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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-2C[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	RLB-2C[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-2C(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-A1	
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	10W/15W/20W (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	2951.1		Pass	≥375 lm/ft (-10%)	
Minimum Luminous Efficacy	150.26		Pass	Standard: ≥115(-3%)	Premium: ≥130(-3%)
Minimum Power Factor	0.9369		Pass	≥0.9(-3%)	
Maximum THD %	12.14		Pass	≤20(+5)	
Zonal Lumen Requirement	0-60°	81.3	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	RLB-2C(0%,300 0K)	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-	120.1	60	0.1649	19.69	0.9945	8.35
A1	277.1	60	0.0757	19.64	0.9369	12.14

**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)	3009.2	2951.1
Luminous Efficacy (lm/W)	152.83	150.26
Zonal lumens in the 0-60 °	81.3	--
Beam Angle (°)	108.9	--
Center Beam Candle Power (cd)	1083	--

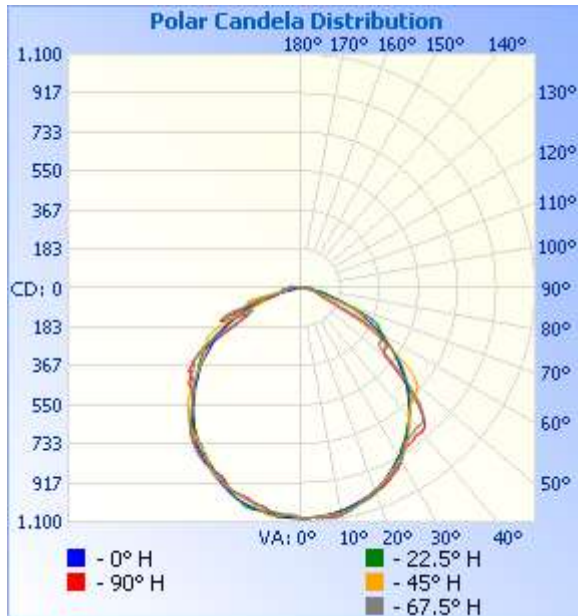


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	843.7	28%
0-40	1,387.7	46.1%
0-60	2,446.4	81.3%
60-90	524.2	17.4%
70-100	236.6	7.9%
90-120	35.0	1.2%
0-90	2,970.6	98.7%
90-180	38.3	1.3%
0-180	3,008.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	102.5	3.4%	90-100	31.1	1%
10-20	294.2	9.8%	100-110	3.6	0.1%
20-30	447.0	14.9%	110-120	0.2	0%
30-40	543.9	18.1%	120-130	0.5	0%
40-50	567.3	18.9%	130-140	0.6	0%
50-60	491.4	16.3%	140-150	0.7	0%
60-70	318.7	10.6%	150-160	0.7	0%
70-80	148.1	4.9%	160-170	0.6	0%
80-90	57.4	1.9%	170-180	0.3	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
4.0ft	67.7 fc	11.2 ft	11.0 ft
8.0ft	16.9 fc	22.5 ft	22.0 ft
12.0ft	7.5 fc	33.7 ft	32.9 ft
16.0ft	4.2 fc	45.0 ft	43.9 ft
20.0ft	2.7 fc	56.2 ft	54.9 ft
24.0ft	1.9 fc	67.5 ft	65.9 ft
28.0ft	1.4 fc	78.7 ft	76.9 ft
32.0ft	1.1 fc	89.9 ft	87.8 ft

■ Vert. Spread: 109.1°
■ Horiz. Spread: 107.8°

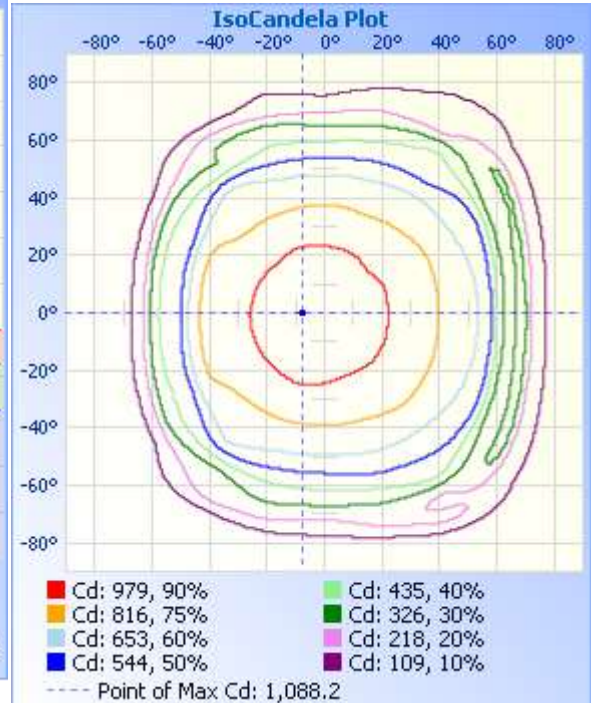
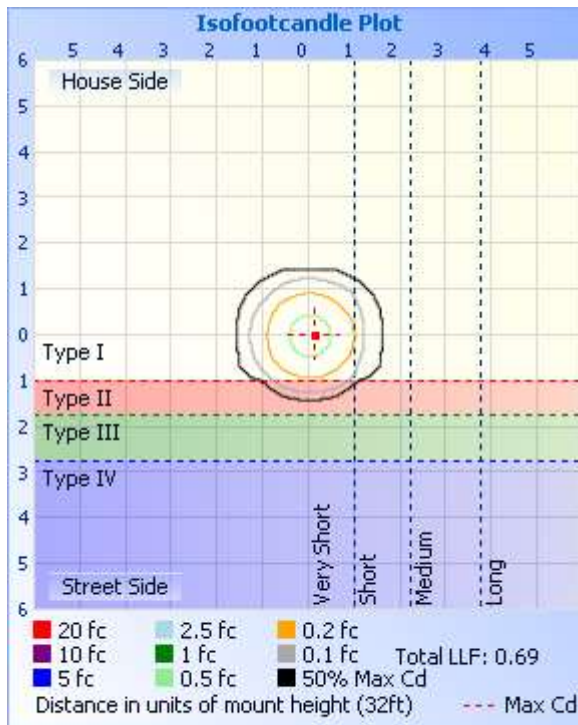




Table--1

UNIT: cd

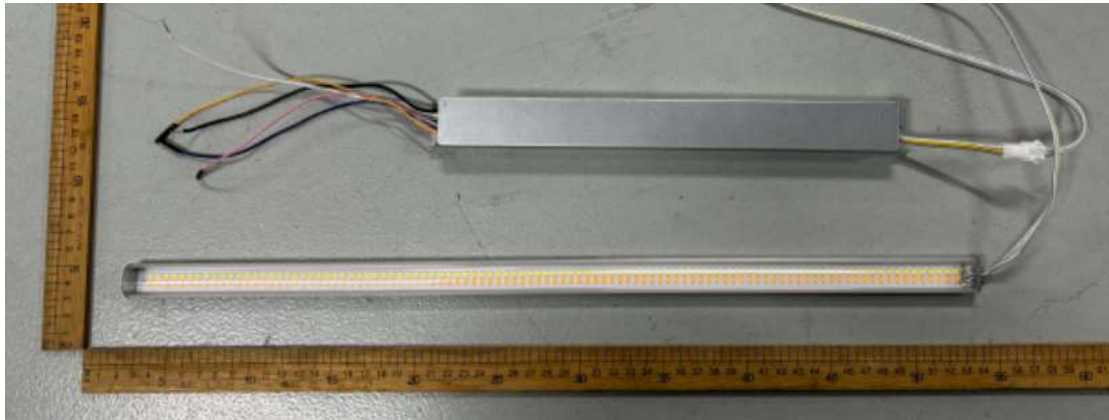
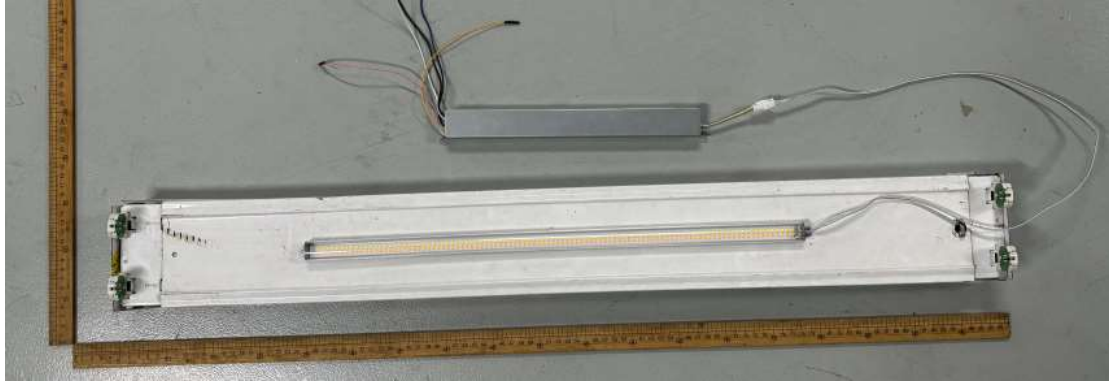
C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083			
5	1083	1080	1067	1066	1079	1077	1081	1082	1086	1085	1081	1079	1081	1067	1064	1064			
10	1043	1047	1064	1051	1064	1066	1077	1080	1083	1085	1079	1071	1067	1064	1064	1064			
15	1018	1019	1016	1047	1041	1051	1055	1049	1050	1054	1060	1053	1048	1057	1028	1021			
20	1002	999	984	1009	1012	1022	1011	1017	1021	1020	1023	1031	1014	1006	995	1002			
25	959	942	952	952	967	978	971	983	991	992	983	991	972	953	968	952			
30	934	915	900	898	916	914	932	935	939	946	935	939	924	909	900	926			
35	884	879	847	839	859	854	872	870	891	870	878	877	866	858	862	889			
40	802	813	802	777	786	790	785	850	882	845	809	803	795	797	824	817			
45	722	721	739	711	710	718	742	798	779	821	732	723	723	714	757	723			
50	694	655	646	619	623	632	713	589	548	638	699	650	636	652	652	671			
55	631	606	544	544	533	531	554	447	486	438	623	555	551	580	565	619			
60	402	513	493	468	434	442	340	399	384	419	407	452	459	493	520	478			
65	291	258	422	370	329	387	322	184	144	238	288	352	356	371	429	253			
70	326	357	206	251	224	223	181	89.2	92.5	93.5	248	294	252	285	197	383			
75	125	131	188	190	127	124	66.3	71.5	74.5	72.8	80.4	137	144	227	266	130			
80	87.2	86.3	108	84.9	49.8	80.7	50.3	54.2	56.4	56.3	49.0	80.8	61.9	92.0	96.3	87.2			
85	66.4	68.7	65.3	60.2	10.3	30.6	39.7	49.4	53.7	48.3	40.2	37.1	14.7	87.1	68.6	69.0			
90	57.2	55.6	54.6	35.4	0.01	27.9	42.0	42.0	42.6	43.3	40.2	23.0	0.00	42.5	56.2	56.4			
95	56.5	53.9	48.6	15.9	0.00	7.02	26.5	32.5	33.4	31.7	25.8	5.15	0.00	24.6	50.1	54.7			
100	47.1	39.7	13.3	0.00	0.00	0.00	4.34	19.1	24.5	19.0	2.75	0.00	0.00	0.00	18.4	41.9			
105	9.34	3.77	0.11	0.00	0.00	0.00	0.70	2.48	1.24	0.61	0.00	0.00	0.00	0.00	0.00	3.17			
110	0.42	0.11	0.00	0.00	0.00	0.00	0.61	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.41	1.02	0.82	0.52	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.00	0.00	0.16	1.26	1.41	1.44	0.43	0.41	0.00	0.00	0.00	0.41	0.31	0.00	0.00	0.00			
125	0.00	0.00	0.47	1.49	1.63	1.52	1.13	0.36	0.00	0.00	0.10	0.67	0.61	0.10	0.00	0.00			
130	0.00	0.10	1.02	1.53	1.72	1.59	1.30	0.31	0.00	0.21	0.35	0.96	0.91	0.30	0.21	0.00			
135	0.00	0.51	1.28	1.81	1.65	1.66	1.38	0.82	0.00	0.26	0.41	1.22	0.96	0.43	0.44	0.10			
140	0.21	0.83	1.36	1.99	1.53	1.73	1.47	1.08	0.13	0.34	0.46	1.42	1.02	0.71	0.57	0.11			
145	0.31	1.21	1.48	2.17	1.56	1.73	1.54	1.39	0.32	0.41	0.53	1.42	1.07	1.22	0.66	0.47			
150	0.42	1.45	1.69	2.34	1.60	2.04	1.95	1.68	0.36	0.48	0.60	1.42	1.12	1.74	0.88	0.61			
155	1.03	1.59	2.04	2.77	1.65	2.86	1.95	1.74	0.40	0.56	0.60	1.43	1.43	1.76	0.91	0.72			
160	1.32	1.74	2.65	3.05	1.72	3.33	2.66	1.79	0.59	0.72	0.61	1.43	2.14	1.77	1.03	0.90			
165	1.49	1.89	2.87	3.36	1.77	3.34	2.87	2.13	1.38	1.54	2.04	2.75	3.68	1.79	2.88	2.47			
170	1.61	2.25	2.98	3.63	1.83	3.35	2.91	2.60	1.54	1.58	2.17	3.08	3.72	1.81	3.69	3.08			
175	1.64	2.36	3.06	3.77	1.83	3.37	2.96	2.74	1.70	1.62	2.29	3.14	3.76	1.83	3.52	3.08			
180	1.65	2.36	3.06	3.77	1.84	3.36	2.98	2.77	1.76	1.64	2.35	3.26	3.77	1.84	3.49	3.08			



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 *******