NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest Highway Cary, IL 60013

LED Lamp

Model name(s): LED-8036M57C-A

Representative (Tested) Model: LED-8036M57C-A

Model Different :N/A

Test & Report By:

Jack Luo

Engineer: Jack Luo

Date: May.09,2016

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.

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	May.09,2016
Test Report No.	GZE160347-L2
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8036M57C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	--	98.49	W
Input Current	--	0.4754	A
Input Voltage (ac)	--	220.0	V
Power Factor	--	0.9417	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	11015	lm
Initial Lumen Efficacy	--	111.84	lm/w
Correlated color temperature / CCT	5737	--	K
Color rendering index / CRI	85.0	--	
R9 Value	14	--	
Duv	0.0022	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	2943	cd
Beam angle (if applicable)		108.4	°
Zonal lumens in the 0°-60° zone		65.7	%
Zonal lumens in the 60°-90° zone		20.5	%
Zonal lumens in the 90°-120° zone		10.7	%
Zonal lumens in the 120°-180° zone		3.2	%

Test Specifications:	
Date of Receipt	: Apr.01,2016
Date of Test	: May.03,2016
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution 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 220 Volts, 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.

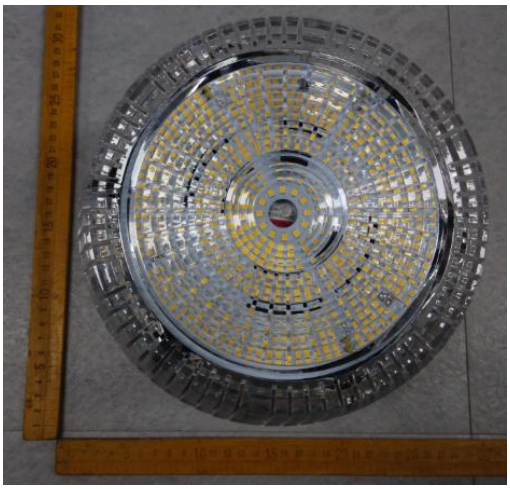
2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric 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 220 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	N/A
Model Number	LED-8036M57C-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	220~347 Vac, 50/60Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	5700K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-L2(5700K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2016-05-03	**Test Ambient:**	25.2 °C
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	LED-8036M57C-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	220.0	60	0.4754	98.49	0.9417	15.16
-L2	347.0	60	0.3138	98.28	0.9025	17.22

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Color Rendering Index (CRI)	85.0
R9	14
CCT (K)	5737
Chromaticity (x, y)	x=0.3272 y=0.3408
Chromaticity (u', v')	u'=0.2034 v'=0.4766
Duv	0.0022

Special Color Rendering Indices			
R1	84	R9	14
R2	94	R10	84
R3	95	R11	81
R4	81	R12	63
R5	84	R13	88
R6	89	R14	98
R7	85	R15	79
R8	68	--	--

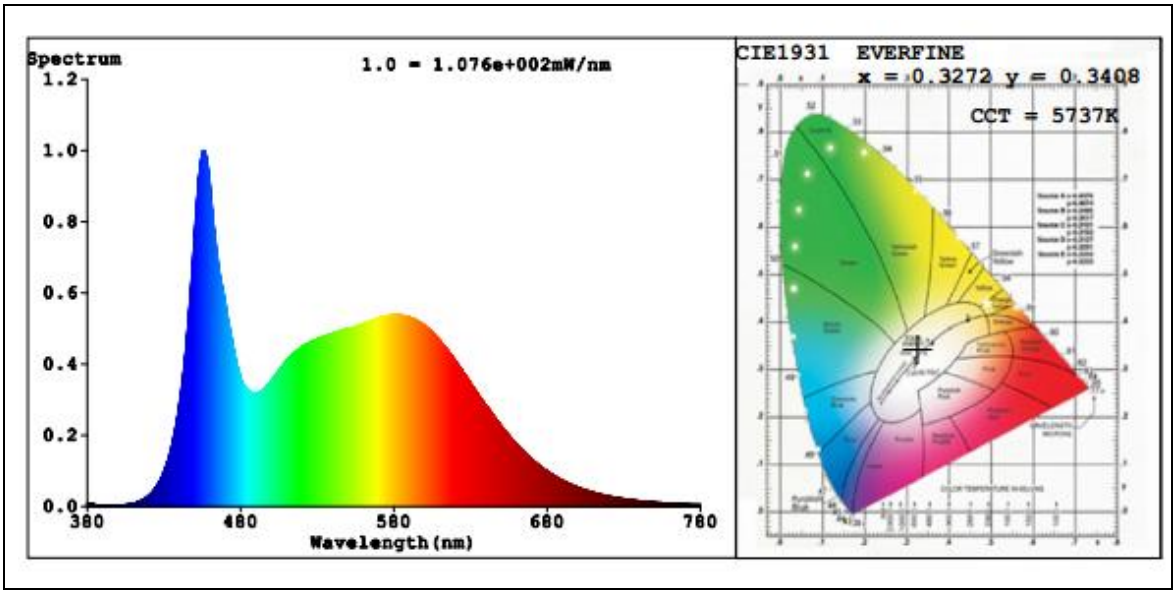
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Total Luminous (lm)	11015
Luminous Efficacy (lm/W)	111.84
Beam Angle°	108.4
Center Beam Candle Power (cd)	2943

Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	347.0
Frequency (Hz)	60
Total Luminous (lm)	10984
Luminous Efficacy (lm/W)	111.76

Spectral Power Distribution & Chromaticity Diagram



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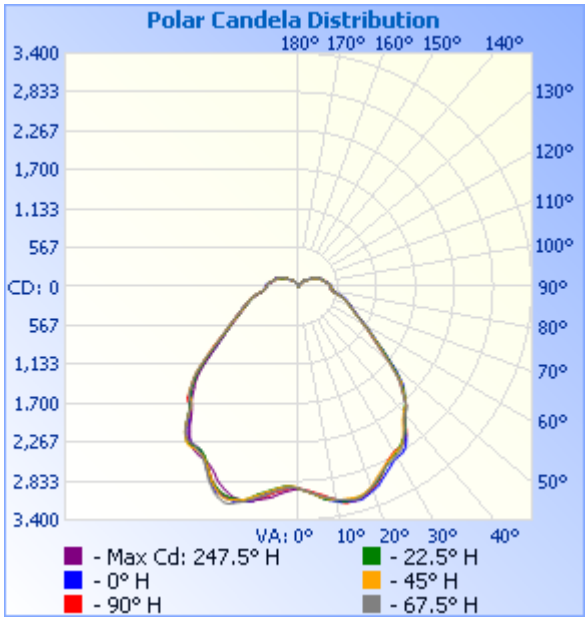
Zonal Lumen Tabulation

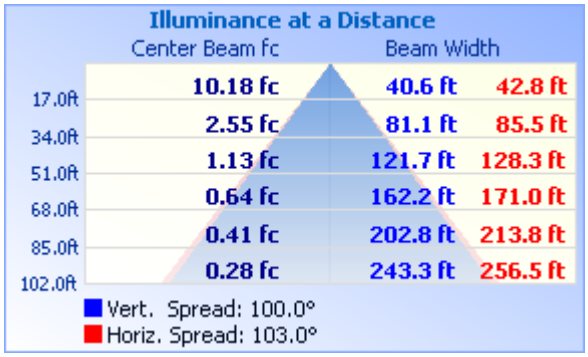
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,580.7	23.4%
0-40	4,268.6	38.8%
0-60	7,231.6	65.7%
60-90	2,256.4	20.5%
70-100	1,792.5	16.3%
90-120	1,177.8	10.7%
0-90	9,488.0	86.1%
90-180	1,526.2	13.9%
0-180	11,014.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	290.4	2.6%	90-100	487.4	4.4%
10-20	908.2	8.2%	100-110	393.2	3.6%
20-30	1,382.1	12.5%	110-120	297.2	2.7%
30-40	1,687.9	15.3%	120-130	178.0	1.6%
40-50	1,678.0	15.2%	130-140	105.1	1%
50-60	1,285.1	11.7%	140-150	45.9	0.4%
60-70	951.3	8.6%	150-160	14.6	0.1%
70-80	751.6	6.8%	160-170	3.7	0%
80-90	553.5	5.0%	170-180	1.0	0%

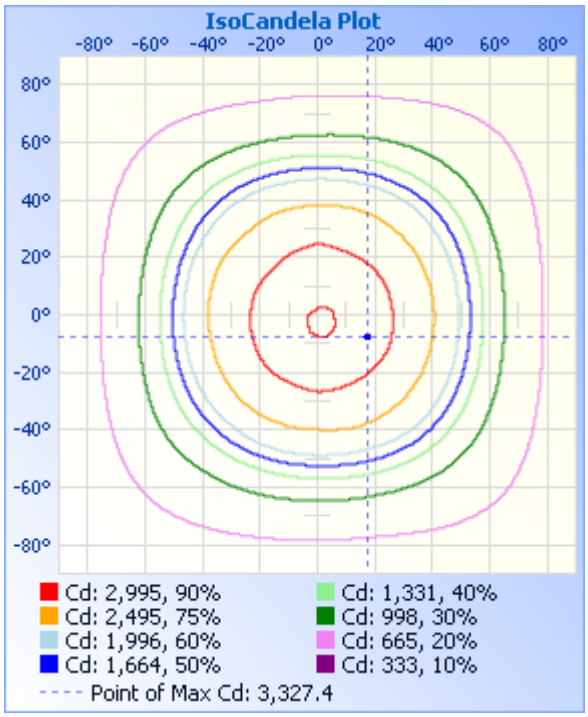
Photometric Data



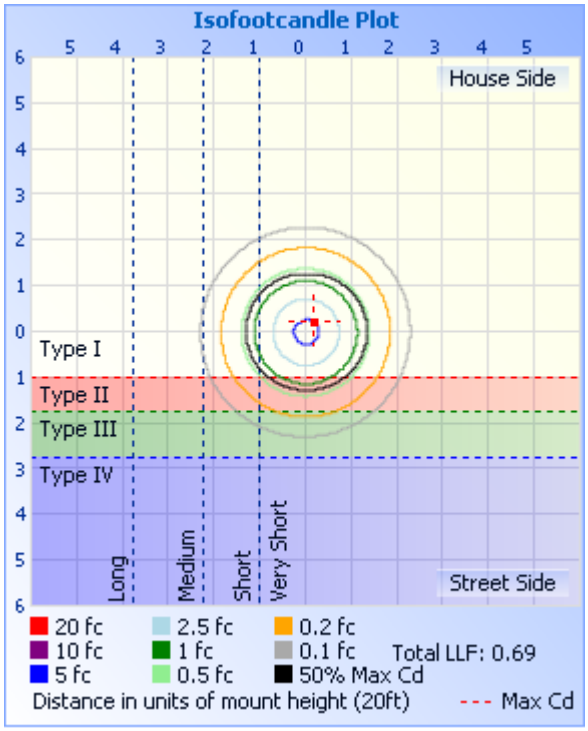
Illuminance Plots



ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943	2943
1	2961	2959	2963	2964	2951	2943	2946	2941	2931	2925	2918	2928	2930	2939	2955	2952	2961
2	2974	2985	2980	2975	2968	2956	2942	2929	2925	2910	2915	2925	2934	2948	2963	2968	2974
3	3002	2996	3007	3000	2982	2966	2955	2939	2918	2915	2917	2931	2948	2961	2981	2981	3002
4	3020	3024	3021	3021	3003	2989	2970	2946	2928	2918	2924	2952	2964	2972	2991	3002	3020
5	3045	3056	3052	3037	3022	3002	2990	2957	2944	2935	2944	2964	2986	2991	3005	3025	3045
6	3083	3088	3082	3065	3045	3027	3006	2982	2962	2950	2958	2987	3002	3009	3024	3050	3083
7	3109	3118	3098	3087	3066	3056	3039	3008	2990	2974	2987	3015	3030	3040	3055	3087	3109
8	3138	3130	3118	3102	3099	3083	3061	3032	3018	3002	3011	3040	3062	3068	3070	3108	3138
9	3153	3143	3139	3125	3121	3105	3086	3056	3053	3024	3034	3077	3101	3101	3098	3124	3153
10	3167	3163	3152	3145	3150	3145	3116	3086	3086	3053	3072	3106	3122	3125	3115	3146	3167
11	3197	3172	3163	3164	3187	3180	3162	3131	3133	3080	3095	3131	3147	3161	3140	3162	3197
12	3204	3194	3168	3177	3215	3201	3200	3175	3185	3118	3126	3164	3169	3187	3161	3190	3204
13	3211	3200	3171	3189	3226	3216	3221	3226	3216	3164	3164	3191	3200	3205	3189	3200	3211
14	3221	3190	3177	3206	3220	3225	3245	3246	3232	3198	3191	3226	3217	3210	3213	3204	3221
15	3225	3188	3179	3208	3224	3237	3262	3259	3237	3215	3218	3247	3236	3208	3218	3219	3225
16	3233	3188	3185	3213	3217	3225	3278	3272	3251	3220	3234	3268	3241	3213	3219	3218	3233
17	3226	3181	3169	3194	3212	3216	3273	3261	3266	3228	3246	3302	3250	3221	3212	3213	3226
18	3204	3163	3148	3167	3187	3193	3257	3247	3262	3233	3262	3322	3250	3222	3206	3197	3204
19	3185	3141	3127	3139	3161	3174	3242	3231	3255	3224	3264	3327	3240	3213	3189	3169	3185
20	3160	3116	3093	3105	3134	3155	3221	3209	3245	3214	3258	3308	3228	3191	3168	3148	3160
21	3145	3088	3056	3078	3107	3135	3179	3175	3234	3196	3237	3284	3202	3170	3132	3116	3145
22	3117	3060	3016	3041	3074	3092	3137	3142	3222	3165	3194	3257	3179	3147	3099	3087	3117
23	3074	3021	2979	3004	3036	3050	3094	3109	3174	3133	3151	3205	3140	3105	3060	3049	3074
24	3043	2983	2945	2970	2992	3004	3047	3059	3126	3102	3108	3153	3097	3066	3023	2994	3043
25	3006	2945	2912	2934	2939	2958	2993	3000	3079	3053	3050	3101	3036	3013	2980	2954	3006
26	2974	2903	2882	2912	2890	2908	2945	2945	3019	2991	2994	3034	2980	2979	2945	2920	2974
27	2943	2872	2856	2894	2850	2863	2896	2891	2960	2930	2936	2972	2925	2934	2912	2895	2943
28	2907	2848	2840	2878	2826	2826	2855	2849	2897	2870	2887	2915	2880	2899	2890	2879	2907

29	2883	2829	2816	2862	2799	2800	2818	2819	2845	2824	2849	2870	2840	2867	2852	2864	2883
30	2868	2813	2792	2840	2781	2782	2788	2793	2806	2794	2821	2838	2813	2850	2822	2857	2868
31	2865	2785	2789	2832	2768	2767	2772	2789	2780	2775	2815	2815	2790	2823	2794	2849	2865
32	2855	2764	2781	2809	2768	2767	2771	2796	2767	2770	2806	2792	2770	2804	2780	2834	2855
33	2828	2738	2754	2773	2760	2762	2779	2801	2760	2777	2806	2770	2760	2794	2768	2819	2828
34	2793	2701	2712	2733	2746	2738	2783	2809	2755	2785	2812	2760	2758	2782	2766	2785	2793
35	2733	2669	2655	2673	2715	2697	2774	2796	2745	2786	2808	2760	2762	2762	2741	2749	2733
36	2661	2632	2594	2623	2663	2643	2734	2763	2713	2774	2783	2750	2752	2724	2705	2700	2661
37	2585	2586	2527	2574	2600	2583	2672	2706	2670	2739	2739	2727	2722	2665	2650	2635	2585
38	2508	2527	2463	2513	2520	2516	2585	2622	2607	2689	2692	2681	2667	2599	2579	2579	2508
39	2443	2452	2423	2450	2452	2438	2489	2523	2531	2616	2622	2612	2607	2536	2511	2501	2443
40	2389	2397	2379	2405	2391	2380	2404	2429	2455	2527	2524	2523	2514	2466	2442	2429	2389
41	2361	2355	2350	2392	2361	2362	2350	2372	2389	2442	2422	2431	2435	2405	2385	2374	2361
42	2337	2319	2335	2353	2338	2346	2315	2338	2352	2368	2333	2349	2355	2354	2357	2325	2337
43	2277	2284	2282	2277	2284	2300	2286	2318	2316	2319	2289	2304	2320	2335	2344	2292	2277
44	2217	2224	2218	2193	2204	2254	2236	2293	2271	2274	2267	2287	2316	2328	2299	2237	2217
45	2168	2172	2143	2125	2137	2171	2152	2228	2229	2230	2250	2261	2290	2279	2203	2172	2168
46	2128	2111	2091	2072	2076	2078	2059	2157	2179	2181	2226	2208	2207	2184	2109	2110	2128
47	2068	2033	2039	1998	2012	2000	2000	2071	2116	2114	2150	2151	2130	2096	2080	2070	2068
48	1979	1960	1932	1914	1930	1926	1942	2016	2046	2042	2078	2083	2075	2034	2039	2001	1979
49	1894	1867	1820	1813	1835	1841	1865	1943	1977	1980	2030	2019	2013	1976	1959	1928	1894
50	1795	1778	1740	1728	1745	1761	1779	1853	1875	1898	1945	1944	1928	1909	1865	1839	1795
51	1700	1687	1646	1627	1645	1672	1694	1755	1767	1806	1852	1854	1825	1812	1770	1746	1700
52	1619	1607	1568	1545	1543	1575	1599	1659	1673	1716	1748	1759	1736	1728	1669	1644	1619
53	1538	1526	1489	1464	1472	1490	1501	1560	1575	1628	1664	1666	1647	1635	1590	1565	1538
54	1458	1446	1434	1396	1404	1423	1425	1477	1490	1543	1584	1564	1575	1556	1510	1485	1458
55	1388	1379	1369	1336	1336	1358	1364	1404	1426	1460	1491	1475	1502	1476	1431	1411	1388
56	1327	1312	1306	1284	1280	1302	1295	1332	1360	1387	1417	1408	1421	1408	1364	1345	1327
57	1275	1262	1252	1236	1232	1251	1239	1266	1301	1322	1345	1354	1352	1341	1308	1290	1275
58	1228	1203	1196	1188	1189	1201	1190	1211	1254	1261	1282	1295	1284	1285	1255	1248	1228
59	1176	1155	1148	1137	1137	1156	1146	1168	1204	1204	1228	1244	1222	1238	1205	1198	1176
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61	1073	1058	1054	1047	1053	1081	1076	1091	1118	1123	1132	1147	1131	1147	1122	1100	1073
62	1032	1016	1010	1008	1022	1044	1041	1061	1082	1079	1080	1097	1091	1100	1079	1060	1032
63	996	973	967	967	985	1013	1006	1033	1045	1036	1044	1058	1054	1056	1040	1021	996
64	955	936	931	934	948	973	968	997	1010	1001	1013	1023	1026	1017	1002	981	955
65	923	907	905	906	916	938	937	960	975	965	981	995	992	981	968	949	923
66	895	879	880	879	886	904	910	923	941	933	944	958	954	951	941	922	895
67	871	852	853	852	858	883	888	899	909	905	905	924	922	922	914	892	871
68	841	828	827	827	836	860	864	881	890	880	881	897	892	893	886	863	841
69	822	809	809	813	815	831	841	859	870	857	863	877	868	870	864	842	822
70	809	788	788	793	792	805	814	830	842	832	840	857	845	848	841	824	809
71	785	768	765	772	775	785	794	802	810	803	817	830	823	823	817	805	785
72	764	750	745	755	757	765	776	783	783	779	791	804	801	798	797	784	764
73	745	730	727	732	739	745	759	768	761	759	774	779	781	776	774	762	745
74	727	702	702	708	711	723	742	752	746	737	756	759	762	753	755	743	727
75	710	681	682	684	690	698	719	734	732	717	738	738	741	736	736	719	710
76	688	659	655	657	666	675	696	716	716	700	720	717	721	715	710	696	688
77	664	635	630	627	638	650	675	694	692	678	693	695	694	695	686	671	664
78	632	608	602	599	609	622	647	666	666	656	671	670	670	670	663	644	632
79	602	580	574	571	579	594	615	631	638	634	646	648	644	644	635	617	602
80	574	551	549	546	550	565	582	596	605	606	618	618	613	617	605	587	574
81	549	527	530	524	524	542	553	567	574	574	587	587	583	591	575	561	549
82	529	513	516	508	507	525	533	545	546	545	560	558	552	562	549	537	529
83	517	505	506	494	495	513	523	530	527	525	537	534	527	535	530	521	517
84	510	498	498	484	487	507	520	520	513	510	520	515	509	515	518	509	510
85	507	493	492	476	480	502	519	514	505	501	508	502	496	504	509	498	507
86	502	486	484	468	473	497	513	507	501	493	501	491	489	497	505	488	502
87	495	476	474	459	465	488	502	498	495	484	491	480	482	494	499	478	495
88	487	466	465	454	457	478	488	486	490	474	481	469	476	486	492	470	487
89	477	458	462	456	450	473	475	476	484	464	473	459	469	482	483	463	477
90	475	462	465	461	451	479	468	471	477	454	465	452	461	477	472	458	475
91	476	466	466	464	452	477	468	471	478	452	461	452	457	479	470	462	476
92	475	467	463	465	453	473	466	470	474	456	461	460	460	481	472	464	475

93	472	464	461	463	450	468	465	467	470	460	460	463	461	478	466	462	472
94	466	457	458	456	447	464	462	462	466	460	457	461	455	469	455	462	466
95	457	447	450	447	441	459	455	457	462	455	453	454	449	460	448	456	457
96	448	433	436	432	433	452	444	449	456	447	447	448	442	454	442	447	448
97	435	424	425	418	423	445	433	443	447	436	439	442	436	446	436	434	435
98	422	416	414	408	412	437	424	431	433	428	428	432	431	438	429	420	422
99	412	405	405	401	404	428	413	421	421	420	421	423	421	429	420	405	412
100	406	396	398	393	401	417	403	409	410	410	412	410	411	422	407	393	406
101	396	388	388	387	397	405	389	399	401	399	406	397	402	420	394	386	396
102	383	382	379	380	394	400	382	389	390	391	398	388	389	412	380	380	383
103	375	379	369	375	388	400	382	381	381	383	387	381	379	400	371	373	375
104	372	377	363	369	380	397	383	378	376	378	376	374	375	391	368	369	372
105	367	371	356	360	371	389	383	377	373	373	365	366	373	386	371	367	367
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115	304	292	295	299	295	295	308	307	299	287	305	305	310	297	308	304	304
116	294	280	281	288	283	281	302	298	290	274	294	297	299	295	297	299	294
117	283	272	272	281	273	268	290	294	278	267	284	291	288	286	285	291	283
118	275	264	264	271	261	259	279	282	266	261	272	281	275	273	274	283	275
119	266	253	254	261	247	252	267	272	259	254	267	273	265	262	263	275	266
120	252	239	240	247	235	239	256	263	252	245	258	264	251	252	250	264	252
121	238	228	227	232	222	227	245	252	239	236	247	254	237	242	239	254	238
122	225	219	213	219	212	215	231	240	227	228	235	245	227	231	230	239	225
123	213	209	200	206	206	204	219	224	214	221	223	229	216	217	218	225	213
124	202	196	186	193	198	196	209	213	201	212	211	214	208	205	212	214	202

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126	177	178	166	172	179	177	191	193	179	195	186	190	198	188	193	186	177
127	168	173	160	165	172	170	184	181	173	185	173	179	186	181	182	175	168
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143	81	76	75	73	75	78	83	83	88	89	90	89	87	87	86	84	81
144	75	71	68	66	69	71	76	79	81	82	84	84	81	80	80	79	75
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148	54	50	49	48	49	51	54	56	59	59	61	61	59	60	58	56	54
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157	25	22	22	22	21	21	22	23	25	25	26	28	27	27	26	26	25
158	23	21	20	20	19	20	20	21	23	23	24	26	25	25	24	24	23
159	21	19	19	19	18	18	19	19	21	22	22	24	23	23	22	22	21
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162	17	14	14	14	14	14	14	14	16	16	17	18	18	18	17	17	17
163	15	13	13	13	12	12	13	13	14	15	15	16	16	16	15	15	15
164	13	12	11	11	11	11	11	11	12	13	13	15	14	15	13	13	13
165	11	11	11	11	10	10	10	10	11	11	12	13	12	13	12	11	11
166	11	11	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11
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179	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
180	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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