



NVLAP LAB CODE:201045-0



Shenzhen Anbotek Compliance Laboratory Limited

IES LM-79-08 TEST REPORT

For
KINGLUMI CO., LTD

Report Number: R011601998L1

Product Type: Track or Mono-point Directional Luminaires

Date of Receipt: 2016-05-20

Date of Test: 2016-05-20 to 2016-09-05

Date of Report: 2016-09-06

Model name(s): X-TR014-22-YYZZ-UU

Representative (Tested) Model: X-TR014-22-2740-UU/X-TR014-22-3040-UU/X-TR014-22-4040-UU/X-TR014-22-5040-UU

Product Description: AC120V 60Hz 22W 2700K/3000K/4000K/5000K

Product Criteria: IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

Prepared By: Shenzhen Anbotek Compliance Laboratory Limited
1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China
Tel: +86 755 2606 6544
Fax: +86 755 26014772
Web: www.anbotek.com

Tested By: Alcander Lou *Alcander Lou*

Reviewed By: Vic Zhou *Vic Zhou*



Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Anbotek Compliance Laboratory Limited. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the Federal Government.

Shenzhen Anbotek Compliance Laboratory Limited
Tel:(86)755-26066544 Fax:(86)755-26014772 www.anbotek.com

TABLE OF CONTENTS

1 – GENERAL.....	3
1.1 Product description.....	3
1.2 Standard of method.....	3
1.3 Test Facility.....	3
2 – Test Equipment List and Details.....	4
3 – Test Method.....	5
3.1 Ambient Condition.....	5
3.2 Power Supply Characteristics.....	5
3.3 Seasoning and Stabilization.....	5
3.4 Integrating Sphere System.....	5
3.5 Goniophotometer System.....	5
4 – Test Result.....	6
4.1 Photometric test with Integrating Sphere System.....	6
4.2 Photometric test with Goniophotometer System.....	18
5 – Additional Test.....	23
Attachment A – Product PHOTO.....	24

1 – GENERAL

1.1 Product description

General Information

Applicant	KINGLUMI CO., LTD
Applicant Address	Bldg 3, Nangang Third Industrial Zone, Tangtou, Shiyan Town, Baoan District, Shenzhen City, China
Manufacturer	KINGLUMI CO., LTD
Manufacturer Address	Bldg 3, Nangang Third Industrial Zone, Tangtou, Shiyan Town, Baoan District, Shenzhen City, China
Brand name	CAMETA
Test Model Number	X-TR014-22-2740-UU/X-TR014-22-3040-UU/ X-TR014-22-4040-UU/X-TR014-22-5040-UU
Burning time before test	0 Hours (For new products)

Rated Values

Rated Inputs	AC120V 60Hz
Rated Power	22W
Nominal CCT	2700K/3000K/4000K/5000K

1.2 Standard of method

- ANSI C78.377-2015: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits-Related Power Quality Requirements for Lighting Equipment
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products

1.3 Test Facility

The test facility used by Shenzhen Anbotek Compliance Laboratory Limited is located at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China.

2 – Test Equipment List and Details

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Digital Power Meter	YOKOGAWA	WT210	SE-074	0-600V/0-10A/0-100Hz	2016-04-06	2017-04-05
Temperature & Humidity meter	XINIXI	CTH-608	SE-260	0°C~50°C, 10% to 90%RH	2016-04-06	2017-04-05
Digital Power Meter	YOKOGAWA	WT310	SE-381	0-600V/0-10A/0-100Hz	2016-04-06	2017-04-05
DC power supply	LINKCOLOR	DC 30V,5A	SE-433	DC 30V, 5A	2016-03-28	2017-03-27
AC power source	Ainuo	AN97001W	SE-434	0-300V, 1000VA	2016-04-06	2017-04-05
Standard lamp	SENSING	220V/500W	SE-448	220V/500W	2016-03-30	2017-03-29
Standard lamp	SENSING	220V/500W	SE-449	220V/500W	2016-03-30	2017-03-29
Spatial distribution of rapid colorimetric measurement system	SENSING	GMS3000	SE-450	/	2016-03-30	2017-03-29
DC power supply	ITECH	IT6832	SE-598	30V 3A	2016-06-23	2017-06-22
Integrating sphere (2.0m)	EVERFINE	2.0m	SE-599	2m	2016-06-23	2017-06-22
Light flickering analyzer	EVERFINE	LFA-2000	SE-600	/	2016-06-25	2017-06-24
AC power source	EVERFINE	DPS1010	SE-602	0-300V, 1000VA	2016-06-23	2017-06-22
Standard lamp	EVERFINE	D215S	SE-603	4.802A	2016-07-02	2017-07-01
DC power supply	EVERFINE	WY605	SE-605	DC 60V, 5A	2016-06-23	2017-06-22
Standard lamp	EVERFINE	D062	SE-606	1.5445A	2016-07-02	2017-07-01
Spectrum analyzer	EVERFINE	HAAS-2000	SE-607	380-780nm 1000-100000K	2016-06-23	2017-06-22

Statement of Traceability: Shenzhen Anbotek Compliance Laboratory Limited attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).

3 – Test Method

3.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, the air flow around the sample(s) being tested did not affect the performance.

3.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within ± 0.2 percent under load.

3.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

3.4 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.

3.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

4 – Test Result

4.1 Photometric test with Integrating Sphere System

4.1.1 Model: X-TR014-22-2740-UU

Electrical data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.03	60	0.1805	21.28	0.982

Photometric data

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
1990.212	5.548	93.525	2656	0.00085

Chromaticity Coordinate

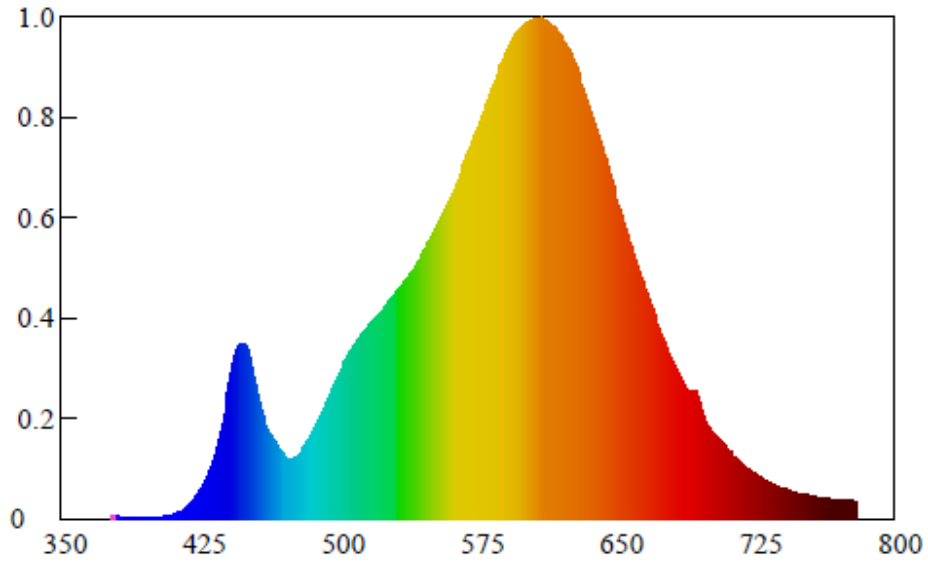
x	y	u	v	u'	v'
0.4650	0.4140	0.2643	0.3529	0.2643	0.5294

Color Rendering Details

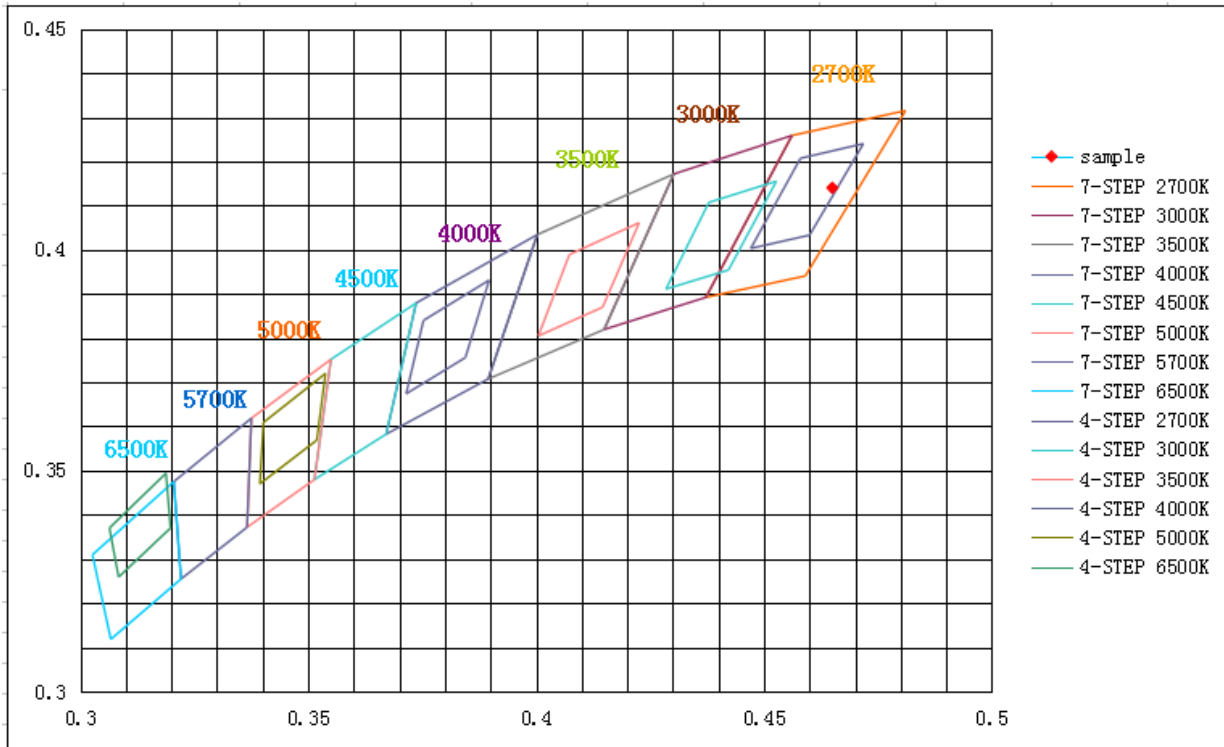
Ra
83.3

R1	R2	R3	R4	R5
82	91	97	82	82
R6	R7	R8	R9	R10
90	83	60	13	80
R11	R12	R13	R14	R15
82	75	84	99	74

Spectral Distribution



ANSI Chromaticity Quadrangles Diagram



4.1.2 Model: X-TR014-22-3040-UU**Electrical data**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.02	60	0.1809	21.35	0.983

Photometric data

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2039.203	5.612	95.513	2997	0.00083

Chromaticity Coordinate

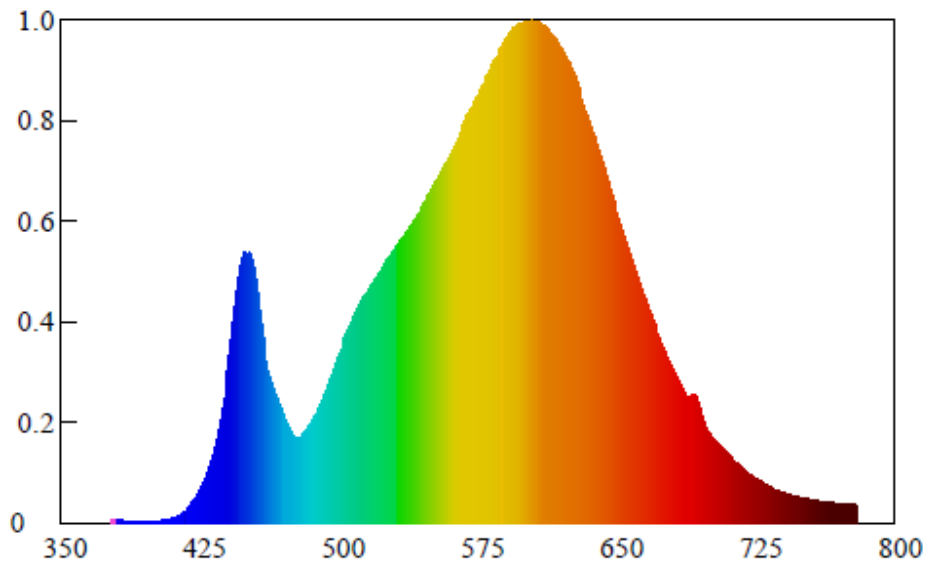
x	y	u	v	u'	v'
0.4384	0.4067	0.2504	0.3484	0.2504	0.5226

Color Rendering Details

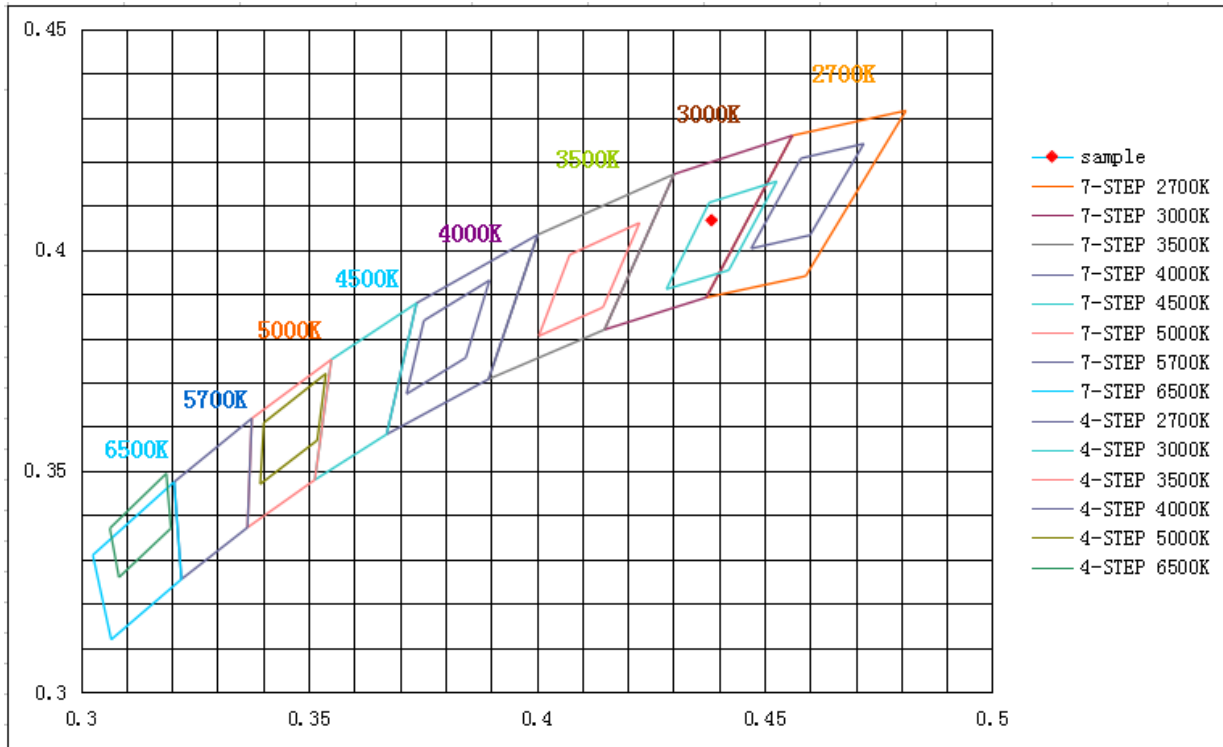
Ra
83.1

R1	R2	R3	R4	R5
82	90	97	82	81
R6	R7	R8	R9	R10
87	85	63	14	76
R11	R12	R13	R14	R15
80	67	84	98	75

Spectral Distribution



ANSI Chromaticity Quadrangles Diagram



4.1.3 Model: X-TR014-22-4040-UU**Electrical data**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.1812	21.42	0.985

Photometric data

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2103.958	5.405	98.224	3922	0.00035

Chromaticity Coordinate

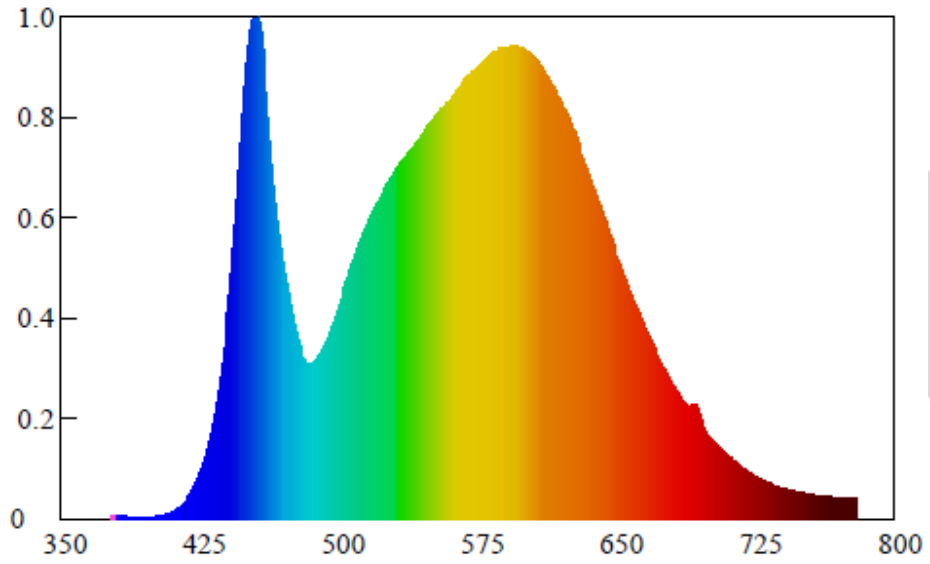
x	y	u	v	u'	v'
0.3842	0.3798	0.2264	0.3357	0.2264	0.5035

Color Rendering Details

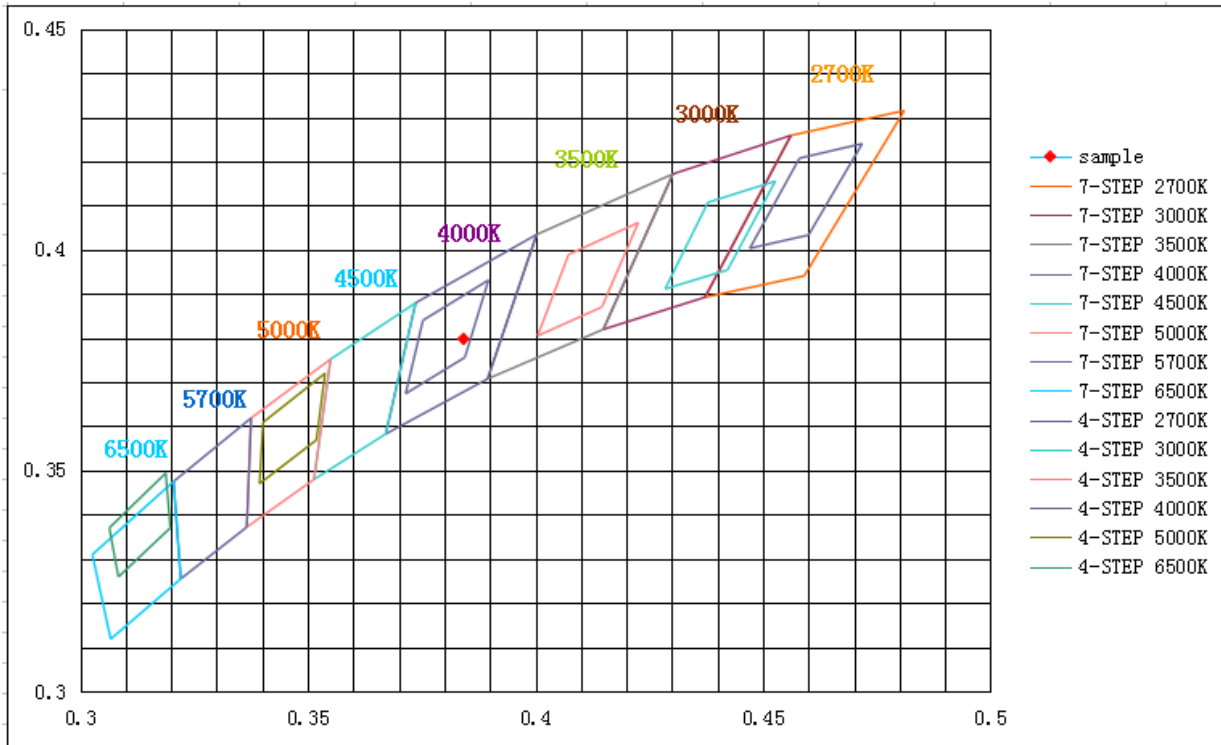
Ra
83.8

R1	R2	R3	R4	R5
83	91	95	80	81
R6	R7	R8	R9	R10
86	87	67	18	77
R11	R12	R13	R14	R15
78	60	85	97	78

Spectral Distribution



ANSI Chromaticity Quadrangles Diagram



4.1.4 Model: X-TR014-22-5040-UU**Electrical data**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.03	60	0.1811	21.41	0.985

Photometric data

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2189.579	6.076	102.269	4934	0.00175

Chromaticity Coordinate

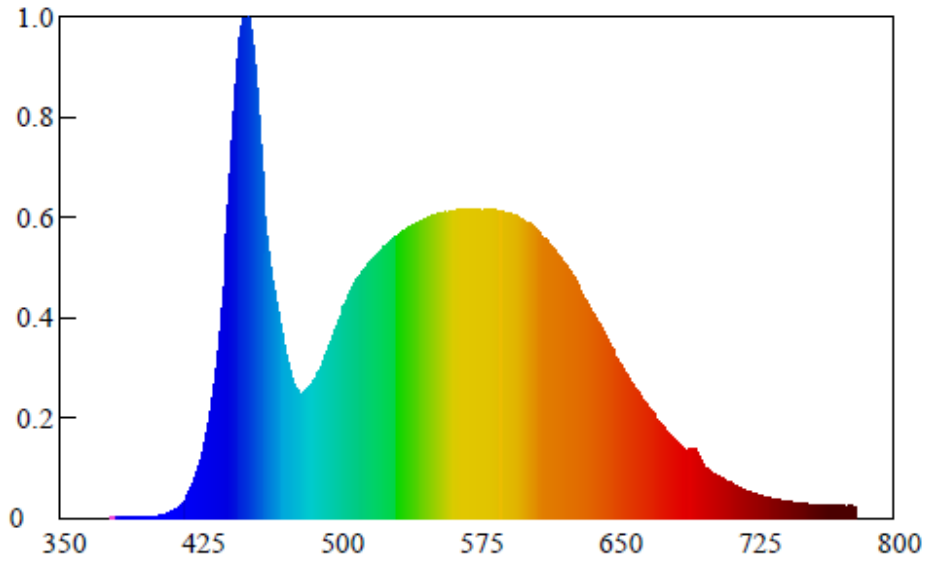
x	y	u	v	u'	v'
0.3474	0.3569	0.2109	0.3251	0.2109	0.4876

Color Rendering Details

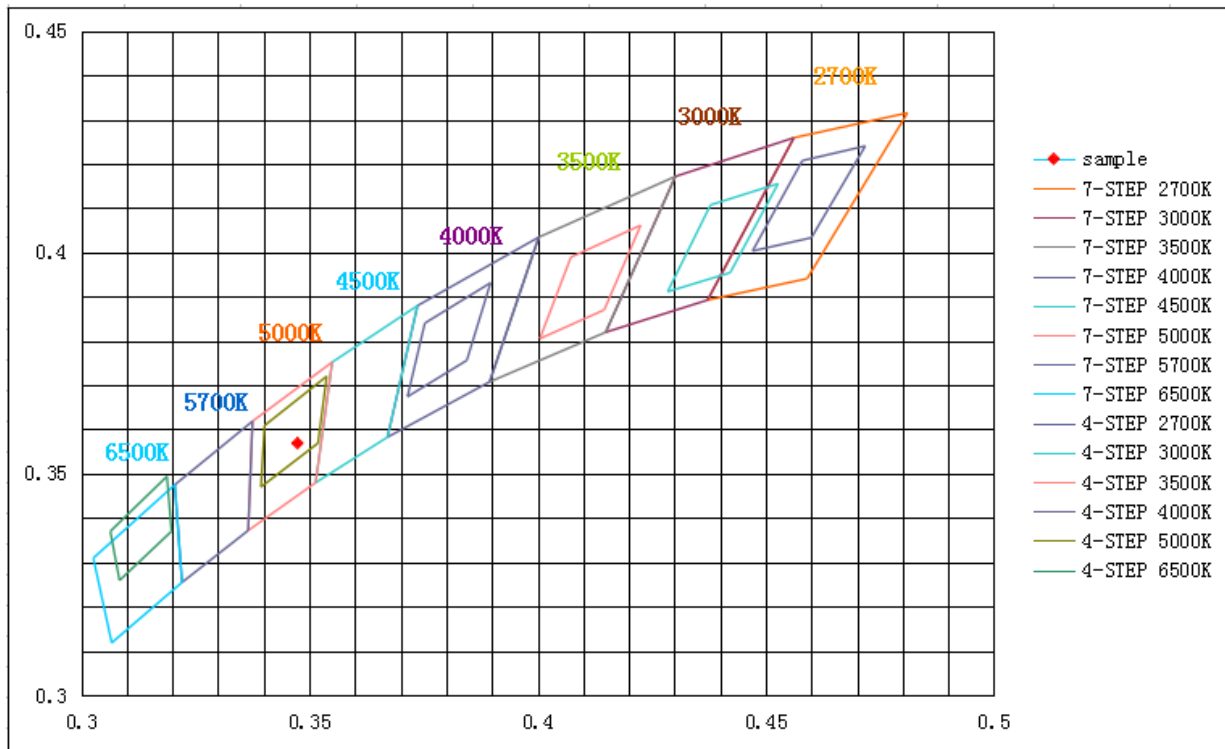
Ra
84.3

R1	R2	R3	R4	R5
83	89	92	83	82
R6	R7	R8	R9	R10
83	90	72	22	72
R11	R12	R13	R14	R15
81	56	85	95	79

Spectral Distribution



ANSI Chromaticity Quadrangles Diagram



4.2 Photometric test with Goniophotometer System

4.2.1 Model: X-TR014-22-2740-UU

Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.02	60	0.1810	21.33	0.982

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	CBCP (cd)	Zonal Lumen Density(0~90°)
2005.80	94.04	2991.986	99.84%

Zonal Lumen Summary

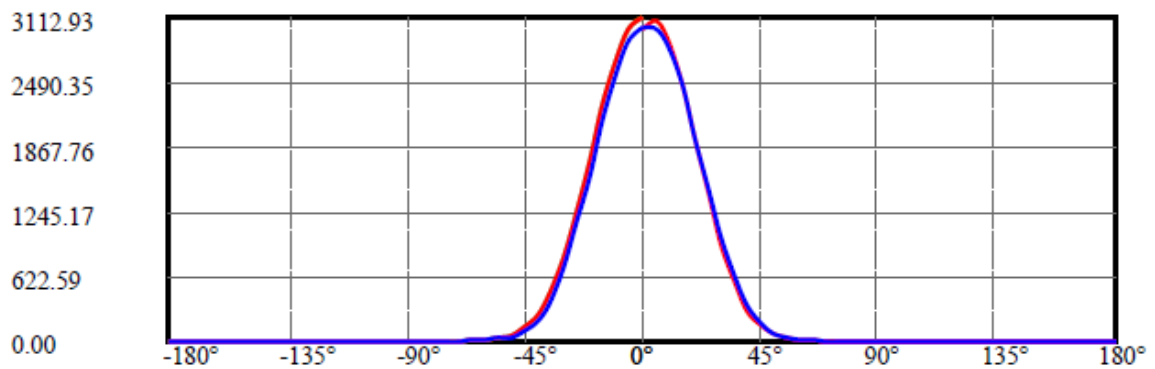
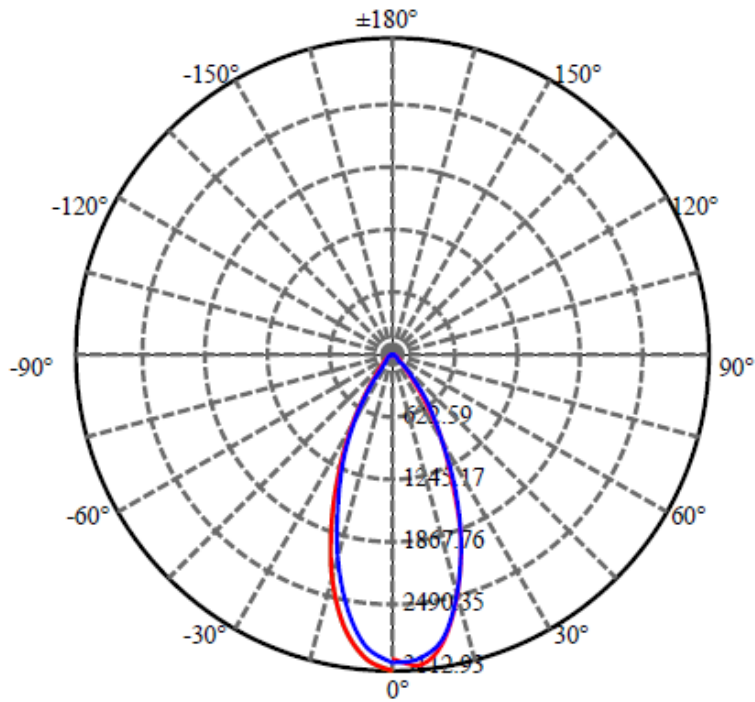
ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	1502.70	74.92%
0-40	1829.49	91.21%
0-60	1984.98	98.96%
0-90	2002.58	99.84%
0-120	2002.85	99.85%
0-180	2005.80	100.00%
60-90	32.20	1.61%
90-120	0.37	0.02%
90-130	0.57	0.03%
90-150	1.64	0.08%
90-180	3.25	0.16%
0-32.56	1604.64	80.00%

ZONAL LUMEN SUMMARY

0-10	274.79
10-20	634.26
20-30	593.64
30-40	326.80
40-50	117.51
50-60	37.98
60-70	14.26
70-80	3.01
80-90	0.32
90-100	0.06
100-110	0.09
110-120	0.12
120-130	0.20
130-140	0.40
140-150	0.67
150-160	0.81
160-170	0.63
170-180	0.18

Light Distribution Curve [Unit: cd]



C180(Max): ———

C0/C180: ———

C90/C270: ———

Field angle(10%Imax):C0/180Left:38.6 Right:39.5
:C90/270Left:37.0 Right:41.1

Beam Angle(50%Imax):C0/180Left:21.7 Right:23.7
:C90/270Left:20.7 Right:24.3

Luminous Intensity (cd) Distribution Data

<i>C/γ</i> (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	2991.99	3073.48	2872.18	2459.99	1945.52	1418.88	935.26	551.48	285.89
22.5	2995.40	2983.87	2809.51	2432.55	1940.98	1409.14	964.81	579.73	319.00
45.0	2997.99	3001.89	2832.73	2467.13	1979.94	1437.87	987.86	606.84	337.19
67.5	3006.76	3011.95	2836.30	2485.48	1966.95	1459.47	1009.29	599.37	334.91
90.0	3023.81	3004.81	2829.16	2448.95	1950.23	1445.34	997.76	614.47	338.49
112.5	3025.27	2997.99	2806.10	2424.27	1906.23	1416.61	979.25	600.67	344.17
135.0	3060.98	3000.92	2771.04	2363.23	1852.66	1326.83	909.12	548.07	309.59
157.5	3081.76	2998.97	2735.97	2315.18	1800.71	1281.21	857.82	490.76	276.15
180.0	3112.93	3004.32	2708.70	2262.42	1731.72	1221.96	802.46	465.60	250.01
202.5	2995.40	2862.27	2541.32	2086.60	1577.65	1116.92	706.19	397.58	211.70
225.0	2997.99	2849.94	2539.54	2051.21	1540.96	1101.66	677.13	367.22	193.84
247.5	3006.76	2857.40	2537.26	2047.64	1539.83	1092.41	691.26	360.40	191.08
270.0	3023.81	2877.21	2566.97	2102.83	1582.04	1112.54	709.76	376.31	194.81
292.5	3025.27	2903.02	2603.01	2171.50	1670.84	1175.85	772.92	417.22	220.95
315.0	3060.98	2959.84	2689.38	2276.38	1763.70	1242.58	821.29	468.85	237.35
337.5	3081.76	3016.50	2775.42	2375.41	1871.33	1321.31	875.52	494.34	258.61
360.0	2991.99	3073.48	2872.18	2459.99	1945.52	1418.88	935.26	551.48	285.89
<i>C/γ</i> (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	153.09	76.46	41.24	25.65	14.94	7.14	2.60	0.49	0.16
22.5	167.70	87.02	47.57	28.25	16.40	8.12	3.25	0.49	0.32
45.0	174.84	88.64	45.78	27.60	15.91	7.95	3.25	0.65	0.32
67.5	179.71	86.53	45.62	27.60	16.40	8.28	3.57	0.81	0.49
90.0	181.34	83.28	44.64	27.92	16.56	8.12	3.25	0.81	0.32
112.5	185.56	86.53	47.08	28.57	16.72	7.63	3.08	0.65	0.32
135.0	161.37	79.71	43.83	26.79	15.42	6.98	2.60	0.65	0.32
157.5	142.21	71.27	42.05	25.97	13.64	6.49	2.27	0.49	0.32
180.0	129.06	66.24	39.29	24.51	12.83	6.01	1.95	0.49	0.16
202.5	109.09	56.50	34.58	21.10	10.39	5.03	1.14	0.49	0.16
225.0	94.00	48.54	30.68	18.99	10.07	4.55	0.97	0.49	0.16
247.5	91.89	46.11	30.03	18.67	9.74	4.71	0.81	0.49	0.16
270.0	95.78	46.27	30.36	18.83	10.23	4.71	0.97	0.49	0.32
292.5	108.93	50.33	31.33	20.78	11.36	5.19	1.30	0.65	0.32
315.0	119.97	57.31	33.12	22.08	12.83	6.01	1.95	0.49	0.32
337.5	131.50	64.77	36.85	23.86	13.96	6.49	2.27	0.65	0.16
360.0	153.09	76.46	41.24	25.65	14.94	7.14	2.60	0.49	0.16
<i>C/γ</i> (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.16
22.5	0.00	0.00	0.16	0.16	0.00	0.16	0.16	0.32	0.16
45.0	0.16	0.00	0.00	0.00	0.16	0.00	0.16	0.16	0.32
67.5	0.00	0.00	0.00	0.16	0.00	0.16	0.00	0.16	0.16
90.0	0.16	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.32
112.5	0.00	0.16	0.16	0.00	0.16	0.16	0.00	0.32	0.32
135.0	0.16	0.16	0.00	0.16	0.00	0.16	0.00	0.16	0.32
157.5	0.00	0.00	0.16	0.16	0.16	0.32	0.16	0.16	0.49
180.0	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.32	0.49
202.5	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.32
225.0	0.16	0.00	0.16	0.16	0.16	0.16	0.16	0.32	0.32
247.5	0.00	0.00	0.00	0.16	0.00	0.16	0.16	0.16	0.32
270.0	0.16	0.00	0.00	0.00	0.16	0.00	0.16	0.32	0.32
292.5	0.00	0.16	0.16	0.00	0.16	0.16	0.16	0.32	0.32
315.0	0.16	0.16	0.00	0.16	0.16	0.16	0.16	0.16	0.49
337.5	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.32
360.0	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.16

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.32	0.65	0.97	1.46	1.62	1.95	2.11	2.27	2.44
22.5	0.49	0.65	1.14	1.30	1.79	1.95	2.27	2.27	2.44
45.0	0.49	0.81	0.97	1.30	1.62	1.95	2.27	2.27	2.44
67.5	0.49	0.65	0.97	1.30	1.62	2.11	2.27	2.44	2.44
90.0	0.49	0.65	0.97	1.30	1.62	2.11	2.27	2.44	2.44
112.5	0.49	0.81	1.14	1.46	1.79	2.11	2.27	2.44	2.60
135.0	0.49	0.65	1.14	1.46	1.95	2.11	2.27	2.44	2.44
157.5	0.65	0.81	1.14	1.62	1.95	2.11	2.44	2.44	2.60
180.0	0.49	0.97	1.14	1.79	1.95	2.27	2.44	2.44	2.44
202.5	0.65	0.81	1.14	1.46	1.79	1.95	2.27	2.44	2.60
225.0	0.65	0.81	1.14	1.46	1.79	2.11	2.27	2.44	2.60
247.5	0.65	0.81	1.14	1.30	1.79	1.95	2.27	2.44	2.60
270.0	0.49	0.65	1.14	1.46	1.79	2.11	2.27	2.44	2.60
292.5	0.49	0.81	0.97	1.46	1.79	1.95	2.27	2.44	2.60
315.0	0.49	0.65	0.97	1.46	1.79	2.11	2.27	2.44	2.44
337.5	0.49	0.65	0.97	1.30	1.79	1.95	2.11	2.44	2.60
360.0	0.32	0.65	0.97	1.46	1.62	1.95	2.11	2.27	2.44

C/γ(°)	180.0
0.0	2.76
22.5	2.60
45.0	2.60
67.5	2.60
90.0	2.60
112.5	2.76
135.0	2.60
157.5	2.76
180.0	2.76
202.5	2.60
225.0	2.60
247.5	2.60
270.0	2.60
292.5	2.76
315.0	2.60
337.5	2.76
360.0	2.76

5 – Additional Test

X-TR014-22-2740-UU

Test item	Test Voltage (V)	Frequency(Hz)	Test Result
Power Factor	120	60	0.982
Total harmonic Distortion	120	60	14.39%

X-TR014-22-3040-UU

Test item	Test Voltage (V)	Frequency(Hz)	Test Result
Power Factor	120	60	0.983
Total harmonic Distortion	120	60	14.26%

X-TR014-22-4040-UU

Test item	Test Voltage (V)	Frequency(Hz)	Test Result
Power Factor	120	60	0.985
Total harmonic Distortion	120	60	13.94%

X-TR014-22-5040-UU

Test item	Test Voltage (V)	Frequency(Hz)	Test Result
Power Factor	120	60	0.985
Total harmonic Distortion	120	60	13.71%

The test data was only good for the test sample. It may have deviation for other test sample.

Attachment A – Product PHOTO

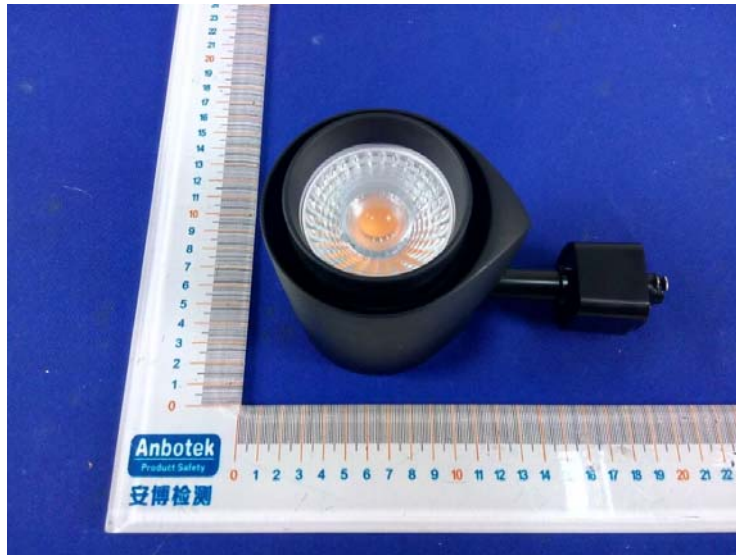


PHOTO 1

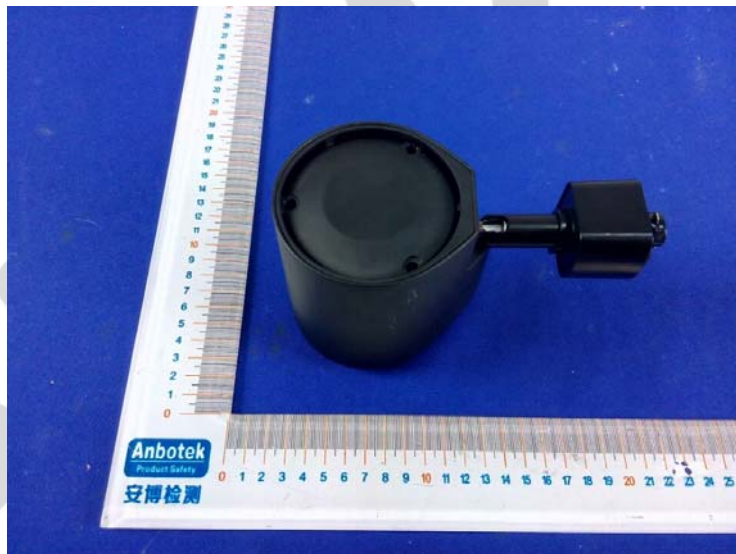


PHOTO 2

-----End of Report-----