LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Lamp specifics

Manufacturer:	LEDVANCE LLC	Watts:	6W
Lamp:	LED6A19F8SC310YV	Rated Lumens:	450Lumens
Trademark:	LEDVANCE & SYLVANIA	Orientation:	VBU and VBD
Test Requester:	Huang Chengqi	Rated Voltage:	120V AC(tested @ 60Hz)
Telephone:	0592-7263029	Beam Angle:	N/A
Sample Size:	10	Center Beam:	N/A
Date of Received:	2025.01.22	CCT:	2700K/3000K/3500K/4000K/5000K
Date of Tests:	2025.02.08 ~ 2025.02.11	Current Burn Time:	0 hr

Test Purpose

Electrical and Photometric tests as required by IES LM-79 test standard

Standards used

ANSI/IES LM-79:2019 Optical and Electrical Measurements of Solid-State Lighting Products
IES LM-20:2013 Photometric testing of reflector type lamps
IES LM-58:2013 Spectroradiometric Measurement Methods for Light Sources
CIE Pub.13.3:1995 Method of measuring and Specifying Color Rendering Properties of Light Sources
CIE Pub.15:2004 Method of measuring and Specifying Color Rendering of Light Sources
ANSI C82.77:2002 Harmonic Emission Limits- Related Power Quality Requirements for Lighting Equipment

Disclaimers

1. It's not allowed if partly use this report without written authorization.
2. Test conclusion in this report is solely applicable for referring samples.
3. The test sample information in this report is provided by the customer.
4. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Measurements performed by one or more of the following authorized operators:

He Chunfang,Zhou Lei

Report prepared by: Zhou Lei

Report was checked and issued by
Chen Xiangbing
Authorized signatory

Issue Date：2025.02.14
E-mail: chenxb@topstar.com.cn
Phone: +86-592-7263892

Instrumentation

Goniometry Instrumentation

EVERFINE TYPE C High Speed Mirror Goniophotometer R5000
EVERFINE HAAS-2000 High Accuracy Array Spectroradiometer
EVERFINE ID-1000 Accurate Photometer
EVERFINE PF2010 Digital Power Analyzer
EVERFINE WY12010 DC Power source
NF EC1000S AC Power source
D980s total luminous flux and spectral flux standard lamp certified by NIM

Sphere Spectroradiometry Instrumentation

EVERFINE HAAS-2000 High Accuracy Array Spectroradiometer, FWHM = 2nm
EVERFINE PF310A Digital power meter
NF EC1000S AC power source
EVERFINE WY305 DC Power source
EVERFINE 1.5 meter sphere with high reflectance coating
D204 total luminous flux and spectral flux standard lamp certified by NIM

Test Objectives

Goniometric measurement:

Measure distribution photometry and input electrical parameters and report candela distribution, calculated lumen output, voltage (V), current (A) and power (W).

Sphere spectroradiometric measurement:

Measure sphere photometry and input electrical parameters and report the total flux output (lumens), Correlated Color Temperature (CCT), Color Rendering Index (CRI), Chromaticity Coordinates (x,y), Spectral Power Distribution (SPD), voltage (V), current (A) and power (W).

Test Procedures and Conditions

Goniometry:

Electrical conditions and physical orientation were set as required by the lamp manufacturer or the customer.

Ambient temperature was controlled at 25+/-1 degree Celsius and measured at the approximate height of the sample mounted on the Goniometer equipment.

Calibration was based on NIM certified total luminous flux and spectral flux standard lamp.

Lamps were stabilized per LM-79 requirements.

EVERFINE type C High Speed Mirror Goniometer was used to measure intensity (candela) at each angle of distribution.

Burn time during testing for each lamp: 2 hours

Stabilization time during testing for each lamp: 0.5 hours

Sphere Spectroradiometry

Electrical conditions and physical orientation were set as required by the luminaires/lamps manufacturer or the customer.

Ambient temperature was controlled at 25+/-1 degree Celsius and measured inside of the sphere, shielded from direct radiation of the lamp.

Calibration was based on NIM certified total luminous flux and spectral flux standard lamp.

Luminaires/lamps were stabilized per LM-79 requirements.

HAAS-2000 Spectroradiometer attached to 1.5 meter sphere painted with high reflectance paint (＞98%) was used to measure correlated color temperature, chromaticity coordinates, color rendering index, total luminous flux and spectral power distribution. Sphere measurement was set up in 4π geometry and used continuous self-absorption correction.

Burn time during testing for each luminaires/lamps: 2 hours

Stabilization time during testing for each luminaires/lamps: 0.5 hours

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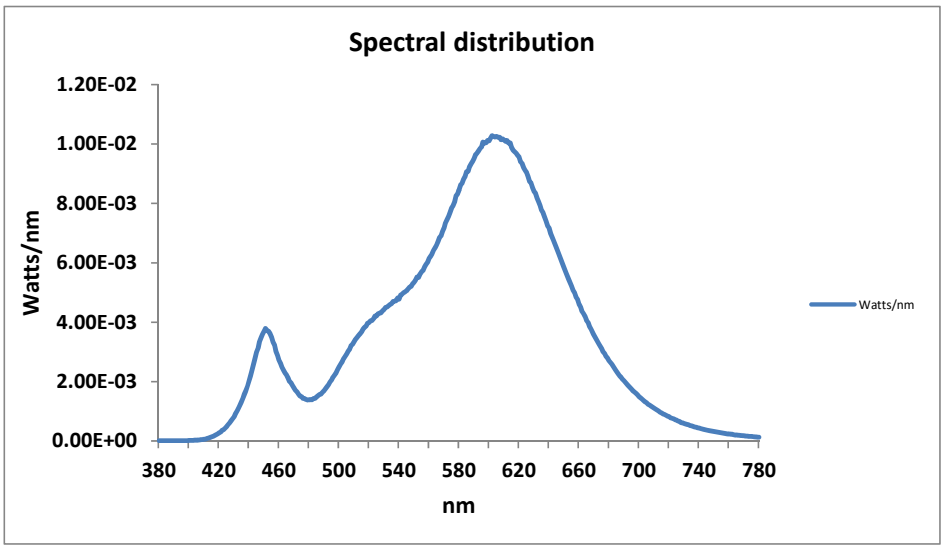
Test data in 2700K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.074	5.1	0.583	457.6	89.0

CCX	CCY	u′	v′	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4571	0.4081	0.2618	0.5260	-0.0007	2720	80.8	-1.3	82	96

Spectral Power Distribution



nm	Watts/nm
380	1.57E-05
385	1.09E-05
390	1.05E-05
395	1.19E-05
400	1.81E-05
405	2.79E-05
410	6.12E-05
415	1.34E-04
420	2.71E-04
425	4.83E-04
430	8.22E-04
435	1.32E-03
440	2.03E-03
445	2.99E-03
450	3.70E-03
455	3.49E-03
460	2.73E-03

nm	Watts/nm
465	2.22E-03
470	1.78E-03
475	1.49E-03
480	1.39E-03
485	1.48E-03
490	1.69E-03
495	2.05E-03
500	2.50E-03
505	2.92E-03
510	3.34E-03
515	3.67E-03
520	3.99E-03
525	4.21E-03
530	4.43E-03
535	4.62E-03
540	4.78E-03
545	5.06E-03

nm	Watts/nm
550	5.35E-03
555	5.71E-03
560	6.14E-03
565	6.60E-03
570	7.18E-03
575	7.85E-03
580	8.44E-03
585	9.07E-03
590	9.51E-03
595	9.90E-03
600	1.01E-02
605	1.03E-02
610	1.01E-02
615	9.89E-03
620	9.56E-03
625	9.03E-03
630	8.41E-03

nm	Watts/nm
635	7.77E-03
640	7.17E-03
645	6.50E-03
650	5.82E-03
655	5.22E-03
660	4.61E-03
665	4.06E-03
670	3.56E-03
675	3.11E-03
680	2.70E-03
685	2.35E-03
690	2.03E-03
695	1.75E-03
700	1.49E-03
705	1.29E-03
710	1.11E-03
715	9.45E-04

nm	Watts/nm
720	8.17E-04
725	6.98E-04
730	5.92E-04
735	5.07E-04
740	4.35E-04
745	3.69E-04
750	3.17E-04
755	2.76E-04
760	2.40E-04
765	2.02E-04
770	1.73E-04
775	1.52E-04
780	1.26E-04

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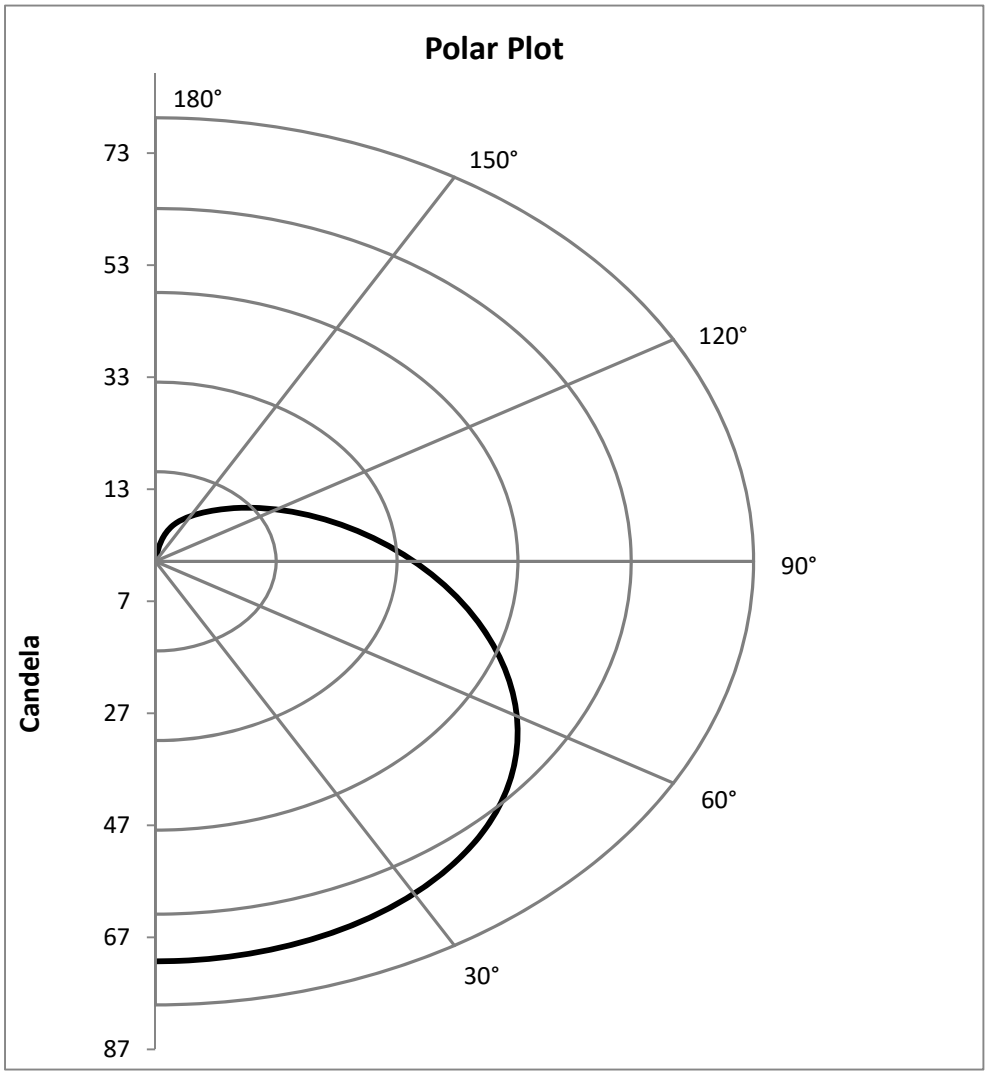
Average Goniometry Test Data

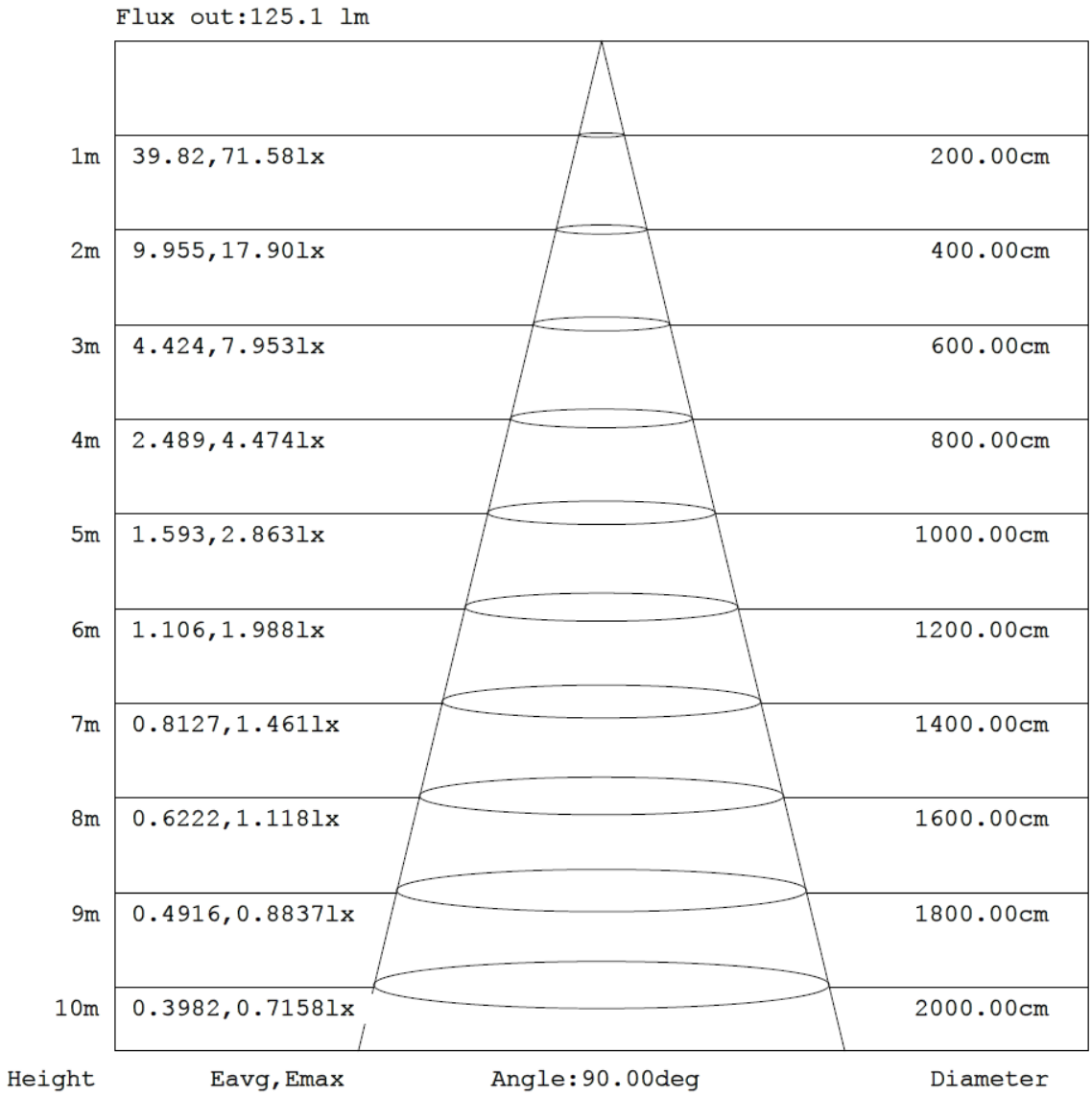
Beam Angle				Color Distribution
	Candela	Half Angle	Full Angle	Δu'v'
Max	72	0.0	-----	-----
50%of Max	36	87.4	174.9	-----
10%of Max	7	-----	-----	-----

Volts	Amps	Watts	PF
120.06	0.076	5.3	0.583
Total Downlight Lumens:			342.3
Total Uplight Lumens:			118.6
Total Lumens:			460.9
Total Lumens/ Watt:			86.9

Intensity Distribution

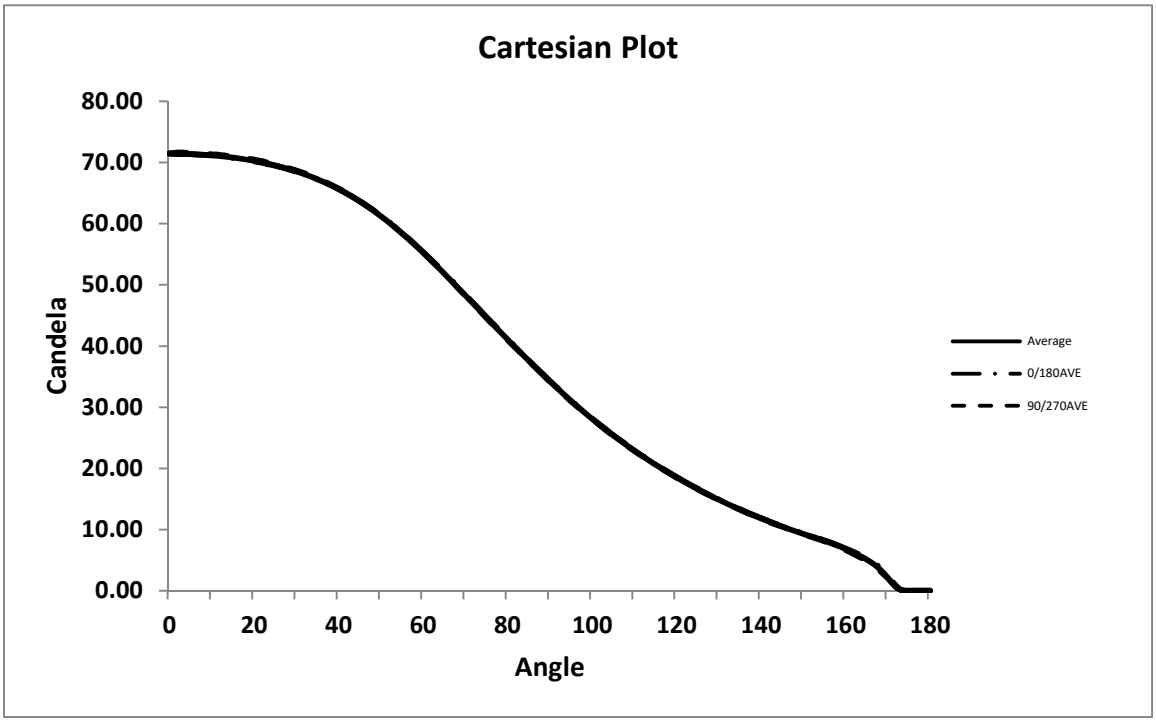


Cone Diagram



Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Cartesian Plot



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Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	71.44	71.44	71.44	0.00	0.00	0.00%
5	71.35	71.34	71.49	1.71	1.71	0.37%
10	71.16	71.13	71.33	5.10	6.81	1.48%
15	70.80	70.75	70.96	8.42	15.23	3.30%
20	70.25	70.18	70.45	11.63	26.85	5.83%
25	69.50	69.46	69.69	14.66	41.51	9.01%
30	68.51	68.47	68.67	17.47	58.98	12.80%
35	67.26	67.29	67.39	20.00	78.98	17.14%
40	65.65	65.69	65.74	22.18	101.15	21.95%
45	63.64	63.69	63.73	23.95	125.10	27.14%
50	61.23	61.29	61.29	25.24	150.34	32.62%
55	58.41	58.50	58.45	26.02	176.36	38.27%
60	55.26	55.37	55.28	26.28	202.64	43.97%
65	51.84	51.94	51.85	26.04	228.68	49.62%
70	48.26	48.38	48.22	25.35	254.03	55.12%
75	44.63	44.75	44.57	24.28	278.31	60.39%
80	41.07	41.17	40.99	22.93	301.23	65.36%
85	37.60	37.69	37.55	21.37	322.60	70.00%
90	34.23	34.30	34.19	19.66	342.26	74.26%
95	31.05	31.12	31.00	17.86	360.12	78.14%
100	28.10	28.18	28.07	16.06	376.19	81.62%
105	25.39	25.45	25.35	14.31	390.49	84.73%
110	22.90	22.96	22.87	12.62	403.11	87.47%
115	20.62	20.67	20.59	11.01	414.12	89.86%
120	18.53	18.58	18.49	9.51	423.63	91.92%
125	16.62	16.68	16.58	8.12	431.76	93.68%
130	14.87	14.93	14.83	6.85	438.60	95.17%
135	13.27	13.33	13.23	5.69	444.29	96.40%
140	11.82	11.88	11.78	4.64	448.93	97.41%
145	10.50	10.55	10.45	3.72	452.66	98.22%
150	9.30	9.36	9.25	2.92	455.57	98.85%
155	8.16	8.25	8.09	2.22	457.79	99.33%
160	6.82	6.93	6.67	1.58	459.37	99.67%
165	5.09	5.29	4.82	1.00	460.36	99.89%
170	2.12	2.49	2.08	0.46	460.82	99.99%
175	0.00	0.00	0.00	0.05	460.87	100.00%
180	0.00	0.00	0.00	0.00	460.87	100.00%

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Individual Lamp Data- Sphere

Position	Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	PF	Luminous Lumens (lm)	LPW (lm/W)	CCX	CCY	CCT (K)	CRI	R9	Duv	Rf	Rg
VBU	1	120.00	0.075	5.3	0.584	460.8	87.7	0.4578	0.4080	2709	80.6	-1.8	-0.0008	82	96
	2	120.00	0.075	5.3	0.582	455.7	86.7	0.4556	0.4068	2730	80.6	-1.7	-0.0010	82	96
	3	120.00	0.074	5.2	0.585	449.6	86.8	0.4581	0.4074	2700	80.5	-1.9	-0.0010	82	96
	4	120.00	0.075	5.2	0.581	451.9	86.7	0.4565	0.4085	2731	80.6	-1.9	-0.0005	82	96
	5	120.00	0.074	5.2	0.582	454.7	88.0	0.4566	0.4080	2726	80.7	-1.4	-0.0007	82	96
VBD	7	120.00	0.070	4.9	0.582	464.0	94.6	0.4580	0.4105	2725	81.3	-0.5	0.0001	83	97
	8	120.00	0.072	5.0	0.581	460.8	91.8	0.4598	0.4115	2708	81.0	-1.7	0.0003	83	96
	9	120.00	0.074	5.2	0.585	465.8	89.7	0.4550	0.4060	2733	81.0	-0.3	-0.0013	82	97
	10	120.00	0.071	5.0	0.585	449.7	89.7	0.4583	0.4088	2708	80.8	-1.7	-0.0005	82	96
	11	120.00	0.074	5.2	0.582	462.9	89.1	0.4551	0.4056	2729	81.0	-0.3	-0.0015	82	97
Average		**120.00**	**0.074**	**5.1**	**0.583**	**457.6**	**89.1**	**0.4571**	**0.4081**	**2720**	**80.8**	**-1.3**	**-0.0007**	**82**	**96**

Individual Lamp Data- Goniometer

Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	Total Lumens (lm)	Beam Angle （°）	CBCP （cd）	90 cone lumen(lm)	E*Δu'v'
1	120.06	0.076	5.3	460.9	174.9	72	125.1	---

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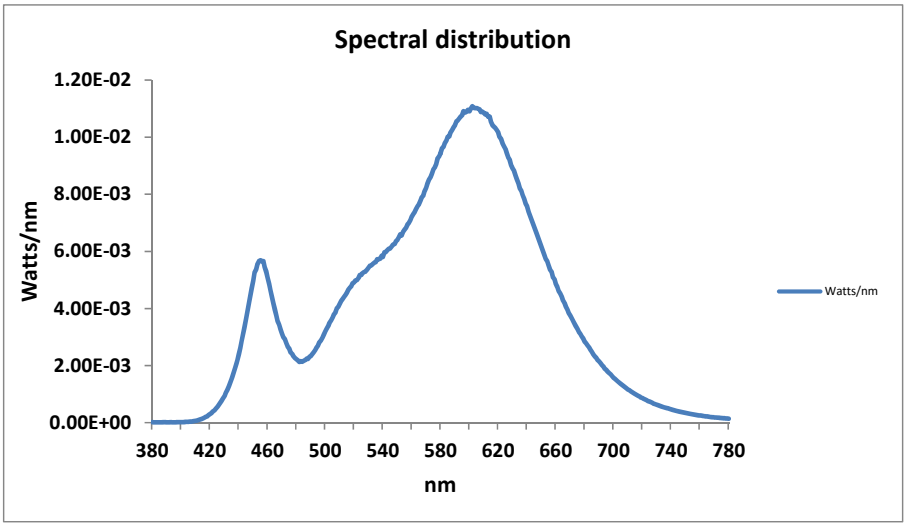
Test data in 3000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.078	5.5	0.592	524.3	94.7

CCX	CCY	u′	v′	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4346	0.3981	0.2517	0.5187	-0.0021	2990	82.5	5.3	83	96

Spectral Power Distribution



nm	Watts/nm
380	1.67E-05
385	1.36E-05
390	1.58E-05
395	1.44E-05
400	1.88E-05
405	3.22E-05
410	6.88E-05
415	1.49E-04
420	2.98E-04
425	5.43E-04
430	9.32E-04
435	1.52E-03
440	2.39E-03
445	3.65E-03
450	4.98E-03
455	5.69E-03
460	5.09E-03

nm	Watts/nm
465	3.98E-03
470	3.12E-03
475	2.59E-03
480	2.21E-03
485	2.17E-03
490	2.34E-03
495	2.71E-03
500	3.20E-03
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535	5.62E-03
540	5.81E-03
545	6.10E-03

nm	Watts/nm
550	6.41E-03
555	6.77E-03
560	7.21E-03
565	7.65E-03
570	8.23E-03
575	8.88E-03
580	9.43E-03
585	1.00E-02
590	1.04E-02
595	1.08E-02
600	1.09E-02
605	1.10E-02
610	1.09E-02
615	1.05E-02
620	1.02E-02
625	9.58E-03
630	8.92E-03

nm	Watts/nm
635	8.21E-03
640	7.58E-03
645	6.85E-03
650	6.15E-03
655	5.51E-03
660	4.86E-03
665	4.28E-03
670	3.76E-03
675	3.28E-03
680	2.85E-03
685	2.48E-03
690	2.15E-03
695	1.85E-03
700	1.58E-03
705	1.37E-03
710	1.17E-03
715	1.00E-03

nm	Watts/nm
720	8.63E-04
725	7.41E-04
730	6.32E-04
735	5.41E-04
740	4.64E-04
745	3.95E-04
750	3.40E-04
755	2.92E-04
760	2.53E-04
765	2.16E-04
770	1.86E-04
775	1.63E-04
780	1.39E-04

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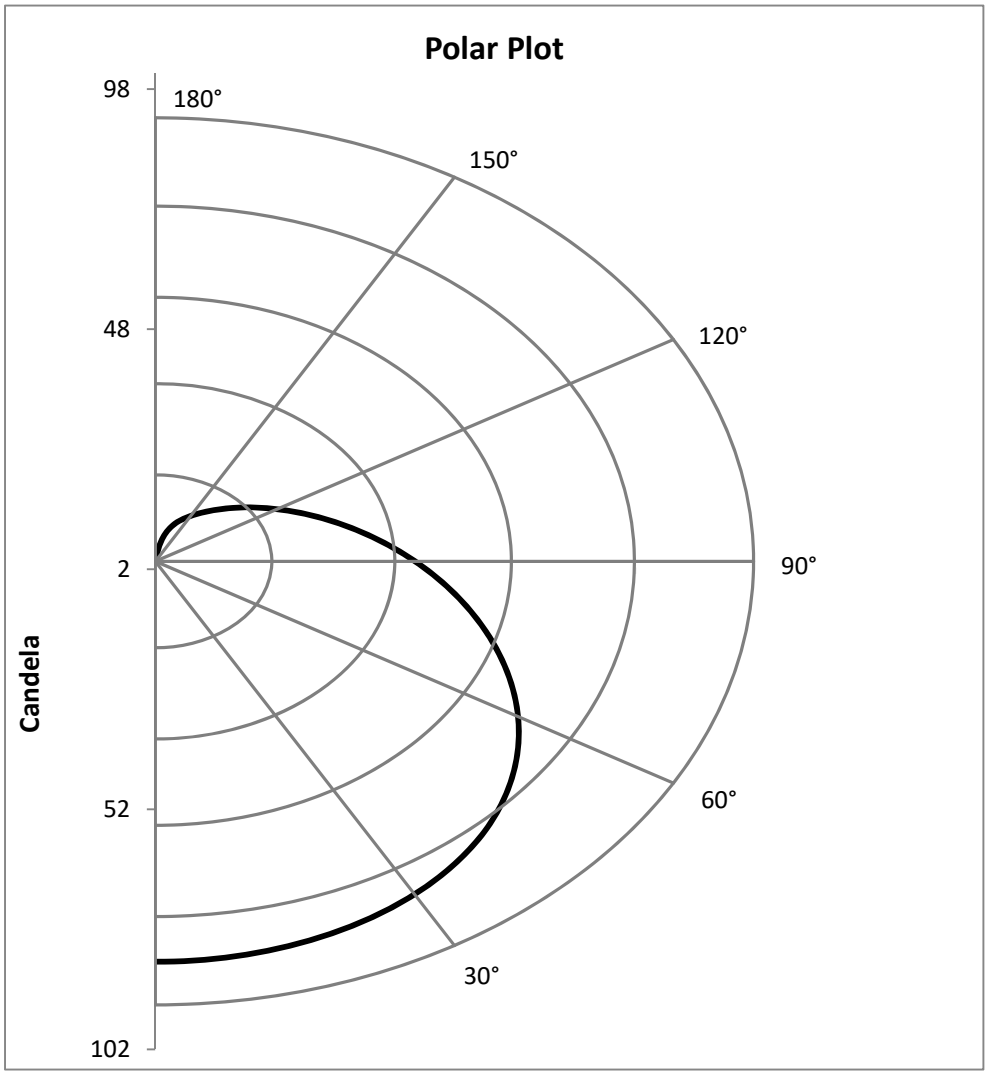
Average Goniometry Test Data

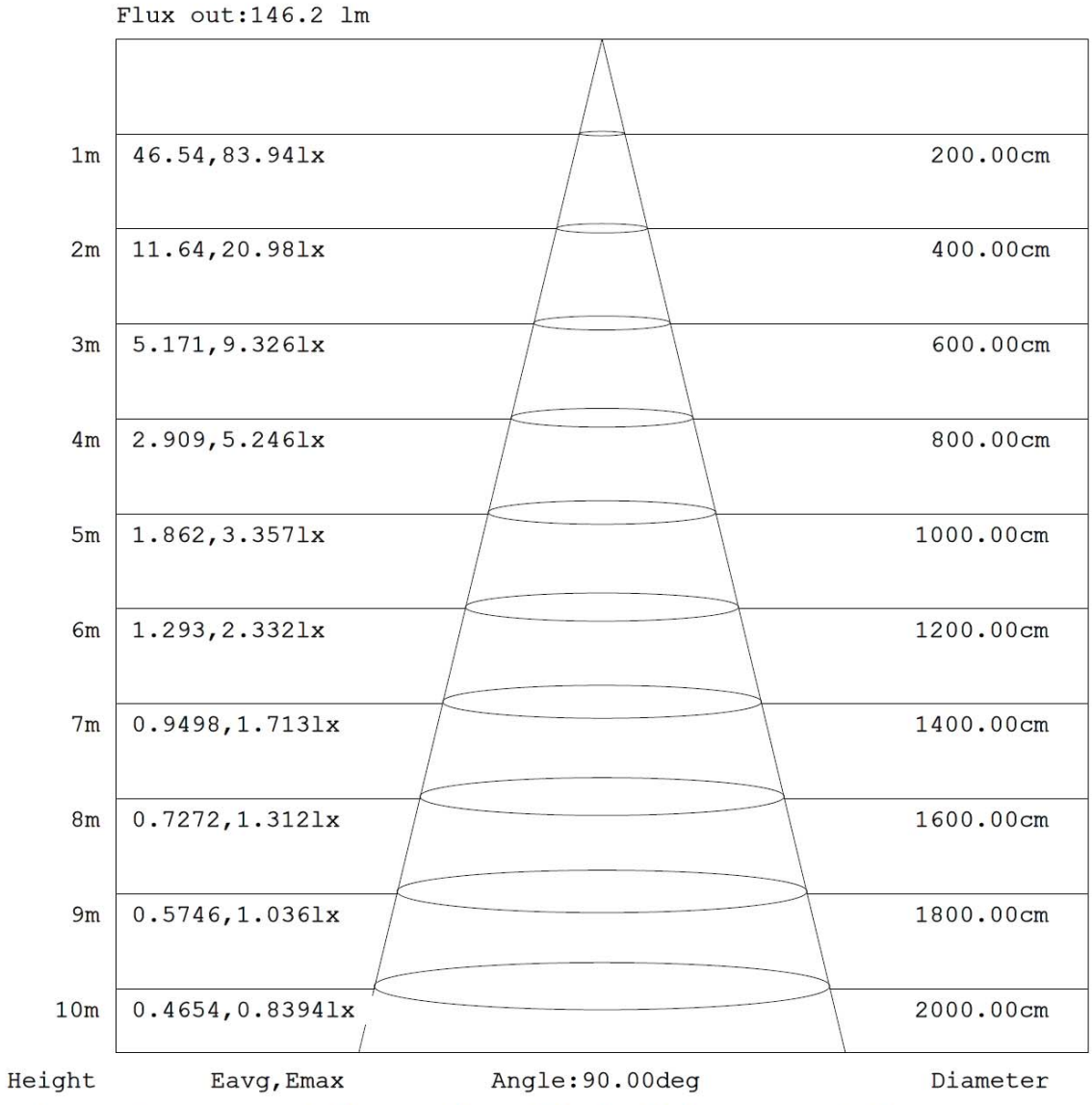
Beam Angle				Color Distribution
	Candela	Half Angle	Full Angle	Δu'v'
Max	84	1.0	-----	-----
50%of Max	42	87.7	175.4	-----
10%of Max	8	-----	-----	-----

Volts	Amps	Watts	PF
120.03	0.079	5.6	0.592
Total Downlight Lumens:			400.5
Total Uplight Lumens:			139.2
Total Lumens:			539.7
Total Lumens/ Watt:			96.1

Intensity Distribution

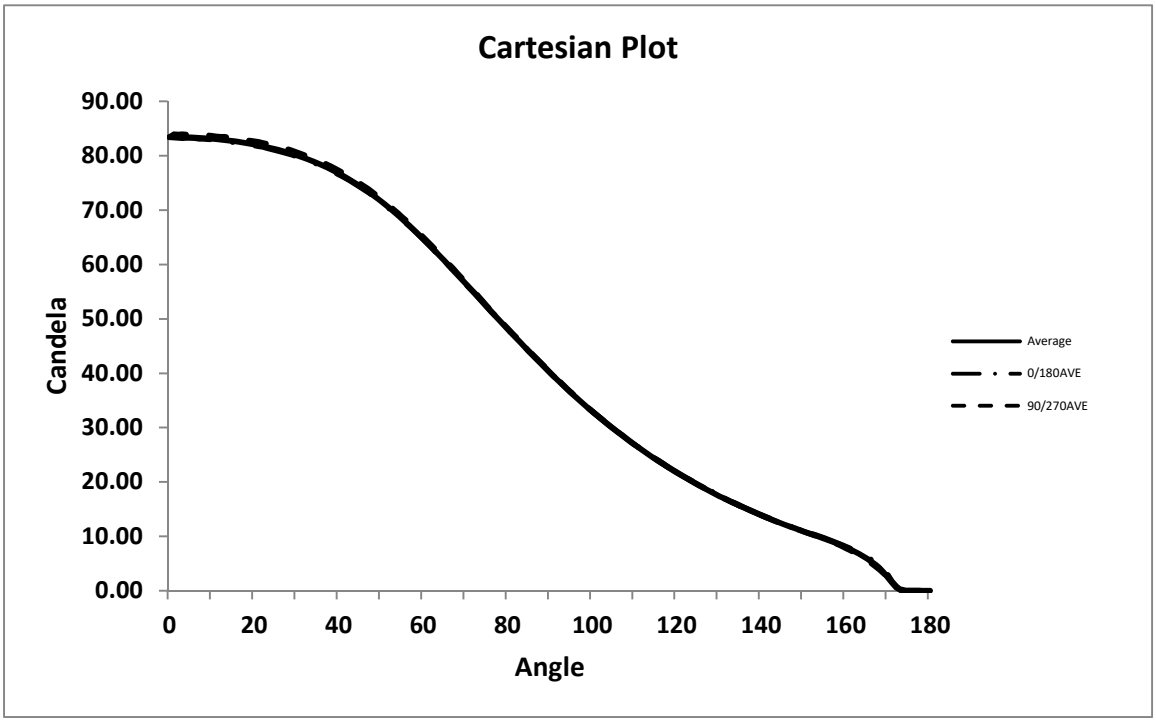


Cone Diagram



Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Cartesian Plot



Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	83.41	83.41	83.41	0.00	0.00	0.00%
5	83.35	83.26	83.83	1.99	1.99	0.37%
10	83.11	82.97	83.64	5.95	7.95	1.47%
15	82.69	82.51	83.22	9.84	17.78	3.30%
20	82.07	81.91	82.62	13.58	31.36	5.81%
25	81.21	81.06	81.77	17.13	48.49	8.99%
30	80.08	79.94	80.63	20.41	68.91	12.77%
35	78.62	78.46	79.14	23.37	92.28	17.10%
40	76.75	76.60	77.27	25.93	118.21	21.90%
45	74.43	74.32	74.93	28.00	146.21	27.09%
50	71.63	71.52	72.09	29.52	175.73	32.56%
55	68.36	68.30	68.74	30.45	206.18	38.20%
60	64.70	64.68	65.06	30.76	236.94	43.90%
65	60.72	60.71	61.02	30.49	267.43	49.55%
70	56.52	56.53	56.78	29.68	297.11	55.05%
75	52.28	52.31	52.47	28.44	325.55	60.32%
80	48.11	48.14	48.26	26.86	352.41	65.30%
85	44.05	44.12	44.16	25.04	377.45	69.94%
90	40.14	40.18	40.25	23.05	400.49	74.21%
95	36.41	36.48	36.49	20.95	421.44	78.09%
100	32.96	33.02	33.03	18.84	440.28	81.58%
105	29.79	29.86	29.86	16.78	457.06	84.69%
110	26.88	26.94	26.94	14.80	471.86	87.43%
115	24.20	24.26	24.26	12.93	484.79	89.83%
120	21.75	21.81	21.79	11.17	495.96	91.90%
125	19.51	19.57	19.55	9.53	505.49	93.67%
130	17.46	17.54	17.48	8.04	513.53	95.15%
135	15.58	15.64	15.61	6.68	520.20	96.39%
140	13.87	13.93	13.88	5.45	525.66	97.40%
145	12.33	12.39	12.32	4.37	530.03	98.21%
150	10.92	10.98	10.90	3.42	533.46	98.85%
155	9.58	9.67	9.54	2.60	536.06	99.33%
160	8.00	8.11	7.87	1.86	537.91	99.67%
165	5.97	6.18	5.68	1.17	539.08	99.89%
170	2.41	2.90	2.52	0.54	539.62	99.99%
175	0.01	0.01	0.01	0.06	539.68	100.00%
180	0.00	0.00	0.00	0.00	539.68	100.00%

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Individual Lamp Data- Sphere

Position	Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	PF	Luminous Lumens (lm)	LPW (lm/W)	CCX	CCY	CCT (K)	CRI	R9	Duv	Rf	Rg
VBU	1	120.00	0.079	5.6	0.592	528.4	93.7	0.4349	0.3980	2984	82.4	5.3	-0.0022	83	96
	2	120.00	0.079	5.6	0.590	526.0	93.8	0.4337	0.3972	2999	82.4	5.3	-0.0023	83	96
	3	120.00	0.078	5.5	0.593	517.4	93.5	0.4361	0.3980	2965	82.3	5.1	-0.0023	83	96
	4	120.00	0.079	5.6	0.590	523.6	94.0	0.4345	0.3987	2998	82.4	5.0	-0.0018	83	96
	5	120.00	0.079	5.6	0.591	520.8	93.3	0.4335	0.3977	3006	82.4	5.3	-0.0021	83	96
VBD	7	120.00	0.077	5.4	0.592	519.1	95.5	0.4354	0.4000	2992	82.4	4.4	-0.0014	83	96
	8	120.00	0.078	5.5	0.590	520.7	94.6	0.4357	0.3998	2986	82.4	4.5	-0.0015	83	96
	9	120.00	0.078	5.6	0.594	532.6	95.8	0.4338	0.3968	2994	82.6	6.1	-0.0025	83	97
	10	120.00	0.076	5.4	0.593	519.0	96.5	0.4364	0.3994	2970	82.4	4.7	-0.0018	83	96
	11	120.00	0.078	5.6	0.593	535.3	96.2	0.4325	0.3958	3008	82.8	7.0	-0.0027	83	97
Average		**120.00**	**0.078**	**5.5**	**0.592**	**524.3**	**94.7**	**0.4347**	**0.3981**	**2990**	**82.5**	**5.3**	**-0.0021**	**83**	**96**

Individual Lamp Data- Goniometer

Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	Total Lumens (lm)	Beam Angle （°）	CBCP （cd）	90 cone lumen(lm)	E*Δu'v'
1	120.03	0.079	5.6	539.7	175.4	84	146.2	---

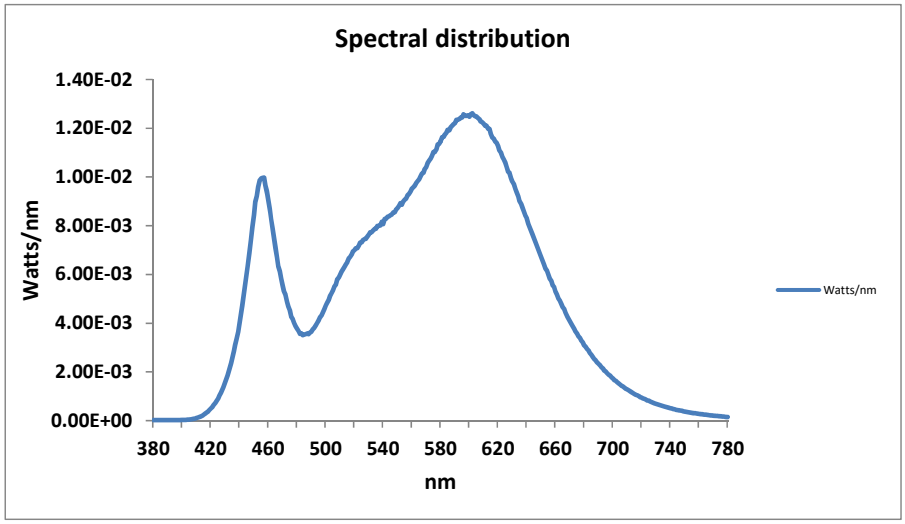
Test data in 3500K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.088	6.5	0.615	663.8	101.7

CCX	CCY	u′	v′	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4011	0.3833	0.2360	0.5075	-0.0024	3534	84.1	12.3	84	96

Spectral Power Distribution



nm	Watts/nm
380	2.53E-05
385	2.16E-05
390	2.18E-05
395	2.09E-05
400	3.01E-05
405	4.82E-05
410	1.11E-04
415	2.43E-04
420	5.05E-04
425	9.08E-04
430	1.56E-03
435	2.56E-03
440	4.02E-03
445	6.09E-03
450	8.44E-03
455	9.94E-03
460	9.07E-03

nm	Watts/nm
465	7.13E-03
470	5.54E-03
475	4.52E-03
480	3.77E-03
485	3.53E-03
490	3.64E-03
495	4.11E-03
500	4.72E-03
505	5.35E-03
510	5.98E-03
515	6.49E-03
520	6.99E-03
525	7.32E-03
530	7.64E-03
535	7.87E-03
540	8.07E-03
545	8.43E-03

nm	Watts/nm
550	8.73E-03
555	9.07E-03
560	9.51E-03
565	9.90E-03
570	1.04E-02
575	1.10E-02
580	1.15E-02
585	1.19E-02
590	1.22E-02
595	1.24E-02
600	1.25E-02
605	1.25E-02
610	1.22E-02
615	1.18E-02
620	1.13E-02
625	1.06E-02
630	9.81E-03

nm	Watts/nm
635	9.01E-03
640	8.30E-03
645	7.49E-03
650	6.71E-03
655	6.01E-03
660	5.30E-03
665	4.67E-03
670	4.09E-03
675	3.57E-03
680	3.10E-03
685	2.70E-03
690	2.34E-03
695	2.01E-03
700	1.73E-03
705	1.49E-03
710	1.28E-03
715	1.10E-03

nm	Watts/nm
720	9.45E-04
725	8.14E-04
730	6.92E-04
735	5.97E-04
740	5.08E-04
745	4.35E-04
750	3.76E-04
755	3.24E-04
760	2.82E-04
765	2.43E-04
770	2.07E-04
775	1.79E-04
780	1.54E-04

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

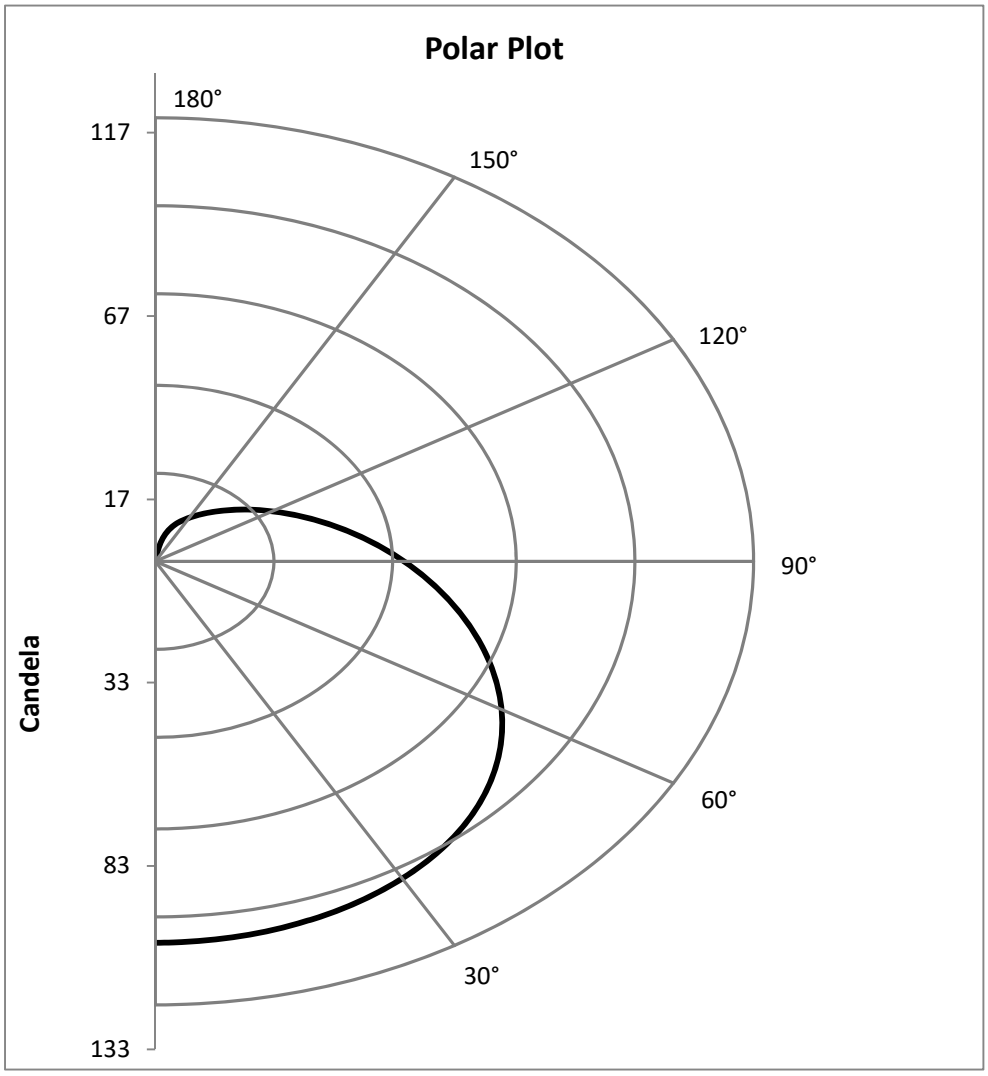
Test Request Number: BG-NW250110-1-01

Average Goniometry Test Data

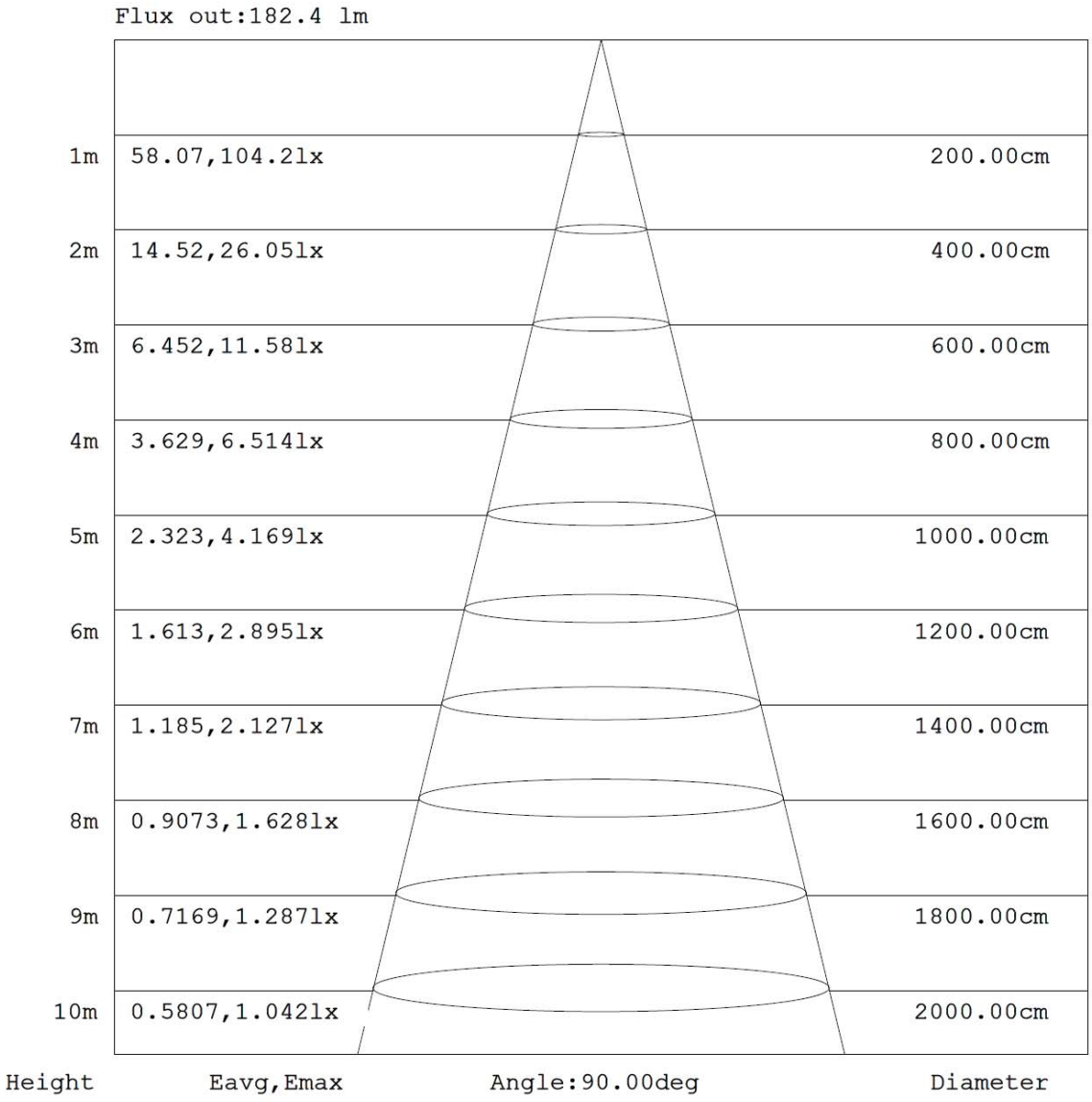
Beam Angle				Color Distribution
	Candela	Half Angle	Full Angle	Δu'v'
Max	104	1.0	-----	-----
50%of Max	52	88.0	175.9	-----
10%of Max	10	-----	-----	-----

Volts	Amps	Watts	PF
120.03	0.089	6.6	0.616
Total Downlight Lumens:			500.5
Total Uplight Lumens:			174.8
Total Lumens:			675.3
Total Lumens/ Watt:			102.4

Intensity Distribution

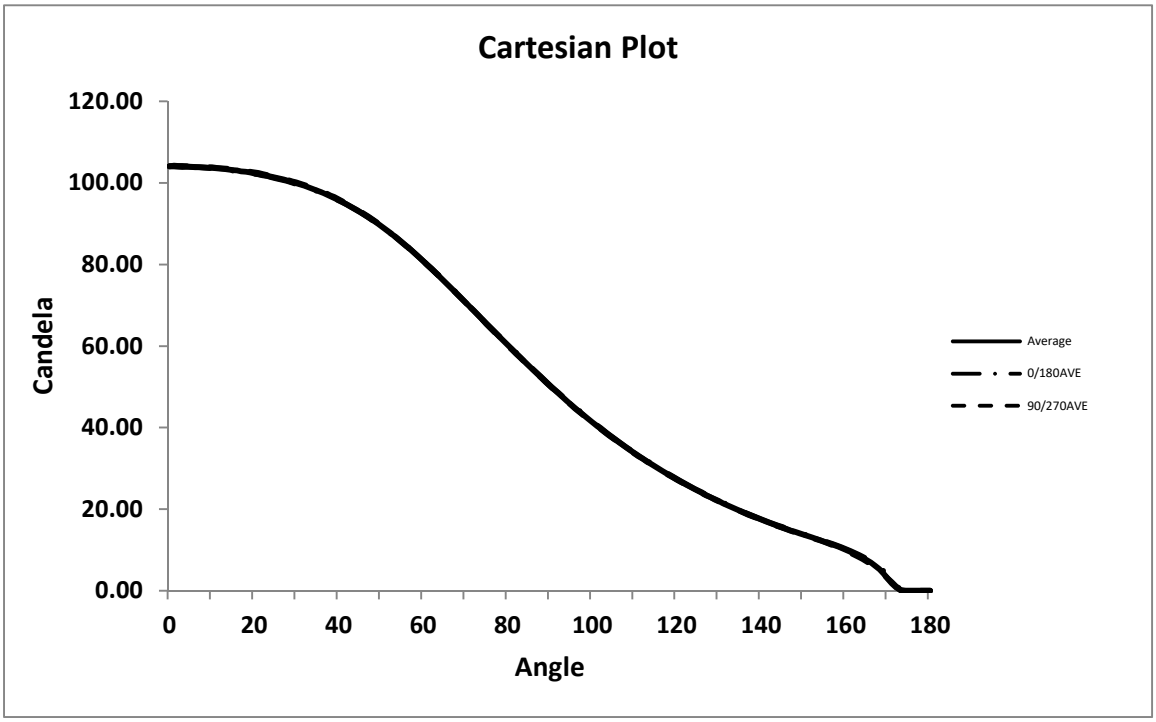


Cone Diagram



Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Cartesian Plot



LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	104.05	104.05	104.05	0.00	0.00	0.00%
5	103.94	103.92	104.08	2.49	2.49	0.37%
10	103.66	103.60	103.80	7.43	9.91	1.47%
15	103.15	103.05	103.28	12.27	22.18	3.28%
20	102.37	102.24	102.55	16.93	39.11	5.79%
25	101.29	101.16	101.46	21.36	60.48	8.96%
30	99.90	99.78	100.12	25.46	85.94	12.73%
35	98.11	98.01	98.34	29.16	115.10	17.04%
40	95.80	95.73	95.97	32.36	147.46	21.84%
45	92.94	92.91	93.09	34.95	182.42	27.01%
50	89.45	89.39	89.58	36.86	219.28	32.47%
55	85.41	85.38	85.49	38.03	257.31	38.10%
60	80.86	80.87	80.91	38.44	295.75	43.80%
65	75.91	75.94	75.91	38.12	333.87	49.44%
70	70.73	70.76	70.69	37.13	371.00	54.94%
75	65.45	65.50	65.40	35.59	406.59	60.21%
80	60.26	60.36	60.16	33.63	440.22	65.19%
85	55.21	55.30	55.11	31.37	471.59	69.83%
90	50.31	50.39	50.26	28.88	500.47	74.11%
95	45.68	45.78	45.60	26.27	526.74	78.00%
100	41.38	41.50	41.29	23.64	550.38	81.50%
105	37.41	37.50	37.34	21.07	571.45	84.62%
110	33.76	33.87	33.69	18.59	590.04	87.37%
115	30.40	30.50	30.34	16.24	606.28	89.78%
120	27.34	27.43	27.27	14.03	620.31	91.86%
125	24.53	24.62	24.47	11.99	632.29	93.63%
130	21.96	22.06	21.90	10.11	642.40	95.13%
135	19.60	19.70	19.55	8.40	650.80	96.37%
140	17.45	17.52	17.40	6.86	657.66	97.39%
145	15.52	15.61	15.44	5.50	663.16	98.20%
150	13.75	13.85	13.66	4.31	667.47	98.84%
155	12.08	12.20	11.95	3.28	670.75	99.33%
160	10.09	10.23	9.87	2.34	673.09	99.67%
165	7.53	7.80	7.13	1.47	674.56	99.89%
170	2.91	3.52	2.98	0.68	675.23	99.99%
175	0.01	0.01	0.01	0.07	675.31	100.00%
180	0.00	0.00	0.00	0.00	675.31	100.00%

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Individual Lamp Data- Sphere

Position	Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	PF	Luminous Lumens (lm)	LPW (lm/W)	CCX	CCY	CCT (K)	CRI	R9	Duv	Rf	Rg
VBU	1	120.00	0.090	6.6	0.615	667.3	101.1	0.4008	0.3829	3538	84.1	12.7	-0.0025	84	96
	2	120.00	0.089	6.5	0.612	661.2	101.0	0.4006	0.3821	3535	84.2	12.8	-0.0028	84	96
	3	120.00	0.088	6.5	0.618	657.6	100.5	0.4010	0.3826	3531	84.2	12.8	-0.0027	84	96
	4	120.00	0.089	6.6	0.614	663.8	100.9	0.4003	0.3829	3549	84.1	12.3	-0.0024	84	96
	5	120.00	0.090	6.7	0.616	669.6	100.4	0.3977	0.3820	3602	84.2	12.6	-0.0022	84	96
VBD	7	120.00	0.087	6.4	0.615	654.9	102.1	0.4043	0.3869	3491	83.6	9.8	-0.0015	84	96
	8	120.00	0.088	6.5	0.614	662.5	101.7	0.4015	0.3841	3531	84.0	11.7	-0.0021	84	96
	9	120.00	0.088	6.5	0.617	670.1	103.2	0.4016	0.3829	3518	84.2	12.9	-0.0027	84	96
	10	120.00	0.084	6.3	0.618	646.6	103.3	0.4058	0.3860	3450	83.8	10.9	-0.0022	84	96
	11	120.00	0.090	6.6	0.616	685.1	103.3	0.3972	0.3801	3597	84.6	14.6	-0.0029	84	96
Average		**120.00**	**0.088**	**6.5**	**0.615**	**663.8**	**101.8**	**0.4011**	**0.3833**	**3534**	**84.1**	**12.3**	**-0.0024**	**84**	**96**

Individual Lamp Data- Goniometer

Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	Total Lumens (lm)	Beam Angle （°）	CBCP （cd）	90 cone lumen(lm)	E*Δu'v'
1	120.03	0.089	6.6	675.3	175.9	104	182.4	---

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

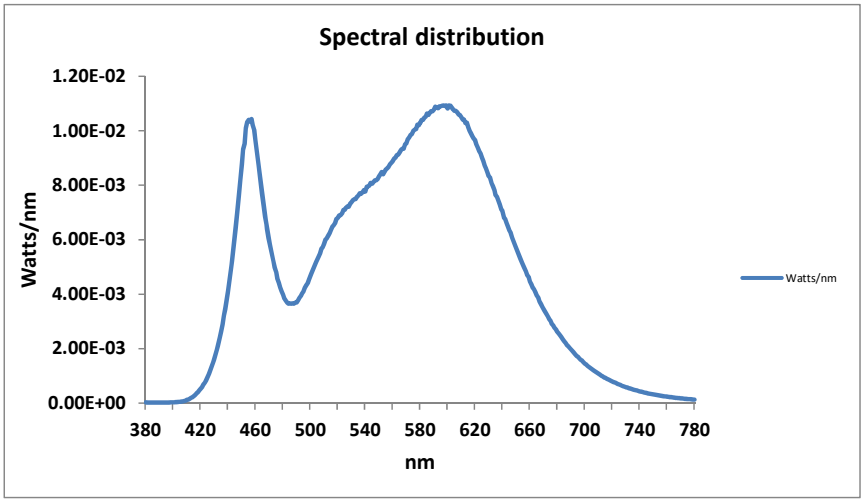
Test data in 4000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.081	5.8	0.598	617.7	106.5

CCX	CCY	u′	v′	Duv	CCT(K)	CRI	R9	Rf	Rg
0.3855	0.3764	0.2286	0.5022	-0.0016	3863	84.5	14.3	84	95

Spectral Power Distribution



nm	Watts/nm
380	2.58E-05
385	2.26E-05
390	2.21E-05
395	2.12E-05
400	3.11E-05
405	4.93E-05
410	1.17E-04
415	2.60E-04
420	5.29E-04
425	9.52E-04
430	1.65E-03
435	2.64E-03
440	4.11E-03
445	6.26E-03
450	8.76E-03
455	1.04E-02
460	9.65E-03

nm	Watts/nm
465	7.60E-03
470	5.95E-03
475	4.81E-03
480	3.98E-03
485	3.66E-03
490	3.70E-03
495	4.11E-03
500	4.68E-03
505	5.28E-03
510	5.84E-03
515	6.36E-03
520	6.81E-03
525	7.11E-03
530	7.38E-03
535	7.62E-03
540	7.77E-03
545	8.05E-03

nm	Watts/nm
550	8.33E-03
555	8.58E-03
560	8.88E-03
565	9.20E-03
570	9.55E-03
575	1.00E-02
580	1.03E-02
585	1.06E-02
590	1.08E-02
595	1.09E-02
600	1.08E-02
605	1.07E-02
610	1.05E-02
615	1.01E-02
620	9.66E-03
625	9.01E-03
630	8.34E-03

nm	Watts/nm
635	7.64E-03
640	7.05E-03
645	6.34E-03
650	5.69E-03
655	5.08E-03
660	4.47E-03
665	3.95E-03
670	3.44E-03
675	3.02E-03
680	2.61E-03
685	2.28E-03
690	1.96E-03
695	1.70E-03
700	1.44E-03
705	1.26E-03
710	1.08E-03
715	9.25E-04

nm	Watts/nm
720	7.92E-04
725	6.87E-04
730	5.85E-04
735	5.01E-04
740	4.33E-04
745	3.73E-04
750	3.18E-04
755	2.74E-04
760	2.43E-04
765	2.02E-04
770	1.77E-04
775	1.52E-04
780	1.31E-04

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

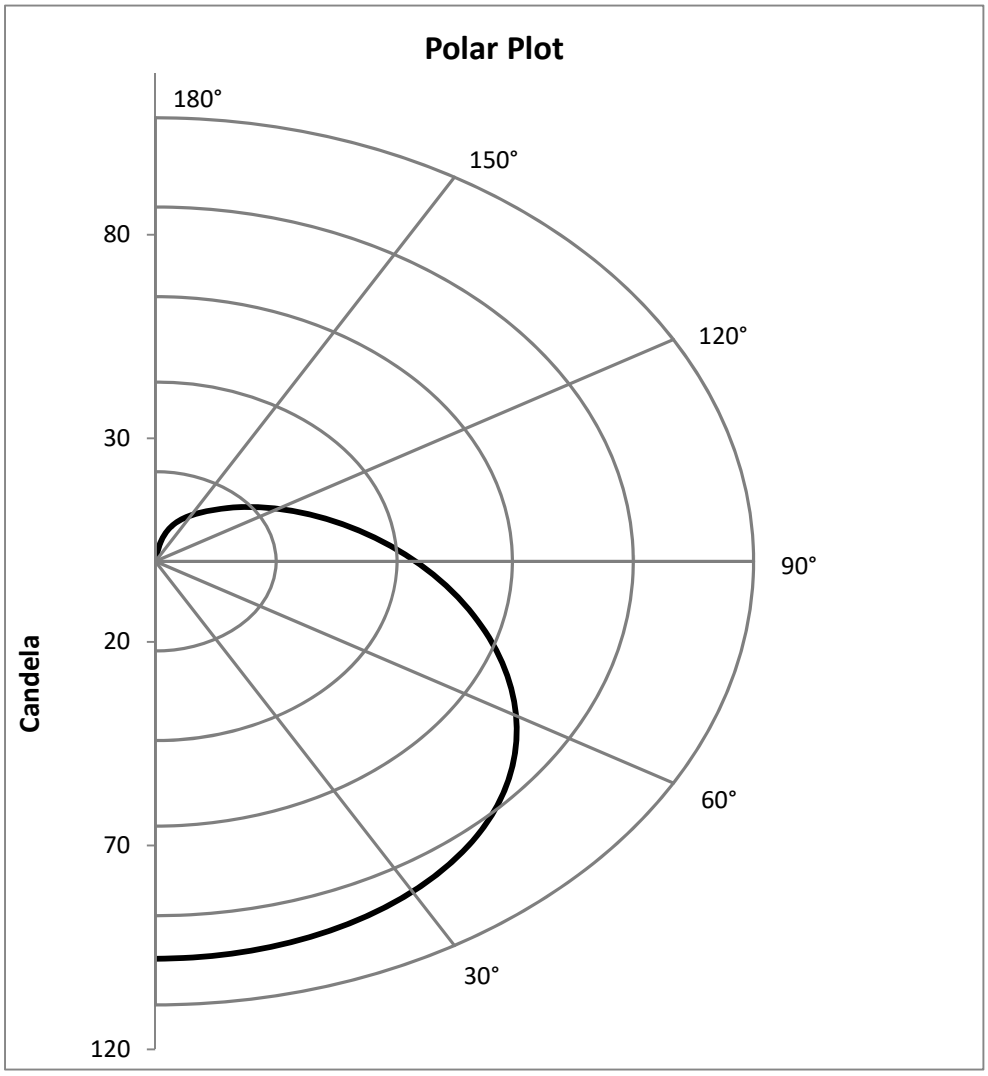
Test Request Number: BG-NW250110-1-01

Average Goniometry Test Data

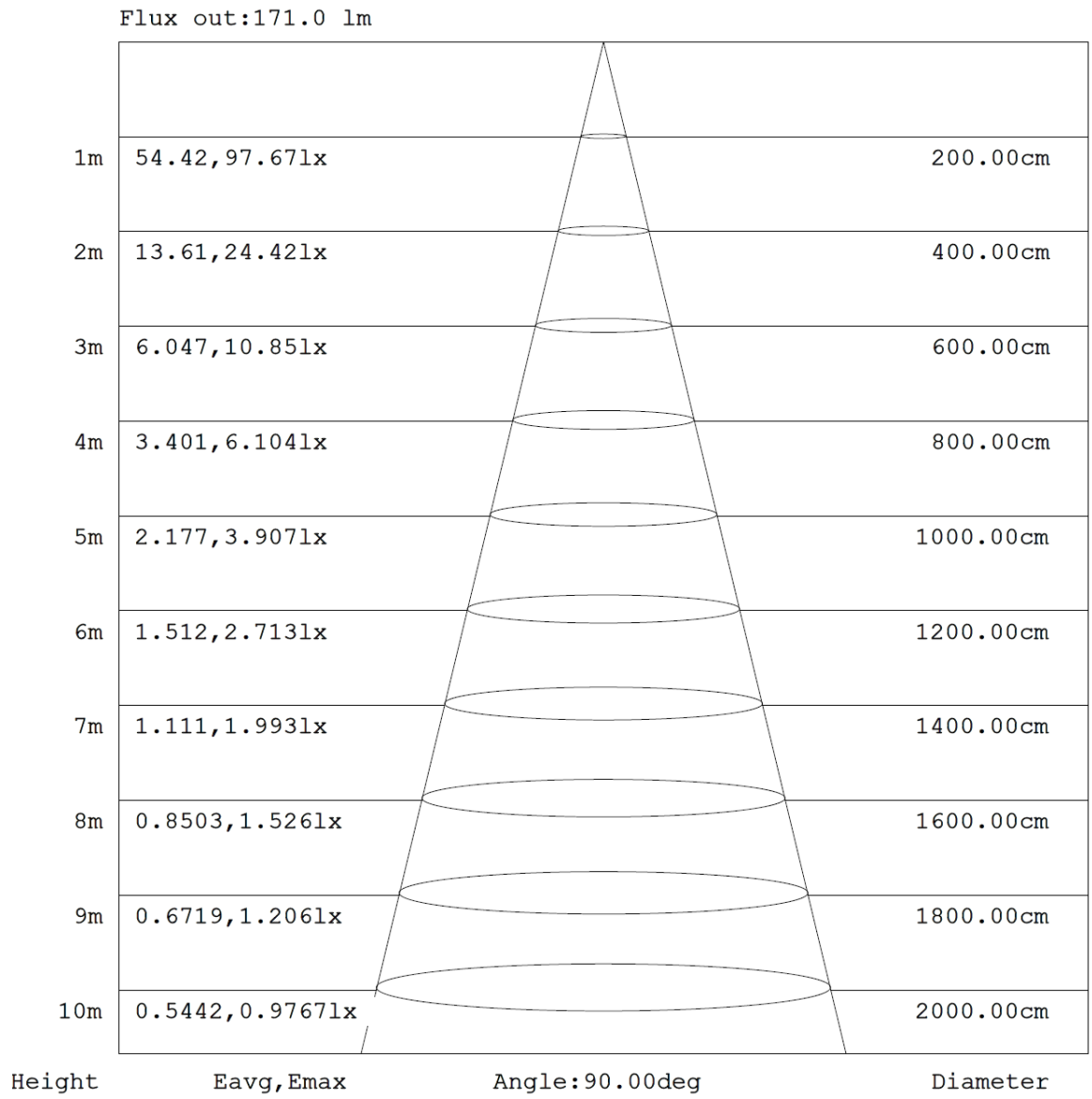
Beam Angle				Color Distribution
	Candela	Half Angle	Full Angle	Δu'v'
Max	98	0.0	-----	-----
50%of Max	49	88.2	176.3	----
10%of Max	10	-----	-----	-----

Volts	Amps	Watts	PF
120.03	0.081	5.8	0.599
Total Downlight Lumens:			469.5
Total Uplight Lumens:			164.9
Total Lumens:			634.4
Total Lumens/ Watt:			108.8

Intensity Distribution

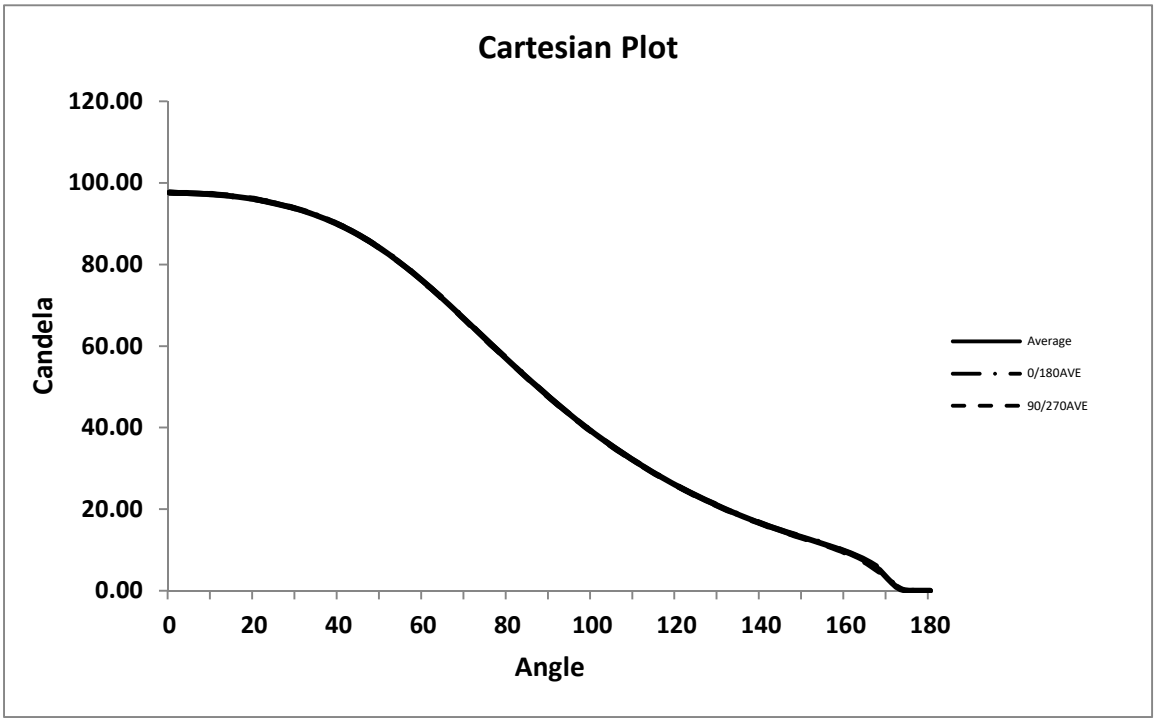


Cone Diagram



Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Cartesian Plot



LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	97.58	97.58	97.58	0.00	0.00	0.00%
5	97.45	97.47	97.51	2.33	2.33	0.37%
10	97.19	97.13	97.28	6.96	9.30	1.47%
15	96.71	96.69	96.80	11.50	20.80	3.28%
20	95.98	95.96	96.10	15.88	36.68	5.78%
25	94.94	94.93	95.01	20.03	56.70	8.94%
30	93.63	93.63	93.72	23.87	80.57	12.70%
35	91.93	91.94	91.97	27.33	107.90	17.01%
40	89.76	89.81	89.83	30.32	138.22	21.79%
45	87.08	87.14	87.15	32.75	170.97	26.95%
50	83.86	83.88	83.91	34.54	205.51	32.39%
55	80.06	80.14	80.06	35.65	241.16	38.01%
60	75.83	75.92	75.80	36.04	277.20	43.69%
65	71.23	71.34	71.18	35.75	312.95	49.33%
70	66.39	66.45	66.29	34.84	347.79	54.82%
75	61.48	61.53	61.38	33.42	381.21	60.09%
80	56.64	56.72	56.52	31.60	412.81	65.07%
85	51.94	52.01	51.81	29.49	442.30	69.72%
90	47.36	47.39	47.24	27.18	469.48	74.00%
95	43.02	43.07	42.93	24.74	494.22	77.90%
100	39.00	39.01	38.91	22.27	516.49	81.41%
105	35.26	35.30	35.18	19.86	536.35	84.54%
110	31.83	31.88	31.76	17.53	553.88	87.31%
115	28.69	28.73	28.61	15.32	569.20	89.72%
120	25.80	25.85	25.73	13.24	582.44	91.81%
125	23.15	23.20	23.08	11.31	593.75	93.59%
130	20.73	20.78	20.67	9.54	603.29	95.09%
135	18.51	18.53	18.45	7.93	611.22	96.34%
140	16.51	16.56	16.42	6.48	617.70	97.37%
145	14.67	14.74	14.58	5.20	622.90	98.19%
150	13.01	13.09	12.89	4.08	626.98	98.83%
155	11.42	11.54	11.28	3.10	630.08	99.32%
160	9.56	9.69	9.32	2.21	632.29	99.67%
165	7.17	7.41	6.75	1.40	633.69	99.89%
170	2.95	3.33	2.97	0.65	634.34	99.99%
175	0.01	0.01	0.01	0.08	634.42	100.00%
180	0.00	0.00	0.00	0.00	634.42	100.00%

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Individual Lamp Data- Sphere

Position	Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	PF	Luminous Lumens (lm)	LPW (lm/W)	CCX	CCY	CCT (K)	CRI	R9	Duv	Rf	Rg
VBU	1	120.00	0.082	5.9	0.598	615.4	104.3	0.3841	0.3755	3891	84.6	14.8	-0.0016	84	95
	2	120.00	0.081	5.8	0.596	616.0	106.1	0.3847	0.3750	3871	84.7	15.1	-0.0020	84	96
	3	120.00	0.081	5.8	0.602	611.4	104.6	0.3849	0.3757	3872	84.6	14.9	-0.0018	84	95
	4	120.00	0.082	5.9	0.598	617.5	105.1	0.3848	0.3759	3877	84.5	14.3	-0.0016	84	95
	5	120.00	0.083	6.0	0.603	627.3	103.9	0.3825	0.3754	3933	84.5	14.1	-0.0012	84	95
VBD	7	120.00	0.079	5.7	0.596	609.5	107.9	0.3899	0.3810	3785	83.9	11.3	-0.0007	84	95
	8	120.00	0.081	5.8	0.596	617.4	106.9	0.3859	0.3770	3856	84.4	13.8	-0.0014	84	95
	9	120.00	0.080	5.7	0.599	624.5	109.2	0.3859	0.3762	3850	84.5	14.8	-0.0018	84	96
	10	120.00	0.076	5.5	0.597	599.3	109.7	0.3906	0.3794	3754	84.2	13.1	-0.0016	84	96
	11	120.00	0.082	5.9	0.600	638.6	107.5	0.3818	0.3733	3937	84.9	16.4	-0.0020	84	95
Average		**120.00**	**0.081**	**5.8**	**0.598**	**617.7**	**106.5**	**0.3855**	**0.3764**	**3863**	**84.5**	**14.3**	**-0.0016**	**84**	**95**

Individual Lamp Data- Goniometer

Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	Total Lumens (lm)	Beam Angle （°）	CBCP （cd）	90 cone lumen(lm)	E*Δu'v'
1	120.03	0.081	5.8	634.4	176.3	98	171.0	---

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

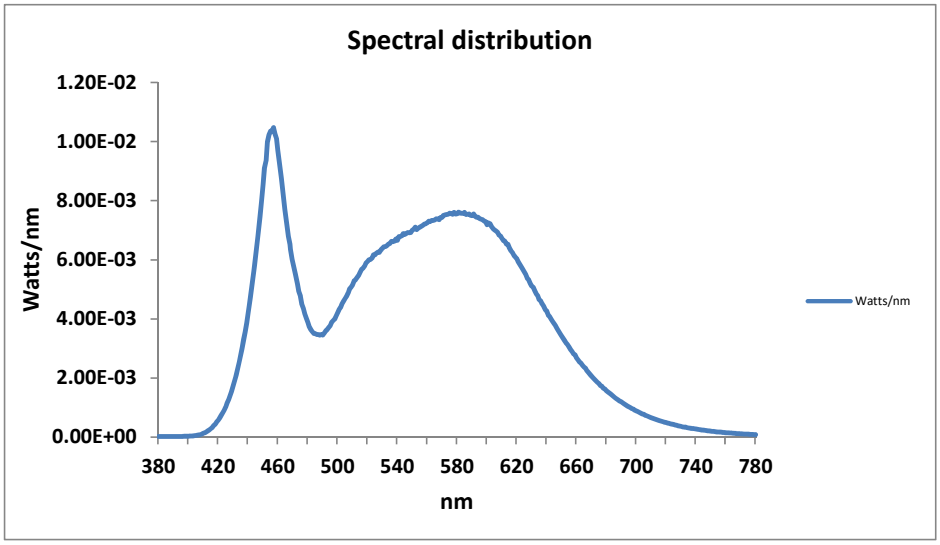
Test data in 5000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.070	4.8	0.573	469.8	97.5

CCX	CCY	u′	v′	Duv	CCT(K)	CRI	R9	Rf	Rg
0.3482	0.3599	0.2103	0.4891	0.0029	4915	82.5	5.3	83	94

Spectral Power Distribution



nm	Watts/nm
380	2.48E-05
385	2.03E-05
390	2.05E-05
395	1.98E-05
400	3.05E-05
405	5.27E-05
410	1.29E-04
415	2.86E-04
420	5.78E-04
425	1.02E-03
430	1.74E-03
435	2.74E-03
440	4.18E-03
445	6.16E-03
450	8.54E-03
455	1.04E-02
460	9.70E-03

nm	Watts/nm
465	7.58E-03
470	5.91E-03
475	4.77E-03
480	3.88E-03
485	3.50E-03
490	3.46E-03
495	3.77E-03
500	4.22E-03
505	4.70E-03
510	5.15E-03
515	5.57E-03
520	5.94E-03
525	6.17E-03
530	6.39E-03
535	6.55E-03
540	6.66E-03
545	6.86E-03

nm	Watts/nm
550	7.00E-03
555	7.11E-03
560	7.25E-03
565	7.35E-03
570	7.44E-03
575	7.58E-03
580	7.56E-03
585	7.60E-03
590	7.49E-03
595	7.40E-03
600	7.18E-03
605	7.01E-03
610	6.73E-03
615	6.40E-03
620	6.03E-03
625	5.59E-03
630	5.11E-03

nm	Watts/nm
635	4.65E-03
640	4.27E-03
645	3.83E-03
650	3.42E-03
655	3.05E-03
660	2.68E-03
665	2.37E-03
670	2.06E-03
675	1.81E-03
680	1.57E-03
685	1.37E-03
690	1.19E-03
695	1.03E-03
700	8.81E-04
705	7.70E-04
710	6.60E-04
715	5.68E-04

nm	Watts/nm
720	4.91E-04
725	4.25E-04
730	3.66E-04
735	3.14E-04
740	2.71E-04
745	2.34E-04
750	2.00E-04
755	1.75E-04
760	1.52E-04
765	1.29E-04
770	1.11E-04
775	9.77E-05
780	8.58E-05

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

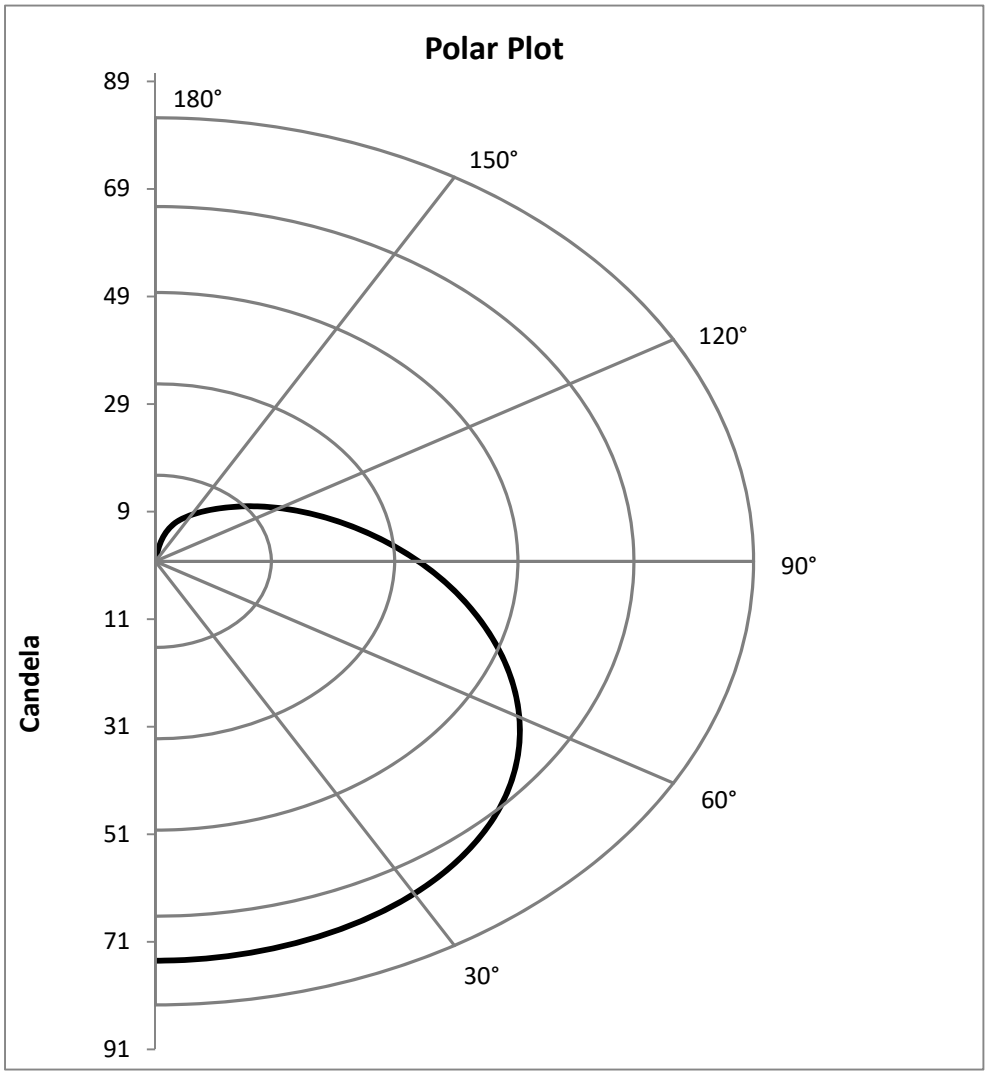
Test Request Number: BG-NW250110-1-01

Average Goniometry Test Data

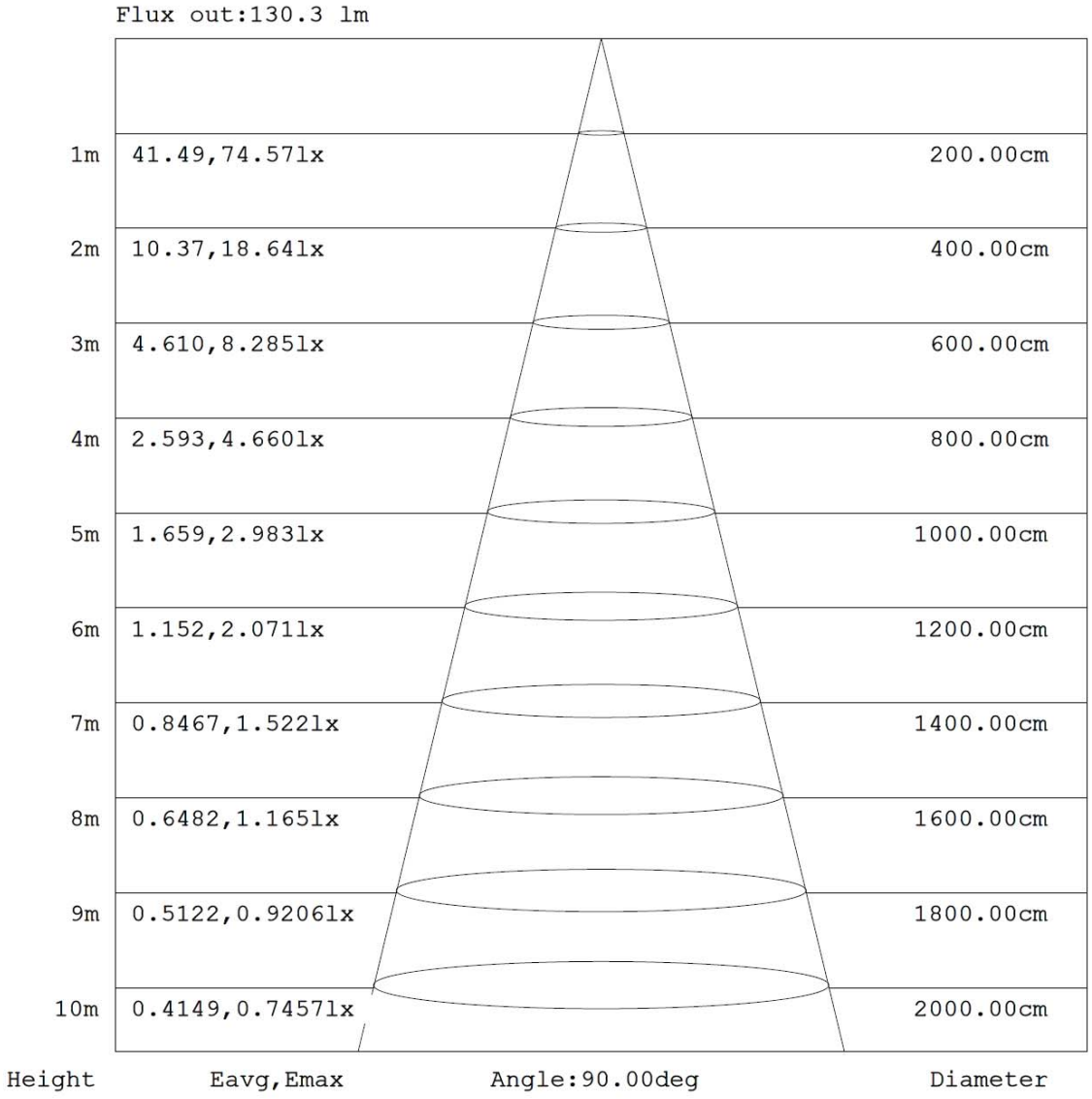
Beam Angle				Color Distribution
	Candela	Half Angle	Full Angle	Δu'v'
Max	239	0.0	-----	-----
50%of Max	120	88.6	177.1	-----
10%of Max	24	-----	-----	-----

Volts	Amps	Watts	PF
120.01	0.070	4.8	0.571
Total Downlight Lumens:			358.7
Total Uplight Lumens:			126.5
Total Lumens:			485.2
Total Lumens/ Watt:			100.4

Intensity Distribution

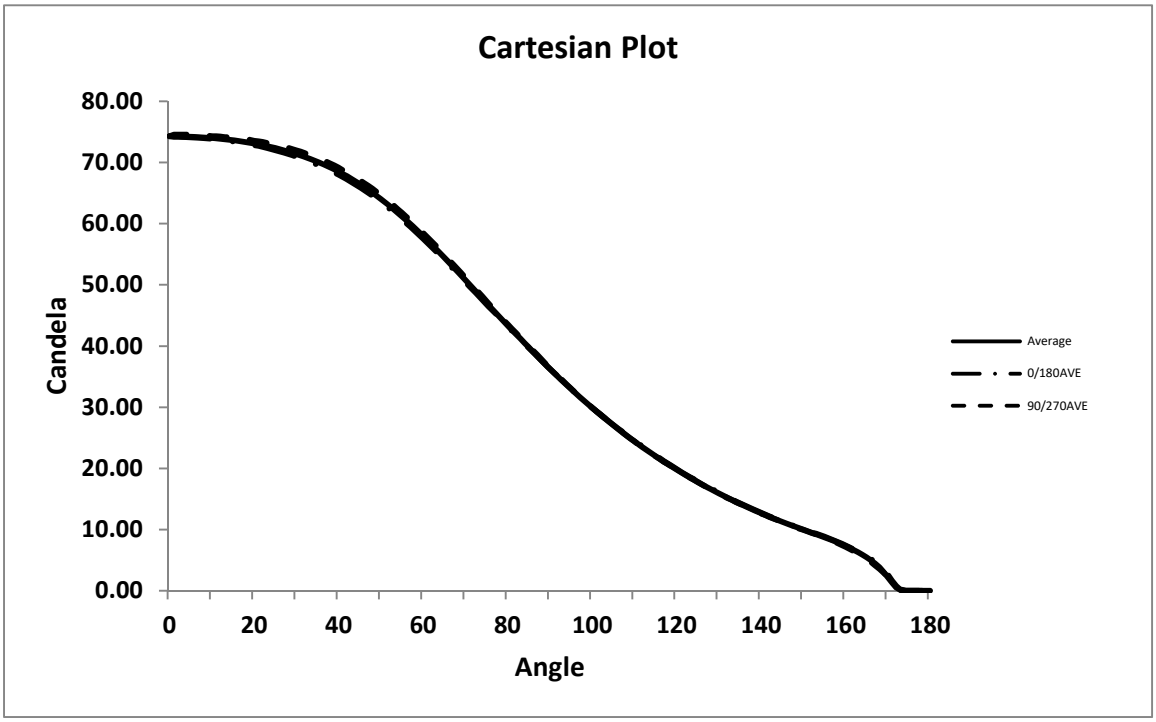


Cone Diagram



Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

Cartesian Plot



LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	74.28	74.28	74.28	0.00	0.00	0.00%
5	74.19	74.10	74.49	1.77	1.77	0.37%
10	73.99	73.87	74.31	5.30	7.08	1.46%
15	73.64	73.46	74.02	8.76	15.83	3.26%
20	73.11	72.85	73.56	12.09	27.93	5.76%
25	72.35	71.98	72.89	15.26	43.18	8.90%
30	71.36	70.95	71.97	18.19	61.37	12.65%
35	70.11	69.66	70.75	20.84	82.21	16.94%
40	68.50	68.00	69.15	23.13	105.34	21.71%
45	66.47	65.98	67.13	25.00	130.34	26.86%
50	64.02	63.52	64.66	26.38	156.71	32.30%
55	61.17	60.70	61.77	27.23	183.94	37.91%
60	57.96	57.54	58.48	27.55	211.49	43.59%
65	54.47	54.07	54.92	27.33	238.82	49.22%
70	50.80	50.49	51.18	26.65	265.47	54.72%
75	47.06	46.84	47.35	25.57	291.05	59.99%
80	43.39	43.28	43.59	24.19	315.24	64.98%
85	39.79	39.73	39.94	22.59	337.83	69.63%
90	36.29	36.28	36.41	20.83	358.66	73.93%
95	32.97	33.01	33.05	18.96	377.62	77.83%
100	29.89	29.95	29.94	17.07	394.69	81.35%
105	27.05	27.13	27.07	15.23	409.92	84.49%
110	24.43	24.52	24.42	13.45	423.37	87.26%
115	22.01	22.11	22.00	11.75	435.12	89.68%
120	19.80	19.90	19.79	10.16	445.28	91.78%
125	17.78	17.87	17.76	8.68	453.97	93.57%
130	15.92	16.00	15.90	7.33	461.29	95.08%
135	14.22	14.29	14.19	6.09	467.38	96.33%
140	12.67	12.74	12.63	4.98	472.36	97.36%
145	11.26	11.32	11.23	3.99	476.35	98.18%
150	9.98	10.05	9.94	3.13	479.48	98.83%
155	8.77	8.85	8.70	2.38	481.86	99.32%
160	7.32	7.42	7.18	1.70	483.56	99.67%
165	5.45	5.65	5.21	1.07	484.62	99.89%
170	2.21	2.63	2.26	0.49	485.11	99.99%
175	0.00	0.00	0.00	0.05	485.17	100.00%
180	0.00	0.00	0.00	0.00	485.17	100.00%

LM-79 Test Report

Testing Laboratory of Xiamen Topstar Lighting Co., Ltd.
No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-1-01

Individual Lamp Data- Sphere

Position	Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	PF	Luminous Lumens (lm)	LPW (lm/W)	CCX	CCY	CCT (K)	CRI	R9	Duv	Rf	Rg
VBU	1	120.00	0.071	4.9	0.573	476.4	97.6	0.3467	0.3594	4967	82.5	5.2	0.0032	83	93
	2	120.00	0.071	4.8	0.569	465.8	96.6	0.3465	0.3578	4967	82.8	6.7	0.0025	83	94
	3	120.00	0.071	4.9	0.577	471.6	96.1	0.3480	0.3598	4922	82.6	5.8	0.0029	83	93
	4	120.00	0.072	5.0	0.574	470.5	95.0	0.3480	0.3590	4920	82.7	6.3	0.0025	83	94
	5	120.00	0.075	5.2	0.582	487.0	93.1	0.3477	0.3600	4932	82.6	5.6	0.0031	83	93
VBD	7	120.00	0.069	4.7	0.571	473.3	100.6	0.3484	0.3600	4908	82.4	5.3	0.0029	83	94
	8	120.00	0.070	4.8	0.572	468.5	97.3	0.3482	0.3599	4915	82.4	5.0	0.0029	83	94
	9	120.00	0.068	4.7	0.572	472.6	100.7	0.3483	0.3600	4911	82.3	5.0	0.0029	83	94
	10	120.00	0.065	4.4	0.568	446.9	100.9	0.3511	0.3624	4820	82.1	3.6	0.0030	83	94
	11	120.00	0.070	4.8	0.571	465.2	97.7	0.3490	0.3607	4891	82.3	4.2	0.0030	83	94
Average		**120.00**	**0.070**	**4.8**	**0.573**	**469.8**	**97.6**	**0.3482**	**0.3599**	**4915**	**82.5**	**5.3**	**0.0029**	**83**	**94**

Individual Lamp Data- Goniometer

Sample No.	Lamp Volts (V)	Lamp Current (A)	Lamp Watts (W)	Total Lumens (lm)	Beam Angle （°）	CBCP （cd）	90 cone lumen(lm)	E*Δu'v'
1	120.01	0.070	4.8	485.2	177.1	239	130.3	---

(The End of Report)