



Report No.:  
BLC2212029E-A-PL

## LM-79-08 Test Report

For

### RAB LIGHTING Inc.

(Brand Name: RAB LIGHTING)

408 W 14th St New York , NY 10014 United States

### Bollards

Model name(s): B17SYZ

Remark: Y can be blank or “/E” represents emergency, blank represents without emergency, or “/E” represents with emergency. Z can be blank, “W” or “B” represents finish color, blank presents RAB Bronze, “W” represents RAB white, “B” represents RAB Black.

Representative (Tested) Model:

B17SYZ(Setting at 3000K)

B17SYZ(Setting at 4000K)

B17SYZ(Setting at 5000K)

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

Test & Report By:

*Candy Chen*

Engineer: Candy Chen

Date: 2022-12-30

Review By:

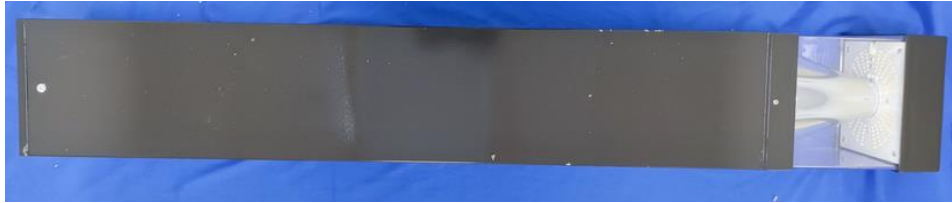
*Jason Luo*

Manager: Jason Luo

### 1.1 Product Information:

Organization Name	RAB LIGHTING Inc.	
Brand Name	RAB LIGHTING	
Model Number	B17SYZ	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Bollards	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	24W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K, 4000K, 5000K(Color tunable)	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXEN-XXE-13H-9D1-00-0-0	
Sample Number	BLC2212029E-A1	
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	2022-12-20
Date of Test	2022-12-23
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-79-2008 Electrical and Photometric 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	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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ , 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  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  horizontal intervals. Goniophotometer far field detector  $f\theta = 1.42\%$ , 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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:

B17SYZ(Setting at 3000K):1.2431

B17SYZ(Setting at 4000K):1.2432

B17SYZ(Setting at 5000K):1.2433



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### 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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)

<b>Test date</b>	2022-12-23	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	B17SYZ(Setting at 3000K)		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC221202	120.0	60	0.192	22.92	0.994	4.63
9E-A1	277.0	60	0.095	24.77	0.941	8.94
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

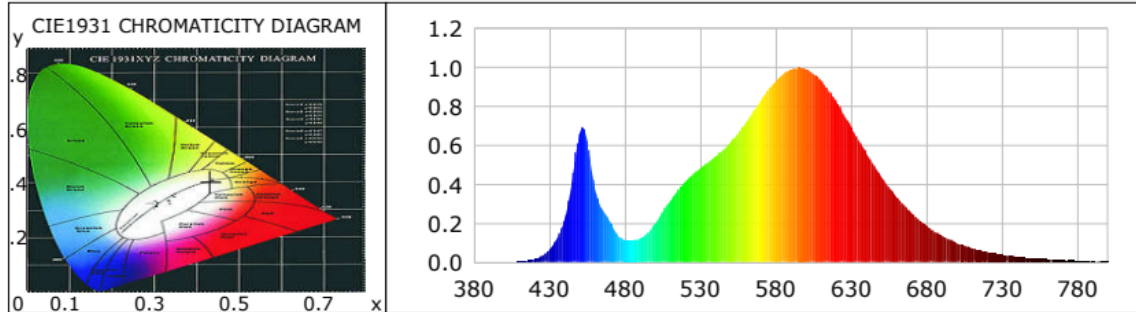
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	69	R9	-33
Frequency (Hz)	60	R2	83	R10	62
CCT (K)	3051	R3	94	R11	63
Duv	-0.0004	R4	68	R12	49
Chromaticity (x, y)	x=0.4327 y=0.4015	R5	69	R13	72
Chromaticity (u', v')	u(u')=0.2490 v'(v')=0.5198	R6	77	R14	97
Color Rendering Index (CRI)	73	R7	76	R15	61
R9	-33	R8	43	--	--
Rf	76	--	--	--	--
Rg	93	--	--	--	--
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)	2978.6	3098.3	>=500(-10%)
Luminous Efficacy (lm/W)	129.96	125.08	Premium: >= 120(-3%)
Most worst Luminous/Highest	120.25		
Zonal lumens in the 90-110 °zone (%)	3.6	--	<=15(+3%)
Zonal lumens >110 °zone (%)	1.3	--	<=0(+3%)
Beam Angle (°)	77.2	--	--
Center Beam Candle Power (cd)	3	--	--

### Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0015	535	0.4488	23.8334	690	0.2520	13.3823
385	0.0004	0.0211	540	0.4826	25.6278	695	0.2153	11.4326
390	0.0006	0.0310	545	0.5125	27.2200	700	0.1865	9.9038
395	0.0004	0.0232	550	0.5432	28.8461	705	0.1570	8.3371
400	0.0009	0.0476	555	0.5746	30.5136	710	0.1365	7.2515
405	0.0009	0.0486	560	0.6178	32.8093	715	0.1164	6.1795
410	0.0026	0.1404	565	0.6615	35.1332	720	0.0974	5.1729
415	0.0055	0.2916	570	0.7158	38.0155	725	0.0841	4.4667
420	0.0147	0.7802	575	0.7716	40.9755	730	0.0710	3.7694
425	0.0311	1.6522	580	0.8274	43.9386	735	0.0596	3.1665
430	0.0630	3.3466	585	0.8836	46.9253	740	0.0524	2.7837
435	0.1212	6.4384	590	0.9285	49.3105	745	0.0449	2.3835
440	0.2170	11.5251	595	0.9643	51.2122	750	0.0381	2.0211
445	0.4075	21.6400	600	0.9896	52.5559	755	0.0306	1.6230
450	0.6572	34.9043	605	0.9998	53.0953	760	0.0268	1.4249
455	0.6291	33.4121	610	0.9916	52.6634	765	0.0237	1.2564
460	0.3874	20.5748	615	0.9669	51.3511	770	0.0193	1.0247
465	0.2738	14.5424	620	0.9321	49.5005	775	0.0174	0.9254
470	0.2114	11.2294	625	0.8806	46.7679	780	0.0144	0.7622
475	0.1436	7.6236	630	0.8239	43.7568	785	0.0117	0.6221
480	0.1132	6.0098	635	0.7587	40.2943	790	0.0105	0.5572
485	0.1107	5.8789	640	0.6920	36.7512	795	0.0086	0.4577
490	0.1203	6.3910	645	0.6242	33.1523	800	0.0053	0.2829
495	0.1497	7.9502	650	0.5583	29.6498			
500	0.1969	10.4574	655	0.4968	26.3840			
505	0.2542	13.5001	660	0.4370	23.2079			
510	0.3125	16.5975	665	0.3837	20.3753			
515	0.3649	19.3785	670	0.3332	17.6952			
520	0.4125	21.9072	675	0.2903	15.4185			
525	0.4488	23.8334	680	0.2520	13.3823			
530	0.4826	25.6278	685	0.2153	11.4326			

**TM30**

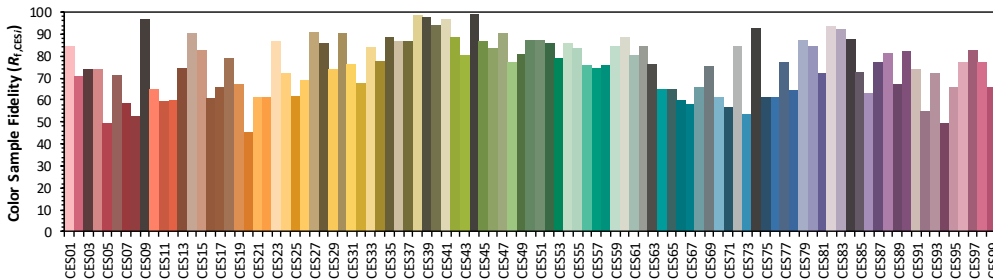
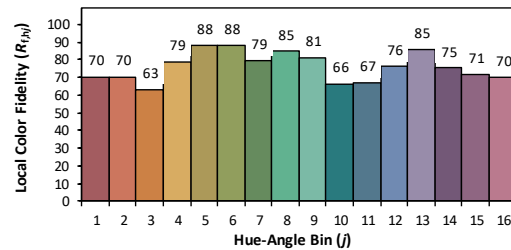
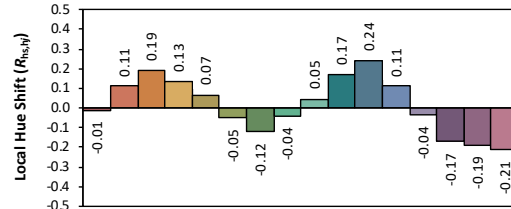
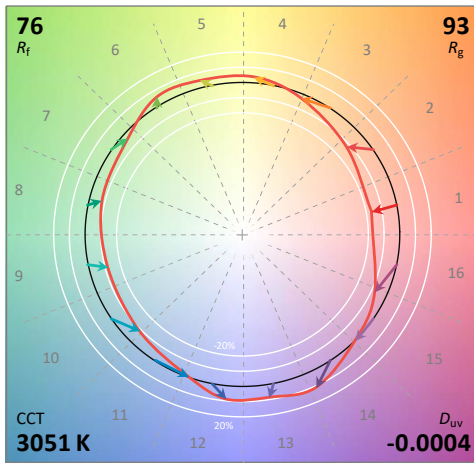
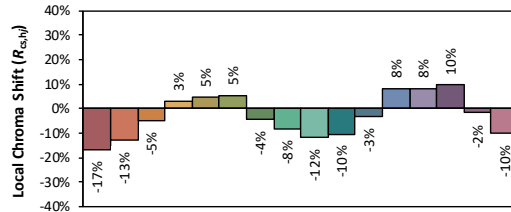
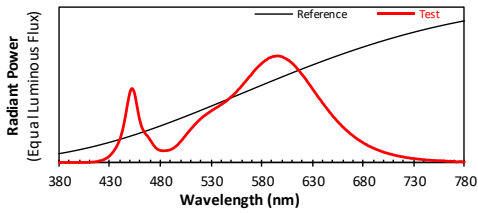
**ANSI/IES TM-30-18 Color Rendition Report**

Source: BXEN-XXE-13H-9D1-00-0-0

Manufacturer: RAB LIGHTING Inc.

Date: 2022/12/23

Model: B17SYZ (Setting at 3000K)



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

$x$  0.4328  
 $y$  0.4015  
 $u'$  0.2490  
 $v'$  0.5198

CIE 13.3-1995  
(CRI)  
 $R_a$  73  
 $R_g$  -33

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

## Zonal Lumen Tabulation

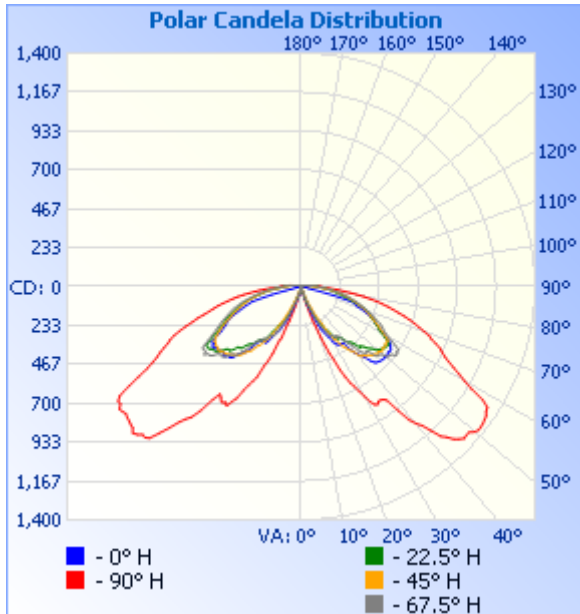
### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	133.8	4.5%	4.5%
0-40	441.5	14.8%	14.8%
0-60	1,668.1	56%	56%
60-90	1,163.3	39.1%	39.1%
70-100	650.7	21.8%	21.8%
90-120	120.5	4%	4%
0-90	2,831.4	95.1%	95.1%
90-180	147.3	4.9%	4.9%
0-180	2,978.6	100%	100%

### Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.5	0.0%	90-100	74.2	2.5%
10-20	11.2	0.4%	100-110	31.5	1.1%
20-30	122.0	4.1%	110-120	14.8	0.5%
30-40	307.7	10.3%	120-130	9.3	0.3%
40-50	535.8	18.0%	130-140	7.3	0.2%
50-60	690.9	23.2%	140-150	5.3	0.2%
60-70	586.8	19.7%	150-160	3.3	0.1%
70-80	392.9	13.2%	160-170	1.5	0%
80-90	183.6	6.2%	170-180	0.2	0%

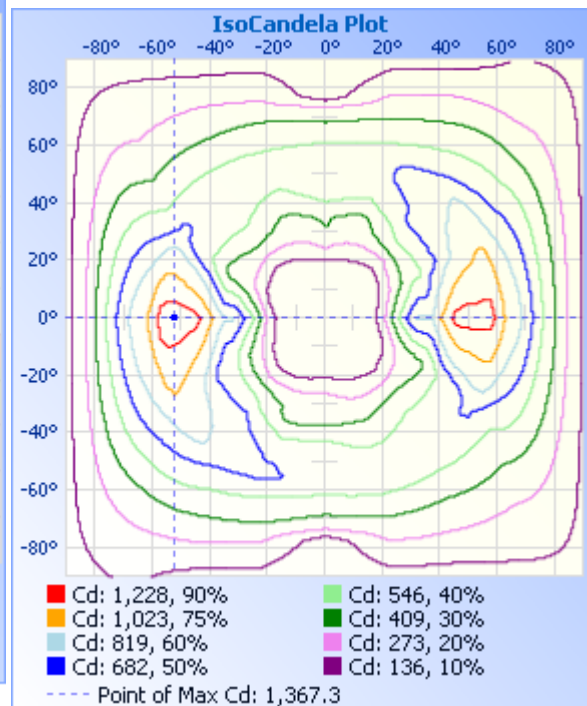
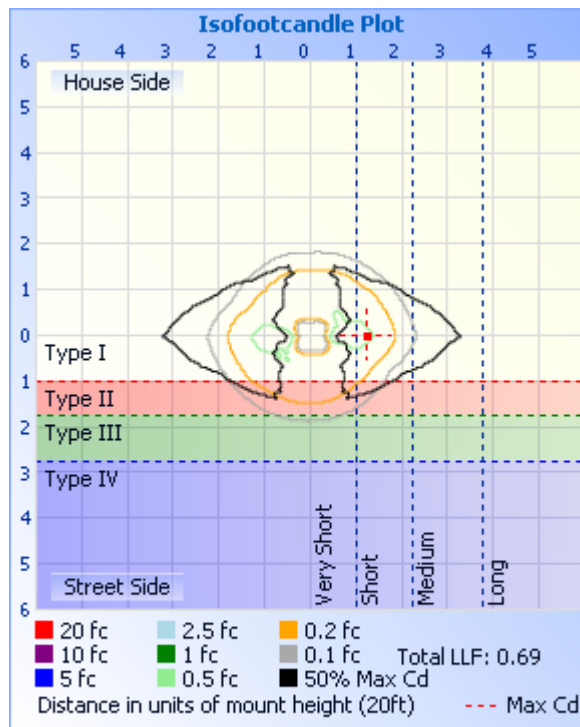
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	0.01 fc	27.1 ft	14.0 ft
34.0ft	0.00 fc	54.3 ft	28.1 ft
51.0ft	0.00 fc	81.4 ft	42.1 ft
68.0ft	0.00 fc	108.5 ft	56.2 ft
85.0ft	0.00 fc	135.7 ft	70.2 ft
102.0ft	0.00 fc	162.8 ft	84.3 ft

■ Vert. Spread: 77.2°  
■ Horiz. Spread: 44.9°



**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	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	3	4	3	3	3	3	3	3	4	3	3	4	3	4	3	3	3
2	4	3	3	4	3	4	3	4	3	3	3	4	3	4	3	3	4
3	4	3	4	4	4	4	4	4	4	3	3	4	4	2	4	4	4
4	4	3	4	4	5	4	4	4	4	4	4	4	4	5	4	4	4
5	4	4	4	5	5	6	4	4	4	4	4	4	4	5	5	5	4
6	4	5	4	5	6	6	5	5	4	4	4	4	5	5	5	5	4
7	5	5	5	5	7	7	5	5	5	5	4	5	7	6	5	6	5
8	6	6	6	5	7	7	6	6	5	5	5	6	5	6	6	5	6
9	7	6	6	7	10	8	7	5	5	5	5	7	7	8	7	7	7
10	7	8	7	8	11	9	7	7	6	6	6	7	10	9	8	8	7
11	8	8	8	9	12	10	8	8	7	7	7	8	10	9	9	9	8
12	9	10	9	9	14	12	9	8	7	8	8	9	11	11	10	9	9
13	10	10	10	10	14	13	10	9	8	9	9	9	12	12	10	11	10
14	10	11	11	11	19	13	11	9	10	9	9	10	19	12	12	11	10
15	25	11	11	11	48	14	13	12	26	10	11	20	43	13	13	12	25
16	53	26	12	23	105	38	14	25	48	23	11	18	92	32	14	18	53
17	67	44	14	24	116	61	15	33	63	41	12	41	125	61	16	26	67
18	85	59	14	34	168	89	16	46	85	61	13	46	160	82	16	44	85
19	119	82	14	49	214	132	16	59	108	70	16	58	219	122	17	76	119
20	130	101	24	65	247	140	27	85	128	76	24	94	240	133	27	98	130
21	157	117	43	102	323	186	59	107	160	86	46	107	332	174	56	123	157
22	196	144	73	127	374	192	89	128	182	109	80	146	346	175	96	149	196
23	215	149	95	156	433	229	126	154	215	139	97	161	435	224	125	160	215
24	249	174	123	193	479	264	156	194	235	182	129	212	487	265	147	185	249
25	281	211	143	219	554	306	182	213	248	204	141	233	522	301	178	200	281
26	293	222	175	247	602	336	220	247	284	213	173	260	606	343	222	227	293
27	310	250	195	272	647	368	258	267	302	226	188	281	634	366	240	261	310
28	335	258	232	291	679	391	272	297	307	237	226	309	669	399	256	270	335
29	346	284	250	315	718	422	310	316	334	261	249	333	712	415	313	291	346

30	382	300	299	337	762	427	353	332	353	274	287	341	775	431	336	315	382
31	400	308	324	346	806	456	401	340	381	304	323	345	804	474	393	346	400
32	407	327	372	342	835	498	451	343	397	315	364	344	842	503	431	347	407
33	417	364	381	351	842	548	486	380	395	349	385	370	828	531	464	365	417
34	415	369	412	371	827	559	514	388	399	386	399	375	841	538	498	363	415
35	419	383	439	360	832	556	537	377	400	384	428	383	837	521	527	362	419
36	419	379	451	366	836	566	551	372	394	396	435	387	818	531	552	373	419
37	423	382	473	376	854	568	580	383	400	400	461	404	806	547	572	383	423
38	477	395	486	404	943	593	605	396	427	404	488	410	858	576	585	396	477
39	509	415	506	422	1029	621	609	421	471	425	497	426	959	633	597	422	509
40	530	438	536	438	1073	639	638	448	510	446	514	456	1021	669	632	449	530
41	549	440	554	472	1103	648	679	488	522	456	536	497	1051	660	671	480	549
42	568	451	554	517	1162	665	696	500	535	465	553	527	1093	662	684	499	568
43	607	471	571	541	1228	702	707	533	557	481	561	556	1159	696	698	526	607
44	630	511	570	557	1255	771	718	557	589	513	568	570	1220	737	695	550	630
45	642	503	579	550	1293	793	713	557	603	520	578	573	1286	755	701	548	642
46	645	518	595	562	1316	786	733	580	596	521	586	584	1301	751	704	575	645
47	651	541	596	608	1335	822	732	611	611	550	597	614	1299	790	700	593	651
48	654	555	609	621	1330	850	740	628	621	575	600	627	1325	833	707	609	654
49	656	567	610	619	1332	853	751	636	615	573	606	633	1337	833	724	603	656
50	655	593	602	631	1355	885	751	633	609	582	609	628	1317	849	733	614	655
51	660	597	617	668	1367	894	753	650	613	610	613	639	1314	878	742	636	660
52	657	608	619	672	1365	922	758	677	624	625	625	668	1307	871	742	649	657
53	652	617	612	675	1364	936	758	669	631	643	624	685	1305	875	734	644	652
54	658	612	615	702	1357	940	754	676	621	646	616	686	1296	894	743	661	658
55	656	625	617	702	1353	969	757	702	641	653	622	708	1306	922	725	662	656
56	646	627	609	690	1336	972	746	695	640	666	617	690	1312	943	706	659	646
57	639	627	612	697	1329	971	743	700	623	666	610	696	1290	942	720	668	639
58	622	609	611	664	1283	965	738	702	629	670	613	696	1293	945	727	645	622
59	592	584	599	634	1190	902	719	670	607	646	598	673	1266	900	703	614	592
60	568	556	577	601	1129	867	695	630	572	618	583	641	1188	847	687	589	568
61	544	534	554	580	1081	830	673	599	545	590	565	615	1113	792	657	573	544

62	528	521	534	560	1033	797	653	576	524	563	547	593	1043	760	627	560	528
63	508	510	515	548	991	779	635	554	510	541	531	570	997	729	607	547	508
64	493	494	501	535	958	760	613	543	497	521	511	554	960	712	593	524	493
65	481	482	483	518	930	731	596	525	484	508	492	534	930	685	573	510	481
66	466	461	468	495	912	697	570	510	464	494	474	519	898	656	560	492	466
67	445	453	450	478	876	673	549	496	444	476	458	504	866	633	543	477	445
68	425	445	436	460	842	651	531	479	418	458	443	486	845	609	521	461	425
69	405	429	420	437	821	624	515	462	393	439	425	469	813	582	502	444	405
70	373	412	403	420	782	603	496	449	371	419	408	451	774	560	481	428	373
71	347	394	387	405	747	575	477	435	351	401	393	437	729	540	468	409	347
72	342	372	371	388	715	544	457	419	326	389	374	420	684	518	451	396	342
73	332	354	356	369	679	515	440	401	308	375	360	400	650	496	434	372	332
74	275	328	342	352	643	491	422	380	228	359	344	383	605	476	413	355	275
75	196	307	325	336	604	462	403	359	181	342	330	364	570	454	397	340	196
76	118	291	307	315	567	429	383	330	99	319	314	346	540	417	376	323	118
77	65	269	292	298	533	411	362	305	61	302	297	323	510	389	359	303	65
78	50	250	278	282	497	382	342	286	39	282	279	305	479	361	340	287	50
79	45	235	261	265	463	358	322	266	34	259	265	288	445	332	321	270	45
80	42	221	246	246	417	334	302	252	32	243	249	269	414	307	299	249	42
81	38	207	227	229	378	314	282	229	30	229	232	248	382	285	277	230	38
82	33	194	209	213	336	293	259	210	29	213	214	230	350	262	255	212	33
83	28	183	191	198	296	273	240	198	24	198	199	211	312	243	231	195	28
84	23	168	173	181	259	247	215	182	18	180	180	193	281	225	210	179	23
85	16	152	155	167	222	224	192	167	14	161	162	177	251	206	189	164	16
86	25	138	136	153	194	204	172	151	22	147	145	161	215	191	165	150	25
87	21	124	119	139	166	183	152	137	18	132	128	147	184	174	147	135	21
88	14	111	105	123	141	165	135	121	13	118	115	133	156	160	130	121	14
89	8	103	94	113	127	152	122	108	9	109	103	122	135	147	116	110	8
90	8	99	87	104	118	145	116	98	9	103	97	113	123	138	110	104	8
91	8	94	82	99	111	138	108	90	8	98	92	105	120	134	105	97	8
92	9	87	77	93	105	127	102	84	8	94	87	98	112	130	100	92	9
93	10	81	72	86	99	118	95	79	9	85	82	90	105	116	93	86	10

94	10	72	64	78	93	108	86	73	9	78	75	82	99	104	83	76	10
95	12	65	56	70	83	96	76	66	10	70	65	75	93	93	74	68	12
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172	3	3	3	3	2	2	2	3	2	2	2	3	2	2	2	2	3
173	2	2	3	2	0	1	2	2	2	2	2	2	2	2	2	2	2
174	2	2	2	2	0	1	2	2	2	2	2	2	0	2	2	2	2
175	2	2	2	2	0	0	1	1	2	2	2	1	0	2	2	2	2
176	1	2	1	2	0	0	1	1	1	1	1	2	0	1	2	2	1
177	2	1	2	1	0	0	1	1	1	1	1	2	0	1	1	1	2
178	1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1
179	1	1	1	1	0	0	0	1	1	1	1	1	0	0	1	1	1
180	1	1	1	1	0	0	0	1	1	1	1	1	0	0	1	1	1

## BUG Rating

### Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	66.9	2.2	2.2
FM (30-60)	763.1	25.6	25.6
FH (60-80)	482.7	16.2	16.2
FVH (80-90)	90.0	3.0	3.0
BL (0-30)	66.8	2.2	2.2
BM (30-60)	771.3	25.9	25.9
BH (60-80)	496.9	16.7	16.7
BVH(80-90)	93.5	3.1	3.1
UL (90-100)	74.2	2.5	2.5
UH (100-180)	73.1	2.5	2.5
Total	2978.5	99.9	100.0
<b>BUG Rating</b>	<b>B1-U3-G1</b>		

## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

<b>Test date</b>	2022-12-23	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	B17SYZ(Setting at 4000K)		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC221202	120.0	60	0.189	22.55	0.994	4.63
9E-A2	277.0	60	0.094	24.41	0.941	8.93
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

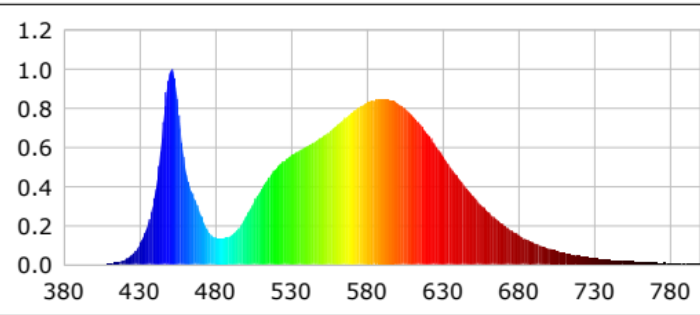
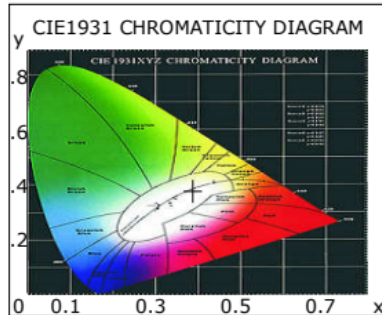
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	-24
Frequency (Hz)	60	R2	83	R10	59
CCT (K)	3815	R3	91	R11	69
Duv	-0.0003	R4	73	R12	47
Chromaticity (x, y)	x=0.3887 y=0.3810	R5	72	R13	74
Chromaticity (u', v')	u(u')=0.2288 v'(v')=0.5047	R6	76	R14	95
Color Rendering Index (CRI)	75	R7	81	R15	66
R9	-24	R8	52	--	--
Rf	77	--	--	--	--
Rg	94	--	--	--	--
Rcs,h1(%)	-16				

### 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)	3119.8	3259.0	>=500(-10%)
Luminous Efficacy (lm/W)	138.35	133.51	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	127.81		

**Spectral Power Distribution & Chromaticity Diagram**



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0023	535	0.5279	30.3881	690	0.2010	11.5676
385	0.0002	0.0135	540	0.5575	32.0902	695	0.1737	10.0000
390	0.0005	0.0284	545	0.5822	33.5146	700	0.1494	8.5991
395	0.0004	0.0240	550	0.6048	34.8133	705	0.1285	7.3973
400	0.0012	0.0704	555	0.6266	36.0680	710	0.1099	6.3291
405	0.0010	0.0598	560	0.6504	37.4418	715	0.0938	5.4003
410	0.0036	0.2064	565	0.6794	39.1110	720	0.0801	4.6101
415	0.0094	0.5408	570	0.7113	40.9483	725	0.0689	3.9669
420	0.0226	1.3014	575	0.7462	42.9575	730	0.0596	3.4321
425	0.0488	2.8091	580	0.7766	44.7027	735	0.0495	2.8485
430	0.0991	5.7031	585	0.8072	46.4666	740	0.0432	2.4846
435	0.1900	10.9350	590	0.8291	47.7282	745	0.0372	2.1396
440	0.3459	19.9114	595	0.8435	48.5545	750	0.0308	1.7708
445	0.6528	37.5776	600	0.8487	48.8573	755	0.0247	1.4191
450	0.9812	56.4798	605	0.8432	48.5412	760	0.0235	1.3506
455	0.8489	48.8642	610	0.8267	47.5903	765	0.0205	1.1779
460	0.5061	29.1356	615	0.8004	46.0720	770	0.0173	0.9949
465	0.3635	20.9249	620	0.7606	43.7864	775	0.0148	0.8517
470	0.2644	15.2202	625	0.7173	41.2904	780	0.0117	0.6710
475	0.1746	10.0500	630	0.6656	38.3173	785	0.0104	0.5971
480	0.1382	7.9553	635	0.6107	35.1552	790	0.0096	0.5498
485	0.1343	7.7282	640	0.5553	31.9652	795	0.0073	0.4181
490	0.1459	8.3992	645	0.4983	28.6860	800	0.0050	0.2876
495	0.1826	10.5138	650	0.4462	25.6875			
500	0.2431	13.9939	655	0.3955	22.7672			
505	0.3118	17.9513	660	0.3492	20.1016			
510	0.3794	21.8417	665	0.3056	17.5909			
515	0.4404	25.3489	670	0.2674	15.3913			
520	0.4902	28.2163	675	0.2331	13.4156			
525	0.5279	30.3881	680	0.2010	11.5676			
530	0.5575	32.0902	685	0.1737	10.0000			

**TM30**

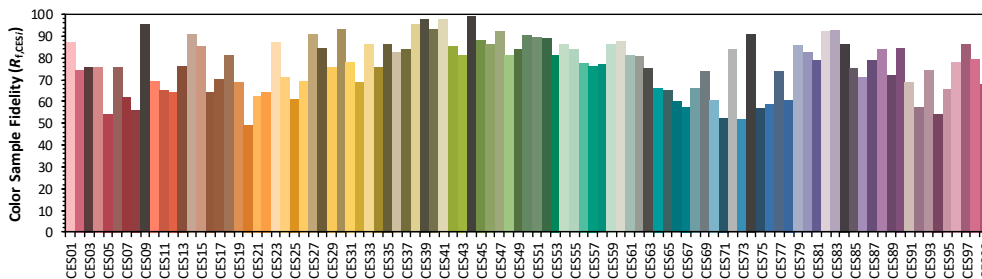
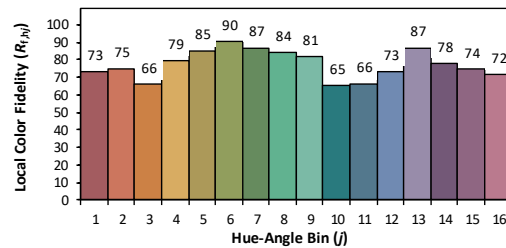
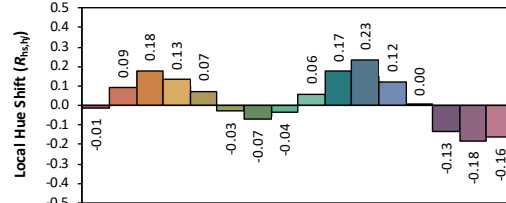
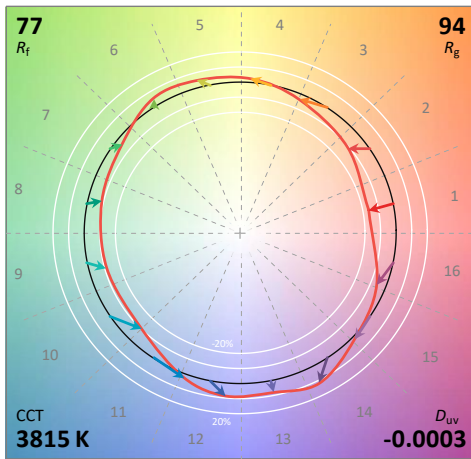
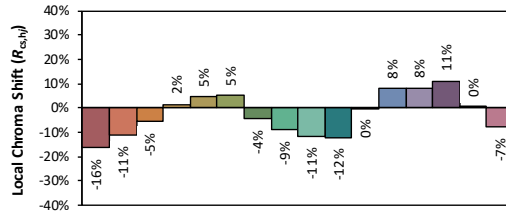
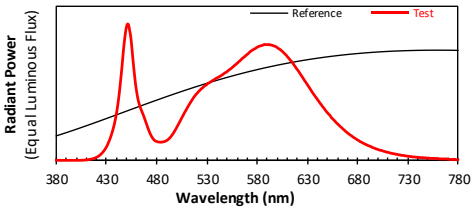
**ANSI/IES TM-30-18 Color Rendition Report**

Source: BXEN-XXE-13H-9D1-00-0-0

Manufacturer: RAB LIGHTING Inc.

Date: 2022/12/23

Model: B17SYZ (Setting at 4000K)



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

$x$  0.3887  
 $y$  0.3810  
 $u'$  0.2288  
 $v'$  0.5047

CIE 13.3-1995 (CRI)  
 $R_a$  75  
 $R_9$  -24

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)

<b>Test date</b>	2022-12-23	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	B17SYZ(Setting at 5000K)		

#### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC221202	120.0	60	0.192	22.88	0.993	4.64
9E-A2	277.0	60	0.095	24.61	0.940	8.93
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

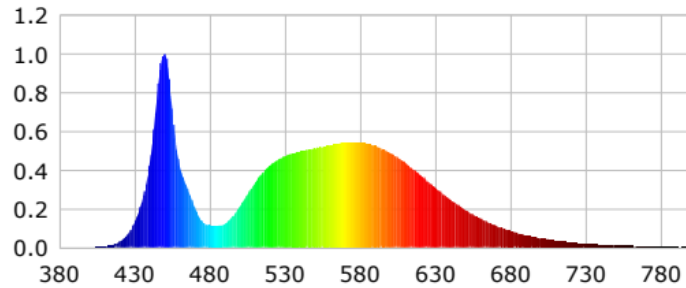
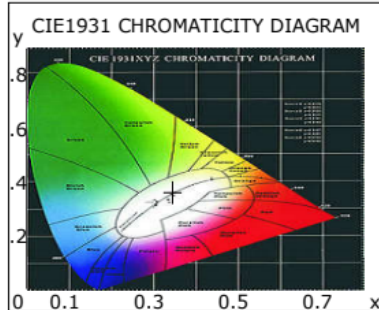
#### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	71	R9	-29
Frequency (Hz)	60	R2	79	R10	50
CCT (K)	5060	R3	84	R11	72
Duv	0.0035	R4	74	R12	44
Chromaticity (x, y)	x=0.3440 y=0.3578	R5	72	R13	72
Chromaticity (u', v')	u(u')=0.2083 v'(v')=0.4875	R6	71	R14	91
Color Rendering Index (CRI)	74	R7	82	R15	65
R9	-29	R8	57	--	--
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)	3095.0	3206.2	>=1000(-10%)
Luminous Efficacy (lm/W)	135.27	130.28	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	125.76		

### 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	0.0352	535	0.4517	36.4668	690	0.1138	9.1868
385	0.0005	0.0399	540	0.4724	38.1360	695	0.0977	7.8909
390	0.0007	0.0587	545	0.4872	39.3375	700	0.0842	6.7983
395	0.0004	0.0321	550	0.4973	40.1465	705	0.0729	5.8828
400	0.0013	0.1044	555	0.5054	40.8037	710	0.0628	5.0686
405	0.0021	0.1713	560	0.5116	41.3085	715	0.0536	4.3255
410	0.0046	0.3743	565	0.5207	42.0397	720	0.0463	3.7344
415	0.0129	1.0405	570	0.5301	42.7994	725	0.0404	3.2616
420	0.0299	2.4166	575	0.5352	43.2088	730	0.0343	2.7713
425	0.0642	5.1824	580	0.5398	43.5819	735	0.0291	2.3484
430	0.1280	10.3358	585	0.5431	43.8448	740	0.0253	2.0453
435	0.2388	19.2792	590	0.5409	43.6733	745	0.0211	1.7053
440	0.4289	34.6258	595	0.5362	43.2909	750	0.0185	1.4899
445	0.7739	62.4780	600	0.5257	42.4464	755	0.0153	1.2329
450	1.0000	80.7360	605	0.5082	41.0298	760	0.0142	1.1443
455	0.7192	58.0644	610	0.4883	39.4218	765	0.0125	1.0072
460	0.4236	34.1958	615	0.4649	37.5346	770	0.0107	0.8656
465	0.3112	25.1222	620	0.4382	35.3778	775	0.0090	0.7229
470	0.2083	16.8172	625	0.4054	32.7343	780	0.0089	0.7168
475	0.1363	11.0056	630	0.3734	30.1454	785	0.0070	0.5668
480	0.1136	9.1701	635	0.3410	27.5346	790	0.0071	0.5697
485	0.1095	8.8404	640	0.3090	24.9450	795	0.0050	0.4007
490	0.1221	9.8591	645	0.2767	22.3389	800	0.0038	0.3104
495	0.1592	12.8535	650	0.2482	20.0348			
500	0.2131	17.2088	655	0.2191	17.6904			
505	0.2728	22.0231	660	0.1938	15.6442			
510	0.3322	26.8203	665	0.1706	13.7749			
515	0.3836	30.9672	670	0.1491	12.0383			
520	0.4242	34.2478	675	0.1299	10.4916			
525	0.4517	36.4668	680	0.1138	9.1868			
530	0.4724	38.1360	685	0.0977	7.8909			

**TM30**

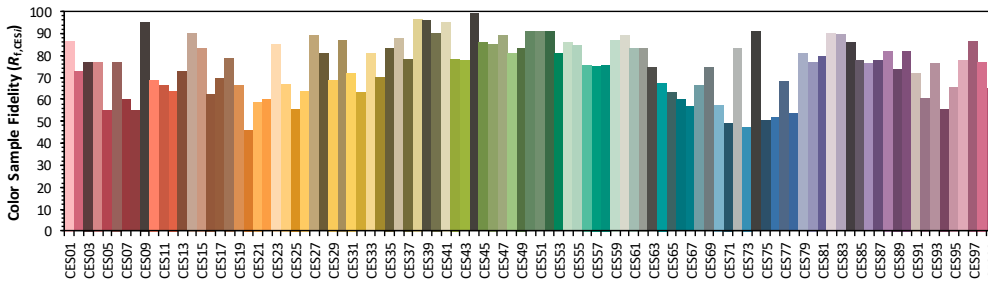
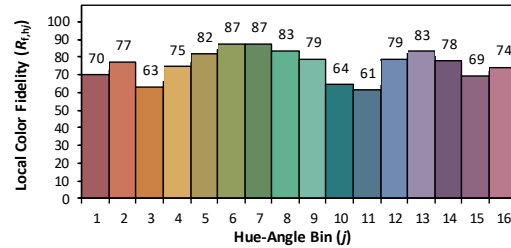
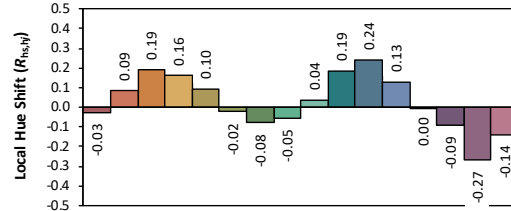
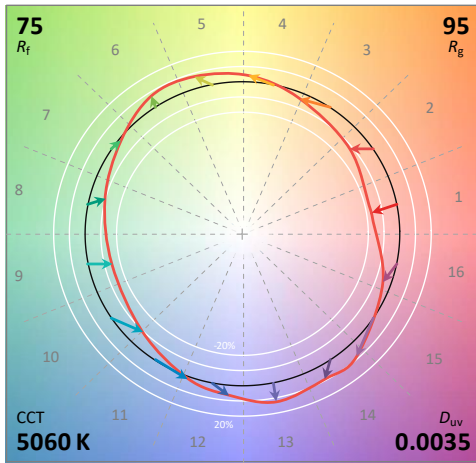
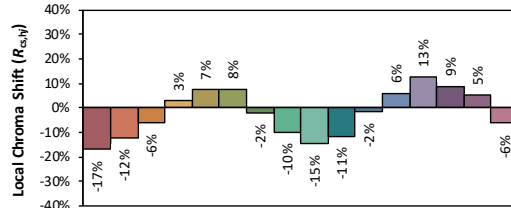
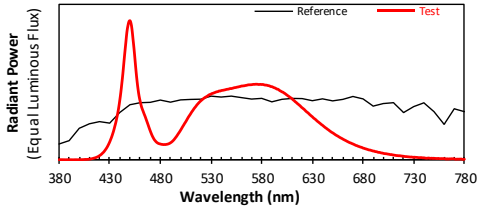
**ANSI/IES TM-30-18 Color Rendition Report**

Source: BXEN-XXE-13H-9D1-00-0-0

Manufacturer: RAB LIGHTING Inc.

Date: 2022/12/23

Model: B17SYZ (Setting at 5000K)



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

$x$  0.3440  
 $y$  0.3578  
 $u'$  0.2083  
 $v'$  0.4875

CIE 13.3-1995 (CRI)  
 $R_a$  74  
 $R_g$  -29

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	2022-01-18
AC Power Source	CHP-500C	DYBWD010159	2022-01-25
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2022-01-25
Digital Power Meter	WT500	DYDWQ20010	2022-01-25
Integral Sphere (2M)	2M	DYJCE120067	2022-01-18
Digital Power Meter	WT500	DYDWQ200006	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 \*\*\*\*\*