

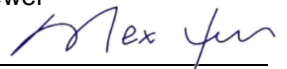


Prüfbericht <i>Test report</i>		Auftragsnr. / order no.: 244268555 Berichtsnr. / report no.: 60397052 001	
Auftraggeber <i>client:</i>		Auftragsdatum / <i>date of order:</i>	
NISKO GROUP LTD. 41 HAMAAYAN MODI'IN, Israel.		23.09.2020 AG-Referenz-Nr. / <i>client reference no.:</i> -	
Inhalt des Auftrags <i>content of order:</i>		Electrical and Photometric Measurement to LM-79-08	
Prüfgrundlagen <i>test specifications:</i>		IES LM-79-08	
Prüfgegenstand <i>test item:</i>		LED Street Light	
EAN-Nr. / no.:		N/A	
Bezeichnung <i>identification:</i>	EL-SL18LA-160W CLASS I T2S 4000K		
Eingang Prüfgegenstand <i>receipt of test item:</i>	23.09.2020		
Prüfgegenstands-Nr. <i>test item no.:</i>	A002073542-012		
Prüfzeitraum und -ort <i>period of test and location:</i>	23.09.2020-28.08.2020, Shanghai Xingshang Photoelectric technology Co., Ltd		
Prüflaboratorium <i>testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.		
Prüfergebnis <i>test result *):</i>	N/A		
Sonstiges / other aspects:		<i>Tests at client's request and there is only test data available in this report and no further ratings for test result. 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..</i>	
geprüft / tested by:		kontrolliert / reviewed by:	
06.11.2020 Fernando Dai /PE		06.11.2020 Alex Yan /Reviewer	
			
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. Dieser Prüfbericht wird neben der Dokumentation der Einzelergebnisse durch eine Bewertung des Produktes ergänzt. Diese Bewertung stützt sich nicht in jedem Fall auf ein durchgängiges Punkte- oder Bewertungssystem, wohl aber auf die Erfahrung der Experten des TÜV Rheinland. Die Bewertung ist keine rechtsverbindliche Interpretation der Mängelfreiheit eines Produktes.</p> <p>This test report relates to the a. m. test sample. Without permission of the testing laboratory this report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety or other mark on this product. Besides single test results this test report contains an assessment of the product. This assessment is not always based on a continuous rating system, but on experience of the experts of TÜV Rheinland Group. This assessment is not a legally binding interpretation of the flawlessness of the product.</p>			

General Remarks:

Factory: NINGBO SKYZON ENERGY CO., LTD
Address: No.19, Ke San Road, Ninghai 315600, Ningbo China

Product Information

Model name	Sample number	Rated voltage, frequency (V, Hz)	Nominal CCT (K)	Rated Wattage (W)	Type of LED Chip
EL-SL18LA-160W CLASS I T2S 4000K	A002073542-012	200-240Vac, 50/60Hz	4000K	160W	LUMILEDS LUXEON 5050- L15040705006000 00 18S2P 2MODULE

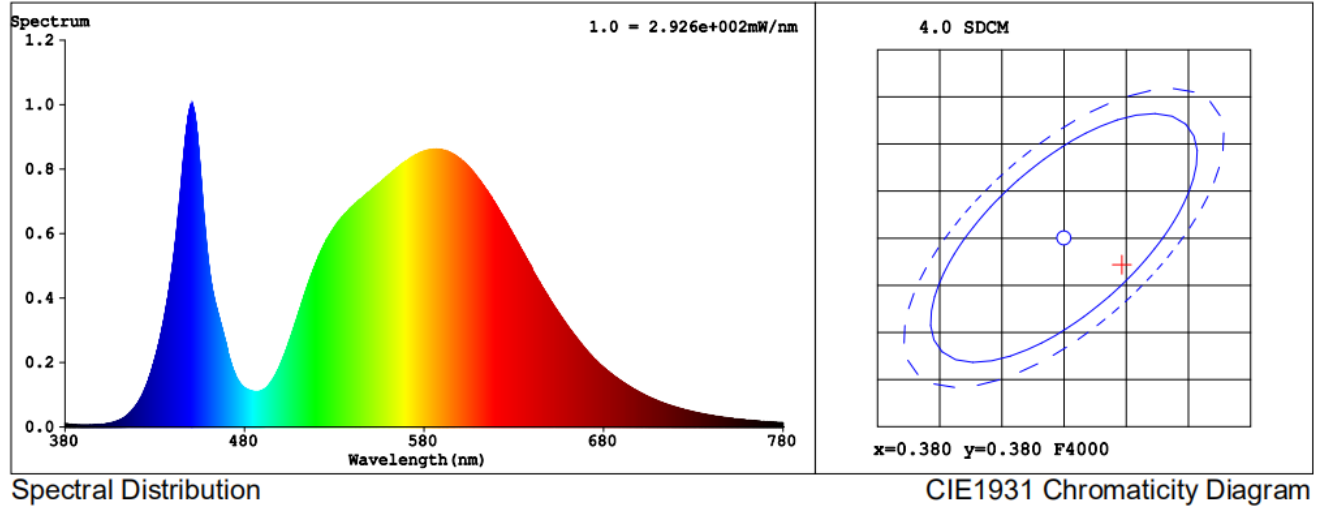
Test conditions:	
Number of hours operated prior to measurement	<u>0</u> hours
Total operating time of the product for measurements including stabilization	<u>2</u> hours and <u>30</u> minutes
Ambient	25 °C
Orientation	As normal use
Stabilization time	<u>90</u> minutes
Test method	Type C Gonio-photometer with moving mirror was used for photometric measurement (C- γ system)
Designation and type of reference standard lamp	For standard luminous flux lamp Current: 1.389A Reference luminous flux: 4310 lm Lamp type: Filament lamp Intensity distribution type: Omni-directional
	For standard luminous intensity lamp: Current: 9.6217A Reference luminous intensity: 571.9 cd Lamp type: Tungsten halogen lamp Intensity distribution type: Omni-directional
Correction factor applied	N/A
Photometric distance	3.0m for photometric measurement
	8.98m for luminous intensity measurement

Measured Results	
	EL-SL18LA-160W CLASS I T2S 4000K
Total luminous flux (lm)	23275
Input wattage (W)	158.92
Input current (A)	0.7297
Frequency (Hz)	50
Power factor	0.9904
Efficacy (lm/W)	146.46
CCT (K)	3890
Chromaticity x	0.3846
Chromaticity y	0.3772
Chromaticity u'	0.2277
Chromaticity v'	0.5024
CRI	73.6
R9	0
Du'v' (Max.)	-0.00101
THDI(%)	4.672
LCS BUG Rating	B3-U0-G3, Full cut-off

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Spectral power distribution: (Clause 10 of LM-79)

EL-SL18LA-160W CLASS I T2S 4000K



Dominant WL: 580.0nm
Peak WL: 451nm

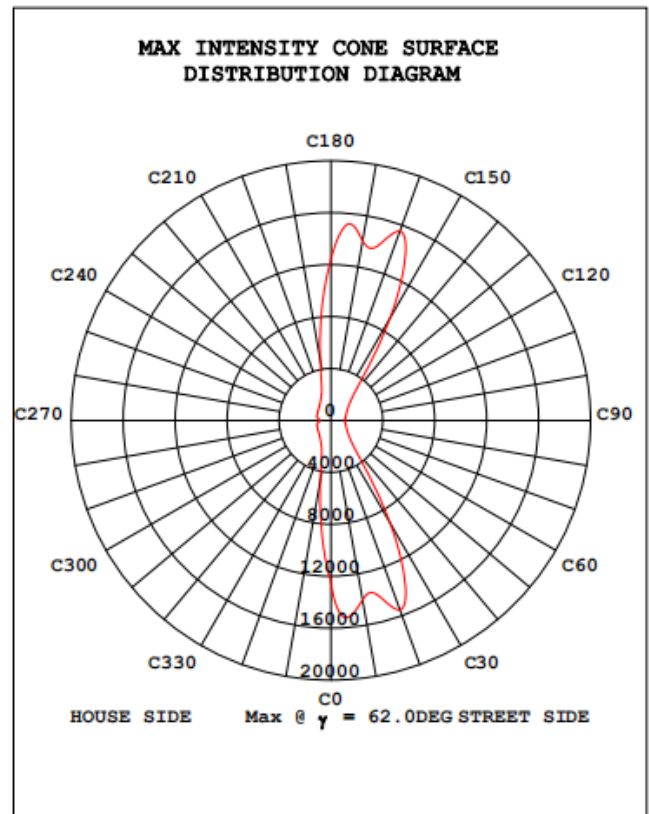
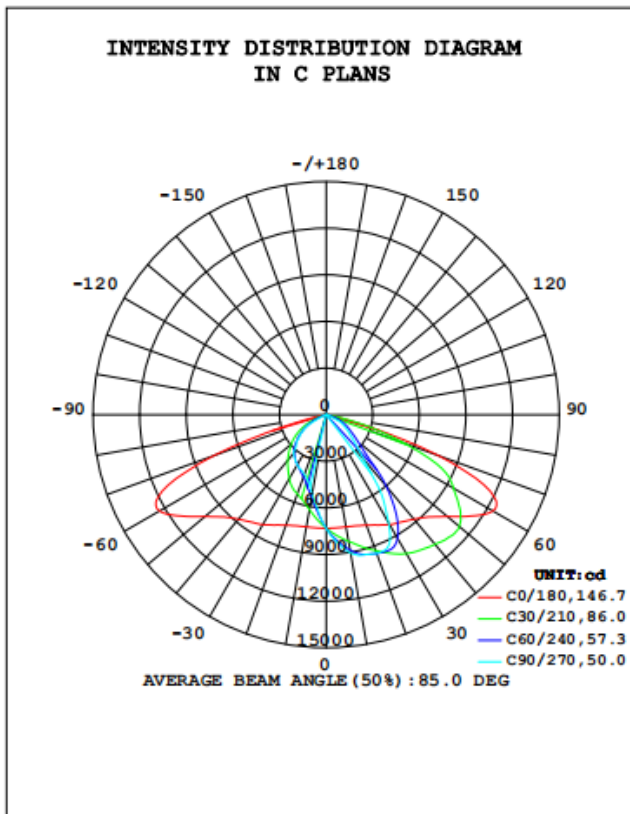
Luminous Intensity Distribution, Ambient temperature: 25°C (Clause 10 of LM-79)

Description	Data
Model	EL-SL18LA 160W CLASS I T2S 4000K
Test voltage (V)	220VAC
Test current (A)	0.7297
Test wattage (W)	158.92
Frequency (Hz)	50
Power factor	0.9904
Central luminous intensity (cd)	7323
Max. luminous intensity(cd)	15537.77 (C=70, Gamma=62)

For the distribution curve see next page.

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DATA OF LAMP		PHOTOMETRIC DATA Eff: 146.46 lm/W			
MODEL	EL-SL18LA	I _{max} (cd)	15537.77	η street_up (%)	0.0
NOMINAL POWER (W)	160	LOR (%)	100.0	η street_down (%)	67.6
RATED VOLTAGE (V)	220-240	TOTAL FLUX (lm)	23275	η house_up (%)	0.0
NOMINAL FLUX (lm)	23274.9	MAXIMUM @ (C, γ)	70, 62.0	η house_down (%)	32.4
LAMPS INSIDE	1	η up (%)	0.0	76 FLASHAREA (m2)	0.05000
TEST VOLTAGE (V)	220	η down (%)	100.0	SLI	21.505



Zonal Lumen Summary and Percentages

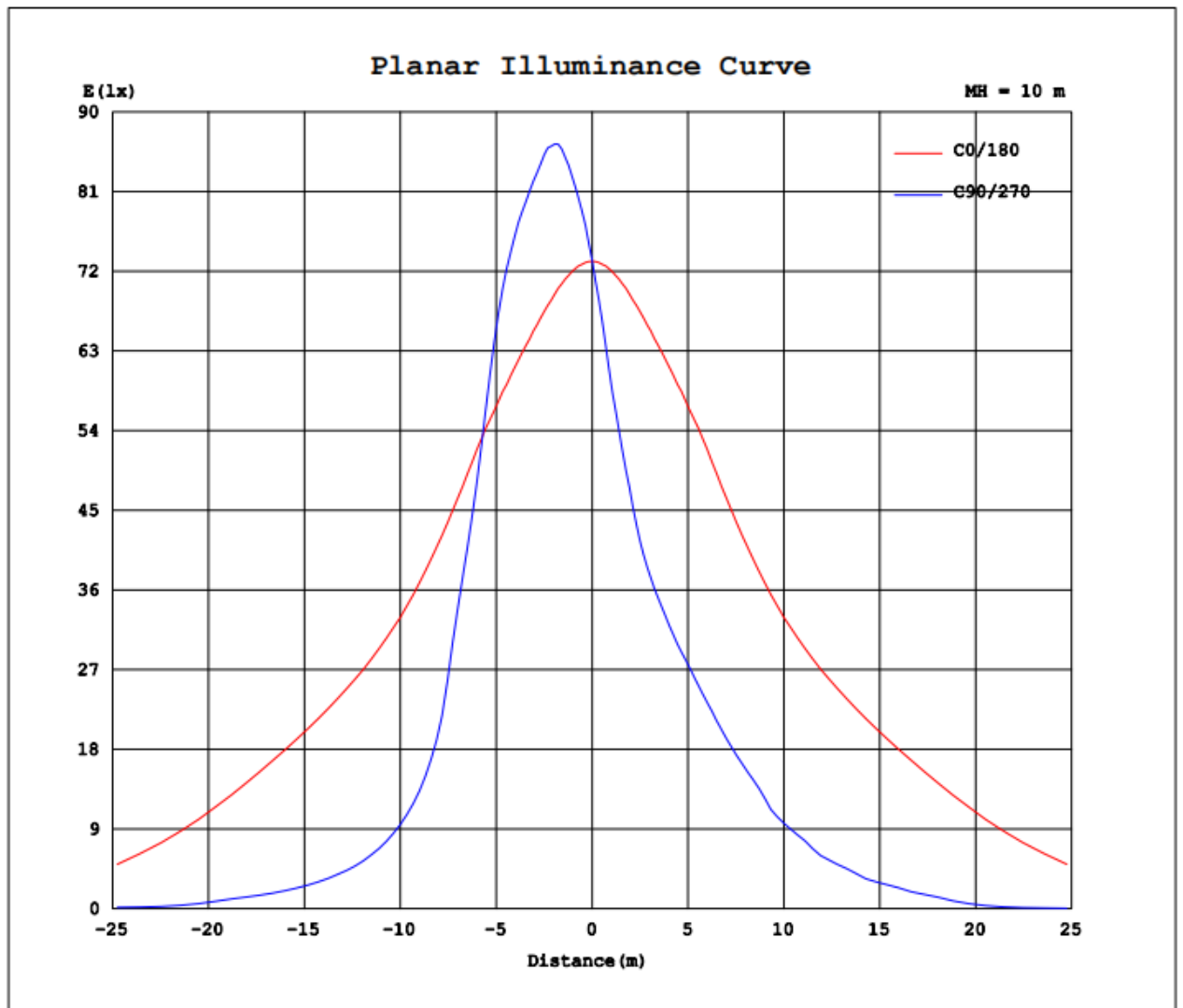
Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	2717.34	11.70	11.70
0-30	6007.48	25.80	25.80
0-40	10107.05	43.40	43.40
0-60	18607.79	79.90	79.90
0-80	23240.33	99.90	99.90
0-90	23274.87	100.00	100.00
10-90	22584.65	97.00	97.00
20-40	7389.71	31.70	31.70
20-50	11647.08	50.00	50.00
40-70	12021.48	51.60	51.70
60-80	4632.58	19.90	19.90
70-80	1111.84	4.80	4.80
80-90	34.50	0.10	0.10
90-110	0.00	0.00	0.00
90-120	0.00	0.00	0.00
90-130	0.00	0.00	0.00
90-150	0.00	0.00	0.00
90-180	0.00	0.00	0.00
110-180	0.00	0.00	0.00
0-180	23274.87	100.00	100.00

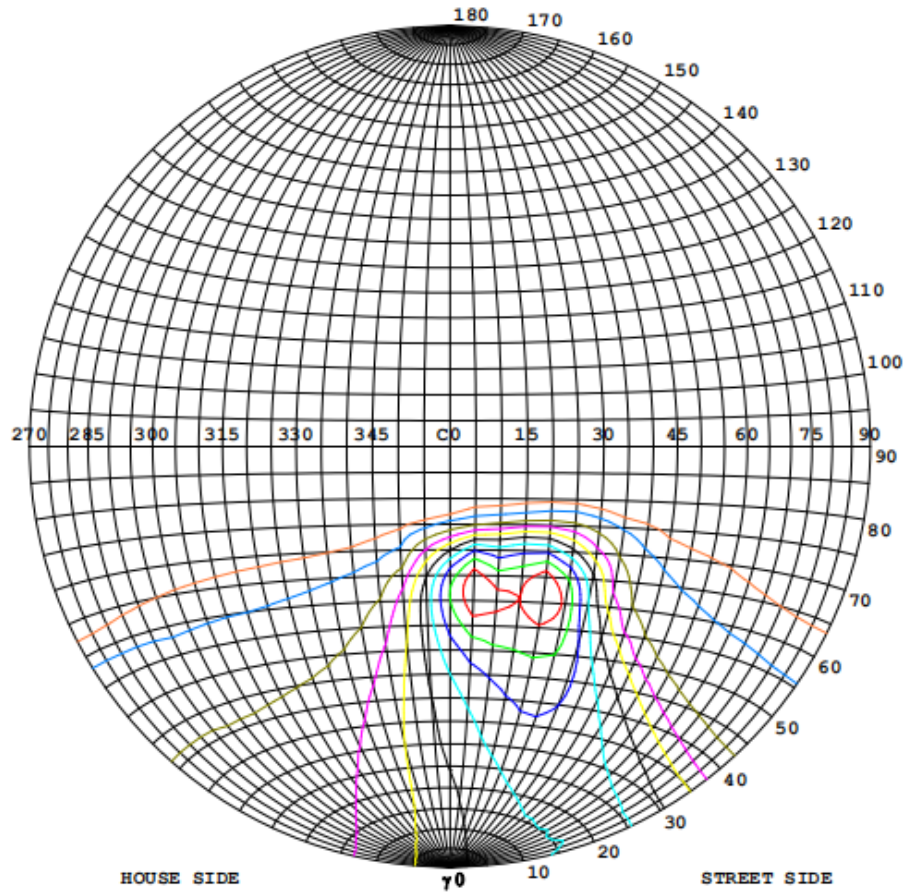
Total Luminaire Efficiency = 100.00%

Luminous Intensity Distribution Data

Keywords				Candela																2D								3D											
Vertical Angles	Horizontal Angles			Multiplier=1			Max. Cd																																
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105																	
37	5063.62	5137.60	5359.95	5703.99	6089.99	6566.66	7179.47	7875.87	8629.60	9372.30	10428.01	10733.49	10875.50	10799.01	10404.96	9834.96	9230.91	8559.57	7654.22	6735.13	5947.06																		
38	4471.49	4519.17	4729.98	5172.08	5668.27	6173.51	6811.99	7543.01	8364.72	9184.61	9909.41	10415.81	10793.11	10954.34	10893.39	10504.95	9940.40	9334.42	8623.81	7676.56	6722.40	5895.95																	
39	4077.25	4095.27	4213.48	4590.69	5143.00	5766.93	6431.26	7206.54	8074.18	8966.59	9809.96	10407.90	10852.21	11013.58	10992.44	10619.76	10060.10	9435.48	8711.60	7706.29	6696.79	5828.69																	
40	3759.03	3778.53	3868.79	4078.24	4546.67	5285.60	6037.79	6948.60	7754.10	8739.76	9698.03	10379.05	10865.36	11093.28	11109.14	10752.71	10190.36	9565.85	8789.20	7752.66	6686.05	5771.61																	
41	3477.99	3500.95	3588.60	3762.19	4064.90	4715.17	5618.99	6489.73	7438.72	8479.42	9536.70	10347.12	10945.88	11175.45	11224.32	10904.73	10332.74	9685.24	8872.78	7786.30	6686.33	5705.89																	
42	3236.03	3258.34	3331.20	3500.05	3760.61	4176.54	5134.62	6100.75	7090.30	8198.52	9361.43	10291.12	11019.50	11296.50	11335.57	11033.33	10478.70	9840.90	8967.07	7827.29	6632.24	5643.90																	
43	3036.32	3049.33	3104.99	3248.49	3474.80	3810.07	4553.73	5687.50	6766.63	7878.43	9123.63	10220.40	11081.21	11408.62	11465.55	11204.87	10661.77	10000.55	9067.10	7881.48	6616.89	5582.86																	
44	2857.22	2861.02	2916.79	3033.98	3231.51	3523.48	4050.94	5211.63	6410.69	7570.11	8866.75	10147.45	11134.55	11542.86	11596.30	11358.17	10822.13	10171.36	9188.71	7917.67	6585.73	5501.71																	
45	2689.06	2702.64	2748.14	2844.39	3021.80	3268.68	3702.64	4642.98	6010.43	7253.46	8604.87	10025.54	11154.71	11675.60	11754.69	11506.65	10996.31	10364.11	9307.69	7958.13	6552.96	5415.48																	
46	2542.63	2555.94	2594.50	2694.58	2844.52	3056.04	3423.78	4109.26	5573.43	6933.11	8306.80	9873.20	11218.63	11816.27	11889.73	11653.85	11187.30	10566.49	9474.01	8004.02	6512.66	5314.73																	
47	2402.59	2420.82	2455.48	2546.76	2682.59	2865.13	3179.83	3733.01	5046.72	6581.01	7999.53	9689.63	11252.38	11971.36	12053.17	11828.43	11392.04	10795.41	9636.50	8048.11	6472.61	5225.62																	
48	2275.95	2294.90	2326.43	2415.20	2533.41	2703.69	2985.71	3443.66	4469.38	6218.67	7689.35	9472.64	11245.03	12121.94	12229.05	12015.27	11635.83	11027.50	9810.88	8109.63	6424.06	5119.19																	
49	2164.79	2175.97	2212.52	2291.35	2398.91	2559.74	2804.60	3193.24	3986.77	5803.79	7375.49	9224.52	11254.38	12287.67	12436.32	12185.49	11876.97	11271.75	9993.45	8161.98	6376.72	4999.38																	
50	2046.52	2061.59	2094.84	2173.23	2281.59	2428.70	2651.43	2978.10	3636.32	5301.86	7070.69	8930.18	11191.22	12449.82	12621.27	12366.38	12130.31	11549.85	10190.81	8218.28	6324.65	4867.10																	
51	1942.43	1958.79	1991.93	2059.98	2161.94	2304.42	2565.24	2804.73	3353.42	4711.73	6738.15	8659.27	11094.79	12621.71	12810.24	12530.56	12392.22	11851.48	10417.37	8273.36	6261.54	4733.04																	
52	1856.09	1874.50	1899.95	1961.34	2055.03	2182.32	2369.92	2655.73	3127.57	4172.91	6401.39	8345.71	11006.67	12830.31	13009.93	12679.20	12630.97	12162.03	10657.65	8330.70	6192.58	4594.17																	
53	1781.02	1787.67	1812.17	1872.90	1955.51	2073.32	2250.98	2504.14	2925.68	3763.72	6015.63	8048.62	10840.47	12981.72	13227.94	12877.62	12892.46	12532.95	10897.30	8392.69	6156.95	4448.94																	
54	1691.41	1702.20	1724.94	1789.76	1866.98	1970.79	2135.45	2368.45	2761.93	3471.18	5559.21	7759.05	10695.94	13153.42	13524.15	13029.83	13151.50	12889.01	11132.86	8460.88	6039.56	4312.53																	
55	1607.83	1627.40	1647.00	1712.99	1787.85	1876.95	2024.74	2248.72	2607.01	3226.29	4989.84	7491.83	10498.06	13341.10	13814.43	13211.89	13375.94	13243.63	11733.25	8523.83	5930.94	4150.30																	
56	1525.32	1536.06	1555.56	1627.79	1706.72	1789.96	1926.37	2136.35	2457.72	3034.75	4443.57	7223.43	10278.95	13486.59	14143.91	13382.71	13638.42	13644.93	11619.66	8592.57	5833.82	3995.97																	
57	1446.38	1454.90	1487.52	1550.23	1625.49	1698.96	1834.23	2029.15	2333.47	2852.94	4015.43	6951.54	10088.62	13647.34	14443.37	13542.30	13847.80	14011.49	11860.39	8626.44	5700.28	3809.38																	
58	1370.36	1381.99	1411.38	1470.38	1544.30	1619.84	1748.69	1920.66	2207.62	2697.74	3880.28	6611.52	9861.76	13711.41	14766.63	13652.83	14012.31	14349.80	12075.32	8656.70	5568.40	3615.99																	
59	1294.36	1309.30	1340.77	1399.59	1461.57	1541.05	1663.57	1827.61	2092.50	2542.84	3429.89	6215.56	9649.18	13739.02	15039.47	13869.98	14162.75	14678.21	12262.69	8657.99	5422.18	3422.93																	
60	1228.37	1236.61	1270.27	1328.91	1388.86	1456.89	1581.94	1741.07	1980.43	2408.37	3237.74	5762.82	9464.88	13758.36	15280.79	13962.67	14198.09	14958.47	12388.70	8628.39	5241.90	3223.75																	
61	1160.33	1168.83	1199.10	1258.23	1316.37	1384.54	1502.91	1655.62	1878.33	2276.54	3055.72	5296.70	9295.73	13643.06	15448.04	13978.36	14192.63	15130.84	12462.47	8571.87	5020.90	3010.48																	
62	1066.02	1077.04	1120.02	1185.24	1243.87	1312.25	1421.30	1572.97	1785.70	2160.36	2911.15	4926.03	9096.73	13423.95	15859.12	13911.62	14051.62	15205.74	12422.38	8415.49	4765.85	2803.44																	
63	907.25	924.98	986.16	1084.99	1166.32	1239.95	1345.98	1496.32	1697.88	2045.96	2774.14	4611.30	8896.58	13128.03	15459.09	13849.11	13804.40	15194.36	12302.51	8210.24	4448.45	2610.73																	
64	701.62	726.17	807.96	936.60	1059.51	1163.87	1270.79	1406.75	1606.48	1944.41	2634.58	4370.30	8592.18	12751.36	15204.68	13851.36	13431.88	15011.87	12017.87	7926.81	4111.80	2404.40																	
65	521.43	545.42	624.48	771.65	927.38	1057.09	1190.95	1319.51	1521.03	1832.56	2512.25	4166.77	8237.29	12279.13	14727.20	13340.14	12947.45	14619.02	11641.11	7569.51	3747.38	2192.26																	
66	390.75	403.72	465.29	608.67	795.35	939.02	1078.45	1232.32	1421.38	1730.54	2384.41	3965.98	7785.86	11665.30	14118.36	13212.43	12411.21	14146.42	11111.65	7113.64	3322.27	1977.58																	
67	328.61	333.82	361.73	462.87	660.27	844.49	962.06	1125.12	1312.13	1637.48	2261.91	3745.11	7219.70	10946.40	13383.86	12386.36	11811.22	13523.92	10445.67	6549.33	2844.54	1743.07																	
68	300.63	303.65	316.41	359.10	522.83	741.97	879.99	998.95	1202.79	1542.01	2116.16	3501.95	6593.84	10104.13	12460.74	11857.91	11191.05	12709.25	9550.18	5999.50	2447.60	1528.22																	
69	279.08	280.75	288.87	307.22	406.06	536.82	612.06	697.27	1070.14	1406.12	1927.97	3224.76	5972.36	9247.87	11576.01	11122.22	10629.58	11811.62	9621.62	6272.14																			



STREETLIGHT ISOCANDELA DIAGRAM

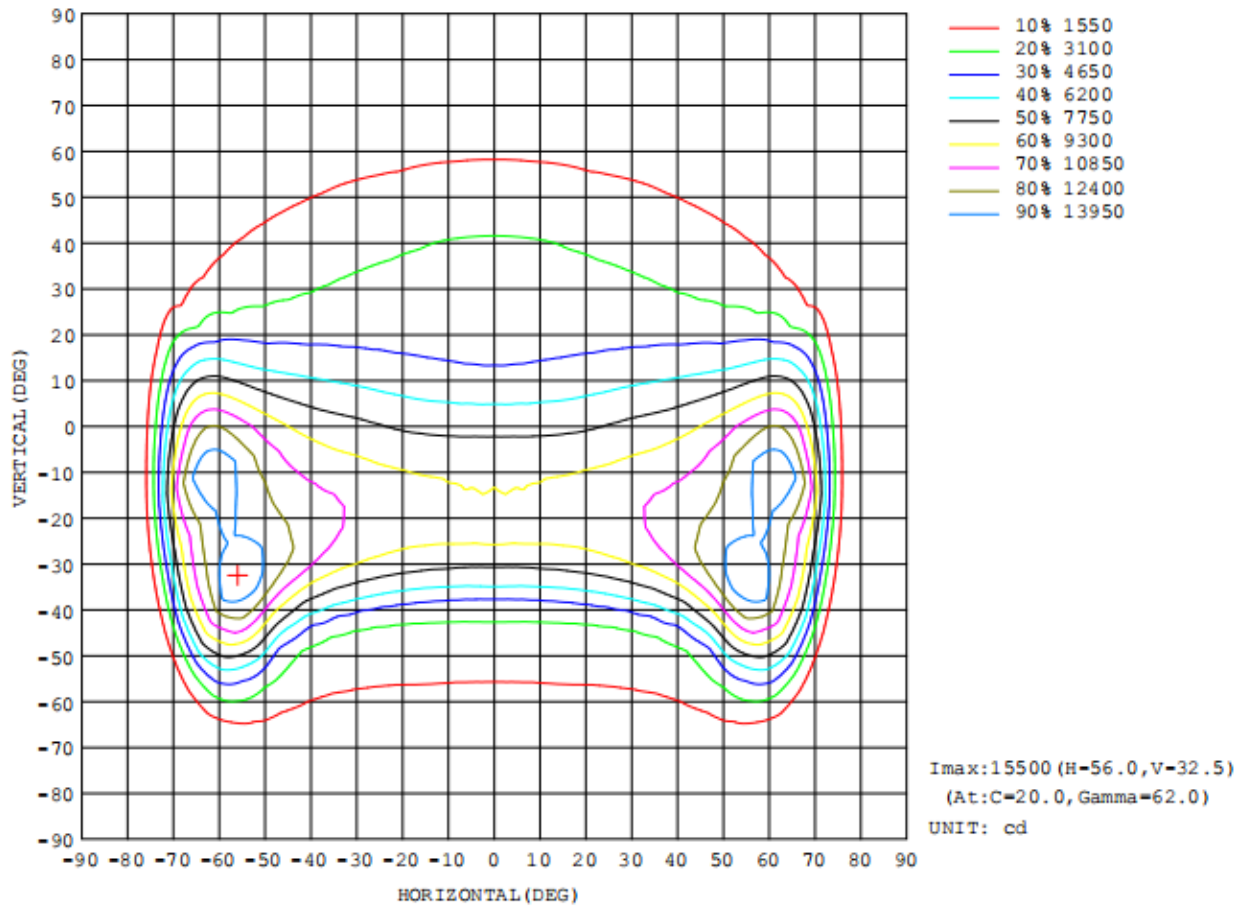


Classification:

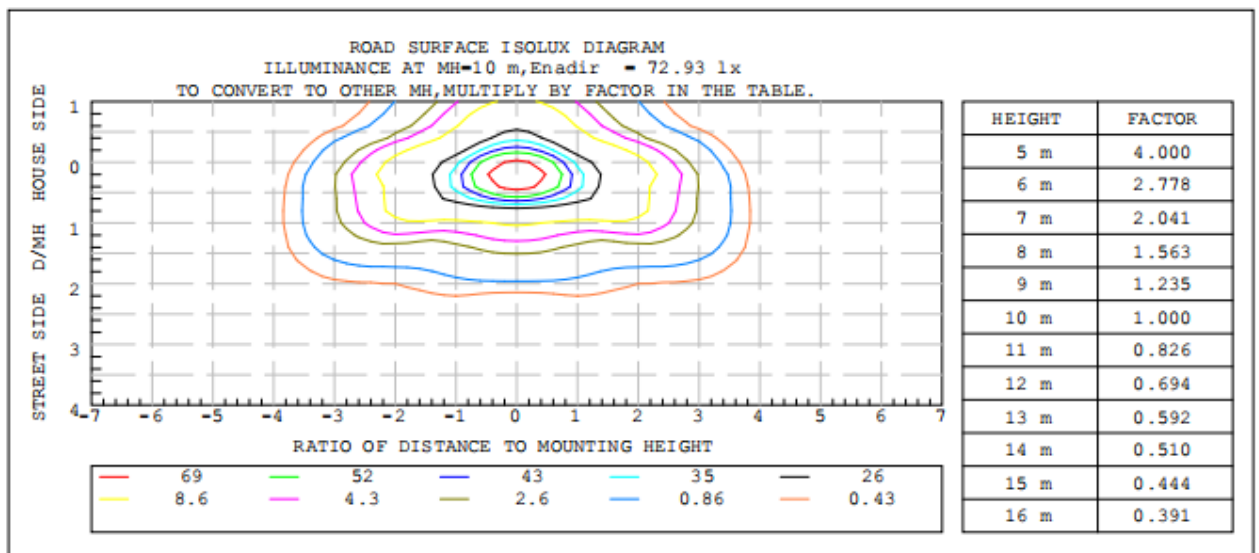
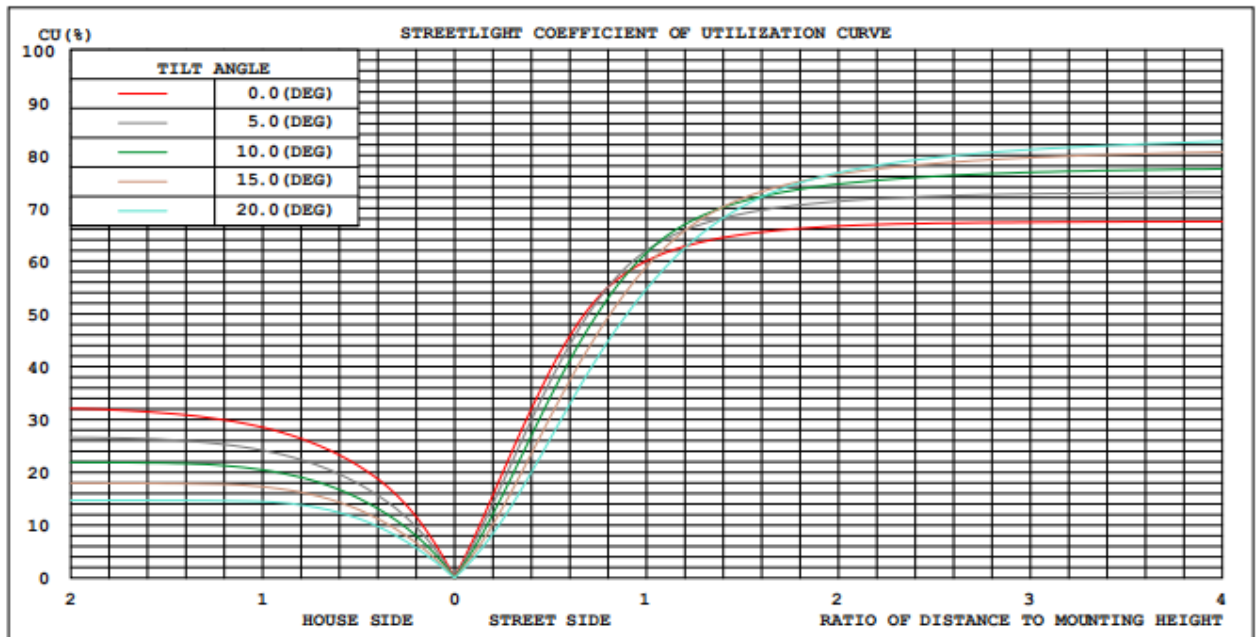
IES:Type II - Short
CIE:Narrow - Intermediate
IES:Full cut-off
CIE:Full cut-off
Max.At80:25.90cd/klm
Max.At90:0cd/klm
Max.80-90:25.90cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
I _{max} =100%	15538
90%	13984
80%	12430
70%	10876
60%	9323
50%	7769
40%	6215
30%	4661
20%	3108
10%	1554
5%	777

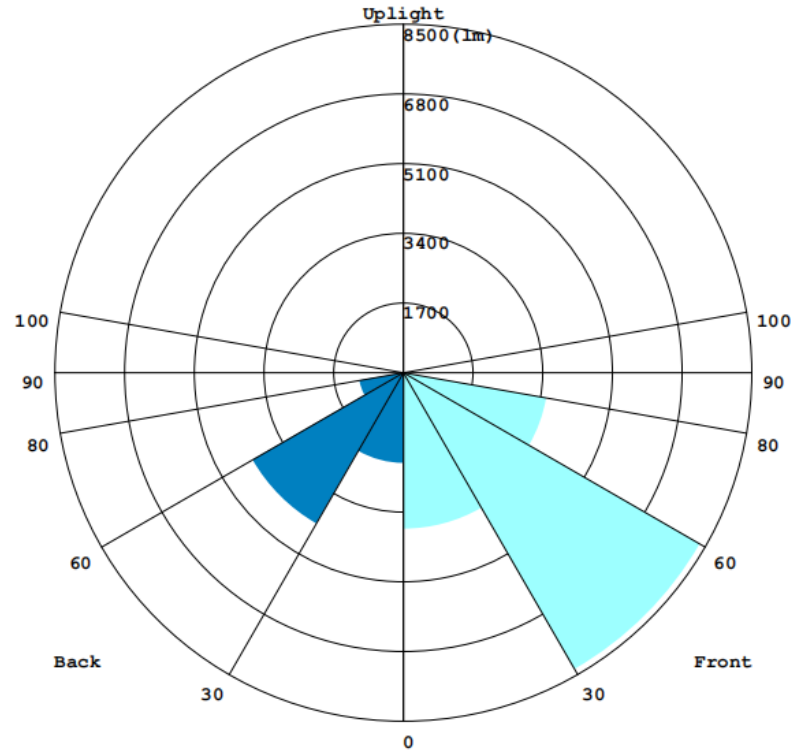
ISOCANDELA DIAGRAM



COEFFICIENT OF UTILIZATION CURVE AND ISOLUX DIAGRAM



LCS REPORT



IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low (0-30)	3804.9	16.3
FM - Front-Medium (30-60)	8351.2	35.9
FH - Front-High (60-80)	3540.6	15.2
FVH - Front-Very High (80-90)	25.796	0.1
Total Forward Light	15722	67.6

BL - Back-Low (0-30)	2202.6	9.5
BM - Back-Medium (30-60)	4249.1	18.3
BH - Back-High (60-80)	1091.9	4.7
BVH - Back-Very High (80-90)	8.7038	0.0
Total Back Light	7552.4	32.4

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-G3
------------------------------	----------

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	7552.4	0	7552.4
Street Side	15722	0	15722

Photo



overview



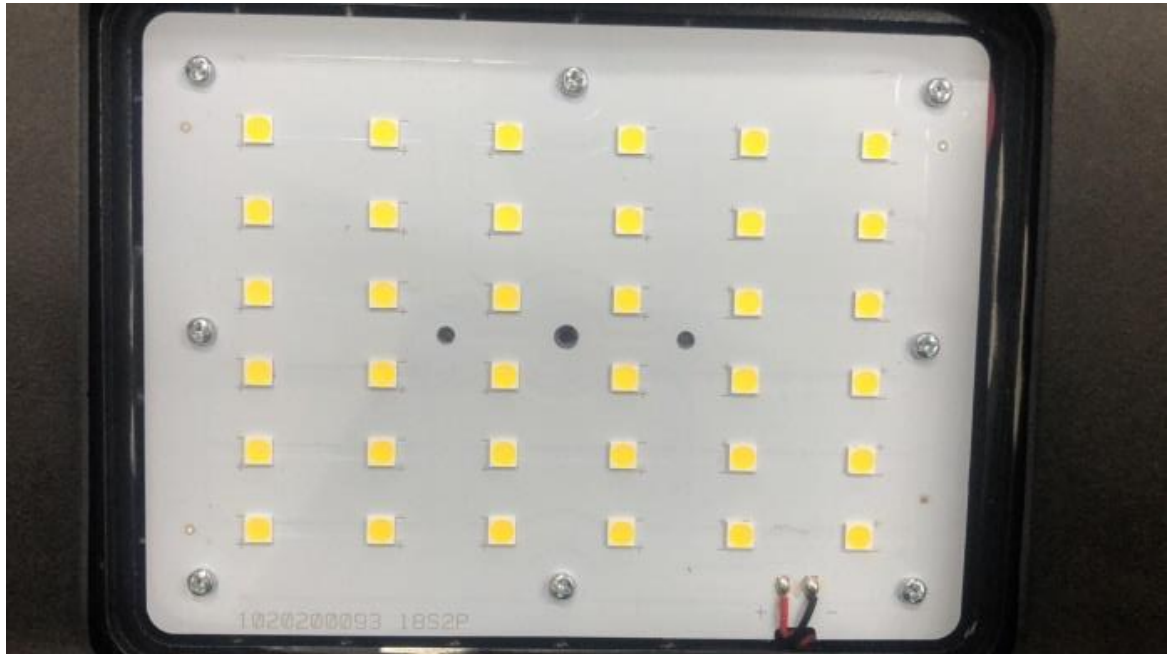
Back-side



LED Driver + SPD



Optical lens



LED module

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 201063-0

TUV Rheinland (Shanghai) Co., Ltd
Jing'An District, Shanghai
China

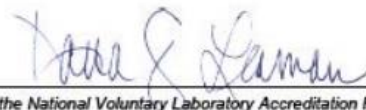
*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Energy Efficient Lighting Products

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2020-06-09 through 2021-06-30
Effective Dates




For the National Voluntary Laboratory Accreditation Program