

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-8046M40-A
LED-8046-CW-E40-A

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

Representative (Tested) Model: LED-8046M40-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.22,2017

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-8046M40-A;LED-8046-CW-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	4000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-J1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



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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

<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	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8046M40-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	120.0	60	0.5688	67.05	0.9823
J1	277.0	60	0.2447	65.02	0.9593

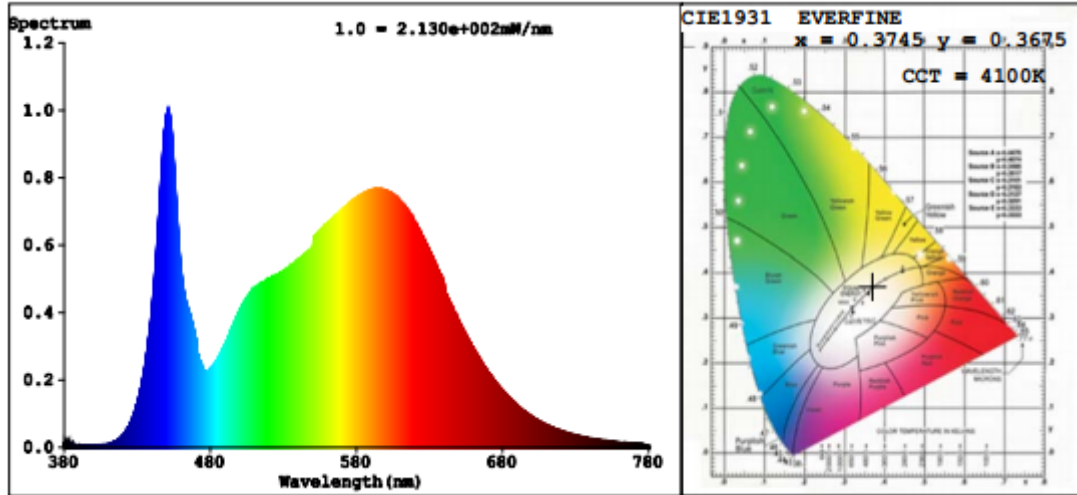
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
		R1	R2	R3	R4
Test Voltage (V)	120.0	83	91	95	83
Frequency (Hz)	60	R9	R10	R11	R12
CCT (K)	4100	12	78	82	66
Duv	-0.0026	R4	83	R12	66
Chromaticity (x, y)	x=0.3745 y=0.3675	R5	83	R13	85
Chromaticity (u', v')	u'=0.2249 v'=0.4966	R6	87	R14	98
Color Rendering Index (CRI)	84.1	R7	86	R15	77
R9	12	R8	66	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	9587.4	9503.2
Luminous Efficacy (lm/W)	142.99	146.16
Beam Angle (°)	277.3	--
Center Beam Candle Power (cd)	332	--

Spectral Power Distribution & Chromaticity Diagram

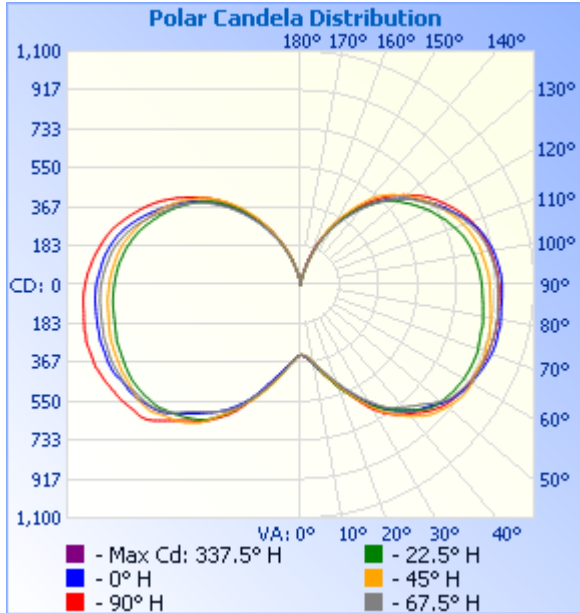


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	442.8	4.6%
0-40	909.1	9.5%
0-60	2,400.8	25%
60-90	2,998.5	31.3%
70-100	3,063.0	31.9%
90-120	2,738.7	28.6%
0-90	5,399.4	56.3%
90-180	4,188.6	43.7%
0-180	9,588.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.8	0.4%	90-100	1,012.5	10.6%
10-20	129.8	1.4%	100-110	933.1	9.7%
20-30	278.1	2.9%	110-120	793.1	8.3%
30-40	466.4	4.9%	120-130	622.9	6.5%
40-50	660.7	6.9%	130-140	437.3	4.6%
50-60	831.0	8.7%	140-150	254.9	2.7%
60-70	948.1	9.9%	150-160	110.2	1.1%
70-80	1,015.3	10.6%	160-170	23.8	0.2%
80-90	1,035.2	10.8%	170-180	0.9	0%

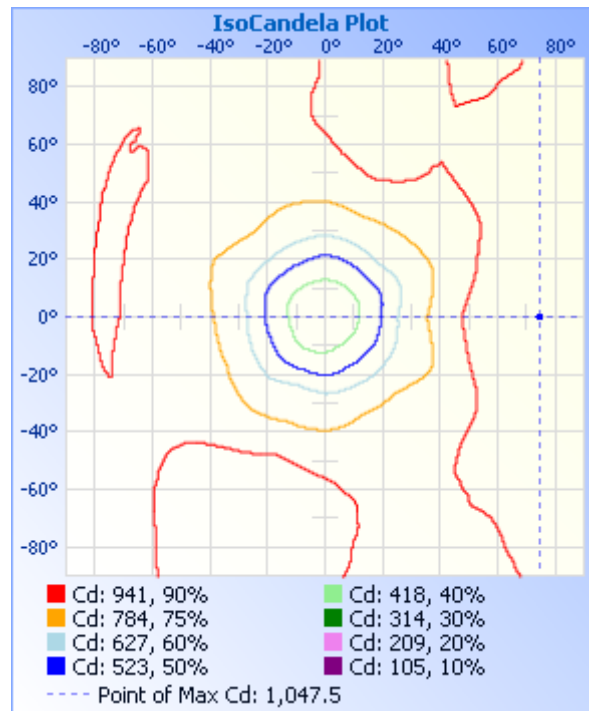
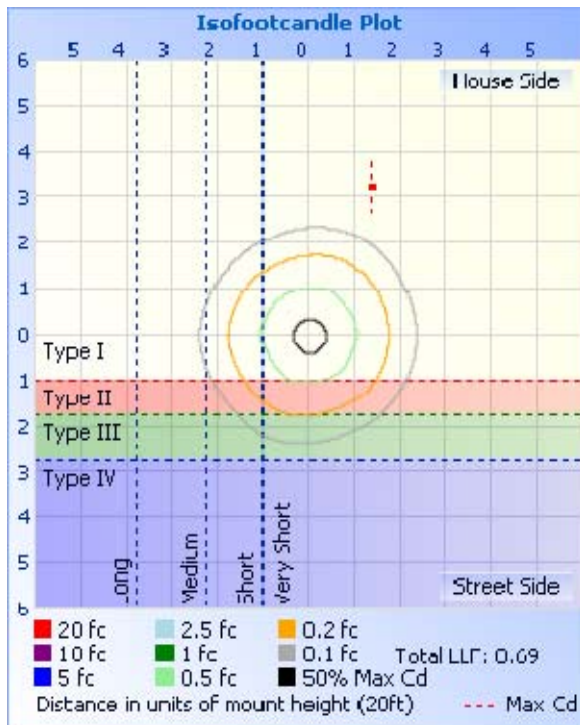
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	1.15 fc	34.0 ft	18.1 ft
34.0ft	0.29 fc	68.0 ft	36.1 ft
51.0ft	0.13 fc	102.0 ft	54.2 ft
68.0ft	0.07 fc	136.0 ft	72.3 ft
85.0ft	0.05 fc	170.0 ft	90.4 ft
102.0ft	0.03 fc	204.0 ft	108.4 ft

■ Vert. Spread: 90.0°
■ Horiz. Spread: 56.0°



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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	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332
1	333	332	332	332	334	330	331	332	334	335	335	335	335	334	335	334	333
2	335	333	332	332	335	333	334	336	338	339	341	338	338	338	339	339	335
3	338	334	334	335	338	337	338	340	344	344	347	343	343	341	343	341	338
4	340	338	336	338	342	342	344	347	351	352	354	350	349	347	346	343	340
5	343	343	340	342	347	348	351	354	357	361	362	359	357	354	350	347	343
6	350	348	346	347	354	355	357	362	364	368	368	366	366	360	357	352	350
7	360	358	352	355	358	362	362	369	370	375	377	373	374	367	364	357	360
8	366	367	360	363	367	369	368	375	381	385	386	384	382	375	374	366	366
9	376	374	368	371	375	377	376	385	390	397	395	396	391	382	383	375	376
10	388	384	378	376	382	388	388	389	398	409	408	406	400	389	393	383	388
11	394	393	388	385	391	398	393	403	409	421	422	417	414	400	404	395	394
12	406	403	397	395	407	414	403	409	421	432	434	429	426	410	414	406	406
13	412	416	407	405	414	421	418	423	429	445	447	439	438	423	430	419	412
14	422	426	419	416	430	436	424	436	443	461	460	452	451	436	439	428	422
15	437	441	432	425	443	452	437	446	451	473	476	462	463	445	455	439	437
16	447	452	448	435	454	462	448	459	464	488	490	476	477	454	473	457	447
17	459	466	460	446	464	472	467	481	480	498	501	492	490	470	483	469	459
18	468	478	474	463	479	488	486	502	492	514	517	506	508	485	499	481	468
19	485	496	487	474	493	503	495	517	509	530	532	522	521	496	514	497	485
20	499	510	502	486	506	518	511	532	524	541	549	537	540	512	535	510	499
21	511	525	517	500	521	533	524	547	544	557	562	554	560	524	549	529	511
22	523	539	534	512	534	542	540	567	560	570	579	565	574	539	567	541	523
23	538	550	547	530	550	553	556	584	575	586	594	583	591	552	586	558	538
24	548	566	564	545	564	566	568	606	593	599	606	598	606	567	599	572	548
25	564	580	578	561	584	581	583	628	607	617	622	615	629	579	613	590	564
26	577	594	595	572	601	595	596	642	623	636	636	633	646	595	627	604	577
27	597	607	610	588	622	613	611	663	636	652	653	645	667	608	644	622	597
28	612	625	629	602	638	629	622	677	651	672	668	659	681	623	657	638	612

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29	630	639	644	619	659	650	636	693	663	687	687	670	700	636	672	659	630
30	643	656	663	632	674	668	647	705	678	703	700	684	713	652	682	676	643
31	661	668	680	647	691	685	662	716	691	718	717	694	727	665	695	694	661
32	676	681	698	661	705	705	675	725	701	735	731	704	742	681	706	708	676
33	693	691	712	678	721	719	685	735	714	748	749	712	755	693	719	726	693
34	706	704	725	691	732	734	698	745	725	764	769	721	771	707	731	740	706
35	721	714	739	706	745	745	709	753	737	778	785	732	784	720	744	756	721
36	732	728	752	717	756	760	725	764	746	787	802	742	798	735	755	769	732
37	744	738	768	728	768	772	737	772	759	798	813	751	808	746	768	784	744
38	753	752	782	735	776	786	754	783	769	804	827	759	817	758	780	795	753
39	765	763	797	745	786	799	766	793	783	813	836	771	825	768	795	812	765
40	776	773	807	753	793	809	780	808	795	820	848	781	835	779	807	827	776
41	786	782	821	763	803	820	794	821	805	827	856	794	849	791	820	836	786
42	799	794	831	771	812	828	803	839	818	835	865	806	861	799	831	848	799
43	807	807	846	783	824	838	814	858	831	842	873	822	876	809	845	857	807
44	815	818	855	792	834	844	822	872	846	849	877	839	890	815	856	869	815
45	821	830	866	799	845	851	831	889	857	856	883	853	908	821	863	879	821
46	829	839	873	811	853	857	841	901	871	863	889	866	922	829	869	891	829
47	838	847	880	821	862	863	854	915	883	868	898	876	939	839	873	899	838
48	848	853	885	836	869	870	869	925	891	875	906	886	955	848	880	913	848
49	858	857	894	846	877	875	882	934	900	883	917	893	965	859	885	923	858
50	869	860	899	859	884	880	898	943	906	887	925	902	974	867	894	939	869
51	877	865	906	870	890	883	909	952	912	891	928	907	979	876	901	950	877
52	886	867	911	880	895	888	920	958	917	892	932	913	982	885	910	961	886
53	894	871	915	887	899	895	928	965	925	895	934	918	984	895	916	968	894
54	898	874	920	893	900	901	936	973	931	899	936	921	989	905	921	975	898
55	904	878	923	896	902	906	943	979	936	902	937	923	994	912	924	982	904
56	910	879	927	901	906	908	949	988	942	904	937	926	998	920	927	987	910
57	915	881	929	905	910	911	953	998	946	907	935	931	1004	925	930	995	915
58	919	884	931	910	916	915	957	1004	949	908	934	936	1007	929	932	1000	919
59	924	886	931	914	919	918	961	1010	951	911	933	942	1011	932	933	1004	924
60	928	888	930	918	922	921	964	1014	952	912	932	947	1013	938	936	1008	928

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61	931	889	929	922	923	923	967	1017	954	913	933	949	1016	944	937	1013	931
62	934	889	927	928	924	926	969	1020	958	912	933	952	1020	951	938	1017	934
63	937	891	926	932	924	927	972	1023	964	912	934	953	1024	955	939	1020	937
64	940	891	925	934	927	926	977	1026	969	911	936	955	1028	958	941	1023	940
65	944	892	925	935	931	926	982	1027	974	911	935	957	1030	960	942	1027	944
66	947	892	927	935	934	928	987	1028	975	909	935	958	1033	963	944	1030	947
67	949	892	928	934	937	930	988	1029	977	908	933	960	1036	964	945	1032	949
68	952	892	930	935	939	930	987	1030	978	908	933	960	1041	963	945	1035	952
69	954	892	928	936	939	930	987	1031	978	907	933	961	1042	963	945	1037	954
70	956	890	925	938	940	930	989	1033	977	906	933	960	1040	964	945	1038	956
71	959	887	923	940	941	931	992	1034	977	906	932	959	1041	964	947	1039	959
72	960	885	921	942	941	930	992	1037	978	906	931	959	1042	962	949	1039	960
73	961	884	922	942	942	930	991	1039	978	907	931	959	1043	960	948	1040	961
74	960	881	925	941	944	929	992	1039	981	903	931	960	1044	961	946	1043	960
75	960	879	923	943	943	930	993	1037	980	900	930	960	1046	963	945	1046	960
76	958	878	921	943	945	931	992	1037	979	898	927	958	1043	963	943	1047	958
77	959	880	917	942	945	928	990	1035	976	896	925	955	1039	960	942	1046	959
78	962	878	913	941	944	928	987	1034	977	895	924	955	1041	960	941	1048	962
79	960	876	913	939	944	925	986	1032	977	893	921	954	1038	957	940	1047	960
80	957	872	910	943	942	925	984	1029	975	892	919	953	1036	956	938	1045	957
81	956	871	907	941	942	924	981	1029	974	891	917	952	1034	952	936	1044	956
82	954	867	905	937	940	922	979	1028	973	891	916	951	1032	950	934	1044	954
83	952	866	903	936	939	921	979	1028	973	890	915	950	1030	948	932	1044	952
84	951	864	901	934	938	921	978	1029	972	889	914	949	1029	948	932	1045	951
85	952	862	899	934	938	921	978	1029	972	888	913	949	1028	947	931	1044	952
86	951	860	896	933	937	921	978	1027	971	886	911	948	1027	946	930	1043	951
87	951	858	894	933	937	921	977	1024	970	885	909	947	1025	945	929	1043	951
88	951	856	893	932	937	920	976	1022	968	882	906	945	1023	943	928	1043	951
89	950	855	892	931	936	920	974	1019	966	881	905	943	1019	940	926	1042	950
90	950	854	891	931	935	920	972	1016	963	879	902	941	1016	937	925	1042	950
91	948	852	890	929	933	920	970	1012	961	876	900	938	1013	935	923	1039	948
92	946	850	888	928	932	918	968	1009	956	874	898	934	1009	932	920	1038	946

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93	945	848	887	925	929	917	964	1005	952	871	895	931	1006	928	919	1036	945
94	942	846	884	923	927	915	961	1001	948	869	892	927	1000	924	916	1033	942
95	939	844	880	919	924	912	958	998	945	866	889	924	995	921	914	1029	939
96	936	841	877	916	920	910	954	992	942	863	885	919	990	918	912	1025	936
97	933	838	875	912	917	908	951	988	938	859	882	914	986	914	910	1022	933
98	929	836	872	910	915	906	946	981	935	855	879	911	980	911	907	1017	929
99	926	833	869	906	911	903	943	974	930	850	876	906	974	907	905	1013	926
100	922	830	866	903	909	902	937	967	924	847	872	903	968	903	901	1008	922
101	918	826	864	900	905	899	931	962	920	843	868	897	961	899	898	1004	918
102	913	822	862	895	901	895	926	955	913	839	863	891	956	893	893	999	913
103	907	817	858	891	898	890	919	948	907	833	859	884	949	888	889	993	907
104	902	813	852	885	893	886	913	942	900	827	852	875	944	881	883	988	902
105	896	809	848	879	889	878	904	935	893	822	845	868	936	874	877	981	896
106	891	803	843	873	883	872	897	929	884	816	839	859	929	867	871	975	891
107	882	799	838	866	877	866	888	920	877	810	832	852	919	859	864	966	882
108	874	791	833	859	873	857	880	912	866	803	826	841	911	850	857	959	874
109	864	784	826	851	867	851	870	903	856	796	820	833	899	840	847	950	864
110	854	777	820	844	861	842	863	895	847	788	814	822	888	832	838	940	854
111	846	768	814	835	853	834	853	884	835	781	806	812	879	820	831	933	846
112	834	762	808	828	847	824	840	877	826	772	799	800	867	810	820	923	834
113	825	755	800	816	838	817	831	864	812	763	790	788	857	800	810	914	825
114	813	749	791	805	829	807	820	856	803	757	783	780	846	789	800	902	813
115	802	740	785	797	821	799	812	846	790	747	775	768	836	780	792	890	802
116	792	731	775	784	812	789	801	838	780	741	767	758	825	770	781	881	792
117	780	724	770	773	803	781	791	824	767	732	758	744	814	763	768	870	780
118	773	715	761	761	792	770	782	813	758	724	750	735	802	751	758	861	773
119	761	709	752	749	783	761	774	805	745	714	744	723	792	743	746	849	761
120	749	700	744	739	773	750	761	792	735	707	733	715	778	731	737	839	749
121	740	692	735	728	763	739	751	780	722	697	724	704	767	718	725	826	740
122	727	682	726	720	755	730	739	766	712	689	714	695	752	709	716	811	727
123	718	671	717	708	743	719	729	755	700	677	706	683	740	698	705	800	718
124	706	663	710	696	733	709	716	738	687	669	695	674	725	688	693	784	706

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125	695	653	699	687	720	697	703	725	677	658	687	663	713	677	683	770	695
126	684	646	688	675	710	686	693	710	663	649	675	653	697	664	671	751	684
127	671	636	681	667	697	673	681	698	652	638	665	641	683	654	661	732	671
128	660	626	672	654	682	663	670	684	638	629	653	627	671	640	647	718	660
129	646	618	664	644	670	648	656	672	626	618	643	616	655	629	635	700	646
130	635	609	653	630	656	636	646	656	610	607	632	601	641	614	621	686	635
131	621	602	640	615	646	621	632	641	597	597	621	589	624	599	608	668	621
132	606	591	631	603	631	608	621	629	579	585	608	572	613	587	597	649	606
133	594	580	619	588	615	592	606	615	565	574	595	558	597	571	581	634	594
134	578	570	610	574	603	579	593	602	548	560	584	540	584	559	568	617	578
135	566	558	599	558	587	561	577	585	535	549	568	528	567	542	552	601	566
136	550	546	586	541	574	543	564	571	519	533	555	511	552	529	536	582	550
137	532	531	576	528	558	529	547	556	505	519	538	497	534	512	522	563	532
138	518	520	562	511	541	511	532	542	488	502	524	480	519	495	505	548	518
139	500	504	550	498	527	494	514	523	474	489	507	466	500	481	491	527	500
140	486	487	533	480	510	475	499	508	455	471	493	447	485	464	474	510	486
141	468	473	518	467	495	460	480	489	441	457	475	432	466	450	456	489	468
142	453	457	498	449	476	445	465	474	422	441	460	414	450	432	441	471	453
143	434	444	477	430	462	427	444	455	407	426	441	399	432	418	424	449	434
144	417	427	461	415	443	412	429	439	389	408	424	381	417	401	410	429	417
145	403	411	439	396	423	395	410	420	375	392	406	367	398	384	392	414	403
146	387	396	423	382	409	381	395	404	357	373	390	350	383	371	378	396	387
147	373	379	402	365	391	364	377	388	343	358	370	336	366	353	361	382	373
148	356	365	385	349	378	349	362	368	324	340	354	320	352	339	344	364	356
149	339	347	367	334	360	331	344	351	308	326	332	305	332	321	330	350	339
150	326	332	346	315	345	317	330	329	287	310	315	287	317	304	312	333	326
151	309	314	330	299	326	300	311	312	273	294	294	272	299	289	297	314	309
152	294	299	312	281	306	287	295	291	257	274	277	256	284	269	277	299	294
153	276	280	297	267	288	270	274	274	245	258	254	242	265	253	261	280	276
154	261	259	275	248	268	256	258	254	227	238	238	223	245	234	243	266	261
155	241	241	251	230	253	238	239	240	213	222	218	204	231	215	225	247	241
156	222	221	224	216	235	222	225	221	196	205	203	191	212	200	210	228	222

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157	208	206	202	199	221	204	207	203	181	190	187	174	198	182	193	213	208
158	191	185	185	177	203	188	193	188	162	175	176	161	181	169	176	195	191
159	173	165	162	162	184	169	175	168	145	160	155	142	167	153	162	180	173
160	157	144	141	141	171	151	159	152	134	141	137	129	151	137	144	163	157
161	138	120	123	127	151	140	142	134	118	123	123	113	134	124	131	144	138
162	124	102	103	112	132	126	128	119	104	110	107	99	120	110	111	128	124
163	107	86	90	97	119	111	117	106	88	96	97	85	104	95	98	112	107
164	90	70	81	88	104	96	100	94	79	85	83	73	90	80	85	97	90
165	77	58	68	76	92	84	89	77	68	70	71	59	69	67	74	85	77
166	61	50	62	67	76	72	75	63	56	60	58	45	49	58	61	67	61
167	48	39	51	55	62	58	67	54	44	49	48	37	36	46	50	53	48
168	33	31	37	41	50	50	53	42	37	38	38	31	24	38	39	38	33
169	20	22	29	30	39	38	42	33	28	32	29	26	17	30	31	25	20
170	15	12	18	19	27	30	33	25	23	24	23	19	10	21	24	19	15
171	15	8	10	12	18	19	24	18	18	18	16	12	7	13	17	15	15
172	11	7	7	9	13	14	17	14	13	13	12	8	6	9	13	13	11
173	8	6	4	6	12	10	12	10	9	9	8	6	5	7	8	12	8
174	6	5	3	5	7	9	9	7	7	6	5	5	3	5	5	7	6
175	4	3	4	5	4	8	7	5	4	4	4	4	3	3	4	4	4
176	3	3	3	3	3	5	4	3	3	3	3	3	2	3	3	3	3
177	2	2	2	2	3	3	3	3	3	2	2	2	2	2	3	2	2
178	2	2	2	2	2	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-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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

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