

<b>Prüfbericht</b> Test report		<b>Auftragsnr. / order no.:</b> 244268555 <b>Berichtsnr. / report no.:</b> 60397028 001	
<b>Auftraggeber</b> client:		<b>Auftragsdatum /</b> date of order: 23.09.2020	
<b>NISKO GROUP LTD.</b>  41 HAMAAYAN MODI'IN, Israel.		<b>AG-Referenz-Nr. /</b> client reference no.: -	
<b>Inhalt des Auftrags</b> content of order:		Electrical and Photometric Measurement to LM-79-08	
<b>Prüfgrundlagen</b> test specifications:		IES LM-79-08	
<b>Prüfgegenstand</b> test item:		LED Street Light	
<b>EAN-Nr. / no.:</b> N/A			
<b>Bezeichnung</b> identification:	EL-SL 18LA-120W CLASS I T3VS 4000K		
<b>Eingang Prüfgegenstand</b> receipt of test item:	23.09.2020		
<b>Prüfgegenstands-Nr.</b> test item no.:	A002073542-002		
<b>Prüfzeitraum und -ort</b> period of test and location:	23.09.2020-28.08.2020, Shanghai Xingshang Photoelectric technology Co., Ltd		
<b>Prüflaboratorium</b> testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.		
<b>Prüfergebnis</b> test result *):	N/A		
<b>Sonstiges / other aspects:</b>		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.	
<b>geprüft / tested by:</b>		<b>kontrolliert / reviewed by:</b>	
06.11.2020 Fernando Dai / P		06.11.2020 Alex Yan / Reviewer	
<b>Datum</b> Date	<b>Name/Stellung</b> Name/Position	<b>Unterschrift</b> Signature	<b>Datum</b> Date
<p><b>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.</b> 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><b>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.</b> 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-120W CLASS I T3VS 4000K	A002073542-002	200-240Vac, 50/60Hz	4000K	120W	LUMILEDS LUXEON 5050- L15040705006000 00 14S2P 2MODULE

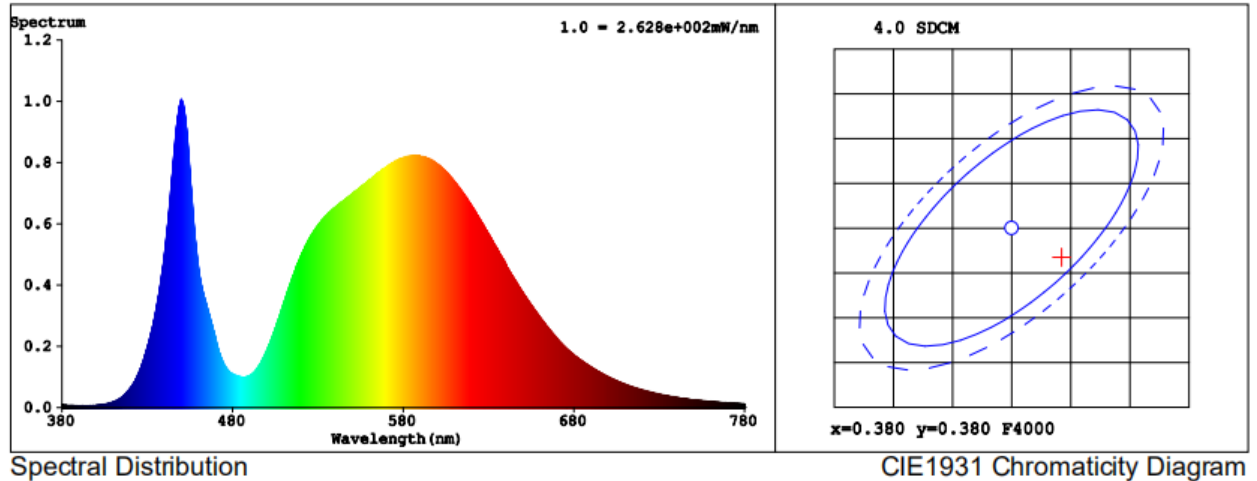
Prüfbericht Nr. / Test report no. 60397028 001

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- $\gamma$ 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

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Measured Results	
	EL-SL18LA-120W CLASS I T3VS 4000K
Total luminous flux (lm)	17991
Input wattage (W)	120.14
Input current (A)	0.5538
Frequency (Hz)	50
Power factor	0.9865
Efficacy (Lm/W)	149.75
CCT (K)	3898
Chromaticity x	0.3842
Chromaticity y	0.3767
Chromaticity u'	0.2276
Chromaticity v'	0.5021
CRI	73.5
R9	0
Du'v' (Max.)	-0.00109
THDI(%)	3.979
LCS BUG Rating	B3-U0-G3, Semi cut-off

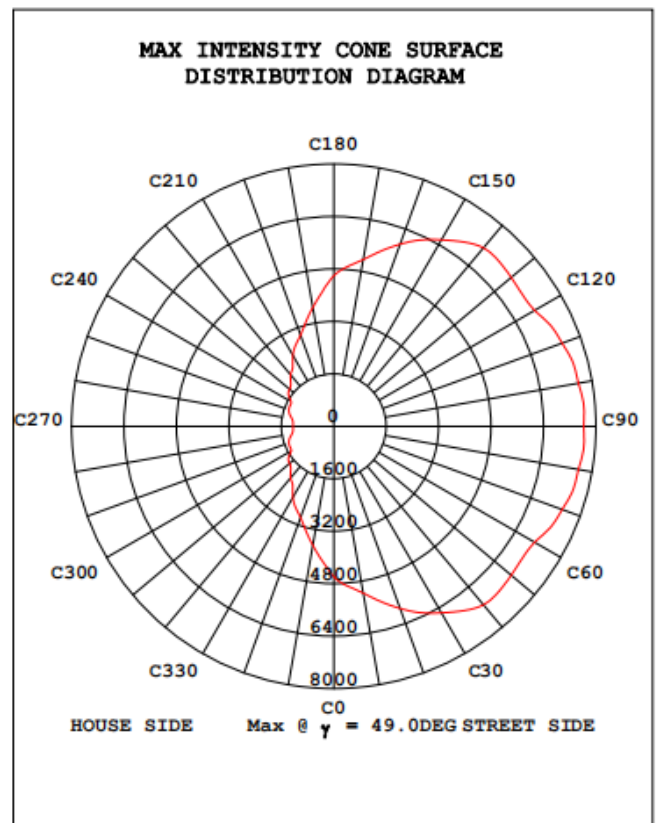
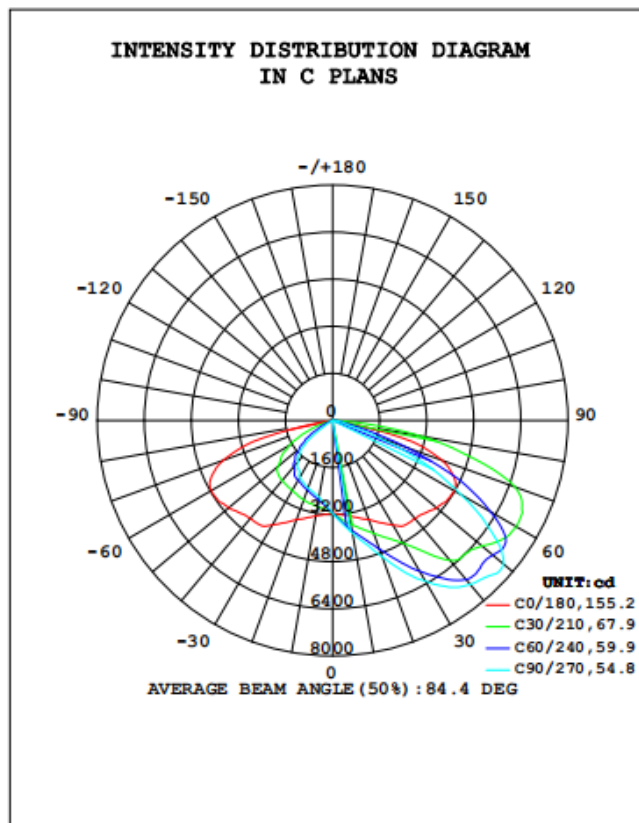
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**Spectral power distribution: (Clause 10 of LM-79)**
**EL-SL18LA-120W CLASS I T3VS 4000K**

**Dominant WL: 580.0nm**
**Peak WL: 450nm**
**Luminous Intensity Distribution, Ambient temperature: 25°C (Clause 10 of LM-79)**

Description	Data
<b>Model</b>	EL-SL18LA-120W CLASS I T3VS 4000K
<b>Test voltage (V)</b>	220VAC
<b>Test current (A)</b>	0.5538
<b>Test wattage (W)</b>	120.14
<b>Frequency (Hz)</b>	50
<b>Power factor</b>	0.9865
<b>Central luminous intensity (cd)</b>	3149.4
<b>Max. luminous intensity(cd)</b>	7657.2 (C=5, Gamma=49)

**For the distribution curve see next page.**
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DATA OF LAMP		PHOTOMETRIC DATA    Eff: 149.75 lm/W			
MODEL	EL-SL18LA	I <sub>max</sub> (cd)	7657.2	η street_up (%)	0.0
NOMINAL POWER(W)	120	LOR(%)	100.0	η street_down (%)	75.0
RATED VOLTAGE (V)	220-240	TOTAL FLUX(lm)	17991	η house_up (%)	0.0
NOMINAL FLUX(lm)	17991.3	MAXIMUM @ (C,γ )	5,49.0	η house_down (%)	25.0
LAMPS INSIDE	1	η up (%)	0.0	76 FLASHAREA(m2)	0.05000
TEST VOLTAGE (V)	220	η down (%)	100.0	SLI	23.001



## Zonal Lumen Summary and Percentages

### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	1278.36	7.10	7.10
0-30	3042.12	16.90	16.90
0-40	5741.35	31.90	31.90
0-60	12970.79	72.10	72.10
0-80	17753.21	98.70	98.70
0-90	17991.33	100.00	100.00
10-90	17683.69	98.30	98.30
20-40	4462.99	24.80	24.80
20-50	7928.41	44.10	44.10
40-70	10395.42	57.80	57.80
60-80	4782.42	26.60	26.60
70-80	1616.44	9.00	9.00
80-90	238.12	1.30	1.30
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	17991.33	100.00	100.00

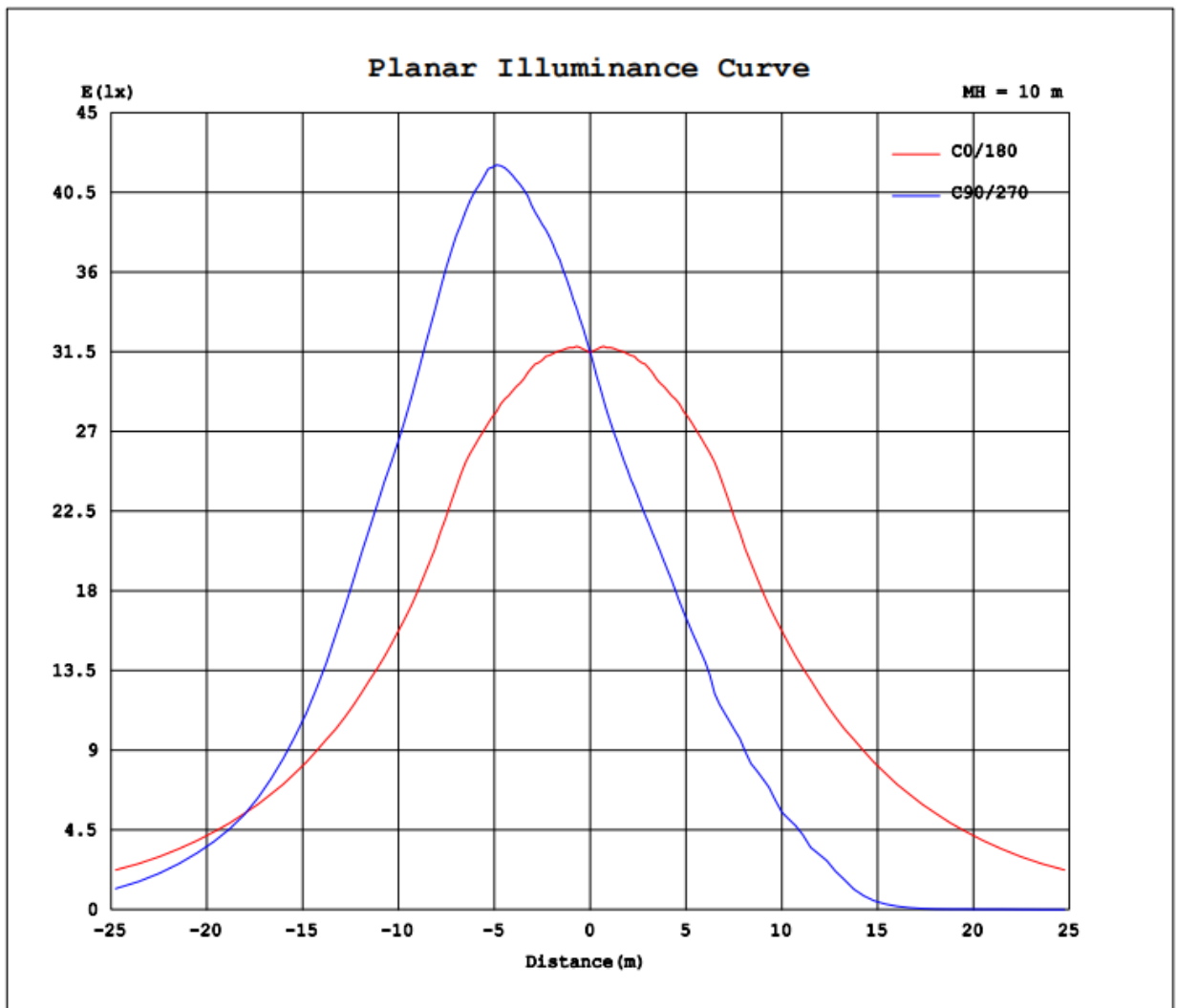
Total Luminaire Efficiency = 100.00%



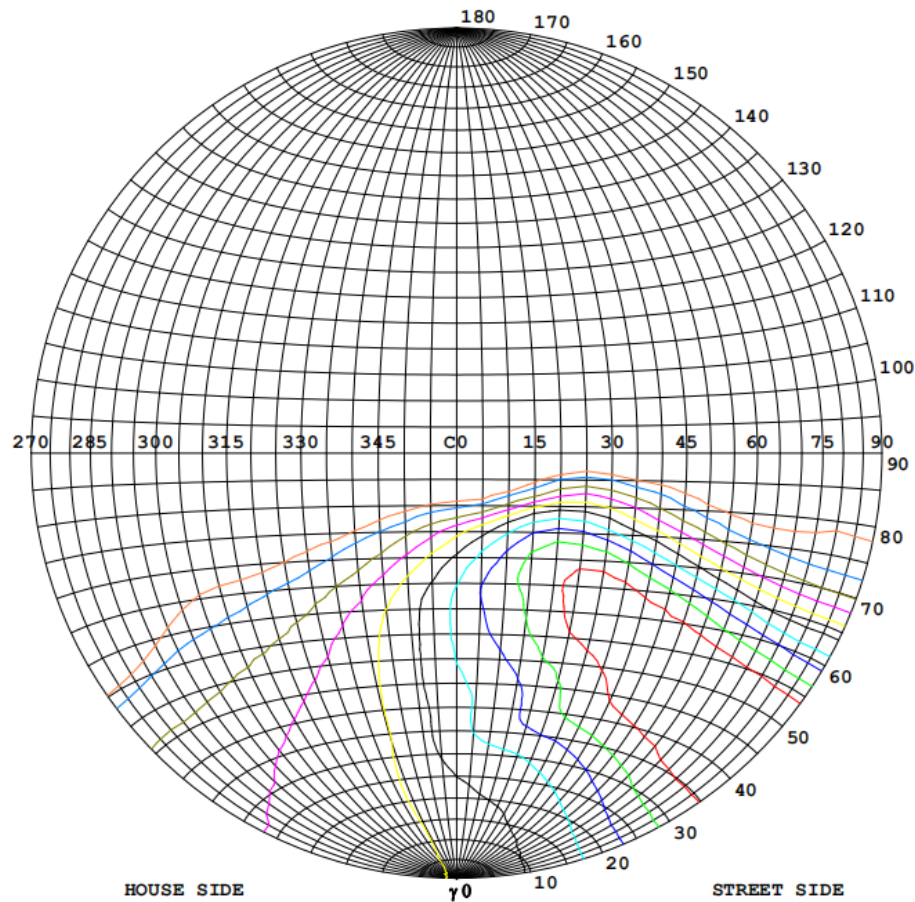
## Luminous Intensity Distribution Data

Tool_View EL-SL18LA 120W CLASS I T3VS 4000K.IES																										
Keywords		Candela																	2D					3D		
		Multiplier=1																								
Vertical Angles		Horizontal Angles																								
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105			
35	6915.800	6939.300	6923.500	6918.700	6822.800	6738.700	6541.600	6404.700	6244.800	6092.800	5883.100	5665.900	5458.000	5328.400	5174.600	5023.300	4838.500	4619.900	4328.900	3962.500	3662.100	3325.300				
36	7006.400	7040.000	7026.600	7024.700	6954.200	6865.400	6677.200	6526.800	6381.800	6229.300	6028.600	5829.900	5616.900	5478.600	5277.400	5124.700	4902.000	4637.700	4337.900	3978.100	3653.000	3315.700				
37	7097.100	7123.400	7102.400	7128.800	7034.000	6972.800	6793.800	6675.900	6513.200	6336.800	6172.400	5993.200	5785.500	5576.000	5403.200	5199.900	4927.300	4656.600	4339.900	3986.200	3641.100	3313.300				
38	7159.500	7192.800	7149.500	7182.500	7125.200	7066.700	6893.100	6803.100	6631.400	6429.300	6296.000	6153.500	5930.500	5697.800	5488.800	5214.500	4935.800	4661.500	4352.100	3973.300	3644.500	3313.800				
39	7213.300	7244.500	7209.600	7236.000	7197.300	7132.800	6978.400	6897.900	6737.300	6545.300	6431.700	6302.800	6083.100	5821.000	5532.100	5212.000	4935.400	4656.900	4339.200	3990.600	3640.800	3317.600				
40	7273.000	7265.300	7249.200	7266.700	7221.600	7171.500	7054.700	6982.500	6852.200	6674.600	6531.600	6428.700	6202.900	5882.700	5539.600	5212.800	4920.300	4648.700	4355.000	3993.400	3648.100	3312.300				
41	7324.700	7311.200	7268.900	7280.400	7218.300	7200.200	7108.300	7078.400	6980.600	6796.400	6638.500	6533.100	6312.700	5921.000	5549.500	5201.200	4907.400	4643.100	4365.700	4006.300	3662.300	3311.800				
42	7357.500	7348.700	7308.300	7287.000	7226.600	7211.500	7123.200	7134.300	7175.800	7155.000	7027.200	6837.800	6647.500	6398.800	5961.300	5562.600	5223.600	4911.800	4643.100	4372.100	4037.200	3678.000	3311.200			
43	7391.500	7385.900	7326.000	7310.200	7227.600	7202.700	7133.400	7175.800	7155.000	7027.200	6837.800	6647.500	6398.800	5961.300	5562.600	5228.400	4927.800	4659.900	4389.200	4027.200	3678.000	3299.800				
44	7430.000	7442.200	7369.800	7324.800	7223.300	7187.800	7109.200	7186.600	7208.100	7112.100	6900.000	6661.200	6382.300	6014.700	5572.300	5257.900	4948.500	4703.300	4417.300	4069.900	3688.100	3304.500				
45	7483.200	7493.600	7446.700	7403.000	7234.000	7175.000	7093.400	7152.000	7221.900	7161.100	6950.000	6683.300	6394.100	6032.900	5609.200	5291.200	4971.100	4730.800	4447.800	4079.000	3690.000	3305.000				
46	7551.200	7571.700	7487.300	7391.100	7265.800	7177.700	7052.800	7123.800	7214.900	7189.400	6998.600	6717.400	6429.400	6085.700	5675.200	5351.400	5012.300	4770.500	4477.900	4094.400	3692.000	3306.500				
47	7627.200	7609.600	7531.200	7452.300	7330.500	7197.700	7043.400	7089.700	7160.800	7208.100	7037.200	6762.100	6438.000	6165.700	5733.800	5383.300	5057.300	4803.600	4505.900	4105.500	3695.200	3310.300				
48	7639.700	7647.500	7573.600	7533.100	7334.500	7239.100	7045.100	7043.600	7106.900	7167.000	7071.100	6802.500	6502.400	6198.800	5808.500	5451.700	5116.700	4852.000	4547.900	4112.700	3684.600	3304.400				
49	7628.500	7657.200	7580.200	7528.800	7414.600	7296.300	7076.700	7022.400	7066.200	7123.500	7104.600	6867.800	6569.800	6273.600	5909.700	5532.700	5165.000	4894.600	4592.000	4156.600	3689.000	3299.500				
50	7596.200	7587.000	7565.200	7579.600	7438.300	7343.400	7110.000	7025.800	7037.500	7090.600	7130.300	6946.200	6623.800	6397.100	6035.600	5610.600	5241.100	4946.600	4616.200	4120.000	3695.100	3289.700				
51	7470.700	7482.700	7503.600	7527.800	7453.300	7364.300	7163.000	7056.600	7025.000	7066.000	7142.000	6985.000	6723.300	6459.900	6132.000	5686.100	5297.200	4986.600	4633.000	4126.500	3675.400	3276.200				
52	7324.300	7369.700	7373.400	7435.200	7403.200	7363.600	7204.400	7071.600	7015.600	7019.100	7131.200	7033.900	6818.000	6541.800	6199.200	5775.100	5364.500	5043.500	4658.800	4162.800	3675.800	3257.900				
53	7135.900	7197.600	7168.400	7263.100	7314.000	7322.900	7243.600	7101.400	7000.400	6983.100	7084.400	7086.100	7031.000	6901.400	6623.200	6252.800	5842.900	5421.700	5093.600	4680.300	4148.800	3659.500	3244.700			
54	6863.200	6875.600	6923.000	7072.900	7160.000	7255.600	7225.500	7146.900	7024.000	6994.500	7094.400	7163.900	7075.400	6975.400	6716.600	6334.200	5926.200	5488.500	5123.000	4734.900	4195.700	3660.300	3220.600			
55	6605.900	6621.500	6645.100	6828.300	6828.300	6865.200	6942.100	7108.500	7191.500	7181.400	7062.400	6993.700	7068.300	7169.000	7173.000	7151.400	6928.600	6546.000	6081.500	5612.800	5245.900	4767.100	4145.400	3655.600	3183.800	
56	6318.300	6337.500	6375.900	6542.900	6711.300	6927.700	7092.800	7183.200	7084.800	6993.400	7018.900	7175.400	7112.700	6981.600	6506.800	6040.700	5581.700	5221.500	4748.600	4138.100	3645.600	3200.700				
57	6050.400	6042.000	6105.600	6271.600	6447.000	6687.000	6922.800	7111.100	7107.900	6993.700	7015.400	7173.000	7112.700	6981.600	6506.800	6040.700	5581.700	5221.500	4748.600	4138.100	3645.600	3200.700				
58	5746.200	5775.100	5832.600	5986.600	6163.900	6436.000	6711.500	6988.000	7100.900	7019.700	7009.600	7161.700	7163.800	6987.500	6595.200	6112.100	5660.800	5261.200	4764.800	4128.700	3635.000	3153.800				
59	5412.000	5440.200	5529.600	5703.200	5865.800	6131.200	6479.200	6831.000	7032.200	7030.300	7031.000	7157.800	7188.500	7038.800	6597.600	6144.000	5704.500	5272.500	4777.800	4129.600	3618.700	3131.800				
60	5058.200	5080.100	5175.000	5407.500	5683.600	5883.000	6196.500	6629.600	6941.300	7034.200	7038.100	7165.800	7221.600	7061.300	6629.500	6192.600	5708.700	5303.100	4764.500	4120.500	3601.400	3075.300				
61	4709.400	4742.200	4796.500	5025.000	5298.600	5596.200	5924.500	6355.400	6780.000	6962.600	7036.100	7167.500	7221.600	7066.200	6666.600	6198.900	5753.400	5343.900	4766.100	4101.000	3567.100	2972.500				
62	4402.000	4393.200	4408.600	4603.000	4941.500	5299.800	5662.200	6098.600	6576.500	6904.000	7011.300	7195.700	7200.500	7076.200	6712.000	6208.600	5784.900	5352.300	4726.100	4101.600	3512.000	2928.900				
63	4105.600	4107.600	4078.100	4206.100	4502.900	5003.400	5343.200	5830.400	6322.400	6722.000	6965.700	7148.700	7197.400	7197.400	7055.000	6718.000	6246.200	5807.300	5375.200	4859.300	4363.000	3865.700	3414.100	3030.700		
64	3800.000	3796.500	3780.300	3860.600	4034.800	4598.600	5044.000	5517.800	6037.000	6544.300	6972.100	7103.200	7176.700	7160.700	6979.700	6307.000	5834.900	5317.300	4833.900	4365.700	3926.700	3322.200	2858.300			
65	3499.700	3451.700	3485.700	3574.500	3724.700	4121.600	4741.000	5171.700	5745.900	6306.400	6733.700	7095.000	7102.900	7033.000	6793.400	6356.100	5863.500	5324.700	4852.200	4367.500	3860.200	3260.200	2563.200			
66	3065.000	3061.900	3085.500	3225.200	3408.500	3746.000	4346.000	4870.200	5410.400	6023.000	6535.800	6933.700	7049.700	7021.100	6791.200	6379.100	5869.600	5252.700	4655.400	4057.500	3573.500	3123.700	2429.200			
67	2651.900	2643.000	2686.200	2833.900	3062.500	3362.300	3861.700	4504.000	5063.400	5629.200	6270.000	6794.100	6968.900	6964.400	6762.900	6394.500	5928.900	5176.000	4549.000	3950.300	3389.300	2760.100				





## STREETLIGHT ISOCANDELA DIAGRAM

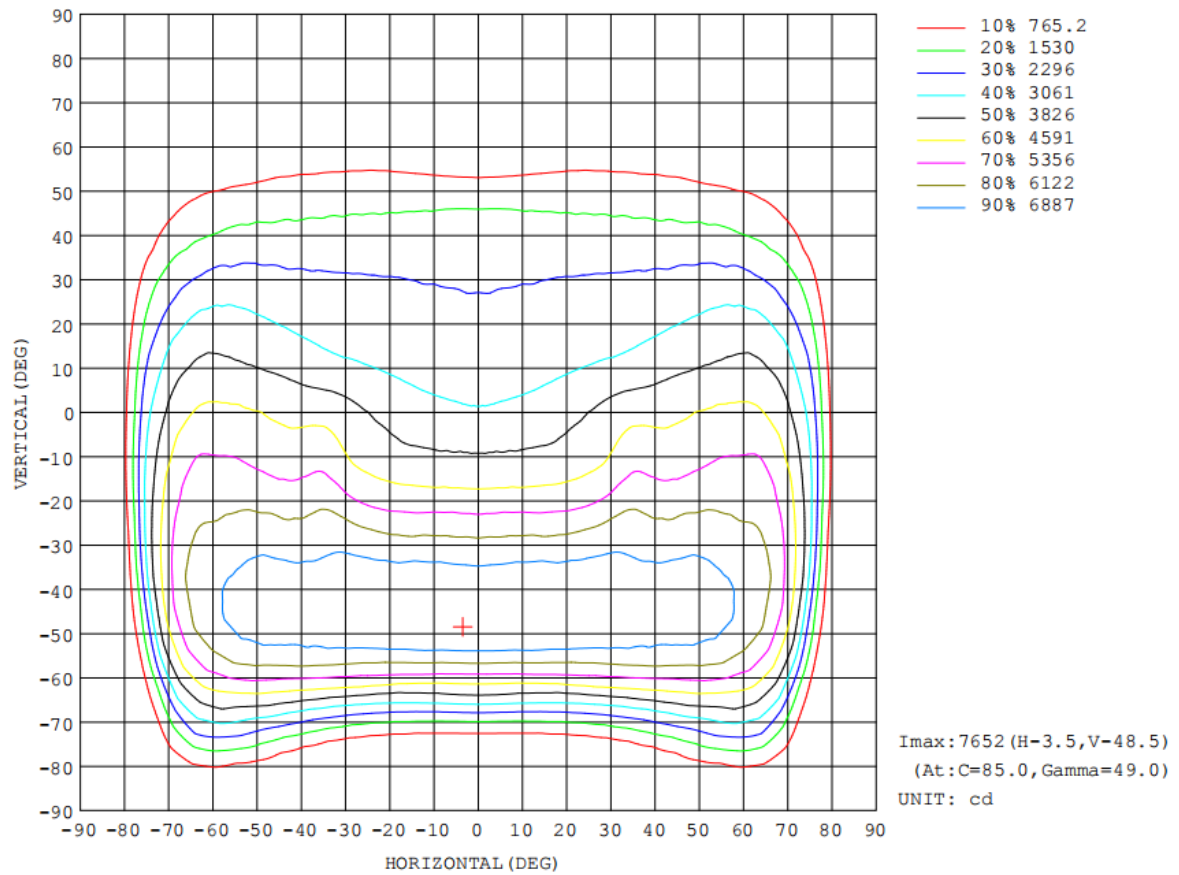


### Classification:

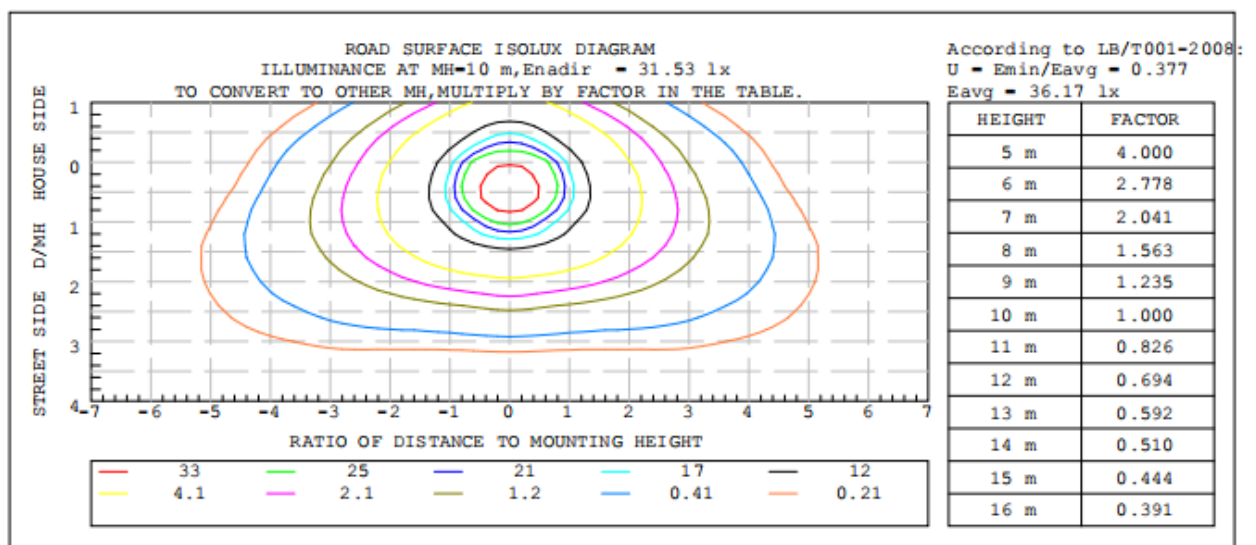
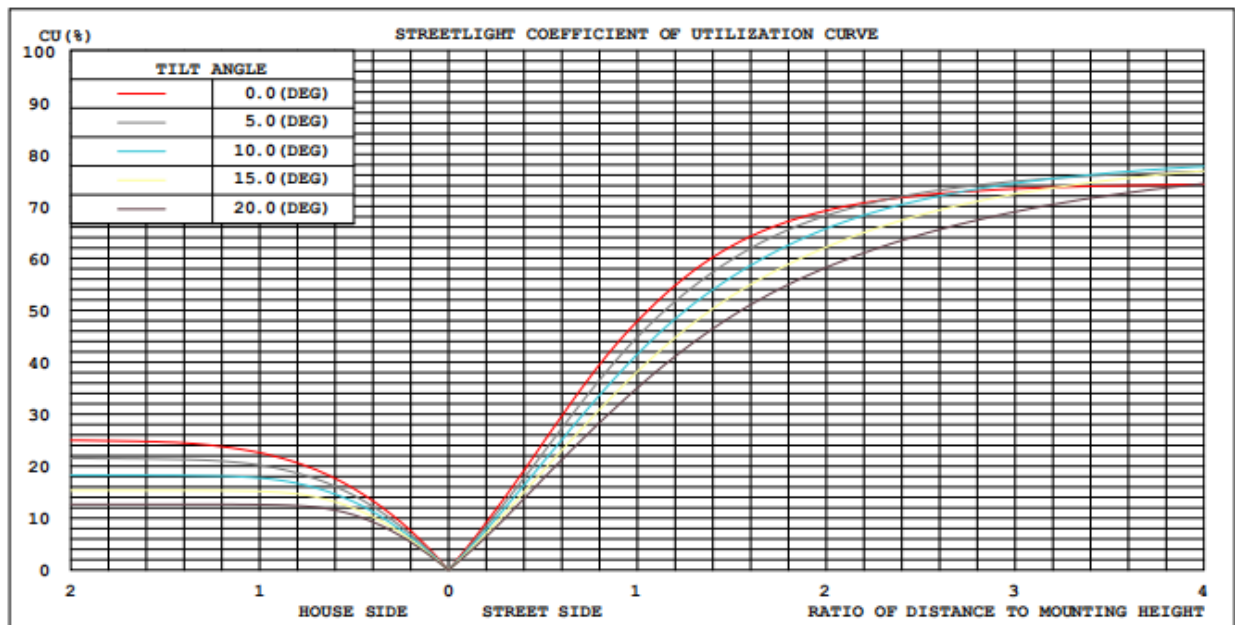
IES: Type III - Very Short  
 CIE: Average - Short  
 IES: Semi cut-off  
 CIE: Non-cut-off  
 Max. At 80: 193.3 cd/klm  
 Max. At 90: 0 cd/klm  
 Max. 80-90: 193.3 cd/klm  
 NRB 5101: Semi limited [29.5%]

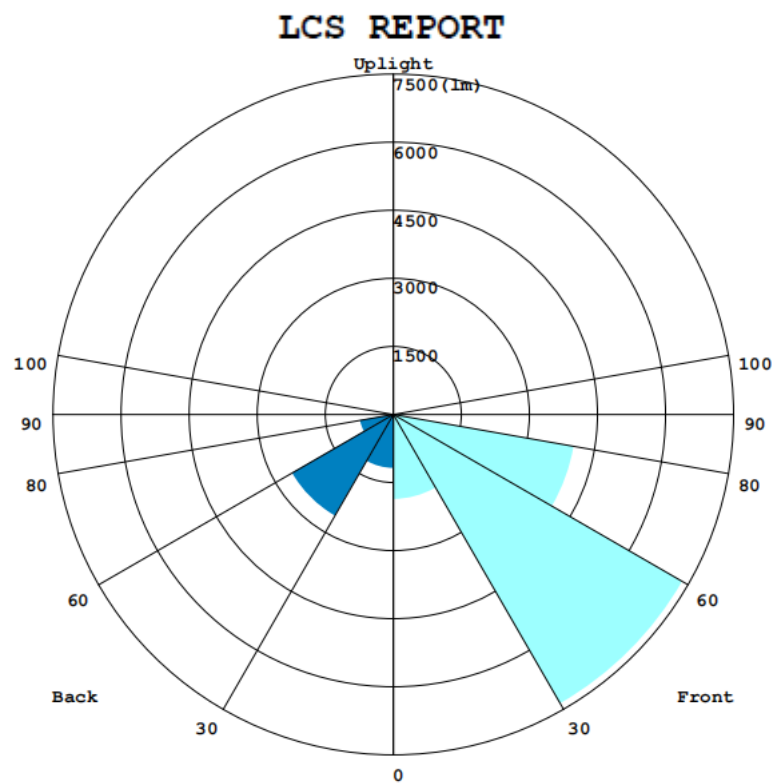
ISOCANDELA DIAGRAM	
UNIT	cd
I <sub>max</sub> =100%	7657
90%	6891
80%	6126
70%	5360
60%	4594
50%	3829
40%	3063
30%	2297
20%	1531
10%	766
5%	383

## ISOCANDELA DIAGRAM



### COEFFICIENT OF UTILIZATION CURVE AND ISOLUX DIAGRAM





IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	1862.4	10.4
FM - Front-Medium(30-60)	7352.9	40.9
FH - Front-High(60-80)	4037.7	22.4
FVH - Front-Very High(80-90)	232.51	1.3
Total Forward Light	13486	75.0

BL - Back-Low(0-30)	1179.7	6.6
BM - Back-Medium(30-60)	2575.8	14.3
BH - Back-High(60-80)	744.74	4.1
BVH - Back-Very High(80-90)	5.6086	0.0
Total Back Light	4505.8	25.0

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	4505.8	0	4505.8
Street Side	13486	0	13486

**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