# 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): DLR0040(R6R8827120WS)

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

**Type of Luminaire:** Downlights

**Report Date:** 2019-09-30

**Prepared By:** 

Test & Report By:

Engineer: Sun Fangfang

Review By:

Manager: Huang Qichong

1.1 Rated Values:							
Rated Voltage / Frequency	120Vac, 50/60 Hz						
Nominal Power	8.0W						
Rated Initial Lamp Lumen	850 lm						
Declared CCT	2700K						

Report No: 20190930116

### **1.2 Test Specifications:**

1.2 Test Specifications.	
	1. Total Luminous Flux
	2. Luminous Distribution Intensity
	3. Luminous Efficacy
Test item	4. Correlated Color Temperature
	5. Color Rendering Index
	6. Chromaticity Coordinate
	7. Electrical Parameters
	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
Reference Standard	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**

#### 1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}C \pm 1^{\circ}C$ , 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.

#### 2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}C \pm 1^{\circ}C$ . 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.

#### 3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or spherespectroradiometer system. The ambient temperature surrounding the sample was maintained at 25°C  $\pm$ 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.

### 2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2019-09-28	Test Ambient:	25.6 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLR0040(R6R8827120WS)		

### **Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
1908250024	120.0	60	0.067	7.85	0.976

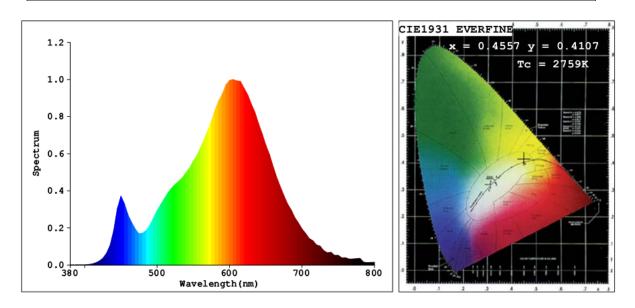
### **Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices								
Test Voltage (V)	120.0	R1	82	R9	12					
Frequency (Hz)	60	R2	92	R10	82					
CCT (K)	2759	R3	96	R11	81					
Duv	0.00038	R4	82	R12	77					
Chromaticity (x, y)	x=0.4557 y=0.4107	R5	82	R13	84					
Chromaticity (u', v')	u'=0.2598 v'=0.5268	R6	91	R14	99					
Color Rendering Index (CRI)	83.5	R7	83	R15	74					
R9	12	R8	60							

#### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	862.41
Luminous Efficacy (lm/W)	109.86
Beam Angle (°)	97.5
Center Beam Candle Power (cd)	361.2

## Spectral Power Distribution & Chromaticity Diagram

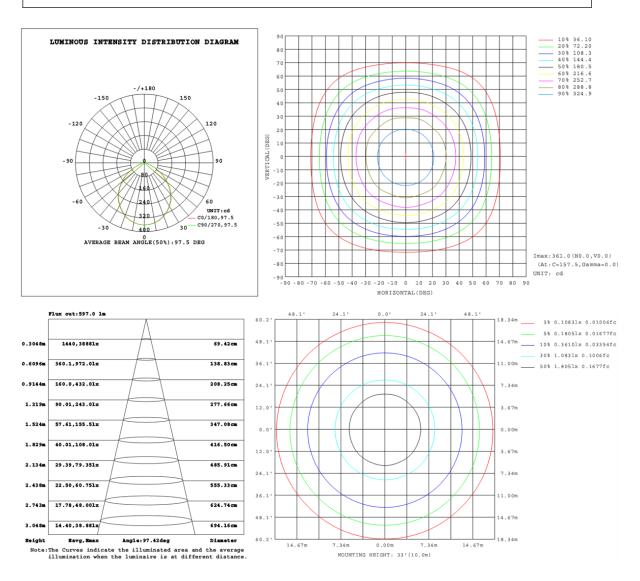


### **Zonal Lumen Tabulation**

Zonal Lumen Summary									
Zone	Lumens	% Luminaire							
0-30	273.3	31.7%							
0-40	438.7	50.9%							
0-60	719.3	83.4%							
60-90	105.4	12.2%							
70-100	42.5	4.9%							
90-120	16.3	1.9%							
0-90	824.7	95.6%							
90-180	37.7	4.4%							
0-180	862.4	100.0%							

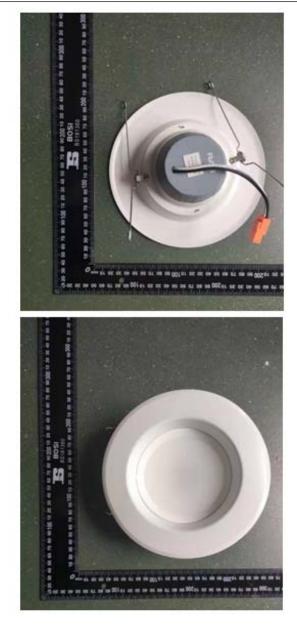
Lumens Per Zone											
Zone	Lumens	% Total	Zone	Lumens	% Total						
0-10	34.1	3.9%	90-100	5.5	0.6%						
10-20	96.5	11.2%	100-110	5.4	0.6%						
20-30	142.7	16.5%	110-120	5.4	0.6%						
30-40	165.4	19.2%	120-130	5.3	0.6%						
40-50	158.3	18.4%	130-140	5.0	0.6%						
50-60	122.3	14.2%	140-150	4.4	0.5%						
60-70	68.4	7.9%	150-160	3.6	0.4%						
70-80	26.0	3.0%	160-170	2.4	0.3%						
80-90	11.0	1.3%	170-180	0.8	0.1%						

#### **Photometric Data**



v (DBG)   0   22.5   45   67.5   90   112.5   135   157.5   160   202.5   22.5   22.7   27   292.5   315   317.5   317.5     0   361	Table1																UNI	r: cd	
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75 22.1 23.0 23.2 24.0 23.3 24.1 23.3 22.9 22.4 21.4 <	65	67.0	70.0	70.9	73.2	72.8	73.1	70.9	70.0	68.7	65.7	64.7	62.7	63.2	62.9	65.0	66.0		
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85   9.46   10.1   10.4   10.8   10.4   10.2   10.3   9.76   9.53   9.10   9.00   9.42   9.59   1   1     90   4.92   4.95   5.01   5.18   5.17   5.21   5.02   4.95   5.35   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.35   5.36   5.35   5.36	75	22.1	23.0	23.2	24.0	23.9	24.1	23.3	22.9	22.4	21.4	21.1	20.5	20.8	20.8	21.6	21.8		
90   4.92   4.95   5.01   5.11   5.21   5.02   4.95   5.33   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.35   5.36   5.37   5.35   5.36   5.35   5.36   5.35   5.36   5.35   5.36   5	80	15.0	15.4	15.6	15.8	15.7	15.7	15.4	15.4	15.3	15.0	14.8	14.5	14.5	14.4	14.7	14.8		
95 4.72 4.71 4.74 4.73 4.74 4.71 5.31 5.33 5.32 5.33 5.32 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.40 5.40 5.40 5.41 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.30 5.40 5.40 5.40 5.40 <	85	9.46	10.1	10.4	10.8	10.8	10.8	10.4	10.2	10.3	9.76	9.53	9.10	9.09	9.00	9.42	9.59		
100 4.66 4.64 4.66 4.64 4.63 5.35 5.36 5.37 5.38 5.38 5.34 5.45	90	4.92	4.95	5.01	5.18	5.17	5.21	5.02	4.95	5.35	5.35	5.35	5.36	5.35	5.34	5.34	5.36		
105 4.68 4.67 4.67 4.66 4.66 4.65 5.46 5.47 5.48 5.48 5.47 5.48 5.48 5.47 5.48 5.48 5.47 5.48 5.48 5.47 5.48 5.48 5.48 5.47 5.48 5.43 5.41 5.48	95	4.72	4.71	4.74	4.74	4.74	4.73	4.74	4.71	5.31	5.33	5.32	5.34	5.33	5.32	5.30	5.32		
110 4.78 4.78 4.75 4.76 4.75 4.75 4.74 4.75 5.63 5.66 5.65 5.65 5.61 5.61 6.61 6.61 6.61 6.61 6.61 6.61 6.61 6.61 6.61 6.61 5.63 5.64 5.61	100	4.66	4.64	4.66	4.65	4.66	4.64	4.64	4.63	5.35	5.36	5.37	5.37	5.38	5.36	5.34	5.34		
115 4.99 4.99 4.91 4.91 4.99 4.91 5.88 5.86 5.86 5.85 5.84 5.82 5.81 1 1 1 1 1 1 1 5.18 5.17 5.15 5.14 5.13 5.13 5.12 5.13 6.05 6.07 6.08 6.09 6.08 6.07 6.05 6.04 1 1 1 1 1 5.44 5.43 5.41 5.39 5.38 5.38 5.39 6.31 6.33 6.33 6.34 6.33 6.32 6.30 6.28 1	105	4.68	4.67	4.67	4.67	4.66	4.66	4.65	4.65	5.46	5.47	5.48	5.48	5.48	5.47	5.45	5.45		
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125 5.44 5.43 5.41 5.39 5.38 5.38 5.38 5.39 6.31 6.33	115	4.96	4.95	4.93	4.91	4.91	4.91	4.90	4.91	5.83	5.85	5.86	5.86	5.85	5.84	5.82	5.81		
130 5.73 5.71 5.70 5.67 5.66 5.65 5.67 6.56 6.58 6.59 6.60 6.59 6.57 6.55 6.53     135 6.05 6.02 6.00 5.98 5.97 5.96 5.97 5.98 6.84 6.86 6.87 6.88 6.87 6.85 6.83 6.81    140 6.39 6.35 6.34 6.32 6.31 6.30 6.31 7.13 7.15 7.15 7.13 7.11 7.10    145 6.74 6.71 6.70 6.68 6.67 6.66 6.67 7.44 7.46 7.45 7.45 7.41 7.40    150 7.12 7.10 7.07 7.04 7.02 7.03 7.05 7.76 7.77 7.78 7.76 7.77 7.76 7.72 7.71     155 7.51 7.48 7.46 7.43 7.41 7.43 7.44 8.07 8.10 8.08 8.07 8.04	120	5.18	5.17	5.15	5.14	5.13	5.13	5.12	5.13	6.05	6.07	6.08	6.09	6.08	6.07	6.05	6.04		
135 6.05 6.02 6.00 5.98 5.97 5.98 5.97 5.98 6.84 6.86 6.87 6.88 6.87 6.85 6.83 6.81 ()   140 6.39 6.35 6.34 6.32 6.31 6.30 6.31 7.13 7.15 7.16 7.17 7.15 7.13 7.11 7.10 ()   145 6.74 6.71 6.70 6.68 6.67 6.66 6.67 7.44 7.46 7.46 7.45 7.45 7.41 7.40 ()   150 7.12 7.10 7.07 7.04 7.02 7.03 7.05 7.76 7.77 7.78 7.76 7.77 7.78 7.76 7.77 7.78 7.76 7.72 7.71 ()	125	5.44	5.43	5.41	5.39	5.38	5.38	5.38	5.39	6.31	6.33	6.33	6.34	6.33	6.32	6.30	6.28		
140 6.39 6.35 6.34 6.32 6.31 6.30 6.31 7.13 7.15 7.16 7.17 7.15 7.13 7.11 7.10 1   145 6.74 6.71 6.70 6.68 6.67 6.65 6.66 6.67 7.44 7.46 7.46 7.45 7.45 7.41 7.40 1 <t< td=""><td>130</td><td>5.73</td><td>5.71</td><td>5.70</td><td>5.67</td><td>5.66</td><td>5.66</td><td>5.65</td><td>5.67</td><td>6.56</td><td>6.58</td><td>6.59</td><td>6.60</td><td>6.59</td><td>6.57</td><td>6.55</td><td>6.53</td><td></td><td></td></t<>	130	5.73	5.71	5.70	5.67	5.66	5.66	5.65	5.67	6.56	6.58	6.59	6.60	6.59	6.57	6.55	6.53		
145 6.74 6.71 6.70 6.68 6.67 6.66 6.67 7.44 7.46 7.46 7.45 7.45 7.41 7.40 1   150 7.12 7.10 7.07 7.04 7.04 7.05 7.76 7.77 7.78 7.76 7.76 7.72 7.71 1 1   155 7.51 7.48 7.46 7.43 7.43 7.41 7.43 7.44 8.07 8.10 8.08 8.07 8.04 8.03 1	135	6.05	6.02	6.00	5.98	5.97	5.96	5.97	5.98	6.84	6.86	6.87	6.88	6.87	6.85	6.83	6.81		
150 7.12 7.10 7.07 7.04 7.04 7.02 7.03 7.05 7.76 7.77 7.78 7.76 7.76 7.72 7.71    155 7.51 7.48 7.46 7.43 7.41 7.43 7.44 8.07 8.10 8.08 8.07 8.04 8.03    160 7.89 7.87 7.85 7.82 7.83 7.41 7.43 7.44 8.07 8.10 8.08 8.07 8.04 8.03    160 7.89 7.87 7.85 7.82 7.83 7.82 7.83 8.37 8.39 8.38 8.37 8.36 8.33 8.33     165 8.28 8.23 8.22 8.20 8.21 8.20 8.22 8.62 8.64 8.61 8.61 8.61 8.58 8.58    170 8.60 8.55 8.54 8.53 8.52 8.53 8.54 8.82 8.83 8.81 8.81 8.91 8.90 8.99 8.99	140	6.39	6.35	6.34	6.32	6.31	6.30	6.30	6.31	7.13	7.15	7.16	7.17	7.15	7.13	7.11	7.10		
155 7.51 7.48 7.46 7.43 7.43 7.43 7.44 8.07 8.10 8.08 8.07 8.04 8.03    160 7.89 7.87 7.85 7.82 7.83 7.82 7.83 8.37 8.39 8.38 8.37 8.36 8.33 8.33     165 8.28 8.23 8.22 8.20 8.20 8.19 8.20 8.62 8.64 8.61 8.61 8.58 8.58    170 8.60 8.58 8.55 8.54 8.53 8.52 8.53 8.54 8.83 8.81 8.81 8.79 8.79 8.79 8.78 8.95 8.93 8.91 8.90 8.99 8.91 8.90 8.99 8.91 8.90 8.89 8.91 </td <td>145</td> <td>6.74</td> <td>6.71</td> <td>6.70</td> <td>6.68</td> <td>6.67</td> <td>6.65</td> <td>6.66</td> <td>6.67</td> <td>7.44</td> <td>7.46</td> <td>7.46</td> <td>7.47</td> <td>7.45</td> <td>7.45</td> <td>7.41</td> <td>7.40</td> <td></td> <td></td>	145	6.74	6.71	6.70	6.68	6.67	6.65	6.66	6.67	7.44	7.46	7.46	7.47	7.45	7.45	7.41	7.40		
160 7.89 7.87 7.85 7.82 7.83 7.82 7.83 8.37 8.39 8.38 8.37 8.36 8.33 8.33 9.33	150	7.12	7.10	7.07	7.04	7.04	7.02	7.03	7.05	7.76	7.78	7.77	7.78	7.76	7.76	7.72	7.71		
165 8.28 8.23 8.22 8.20 8.20 8.19 8.20 8.20 8.62 8.64 8.63 8.64 8.61 8.61 8.58 8.58    170 8.60 8.58 8.55 8.53 8.52 8.53 8.54 8.82 8.83 8.81 8.61 8.61 8.58 8.58     170 8.65 8.58 8.53 8.52 8.53 8.54 8.82 8.83 8.81 8.81 8.79 8.77 8.77 8.77 8.77 8.77 8.77 100    175 8.85 8.83 8.82 8.87 8.78 8.95 8.95 8.93 8.91 8.90 8.89 8.89 100 <td< td=""><td>155</td><td>7.51</td><td>7.48</td><td>7.46</td><td>7.43</td><td>7.43</td><td>7.41</td><td>7.43</td><td>7.44</td><td>8.07</td><td>8.10</td><td>8.08</td><td>8.10</td><td>8.08</td><td>8.07</td><td>8.04</td><td>8.03</td><td></td><td></td></td<>	155	7.51	7.48	7.46	7.43	7.43	7.41	7.43	7.44	8.07	8.10	8.08	8.10	8.08	8.07	8.04	8.03		
170 8.60 8.58 8.56 8.54 8.53 8.52 8.53 8.54 8.82 8.83 8.81 8.81 8.79 8.79 8.77 8.77 6.77 6.77   175 8.85 8.83 8.82 8.80 8.79 8.78 8.78 8.95 8.95 8.93 8.91 8.90 8.89 8.89 6.77 <t< td=""><td>160</td><td>7.89</td><td>7.87</td><td>7.85</td><td>7.82</td><td>7.83</td><td>7.80</td><td>7.82</td><td>7.83</td><td>8.37</td><td>8.39</td><td>8.38</td><td>8.38</td><td>8.37</td><td>8.36</td><td>8.33</td><td>8.33</td><td></td><td></td></t<>	160	7.89	7.87	7.85	7.82	7.83	7.80	7.82	7.83	8.37	8.39	8.38	8.38	8.37	8.36	8.33	8.33		
175 8.85 8.83 8.82 8.80 8.79 8.78 8.79 8.78 8.95 8.95 8.93 8.93 8.91 8.90 8.89 8.89	165	8.28	8.23	8.22	8.20	8.20	8.19	8.20	8.20	8.62	8.64	8.63	8.64	8.61	8.61	8.58	8.58		
	170	8.60	8.58	8.56	8.54	8.53	8.52	8.53	8.54	8.82	8.83	8.81	8.81	8.79	8.79	8.77	8.77		
180 8.98 8.98 8.98 8.96 8.94 8.93 8.93 8.93 8.98 8.98 8.98 8.97 8.96 8.94 8.93 8.93 8.93	175	8.85	8.83	8.82	8.80	8.79	8.78	8.79	8.78	8.95	8.95	8.93	8.93	8.91	8.90	8.89	8.89		
	180	8.98	8.98	8.98	8.96	8.94	8.93	8.93	8.93	8.98	8.98	8.97	8.96	8.94	8.93	8.93	8.93		

## **3. Product Photo**



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