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Photometric Test Report

Relevant Standards
IES LM-79-2008
ANSI C78.377-2011, ANSI C82.77-2002
CIE 13.3-1995, CIE 15-2004, IES TM-30-15, UL 1598-2008

Prepared For
RLE Industries

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Catalog Number
PDU-V2 3000K

Order Number
11524480
Test Number
11524880.05

Test Date

2017-01-23 - 2017-01-26

Prepared By

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Approved By

Tiffany Hamm, Project Handler

The results contained in this report pertain only to the tested sample.
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Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: White aluminum housing, lower frosted plastic lens enclosure, upper frosted plastic lens enclosure
Lamp: 192 white LEDs, four boards with 48 LEDs each
Mounting: Pendant
Ballast/Driver: One Philips Advance Xitanium XI075C200V054BST1

Luminaire



Luminaire Characteristics

Luminous Length: 48.00 in.
Luminous Width: 1.750 in.
Luminous Height: 4.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 6104 Lumens
Efficacy: 99.4 lm/w
CCT: 3106 K
CRI (Ra): 84.1

Distribution

Total Luminaire Output: 6114 Lumens
Luminaire Efficacy: 99.5 lm/w
Maximum Candela: 1409 Candela

Electrical Data at 277 VAC

Test Temperature: 25.0 °C
Voltage: 277.0 VAC
Current: 0.2210 A
Power: 60.88 W
Power Factor: 0.990
Frequency: 60 Hz
Current THD: 9.56 %

In-Situ

LED Temperature: 61.6 °C
Driver Temperature: 63.9 °C
Measured LED Current: 0.1006 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.



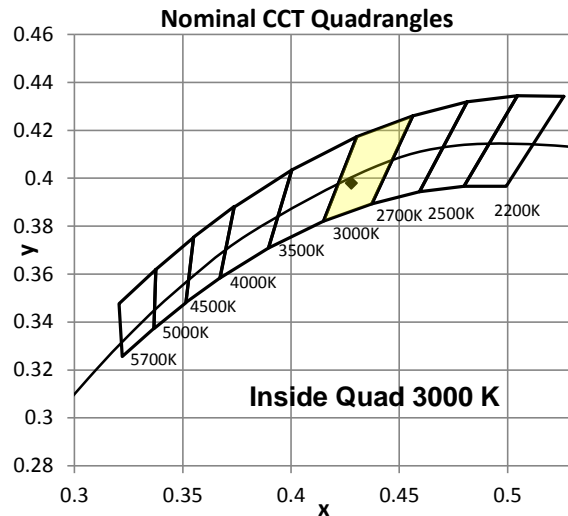
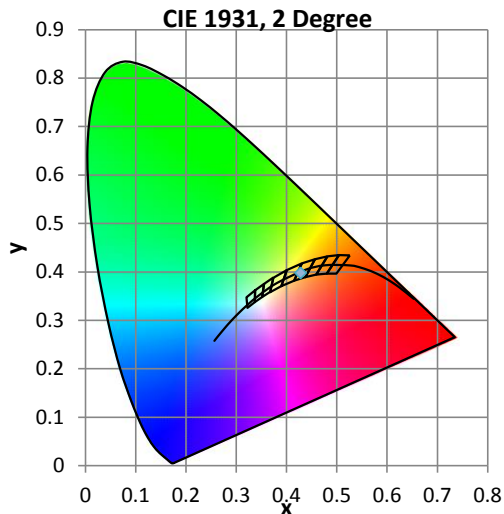
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.0 VAC	0.5137 A	61.41 W	0.996	60 Hz	8.39 %

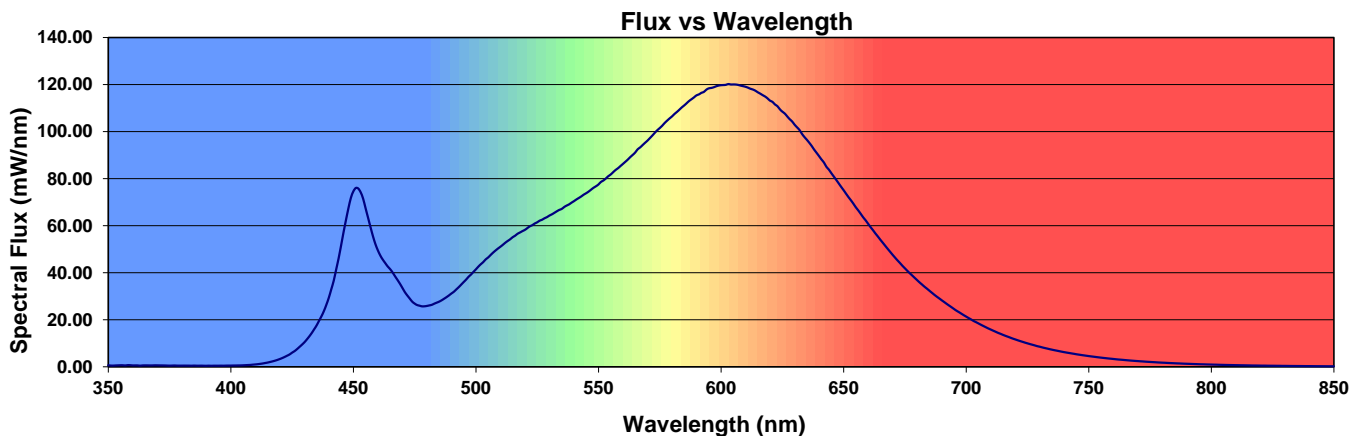
Summary of Results

Total Output:	6104 Lumens	Chromaticity (x):	0.4279
Efficacy:	99.4 lm/w	Chromaticity (y):	0.3979
CCT:	3106 K	Chromaticity (u'):	0.2473
CRI (Ra):	84.1	Chromaticity (v'):	0.5176
CRI (R9):	16.3	TM-30 R_f:	83.8
Peak Wavelength:	603.7 nm	TM-30 R_g:	96.8
Dominant Wavelength:	582.8 nm	Duv:	-0.0017
S/P Ratio:	1.401		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
84.1	82.8	91.8	96.5	81.9	82.9	89.6	84.2	63.1	16.3	80.9	81.1	72.0	85.0	98.7





Distribution - Goniophotometer

Distribution Test Conditions

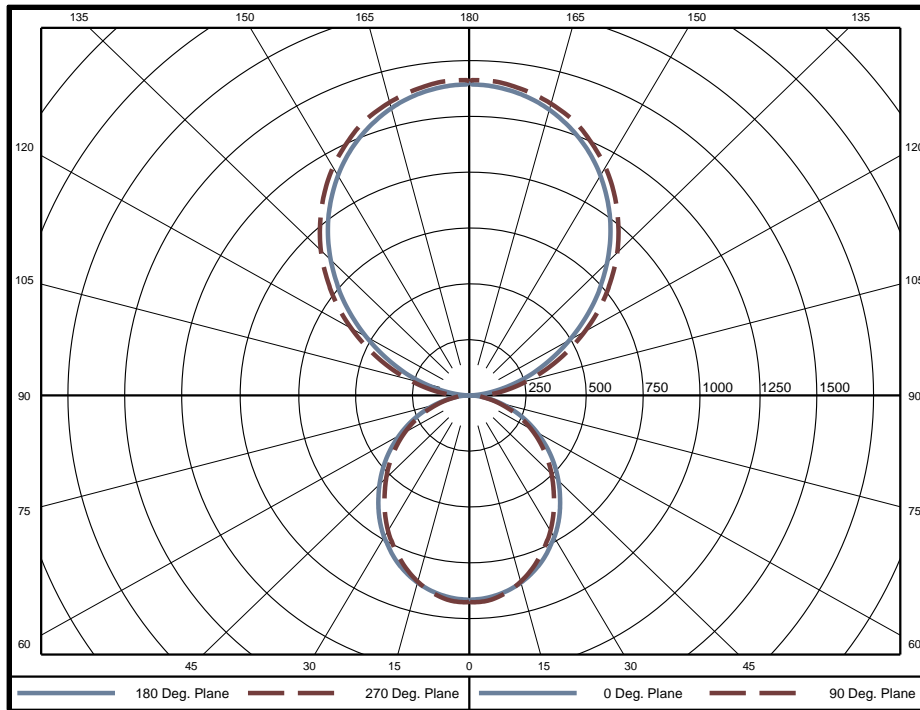
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	120.0 VAC	0.5141 A	61.47 W	0.996	60 Hz	8.39 %

Summary of Results

Spacing Criteria
 0-180: 1.19
 90-270: 1.19

Total Lumen Output: 6114 Lumens
Luminaire Efficacy: 99.5 lm/w
Maximum Candela: 1409 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	21.9	0.4%	60-65	142.9	2.3%	120-125	280.4	4.6%
5-10	64.8	1.1%	65-70	116.1	1.9%	125-130	312.9	5.1%
10-15	104.5	1.7%	70-75	86.7	1.4%	130-135	334.7	5.5%
15-20	139.3	2.3%	75-80	57.3	0.9%	135-140	345.7	5.7%
20-25	167.6	2.7%	80-85	31.0	0.5%	140-145	344.4	5.6%
25-30	188.9	3.1%	85-90	15.9	0.3%	145-150	330.3	5.4%
30-35	202.7	3.3%	90-95	29.3	0.5%	150-155	303.8	5.0%
35-40	207.9	3.4%	95-100	62.1	1.0%	155-160	266.0	4.4%
40-45	206.1	3.4%	100-105	103.2	1.7%	160-165	217.9	3.6%
45-50	198.6	3.2%	105-110	149.1	2.4%	165-170	161.5	2.6%
50-55	185.2	3.0%	110-115	195.6	3.2%	170-175	99.3	1.6%
55-60	166.2	2.7%	115-120	240.3	3.9%	175-180	33.5	0.5%

Zone	Lumens	% of Luminaire
0-40	1098	18.0%
0-60	1854	30.3%
0-90	2304	37.7%
90-180	3810	62.3%



Candela Tabulation

Horizontal Angle (Degrees)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919
5	906	917	913	916	919	916	913	917	906	917	913	916	919	916	913	917
10	890	900	895	897	896	897	895	900	890	900	895	897	896	897	895	900
15	864	874	865	863	860	863	865	874	864	874	865	863	860	863	865	874
20	829	837	823	817	812	817	823	837	829	837	823	817	812	817	823	837
25	785	790	773	763	756	763	773	790	785	790	773	763	756	763	773	790
30	733	738	719	706	699	706	719	738	733	738	719	706	699	706	719	738
35	675	677	656	640	634	640	656	677	675	677	656	640	634	640	656	677
40	611	611	589	573	566	573	589	611	611	611	589	573	566	573	589	611
45	546	544	522	508	502	508	522	544	546	544	522	508	502	508	522	544
50	479	476	456	444	439	444	456	476	479	476	456	444	439	444	456	476
55	412	409	391	380	375	380	391	409	412	409	391	380	375	380	391	409
60	343	339	325	315	312	315	325	339	343	339	325	315	312	315	325	339
65	275	272	260	252	250	252	260	272	275	272	260	252	250	252	260	272
70	208	205	196	190	188	190	196	205	208	205	196	190	188	190	196	205
75	143	141	135	131	129	131	135	141	143	141	135	131	129	131	135	141
80	84	83	80	77	77	77	80	83	84	83	80	77	77	77	80	83
85	35	35	36	41	44	41	36	35	35	35	36	41	44	41	36	35
90	0	15	32	45	50	45	32	15	0	15	32	45	50	45	32	15
95	40	56	85	105	112	105	85	56	40	56	85	105	112	105	85	56
100	109	127	156	176	182	176	156	127	109	127	156	176	182	176	156	127
105	196	216	242	261	267	261	242	216	196	216	242	261	267	261	242	216
110	295	313	339	358	364	358	339	313	295	313	339	358	364	358	339	313
115	396	419	444	463	469	463	444	419	396	419	444	463	469	463	444	419
120	507	532	554	573	579	573	554	532	507	532	554	573	579	573	554	532
125	622	647	667	686	692	686	667	647	622	647	667	686	692	686	667	647
130	736	762	777	792	798	792	777	762	736	762	777	792	798	792	777	762
135	847	873	884	898	905	898	884	873	847	873	884	898	905	898	884	873
140	952	979	986	997	1002	997	986	979	952	979	986	997	1002	997	986	979
145	1049	1076	1081	1089	1094	1089	1081	1076	1049	1076	1081	1089	1094	1089	1081	1076
150	1136	1161	1165	1173	1177	1173	1165	1161	1136	1161	1165	1173	1177	1173	1165	1161
155	1212	1236	1237	1244	1248	1244	1237	1236	1212	1236	1237	1244	1248	1244	1237	1236
160	1275	1298	1298	1305	1309	1305	1298	1298	1275	1298	1298	1305	1309	1305	1298	1298
165	1325	1347	1345	1350	1352	1350	1345	1347	1325	1347	1345	1350	1352	1350	1345	1347
170	1361	1381	1376	1380	1384	1380	1376	1381	1361	1381	1376	1380	1384	1380	1376	1381
175	1382	1402	1395	1400	1406	1400	1395	1402	1382	1402	1395	1400	1406	1400	1395	1402
180	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

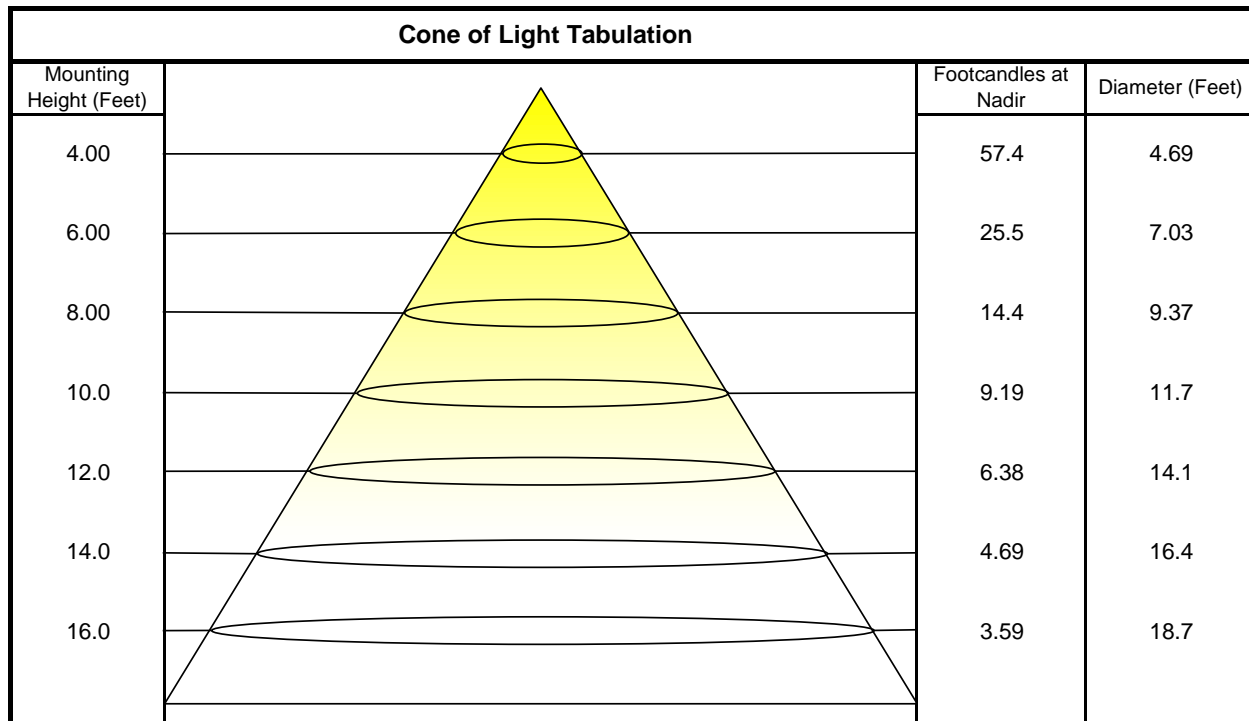
	0	45	90
0	16960	16960	16960
45	14240	13610	13100
55	13250	12580	12060
65	12010	11350	10910
75	10200	9653	9164
85	7500	7555	9401



Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **																	
0	6371	6371	6371	6371	5780	5780	5780	5780	4676	4676	4676	3667	3667	3667	2740	2740	2740	2304
1	5810	5549	5316	5105	5261	5043	4845	4667	4094	3957	3832	3222	3132	3048	2419	2363	2311	1939
2	5290	4846	4479	4171	4783	4409	4096	3830	3588	3366	3173	2831	2680	2547	2131	2034	1948	1628
3	4825	4260	3822	3473	4360	3880	3504	3200	3165	2893	2668	2504	2314	2155	1890	1766	1660	1381
4	4412	3767	3295	2935	3986	3436	3027	2711	2811	2510	2272	2230	2018	1846	1690	1549	1432	1187
5	4047	3353	2867	2509	3657	3062	2639	2323	2512	2198	1956	2000	1775	1598	1523	1370	1248	1033
6	3725	3003	2519	2171	3368	2747	2322	2014	2261	1941	1703	1807	1575	1398	1382	1223	1099	909
7	3441	2707	2231	1898	3114	2480	2061	1763	2047	1729	1497	1642	1409	1235	1261	1100	977	807
8	3189	2453	1991	1673	2889	2250	1841	1556	1864	1550	1326	1500	1268	1099	1158	996	875	723
9	2967	2236	1788	1486	2690	2054	1656	1384	1706	1399	1184	1378	1150	986	1069	908	790	653
10	2768	2047	1615	1328	2513	1883	1498	1239	1568	1269	1063	1272	1048	889	991	832	717	594

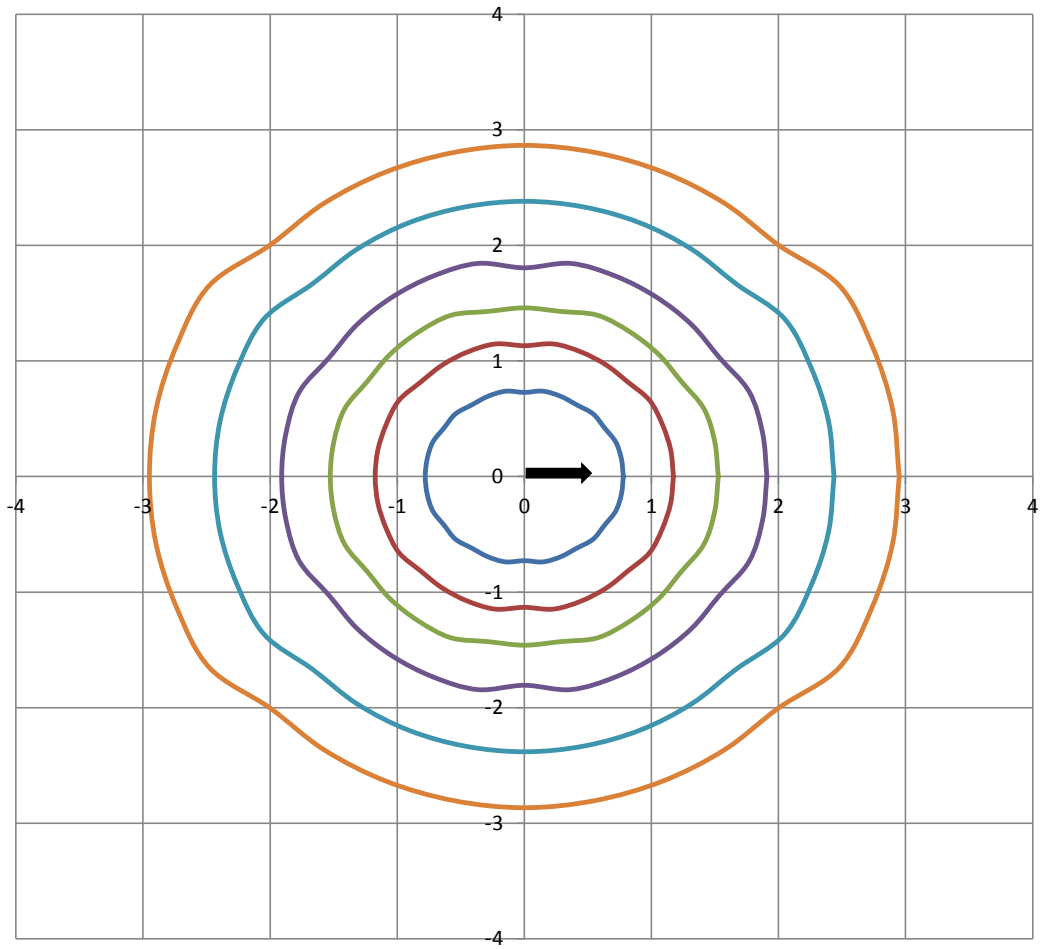
Beam and Field Information	
CIE Type:	Semi-Indirect
Center Beam Intensity:	919 Candela
Central Cone Intensity:	918 Candela
Beam Flux:	4731.4 Lumens
Beam Angle (0-180):	103.0 Degrees
Beam Angle (90-270):	96.7 Degrees
Field Angle (0-180):	158.6 Degrees
Field Angle (90-270):	157.0 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height





In-Situ Test

In-Situ Test Conditions

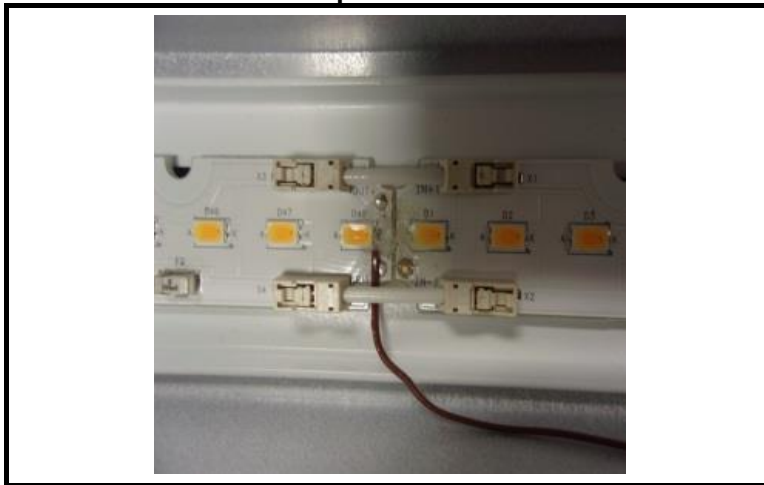
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.3 °C	120.7 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 61.6 °C
Driver Temperature: 63.9 °C
Measured LED Current: 0.1006 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

LED Temperature Location



Driver Temperature Location

