ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD

TEST REPORT

Prepared For :	ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD 6F,01B,No.28, Kanglong N0.3Rd, Xinmao Industrial, Henglan Town, Zhongshan City
Product Name:	LED STREET LIGHT
Model :	YC-S005-150W
Prepared By :	Guangdong KEYS Testing Technology Co., Ltd. Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Test Date:	May 17, 2024 - May 21, 2024
Date of Report :	May 21, 2024
Report No.:	KEYS240516011002LD-01

TEST REPORT OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS ACCODING TO LM-79-19 APPROVED METHOD	
Testing laboratory ..... :	Guangdong KEYS Testing Technology Co., Ltd.
Address ..... :	Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Testing location ..... :	Guangdong KEYS Testing Technology Co., Ltd.
Applicant ..... :	ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD
Address ..... :	6F,01B,No.28, Kanglong N0.3Rd, Xinmao Industrial, Henglan Town, Zhongshan City
Test Procedure ..... :	Optical and Electrical Measurements of Solid-State Lighting Products Accoding to LM-79-19 Approved Method.
Non-standard test method ..... :	N/A
Type of test object ..... :	LED STREET LIGHT
Trademark ..... :	N/A
Model/type reference ..... :	YC-S005-150W
Manufacturer of LED driver..... :	3*TMX-50W 80-450V
LED driver surge protection..... :	8KV
LED type..... :	PCT3030
Model Number of LED chip..... :	PCT3030
Manufacturer.....:	Shenzhen Mingtu Photoelectric Technology Co., LTD
Rating .... :	AC85-375V, 50/60Hz, 150W
Manufacturer ..... :	ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD
Address ..... :	6F,01B,No.28, Kanglong N0.3Rd, Xinmao Industrial, Henglan Town, Zhongshan City
Particulars: test item vs. test requirements	

Name and address of the testing laboratory: Guangdong KEYS Testing Technology Co., Ltd.
Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China

Tested by (name + signature): Sunny Li

Approved by (name + signature): Jason Zhan

1.0 TEST METHOD

Test methods according to IESNA LM-79-19 following chapter:

4.0 Physical and Environmental Test Conditions

Due to the thermal characteristics of LEDs, photometric values, optical measurements, and electrical characteristics of SSL products are sensitive to changes in ambient temperature or air movement.

AmbientTemperature:

The ambienttemperature in which measurements are taken shall be maintained at 25 °C with a tolerance interval of ±1.2 °C, measured at a point not more than 1.5 m from the SSL product and at the same height as the SSL product. (See Annex D.)

For example, if the expanded uncertainty (k=2) of the thermometer is 0.2 °C, the reading of the thermometer shall be±1.0C.Thetemperaturesensorshall beshielded from direct optical radiation from the SSL product and direct optical radiation from any other source, such as an auxiliary lamp. Measurements performed at other than this recommended temperature constitute a nonstandard condition and shall be noted in the test report.

5.0 Electrical Test Conditions

5.1 Power Supply Requirements

5.1.1 Voltage Waveform and Frequency. During operation of the SSL product, the AC power supply shall have a sinusoidal voltage waveform at the prescribed frequency (typically 60 Hz or 50 Hz) such that the total harmonic distortion or RMS summation of the harmonic components (as discussed in Section 5.3.4) shall not exceed 3% of the fundamental frequency during operation of the DUT. The supplied frequency shallhave a tolerance interval of ±2 Hz from the prescribed frequency.

5.1.2 AC Voltage Regulation. The voltage ofan AC power supply (RMS voltage) applied to the DUTshall be regulated to within ±0.2% under load. The AC power supply shall have a current crest factor capability greater than required by the DUT. If the current crest factor of the waveform required by the DUT is unknown, the power supply shall have a current crest factor capability of at least 10.

5.1.3 DC Voltage Regulation. The voltage of a DC power supply (instantaneous voltage) applied to the DUT shall be regulated to within ±0.2 % under load.
The AC voltage component or ripple factor of the DC regulated voltage shall be less than 0.5%(RMS) of the DC regulated voltage.

6.0 Test Preparation

6.1 DUT Identification
It is allways good laboratory practice to mark or clearly identify DUTs.
6.2 DUT Handling
While SSL products are not as sensitive to movement as incandescent lamps, vibrations and mechanical shocks should be minimized. Devices to be tested should not be stored under temperature extremes or at high-humidity conditions.

6.3 Seasoning

SSL products shall be tested with no seasoning.

6.4 Pre-burn and Stabilization
Before measurements are taken, the DUT shall be operated long enough to reach photometric and electrical stabilization and temperature equilibrium.
The time required for stabilization depends on the type of SSL product. The stabilization time typically ranges from 30 minutes for small integrated LED lamps to two or more hours for large SSL luminaires. During stabilization,the SSL product shall be operated in ambient temperature as specified in Section 4.2.1,and in the operating orientation as specified in Section 6.5. Stability shall be achieved when the variation (maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10-minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%. Readings should be taken at regular intervals.

For subsequent measurements of the same SSL product (which has reached initial stabilization) at a different color or intensity control setting, an alternate method of determining stability is the point at which the variation

in lumen output and electrical power is projected via linear regression to be less than 0.5% over 20 minutes; the linear regression shall be based on at least three measurements taken at least one minute apart. The stabilization time used for each measurement shall be recorded.
SSL products may be pre-burned for several hours to decrease the stabilization time required and the magnitude of change in light output and power consumption during the stabilization period. For the case in which the intended use requires only a limited lifetime (on the order of 1,000 hours or less), DUTs should not be pre-burned prior to performing measurements.

7.0 TEST METHODS FOR TOTAL LUMINOUS FLUX MEASUREMENT

8.0 Luminous Intensity or Optical Angular Distribution Measurement

9.0 Chromaticity Uniformity Measurements

10.0 UNCERTAINTY STATEMENT

As the tolerance intervals that have been provided throughoutthisstandardare intended to limitthemagnitude

of the measurement uncertainty, direct calculation of the measurement uncertainty for an SSL product measurement is not required. If the provided guidelines are adhered to, the expected expanded measurement uncertainty for the measurement of total luminous flux is on the order of ±4% (k=2). This is consistent with the summary results of a proficiency test conducted by 118 laboratories worldwide.'

Remark:

1. 0 hour season, pre-heating the lamp for 45 minutes at least;
2. Ambient: 65%RH, 25℃.

SUMMARY OF TEST RESULT:

SPECTRORADIOMETRIC TESTING IN INTEGRATING SPHERE	
PHOTOMETRIC	--
Total integrated flux(lumens)	18036.5
EFFICACY	--
Lumens/watt	124.95

LUMINOUS INTENSITY DISTRIBUTION	
Maximum intensity (if applicable)(cd)	8537
Beam angle(50%Imax)(°)	147.1°
Zonal lumens in the 0°-60°zone (%)	62.3
Zonal lumens in the 0°-90°zone (%)	100
Zonal lumens in the 0°-120°zone (%)	-
Zonal lumens in the 0°-180°zone (%)	-

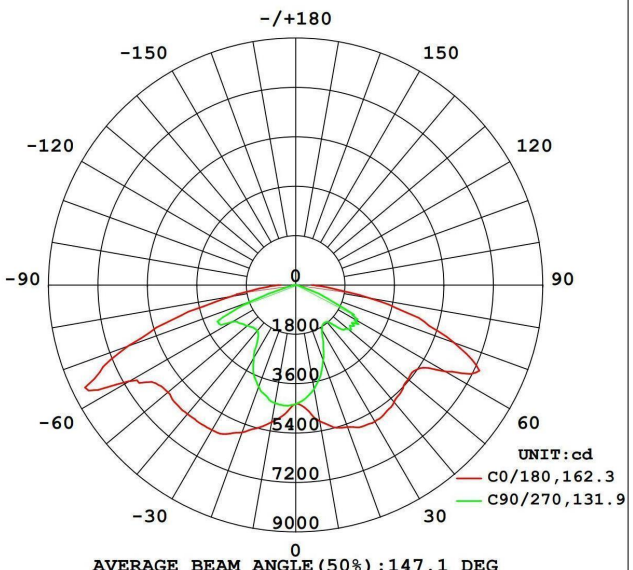
Note: The test data was only good for the test sample. It may have deviation for other test sample.

STREETLIGHT PHOTOMETRIC TEST REPORT

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:18036.5x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

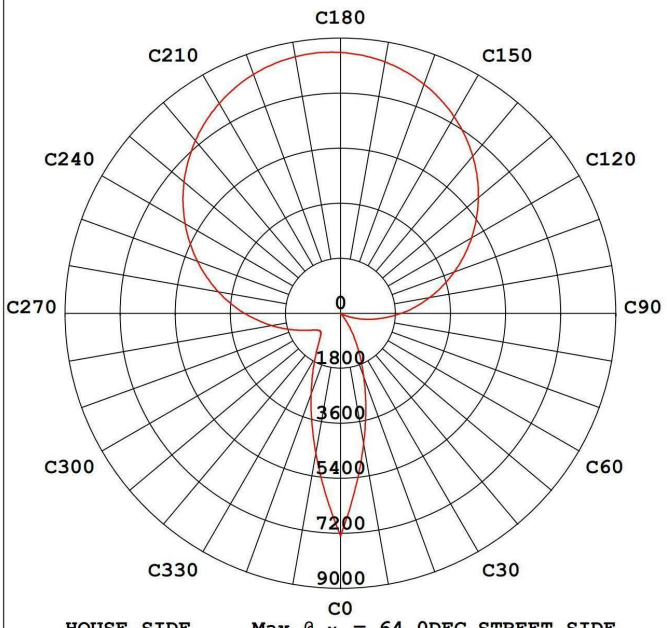
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 124.95 lm/W	
MODEL	--	Imax(cd)	8537	η street_up(%)	0.0
NOMINAL POWER(W)	--	LOR(%)	100.0	η street_down(%)	47.1
RATED VOLTAGE(V)	--	TOTAL FLUX(lm)	18036	η house_up(%)	0.0
NOMINAL FLUX(lm)	18036.5	MAXIMUM @(C,γ)	180,64.0	η house_down(%)	52.9
LAMPS INSIDE	1	η up(%)	0.0	76 FLASHAREA(m2)	0.00100
TEST VOLTAGE(V)	--	η down(%)	100.0	SLI	22.224

INTENSITY DISTRIBUTION DIAGRAM
IN C PLANS



AVERAGE BEAM ANGLE(50%):147.1 DEG

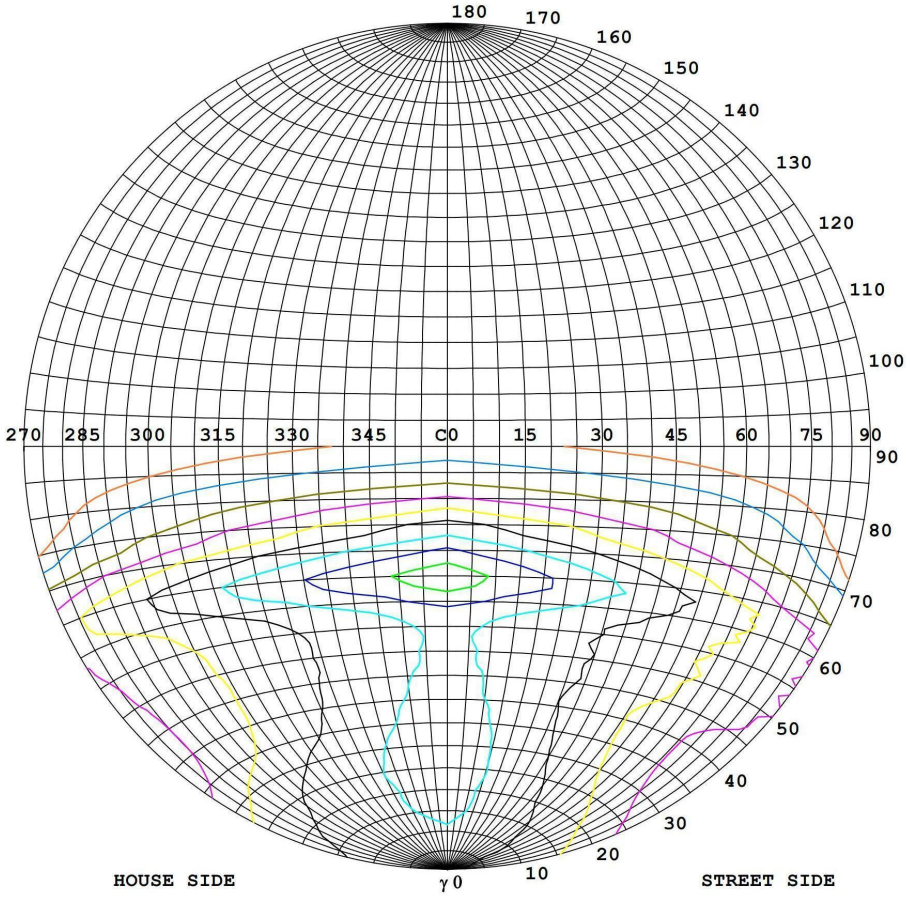
MAX INTENSITY CONE SURFACE
DISTRIBUTION DIAGRAM



HOUSE SIDE Max @ γ = 64.0DEG STREET SIDE

STREETLIGHT ISOCANDELA DIAGRAM

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

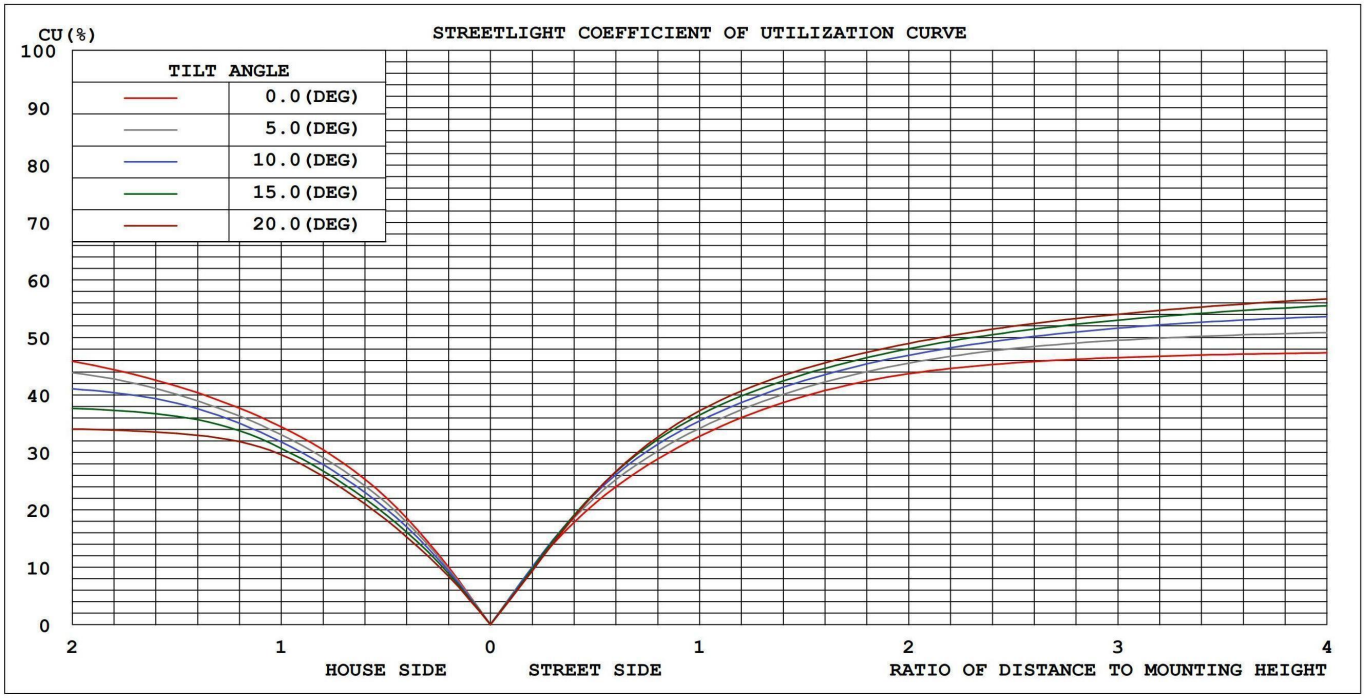


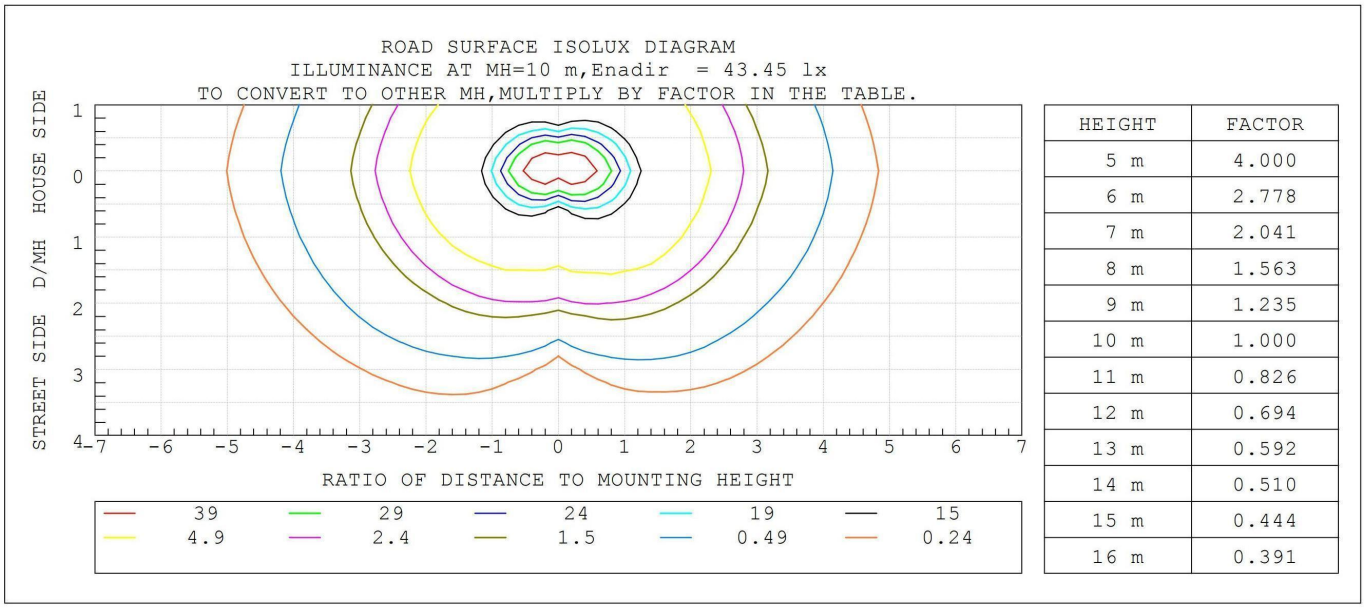
Classification:

IES:Type I - Short
CIE:Narrow - Intermediate
IES:Semi cut-off
CIE:Non-cut-off
Max.At80:126.6cd/klm
Max.At90:26.90cd/klm
Max.80-90:126.6cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
Imax=100%	8537
90%	7683
80%	6829
70%	5976
60%	5122
50%	4268
40%	3415
30%	2561
20%	1707
10%	854
5%	427

COEFFICIENT OF UTILIZATION CURVE AND ISOLUX DIAGRAM





HEIGHT	FACTOR
5 m	4.000
6 m	2.778
7 m	2.041
8 m	1.563
9 m	1.235
10 m	1.000
11 m	0.826
12 m	0.694
13 m	0.592
14 m	0.510
15 m	0.444
16 m	0.391

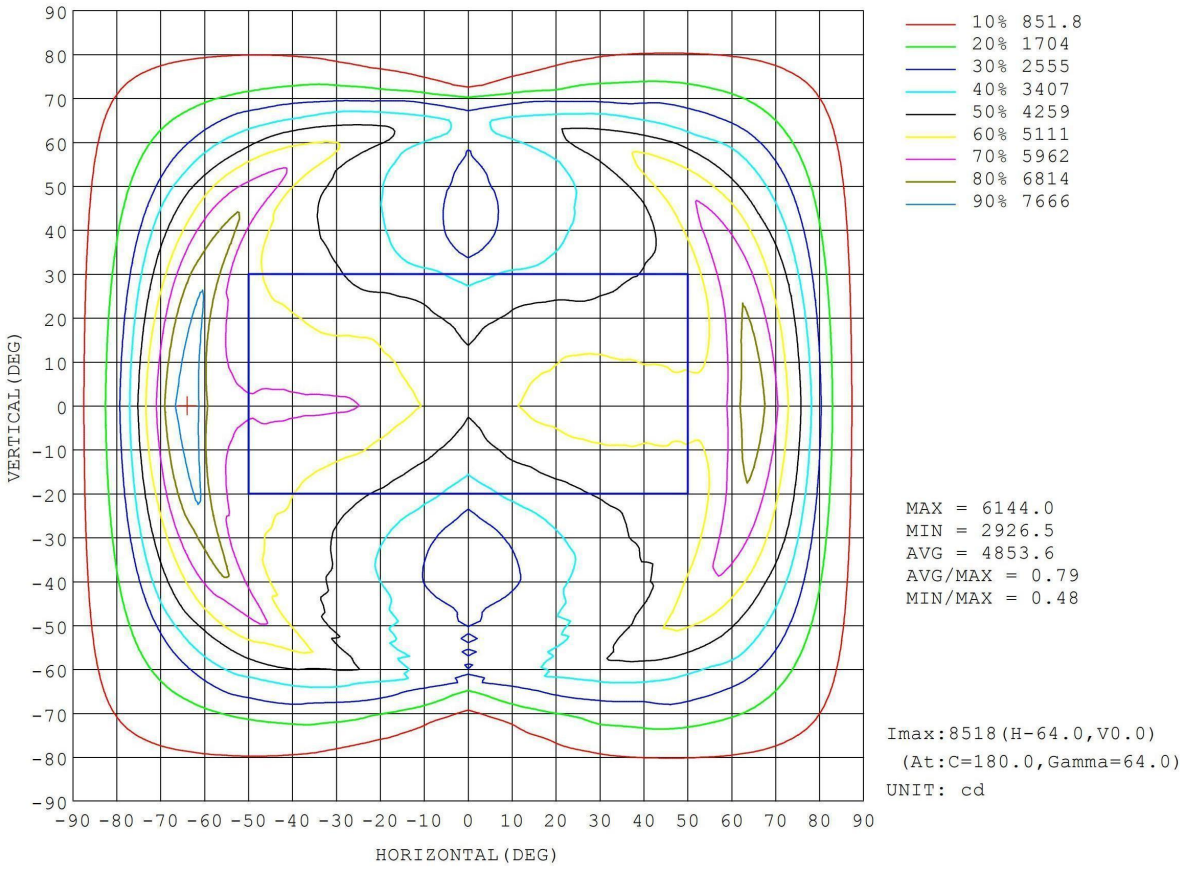
ZONAL FLUX DIAGRAM

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

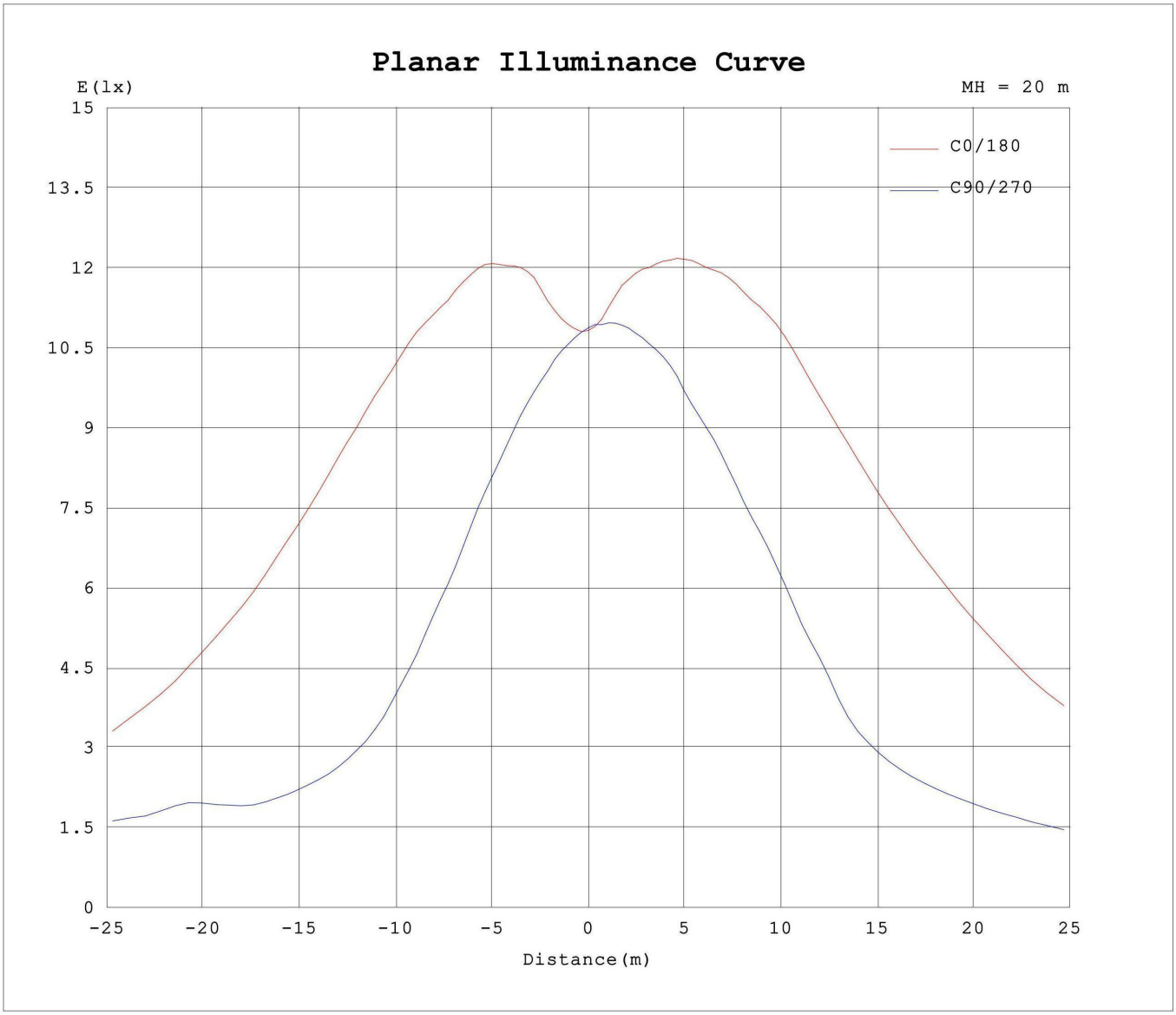
γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum,lamp
10	5041	3855	5068	4373					0- 10	429.7	429.7	2.03,2.03
20	5502	2920	5709	3954					10- 20	1298	1728	8.17,8.17
30	5754	1923	6103	3067					20- 30	2030	3758	17.8,17.8
40	5570	1762	6138	2188					30- 40	2521	6279	29.7,29.7
50	5356	2526	6076	2319					40- 50	3088	9368	44.3,44.3
60	6329	2557	7023	2722					50- 60	3792	13159	62.3,62.3
70	6130	689.2	6481	1804					60- 70	4716	17875	84.6,84.6
80	2677	33.96	2355	76.15					70- 80	2525	20400	96.5,96.5
90	568.7	6.288	538.8	1.143					80- 90	737.9	21138	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

ISOCANDELA DIAGRAM

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:



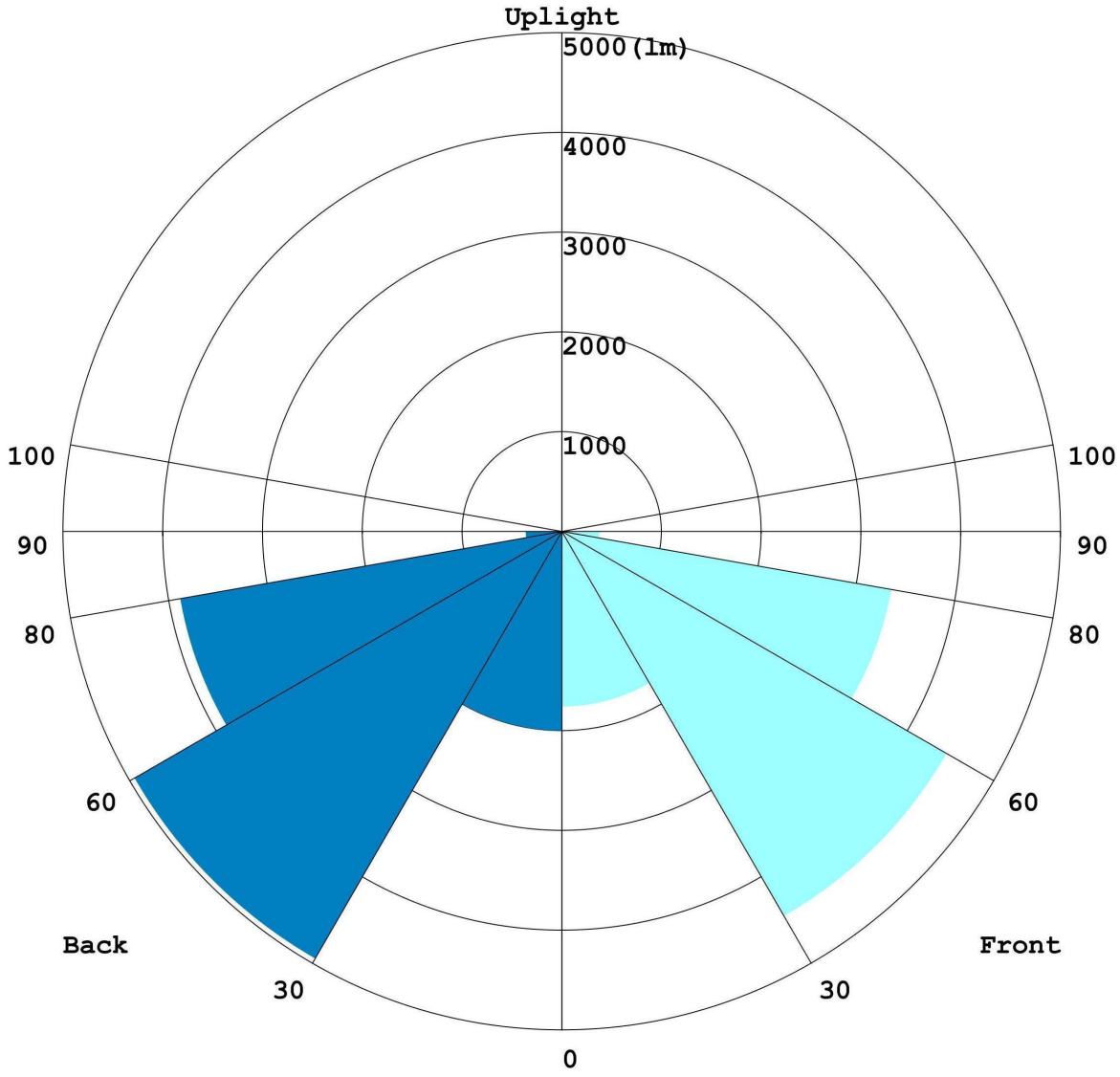
Planar Illuminance Curve



LCS REPORT

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

LUMINAIRE CLASSIFICATION SYSTEM(LCS) GRAPH



BUG REPORT

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	1757.7	8.3
FM - Front-Medium(30-60)	4455.6	21.1
FH - Front-High(60-80)	3356.7	15.9
FVH - Front-Very High(80-90)	376.91	1.8
Total Forward Light	9946.9	47.1
BL - Back-Low(0-30)	2000.5	9.5
BM - Back-Medium(30-60)	4945.7	23.4
BH - Back-High(60-80)	3884.1	18.4
BVH - Back-Very High(80-90)	360.95	1.7
Total Back Light	11191	52.9
UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

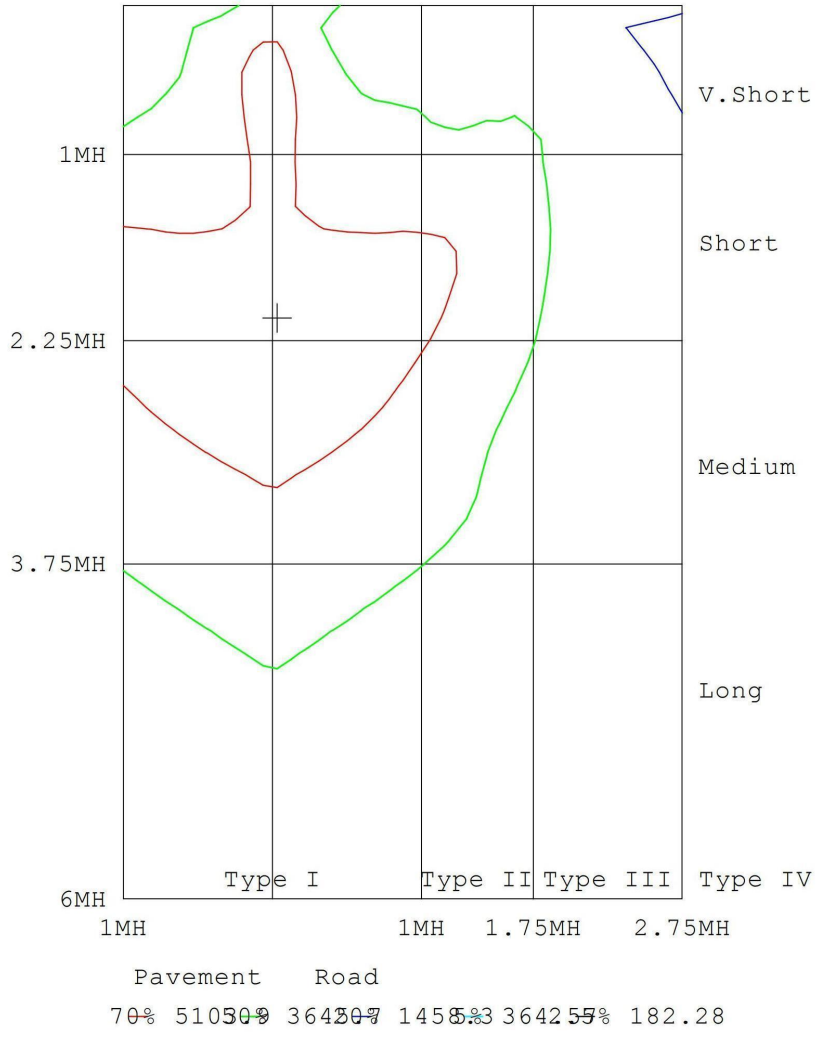
BUG(Back,Up,Glare) Rating	B4-U0-G4

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	11191	0	11191
Street Side	9946.9	0	9946.9

ROAD ISOCANDELA REPORT

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

ROAD SURFACE ISOCANDELA DIAGRAM



LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.08V I:0.6680A P:144.83W PF:0.9853 Freq:60.04Hz Lamp Flux:21138.1x1 lm		
SPEC.:	TYPE:	WEIGHT:
MFR.: EVERFINE	DIM.:	SERIAL No.:
	SUR.:360*145mm	Shielding Angle:

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	90	180	270
0	4340	4340	4340	4340
5	4543	4151	4733	4411
10	5041	3855	5068	4373
15	5368	3455	5400	4187
20	5502	2920	5709	3954
25	5700	2386	5988	3621
30	5754	1923	6103	3067
35	5691	1746	6129	2403
40	5570	1762	6138	2188
45	5455	2215	6140	2201
50	5356	2526	6076	2319
55	5373	2601	6238	2445
60	6329	2557	7023	2722
65	7383	1650	8101	3146
70	6130	689	6481	1804
75	4640	139	4337	401
80	2677	34.0	2355	76.1
85	1218	17.5	1193	26.4
90	569	6.29	539	1.14

ANNEX A:

Photo-documentation