



## Product Test Report - Goniometer Luminaire Evaluation

Method: LM-79:2019

Evaluation: Photometric Summary

### Test results reported for:

LightArt A 3FORM COMPANY

Product Description: Ribbon Cloud Pendant White 18in

### Issued Report:

LIGT011-030\_Ribbon Cloud Pendant White 18in

Project: 80072634 - TPPPT

### Original issue date:

Friday, February 26, 2021

### Revision Issue Date:

First Issue

### Prepared for:

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## Product Test Report - Goniometer Luminaire Evaluation

**Manufacturer:** LightArt A 3FORM COMPANY

**Report Number:** LIGT011-030

**Product Description:** Ribbon Cloud Pendant White 18in

**Release Date:** 2/26/2021

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**Manufacturer:** LightArt A 3FORM COMPANY

**Report Number:** LIGT011-030

**Product Description:** Ribbon Cloud Pendant White 18in

**Release Date:** 2/26/2021

### SAMPLE DESCRIPTION

Lab sample identification: 1

Customer Identification: Configuration C

Manufacturer: LightArt A 3FORM COMPANY

Part number: NA

Model Number: NA

Description: Ribbon Cloud Pendant White 18in

#### Manufacturer's ratings

Max Current (A):	NA
Operating voltage:	120VAC
CCT:	NA
Frequency (Hz):	50-60
Type:	LED

#### Sample Device Southern Hemisphere



#### Sample Device Northern Hemisphere

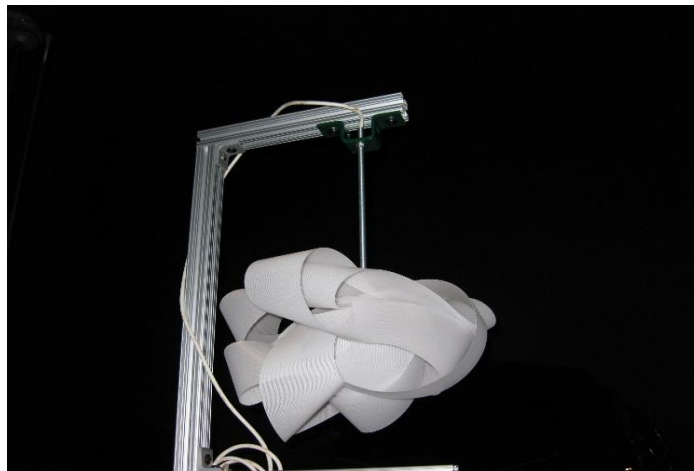
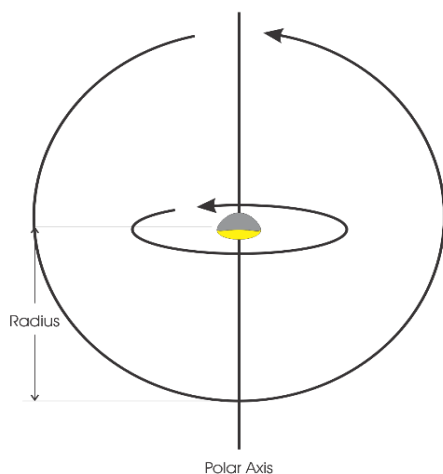
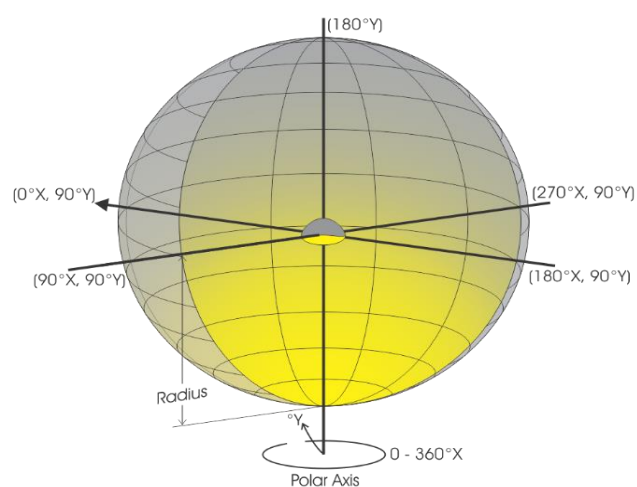


Image At 0° and 0°, See Equipment Geometry

#### Equipment Geometry - For Sample Device Mounted



#### 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 called vertical 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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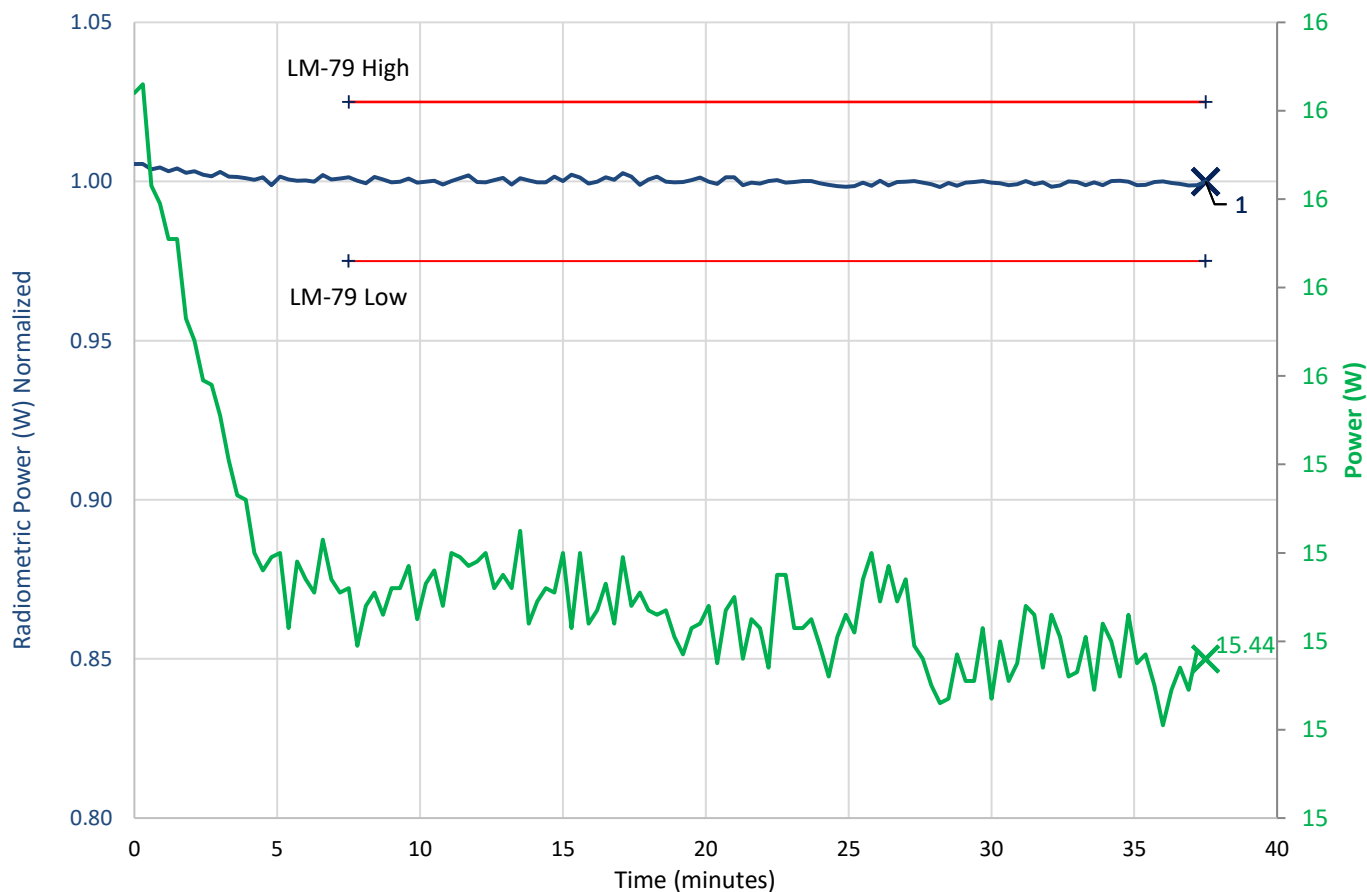
**Release Date:** 2/26/2021

### OPTICAL STABILIZATION

Stabilization Description - A series of 126 measurements are recorded during the stabilization period. The final stabilized measurement of normalized radiant power, as defined by LM-79:2019, is reported after 37 minutes of recorded device runtime. The 'Measurements in Range', provided below, are a histogram of measurements recorded during the 30 minute stabilization window.

% of range	Power (W) Normalized	Measurements in Range
99.827%	1.00	7
99.870%	1.00	16
99.913%	1.00	10
99.956%	1.00	30
99.999%	1.00	19
100.043%	1.00	9
100.086%	1.00	8
100.129%	1.00	13
100.172%	1.00	2
100.215%	1.00	3
100.000%	1.00	Reported

% of range	Power (W)	Measurements in Range
99.903%	15.42	1
99.931%	15.43	6
99.960%	15.43	12
99.988%	15.43	10
100.017%	15.44	17
100.045%	15.44	25
100.074%	15.45	14
100.102%	15.45	17
100.131%	15.46	15
100.159%	15.46	2
100.000%	15.44	Reported



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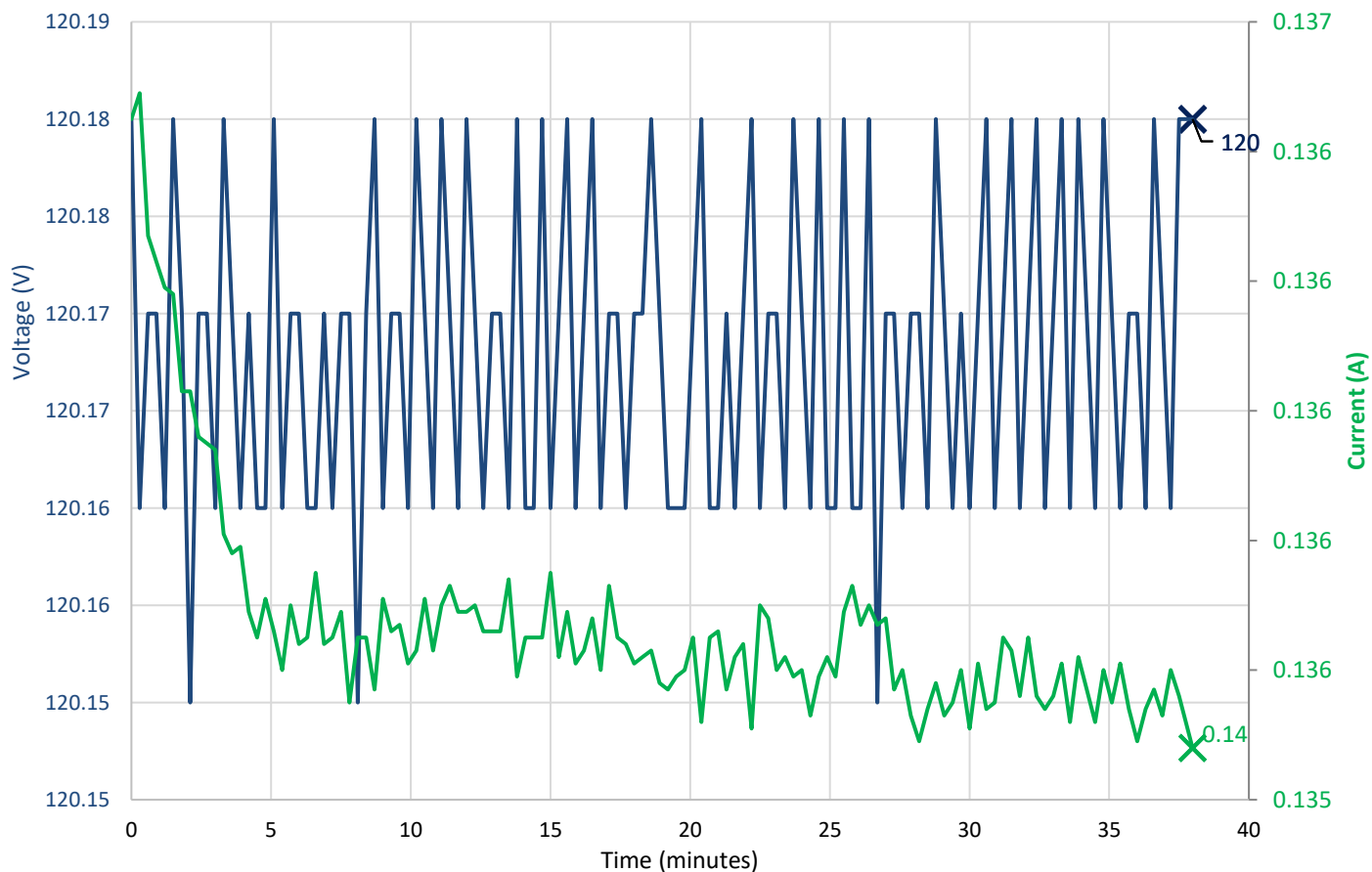
**Release Date:** 2/26/2021

### ELECTRICAL STABILIZATION

Stabilization Description - A series of 127 measurements are recorded during the stabilization period. The final stabilized measurement, as defined by LM-79:2019, is reported after 38 minutes of recorded device runtime. The 'Measurements in Range', provided below, are a histogram of measurements recorded during the 30 minute stabilization window.

% of range	Voltage (V)	Measurements in Range
99.975%	120.15	3
99.978%	120.15	0
99.980%	120.16	0
99.983%	120.16	47
99.985%	120.16	0
99.988%	120.17	0
99.990%	120.17	48
99.993%	120.17	0
99.995%	120.17	0
99.998%	120.18	29
100.000%	120.18	Reported

% of range	Current (A)	Measurements in Range
100.000%	0.135	3
100.020%	0.136	9
100.040%	0.136	13
100.060%	0.136	8
100.080%	0.136	19
100.100%	0.136	13
100.120%	0.136	15
100.140%	0.136	10
100.159%	0.136	6
100.179%	0.136	5
100.000%	0.135	Reported



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### PHOTOMETRIC SUMMARY

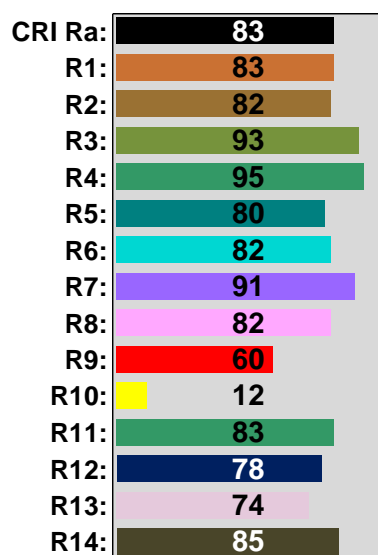
#### Radiometric Measurements

**Peak Wl:** 607.4 nm  
**FWHM:** 126.4 nm  
**Centroid Wl:** 584.6 nm

#### Photometric Measurements

**Photopic Power:** 1423 lm  
**Luminous Efficacy:** 92 lm/W  
**CCT:** 2959 K

#### Color Rendering Index



#### Color Coordinates

**Cx:** 0.4390  
**Cy:** 0.4033  
**u:** 0.2523  
**v:** 0.3476  
**u':** 0.2523  
**v':** 0.5214  
**Duv:** -0.0006  
**Du'v':** 0.0000

**Color Purity:** - %  
**Dom Wl:** 583.2 nm  
**Comp Wl:** 482.6 nm  
**Gamut Area:** 0.492

#### Electrical Performance

**Voltage:** 120.180 V  
**Current:** 0.135 A  
**Frequency:** 59.973 Hz  
**Active Power (P):** 15.425 W  
**Apparent Power:** 16.281 VA  
**Power Factor:** 0.947 W/VA  
**THD Voltage:** 0.2 %  
**THD Current:** 37.5 %

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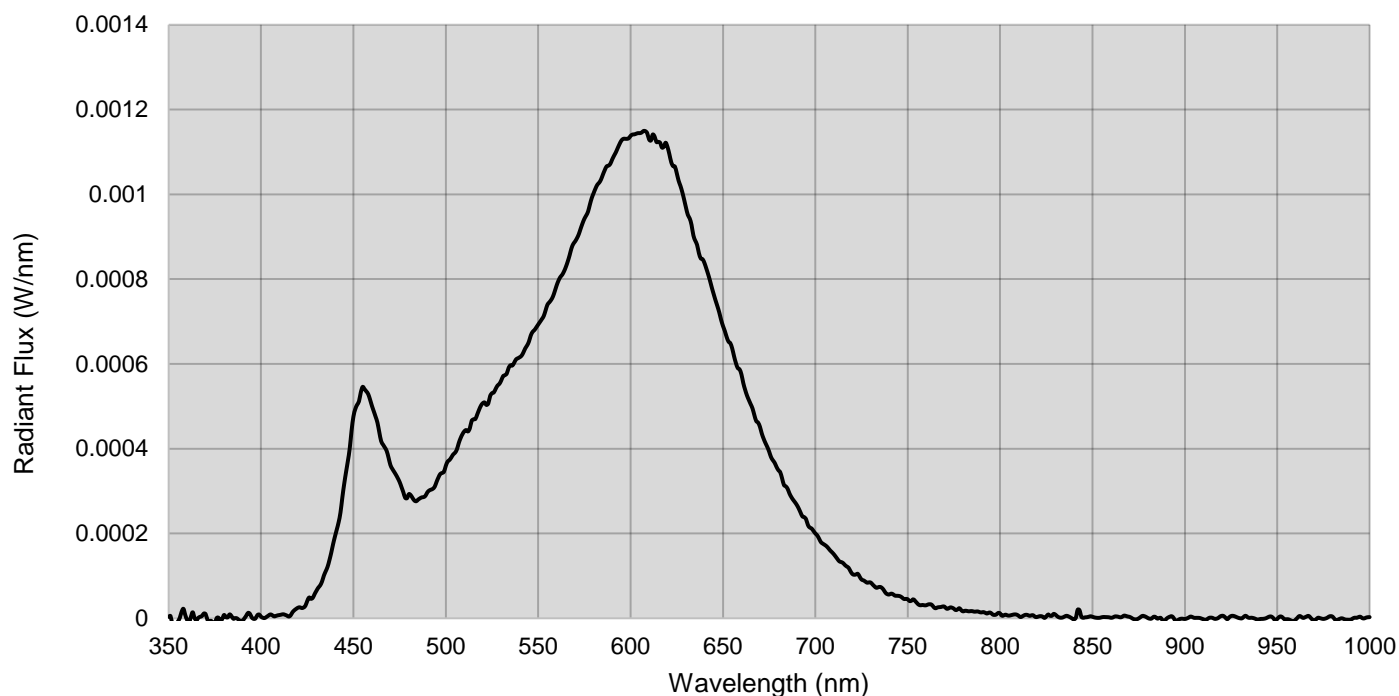
Report Number: LIGT011-030

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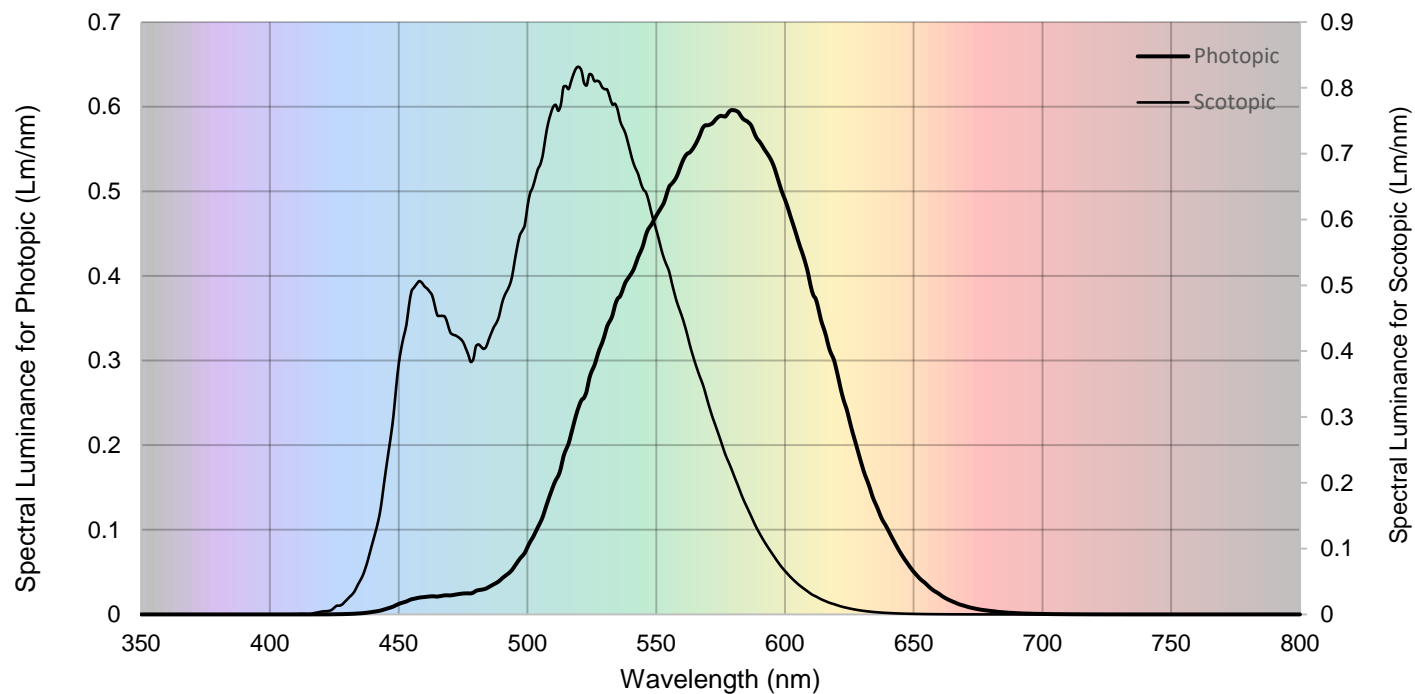
Release Date: 2/26/2021

### VISIBLE SPECTRUM

#### Radiometric Spectrum



#### Photopic and Scotopic Spectrum



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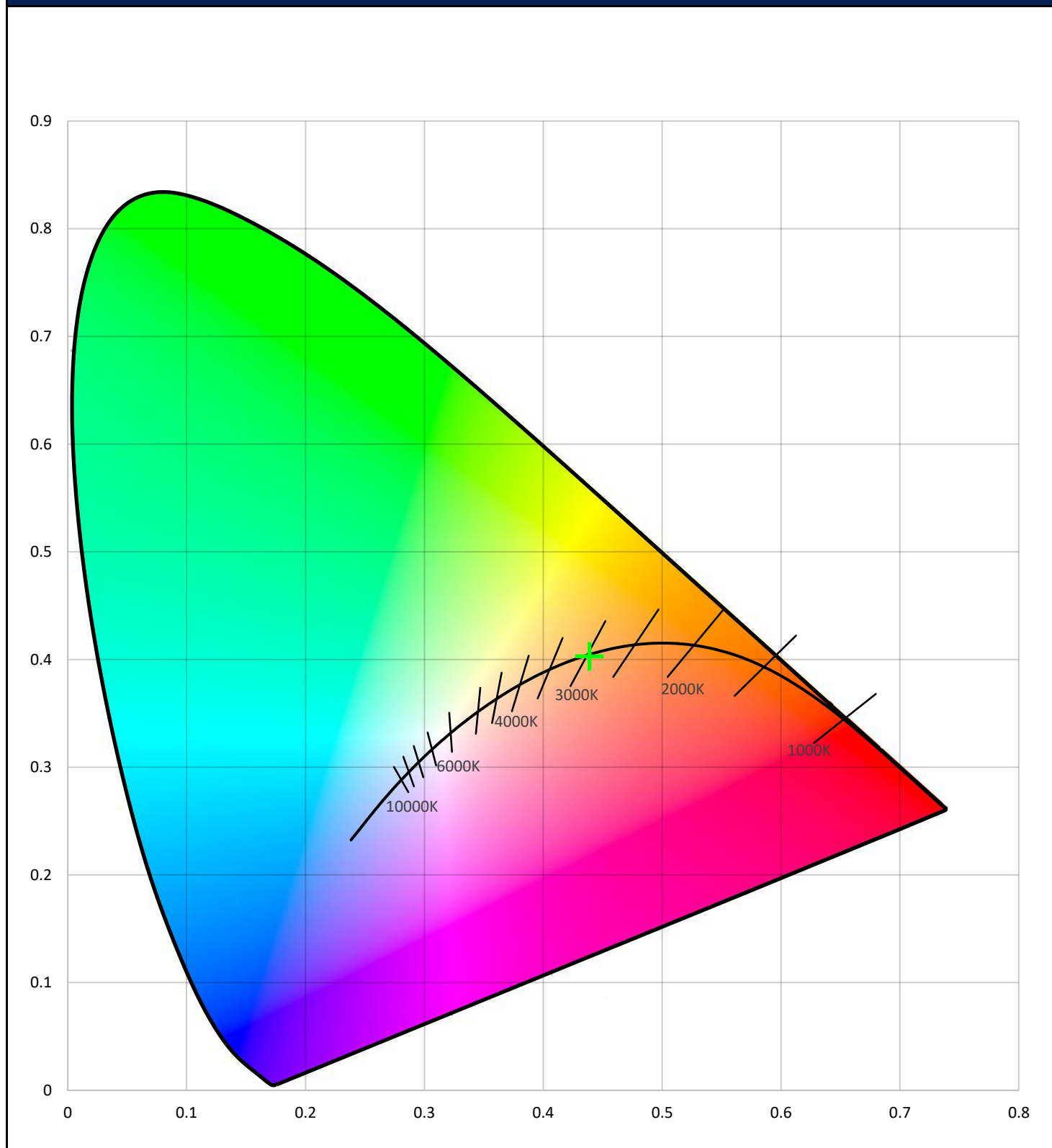
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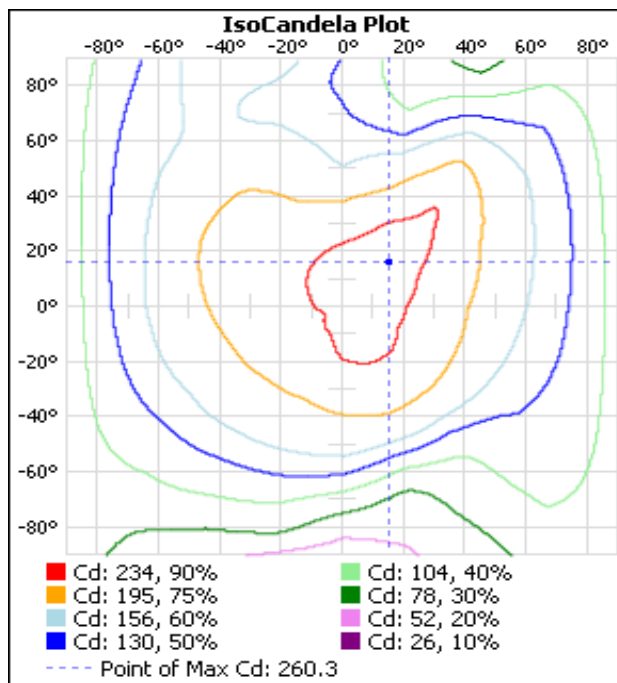
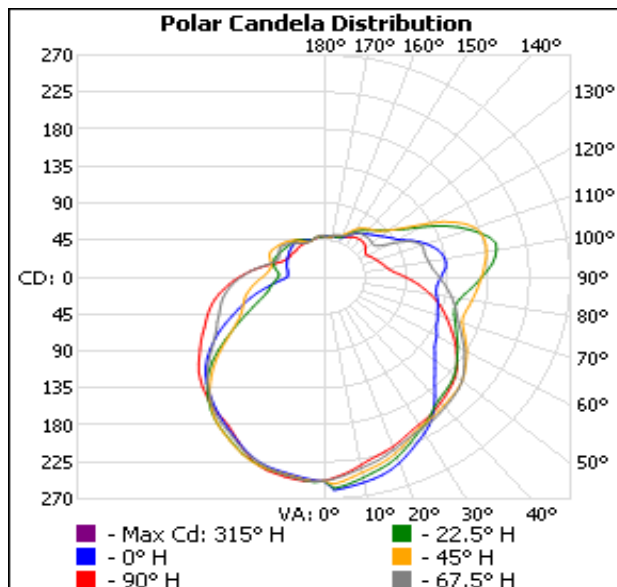
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### CANDELA PLOTS



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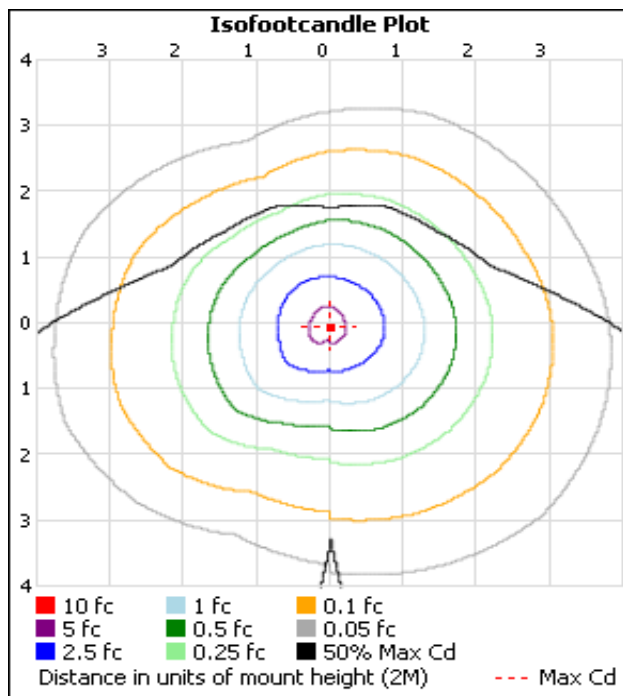
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### ILLUMINANCE PLOTS



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
0.33M	209 fc	1.12 M	2.58 M
0.67M	51.7 fc	2.25 M	5.18 M
1.00M	23.1 fc	3.37 M	7.75 M
1.33M	13.0 fc	4.49 M	10.33 M
1.67M	8.29 fc	5.61 M	12.93 M
2.00M	5.77 fc	6.73 M	15.50 M

■ Vert. Spread: 118.6°  
■ Horiz. Spread: 151.1°

### ZONAL LUMEN SUMMARY

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	193.7	13.60%
0-40	324.2	22.80%
0-60	618.6	43.50%
60-90	368.4	25.90%
70-100	325.2	22.90%
90-120	253.4	17.80%
0-90	987.1	69.40%
90-180	435.9	30.60%
0-180	1423.0	100.00%

Lumens Per Zone		
Zone	Lumens	% Total
0-10	23.3	1.60%
10-20	44.89	4.70%
20-30	103.3	7.30%
30-40	130.5	9.20%
40-50	146.5	10.30%
50-60	147.9	10.40%
60-70	137.3	9.70%
70-80	123.6	8.70%
80-90	107.5	7.60%
90-100	94.1	6.60%
100-110	85.7	6.00%
110-120	73.5	5.20%
120-130	58.1	4.10%
130-140	46.7	3.30%
140-150	35.6	2.50%
150-160	23.7	1.70%
160-170	13.9	1.00%
170-180	4.7	0.30%

Lower Hemisphere

Upper Hemisphere

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## CANDELA TABLE

LOWER HEMISPHERE

	0	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
South Pole	0	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	2.5	259	257	252	246	244	239	244	245	247	250	249	249	249	250	250	243	239
	5	258	255	249	243	241	235	240	242	245	248	247	248	249	251	251	244	237
	7.5	256	251	245	239	237	231	236	238	243	246	245	246	248	251	252	244	235
	10	253	248	241	236	232	227	232	235	242	244	243	244	247	251	254	244	232
	12.5	251	244	238	233	228	224	228	231	240	243	242	242	245	251	256	244	230
	15	249	241	236	230	225	222	225	228	239	241	241	240	243	251	258	245	228
	17.5	245	238	232	227	222	219	222	224	236	239	240	236	240	250	260	245	225
	20	241	233	228	223	220	216	218	220	232	236	237	233	235	247	260	245	221
	22.5	235	228	224	220	216	212	213	215	227	233	233	229	228	243	260	243	216
	25	230	223	219	217	213	209	209	209	221	228	229	223	221	237	259	241	211
	27.5	225	218	214	215	210	206	205	205	216	223	224	218	215	231	258	238	206
	30	220	213	210	213	207	204	201	201	211	219	219	214	209	226	257	234	201
	32.5	214	209	209	212	206	202	199	198	207	214	215	210	205	221	255	231	199
	35	207	204	207	211	204	199	195	195	202	209	209	205	203	216	250	225	196
	37.5	198	199	206	208	202	195	191	191	197	204	202	200	199	212	245	219	188
	40	189	195	204	206	199	191	187	187	192	197	194	194	196	208	242	211	179
	42.5	179	193	202	205	196	187	183	182	187	189	185	187	192	205	239	203	170
	45	171	191	201	202	194	183	178	178	182	181	176	180	188	201	236	196	162
	47.5	165	189	200	200	191	179	173	173	176	171	165	173	184	198	233	190	155
	50	159	186	197	197	188	174	168	167	169	160	153	166	179	194	229	183	148
	52.5	153	182	194	193	183	168	161	161	161	146	141	158	173	190	224	176	142
	55	148	178	189	187	178	161	154	153	152	131	129	150	167	185	217	166	137
	57.5	145	173	185	182	172	154	147	146	143	118	118	143	161	180	211	156	133
	60	143	169	181	178	167	148	140	138	133	106	110	137	156	176	204	147	130
	62.5	139	164	175	172	160	141	133	131	122	95	104	133	150	170	194	136	128
	65	136	160	170	166	154	135	126	123	111	86	99	129	145	165	183	126	125
	67.5	135	156	165	161	148	129	120	116	101	78	96	125	140	160	171	118	122
	70	132	153	161	156	143	123	114	110	93	72	94	122	136	156	159	110	121
	72.5	131	149	160	153	137	117	108	104	85	67	92	119	132	151	145	104	119
	75	129	148	161	149	131	111	102	98	77	63	89	116	127	145	132	98	117
	77.5	127	148	162	146	125	104	95	93	68	61	86	113	122	138	118	94	115
	80	125	151	164	142	118	97	88	87	61	59	82	109	117	130	104	93	114
	82.5	124	156	166	138	111	90	80	78	54	56	79	105	111	120	92	91	112
	85	124	161	168	134	104	82	72	68	49	54	75	101	105	110	82	89	112
	87.5	126	167	170	130	97	75	64	57	44	52	71	96	99	100	75	88	113
Equator	90	128	173	172	126	89	69	57	49	40	50	68	91	93	90	71	86	115

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## CANDELA TABLE

LOWER HEMISPHERE

Equator

North Pole

0	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
90	128	173	172	126	89	69	57	49	40	50	68	91	93	90	71	86	115
92.5	131	179	175	123	83	63	52	45	40	50	65	86	87	80	69	86	117
95	134	185	177	119	76	58	49	44	40	50	62	81	82	72	68	85	120
97.5	135	189	179	118	72	54	46	45	40	51	61	76	76	66	68	84	121
100	134	192	181	116	69	51	45	44	40	54	60	71	70	61	68	84	122
102.5	132	193	182	114	67	49	44	44	41	56	59	66	65	58	68	83	120
105	129	188	181	114	65	47	45	45	42	57	60	62	60	58	67	82	118
107.5	124	179	180	115	63	47	47	47	43	58	61	59	56	58	67	80	115
110	119	169	176	114	61	47	48	47	43	58	62	57	52	57	67	79	110
112.5	113	159	169	110	59	48	50	48	44	58	64	55	50	57	67	78	105
115	106	147	158	104	57	49	51	49	45	58	66	55	48	56	67	77	99
117.5	98	135	146	93	55	50	52	50	45	58	66	56	47	56	67	75	92
120	92	122	131	79	54	51	53	50	46	57	66	57	45	56	65	74	86
122.5	88	110	115	71	54	52	54	51	47	56	65	58	45	56	63	72	82
125	85	100	104	67	55	53	54	52	48	56	64	60	45	56	62	69	79
127.5	81	95	95	67	57	54	55	52	48	56	63	60	45	56	61	67	75
130	78	89	88	68	59	55	55	52	49	55	62	59	45	56	60	65	72
132.5	76	84	83	68	60	56	55	52	50	55	61	58	45	56	59	63	70
135	73	81	80	68	60	56	55	52	51	55	60	57	44	55	57	62	67
137.5	71	78	78	67	61	56	55	53	51	55	59	55	45	54	56	60	65
140	69	75	77	67	60	56	55	53	52	55	58	53	45	52	55	59	63
142.5	67	72	75	67	60	56	54	54	53	55	56	52	46	50	53	57	62
145	65	69	73	66	59	55	54	54	53	55	55	50	46	48	52	56	60
147.5	63	67	70	64	58	55	54	54	54	54	53	49	46	46	51	54	58
150	60	63	67	61	56	54	53	54	53	53	51	48	46	45	49	52	55
152.5	57	60	63	58	55	53	52	52	52	51	50	47	46	45	47	49	53
155	54	56	59	56	54	52	51	51	50	49	48	46	47	45	45	47	50
157.5	52	53	56	54	53	52	51	50	49	48	47	46	46	45	45	46	48
160	51	51	54	54	53	52	50	50	48	47	46	46	47	45	45	45	47
162.5	51	51	53	54	53	52	50	50	48	47	46	47	47	46	45	45	47
165	51	51	52	53	52	51	51	50	48	47	47	47	47	46	46	46	47
167.5	51	51	52	52	51	51	50	50	48	48	48	48	48	47	47	47	48
170	52	51	51	52	51	50	50	50	49	49	49	49	48	48	49	48	48
172.5	51	50	50	51	50	49	50	50	49	49	50	50	49	49	49	47	47
175	50	49	49	50	49	48	48	49	49	49	50	51	50	50	49	48	47
177.5	50	49	48	49	48	48	47	48	48	49	51	51	51	50	50	48	47
180	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49

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### EQUIPMENT

Item	Description/use	Manufacturer	Model	Serial #	Calibration Due
Spectrometer	Spectrum	Orb Optronix	SP-75	4013726	7/16/2021
Radiometer	Power Meter	Newport	2936R	18953	3/25/2021
Quantum Sensor	PAR vs Angle	Gigahertz-Optik	PS-3701	44466	3/25/2021
AC Power Supply	DUT AC Voltage	QuadTech	31015	QT3101500128	Not Applicable
Power Analyzer	Electrical	Yokogawa	WT310E	C25K10003V	8/16/2021
Goniometer	Angular & IES data	Orb Optronix	Gono 7_M	GONO007	8/16/2021
Spectral Suite	Software - Spectrum	Orb Optronix	SS V3	3.1.17.901	Not Applicable
Spectral Suite	Software - IES	Orb Optronix	SS V3	3.0.16.951	Not Applicable

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### ABOUT ACCREDITED TESTING

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### REVISION HISTORY

REVISION	DATE	APPROVED	DESCRIPTION OF REVISION
030	2/26/2021	ACM	① ORIGINAL

END OF REPORT