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-044

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 3000K, 10X40DEG DIFFUSER.
SAMPLE #4

MODEL NO. EW REACHELITE POWERCORE, 100W, 3000K, 10X40 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, 10x40 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, 10x40 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 3000K, 10x40deg Diffuser. Sample #4

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	4574.3	4422.4
Total Power (W)	96.40	95.69
Lumen Efficacy (Lm/W)	47.5	46.2
Power Factor ( )	0.987	0.988
Current ATHD (%)	13.22	
Correlated Color Temp. (CCT-K)	3031	
Color Rendering Index (CRI - Ra)	81.6	
CRI - R9	6.1	
DUV ( )	0.002	
Chromaticity Coordinate (x)	0.437	
Chromaticity Coordinate (y)	0.409	
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	120.03	806.7	95.69	0.988	4422.4	46.2

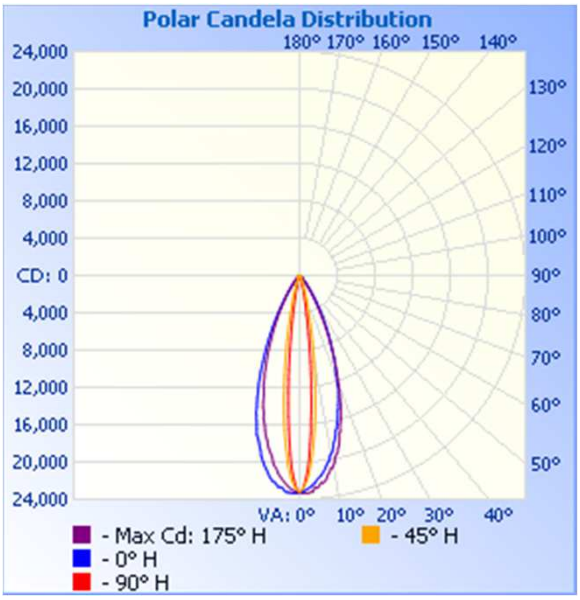
Maximum Cd: 23,364.5 at Horizontal: 175°, Vertical: 1°

Luminous Opening: (L: 18.48", W: 4.8")

Intensity (Candlepower) Summary at 25°C - Candelas

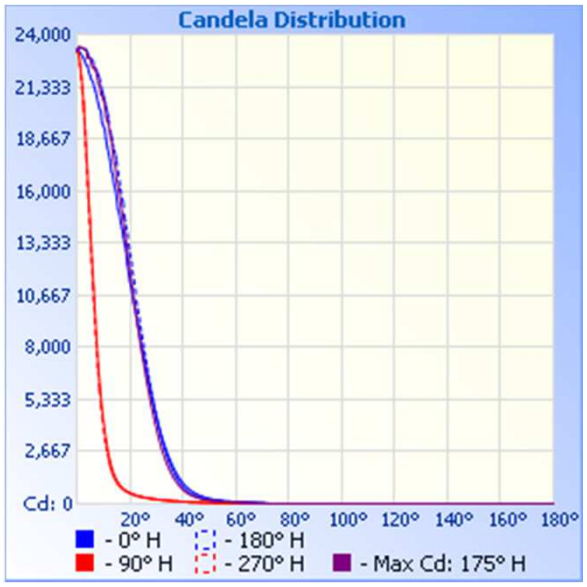
Angle	0	30	45	65	90
0	23158	23158	23158	23158	23158
5	21893	19323	17443	15250	14365
10	19348	12581	8552	5368	4236
15	15657	6561	3164	1606	1222
20	11380	2932	1212	684	569
25	7680	1275	599	398	346
30	4458	635	366	265	234
35	2297	377	249	185	165
40	1075	252	177	132	119
45	515	181	129	95	84
50	270	132	96	68	58
55	162	94	69	46	37
60	108	67	46	29	22
65	69	43	27	14	9
70	40	23	11	3	0
75	13	6	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

Polar Candela Plot

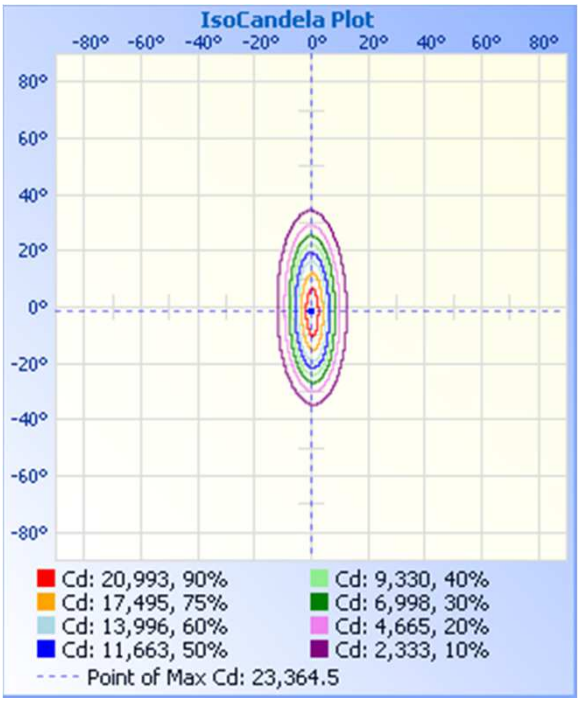


RESULTS:

Cartesian Candela Distribution Plot



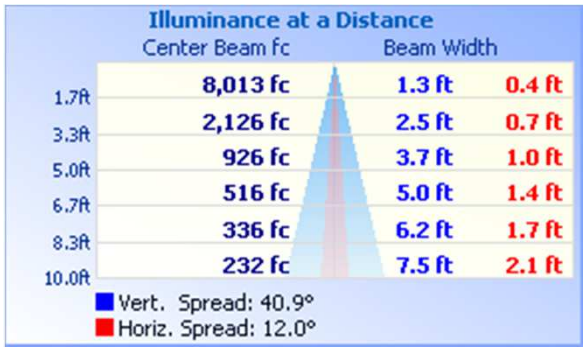
Isocandela Plot



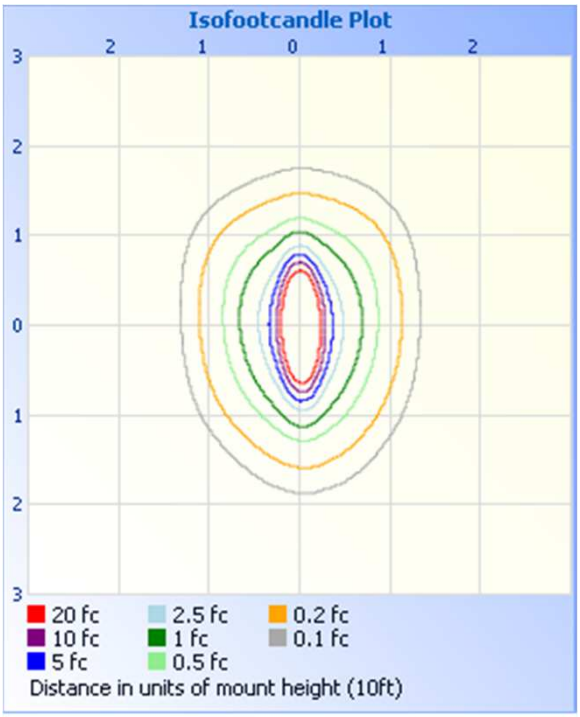
Isoillumination Plots

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	12710	3190	2074
55	4943	2091	1120
65	2867	1128	372
75	884	0	0
85	0	0	0

RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	3848.5	87.0
0-40	4174.5	94.4
0-60	4383.8	99.1
0-90	4422.4	100.0
60-90	38.6	0.9
70-100	5.4	0.1
90-120	0.0	0.0
90-180	0.0	0.0
0-180	4422.4	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1439.8	32.6
10-20	1580.5	35.7
20-30	828.1	18.7
30-40	326.0	7.4
40-50	137.0	3.1
50-60	72.4	1.6
60-70	33.1	0.7
70-80	5.4	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	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	1.15	1.12	1.10	1.08	1.12	1.10	1.08	.96	1.06	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96
2	1.10	1.06	1.03	1.00	1.08	1.05	1.02	.92	1.01	.99	.97	.98	.97	.95	.96	.94	.93	.91
3	1.06	1.01	.97	.94	1.04	1.00	.96	.88	.97	.94	.92	.95	.92	.90	.93	.91	.89	.87
4	1.02	.96	.92	.88	1.01	.95	.91	.85	.93	.90	.87	.91	.88	.86	.90	.87	.85	.84
5	.99	.92	.88	.84	.97	.91	.87	.81	.90	.86	.83	.88	.85	.82	.87	.84	.82	.80
6	.95	.88	.84	.80	.94	.88	.83	.78	.86	.82	.80	.85	.82	.79	.84	.81	.79	.77
7	.92	.85	.80	.77	.91	.84	.80	.76	.83	.79	.77	.82	.79	.76	.81	.78	.76	.75
8	.89	.82	.77	.74	.88	.82	.77	.73	.81	.77	.74	.80	.76	.74	.79	.76	.73	.72
9	.87	.79	.75	.72	.86	.79	.74	.71	.78	.74	.71	.77	.74	.71	.76	.73	.71	.70
10	.84	.77	.72	.69	.83	.76	.72	.69	.76	.72	.69	.75	.71	.69	.74	.71	.69	.68

Flood Summary

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	81.2%	3,591.4	24.3	69.3
Beam (50%):	41.9%	1,854.1	12	40.9
Total:	100.7%	4,453.5		

RESULTS:

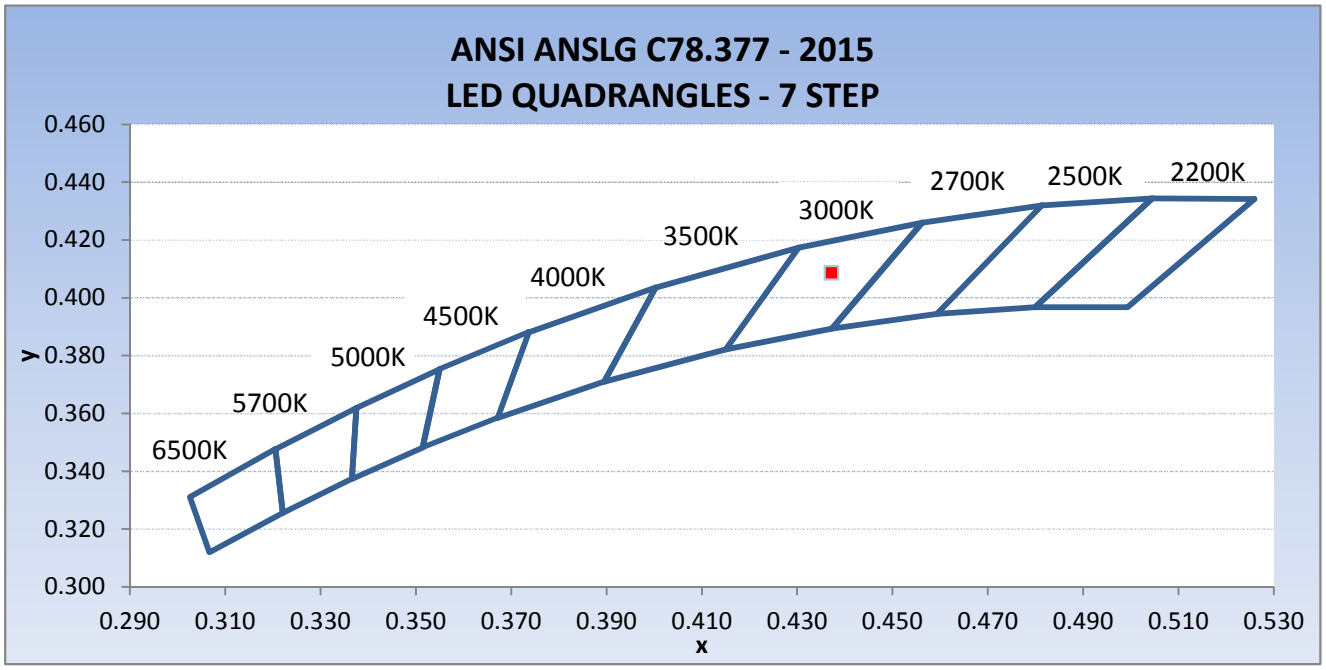
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method

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 ( )
4574.3	47.5	3031	81.6	6.1	0.002

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.437	0.409	0.249	0.523

ANSI C78.377 SSL Chromaticity (2015 Version)

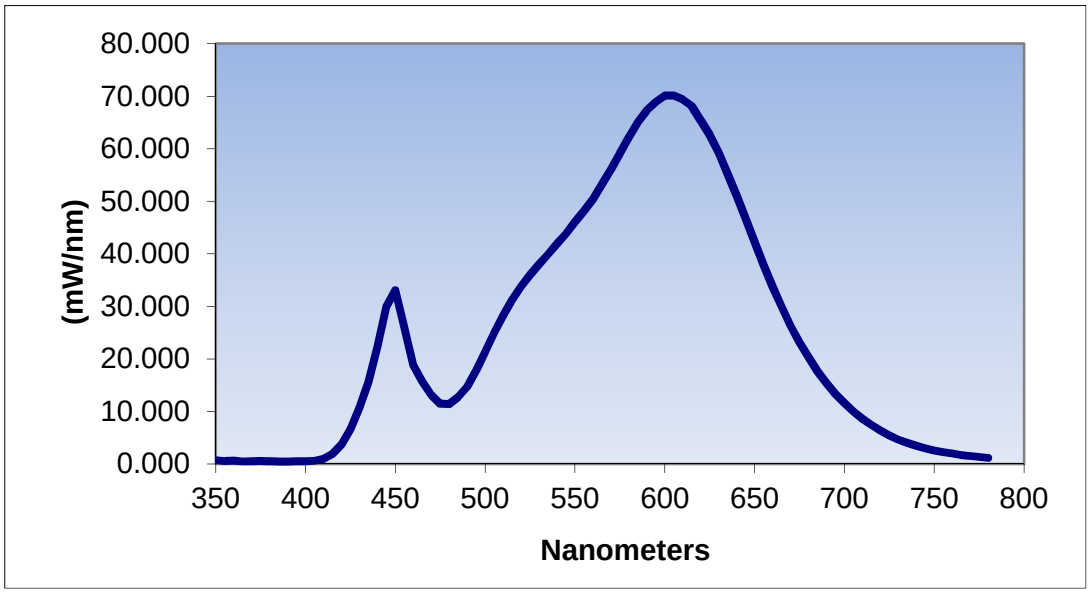


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.724	460	18.807	570	56.107	680	20.334
355	0.582	465	15.709	575	59.164	685	17.660
360	0.601	470	13.170	580	62.169	690	15.400
365	0.506	475	11.459	585	65.025	695	13.366
370	0.520	480	11.399	590	67.275	700	11.562
375	0.535	485	12.735	595	68.880	705	10.025
380	0.512	490	14.758	600	70.104	710	8.607
385	0.459	495	17.836	605	70.101	715	7.460
390	0.453	500	21.356	610	69.365	720	6.357
395	0.491	505	24.971	615	68.127	725	5.433
400	0.473	510	28.288	620	65.436	730	4.648
405	0.618	515	31.262	625	62.686	735	4.022
410	0.979	520	33.790	630	59.213	740	3.463
415	1.918	525	36.004	635	55.135	745	3.009
420	3.733	530	37.984	640	51.013	750	2.592
425	6.626	535	39.892	645	46.648	755	2.279
430	10.676	540	41.925	650	42.182	760	1.992
435	15.625	545	43.806	655	37.845	765	1.738
440	22.286	550	46.054	660	33.772	770	1.521
445	29.997	555	48.139	665	29.985	775	1.334
450	33.073	560	50.455	670	26.334	780	1.174
455	26.036	565	53.212	675	23.161		

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, 10x40 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 3000K, 10x40 Degree Beam Diffuser, All LEDs On