



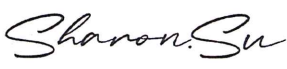


# TEST REPORT

## 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-NSO5-250
<b>Bewertung:</b> <i>Rating:</i>	AC100-240V, 50/60Hz, 250W, 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-NSO5-250
Rated Inputs.....:	AC100-240V, 50/60Hz
Rated Power.....:	250W
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

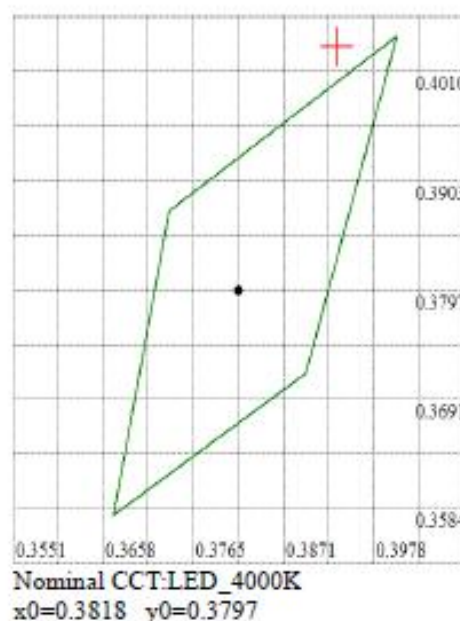
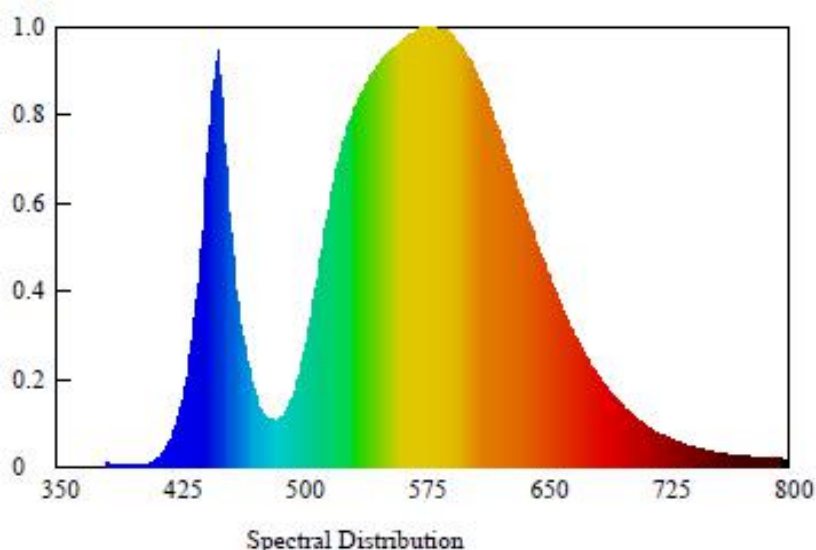
### 4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	229.89	50.01	1.0955	0.9920	249.83

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3863	70.2	+0.00838	35343.73	141.5

### 4.2 Spectrum

#### Spectroradiometric Parameters



Nominal CCT:LED\_4000K  
 $x_0=0.3818$   $y_0=0.3797$

Chromaticity Coordinates:  $x=0.3935$   $y=0.4034$   $u'=0.2231$   $v'=0.5147$

Correlated Color Temperature: 3863 K

Colour Fidelity Index:  $R_f=71$

Luminous Flux: 35343.73 lm

Chromaticity Difference: +0.00838Duv

Color Ratio:  $K_r=36.4\%$   $K_g=57.6\%$   $K_b=6.1\%$

Bandwidth: 135.5nm

Photosynthetically Active Radiation(PAR): 93.99W

Rendering Index:  $R_a=70.2$

Dominant Wavelength: 575.0 nm(E)

Gamut Index:  $R_g=93$

Purity: 0.3918

Peak Wavelength: 580.0 nm

Radiant Flux: 96.763 W

Photosynthetic Photon Flux(PPF):445.83 $\mu$ mol/s

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

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





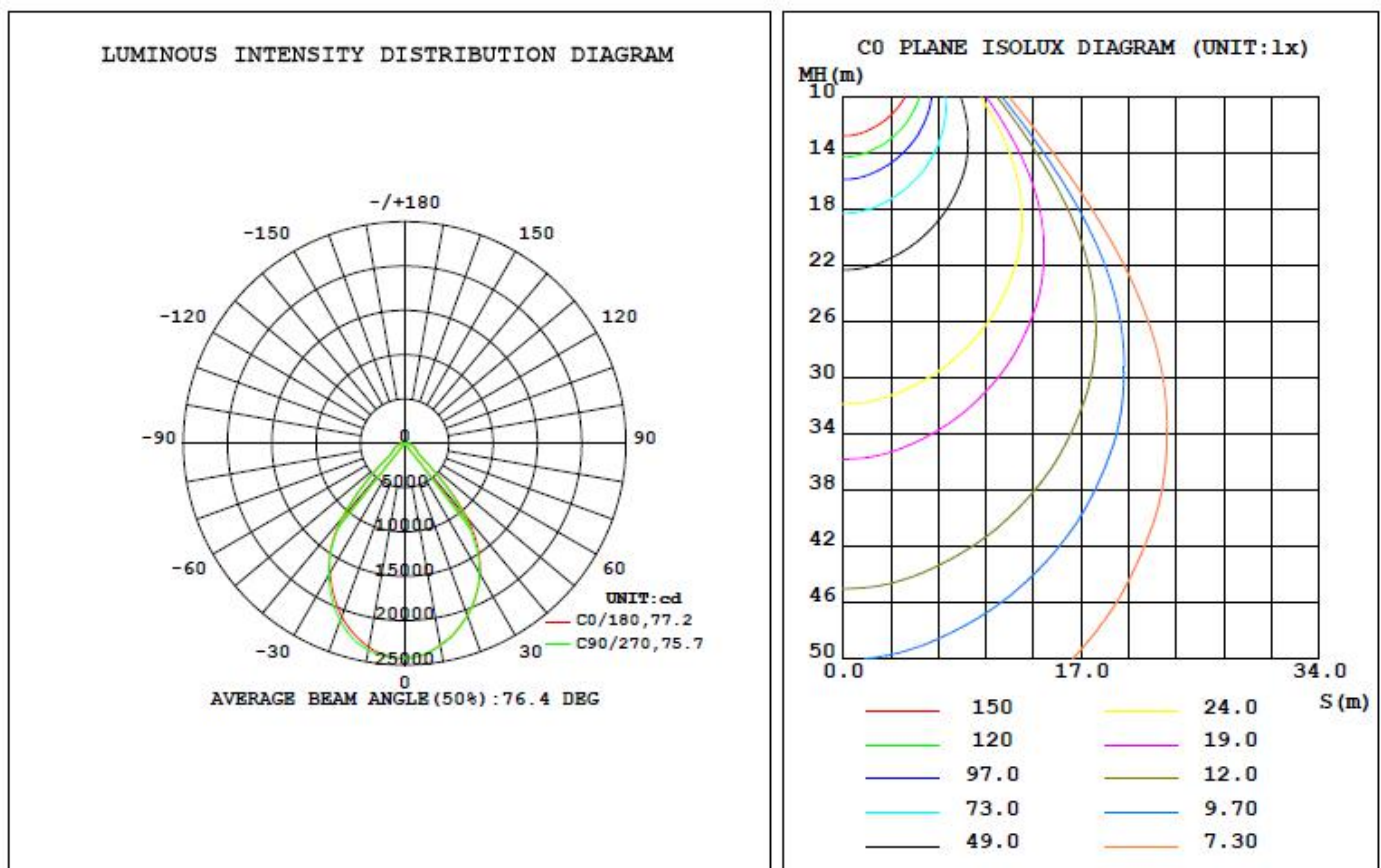
## 5. Goniophotometer Test results

### 5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	230.0	50.01	1.095	0.9914	249.8

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	Imax (cd)	Spacing Criteria ( 0~180° )	Spacing Criteria ( 90~270° )
Output	35336.8	141.46	24257	1.07	1.09

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







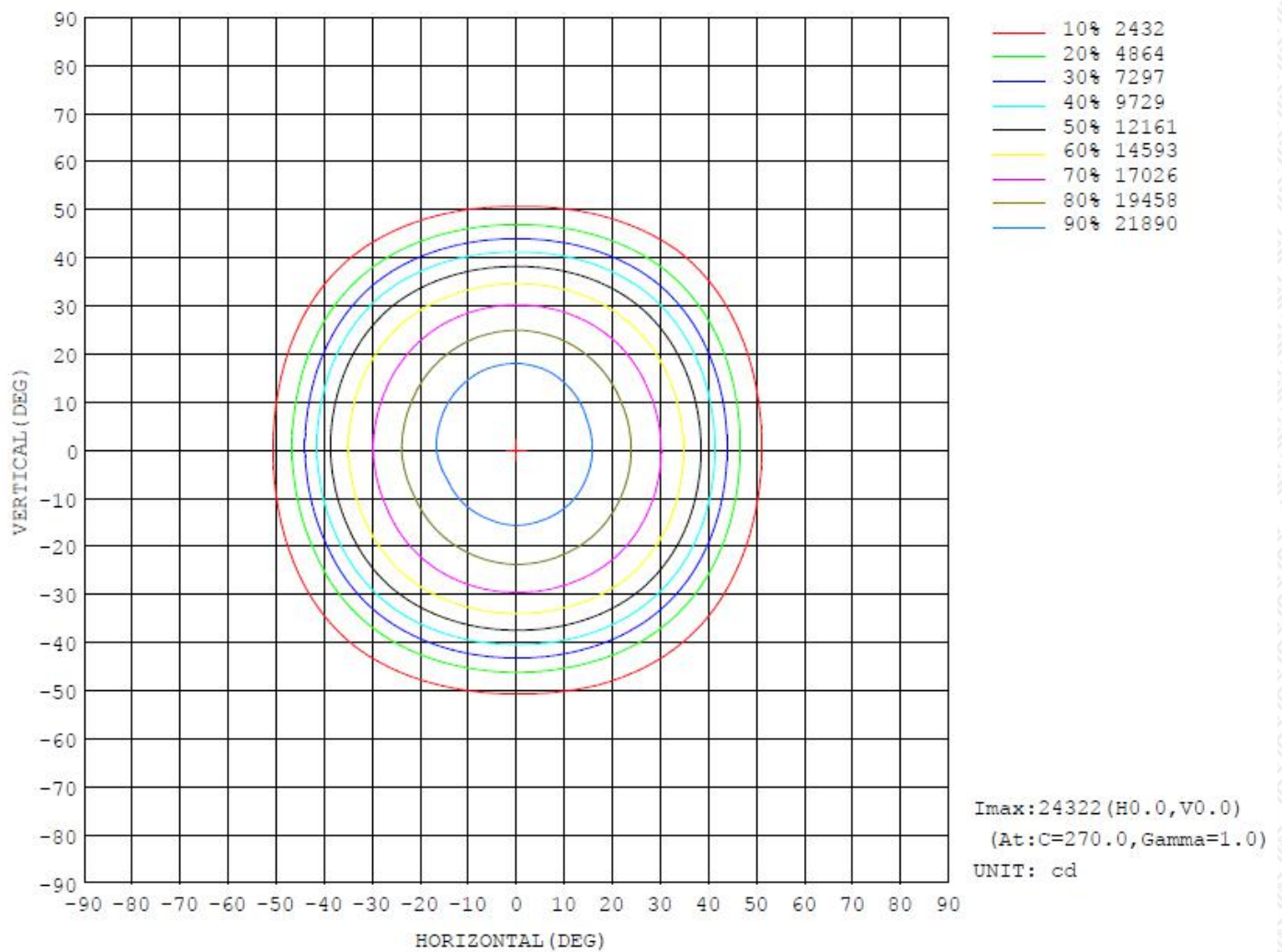
### 5.3 Zonal Flux Diagram

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	2312	2311	2317	2320	2337	2360	2366	2343	0- 10	2270	2270	6.46, 6.46
20	2067	2066	2069	2064	2078	2105	2129	2102	10- 20	6256	8526	24.3, 24.3
30	1705	1700	1685	1683	1689	1696	1714	1715	20- 30	8749	17274	49.2, 49.2
40	1090	1056	1011	1042	1107	1119	1071	1107	30- 40	8828	26102	74.3, 74.3
50	269.7	272.1	260.3	263.9	264.7	274.8	270.2	294.9	40- 50	4843	30945	88.1, 88.1
60	163.2	168.1	146.5	161.5	151.8	152.3	142.3	161.7	50- 60	1695	32640	92.9, 92.9
70	114.8	120.4	96.73	112.2	103.1	104.5	92.61	113.9	60- 70	1312	33953	96.6, 96.6
80	51.66	53.32	57.20	47.90	47.20	41.46	50.18	49.75	70- 80	838.1	34791	99, 99
90	0.7212	1.343	0.8918	0.4487	0.3145	0.2904	0.2975	0.7095	80- 90	247.2	35038	99.7, 99.7
100	1.085	0.3731	0.2022	0.3609	0.9585	0.3581	0.2394	0.4500	90-100	3.508	35041	99.7, 99.7
110	0.4053	0.2467	0.1945	0.2406	0.4047	0.3582	0.3219	0.3310	100-110	4.009	35045	99.7, 99.7
120	0.2849	0.3132	0.3140	0.3298	0.4954	0.6051	0.6221	0.5268	110-120	3.403	35049	99.7, 99.7
130	1.181	1.207	1.449	1.132	1.036	1.151	1.096	1.009	120-130	6.564	35055	99.8, 99.8
140	2.769	2.670	3.207	2.590	2.193	2.121	2.635	2.048	130-140	13.64	35069	99.8, 99.8
150	4.657	4.726	5.136	4.743	3.623	3.553	4.311	3.628	140-150	21.35	35090	99.9, 99.9
160	5.553	5.595	5.737	5.579	5.262	5.225	5.698	5.183	150-160	22.81	35113	99.9, 99.9
170	6.562	6.901	7.485	6.621	5.862	6.127	6.899	6.662	160-170	16.89	35130	100, 100
180	7.281	7.449	7.714	6.987	7.233	7.297	7.445	7.339	170-180	6.658	35137	100, 100
DEG	LUMINOUS INTENSITY: $\times 10 \text{cd}$									UNIT: lm		





## 5.4 Isocandela Diagram







## 5.5 Luminous Distribution Intensity Data

Table--1

UNIT:  $\times 10\text{cd}$

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	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424	2424			
5	2395	2391	2392	2388	2391	2391	2394	2395	2402	2407	2414	2414	2417	2413	2410	2403			
10	2312	2307	2311	2313	2317	2314	2320	2327	2337	2346	2360	2364	2366	2361	2343	2326			
15	2204	2201	2204	2202	2208	2204	2208	2210	2225	2236	2257	2268	2275	2262	2241	2219			
20	2067	2064	2066	2067	2069	2065	2064	2065	2078	2088	2105	2123	2129	2120	2102	2081			
25	1900	1896	1900	1900	1904	1896	1889	1885	1896	1896	1914	1934	1945	1938	1923	1911			
30	1705	1701	1700	1689	1685	1683	1683	1679	1689	1687	1696	1706	1714	1715	1715	1707			
35	1442	1445	1437	1407	1390	1400	1420	1428	1456	1455	1452	1435	1435	1445	1455	1450			
40	1090	1078	1056	1027	1011	1019	1042	1057	1107	1118	1119	1089	1071	1089	1107	1098			
45	622	605	596	586	580	580	583	579	627	640	654	642	636	648	658	643			
50	270	270	272	267	260	262	264	258	265	268	275	275	270	287	295	287			
55	183	187	189	180	172	175	183	181	175	175	176	172	171	176	186	188			
60	163	167	168	158	146	153	162	159	152	152	152	147	142	151	162	166			
65	141	146	145	133	118	128	138	136	130	130	129	122	115	128	139	145			
70	115	121	120	110	96.7	104	112	111	103	105	104	97.1	92.6	103	114	119			
75	78.3	90.7	90.7	80.2	78.6	74.9	82.9	81.8	69.9	77.2	74.3	70.0	75.0	75.6	85.3	89.7			
80	51.7	57.2	53.3	50.2	57.2	46.2	47.9	48.5	47.2	46.9	41.5	41.0	50.2	46.6	49.8	56.5			
85	29.0	26.4	22.6	22.5	25.0	19.8	19.3	20.6	22.8	19.9	16.4	14.6	20.0	19.4	22.2	26.9			
90	0.72	1.01	1.34	1.00	0.89	0.50	0.45	0.40	0.31	0.31	0.29	0.28	0.30	0.38	0.71	0.99			
95	0.28	0.28	0.26	0.27	0.25	0.25	0.24	0.26	0.25	0.26	0.26	0.25	0.22	0.24	0.26	0.26			
100	1.09	0.77	0.37	0.25	0.20	0.21	0.36	0.71	0.96	0.67	0.36	0.25	0.24	0.25	0.45	0.80			
105	0.71	0.51	0.34	0.20	0.19	0.19	0.29	0.42	0.53	0.40	0.33	0.27	0.26	0.28	0.32	0.50			
110	0.41	0.35	0.25	0.20	0.19	0.19	0.24	0.35	0.40	0.39	0.36	0.34	0.32	0.31	0.33	0.39			
115	0.29	0.28	0.25	0.20	0.22	0.19	0.24	0.29	0.40	0.41	0.42	0.43	0.42	0.40	0.39	0.39			
120	0.28	0.29	0.31	0.31	0.31	0.34	0.33	0.29	0.50	0.54	0.61	0.62	0.62	0.58	0.53	0.48			
125	0.63	0.64	0.68	0.75	0.84	0.73	0.65	0.62	0.68	0.78	0.80	0.71	0.89	0.65	0.71	0.65			
130	1.18	1.18	1.21	1.36	1.45	1.25	1.13	1.11	1.04	1.12	1.15	1.16	1.10	0.92	1.01	0.95			
135	1.83	1.81	1.85	2.08	2.11	1.89	1.69	1.78	1.53	1.55	1.58	1.82	2.01	1.58	1.44	1.38			
140	2.77	2.73	2.67	2.90	3.21	2.91	2.59	2.64	2.19	2.15	2.12	2.61	2.63	2.54	2.05	2.02			
145	3.73	3.70	3.62	3.96	4.13	3.95	3.68	3.45	2.88	2.81	2.78	3.56	3.47	3.44	2.78	2.77			
150	4.66	4.71	4.73	4.98	5.14	4.93	4.74	4.32	3.62	3.60	3.55	4.51	4.31	4.43	3.63	3.56			
155	5.18	5.30	5.29	5.48	5.55	5.25	5.34	4.82	4.48	4.44	4.54	5.30	5.04	5.29	4.15	4.38			
160	5.55	5.64	5.60	5.74	5.74	5.61	5.58	5.30	5.26	5.12	5.23	5.78	5.70	5.68	5.18	5.01			
165	5.98	6.07	6.14	6.51	6.57	6.07	6.07	5.88	5.56	5.56	5.60	5.89	6.34	6.57	5.93	5.46			
170	6.56	6.73	6.90	7.35	7.48	6.80	6.62	6.51	5.86	5.87	6.13	6.29	6.90	7.03	6.66	6.04			
175	7.34	7.33	7.49	7.81	7.80	7.30	7.11	7.13	6.77	6.71	6.77	6.88	7.35	7.48	7.19	6.60			
180	7.28	7.30	7.45	7.43	7.71	7.31	6.99	7.07	7.23	7.34	7.30	7.50	7.45	7.74	7.34	7.06			

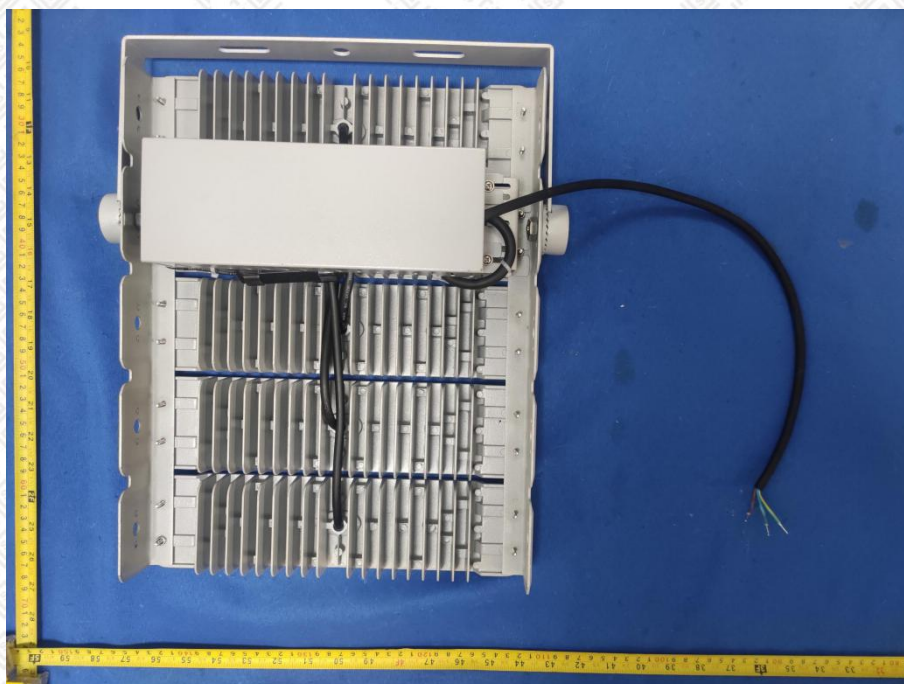




## 6. Photo of sample

### Photo document

Photos of FL-NS05-250



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