



NVLAP LAB CODE 201011-0

Report No.: GZE160347-T

## 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-8082M30

Representative (Tested) Model: LED-8082M30

Model Different :N/A

Test & Report By:

*Jack Luo*

Engineer: Jack Luo

Date: Apr.28,2016

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

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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	Apr.28,2016
Test Report No.	GZE160347-T
Laboratory Contact Name	Tommy Liang

### Product Information:

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8082M30		
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	--	42.48	W
Input Current	--	0.3566	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9918	
Off-State Power	--	0	W

### Photometric Characteristics

Total Initial Lumen Output	--	4410.0	lm
Initial Lumen Efficacy	--	103.81	lm/w
Correlated color temperature / CCT	2875	--	K
Color rendering index / CRI	81.7	--	
R9 Value	6	--	
Duv	0.0001	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)	-----	1364	cd
Beam angle (if applicable)		110.9	°
Zonal lumens in the 0°-60° zone		68.2	%
Zonal lumens in the 60°-90° zone		25.1	%
Zonal lumens in the 90°-120° zone		5.8	%
Zonal lumens in the 120°-180° zone		0.9	%

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Test Specifications:	
Date of Receipt	: Apr.01,2016
Date of Test	: Apr.24,2016
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	<p>IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</p> <p>ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</p> <p>CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</p> <p>CIE 15-2004 Technical Report Colorimetry</p> <p>IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</p> <p>IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</p>
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.

## 1. Product Information:

Brand Name	N/A
Model Number	LED-8082M30
Luminaire Type	LED Lamp
Rated Voltage / Frequency	120~277 Vac, 50/60Hz
Nominal Power	45W
Rated Initial Lamp Lumen	--
Declared CCT	3000K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-T1(3000K)

### Photo



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<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>	2016-04-24	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	LED-8082M30		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	120.0	60	0.3566	42.48	0.9918	5.70
-T1	277.0	60	0.1683	42.02	0.9014	14.92

### Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	81.7
R9	6
CCT (K)	2875
Chromaticity (x, y)	x=0.4463 y=0.4074
Chromaticity (u', v')	u'=0.2552 v'=0.5241
Duv	0.0001

Special Color Rendering Indices			
R1	70	R9	6
R2	91	R10	79
R3	96	R11	77
R4	79	R12	70
R5	80	R13	82
R6	89	R14	99
R7	82	R15	73
R8	58	--	--

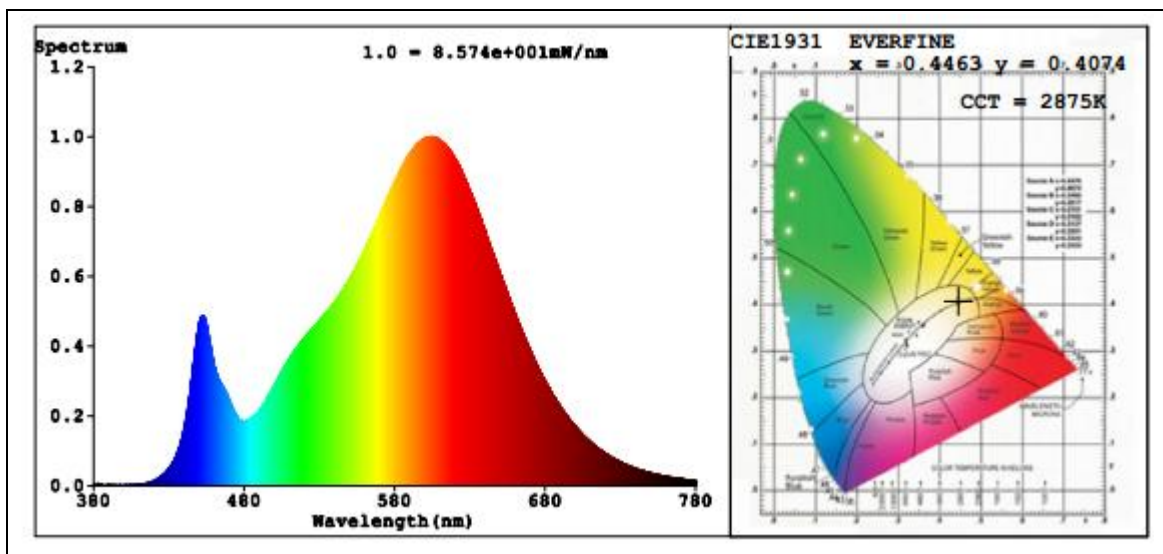
### Goniophotometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	4410.0
Luminous Efficacy (lm/W)	103.81
Beam Angle°	110.9
Center Beam Candle Power (cd)	1364

### Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	4371.7
Luminous Efficacy (lm/W)	104.03

**Spectral Power Distribution & Chromaticity Diagram**



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## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,050.1	23.8%
0-40	1,710.6	38.8%
0-60	3,007.1	68.2%
60-90	1,108.6	25.1%
70-100	749.2	17%
90-120	254.4	5.8%
0-90	4,115.7	93.3%
90-180	294.1	6.7%
0-180	4,409.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	128.9	2.9%	90-100	142.3	3.2%
10-20	367.8	8.3%	100-110	75.8	1.7%
20-30	553.4	12.5%	110-120	36.4	0.8%
30-40	660.5	15.0%	120-130	17.7	0.4%
40-50	679.1	15.4%	130-140	10.5	0.2%
50-60	617.4	14.0%	140-150	6.6	0.1%
60-70	501.7	11.4%	150-160	3.4	0.1%
70-80	366.2	8.3%	160-170	1.2	0%
80-90	240.7	5.5%	170-180	0.3	0%

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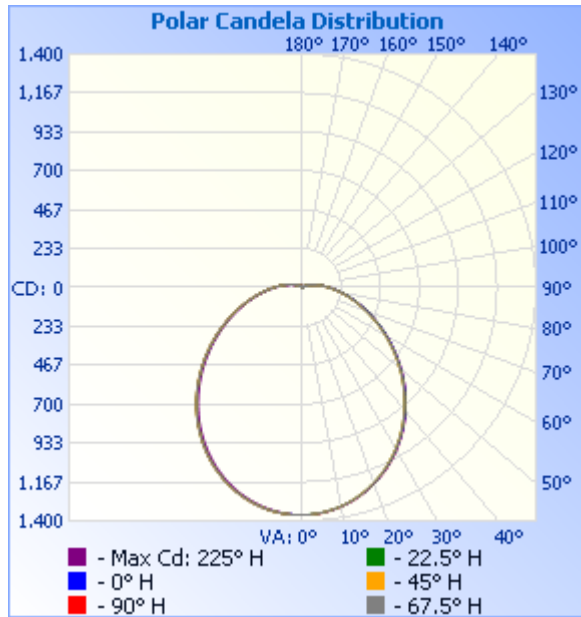
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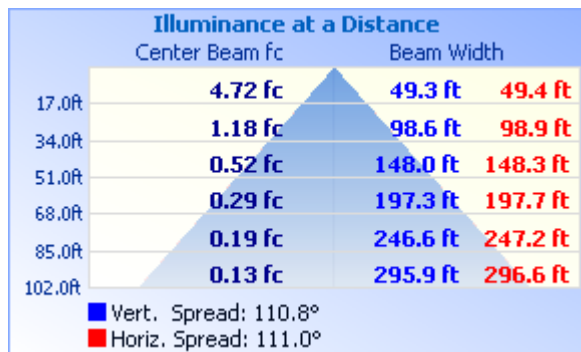
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## Photometric Data



## Illuminance Plots



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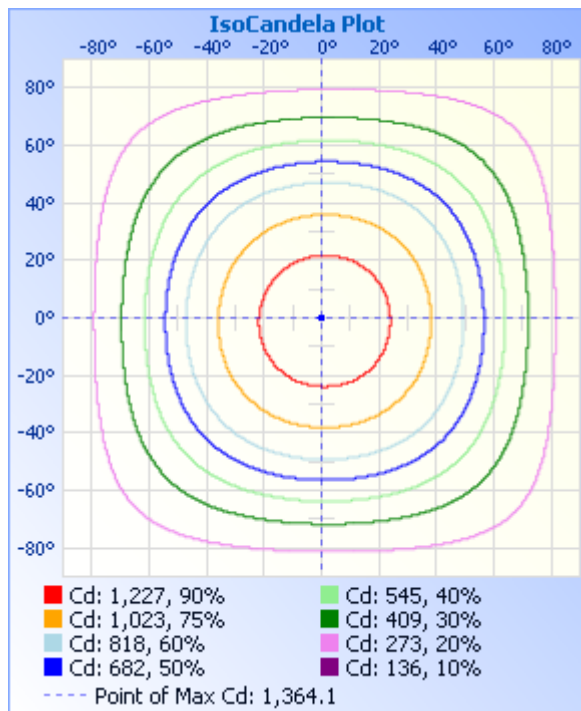
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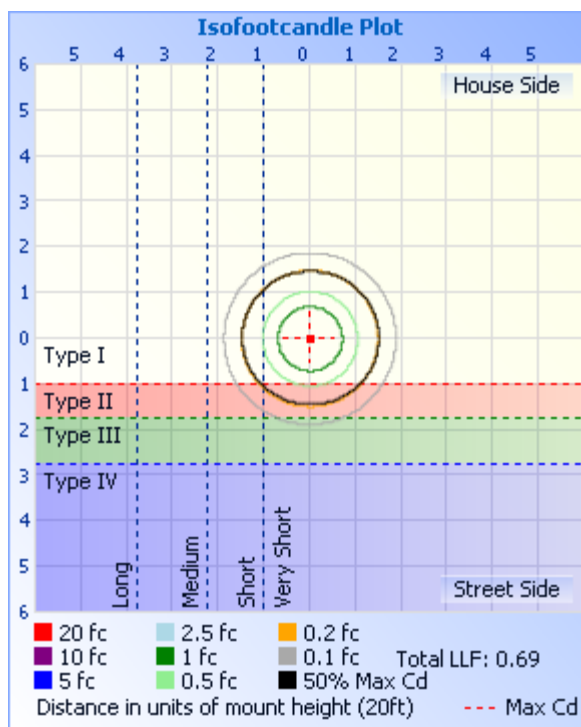
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## ISOCANDELA DIAGRAM



## 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	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364
1	1363	1363	1363	1362	1363	1363	1363	1364	1363	1364	1364	1364	1364	1364	1363	1363	1363
2	1362	1361	1362	1361	1362	1362	1363	1363	1363	1363	1364	1363	1364	1363	1363	1362	1362
3	1360	1359	1359	1359	1361	1361	1361	1362	1362	1362	1363	1363	1363	1363	1362	1360	1360
4	1357	1357	1357	1357	1358	1359	1359	1360	1361	1361	1362	1361	1362	1361	1359	1358	1357
5	1354	1354	1354	1354	1356	1357	1357	1358	1359	1359	1360	1360	1360	1358	1357	1356	1354
6	1351	1350	1350	1350	1353	1353	1354	1356	1357	1357	1358	1357	1357	1356	1354	1352	1351
7	1347	1346	1346	1346	1348	1350	1351	1352	1354	1354	1355	1354	1354	1352	1350	1348	1347
8	1343	1341	1341	1342	1344	1346	1347	1349	1350	1351	1352	1351	1351	1349	1346	1344	1343
9	1337	1336	1336	1336	1339	1341	1343	1344	1346	1346	1347	1347	1346	1344	1342	1339	1337
10	1332	1331	1331	1331	1334	1335	1337	1340	1341	1342	1343	1342	1341	1339	1337	1334	1332
11	1327	1325	1325	1325	1327	1330	1332	1334	1336	1337	1338	1337	1336	1334	1331	1328	1327
12	1320	1318	1318	1318	1321	1323	1326	1329	1330	1331	1332	1331	1331	1328	1325	1322	1320
13	1313	1311	1310	1311	1315	1317	1319	1322	1324	1325	1326	1325	1325	1322	1319	1315	1313
14	1305	1303	1303	1304	1307	1310	1312	1315	1317	1318	1320	1319	1318	1315	1312	1308	1305
15	1297	1295	1295	1295	1299	1302	1305	1308	1310	1311	1313	1312	1310	1308	1304	1300	1297
16	1289	1286	1286	1287	1290	1294	1296	1300	1303	1304	1305	1304	1303	1299	1296	1292	1289
17	1280	1277	1276	1277	1282	1285	1288	1292	1294	1295	1297	1296	1294	1291	1288	1283	1280
18	1270	1267	1267	1267	1272	1276	1279	1283	1286	1286	1288	1288	1286	1282	1278	1274	1270
19	1260	1257	1256	1257	1262	1266	1270	1273	1276	1278	1279	1279	1277	1273	1269	1264	1260
20	1250	1247	1246	1247	1252	1256	1259	1263	1267	1268	1270	1269	1267	1263	1259	1254	1250
21	1239	1236	1235	1236	1241	1245	1249	1253	1256	1258	1259	1259	1256	1253	1248	1243	1239
22	1228	1224	1224	1225	1230	1234	1238	1242	1246	1247	1248	1248	1246	1242	1238	1232	1228
23	1216	1212	1212	1213	1218	1222	1226	1231	1234	1236	1238	1237	1235	1231	1226	1221	1216
24	1204	1200	1199	1200	1206	1210	1215	1219	1222	1225	1226	1225	1223	1220	1214	1209	1204
25	1191	1188	1186	1187	1193	1198	1203	1207	1211	1213	1214	1214	1212	1207	1202	1196	1191
26	1178	1174	1172	1174	1180	1185	1190	1195	1198	1200	1202	1201	1199	1195	1189	1183	1178
27	1165	1160	1159	1160	1167	1172	1177	1182	1186	1188	1189	1189	1186	1182	1176	1170	1165
28	1151	1146	1145	1146	1153	1158	1164	1168	1172	1174	1176	1176	1173	1168	1163	1156	1151

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29	1137	1132	1130	1132	1138	1144	1149	1154	1158	1161	1162	1162	1159	1154	1149	1142	1137
30	1122	1117	1115	1117	1124	1130	1135	1140	1144	1147	1148	1148	1145	1140	1134	1128	1122
31	1107	1102	1100	1102	1109	1115	1121	1126	1130	1132	1134	1134	1130	1126	1120	1113	1107
32	1092	1086	1085	1086	1094	1100	1106	1111	1115	1118	1119	1119	1115	1111	1105	1098	1092
33	1076	1071	1069	1070	1078	1084	1090	1095	1100	1102	1104	1103	1100	1095	1089	1082	1076
34	1061	1055	1053	1055	1062	1068	1074	1079	1084	1086	1088	1088	1085	1080	1074	1067	1061
35	1044	1038	1036	1038	1045	1052	1058	1063	1068	1071	1072	1072	1069	1064	1058	1051	1044
36	1028	1022	1020	1021	1029	1036	1042	1047	1051	1054	1056	1056	1053	1048	1042	1034	1028
37	1011	1005	1002	1004	1012	1019	1025	1030	1035	1038	1040	1039	1037	1032	1025	1017	1011
38	994	988	985	987	995	1002	1008	1014	1018	1021	1023	1023	1020	1014	1008	1000	994
39	977	970	968	969	977	985	991	996	1001	1004	1006	1006	1002	997	991	983	977
40	959	952	950	951	960	967	973	979	983	987	989	988	985	980	973	965	959
41	941	934	932	933	942	949	956	961	966	969	971	971	967	962	955	948	941
42	923	916	913	915	923	931	938	943	948	951	953	953	949	945	937	930	923
43	904	897	895	896	905	912	920	925	930	933	935	935	931	926	919	911	904
44	886	879	876	878	887	894	901	906	912	915	917	917	913	908	901	893	886
45	868	860	858	859	868	876	882	888	893	896	899	898	895	889	882	874	868
46	849	842	839	841	849	857	864	869	875	878	880	880	876	871	864	856	849
47	830	823	820	822	830	838	845	851	856	859	861	861	857	852	845	837	830
48	811	804	801	803	812	819	826	832	836	840	842	842	838	833	826	818	811
49	792	785	782	784	792	800	807	813	818	821	824	823	819	814	807	799	792
50	773	766	763	764	773	781	788	794	798	802	804	804	800	796	788	780	773
51	754	747	743	745	754	762	768	774	779	783	785	785	781	776	769	761	754
52	735	727	724	726	734	742	749	755	760	764	766	766	762	757	750	742	735
53	716	709	705	707	715	723	730	736	741	744	747	746	743	738	730	722	716
54	697	689	686	687	696	704	711	717	721	725	728	727	724	719	711	703	697
55	678	670	667	669	677	685	692	698	702	706	708	708	705	699	692	684	678
56	659	651	648	649	658	666	672	678	683	687	689	689	685	680	673	665	659
57	640	633	629	631	639	647	654	659	664	668	670	670	667	661	654	647	640
58	621	614	610	612	620	628	635	640	645	648	651	651	648	643	635	628	621
59	603	596	592	593	601	609	616	621	626	630	632	632	629	624	616	609	603
60	584	578	574	575	583	591	597	603	608	611	613	612	610	606	598	591	584

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61	566	559	555	557	564	572	579	584	589	593	595	594	592	587	579	572	566
62	548	541	537	538	546	554	560	565	570	574	576	576	573	569	561	554	548
63	530	524	520	521	528	536	542	547	552	556	558	558	555	550	543	536	530
64	512	506	502	503	511	518	524	529	534	538	540	540	537	532	525	518	512
65	495	489	485	486	493	500	506	511	516	520	522	522	519	515	508	501	495
66	478	472	468	469	476	483	489	494	499	502	504	504	502	497	490	484	478
67	461	455	451	452	459	466	472	477	482	485	487	486	485	480	473	467	461
68	445	439	435	436	442	449	455	459	465	468	470	469	468	463	456	450	445
69	429	423	419	420	426	433	438	443	448	451	452	452	451	446	440	434	429
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74	352	347	343	344	349	355	360	365	369	372	373	373	371	367	362	356	352
75	337	332	329	329	334	340	345	350	354	357	358	358	357	352	347	342	337
76	323	318	315	316	320	326	331	335	340	342	343	343	342	338	333	328	323
77	310	305	302	302	307	312	317	321	325	328	329	329	328	324	319	314	310
78	297	292	289	289	293	299	303	307	312	314	316	315	314	310	305	301	297
79	284	279	276	276	281	286	290	294	298	301	302	302	301	297	292	288	284
80	271	267	264	264	268	273	277	281	285	288	289	289	288	284	280	275	271
81	259	255	252	252	256	261	265	269	272	275	276	276	275	271	267	263	259
82	247	243	240	240	244	249	253	257	260	263	264	263	263	259	255	250	247
83	236	232	229	229	232	237	241	245	248	251	252	252	251	247	243	239	236
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86	203	200	197	197	201	205	209	212	215	217	218	218	217	214	210	206	203
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90	164	162	160	160	163	167	170	173	175	178	178	178	176	173	170	167	164
91	156	153	152	152	154	158	161	164	167	168	169	169	167	164	161	159	156
92	148	145	144	143	146	150	152	155	158	160	161	160	158	156	153	150	148

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93	140	137	136	135	138	141	144	147	150	151	152	152	150	147	145	142	140
94	132	130	128	128	131	134	136	139	141	143	144	144	142	139	137	135	132
95	125	122	121	121	123	126	129	132	134	135	136	136	134	132	129	127	125
96	118	116	114	114	117	119	122	124	126	128	129	128	126	124	122	120	118
97	111	109	108	108	110	113	115	117	119	121	122	121	120	117	115	113	111
98	105	103	102	101	104	106	108	111	113	114	115	114	113	111	109	107	105
99	98	97	96	96	98	100	102	104	106	107	108	108	106	104	102	100	98
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101	87	86	85	85	87	89	91	93	94	95	96	96	94	92	91	89	87
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103	77	75	74	74	77	79	80	82	84	85	86	85	83	81	80	78	77
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105	67	66	65	65	68	69	71	73	74	75	76	75	73	71	70	69	67
106	63	62	61	61	64	65	66	68	69	70	71	70	68	67	65	64	63
107	59	58	57	57	59	61	62	64	65	66	66	66	64	63	61	60	59
108	55	54	54	54	56	57	58	60	61	62	62	62	60	58	57	56	55
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125	19	19	19	19	18	19	19	19	19	20	20	19	20	20	19	19	19
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157	7	6	6	7	6	6	6	6	6	6	6	6	7	7	7	7	7
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179	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
180	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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### 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 \*\*\*\*\*