



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-8087E57C-A
LED-8087M57C-A

Remark : The suffix of the model name“E” stand for E26;
“M” stand for E39.

Representative (Tested) Model: LED-8087E57C-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-N2
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	LIGHT EFFICIENT DESIGN		
Brand Name	N/A		
Model Number	LED-8087E57C-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	--	31.26	W
Input Current	--	0.1467	A
Input Voltage (ac)	--	220.0	V
Power Factor	--	0.9687	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	4058.6	lm
Initial Lumen Efficacy	--	129.83	lm/w
Correlated color temperature / CCT	5636	--	K
Color rendering index / CRI	84.6	--	
R9 Value	12	--	
Duv	0.0018	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)		1496	cd
Beam angle (if applicable)		109.7	°
Zonal lumens in the 0°-60° zone		81.2	%
Zonal lumens in the 60°-90° zone	-----	18.2	%
Zonal lumens in the 90°-120° zone		0.5	%
Zonal lumens in the 120°-180° zone		0.1	%

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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 220 Volts, 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. 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 220 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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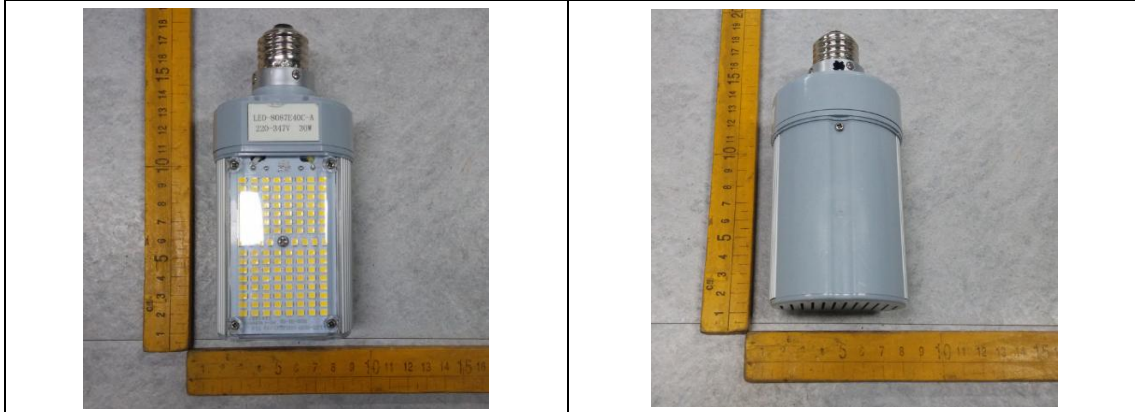
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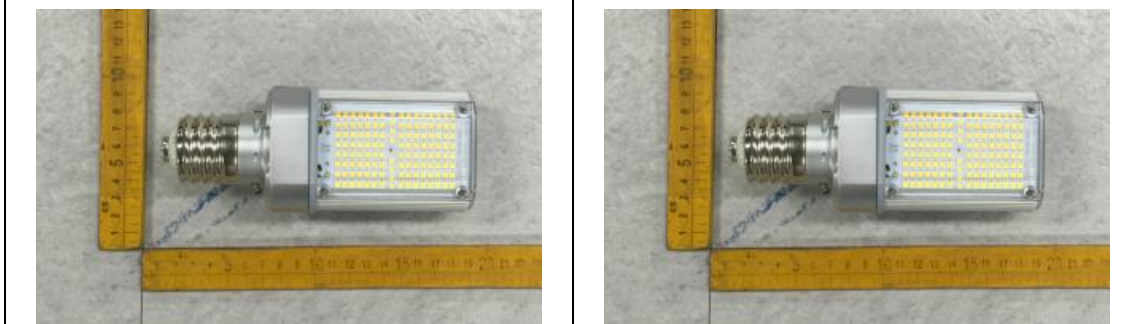
1. Product Information:

Brand Name	N/A
Model Number	LED-8087E57C-A, LED-8087M57C-A
Luminaire Type	LED Lamp
Rated Voltage / Frequency	220~347 Vac, 50/60Hz
Nominal Power	30W
Rated Initial Lamp Lumen	--
Declared CCT	5700K
LED Manufacturer	N/A
LED Model	N/A
Sample Receipt Date	Apr.01,2016
Sample Number	GZE160347-N2(5700K)

Photo



LED-8087E40C-A



LED-8087M40C-A

2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2016-05-03	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8087E57C-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160347	220.0	60	0.1467	31.26	0.9687	15.09
-N2	347.0	60	0.0972	31.39	0.9304	18.67

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Color Rendering Index (CRI)	84.6
R9	12
CCT (K)	5636
Chromaticity (x, y)	x=0.3294 y=0.3419
Chromaticity (u', v')	u'=0.2045 v'=0.4775
Duv	0.0018

Special Color Rendering Indices			
R1	84	R9	12
R2	94	R10	83
R3	94	R11	82
R4	81	R12	63
R5	84	R13	88
R6	89	R14	98
R7	85	R15	79
R8	67	--	--

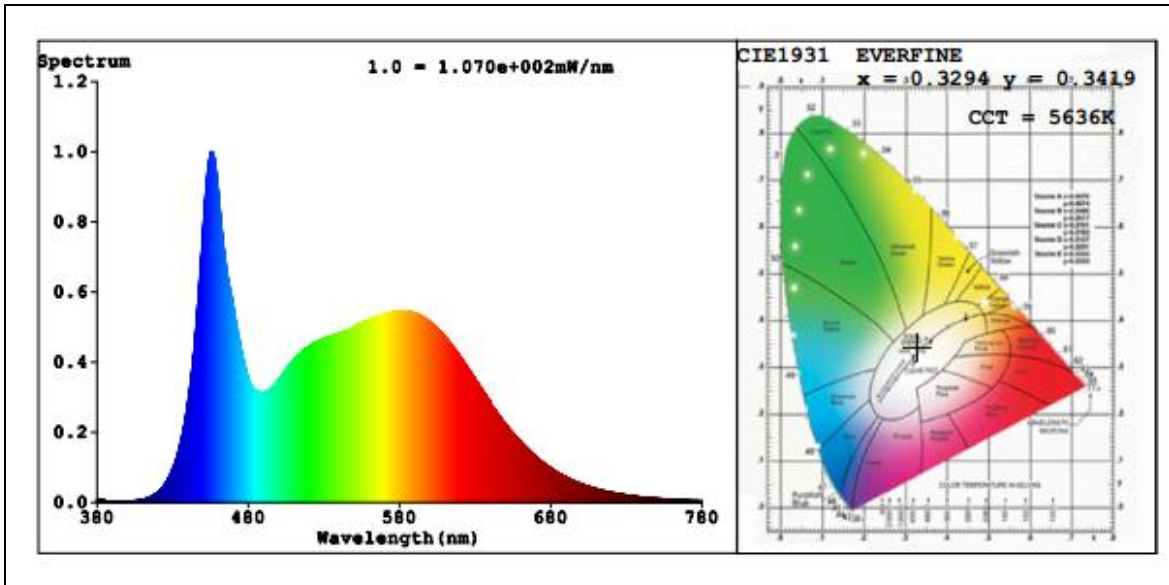
Goniophotometer Method :

Parameter	Result
Test Voltage (V)	220.0
Frequency (Hz)	60
Total Luminous (lm)	4058.6
Luminous Efficacy (lm/W)	129.83
Beam Angle°	109.7
Center Beam Candle Power (cd)	1496

Goniophotometer Methodn :

Parameter	Result
Test Voltage (V)	347.0
Frequency (Hz)	60
Total Luminous (lm)	4037.9
Luminous Efficacy (lm/W)	128.64

Spectral Power Distribution & Chromaticity Diagram



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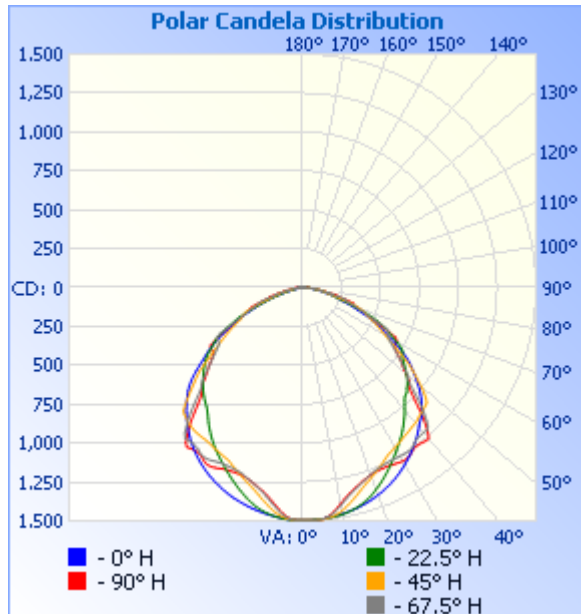
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Zonal Lumen Tabulation

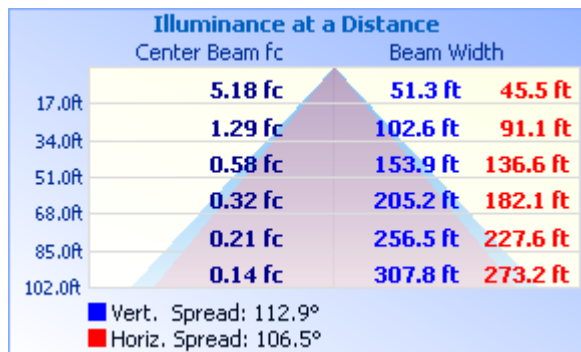
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,108.3	27.3%
0-40	1,848.5	45.6%
0-60	3,295.9	81.2%
60-90	738.1	18.2%
70-100	272.4	6.7%
90-120	20.2	0.5%
0-90	4,034.0	99.4%
90-180	24.1	0.6%
0-180	4,058.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	139.8	3.4%	90-100	5.1	0.1%
10-20	384.7	9.5%	100-110	11.0	0.3%
20-30	583.7	14.4%	110-120	4.1	0.1%
30-40	740.2	18.2%	120-130	1.2	0%
40-50	777.7	19.2%	130-140	0.8	0%
50-60	669.8	16.5%	140-150	0.7	0%
60-70	470.7	11.6%	150-160	0.6	0%
70-80	212.8	5.2%	160-170	0.4	0%
80-90	54.6	1.3%	170-180	0.2	0%

Photometric Data



Illuminance Plots



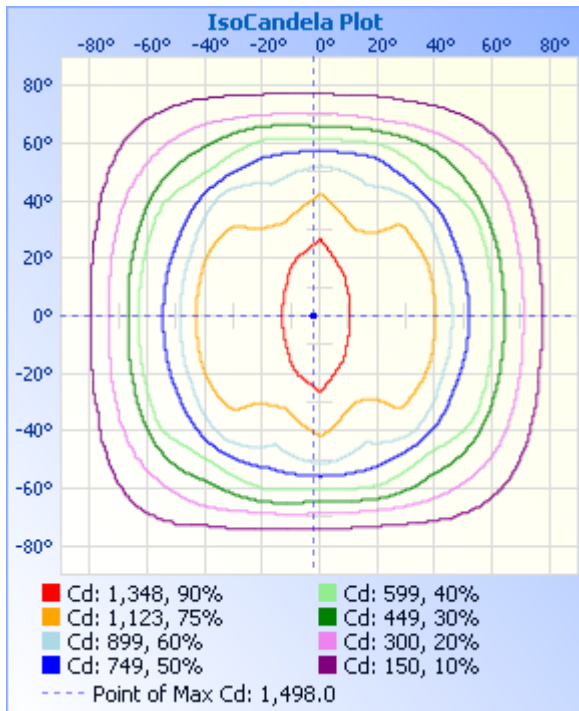
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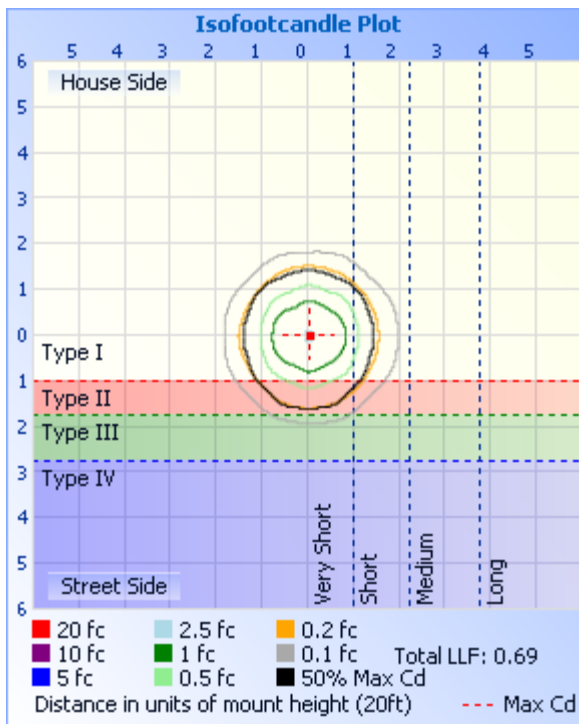
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ISOCANDELA DIAGRAM



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	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496
1	1497	1496	1496	1496	1496	1496	1496	1496	1495	1496	1496	1496	1496	1496	1496	1496	1497
2	1496	1495	1496	1496	1498	1497	1496	1496	1494	1495	1494	1494	1493	1495	1495	1496	1496
3	1495	1494	1496	1497	1498	1498	1496	1494	1493	1494	1492	1489	1486	1489	1493	1494	1495
4	1493	1493	1496	1496	1497	1497	1496	1493	1490	1491	1487	1479	1475	1480	1487	1493	1493
5	1491	1492	1495	1493	1493	1493	1494	1492	1488	1489	1479	1464	1457	1465	1479	1490	1491
6	1489	1490	1492	1486	1484	1486	1492	1490	1485	1485	1468	1445	1435	1445	1468	1486	1489
7	1486	1488	1486	1474	1470	1474	1486	1488	1481	1480	1454	1422	1412	1424	1454	1481	1486
8	1484	1486	1480	1459	1452	1458	1478	1485	1477	1474	1437	1401	1390	1402	1436	1475	1484
9	1480	1482	1469	1440	1431	1439	1468	1481	1473	1467	1418	1379	1368	1381	1418	1469	1480
10	1476	1479	1456	1420	1409	1418	1454	1477	1469	1459	1399	1359	1350	1361	1400	1460	1476
11	1472	1474	1441	1399	1388	1397	1437	1472	1464	1449	1381	1340	1334	1344	1382	1451	1472
12	1468	1468	1424	1379	1369	1377	1419	1465	1459	1438	1362	1325	1321	1330	1363	1440	1468
13	1463	1462	1407	1362	1354	1359	1401	1458	1454	1426	1344	1312	1308	1316	1347	1427	1463
14	1457	1454	1390	1348	1340	1345	1383	1449	1448	1412	1328	1300	1297	1302	1331	1412	1457
15	1452	1445	1371	1334	1328	1331	1364	1440	1442	1397	1313	1287	1287	1292	1317	1398	1452
16	1446	1435	1354	1322	1315	1318	1346	1428	1436	1381	1299	1276	1279	1282	1303	1382	1446
17	1440	1423	1339	1309	1304	1305	1330	1416	1430	1365	1287	1267	1271	1274	1290	1367	1440
18	1433	1410	1324	1298	1295	1293	1316	1401	1423	1349	1273	1257	1267	1264	1277	1351	1433
19	1426	1396	1310	1288	1287	1283	1302	1387	1416	1333	1260	1251	1266	1258	1264	1335	1426
20	1418	1380	1297	1278	1279	1274	1288	1370	1408	1316	1247	1248	1265	1256	1251	1320	1418
21	1409	1364	1283	1268	1275	1264	1274	1354	1400	1299	1235	1245	1265	1254	1240	1304	1409
22	1401	1348	1270	1263	1273	1257	1260	1337	1390	1282	1223	1244	1266	1252	1227	1288	1401
23	1392	1331	1256	1258	1271	1254	1246	1319	1381	1265	1211	1243	1269	1251	1217	1272	1392
24	1382	1314	1244	1255	1270	1251	1233	1301	1372	1249	1203	1242	1274	1251	1209	1256	1382
25	1372	1296	1232	1251	1270	1248	1221	1284	1362	1233	1196	1243	1280	1251	1203	1241	1372
26	1361	1278	1218	1248	1272	1247	1208	1266	1351	1216	1191	1247	1287	1255	1198	1225	1361
27	1350	1260	1208	1247	1276	1245	1199	1248	1340	1200	1186	1251	1292	1260	1192	1210	1350
28	1338	1242	1200	1247	1280	1247	1191	1229	1330	1184	1181	1256	1293	1265	1187	1195	1338

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29	1326	1224	1193	1249	1284	1249	1185	1211	1318	1167	1176	1260	1288	1268	1181	1179	1326
30	1313	1207	1186	1251	1287	1252	1179	1193	1306	1150	1170	1261	1277	1269	1175	1162	1313
31	1299	1190	1180	1253	1288	1256	1173	1175	1292	1132	1166	1257	1263	1264	1171	1145	1299
32	1286	1173	1173	1254	1284	1258	1166	1158	1279	1113	1163	1247	1257	1253	1168	1127	1286
33	1273	1155	1166	1253	1275	1258	1160	1139	1265	1095	1160	1235	1254	1241	1165	1110	1273
34	1258	1138	1160	1248	1263	1254	1154	1121	1251	1076	1158	1230	1254	1234	1163	1091	1258
35	1244	1119	1155	1239	1254	1246	1150	1102	1236	1055	1157	1224	1260	1229	1162	1070	1244
36	1229	1100	1149	1227	1254	1235	1146	1082	1220	1034	1156	1223	1266	1228	1160	1051	1229
37	1214	1081	1144	1218	1255	1229	1142	1062	1204	1015	1153	1227	1248	1232	1157	1033	1214
38	1198	1061	1140	1215	1258	1227	1140	1042	1187	997	1149	1228	1205	1231	1150	1019	1198
39	1181	1042	1135	1213	1265	1226	1136	1021	1170	982	1143	1204	1162	1205	1145	1006	1181
40	1164	1020	1131	1213	1261	1230	1132	999	1152	970	1140	1161	1114	1164	1142	995	1164
41	1147	998	1125	1216	1226	1232	1127	979	1134	958	1132	1119	1056	1124	1132	983	1147
42	1136	979	1117	1204	1180	1215	1121	961	1115	946	1120	1074	1005	1077	1124	971	1136
43	1123	963	1112	1167	1133	1172	1119	946	1095	932	1114	1023	961	1026	1120	963	1123
44	1103	954	1107	1125	1074	1129	1114	931	1076	919	1103	972	932	976	1106	957	1103
45	1082	948	1100	1081	1019	1084	1107	917	1055	905	1069	927	922	931	1072	944	1082
46	1063	930	1094	1029	972	1030	1104	904	1035	890	1030	902	895	908	1035	930	1063
47	1042	919	1090	979	933	979	1092	888	1013	875	992	883	860	888	999	917	1042
48	1018	906	1068	932	919	932	1056	872	990	860	955	848	834	852	968	901	1018
49	994	890	1034	898	907	902	1014	856	966	845	920	815	809	821	933	884	994
50	968	872	1000	884	871	892	972	841	938	829	886	784	787	793	898	867	968
51	941	854	959	853	842	859	933	824	904	814	854	758	762	766	869	853	941
52	915	836	924	818	816	823	896	805	867	798	805	733	739	741	821	842	915
53	889	818	886	793	795	795	860	783	830	781	757	709	719	718	775	834	889
54	863	800	854	766	771	768	832	761	794	764	718	686	712	695	737	825	863
55	837	785	812	742	745	743	783	741	762	743	682	664	705	673	702	810	837
56	807	773	761	716	723	717	735	724	731	718	648	649	705	660	666	790	807
57	773	765	722	693	705	694	698	712	699	693	616	642	706	653	634	767	773
58	735	755	684	670	698	671	663	691	667	671	587	640	698	649	606	742	735
59	695	732	648	649	695	650	627	665	629	652	560	640	658	648	582	717	695
60	655	701	616	637	694	640	595	641	589	629	531	636	599	642	558	684	655

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61	617	669	587	630	690	635	565	617	550	594	501	606	552	609	534	646	617
62	585	640	562	623	672	630	535	594	515	555	473	548	511	553	512	606	585
63	555	614	538	617	618	626	506	558	484	516	449	497	470	504	493	569	555
64	527	586	516	600	566	608	478	520	453	482	435	455	443	462	478	535	527
65	495	556	493	552	525	557	452	483	414	447	427	416	419	424	465	502	495
66	458	524	467	502	485	509	430	447	372	406	416	388	400	396	450	466	458
67	418	488	446	461	449	466	417	408	338	359	396	366	380	375	427	420	418
68	382	445	429	425	423	428	405	363	309	318	359	348	362	358	391	372	382
69	355	395	410	391	403	393	389	322	277	285	320	324	355	334	353	332	355
70	328	353	392	368	384	370	365	287	244	250	284	306	326	319	317	302	328
71	293	320	368	351	349	350	333	251	217	218	249	297	292	306	281	274	293
72	263	288	332	320	337	319	293	217	187	194	220	269	261	276	251	243	263
73	252	250	292	289	339	290	256	191	161	168	199	239	217	246	228	220	252
74	233	226	252	292	305	295	223	164	138	147	173	196	221	207	202	211	233
75	205	218	227	280	273	276	201	143	114	126	159	179	202	191	187	190	205
76	185	193	203	249	221	242	174	122	92	109	152	176	154	180	176	174	185
77	156	176	169	196	202	190	147	106	75	93	133	137	161	139	161	149	156
78	148	155	172	174	224	170	150	90	59	81	105	129	129	136	134	142	148
79	131	141	169	183	157	181	138	78	46	69	97	108	122	111	123	130	131
80	115	131	140	137	143	130	107	69	33	56	78	100	106	103	101	112	115
81	98	118	119	121	140	120	90	55	23	43	69	86	97	91	94	98	98
82	84	103	108	112	112	108	79	43	14	34	57	76	77	81	81	89	84
83	71	88	91	101	106	96	64	33	7	28	48	58	59	63	70	74	71
84	61	77	86	91	98	84	57	28	3	21	40	43	43	48	62	63	61
85	56	64	75	84	83	75	47	21	1	17	29	30	31	36	49	55	56
86	46	55	67	63	60	55	40	16	0	12	20	22	24	27	38	45	46
87	41	46	52	46	45	40	30	12	0	9	15	17	18	22	30	34	41
88	29	35	41	35	33	29	21	8	0	6	12	14	14	17	24	25	29
89	20	26	31	27	25	22	15	6	0	5	10	10	10	14	19	20	20
90	16	20	25	22	19	17	11	4	0	4	7	8	9	12	17	17	16
91	14	15	20	17	14	13	8	0	0	0	6	8	9	11	16	12	14
92	0	0	14	13	9	7	0	0	0	0	0	6	7	10	5	0	0

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93	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
95	6	11	0	0	0	0	0	1	0	1	0	0	0	0	13	6
96	17	14	0	0	0	0	0	0	0	0	0	0	0	0	15	17
97	22	15	2	0	0	0	0	0	0	0	0	0	0	8	16	22
98	22	16	13	0	0	0	0	0	0	0	0	0	0	14	18	22
99	21	16	11	0	0	5	0	0	0	0	0	13	0	0	12	17
100	21	16	9	0	7	23	0	0	0	0	0	25	30	0	10	17
101	20	16	9	0	27	22	0	0	0	0	0	27	38	0	9	18
102	21	17	8	0	27	24	0	0	0	0	0	30	35	1	8	17
103	20	16	5	1	27	25	0	0	0	0	0	27	37	3	4	18
104	20	17	2	0	30	25	1	0	0	0	1	24	35	6	1	16
105	19	16	0	9	31	27	4	0	0	0	3	21	30	7	0	16
106	18	14	0	10	31	26	7	0	0	0	4	20	25	10	0	13
107	17	9	0	12	32	22	9	0	0	0	6	21	23	12	0	7
108	11	4	0	13	27	21	8	0	0	0	5	18	25	11	0	3
109	5	1	0	12	25	18	8	0	0	0	5	15	22	10	0	1
110	2	0	0	14	21	19	8	0	0	0	5	13	19	9	0	0
111	0	0	0	14	21	19	6	0	0	0	4	12	16	9	0	0
112	0	0	0	12	21	15	5	0	0	0	3	11	15	9	0	0
113	0	0	0	11	18	13	4	0	0	0	3	9	13	8	0	0
114	0	0	1	10	16	12	4	0	0	0	2	7	11	7	0	0
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117	0	0	1	7	11	7	2	0	0	0	1	5	7	5	1	0
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120	0	0	1	5	6	5	1	0	0	0	1	3	5	3	1	0
121	0	0	1	4	6	4	1	0	0	1	1	3	4	3	1	0
122	0	0	1	4	5	3	1	0	1	1	1	2	4	3	1	0
123	0	0	1	3	4	3	1	0	1	1	1	2	4	2	1	0
124	1	0	1	3	3	2	1	0	1	1	1	2	3	2	1	0

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125	1	1	1	3	3	2	1	1	1	1	1	1	3	2	1	1	1
126	1	1	1	2	2	2	1	1	1	1	1	1	3	2	1	1	1
127	1	1	1	2	2	1	1	1	1	1	1	1	2	2	1	1	1
128	1	1	1	2	2	1	1	1	1	1	1	1	2	2	1	1	1
129	1	1	1	2	2	1	1	1	1	1	1	1	2	1	1	1	1
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134	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
135	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
136	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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149	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
150	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
151	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
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153	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
154	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2
155	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
156	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2

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157	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
158	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
159	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
160	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	2	2
161	2	2	1	1	1	1	1	1	1	2	2	1	1	1	2	2	2
162	2	2	1	1	1	1	1	1	1	2	2	1	1	1	2	2	2
163	2	2	2	1	1	1	1	2	1	2	2	2	1	1	2	2	2
164	2	2	2	1	1	1	1	2	1	2	2	2	1	1	2	2	2
165	2	2	2	1	1	1	1	1	1	2	2	2	1	1	2	2	2
166	2	2	2	1	1	1	1	2	1	2	2	2	1	1	2	2	2
167	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
168	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
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170	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
171	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
172	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
173	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
174	2	2	2	1	2	1	1	2	2	2	2	2	1	1	2	2	2
175	2	2	2	1	2	1	2	2	2	2	2	2	1	1	2	2	2
176	2	2	2	1	2	1	0	2	2	2	2	2	1	1	2	2	2
177	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
178	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2
179	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2
180	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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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 *******