

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-8056M40-A

Representative (Tested) Model: LED-8056M40-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

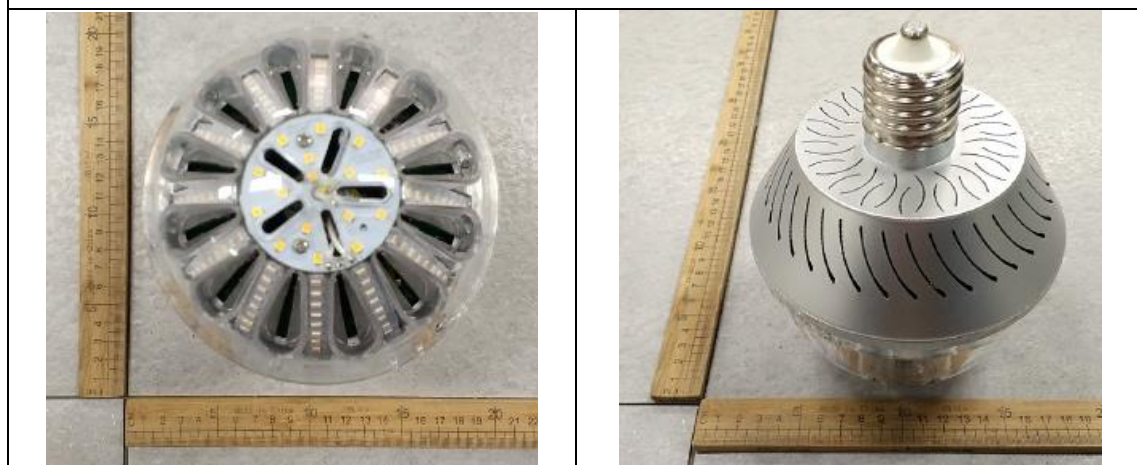
Fax: 8620-32290422

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

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8056M40-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	4000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAT0SE	
Sample Number	GZE1801030-H-G1	
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-8056M40-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	120.0	60	0.3597	42.49	0.9844	9.68
0-H-G1	277.0	60	0.1671	42.91	0.9270	14.08

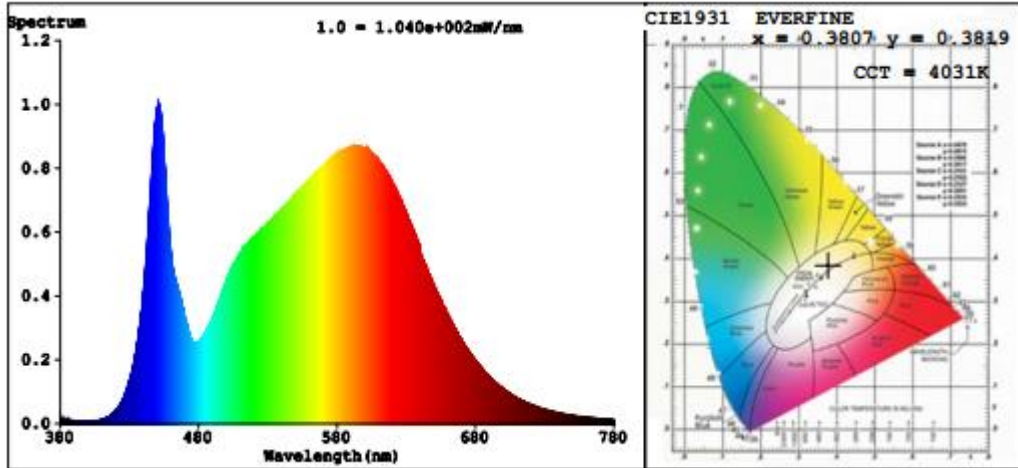
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	6
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	4031	R3	95	R11	80
Duv	0.0023	R4	81	R12	61
Chromaticity (x, y)	x=0.3807 y=0.3819	R5	81	R13	82
Chromaticity (u', v')	u'=0.2232 v'=0.5039	R6	84	R14	97
Color Rendering Index (CRI)	82.6	R7	86	R15	74
R9	6	R8	64	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	5263.5	5334.0
Luminous Efficacy (lm/W)	123.88	124.31
Most worst Luminous/Highest Watts	122.66	
Beam Angle (°)	180.4	--
Center Beam Candle Power (cd)	912	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	679.7	12.9%
0-40	1,167.2	22.2%
0-60	2,363.4	44.9%
60-90	1,695.7	32.2%
70-100	1,537.3	29.2%
90-120	996.7	18.9%
0-90	4,059.2	77.1%
90-180	1,204.5	22.9%
0-180	5,263.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	79.8	1.5%	90-100	438.3	8.3%
10-20	229.7	4.4%	100-110	332.8	6.3%
20-30	370.1	7.0%	110-120	225.7	4.3%
30-40	487.5	9.3%	120-130	126.7	2.4%
40-50	577.6	11.0%	130-140	57.5	1.1%
50-60	618.7	11.8%	140-150	18.8	0.4%
60-70	596.8	11.3%	150-160	4.0	0.1%
70-80	558.0	10.6%	160-170	0.6	0%
80-90	541.0	10.3%	170-180	0.1	0%

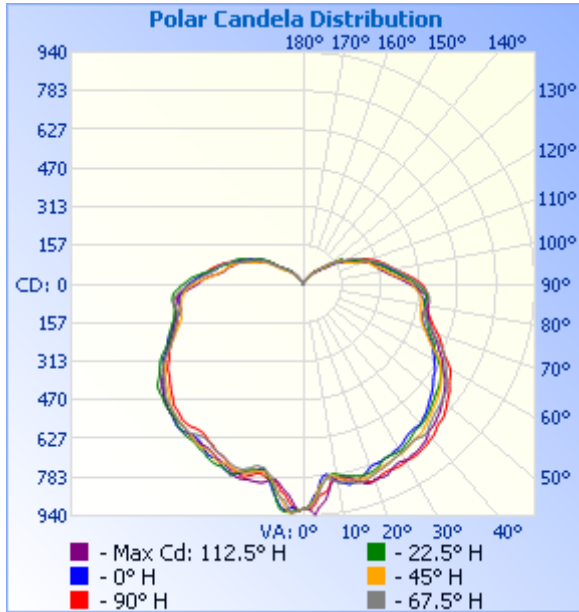
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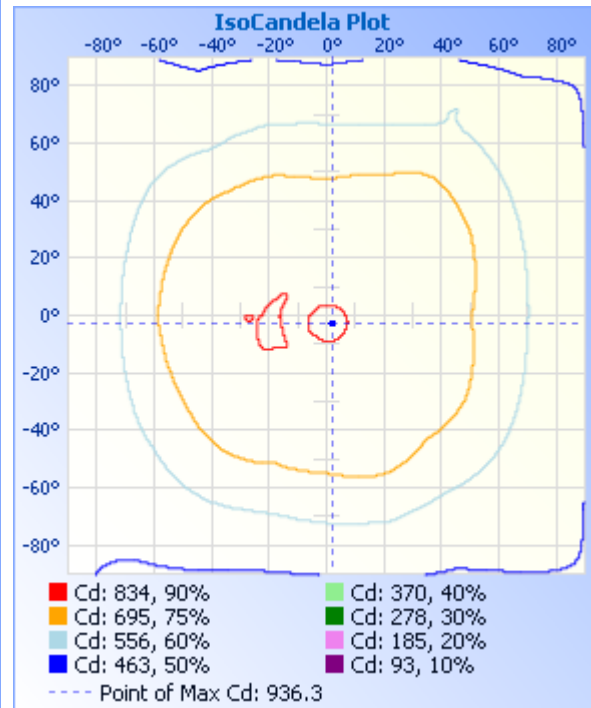
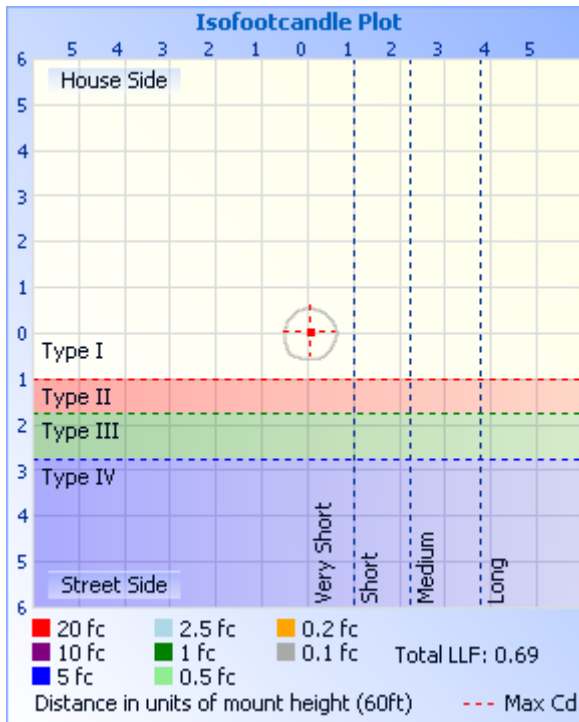
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
10.0ft	9.12 fc	19.0 ft
20.0ft	2.28 fc	38.1 ft
30.0ft	1.01 fc	57.1 ft
40.0ft	0.57 fc	76.2 ft
50.0ft	0.36 fc	95.2 ft
60.0ft	0.25 fc	114.3 ft

■ Horiz. Spread: 87.2°



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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	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912	912
1	907	908	910	913	910	912	913	915	919	917	918	918	918	917	914	907	907
2	887	892	892	902	912	919	912	905	912	918	924	924	911	904	902	889	887
3	859	873	875	884	895	936	917	906	907	923	931	929	898	878	876	863	859
4	843	847	842	863	870	910	914	919	919	926	922	905	880	856	847	840	843
5	801	816	816	829	856	895	901	896	916	924	898	879	856	843	823	811	801
6	783	804	804	807	850	879	883	891	903	915	871	872	847	827	798	799	783
7	777	791	787	792	839	849	861	864	881	885	855	852	824	812	785	790	777
8	786	782	786	799	811	814	834	838	857	845	828	825	805	802	790	783	786
9	799	779	789	808	799	803	809	807	829	815	808	792	803	802	790	787	799
10	812	784	794	817	797	797	796	791	800	801	793	785	802	808	800	790	812
11	821	789	805	821	801	794	791	781	780	783	777	774	798	818	814	799	821
12	825	795	814	821	810	798	793	783	767	773	778	760	789	823	822	811	825
13	834	799	820	824	819	803	800	789	768	776	779	761	786	824	825	828	834
14	832	801	822	828	819	812	807	798	778	779	781	759	792	825	828	834	832
15	828	805	822	834	822	818	815	800	788	780	786	766	801	824	832	834	828
16	821	810	822	838	830	828	816	802	794	785	795	777	809	824	832	831	821
17	817	812	823	837	835	843	819	807	798	791	801	783	818	827	831	827	817
18	811	812	824	835	842	850	825	817	804	796	802	790	817	829	830	823	811
19	801	812	825	831	848	851	823	820	812	806	801	792	813	829	829	819	801
20	791	811	823	826	848	844	814	816	822	819	802	791	808	824	826	816	791
21	787	809	819	821	845	844	803	822	826	826	798	790	802	817	821	811	787
22	786	803	812	817	837	845	804	824	820	820	795	785	794	806	813	804	786
23	786	796	807	815	834	847	804	817	816	812	791	781	785	799	804	801	786
24	784	787	804	811	831	845	802	800	808	808	794	775	776	795	800	800	784
25	782	780	803	808	832	836	799	795	798	812	798	769	772	791	798	797	782
26	780	779	800	804	834	830	797	794	791	812	797	765	767	788	801	793	780
27	778	780	798	801	835	824	797	795	790	810	792	763	765	784	805	787	778
28	774	781	796	797	836	821	799	796	793	807	782	761	759	778	812	780	774

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29	771	782	795	795	835	822	800	795	792	803	778	757	750	773	816	777	771
30	770	782	794	791	832	826	800	793	786	795	777	750	746	769	817	777	770
31	766	780	793	789	831	827	797	789	780	791	777	745	742	768	817	777	766
32	761	775	789	785	831	823	793	785	771	788	778	741	737	769	819	778	761
33	754	771	786	782	832	821	789	781	765	785	777	741	731	770	819	777	754
34	748	766	782	779	831	822	787	775	760	781	776	742	727	770	819	777	748
35	743	761	777	777	828	818	789	771	759	778	771	746	726	769	818	774	743
36	742	755	774	777	825	815	790	766	758	777	766	752	728	768	814	770	742
37	739	749	772	779	823	810	788	761	760	777	761	756	730	766	812	767	739
38	738	747	772	784	820	806	784	758	764	777	759	759	735	762	810	767	738
39	740	746	768	787	815	799	781	757	769	774	756	757	737	756	808	763	740
40	740	743	763	784	812	789	778	756	773	769	754	753	736	754	806	757	740
41	734	741	757	775	809	783	772	757	771	766	750	753	736	753	802	750	734
42	729	739	752	767	802	781	767	758	768	765	748	751	735	752	801	747	729
43	725	734	746	761	794	778	760	757	763	759	746	747	730	752	799	748	725
44	720	730	741	756	790	773	754	748	757	753	744	743	725	751	795	746	720
45	714	726	736	751	788	768	749	739	753	750	740	740	722	749	791	741	714
46	706	719	731	747	786	763	745	734	749	747	736	737	721	748	783	733	706
47	700	714	727	745	782	758	742	731	746	745	732	732	717	746	776	726	700
48	693	709	722	741	774	751	738	726	741	744	725	729	709	741	771	718	693
49	688	705	718	738	768	744	735	719	735	742	717	726	700	737	764	711	688
50	682	700	713	734	760	738	732	714	731	737	709	723	695	733	758	705	682
51	675	696	707	731	752	731	728	706	725	732	703	717	688	726	751	698	675
52	669	693	702	730	746	724	724	700	717	730	698	710	681	720	745	691	669
53	660	690	696	725	740	717	719	696	709	729	693	702	674	713	737	681	660
54	653	685	691	721	735	711	714	692	701	725	686	696	668	708	731	676	653
55	646	678	684	712	724	704	708	687	691	720	681	688	661	699	722	672	646
56	643	674	675	703	716	696	699	682	682	710	674	680	655	692	713	669	643
57	639	668	665	692	708	684	690	675	674	696	667	675	651	681	706	662	639
58	631	660	657	685	703	674	682	668	667	687	659	672	647	668	697	652	631
59	620	647	650	676	698	662	672	659	660	679	653	665	639	660	687	639	620
60	613	636	644	667	691	654	663	651	656	672	647	655	630	652	670	628	613

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61	608	623	633	660	675	647	655	641	651	663	639	642	621	642	656	620	608
62	599	612	619	652	661	637	648	634	642	654	630	630	615	630	640	608	599
63	592	603	598	645	646	625	639	623	627	643	616	616	609	619	630	598	592
64	584	592	585	635	633	614	631	613	616	630	603	603	602	608	620	587	584
65	577	586	571	625	624	605	624	606	610	614	591	592	594	601	613	579	577
66	567	579	559	609	615	596	613	596	603	602	583	584	589	593	605	569	567
67	557	571	550	596	608	585	600	585	597	592	573	575	579	586	598	563	557
68	544	557	540	581	599	576	586	574	590	585	561	566	569	576	589	556	544
69	535	548	533	571	590	564	576	566	583	579	553	560	564	569	584	551	535
70	527	540	522	560	577	556	564	555	574	573	545	553	555	562	575	543	527
71	519	536	515	552	567	547	555	543	564	567	536	548	546	556	569	537	519
72	512	531	507	540	556	542	549	536	556	562	528	544	540	550	563	529	512
73	508	527	503	531	549	536	540	531	547	556	521	538	535	544	559	524	508
74	504	521	499	521	541	530	533	526	538	548	514	531	532	538	558	519	504
75	501	517	497	514	534	527	529	520	530	541	510	525	529	534	558	517	501
76	499	511	493	508	527	523	525	514	521	539	510	522	527	531	558	514	499
77	500	508	491	505	521	519	523	505	513	535	509	520	526	528	558	512	500
78	503	503	489	503	516	516	523	497	508	532	509	522	527	526	558	511	503
79	504	501	487	503	513	512	523	493	507	530	507	524	527	526	557	511	504
80	502	500	485	505	513	513	521	490	508	529	505	527	529	524	552	514	502
81	500	500	485	510	511	515	518	491	508	531	501	529	531	520	548	518	500
82	496	501	484	512	510	516	516	494	509	533	498	530	531	517	542	519	496
83	492	502	484	514	510	513	514	496	509	534	495	528	527	515	534	517	492
84	486	502	482	514	508	507	510	498	506	532	492	523	520	511	521	513	486
85	478	501	475	510	505	499	506	495	502	530	487	514	511	501	510	507	478
86	472	497	469	505	503	488	496	489	497	526	483	506	503	489	500	503	472
87	466	489	462	497	499	474	485	480	489	516	477	495	493	472	488	496	466
88	460	481	455	490	494	462	475	469	480	505	467	482	482	457	479	490	460
89	452	470	448	481	488	447	462	460	474	498	457	472	472	441	468	479	452
90	444	461	444	472	482	435	451	450	465	486	442	459	459	430	460	467	444
91	434	452	436	461	471	420	443	441	455	474	427	447	446	418	449	450	434
92	426	441	422	451	460	408	436	434	445	465	416	437	438	411	439	437	426

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93	416	430	408	441	450	395	426	426	434	457	400	424	428	402	424	426	416
94	405	417	392	428	436	383	417	419	424	442	385	413	417	389	412	411	405
95	398	407	381	417	425	372	410	411	415	425	372	404	405	376	398	402	398
96	391	393	366	406	412	359	398	400	401	412	359	391	399	358	382	394	391
97	384	380	357	398	401	348	383	387	386	397	348	380	393	346	372	386	384
98	375	368	349	389	388	341	371	377	373	382	340	370	387	333	363	375	375
99	367	358	342	379	379	332	359	367	365	372	331	364	381	326	357	367	367
100	357	352	335	369	371	324	349	362	355	362	324	360	373	321	346	358	357
101	351	343	325	361	362	318	345	360	351	353	321	356	365	318	337	350	351
102	345	334	317	354	356	312	343	355	347	346	317	350	357	314	330	343	345
103	336	325	307	345	350	306	338	347	339	337	310	340	347	306	325	335	336
104	328	320	300	338	341	303	332	340	332	324	305	334	338	300	324	328	328
105	316	315	294	327	333	301	322	326	322	315	298	326	330	292	323	316	316
106	305	307	288	316	326	297	309	314	312	306	289	313	318	289	320	304	305
107	294	299	285	307	320	291	297	307	302	302	282	302	307	284	314	291	294
108	282	294	282	299	309	280	282	296	290	299	275	286	292	277	307	282	282
109	274	290	277	291	301	271	269	282	281	293	268	270	274	270	300	274	274
110	263	281	266	281	289	265	262	271	275	288	262	261	263	263	290	264	263
111	254	269	251	272	282	260	252	259	270	280	249	253	253	257	277	255	254
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113	230	238	224	257	263	242	238	247	253	260	224	238	243	232	244	234	230
114	224	228	214	251	254	232	226	234	244	241	214	232	237	216	234	226	224
115	222	218	207	243	242	224	215	220	238	230	207	228	229	205	228	222	222
116	217	210	201	235	232	213	206	212	231	224	203	224	219	196	226	219	217
117	206	203	193	222	218	202	201	209	222	219	198	217	208	194	227	211	206
118	196	201	190	211	205	196	200	206	214	216	191	207	200	194	225	200	196
119	185	192	190	203	195	186	200	202	209	209	186	197	194	189	222	189	185
120	178	188	186	193	191	177	197	195	199	201	177	189	187	183	216	186	178
121	175	189	181	178	187	174	191	188	191	194	165	182	175	179	198	184	175
122	170	186	173	167	183	172	177	176	183	183	156	168	162	176	184	179	170
123	162	183	165	161	178	158	161	162	165	175	144	150	146	168	164	169	162
124	151	169	160	153	161	140	146	146	151	162	132	138	133	157	148	146	151

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125	139	155	151	153	149	126	129	127	140	139	113	128	120	143	136	128	139
126	124	136	141	151	136	118	120	119	119	119	100	120	115	125	126	117	124
127	114	122	128	142	121	112	116	115	111	111	97	117	110	114	117	111	114
128	106	110	112	133	110	102	111	112	111	104	95	106	107	106	105	104	106
129	99	107	101	124	106	101	107	107	109	99	89	98	99	101	97	100	99
130	92	107	95	114	102	98	103	96	97	94	84	91	90	95	95	97	92
131	90	98	96	101	98	88	94	85	91	92	81	84	86	92	96	90	90
132	89	91	95	92	94	81	84	81	86	91	79	80	82	88	93	86	89
133	83	91	89	87	86	71	80	76	80	88	73	82	78	83	90	86	83
134	77	84	81	84	82	69	80	72	79	82	73	76	69	79	89	85	77
135	69	77	70	85	79	66	78	69	80	77	68	67	65	78	80	80	69
136	64	71	68	76	74	62	73	68	76	71	64	63	63	73	74	72	64
137	61	68	65	66	71	59	63	63	71	66	58	63	56	69	67	63	61
138	57	63	61	62	69	53	60	58	58	60	53	55	48	66	63	61	57
139	55	62	56	62	64	45	54	57	57	56	49	50	45	66	57	57	55
140	50	47	48	57	59	41	46	50	52	50	44	49	39	56	51	51	50
141	42	44	46	51	54	39	44	42	44	46	41	42	35	52	46	51	42
142	37	41	40	46	52	32	38	40	41	41	36	38	30	47	41	43	37
143	35	37	38	42	48	28	31	32	35	37	30	31	25	43	38	36	35
144	30	31	31	37	43	24	26	28	29	33	27	27	22	39	34	32	30
145	25	26	26	33	36	22	23	25	26	28	24	23	20	33	30	29	25
146	22	23	24	31	30	19	21	23	23	25	22	21	19	28	26	27	22
147	20	20	21	27	26	18	20	20	20	22	19	19	16	26	24	24	20
148	17	19	19	23	25	15	17	18	19	20	18	17	14	23	21	21	17
149	16	17	18	20	21	13	15	16	17	18	16	15	13	21	18	18	16
150	14	14	16	18	19	12	14	15	15	16	14	13	12	19	16	16	14
151	12	13	13	16	16	11	12	13	13	14	13	12	10	16	14	14	12
152	11	11	12	14	15	9	10	12	12	13	11	11	9	14	13	13	11
153	10	10	11	13	13	8	9	10	10	11	10	9	8	12	12	12	10
154	8	8	9	11	11	7	8	9	9	9	9	8	6	11	11	11	8
155	7	7	8	9	10	6	7	7	8	8	8	7	6	10	9	9	7
156	6	6	7	8	9	5	6	6	7	7	6	5	5	9	8	7	6

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