



Report No.: BLC2103014E-D

LM-79-08 Test Report

For

IKIO LED LIGHTING

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Outdoor Pole/Arm-Mounted Area and Roadway Luminares

Architectural Flood and Spot Luminares

Model name(s): IK-SBSLG2-150W-304050K-MV (150W)

Representative (Tested) Model:

IK-SBSLG2-150W-304050K-MV (150W,30K) (Tested at 0% CCT Setting)
IK-SBSLG2-150W-304050K-MV (150W,40K) (Tested at 50% CCT Setting)
IK-SBSLG2-150W-304050K-MV (150W,50K) (Tested at 100% CCT Setting)

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

Test & Report By:

Sophie Yang

Engineer: Sophie Yang

Date: 2021-04-14

Review By:



Jason Luo

Manager: Jason Luo



Report No.: BLC2103014E-D

1.1 Product Information:

| | | | | |
|--|--|----------------------|---|--|
| Organization Name | IKIO LED LIGHTING | | | |
| Brand Name | IKIO | | | |
| Model Number | IK-SBSLG2-150W-304050K-MV (150W) | | | |
| 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 Architectural Flood and Spot Luminaires | | | |
| Rated Voltage / Frequency | 120-277Vac, 50/60 Hz | | | |
| Nominal Power | 150W | | | |
| Rated Initial Lamp Lumen | -- | | | |
| Declared CCT | 3000K, 4000K, 5000K(Power adjustable) | | | |
| LED Manufacturer | Bridgelux Inc. | | | |
| LED Model | BXEM-30C-12H-6C | | | |
| Sample Number | BLC2103014E-D1 | | | |
| Luminaire Aperture (for downlights) | -- | in. mm mm s |  | |
| Luminaire Length | -- | | | |
| Luminaires Width | -- | | | |
| Number of Units (modular products) | N/A | | | |
| Photo | | | | |
|  | | | | |



Report No.: BLC2103014E-D

1.2 Test Specifications:

| | |
|----------------------------|---|
| Date of Receipt | 2021-3-10 |
| Date of Test | 2021-3-16 |
| 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.



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2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

| | | | |
|-------------------------|--|---------------------------------|---------|
| Test date | 2021-3-16 | Test Ambient: | 25.2 °C |
| Test Orientation | As intended | Stabilization Time (min) | 90 |
| Model Number | IK-SBSLG2-150W-304050K-MV (150W,30K) (Tested at 0% CCT Setting) | | |

Electrical Measurement:

| Sample No. | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor | THD % |
|--------------------------|---------------|----------------|-------------|-----------|------------------|---------------|
| BLC210301 | 120.0 | 60 | 1.264 | 151.22 | 0.997 | 4.15 |
| 4E-D1 | 277.0 | 60 | 0.551 | 145.78 | 0.955 | 8.29 |
| 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 | 68 | R9 | -35 |
| Frequency (Hz) | 60 | R2 | 82 | R10 | 59 |
| CCT (K) | 2981 | R3 | 94 | R11 | 64 |
| Duv | -0.0002 | R4 | 68 | R12 | 52 |
| Chromaticity (x, y) | x=0.4381 y=0.4040 | R5 | 68 | R13 | 70 |
| Chromaticity (u', v') | u(u')=0.2513 v'=0.5215 | R6 | 76 | R14 | 97 |
| Color Rendering Index (CRI) | 72 | R7 | 76 | R15 | 60 |
| R9 | -35 | R8 | 42 | -- | -- |
| Rf | 75 | -- | -- | -- | -- |
| Rg | 95 | -- | -- | -- | -- |
| Rcs,h1(%) | -17 | | | | |

Photometric Measurement – Goniophotometer Method:

| Parameter | Result | | DLC V5.1 Pass Criteria |
|-------------------------------------|---------|---------|---|
| Test Voltage (V) | 120.0 | 277.0 | -- |
| Frequency (Hz) | 60 | 60 | |
| Total Luminous (lm) | 20261.0 | 19845.6 | >=10000(-10%) |
| Luminous Efficacy (lm/W) | 133.98 | 136.13 | Premium: >= 120(-3%) |
| Most worst Luminous/Highest | 131.24 | | |
| Zonal lumens in the 0-90 °zone (%) | 100 | -- | Category 1: >=100(-1) Category 2: >=85(-3) |
| Zonal lumens in the 80-90 °zone (%) | 1.6 | -- | <=10(+3) |
| Beam Angle (°) | 134.7 | -- | -- |
| Center Beam Candle Power (cd) | 4591 | -- | -- |

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01

Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,

Guangzhou, People's Republic of China engineer@etk-utest.com

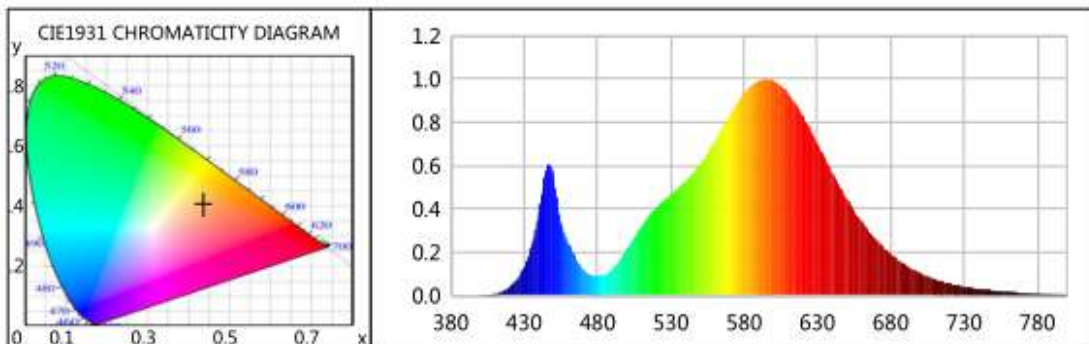
Report Format Number BL-FM-SA-012



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Spectral Power Distribution & Chromaticity Diagram



| WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) |
|--------|--------|-----------|--------|--------|-----------|--------|--------|-----------|
| 380 | 0.0006 | 0.2490 | 525 | 0.4372 | 178.6318 | 670 | 0.2573 | 105.1196 |
| 385 | 0.0001 | 0.0299 | 530 | 0.4657 | 190.2760 | 675 | 0.2237 | 91.3798 |
| 390 | 0.0005 | 0.2131 | 535 | 0.4952 | 202.3327 | 680 | 0.1930 | 78.8504 |
| 395 | 0.0006 | 0.2630 | 540 | 0.5287 | 215.9938 | 685 | 0.1645 | 67.2035 |
| 400 | 0.0014 | 0.5544 | 545 | 0.5625 | 229.8031 | 690 | 0.1417 | 57.9042 |
| 405 | 0.0029 | 1.1843 | 550 | 0.6054 | 247.3257 | 695 | 0.1224 | 50.0111 |
| 410 | 0.0078 | 3.1843 | 555 | 0.6548 | 267.5155 | 700 | 0.1044 | 42.6566 |
| 415 | 0.0186 | 7.5965 | 560 | 0.7104 | 290.2210 | 705 | 0.0891 | 36.4140 |
| 420 | 0.0390 | 15.9133 | 565 | 0.7699 | 314.5381 | 710 | 0.0757 | 30.9073 |
| 425 | 0.0742 | 30.3221 | 570 | 0.8281 | 338.3369 | 715 | 0.0658 | 26.8885 |
| 430 | 0.1323 | 54.0526 | 575 | 0.8865 | 362.2013 | 720 | 0.0554 | 22.6320 |
| 435 | 0.2241 | 91.5695 | 580 | 0.9328 | 381.0887 | 725 | 0.0476 | 19.4584 |
| 440 | 0.3831 | 156.5171 | 585 | 0.9674 | 395.2170 | 730 | 0.0405 | 16.5276 |
| 445 | 0.5824 | 237.9570 | 590 | 0.9888 | 403.9575 | 735 | 0.0351 | 14.3511 |
| 450 | 0.5460 | 223.0770 | 595 | 1.0000 | 408.5533 | 740 | 0.0309 | 12.6146 |
| 455 | 0.3398 | 138.8347 | 600 | 0.9945 | 406.3227 | 745 | 0.0262 | 10.6900 |
| 460 | 0.2417 | 98.7637 | 605 | 0.9688 | 395.7898 | 750 | 0.0229 | 9.3462 |
| 465 | 0.1787 | 73.0265 | 610 | 0.9355 | 382.2079 | 755 | 0.0191 | 7.8210 |
| 470 | 0.1207 | 49.3289 | 615 | 0.8886 | 363.0528 | 760 | 0.0168 | 6.8830 |
| 475 | 0.0961 | 39.2766 | 620 | 0.8314 | 339.6692 | 765 | 0.0143 | 5.8563 |
| 480 | 0.0899 | 36.7147 | 625 | 0.7681 | 313.8237 | 770 | 0.0123 | 5.0135 |
| 485 | 0.0958 | 39.1303 | 630 | 0.7019 | 286.7651 | 775 | 0.0106 | 4.3441 |
| 490 | 0.1191 | 48.6553 | 635 | 0.6359 | 259.7787 | 780 | 0.0095 | 3.8842 |
| 495 | 0.1608 | 65.7122 | 640 | 0.5689 | 232.4186 | 785 | 0.0069 | 2.8390 |
| 500 | 0.2122 | 86.7100 | 645 | 0.5053 | 206.4368 | 790 | 0.0065 | 2.6594 |
| 505 | 0.2650 | 108.2636 | 650 | 0.4470 | 182.6143 | 795 | 0.0058 | 2.3694 |
| 510 | 0.3187 | 130.2073 | 655 | 0.3923 | 160.2634 | 800 | 0.0043 | 1.7701 |
| 515 | 0.3648 | 149.0217 | 660 | 0.3425 | 139.9399 | | | |
| 520 | 0.4042 | 165.1298 | 665 | 0.2979 | 121.7148 | | | |

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TM30

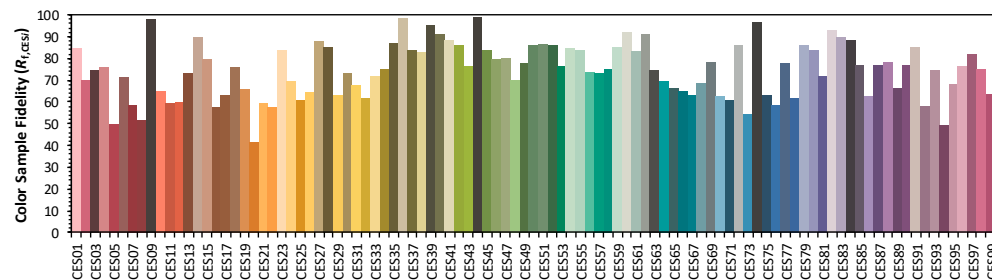
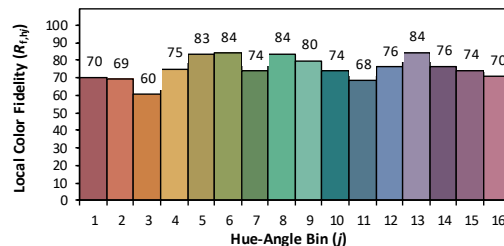
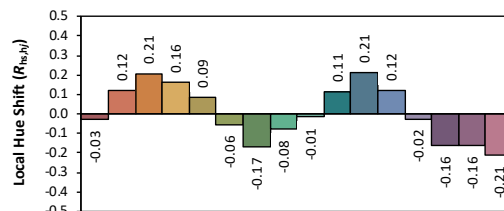
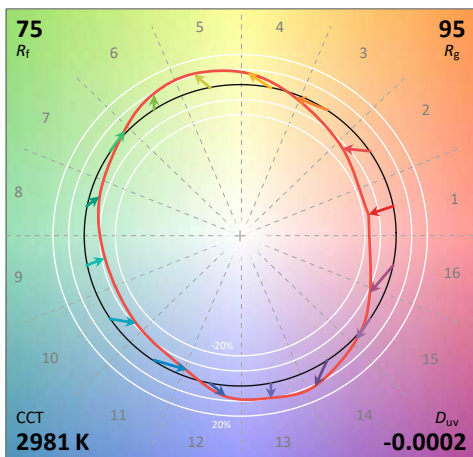
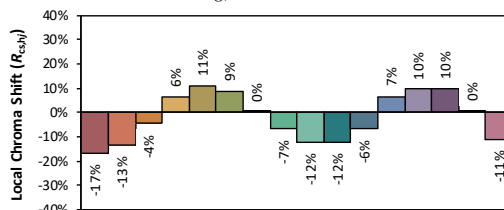
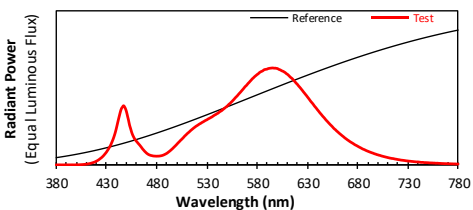
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEM-30C-12H-6C

Manufacturer: IK10 LED LIGHTING

Date: 2021/3/16

Model: IK-SBSLG2-150W-304050K-MV (150W, 30K) (Tested at 0% CC Setting)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4381
 y 0.4040
 u' 0.2513
 v' 0.5215

CIE 13.3-1995
(CRI)

R_a 72
 R_9 -35

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

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Zonal Lumen Tabulation

Zonal Lumen Summary

| Zone | Lumens | % Lamp | % Luminaire |
|--------|----------|--------|-------------|
| 0-30 | 3,809.1 | 18.8% | 18.8% |
| 0-40 | 6,655.9 | 32.9% | 32.9% |
| 0-60 | 14,464.8 | 71.4% | 71.4% |
| 60-90 | 5,794.9 | 28.6% | 28.6% |
| 70-100 | 2,273.7 | 11.2% | 11.2% |
| 90-120 | 0 | 0% | 0% |
| 0-90 | 20,259.7 | 100% | 100% |
| 90-180 | 0 | 0% | 0% |
| 0-180 | 20,259.7 | 100% | 100% |

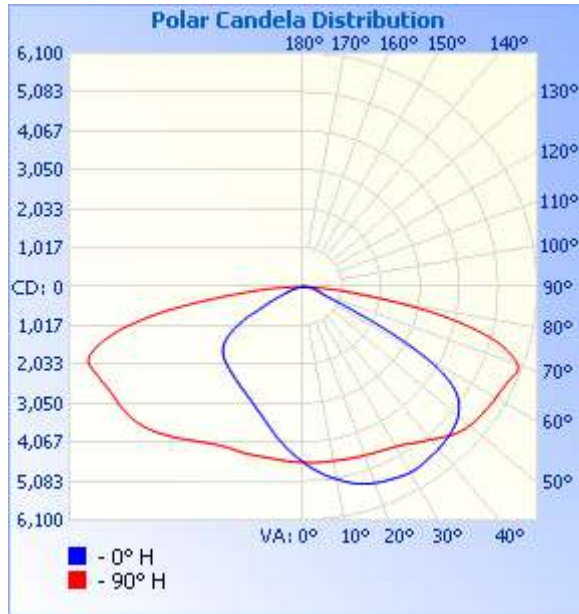
Lumens Per Zone

| Zone | Lumens | % Total | Zone | Lumens | % Total |
|-------|---------|---------|---------|--------|---------|
| 0-10 | 437.0 | 2.2% | 90-100 | 0 | 0% |
| 10-20 | 1,288.2 | 6.4% | 100-110 | 0 | 0% |
| 20-30 | 2,083.9 | 10.3% | 110-120 | 0 | 0% |
| 30-40 | 2,846.8 | 14.1% | 120-130 | 0 | 0% |
| 40-50 | 3,621.0 | 17.9% | 130-140 | 0 | 0% |
| 50-60 | 4,187.9 | 20.7% | 140-150 | 0 | 0% |
| 60-70 | 3,521.2 | 17.4% | 150-160 | 0 | 0% |
| 70-80 | 1,878.5 | 9.3% | 160-170 | 0 | 0% |
| 80-90 | 395.2 | 2.0% | 170-180 | 0 | 0% |



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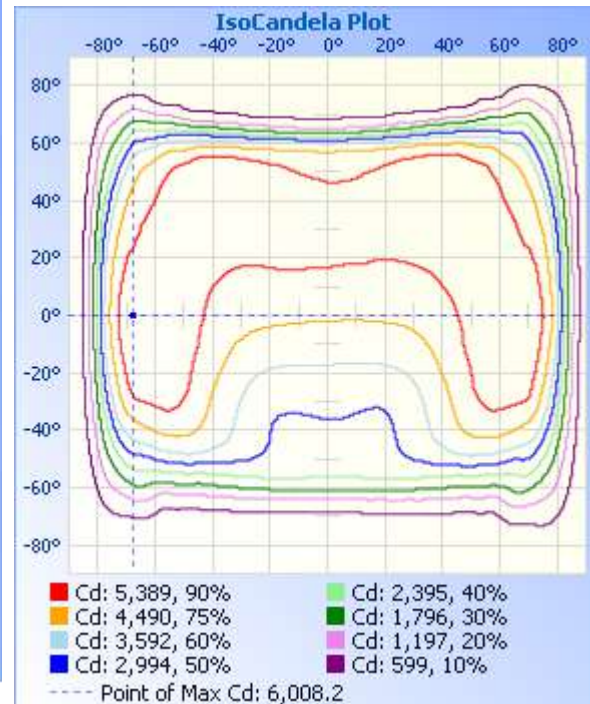
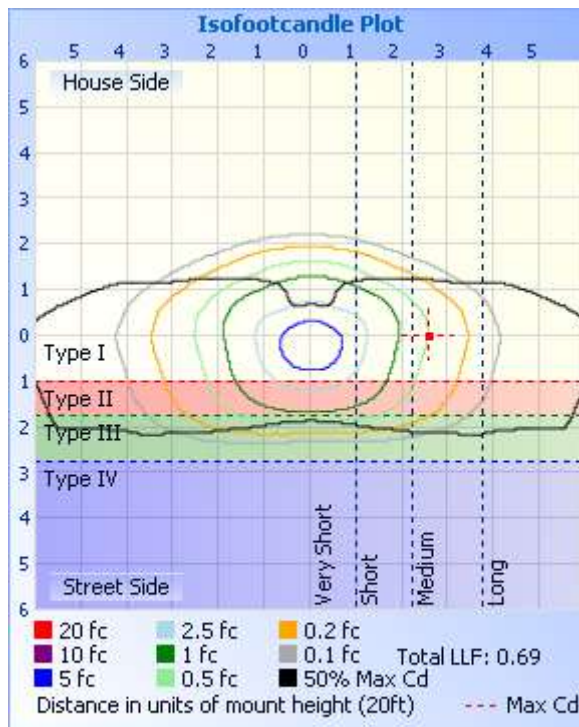
Photometric Data



Illuminance at a Distance

| | Center Beam fc | Beam Width |
|---------|----------------|---------------------|
| 17.0ft | 15.9 fc | 47.8 ft 199.2 ft |
| 34.0ft | 3.97 fc | 95.7 ft 398.5 ft |
| 51.0ft | 1.77 fc | 143.5 ft 597.7 ft |
| 68.0ft | 0.99 fc | 191.3 ft 797.0 ft |
| 85.0ft | 0.64 fc | 239.2 ft 996.2 ft |
| 102.0ft | 0.44 fc | 287.0 ft 1,195.5 ft |

■ Vert. Spread: 109.2°
■ Horiz. Spread: 160.6°



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Candela Table - Type C

| | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 210 | 220 | 230 | 240 | 250 | 260 | 270 | 280 | 290 | 300 | 310 | 320 | 330 | 340 | 350 | 360 |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 | 4591 |
| 1 | 4649 | 4657 | 4644 | 4642 | 4643 | 4637 | 4622 | 4619 | 4608 | 4596 | 4585 | 4573 | 4565 | 4556 | 4542 | 4540 | 4531 | 4521 | 4526 | 4530 | 4534 | 4529 | 4546 | 4553 | 4559 | 4566 | 4576 | 4589 | 4598 | 4610 | 4618 | 4627 | 4635 | 4648 | 4644 | 4655 | 4649 |
| 2 | 4706 | 4711 | 4699 | 4694 | 4690 | 4678 | 4655 | 4649 | 4621 | 4599 | 4574 | 4556 | 4534 | 4512 | 4495 | 4491 | 4476 | 4462 | 4468 | 4468 | 4475 | 4476 | 4498 | 4510 | 4522 | 4541 | 4563 | 4589 | 4606 | 4631 | 4644 | 4665 | 4678 | 4697 | 4699 | 4714 | 4706 |
| 3 | 4762 | 4766 | 4758 | 4747 | 4735 | 4721 | 4689 | 4670 | 4636 | 4603 | 4568 | 4539 | 4504 | 4473 | 4451 | 4438 | 4421 | 4399 | 4406 | 4405 | 4405 | 4420 | 4449 | 4471 | 4488 | 4521 | 4548 | 4585 | 4615 | 4646 | 4673 | 4706 | 4717 | 4748 | 4760 | 4774 | 4762 |
| 4 | 4812 | 4819 | 4811 | 4794 | 4781 | 4759 | 4720 | 4693 | 4648 | 4607 | 4560 | 4522 | 4474 | 4434 | 4404 | 4383 | 4352 | 4339 | 4348 | 4341 | 4347 | 4361 | 4399 | 4429 | 4453 | 4495 | 4534 | 4583 | 4623 | 4663 | 4699 | 4742 | 4757 | 4794 | 4813 | 4827 | 4812 |
| 5 | 4868 | 4871 | 4865 | 4848 | 4825 | 4797 | 4749 | 4718 | 4662 | 4611 | 4552 | 4505 | 4451 | 4395 | 4356 | 4331 | 4291 | 4276 | 4286 | 4270 | 4284 | 4303 | 4348 | 4386 | 4422 | 4468 | 4521 | 4578 | 4631 | 4681 | 4722 | 4775 | 4800 | 4840 | 4865 | 4880 | 4868 |
| 6 | 4923 | 4922 | 4916 | 4895 | 4872 | 4833 | 4781 | 4742 | 4673 | 4612 | 4545 | 4486 | 4422 | 4357 | 4302 | 4269 | 4230 | 4214 | 4227 | 4210 | 4225 | 4248 | 4292 | 4340 | 4388 | 4445 | 4505 | 4574 | 4636 | 4700 | 4748 | 4807 | 4840 | 4886 | 4916 | 4931 | 4923 |
| 7 | 4977 | 4972 | 4961 | 4945 | 4914 | 4873 | 4804 | 4767 | 4686 | 4613 | 4532 | 4468 | 4389 | 4316 | 4258 | 4216 | 4175 | 4146 | 4160 | 4149 | 4167 | 4192 | 4244 | 4301 | 4353 | 4421 | 4498 | 4571 | 4648 | 4716 | 4771 | 4837 | 4879 | 4929 | 4965 | 4980 | 4977 |
| 8 | 5023 | 5019 | 5007 | 4992 | 4954 | 4908 | 4834 | 4788 | 4696 | 4617 | 4528 | 4451 | 4361 | 4278 | 4214 | 4163 | 4113 | 4091 | 4098 | 4088 | 4102 | 4138 | 4191 | 4257 | 4320 | 4398 | 4489 | 4566 | 4658 | 4737 | 4797 | 4869 | 4918 | 4975 | 5010 | 5025 | 5023 |
| 9 | 5071 | 5060 | 5055 | 5033 | 4995 | 4944 | 4863 | 4807 | 4710 | 4619 | 4519 | 4433 | 4333 | 4244 | 4168 | 4113 | 4059 | 4032 | 4038 | 4029 | 4045 | 4082 | 4143 | 4214 | 4288 | 4378 | 4473 | 4564 | 4663 | 4754 | 4828 | 4899 | 4953 | 5015 | 5050 | 5067 | 5071 |
| 10 | 5113 | 5106 | 5100 | 5079 | 5035 | 4979 | 4894 | 4830 | 4724 | 4622 | 4513 | 4414 | 4306 | 4207 | 4123 | 4064 | 4000 | 3975 | 3981 | 3962 | 3990 | 4029 | 4098 | 4172 | 4255 | 4356 | 4464 | 4560 | 4665 | 4768 | 4851 | 4932 | 4984 | 5051 | 5092 | 5109 | 5113 |
| 11 | 5156 | 5153 | 5141 | 5127 | 5071 | 5012 | 4923 | 4850 | 4738 | 4624 | 4506 | 4401 | 4278 | 4170 | 4072 | 4006 | 3946 | 3914 | 3918 | 3902 | 3935 | 3976 | 4047 | 4133 | 4224 | 4338 | 4456 | 4562 | 4674 | 4783 | 4874 | 4959 | 5018 | 5089 | 5130 | 5152 | 5156 |
| 12 | 5206 | 5195 | 5183 | 5164 | 5106 | 5045 | 4952 | 4874 | 4750 | 4629 | 4505 | 4388 | 4251 | 4135 | 4021 | 3959 | 3892 | 3853 | 3854 | 3842 | 3879 | 3923 | 3999 | 4093 | 4196 | 4319 | 4448 | 4562 | 4684 | 4799 | 4898 | 4986 | 5045 | 5124 | 5171 | 5193 | 5206 |
| 13 | 5247 | 5241 | 5229 | 5199 | 5142 | 5079 | 4978 | 4895 | 4765 | 4639 | 4502 | 4379 | 4222 | 4093 | 3973 | 3908 | 3839 | 3791 | 3797 | 3788 | 3822 | 3867 | 3954 | 4053 | 4168 | 4306 | 4444 | 4566 | 4696 | 4819 | 4922 | 5011 | 5079 | 5161 | 5209 | 5232 | 5247 |
| 14 | 5286 | 5281 | 5265 | 5236 | 5181 | 5113 | 5007 | 4914 | 4777 | 4646 | 4499 | 4363 | 4192 | 4055 | 3926 | 3859 | 3778 | 3734 | 3740 | 3732 | 3764 | 3818 | 3909 | 4009 | 4140 | 4287 | 4437 | 4571 | 4706 | 4836 | 4947 | 5038 | 5112 | 5195 | 5244 | 5269 | 5286 |
| 15 | 5326 | 5319 | 5301 | 5270 | 5212 | 5146 | 5033 | 4932 | 4790 | 4650 | 4498 | 4348 | 4166 | 4015 | 3880 | 3803 | 3729 | 3686 | 3682 | 3680 | 3715 | 3769 | 3862 | 3971 | 4112 | 4271 | 4435 | 4578 | 4720 | 4855 | 4972 | 5066 | 5140 | 5232 | 5277 | 5300 | 5326 |
| 16 | 5361 | 5349 | 5336 | 5304 | 5247 | 5179 | 5061 | 4949 | 4800 | 4656 | 4493 | 4331 | 4138 | 3980 | 3832 | 3751 | 3675 | 3633 | 3630 | 3627 | 3664 | 3718 | 3814 | 3929 | 4084 | 4252 | 4426 | 4586 | 4736 | 4874 | 4997 | 5093 | 5168 | 5261 | 5310 | 5330 | 5361 |

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|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 17 | 5390 | 5375 | 5367 | 5336 | 5279 | 5211 | 5083 | 4964 | 4808 | 4664 | 4490 | 4311 | 4110 | 3939 | 3778 | 3695 | 3627 | 3585 | 3579 | 3578 | 3614 | 3666 | 3759 | 3886 | 4053 | 4230 | 4417 | 4592 | 4745 | 4892 | 5022 | 5122 | 5199 | 5288 | 5342 | 5358 | 5390 |
| 18 | 5417 | 5403 | 5397 | 5366 | 5312 | 5240 | 5107 | 4983 | 4819 | 4673 | 4482 | 4296 | 4082 | 3902 | 3735 | 3650 | 3580 | 3542 | 3526 | 3532 | 3568 | 3620 | 3711 | 3851 | 4021 | 4216 | 4416 | 4601 | 4754 | 4907 | 5043 | 5150 | 5227 | 5316 | 5369 | 5384 | 5417 |
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|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
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|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
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|----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| 74 | 421 | 421 | 433 | 459 | 728 | 1867 | 3887 | 4658 | 4772 | 5280 | 4604 | 2754 | 1360 | 658 | 436 | 360 | 305 | 282 | 273 | 282 | 320 | 399 | 503 | 766 | 1557 | 2917 | 4919 | 5568 | 4983 | 4832 | 4347 | 2370 | 933 | 507 | 450 | 430 | 421 |
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| 76 | 362 | 359 | 378 | 392 | 466 | 1023 | 2860 | 4125 | 4249 | 4620 | 3803 | 2393 | 842 | 433 | 324 | 276 | 236 | 185 | 177 | 193 | 261 | 304 | 381 | 532 | 999 | 2533 | 4220 | 5105 | 4552 | 4385 | 3449 | 1453 | 544 | 422 | 397 | 372 | 362 |
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| 78 | 295 | 299 | 309 | 332 | 361 | 538 | 1819 | 3535 | 3588 | 3802 | 3008 | 1926 | 561 | 311 | 247 | 190 | 133 | 102 | 98 | 102 | 162 | 222 | 288 | 377 | 667 | 2189 | 3353 | 4446 | 3968 | 3833 | 2412 | 749 | 403 | 360 | 333 | 311 | 295 |
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| 82 | 185 | 180 | 193 | 202 | 199 | 246 | 484 | 1876 | 1993 | 1725 | 1566 | 757 | 242 | 155 | 100 | 54 | 31 | 11 | 10 | 11 | 27 | 70 | 127 | 196 | 299 | 1006 | 1899 | 2539 | 2442 | 2376 | 796 | 304 | 238 | 232 | 212 | 196 | 185 |
| 83 | 161 | 160 | 165 | 172 | 174 | 201 | 343 | 1490 | 1720 | 1341 | 1278 | 552 | 192 | 125 | 87 | 52 | 20 | 9 | 13 | 8 | 23 | 52 | 107 | 165 | 254 | 747 | 1584 | 2048 | 2069 | 1989 | 537 | 247 | 202 | 198 | 180 | 170 | 161 |
| 84 | 137 | 134 | 133 | 146 | 145 | 164 | 268 | 1094 | 1429 | 1023 | 956 | 386 | 153 | 100 | 65 | 39 | 16 | 8 | 12 | 0 | 22 | 41 | 82 | 129 | 208 | 538 | 1299 | 1633 | 1761 | 1590 | 397 | 211 | 172 | 164 | 153 | 140 | 137 |
| 85 | 111 | 111 | 113 | 117 | 121 | 127 | 198 | 734 | 1118 | 723 | 670 | 251 | 117 | 71 | 49 | 30 | 16 | 0 | 10 | 9 | 18 | 37 | 72 | 106 | 161 | 364 | 1007 | 1263 | 1486 | 1227 | 286 | 170 | 142 | 137 | 126 | 116 | 111 |
| 86 | 91 | 86 | 87 | 91 | 95 | 103 | 142 | 474 | 734 | 483 | 398 | 149 | 82 | 49 | 35 | 21 | 10 | 10 | 9 | 0 | 19 | 31 | 54 | 81 | 118 | 250 | 710 | 965 | 1178 | 857 | 210 | 139 | 114 | 110 | 101 | 90 | 91 |
| 87 | 60 | 62 | 62 | 58 | 68 | 78 | 104 | 228 | 381 | 211 | 140 | 66 | 50 | 34 | 23 | 18 | 11 | 10 | 9 | 0 | 14 | 15 | 37 | 62 | 85 | 148 | 440 | 664 | 866 | 548 | 150 | 105 | 92 | 85 | 77 | 74 | 60 |
| 88 | 42 | 42 | 39 | 38 | 39 | 44 | 56 | 74 | 79 | 15 | 25 | 13 | 17 | 20 | 16 | 12 | 9 | 0 | 8 | 0 | 11 | 15 | 25 | 46 | 64 | 82 | 201 | 413 | 526 | 306 | 107 | 78 | 54 | 64 | 55 | 46 | 42 |
| 89 | 22 | 16 | 19 | 20 | 20 | 21 | 26 | 26 | 20 | 0 | 9 | 11 | 11 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 11 | 20 | 25 | 34 | 46 | 67 | 153 | 173 | 109 | 52 | 49 | 43 | 41 | 27 | 26 | 22 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People's Republic of China engineer@etk-utest.com
Report Format Number BL-FM-SA-012



Report No.: BLC2103014E-D

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People’ s Republic of China engineer@etk-utest.com
 Report Format Number BL-FM-SA-012
 14 / 26



Certificate#4810.01

[illegible]



Report No.: BLC2103014E-D

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People’ s Republic of China engineer@etk-utest.com
 Report Format Number BL-FM-SA-012
 16 / 26



Certificate#4810.01

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Certificate#4810.01

[illegible]



Report No.: BLC2103014E-D

BUG

Lum. Classification System (LCS)

| <u>LCS Zone</u> | <u>Lumens</u> | <u>%Lamp</u> | <u>%Lum</u> |
|-------------------|-----------------|--------------|-------------|
| FL (0-30) | 2178.1 | 10.8 | 10.8 |
| FM (30-60) | 6358.8 | 31.4 | 31.4 |
| FH (60-80) | 3205.1 | 15.8 | 15.8 |
| FVH (80-90) | 251.1 | 1.2 | 1.2 |
| BL (0-30) | 1630.9 | 8.0 | 8.0 |
| BM (30-60) | 4298.5 | 21.2 | 21.2 |
| BH (60-80) | 2194.4 | 10.8 | 10.8 |
| BVH (80-90) | 144.1 | 0.7 | 0.7 |
| UL (90-100) | 0.0 | 0.0 | 0.0 |
| UH (100-180) | 0.0 | 0.0 | 0.0 |
| Total | 20261.0 | 99.9 | 100.0 |
| BUG Rating | B3-U0-G3 | | |



Report No.: BLC2103014E-D

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

| | | | |
|-------------------------|---|---------------------------------|---------|
| Test date | 2021-3-16 | Test Ambient: | 25.2 °C |
| Test Orientation | As intended | Stabilization Time (min) | 90 |
| Model Number | IK-SBSLG2-150W-304050K-MV (150W,40K) (Tested at 50% CCT Setting) | | |

Electrical Measurement:

| Sample No. | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor | THD % |
|--------------------------|---------------|----------------|-------------|-----------|------------------|---------------|
| BLC210301 4E-D1 | 120.0 | 60 | 1.216 | 145.64 | 0.998 | 4.51 |
| | 277.0 | 60 | 0.529 | 140.07 | 0.956 | 7.97 |
| 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 | 70 | R9 | -30 |
| Frequency (Hz) | 60 | R2 | 81 | R10 | 56 |
| CCT (K) | 3717 | R3 | 90 | R11 | 68 |
| Duv | -0.0012 | R4 | 72 | R12 | 49 |
| Chromaticity (x, y) | x=0.3927 y=0.3813 | R5 | 70 | R13 | 72 |
| Chromaticity (u', v') | u(u')=0.2313 v'=0.5054 | R6 | 74 | R14 | 94 |
| Color Rendering Index (CRI) | 73 | R7 | 79 | R15 | 63 |
| R9 | -30 | R8 | 50 | -- | -- |
| Rf | 75 | -- | -- | -- | -- |
| Rg | 95 | -- | -- | -- | -- |
| Rcs,h1(%) | -17 | | | | |

Photometric Measurement – Sphere-Spectroradiometer Method:

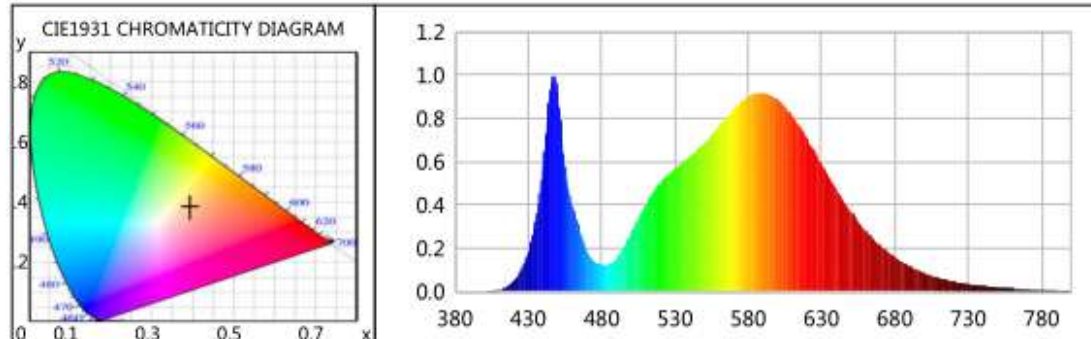
| Parameter | Result | | DLC V5.1 Pass Criteria |
|-----------------------------------|---------|---------|------------------------|
| Test Voltage (V) | 120.0 | 277.0 | -- |
| Frequency (Hz) | 60 | 60 | |
| Total Luminous (lm) | 21875.1 | 21335.5 | >=10000(-10%) |
| Luminous Efficacy (lm/W) | 150.20 | 152.32 | Premium: >= 120(-3%) |
| Most worst Luminous/Highest Watts | 146.49 | | |



Certificate#4810.01

Report No.: BLC2103014E-D

Spectral Power Distribution & Chromaticity Diagram



| WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) |
|--------|--------|-----------|--------|--------|-----------|--------|--------|-----------|
| 380 | 0.0007 | 0.3107 | 525 | 0.5366 | 226.5050 | 670 | 0.2114 | 89.2213 |
| 385 | 0.0007 | 0.2777 | 530 | 0.5663 | 239.0615 | 675 | 0.1840 | 77.6802 |
| 390 | 0.0007 | 0.3013 | 535 | 0.5937 | 250.6014 | 680 | 0.1585 | 66.9142 |
| 395 | 0.0006 | 0.2591 | 540 | 0.6228 | 262.9259 | 685 | 0.1366 | 57.6587 |
| 400 | 0.0012 | 0.5069 | 545 | 0.6510 | 274.8268 | 690 | 0.1178 | 49.7372 |
| 405 | 0.0034 | 1.4414 | 550 | 0.6842 | 288.8297 | 695 | 0.1020 | 43.0452 |
| 410 | 0.0085 | 3.6008 | 555 | 0.7222 | 304.8451 | 700 | 0.0866 | 36.5586 |
| 415 | 0.0216 | 9.1171 | 560 | 0.7637 | 322.3718 | 705 | 0.0739 | 31.2134 |
| 420 | 0.0469 | 19.7974 | 565 | 0.8016 | 338.3687 | 710 | 0.0629 | 26.5464 |
| 425 | 0.0965 | 40.7373 | 570 | 0.8410 | 355.0002 | 715 | 0.0543 | 22.9346 |
| 430 | 0.1837 | 77.5334 | 575 | 0.8761 | 369.8276 | 720 | 0.0467 | 19.6948 |
| 435 | 0.3263 | 137.7336 | 580 | 0.9006 | 380.1756 | 725 | 0.0399 | 16.8602 |
| 440 | 0.5793 | 244.5409 | 585 | 0.9144 | 385.9830 | 730 | 0.0337 | 14.2279 |
| 445 | 0.9322 | 393.5081 | 590 | 0.9164 | 386.8507 | 735 | 0.0295 | 12.4577 |
| 450 | 0.9279 | 391.6836 | 595 | 0.9082 | 383.4036 | 740 | 0.0254 | 10.7103 |
| 455 | 0.5745 | 242.5269 | 600 | 0.8897 | 375.5754 | 745 | 0.0226 | 9.5380 |
| 460 | 0.3935 | 166.0956 | 605 | 0.8543 | 360.6347 | 750 | 0.0193 | 8.1261 |
| 465 | 0.2884 | 121.7364 | 610 | 0.8144 | 343.7784 | 755 | 0.0171 | 7.2243 |
| 470 | 0.1848 | 78.0291 | 615 | 0.7655 | 323.1409 | 760 | 0.0147 | 6.1855 |
| 475 | 0.1381 | 58.2928 | 620 | 0.7093 | 299.4173 | 765 | 0.0124 | 5.2502 |
| 480 | 0.1244 | 52.5110 | 625 | 0.6485 | 273.7465 | 770 | 0.0109 | 4.5829 |
| 485 | 0.1263 | 53.3195 | 630 | 0.5888 | 248.5504 | 775 | 0.0089 | 3.7523 |
| 490 | 0.1521 | 64.2178 | 635 | 0.5301 | 223.7920 | 780 | 0.0075 | 3.1644 |
| 495 | 0.2025 | 85.4868 | 640 | 0.4731 | 199.7133 | 785 | 0.0058 | 2.4658 |
| 500 | 0.2666 | 112.5556 | 645 | 0.4187 | 176.7590 | 790 | 0.0053 | 2.2226 |
| 505 | 0.3335 | 140.7674 | 650 | 0.3683 | 155.4738 | 795 | 0.0056 | 2.3486 |
| 510 | 0.3999 | 168.8195 | 655 | 0.3223 | 136.0664 | 800 | 0.0032 | 1.3357 |
| 515 | 0.4545 | 191.8607 | 660 | 0.2811 | 118.6417 | | | |
| 520 | 0.4998 | 210.9884 | 665 | 0.2451 | 103.4554 | | | |

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

21 / 26

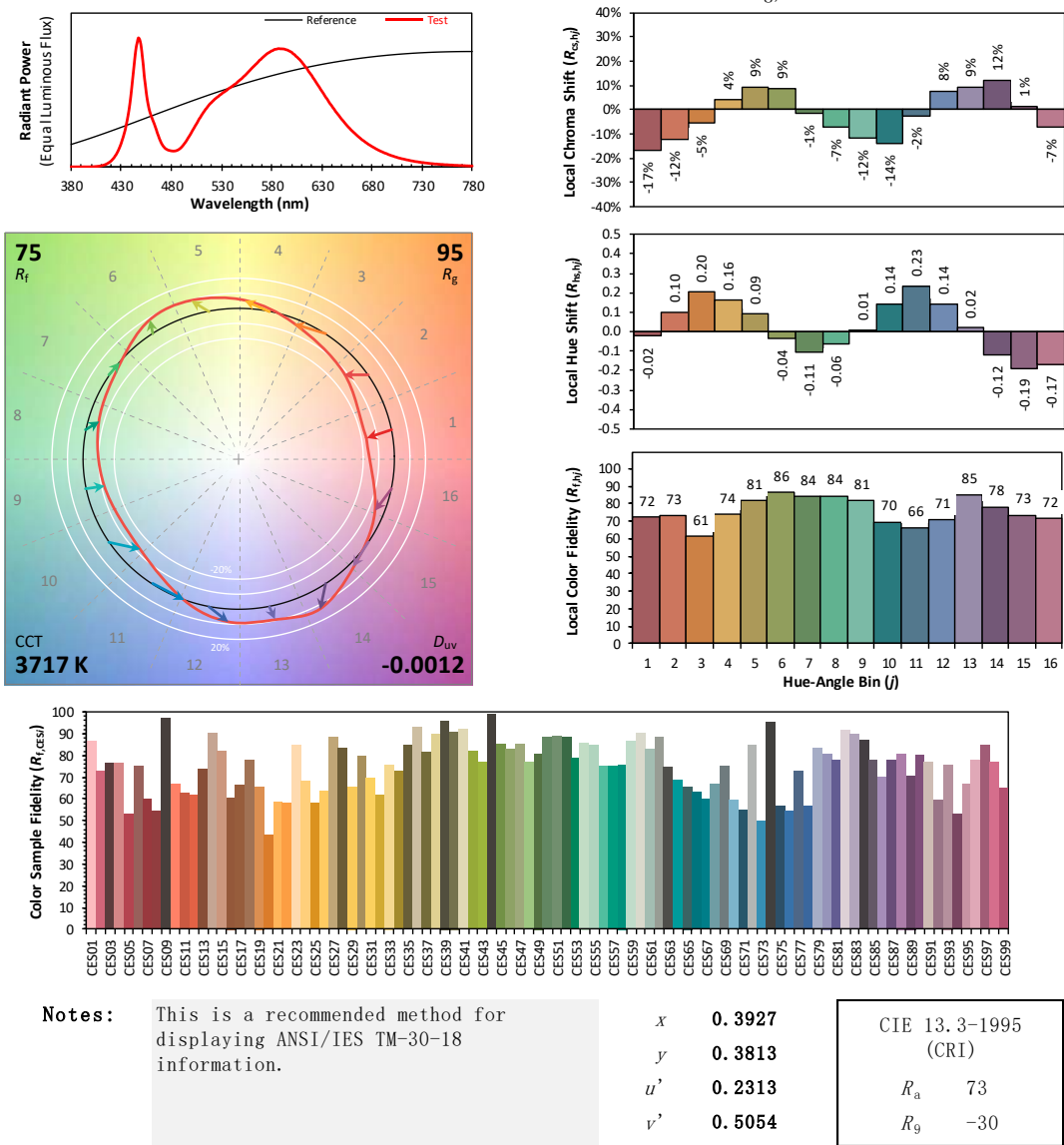


Report No.: BLC2103014E-D

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: BXEM-30C-12H-6C
Date: 2021/3/16
Manufacturer: IK10 LED LIGHTING
Model: IK-SBSLG2-150W-304050K-MV (150W, 40K) (Tested at 50% CC Setting)



Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



Report No.: BLC2103014E-D

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

| | | | |
|-------------------------|--|---------------------------------|---------|
| Test date | 2021-3-16 | Test Ambient: | 25.2 °C |
| Test Orientation | As intended | Stabilization Time (min) | 90 |
| Model Number | IK-SBSLG2-150W-304050K-MV (150W,50K) (Tested at 100% CCT Setting) | | |

Electrical Measurement:

| Sample No. | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor | THD % |
|--------------------------|---------------|----------------|-------------|-----------|------------------|---------------|
| BLC210301 | 120.0 | 60 | 1.258 | 150.63 | 0.998 | 3.96 |
| 4E-D1 | 277.0 | 60 | 0.528 | 139.93 | 0.956 | 8.22 |
| 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 | 68 | R9 | -39 |
| Frequency (Hz) | 60 | R2 | 77 | R10 | 46 |
| CCT (K) | 4816 | R3 | 84 | R11 | 68 |
| Duv | 0.0012 | R4 | 71 | R12 | 42 |
| Chromaticity (x, y) | x=0.3508 y=0.3585 | R5 | 69 | R13 | 69 |
| Chromaticity (u', v') | u(u')=0.2126 v'=0.4888 | R6 | 68 | R14 | 91 |
| Color Rendering Index (CRI) | 71 | R7 | 80 | R15 | 61 |
| R9 | -39 | R8 | 53 | -- | -- |
| Rf | 72 | -- | -- | -- | -- |
| Rg | 95 | -- | -- | -- | -- |
| Rcs,h1(%) | -18 | | | | |

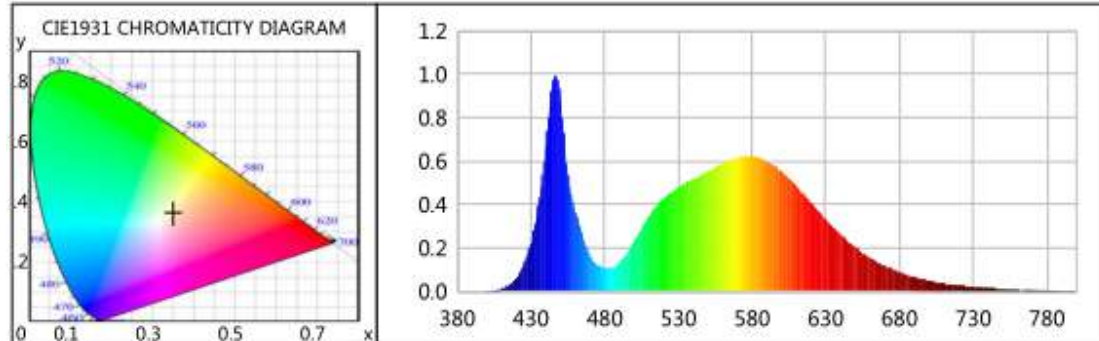
Photometric Measurement – Sphere-Spectroradiometer Method:

| Parameter | Result | | DLC V5.1 Pass Criteria |
|-----------------------------------|---------|---------|------------------------|
| Test Voltage (V) | 120.0 | 277.0 | -- |
| Frequency (Hz) | 60 | 60 | |
| Total Luminous (lm) | 21354.8 | 19997.4 | >=10000(-10%) |
| Luminous Efficacy (lm/W) | 141.77 | 142.91 | Premium: >= 120(-3%) |
| Most worst Luminous/Highest Watts | 132.76 | | |



Report No.: BLC2103014E-D

Spectral Power Distribution & Chromaticity Diagram



| WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) | WL(nm) | PL | PE(mW/nm) |
|--------|--------|-----------|--------|--------|-----------|--------|--------|-----------|
| 380 | 0.0004 | 0.2239 | 525 | 0.4573 | 252.9886 | 670 | 0.1159 | 64.1359 |
| 385 | 0.0005 | 0.3019 | 530 | 0.4801 | 265.6452 | 675 | 0.1013 | 56.0556 |
| 390 | 0.0007 | 0.4142 | 535 | 0.4984 | 275.7581 | 680 | 0.0873 | 48.3274 |
| 395 | 0.0013 | 0.6956 | 540 | 0.5169 | 285.9784 | 685 | 0.0760 | 42.0327 |
| 400 | 0.0019 | 1.0345 | 545 | 0.5336 | 295.2328 | 690 | 0.0656 | 36.2983 |
| 405 | 0.0042 | 2.3221 | 550 | 0.5512 | 304.9479 | 695 | 0.0569 | 31.4742 |
| 410 | 0.0110 | 6.1049 | 555 | 0.5700 | 315.3663 | 700 | 0.0485 | 26.8577 |
| 415 | 0.0275 | 15.2411 | 560 | 0.5891 | 325.9436 | 705 | 0.0426 | 23.5803 |
| 420 | 0.0601 | 33.2413 | 565 | 0.6044 | 334.3859 | 710 | 0.0358 | 19.8057 |
| 425 | 0.1207 | 66.8064 | 570 | 0.6148 | 340.1731 | 715 | 0.0311 | 17.2089 |
| 430 | 0.2260 | 125.0177 | 575 | 0.6228 | 344.5644 | 720 | 0.0258 | 14.2959 |
| 435 | 0.3918 | 216.7536 | 580 | 0.6230 | 344.7039 | 725 | 0.0228 | 12.6161 |
| 440 | 0.6670 | 369.0649 | 585 | 0.6145 | 339.9650 | 730 | 0.0191 | 10.5521 |
| 445 | 0.9728 | 538.2251 | 590 | 0.5996 | 331.7401 | 735 | 0.0170 | 9.4200 |
| 450 | 0.8767 | 485.0473 | 595 | 0.5792 | 320.4691 | 740 | 0.0148 | 8.1893 |
| 455 | 0.5352 | 296.1354 | 600 | 0.5536 | 306.3173 | 745 | 0.0130 | 7.1731 |
| 460 | 0.3665 | 202.7679 | 605 | 0.5198 | 287.5873 | 750 | 0.0109 | 6.0280 |
| 465 | 0.2571 | 142.2361 | 610 | 0.4860 | 268.8712 | 755 | 0.0103 | 5.7020 |
| 470 | 0.1626 | 89.9538 | 615 | 0.4478 | 247.7746 | 760 | 0.0090 | 4.9965 |
| 475 | 0.1212 | 67.0559 | 620 | 0.4086 | 226.0434 | 765 | 0.0074 | 4.1079 |
| 480 | 0.1073 | 59.3616 | 625 | 0.3690 | 204.1500 | 770 | 0.0066 | 3.6605 |
| 485 | 0.1080 | 59.7402 | 630 | 0.3307 | 182.9494 | 775 | 0.0047 | 2.6083 |
| 490 | 0.1305 | 72.2197 | 635 | 0.2961 | 163.8252 | 780 | 0.0047 | 2.5735 |
| 495 | 0.1750 | 96.8041 | 640 | 0.2629 | 145.4703 | 785 | 0.0038 | 2.1015 |
| 500 | 0.2300 | 127.2357 | 645 | 0.2313 | 127.9861 | 790 | 0.0041 | 2.2713 |
| 505 | 0.2867 | 158.6360 | 650 | 0.2022 | 111.8494 | 795 | 0.0028 | 1.5394 |
| 510 | 0.3437 | 190.1617 | 655 | 0.1761 | 97.4340 | 800 | 0.0011 | 0.6315 |
| 515 | 0.3905 | 216.0661 | 660 | 0.1547 | 85.5942 | | | |
| 520 | 0.4279 | 236.7646 | 665 | 0.1341 | 74.2219 | | | |

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01

Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People's Republic of China engineer@etk-utest.com

Report Format Number BL-FM-SA-012

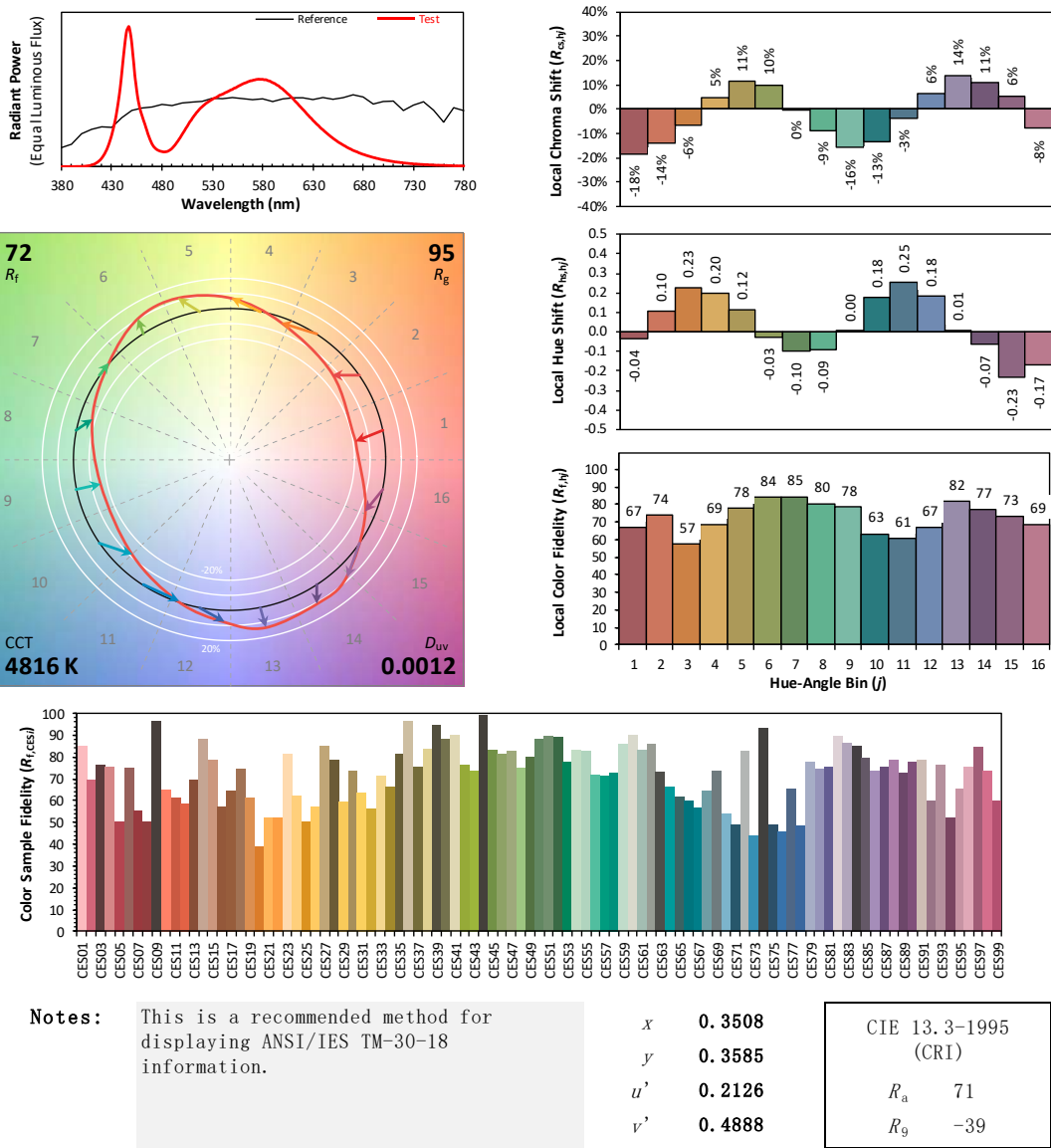


Report No.: BLC2103014E-D

TM30

ANSI/IES TM-30-18 Color Rendition Report

| | | | |
|---------|-----------------|---------------|---|
| Source: | BXEM-30C-12H-6C | Manufacturer: | IKIO LED LIGHTING |
| Date: | 2021/3/16 | Model: | IK-SBSLG2-150W-304050K-MV (150W, 50K) (Tested at 100% CC Setting) |



Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



Report No.: BLC2103014E-D

3. Test Equipment

| Equipment Name | Model No. | Serial No. | Next Calibration Date |
|--|-----------|-------------|-----------------------|
| Goniophotometric System | GPM-3000 | DYHXF120001 | 2022-01-18 |
| AC Power Source | CHP-500 | DYBWD010159 | 2022-01-25 |
| Total Luminous Flux Standard Lamp | 24V/150W | DYJYR040040 | 2022-01-24 |
| Digital Power Meter | WT500 | DYDWQ20010 | 2022-01-25 |
| Integral Sphere (2M) | 2M | DYJCE120067 | 2022-01-18 |
| Digital Power Meter | WT500 | DYDWQ20006 | 2022-01-25 |
| Optical Color and Electrical Measurement System | CMS-3000S | DYJCE120067 | 2022-01-18 |
| Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2 | | | |

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