TEST REPORT OF IES LM-79-08

Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

Client.....	:	ROYALUX EXPORTS
Address.....	:	SDF BLOCK M-13, M-14, M-15 & M-16,NOIDA SPECIAL ECONOMIC ZONE,NOIDA DADRI ROAD, PHASE-II,NOIDA, DSTT. GAUTAM BUDH NAGAR, UP-201305
Test Model.....	:	402Y0300W30L70AY,402Y0300W57L70AY
Product Description	:	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires
Brand Name.....	:	Rlux ikio
Testing Laboratory....	:	Guangdong Meide Testing Technology Co., Ltd.
Address.....	:	1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,SongshanLake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr., China.
Report No.....	:	CA1905127L 01005
Test Date.....	:	2019-05-23 to 2019-05-28
Report Date.....	:	2019-05-30

Compiled by:

Luke Lei

Luke Lei/ Project Engineer

Approved by:

Jessie Li/ Technical Manager

Guangdong Meide Testing Technology Co., Ltd. * CERTIFICATE *

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Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST,or any agency of the Federal Government.

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1.Product Information

Model Number.....:	402Y0300W30L70AY,402Y0300W57L70AY
Manufacturer.....:	ROYALUX EXPORTS
Product Type.....:	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires
Rated Voltage/Frequency.....:	100-277V AC 50/60Hz
Rated Power.....:	300W
Declared CCT.....:	3000K,5700K
LED Manufacturer.....:	CREE Venture LED Company Limited
LED Model No.....:	JK3030AWT-00-0000-000B0HH422E

2.Standards Used

- IES LM-79-08:Approved Method:Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment

3.Test equipment list

Test Equipment	Serial No	Model No	Range Used	Calibration date	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	1600mm,3000W/10A	2018/10/19	2019/10/18
Digital Power Meter	MD-E001	PF2010	0-600V,0-20A,0-4KW	2018/10/08	2019/10/07
AC Testing Power Source	MD-E002	DPS1060	0-300Vac,0-20A.0-5 KW	2018/10/08	2019/10/07
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	7.295A,2856K,11227 lm,94.35V	2018/10/19	2019/10/18
Integrating Sphere System	MD-E029	2M	--	2018/10/10	2019/10/09
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	380-780nm	2018/10/10	2019/10/09
Digital Power Meter	MD-E008	PF310	0-600Vac,0-20A	2018/10/08	2019/10/07
AC Testing Power Source	MD-E010	DPS1010	0-300Vac,0-10A,0-10 00W	2018/10/08	2019/10/07
Standard Lamp	MD-E012	D204	3.9424A,20.75V,285 6K,1332.3lm	2019/02/21	2020/02/20

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd.attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

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4.Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at 25°C±1°C during measurement.

Goniophotometer System

The sample was tested according to the IES LM-79-2008.

Photometric paramters were measured using a type C goniophotometer and software. 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 0.5° vertical intervals and 10°horizontal intervals.

Integrating Sphere System

The sample was tested according to the IES LM-79-2008.

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.

THD and PF Test

The sample was tested according to the ANSI C82.77-2002.

The sample was operated at rated voltage and was stabilized before measurement.The total harmonic distortion were calculated from the digital power meter.

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5.Integrating Sphere Test Results

5.1 Test Data

Test Ambient Temperature	25.1℃	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	60

Photometric and Electrical Measurement Result

Model Number	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
402Y0300W30L70AY	120.0	60	2.488	297.9	0.9978
402Y0300W57L70AY	120.0	60	2.492	298.6	0.9985

Model Number	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)	Ra	R9
402Y0300W30L70AY	39418	132.32	2981	73.6	0
402Y0300W57L70AY	40817	136.69	5477	75.1	0

Model Number	duv	x	y	u'	v'
402Y0300W30L70AY	-0.000405	0.4377	0.4033	0.2514	0.5212
402Y0300W57L70AY	0.00218	0.3330	0.3458	0.2055	0.4800

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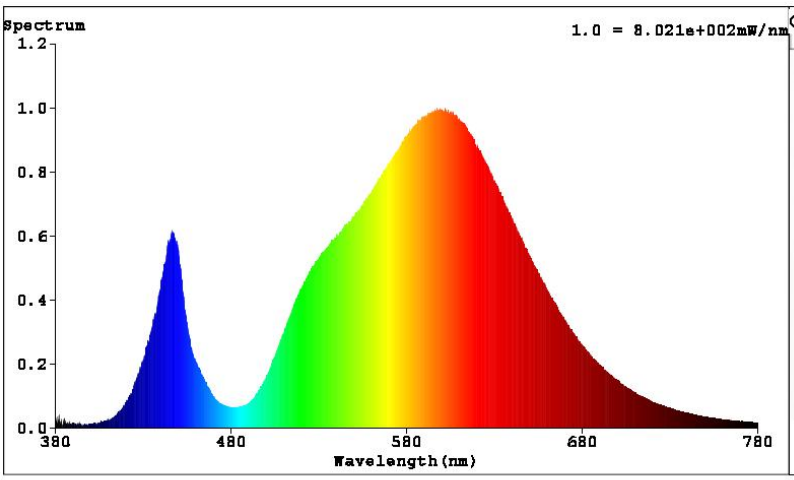
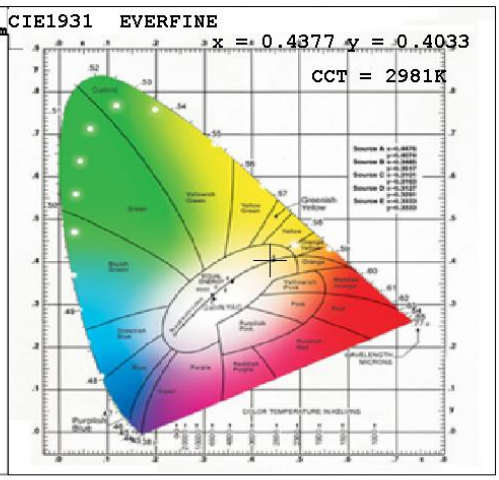
5.2 Spectrum

402Y0300W30L70AY





Colorimetric Parameters

Chromaticity Coordinate: x = 0.4377 y = 0.4033 / u' = 0.2514 v' = 0.5212 (duv=-4.05e-04)

CCT= 2981K Prcp WL: Ld=583.0nm Purity=52.4%

Peak WL: Lp=597nm FWHM: =127.7nm Ratio:R=21.9% G=76.8% B=1.4%

Render Index: Ra = 73.6 TM30:Rf=70 Rg=97

R1 =71	R2 =81	R3 =89	R4 =72	R5 =70	R6 =73	R7 =80	
R8 =51	R9 =0	R10=55	R11=68	R12=48	R13=73	R14=93	R15=65

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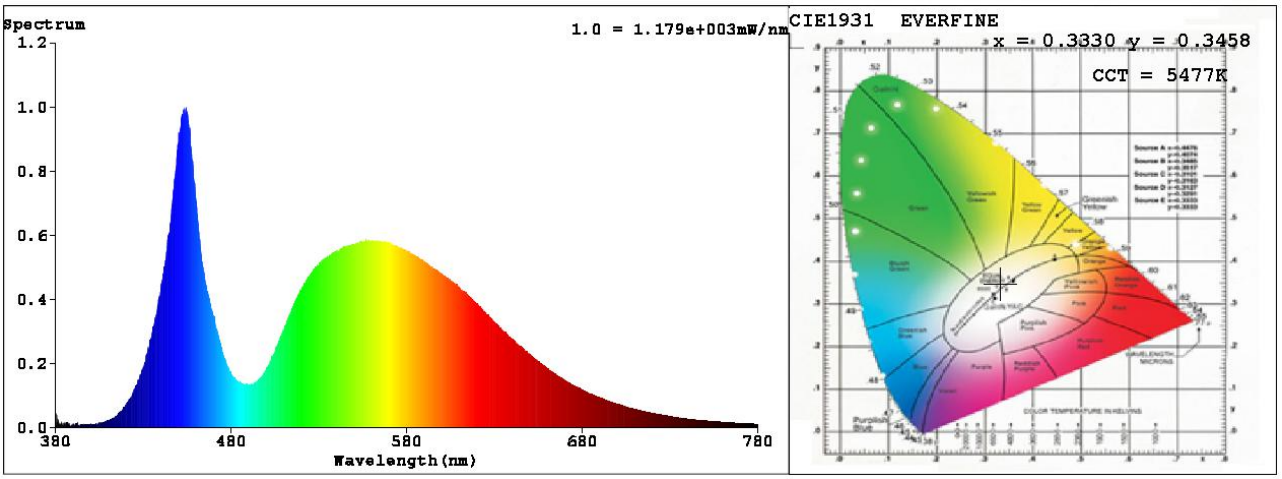
402Y0300W57L70AY



Colorimetric Parameters

Chromaticity Coordinate: x = 0.3330 y = 0.3458 / u' = 0.2055 v' = 0.4800 (duv=2.18e-03)

CCT= 5477K Prcp WL: Ld=553.2nm Purity=3.7%

Peak WL: Lp=454nm FWHM: =22.3nm Ratio:R=13.9% G=82.3% B=3.8%

Render Index: Ra = 75.1 TM30:Rf=73 Rg=94

R1 =73	R2 =80	R3 =82	R4 =75	R5 =73	R6 =71	R7 =85	
R8 =63	R9 =0	R10=49	R11=69	R12=43	R13=74	R14=90	R15=70

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6. Goniophotometer Test results

6.1 Test Data

Test Ambient Temperature	25.1℃	Test orientation	Downward
Operate time(Min.)	120	stabilization time(Min.)	90

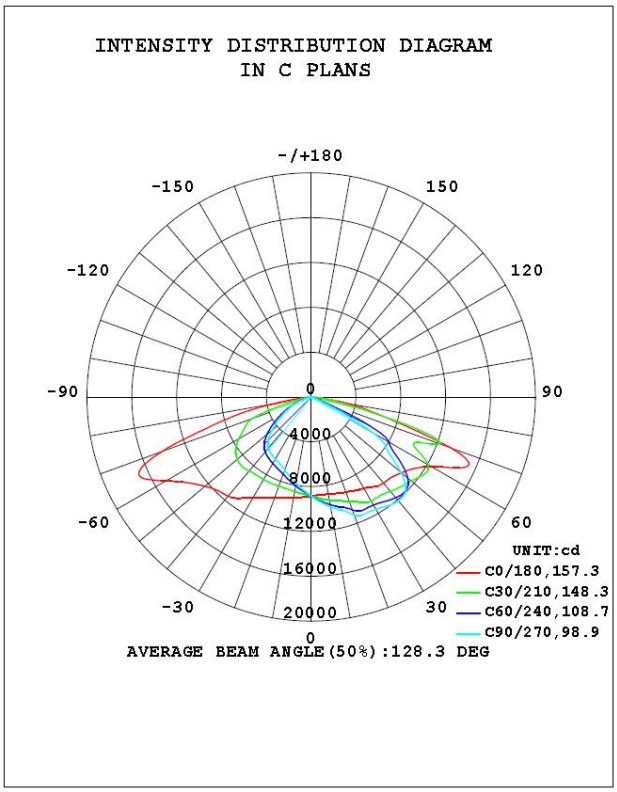
Electrical Measurement

Model Number	Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
402Y0300W30L70AY	120.0	60	2.487	0.9981	298.1

Photometric Measurement

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	ZL (0-90°)	ZL (80-90°)
402Y0300W30L70AY	39429.9	132.27	99.9%	1.2%

6.2 Luminous Intensity Distribution Diagram



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6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	880.8	955.3	995.4	980.2	914.1	830.0	782.5	807.4	0- 10	848.4	848.4	2.15,2.15
20	903.7	1031	1121	1080	955.1	784.4	693.3	754.0	10- 20	2560	3408	8.64,8.64
30	942.8	1091	1156	1170	1033	748.1	639.2	714.2	20- 30	4305	7713	19.6,19.6
40	1003	1143	1211	1214	1155	720.5	597.3	675.3	30- 40	5973	13687	34.7,34.7
50	1052	1181	1044	1253	1240	637.6	457.8	584.2	40- 50	7388	21074	53.4,53.4
60	1244	950.9	626.4	1010	1497	424.1	268.2	386.2	50- 60	7780	28855	73.2,73.2
70	1318	387.6	48.90	433.9	1414	180.2	105.9	164.1	60- 70	6804	35659	90.4,90.4
80	331.1	38.51	14.15	44.74	345.8	39.19	20.13	36.13	70- 80	3276	38934	98.7,98.7
90	0.4776	0.1980	0.1181	0.1492	0.8905	0.4209	0.1511	0.4763	80- 90	452.9	39387	99.9,99.9
100	0.5644	0.2780	0.1876	0.2108	1.080	0.6759	0.3962	0.7672	90-100	4.865	39392	99.9,99.9
110	0.6555	0.3372	0.2824	0.2957	0.9026	0.7053	0.5898	0.8045	100-110	5.841	39398	99.9,99.9
120	0.8711	0.4525	0.4431	0.4260	0.6911	0.6301	0.6806	0.7250	110-120	5.778	39404	99.9,99.9
130	1.122	0.6086	0.6374	0.5487	0.7150	0.7456	0.8842	0.8286	120-130	6.089	39410	99.9,99.9
140	0.9570	0.6805	0.8057	0.5981	0.8351	0.9647	1.211	1.017	130-140	6.454	39416	100,100
150	0.6343	0.6606	0.9054	0.5934	0.8538	1.085	1.447	1.101	140-150	5.713	39422	100,100
160	0.6413	0.7718	1.076	0.7058	0.8801	1.047	1.459	1.152	150-160	4.391	39426	100,100
170	0.7426	0.8361	1.177	0.8015	0.8884	0.9189	1.362	1.118	160-170	2.761	39429	100,100
180	0.8604	0.9331	1.236	0.9081	0.8553	0.8538	1.212	1.007	170-180	0.9456	39430	100,100
DEG	LUMINOUS INTENSITY:*10cd									UNIT:lm		

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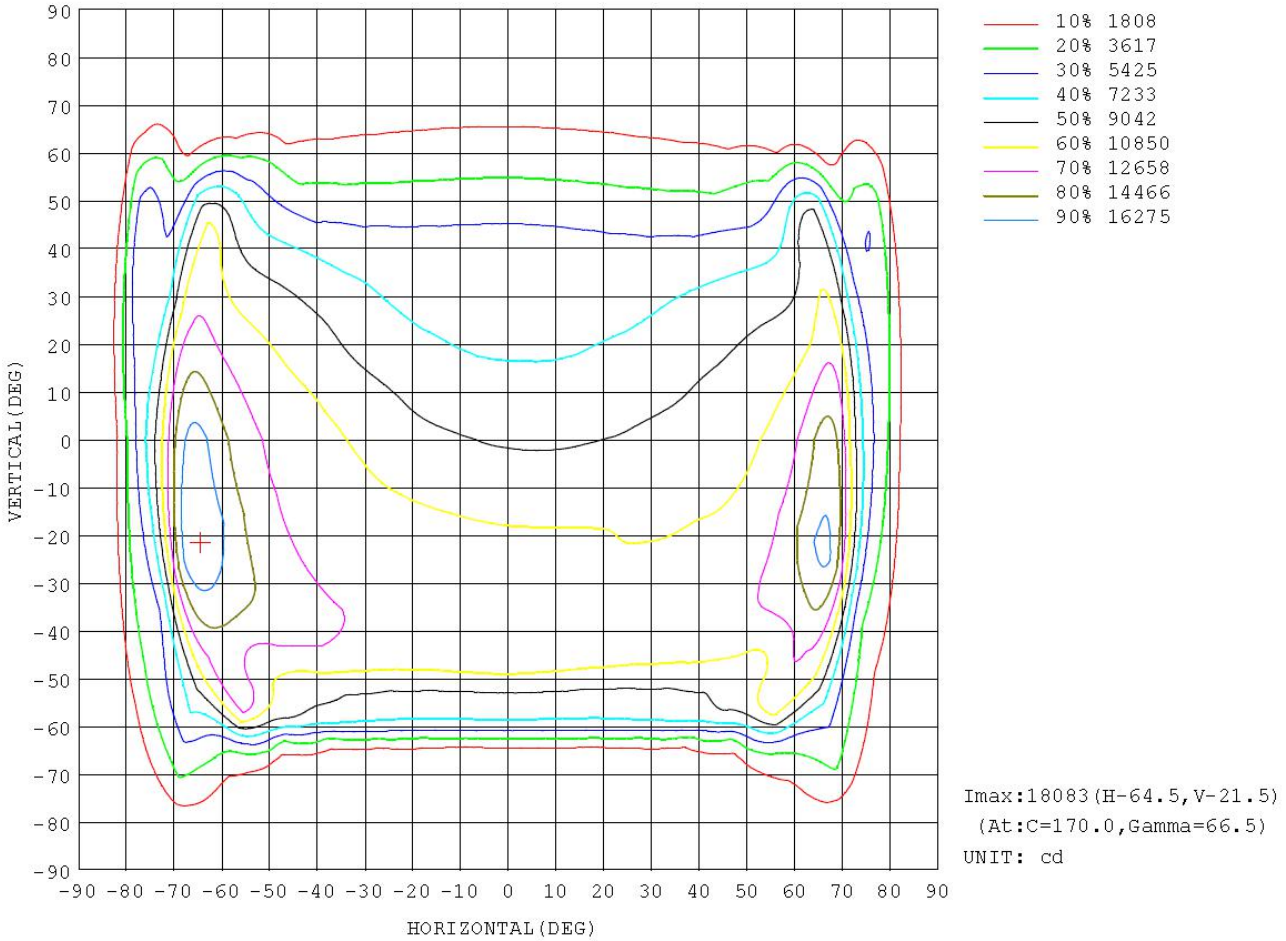
6.4 Isocandela Diagram



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6.5 Luminous Distribution Intensity Data

Table--1 UNIT: ×10cd

C(DEG) / γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884
5	878	888	897	906	915	922	929	934	938	940	941	941	938	935	930	923	915	907	897
10	881	899	917	933	948	962	974	984	991	995	997	996	992	985	975	964	949	933	914
15	891	916	939	960	980	999	1015	1028	1039	1045	1047	1046	1041	1032	1020	1003	983	960	933
20	904	936	964	992	1017	1044	1072	1095	1111	1121	1124	1121	1110	1091	1068	1043	1015	987	955
25	920	957	995	1036	1070	1094	1110	1124	1137	1148	1157	1162	1166	1163	1143	1104	1057	1020	987
30	943	994	1042	1071	1084	1097	1112	1130	1145	1156	1163	1164	1164	1169	1172	1164	1133	1084	1033
35	976	1035	1060	1075	1095	1119	1139	1158	1175	1187	1191	1190	1186	1181	1178	1175	1172	1158	1102
40	1003	1044	1073	1098	1130	1155	1172	1186	1200	1211	1214	1215	1218	1218	1210	1197	1192	1188	1155
45	1014	1060	1099	1132	1164	1184	1186	1181	1183	1190	1194	1205	1225	1244	1248	1239	1229	1214	1181
50	1052	1100	1135	1166	1188	1173	1125	1073	1049	1044	1050	1086	1153	1228	1279	1283	1281	1276	1240
55	1115	1181	1204	1214	1175	1063	940	860	832	829	835	871	965	1119	1276	1352	1373	1390	1337
60	1244	1345	1296	1202	1024	877	797	717	649	626	649	720	809	915	1106	1330	1480	1581	1497
65	1491	1585	1298	1006	933	744	447	222	170	149	159	231	467	764	991	1147	1485	1789	1683
70	1318	1602	1282	1217	603	173	79.2	62.2	52.0	48.9	53.0	68.0	84.7	188	680	1353	1343	1649	1414
75	658	710	916	665	119	58.6	44.3	35.6	32.5	32.6	33.1	38.7	51.7	66.7	128	712	918	697	808
80	331	243	480	198	49.9	27.1	20.1	16.5	15.6	14.2	15.8	17.3	23.2	33.1	56.4	178	564	390	346
85	25.4	27.2	159	28.3	2.38	2.60	1.85	1.37	1.25	1.26	1.31	1.55	2.46	2.49	4.03	25.8	212	71.7	27.1
90	0.48	0.43	0.36	0.31	0.23	0.16	0.13	0.11	0.12	0.12	0.11	0.10	0.12	0.13	0.16	0.20	0.25	0.32	0.89
95	0.52	0.48	0.42	0.34	0.28	0.21	0.15	0.14	0.15	0.15	0.14	0.13	0.15	0.17	0.20	0.24	0.30	0.36	1.03
100	0.56	0.53	0.47	0.39	0.31	0.24	0.19	0.18	0.18	0.19	0.17	0.16	0.19	0.19	0.23	0.29	0.34	0.38	1.08
105	0.61	0.57	0.52	0.43	0.35	0.27	0.22	0.21	0.22	0.23	0.21	0.19	0.23	0.23	0.26	0.32	0.37	0.42	1.02
110	0.66	0.61	0.55	0.46	0.38	0.29	0.26	0.27	0.27	0.28	0.26	0.24	0.28	0.29	0.30	0.37	0.40	0.47	0.90
115	0.76	0.68	0.61	0.50	0.41	0.34	0.33	0.33	0.34	0.35	0.33	0.31	0.34	0.34	0.37	0.43	0.50	0.54	0.79
120	0.87	0.78	0.69	0.58	0.48	0.42	0.42	0.42	0.43	0.44	0.42	0.39	0.40	0.41	0.45	0.52	0.60	0.66	0.69
125	1.02	0.92	0.81	0.68	0.59	0.50	0.52	0.52	0.53	0.54	0.52	0.48	0.50	0.46	0.53	0.62	0.73	0.85	0.67
130	1.12	1.06	0.92	0.77	0.64	0.57	0.60	0.61	0.62	0.64	0.62	0.57	0.58	0.52	0.57	0.70	0.83	0.98	0.71
135	1.09	1.03	0.90	0.79	0.68	0.64	0.67	0.69	0.71	0.73	0.71	0.66	0.65	0.60	0.61	0.68	0.78	0.95	0.78
140	0.96	0.91	0.82	0.74	0.68	0.68	0.72	0.76	0.79	0.81	0.78	0.72	0.69	0.60	0.59	0.65	0.71	0.80	0.84
145	0.80	0.76	0.72	0.67	0.65	0.72	0.76	0.81	0.84	0.85	0.82	0.77	0.71	0.60	0.58	0.60	0.64	0.69	0.88
150	0.63	0.63	0.61	0.59	0.60	0.72	0.77	0.83	0.88	0.91	0.88	0.81	0.75	0.62	0.57	0.54	0.56	0.60	0.85
155	0.62	0.62	0.61	0.60	0.64	0.78	0.85	0.91	0.96	0.99	0.96	0.90	0.84	0.70	0.60	0.58	0.59	0.61	0.89
160	0.64	0.64	0.65	0.65	0.71	0.84	0.91	0.99	1.04	1.08	1.04	0.98	0.89	0.77	0.64	0.61	0.64	0.62	0.88
165	0.70	0.68	0.69	0.70	0.74	0.87	0.94	1.04	1.10	1.13	1.10	1.05	0.96	0.82	0.72	0.68	0.67	0.66	0.88
170	0.74	0.72	0.72	0.73	0.78	0.89	0.99	1.09	1.16	1.18	1.14	1.09	0.98	0.84	0.76	0.70	0.71	0.72	0.89
175	0.79	0.79	0.79	0.81	0.84	0.94	1.05	1.15	1.22	1.22	1.19	1.14	1.04	0.92	0.87	0.82	0.83	0.81	0.86
180	0.86	0.83	0.81	0.84	0.88	0.99	1.07	1.17	1.21	1.24	1.18	1.13	1.06	0.93	0.89	0.85	0.84	0.82	0.86

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Table--2 UNIT: ×10cd

γ (DEG) \ C(DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884	884		
5	887	878	868	859	851	844	838	833	830	829	831	833	838	843	851	859	868		
10	895	875	856	838	822	807	795	787	782	782	785	791	801	813	828	844	862		
15	905	876	847	819	793	769	752	741	737	737	743	754	770	791	814	839	865		
20	922	885	845	803	765	734	711	698	693	694	701	716	739	769	802	836	869		
25	951	906	850	790	741	708	683	668	661	661	670	687	715	751	795	839	881		
30	986	925	850	776	721	686	662	647	639	639	648	666	694	735	785	840	894		
35	1025	942	851	764	703	665	643	629	623	623	630	645	674	718	776	842	907		
40	1074	970	862	758	683	639	615	602	597	598	604	618	649	702	774	852	934		
45	1112	1002	875	741	648	594	562	548	544	546	554	573	610	675	771	867	951		
50	1151	1017	863	694	582	515	480	463	458	461	473	496	544	625	746	871	976		
55	1196	1023	826	606	480	412	377	361	357	359	370	397	450	541	697	865	1006		
60	1245	1003	747	481	367	310	282	272	268	270	278	296	343	430	610	832	1026		
65	1307	1022	659	348	258	217	198	192	188	189	195	207	241	312	501	811	1080		
70	1160	1127	557	207	153	130	118	109	106	107	113	123	142	186	367	989	1124		
75	580	663	228	89.6	78.2	70.9	59.0	44.7	40.6	42.1	54.4	67.1	73.4	81.2	130	624	565		
80	715	95.7	53.5	39.3	39.1	33.3	22.9	21.2	20.1	20.5	20.9	28.5	36.7	35.5	45.4	73.6	519		
85	147	15.6	12.4	8.97	8.46	6.06	1.90	0.63	0.27	0.49	1.57	3.97	7.19	6.96	8.30	12.3	89.0		
90	0.92	0.83	0.66	0.50	0.34	0.22	0.16	0.15	0.15	0.15	0.18	0.25	0.38	0.57	0.76	0.91	1.00		
95	1.07	0.98	0.82	0.65	0.49	0.36	0.29	0.27	0.26	0.26	0.31	0.39	0.55	0.74	0.94	1.09	1.17		
100	1.10	1.02	0.89	0.74	0.61	0.50	0.43	0.41	0.40	0.40	0.45	0.53	0.67	0.87	1.02	1.15	1.24		
105	1.02	0.96	0.88	0.77	0.68	0.61	0.54	0.53	0.52	0.52	0.56	0.63	0.76	0.90	1.02	1.13	1.17		
110	0.89	0.86	0.81	0.74	0.67	0.64	0.61	0.60	0.59	0.59	0.62	0.66	0.75	0.86	0.96	1.02	1.02		
115	0.78	0.76	0.72	0.68	0.66	0.64	0.66	0.65	0.63	0.62	0.64	0.66	0.70	0.79	0.86	0.89	0.90		
120	0.69	0.66	0.65	0.62	0.64	0.66	0.70	0.71	0.68	0.66	0.67	0.68	0.70	0.75	0.79	0.80	0.79		
125	0.69	0.63	0.62	0.65	0.65	0.72	0.75	0.79	0.76	0.74	0.74	0.73	0.72	0.79	0.81	0.80	0.78		
130	0.73	0.73	0.72	0.72	0.77	0.82	0.87	0.90	0.88	0.87	0.87	0.84	0.81	0.85	0.89	0.89	0.84		
135	0.77	0.80	0.81	0.84	0.89	0.94	1.02	1.07	1.04	1.03	1.02	0.97	0.92	0.94	0.97	0.96	0.90		
140	0.83	0.87	0.90	0.94	0.99	1.06	1.16	1.22	1.21	1.18	1.17	1.11	1.02	1.01	1.01	1.00	0.96		
145	0.90	0.93	0.96	1.01	1.06	1.17	1.30	1.36	1.35	1.32	1.31	1.21	1.09	1.05	1.03	1.02	1.00		
150	0.91	0.93	0.97	1.04	1.13	1.25	1.37	1.44	1.45	1.40	1.38	1.27	1.13	1.07	1.02	1.00	0.98		
155	0.92	0.93	0.98	1.05	1.15	1.28	1.39	1.46	1.47	1.42	1.39	1.33	1.18	1.10	1.05	1.01	0.99		
160	0.90	0.92	0.95	0.98	1.11	1.22	1.34	1.43	1.46	1.43	1.39	1.33	1.20	1.11	1.05	1.01	0.98		
165	0.87	0.89	0.88	0.91	1.00	1.12	1.24	1.36	1.39	1.40	1.34	1.29	1.16	1.06	1.01	0.98	0.92		
170	0.89	0.88	0.87	0.88	0.96	1.09	1.19	1.30	1.36	1.39	1.34	1.29	1.18	1.05	1.00	0.98	0.93		
175	0.86	0.88	0.86	0.86	0.92	1.04	1.14	1.23	1.31	1.33	1.29	1.24	1.15	1.01	0.96	0.94	0.90		
180	0.86	0.83	0.81	0.83	0.88	0.98	1.07	1.15	1.21	1.23	1.19	1.14	1.07	0.94	0.89	0.86	0.85		

7.THD and PF Test

Test type	Voltage (V AC)	Frequency (Hz)	Current(A)	Power Factor	Power(W)	Current THD
Results	277.0	60	1.0828	0.9562	286.81	7.81%

Laboratory:Guangdong Meide Testing Technology Co., Ltd.
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8. Photo of sample

Figure 1

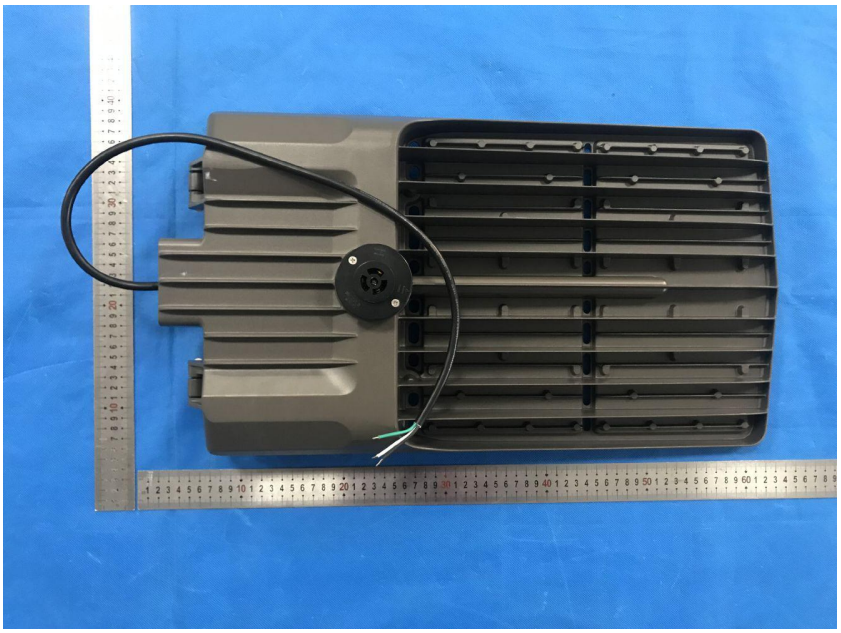

Figure 2

****** END OF THE TEST REPORT******

Laboratory:Guangdong Meide Testing Technology Co., Ltd.
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