



Report No.: GZE160347-Q3

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-8039E57-A

Representative (Tested) Model: LED-8039E57-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-Q3
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8039E57-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	--	18.04	W
Input Current	--	0.1521	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9886	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	2243.4	lm
Initial Lumen Efficacy	--	124.36	lm/w
Correlated color temperature / CCT	5552	--	K
Color rendering index / CRI	85.1	--	
R9 Value	15	--	
Duv	0.0021	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		91	cd
Beam angle (if applicable)		280.2	°
Zonal lumens in the 0°-60° zone		25.4	%
Zonal lumens in the 60°-90° zone	-----	30.9	%
Zonal lumens in the 90°-120° zone		28.7	%
Zonal lumens in the 120°-180° zone		15	%

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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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**1. Product Information:**

Brand Name	N/A
Model Number	LED-8039E57-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 Vac, 50/60Hz
Nominal Power	18W
Rated Initial Lamp Lumen	--
Declared CCT	5700K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-Q3(5700K)

**Photo**



<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-8039E57-A		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	0.1521	18.04	0.9886	11.72
-Q3	277.0	60	0.0673	16.81	0.9015	18.51

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	85.1
R9	15
CCT (K)	5552
Chromaticity (x, y)	x=0.3312 y=0.3440
Chromaticity (u', v')	u'=0.2049 v'=0.4789
Duv	0.0021

Special Color Rendering Indices			
R1	84	R9	15
R2	91	R10	77
R3	94	R11	84
R4	84	R12	63
R5	84	R13	86
R6	86	R14	97
R7	88	R15	79
R8	70	--	--

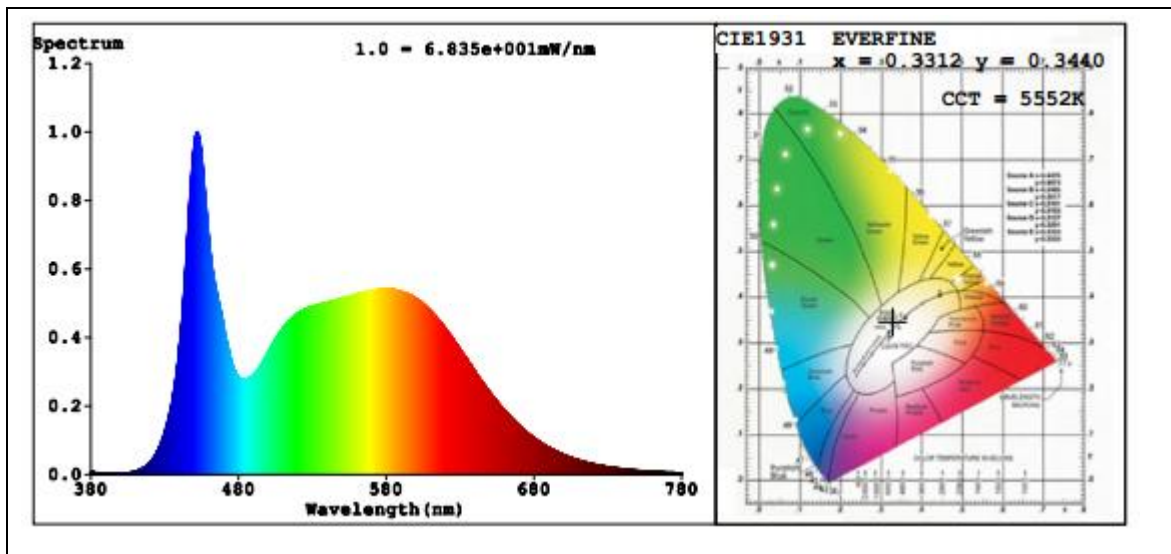
**Goniophotometer Method :**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2243.4
Luminous Efficacy (lm/W)	124.36
Beam Angle°	280.2
Center Beam Candle Power (cd)	91

**Goniophotometer Methodn :**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2084.9
Luminous Efficacy (lm/W)	124.03

**Spectral Power Distribution & Chromaticity Diagram**



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**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	110.1	4.9%
0-40	221.0	9.9%
0-60	570.7	25.4%
60-90	692.4	30.9%
70-100	707.7	31.5%
90-120	643.3	28.7%
0-90	1,263.1	56.3%
90-180	980.3	43.7%
0-180	2,243.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	9.2	0.4%	90-100	235.4	10.5%
10-20	33.0	1.5%	100-110	219.4	9.8%
20-30	67.9	3.0%	110-120	188.6	8.4%
30-40	110.9	4.9%	120-130	148.3	6.6%
40-50	156.0	7.0%	130-140	102.1	4.6%
50-60	193.7	8.6%	140-150	57.5	2.6%
60-70	220.0	9.8%	150-160	23.9	1.1%
70-80	234.1	10.4%	160-170	5.1	0.2%
80-90	238.3	10.6%	170-180	0.1	0%

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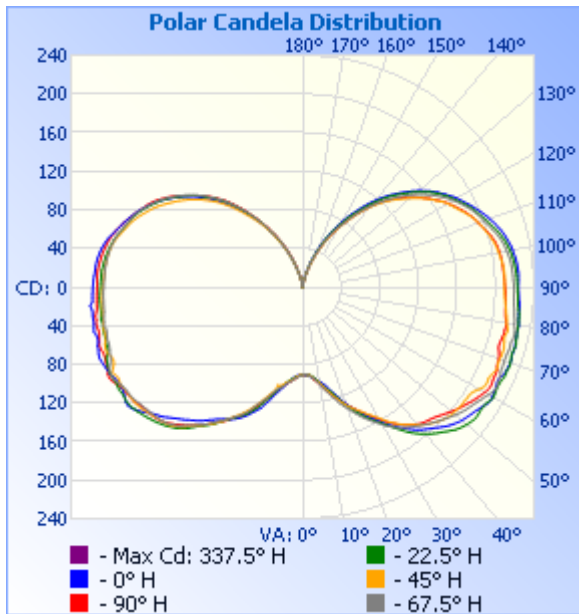
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### Photometric Data

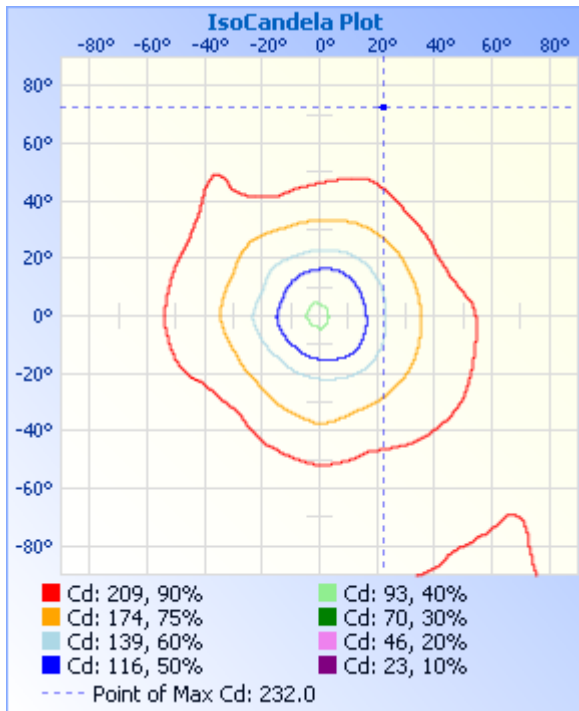


### Illuminance Plots

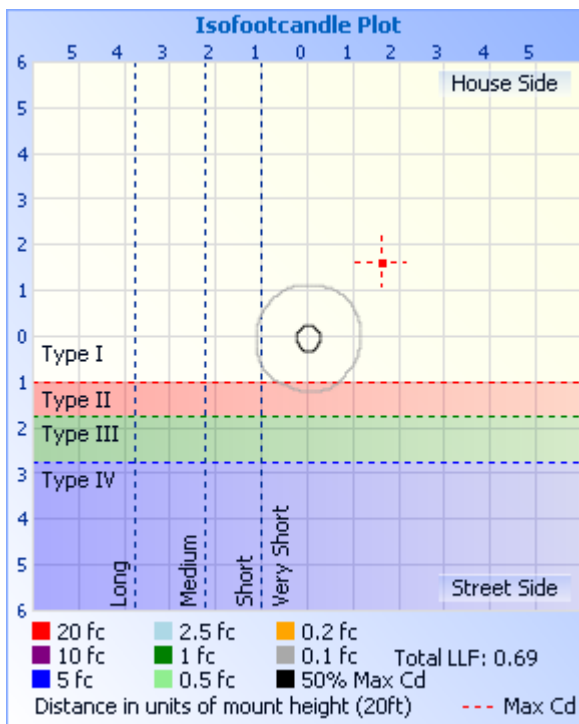
Illuminance at a Distance		
	Center Beam fc	Beam Width
17.0ft	<b>0.31 fc</b>	
34.0ft	<b>0.08 fc</b>	
51.0ft	<b>0.03 fc</b>	
68.0ft	<b>0.02 fc</b>	
85.0ft	<b>0.01 fc</b>	
102.0ft	<b>0.01 fc</b>	



### 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	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
1	91	90	91	90	91	91	91	91	91	91	91	92	91	91	91	91	91
2	91	91	91	90	91	91	91	91	92	92	91	92	92	92	91	91	91
3	92	91	91	91	91	92	92	92	92	92	92	93	93	94	92	92	92
4	93	91	91	91	91	92	92	93	92	93	93	94	94	95	93	93	93
5	93	92	92	93	93	93	93	94	93	94	95	95	95	97	94	93	93
6	94	93	93	94	94	95	95	95	95	95	96	97	96	98	96	94	94
7	95	94	95	96	96	97	97	97	97	96	97	98	98	99	98	96	95
8	96	96	97	98	98	99	99	99	99	98	98	99	99	101	100	97	96
9	98	98	99	100	100	101	102	101	101	99	100	101	101	102	101	98	98
10	100	101	101	102	102	104	104	103	103	101	101	103	102	104	102	99	100
11	101	102	103	105	105	106	107	106	105	104	102	105	104	105	105	101	101
12	102	105	106	108	107	109	110	108	108	105	104	106	106	106	106	103	102
13	104	107	109	111	110	112	114	111	110	108	105	107	108	108	108	105	104
14	107	110	111	114	113	115	117	115	114	111	104	109	111	111	110	108	107
15	110	112	114	117	115	118	121	119	117	114	110	111	113	114	111	109	110
16	114	115	117	120	118	121	124	123	120	117	113	114	116	116	114	112	114
17	117	118	120	124	120	125	128	127	124	120	116	118	119	119	116	115	117
18	120	122	123	127	123	128	131	130	128	123	119	121	122	122	119	118	120
19	124	126	126	130	126	131	135	133	132	127	123	124	126	125	123	122	124
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22	135	136	134	139	134	140	145	142	140	138	133	134	136	135	132	132	135
23	138	140	137	142	137	143	148	144	143	141	137	138	140	138	136	136	138
24	141	143	139	146	140	146	151	147	146	144	140	142	143	141	139	139	141
25	144	146	142	149	143	149	154	149	148	146	143	145	147	144	143	143	144
26	148	150	145	152	145	153	157	151	151	149	146	148	150	148	146	147	148
27	151	153	148	155	148	156	160	154	153	151	149	150	152	151	150	151	151
28	154	156	150	158	151	160	163	156	155	153	152	153	153	155	153	154	154

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29	157	159	153	161	154	163	166	158	156	156	155	156	157	158	156	158	157
30	161	162	156	164	158	167	169	161	158	159	159	158	160	161	160	162	161
31	165	166	160	167	161	171	173	164	159	162	162	161	162	164	163	165	165
32	168	169	163	170	164	175	176	167	161	165	165	164	165	167	165	168	168
33	171	173	167	173	167	179	180	170	163	169	168	167	168	170	168	170	171
34	174	177	170	175	171	183	183	173	166	172	171	169	170	173	172	173	174
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36	181	185	176	180	176	189	189	180	170	177	176	176	176	179	178	177	181
37	184	189	178	182	179	192	192	182	173	180	179	179	179	183	182	179	184
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40	193	198	186	187	185	199	202	191	180	191	189	187	187	193	190	186	193
41	195	201	189	189	187	201	205	193	182	194	192	190	189	196	193	188	195
42	197	204	191	191	188	203	207	196	184	196	194	193	192	200	196	190	197
43	199	206	193	193	189	205	209	198	187	198	196	195	194	203	200	192	199
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48	211	218	202	202	197	209	218	209	199	207	203	202	204	214	215	203	211
49	213	220	203	204	199	210	218	211	201	209	204	203	204	215	218	206	213
50	215	222	203	206	201	211	219	213	204	210	205	204	205	216	220	208	215
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52	217	224	205	210	204	212	219	217	210	213	208	205	206	217	223	214	217
53	219	225	205	211	206	213	220	218	213	214	209	206	207	218	225	216	219
54	220	225	205	213	208	214	221	219	216	215	210	207	208	218	226	218	220
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56	223	224	206	215	211	215	224	219	219	217	211	209	211	220	228	223	223
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58	227	226	207	219	215	218	226	218	217	217	212	211	212	220	228	225	227
59	228	227	209	221	216	219	226	218	216	217	212	211	213	221	228	226	228
60	227	228	211	223	218	220	226	218	215	218	213	212	214	221	227	226	227

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61	226	228	214	225	219	221	227	218	214	218	214	213	215	221	227	226	226
62	226	227	215	226	220	222	227	218	214	218	214	214	216	221	227	225	226
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93	224	222	210	219	209	218	222	214	217	209	206	206	213	219	227	227	224
94	224	222	210	218	209	218	222	214	216	209	206	206	213	219	227	227	224
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111	205	201	193	199	193	199	202	195	195	192	190	192	195	201	207	207	205
112	202	199	191	197	191	197	200	193	193	191	188	191	193	199	205	205	202
113	200	197	189	196	189	195	197	192	191	189	186	190	191	197	203	204	200
114	198	195	186	194	187	193	195	190	189	188	183	188	189	196	200	202	198
115	196	194	184	192	185	191	193	188	187	186	181	187	187	194	198	199	196
116	194	191	182	190	183	189	190	186	185	184	179	185	185	192	196	197	194
117	191	189	180	187	181	187	188	184	183	182	177	182	184	190	194	195	191
118	189	186	177	185	178	184	185	182	181	180	175	180	182	187	192	192	189
119	186	184	176	182	176	182	183	179	178	177	172	178	180	185	190	190	186
120	184	182	173	180	174	179	180	177	176	175	170	176	178	183	188	187	184
121	182	180	171	178	171	177	178	175	173	173	167	174	175	181	185	185	182
122	179	177	168	175	169	174	175	172	170	171	164	172	173	178	183	182	179
123	177	175	165	172	166	171	171	169	168	168	161	169	170	175	180	179	177
124	174	172	162	169	163	168	168	167	165	165	159	166	167	173	177	176	174

Laboratory: Standard-Tech Co. Ltd Testing Center

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125	171	169	159	166	160	165	165	164	162	162	156	163	164	170	174	173	171
126	168	167	156	163	157	162	162	161	159	159	153	160	160	167	171	170	168
127	165	164	153	159	154	159	159	158	156	156	150	158	157	164	168	167	165
128	162	160	150	156	151	156	156	155	153	153	148	155	154	161	164	163	162
129	159	157	147	152	148	153	153	152	149	150	144	152	151	157	161	160	159
130	155	153	143	149	145	149	150	149	146	147	141	149	148	154	158	156	155
131	152	150	140	145	142	146	147	146	142	144	138	145	144	150	154	153	152
132	148	146	137	141	138	143	143	142	139	141	135	142	141	146	151	149	148
133	144	142	133	137	135	139	139	139	135	137	131	138	138	143	147	145	144
134	140	138	130	134	131	135	136	135	131	134	128	135	135	139	143	141	140
135	137	135	127	130	128	131	132	132	127	130	124	131	132	135	140	137	137
136	133	131	123	126	125	128	128	128	123	126	121	127	128	132	136	133	133
137	129	127	120	122	121	124	124	124	119	123	117	124	124	128	132	129	129
138	125	123	116	118	117	120	120	120	115	119	113	120	121	124	128	125	125
139	121	119	112	114	113	116	116	116	111	114	109	115	116	120	124	122	121
140	117	114	108	109	109	112	112	112	107	110	104	111	112	116	120	117	117
141	113	110	104	105	105	108	108	107	103	105	100	107	108	111	116	113	113
142	109	105	100	101	101	103	103	103	99	101	96	103	103	107	111	109	109
143	104	101	95	97	96	99	98	99	95	97	92	98	99	103	106	105	104
144	100	97	91	92	92	94	94	94	91	92	88	94	95	98	102	100	100
145	96	93	87	88	87	90	89	90	87	88	85	90	90	94	97	95	96
146	92	89	83	84	83	86	85	86	83	84	81	85	86	90	93	91	92
147	87	85	79	79	79	81	81	81	79	80	78	81	82	85	88	87	87
148	83	80	75	76	75	77	78	77	75	76	74	77	78	81	84	82	83
149	79	76	71	72	71	73	74	73	71	72	70	73	74	77	79	78	79
150	74	72	67	68	67	69	70	69	67	68	66	69	70	73	75	74	74
151	70	68	63	65	63	65	66	65	63	64	62	65	66	69	71	70	70
152	66	64	59	61	60	61	62	62	59	60	58	62	62	65	67	66	66
153	62	60	56	57	56	57	58	58	54	56	54	58	58	61	63	62	62
154	58	56	51	53	52	53	54	54	51	52	50	54	54	57	59	59	58
155	54	52	48	49	48	49	50	50	46	48	46	50	50	53	55	55	54
156	50	48	44	45	45	45	46	46	43	44	43	46	47	49	51	52	50

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157	46	45	40	41	41	42	42	42	39	40	40	41	43	45	47	48	46
158	42	41	37	38	37	38	38	38	36	37	36	37	40	42	43	44	42
159	38	37	33	34	34	34	34	34	33	33	32	34	36	38	39	40	38
160	35	33	30	31	30	31	31	31	29	29	29	30	33	35	35	36	35
161	31	30	27	27	27	27	27	28	26	26	26	27	29	31	31	32	31
162	27	26	23	24	24	24	24	24	22	23	22	24	25	27	28	29	27
163	24	23	20	21	20	21	21	21	19	20	19	20	22	25	25	25	24
164	21	20	18	18	17	18	17	18	17	17	16	18	19	21	22	22	21
165	18	17	15	16	15	15	15	15	14	14	14	15	17	18	18	19	18
166	16	15	12	13	12	12	12	12	11	12	11	12	14	14	16	16	16
167	13	12	10	10	10	10	10	10	9	10	9	10	11	13	13	14	13
168	10	10	7	8	8	8	7	8	7	7	7	8	9	10	11	11	10
169	8	7	5	6	6	6	6	6	5	5	5	6	7	8	9	9	8
170	6	5	4	5	4	4	4	4	4	4	3	4	6	6	7	7	6
171	5	3	2	3	3	3	2	3	2	2	2	3	4	5	5	5	5
172	3	2	1	2	1	1	1	2	1	1	1	1	3	3	4	4	3
173	2	1	0	0	0	0	0	1	0	0	0	1	2	2	2	2	2
174	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
175	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**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 \*\*\*\*\***