LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: N/A)

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-8056M30C-A

Representative (Tested) Model: LED-8056M30C-A

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: May.18,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8056M30C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	220 -347Vac, 50/60 Hz	
Nominal Power	45W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAV0SE	
Sample Number	GZE1801030-H-T1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

1.2 Test Specifications:

Date of Receipt	May.01,2018
Date of Test	May.02,2018
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. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer 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 277 or rated 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 °horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 ºC ±1 ºC. 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 277 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 ºC ±1 ºC. The sample was operated at 277 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2018-05-02	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8056M30C-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103 0-H-T1	277.0	60	0.1586	41.80	0.9515	14.01
	347.0	60	0.1335	41.87	0.9036	16.85

Chromaticity Measurement - Sphere-Spectroradiometer Method:

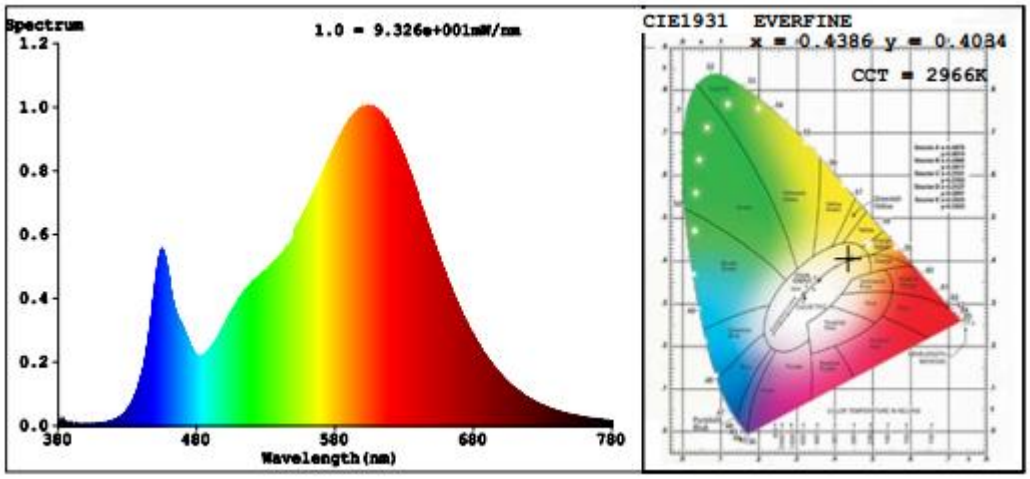
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	2966
Duv	-0.0005
Chromaticity (x, y)	x=0.4386 y=0.4034
Chromaticity (u', v')	u'=0.2520 v'=0.5214
Color Rendering Index (CRI)	82.4
R9	8

Special Color Rendering Indices			
R1	81	R9	8
R2	92	R10	83
R3	95	R11	78
R4	79	R12	72
R5	81	R13	84
R6	91	R14	98
R7	82	R15	74
R8	58	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	5196.0	5194.8
Luminous Efficacy (lm/W)	124.31	124.07
Most worst Luminous/Highest Watts	124.07	
Beam Angle ( )	178.8	--
Center Beam Candle Power (cd)	913	--

Spectral Power Distribution & Chromaticity Diagram

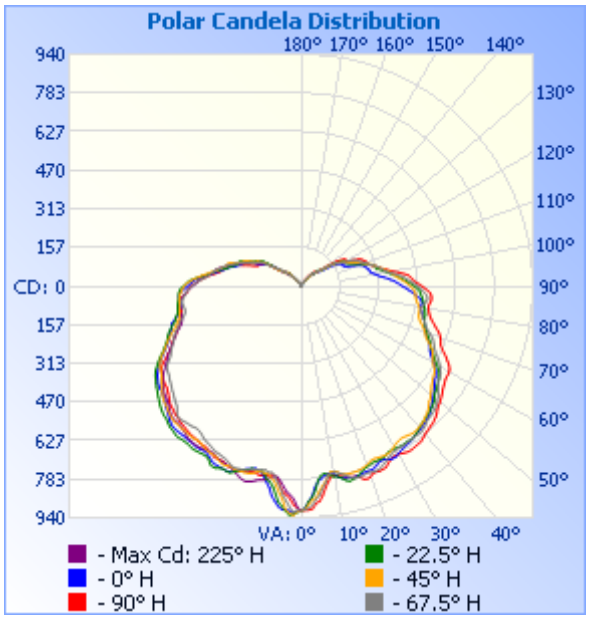


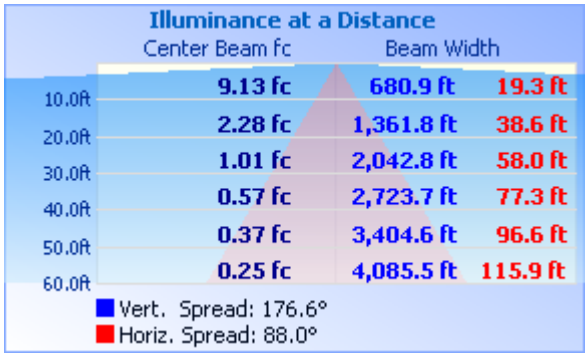
Zonal Lumen Tabulation

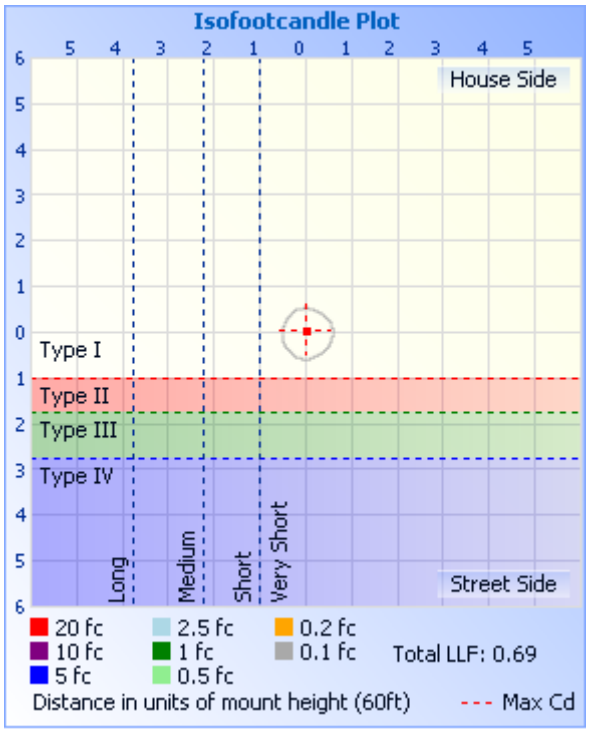
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	666.6	12.8%
0-40	1,144.9	22%
0-60	2,325.8	44.8%
60-90	1,669.1	32.1%
70-100	1,516.8	29.2%
90-120	992.6	19.1%
0-90	3,994.8	76.9%
90-180	1,201.4	23.1%
0-180	5,196.2	100%

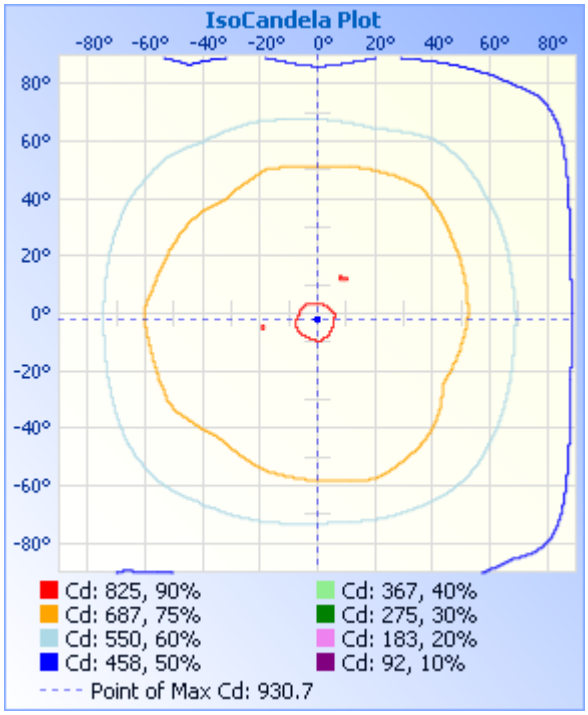
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	78.7	1.5%	90-100	438.8	8.4%
10-20	225.2	4.3%	100-110	326.2	6.3%
20-30	362.7	7.0%	110-120	227.6	4.4%
30-40	478.3	9.2%	120-130	128.5	2.5%
40-50	570.4	11.0%	130-140	56.4	1.1%
50-60	610.5	11.7%	140-150	19.0	0.4%
60-70	591.0	11.4%	150-160	4.1	0.1%
70-80	548.3	10.6%	160-170	0.6	0%
80-90	529.7	10.2%	170-180	0.1	0%

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913
1	900	903	904	906	909	911	911	915	913	917	916	909	898	895	897	899	900
2	874	874	886	901	908	906	911	915	920	926	**931**	918	888	867	864	873	874
3	854	856	867	887	904	918	907	903	913	930	921	897	863	842	848	839	854
4	816	830	862	866	883	919	916	898	908	914	909	874	849	825	837	799	816
5	793	790	835	852	875	893	901	903	908	897	869	851	839	811	817	774	793
6	785	772	817	827	850	882	889	891	898	881	846	819	817	789	797	766	785
7	774	764	800	805	821	870	877	879	878	851	818	797	786	769	780	768	774
8	769	773	779	781	798	846	857	845	859	821	796	773	776	770	779	788	769
9	766	779	761	768	780	821	822	815	827	804	787	765	774	772	785	798	766
10	773	785	763	767	780	807	806	797	808	798	772	766	778	778	794	803	773
11	789	787	767	772	784	796	792	786	788	777	771	759	779	785	801	806	789
12	795	796	777	778	789	801	785	777	774	765	771	762	786	796	803	808	795
13	800	808	783	786	793	809	786	780	769	769	771	764	783	805	809	817	800
14	801	815	785	796	799	820	791	774	762	767	780	767	777	812	816	827	801
15	803	812	784	804	802	825	797	778	767	766	786	771	778	816	821	833	803
16	803	808	785	809	803	823	800	779	771	774	789	777	783	815	824	829	803
17	802	801	783	810	810	819	799	783	777	779	790	780	787	815	820	824	802
18	800	792	781	809	823	819	802	784	782	784	789	781	789	814	813	814	800
19	798	784	777	805	826	824	802	791	786	792	788	784	790	810	805	804	798
20	797	780	774	804	823	828	801	802	793	802	791	785	790	808	796	797	797
21	798	775	767	806	814	824	799	804	805	810	788	783	790	802	790	793	798
22	795	772	762	808	812	815	797	795	809	809	786	776	788	796	785	796	795
23	788	772	760	807	815	809	791	778	807	806	789	769	783	791	783	802	788
24	780	773	762	801	814	801	777	777	805	808	789	764	778	782	782	807	780
25	777	771	764	795	812	795	763	774	804	815	784	761	777	774	778	812	777
26	781	770	766	788	803	794	758	768	802	816	776	758	778	773	774	812	781
27	789	765	766	780	793	796	755	761	797	812	771	756	777	774	768	805	789
28	792	760	763	774	788	798	753	755	788	798	770	753	771	774	765	796	792

29	792	759	759	770	787	797	752	755	781	790	770	747	767	774	764	788	792
30	786	760	752	768	788	796	747	754	776	789	768	743	761	773	767	784	786
31	781	762	746	766	791	793	743	747	776	791	763	740	758	770	769	782	781
32	777	765	742	767	796	784	738	740	778	792	757	737	758	768	773	782	777
33	774	764	739	767	800	778	735	731	778	793	754	730	756	764	774	783	774
34	772	764	740	767	801	778	734	726	775	792	754	723	754	758	774	784	772
35	771	764	742	765	799	780	730	727	774	790	755	718	753	754	772	783	771
36	769	766	745	765	798	781	727	730	774	788	755	716	751	752	771	781	769
37	762	763	748	765	797	779	724	733	772	787	755	717	749	751	767	780	762
38	759	758	749	765	794	777	721	738	772	788	754	721	746	748	761	779	759
39	757	753	748	766	789	776	720	745	773	791	753	722	744	744	755	775	757
40	754	748	745	764	783	772	721	747	773	790	753	723	741	739	752	767	754
41	751	743	743	761	779	767	727	747	773	786	753	726	739	736	747	761	751
42	747	740	740	754	776	761	733	748	772	782	752	729	735	732	746	760	747
43	744	736	733	748	772	756	737	747	770	780	753	729	732	728	747	760	744
44	741	733	729	745	770	752	736	742	764	776	751	724	730	722	747	757	741
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46	729	726	717	741	760	741	734	726	748	766	743	700	721	714	738	742	729
47	721	723	707	738	753	736	728	723	742	763	739	695	718	710	731	736	721
48	713	719	698	733	744	730	722	720	737	759	733	690	715	706	723	728	713
49	707	714	694	729	739	725	718	719	730	754	730	683	708	705	717	721	707
50	699	705	685	721	734	721	712	719	722	747	725	677	700	702	711	712	699
51	692	697	678	714	729	718	704	718	718	741	721	673	693	695	708	705	692
52	684	692	670	705	722	715	694	713	713	734	714	667	687	687	705	695	684
53	677	688	663	697	717	709	685	709	710	728	707	662	683	678	698	684	677
54	669	682	658	687	710	705	679	703	707	722	698	656	681	670	691	677	669
55	662	677	652	680	706	700	671	697	705	716	690	652	678	659	683	671	662
56	658	674	649	676	702	697	666	690	700	709	681	646	675	651	677	668	658
57	651	667	644	672	697	694	659	684	693	702	674	643	670	642	668	660	651
58	643	660	637	667	695	690	651	677	687	697	668	640	666	634	657	649	643
59	631	647	626	658	695	678	642	669	679	690	664	636	662	625	643	634	631
60	621	634	618	650	693	666	637	664	668	682	660	624	653	616	633	623	621

61	607	620	611	640	688	660	630	657	656	669	654	611	639	604	622	609	607
62	596	610	604	630	679	656	621	649	646	657	646	600	620	594	614	598	596
63	587	599	597	616	665	648	612	637	633	644	638	593	606	582	604	584	587
64	581	588	592	606	654	637	605	623	621	630	625	586	592	573	593	574	581
65	576	580	580	596	639	628	599	606	607	616	611	577	582	566	582	562	576
66	570	572	568	590	626	616	593	594	597	606	601	568	573	557	570	552	570
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68	551	556	545	577	610	592	582	574	577	586	580	555	555	533	552	536	551
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76	511	517	491	508	543	525	518	525	522	524	509	488	502	483	500	496	511
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84	485	496	468	515	531	484	491	496	497	499	497	482	493	475	489	503	485
85	472	491	465	514	531	484	489	498	498	498	496	476	482	467	482	496	472
86	461	487	465	509	528	484	486	499	496	498	493	471	471	461	475	490	461
87	450	483	462	500	524	479	480	497	491	497	489	466	464	450	466	483	450
88	435	480	458	492	513	473	472	494	481	493	484	460	458	441	459	477	435
89	424	471	451	484	503	466	467	488	472	487	480	451	453	430	450	468	424
90	411	459	443	472	489	454	460	481	462	477	475	443	447	422	442	456	411
91	401	448	435	462	478	442	453	471	453	468	468	434	437	415	432	444	401
92	389	436	424	450	465	432	448	461	444	460	457	424	425	403	424	428	389

93	380	425	415	439	456	418	441	452	436	450	447	415	413	391	417	415	380
94	366	410	405	426	449	403	433	439	425	435	433	403	404	379	409	399	366
95	354	400	395	417	443	389	424	428	411	416	418	392	393	371	399	386	354
96	340	388	385	404	435	373	420	423	398	401	407	381	380	360	387	371	340
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106	274	306	306	304	302	275	329	330	287	294	313	307	305	289	303	295	274
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108	267	285	289	289	287	270	313	310	270	278	306	289	281	284	283	290	267
109	261	274	279	282	285	261	295	301	263	271	294	280	264	280	275	284	261
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111	234	255	261	269	280	243	276	286	258	271	267	261	234	268	259	259	234
112	219	242	254	262	276	238	266	279	253	268	260	250	224	261	249	251	219
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123	153	176	175	170	196	140	179	178	161	183	161	152	158	167	172	143	153
124	138	164	160	164	187	128	177	171	156	166	144	143	145	161	150	129	138

125	128	154	151	156	175	112	151	155	149	147	128	134	129	155	132	117	128
126	116	139	138	146	160	99	123	137	134	123	115	124	111	144	119	109	116
127	109	122	124	131	147	92	111	129	119	112	109	117	102	134	114	106	109
128	101	107	115	118	132	83	105	120	104	103	105	109	97	120	107	101	101
129	92	99	106	107	114	80	99	107	96	96	98	99	97	110	100	94	92
130	89	95	99	102	104	80	96	102	91	92	93	94	94	101	92	92	89
131	88	95	90	96	97	75	94	95	87	87	85	86	83	91	91	84	88
132	85	97	84	90	91	72	86	88	82	81	79	82	75	86	84	85	85
133	81	90	82	85	91	68	77	79	73	79	76	80	70	83	77	90	81
134	74	83	81	80	84	65	74	73	73	79	81	69	69	78	76	86	74
135	67	72	77	73	81	66	68	71	70	79	79	61	67	73	72	75	67
136	64	68	67	75	81	63	66	71	73	72	73	59	59	66	69	67	64
137	65	68	61	71	78	59	67	65	67	68	67	58	51	60	68	61	65
138	56	65	59	67	72	55	59	60	61	62	59	50	46	56	65	60	56
139	52	60	54	64	69	51	55	57	59	59	55	45	42	55	55	52	52
140	44	48	52	61	66	45	54	56	54	51	50	42	39	55	49	47	44
141	40	44	46	52	61	41	47	50	47	46	43	36	32	46	48	43	40
142	35	39	42	48	57	36	43	47	43	41	39	33	29	40	38	34	35
143	35	38	38	47	53	28	38	39	36	37	32	29	26	38	36	30	35
144	26	31	35	40	46	25	31	35	31	33	29	26	24	35	31	26	26
145	23	25	31	33	40	22	27	29	27	29	26	23	21	31	28	23	23
146	20	22	25	28	36	20	24	25	25	25	24	20	18	26	26	21	20
147	18	20	22	25	31	18	21	23	23	22	22	18	16	23	23	19	18
148	16	18	20	23	27	16	19	22	20	20	20	16	14	22	20	17	16
149	15	16	17	21	24	14	17	18	18	18	17	14	12	19	19	15	15
150	13	14	16	20	21	13	15	16	16	17	15	12	11	18	18	13	13
151	11	12	14	17	18	12	13	15	14	15	13	11	9	15	15	11	11
152	10	11	12	15	16	11	12	13	12	13	11	9	8	14	12	10	10
153	9	9	10	14	15	9	10	12	11	11	10	8	7	12	10	9	9
154	7	8	9	12	13	8	9	10	9	10	9	7	6	11	9	8	7
155	6	7	8	11	13	7	8	9	8	8	8	6	5	9	8	7	6
156	6	6	7	10	12	6	6	7	7	7	7	5	4	8	7	6	6

157	5	5	6	9	10	5	6	6	6	7	6	4	3	7	6	5	5
158	4	4	5	7	9	4	5	5	5	5	5	4	3	5	5	4	4
159	3	4	4	6	7	4	4	5	4	5	4	3	2	5	4	4	3
160	3	3	4	5	6	3	3	4	4	4	4	3	2	4	4	3	3
161	3	3	3	4	5	3	3	3	3	3	3	3	2	3	3	3	3
162	2	2	3	4	5	3	3	3	3	3	3	2	2	3	3	2	2
163	2	2	2	3	4	2	2	3	3	3	3	2	2	2	2	2	2
164	2	2	2	3	3	2	2	2	2	3	2	2	2	2	2	2	2
165	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2
166	1	2	2	2	3	2	2	2	2	2	2	2	1	2	2	2	1
167	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1
168	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1
169	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1
170	1	1	1	2	1	2	1	2	2	2	2	1	1	1	1	1	1
171	1	1	1	1	1	2	2	2	2	2	1	2	1	2	1	1	1
172	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1
173	1	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1
174	1	1	1	1	1	1	2	1	2	1	1	1	1	2	1	1	1
175	1	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	1
176	1	1	1	1	1	2	2	2	1	2	1	2	1	1	2	1	1
177	1	1	1	1	1	2	1	2	2	1	2	1	2	2	1	1	1
178	2	1	1	1	1	2	1	1	1	1	1	2	1	2	1	1	2
179	2	1	1	1	1	2	1	1	1	2	1	1	1	1	2	1	2
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

******** END OF REPORT ********