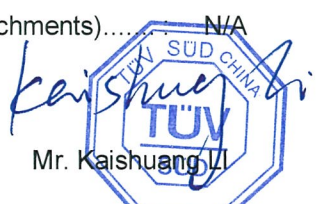





TEST REPORT IES LM-79-08

TÜV SÜD Test Report for Electrical and Photometric Measurements of Solid-State Lighting Products

Report reference No.	70.402.17.014.42-19
Date of issue	2018-11-05
Project handler	Mr. Kaishuang LI
Testing laboratory	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Address	No. 151 Hengtong Road, 200070, Shanghai, P.R.China.
Testing procedure	<input type="checkbox"/> TMP <input type="checkbox"/> WMTL <input type="checkbox"/> SMTL <input type="checkbox"/> LTR
Testing location	No. 1999, Duhui Road, Shanghai, 201108, P. R. China
Client	Everlite LED Lighting Co., Limited
Client number	91783
Address	Room 2105, Trend Centre, 29-31, Cheung Lee Street, Chaiwan, Hong Kong
Contact person	Jackie ZHANG
Standard	This TÜV SÜD test program is based on the following requirements: IES LM-79-08
TRF originated by	TÜV SÜD Product Service GmbH, Mr. Kenneth Lau
Copyright blank test report	This test report is based on the content of the standard (see above). The test report considered selected clauses of the a.m. standard(s) and experience gained with product testing. It was prepared by TÜV SÜD Product Service GmbH. TUV SUD Group takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.
Test procedure	<input type="checkbox"/> TÜV Mark <input checked="" type="checkbox"/> without certification
Non-standard test method	N/A
National deviations	N/A
Number of pages (Report)	18
Number of pages (Attachments)	N/A
Compiled by	Approved by
(+ signature)  Mr. Kaishuang LI	(+ signature)  Ms. Lucy LU

Test sample	1 pre-production sample from factory	
Type of test object	LED Luminaire (LED Street Light)	
Trade mark	N/A	
Model and/or type reference	EL-SL18LA-120W-4000K	
Lens type	TYPE II	
Rating(s)	90-305V AC, 50/60Hz, 120W, Class I, IP66	
Manufacturer	Ningbo Shishang Photoelectricity Technology Co., Ltd.	
Manufacturer number	92974	
Address	No.19, KeSan Road, Ninghai, 315600, Ningbo, Zhejiang, People's Republic of China	
Sub-contractors/ tests (clause)	N/A	
Name	N/A	
Order description	<input type="checkbox"/>	Complete test according to TRF
	<input checked="" type="checkbox"/>	Partial test according to manufacturer's specifications
	<input type="checkbox"/>	Preliminary test
	<input type="checkbox"/>	Spot check
	<input type="checkbox"/>	Other:
Date of order	2017-12-29	
Date of receipt of test item	2018-10-22	
Date(s) of performance of test	2018-10-30 to 2018-10-31	
Test item particulars (delared):		
Lamp type :	<input type="checkbox"/>	Bare lamp
	<input type="checkbox"/>	Covered lamp, no reflector
	<input type="checkbox"/>	Lamp with reflector
	<input checked="" type="checkbox"/>	other: LED Street Light
Lamp cap installed :	N/A	
Rated Votage (V) :	90-305	
Rated Power (W) :	120	
Rated Power Factor :	N/A	
Rated Luminous Flux (lm) :	N/A	
Rated CCT (K) :	4000	
Rated CRI :	N/A	



Attachments:

1. Test Equipment List

General remarks:

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced except in full without the written approval of the testing laboratory.

Summary of testing:

☐ deviation(s) found

☒ no deviations found

The test was operated at 230V, 50Hz, in accordance with the applicant's instruction.

Model	Luminous Efficacy (Lumens/Watt)	Total Luminous Flux (Lumens)	Input Power (Watts)
EL-SL18LA-120W-4000K	148,62	17849,26	120,1
Power Factor	CCT (K)	CRI	Stabilisation Time (minutes)
0,9783	4059	71,5	90

Copy of marking plate:

Not provide

Picture of the product:



Characteristic data

Dimension (mm, Height x Width x Length): 260mm*380mm*830mm

Weight: approximately : 12,5Kg

Purpose of the product

LED Street light for generally lighting purpose.

Possible test case verdicts:

- test case does not apply to the test object:: N(.A.) / not included in the order
- test object does meet the requirement.....: P(ass)
- test object does not meet the requirement:: F(ail)

Possible suffixes to the verdicts:

- suffix for detailed information for the client.....: - C(omment)
- suffix for important information for factory inspection...: - M(anufacturing)

Clause	Requirement	Test	Measuring result	Remark	Verdict
2.0	Ambient Conditions				P
2.1	General				P
2.2	Air Temperature				P
2.3	Thermal Condition for Mounting SSL Products				P
2.4	Air Movement				P
3.0	Power Supply Characteristics				P
3.1	Waveshape of AC power supply				P
3.2	Voltage regulation				P
4.0	Seasoning of SSL Product		No seasoning of SSL product		P
5.0	Stabilisation of SSL Product		Sufficiently satbilised before measurment		P
6.0	Operation Orientation				P
	SSL product shall be stabilized and measured in intended operating orientation				P
7.0	Electrical Settings				P
	SSL product shall be operated at rated voltage				P
	SSL product with dimming capability are tested at maximum input power condition				N/A
	SSL product with different modes are measured in all relvant modes				N/A
8.0	Electrical Instrumentations				P
8.1	Circuits				P
8.2	Uncertainties				P
9.0	Test methodes for Luminous Flux measurment				P
9.1	Integrating sphere with a spectroradiometer (Sphere-spectroradiometer system)				N/A
9.2	Integrating sphere with a photometer head (Sphere-photometer system)				N/A
9.3	Goniophotometer				P
10.0	Luminous Intensity Distribution				P
	Reporting acc. to IEC LM-63		See table 3		P
11.0	Luminous Efficay		See table 1		P
12.0	Test Methodes for Color Characteristics of SSL Products				P
	Measurments		See table 1		P
13.0	Uncertainty statement				P

Table 1	Test data		
Model	EL-SL18LA-120W-4000K		
Rated Voltage (V):	AC 90-305	Rated Power (W):	120
Rated luminous flux (lm):	N/A	Ambient temperature 25 ±1°C (°C):	25,3
Test item		Measured Value	
		Integrating Sphere	Goniophotometer
Key Photometric Results			
Luminous Efficacy (Lumens/Watt)	-	148,62	
Total Luminous Flux (Lumens)	-	17849,26	
Correlated Color Temperature (CCT)	4059	-	
Color Rendering Index (CRI)	71,5	-	
Chromaticity (Chroma x / Chroma y)	0,3792/0,3803	-	
Chromaticity (Chroma u / Chroma v)	-	-	
Chromaticity (Chroma u' / Chroma v')	0,2229/0,5030	-	
Duv Value	0,0020	-	
SDCM	0,62	-	
Color Angular Uniformity (Max. du'v')	-	-	
Stabilization Time (Light and Power) (Minutes)	90		
Total Run Time – Goniophotometer (Minutes)	150		
Spacing Criteria		C=15° / γ=1°	
Electrical Input Results			
Input Power (Watts)	-	120.1	
Input Voltage (Volts AC)	-	230,1	
Input Current (Amps)	-	0,5335	
Input Frequency (Hertz)	-	50,0	
Power Factor	-	0,9783	
A-THD (Current – Total Harmonic Distortion)	-	-	
Additional Information			
Ambient Temperature (°C):	25,3	25,3	
Photometric measurement condition	-	Photometric distance: 26m	
Number of hours operated prior to measurement	0h		
Orientation (burning position)	Base up, center of the Goniophotometer		
Supplementary Information:			
- Absorbtion Correction used: Yes			
Stabilisation was considered reached by: the variation (maximum-minimum) of at least 3 readings			
- of the light output and electrical power over a period of 30 minutes is less than 0.5%.			

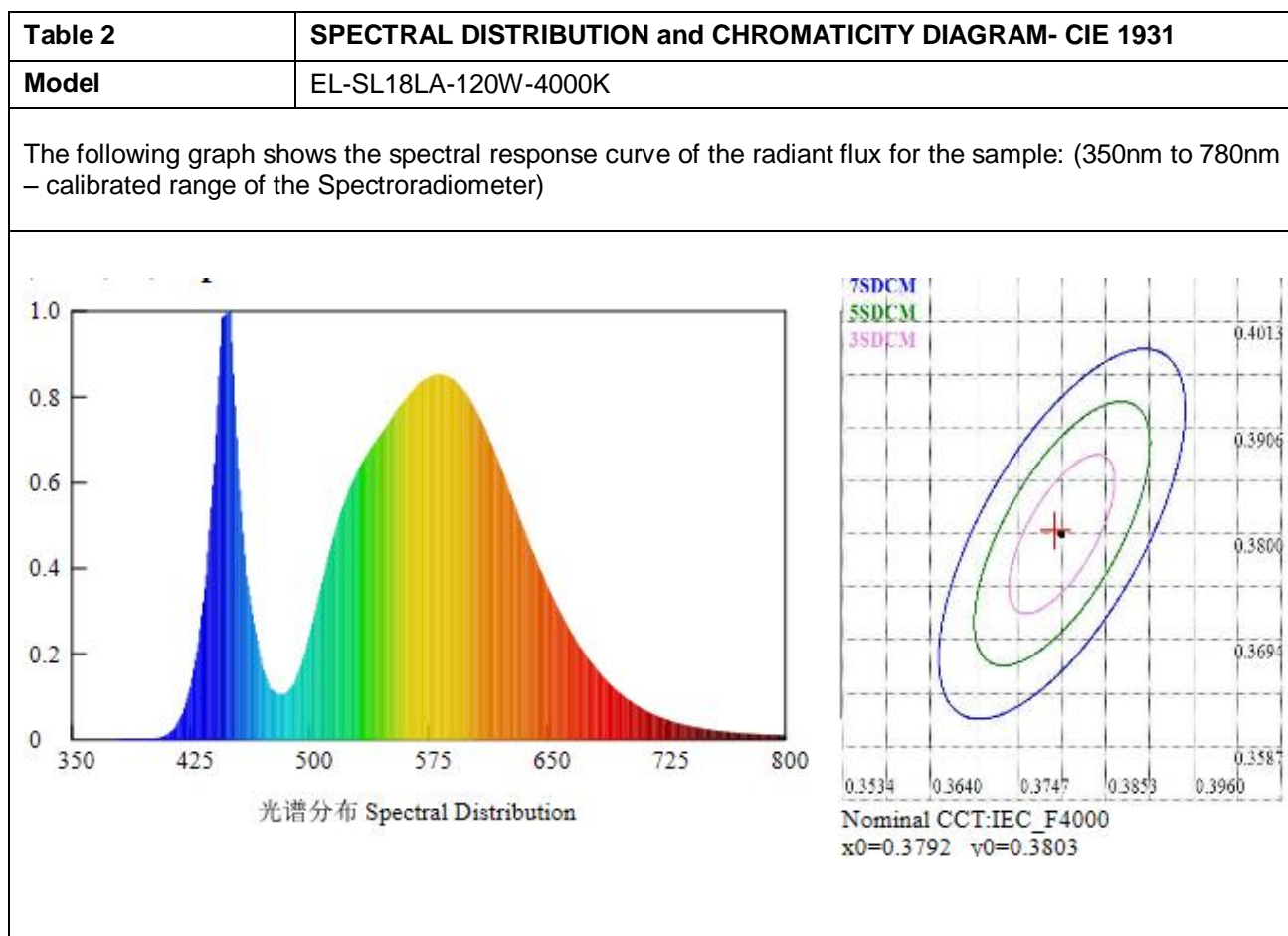
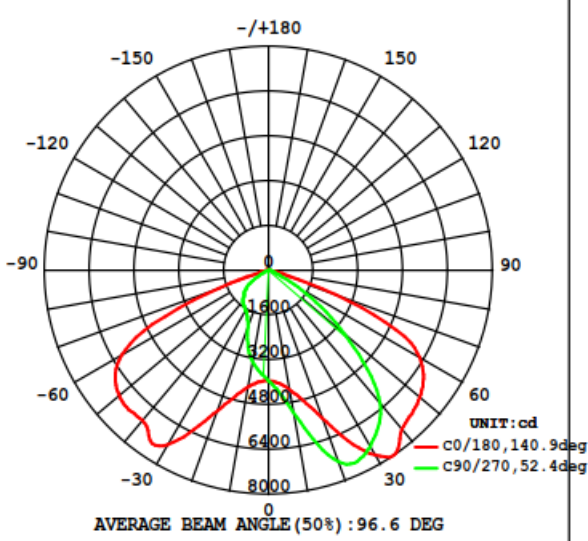


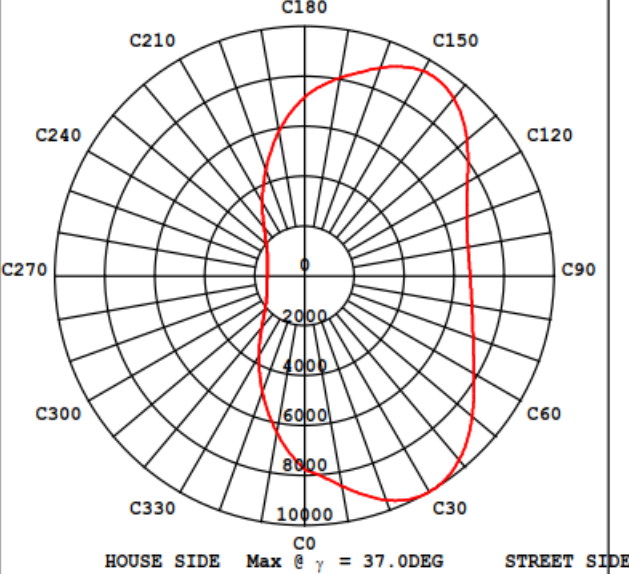
Table 3		LIGHT DISTRIBUTION DIAGRAM			
Model:		EL-SL18LA-120W-4000K			
DATA OF LAMP		PHOTOMETRIC DATA Eff: 148.62 lm/W			
MODEL		I _{max} (cd)	9994	η street_up (%)	0.0
NOMINAL POWER (W)	120	LOR (%)	100	η street_down (%)	70.6
RATED VOLTAGE (V)	90-305	TOTAL FLUX (lm)	17849.26	η house_up (%)	0.0
NOMINAL FLUX (lm)	17849.26	MAXIMUM @ (C, γ)	30,37.0	η house_down (%)	29.4
LAMPS INSIDE	1	η up (%)	0.0	76 FLASHAREA (m2)	
TEST VOLTAGE (V)	230	η down (%)	100	SLI	

**INTENSITY DISTRIBUTION DIAGRAM
IN C PLANS**



UNIT: cd
— C0/180, 140.9deg
— C90/270, 52.4deg
AVERAGE BEAM ANGLE (50%): 96.6 DEG

**MAX INTENSITY CONE SURFACE
DISTRIBUTION DIAGRAM**



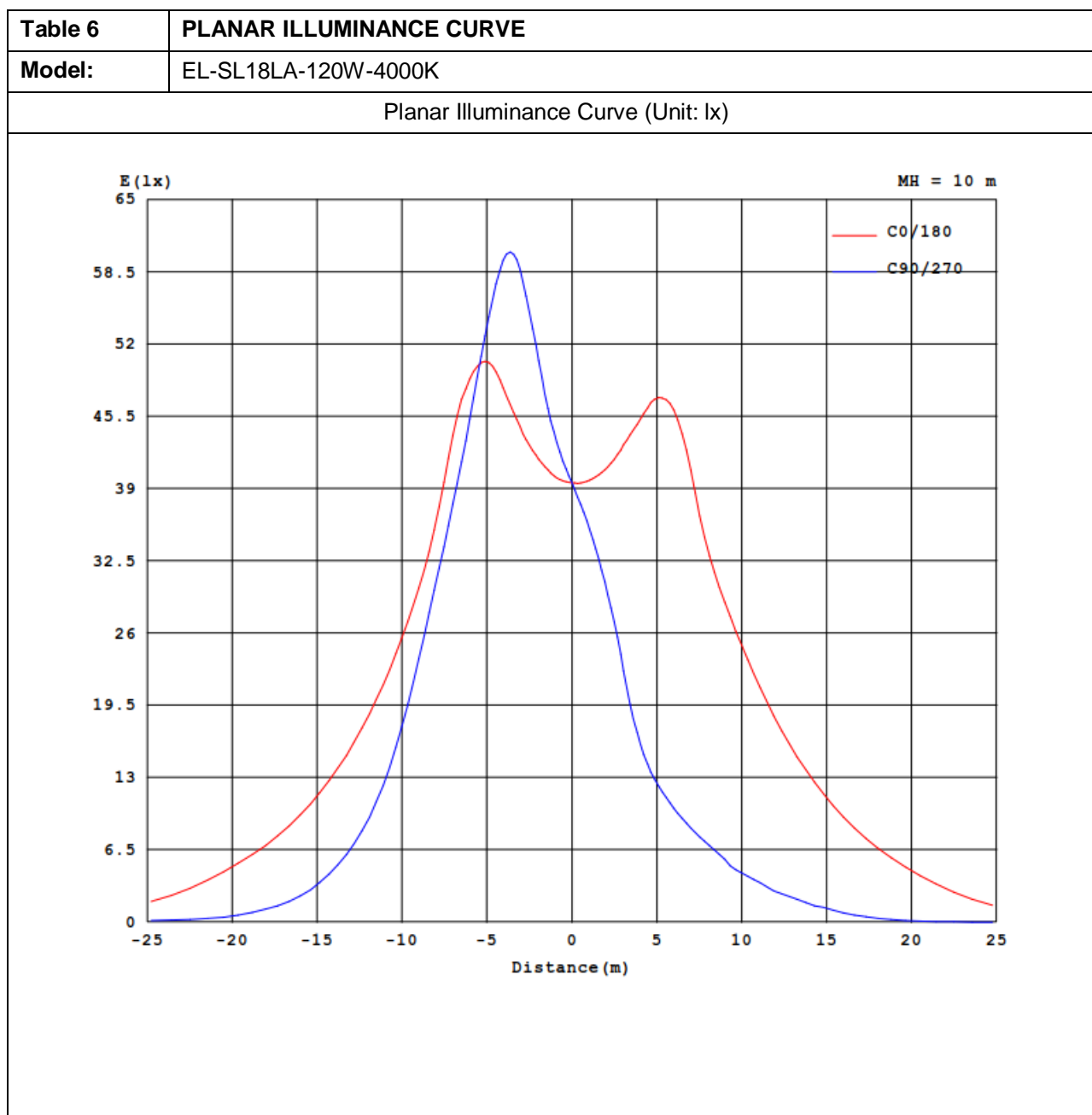
HOUSE SIDE Max @ γ = 37.0DEG STREET SIDE

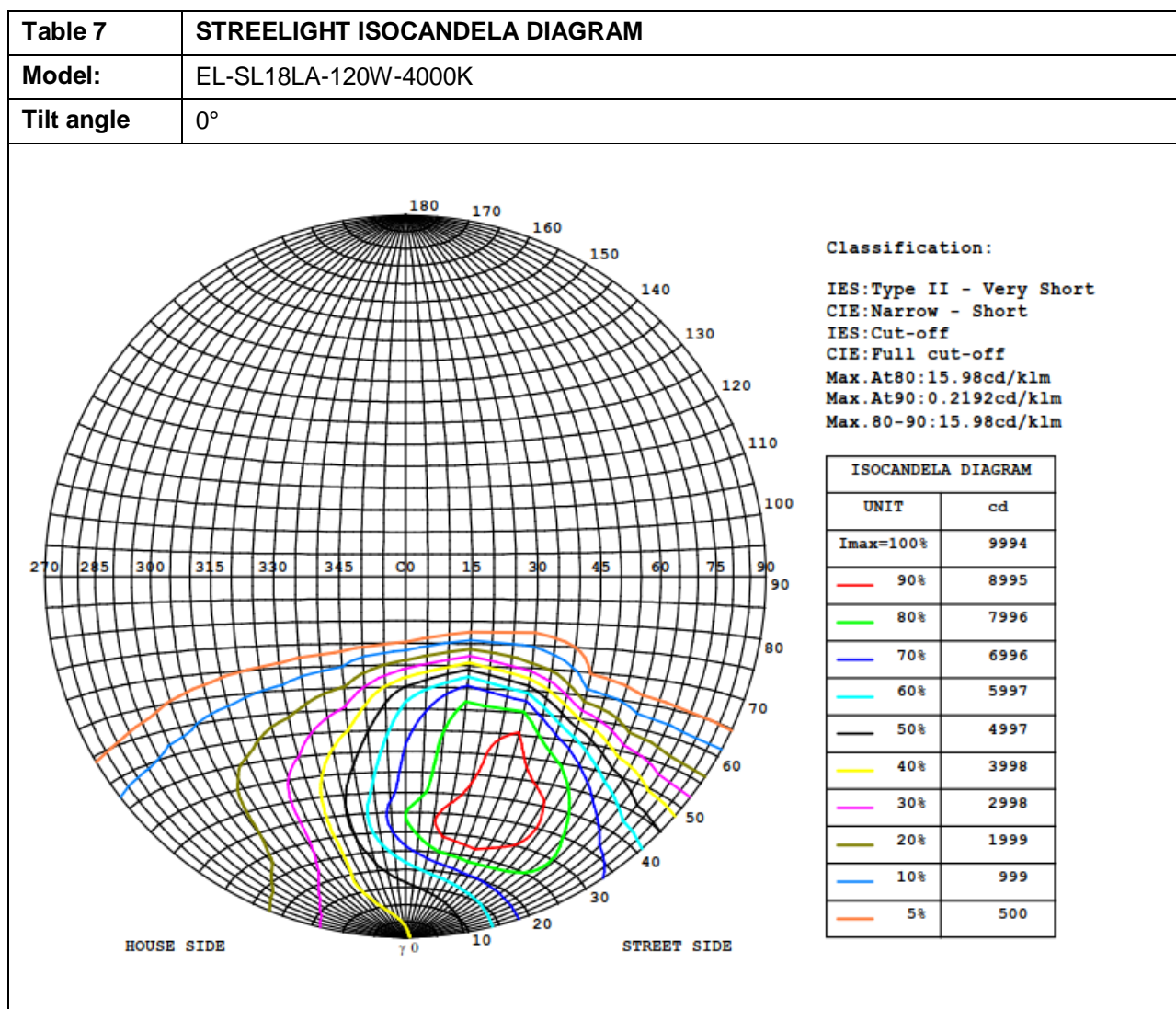
Table 4a		LUMINOUS DISTRIBUTION INTENSITY DATA (unit: cd)							
Model:		EL-SL18LA-120W-4000K							
y \ C		0	15	30	45	60	75	90	105
0		3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39
5		4364.97	4353.89	4310.31	4251.04	4181.31	4101.39	4013.22	3928.11
10		5132.09	5089.20	4951.26	4769.89	4592.55	4420.45	4235.32	4046.90
15		6249.79	6168.83	5953.26	5665.36	5342.99	5004.02	4668.23	4314.45
20		7267.74	7189.27	7060.27	6861.70	6551.66	6044.65	5337.14	4640.10
25		7528.08	7506.54	7600.02	7902.61	8088.56	7496.02	6279.28	4913.39
30		7269.03	7334.67	7763.88	8544.53	9025.59	8638.60	7183.94	5216.41
35		6839.71	6939.14	7635.65	8899.64	9423.54	8616.32	7398.16	5284.11
40		6199.44	6382.35	7313.98	8859.58	9401.87	8363.73	7010.04	5131.42
45		4985.70	5324.53	6707.87	8476.21	9375.71	8614.26	7052.67	4875.76
50		3569.60	3827.36	5346.16	7796.27	9413.61	8726.16	6964.84	4396.01
55		2300.58	2383.94	3331.94	6280.80	9246.69	8570.29	6688.88	3688.06
60		1214.30	1196.63	1518.52	3582.81	7998.43	8128.83	6050.19	2782.91
65		474.95	494.18	582.75	1144.72	5065.64	6829.52	4573.97	1707.52
70		241.90	249.59	313.74	420.68	1998.31	3553.12	1885.94	743.76
75		156.96	153.85	183.95	267.79	746.41	852.35	372.50	252.09
80		54.72	62.10	70.10	104.18	212.87	190.33	80.77	58.81
85		4.66	4.85	5.41	4.24	4.24	4.71	2.99	2.70
90		0	0	0	0	0	0	0	0
95		0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0
105		0	0	0	0	0	0	0	0
110		0	0	0	0	0	0	0	0
115		0	0	0	0	0	0	0	0
120		0	0	0	0	0	0	0	0
125		0	0	0	0	0	0	0	0
130		0	0	0	0	0	0	0	0
135		0	0	0	0	0	0	0	0
140		0	0	0	0	0	0	0	0
145		0	0	0	0	0	0	0	0
150		0	0	0	0	0	0	0	0
155		0	0	0	0	0	0	0	0
160		0	0	0	0	0	0	0	0
165		0	0	0	0	0	0	0	0
170		0	0	0	0	0	0	0	0
175		0	0	0	0	0	0	0	0
180		0	0	0	0	0	0	0	0

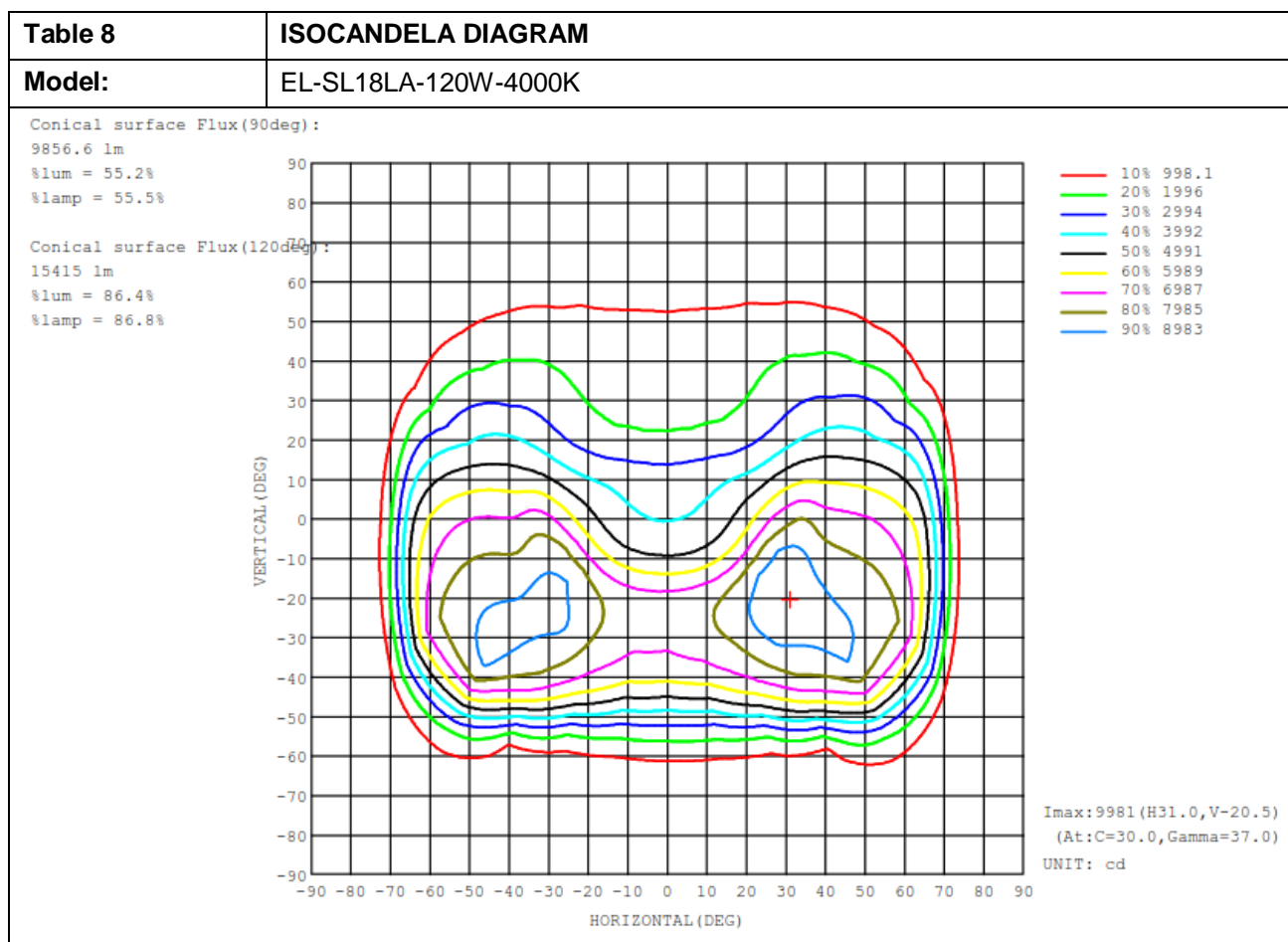
Table 4b		LUMINOUS DISTRIBUTION INTENSITY DATA (unit: cd)							
Model:		EL-SL18LA-120W-4000K							
y \ C		120	135	150	165	180	195	210	225
0		3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39
5		3847.50	3772.90	3708.51	3667.21	3656.76	3673.63	3721.51	3792.38
10		3849.43	3654.51	3474.66	3354.21	3314.40	3361.14	3500.33	3694.80
15		3904.94	3487.19	3134.22	2908.26	2846.22	2939.39	3198.04	3569.61
20		3825.53	3091.15	2565.50	2276.19	2203.27	2321.57	2662.69	3226.57
25		3605.48	2649.00	2102.46	1870.71	1817.40	1905.17	2179.00	2793.63
30		3450.15	2355.81	1880.03	1690.70	1651.26	1722.14	1933.37	2461.85
35		3420.15	2253.93	1774.96	1582.87	1547.91	1611.99	1814.40	2336.78
40		3373.25	2232.51	1697.93	1482.86	1446.02	1509.52	1742.21	2343.85
45		3158.55	2170.96	1613.70	1301.18	1258.95	1318.59	1679.26	2277.05
50		2764.99	1990.66	1423.57	1136.76	1069.33	1166.84	1480.09	2095.62
55		2251.11	1594.97	1160.69	883.30	806.74	924.45	1214.41	1684.85
60		1617.74	1157.31	820.11	558.93	418.37	582.35	866.57	1242.71
65		1020.70	701.80	472.38	179.44	110.89	196.46	526.32	781.17
70		492.32	351.86	215.64	85.64	23.26	87.23	234.68	406.99
75		190.30	148.77	92.63	62.03	16.21	63.87	100.61	160.20
80		36.58	58.81	31.65	1.45	0.43	2.11	36.97	68.57
85		1.94	5.64	1.54	0.39	0.36	0.55	1.12	0.99
90		0	0	0	0	0	0	0	0
95		0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0
105		0	0	0	0	0	0	0	0
110		0	0	0	0	0	0	0	0
115		0	0	0	0	0	0	0	0
120		0	0	0	0	0	0	0	0
125		0	0	0	0	0	0	0	0
130		0	0	0	0	0	0	0	0
135		0	0	0	0	0	0	0	0
140		0	0	0	0	0	0	0	0
145		0	0	0	0	0	0	0	0
150		0	0	0	0	0	0	0	0
155		0	0	0	0	0	0	0	0
160		0	0	0	0	0	0	0	0
165		0	0	0	0	0	0	0	0
170		0	0	0	0	0	0	0	0
175		0	0	0	0	0	0	0	0
180		0	0	0	0	0	0	0	0

Table 4c		LUMINOUS DISTRIBUTION INTENSITY DATA (unit: cd)							
Model:		EL-SL18LA-120W-4000K							
y \ C		240	255	270	285	300	315	330	345
0		3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39	3954.39
5		3876.11	3953.85	4044.41	4123.10	4197.22	4261.90	4321.30	4355.58
10		3919.55	4125.29	4323.12	4490.37	4653.13	4807.36	4968.34	5088.80
15		4010.52	4427.14	4815.94	5129.64	5459.94	5783.85	6025.85	6201.36
20		3993.63	4837.62	5612.60	6290.40	6779.88	7072.51	7246.89	7293.74
25		3829.40	5243.62	6714.60	7919.55	8485.40	8291.77	7971.37	7668.00
30		3760.06	5672.47	7626.22	9142.82	9540.85	8986.69	8159.99	7537.33
35		3719.26	5752.14	7958.92	9275.48	9955.74	9254.57	7982.96	7185.99
40		3622.69	5495.02	7427.64	8748.04	9871.86	9076.99	7530.24	6541.09
45		3386.98	5150.90	7240.80	8644.47	9477.22	8634.56	6828.79	5404.28
50		2977.90	4676.84	7064.47	8646.83	9327.19	7861.11	5454.24	3883.85
55		2472.99	4023.65	6762.58	8575.43	9053.09	6416.63	3467.31	2450.30
60		1821.50	3141.83	6230.61	8233.49	8100.29	3932.31	1664.90	1268.64
65		1164.44	2028.40	5032.48	7216.02	5677.95	1448.31	665.52	524.48
70		601.72	955.87	2557.52	4396.65	2588.01	472.43	333.93	260.35
75		240.32	336.07	524.58	1307.05	934.29	285.97	198.85	160.99
80		53.11	85.03	83.97	232.84	283.95	126.42	82.27	67.49
85		2.21	3.97	4.72	17.81	16.14	11.45	7.93	5.46
90		0	0	0	0	0	0	0	0
95		0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0
105		0	0	0	0	0	0	0	0
110		0	0	0	0	0	0	0	0
115		0	0	0	0	0	0	0	0
120		0	0	0	0	0	0	0	0
125		0	0	0	0	0	0	0	0
130		0	0	0	0	0	0	0	0
135		0	0	0	0	0	0	0	0
140		0	0	0	0	0	0	0	0
145		0	0	0	0	0	0	0	0
150		0	0	0	0	0	0	0	0
155		0	0	0	0	0	0	0	0
160		0	0	0	0	0	0	0	0
165		0	0	0	0	0	0	0	0
170		0	0	0	0	0	0	0	0
175		0	0	0	0	0	0	0	0
180		0	0	0	0	0	0	0	0

Table 5		ZONAL FLUX DIAGRAM										
Model:		EL-SL18LA-120W-4000K										
γ	c0	c45	c90	c135	c180	c225	c270	c315	γ	Φ zone	Φ total	%lum, lamp
10	4323	4807	5132	4770	4235	3655	3314	3695	0- 10	390.7	390.7	2.19,2.2
20	5613	7073	7268	6862	5337	3091	2203	3227	10- 20	1330	1721	9.64,9.64
30	7626	8987	7269	8545	7184	2356	1651	2462	20- 30	2550	4270	23.9,24
40	7428	9077	6199	8860	7010	2233	1446	2344	30- 40	3595	7865	44.1,44.1
50	7064	7861	3570	7796	6965	1991	1069	2096	40- 50	4000	11865	66.5,66.5
60	6231	3932	1214	3583	6050	1157	418.4	1243	50- 60	3549	15415	86.4,86.4
70	2558	472.4	241.9	420.7	1886	351.9	23.26	407.0	60- 70	1996	17411	97.5,98
80	83.97	126.4	54.72	104.2	80.77	58.81	0.4332	68.57	70- 80	417.7	17829	99.9,100
90	2.563	1.679	0.8711	1.197	2.659	1.262	0.5105	1.140	80- 90	20.58	17849	100,100
100	0	0	0	0	0	0	0	0	90-100	0	17849	100,100
110	0	0	0	0	0	0	0	0	100-110	0	17849	100,100
120	0	0	0	0	0	0	0	0	110-120	0	17849	100,100
130	0	0	0	0	0	0	0	0	120-130	0	17849	100,100
140	0	0	0	0	0	0	0	0	130-140	0	17849	100,100
150	0	0	0	0	0	0	0	0	140-150	0	17849	100,100
160	0	0	0	0	0	0	0	0	150-160	0	17849	100,100
170	0	0	0	0	0	0	0	0	160-170	0	17849	100,100
180	0	0	0	0	0	0	0	0	170-180	0	17849	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 6.4 %									UNIT:lm		







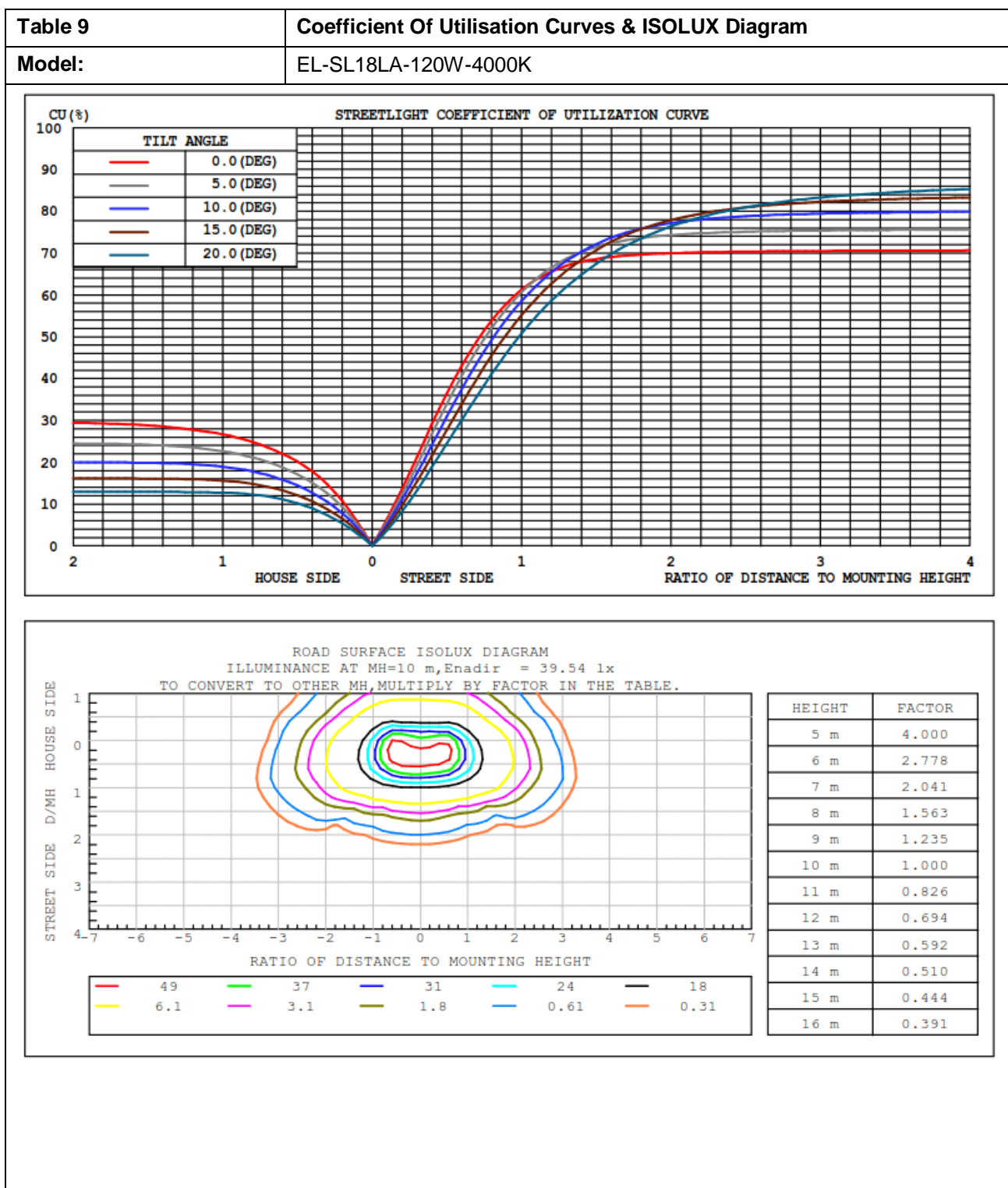
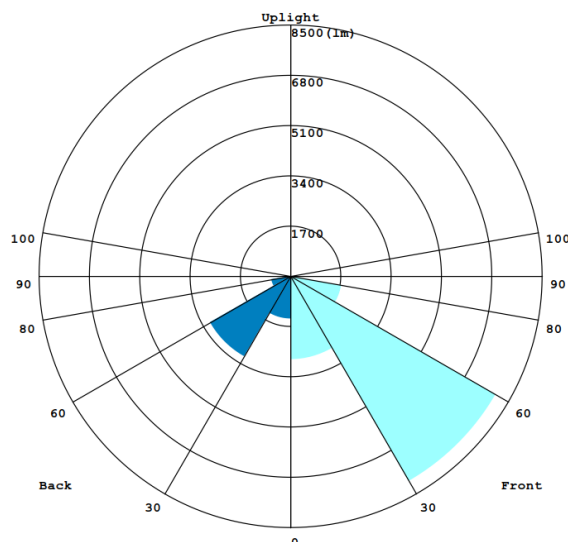


Table 10	LCS
Model:	EL-SL18LA-120W-4000K



The diagram is a circular IESNA luminaire flux distribution plot. It features concentric circles representing lumens: 1700, 3400, 5100, 6800, and 8500 (1m). Radial lines indicate beam angles from 0 to 100 degrees. The plot is divided into 'Front' (0-90 degrees) and 'Back' (90-180 degrees) sections. A large cyan-colored area represents the front light distribution, peaking at approximately 8000 lumens at 60 degrees. A smaller blue-colored area represents the back light distribution, peaking at approximately 1500 lumens at 120 degrees. The 'Uplight' section (90-180 degrees) shows zero lumens.

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	2822.7	15.8
FM - Front-Medium(30-60)	8003.9	44.8
FH - Front-High(60-80)	1753.8	9.8
FVH - Front-Very High(80-90)	16.006	0.1
Total Forward Light	12596	70.6

BL - Back-Low(0-30)	1447.7	8.1
BM - Back-Medium(30-60)	3140.4	17.6
BH - Back-High(60-80)	660.12	3.7
BVH - Back-Very High(80-90)	4.5756	0.0
Total Back Light	5252.9	29.4

UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

BUG(Back,Up,Glare) Rating	B3-U0-G2
---------------------------	----------

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	12596	0	12596
Street Side	5252.8	0	5252.9

Attachment 1: Equipment List

No.	Type	Manufacture	Model	Equipment ID	Next Calibration
1	Full-field Speed Goniophotometer	Everfine	GO-R5000	S1207714-YQ	May. 18.2019
2	High-accuracy Digital Photometer Head	Everfine	ID-1000_P-B/ID-1000_P-C	S1207714a-YQ	May. 18.2019
3	High-accuracy Digital Photometer Head	Everfine	ID-1000_P-B/ID-1000_P-C	S1207714b-YQ	May. 18.2019
4	High Accuracy Array Spectroradio Meter	Labsphere	CDS-600	S1312826-YQ	May. 18.2019
5	Standard Light Source	Everfine	D908	S1207714d-YQ	May. 18.2019
6	Digital Power Meter	Yokogawa	WT310	S1310805-YQ	May. 18.2019
7	Digital CC & CV DC Power Supply	Everfine	WY12010	S1207714f-YQ	May. 18.2019
8	Intelligent AC Power Source	Everfine	DPS1060	S1207714g-YQ	May. 18.2019
10	DC Power Supply	Everfine	WY3010	S1108624-YQ	May. 18.2019
11	Flux Reference Lamp	Labsphere	SCL-1400	S1602991-YQ	May. 18.2019
12	luminance Source	Everfine	SLS-150	S1108626-YQ	May. 18.2019
13	Thermometer	Fluke	Fluke 52-II	S0712414-YQ	May. 18.2019

-- END OF TEST REPORT --