

LM-79-08 Test Report
For
RAB LIGHTING INC
(Brand Name: N/A)

170 Ludlow Ave, PO BOX 970, Northvale, NJ 07647-2305 USA

Model name(s): DLC0022(C8R24940UNVW)

Report Type: Testing and Report According to IES LM-79-2008

**Type of
Luminaire:** Downlights

Report Date: 2019-10-10

Prepared By:

Test & Report By:



Engineer: Sun Fangfang

Review By:



Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 50/60 Hz
Nominal Power	24W
Rated Initial Lamp Lumen	2000 lm
Declared CCT	4000K

Note: The tests are conducted under the worst conditions.

1.2 Test Specifications:

Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric 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

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25°C ±1°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°vertical intervals and 22.5°horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25°C ±1°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.</p>
<p>3) Electrical Measurements:</p> <p>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°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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2019-10-08	Test Ambient:	25.6 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLC0022(C8R24940UNVW)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
1909180035	120.0	60	0.183	21.80	0.995

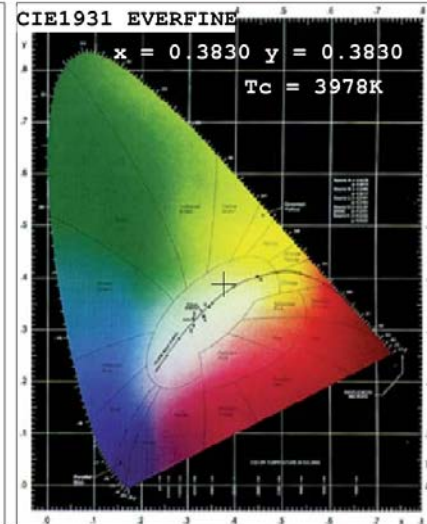
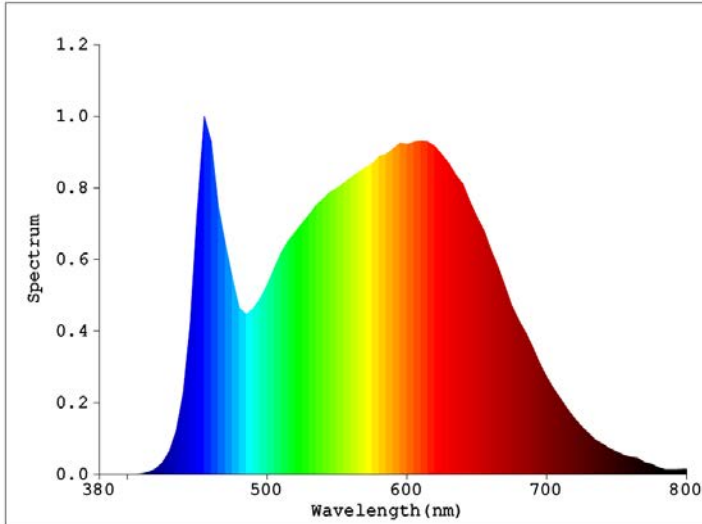
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	92	R9	57
Frequency (Hz)	60	R2	97	R10	91
CCT (K)	3978	R3	98	R11	88
Duv	0.00218	R4	88	R12	68
Chromaticity (x, y)	x=0.3830 y=0.3830	R5	90	R13	93
Chromaticity (u', v')	u'=0.2243 v'=0.5047	R6	94	R14	99
Color Rendering Index (CRI)	91.3	R7	91	R15	88
R9	57	R8	82	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2079.3
Luminous Efficacy (lm/W)	95.38
Beam Angle (°)	89.4
Center Beam Candle Power (cd)	997.2

Spectral Power Distribution & Chromaticity Diagram

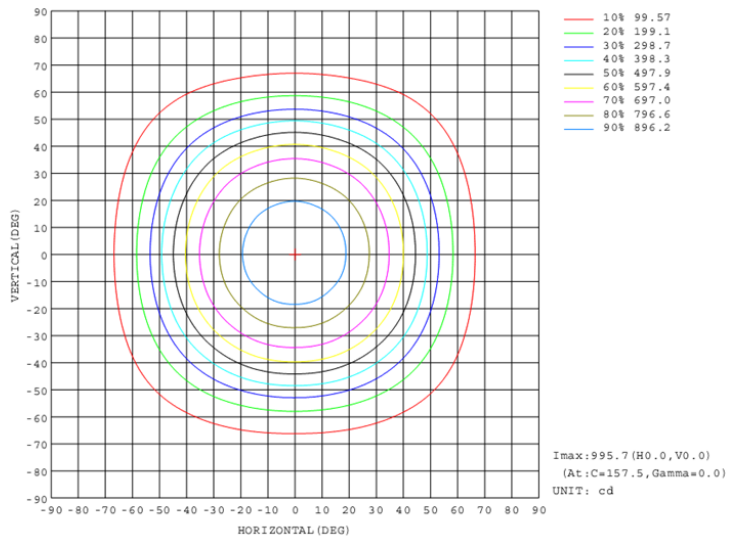
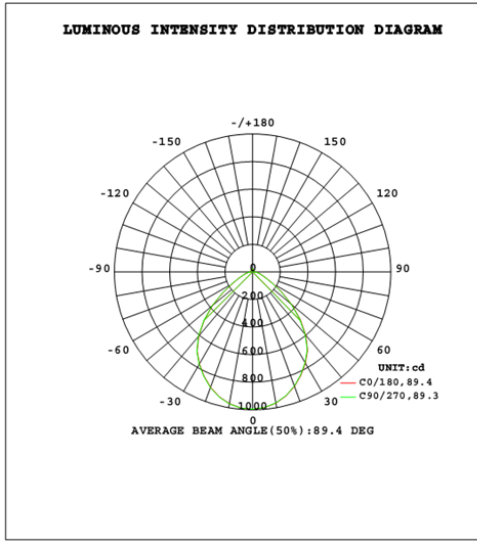


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	739.1	35.5%
0-40	1171.6	56.3%
0-60	1786.4	85.9%
60-90	202.3	9.7%
70-100	99.3	4.8%
90-120	37.5	1.8%
0-90	1988.7	95.6%
90-180	90.6	4.4%
0-180	2079.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	93.8	4.5%	90-100	12.5	0.6%
10-20	263.0	12.6%	100-110	12.4	0.6%
20-30	382.4	18.4%	110-120	12.6	0.6%
30-40	432.5	20.8%	120-130	12.7	0.6%
40-50	377.2	18.1%	130-140	12.3	0.6%
50-60	237.5	11.4%	140-150	11.0	0.5%
60-70	115.5	5.6%	150-160	9.0	0.4%
70-80	60.4	2.9%	160-170	6.0	0.3%
80-90	26.4	1.3%	170-180	2.1	0.1%

Photometric Data



Flux out: 1374 lm

Height	Havg, Hmax	Angle: 89.32deg	Diameter
1ft	437.4, 997.2fc		1.976ft
2ft	109.3, 249.3fc		3.953ft
3ft	48.60, 110.8fc		5.929ft
4ft	27.34, 62.32fc		7.906ft
5ft	17.49, 39.89fc		9.882ft
6ft	12.15, 27.70fc		11.86ft
7ft	8.926, 20.35fc		13.83ft
8ft	6.834, 15.58fc		15.81ft
9ft	5.400, 12.31fc		17.79ft
10ft	4.374, 9.972fc		19.76ft

Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

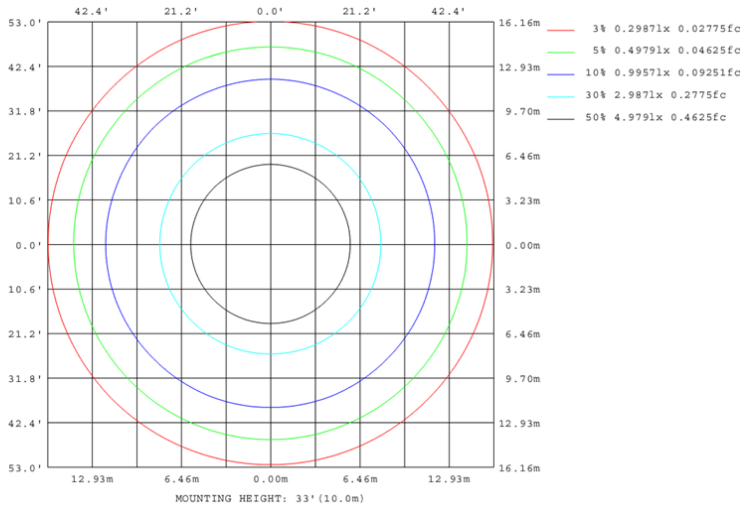
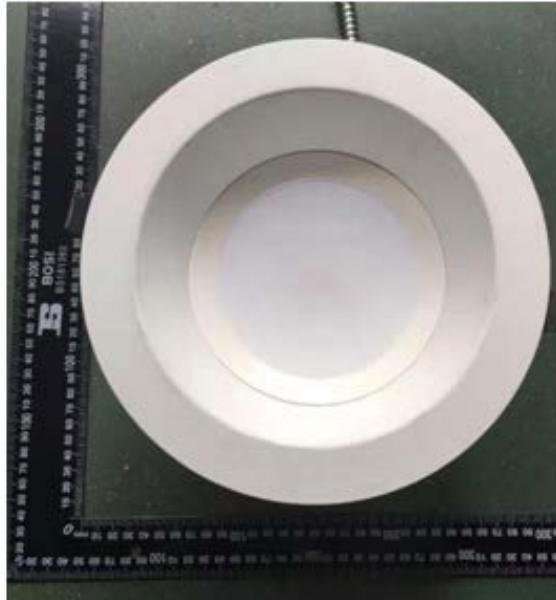
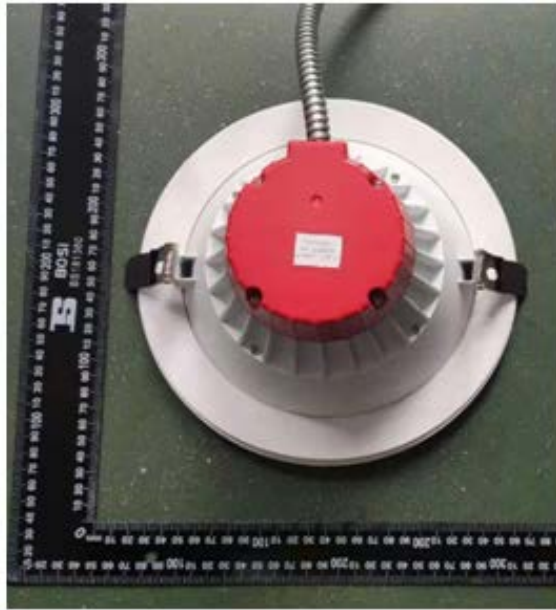


Table--1

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	996	996	996	996	996	996	996	997	996	996	996	996	996	996	996	997			
5	988	988	987	987	987	988	988	990	990	990	990	990	991	990	990	990			
10	966	966	965	965	965	967	967	970	970	970	972	971	972	970	970	969			
15	932	931	929	930	929	932	932	936	937	937	939	939	939	937	937	934			
20	884	884	881	882	881	884	885	889	890	891	894	893	893	891	891	888			
25	827	827	823	824	823	826	827	832	833	834	837	836	836	833	834	830			
30	764	763	760	761	759	763	765	769	771	771	775	773	774	771	771	767			
35	693	693	689	691	689	693	694	700	701	702	706	704	705	701	701	697			
40	597	598	592	594	592	597	597	604	608	608	613	610	612	607	607	602			
45	486	486	481	483	480	485	485	493	496	496	501	499	501	496	496	490			
50	369	370	365	366	364	368	369	376	380	379	384	382	385	380	380	374			
55	258	255	254	253	254	254	257	259	263	266	267	268	268	267	264	262			
60	169	166	163	165	163	166	168	169	171	174	174	175	174	174	172	171			
65	110	110	108	109	108	110	109	112	112	112	114	113	114	112	113	111			
70	74.5	74.7	73.5	74.0	73.4	74.4	74.2	75.6	76.3	76.0	77.2	76.6	77.4	76.2	76.4	75.1			
75	56.6	56.8	56.1	56.4	56.0	56.6	56.5	57.1	57.4	57.3	57.9	57.7	57.9	57.4	57.7	57.2			
80	38.2	38.4	37.6	38.0	37.6	38.3	38.2	38.8	40.1	40.2	41.3	41.0	41.4	40.7	40.8	39.9			
85	21.3	21.5	21.1	21.5	21.1	21.7	21.5	21.8	23.6	23.8	24.9	24.9	25.2	24.6	24.5	23.5			
90	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	12.4	12.4	12.4	12.4	12.5	12.4	12.4	12.4			
95	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	12.2	12.3	12.3	12.3	12.3	12.3	12.3	12.3			
100	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4			
105	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7			
110	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.3			
115	11.5	11.5	11.6	11.6	11.6	11.6	11.6	11.5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.9			
120	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.6			
125	13.1	13.1	13.1	13.1	13.2	13.1	13.2	13.1	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.4			
130	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	16.1	16.1	16.0	16.1	16.1	16.1	16.1	16.2			
135	14.8	14.8	14.9	14.9	14.9	14.9	14.9	14.9	16.9	16.9	16.8	16.9	16.9	16.9	16.9	17.0			
140	15.7	15.7	15.8	15.8	15.8	15.8	15.8	15.8	17.6	17.7	17.6	17.7	17.7	17.7	17.7	17.8			
145	16.6	16.7	16.7	16.7	16.8	16.7	16.7	16.7	18.4	18.4	18.4	18.4	18.4	18.5	18.5	18.6			
150	17.6	17.6	17.7	17.7	17.7	17.7	17.7	17.7	19.2	19.2	19.2	19.2	19.2	19.2	19.3	19.3			
155	18.6	18.7	18.7	18.7	18.7	18.7	18.8	18.7	20.0	20.1	20.0	20.1	20.0	20.1	20.1	20.2			
160	19.7	19.7	19.7	19.7	19.8	19.7	19.8	19.7	20.9	20.9	20.8	20.9	20.9	20.9	20.9	21.0			
165	20.7	20.7	20.8	20.7	20.8	20.8	20.8	20.8	21.6	21.7	21.6	21.6	21.6	21.7	21.7	21.7			
170	21.6	21.6	21.7	21.7	21.7	21.7	21.7	21.7	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.4			
175	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.8			
180	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8			

3. Product Photo



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