

PROTEUSTM MAXIMUS

Photometric Test Report

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CONTENTS

Testing Process	4
Zoom IN	5
Zoom 50%	10
Zoom OUT	15
High CRI	20
CTO	25
UV	30

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, 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 C700](#)

Photometric Report

Total Lumen Output*

Integrating Sphere 15756 lm

VISO Lab Spion 16740 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
4.8°	6.1°	6.4°

Color Temperature: 6152 K

CRI: 70.0

TLCI: 45

TM30: 67.2

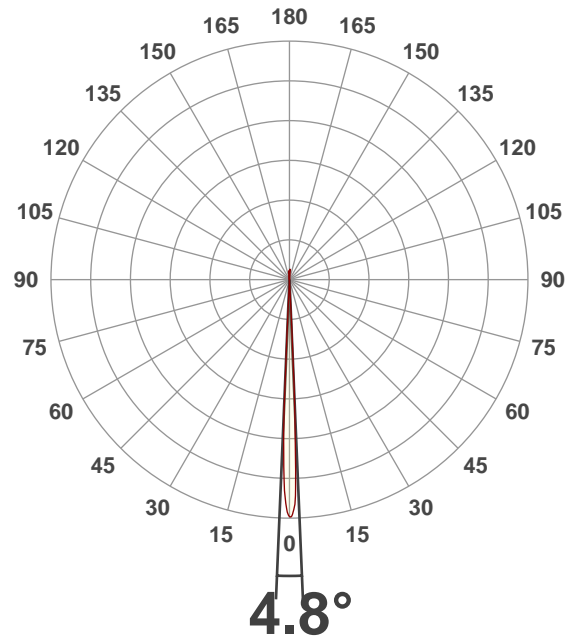
CQS: 67.7

Voltage: 115 V, Current: 11.4 A

Power: 1310 W

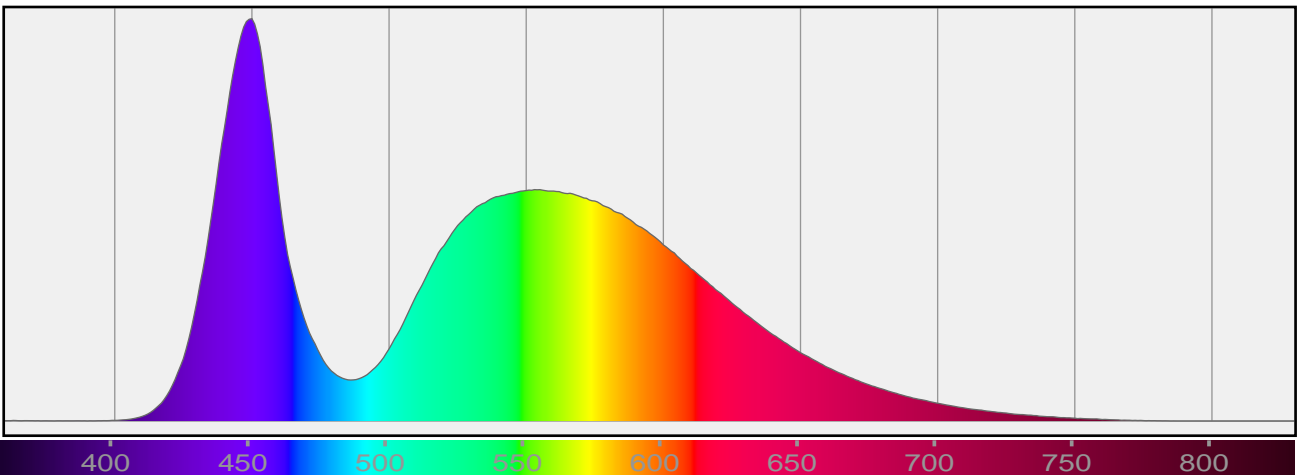
Efficacy: 13 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

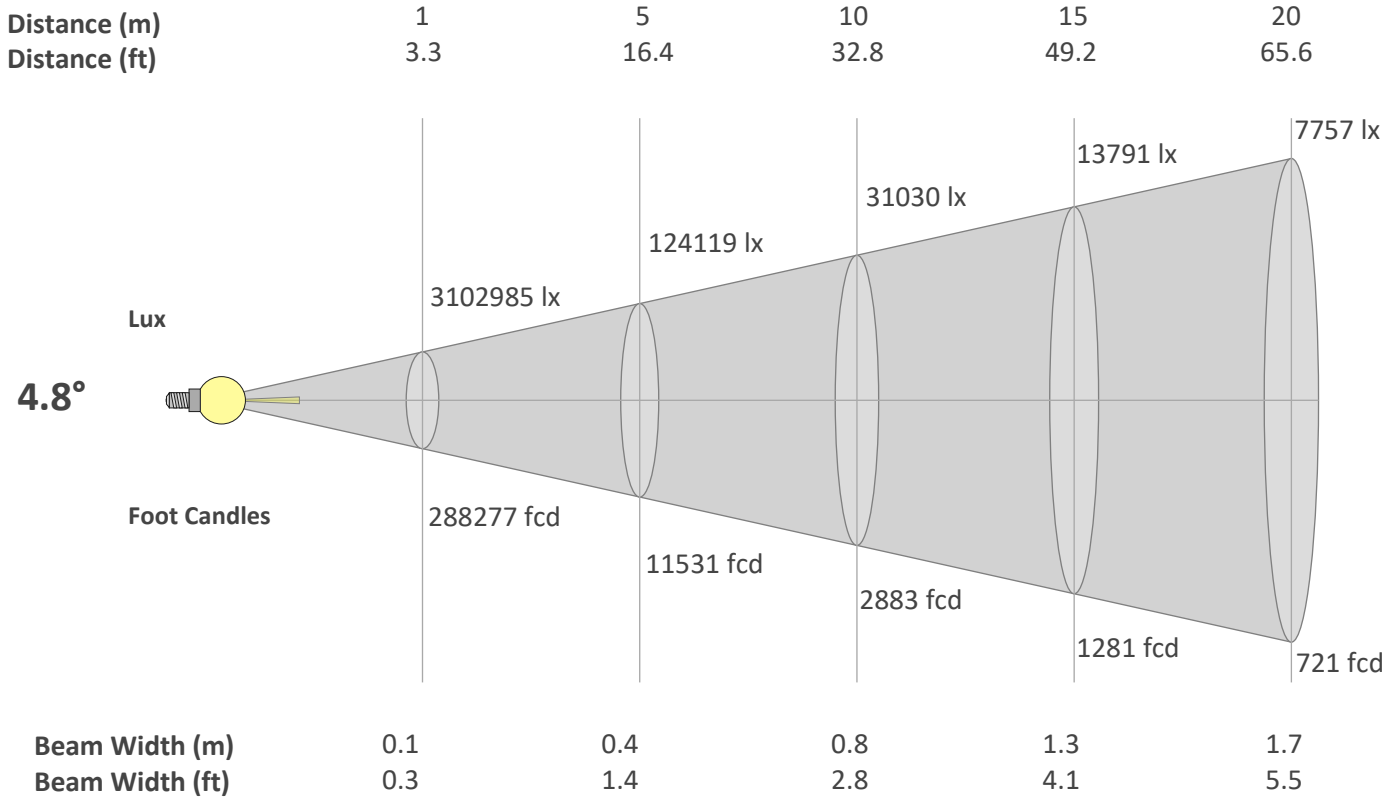
Dominant Wavelength 579 nm



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

Beam Details

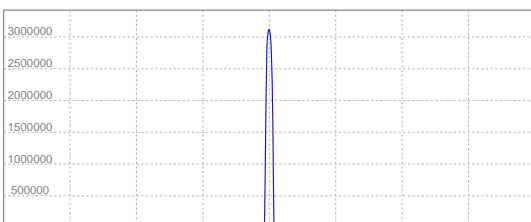
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
4.8°	6.1°	6.4°



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	3102985	775746	344776	193937	124119	86194	63326	48484	38308	31030	25645	21549	18361	15832	13791	12121	10737	9577	8596	7757
FC	288276.8	72069.2	32030.8	18017.3	11531.1	8007.7	5883.2	4504.3	3559	2882.8	2382.5	2001.9	1705.8	1470.8	1281.2	1126.1	997.5	889.7	798.6	720.7

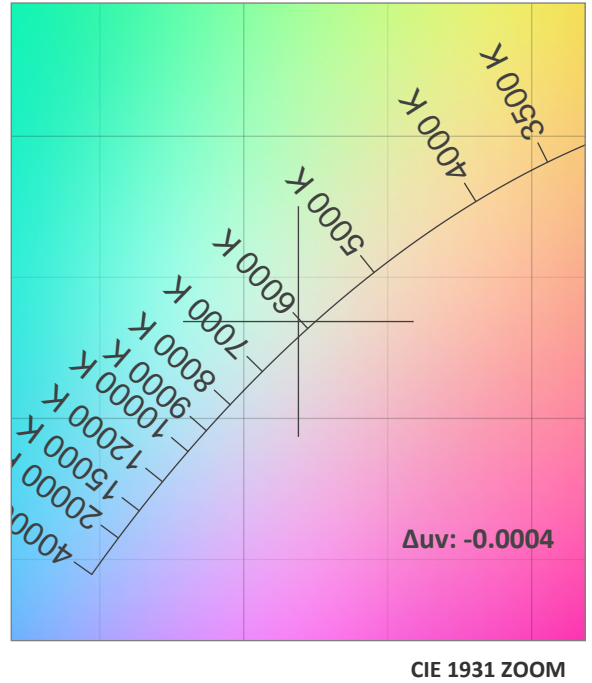
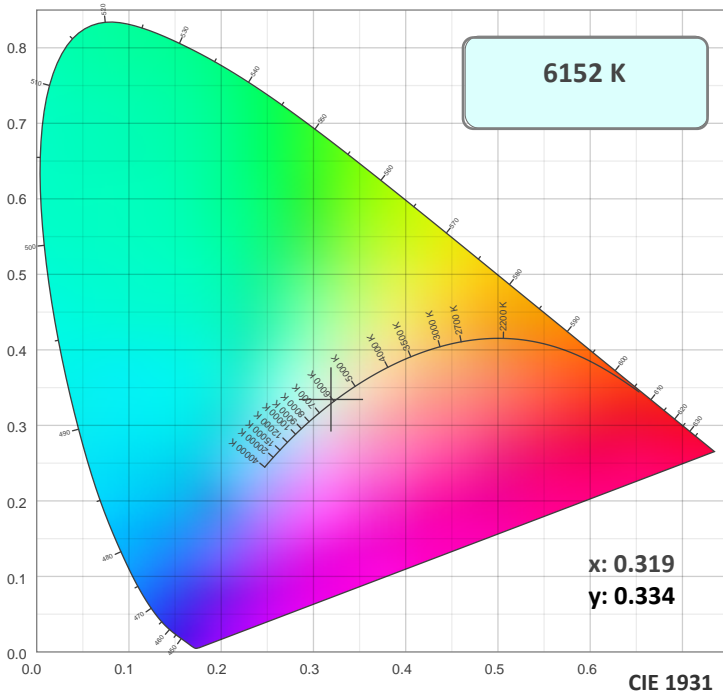
Linear Distribution



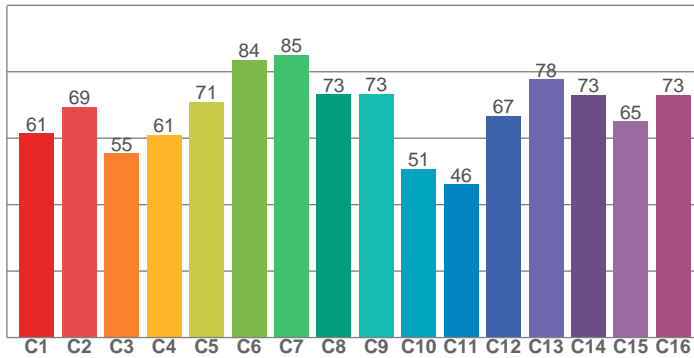
Peak Candela
3112490 cd

Calculate Center Beam Intensities
 $lux = 3112490 / distance(m)^2$
 $fc = 3112490 / distance(ft)^2$

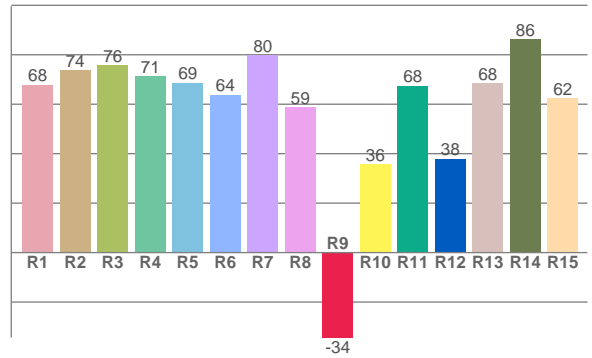
Color Details



TM30: 67.2



CRI: 70.0 (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
67.8	73.8	75.7	71.4	68.6	63.8	79.8	58.8	-34.4	35.7	67.5	38.0	68.4	86.2	62.5

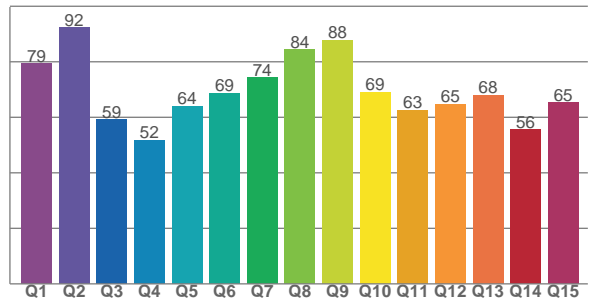
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
61.4	69.4	55.5	61.1	70.9	83.6	85.2	73.2	73.3	50.8	46.1	66.6	77.7	73.1	65.1	73.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
79.4	92.4	59.2	51.8	64.0	68.7	74.2	84.3	87.8	69.1	62.6	64.7	68.0	55.6	65.3

CQS: 67.7



Color Parameters

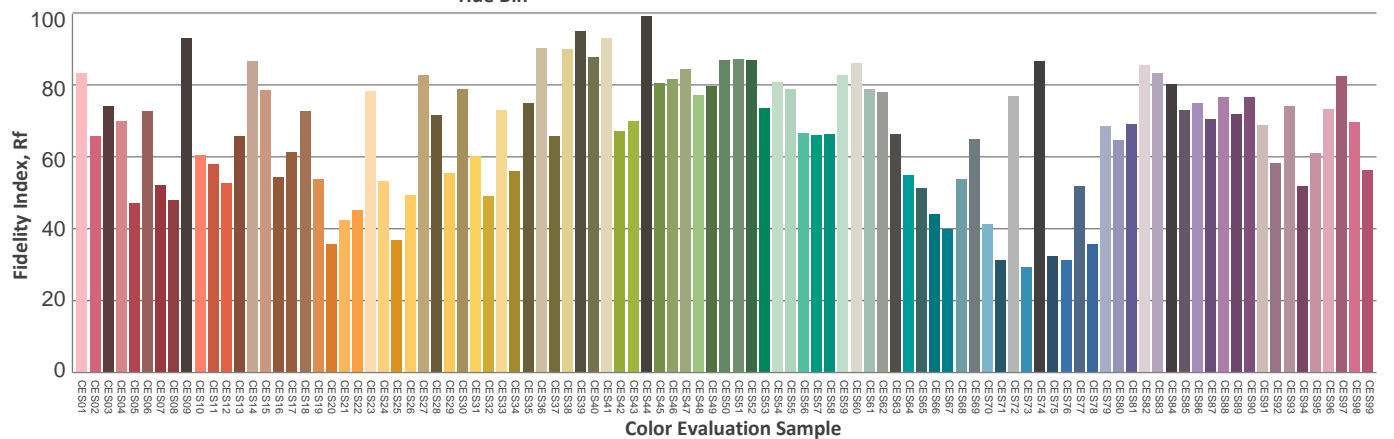
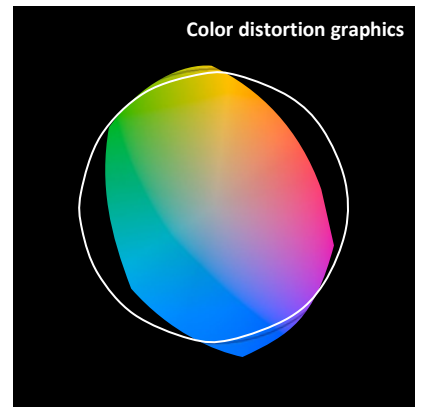
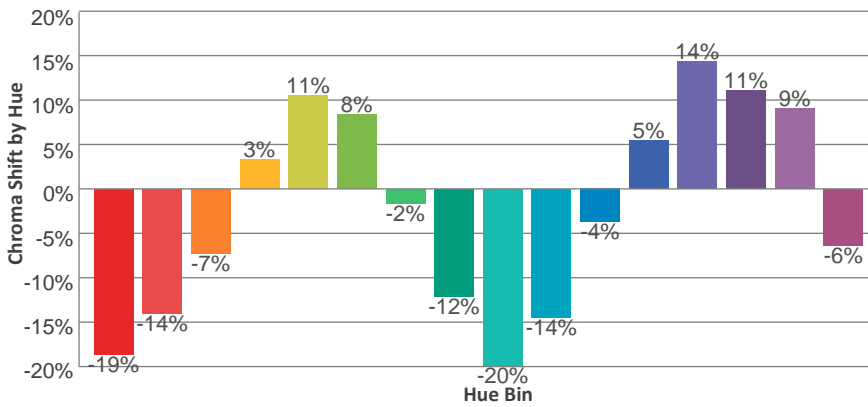
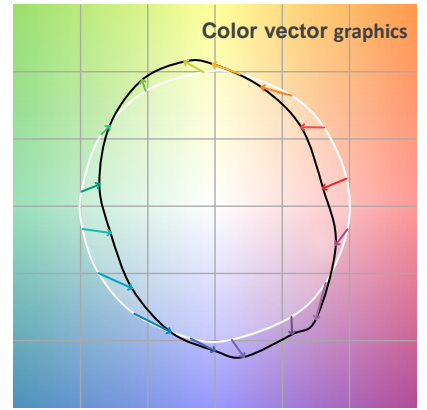
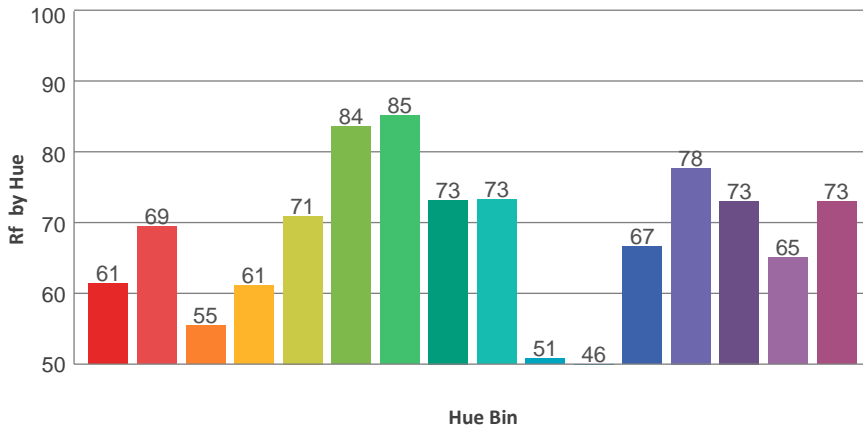
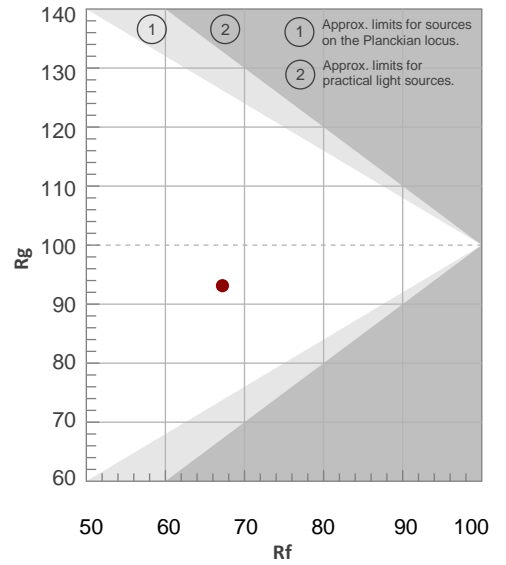
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6152 K	70.0	-34.4	67.2	93.1	67.7	0.319	0.334	0.200	0.315	-0.0004

TM30 Details

Rf 67.2
Fidelity Index Rf

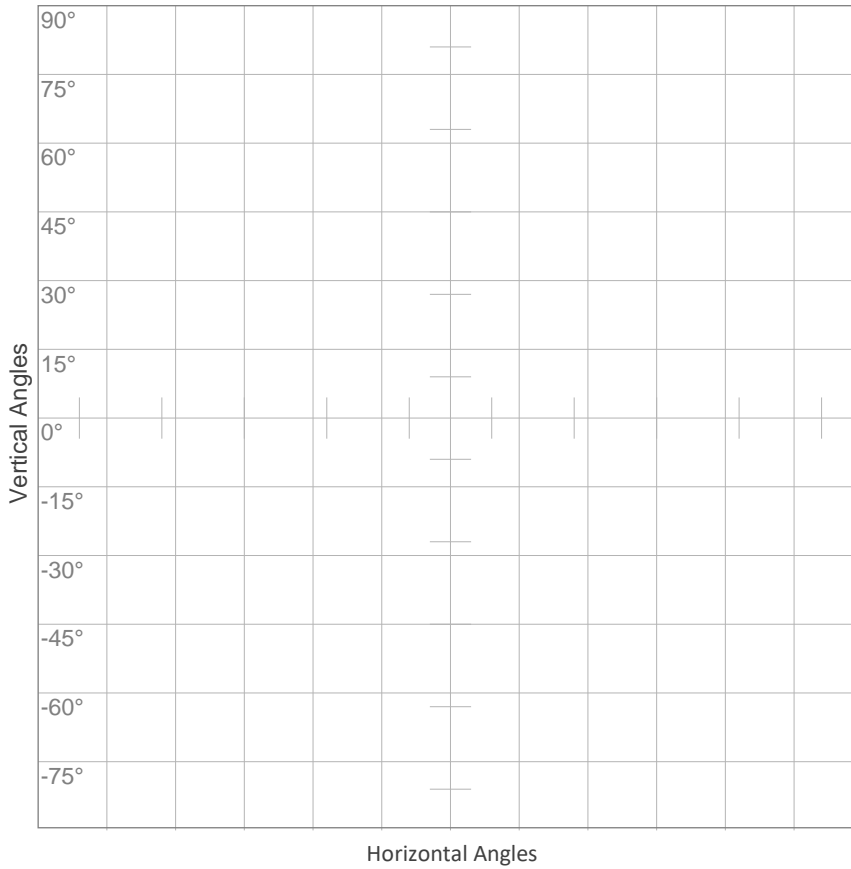
Rg 93.1
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	61	-19%	-4%
2	69	-14%	10%
3	55	-7%	22%
4	61	3%	21%
5	71	11%	12%
6	84	8%	-2%
7	85	-2%	-8%
8	73	-12%	-8%
9	73	-20%	7%
10	51	-14%	23%
11	46	-4%	30%
12	67	5%	19%
13	78	14%	6%
14	73	11%	-7%
15	65	9%	-27%
16	73	-6%	-13%



ISO Diagrams

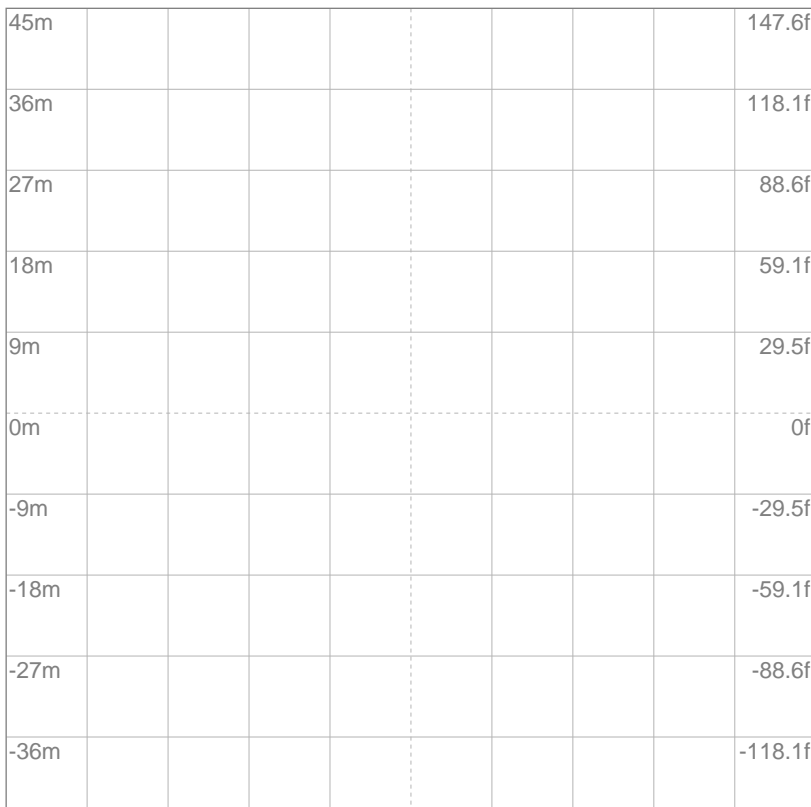
ISO Candela Diagram



10%	310299 cd
20%	620597 cd
30%	930896 cd
40%	1241194 cd
50%	1551493 cd
60%	1861791 cd
70%	2172090 cd
80%	2482388 cd
90%	2792687 cd

Conditions:
 Number of c-planes: 2
 Candela at center: 3102985 cd

ISO Lux Diagram



3%	931 lx
5%	1551 lx
10%	3103 lx
30%	9309 lx
50%	15.5K lx

Conditions:
 Number of c-planes: 2
 Lux at center: 31.0K 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*

Integrating Sphere 48365 lm

VISO Lab Spion 37800 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
15°	18.3°	19.2°

Color Temperature: 6202 K

CRI: 69.6

TLCI: 44

TM30: 67.0

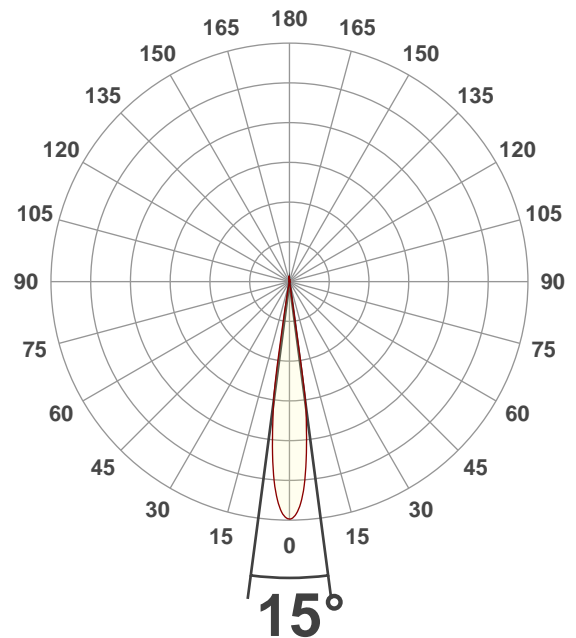
CQS: 67.5

Voltage: 116 V, Current: 11.3 A

Power: 1308.9 W

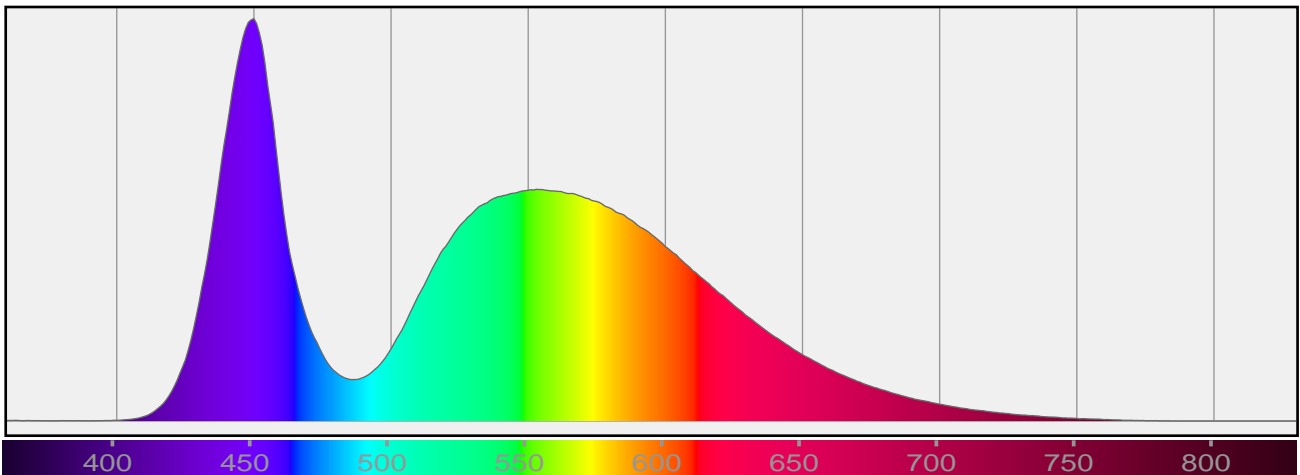
Efficacy: 29 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

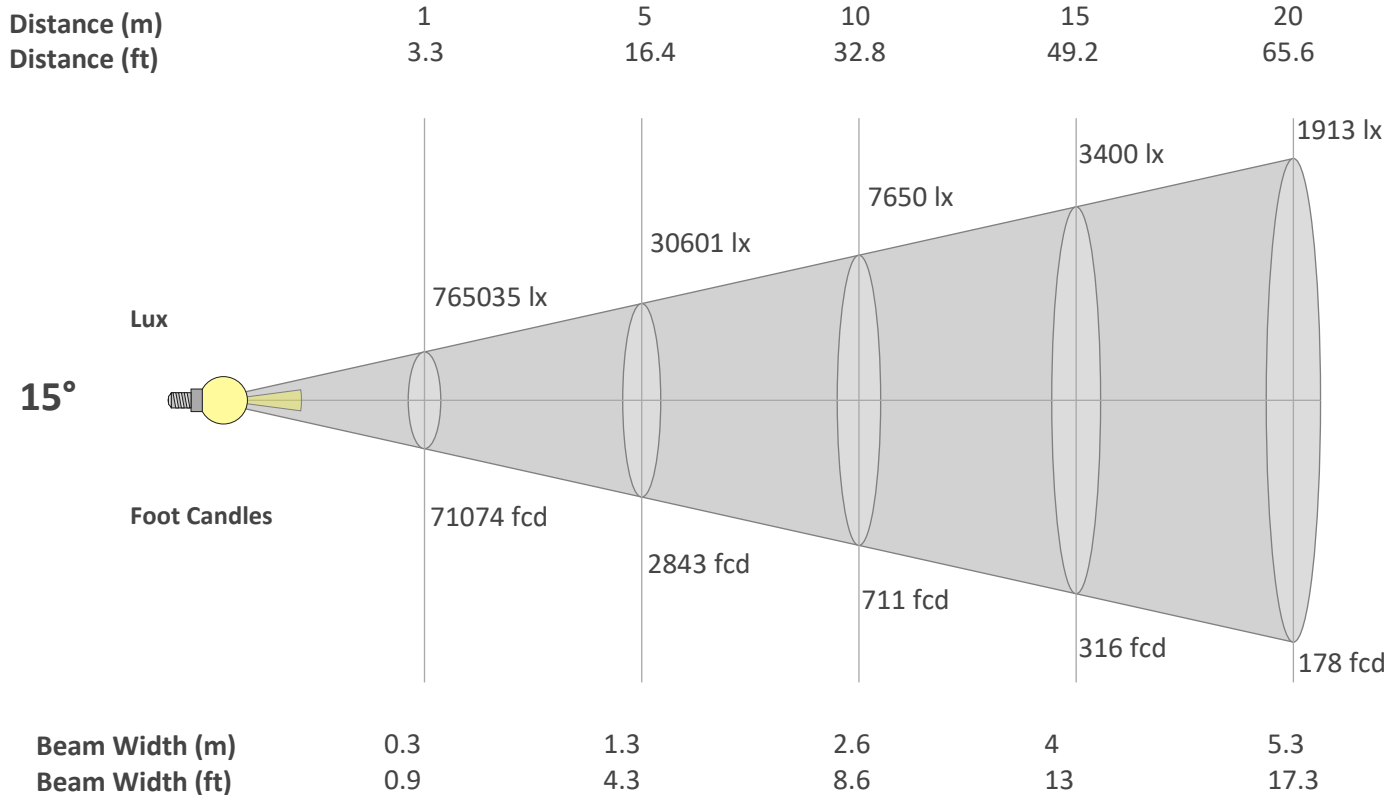
Dominant Wavelength 577 nm



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

Beam Details

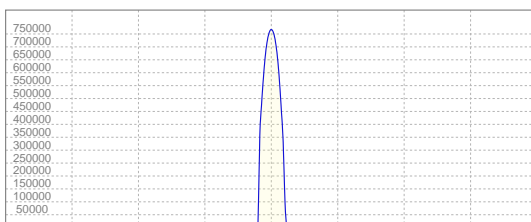
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
15°	18.3°	19.2°



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	765035	191259	85004	47815	30601	21251	15613	11954	9445	7650	6323	5313	4527	3903	3400	2988	2647	2361	2119	1913
FC	71074	17768.5	7897.1	4442.1	2843	1974.3	1450.5	1110.5	877.5	710.7	587.4	493.6	420.6	362.6	315.9	277.6	245.9	219.4	196.9	177.7

Linear Distribution



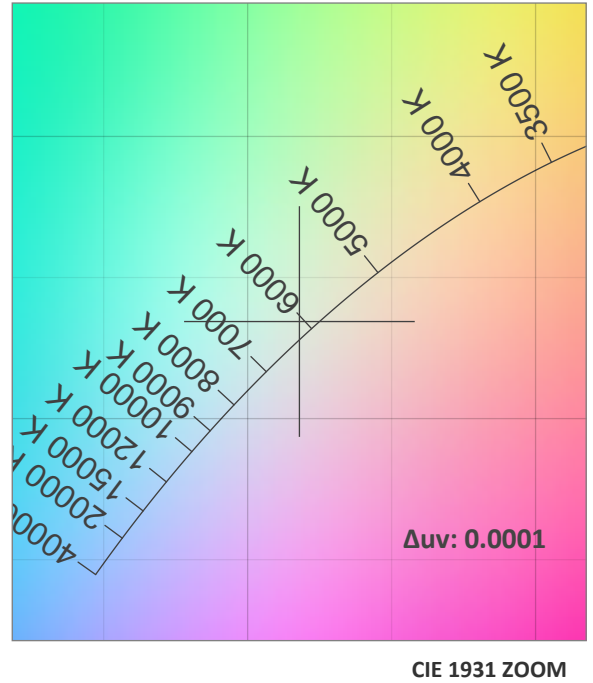
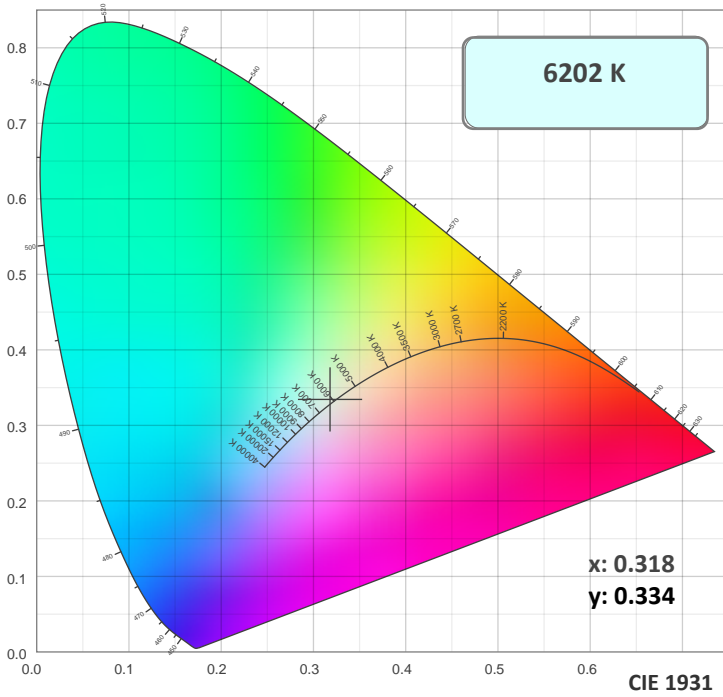
Peak Candela
765893 cd

Calculate Center Beam Intensities

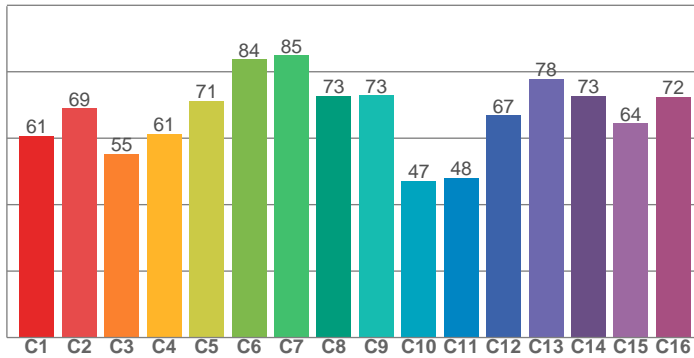
$lux = 765893 / distance(m)^2$

$fc = 765893 / distance(ft)^2$

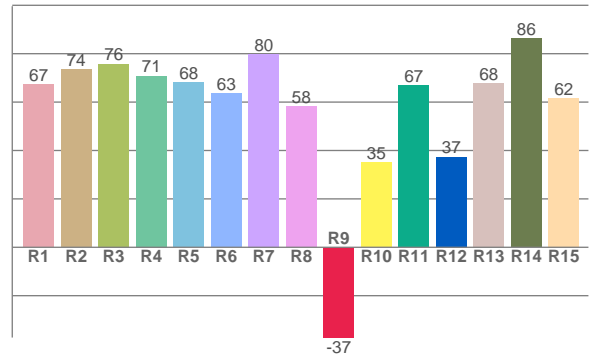
Color Details



TM30: 67.0



CRI: 69.6 (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
67.2	73.5	75.8	70.9	68.1	63.5	79.8	58.1	-37.3	35.1	66.8	37.4	67.8	86.2	61.7

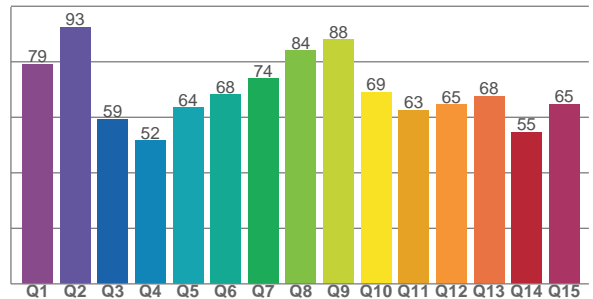
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
60.6	69.0	55.3	61.2	71.3	83.8	85.0	72.7	72.9	47.1	48.0	66.9	77.8	72.8	64.4	72.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
79.1	92.5	59.3	51.6	63.6	68.3	73.9	84.0	88.0	69.1	62.5	64.5	67.7	54.7	64.7

CQS: 67.5



Color Parameters

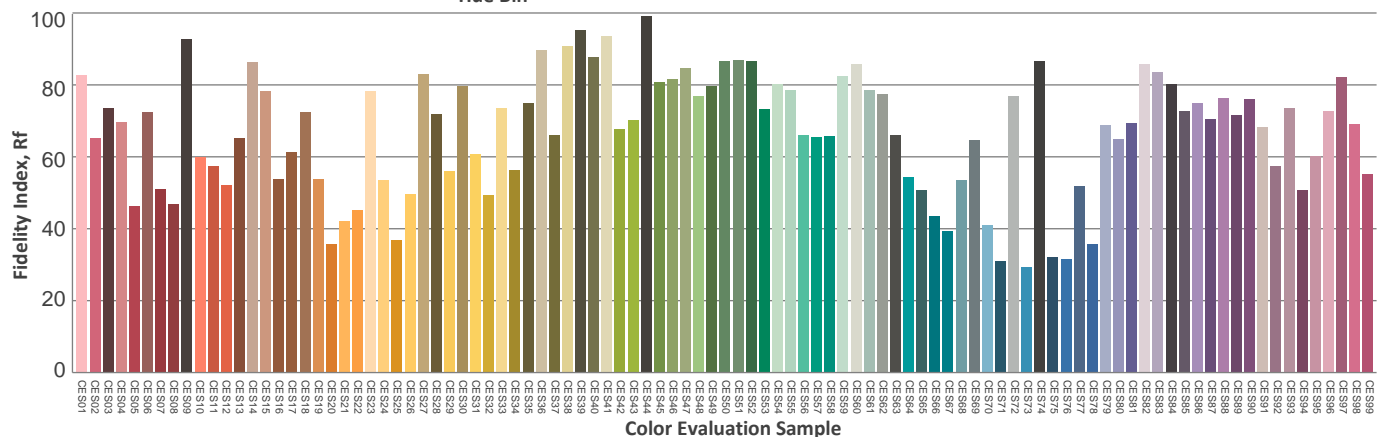
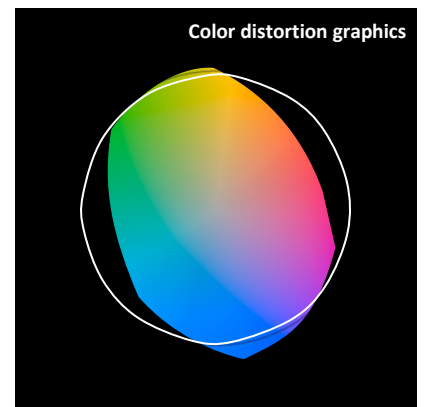
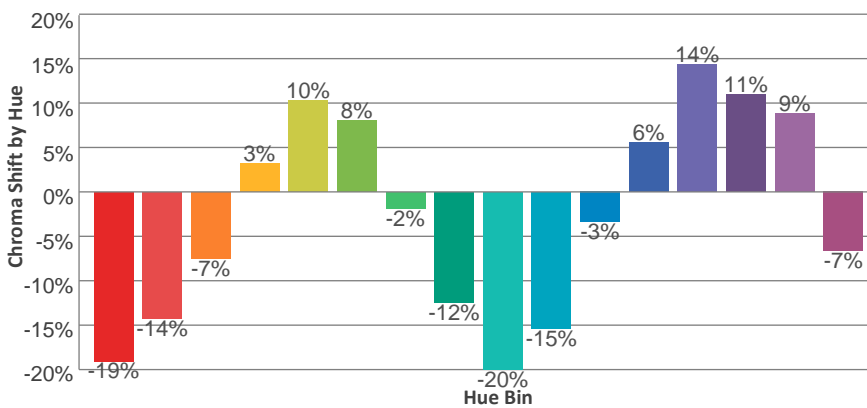
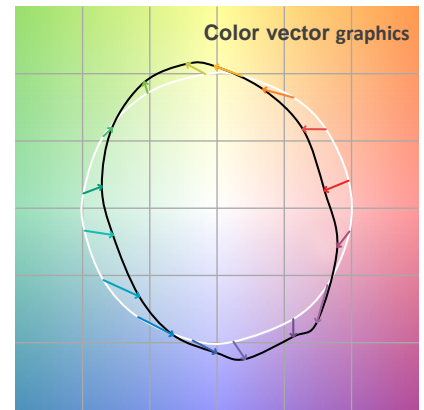
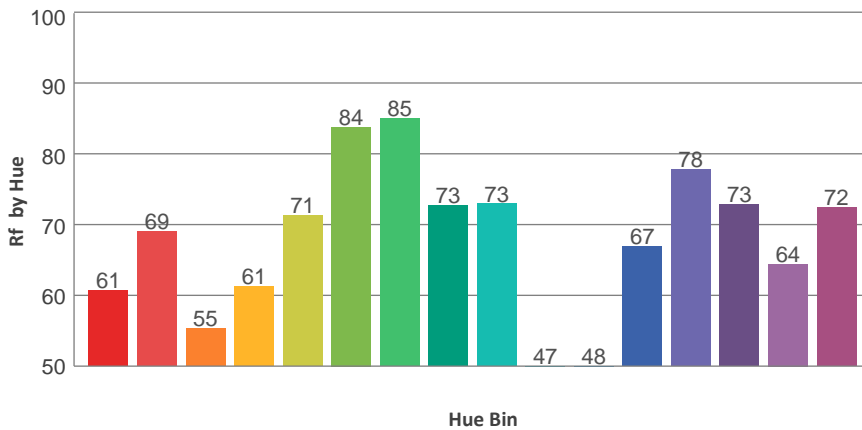
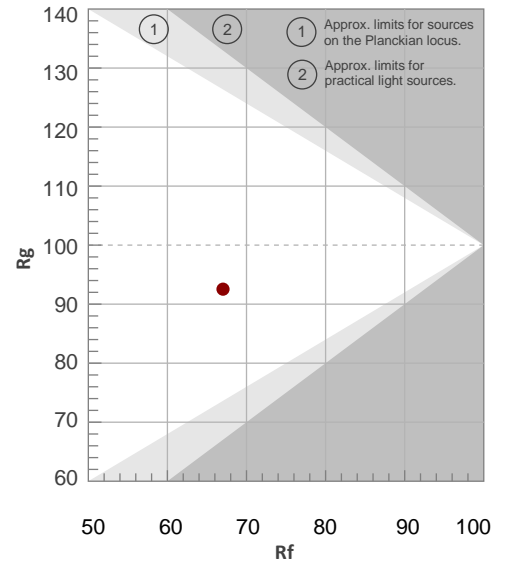
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6202 K	69.6	-37.3	67.0	92.5	67.5	0.318	0.334	0.199	0.315	0.0001

TM30 Details

Rf 67.0
Fidelity Index Rf

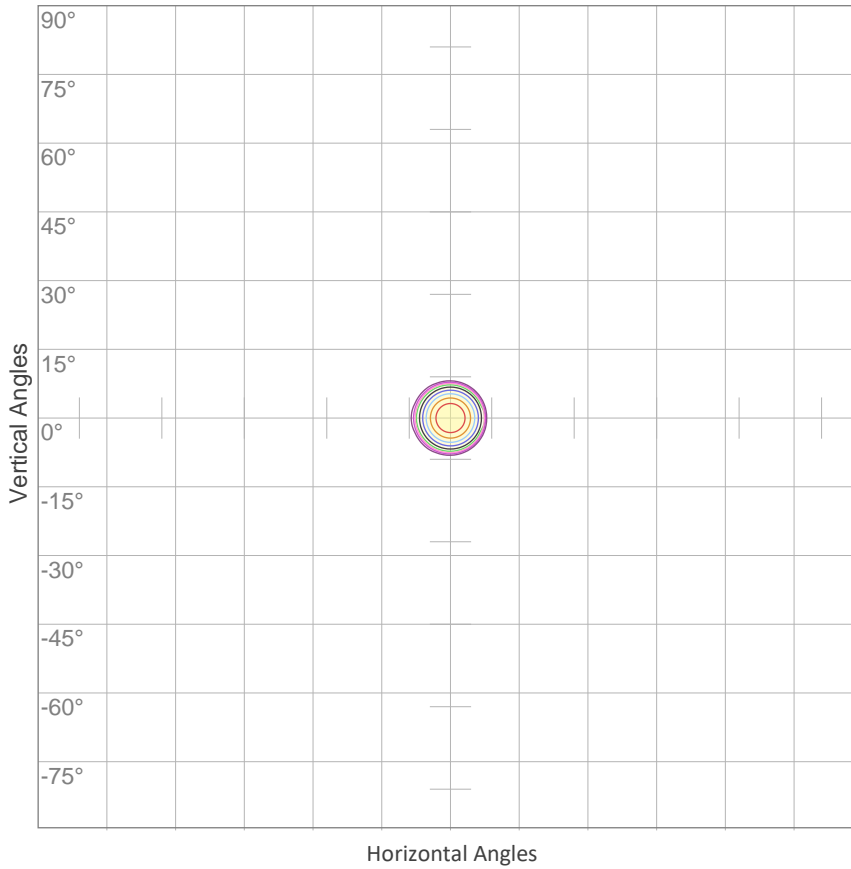
Rg 92.5
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	61	-19%	-4%
2	69	-14%	10%
3	55	-7%	22%
4	61	3%	21%
5	71	10%	12%
6	84	8%	-2%
7	85	-2%	-8%
8	73	-12%	-8%
9	73	-20%	7%
10	47	-15%	25%
11	48	-3%	29%
12	67	6%	19%
13	78	14%	6%
14	73	11%	-7%
15	64	9%	-27%
16	72	-7%	-13%



ISO Diagrams

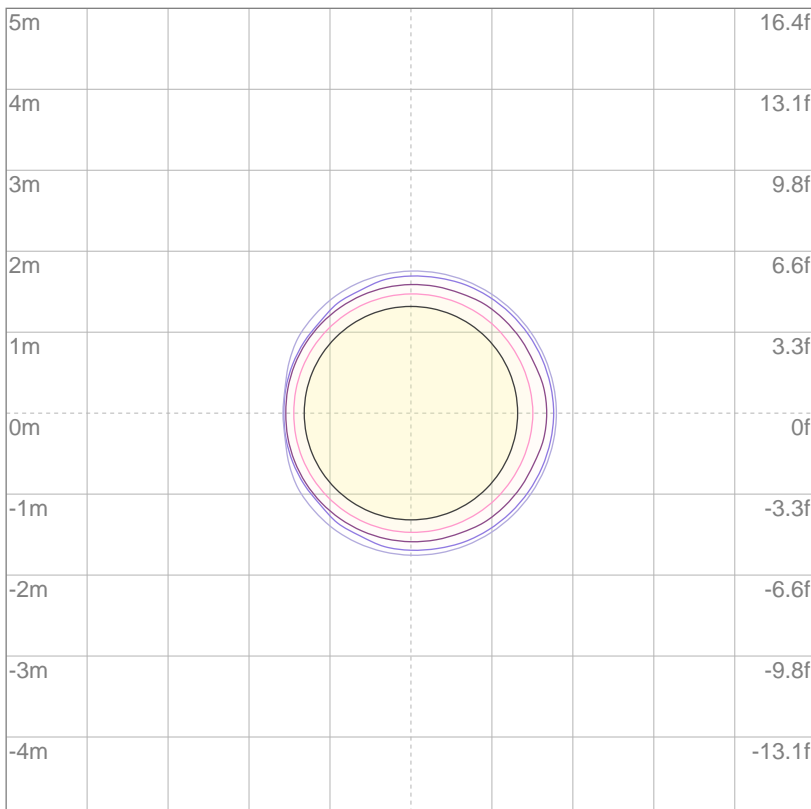
ISO Candela Diagram



10%	76503 cd
20%	153007 cd
30%	229510 cd
40%	306014 cd
50%	382517 cd
60%	459021 cd
70%	535524 cd
80%	612028 cd
90%	688531 cd

Conditions:
 Number of c-planes: 2
 Candela at center: 765035 cd

ISO Lux Diagram



3%	230 lx
5%	383 lx
10%	765 lx
30%	2295 lx
50%	3825 lx

Conditions:
 Number of c-planes: 2
 Lux at center: 7650 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*

Integrating Sphere 38615 lm

VISO Lab Spion 38640 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
41.2°	51°	54.1°

Color Temperature: 6218 K

CRI: 69.5

TLCI: 44

TM30: 66.8

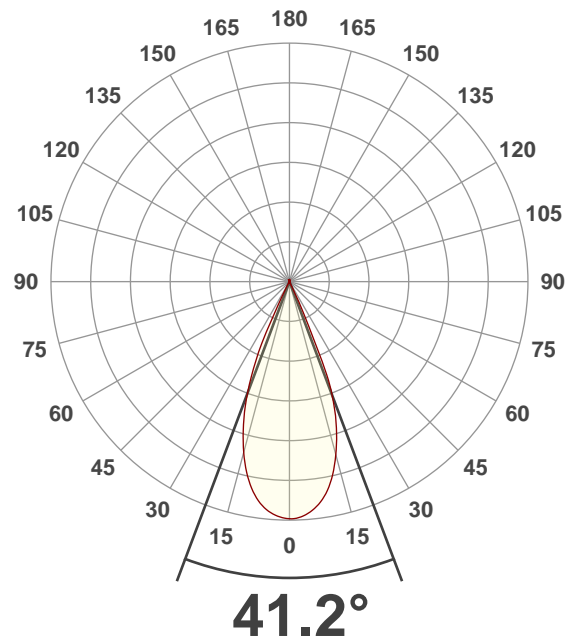
CQS: 67.3

Voltage: 115 V, Current: 11.4 A

Power: 1310 W

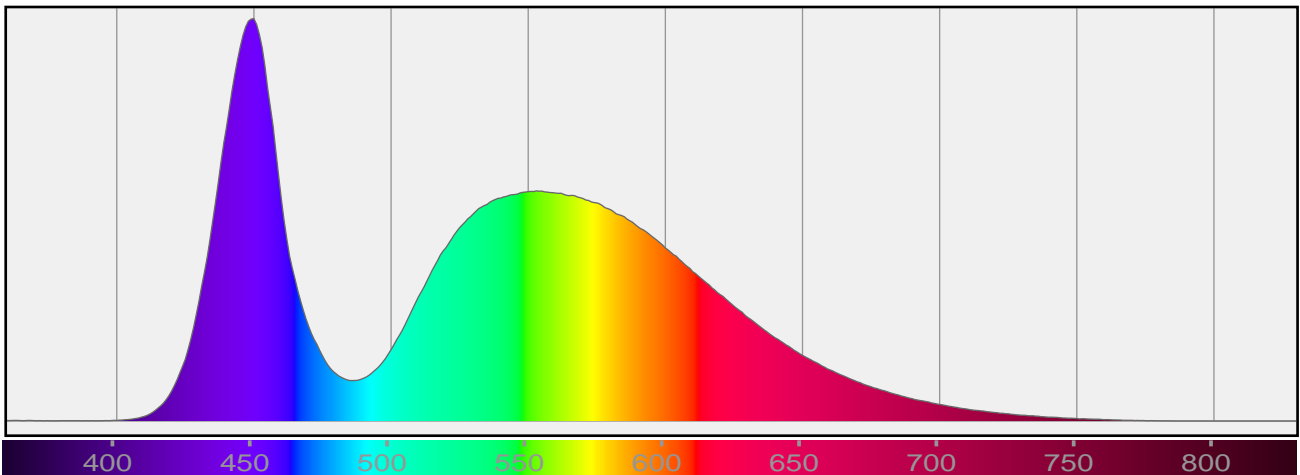
Efficacy: 29 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

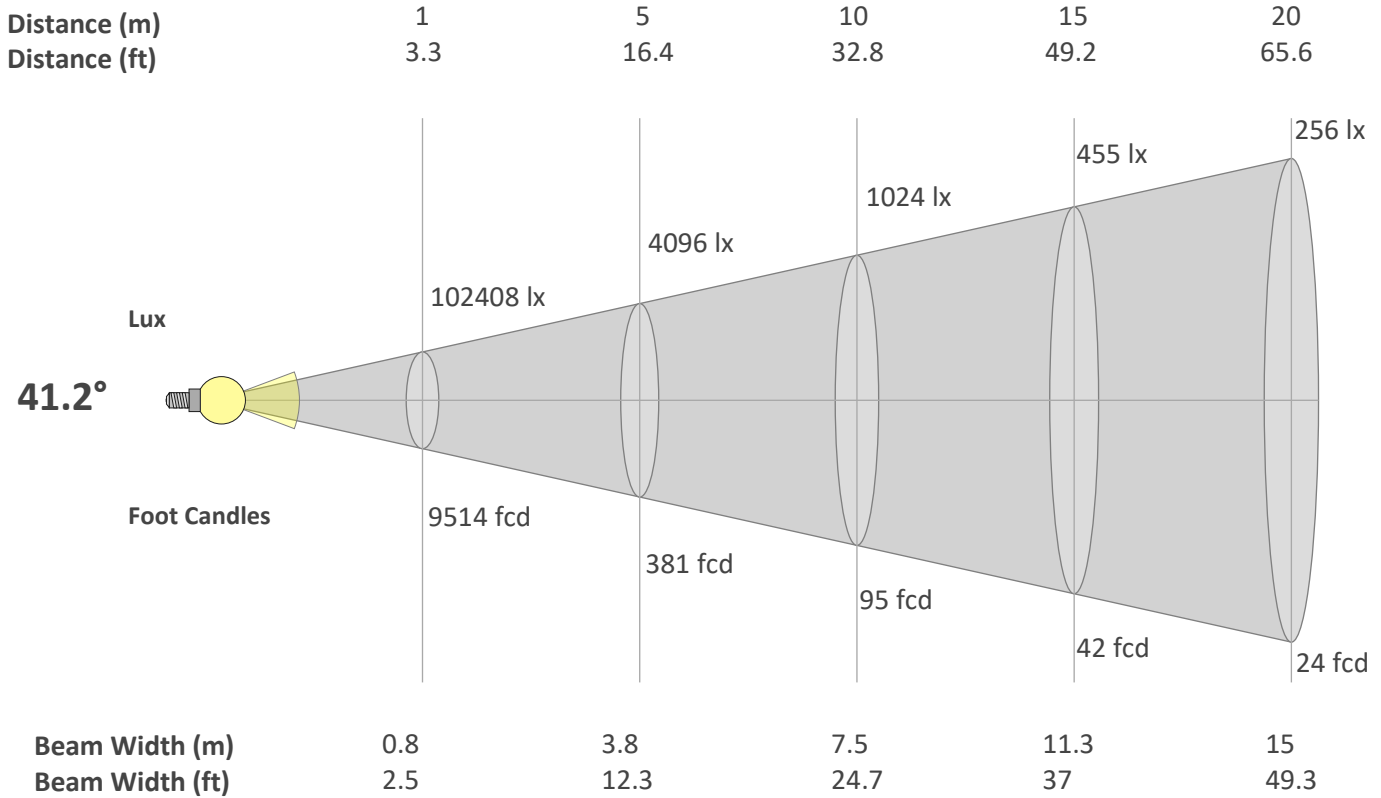
Dominant Wavelength 578 nm



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

Beam Details

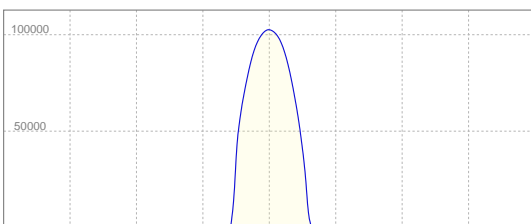
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
41.2°	51°	54.1°



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	102408	25602	11379	6400	4096	2845	2090	1600	1264	1024	846	711	606	522	455	400	354	316	284	256
FC	9514	2378.5	1057.1	594.6	380.6	264.3	194.2	148.7	117.5	95.1	78.6	66.1	56.3	48.5	42.3	37.2	32.9	29.4	26.4	23.8

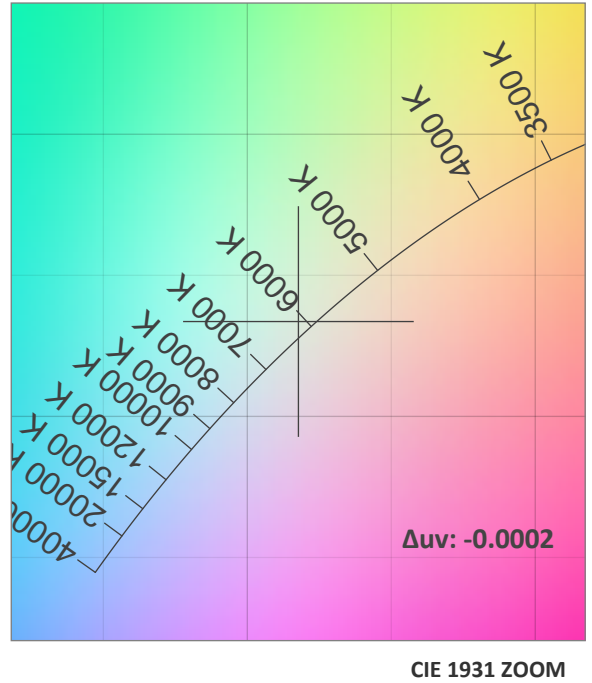
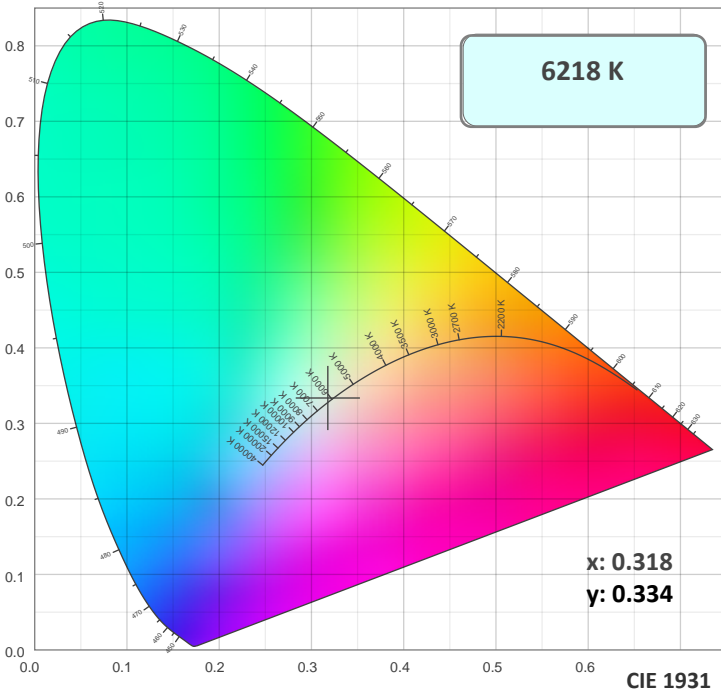
Linear Distribution



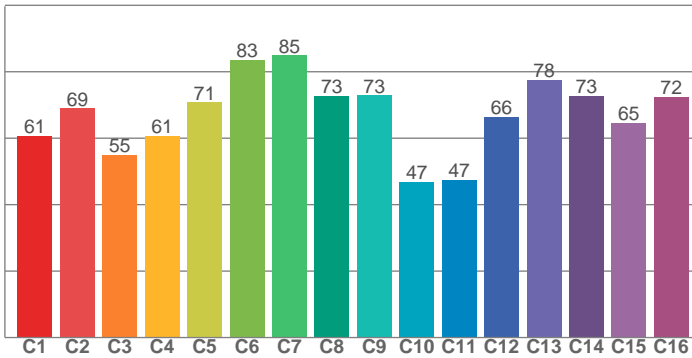
Peak Candela
102508 cd

Calculate Center Beam Intensities
 $lux = 102508 / distance(m)^2$
 $fc = 102508 / distance(ft)^2$

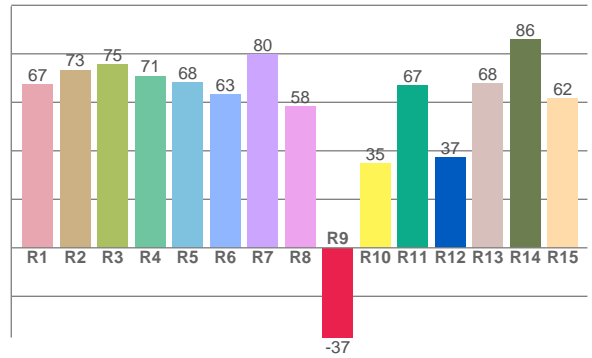
Color Details



TM30: 66.8



CRI: 69.5 (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
67.2	73.4	75.5	70.9	68.1	63.3	79.6	58.2	-37.0	34.7	66.9	37.3	67.8	86.0	61.8

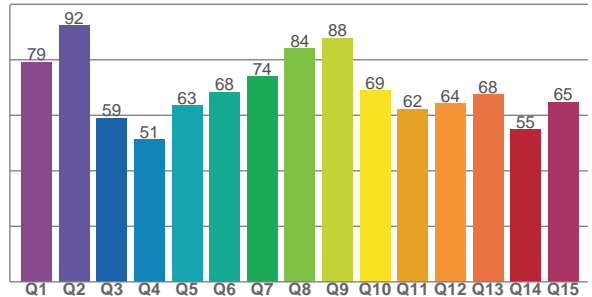
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
60.7	68.9	54.9	60.7	70.7	83.5	85.0	72.7	72.9	46.8	47.5	66.3	77.5	72.7	64.6	72.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
79.1	92.3	59.0	51.3	63.5	68.3	73.9	84.1	87.7	68.8	62.2	64.2	67.5	54.8	64.7

CQS: 67.3



Color Parameters

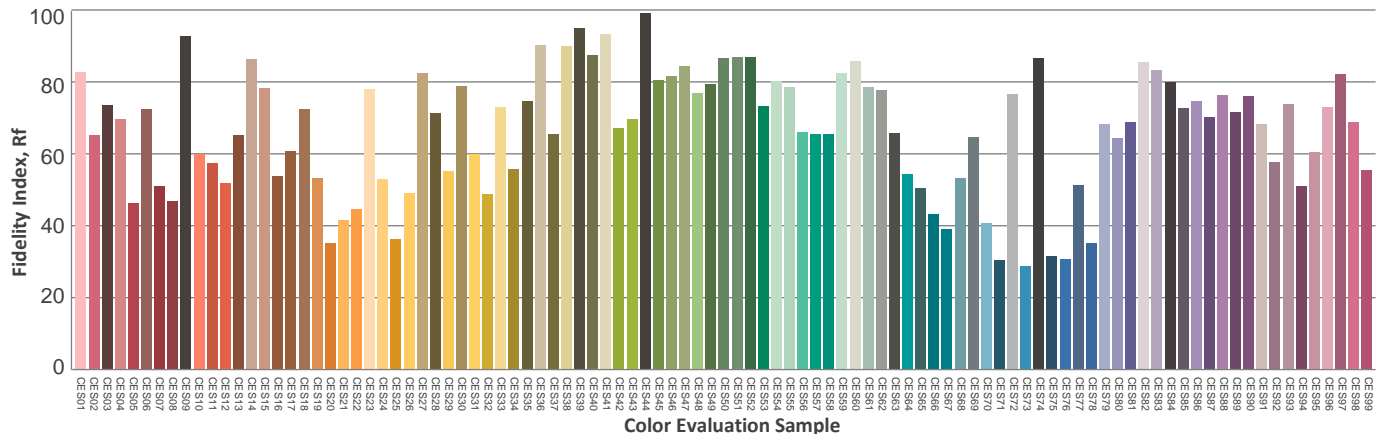
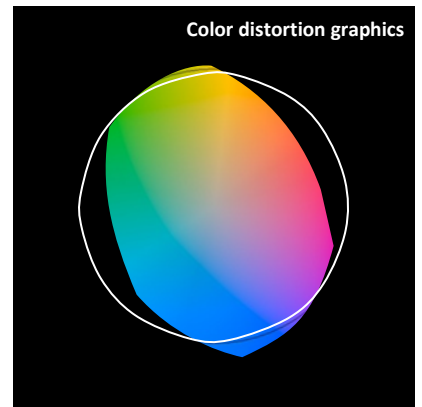
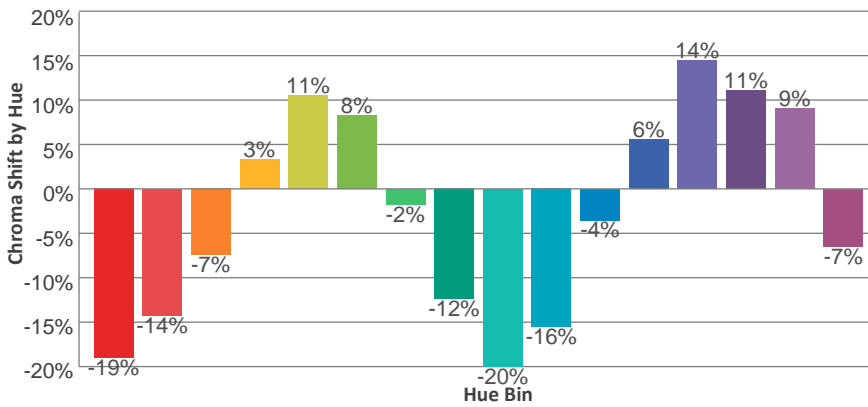
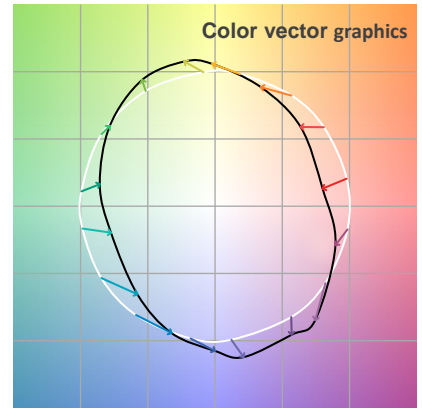
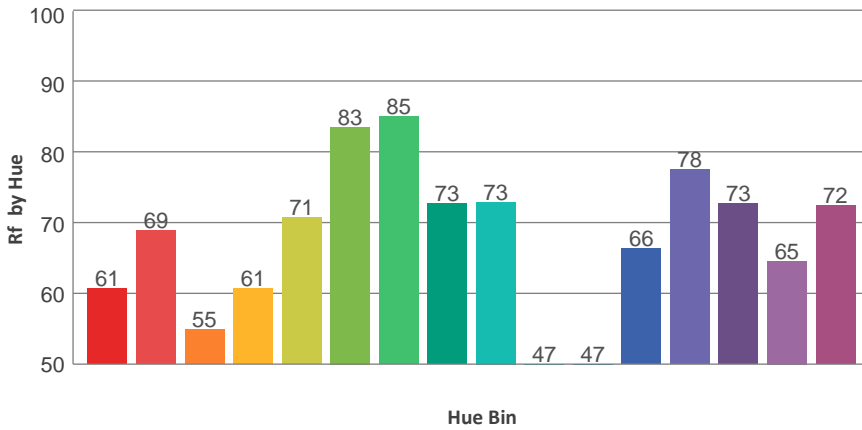
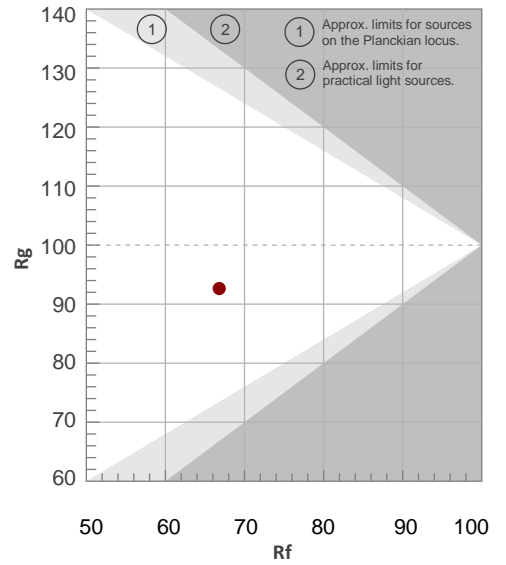
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6218 K	69.5	-37.0	66.8	92.6	67.3	0.318	0.334	0.200	0.314	-0.0002

TM30 Details

Rf 66.8
Fidelity Index Rf

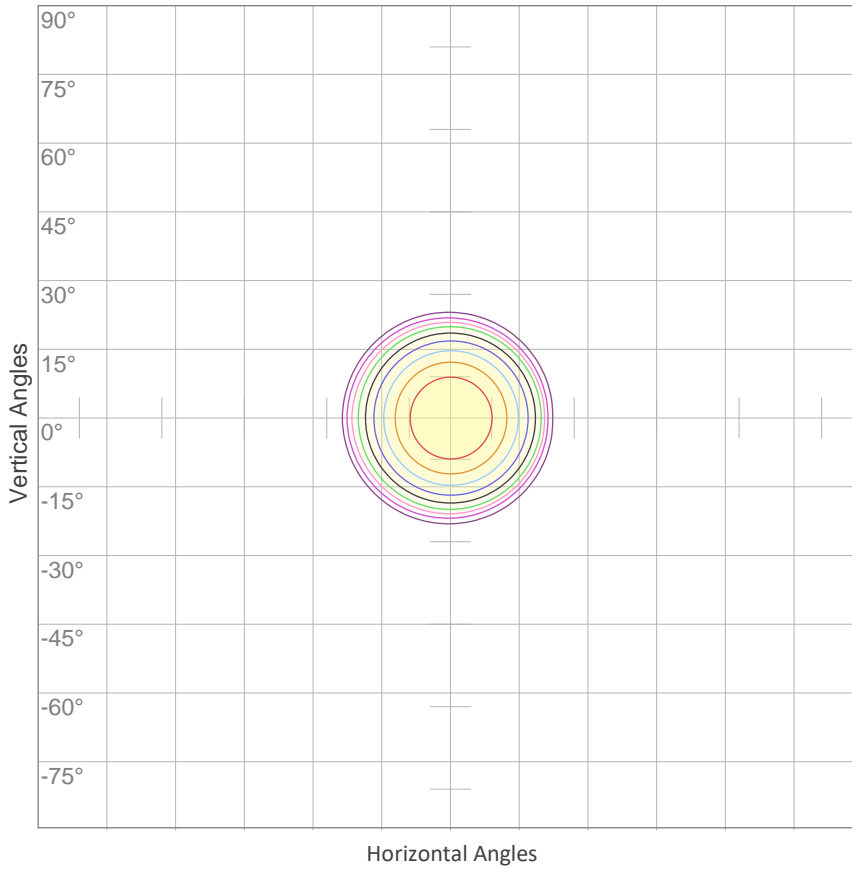
Rg 92.6
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	61	-19%	-4%
2	69	-14%	10%
3	55	-7%	22%
4	61	3%	22%
5	71	11%	12%
6	83	8%	-2%
7	85	-2%	-9%
8	73	-12%	-8%
9	73	-20%	7%
10	47	-16%	25%
11	47	-4%	29%
12	66	6%	19%
13	78	14%	6%
14	73	11%	-7%
15	65	9%	-27%
16	72	-7%	-13%



ISO Diagrams

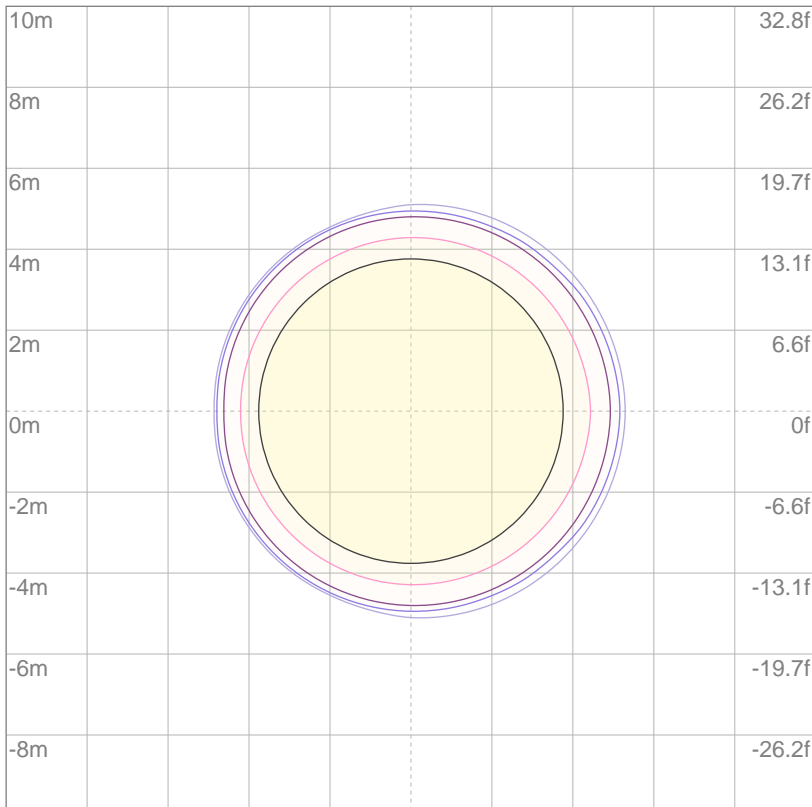
ISO Candela Diagram



10%	10241 cd
20%	20482 cd
30%	30722 cd
40%	40963 cd
50%	51204 cd
60%	61445 cd
70%	71685 cd
80%	81926 cd
90%	92167 cd

Conditions:
 Number of c-planes: 2
 Candela at center: 102408 cd

ISO Lux Diagram



3%	30.7 lx
5%	51.2 lx
10%	102 lx
30%	307 lx
50%	512 lx

Conditions:
 Number of c-planes: 2
 Lux at center: 1024 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*

Integrating Sphere N/A
 VISO Lab Spion 29223 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
14.9°	18.5°	19.1°

Color Temperature: 5798 K

CRI: 82.1

TLCI: 54

TM30: 74.5

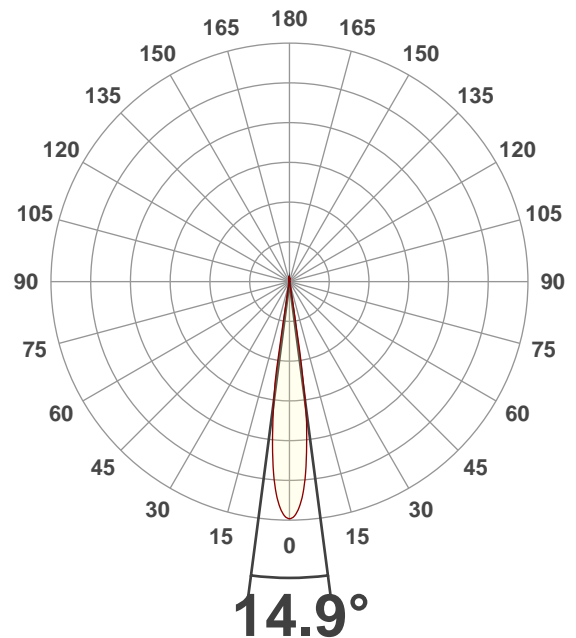
CQS: 74.0

Voltage: 115 V, Current: 11.2 A

Power: 1295 W

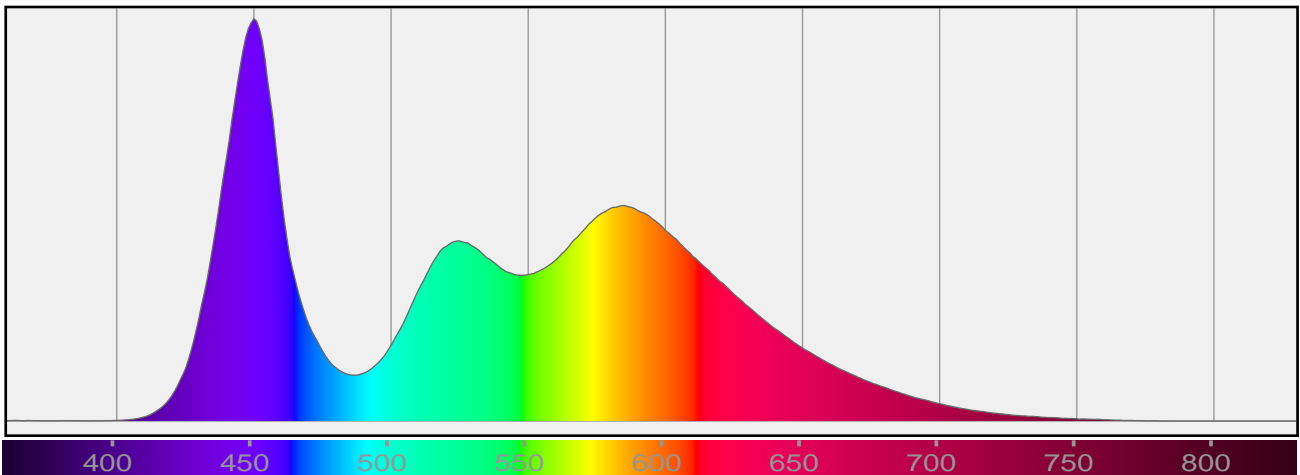
Efficacy: 23 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

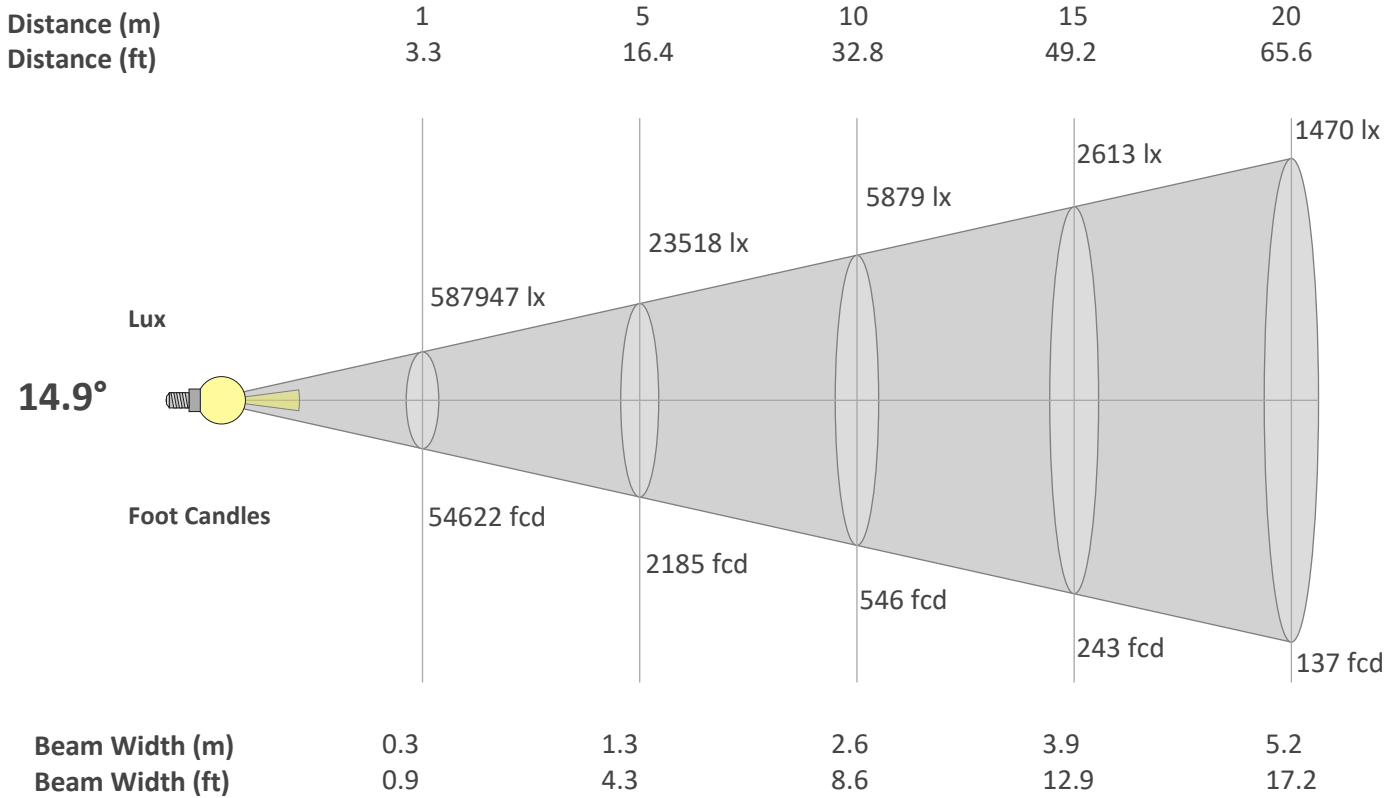
Dominant Wavelength 829 nm



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

Beam Details

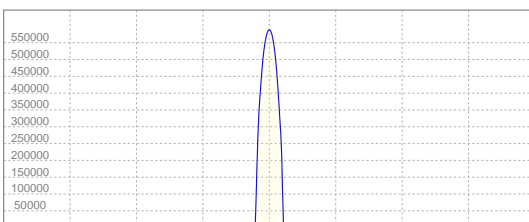
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
14.9°	18.5°	19.1°



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	587947	146987	65327	36747	23518	16332	11999	9187	7259	5879	4859	4083	3479	3000	2613	2297	2034	1815	1629	1470
FC	54622	13655.5	6069.1	3413.9	2184.9	1517.3	1114.7	853.5	674.3	546.2	451.4	379.3	323.2	278.7	242.8	213.4	189	168.6	151.3	136.6

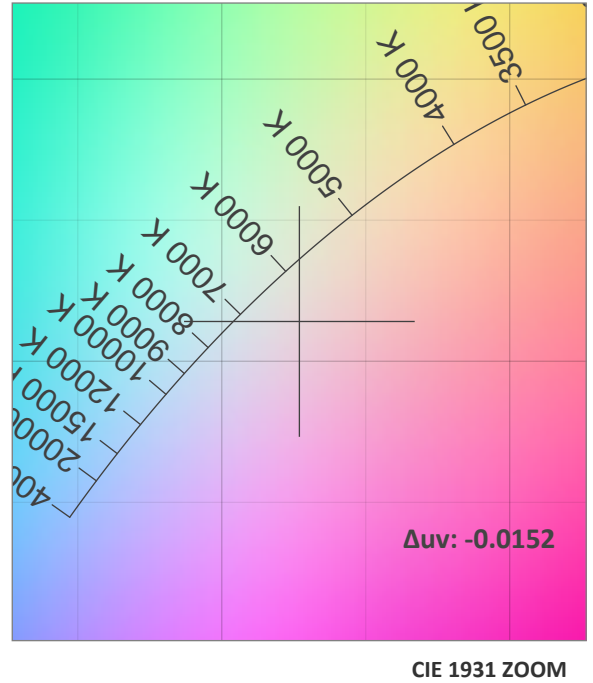
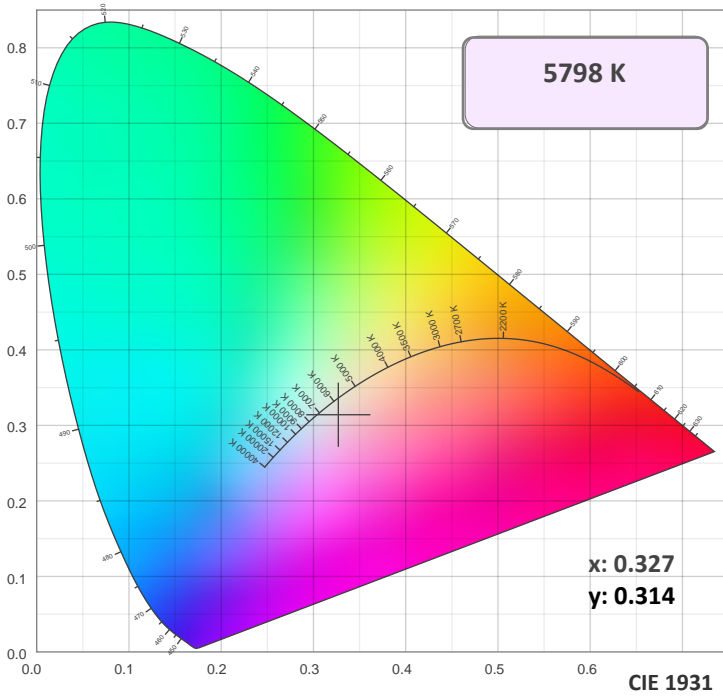
Linear Distribution



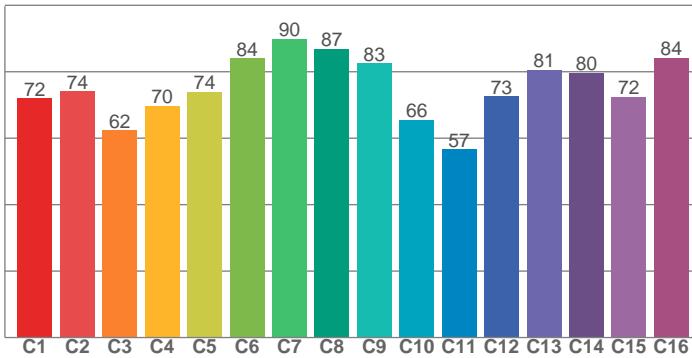
Peak Candela
588105 cd

Calculate Center Beam Intensities
 $lux = 588105 / distance(m)^2$
 $fc = 588105 / distance(ft)^2$

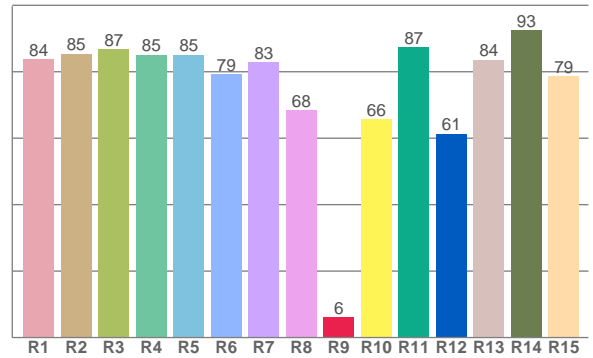
Color Details



TM30: 74.5



CRI: 82.1 (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
83.7	85.4	86.7	85.1	85.1	79.3	82.8	68.4	6.0	65.7	87.5	61.4	83.6	92.5	78.7

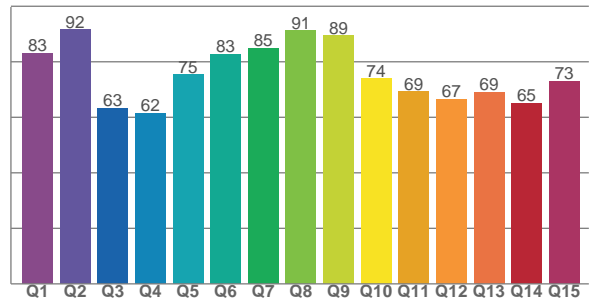
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
72.0	74.1	62.3	69.7	73.9	84.0	90.0	86.9	82.6	65.6	56.6	72.5	80.6	79.7	72.5	84.2

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
83.2	91.6	63.2	61.6	75.3	82.7	84.9	91.1	89.4	74.0	69.3	66.5	69.0	65.2	73.1

CQS: 74.0



Color Parameters

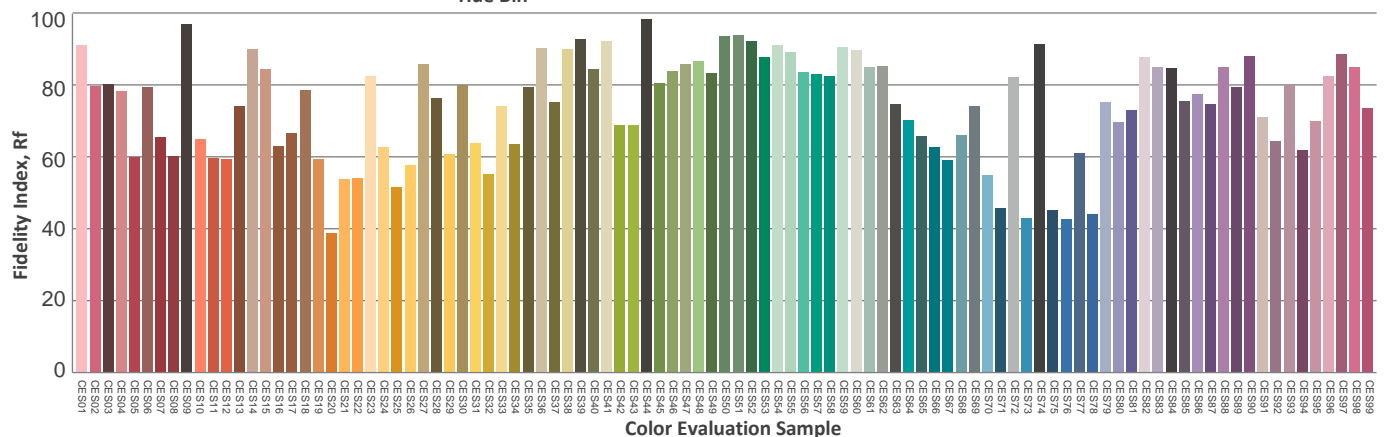
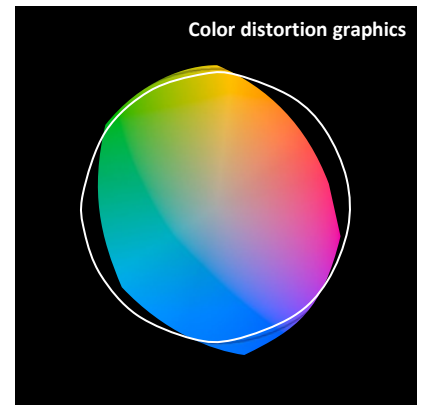
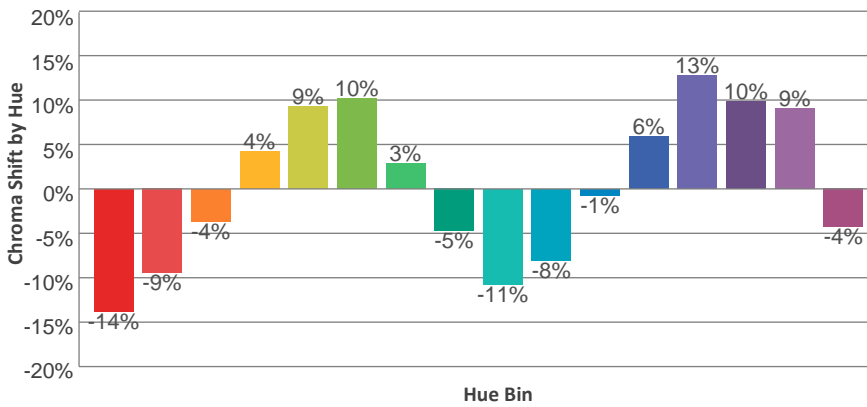
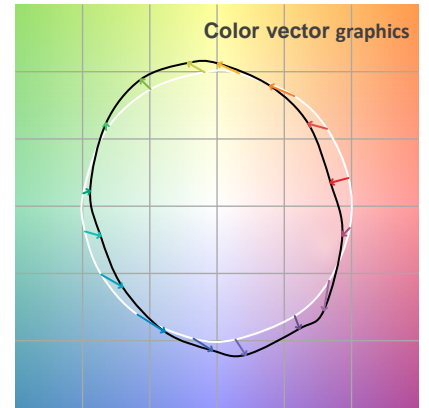
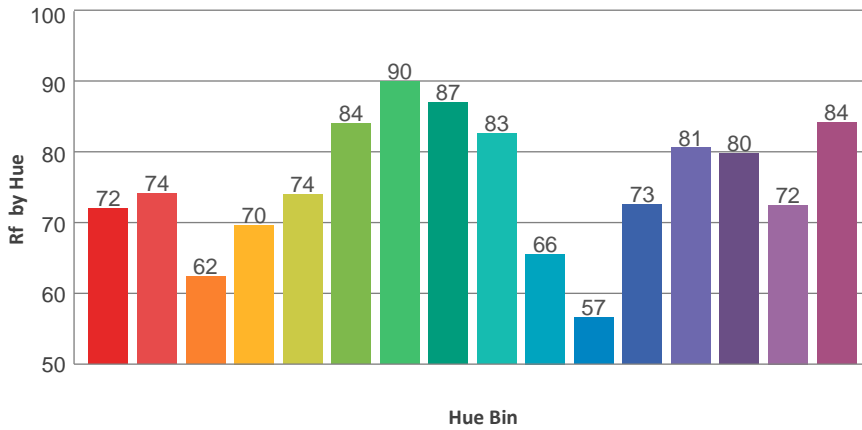
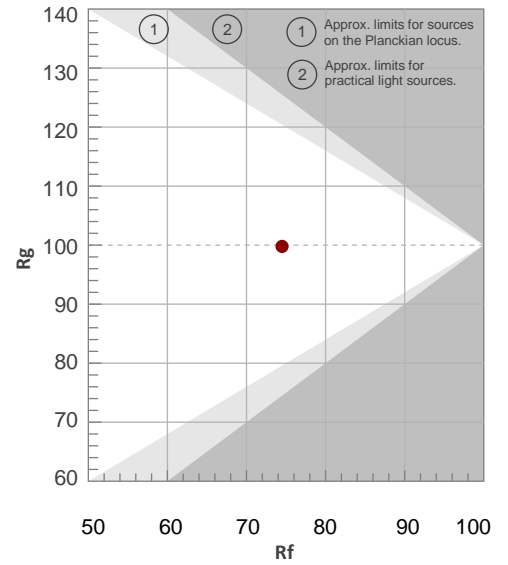
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5798 K	82.1	6.0	74.5	99.8	74.0	0.327	0.314	0.214	0.308	-0.0152

TM30 Details

Rf 74.5
Fidelity Index Rf

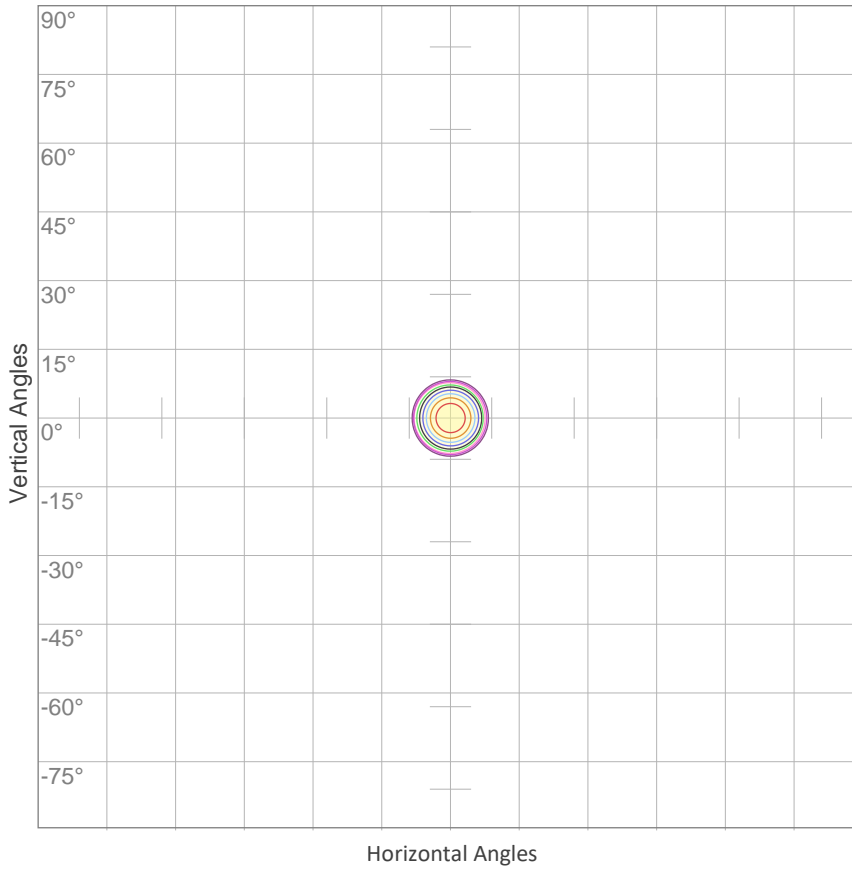
Rg 99.8
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	72	-14%	-1%
2	74	-9%	11%
3	62	-4%	19%
4	70	4%	17%
5	74	9%	11%
6	84	10%	2%
7	90	3%	-4%
8	87	-5%	-3%
9	83	-11%	6%
10	66	-8%	16%
11	57	-1%	24%
12	73	6%	15%
13	81	13%	5%
14	80	10%	-2%
15	72	9%	-20%
16	84	-4%	-7%



ISO Diagrams

ISO Candela Diagram

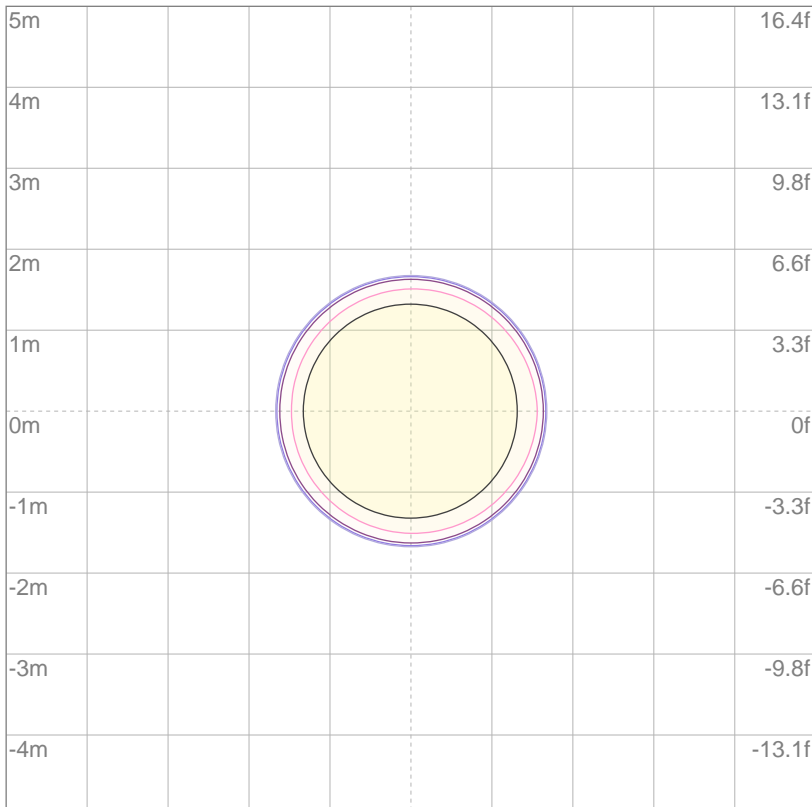


10%	58795 cd
20%	117589 cd
30%	176384 cd
40%	235179 cd
50%	293973 cd
60%	352768 cd
70%	411563 cd
80%	470357 cd
90%	529152 cd

Conditions:

Number of c-planes: 2
Candela at center: 587947 cd

ISO Lux Diagram



3%	176 lx
5%	294 lx
10%	588 lx
30%	1764 lx
50%	2940 lx

Conditions:

Number of c-planes: 2
Lux at center: 5879 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*

Integrating Sphere N/A
 VISO Lab Spion 10751 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
15.2°	18.6°	19.2°

Color Temperature: 2738 K

CRI: 62.1

TLCI: 29

TM30: 59.5

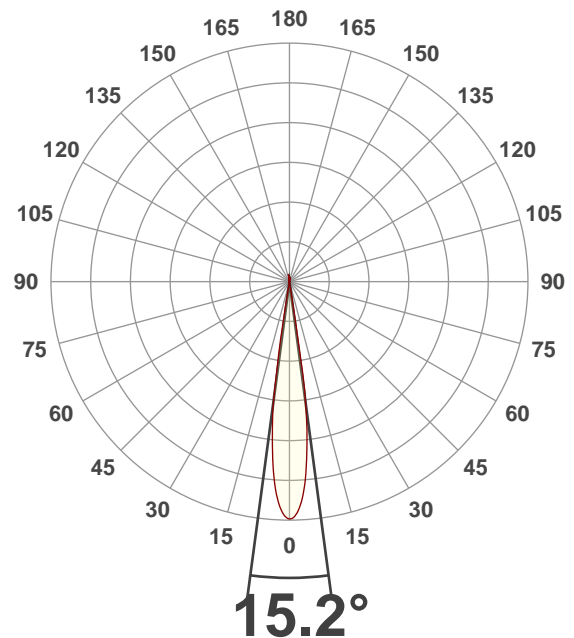
CQS: 61.0

Voltage: 116 V, Current: 11.3 A

Power: 1304.1 W

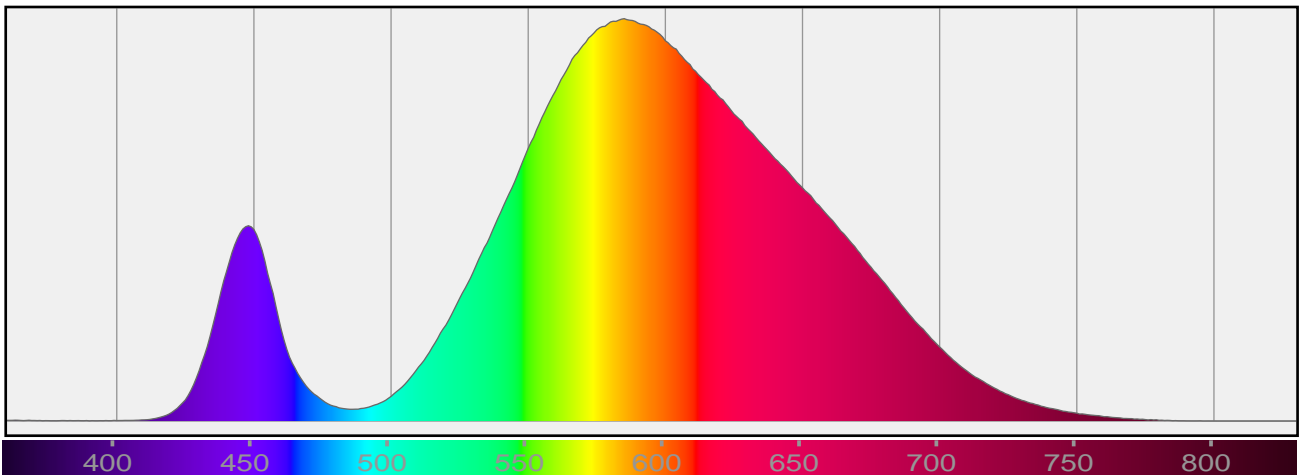
Efficacy: 8 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

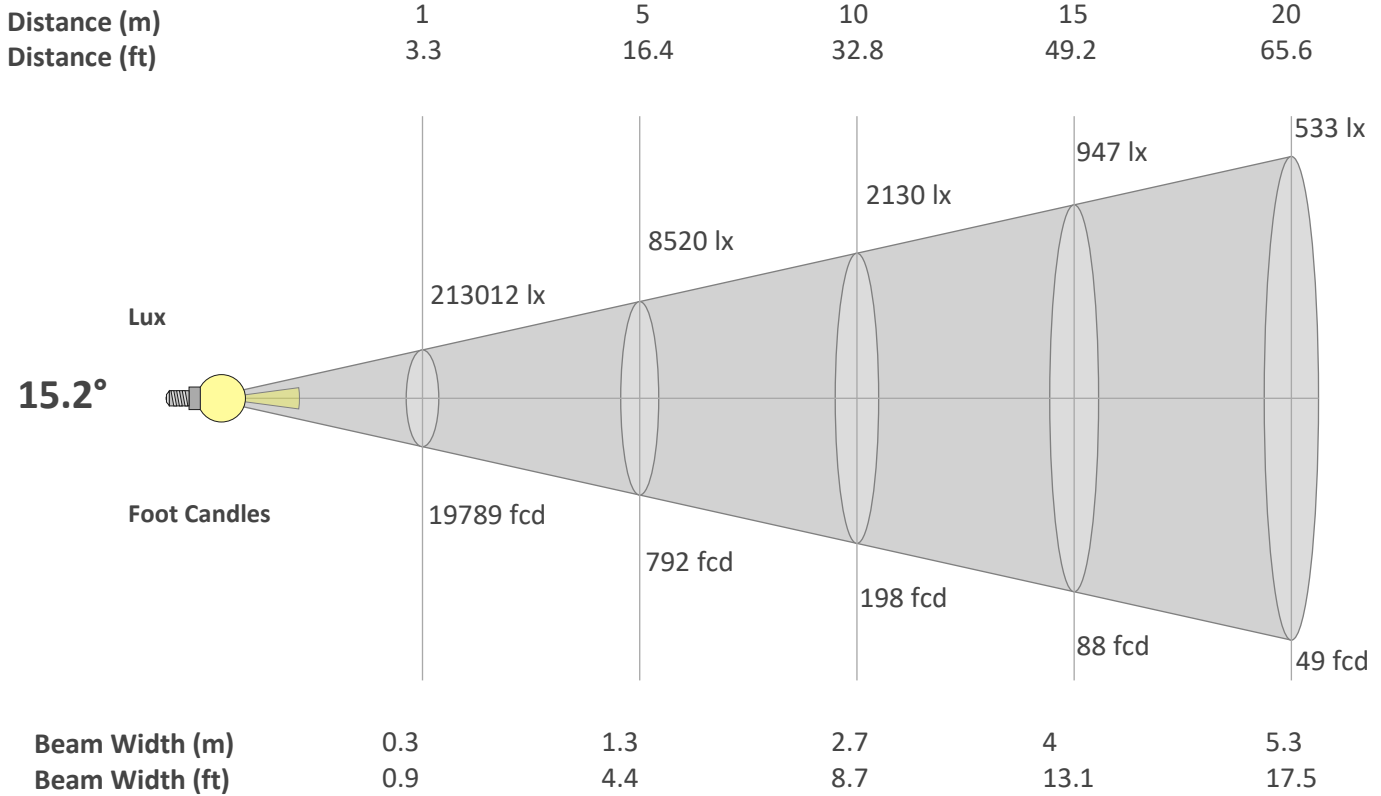
Dominant Wavelength 585 nm



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

Beam Details

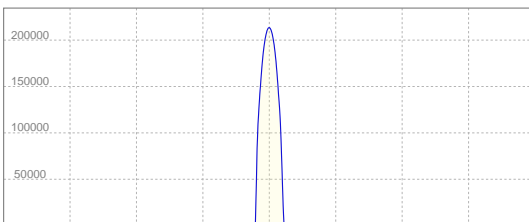
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
15.2°	18.6°	19.2°



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	213012	53253	23668	13313	8520	5917	4347	3328	2630	2130	1760	1479	1260	1087	947	832	737	657	590	533
FC	19789.4	4947.4	2198.8	1236.8	791.6	549.7	403.9	309.2	244.3	197.9	163.5	137.4	117.1	101	88	77.3	68.5	61.1	54.8	49.5

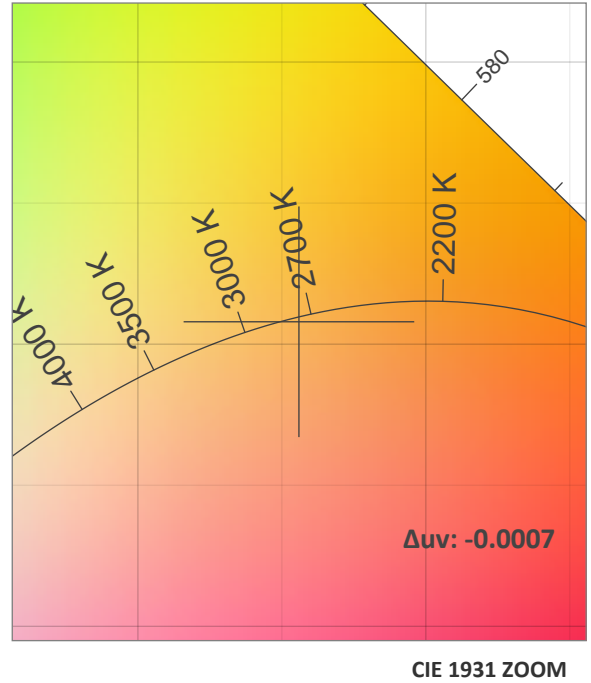
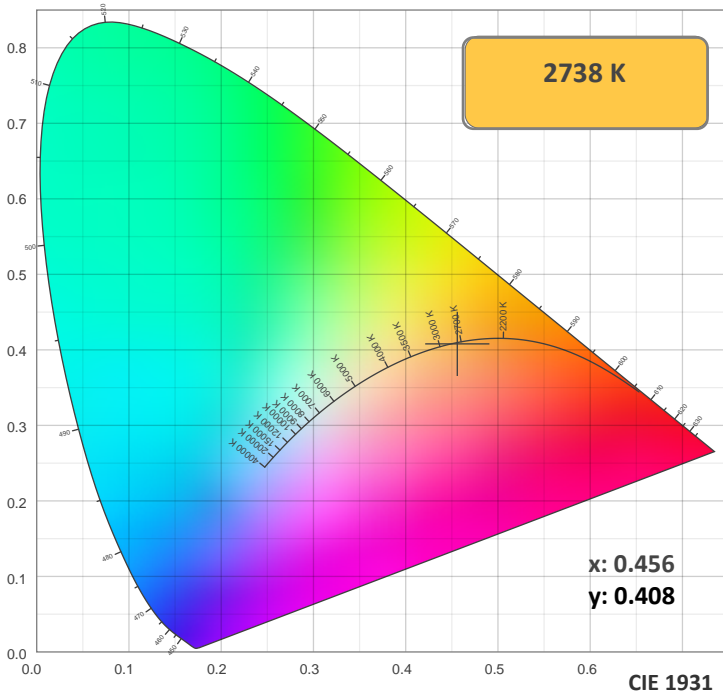
Linear Distribution



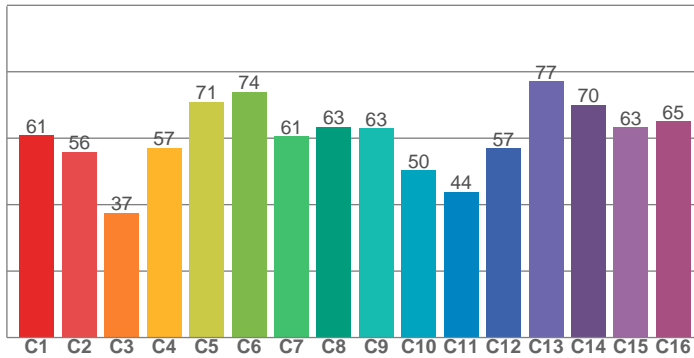
Peak Candela
213206 cd

Calculate Center Beam Intensities
 $lux = 213206 / distance(m)^2$
 $fc = 213206 / distance(ft)^2$

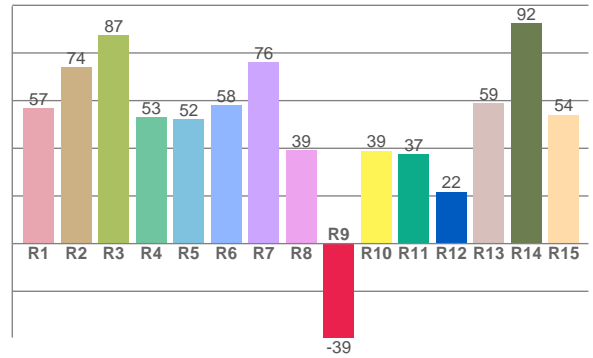
Color Details



TM30: 59.5



CRI: 62.1 (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
56.8	74.0	87.4	53.0	52.3	58.1	76.1	39.3	-39.4	39.0	37.5	21.7	58.8	92.4	54.1

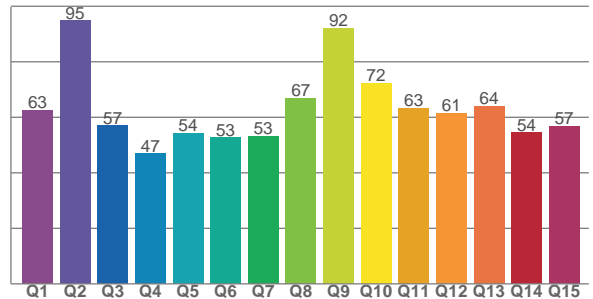
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
60.8	55.9	37.5	57.1	70.9	74.0	60.6	63.3	62.9	50.3	43.9	56.9	77.1	69.9	63.3	65.1

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
62.5	94.9	57.1	46.9	54.3	52.8	53.3	66.9	92.1	72.3	63.3	61.4	64.0	54.5	56.9

CQS: 61.0



Color Parameters

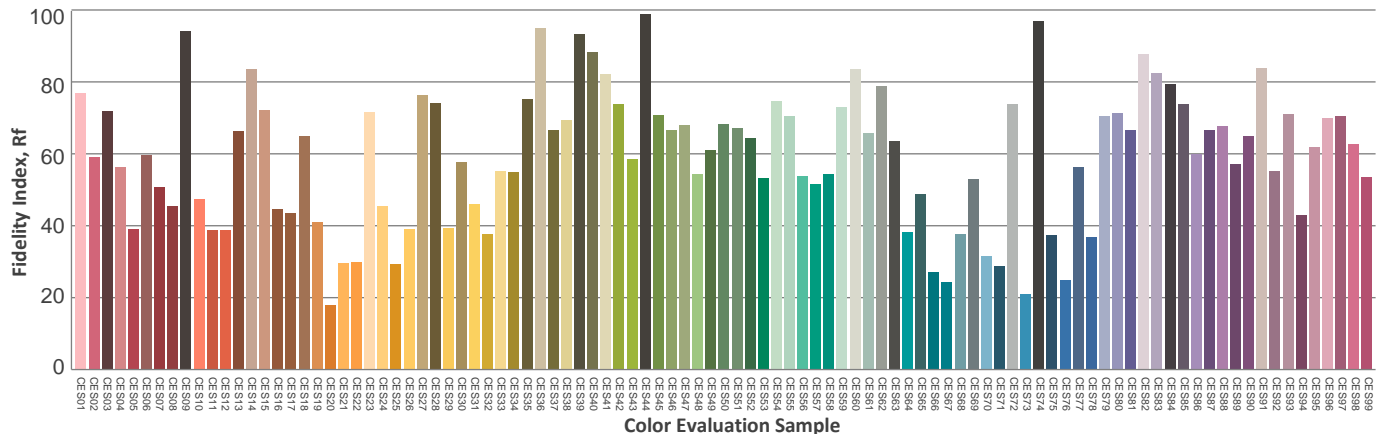
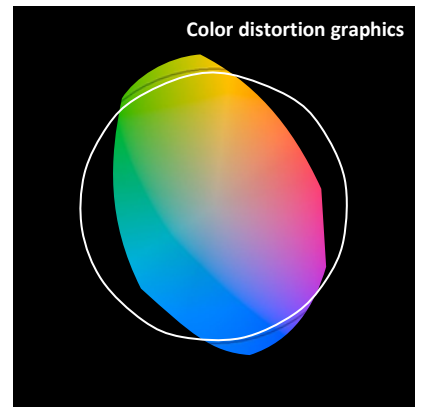
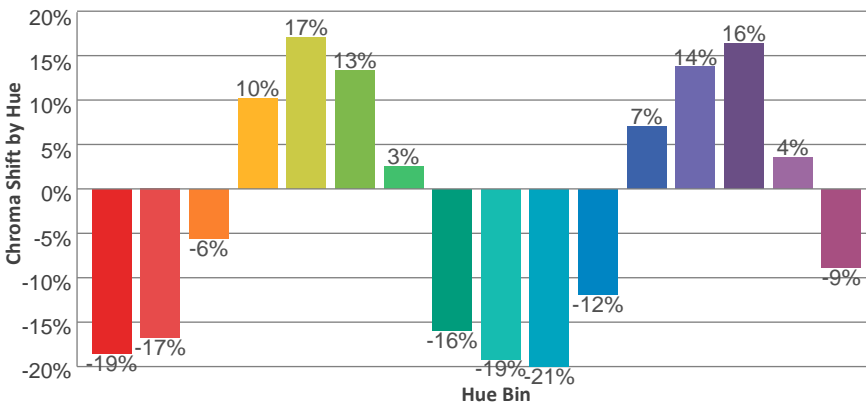
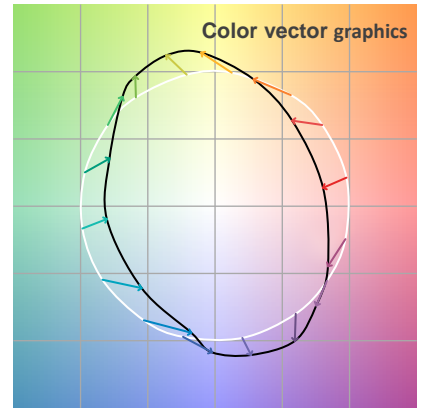
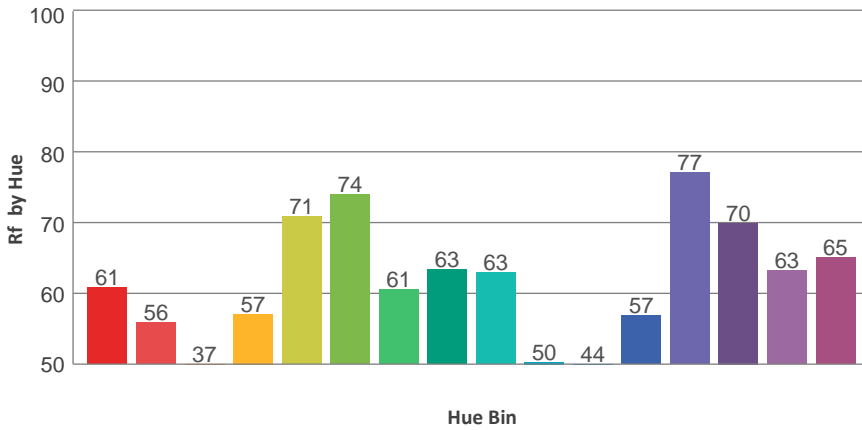
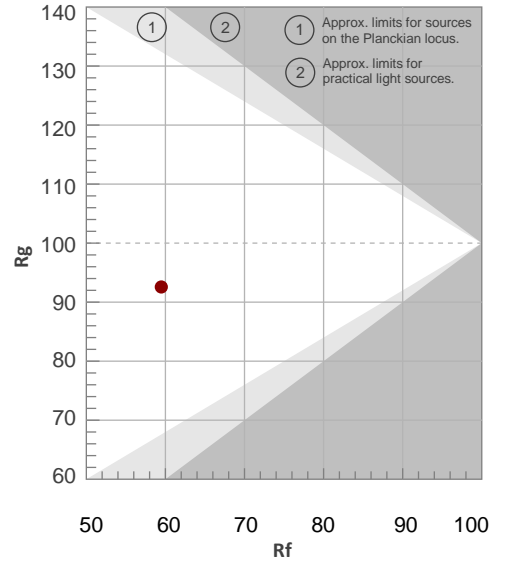
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2738 K	62.1	-39.4	59.5	92.6	61.0	0.456	0.408	0.261	0.350	-0.0007

TM30 Details

Rf 59.5
Fidelity Index Rf

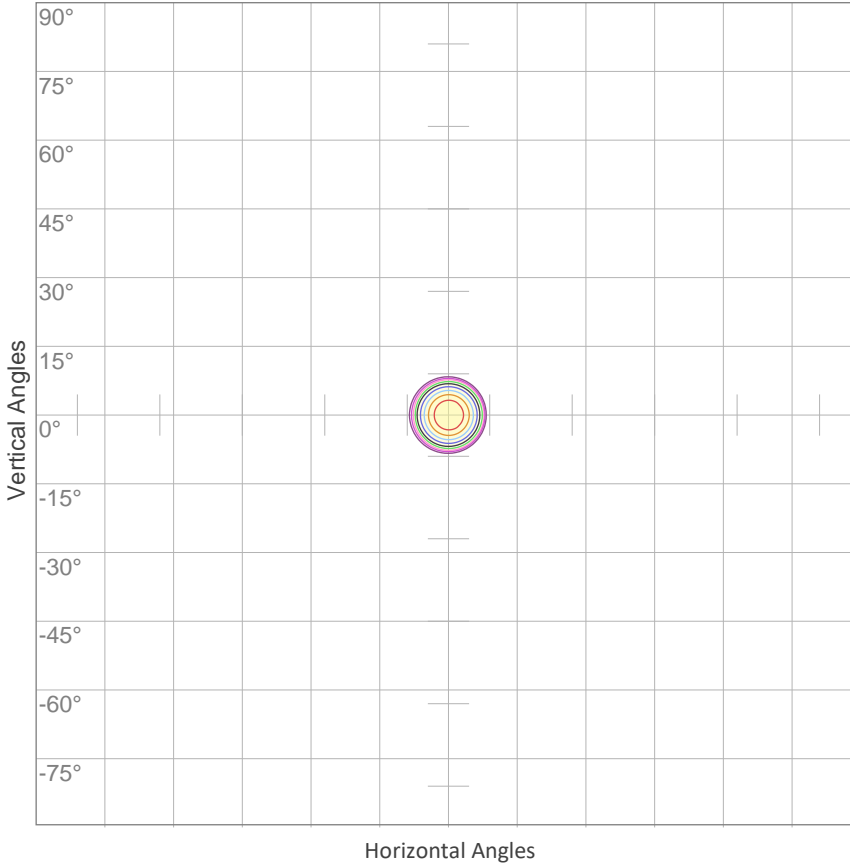
Rg 92.6
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	61	-19%	-4%
2	56	-17%	15%
3	37	-6%	29%
4	57	10%	25%
5	71	17%	12%
6	74	13%	-8%
7	61	3%	-23%
8	63	-16%	-14%
9	63	-19%	-3%
10	50	-21%	21%
11	44	-12%	34%
12	57	7%	23%
13	77	14%	4%
14	70	16%	-12%
15	63	4%	-20%
16	65	-9%	-22%



ISO Diagrams

ISO Candela Diagram

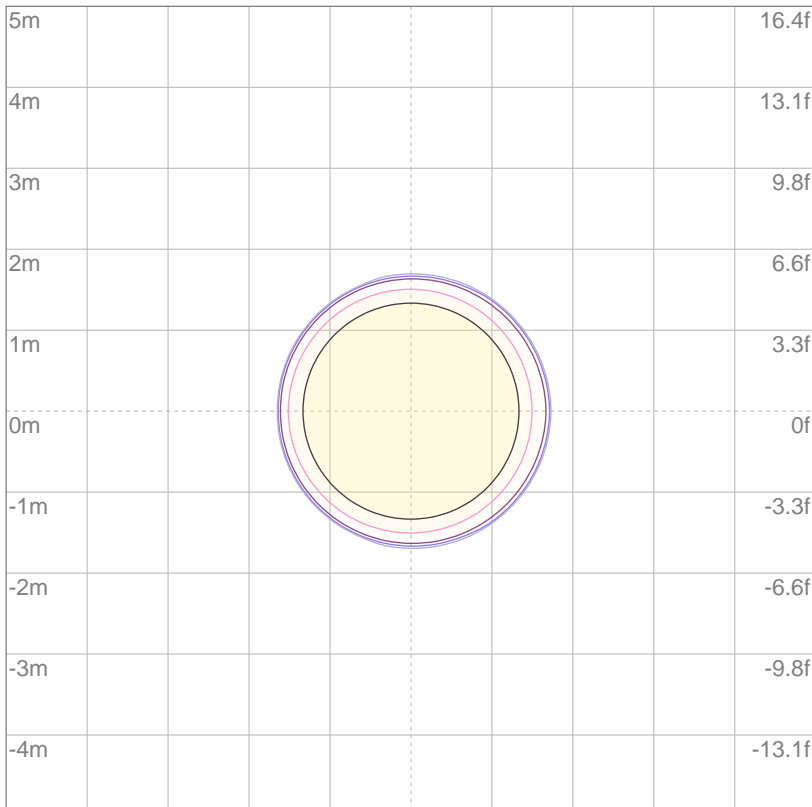


10%	21301 cd
20%	42602 cd
30%	63904 cd
40%	85205 cd
50%	106506 cd
60%	127807 cd
70%	149108 cd
80%	170409 cd
90%	191711 cd

Conditions:

Number of c-planes: 2
Candela at center: 213012 cd

ISO Lux Diagram



3%	63.9 lx
5%	107 lx
10%	213 lx
30%	639 lx
50%	1065 lx

Conditions:

Number of c-planes: 2
Lux at center: 2130 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*

Integrating Sphere N/A
 VISO Lab Spion 34.7 lm

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
15.2°	18.7°	19.3°

Color Temperature: 0 K

CRI: 0.0

TLCI: n/a

TM30: 0.0

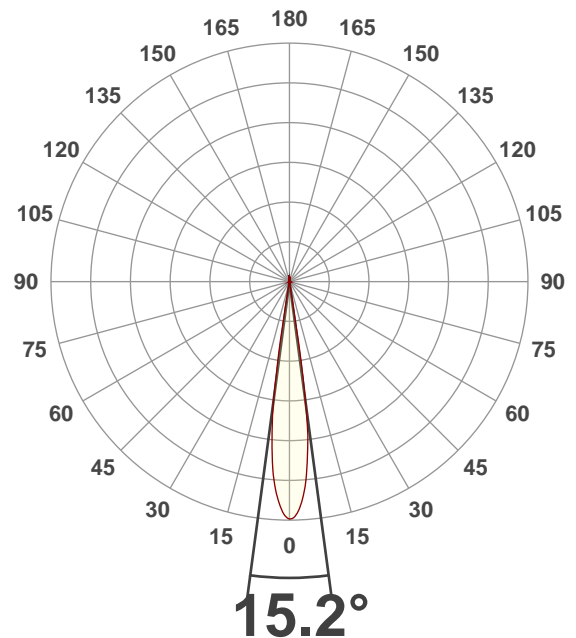
CQS: 0.0

Voltage: 115 V, Current: 11.2 A

Power: 1297 W

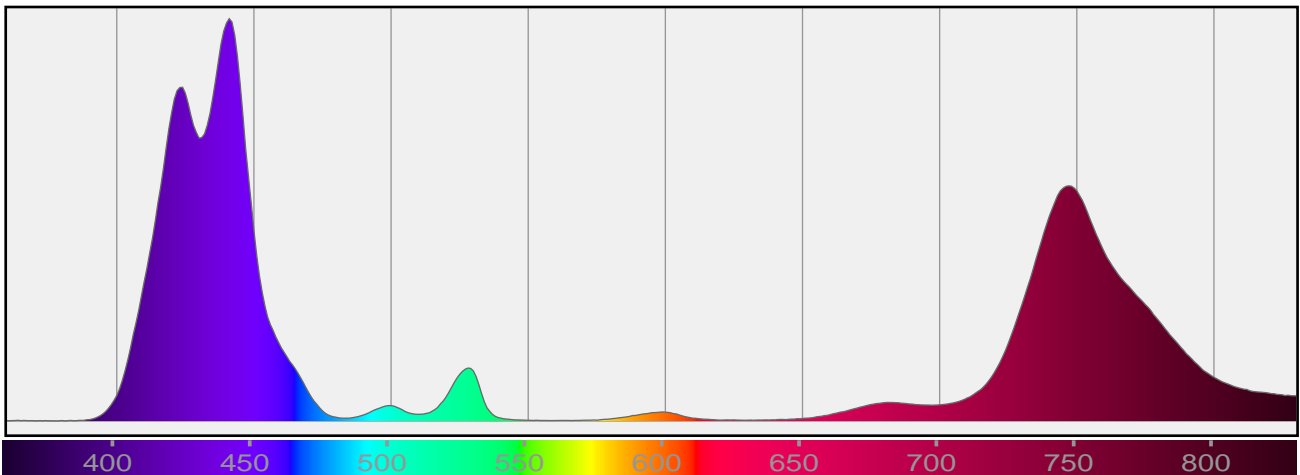
Efficacy: 0 Lumen/Watt

Measurement Date: 7/22/2019



Spectral Distribution

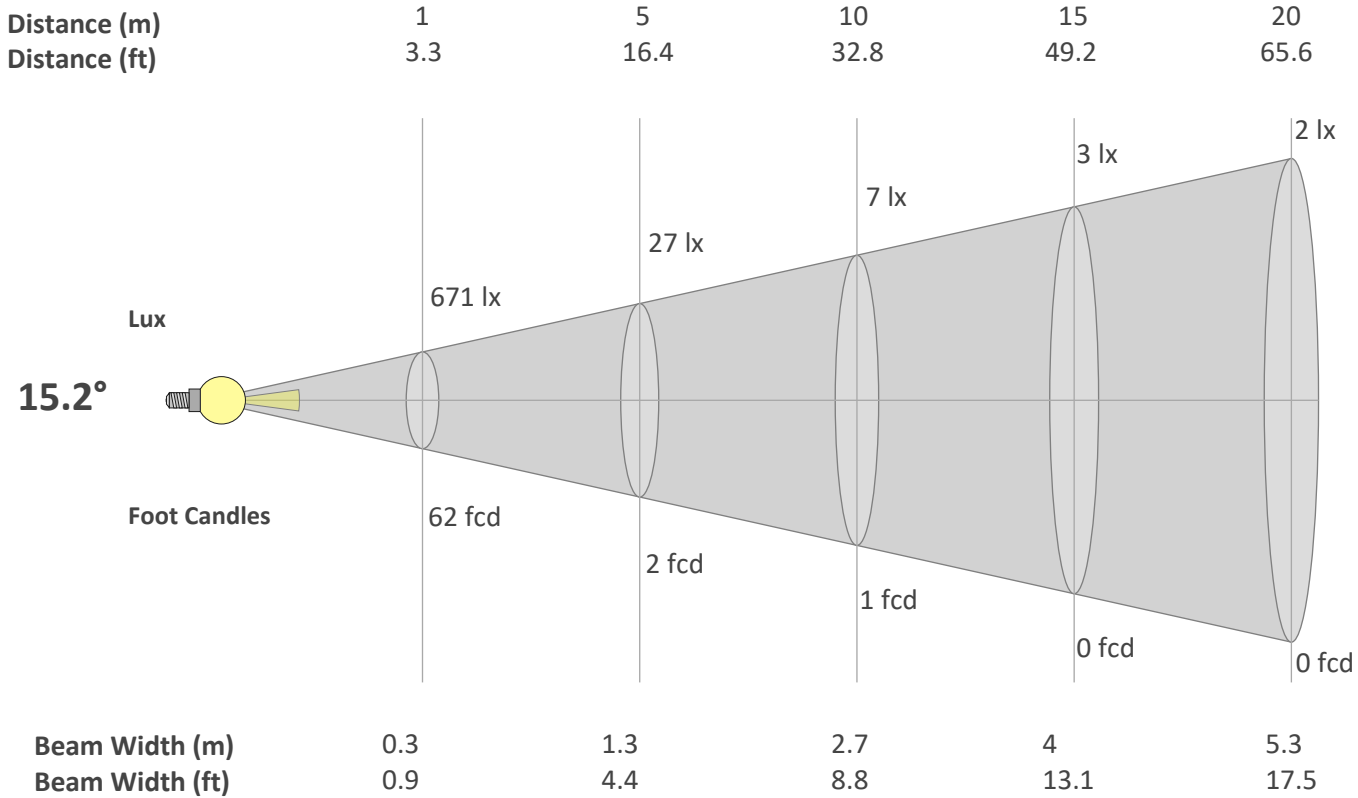
Dominant Wavelength 452 nm



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

Beam Details

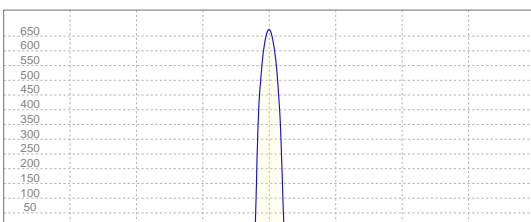
Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
15.2°	18.7°	19.3°



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	671	168	75	42	27	19	14	10	8	7	6	5	4	3	3	3	2	2	2	2
FC	62.3	15.6	6.9	3.9	2.5	1.7	1.3	1	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2

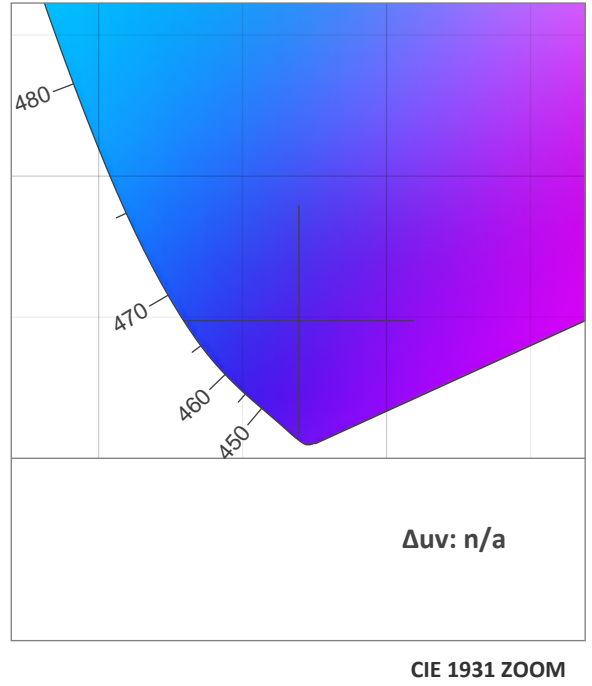
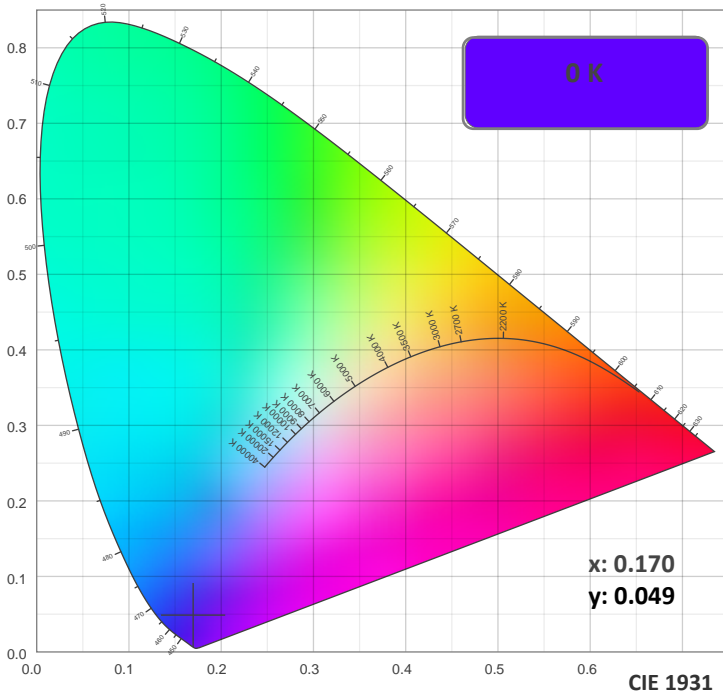
Linear Distribution



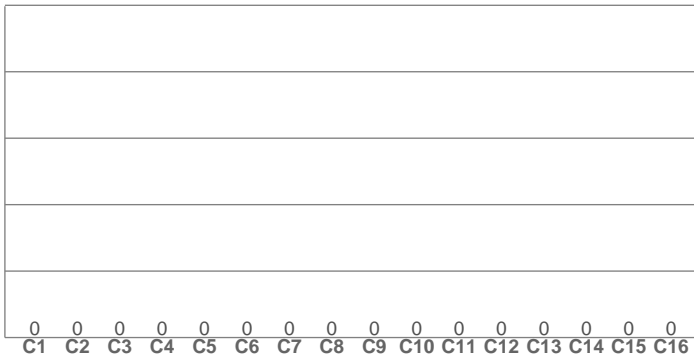
Peak Candela
671 cd

Calculate Center Beam Intensities
 $lux = 671 / distance(m)^2$
 $fc = 671 / distance(ft)^2$

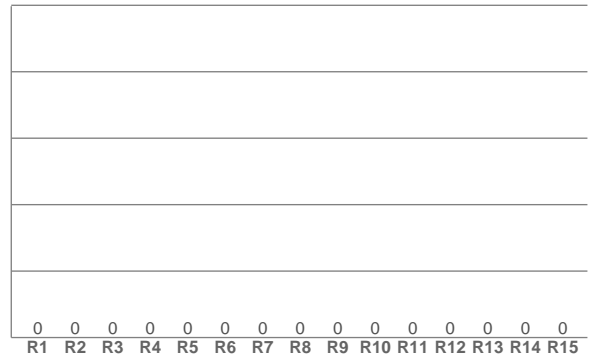
Color Details



TM30: 0.0



CRI: 0.0 (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
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

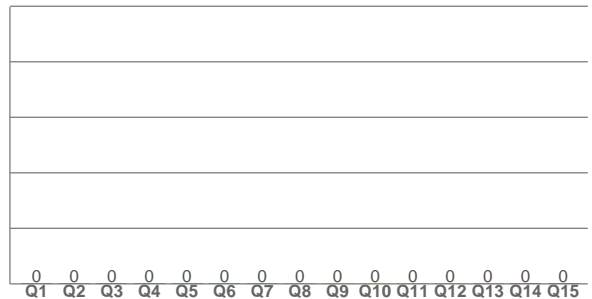
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CQS: 0.0



Color Parameters

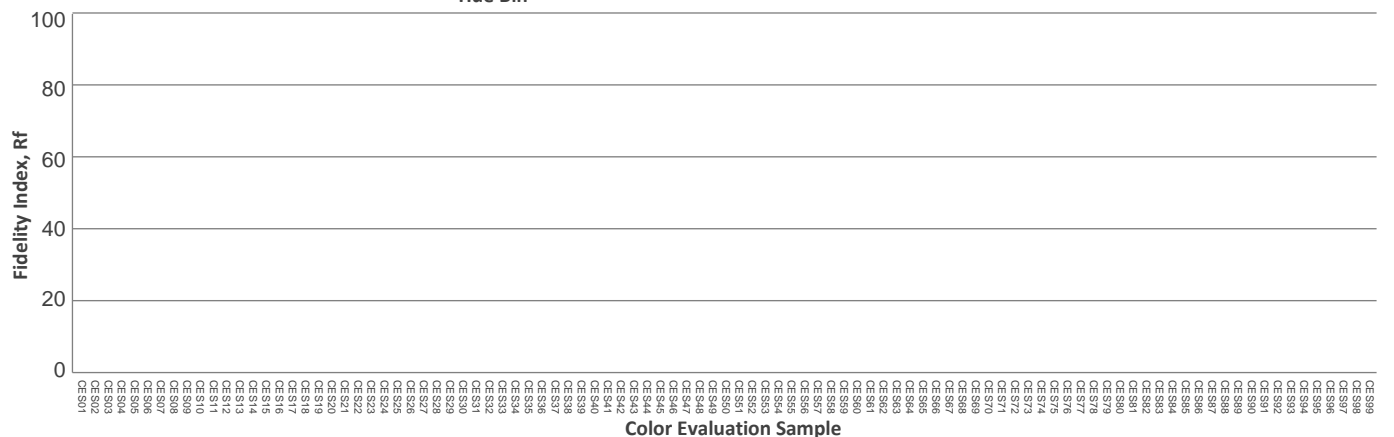
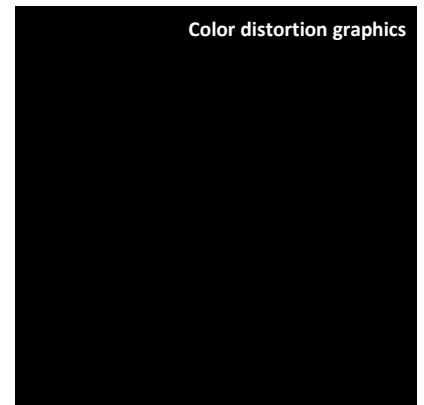
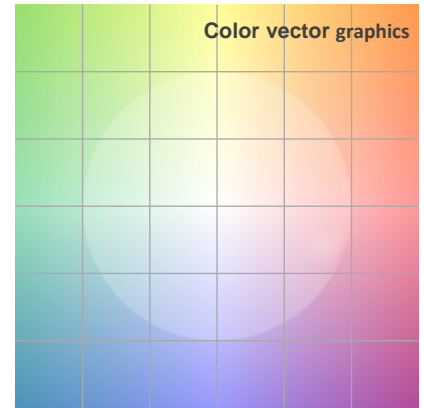
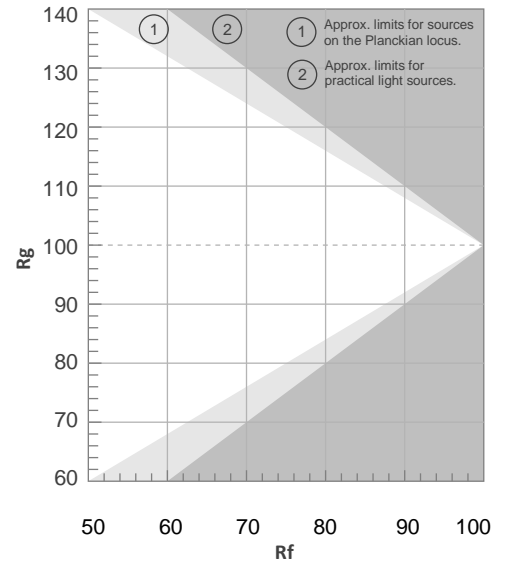
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Deviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
0 K	0.0	0.0	0.0	0.0	0.0	0.170	0.049	0.209	0.090	n/a

TM30 Details

Rf 0.0
Fidelity Index Rf

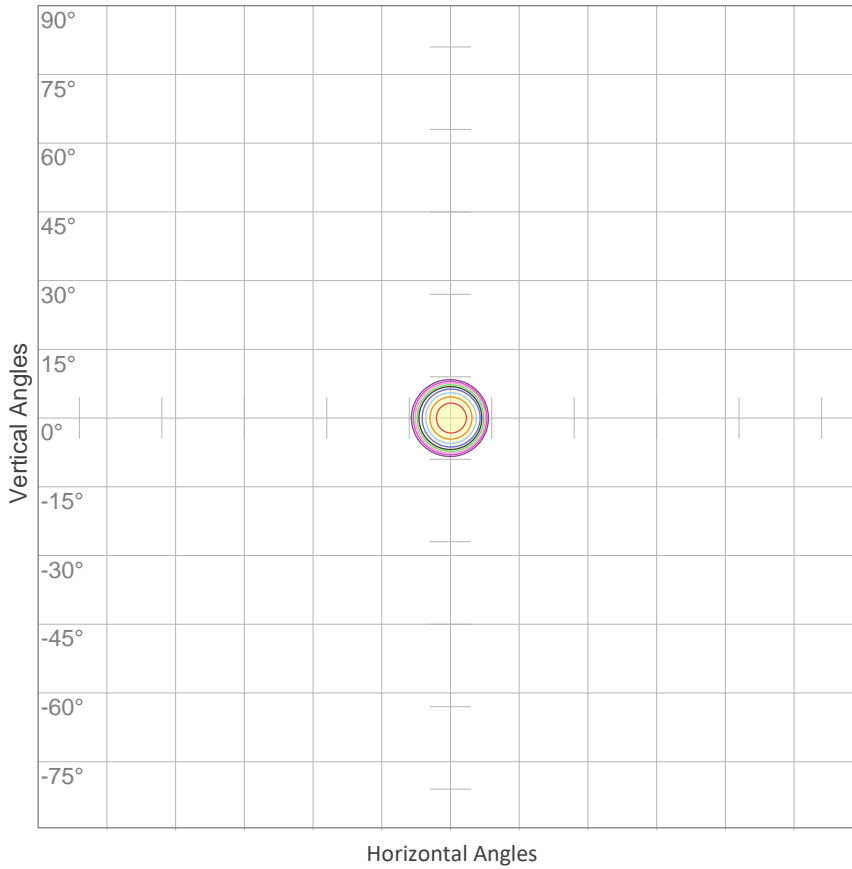
Rg 0.0
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	0	0%	0%
2	0	0%	0%
3	0	0%	0%
4	0	0%	0%
5	0	0%	0%
6	0	0%	0%
7	0	0%	0%
8	0	0%	0%
9	0	0%	0%
10	0	0%	0%
11	0	0%	0%
12	0	0%	0%
13	0	0%	0%
14	0	0%	0%
15	0	0%	0%
16	0	0%	0%



ISO Diagrams

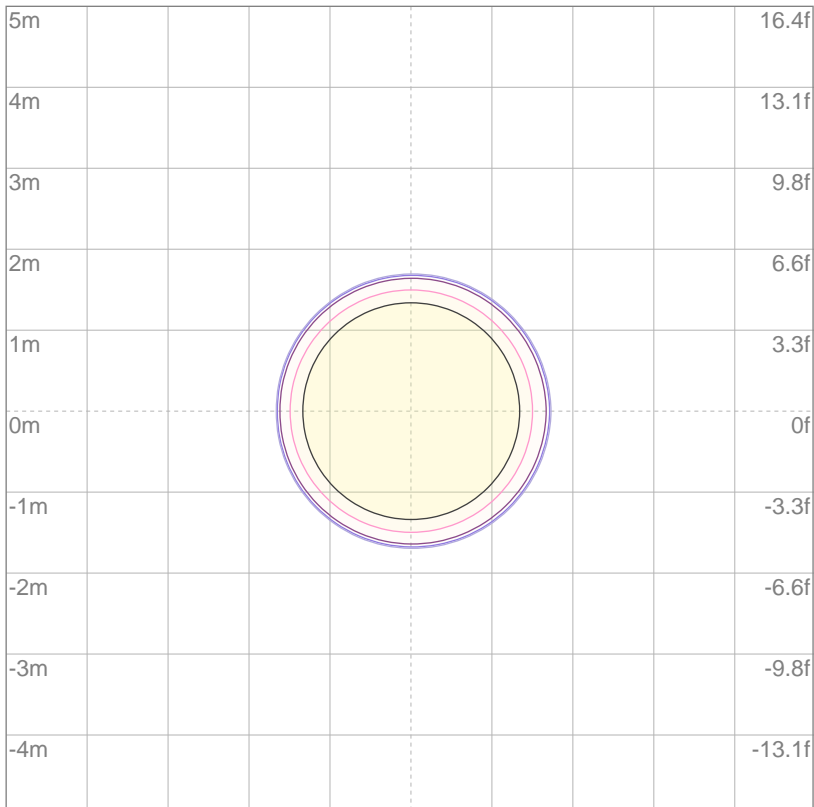
ISO Candela Diagram



10%	67 cd
20%	134 cd
30%	201 cd
40%	268 cd
50%	335 cd
60%	402 cd
70%	469 cd
80%	537 cd
90%	604 cd

Conditions:
 Number of c-planes: 2
 Candela at center: 671 cd

ISO Lux Diagram



3%	0.201 lx
5%	0.335 lx
10%	0.671 lx
30%	2.01 lx
50%	3.35 lx

Conditions:
 Number of c-planes: 2
 Lux at center: 6.71 lx

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

Mounting Height: 10 meters (33 feet)