

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-NW250110-2-01

Lamp specifics

Manufacturer:	LEDVANCE LLC	Watts:	9W
Lamp:	LED9A19F8SC310YV	Rated Lumens:	800Lumens
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:	2025.01.23 ~ 2025.02.05	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.

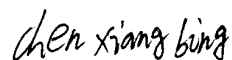
Measurements performed by one or more of
the following authorized operators:

He Chunfang,Zhou Lei

Report prepared by: Zhou Lei

Report was checked and issued by
Chen Xiangbing

Authorized signatory



Issue Date: 2025.02.14

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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).

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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 4 π 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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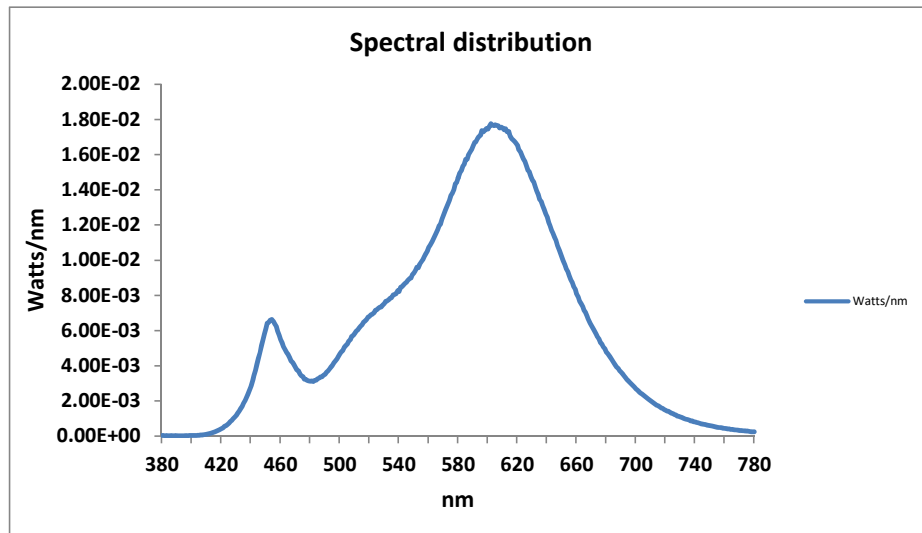
Test data in 2700K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.127	8.6	0.565	810.9	94.2

CCX	CCY	u'	v'	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4551	0.4067	0.2612	0.5251	-0.0010	2738	81.0	0.6	83	96

Spectral Power Distribution



nm	Watts/nm
380	3.26E-05
385	2.54E-05
390	2.12E-05
395	2.66E-05
400	3.36E-05
405	4.92E-05
410	1.12E-04
415	2.27E-04
420	4.31E-04
425	7.23E-04
430	1.18E-03
435	1.86E-03
440	2.87E-03
445	4.44E-03
450	6.12E-03
455	6.53E-03
460	5.50E-03

nm	Watts/nm
465	4.65E-03
470	3.91E-03
475	3.37E-03
480	3.13E-03
485	3.25E-03
490	3.51E-03
495	4.03E-03
500	4.67E-03
505	5.24E-03
510	5.83E-03
515	6.32E-03
520	6.81E-03
525	7.19E-03
530	7.54E-03
535	7.88E-03
540	8.22E-03
545	8.75E-03

nm	Watts/nm
550	9.29E-03
555	9.92E-03
560	1.07E-02
565	1.15E-02
570	1.25E-02
575	1.37E-02
580	1.47E-02
585	1.57E-02
590	1.65E-02
595	1.71E-02
600	1.75E-02
605	1.77E-02
610	1.75E-02
615	1.71E-02
620	1.65E-02
625	1.56E-02
630	1.46E-02

nm	Watts/nm
635	1.35E-02
640	1.25E-02
645	1.13E-02
650	1.02E-02
655	9.12E-03
660	8.08E-03
665	7.14E-03
670	6.28E-03
675	5.52E-03
680	4.79E-03
685	4.19E-03
690	3.64E-03
695	3.12E-03
700	2.69E-03
705	2.33E-03
710	2.00E-03
715	1.73E-03

nm	Watts/nm
720	1.48E-03
725	1.28E-03
730	1.09E-03
735	9.37E-04
740	8.13E-04
745	6.93E-04
750	5.91E-04
755	5.07E-04
760	4.39E-04
765	3.78E-04
770	3.24E-04
775	2.84E-04
780	2.42E-04

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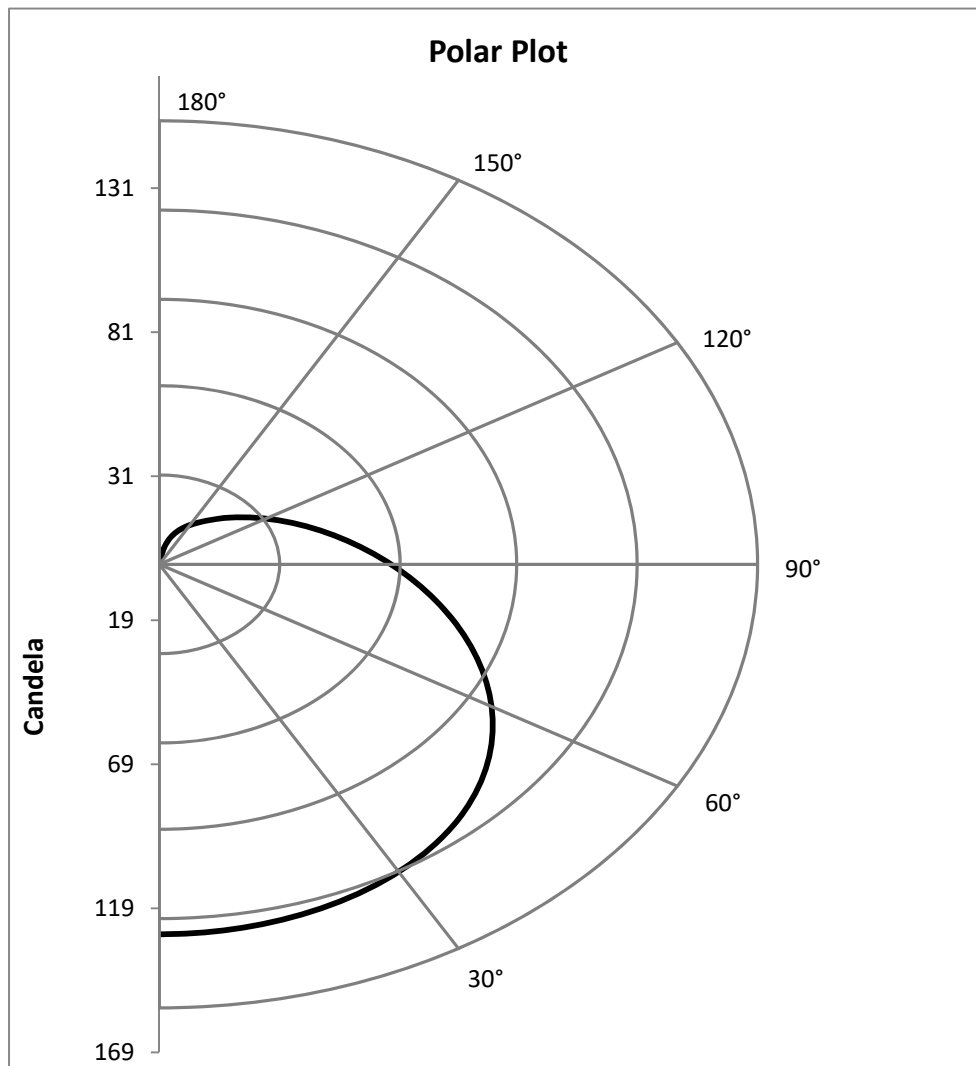
Test Request Number: BG-NW250110-2-01

Average Goniometry Test Data

Beam		Angle		Color Distribution
	Candela	Half Angle	Full Angle	$\Delta u'v'$
Max	128	0.0	-----	-----
50%of Max	64	86.0	172.0	-----
10%of Max	13	-----	-----	-----

Volts	Amps	Watts	PF
120.09	0.128	8.6	0.563
Total Downlight Lumens:			610.7
Total Uplight Lumens:			203.9
Total Lumens:			814.6
Total Lumens/ Watt:			94.3

Intensity Distribution

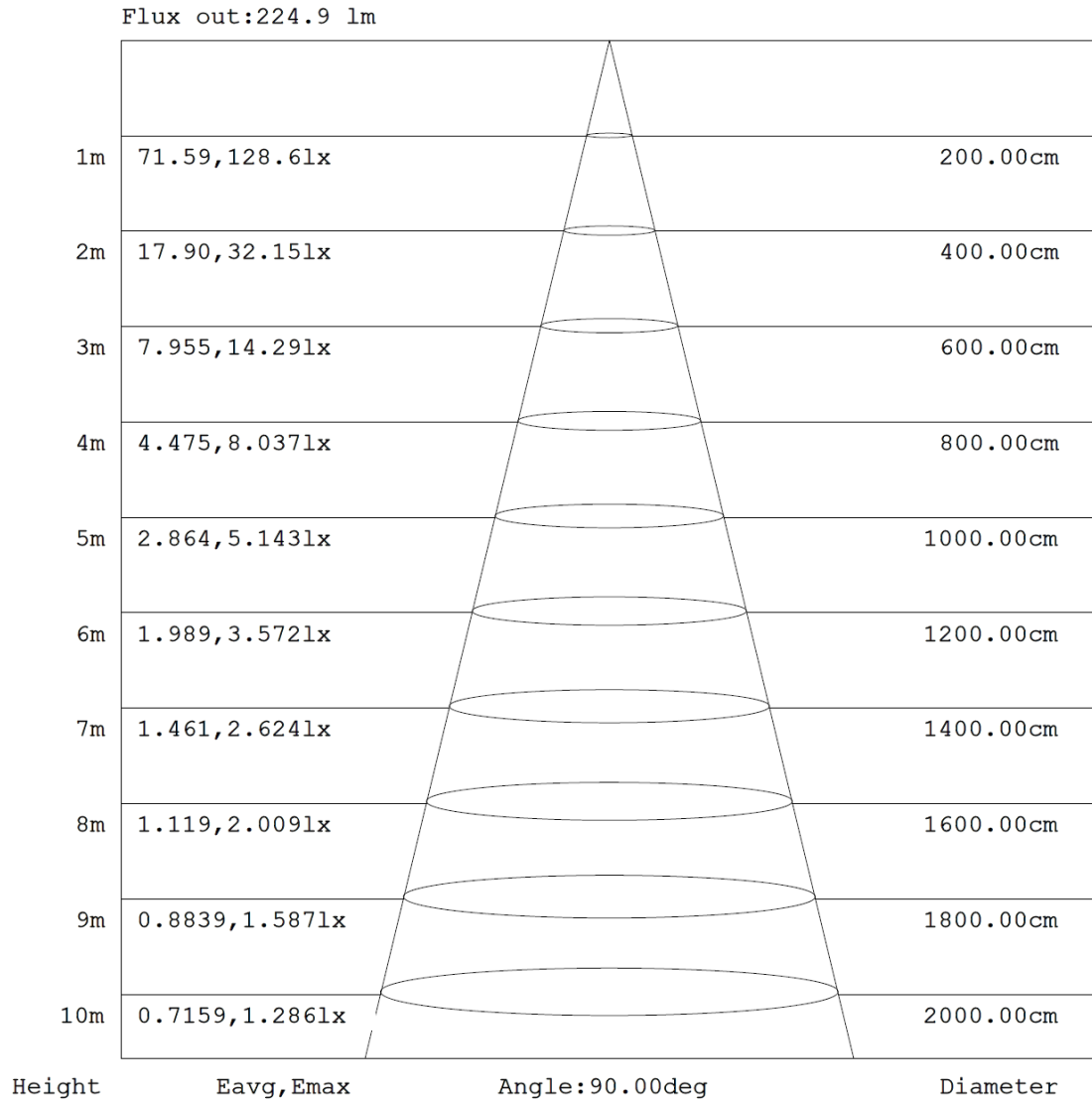


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Cone Diagram



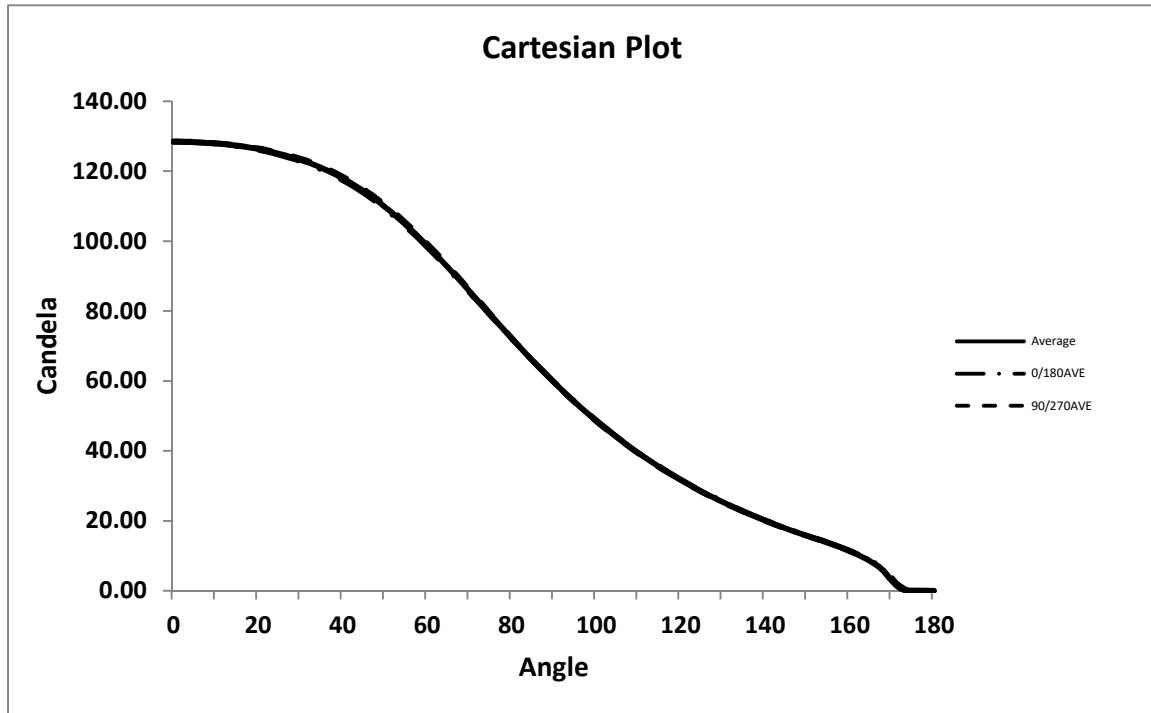
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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Cartesian Plot



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Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	128.44	128.44	128.44	0.00	0.00	0.00%
5	128.30	128.26	128.38	3.07	3.07	0.38%
10	127.93	127.82	128.03	9.17	12.24	1.50%
15	127.31	127.20	127.48	15.14	27.38	3.36%
20	126.33	126.14	126.56	20.90	48.28	5.93%
25	125.00	124.70	125.30	26.36	74.64	9.16%
30	123.23	122.87	123.61	31.41	106.06	13.02%
35	120.93	120.49	121.36	35.96	142.02	17.43%
40	118.00	117.49	118.49	39.87	181.89	22.33%
45	114.31	113.79	114.89	43.02	224.92	27.61%
50	109.82	109.33	110.40	45.30	270.22	33.17%
55	104.61	104.12	105.19	46.64	316.86	38.90%
60	98.77	98.34	99.31	47.02	363.88	44.67%
65	92.39	92.02	92.85	46.47	410.35	50.37%
70	85.71	85.45	86.02	45.09	455.45	55.91%
75	78.92	78.77	79.13	43.02	498.47	61.19%
80	72.22	72.16	72.34	40.43	538.90	66.15%
85	65.78	65.78	65.79	37.48	576.38	70.75%
90	59.67	59.75	59.62	34.33	610.71	74.97%
95	53.93	54.05	53.84	31.08	641.79	78.78%
100	48.65	48.78	48.53	27.86	669.65	82.20%
105	43.82	43.96	43.71	24.73	694.38	85.24%
110	39.40	39.52	39.28	21.74	716.12	87.91%
115	35.39	35.50	35.26	18.93	735.05	90.23%
120	31.73	31.83	31.62	16.31	751.36	92.23%
125	28.40	28.49	28.32	13.90	765.26	93.94%
130	25.38	25.44	25.29	11.69	776.95	95.37%
135	22.61	22.66	22.53	9.69	786.64	96.56%
140	20.08	20.13	20.03	7.90	794.55	97.53%
145	17.80	17.84	17.73	6.32	800.87	98.31%
150	15.70	15.74	15.64	4.93	805.80	98.92%
155	13.71	13.75	13.68	3.73	809.54	99.37%
160	11.37	11.45	11.42	2.65	812.18	99.70%
165	8.36	8.56	8.52	1.65	813.83	99.90%
170	2.81	3.68	2.65	0.73	814.56	99.99%
175	0.01	0.01	0.01	0.07	814.63	100.00%
180	0.00	0.00	0.00	0.00	814.63	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	0.127	8.6	0.564	800.6	92.9	0.4553	0.4067	2734	81.1	0.7	-0.0011	83	95
	2	120.00	0.128	8.7	0.566	806.7	92.6	0.4552	0.4055	2726	81.0	0.9	-0.0015	83	96
	3	120.00	0.127	8.6	0.563	803.8	93.6	0.4546	0.4058	2736	81.1	1.1	-0.0013	83	96
	4	120.00	0.128	8.6	0.561	802.6	93.3	0.4554	0.4079	2742	81.0	0.2	-0.0006	83	95
	5	120.00	0.128	8.6	0.562	806.2	93.5	0.4547	0.4068	2744	81.0	0.3	-0.0010	83	95
VBD	7	120.00	0.127	8.6	0.565	821.6	95.7	0.4534	0.4061	2757	81.2	1.2	-0.0011	83	96
	8	120.00	0.126	8.6	0.571	814.2	94.2	0.4549	0.4053	2729	81.0	0.9	-0.0015	83	96
	9	120.00	0.126	8.6	0.566	820.4	95.6	0.4551	0.4083	2749	81.0	0.1	-0.0004	83	95
	10	120.00	0.126	8.6	0.565	808.6	94.4	0.4555	0.4061	2727	81.0	0.7	-0.0013	83	96
	11	120.00	0.127	8.6	0.566	824.0	95.7	0.4564	0.4083	2731	80.9	-0.1	-0.0006	83	95
Average		120.00	0.127	8.6	0.565	810.9	94.2	0.4551	0.4067	2738	81.0	0.6	-0.0010	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	120.09	0.128	8.6	814.6	172.0	128	224.9	---

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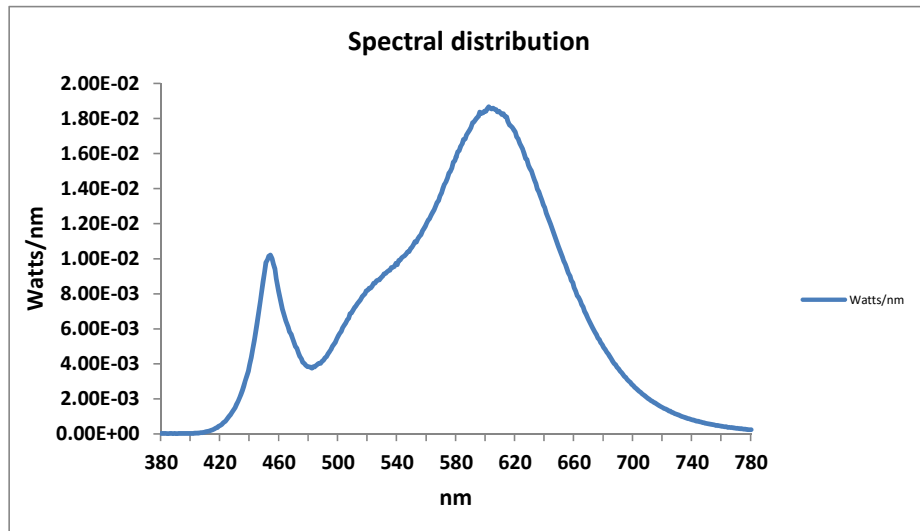
Test data in 3000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.129	8.7	0.566	890.7	101.9

CCX	CCY	u'	v'	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4346	0.3964	0.2524	0.5180	-0.0028	2976	82.8	7.4	84	97

Spectral Power Distribution



nm	Watts/nm
380	3.34E-05
385	2.42E-05
390	2.37E-05
395	2.91E-05
400	3.43E-05
405	5.16E-05
410	1.19E-04
415	2.49E-04
420	4.89E-04
425	8.92E-04
430	1.51E-03
435	2.48E-03
440	3.97E-03
445	6.38E-03
450	9.23E-03
455	1.00E-02
460	7.94E-03

nm	Watts/nm
465	6.37E-03
470	5.22E-03
475	4.29E-03
480	3.83E-03
485	3.91E-03
490	4.21E-03
495	4.82E-03
500	5.61E-03
505	6.33E-03
510	7.06E-03
515	7.65E-03
520	8.21E-03
525	8.62E-03
530	9.01E-03
535	9.34E-03
540	9.66E-03
545	1.02E-02

nm	Watts/nm
550	1.07E-02
555	1.13E-02
560	1.20E-02
565	1.28E-02
570	1.38E-02
575	1.49E-02
580	1.58E-02
585	1.68E-02
590	1.75E-02
595	1.81E-02
600	1.84E-02
605	1.86E-02
610	1.83E-02
615	1.78E-02
620	1.72E-02
625	1.63E-02
630	1.52E-02

nm	Watts/nm
635	1.40E-02
640	1.29E-02
645	1.17E-02
650	1.05E-02
655	9.44E-03
660	8.34E-03
665	7.39E-03
670	6.47E-03
675	5.67E-03
680	4.93E-03
685	4.30E-03
690	3.72E-03
695	3.21E-03
700	2.75E-03
705	2.38E-03
710	2.04E-03
715	1.76E-03

nm	Watts/nm
720	1.50E-03
725	1.30E-03
730	1.11E-03
735	9.45E-04
740	8.13E-04
745	6.96E-04
750	6.01E-04
755	5.13E-04
760	4.41E-04
765	3.75E-04
770	3.23E-04
775	2.79E-04
780	2.49E-04

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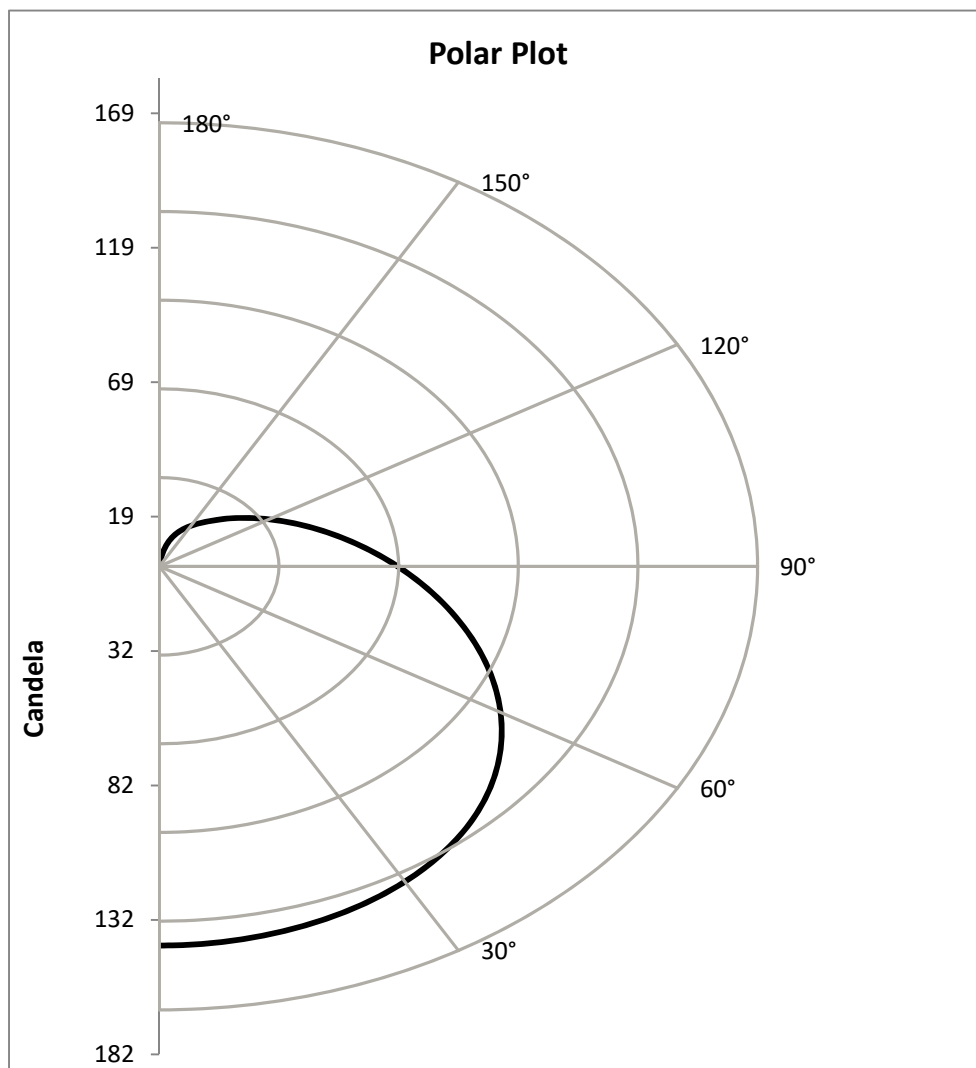
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Average Goniometry Test Data

Beam		Angle		Color Distribution
	Candela	Half Angle	Full Angle	$\Delta u'v'$
Max	141	1.0	-----	-----
50%of Max	71	86.0	172.0	-----
10%of Max	14	-----	-----	-----

Volts	Amps	Watts	PF
120.09	0.130	8.8	0.563
Total Downlight Lumens:			671.9
Total Uplight Lumens:			224.8
Total Lumens:			896.7
Total Lumens/ Watt:			102.2

Intensity Distribution

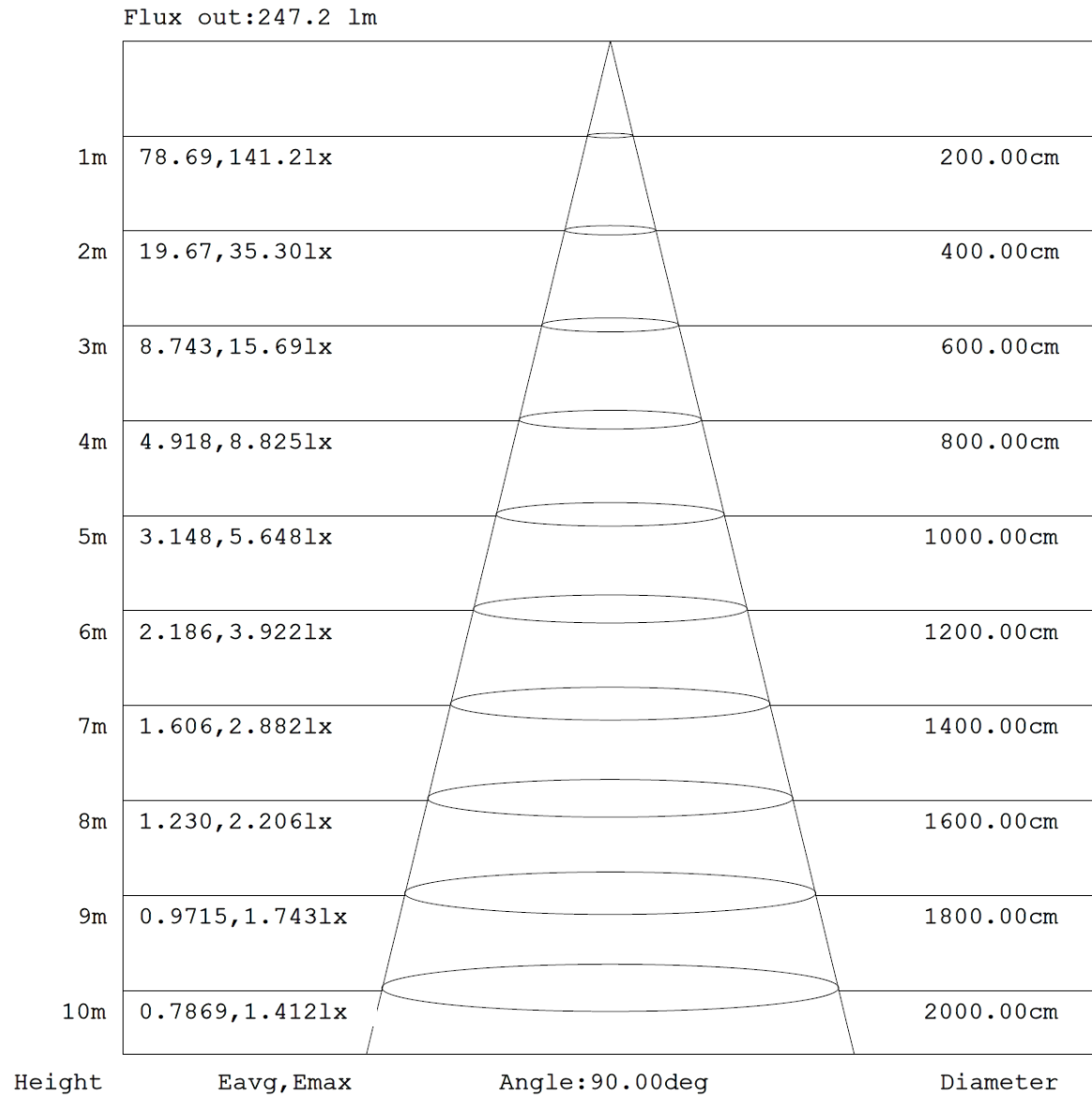


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Cone Diagram



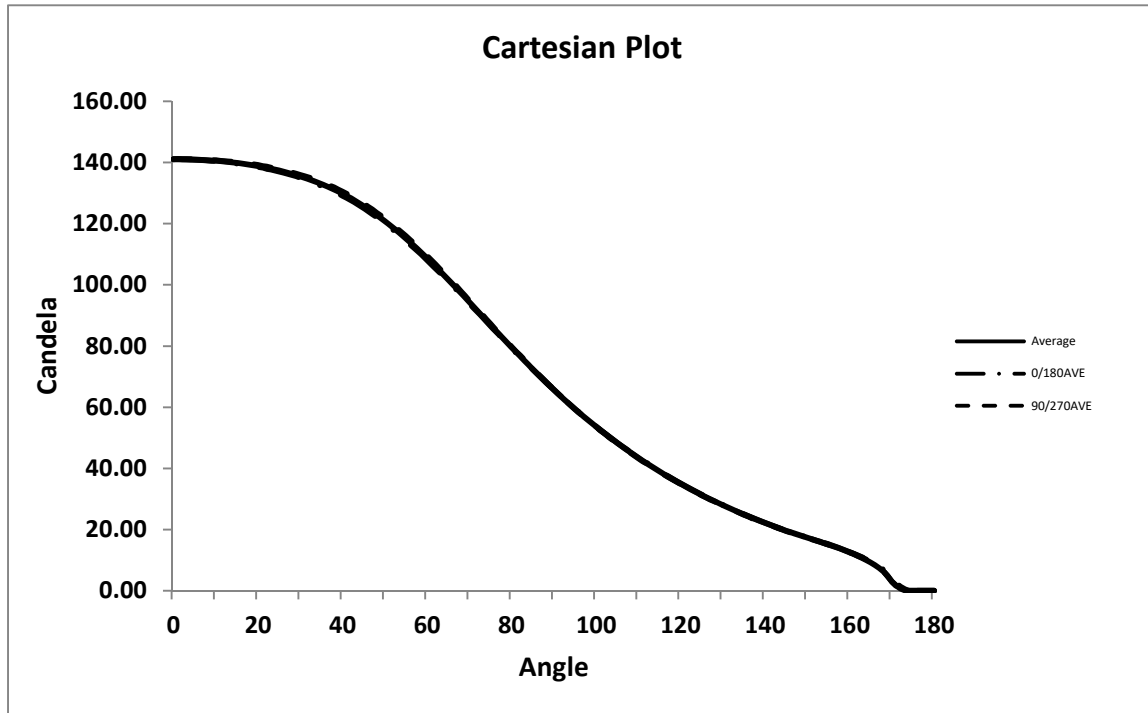
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Cartesian Plot



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Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	141.05	141.05	141.05	0.00	0.00	0.00%
5	140.93	140.87	141.02	3.37	3.37	0.38%
10	140.53	140.47	140.68	10.07	13.44	1.50%
15	139.86	139.70	140.08	16.63	30.07	3.35%
20	138.81	138.55	139.11	22.97	53.04	5.91%
25	137.36	137.05	137.77	28.97	82.01	9.15%
30	135.44	134.98	135.92	34.53	116.53	13.00%
35	132.95	132.41	133.53	39.53	156.06	17.40%
40	129.74	129.10	130.44	43.84	199.90	22.29%
45	125.71	125.06	126.45	47.31	247.22	27.57%
50	120.83	120.15	121.60	49.83	297.05	33.13%
55	115.11	114.44	115.93	51.31	348.36	38.85%
60	108.69	108.09	109.42	51.74	400.10	44.62%
65	101.71	101.20	102.35	51.15	451.25	50.32%
70	94.37	93.99	94.85	49.65	500.90	55.86%
75	86.90	86.65	87.24	47.37	548.28	61.14%
80	79.55	79.37	79.77	44.52	592.80	66.11%
85	72.47	72.39	72.59	41.29	634.09	70.71%
90	65.74	65.74	65.78	37.83	671.91	74.93%
95	59.42	59.48	59.38	34.25	706.16	78.75%
100	53.62	53.69	53.55	30.70	736.86	82.17%
105	48.29	48.39	48.20	27.25	764.11	85.21%
110	43.45	43.54	43.36	23.97	788.08	87.89%
115	39.02	39.12	38.92	20.87	808.95	90.21%
120	34.99	35.08	34.90	17.99	826.94	92.22%
125	31.32	31.40	31.25	15.32	842.26	93.93%
130	27.98	28.04	27.91	12.89	855.15	95.37%
135	24.93	24.99	24.87	10.69	865.84	96.56%
140	22.15	22.21	22.09	8.72	874.56	97.53%
145	19.62	19.67	19.53	6.97	881.53	98.31%
150	17.33	17.37	17.26	5.44	886.97	98.91%
155	15.13	15.18	15.11	4.12	891.09	99.37%
160	12.54	12.65	12.60	2.92	894.01	99.70%
165	9.21	9.47	9.43	1.82	895.83	99.90%
170	3.12	4.09	2.91	0.81	896.64	99.99%
175	0.01	0.01	0.01	0.07	896.71	100.00%
180	0.00	0.00	0.00	0.00	896.71	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-NW250110-2-01

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	0.129	8.8	0.565	886.8	101.3	0.4348	0.3964	2973	82.9	7.7	-0.0028	84	97
	2	120.00	0.130	8.9	0.567	891.3	100.7	0.4350	0.3955	2962	82.9	7.8	-0.0032	83	97
	3	120.00	0.129	8.7	0.563	883.5	101.4	0.4348	0.3959	2969	82.9	7.7	-0.0030	84	97
	4	120.00	0.130	8.7	0.562	878.6	100.6	0.4342	0.3968	2986	82.8	7.2	-0.0026	84	96
	5	120.00	0.129	8.8	0.564	884.7	101.0	0.4333	0.3957	2993	82.9	7.6	-0.0029	84	97
VBD	7	120.00	0.128	8.7	0.567	901.0	103.5	0.4337	0.3963	2990	82.9	7.6	-0.0027	84	97
	8	120.00	0.129	8.8	0.567	892.2	101.8	0.4349	0.3956	2963	82.8	7.6	-0.0031	83	97
	9	120.00	0.128	8.7	0.568	899.5	103.4	0.4352	0.3982	2980	82.7	6.5	-0.0021	84	96
	10	120.00	0.128	8.7	0.564	887.5	102.2	0.4345	0.3955	2971	82.9	7.8	-0.0031	84	97
	11	120.00	0.128	8.7	0.571	901.9	103.2	0.4357	0.3978	2968	82.7	6.7	-0.0024	84	96
Average		120.00	0.129	8.7	0.566	890.7	101.9	0.4346	0.3964	2976	82.8	7.4	-0.0028	84	97

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	120.09	0.130	8.8	896.7	172.0	141	247.2	---

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-NW250110-2-01

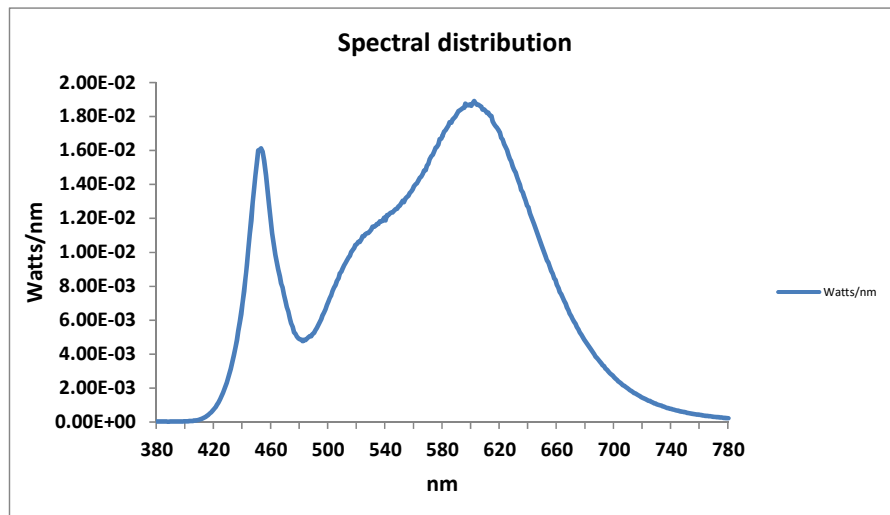
Test data in 3500K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.132	9.0	0.569	996.2	110.2

CCX	CCY	u'	v'	Duv	CCT(K)	CRI	R9	Rf	Rg
0.4014	0.3796	0.2378	0.5060	-0.0041	3494	84.9	16.0	84	98

Spectral Power Distribution



nm	Watts/nm
380	3.93E-05
385	3.33E-05
390	2.91E-05
395	3.45E-05
400	4.60E-05
405	6.98E-05
410	1.63E-04
415	3.67E-04
420	7.76E-04
425	1.47E-03
430	2.61E-03
435	4.38E-03
440	7.04E-03
445	1.11E-02
450	1.53E-02
455	1.54E-02
460	1.16E-02

nm	Watts/nm
465	9.02E-03
470	7.11E-03
475	5.60E-03
480	4.88E-03
485	4.91E-03
490	5.26E-03
495	6.06E-03
500	7.10E-03
505	8.08E-03
510	9.04E-03
515	9.79E-03
520	1.05E-02
525	1.10E-02
530	1.14E-02
535	1.17E-02
540	1.19E-02
545	1.24E-02

nm	Watts/nm
550	1.28E-02
555	1.33E-02
560	1.39E-02
565	1.45E-02
570	1.52E-02
575	1.62E-02
580	1.69E-02
585	1.77E-02
590	1.82E-02
595	1.85E-02
600	1.86E-02
605	1.87E-02
610	1.83E-02
615	1.77E-02
620	1.71E-02
625	1.60E-02
630	1.49E-02

nm	Watts/nm
635	1.37E-02
640	1.27E-02
645	1.14E-02
650	1.02E-02
655	9.16E-03
660	8.09E-03
665	7.14E-03
670	6.23E-03
675	5.45E-03
680	4.75E-03
685	4.13E-03
690	3.58E-03
695	3.07E-03
700	2.63E-03
705	2.28E-03
710	1.96E-03
715	1.68E-03

nm	Watts/nm
720	1.43E-03
725	1.24E-03
730	1.05E-03
735	9.07E-04
740	7.74E-04
745	6.66E-04
750	5.72E-04
755	4.88E-04
760	4.25E-04
765	3.64E-04
770	3.06E-04
775	2.69E-04
780	2.35E-04

LM-79 Test Report

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

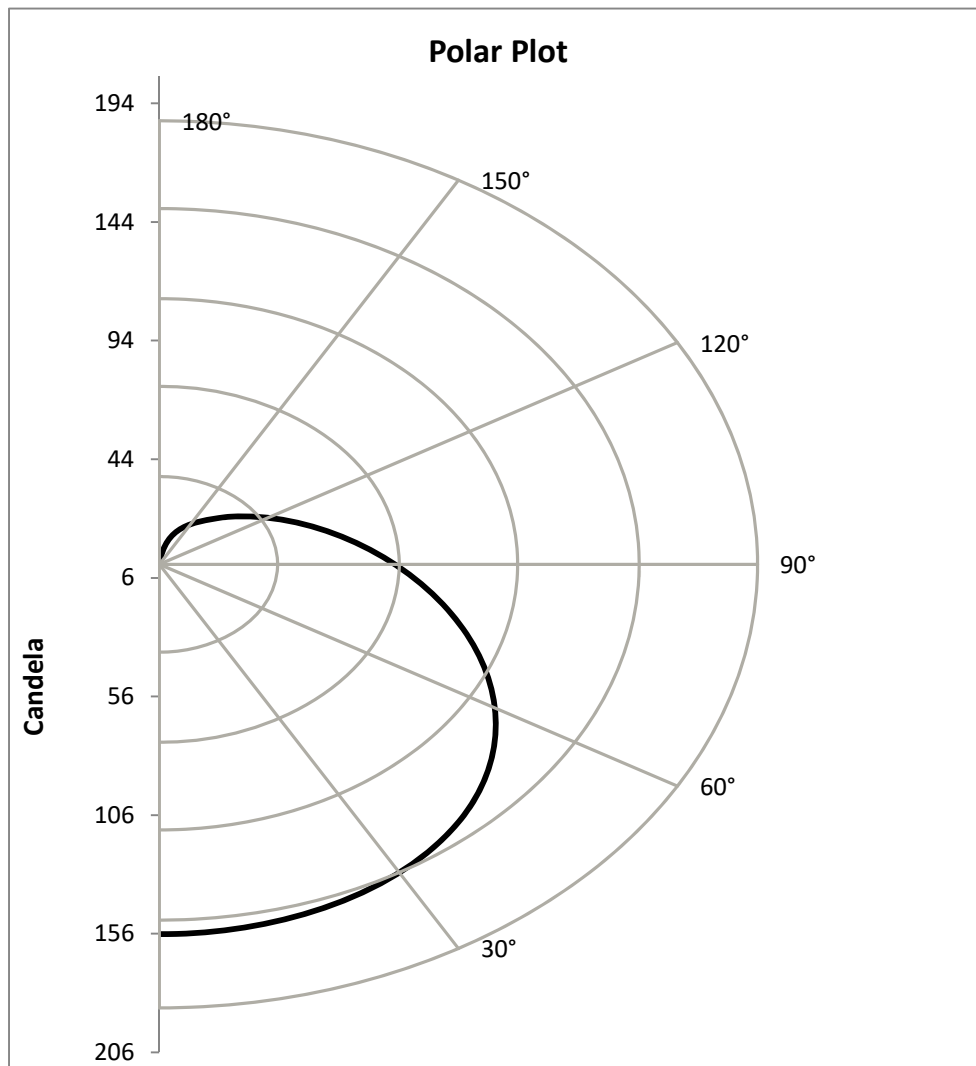
Test Request Number: BG-NW250110-2-01

Average Goniometry Test Data

Beam		Angle		Color Distribution
	Candela	Half Angle	Full Angle	$\Delta u'v'$
Max	156	0.0	-----	-----
50%of Max	78	86.6	173.3	----
10%of Max	16	-----	-----	-----

Volts	Amps	Watts	PF
120.07	0.133	9.1	0.567
Total Downlight Lumens:			747.7
Total Uplight Lumens:			252.1
Total Lumens:			999.8
Total Lumens/ Watt:			110.1

Intensity Distribution

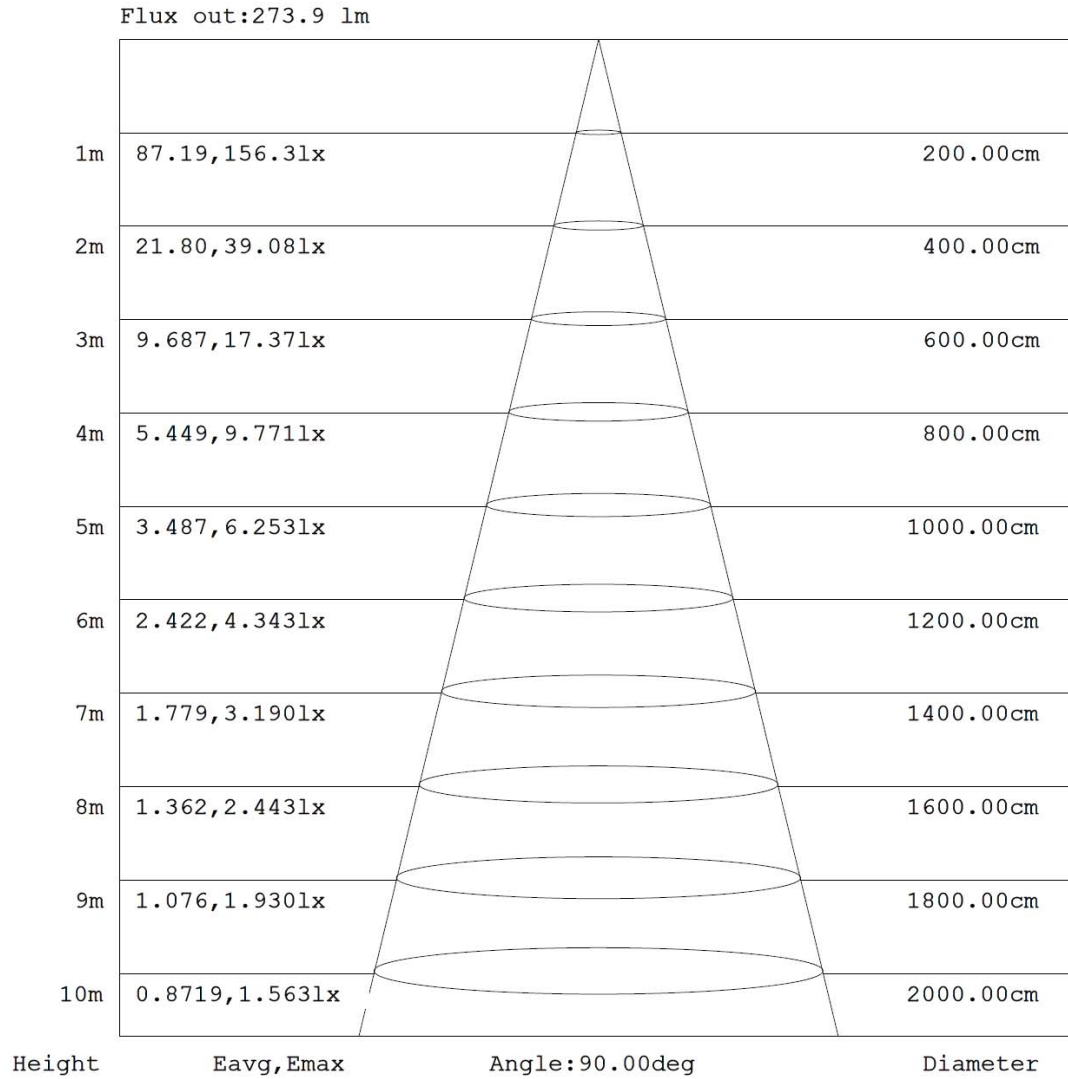


LM-79 Test Report

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

Test Request Number: BG-NW250110-2-01

Cone Diagram



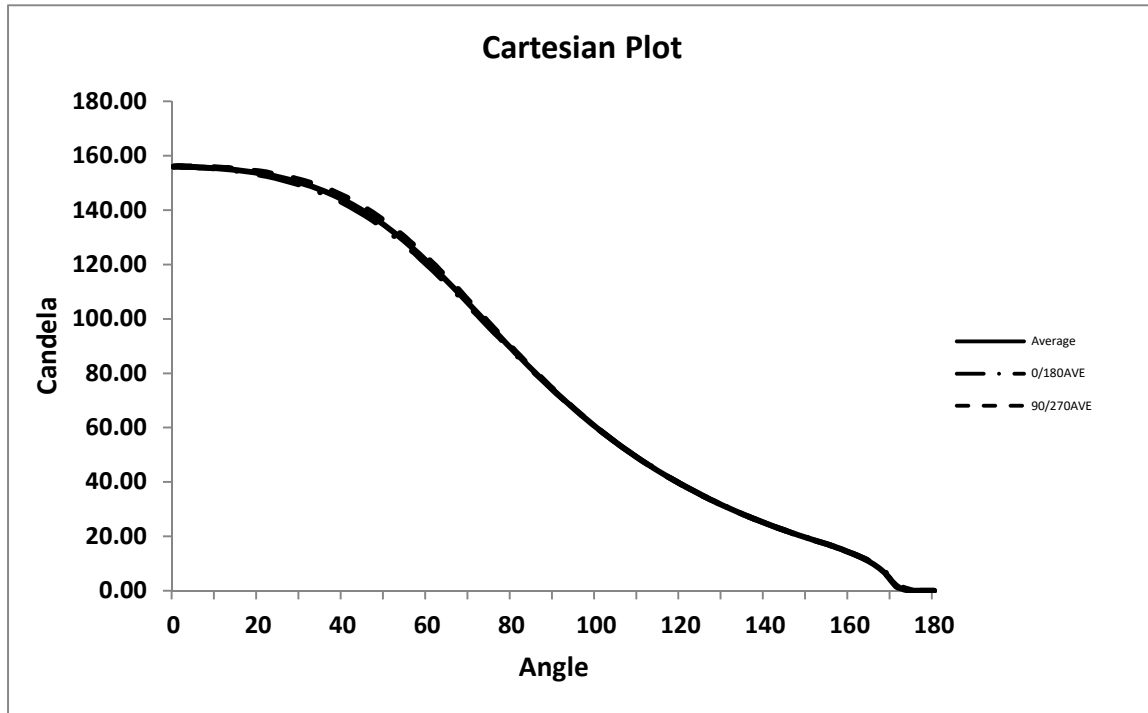
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-NW250110-2-01

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-NW250110-2-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	155.93	155.93	155.93	0.00	0.00	0.00%
5	155.78	155.81	156.08	3.73	3.73	0.37%
10	155.38	155.25	155.76	11.13	14.86	1.49%
15	154.68	154.44	155.17	18.39	33.25	3.33%
20	153.59	153.14	154.30	25.41	58.66	5.87%
25	152.06	151.43	152.98	32.06	90.72	9.07%
30	150.04	149.22	151.15	38.23	128.95	12.90%
35	147.39	146.35	148.68	43.81	172.76	17.28%
40	143.94	142.79	145.37	48.62	221.38	22.14%
45	139.61	138.30	141.13	52.52	273.90	27.40%
50	134.33	133.00	135.90	55.37	329.27	32.93%
55	128.12	126.83	129.67	57.08	386.35	38.64%
60	121.11	119.88	122.56	57.62	443.97	44.41%
65	113.44	112.36	114.72	57.03	500.99	50.11%
70	105.36	104.43	106.43	55.41	556.40	55.65%
75	97.12	96.43	97.94	52.92	609.32	60.94%
80	88.98	88.49	89.56	49.78	659.10	65.92%
85	81.13	80.79	81.53	46.20	705.30	70.54%
90	73.65	73.47	73.89	42.36	747.66	74.78%
95	66.61	66.53	66.76	38.38	786.04	78.62%
100	60.13	60.10	60.21	34.42	820.46	82.06%
105	54.17	54.20	54.19	30.57	851.03	85.12%
110	48.74	48.80	48.72	26.88	877.91	87.81%
115	43.80	43.86	43.78	23.42	901.33	90.15%
120	39.27	39.34	39.24	20.19	921.52	92.17%
125	35.16	35.23	35.12	17.20	938.72	93.89%
130	31.40	31.45	31.36	14.47	953.19	95.34%
135	27.97	28.02	27.94	11.99	965.18	96.54%
140	24.85	24.90	24.82	9.78	974.96	97.52%
145	22.01	22.06	21.99	7.82	982.78	98.30%
150	19.41	19.45	19.39	6.10	988.88	98.91%
155	16.94	16.99	16.97	4.61	993.49	99.37%
160	14.07	14.16	14.15	3.27	996.76	99.70%
165	10.36	10.62	10.57	2.04	998.81	99.90%
170	3.57	4.67	3.34	0.91	999.72	99.99%
175	0.01	0.01	0.01	0.09	999.80	100.00%
180	0.00	0.00	0.00	0.00	999.80	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-NW250110-2-01

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	0.133	9.1	0.567	990.1	109.2	0.4006	0.3792	3508	85.0	16.5	-0.0041	84	98
	2	120.00	0.134	9.2	0.569	998.6	109.1	0.4021	0.3794	3475	85.0	16.3	-0.0043	84	98
	3	120.00	0.133	9.0	0.566	984.3	109.4	0.4024	0.3796	3473	84.9	16.0	-0.0043	84	98
	4	120.00	0.133	9.0	0.564	983.5	109.0	0.4001	0.3790	3520	84.9	16.1	-0.0041	84	98
	5	120.00	0.134	9.1	0.565	990.1	109.3	0.3988	0.3778	3541	85.1	16.7	-0.0043	84	98
VBD	7	120.00	0.131	9.0	0.571	1005.1	111.6	0.4019	0.3803	3489	84.8	15.5	-0.0039	84	98
	8	120.00	0.132	9.1	0.571	999.5	110.4	0.4024	0.3797	3471	84.9	15.9	-0.0043	84	98
	9	120.00	0.131	9.0	0.574	1007.1	112.0	0.4029	0.3819	3479	84.6	14.5	-0.0034	84	97
	10	120.00	0.132	9.0	0.568	1001.0	111.4	0.4014	0.3789	3489	85.1	16.8	-0.0044	84	98
	11	120.00	0.132	9.1	0.570	1002.3	110.7	0.4017	0.3803	3493	84.8	15.4	-0.0039	84	98
Average		120.00	0.132	9.0	0.569	996.2	110.2	0.4014	0.3796	3494	84.9	16.0	-0.0041	84	98

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	120.07	0.133	9.1	999.8	173.3	156	273.9	---

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-NW250110-2-01

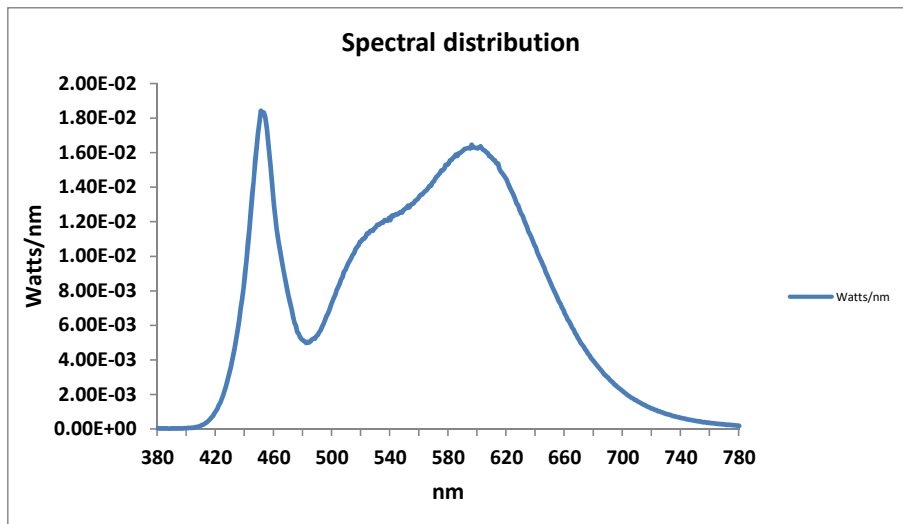
Test data in 4000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.128	8.7	0.566	946.0	108.8

CCX	CCY	u'	v'	Duv	CCT(K)	CRI	R9	Rf	Rg
0.3759	0.3665	0.2262	0.4963	-0.0035	4051	85.2	18.7	84	97

Spectral Power Distribution



nm	Watts/nm
380	4.45E-05
385	3.46E-05
390	3.28E-05
395	3.99E-05
400	5.13E-05
405	8.49E-05
410	2.12E-04
415	4.88E-04
420	1.05E-03
425	1.98E-03
430	3.48E-03
435	5.75E-03
440	8.97E-03
445	1.36E-02
450	1.78E-02
455	1.74E-02
460	1.29E-02

nm	Watts/nm
465	9.89E-03
470	7.66E-03
475	5.96E-03
480	5.11E-03
485	5.08E-03
490	5.43E-03
495	6.28E-03
500	7.37E-03
505	8.41E-03
510	9.39E-03
515	1.02E-02
520	1.09E-02
525	1.13E-02
530	1.17E-02
535	1.19E-02
540	1.21E-02
545	1.24E-02

nm	Watts/nm
550	1.27E-02
555	1.30E-02
560	1.35E-02
565	1.38E-02
570	1.44E-02
575	1.50E-02
580	1.54E-02
585	1.59E-02
590	1.61E-02
595	1.62E-02
600	1.62E-02
605	1.61E-02
610	1.57E-02
615	1.51E-02
620	1.44E-02
625	1.35E-02
630	1.25E-02

nm	Watts/nm
635	1.14E-02
640	1.05E-02
645	9.48E-03
650	8.49E-03
655	7.59E-03
660	6.68E-03
665	5.88E-03
670	5.14E-03
675	4.50E-03
680	3.91E-03
685	3.40E-03
690	2.95E-03
695	2.53E-03
700	2.16E-03
705	1.87E-03
710	1.61E-03
715	1.38E-03

nm	Watts/nm
720	1.19E-03
725	1.02E-03
730	8.68E-04
735	7.43E-04
740	6.44E-04
745	5.52E-04
750	4.72E-04
755	4.03E-04
760	3.57E-04
765	3.03E-04
770	2.57E-04
775	2.24E-04
780	1.92E-04

LM-79 Test Report

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

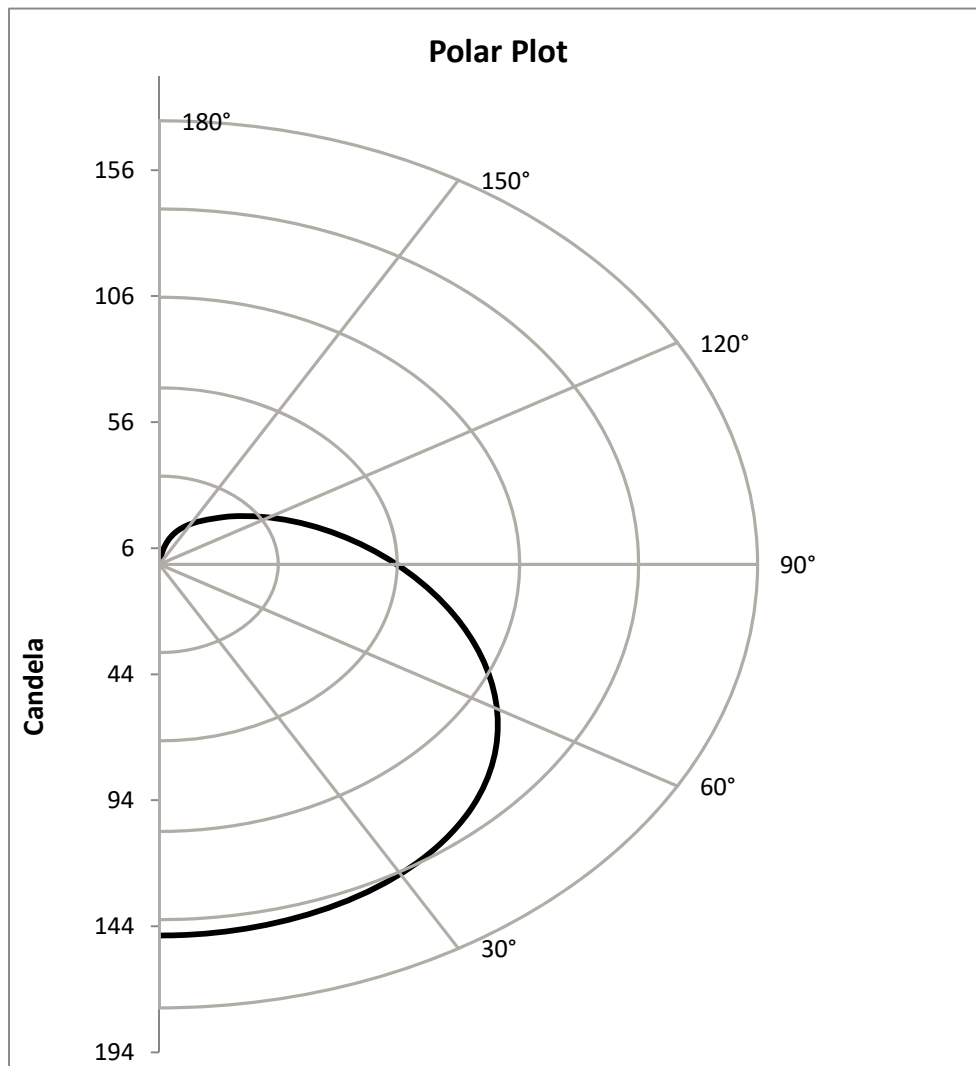
Test Request Number: BG-NW250110-2-01

Average Goniometry Test Data

Beam	Angle			Color Distribution
	Candela	Half Angle	Full Angle	$\Delta u'v'$
Max	147	0.0	-----	-----
50%of Max	74	86.8	173.7	-----
10%of Max	15	-----	-----	-----

Volts	Amps	Watts	PF
120.08	0.129	8.8	0.566
Total Downlight Lumens:			707.7
Total Uplight Lumens:			239.0
Total Lumens:			946.7
Total Lumens/ Watt:			108.1

Intensity Distribution

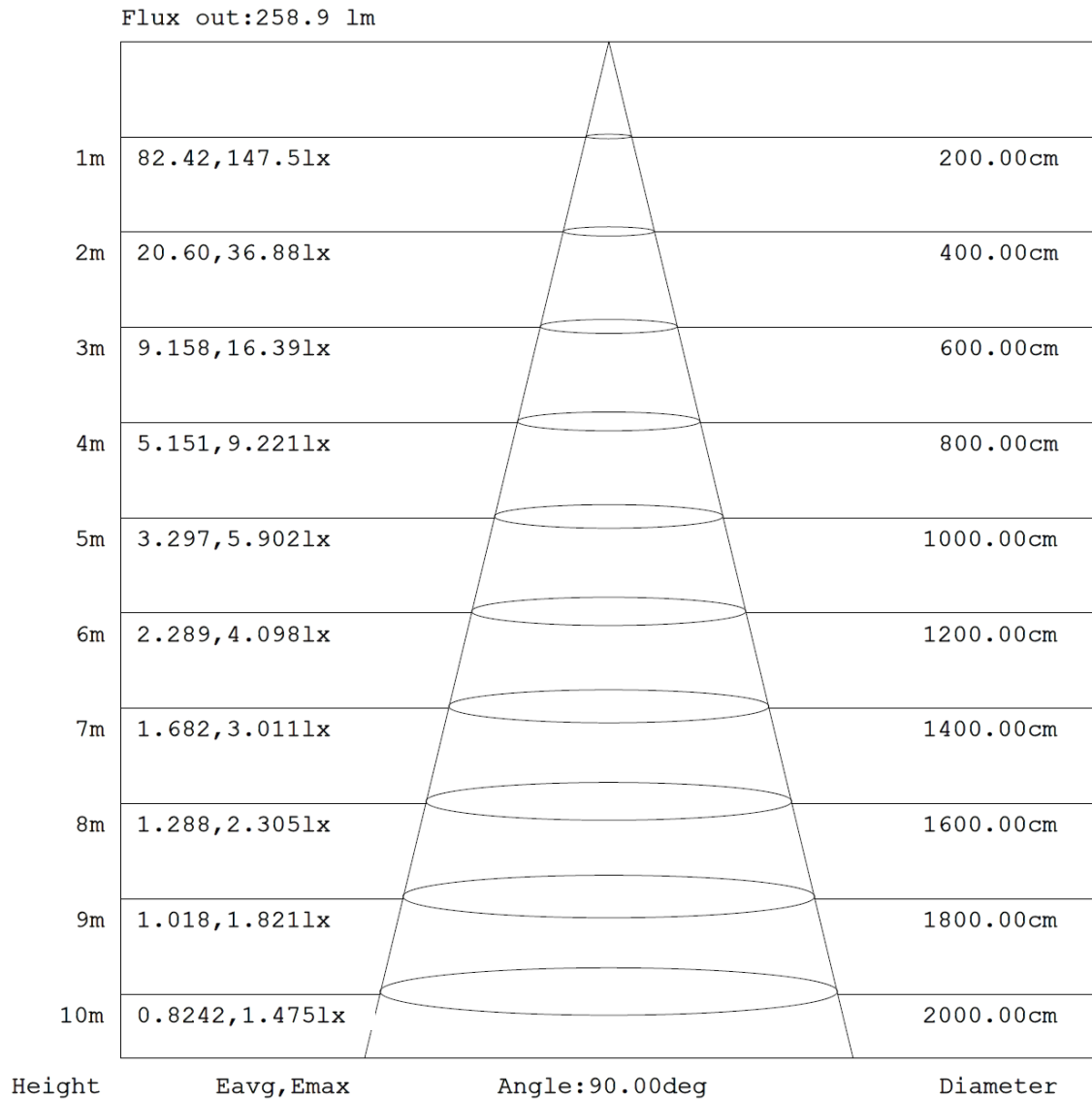


LM-79 Test Report

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

Test Request Number: BG-NW250110-2-01

Cone Diagram



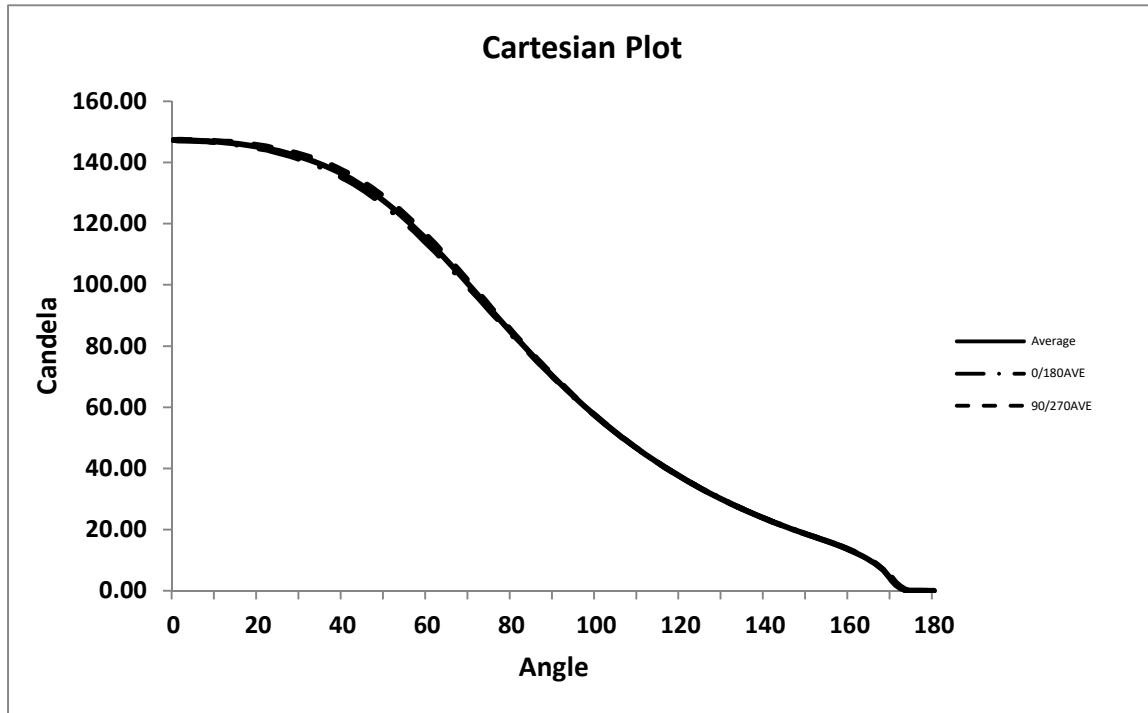
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-NW250110-2-01

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-NW250110-2-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	147.27	147.27	147.27	0.00	0.00	0.00%
5	147.16	147.05	147.38	3.52	3.52	0.37%
10	146.77	146.61	147.05	10.51	14.03	1.48%
15	146.12	145.83	146.48	17.38	31.41	3.32%
20	145.12	144.64	145.65	24.00	55.41	5.85%
25	143.70	143.07	144.39	30.29	85.71	9.05%
30	141.83	141.07	142.73	36.14	121.85	12.87%
35	139.36	138.39	140.48	41.41	163.26	17.24%
40	136.16	135.00	137.41	45.98	209.24	22.10%
45	132.10	130.88	133.50	49.68	258.93	27.35%
50	127.14	125.88	128.62	52.40	311.32	32.88%
55	121.29	119.98	122.73	54.03	365.36	38.59%
60	114.70	113.48	116.08	54.56	419.91	44.36%
65	107.46	106.35	108.69	54.01	473.93	50.06%
70	99.84	98.92	100.90	52.49	526.42	55.60%
75	92.04	91.28	92.86	50.15	576.56	60.90%
80	84.33	83.77	84.98	47.18	623.74	65.89%
85	76.90	76.50	77.37	43.79	667.54	70.51%
90	69.82	69.54	70.12	40.16	707.70	74.75%
95	63.16	62.97	63.35	36.39	744.09	78.60%
100	57.01	56.90	57.12	32.63	776.72	82.04%
105	51.36	51.31	51.43	28.98	805.70	85.11%
110	46.21	46.21	46.22	25.49	831.18	87.80%
115	41.51	41.51	41.52	22.20	853.39	90.14%
120	37.22	37.24	37.22	19.13	872.52	92.16%
125	33.32	33.34	33.31	16.30	888.82	93.89%
130	29.76	29.78	29.74	13.71	902.53	95.33%
135	26.51	26.52	26.50	11.37	913.90	96.53%
140	23.55	23.56	23.53	9.27	923.17	97.51%
145	20.85	20.87	20.84	7.41	930.58	98.30%
150	18.40	18.42	18.39	5.78	936.36	98.91%
155	16.06	16.10	16.08	4.37	940.73	99.37%
160	13.33	13.41	13.43	3.10	943.83	99.70%
165	9.79	10.02	10.06	1.93	945.77	99.90%
170	3.32	4.32	3.16	0.86	946.63	99.99%
175	0.01	0.01	0.01	0.08	946.71	100.00%
180	0.00	0.00	0.00	0.00	946.71	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-NW250110-2-01

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	0.129	8.7	0.565	935.4	107.0	0.3752	0.3661	4068	85.3	19.0	-0.0035	84	97
	2	120.00	0.129	8.8	0.568	949.4	107.9	0.3768	0.3668	4026	85.3	18.9	-0.0037	85	97
	3	120.00	0.128	8.7	0.564	934.8	108.0	0.3771	0.3669	4021	85.2	18.6	-0.0037	84	97
	4	120.00	0.128	8.7	0.564	937.1	107.8	0.3743	0.3654	4089	85.3	18.9	-0.0036	84	97
	5	120.00	0.129	8.7	0.563	942.0	107.9	0.3730	0.3644	4119	85.4	19.4	-0.0037	84	97
VBD	7	120.00	0.128	8.7	0.564	954.5	110.3	0.3770	0.3677	4026	85.1	18.1	-0.0033	84	97
	8	120.00	0.128	8.7	0.567	951.4	109.4	0.3767	0.3669	4031	85.2	18.6	-0.0036	84	97
	9	120.00	0.126	8.6	0.570	960.8	111.2	0.3776	0.3689	4019	84.9	17.0	-0.0029	84	97
	10	120.00	0.127	8.7	0.566	942.9	108.9	0.3752	0.3652	4060	85.5	19.9	-0.0040	85	98
	11	120.00	0.128	8.7	0.569	951.3	109.2	0.3759	0.3670	4055	85.1	18.2	-0.0033	84	97
Average		120.00	0.128	8.7	0.566	946.0	108.8	0.3759	0.3665	4051	85.2	18.7	-0.0035	84	97

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	120.08	0.129	8.8	946.7	173.7	147	258.9	---

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-NW250110-2-01

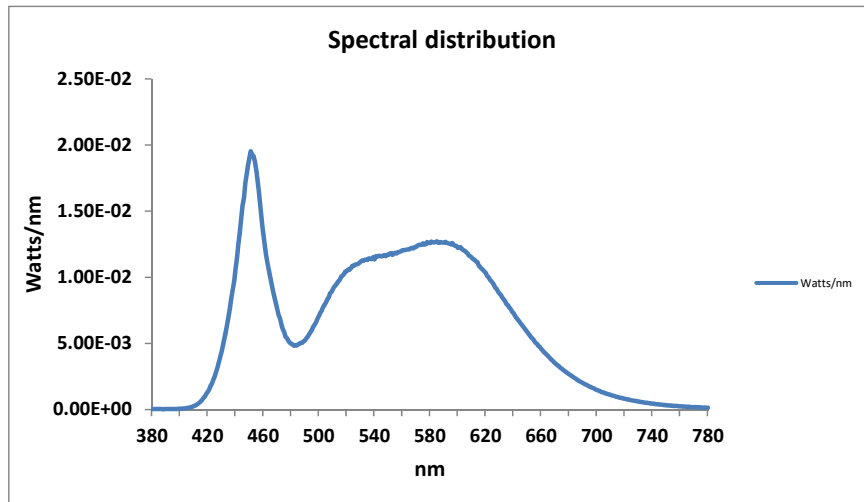
Test data in 5000K

Average Sphere Spectroradiometry Test Data

Lamp Volts(V)	Lamp Current(A)	Lamp Watts(W)	Power Factor	Lumens (lm)	LPW (lm/W)
120.00	0.124	8.3	0.563	813.3	97.5

CCX	CCY	u'	v'	Duv	CCT(K)	CRI	R9	Rf	Rg
0.3429	0.3498	0.2106	0.4835	0.0000	5081	83.2	9.9	83	97

Spectral Power Distribution



nm	Watts/nm
380	3.48E-05
385	3.55E-05
390	3.81E-05
395	4.08E-05
400	5.89E-05
405	1.10E-04
410	2.67E-04
415	6.39E-04
420	1.35E-03
425	2.52E-03
430	4.35E-03
435	7.03E-03
440	1.06E-02
445	1.54E-02
450	1.91E-02
455	1.80E-02
460	1.33E-02

nm	Watts/nm
465	1.00E-02
470	7.59E-03
475	5.84E-03
480	4.98E-03
485	4.92E-03
490	5.23E-03
495	6.05E-03
500	7.11E-03
505	8.10E-03
510	9.08E-03
515	9.81E-03
520	1.05E-02
525	1.09E-02
530	1.12E-02
535	1.13E-02
540	1.14E-02
545	1.16E-02

nm	Watts/nm
550	1.17E-02
555	1.18E-02
560	1.20E-02
565	1.21E-02
570	1.23E-02
575	1.26E-02
580	1.26E-02
585	1.27E-02
590	1.26E-02
595	1.25E-02
600	1.22E-02
605	1.20E-02
610	1.15E-02
615	1.09E-02
620	1.03E-02
625	9.57E-03
630	8.77E-03

nm	Watts/nm
635	7.97E-03
640	7.31E-03
645	6.56E-03
650	5.84E-03
655	5.20E-03
660	4.58E-03
665	4.03E-03
670	3.51E-03
675	3.07E-03
680	2.67E-03
685	2.33E-03
690	2.00E-03
695	1.73E-03
700	1.49E-03
705	1.29E-03
710	1.11E-03
715	9.51E-04

nm	Watts/nm
720	8.19E-04
725	7.10E-04
730	6.03E-04
735	5.15E-04
740	4.50E-04
745	3.86E-04
750	3.34E-04
755	2.84E-04
760	2.54E-04
765	2.15E-04
770	1.85E-04
775	1.61E-04
780	1.39E-04

LM-79 Test Report

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No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

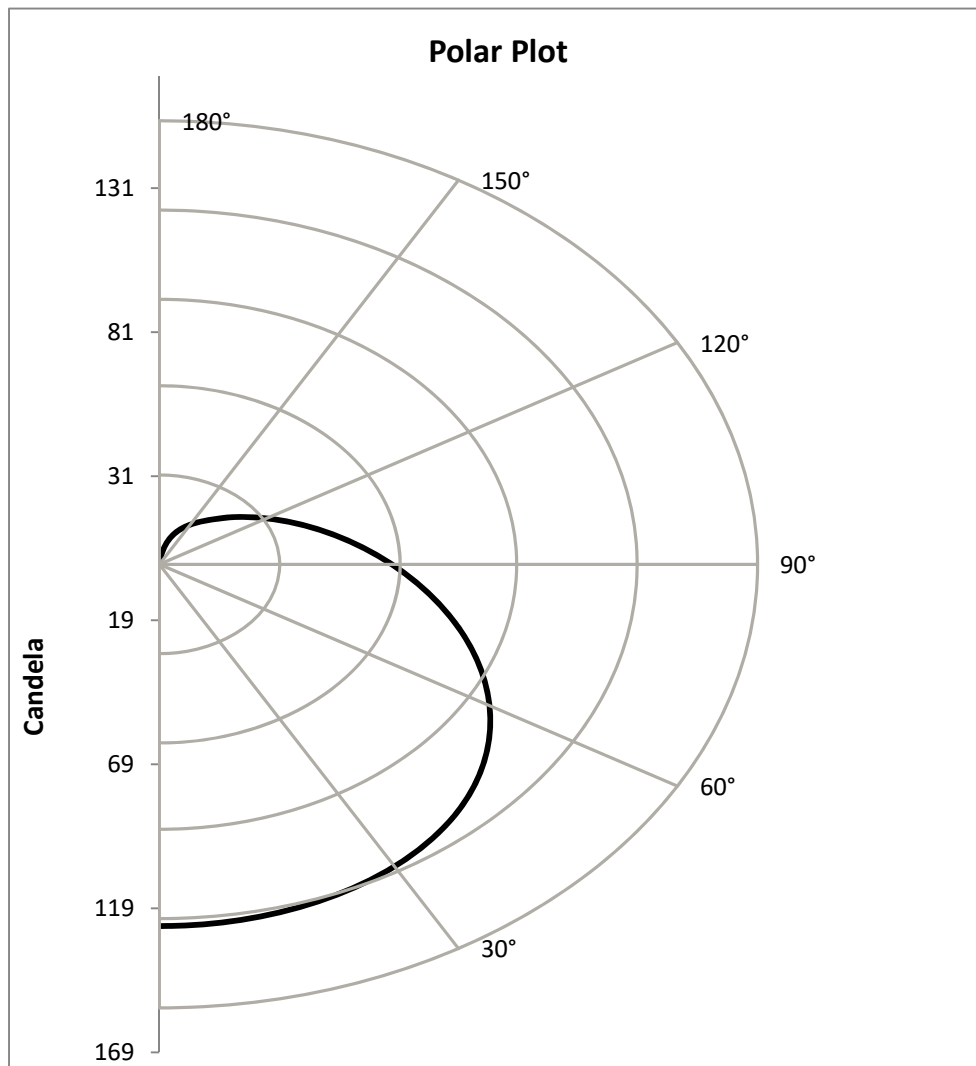
Test Request Number: BG-NW250110-2-01

Average Goniometry Test Data

Beam		Angle		Color Distribution
	Candela	Half Angle	Full Angle	$\Delta u'v'$
Max	126	2.0	-----	-----
50%of Max	63	87.2	174.4	-----
10%of Max	13	-----	-----	-----

Volts	Amps	Watts	PF
120.08	0.125	8.4	0.562
Total Downlight Lumens:			605.3
Total Uplight Lumens:			205.0
Total Lumens:			810.3
Total Lumens/ Watt:			96.2

Intensity Distribution

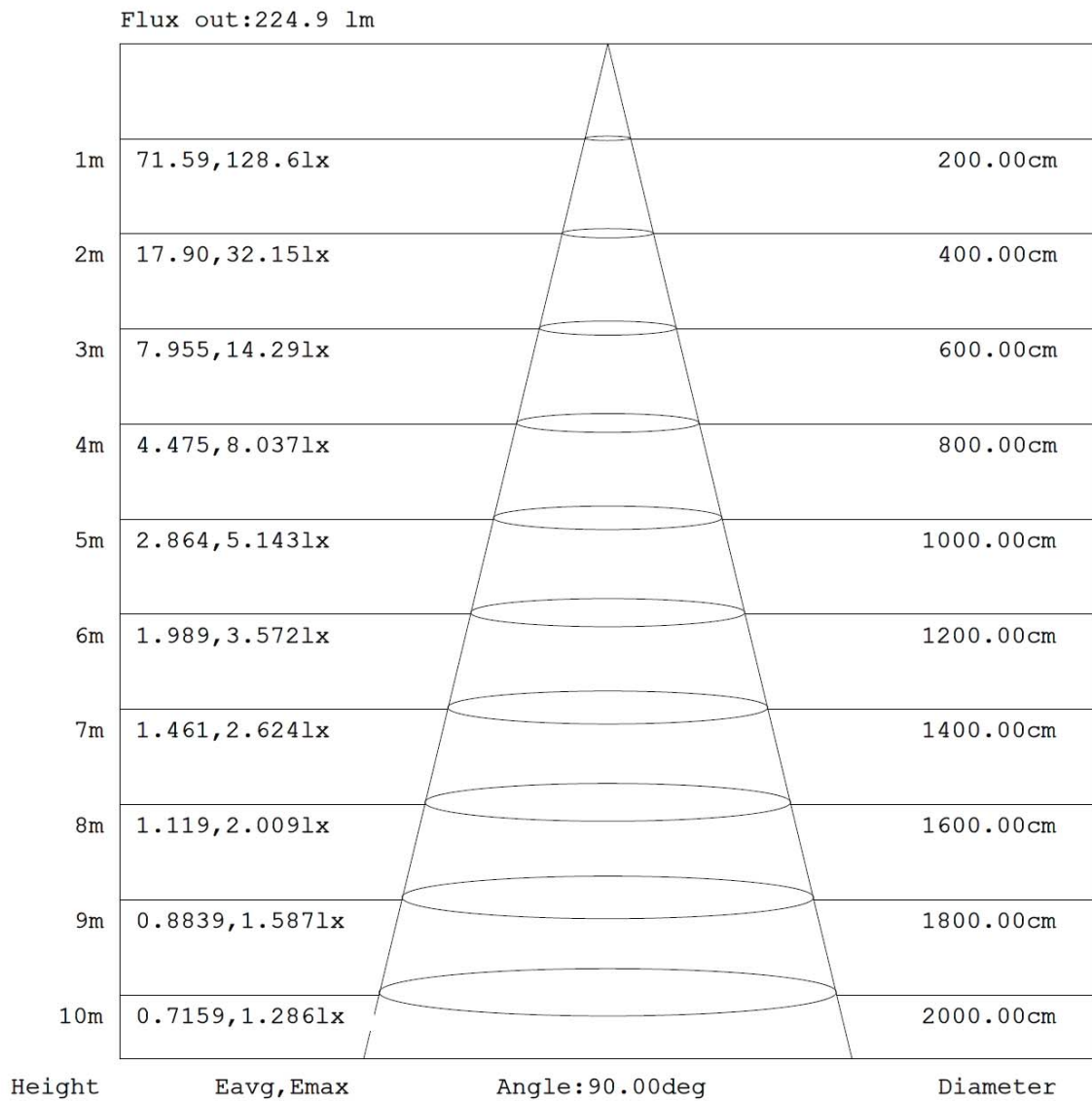


LM-79 Test Report

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

Test Request Number: BG-NW250110-2-01

Cone Diagram



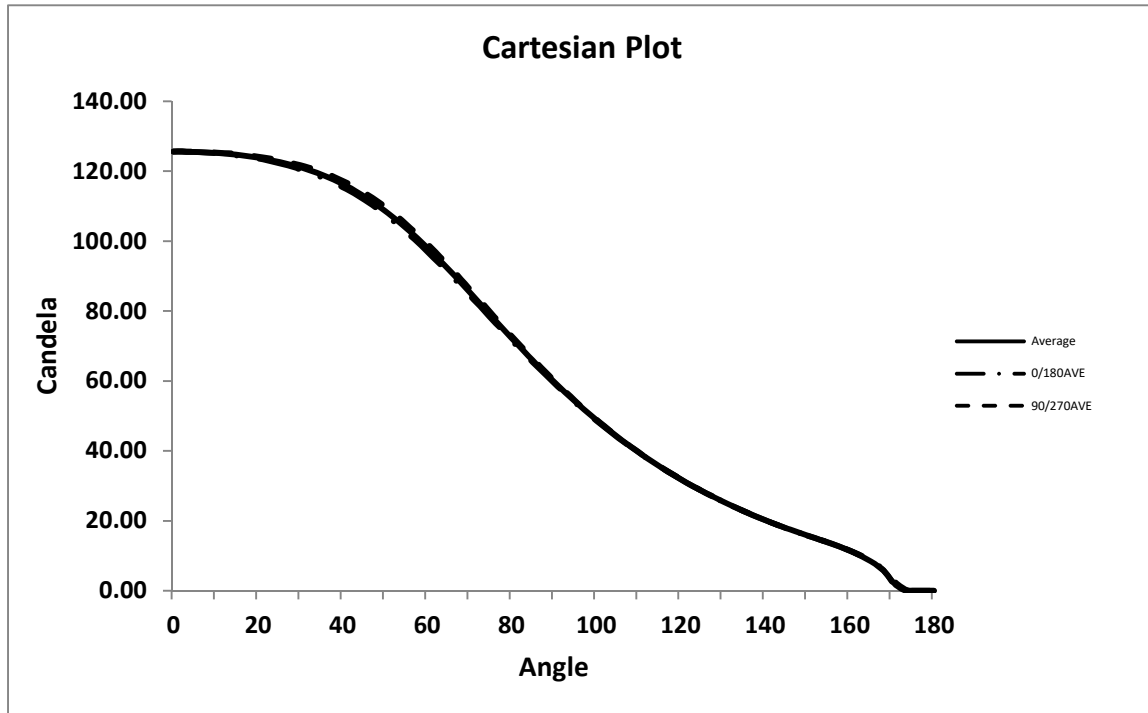
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-NW250110-2-01

Cartesian Plot



LM-79 Test Report

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No.676 Meixi Avenue, Xike, Tong'an District, Xiamen, Fujian, China

Test Request Number: BG-NW250110-2-01

Cartesian Distribution

Angle	Average cd	0/180 Average	90/270 Average	Zonal Lumens	Cumulative Lumens	%Total
0	125.59	125.59	125.59	0.00	0.00	0.00%
5	125.51	125.48	125.59	3.00	3.00	0.37%
10	125.22	125.14	125.33	8.97	11.97	1.48%
15	124.67	124.52	124.92	14.82	26.79	3.31%
20	123.84	123.56	124.15	20.48	47.28	5.83%
25	122.65	122.22	123.14	25.85	73.13	9.02%
30	121.09	120.52	121.72	30.85	103.98	12.83%
35	119.04	118.30	119.87	35.37	139.35	17.20%
40	116.35	115.49	117.32	39.29	178.64	22.04%
45	112.91	111.95	113.98	42.46	221.10	27.29%
50	108.71	107.64	109.86	44.80	265.89	32.81%
55	103.76	102.68	104.96	46.21	312.10	38.52%
60	98.14	97.07	99.29	46.68	358.78	44.28%
65	92.00	90.99	93.07	46.23	405.02	49.98%
70	85.50	84.62	86.47	44.95	449.96	55.53%
75	78.86	78.09	79.63	42.96	492.92	60.83%
80	72.27	71.66	72.89	40.43	533.35	65.82%
85	65.92	65.43	66.40	37.53	570.88	70.45%
90	59.86	59.49	60.20	34.42	605.30	74.70%
95	54.16	53.91	54.41	31.20	636.50	78.55%
100	48.90	48.71	49.09	27.99	664.49	82.00%
105	44.07	43.94	44.18	24.86	689.35	85.07%
110	39.64	39.56	39.73	21.86	711.22	87.77%
115	35.61	35.54	35.67	19.04	730.26	90.12%
120	31.92	31.89	31.96	16.41	746.67	92.14%
125	28.57	28.55	28.60	13.98	760.65	93.87%
130	25.53	25.50	25.55	11.76	772.41	95.32%
135	22.74	22.71	22.76	9.75	782.16	96.52%
140	20.20	20.19	20.22	7.95	790.11	97.51%
145	17.90	17.88	17.90	6.36	796.47	98.29%
150	15.80	15.80	15.79	4.96	801.43	98.90%
155	13.80	13.82	13.81	3.75	805.19	99.37%
160	11.46	11.52	11.54	2.66	807.85	99.69%
165	8.43	8.59	8.66	1.66	809.52	99.90%
170	2.86	3.72	2.73	0.74	810.26	99.99%
175	0.01	0.01	0.01	0.07	810.32	100.00%
180	0.00	0.00	0.00	0.00	810.32	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-NW250110-2-01

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	0.125	8.4	0.562	806.4	95.9	0.3428	0.3497	5084	83.3	10.4	0.0000	83	97
	2	120.00	0.124	8.4	0.564	812.4	96.5	0.3439	0.3503	5040	83.3	10.1	-0.0002	83	97
	3	120.00	0.123	8.3	0.561	802.0	96.7	0.3440	0.3503	5040	83.2	9.7	-0.0002	83	97
	4	120.00	0.124	8.3	0.559	801.3	96.1	0.3407	0.3476	5162	83.5	10.9	-0.0002	83	97
	5	120.00	0.125	8.4	0.561	812.2	96.9	0.3402	0.3474	5179	83.5	11.1	-0.0001	83	97
VBD	7	120.00	0.122	8.3	0.565	817.6	98.5	0.3443	0.3511	5028	83.1	9.3	0.0001	83	97
	8	120.00	0.123	8.3	0.564	817.9	98.2	0.3434	0.3505	5064	82.9	8.9	0.0001	83	97
	9	120.00	0.123	8.3	0.563	833.1	100.5	0.3451	0.3526	5003	82.6	7.5	0.0005	83	97
	10	120.00	0.123	8.3	0.563	810.9	97.7	0.3418	0.3482	5119	83.4	11.3	-0.0004	83	97
	11	120.00	0.124	8.4	0.564	819.7	98.1	0.3428	0.3501	5087	83.0	9.3	0.0002	83	97
Average		120.00	0.124	8.3	0.563	813.3	97.5	0.3429	0.3498	5081	83.2	9.9	0.0000	83	97

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	120.08	0.125	8.4	810.3	174.4	126	221.1	---

(The End of Report)