



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

LED Wall Luminaire

Model name(s): 533011##

Representative (Tested) Model: 53301111

Model Difference: ##=11-30 intends CCT 3000K, 4000K and 5000K. (The product is color tunable luminaire, tunable from 3000K, 4000K and 5000K).

Prepare By:

/ as low

Engineer: Leo Liu Date: 2017-08-12

Review By:

incer Tven

Technical Lead: Vincent Yuan Date: 2017-08-15

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 1st 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: 533011## (##=11-30) Outdoor Wall Luminaire Product type: AC120V, 60Hz, 40W Rating Input: Declared CCT: 3000K, 4000K, 5000K Declared Light output: 3500 lm LED Manufacturer: Samsung LED Model: SPMWH1229A LED Quantity: 63 pcs Forward current of LED 100mA Date of Receipt Samples: 2017-07-13 Quantity of Receipt 3 Sample Number: 170713002-S1

Laboratory Information:

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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:	2017-08-15
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17070066
Remark (If applicable)	N/A





Test Specifications:	
Date of Test	2017-08-11
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° C $\pm 1^{\circ}$ 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 Cor	Test Condition:									
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time						
25.0 °C	42 %	Face Down	90 min	25 min						
Electric	al Data:									

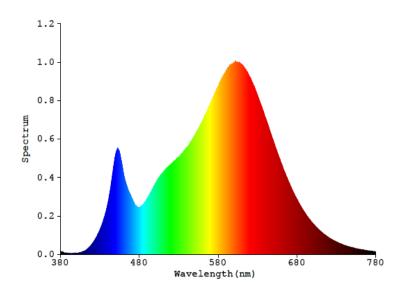
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.3368	39.58	0.9795

Color Data:

Parameter	Result
CCT(K)	3107
Color Rendering Index (CRI)	83.9
R9	12
Chromaticity, x	0.4269
Chromaticity, y	0.3957
Chromaticity u'	0.2477
Chromaticity v'	0.5165
Duv	-0.00195

S	Special Color Rendering								
R1	83	R9	12						
R2	93	R10	84						
R3	95	R11	81						
R4	82	R12	78						
R5	84	R13	85						
R6	92	R14	98						
R7	83	R15	76						
R8	61	-	-						

Spectrum Diagram:





NVLAP LAB CODE 600150-0

Report No: NTCR17070066 Report Version: V1.1

Goniophotemeter Test Results:

Test Condition:									
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time					
25.0 °C	42 %	Face Down	90 min	25 min					
Electric	al Data:								

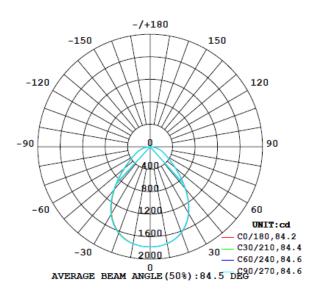
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.3368	39.58	0.9793

Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	3555.9
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	89.85
Zonal Lumens Distribution (0-85°)	99.2%
Zonal Lumens Distribution (90-180°)	0%
Beam Angle (°)	84.5
Center Beam Candle Power (cd)	1783

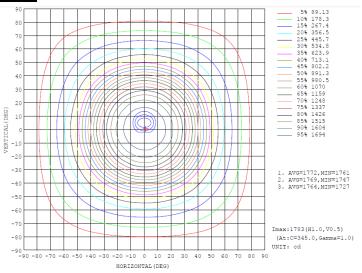
Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM













γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	zone	<pre> total </pre>	%lum,lam
10	1751	1749	1746	1745	1747	1751	1754	1752	0- 10	168.6	168.6	4.74,4.74
20	1628	1625	1618	1617	1624	1633	1640	1633	10- 20	479.4	648.0	18.2,18.2
30	1375	1371	1358	1357	1370	1380	1397	1385	20- 30	696.7	1345	37.8,37.8
40	982.6	980.5	963.8	964.9	980.3	993.9	1014	997.6	30-40	741.4	2086	58.7,58.7
50	589.3	589.4	575.9	577.3	586.7	598.7	614.2	600.3	40- 50	599.3	2685	75.5,75.5
60	347.4	349.8	343.4	343.6	346.1	353.5	362.1	354.6	50- 60	408.1	3093	87,87
70	210.1	215.0	212.4	211.1	209.7	216.9	224.2	217.8	60-70	275.4	3369	94.7,94.1
80	66.91	85.88	88.61	80.98	67.15	89.15	100.5	89.02	70- 80	159.9	3529	99.2,99.2
90	0.0058	0.0019	0.0038	0.0017	0.0053	0.0130	0.0050	0.0057	80- 90	27.05	3556	100,100
100	0.0019	0.0123	0.0025	0.0050	0.0025	0.0025	0.0022	0.0022	90-100	0.0030	3556	100,100
110	0.0019	0.0047	0.0025	0.0041	0.0035	0.0025	0.0028	0.0022	100-110	0.0033	3556	100,100
120	0.0025	0.0054	0.0025	0.0047	0.0035	0.0028	0.0038	0.0031	110-120	0.0033	3556	100,100
130	0.0032	0.0063	0.0038	0.0060	0.0057	0.0054	0.0054	0.0057	120-130	0.0037	3556	100,100
140	0.0054	0.0066	0.0066	0.0066	0.0057	0.0069	0.0066	0.0060	130-140	0.0044	3556	100,100
150	0.0066	0.0063	0.0066	0.0070	0.0073	0.0073	0.0066	0.0066	140-150	0.0040	3556	100,100
160	0.0063	0.0063	0.0073	0.0063	0.0070	0.0073	0.0063	0.0066	150-160	0.0032	3556	100,100
170	0.0063	0.0051	0.0057	0.0057	0.0073	0.0060	0.0063	0.0066	160-170	0.0018	3556	100,100
180	0.0016	0.0022	0.0025	0.0025	0.0013	0.0035	0.0025	0.0028	170-180	0.0005	3556	100,100





NVLAP LAB CODE 600150-0

Luminous Distribution Intensity Data:

Table1 C (DEG)																			
(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1782	1782	1782	1781	1781	1781	1781	1781	1783	1780	1783	1783	1782	1782	1782	1781	1781	1781	1781
5	1775	1776	1775	1773	1773	1774	1773	1772	1772	1772	1772	1772	1773	1773	1776	1774	1775	1775	1775
10	1751	1752	1750	1749	1749	1748	1746	1746	1744	1745	1745	1747	1747	1749	1752	1751	1754	1753	1754
15	1704	1707	1702	1701	1699	1701	1697	1696	1693	1695	1695	1697	1700	1700	1706	1706	1710	1709	1711
20	1628	1632	1626	1625	1623	1624	1618	1618	1613	1617	1616	1620	1624	1623	1632	1633	1638	1638	1640
25	1520	1524	1516	1517	1512	1514	1507	1508	1500	1504	1503	1509	1516	1514	1524	1525	1533	1532	1537
30	1375	1379	1369	1371	1364	1367	1358	1359	1350	1357	1354	1363	1370	1368	1380	1380	1391	1390	1397
35	1192	1198	1186	1187	1179	1182	1173	1175	1165	1173	1170	1181	1189	1185	1202	1201	1214	1212	1220
40	983	990	977	980	971	973	964	966	957	965	962	972	980	977	995	994	1008	1006	1014
45	772	779	767	771	763	765	756	759	751	757	753	763	771	767	784	785	797	795	803
50	589	594	585	589	582	584	576	579	573	577	574	580	587	584	597	599	609	608	614
55	448	452	446	449	444	446	440	442	437	441	437	442	446	444	454	455	463	462	468
60	347	351	347	350	346	347	343	345	341	344	340	343	346	345	352	353	359	359	362
65	273	276	274	276	274	275	272	274	271	272	269	270	272	271	278	279	284	283	286
70	210	213	211	215	213	215	212	214	211	211	207	208	210	209	215	217	222	222	224
75	144	148	149	154	154	155	153	154	151	150	145	143	145	145	153	156	162	162	164
80	66.9	72.5	75.1	85.9	88.8	91.1	88.6	89.8	85.9	81.0	69.5	66.2	67.2	68.2	81.4	89.2	97.3	98.2	101
85	6.12	2.19	8.15	14.6	16.5	22.3	18.4	21.1	13.1	6.71	4.54	1.45	1.59	4.33	6.60	14.0	27.7	27.3	31.1
90	0.01	_	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01
95	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
100	0.00	0.00	0.00	0.01	0.01	0.00		0.00	0.01		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.01		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
110	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
115	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
120	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
130	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01		0.01
135	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.01		0.01	0.00	0.01		0.01		0.01
140		0.00			0.01	0.01	0.01	0.01	0.01	0.01	0.01			0.00	0.01	0.01	0.01	0.01	0.01
145	0.01	_	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
155	0.01	0.01	0.01	0.01	0.01	0.01		0.01		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	0.01
100	0.01		0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
170				0.01	0.01	0.01	0.01				_			0.01	0.01	0.01	0.01	0.00	0.01
170	0.01	0.01		0 00	0 01	0 01	0 01			0 00									
170 175 180 Table2	0.00	0.00		0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00		0.00			
175 180 Table2 C(DEG)	0.00	0.00	0.01	0.00	0.00											0.00	0.00		
175 180 Table2 C (DEG) y (DEG)	0.00 0.00 285	0.00	0.01	0.00	0.00 345											0.00	0.00		0.00
175 180 Table2 C (DEG) y (DEG) 0	0.00 0.00 285 1781	0.00 0.00 300 1783	0.01 0.00 315 1780	0.00 330 1783	0.00 345 1783											0.00	0.00		
175 180 Table2 C (DEG) y (DEG) 0 5	0.00 0.00 285 1781 1774	0.00 0.00 300 1783 1775	0.01 0.00 315 1780 1776	0.00 330 1783 1776	0.00 345 1783 1775											0.00	0.00		
175 180 Table2 C (DEG) 0 5 10	0.00 0.00 285 1781 1774 1753	0.00 0.00 300 1783 1775 1754	0.01 0.00 315 1780 1776 1752	0.00 330 1783 1776 1753	0.00 345 1783 1775 1752											0.00	0.00		
175 180 Table2 C (DEG) 0 5 10 15	0.00 0.00 285 1781 1774 1753 1709	0.00 0.00 300 1783 1775 1754 1710	0.01 0.00 315 1780 1776 1752 1706	0.00 330 1783 1776 1753 1709	0.00 345 1783 1775 1752 1705											0.00	0.00		
175 180 Table2 C(DEG) 0 5 5 10 15 20	0.00 0.00 285 1781 1774 1753 1709 1637	0.00 0.00 300 1783 1775 1754 1710 1639	0.01 0.00 315 1780 1776 1752 1706 1633	0.00 330 1783 1776 1753 1709 1635	345 1783 1775 1752 1705 1630											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25	0.00 0.00 285 1781 1774 1753 1709 1637 1533	0.00 0.00 300 1783 1775 1754 1710 1639 1535	0.01 0.00 315 1780 1776 1752 1706 1633 1527	0.00 330 1783 1776 1753 1709 1635 1529	0.00 345 1783 1775 1752 1705 1630 1524											0.00	0.00		
175 180 Table2 C(DEG) (DEG) 0 5 10 15 20 25 30	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391	0.00 0.00 300 1783 1775 1754 1710 1639 1535 1393	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385	0.00 330 1783 1776 1753 1709 1635 1529 1387	0.00 345 1783 1775 1752 1705 1630 1524 1379											0.00	0.00		
175 180 Table2 C (DEG) y (DEG) 0 5 10 15 20 25 30 35	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198											0.00	0.00		
175 180 Table2 C(DE6) 0 5 10 15 20 25 30 35 40	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1006	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205 998	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000	0.00 345 1783 1775 1752 1755 1630 1524 1379 1198 989											0.00	0.00		
175 180 Table2 C (DEG) y (DEG) 0 5 10 15 20 25 30 35	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198											0.00	0.00		
175 180 Table2 C(DEG) 0 5 5 10 15 20 30 35 30 35 40 45 50	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1006 795	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798	0.01 0.00 315 1780 1776 1633 1527 1385 1205 998 786	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 778											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 40 45	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1006 795 607	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798 610	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205 998 786 600	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 778 593											0.00	0.00		
175 180 Table2 C(DEG) (DEG) (DEG) 10 15 20 25 30 35 40 45 50 55	0.00 0.00 285 1781 1774 1753 1779 1637 1533 1391 1213 1006 795 607 462	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798 610 464	0.01 0.00 315 1780 1776 1633 1527 1385 1205 998 786 600 456	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602 457	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 778 593 451											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 40 45 55 60	0.00 0.00 1781 1774 1753 1391 1213 1006 795 607 462 359	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798 610 464 360	0.01 0.00 315 1780 1776 1752 1776 1633 1527 1385 1205 998 786 600 456 355	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602 457 355	0.00 345 1783 1775 1752 1630 1524 1379 1198 989 778 593 451 350											0.00	0.00		
175 180 Table2 C(DE6) (DE6) 0 5 10 0 5 20 25 20 25 30 35 40 45 55 50 55 50 55 50 55 50 55 50 55 50 60 65 55 50 60 60 60 60 60 60 60 60 60 6	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 213 1213 1006 795 607 462 359 283	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1393 1215 1009 798 610 464 360 285	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205 998 786 600 456 355 280	0.00 330 1783 1776 1753 1529 1387 1208 1000 789 602 457 355 280	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 778 593 451 350 275											0.00	0.00		
175 180 Teble2 C(DEG) (CEG) (CEG) 10 15 20 30 35 30 35 55 60 65 70	0.00 0.00 285 1781 1773 1773 1773 1709 1533 1391 1213 1006 795 607 607 607 462 359 283 222	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798 610 464 360 285 223	0.01 0.00 1776 1752 1706 1633 1527 1385 1205 998 786 600 456 355 280 218	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602 457 355 280 217	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 989 989 593 451 350 275 212											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 40 55 50 55 50 55 50 55 50 55 70 75	0.00 0.00 285 1781 1774 1753 1391 1213 1006 795 607 462 283 259 283 222 162	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 798 610 464 360 285 223 162	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 1205 998 786 600 456 456 355 280 218 157	0.00 330 1783 1776 1753 1709 1635 1208 1000 789 602 457 355 280 217 155	0.00 345 1783 1775 1752 1705 1524 1379 1198 989 778 593 451 275 212 148											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 40 45 55 50 55 50 65 70 65 70 80 85 90	0.00 0.00 1781 1774 1753 1709 1637 1533 1391 1213 1006 795 607 462 359 283 222 162 283 222 162 283 222 162 0.01	0.00 0.00 1783 1775 1754 1710 1639 1215 1009 798 610 464 360 285 223 162 98.2 27.5 0.01	0.01 0.00 1776 1776 1775 1706 1633 1527 1205 998 786 600 455 355 280 218 157 280 218 157 280 218 157 280 218 157 280 218 157 280 218 218 215 280 218 215 280 218 215 280 218 215 280 218 215 280 218 215 218 215 217 217 217 217 217 217 217 217 217 217	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602 457 355 280 217 355 81.8 5.60 0.00	0.00 345 1783 1775 1752 1705 1524 1379 1198 989 778 989 778 593 350 275 212 148 451 350 275 212 148 6.00											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 5 20 25 30 35 50 45 55 60 65 70 75 80 85 90 95	0.00 0.00 285 1781 1774 1753 1391 1213 1006 795 607 462 359 283 283 283 283 283 283 283 283 283 283	0.00 0.00 1783 1775 1754 1393 1215 1393 1215 1009 798 610 464 360 223 162 98.2 27.5 0.01 0.00	0.01 0.00 315 1780 1776 1752 1706 1633 1527 1385 786 600 456 355 786 600 456 355 280 218 157 89.0 0.01 0.00	0.00 330 1783 1776 1753 1709 1635 1529 1635 1529 602 1387 355 280 217 155 81.8 81.8 5.60 0.00 0.00	0.00 345 1783 1775 1752 1705 1524 1379 1198 989 778 593 350 275 212 148 71.2 148 71.2 148 0.01 0.00											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 10 20 25 30 30 30 35 40 45 50 55 50 55 50 55 50 55 50 55 50 55 50 55 50 90 95 100 100 100 100 100 100 100 10	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1006 607 462 359 283 59 222 162 98.7 27.8 0.01 0.00 0.00	0.00 0.00 1783 1775 1754 1710 1639 1535 1393 1215 1009 1535 1393 1215 200 464 360 285 223 162 98.2 27.5 0.01 0.00 0.00	0.01 0.00 10.00 1776 1780 1776 1706 1752 1385 1205 998 600 456 600 456 600 456 280 0.55 280 0.12.8 0.01 0.00 0.00	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 602 457 355 280 0.00 0.00 0.00 0.00	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 989 989 989 1198 593 451 350 275 212 148 71.2 4.56 0.01 0.00 0.000											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 5 20 25 30 35 30 35 40 45 55 60 55 60 55 60 55 70 75 75 80 85 100 105 105 105 105 105 105 10	0.00 0.00 285 1781 1773 1773 1773 1773 1773 1006 795 607 283 283 283 283 283 283 283 283	0.00 0.00 1783 1775 1754 1710 1639 1535 1009 788 610 285 223 162 28.2 27.5 0.01 0.00 0.00 0.00	0.01 0.00 315 1780 1776 1752 1785 1785 1857 998 786 600 218 786 600 218 786 600 218 786 600 12.8 0.01 12.8 0.00 12.8 0.00 0.00 0.00	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1387 1208 1387 1208 1387 1208 1387 1208 1387 1208 1387 1208 1387 1208 1387 1208 1387 1529 1387 1208 1387 1208 1387 1000 0.00 0.000 0.000 0.000	0.00 345 1783 1775 1705 1705 1705 1630 1524 1379 1198 989 989 989 1198 989 275 235 212 148 71.2 4.56 0.01 0.000 0.000 0.000											0.00	0.00		
175 180 Teble2 C(DZG) 0 5 10 20 25 30 35 40 45 50 65 70 75 80 85 90 100 110 110	0.00 0.00 285 1781 1774 1753 1391 1213 1006 795 607 462 359 283 222 162 283 222 162 283 222 162 0.01 0.00 0.00 0.00	0.00 0.00 1783 1775 1754 1393 1393 1393 1393 1393 1393 1393 139	0.01 0.00 315 1780 1776 1756 1633 1527 1385 998 786 600 456 355 280 218 157 280 218 157 0.01 0.00 0.00 0.00 0.000	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 602 457 280 217 155 280 217 155 280 217 155 280 0.00 0.00 0.00 0.00 0.00	0.00 345 1783 1775 1752 1630 1524 1379 198 989 778 593 451 350 275 212 212 148 350 275 212 212 148 0.01 0.00 0.000 0.000											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 20 25 30 35 40 55 55 55 55 55 55 60 65 75 80 90 95 100 105 110 115 110 15 15 10 10 15 10 10 15 10 15 10 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 15 10 10 15 10 15 10 15 10 15 10 10 15 10 10 15 10 10 15 10 15 10 10 15 10 10 15 10 10 15 10 10 15 10 10 15 10 10 115 10 10 115 10 10 115 10 115 10 10 115 10 10 115 10 115 10 115 10 115 10 115 10 115 10 115 10 115 10 115 10 115 115	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1006 795 283 1006 359 283 282 162 98.7 27.8 98.7 27.8 0.01 0.00 0.00 0.00 0.00 0.00	0.00 0.00 300 1783 1775 1754 1710 1535 1215 1009 798 285 285 162 98.2 27.5 162 98.2 27.5 0.01 0.00 0.00 0.00 0.00 0.000 0.000	0.01 0.00 315 1780 1776 1752 1706 1633 1527 998 786 600 456 355 280 456 355 280 456 355 280 0.01 0.00 0.00 0.00 0.00 0.000	0.00 330 1783 1776 1753 1709 1387 1208 1387 1208 602 457 355 602 457 355 81.8 81.8 5.60 0.00 0.00 0.00 0.00 0.00	0.00 345 1783 1775 1752 1752 1752 1752 1752 1752 1752											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 5 20 25 30 35 20 25 30 35 5 60 45 55 60 45 55 60 85 65 75 75 80 80 85 90 95 100 115 120 120	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1391 1213 1391 1213 283 222 162 283 222 162 283 222 162 0.00	0.00 0.00 1783 1775 1754 1710 1639 1215 1393 1215 1393 1215 239 260 285 223 162 27.5 0.01 0.00 0.00 0.00 0.00 0.00 0.00	0.01 0.00 1780 1776 1775 1706 1633 1205 1205 786 600 456 600 456 600 12.8 786 600 12.8 0.01 12.8 0.01 0.00 0.00 0.00 0.00 0.00	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 602 457 355 280 217 355 81.8 5.60 0.00 0.00 0.00 0.00 0.00 0.00	0.00 345 1783 1775 1752 1752 1630 1524 1379 989 778 989 778 350 275 212 451 350 275 212 451 451 350 0.01 0.00 0.00 0.00 0.000 0.000 0.000											0.00	0.00		
175 180 Teble2 C(DEG) 0 5 10 15 10 220 25 30 35 40 45 50 55 60 65 55 60 65 55 80 90 95 90 105 110 115 120 125 100 125 100 110 125 100 110 125 100 100 100 100 100 100 100 10	0.00 0.00 2285 1781 1774 1753 1709 1637 1533 1391 1213 1006 795 607 462 283 222 162 98.7 227.8 0.01 0.00 0.00 0.00 0.00 0.00	0.00 0.00 1783 1775 1754 1710 1535 1393 1215 1009 798 610 464 360 610 464 225 223 162 98.2 227.5 0.01 0.00 0.00 0.00 0.00 0.00 0.00	0.01 0.01 0.00 315 1780 1776 1776 1633 1205 998 9786 600 456 600 456 280 218 157 89.0 12.8 0.01 0.00 0.00 0.00 0.00 0.000 0.000 0.000	0.00 330 1783 1776 1753 1709 1635 1529 1635 1529 602 457 355 602 457 355 602 217 155 81.8 81.8 0.00	0.00 345 1783 1775 1775 1775 1775 1775 1379 1198 989 989 1198 989 989 1198 593 451 350 7778 593 451 350 7778 593 451 1379 212 24 4.56 0.01 0.00 0.000 0.000 0.000 0.000											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 5 20 25 25 30 35 40 45 55 60 55 60 55 60 55 60 75 75 80 85 100 115 120 105 115 120 105 105 105 105 105 105 105 10	0.00 0.00 0.00 285 1781 1774 1753 1709 1533 1391 1213 1391 1213 1391 222 359 283 222 98.7 27.8 98.7 27.8 9.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 1783 1775 1754 1710 1535 1393 1215 1393 1215 1393 1215 1393 225 223 5 225 225 227.5 98.2 27.5 98.2 27.5 0.01 0.00	0.01 0.01 0.00 1780 1776 1775 1706 1705 1706 1633 1527 1385 289 786 600 998 786 600 12.8 998 786 600 12.8 998 0.01 0.00 0.00 0.00 0.00 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.0000000 0.00000000	0.00 330 1783 1776 1753 1779 1635 1529 602 457 355 81.8 5.60 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01	0.00 345 1783 1775 1775 1705 1630 1524 1379 1198 778 593 700 700 700 700 700 700 700 700 700 70											0.00	0.00		
175 180 Teble2 C(DZG) 0 5 10 20 25 30 35 40 45 50 65 65 70 75 80 85 90 105 110 115 120 125 130 135 135	0.00 0.00 0.00 285 1781 1774 1753 1391 1213 1006 795 607 462 359 222 162 283 222 162 27.8 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 1783 1775 1754 1751 1751 1393 1215 1009 798 610 464 360 464 360 462 223 162 227.5 0.01 0.00 0.00 0.000 0.000 0.001 0.01 0.01	0.01 0.01 0.00 1780 1780 1776 1633 1527 1385 998 786 600 456 355 998 218 157 89.0 218 12.8 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.001	0.00 330 1783 1776 1753 1709 1635 1209 1387 1208 602 457 280 217 155 280 217 155 280 217 155 280 217 0.00 0.	0.00 345 1783 1775 1752 1705 1630 1524 1379 1198 989 989 989 989 593 451 275 212 4.56 0.01 0.00 0.00 0.00 0.000 0.000 0.000											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 15 15 20 25 30 30 35 40 45 50 55 50 100 10	0.00 0.00 0.00 1781 1774 1753 1709 1637 1533 1006 795 607 462 359 283 1006 795 162 98.7 27.8 0.01 0.000 0.00	0.00 0.00 1783 1775 1754 1710 1639 1393 1393 1393 1639 1393 1639 1393 1639 1393 1639 1393 1639 1393 1639 1393 1395	0.01 0.01 0.00 1780 1780 1776 1780 1752 1706 1633 1527 1385 998 786 600 456 355 280 0.01 0.00	0.00 330 1783 1776 1775 1529 1387 1529 1387 1529 1387 789 602 280 789 602 280 789 602 217 155 81.8 5.60 0.00	0.00 345 1783 1775 1775 1775 1705 1524 1379 778 989 778 593 350 275 212 148 71.2 4.56 0.01 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		
175 180 Table2 C(DEG) 0 5 10 5 20 25 20 25 30 35 5 60 45 55 60 45 55 60 45 55 60 85 65 75 75 80 80 85 100 110 115 120 115 120 115 120 115 120 125 100 115 120 115 120 115 120 125 100 115 120 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 105 105 100 105 110 110	0.00 0.00 0.00 285 1781 1774 1753 1391 1213 1006 07 462 283 222 98.7 27.8 0.01 0.00	0.00 0.00 1783 1775 1754 1755 1754 1393 1215 1009 1393 1215 1009 285 223 1662 285 223 1682 27.5 0.01 0.00	0.01 0.01 0.00 1752 1780 1776 1752 1205 98 00 1385 1205 98 00 1385 280 218 157 786 600 456 600 456 600 12.8 0.01 0.000 0.00	0.00 330 1783 1776 17753 1709 1635 1529 1387 1208 602 789 602 789 602 789 602 789 602 789 602 1355 81.8 5.60 0.000 0.00	0.00 345 1783 1775 1752 1705 1630 1524 989 978 989 778 989 778 989 778 212 212 4.56 0.01 0.00											0.00	0.00		
175 180 Teble2 C (125c) 0 5 10 15 15 20 25 30 35 40 45 50 55 60 65 65 65 65 80 85 90 90 110 115 120 125 100 105 10 10 10 10 10 10 10 10 10 10	0.00 0.00 1781 1774 1753 1779 1637 1331 1213 1391 1213 1391 1213 1391 1213 1391 1213 1391 1253 1006 795 607 1006 795 607 1006 0.00 0.00 0.00 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.0000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.00000 0.0000 0.0000000 0.00000000	0.00 0.00 1783 1775 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 1393 1254 1393 1254 1393 1254 1393 1254 1393 1254 1393 1255 1393 1254 1393 1255 1393 162 98.2 223 162 98.0 0.00 0.000 0.000 0.000 0.000 0.001 0.01	0.01 0.01 0.00 315 1780 1776 1752 1706 1633 1205 1205 786 600 998 786 600 218 355 280 0.01 0.00 0.0	0.00 330 1783 1776 1775 1529 1387 1529 1387 789 280 000 789 285 280 0.001 0.00	0.00 345 1783 1775 1752 1705 1524 1379 451 350 275 212 148 71.2 212 148 0.01 0.00 0.											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 5 20 25 20 35 30 35 40 45 55 60 55 60 55 70 80 85 90 90 90 105 115 120 105 105 10 15 15 15 15 15 15 15 15 15 15	0.00 0.00 0.00 285 1781 1773 1391 1213 1006 1391 1213 1006 1391 1213 1006 1391 1213 1006 1391 1213 1006 1391 1213 1006 1392 1233 1007 462 98.7 27.8 98.7 27.8 98.7 27.8 98.7 27.8 98.7 27.8 90.01 0.00 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000000	0.00 0.00 1783 1775 1754 1710 1639 1215 1009 798 610 464 98.2 223 98.2 227.5 98.2 27.5 98.2 98.2 98.2 98.2 98.2 0.01 0.000 0.00 0.	0.01 0.01 0.00 315 1780 1776 1752 1205 998 600 456 600 456 600 12.8 99.0 12.8 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01	0.00 330 1783 1776 1753 1709 1635 1529 602 457 280 217 1208 5.60 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01	0.00 345 1783 1775 1630 1524 989 1198 989 1198 989 1198 989 212 275 212 4.56 0.01 148 71.2 4.56 0.00 0.0											0.00	0.00		
175 180 Table2 C(DZG) 0 5 10 20 25 30 30 35 50 45 50 45 50 65 55 60 65 55 60 65 70 75 80 85 90 105 110 122 125 130 135 145 150 155 150 155 160	0.00 0.00 285 1781 1773 1779 1637 1533 1391 1213 1391 1213 359 283 98.7 283 98.7 162 98.7 162 98.7 162 98.7 1006 0.000 0.00	0.00 0.00 1783 1775 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 0.00 798 610 285 98.2 98.2 98.2 98.2 98.2 98.2 98.2 98.2 98.2 0.00 0.0	0.01 0.00 17760 17752 17700 1633 12055 1205 120	0.00 330 1783 1776 1753 1709 1635 1529 1387 1208 1000 789 217 457 355 280 217 155 280 217 155 81.8 5.60 0.000 0.00	0.00 345 1783 1775 1752 1752 1379 1524 1379 778 593 778 593 451 350 275 1198 778 778 78 798 778 78 798 778 78 78 78 78 78 78 78 78											0.00	0.00		
175 180 Table2 C(DEG) 0 5 10 15 10 220 25 30 35 40 45 50 55 60 65 55 60 65 70 75 80 90 95 95 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 100 115 125 125 100 115 125 125 100 115 125 125 125 125 125 125 125	0.00 0.00 285 1781 1774 1753 1704 1753 1391 1006 795 607 462 359 222 98.7 27.8 0.01 0.00	0.00 0.00 1783 1775 1710 1535 1009 1535 1009 798 464 360 464 360 464 223 162 27.5 0.01 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01	0.01 0.00 315 1780 1776 17752 1706 1633 1527 1385 998 786 600 456 355 998 456 355 998 456 355 998 456 0.01 12.08 9.0 0.00 0.00 0.00 0.00 0.00 0.00 0.	0.00 330 1783 1776 1753 1208 1000 457 280 217 280 217 280 217 5.60 0.00 0.	0.00 345 1783 1775 1752 1630 1524 989 91198 989 1198 989 1198 989 1198 989 275 212 148 71.2 4.56 0.00 0.											0.00	0.00		
175 180 Table2 C(DZG) 0 5 10 20 25 30 30 35 50 45 50 45 50 65 55 60 65 55 60 65 70 75 80 85 90 105 110 122 125 130 135 145 150 155 150 155 160	0.00 0.00 285 1781 1774 1753 1709 1637 1533 1391 1213 1391 2213 1391 223 329 27.8 0.01 0.00 0.0	0.00 0.00 1783 1775 1754 1710 1639 1393 1215 1393 1215 1393 1215 1393 1215 1393 1215 1393 1255 223 162 27.5 0.01 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01	0.01 0.00 17760 17752 17700 1633 12055 1205 120	0.00 330 1783 1776 1753 1709 1635 1529 1208 602 789 602 709 789 602 709 789 602 709 789 602 709 789 602 709 789 602 709 789 602 709 709 709 709 709 709 709 709	0.00 345 1783 1775 1752 1752 1752 1705 1379 1198 989 778 593 709 700 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.000000 0.00000000											0.00	0.00		













NVLAP LAB CODE 600150-0

Report No: NTCR17070066 Report Version: V1.1

Equipment ID	Equipment ID Equipment Name					
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****