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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): RLB2-3F[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:

Engineer: Ferrum Li

Review By:

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	RLB2-3F[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	RLB2-3F(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-F1	
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	25W/30W/35W/40W/45W (Power Adjustable)
Rated Initial Lamp Lumen	--
Declared CCT	3000K,3500K,4000K,5000K,6500K (Color Tunable)

1.3 Test Specifications:

Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Electrical Parameters
Reference Standard	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 ºC ±1.2 ºC. 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	5917.7		Pass	>=375 lm/ft (-10%)	
Minimum Luminous Efficacy	138.04		Pass	Standard: >= 115(-3%)	Premium: >= 130(-3%)
Minimum Power Factor	0.9591		Pass	>= 0.9(-3%)	
Maximum THD %	12.62		Pass	<= 20(+5)	
Zonal Lumen Requirement	0-60 °	67.8	Pass	>=40(-3)	

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-12	**Test Ambient:**	25±1 ℃
Test Orientation	As intended	**Stabilization Time (min)**	60
Model Number	RLB2-3F(0%,3000 K)	**Total Operating Time (min)**	75

Electrical Measurement in Lithonia C2 25 MVOLT GEB10IS:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JDE241105-F1	120.0	60	0.3618	43.29	0.9971	6.33
	277.0	60	0.1608	42.73	0.9591	12.62

Photometric Measurement in Lithonia C2 25 MVOLT GEB10IS– Goniophotometer Method(Test Distance:26.000m):

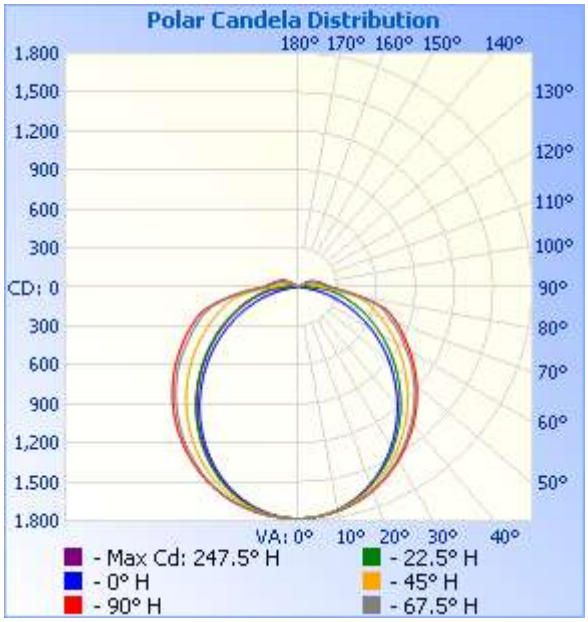
Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	5975.9	5917.7
Luminous Efficacy (lm/W)	138.04	138.49
Zonal lumens in the 0-60 °	67.8	--
Beam Angle (°)	118.5	--
Center Beam Candle Power (cd)	1782	--

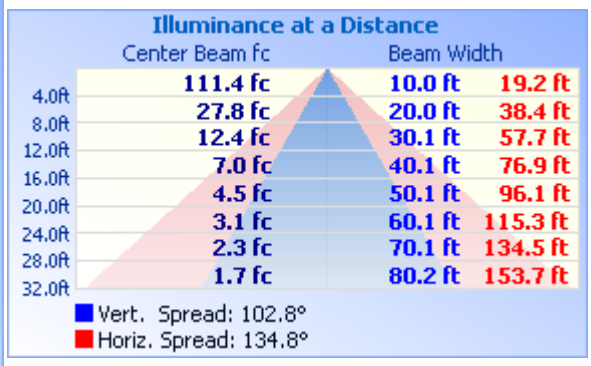
Zonal Lumen Tabulation

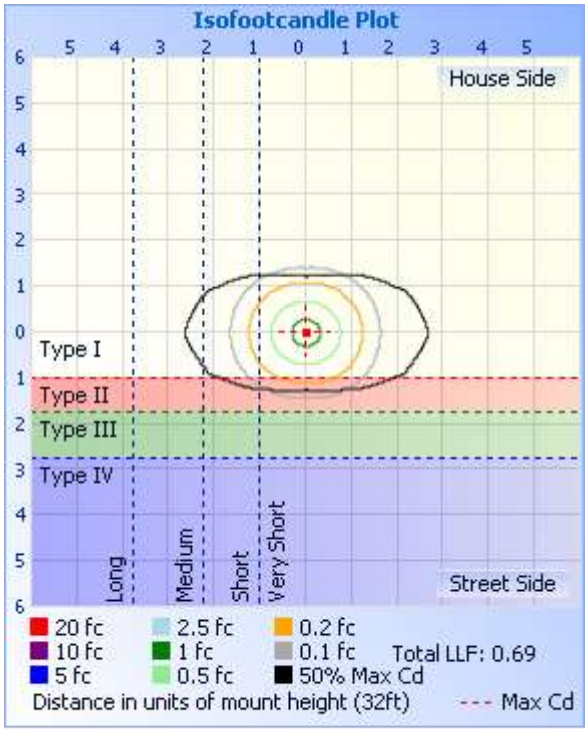
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,379.2	23.1%
0-40	2,258.1	37.8%
0-60	4,052.8	67.8%
60-90	1,625.8	27.2%
70-100	1,022.1	17.1%
90-120	278.4	4.7%
0-90	5,678.6	95%
90-180	296.8	5%
0-180	5,975.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	168.5	2.8%	90-100	141.2	2.4%
10-20	482.0	8.1%	100-110	90.1	1.5%
20-30	728.7	12.2%	110-120	47.1	0.8%
30-40	878.9	14.7%	120-130	10.5	0.2%
40-50	923.4	15.5%	130-140	2.3	0%
50-60	871.3	14.6%	140-150	2.0	0%
60-70	744.9	12.5%	150-160	1.6	0%
70-80	572.5	9.6%	160-170	1.4	0%
80-90	308.4	5.2%	170-180	0.5	0%

Photometric Data







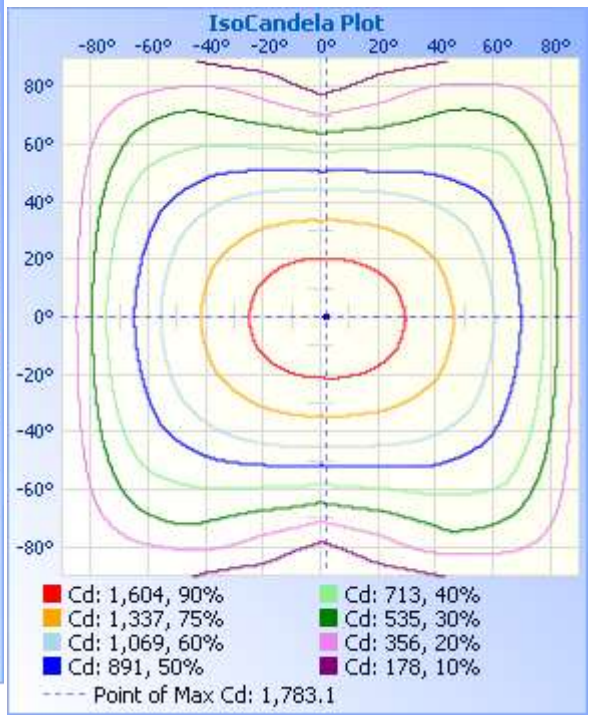


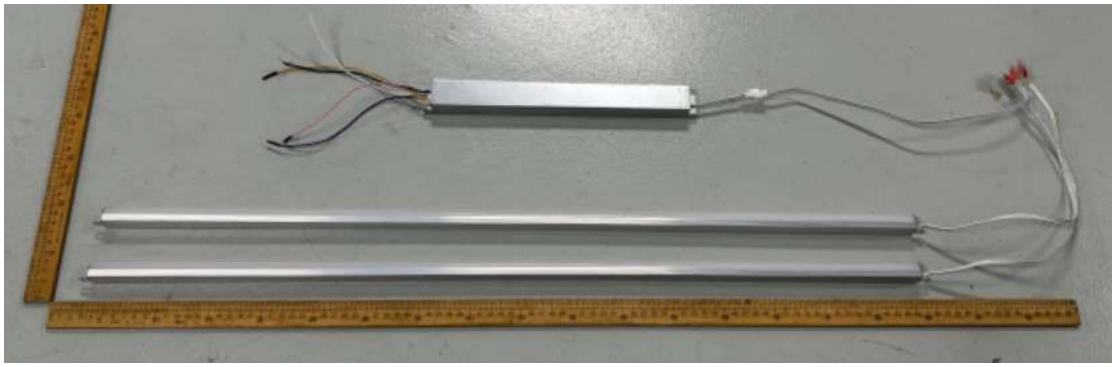
Table--1 UNIT: cd

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	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782			
5	1779	1778	1775	1773	1771	1770	1770	1772	1773	1772	1771	1771	1772	1774	1777	1779			
10	1766	1761	1753	1744	1739	1740	1744	1749	1752	1749	1745	1740	1740	1746	1755	1765			
15	1741	1732	1712	1695	1687	1690	1700	1711	1717	1712	1702	1691	1688	1699	1718	1737			
20	1704	1690	1658	1628	1615	1623	1642	1660	1670	1661	1643	1622	1616	1634	1665	1696			
25	1655	1635	1590	1545	1526	1541	1571	1598	1610	1599	1570	1540	1528	1552	1599	1643			
30	1594	1569	1509	1448	1424	1445	1488	1525	1540	1525	1484	1444	1425	1456	1520	1578			
35	1524	1493	1416	1339	1309	1338	1394	1442	1461	1441	1389	1337	1311	1348	1429	1503			
40	1445	1408	1314	1223	1186	1223	1294	1354	1375	1352	1286	1222	1189	1231	1330	1419			
45	1361	1317	1209	1100	1055	1103	1189	1261	1285	1257	1180	1102	1058	1109	1226	1330			
50	1271	1221	1100	973	921	980	1083	1164	1190	1159	1073	978	924	983	1119	1236			
55	1175	1123	991	845	784	858	977	1064	1092	1060	966	853	786	857	1010	1141			
60	1076	1022	883	719	647	737	873	958	992	958	862	730	648	734	904	1035			
65	978	921	775	599	510	621	768	862	896	861	758	612	511	615	797	930			
70	882	827	671	487	374	513	668	767	804	770	659	501	378	505	695	838			
75	786	732	576	383	244	408	576	677	714	679	569	399	249	400	599	744			
80	617	588	478	286	126	312	478	519	530	526	478	300	131	304	505	595			
85	428	404	323	195	36.0	216	307	348	361	351	310	208	38.2	212	342	412			
90	267	246	176	79.5	0.64	90.7	175	225	240	228	178	85.0	0.00	88.1	189	250			
95	229	207	143	53.1	0.59	63.2	144	193	207	194	142	55.7	0.00	60.2	154	212			
100	197	175	117	37.5	0.54	46.1	119	165	178	162	115	37.9	0.00	43.2	123	179			
105	168	147	96.6	10.2	1.30	18.4	98.6	140	153	140	93.2	10.7	0.52	14.8	101	151			
110	144	127	71.3	3.18	1.68	3.77	76.4	118	131	116	69.6	1.28	1.47	1.05	76.2	128			
115	117	97.1	31.5	3.27	2.37	3.26	41.1	93.4	107	90.9	34.9	1.78	2.52	1.57	36.2	98.6			
120	74.7	52.3	4.09	3.45	3.03	3.35	8.42	59.2	77.1	56.6	4.24	2.32	3.23	2.41	3.13	54.5			
125	28.4	12.0	4.04	3.68	3.42	3.72	3.78	19.3	34.8	17.3	3.17	2.82	3.77	3.22	1.48	12.9			
130	2.65	2.84	3.98	3.87	3.67	4.04	3.78	3.35	3.82	2.21	2.09	3.25	4.11	3.77	1.50	2.43			
135	2.41	2.86	3.92	4.28	3.62	4.34	3.78	3.32	1.26	1.61	2.00	3.28	4.17	4.03	1.54	1.78			
140	2.41	2.88	3.86	4.74	3.56	4.57	3.78	3.29	1.26	1.60	1.99	3.31	4.23	4.29	1.57	1.26			
145	2.47	2.91	3.81	4.84	3.56	4.82	3.82	3.26	1.29	1.67	2.13	3.34	4.29	4.67	1.79	1.55			
150	2.53	2.93	3.66	4.94	3.57	4.92	4.31	3.25	1.42	1.71	2.18	3.38	4.51	4.83	2.08	1.89			
155	2.59	3.19	4.28	5.23	4.09	5.25	4.73	3.25	1.51	1.75	2.24	3.41	5.24	4.82	2.52	1.93			
160	3.16	3.33	4.91	6.45	4.93	6.40	4.99	3.56	1.68	2.20	2.30	3.44	6.19	4.81	3.47	1.99			
165	3.24	3.69	5.33	7.21	4.90	7.63	5.36	3.98	3.04	3.05	3.77	5.23	8.07	4.81	7.15	4.10			
170	3.32	4.28	5.89	7.96	4.87	8.15	5.89	4.61	3.40	3.78	4.81	6.27	8.12	4.81	8.24	5.56			
175	3.46	4.47	6.09	8.17	4.83	8.31	5.96	4.93	3.59	3.92	4.60	6.19	8.16	4.81	8.36	5.98			
180	3.46	4.51	6.16	8.15	4.82	8.69	5.99	4.93	3.67	3.57	4.49	6.16	8.18	4.81	8.40	5.98			

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



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