

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-8056M30-A

Representative (Tested) Model: LED-8056M30-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.

Laboratory: Standard-Tech Co., Ltd Testing Center

NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

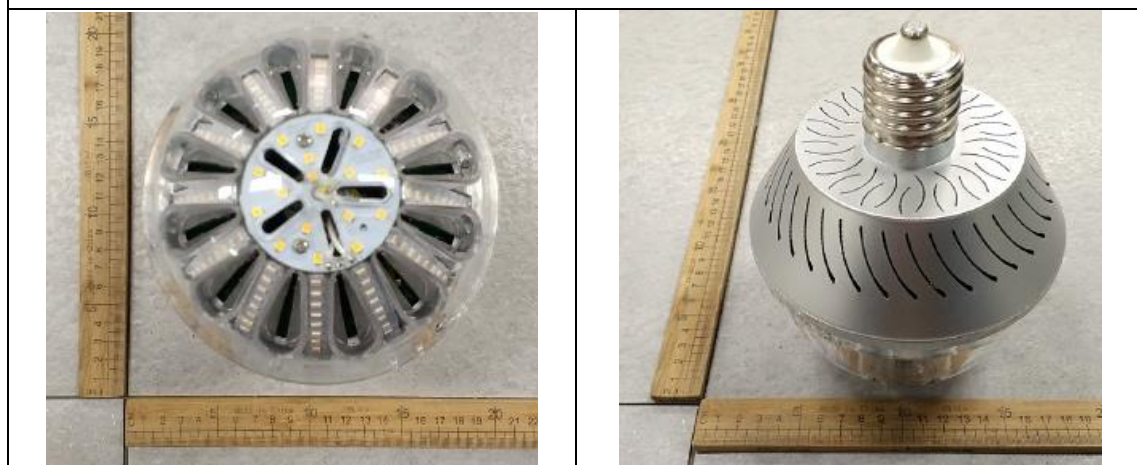
Fax: 8620-32290422

<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8056M30-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120 -277Vac, 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-F1	
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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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

<p>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 120 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.</p>
<p>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 °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 120 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.</p>
<p>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 °C ± 1 °C. The sample was operated at 120 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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2018-05-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8056M30-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	120.0	60	0.3827	45.07	0.9813	11.47
0-H-F1	277.0	60	0.1762	45.25	0.9270	13.92

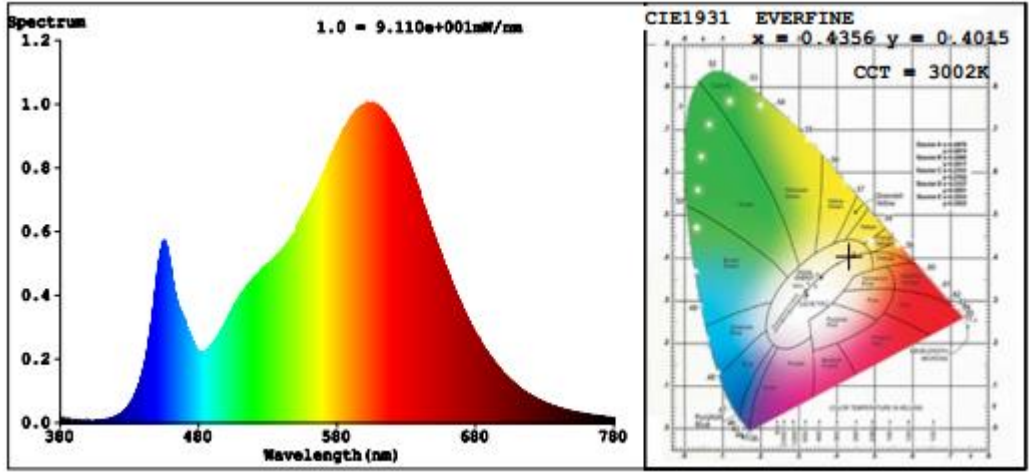
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	9
Frequency (Hz)	60	R2	93	R10	83
CCT (K)	3002	R3	95	R11	79
Duv	-0.0008	R4	80	R12	72
Chromaticity (x, y)	x=0.4356 y=0.4015	R5	82	R13	84
Chromaticity (u', v')	u'=0.2508 v'=0.5202	R6	91	R14	98
Color Rendering Index (CRI)	82.8	R7	82	R15	74
R9	9	R8	59	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	5469.0	5525.8
Luminous Efficacy (lm/W)	121.34	122.12
Most worst Luminous/Highest Watts	120.86	
Beam Angle (°)	181.7	--
Center Beam Candle Power (cd)	960	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	691.7	12.6%
0-40	1,190.7	21.8%
0-60	2,424.7	44.3%
60-90	1,775.6	32.5%
70-100	1,620.7	29.6%
90-120	1,050.9	19.2%
0-90	4,200.3	76.8%
90-180	1,268.9	23.2%
0-180	5,469.2	100%

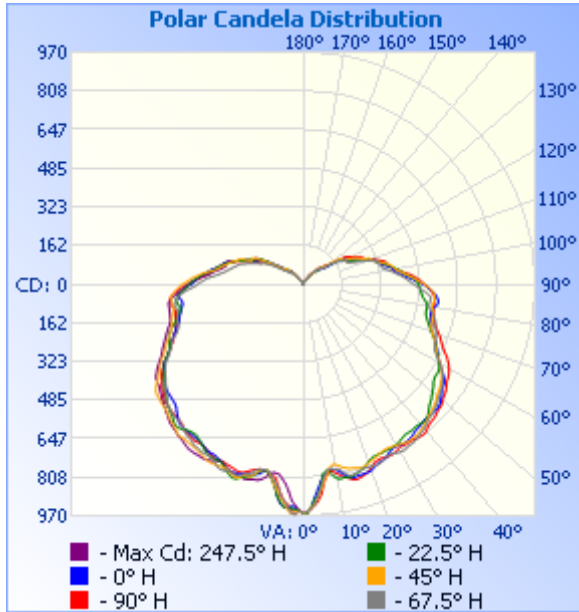
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	81.4	1.5%	90-100	462.1	8.4%
10-20	233.7	4.3%	100-110	350.9	6.4%
20-30	376.6	6.9%	110-120	237.9	4.4%
30-40	499.0	9.1%	120-130	132.1	2.4%
40-50	594.8	10.9%	130-140	61.0	1.1%
50-60	639.3	11.7%	140-150	19.9	0.4%
60-70	616.9	11.3%	150-160	4.2	0.1%
70-80	586.7	10.7%	160-170	0.7	0%
80-90	571.9	10.5%	170-180	0.1	0%

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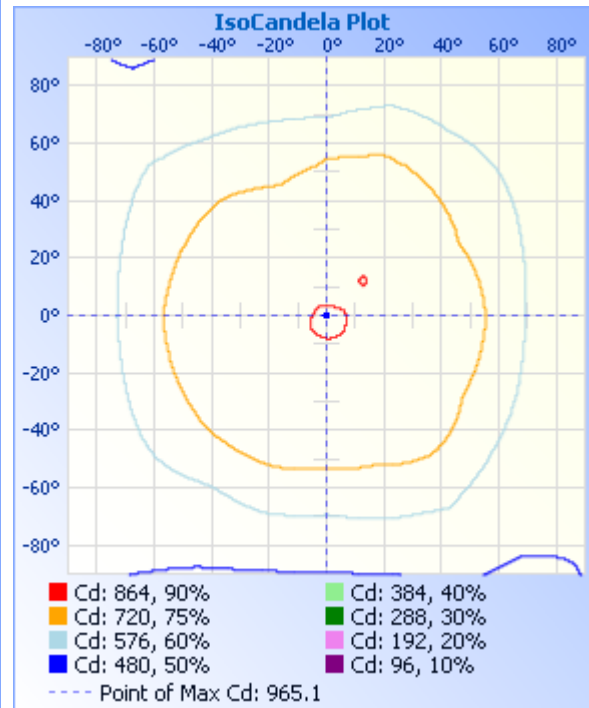
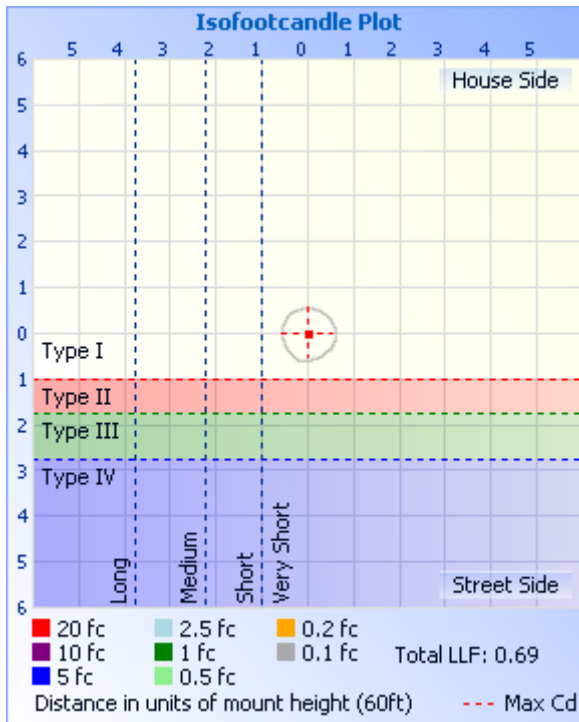
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Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
10.0ft	9.60 fc	
20.0ft	2.40 fc	
30.0ft	1.07 fc	
40.0ft	0.60 fc	
50.0ft	0.38 fc	
60.0ft	0.27 fc	



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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	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960
1	954	961	955	952	957	962	961	953	946	949	949	948	949	949	945	947	954
2	937	935	937	942	941	948	948	932	933	944	956	965	961	947	933	929	937
3	897	903	921	924	927	955	944	938	931	940	962	959	946	919	903	907	897
4	864	886	894	892	910	932	939	951	938	939	947	937	925	899	869	869	864
5	832	847	863	852	882	905	935	931	936	936	921	909	911	888	863	840	832
6	805	798	834	815	835	878	906	898	924	918	900	891	886	856	846	820	805
7	794	786	806	792	807	859	876	872	892	895	877	851	855	836	821	804	794
8	783	794	777	781	790	843	833	844	854	855	854	838	821	828	814	799	783
9	784	814	766	784	795	815	810	823	828	832	829	822	811	823	815	798	784
10	788	826	766	788	804	798	795	809	809	811	805	797	806	819	824	808	788
11	800	830	774	788	815	797	788	799	799	795	793	794	797	811	838	822	800
12	814	827	783	804	825	804	789	791	803	795	795	793	793	804	848	835	814
13	825	829	789	818	832	811	795	789	815	804	799	797	794	811	855	842	825
14	836	831	795	825	840	816	811	792	820	817	815	801	799	829	858	843	836
15	837	827	797	823	848	815	820	800	827	832	831	814	805	846	862	846	837
16	834	822	800	821	846	825	825	802	828	839	839	826	813	851	865	851	834
17	834	818	805	816	842	832	837	805	832	843	835	832	822	847	870	851	834
18	833	812	806	811	838	835	850	812	835	851	848	839	830	840	871	849	833
19	833	805	802	812	831	833	849	818	840	860	857	846	830	837	868	846	833
20	831	793	797	814	822	833	844	817	839	863	856	846	828	835	861	845	831
21	825	786	792	817	813	830	839	808	843	857	849	841	824	834	855	840	825
22	818	780	788	818	804	826	836	811	841	848	838	841	821	830	845	835	818
23	813	779	784	816	800	817	832	816	834	839	836	848	819	821	837	829	813
24	811	779	779	813	799	814	821	821	823	825	837	850	816	818	833	822	811
25	808	779	775	806	800	812	811	819	816	819	838	846	815	814	829	819	808
26	801	778	773	800	803	810	805	809	811	818	840	836	817	810	827	822	801
27	792	778	772	799	805	810	800	803	807	820	842	828	817	804	822	828	792
28	786	778	774	803	804	810	794	792	805	821	841	822	814	797	816	835	786

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29	782	778	776	808	800	810	792	784	805	819	838	820	807	790	809	840	782
30	782	776	781	811	796	804	788	783	805	812	833	820	803	785	802	841	782
31	785	774	782	813	793	799	784	788	800	804	830	820	798	780	799	840	785
32	789	770	786	812	795	800	783	789	792	797	826	818	794	776	798	840	789
33	789	765	790	809	797	804	783	792	788	789	822	815	793	771	797	841	789
34	787	761	792	808	796	809	786	792	786	782	820	814	796	765	798	840	787
35	785	761	791	807	797	811	788	788	786	776	820	809	798	763	798	839	785
36	781	762	790	803	801	810	790	790	785	774	818	801	796	761	797	836	781
37	775	763	790	799	803	808	792	793	783	776	818	800	793	761	796	830	775
38	772	761	788	795	805	806	793	793	783	779	818	797	792	762	795	826	772
39	770	760	785	792	806	804	794	791	783	784	819	790	789	764	794	824	770
40	767	763	781	788	802	802	796	787	781	791	818	783	780	768	791	819	767
41	764	766	775	783	794	801	793	782	781	796	810	778	773	767	786	814	764
42	761	765	771	776	788	799	783	779	777	796	805	773	770	763	782	811	761
43	761	761	765	771	786	793	775	778	768	792	800	772	770	762	780	808	761
44	763	753	760	767	784	787	769	776	758	784	796	772	768	761	777	804	763
45	765	744	757	765	782	780	764	772	749	777	792	771	767	759	776	796	765
46	766	734	752	761	777	775	758	767	739	772	786	768	765	754	775	790	766
47	766	727	749	757	772	770	753	762	734	766	781	764	763	748	772	784	766
48	763	722	744	751	772	763	747	760	731	761	777	760	761	742	765	777	763
49	760	713	738	746	768	759	742	758	729	755	776	753	759	733	759	772	760
50	752	706	730	739	762	755	736	753	727	747	775	745	756	726	754	766	752
51	744	698	724	734	755	751	731	748	726	739	771	735	751	719	749	761	744
52	734	692	721	730	751	741	727	740	723	732	768	728	743	713	742	754	734
53	728	683	717	726	747	733	724	733	719	726	767	719	736	709	732	748	728
54	724	678	711	719	739	725	721	723	713	717	762	710	730	701	725	742	724
55	721	674	705	712	733	719	717	716	705	710	752	702	721	696	719	738	721
56	713	674	700	705	726	715	709	709	697	702	739	695	713	689	715	735	713
57	699	674	691	694	722	709	700	702	691	696	723	687	707	683	710	732	699
58	687	672	684	685	718	697	690	696	687	686	713	681	697	676	703	726	687
59	673	664	675	673	713	680	677	687	683	677	703	672	686	667	692	715	673
60	662	654	662	661	704	668	660	675	674	668	693	664	672	656	683	705	662

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61	648	646	649	645	696	659	642	663	662	660	682	652	658	648	669	692	648
62	639	637	635	631	686	650	630	650	646	647	671	638	642	639	655	680	639
63	630	630	626	619	676	642	617	640	632	632	658	627	630	634	645	667	630
64	624	620	618	612	661	634	605	627	622	623	645	616	618	629	634	658	624
65	616	613	611	608	649	629	595	616	616	618	637	608	609	624	625	650	616
66	608	605	603	606	637	620	586	609	607	612	628	602	597	621	614	642	608
67	599	598	597	602	630	610	576	602	596	608	619	594	588	615	606	631	599
68	590	588	588	599	621	603	563	595	587	605	607	579	583	606	597	624	590
69	580	579	581	595	613	595	554	586	577	601	598	565	575	594	590	616	580
70	572	568	572	591	603	585	543	579	569	595	590	558	568	584	584	608	572
71	565	561	567	586	594	576	536	570	561	584	583	551	563	576	578	602	565
72	564	553	563	580	584	566	532	561	552	575	580	549	559	570	573	594	564
73	561	547	562	578	578	555	530	555	543	563	576	547	556	565	571	584	561
74	557	540	561	576	571	545	529	547	537	553	572	546	554	558	569	579	557
75	552	535	558	571	567	541	528	541	535	546	568	543	553	552	568	574	552
76	548	530	555	566	562	538	527	536	531	539	565	542	551	547	566	573	548
77	548	527	555	557	560	539	527	533	526	532	560	539	547	544	561	571	548
78	548	526	555	549	557	542	528	531	522	525	556	537	546	542	555	570	548
79	551	527	553	539	555	542	530	531	517	522	553	538	549	540	553	570	551
80	557	527	550	535	554	540	531	531	513	525	554	541	554	538	551	569	557
81	566	524	550	533	553	534	532	532	511	531	554	545	558	535	552	569	566
82	569	517	552	534	554	529	532	531	512	535	555	542	560	531	552	568	569
83	569	510	553	537	554	525	531	530	517	536	557	534	560	529	551	564	569
84	565	503	554	536	552	521	524	527	523	530	557	528	558	526	549	553	565
85	559	499	552	529	549	518	518	522	524	523	553	517	553	521	543	538	559
86	550	495	548	518	543	515	510	511	521	514	545	503	542	515	537	524	550
87	541	492	541	500	536	508	495	500	511	504	537	488	527	510	528	508	541
88	527	490	532	487	529	500	479	487	500	495	527	469	514	504	520	496	527
89	515	487	518	475	518	490	467	473	483	486	517	453	499	498	506	488	515
90	500	483	507	462	508	479	454	464	468	477	505	443	484	491	492	480	500
91	486	478	491	452	497	466	442	454	459	467	491	431	469	486	479	471	486
92	467	473	478	440	489	456	433	444	450	458	478	418	450	479	463	457	467

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93	452	463	464	432	476	443	420	438	441	447	468	408	436	468	452	443	452
94	434	452	449	422	465	431	407	432	434	438	453	394	426	458	438	423	434
95	420	439	438	412	453	422	397	425	425	429	437	378	416	449	424	408	420
96	407	425	426	398	434	411	389	417	416	416	423	362	405	443	407	394	407
97	394	417	415	388	419	398	378	404	406	401	408	351	393	432	393	385	394
98	386	408	403	378	401	388	368	389	398	390	391	340	385	419	376	377	386
99	381	400	395	365	391	381	361	379	388	378	376	331	377	407	365	366	381
100	380	389	389	356	380	375	351	367	376	369	365	325	370	393	356	355	380
101	373	380	381	343	374	370	341	359	366	367	358	317	364	383	347	346	373
102	362	370	377	337	368	363	334	351	356	360	353	308	357	374	342	339	362
103	350	360	368	335	363	354	330	342	350	346	344	304	352	368	340	334	350
104	338	352	358	333	361	345	324	334	346	341	334	297	346	364	334	332	338
105	332	342	343	330	357	330	319	328	340	336	327	290	339	359	326	334	332
106	325	333	332	328	350	314	312	320	335	324	322	287	329	357	321	333	325
107	318	323	322	325	338	303	305	310	324	314	317	281	317	349	315	327	318
108	314	315	313	316	328	291	297	301	310	305	309	273	303	338	309	315	314
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115	245	233	256	213	265	232	225	224	234	241	237	204	229	251	228	212	245
116	236	226	248	207	256	215	216	211	223	232	236	195	218	251	216	207	236
117	229	221	239	205	246	204	207	208	218	226	239	192	206	246	208	217	229
118	219	217	229	203	239	195	202	206	216	221	233	186	200	241	207	225	219
119	210	207	217	202	233	190	196	202	209	217	222	176	196	231	202	226	210
120	202	198	202	197	230	185	190	198	200	209	203	165	187	221	200	212	202
121	200	188	195	194	225	175	181	196	188	197	184	156	176	210	195	192	200
122	200	184	196	188	218	158	174	195	174	179	170	146	162	204	189	167	200
123	188	180	195	180	208	142	167	186	167	164	157	136	149	195	188	149	188
124	170	172	192	165	188	126	151	166	152	138	145	120	134	185	169	132	170

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125	143	162	183	154	175	116	134	149	139	116	132	109	126	175	144	124	143
126	125	146	163	147	159	111	124	132	131	112	118	102	118	159	123	120	125
127	115	134	147	136	143	106	121	121	123	113	111	95	108	144	112	110	115
128	110	120	131	122	130	101	113	114	114	108	104	90	102	130	103	98	110
129	107	112	118	108	125	96	106	107	103	100	101	87	94	122	100	86	107
130	103	107	113	98	121	88	102	107	91	93	97	81	87	114	99	85	103
131	100	100	111	95	115	83	91	103	87	89	91	77	86	113	97	87	100
132	90	97	110	99	110	81	87	92	86	79	91	75	86	108	90	87	90
133	86	89	105	102	104	85	80	85	81	81	88	75	79	101	82	85	86
134	86	84	104	98	99	81	74	81	72	83	86	75	71	92	80	81	86
135	82	79	94	90	97	73	71	80	69	83	78	73	72	88	72	80	82
136	75	74	90	83	92	65	68	76	63	77	69	67	70	86	73	77	75
137	71	68	76	77	82	58	62	70	58	62	63	60	57	77	71	76	71
138	64	65	68	74	76	55	58	67	59	59	57	53	55	72	69	70	64
139	57	62	64	71	69	52	54	59	59	55	53	48	50	68	61	63	57
140	53	56	62	62	67	44	47	50	50	48	47	43	43	65	55	57	53
141	48	52	50	54	61	39	43	47	45	46	42	38	38	54	49	53	48
142	46	47	48	52	57	31	38	45	39	38	36	32	31	50	45	47	46
143	39	43	45	44	52	27	33	36	35	32	31	27	28	48	43	43	39
144	33	39	38	41	44	24	27	30	29	27	28	25	24	40	35	37	33
145	29	33	36	34	39	23	25	26	26	25	25	21	21	38	30	31	29
146	26	27	29	28	35	20	22	23	23	22	23	19	19	28	27	27	26
147	25	24	25	23	31	19	20	22	21	20	20	17	17	26	24	24	25
148	23	23	23	22	27	16	18	19	18	19	18	16	15	22	22	21	23
149	20	20	21	20	22	15	15	16	16	16	16	14	14	20	20	19	20
150	16	18	19	19	20	13	14	14	15	15	14	13	12	18	17	17	16
151	14	16	16	18	18	11	13	13	13	12	13	11	10	16	15	15	14
152	13	14	14	15	16	10	11	11	12	11	11	10	9	14	13	14	13
153	11	13	13	13	14	8	10	10	10	10	10	9	8	12	11	12	11
154	10	11	11	11	13	7	9	9	9	9	9	7	7	11	10	11	10
155	9	9	10	12	12	6	7	8	7	7	7	6	6	10	9	9	9
156	8	8	8	9	10	5	6	6	7	7	6	5	5	9	8	7	8

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157	6	6	7	8	9	4	5	6	5	6	5	5	4	7	7	6	6
158	5	5	6	7	7	4	4	5	5	5	4	4	3	6	6	5	5
159	4	4	5	6	6	3	4	4	4	4	4	3	3	5	5	4	4
160	4	4	4	5	5	3	3	3	4	3	3	3	3	5	4	4	4
161	3	3	4	4	4	2	3	3	3	3	3	3	2	4	3	3	3
162	3	3	3	3	4	2	2	3	3	3	3	3	2	3	3	3	3
163	2	2	2	3	3	2	2	2	2	3	2	2	2	3	3	2	2
164	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2
165	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
166	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
167	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
168	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
169	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
170	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2
171	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2
172	2	2	1	2	1	2	2	2	2	2	2	2	2	2	1	2	2
173	2	1	1	2	1	2	2	2	2	2	2	2	2	1	1	2	2
174	1	2	1	2	1	2	2	1	2	2	2	2	2	2	1	1	1
175	2	1	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2
176	2	2	2	1	1	2	2	2	2	2	2	2	2	2	1	2	2
177	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1
178	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
179	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
180	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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 *******

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