



IES LM-79-08

MEASUREMENT AND TEST REPORT

For

ATG Electronics Corp

10700 7th Street Rancho Cucamonga, CA 91730, USA

Test Model: AA-100-40-T5

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:	George Yang <i>George Yang</i>
Report Number:	RKSB181017003-10-14
Test Date:	2018-08-28
Report Date:	2018-10-18
Reviewed By:	Ray Gao/EE Engineer <i>Ry Gao</i>
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu province, China. Tel: +86-0512-86175000 Fax: +86-0512-88934268
Test Facility:	Test facility was located at No.248 Chenghu Road, Kunshan, Jiangsu province, China.
Accreditation:	The IAS Accreditation Number TL-749.

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). 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 2018-08-27 and used for testing.

Model Tested: AA-100-40-T5
 Manufacturer: ATG Electronics Corp
 Brand Name: ATG
 Product Designation: Outdoor Pole/Arm-mounted Area and Roadway Luminaires
 Aging Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 120-277 VAC 60Hz
 Rated Power: 100 W
 Nominal CCT: 4000K
 Nominal Lumen Output: 12000lm

Note:

1. The applicant *ATG Electronics Corp* declared that their product with model AA-100-40-T5 is the same to the product in report# RKS180502030-10-14 and is authorized by original applicant to use their test data.
2. All the data in previous report (RKS180502030-10-14) is shared in report.

2. Standards Used

- IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products
- ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment
- IES TM-30-15: IES Method for Evaluating Light Source Color Rendition

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2018-01-24	2019-01-24
Power Meter	INVENTFINE	WT500	GSJWQ20009	2018-04-08	2019-04-08
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2018-01-24	2019-01-24
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2018-04-08	2019-04-08
Standard Light Source	INVENTFINE	N/A	JWWCR020106	2018-01-24	2019-01-24
Thermal Meter	KEJIAN	TA298	N/A	2017-11-14	2018-11-14
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2018-04-08	2019-04-08

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) 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, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement.

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 $U=2.6\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=24\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.5$ ($K=2$), at the 95% confidence level.

The uncertainty of power meter AC current $U=0.16\%$ of rdg, AC Voltage $U=0.18\%$ of rdg, Power $U=0.14\%$ ($K=2$), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_i , R_g was calculated according to IES TM-30-15 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

5. Test Result

[Integrating Sphere System]

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

Test orientation: **Downward**

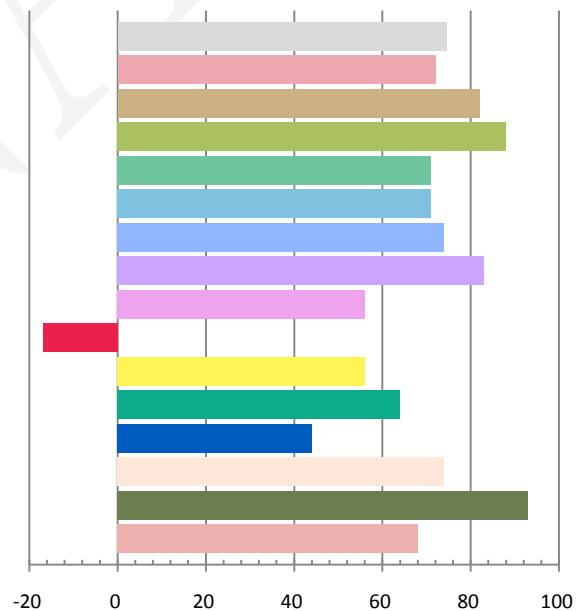
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.8324	99.42	0.9951	12342.9	124.15

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
36.288	4054	-0.00071	0.3777	0.3735	0.2246	0.4997

Color Rendering Index

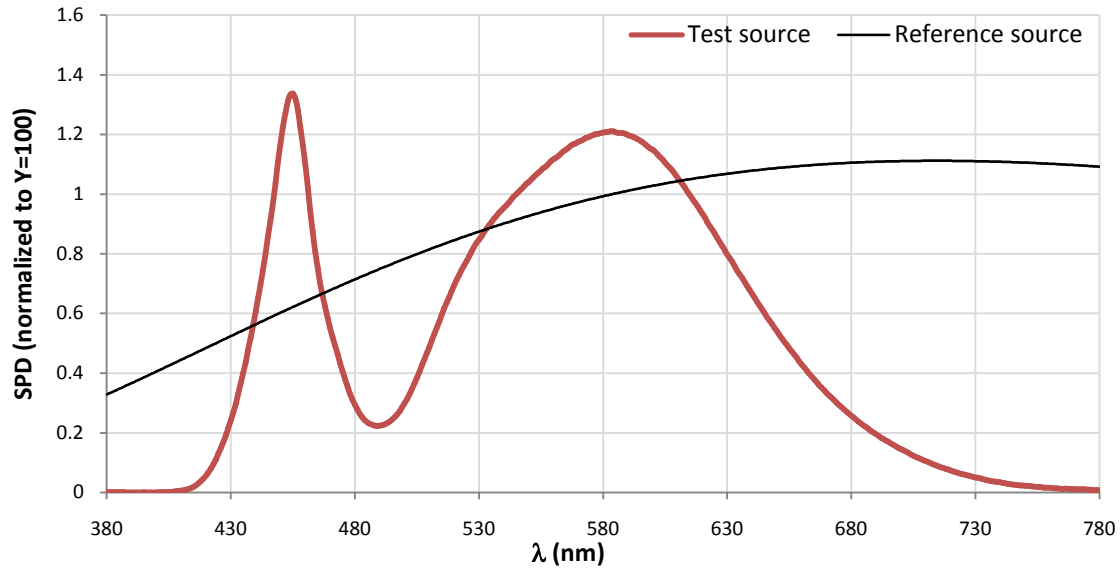
Ra 74.5			
R1 72	R2 82	R3 88	R4 71
R5 71	R6 74	R7 83	R8 56
R9 -17	R10 56	R11 64	R12 44
R13 74	R14 93	R15 68	



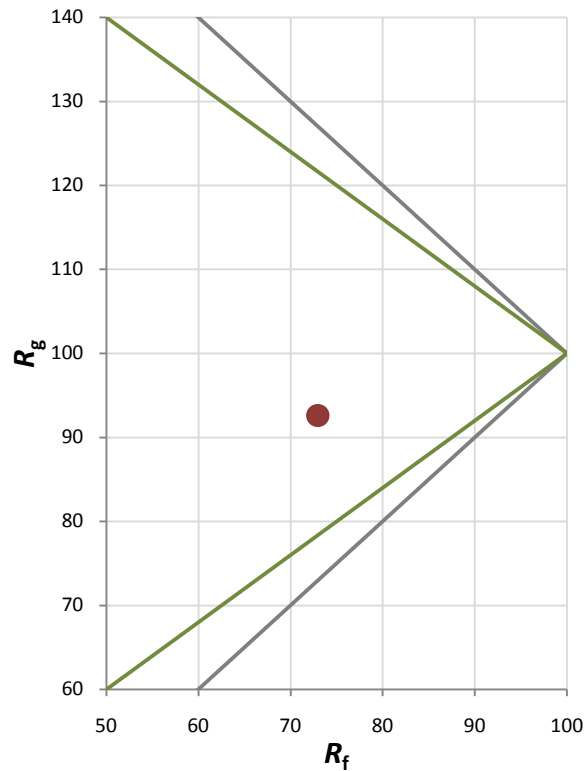
Fidelity Index and Gamut Index

Fidelity Index R_f	73
Gamut Index R_g	93

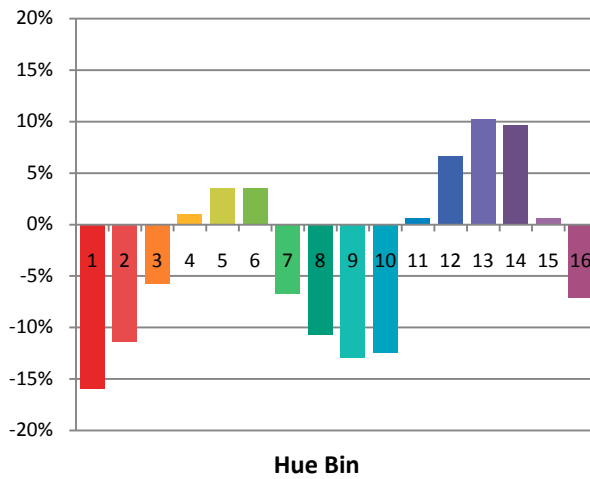
Spectral Power Distribution Comparison



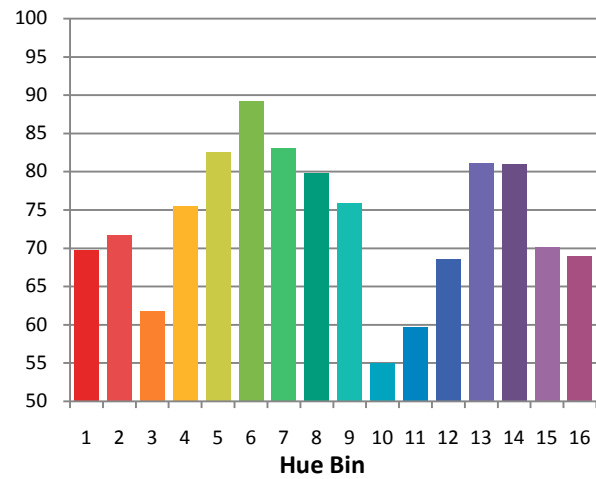
Plot of R_g versus R_f



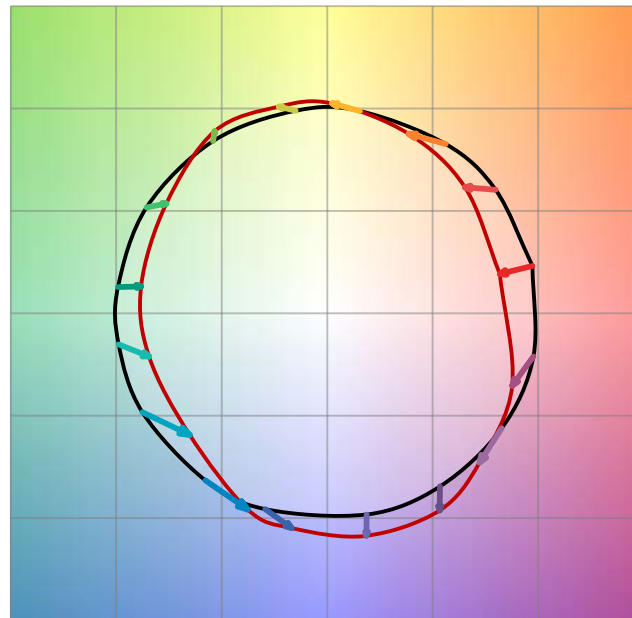
Chroma Shift by Hue



R_t by Hue

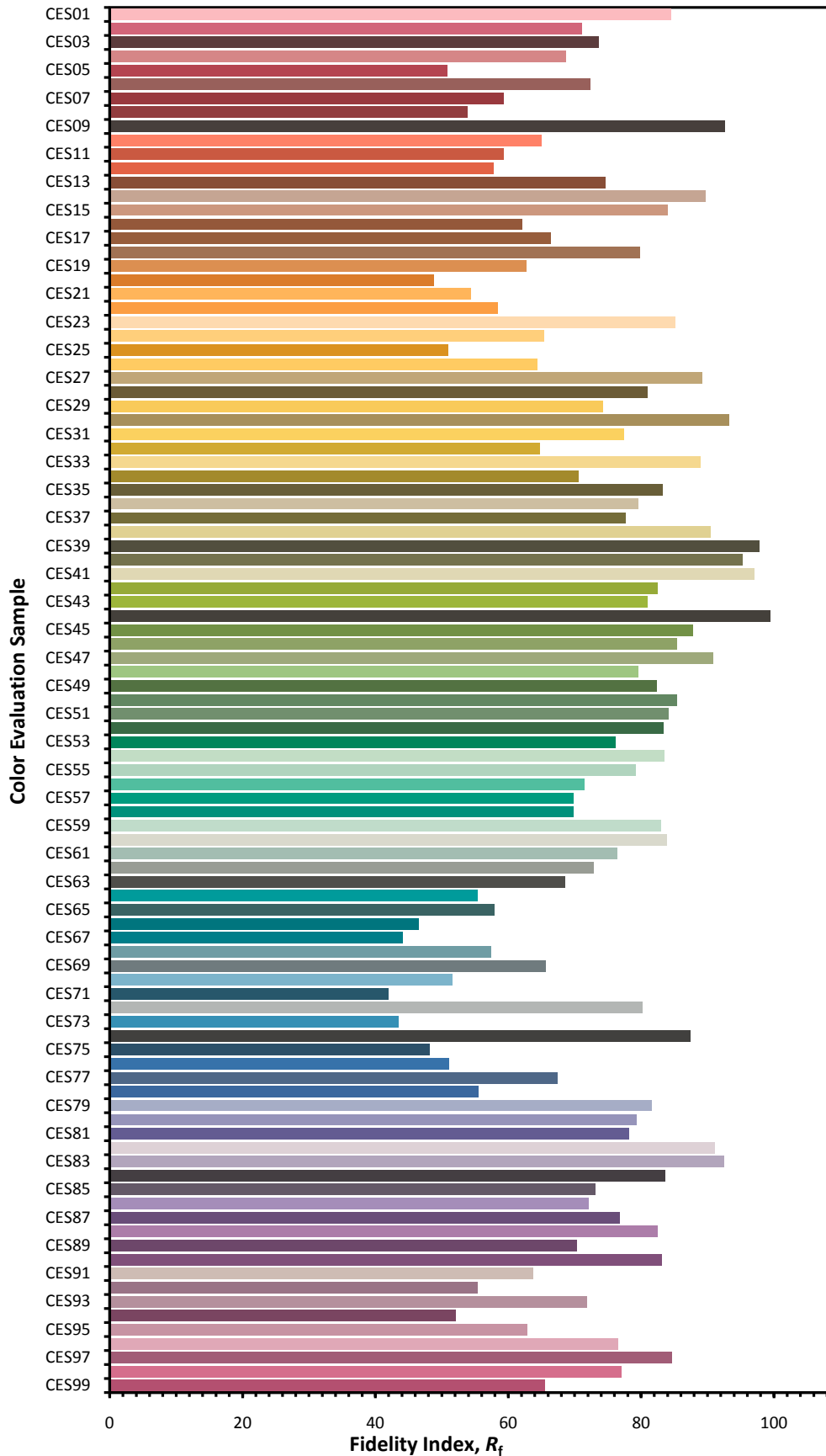


Color Vector Graphic

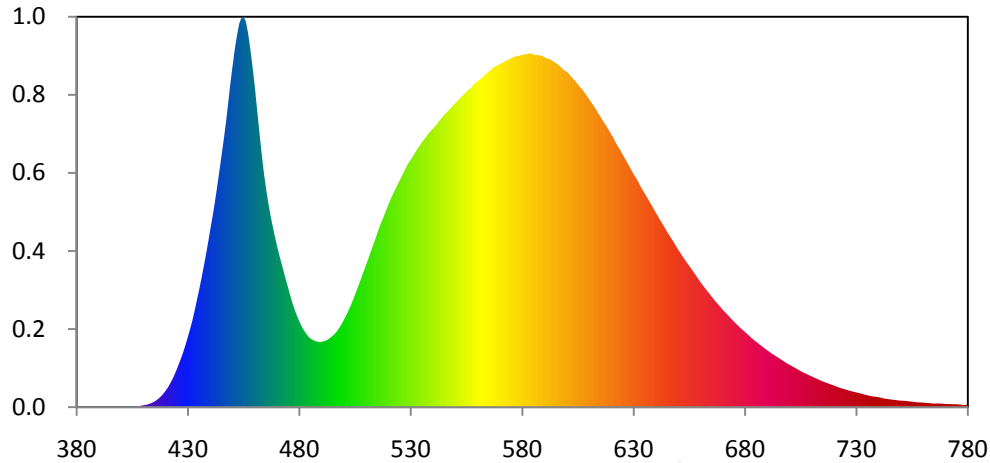


— Reference Illuminant — Test Source

Color Fidelity by CES Sample



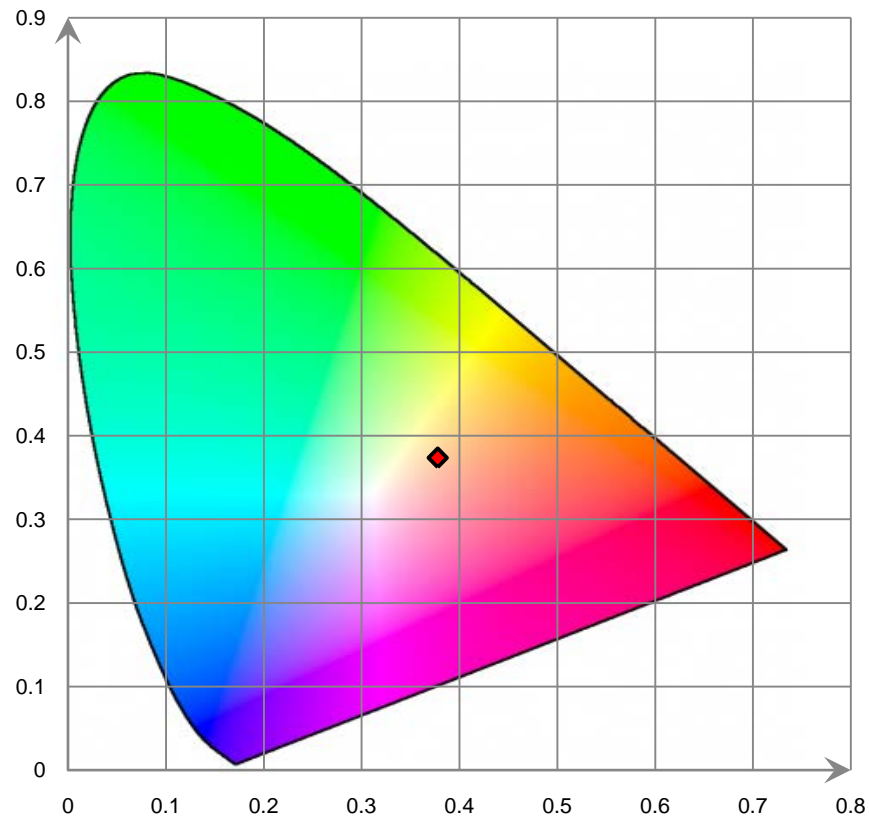
Relative Spectral Power Distribution



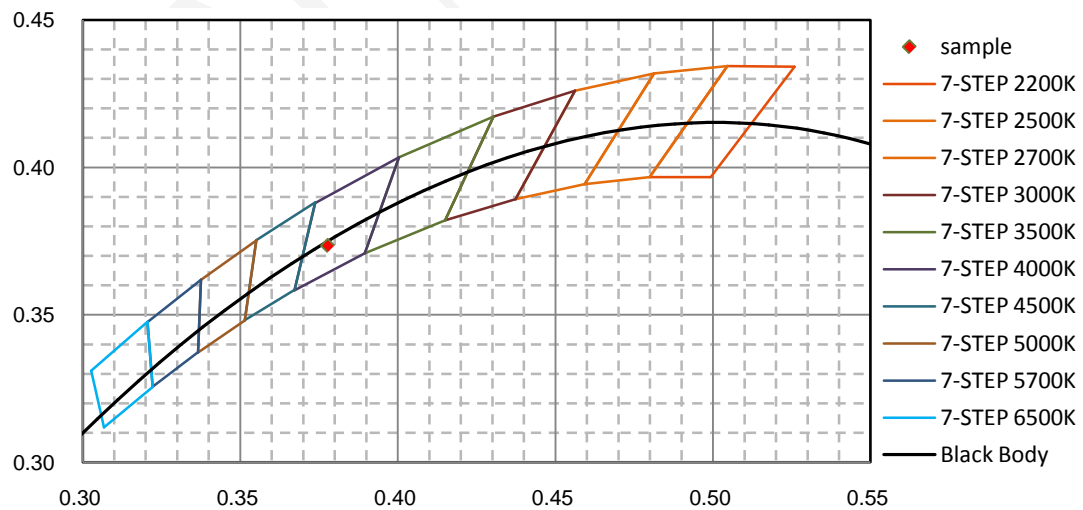
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.436E-01	421	1.217E+01	462	1.711E+02	503	6.266E+01	544	1.791E+02
381	1.249E-01	422	1.459E+01	463	1.580E+02	504	6.606E+01	545	1.806E+02
382	1.519E-01	423	1.718E+01	464	1.459E+02	505	6.953E+01	546	1.822E+02
383	1.725E-01	424	2.017E+01	465	1.358E+02	506	7.318E+01	547	1.836E+02
384	1.681E-01	425	2.345E+01	466	1.269E+02	507	7.685E+01	548	1.851E+02
385	1.429E-01	426	2.700E+01	467	1.192E+02	508	8.063E+01	549	1.867E+02
386	1.163E-01	427	3.063E+01	468	1.123E+02	509	8.443E+01	550	1.880E+02
387	1.045E-01	428	3.460E+01	469	1.057E+02	510	8.819E+01	551	1.894E+02
388	7.060E-02	429	3.893E+01	470	9.979E+01	511	9.199E+01	552	1.909E+02
389	7.800E-02	430	4.354E+01	471	9.418E+01	512	9.590E+01	553	1.923E+02
390	7.690E-02	431	4.846E+01	472	8.894E+01	513	9.977E+01	554	1.938E+02
391	6.480E-02	432	5.364E+01	473	8.384E+01	514	1.036E+02	555	1.952E+02
392	5.790E-02	433	5.970E+01	474	7.860E+01	515	1.076E+02	556	1.964E+02
393	6.460E-02	434	6.608E+01	475	7.370E+01	516	1.115E+02	557	1.974E+02
394	7.560E-02	435	7.241E+01	476	6.872E+01	517	1.151E+02	558	1.991E+02
395	9.230E-02	436	7.912E+01	477	6.406E+01	518	1.184E+02	559	2.006E+02
396	7.630E-02	437	8.636E+01	478	6.003E+01	519	1.219E+02	560	2.017E+02
397	5.980E-02	438	9.367E+01	479	5.632E+01	520	1.254E+02	561	2.026E+02
398	4.800E-02	439	1.014E+02	480	5.304E+01	521	1.288E+02	562	2.038E+02
399	3.220E-02	440	1.097E+02	481	5.017E+01	522	1.317E+02	563	2.052E+02
400	6.990E-02	441	1.174E+02	482	4.770E+01	523	1.346E+02	564	2.065E+02
401	1.325E-01	442	1.260E+02	483	4.558E+01	524	1.374E+02	565	2.074E+02
402	1.974E-01	443	1.353E+02	484	4.382E+01	525	1.402E+02	566	2.086E+02
403	2.021E-01	444	1.449E+02	485	4.251E+01	526	1.429E+02	567	2.100E+02
404	2.430E-01	445	1.547E+02	486	4.165E+01	527	1.457E+02	568	2.108E+02
405	3.419E-01	446	1.647E+02	487	4.099E+01	528	1.486E+02	569	2.114E+02
406	4.671E-01	447	1.754E+02	488	4.052E+01	529	1.511E+02	570	2.123E+02
407	5.672E-01	448	1.873E+02	489	4.032E+01	530	1.531E+02	571	2.129E+02
408	6.936E-01	449	1.996E+02	490	4.041E+01	531	1.552E+02	572	2.137E+02
409	9.054E-01	450	2.106E+02	491	4.071E+01	532	1.575E+02	573	2.146E+02
410	1.147E+00	451	2.212E+02	492	4.124E+01	533	1.597E+02	574	2.150E+02
411	1.412E+00	452	2.298E+02	493	4.202E+01	534	1.618E+02	575	2.158E+02
412	1.750E+00	453	2.371E+02	494	4.304E+01	535	1.638E+02	576	2.165E+02
413	2.208E+00	454	2.408E+02	495	4.419E+01	536	1.656E+02	577	2.169E+02
414	2.773E+00	455	2.415E+02	496	4.550E+01	537	1.674E+02	578	2.173E+02
415	3.521E+00	456	2.385E+02	497	4.718E+01	538	1.693E+02	579	2.175E+02
416	4.434E+00	457	2.314E+02	498	4.919E+01	539	1.710E+02	580	2.180E+02
417	5.557E+00	458	2.216E+02	499	5.150E+01	540	1.723E+02	581	2.182E+02
418	6.866E+00	459	2.106E+02	500	5.403E+01	541	1.738E+02	582	2.183E+02
419	8.424E+00	460	1.985E+02	501	5.665E+01	542	1.755E+02	583	2.188E+02
420	1.017E+01	461	1.846E+02	502	5.957E+01	543	1.775E+02	584	2.187E+02

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.181E+02	626	1.541E+02	667	6.506E+01	708	2.028E+01	749	4.189E+00
586	2.178E+02	627	1.517E+02	668	6.354E+01	709	1.965E+01	750	4.053E+00
587	2.178E+02	628	1.493E+02	669	6.201E+01	710	1.902E+01	751	3.962E+00
588	2.176E+02	629	1.467E+02	670	6.034E+01	711	1.836E+01	752	3.875E+00
589	2.173E+02	630	1.442E+02	671	5.885E+01	712	1.776E+01	753	3.733E+00
590	2.165E+02	631	1.420E+02	672	5.745E+01	713	1.711E+01	754	3.547E+00
591	2.159E+02	632	1.397E+02	673	5.598E+01	714	1.647E+01	755	3.445E+00
592	2.155E+02	633	1.370E+02	674	5.448E+01	715	1.591E+01	756	3.275E+00
593	2.148E+02	634	1.345E+02	675	5.304E+01	716	1.538E+01	757	3.054E+00
594	2.139E+02	635	1.322E+02	676	5.165E+01	717	1.493E+01	758	2.974E+00
595	2.130E+02	636	1.299E+02	677	5.032E+01	718	1.435E+01	759	2.931E+00
596	2.121E+02	637	1.275E+02	678	4.902E+01	719	1.385E+01	760	2.822E+00
597	2.108E+02	638	1.252E+02	679	4.777E+01	720	1.340E+01	761	2.671E+00
598	2.095E+02	639	1.228E+02	680	4.657E+01	721	1.286E+01	762	2.556E+00
599	2.083E+02	640	1.203E+02	681	4.531E+01	722	1.233E+01	763	2.506E+00
600	2.075E+02	641	1.180E+02	682	4.399E+01	723	1.179E+01	764	2.277E+00
601	2.063E+02	642	1.156E+02	683	4.276E+01	724	1.141E+01	765	2.211E+00
602	2.045E+02	643	1.133E+02	684	4.160E+01	725	1.102E+01	766	2.277E+00
603	2.030E+02	644	1.110E+02	685	4.050E+01	726	1.056E+01	767	2.286E+00
604	2.015E+02	645	1.086E+02	686	3.945E+01	727	1.016E+01	768	2.172E+00
605	1.998E+02	646	1.064E+02	687	3.837E+01	728	9.786E+00	769	2.076E+00
606	1.980E+02	647	1.043E+02	688	3.728E+01	729	9.474E+00	770	1.995E+00
607	1.964E+02	648	1.022E+02	689	3.621E+01	730	9.163E+00	771	1.967E+00
608	1.947E+02	649	9.981E+01	690	3.523E+01	731	8.806E+00	772	1.907E+00
609	1.927E+02	650	9.755E+01	691	3.424E+01	732	8.489E+00	773	1.863E+00
610	1.906E+02	651	9.545E+01	692	3.320E+01	733	8.078E+00	774	1.839E+00
611	1.886E+02	652	9.329E+01	693	3.230E+01	734	7.698E+00	775	1.811E+00
612	1.866E+02	653	9.129E+01	694	3.146E+01	735	7.365E+00	776	1.671E+00
613	1.845E+02	654	8.932E+01	695	3.060E+01	736	7.038E+00	777	1.571E+00
614	1.822E+02	655	8.740E+01	696	2.968E+01	737	6.766E+00	778	1.433E+00
615	1.800E+02	656	8.549E+01	697	2.877E+01	738	6.572E+00	779	1.446E+00
616	1.778E+02	657	8.349E+01	698	2.787E+01	739	6.433E+00	780	1.416E+00
617	1.756E+02	658	8.148E+01	699	2.700E+01	740	6.208E+00		
618	1.735E+02	659	7.944E+01	700	2.624E+01	741	5.886E+00		
619	1.711E+02	660	7.749E+01	701	2.549E+01	742	5.535E+00		
620	1.687E+02	661	7.566E+01	702	2.471E+01	743	5.237E+00		
621	1.664E+02	662	7.380E+01	703	2.394E+01	744	5.044E+00		
622	1.637E+02	663	7.205E+01	704	2.311E+01	745	4.861E+00		
623	1.613E+02	664	7.033E+01	705	2.231E+01	746	4.692E+00		
624	1.591E+02	665	6.856E+01	706	2.157E+01	747	4.512E+00		
625	1.566E+02	666	6.680E+01	707	2.090E+01	748	4.344E+00		

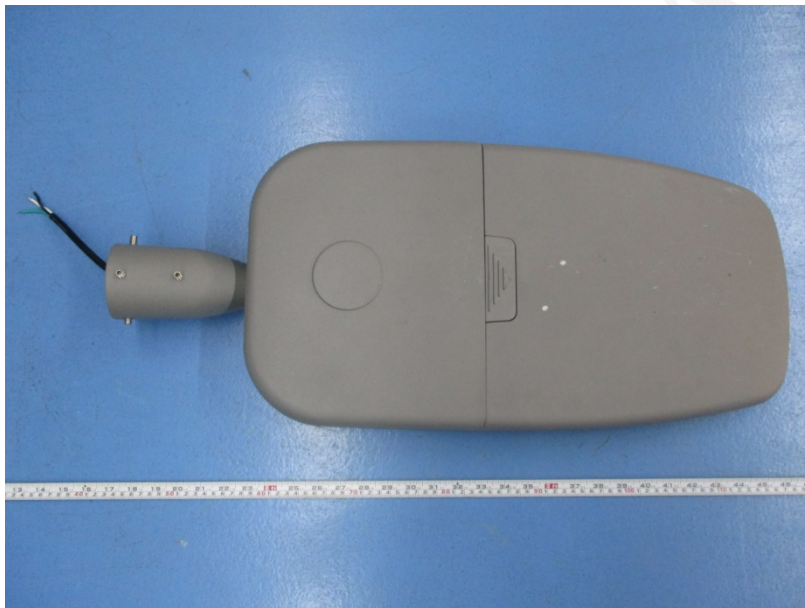
CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



6. Product Photo



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