

LM-79-08 Test Report

For

IKIO LED LIGHTING

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Direct Linear Ambient Luminaires

Model name(s): IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)

Remark: "a" can be any two letters for lamp colors, "b" can be "M" or blank for Motion Sensor provided or not, "d" can be "D", "e" can be any digits for CCT, "f" can be "R" or blank.

Representative (Tested) Model:

IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)

IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)

IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)

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

Test & Report By:



Engineer: Winny Wu


Date: 2023-12-11

Review By:



Manager: Jason Luo

1.1 Product Information:

Organization Name	IKIO LED LIGHTING	
Brand Name	IKIO	
Model Number	IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Direct Linear Ambient Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	20W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K, 5000K (Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RA35000H1 L128-5080RA35000H1	
Sample Number	UTC2311030E-B1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

1.2 Test Specifications:

Date of Receipt	2023-11-21
Date of Test	2023-11-23
Test item	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. IES LM-79-2019 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 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 6. 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. Goniophotometer far field detector $f1'=1.42\%$, Test distance: 14.14m

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.

Self-absorption:

IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W):1.0597

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-23	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (30W)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231103 0E-B1	120.0	60	0.162	19.35	0.995	5.86
	277.0	60	0.077	19.93	0.931	10.89
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

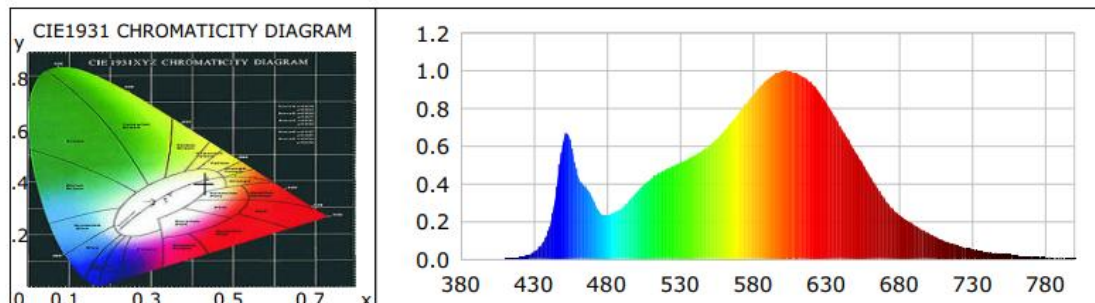
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	3092	R3	94	R11	82
Duv	-0.0013	R4	81	R12	73
Chromaticity (x, y)	x=0.4287 y=0.3979	R5	84	R13	86
Chromaticity (u', v')	u(u')=0.2479 v'=0.5177	R6	92	R14	98
Color Rendering Index (CRI)	84	R7	81	R15	75
R9	11	R8	60	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11				

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)	2745.1	2780.4	375 lm/ft (-10%)
Luminous Efficacy (lm/W)	141.87	139.51	Standard: >= 115(-3%)
Most worst Luminous/Highest	137.74		
Zonal lumens in the 0-60° zone (%)	68.60	--	>=40(-3%)
Beam Angle (°)	117.5	--	--
Center Beam Candle Power (cd)	825	--	--

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0030	535	0.4921	28.6759	690	0.3161	18.4216
385	0.0003	0.0182	540	0.5105	29.7465	695	0.2696	15.7080
390	0.0007	0.0385	545	0.5286	30.8028	700	0.2332	13.5884
395	0.0006	0.0332	550	0.5503	32.0657	705	0.2059	11.9993
400	0.0008	0.0449	555	0.5752	33.5186	710	0.1828	10.6503
405	0.0011	0.0664	560	0.6049	35.2492	715	0.1588	9.2539
410	0.0016	0.0937	565	0.6377	37.1588	720	0.1363	7.9425
415	0.0043	0.2488	570	0.6794	39.5910	725	0.1166	6.7948
420	0.0091	0.5278	575	0.7233	42.1433	730	0.0993	5.7850
425	0.0185	1.0756	580	0.7724	45.0087	735	0.0835	4.8672
430	0.0374	2.1783	585	0.8224	47.9187	740	0.0718	4.1817
435	0.0745	4.3412	590	0.8725	50.8398	745	0.0609	3.5478
440	0.1517	8.8380	595	0.9164	53.3964	750	0.0513	2.9894
445	0.3382	19.7051	600	0.9559	55.6990	755	0.0425	2.4744
450	0.6166	35.9287	605	0.9851	57.4035	760	0.0384	2.2379
455	0.6329	36.8776	610	0.9976	58.1285	765	0.0320	1.8641
460	0.4506	26.2544	615	0.9963	58.0512	770	0.0264	1.5354
465	0.3867	22.5319	620	0.9859	57.4467	775	0.0248	1.4451
470	0.3260	18.9966	625	0.9647	56.2094	780	0.0209	1.2181
475	0.2492	14.5215	630	0.9339	54.4171	785	0.0151	0.8802
480	0.2324	13.5429	635	0.8889	51.7960	790	0.0155	0.9029
485	0.2470	14.3948	640	0.8320	48.4827	795	0.0100	0.5840
490	0.2707	15.7741	645	0.7689	44.8045	800	0.0094	0.5484
495	0.3080	17.9481	650	0.7026	40.9392			
500	0.3523	20.5275	655	0.6355	37.0307			
505	0.3916	22.8203	660	0.5678	33.0833			
510	0.4261	24.8256	665	0.5052	29.4382			
515	0.4527	26.3769	670	0.4401	25.6422			
520	0.4741	27.6282	675	0.3770	21.9698			
525	0.4921	28.6759	680	0.3161	18.4216			
530	0.5105	29.7465	685	0.2696	15.7080			

TM30

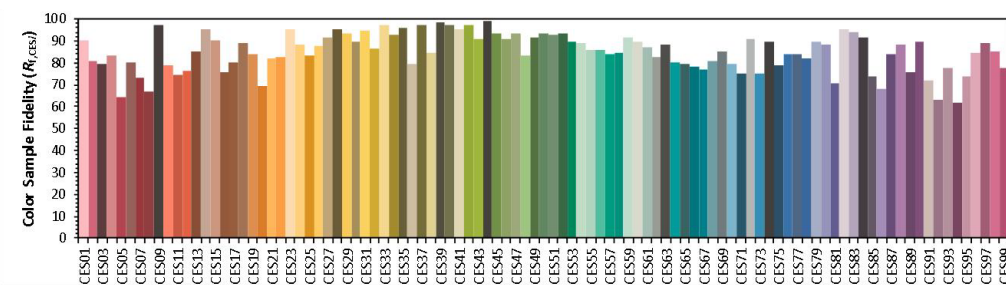
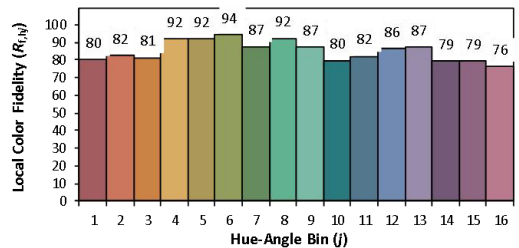
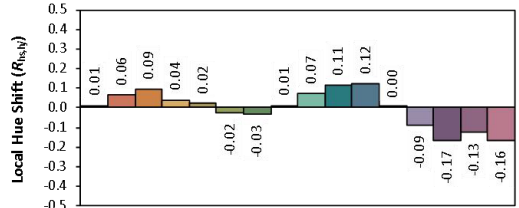
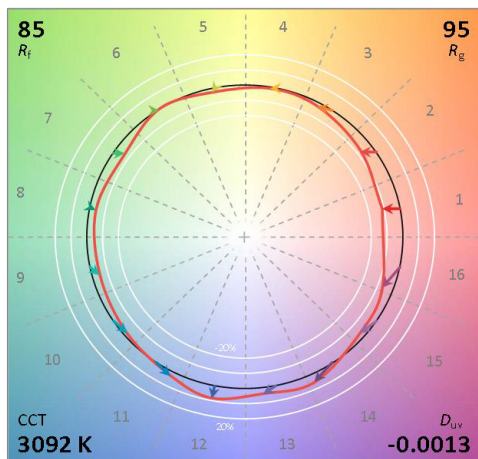
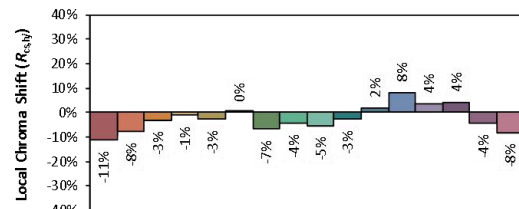
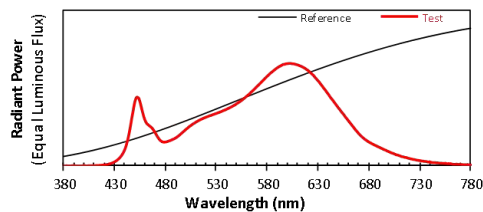
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/11/23

Model: IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (20W)



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

x 0.4287
 y 0.3979
 u' 0.2479
 v' 0.5177

CIE 13.3-1995
(CRI)
 R_a 84
 R_9 11

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

Zonal Lumen Tabulation

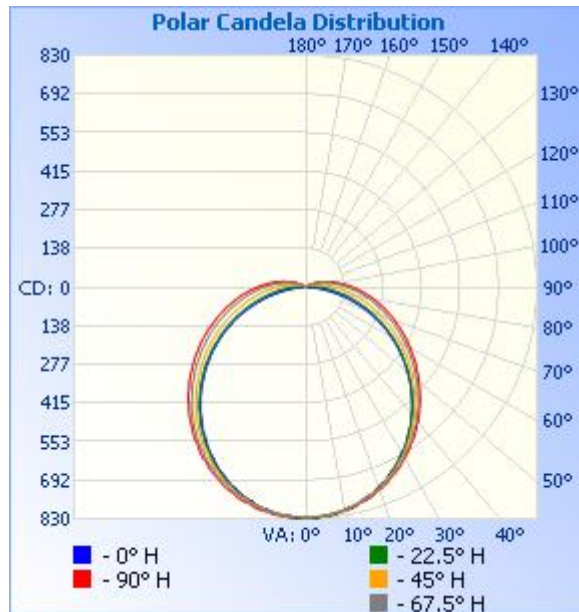
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	641.1	23.4%	23.4%
0-40	1,051.5	38.3%	38.3%
0-60	1,882.7	68.6%	68.6%
60-90	718.6	26.2%	26.2%
70-100	466.6	17%	17%
90-120	130.9	4.8%	4.8%
0-90	2,601.2	94.8%	94.8%
90-180	143.7	5.2%	5.2%
0-180	2,745.0	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	78.1	2.8%	90-100	79.8	2.9%
10-20	223.7	8.2%	100-110	37.2	1.4%
20-30	339.3	12.4%	110-120	13.9	0.5%
30-40	410.4	15.0%	120-130	4.4	0.2%
40-50	430.3	15.7%	130-140	2.9	0.1%
50-60	400.8	14.6%	140-150	2.4	0.1%
60-70	331.8	12.1%	150-160	1.7	0.1%
70-80	239.3	8.7%	160-170	1.0	0%
80-90	147.5	5.4%	170-180	0.4	0%

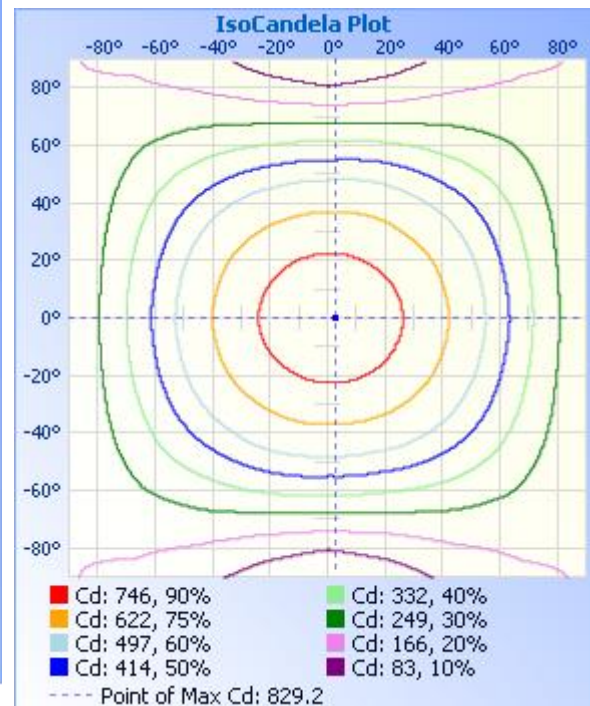
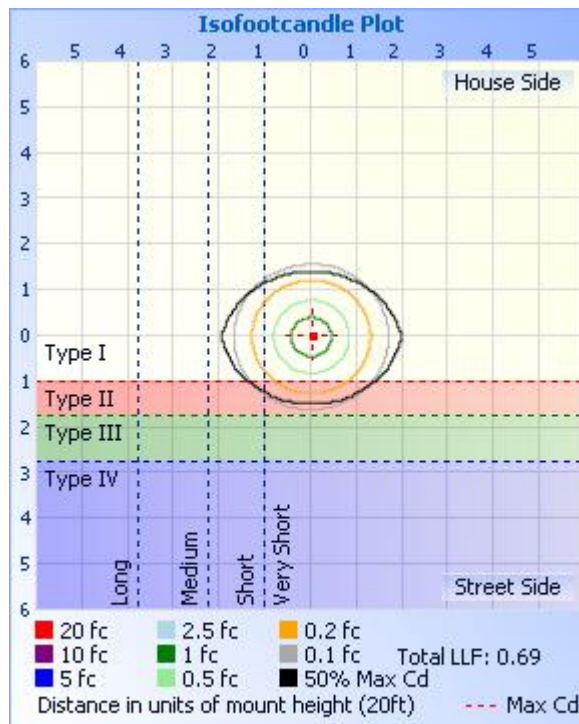
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	2.86 fc	48.6 ft	65.2 ft
34.0ft	0.71 fc	97.3 ft	130.4 ft
51.0ft	0.32 fc	145.9 ft	195.7 ft
68.0ft	0.18 fc	194.5 ft	260.9 ft
85.0ft	0.11 fc	243.2 ft	326.1 ft
102.0ft	0.08 fc	291.8 ft	391.3 ft

■ Vert. Spread: 110.1°
■ Horiz. Spread: 124.9°



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	825	825	825	825	825	825	825	825	825	825	825	825	825	825	825	825	825
1	823	827	825	825	829	823	825	825	826	825	823	826	827	826	825	824	823
2	826	827	825	821	828	825	822	825	826	826	822	823	829	826	825	823	826
3	825	826	821	823	827	824	824	820	825	825	824	822	829	826	822	824	825
4	824	823	821	822	824	823	822	821	820	824	823	824	827	822	824	823	824
5	820	821	821	821	821	821	821	820	821	821	822	823	824	823	823	822	820
6	818	822	819	819	823	818	819	819	819	820	818	821	824	823	822	819	818
7	819	820	817	815	822	818	814	817	818	820	816	818	823	821	818	816	819
8	817	818	813	814	819	816	814	811	815	818	817	816	821	818	815	816	817
9	813	812	813	812	814	814	811	810	810	815	814	816	819	814	814	814	813
10	808	810	810	809	812	808	809	808	809	809	812	814	815	814	812	811	808
11	805	809	807	806	812	805	804	804	805	807	806	811	815	812	809	805	805
12	804	806	803	802	809	805	799	800	802	805	803	805	813	809	804	802	804
13	800	801	797	800	805	801	798	794	798	800	801	802	810	805	800	801	800
14	796	795	796	797	798	797	793	793	790	796	798	801	804	799	799	796	796
15	789	790	792	793	795	789	789	789	788	789	794	798	800	799	795	792	789
16	784	788	787	788	793	785	783	784	783	787	787	794	799	795	791	785	784
17	781	782	783	782	789	784	777	776	778	782	783	786	795	791	784	780	781
18	775	777	774	780	784	780	775	769	771	777	780	783	791	785	779	778	775
19	770	768	772	775	777	774	769	767	765	770	775	780	784	779	776	773	770
20	761	764	766	769	772	766	763	761	760	762	769	775	780	777	771	767	761
21	756	759	761	762	769	760	754	755	754	758	761	770	777	773	765	757	756
22	751	752	754	756	764	757	748	745	748	752	758	761	772	767	757	752	751
23	744	745	746	753	758	751	744	739	738	745	751	757	766	758	751	747	744
24	737	735	742	747	748	744	737	734	731	738	744	753	758	752	746	741	737
25	727	731	735	740	743	735	730	727	725	727	738	747	752	748	740	734	727
26	722	723	728	732	738	729	720	719	718	723	728	740	748	742	733	724	722
27	714	715	719	724	731	724	713	710	710	715	723	730	742	735	723	717	714
28	706	707	712	720	724	717	708	702	700	707	715	726	735	726	715	711	706

Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

29	698	696	705	712	715	710	699	696	691	698	708	719	726	719	710	703	698
30	687	689	698	704	709	699	691	687	685	687	700	712	719	714	703	695	687
31	682	682	689	695	702	693	681	679	675	680	690	705	714	707	695	685	682
32	673	672	680	687	694	686	673	667	667	672	684	694	707	699	685	677	673
33	663	664	670	681	686	678	665	659	655	662	675	688	699	688	676	670	663
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35	641	644	655	664	671	659	647	643	639	641	655	673	680	675	659	652	641
36	634	633	646	653	662	652	636	634	628	634	646	664	674	666	650	641	634
37	625	624	634	644	654	643	628	621	618	624	639	652	667	657	640	632	625
38	615	614	624	637	645	635	618	612	606	614	629	646	658	646	630	624	615
39	604	602	616	629	634	625	609	604	596	602	619	637	647	637	622	614	604
40	592	594	606	619	627	614	599	594	587	591	608	628	638	631	612	604	592
41	582	583	596	608	618	606	587	584	576	582	597	617	632	621	602	592	582
42	572	572	585	598	609	596	579	571	564	572	589	607	622	611	590	583	572
43	561	560	574	591	599	587	569	562	552	561	578	599	614	599	580	573	561
44	549	549	566	581	589	577	558	552	542	548	568	589	602	591	571	563	549
45	536	540	556	571	581	565	548	541	531	537	556	580	593	581	562	552	536
46	527	528	544	559	571	557	535	530	519	527	546	568	585	571	549	539	527
47	515	518	532	549	561	547	527	517	508	515	536	557	576	561	538	529	515
48	503	504	521	540	549	537	516	507	494	504	524	549	566	549	527	518	503
49	490	493	512	530	540	526	505	496	484	490	513	538	553	542	517	507	490
50	478	483	501	520	531	514	493	485	471	479	501	528	546	531	506	495	478
51	467	471	491	509	521	506	481	473	459	468	490	515	537	521	495	483	467
52	455	459	477	499	512	496	473	459	447	456	481	505	526	510	482	471	455
53	444	446	466	489	500	486	461	449	434	444	469	496	515	498	474	459	444
54	429	435	457	478	491	473	449	438	423	430	458	485	505	489	462	447	429
55	417	423	446	468	483	462	438	426	410	419	445	475	495	478	450	435	417
56	405	411	435	457	472	453	427	412	398	407	435	462	485	467	439	423	405
57	392	399	423	447	463	443	416	400	384	395	424	452	476	457	427	411	392
58	381	386	411	437	451	433	405	388	371	383	413	443	466	445	417	399	381
59	367	374	401	427	442	421	395	376	360	368	401	433	454	436	406	387	367

60	354	363	390	416	433	411	382	364	346	357	389	422	445	426	394	373	354
61	341	350	379	406	423	403	371	350	333	345	378	410	435	415	381	361	341
62	328	338	367	397	413	392	361	338	319	332	366	401	425	405	371	349	328
63	315	326	357	386	403	382	351	326	305	319	355	391	415	393	360	336	315
64	300	313	346	376	394	371	340	314	293	306	344	381	403	383	349	323	300
65	288	301	336	366	384	361	329	300	280	295	333	370	395	373	338	309	288
66	275	290	325	355	375	352	318	286	267	283	322	358	385	364	326	296	275
67	262	277	313	347	365	343	307	274	253	270	311	349	375	352	316	285	262
68	249	265	303	337	354	332	298	263	239	257	300	340	364	341	305	272	249
69	234	254	292	327	346	322	287	249	226	245	289	329	355	333	294	258	234
70	222	241	282	316	337	313	277	238	213	234	278	319	345	323	285	245	222
71	208	230	270	307	328	304	266	225	200	222	268	309	336	312	272	233	208
72	196	218	261	299	319	294	257	213	185	209	258	300	327	302	264	220	196
73	181	206	251	290	308	284	247	201	172	197	248	289	316	292	254	208	181
74	168	196	241	281	300	275	237	189	160	186	236	280	306	284	244	196	168
75	156	184	231	270	292	266	226	178	147	174	227	270	299	274	233	183	156
76	143	173	221	261	283	257	217	166	134	164	218	261	289	265	223	172	143
77	131	162	212	253	274	249	208	156	121	153	208	253	280	255	214	161	131
78	118	152	204	245	264	240	199	145	109	143	199	244	270	247	205	151	118
79	105	142	194	237	257	231	189	135	97	133	189	235	262	238	196	140	105
80	94	132	185	227	248	224	180	126	86	123	180	226	254	230	187	130	94
81	82	122	176	218	240	215	172	115	74	114	172	217	245	221	177	120	82
82	71	112	167	211	230	208	164	106	63	105	164	209	237	212	169	111	71
83	60	103	160	203	222	199	156	98	53	96	156	202	228	204	160	101	60
84	50	95	152	195	215	191	148	90	44	87	146	194	220	196	151	93	50
85	41	87	144	187	207	184	140	82	36	79	139	185	212	189	145	85	41
86	34	80	136	179	199	176	134	75	28	72	132	178	203	182	136	78	34
87	27	71	128	172	191	169	125	68	22	66	125	170	196	172	129	71	27
88	21	64	122	165	183	161	118	61	18	59	118	164	187	166	122	64	21
89	17	59	115	158	177	153	112	55	15	53	111	157	180	159	115	58	17
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91	13	47	102	144	161	140	98	43	12	42	98	142	166	145	101	47	13
92	13	42	95	137	154	133	91	38	11	37	91	135	158	137	95	41	13
93	12	36	89	130	147	125	85	33	11	32	85	129	151	131	88	36	12
94	11	31	83	123	140	119	78	29	10	27	79	122	144	124	82	31	11
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179	4	4	4	4	3	4	4	4	2	4	4	4	3	4	4	4	4
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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-23	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-TPS1-25/20/15W2FTBTB1A2GRD30/40/50 (20W)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231103 0E-B1	120.0	60	0.158	18.89	0.995	5.45
	277.0	60	0.074	19.17	0.931	11.01
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

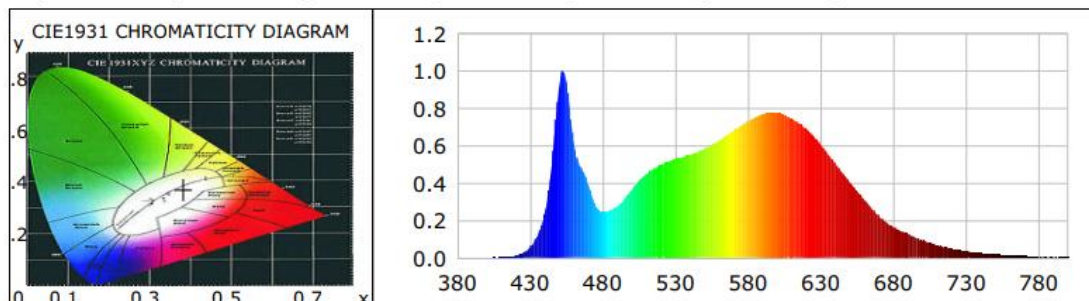
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	85	R9	18
Frequency (Hz)	60	R2	93	R10	83
CCT (K)	3949	R3	96	R11	83
Duv	-0.024	R4	84	R12	64
Chromaticity (x, y)	x=0.3810 y=0.3721	R5	85	R13	87
Chromaticity (u', v')	u(u')=0.2274v'=0.4996	R6	89	R14	99
Color Rendering Index (CRI)	85	R7	85	R15	79
R9	18	R8	66	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-11				

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)	2898.1	2985.0	375 lm/ft (-10%)
Luminous Efficacy (lm/W)	153.42	155.71	Standard: >= 115(-3%)
Most worst Luminous/Highest Watts	151.18		

Spectral Power Distribution & Chromaticity Diagram

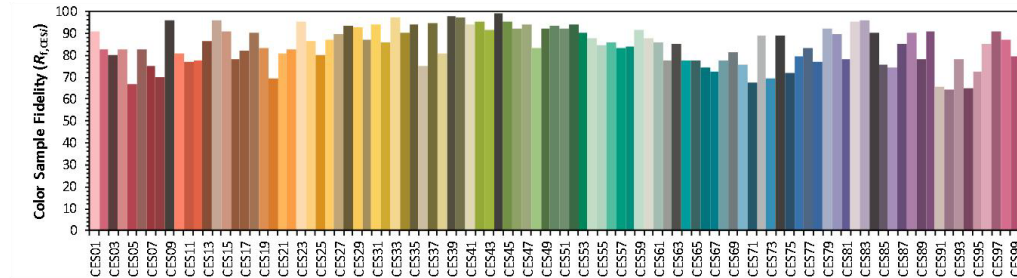
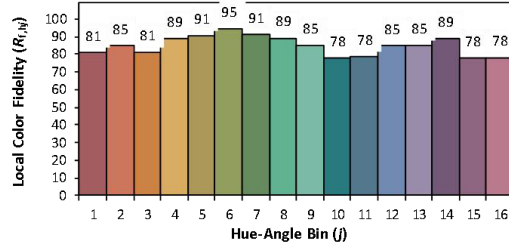
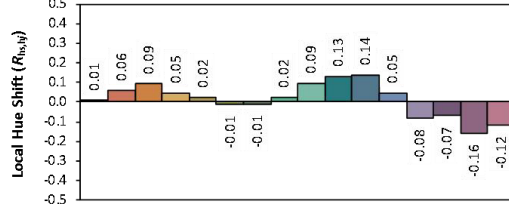
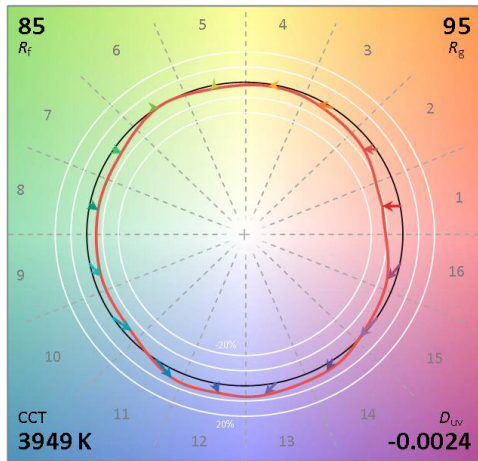
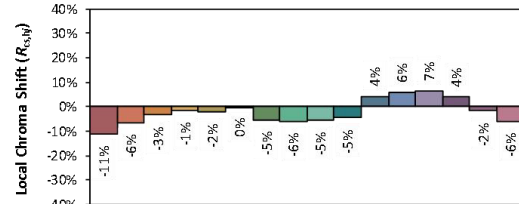
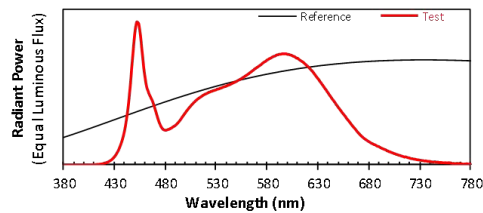


WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0039	535	0.5145	35.8286	690	0.2229	15.5257
385	0.0005	0.0352	540	0.5252	36.5769	695	0.1887	13.1414
390	0.0004	0.0310	545	0.5386	37.5077	700	0.1638	11.4071
395	0.0004	0.0285	550	0.5508	38.3627	705	0.1434	9.9892
400	0.0006	0.0420	555	0.5671	39.4932	710	0.1281	8.9228
405	0.0015	0.1032	560	0.5845	40.7097	715	0.1101	7.6652
410	0.0016	0.1091	565	0.6051	42.1396	720	0.0926	6.4499
415	0.0051	0.3565	570	0.6279	43.7322	725	0.0795	5.5374
420	0.0118	0.8224	575	0.6544	45.5749	730	0.0675	4.7001
425	0.0261	1.8203	580	0.6820	47.4960	735	0.0558	3.8838
430	0.0560	3.9032	585	0.7078	49.2921	740	0.0493	3.4304
435	0.1175	8.1838	590	0.7342	51.1308	745	0.0408	2.8424
440	0.2366	16.4776	595	0.7539	52.5011	750	0.0343	2.3904
445	0.5008	34.8764	600	0.7703	53.6478	755	0.0274	1.9109
450	0.9103	63.3940	605	0.7781	54.1872	760	0.0252	1.7574
455	0.9458	65.8700	610	0.7743	53.9270	765	0.0229	1.5953
460	0.6242	43.4725	615	0.7637	53.1836	770	0.0176	1.2265
465	0.4854	33.8078	620	0.7475	52.0570	775	0.0159	1.1098
470	0.3934	27.3957	625	0.7216	50.2580	780	0.0134	0.9336
475	0.2833	19.7285	630	0.6909	48.1156	785	0.0097	0.6772
480	0.2433	16.9469	635	0.6526	45.4463	790	0.0103	0.7139
485	0.2548	17.7468	640	0.6048	42.1220	795	0.0074	0.5186
490	0.2767	19.2685	645	0.5561	38.7282	800	0.0046	0.3229
495	0.3159	22.0013	650	0.5049	35.1620			
500	0.3671	25.5649	655	0.4541	31.6283			
505	0.4120	28.6951	660	0.4035	28.0992			
510	0.4501	31.3496	665	0.3569	24.8545			
515	0.4762	33.1658	670	0.3111	21.6651			
520	0.4972	34.6277	675	0.2652	18.4676			
525	0.5145	35.8286	680	0.2229	15.5257			
530	0.5252	36.5769	685	0.1887	13.1414			

TM30

ANSI/IES TM-30-18 Color Rendition Report

Source:	L128-3080RA35000H1 L128-5080RA35000H1	Manufacturer:	IKIO LED LIGHTING
Date:	2023/11/23	Model:	IK-TPS1-25/20/15W2FTBTB1A2- GRD30/40/50 (20W)



Notes:	This is a recommended method for displaying ANSI/IES TM-30-18 information.	x	0.3810	CIE 13.3-1995 (CRI) R_a 85 R_g 18
		y	0.3721	
		u'	0.2274	
		v'	0.4996	

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

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-23	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-TPS1-25/20/15W2FTBTB1A2GRD30/40/50 (20W)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231103 0E-B1	120.0	60	0.162	19.38	0.995	5.69
	277.0	60	0.078	19.99	0.93	11.07
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

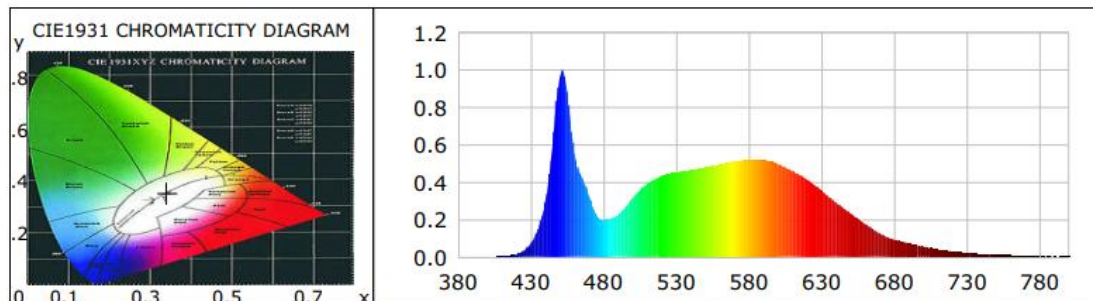
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	7
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5148	R3	93	R11	82
Duv	0.0019	R4	83	R12	59
Chromaticity (x, y)	x=0.3413 y=0.3523	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2086v'=0.4845	R6	84	R14	96
Color Rendering Index (CRI)	83	R7	86	R15	76
R9	7	R8	67	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-13				

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)	2966.5	2918.3	375 lm/ft (-10%)
Luminous Efficacy (lm/W)	153.07	145.99	Standard: >= 115(-3%)
Most worst Luminous/Highest Watts	145.99		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0057	535	0.4433	42.2181	690	0.1266	12.0518
385	0.0005	0.0480	540	0.4508	42.9328	695	0.1070	10.1885
390	0.0004	0.0411	545	0.4568	43.5032	700	0.0929	8.8460
395	0.0003	0.0289	550	0.4630	44.0888	705	0.0820	7.8129
400	0.0004	0.0373	555	0.4700	44.7612	710	0.0722	6.8773
405	0.0013	0.1203	560	0.4768	45.4019	715	0.0640	6.0908
410	0.0028	0.2674	565	0.4852	46.2056	720	0.0544	5.1845
415	0.0058	0.5529	570	0.4943	47.0747	725	0.0469	4.4635
420	0.0145	1.3817	575	0.5025	47.8543	730	0.0401	3.8195
425	0.0334	3.1854	580	0.5098	48.5475	735	0.0340	3.2380
430	0.0721	6.8708	585	0.5148	49.0274	740	0.0288	2.7395
435	0.1501	14.2912	590	0.5202	49.5338	745	0.0252	2.4038
440	0.2971	28.2929	595	0.5208	49.5936	750	0.0219	2.0840
445	0.6000	57.1393	600	0.5171	49.2419	755	0.0170	1.6229
450	0.9631	91.7141	605	0.5103	48.5985	760	0.0154	1.4644
455	0.8857	84.3481	610	0.4972	47.3503	765	0.0142	1.3538
460	0.5605	53.3715	615	0.4786	45.5804	770	0.0113	1.0788
465	0.4296	40.9104	620	0.4606	43.8647	775	0.0094	0.8953
470	0.3269	31.1296	625	0.4383	41.7419	780	0.0094	0.8940
475	0.2284	21.7500	630	0.4138	39.4045	785	0.0070	0.6709
480	0.1968	18.7420	635	0.3846	36.6300	790	0.0062	0.5894
485	0.2051	19.5283	640	0.3556	33.8665	795	0.0049	0.4636
490	0.2279	21.7056	645	0.3236	30.8209	800	0.0050	0.4803
495	0.2678	25.5065	650	0.2902	27.6373			
500	0.3150	30.0013	655	0.2611	24.8610			
505	0.3576	34.0513	660	0.2316	22.0549			
510	0.3908	37.2189	665	0.2047	19.4928			
515	0.4155	39.5700	670	0.1771	16.8691			
520	0.4313	41.0737	675	0.1502	14.3069			
525	0.4433	42.2181	680	0.1266	12.0518			
530	0.4508	42.9328	685	0.1070	10.1885			

TM30

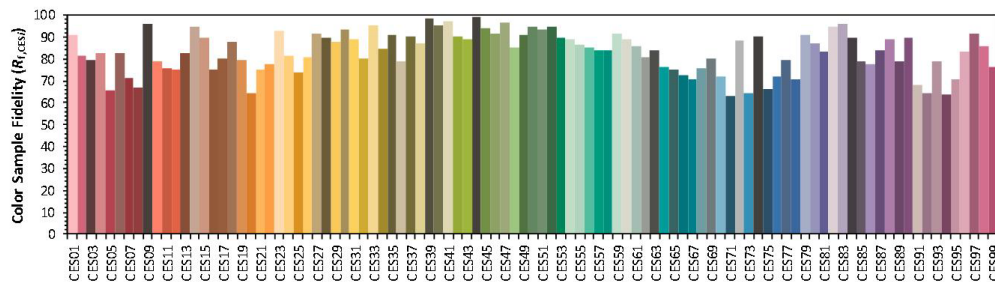
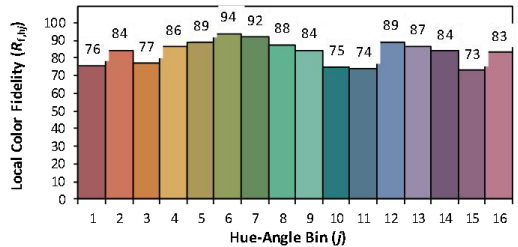
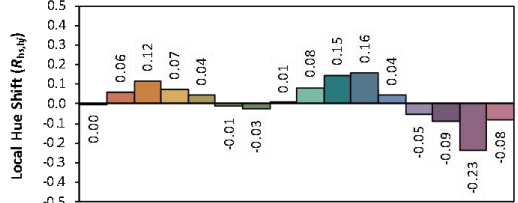
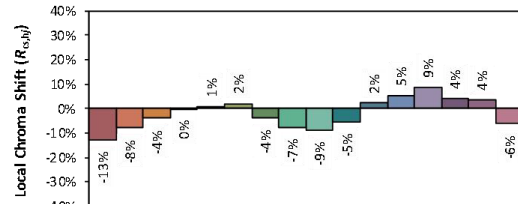
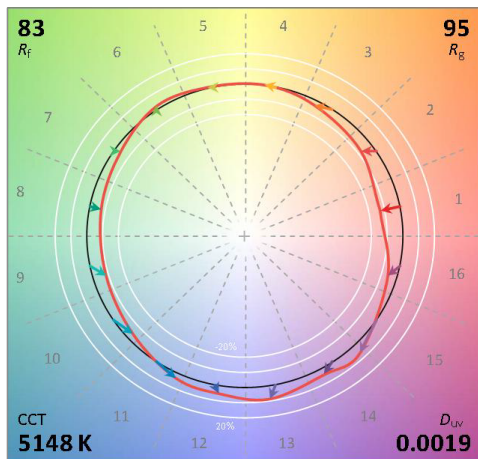
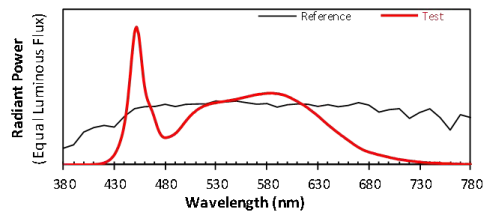
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/11/23

Model: IK-TPS1-25/20/15W2FTBTB1A2-GRD30/40/50 (20W)



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

x 0.3413
 y 0.3523
 u' 0.2086
 v' 0.4845

CIE 13.3-1995
(CRI)

R_a 83
 R_g 7

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

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBWD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
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 *****