

## LM-79-08 Test Report

For

### ATG Electronics Corp.

(Brand Name: )

10588 MONTE VISTA AVE MONTCLAIR, CA 91763

### LED Luminaires

Model name(s): LFDR4-29X-XXB8-Y-ZZ

Remark: Where "XX" can be any number, represents color temperature

Representative (Tested) Model: LFDR4-29X-30B8-Y-ZZ

LFDR4-29X-50B8-Y-ZZ

Model Different: All construction and rating are the same, except CCT

Test & Report By:

*Leo Wang*

Engineer: Leo Wang

Date: Nov.30,2019

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:**

Organization Name	ATG Electronics Corp.	
Brand Name		
Model Number	LFDR4-29X-XXB8-Y-ZZ	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60Hz	
Nominal Power	29W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,5000K	
LED Manufacturer	Shenzhen Runlite Technology Co.,Ltd	
LED Model	T28351-W29SC0D2FB3C0-XXXX	
Sample Number	JBE191004-A1(3000K),A2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
<b>Photo</b>		
		

## 1.2 Test Specifications:

Date of Receipt	Nov.20,2019
Date of Test	Nov.23,2019
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. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 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>

## 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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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 sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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	2019-12-23	Test Ambient:	25 ± 1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LFDR4-29X-30B8-Y-ZZ	Total Operating Time (min)	90

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE191004-	120.0	60	0.2306	27.25	0.9848	12.04
A1	277.0	60	0.1064	27.74	0.9413	13.53

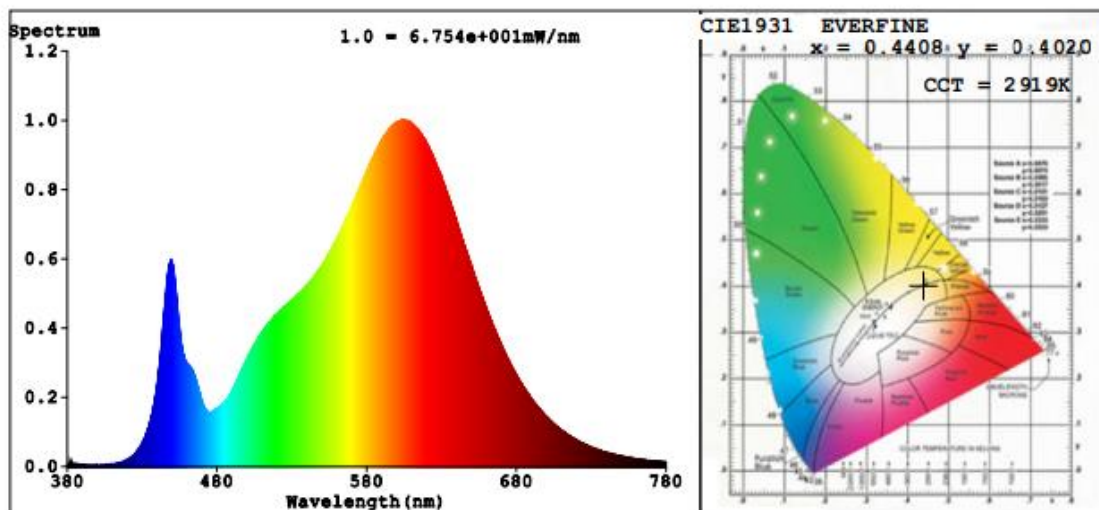
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	2919	R3	96	R11	81
Duv	-0.0013	R4	81	R12	73
Chromaticity (x, y)	x=0.4408 y=0.4020	R5	81	R13	83
Chromaticity (u', v')	u'=0.2540 v'=0.5212	R6	90	R14	99
Color Rendering Index (CRI)	82.5	R7	82	R15	73
R9	6	R8	58	--	--

**Photometric Measurement – Goniophotometer Method:**

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	3625.6	3640.0
Luminous Efficacy (lm/W)	133.05	131.22
Beam Angle (°)	90.9	--
Center Beam Candle Power (cd)	1751	--

## Spectral Power Distribution & Chromaticity Diagram



## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,377.8	38%
0-40	2,164.2	59.7%
0-60	3,239.6	89.4%
60-90	373.2	10.3%
70-100	144.8	4%
90-120	3.3	0.1%
0-90	3,612.8	99.7%
90-180	12.3	0.3%
0-180	3,625.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	167.5	4.6%	90-100	1.4	0%
10-20	492.2	13.6%	100-110	0.8	0%
20-30	718.1	19.8%	110-120	1.1	0%
30-40	786.4	21.7%	120-130	1.7	0%
40-50	652.0	18.0%	130-140	2.0	0.1%
50-60	423.5	11.7%	140-150	2.0	0.1%
60-70	229.8	6.3%	150-160	1.7	0%
70-80	111.6	3.1%	160-170	1.1	0%
80-90	31.7	0.9%	170-180	0.5	0%

## Photometric Data

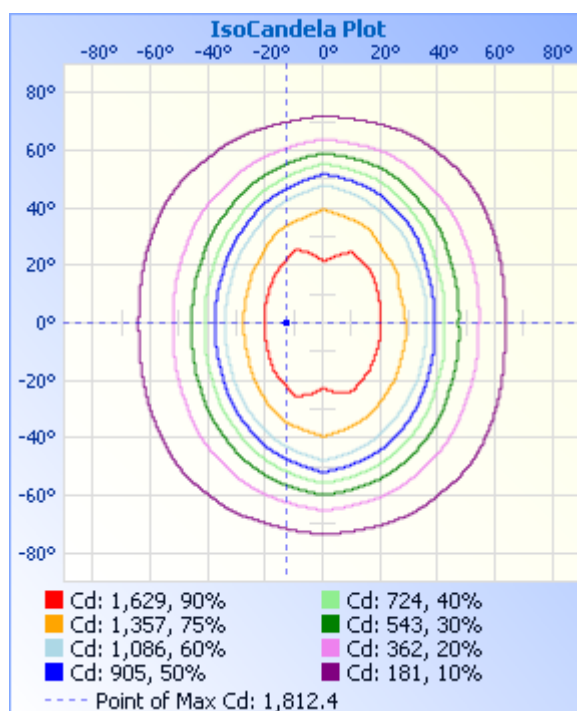
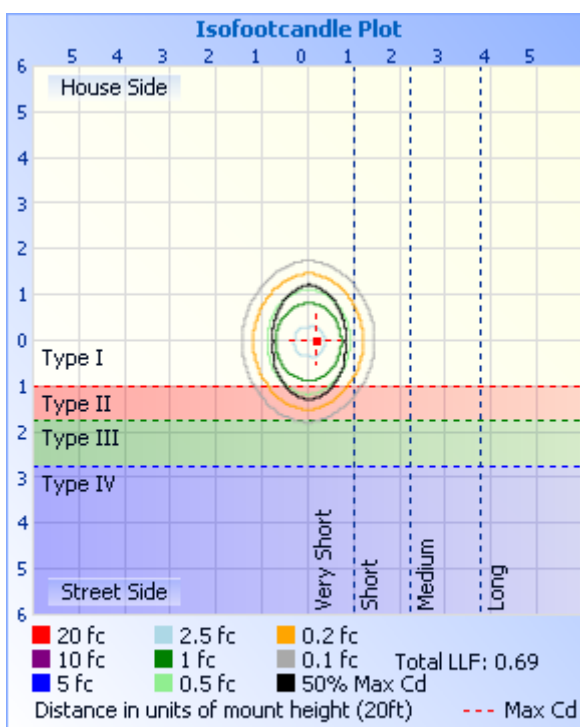
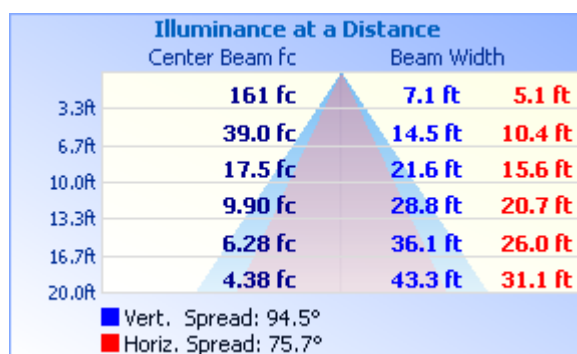
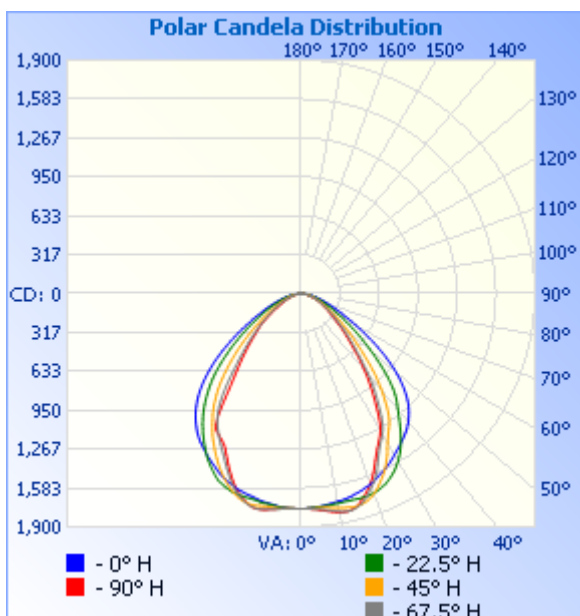




Table--1

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	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751	1751			
5	1755	1759	1747	1740	1739	1741	1749	1762	1768	1762	1754	1748	1745	1749	1753	1758			
10	1785	1782	1759	1724	1717	1733	1772	1801	1808	1802	1772	1733	1723	1732	1756	1783			
15	1751	1770	1773	1713	1689	1731	1786	1794	1782	1789	1780	1726	1691	1718	1755	1759			
20	1621	1662	1726	1693	1649	1726	1732	1672	1646	1665	1727	1709	1654	1702	1685	1644			
25	1441	1478	1606	1653	1589	1676	1597	1480	1444	1481	1592	1661	1596	1642	1565	1478			
30	1332	1326	1422	1569	1515	1575	1404	1321	1286	1311	1415	1560	1524	1531	1418	1338			
35	1133	1269	1257	1424	1442	1412	1247	1092	1031	1106	1249	1406	1444	1390	1256	1178			
40	809	891	1123	1247	1357	1223	1010	839	787	841	1039	1221	1335	1231	1069	908			
45	610	650	870	1072	1221	1027	750	609	568	625	776	1023	1183	1043	842	664			
50	465	496	616	865	1017	768	538	446	416	454	567	782	979	820	618	486			
55	332	367	432	624	761	545	382	325	306	329	407	569	741	602	435	353			
60	225	249	300	430	511	375	266	239	228	240	287	400	518	422	300	251			
65	159	174	207	290	336	257	190	175	175	176	205	277	354	292	206	176			
70	108	119	143	192	222	175	137	126	122	130	146	188	239	198	142	120			
75	71.2	78.8	96.3	123	143	116	96.4	85.6	77.6	84.4	102	125	155	130	95.8	77.4			
80	42.5	47.3	60.0	73.9	85.9	73.5	59.9	50.5	47.1	49.7	64.1	79.7	94.2	79.9	59.5	46.5			
85	18.3	20.1	25.4	34.3	39.2	34.6	27.1	21.7	22.0	21.4	27.5	36.5	40.2	35.9	24.8	19.9			
90	0.41	0.46	0.53	0.81	1.43	0.87	0.70	0.47	0.31	6.67	6.34	2.50	1.31	6.00	0.54	5.45			
95	0.31	0.39	0.41	0.57	1.18	0.77	0.45	0.31	0.33	3.73	3.89	1.15	1.51	0.74	0.46	3.35			
100	0.32	0.37	0.41	0.61	1.26	0.80	0.47	0.30	0.35	0.80	1.44	0.67	2.47	0.83	0.41	1.25			
105	0.33	0.35	0.41	0.76	1.71	0.86	0.49	0.28	0.41	0.30	0.86	0.66	2.32	0.94	0.53	0.65			
110	0.34	0.32	0.41	1.47	1.91	1.36	0.61	0.27	0.48	0.43	0.66	1.12	2.67	1.25	0.66	0.47			
115	0.35	0.35	0.86	1.63	2.46	1.54	0.76	0.47	0.62	0.66	0.91	1.22	2.97	1.26	0.91	0.60			
120	0.41	0.71	1.17	1.86	2.65	1.68	1.32	0.72	0.75	0.87	1.14	1.57	2.88	1.77	1.22	0.78			
125	0.77	0.86	1.48	3.13	3.11	3.18	1.62	0.88	0.87	1.04	1.38	2.64	4.04	3.33	1.43	0.99			
130	0.87	1.02	1.63	3.89	3.93	3.63	1.78	1.31	1.23	1.43	1.75	3.25	4.20	3.89	1.88	1.30			
135	1.13	1.46	1.94	4.11	3.83	4.09	2.44	1.65	1.59	1.63	2.07	3.45	4.49	4.09	2.39	1.66			
140	1.54	1.64	2.29	4.12	3.98	4.19	2.51	1.86	1.85	2.14	2.40	3.60	4.90	4.16	2.56	2.18			
145	1.84	1.99	2.90	4.14	4.68	4.19	2.49	2.38	2.21	2.50	2.76	3.65	5.34	4.28	3.25	2.69			
150	2.20	2.45	3.57	4.15	5.12	4.29	3.45	2.64	2.67	2.86	3.17	3.69	4.99	4.34	4.02	3.21			
155	2.44	2.76	4.03	4.19	5.30	4.64	3.91	3.05	2.75	2.99	3.24	3.67	4.33	4.34	4.42	3.52			
160	2.51	3.01	4.31	4.36	5.53	4.62	3.96	3.30	2.84	3.01	3.30	3.66	3.97	4.80	4.53	3.68			
165	2.67	3.09	4.35	4.58	5.24	4.69	4.27	3.36	3.00	3.06	3.37	3.65	4.09	5.25	4.57	4.09			
170	3.07	3.42	4.38	4.76	5.69	5.09	4.77	3.42	3.44	3.48	3.83	4.67	5.19	6.97	5.38	5.13			
175	3.33	3.87	4.84	4.91	6.94	5.45	5.43	3.83	3.79	3.83	4.05	4.94	5.10	7.22	5.59	5.64			
180	3.69	3.98	5.10	5.02	7.20	5.75	5.49	4.09	3.79	3.62	3.98	4.97	4.99	7.16	5.74	5.64			

## 2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2019-12-23	Test Ambient:	25 ± 1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LFDR4-29X-50B8-Y-ZZ	Total Operating Time (min)	90

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE191004-	120.0	60	0.2462	29.02	0.9821	12.11
A2	277.0	60	0.1135	29.54	0.9399	13.67

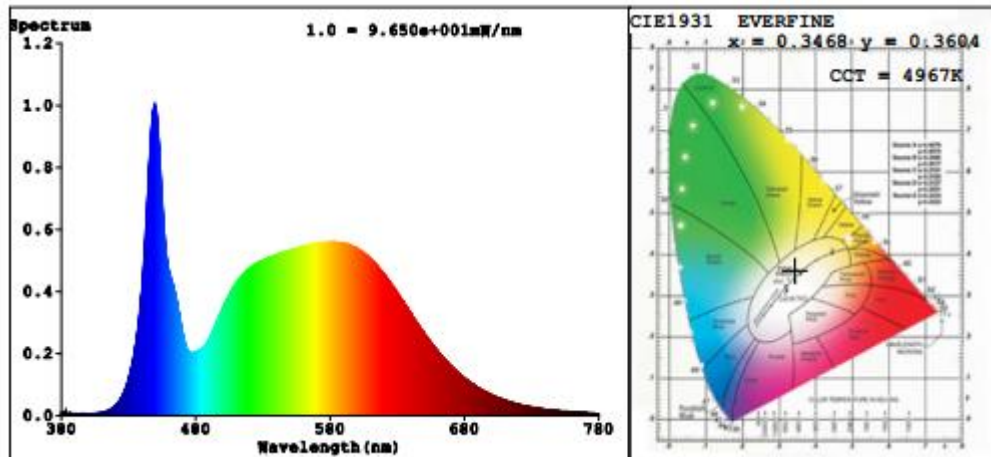
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	8
Frequency (Hz)	60	R2	87	R10	69
CCT (K)	4967	R3	92	R11	81
Duv	0.0037	R4	82	R12	55
Chromaticity (x, y)	x=0.3468 y=0.3604	R5	80	R13	82
Chromaticity (u', v')	u'=0.2092 v'=0.4892	R6	82	R14	96
Color Rendering Index (CRI)	82.4	R7	88	R15	75
R9	8	R8	68	--	--

### Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	4159	4176
Luminous Efficacy (lm/W)	143.31	141.37



**Spectral Power Distribution & Chromaticity Diagram****Laboratory: Standard-Tech Co., Ltd. Testing Center**

Report Format Number STD-QP019-409-B/0

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

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<http://www.standard-tech.com>

### 2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
LFDR4-29X-30B8-Y-ZZ	3000K	3625.6	27.25	133.05
LFDR4-29X-35B8-Y-ZZ	3500K	3759 <sup>*1</sup>	28.14 <sup>*2</sup>	133.58 <sup>*3</sup>
LFDR4-29X-40B8-Y-ZZ	4000K	3892 <sup>*1</sup>	28.14 <sup>*2</sup>	138.31 <sup>*3</sup>
LFDR4-29X-50B8-Y-ZZ	5000K	4159	29.02	143.31

\*1: This value is calculated and the calculation formula is as below:

$$3759 = (4159 - 3625.6) / 4 * 1 + 3625.6$$

$$3892 = (4159 - 3625.6) / 4 * 2 + 3625.6$$

\*2: This value is calculated and the calculation formula is as below:

$$28.14 = (29.02 + 27.25) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$133.58 = (3759 / 28.14)$$

$$138.31 = (3892 / 28.14)$$

**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-332	Standard Lamp	2019-07-03	2020-07-02
ST-R-333	Power Meter for Integrating Sphere	2019-06-27	2020-06-26
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2019-07-03	2020-07-02
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
Expand Uncertainty: Photometric Measurement (Sphere):2.66%, k=2 Chromaticity Measurement(Sphere):28.6K, k=2 Photometric Measurement(Goniophotometer):2.76%, k=2			

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