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LM-79-19 Test Report

For

RAB Lighting Inc.

(Brand Name: RAB Lighting)

Room 609, Building C, MixC, No. 1799 Wuzhong Road Minhang District, Shanghai,
China Xiao Xiang, 15921313292, gary.xiao@rablighting.com

Model name(s):

RLB2-4F[blank, /MVS, /LCBS/MVS][blank, /E]

Report Type: Testing and Report According to IES LM-79-2019
Type of Luminaire: Retrofit Kits for Direct Linear Ambient Luminaires
Report Date: 2024-11-15

Test & Report By:

Ferrum Li

Engineer: Ferrum Li

Review By:

Garman Mo

Manager: Garman Mo

Note: 1. The results contained in this report pertain only to the tested samples.
2. This report does not imply product certification, approval, or endorsement by A2LA or any agency of the Federal Government.



1.1 Product Information:		
Model Number	RLB2-4F[blank, /MVS, /LCBS/MVS][blank, /E]	
Remark	The suffix “[blank, /MVS, /LCBS/MVS]” can be “/MVS” =with motion sensor, “/LCBS/MVS” =motion sensor with Bluetooth and smart controller or Blank=no sensor and smart controller provided. The suffix “[blank, /E]” can be “/E” =with emergency backup driver or Blank=no emergency backup driver provided.	
Representative (Tested) Model	RLB2-4F(0%,3000K)	
Model Difference	N/A	
SKU (if available)	--	
Type of Luminaire (for integral lamps, list base type and lamp type)	Retrofit Kits for Direct Linear Ambient Luminaires	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXEN-30E-13H-9C1 BXEN-65E-13H-9C1	
Integral Controls Availability	Yes	
Dimming	Continuous	
Sample Number	JDE241105-G1	
Date of Receipt	2024-11-09	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaire Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120-277Vac, 50/60Hz
Nominal Power	30W/35W/40W/45W/50W (Power Adjustable)
Rated Initial Lamp Lumen	--
Declared CCT	3000K,3500K,4000K,5000K,6500K (Color Tunable)



1.3 Test Specifications:

Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2019 Optical and Electrical Measurements of Solid-State Lighting Products 2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.4 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1.2 °C, measured at a point not more than 1.5 m from the sample and at the same height as the sample. The humidity should be maintained between 10% and 65%. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 °vertical intervals and 22.5 °horizontal intervals.

2) 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 °C ± 1.2 °C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.



2.1 Summary of Test Result

Criteria Item	Measured Value		Compliance	Requirement (DLC V5.1)	
Minimum Total Luminous	6180.3		Pass	≥375 lm/ft (-10%)	
Minimum Luminous Efficacy	132.96		Pass	Standard: ≥115(-3%)	Premium: ≥130(-3%)
Minimum Power Factor	0.9668		Pass	≥0.9(-3%)	
Maximum THD %	12.83		Pass	≤20(+5)	
Zonal Lumen Requirement	0-60°	65.3	Pass	≥40(-3)	



2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-12	Test Ambient:	25 ± 1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	RLB2-4F(0%,3000 K)	Total Operating Time (min)	75

Electrical Measurement in Lithonia C2 32 MVOLT GEB10IS:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JDE241105-	120.1	60	0.3952	47.29	0.9973	5.96
G1	277.1	60	0.1723	46.17	0.9668	12.83

**Photometric Measurement in Lithonia C2 32 MVOLT GEB10IS–
Goniophotometer Method(Test Distance:26.000m):**

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	6287.7	6180.3
Luminous Efficacy (lm/W)	132.96	133.86
Zonal lumens in the 0-60 °	65.3	--
Beam Angle (°)	128.2	--
Center Beam Candle Power (cd)	1715	--

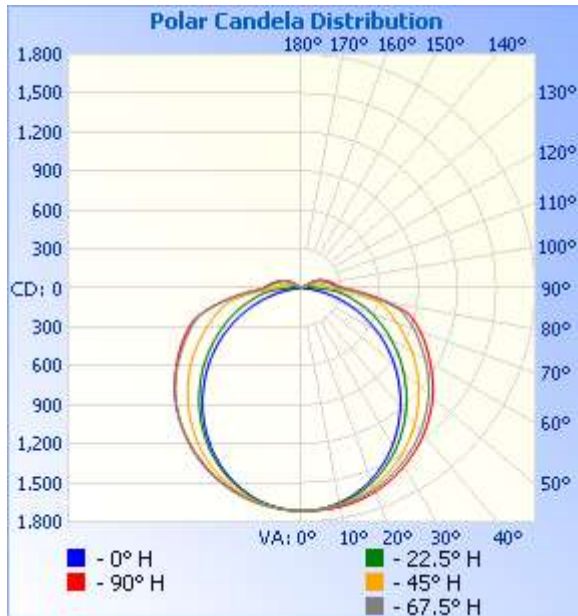


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,347.9	21.4%
0-40	2,230.6	35.5%
0-60	4,105.8	65.3%
60-90	1,823.6	29%
70-100	1,177.3	18.7%
90-120	338.1	5.4%
0-90	5,929.4	94.3%
90-180	358.0	5.7%
0-180	6,287.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	162.5	2.6%	90-100	169.2	2.7%
10-20	468.1	7.4%	100-110	110.5	1.8%
20-30	717.3	11.4%	110-120	58.4	0.9%
30-40	882.7	14.0%	120-130	11.9	0.2%
40-50	951.3	15.1%	130-140	2.5	0%
50-60	923.9	14.7%	140-150	2.1	0%
60-70	815.4	13.0%	150-160	1.6	0%
70-80	647.3	10.3%	160-170	1.4	0%
80-90	360.8	5.7%	170-180	0.5	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
4.0ft	107.2 fc	10.9 ft	29.3 ft
8.0ft	26.8 fc	21.8 ft	58.6 ft
12.0ft	11.9 fc	32.6 ft	88.0 ft
16.0ft	6.7 fc	43.5 ft	117.3 ft
20.0ft	4.3 fc	54.4 ft	146.6 ft
24.0ft	3.0 fc	65.3 ft	175.9 ft
28.0ft	2.2 fc	76.2 ft	205.2 ft
32.0ft	1.7 fc	87.0 ft	234.6 ft

■ Vert. Spread: 107.3°
■ Horiz. Spread: 149.5°

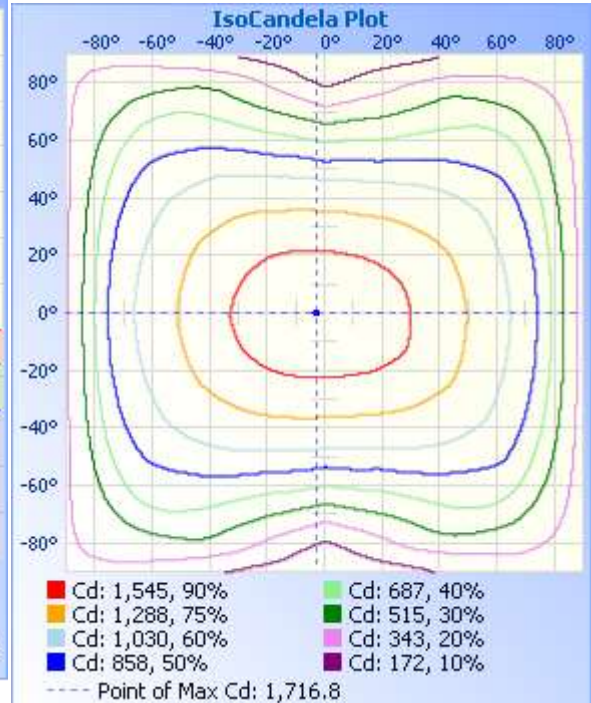
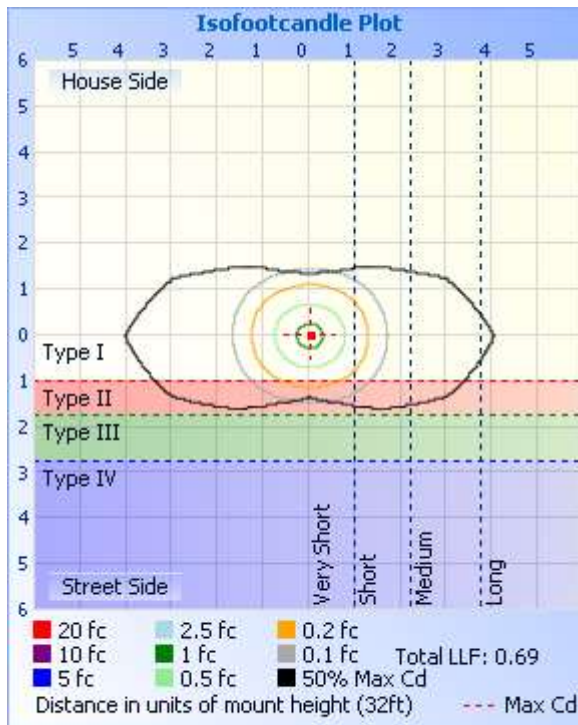




Table--1 UNIT: cd

γ (DEG) C (DEG)																
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715	1715
5	1706	1706	1706	1704	1705	1709	1710	1712	1715	1714	1712	1708	1706	1707	1708	1711
10	1691	1689	1684	1676	1678	1685	1693	1701	1710	1704	1697	1685	1679	1681	1689	1697
15	1668	1662	1647	1633	1632	1646	1664	1679	1693	1682	1666	1645	1633	1639	1659	1675
20	1635	1625	1600	1573	1568	1590	1624	1645	1666	1651	1623	1590	1571	1581	1616	1642
25	1593	1579	1539	1500	1491	1522	1572	1603	1629	1609	1567	1520	1494	1509	1561	1601
30	1542	1524	1469	1413	1400	1442	1510	1553	1581	1556	1500	1438	1403	1425	1494	1550
35	1486	1461	1388	1317	1297	1350	1437	1495	1528	1496	1423	1345	1301	1329	1416	1491
40	1421	1390	1301	1213	1185	1248	1357	1430	1465	1428	1339	1244	1189	1224	1331	1424
45	1352	1314	1208	1101	1066	1142	1271	1356	1395	1352	1249	1136	1069	1114	1239	1351
50	1276	1233	1112	984	941	1030	1179	1280	1318	1271	1156	1022	943	1000	1144	1272
55	1191	1144	1014	866	811	916	1082	1193	1232	1183	1058	905	812	882	1047	1186
60	1106	1051	914	747	676	800	984	1100	1145	1089	961	787	677	764	946	1090
65	1021	962	811	630	541	686	880	1007	1059	998	857	670	540	650	843	1000
70	933	874	712	521	403	578	784	923	973	910	758	559	403	542	747	913
75	825	779	618	410	270	464	693	827	882	819	667	448	269	430	654	813
80	635	607	509	309	146	365	595	675	701	671	575	344	146	336	540	633
85	439	414	336	206	46.7	267	406	475	499	472	395	251	47.8	230	355	434
90	293	267	195	83.3	1.83	113	233	301	326	300	228	103	1.03	96.8	209	282
95	258	231	158	57.5	1.14	76.4	184	248	270	246	176	67.0	0.51	68.8	173	244
100	224	198	131	41.4	1.32	56.3	151	214	236	212	143	46.3	1.22	51.2	142	208
105	194	168	108	11.3	1.63	20.9	126	184	205	182	118	8.99	1.94	18.4	118	179
110	166	144	82.1	3.89	2.45	6.78	97.8	157	176	153	88.9	2.23	3.06	2.75	91.9	152
115	136	114	35.6	3.93	2.74	5.42	48.2	125	145	121	37.2	2.64	3.06	3.04	44.2	121
120	89.6	61.4	3.97	4.37	2.86	4.05	6.69	72.7	99.1	67.1	2.48	2.95	3.06	3.34	3.91	68.4
125	33.8	13.1	3.57	4.53	2.86	3.99	3.52	18.9	39.1	15.7	2.52	3.25	3.06	3.47	3.00	16.6
130	2.59	2.87	3.60	4.54	2.86	4.01	3.57	2.83	1.96	3.14	2.75	3.86	2.90	3.78	3.00	3.06
135	2.36	2.77	3.64	4.55	2.86	4.03	3.62	2.83	2.02	2.49	2.78	3.98	3.00	4.12	3.10	2.79
140	2.07	2.66	3.67	4.56	2.86	4.04	3.67	2.64	2.08	2.46	2.85	3.99	3.23	4.29	3.11	2.70
145	2.10	2.66	3.71	4.56	2.86	4.06	3.73	2.77	2.14	2.56	3.06	4.01	3.55	4.52	3.31	2.83
150	2.13	2.66	3.74	4.57	2.86	4.08	3.78	2.89	2.28	2.71	3.14	4.03	3.72	4.40	3.68	2.93
155	2.16	2.87	3.77	4.57	3.06	4.60	3.83	3.01	2.43	2.90	3.24	4.05	4.08	4.53	3.95	3.10
160	2.79	3.18	4.79	5.49	3.68	5.31	4.62	3.46	2.59	3.09	3.34	4.06	4.49	4.57	4.34	3.36
165	3.20	4.17	5.61	6.30	4.49	6.24	5.60	4.08	3.63	3.89	4.48	5.79	6.12	4.90	6.41	5.35
170	3.82	4.49	6.18	6.74	4.77	6.71	6.31	4.67	4.45	4.41	4.95	6.49	6.99	4.94	7.08	6.15
175	4.24	4.82	6.38	6.79	4.86	6.81	6.31	4.78	4.69	4.55	4.84	6.43	6.87	4.99	7.08	6.32
180	4.44	4.82	6.42	6.81	4.90	6.85	6.31	4.82	4.76	4.41	4.79	6.40	6.84	5.01	6.93	6.39



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp D908S	2022-07-19	2025-07-18
ST-R-357	AC Power Source	2024-01-29	2025-01-28
ST-R-S-422	Power Meter for Goniophotometer	2024-05-29	2025-05-28
ST-R-S-354	hygrothermograph for Goniophotometer	2024-05-29	2025-05-28
Uncertainty: Photometric Measurement(Goniophotometer): 2.94%, k=2			

4. Product Photo



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