LM-79-08 Test Report

For

P.Q.L., Inc.

2285 Ward Avenue / Simi Valley, CA 93065

WALL MOUNT

Model Name(s):

8335 W 30
83354
83355
8335X-17W-35K
8335X-17W-50K

Representative (Tested) Model:
8335X-17W-50K

Model Difference: All is the same construction, except CCT.

Prepare by:

Derek Lai

Engineer: Derek Lai
Date: 2018-12-13

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan
Issue Date: 2018-12-31
Revised Date: N/A

Note:
1. The results contained in this report pertain only to the tested samples.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Product Information:

Client Name:	P.Q.L., Inc.
Brand Name:	Superior Life®
Model Number:	8335X-17W-50K
Product Type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires
Rating Input:	120-277Vac, 50/60Hz, 17W
Declared CCT:	5000K
Declared Light Output:	1950lm
LED Manufacturer:	LUMILEDS
LED Model:	LUXEON 3030 2D
LED Quantity:	20 pcs

Test Information:

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2018-12-07
Quantity of Receipt Samples:	1 pcs
Sample Number:	181207006-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

Report Information:

Issued Date of Test Report:	2018-12-31
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18120030
Remark *(If applicable)*:	N/A

Test Specification:	
Date of Test	2018-12-10
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 C78.377-2017 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 ANSI C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements

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 °C ± 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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizonal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at 25 °C± 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 require Voltage and Frequency. 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 1 nm intervals over the rage of 380 to 780 nm.

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.6	40.8	Face Down	90	10

Electrical Data:

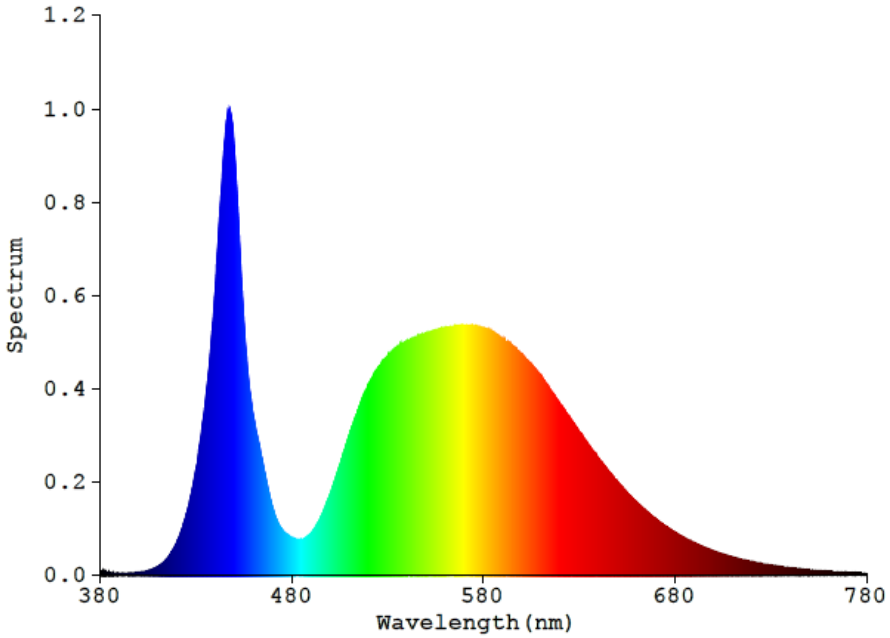
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1411	16.69	0.9858

Color Data:

Parameter	Result
CCT(K)	5067
Color Rendering Index (CRI)	71.7
R9	-26
Chromaticity, x	0.3434
Chromaticity, y	0.3520
Chromaticity, u'	0.2101
Chromaticity, v'	0.4846
Duv	0.00088

Special Color Rendering			
R1	70	R9	-26
R2	76	R10	41
R3	79	R11	71
R4	73	R12	42
R5	71	R13	70
R6	67	R14	88
R7	79	R15	65
R8	58	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.6	40.8	Face Down	90	25

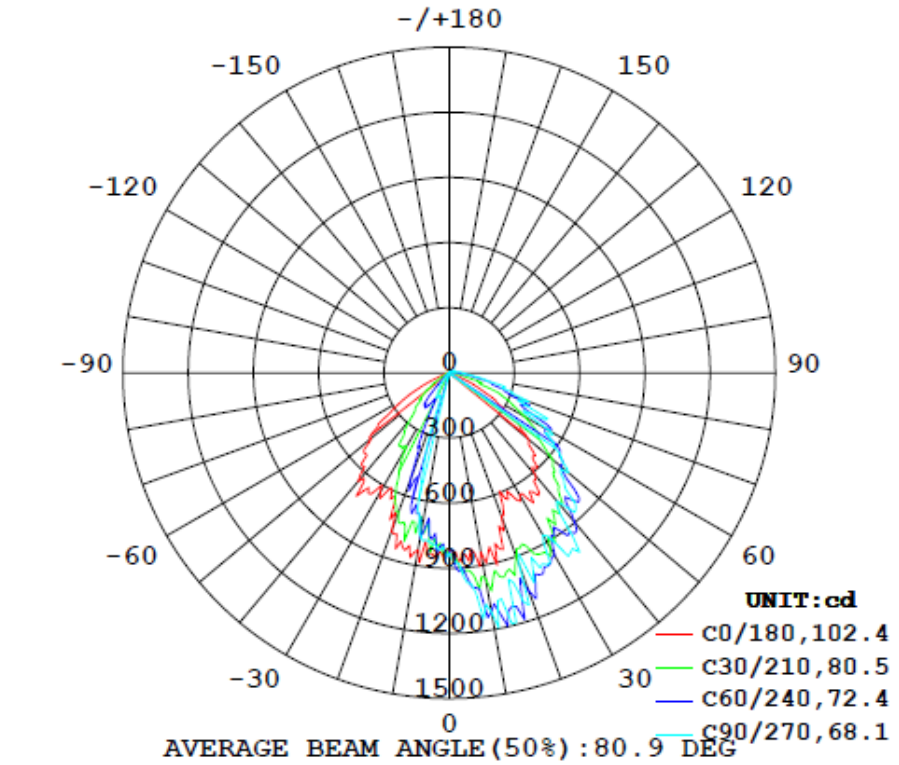
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1411	16.69	0.9858

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	1946.0
Luminous Efficacy (lm/w)	116.60
Zonal Lumens (0-90°) (lm)	1910.7
Zonal Luminous Efficacy (0-90°) (lm/w)	114.48
Zonal Lumens Distribution (80-90°)	1.6%
Beam Angle (°)	80.9

Luminous Intensity Distribution Diagram:

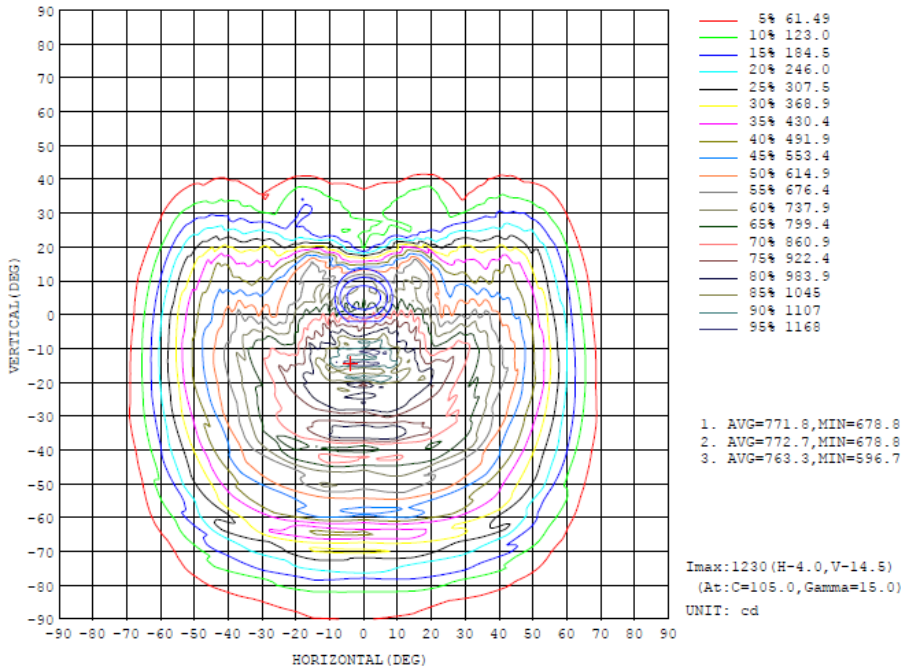


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	837.9	1047	1118	1069	827.7	685.6	761.2	682.5	0- 10	82.62	82.62	4.25,4.25
20	703.3	1019	942.0	1056	778.2	678.7	112.6	692.1	10- 20	234.2	316.9	16.3,16.3
30	647.7	965.9	862.0	941.3	635.5	233.1	111.3	224.0	20- 30	305.8	622.7	32,32
40	619.4	863.5	770.5	850.9	651.2	102.6	41.87	94.87	30- 40	356.5	979.2	50.3,50.3
50	476.1	690.5	714.8	666.9	470.5	32.79	8.250	26.95	40- 50	352.8	1332	68.4,68.4
60	230.6	464.1	534.4	493.5	235.7	11.05	3.676	11.21	50- 60	282.8	1615	83,83
70	26.67	331.3	390.9	342.0	31.75	4.838	1.506	5.284	60- 70	177.6	1792	92.1,92.1
80	10.89	99.69	162.1	99.99	12.61	2.841	0.8273	2.812	70- 80	87.49	1880	96.6,96.6
90	6.491	34.56	62.51	36.48	6.881	2.252	0.7394	2.037	80- 90	30.76	1911	98.2,98.2
100	3.086	12.93	18.23	12.39	3.163	0.9603	0.4552	1.039	90-100	13.15	1924	98.9,98.9
110	3.442	8.218	24.69	9.534	3.517	0.6142	0.4612	0.6368	100-110	6.842	1931	99.2,99.2
120	1.981	5.187	25.78	4.722	2.093	0.6502	0.0411	0.6074	110-120	5.819	1936	99.5,99.5
130	0.6195	6.578	18.22	6.422	0.7866	0.5036	0.1515	0.5011	120-130	4.335	1941	99.7,99.7
140	0.7790	5.603	12.70	5.848	0.8525	0.2727	0.1476	0.2499	130-140	2.983	1944	99.9,99.9
150	0.6985	3.094	8.030	3.631	0.6362	0.0310	0.0811	0.0194	140-150	1.598	1945	100,100
160	0.0439	1.476	2.216	1.169	0	0	0.0506	0	150-160	0.5441	1946	100,100
170	0	0	0.0006	0.0814	0	0	0	0	160-170	0.0472	1946	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0001	1946	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 7.1 %									UNIT:lm		

Isocandela Diagram:



Luminous Distribution Intensity Data:

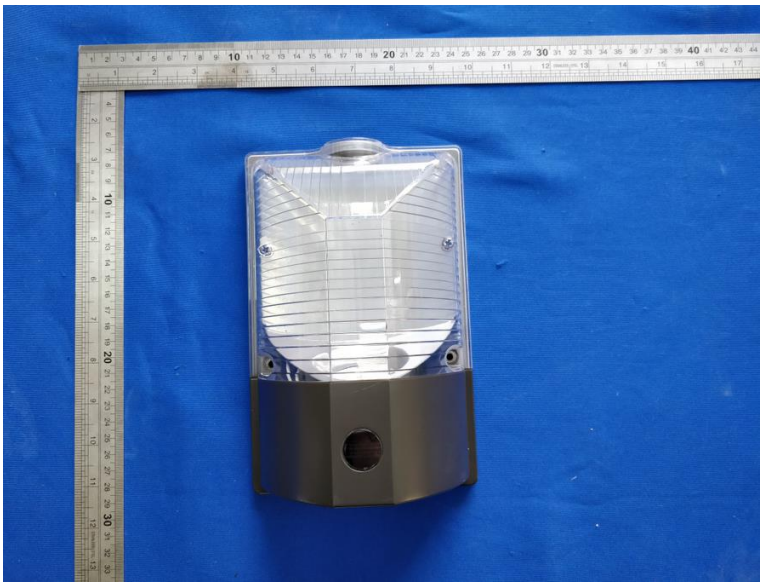
Table--1 UNIT: cd

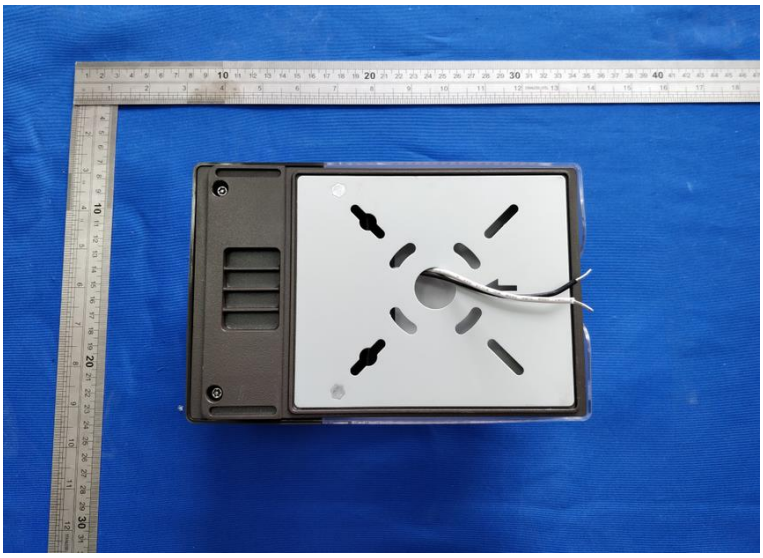
γ (DEG) \ C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	824	851	836	844	827	837	832	829	835	827	836	828	824	851	836	844	827	837	832
5	838	887	911	945	945	963	971	913	948	943	854	856	844	836	764	764	741	761	795
10	838	966	962	1047	1115	1114	1118	1078	1029	1069	979	940	828	716	753	686	774	774	761
15	814	889	974	1043	1114	1198	1190	1239	1122	1066	976	912	831	727	802	662	670	495	475
20	703	798	901	1019	1067	1181	942	1087	1063	1056	932	797	778	633	682	679	519	226	113
25	643	764	918	1056	1021	1008	991	977	1028	998	882	759	642	600	579	476	243	121	125
30	648	868	930	966	973	959	862	914	953	941	899	829	635	519	394	233	151	133	111
35	668	806	854	858	888	1035	988	992	905	881	827	807	645	473	406	160	197	118	79.7
40	619	724	781	863	896	821	770	801	870	851	767	687	651	476	281	103	161	55.3	41.9
45	542	677	684	828	841	829	757	856	818	778	669	652	538	513	212	62.9	59.2	24.9	13.9
50	476	540	621	691	666	687	715	711	643	667	597	531	470	370	156	32.8	22.9	11.4	8.25
55	325	455	505	595	623	628	583	611	607	588	506	452	364	269	96.3	18.1	10.9	6.36	5.13
60	231	312	399	464	512	583	534	583	530	494	397	312	236	146	43.3	11.1	6.78	4.35	3.68
65	108	204	301	398	374	464	501	517	381	391	301	204	118	36.1	16.0	7.58	3.84	2.46	2.41
70	26.7	91.9	161	331	304	358	391	383	304	342	163	95.3	31.8	14.0	14.5	4.84	2.00	1.42	1.51
75	15.2	32.7	100	205	203	239	264	265	223	210	103	35.9	17.4	9.83	10.3	3.36	1.30	1.02	0.99
80	10.9	21.8	39.4	99.7	116	152	162	154	117	100.0	44.7	23.7	12.6	7.83	12.6	2.84	0.98	0.77	0.83
85	7.63	17.4	29.6	43.8	56.4	73.1	77.6	78.5	63.6	49.7	31.3	17.8	8.02	5.62	7.66	2.48	0.92	0.77	0.77
90	6.49	13.3	23.2	34.6	42.1	57.5	62.5	60.5	44.9	36.5	24.2	14.2	6.88	4.66	5.25	2.25	0.96	0.82	0.74
95	2.04	3.45	6.62	18.0	31.0	50.1	48.4	51.7	31.4	18.0	6.71	3.83	3.42	2.28	2.15	1.77	1.19	1.14	1.15
100	3.09	2.85	13.9	12.9	9.14	17.3	18.2	16.5	8.62	12.4	13.9	4.09	3.16	0.61	1.99	0.96	0.37	0.38	0.46
105	4.27	3.04	13.7	13.9	3.72	26.7	28.2	26.8	4.60	16.3	14.3	3.77	3.97	1.45	1.85	0.82	0.33	0.45	0.56
110	3.44	2.53	9.54	8.22	7.45	22.1	24.7	21.9	5.48	9.53	10.4	3.09	3.52	1.36	1.72	0.61	0.25	0.36	0.46
115	2.79	2.00	6.71	5.64	15.2	23.0	28.5	22.7	13.0	5.59	7.10	2.38	2.76	1.27	1.45	0.80	0.04	0.08	0.27
120	1.98	1.02	3.95	5.19	15.1	22.1	25.8	22.1	15.4	4.72	3.97	1.29	2.09	1.14	1.18	0.65	0.10	0.06	0.04
125	0.87	0.34	3.13	6.63	13.5	19.6	21.8	20.0	15.2	5.80	3.12	0.35	1.21	0.95	1.07	0.54	0.12	0.08	0.17
130	0.62	1.32	2.95	6.58	11.4	16.9	18.2	16.5	11.8	6.42	2.74	1.33	0.79	0.44	0.99	0.50	0.09	0.07	0.15
135	0.74	1.76	3.19	6.41	10.0	13.9	15.9	14.3	10.8	6.61	2.93	1.52	0.88	0.37	0.87	0.39	0.07	0.06	0.13
140	0.78	1.31	2.97	5.60	8.82	12.4	12.7	12.7	9.43	5.85	2.65	0.93	0.85	0.50	0.61	0.27	0.04	0.06	0.15
145	0.25	0.92	0.30	3.94	6.28	9.47	10.7	10.3	7.68	4.87	0.55	1.03	0.22	0.66	0.37	0.15	0.02	0.01	0.10
150	0.70	0.96	0.89	3.09	5.01	7.01	8.03	7.71	5.99	3.63	0.60	0.99	0.64	0.55	0.06	0.03	0.02	0.01	0.08
155	0.22	0.68	1.27	0.00	3.35	4.79	5.07	4.56	3.40	0.00	0.53	0.64	0.27	0.13	0.00	0.01	0.03	0.01	0.08
160	0.04	0.46	0.84	1.48	0.11	1.43	2.22	1.57	0.05	1.17	0.28	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.05
165	0.00	0.24	0.43	0.40	0.01	0.69	0.27	0.67	0.79	0.60	0.35	0.21	0.00	0.03	0.01	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	829	835	827	836	828
5	783	770	763	768	825
10	741	709	682	779	744
15	520	620	712	770	735
20	266	486	692	736	652
25	118	256	512	568	566
30	126	130	224	395	565
35	117	172	166	396	491
40	61.4	147	94.9	282	495
45	27.0	65.8	55.0	227	495
50	11.4	26.2	26.9	170	377
55	6.32	11.9	16.1	110	257
60	4.50	6.95	11.2	47.2	142
65	2.55	3.96	7.61	15.6	47.3
70	1.38	2.02	5.28	12.5	14.2
75	0.97	1.31	3.59	9.78	8.93
80	0.76	0.94	2.81	11.7	6.88
85	0.78	0.82	2.36	6.92	5.62
90	0.70	0.86	2.04	5.23	4.37
95	1.05	1.13	1.52	1.44	1.70
100	0.39	0.41	1.04	1.85	0.13
105	0.47	0.36	0.74	2.09	0.78
110	0.39	0.23	0.64	1.75	0.72
115	0.04	0.05	0.74	1.39	0.64
120	0.07	0.19	0.61	1.10	0.56
125	0.12	0.14	0.51	0.95	0.49
130	0.08	0.11	0.50	0.86	0.31
135	0.06	0.09	0.38	0.76	0.81
140	0.06	0.04	0.25	0.56	0.91
145	0.04	0.01	0.12	0.31	0.39
150	0.05	0.01	0.02	0.02	0.64
155	0.02	0.01	0.00	0.00	0.20
160	0.01	0.00	0.00	0.00	0.08
165	0.00	0.00	0.00	0.00	0.02
170	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00

Photo of Sample:





Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2018-11-16	2019-11-15
NTC-F01-006	2.0 meter Integrating Sphere	2018-11-16	2019-11-15
NTC-F01-012	Standard Lamp	2018-11-13	2019-11-12
NTC-F01-013	Standard Lamp	2018-11-13	2019-11-12
NTC-F01-031	Digital Power Meter	2018-08-29	2019-08-28
NTC-F01-019	Temperature & Humidity Meter	2018-11-12	2019-11-11

************End of Report************

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com