



Guangdong Meide Testing Technology Co., Ltd.



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, DIST. GAUTAM BUDH NAGAR, UP-201305

Test Model..... : 402Y0240W30L70AY, 402Y0240W57L70AY

Product Description : Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Brand Name..... :  

Testing Laboratory.... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan Lake
Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Report No..... : CA1905127L 01004

Test Date..... : 2019-05-23 to 2019-05-28

Report Date..... : 2019-05-30

Compiled by:



Luke Lei/ Project Engineer

Approved by:



Jessie Li/ Technical Manager



Note 1: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the Federal Government.

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1.Product Information

Model Number.....: 402Y0240W30L70AY,402Y0240W57L70AY
 Manufacturer.....: ROYALUX EXPORTS
 Product Type.....: Outdoor Pole/Arm-Mounted Area and Roadway Luminaires
 Rated Voltage/Frequency.....: 100-277V AC 50/60Hz
 Rated Power.....: 240W
 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 Spectoradio 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ during measurement.

Goniophotometer System

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

Photometric parameters 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.



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
402Y0240W30L70AY	120.0	60	1.993	237.9	0.9949
402Y0240W57L70AY	120.0	60	1.997	238.6	0.9957

Model Number	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)	Ra	R9
402Y0240W30L70AY	31354	131.79	2981	73.6	0
402Y0240W57L70AY	32428	135.91	5504	75.3	0

Model Number	duv	x	y	u'	v'
402Y0240W30L70AY	-0.000369	0.4378	0.4034	0.2514	0.5213
402Y0240W57L70AY	0.00205	0.3324	0.3449	0.2053	0.4795

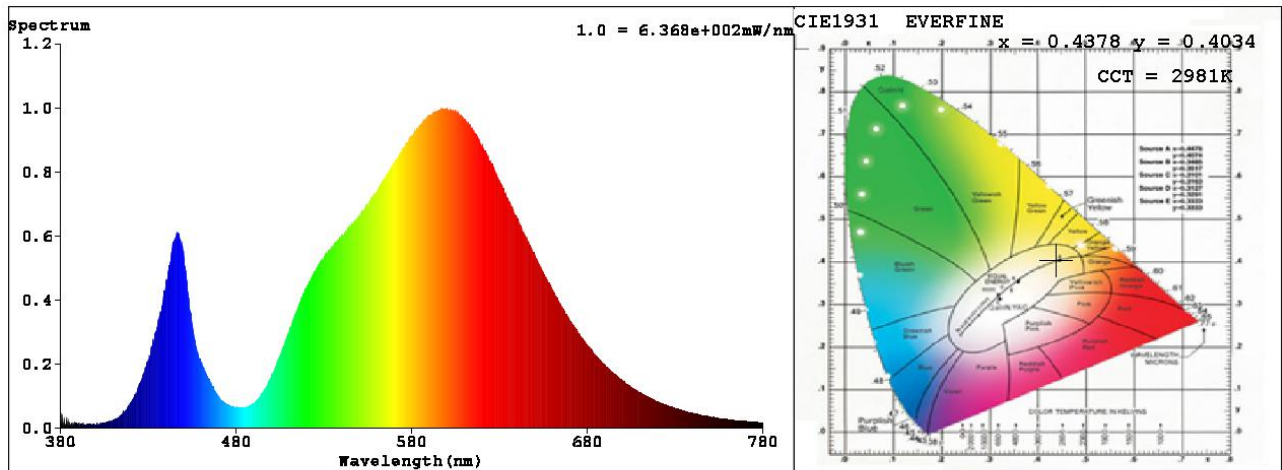


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5.2 Spectrum

402Y0240W30L70AY



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4378$ $y = 0.4034$ / $u' = 0.2514$ $v' = 0.5213$ ($duv = -3.69e-04$)

CCT= 2981K Prcp WL: $L_d = 583.0\text{nm}$ Purity=52.5%

Peak WL: $L_p = 597\text{nm}$ FWHM: $= 128.1\text{nm}$ Ratio: R=21.9% G=76.8% B=1.4%

Render Index: $R_a = 73.6$ TM30: $R_f = 71$ $R_g = 97$

R1 =71 R2 =81 R3 =89 R4 =72 R5 =70 R6 =73 R7 =80

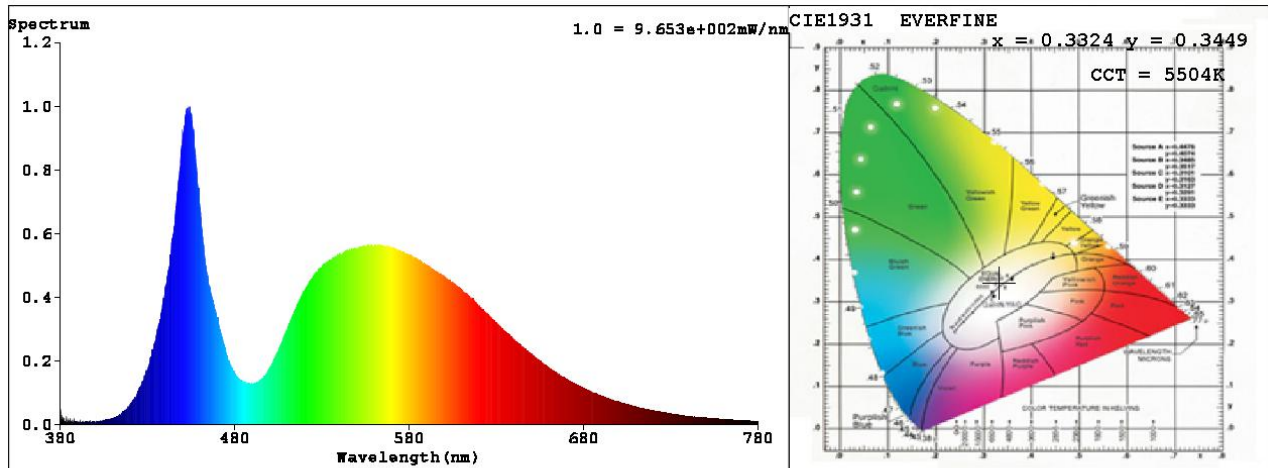
R8 =51 R9 =0 R10=56 R11=68 R12=48 R13=73 R14=93 R15=65



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402Y0240W57L70AY



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3324$ $y = 0.3449$ / $u' = 0.2053$ $v' = 0.4795$ ($duv=2.05e-03$)

CCT= 5504K Prop WL: Ld=550.3nm Purity=3.3%

Peak WL: Lp=454nm FWHM: =21.2nm Ratio:R=13.9% G=82.3% B=3.8%

Render Index: Ra = 75.3 TM30:Rf=73 Rg=94

R1 =73 R2 =80 R3 =82 R4 =75 R5 =73 R6 =71 R7 =85

R8 =64 R9 =0 R10=49 R11=70 R12=43 R13=74 R14=90 R15=70



6. Goniophotometer Test results

6.1 Test Data

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

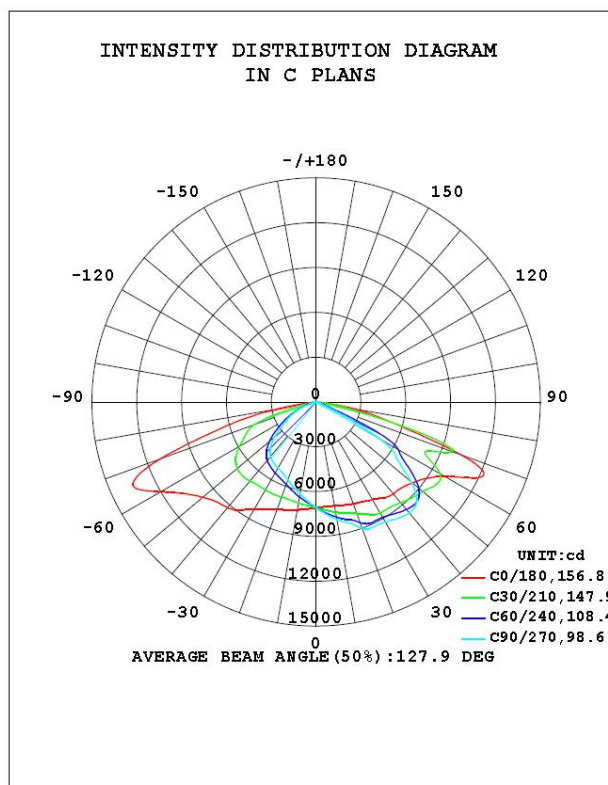
Electrical Measurement

Model Number	Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
402Y0240W30L70AY	120.0	60	1.993	0.9955	238.1

Photometric Measurement

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	ZL (0-90°)	ZL (80-90°)
402Y0240W30L70AY	31363.6	131.72	99.9%	1.1%

6.2 Luminous Intensity Distribution Diagram





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6.3 Zonal Flux Diagram

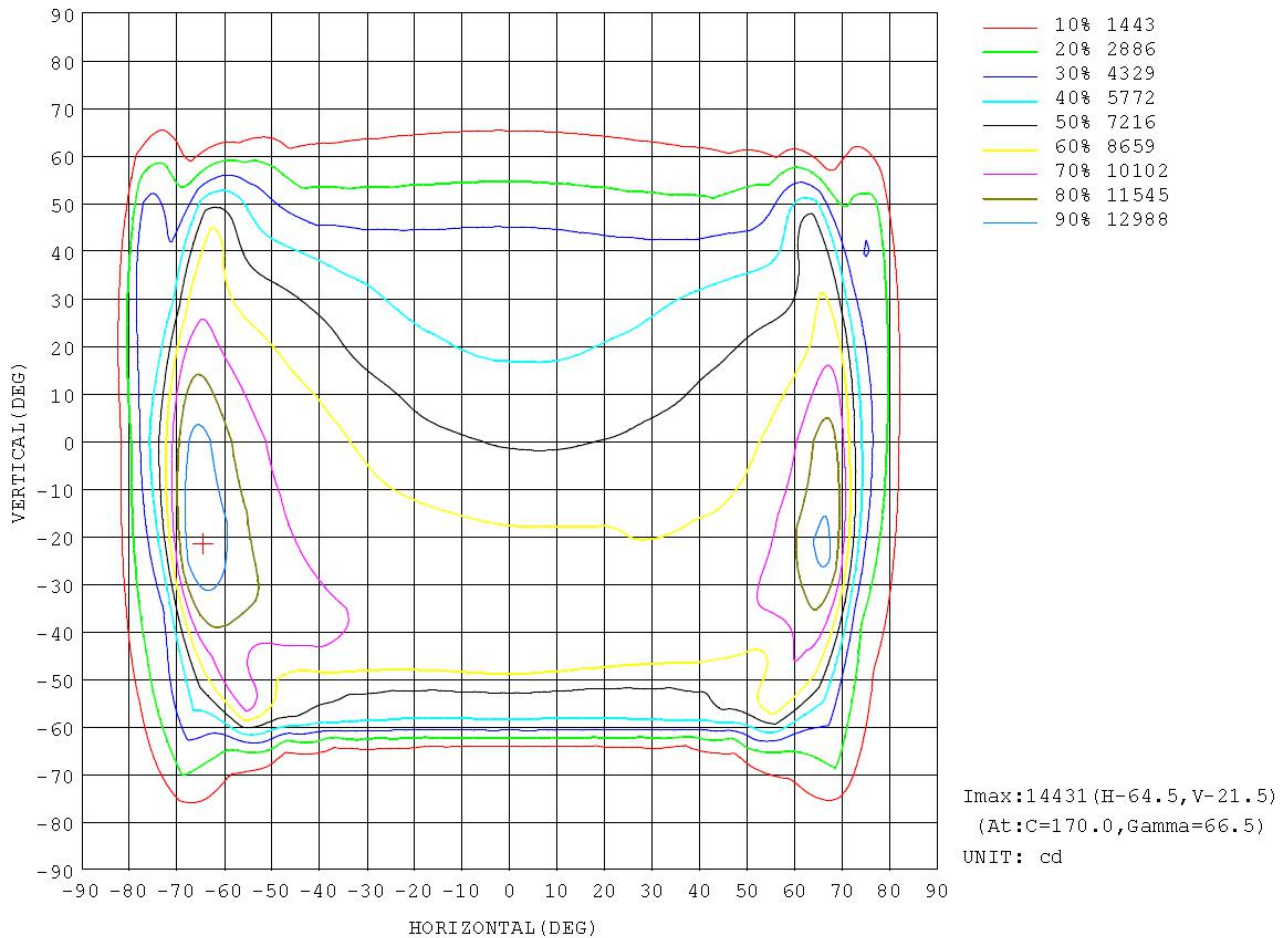
γ	CD	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	llum, lamp
10	705.9	765.6	797.9	785.5	732.4	664.7	626.8	646.7	0- 10	679.9	679.9	2.17, 2.17
20	724.1	826.1	898.4	865.5	765.2	627.9	554.9	603.6	10- 20	2051	2731	8.71, 8.71
30	755.1	873.3	926.3	937.1	827.6	598.5	511.4	571.4	20- 30	3449	6179	19.7, 19.7
40	802.4	915.0	969.3	972.2	924.0	576.0	477.1	539.7	30- 40	4782	10961	34.9, 34.9
50	842.5	943.2	928.7	1002	992.3	507.5	363.1	464.9	40- 50	5904	16866	53.8, 53.8
60	998.3	754.0	487.3	800.5	1201	334.9	211.7	304.7	50- 60	6199	23065	73.5, 73.5
70	1031	288.0	38.23	326.6	1108	139.6	81.94	127.2	60- 70	5390	28454	90.7, 90.7
80	253.0	29.18	10.81	34.24	260.6	29.65	15.39	27.55	70- 80	2539	30993	98.8, 98.8
90	0.3836	0.1587	0.0936	0.1203	0.7091	0.3340	0.1188	0.3763	80- 90	336.8	31330	99.9, 99.9
100	0.4487	0.2203	0.1478	0.1678	0.8583	0.5341	0.3118	0.6052	90-100	3.861	31333	99.9, 99.9
110	0.5165	0.2664	0.2227	0.2340	0.7156	0.5599	0.4650	0.6360	100-110	4.621	31338	99.9, 99.9
120	0.6870	0.3601	0.3511	0.3392	0.5488	0.5014	0.5359	0.5769	110-120	4.577	31343	99.9, 99.9
130	0.8965	0.4856	0.5056	0.4373	0.5704	0.5951	0.7016	0.6597	120-130	4.841	31347	99.9, 99.9
140	0.7618	0.5423	0.6405	0.4745	0.6670	0.7700	0.9647	0.8094	130-140	5.139	31353	100, 100
150	0.5043	0.5266	0.7217	0.4729	0.6798	0.8656	1.154	0.8754	140-150	4.551	31357	100, 100
160	0.5141	0.6157	0.8588	0.5638	0.7028	0.8358	1.163	0.9170	150-160	3.501	31361	100, 100
170	0.5935	0.6667	0.9392	0.6391	0.7096	0.7339	1.088	0.8914	160-170	2.203	31363	100, 100
180	0.6873	0.7442	0.9881	0.7248	0.6828	0.6816	0.9696	0.8047	170-180	0.7550	31364	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: $\times 10\text{cd}$

γ (DEG) \ C (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709
5	704	711	719	726	733	739	744	748	752	754	754	754	752	749	745	740	734	726	719
10	706	721	735	748	760	771	781	789	794	798	799	798	795	789	782	772	761	748	732
15	714	734	753	770	785	801	814	824	832	837	839	838	834	827	817	803	788	769	748
20	724	750	773	795	815	837	860	878	890	898	901	899	890	875	856	836	814	791	765
25	737	767	797	830	858	876	889	900	911	920	927	931	934	932	917	886	848	818	790
30	755	796	835	858	868	878	891	905	917	926	932	932	932	936	939	933	909	870	828
35	782	829	849	860	877	896	913	928	941	951	954	953	950	946	943	941	939	928	883
40	802	835	858	879	905	925	939	949	961	969	972	972	975	975	969	958	955	951	924
45	811	848	879	906	931	947	949	944	945	950	953	962	979	995	999	992	985	972	945
50	843	881	908	933	950	936	896	853	833	829	834	863	918	980	1023	1028	1026	1023	992
55	893	946	965	971	938	844	745	682	660	658	663	690	765	889	1018	1083	1100	1115	1070
60	998	1080	1037	956	811	697	634	565	507	487	507	566	643	726	875	1058	1184	1270	1201
65	1196	1271	1034	801	746	581	337	163	118	99.4	118	168	353	596	792	914	1183	1432	1345
70	1031	1264	1019	973	455	121	61.7	48.4	40.6	38.2	41.4	53.0	66.2	138	516	1083	1063	1296	1108
75	512	536	708	503	90.9	45.6	34.5	27.7	25.4	25.5	25.8	30.1	40.4	52.1	87.6	533	715	531	628
80	253	186	374	149	37.8	20.6	15.3	12.5	11.8	10.8	12.0	13.2	17.7	25.2	43.3	133	438	305	261
85	15.4	16.8	115	17.5	1.36	1.51	1.08	1.09	0.78	0.58	0.83	1.41	1.42	1.34	2.41	17.5	143	49.2	18.1
90	0.38	0.35	0.29	0.25	0.19	0.13	0.10	0.09	0.09	0.09	0.09	0.08	0.10	0.11	0.13	0.16	0.21	0.26	0.71
95	0.42	0.39	0.34	0.28	0.22	0.17	0.12	0.11	0.12	0.12	0.11	0.10	0.12	0.13	0.16	0.19	0.24	0.29	0.82
100	0.45	0.42	0.37	0.31	0.25	0.19	0.15	0.14	0.15	0.15	0.13	0.13	0.15	0.15	0.18	0.23	0.27	0.31	0.86
105	0.48	0.45	0.41	0.34	0.28	0.21	0.17	0.17	0.18	0.18	0.16	0.15	0.18	0.18	0.21	0.26	0.29	0.33	0.81
110	0.52	0.48	0.44	0.36	0.30	0.23	0.21	0.21	0.22	0.22	0.20	0.19	0.22	0.23	0.24	0.29	0.32	0.37	0.72
115	0.60	0.54	0.48	0.40	0.32	0.27	0.26	0.26	0.27	0.28	0.26	0.24	0.27	0.27	0.29	0.35	0.40	0.42	0.63
120	0.69	0.62	0.55	0.46	0.38	0.34	0.33	0.33	0.34	0.35	0.33	0.31	0.32	0.32	0.35	0.42	0.48	0.53	0.55
125	0.81	0.73	0.65	0.54	0.47	0.40	0.41	0.41	0.42	0.43	0.41	0.38	0.39	0.37	0.42	0.49	0.58	0.68	0.53
130	0.90	0.84	0.73	0.61	0.51	0.46	0.47	0.48	0.50	0.51	0.49	0.45	0.46	0.42	0.46	0.56	0.66	0.78	0.57
135	0.87	0.82	0.72	0.63	0.54	0.51	0.54	0.55	0.57	0.58	0.56	0.52	0.51	0.48	0.48	0.54	0.61	0.75	0.63
140	0.76	0.72	0.65	0.59	0.54	0.54	0.58	0.60	0.63	0.64	0.62	0.57	0.54	0.48	0.47	0.52	0.56	0.63	0.67
145	0.64	0.61	0.57	0.53	0.52	0.57	0.60	0.64	0.67	0.68	0.66	0.61	0.57	0.48	0.46	0.48	0.51	0.54	0.70
150	0.50	0.50	0.48	0.47	0.48	0.57	0.62	0.66	0.70	0.72	0.70	0.65	0.60	0.49	0.45	0.43	0.45	0.48	0.68
155	0.50	0.49	0.48	0.48	0.51	0.62	0.68	0.73	0.76	0.79	0.77	0.72	0.67	0.56	0.48	0.46	0.47	0.49	0.71
160	0.51	0.51	0.51	0.52	0.56	0.67	0.72	0.79	0.83	0.86	0.83	0.78	0.71	0.61	0.52	0.49	0.51	0.49	0.70
165	0.56	0.54	0.55	0.56	0.59	0.69	0.75	0.83	0.88	0.90	0.88	0.84	0.76	0.65	0.58	0.54	0.53	0.53	0.70
170	0.59	0.58	0.58	0.58	0.62	0.71	0.79	0.87	0.92	0.94	0.91	0.87	0.78	0.67	0.61	0.56	0.57	0.58	0.71
175	0.63	0.63	0.64	0.65	0.67	0.75	0.84	0.92	0.97	0.97	0.95	0.91	0.83	0.74	0.69	0.66	0.66	0.65	0.69
180	0.69	0.66	0.65	0.66	0.70	0.79	0.85	0.93	0.97	0.99	0.94	0.90	0.84	0.74	0.71	0.68	0.67	0.66	0.68



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Table--2

UNIT: ×10cd

C(°)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
γ (°)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709	709		
5	711	703	695	688	682	676	671	668	665	665	665	667	671	676	682	688	696		
10	717	701	686	671	658	646	637	630	627	626	629	634	642	652	663	677	691		
15	725	702	679	656	635	616	602	593	590	590	595	604	617	633	652	672	693		
20	738	709	677	643	613	588	569	559	555	556	561	573	592	616	643	670	697		
25	762	725	680	633	593	566	547	534	529	529	536	550	572	602	636	672	706		
30	789	740	680	621	576	549	530	518	511	512	519	533	555	588	628	673	716		
35	821	754	681	611	562	532	514	503	498	498	504	516	539	574	621	674	727		
40	860	777	690	606	546	511	491	481	477	477	482	494	518	561	620	682	748		
45	889	801	699	592	517	473	448	437	433	435	441	457	487	539	616	694	762		
50	920	813	689	553	462	409	381	367	363	366	375	394	432	497	596	697	781		
55	956	817	658	481	381	326	298	286	282	284	293	313	356	430	555	691	805		
60	994	800	593	380	289	244	223	215	212	213	219	233	270	339	483	663	821		
65	1044	818	523	273	202	170	156	150	148	148	153	162	189	245	396	650	866		
70	911	897	437	160	119	101	91.7	84.7	81.9	83.1	88.0	95.6	110	144	286	795	888		
75	454	503	171	68.9	60.8	55.1	45.4	33.8	31.2	32.4	41.7	52.1	57.1	62.7	97.5	466	438		
80	566	69.8	40.2	29.2	30.1	24.9	17.5	16.2	15.4	15.7	15.9	21.6	28.3	26.8	35.0	51.8	392		
85	104	11.3	9.10	6.44	5.99	3.39	1.25	0.36	0.15	0.29	1.10	1.98	5.08	4.94	6.01	9.08	67.4		
90	0.73	0.66	0.53	0.40	0.27	0.17	0.13	0.12	0.12	0.12	0.14	0.20	0.30	0.45	0.60	0.73	0.80		
95	0.85	0.78	0.65	0.51	0.39	0.28	0.23	0.21	0.20	0.21	0.24	0.31	0.43	0.58	0.75	0.86	0.93		
100	0.88	0.81	0.71	0.59	0.48	0.39	0.34	0.32	0.31	0.32	0.36	0.42	0.53	0.68	0.81	0.92	0.98		
105	0.81	0.76	0.70	0.61	0.54	0.48	0.43	0.41	0.41	0.41	0.44	0.49	0.60	0.71	0.81	0.89	0.93		
110	0.71	0.69	0.64	0.59	0.53	0.51	0.48	0.47	0.47	0.46	0.49	0.52	0.59	0.68	0.76	0.81	0.81		
115	0.62	0.61	0.57	0.54	0.52	0.51	0.52	0.52	0.50	0.49	0.51	0.52	0.56	0.63	0.68	0.71	0.71		
120	0.55	0.53	0.52	0.49	0.51	0.52	0.55	0.56	0.54	0.52	0.53	0.54	0.56	0.59	0.63	0.63	0.63		
125	0.55	0.50	0.50	0.52	0.52	0.57	0.60	0.62	0.61	0.59	0.59	0.58	0.57	0.63	0.64	0.63	0.62		
130	0.58	0.58	0.58	0.57	0.62	0.66	0.69	0.72	0.70	0.69	0.69	0.67	0.64	0.68	0.71	0.71	0.67		
135	0.62	0.64	0.65	0.67	0.71	0.75	0.81	0.85	0.83	0.82	0.81	0.78	0.74	0.75	0.77	0.77	0.72		
140	0.66	0.69	0.72	0.75	0.79	0.85	0.93	0.97	0.96	0.94	0.93	0.89	0.81	0.81	0.81	0.80	0.77		
145	0.72	0.74	0.77	0.81	0.85	0.93	1.04	1.08	1.08	1.05	1.05	0.97	0.87	0.83	0.82	0.81	0.80		
150	0.73	0.74	0.77	0.83	0.90	1.00	1.09	1.15	1.15	1.12	1.10	1.01	0.90	0.85	0.81	0.80	0.78		
155	0.73	0.75	0.78	0.84	0.92	1.02	1.10	1.16	1.17	1.14	1.11	1.06	0.94	0.87	0.83	0.80	0.78		
160	0.72	0.74	0.75	0.79	0.89	0.97	1.07	1.14	1.16	1.14	1.11	1.06	0.95	0.88	0.84	0.80	0.78		
165	0.70	0.71	0.70	0.73	0.80	0.90	0.99	1.08	1.11	1.11	1.07	1.03	0.92	0.84	0.81	0.78	0.73		
170	0.71	0.70	0.69	0.70	0.76	0.87	0.95	1.04	1.09	1.11	1.07	1.03	0.94	0.84	0.80	0.78	0.74		
175	0.69	0.70	0.69	0.69	0.74	0.83	0.91	0.98	1.04	1.06	1.03	0.99	0.91	0.80	0.76	0.75	0.72		
180	0.68	0.66	0.65	0.66	0.70	0.78	0.85	0.92	0.97	0.99	0.95	0.91	0.85	0.75	0.71	0.69	0.68		

7. THD and PF Test

Test type	Voltage (V AC)	Frequency (Hz)	Current(A)	Power Factor	Power(W)	Current THD
Results	277.0	60	0.8793	0.9387	228.64	8.93%



Guangdong Meide Testing Technology Co., Ltd.



8. Photo of sample



Figure 1



Figure 2

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