



# LM-79-08 Test Report

For

## **ELEC-TECH INTERNATIONAL CO LTD**

No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai City, Guangdong Province, P.R. China 519085

# Wall Pack

Model name(s): 533042xx

Representative (Tested) Model: 53304261

Model Difference: XX=61-70 intends CCT is 5000K

Prepare By:

loston

Engineer: Leo Liu Date: 2017-06-22

Review By:

incer Tven

Technical Lead:Vincent Yuan Date: 2017-06-22

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

Laboratory: Dongguan New Testing Centre Co., Ltd Page 1/11 Address: 3F, No. 1 the 1<sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China Tel: 86-755-2344 3526 Website: http://www.ntc-cert.com





Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	53304261
Product type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area
	Luminaires
Rating Input:	AC120-277V, 50/ 60Hz, 32W
Declared CCT:	5000K
Declared Light Output:	3500lm
LED Manufacturer:	Samsung
LED Model:	2835 Series
LED Quantity:	78 pcs
Forward current of LED Chip:	200mA
Date of Receipt Samples:	2017-06-14
Quantity of Receipt Samples:	1
Sample Number:	170614005-S1
Laboratory Information:	
Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1 <sup>st</sup> North Industry Road, Songshan Lake Science &
	Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_ntc@163.com
<b>Report Information</b>	
Issued Date of Test Report:	2017-06-22
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17060037
Remark (If applicable)	N/A





Test Specifications	
Date of Test	2017-06-19
Test item	1. Total Luminous Flux
	2. Luminous Distribution Intensity
	3. Luminous Efficacy
	4. Correlated Color Temperature
	5. Color Rendering Index
	6. Chromaticity Coordinate
	7. THD and PF
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State
	Lighting Products
	ANSI C78.377-2008 Specifications for the Chromaticity of Solid State
	Lighting Products
	CIE 13.3-1995 Method of Measuring and Specifying Color Rendering
	Properties of Light Sources
	CIE 15-2004 Technical Report Colorimetry

#### **Test Methods**

#### 1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}$  C  $\pm$  1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° Vertical intervals.

#### 2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}$  C  $\pm$  1° C. 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

#### 3. THD and PF measurements

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.





**Integrating Sphere Test Results** 

Test Co	Test Condition:										
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time							
25.1	51	Face Down	90	25							
Electric	al Data:										

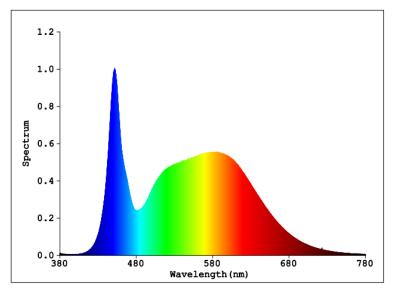
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	<b>Power Factor</b>
120.0	60	0.2702	31.98	0.9862

Color Data:

Color Dutui	
Parameter	Result
CCT(K)	5220
Color Rendering Index (CRI)	84.1
R9	12
Chromaticity, x	0.3394
Chromaticity, y	0.3502
Chromaticity u'	0.2081
Chromaticity v'	0.4831
Duv	0.00163

Special Color Rendering										
R1	83	R9	12							
R2	89	R10	74							
R3	93	R11	83							
R4	84	R12	62							
R5	83	R13	84							
R6	85	R14	96							
R7	87	R15	78							
R8	69	-	-							

## Spectrum Diagram:





NVLAP®

NVLAP LAB CODE 600150-0

Report No: NTCR17060037 Report Version: V1.1

**Goniophotemeter Test Results:** 

Test Condition:										
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time						
25.1	52	Face Down	90	25						
Electric	al Data:									

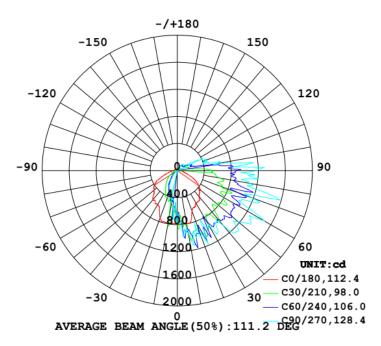
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	<b>Power Factor</b>
120.0	60	0.2702	31.98	0.9862

### **Goniophotometer Data:**

Parameter	Result
Total Luminous (lm)	3655.4
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	114.3
Zonal Lumens (0-90°) (1m)	3059
Zonal Luminous Efficacy(0-90°) (lm/w)	95.56
Zonal Lumens Distribution (80-90°)	11.73%
Beam Angle (°)	111.2
Center Beam Candle Power (cd)	1574

### **Luminous Intensity Distribution Diagram:**

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



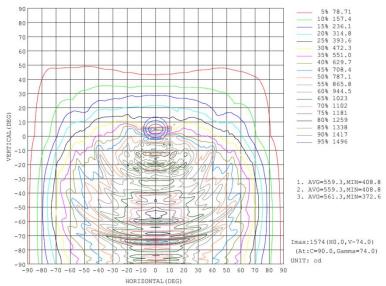
 Laboratory: Dongguan New Testing Centre Co., Ltd
 Page
 5 / 11

 Address: 3F, No. 1 the 1<sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
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ZONAL FLUX DIAGRAM:

Ÿ	C0	C45	C90	C135	C180	C225	C270	C315	Y		<pre>     total </pre>	%lum,lamp
10	794.8	934.7	905.9	862.1	782.4	438.6	414.3	391.7	0- 10	67.27	67.27	1.84,1.84
20	639.6	975.2	1044	939.0	740.9	353.6	331.0	350.8	10- 20	197.8	265.0	7.25,7.25
30	565.3	954.2	927.0	874.8	586.7	290.1	206.7	278.1	20- 30	297.2	562.2	15.4,15.4
40	503.2	861.3	1061	825.9	558.7	194.8	103.4	185.5	30-40	356.0	918.2	25.1,25.1
50	442.9	971.9	1183	938.9	446.4	125.7	41.43	118.5	40- 50	417.2	1335	36.5,36.5
60	324.4	945.8	1489	868.2	376.3	61.60	22.24	60.12	50- 60	454.7	1790	49,49
70	167.6	800.9	1177	776.9	219.4	22.02	1.905	23.30	60- 70	455.3	2245	61.4,61.4
80	84.09	753.1	1087	710.0	108.2	9.921	2.767	10.87	70- 80	438.6	2684	73.4,73.4
90	55.45	658.2	1187	646.5	63.75	5.911	3.320	6.350	80- 90	375.3	3059	83.7,83.7
100	33.75	330.2	542.8	252.8	39.81	4.926	5.715	4.786	90-100	292.5	3352	91.7,91.7
110	36.32	176.1	437.6	198.4	40.52	3.795	5.714	3.556	100-110	124.4	3476	95.1,95.1
120	26.11	90.15	234.8	91.71	28.72	3.416	4.605	3.045	110-120	85.73	3562	97.4,97.4
130	14.49	78.16	125.7	76.61	18.81	2.825	2.825	2.484	120-130	40.71	3603	98.6,98.6
140	5.687	75.58	117.0	74.64	6.262	2.256	1.966	2.088	130-140	28.54	3631	99.3,99.3
150	2.422	36.42	64.50	36.32	2.527	2.117	1.895	2.025	140-150	16.91	3648	99.8,99.8
160	2.393	1.843	36.28	1.739	2.357	1.951	1.825	1.887	150-160	5.988	3654	100,100
170	2.365	3.684	4.805	2.980	2.305	1.885	1.858	1.873	160-170	1.137	3655	100,100
180	2.345	2.102	2.028	1.987	2.269	1.839	1.905	1.862	170-180	0.2145	3655	100,100
DEG		LUN	INOUS INTE	NSITY:cd	Less than	25% Percen	t = 10.5 %			UNI	T:lm	





**Luminous Distribution Intensity Data:** 

Table1																UNI	T: cd		
C (DEG)	0		20					105	100	1.15	1.00	1.00	100	1.05		225			
(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	796	788	796	782	792	773	788	777	782	780	801	786	796	788	796	782	792	773	788
5	788	870	738	773	803	897	985	917	817	723	776	692	784	612	539	612	686	745	729
10	795	742	938	935	909	860	906	859	872	862	947	754	782	568	734	439	451	411	414
15	778	806	932	955	1182	937	927	916	1107	940	868	760	781	693	468	458	394	330	335
20	640	879	907	975	913	1056	1044	1058	885	939	852	875	741	703	427	354	354	326	331
25	605	844	1073	882	919	975	801	964	911	846	980	777	633	587	423	345	299	273	264
30	565	768	916	954	847	979	927	949	828	875	869	746	587	501	350	290	244	223	207
35	545	778	808	830	945	1055	1015	1052	922	781	770	716	575	442	298	238	196	168	157
40	503	883	975	861	949	1035	1015	992	905	826	937	849	559	405	259	195	143	105	103
																		-	
45	471	678	735	912	991	1106	1268	1122	964	874	688	618	486	348	219	157	106	74.3	63.2
50	443	639	797	972	1060	1085	1183	1079	1039	939	751	619	446	239	183	126	70.9	48.1	41.4
55	398	729	891	886	998	1215	1336	1205	973	815	801	639	424	197	148	90.3	43.6	34.0	32.1
60	324	661	801	946	993	1341	1489	1324	948	868	745	633	376	175	119	61.6	25.6	24.1	22.2
65	244	609	728	805	886	1022	1042	1016	858	768	672	573	304	135	86.7	39.3	12.7	10.1	8.04
70	168	588	670	801	955	1139	1177	1162	996	777	669	609	219	107	59.9	22.0	2.27	3.81	1.91
75	119	482	653	818	1084	1410	1501	1444	1090	817	603	492	152	84.7	43.7	11.8	2.40	2.83	2.40
80	84.1	408	638	753	851	1062	1087	1057	834	710	650	429	108	68.0	33.4	9.92	2.71	2.12	2.77
85	62.8	300	558	698	816	1108	1109	1109	783	673	553	322	79.5	53.8	26.5	7.89	2.77	2.47	3.01
90	55.4	226	501	658	870	1153	1187	1112	820	646	508	244	63.8	46.6	22.4	5.91	2.83	2.66	3.32
		-	324	-	814	985			738	498		116							
95	48.7	120	_	562	-		1027	926	_		270	-	58.2	42.6	18.8	5.10	3.60	3.46	4.44
100	33.8	66.7	172	330	442	544	543	535	404	253	157	76.4	39.8	28.2	12.0	4.93	3.60	4.57	5.71
105	22.4	42.9	174	133	259	409	392	445	204	130	186	52.8	26.8	17.8	7.66	4.21	3.60	4.82	5.79
110	36.3	38.4	122	176	237	363	438	387	221	198	132	40.4	40.5	23.3	9.36	3.80	3.60	4.82	5.71
115	31.0	31.5	78.1	129	202	344	416	341	212	140	79.7	33.9	34.3	18.6	7.30	3.61	3.60	4.82	5.10
120	26.1	27.5	60.1	90.1	141	204	235	207	150	91.7	58.2	29.7	28.7	14.8	5.65	3.42	3.53	4.82	4.61
125	21.9	25.1	58.3	77.2	104	129	141	131	107	75.6	56.1	27.5	24.3	11.9	4.19	3.17	3.13	4.45	3.87
130	14.5	11.9	55.6	78.2	99.7	117	126	118	99.2	76.6	53.3	16.4	18.8	8.73	3.30	2.83	2.59	3.21	2.82
135	8.24	7.74	52.9	80.2	101	115	123	115	97.8	77.9	50.8	6.14	8.32	6.49	2.41	2.43	2.21	2.87	2.52
140	5.69	12.5	44.1	75.6	102	110	117	111	100	74.6	43.9	11.1	6.26	5.41	2.05	2.26	1.77	2.54	1.97
140	3.56	6.90	26.6	57.4	80.0	87.3	89.1		78.5		27.8	7.99		3.75	2.03	2.19	1.77	2.16	1.93
								86.2		56.8			3.62						
150	2.42	3.42	2.24	36.4	54.1	65.2	64.5	64.4	55.2	36.3	7.02	3.27	2.53	2.45	2.00	2.12	1.77	2.14	1.90
155	2.41	3.03	5.82	27.0	40.1	45.5	44.8	45.8	40.6	30.8	1.86	2.09	2.38	2.41	2.14	2.01	1.77	2.12	1.86
160	2.39	2.63	5.86	1.84	14.0	33.3	36.3	33.9	17.8	1.74	6.60	2.03	2.36	2.37	2.14	1.95	1.77	2.04	1.82
165	2.38	2.37	2.27	6.02	10.5	1.77	1.78	1.72	7.16	5.70	2.72	2.10	2.33	2.33	2.14	1.92	1.77	1.96	1.79
170	2.36	2.31	2.24	3.68	2.22	3.89	4.81	4.56	2.70	2.98	2.50	2.21	2.31	2.29	2.13	1.89	1.77	1.94	1.86
175	2.35	2.26	2.21	2.55							2.27	2.25		2.25		1.85	1.77		1.89
180 Table2	2.35		2.21	2.55	2.12	2.57	2.03	2.74	1.96	2.27	2.27		2.28	2.25	2.13	1.85 1.84 UNI	1.77	1.92	
180			2.21	2.55	2.12	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG)	2.34	2.23	2.21 2.20	2.55	2.12	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) Y (DEG)	2.34	2.23	2.21 2.20 315	2.55 2.10 330	2.12 2.08 345	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) γ (DEG) 0 5	2.34 285 777	2.23 300 782	2.21 2.20 315 780	2.55 2.10 330 801 496	2.12 2.08 345 786	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) γ (DEG) 0	2.34 285 777 714	2.23 300 782 605	2.21 2.20 315 780 517	2.55 2.10 330 801	2.12 2.08 345 786 655	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) γ (DEG) 0 5 10 15	2.34 285 777 714 404 326	2.23 300 782 605 449 394	2.21 2.20 315 780 517 392 411	2.55 2.10 330 801 496 750 391	2.12 2.08 345 786 655 492 492	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C (DEG) γ (DEG) 0 5 10 15 20	2.34 285 777 714 404 326 321	2.23 300 782 605 449 394 351	2.21 2.20 315 780 517 392 411 351	2.55 2.10 330 801 496 750 391 402	2.12 2.08 345 786 655 492 492 562	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C (DEG) γ (DEG) 0 5 10 15 20 25	2.34 285 777 714 404 326 321 269	2.23 300 782 605 449 394 351 294	2.21 2.20 315 780 517 392 411 351 323	2.55 2.10 330 801 496 750 391 402 371	2.12 2.08 345 786 655 492 492 562 527	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) 0 5 10 15 20 25 30	2.34 285 777 714 404 326 321 269 225	2.23 300 782 605 449 394 351 294 238	2.21 2.20 315 780 517 392 411 351 323 278	2.55 2.10 330 801 496 750 391 402 371 341	2.12 2.08 345 786 655 492 492 562 527 466	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) 9 10 15 20 25 30 35	2.34 285 777 714 404 326 321 269 225 164	2.23 300 782 605 449 394 351 294 238 199	2.21 2.20 315 780 517 392 411 351 323 278 234	2.55 2.10 330 801 496 750 391 402 371 341 280	2.12 2.08 345 786 655 492 492 562 527 466 393	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C (DEG) y (DEG) 0 5 10 15 20 25 30 35 40	2.34 2.85 777 714 404 326 321 269 225 164 109	2.23 300 782 605 449 394 351 294 238 199 141	2.21 2.20 315 780 517 392 411 351 323 278 234 185	2.55 2.10 330 801 496 750 391 402 371 341 280 237	2.12 2.08 345 786 655 492 492 562 527 466 393 316	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           y         (DEG)           0         0           5         10           15         20           25         30           30         35           40         45	2.34 2.85 777 714 404 326 321 269 225 164 109 75.7	2.23 300 782 605 449 394 351 294 238 199 141 103	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C (DEG)           0           5           10           15           20           25           30           35           40           45           50	2.34 2.85 777 714 404 326 321 269 225 164 109 75.7 48.9	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           0           5           10           15           20           25           30           35           40           45           50           55	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167 136	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C (DEG)           0           5           10           15           20           25           30           35           40           45           50	2.34 2.85 777 714 404 326 321 269 225 164 109 75.7 48.9	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           0           5           10           15           20           25           30           35           40           45           50           55	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167 136	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215 197	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           0           5           10           15           20           25           30           35           40           45           50           55           60	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7 25.7	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167 136 110	2.12 2.08 345 786 655 492 562 527 466 393 316 238 215 197 147	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C (DEG) 0 5 10 15 20 25 30 35 40 45 50 55 60 65	2.34 2.34 2.85 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7 25.7 12.6	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8	2.55 2.10 330 801 496 750 391 402 391 280 237 197 167 136 110 79.8	2.12 2.08 345 786 655 492 492 552 527 466 393 316 238 215 197 147 121	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) y (DEG) 0 5 5 10 15 20 25 30 35 40 45 55 55 60 55 70	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3 2.94	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7 25.7 12.6 2.39	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8 23.3	2.55 2.10 330 801 496 750 391 402 371 341 280 237 197 167 136 110 79.8 57.2	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215 197 147 121 95.3	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEG) 0 5 10 25 30 25 30 25 30 40 45 55 60 65 55 60 67 70 75	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3 2.94 1.98	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7 25.7 12.6 2.39 2.33	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8 23.3 13.0	2.55 2.10 801 496 750 391 402 371 341 280 237 197 167 136 110 79.8 57.2 42.2	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215 197 147 121 95.3 75.9	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           γ         (DEG)           0         5           10         0           20         25           30         35           40         45           50         55           60         65           70         75           80         80	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3 2.94 1.98 2.00	2.23 300 782 605 394 394 238 199 141 103 71.5 44.7 25.7 12.6 2.39 2.33 2.57	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8 23.3 13.0	2.55 2.10 801 496 750 391 402 371 341 280 237 197 167 136 136 110 79.8 57.2 42.2 32.2	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215 197 147 121 95.3 75.9 60.3	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 30 35 40 45 50 65 65 65 70 75 80 85	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3 2.94 1.98 2.00 2.31 2.53	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 44.7 25.7 12.6 2.33 2.57 2.66 2.69	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8 23.3 13.0 10.9 8.51	2.55 2.10 801 496 750 391 341 280 237 197 167 136 110 79.8 57.2 42.2 26.3 22.0	2.12 2.08 345 786 655 562 562 552 562 552 238 316 238 215 197 147 121 95.3 75.9 60.3 48.9	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 c(DEC) y (DEG) 0 5 10 15 20 5 30 35 30 35 40 45 55 60 55 70 75 80 85 90 95	2.34 2.34 2.34 2.34 404 326 321 269 225 164 109 75.7 48.99 23.5 10.3 2.94 1.98 2.03 2.31 2.31 2.33 3.53	2.23 300 782 605 449 394 238 199 141 103 71.5 2.7 12.6 2.39 2.33 2.57 2.66 2.69 3.31	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 18 86.7 60.1 38.8 23.3 13.0 10.9 8.51 6.35 5.22	2.55 2.10 801 496 750 391 341 280 237 197 167 136 110 79.8 57.2 42.2 32.2 226.3 22.0 18.0	2.12 2.08 345 786 655 522 492 492 562 527 466 238 215 197 121 95.3 75.9 60.3 75.9 48.9 44.2 40.2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           y (DEG)           0           5           10           15           20           25           30           35           60           65           60           65           70           75           80           90           95           100	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 33.9 2.35 10.3 2.35 3.53 3.53	2.23 300 782 605 449 394 351 294 238 199 141 103 71.5 2.57 2.57 2.57 2.69 3.31 3.36	2.21 2.20 315 780 517 392 234 111 351 323 278 234 185 151 118 86.7 60.1 188.8 23.3 13.0 10.9 8.51 6.35 5.22 4.79	2.55 2.10 801 496 750 331 402 371 341 280 237 197 167 136 110 57.2 42.2 32.2 26.3 22.0 18.0 12.2	2.12 2.08 345 786 655 492 562 527 466 238 215 197 147 121 95.3 75.9 60.3 48.9 44.2 29.2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (CDEC) (DDEG) 0 10 15 20 10 15 20 30 35 30 35 55 60 65 70 55 80 85 90 95 105	2.34 2.34 777 714 404 326 225 164 109 235 164 109 33.9 23.5 10.3 3.9 2.94 1.98 2.94 1.98 2.94 1.98 2.53 3.53 3.53 3.53	2.23 300 782 605 449 394 238 199 141 103 71.5 44.7 25.7 12.6 2.39 2.33 2.57 2.66 2.69 3.31 3.36 3.42	2.21 2.20 315 780 517 392 234 185 151 118 86.7 60.1 38.8 23.3 13.0 10.9 8.51 6.35 5.22 4.79 4.17	2.55 2.10 801 496 750 331 402 371 341 280 237 167 136 110 79.8 22.2 26.3 22.0 18.0 18.0 12.2 6.53	2.12 2.08 345 786 655 492 492 562 527 762 3316 238 215 197 147 121 95.3 48.9 44.2 40.2 29.2 16.8	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 55 60 65 70 75 80 85 90 100 100 110 101 115 100 10 10 10 10 10 10 10 10 1	2.34 2.34 777 714 404 326 225 164 109 23.5 10.3 2.94 8.9 33.9 23.5 10.3 2.94 2.00 2.31 2.53 3.53 4.51 4.75 4.75	2.23 300 782 605 449 394 238 199 141 238 103 71.5 44.7 25.7 12.6 2.33 2.57 2.66 2.69 3.31 3.36 3.42 3.47	2.21 2.20 315 780 517 392 411 351 323 278 151 118 234 185 151 138.8 23.3 13.0 66.7 60.1 38.8 23.3 13.0 9.8.51 6.35 5.22 4.17 3.56	2.55 2.10 801 496 331 402 371 280 237 197 167 136 110 79.8 57.2 42.2 26.3 22.0 18.0 12.2 6.53 9.29	2.12 2.08 345 786 655 527 492 492 562 527 492 316 238 215 238 215 197 147 121 95.3 75.9 44.2 29.2 16.8 23.1	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180           Table2           C(DEG)           y           0           5           10           15           20           25           30           35           60           65           60           65           90           95           100           105           100           105           110           115	2.34 2.34 777 714 404 326 321 269 225 164 109 75.7 48.9 33.9 23.5 2.94 1.98 2.01 2.31 2.53 3.53 4.51 4.75	2.23 300 782 605 449 351 294 238 199 141 103 71.5 44.7 2.39 2.33 2.57 2.66 2.69 3.31 3.36 3.47 3.53	2.21 2.20 315 517 392 411 351 233 278 234 185 151 18 86.7 60.1 38.85 13.0 10.9 8.51 5.22 4.17 3.56 3.38	2.55 2.10 801 496 750 391 341 280 237 197 167 136 110 79.8 57.2 42.2 32.2 26.3 32.2 22.0 18.0 12.2 6.53 9.29 7.10	2.12 2.08 345 786 655 492 492 562 527 466 393 316 238 215 197 147 127 95.3 75.9 60.3 48.9 29.2 29.2 16.8 23.1 18.5	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (DEC) (DEC) 0 5 10 15 20 10 15 20 30 35 30 35 30 40 45 55 60 65 70 75 80 85 90 95 100 105 110 115 120	2.34 2.34 285 777 714 326 321 269 225 164 109 75.7 48.9 33.9 23.5 10.3 2.94 1.98 2.00 2.31 2.53 4.51 4.93 4.51 4.93 4.90 4.81	2.23 300 782 605 394 394 394 351 238 199 141 103 71.5 44.7 25.7 12.6 2.39 2.33 2.57 2.66 3.31 3.36 3.42 3.53 3.42	2.21 2.20 315 780 411 351 739 278 234 185 151 411 86.7 60.1 38.8 86.7 60.1 10.9 8.51 13.0 10.9 8.51 13.0 9.5522 4.79 4.17 3.582 3.38 3.304	2.55 2.10 801 496 750 391 402 237 197 136 110 79.8 22.2 26.3 32.0 18.0 12.2 6.53 9.29 9.29 9.569	2.12 2.08 345 786 655 492 562 562 527 466 238 215 197 121 95.3 316 238 215 197 121 95.3 48.9 44.2 29.2 16.8 23.1 18.5 15.0	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 50 60 65 70 75 80 85 90 100 115 1100 115 1100 115 1100 115 1100 115 125 100 115 125 100 115 125 125 100 115 125 100 115 125 125 100 115 125 125 125 125 125 125 125	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 23.5 10.3 2.94 2.53 3.53 3.53 3.53 3.53 4.51 4.51 4.51 4.51 4.51 4.93	2.23 300 782 605 394 351 294 238 199 141 103 71.5 2.33 2.57 2.66 2.69 3.31 3.36 3.42 3.42 2.58	2.21 2.20 780 517 392 411 351 278 234 185 151 118 86.7 60.1 5.22 8.8 8.51 6.35 5.22 4.79 4.17 3.56 3.38	2.55 2.10 330 801 496 750 391 341 280 71 341 280 79.7 197 167 136 57.2 26.3 22.0 18.0 18.0 18.2 26.5 39.29 7.10	2.12 2.08 345 655 492 492 552 527 466 238 215 197 121 95.3 75.9 48.9 44.2 40.2 29.2 16.8 23.1 18.5 5.0 12.2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (DEC) (DEC) 0 5 10 15 20 10 15 20 30 35 30 35 30 40 45 55 60 65 70 75 80 85 90 95 100 105 110 115 120	2.34 2.34 285 777 714 404 326 321 269 225 164 109 75.7 48.9 23.5 10.3 2.94 1.98 2.00 2.31 2.53 3.53 3.53 3.53 3.53 4.51 4.51 4.51 4.51 4.51 4.51 4.51 4.51	2.23 300 782 605 394 394 394 199 141 103 71.5 2.33 2.57 2.66 2.69 3.31 3.36 3.42 3.42 2.58	2.21 2.20 780 517 392 411 351 278 234 185 151 118 86.7 60.1 5.22 8.8 8.51 6.35 5.22 4.79 4.17 3.56 3.30 4	2.55 2.10 801 496 750 391 402 237 197 136 110 79.8 22.2 26.3 32.0 18.0 12.2 6.53 9.29 9.29 9.569	2.12 2.08 345 655 492 492 552 527 466 238 215 197 121 95.3 75.9 48.9 44.2 40.2 29.2 16.8 23.1 18.5 5.0 12.2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 50 60 65 70 75 80 85 90 100 115 1100 115 1100 115 1100 115 1100 115 125 100 115 125 100 115 125 125 100 115 125 100 115 125 125 100 115 125 125 125 125 125 125 125	2.34 285 777 714 404 326 321 269 225 164 109 33.9 2.35 3.59 4.51 2.53 3.53 4.51 2.53 3.53 4.51 2.53 3.53 4.51 2.53 3.53 4.51 2.55 3.53 4.55 4.75 2.55 2.55 2.55 2.55 2.55 2.55 2.55 2	2.23 300 782 605 394 394 351 294 394 394 351 294 199 141 103 71.5 44.7 2.39 2.33 7.57 2.39 2.33 2.57 2.58 2.58 2.37	2.21 2.20 315 780 517 392 411 323 278 185 151 18 86.7 60.1 38.8 23.3 13.0 10.9 8.51 5.22 4.79 4.17 5.56 3.38 3.04	2.55 2.10 330 801 496 750 391 341 280 71 341 280 79.7 197 167 136 57.2 26.3 22.0 18.0 18.0 18.2 26.5 39.29 7.10	2.12 2.08 345 786 655 492 552 552 552 552 333 316 238 215 75.9 60.3 48.9 95.3 75.9 60.3 48.9 215.2 197 147 121 197.3 147 129 5.3 75.9 60.3 48.9 21.6 8 5.5 9 5.5 9 5.5 197 197 147 195 197 147 195 195 197 195 195 195 195 195 195 195 195 195 195	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (CDEG) (DDEG) 0 5 10 15 20 10 25 30 25 40 45 55 60 65 55 60 65 70 65 80 85 100 105 105 105 105 105 105 10	2.34 2.34 404 326 269 225 164 9 25,7 48.9 33.9 75,7 48.9 33.9 2,35 10.3 2,94 1.98 2,35 10.3 2,94 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.91 4.90 4.91 4.91 4.90 4.91 4.91 4.91 4.91 4.91 4.91 4.91 4.91	2.23 300 782 605 449 394 238 199 238 199 238 199 238 199 244 238 25.7 2.66 2.33 2.57 2.66 3.31 3.36 3.42 2.53 3.42 2.53 3.53 3.53 3.53 3.53 3.53 3.53 3.54 2.57 2.02	2.21 2.20 315 780 517 392 411 323 278 234 185 151 188 86.7 60.1 38.8 23.3 13.0 10.9 8.51 6.35 5.22 4.79 4.17 3.58 8.304 2.20	2.55 2.10 801 496 750 391 402 371 341 237 197 167 79.8 57.2 26.3 32.2 26.5 32.2 26.5 39.29 7.10 5.69 4.41 5.26 2.36	2.12 2.08 345 786 655 527 522 527 492 562 238 238 238 238 235 197 147 121 95.3 75.9 60.3 48.9 44.2 29.2 16.8 23.1 18.5 15.0 12.29,2 9 5.40	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 50 60 65 55 60 65 70 75 80 85 90 95 100 115 120 135 100 115 120 135 100 115 100 100	2.34 2.34 404 326 321 269 225 164 109 23.5 164 1.98 2.53 3.53 3.53 3.53 3.53 4.51 4.51 4.51 4.51 4.51 4.51 4.51 4.51	2.23 300 782 449 394 238 199 141 103 71.5 44.7 25.7 2.66 2.39 2.37 2.57 2.56 3.31 3.36 3.42 3.42 2.58 2.39 2.202 1.94	2.21 2.20 315 780 517 392 234 185 151 234 185 151 32.3 278 86.7 60.1 38.68 5.23 3.30 4.79 3.56 3.38 4.77 3.56 3.304 2.70 2.48	2.55 2.10 801 496 750 2371 341 280 237 137 136 1167 136 179. 857.2 42.2 32.2 32.2 32.2 5.3 9.29 7.10 8.69 4.41 3.26 6 1.92	2.12 2.08 345 786 655 52 52 52 333 316 238 235 197 147 195.3 75.9 60.3 75.9 60.3 75.9 44.2 29.2 16.8 23.1 18.5 23.1 18.5 0 12.2 9.40 5.27	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (DEG) (DEG) 0 5 10 10 15 20 10 25 30 35 35 40 45 55 60 65 70 55 60 65 70 95 100 105 115 120 105 115 120 105 115 120 105 115 120 105 105 105 105 105 105 105 10	2.34 285 777 714 404 326 225 164 321 269 225 164 33.9 2.35 10.3 2.94 2.35 10.3 2.94 2.53 3.53 4.51 4.75 4.93 4.93 4.93 4.90 4.81 2.58 2.58 2.55 3.53 4.51 4.93 4.93 4.93 4.93 4.94 2.58 5.77 7.74 7.74 7.74 7.74 7.74 7.74 7.74	2.23 300 782 605 449 394 238 199 141 103 71.5 2.37 2.66 2.39 3.31 3.36 3.42 3.347 3.53 3.42 2.58 2.37 2.02 1.94 1.92	2.21 2.20 315 780 517 392 411 351 323 278 185 151 18 66.7 60.1 38.8 65.7 23.3 13.0 10.9 8.51 5.22 4.79 3.56 3.38 3.04 2.70 2.70 2.48 2.23	2.55 2.10 801 496 331 402 371 280 237 167 136 57.2 26.3 32.2 26.3 32.2 26.5 32.2 26.5 32.2 26.5 32.2 26.5 18.0 12.2 26.5 18.0 12.2 26.5 18.0 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	2.12 2.08 345 786 655 527 527 33 466 393 316 215 197 121 95.3 48.9 44.2 29.2 16.8 40.2 29.2 16.8 55.7 15.0 0 5.40 23.1 18.5 15.0 0 5.40 23.1 23.1 23.1 23.1 23.1 23.1 23.1 23.1	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 15 20 30 35 30 35 30 40 45 55 60 65 70 75 80 85 90 100 115 120 125 30 35 35 30 35 35 30 35 35 30 35 35 30 35 30 35 35 30 35 30 35 35 30 35 35 30 35 35 30 35 35 30 35 35 30 35 35 30 35 35 30 35 35 35 35 35 35 35 35 35 35	2.34 2.34 404 326 269 225 164 231 109 75.7 48.9 33.9 2.35 10.3 2.94 2.35 10.3 2.94 2.35 1.98 2.00 2.31 2.53 4.93 4.93 4.90 4.81 4.90 4.81 4.90 4.81 2.68 2.68 2.68 2.54 2.68 2.68 2.68 2.69 2.54 2.68 2.68 2.54 2.68 2.68 2.54 2.68 2.69 2.54 2.54 2.69 2.54 2.54 2.55 2.54 2.55 2.54 2.55 2.54 2.55 2.55	2.23 300 782 605 449 394 238 199 224 238 199 141 103 71.5 2.4 2.57 2.66 2.69 2.63 3.31 3.36 3.42 2.53 3.42 2.53 3.42 2.53 2.57 2.66 2.59 2.59 2.69 3.51 3.31 3.42 2.57 2.57 2.57 2.57 2.66 2.59 2	2.21 2.20 315 780 517 392 234 185 151 18 86.7 60.1 18 86.7 60.1 18 86.7 60.1 18 86.7 60.1 18 86.7 60.1 18 86.7 60.1 19 8.5 15 10.9 8.5 13.0 9 8.5 13.0 9 8.5 13.0 9 8.5 12 3.3 8.8 8.2 3.3 8.8 8.3 3.0 9 8.5 12 3.3 8.8 8.2 3.3 8.3 3.0 9 8.5 12 3.3 8.8 8.2 3.3 8.5 12 3.5 12 13 10.9 12 10.9 10.9 10.9 10.9 10.9 10.9 10.9 10.9	2.55 2.10 801 496 750 331 402 331 280 237 197 736 136 136 197 282 222 26.3 22.0 26.53 9.29 26.53 9.29 12.2 6.53 9.29 1.92 2.36 1.92 2.36	2.12 2.08 345 786 655 522 492 492 522 492 527 466 238 215 238 215 238 215 238 215 238 215 238 249 2 40.2 29.2 16.8 29.2 16.8 30 316 5.5 29.5 29.5 29.5 29.5 29.5 29.5 29.5	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEC) 0 5 10 15 20 25 30 35 40 45 50 65 65 65 65 65 80 85 90 95 100 115 120 135 100 115 100 105 100 115 100 115 100 115 100 115 100 115 125 100 115 125 100 115 125 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 130 135 135 140 145 155 140 155 140 155 155 140 155 155 155 140 155 155 155 155 155 155 155 15	2.34 285 777 714 404 326 225 103 75.7 48.9 23.5 10.3 3.9 2.94 1.98 2.04 2.31 2.53 3.53 4.51 4.75 4.93 4.90 4.81 4.08 2.54 4.81 4.08 2.54 2.54 2.54 2.54 2.54 2.54 2.54 2.54	2.23 300 782 605 449 394 238 199 141 103 71.5 2.39 2.33 2.57 2.33 2.57 2.66 2.69 3.31 3.42 3.42 2.58 2.39 2.45 3.42 2.58 2.39 2.194 1.99 1.11 1.26	2.21 2.20 315 780 517 323 278 234 185 151 118 86.7 23.3 151 138.8 60.1 38.8 23.3 13.0 10.9 8.51 3.3.0 4.79 3.56 3.38 4.17 3.56 3.30 4.270 2.06 2.102 2.002 2	2.55 2.10 801 496 750 391 402 237 1341 280 750 751 341 280 751 237 136 759 237 136 759 237 136 759 237 136 759 237 136 759 237 136 759 759 759 759 759 759 759 759 759 759	2.12 2.08 345 786 655 522 492 492 492 492 492 238 215 197 7 466 393 316 238 215 197 7 5.9 60.3 48.9 25.2 7 5.2 147 121 95.3 48.9 29.2 29.2 12.5 15.0 12.2 9.5 9.5 9.5 9.5 9.5 27 55 29 55 27 55 29 55 27 55 29 55 27 55 29 55 27 55 29 55 27 55 27 55 29 55 27 55 55 57 55 55	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (DEC) 0 5 10 15 20 10 15 20 40 45 55 60 55 70 55 60 65 70 95 100 105 110 115 120 125 120 125 120 135 135 146 135 146 135 120 135 146 135 146 135 146 135 146 135 146 135 146 145 156 120 135 146 145 156 156 120 135 146 145 156 156 156 120 135 146 145 156 156 156 156 156 156 156 15	2.34 285 777 714 404 326 321 269 225 164 109 33.9 23.5 33.9 2.94 1.98 2.00 2.31 2.94 4.93 4.93 4.93 4.93 4.93 4.93 4.93 4	2.23 300 782 605 449 351 294 451 238 199 141 107 2.38 2.39 2.37 2.57 2.66 2.39 2.33 3.36 3.42 2.57 3.31 3.42 2.58 2.57 2.58 2.57 2.59	2.21 2.20 315 780 517 392 234 411 351 323 278 234 185 151 118 86.7 234 151 118 86.7 50.1 38.8 23.3 13.00 8.51 6.35 5.22 4.17 3.56 3.38 3.04 2.70 2.70 2.70 2.06 2.02 1.89	2.55 2.10 330 801 496 331 341 280 371 341 280 750 371 371 371 371 371 371 371 371 371 371	2.12 2.08 345 786 655 562 492 492 562 238 215 75.9 60.3 75.9 60.3 75.9 60.3 75.9 60.3 8.9 44.2 40.2 29.2 16.8 8.3 197 147 125.3 75.9 60.3 3.6 0 2.21 2.49 5.40 5.27 5.27 5.27 10.5 10.5 10.5 10.5 10.5 5.27 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 55 60 65 55 60 65 70 75 80 85 90 100 115 120 125 100 105 100 115 125 100 10 10 10 10 10 10 10 10 1	2.34 285 777 714 404 326 225 164 109 75.7 4.93 3.9 2.35 3.53 2.94 1.98 4.51 4.75 4.93 4.51 4.75 4.93 4.51 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.81 4.90 4.91 4.91 4.90 4.91 4.91 4.91 4.91 4.91 4.91 4.91 4.91	2.23 300 782 605 449 394 238 199 141 103 71.5 44.7 2.39 2.33 2.57 2.66 2.69 3.31 3.42 2.57 2.66 3.42 3.53 3.42 2.57 2.66 3.42 3.51 1.53 3.42 2.39 1.51 1.51 1.52 1.5	2.21 2.20 315 780 517 392 323 278 234 131 323 278 234 132 323 278 234 135 151 188 6.7 60.1 38.8 5.22 4.79 4.79 3.56 5.22 4.79 4.77 3.56 2.33 2.09 2.48 2.23 2.09 2.49 2.20 2.02 1.97 1.88	2.55 2.10 330 801 496 391 371 341 280 197 197 137 137 137 137 137 137 137 137 137 13	2.12 2.00 345 786 655 492 492 562 527 466 238 316 238 197 147 121 95.3 316 0.3 48.9 40.2 29.2 40.2 29.2 40.2 29.2 15.0 12.5 50 12.5 9.40 5.5 50 23.5 121 95.5 50 23.5 7 50 20.5 20.5 20.5 20.5 20.5 20.5 20.5 2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 (CDEC) (DDEC) 0 5 10 15 20 10 15 20 35 40 45 55 60 65 55 60 65 70 105 100 105 100 115 120 105 100 105 105 100 105 105 10	2.34 285 777 714 404 321 265 225 164 109 3.92 2.55 10.3 2.94 2.00 2.31 3.53 4.51 4.75 4.93 4.90 2.51 4.75 4.93 4.90 2.51 2.52 5.75 7.77 4.93 4.90 2.51 2.55 2.55 1.98 2.55 1.98 2.54 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 1.98 2.55 2.55 2.55 2.55 2.55 2.55 2.55 2.5	2.23 300 782 605 449 351 294 199 141 103 71.5 44.7 12.6 2.33 2.57 2.63 3.42 3.34 3.42 2.58 2.37 2.59 2.49 3.31 3.42 2.58 2.37 2.59 1.94 1.99 1.87 1.88 1.884	2.21 2.20 315 780 517 392 411 323 278 823 415 151 323 278 86.7 60.1 88.8 86.7 60.1 188 86.7 60.1 98.51 6.35 234 4.17 98.51 6.35 2.22 4.79 4.17 3.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	2.55 2.10 330 801 496 750 391 240 237 1341 280 237 137 136 110 237 136 57.2 42.2 26.3 32.0 12.2 6.53 22.2 26.3 22.0 12.2 2 6.53 2.20 1.92 1.92 1.92 1.92	2.12 2.08 345 786 655 562 562 562 562 562 562 517 492 492 215 197 147 75.9 95.3 75.9 48.9 44.2 29.2 16.8 5.40 23.1 18.5 15.0 0 2.21 3.60 2.218 2.16 2.13	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	
180 Table2 C(DEC) y (DEG) 0 5 10 15 20 10 15 20 30 35 40 45 55 60 65 55 60 65 70 75 80 85 90 100 115 120 125 100 105 100 115 125 100 10 10 10 10 10 10 10 10 1	2.34 2.34 404 326 321 225 164 1.225 163 2.25 10.3 2.94 2.31 2.35 3.53 3.53 3.53 3.53 4.51 4.90 4.81 4.00 4.81 4.00 4.81 4.00 4.81 4.90 4.81 4.90 4.91 4.90 4.91 4.90 4.91 4.91 4.90 4.91 4.91 4.91 4.91 4.91 4.91 4.91 4.91	2.23 300 782 605 449 351 294 238 199 141 103 71.5 2.39 2.33 2.57 2.33 2.57 2.33 2.57 2.33 2.53 3.42 2.66 3.31 3.53 3.42 2.59 3.31 3.42 2.59 1.91 1.89 1.84 1.84	2.21 2.20 315 780 517 392 411 351 323 278 234 185 151 118 86.7 60.1 38.8 5.7 23.3 13.0 10.9 2.3 3.3 6.51 6.35 5.22 4.79 4.17 3.56 2.33 3.38 3.34 2.04 2.23 2.09 4.17 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1	2.55 2.10 330 801 496 391 371 341 280 137 197 197 137 137 137 137 137 137 137 137 137 13	2.12 2.00 345 766 55 492 492 562 527 466 238 316 238 316 238 215 197 72.1 47 121 95.3 215 197 147 121 95.3 215 107 147 121 95.3 16.8 23.5 147 29.2 29.2 29.2 29.2 16.8 23.5 15.5 29.5 29.5 29.5 29.5 29.5 29.5 29.5 2	2.57	2.03	2.74	1.96	2.27	2.27	2.25	2.28	2.25	2.13	1.84	1.77	1.92	

## THD and PF Measurement Test Result:

### **Electrical Measurement:**

Voltage (Vac)	Frequency (Hz)	requency (Hz) Current (A) Power (W		<b>Power Factor</b>	iTHD
277.06	60	0.1247	30.67	0.8873	14.52









 Laboratory: Dongguan New Testing Centre Co., Ltd
 Page
 9 / 11

 Address: 3F, No. 1 the 1<sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
 Guangdong, China
 Tel: 86-755-2344 3526

 Website: http://www.ntc-cert.com
 Website: http://www.ntc-cert.com
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NVLAP LAB CODE 600150-0

Report No: NTCR17060037 Report Version: V1.1

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2016-12-03	2017-12-02
NTC-F01-006	2.0 meter Integrating Sphere	2016-12-03	2017-12-02
NTC-F01-013	Standard Lamp	2016-12-27	2017-12-26
NTC-F01-031	Digital Power Meter	2016-12-05	2017-12-04
NTC-F01-019	Temperature & Humidity Meter	2016-11-28	2017-11-27





\*\*\*\*\*END OF DATASHEET\*\*\*\*