

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-8032M40-A

Representative (Tested) Model: LED-8032M40-A

Model Different :N/A

Test & Report By:

Jack Luo

Engineer: Jack Luo

Date: Apr.28,2016

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	Apr.28,2016
Test Report No.	GZE160347-I
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8032M40-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	

Integrating Sphere

Goniophotometer

Electrical Measurements:

Output

Output

Input Wattage	--	144.4	W
Input Current	--	1.225	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9825	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	16407	lm
Initial Lumen Efficacy	--	113.62	lm/w
Correlated color temperature / CCT	4051	--	K
Color rendering index / CRI	84.3	--	
R9 Value	13	--	
Duv	0.0007	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	5972	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	: Apr.24,2016
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 120 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.

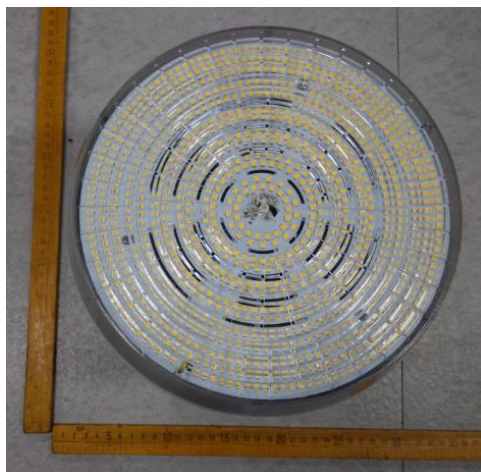
2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

1. Product Information:

Brand Name	N/A
Model Number	LED-8032M40-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 Vac, 50/60Hz
Nominal Power	140W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-I1(4000K)

Photo



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2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2016-04-24	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8032M40-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	1.225	144.4	0.9825	14.90
-I1	277.0	60	0.5650	143.3	0.9157	17.46

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.3
R9	13
CCT (K)	4051
Chromaticity (x, y)	x=0.3787 y=0.3772
Chromaticity (u', v')	u'=0.2238 v'=0.5015
Duv	0.0007

Special Color Rendering Indices			
R1	83	R9	13
R2	91	R10	79
R3	96	R11	81
R4	82	R12	63
R5	83	R13	85
R6	87	R14	98
R7	86	R15	77
R8	66	--	--

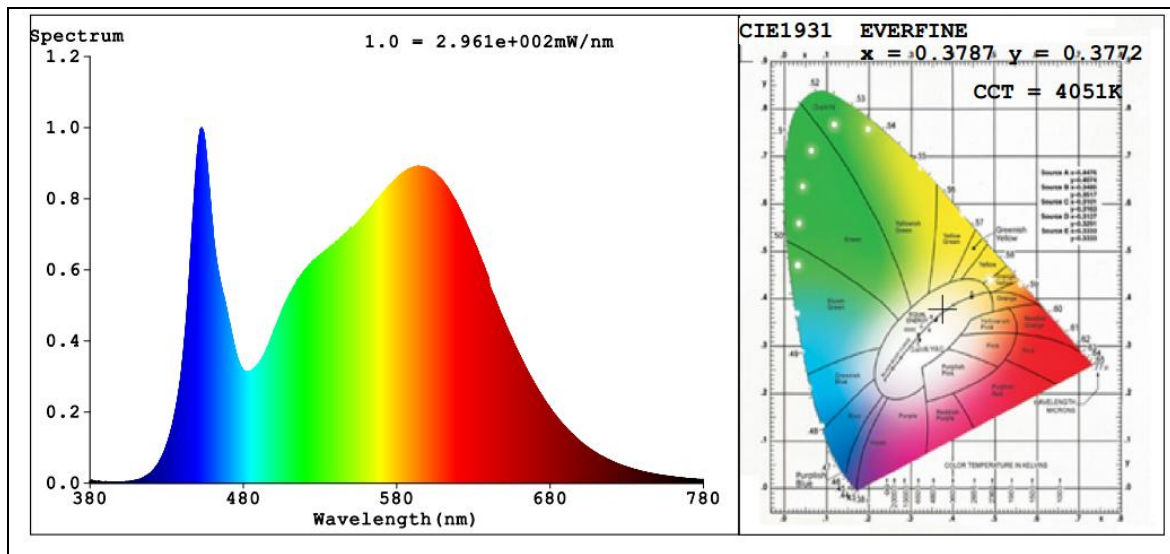
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	16407
Luminous Efficacy (lm/W)	113.62
Beam Angle°	105.1
Center Beam Candle Power (cd)	5972

Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	16759
Luminous Efficacy (lm/W)	116.93

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,597.6	28%
0-40	7,454.3	45.4%
0-60	12,879.0	78.5%
60-90	2,957.8	18%
70-100	1,401.2	8.5%
90-120	406.2	2.5%
0-90	15,836.8	96.5%
90-180	568.2	3.5%
0-180	16,405.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	551.6	3.4%	90-100	140.5	0.9%
10-20	1,619.9	9.9%	100-110	153.1	0.9%
20-30	2,426.1	14.8%	110-120	112.6	0.7%
30-40	2,856.7	17.4%	120-130	75.7	0.5%
40-50	2,953.2	18.0%	130-140	45.8	0.3%
50-60	2,471.5	15.1%	140-150	23.8	0.1%
60-70	1,697.1	10.3%	150-160	10.4	0.1%
70-80	917.4	5.6%	160-170	4.5	0%
80-90	343.2	2.1%	170-180	1.7	0%

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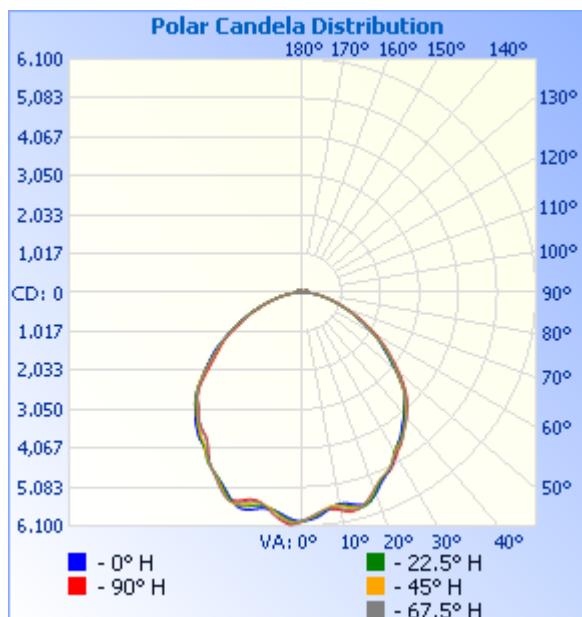
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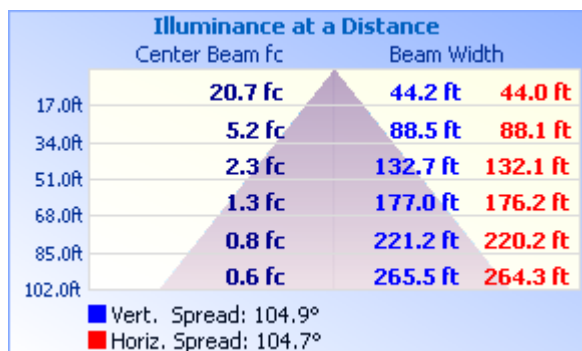
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Photometric Data



Illuminance Plots



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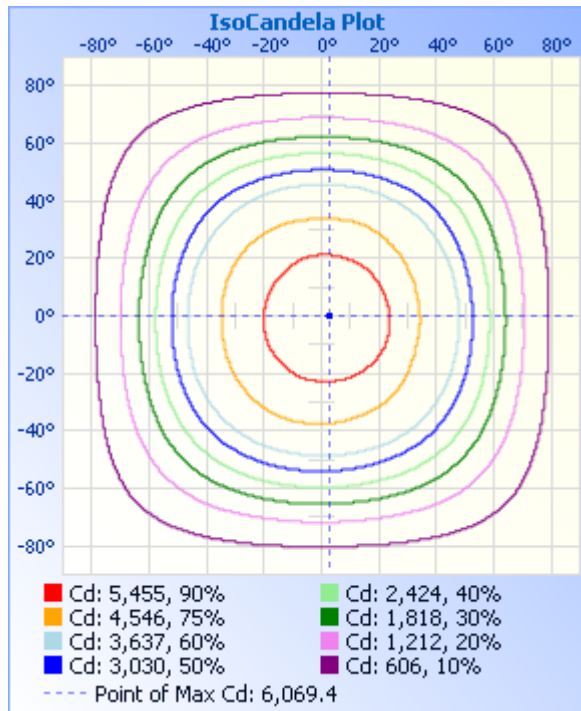
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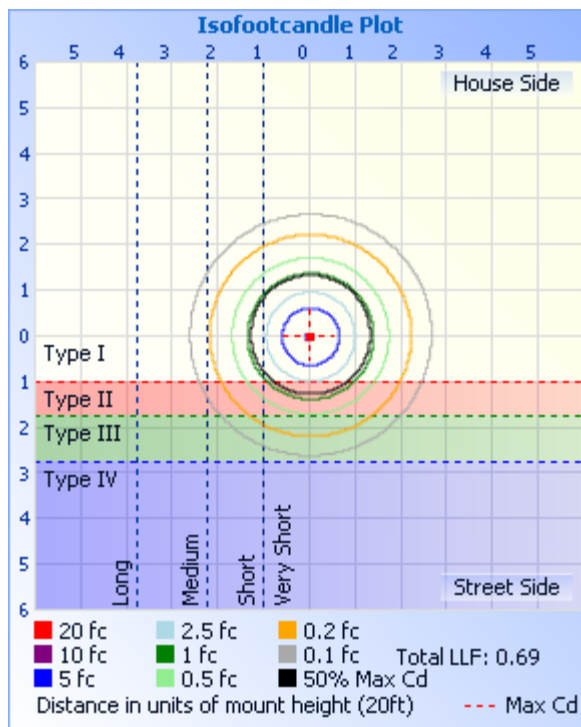
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ISOCANDELA DIAGRAM



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	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972	5972
1	5956	5938	5926	5921	5920	5926	5940	5953	5972	5987	6002	6014	6014	6008	5996	5976	5956
2	5934	5904	5884	5872	5872	5880	5900	5924	5955	5983	6016	6040	6053	6040	6012	5969	5934
3	5908	5873	5843	5823	5824	5831	5854	5883	5921	5962	6002	6037	6069	6059	6011	5950	5908
4	5872	5829	5788	5774	5782	5789	5812	5839	5877	5925	5966	6006	6045	6039	5983	5915	5872
5	5822	5771	5733	5732	5744	5752	5775	5796	5829	5874	5921	5964	5997	5988	5932	5871	5822
6	5759	5714	5679	5701	5721	5729	5751	5760	5785	5817	5863	5919	5943	5925	5874	5810	5759
7	5699	5666	5642	5684	5714	5723	5744	5741	5747	5760	5797	5868	5881	5863	5809	5737	5699
8	5651	5636	5628	5680	5716	5733	5746	5736	5729	5713	5732	5796	5806	5785	5728	5674	5651
9	5619	5624	5636	5694	5736	5762	5762	5747	5721	5685	5674	5725	5726	5704	5651	5622	5619
10	5603	5629	5660	5727	5775	5806	5796	5769	5722	5666	5633	5658	5654	5626	5589	5582	5603
11	5604	5650	5697	5768	5814	5839	5840	5804	5739	5661	5610	5614	5599	5563	5546	5563	5604
12	5626	5691	5738	5804	5842	5863	5875	5847	5773	5673	5612	5591	5570	5529	5528	5566	5626
13	5669	5739	5770	5834	5856	5879	5899	5877	5814	5711	5630	5590	5558	5518	5530	5583	5669
14	5710	5778	5793	5847	5852	5884	5914	5899	5844	5758	5677	5609	5566	5530	5550	5617	5710
15	5741	5803	5799	5829	5829	5869	5911	5915	5865	5784	5728	5649	5596	5570	5584	5660	5741
16	5771	5812	5780	5778	5778	5820	5879	5907	5866	5797	5761	5700	5643	5618	5629	5699	5771
17	5770	5785	5738	5714	5712	5751	5810	5860	5848	5799	5783	5738	5686	5656	5673	5720	5770
18	5734	5725	5668	5645	5637	5682	5728	5791	5798	5783	5799	5763	5715	5685	5699	5704	5734
19	5665	5648	5583	5562	5556	5602	5637	5711	5725	5739	5787	5779	5726	5694	5681	5655	5665
20	5593	5559	5487	5480	5480	5527	5551	5619	5640	5673	5735	5755	5714	5653	5632	5591	5593
21	5507	5469	5395	5406	5407	5453	5469	5531	5558	5595	5660	5692	5659	5587	5576	5521	5507
22	5416	5381	5312	5331	5342	5396	5397	5461	5481	5515	5575	5619	5583	5508	5511	5438	5416
23	5339	5302	5251	5270	5292	5352	5343	5398	5408	5436	5486	5539	5497	5425	5423	5354	5339
24	5275	5243	5215	5235	5257	5320	5307	5342	5345	5360	5395	5445	5410	5342	5323	5276	5275
25	5219	5197	5181	5200	5224	5288	5268	5296	5289	5289	5316	5353	5334	5280	5229	5214	5219
26	5169	5143	5142	5152	5186	5240	5223	5246	5246	5231	5245	5269	5266	5223	5161	5162	5169
27	5105	5078	5077	5096	5128	5167	5164	5183	5190	5190	5183	5198	5197	5164	5109	5116	5105
28	5028	4991	4994	5018	5057	5083	5086	5101	5126	5144	5128	5124	5124	5099	5059	5061	5028

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29	4931	4894	4904	4927	4975	4998	4995	5008	5050	5085	5057	5044	5031	5007	4988	4982	4931
30	4834	4799	4826	4853	4897	4920	4909	4918	4957	5007	4982	4943	4919	4893	4891	4890	4834
31	4750	4724	4758	4797	4833	4857	4836	4838	4864	4911	4889	4822	4794	4775	4783	4794	4750
32	4679	4679	4718	4755	4778	4810	4787	4780	4793	4828	4790	4700	4677	4653	4680	4720	4679
33	4619	4644	4677	4705	4722	4756	4758	4741	4748	4757	4714	4604	4586	4570	4613	4668	4619
34	4560	4594	4624	4639	4644	4685	4715	4715	4715	4707	4660	4544	4522	4517	4561	4610	4560
35	4487	4524	4568	4566	4566	4598	4664	4672	4680	4650	4611	4509	4483	4484	4510	4535	4487
36	4404	4455	4490	4488	4489	4518	4598	4621	4629	4576	4554	4466	4448	4430	4435	4453	4404
37	4326	4383	4410	4420	4420	4458	4526	4562	4567	4503	4484	4412	4401	4361	4351	4366	4326
38	4263	4317	4348	4369	4354	4403	4471	4503	4493	4429	4413	4351	4355	4301	4268	4279	4263
39	4192	4240	4282	4305	4290	4350	4420	4454	4433	4359	4341	4301	4298	4252	4196	4211	4192
40	4108	4134	4186	4229	4213	4276	4346	4387	4361	4296	4284	4245	4235	4195	4145	4131	4108
41	4030	4042	4094	4139	4142	4198	4261	4295	4280	4236	4222	4168	4152	4112	4067	4042	4030
42	3975	3985	4012	4073	4079	4140	4174	4208	4187	4154	4132	4082	4061	4031	3980	3972	3975
43	3915	3920	3938	4004	4016	4082	4107	4142	4112	4085	4057	3997	4004	3958	3911	3899	3915
44	3846	3852	3859	3912	3928	4008	4044	4083	4052	4023	3998	3942	3957	3899	3839	3820	3846
45	3768	3765	3775	3813	3835	3918	3946	4012	3964	3947	3923	3895	3889	3838	3768	3743	3768
46	3675	3669	3670	3700	3747	3826	3846	3924	3873	3860	3846	3826	3801	3744	3685	3672	3675
47	3561	3556	3562	3593	3636	3722	3740	3806	3772	3785	3767	3732	3706	3629	3594	3566	3561
48	3429	3437	3457	3494	3533	3605	3630	3679	3658	3677	3660	3626	3600	3522	3486	3466	3429
49	3309	3319	3343	3392	3428	3490	3516	3550	3547	3543	3541	3513	3457	3389	3376	3352	3309
50	3186	3196	3234	3272	3319	3375	3399	3429	3439	3420	3429	3388	3315	3269	3259	3212	3186
51	3055	3073	3121	3162	3204	3263	3292	3321	3324	3304	3299	3259	3172	3140	3131	3082	3055
52	2943	2957	3018	3042	3089	3150	3184	3212	3214	3188	3169	3130	3046	3015	3003	2959	2943
53	2835	2853	2907	2934	2975	3038	3075	3103	3104	3072	3039	3001	2925	2895	2887	2843	2835
54	2721	2755	2805	2837	2871	2927	2967	2994	2995	2956	2927	2890	2816	2793	2781	2733	2721
55	2619	2656	2701	2739	2768	2817	2872	2896	2895	2850	2816	2787	2715	2697	2670	2637	2619
56	2525	2553	2602	2629	2661	2714	2774	2800	2803	2745	2716	2693	2623	2603	2568	2539	2525
57	2441	2448	2492	2513	2553	2600	2664	2699	2710	2644	2619	2596	2540	2508	2474	2435	2441
58	2336	2339	2371	2397	2450	2492	2552	2586	2588	2542	2526	2508	2452	2414	2372	2336	2336
59	2227	2233	2255	2287	2347	2379	2431	2463	2466	2429	2426	2406	2358	2307	2258	2235	2227
60	2116	2124	2143	2178	2244	2276	2313	2341	2345	2316	2315	2295	2243	2190	2148	2130	2116

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61	1996	2014	2039	2073	2134	2164	2193	2223	2228	2208	2201	2175	2118	2072	2034	2019	1996
62	1880	1906	1936	1972	2024	2056	2091	2107	2117	2103	2085	2055	1992	1958	1928	1905	1880
63	1777	1801	1835	1870	1918	1958	1994	1998	2012	1993	1976	1933	1876	1853	1820	1795	1777
64	1687	1697	1727	1759	1810	1850	1897	1902	1912	1895	1878	1826	1778	1753	1726	1696	1687
65	1602	1606	1634	1653	1707	1749	1796	1816	1816	1795	1783	1733	1693	1655	1636	1609	1602
66	1517	1514	1542	1571	1607	1638	1681	1717	1730	1696	1686	1643	1603	1568	1546	1522	1517
67	1433	1423	1449	1490	1525	1560	1591	1614	1627	1599	1581	1560	1514	1480	1457	1435	1433
68	1333	1333	1360	1395	1433	1475	1493	1516	1524	1510	1488	1466	1424	1383	1366	1347	1333
69	1241	1243	1271	1296	1336	1385	1408	1421	1424	1424	1400	1370	1321	1294	1274	1251	1241
70	1157	1158	1185	1202	1249	1286	1306	1336	1336	1329	1310	1274	1226	1199	1176	1157	1157
71	1085	1075	1106	1125	1159	1193	1217	1236	1247	1227	1207	1187	1149	1120	1096	1079	1085
72	1004	1004	1038	1064	1089	1123	1144	1155	1163	1143	1123	1108	1076	1043	1024	1006	1004
73	924	930	954	985	1012	1046	1070	1084	1088	1071	1054	1033	994	966	947	930	924
74	853	857	878	898	934	969	994	1013	1014	1002	985	956	918	892	869	852	853
75	785	786	808	832	863	893	913	933	929	925	904	878	845	820	803	786	785
76	718	722	737	760	795	823	845	864	860	855	834	813	777	751	737	720	718
77	658	663	679	698	724	754	774	789	790	779	763	739	707	687	675	662	658
78	600	603	618	639	667	694	714	725	725	712	697	677	648	630	614	606	600
79	546	551	564	582	604	632	646	661	666	650	640	617	592	576	559	551	546
80	497	500	513	529	551	573	588	602	600	592	579	561	538	522	509	501	497
81	449	453	468	483	499	521	534	546	547	540	529	508	491	474	459	454	449
82	405	408	422	436	453	471	483	495	497	492	478	461	444	429	415	408	405
83	363	365	380	394	409	428	440	452	450	447	435	418	400	385	372	365	363
84	320	323	334	350	367	384	395	407	408	405	392	376	358	343	331	322	320
85	275	278	289	307	325	344	356	365	365	363	350	336	317	301	287	277	275
86	222	229	239	258	279	300	312	322	325	319	308	291	274	256	240	227	222
87	166	171	183	203	229	252	267	275	277	272	257	243	222	203	186	172	166
88	111	115	124	144	169	195	212	224	226	220	206	190	166	142	126	116	111
89	93	91	89	95	116	135	153	162	167	162	148	133	117	105	98	94	93
90	101	100	96	91	88	95	104	113	117	112	105	98	94	95	98	100	101
91	107	106	104	101	96	93	91	91	90	89	91	95	100	104	106	107	107
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93	122	121	120	117	112	109	107	106	105	104	105	107	109	112	117	119	122
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97	151	152	153	153	154	154	147	143	140	138	137	142	148	150	154	151	151
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125	85	83	83	82	80	80	82	83	84	84	86	86	89	88	87	86	85
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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 *****