



FOR THE SCOPE OF  
ACCREDITATION UNDER NVLAP LAB  
CODE 100402-0.

# REPORT

3933 US ROUTE 11, CORTLAND, NEW YORK 13045

Project No. G103088115

Date: June 30, 2017

REPORT NO. 103088115CRT-048

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 4000K, 20DEG DIFFUSER.  
SAMPLE #5

MODEL NO. EW REACHELITE POWERCORE, 100W, 4000K, 20 DEGREE BEAM DIFFUSER, ALL LEDS ON

## RENDERED TO:

PHILIPS COLOR KINETICS  
3 BURLINGTON WOODS DRIVE  
BURLINGTON, MA 01803

TESTS: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION The testing performed was authorized by signed quote number Qu-00783021.

## STANDARDS USED:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting  
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number eW ReachElite Powercore, 100W, 4000K, 20 Degree Beam Diffuser, All LEDs On. The sample was received by Intertek on May 22, 2017 in undamaged condition and one sample was tested as received. The sample designation was CRT1705221531-002.

DATE OF TESTS: June 8, 2017 through June 14, 2017.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 4000K, 20 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 4000K, 20deg Diffuser.
Sample #5

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	5168.6	5236.1
Total Power (W)	97.90	97.21
Lumen Efficacy (Lm/W)	52.8	53.9
Power Factor ( )	0.988	0.989
Current ATHD (%)	12.69	
Correlated Color Temp. (CCT-K)	3919	
Color Rendering Index (CRI - Ra)	80.9	
CRI - R9	6.7	
DUV ( )	0.004	
Chromaticity Coordinate (x)	0.387	
Chromaticity Coordinate (y)	0.389	
Chromaticity Coordinate (u')	0.225	
Chromaticity Coordinate (v')	0.508	

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
LSI High Speed Mirror Goniometer	6440	---	6/2/2017	7/2/2017
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
Yokogawa Power Analyzer	WT210	E464	5/2/2017	5/2/2018
Omega Thermometer	DPI8-C24	M263	5/2/2017	5/2/2018
M-D Building Products Digital Level	Smart Tool	L112	4/4/2017	4/4/2018
NIST Luminous Intensity Standard Source	NBS10322	N1427	1/9/2017	1/9/2019
NIST Luminous Intensity Standard Source	NBS10332	N1435	1/9/2017	1/9/2019
NIST Luminous Intensity Standard Source	NBS10265	N1437	1/9/2017	1/9/2019
NIST Luminous Flux Standard Source	NBS10428	N1424	1/11/2017	1/11/2019
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
Yokogawa Power Analyzer	WT1600	E474	5/4/2017	5/4/2018
Fluke Thermometer	53 II	D587	12/29/2016	12/29/2017
Fluke Multimeter	87V	D590	4/28/2017	4/28/2018
3M Integrating Sphere Spectrometer System	CDS 1100	---	6/2/2017	7/2/2017
Fisher Scientific Stopwatch	130471471	N1404	12/29/2016	12/19/2017
Secondary Spectral Intensity Standard Source	BS5186	RF5186	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	BS3616	--	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	BS4116	--	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	6836	--	1/28/2017	1/28/2018



## TEST METHODS:

### Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

### Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS 1100 CCD Array Spectroradiometer and two meter or ten foot sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

### Photometric and Electrical measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.



**RESULTS:**

**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method**

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1705221531-002	Base Up	120.09	818.7	97.21	0.989	5236.1	53.9

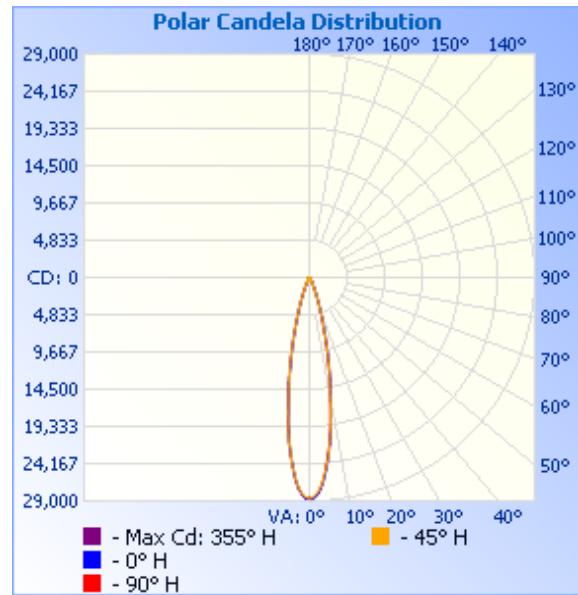
Maximum Cd: 28,809.5 at Horizontal: 355°, Vertical: 0.5°

Luminous Opening: (L: 18.5", W: 4.75")

**Intensity (Candlepower) Summary at 25°C - Candelas**

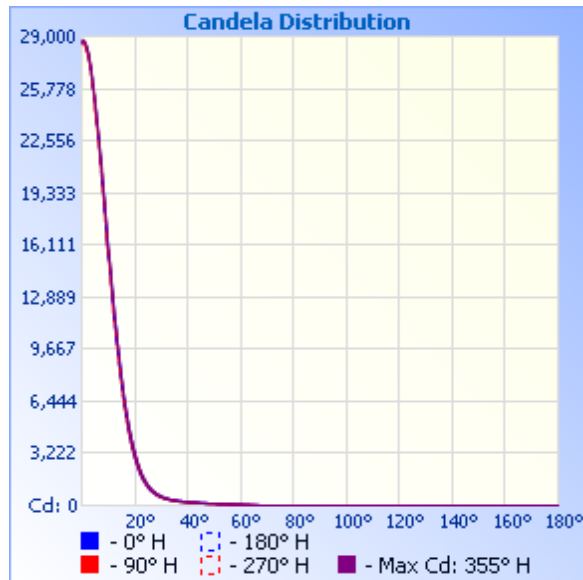
Angle	0	30	45	65	90
0	28602	28602	28602	28602	28602
5	24930	24658	24689	24515	24421
10	15827	15932	15517	15757	15448
15	7868	7834	7740	7597	7406
20	3280	3202	3134	3040	2935
25	1269	1233	1193	1147	1101
30	586	557	532	507	494
35	344	321	301	284	285
40	241	220	201	187	191
45	178	161	144	131	135
50	132	119	106	94	97
55	97	85	75	65	68
60	66	60	51	43	46
65	40	37	30	25	27
70	19	18	14	10	12
75	0	2	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

**Polar Candela Plot**

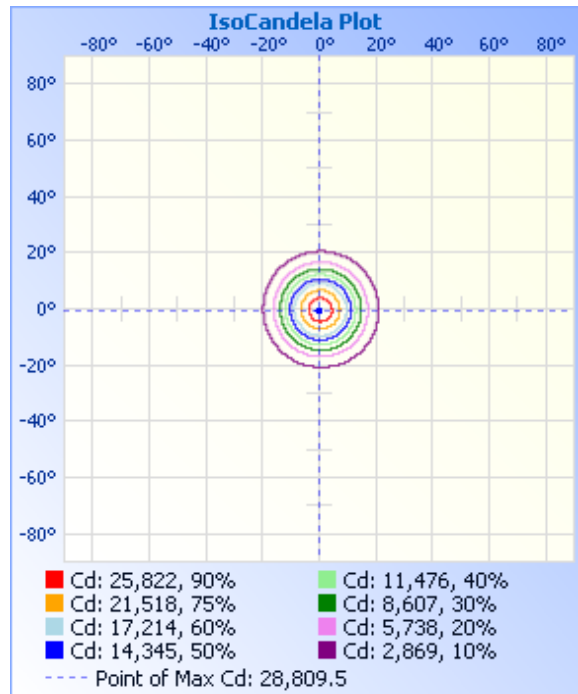


**RESULTS:**

Cartesian Candela Distribution Plot



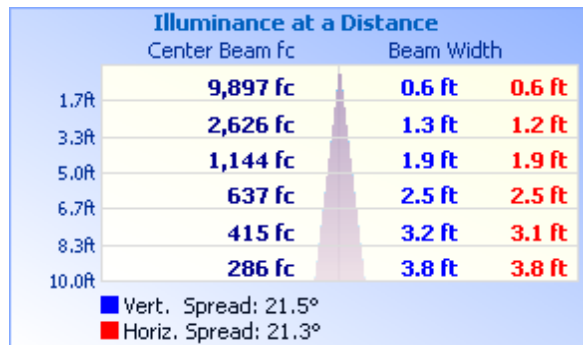
Isocandela Plot



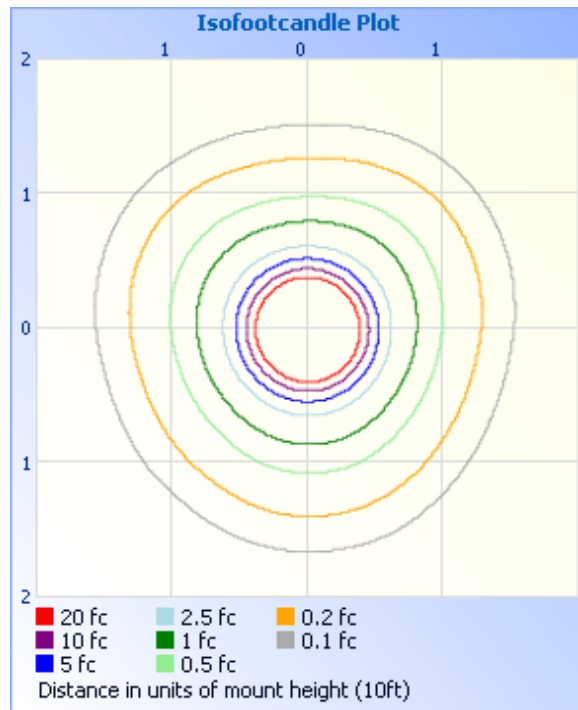
Isoillumination Plots

Mounting Height: 10ft

Illuminance - Cone of Light



Isoillumination Plot



Luminance Data (cd/sq.m)

Angles In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4395	3548	3338
55	2940	2283	2067
65	1636	1256	1099
75	13	0	0
85	0	0	0



**RESULTS:**

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4807.1	91.8
0-40	5009.7	95.7
0-60	5199.6	99.3
0-90	5236.1	100.0
60-90	36.5	0.7
70-100	3.8	0.1
90-120	0.0	0.0
90-180	0.0	0.0
0-180	5236.1	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	2054.7	39.2
10-20	2142.3	40.9
20-30	610.1	11.7
30-40	202.7	3.9
40-50	118.4	2.3
50-60	71.5	1.4
60-70	32.7	0.6
70-80	3.8	0.1
80-90	0.0	0.0

Coefficients of Utilization

**Coefficients Of Utilization - Zonal Cavity Method**

Effective Floor Cavity Reflectance: 20%

RCC %:	80				70				50				30				10				0			
RW %:	70	50	30	0	70	50	30	0	50	30	20	0	50	30	20	0	50	30	20	0	50	30	20	0
RCR: 0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.00	1.11	1.11	1.11	1.11	1.06	1.06	1.06	1.06	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.00
1	1.15	1.13	1.11	1.09	1.13	1.11	1.09	.97	1.07	1.05	1.04	1.04	1.03	1.02	1.01	1.01	1.00	.99	.98	.98	.96	.96	.96	.96
2	1.11	1.07	1.04	1.02	1.09	1.06	1.03	.94	1.03	1.00	.99	.99	1.00	.98	.96	.96	.97	.96	.94	.94	.93	.93	.93	.93
3	1.07	1.03	.99	.96	1.06	1.01	.98	.90	.99	.96	.94	.94	.97	.94	.93	.93	.95	.93	.91	.91	.90	.90	.90	.90
4	1.04	.99	.95	.92	1.03	.98	.94	.88	.96	.93	.90	.90	.94	.91	.89	.89	.92	.90	.88	.88	.87	.87	.87	.87
5	1.01	.95	.91	.88	1.00	.94	.90	.85	.93	.89	.87	.87	.91	.88	.86	.86	.90	.87	.85	.85	.84	.84	.84	.84
6	.98	.92	.88	.85	.97	.91	.87	.83	.90	.86	.84	.84	.89	.86	.83	.83	.87	.85	.83	.83	.82	.82	.82	.82
7	.95	.89	.85	.82	.94	.88	.84	.80	.87	.84	.81	.81	.86	.83	.81	.81	.85	.83	.80	.80	.79	.79	.79	.79
8	.93	.86	.82	.79	.92	.86	.82	.78	.85	.81	.79	.79	.84	.81	.79	.79	.83	.80	.78	.78	.77	.77	.77	.77
9	.91	.84	.80	.77	.90	.84	.80	.76	.83	.79	.77	.77	.82	.79	.77	.77	.81	.78	.76	.76	.75	.75	.75	.75
10	.88	.82	.78	.75	.88	.81	.78	.74	.81	.77	.75	.75	.80	.77	.75	.75	.79	.77	.75	.75	.74	.74	.74	.74

Flood Summary

**Flood Summary**

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	81%	4,239.9	40.7	41.1
Beam (50%):	41.6%	2,175.7	21.3	21.5
<b>Total:</b>	<b>100.2%</b>	<b>5,247.5</b>		



**RESULTS:**

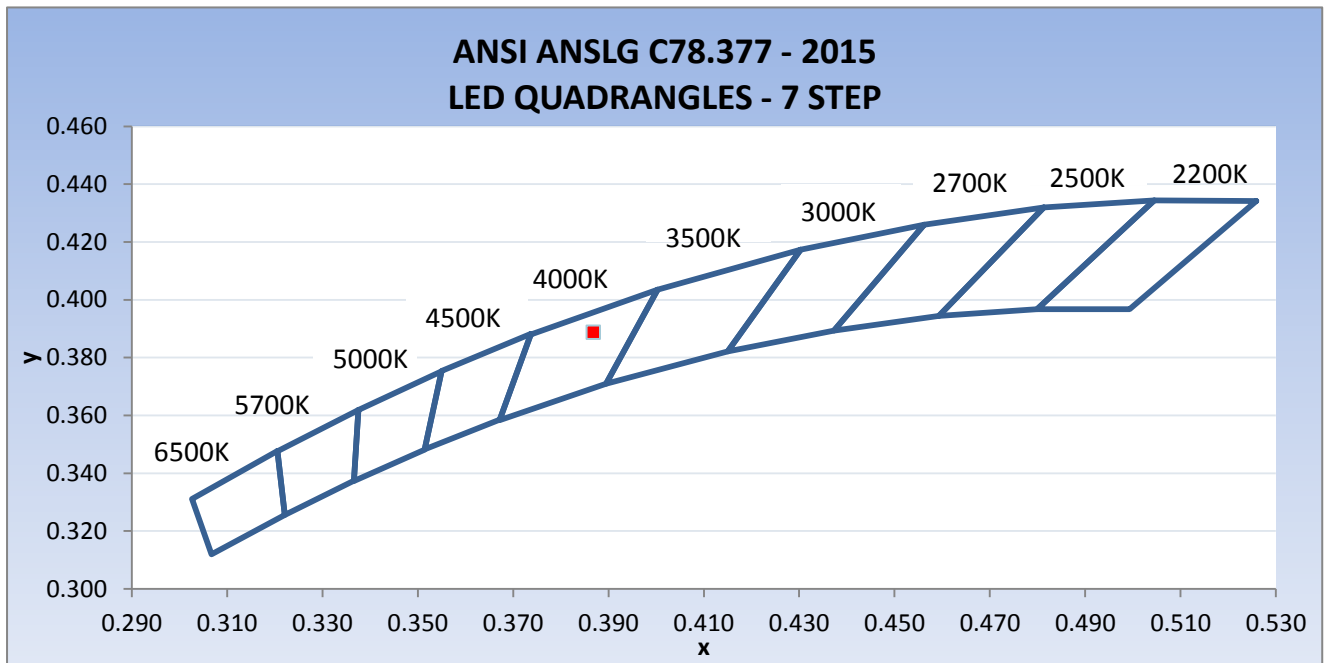
**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method**

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Current ATHD (%)
CRT1705221531-002	Base Up	120.04	825.3	97.90	0.988	12.69

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ( )
5168.6	52.8	3919	80.9	6.7	0.004

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.387	0.389	0.225	0.508

**ANSI C78.377 SSL Chromaticity (2015 Version)**



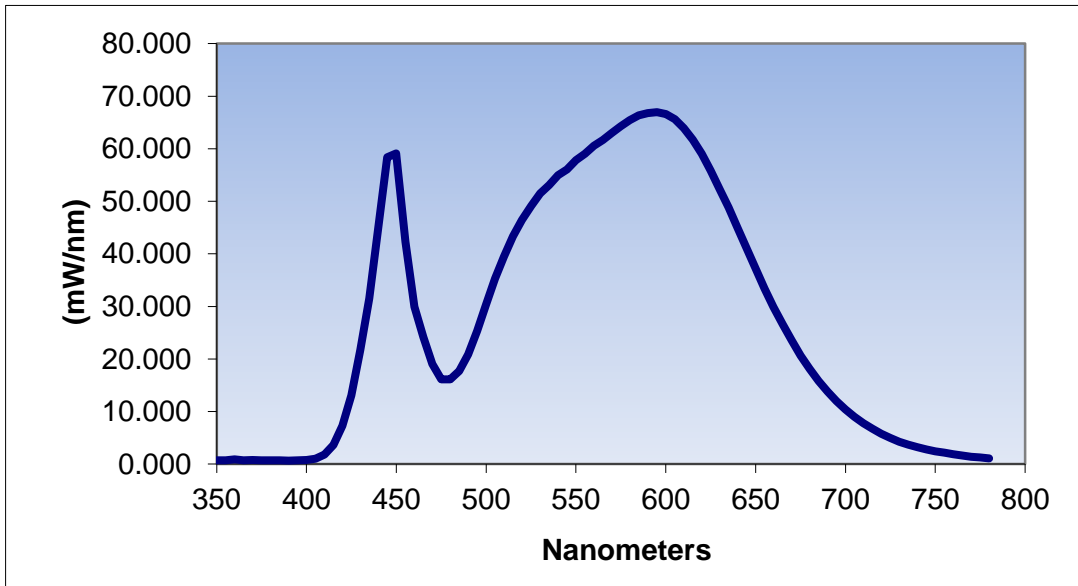


**RESULTS**

**Spectral Distribution Over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.742	460	29.967	570	62.986	680	18.113
355	0.716	465	24.182	575	64.299	685	15.802
360	0.875	470	19.011	580	65.457	690	13.814
365	0.706	475	16.111	585	66.337	695	11.984
370	0.786	480	16.137	590	66.789	700	10.400
375	0.685	485	17.731	595	66.974	705	9.022
380	0.686	490	20.862	600	66.602	710	7.782
385	0.688	495	25.285	605	65.619	715	6.735
390	0.663	500	30.356	610	63.922	720	5.759
395	0.714	505	35.313	615	61.731	725	4.949
400	0.775	510	39.489	620	59.045	730	4.241
405	1.025	515	43.316	625	55.801	735	3.678
410	1.793	520	46.429	630	52.291	740	3.196
415	3.642	525	49.120	635	48.827	745	2.795
420	7.273	530	51.469	640	44.895	750	2.428
425	13.052	535	53.094	645	41.074	755	2.149
430	21.749	540	54.971	650	37.271	760	1.885
435	31.536	545	56.081	655	33.383	765	1.641
440	44.917	550	57.824	660	29.882	770	1.407
445	58.389	555	59.066	665	26.574	775	1.249
450	59.097	560	60.585	670	23.525	780	1.095
455	42.299	565	61.634	675	20.599		

**Spectral Data Over Visible Wavelengths**







PRODUCT PICTURE:



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

Ryan Siddon  
Project Engineer  
Lighting Division

Report Reviewed By:

Jeffrey Davis  
Engineering Supervisor  
Lighting Division

Attachments:

Gonio IES File - eW ReachElite Powercore, 100W, 4000K, 20 Degree Beam Diffuser, All LEDs On  
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 4000K, 20 Degree Beam Diffuser, All LEDs On