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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):**

**RLB-3C [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:** 2024-11-22

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.

Project No.: JDE24105 Report No.: JDE241105-I

Report Format Number STP-QP019-101-B/0

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<b>1.1 Product Information:</b>		
Model Number	RLB-3C[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	RLB-3C(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-I1	
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

<b>1.2 Rated Values:</b>	
Rated Voltage / Frequency	120-277Vac, 50/60Hz
Nominal Power	15W/20W/25W (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"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. 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 C78.377-2015 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	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	3694.6		Pass	≥375 lm/ft (-10%)	
Minimum Luminous Efficacy	154.44		Pass	Standard: ≥115(-3%)	Premium: ≥130(-3%)
Minimum Power Factor	0.9290		Pass	≥0.9(-3%)	
Maximum THD %	12.40		Pass	≤20(+5)	
Zonal Lumen Requirement	0-60°	80.9	Pass	≥40(-3)	



**2.2 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2024-11-12	<b>Test Ambient:</b>	25 ± 1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	RLB-3C(0%,300 0K)	<b>Total Operating Time (min)</b>	75

**Electrical Measurement in Lithonia C2 25 MVOLT GEB10IS:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JDE241105-I	120.0	60	0.2010	24.00	0.9951	6.51
1	277.2	60	0.0929	23.92	0.9290	12.40

**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)	3738.7	3694.6
Luminous Efficacy (lm/W)	155.77	154.44
Zonal lumens in the 0-60 °	80.9	--
Beam Angle ( °)	109.1	--
Center Beam Candle Power (cd)	1310	--

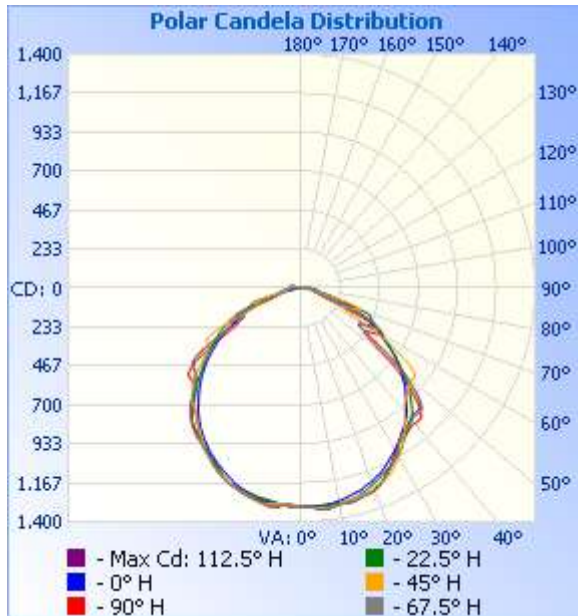


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,042.7	27.9%
0-40	1,713.2	45.8%
0-60	3,025.3	80.9%
60-90	662.6	17.7%
70-100	291.0	7.8%
90-120	45.4	1.2%
0-90	3,687.9	98.7%
90-180	50.5	1.3%
0-180	3,738.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	125.1	3.3%	90-100	39.5	1.1%
10-20	363.3	9.7%	100-110	5.4	0.1%
20-30	554.4	14.8%	110-120	0.5	0%
30-40	670.4	17.9%	120-130	0.9	0%
40-50	708.9	19.0%	130-140	1.1	0%
50-60	603.3	16.1%	140-150	1.0	0%
60-70	411.1	11.0%	150-160	0.9	0%
70-80	179.0	4.8%	160-170	0.8	0%
80-90	72.5	1.9%	170-180	0.3	0%

**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
4.0ft	81.9 fc	11.3 ft	11.0 ft
8.0ft	20.5 fc	22.6 ft	22.0 ft
12.0ft	9.1 fc	33.9 ft	33.0 ft
16.0ft	5.1 fc	45.2 ft	44.0 ft
20.0ft	3.3 fc	56.5 ft	55.0 ft
24.0ft	2.3 fc	67.8 ft	66.0 ft
28.0ft	1.7 fc	79.1 ft	77.0 ft
32.0ft	1.3 fc	90.5 ft	88.0 ft

■ Vert. Spread: 109.4°  
■ Horiz. Spread: 107.9°

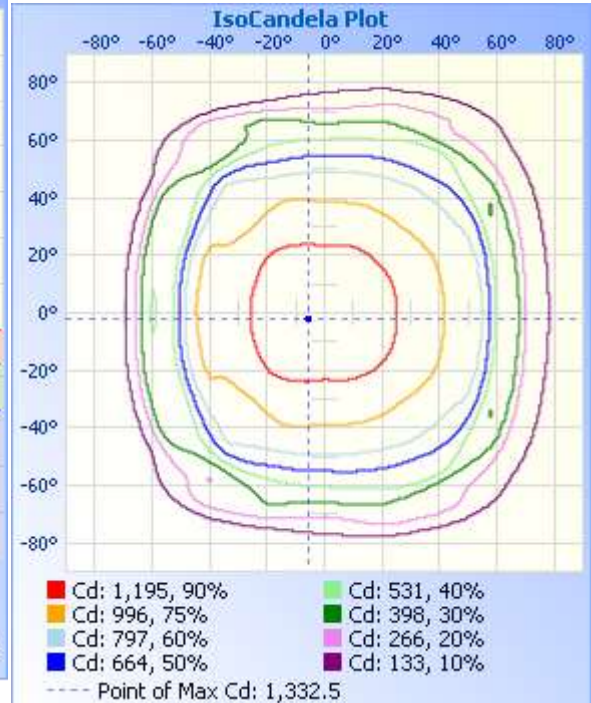
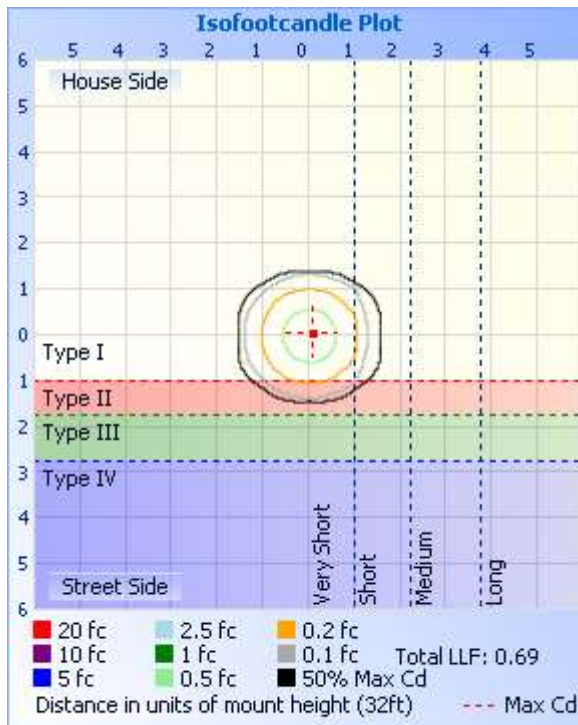




Table--1 UNIT: °C

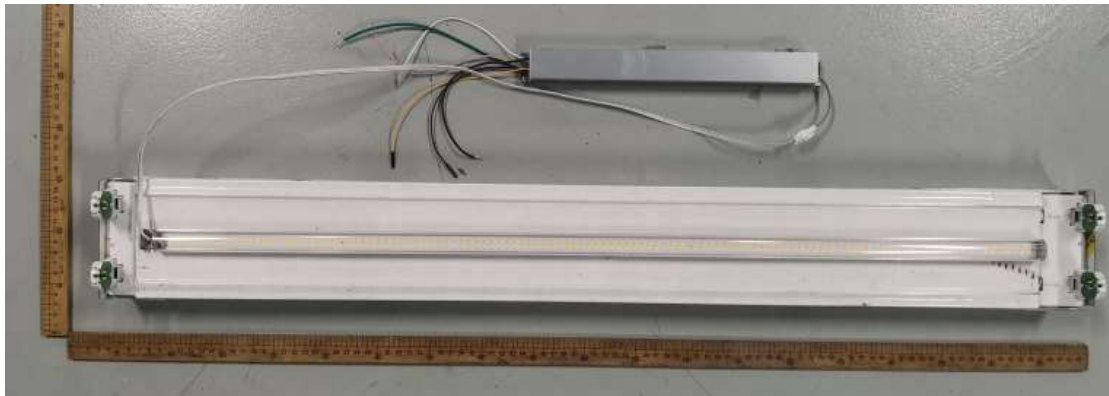
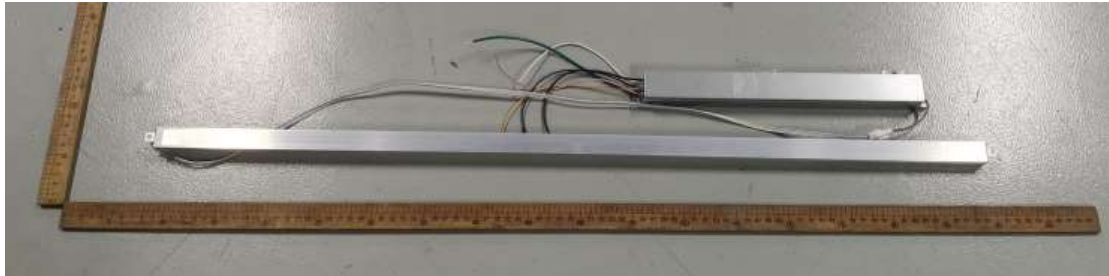
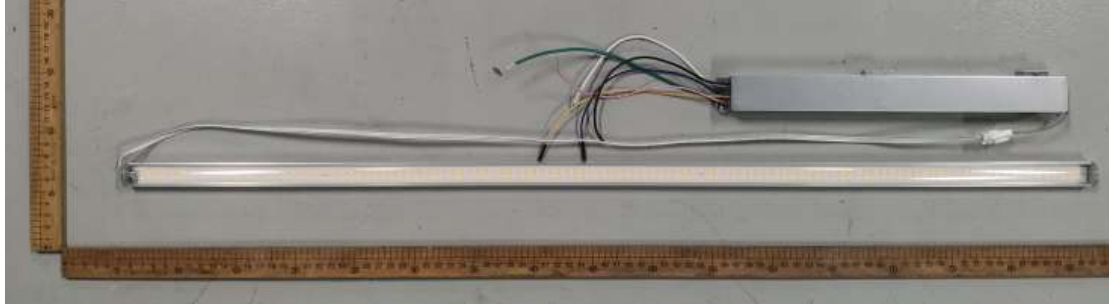
γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310	1310			
5	1307	1304	1296	1305	1307	1309	1322	1328	1327	1329	1317	1314	1305	1301	1299	1303			
10	1303	1311	1309	1285	1293	1309	1316	1316	1315	1315	1317	1309	1291	1281	1315	1313			
15	1279	1284	1279	1271	1266	1292	1295	1309	1308	1310	1290	1293	1263	1272	1280	1286			
20	1247	1248	1246	1255	1232	1250	1270	1287	1285	1285	1266	1250	1223	1249	1249	1252			
25	1190	1201	1197	1201	1182	1203	1239	1223	1213	1222	1229	1197	1171	1186	1202	1206			
30	1134	1136	1143	1135	1120	1155	1167	1141	1127	1140	1156	1147	1113	1132	1142	1141			
35	1090	1077	1060	1071	1053	1084	1073	1059	1076	1052	1063	1085	1046	1065	1056	1085			
40	1024	1024	986	993	978	1024	963	1031	1057	1020	958	1009	963	989	986	1032			
45	910	927	919	910	882	922	901	1021	997	1007	883	916	869	904	929	927			
50	856	826	843	811	781	796	863	807	722	812	841	793	767	793	842	828			
55	790	798	715	695	668	662	773	475	461	486	771	662	653	689	710	804			
60	470	571	627	582	552	542	476	464	554	436	496	520	533	583	653	549			
65	477	392	533	483	423	466	268	444	342	453	263	432	407	478	482	405			
70	230	333	270	351	297	365	375	136	124	148	326	355	280	338	270	312			
75	144	145	252	259	176	131	132	87.6	87.1	87.0	159	140	162	249	231	142			
80	121	119	114	109	76.2	93.4	63.8	69.3	75.1	70.7	61.6	76.4	66.8	111	104	117			
85	85.1	86.7	85.0	78.5	16.9	67.6	53.6	64.0	67.0	64.1	52.4	59.9	13.1	77.0	85.2	84.9			
90	71.5	71.0	67.0	47.0	0.34	34.2	49.9	52.7	53.5	53.1	48.2	30.4	0.00	49.8	66.7	70.2			
95	66.8	65.6	62.8	28.7	0.00	11.8	37.7	45.7	48.1	44.4	32.9	2.95	0.00	28.4	61.5	65.6			
100	65.6	60.2	29.0	0.83	0.00	0.61	5.10	20.0	25.5	17.7	2.33	0.00	0.00	0.00	24.0	59.3			
105	8.88	5.33	1.21	0.51	0.11	0.52	1.45	2.44	1.27	0.32	0.00	0.00	0.00	0.00	0.00	4.28			
110	0.33	0.11	0.80	0.75	0.86	0.43	1.09	0.11	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00			
115	0.00	0.00	0.51	1.49	1.39	1.28	0.72	0.00	0.00	0.00	0.00	0.64	2.15	0.00	0.00	0.00			
120	0.00	0.00	0.64	2.03	1.82	1.81	0.43	0.00	0.00	0.00	0.10	1.17	4.28	0.43	0.11	0.00			
125	0.00	0.03	1.27	2.87	2.03	2.48	1.07	0.00	0.00	0.04	0.32	1.49	4.98	0.64	0.00	0.11			
130	0.00	0.16	1.71	3.32	2.36	2.63	1.51	0.21	0.00	0.23	0.43	1.50	5.08	0.79	0.43	0.00			
135	0.00	0.54	1.75	3.39	2.39	2.77	1.55	0.39	0.00	0.30	0.50	1.52	5.17	0.93	0.53	0.11			
140	0.00	0.86	1.79	3.42	2.43	2.88	1.60	0.43	0.11	0.37	0.53	1.54	5.14	1.17	0.74	0.21			
145	0.34	1.31	1.90	3.45	2.46	2.88	1.82	0.75	0.32	0.45	0.57	1.55	4.78	1.39	1.07	0.75			
150	0.48	1.55	2.06	3.48	2.49	3.05	2.04	1.18	0.46	0.52	0.60	1.57	4.39	2.03	1.18	0.80			
155	0.86	1.72	2.66	3.51	2.53	3.21	2.25	1.43	0.59	0.71	0.63	1.59	4.01	3.21	1.24	0.89			
160	1.25	1.82	3.28	3.98	2.56	3.31	3.02	1.61	0.65	0.92	1.21	2.17	4.06	4.48	1.63	1.07			
165	1.50	1.90	3.34	4.50	3.32	3.42	3.12	1.82	1.53	1.61	2.34	3.20	5.14	5.06	3.21	2.68			
170	1.66	2.25	3.37	4.94	4.14	3.48	3.16	2.08	1.66	1.78	2.60	3.34	5.09	5.17	3.57	3.15			
175	1.72	2.32	3.39	5.01	4.82	3.59	3.20	2.20	1.78	1.73	2.65	3.39	5.05	5.12	3.62	3.19			
180	1.72	2.35	3.40	5.01	4.82	3.63	3.21	2.25	1.72	1.71	2.34	3.41	5.03	4.80	3.64	3.21			



<b>3. Test Equipment</b>
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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 \*\*\*\*\***