



NVLAP Lab Code 500089-0

Report Number: RESTL-2013-0003
Model: BXCCAxD08-Ux7 or CPY250-A-xx-D-A-UL-xx-40K
Date: 8/29/2013

Cree Racine Engineering Services Testing Laboratory (RESTL) Photometric Testing and Evaluation Report

Prepared For:

Jeff Carlson

Cree, Inc

9201 Washington Avenue

Racine, WI 53406

Prepared By:

Cédric Duviols, Photometric Technician

Approved By:

Steven Bowers, Photometric Test Engineer

Product Information

Manufacturer	Cree, Inc.
Model Number (SKU)	BXCCAxD08-Ux7 or CPY250-A-xx-D-A-UL-xx-40K
Serial Number	N/A
LED Type	XTE AWT

Product Description

Surface mounted fixture. White square aluminum housing. Square prismatic drop lens installed in the center. White aluminum heat sinks on two sides of the fixture. 72 type XTE AWT LEDs on white square PCB. 4000K color temperature.

Driver Information (Where Applicable)

ADVANCE LEDINTA700C140F30

Aperture Size	Length	Width
7"	15"	15"

Sample

The following sample was submitted for evaluation





NVLAP Lab Code 500089-0

Key Photometric Data	Sphere Output	Goniophotometer	
Luminous Flux	8329	8179.7	lm
Efficacy	101.2	99.8	lm/W
Correlated Color Temperature (CCT)	3895	K	
Color Rendering Index (CRI)	74		
R ₉	-8		
Duv	-0.001238		
S/P Ratio*	1.49		

Electrical Measurements	Sphere		Goniophotometer		
	120V	277V	120V	277V	
Input Wattage	82.3	81.8	81.98	N/A	W
Input Current	0.689	0.314	0.687	N/A	A
Input Voltage	120.1	277	120.00	N/A	V
Power Factor	0.995	0.94	0.995	N/A	
Off-State Power	0	0	0	N/A	W
Total Harmonic Distortion (Voltage)	0.1	0.2	0.12	N/A	%
Total Harmonic Distortion (Amperage)	8.5	10.7	8.61	N/A	%

Note: All photometric measurements taken at 120VAC.

Luminous Intensity Distribution	Goniophotometer	
Max Candela	3515.5	Cd
Angle of Max Candela (Horizontal)	90	°
Angle of Max Candela (Vertical)	7.5	°

Key Test Parameters	Sphere Output	Goniophotometer	
Stabilization Time	63	62	min
Total Operating Time (Stabilization + Test)	67	82	min
Ambient Temperature	26	25.5	°C

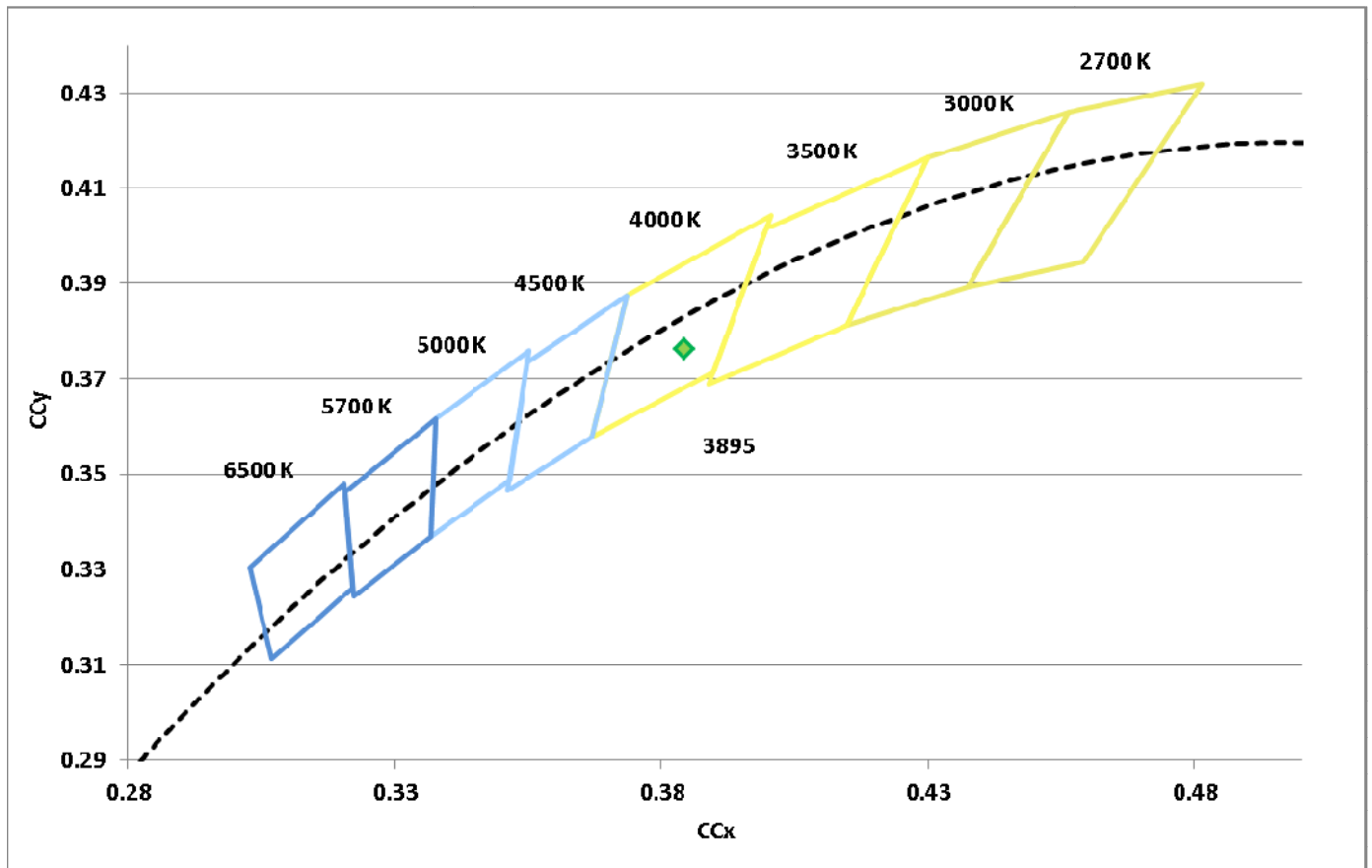
Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.3841	0.3764	0.2277	0.3346	0.2277	0.5020	-0.001238

Color Rendering Index Details

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
74	73	79	82	75	72	70	82	60	-8	49	71	46	74	90

Chromaticity Diagram



Spectral Distribution

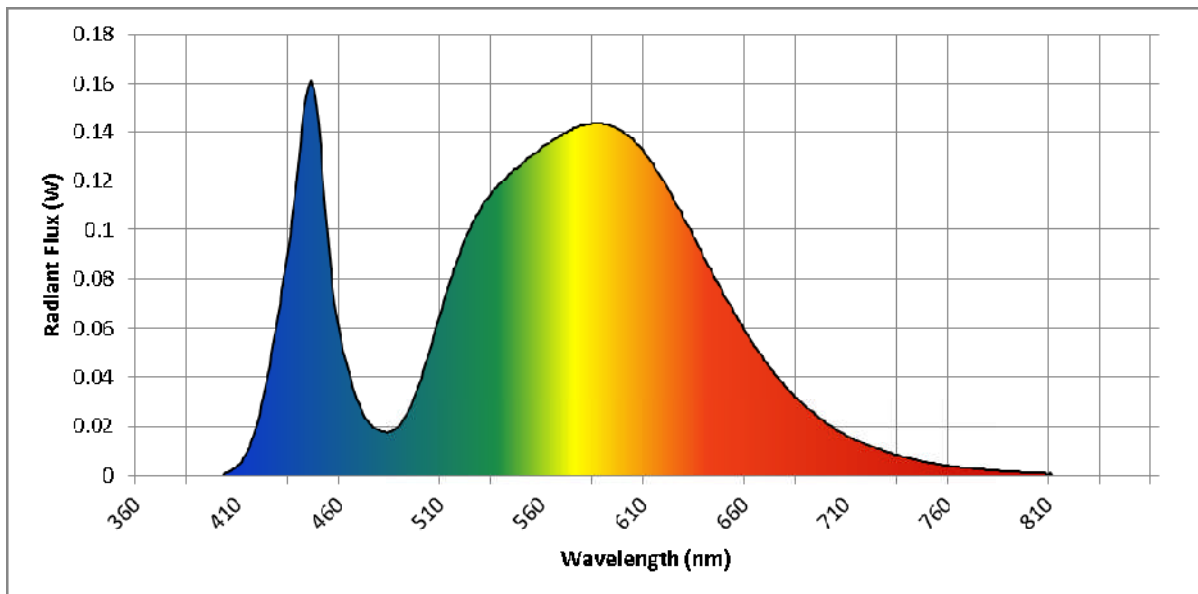
λ (nm)	W/nm
360	0.000555
370	0.000551
380	0.000332
390	0.000248
400	0.000242
410	0.003590
420	0.021159
430	0.064744
440	0.126550
450	0.143318
460	0.059541
470	0.028490
480	0.017990
490	0.020071
500	0.037463
510	0.065012
520	0.090660

λ (nm)	W/nm
530	0.108522
540	0.119164
550	0.126450
560	0.133327
570	0.138470
580	0.142664
590	0.143284
600	0.140193
610	0.132201
620	0.120035
630	0.105187
640	0.089276
650	0.073472
660	0.059536
670	0.046895
680	0.036627
690	0.028145

λ (nm)	W/nm
700	0.021454
710	0.016272
720	0.012303
730	0.009248
740	0.006856
750	0.005094
760	0.003810
770	0.002811
780	0.002086
790	0.001552
800	0.021454
810	0.016272
820	0.012303
830	0.009248
840	
840	
850	

Dominant Wavelength	580	nm
Peak Wavelength:	446	nm

Spectral Power Distribution (W/nm)



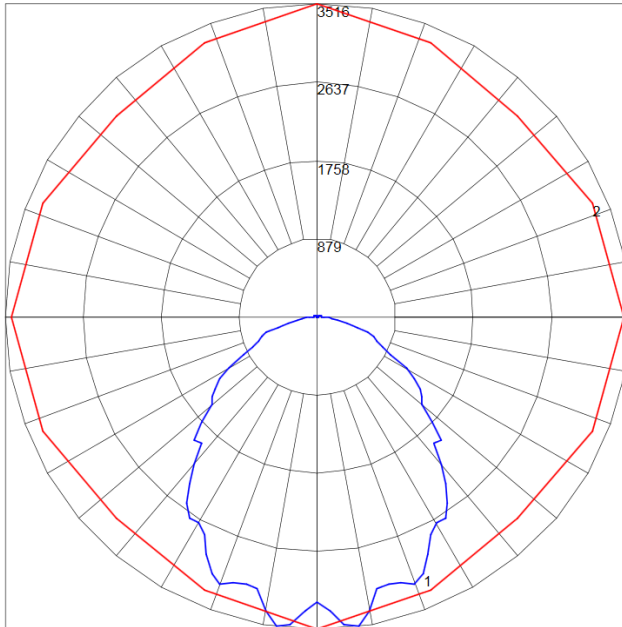


NVLAP Lab Code 500089-0

Zonal Lumen Summary

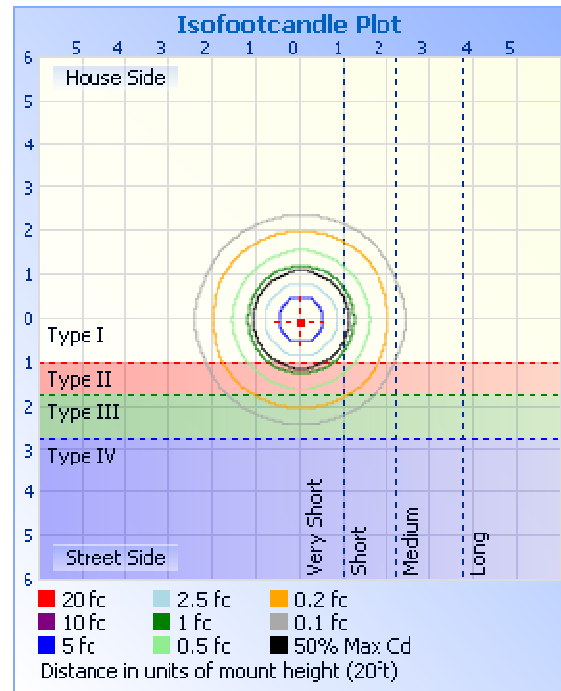
Zone	Lumens	% of Total	Zone	Lumens	% of Total
0-5	79.4	1.0%	90-95	19.9	0.2%
5-10	237.3	2.9%	95-100	8.6	0.1%
10-15	384.0	4.7%	100-105	4.3	0.1%
15-20	517.1	6.3%	105-110	1.6	0%
20-25	628.3	7.7%	110-115	0.2	0%
25-30	708.5	8.7%	115-120	0.0	0%
30-35	754.8	9.2%	120-125	0	0%
35-40	771.8	9.4%	125-130	0	0%
40-45	739.3	9.0%	130-135	0	0%
45-50	708.5	8.7%	135-140	0	0%
50-55	633.4	7.7%	140-145	0	0%
55-60	582.7	7.1%	145-150	0	0%
60-65	481.7	5.9%	150-155	0	0%
65-70	356.0	4.4%	155-160	0	0%
70-75	260.9	3.2%	160-165	0	0%
75-80	163.8	2.0%	165-170	0	0%
80-85	91.2	1.1%	170-175	0	0%
85-90	46.2	0.6%	175-180	0	0%
			Total	8179.7 lm	100%

Candela Plot

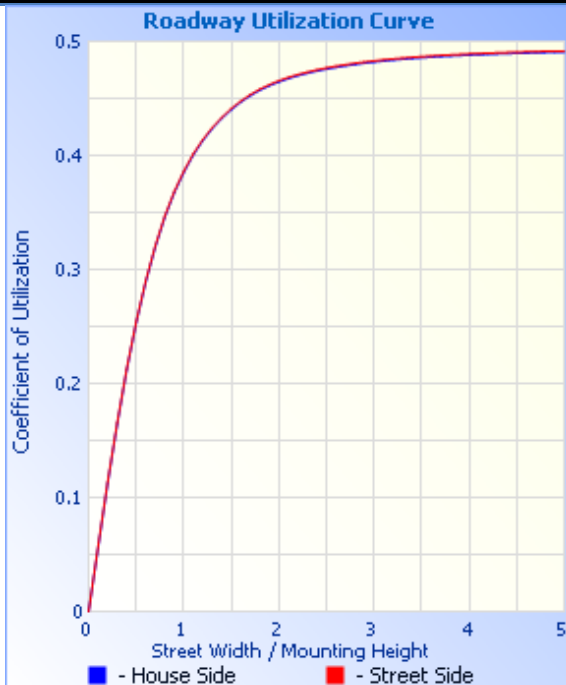


Maximum Candela = 3515.5 - Located At Horizontal Angle = 90, Vertical Angle = 7.5
 # 1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.)
 # 2 - Horizontal Cone Through Vertical Angle (7.5) (Through Max. Cd.)

Illuminance Plot

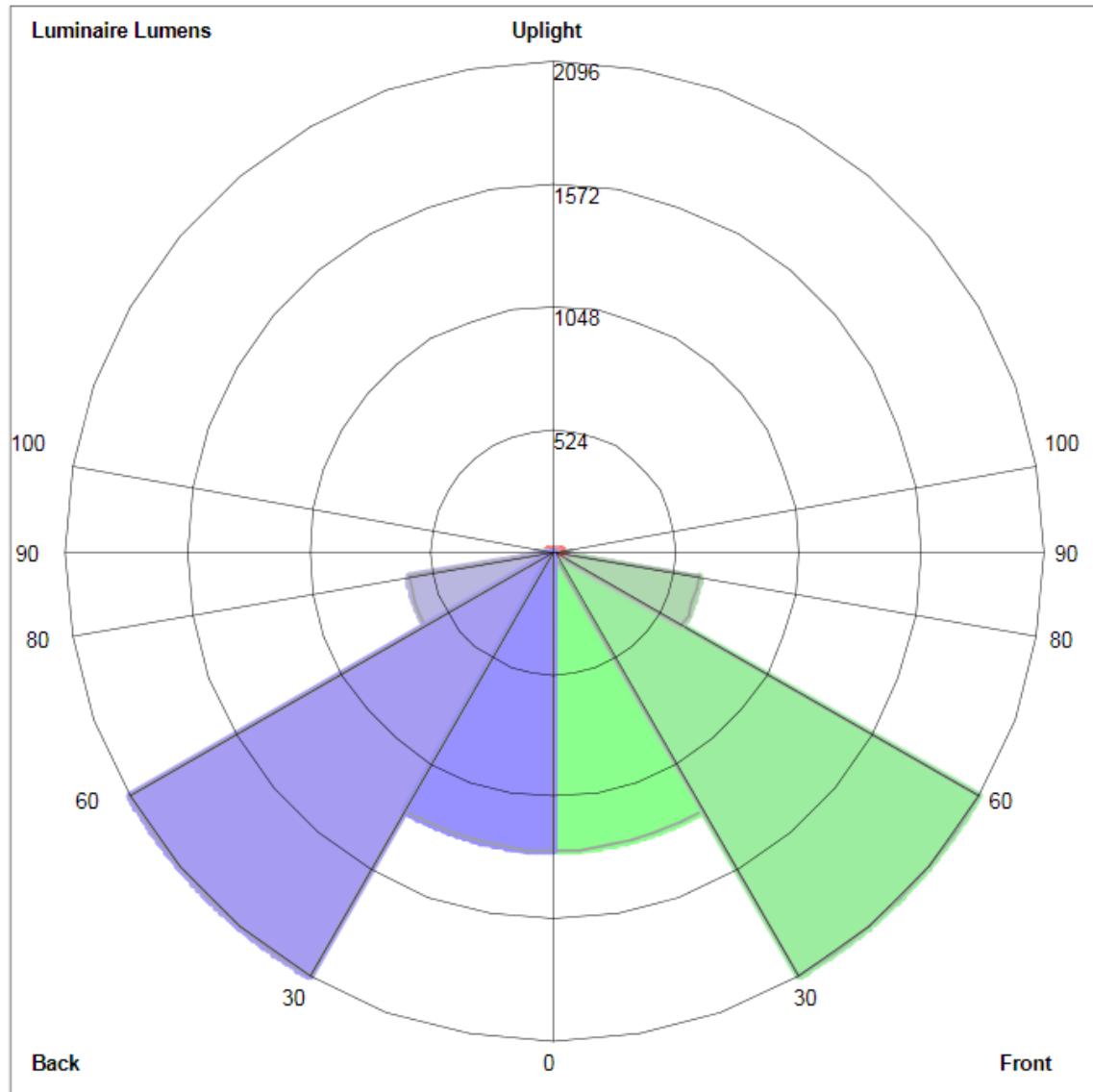


Roadway Utilization



Roadway Summary	Lumens	% Lamp
Cutoff Classification	CUTOFF	
Distribution	Type VS	
Downward Street Side	4,073.0	49.8%
Downward House Side	4,073.0	49.8%
Downward Total	8,146.1	99.6%
Upward Street Side	17.3	0.2%
Upward House Side	17.3	0.2%
Upward Total	34.6	0.4%
Total Lumens	8,180.6	100%

Luminaire Classification System



Luminaire Lumens:
 Front: Low=1277.7, Medium= 2096.0, High=631.4, Very High=68.7
 Back: Low=1277.7, Medium= 2096.0, High=631.4, Very High=68.7
 Uplight: Low=28.5, High=6.1

BUG Rating : B3-U2-G1



NVLAP Lab Code 500089-0

Candela Tabulations

	0	22.5	45	67.5	90
0	3215	3215	3215	3215	3215
2.5	3251	3251	3269	3305	3324
5	3465	3380	3287	3412	3480
7.5	3454	3356	3199	3339	3516
10	3292	3258	3112	3227	3359
12.5	3131	3296	3236	3304	3128
15	3036	3296	3249	3316	3111
17.5	3050	3165	3123	3160	3136
20	3165	3046	3006	3017	3200
22.5	3056	3042	2923	2978	3122
25	2896	2926	2905	2898	2956
27.5	2695	2858	2866	2805	2756
30	2587	2663	2738	2656	2674
32.5	2640	2547	2517	2500	2692
35	2523	2501	2406	2454	2556
37.5	2375	2385	2259	2311	2363
40	2150	2194	2051	2110	2173
42.5	1988	2025	2016	1965	1941
45	1984	1836	1926	1781	1967
47.5	1886	1748	1772	1764	1764
50	1558	1632	1594	1573	1540
52.5	1471	1475	1404	1406	1490
55	1418	1346	1336	1350	1417
57.5	1327	1250	1247	1265	1302
60	1128	1161	1114	1164	1156
62.5	942	1014	989	1025	934
65	832	821	885	832	812
67.5	694	677	706	670	727
70	627	584	550	588	673
72.5	542	487	432	518	603
75	407	389	357	420	464
77.5	285	283	301	314	337
80	212	211	220	227	231
82.5	162	162	167	168	168
85	121	120	120	121	123
87.5	81	81	82	82	82
90	50	53	54	55	55



NVLAP Lab Code 500089-0

Candela Tabulations (Continued)

	0	22.5	45	67.5	90
92.5	27	29	34	42	44
95	11	11	21	33	38
97.5	1	0	13	28	36
100	0	0	8	22	30
102.5	0	0	3	16	24
105	0	0	0	12	17
107.5	0	0	0	6	11
110	0	0	0	1	6
112.5	0	0	0	0	3
115	0	0	0	0	1
117.5	0	0	0	0	0
120	0	0	0	0	0
122.5	0	0	0	0	0
125	0	0	0	0	0
127.5	0	0	0	0	0
130	0	0	0	0	0
132.5	0	0	0	0	0
135	0	0	0	0	0
137.5	0	0	0	0	0
140	0	0	0	0	0
142.5	0	0	0	0	0
145	0	0	0	0	0
147.5	0	0	0	0	0
150	0	0	0	0	0
152.5	0	0	0	0	0
155	0	0	0	0	0
157.5	0	0	0	0	0
160	0	0	0	0	0
162.5	0	0	0	0	0
165	0	0	0	0	0
167.5	0	0	0	0	0
170	0	0	0	0	0
172.5	0	0	0	0	0
175	0	0	0	0	0
177.5	0	0	0	0	0
180	0	0	0	0	0



NVLAP Lab Code 500089-0

Integrating Sphere Equipment List

Description	Manufacturer	Model	Serial Number
2M Sphere	Everfine	2M	1004156T
CCD Array Spectrometer	Gooch & Housego	OL 770VIS	10413180
Programmable AC Source	Adaptive	FC200	2280220
Power Analyzer	Chroma	66202	66202 0005018

Goniophotometer Equipment List

Description	Manufacturer	Model	Serial Number
AC Power Source	Elgar	CW1251P	1248A02602
Type C Goniophotometer	LSI / UL	6440T	6440PN2028
Spectroradiometer	Gooch & Housego	770VIS/NIR	12415189
Power Meter	Yokogawa	WT210	91M945458

Test Methods Used:

Title	Description
ANSI C82.77:2002	Harmonic Emission Limits- Related Power Quality Reqt's for Lighting Equipment
CIE Pub. 13.3:1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. 15:2004	Colorimetry
IES LM-58:1994	Spectroradiometric Measurements
IES LM-65:2001	Single-Ended Compact Fluorescent Lamps – Life Test Performance
IES LM-79:2008	Electrical and Photometric Measurements of Solid-State Lighting Products

Reference Standard Used:

Equipment	Description
2m Sphere	Tungsten Halogen Omni-Directional 75W Calibration Lamp, Serial Number F119
Type C Goniophotometer and Spectrometer	Tungsten Halogen Omni-Directional 500W Calibration Lamp, Serial Numbers 13C069, 13C070, 13C071. For color calibration of spectrometer, 13C074.



NVLAP Lab Code 500089-0

Disclaimers:

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

The results contained in this report pertain only to the tested sample.

This report shall not be reproduced, except in full, without written approval of the RESTL.

Items marked with an asterisk are not covered by the NVLAP accreditation.

In the event that the recorded temperature is outside of $25 \pm 1^\circ\text{C}$, this is considered a non-standard condition.

Some areas of this report may not explicitly call out the equipment used to produce the data. The following list identifies the equipment and associated data tables or figures that may appear in this report but are not clearly identified.

Integrating Sphere: Chromaticity Coordinates, Color Rendering Index Details, Chromaticity Diagram, Spectral Power Distribution, Dominant Wavelength and Peak Wavelength.

Goniophotometer: Zonal Lumen Summary, Candela Plot, Isofootcandle Plot, Roadway Utilization Plot, Roadway Summary, Luminaire Classification System, and Candela Tabulations.

In the event that testing is subcontracted out to an external laboratory, the associated information that appears in the equipment list and report items associated with that equipment are the actual equipment used, and test results produced, by that laboratory.

Additional Comments: