



# 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

## Inseparable SSL Luminaire

Model name(s): 546063XX

Representative (Tested) Model: 54606341

Model Difference: XX=41-50 intends CCT is 4000K.

Prepare By:

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Engineer: Leo Liu Date: 2017-06-22

Review By:

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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



R NVLAP LAB CODE 600150-0

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI, Commercial Electric
Model Number:	546063XX(XX=41-50)
Product type:	Inseparable SSL Luminaire
Rating Input:	AC120V, 60Hz, 11.5W
Declared CCT:	4000K
Declared Light output:	830lm
LED Manufacturer:	EVERLIGHT
LED Model:	67-218
LED Quantity:	24 pcs
Forward current of LED Chip:	150 mA
Date of Receipt Samples:	2017-06-18
Quantity of Receipt Samples:	3
Sample Number:	170618001-S1
Laboratory Information:	
Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1st 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><u>Report Information</u></b>	
Issued Date of Test Report:	2017-06-22
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17060049
Remark (If applicable)	





<b>Test Specifications:</b>	
Date of Test	2017-06-21
Test item	1. Total Luminous Flux
	2. Luminous Distribution Intensity
	3. Luminous Efficacy
	4. Correlated Color Temperature
	5. Color Rendering Index
	6. Chromaticity Coordinate
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  $25^{\circ} \text{ C} \pm 1^{\circ} \text{ C}$ , 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° 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.





**Integrating Sphere Test Results** 

Test Co	ndition:			
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.0 °C	51 %	Face Down	90 mins	25 mins
Electric	al Data:			

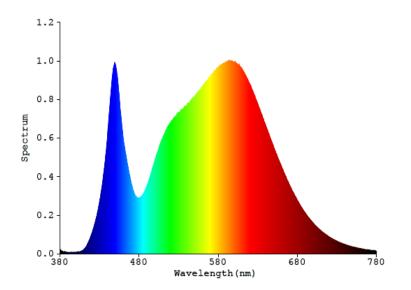
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	<b>Power Factor</b>
120.0	60	0.1001	11.48	0.9558

Color Data:

Parameter	Result
CCT(K)	3989
Color Rendering Index (CRI)	83.6
R9	14
Chromaticity, x	0.3812
Chromaticity, y	0.3781
Chromaticity u'	0.2251
Chromaticity v'	0.5023
Duv	0.00040

S	Special Color Rendering									
R1	82	R9	14							
R2	89	R10	73							
R3	94	R11	83							
R4	84	R12	66							
R5	82	R13	83							
R6	84	R14	97							
R7	87	R15	76							
R8	67	-	-							

## Spectrum Diagram:





NVLAP LAB CODE 600150-0

Report No: NTCR17060049 Report Version: V1.1

**Goniophotemeter Test Results:** 

Test Co	ndition:			
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.6 °C	45 %	Face Down	90 mins	25 mins
Electric	al Data:			

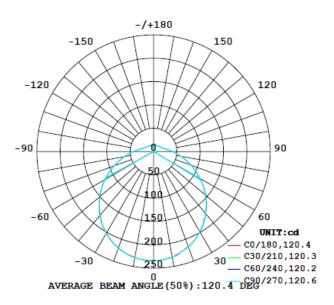
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	<b>Power Factor</b>
120.0	60	0.1001	11.48	0.9558

### **Goniophotometer Data:**

Parameter	Result
Total Luminous (lm)	913.6
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	79.56
Zonal Lumens Distribution (0-90°)	85.5%
Beam Angle (°)	120.4
Center Beam Candle Power (cd)	234

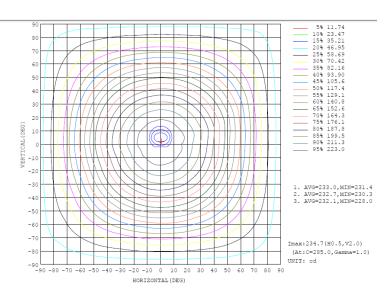
### **Luminous Intensity Distribution Diagram:**

### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM













#### ZONAL FLUX DIAGRAM:

Ŷ	CO	C45	C90	C135	C180	C225	C270	C315	Y	∳ zone		%lum,lamg
10	229.9	229.4	229.1	228.6	230.1	230.9	231.2	230.5	0- 10	22.15	22.15	2.42,2.42
20	217.6	217.3	217.0	216.7	219.7	220.2	220.6	219.9	10- 20	63.58	85.73	9.38,9.38
30	198.8	197.9	197.8	196.7	201.9	202.5	203.1	203.5	20- 30	96.98	182.7	20,20
40	173.7	174.3	173.9	172.6	178.1	178.7	179.8	179.7	30- 40	118.3	301.0	32.9,32.9
50	145.3	145.6	145.3	143.2	150.0	150.7	151.9	151.6	40- 50	125.5	426.5	46.7,46.7
60	115.3	114.8	115.4	113.6	119.8	120.0	121.0	120.8	50- 60	119.0	545.5	59.7,59.7
70	85.65	86.05	85.29	84.44	89.79	89.56	90.01	90.39	60- 70	101.5	646.9	70.8,70.8
80	60.08	60.16	59.86	59.12	63.62	63.12	63.89	63.53	70- 80	78.33	725.3	79.4,79.4
90	40.82	40.89	40.33	40.26	43.51	43.09	43.51	43.12	80- 90	55.82	781.1	85.5,85.5
100	28.00	28.02	27.81	27.75	29.71	29.83	29.69	29.70	90-100	37.96	819.0	89.6,89.6
110	21.37	20.96	21.11	21.00	21.86	22.25	21.97	22.30	100-110	26.25	845.3	92.5,92.5
120	18.11	17.78	17.84	17.48	18.30	18.80	18.27	18.45	110-120	19.59	864.9	94.7,94.7
130	16.90	16.32	16.30	15.70	16.45	17.08	16.17	16.47	120-130	15.43	880.3	96.4,96.4
140	15.88	15.55	15.08	14.49	15.50	16.19	14.99	15.33	130-140	12.32	892.6	97.7,97.7
150	14.67	14.85	14.51	13.97	14.28	15.32	14.25	14.88	140-150	9.400	902.0	98.7,98.7
160	14.12	14.04	13.92	13.91	13.58	14.28	14.23	14.11	150-160	6.621	908.7	99.5,99.5
170	13.59	13.00	12.78	12.38	13.46	13.77	14.14	13.66	160-170	3.928	912.6	99.9,99.9
180	7.844	6.883	6.966	7.023	7.334	6.947	6.839	7.342	170-180	1.066	913.7	100,100
DEG		LUM	INOUS INTER	NSITY:cd	Less than	25% Percen	t = 13.4 %			UNI		





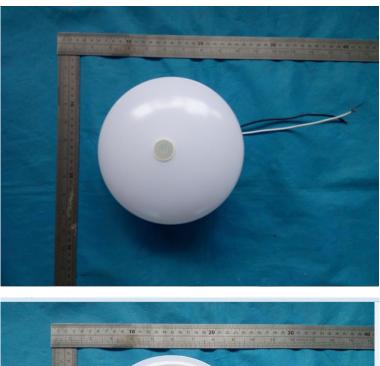
### NVLAP LAB CODE 600150-0

**Luminous Distribution Intensity Data:** 

Table1 C(DEG)																	T: cd		
(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	234	234	233	234	234	234	234	234	233	234	234	234	234	234	233	234	234	234	234
5	232	233	233	233	233	232	233	233	232	232	232	233	233	234	233	233	233	233	234
10	230	229	229	229	229	229	229	229	229	229	229	229	230	231	230	231	231	231	231
15	223	225	224	224	224	224	224	224	224	223	224	224	226	226	227	227	226	226	227
20	218	218	218	217	217	216	217	217	216	217	217	217	220	220	220	220	220	220	221
25	209	209	208	209	209	207	209	208	207	208	208	208	212	212	212	212	212	212	213
30	199	198	198	198	199	197	198	198	197	197	198	198	202	203	202	202	203	202	203
35	187	186	187	187	187	186	186	187	186	185	186	186	191	191	192	192	192	191	192
40	174	174	174	174	174	174	174	173	173	173	173	173	178	178	179	179	179	179	180
45	159	160	160	160	160	160	159	160	158	159	159	159	164	165	165	165	166	165	166
50	145	147	145	146 130	145	145	145	145	144	143	144	144	150	151 135	151	151	151	151	152
60	130	115	129	130	130 115	130 115	130 115	130	130	129	129	129	135 120	135	136 120	136 120	136 121	135 120	136
65	99.6	99.6	100	101	99.8	99.6	99.7	99.7	98.6	98.6	98.7	98.6	104	105	105	105	105	104	105
70		85.3	85.7	86.0	85.8	85.2	85.3	85.2	83.5	84.4	84.2	84.1	89.8	90.1	90.2	89.6	90.2	89.9	90.
75		72.1	71.5	72.1	71.9		71.9	71.5	70.8	70.8	70.7	70.8	75.9	76.4	75.9	75.9	76.1	75.8	76.
80	60.1	59.2	59.5	60.2	60.1	59.8		59.6	58.6	59.1	58.7	59.0	63.6	63.4	63.7	63.1	63.5	63.1	63.
85	49.0	49.4	49.4	49.6		49.3		49.1	48.3		48.4	48.8	52.7	52.7	52.7	52.5	52.7	52.2	52.
90	40.8	40.7	41.1		40.7	40.4		40.3	40.0			40.1	43.5	43.3	43.5		43.5	42.9	43.
95	33.4	33.6	33.6	33.6	33.6	33.3	33.2	33.3	33.2	33.0	33.0	33.0	35.6	35.5	35.9	35.6	35.5	35.3	35.
100		28.0		28.0			27.8			27.7		-	29.7				29.5	29.5	29.1
105	24.2	23.8	24.2	24.0	24.2		23.8			23.6			25.1	25.4	25.0	25.2	25.2	25.5	25.
110	21.4	21.1	21.5	21.0	21.4	21.1	21.1	21.0	21.2	21.0	21.2	20.9	21.9	22.2	22.1		22.1	22.3	22.
115				19.0			19.2				19.2		19.7		19.9		20.1	20.2	19.
120		17.8								17.5		17.7	18.3				18.7	18.9	18.
125		17.1							16.7		17.0	16.7	17.2			17.8	17.4	17.7	17.
130			17.0					15.7	16.0		16.3	16.0	16.4			17.1	16.5	16.8	16.
135		16.6			16.0		15.6				15.7	15.4	15.9				15.9	16.2	15.
140		15.5	16.1		15.6	14.7		14.5		14.5	15.1		15.5		15.7		15.6	15.3	15.
145		15.0										14.5						15.0	14.
150												14.4							
155												14.3							
165												14.2							
																		13.6	
170			13.6	13.0	12 3	11 8													
170 175 180 Table2	13.6 10.1	13.3 9.23 6.24	9.63	8.99	9.32	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C(DEG)	13.6 10.1 7.84	13.3 9.23 6.24	9.63	8.99	9.32	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C (DEG) (DEG)	13.6 10.1 7.84 285	13.3 9.23 6.24 300	9.63 7.14 315	8.99 6.88 330	9.32 7.52 345	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C (DEG) (DEG) 0	13.6 10.1 7.84 285 234	13.3 9.23 6.24 300 233	9.63 7.14 315 234	8.99 6.88 330 234	9.32 7.52 345 234	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C (DEG) (DEG) 0 5	13.6 10.1 7.84 285 234 234	13.3 9.23 6.24 300 233 233	9.63 7.14 315 234 233	8.99 6.88 330 234 234	9.32 7.52 345 234 234	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C(DEG) (DEG) 0 5 10	13.6 10.1 7.84 285 234 234 231	13.3 9.23 6.24 300 233 233 231	9.63 7.14 315 234 233 230	8.99 6.88 330 234 234 232	9.32 7.52 345 234 234 232	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C (DEG) (DEG) 0 5	13.6 10.1 7.84 285 234 234	13.3 9.23 6.24 300 233 233	9.63 7.14 315 234 233	8.99 6.88 330 234 234	9.32 7.52 345 234 234	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15	13.6 10.1 7.84 285 234 234 231 227	13.3 9.23 6.24 300 233 233 231 227	9.63 7.14 315 234 233 230 226	8.99 6.88 330 234 232 232 227	9.32 7.52 345 234 234 232 227	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C(DEG) 0 5 10 15 20	13.6 10.1 7.84 285 234 234 231 227 220	13.3 9.23 6.24 300 233 233 231 227 221	9.63 7.14 315 234 233 230 226 220	8.99 6.88 330 234 234 232 227 221	9.32 7.52 345 234 234 232 227 221	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C (DEG) (DEG) 0 5 10 15 20 25	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192	13.3 9.23 6.24 300 233 231 227 221 213	9.63 7.14 315 234 233 226 220 213 204 192	8.99 6.88 330 234 232 227 221 213	9.32 7.52 345 234 234 232 227 221 213	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C (DEG) 0 5 5 10 15 20 25 30 35 40	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180	9.63 7.14 315 234 233 226 220 213 204 192 180	8.99 6.88 330 234 234 232 227 221 213 203 193 180	9.32 7.52 345 234 234 232 227 221 213 204 193 181	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 40 45	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166	8.99 6.88 330 234 234 232 227 221 213 203 193 180 166	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 40 45 50	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151	9.63 7.14 315 234 233 226 220 213 204 192 180 166 152	8.99 6.88 330 234 234 232 227 221 213 203 193 180 166 152	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 <b>Teble2</b> C(DEG) 0 5 10 0 5 20 25 30 35 40 45 50 55	13.6 10.1 7.84 285 234 231 220 213 203 203 192 180 167 152 137	13.3 9.23 6.24 300 233 233 231 221 221 213 203 192 180 166 151 136	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166 152 136	8.99 6.88 330 234 234 232 227 221 213 203 193 180 166 152 137	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 10 0 5 10 20 25 30 35 40 45 55 60	13.6 10.1 7.84 285 234 234 231 227 220 213 203 213 203 192 180 167 152 137 120	13.3 9.23 6.24 300 233 233 231 221 221 213 203 192 180 166 151 136 121	9.63 7.14 315 234 233 226 220 213 204 192 180 166 152 136 121	8.99 6.88 330 234 232 227 221 213 203 193 180 166 152 137 121	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 50 55 60 65	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152 137 120 106	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151 136 121 106	9.63 7.14 315 234 233 226 220 213 204 192 180 166 152 136 121 105	8.99 6.88 330 234 232 227 221 213 203 193 180 166 152 137 121 106	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 107	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 5 10 15 20 25 30 35 40 45 50 55 60 65 70	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152 137 120 106 90.1	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151 136 121 106 90.5	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166 152 136 152 136 121 105 90.4	8.99 6.88 330 234 234 232 227 221 213 203 193 180 166 152 137 121 106 91.0	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 107 91.4	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 5 10 15 20 0 5 30 35 30 35 40 45 50 60 65 70 75	13.6 10.1 7.84 285 234 231 227 220 213 203 192 180 167 152 137 120 106 90.1 76.1	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151 136 90.5 77.0	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166 152 136 121 105 90.4 76.3	8.99 6.88 330 234 232 227 221 213 203 193 180 166 152 137 121 106 91.0 77.1	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 107 91.4 77.1	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 5 10 15 20 25 30 35 40 45 50 55 60 65 70	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152 137 120 106 90.1	13.3 9.23 6.24 300 233 231 231 227 221 213 203 192 180 166 151 136 121 106 590.5 77.0 63.8	9.63 7.14 315 234 233 230 226 220 223 204 192 180 166 152 136 121 105 90.4 76.3 63.5	8.99 6.88 330 234 232 227 221 203 193 180 166 152 137 121 06 91.0 77.1 64.3	9.32 7.52 345 234 232 227 221 204 193 181 167 153 137 122 04 193 181 167 153 137 122 107 91.4	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 40 45 55 60 65 70 75 80	13.6 10.1 7.84 285 234 231 227 220 213 203 192 180 167 152 137 120 106 106 7.6.1 63.4	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151 136 121 106 50.5 77.0 63.8 53.0	9.63 7.14 315 234 233 230 226 220 223 204 192 180 166 152 136 121 105 90.4 76.3 63.5 52.5	8.99 6.88 330 234 232 227 221 213 203 193 180 166 152 137 121 106 91.0 77.1	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 107 91.4 53.3	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 <b>Table2</b> C (DEG) (DEG) 0 5 10 5 20 25 30 35 40 45 50 60 65 60 65 80 85	13.6 10.1 7.84 285 234 231 227 220 213 203 192 180 167 152 137 120 106 90.1 76.1 63.4 52.4	13.3 9.23 6.24 300 233 233 231 227 221 213 203 192 180 166 151 136 121 106 50.5 77.0 63.8 53.0	9.63 7.14 315 234 230 226 220 213 204 192 180 166 152 136 121 105 90.4 76.3 63.5 52.5 43.1	8.99 6.88 330 234 234 227 221 213 203 193 180 166 152 137 121 106 91.0 77.1 64.3 53.3	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 107 91.4 77.1 95.4 64.6 53.3	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 10 15 20 25 30 35 40 55 50 55 60 65 70 65 80 85 90	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152 137 120 106 90.1 76.1 45.2.4 42.9	13.3 9.23 6.24 300 233 231 227 221 213 203 192 180 166 121 136 151 136 151 136 55.77.0 63.8 53.0 43.4 35.7 29.4	9.63 7.14 315 234 233 226 220 213 204 192 180 166 152 136 121 36 155 90.4 76.3 63.5 52.5 43.1 35.3 29.7	8.99 6.88 234 234 232 227 221 213 203 193 180 166 152 137 121 191.0 77.1 64.3 53.3 43.9 36.0 29.8	9.32 7.52 345 234 234 232 227 221 213 204 193 181 167 153 137 122 91.4 77.1 64.6 53.3 43.9 36.0 30.1	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Teble2 C(DEG) (DEG) 0 5 10 0 5 20 25 20 25 20 25 30 35 40 45 55 60 55 60 55 60 85 80 85 90 95	13.6 10.1 7.84 285 234 231 227 220 213 203 192 180 167 152 180 167 152 180 106 90.1 76.1 63.4 42.9 35.5	13.3 9.23 6.24 300 233 231 227 221 213 203 192 180 166 121 136 151 136 151 136 55.77.0 63.8 53.0 43.4 35.7 29.4	9.63 7.14 315 234 233 226 220 223 204 192 180 166 121 105 90.4 152 136 152 136 152 52.5 43.1 35.3 29.7 25.2	8.99 6.88 234 232 227 221 203 193 180 166 152 137 121 106 91.0 64.3 53.3 43.9 36.0 29.8 25.3	9.32 7.52 234 234 232 227 221 204 193 181 167 122 107 91.4 64.6 53.3 43.9 36.0 25.6	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 <b>Table2</b> C(DEG) (DEG) 0 5 10 5 20 25 30 35 30 35 40 45 55 60 65 55 60 65 70 75 80 95 100	13.6 10.1 7.84 285 234 231 227 220 213 203 192 133 192 137 152 137 152 137 152 137 152 137 152 137 152 29.7	13.3 9.23 6.24 300 233 231 227 221 213 203 192 180 166 121 136 151 136 151 136 55.77.0 63.8 53.0 43.4 35.7 29.4	9.63 7.14 315 234 233 226 220 223 204 192 180 166 121 105 152 136 121 105 52.5 43.1 35.3 29.7 25.2	8.99 6.88 234 234 232 227 221 213 203 193 180 166 152 137 121 191.0 77.1 64.3 53.3 43.9 36.0 29.8	9.32 7.52 234 234 232 227 221 204 193 181 167 122 107 91.4 64.6 53.3 43.9 36.0 25.6	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 10 15 20 0 5 10 25 30 35 40 45 50 55 60 65 70 80 85 90 95 100 105 100 115 100 105 100 105 100 105 100 115 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 105	13.6 10.1 7.84 285 234 234 237 220 213 203 192 180 167 120 163.4 52.4 42.9 35.5 29.7 25.2 22.1 20.0	13.3 9.23 6.24 300 233 231 227 221 213 203 203 192 180 166 151 136 151 136 151 136 53.0 63.8 53.0 63.8 53.0 63.8 53.7 29.4 25.2 29.4 25.2 29.4 25.2 21.9 9 19.6	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166 152 136 152 136 155 30.4 43.1 35.3 29.7 25.2 22.3 20.1	8.99 6.88 330 234 232 227 221 213 180 166 152 137 121 106 4.3 35.3 36.0 29.8 25.3 32.21 20.0	9.32 7.52 7.52 234 234 232 227 221 213 204 193 181 167 153 137 167 163 .63.3 36.0 30.1 25.6 22.5 20.4	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C (DEG) (DEG) 0 5 10 0 5 20 25 20 25 30 35 40 45 50 60 65 55 60 65 70 75 80 85 90 105 110 110 110 110 110 110 11	13.6 10.1 7.84 285 234 234 237 220 213 203 192 180 167 120 163.4 52.4 42.9 35.5 29.7 25.2 22.1 20.0	13.3 9.23 6.24 300 233 231 221 221 221 221 221 100 166 151 136 90.5 77.0 63.8 53.0 43.4 35.7 29.4 25.2 21.9	9.63 7.14 315 234 233 230 226 220 213 204 192 180 166 152 136 152 136 155 30.4 43.1 35.3 29.7 25.2 22.3 20.1	8.99 6.88 330 234 234 232 227 221 213 203 180 166 152 106 91.0 64.3 53.3 43.9 95.0 29.8 25.3 22.1 20.0 018.2	9.32 7.52 234 234 232 221 213 204 167 153 181 167 153 181 167 153 187 122 107 91.4 43.9 91.4 53.3 43.9 91.4 18.9	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) 0 5 10 15 20 0 15 20 0 15 20 30 25 30 40 45 50 55 50 65 70 65 70 65 90 95 90 95 100 115 125 100 115 100 115 100 115 100 115 100 101 115 100 101 115 100 101 115 100 101 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 100	13.6 10.1 7.84 285 234 231 227 220 213 192 180 90.1 76.1 163.4 42.9 35.5 29.7 25.2 25.2 25.2 25.2 25.2 25.2 25.2 25.4 25.4 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 2	13.3 9.23 6.24 300 233 231 227 221 203 192 180 166 151 136 151 136 151 136 53.0 43.4 35.7 29.4 35.7 29.4 25.2 21.9 19.6 8.1 16.9	9.63 7.14 315 234 233 230 226 220 213 204 192 200 166 152 136 152 136 52.5 43.1 35.3 29.7 25.2 22.3 20.1 18.5 17.4	8.99 6.88 234 234 232 227 221 213 193 180 166 152 137 121 106 91.0 77.1 64.3 35.3 43.9 36.0 29.8 25.3 22.1 20.3 125.1 20.3 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6	9.32 7.52 234 234 234 232 227 221 213 227 221 133 181 167 753 3137 153 137 153 137 153 36.0 30.1 30.1 30.1 25.6 22.5 25.6 22.5 25.4 18.7 25.6	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Teble2 C(DEG) (DEG) 0 5 10 15 20 0 5 10 15 20 25 30 35 5 60 55 60 55 80 85 100 105 100 105 100 105 100 105 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 105	13.6 10.1 7.84 285 234 231 227 220 122 203 192 213 203 192 213 203 192 180 167 152 137 120 106 90.1 165 52.4 42.9 95.7 25.2 22.1 20.0 18.6 5 17.3	13.3 9.23 6.24 300 233 231 227 221 203 192 203 192 203 192 203 192 106 151 1366 151 1366 53.0 43.4 53.0 43.4 25.2 21.9 29.4 25.9 4 35.7 29.4 25.9 4 35.7 29.4 25.9 4 35.7 29.4 25.9 21.9 21.9 20.9 20.9 20.9 20.9 20.9 20.9 20.9 20	9.63 7.14 315 234 233 226 220 213 204 192 180 166 152 136 152 136 35.3 29.7 25.2 52.5 17.4 18.5 17.4	8.99 6.88 234 232 227 221 213 203 193 180 166 152 137 121 106 91.0 64.3 53.3 43.9 25.3 36.0 29.8 25.3 22.1 20.0 18.2 21.1 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.2 120.	9.32 7.52 234 234 234 232 201 227 221 213 204 193 181 167 153 137 122 107 91.4 77.1 64.6 53.3 36.0 30.1 25.6 20.4 18.9 91.7,7 16.8	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 <b>Teble2</b> C (DEG) 0 5 10 0 5 20 25 20 25 30 35 40 45 50 60 65 570 75 80 85 90 100 110 110 120 125 100 110 120 125 100 105 110 120 125 100 105 100 115 120 120 125 100 105 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 155 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 105	13.6 10.1 7.84 285 234 234 231 207 213 203 213 203 213 203 213 203 213 203 213 203 213 203 219 213 203 219 219 219 219 219 219 219 219 219 219	13.3 9.23 6.24 300 233 231 221 213 203 221 213 203 192 180 166 151 136 106 53.0 43.4 35.7 77.0 63.8 43.4 35.7 29.4 25.2 21.9 9 18.0 18.1 16.9	9.63 7.14 315 234 230 226 220 224 192 180 226 121 180 166 152 136 152 136 121 105 52.5 43.1 35.3 29.7 25.2 22.3 21.3 105 51.5 9 15.9	8.99 6.88 234 232 222 227 221 193 193 180 166 152 137 121 106 91.0 77.1 213 353.3 43.9 353.3 43.9 22.1 22.8 22.8 22.8 22.8 22.8 22.8 22.8	9.32 7.52 234 234 232 227 221 204 193 181 167 153 137 122 04 167 53.3 43.9 36.0 25.6 22.5 20.4 18.9 17.7 16.8	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DEG) (DEG) 0 5 10 0 5 10 20 25 30 35 35 40 45 50 55 60 65 60 65 70 80 85 90 95 100 105 115 120 135 140	13.6 10.1 7.84 285 234 231 227 220 213 203 192 203 192 203 192 203 192 180 167 152 180 167 152 137 120 106 63.4 42.9 35.5 29.7 25.2 22.1 20.0 167 15.2 15.3 16.5 15.3 15.3	13.3 9.23 6.24 300 233 231 227 221 203 192 203 192 203 192 203 192 203 192 213 203 192 213 203 192 213 203 192 213 203 192 213 203 192 214 90.5 53.0 43.4 35.7 29.4 43.4 25.2 21.9 19.6 6 18.1 16.9 91.5 5 16.9 14.9	9.63 7.14 315 234 230 226 220 213 226 220 213 226 220 213 226 220 180 166 152 136 152 136 152 135 30.4 76.3 29.7 22.2 22.3 20.1 105 105 15.3 15.9 15.3	8.99 6.88 234 232 227 221 203 193 193 166 152 137 121 106 91.0 77.1 64.3 35.0 25.3 22.1 20.0 25.5 22.1 20.0 25.5 120.2 18.2 20.2 18.2 20.3 19.5 11.5 15.1	9.32 7.52 7.52 234 234 232 227 221 204 193 107 91.4 167 153 36.0 30.1 53.3 36.0 30.1 55.6 22.5 20.4 18.9 36.0 30.1 77.1 16.8	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Teble2 C(DEG) (DEG) 0 5 10 0 5 20 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 100 95 100 115 120 105 110 115 120 125 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 105	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 180 167 152 137 152 137 152 106 90.1 76.1 152 137 25.2 4 29.7 25.2 29.7 25.2 22.1 10.0 16.3 4 20.9 10.0 11.5 20.0 10.5 10.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 20.0 10.5 10.5 20.5 10.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5 2	13.3 9.23 6.24 300 233 233 231 227 221 213 203 203 203 231 227 180 160 151 136 151 136 151 136 53.0 43.4 25.2 29.4 25.9 4 3.5.7 29.4 19.6 18.5 16.9 19.6 18.5 16.9 19.6 18.5 16.9 19.6 19.5 19.6 19.5 19.6 19.5 19.5 19.5 19.5 19.5 19.5 19.5 19.5	9.63 7.14 315 234 230 226 220 213 204 192 136 152 136 152 136 152 136 152 136 35.3 29.7 25.2 52.5 43.1 35.3 29.7 25.2 22.3 20.1 18.5 15.9 15.3 315.0	8.99 6.88 330 234 232 227 221 213 180 166 315 152 137 121 64.3 53.3 43.9 36.0 29.8 25.3 22.0 18.2 21.2 137 121 121 121 121 121 121 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 137 122 122 137 122 137 122 137 122 137 122 122 137 122 137 122 122 137 122 122 137 122 137 122 137 122 137 122 122 137 122 122 137 120 164.3 137 122 122 122 122 137 120 164.3 136.0 162 122 125 125 125 125 125 125 125 125 12	9.32 7.52 7.52 234 234 232 227 221 204 193 181 167 153 137 721 164.6 53.3 43.9 36.0 30.1 25.6 20.4 18.9 7.7 16.8 16.5 16.1 15.5	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C(DZG) 0 5 10 15 20 0 15 20 10 15 20 30 35 40 45 50 55 50 65 70 65 70 65 90 95 90 95 100 115 125 100 101 115 125 100 101 15 101 101 15 101 101	13.6 10.1 7.84 285 234 231 227 220 213 220 213 203 192 180 167 137 120 90.1 76.1 63.4 42.9 35.5 24.9 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 25.2 29.7 20.0 16.6 15.5 29.7 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20	13.3 9.23 6.24 300 233 231 221 221 221 221 132 192 180 151 136 90.5 77.0 63.8 90.5 77.0 63.8 91.5 11.0 63.8 91.5 12.1 106 15.5 14.1 14.2	9.63 7.14 315 234 230 226 220 223 204 192 180 166 152 136 152 136 30.4 76.3 52.5 43.1 135.3 29.7 25.2 20.1 185.5 17.4 16.5 15.9 15.3 15.0	8.99 6.88 330 234 232 227 221 203 193 193 193 193 193 195 152 137 121 106 91.0 91.0 91.0 91.0 91.0 91.0 91.0 91.0	9.32 7.52 345 234 232 227 221 204 193 204 193 181 167 153 137 122 107 91.4 77.1 64.6 53.3 30.1 25.6 22.5 6 22.5 6 18.9 17.7 8 18.9 17.7 8 18.9 17.7 125 107 125 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 107 115 115 115 115 115 115 115 115 115 11	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 Table2 C (DEG) (DEG) 10 15 20 5 30 35 30 35 30 40 45 50 55 80 85 100 105 100 105 100 105 100 105 100 105 100 105 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 115 120 105 100 115 120 105 115 120 135 130 135 135 135 135 135 135 135 135	13.6 10.1 7.84 285 234 231 227 220 213 192 180 167 152 137 165 167 163.4 42.9 35.5 29.7 25.2 22.1 20.0 18.6 167 152 137 155 15.9 15.3 15.0 14.8	13.3 9.23 6.24 6.24 300 233 233 231 227 221 213 192 180 166 151 136 151 136 53.0 63.8 53.0 63.8 53.0 63.8 53.0 166 121 106 90.5 5 14.2 199 14.5 14.5	9.63 7.14 315 234 230 226 220 213 204 192 213 204 192 136 152 52.5 52.5 52.5 52.5 52.5 17.4 43.1 35.3 29.7 25.2 22.3 20.1 18.5 17.4	8.99 6.88 3300 234 232 227 221 213 203 180 166 152 137 121 06 91.0 77.1 21 06 91.0 29.8 25.3 36.0 29.8 22.1 20.0 0 18.2 22.1 120.0 18.2 53.3 180 106 152 137 121 106 152 155 155 155 155 155 155 155 155 155	9.32 7.52 345 234 232 227 221 213 204 181 167 153 137 153 137 153 137 153 137 153 137 91.4 564.6 53.3 36.0 30.1 25.5 20.4 18.9 18.5 20.4 18.5 15.5 20.4 18.5 21.5 21.5 22.5 21.5 22.5 22.5 23.5 23.5 23.5 23.5 23.5 23	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.
175 180 <b>Teble2</b> C (DEG) (DEG) 0 5 10 0 5 20 25 25 25 30 35 40 45 50 65 55 60 55 70 75 80 85 90 95 100 115 120 125 120 135 140 145 120 135 145 120 135 140 145 155 160	13.6 10.1 7.84 285 234 231 227 220 192 203 192 203 192 106 167 152 390.1 76.1 63.4 42.9 35.5 22.7 25.2 22.1 76.1 63.4 42.9 15.3 15.9 15.9 15.9 15.9 15.0 14.8	13.3 9.23 6.24 6.24 7.23 233 233 231 227 221 122 203 192 130 166 151 136 155 77.0 63.8 90.5 77.0 63.8 90.5 77.0 63.8 90.5 77.0 63.8 90.5 136 121 136 136 136 136 136 136 136 136 136 13	9.63 7.14 315 234 233 220 213 201 192 180 165 152 136 121 105 152 135 30.4 76.3 52.5 52.5 52.5 52.5 52.5 15.9 15.3 15.0 14.9 14.1	8.99 6.88 330 234 232 227 221 213 193 180 166 152 137 106 91.0 6 4.3 353.3 22.0 0 18.2 17.0 164.3 25.3 22.1 29.8 25.3 22.1 17.0 18.2 17.5 515.5 15.1 14.9 14.4 14.1 14.0	9.32 7.52 7.52 234 234 232 227 221 213 204 193 181 167 753 181 167 753 181 167 753 181 167 753 181 167 153 107 91.4 77.1 22.0 41.6 8.9 17.7 20.4 18.9 17.5 20.4 18.9 17.5 20.4 18.9 17.5 20.4 18.9 17.5 20.4 18.9 17.5 20.4 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 Table2 C(DEG) (DEG) 0 5 10 15 20 0 5 30 25 30 25 30 40 45 50 55 60 65 70 80 85 80 85 90 95 100 105 100 105 100 105 100 105 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 15 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 100 105 115 125 100 105 115 125 135 135 140 155 155 100 115 125 135 140 145 155 140 145 155 140 145 155 140 145 155 140 145 155 140 145 155 140 145 155 165 165 165 155 140 155 155 165 165 165 155 165 165	13.6 10.1 7.84 285 234 234 231 227 220 213 203 192 213 203 192 213 203 192 213 203 192 213 203 192 213 203 192 213 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 192 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 203 195 195 203 195 195 203 195 195 203 195 195 203 195 195 195 195 195 195 195 195 195 195	13.3 9.23 6.24 6.24 7.23 233 231 227 221 213 203 192 213 203 192 213 203 192 213 203 192 213 203 192 219 180 166 90.5 77.0 43.4 25.2 29.4 43.4 16.9 19.5 5 35.7 29.4 16.9 19.5 5 35.7 29.4 16.9 19.5 5 35.7 21.1 21.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20	9.63 7.14 315 234 233 230 226 220 213 204 192 180 65 25 52.5 52.5 52.5 52.5 52.5 17.4 18.5 121 105 90.4 43.1 35.3 29.7 43.1 35.3 29.7 18.5 15.9 15.5 17.4	8.99 6.88 3300 234 232 227 21 21 3 30 3 20 3 20 3 221 121 3 20 3 20	9.32 7.52 234 234 232 227 21 193 181 167 153 137 153 137 153 137 153 137 91.4 (55.3 36.0 30.1 (6.5 2.5 20.4 17.7 16.6 5 20.5 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1.5) 20.4 (1	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0
175 180 <b>Teble2</b> C (DEG) (DEG) 0 5 10 0 5 20 25 25 25 30 35 40 45 50 65 55 60 55 70 75 80 85 90 95 100 115 120 125 120 135 140 145 120 135 145 120 135 140 145 155 160	13.6 10.1 7.84 285 234 234 231 227 220 167 152 203 192 100 167 152 137 120 106 52.4 42.9 90.1 76.1 63.4 90.1 76.1 63.4 90.1 75.2 4 22.7 120 106 167 15.2 4 15.2 15.9 15.3 15.5 15.9 15.3 15.0 14.4 14.1 14.1 13.8	13.3 9.23 6.24 6.24 7.23 233 233 231 227 221 122 203 192 130 166 151 136 155 77.0 63.8 90.5 77.0 63.8 90.5 77.0 63.8 90.5 77.0 63.8 90.5 136 121 136 136 136 136 136 136 136 136 136 13	9.63 7.14 315 234 233 230 220 213 201 192 180 166 152 136 152 136 152 136 152 136 152 135 329.7 75.2 22.3 20.1 15.3 35.0 14.5 15.9 14.5 15.3 15.0 14.5	8.99 6.88 330 234 234 234 227 221 213 193 180 166 152 33 193 180 77.1 64.3 35.3 43.9 36.0 77.1 64.3 25.3 25.3 25.3 25.3 12.0 10.6 29.8 25.3 25.1 11.0 16.2 29.8 29.8 29.1 20.3 193 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 191 10.6 153 137 121 10.6 153 137 120 10.6 153 137 120 10.6 152 20.3 193 180 166 152 20.3 193 180 166 152 20.3 191 10.6 152 20.3 193 180 166 152 20.3 191 10.6 153 137 110 166 20.3 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0	9.32 7.52 7.52 234 234 234 232 227 221 193 181 167 153 137 122 107 7.1 64.6 53.3 30.1 25.6 22.5 6 30.1 25.6 16.1 15.5 15.2 20.4 18.5 16.1 15.5 15.2 20.4 18.5 16.6 11.5 5 51.5 20.4 20.4 20.4 20.4 20.4 20.4 20.4 20.4	8.65	9.02	8.37	9.07	8.55	9.16	8.83	8.10	9.76	9.81	10.6	10.3	11.3	11.0







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Report No: NTCR17060049 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\*\*\*\*