



Fuze Wash FR

Photometric Test Report

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Testing Process

Total Lumen Measurements

Lumens are measured using a Viso Systems Lab Spion and a 2π Integrating Sphere. As a goniophotometer, the Viso calculates the field lumens of the fixture by taking multiple measurements across the light beam. The measured lumens of the 2π Integrating Sphere tends to be higher than the Viso goniophotometer due to a variety of differences in measurement principles. Therefore, sometimes both values are provided in the report.

Many lumens figures provided for entertainment lighting fixtures are only the 2π sphere values, some even emphasize the LED engine lumens. All Elation product photometric data is the actual light output from the fixture lens, never a theoretical value based on calculation or using the source lumens as the fixtures output. We advise to always compare total fixture lumens acquired with identical measurement systems when comparing lighting fixtures.

Test Lab Equipment and Process

Elation operates an optical testing laboratory at its Los Angeles, CA headquarters to provide accurate photometric data for its lighting products. The testing lab is both light and climate- controlled and contains a variety of precise lighting measurement systems. Fixtures are analyzed with the sophisticated [Viso Systems Lab Spion](#) equipment, which measures all light and color parameters by panning the light beam at a precise speed and from different angles through a calibrated, laser aligned light and color sensor. Test data is collected and summarized by the Viso Light Inspector software. This type of measurement system is referred to as a Goniophotometer.

The Viso software calculates all relevant types of measurements, from beam angles, candela to center light intensity at a variety of distances to the latest color quality measurements like TM30 or CQS as well as accurate color temperature. This wealth of data is then processed by an Elation specific template which is included in the photometric test report for various fixture conditions such as zoom angles and color correction filters.

The Viso software also creates IES (Illuminating Engineering Society) files for each test report. IES is an industry standard file format created for the easy electronic transfer of photometric test data, which is widely used by lighting manufacturers for photometric data distribution.

Fixtures are also analyzed using an 2π Integrating Sphere. This technique takes the output of the fixture and measures the amount of light inside a sealed perfect sphere. Due to the size of most fixtures they shine into an opening on the side of the sphere. A sensor is mounted behind a glare shield to avoid direct light input and a very short measurement is taken to gather the total lumens within the sphere. Due to different measurement principles, distortion and measurement uncertainties, there is a difference in these results.

Additionally, fixtures are periodically rechecked for accuracy using various hand-held light meters including one or more of the devices listed below. This is done to ensure the test data contained in this report is as accurate as possible.

[Asenstek Lighting Passport](#) | [Konica Minolta T-10](#) | [Sekonic C700T](#)

Photometric Report

Total Lumen Output*

VISO Lab Spion 15120 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
8.2°	13°	16.1°

Color Temperature: 6494 K

CRI: 86.8

TLCI: 91

TM30: 86.8

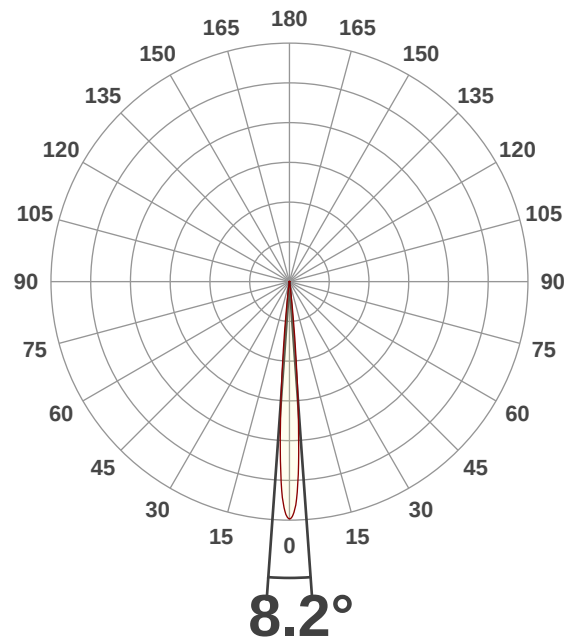
CQS: 88.3

Voltage: 116 V, Current: 5.28 A

Power: 609.9 W

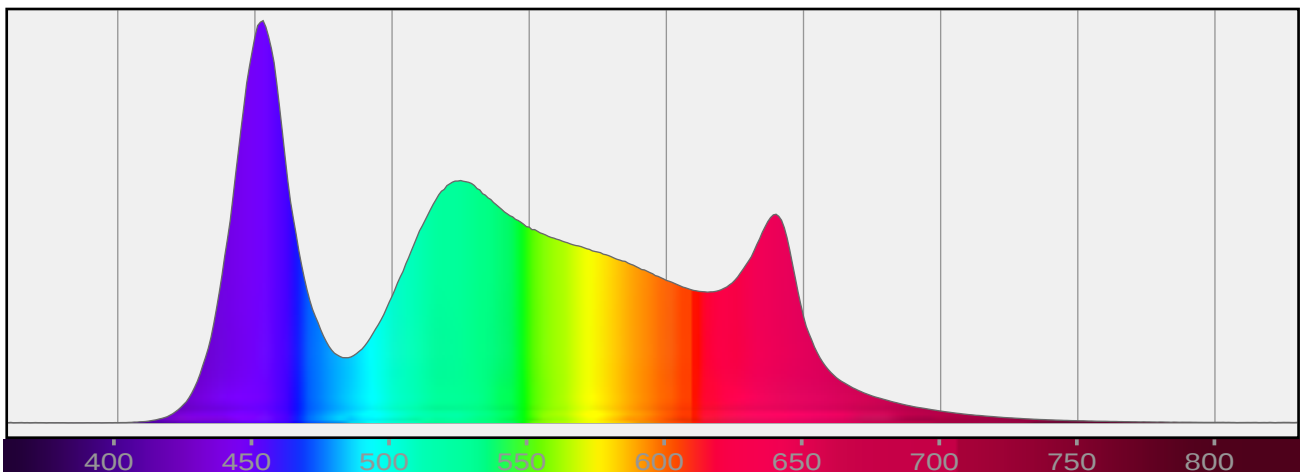
Efficacy: 25 Lumen/Watt

Measurement Date: 4/30/2020



Spectral Distribution

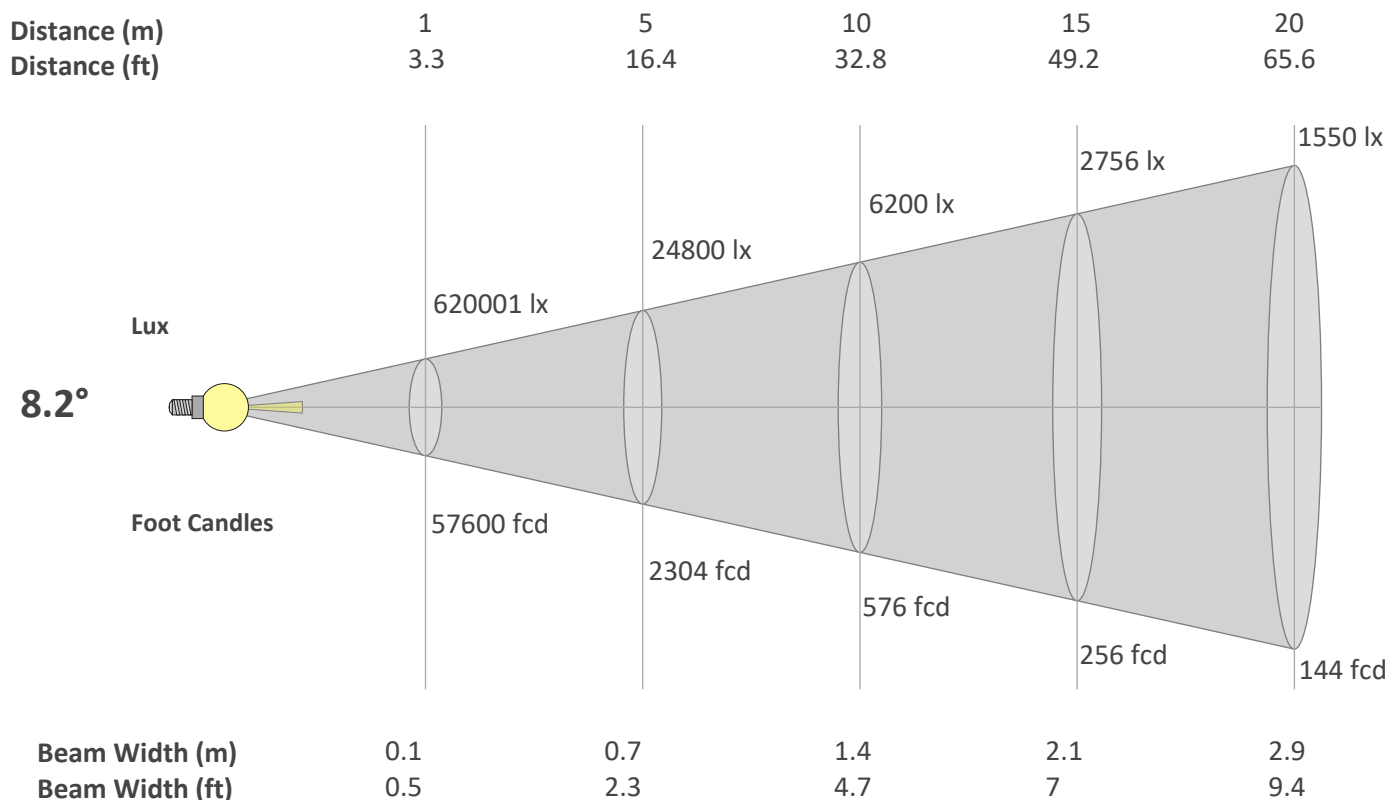
Dominant Wavelength 545 nm



*Total Lumen measurements by calibrated Everfine 2π Integrating Sphere and Viso Systems Lab Spion

Beam Details

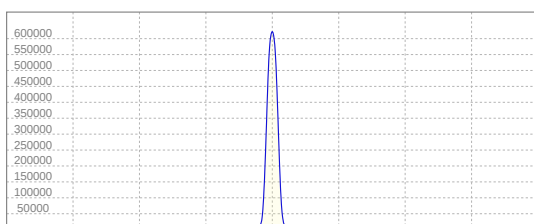
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
8.2°	13°	16.1°



Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	620001	155000	68889	38750	24800	17222	12653	9688	7654	6200	5124	4306	3669	3163	2756	2422	2145	1914	1717	1550
FC	57599.9	14400	6400	3600	2304	1600	1175.5	900	711.1	576	476	400	340.8	293.9	256	225	199.3	177.8	159.6	144

Linear Distribution



Peak Candela

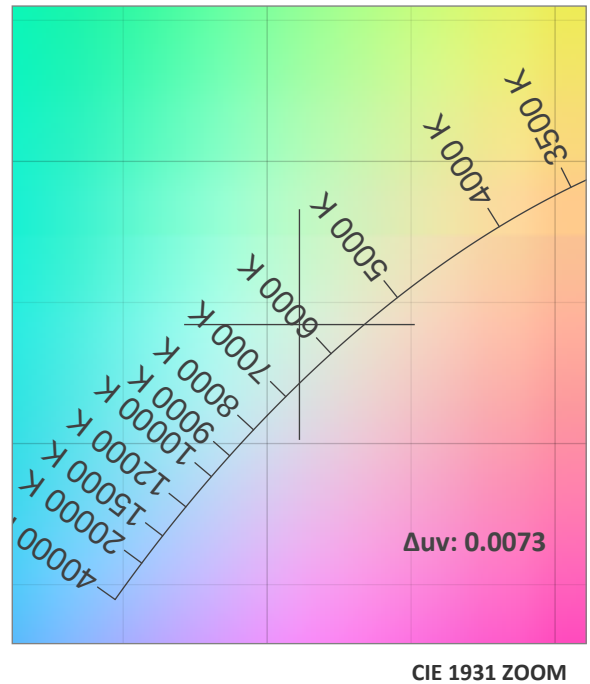
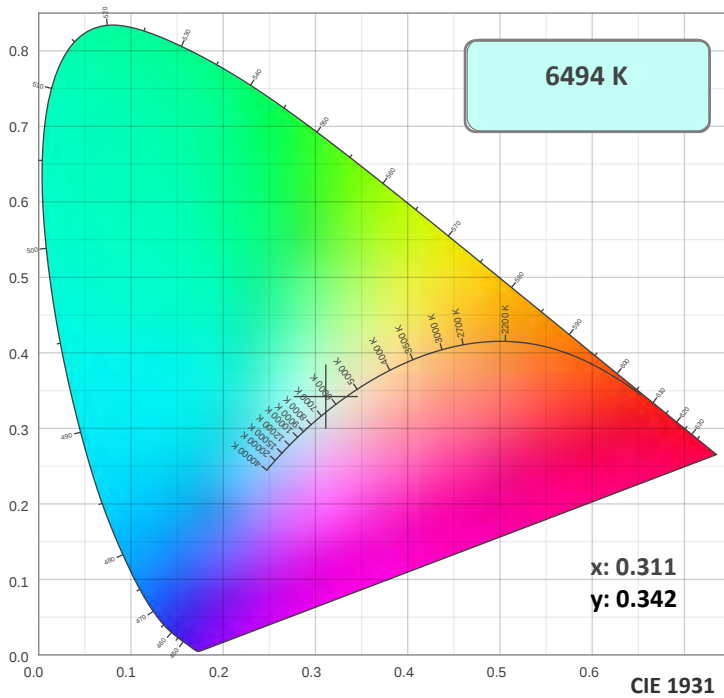
621265 cd

Calculate Center Beam Intensities

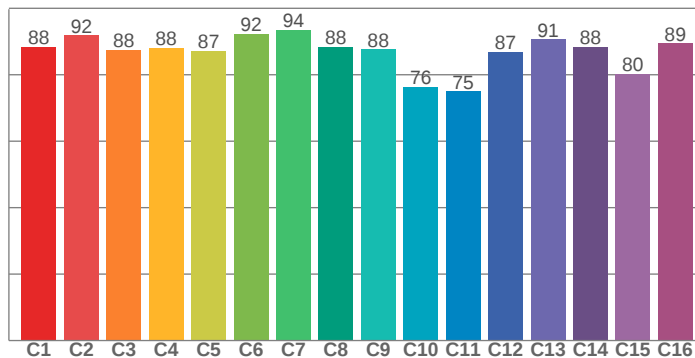
$$\text{lux} = 621265 / \text{distance(m)}^2$$

$$\text{fc} = 621265 / \text{distance(ft)}^2$$

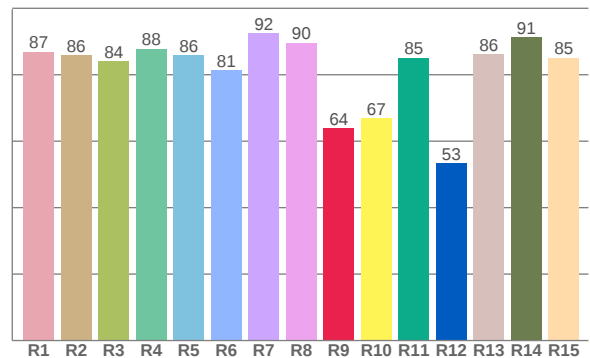
Color Details



TM30: 86.8



CRI: 86.8 (R1-R8)



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
87.0	85.9	84.2	87.8	85.9	81.4	92.5	89.7	63.9	66.8	85.2	53.3	86.1	91.3	85.2

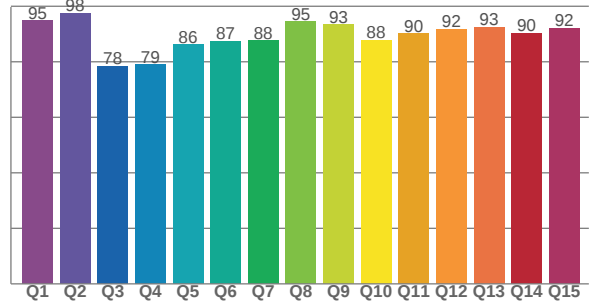
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
88.4	91.8	87.5	88.1	87.3	92.3	93.6	88.4	87.6	76.3	74.9	86.9	90.7	88.3	80.3	89.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
94.9	97.6	78.5	79.0	86.3	87.4	87.6	94.5	93.3	87.8	90.1	91.8	92.6	90.4	92.1

CQS: 88.3



Color Parameters

Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6494 K	86.8	63.9	86.8	99.2	88.3	0.311	0.342	0.192	0.317	0.0073

TM30 Details

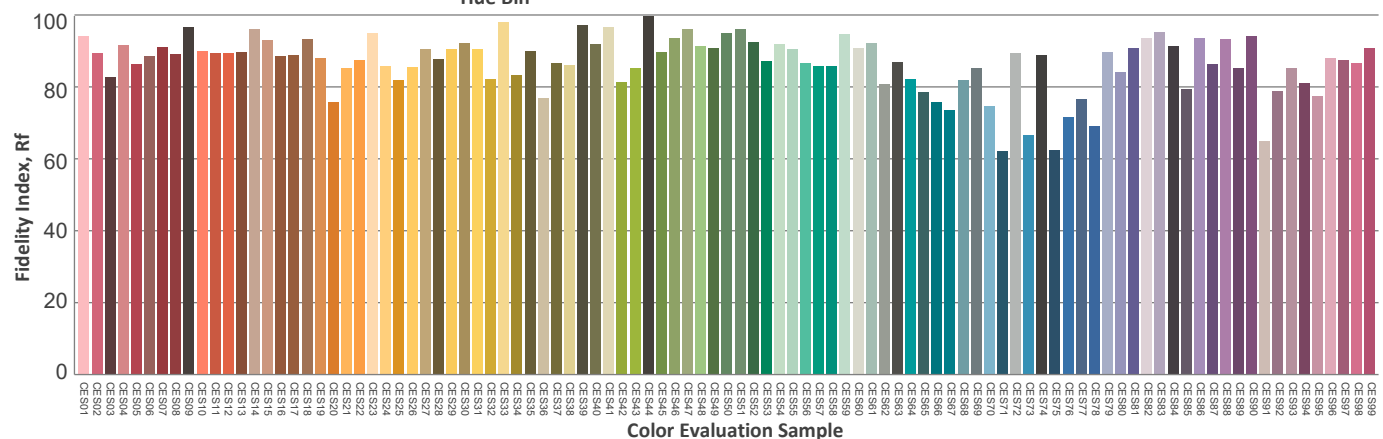
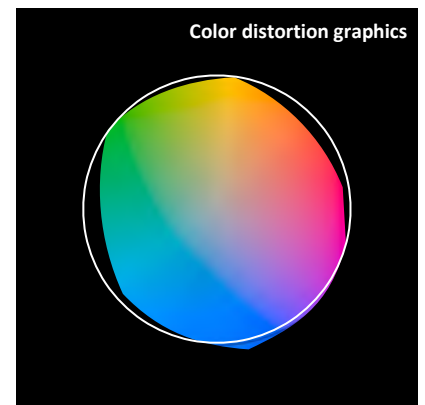
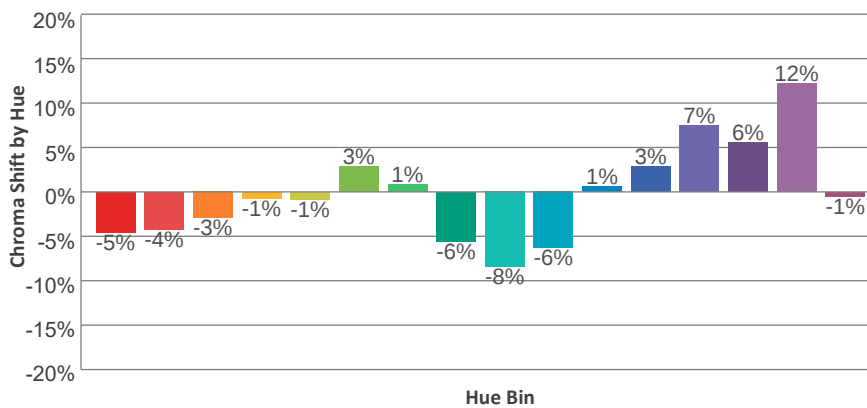
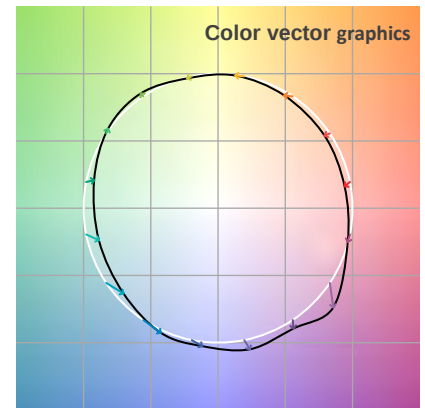
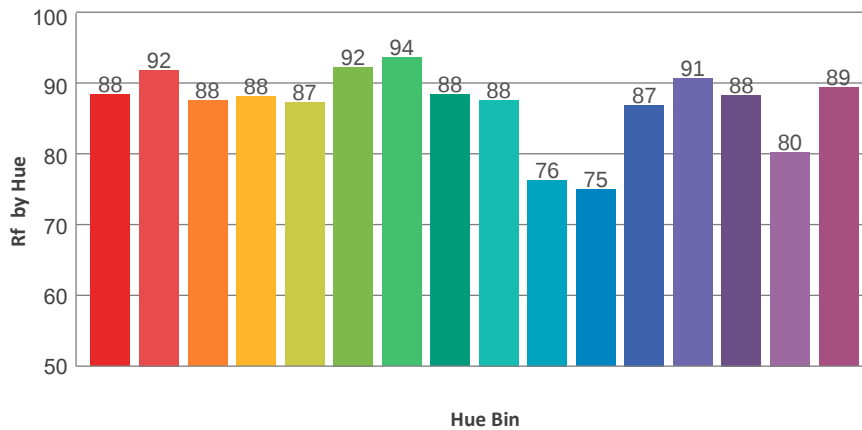
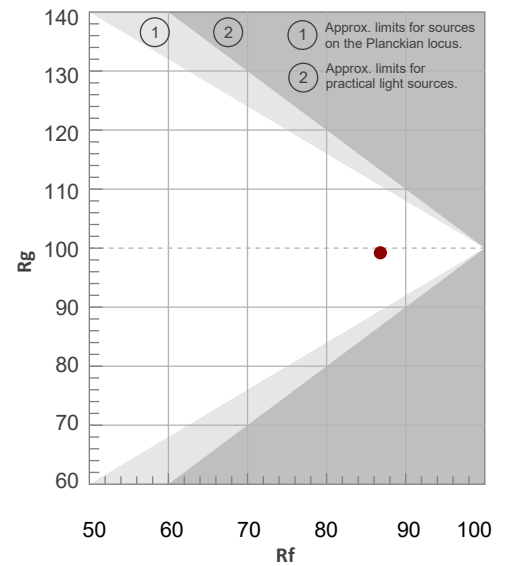
Rf 86.8

Fidelity Index Rf

Rg 99.2

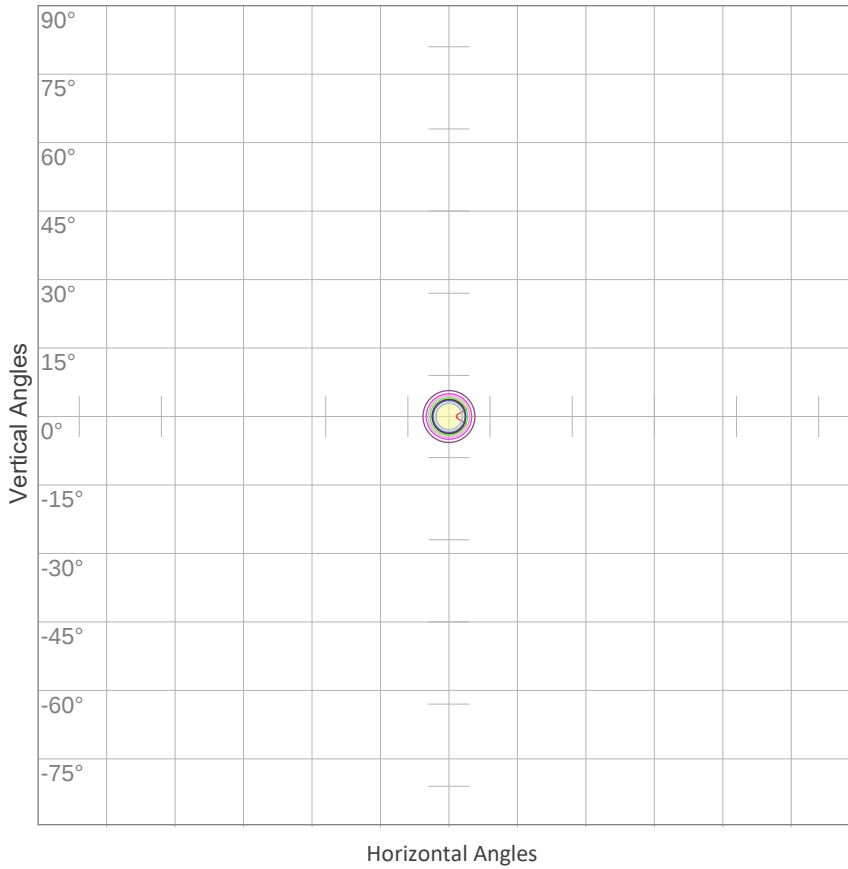
Gamut Index Rg

Hue Bin	R_i	Graphic shifts (%)	
		Chroma	Hue
1	88	-5%	-2%
2	92	-4%	1%
3	88	-3%	6%
4	88	-1%	7%
5	87	-1%	4%
6	92	3%	0%
7	94	1%	-4%
8	88	-6%	-2%
9	88	-8%	6%
10	76	-6%	14%
11	75	1%	16%
12	87	3%	8%
13	91	7%	3%
14	88	6%	-3%
15	80	12%	-14%
16	89	-1%	-6%



ISO Diagrams

ISO Candela Diagram



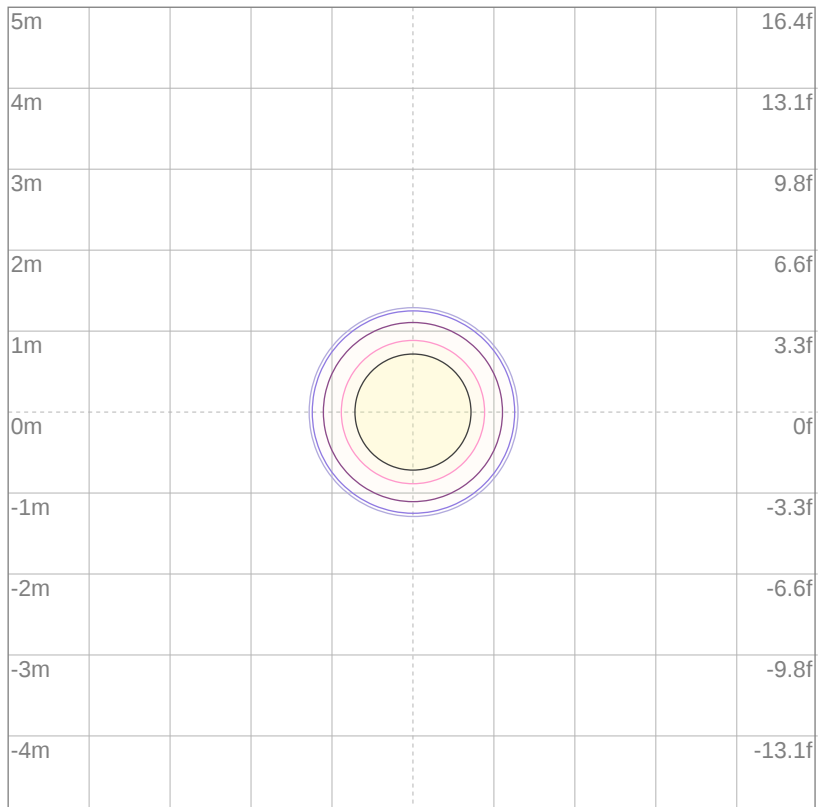
10%	62000 cd
20%	124000 cd
30%	186000 cd
40%	248000 cd
50%	310000 cd
60%	372000 cd
70%	434000 cd
80%	496001 cd
90%	558001 cd

Conditions:

Number of c-planes: 2

Candela at center: 620001 cd

ISO Lux Diagram



3%	186 lx
5%	310 lx
10%	620 lx
30%	1860 lx
50%	3100 lx

Conditions:

Number of c-planes: 2

Lux at center: 6200 lx

Lux distribution on a surface when lamp is mounted at 10 meters from the surface.

Mounting Height: 10 meters (33 feet)

Photometric Report

Total Lumen Output*

VISO Lab Spion 12340 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
21.8°	30.6°	34.9°

Color Temperature: 6481 K

CRI: 86.9

TLCI: 91

TM30: 86.9

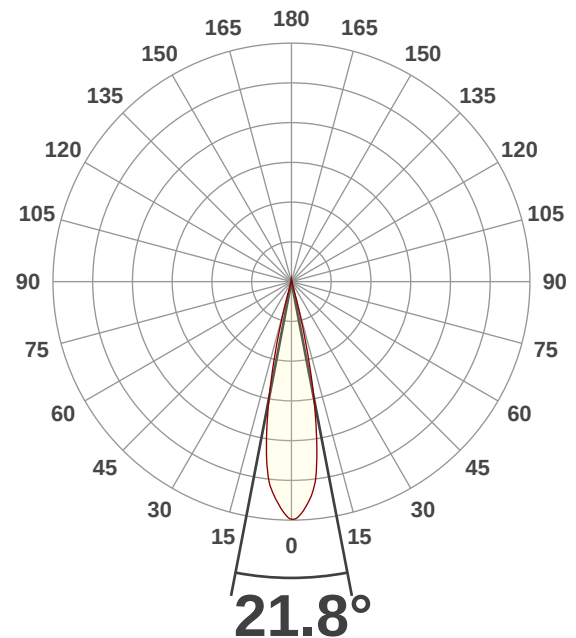
CQS: 88.4

Voltage: 115 V, Current: 5.43 A

Power: 625 W

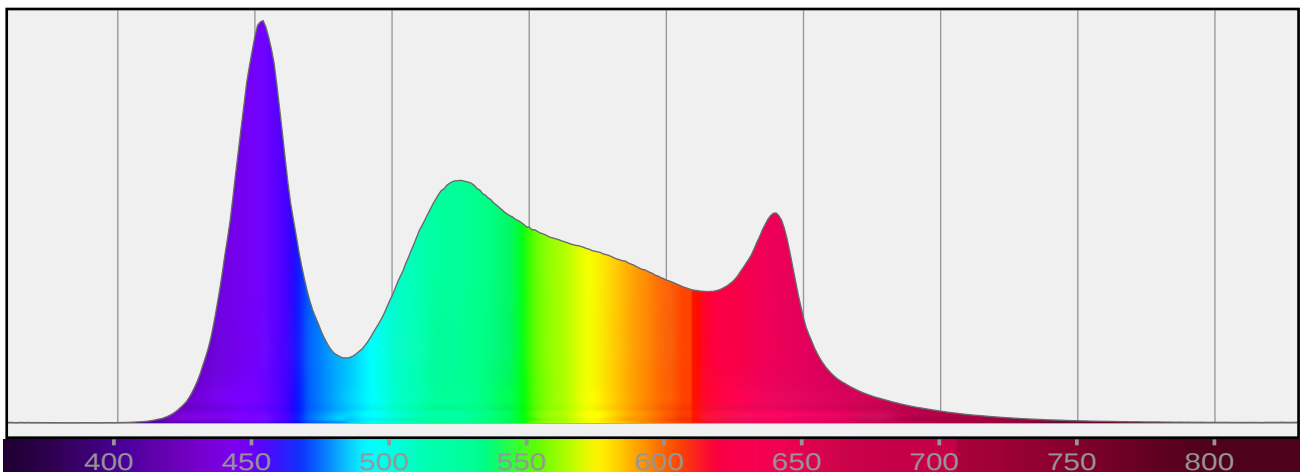
Efficacy: 20 Lumen/Watt

Measurement Date: 5/6/2020



Spectral Distribution

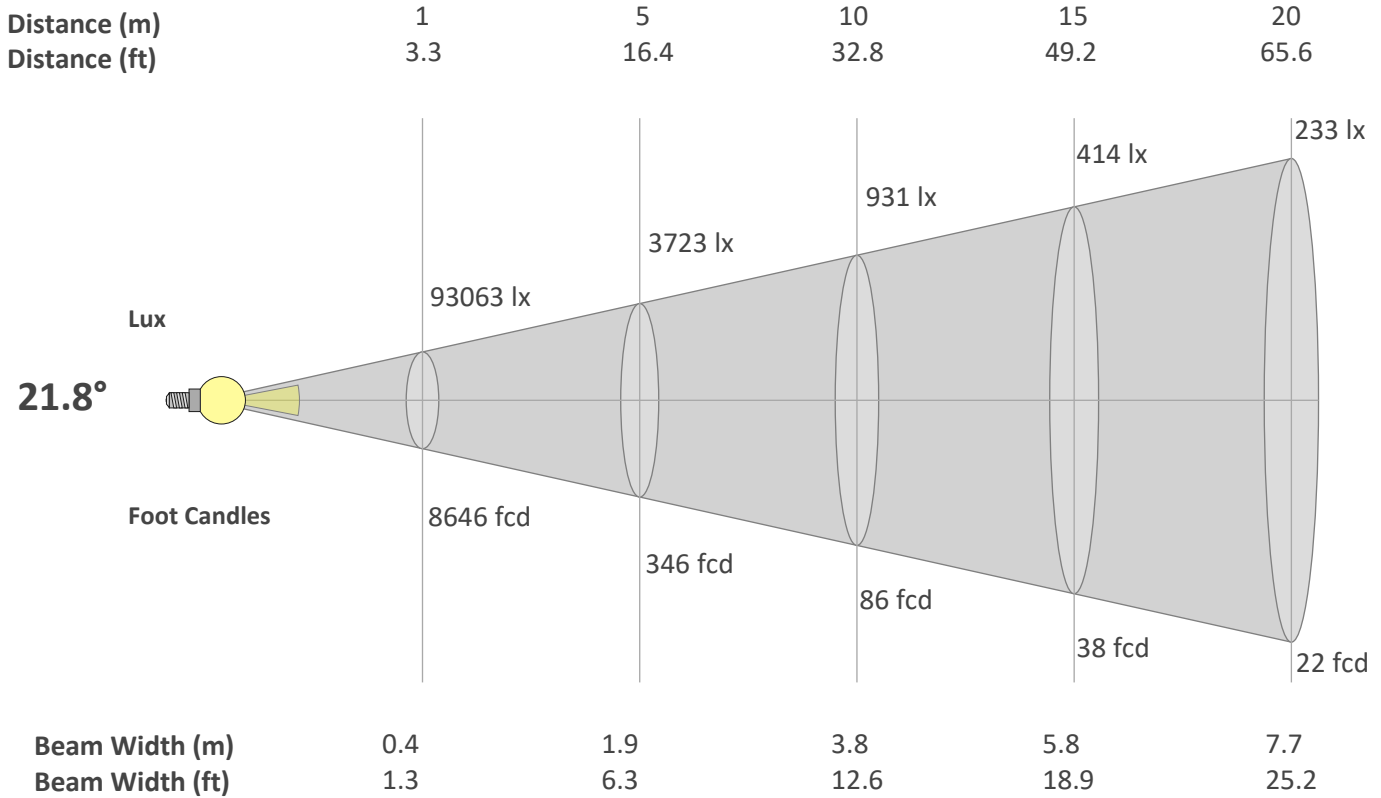
Dominant Wavelength 546 nm



*Total Lumen measurements by calibrated Everfine 2π Integrating Sphere and Viso Systems Lab Spion

Beam Details

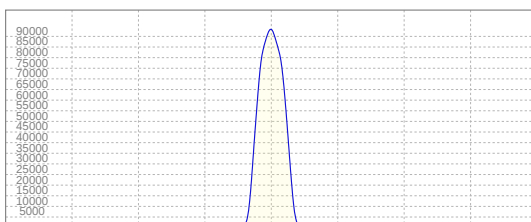
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
21.8°	30.6°	34.9°



Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	93063	23266	10340	5816	3723	2585	1899	1454	1149	931	769	646	551	475	414	364	322	287	258	233
FC	8645.8	2161.5	960.6	540.4	345.8	240.2	176.4	135.1	106.7	86.5	71.5	60	51.2	44.1	38.4	33.8	29.9	26.7	23.9	21.6

Linear Distribution



Peak Candela

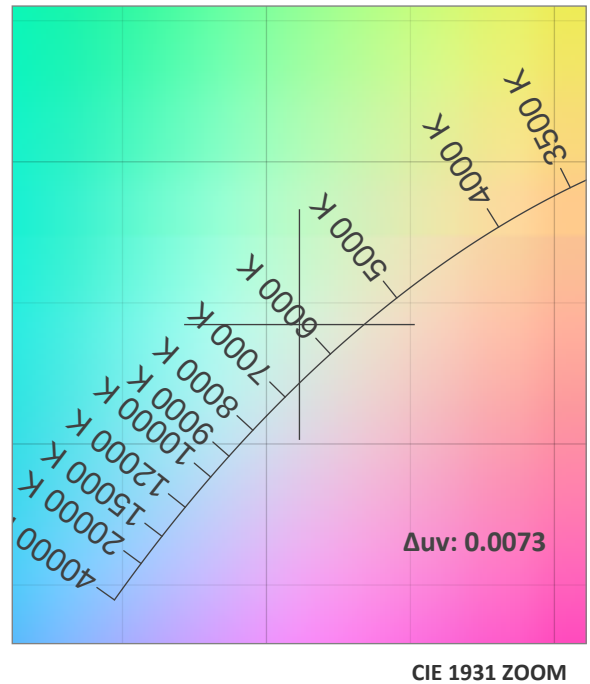
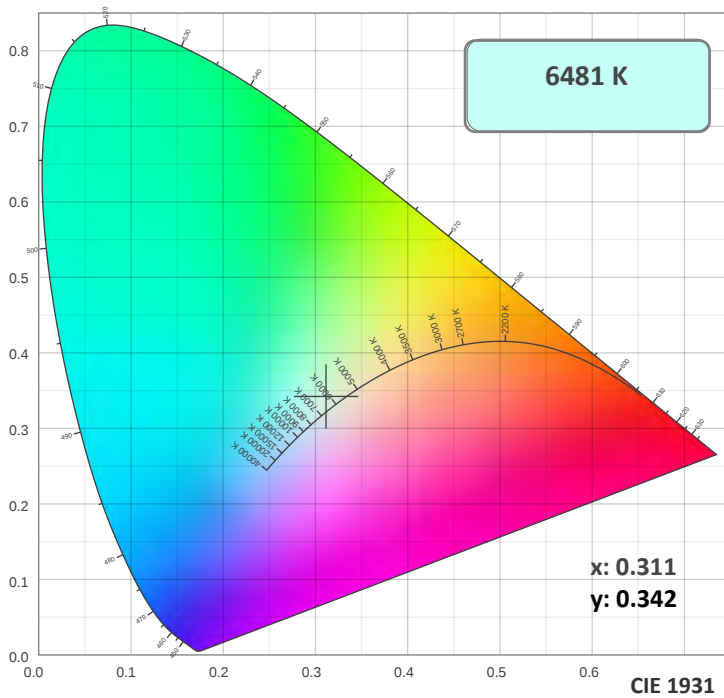
93072 cd

Calculate Center Beam Intensities

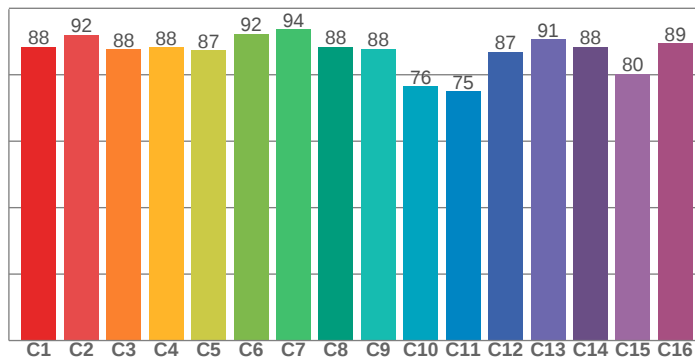
$lux = 93072 / distance(m)^2$

$fc = 93072 / distance(ft)^2$

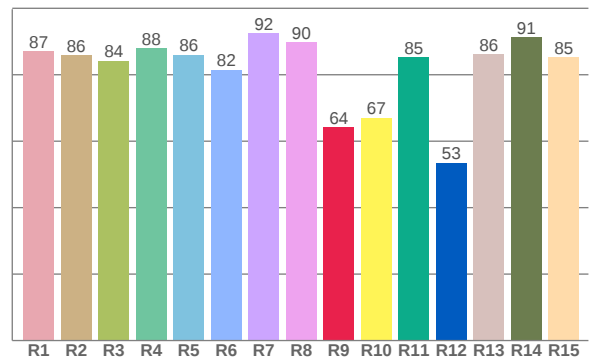
Color Details



TM30: 86.9



CRI: 86.9 (R1-R8)



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
87.1	86.0	84.2	87.9	86.1	81.5	92.5	89.8	64.3	67.0	85.2	53.5	86.3	91.3	85.3

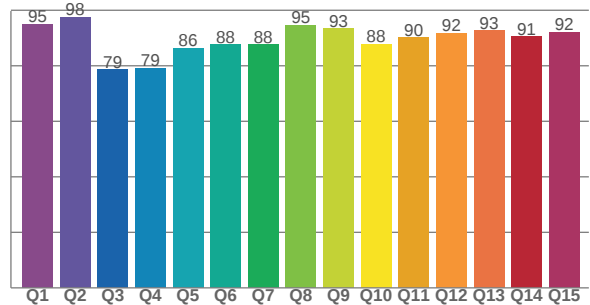
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
88.5	91.9	87.6	88.2	87.3	92.3	93.6	88.5	87.7	76.5	75.1	87.0	90.7	88.3	80.3	89.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
94.9	97.6	78.6	79.2	86.4	87.6	87.6	94.6	93.4	87.9	90.2	91.8	92.6	90.5	92.2

CQS: 88.4



Color Parameters

Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6481 K	86.9	64.3	86.9	99.3	88.4	0.311	0.342	0.192	0.317	0.0073

TM30 Details

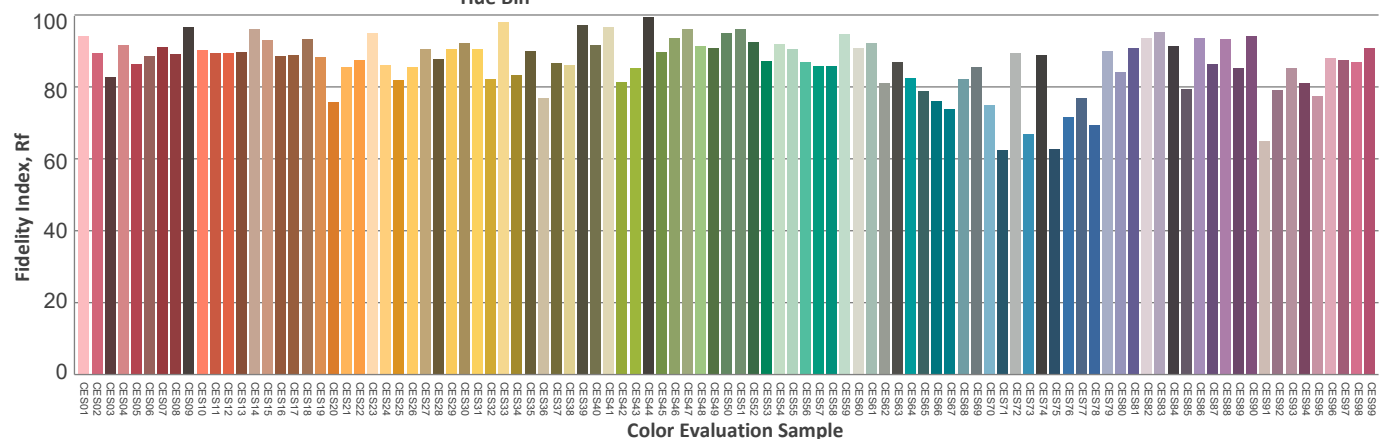
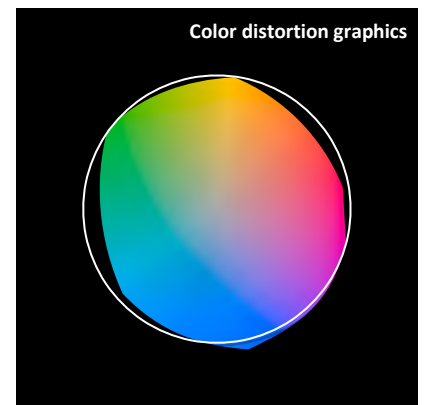
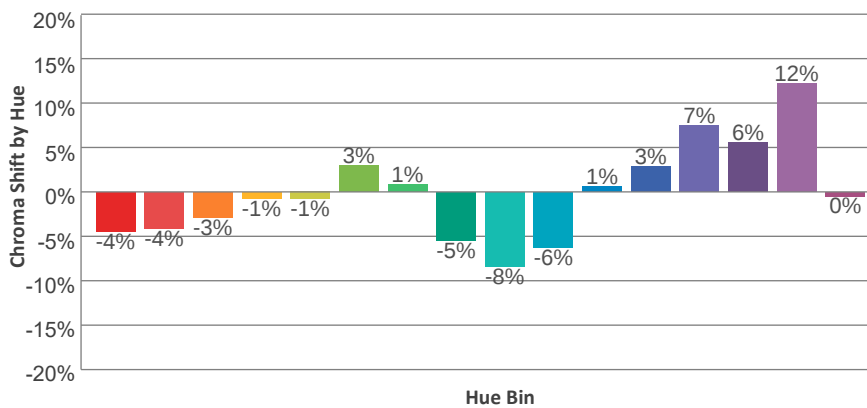
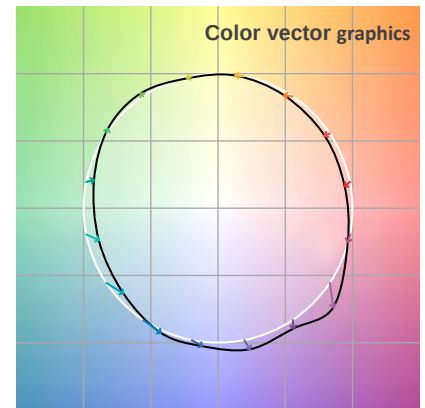
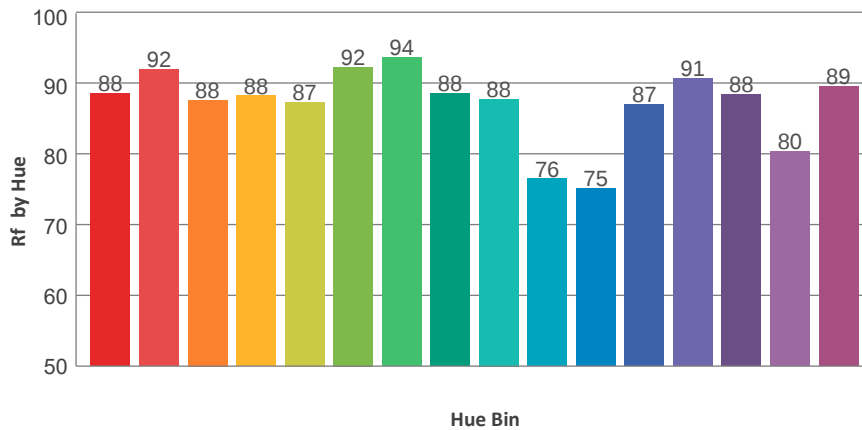
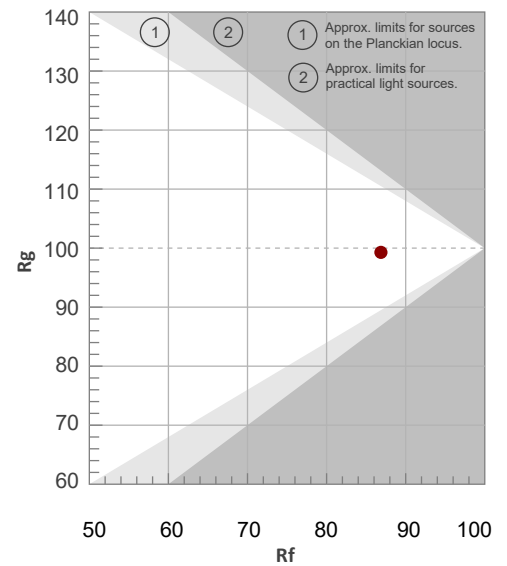
Rf 86.9

Fidelity Index Rf

Rg 99.3

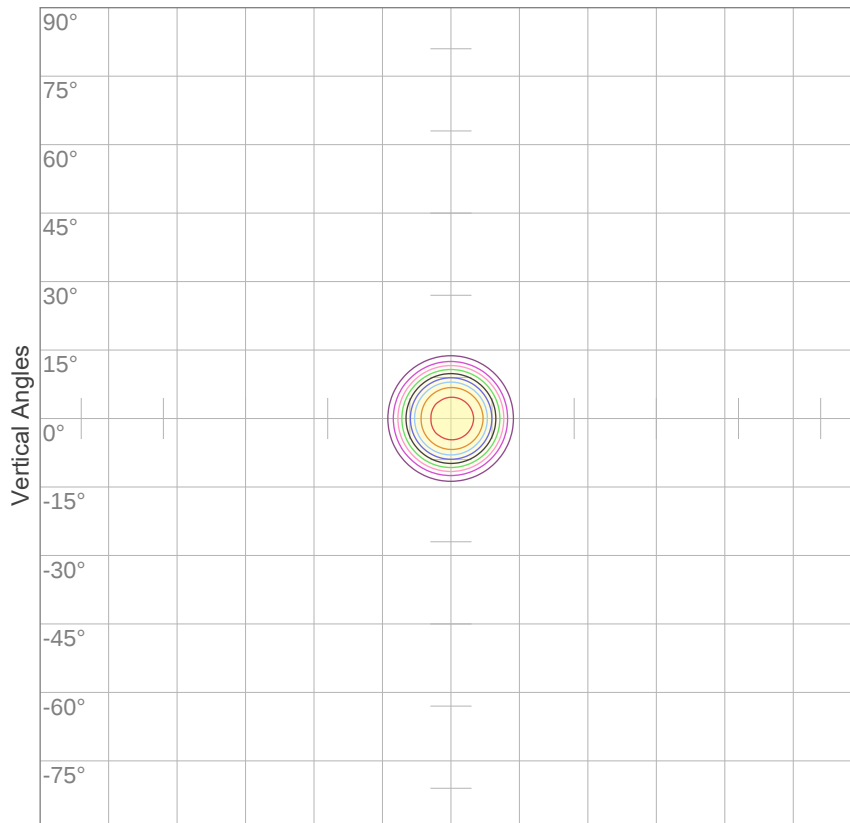
Gamut Index Rg

Hue Bin	R_i	Graphic shifts (%)	
		Chroma	Hue
1	88	-4%	-2%
2	92	-4%	1%
3	88	-3%	6%
4	88	-1%	7%
5	87	-1%	4%
6	92	3%	0%
7	94	1%	-4%
8	88	-5%	-2%
9	88	-8%	6%
10	76	-6%	13%
11	75	1%	16%
12	87	3%	8%
13	91	7%	3%
14	88	6%	-3%
15	80	12%	-14%
16	89	0%	-6%



ISO Diagrams

ISO Candela Diagram



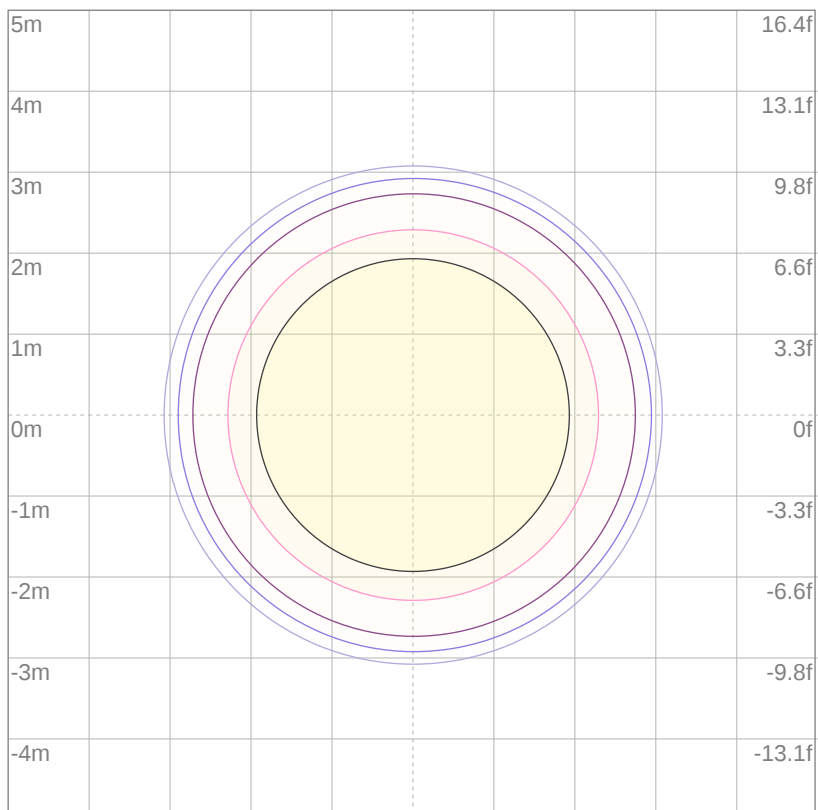
10%	9306 cd
20%	18613 cd
30%	27919 cd
40%	37225 cd
50%	46531 cd
60%	55838 cd
70%	65144 cd
80%	74450 cd
90%	83756 cd

Conditions:

Number of c-planes: 2

Candela at center: 93063 cd

ISO Lux Diagram



3%	27.9 lx
5%	46.5 lx
10%	93.1 lx
30%	279 lx
50%	465 lx

Conditions:

Number of c-planes: 2

Lux at center: 931 lx

Lux distribution on a surface when lamp is mounted at 10 meters from the surface.

Photometric Report

Total Lumen Output*

VISO Lab Spion 12509 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
50.3°	62.4°	68.2°

Color Temperature: 6443 K

CRI: 86.8

TLCI: 90

TM30: 86.9

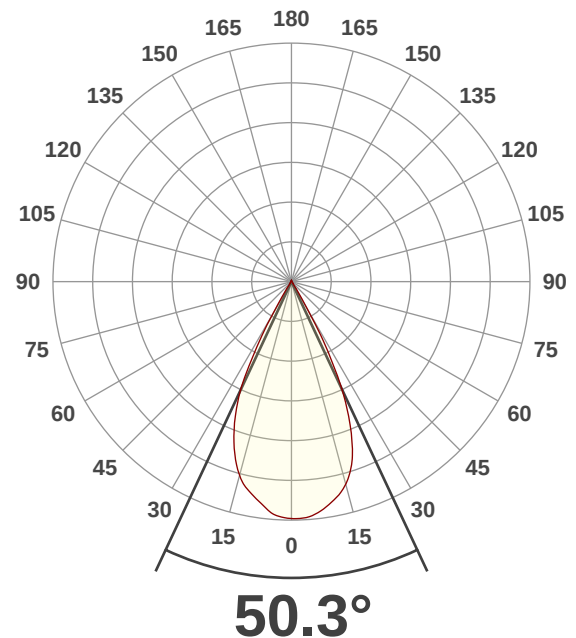
CQS: 88.6

Voltage: 117 V, Current: 5.35 A

Power: 624.9 W

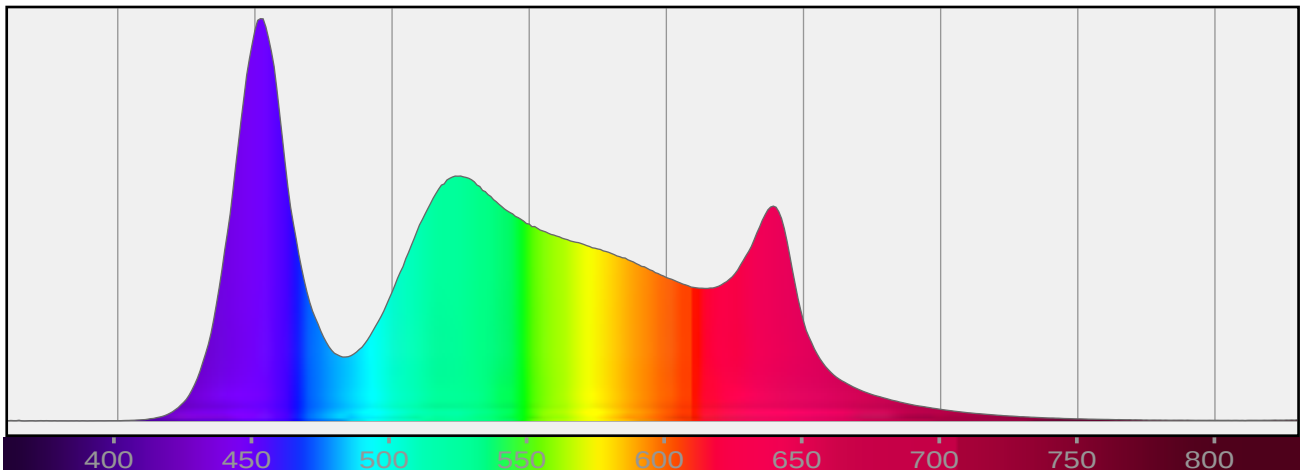
Efficacy: 20 Lumen/Watt

Measurement Date: 5/6/2020



Spectral Distribution

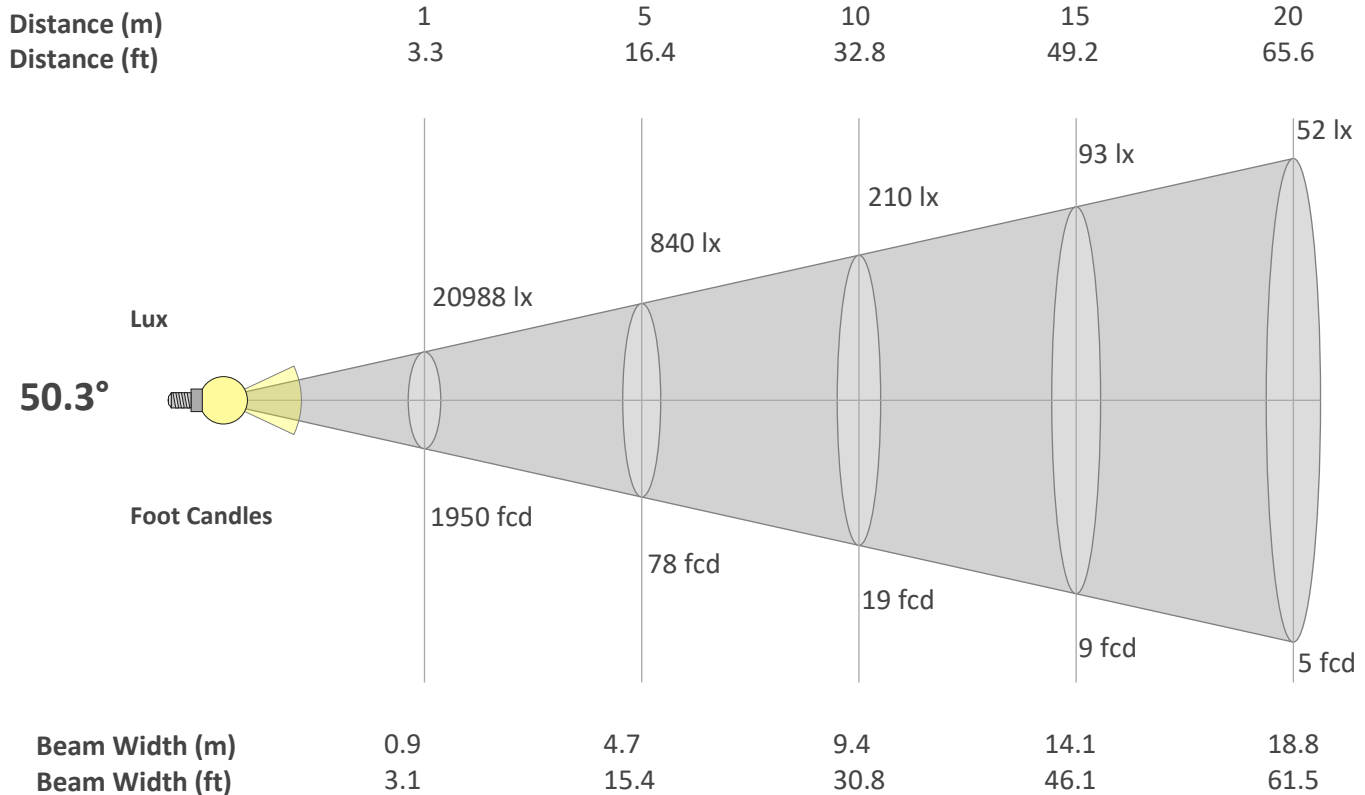
Dominant Wavelength 549 nm



*Total Lumen measurements by calibrated Everfine 2π Integrating Sphere and Viso Systems Lab Spion

Beam Details

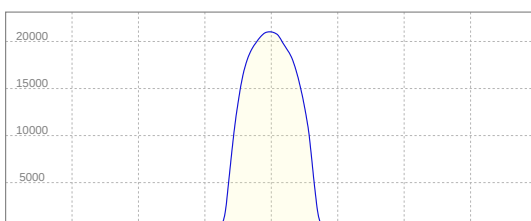
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
50.3°	62.4°	68.2°



Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	20988	5247	2332	1312	840	583	428	328	259	210	173	146	124	107	93	82	73	65	58	52
FC	1949.9	487.5	216.7	121.9	78	54.2	39.8	30.5	24.1	19.5	16.1	13.5	11.5	9.9	8.7	7.6	6.7	6	5.4	4.9

Linear Distribution



Peak Candela

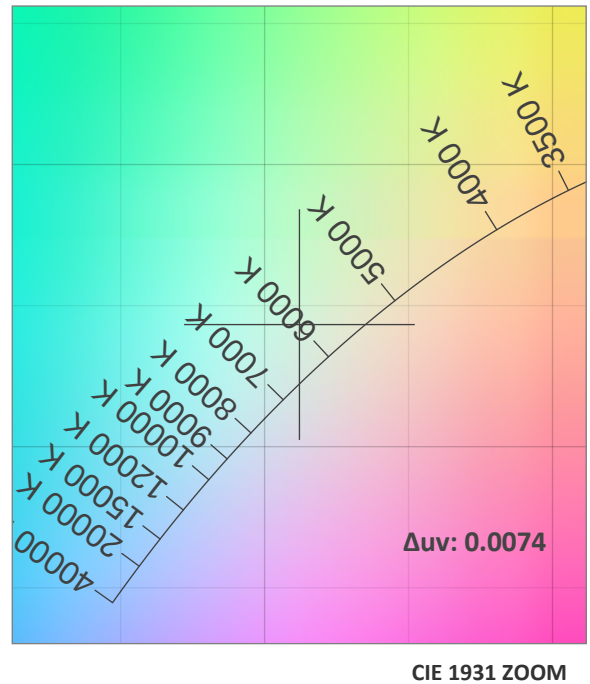
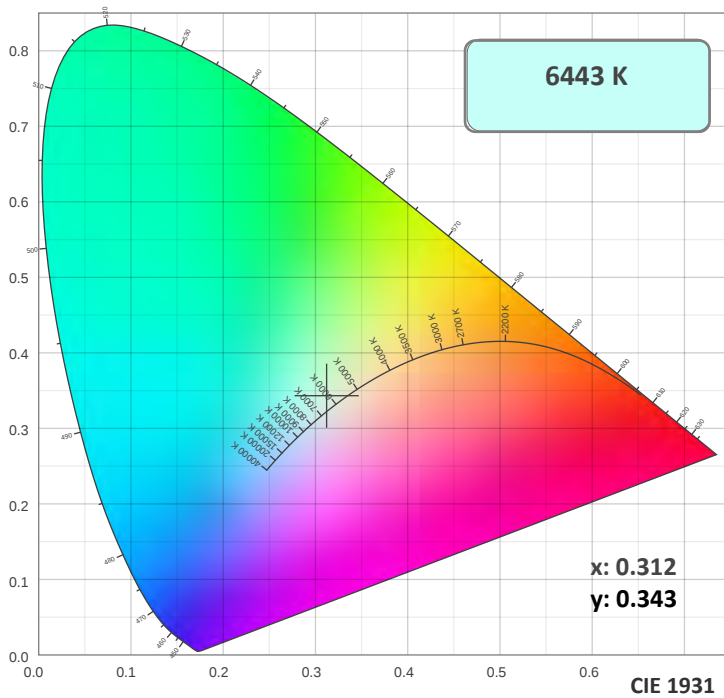
21023 cd

Calculate Center Beam Intensities

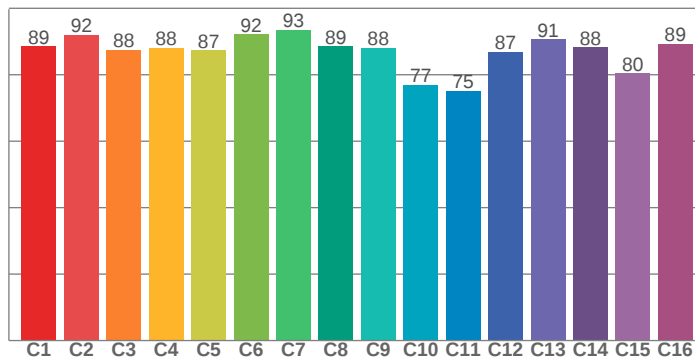
$$\text{lux} = 21023 / \text{distance(m)}^2$$

$$\text{fc} = 21023 / \text{distance(ft)}^2$$

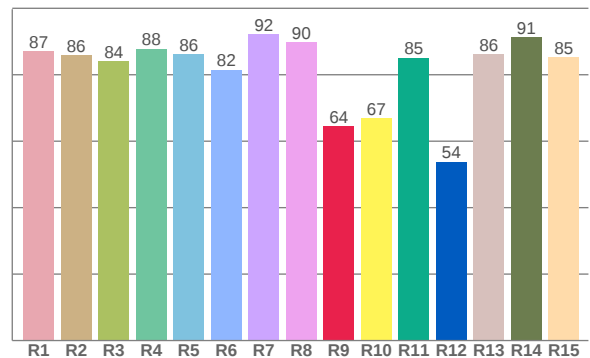
Color Details



TM30: 86.9



CRI: 86.8 (R1-R8)



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
87.1	85.8	84.1	87.8	86.1	81.5	92.1	89.8	64.4	66.8	85.2	53.8	86.2	91.3	85.3

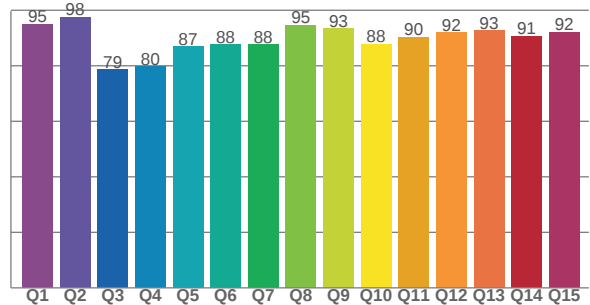
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
88.5	92.0	87.6	88.2	87.4	92.2	93.5	88.6	88.1	76.9	75.2	86.9	90.6	88.2	80.4	89.3

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
95.0	97.5	78.7	79.7	86.8	87.6	87.6	94.7	93.4	87.9	90.4	91.9	92.7	90.6	92.2

CQS: 88.6



Color Parameters

Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6443 K	86.8	64.4	86.9	99.5	88.6	0.312	0.343	0.192	0.317	0.0074

TM30 Details

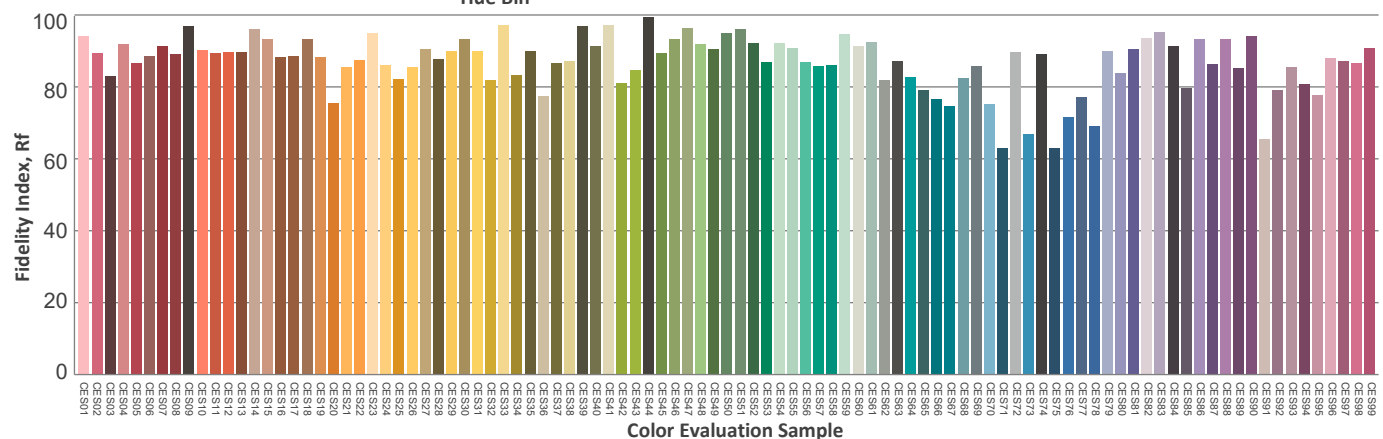
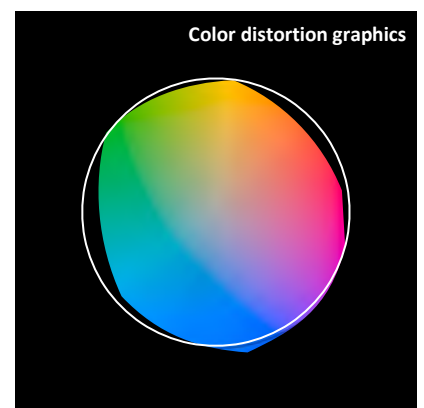
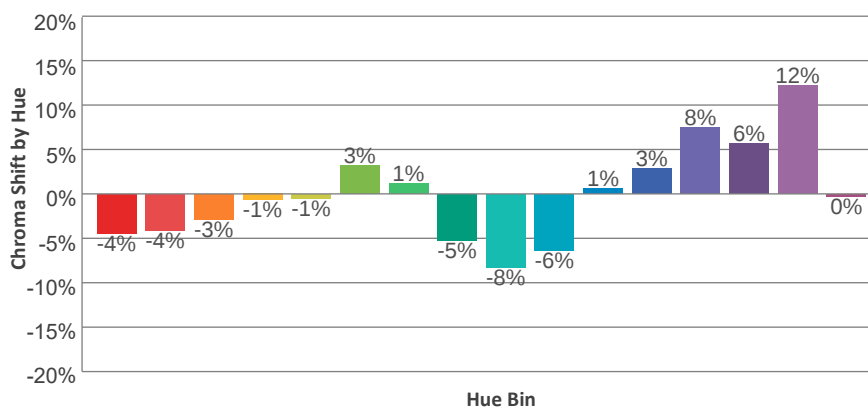
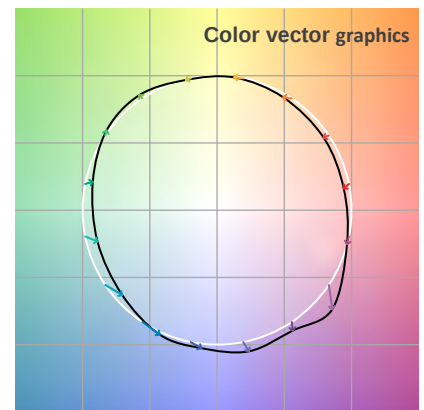
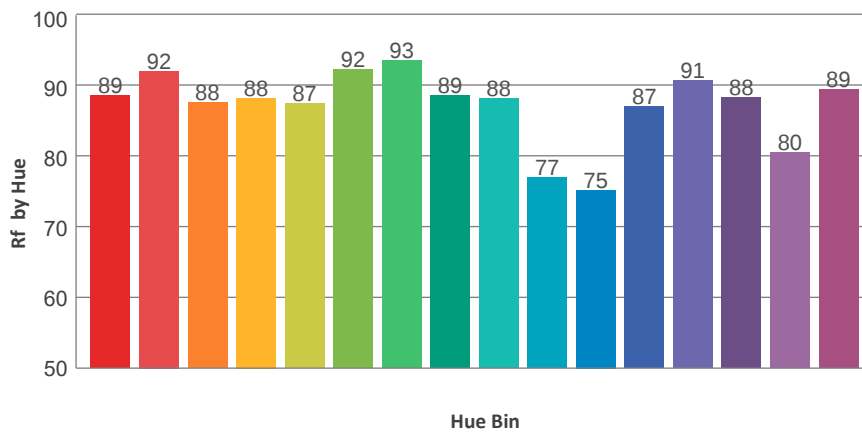
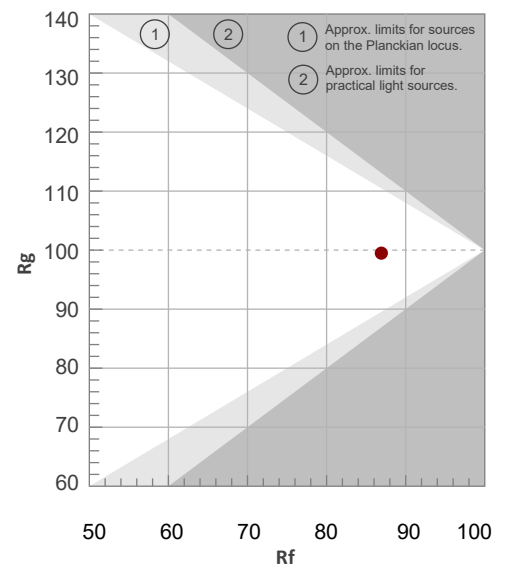
Rf 86.9

Fidelity Index Rf

Rg 99.5

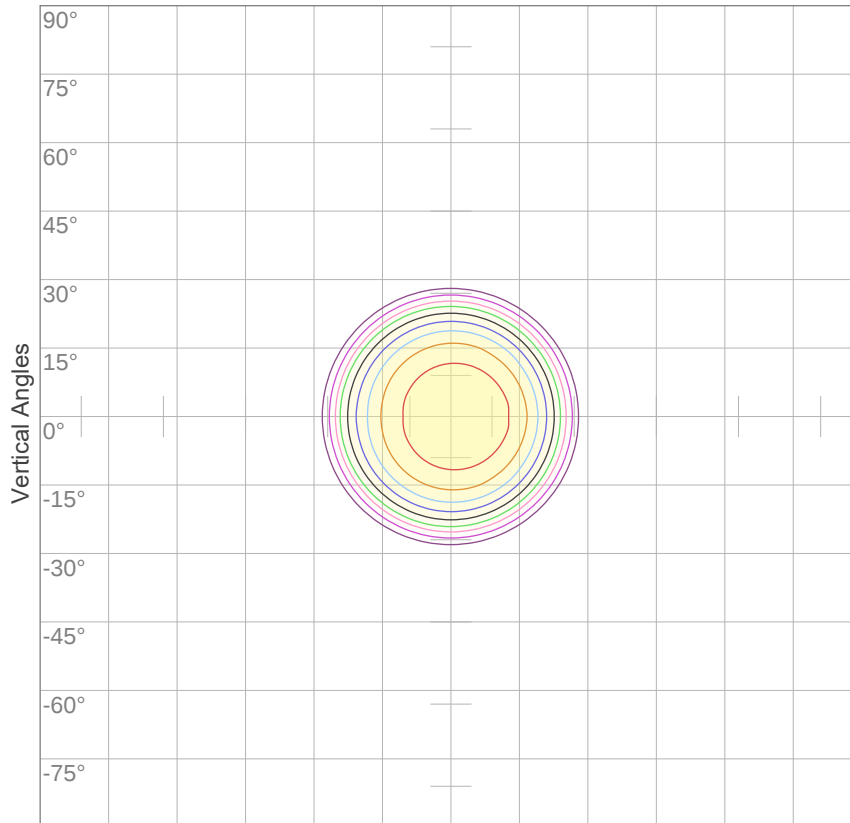
Gamut Index Rg

		Graphic shifts (%)	
Hue Bin	R _f	Chroma	Hue
1	89	-4%	-2%
2	92	-4%	1%
3	88	-3%	6%
4	88	-1%	7%
5	87	-1%	4%
6	92	3%	1%
7	93	1%	-4%
8	89	-5%	-3%
9	88	-8%	5%
10	77	-6%	13%
11	75	1%	16%
12	87	3%	8%
13	91	8%	3%
14	88	6%	-3%
15	80	12%	-14%
16	89	0%	-6%



ISO Diagrams

ISO Candela Diagram



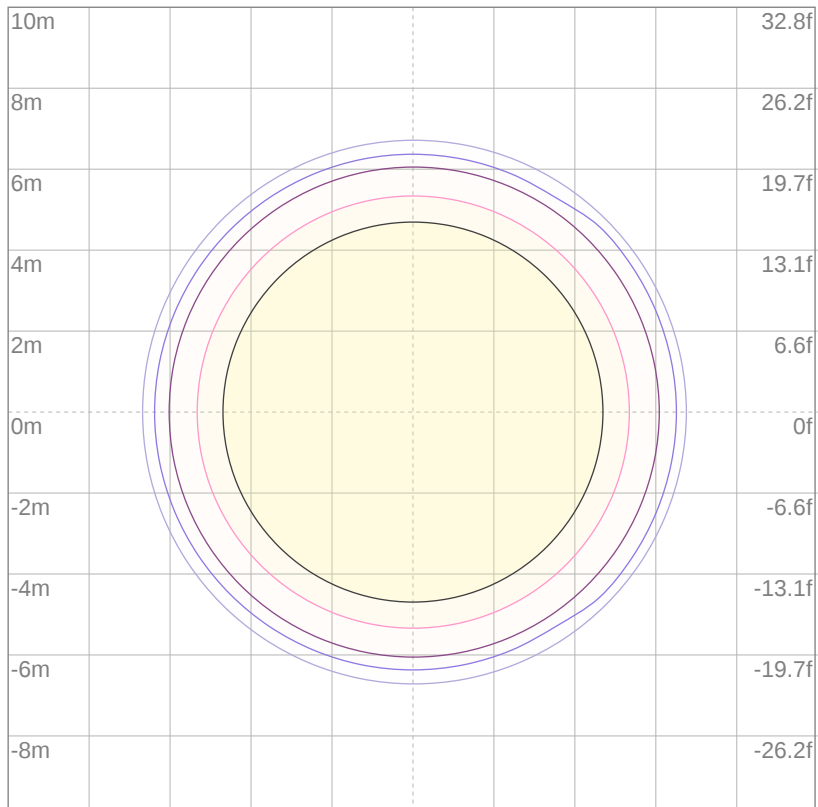
10%	2099 cd
20%	4198 cd
30%	6296 cd
40%	8395 cd
50%	10494 cd
60%	12593 cd
70%	14692 cd
80%	16791 cd
90%	18889 cd

Conditions:

Number of c-planes: 2

Candela at center: 20988 cd

ISO Lux Diagram



3%	6.30 lx
5%	10.5 lx
10%	21.0 lx
30%	63.0 lx
50%	105 lx

Conditions:

Number of c-planes: 2

Lux at center: 210 lx

Lux distribution on a surface when lamp is mounted at 10 meters from the surface.

Mounting Height: 10 meters (33 feet)

Photometric Report

Total Lumen Output*

VISO Lab Spion 7842 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
22.5°	30.4°	34.3°

Color Temperature: 3219 K

CRI: 92.9

TLCI: 88

TM30: 91.2

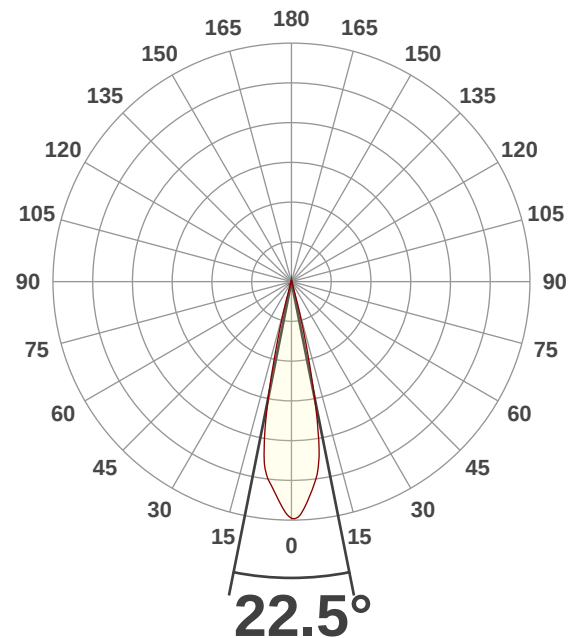
CQS: 91.4

Voltage: 116 V, Current: 3.00 A

Power: 349 W

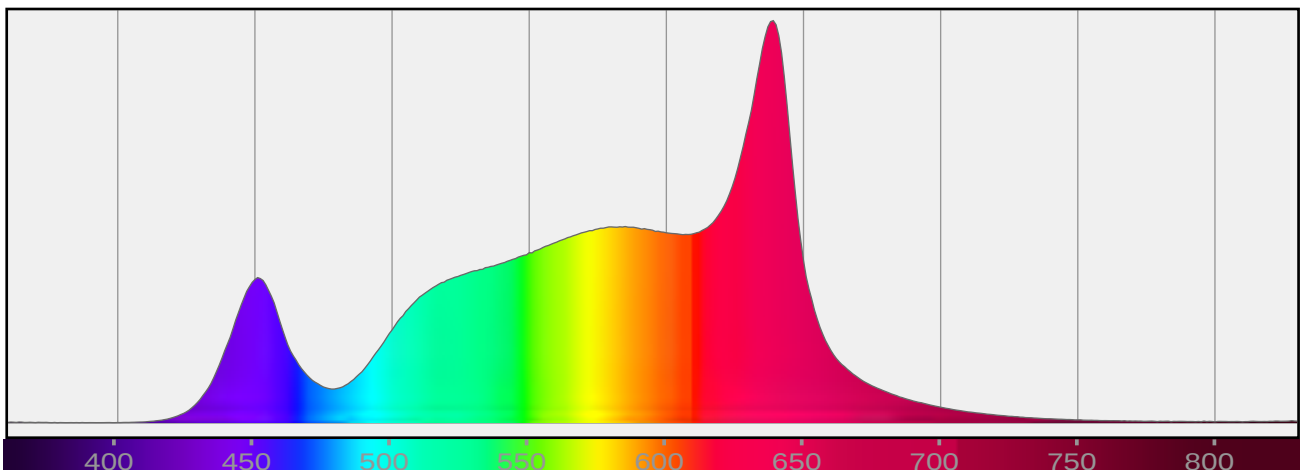
Efficacy: 22 Lumen/Watt

Measurement Date: 9/15/2020



Spectral Distribution

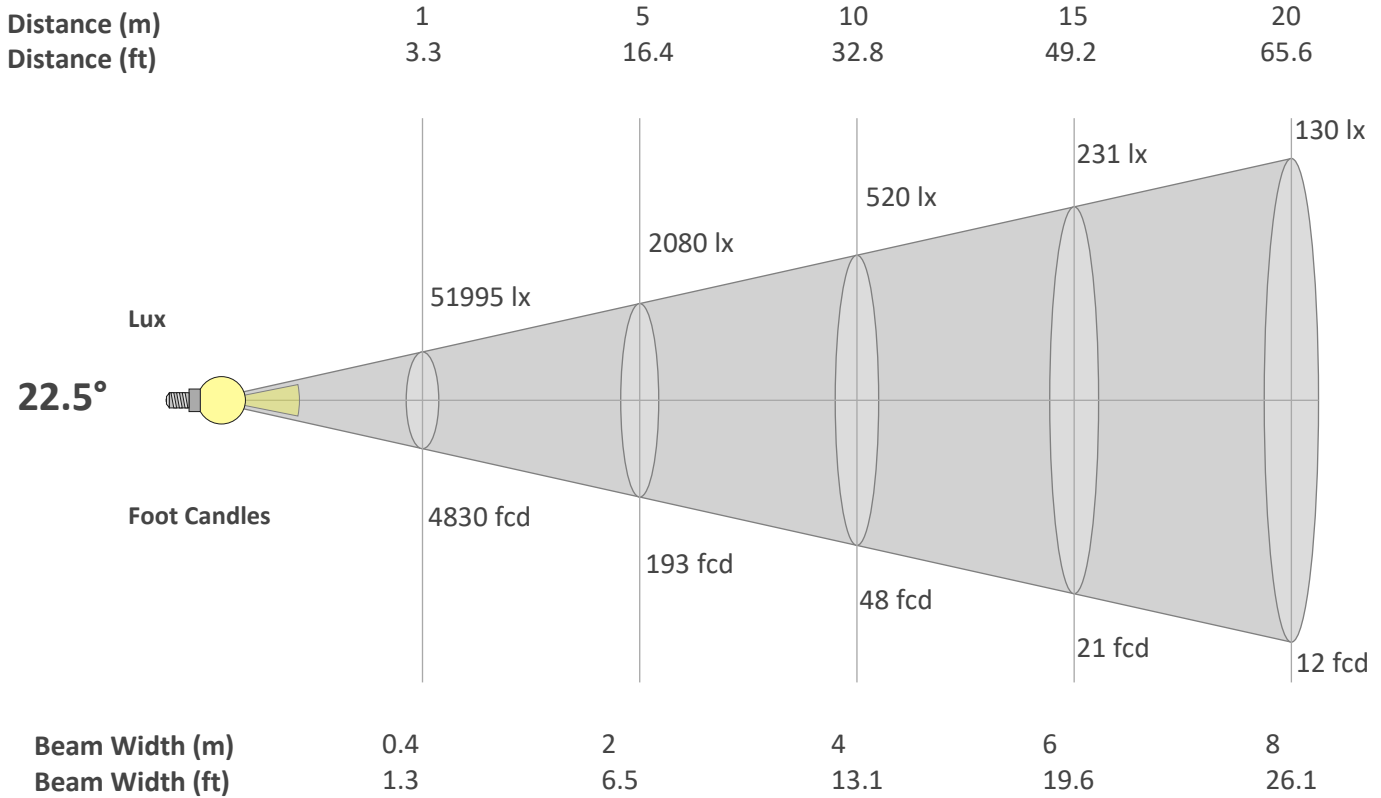
Dominant Wavelength 582 nm



*Total Lumen measurements by calibrated Everfine 2π Integrating Sphere and Viso Systems Lab Spion

Beam Details

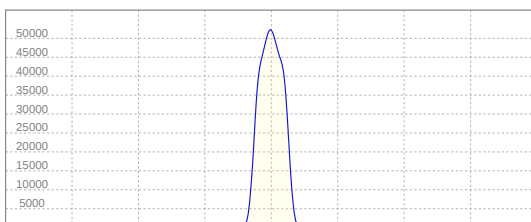
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
22.5°	30.4°	34.3°



Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	51995	12999	5777	3250	2080	1444	1061	812	642	520	430	361	308	265	231	203	180	160	144	130
FC	4830.5	1207.6	536.7	301.9	193.2	134.2	98.6	75.5	59.6	48.3	39.9	33.5	28.6	24.6	21.5	18.9	16.7	14.9	13.4	12.1

Linear Distribution



Peak Candela

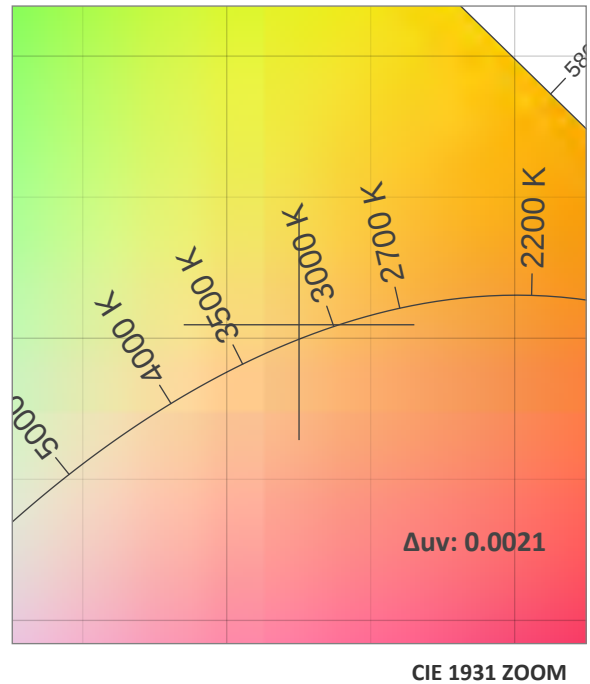
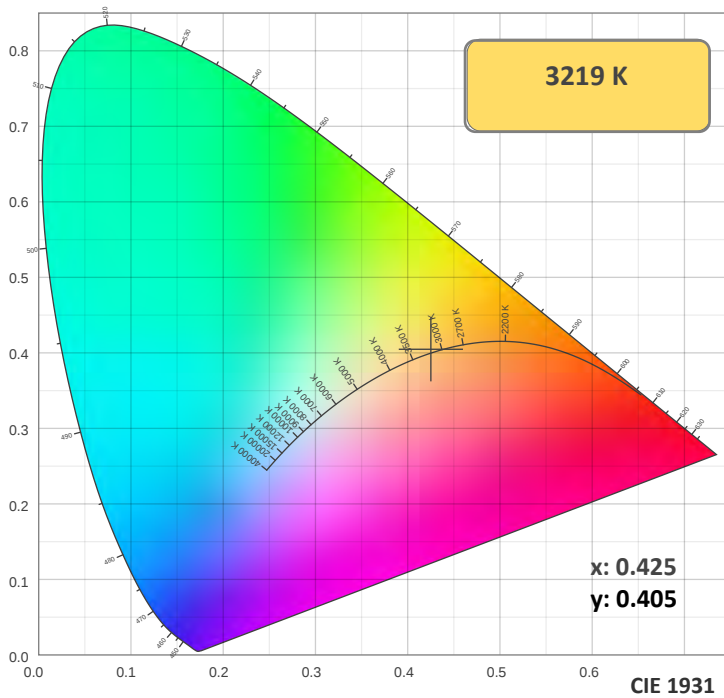
52232 cd

Calculate Center Beam Intensities

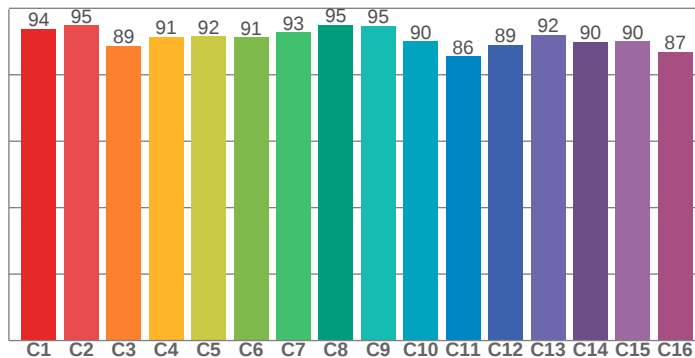
$$\text{lux} = 52232 / \text{distance(m)}^2$$

$$\text{fc} = 52232 / \text{distance(ft)}^2$$

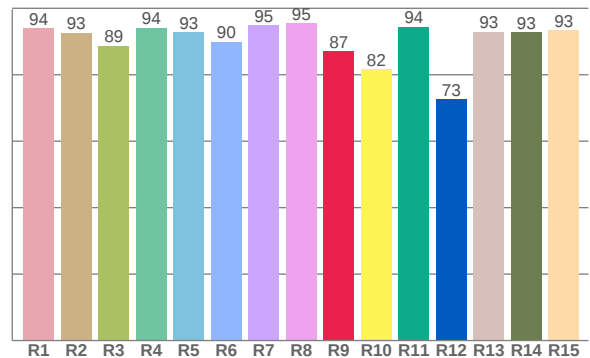
Color Details



TM30: 91.2



CRI: 92.9 (R1-R8)



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
94.1	92.6	88.8	94.2	92.9	89.9	95.0	95.5	87.1	81.6	94.4	72.6	92.9	92.8	93.4

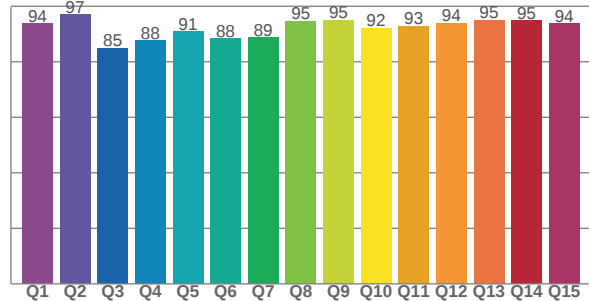
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.8	94.9	88.7	91.4	91.6	91.2	92.8	95.0	94.7	90.0	85.6	89.0	92.1	89.9	90.0	86.8

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
93.7	96.9	85.0	87.7	90.8	88.4	88.7	94.6	94.9	92.0	92.9	93.9	95.0	94.8	93.8

CQS: 91.4



Color Parameters

Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3219 K	92.9	87.1	91.2	102.6	91.4	0.425	0.405	0.243	0.347	0.0021

TM30 Details

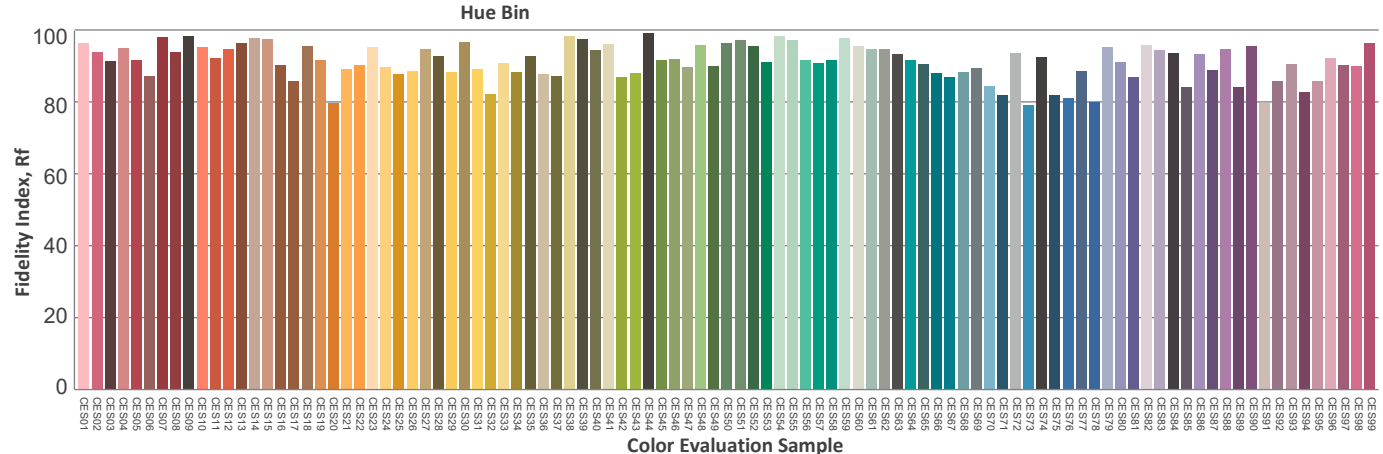
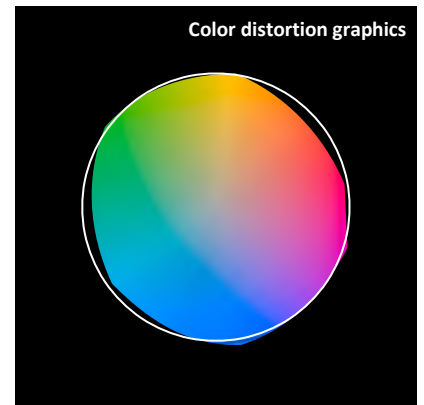
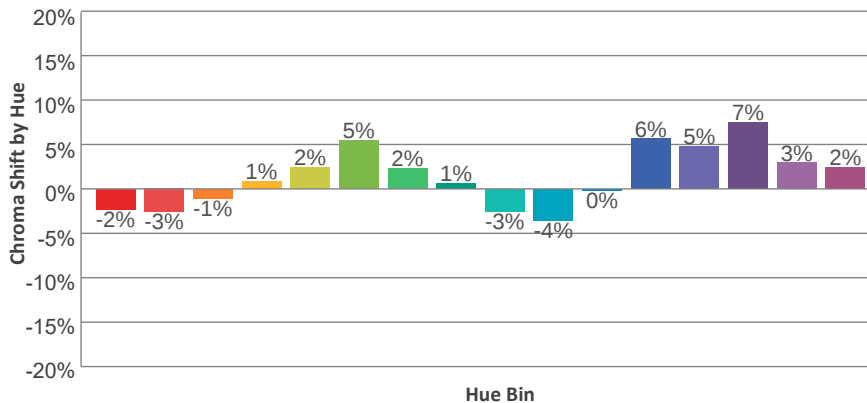
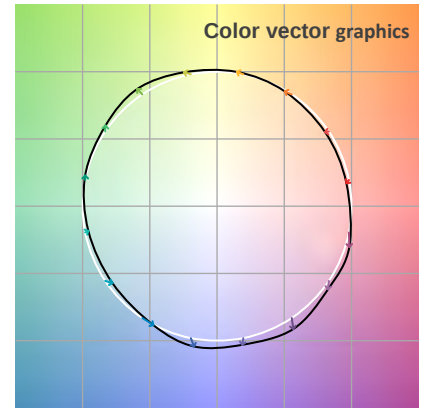
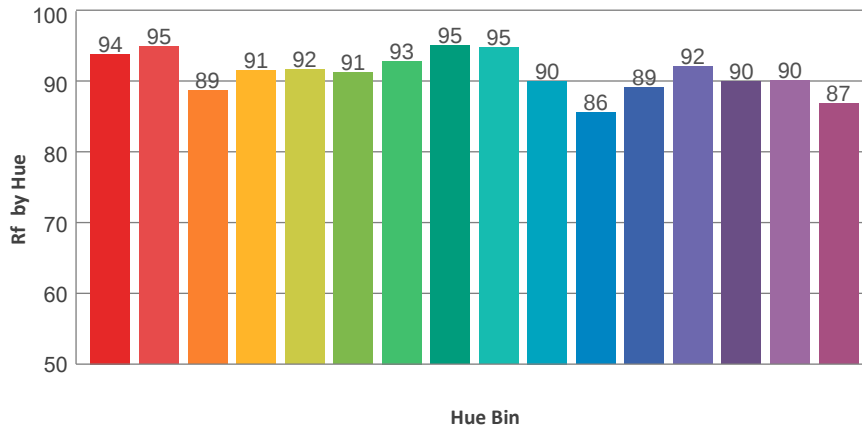
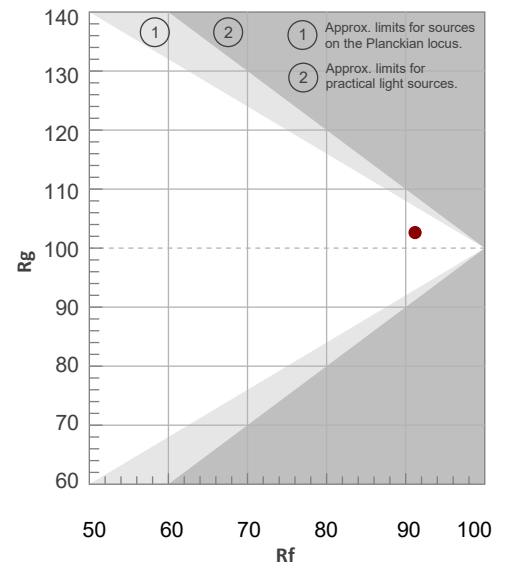
Rf 91.2

Fidelity Index Rf

Rg 102.6

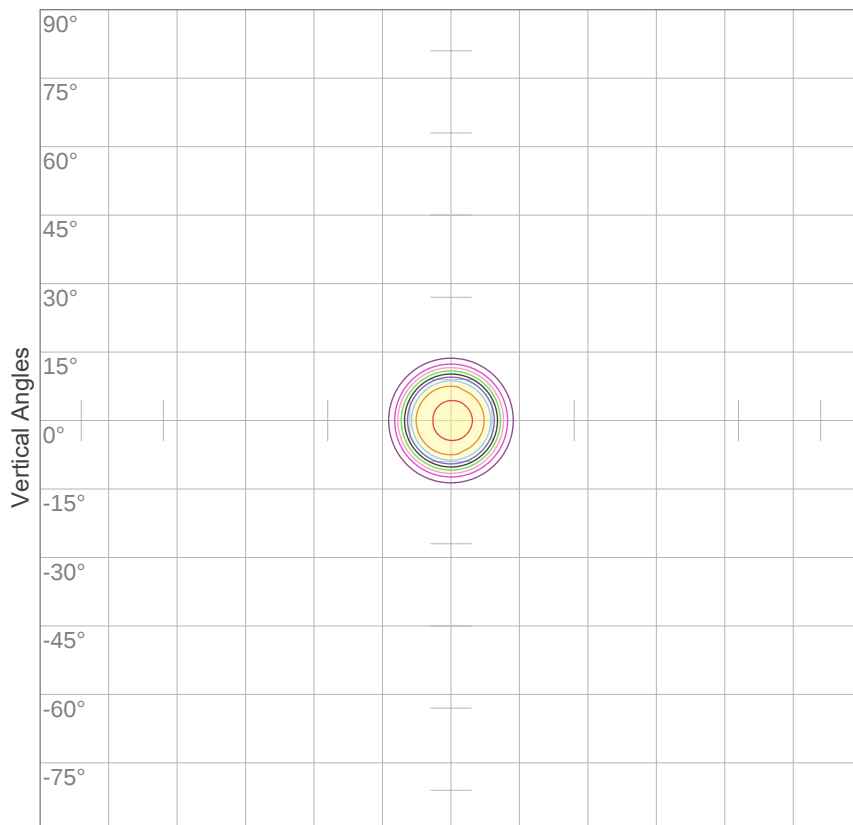
Gamut Index Rg

Hue Bin	R_i	Graphic shifts (%)	
		Chroma	Hue
1	94	-2%	-2%
2	95	-3%	1%
3	89	-1%	6%
4	91	1%	5%
5	92	2%	5%
6	91	5%	1%
7	93	2%	-4%
8	95	1%	-3%
9	95	-3%	-1%
10	90	-4%	4%
11	86	0%	10%
12	89	6%	4%
13	92	5%	-2%
14	90	7%	-4%
15	90	3%	-5%
16	87	2%	-11%



ISO Diagrams

ISO Candela Diagram



Horizontal Angles

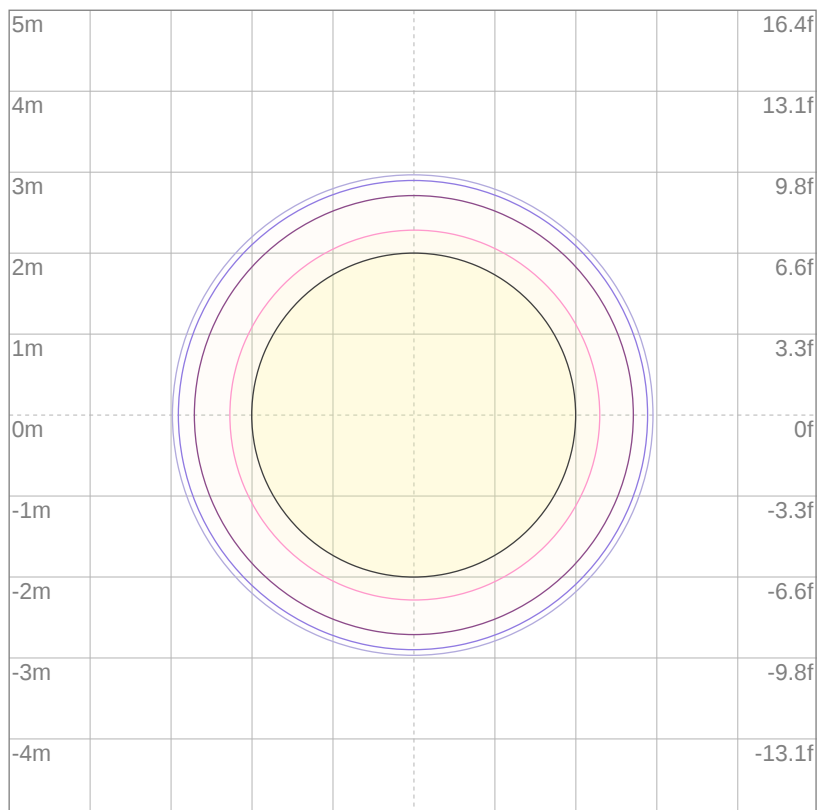
10%	5199 cd
20%	10399 cd
30%	15598 cd
40%	20798 cd
50%	25997 cd
60%	31197 cd
70%	36396 cd
80%	41596 cd
90%	46795 cd

Conditions:

Number of c-planes: 2

Candela at center: 51995 cd

ISO Lux Diagram



Mounting Height: 10 meters (33 feet)

3%	15.6 lx
5%	26.0 lx
10%	52.0 lx
30%	156 lx
50%	260 lx

Conditions:

Number of c-planes: 2

Lux at center: 520 lx

Lux distribution on a surface when lamp is mounted at 10 meters from the surface.