



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): 565071##

Representative (Tested) Model: 56507111

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

Prepare By:

/ solor

Engineer: Leo Liu Date: 2018-04-26

Review By:

incer wen

Technical Lead: Vincent Yuan Date: 2018-04-26

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:	Commercial Electric
Model Number:	565071##(##=11-30)
Product type:	Inseparable SSL Luminaire
Rating Input:	AC120V, 60Hz, 30W
Declared CCT:	3000K
Declared Light output:	2600lm
LED Manufacturer:	SAMSUNG
LED Model:	SPMWHX228FD5XXXXXX
LED Quantity:	176 pcs
Forward current of LED Chip:	160 mA
Date of Receipt Samples:	2018-04-10
Quantity of Receipt Samples:	3
Sample Number:	180410001-S1
Laboratory Information:	
Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1 st North Industry Road, Songshan Lake Science &
	Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_ntc@163.com
<u>Report Information</u>	
Issued Date of Test Report:	2018-04-26
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18040028
Remark (If applicable)	N/A





Test Specifications:	
Date of Test`	2018-04-26
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 Co										
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time						
25.1 °C	52 %	Face Down	90 mins	25 mins						
Electric	Electrical Data:									

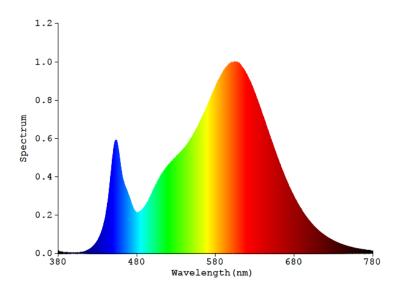
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2369	27.98	0.9839

Color Data:

Parameter	Result
CCT(K)	3028
Color Rendering Index (CRI)	83.6
R9	13
Chromaticity, x	0.4327
Chromaticity, y	0.3986
Chromaticity u'	0.2502
Chromaticity v'	0.5186
Duv	-0.0016

Special Color Rendering									
R1	83	R9	13						
R2	93	R10	83						
R3	95	R11	80						
R4	81	R12	73						
R5	83	R13	85						
R6	91	R14	98						
R7	83	R15	76						
R8	61	-	-						

Spectrum Diagram:





NVLAP LAB CODE 600150-0

Report No: NTCR18040028 Report Version: V1.1

Goniophotemeter Test Results:

Test Condition:											
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time							
25.2 °C	50 %	Face Down	90 mins	25 mins							
Electric	al Data:										

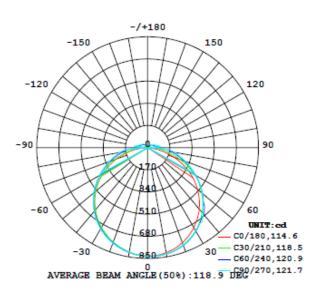
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2369	27.98	0.9839

Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	2788.06
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	99.65
Zonal Lumens Distribution (0-90°)	94.1%
Beam Angle (°)	118.9

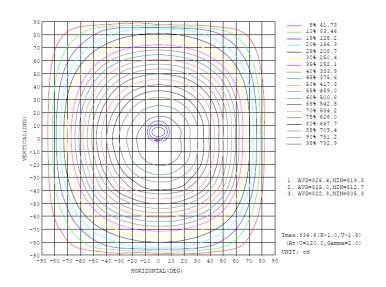
Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM













ZONAL FLUX DIAGRAM:

۲	C0	C45	C90	C135	C180	C225	C270	C315	Y	sone	<pre> total </pre>	<lum, lang<="" th=""></lum,>
10	817.9	828.5	828.6	824.3	818.5	814.2	816.1	820.7	0- 10	78.96	78.96	2.83,2.83
20	776.3	798.4	797.3	788.2	778.1	772.9	780.1	782.6	10- 20	227.6	306.5	11,11
30	708.0	739.5	737.2	724.8	712.8	711.1	720.9	721.7	20- 30	348.7	655.3	23.5,23.5
40	614.6	655.1	663.5	638.6	626.0	628.1	628.7	638.3	30- 40	427.6	1083	28.8,28.8
50	499.7	557.5	546.6	541.8	518.3	526.6	539.7	534.1	40- 50	453.3	1536	55.1,55.1
60	364.1	421.7	426.6	408.9	393.2	410.1	427.2	413.8	50- 60	422.1	1958	70.2,70.2
70	212.8	285.0	208.6	277.1	253.5	284.8	314.8	284.4	60- 70	340.6	2299	82.5,82.5
80	62.36	163.9	209.6	160.6	107.7	170.3	217.4	167.2	70- 80	229.0	2528	90.7,90.7
90	0.0802	0.1175	19.87	0.1927	3.897	10.78	0.3855	4.301	80- 90	96.94	2625	94.1,94.1
100	0.6287	49.44	83.98	51.19	0.6066	52.45	92.13	52.15	90-100	38.67	2663	95.5,95.5
110	0.8233	36.37	59.70	38.94	1.126	41.15	63.60	41.64	100-110	43.21	2707	97.1,97.1
120	0.8913	28.52	47.46	30.60	1.128	34.57	52.42	34.70	110-120	31.77	2738	98.2,98.2
130	0.8297	21.10	36.20	22.65	1.086	28.03	42.57	27.97	120-130	22.76	2761	99,99
140	0.7295	14.99	25.61	15.32	0.6315	21.36	32.85	20.93	130-140	14.96	2776	99.6,99.6
150	0.6636	6.991	15.90	7.457	0.7524	12.71	23.00	12.80	140-150	8.068	2784	99.9,99.9
160	0.6914	2.343	2.219	2.613	0.8402	7.345	9.345	6.965	150-160	2.941	2787	100,100
170	0.7764	1.338	1.517	1.712	0.8803	2.295	4.101	1.398	160-170	0.7364	2788	100,100
180	0.8373	0.8272	0.8413	0.8144	0.8196	0.8265	0.8414	0.8137	170-180	0.1408	2788	100,100
DEG		LUM	INOUS INTE	NSITY:cd	Less than	35% Percen	s = 16.2 %			UNI	T:lm	





NVLAP LAB CODE 600150-0

Luminous Distribution Intensity Data:

																	UNI	T: cd		
γ (C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
	DEG)	-																		
	5	831 828	832 831	832 832	833 834	832 833	832 833	832 833	832 833	834 833	834 833	835 831	834 829	831 828	832 827	832 826	833 826	832 826	832 826	832 827
	10	818	822	826	828	829	829	829	827	826	824	821	818	818	816	814	814	814	815	816
	15	801	807	814	817	817	817	817	814	813	810	805	801	801	798	795	796	798	799	801
	20	776	785	794	798	799	799	797	795	792	788	782	777	778	774	770	773	776	778	780
	25	745	755	768	773	772	772	770	766	763	760	753	746	748	745	741	745	749	751	753
	30	708	720	735	739	740	740	737	734	729	725	718	710	713	709	706	711	716	718	721
	35	664	678	695	700	701	702	705	695	689	684	677	669	672	667	666	672	678	679	682
	40	615	631	648	655	674	669	663	663	659	639	630	621	626	621	621	628	634	636	639
	45	560	577	597	612	609	606	602	599	598	592	578	570	575	571	572	579	586	588	591
	50	500	518	540	557	549	551	547	544	538	542	522	513	518	516	518	527	534	536	540
	55	434	454	484	487	489	491	488	485	479	472	464	451	458	457	460	470	479	482	484
	60	364	384	416	422	425	429	427	424	417	409	403	385	393	394	398	410	420	424	427
	65	290	311	340	353	360	367	366	363	354	343	329	316	325	327	334	348	361	366	370
	70	213	236	267	285	298	308	309	304	292	277	259	244	253	258	267	285	302	310	315
	75	135	158	195	221	240	254	256	252	236	215	191	172	180	188	200	224	247	259	264
	80	62.4	86.9	131	164	189	206	210	204	187	161	129	102	108	120	139	170	196	212	217
	85	9.99	31.5	74.3	111	133	139	133	136	131	110	75.7	44.8	43.7	59.2	85.4	120	150	145	140
	90	0.08	0.08	8.47	0.12	20.2	0.27	19.9	0.30	19.6	0.19	3.50	0.11	3.90	10.7	1.95	10.8	0.25	22.5	0.39
	95	0.44	7.64	29.6	54.5	81.6	84.6	86.1	83.7	82.6		29.5	8.60	0.34	7.57	29.4	56.4	70.1	79.1	80.6
	100	0.63	7.12	27.6	49.4	67.3	80.2	84.0	82.0	68.1	51.2	28.8	7.71	0.61	8.57	29.9	52.4	73.4	86.1	92.1
	105	0.77	6.01	24.2	41.0	55.5	66.8	70.4	66.0	57.2		26.6	6.95	0.86	8.76	28.2	45.1	60.8	70.6	74.0
	110	0.82	5.02	21.3	36.4	48.5	57.0	59.7	57.5	50.3	38.9	23.8	6.22	1.13	8.30	26.3	41.2	53.1	60.8	63.6
	115	0.87	3.81	18.5	32.3	43.3	50.5	53.3	51.5	45.1	34.8	20.8	5.42	1.24	7.91	24.2	37.8	48.6	55.1	57.4
	120	0.89	3.13	16.0	28.5	38.4	45.1	47.5	46.0	40.2	30.6	18.0	3.80	1.13	6.72	22.0	34.6	44.3	50.2	52.4
	125 130	0.96	1.52	14.4	24.6	33.6	39.6	41.8	40.4	35.1	26.4	16.1	2.98	1.13	2.77	20.9	31.2	40.2	45.4	47.4
	130	0.83	1.89	7.66	21.1	28.8	34.2	36.2	34.9	30.1	22.6	12.9	1.51	1.09	2.43	18.1	28.0	35.9	40.8	42.6
	135	0.76	1.38	7.66	19.7	24.4	29.1	30.7	29.6	25.5	19.3	9.34	2.48	0.87	5.35	14.6	25.7	28.5	36.3	37.9
	140	0.73	1.60	6.31	9,15	21.3	24.1	25.6	24.6	21.8	15.3	6.61	2.20	0.63	4.96	11.7	21.4	28.5	31.5	32.8
_	145	0.73	1.77	2.11	9.15	16.4		21.7	22.4	17.4	10.4	1.32	1.91	0.67	4.01	1.36	16.7	24.2	27.5	28.2
_	155	0.69	1.72	2.02	1.71	7.04		9.37	8.83	7.77	1.86	2.01	1.87	0.81	2.60	5.96	1.99	13.9	16.2	17.3
	160	0.69	1.31	1 77	2.34	1.28	1.44	2.22	1.99	1.90		1.89	1.74	0.84	1.95	4.32	7.35	2.08	2.13	9.34
	165	0.09	1.19	1.97	1.34	1.61	2.02		2.55	2.13	1.78	1.81	1.78	0.86	2.00	2.50	4.54	6.43	7.62	7.99
_		0.72	0.77		1.34	1.76		1.52									2.29			
	170	0.84	0.90	0.90				1.52	1.96	1.73		1.80	1.24	0.88	1.75	1.90		2.99	3.97	4.10
	175		_	_	1.58	1.64		0.84		1.52			0.85	0.88		1.65	1.74		1.51	0.84
	C (DEG)	285	300	315	330	345														
1 .	0	832	834	834	835	834							-	-	-	-	-			
	5				-								_	_	_	_				
	10	828	831	831	832	831														
	10	828 817	831 820	821	832 823	831 822														
	15																			
		817	820	821	823	822														
	15	817 802	820 804	821 804	823 806	822 807														
	15 20	817 802 781	820 804 784	821 804 783	823 806 783	822 807 784														
	15 20 25 30 35	817 802 781 754 721 682	820 804 784 757 724 685	821 804 783 755 722 683	823 806 783 755 721 681	822 807 784 755 719 677														
	15 20 25 30 35 40	817 802 781 754 721 682 639	820 804 784 757 724 685 641	821 804 783 755 722 683 638	823 806 783 755 721 681 636	822 807 784 755 719 677 630														
	15 20 25 30 35 40 45	817 802 781 754 721 682 639 590	820 804 784 757 724 685 641 592	821 804 783 755 722 683 638 588	823 806 783 755 721 681 636 585	822 807 784 755 719 677 630 577														
	15 20 25 30 35 40 45 50	817 802 781 754 721 682 639 590 538	820 804 784 757 724 685 641 592 539	821 804 783 755 722 683 638 588 534	823 806 783 755 721 681 636 585 529	822 807 784 755 719 677 630 577 520														
	15 20 25 30 35 40 45 50 55	817 802 781 754 721 682 639 590 538 482	820 804 784 757 724 685 641 592 539 482	821 804 783 755 722 683 638 588 538 534 476	823 806 783 755 721 681 636 585 529 470	822 807 784 755 719 677 630 577 520 458														
	15 20 25 30 35 40 45 50 55 60	817 802 781 754 721 682 639 590 538 482 424	820 804 784 757 724 685 641 592 539 482 422	821 804 783 755 722 683 638 588 538 534 476 414	823 806 783 755 721 681 636 585 529 470 405	822 807 784 755 719 677 630 577 520 458 391														
	15 20 25 30 35 40 45 50 55 60 65	817 802 781 754 721 682 639 590 538 482 424 366	820 804 784 757 724 685 641 592 539 482 422 361	821 804 783 755 722 683 638 588 538 534 476 414 349	823 806 783 755 721 681 636 585 529 470 405 337	822 807 784 755 719 677 630 577 520 458 391 320														
	15 20 25 30 35 40 45 50 55 60 65 70	817 802 781 754 721 682 639 590 538 482 424 366 309	820 804 784 757 724 685 641 592 539 482 422 361 301	821 804 783 755 722 683 638 588 534 476 414 349 284	823 806 783 755 721 681 636 585 529 470 405 337 268	822 807 784 755 719 677 630 577 520 458 391 320 246														
	15 20 25 30 35 40 45 55 55 60 65 70 75	817 802 781 754 721 682 639 590 538 482 424 366 309 258	820 804 784 757 724 685 641 592 539 482 422 361 301 246	821 804 783 755 722 683 638 588 538 538 534 476 414 349 284 223	823 806 783 755 721 681 636 585 529 470 405 337 268 198	822 807 784 755 719 677 630 577 520 458 391 320 246 172														
	15 20 25 30 35 40 45 50 55 60 65 70 75 80	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212	820 804 784 757 724 685 641 592 539 482 422 361 301 246 195	821 804 783 755 722 683 638 588 534 476 414 349 284 223 167	823 806 783 755 721 681 636 585 529 470 405 337 268 198 133	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6														
	15 20 25 30 35 40 45 55 60 65 70 75 80 85	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131	820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126	821 804 783 755 722 683 638 588 534 476 414 349 284 223 167 111	823 806 783 755 721 681 636 585 529 470 405 337 268 198 133 75.5	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6 39.8														
	15 20 25 30 35 40 45 55 60 65 70 75 80 85 90	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77	820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126 0.18	821 804 783 755 722 683 638 588 534 476 414 349 284 223 167 111 4.30	823 806 783 755 721 681 636 585 529 470 405 337 268 198 133 75.5 6.45	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6 39.8 0.22														
	15 20 25 30 35 40 45 55 60 65 70 75 80 85	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131	820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126	821 804 783 755 722 683 638 588 534 476 414 349 284 223 167 111	823 806 783 755 721 681 636 585 529 470 405 337 268 198 133 75.5	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6 39.8														
_	15 20 25 30 35 40 45 55 55 60 65 70 65 70 75 80 85 90 95	817 802 781 754 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7	820 820 820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126 0.18 89.2 72.8	821 804 783 755 722 683 638 588 534 476 414 349 284 223 167 111 4.30 60.7	823 806 783 755 721 681 636 585 529 470 405 337 268 133 75.5 6.45 32.2 30.3	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6 39.8 0.22 8.01														
	15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8 70.1	820 820 820 820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126 0.18 89.2 72.8 60.6	821 804 783 755 722 683 638 538 538 534 476 414 349 284 223 167 111 4.30 60.7 52.2 45.3	823 806 783 755 721 681 636 585 529 470 405 3337 268 133 75.5 6.45 32.2 30.3 28.7	822 807 784 755 719 677 630 577 520 458 391 2246 3920 246 39.8 0.22 8.01 8.31 8.19														
	15 20 25 30 35 40 45 55 55 60 65 70 75 80 80 85 90 95 100	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8	820 820 820 804 784 757 724 685 641 592 539 482 422 361 301 246 195 126 0.18 89.2 72.8	821 804 783 755 722 683 638 538 538 534 476 414 223 414 223 167 111 4.30 60.7 52.2 45.3 41.6	823 806 783 755 721 681 636 585 529 470 405 337 268 198 133 75.5 6.45 332.2 30.3 28.7 26.4	822 807 784 755 719 677 630 577 520 458 391 320 246 172 99.6 39.8 0.22 8.01 8.31 8.19 7.74														
	15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8 70.1 60.7	820 820 820 820 784 757 724 685 641 552 539 482 422 361 301 246 0.18 89.2 72.8 60.6 53.4	821 804 783 755 722 683 638 538 538 534 476 414 349 284 223 167 111 4.30 60.7 52.2 45.3	823 806 783 755 721 681 636 585 529 470 405 3337 268 133 75.5 6.45 32.2 30.3 28.7	822 807 784 755 719 630 577 520 458 391 2246 3920 246 39.8 0.22 8.01 8.31 8.19														
	15 20 25 30 35 40 45 55 60 65 70 75 80 80 85 90 95 100 105 110 115	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8 70.1 60.7 55.3 50.4	820 820 820 820 820 784 757 724 685 641 539 482 422 361 301 246 195 126 0.18 89.2 72.8 60.6 53.4 48.9 44.6	821 804 783 755 722 683 638 588 476 414 349 284 223 167 111 4.30 60.7 52.2 45.3 41.6 38.1 34.7	823 806 783 755 721 636 535 529 470 405 337 268 133 75.5 6.45 32.2 30.3 32.2 30.3 228.7 26.4 24.2 22.4	822 807 784 755 719 677 630 557 520 458 391 320 246 172 99.6 39.8 0.22 8.01 8.31 8.31 8.31 7.74 7.01 5.86														
	15 20 25 30 35 40 45 55 55 60 65 70 75 80 85 90 95 100 105 110 115 120	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8 70.1 60.7 55.3 50.4 45.5	820 820 820 820 820 784 757 724 685 532 532 482 422 361 301 246 0.18 89.2 72.8 60.6 53.4 48.9 44.6 40.3	821 804 783 755 722 683 588 534 476 414 349 284 476 414 349 223 167 111 4.30 60.7 52.2 45.3 41.6 38.1 38.1 38.1	823 806 783 755 721 681 636 585 529 470 405 337 268 138 75.5 6.45 32.2 30.3 28.7 26.4 24.2	822 807 784 755 719 677 520 458 391 320 246 399.6 399.8 0.22 8.01 8.31 8.31 8.31 97.74 7.74 7.01 7.88														
	15 20 25 30 35 50 55 60 65 70 65 70 80 85 90 95 100 105 110 115 120 125	817 802 781 754 721 682 530 538 482 424 366 309 258 212 212 131 5.77 93.7 85.8 70.1 60.7 55.3 50.4 45.5	820 820 820 820 820 784 757 724 685 532 532 482 422 361 301 246 0.18 89.2 72.8 60.6 53.4 48.9 48.9 44.6 40.3 35.9	821 804 783 755 722 683 538 538 538 538 534 476 414 349 284 416 414 349 284 167 111 4.30 60.7 52.2 45.3 41.6 38.1 38.1 31.2 28.0	823 806 783 755 721 636 585 529 470 405 337 268 133 75.5 6.45 32.2 30.3 28.7 26.4 24.2 22.4 20.0	822 807 784 755 677 630 577 520 458 391 226 172 99.6 39.8 0.22 246 172 99.6 39.8 0.22 8.01 8.01 8.01 8.01 8.01 1.8 1.88														
	15 20 25 30 35 40 45 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130	817 802 781 754 721 682 639 590 538 482 424 424 366 309 258 212 131 5.77 93.7 85.8 70.1 60.7 55.3 50.4 45.5 30.4 40.9 36.1	820 820 820 820 804 784 757 724 685 641 592 539 482 422 361 246 195 126 0.18 89.2 72.8 60.6 53.4 48.9 44.6 35.9 31.9	821 804 783 755 722 683 638 638 538 538 538 538 538 534 476 414 223 167 111 4.30 60.7 52.2 45.3 41.6 38.1 34.7 31.2 28.0 24.7	823 806 783 755 721 636 585 529 470 405 529 470 405 529 470 405 529 470 268 133 75.5 6.45 32.2 30.3 28.7 26.4 22.4 22.4 20.0 17.6	822 807 784 755 719 677 520 458 391 320 246 172 99.6 39.8 0.22 8.01 8.31 8.19 7.74 7.01 5.86 1.85 4.22														
	15 20 25 30 35 40 45 50 55 60 65 65 70 70 75 80 85 90 95 100 105 110 115 120 125 130 135	817 802 781 754 721 682 639 590 538 482 424 366 309 258 212 131 5.77 93.7 85.8 5.8 5.8 5.8 5.0.1 60.7 55.3 50.4 45.5 93.6.1 31.4	820 820 820 820 804 784 757 724 685 539 482 422 361 301 246 195 126 0.18 89.2 72.8 60.6 53.4 48.9 44.6 40.3 35.9 31.9 28.0	821 804 783 755 722 683 638 538 538 538 534 476 414 223 167 111 4.30 60.7 52.2 45.3 41.6 38.1 34.7 31.2 28.0 228.0 24.7 20.9	823 806 783 755 721 681 681 636 585 529 470 405 585 529 470 405 529 470 405 337 268 133 75.5 6.45 32.2 30.3 28.7 26.4 24.2 22.4 20.17.6 17.6 17.6	822 807 784 755 677 630 577 520 458 331 320 246 172 99.6 39.8 0.22 8.01 8.39 8.19 5.86 1.85 1.88 1.85 2.72														
	15 20 25 30 35 50 55 55 55 60 60 65 70 70 75 80 80 85 90 95 90 95 100 105 110 115 120 125 130	817 802 781 754 632 639 530 538 482 366 309 258 212 313 5.77 93.7 85.8 70.1 55.3 50.4 45.5 40.9 36.1 31.4 27.4	820 804 784 757 724 685 641 592 539 482 361 301 246 0.18 89.2 72.8 60.6 53.4 48.9 44.6 40.3 35.9 31.9 31.9 28.0 23.2	821 804 783 755 683 638 588 534 476 434 223 167 52.2 41.4 4.30 60.7 52.2 45.3 41.6 38.1 38.1 34.7 31.2 28.0 24.7 20.9 16.4	823 806 783 755 661 636 585 529 470 405 337 268 133 75.5 6.45 32.2 30.3 28.7 26.4 24.2 22.4 20.0 17.6 14.5 11.7	822 807 784 755 677 630 577 520 458 391 320 246 172 99.6 172 99.6 39.8 0.22 8.01 8.31 8.19 7.74 5.86 1.88 1.85 4.22 3.72 2.94														
	15 20 23 30 35 40 44 45 55 55 60 65 55 60 65 70 75 80 90 95 90 95 100 105 110 110 112 120 110 1140	817 802 781 754 632 639 590 538 482 424 336 309 258 212 131 35.77 93.7 85.8 70.1 60.7 55.3 50.4 45.5 40.9 36.1 31.4 27.4 21.9	820 804 757 724 685 641 592 422 361 301 246 195 126 0.18 89.2 246 53.4 48.9 44.6 40.3 35.9 31.9 28.0 31.9 28.0 23.2 18.3	821 804 783 755 683 638 538 538 476 414 349 223 167 111 4.30 60.7 122 45.3 41.6 38.1 34.7 31.2 28.0 24.7 20.9 26.7 20.9 16.4 12.8	823 806 783 755 721 681 636 535 529 470 405 337 268 133 75.5 6.45 32.2 30.3 28.7 26.4 22.4 20.0 17.6 14.5 11.7 1.92	822 807 784 755 677 630 577 630 577 520 391 320 246 39.8 30 39.8 30 30 30 30 30 30 30 30 30 30 30 30 30														
	15 20 30 35 40 45 55 55 60 65 75 70 75 80 85 90 95 100 105 110 100 115 122 130 135 140	817 802 781 754 682 639 538 538 538 482 424 366 309 258 212 131 5.77 93.77 85.8 70.1 60.7 55.3 50.4 45.5 40.9 36.1 31.4 27.4 91.6.0	820 804 757 724 685 641 552 539 482 422 361 301 246 0.18 89.2 72.8 89.2 72.8 60.6 53.4 48.9 44.6 40.3 35.9 31.9 28.0 23.2 31.9 31.9 21.9 31.9 21.9 31.9 31.9 31.9 31.9 31.9 31.9 31.9 3	821 804 783 755 683 638 588 534 476 414 349 284 167 111 4.30 60.7 52.2 45.3 41.6 38.1 34.7 31.2 28.0 24.7 20.9 16.4 1.88	823 806 783 755 721 681 636 585 529 470 405 337 268 133 75.5 6.45 32.2 22.4 22.4 22.4 22.4 20.0 17.6 14.5 11.7 23.64	822 807 784 755 719 677 630 557 552 458 391 320 99.6 39.8 99.6 39.8 8.31 8.19 5.26 8.01 8.31 8.19 5.86 1.88 4.22 3.77 4.22 3.72 2.94 1.85 4.22 3.72														
	15 20 30 35 40 45 55 66 65 70 70 75 80 80 85 90 95 100 105 110 115 1120 125 130 133 140 145	817 802 781 754 721 682 639 590 482 424 366 309 258 212 131 5.77 93.7 85.8 70.1 60.7 93.7 85.3 50.4 45.5 36.1 31.4 27.4 21.9 93.7 16.0 1.80	820 804 757 724 685 641 592 482 422 361 246 195 126 0.18 89.2 72.8 60.6 53.4 40.3 35.9 44.6 40.3 35.9 28.0 23.2 18.3 3.32	821 804 783 755 683 638 638 638 638 638 638 416 414 4349 223 167 111 4.30 60.7 52.2 45.3 41.6 60.7 52.2 45.3 41.6 38.1 34.7 31.2 28.0 9 16.4 12.8 6.96 6.96	823 806 783 755 721 681 636 585 529 470 405 337 75.5 268 198 133 75.5 32.2 30.3 28.7 32.2 30.3 28.7 26.4 24.2 22.4 22.4 24.2 22.4 24.2 17.6 14.5 11.7 1.9 26.4 3.3 3.3 3.3 3.3 3.3 28.7 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3	822 807 764 755 719 677 630 520 458 391 320 520 458 391 320 520 458 391 320 520 458 391 320 526 458 391 320 526 391 527 520 458 391 320 526 527 520 520 520 526 527 520 526 527 520 526 527 520 526 527 520 526 527 520 526 527 527 526 527 526 527 527 528 528 529 528 529 529 529 520 529 520 529 520 520 520 520 520 520 520 520 520 520														
	15 20 25 30 35 50 55 50 55 60 60 60 67 75 80 80 80 80 80 80 80 90 95 100 105 110 115 120 110 115 123 130 135 135 140 145 135 140 145 170 170 175 175 170 175 175 175 175 175 175 175 175 175 175	817 802 781 754 754 754 754 754 753 530 530 538 482 424 424 366 369 258 212 363 363 363 363 363 363 363 363 363 36	820 804 784 685 641 301 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 26 26 26 21 26 21 26 21 26 21 26 21 26 20 21 21 26 20 21 21 21 21 21 21 21 21 21 21 21 21 21	821 804 783 755 722 683 638 538 538 538 538 538 538 538 538 538 5	823 806 783 755 721 681 636 585 529 470 726 405 337 268 198 37 5.5 6.45 32.2 30.3 28.7 26.4 22.4 22.4 22.4 22.4 22.4 2.2 4.5 11.7 1.92 3.64 5.5 9.3.64 1.30 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2	822 807 784 755 719 630 577 520 458 391 320 246 39.8 0.22 458 391 320 246 39.8 0.22 8.01 8.01 8.01 8.01 8.01 8.01 8.01 8.01														
	15 20 25 30 35 50 55 50 55 60 60 60 67 75 80 80 80 80 80 80 80 90 95 100 105 110 115 120 110 115 123 130 135 135 140 145 135 140 145 170 170 175 175 170 175 175 175 175 175 175 175 175 175 175	817 802 781 754 754 754 754 754 753 530 530 538 482 424 424 366 369 258 212 363 363 363 363 363 363 363 363 363 36	820 804 784 685 641 301 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 195 246 26 26 26 21 26 21 26 21 26 21 26 21 26 20 21 21 26 20 21 21 21 21 21 21 21 21 21 21 21 21 21	821 804 783 755 722 683 638 538 538 538 538 538 538 538 538 538 5	823 806 783 755 721 681 636 585 529 470 405 529 470 268 133 775.5 6.45 32.2 30.3 775.5 6.45 32.2 26.4 22.4 22.4 22.4 22.4 22.4 22.5 11.7 1.9 20.0 3.70 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.	822 807 784 755 719 630 577 520 458 391 320 246 39.8 0.22 458 391 320 246 39.8 0.22 8.01 8.01 8.01 8.01 8.01 8.01 8.01 8.01														











Equipment Eisti			
Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2017-11-18	2018-11-17
NTC-F01-006	2.0 meter Integrating Sphere	2017-11-18	2018-11-17
NTC-F01-013	Standard Lamp	2017-11-18	2018-11-17
NTC-F01-031	Digital Power Meter	2017-11-18	2018-11-17
NTC-F01-019	Temperature & Humidity Meter	2017-11-23	2018-11-22





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