



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-038

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 3000K, 5DEG DIFFUSER.
SAMPLE #4

MODEL NO. EW REACHELITE POWERCORE, 100W, 3000K, 5 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

Note: Gonio testing was conducted on a Type A Goniometer and not tested to LM-79 requirements.

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number eW ReachElite Powercore, 100W, 3000K, 5 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 23, 2017 through June 27, 2017.

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SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 3000K, 5 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 3000K, 5deg Diffuser.
Sample #4

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	4853.8	5056.2
Total Power (W)	96.40	97.86
Lumen Efficacy (Lm/W)	50.4	51.7
Power Factor ()	0.987	0.990
Current ATHD (%)	13.22	
Correlated Color Temp. (CCT-K)	3022	
Color Rendering Index (CRI - Ra)	81.5	
CRI - R9	6.3	
DUV ()	0.002	
Chromaticity Coordinate (x)	0.438	
Chromaticity Coordinate (y)	0.409	
Chromaticity Coordinate (u')	0.249	
Chromaticity Coordinate (v')	0.524	

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
Goniometer	O109	snt 10	10/3/2017	10/3/2018
25M Photometer	sms 10	O115	10/24/2017	10/24/2018
Hygro-Thermometer	445715	T1555	5/16/2017	5/16/2018
Level	No 98	L142	7/20/2016	7/20/2017
Power Analyzer	WT230	U094	4/25/2017	4/25/2018
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 Type A 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, but this Type A method is not approved per LM-79. 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

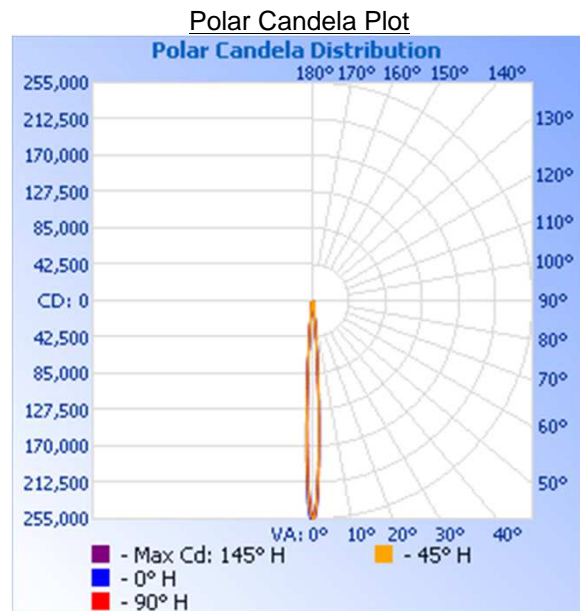
Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1706201113-001	Base Up	120.07	823.8	97.86	0.990	5056.2	51.7

Maximum Cd: 254,960.0 at Horizontal: 145°, Vertical: 0.3°

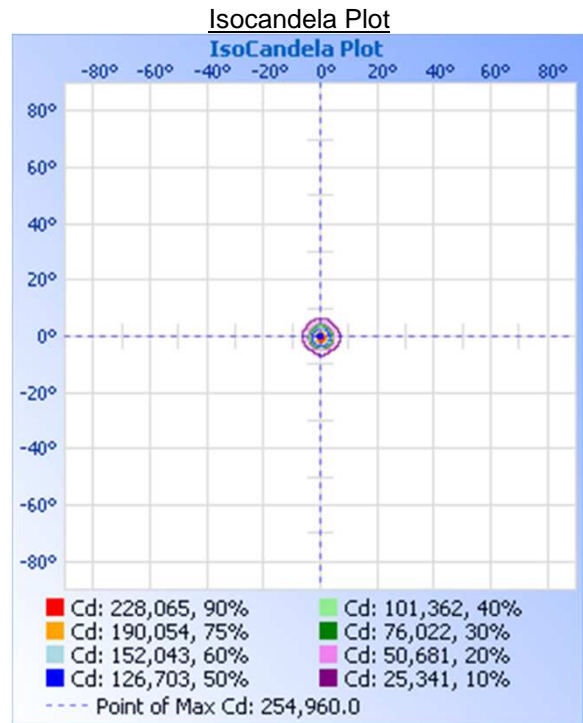
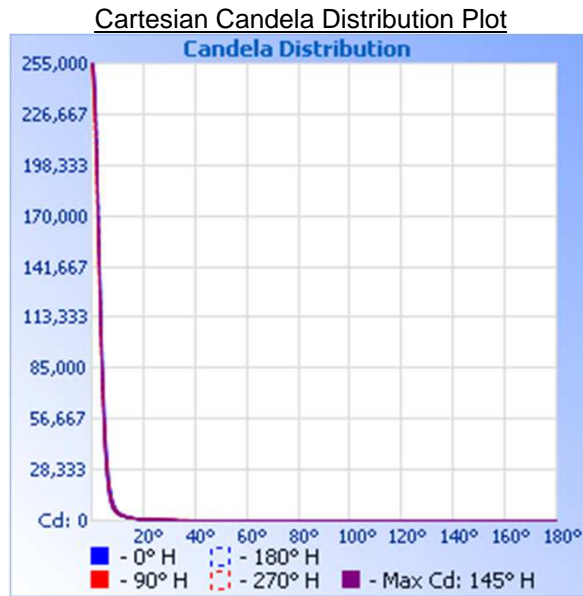
Luminous Opening: (L: 18.5", W: 4.75")

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	30	45	65	90
0	253405	253405	253405	253405	253405
5	55981	56137	54128	51723	48242
10	5286	5234	5050	4811	4418
15	1795	1760	1720	1701	1653
20	817	800	796	809	812
25	501	488	494	520	525
30	343	328	343	385	390
35	244	229	245	292	300
40	182	173	185	233	253
45	144	137	150	177	186
50	115	106	119	144	150
55	91	78	88	118	123
60	67	57	63	83	82
65	46	39	41	51	52
70	29	25	26	30	30
75	17	15	15	16	15
80	8	7	7	7	6
85	3	3	2	2	0
90	0	0	0	0	0



RESULTS:



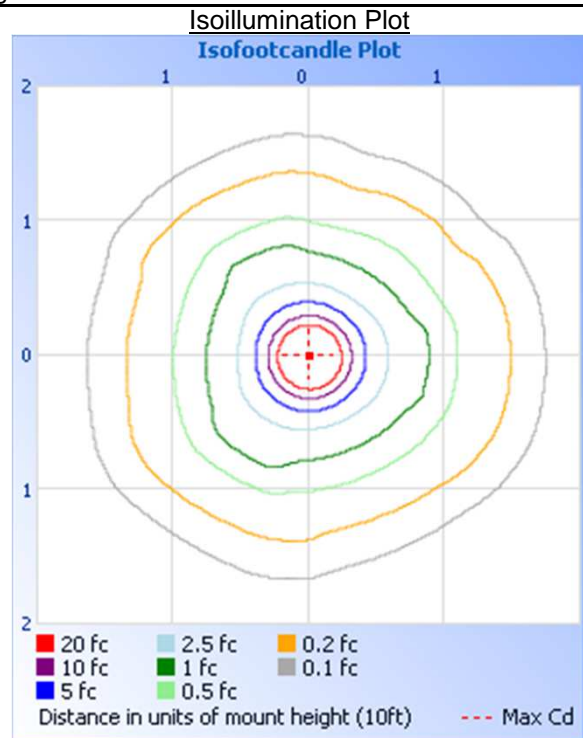
Isoillumination Plots

Mounting Height: 10ft

Illuminance - Cone of Light
Illuminance at a Distance

	Center Beam fc	Beam Width
1.7ft	87,683 fc	0.2 ft 0.2 ft
3.3ft	23,270 fc	0.4 ft 0.4 ft
5.0ft	10,136 fc	0.6 ft 0.5 ft
6.7ft	5,645 fc	0.8 ft 0.7 ft
8.3ft	3,678 fc	0.9 ft 0.9 ft
10.0ft	2,534 fc	1.1 ft 1.1 ft

Legend:
 - Vert. Spread: 6.5° (Blue)
 - Horiz. Spread: 6.1° (Red)



Luminance Data (cd/sq.m)

Angles In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	3581	3737	4635
55	2812	2714	3776
65	1918	1724	2149
75	1135	990	1045
85	580	481	85



RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4618.0	91.3
0-40	4781.5	94.6
0-60	4991.4	98.7
0-90	5056.2	100.0
60-90	64.8	1.3
70-100	19.7	0.4
90-120	0.0	0.0
90-180	0.0	0.0
0-180	5056.2	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	3893.2	77.0
10-20	491.9	9.7
20-30	232.9	4.6
30-40	163.5	3.2
40-50	123.9	2.5
50-60	86.0	1.7
60-70	45.1	0.9
70-80	16.8	0.3
80-90	2.9	0.1

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	1.06	1.06	1.06	1.06	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.00	1.00
1	1.16	1.14	1.12	1.11	1.13	1.12	1.10	.98	1.08	1.07	1.06	1.04	1.03	1.02	1.01	1.00	1.00	1.00	1.00	.98	.98	.98	.98	.98
2	1.13	1.10	1.07	1.05	1.11	1.08	1.06	.96	1.05	1.03	1.01	1.02	1.01	.99	.99	.98	.98	.98	.98	.97	.97	.97	.97	.97
3	1.10	1.06	1.03	1.01	1.08	1.05	1.02	.95	1.02	1.00	.98	1.00	.98	.97	.97	.98	.98	.97	.95	.94	.94	.94	.94	.94
4	1.08	1.03	1.00	.97	1.06	1.02	.99	.93	1.00	.98	.96	.98	.96	.95	.95	.97	.97	.95	.94	.93	.93	.93	.93	.93
5	1.05	1.01	.97	.95	1.04	1.00	.97	.92	.98	.96	.94	.97	.95	.93	.93	.96	.96	.94	.92	.91	.91	.91	.91	.91
6	1.04	.99	.95	.93	1.03	.98	.95	.91	.97	.94	.92	.96	.93	.92	.92	.95	.95	.93	.91	.90	.90	.90	.90	.90
7	1.02	.97	.94	.92	1.01	.96	.93	.90	.95	.93	.91	.95	.92	.90	.90	.94	.94	.92	.90	.89	.89	.89	.89	.89
8	1.00	.96	.92	.90	1.00	.95	.92	.89	.94	.92	.90	.93	.91	.89	.89	.93	.91	.89	.88	.88	.88	.88	.88	.88
9	.99	.94	.91	.89	.98	.94	.91	.88	.93	.91	.89	.93	.90	.89	.89	.92	.90	.88	.88	.88	.88	.88	.88	.88
10	.98	.93	.90	.88	.97	.93	.90	.88	.92	.90	.88	.92	.89	.88	.88	.91	.89	.88	.88	.87	.87	.87	.87	.87

Flood Summary

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	66.2%	3,347.7	13	13.2
Beam (50%):	32.9%	1,663.4	6.1	6.5
Total:	101.9%	5,153.4		



RESULTS:

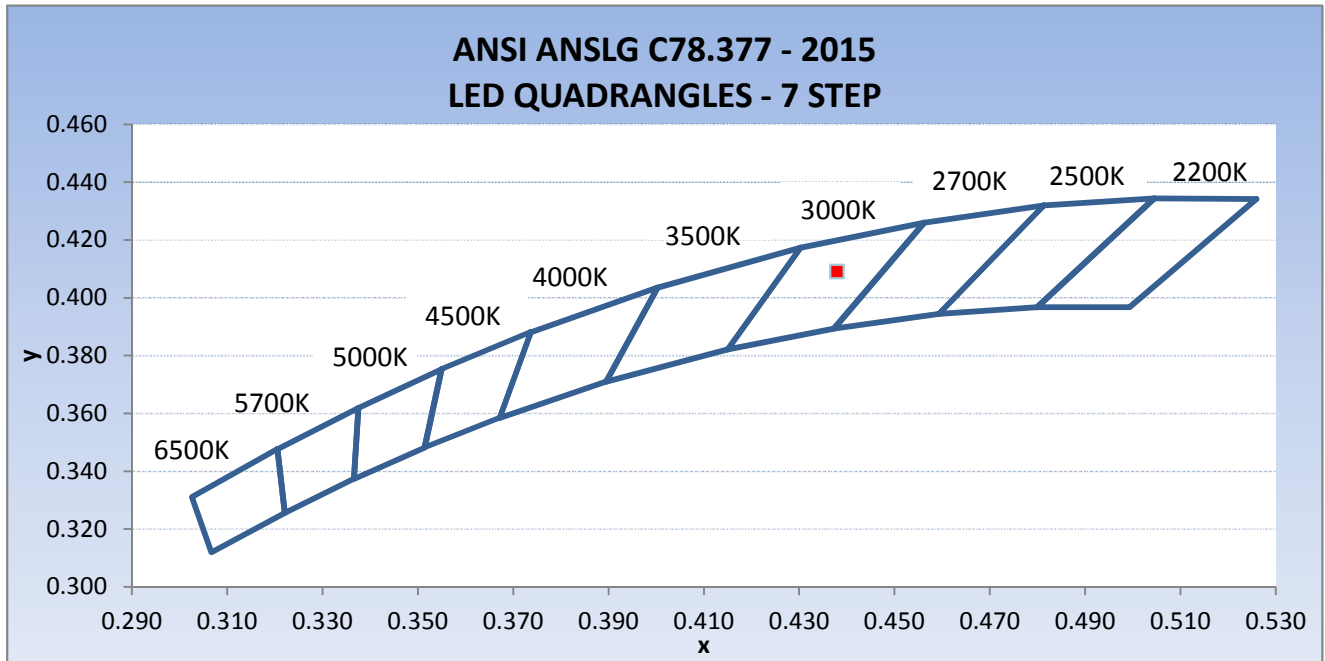
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Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Current ATHD (%)
CRT1706201113-001	Base Up	120.01	813.7	96.40	0.987	13.22

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ()
4853.8	50.4	3022	81.5	6.3	0.002

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.438	0.409	0.249	0.524

ANSI C78.377 SSL Chromaticity (2015 Version)



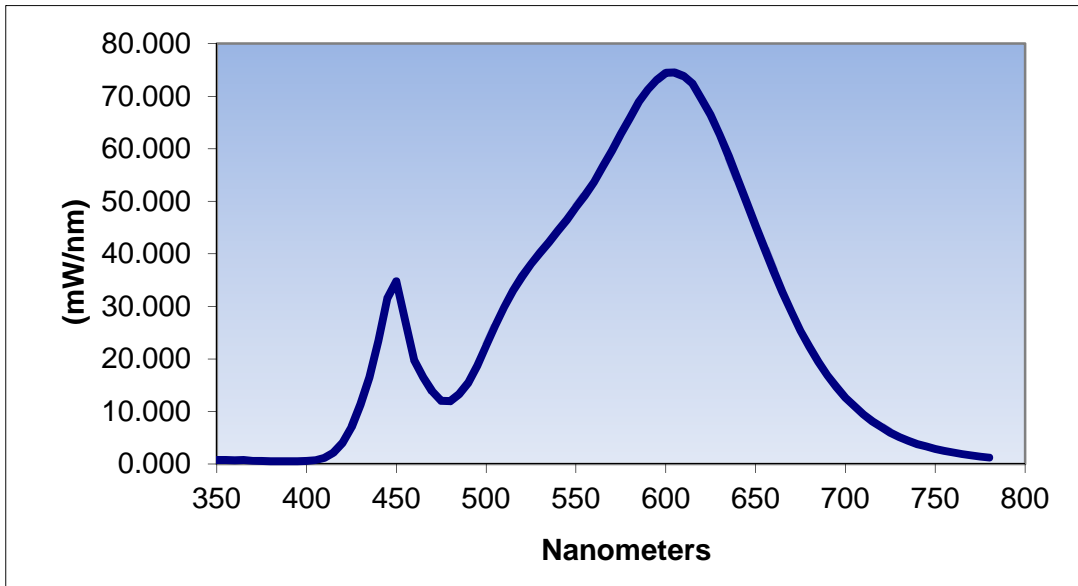


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.731	460	19.755	570	59.642	680	22.305
355	0.725	465	16.498	575	62.868	685	19.440
360	0.691	470	13.811	580	65.821	690	16.905
365	0.754	475	11.993	585	68.958	695	14.658
370	0.629	480	11.950	590	71.260	700	12.645
375	0.576	485	13.310	595	73.097	705	11.005
380	0.499	490	15.490	600	74.421	710	9.446
385	0.484	495	18.725	605	74.507	715	8.131
390	0.483	500	22.545	610	73.788	720	7.034
395	0.471	505	26.343	615	72.377	725	5.998
400	0.569	510	29.820	620	69.440	730	5.144
405	0.718	515	33.024	625	66.467	735	4.414
410	1.166	520	35.714	630	62.633	740	3.806
415	2.121	525	38.064	635	58.499	745	3.336
420	4.034	530	40.206	640	54.083	750	2.871
425	7.013	535	42.235	645	49.710	755	2.487
430	11.320	540	44.422	650	45.258	760	2.176
435	16.512	545	46.494	655	41.007	765	1.884
440	23.428	550	48.831	660	36.750	770	1.631
445	31.539	555	51.100	665	32.729	775	1.424
450	34.805	560	53.686	670	28.917	780	1.252
455	27.221	565	56.694	675	25.372		

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:

Melanie Brittain
Associate Engineer
Lighting Division

Attachments:

Gonio IES File - eW ReachElite Powercore, 100W, 3000K, 5 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 3000K, 5 Degree Beam Diffuser, All LEDs On