



Report No.: RHL23010902-9

# LM-79-19 Test Report

For

## IKIO LED LIGHTING

(Brand Name: IKIO)

### Internal Driver/Line Voltage (UL Type B)Lamps

470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Model name(s): IK-GT802U-0015-CCTB-SF

Remark: The color temperature can be adjusted to 3000K, 3500K, 4100K,5000K,6500K.

Test & Report By:

*Sun Liang*

Review By:

*Harry Wei*

Engineer: Sun Liang

Manager: Harry Wei

Date: Jan.13, 2023

Note: 1. All the test results related only to the samples tested.

2. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U. S. Government.

3. This report contains data that are not covered by the NVLAP accreditation.

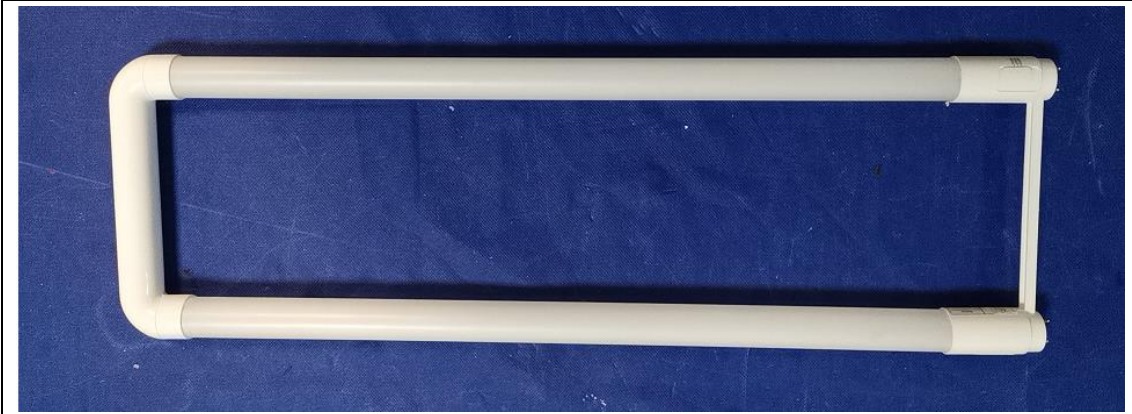
Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0  
Add: Room 212, 24 Building, 7 Qingyi Road, Hi-Tech Zone, Ningbo, China  
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Report Format Number HL-Report-EEL-001

**1.1 Product Information:**

Organization Name	IKIO LED LIGHTING	
Brand Name	IKIO	
Model Number	IK-GT802U-0015-CCTB-SF	
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	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	15W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4100K,5000K, 6500K (Color tunable)	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXEN-**E-11L-3A5	
Sample Number	RHL23010902-901	
Lamp Length	600	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**





### 1.2 Test Specifications:

Date of Receipt	Jan. 09, 2023
Date of Test	Jan. 09, 2023
Test item	<ol style="list-style-type: none"><li>1. Total Luminous Flux</li><li>2. Luminous Distribution Intensity</li><li>3. Luminous Efficacy</li><li>4. Correlated Color Temperature</li><li>5. Color Rendering Index</li><li>6. Chromaticity Coordinate</li><li>7. Electrical Parameters</li></ol>
Reference Standard	<ol style="list-style-type: none"><li>1. IES-LM-79-2019 OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS</li><li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li><li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li><li>4. CIE 15-2004 Technical Report Colorimetry</li><li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li><li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li></ol>
Reference Work Instruction	HL-WI-EE-001, HL-WI-EE-002

### 1.3 Test Methods

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**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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**The reference standard lamp D204 is rated 4.0241A,21.62V, The Series No. M133806CA8391160 omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.**

**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.

**The reference standard lamp D204 is rated 4.0241A,21.62V, The Series No. M133806CA8391160 omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.**

**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 HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 3000K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2301	120.00	60	0.1245	14.50	0.9705	19.10
0902-901	277.02	60	0.05945	14.84	0.9008	19.00

**Chromaticity Measurement - Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	9
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	3051	R3	96	R11	80
Duv	0.0004	R4	81	R12	72
Chromaticity (x, y)	x = 0.4339 y = 0.4039	R5	81	R13	84
Chromaticity (u', v')	u' = 0.2487 v' = 0.5209	R6	89	R14	99
Color Rendering Index (CRI)	83.0	R7	83	R15	74
R9	9	R8	60	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method (Self-absorption: 1.0124) (4 $\pi$  geometry):**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.00	277.00	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2072.80	2081.60	Bare Lamp: $\geq 1400(-10\%)$
Luminous Efficacy (lm/W)	142.95	140.27	Bare lamp: $\geq 120(-3\%)$
Most worst Luminous/Highest Watts	139.68		



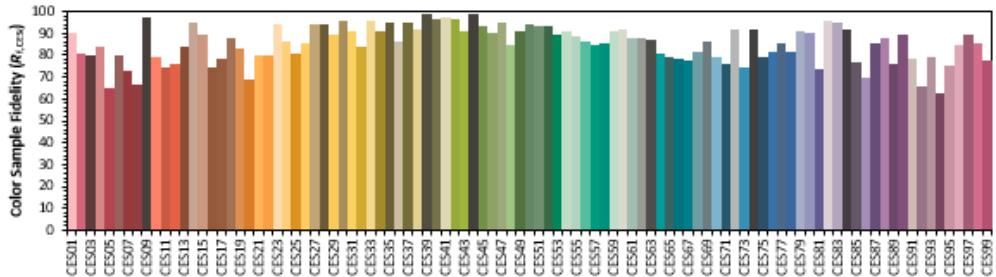
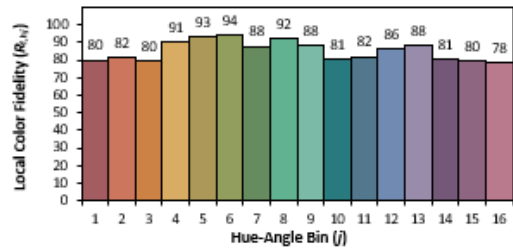
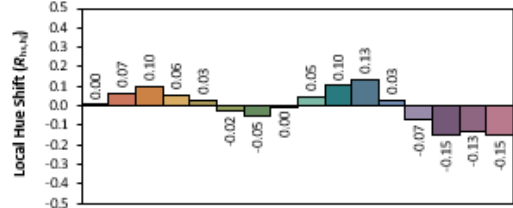
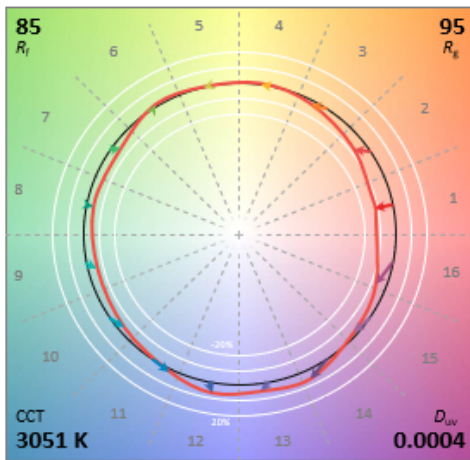
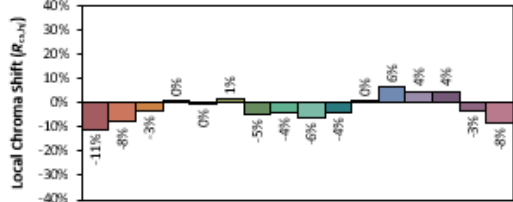
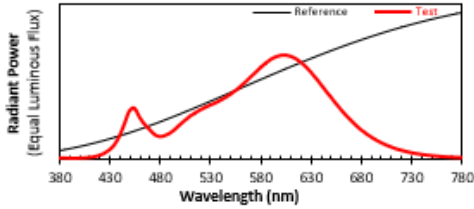
**Spectral Power Distribution & Chromaticity Diagram**

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0093	485	0.2247	590	0.9569	695	0.1794
385	0.0106	490	0.2473	595	0.9812	700	0.1542
390	0.0075	495	0.2852	600	0.9955	705	0.1320
395	0.0071	500	0.3290	605	0.9979	710	0.1132
400	0.0086	505	0.3725	610	0.9854	715	0.0961
405	0.0104	510	0.4110	615	0.9624	720	0.0828
410	0.0147	515	0.4433	620	0.9279	725	0.0702
415	0.0212	520	0.4713	625	0.8833	730	0.0600
420	0.0342	525	0.4955	630	0.8316	735	0.0510
425	0.0547	530	0.5178	635	0.7741	740	0.0437
430	0.0875	535	0.5384	640	0.7124	745	0.0375
435	0.1372	540	0.5633	645	0.6498	750	0.0317
440	0.2190	545	0.5902	650	0.5896	755	0.0275
445	0.3383	550	0.6216	655	0.5278	760	0.0235
450	0.4636	555	0.6572	660	0.4702	765	0.0201
455	0.4879	560	0.6962	665	0.4157	770	0.0172
460	0.4003	565	0.7396	670	0.3660	775	0.0148
465	0.3333	570	0.7873	675	0.3186	780	0.0139
470	0.2812	575	0.8331	680	0.2774		
475	0.2342	580	0.8796	685	0.2409		
480	0.2160	585	0.9206	690	0.2084		

**TM-30**

**Source:** BXEN-30E-11L-3A5  
**Date:** 2023/1/9

**Manufacturer:** IKIO LED LIGHTING  
**Model:** IK-GT802U-0015-CCTB-SF



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

$x$  0.4339  
 $y$  0.4039  
 $z'$  0.2487  
 $v'$  0.5209

CIE 13.3-1995 (CRI)  
 $R_2$  83  
 $R_3$  9

**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 ° C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 3000K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2301	120.00	60	0.1250	14.63	0.9730	19.10
0902-901	277.00	60	0.0580	14.92	0.9220	19.00

**Photometric Measurement – Goniophotometer Method:****(Goniophotometer far field detector  $f1'=1.42\%$ , Test distance: 16.770m)**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2012.40	2023.30	Bare Lamp: $\geq 1400(-10\%)$
Luminous Efficacy (lm/W)	137.55	135.61	Bare lamp: $\geq 120(-3\%)$
Most worst Luminous/Highest Watts	134.88		
Beam Angle (°)	168.9		140° (-5°)
Center Beam Candle Power (cd)	413		--





**Zonal Lumen Tabulation**

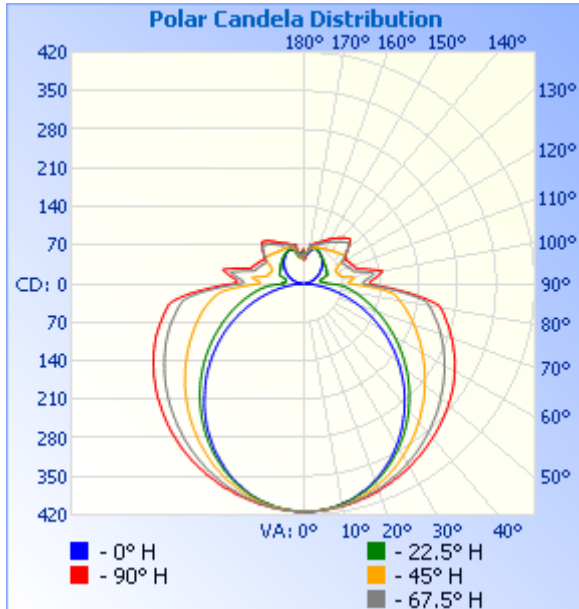
**Zonal Lumen Summary**

Zone	Lumens	% Lamp	% Luminaire
0-30	324.5	16.1%	16.1%
0-40	538.6	26.8%	26.8%
0-60	1,009.2	50.2%	50.2%
60-90	551.2	27.4%	27.4%
70-100	416.2	20.7%	20.7%
90-120	220.1	10.9%	10.9%
0-90	1,560.5	77.5%	77.5%
90-180	451.8	22.5%	22.5%
0-180	2,012.3	100%	100%

**Lumens Per Zone**

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	39.1	1.9%	90-100	85.6	4.3%
10-20	112.6	5.6%	100-110	70.7	3.5%
20-30	172.7	8.6%	110-120	63.7	3.2%
30-40	214.1	10.6%	120-130	64.9	3.2%
40-50	234.8	11.7%	130-140	61.2	3%
50-60	235.9	11.7%	140-150	47.6	2.4%
60-70	220.7	11.0%	150-160	33.6	1.7%
70-80	192.9	9.6%	160-170	19.2	1%
80-90	137.6	6.8%	170-180	5.2	0.3%

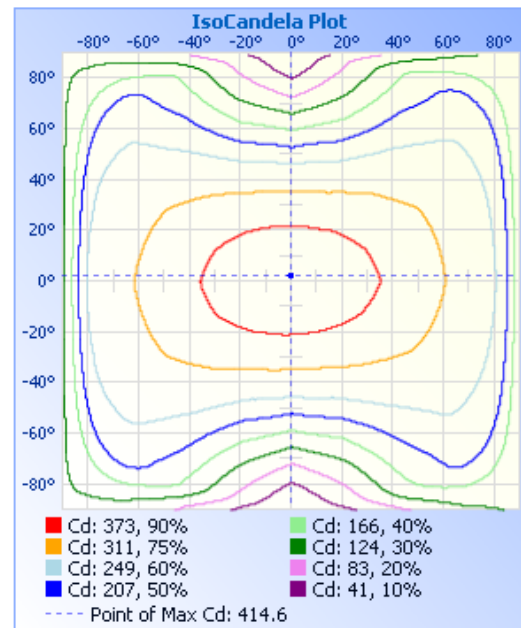
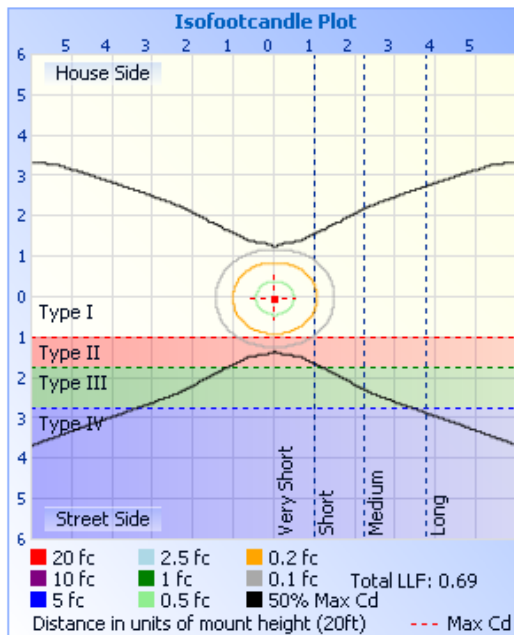
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width
17.0ft	1.43 fc	44.4 ft 348.5 ft
34.0ft	0.36 fc	88.7 ft 696.9 ft
51.0ft	0.16 fc	133.1 ft 1,045.4 ft
68.0ft	0.09 fc	177.4 ft 1,393.8 ft
85.0ft	0.06 fc	221.8 ft 1,742.3 ft
102.0ft	0.04 fc	266.1 ft 2,090.8 ft

■ Vert. Spread: 105.1°  
■ Horiz. Spread: 168.9°





**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	413	413	413	413	413	413	413	413	413	413	413	413	413	413	413	413	413
1	414	413	413	414	413	413	413	413	415	413	414	414	413	412	413	413	414
2	414	413	413	413	413	412	413	412	414	413	413	413	413	413	413	413	414
3	414	413	413	413	413	413	413	412	412	412	413	413	413	412	413	412	414
4	413	413	413	413	413	412	412	412	412	411	412	411	412	412	412	412	413
5	412	412	413	413	412	412	412	410	411	410	411	412	412	412	412	412	412
6	411	411	412	413	413	411	411	410	410	409	410	410	411	411	411	411	411
7	410	410	411	412	411	411	410	408	409	408	409	411	410	410	410	410	410
8	410	409	411	411	411	410	408	407	406	407	408	410	410	410	409	409	410
9	408	407	410	410	411	409	408	405	405	405	407	409	409	408	408	407	408
10	405	406	408	410	410	409	407	404	404	403	406	407	408	408	407	406	405
11	404	405	408	409	409	408	406	402	402	401	404	407	408	407	406	404	404
12	402	403	406	408	409	407	404	400	399	399	402	405	407	406	404	402	402
13	400	401	405	406	407	406	403	398	397	397	401	404	405	405	403	400	400
14	398	399	403	406	407	404	400	396	394	395	399	403	404	404	402	397	398
15	394	396	401	403	405	404	398	393	391	392	397	402	403	402	399	395	394
16	392	394	399	404	405	402	397	390	388	389	394	400	402	401	397	393	392
17	390	392	397	401	404	401	394	387	384	387	392	399	401	400	396	390	390
18	387	388	395	399	403	399	392	385	382	384	390	396	401	398	393	388	387
19	383	386	393	399	402	398	390	381	378	381	387	395	399	396	391	384	383
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22	373	376	385	393	397	394	383	372	368	370	380	390	395	391	384	374	373
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24	365	369	380	389	394	390	378	365	359	363	373	385	392	388	379	367	365
25	361	366	377	387	392	388	374	360	355	359	370	383	390	385	377	364	361
26	357	361	374	386	391	385	372	356	350	355	368	381	388	384	373	360	357
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28	348	353	368	382	388	382	366	349	342	347	361	377	385	380	367	352	348
29	344	350	365	379	386	380	362	344	337	343	358	374	384	377	364	348	344
30	339	345	361	377	385	377	359	340	331	338	354	373	382	376	361	344	339

**Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0**  
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**www.hopestartest.com**



31	334	341	358	374	383	376	356	336	327	334	351	370	381	373	358	339	334
32	329	336	355	373	380	373	353	331	322	329	347	368	379	371	354	335	329
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56	189	212	265	307	329	309	266	210	181	205	256	302	324	310	269	215	189
57	183	207	261	305	326	307	262	205	175	199	252	299	321	307	265	210	183
58	176	202	257	302	323	303	259	200	169	194	249	296	319	304	261	205	176
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63	144	175	239	286	309	289	240	175	137	168	230	281	304	290	243	180	144

Laboratory: Hopenstar Test Lab Limited, NVLAP Code: 600245-0  
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64	138	170	235	283	305	286	237	170	131	163	226	278	301	288	240	175	138
65	132	165	231	281	302	284	233	165	124	158	223	276	299	284	235	170	132
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79	47	101	181	236	256	236	183	103	42	94	173	231	254	237	186	110	47
80	41	97	178	232	253	233	178	99	36	90	169	227	250	234	182	106	41
81	36	93	174	229	248	230	174	95	31	86	165	223	247	231	179	102	36
82	31	90	171	223	237	221	170	91	26	82	161	220	241	227	176	99	31
83	26	86	167	211	223	208	165	87	22	78	156	211	231	220	173	95	26
84	22	83	163	196	207	194	155	83	17	73	151	201	220	209	169	92	22
85	17	79	152	181	192	178	143	79	13	69	142	187	205	196	161	89	17
86	14	76	139	166	175	163	129	73	10	65	131	172	189	180	150	86	14
87	10	72	125	149	160	148	115	64	7	59	119	157	173	165	137	82	10
88	8	65	111	134	144	132	101	54	5	51	106	142	159	149	123	75	8
89	5	56	97	119	129	117	87	44	3	42	92	128	144	134	108	64	5
90	4	48	85	110	121	111	82	39	2	35	80	114	128	119	93	54	4
91	3	43	83	109	121	111	82	40	2	35	78	109	121	110	85	48	3
92	3	41	83	110	122	113	84	41	3	35	78	109	120	109	84	46	3
93	4	40	84	112	125	116	88	44	3	37	81	111	122	110	85	46	4
94	4	38	87	116	129	119	92	44	4	37	84	113	124	113	89	48	4
95	5	35	90	119	132	123	96	40	5	34	87	118	128	117	93	46	5
96	6	33	92	123	136	127	100	36	5	32	91	122	133	122	97	41	6

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97	6	32	92	126	139	131	99	36	6	32	93	125	137	126	101	37	6
98	7	32	86	129	143	134	92	35	7	31	87	129	140	130	101	37	7
99	8	32	80	127	145	132	85	35	8	31	81	132	144	134	92	36	8
100	9	32	75	120	139	125	78	35	9	31	74	127	148	134	85	36	9
101	10	32	70	112	132	117	73	35	10	31	69	119	141	125	77	36	10
102	11	32	69	105	124	110	71	34	11	31	67	111	132	117	72	35	11
103	12	33	68	100	117	102	70	35	12	31	67	103	123	108	71	35	12
104	13	34	67	94	110	96	69	36	13	32	66	96	115	100	70	35	13
105	14	36	66	92	104	94	69	37	14	34	65	91	107	94	69	36	14
106	15	38	66	92	101	93	68	40	16	35	65	90	101	92	69	37	15
107	17	41	65	91	99	91	67	42	17	37	64	89	98	91	68	38	17
108	18	43	64	90	98	90	66	45	18	40	63	88	97	90	67	40	18
109	19	46	64	89	97	89	66	48	19	42	63	87	96	89	66	41	19
110	20	47	63	87	97	88	65	51	20	45	62	86	95	88	65	43	20
111	21	47	63	86	96	87	65	53	21	46	62	85	94	86	65	45	21
112	23	47	63	85	95	86	64	53	23	46	61	84	93	85	64	47	23
113	24	47	64	84	94	85	65	53	24	46	61	83	92	84	64	47	24
114	25	47	66	83	93	84	66	53	25	46	62	82	91	83	64	48	25
115	26	47	67	82	92	83	68	53	26	46	62	81	90	82	64	48	26
116	27	47	70	82	91	82	70	53	27	47	63	80	89	81	65	48	27
117	28	48	72	81	90	81	72	53	29	47	65	79	88	80	66	48	28
118	30	49	75	81	90	81	75	53	30	47	67	79	87	79	67	47	30
119	31	49	78	82	89	82	77	53	31	48	69	78	86	79	69	47	31
120	32	49	81	83	89	83	80	53	32	48	71	78	85	79	71	48	32
121	33	49	84	85	90	85	83	53	33	48	74	79	84	79	73	48	33
122	34	50	87	87	90	87	86	54	35	48	76	80	84	80	76	49	34
123	36	50	89	89	92	89	89	54	36	49	79	81	85	81	78	49	36
124	37	50	90	91	94	91	92	54	37	49	81	82	86	82	80	48	37
125	38	50	90	94	96	94	92	54	38	50	82	84	87	84	82	48	38
126	39	51	89	97	98	97	91	55	39	50	82	86	88	86	83	49	39
127	40	51	88	100	100	100	91	55	40	51	82	88	89	88	83	49	40
128	41	51	87	103	103	103	90	55	41	51	81	91	91	90	84	50	41
129	42	51	86	106	106	105	89	56	42	52	81	93	93	92	83	50	42

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130	44	52	85	109	108	108	88	56	44	52	80	96	95	94	83	51	44
131	45	52	85	111	111	111	88	57	45	53	79	98	98	97	82	51	45
132	46	53	83	111	114	111	87	57	46	54	79	100	100	99	81	52	46
133	47	53	83	109	117	110	86	58	47	54	78	100	102	100	80	53	47
134	48	53	82	108	117	109	86	58	48	54	78	100	104	100	79	54	48
135	49	54	82	106	116	107	85	58	49	55	77	99	106	99	79	55	49
136	50	54	81	105	115	106	84	58	50	56	77	98	106	98	79	55	50
137	51	54	81	104	113	105	84	59	51	56	76	97	105	97	78	56	51
138	52	55	80	102	112	103	83	59	52	57	75	95	104	96	77	56	52
139	53	55	79	101	110	102	82	59	53	57	75	94	102	95	76	56	53
140	54	56	79	99	109	101	82	59	54	58	75	93	101	93	75	57	54
141	55	57	78	98	107	99	81	59	55	59	75	92	100	92	74	56	55
142	56	58	78	97	106	98	80	60	55	59	74	91	98	91	74	56	56
143	57	59	77	95	104	97	80	60	56	60	74	90	96	90	74	56	57
144	57	59	76	94	102	95	79	61	57	60	73	88	95	89	74	56	57
145	58	60	76	93	101	94	78	61	58	61	73	87	94	88	73	57	58
146	59	60	75	92	99	93	78	61	59	61	73	86	92	86	72	58	59
147	60	60	75	90	98	91	77	62	60	62	72	84	91	85	72	59	60
148	61	60	75	89	96	90	77	62	61	62	73	83	88	84	72	59	61
149	61	61	74	88	94	89	77	62	61	63	72	82	87	83	72	60	61
150	62	61	74	86	93	88	76	62	62	64	72	81	86	82	72	60	62
151	63	62	73	85	92	86	76	62	63	64	72	80	85	81	72	61	63
152	64	64	73	84	90	85	75	62	64	65	72	79	84	80	72	62	64
153	64	65	73	83	88	84	75	63	64	65	72	79	82	79	72	63	64
154	65	65	72	82	87	83	74	64	65	65	71	78	81	79	71	63	65
155	66	66	71	81	85	82	73	64	65	66	71	78	81	78	71	64	66
156	66	66	71	80	84	81	73	65	66	66	71	78	80	78	70	65	66
157	67	66	71	79	83	80	72	65	66	66	71	77	80	77	69	65	67
158	67	67	71	79	82	79	72	65	67	66	71	76	79	76	69	65	67
159	68	68	71	78	81	78	72	64	67	66	71	76	78	76	69	65	68
160	68	68	70	76	80	77	71	63	66	67	71	75	77	75	70	65	68
161	68	68	69	76	78	76	71	62	65	67	70	74	77	73	70	64	68
162	68	68	69	75	77	76	67	62	65	66	70	74	75	72	70	64	68

**Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0**  
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163	67	67	69	75	76	75	66	62	64	66	69	73	74	72	70	64	67
164	65	67	69	74	76	74	65	61	63	66	67	73	74	72	70	64	65
165	64	66	69	73	75	73	64	61	62	63	65	73	73	72	69	63	64
166	63	66	67	72	74	71	62	60	61	60	64	72	73	72	68	63	63
167	62	64	66	71	72	70	60	59	60	58	63	70	73	72	66	62	62
168	60	63	65	72	71	66	58	58	59	56	62	65	73	71	65	61	60
169	59	62	65	71	72	60	57	56	58	53	61	61	73	70	63	60	59
170	58	61	62	67	69	56	56	52	57	51	59	58	68	67	62	59	58
171	56	60	61	65	63	54	54	50	56	49	56	57	62	64	60	58	56
172	55	58	60	61	57	52	54	49	56	49	53	56	56	61	59	56	55
173	53	57	57	58	53	50	56	49	54	48	50	55	54	58	57	55	53
174	54	57	57	58	48	52	54	49	54	46	47	54	51	56	56	54	54
175	55	56	56	51	49	56	53	50	55	46	46	52	50	54	52	56	55
176	55	56	56	53	47	57	51	51	55	48	46	52	50	52	53	56	55
177	56	57	53	53	43	57	51	52	56	51	48	54	51	45	55	56	56
178	57	57	54	51	52	52	51	53	56	55	50	53	47	49	56	56	57
179	58	58	54	46	58	51	52	55	57	57	53	49	52	52	55	57	58
180	58	58	55	44	63	54	54	56	58	58	55	44	63	54	54	56	58



**2.3 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 3500K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL230109	120.0	60	0.1250	14.55	0.9693	19.00
02-901	277.0	60	0.05972	14.91	0.9016	19.10
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	17
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	3414	R3	96	R11	81
Duv	-0.0018	R4	82	R12	72
Chromaticity (x, y)	x = 0.4082 y = 0.3880	R5	84	R13	87
Chromaticity (u', v')	u' = 0.2388 v' = 0.5105	R6	91	R14	98
Color Rendering Index (CRI)	85.0	R7	84	R15	78
R9	17	R8	64	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2131.30	2137.5	Bare Lamp: >= 1400(-10%)
Luminous Efficacy (lm/W)	146.48	143.36	Bare lamp: >= 120(-3%)
Most worst Luminous/Highest Watts	142.94		



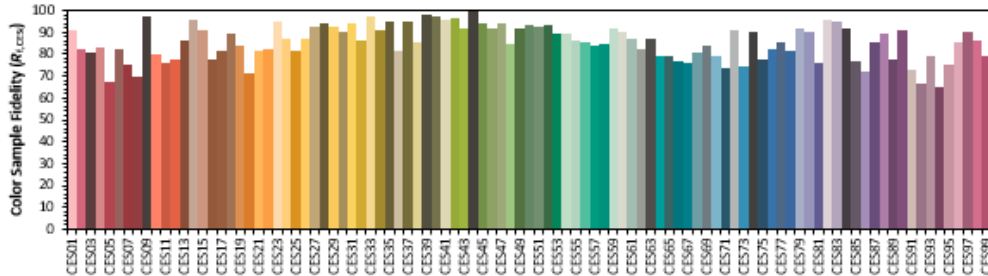
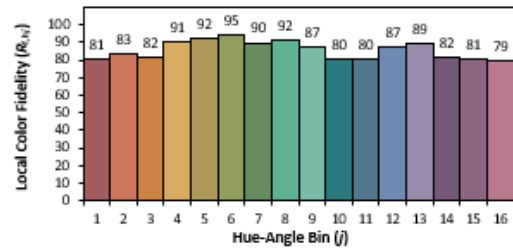
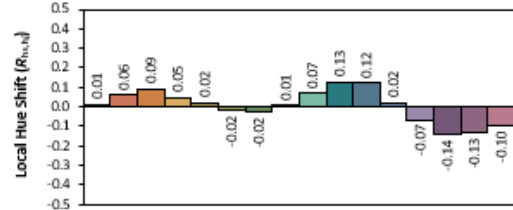
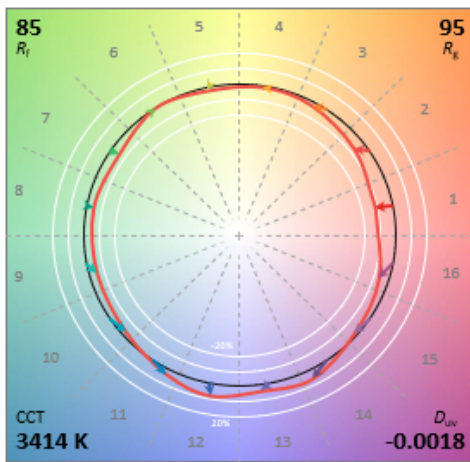
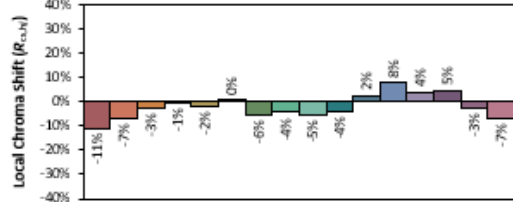
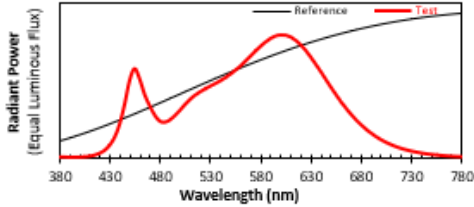
**Spectral Power Distribution & Chromaticity Diagram**

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0116	485	0.2924	590	0.9699	695	0.1723
385	0.0109	490	0.3103	595	0.9903	700	0.1477
390	0.0086	495	0.3462	600	0.9964	705	0.1266
395	0.0093	500	0.3879	605	0.9949	710	0.1084
400	0.0096	505	0.4352	610	0.9802	715	0.0921
405	0.0116	510	0.4769	615	0.9520	720	0.0786
410	0.0166	515	0.5108	620	0.9141	725	0.0673
415	0.0250	520	0.5380	625	0.8692	730	0.0573
420	0.0398	525	0.5615	630	0.8145	735	0.0493
425	0.0639	530	0.5837	635	0.7557	740	0.0418
430	0.1041	535	0.6045	640	0.6963	745	0.0354
435	0.1679	540	0.6265	645	0.6329	750	0.0308
440	0.2736	545	0.6520	650	0.5706	755	0.0262
445	0.4345	550	0.6806	655	0.5113	760	0.0223
450	0.6288	555	0.7123	660	0.4533	765	0.0193
455	0.7253	560	0.7467	665	0.4017	770	0.0165
460	0.6397	565	0.7872	670	0.3520	775	0.0142
465	0.5134	570	0.8273	675	0.3073	780	0.0135
470	0.4234	575	0.8685	680	0.2676		
475	0.3477	580	0.9061	685	0.2319		
480	0.2996	585	0.9411	690	0.2008		

**TM-30**

**Source:** BXEN-35E-11L-3A5  
**Date:** 2023/1/9

**Manufacturer:** IKIO LED LIGHTING  
**Model:** IK-GT802U-0015-CCTB-SF



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

$s$  0.4082  
 $\gamma$  0.3880  
 $u'$  0.2388  
 $v'$  0.5105

CIE 13.3-1995 (CRI)  
 $R_a$  85  
 $R_g$  17

**2.4 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 4100K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL230109	120.0	60	0.12410	14.45	0.9698	19.00
02-901	277.0	60	0.05936	14.81	0.9005	19.10
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	86	R9	22
Frequency (Hz)	60	R2	94	R10	85
CCT (K)	3876	R3	96	R11	83
Duv	-0.0028	R4	83	R12	69
Chromaticity (x, y)	x = 0.3839 y = 0.3728	R5	86	R13	88
Chromaticity (u', v')	u' = 0.2290 v' = 0.5003	R6	91	R14	99
Color Rendering Index (CRI)	86.0	R7	85	R15	80
R9	22	R8	67	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2144.30	2155.60	Bare Lamp: >= 1400(-10%)
Luminous Efficacy (lm/W)	148.39	145.55	Bare lamp: >= 120(-3%)
Most worst Luminous/Highest Watts	144.79		

**Spectral Power Distribution & Chromaticity Diagram**

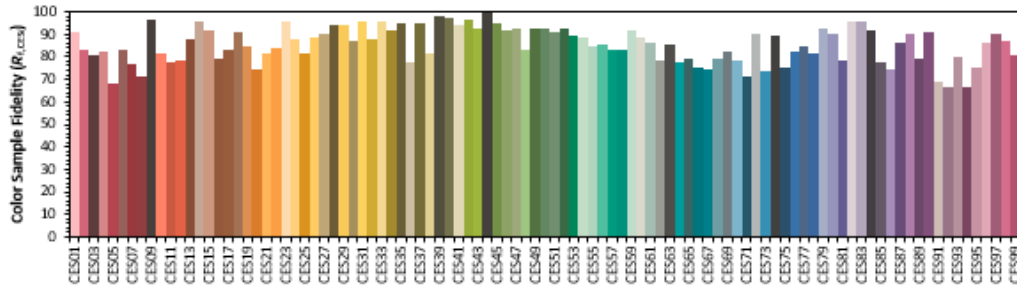
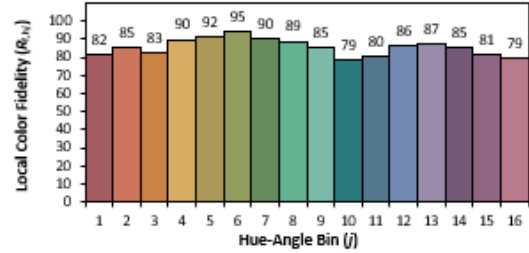
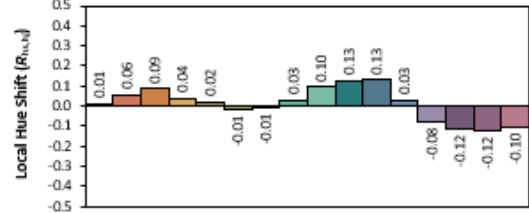
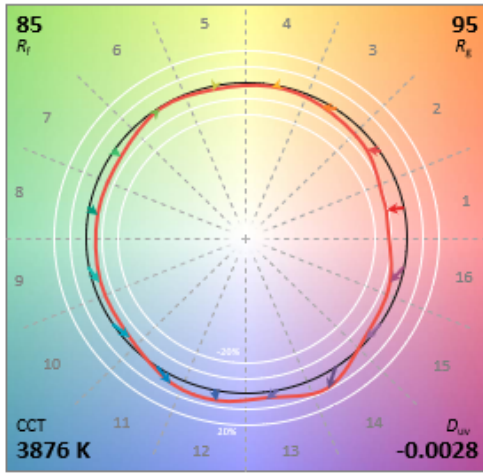
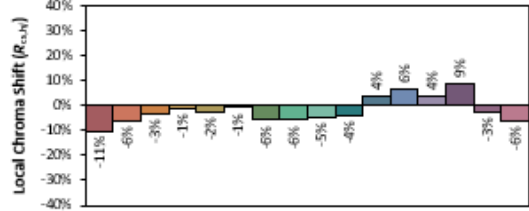
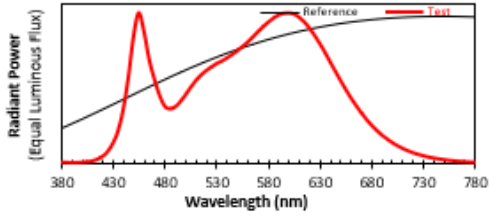
Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0125	485	0.3648	590	0.9852	695	0.1633
385	0.0116	490	0.3768	595	0.9958	700	0.1399
390	0.0096	495	0.4112	600	0.9975	705	0.1198
395	0.0102	500	0.4564	605	0.9898	710	0.1022
400	0.0119	505	0.5055	610	0.9676	715	0.0871
405	0.0153	510	0.5510	615	0.9370	720	0.0743
410	0.0200	515	0.5870	620	0.8954	725	0.0635
415	0.0320	520	0.6169	625	0.8461	730	0.0543
420	0.0505	525	0.6409	630	0.7918	735	0.0459
425	0.0827	530	0.6637	635	0.7340	740	0.0394
430	0.1355	535	0.6797	640	0.6701	745	0.0339
435	0.2177	540	0.7004	645	0.6083	750	0.0291
440	0.3584	545	0.7225	650	0.5475	755	0.0247
445	0.5699	550	0.7479	655	0.4890	760	0.0213
450	0.8424	555	0.7760	660	0.4337	765	0.0182
455	0.9985	560	0.8051	665	0.3830	770	0.0157
460	0.8793	565	0.8393	670	0.3355	775	0.0135
465	0.6945	570	0.8748	675	0.2925	780	0.0129
470	0.5638	575	0.9075	680	0.2533		
475	0.4566	580	0.9369	685	0.2195		
480	0.3842	585	0.9652	690	0.1894		



**TM-30**

**Source:** BXEN-41E-11L-3A5  
**Date:** 2023/1/9

**Manufacturer:** IKIO LED LIGHTING  
**Model:** IK-GT802U-0015-CCTB-SF



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

$x$  0.3839  
 $y$  0.3728  
 $u'$  0.2290  
 $v'$  0.5003

CIE 13.3-1995 (CRI)  
 $R_a$  86  
 $R_g$  22

**2.5 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 5000K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL230109	120.0	60	0.12790	14.86	0.9680	18.90
02-901	277.0	60	0.06064	15.20	0.9048	18.70
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	86	R9	24
Frequency (Hz)	60	R2	94	R10	84
CCT (K)	4905	R3	96	R11	82
Duv	-0.0018	R4	83	R12	63
Chromaticity (x, y)	x = 0.3474 y = 0.3499	R5	85	R13	89
Chromaticity (u', v')	u' = 0.2137 v' = 0.4842	R6	89	R14	98
Color Rendering Index (CRI)	86.0	R7	87	R15	82
R9	24	R8	71	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	2108.50	2115.80	Bare Lamp: >= 1400(-10%)
Luminous Efficacy (lm/W)	141.89	139.20	Bare lamp: >= 120(-3%)
Most worst Luminous/Highest Watts	138.72		



**Spectral Power Distribution & Chromaticity Diagram**

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0142	485	0.3298	590	0.6755	695	0.0972
385	0.0113	490	0.3335	595	0.6726	700	0.0831
390	0.0103	495	0.3568	600	0.6639	705	0.0713
395	0.0100	500	0.3920	605	0.6508	710	0.0608
400	0.0108	505	0.4308	610	0.6286	715	0.0517
405	0.0150	510	0.4669	615	0.6017	720	0.0445
410	0.0212	515	0.4938	620	0.5694	725	0.0377
415	0.0338	520	0.5156	625	0.5329	730	0.0322
420	0.0539	525	0.5312	630	0.4945	735	0.0277
425	0.0873	530	0.5442	635	0.4544	740	0.0233
430	0.1433	535	0.5548	640	0.4130	745	0.0201
435	0.2356	540	0.5650	645	0.3722	750	0.0173
440	0.3787	545	0.5774	650	0.3339	755	0.0148
445	0.5937	550	0.5881	655	0.2971	760	0.0129
450	0.8553	555	0.6003	660	0.2620	765	0.0110
455	1.0000	560	0.6162	665	0.2306	770	0.0094
460	0.8680	565	0.6304	670	0.2016	775	0.0083
465	0.6766	570	0.6450	675	0.1756	780	0.0077
470	0.5439	575	0.6574	680	0.1516		
475	0.4335	580	0.6661	685	0.1310		
480	0.3569	585	0.6736	690	0.1129		

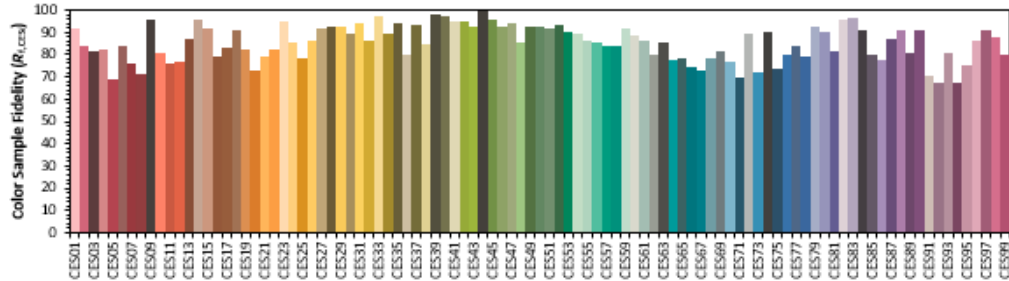
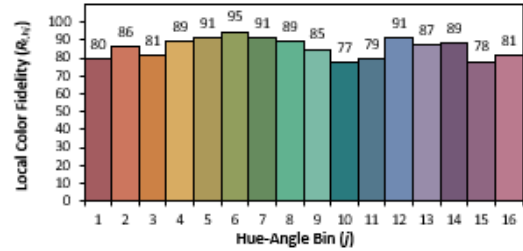
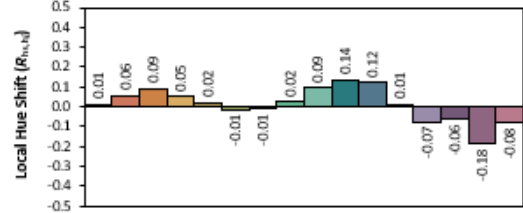
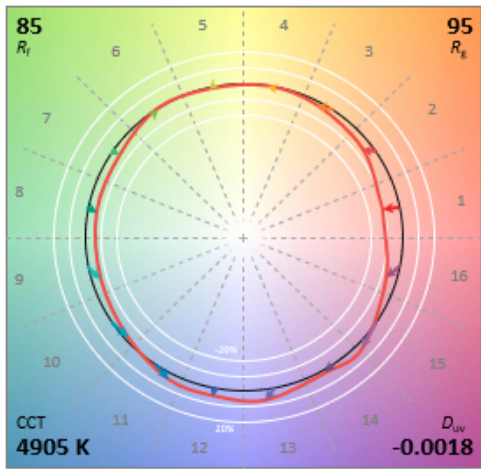
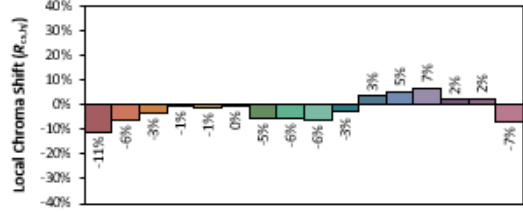
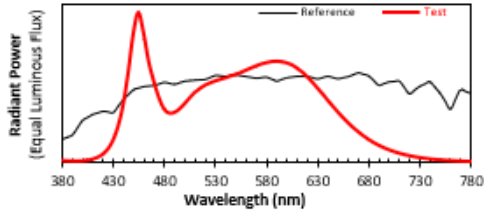




# TM-30

**Source:** BXEN-50E-11L-3A5  
**Date:** 2023/1/9

**Manufacturer:** IKIO LED LIGHTING  
**Model:** IK-GT802U-0015-CCTB-SF



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

$x$  0.3474  
 $y$  0.3499  
 $u'$  0.2137  
 $v'$  0.4842

CIE 13.3-1995 (CRI)  
 $R_a$  86  
 $R_g$  24

**2.6 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

<b>Test date</b>	2023-01-09	<b>Test Ambient:</b>	25.1 °C
<b>Test Orientation</b>	As intended	<b>Total operation burning time(min):</b>	90
<b>Model Number</b>	IK-GT802U-0015-CCTB-SF (Switch on 6500K)	<b>Stabilization Time(min):</b>	60

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL230109	120.0	60	0.12920	15.02	0.9674	19.30
02-901	277.0	60	0.06112	15.34	0.9060	19.60
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	13
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	6360	R3	94	R11	82
Duv	0.0025	R4	83	R12	62
Chromaticity (x, y)	x = 0.3152 y = 0.3302	R5	84	R13	86
Chromaticity (u', v')	u' = 0.1992 v' = 0.4693	R6	86	R14	97
Color Rendering Index (CRI)	85.0	R7	88	R15	79
R9	13	R8	70	--	--
Rf	84	--	--	--	--
Rg	93	--	--	--	--
Rcs,h1(%)	-13	--	--	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method****(Self-absorption:1.0124) (4 $\pi$  geometry):**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	1978.30	1986.70	Bare Lamp: >= 1400(-10%)
Luminous Efficacy (lm/W)	131.71	129.51	Bare lamp: >= 120(-3%)
Most worst Luminous/Highest Watts	128.96		



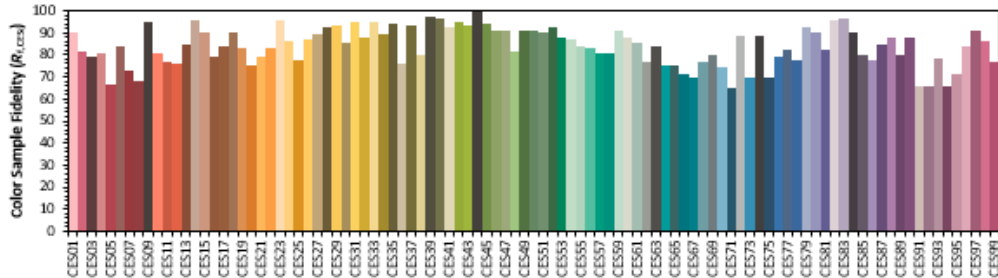
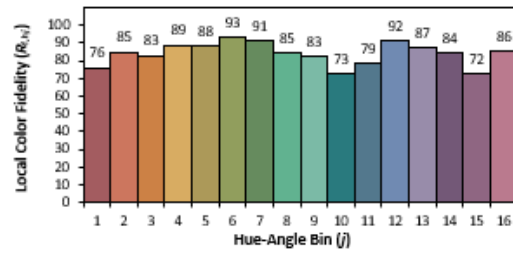
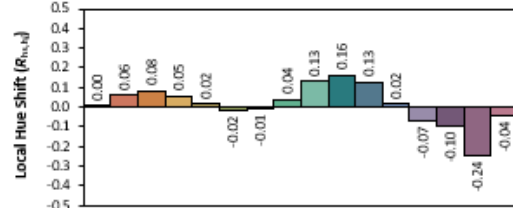
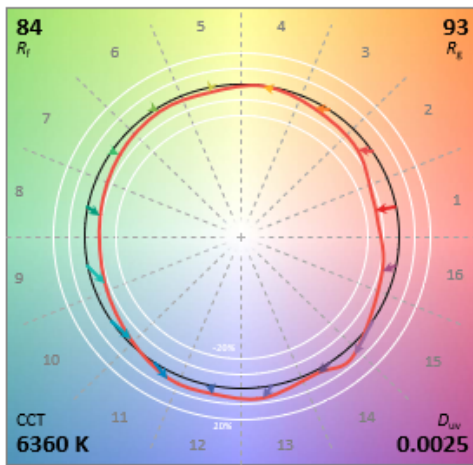
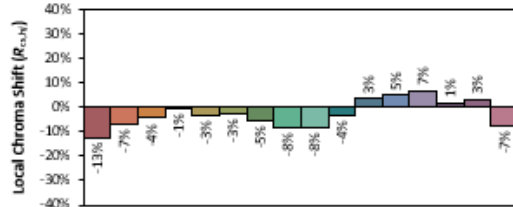
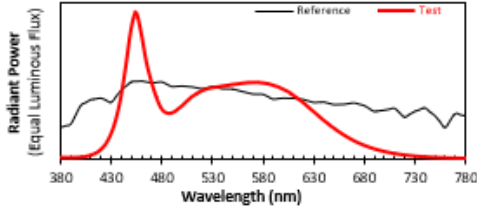
**Spectral Power Distribution & Chromaticity Diagram**

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0112	485	0.3149	590	0.5040	695	0.0589
385	0.0100	490	0.3144	595	0.4929	700	0.0504
390	0.0094	495	0.3330	600	0.4762	705	0.0431
395	0.0103	500	0.3618	605	0.4597	710	0.0367
400	0.0121	505	0.3950	610	0.4346	715	0.0314
405	0.0163	510	0.4254	615	0.4103	720	0.0270
410	0.0242	515	0.4488	620	0.3827	725	0.0231
415	0.0382	520	0.4667	625	0.3529	730	0.0196
420	0.0621	525	0.4795	630	0.3228	735	0.0169
425	0.1005	530	0.4881	635	0.2926	740	0.0146
430	0.1644	535	0.4927	640	0.2635	745	0.0125
435	0.2645	540	0.4987	645	0.2357	750	0.0107
440	0.4172	545	0.5032	650	0.2097	755	0.0093
445	0.6353	550	0.5093	655	0.1851	760	0.0079
450	0.8814	555	0.5132	660	0.1624	765	0.0067
455	0.9999	560	0.5182	665	0.1420	770	0.0059
460	0.8651	565	0.5218	670	0.1232	775	0.0052
465	0.6710	570	0.5228	675	0.1069	780	0.0048
470	0.5327	575	0.5232	680	0.0922		
475	0.4226	580	0.5196	685	0.0796		
480	0.3444	585	0.5149	690	0.0685		

**TM-30**

**Source:** BXEN-65E-11L-3A5  
**Date:** 2023/1/9

**Manufacturer:** IKIO LED LIGHTING  
**Model:** IK-GT802U-0015-CCTB-SF



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

$x$	0.3152	CIE 13.3-1995 (CRI)	
$y$	0.3302		
$u'$	0.1992		
$v'$	0.4693		
		$R_2$	85
		$R_3$	13

**3. Test Equipment**

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	91N827816	2023-11-03
AC Power Source	CHP-1000	213630	2023-09-16
Total Luminous Flux Standard Lamp	24V150W	24V150W	2023-11-07
Digital Power Meter	WT500	TBS1012 C020506	2023-09-16
Integral Sphere (2M)	2m sphere	N.A	2023-11-03
Digital Power Meter	PF310A	P609877CD1391157	2023-07-01
Optical Color and Electrical Measurement System	HAAS-2000	M108544CM5351115	2023-11-03
Standard Lamp	D204	M133806CJ6391158	2023-11-03
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 \*\*\*\*\***