



TEST REPORT IES LM-79-08

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

Report reference No.:	70.402.17.014.42-04
Date of issue	2018-09-01
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	LED Luminaire (LED Street Light)	
Type of test object	Fixed	
Trade mark	N/A	
Model and/or type reference	EL-SL18LA-100W-4000K	
Lens type	TYPE II	
Rating(s)	220-240V AC, 50/60Hz, 100W, 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	2018-08-27	
Date(s) of performance of test	2018-08-31	
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) :	220-240	
Rated Power (W) :	100	
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.

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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-100W-4000K	149,87	15301.7	102,1
Power Factor	CCT (K)	CRI	Stabilisation Time (minutes)
0,9834	4008	72,2	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 : 6,8Kg

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-100W-4000K		
Rated Voltage (V):	AC 220-240	Rated Power (W):	100
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)	-	149,87	
Total Luminous Flux (Lumens)	-	15301,7	
Correlated Color Temperature (CCT)	4008	-	
Color Rendering Index (CRI)	72,2	-	
Chromaticity (Chroma x / Chroma y)	0,3821/0,3840	-	
Chromaticity (Chroma u / Chroma v)	-	-	
Chromaticity (Chroma u' / Chroma v')	0,2233/0,5050	-	
Duv Value	0,0029	-	
SDCM	1,51	-	
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)	-	102,1	
Input Voltage (Volts AC)	-	230,0	
Input Current (Amps)	-	0,4515	
Input Frequency (Hertz)	-	50,0	
Power Factor	-	0,9834	
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%.			

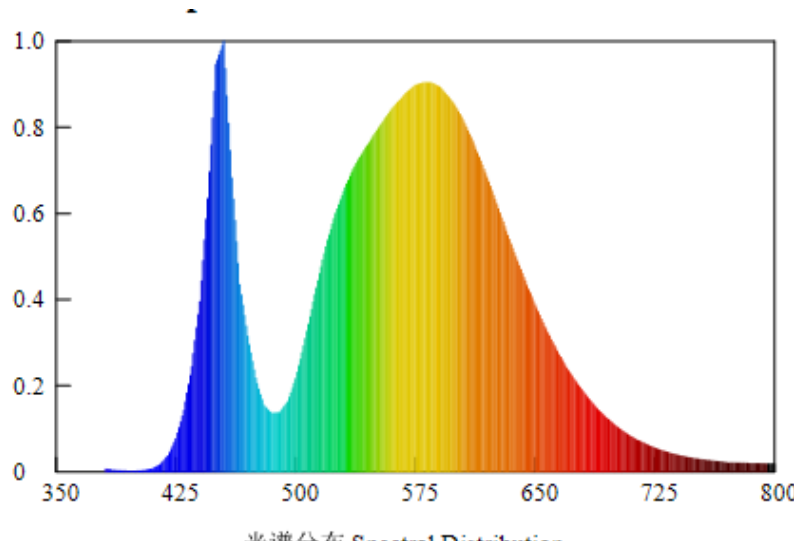
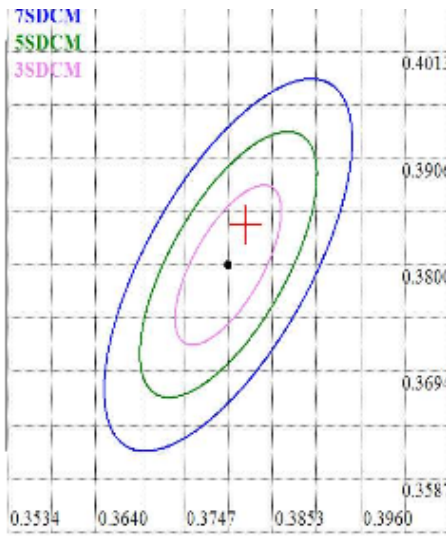
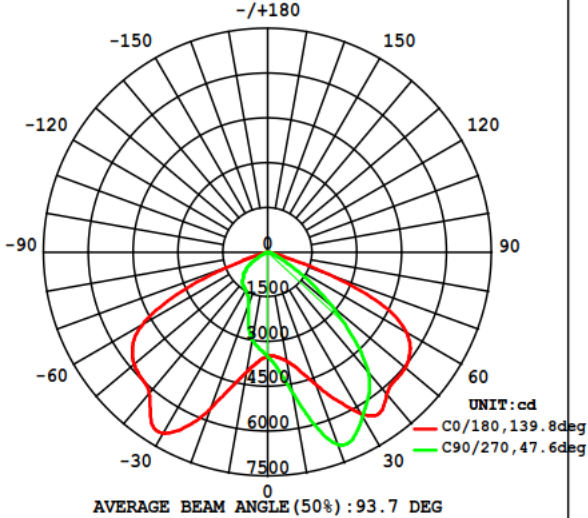
Table 2	SPECTRAL DISTRIBUTION and CHROMATICITY DIAGRAM- CIE 1931
Model	EL-SL18LA-100W-4000K
<p>The following graph shows the spectral response curve of the radiant flux for the sample: (350nm to 780nm – calibrated range of the Spectroradiometer)</p>	
<div>  <p>光谱分布 Spectral Distribution</p> </div> <div>  <p>7SDCM 5SDCM 3SDCM</p> <p>Nominal CCT:IEC_F4000 x0=0.3821 y0=0.3840</p> </div>	

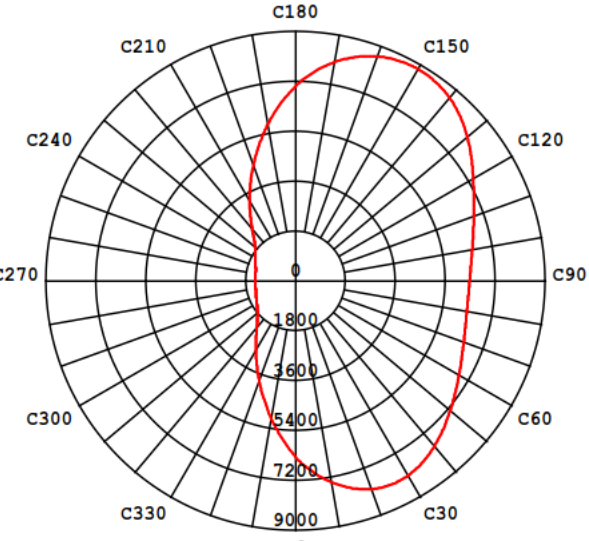
Table 3		LIGHT DISTRIBUTION DIAGRAM			
Model:		EL-SL18LA-100W-4000K			
DATA OF LAMP		PHOTOMETRIC DATA Eff: 149.87 lm/W			
MODEL		Imax (cd)	8831	η street_up (%)	0.0
NOMINAL POWER (W)		LOR (%)	100.0	η street_down (%)	70.4
RATED VOLTAGE (V)		TOTAL FLUX (lm)	15301.7	η house_up (%)	0.0
NOMINAL FLUX (lm)	15301.7	MAXIMUM @ (C, γ)	150, 31.0	η house_down (%)	29.6
LAMPS INSIDE	1	η up (%)	0.0	76 FLASHAREA (m2)	
TEST VOLTAGE (V)	230	η down (%)	100.0	SLI	

**INTENSITY DISTRIBUTION DIAGRAM
IN C PLANS**



AVERAGE BEAM ANGLE (50%): 93.7 DEG

**MAX INTENSITY CONE SURFACE
DISTRIBUTION DIAGRAM**



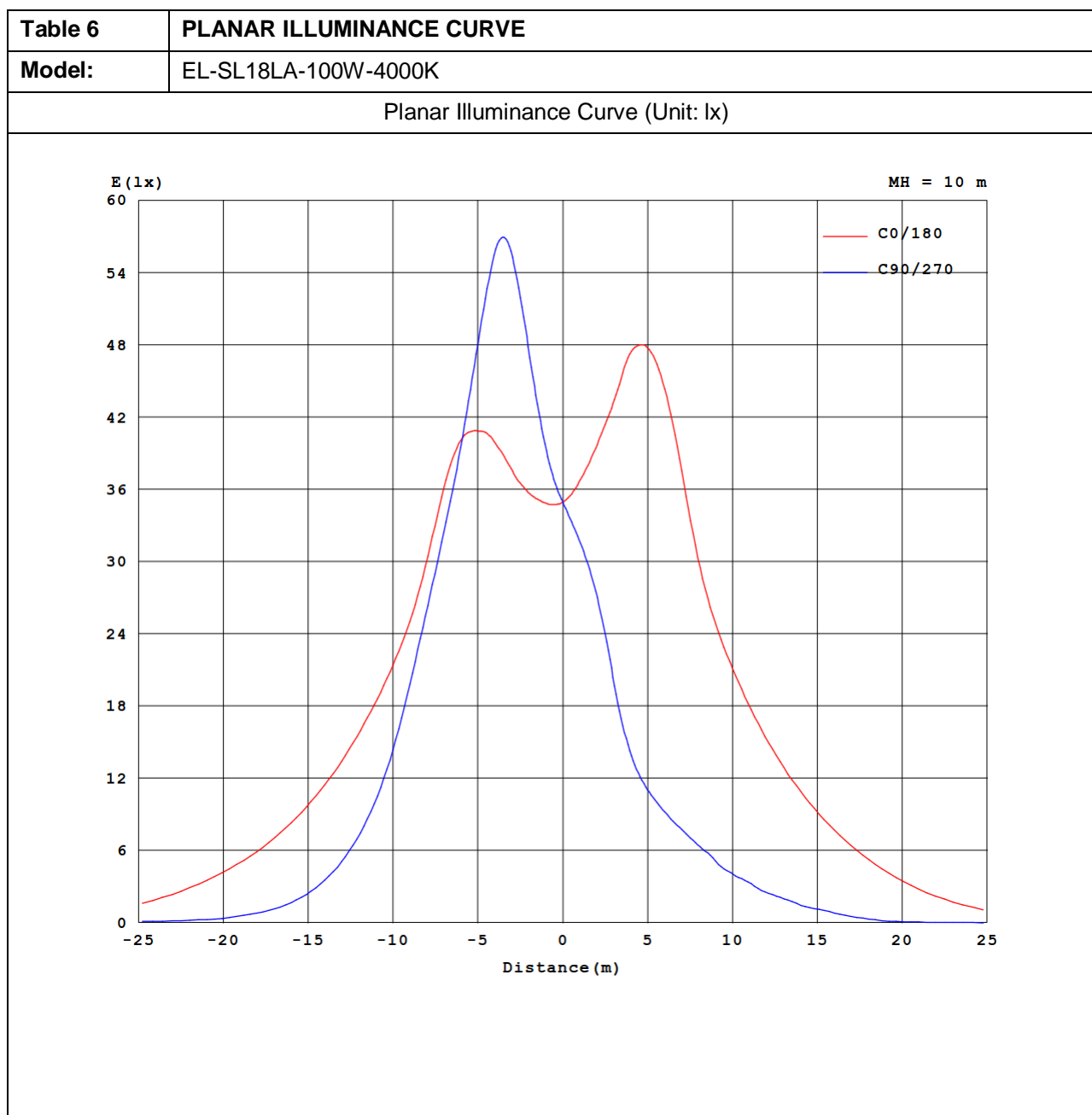
HOUSE SIDE Max @ γ = 31.0DEG STREET SIDE

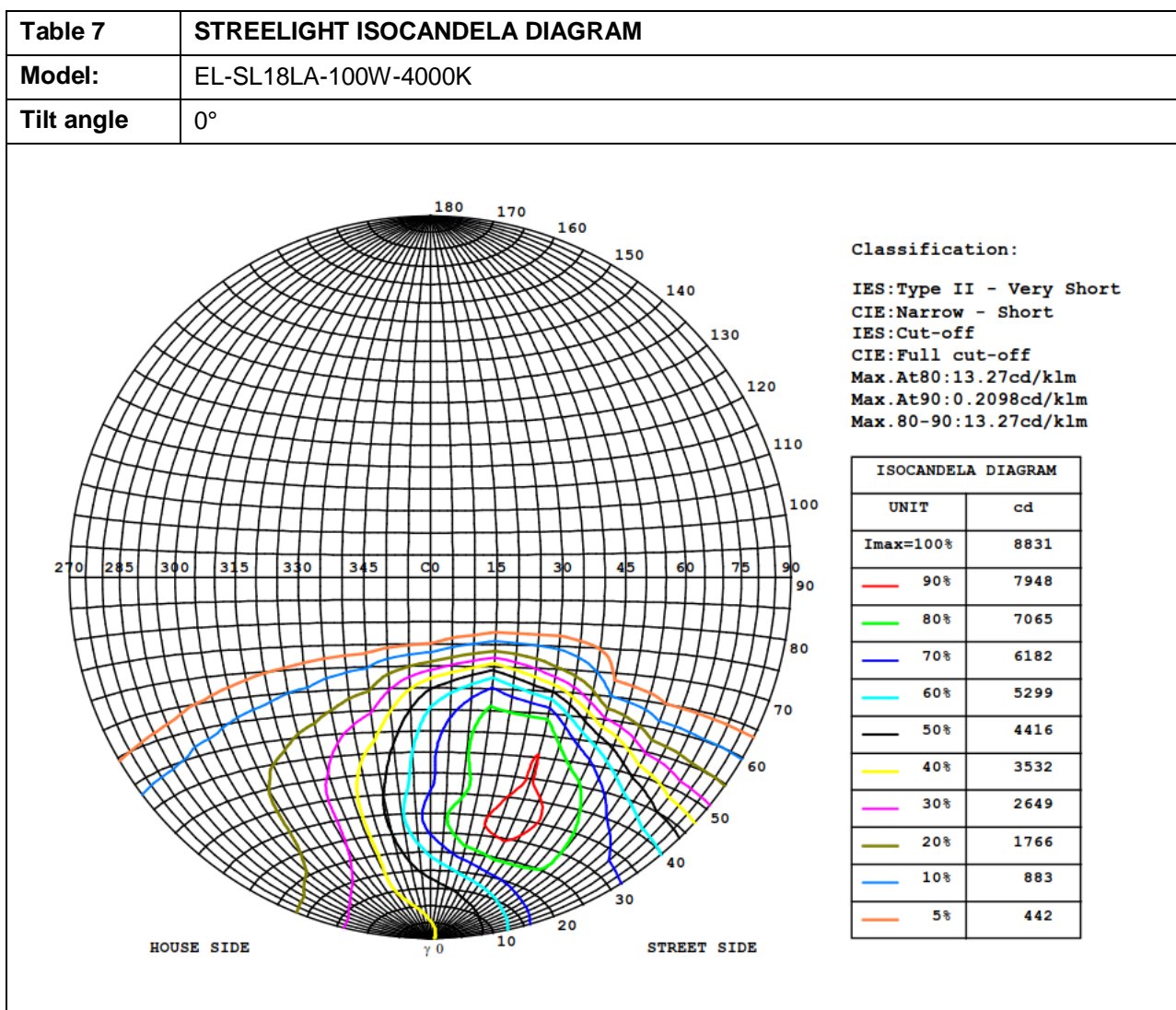
Table 4a		LUMINOUS DISTRIBUTION INTENSITY DATA (unit: cd)							
Model:		EL-SL18LA-100W-4000K							
y \ C		0	15	30	45	60	75	90	105
0		3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24
5		3911.10	3916.71	3902.23	3855.68	3815.25	3754.92	3680.02	3598.80
10		4746.12	4749.81	4710.46	4588.16	4461.75	4267.26	4068.22	3863.05
15		5927.16	5936.27	5884.24	5687.12	5438.63	5082.61	4668.15	4212.78
20		6849.34	6941.27	7060.65	7107.85	6954.10	6392.65	5560.89	4561.38
25		6842.13	7090.97	7529.53	8092.36	8351.42	7709.13	6448.58	4957.86
30		6374.02	6721.19	7431.93	8375.65	8819.57	8376.04	6996.24	5116.73
35		5900.58	6179.26	7108.44	8404.49	8759.67	7987.56	6830.28	4913.28
40		5250.70	5493.52	6577.12	8052.18	8334.61	7336.41	6171.23	4514.60
45		4068.55	4417.85	5756.90	7433.25	8063.09	7314.39	5979.14	4115.79
50		2828.73	3024.87	4287.45	6614.19	8016.06	7351.42	5839.71	3616.30
55		1717.53	1771.04	2430.28	5035.23	7683.60	7229.84	5529.72	2967.92
60		850.23	832.29	1024.44	2628.25	6397.38	6751.04	4842.99	2169.27
65		362.52	351.34	391.68	824.13	3767.85	5243.41	3365.34	1300.21
70		214.01	211.50	263.52	357.13	1541.66	2547.31	1316.41	591.21
75		129.24	126.25	164.29	244.31	580.49	491.35	236.53	183.31
80		50.65	55.95	58.75	88.63	143.37	104.59	39.16	43.91
85		2.50	3.02	3.83	2.35	1.91	2.27	1.86	2.10
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

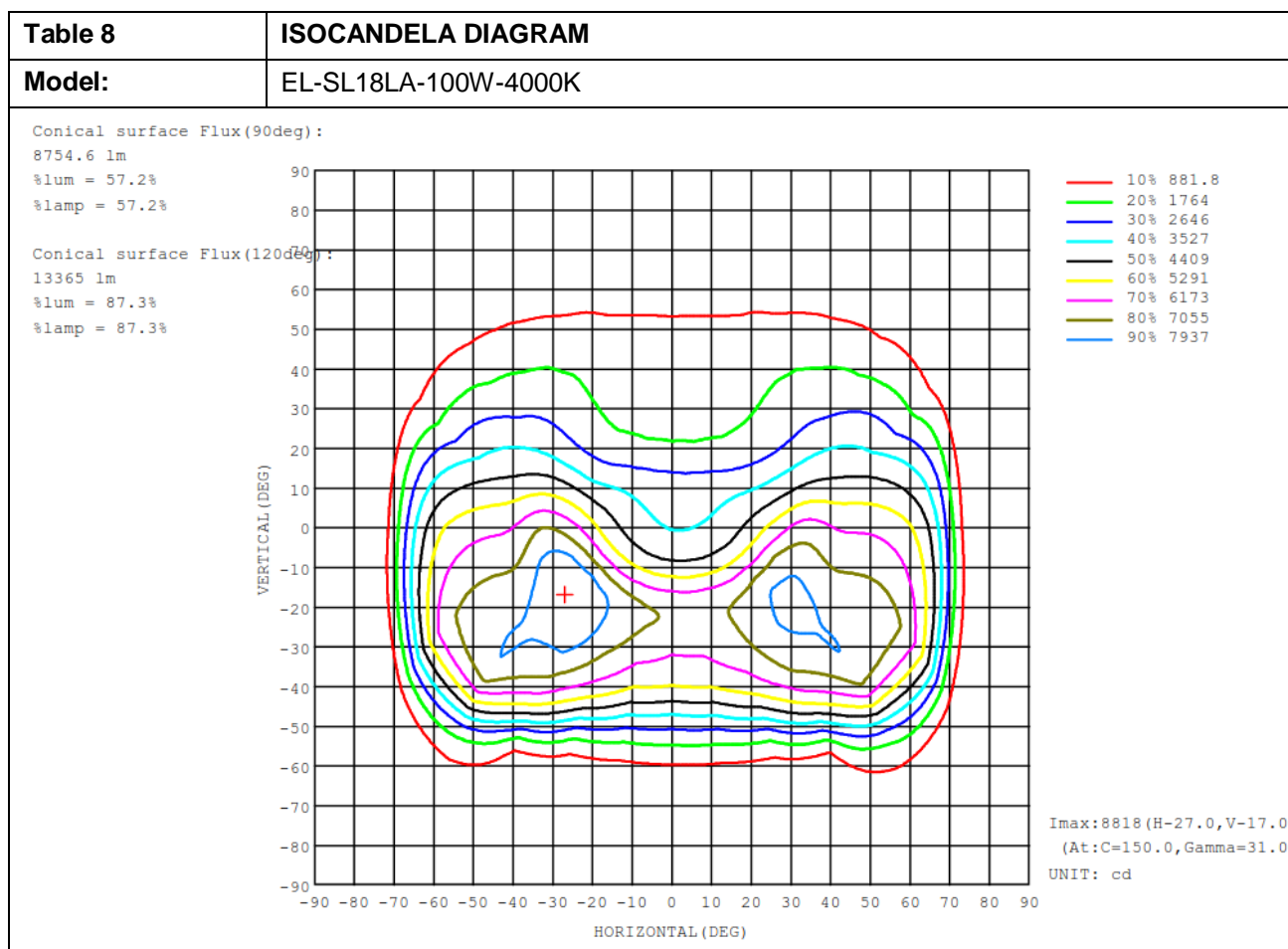
Table 4b		LUMINOUS DISTRIBUTION INTENSITY DATA (unit: cd)							
Model:		EL-SL18LA-100W-4000K							
$\gamma \backslash C$		120	135	150	165	180	195	210	225
0		3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24
5		3507.64	3428.77	3347.28	3286.48	3249.54	3239.63	3261.22	3302.73
10		3627.81	3408.06	3207.00	3052.85	2982.35	2984.00	3068.43	3204.00
15		3722.13	3252.07	2872.28	2607.01	2509.60	2539.40	2736.92	3027.79
20		3591.68	2817.14	2315.28	2007.26	1908.56	1950.24	2195.25	2625.82
25		3424.36	2392.50	1888.47	1657.26	1592.61	1630.67	1805.16	2223.35
30		3366.83	2150.94	1701.11	1520.62	1481.08	1513.64	1648.22	1987.20
35		3262.40	2139.25	1634.08	1450.83	1413.04	1440.33	1577.39	1940.16
40		3073.32	2119.26	1597.40	1374.84	1332.02	1362.45	1541.76	1936.26
45		2747.89	2009.82	1531.25	1214.99	1155.96	1195.03	1464.43	1901.32
50		2320.29	1763.40	1329.67	1040.67	976.20	1030.37	1283.88	1743.90
55		1844.99	1353.95	1045.56	814.81	741.84	815.82	1038.55	1406.96
60		1276.51	939.53	728.84	527.91	390.17	531.81	756.04	1026.14
65		817.14	593.32	398.48	152.73	109.10	155.41	430.92	676.72
70		419.05	280.54	182.20	79.79	64.07	77.72	200.00	350.40
75		156.85	127.02	79.60	57.90	19.92	55.91	81.86	159.24
80		30.86	49.30	34.29	1.56	0.31	2.00	35.92	67.66
85		1.48	0.61	0.51	0.29	0.24	0.34	0.42	0.85
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-100W-4000K							
y \ C		240	255	270	285	300	315	330	345
0		3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24	3493.24
5		3366.22	3438.45	3518.39	3587.81	3671.03	3739.77	3819.74	3867.58
10		3373.39	3544.41	3709.66	3871.32	4081.12	4285.37	4501.05	4639.63
15		3400.99	3762.96	4088.53	4409.04	4817.77	5171.81	5538.97	5766.60
20		3271.05	4009.79	4720.25	5344.54	5935.03	6318.46	6620.04	6753.97
25		3046.67	4201.78	5477.29	6610.53	7204.40	7144.40	6982.61	6833.57
30		2906.25	4411.59	6236.27	7626.11	8028.48	7494.55	6843.19	6422.15
35		2849.53	4513.41	6566.66	7731.28	8305.48	7671.92	6586.21	6046.69
40		2829.71	4407.80	6218.66	7362.74	8252.85	7506.35	6209.30	5498.71
45		2703.88	4170.66	6056.36	7338.78	7991.94	7158.87	5511.42	4418.77
50		2419.33	3823.36	6023.42	7478.60	7957.61	6404.95	4210.42	3089.47
55		2029.88	3287.65	5825.27	7473.94	7679.71	4981.68	2539.74	1877.65
60		1481.62	2555.09	5355.46	7177.48	6687.24	2774.38	1172.17	910.53
65		974.88	1650.67	4312.15	6226.16	4392.67	885.43	444.38	381.96
70		537.24	833.70	2179.49	3929.02	1892.14	372.38	273.96	225.96
75		209.95	280.38	451.46	1116.20	756.31	254.60	168.65	139.83
80		48.01	75.02	96.90	201.24	203.06	103.50	68.75	61.06
85		1.82	2.63	3.22	17.41	12.65	7.51	3.91	2.65
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-100W-4000K											
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lamp	
5	3518	3740	3911	3856	3680	3429	3250	3303	0- 5	84.60	84.60	0.55	
10	3710	4285	4746	4588	4068	3408	2982	3204	5- 10	267.0	351.6	2.3	
15	4089	5172	5927	5687	4668	3252	2510	3028	10- 15	485.4	837.1	5.47	
20	4720	6318	6849	7108	5561	2817	1909	2626	15- 20	746.6	1584	10.3	
25	5477	7144	6842	8092	6449	2393	1593	2223	20- 25	1032	2615	17.1	
30	6236	7495	6374	8376	6996	2151	1481	1987	25- 30	1294	3910	25.6	
35	6567	7672	5901	8404	6830	2139	1413	1940	30- 35	1507	5417	35.4	
40	6219	7506	5251	8052	6171	2119	1332	1936	35- 40	1640	7056	46.1	
45	6056	7159	4069	7433	5979	2010	1156	1901	40- 45	1698	8755	57.2	
50	6023	6405	2829	6614	5840	1763	976.2	1744	45- 50	1690	10444	68.3	
55	5825	4982	1718	5035	5530	1354	741.8	1407	50- 55	1577	12022	78.6	
60	5355	2774	850.2	2628	4843	939.5	390.2	1026	55- 60	1343	13365	87.3	
65	4312	885.4	362.5	824.1	3365	593.3	109.1	676.7	60- 65	990.6	14355	93.8	
70	2179	372.4	214.0	357.1	1316	280.5	64.07	350.4	65- 70	595.2	14950	97.7	
75	451.5	254.6	129.2	244.3	236.5	127.0	19.92	159.2	70- 75	256.3	15207	99.4	
80	96.90	103.5	50.65	88.63	39.16	49.30	0.2221	67.66	75- 80	79.03	15286	99.9	
85	3.215	7.507	2.497	2.347	1.857	0.6138	0.2222	0.8524	80- 85	15.20	15301	100	
90	1.881	1.112	0.5961	0.7332	2.090	0.7179	0.3156	0.7215	85- 90	0.7537	15302	100	
95									90- 95				
100									95-100				
105									100-105				
110									105-110				
115									110-115				
120									115-120				
125									120-125				
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175									170-175				
180									175-180				
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 19.7 %								UNIT:lm				







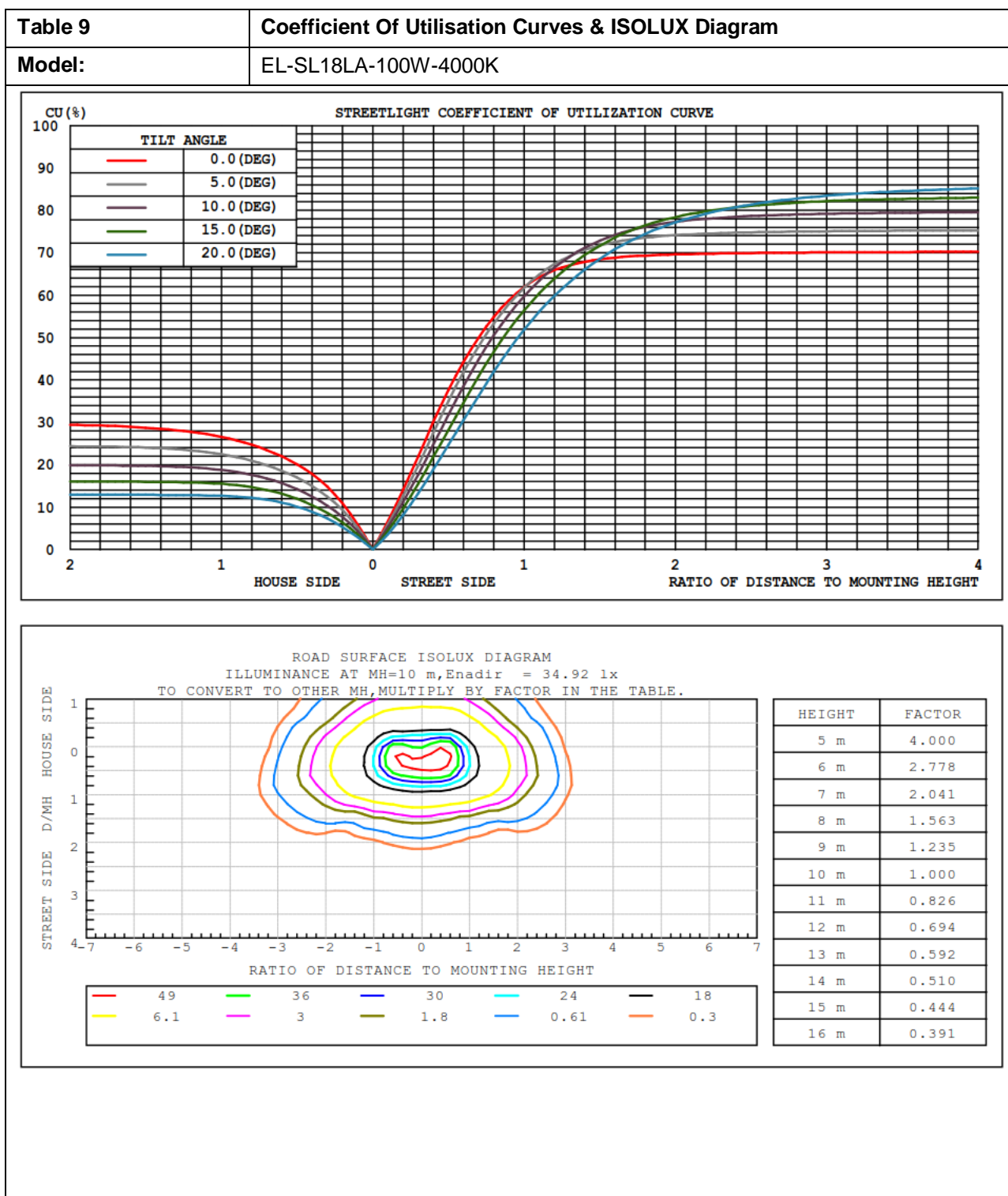


Table 10	LCS
Model:	EL-SL18LA-100W-4000K

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	2606.7	17.0
FM - Front-Medium(30-60)	6760.3	44.2
FH - Front-High(60-80)	1390.8	9.1
FVH - Front-Very High(80-90)	12.502	0.1
Total Forward Light	10770	70.4

BL - Back-Low(0-30)	1303.1	8.5
BM - Back-Medium(30-60)	2694.6	17.6
BH - Back-High(60-80)	530.31	3.5
BVH - Back-Very High(80-90)	3.4493	0.0
Total Back Light	4531.4	29.6

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
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	10770	0	10770
Street Side	4531.4	0	4531.4

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 --