Product Test Report - Radiometric/Photometric Flux

Method: LM-79-08

Test results reported for:
Slim Ring M
Product Description: Decorative LED Ring Pendant

Issued Report:
LIGT007-030

Original issue date:
Tuesday, July 23, 2019

Revision Issue Date:
First Issue

Prepared for:
LightArt
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Seattle, Washington 98134

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Testing performed by:
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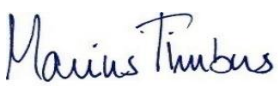
Test report prepared by:



Marius Timbus
Test Technician
Test & Measurement Services

Test report approved by:

Aaron Miller
Laboratory Manager
Test & Measurement Services

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Manufacturer: Slim Ring M
Report Number: LIGT007-030
Product Description: Decorative LED Ring Pendant
Release Date: 7/23/2019

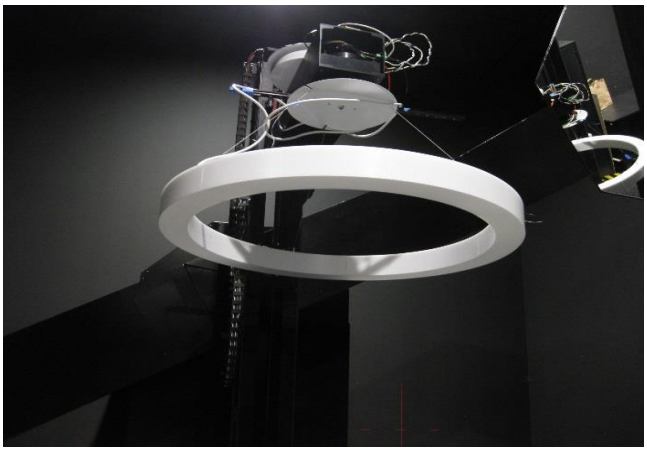
SAMPLE DESCRIPTION

Lab sample identification:	3
Customer Identification:	LIGT
Manufacturer:	LightArt
Part number:	-
Model Number:	Slim Ring M
Description:	Decorative LED Ring Pendant

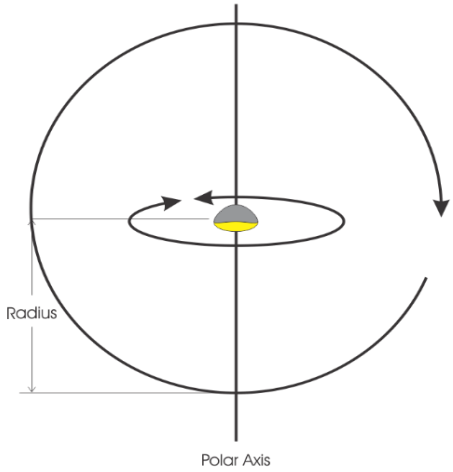
Manufacturer's ratings	
Max Current (A):	-
Operating voltage:	120.0
CCT:	-
Frequency (Hz):	60
Type:	LED

Sample Device as Received

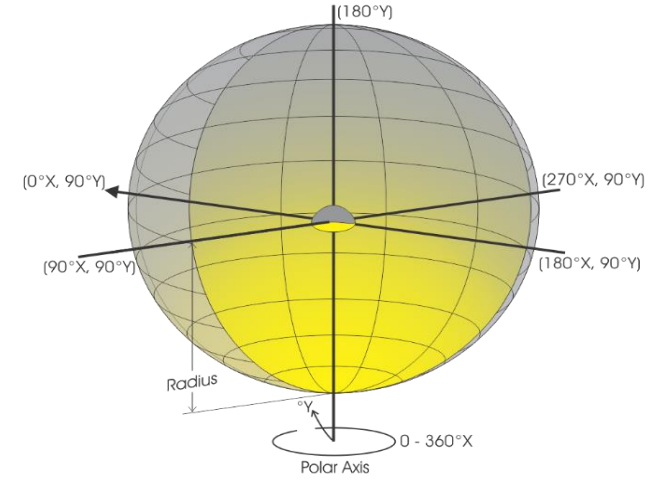
Sample Device Mounted to Test Apparatus



Equipment Geometry -



Test Geometry - Type C Coordinates



Coordinate System Description

Reference: LM-75-01 Goniophotometer Types and Photometric Coordinates

Type C coordinate system, the polar axis is vertical. The angles measure in the vertical half planes of data are call Veridical angles, and the angles to the horizontal half planes are called Lateral angles. The vertical V angles range in value from 0° to 180°. The lateral L planes range in value from 0° to 360°.

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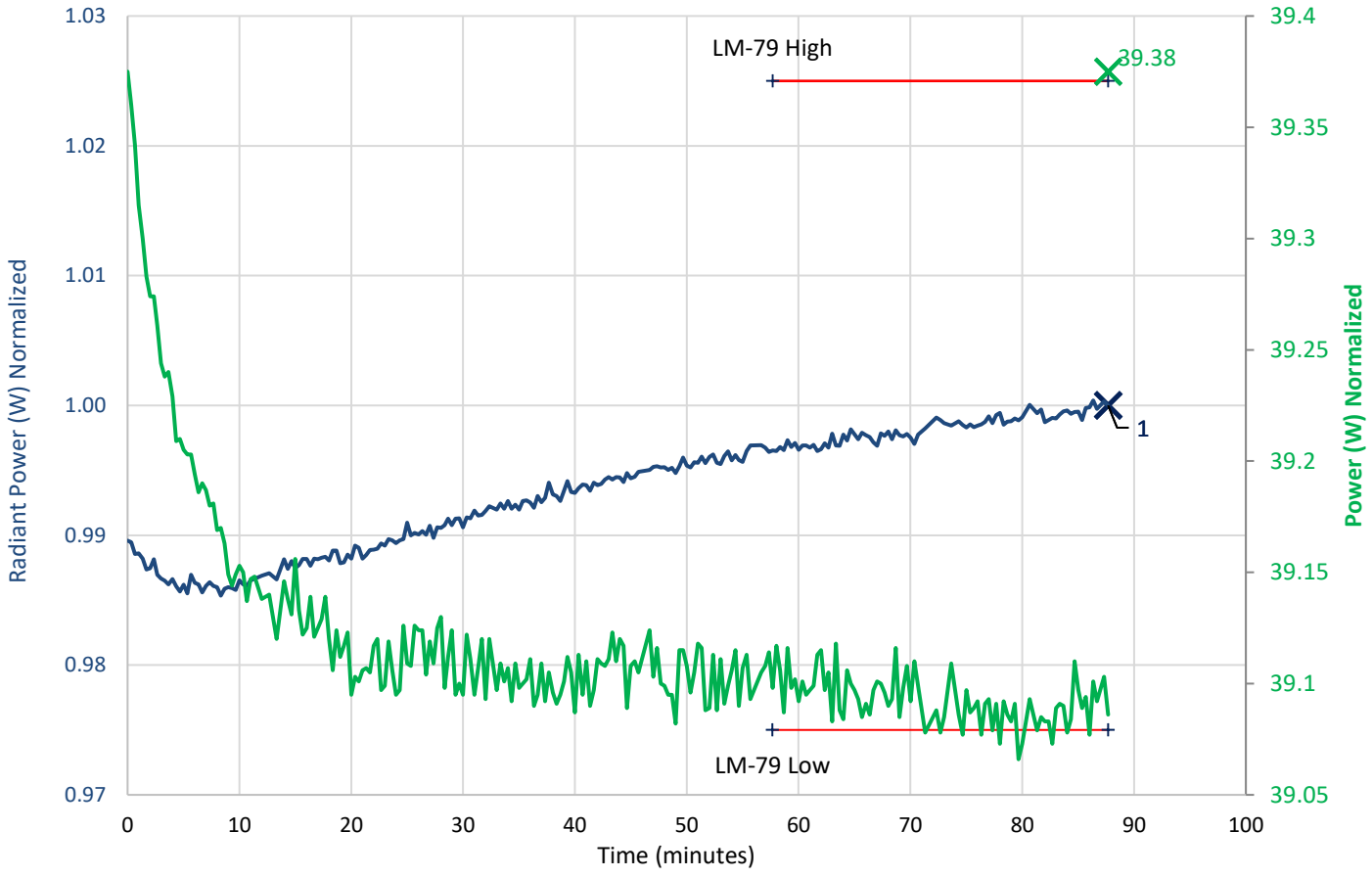
Release Date: 7/23/2019

RADIOMETRIC STABILIZATION

Stabilization Description - A series of 246 measurements are recorded during the stabilization period. The final stabilized measurement, as defined by LM-79-08, is reported after 88 minutes of device runtime.

% of range	Radiant Power (W) Normalized	Measurements in Range
98.535%	0.99	26
98.685%	0.99	25
98.835%	0.99	21
98.986%	0.99	16
99.136%	0.99	19
99.286%	0.99	19
99.437%	0.99	26
99.587%	1.00	34
99.738%	1.00	38
99.888%	1.00	23
100.000%	1.00	Reported

% of range	Power (W) Normalized	Measurements in Range
99.048%	39.00	0
99.143%	39.04	4
99.238%	39.08	155
99.333%	39.11	59
99.429%	39.15	10
99.524%	39.19	7
99.619%	39.23	5
99.714%	39.26	4
99.810%	39.30	2
99.905%	39.34	3
100.000%	39.38	Reported



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RESULTS SUMMARY

Radiometric Measurements

Peak Wl:	599.1	nm
FWHM:	130.4	nm
Centroid Wl:	585.1	nm

Photometric Measurements

Luminous Flux:	4030	lm
Luminous Efficacy:	103	lm/W
CCT:	3068	K

Color Rendering Index

CRI Ra:	83
R1:	83
R2:	82
R3:	92
R4:	95
R5:	81
R6:	82
R7:	90
R8:	83
R9:	61
R10:	12
R11:	82
R12:	80
R13:	71
R14:	85

Color Coordinates

Cx:	0.430146	
Cy:	0.39802	
u:	0.248785	
v:	0.345306	
u':	0.248785	
v':	0.517959	
Duv:	-0.001475	
Du'v':	0	
Color Purity:	-	%
Dom Wl:	583.1	nm
Comp Wl:	482.5	nm
Gamut Area:	0.533835	

Electrical Peformance

Voltage:	120.170	V
Current:	0.327	A
Frequency:	59.972	Hz
Active Power (P):	39.086	W
Power Factor:	0.996	cos θ
THD(I):	5.740	%
THD(V):	0.12	%

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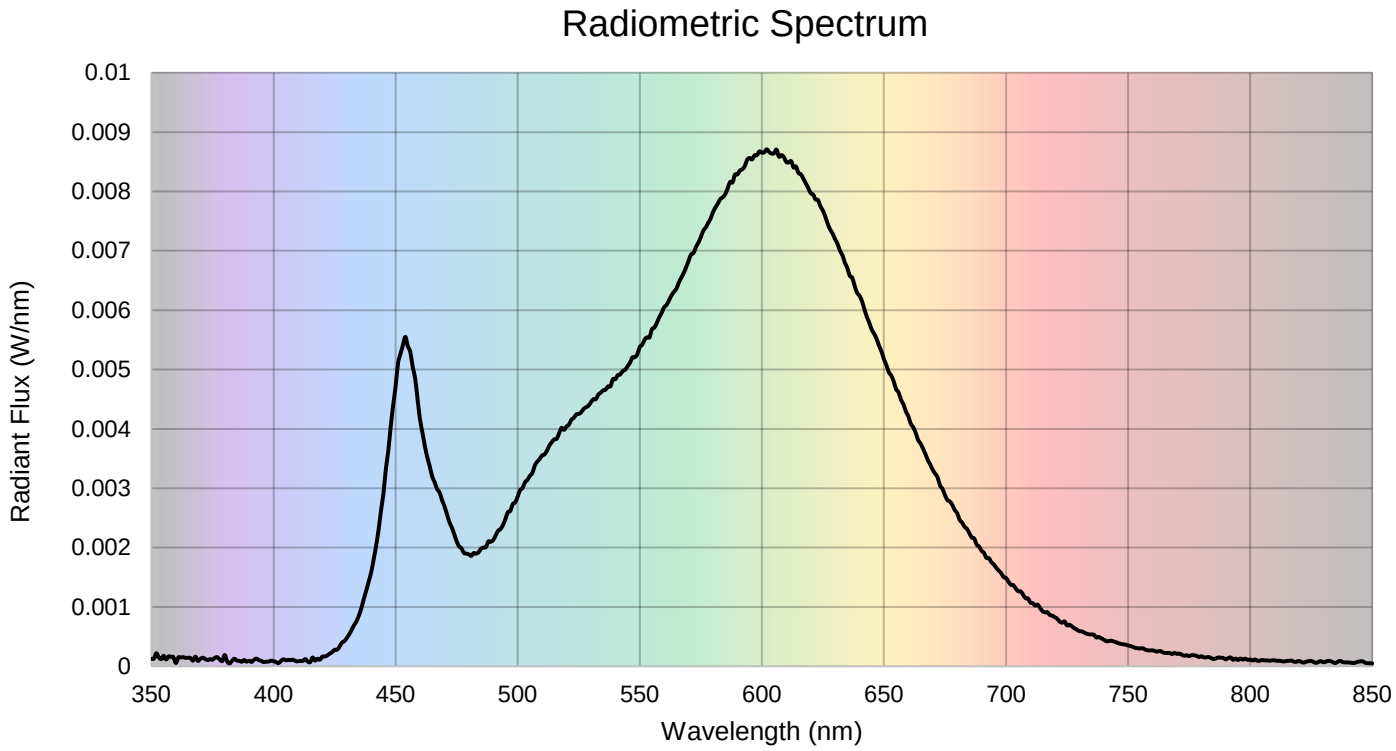
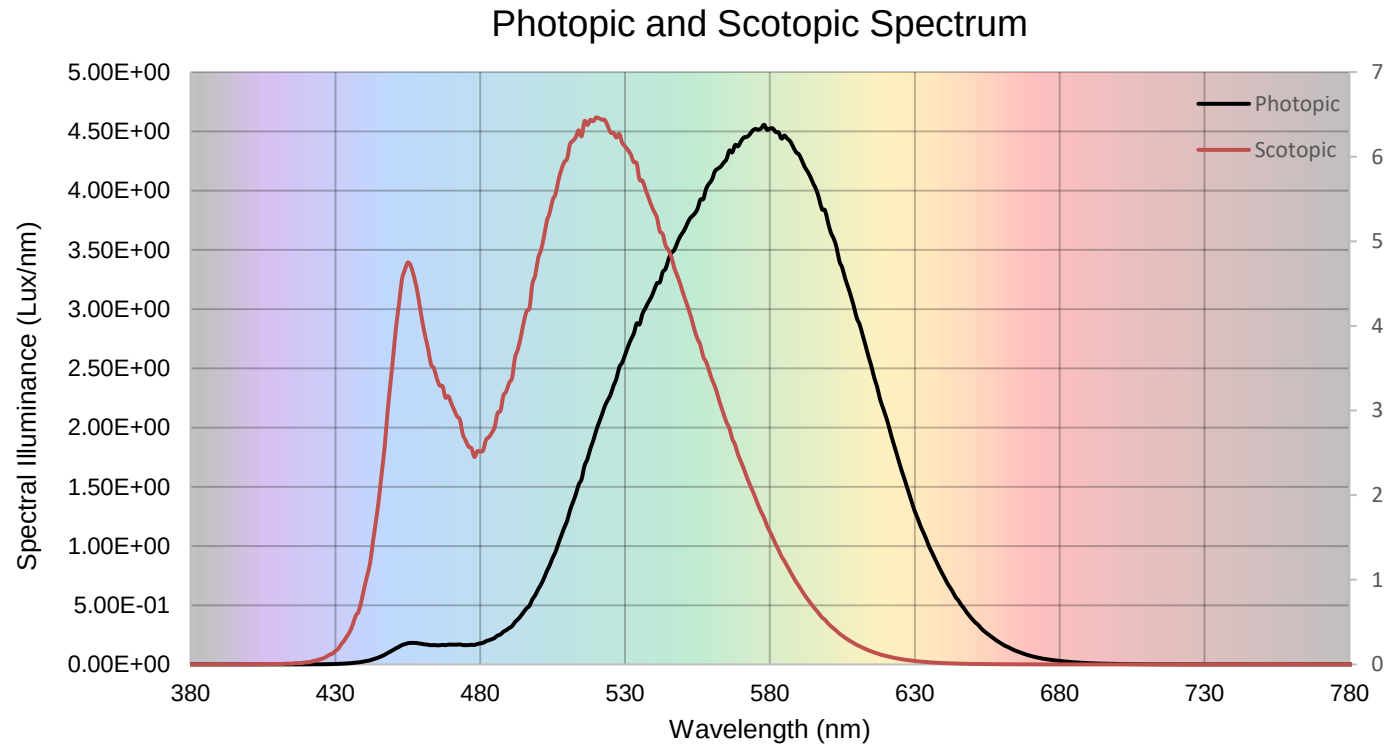
SPECTRUM





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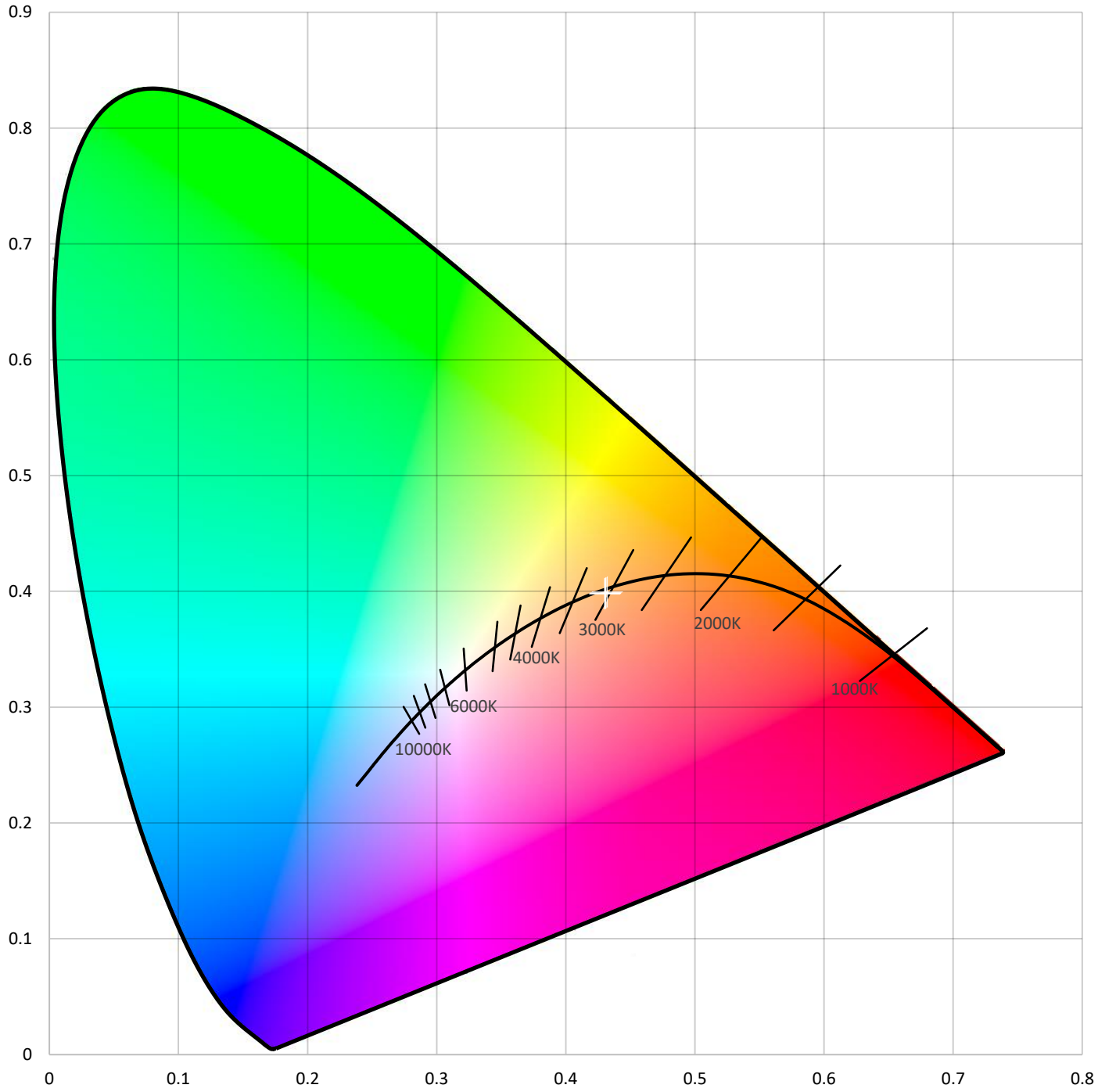
CIE 1931



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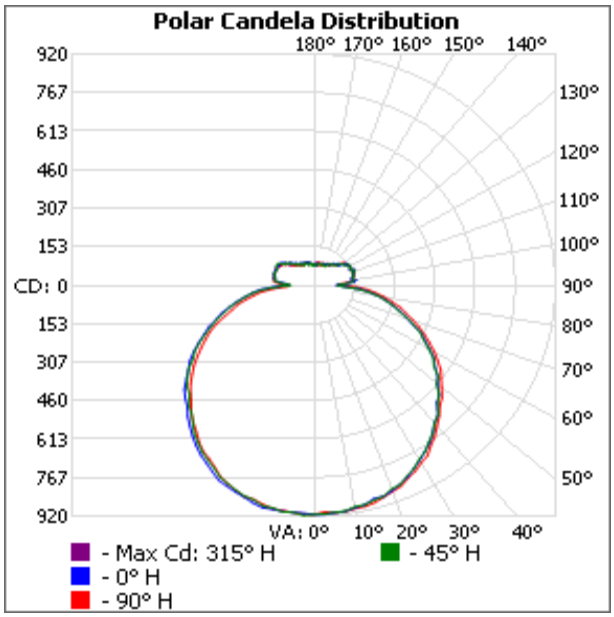
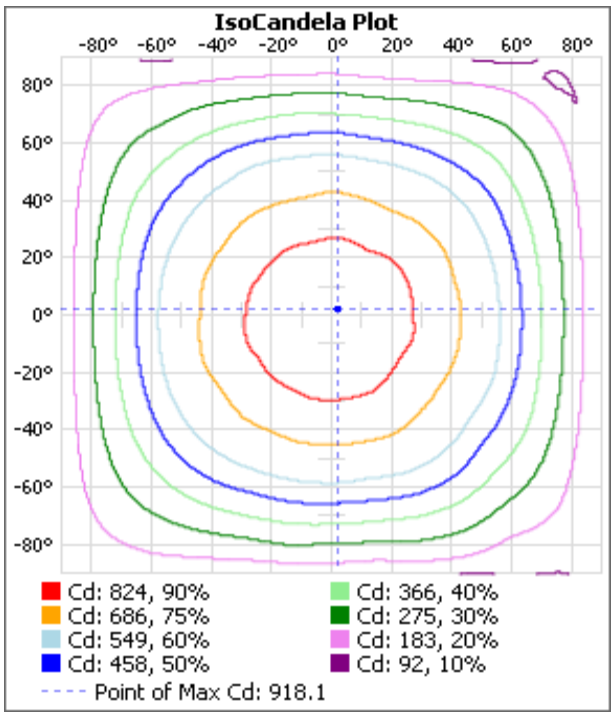
CANDELA PLOTS





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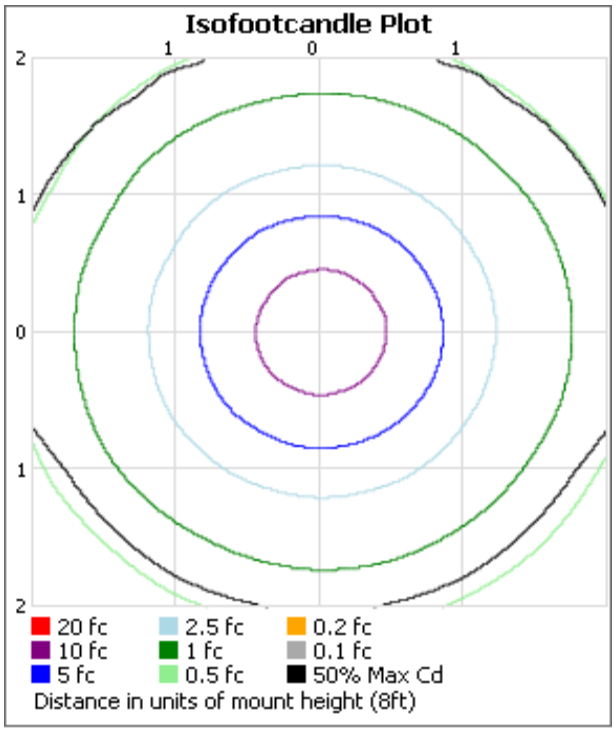
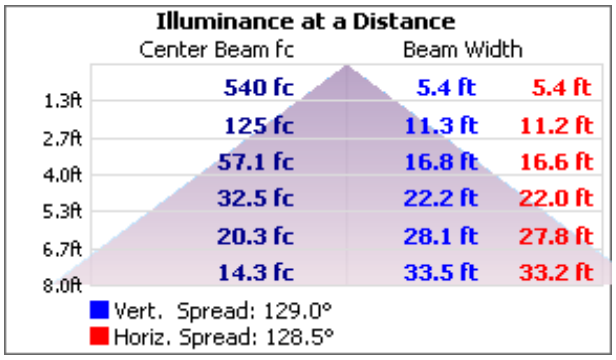
ILLUMINANCE PLOTS





ZONAL LUMEN SUMMARY

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	727.4	18.00%
0-40	1208	30.00%
0-60	2236.6	55.50%
60-90	969	24.00%
70-100	668.4	16.60%
90-120	461.9	11.50%
0-90	3205.6	79.50%
90-180	824.8	20.50%
0-180	4030.3	100.00%

Lumens Per Zone		
Zone	Lumens	% Total
0-10	86.6	2.1%
10-20	251.7	6.2%
20-30	389.1	9.7%
30-40	480.6	11.9%
40-50	518.6	12.9%
50-60	510	12.7%
60-70	443.3	11.0%
70-80	335	8.3%
80-90	190.7	4.7%

Lumens Per Zone		
Zone	Lumens	% Total
90-100	142.8	3.5%
100-110	164	4.1%
110-120	155.2	3.9%
120-130	131.7	3.3%
130-140	92.1	2.3%
140-150	63.4	1.6%
150-160	42.5	1.1%
160-170	25.1	0.6%
170-180	8.1	0.2%

Coefficients Of Utilization - Zonal Cavity Method

RCC %:	80				70				50			30			10			0
RW %:	70	50	30	0	70	50	30	0	50	30	20	50	30	20	50	30	20	0
RCR: 0	1.14	1.14	1.14	1.14	1.09	1.09	1.09	.80	1.00	1.00	1.00	.91	.91	.91	.83	.83	.83	.80
1	1.02	.97	.92	.88	.97	.93	.88	.63	.84	.81	.78	.77	.74	.72	.70	.68	.66	.63
2	.92	.83	.76	.70	.88	.80	.73	.52	.73	.67	.63	.66	.62	.58	.60	.57	.54	.51
3	.84	.72	.64	.57	.79	.69	.61	.43	.63	.57	.52	.58	.53	.48	.53	.48	.45	.42
4	.76	.64	.55	.48	.72	.61	.53	.37	.56	.49	.43	.51	.45	.41	.47	.42	.38	.35
5	.70	.57	.47	.41	.66	.54	.46	.32	.50	.43	.37	.46	.40	.35	.42	.37	.33	.30
6	.64	.51	.42	.35	.61	.49	.40	.28	.45	.37	.32	.41	.35	.30	.38	.32	.28	.26
7	.59	.46	.37	.31	.56	.44	.36	.24	.40	.33	.28	.37	.31	.27	.34	.29	.25	.23
8	.55	.42	.33	.27	.52	.40	.32	.22	.37	.30	.25	.34	.28	.24	.31	.26	.22	.20
9	.51	.38	.30	.24	.49	.37	.29	.19	.34	.27	.22	.31	.25	.21	.29	.24	.20	.18
10	.48	.35	.27	.22	.46	.34	.26	.18	.31	.25	.20	.29	.23	.19	.27	.22	.18	.16

Effective Floor Cavity Reflectance: 20%

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CANDELA TABLE

	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360
0	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913	913
5	909	904	910	908	910	913	908	903	906	907	909	908	908	910	914	908	905	914	908	913	906	911	906	908	909
10	899	905	907	896	897	896	903	907	909	907	909	906	905	908	906	901	898	901	904	904	904	904	899	902	899
15	880	889	889	885	891	903	896	902	894	895	890	897	897	897	891	885	890	889	883	884	889	895	879	887	880
20	871	868	877	863	867	872	874	876	869	878	881	883	875	882	879	868	868	873	870	867	872	865	857	861	871
25	843	837	844	838	843	844	847	857	847	854	852	859	857	849	858	844	837	844	842	836	841	845	829	832	843
30	805	796	811	800	813	822	817	825	814	815	813	820	818	818	817	805	801	808	798	805	804	795	791	798	805
35	767	754	759	763	765	777	777	787	768	780	777	779	780	772	785	768	760	764	763	759	762	765	747	759	767
40	714	710	715	715	723	729	729	732	727	734	734	736	734	732	734	717	717	713	714	705	713	712	698	708	714
45	662	658	667	666	667	681	678	692	678	686	676	686	681	685	686	675	660	670	659	659	663	665	651	656	662
50	613	609	619	610	615	625	634	641	628	640	628	637	644	631	643	631	606	618	613	609	613	605	608	602	613
55	561	562	570	557	566	581	590	587	592	586	583	585	582	576	582	582	553	565	557	552	559	560	556	557	561
60	507	510	504	504	505	524	529	535	531	518	523	529	528	518	523	524	493	501	495	498	508	499	489	496	507
65	450	443	442	447	442	461	464	467	466	466	456	465	460	453	464	454	426	434	435	427	439	423	432	428	450
70	374	385	376	376	376	389	399	404	399	396	391	399	395	389	401	390	366	375	360	357	371	368	363	366	374
75	311	313	313	313	308	327	340	334	335	329	327	333	331	327	332	330	300	302	302	300	307	300	300	301	311
80	249	247	241	251	255	260	272	272	269	266	262	277	265	263	271	266	236	240	231	238	243	239	231	241	249
85	177	170	170	165	180	198	205	210	207	200	196	206	207	188	210	196	153	172	155	149	166	159	145	149	177
90	86	86	86	90	86	92	95	99	102	98	92	104	97	99	103	89	93	90	96	97	84	92	97	92	86
95	153	147	147	148	143	133	130	128	123	127	131	124	129	134	123	138	148	150	151	142	144	151	152	147	153
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145	100	105	96	100	96	96	98	103	107	105	102	100	104	103	108	105	96	96	100	87	96	96	95	91	100
150	100	96	95	86	91	90	95	95	96	100	93	100	102	96	96	100	91	95	91	91	91	91	96	91	100
155	95	91	91	90	86	87	88	96	91	100	96	90	96	91	87	87	91	82	90	86	86	86	81	91	95
160	91	91	91	86	90	91	95	92	95	91	91	96	91	92	100	96	95	91	91	86	101	87	86	91	91
165	91	86	86	86	95	86	83	87	91	91	87	91	87	89	96	86	81	86	86	91	86	91	81	81	91
170	85	91	86	86	94	87	94	88	90	86	91	86	91	91	81	91	86	86	86	82	86	91	86	81	85
175	90	82	90	81	81	82	86	82	80	78	90	86	86	85	86	77	76	76	86	86	86	81	81	81	90
180	85	82	87	86	77	86	86	76	82	82	86	90	81	81	81	81	81	77	81	86	86	77	86	81	85

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EQUIPMENT

Item	Description/use	Manufacturer	Model	Serial #	Calibration Due
Spectrometer	Spectrum	Orb Optronix	SP-200	2009063	7/16/2020
Power Supply	DUT power supply	Chroma	31015	QT3101500128	-
Type C Goniometer	Light Distribution	Orb Optronix		GONI003	at use
Power Meter	Luminous Intensity	Newport	2936-R	18963	-

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REVISION HISTORY

REVISION	DATE	APPROVED	DESCRIPTION OF REVISION
030	7/23/2019	ACM	⓪ORIGINAL

END OF REPORT

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