

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-8024E30-A

LED-8024-NW-E27-A

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

Representative (Tested) Model: LED-8024E30-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.13,2017

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

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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-8024E30-A;LED-8024-NW-E27-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	3000K	
LED Manufacturer	SAMSUNG	
LED Model	SPMWHT541MXXXXXXXXXX	
Sample Number	GZE161214-AD1	
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**1) Photometric and Light Distribution Measurement – Goniophotometer Method:**

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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.

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

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

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-8024E30-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	120.0	60	0.4141	46.53	0.9364
AD1	277.0	60	0.1765	45.31	0.9270

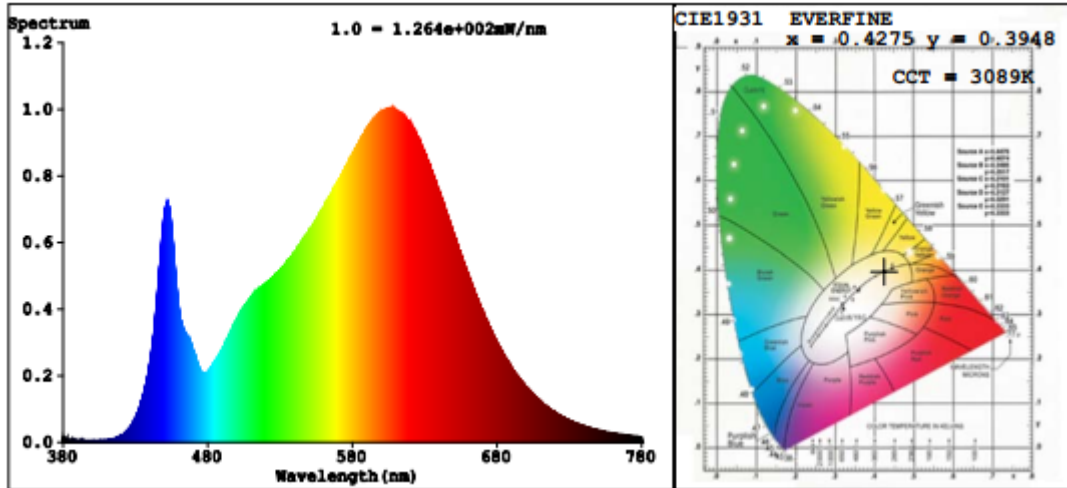
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	85	R9	21
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	3089	R3	96	R11	83
Duv	-0.0024	R4	83	R12	75
Chromaticity (x, y)	x=0.4275 y=0.3948	R5	85	R13	87
Chromaticity (u', v')	u'=0.2485 v'=0.5162	R6	92	R14	99
Color Rendering Index (CRI)	85.4	R7	84	R15	79
R9	21	R8	65	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	6062.2	5972.4
Luminous Efficacy (lm/W)	130.29	131.81
Beam Angle (°)	281.7	--
Center Beam Candle Power (cd)	262	--

Spectral Power Distribution & Chromaticity Diagram

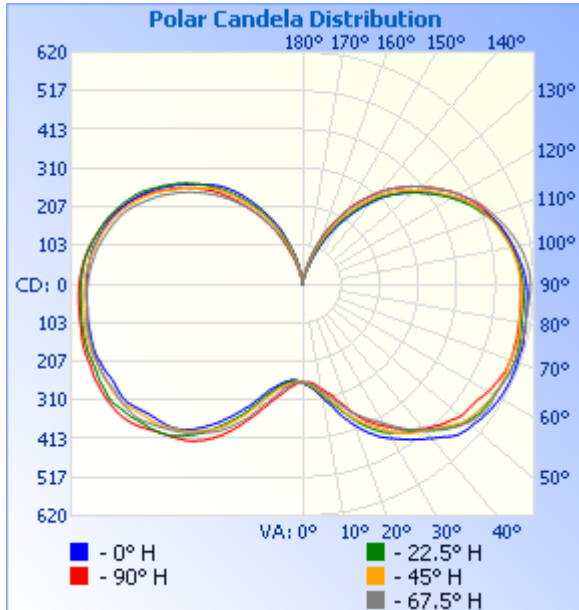


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	305.8	5%
0-40	609.5	10.1%
0-60	1,550.3	25.6%
60-90	1,868.5	30.8%
70-100	1,913.4	31.6%
90-120	1,725.8	28.5%
0-90	3,418.8	56.4%
90-180	2,643.8	43.6%
0-180	6,062.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	26.2	0.4%	90-100	635.1	10.5%
10-20	91.6	1.5%	100-110	586.8	9.7%
20-30	188.0	3.1%	110-120	503.9	8.3%
30-40	303.7	5.0%	120-130	392.2	6.5%
40-50	420.1	6.9%	130-140	275.1	4.5%
50-60	520.6	8.6%	140-150	162.4	2.7%
60-70	590.3	9.7%	150-160	70.9	1.2%
70-80	631.9	10.4%	160-170	16.6	0.3%
80-90	646.4	10.7%	170-180	0.8	0%

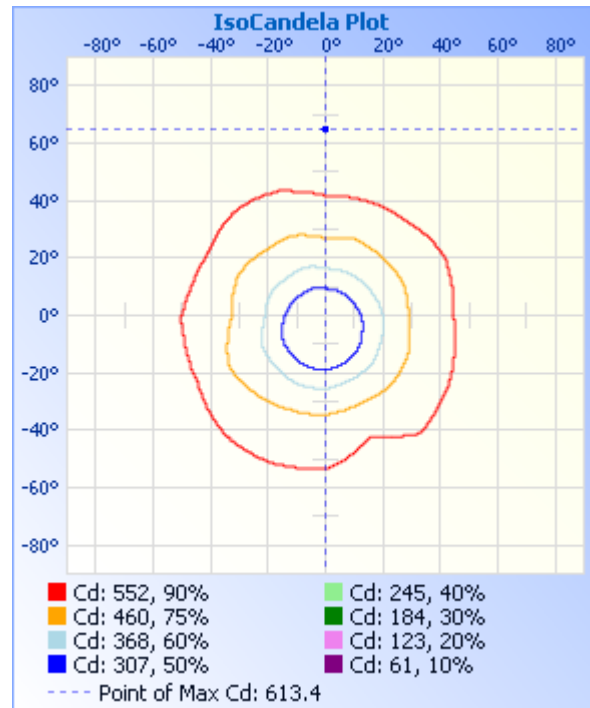
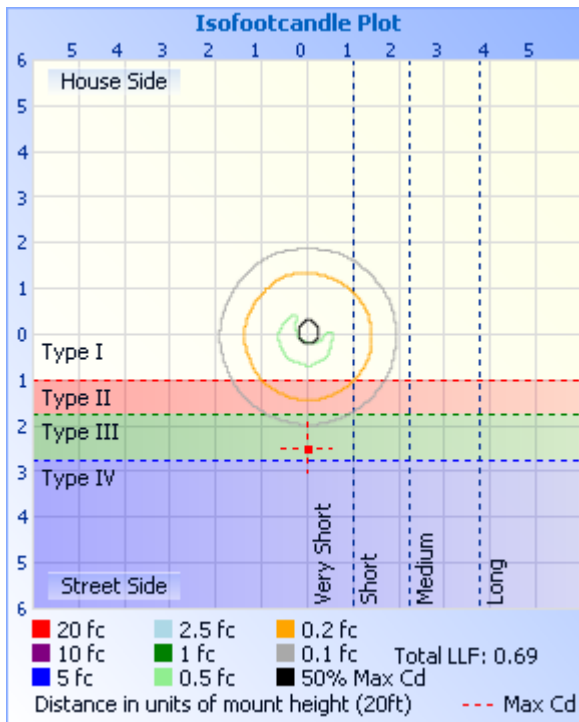
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	0.91 fc	70.3 ft
34.0ft	0.23 fc	140.7 ft
51.0ft	0.10 fc	211.0 ft
68.0ft	0.06 fc	281.3 ft
85.0ft	0.04 fc	351.6 ft
102.0ft	0.03 fc	422.0 ft

■ Beam Spread: 128.4°



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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	262	262	262	262	262	262	262	262	262	262	262	262	262	262	262	262	262
1	266	264	264	264	263	260	260	259	261	262	262	262	262	263	264	264	266
2	269	268	265	265	263	260	260	258	260	261	261	263	264	266	267	267	269
3	271	271	267	266	263	260	259	258	259	259	262	264	265	268	270	271	271
4	274	273	270	266	264	259	258	258	258	259	262	265	268	272	273	274	274
5	278	277	273	270	264	259	257	258	258	260	264	266	272	275	277	278	278
6	283	281	277	273	267	260	257	259	258	261	265	268	275	280	283	284	283
7	288	286	281	277	270	262	258	260	259	262	267	271	279	287	288	288	288
8	295	291	287	282	275	265	259	261	262	265	269	276	283	292	292	294	295
9	301	296	292	288	280	269	263	264	264	267	273	280	288	299	299	300	301
10	309	301	298	291	286	271	265	266	266	269	276	282	294	302	307	308	309
11	317	307	303	296	288	276	267	270	269	273	279	290	300	309	313	316	317
12	323	315	310	302	293	279	271	272	271	278	282	297	305	316	322	323	323
13	331	322	316	307	299	284	273	274	276	281	287	303	312	323	330	334	331
14	340	330	322	313	303	287	279	279	280	287	294	311	319	332	339	342	340
15	353	336	331	320	309	293	285	283	285	294	300	318	325	340	347	352	353
16	361	345	337	326	318	298	291	289	290	300	308	326	336	350	356	362	361
17	372	353	348	335	327	306	299	295	294	307	314	334	344	359	367	370	372
18	380	362	360	343	336	313	306	302	302	312	323	340	352	366	375	380	380
19	390	372	368	352	343	321	317	312	311	321	334	351	363	377	385	388	390
20	401	379	377	360	354	329	326	317	319	332	343	362	372	386	394	397	401
21	409	389	384	368	365	338	333	327	329	341	353	372	383	394	402	405	409
22	419	399	392	376	375	346	342	337	338	352	361	384	392	403	411	412	419
23	426	406	401	380	385	355	351	345	349	365	374	393	403	411	419	420	426
24	435	416	407	387	393	365	362	355	360	374	385	403	415	420	428	427	435
25	442	423	414	395	403	372	372	362	367	386	393	412	425	427	436	434	442
26	451	432	420	401	409	381	380	372	378	395	405	419	436	436	445	440	451
27	459	439	429	408	417	387	390	381	387	406	414	429	445	444	454	448	459
28	464	447	436	414	425	394	397	392	399	416	425	438	456	453	462	456	464

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29	471	453	444	422	431	400	404	401	408	427	435	447	465	461	472	461	471
30	476	458	452	428	438	408	411	412	419	437	443	454	475	469	479	468	476
31	483	464	461	438	445	414	419	425	430	447	452	461	483	476	487	474	483
32	488	468	469	445	453	421	428	434	439	459	459	467	491	482	494	481	488
33	495	474	475	455	460	429	436	446	449	469	466	473	499	489	502	487	495
34	501	479	482	463	467	435	446	454	458	480	472	478	505	494	507	495	501
35	508	484	487	472	474	442	453	464	469	488	479	485	512	500	514	501	508
36	513	488	493	480	482	448	462	471	476	498	486	492	518	504	519	510	513
37	519	494	497	487	487	456	468	479	486	506	492	499	523	509	525	516	519
38	526	498	503	495	493	463	476	485	493	515	499	506	527	513	528	524	526
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40	539	511	513	509	504	481	489	497	507	529	510	515	535	524	538	536	539
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42	552	526	523	522	514	498	500	507	518	542	520	525	543	535	550	551	552
43	558	532	527	529	519	505	508	512	521	548	524	531	547	540	556	558	558
44	567	541	532	538	524	513	513	516	524	552	530	534	551	546	562	561	567
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46	580	552	544	553	533	528	523	522	529	559	539	545	562	556	569	567	580
47	583	557	552	560	537	538	528	526	532	563	542	550	568	559	573	572	583
48	586	563	557	567	541	545	532	528	534	565	545	555	574	564	579	575	586
49	589	568	565	571	547	552	535	531	537	568	548	561	580	568	585	580	589
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51	592	576	571	581	553	559	545	539	543	574	554	569	590	575	595	590	592
52	596	580	574	586	555	563	551	545	548	579	558	572	594	576	599	593	596
53	599	583	577	589	556	567	557	549	552	583	561	573	597	576	601	593	599
54	600	586	579	592	557	571	559	554	557	585	566	575	600	578	603	593	600
55	602	588	581	594	559	574	560	560	561	588	570	577	603	579	605	593	602
56	605	589	583	597	561	578	562	567	566	591	574	578	604	581	606	594	605
57	607	590	585	597	563	581	563	573	568	595	577	580	605	582	607	594	607
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59	609	591	591	596	571	588	568	583	570	601	582	579	608	585	611	598	609
60	610	592	594	595	574	590	569	586	571	601	583	580	609	587	612	601	610

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61	611	593	595	596	577	591	569	589	570	601	584	580	610	588	611	603	611
62	612	595	597	596	580	592	570	590	570	601	584	581	610	589	610	604	612
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68	613	604	593	604	592	595	581	594	580	600	589	589	609	593	609	600	613
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74	613	603	596	608	592	596	580	601	586	602	595	589	611	587	608	598	613
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79	607	598	592	610	590	595	583	609	584	601	594	587	606	583	601	593	607
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82	605	594	589	606	588	593	582	609	582	598	591	582	603	581	601	592	605
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87	603	593	587	610	586	590	579	605	580	595	587	579	601	578	599	592	603
88	602	592	587	611	585	590	579	605	580	595	586	578	600	578	598	590	602
89	601	591	587	611	585	590	578	605	580	595	585	577	600	576	596	589	601
90	600	590	585	611	585	590	578	605	579	594	585	576	599	575	595	588	600
91	598	589	584	610	585	590	578	604	579	593	583	575	597	573	593	586	598
92	596	588	582	610	584	590	577	604	578	592	583	573	596	571	591	584	596

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93	594	586	581	608	583	589	577	603	578	591	581	572	594	568	588	582	594
94	592	584	580	607	582	588	576	602	577	590	580	570	593	566	585	580	592
95	589	582	579	604	580	587	575	601	576	589	578	569	591	564	583	577	589
96	586	579	577	602	579	586	574	599	575	588	576	567	589	561	580	575	586
97	583	576	574	599	577	585	573	598	574	586	573	564	588	559	578	572	583
98	580	573	572	597	575	584	571	596	573	584	571	563	585	556	575	570	580
99	577	571	569	593	573	582	569	594	571	581	568	560	583	554	572	566	577
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101	571	565	564	586	569	577	563	589	565	575	563	554	577	547	566	560	571
102	568	561	561	581	565	575	561	587	563	572	560	551	574	544	562	556	568
103	564	557	557	578	563	573	559	584	561	569	557	548	570	540	558	552	564
104	561	555	553	573	560	571	555	581	558	566	554	544	567	537	555	548	561
105	557	551	549	569	556	568	552	577	555	563	552	541	563	532	551	544	557
106	554	548	546	565	552	565	549	574	552	559	548	537	560	529	547	540	554
107	549	543	543	559	548	561	546	571	549	556	544	535	556	524	543	536	549
108	544	539	538	554	545	558	543	568	546	553	541	531	552	519	537	530	544
109	539	534	535	548	540	554	540	564	543	550	536	527	547	515	532	525	539
110	533	527	529	544	537	550	536	560	538	546	532	522	543	509	525	520	533
111	528	522	524	539	532	547	532	558	535	541	527	519	538	505	520	513	528
112	522	515	520	534	529	542	529	554	530	537	523	514	533	498	516	507	522
113	515	510	514	530	524	538	524	550	525	532	518	509	528	493	510	500	515
114	510	503	509	524	519	533	520	544	520	528	513	502	521	485	504	492	510
115	502	498	502	518	512	529	515	539	516	523	507	497	516	477	497	486	502
116	495	490	496	511	506	523	511	532	510	518	501	489	509	471	489	478	495
117	488	483	490	504	501	519	505	527	506	512	495	481	503	463	482	472	488
118	482	476	483	495	494	512	500	521	499	508	489	475	496	457	474	464	482
119	474	468	477	487	488	506	493	514	494	501	483	467	489	450	467	458	474
120	464	461	468	481	482	499	487	507	488	495	476	461	481	443	458	450	464
121	457	453	461	473	475	493	480	499	480	488	470	454	474	435	449	441	457
122	448	445	452	467	468	485	473	490	475	480	462	448	465	427	442	434	448
123	441	438	444	458	460	477	467	482	467	472	455	438	457	420	433	425	441
124	432	429	438	451	452	470	459	472	460	464	446	431	449	411	426	418	432

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125	424	422	430	442	444	462	453	466	452	459	439	423	440	404	417	409	424
126	415	413	423	434	438	455	444	457	446	450	430	416	433	395	409	402	415
127	406	406	413	427	429	447	437	450	437	443	422	407	424	386	400	393	406
128	398	397	406	420	421	441	428	441	431	435	413	399	417	378	391	383	398
129	389	389	398	414	414	432	421	434	422	428	407	392	408	369	384	376	389
130	381	382	389	406	405	425	413	425	415	419	399	382	401	362	376	366	381
131	372	373	382	398	398	416	406	419	406	413	391	374	391	352	369	359	372
132	364	366	374	392	388	409	397	409	399	402	384	365	383	344	359	349	364
133	356	357	367	383	381	399	390	402	391	394	378	357	374	335	349	339	356
134	346	347	359	376	373	391	381	392	385	385	370	347	366	325	341	331	346
135	338	339	351	366	364	381	374	384	377	376	364	340	355	317	330	320	338
136	328	330	342	356	358	373	365	376	371	367	356	330	347	306	322	312	328
137	319	323	332	348	349	363	358	367	363	358	349	321	336	298	311	301	319
138	308	313	324	338	341	354	349	356	357	346	339	311	326	288	302	292	308
139	296	304	313	330	330	345	343	348	349	338	332	302	313	280	289	281	296
140	285	293	305	319	323	337	334	338	342	327	322	293	303	269	277	269	285
141	273	281	293	309	312	327	326	329	332	318	311	284	291	258	268	260	273
142	263	271	283	298	301	317	316	319	324	308	302	272	281	249	255	249	263
143	251	258	271	287	293	306	307	310	314	299	290	264	268	238	244	240	251
144	240	247	260	278	282	297	296	298	306	288	280	253	258	229	232	229	240
145	228	238	251	266	273	287	288	290	295	280	268	245	246	218	220	217	228
146	216	226	239	257	263	278	277	279	285	268	258	234	236	207	210	208	216
147	206	214	230	246	254	266	266	270	273	257	247	226	224	198	197	196	206
148	193	204	218	237	241	257	256	259	264	248	238	215	212	186	187	187	193
149	183	192	206	226	228	246	246	250	251	238	226	206	203	177	176	174	183
150	171	181	196	214	219	237	237	240	242	230	217	194	191	165	164	162	171
151	159	173	184	204	207	225	225	228	229	218	205	182	182	153	155	153	159
152	149	161	173	192	195	212	216	219	217	208	196	172	171	144	142	142	149
153	136	152	163	180	186	202	205	209	208	195	185	160	162	135	131	131	136
154	126	140	151	170	175	190	196	200	197	184	177	152	149	124	118	121	126
155	116	128	143	159	166	182	185	186	188	171	166	142	138	114	105	108	116
156	103	118	132	150	154	171	176	175	177	162	154	134	125	101	96	98	103

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157	95	104	118	137	142	162	166	162	169	152	142	123	115	91	87	88	95
158	85	95	108	124	134	149	157	153	157	143	128	116	103	80	79	79	85
159	73	86	98	115	122	141	145	142	146	133	119	102	92	72	69	71	73
160	65	77	89	103	108	131	134	133	131	123	108	90	85	64	58	62	65
161	57	70	79	95	97	117	119	120	118	110	100	82	74	55	51	54	57
162	48	60	68	85	88	106	107	111	109	98	91	72	65	47	43	44	48
163	41	52	63	75	78	95	98	102	98	89	85	65	56	41	36	37	41
164	35	43	53	67	67	87	88	88	90	79	73	55	49	33	30	33	35
165	29	36	45	56	58	75	80	79	82	73	61	47	40	27	23	25	29
166	22	31	38	49	51	65	69	71	73	65	55	41	32	21	18	19	22
167	18	25	32	40	41	53	60	64	61	55	46	36	25	17	14	15	18
168	14	20	29	34	32	46	48	54	53	45	39	28	21	13	10	11	14
169	10	16	22	28	27	37	38	45	46	38	32	23	18	9	7	8	10
170	7	12	18	22	18	28	32	38	36	31	26	20	13	6	5	6	7
171	5	9	14	17	12	22	22	28	30	23	20	13	10	4	3	3	5
172	3	6	10	12	8	15	17	23	19	18	16	10	7	2	2	2	3
173	2	4	7	9	6	10	12	14	12	10	9	7	5	2	2	2	2
174	2	3	4	5	3	8	9	8	5	5	5	6	3	1	1	1	2
175	1	2	3	3	2	6	6	4	2	3	4	3	2	1	1	1	1
176	1	1	2	2	1	3	3	2	3	2	4	2	1	1	1	1	1
177	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1
178	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1
179	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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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