



Report No.: GZE160347-I2

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-8032M57-A

Representative (Tested) Model: LED-8032M57-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.

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>

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-I2
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8032M57-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	--	144.2	W
Input Current	--	1.224	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9816	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	16605	lm
Initial Lumen Efficacy	--	115.15	lm/w
Correlated color temperature / CCT	5393	--	K
Color rendering index / CRI	84.7	--	
R9 Value	12	--	
Duv	0.0027	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		6044	cd
Beam angle (if applicable)		105.1	°
Zonal lumens in the 0°-60° zone	-----	78.5	%
Zonal lumens in the 60°-90° zone		18	%
Zonal lumens in the 90°-120° zone		2.5	%
Zonal lumens in the 120°-180° zone		1	%

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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	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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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 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 120 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.

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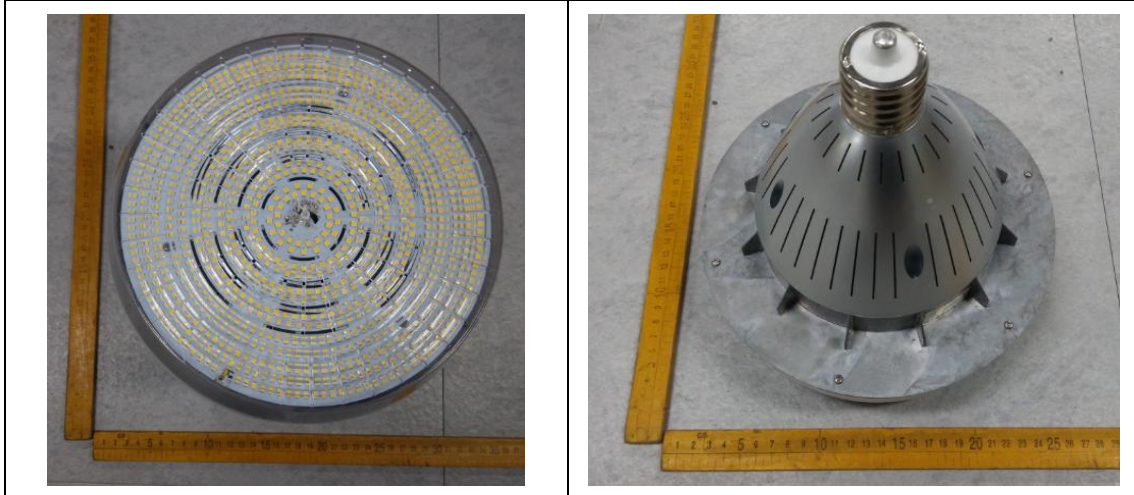
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**1. Product Information:**

Brand Name	N/A
Model Number	LED-8032M57-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 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-I2(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-8032M57-A		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	1.224	144.2	0.9816	14.57
-I2	277.0	60	0.5643	142.9	0.9142	17.11

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.7
R9	12
CCT (K)	5393
Chromaticity (x, y)	x=0.3351 y=0.3486
Chromaticity (u', v')	u'=0.2058 v'=0.4817
Duv	0.0027

Special Color Rendering Indices			
R1	83	R9	12
R2	91	R10	77
R3	94	R11	83
R4	83	R12	64
R5	84	R13	85
R6	86	R14	97
R7	87	R15	78
R8	69	--	--

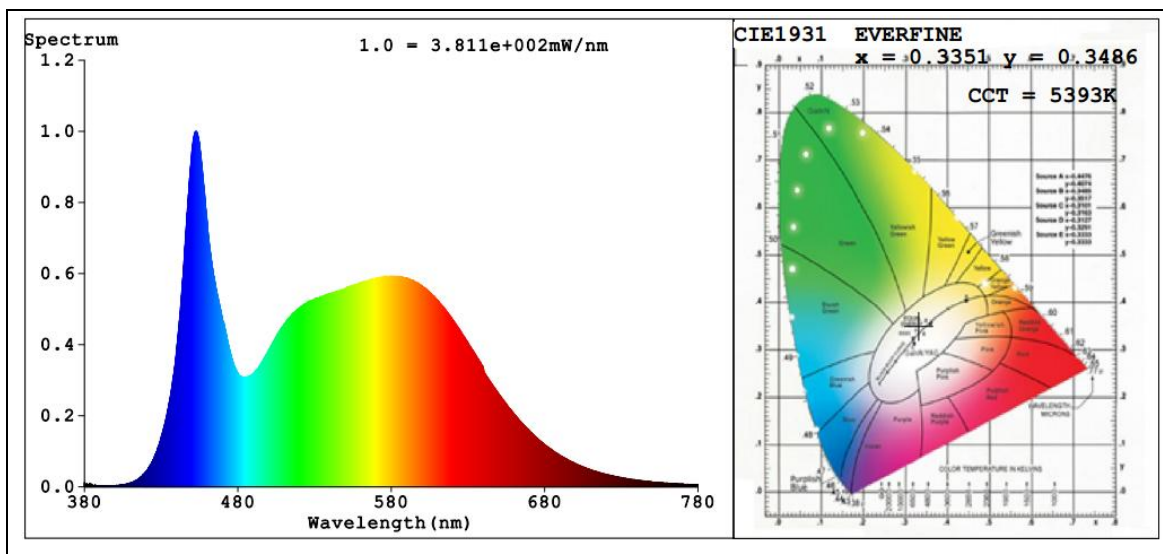
**Goniophotometer Method :**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	16605
Luminous Efficacy (lm/W)	115.15
Beam Angle°	105.1
Center Beam Candle Power (cd)	6044

**Goniophotometer Methodn :**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	16841
Luminous Efficacy (lm/W)	117.85

**Spectral Power Distribution & Chromaticity Diagram**



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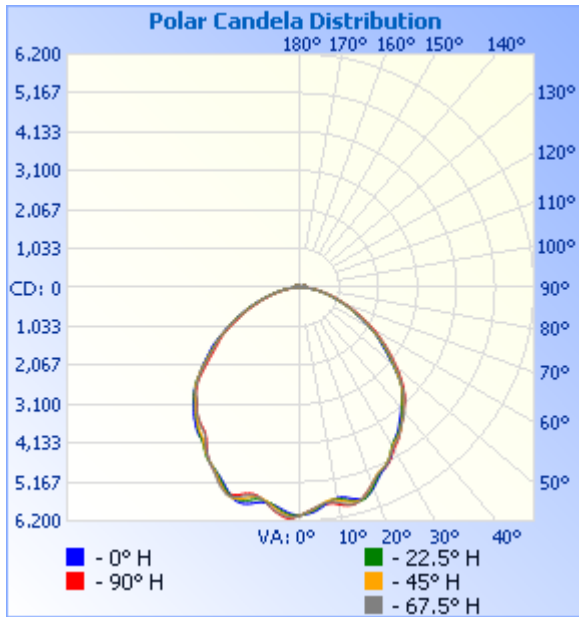
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**Zonal Lumen Tabulation**

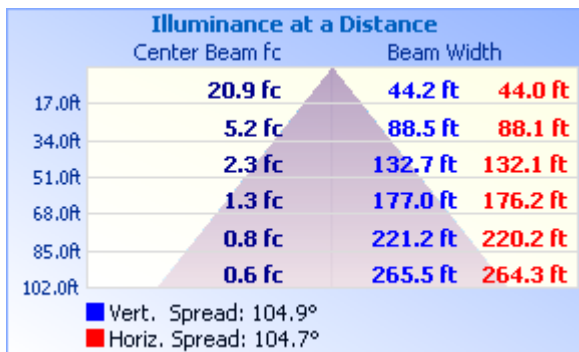
<b>Zonal Lumen Summary</b>		
Zone	Lumens	% Luminaire
0-30	4,653.1	28%
0-40	7,544.3	45.4%
0-60	13,034.5	78.5%
60-90	2,993.5	18%
70-100	1,418.1	8.5%
90-120	411.1	2.5%
0-90	16,027.9	96.5%
90-180	575.1	3.5%
0-180	16,603.0	100%

<b>Lumens Per Zone</b>					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	558.3	3.4%	90-100	142.2	0.9%
10-20	1,639.4	9.9%	100-110	155.0	0.9%
20-30	2,455.4	14.8%	110-120	113.9	0.7%
30-40	2,891.1	17.4%	120-130	76.6	0.5%
40-50	2,988.8	18.0%	130-140	46.4	0.3%
50-60	2,501.4	15.1%	140-150	24.1	0.1%
60-70	1,717.6	10.3%	150-160	10.5	0.1%
70-80	928.5	5.6%	160-170	4.5	0%
80-90	347.3	2.1%	170-180	1.8	0%

### Photometric Data

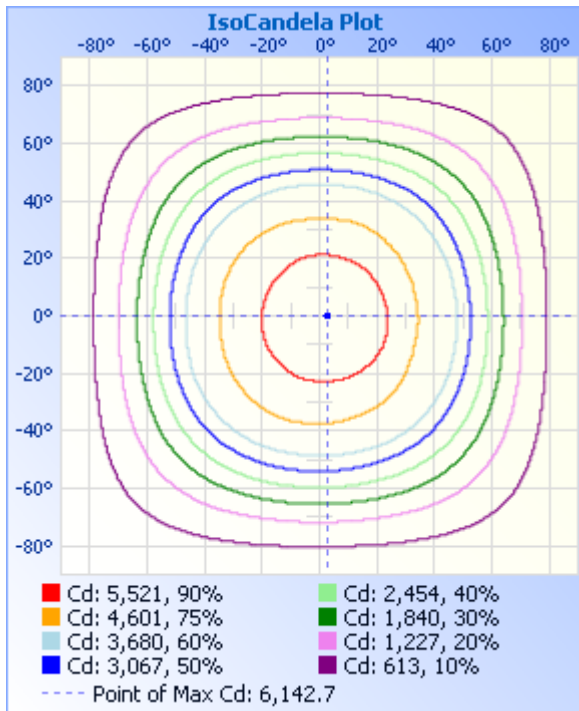


### Illuminance Plots

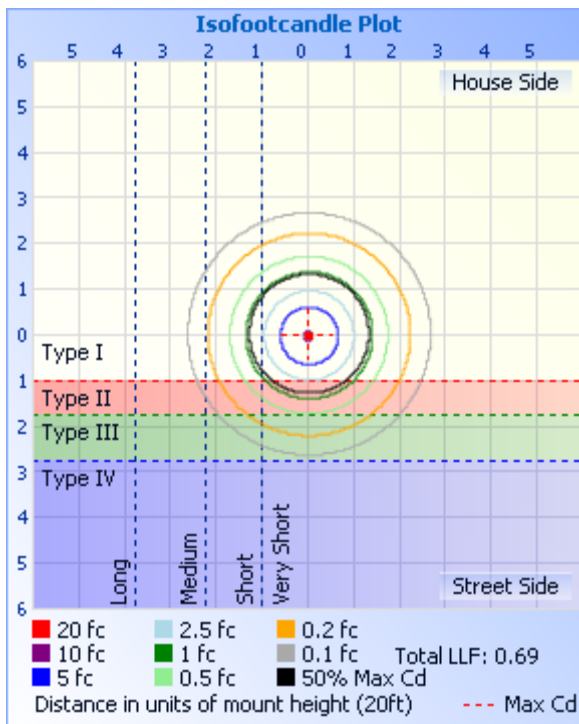




### ISOCANDELA DIAGRAM



### 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	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044	6044
1	6028	6010	5997	5992	5991	5998	6012	6025	6044	6059	6074	6087	6087	6081	6069	6048	6028
2	6005	5975	5955	5943	5942	5951	5971	5996	6026	6055	6089	6113	6126	6113	6085	6041	6005
3	5979	5944	5913	5893	5894	5901	5925	5954	5992	6034	6075	6110	6143	6132	6083	6022	5979
4	5943	5899	5858	5843	5851	5859	5882	5909	5948	5997	6038	6078	6118	6111	6055	5987	5943
5	5892	5840	5802	5801	5813	5821	5845	5866	5899	5945	5993	6036	6069	6060	6003	5941	5892
6	5828	5783	5748	5770	5790	5798	5821	5829	5855	5887	5934	5990	6015	5997	5945	5881	5828
7	5768	5735	5711	5753	5783	5792	5813	5810	5816	5829	5867	5939	5952	5933	5879	5807	5768
8	5720	5704	5696	5748	5785	5802	5816	5806	5798	5782	5801	5866	5876	5855	5797	5743	5720
9	5687	5692	5704	5763	5805	5832	5832	5816	5790	5753	5742	5794	5795	5772	5720	5690	5687
10	5671	5697	5728	5796	5845	5876	5866	5838	5792	5735	5701	5726	5723	5693	5657	5649	5671
11	5672	5719	5766	5837	5884	5910	5910	5874	5808	5730	5678	5682	5667	5630	5613	5630	5672
12	5694	5760	5807	5874	5913	5933	5945	5918	5842	5742	5679	5659	5637	5596	5595	5633	5694
13	5738	5808	5839	5904	5927	5950	5971	5948	5884	5780	5698	5658	5625	5585	5597	5650	5738
14	5779	5848	5863	5917	5923	5955	5985	5971	5914	5827	5746	5676	5633	5597	5617	5685	5779
15	5811	5873	5869	5900	5899	5940	5983	5986	5935	5854	5797	5717	5664	5637	5651	5728	5811
16	5841	5882	5850	5848	5848	5891	5950	5978	5937	5867	5831	5769	5711	5685	5697	5768	5841
17	5840	5855	5807	5783	5781	5820	5880	5931	5918	5869	5853	5807	5754	5724	5741	5789	5840
18	5803	5794	5737	5713	5705	5751	5797	5861	5868	5853	5869	5833	5784	5754	5768	5773	5803
19	5734	5716	5650	5629	5623	5670	5705	5780	5794	5808	5857	5849	5796	5762	5749	5724	5734
20	5661	5626	5553	5546	5547	5594	5618	5686	5708	5742	5804	5824	5783	5721	5700	5659	5661
21	5573	5535	5460	5471	5472	5519	5535	5598	5625	5662	5728	5760	5727	5654	5643	5588	5573
22	5482	5446	5376	5395	5406	5461	5462	5526	5547	5581	5642	5687	5651	5575	5578	5503	5482
23	5404	5366	5314	5333	5356	5417	5408	5463	5473	5502	5552	5606	5563	5490	5489	5418	5404
24	5338	5306	5278	5298	5320	5384	5371	5406	5409	5425	5460	5511	5475	5407	5387	5340	5338
25	5282	5260	5244	5263	5287	5352	5332	5360	5353	5352	5380	5417	5398	5343	5292	5277	5282
26	5232	5206	5204	5214	5248	5303	5286	5309	5309	5294	5309	5332	5330	5286	5223	5224	5232
27	5167	5139	5138	5158	5190	5230	5227	5246	5253	5253	5246	5261	5260	5226	5171	5178	5167
28	5088	5051	5054	5079	5118	5145	5148	5162	5188	5206	5190	5186	5185	5160	5120	5122	5088

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29	4990	4953	4963	4987	5035	5058	5055	5069	5111	5147	5118	5105	5092	5067	5048	5042	4990
30	4892	4857	4884	4912	4956	4980	4968	4978	5017	5068	5042	5003	4979	4952	4950	4949	4892
31	4807	4781	4816	4855	4891	4916	4894	4897	4923	4970	4948	4880	4852	4833	4840	4852	4807
32	4735	4736	4775	4813	4835	4868	4845	4838	4851	4887	4848	4756	4734	4709	4737	4777	4735
33	4675	4700	4734	4762	4779	4813	4815	4798	4805	4814	4771	4660	4641	4625	4669	4725	4675
34	4615	4650	4680	4695	4700	4741	4772	4771	4772	4764	4716	4598	4577	4572	4616	4666	4615
35	4541	4579	4624	4622	4621	4654	4721	4729	4737	4706	4667	4564	4537	4538	4565	4590	4541
36	4457	4509	4544	4542	4543	4572	4653	4677	4685	4631	4609	4520	4501	4483	4489	4507	4457
37	4379	4436	4463	4473	4474	4511	4581	4617	4623	4558	4538	4465	4454	4413	4404	4419	4379
38	4314	4370	4400	4421	4406	4456	4525	4558	4548	4482	4467	4403	4407	4353	4320	4330	4314
39	4243	4292	4333	4357	4342	4403	4473	4508	4486	4412	4394	4353	4349	4303	4247	4262	4243
40	4157	4184	4237	4280	4264	4327	4399	4440	4414	4348	4335	4297	4286	4245	4195	4181	4157
41	4078	4091	4143	4189	4192	4249	4312	4347	4332	4287	4273	4218	4203	4162	4116	4090	4078
42	4023	4033	4060	4122	4128	4190	4224	4259	4238	4205	4182	4131	4110	4080	4028	4020	4023
43	3963	3968	3986	4052	4064	4131	4156	4192	4162	4135	4106	4045	4052	4006	3958	3946	3963
44	3893	3899	3906	3960	3975	4057	4093	4132	4101	4071	4046	3990	4004	3946	3885	3866	3893
45	3813	3811	3821	3859	3881	3965	3994	4061	4012	3995	3970	3942	3936	3884	3813	3788	3813
46	3719	3713	3714	3745	3792	3872	3892	3971	3920	3907	3892	3872	3846	3789	3730	3717	3719
47	3604	3599	3605	3636	3680	3767	3785	3852	3818	3830	3813	3777	3750	3673	3637	3609	3604
48	3471	3478	3498	3537	3576	3648	3674	3723	3702	3722	3704	3670	3644	3564	3528	3508	3471
49	3349	3359	3384	3433	3469	3532	3558	3593	3590	3586	3584	3556	3499	3430	3417	3392	3349
50	3224	3235	3273	3311	3360	3416	3440	3470	3480	3461	3470	3429	3355	3308	3299	3251	3224
51	3092	3110	3159	3200	3243	3302	3332	3362	3364	3344	3339	3298	3210	3178	3169	3119	3092
52	2978	2992	3054	3078	3127	3188	3222	3251	3253	3226	3207	3168	3083	3051	3039	2995	2978
53	2869	2888	2942	2970	3010	3075	3113	3141	3142	3109	3076	3037	2961	2930	2922	2877	2869
54	2753	2788	2839	2871	2906	2962	3003	3030	3031	2992	2962	2925	2850	2827	2814	2766	2753
55	2651	2688	2734	2772	2801	2851	2907	2931	2930	2885	2850	2820	2748	2730	2703	2669	2651
56	2556	2584	2633	2661	2693	2747	2808	2834	2837	2779	2749	2725	2655	2634	2599	2569	2556
57	2471	2478	2522	2543	2584	2631	2696	2731	2743	2676	2651	2628	2570	2538	2503	2465	2471
58	2364	2367	2399	2426	2480	2522	2583	2617	2619	2572	2557	2539	2481	2444	2401	2364	2364
59	2254	2260	2282	2314	2375	2408	2460	2493	2496	2459	2456	2435	2386	2335	2285	2262	2254
60	2142	2150	2169	2205	2271	2303	2341	2370	2373	2344	2343	2323	2270	2216	2174	2156	2142

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61	2020	2039	2064	2098	2160	2190	2219	2249	2255	2235	2227	2201	2143	2097	2059	2044	2020
62	1903	1929	1960	1996	2048	2081	2116	2132	2143	2128	2111	2079	2016	1982	1951	1928	1903
63	1798	1823	1858	1893	1941	1982	2018	2022	2036	2017	2000	1957	1898	1875	1842	1817	1798
64	1707	1718	1748	1780	1832	1873	1920	1925	1935	1918	1901	1848	1800	1775	1746	1717	1707
65	1621	1625	1654	1672	1727	1770	1817	1837	1838	1817	1804	1754	1714	1675	1656	1629	1621
66	1536	1533	1560	1590	1626	1658	1701	1738	1750	1716	1706	1663	1623	1587	1565	1540	1536
67	1450	1440	1467	1508	1543	1579	1611	1634	1646	1618	1600	1579	1532	1498	1474	1452	1450
68	1349	1349	1377	1412	1450	1493	1511	1534	1543	1529	1506	1483	1441	1400	1382	1363	1349
69	1256	1258	1286	1312	1353	1402	1425	1438	1441	1441	1416	1386	1337	1309	1289	1266	1256
70	1171	1172	1200	1217	1264	1301	1321	1352	1352	1345	1325	1290	1240	1214	1190	1171	1171
71	1099	1088	1119	1138	1173	1207	1232	1251	1262	1242	1221	1201	1163	1134	1110	1092	1099
72	1016	1016	1051	1077	1102	1136	1158	1169	1177	1157	1137	1121	1089	1056	1036	1018	1016
73	935	942	965	996	1024	1059	1083	1097	1101	1084	1066	1045	1006	978	959	941	935
74	863	867	889	909	945	980	1006	1025	1026	1014	997	968	929	903	879	862	863
75	795	796	818	842	873	904	924	944	940	936	915	889	855	830	813	795	795
76	727	731	746	769	805	833	856	875	871	865	844	823	786	760	745	729	727
77	666	671	687	707	733	763	783	799	799	789	773	748	716	696	683	670	666
78	607	610	626	647	675	703	722	734	733	720	706	685	656	638	621	613	607
79	553	557	570	589	612	640	654	669	674	658	648	624	599	583	566	558	553
80	503	506	519	536	558	579	595	609	607	600	586	568	544	528	515	507	503
81	455	458	473	488	505	528	541	553	554	546	535	514	497	479	465	460	455
82	410	413	427	441	458	477	489	501	503	498	483	466	449	435	420	413	410
83	368	370	384	399	414	433	445	457	456	453	440	423	405	390	377	370	368
84	324	327	338	354	371	389	400	412	412	410	397	381	362	348	335	325	324
85	278	282	292	311	329	348	360	369	370	367	354	340	321	305	290	280	278
86	225	232	242	261	283	304	316	326	329	323	311	295	277	259	243	230	225
87	168	173	185	205	231	255	270	278	280	275	260	246	224	206	188	174	168
88	113	116	126	146	171	197	214	226	229	222	208	192	168	144	128	117	113
89	94	92	90	96	117	136	154	164	169	164	150	135	118	107	99	95	94
90	102	101	97	92	89	96	106	115	118	113	106	99	95	96	99	102	102
91	108	108	105	102	97	95	92	92	91	90	92	96	101	105	108	109	108
92	112	114	112	110	106	104	102	102	100	99	101	104	107	109	111	112	112

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93	124	123	122	118	113	110	108	108	106	105	106	109	110	114	118	121	124
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99	156	158	157	159	158	159	159	153	154	149	150	154	154	159	157	159	156
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102	153	152	155	156	155	154	156	153	153	154	151	156	154	156	156	154	153
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106	144	141	143	144	144	145	146	145	144	146	144	145	146	144	146	145	144
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108	136	135	136	137	139	142	140	141	141	141	140	138	140	140	139	138	136
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125	86	84	84	83	81	81	83	84	85	85	87	87	90	89	89	87	86
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157	19	18	19	19	18	18	19	19	20	20	20	20	20	19	19	19	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%			

**\*\*\*\*\* END OF DATASHEET PACKAGE \*\*\*\*\***