

IES LM-79-08

MEASUREMENT AND TEST REPORT For

ATG Electronics Corp

9020 Rancho Park Court Rancho Cucamonga, CA 91730

Test Model: FZL-5K-6FT

Report Type:	Electrical and Photometric tests including: Input Current, Power, Power Factor, Luminous Flux, Luminous Efficacy, CRI, CCT, Chromaticity Coordinate, Spectral Power Distribution
Test Engineer:	Daniel Duan <i>Daniel Duan</i>
Report Number:	RSZ160325507-10A2
Test Date:	2016-04-11
Report Date:	2016-04-15
Reviewed By:	Jeanne Han/Safety Manager <i>Jeanne Han</i>
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China.
Accreditation:	The NVLAP Lab Code is 200707-0.

STATEMENT: This test may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen). The test data was only valid for the test sample(s). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

1. Product Description

General Information:

One sample was received on 2016-03-25 and used for testing.

Model Tested: FZL-5K-6FT

Manufacturer: ATG Electronics Corp

Brand Name: ATG

Product Designation: Horizontal Refrigerated Case Luminaires

Dimmable: Continuous Dimming

Dimming Range: 10% to 100%

Burning Time Before Test: 0 hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 120V AC 60Hz

Rated Power: 18W

Nominal CCT: 5000K

Nominal Light Output: 2100 lm

Nominal CRI: 80

Length: 5.94ft

2. Standards Used

- IESNA LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits – Related Power Quality Requirements for Lighting

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2015-11-09	2016-11-08
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2016-03-10	2017-03-09
DC Power Supply	EVERFINE	WY305-V1	1101047	30V/5A	2015-07-27	2016-07-26
Thermal Meter	Anymetre	JR900A	N/A	25°C	2016-01-12	2017-01-11
Standard Light Source	SENSING	N/A	LSD090808	N/A	2015-09-25	2016-09-24
AC Power Supply	EVERFINE	DPS1010-YF	1011001T	30V/5A	2016-03-04	2017-03-03

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

4. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ during measurement. And relative humidity is less than 65%.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards.

4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=32\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1$ ($K=2$), at the 95% confidence level.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.15\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.

5. Test Result

[Integrating Sphere System]

Total operating time for integrating sphere test: **1.0 hour**

Test orientation: **Downward**

Electrical Measurement

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.1	60	0.1496	17.63	0.9817

Photometric Measurement

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2091.8	6.461	118.62	5023	0.00336

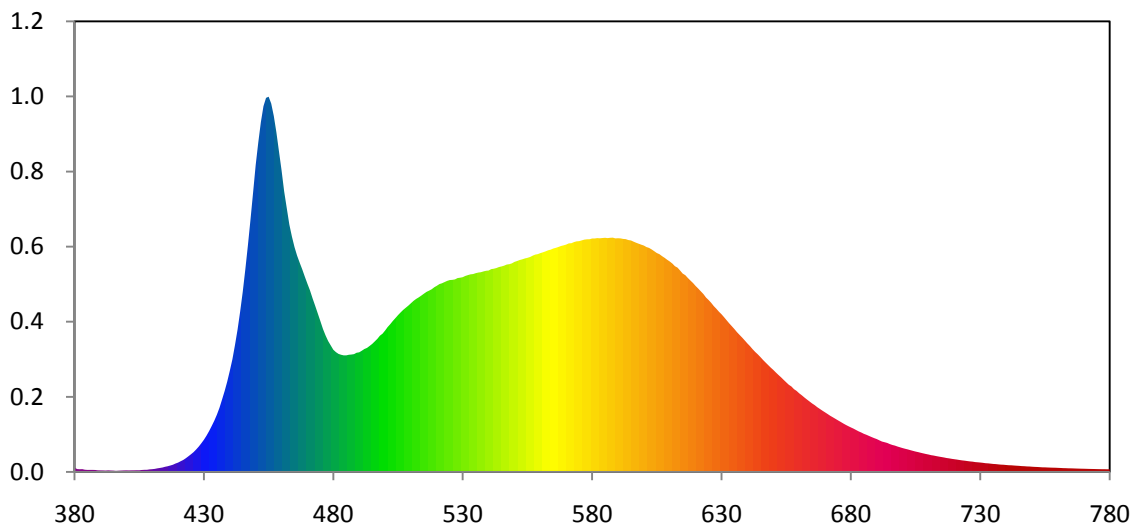
Chromaticity Coordinate

x	y	u	v	u'	v'
0.3451	0.3583	0.2088	0.3253	0.2088	0.4879

Color Rendering Index

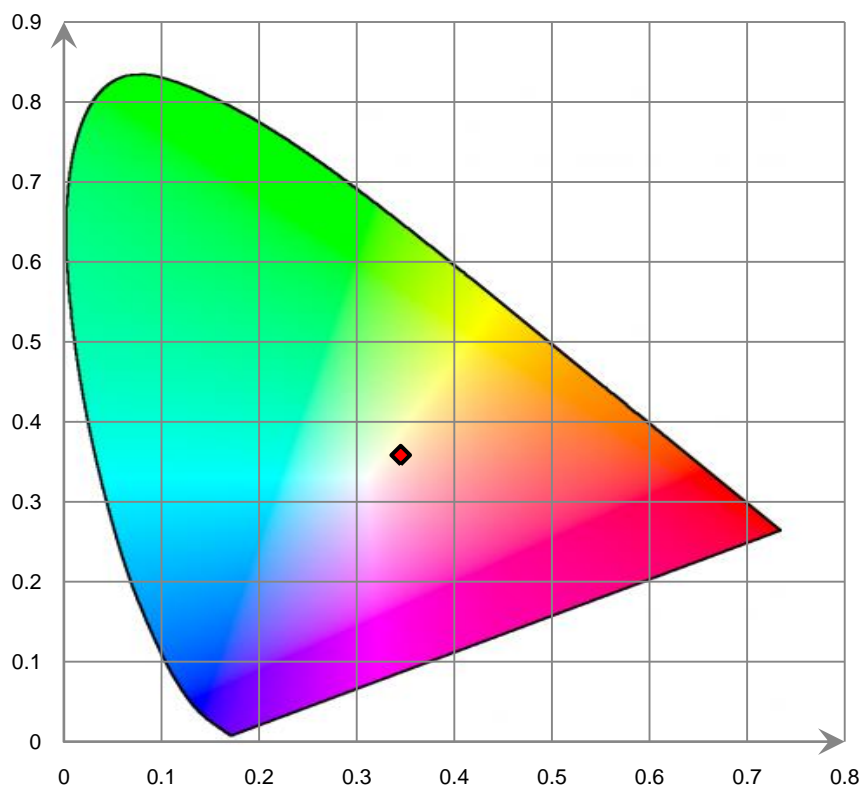
Ra 83.5			
R1 82	R2 92	R3 95	R4 81
R5 82	R6 88	R7 85	R8 64
R9 4	R10 79	R11 80	R12 63
R13 85	R14 98	R15 76	

Relative Spectral Power Distribution

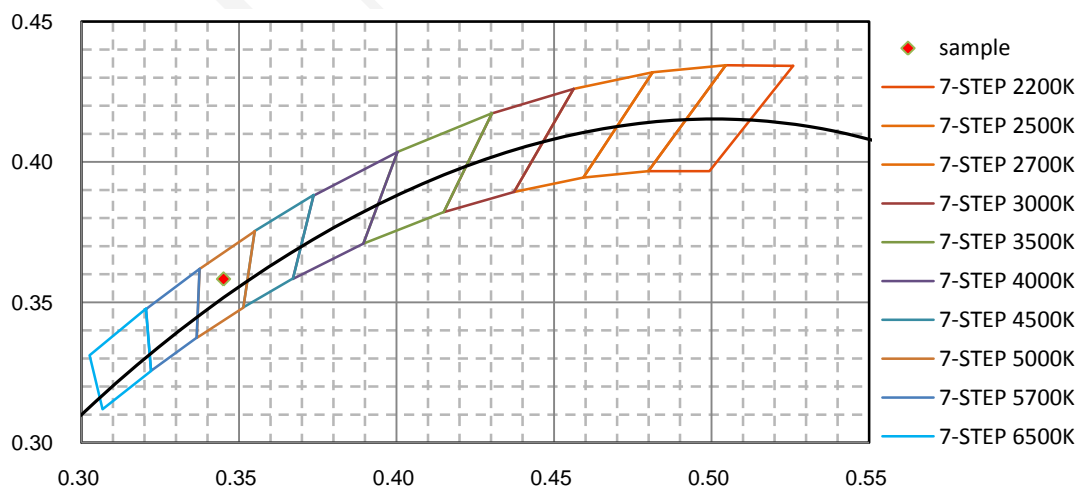


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.987E-01	465	3.176E+01	550	2.967E+01	635	2.017E+01	720	1.787E+00
385	2.765E-01	470	2.658E+01	555	3.024E+01	640	1.814E+01	725	1.529E+00
390	2.053E-01	475	2.129E+01	560	3.091E+01	645	1.624E+01	730	1.322E+00
395	1.764E-01	480	1.725E+01	565	3.156E+01	650	1.441E+01	735	1.118E+00
400	2.102E-01	485	1.646E+01	570	3.212E+01	655	1.265E+01	740	9.705E-01
405	2.215E-01	490	1.689E+01	575	3.260E+01	660	1.111E+01	745	8.511E-01
410	3.806E-01	495	1.807E+01	580	3.297E+01	665	9.666E+00	750	7.253E-01
415	7.224E-01	500	1.997E+01	585	3.307E+01	670	8.409E+00	755	6.353E-01
420	1.309E+00	505	2.215E+01	590	3.301E+01	675	7.280E+00	760	5.701E-01
425	2.489E+00	510	2.383E+01	595	3.270E+01	680	6.282E+00	765	5.005E-01
430	4.543E+00	515	2.518E+01	600	3.197E+01	685	5.376E+00	770	4.423E-01
435	8.078E+00	520	2.629E+01	605	3.092E+01	690	4.631E+00	775	3.950E-01
440	1.428E+01	525	2.710E+01	610	2.973E+01	695	3.935E+00	780	3.654E-01
445	2.544E+01	530	2.751E+01	615	2.802E+01	700	3.359E+00		
450	4.334E+01	535	2.807E+01	620	2.627E+01	705	2.871E+00		
455	5.300E+01	540	2.845E+01	625	2.429E+01	710	2.449E+00		
460	4.260E+01	545	2.902E+01	630	2.227E+01	715	2.096E+00		

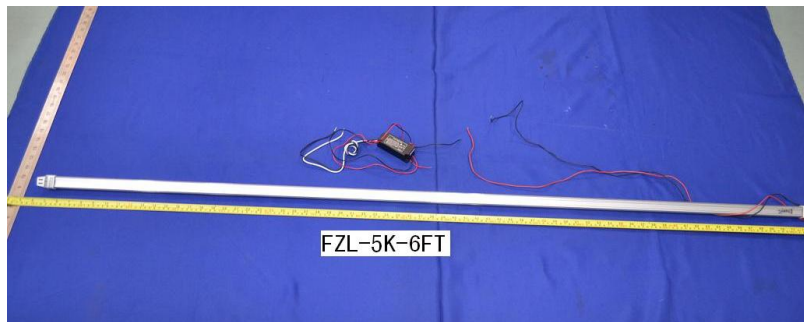
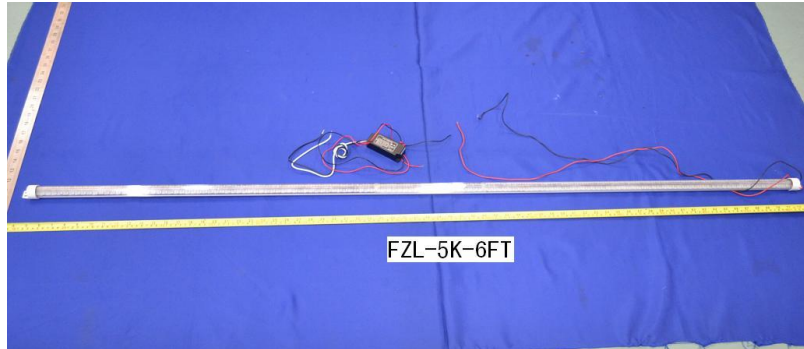
CIE 1931 x y Chromaticity Diagram



7-Step & 4-Step Chromaticity Quadrangles



6. Product Photo



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