

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest Highway Cary, IL60013

LED Luminaires

Model name(s): LED-8024M57-A

LED-8024-DL-E40-A

Remark: The two models are the same product with two model names

Representative (Tested) Model: LED-8024M57-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.29,2017

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

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8024M57-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	45W	
Rated Initial Lamp Lumen	--	
Declared CCT	5700K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-N1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Jan 16,2017
Date of Test	Jan 17,2017
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° 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 or rated 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.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° 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 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8024M57-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	120.0	60	0.4118	47.43	0.9598
N1	277.0	60	0.1774	46.00	0.9360

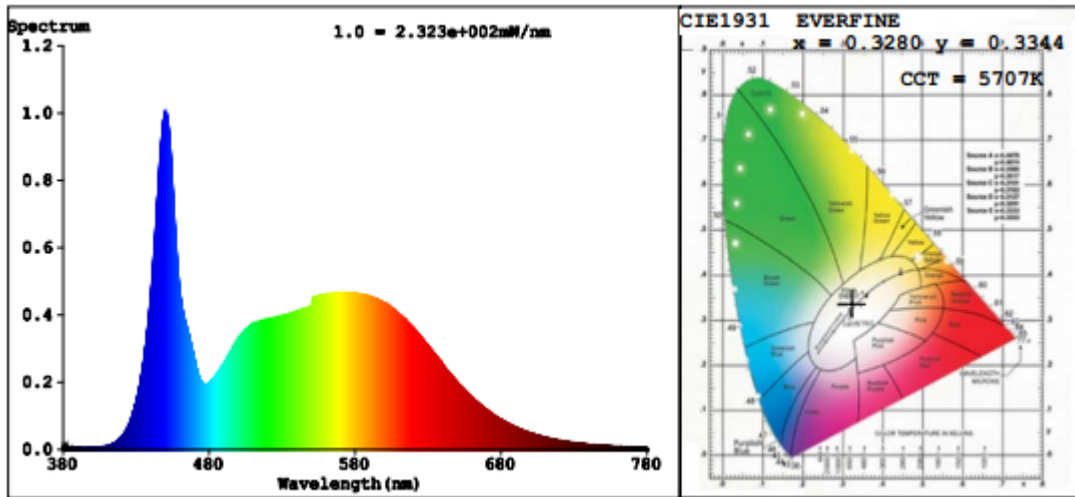
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	15
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5707	R3	92	R11	86
Duv	-0.0014	R4	85	R12	64
Chromaticity (x, y)	x=0.3280 y=0.3344	R5	85	R13	85
Chromaticity (u', v')	u'=0.2064 v'=0.4735	R6	84	R14	96
Color Rendering Index (CRI)	84.5	R7	87	R15	80
R9	15	R8	71	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	6913.4	6808.3
Luminous Efficacy (lm/W)	145.76	148.01
Beam Angle (°)	284.6	--
Center Beam Candle Power (cd)	208	--

Spectral Power Distribution & Chromaticity Diagram

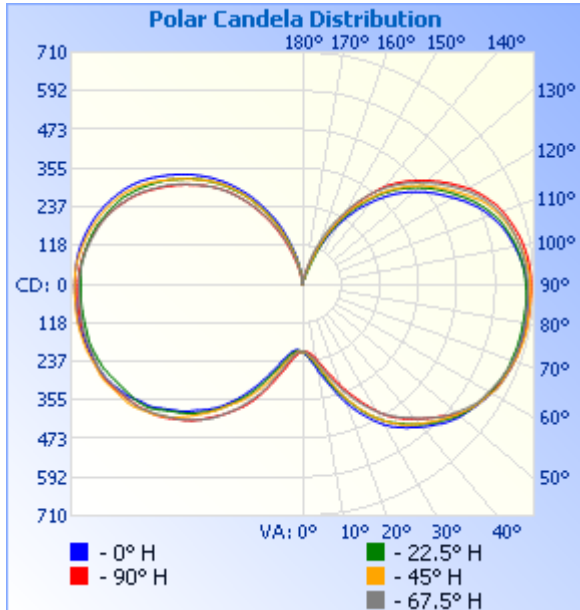


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	287.9	4.2%
0-40	601.2	8.7%
0-60	1,619.1	23.4%
60-90	2,148.9	31.1%
70-100	2,228.3	32.2%
90-120	2,042.0	29.5%
0-90	3,768.0	54.5%
90-180	3,145.8	45.5%
0-180	6,913.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	21.3	0.3%	90-100	746.4	10.8%
10-20	82.2	1.2%	100-110	694.7	10%
20-30	184.3	2.7%	110-120	600.9	8.7%
30-40	313.3	4.5%	120-130	472.3	6.8%
40-50	447.0	6.5%	130-140	334.2	4.8%
50-60	570.9	8.3%	140-150	196.5	2.8%
60-70	667.0	9.6%	150-160	82.0	1.2%
70-80	727.9	10.5%	160-170	17.9	0.3%
80-90	754.1	10.9%	170-180	1.0	0%

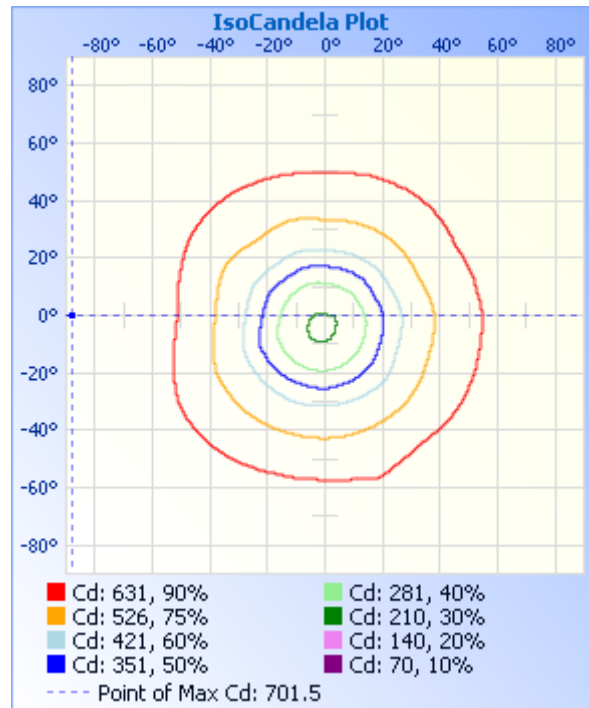
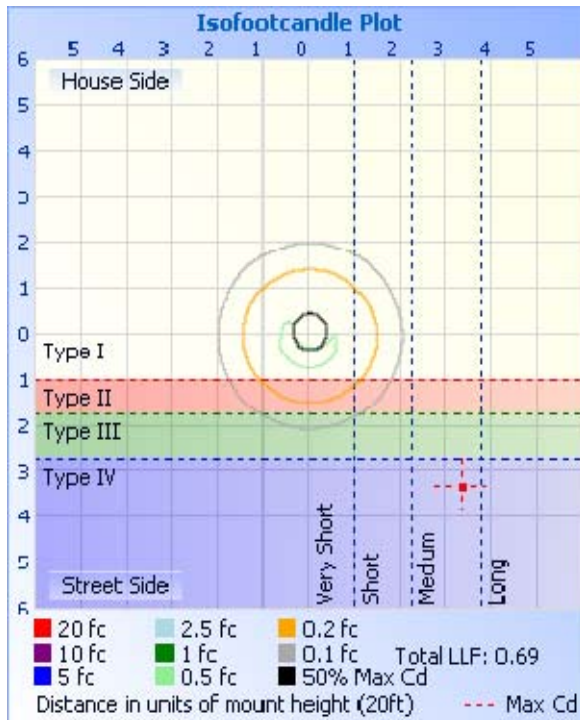
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	0.72 fc	34.0 ft	22.0 ft
34.0ft	0.18 fc	68.0 ft	44.1 ft
51.0ft	0.08 fc	102.0 ft	66.1 ft
68.0ft	0.05 fc	136.0 ft	88.2 ft
85.0ft	0.03 fc	170.0 ft	110.2 ft
102.0ft	0.02 fc	204.0 ft	132.2 ft

■ Vert. Spread: 90.0°
 ■ Horiz. Spread: 65.9°



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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	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208
1	211	209	209	207	207	207	207	206	206	206	208	207	208	209	210	210	211
2	214	211	210	207	206	205	205	204	205	205	208	207	208	211	213	214	214
3	218	215	212	210	207	205	203	202	204	204	206	208	210	214	216	218	218
4	223	219	216	214	209	205	204	201	203	204	208	209	214	217	220	222	223
5	227	223	222	216	211	206	204	202	203	205	210	214	219	224	227	229	227
6	234	229	225	220	214	208	204	203	204	208	213	217	223	230	233	235	234
7	241	233	229	224	217	210	205	204	205	211	217	221	227	238	238	242	241
8	248	240	234	228	220	214	207	206	208	214	220	225	234	243	246	250	248
9	256	248	241	234	225	219	211	209	210	217	225	232	241	251	255	260	256
10	268	256	249	239	230	222	214	213	215	220	231	239	248	260	262	268	268
11	278	264	257	246	238	228	219	217	221	227	237	247	257	268	272	278	278
12	288	274	265	255	247	234	226	223	225	234	243	255	266	279	283	286	288
13	296	284	277	264	253	238	231	229	232	241	251	263	274	289	292	296	296
14	309	297	286	273	263	245	240	235	238	249	259	275	284	301	302	306	309
15	321	309	298	284	272	252	247	244	244	257	270	284	293	312	312	319	321
16	331	322	312	294	283	260	254	252	253	265	280	295	306	325	325	333	331
17	345	333	324	306	291	269	263	259	264	276	288	304	315	338	335	345	345
18	359	345	339	316	302	276	273	269	272	284	301	318	327	350	349	359	359
19	371	358	350	328	314	287	281	279	282	294	312	332	340	363	363	370	371
20	385	368	365	337	325	298	292	291	292	306	324	343	351	374	374	383	385
21	396	380	375	350	339	307	302	301	304	316	334	357	364	387	388	394	396
22	409	390	389	360	349	318	313	314	313	328	345	367	375	396	399	407	409
23	419	403	399	374	362	328	325	327	326	339	354	380	387	407	412	420	419
24	432	414	412	384	373	340	340	337	338	353	365	389	396	417	422	430	432
25	442	427	424	397	385	349	351	350	349	364	377	400	407	429	434	443	442
26	454	437	434	406	396	362	364	360	362	376	385	410	418	438	443	452	454
27	464	450	447	418	410	373	375	373	372	385	397	422	426	450	455	465	464
28	476	459	458	428	421	386	387	384	386	397	405	434	436	460	464	474	476

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29	486	470	470	439	435	397	399	396	397	406	414	442	445	472	476	485	486
30	497	478	478	448	446	411	409	405	410	418	421	453	455	481	485	492	497
31	505	489	490	460	460	424	421	417	419	430	432	463	464	493	495	502	505
32	514	497	498	470	469	435	431	426	431	440	441	475	474	501	503	509	514
33	521	506	508	478	482	447	444	437	443	451	453	484	481	512	513	517	521
34	530	513	516	488	490	457	454	448	453	460	464	495	491	521	521	525	530
35	536	522	525	495	500	468	466	456	464	471	473	503	499	532	531	533	536
36	544	529	532	504	507	476	477	466	471	480	485	512	509	541	538	539	544
37	550	538	540	511	516	486	486	474	481	490	494	520	520	551	547	546	550
38	557	545	545	520	524	495	495	486	488	498	505	527	528	559	553	552	557
39	564	553	553	527	532	502	502	495	497	507	515	535	538	565	561	559	564
40	570	561	559	536	538	510	510	505	504	516	526	542	545	573	567	565	570
41	577	568	565	544	547	517	516	516	514	524	536	550	553	579	575	572	577
42	583	574	570	553	554	525	524	524	524	532	547	557	559	587	582	578	583
43	590	581	578	561	562	533	531	534	532	539	558	564	566	594	587	586	590
44	596	589	583	570	569	542	540	542	541	547	566	570	572	601	594	592	596
45	604	594	591	578	577	548	549	552	547	553	577	577	580	607	600	599	604
46	610	600	595	587	584	557	554	559	555	560	584	583	588	613	607	605	610
47	616	606	602	594	594	567	561	567	562	569	592	589	594	618	612	612	616
48	621	614	608	600	601	575	566	574	571	576	599	596	601	623	618	619	621
49	626	620	614	606	610	584	574	582	579	586	608	602	606	627	623	624	626
50	631	626	621	612	618	591	581	591	588	594	613	609	611	632	629	628	631
51	635	631	626	619	628	599	590	598	597	603	618	615	615	635	633	632	635
52	638	636	632	624	635	604	598	605	602	608	626	622	621	640	638	635	638
53	642	640	637	632	639	609	605	610	608	613	632	628	627	644	643	638	642
54	646	644	643	637	644	612	613	616	612	618	639	632	630	647	646	642	646
55	650	647	648	643	647	618	619	620	619	622	644	636	634	650	650	645	650
56	654	650	653	649	651	624	626	627	625	626	648	638	638	652	654	650	654
57	657	654	656	652	654	630	631	634	633	628	651	642	643	655	657	653	657
58	661	657	660	654	657	636	637	639	639	631	654	644	646	657	661	657	661
59	665	661	663	656	660	640	641	644	643	633	657	648	651	659	665	660	665
60	669	664	668	659	665	644	644	647	648	637	660	651	656	662	668	664	669

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61	672	667	673	662	669	648	649	649	653	640	664	655	659	666	673	667	672
62	677	668	677	666	673	652	653	652	658	643	667	659	664	668	673	670	677
63	679	671	679	669	676	656	658	655	662	647	672	663	667	671	674	672	679
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83	693	687	700	692	701	690	693	692	698	681	700	686	691	684	687	685	693
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86	692	688	700	691	701	690	692	692	699	682	700	686	691	684	687	684	692
87	691	687	700	691	701	691	692	692	699	681	700	686	691	684	686	683	691
88	691	687	700	691	702	692	692	692	699	681	700	686	690	684	685	682	691
89	690	686	700	691	701	692	693	692	699	681	700	686	690	683	685	681	690
90	688	685	699	691	701	692	693	693	699	681	699	686	689	682	684	680	688
91	687	684	698	690	701	692	693	693	699	681	700	686	689	681	683	678	687
92	685	683	697	689	701	692	694	693	699	681	699	685	688	680	681	677	685

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93	683	681	695	688	700	691	694	693	699	682	699	684	687	678	679	675	683
94	680	680	693	687	699	690	693	693	698	682	698	682	685	675	677	672	680
95	678	678	691	686	698	688	693	692	697	681	697	681	684	673	674	669	678
96	675	676	689	685	696	686	692	691	697	680	695	680	682	670	671	667	675
97	672	674	686	683	695	685	691	689	695	678	693	677	679	668	669	663	672
98	669	671	684	681	693	684	688	688	695	676	691	675	677	665	665	660	669
99	665	668	681	679	690	682	686	687	693	674	688	672	674	662	662	657	665
100	662	665	677	677	688	680	684	684	691	672	685	668	671	658	658	654	662
101	657	663	675	674	686	677	681	682	688	669	682	666	668	654	654	650	657
102	654	659	671	672	682	674	678	680	686	666	679	662	665	650	650	647	654
103	650	655	668	669	679	672	676	678	684	664	676	659	662	646	646	643	650
104	646	651	664	666	676	669	674	676	681	661	673	655	658	643	643	639	646
105	642	647	661	663	673	667	670	673	678	659	670	653	654	638	638	635	642
106	636	644	656	660	669	663	667	669	674	656	666	649	650	635	634	631	636
107	631	639	651	657	665	660	663	666	672	651	663	646	646	631	629	626	631
108	625	635	647	653	661	657	660	662	668	647	658	641	641	626	624	621	625
109	618	629	642	648	657	653	655	658	664	642	655	636	637	621	619	616	618
110	613	622	638	644	653	650	651	653	660	638	650	631	631	615	613	611	613
111	606	617	632	639	648	645	647	650	656	633	646	626	626	609	608	603	606
112	600	610	625	634	643	641	643	644	651	629	641	621	619	602	600	595	600
113	592	604	619	627	637	635	639	640	646	624	636	615	614	594	592	588	592
114	585	596	612	621	630	631	635	635	642	620	631	608	607	588	585	579	585
115	575	588	605	615	624	624	629	631	635	615	626	601	600	579	577	572	575
116	566	581	595	607	617	619	624	624	631	610	620	595	594	572	570	562	566
117	559	572	585	600	610	612	616	620	625	603	614	588	586	563	561	555	559
118	549	564	577	592	603	606	609	613	619	595	606	582	580	556	553	546	549
119	540	556	567	584	596	599	604	607	612	589	599	574	571	547	543	537	540
120	531	546	559	575	587	592	596	599	606	581	592	566	564	538	533	530	531
121	521	539	549	565	577	585	589	592	599	575	583	557	555	531	525	521	521
122	513	530	542	557	569	576	580	584	592	566	576	549	547	521	515	513	513
123	504	522	532	548	558	568	572	575	584	559	566	539	537	513	508	504	504
124	496	513	522	540	550	559	563	569	575	551	559	532	529	504	498	495	496

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125	486	506	514	530	541	552	556	559	567	545	548	523	519	494	490	487	486
126	477	496	505	522	531	543	546	551	557	536	539	515	511	487	480	478	477
127	469	487	497	512	523	536	538	541	549	528	529	506	501	477	470	470	469
128	458	479	487	503	512	526	528	533	539	518	520	496	493	470	462	460	458
129	449	469	479	493	504	519	519	524	531	510	510	488	482	461	452	450	449
130	439	461	469	483	494	509	511	516	521	500	501	477	474	453	444	442	439
131	430	451	459	474	484	501	502	506	512	491	491	468	464	442	434	432	430
132	419	440	450	464	475	490	494	498	502	483	482	457	454	430	424	423	419
133	409	431	438	454	464	482	485	488	494	474	472	447	446	421	415	411	409
134	399	420	428	446	456	470	477	480	483	465	462	436	436	409	404	402	399
135	387	411	417	435	445	456	466	469	474	454	454	427	428	399	395	389	387
136	377	399	405	425	434	441	457	461	463	445	443	417	417	387	383	377	377
137	363	387	395	414	424	429	446	450	454	433	435	408	408	376	371	367	363
138	352	377	382	402	412	411	436	440	442	424	425	396	397	365	360	354	352
139	341	364	371	393	402	391	422	431	433	412	416	387	388	352	347	343	341
140	327	353	358	380	387	376	406	419	422	403	405	375	376	342	337	329	327
141	316	339	344	370	375	359	393	409	409	391	396	365	366	329	323	316	316
142	303	327	332	357	359	340	380	397	400	380	383	352	353	319	312	305	303
143	293	313	319	346	344	324	364	387	387	368	374	339	342	305	299	292	293
144	278	298	309	332	330	305	352	374	377	358	360	329	327	290	285	280	278
145	264	286	295	317	312	286	333	363	364	345	350	316	316	279	274	266	264
146	254	272	284	305	299	268	324	350	353	335	336	304	302	265	260	255	254
147	240	257	270	290	282	248	306	339	340	321	324	290	290	255	249	240	240
148	226	246	256	278	268	232	295	326	329	310	310	279	275	241	235	227	226
149	214	230	244	263	249	210	279	314	316	296	298	265	261	227	221	216	214
150	199	214	226	247	229	194	268	300	305	285	283	254	250	215	209	202	199
151	187	197	211	234	213	176	249	290	290	270	271	241	235	199	195	189	187
152	170	183	196	219	194	160	236	276	278	258	256	230	224	187	183	178	170
153	154	170	181	208	179	142	218	265	264	245	244	217	209	174	167	162	154
154	142	153	167	195	163	126	198	251	252	234	229	205	197	160	151	150	142
155	127	131	151	180	147	115	188	240	238	219	215	190	183	149	139	134	127
156	115	112	133	167	137	101	175	225	228	206	204	178	169	135	126	122	115

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NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

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157	102	91	117	150	126	91	163	213	215	194	190	164	157	122	114	113	102
158	90	72	99	137	117	79	149	199	204	180	180	151	142	111	105	101	90
159	77	54	85	122	104	72	139	188	189	169	166	142	129	98	92	86	77
160	63	39	70	109	90	66	126	173	176	156	153	129	115	89	82	75	63
161	51	29	55	97	81	61	114	157	160	146	137	118	105	78	71	66	51
162	42	23	46	79	68	55	99	144	145	132	126	104	93	67	62	58	42
163	35	20	38	63	56	51	87	128	133	117	112	95	82	59	52	47	35
164	31	18	30	53	49	48	79	117	119	106	100	85	73	49	42	38	31
165	24	17	25	41	42	46	70	105	109	93	91	75	63	40	35	33	24
166	20	16	18	31	34	38	64	96	96	85	78	66	54	33	29	24	20
167	18	13	13	19	26	26	54	82	84	74	67	55	44	27	21	19	18
168	12	11	6	10	16	18	47	69	73	65	58	48	37	23	17	15	12
169	9	9	3	5	9	12	40	60	61	53	50	40	31	16	12	10	9
170	6	5	2	3	5	12	34	51	53	47	42	34	22	11	8	7	6
171	4	3	2	2	4	12	29	43	43	39	33	26	17	7	6	4	4
172	3	2	2	2	4	10	23	34	36	31	27	19	13	4	4	3	3
173	2	2	2	2	4	8	20	27	28	25	20	16	8	2	2	2	2
174	2	2	2	2	4	6	15	22	20	20	15	11	6	2	2	2	2
175	2	2	2	2	2	3	9	14	16	14	11	6	4	2	2	2	2
176	2	2	2	2	2	3	5	8	12	10	7	4	2	2	2	2	2
177	2	2	2	2	2	3	4	5	8	6	3	2	2	2	2	2	2
178	2	2	2	2	2	2	3	3	5	3	2	2	2	2	2	2	2
179	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
180	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06

Expand Uncertainty:
Photometric Measurement (Sphere):2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.36%, k=2

******* END OF REPORT *******

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