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 29, 2017

REPORT NO. 103088115CRT-041

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 3000K, 40DEG DIFFUSER.
SAMPLE #4

MODEL NO. EW REACHELITE POWERCORE, 100W, 3000K, 40 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, 3000K, 40 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 CRT1706201113-001.

DATE OF TESTS: June 7, 2017 through June 23, 2017.

SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 3000K, 40 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 3000K, 40deg Diffuser. Sample #4

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	4535.5	4418.9
Total Power (W)	96.40	95.66
Lumen Efficacy (Lm/W)	47.0	46.2
Power Factor ( )	0.987	0.988
Current ATHD (%)	13.22	
Correlated Color Temp. (CCT-K)	3036	
Color Rendering Index (CRI - Ra)	81.6	
CRI - R9	6.3	
DUV ( )	0.002	
Chromaticity Coordinate (x)	0.437	
Chromaticity Coordinate (y)	0.408	
Chromaticity Coordinate (u')	0.249	
Chromaticity Coordinate (v')	0.523	

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	---	6/19/2017	7/19/2017
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)
CRT1706201113-001	Base Up	120.04	806.4	95.66	0.988	4418.9	46.2

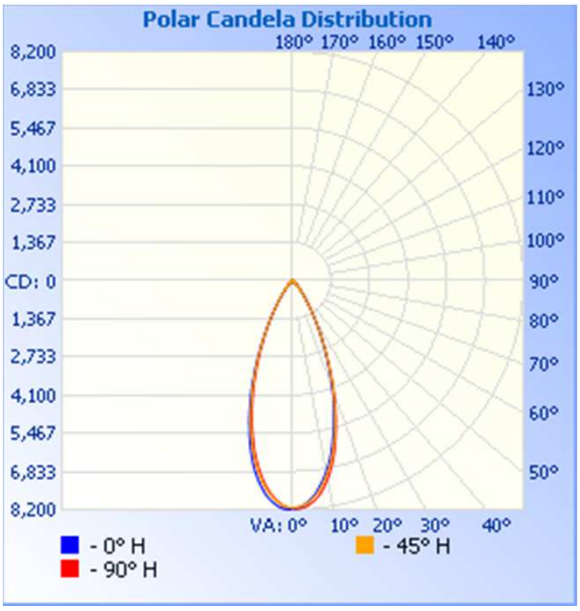
Maximum Cd: 8,195.5 at Horizontal: 180°, Vertical: 1°

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

Intensity (Candlepower) Summary at 25°C - Candelas

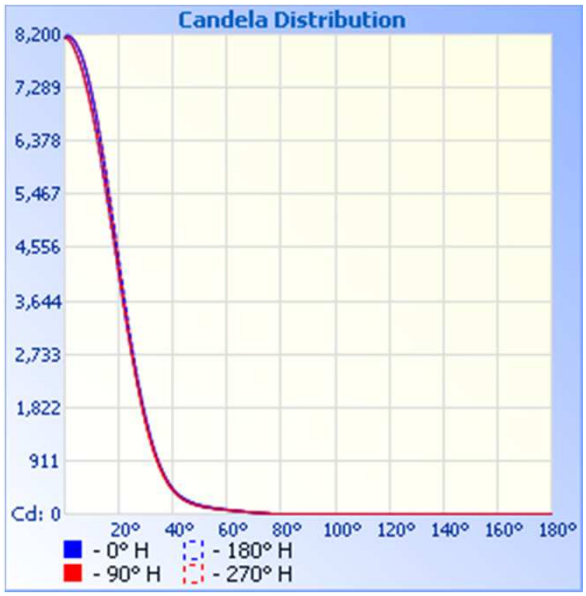
Angle	0	30	45	65	90
0	8134	8134	8134	8134	8134
5	7804	7817	7850	7914	7968
10	6915	6969	7029	7109	7184
15	5611	5676	5743	5809	5866
20	4113	4172	4205	4247	4278
25	2680	2700	2717	2731	2732
30	1569	1574	1576	1564	1550
35	841	835	826	811	797
40	436	430	420	407	399
45	247	241	232	222	218
50	157	155	149	140	139
55	110	108	104	97	97
60	78	77	74	69	70
65	52	53	50	46	47
70	30	32	30	27	28
75	11	14	13	11	12
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

Polar Candela Plot

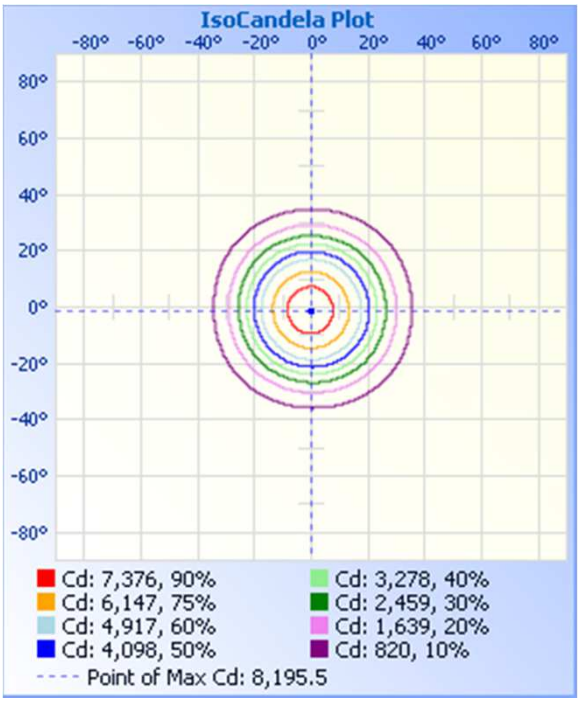


RESULTS:

Cartesian Candela Distribution Plot



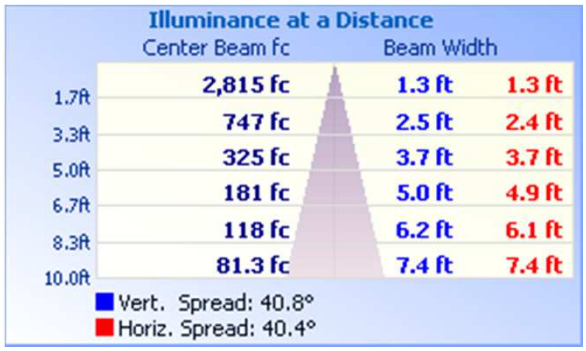
Isocandela Plot



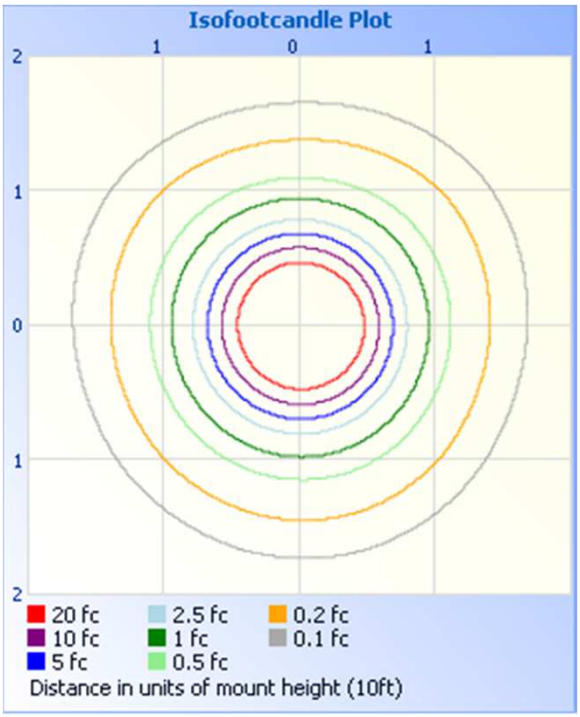
Isoillumination Plots

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	6144	5783	5437
55	3374	3187	2991
65	2175	2092	1975
75	728	871	851
85	0	0	0

RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	3532.3	79.9
0-40	4073.0	92.2
0-60	4354.2	98.5
0-90	4418.9	100.0
60-90	64.7	1.5
70-100	14.3	0.3
90-120	0.0	0.0
90-180	0.0	0.0
0-180	4418.9	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	722.7	16.4
10-20	1564.8	35.4
20-30	1244.7	28.2
30-40	540.7	12.2
40-50	187.9	4.3
50-60	93.3	2.1
60-70	50.4	1.1
70-80	14.3	0.3
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	50	30	20	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	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.14	1.11	1.09	1.07	1.11	1.09	1.07	.95	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96	.94
2	1.09	1.04	1.00	.97	1.06	1.02	.99	.89	.99	.96	.94	.96	.94	.92	.93	.92	.90	.88
3	1.04	.98	.93	.89	1.02	.96	.92	.84	.94	.90	.87	.91	.88	.86	.89	.87	.84	.83
4	.99	.92	.87	.83	.97	.91	.86	.79	.89	.85	.81	.87	.83	.80	.85	.82	.80	.78
5	.95	.87	.81	.77	.93	.86	.81	.75	.84	.80	.76	.83	.79	.76	.81	.78	.75	.74
6	.90	.82	.77	.73	.89	.81	.76	.71	.80	.75	.72	.79	.75	.72	.77	.74	.71	.70
7	.87	.78	.73	.69	.85	.77	.72	.67	.76	.72	.68	.75	.71	.68	.74	.70	.67	.66
8	.83	.74	.69	.65	.82	.74	.69	.64	.73	.68	.65	.72	.67	.64	.71	.67	.64	.63
9	.80	.71	.65	.62	.79	.70	.65	.61	.69	.65	.61	.69	.64	.61	.68	.64	.61	.60
10	.76	.68	.62	.59	.76	.67	.62	.58	.66	.62	.59	.66	.61	.58	.65	.61	.58	.57

Flood Summary

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	87.8%	3,881.8	69.9	70.5
Beam (50%):	52.7%	2,328.3	40.4	40.8
Total:	100%	4,420.8		

RESULTS:

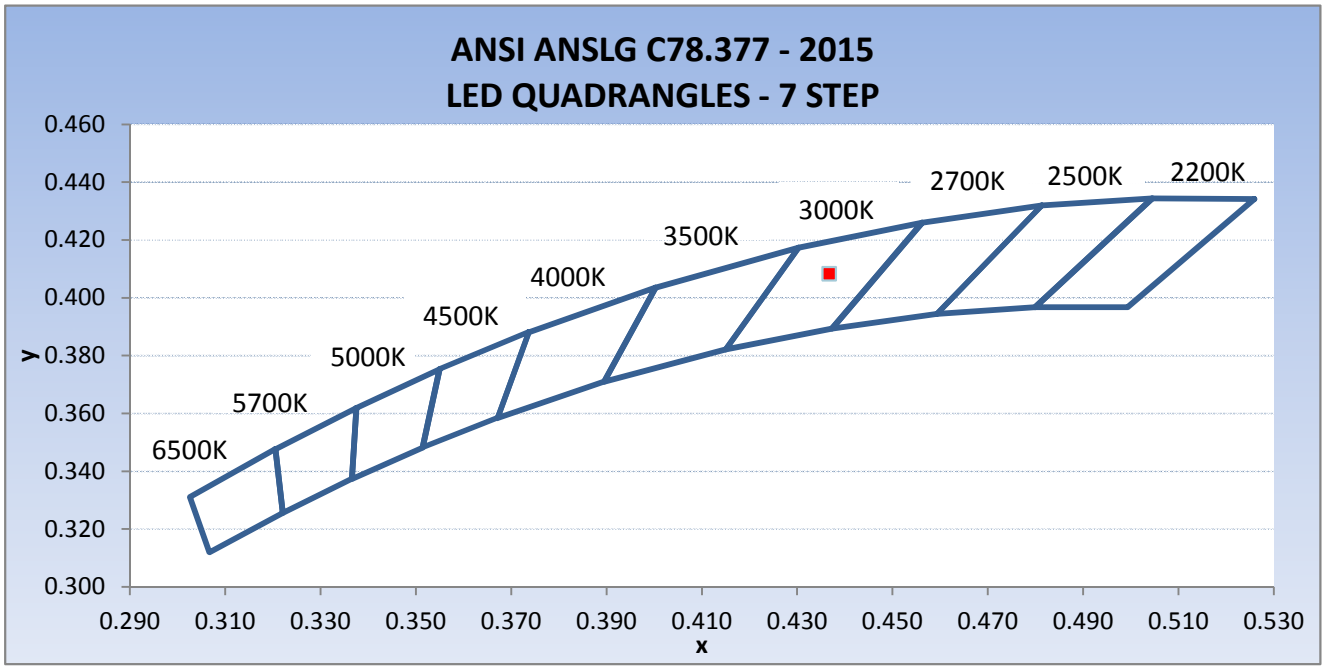
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Current ATHD (%)
CRT1706201113-001	Base Up	120.01	813.7	96.40	0.987	13.22

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ( )
4535.5	47.0	3036	81.6	6.3	0.002

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.437	0.408	0.249	0.523

ANSI C78.377 SSL Chromaticity (2015 Version)

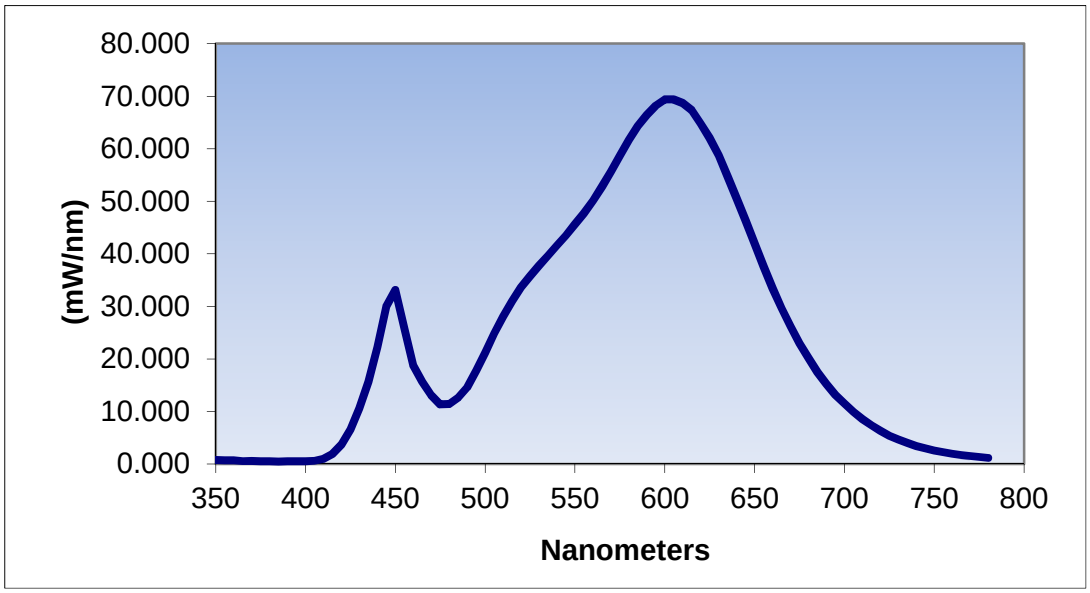


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.722	460	18.766	570	55.661	680	20.137
355	0.662	465	15.654	575	58.721	685	17.475
360	0.655	470	13.103	580	61.664	690	15.238
365	0.570	475	11.334	585	64.324	695	13.183
370	0.556	480	11.371	590	66.463	700	11.512
375	0.474	485	12.619	595	68.210	705	9.923
380	0.470	490	14.611	600	69.390	710	8.519
385	0.458	495	17.786	605	69.392	715	7.371
390	0.476	500	21.216	610	68.711	720	6.317
395	0.478	505	24.859	615	67.341	725	5.360
400	0.506	510	28.086	620	64.803	730	4.630
405	0.612	515	30.984	625	62.066	735	4.007
410	0.963	520	33.620	630	58.705	740	3.434
415	1.910	525	35.747	635	54.641	745	2.993
420	3.727	530	37.792	640	50.462	750	2.594
425	6.566	535	39.650	645	46.266	755	2.247
430	10.613	540	41.622	650	41.910	760	1.979
435	15.632	545	43.508	655	37.573	765	1.727
440	22.226	550	45.634	660	33.467	770	1.515
445	30.009	555	47.682	665	29.685	775	1.342
450	33.124	560	50.150	670	26.188	780	1.173
455	25.888	565	52.793	675	22.986		

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

Ryan Siddon
Project Engineer
Lighting Division

Report Reviewed By:

Melanie Brittain

Melanie Brittain
Associate Engineer
Lighting Division

Attachments:
Gonio IES File - eW ReachElite Powercore, 100W, 3000K, 40 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 3000K, 40 Degree Beam Diffuser, All LEDs On