



NVLAP LAB CODE 201011-0

Report No.: GZE150818-F3

LM-79-08 Test Report

For

Premium Quality Lighting, Inc.

(Brand Name: Superior Life®)

2285 Ward Avenue
Simi Valley, CA 93065

Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires

Model name(s): 83417

Representative (Tested) Model: 83417

Model Different: N/A

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date: Sep.09,2015

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: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

Tel: 8620-3229 0320

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<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	Sep.09,2015
Test Report No.	GZE150818-F3
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	Premium Quality Lighting	
Brand Name	Superior Life®	
Model Number	83417	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires	
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	--	105.0	W
Input Current	--	0.8811	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9931	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	14154	lm
Initial Lumen Efficacy	--	134.80	lm/w
Correlated color temperature / CCT	4159	--	K
Color rendering index / CRI	74.7	--	
R9 Value	0	--	
Duv	-0.0008	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)		5035	cd
Beam angle (if applicable)		113.7	°
Zonal lumens in the 0°-60° zone		82	%
Zonal lumens in the 60°-90° zone	----	17.9	%
Zonal lumens in the 90°-120° zone		0	%
Zonal lumens in the 120°-180° zone		0.1	%

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Test Specifications:	
Date of Receipt	: Aug.08,2015
Date of Test	: Aug.15,2015
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 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.

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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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1. Product Information:

Brand Name	Superior Life®
Model Number	83417
Luminaire Type	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires
Rated Voltage / Frequency	100~ 277V, 50/60 Hz
Nominal Power	105W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	Nichia Corporation
LED Model	NF2L757DR (Nominal CCT: 2700 K)
Sample Receipt Date	Aug.08,2015
Sample Number	GZE150818-F31(4000K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-08-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	83417		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150818	120.0	60	0.8811	105.0	0.9931	7.58
-F31	277.0	60	0.4161	105.4	0.9144	10.36

Sphere-Spectroradiometer Method in GE M250R2 Roadway Lamp:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	71	R9	0
Frequency (Hz)	60	R2	82	R10	57
Color Rendering Index (CRI)	74.7	R3	89	R11	69
R9	0	R4	73	R12	50
CCT (K)	4159	R5	72	R13	73
Chromaticity (x, y)	x=0.3732 y=0.3704	R6	74	R14	94
Chromaticity (u', v')	u'=0.2228 v'=0.4977	R7	82	R15	66
Duv	-0.0008	R8	55	--	--

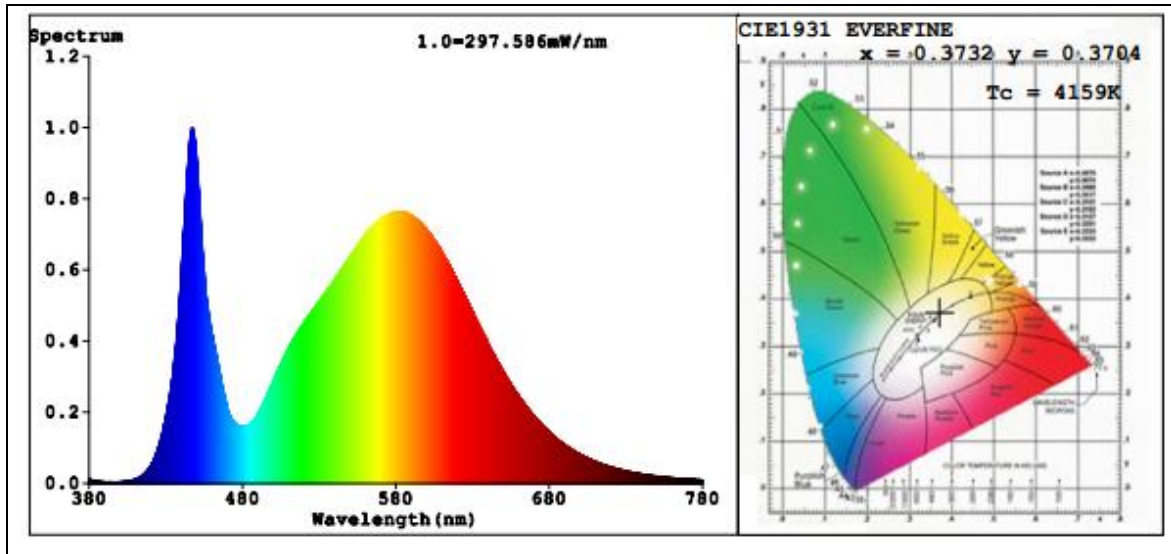
Goniophotometer Method in GE M250R2 Roadway Lamp:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	14154
Luminous Efficacy (lm/W)	134.80
Beam Angle °	113.7
Center Beam Candle Power (cd)	5035

Goniophotometer Method in GE M250R2 Roadway Lamp:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	14252
Luminous Efficacy (lm/W)	135.22

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,962.1	28%
0-40	6,527.3	46.1%
0-60	11,601.3	82%
60-90	2,532.4	17.9%
70-100	825.0	5.8%
90-120	4.2	0%
0-90	14,133.7	99.9%
90-180	18.6	0.1%
0-180	14,152.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	478.2	3.4%	90-100	0.7	0%
10-20	1,377.4	9.7%	100-110	1.8	0%
20-30	2,106.5	14.9%	110-120	1.8	0%
30-40	2,565.2	18.1%	120-130	2.4	0%
40-50	2,680.5	18.9%	130-140	2.9	0%
50-60	2,393.5	16.9%	140-150	3.2	0%
60-70	1,708.1	12.1%	150-160	3.0	0%
70-80	762.3	5.4%	160-170	2.1	0%
80-90	62.0	0.4%	170-180	0.8	0%

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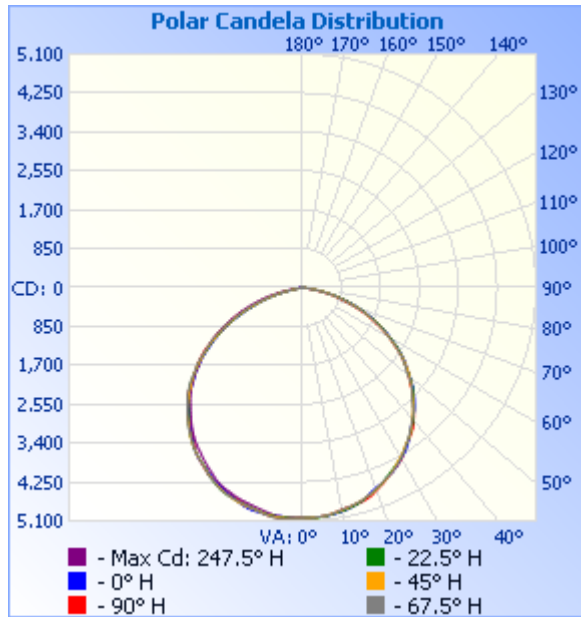
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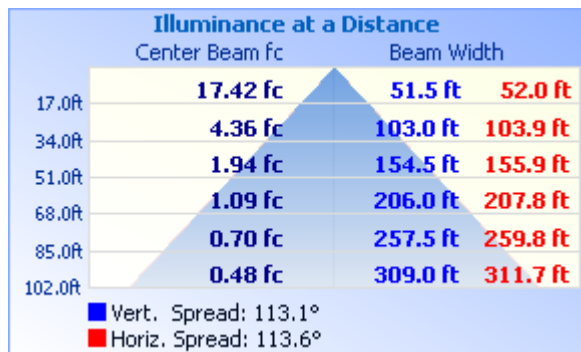
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Photometric Data



Illuminance Plots



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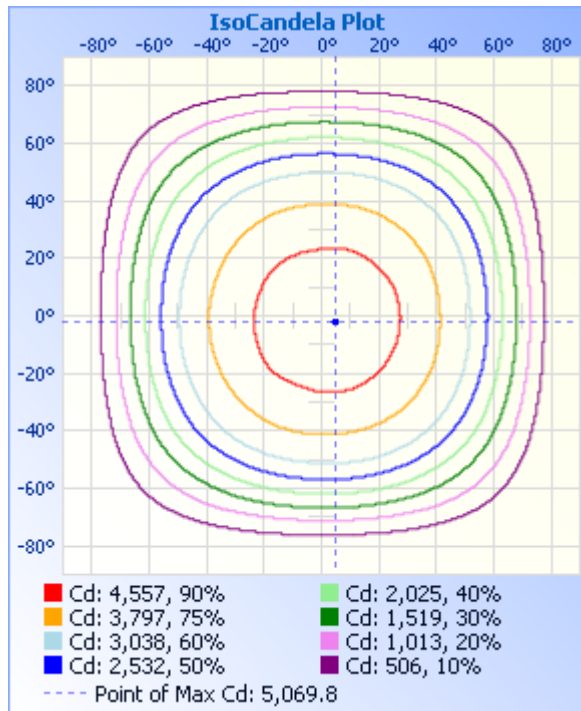
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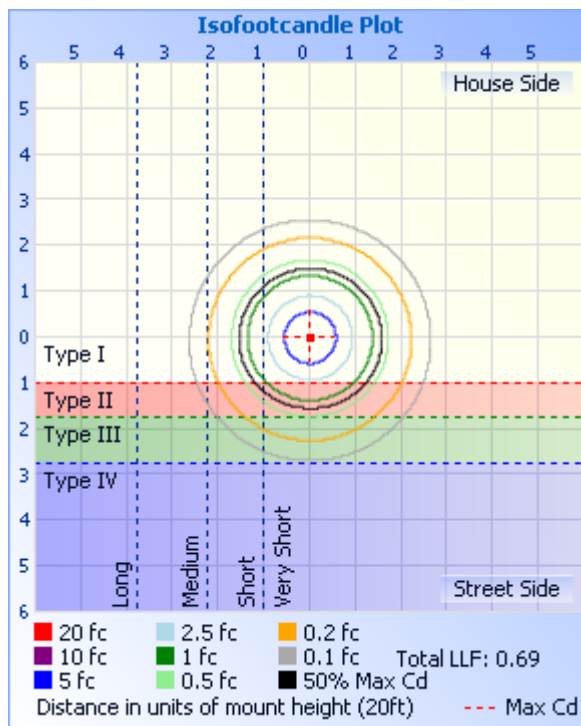
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ISOCANDELA DIAGRAM



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	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035	5035
1	5025	5027	5031	5031	5028	5029	5031	5033	5038	5040	5035	5034	5043	5039	5034	5031	5025
2	5019	5031	5026	5030	5026	5026	5027	5027	5037	5044	5040	5044	5054	5043	5034	5030	5019
3	5021	5033	5026	5028	5026	5021	5014	5018	5033	5042	5045	5049	5058	5045	5032	5033	5021
4	5019	5033	5021	5019	5022	5015	5003	5006	5021	5035	5047	5055	5060	5046	5034	5032	5019
5	5015	5025	5015	5014	5017	5004	4995	5002	5021	5035	5050	5062	5057	5042	5027	5025	5015
6	5012	5014	5003	5005	5007	5000	4985	5006	5022	5036	5046	5070	5057	5040	5016	5020	5012
7	5004	4999	4988	4987	4991	4990	4983	5008	5022	5030	5039	5067	5048	5037	5004	5012	5004
8	4992	4983	4973	4968	4969	4979	4985	5016	5020	5023	5034	5052	5042	5032	4993	4993	4992
9	4978	4969	4955	4949	4945	4965	4983	5021	5012	5013	5021	5033	5028	5023	4984	4968	4978
10	4965	4958	4940	4924	4923	4950	4972	5016	5005	4991	5004	5013	5005	5011	4973	4945	4965
11	4949	4942	4921	4906	4907	4930	4953	5002	5000	4974	4981	4990	4984	4993	4953	4923	4949
12	4931	4923	4905	4893	4895	4905	4934	4989	4992	4957	4963	4968	4958	4972	4935	4904	4931
13	4910	4905	4879	4876	4886	4880	4916	4964	4984	4938	4953	4943	4934	4952	4918	4884	4910
14	4878	4884	4858	4858	4873	4859	4889	4936	4968	4920	4940	4921	4912	4929	4900	4865	4878
15	4850	4856	4832	4835	4861	4838	4865	4910	4942	4905	4926	4902	4890	4903	4882	4846	4850
16	4816	4823	4808	4810	4848	4816	4842	4877	4913	4893	4905	4886	4866	4878	4867	4827	4816
17	4779	4789	4781	4781	4829	4796	4816	4843	4876	4876	4888	4871	4842	4858	4848	4807	4779
18	4734	4758	4755	4749	4801	4777	4784	4814	4837	4854	4863	4852	4819	4836	4822	4785	4734
19	4693	4728	4725	4715	4762	4749	4756	4786	4806	4838	4839	4837	4792	4809	4793	4756	4693
20	4657	4696	4689	4681	4716	4713	4732	4762	4771	4820	4810	4818	4768	4778	4759	4731	4657
21	4634	4662	4647	4644	4675	4676	4696	4735	4736	4797	4779	4790	4739	4747	4720	4707	4634
22	4609	4621	4613	4604	4640	4639	4667	4699	4705	4768	4748	4761	4713	4718	4681	4677	4609
23	4579	4573	4582	4569	4596	4603	4638	4655	4673	4730	4715	4726	4687	4689	4646	4646	4579
24	4546	4528	4551	4535	4554	4570	4610	4608	4642	4691	4674	4687	4660	4665	4614	4611	4546
25	4518	4484	4515	4506	4510	4539	4580	4558	4605	4648	4635	4648	4631	4632	4575	4562	4518
26	4483	4442	4472	4476	4474	4510	4531	4513	4565	4604	4600	4609	4601	4591	4531	4510	4483
27	4444	4409	4421	4436	4439	4478	4477	4469	4529	4552	4553	4564	4562	4544	4482	4464	4444
28	4400	4370	4371	4397	4407	4442	4435	4434	4487	4496	4505	4512	4518	4490	4434	4421	4400
29	4355	4333	4319	4348	4368	4405	4382	4399	4457	4447	4456	4464	4469	4439	4388	4373	4355

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30	4310	4294	4277	4295	4324	4360	4342	4358	4421	4405	4416	4417	4426	4389	4346	4327	4310
31	4267	4240	4230	4244	4265	4306	4299	4314	4385	4367	4375	4371	4384	4343	4308	4277	4267
32	4222	4184	4175	4196	4197	4244	4244	4268	4342	4330	4333	4324	4336	4299	4258	4226	4222
33	4170	4133	4119	4139	4134	4184	4173	4215	4293	4286	4283	4280	4280	4255	4215	4185	4170
34	4112	4081	4073	4082	4086	4122	4106	4156	4233	4238	4232	4235	4213	4211	4166	4138	4112
35	4043	4032	4031	4026	4044	4060	4052	4097	4167	4182	4186	4179	4140	4159	4111	4088	4043
36	3984	3985	3987	3966	4001	4006	4013	4049	4097	4122	4137	4121	4068	4105	4059	4034	3984
37	3919	3923	3928	3907	3957	3942	3974	4003	4020	4065	4070	4063	4005	4039	4010	3980	3919
38	3854	3871	3864	3845	3910	3885	3927	3964	3950	4009	4003	4011	3953	3973	3952	3918	3854
39	3796	3816	3794	3787	3850	3837	3865	3910	3894	3942	3935	3955	3899	3911	3883	3854	3796
40	3746	3753	3729	3739	3775	3781	3797	3842	3843	3870	3874	3895	3844	3851	3812	3792	3746
41	3697	3691	3669	3683	3709	3719	3730	3768	3781	3802	3820	3828	3791	3781	3744	3721	3697
42	3638	3632	3610	3612	3636	3643	3656	3700	3716	3731	3759	3754	3735	3711	3693	3659	3638
43	3580	3568	3541	3528	3562	3567	3578	3632	3642	3666	3692	3695	3686	3650	3643	3593	3580
44	3521	3496	3472	3446	3495	3492	3506	3560	3575	3604	3615	3630	3630	3590	3578	3532	3521
45	3454	3427	3399	3381	3432	3428	3445	3478	3519	3542	3545	3566	3562	3523	3508	3471	3454
46	3381	3365	3330	3328	3347	3361	3375	3402	3452	3474	3470	3506	3493	3468	3424	3412	3381
47	3310	3300	3261	3269	3262	3294	3305	3325	3362	3404	3386	3439	3423	3404	3350	3343	3310
48	3239	3227	3195	3203	3177	3227	3235	3248	3271	3334	3302	3361	3341	3329	3275	3270	3239
49	3152	3141	3122	3121	3097	3133	3149	3185	3181	3264	3218	3282	3234	3253	3194	3196	3152
50	3069	3065	3052	3019	3032	3025	3070	3105	3095	3169	3152	3203	3131	3183	3122	3123	3069
51	2980	2981	2982	2929	2981	2946	2981	3010	3025	3074	3074	3095	3056	3097	3047	3034	2980
52	2906	2898	2907	2864	2898	2883	2885	2909	2947	2988	2992	2994	2983	3012	2979	2945	2906
53	2836	2812	2831	2802	2807	2813	2810	2815	2853	2901	2906	2929	2904	2934	2906	2848	2836
54	2767	2739	2754	2730	2722	2721	2735	2735	2765	2813	2797	2843	2828	2854	2825	2778	2767
55	2695	2670	2669	2642	2648	2634	2654	2654	2684	2716	2701	2742	2756	2754	2741	2708	2695
56	2609	2589	2572	2551	2561	2550	2551	2560	2584	2607	2619	2647	2663	2667	2641	2619	2609
57	2515	2505	2474	2469	2465	2465	2452	2468	2468	2505	2521	2548	2579	2573	2548	2543	2515
58	2423	2421	2388	2378	2351	2373	2366	2355	2373	2411	2433	2454	2481	2478	2467	2448	2423
59	2321	2329	2284	2277	2271	2257	2259	2265	2288	2315	2327	2373	2369	2382	2383	2345	2321
60	2226	2227	2194	2180	2198	2164	2157	2169	2179	2213	2214	2284	2274	2305	2281	2260	2226
61	2145	2130	2115	2092	2095	2076	2056	2058	2086	2092	2120	2184	2183	2209	2178	2184	2145

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62	2071	2044	2022	2010	1999	1979	1953	1961	1971	2009	2018	2080	2095	2101	2089	2088	2071
63	1979	1960	1922	1915	1908	1862	1860	1859	1858	1913	1907	1968	1992	1987	1997	1983	1979
64	1879	1876	1844	1810	1789	1778	1764	1755	1771	1790	1805	1872	1881	1890	1893	1894	1879
65	1781	1778	1747	1731	1699	1670	1646	1639	1661	1670	1705	1761	1781	1809	1791	1800	1781
66	1693	1678	1649	1639	1621	1560	1538	1547	1537	1576	1601	1636	1681	1710	1700	1704	1693
67	1606	1577	1551	1546	1514	1487	1443	1438	1426	1455	1491	1529	1581	1611	1609	1608	1606
68	1506	1486	1464	1454	1416	1385	1340	1325	1330	1360	1377	1430	1467	1512	1504	1512	1506
69	1407	1401	1365	1352	1296	1277	1243	1208	1204	1239	1264	1322	1348	1406	1404	1417	1407
70	1303	1302	1276	1243	1209	1175	1124	1097	1102	1128	1163	1224	1245	1301	1300	1317	1303
71	1215	1202	1179	1152	1107	1072	1020	995	1006	1016	1060	1115	1138	1191	1198	1216	1215
72	1118	1101	1072	1052	1000	967	937	888	893	919	952	1008	1036	1089	1104	1117	1118
73	1019	1015	984	953	909	865	823	788	791	812	848	901	940	985	996	1024	1019
74	926	917	893	859	813	776	720	697	693	707	750	806	840	889	907	925	926
75	831	822	799	764	724	678	632	596	589	611	650	697	742	794	808	828	831
76	743	733	710	673	632	586	534	505	486	513	542	577	635	694	713	730	743
77	647	647	620	588	538	484	446	413	379	411	437	456	512	603	627	646	647
78	553	557	535	500	433	378	351	312	275	304	329	339	395	513	541	559	553
79	446	467	456	416	333	278	259	221	189	210	224	236	288	401	462	462	446
80	345	368	380	318	241	192	176	145	117	131	137	148	198	299	384	365	345
81	253	281	310	228	166	122	107	86	64	72	74	83	121	208	308	271	253
82	176	197	231	156	103	69	59	43	38	35	36	39	64	134	216	190	176
83	110	129	151	97	54	34	31	26	22	23	24	26	30	78	137	122	110
84	58	75	89	51	29	25	21	18	16	17	19	21	23	38	76	68	58
85	30	35	47	26	23	19	16	12	12	11	13	16	18	23	39	30	30
86	21	19	24	20	18	14	10	8	6	6	8	11	13	17	21	19	21
87	14	13	15	15	13	9	5	4	2	3	3	6	9	12	14	13	14
88	8	8	10	10	9	4	2	3	1	2	1	5	4	8	8	7	8
89	3	3	4	4	4	1	1	1	1	2	1	4	1	2	3	3	3
90	2	1	1	1	1	0	1	1	1	2	1	3	0	0	0	1	2
91	0	0	0	0	1	0	0	1	1	1	1	2	0	0	0	0	0
92	0	0	0	0	1	1	0	1	1	1	1	2	0	0	0	0	0
93	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0

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94	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0
95	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0
96	0	0	0	0	1	1	1	1	2	1	1	1	0	0	0	0	0
97	0	0	0	0	1	1	1	1	2	1	1	1	0	0	0	0	0
98	0	0	0	0	1	1	1	1	3	1	1	1	0	0	0	0	0
99	0	0	0	0	1	1	1	1	7	1	1	1	0	0	0	0	0
100	0	0	0	0	1	1	1	1	24	1	1	1	0	0	0	0	0
101	0	0	0	0	1	1	1	1	38	1	1	1	0	0	0	0	0
102	0	0	0	0	1	1	1	1	51	1	1	1	0	0	0	0	0
103	0	0	0	0	1	1	1	1	30	1	1	1	0	0	0	0	0
104	0	0	0	0	1	1	1	1	11	2	1	1	0	0	0	0	0
105	0	0	0	0	1	1	1	2	2	2	1	1	0	0	0	0	0
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107	0	0	0	0	2	2	2	2	2	2	2	2	1	0	0	0	0
108	0	0	0	0	2	2	2	2	2	2	2	2	1	0	0	0	0
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124	3	2	2	2	3	3	3	3	3	3	3	2	2	2	2	2	3
125	3	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	3

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126	3	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	3
127	3	3	2	2	3	3	3	3	4	4	3	3	2	2	2	2	3
128	3	3	2	2	4	3	3	4	4	4	3	3	2	2	2	3	3
129	3	3	3	2	4	4	3	4	4	4	3	3	2	2	2	3	3
130	3	3	3	2	4	4	4	4	4	4	4	3	2	2	2	3	3
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147	5	5	5	4	6	6	6	6	6	6	6	6	4	4	4	5	5
148	5	5	5	4	6	6	6	6	6	7	6	6	4	4	4	5	5
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156	7	6	6	5	8	7	8	8	8	8	8	8	5	5	6	6	7
157	7	6	6	6	8	7	8	8	8	8	8	8	5	6	6	6	7

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158	7	6	6	6	7	8	8	8	8	8	8	8	5	6	6	6	7
159	7	6	6	6	7	8	8	8	8	8	8	8	6	6	6	7	7
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162	7	7	6	6	8	8	8	8	8	9	9	8	6	6	6	7	7
163	7	7	6	7	8	8	8	8	8	9	9	8	6	6	6	7	7
164	7	7	7	7	8	8	8	8	8	9	9	8	6	6	7	7	7
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166	7	8	7	7	8	8	8	8	8	9	9	8	7	7	7	7	7
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179	8	8	8	8	9	8	8	8	8	8	8	8	8	8	8	8	8
180	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

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 *******