

**LM-79-08 Test Report**

For

**LIGHT EFFICIENT DESIGN, LLC****(Brand Name: N/A)**

188 S.Northwest Highway, Cary, IL60013, USA

**LED Luminaires**

Model name(s): LED-8057M40-A

Representative (Tested) Model: LED-8057M40-A

Model Different: All construction and rating are the same, except CCT

Test &amp; Report By:

*Garman Mo*

Engineer: Garman Mo

Date: Mar.28,2018

Review By:

*Univ Xie*

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.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

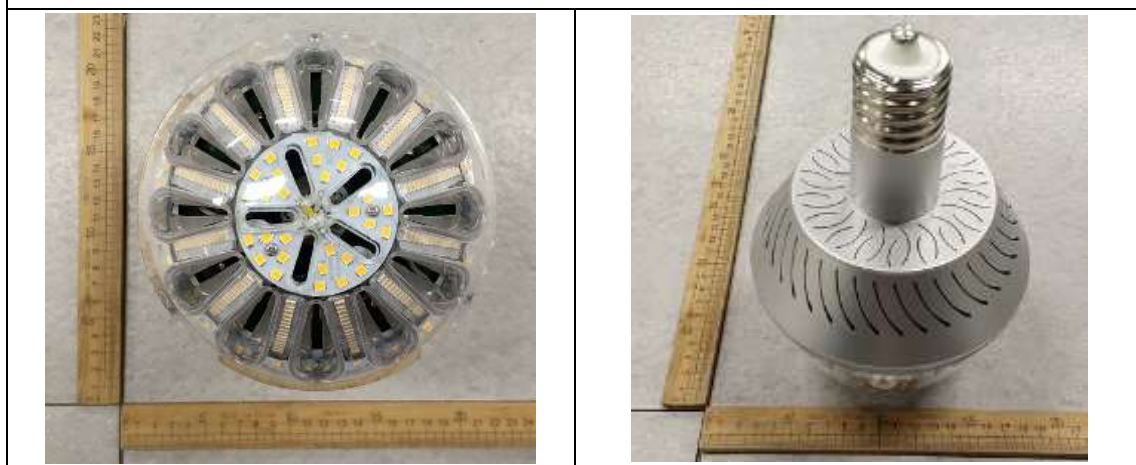
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**1.1 Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8057M40-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	75W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAT0SE	
Sample Number	GZE1801030-H-E1	
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	Mar.16,2018
Date of Test	Mar.17,2018
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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	2018-03-17	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8057M40-A		

**Electrical Measurement:**

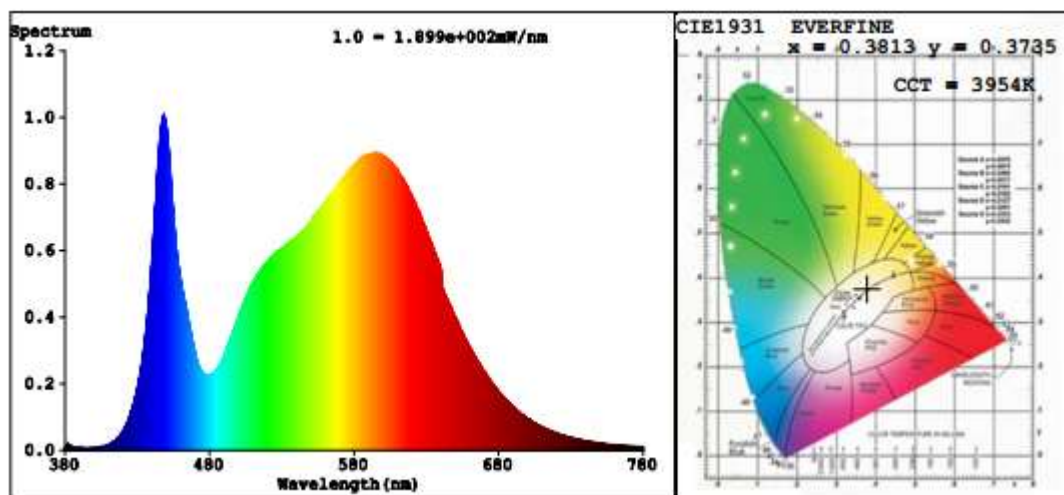
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	120.0	60	0.6527	76.88	0.9815	15.15
0-H-E1	277.0	60	0.2956	75.99	0.9282	19.49

**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	3954	R3	94	R11	80
Duv	-0.0018	R4	81	R12	64
Chromaticity (x, y)	x=0.3813 y=0.3735	R5	80	R13	82
Chromaticity (u', v')	u'=0.2269 v'=0.5003	R6	84	R14	97
Color Rendering Index (CRI)	81.6	R7	84	R15	74
R9	1	R8	62	--	--

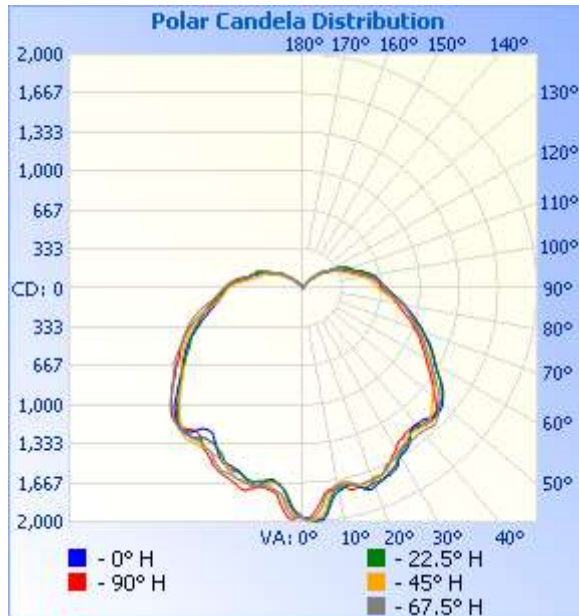
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	9578.2	9607.0
Luminous Efficacy (lm/W)	124.59	126.42
Most worst Luminous/Highest Watts	124.59	
Beam Angle (°)	143.5	--
Center Beam Candle Power (cd)	1966	--

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,445.7	15.1%
0-40	2,429.2	25.4%
0-60	4,828.2	50.4%
60-90	2,928.7	30.6%
70-100	2,470.0	25.8%
90-120	1,496.8	15.6%
0-90	7,756.9	81%
90-180	1,821.5	19%
0-180	9,578.4	100%

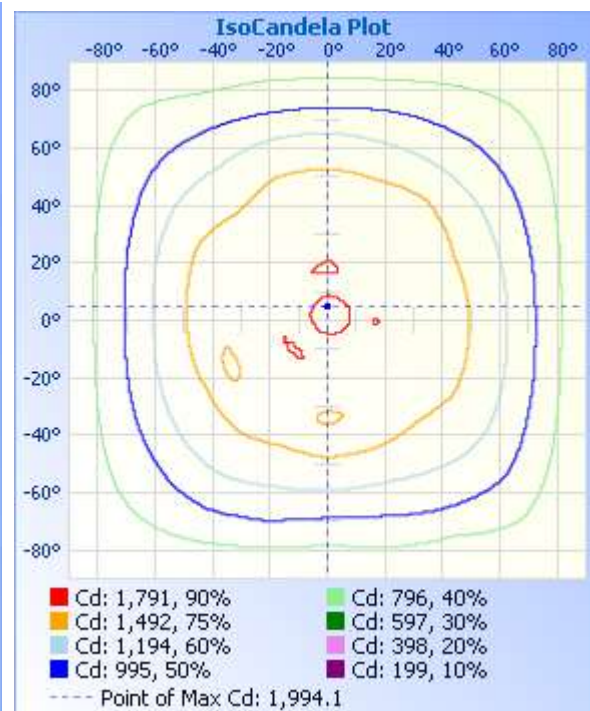
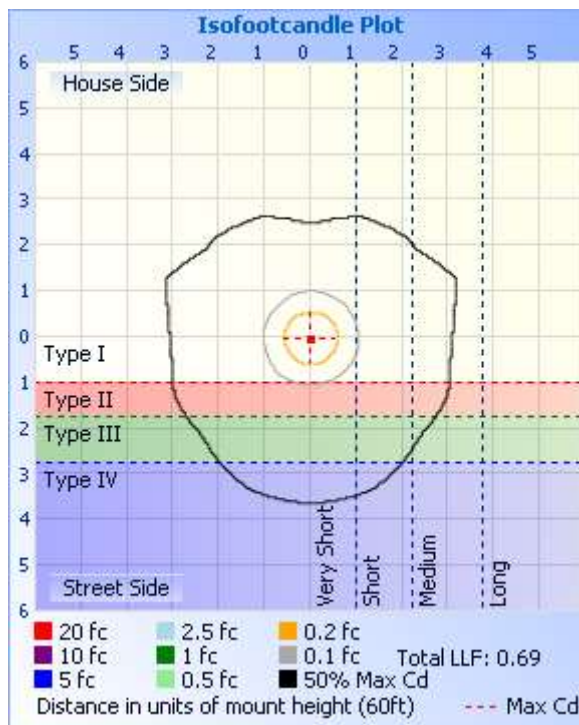
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	172.2	1.8%	90-100	664.9	6.9%
10-20	495.2	5.2%	100-110	492.6	5.1%
20-30	778.2	8.1%	110-120	339.3	3.5%
30-40	983.6	10.3%	120-130	196.5	2.1%
40-50	1,191.1	12.4%	130-140	89.3	0.9%
50-60	1,207.8	12.6%	140-150	29.5	0.3%
60-70	1,123.6	11.7%	150-160	7.5	0.1%
70-80	989.8	10.3%	160-170	1.5	0%
80-90	815.3	8.5%	170-180	0.3	0%

**Photometric Data**


**Illuminance at a Distance**

	Center Beam fc	Beam Width	
10.0ft	19.7 fc	59.9 ft	60.3 ft
20.0ft	4.92 fc	119.7 ft	120.5 ft
30.0ft	2.18 fc	179.6 ft	180.8 ft
40.0ft	1.23 fc	239.4 ft	241.0 ft
50.0ft	0.79 fc	299.3 ft	301.3 ft
60.0ft	0.55 fc	359.2 ft	361.5 ft

■ Vert. Spread: 143.0°  
■ Horiz. Spread: 143.3°



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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	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966	1966
1	1976	1986	1989	1983	1971	1957	1942	1938	1937	1947	1958	1967	1961	1957	1953	1964	1976
2	1984	1983	1983	1967	1953	1935	1907	1899	1911	1931	1943	1962	1972	1983	1966	1974	1984
3	1990	1990	1985	1960	1917	1901	1870	1859	1866	1885	1914	1944	1979	1977	1960	1980	1990
4	1990	1994	1967	1924	1875	1843	1804	1815	1803	1829	1870	1905	1959	1970	1962	1982	1990
5	1990	1966	1956	1876	1822	1771	1751	1760	1744	1755	1807	1842	1909	1922	1971	1981	1990
6	1947	1933	1871	1803	1763	1738	1736	1730	1715	1714	1773	1777	1855	1857	1937	1951	1947
7	1879	1854	1808	1761	1744	1726	1739	1698	1697	1691	1758	1757	1791	1815	1874	1881	1879
8	1817	1793	1758	1748	1736	1724	1728	1689	1672	1675	1745	1750	1764	1777	1814	1818	1817
9	1781	1745	1721	1731	1717	1736	1727	1704	1658	1671	1707	1738	1753	1767	1776	1775	1781
10	1761	1739	1707	1704	1714	1737	1720	1718	1662	1670	1697	1721	1745	1761	1739	1742	1761
11	1754	1742	1709	1695	1714	1732	1741	1731	1679	1678	1705	1714	1739	1751	1735	1735	1754
12	1740	1740	1710	1695	1739	1746	1760	1734	1711	1688	1724	1723	1735	1749	1730	1735	1740
13	1717	1726	1703	1714	1766	1762	1785	1742	1733	1693	1733	1738	1743	1753	1731	1727	1717
14	1717	1729	1718	1736	1776	1780	1795	1765	1733	1710	1742	1745	1765	1760	1740	1734	1717
15	1740	1745	1748	1752	1769	1797	1801	1786	1728	1707	1731	1745	1777	1752	1756	1750	1740
16	1769	1772	1757	1750	1770	1798	1799	1786	1720	1704	1733	1739	1801	1750	1759	1774	1769
17	1791	1790	1752	1751	1781	1789	1786	1780	1702	1692	1738	1730	1800	1749	1757	1781	1791
18	1815	1794	1745	1751	1789	1792	1774	1778	1678	1683	1725	1729	1787	1754	1742	1771	1815
19	1816	1778	1746	1744	1780	1785	1762	1768	1662	1672	1723	1729	1773	1761	1750	1768	1816
20	1803	1770	1748	1733	1753	1764	1751	1756	1653	1668	1711	1719	1762	1753	1752	1756	1803
21	1791	1778	1751	1729	1739	1753	1749	1757	1650	1669	1692	1713	1750	1744	1749	1748	1791
22	1782	1771	1744	1734	1741	1737	1746	1736	1644	1678	1685	1709	1744	1733	1757	1751	1782
23	1773	1766	1726	1731	1730	1727	1732	1697	1640	1669	1661	1710	1739	1709	1750	1749	1773
24	1765	1757	1716	1712	1710	1729	1720	1679	1646	1633	1641	1711	1732	1701	1745	1740	1765
25	1760	1737	1706	1699	1679	1709	1691	1655	1642	1610	1631	1695	1722	1682	1744	1731	1760
26	1750	1728	1680	1676	1671	1676	1663	1630	1617	1581	1633	1681	1708	1663	1733	1708	1750
27	1740	1714	1653	1664	1655	1658	1652	1621	1592	1567	1617	1666	1697	1650	1702	1683	1740
28	1723	1700	1651	1657	1624	1633	1647	1603	1566	1558	1614	1638	1671	1628	1673	1671	1723

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29	1682	1672	1638	1639	1609	1621	1642	1578	1537	1541	1615	1619	1654	1609	1650	1653	1682
30	1661	1652	1620	1630	1593	1610	1627	1567	1512	1537	1603	1606	1636	1592	1618	1632	1661
31	1655	1635	1605	1613	1563	1577	1608	1566	1487	1533	1602	1598	1627	1589	1610	1622	1655
32	1644	1621	1593	1598	1544	1542	1592	1560	1465	1533	1611	1595	1608	1587	1602	1611	1644
33	1634	1611	1586	1595	1544	1516	1582	1553	1459	1531	1618	1591	1587	1574	1590	1601	1634
34	1618	1594	1564	1601	1534	1492	1565	1549	1462	1546	1617	1583	1565	1551	1584	1589	1618
35	1592	1578	1556	1603	1520	1475	1555	1541	1470	1569	1618	1586	1539	1545	1579	1569	1592
36	1558	1555	1553	1598	1518	1467	1548	1547	1490	1581	1622	1594	1531	1538	1579	1556	1558
37	1534	1532	1548	1597	1515	1466	1541	1549	1528	1591	1631	1599	1531	1534	1584	1549	1534
38	1516	1530	1554	1589	1514	1475	1537	1547	1565	1594	1630	1598	1538	1541	1585	1542	1516
39	1511	1538	1556	1590	1519	1485	1536	1556	1585	1596	1627	1605	1555	1554	1579	1547	1511
40	1517	1550	1559	1595	1537	1493	1542	1562	1601	1595	1615	1604	1570	1560	1586	1554	1517
41	1522	1550	1561	1599	1559	1508	1550	1558	1604	1585	1590	1598	1580	1564	1598	1554	1522
42	1522	1550	1571	1609	1574	1518	1553	1546	1591	1575	1566	1595	1585	1560	1602	1552	1522
43	1533	1560	1574	1618	1579	1525	1554	1536	1578	1562	1542	1588	1584	1556	1615	1552	1533
44	1551	1565	1563	1621	1581	1531	1546	1518	1563	1549	1523	1576	1580	1552	1623	1563	1551
45	1564	1561	1542	1613	1576	1525	1532	1498	1543	1526	1494	1562	1574	1542	1626	1569	1564
46	1570	1556	1526	1599	1568	1514	1525	1481	1521	1497	1464	1546	1564	1525	1626	1571	1570
47	1572	1552	1504	1579	1557	1498	1511	1470	1505	1470	1445	1531	1545	1508	1615	1570	1572
48	1572	1546	1483	1556	1538	1483	1490	1457	1474	1435	1421	1517	1520	1494	1595	1563	1572
49	1564	1539	1466	1537	1504	1464	1465	1444	1441	1405	1398	1500	1495	1473	1573	1547	1564
50	1555	1532	1447	1517	1478	1447	1444	1422	1407	1380	1372	1477	1470	1456	1545	1526	1555
51	1536	1527	1433	1505	1450	1419	1417	1400	1380	1358	1349	1451	1445	1427	1518	1499	1536
52	1519	1512	1413	1477	1422	1392	1387	1365	1351	1332	1320	1427	1420	1402	1501	1481	1519
53	1498	1486	1401	1451	1395	1368	1358	1330	1325	1310	1293	1401	1399	1375	1477	1462	1498
54	1479	1464	1386	1415	1365	1350	1339	1299	1296	1289	1271	1377	1371	1355	1455	1441	1479
55	1447	1439	1371	1385	1339	1326	1322	1278	1271	1272	1259	1356	1343	1330	1420	1412	1447
56	1419	1418	1347	1355	1310	1301	1305	1255	1248	1248	1244	1339	1320	1301	1388	1387	1419
57	1383	1386	1321	1329	1287	1283	1283	1237	1228	1221	1231	1318	1304	1283	1348	1357	1383
58	1355	1359	1298	1307	1259	1264	1266	1221	1208	1194	1224	1299	1281	1264	1311	1334	1355
59	1327	1326	1268	1284	1238	1244	1249	1201	1192	1177	1215	1281	1257	1247	1285	1304	1327
60	1308	1303	1244	1264	1215	1223	1230	1181	1170	1156	1200	1270	1233	1227	1254	1277	1308

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61	1286	1282	1217	1241	1197	1203	1210	1161	1149	1132	1182	1249	1214	1214	1233	1257	1286
62	1268	1263	1200	1219	1175	1175	1192	1145	1136	1107	1166	1223	1195	1193	1208	1231	1268
63	1248	1239	1178	1190	1153	1149	1165	1126	1116	1091	1150	1201	1180	1175	1183	1213	1248
64	1226	1221	1162	1169	1136	1133	1139	1109	1095	1076	1129	1173	1167	1148	1158	1189	1226
65	1209	1196	1142	1146	1114	1115	1122	1093	1076	1063	1108	1150	1146	1125	1142	1170	1209
66	1187	1174	1126	1128	1099	1094	1100	1079	1057	1052	1092	1130	1128	1097	1120	1148	1187
67	1166	1147	1105	1103	1080	1070	1082	1061	1029	1038	1081	1114	1111	1077	1104	1129	1166
68	1138	1128	1088	1083	1061	1050	1064	1043	1001	1020	1063	1095	1096	1057	1081	1108	1138
69	1115	1106	1067	1062	1033	1030	1048	1031	979	997	1041	1077	1073	1042	1064	1092	1115
70	1092	1088	1050	1045	1016	1011	1029	1012	955	979	1023	1063	1048	1027	1042	1073	1092
71	1074	1065	1029	1028	998	993	1009	991	932	958	1002	1045	1026	1015	1027	1059	1074
72	1052	1042	1010	1015	983	979	994	975	916	940	978	1028	998	998	1009	1040	1052
73	1032	1013	991	994	962	964	973	952	894	925	960	1008	970	984	995	1025	1032
74	1009	992	977	976	941	948	952	927	869	907	937	993	946	967	979	1004	1009
75	989	968	960	956	919	931	934	903	846	887	909	971	917	950	967	986	989
76	967	950	944	942	894	907	906	882	830	870	878	947	886	926	952	968	967
77	948	929	923	925	878	884	877	854	811	850	853	926	860	910	942	951	948
78	930	913	909	912	858	862	849	831	790	830	822	900	844	890	929	933	930
79	907	895	889	893	841	845	827	813	776	806	793	875	827	871	915	913	907
80	889	880	869	878	824	822	806	786	755	789	773	846	810	850	889	898	889
81	869	857	839	856	812	799	787	763	738	769	750	821	797	834	870	876	869
82	854	838	813	837	792	779	771	747	729	748	730	794	777	815	854	856	854
83	832	818	780	812	775	761	756	726	718	735	714	772	759	799	827	830	832
84	813	803	754	792	758	744	742	709	710	722	702	756	749	783	805	811	813
85	792	781	731	770	744	731	727	693	698	712	689	743	734	770	783	788	792
86	774	765	706	751	726	718	715	682	690	705	677	726	722	751	765	767	774
87	754	752	690	736	713	706	699	667	681	696	669	714	706	737	745	745	754
88	739	738	674	723	700	696	687	654	672	684	661	700	696	724	730	726	739
89	726	724	661	715	686	690	679	643	665	669	653	686	686	708	716	705	726
90	712	707	646	706	675	680	667	630	655	656	645	675	673	695	706	691	712
91	701	693	635	698	667	667	654	615	643	641	628	664	664	681	696	678	701
92	688	679	623	689	661	655	645	604	632	627	609	647	653	670	686	664	688

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93	679	670	614	682	656	643	632	587	613	617	596	628	639	658	678	653	679
94	671	658	604	675	650	627	611	571	593	603	576	615	626	648	670	640	671
95	664	651	596	662	638	608	587	550	575	586	549	600	613	636	661	629	664
96	654	644	587	649	627	581	564	530	559	571	522	583	599	623	645	613	654
97	644	636	576	632	613	559	534	507	538	551	505	567	584	608	630	600	644
98	634	628	566	618	603	542	509	486	519	530	485	546	568	590	618	589	634
99	625	616	548	598	591	522	489	470	501	516	466	524	544	576	608	581	625
100	612	606	534	582	571	504	468	455	485	502	451	506	517	560	598	573	612
101	595	595	513	567	554	492	447	442	476	488	434	488	495	547	582	559	595
102	580	584	496	548	534	479	435	434	465	478	418	474	473	533	568	545	580
103	563	567	481	533	518	467	420	427	456	468	408	465	459	522	547	527	563
104	550	552	462	514	503	458	411	423	448	459	398	454	446	512	529	510	550
105	532	535	448	500	484	443	406	416	439	452	388	443	439	496	509	492	532
106	515	513	433	482	470	425	406	407	425	437	381	437	437	484	493	470	515
107	497	494	423	467	453	410	403	397	413	424	374	434	431	468	476	454	497
108	473	477	413	455	444	394	394	386	400	414	368	431	421	454	458	439	473
109	458	468	398	442	435	387	380	370	392	403	364	428	408	441	446	429	458
110	445	458	387	429	430	383	363	359	384	390	356	421	388	430	434	415	445
111	436	449	374	415	421	375	343	343	367	369	346	413	371	422	426	407	436
112	428	444	364	406	409	361	327	322	349	342	331	395	361	414	422	401	428
113	416	436	360	400	400	339	304	303	330	323	318	376	352	404	415	394	416
114	400	427	355	389	387	318	284	286	303	304	301	356	346	394	408	388	400
115	382	418	354	379	377	304	270	273	283	295	278	329	328	384	398	380	382
116	370	403	353	368	366	285	263	259	265	287	264	310	304	377	392	375	370
117	362	392	350	358	348	269	262	240	251	270	249	291	284	366	385	370	362
118	356	379	341	346	334	247	255	223	243	252	238	278	264	355	378	359	356
119	350	365	329	330	316	228	240	215	235	238	225	270	248	340	367	353	350
120	339	351	317	315	301	219	221	211	235	231	209	261	240	317	346	335	339
121	324	335	296	296	284	221	208	211	237	233	205	252	230	297	326	315	324
122	301	318	278	279	266	225	191	205	231	230	207	245	226	272	308	296	301
123	271	294	264	264	255	221	184	193	217	216	207	230	228	260	292	277	271
124	254	277	253	246	246	212	182	176	199	200	202	218	220	255	282	270	254

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125	241	264	245	234	239	191	169	152	173	184	184	202	211	247	267	262	241
126	232	251	237	226	230	169	153	138	151	168	155	181	188	237	255	252	232
127	221	239	230	224	224	148	140	128	139	148	142	163	168	231	244	241	221
128	219	232	223	223	212	138	128	122	130	145	129	148	150	225	234	232	219
129	221	227	217	219	197	125	121	118	125	136	124	138	143	218	229	218	221
130	215	214	211	215	187	119	113	108	124	131	117	124	135	207	225	205	215
131	197	206	199	202	175	110	104	97	117	121	112	116	125	193	221	200	197
132	179	200	189	182	159	98	99	89	103	107	103	110	116	175	209	190	179
133	168	187	170	160	138	90	93	81	93	90	96	106	104	162	190	181	168
134	153	175	151	149	127	84	85	74	82	86	86	97	99	148	165	168	153
135	143	154	137	133	116	77	75	62	77	76	74	85	90	138	153	151	143
136	140	141	130	127	109	68	65	56	68	69	68	76	82	128	144	140	140
137	132	125	123	120	106	60	59	48	58	62	62	67	74	121	138	132	132
138	120	119	121	114	96	52	53	46	53	57	53	60	67	115	138	125	120
139	112	116	112	101	86	47	48	43	47	49	48	55	61	107	126	119	112
140	106	104	100	89	76	44	45	39	45	44	46	52	54	95	109	107	106
141	102	96	92	84	73	40	42	36	40	42	43	48	50	84	97	95	102
142	92	85	82	77	65	38	39	34	36	37	38	44	46	78	88	83	92
143	81	79	74	68	60	34	35	31	35	35	37	41	42	68	79	76	81
144	72	69	63	59	54	31	31	29	31	33	33	37	40	63	74	70	72
145	69	62	56	52	47	29	29	25	29	28	30	33	36	58	63	63	69
146	63	58	48	45	41	26	26	23	25	26	27	30	32	51	56	56	63
147	57	50	43	41	38	23	23	20	22	22	23	27	28	47	53	52	57
148	49	45	40	37	34	20	20	18	19	20	22	24	26	45	47	44	49
149	46	41	37	34	32	18	18	15	17	17	19	21	23	41	43	40	46
150	41	39	34	31	29	16	15	13	15	15	17	19	21	38	40	36	41
151	37	35	31	29	26	14	13	12	13	13	15	17	18	36	37	34	37
152	35	32	29	26	24	12	11	10	11	11	13	15	16	31	33	31	35
153	31	28	26	23	21	10	9	9	9	10	11	12	14	29	31	28	31
154	28	25	24	21	19	9	8	7	8	9	9	11	12	26	27	26	28
155	25	22	21	18	16	7	7	7	7	7	8	9	11	24	26	24	25
156	23	20	18	16	14	6	6	6	6	6	7	8	9	21	22	22	23

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157	20	18	16	14	13	6	5	5	5	5	6	7	8	18	19	19	20
158	18	16	14	13	11	5	5	5	5	5	5	6	7	16	17	17	18
159	16	14	13	11	9	5	5	4	4	4	5	5	6	14	15	14	16
160	14	12	11	9	8	4	4	4	4	4	5	5	6	12	12	13	14
161	12	10	9	8	7	4	5	4	4	4	4	4	5	10	11	11	12
162	10	9	8	7	6	4	4	4	3	4	4	4	5	9	9	9	10
163	9	8	7	6	5	3	4	3	3	3	4	4	4	7	9	8	9
164	7	7	6	5	5	3	3	3	3	3	4	4	4	7	7	7	7
165	7	6	5	5	4	3	3	3	3	3	3	4	4	6	6	6	7
166	6	5	5	4	4	3	3	3	3	3	3	4	4	5	5	5	6
167	5	5	4	4	3	3	3	3	3	3	3	3	3	5	5	5	5
168	5	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	5
169	4	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	4
170	4	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	4
171	4	4	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4
172	4	3	3	3	3	3	3	3	3	3	3	2	3	4	4	4	4
173	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
174	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3
175	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
176	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
177	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3
178	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
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 \*\*\*\*\***