LM-79-08 Test Report

For

ATG Electronics Corp.

(Brand Name: ATG ELECTRONICS)

10588 MONTE VISTA AVE MONTCLAIR, CA 91763

LED Luminaires

Model name(s): LFID4-33X-XXYYB8-Y-ZZ

Remark: Where "XX" can be any number, represents up light color temperature, "YY" can be any number, represents down light color temperature

Representative (Tested) Model: LFID4-33X-3030B8-Y-ZZ
LFID4-33X-5050B8-Y-ZZ

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

Test & Report By:

Leo Wang

Engineer: Leo Wang

Review By:

Garman Mo

Manager: Garman Mo

Date: Nov.30,2019

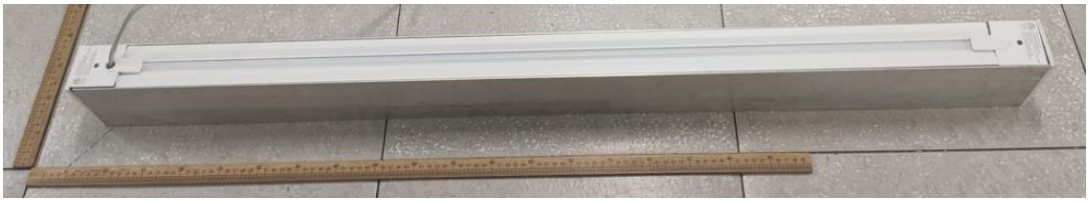
Note: 1.The results contained in this report pertain only to the tested samples.

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	ATG ELECTRONICS	
Model Number	LFID4-33X-XXYYB8-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	33W	
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-B1(3000K),B2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Nov.20,2019
Date of Test	Nov.23,2019
Test item	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	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 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

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 °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.

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 ºC ±1 ºC. 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 ºC ±1 ºC. 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	LFID4-33X-3030B8-Y-ZZ	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE191004-B1	120.0	60	0.2648	31.26	0.9838	7.89
	277.0	60	0.1285	32.16	0.9038	14.22

Chromaticity Measurement - Sphere-Spectroradiometer Method:

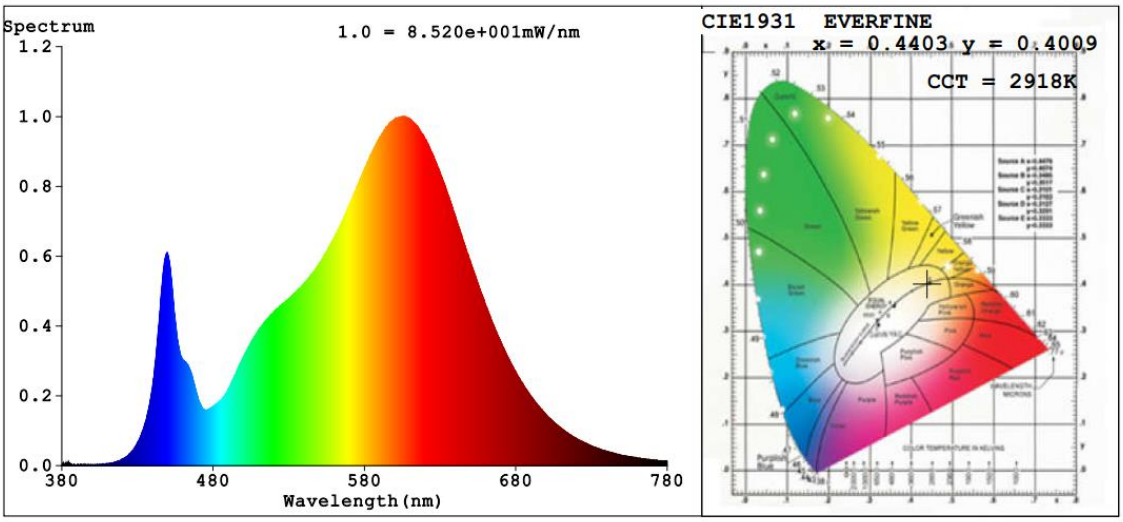
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2918
Duv	-0.0017
Chromaticity (x, y)	x=0.4403 y=0.4009
Chromaticity (u', v')	u'=0.2541 v'=0.5206
Color Rendering Index (CRI)	82.8
R9	8

Special Color Rendering Indices			
R1	82	R9	8
R2	92	R10	81
R3	96	R11	81
R4	81	R12	74
R5	82	R13	74
R6	90	R14	98
R7	82	R15	74
R8	59	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	4330.1	4397.2
Luminous Efficacy (lm/W)	138.52	136.73
Beam Angle ( )	91.0	--
Center Beam Candle Power (cd)	1300	--

Spectral Power Distribution & Chromaticity Diagram

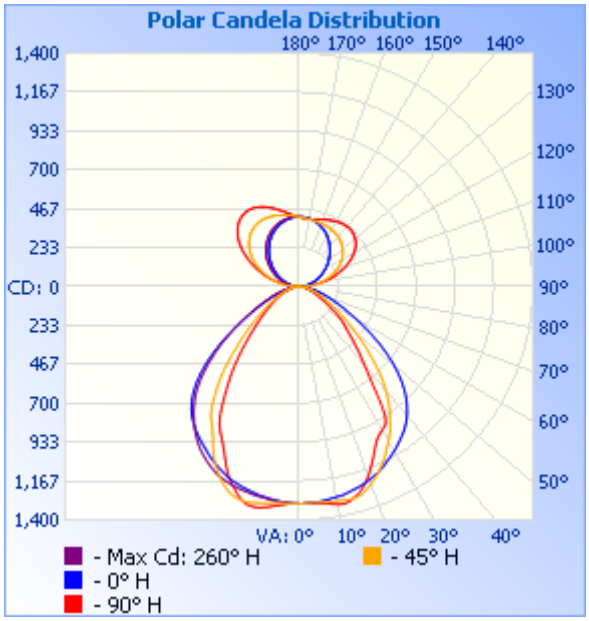


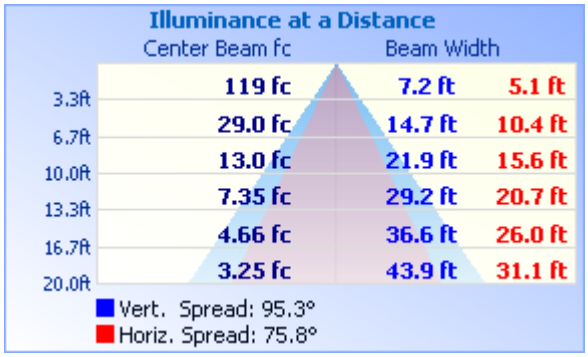
Zonal Lumen Tabulation

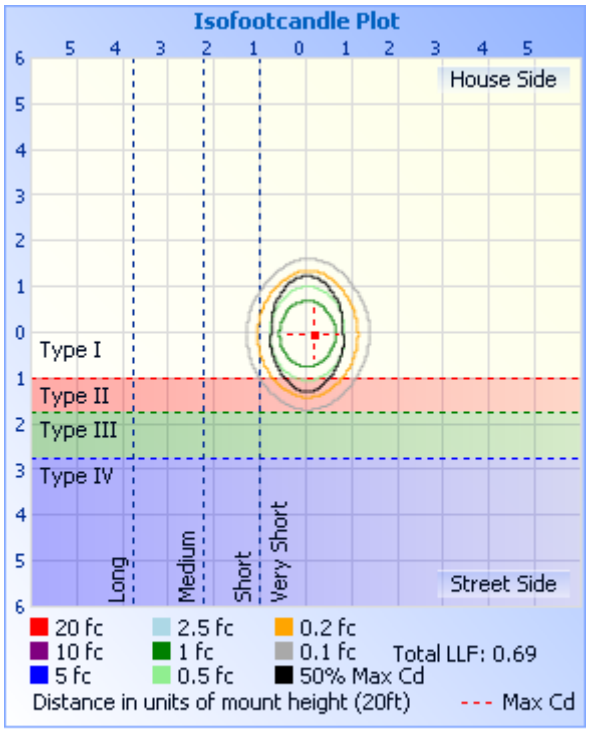
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,024.3	23.7%
0-40	1,610.1	37.2%
0-60	2,411.5	55.7%
60-90	280.8	6.5%
70-100	153.0	3.5%
90-120	437.2	10.1%
0-90	2,692.3	62.2%
90-180	1,638.3	37.8%
0-180	4,330.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	124.5	2.9%	90-100	44.3	1%
10-20	365.9	8.4%	100-110	155.1	3.6%
20-30	534.0	12.3%	110-120	237.8	5.5%
30-40	585.7	13.5%	120-130	288.4	6.7%
40-50	485.7	11.2%	130-140	295.2	6.8%
50-60	315.8	7.3%	140-150	260.3	6%
60-70	172.0	4.0%	150-160	196.9	4.5%
70-80	84.2	1.9%	160-170	120.2	2.8%
80-90	24.5	0.6%	170-180	40.1	0.9%

Photometric Data







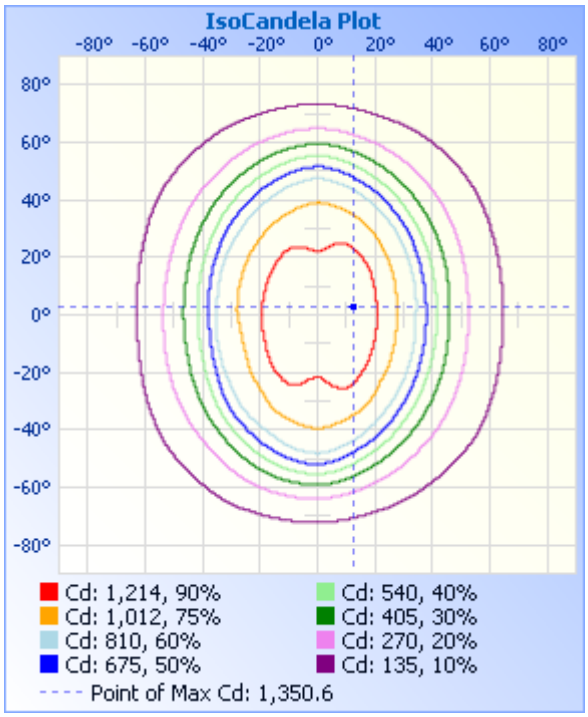


Table--4 UNIT: cd

γ (DEG) \ C (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300				
5	1293	1294	1295	1296	1298	1300	1302	1304	1306	1308	1310	1312	1313	1314	1315				
10	1281	1284	1289	1296	1303	1311	1318	1324	1330	1335	1339	1343	1345	1346	1346				
15	1270	1279	1289	1299	1309	1319	1327	1331	1334	1335	1335	1335	1334	1332	1329				
20	1260	1274	1283	1287	1289	1287	1284	1276	1266	1256	1245	1237	1231	1226	1223				
25	1224	1239	1242	1233	1219	1201	1182	1161	1140	1120	1102	1088	1078	1072	1070				
30	1158	1164	1155	1129	1098	1066	1034	1016	1001	989	980	971	964	959	956				
35	1059	1049	1031	1007	979	949	919	891	864	839	816	798	784	774	767				
40	947	918	886	852	817	781	746	713	682	654	630	611	597	588	583				
45	816	776	732	686	641	596	555	524	498	475	457	442	431	424	420				
50	632	584	540	501	464	430	399	377	359	345	333	324	316	311	308				
55	455	416	381	352	326	302	282	268	257	248	242	237	232	229	227				
60	308	283	261	242	224	209	196	188	183	180	178	176	173	172	170				
65	207	193	180	168	157	148	139	135	132	130	129	129	128	128	129				
70	140	131	124	117	111	105	101	97.9	95.9	94.5	93.6	92.8	91.8	91.0	90.5				
75	91.6	86.8	82.5	79.1	75.9	72.9	70.2	68.1	66.3	64.8	63.4	62.1	60.9	59.7	58.8				
80	55.8	53.3	51.1	49.3	47.5	45.8	44.1	42.4	40.7	39.2	37.8	36.7	35.7	35.0	34.4				
85	24.9	24.1	23.1	22.1	21.0	19.9	18.9	18.0	17.3	16.7	16.2	15.9	15.9	16.0	16.2				
90	4.68	5.74	5.77	4.72	3.43	2.06	0.78	0.49	0.36	0.31	0.37	0.90	1.76	2.63	3.42				
95	34.7	41.4	45.1	45.5	44.7	42.8	40.2	36.7	32.9	29.0	25.2	22.3	20.5	19.2	18.5				
100	60.6	70.5	81.2	92.1	102	111	117	116	112	107	101	95.5	91.3	87.7	85.1				
105	91.7	104	117	130	143	155	165	171	174	177	178	178	178	177	176				
110	124	138	154	170	187	202	216	224	229	233	235	236	236	236	236				
115	156	173	191	211	231	250	267	278	286	292	296	299	301	302	302				
120	190	207	227	250	273	295	316	329	340	349	356	361	364	367	368				
125	222	241	262	286	311	335	357	374	388	400	410	417	422	426	428				
130	254	272	293	317	342	367	391	410	426	441	454	463	471	476	479				
135	284	302	323	346	371	395	419	439	456	472	486	497	505	511	515				
140	313	329	349	370	393	417	439	458	476	492	506	517	527	534	539				
145	339	353	370	390	410	431	451	469	485	500	513	525	535	542	548				
150	362	374	388	405	422	440	457	473	487	500	511	522	531	538	542				
155	380	389	401	414	428	443	457	469	480	491	500	509	516	522	526				
160	395	402	410	420	431	442	452	461	469	476	483	489	495	499	503				
165	407	412	417	423	430	437	444	449	455	459	464	468	472	475	477				
170	416	418	421	425	428	432	435	438	441	444	446	448	450	451	452				
175	420	422	423	424	425	426	427	428	429	430	430	431	432	432	432				
180	420	420	420	420	420	419	419	419	419	419	419	419	419	419	418				

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	LFID4-33X-5050B8-Y-ZZ	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE191004-B2	120.0	60	0.2908	34.40	0.9859	7.81
	277.0	60	0.1412	35.39	0.9046	14.16

Chromaticity Measurement - Sphere-Spectroradiometer Method:

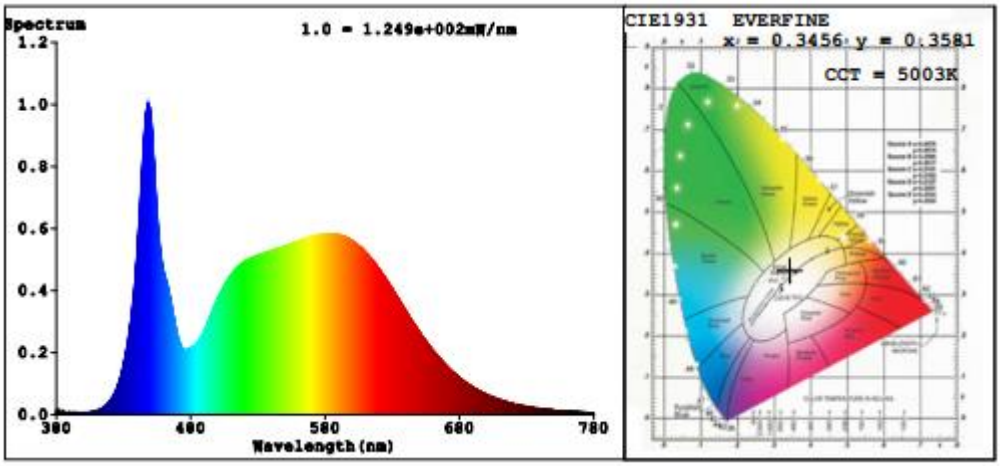
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5003
Duv	0.0030
Chromaticity (x, y)	x=0.3456 y=0.3581
Chromaticity (u', v')	u'=0.2093 v'=0.4879
Color Rendering Index (CRI)	82.5
R9	5

Special Color Rendering Indices			
R1	81	R9	5
R2	87	R10	69
R3	91	R11	84
R4	84	R12	64
R5	82	R13	82
R6	83	R14	95
R7	86	R15	75
R8	67	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	4948	5025
Luminous Efficacy (lm/W)	143.84	141.99

Spectral Power Distribution & Chromaticity Diagram



2.3 Performance Assessment:

Model name	CCT(K)	Luminous Efficacy (lm/W)	Power (W)	Total Luminous (lm)
LFID4-33X-3030B8-Y-ZZ	3000K	138.52	31.26	4330.1
LFID4-33X-3535B8-Y-ZZ	3500K	139.85*1	32.83*2	4591*3
LFID4-33X-4040B8-Y-ZZ	4000K	141.18*1	32.83*2	4635*3
LFID4-33X-5050B8-Y-ZZ	5000K	143.84	34.40	4948

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

139.85= (143.84-138.52)/4*1+138.52

141.18= (143.84-138.52)/4*2+138.52

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

32.83= (34.40+31.26)/2

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

4591= (139.85*32.83)

4635= (141.18*32.83)

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 ********