

LM-79-08 Test Report

For

ETI Solid State Lighting (Zhuhai) Ltd

No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City,
Guangdong Prov., China 519085

LED Shop Light

Model Name(s):

557031##

Representative (Tested) Model:

55703141

Model Difference: ## can be 41-50 or 91-99 indicated 4000K.

Prepare by:

Review by:

Engineer: Alan Wang

Date: 2020-05-14

Technical Lead: Vincent Yuan

Issue Date: 2020-06-

Revised Date: N/A

Note:

1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd
3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Client Information:

Applicant Name:	ETI Solid State Lighting (Zhuhai) Ltd
Brand Name:	Commercial Electric, ETI, Hampton Bay
Factory 1 Name:	ETI Solid State Lighting (Zhuhai) Ltd
Factory 1 Address:	No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High tech District, Zhuhai City, Guangdong Prov., China 519085
Factory 2 Name:	NVC VIETNAM TECHNOLOGY AND LIGHTING COMPANY LIMITED
Factory 2 Address:	Lot CN23-1, Yen Phong Industrial park, Dong Phong commune, Yen Phong district, Bac Ninh province, Vietnam

Product Information:

Model Number:	557031##(##=41-50 or 91-99)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120Vac, 60Hz, 40W for light, 10W for Speaker, total wattage 50W
Declared CCT:	4000K
Declared Light Output:	3600 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228MD5WAT0XX
LED Quantity:	92 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:	2020-04-15
Quantity of Receipt Samples:	1 pc
Sample Number:	200415005-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_zhong@ntc-cert.com

Report Information:

Issued Date of Test Report:	2020-06-
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR20040073
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2020-05-12
Test Item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Fidelity Index 8. Gamut Index 9. Local Chroma Shift
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 IES TM-30-18 IES Method for Evaluating Light Source Color Rendition ANSI C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements IES TM-15-11 Luminaire Classification System for Outdoor Luminaires Addendum A for IES TM-15-11 Backlight, Uplight, and Glare (BUG) Ratings

Test Methods:
<p>1. Photometric and Electrical Measurements – Light Distribution Method:</p> <p>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° horizontal intervals.</p>
<p>2. Photometric and Electrical Measurements – Integrating Sphere Method:</p> <p>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.</p>

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.1	52.7	Face Down	90	10

Electrical Data:

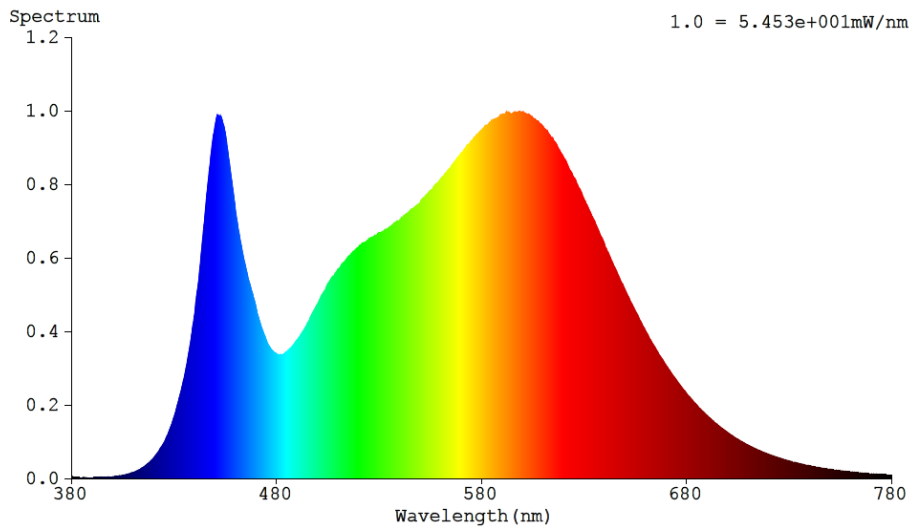
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.3917	39.46	0.8372

Color Data:

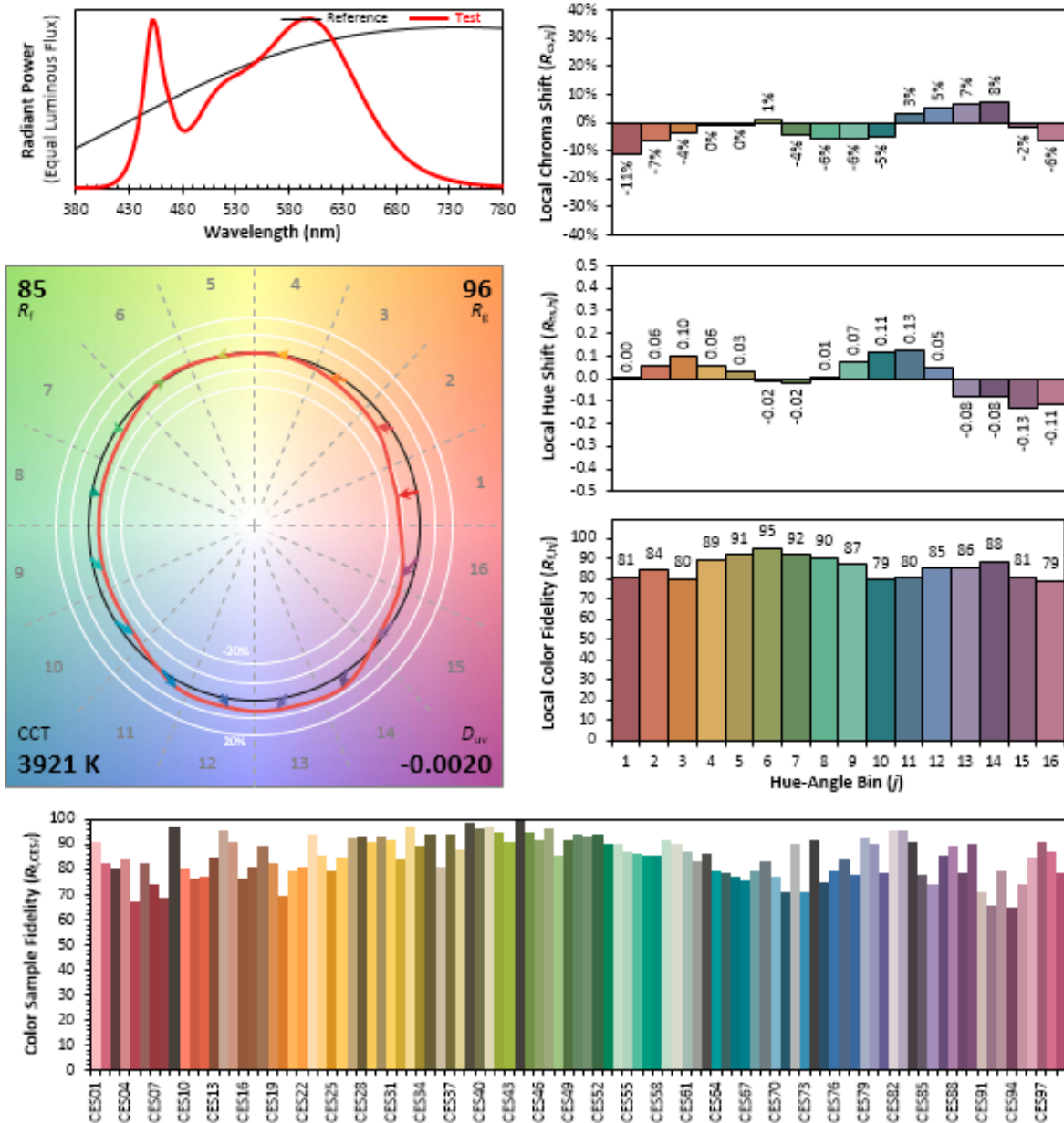
Parameter	Result
CCT(K)	3922
Ra	84.8
Rf	85
Rg	96
Rcs, hl	-11%
Chromaticity, (x, y)	(0.3826, 0.3740)
Chromaticity, (u', v')	(0.2276, 0.5007)
Duv	-0.00191

Specify Color Rendering			
R1	84	R9	14
R2	92	R10	81
R3	96	R11	82
R4	83	R12	69
R5	84	R13	86
R6	89	R14	98
R7	85	R15	78
R8	65	-	-

Spectrum Diagram:



IES TM-30-18 Color Rendition Result:



Spectrum Data:

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0047	447	0.8262	514	0.5963	581	0.9540	648	0.5374	715	0.0776
381	0.0035	448	0.8785	515	0.6032	582	0.9611	649	0.5272	716	0.0752
382	0.0028	449	0.9262	516	0.6084	583	0.9625	650	0.5147	717	0.0727
383	0.0031	450	0.9586	517	0.6147	584	0.9691	651	0.5027	718	0.0704
384	0.0029	451	0.9875	518	0.6199	585	0.9750	652	0.4911	719	0.0685
385	0.0029	452	0.9881	519	0.6258	586	0.9776	653	0.4791	720	0.0663
386	0.0031	453	0.9842	520	0.6298	587	0.9799	654	0.4682	721	0.0643
387	0.0026	454	0.9656	521	0.6355	588	0.9821	655	0.4569	722	0.0623
388	0.0030	455	0.9438	522	0.6407	589	0.9879	656	0.4470	723	0.0602
389	0.0028	456	0.9037	523	0.6425	590	0.9911	657	0.4348	724	0.0585
390	0.0030	457	0.8634	524	0.6459	591	0.9913	658	0.4243	725	0.0564
391	0.0035	458	0.8203	525	0.6516	592	0.9966	659	0.4131	726	0.0548
392	0.0032	459	0.7786	526	0.6555	593	0.9971	660	0.4023	727	0.0529
393	0.0034	460	0.7347	527	0.6579	594	0.9934	661	0.3928	728	0.0515
394	0.0036	461	0.6959	528	0.6615	595	0.9937	662	0.3816	729	0.0496
395	0.0037	462	0.6624	529	0.6632	596	0.9977	663	0.3720	730	0.0480
396	0.0039	463	0.6318	530	0.6691	597	0.9984	664	0.3630	731	0.0466
397	0.0040	464	0.6022	531	0.6706	598	0.9982	665	0.3538	732	0.0448
398	0.0046	465	0.5775	532	0.6724	599	0.9981	666	0.3437	733	0.0437
399	0.0050	466	0.5518	533	0.6776	600	0.9984	667	0.3345	734	0.0424
400	0.0050	467	0.5293	534	0.6799	601	0.9952	668	0.3266	735	0.0409
401	0.0058	468	0.5095	535	0.6839	602	0.9926	669	0.3174	736	0.0397
402	0.0067	469	0.4893	536	0.6874	603	0.9918	670	0.3085	737	0.0383
403	0.0072	470	0.4683	537	0.6923	604	0.9877	671	0.3010	738	0.0370
404	0.0078	471	0.4430	538	0.6975	605	0.9830	672	0.2926	739	0.0361
405	0.0090	472	0.4241	539	0.7013	606	0.9786	673	0.2841	740	0.0349
406	0.0101	473	0.4068	540	0.7031	607	0.9744	674	0.2763	741	0.0337
407	0.0114	474	0.3919	541	0.7098	608	0.9700	675	0.2687	742	0.0328
408	0.0127	475	0.3773	542	0.7145	609	0.9643	676	0.2609	743	0.0316
409	0.0148	476	0.3642	543	0.7192	610	0.9588	677	0.2536	744	0.0306
410	0.0167	477	0.3557	544	0.7226	611	0.9518	678	0.2459	745	0.0297
411	0.0183	478	0.3482	545	0.7277	612	0.9469	679	0.2394	746	0.0286
412	0.0212	479	0.3432	546	0.7339	613	0.9376	680	0.2318	747	0.0278
413	0.0238	480	0.3404	547	0.7366	614	0.9295	681	0.2250	748	0.0270
414	0.0272	481	0.3369	548	0.7417	615	0.9241	682	0.2192	749	0.0260
415	0.0305	482	0.3378	549	0.7461	616	0.9152	683	0.2127	750	0.0253
416	0.0345	483	0.3374	550	0.7505	617	0.9056	684	0.2059	751	0.0245
417	0.0393	484	0.3410	551	0.7598	618	0.8947	685	0.2005	752	0.0236
418	0.0439	485	0.3452	552	0.7649	619	0.8851	686	0.1936	753	0.0232
419	0.0493	486	0.3505	553	0.7711	620	0.8752	687	0.1881	754	0.0222
420	0.0550	487	0.3555	554	0.7766	621	0.8665	688	0.1825	755	0.0216
421	0.0624	488	0.3615	555	0.7835	622	0.8541	689	0.1771	756	0.0209
422	0.0694	489	0.3690	556	0.7870	623	0.8410	690	0.1720	757	0.0204
423	0.0779	490	0.3772	557	0.7963	624	0.8327	691	0.1665	758	0.0196
424	0.0870	491	0.3836	558	0.8023	625	0.8197	692	0.1616	759	0.0191
425	0.0954	492	0.3924	559	0.8067	626	0.8110	693	0.1565	760	0.0185
426	0.1073	493	0.4016	560	0.8144	627	0.7976	694	0.1517	761	0.0180
427	0.1195	494	0.4100	561	0.8214	628	0.7872	695	0.1473	762	0.0173
428	0.1338	495	0.4208	562	0.8272	629	0.7759	696	0.1426	763	0.0170
429	0.1486	496	0.4307	563	0.8337	630	0.7615	697	0.1379	764	0.0163
430	0.1658	497	0.4432	564	0.8415	631	0.7499	698	0.1340	765	0.0158
431	0.1851	498	0.4542	565	0.8462	632	0.7380	699	0.1296	766	0.0152
432	0.2067	499	0.4644	566	0.8559	633	0.7260	700	0.1257	767	0.0148
433	0.2278	500	0.4745	567	0.8626	634	0.7134	701	0.1217	768	0.0143
434	0.2510	501	0.4858	568	0.8711	635	0.7024	702	0.1182	769	0.0138
435	0.2759	502	0.4979	569	0.8762	636	0.6893	703	0.1140	770	0.0135
436	0.3034	503	0.5070	570	0.8851	637	0.6766	704	0.1100	771	0.0130
437	0.3361	504	0.5153	571	0.8902	638	0.6629	705	0.1069	772	0.0126
438	0.3677	505	0.5291	572	0.8983	639	0.6528	706	0.1036	773	0.0121
439	0.4080	506	0.5373	573	0.9067	640	0.6386	707	0.1002	774	0.0120
440	0.4452	507	0.5467	574	0.9112	641	0.6244	708	0.0973	775	0.0114
441	0.4961	508	0.5513	575	0.9187	642	0.6132	709	0.0939	776	0.0112
442	0.5365	509	0.5606	576	0.9251	643	0.5997	710	0.0914	777	0.0110
443	0.5948	510	0.5695	577	0.9307	644	0.5870	711	0.0883	778	0.0106
444	0.6538	511	0.5742	578	0.9372	645	0.5747	712	0.0854	779	0.0106
445	0.7091	512	0.5839	579	0.9428	646	0.5628	713	0.0827	780	0.0107
446	0.7727	513	0.5893	580	0.9485	647	0.5502	714	0.0801		N/A

Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.1	52.7	Face Down	90	25

Electrical Data:

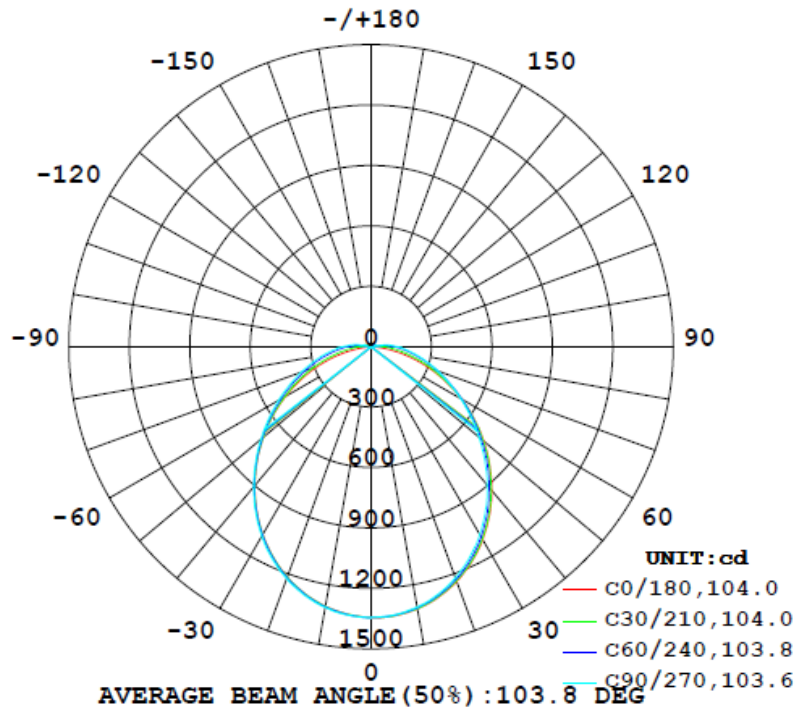
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.3917	39.46	0.8372

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	3712.9
Luminous Efficacy (lm/w)	94.09
Zonal Lumens Distribution (0-60°)	76.0%
Beam Angle (°)	103.8

Luminous Intensity Distribution Diagram:

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	1322	1319	1312	1308	1309	1310	1315	1324	0- 10	126.9	126.9	3.42,3.42
20	1241	1233	1221	1214	1218	1219	1226	1241	10- 20	360.2	487.1	13.1,13.1
30	1107	1096	1078	1072	1077	1077	1087	1106	20- 30	535.4	1022	27.5,27.5
40	930.9	918.6	897.0	891.4	899.7	899.7	907.3	932.5	30- 40	626.8	1649	44.4,44.4
50	729.7	718.3	699.8	691.2	698.3	702.6	714.2	734.4	40- 50	626.5	2276	61.3,61.3
60	516.5	517.0	512.6	493.4	489.8	506.5	529.9	535.2	50- 60	546.8	2823	76,76
70	303.9	337.4	352.2	318.7	282.0	332.2	369.6	354.5	60- 70	415.5	3238	87.2,87.2
80	107.7	193.8	225.4	181.0	92.22	191.1	240.8	207.8	70- 80	266.6	3505	94.4,94.4
90	0.2031	93.74	131.6	86.22	0.1410	92.82	142.1	101.5	80- 90	137.8	3642	98.1,98.1
100	0.1254	0.2157	25.56	0.1856	0.3120	3.476	53.59	0.3757	90-100	54.53	3697	99.6,99.6
110	0.1817	6.316	26.36	5.668	0.3632	5.296	29.76	7.697	100-110	8.135	3705	99.8,99.8
120	0.2742	0.3180	5.276	0.3970	0.4125	0.4926	6.583	0.5286	110-120	5.353	3711	99.9,99.9
130	0.4068	0.3983	0.4742	0.4605	0.5653	0.6356	0.6812	0.5754	120-130	0.7136	3711	100,100
140	0.5130	0.4608	0.5425	0.5020	0.7202	0.7661	0.8173	0.7136	130-140	0.4993	3712	100,100
150	0.5964	0.5686	0.5431	0.6040	0.8622	0.9535	0.9288	0.9255	140-150	0.4289	3712	100,100
160	0.7310	0.6566	0.6194	0.6956	1.130	1.206	1.255	1.202	150-160	0.3889	3712	100,100
170	0.8327	0.7977	0.6906	0.7888	1.084	1.180	1.128	1.095	160-170	0.2673	3713	100,100
180	0.9733	0.9632	0.9347	0.9133	0.9699	0.9769	0.9387	0.9057	170-180	0.0910	3713	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 15.3 %									UNIT:lm		

Isocandela Diagram:

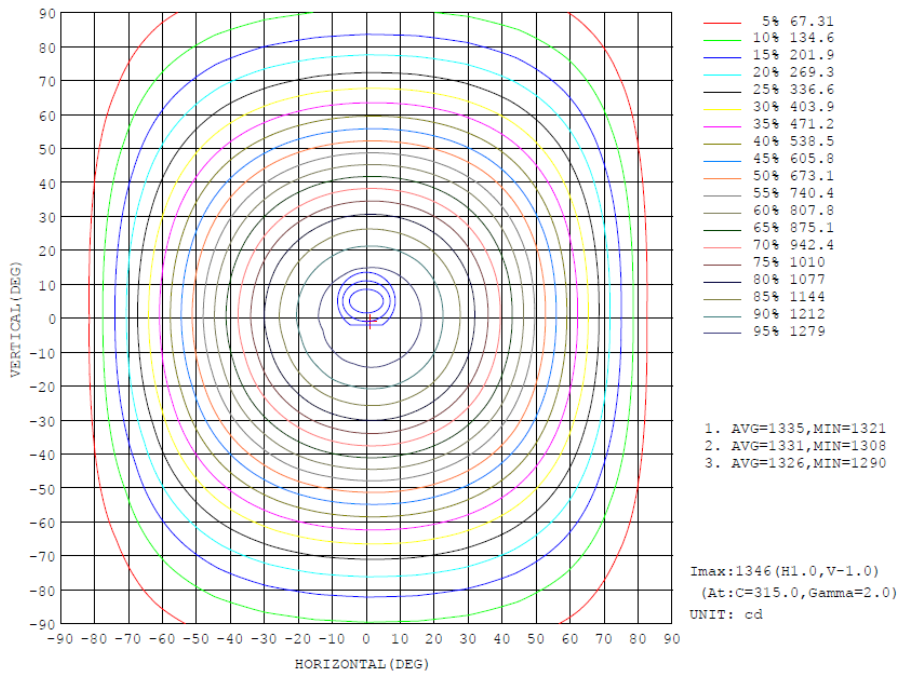
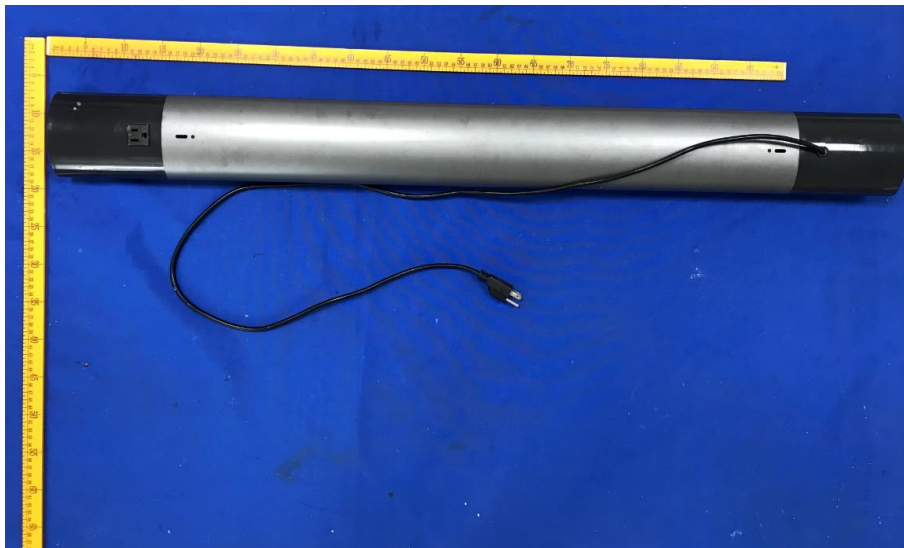


Photo of Sample:



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2019-11-13	2020-11-12
NTC-F01-006	2.0 meter Integrating Sphere	2019-11-13	2020-11-12
NTC-F01-012	Standard Lamp	2019-11-13	2020-11-12
NTC-F01-013	Standard Lamp	2019-11-13	2020-11-12
NTC-F01-031	Digital Power Meter	2019-08-22	2020-08-21
NTC-F01-019	Temperature & Humidity Meter	2019-11-15	2020-11-14

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