



Report No.: GZE150818-N2

NVLAP LAB CODE 201011-0

## 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): 83415

Representative (Tested) Model: 83415

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

Fax: 8620-32290422

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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	A Sep.09,2015
Test Report No.	GZE150818-N2
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	Premium Quality Lighting	
Brand Name	Superior Life®	
Model Number	83415	
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	--	202.5	W
Input Current	--	1.6992	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9931	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	26788	lm
Initial Lumen Efficacy	--	132.25	lm/w
Correlated color temperature / CCT	4986	--	K
Color rendering index / CRI	75.2	--	
R9 Value	0	--	
Duv	0.0037	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		9479	cd
Beam angle (if applicable)		114.0	°
Zonal lumens in the 0°-60° zone		81.8	%
Zonal lumens in the 60°-90° zone	----	18	%
Zonal lumens in the 90°-120° zone		0.1	%
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  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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	83415
Luminaire Type	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires
Rated Voltage / Frequency	100~ 277V, 50/60 Hz
Nominal Power	200W
Rated Initial Lamp Lumen	--
Declared CCT	5000K
LED Manufacturer	Nichia Corporation
LED Model	NF2L757DR (Nominal CCT: 2700 K)
Sample Receipt Date	Aug.08,2015
Sample Number	GZE150818-N21(5000K)

**Photo**



<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
------------------------------------------------------------------------------------------------------	-----------------------

<b>Test date</b>	2015-08-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	83415		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150818	120.0	60	1.6992	202.5	0.9931	8.31
-N21	277.0	60	0.7886	201.7	0.9233	11.51

**Sphere-Spectroradiometer Method in GE M250R2 Roadway Lamp:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	81	R10	52
Color Rendering Index (CRI)	75.2	R3	85	R11	69
R9	0	R4	74	R12	39
CCT (K)	4986	R5	72	R13	74
Chromaticity (x, y)	x=0.3462 y=0.3600	R6	72	R14	91
Chromaticity (u', v')	u'=0.2089 v'=0.4889	R7	85	R15	68
Duv	0.0037	R8	61	--	--

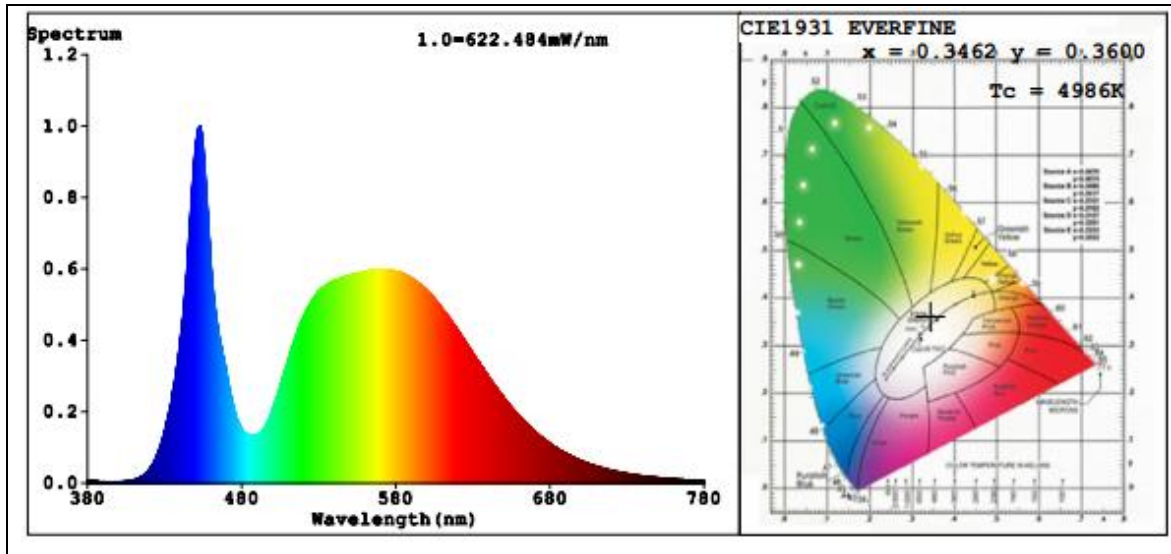
**Goniophotometer Method in GE M250R2 Roadway Lamp:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	26788
Luminous Efficacy (lm/W)	132.25
Beam Angle °	114.0
Center Beam Candle Power (cd)	9479

**Goniophotometer Method in GE M250R2 Roadway Lamp:**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	26776
Luminous Efficacy (lm/W)	132.75

**Spectral Power Distribution & Chromaticity Diagram**



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**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7,458.2	27.8%
0-40	12,300.7	45.9%
0-60	21,901.8	81.8%
60-90	4,820.1	18%
70-100	1,579.8	5.9%
90-120	17.4	0.1%
0-90	26,721.9	99.8%
90-180	62.8	0.2%
0-180	26,784.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	899.1	3.4%	90-100	3.2	0%
10-20	2,591.6	9.7%	100-110	6.2	0%
20-30	3,967.5	14.8%	110-120	8.1	0%
30-40	4,842.5	18.1%	120-130	9.6	0%
40-50	5,065.6	18.9%	130-140	10.4	0%
50-60	4,535.5	16.9%	140-150	9.7	0%
60-70	3,243.5	12.1%	150-160	8.2	0%
70-80	1,439.2	5.4%	160-170	5.4	0%
80-90	137.4	0.5%	170-180	2.0	0%

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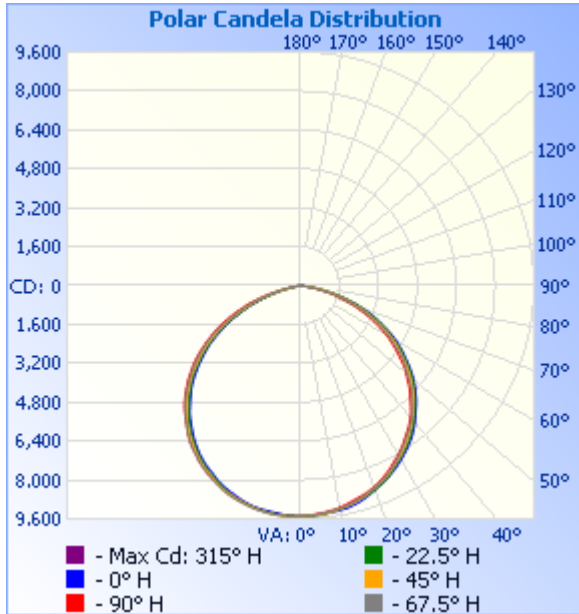
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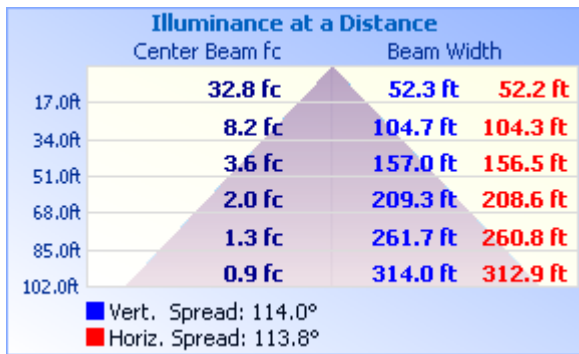
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### Photometric Data



### Illuminance Plots



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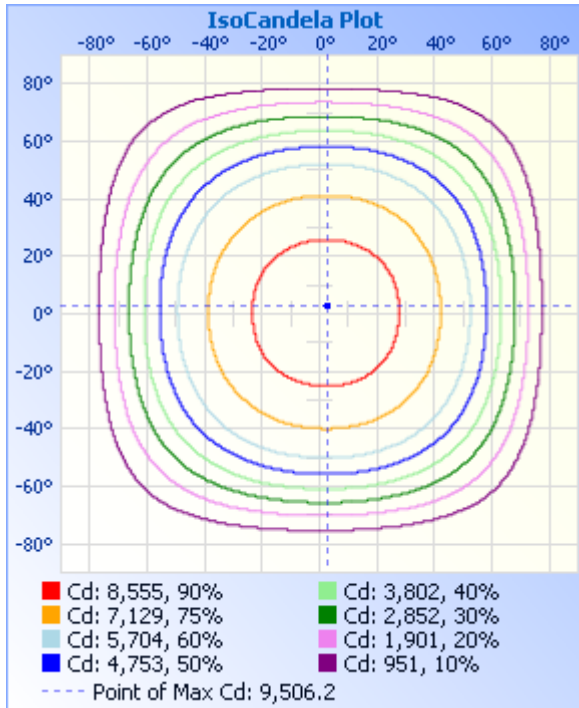
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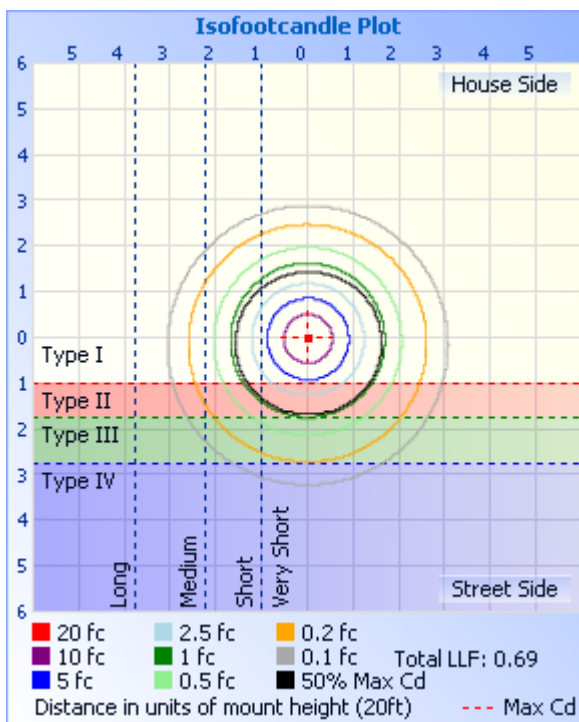
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### ISOCANDELA DIAGRAM



### 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	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479	9479
1	9479	9473	9473	9470	9469	9466	9468	9470	9480	9481	9486	9488	9483	9487	9488	9491	9479
2	9479	9474	9472	9459	9450	9453	9460	9462	9472	9484	9492	9492	9475	9489	9501	9499	9479
3	9474	9475	9464	9446	9434	9443	9448	9451	9461	9477	9494	9490	9460	9482	9506	9504	9474
4	9460	9472	9458	9435	9415	9433	9438	9442	9448	9473	9489	9490	9454	9476	9506	9503	9460
5	9447	9468	9447	9419	9395	9418	9429	9433	9431	9470	9486	9488	9446	9464	9494	9493	9447
6	9431	9451	9435	9394	9377	9403	9423	9421	9409	9458	9479	9482	9436	9451	9477	9482	9431
7	9416	9415	9415	9377	9355	9385	9409	9404	9390	9449	9458	9469	9426	9438	9463	9467	9416
8	9399	9386	9391	9356	9327	9362	9392	9384	9371	9433	9439	9456	9414	9424	9450	9450	9399
9	9391	9357	9356	9329	9298	9331	9357	9365	9351	9402	9416	9438	9394	9410	9442	9429	9391
10	9376	9332	9320	9301	9265	9293	9324	9339	9336	9375	9389	9412	9374	9390	9425	9409	9376
11	9359	9300	9291	9267	9225	9252	9285	9301	9313	9342	9358	9389	9354	9377	9405	9381	9359
12	9342	9269	9265	9234	9182	9215	9239	9255	9285	9314	9328	9361	9333	9355	9376	9356	9342
13	9305	9227	9236	9199	9134	9174	9196	9202	9250	9284	9294	9327	9303	9344	9351	9321	9305
14	9269	9183	9200	9160	9088	9130	9143	9151	9208	9250	9258	9288	9271	9315	9320	9279	9269
15	9231	9146	9156	9117	9047	9080	9083	9099	9156	9211	9215	9253	9238	9286	9286	9234	9231
16	9179	9114	9102	9066	9007	9030	9026	9051	9103	9176	9171	9217	9199	9244	9238	9183	9179
17	9124	9075	9045	9016	8968	8981	8979	9006	9051	9138	9129	9178	9155	9196	9186	9131	9124
18	9062	9031	8992	8962	8922	8933	8937	8961	8997	9083	9084	9141	9110	9144	9131	9090	9062
19	9005	8983	8932	8908	8870	8879	8897	8912	8944	9020	9046	9099	9059	9085	9073	9049	9005
20	8944	8937	8875	8854	8811	8824	8851	8863	8890	8957	9003	9046	9004	9025	9019	9009	8944
21	8881	8882	8815	8792	8751	8763	8791	8803	8831	8895	8953	8984	8943	8968	8968	8955	8881
22	8825	8823	8746	8735	8686	8695	8729	8731	8772	8816	8891	8916	8883	8914	8915	8903	8825
23	8768	8758	8687	8669	8612	8619	8660	8657	8701	8744	8816	8852	8822	8863	8869	8844	8768
24	8704	8697	8630	8596	8533	8549	8576	8577	8616	8672	8736	8788	8766	8811	8820	8779	8704
25	8640	8623	8561	8521	8454	8468	8488	8499	8531	8601	8651	8717	8698	8753	8761	8717	8640
26	8569	8533	8480	8442	8367	8377	8407	8428	8464	8532	8578	8647	8639	8691	8695	8642	8569
27	8496	8444	8390	8355	8279	8304	8329	8350	8394	8460	8518	8579	8569	8632	8618	8560	8496
28	8426	8360	8303	8265	8195	8223	8250	8265	8321	8384	8452	8504	8503	8564	8534	8479	8426

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29	8350	8275	8228	8175	8113	8138	8164	8177	8237	8305	8374	8425	8429	8488	8447	8393	8350
30	8269	8191	8154	8077	8030	8040	8083	8083	8148	8212	8287	8339	8347	8402	8358	8313	8269
31	8180	8118	8066	7984	7936	7939	7987	7990	8061	8124	8193	8246	8252	8312	8272	8242	8180
32	8099	8032	7968	7892	7838	7841	7878	7898	7968	8031	8097	8160	8161	8217	8187	8168	8099
33	8018	7951	7873	7803	7746	7746	7768	7799	7866	7923	8000	8086	8074	8127	8106	8090	8018
34	7930	7858	7780	7699	7639	7655	7665	7706	7764	7829	7898	8002	7983	8030	8024	7998	7930
35	7844	7766	7684	7603	7535	7574	7569	7611	7651	7728	7799	7908	7886	7931	7933	7898	7844
36	7748	7676	7575	7508	7443	7482	7475	7504	7530	7621	7706	7801	7789	7827	7833	7794	7748
37	7646	7574	7480	7412	7346	7379	7365	7397	7412	7508	7598	7685	7682	7733	7739	7688	7646
38	7542	7463	7382	7318	7250	7259	7241	7280	7296	7392	7497	7563	7566	7634	7639	7584	7542
39	7429	7353	7277	7212	7138	7142	7115	7150	7183	7265	7379	7439	7446	7536	7530	7476	7429
40	7309	7241	7152	7103	7035	7010	6985	7019	7067	7139	7246	7312	7326	7432	7413	7364	7309
41	7189	7123	7030	6985	6915	6882	6855	6886	6949	7018	7122	7192	7211	7313	7309	7262	7189
42	7063	7006	6922	6868	6779	6748	6734	6756	6809	6891	6993	7073	7110	7180	7192	7153	7063
43	6948	6886	6816	6748	6632	6615	6611	6639	6669	6765	6864	6955	6996	7050	7083	7041	6948
44	6841	6768	6702	6613	6497	6463	6495	6497	6529	6629	6739	6831	6875	6917	6957	6922	6841
45	6727	6639	6581	6481	6373	6319	6371	6338	6393	6486	6604	6700	6746	6795	6835	6790	6727
46	6601	6519	6456	6348	6245	6180	6240	6192	6268	6335	6460	6554	6610	6676	6711	6651	6601
47	6470	6399	6325	6222	6108	6058	6090	6054	6132	6191	6304	6403	6466	6557	6568	6528	6470
48	6345	6263	6184	6085	5961	5922	5939	5929	5977	6064	6150	6254	6326	6427	6436	6403	6345
49	6210	6138	6043	5933	5812	5775	5778	5797	5817	5923	6004	6101	6180	6290	6297	6263	6210
50	6074	6010	5906	5777	5682	5624	5611	5638	5645	5767	5857	5945	6033	6146	6144	6130	6074
51	5936	5872	5759	5628	5555	5469	5430	5470	5483	5596	5700	5802	5878	5980	5994	5993	5936
52	5790	5721	5607	5484	5408	5320	5262	5282	5328	5422	5531	5646	5720	5804	5840	5842	5790
53	5631	5555	5457	5354	5242	5169	5115	5118	5156	5249	5351	5484	5569	5650	5694	5701	5631
54	5474	5395	5302	5231	5066	5012	4947	4950	4979	5085	5187	5308	5410	5500	5555	5543	5474
55	5311	5247	5137	5090	4911	4853	4776	4777	4803	4917	5025	5140	5243	5343	5411	5386	5311
56	5154	5100	4987	4922	4742	4676	4606	4605	4638	4724	4847	4978	5070	5192	5239	5233	5154
57	5007	4949	4838	4727	4581	4495	4448	4413	4479	4534	4670	4807	4895	5030	5055	5082	5007
58	4851	4799	4689	4545	4414	4319	4294	4230	4267	4360	4483	4630	4713	4857	4891	4937	4851
59	4694	4612	4533	4385	4264	4158	4102	4072	4068	4182	4274	4441	4535	4678	4742	4768	4694
60	4540	4427	4366	4231	4100	3989	3897	3899	3875	3984	4079	4259	4352	4506	4576	4558	4540

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61	4381	4269	4193	4067	3901	3807	3704	3694	3687	3789	3910	4056	4163	4333	4394	4388	4381
62	4200	4117	4022	3886	3718	3622	3511	3490	3500	3585	3706	3862	3980	4145	4212	4221	4200
63	4013	3949	3839	3704	3534	3437	3318	3285	3312	3381	3502	3653	3794	3940	4027	4048	4013
64	3815	3766	3651	3509	3350	3252	3126	3078	3097	3177	3298	3444	3594	3742	3855	3874	3815
65	3641	3591	3458	3333	3185	3058	2955	2895	2880	2969	3095	3236	3408	3561	3679	3692	3641
66	3465	3403	3264	3150	2983	2862	2759	2681	2686	2749	2881	3048	3196	3375	3462	3487	3465
67	3288	3220	3099	2955	2793	2640	2550	2483	2499	2546	2673	2840	3013	3167	3252	3292	3288
68	3097	3044	2929	2766	2619	2461	2358	2287	2281	2341	2464	2634	2792	2965	3074	3107	3097
69	2896	2860	2749	2563	2438	2281	2166	2096	2070	2150	2258	2425	2587	2775	2875	2921	2896
70	2686	2655	2538	2389	2231	2087	1986	1895	1882	1941	2064	2226	2391	2560	2683	2732	2686
71	2507	2449	2346	2213	2062	1901	1778	1701	1675	1734	1859	2012	2182	2367	2498	2531	2507
72	2319	2264	2160	2011	1877	1731	1598	1511	1484	1539	1658	1810	1967	2156	2279	2310	2319
73	2114	2073	1993	1839	1697	1548	1415	1328	1301	1339	1456	1611	1773	1959	2096	2129	2114
74	1928	1892	1816	1667	1525	1382	1241	1164	1125	1164	1269	1397	1579	1768	1890	1946	1928
75	1724	1720	1639	1494	1349	1191	1080	992	942	991	1068	1184	1386	1578	1704	1752	1724
76	1520	1548	1462	1334	1172	1009	907	816	762	808	883	979	1156	1388	1518	1557	1520
77	1316	1328	1291	1160	991	820	733	650	591	634	697	778	940	1201	1336	1363	1316
78	1096	1123	1118	995	789	636	564	489	442	476	521	587	741	987	1161	1144	1096
79	897	933	967	815	616	478	410	356	319	340	371	428	562	787	987	934	897
80	709	755	800	638	456	338	278	245	220	230	247	288	400	608	801	747	709
81	542	580	634	479	321	223	178	160	146	148	152	184	267	443	614	568	542
82	398	432	473	340	211	133	108	100	92	93	93	106	163	303	438	420	398
83	278	308	331	223	127	78	69	67	64	65	64	68	92	194	296	293	278
84	173	202	212	136	73	60	54	53	54	54	52	57	62	113	186	188	173
85	92	117	129	78	58	47	40	38	38	36	40	47	51	65	110	103	92
86	51	56	75	57	46	34	25	20	18	18	22	33	42	50	61	50	51
87	31	34	43	42	33	19	11	11	12	11	9	15	28	38	36	30	31
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90	3	3	3	2	3	3	3	4	3	4	3	3	1	2	2	2	3
91	1	1	1	1	3	3	3	4	3	4	3	3	1	1	1	1	1
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93	1	1	1	1	3	3	3	5	4	4	3	3	2	1	1	1	1
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157	19	18	18	17	20	20	20	20	17	16	19	19	15	15	17	19	19
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<b>3. Test Equipment</b>
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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 \*\*\*\*\***