

Report of Test

LLIA002447-001

Indoor Distribution Radiometry Test Report

Catalog Number: Nukit Lantern

Portable, formed black housing, formed black plastic reflector holder with mini fan attached, specular aluminum reflector behind lamp, clear enclosure.

One cylindrical excimer lamp

One potted excimer driver and one DZS1203000 12V Power supply



Prepared For:

Machinery Enchantress, LLC

5830 E 2nd Street

Suite 7000

Casper, WY 82609, USA

Performance Summary

Input Voltage	120.0 Vac	Radiant Power	19.6 mW _{UV-C}
Input Current	0.1793 A	Radiant Efficiency	0.23% W _{UV-C} /W _{elec}
Input Power	8.54 W	Downward Flux	19.6 mW _{UV-C}
Frequency	60.00 Hz	Upward	0.0 mW _{UV-C}
Power Factor	0.397		
Current THD	209.0 %		

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 07/22/2024

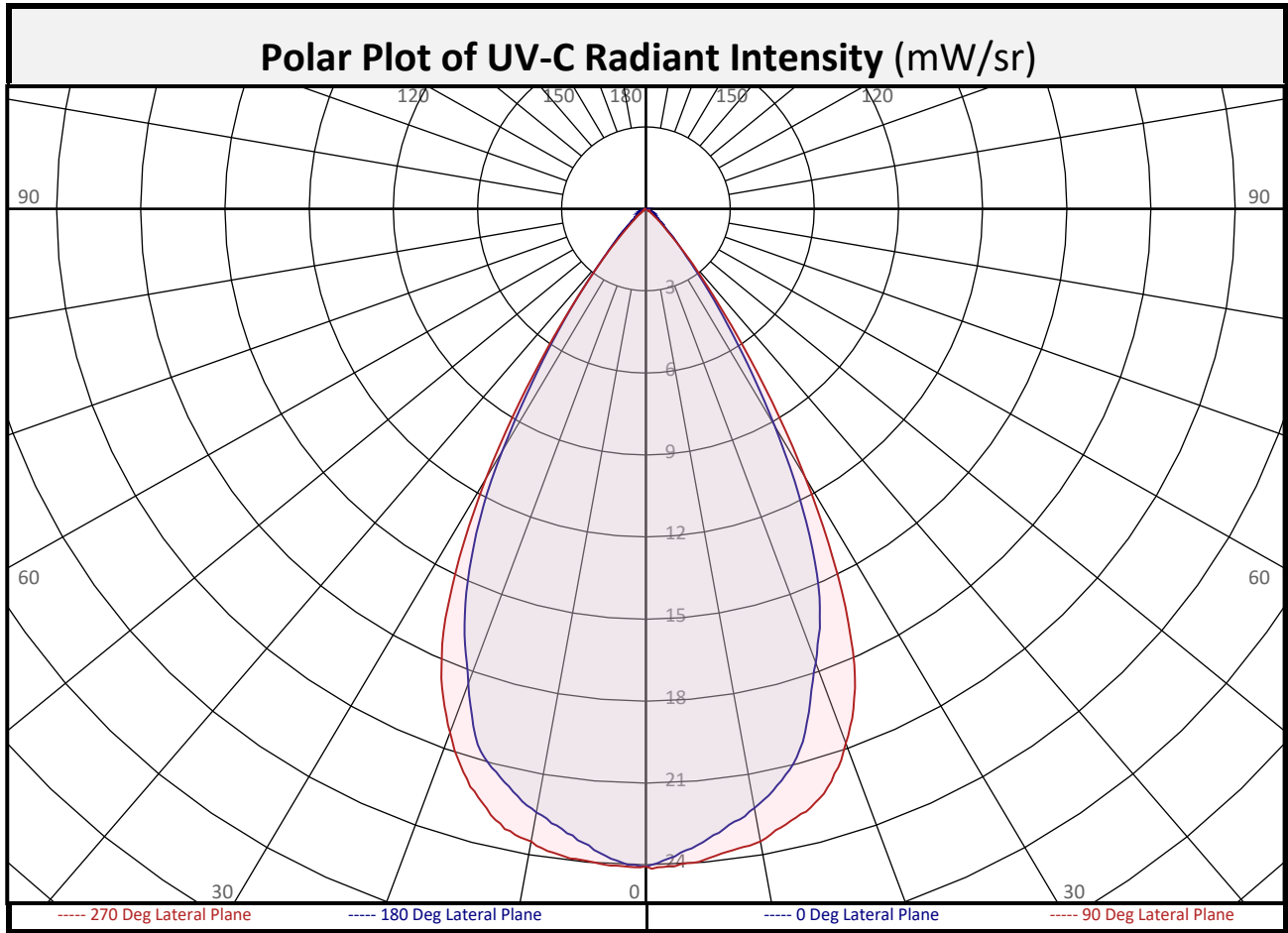
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Signed: _____



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Zonal Flux Summary										
Zone (Deg Vert)	Radiant Power (mW _{UV-C})	Percent of Total		Zone (Deg Vert)	Radiant Power (mW _{UV-C})	Percent of Total		Zone (Deg Vert)	Radiant Power (mW _{UV-C})	Percent of Total
0-10	2.2	11.3%		90-100	0.0	0.0%		0-20	8.2	41.9%
10-20	6.0	30.6%		100-110	0.0	0.0%		0-30	15.2	77.4%
20-30	7.0	35.4%		110-120	0.0	0.0%		0-40	18.6	94.5%
30-40	3.4	17.2%		120-130	0.0	0.0%		0-60	19.5	99.5%
40-50	0.8	3.9%		130-140	0.0	0.0%		0-80	19.6	100.0%
50-60	0.2	1.0%		140-150	0.0	0.0%		10-90	17.4	88.7%
60-70	0.1	0.4%		150-160	0.0	0.0%		20-50	11.1	56.5%
70-80	0.0	0.1%		160-170	0.0	0.0%		40-90	1.1	5.5%
80-90	0.0	0.0%		170-180	0.0	0.0%		60-90	0.1	0.5%
0-90	19.6	100.0%		90-180	0.0	0.0%		0-180	19.6	100.0%



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UV-C Radiant Intensity (mW/sr) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	0	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	2.5	23.7	23.7	23.7	24.0	24.1	23.9	24.0	23.7	23.9
	5	23.3	23.1	23.2	23.7	23.9	23.7	23.6	23.2	23.4
	7.5	22.7	22.7	22.8	23.2	23.7	23.3	23.3	22.8	22.9
	10	22.3	22.2	22.5	22.9	23.5	23.0	22.7	22.2	22.4
	12.5	21.6	21.5	22.1	22.6	23.1	22.5	22.1	21.6	21.9
	15	20.8	20.8	21.3	21.9	22.7	22.0	21.5	21.0	21.2
	17.5	19.3	19.7	20.5	21.1	22.0	21.3	20.9	20.3	20.2
	20	17.7	18.0	19.4	20.1	20.8	20.1	19.9	18.7	18.5
	22.5	16.2	16.2	17.8	18.6	19.4	18.6	18.3	17.0	16.9
	25	14.2	14.2	15.2	16.4	17.2	16.4	16.0	14.9	15.0
	27.5	11.8	11.7	12.3	13.7	14.4	13.6	12.9	12.4	12.8
	30	9.2	9.1	9.4	10.6	11.3	10.6	10.0	9.9	10.2
	32.5	6.8	6.7	6.8	7.7	8.3	7.7	7.2	7.4	7.6
	35	4.8	4.7	4.6	5.2	5.7	5.3	5.1	5.3	5.4
	37.5	3.3	3.1	3.1	3.3	3.7	3.3	3.4	3.5	3.7
	40	2.1	2.0	1.9	2.1	2.4	2.0	2.2	2.2	2.4
	42.5	1.5	1.3	1.2	1.3	1.3	1.2	1.5	1.3	1.6
	45	1.0	0.9	0.8	0.6	0.8	0.5	1.0	0.9	1.2
	47.5	0.8	0.6	0.4	0.4	0.5	0.4	0.6	0.5	0.8
50	0.6	0.4	0.4	0.3	0.3	0.2	0.5	0.5	0.5	
52.5	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.4	
55	0.4	0.3	0.2	0.1	0.1	0.1	0.3	0.2	0.3	
57.5	0.3	0.2	0.2	0.0	0.0	0.0	0.2	0.1	0.3	
60	0.3	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.3	
62.5	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.3	
65	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	
67.5	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.3	
70	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	
72.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	
75	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	
77.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
82.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
87.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

North America (issuing laboratory)

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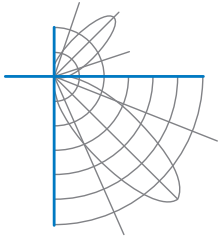
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UV-C Radiant Intensity (mW/sr) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	92.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	97.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	102.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	107.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	112.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	117.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	122.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	127.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	132.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	137.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	142.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	147.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	152.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	157.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	162.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
167.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
172.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
177.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.



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UV-C Radiant Intensity (mW/sr) Table

		Lateral (C-Plane) Angles								
		180	202.5	225	247.5	270	292.5	315	337.5	0
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	0	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	2.5	23.9	24.0	23.9	24.1	24.1	23.9	23.9	23.9	23.7
	5	23.4	23.5	23.7	24.0	24.0	23.6	23.5	23.3	23.3
	7.5	22.9	23.2	23.2	23.7	23.8	23.3	23.1	23.1	22.7
	10	22.4	22.5	22.7	23.3	23.5	23.0	22.7	22.4	22.3
	12.5	21.9	22.0	22.2	22.8	23.3	22.5	22.2	21.7	21.6
	15	21.2	21.5	21.6	22.2	22.5	21.8	21.4	21.0	20.8
	17.5	20.2	20.7	20.8	21.2	21.6	21.0	20.5	19.7	19.3
	20	18.5	19.1	19.9	20.0	20.4	19.8	19.4	18.1	17.7
	22.5	16.9	17.4	18.4	18.5	19.0	18.2	17.6	16.6	16.2
	25	15.0	15.4	16.1	16.5	17.1	16.1	15.1	14.5	14.2
	27.5	12.8	13.0	13.2	13.9	14.4	13.4	12.4	12.1	11.8
	30	10.2	10.3	10.1	11.0	11.4	10.5	9.6	9.5	9.2
	32.5	7.6	7.8	7.5	8.1	8.4	7.7	6.9	7.1	6.8
	35	5.4	5.6	5.2	5.6	5.7	5.2	4.9	5.0	4.8
	37.5	3.7	3.9	3.4	3.8	3.7	3.2	3.3	3.5	3.3
	40	2.4	2.5	2.2	2.3	2.3	1.8	2.3	2.3	2.1
	42.5	1.6	1.7	1.4	1.5	1.3	1.1	1.4	1.5	1.5
	45	1.2	1.2	0.8	0.9	0.8	0.7	0.8	1.1	1.0
	47.5	0.8	0.7	0.6	0.5	0.4	0.3	0.5	0.8	0.8
50	0.5	0.5	0.4	0.4	0.3	0.2	0.4	0.7	0.6	
52.5	0.4	0.4	0.2	0.3	0.1	0.1	0.3	0.5	0.4	
55	0.3	0.4	0.2	0.1	0.0	0.0	0.3	0.4	0.4	
57.5	0.3	0.4	0.2	0.0	0.0	0.0	0.2	0.3	0.3	
60	0.3	0.3	0.1	0.0	0.0	0.1	0.2	0.3	0.3	
62.5	0.3	0.3	0.1	0.0	0.0	0.0	0.2	0.2	0.3	
65	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.3	
67.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	
70	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	
72.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
75	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
77.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
82.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
87.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

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		180	202.5	225	247.5	270	292.5	315	337.5	0
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	92.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	97.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	102.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	107.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	112.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	117.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	122.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	127.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	132.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	137.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	142.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	147.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
152.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
157.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
162.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
167.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
172.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
177.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.

North America (issuing laboratory)

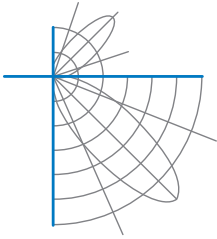
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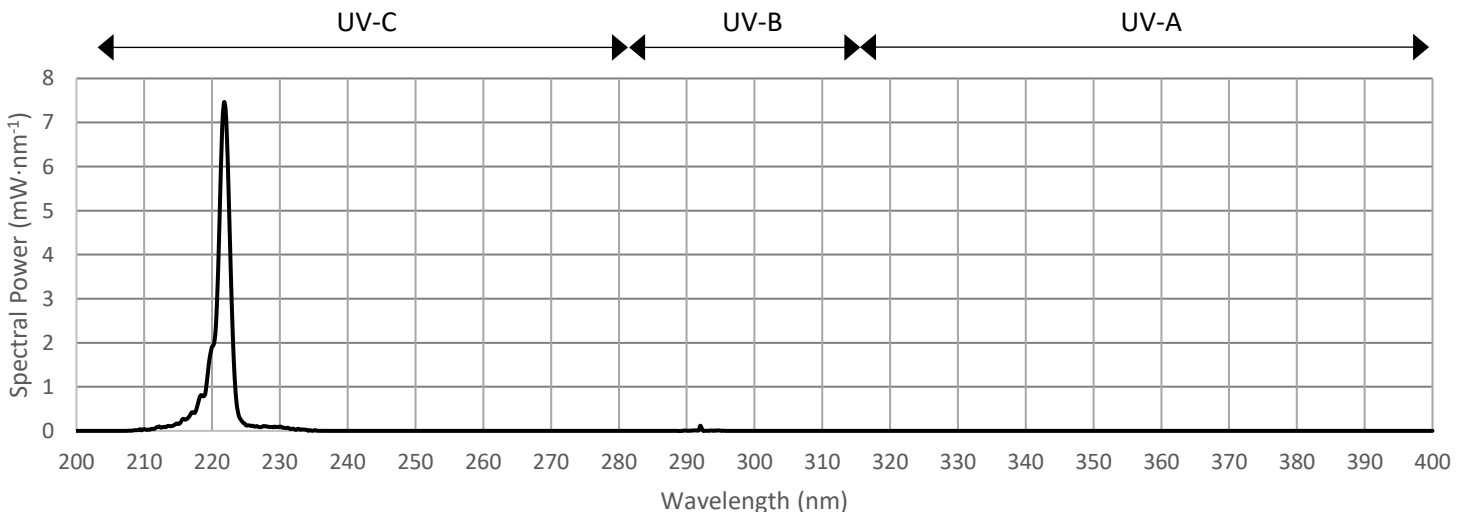


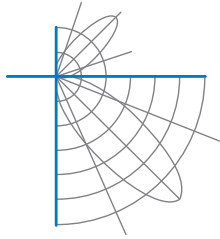
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Spectral Radiant Flux Summary

Radiant Flux Tabulation			
Waveband (nm)	Radiant Flux (mW _r)	Percent of Total	Radiant Efficiency (W _r /W _e)
UV-C 200-250	19.6	99.7%	0.23%
UV-C 200-280	19.6	99.7%	0.23%
UV-B 280-315	0.1	0.3%	0.00%
UV-A 315-400	0.0	0.0%	0.00%
Total UV 200-400	19.7	100.0%	0.23%





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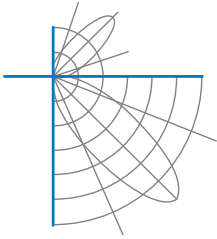
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																					
Effective Floor Cavity Reflectance 0.20																					
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	0	
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	111	106	106	106	106	102	102	102	102	100
1	114	111	109	106	111	109	107	105	105	103	102	102	101	100	99	99	98	97	96	96	94
2	108	104	100	96	106	102	98	95	99	96	93	93	96	93	91	91	93	91	89	89	88
3	103	97	92	88	101	96	91	88	93	89	86	86	91	87	85	85	88	86	84	84	82
4	98	91	86	82	96	90	85	81	88	83	80	80	86	82	79	79	84	81	78	78	77
5	93	85	80	76	92	84	79	75	83	78	75	75	81	77	74	74	80	76	73	73	72
6	89	80	75	71	88	80	74	70	78	73	70	70	77	73	69	69	75	72	69	69	68
7	85	76	70	66	84	75	70	66	74	69	66	66	73	68	65	65	72	68	65	65	63
8	81	72	66	62	80	71	66	62	70	65	62	62	69	65	61	61	68	64	61	61	60
9	77	68	62	58	76	67	62	58	67	62	58	58	66	61	58	58	65	61	58	58	56
10	74	64	59	55	73	64	59	55	63	58	55	55	62	58	55	55	62	58	55	55	53

For absolute test reports, RUs are expressed as a percentage of total radiant flux output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Irradiance Plot				
Height(m)	Irradiance at Nadir ($\mu\text{W}_{\text{UV-C}}\text{-cm}^{-2}$)	Ground-level distance to half-of-nadir irradiance (m)		
		0-180 deg	90-270 deg	
0.50	9.6	0.44	0.48	
0.75	4.3	0.66	0.72	
1.00	2.4	0.88	0.96	
1.25	1.5	1.10	1.20	
1.50	1.1	1.32	1.44	
2.00	0.6	1.76	1.93	

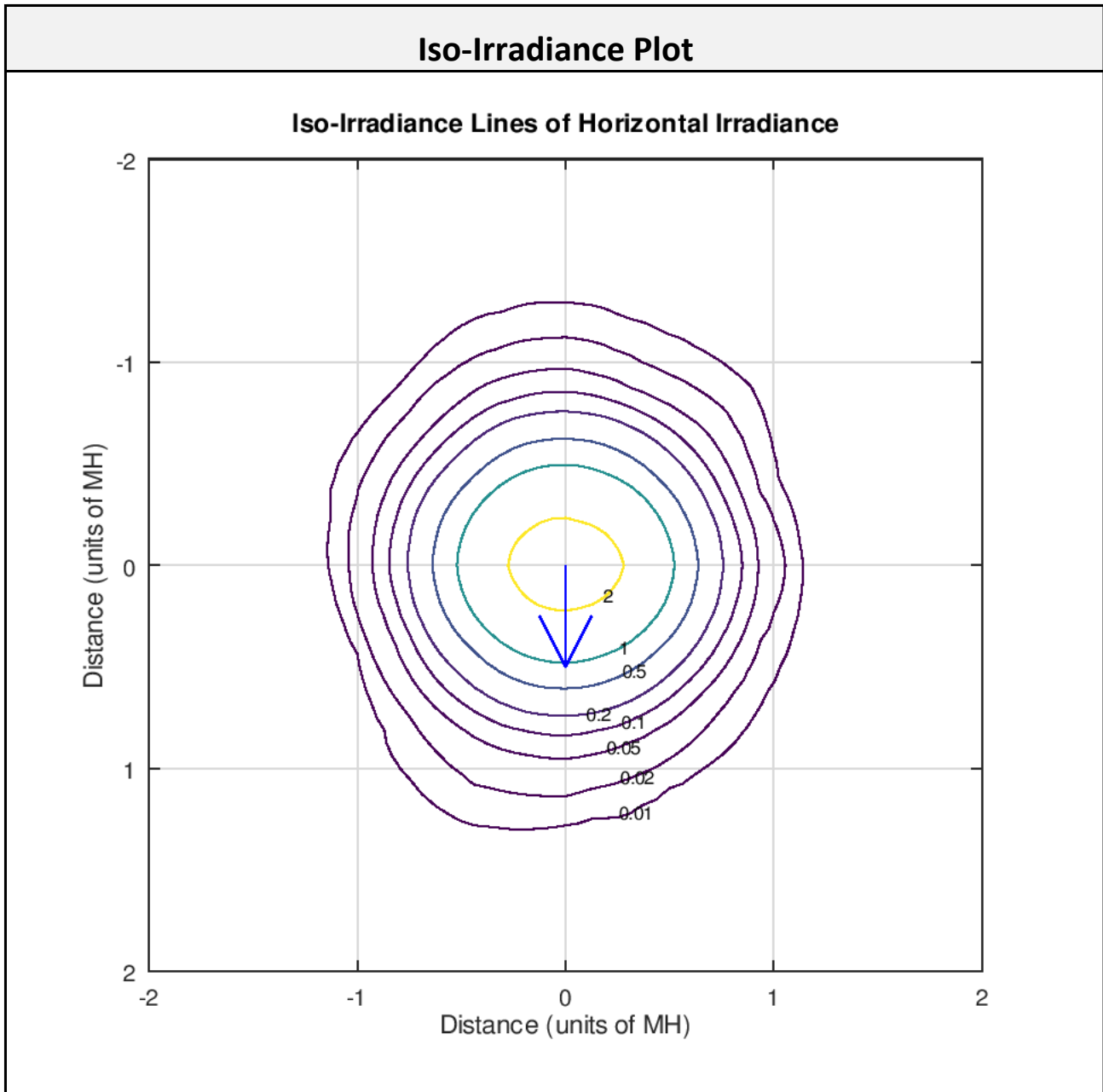
Spacing Criterion	
0 deg:	0.9
90 deg:	1.0
180 deg:	0.9
270 deg:	1.0

Beam and Field Angle	
0-180 Degree Plane	
Beam Angle:	55.5°
Field Angle:	79.2°
90-270 Degree Plane	
Beam Angle:	58.9°
Field Angle:	79.7°

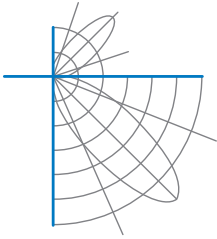


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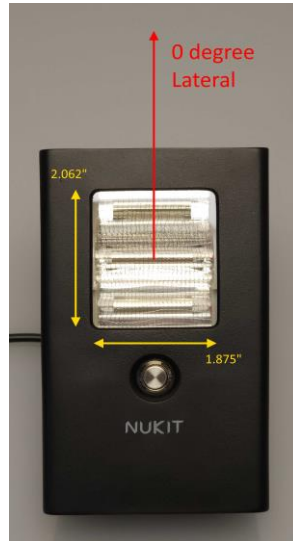


The iso-irradiance values shown in the plot above are based on a mounting height of $h = 1.00$ meters. Grid values show multiples of mounting height. The iso-irradiance contour lines are expressed in units of $\mu\text{W}/\text{cm}^2$. The values expressed are based on the direct output from a single unit without the contribution of room reflections.



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Additional Pictures of Test Subject





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Test Distance 1.4 m

Ambient Temperature 25.0 °C

Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

This test was conducted in accordance with the applicable sections of IES LM-93-22. Noise was removed based on angular limits and threshold values. Format of reports and angular increments based on IES LM-41-20 and LM-46-20. Spectral values presented in this report are based on spectral irradiance distribution measurements directly measured at the angle of peak intensity. Spectral irradiance measurements were acquired according to IES LM-58-20.

The radiant intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured. Where the lateral half-planes measured do not coincide with typically presented lateral increments, interpolated values may be presented.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

Intensity values were measured and are reported using the direct measurement Type "C" goniometer geometry (no mirror) and guidance from IES LM-75-19. Stray optical radiation reduction was employed in the testing environment and stray optical radiation measurement and removal techniques were employed.

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. This report is free of erasures and corrections.