



LM-79-08 Test Report

For

IKIO LED Lighting

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Model name(s): IK-T504-0015-DY-XXB

Report Type: Testing and Report According to IES LM-79-2008

Type of Luminaire: Internal Driver/Line Voltage (UL Type B) Lamps

Report Date: 2023-08-10
Ningbo TengLi Testing Co., Ltd

Prepared By: 2nd floor, Block B, Ningbo Testing and Certification Base,
No. 66 Qingyi Road, Ningbo National Hi-Tech Zone,
Ningbo, Zhejiang

Test & Report By:

Wat Wang

Engineer: Wat Wang

Review By:

Nick Song

Manager: Nick Song

Note: 1. The results contained in this report pertain only to the tested samples

2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.



1.1 Product Information:

Model Number	IK-T504-0015-DY-XXB	
Remark	XX can any letter, representing the CCT (3000=3000K,3500=3500K,4000=4000K,4500=4500K,5000=5000K,6500=6500K).	
Representative (Tested) Model	IK-T504-0015-DY-3000B IK-T504-0015-DY-6500B	
Model Difference	All construction and rating are the same, except CCT	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Internal Driver/Line Voltage (UL Type B) Lamps	
LED Manufacturer	Shenzhen Runlite Technology Co.,LTD	
LED Model	T28351-W29SC0D2FB3C0-XXXX T28351-W64SC0E1FB3C0-XXXX	
Test Ballast	--	
Dimming	Continuous	
Integral Controls	No	
Sample Number	JBE230711-C1(3000K), C2(6500K)	
Date of Receipt	Aug 05,2023	
Luminaire Length	1200	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:

Rated Voltage / Frequency	100-277Vac, 50/60Hz
Nominal Power	15W
Rated Initial Lamp Lumen	--
Declared CCT	3000K,3500K,4000K,4500K,5000K,6500K



1.3 Test Specifications:

Test item	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	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2015 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

1.4 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 Summary of Test Result

Criteria Item	Measured Value		Compliance	Requirement (DLC V5.1)
Minimum Total Luminous	2398.5		Pass	$\geq 1600(-10\%)$
Minimum Luminous Efficacy	153.78		Pass	Standard: $\geq 120(-3\%)$
Minimum Power Factor	0.8779		Pass	$\geq 0.9(-3\%)$
Maximum THD %	24.73		Pass	$\leq 20(+5)$
Minimum CRI	83.0		Pass	$\geq 80(-1)$
Minimum R9	6		Pass	$\geq 0(-1)$
Minimum Rg	93		Pass	$\geq 89(-1)$
Minimum Rf	84		Pass	$\geq 70(-1)$
Rcs, h1(%)	-13		Pass	-12%-23%(-1%)
CCT (K)	3000K	2965	Pass	$\leq 6500K$
	6500K	6378		
Beam Angle (°)(C0/180)	168.3		Pass	$\geq 140(-5)$



2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-08-07	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	IK-T504-0015-DY-3000B	Total Operating Time(min)	75

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE230711-	120.0	60.01	0.1339	15.54	0.9658	24.48
C1	276.9	60.01	0.0642	15.60	0.8779	24.73

Photometric Measurement for Bare-lamp– Goniophotometer Method (Test Distance: 26.00m):

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	2447.5	2398.5
Luminous Efficacy (lm/W)	157.53	153.78
Beam Angle (°)(C0/180)	168.3	--
Center Beam Candle Power (cd)	383	--



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	415.6	17%
0-40	778.9	31.8%
0-60	1,616.4	66.1%
60-90	685.2	28%
70-100	424.5	17.3%
90-120	124.0	5.1%
0-90	2,301.7	94.1%
90-180	145.5	5.9%
0-180	2,447.2	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	% Total
0-10	38.2	1.6%	90-100	63.8	2.6%
10-20	129.1	5.3%	100-110	34.6	1.4%
20-30	248.3	10.1%	110-120	25.6	1%
30-40	363.3	14.8%	120-130	12.9	0.5%
40-50	426.5	17.4%	130-140	5.4	0.2%
50-60	411.0	16.8%	140-150	2.1	0.1%
60-70	324.6	13.3%	150-160	0.7	0%
70-80	221.4	9.0%	160-170	0.3	0%
80-90	139.3	5.7%	170-180	0.1	0%

Photometric Data

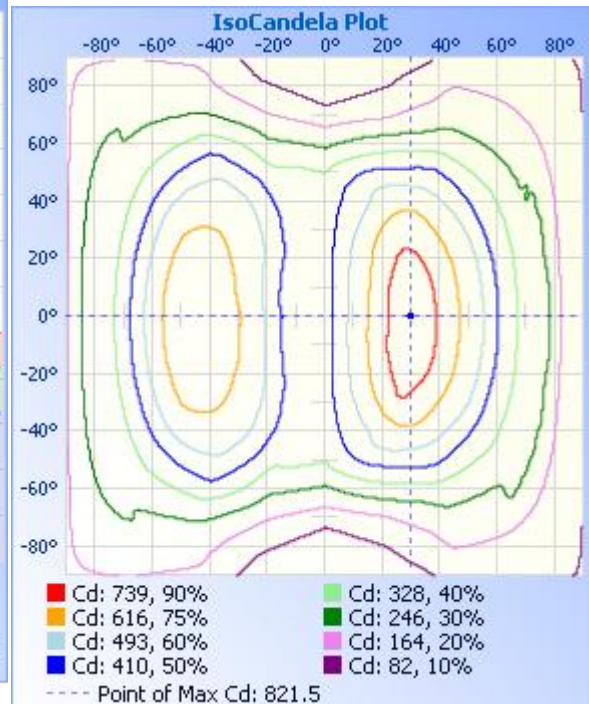
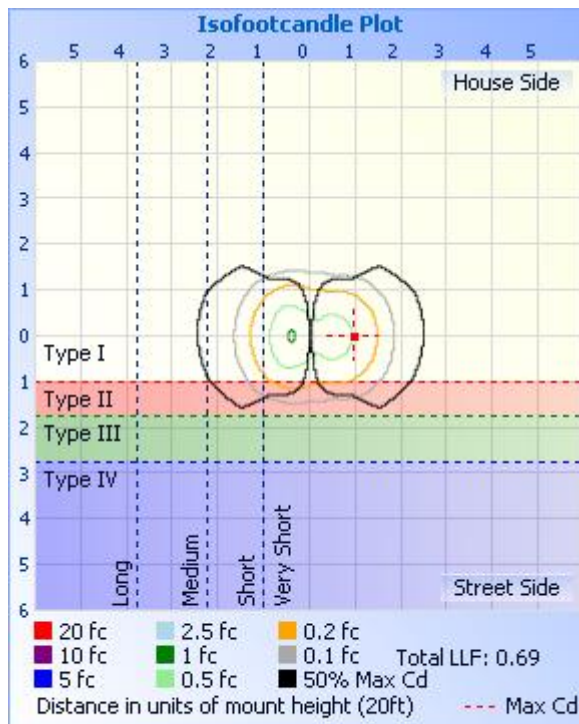
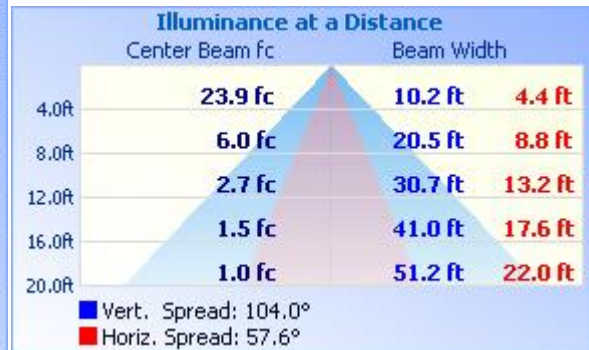
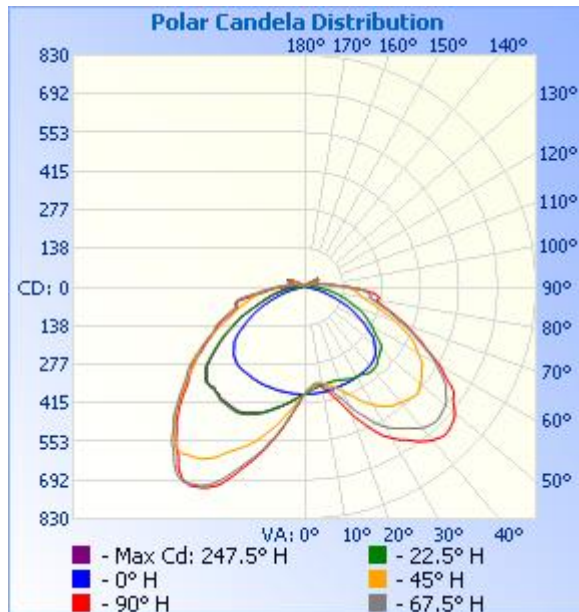




Table--1

UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	383	383	383	383	383	383	383	383	383	383	383	383	383	383	383	383			
5	445	440	426	403	383	367	358	351	354	357	359	368	383	404	428	444			
10	530	517	481	428	381	357	351	352	362	358	353	357	382	429	486	524			
15	618	597	539	454	379	352	364	388	409	396	366	353	380	455	545	609			
20	707	674	594	479	377	355	397	443	478	453	399	354	379	482	604	690			
25	789	757	642	497	375	364	440	512	558	526	440	362	378	501	653	776			
30	821	796	693	503	371	371	485	577	624	593	487	368	375	509	709	813			
35	789	788	719	498	370	379	520	618	672	635	519	378	372	506	734	804			
40	719	723	709	490	366	384	538	658	715	677	537	382	368	494	724	739			
45	642	654	648	488	355	370	554	674	729	694	553	367	355	491	659	666			
50	553	566	562	460	329	355	541	659	704	681	538	352	330	465	569	577			
55	492	496	480	390	290	320	513	620	653	638	511	318	290	394	483	507			
60	412	414	422	317	232	280	468	543	558	558	467	277	231	320	423	423			
65	347	349	336	246	178	238	416	449	463	461	416	235	175	248	336	357			
70	283	290	269	173	116	188	339	369	382	379	338	185	113	174	270	299			
75	255	239	220	127	70.0	146	266	302	309	311	265	143	67.2	127	221	249			
80	202	224	184	89.2	31.9	104	214	244	263	250	212	102	29.6	88.5	184	233			
85	131	137	148	61.6	7.17	68.5	186	228	248	233	183	67.2	6.27	60.5	148	145			
90	79.6	91.6	101	41.5	0.08	46.2	151	163	157	166	146	45.0	0.00	41.0	102	95.5			
95	43.7	53.7	70.4	24.5	0.21	30.7	101	94.1	93.6	97.8	98.6	29.5	0.11	23.8	70.2	55.7			
100	35.4	38.2	58.4	14.3	0.80	19.1	73.1	67.1	57.3	68.2	71.0	18.5	0.27	14.0	58.6	39.8			
105	52.5	51.1	44.7	7.08	0.96	10.9	50.4	42.6	42.5	42.9	48.6	10.5	0.62	7.05	45.2	54.9			
110	59.1	55.7	32.0	4.08	1.01	7.04	43.4	39.0	45.2	39.4	41.8	6.97	0.80	4.20	32.4	59.1			
115	60.2	47.3	18.0	3.08	1.15	5.14	28.7	47.6	46.3	47.5	27.7	4.94	0.88	3.27	18.0	50.2			
120	42.1	30.1	13.1	2.02	1.15	3.65	17.5	49.3	56.4	49.5	16.8	3.36	0.92	1.99	13.1	31.6			
125	23.7	18.7	8.24	1.49	1.15	2.58	13.6	28.3	46.0	28.3	13.2	2.25	0.96	1.41	8.51	19.8			
130	19.1	14.2	5.10	1.35	1.16	2.00	9.76	20.8	25.4	20.5	9.69	1.59	0.99	1.33	5.27	15.3			
135	11.1	9.00	3.37	1.29	1.17	1.81	7.09	15.3	18.8	15.2	7.19	1.55	1.07	1.25	3.44	9.76			
140	5.87	4.98	1.94	1.22	1.18	1.79	4.72	10.6	15.2	10.9	4.87	1.53	1.14	1.14	1.90	5.45			
145	3.34	2.69	1.54	1.16	1.20	1.73	3.22	7.30	11.2	8.10	3.50	1.44	1.17	1.03	1.47	2.66			
150	1.77	1.67	1.27	0.88	1.21	1.52	1.96	4.52	6.24	5.21	2.37	1.35	1.15	1.03	1.17	1.51			
155	1.33	1.36	1.02	0.83	1.23	1.20	1.61	2.41	3.14	2.93	1.64	1.22	1.04	1.02	0.91	1.15			
160	1.13	1.21	0.92	0.86	1.25	1.11	1.44	1.77	1.68	1.72	1.37	1.11	1.02	1.01	0.85	0.91			
165	0.99	0.98	0.81	0.89	1.47	1.12	1.31	1.60	1.33	1.33	1.16	0.81	1.04	1.25	0.98	0.84			
170	0.78	0.87	0.80	1.06	1.63	1.19	1.11	1.15	1.14	1.01	0.95	0.79	1.18	1.54	1.14	0.90			
175	0.76	0.85	0.79	1.14	1.63	1.18	1.06	1.04	0.93	0.83	0.85	0.78	1.20	1.63	1.20	0.98			
180	0.81	0.85	0.78	1.14	1.74	1.17	0.95	0.87	0.84	0.79	0.81	0.77	1.15	1.65	1.20	1.01			



2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-08-07	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	IK-T504-0015-DY-3000B	Total Operating Time(min)	61

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE230711-	120.0	60	0.1347	15.61	0.9659	24.47
C1	277.0	60	0.0644	15.67	0.8781	24.71

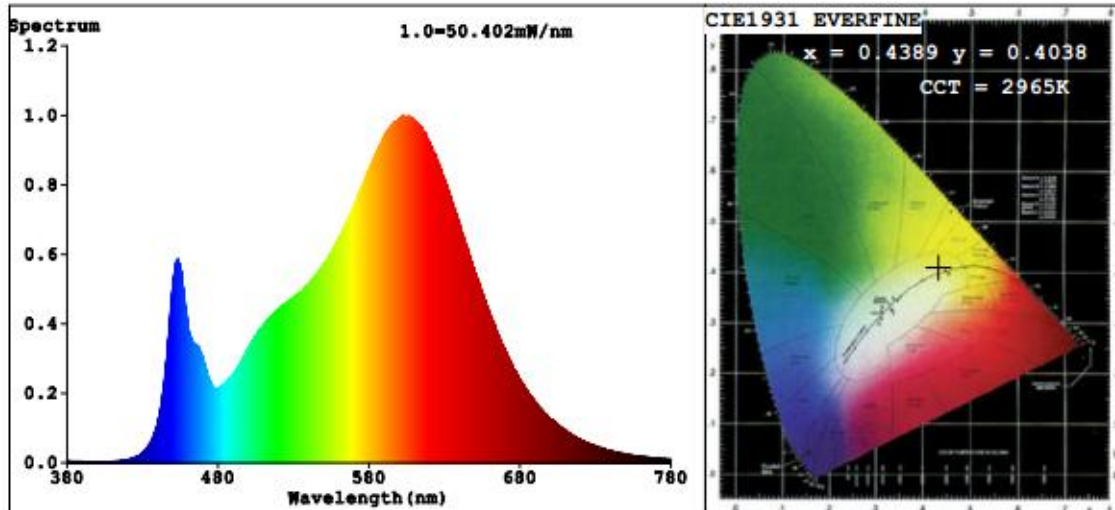
Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer Method (Self-absorption:1.0433)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2965
Duv	-0.0004
Chromaticity (x, y)	x=0.4389 y=0.4038
Chromaticity (u', v')	u'=0.2520 v'=0.5215
Color Rendering Index (CRI)	83.0
R9	6
Rg	94
Rf	84
Rcs,h1(%)	-12

Photometric Measurement for Bare-lamp–Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	2463	2414
Luminous Efficacy (lm/W)	157.78	154.05

Spectral Power Distribution & Chromaticity Diagram



R1 =82	R2 =94	R3 =93	R4 =80	R5 =83	R6 =93	R7 =81	
R8 =57	R9 =6	R10=86	R11=81	R12=73	R13=85	R14=97	R15=74

TM30

ANSI/IES TM-30-18 Color Rendition Report

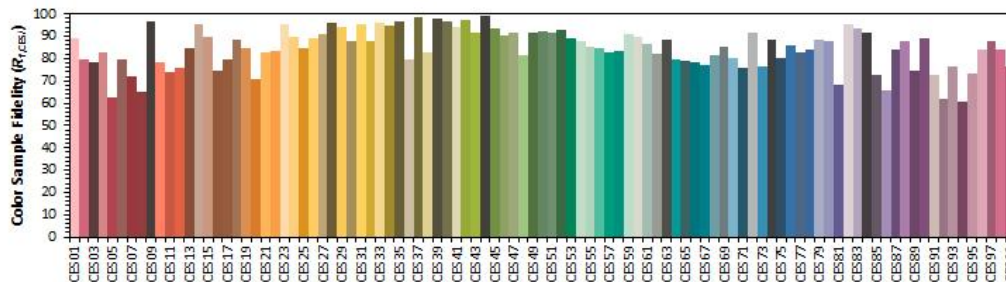
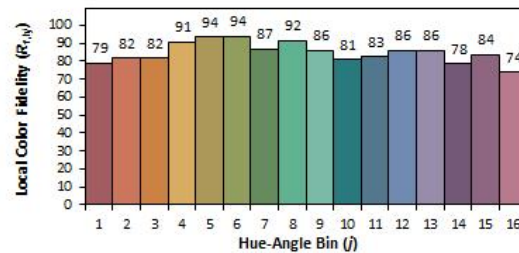
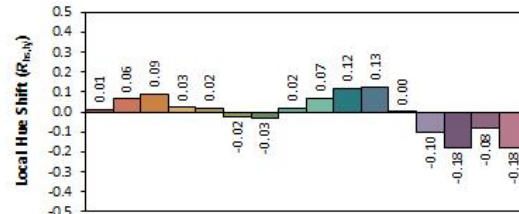
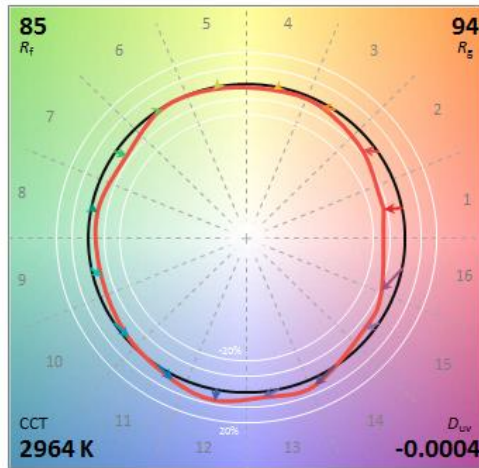
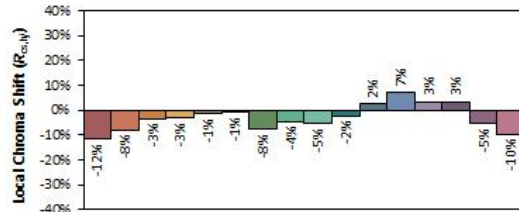
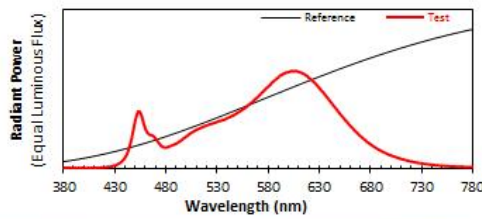
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Manufacturer:

IKIO LED Lighting

Date: 2023-08-07

Model: IK-T504-0015-DY-3000B



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

x 0.4389
 y 0.4037
 u' 0.2520
 v' 0.5215

CIE 13.3-1995
(CRI)

R_a 83
 R_g 6

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



2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-08-07	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	IK-T504-0015-DY-6500B	Total Operating Time(min)	61

Electrical Measurement for Bare-lamp:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE230711-	120.0	60	0.1365	15.82	0.9656	24.50
C2	277.0	60	0.0653	15.88	0.8780	24.72

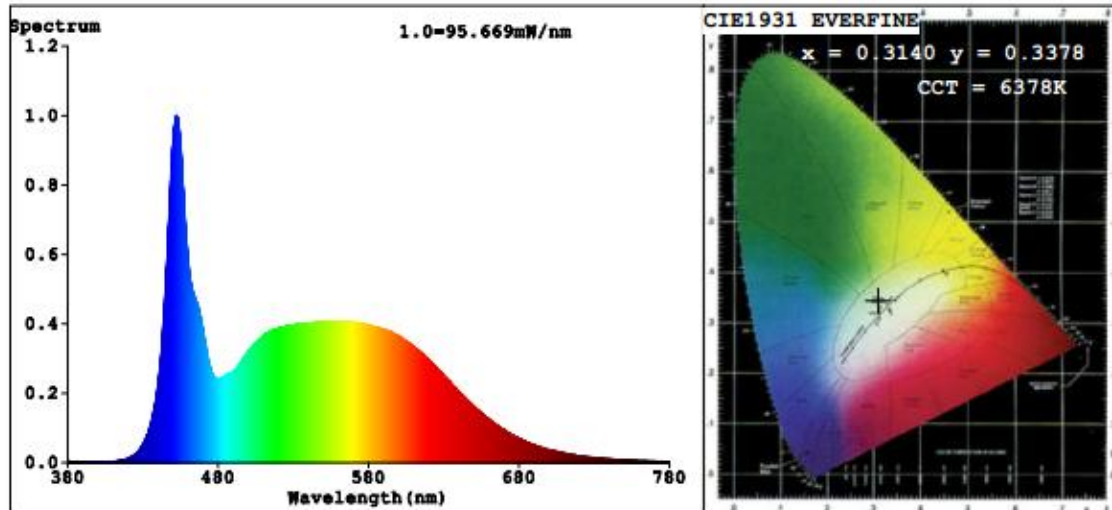
Chromaticity Measurement for Bare-lamp - Sphere-Spectroradiometer Method (Self-absorption:1.0435)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	6378
Duv	0.0070
Chromaticity (x, y)	x=0.3140 y=0.3378
Chromaticity (u', v')	u'=0.1954 v'=0.4731
Color Rendering Index (CRI)	84.4
R9	9
Rg	93
Rf	84
Rcs,h1(%)	-13

Photometric Measurement for Bare-lamp–Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	2666	2613
Luminous Efficacy (lm/W)	168.52	164.55

Spectral Power Distribution & Chromaticity Diagram



R1 =82	R2 =91	R3 =95	R4 =82	R5 =83	R6 =86	R7 =88
R8 =69	R9 =9	R10=77	R11=82	R12=57	R13=85	R14=97 R15=77

TM30

ANSI/IES TM-30-18 Color Rendition Report

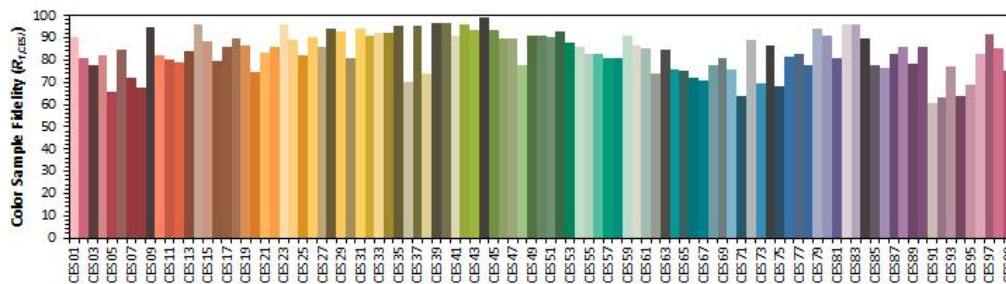
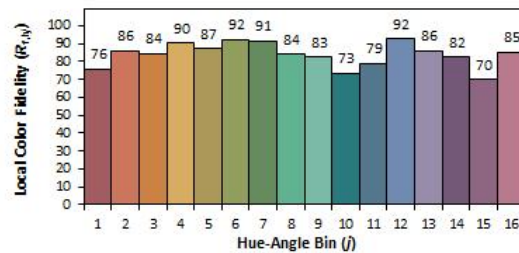
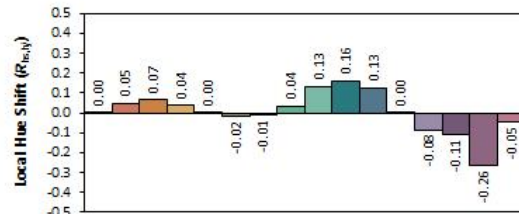
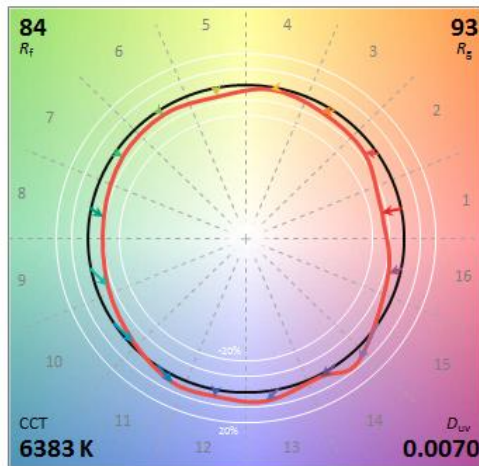
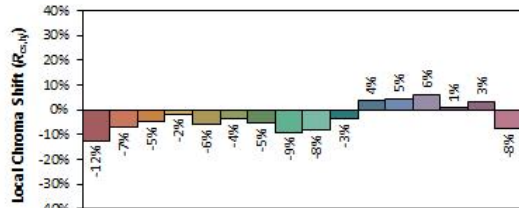
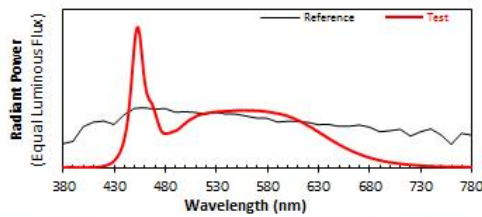
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Manufacturer:

IKIO LED Lighting

Date: 2023-08-07

Model: IK-T504-0015-DY-6500B



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

x 0.3139
 y 0.3376
 u' 0.1955
 v' 0.4730

CIE 13.3-1995
(CRI)

R_a 84
 R_9 9

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



2.5 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
IK-T504-0015-DY-3000B	3000K	2447.5	15.54	157.53
IK-T504-0015-DY-3500B	3500K	2484 ^{*1}	15.68 ^{*2}	158.42 ^{*3}
IK-T504-0015-DY-4000B	4000K	2520 ^{*1}	15.68 ^{*2}	160.71 ^{*3}
IK-T504-0015-DY-4500B	4500K	2557 ^{*1}	15.68 ^{*2}	163.07 ^{*3}
IK-T504-0015-DY-5000B	5000K	2593 ^{*1}	15.68 ^{*2}	165.37 ^{*3}
IK-T504-0015-DY-6500B	6500K	2666	15.82	168.52

*1: This value is calculated and the calculation formula is as below:

$$2484 = (2666 - 2447.5) / 6 * 1 + 2447.5$$

$$2520 = (2666 - 2447.5) / 6 * 2 + 2447.5$$

$$2557 = (2666 - 2447.5) / 6 * 3 + 2447.5$$

$$2593 = (2666 - 2447.5) / 6 * 4 + 2447.5$$

*2: This value is calculated and the calculation formula is as below:

$$15.68 = (15.54 + 15.82) / 2$$

*3: This value is calculated and the calculation formula is as below:

$$158.42 = 2484 / 15.68$$

$$160.71 = 2520 / 15.68$$

$$163.07 = 2557 / 15.68$$

$$165.37 = 2593 / 15.68$$



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-703	Standard Lamp D204	2022-12-29	2023-12-28
ST-R-704	Power Meter for Integrating Sphere	2022-12-29	2023-12-28
ST-R-707	Temperature Probe for Integrating Sphere	2023-01-03	2024-01-02
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2022-12-29	2023-12-28
ST-R-711	Power Meter for Goniophotometer	2022-12-29	2023-12-28
ST-R-709	Hygrothermograph for Goniophotometer	2023-01-03	2024-01-02
Uncertainty(K=2): Photometric Measurement (Sphere):3.40% Chromaticity Measurement(Sphere):44.8K Photometric Measurement(Goniophotometer):3.64%			

4. Product Photo



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