



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, DSTT. GAUTAM BUDH NAGAR, UP-201305

Test Model..... : 402Y0200W30L70AY,402Y0200W57L70AY

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

Brand Name..... :  

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

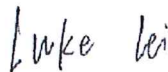
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Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr., China.

Report No..... : CA1905127L 01003

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.

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



1. Product Information

Model Number.....: 402Y0200W30L70AY,402Y0200W57L70AY
 Manufacturer.....: ROYALUX EXPORTS
 Product Type.....: Outdoor Pole/Arm-Mounted Area and Roadway Luminaires
 Rated Voltage/Frequency.....: 100-277V AC 50/60Hz
 Rated Power.....: 200W
 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,0-1000W	2018/10/08	2019/10/07
Standard Lamp	MD-E012	D204	3.9424A,20.75V,2856K,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
402Y0200W30L70AY	120.0	60	1.662	198.5	0.9953
402Y0200W57L70AY	120.0	60	1.666	199.2	0.9964

Model Number	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)	Ra	R9
402Y0200W30L70AY	26358	132.79	2983	73.6	0
402Y0200W57L70AY	27364	137.37	5511	74.7	0

Model Number	duv	x	y	u'	v'
402Y0200W30L70AY	-0.000412	0.4375	0.4032	0.2513	0.5211
402Y0200W57L70AY	0.00239	0.3322	0.3452	0.2051	0.4796

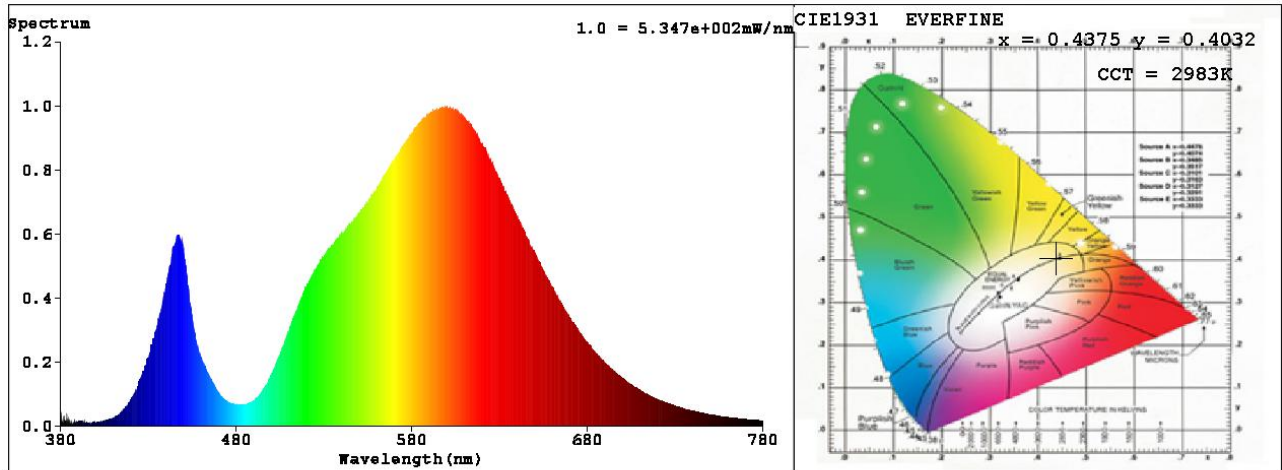


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5.2 Spectrum

402Y0200W30L70AY



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4375$ $y = 0.4032$ / $u' = 0.2513$ $v' = 0.5211$ ($duv = -4.12e-04$)

CCT= 2983K Prcp WL: $\lambda_d = 583.0nm$ Purity=52.4%

Peak WL: $\lambda_p = 599nm$ FWHM: $=127.9nm$ Ratio: R=21.8% 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

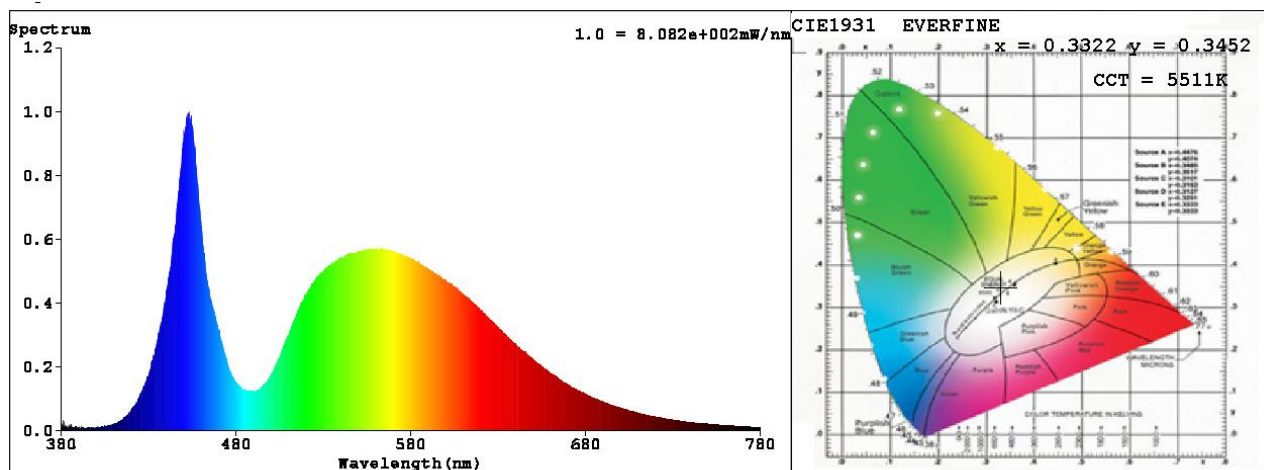
R8 =51 R9 =0 R10=56 R11=67 R12=48 R13=73 R14=93 R15=65



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402Y0200W57L70AY



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3322$ $y = 0.3452$ / $u' = 0.2051$ $v' = 0.4796$ ($duv=2.39e-03$)

CCT= 5511K Prcp WL: Ld=549.7nm Purity=3.3%

Peak WL: Lp=453nm FWHM: =20.8nm Ratio:R=13.9% G=82.4% B=3.7%

Render Index: Ra = 74.7 TM30:Rf=73 Rg=94

R1 =73 R2 =79 R3 =82 R4 =74 R5 =73 R6 =70 R7 =84

R8 =63 R9 =0 R10=48 R11=70 R12=42 R13=74 R14=89 R15=69



6. Goniophotometer Test results

6.1 Test Data

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

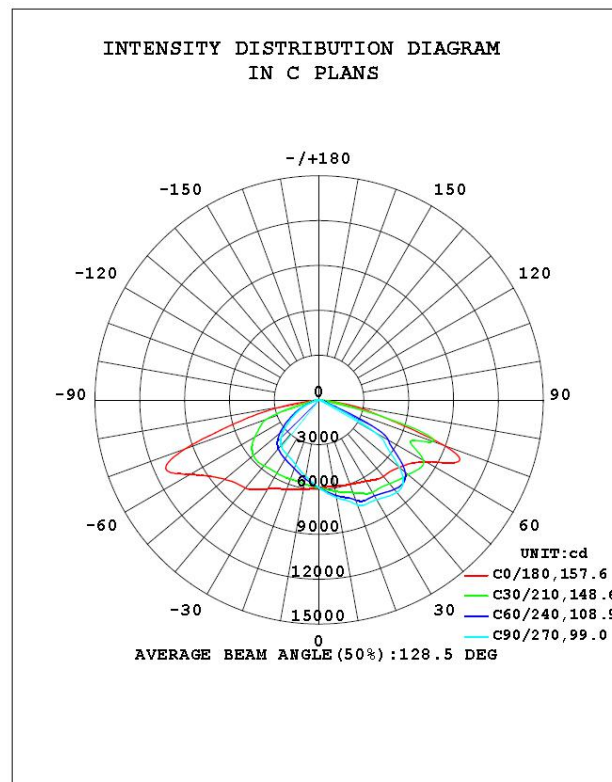
Electrical Measurement

Model Number	Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
402Y0200W30L70AY	120.0	60	1.661	0.9958	198.5

Photometric Measurement

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	ZL (0-90°)	ZL (80-90°)
402Y0200W30L70AY	26374.8	132.87	99.9%	2.1%

6.2 Luminous Intensity Distribution Diagram





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6.3 Zonal Flux Diagram

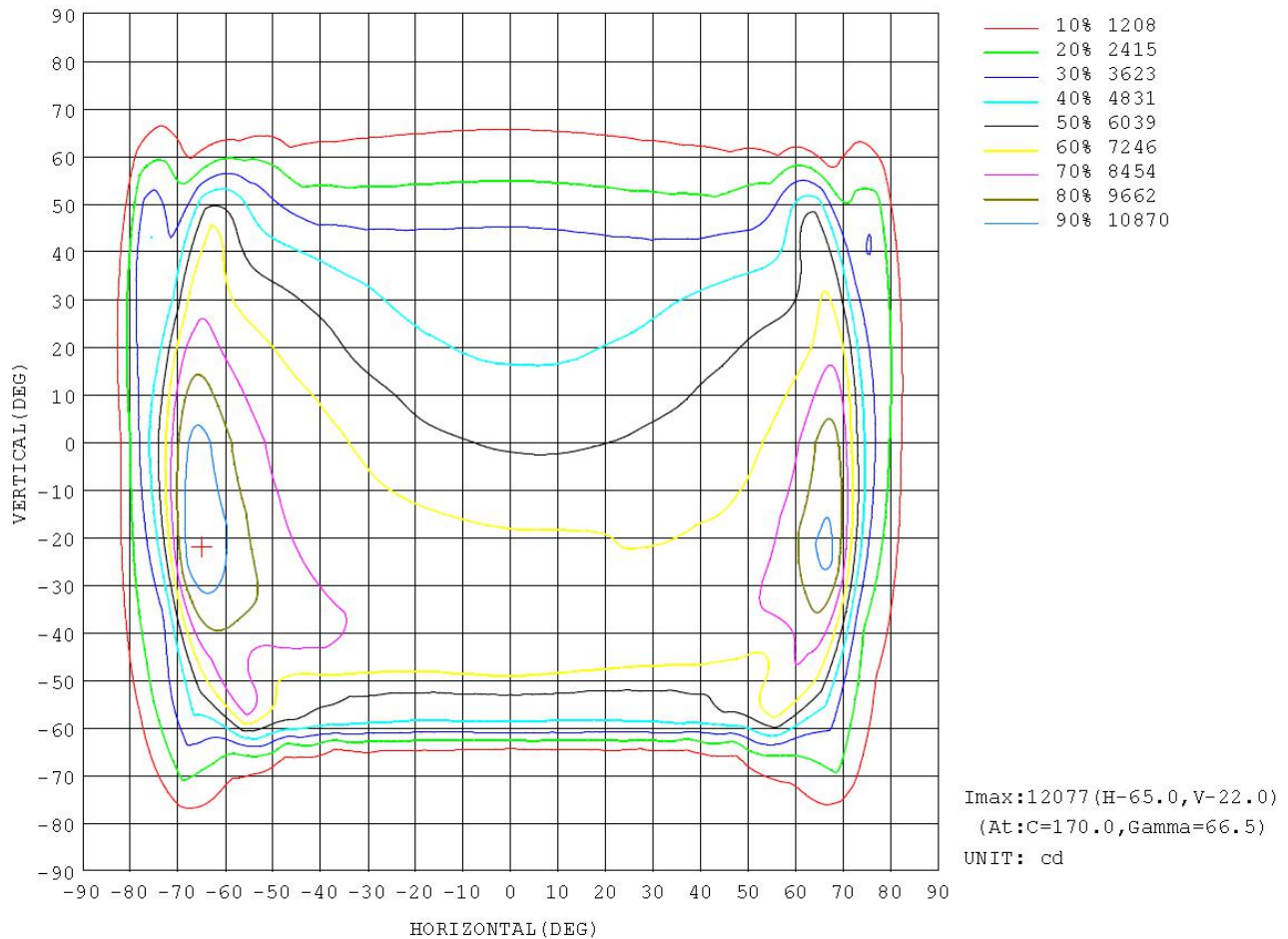
γ	CD	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	586.3	635.6	662.4	652.2	608.3	552.4	521.0	537.4	0- 10	564.6	564.6	2.14, 2.14
20	601.7	686.1	746.3	718.5	635.8	522.3	461.8	502.1	10- 20	1704	2268	8.6, 8.6
30	628.1	726.8	770.5	779.9	688.1	498.5	426.1	475.9	20- 30	2868	5136	19.5, 19.5
40	668.9	761.6	807.5	808.9	769.7	480.6	398.6	450.4	30- 40	3981	9117	34.6, 34.6
50	702.0	788.1	698.8	836.4	826.7	426.1	306.5	390.4	40- 50	4929	14046	53.3, 53.3
60	828.8	637.4	424.0	677.3	998.2	284.6	180.2	259.2	50- 60	5200	19246	73, 73
70	889.8	268.3	33.13	293.0	951.0	122.0	71.99	111.3	60- 70	4562	23809	90.3, 90.3
80	227.3	26.65	9.836	30.77	238.3	26.93	13.79	24.83	70- 80	2223	26032	98.7, 98.7
90	0.3232	0.1355	0.0821	0.1028	0.6012	0.2850	0.1045	0.3224	80- 90	314.4	26346	99.9, 99.9
100	0.3806	0.1888	0.1283	0.1435	0.7257	0.4560	0.2685	0.5173	90-100	3.291	26349	99.9, 99.9
110	0.4433	0.2284	0.1912	0.2000	0.6073	0.4741	0.3980	0.5417	100-110	3.942	26353	99.9, 99.9
120	0.5875	0.3035	0.2985	0.2862	0.4647	0.4230	0.4586	0.4860	110-120	3.891	26357	99.9, 99.9
130	0.7519	0.4070	0.4276	0.3674	0.4792	0.4992	0.5934	0.5550	120-130	4.084	26361	99.9, 99.9
140	0.6417	0.4553	0.5396	0.4020	0.5584	0.6452	0.8104	0.6810	130-140	4.323	26366	100, 100
150	0.4256	0.4420	0.6049	0.3974	0.5721	0.7252	0.9667	0.7376	140-150	3.824	26369	100, 100
160	0.4282	0.5160	0.7185	0.4718	0.5884	0.7000	0.9756	0.7706	150-160	2.938	26372	100, 100
170	0.4963	0.5588	0.7866	0.5358	0.5930	0.6129	0.9088	0.7466	160-170	1.845	26374	100, 100
180	0.5792	0.6227	0.8280	0.6122	0.5713	0.5699	0.8085	0.6716	170-180	0.6314	26375	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(°) γ (°)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588
5	584	591	597	603	609	614	618	621	624	626	626	626	624	622	619	614	609	603	597
10	586	598	610	621	631	640	648	655	659	662	663	663	660	655	649	641	632	621	608
15	593	610	625	639	652	665	675	684	691	695	697	696	693	687	678	667	654	639	621
20	602	623	642	660	677	695	714	729	739	746	748	746	739	726	711	694	676	657	636
25	612	637	662	690	713	729	740	749	757	765	771	774	777	775	761	735	704	679	657
30	628	662	694	714	723	731	741	753	763	771	775	775	775	779	781	776	755	722	688
35	651	690	707	716	730	745	759	772	783	791	794	793	790	787	785	783	782	771	734
40	669	696	715	732	753	770	781	791	800	808	810	810	812	812	806	798	795	792	770
45	676	707	733	755	776	790	791	788	790	794	797	804	817	829	832	826	820	809	788
50	702	734	757	778	793	784	752	718	702	699	703	726	770	820	853	856	854	851	827
55	743	787	803	810	785	712	630	577	557	556	560	583	647	749	852	902	915	926	892
60	829	896	865	804	687	588	534	482	438	424	439	483	541	613	742	890	987	1052	998
65	994	1056	868	674	623	501	308	158	119	97.8	118	163	319	514	661	768	993	1192	1123
70	890	1077	858	811	414	122	53.8	42.2	35.2	33.1	36.1	46.2	57.3	119	467	901	901	1109	951
75	448	489	623	459	81.1	39.9	30.1	24.2	22.0	22.1	22.5	26.3	35.1	45.3	88.5	493	623	480	545
80	227	167	325	136	34.6	18.7	13.8	11.4	10.7	9.84	10.9	12.1	16.2	22.9	38.7	122	383	265	238
85	20.2	21.2	115	20.9	1.95	1.30	1.52	1.13	0.96	0.73	1.20	1.24	1.22	2.10	3.07	19.3	148	50.5	19.6
90	0.32	0.29	0.25	0.21	0.16	0.11	0.09	0.08	0.08	0.08	0.07	0.07	0.08	0.09	0.11	0.14	0.17	0.22	0.60
95	0.35	0.33	0.28	0.23	0.19	0.14	0.10	0.10	0.10	0.10	0.09	0.09	0.11	0.11	0.14	0.16	0.20	0.24	0.70
100	0.38	0.36	0.32	0.26	0.21	0.17	0.13	0.12	0.13	0.13	0.12	0.11	0.13	0.13	0.16	0.20	0.23	0.26	0.73
105	0.41	0.39	0.35	0.29	0.24	0.18	0.15	0.15	0.15	0.16	0.14	0.13	0.16	0.16	0.18	0.22	0.25	0.28	0.69
110	0.44	0.41	0.37	0.31	0.26	0.20	0.18	0.18	0.19	0.19	0.17	0.16	0.19	0.19	0.21	0.25	0.27	0.32	0.61
115	0.51	0.46	0.41	0.34	0.28	0.23	0.22	0.23	0.23	0.24	0.22	0.21	0.23	0.23	0.25	0.29	0.34	0.37	0.53
120	0.59	0.53	0.47	0.39	0.32	0.28	0.28	0.28	0.29	0.30	0.28	0.26	0.27	0.27	0.30	0.35	0.40	0.44	0.46
125	0.68	0.62	0.54	0.46	0.39	0.34	0.35	0.35	0.35	0.36	0.35	0.33	0.33	0.31	0.35	0.41	0.49	0.57	0.45
130	0.75	0.71	0.61	0.51	0.43	0.38	0.40	0.41	0.42	0.43	0.41	0.38	0.39	0.35	0.39	0.47	0.56	0.66	0.48
135	0.73	0.69	0.60	0.53	0.45	0.43	0.45	0.46	0.48	0.49	0.48	0.44	0.43	0.40	0.41	0.46	0.52	0.64	0.53
140	0.64	0.61	0.55	0.50	0.46	0.46	0.48	0.51	0.53	0.54	0.52	0.48	0.46	0.40	0.40	0.44	0.47	0.54	0.56
145	0.54	0.51	0.48	0.45	0.44	0.48	0.51	0.54	0.56	0.57	0.55	0.52	0.48	0.40	0.39	0.40	0.43	0.46	0.59
150	0.43	0.42	0.41	0.39	0.40	0.48	0.52	0.56	0.59	0.60	0.59	0.54	0.50	0.41	0.38	0.36	0.38	0.40	0.57
155	0.42	0.41	0.41	0.40	0.42	0.52	0.57	0.61	0.64	0.66	0.64	0.60	0.56	0.47	0.40	0.39	0.39	0.41	0.59
160	0.43	0.43	0.43	0.44	0.47	0.56	0.60	0.66	0.70	0.72	0.70	0.65	0.59	0.51	0.43	0.41	0.42	0.41	0.59
165	0.47	0.45	0.46	0.47	0.50	0.58	0.63	0.69	0.73	0.76	0.74	0.70	0.64	0.55	0.48	0.45	0.45	0.44	0.59
170	0.50	0.48	0.48	0.49	0.52	0.60	0.66	0.73	0.77	0.79	0.76	0.73	0.66	0.56	0.51	0.46	0.47	0.48	0.59
175	0.53	0.53	0.53	0.54	0.56	0.63	0.70	0.77	0.81	0.81	0.79	0.76	0.69	0.62	0.58	0.55	0.55	0.54	0.57
180	0.58	0.55	0.54	0.56	0.59	0.66	0.72	0.78	0.81	0.83	0.80	0.76	0.71	0.63	0.59	0.57	0.56	0.55	0.57



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Table--2

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

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588	588		
5	590	584	578	572	566	561	557	555	553	552	553	554	557	561	566	572	578		
10	596	583	570	558	547	537	529	524	521	521	522	527	533	541	551	562	574		
15	602	583	564	545	528	512	500	493	491	491	494	502	513	527	542	558	576		
20	614	589	563	535	510	489	474	465	462	463	467	477	492	512	535	557	579		
25	633	603	566	526	494	471	455	445	440	441	446	458	476	501	529	559	586		
30	657	616	566	517	480	457	441	431	426	426	432	444	462	489	523	560	596		
35	683	627	567	510	468	444	428	419	415	415	420	430	449	478	517	561	605		
40	716	647	575	506	455	427	410	402	399	399	403	413	433	468	516	568	622		
45	741	668	583	495	433	396	376	366	363	365	370	383	407	451	514	579	635		
50	767	678	576	463	389	345	321	310	306	309	316	332	364	417	498	581	651		
55	798	683	551	406	322	276	253	242	239	241	248	266	301	363	466	578	671		
60	831	670	499	323	246	208	189	183	180	181	186	199	230	288	408	556	685		
65	873	682	441	234	174	146	134	129	127	127	131	139	162	210	336	542	720		
70	780	753	374	140	104	88.0	79.8	74.1	72.0	72.9	76.8	83.3	96.4	126	248	659	754		
75	392	454	157	61.2	53.1	48.1	40.2	30.6	27.8	29.1	37.1	45.5	49.8	55.4	89.9	429	385		
80	479	67.1	36.9	27.1	26.7	22.9	15.7	14.5	13.8	14.1	14.3	19.7	25.1	24.5	31.0	51.7	346		
85	94.0	11.1	8.78	6.37	6.11	3.92	1.45	0.53	0.26	0.41	1.17	2.82	5.08	5.03	6.00	8.65	75.0		
90	0.62	0.56	0.45	0.34	0.23	0.15	0.11	0.11	0.10	0.10	0.13	0.17	0.26	0.38	0.51	0.62	0.68		
95	0.72	0.66	0.55	0.44	0.33	0.24	0.20	0.18	0.18	0.18	0.21	0.27	0.37	0.50	0.63	0.73	0.79		
100	0.74	0.69	0.60	0.50	0.41	0.34	0.29	0.27	0.27	0.27	0.31	0.36	0.45	0.58	0.69	0.78	0.83		
105	0.69	0.65	0.59	0.52	0.46	0.41	0.37	0.36	0.35	0.35	0.38	0.42	0.51	0.61	0.69	0.76	0.79		
110	0.60	0.58	0.54	0.49	0.45	0.43	0.41	0.40	0.40	0.40	0.42	0.45	0.50	0.58	0.64	0.69	0.69		
115	0.53	0.50	0.48	0.46	0.44	0.43	0.44	0.44	0.42	0.42	0.43	0.44	0.47	0.53	0.58	0.60	0.60		
120	0.47	0.44	0.44	0.42	0.43	0.44	0.47	0.48	0.46	0.44	0.45	0.45	0.47	0.50	0.53	0.54	0.53		
125	0.46	0.42	0.42	0.44	0.43	0.48	0.51	0.53	0.51	0.50	0.50	0.49	0.48	0.53	0.54	0.54	0.52		
130	0.49	0.49	0.48	0.48	0.52	0.55	0.58	0.61	0.59	0.58	0.58	0.56	0.54	0.57	0.60	0.60	0.56		
135	0.52	0.53	0.54	0.56	0.59	0.63	0.68	0.72	0.70	0.69	0.68	0.65	0.62	0.63	0.65	0.64	0.60		
140	0.55	0.58	0.60	0.63	0.66	0.71	0.78	0.82	0.81	0.79	0.78	0.74	0.68	0.68	0.67	0.67	0.64		
145	0.60	0.62	0.64	0.68	0.71	0.78	0.87	0.91	0.90	0.88	0.88	0.81	0.73	0.70	0.69	0.68	0.67		
150	0.61	0.62	0.65	0.69	0.76	0.83	0.92	0.96	0.97	0.94	0.92	0.85	0.76	0.72	0.68	0.67	0.65		
155	0.62	0.62	0.66	0.70	0.77	0.86	0.93	0.97	0.98	0.95	0.93	0.89	0.79	0.73	0.70	0.68	0.66		
160	0.60	0.62	0.63	0.66	0.74	0.82	0.90	0.96	0.98	0.96	0.93	0.89	0.80	0.74	0.71	0.68	0.65		
165	0.58	0.59	0.59	0.61	0.67	0.75	0.83	0.91	0.93	0.93	0.90	0.86	0.78	0.71	0.68	0.66	0.62		
170	0.59	0.59	0.58	0.59	0.64	0.73	0.79	0.87	0.91	0.93	0.90	0.86	0.79	0.70	0.67	0.65	0.62		
175	0.57	0.59	0.58	0.57	0.62	0.70	0.76	0.82	0.87	0.89	0.86	0.83	0.77	0.67	0.64	0.63	0.60		
180	0.57	0.55	0.54	0.55	0.59	0.65	0.71	0.77	0.81	0.82	0.79	0.76	0.71	0.63	0.60	0.58	0.57		

7. THD and PF Test

Test type	Voltage (V AC)	Frequency (Hz)	Current(A)	Power Factor	Power(W)	Current THD
Results	277.0	60	0.7442	0.9411	193.99	11.52%



Guangdong Meide Testing Technology Co., Ltd.



8. Photo of sample



Figure 1



Figure 2

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