

## **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-8032M57C-A

Representative (Tested) Model: LED-8032M57C-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-J2
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8032M57C-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
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Input Wattage	--	141.6	W
Input Current	--	0.6617	A
Input Voltage (ac)	--	220.0	V
Power Factor	--	0.9727	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	16923	lm
Initial Lumen Efficacy	--	119.51	lm/w
Correlated color temperature / CCT	5669	--	K
Color rendering index / CRI	84.7	--	
R9 Value	12	--	
Duv	0.0022	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)	-----	6055	cd
Beam angle (if applicable)		105.9	°
Zonal lumens in the 0°-60° zone		78.5	%
Zonal lumens in the 60°-90° zone		18.1	%
Zonal lumens in the 90°-120° zone		2.5	%
Zonal lumens in the 120°-180° zone		1	%

Laboratory: Standard-Tech Co. Ltd Testing Center

NVLAP CODE: 201011-0

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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	<p>IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</p> <p>ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</p> <p>CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</p> <p>CIE 15-2004 Technical Report Colorimetry</p> <p>IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</p> <p>IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</p>
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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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 220 Volts, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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 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-8032M57C-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	220~347 Vac, 50/60Hz
Nominal Power	140W
Rated Initial Lamp Lumen	--
Declared CCT	5700K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-J2(5700K)

## Photo



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<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
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<b>Test date</b>	2016-05-03	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	LED-8032M57C-A		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	220.0	60	0.6617	141.6	0.9727	15.39
-J2	347.0	60	0.4411	140.8	0.9198	18.06

### Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.7
R9	12
CCT (K)	5669
Chromaticity (x, y)	x=0.3286 y=0.3419
Chromaticity (u', v')	u'=0.2039 v'=0.4774
Duv	0.0022

Special Color Rendering Indices			
R1	84	R9	12
R2	94	R10	84
R3	94	R11	80
R4	81	R12	63
R5	84	R13	88
R6	89	R14	98
R7	85	R15	79
R8	67	--	--

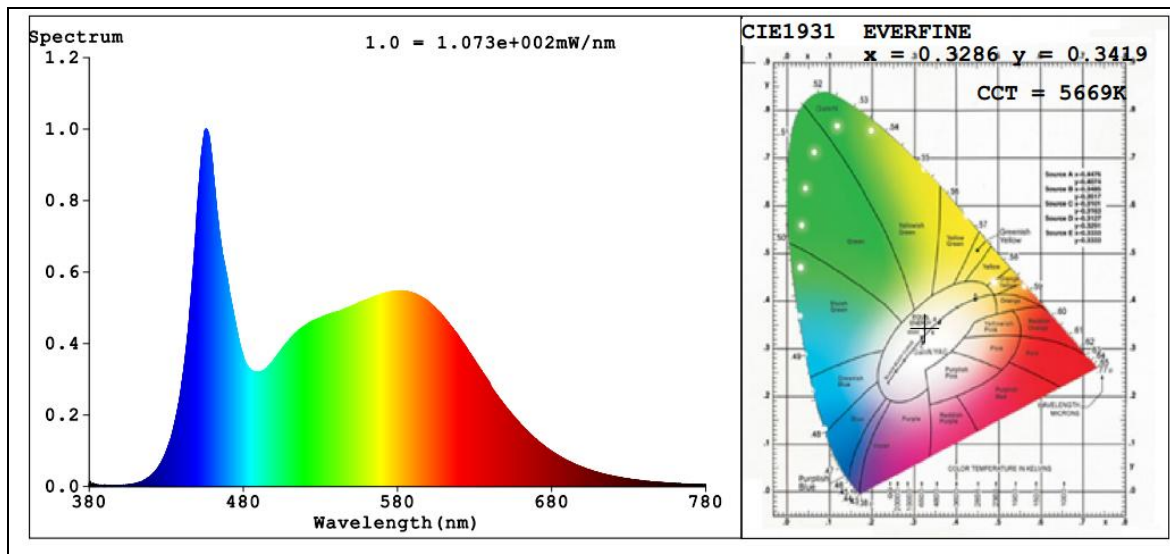
### Goniophotometer Method :

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Total Luminous (lm)	16923
Luminous Efficacy (lm/W)	119.51
Beam Angle°	105.9
Center Beam Candle Power (cd)	6055

### Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	347.0
Frequency (Hz)	60
Total Luminous (lm)	16933
Luminous Efficacy (lm/W)	120.26

**Spectral Power Distribution & Chromaticity Diagram**



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## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,719.4	27.9%
0-40	7,664.2	45.3%
0-60	13,276.1	78.5%
60-90	3,055.2	18.1%
70-100	1,440.3	8.5%
90-120	422.3	2.5%
0-90	16,331.3	96.5%
90-180	590.0	3.5%
0-180	16,921.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	564.9	3.3%	90-100	145.6	0.9%
10-20	1,665.5	9.8%	100-110	159.1	0.9%
20-30	2,489.0	14.7%	110-120	117.6	0.7%
30-40	2,944.8	17.4%	120-130	78.8	0.5%
40-50	3,049.3	18.0%	130-140	47.5	0.3%
50-60	2,562.6	15.1%	140-150	24.3	0.1%
60-70	1,760.5	10.4%	150-160	10.7	0.1%
70-80	948.6	5.6%	160-170	4.6	0%
80-90	346.1	2.0%	170-180	1.8	0%

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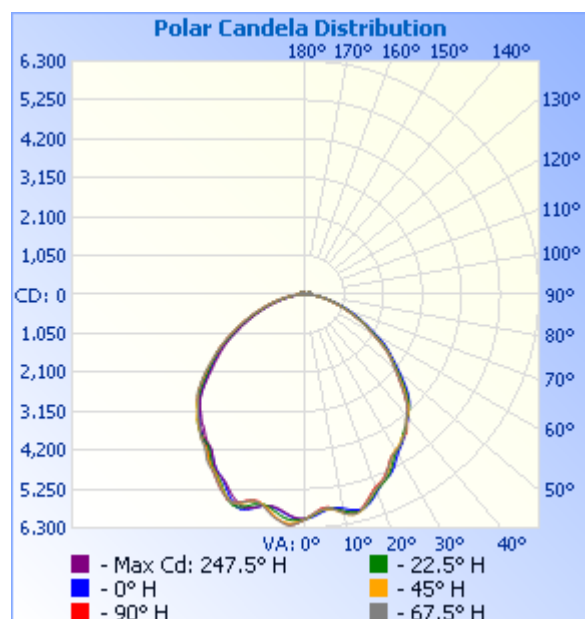
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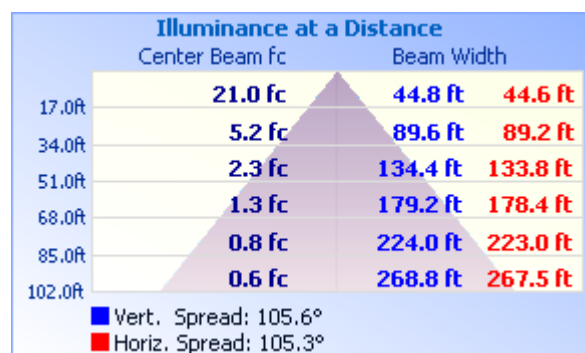
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## Photometric Data



## Illuminance Plots



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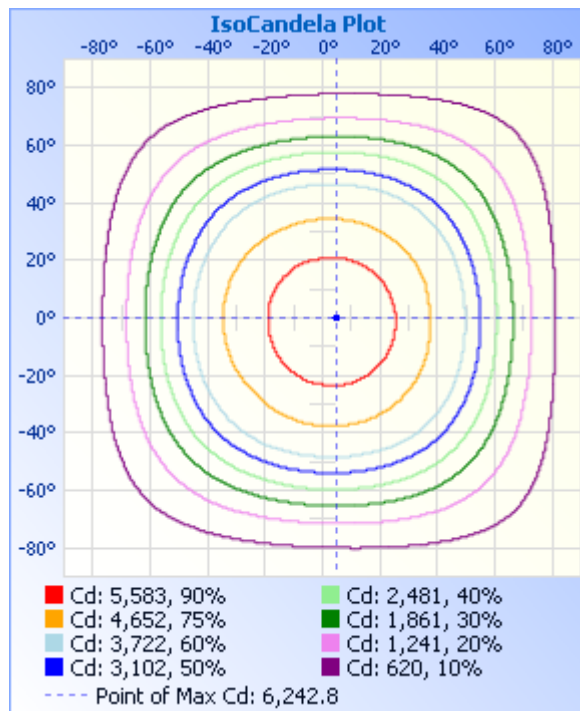
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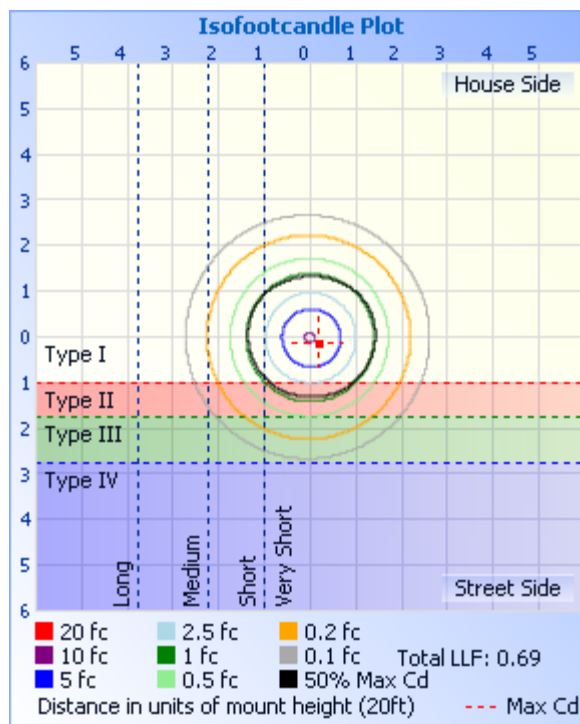
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## ISOCANDELA DIAGRAM



## ISOLUX DIAGRAM



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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	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055	6055
1	6029	6011	5998	5984	5987	5998	6021	6041	6066	6087	6104	6112	6111	6098	6078	6055	6029
2	5992	5959	5937	5919	5917	5930	5967	6017	6058	6101	6140	6169	6160	6132	6090	6044	5992
3	5947	5902	5883	5862	5853	5862	5909	5967	6036	6100	6172	6220	6208	6150	6083	6016	5947
4	5898	5856	5841	5815	5796	5805	5849	5912	5994	6092	6190	6243	6224	6140	6058	5975	5898
5	5854	5826	5819	5795	5770	5767	5804	5867	5949	6067	6181	6228	6203	6119	6012	5925	5854
6	5826	5814	5818	5798	5772	5758	5777	5824	5903	6024	6156	6177	6160	6079	5951	5874	5826
7	5813	5821	5832	5818	5793	5777	5776	5795	5860	5969	6104	6129	6109	6015	5887	5828	5813
8	5815	5847	5878	5864	5840	5816	5793	5784	5823	5911	6028	6077	6047	5943	5829	5796	5815
9	5824	5888	5933	5930	5900	5874	5831	5799	5800	5854	5941	6008	5978	5869	5776	5784	5824
10	5857	5932	5994	5991	5950	5935	5888	5832	5792	5809	5863	5923	5894	5803	5746	5784	5857
11	5901	5971	6041	6035	5995	5986	5947	5882	5803	5780	5795	5842	5817	5762	5738	5797	5901
12	5941	6006	6066	6065	6030	6025	6001	5932	5836	5781	5760	5783	5758	5734	5747	5833	5941
13	5966	6029	6072	6068	6033	6038	6037	5977	5888	5797	5743	5742	5723	5736	5783	5884	5966
14	5986	6027	6047	6032	6000	6003	6040	6014	5943	5836	5747	5734	5722	5763	5835	5927	5986
15	5986	5990	5987	5967	5942	5954	6011	6026	5992	5894	5776	5754	5743	5814	5882	5965	5986
16	5949	5923	5897	5883	5855	5889	5956	6002	6033	5947	5832	5805	5790	5874	5932	5987	5949
17	5891	5855	5810	5791	5766	5805	5884	5950	6048	5987	5884	5862	5846	5925	5970	5966	5891
18	5824	5775	5725	5702	5675	5715	5799	5886	6018	6016	5921	5909	5903	5960	5975	5909	5824
19	5746	5693	5638	5622	5591	5629	5707	5809	5954	6015	5945	5938	5942	5981	5933	5843	5746
20	5652	5616	5570	5560	5524	5552	5621	5718	5874	5966	5930	5941	5948	5962	5868	5774	5652
21	5570	5561	5521	5504	5477	5491	5542	5622	5781	5894	5876	5899	5913	5893	5788	5692	5570
22	5497	5516	5471	5462	5433	5450	5483	5544	5671	5806	5807	5839	5839	5805	5699	5596	5497
23	5439	5469	5415	5408	5382	5411	5441	5484	5566	5696	5732	5772	5768	5713	5610	5516	5439
24	5400	5419	5350	5327	5306	5372	5403	5440	5480	5594	5642	5690	5689	5617	5524	5455	5400
25	5371	5343	5266	5227	5215	5309	5362	5401	5410	5506	5552	5606	5602	5526	5462	5408	5371
26	5315	5250	5164	5130	5113	5216	5283	5345	5351	5433	5461	5515	5515	5457	5418	5376	5315
27	5237	5154	5054	5031	5017	5117	5186	5272	5294	5371	5386	5429	5434	5396	5366	5320	5237
28	5145	5055	4958	4955	4945	5035	5090	5175	5216	5308	5333	5364	5360	5331	5295	5231	5145

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29	5056	4964	4886	4906	4898	4970	5006	5077	5126	5224	5274	5316	5281	5260	5202	5128	5056
30	4972	4898	4846	4878	4870	4924	4938	4993	5024	5119	5205	5260	5198	5157	5086	5017	4972
31	4898	4852	4813	4845	4844	4872	4884	4930	4931	5015	5115	5178	5109	5031	4971	4917	4898
32	4837	4801	4773	4800	4805	4825	4832	4887	4873	4917	5023	5076	4996	4898	4864	4842	4837
33	4783	4743	4716	4748	4752	4754	4763	4846	4845	4841	4940	4977	4891	4805	4788	4804	4783
34	4712	4665	4652	4690	4697	4687	4692	4794	4827	4807	4881	4903	4817	4738	4733	4762	4712
35	4643	4581	4619	4649	4659	4631	4627	4724	4799	4780	4844	4851	4764	4709	4698	4701	4643
36	4562	4528	4588	4585	4613	4579	4567	4645	4744	4745	4789	4794	4716	4691	4664	4624	4562
37	4488	4487	4513	4493	4540	4512	4518	4578	4669	4694	4719	4726	4659	4667	4607	4549	4488
38	4428	4423	4411	4393	4439	4430	4452	4530	4596	4649	4646	4640	4597	4617	4556	4493	4428
39	4363	4338	4324	4306	4340	4353	4381	4459	4534	4594	4585	4559	4529	4574	4509	4452	4363
40	4284	4275	4270	4242	4267	4294	4318	4363	4448	4525	4521	4467	4473	4537	4449	4384	4284
41	4216	4229	4225	4188	4206	4247	4268	4283	4352	4439	4464	4402	4417	4466	4364	4306	4216
42	4158	4171	4164	4110	4108	4165	4202	4225	4254	4342	4372	4336	4338	4367	4270	4238	4158
43	4096	4101	4064	4002	4013	4068	4105	4161	4185	4259	4276	4251	4241	4272	4201	4184	4096
44	4033	3991	3934	3881	3873	3948	4023	4081	4120	4196	4207	4163	4163	4199	4159	4106	4033
45	3937	3882	3813	3767	3760	3822	3902	3996	4048	4122	4139	4106	4112	4146	4109	4042	3937
46	3839	3759	3700	3628	3649	3717	3802	3882	3959	4026	4056	4058	4051	4091	4014	3925	3839
47	3717	3629	3567	3511	3501	3591	3680	3769	3837	3931	3983	3993	3968	4003	3902	3821	3717
48	3598	3508	3441	3398	3391	3473	3557	3637	3725	3817	3900	3913	3877	3880	3776	3694	3598
49	3464	3383	3324	3284	3287	3346	3444	3522	3595	3686	3781	3792	3764	3750	3648	3560	3464
50	3337	3264	3204	3165	3184	3237	3336	3407	3480	3574	3665	3680	3642	3592	3513	3438	3337
51	3215	3140	3096	3065	3082	3128	3222	3297	3365	3443	3538	3573	3521	3467	3374	3309	3215
52	3096	3036	2989	2969	2985	3020	3108	3187	3260	3335	3424	3457	3384	3345	3255	3185	3096
53	2990	2933	2900	2876	2891	2921	2993	3076	3156	3226	3307	3333	3264	3215	3141	3079	2990
54	2884	2833	2812	2789	2795	2814	2880	2980	3051	3117	3191	3209	3156	3093	3035	2974	2884
55	2790	2740	2708	2689	2689	2717	2772	2881	2951	3009	3074	3086	3047	2991	2950	2871	2790
56	2697	2634	2585	2551	2565	2604	2663	2771	2851	2920	2963	2975	2941	2892	2857	2775	2697
57	2605	2522	2462	2419	2433	2483	2560	2650	2751	2826	2855	2869	2843	2799	2774	2676	2605
58	2497	2395	2328	2286	2304	2353	2439	2524	2638	2722	2750	2760	2745	2719	2678	2573	2497
59	2370	2263	2197	2173	2185	2228	2320	2400	2520	2592	2639	2645	2642	2630	2566	2460	2370
60	2240	2137	2076	2068	2075	2117	2202	2287	2395	2459	2530	2533	2523	2522	2434	2336	2240

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61	2116	2026	1977	1964	1973	2010	2093	2170	2265	2330	2410	2423	2409	2399	2301	2208	2116
62	2009	1915	1879	1870	1879	1907	1988	2066	2149	2226	2293	2317	2287	2266	2169	2089	2009
63	1905	1814	1789	1780	1793	1808	1883	1962	2050	2120	2176	2198	2172	2126	2055	1988	1905
64	1801	1732	1691	1672	1693	1715	1778	1862	1957	2027	2068	2082	2065	2001	1949	1887	1801
65	1699	1635	1593	1569	1584	1625	1683	1755	1843	1922	1970	1973	1960	1897	1857	1788	1699
66	1609	1538	1494	1465	1477	1522	1593	1657	1742	1818	1868	1864	1855	1798	1774	1682	1609
67	1509	1441	1396	1377	1389	1413	1491	1562	1644	1716	1760	1762	1753	1714	1678	1586	1509
68	1417	1346	1301	1297	1300	1320	1388	1463	1539	1610	1659	1662	1658	1617	1566	1490	1417
69	1325	1260	1221	1207	1213	1237	1292	1364	1442	1509	1559	1577	1563	1520	1453	1395	1325
70	1233	1176	1143	1120	1130	1161	1210	1275	1336	1415	1464	1489	1468	1423	1357	1298	1233
71	1152	1096	1059	1041	1047	1078	1135	1196	1245	1322	1360	1384	1367	1327	1280	1215	1152
72	1071	1012	976	964	971	998	1050	1116	1173	1231	1262	1278	1273	1249	1199	1136	1071
73	988	934	901	878	894	924	968	1035	1093	1145	1187	1191	1186	1165	1111	1046	988
74	911	860	823	808	816	840	895	951	1009	1072	1115	1117	1114	1077	1030	965	911
75	835	784	755	740	749	771	813	867	936	984	1035	1049	1034	998	951	890	835
76	762	719	693	677	676	703	747	795	861	911	952	961	951	923	871	811	762
77	700	655	628	617	615	639	675	728	781	827	882	884	883	847	793	747	700
78	634	592	568	558	557	580	613	663	713	764	799	809	800	772	729	679	634
79	577	537	513	502	505	522	555	601	644	697	730	741	736	705	664	617	577
80	519	484	461	453	455	471	500	541	583	632	661	678	671	642	603	558	519
81	465	433	413	407	411	424	449	485	528	569	598	616	611	581	542	502	465
82	414	389	370	363	366	383	405	437	475	513	543	558	551	525	487	450	414
83	370	346	329	319	324	340	364	393	427	463	488	504	496	471	436	402	370
84	327	304	287	277	282	298	325	353	384	417	440	453	445	422	390	360	327
85	287	261	242	227	231	252	282	312	344	376	394	407	398	375	348	318	287
86	247	212	185	165	171	197	232	272	306	335	353	364	354	336	310	281	247
87	199	153	122	109	114	133	169	219	261	292	313	321	312	294	269	240	199
88	132	103	90	91	88	92	114	155	203	244	269	276	269	254	228	185	132
89	97	94	96	100	99	94	90	105	143	185	217	227	223	204	166	122	97
90	95	104	104	103	103	103	100	94	100	129	156	169	164	143	117	97	95
91	106	106	103	104	104	106	105	103	97	95	110	120	116	106	94	97	106
92	106	105	111	116	116	114	109	107	105	100	93	93	93	93	99	105	106

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93	109	121	125	131	132	130	122	114	108	105	102	100	101	102	104	106	109
94	125	136	143	146	149	147	139	128	117	108	105	104	104	104	106	112	125
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96	155	158	162	156	164	164	161	158	146	134	124	119	118	122	130	143	155
97	160	156	163	158	163	161	169	169	161	150	138	134	133	136	145	157	160
98	161	160	159	160	158	166	167	166	166	162	155	148	148	151	153	161	161
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100	156	158	159	159	156	161	160	167	164	164	167	156	160	157	161	163	156
101	154	156	157	156	155	160	160	164	162	167	163	161	160	161	156	161	154
102	154	155	155	153	155	157	159	162	160	164	161	163	157	161	155	156	154
103	152	152	152	152	155	156	155	159	162	161	161	161	157	158	154	155	152
104	152	149	147	148	149	149	152	156	159	160	162	159	156	158	152	152	152
105	148	146	145	147	147	146	148	151	157	157	159	158	156	154	151	151	148
106	144	144	143	142	142	145	148	149	151	154	156	155	154	153	148	146	144
107	142	142	139	138	139	141	145	147	150	151	152	155	154	149	145	144	142
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125	88	84	82	83	80	81	83	86	89	91	92	93	95	93	92	89	88
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157	19	19	19	18	17	17	17	18	19	20	21	22	22	22	21	20	19
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**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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