

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest Highway Cary, IL60013

LED Luminaires

Model name(s): LED-8046M30-A

LED-8046-NW-E40-A

Remark: The two models are the same product with two model names

Representative (Tested) Model: LED-8046M30-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.17,2017

Review By:

Tommy Liang

Manager: Tommy Liang

Note: 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

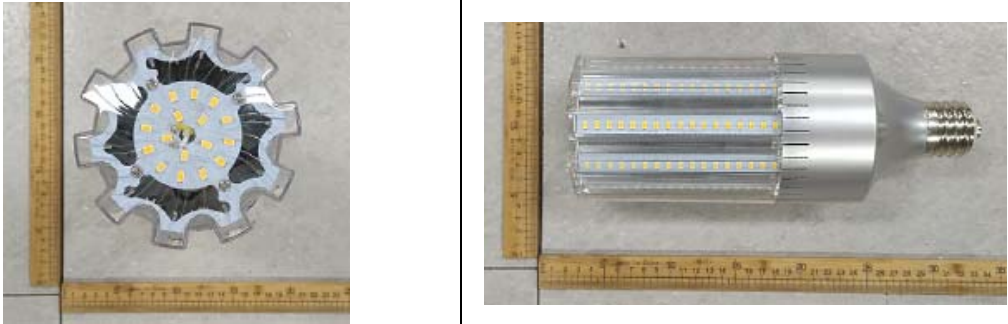
Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

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

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8046M30-A;LED-8046-NW-E40-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	65W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG	
LED Model	SPMWHT541MXXXXXXXXXX	
Sample Number	GZE161214-BG1	
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	Jan 16,2017
Date of Test	Jan 17,2017
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**1) Photometric and Light Distribution Measurement – Goniophotometer Method:**

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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.

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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8046M30-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	120.0	60	0.5636	66.70	0.9862
BG1	277.0	60	0.2405	64.19	0.9635

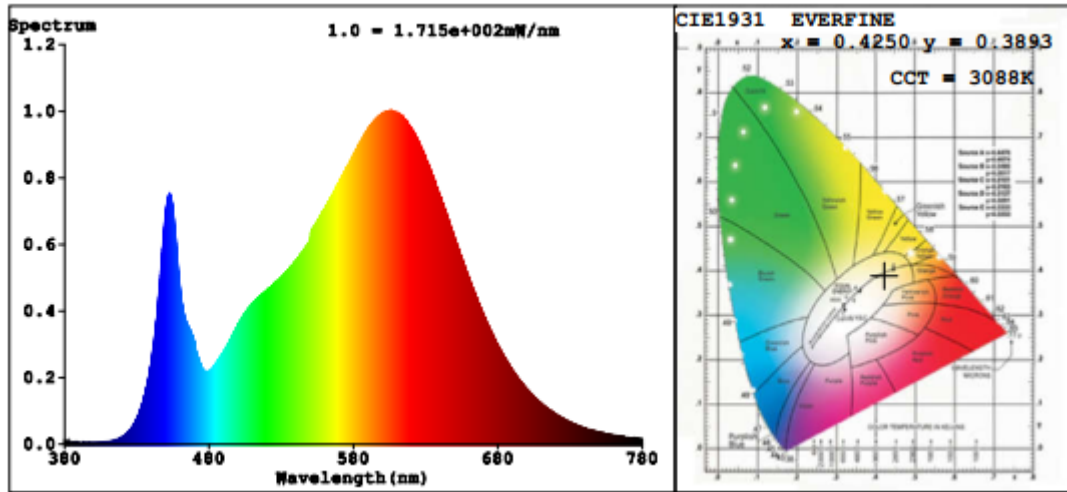
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	20
Frequency (Hz)	60	R2	94	R10	86
CCT (K)	3088	R3	95	R11	82
Duv	-0.0043	R4	82	R12	76
Chromaticity (x, y)	x=0.4250 y=0.3893	R5	85	R13	87
Chromaticity (u', v')	u'=0.2492 v'=0.5136	R6	92	R14	98
Color Rendering Index (CRI)	84.7	R7	83	R15	79
R9	20	R8	63	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	8449.7	8196.5
Luminous Efficacy (lm/W)	126.68	127.69
Beam Angle (°)	279.8	--
Center Beam Candle Power (cd)	306	--

Spectral Power Distribution & Chromaticity Diagram

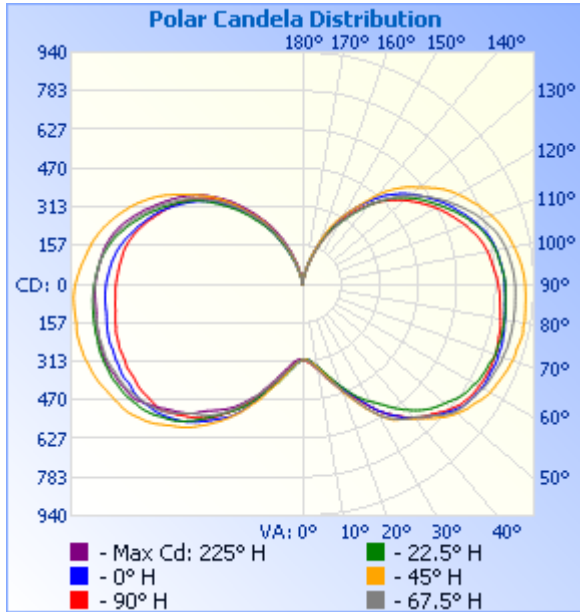


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	395.4	4.7%
0-40	808.5	9.6%
0-60	2,130.4	25.2%
60-90	2,653.1	31.4%
70-100	2,707.2	32%
90-120	2,407.4	28.5%
0-90	4,783.4	56.6%
90-180	3,666.9	43.4%
0-180	8,450.3	100%

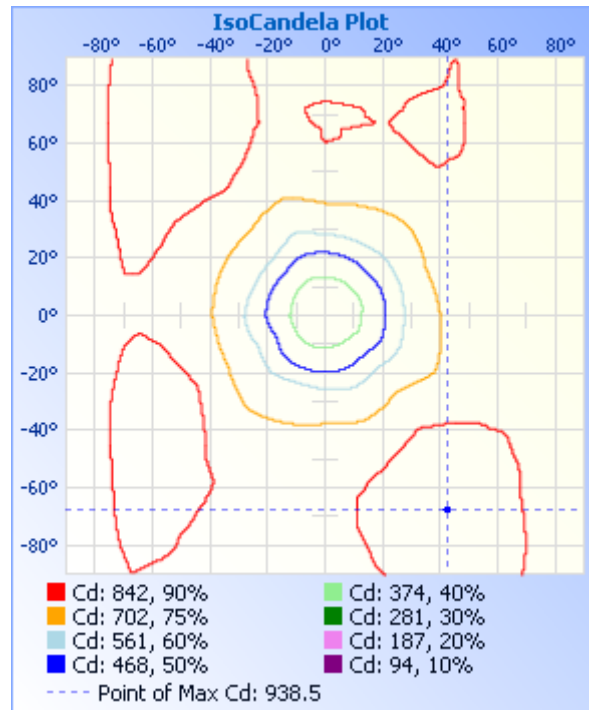
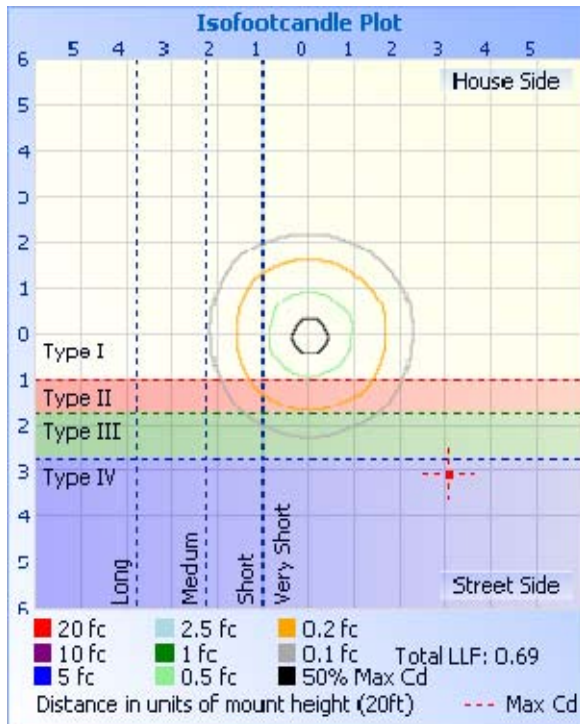
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.6	0.4%	90-100	893.5	10.6%
10-20	115.9	1.4%	100-110	820.3	9.7%
20-30	247.9	2.9%	110-120	693.5	8.2%
30-40	413.1	4.9%	120-130	542.9	6.4%
40-50	585.8	6.9%	130-140	379.7	4.5%
50-60	736.0	8.7%	140-150	219.6	2.6%
60-70	839.4	9.9%	150-160	94.9	1.1%
70-80	898.3	10.6%	160-170	21.3	0.3%
80-90	915.4	10.8%	170-180	1.1	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	1.06 fc	
34.0ft	0.27 fc	
51.0ft	0.12 fc	
68.0ft	0.07 fc	
85.0ft	0.04 fc	
102.0ft	0.03 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	306	306	306	306	306	306	306	306	306	306	306	306	306	306	306	306	306
1	304	305	305	307	309	307	309	309	309	309	308	308	308	307	306	305	304
2	303	305	305	309	312	310	313	312	312	313	311	311	309	307	306	305	303
3	304	305	307	311	314	313	316	318	317	318	315	313	311	308	307	305	304
4	307	307	310	314	317	317	322	322	322	322	320	317	315	312	309	307	307
5	310	311	315	317	320	321	326	329	328	330	325	322	317	315	312	310	310
6	315	316	319	323	325	327	332	334	334	337	332	327	322	319	315	314	315
7	322	320	324	330	331	333	337	340	342	344	339	334	329	325	322	319	322
8	326	326	328	335	337	341	344	348	350	351	345	340	335	332	328	327	326
9	332	332	335	344	344	349	351	354	357	359	354	348	345	338	337	333	332
10	339	338	343	349	350	359	361	363	366	370	367	357	353	345	347	342	339
11	346	346	349	359	360	367	365	370	373	378	377	364	360	349	353	350	346
12	357	353	360	370	367	380	379	379	383	388	388	371	373	362	364	358	357
13	366	362	368	378	379	389	386	389	393	399	397	380	381	371	372	369	366
14	377	371	379	387	391	402	392	400	403	412	410	389	391	380	383	378	377
15	386	380	389	399	398	412	405	406	414	419	422	399	401	394	394	389	386
16	395	391	400	411	410	426	416	420	426	432	431	410	414	405	408	401	395
17	403	399	411	421	420	440	431	437	439	441	446	422	426	418	416	413	403
18	416	412	428	430	432	457	442	448	449	453	459	433	437	428	429	423	416
19	425	424	442	442	444	473	452	461	465	463	476	447	450	442	442	435	425
20	439	437	456	457	458	486	466	474	479	476	492	458	462	452	453	446	439
21	451	446	473	467	468	501	480	490	491	490	505	472	477	467	472	460	451
22	464	459	488	481	478	515	497	504	509	502	519	484	490	478	485	472	464
23	477	470	502	494	488	531	511	524	523	519	531	498	506	492	497	485	477
24	489	485	516	511	498	541	525	545	543	530	549	513	519	507	506	502	489
25	504	496	534	528	511	555	537	561	557	543	563	525	534	519	521	514	504
26	518	510	549	543	523	565	551	582	575	554	580	539	548	536	532	528	518
27	534	519	566	562	540	579	563	597	588	567	592	552	560	550	545	542	534
28	549	530	579	577	553	587	572	616	602	577	606	568	574	564	555	560	549

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29	567	541	595	594	569	595	581	627	615	587	621	580	587	575	570	575	567
30	583	548	610	609	584	603	590	638	624	599	633	593	602	590	580	593	583
31	599	559	623	625	600	610	600	645	635	609	648	607	612	602	590	606	599
32	612	568	640	636	613	622	608	653	644	623	659	617	627	621	599	620	612
33	628	581	653	648	627	632	616	661	656	634	673	629	639	633	607	632	628
34	639	591	664	657	637	647	624	667	666	648	685	638	652	649	617	644	639
35	651	606	671	669	650	659	633	673	678	658	700	649	664	662	625	657	651
36	662	616	678	677	660	676	645	678	687	673	710	656	672	678	635	667	662
37	676	631	684	686	673	689	654	685	699	684	723	663	680	692	643	678	676
38	687	642	694	693	686	707	666	691	710	699	737	671	689	701	655	685	687
39	697	655	702	699	696	725	676	699	718	713	747	678	697	713	668	693	697
40	709	665	712	704	706	740	689	707	729	724	758	686	704	722	683	700	709
41	720	677	720	713	715	759	699	720	737	737	767	693	711	732	693	706	720
42	729	689	731	722	724	772	711	733	746	747	776	704	718	739	705	714	729
43	737	698	744	732	731	787	720	744	751	758	784	715	727	744	713	724	737
44	746	709	755	742	739	798	732	756	758	766	796	729	735	748	722	731	746
45	753	717	768	753	744	809	744	765	765	774	805	739	742	753	730	740	753
46	764	726	778	766	753	817	755	775	772	780	817	750	750	756	737	748	764
47	771	733	790	777	762	823	766	780	778	787	828	760	758	760	745	759	771
48	780	740	798	788	772	832	775	789	783	797	836	767	767	764	755	769	780
49	788	746	809	798	779	838	783	793	789	805	846	776	772	770	766	781	788
50	798	753	816	807	787	846	789	795	792	812	852	783	774	775	774	792	798
51	804	759	825	812	793	855	797	796	796	817	859	790	774	781	784	799	804
52	813	767	831	817	801	861	803	798	799	824	867	796	775	783	792	805	813
53	819	775	839	819	807	866	807	801	804	828	874	800	777	785	802	809	819
54	823	783	843	824	810	871	811	805	808	831	881	805	778	787	810	811	823
55	826	789	848	827	815	876	814	810	810	836	884	809	780	789	821	812	826
56	830	795	854	830	818	879	817	815	813	840	888	814	784	790	827	813	830
57	834	798	863	833	822	883	820	820	814	845	890	819	785	791	832	816	834
58	835	801	869	837	825	887	823	825	814	848	894	824	786	793	834	821	835
59	839	803	875	840	827	888	824	825	812	851	898	829	785	795	836	825	839
60	841	808	880	846	827	891	825	825	811	853	901	832	784	795	838	830	841

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61	843	813	882	849	829	892	830	828	813	855	904	835	784	796	842	834	843
62	844	816	885	852	831	892	834	831	818	857	907	836	784	797	845	836	844
63	844	818	887	854	832	892	838	834	820	860	913	839	786	798	847	836	844
64	843	820	891	856	833	892	841	835	820	863	917	840	789	797	848	836	843
65	843	822	893	857	835	895	842	836	818	863	920	842	789	797	850	836	843
66	844	823	897	858	835	896	842	837	817	863	923	845	787	801	854	837	844
67	847	824	900	861	835	892	842	836	817	864	926	847	786	804	856	839	847
68	848	827	903	864	834	889	842	836	818	866	927	850	786	804	858	840	848
69	848	833	904	866	833	887	842	837	818	866	928	852	786	803	859	841	848
70	846	834	907	866	833	886	840	839	817	866	930	853	787	802	859	841	846
71	845	833	909	867	834	885	841	840	816	867	934	852	788	802	859	840	845
72	846	832	909	869	832	884	841	842	817	867	936	852	786	802	858	839	846
73	847	833	908	871	829	883	839	843	819	866	936	852	784	801	858	839	847
74	845	835	910	870	827	883	838	842	818	865	936	852	784	799	857	837	845
75	842	836	913	870	825	881	838	841	817	863	938	854	784	800	856	836	842
76	841	835	914	870	825	877	837	841	816	863	937	855	783	800	856	837	841
77	841	834	917	870	824	876	837	840	814	864	939	854	778	799	853	837	841
78	838	834	916	870	822	874	836	840	813	862	938	854	777	798	852	835	838
79	835	834	912	869	820	870	835	839	811	861	935	852	775	796	851	834	835
80	833	832	914	870	816	867	834	838	809	861	933	850	773	797	852	830	833
81	833	831	914	869	813	863	833	838	807	860	933	850	770	795	849	829	833
82	830	831	912	868	811	862	833	837	806	859	932	851	767	794	846	826	830
83	829	830	911	868	809	860	833	838	806	858	932	851	767	794	845	824	829
84	827	827	910	868	807	858	833	838	806	857	933	851	766	794	845	822	827
85	826	827	909	867	804	856	833	837	805	856	933	851	764	794	845	821	826
86	826	825	908	866	803	853	832	835	805	855	932	851	763	795	844	819	826
87	824	824	907	865	802	850	831	833	803	853	931	850	762	794	845	818	824
88	822	824	906	865	800	847	830	832	802	850	929	848	761	793	844	817	822
89	822	824	905	865	797	844	829	829	800	849	927	846	760	793	843	816	822
90	821	823	904	863	794	841	826	827	799	846	924	845	759	792	842	814	821
91	820	821	902	861	792	837	825	823	796	843	919	843	757	791	841	812	820
92	819	820	900	860	789	834	821	821	793	841	915	840	755	791	839	809	819

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93	817	817	898	858	785	829	819	817	791	838	910	837	753	790	836	806	817
94	814	814	895	856	782	825	816	814	787	835	906	834	751	789	833	803	814
95	812	811	892	853	778	821	814	811	785	832	901	831	749	786	831	799	812
96	809	807	889	850	775	817	811	809	782	830	896	828	748	785	828	796	809
97	806	805	884	847	773	812	807	805	780	825	891	825	745	783	827	792	806
98	804	803	881	845	769	807	805	801	775	820	886	822	743	781	824	790	804
99	802	800	876	842	767	802	801	797	771	816	882	818	741	778	821	786	802
100	799	797	873	838	763	796	797	793	767	810	876	815	740	776	819	783	799
101	796	793	868	834	758	791	791	789	761	805	872	810	738	773	815	779	796
102	793	788	864	830	754	785	786	784	756	798	867	805	734	770	811	775	793
103	788	783	859	826	749	780	779	778	750	793	860	799	730	768	806	771	788
104	785	777	853	820	744	773	772	773	745	784	854	793	726	764	801	766	785
105	779	771	849	815	737	766	766	766	737	777	847	785	721	760	795	763	779
106	773	765	843	807	731	758	757	761	729	768	840	776	716	755	788	756	773
107	765	758	837	798	724	749	750	753	723	758	830	769	710	751	782	749	765
108	757	752	830	790	716	742	741	747	716	751	823	759	705	745	773	744	757
109	751	743	824	781	709	734	735	740	710	742	814	752	698	739	766	737	751
110	742	734	815	774	701	726	724	734	702	732	806	743	693	734	756	730	742
111	734	726	807	766	695	717	715	726	695	722	796	734	686	728	747	721	734
112	726	718	800	757	685	709	705	718	687	713	787	724	679	722	739	715	726
113	720	708	791	746	678	699	697	708	681	704	777	717	673	717	728	707	720
114	710	697	784	735	671	692	688	701	673	696	768	705	664	709	718	697	710
115	700	690	773	726	662	682	679	693	666	684	757	696	658	703	711	691	700
116	693	680	764	715	655	675	668	684	658	675	748	686	650	698	699	682	693
117	685	669	756	706	647	667	661	676	650	664	736	678	645	692	688	675	685
118	678	660	747	694	640	659	651	667	640	656	724	668	638	686	680	665	678
119	669	650	738	684	630	650	641	656	632	645	714	659	631	680	670	657	669
120	661	642	728	674	621	643	632	647	622	634	702	648	624	673	661	649	661
121	651	632	720	663	613	633	622	635	614	626	690	637	618	665	651	639	651
122	641	622	710	652	603	623	613	626	603	615	675	628	611	659	641	631	641
123	633	613	699	640	595	614	602	614	594	606	663	617	605	650	633	620	633
124	623	603	689	630	585	604	593	603	586	594	647	608	597	643	623	612	623

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125	615	596	676	618	577	595	582	593	575	584	634	596	591	633	614	602	615
126	606	585	664	606	567	585	573	581	567	572	617	586	581	623	604	591	606
127	596	577	649	596	557	576	561	571	556	562	605	573	571	615	595	583	596
128	588	567	638	583	549	565	551	559	547	549	589	562	563	605	584	574	588
129	578	556	624	572	539	557	539	549	535	538	574	548	552	596	572	565	578
130	569	547	610	557	531	546	528	536	525	524	562	538	543	585	563	555	569
131	559	535	600	546	521	537	514	527	513	511	548	524	532	574	550	543	559
132	547	525	587	531	510	527	499	514	503	495	535	511	523	565	539	534	547
133	538	513	577	516	501	516	487	503	490	480	521	499	510	553	526	522	538
134	525	499	563	503	490	506	473	488	475	467	508	485	499	543	511	513	525
135	515	488	549	488	480	494	461	473	463	451	492	473	483	530	499	502	515
136	502	472	536	475	468	484	446	461	448	438	479	457	471	517	484	492	502
137	492	460	520	460	458	470	435	446	435	423	462	445	456	500	472	480	492
138	477	445	506	444	445	459	420	433	420	410	448	429	444	482	457	466	477
139	463	432	488	432	431	445	408	417	408	394	430	416	429	468	445	456	463
140	449	416	473	416	421	434	392	404	393	381	416	399	414	449	429	442	449
141	434	400	452	403	408	421	375	387	380	365	397	387	401	433	413	431	434
142	422	387	431	387	396	407	362	372	365	353	379	372	386	411	399	416	422
143	407	370	414	374	382	395	346	354	353	337	365	357	373	395	383	400	407
144	394	357	395	358	371	380	334	340	338	321	351	345	357	377	370	387	394
145	379	342	380	342	356	366	319	323	321	309	339	329	345	362	354	371	379
146	363	327	364	329	340	348	307	310	308	295	324	317	329	351	342	358	363
147	350	315	352	313	327	332	291	295	291	284	312	302	317	336	326	342	350
148	334	300	337	300	311	312	277	281	278	269	298	290	302	324	311	329	334
149	320	287	322	285	298	296	260	268	260	256	287	275	290	309	299	312	320
150	304	277	312	272	280	277	246	252	246	240	271	263	274	297	284	299	304
151	291	265	298	257	266	262	232	238	228	227	256	248	260	283	273	282	291
152	275	254	286	241	248	242	218	221	214	210	237	237	243	265	258	266	275
153	257	241	270	228	231	227	208	209	195	194	219	222	229	249	245	253	257
154	243	226	255	213	218	211	193	195	182	181	206	209	211	229	230	237	243
155	227	212	236	201	201	199	181	183	166	167	189	192	195	216	213	223	227
156	212	194	218	185	188	183	168	168	153	155	177	177	181	200	200	207	212

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157	195	180	203	169	172	167	156	153	141	141	162	167	165	184	184	190	195
158	178	163	183	156	157	153	141	142	126	128	149	154	154	170	168	177	178
159	166	147	164	141	145	134	129	125	114	113	134	141	140	156	155	163	166
160	152	137	151	127	128	121	109	112	100	104	121	124	127	144	141	152	152
161	140	126	137	114	116	107	93	97	89	91	106	113	113	129	130	136	140
162	124	114	125	98	103	95	79	86	76	80	93	98	100	113	114	121	124
163	109	101	109	88	92	80	62	69	65	69	82	86	89	103	99	108	109
164	98	87	94	77	82	67	52	55	56	57	70	76	78	87	88	96	98
165	87	75	83	63	69	57	44	48	45	49	60	66	66	77	76	83	87
166	73	66	73	55	55	47	43	42	38	40	49	56	56	67	66	73	73
167	63	57	61	46	49	39	37	35	30	33	41	46	48	55	56	61	63
168	54	47	51	37	38	30	27	28	22	25	33	38	39	45	46	51	54
169	44	38	43	32	31	25	19	20	16	20	25	30	32	38	40	43	44
170	37	31	35	25	25	19	12	12	11	15	20	24	26	30	31	34	37
171	29	25	27	20	20	14	8	7	7	11	15	18	20	23	24	27	29
172	23	19	20	15	14	11	5	4	5	8	10	14	15	18	19	21	23
173	17	14	14	11	10	8	4	3	3	6	6	10	12	13	14	15	17
174	12	11	10	8	6	6	3	2	3	4	5	7	8	8	10	11	12
175	9	8	7	6	4	4	2	2	2	3	3	4	6	6	7	7	9
176	5	5	4	4	3	2	2	2	2	2	2	3	4	4	4	5	5
177	4	4	3	3	2	2	2	2	2	2	2	2	2	3	3	3	4
178	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
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	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06

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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