




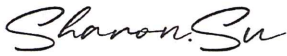


# TEST REPORT

## Of IES LM-79-08

<b>Kunde:</b> <i>Client:</i>	Shenzhen Penel Optoelectronics Technology Co.,Ltd
<b>Adresse:</b> <i>Address:</i>	The 1st Building ,Xi'en Industrial District, No.227, Xiangshan Avenue, Yanluo Street, Bao'an District, Shenzhen, China
<b>Hersteller:</b> <i>Manufacturer:</i>	Shenzhen Penel Optoelectronics Technology Co.,Ltd
<b>Adresse:</b> <i>Address:</i>	The 1st Building ,Xi'en Industrial District, No.227, Xiangshan Avenue, Yanluo Street, Bao'an District, Shenzhen, China
<b>Name der Marke:</b> <i>Brand Name:</i>	
<b>Beschreibung des Produkts:</b> <i>Product Description:</i>	LED FLOOD LIGHT
<b>Modelle:</b> <i>Models:</i>	FL-NSO5-200
<b>Bewertung:</b> <i>Rating:</i>	AC100-240V, 50/60Hz, 200W, 4000K
<b>Verfahren:</b> <i>Method:</i>	IES LM-79-08: Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products
<b>Prüfergebnis*:</b> <i>Test result*:</i>	N/A

<b>Datum der Prüfung:</b> <i>Date of Test:</i>	<b>Datum der Emission:</b> <i>Date of Issue:</i>	<b>Klassifizierung:</b> <i>Classification:</i>	<b>Gegenstand der Prüfung:</b> <i>Test item:</i>
2021-01-20-2021-01-25	2021-01-26	Commission Test	IES LM-79-08

**Prüflabor (Testlabor) / Testing Laboratory:**  
Shenzhen Southern LCS Compliance Testing Laboratory Ltd.

<b>Test von/Test by:</b>  Sharon Su/ Project Engineer	<b>Check von/Check by:</b>  Ian Luo/ Director	<b>Genehmigt von/Approved by:</b>  Jesse Liu/ Manager
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**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.**  
*Remark: The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of examination of the product sample submitted by the appliance. A general statement concerning the quality of the products from the series manufacturer cannot be derived therefore.*





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## 1. Test Method

Test Item.....:	Integrating Sphere Test
Ambient Condition .....	25.1°C
Stabilization time .....(h):	0.5h
Orientation(burning position) of SSL product during test .....	down
Test Method .....	<p>The sample was tested according to the IES LM-79-2008.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.</p>
Test Item.....:	Goniophotometer Test
Ambient Condition.....:	25.1°C
Total operated time of the product for measurements including stabilization..... (h):	1.0h
Orientation(burning position) of SSL product during test .....	down
Test Method.....:	<p>The sample was tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using a type C goniophotometer and software. The sample reference plane was located at the center of the sample goniometer at a test distance of 26m from the detectors. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1 ° vertical intervals and 22.5 ° horizontal intervals.</p>





## 2. Product Information

Product description.....:	LED FLOOD LIGHT
Model Number.....:	FL-NSO5-200
Rated Inputs.....:	AC100-240V, 50/60Hz
Rated Power.....:	200W
Declared CCT.....:	4000K
LED Manufacturer.....:	CREE
LED Model.....:	3030LEDs
Forward current of the LED chip.....:	400mA
Date of Receipt Samples.....:	January 19, 2021
Quantity of Receipt Samples.....:	1 unit

## 3. Test equipment list

Manufacturer	Description	Equipment ID	Model	Calibration Date	Calibration Due Date
EVERFINE	Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2020/07/02	2021/07/01
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2020/06/24	2021/06/23
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2020/06/24	2021/06/23
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2020/07/02	2021/07/01
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2020/07/02	2021/07/01
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2020/06/24	2021/06/23
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2020/06/24	2021/06/23
SENSING	Standard Lamp	SLCS-S-118	S11010017	2020/07/02	2021/07/01





## 4. Integrating Sphere Test Results

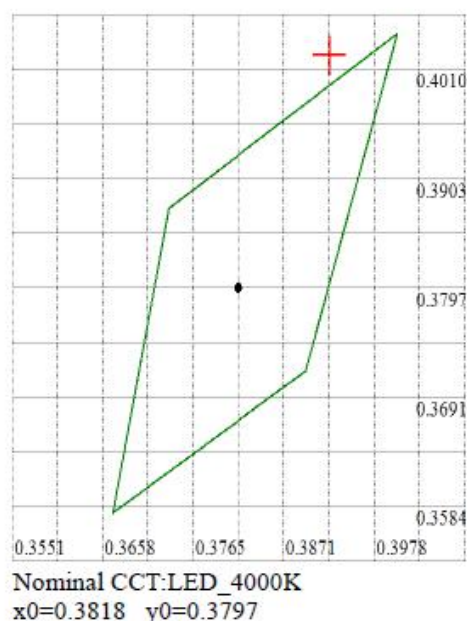
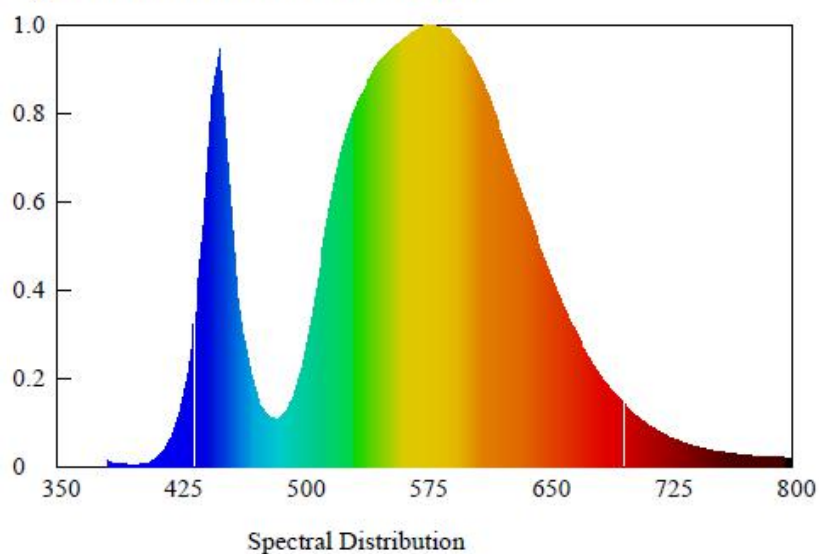
### 4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	229.96	50.01	0.8850	0.9800	199.45

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3877	70.2	+0.00813	28149.37	141.1

### 4.2 Spectrum

#### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.3926$   $y=0.4023$   $u'=0.223$   $v'=0.5141$

Correlated Color Temperature: 3877 K

Colour Fidelity Index:  $R_f=71$

Luminous Flux: 28149.37 lm

Chromaticity Difference: +0.00813Duv

Color Ratio:  $K_r=36.3\%$   $K_g=57.6\%$   $K_b=6.1\%$

Bandwidth: 135.6nm

Photosynthetically Active Radiation(PAR): 75.43W

Rendering Index:  $R_a=70.2$

Dominant Wavelength: 575.0 nm(E)

Gamut Index:  $R_g=93$

Purity: 0.3857

Peak Wavelength: 580.0 nm

Radiant Flux: 77.701 W

Photosynthetic Photon Flux(PPF): 357.58  $\mu\text{mol/s}$

$R_1=67$   $R_2=76$   $R_3=82$   $R_4=70$   $R_5=65$   $R_6=65$   $R_7=83$   $R_8=54$

$R_9=-29$   $R_{10}=42$   $R_{11}=64$   $R_{12}=32$   $R_{13}=69$   $R_{14}=90$   $R_{15}=61$   $R_e=59$





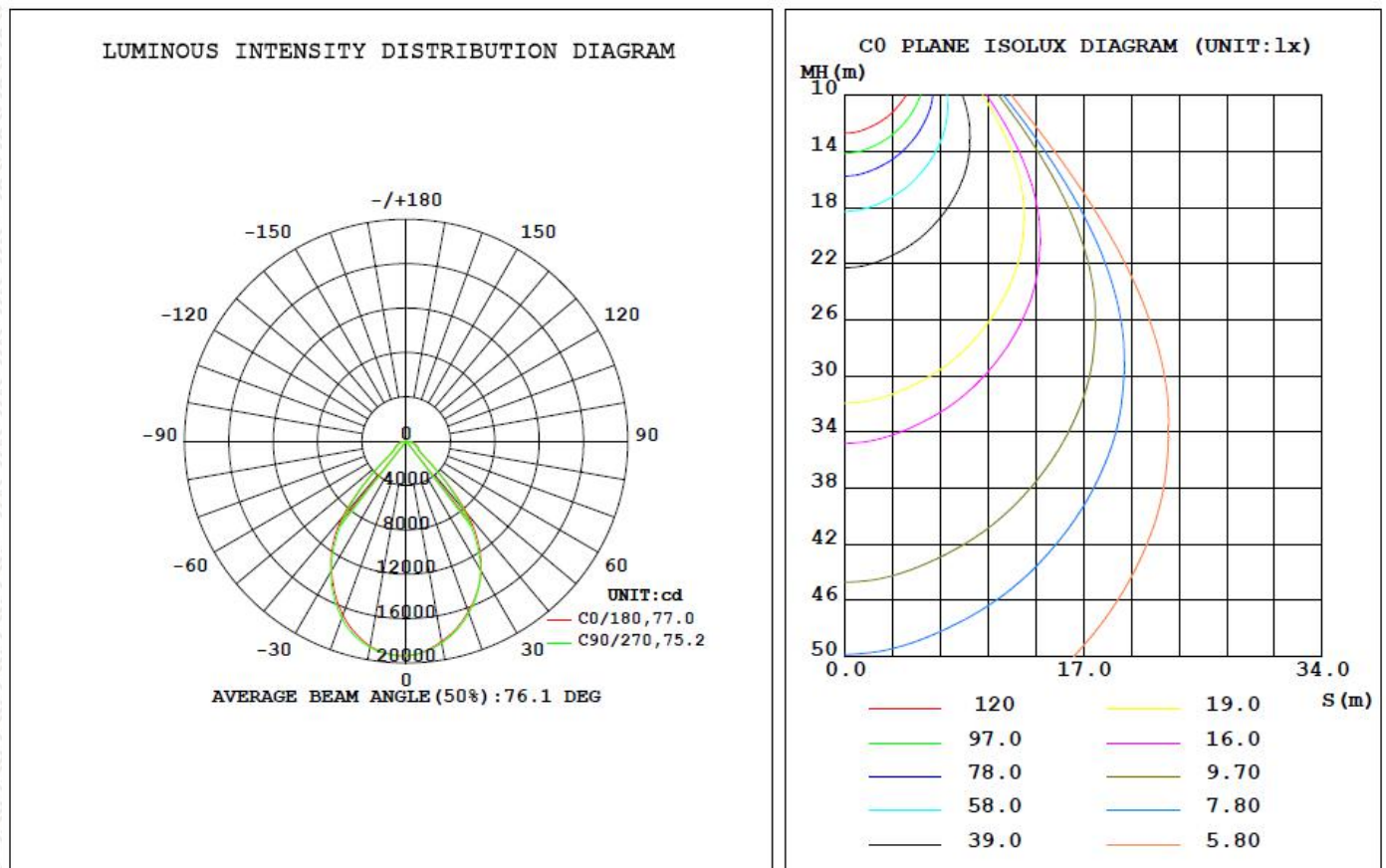
## 5. Goniophotometer Test results

### 5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	230.0	50.01	0.8843	0.9794	199.2

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	Imax (cd)	Spacing Criteria ( 0~180° )	Spacing Criteria ( 90~270° )
Output	28123.2	141.18	19364	1.07	1.09

### 5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)







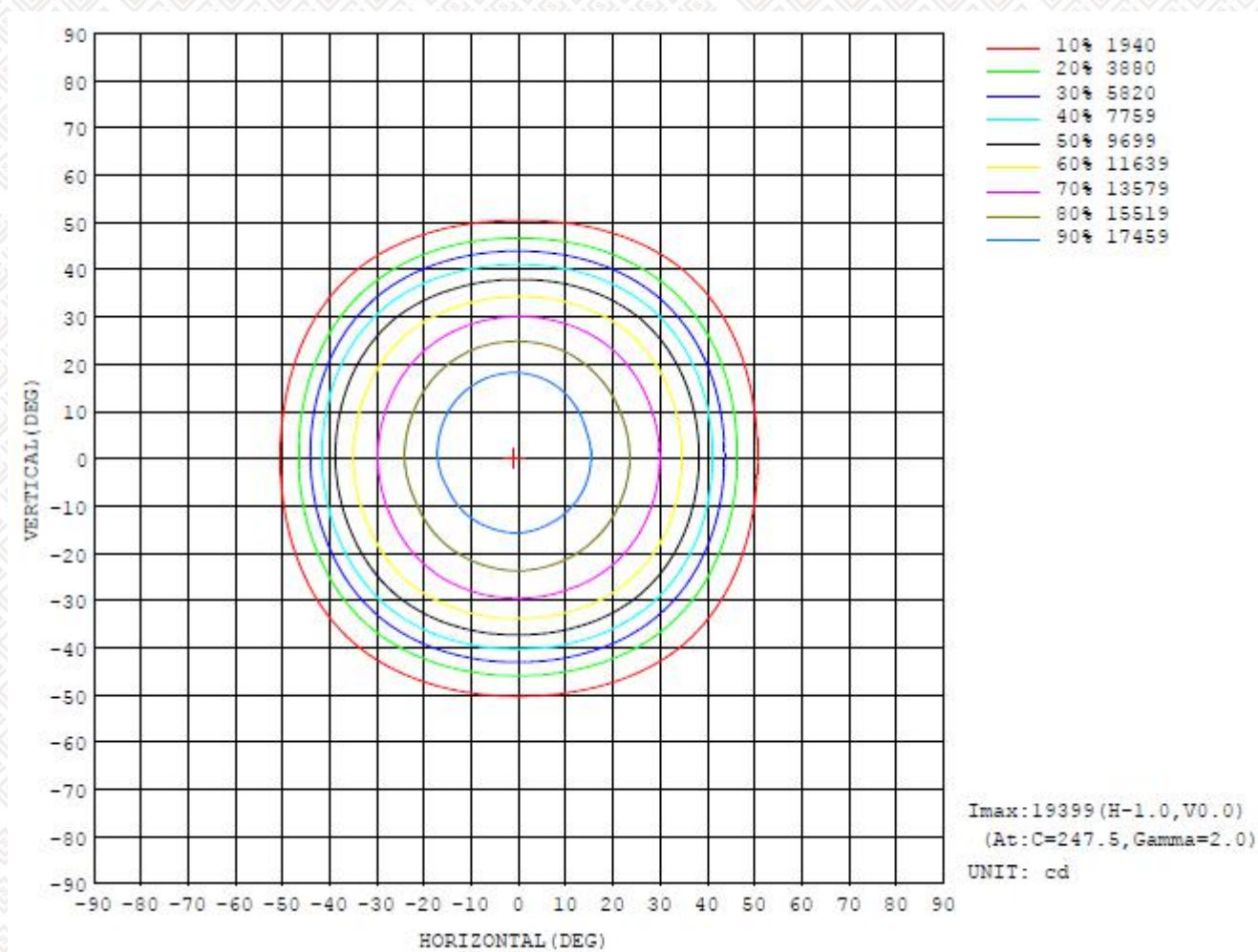
### 5.3 Zonal Flux Diagram

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	1834	1835	1847	1859	1877	1890	1886	1862	0- 10	1811	1811	6.51, 6.51
20	1637	1638	1650	1656	1670	1694	1699	1669	10- 20	4994	6805	24.5, 24.5
30	1352	1347	1340	1348	1349	1356	1360	1364	20- 30	6975	13780	49.5, 49.5
40	850.8	823.7	795.0	842.9	894.3	894.2	843.2	874.1	30- 40	7008	20787	74.7, 74.7
50	211.5	211.4	204.9	205.9	207.9	214.7	205.7	223.2	40- 50	3802	24589	88.4, 88.4
60	128.9	132.1	113.3	123.5	117.6	116.6	108.0	124.7	50- 60	1302	25891	93.1, 93.1
70	91.47	94.94	74.75	85.35	79.57	80.37	71.07	88.41	60- 70	1015	26906	96.7, 96.7
80	41.42	41.66	43.21	35.92	36.76	32.97	37.54	38.53	70- 80	649.0	27555	99, 99
90	0.4508	0.9673	0.5363	0.3136	0.2093	0.2089	0.2159	0.5027	80- 90	190.6	27746	99.7, 99.7
100	0.8576	0.2617	0.1497	0.2258	0.7178	0.2542	0.1648	0.2706	90-100	2.561	27749	99.7, 99.7
110	0.3294	0.2019	0.1422	0.1808	0.3069	0.2617	0.2322	0.2559	100-110	3.032	27752	99.7, 99.7
120	0.2396	0.2166	0.1720	0.2106	0.3821	0.4492	0.4121	0.3994	110-120	2.530	27754	99.8, 99.8
130	0.9410	0.8971	0.9564	0.8267	0.8023	0.8607	0.7416	0.7924	120-130	4.739	27759	99.8, 99.8
140	2.274	2.113	2.333	2.069	1.731	1.668	1.904	1.672	130-140	10.35	27769	99.8, 99.8
150	3.808	3.808	3.979	3.769	2.868	2.942	3.241	3.034	140-150	16.78	27786	99.9, 99.9
160	4.564	4.545	4.674	4.538	4.230	4.195	4.485	4.269	150-160	18.14	27804	99.9, 99.9
170	5.337	5.597	5.991	5.465	4.747	4.996	5.388	5.376	160-170	13.63	27818	100, 100
180	5.930	6.131	6.107	5.827	5.877	5.961	5.958	5.962	170-180	5.375	27823	100, 100
DEG	LUMINOUS INTENSITY: *10cd									UNIT: lm		





## 5.4 Isocandela Diagram







## 5.5 Luminous Distribution Intensity Data

Table--1		UNIT: ×10cd																
C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5		
0	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934		
5	1903	1902	1903	1904	1905	1909	1915	1919	1924	1926	1929	1929	1925	1923	1919	1911		
10	1834	1831	1835	1841	1847	1852	1859	1868	1877	1883	1890	1891	1886	1881	1862	1844		
15	1749	1747	1747	1751	1762	1765	1773	1777	1788	1798	1813	1817	1813	1801	1779	1760		
20	1637	1635	1638	1641	1650	1653	1656	1658	1670	1680	1694	1702	1699	1685	1669	1647		
25	1508	1501	1504	1508	1515	1515	1514	1510	1521	1524	1539	1549	1547	1542	1525	1514		
30	1352	1348	1347	1338	1340	1346	1348	1343	1349	1347	1356	1357	1360	1363	1364	1357		
35	1140	1137	1131	1110	1102	1118	1139	1147	1162	1159	1156	1133	1125	1141	1160	1151		
40	851	837	824	803	795	813	843	857	894	900	894	857	843	857	874	867		
45	475	463	458	450	450	456	466	468	514	524	524	514	504	509	510	501		
50	212	211	211	205	205	206	206	205	208	212	215	210	206	217	223	220		
55	144	147	147	139	132	134	141	139	135	135	135	131	130	134	143	146		
60	129	132	132	123	113	117	124	122	118	117	117	112	108	116	125	129		
65	112	116	114	105	91.7	97.8	105	105	100	99.7	99.1	92.6	86.9	97.8	107	113		
70	91.5	95.9	94.9	86.0	74.8	78.5	85.3	84.8	79.6	80.8	80.4	73.8	71.1	79.1	88.4	92.9		
75	62.5	72.2	71.2	62.5	60.7	57.1	62.9	62.3	54.1	59.3	58.1	53.2	56.5	57.8	66.0	70.6		
80	41.4	45.6	41.7	38.7	43.2	34.9	35.9	36.9	36.8	36.2	33.0	32.2	37.5	35.6	38.5	45.0		
85	23.9	21.1	17.7	17.4	18.6	14.9	14.0	15.3	17.3	15.1	12.9	12.5	14.6	14.4	16.9	21.6		
90	0.45	0.76	0.97	0.70	0.54	0.33	0.31	0.31	0.21	0.21	0.21	0.20	0.22	0.29	0.50	0.72		
95	0.22	0.22	0.20	0.20	0.19	0.18	0.19	0.20	0.19	0.19	0.19	0.17	0.16	0.17	0.20	0.20		
100	0.86	0.59	0.26	0.16	0.15	0.15	0.23	0.51	0.72	0.48	0.25	0.19	0.16	0.18	0.27	0.56		
105	0.60	0.42	0.25	0.15	0.14	0.14	0.22	0.33	0.40	0.29	0.25	0.19	0.19	0.19	0.25	0.37		
110	0.33	0.27	0.20	0.15	0.14	0.14	0.18	0.27	0.31	0.29	0.26	0.25	0.23	0.23	0.26	0.30		
115	0.25	0.22	0.19	0.15	0.14	0.14	0.18	0.23	0.31	0.31	0.31	0.31	0.28	0.29	0.29	0.30		
120	0.24	0.22	0.22	0.19	0.17	0.20	0.21	0.23	0.38	0.40	0.45	0.40	0.41	0.41	0.40	0.38		
125	0.50	0.49	0.47	0.50	0.52	0.47	0.46	0.47	0.53	0.57	0.59	0.48	0.58	0.48	0.56	0.54		
130	0.94	0.91	0.90	0.96	0.96	0.89	0.83	0.87	0.80	0.83	0.86	0.76	0.74	0.68	0.79	0.79		
135	1.48	1.41	1.42	1.52	1.51	1.44	1.31	1.43	1.19	1.16	1.20	1.23	1.37	1.16	1.15	1.14		
140	2.27	2.18	2.11	2.25	2.33	2.27	2.07	2.16	1.73	1.65	1.67	1.84	1.90	1.90	1.67	1.68		
145	3.05	2.94	2.88	3.10	3.12	3.10	2.87	2.81	2.28	2.18	2.29	2.57	2.57	2.62	2.32	2.32		
150	3.81	3.77	3.81	3.87	3.98	3.80	3.77	3.50	2.87	2.84	2.94	3.28	3.24	3.35	3.03	2.96		
155	4.24	4.25	4.27	4.31	4.27	4.17	4.27	3.93	3.58	3.55	3.62	3.95	3.89	4.01	3.51	3.63		
160	4.56	4.53	4.54	4.58	4.67	4.54	4.54	4.29	4.23	4.09	4.19	4.56	4.48	4.44	4.27	4.13		
165	4.90	4.86	4.96	5.14	5.25	4.91	4.97	4.82	4.48	4.48	4.58	4.91	4.93	5.03	4.85	4.53		
170	5.34	5.39	5.60	5.77	5.99	5.51	5.46	5.34	4.75	4.77	5.00	5.23	5.39	5.42	5.38	4.96		
175	5.97	5.90	6.11	6.22	6.24	5.93	5.93	5.79	5.48	5.46	5.50	5.61	5.72	5.76	5.77	5.40		
180	5.93	5.90	6.13	5.91	6.11	5.94	5.83	5.76	5.88	6.00	5.96	6.15	5.96	6.20	5.96	5.90		

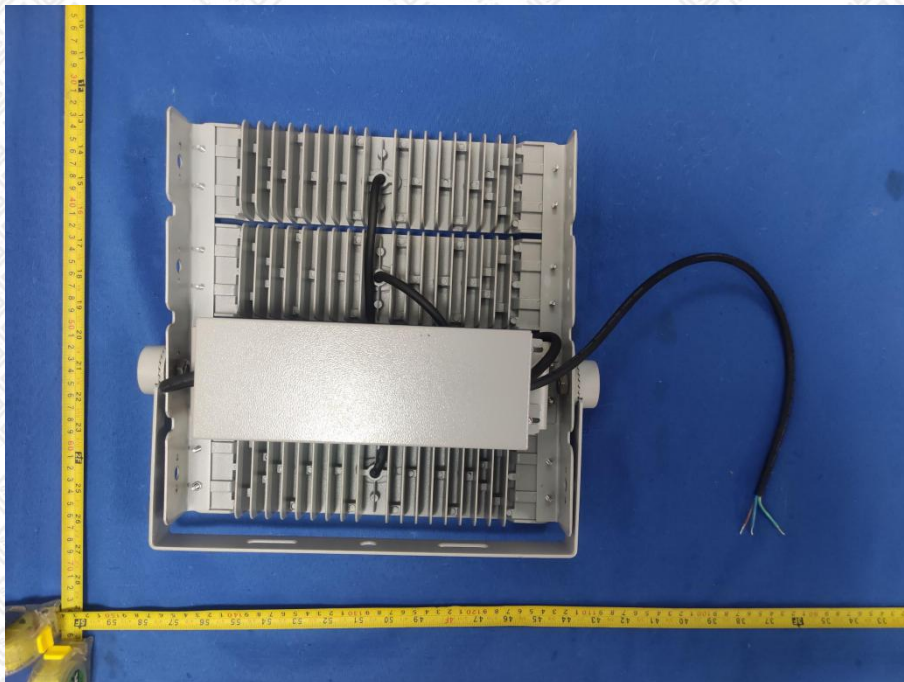




## 6. Photo of sample

### Photo document

Photos of FL-NS05-200



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