ED G4 850



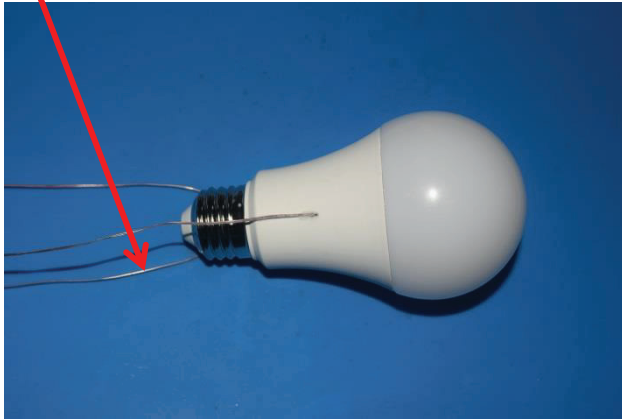
T_{capacitors} for Model: A19 15W 120V E26 ED G4 850



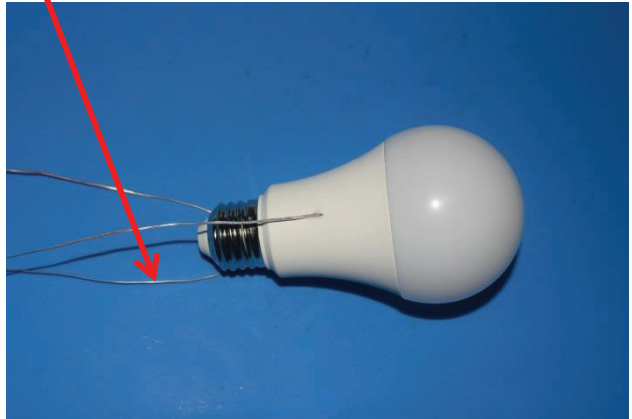
T_{capacitors} for Model: A19 15W 120V E26 ED G4 850



T_{fuses} for Model: A19 15W 120V E26 ED G4 850



T_{fuses} for Model: A19 15W 120V E26 ED G4 850



Supply voltage: AC120V 60Hz

Type of thermocouples: T

Test Duration: ≥3.5 hours

Sample No.	TMP _{LED} (°C)	TMP _C (°C)	T _{capacitors} (°C)	T _{fuses} (°C)
R1KS210220119-S12	88.8	87.4	98.0	102.1
R1KS200616103-S17	90.4	88.9	99.4	103.7



5.2. Initial Photometric and Electrical Measurements

Test Method:

IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI/ANSI C78.377-2015: Specifications for the Chromaticity of Solid State Lighting Products

ANSI C82.77-10-2014 Harmonic Emission Limits-Related Power Quality Requirements for Lighting Equipment

Performance Requirements:

Luminous Efficacy: Reported values for each lamp model shall meet the applicable requirement in the ENERGY STAR specification. Additionally eight or more units individually shall meet the requirement.

Light Output: For omnidirectional and decorative lamps, Reported lamp initial light output (in lumens) shall fall within the range of the referenced incandescent lamp listed in the ENERGY STAR specification. For R, BR and ER lamps, reported lamp initial light output (in lumens) shall be greater than or equal to the incandescent lamp's rated wattage times the multiplier required in the ENERGY STAR specification. Additionally 8 or more units individually shall meet the requirement. No requirements for MR and PAR lamps.

CCT: Reported lamp model light color temperature shall correlate to one of the required nominal CCTs, additionally 9 out of 10 units shall fall within a 7-step ANSI quadrangle for the designated CCT.

CRI: The average $R_a \sim 80$ and $R_9 > 0$. No more than 3 units shall have $R_a < 77$. No unit shall have $R_a < 75$

Power Factor: ~ 0.7 for lamps $> 5W$. Omnidirectional lamps with rated/reported input power ≤ 10 watts shall have a reported value ~ 0.6 .

For family products, the varies of input current and input wattage between tested representative model and variants should be within 10%, and within 5% for power factor.

Test Procedure:

According to IES LM-79-08, LED lamps were tested at ambient temperature $25^\circ\text{C} \pm 1^\circ\text{C}$ with no seasoning. Initial parameters including Total Light Output (luminous flux), Correlated Color Temperature (CCT), Color Rendering Index (CRI), Luminous Efficacy, Chromaticity Coordinate, Current, Power, and Power Factor, were measured 5 base-up and 5 base-down by integrating sphere system. This system including spectrophotometer, integrating sphere, digital power meter, DC power supply and AC power supply, was calibrated by standard light source before measurement. Spectral measurement was taken at no more than 5 nm intervals from 380 to 780 nm. The u' , v' and Duv was calculated based on measured x , y in accordance with CIE Pub. No.15:2004 and ANSI C78.377-2015 and rounded to four decimal places. Other test results were derived by software of test equipment and were recorded with no rounding.

For spectral power distribution data, please see Attachment B

Test Equipment:

Device	Manufacturer	Model No	Serial No	Calibration date	Calibration due date
1.5m integrating sphere	SENSING	1.5m	NA	2020-07-01	2021-06-30
Digital power meter	EVERFINE	PF9811	G135717CN1361159	2020-10-21	2021-10-20
High-precision rapid spectral radiometer	EVERFINE	HAAS-2000	N/A	2020-07-01	2021-06-30

Device	Manufacturer	Model No	Serial No	Calibration date	Calibration due date
Precision frequency power supply	ALL Power	APW-105N	970663	2021-01-04	2022-01-03
Standard Light Source	EVERFINE	D204	N/A	2020-10-20	2021-10-19
thermometer	SENSING	NA	NA	2020-03-13	2021-03-12
Programmable Precision DC Power Supply	ITECH	IT6154	0061 0417 6471 0010 19	2020-08-25	2021-08-24

Uncertainty:

The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=21K$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1(K=2)$, at the 95% confidence level.

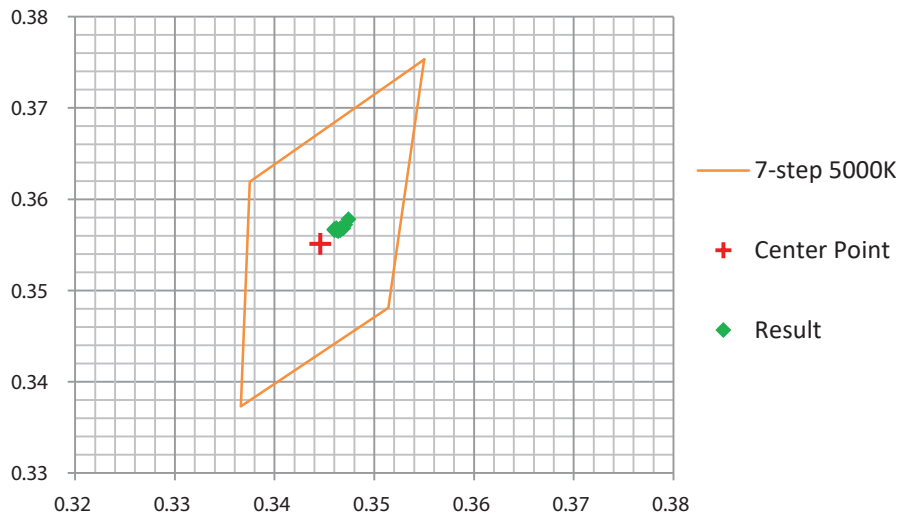
The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.17\%$ of rdg, Power $U=0.48\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	Orientation	Voltage (V)	Current (A)	Power (W)	Power Factor	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
R1KS21022 0119-S01	VBU	120.0	0.1465	14.05	0.7992	1764.6	125.56	4935
R1KS21022 0119-S02	VBU	120.0	0.1473	14.04	0.7938	1793.1	127.76	4947
R1KS21022 0119-S03	VBU	120.0	0.1455	13.89	0.7955	1775.0	127.76	4959
R1KS21022 0119-S04	VBU	120.0	0.1472	14.04	0.7949	1786.2	127.21	4983
R1KS21022 0119-S05	VBU	120.0	0.1468	14.00	0.7946	1787.1	127.64	4983
Average	VBU	120.0	0.1467	14.00	0.7956	1781.2	127.19	4961
R1KS21022 0119-S06	VBD	120.0	0.1472	14.04	0.7948	1780.4	126.79	4974
R1KS21022 0119-S07	VBD	120.0	0.1458	13.92	0.7952	1774.0	127.48	4949
R1KS21022 0119-S08	VBD	120.0	0.1471	14.03	0.7945	1788.6	127.51	4962
R1KS21022 0119-S09	VBD	120.0	0.1478	14.06	0.7928	1765.5	125.57	4976
R1KS21022 0119-S10	VBD	120.0	0.1470	14.01	0.7944	1795.5	128.11	4969
Average	VBD	120.0	0.1470	14.01	0.7943	1780.8	127.09	4966
Average	ALL	120.0	0.1468	14.01	0.7950	1781.0	127.14	4964

Sample No.	Orientation	R _a	R _g	R _f	R _g	x	y	Duv
R1KS21022 0119-S01	VBU	85.1	17	85	94	0.3474	0.3578	0.00214
R1KS21022 0119-S02	VBU	85.2	17	85	94	0.3471	0.3572	0.00202
R1KS21022 0119-S03	VBU	85.2	18	85	94	0.3466	0.3568	0.00199
R1KS21022 0119-S04	VBU	85.1	17	85	94	0.3460	0.3566	0.00213
R1KS21022 0119-S05	VBU	85.1	17	85	94	0.3460	0.3567	0.00217
Average	VBU	85.1	17	85	94	0.3466	0.3570	0.00209
R1KS21022 0119-S06	VBD	85.2	18	85	94	0.3462	0.3566	0.00201
R1KS21022 0119-S07	VBD	85.3	18	85	94	0.3469	0.3568	0.00187
R1KS21022 0119-S08	VBD	85.3	18	85	94	0.3466	0.3566	0.00191
R1KS21022 0119-S09	VBD	85.2	18	85	95	0.3462	0.3568	0.00214
R1KS21022 0119-S10	VBD	85.3	18	85	94	0.3464	0.3565	0.00191
Average	VBD	85.3	18	85	94	0.3465	0.3567	0.00197
Average	ALL	85.2	18	85	94	0.3465	0.3568	0.00203

7-step chromaticity quadrangles per ANSI/ANSI C78.377-2015



5.3. Luminous Intensity Distribution

Test Method:

IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

Performance Requirements:

80% of the luminous intensity measured values (candelas) shall vary by no more than 35% from the average of all measured values in the 0° to 130° zone. All measured values (candelas) in the 0° to 130° zone shall vary by no more than 60% from the average of all measured values. No less than 5% of total flux (zonal lumens) shall be emitted in the 130° to 180° zone.

Test Procedure:

According to IES LM-79-08, LED lamps were tested at ambient temperature 25°C±1°C with no seasoning. Luminous Intensity distribution was measured by type C goniophotometer. One sample was measured and operated at base-up orientation. Sample was motionless and its position was unchanged during test. After measurement of a vertical plane sample was rotated 22.5° around the lamp polar axis. Sample was operated at rated voltage and was tested after stabilized according to IES LM-79-08. The center beam intensity is that the value of light flux intensity in candelas (cd) measured on the beam axis. According to ENERGY STAR specification, the beam angle in degrees is between the two opposite directions in which the average intensity is 50% of the center beam intensity as measured in two rotational planes, 90° from each other, around and through the beam axis.

Test Equipment:

Device	Manufacturer	Model No	Serial No	Calibration date	Calibration due date
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2021-01-04	2022-01-03
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2021-01-04	2022-01-03
Digital power meter	YOKOGAWA	WT-210	91j926132	2021-01-04	2022-01-03
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2020-03-13	2021-03-12
Wireless Remote Sensor	N/A	433MHz	N/A	2020-03-12	2021-03-11
Standard Light Source	EVERFINE	D908	1012003	2020-10-20	2021-10-19

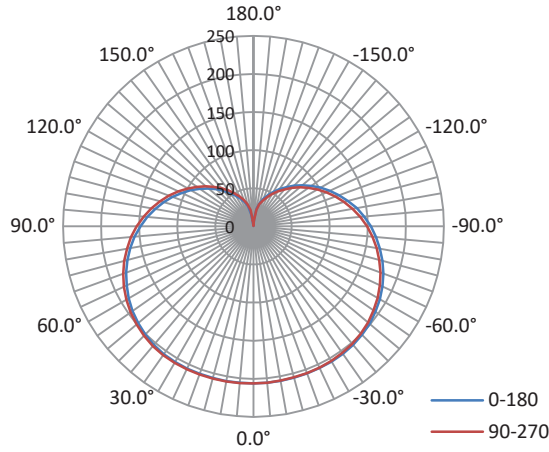
Uncertainty:

The uncertainty of the luminous intensity is U=2.00% (K=2), at the 95% confidence level.



Test Data:

Luminous Intensity Distribution Diagram



Sample No.	Orientation	Beam Angle (Deg)	CBCP (cd)
R1KS210220119-S11	VBU	234.2	207

Zonal Lumen Density

Deg	Flux (lm)	%
0-5	4.9	0.28
0-10	19.7	1.11
0-15	44.1	2.49
0-20	78.0	4.41
0-25	121.2	6.85
0-30	173.2	9.79
0-35	233.5	13.21
0-40	301.6	17.05
0-45	376.5	21.29
0-50	457.1	25.85
0-55	542.6	30.68
0-60	631.6	35.71
0-65	722.9	40.88
0-70	815.3	46.10
0-75	907.5	51.31
0-80	998.4	56.45
0-85	1086.8	61.46
0-90	1171.8	66.26

Deg	Flux (lm)	%
0-95	1252.4	70.82
0-100	1327.6	75.07
0-105	1396.9	78.99
0-110	1460.0	82.56
0-115	1516.5	85.75
0-120	1566.4	88.57
0-125	1609.8	91.03
0-130	1646.7	93.12
0-135	1677.7	94.87
0-140	1703.0	96.30
0-145	1723.2	97.44
0-150	1738.7	98.32
0-155	1750.4	98.98
0-160	1758.7	99.45
0-165	1764.2	99.76
0-170	1767.3	99.93
0-175	1768.4	100.00
0-180	1768.5	100.00



Luminous Intensity Distribution

Gamma	~ =0DEG		~ =22.5DEG		~ =45DEG		~ =67.5DEG	
	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}
0	206	22.57%	206	22.57%	206	22.57%	206	22.57%
5	206	22.51%	206	22.67%	206	22.64%	206	22.70%
10	206	22.52%	206	22.65%	206	22.76%	206	22.78%
15	206	22.48%	206	22.75%	206	22.77%	207	22.83%
20	206	22.51%	206	22.73%	207	22.83%	207	22.94%
25	206	22.51%	207	22.83%	207	22.94%	207	23.06%
30	206	22.26%	206	22.63%	207	22.82%	207	22.95%
35	205	21.69%	205	22.10%	206	22.42%	206	22.62%
40	203	20.74%	204	21.19%	204	21.55%	205	21.81%
45	201	19.31%	202	19.84%	202	20.28%	203	20.58%
50	197	17.43%	198	18.01%	199	18.52%	200	18.85%
55	194	15.16%	195	15.79%	196	16.27%	196	16.77%
60	189	12.35%	190	13.11%	191	13.56%	192	14.13%
65	184	9.21%	185	9.94%	186	10.50%	187	11.12%
70	178	5.66%	179	6.34%	180	6.95%	181	7.67%
75	171	1.71%	172	2.36%	173	3.06%	175	3.81%
80	164	2.33%	165	1.75%	166	1.17%	168	0.35%
85	157	6.87%	158	6.20%	159	5.64%	160	4.76%
90	148	11.77%	149	11.15%	150	10.53%	152	9.63%
95	140	16.87%	141	16.36%	142	15.69%	143	14.80%
100	131	22.14%	132	21.63%	133	20.93%	134	20.07%
105	122	27.50%	123	26.98%	124	26.32%	125	25.44%
110	113	32.89%	114	32.36%	115	31.74%	116	30.87%
115	104	38.26%	105	37.83%	106	37.17%	107	36.30%
120	95	43.60%	96	43.20%	97	42.57%	98	41.72%
125	86	48.85%	87	48.48%	88	47.87%	89	47.00%
130	77	53.98%	78	53.62%	79	53.03%	80	52.19%
Gamma	~ =90DEG		~ =112.5DEG		~ =135DEG		~ =157.5DEG	
	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}
0	206	22.57%	206	22.57%	206	22.57%	206	22.57%
5	206	22.74%	206	22.72%	206	22.67%	206	22.65%
10	207	22.85%	206	22.75%	206	22.67%	206	22.67%
15	207	22.88%	206	22.73%	206	22.57%	206	22.61%
20	207	22.97%	206	22.75%	206	22.56%	206	22.61%
25	207	23.03%	206	22.76%	206	22.53%	206	22.57%
30	207	22.97%	206	22.77%	206	22.51%	206	22.46%
35	206	22.69%	206	22.47%	206	22.28%	205	22.16%
40	205	21.97%	205	21.80%	205	21.64%	204	21.55%
45	203	20.75%	203	20.68%	203	20.59%	203	20.55%
50	200	19.10%	200	19.07%	200	19.05%	200	19.05%
55	197	17.05%	197	17.09%	197	17.12%	197	17.06%
60	193	14.49%	193	14.57%	193	14.73%	193	14.71%
65	188	11.53%	188	11.69%	188	11.92%	188	11.92%
70	182	8.14%	182	8.36%	183	8.65%	183	8.67%
75	176	4.38%	176	4.62%	177	5.02%	177	5.07%
80	169	0.24%	169	0.60%	170	0.99%	170	1.11%
85	161	4.12%	162	3.74%	163	3.27%	163	3.15%
90	153	8.86%	154	8.35%	155	7.80%	155	7.63%
95	145	13.96%	146	13.34%	147	12.78%	147	12.57%
100	136	19.19%	137	18.60%	138	17.95%	138	17.69%
105	127	24.55%	128	23.87%	129	23.20%	130	22.91%
110	118	29.97%	119	29.26%	120	28.50%	121	28.19%
115	109	35.39%	110	34.67%	111	33.92%	112	33.56%
120	100	40.80%	101	40.07%	102	39.32%	103	38.93%
125	91	46.15%	92	45.38%	93	44.62%	94	44.25%
130	82	51.34%	83	50.59%	84	49.84%	85	49.46%



Gamma	~ =180DEG		~ =202.5DEG		~ =225DEG		~ =247.5DEG	
	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}
0	206	22.57%	206	22.57%	206	22.57%	206	22.57%
5	206	22.50%	206	22.48%	206	22.40%	206	22.40%
10	206	22.38%	206	22.32%	205	22.18%	205	22.12%
15	205	22.20%	205	22.08%	205	21.97%	205	21.92%
20	205	22.04%	205	21.92%	205	21.80%	205	21.78%
25	205	21.96%	205	21.82%	205	21.61%	204	21.52%
30	205	21.80%	205	21.62%	204	21.39%	204	21.29%
35	204	21.50%	204	21.29%	203	20.93%	203	20.74%
40	203	20.81%	203	20.51%	202	20.14%	202	19.89%
45	201	19.69%	201	19.40%	200	18.85%	199	18.59%
50	199	18.23%	198	17.80%	197	17.26%	197	16.89%
55	195	16.18%	195	15.81%	194	15.25%	193	14.76%
60	191	13.82%	191	13.46%	190	12.83%	189	12.24%
65	187	10.99%	186	10.61%	185	9.95%	184	9.31%
70	181	7.78%	181	7.42%	179	6.69%	178	5.98%
75	175	4.19%	175	3.84%	173	3.01%	172	2.31%
80	169	0.22%	168	0.13%	167	0.88%	165	1.64%
85	162	3.92%	161	4.32%	160	5.09%	158	5.98%
90	154	8.42%	153	8.83%	152	9.67%	151	10.48%
95	146	13.24%	145	13.64%	144	14.43%	142	15.33%
100	138	18.23%	137	18.62%	136	19.38%	134	20.25%
105	128	23.86%	127	24.29%	126	25.02%	125	25.88%
110	119	29.07%	119	29.49%	117	30.22%	116	31.07%
115	110	34.36%	110	34.77%	109	35.46%	107	36.31%
120	101	39.71%	101	40.04%	100	40.66%	98	41.47%
125	93	44.96%	92	45.25%	91	45.84%	90	46.66%
130	84	50.11%	83	50.39%	82	50.94%	81	51.73%

Gamma	~ =270DEG		~ =292.5DEG		~ =315DEG		~ =337.5DEG	
	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}	I _c (cd)	(I _c - I _{AVG})/I _{AVG}
0	206	22.57%	206	22.57%	206	22.57%	206	22.57%
5	206	22.37%	206	22.42%	206	22.40%	206	22.55%
10	205	22.20%	205	22.16%	206	22.27%	206	22.41%
15	205	22.03%	205	21.96%	205	22.16%	206	22.39%
20	205	21.76%	205	21.77%	205	22.00%	206	22.27%
25	205	21.61%	205	21.66%	205	21.92%	205	22.15%
30	204	21.30%	204	21.31%	204	21.56%	205	21.83%
35	203	20.74%	203	20.70%	203	20.92%	204	21.21%
40	201	19.75%	201	19.72%	202	19.85%	202	20.15%
45	199	18.39%	199	18.23%	199	18.40%	200	18.68%
50	196	16.64%	196	16.38%	196	16.48%	196	16.79%
55	192	14.43%	192	14.11%	192	14.21%	192	14.41%
60	188	11.81%	187	11.47%	187	11.48%	188	11.64%
65	183	8.82%	182	8.34%	182	8.28%	182	8.48%
70	177	5.38%	176	4.82%	176	4.76%	176	4.91%
75	171	1.67%	170	1.06%	170	0.90%	170	1.02%
80	164	2.37%	163	3.08%	163	3.25%	163	3.10%
85	157	6.68%	156	7.39%	155	7.64%	155	7.60%
90	149	11.33%	148	12.07%	147	12.38%	147	12.46%
95	141	16.19%	140	17.02%	139	17.40%	139	17.51%
100	132	21.34%	131	22.33%	130	22.83%	129	23.00%
105	123	26.81%	122	27.68%	121	28.19%	120	28.38%
110	114	32.01%	113	32.89%	112	33.45%	112	33.68%
115	106	37.25%	104	38.18%	103	38.71%	103	38.98%
120	97	42.46%	95	43.40%	94	43.94%	94	44.26%
125	88	47.63%	87	48.52%	86	49.10%	85	49.44%
130	80	52.71%	78	53.55%	77	54.15%	77	54.49%

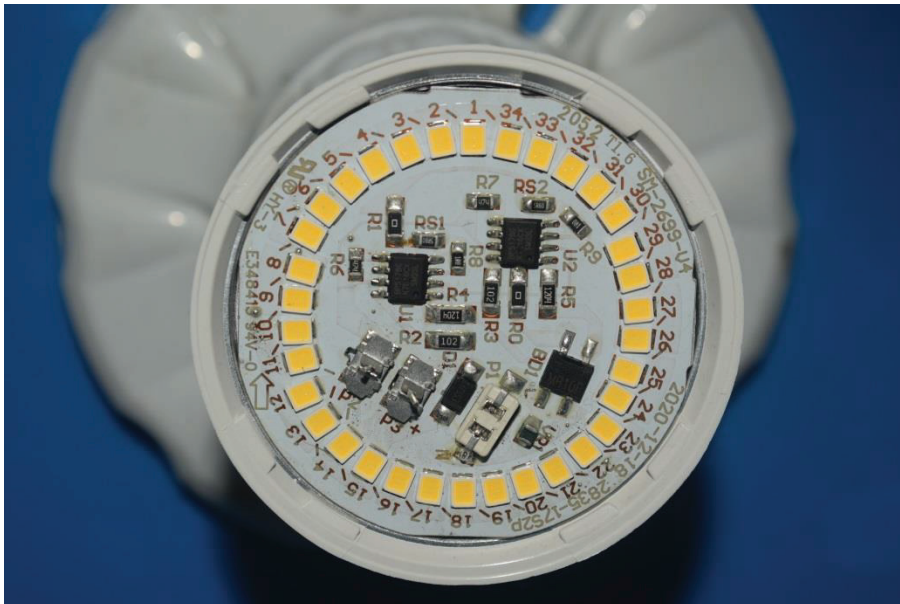
I _{AVG}	I _c MAX=Max (I _c - I _{AVG})/I _{AVG}	Number of Data	Failed Data Percent
168	54.49%	432	13.66%

6. EUT Photo

6.1. Lamp Photo



6.2. LED Board Photo





Attachment A - Test Report #R1KS200616103-10-6000-M1

Attachment B - Spectral Power Distribution

Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
6. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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