



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 36in

Issued Report:

LIGT011-020_Ribbon Cloud Pendant White 36in

Project: 80072634 - TPPPT

Original issue date:

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Revision Issue Date:

First Issue

Prepared for:

LightArt A 3FORM COMPANY
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Product Test Report - Goniometer Luminaire Evaluation

Manufacturer: LightArt A 3FORM COMPANY

Report Number: LIGT011-020

Product Description: Ribbon Cloud Pendant White 36in

Release Date: 2/26/2021

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Product Test Report - Goniometer Luminaire Evaluation

Manufacturer: LightArt A 3FORM COMPANY

Report Number: LIGT011-020

Product Description: Ribbon Cloud Pendant White 36in

Release Date: 2/26/2021

SAMPLE DESCRIPTION

Lab sample identification: 1

Customer Identification: Configuration B

Manufacturer: LightArt A 3FORM COMPANY

Part number: NA

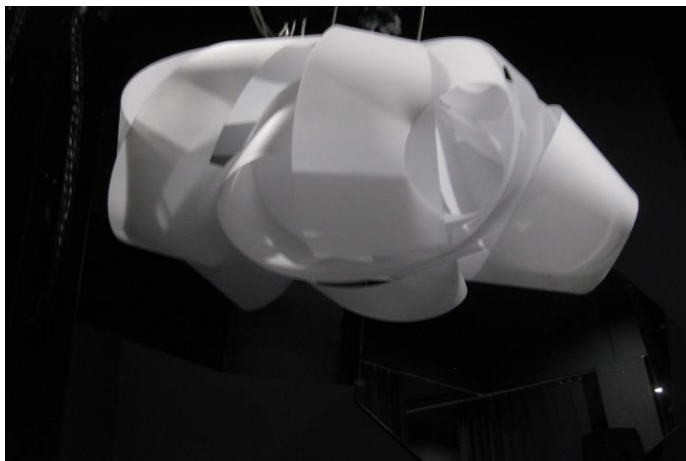
Model Number: NA

Description: Ribbon Cloud Pendant White 36in

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

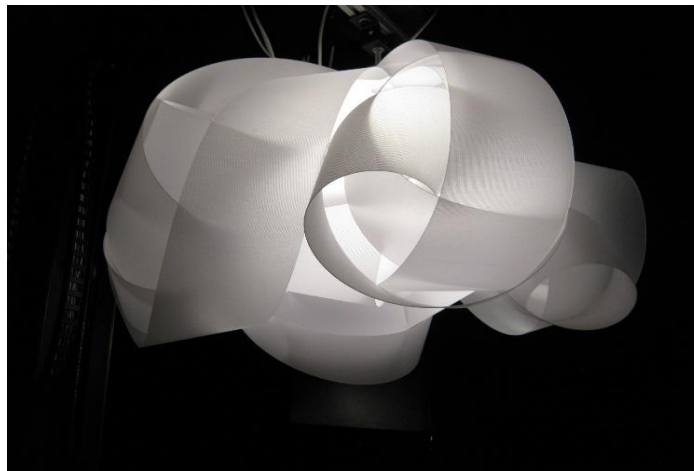
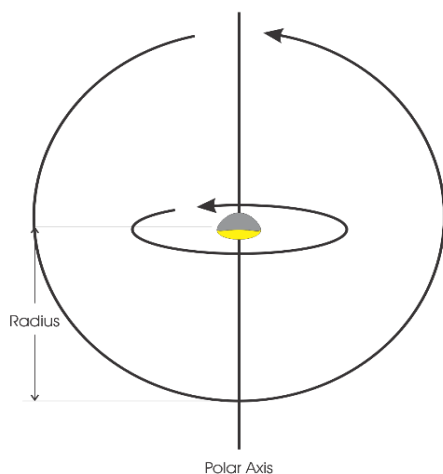
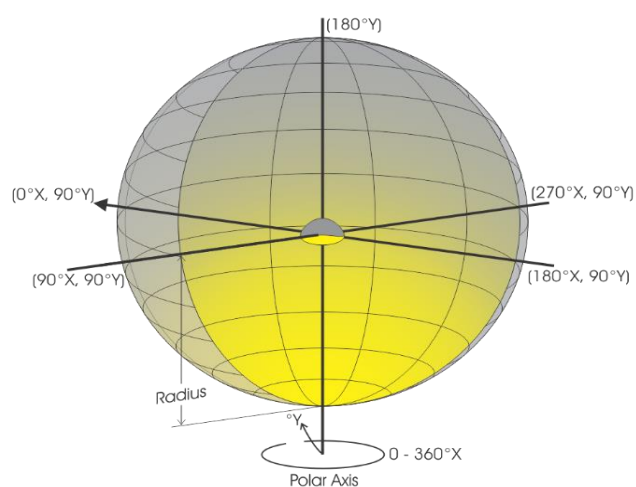


Image At 0° and 0°, See Equipment Geometry

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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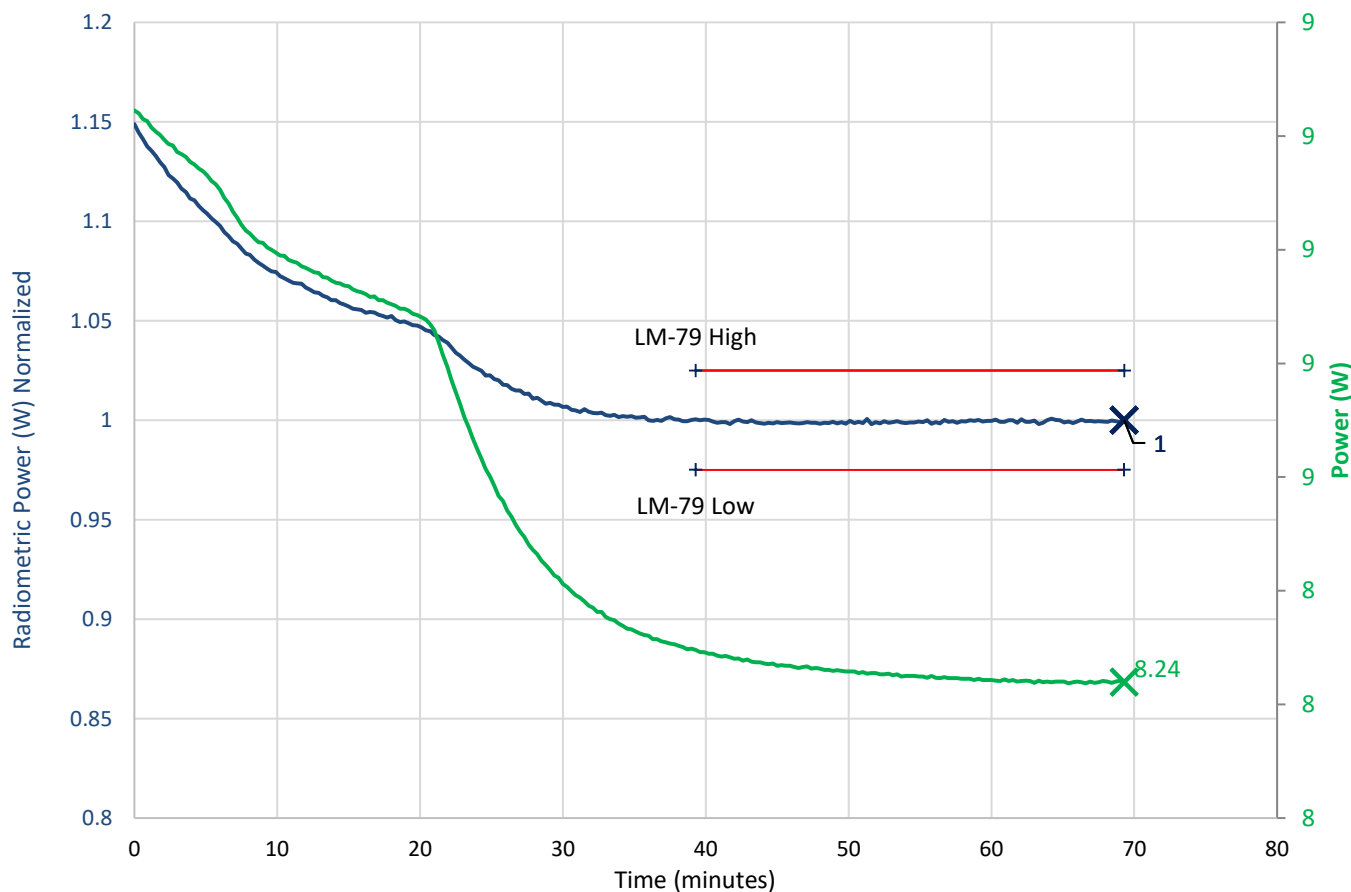
Release Date: 2/26/2021

OPTICAL STABILIZATION

Stabilization Description - A series of 232 measurements are recorded during the stabilization period. The final stabilized measurement of normalized radiant power, as defined by LM-79:2019, is reported after 69 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
99.800%	1.00	7
99.828%	1.00	11
99.856%	1.00	18
99.885%	1.00	14
99.913%	1.00	15
99.941%	1.00	13
99.969%	1.00	8
99.997%	1.00	14
100.026%	1.00	8
100.054%	1.00	2
100.000%	1.00	Reported

% of range	Power (W)	Measurements in Range
99.976%	8.24	29
100.047%	8.24	17
100.119%	8.25	13
100.191%	8.25	10
100.262%	8.26	8
100.334%	8.27	8
100.405%	8.27	4
100.477%	8.28	5
100.549%	8.28	4
100.620%	8.29	3
100.000%	8.24	Reported



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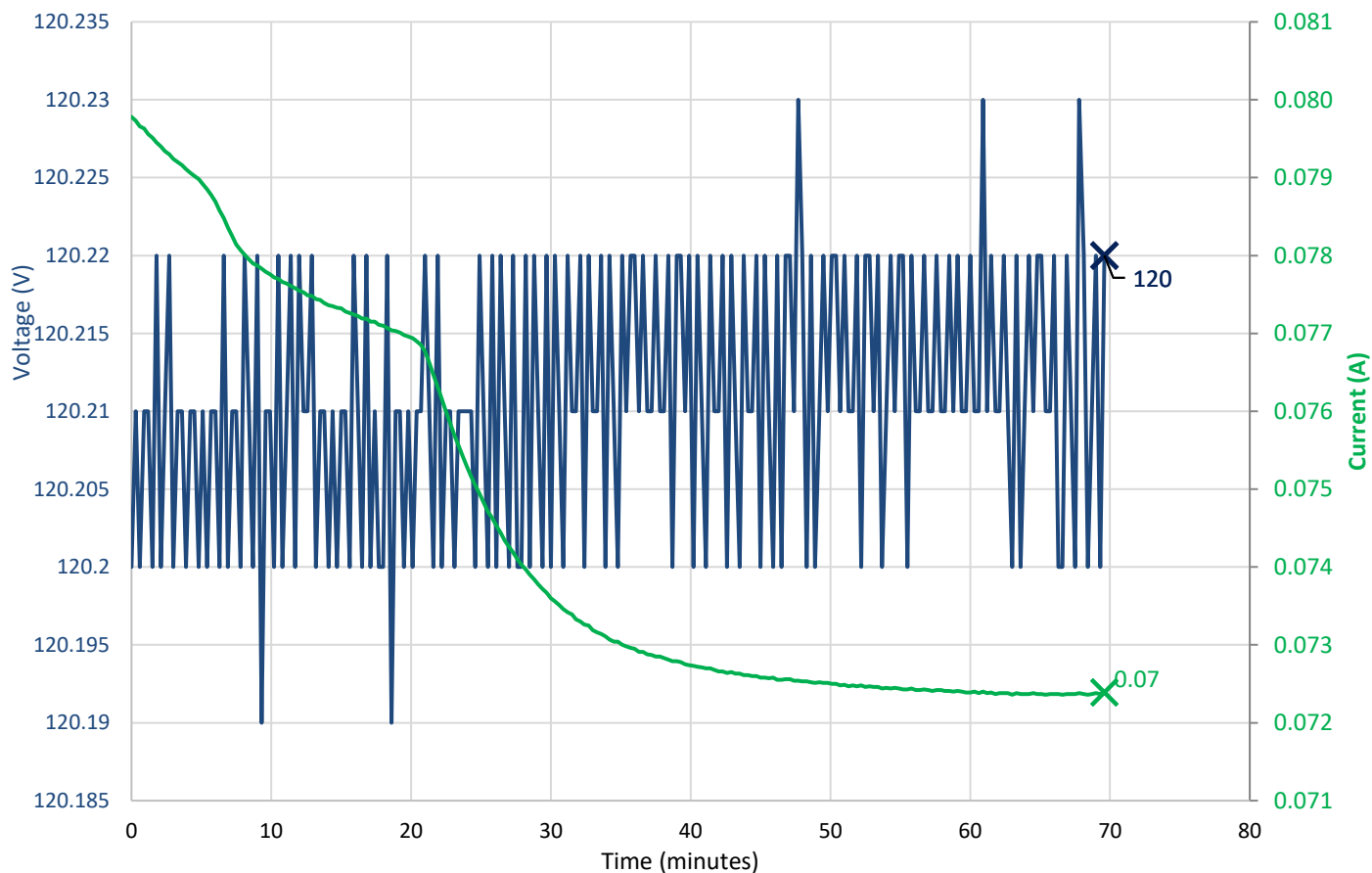
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ELECTRICAL STABILIZATION

Stabilization Description - A series of 233 measurements are recorded during the stabilization period. The final stabilized measurement, as defined by LM-79:2019, is reported after 70 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
99.983%	120.20	61
99.986%	120.20	0
99.988%	120.21	0
99.991%	120.21	91
99.993%	120.21	0
99.996%	120.22	0
99.998%	120.22	76
100.001%	120.22	0
100.003%	120.22	0
100.006%	120.23	3
100.000%	120.22	Reported

% of range	Current (A)	Measurements in Range
99.959%	0.072	36
100.017%	0.072	16
100.075%	0.072	11
100.133%	0.072	8
100.191%	0.073	9
100.249%	0.073	8
100.307%	0.073	4
100.365%	0.073	3
100.423%	0.073	5
100.481%	0.073	3
100.000%	0.072	Reported



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PHOTOMETRIC SUMMARY

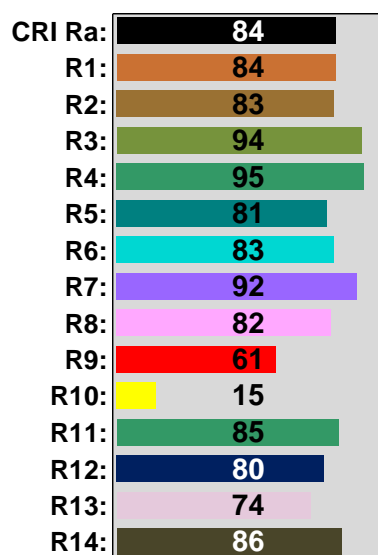
Radiometric Measurements

Peak Wl: 605.9 nm
FWHM: 129.0 nm
Centroid Wl: 584.7 nm

Photometric Measurements

Photopic Power: 624 lm
Luminous Efficacy: 76 lm/W
CCT: 2983 K

Color Rendering Index



Color Coordinates

Cx: 0.4354
Cy: 0.3988
u: 0.2518
v: 0.3460
u': 0.2518
v': 0.5191
Duv: -0.0019
Du'v': 0.0000

Color Purity: - %
Dom Wl: 583.6 nm
Comp Wl: 482.9 nm
Gamut Area: 0.519

Electrical Performance

Voltage: 120.220 V
Current: 0.072 A
Frequency: 59.973 Hz
Active Power (P): 8.243 W
Apparent Power: 8.703 VA
Power Factor: 0.947 W/VA
THD Voltage: 0.1 %
THD Current: 27.1 %

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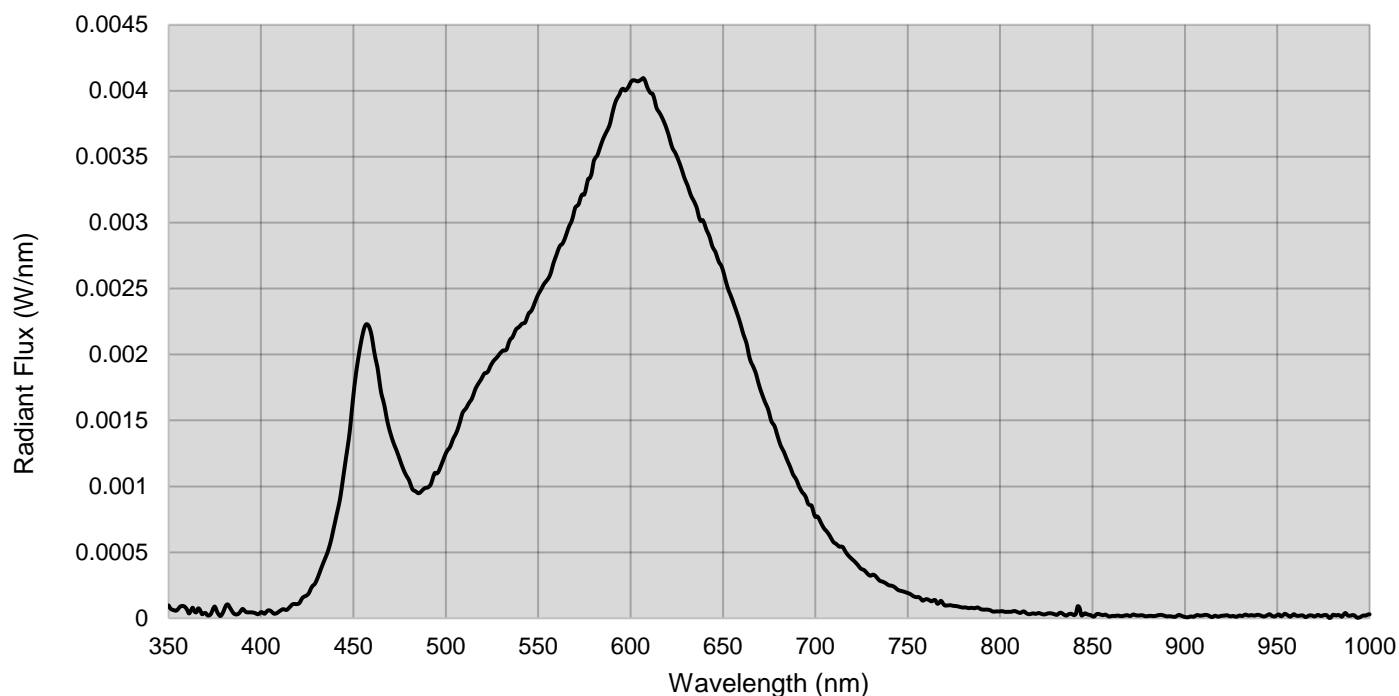
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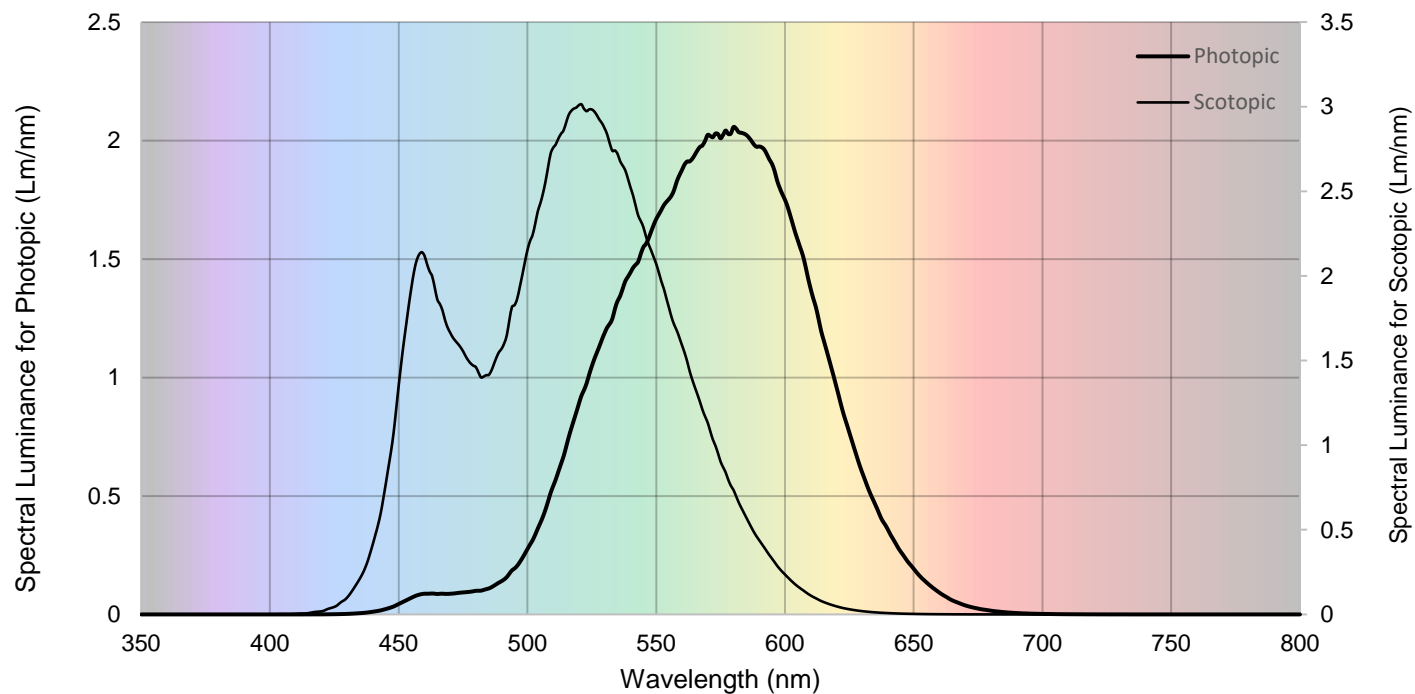
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VISIBLE SPECTRUM

Radiometric Spectrum



Photopic and Scotopic Spectrum



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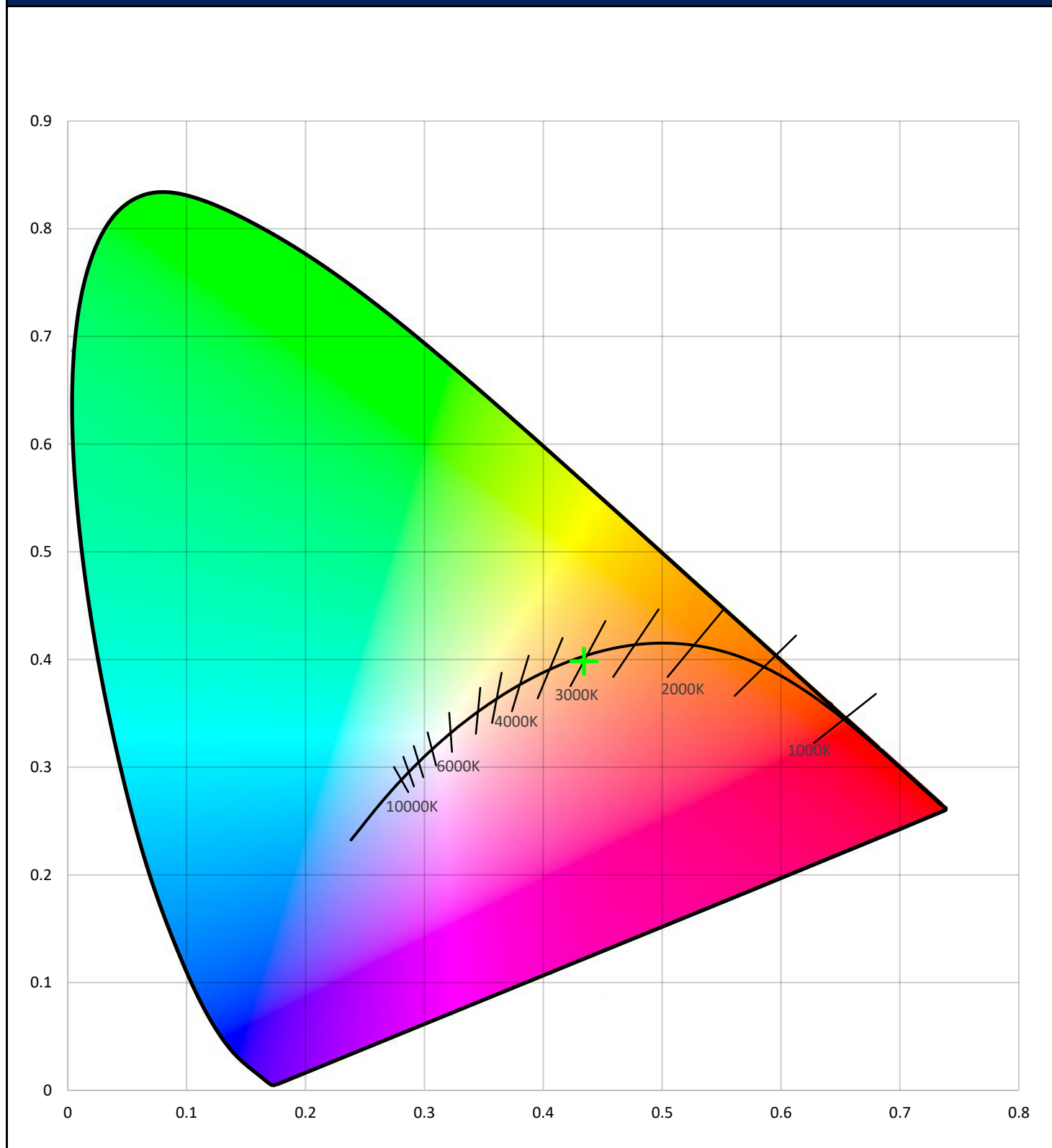
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CIE 1931



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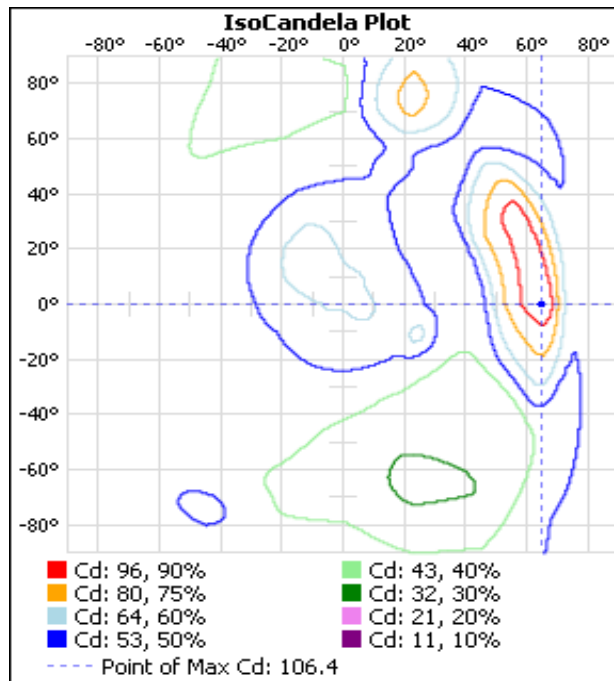
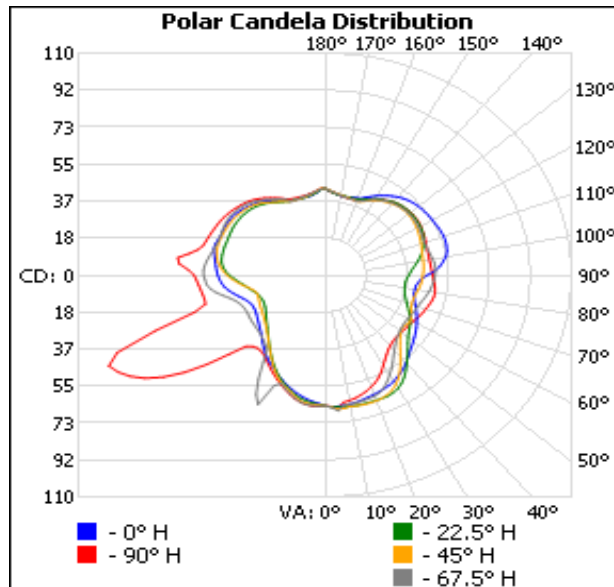
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CANDELA PLOTS



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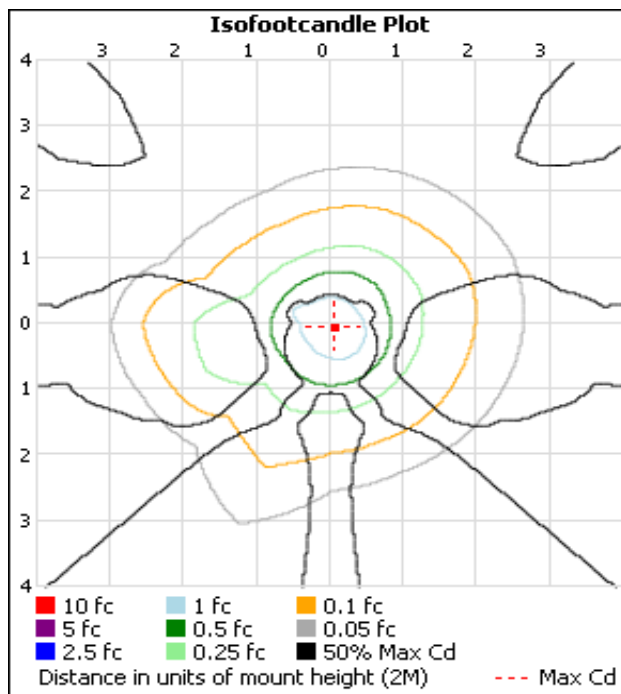
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ILLUMINANCE PLOTS



Illuminance at a Distance

	Center Beam fc	Beam Width	
0.33M	54.6 fc	0.62 M	0.11 M
0.67M	13.5 fc	1.24 M	0.22 M
1.00M	6.02 fc	1.86 M	0.33 M
1.33M	3.39 fc	2.48 M	0.44 M
1.67M	2.17 fc	3.11 M	0.56 M
2.00M	1.51 fc	3.73 M	0.67 M

■ Vert. Spread: 86.0°
■ Horiz. Spread: 19.0°

ZONAL LUMEN SUMMARY

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	49.6	8.00%
0-40	81.2	13.00%
0-60	161.7	25.90%
60-90	153.2	24.60%
70-100	159.4	25.60%
90-120	160.8	25.80%
0-90	315.0	50.50%
90-180	308.6	49.50%
0-180	623.6	100.00%

Lumens Per Zone		
Zone	Lumens	% Total
0-10	6.1	1.00%
10-20	17.3	2.80%
20-30	26.2	4.20%
30-40	31.5	5.10%
40-50	36.4	5.80%
50-60	44.2	7.10%
60-70	49.3	7.90%
70-80	50.2	8.10%
80-90	53.7	8.60%
90-100	55.5	8.90%
100-110	54.3	8.70%
110-120	51	8.20%
120-130	45.9	7.40%
130-140	38.4	6.20%
140-150	29	4.60%
150-160	19.3	3.10%
160-170	11.3	1.80%
170-180	3.9	0.60%

Lower Hemisphere

Upper Hemisphere

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CANDELA TABLE

LOWER HEMISPHERE

South Pole

Equator

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
0	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
2.5	65	65	65	66	65	64	64	64	64	64	65	65	65	65	65	66	65
5	65	66	67	67	66	64	63	63	63	64	64	65	65	65	65	66	65
7.5	65	66	67	65	64	62	62	62	62	63	64	65	65	64	64	66	65
10	65	66	66	65	63	61	60	60	61	62	63	64	64	64	64	66	65
12.5	65	66	66	65	62	60	59	59	60	61	62	62	63	62	62	64	65
15	64	66	66	65	62	59	58	58	58	59	60	61	61	61	61	63	64
17.5	64	66	66	64	60	57	56	56	57	58	58	59	59	59	59	62	64
20	63	66	66	64	59	56	55	55	56	56	57	57	58	57	57	61	63
22.5	63	66	66	63	58	54	54	54	54	54	55	59	56	55	56	59	63
25	62	66	65	62	56	53	53	53	52	52	53	71	54	53	54	58	62
27.5	62	66	64	60	54	51	52	52	51	50	50	67	52	51	52	57	62
30	61	65	63	57	52	50	51	51	50	47	48	60	51	49	51	56	61
32.5	60	64	61	55	50	48	50	50	48	45	45	51	49	48	49	55	60
35	59	62	58	53	48	47	49	49	47	43	43	45	48	47	48	54	59
37.5	58	59	55	50	46	47	49	48	45	41	41	44	47	46	48	54	58
40	56	57	52	48	45	46	49	47	43	39	40	42	47	47	47	53	57
42.5	55	54	50	46	45	46	49	47	42	38	38	42	48	48	47	53	55
45	54	52	47	45	44	46	48	46	40	36	37	41	50	54	47	53	54
47.5	52	50	46	44	44	47	48	46	39	35	36	41	58	67	46	54	53
50	51	48	44	43	44	48	48	45	38	34	35	40	69	77	46	55	52
52.5	50	47	43	43	44	48	47	44	38	33	34	40	79	85	46	56	51
55	49	46	43	43	45	49	47	44	37	32	34	40	88	92	46	56	50
57.5	48	45	44	43	45	50	46	43	36	31	33	40	95	96	46	55	49
60	47	44	44	43	45	50	46	42	36	31	33	39	100	99	46	56	48
62.5	46	43	43	43	46	50	45	42	36	31	33	39	104	99	47	60	47
65	45	41	42	43	47	51	45	42	36	30	32	39	106	92	47	66	46
67.5	44	40	42	44	48	51	46	42	36	31	32	40	100	72	47	73	45
70	43	39	41	44	48	50	47	42	37	31	32	41	81	57	48	81	44
72.5	42	38	41	45	49	50	50	42	38	31	32	42	61	54	48	86	42
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82.5	41	36	43	48	50	50	54	45	45	37	37	52	56	54	53	84	41
85	42	36	43	48	49	49	50	46	46	39	40	53	57	55	54	80	41
87.5	43	37	43	49	48	49	48	47	47	41	42	54	57	56	55	76	43
90	46	37	44	49	48	49	48	48	48	43	44	54	58	57	56	71	45

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CANDELA TABLE

LOWER HEMISPHERE

Equator

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	46	37	44	49	48	49	48	48	48	43	44	54	58	57	56	71	45
92.5	49	38	44	49	48	48	48	48	48	44	45	54	61	58	57	67	48
95	51	39	44	49	47	48	48	49	49	46	47	54	65	58	57	64	51
97.5	53	41	44	49	47	48	49	49	49	47	48	53	66	59	58	61	53
100	55	42	44	49	47	47	50	50	50	47	49	53	62	59	58	60	55
102.5	56	44	45	48	47	47	50	50	51	47	50	52	58	58	59	59	56
105	56	45	45	48	47	47	51	51	51	47	50	51	56	58	59	58	56
107.5	56	46	45	47	47	47	51	51	51	47	50	51	56	58	59	58	57
110	56	47	46	47	48	47	51	52	51	47	50	51	55	58	58	58	57
112.5	56	48	46	47	48	47	50	52	50	47	50	51	55	58	58	58	57
115	56	48	46	48	48	48	50	52	51	47	50	51	55	57	58	58	56
117.5	55	49	47	48	49	48	50	52	51	47	50	51	54	57	58	58	56
120	55	49	47	48	49	48	49	52	51	47	50	51	54	57	57	58	56
122.5	55	49	48	48	49	48	49	52	51	47	50	51	53	56	57	58	56
125	55	49	48	48	49	48	49	52	51	47	49	51	53	56	56	57	55
127.5	54	49	48	48	49	48	49	51	50	47	49	51	52	55	55	57	55
130	54	49	48	48	49	48	48	51	50	47	49	51	52	54	55	57	55
132.5	53	49	48	48	49	48	48	50	49	47	48	50	51	53	54	56	54
135	53	49	47	48	48	48	48	49	48	46	48	50	51	52	53	55	54
137.5	52	48	47	47	48	48	47	48	48	46	47	49	50	51	53	54	53
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142.5	49	46	46	46	46	47	45	46	46	45	45	47	48	49	50	52	51
145	48	45	45	45	46	46	45	45	45	44	44	46	47	47	49	51	49
147.5	47	45	44	44	45	45	44	44	44	43	43	45	45	46	47	49	48
150	45	44	43	43	43	43	43	43	43	42	42	44	44	45	46	48	47
152.5	44	43	42	42	42	42	41	41	42	41	41	42	43	43	44	46	45
155	43	42	40	41	41	41	40	40	41	40	40	41	42	42	43	44	44
157.5	41	41	39	40	40	40	39	39	40	40	40	40	41	41	42	43	42
160	41	40	39	39	40	40	38	39	40	40	40	40	40	41	41	42	42
162.5	40	40	40	39	39	39	38	39	40	40	39	40	40	41	41	42	41
165	40	40	40	40	40	39	39	39	40	39	40	40	40	41	41	41	41
167.5	40	40	40	40	40	39	39	39	40	40	40	40	40	41	41	41	41
170	40	40	40	40	40	39	39	40	40	40	40	41	41	41	41	41	41
172.5	41	40	41	41	41	40	40	41	40	40	41	41	41	41	41	41	41
175	41	41	42	41	41	40	41	42	41	41	42	42	42	42	42	41	42
177.5	42	42	42	42	42	41	42	43	43	42	43	43	43	43	42	42	42
180	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43

North Pole

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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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REVISION HISTORY

REVISION	DATE	APPROVED	DESCRIPTION OF REVISION
020	2/26/2021	ACM	① ORIGINAL

END OF REPORT