FUZE PROFILE™

Photometric Test Report

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C O N T E N T S

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

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Photometric Report

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
7.5°	8.6°	9.1°

Total Lumen Output*

Integrating Sphere	6947 lm
VISO Lab Spion	5813 lm

Color Temperature: 6605 K

CRI: 91.1

TLCI: 93

TM30: 88.2

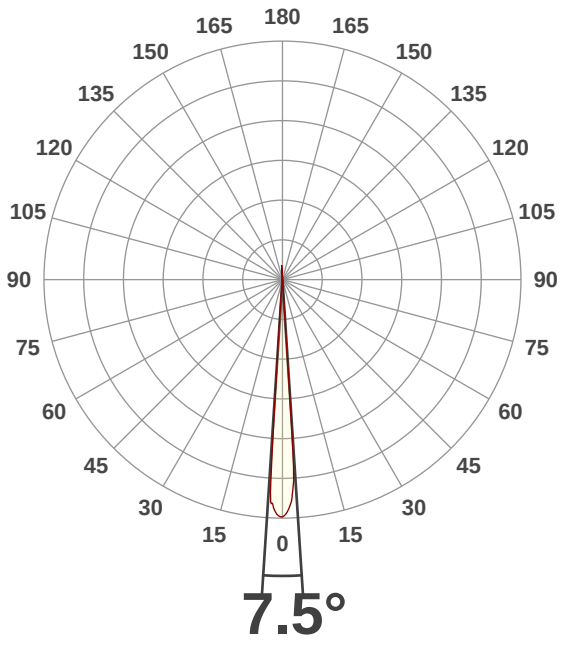
CQS: 91.7

Voltage: 116 V, Current: 3.39 A

Power: 393 W

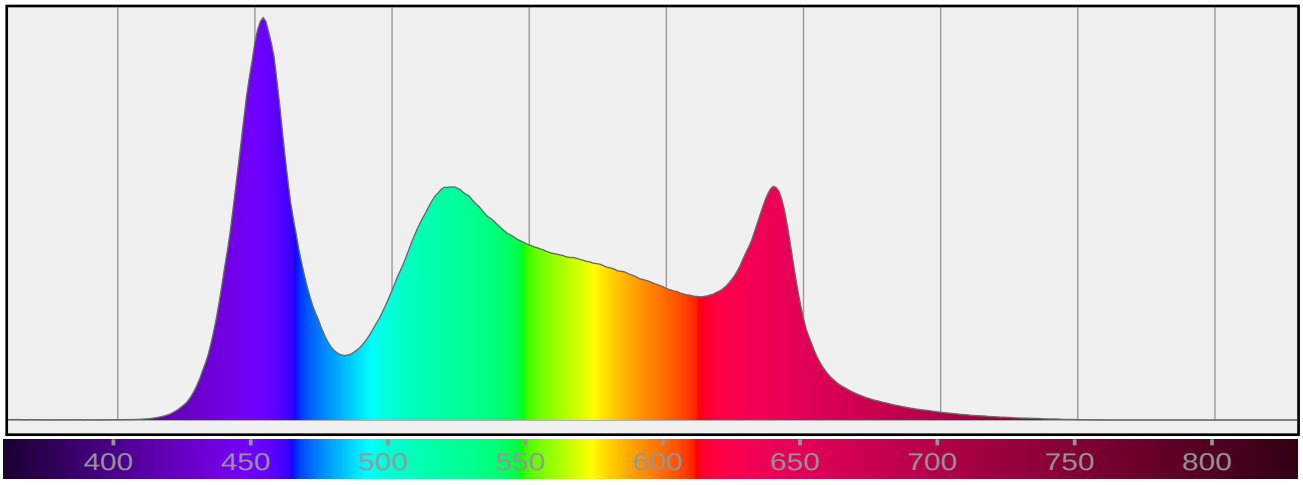
Efficacy: 15 Lumen/Watt

Measurement Date: 7/23/2019



Spectral Distribution

Dominant Wavelength 526 nm



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

Fuze Spot-Profile Zoom In

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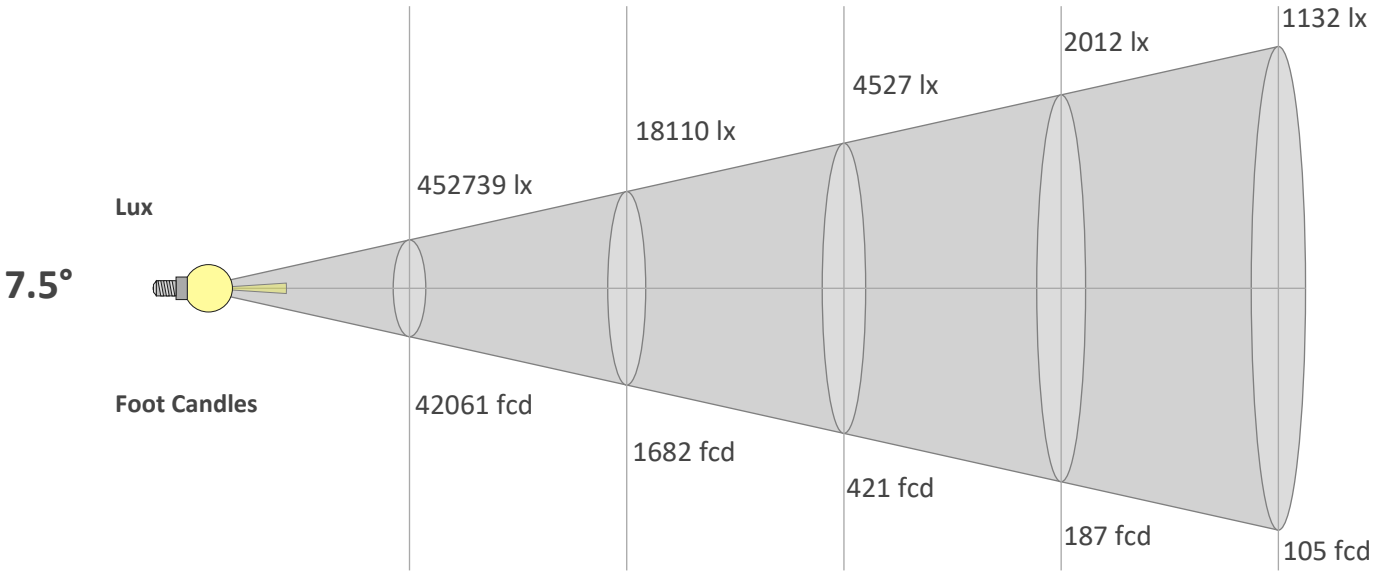
Beam Details

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
7.5°	8.6°	9.1°

Distance (m)	1	5	10	15	20
Distance (ft)	3.3	16.4	32.8	49.2	65.6



Beam Width (m)	0.1	0.7	1.3	2	2.6
Beam Width (ft)	0.4	2.1	4.3	6.4	8.5

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	452739	113185	50304	28296	18110	12576	9240	7074	5589	4527	3742	3144	2679	2310	2012	1769	1567	1397	1254	1132
FC	42060.8	10515.2	4673.4	2628.8	1682.4	1168.4	858.4	657.2	519.3	420.6	347.6	292.1	248.9	214.6	186.9	164.3	145.5	129.8	116.5	105.2

Linear Distribution

Peak Candela

452813 cd

Calculate Center Beam Intensities

lux = 452813 / distance(m)^2

fc = 452813 / distance(ft)^2

Fuze Spot-Profile Zoom In

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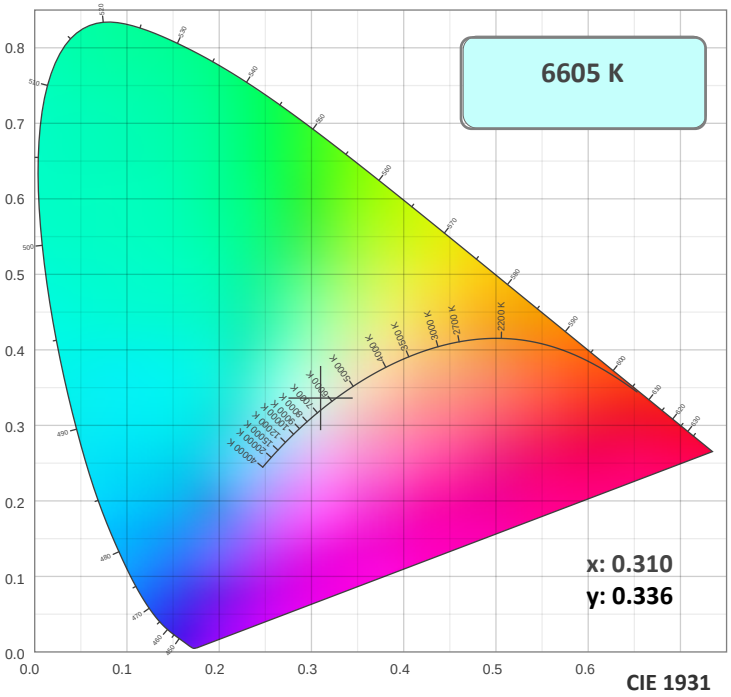
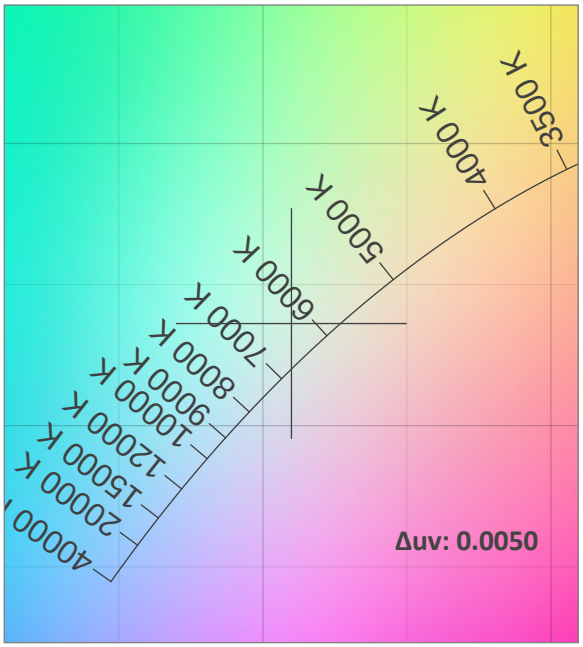
Color Details

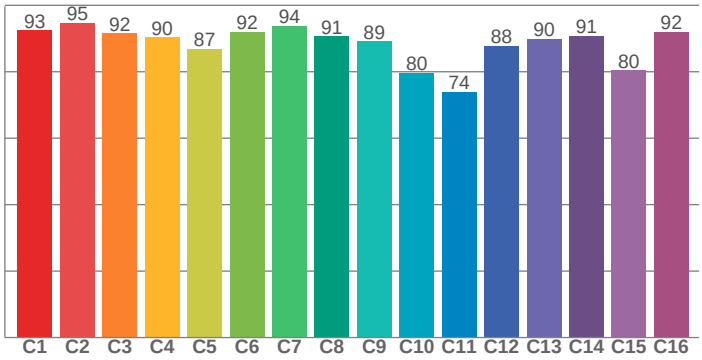


CIE 1931

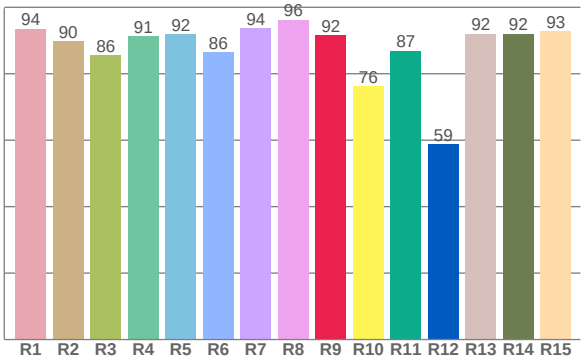


CIE 1931 ZOOM

TM30: 88.2



CRI: 91.1 (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
93.5	89.8	85.6	91.3	92.0	86.4	93.7	96.3	91.6	76.2	86.9	58.8	92.1	92.1	92.8

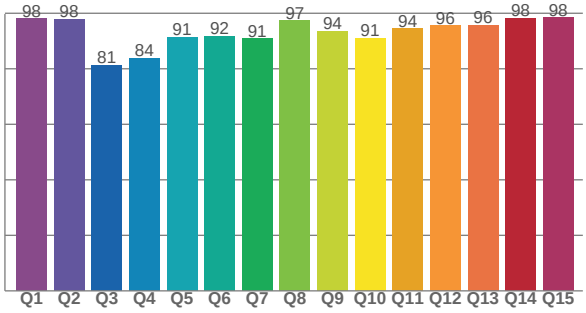
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
92.5	94.7	91.5	90.4	86.8	91.9	93.9	90.7	89.1	79.7	74.0	87.8	90.0	90.8	80.4	92.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
98.1	98.0	81.4	83.9	91.3	91.7	90.9	97.3	93.6	91.0	94.5	95.6	95.7	98.2	98.5

CQS: 91.7



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 Deviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6605 K	91.1	91.6	88.2	100.9	91.7	0.310	0.336	0.193	0.314	0.0050

Fuze Spot-Profile Zoom In

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TM30 Details

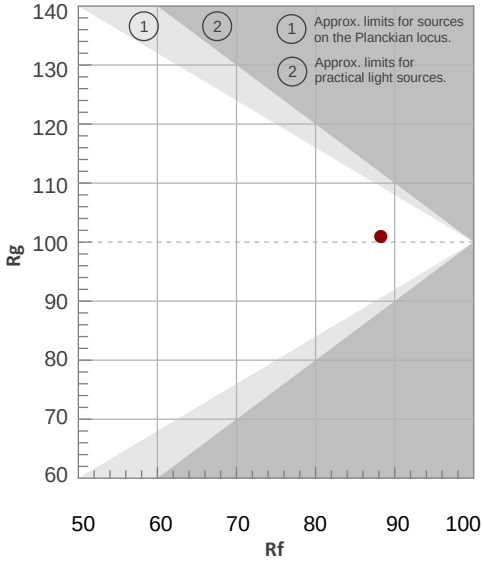
Rf 88.2

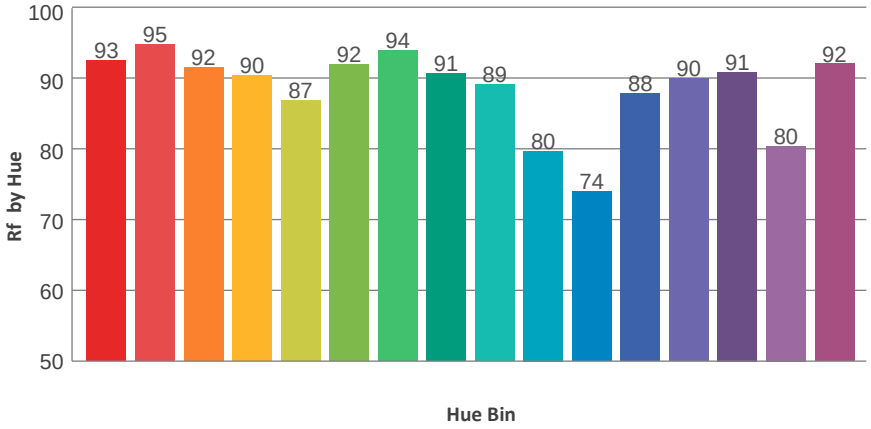
Fidelity Index Rf

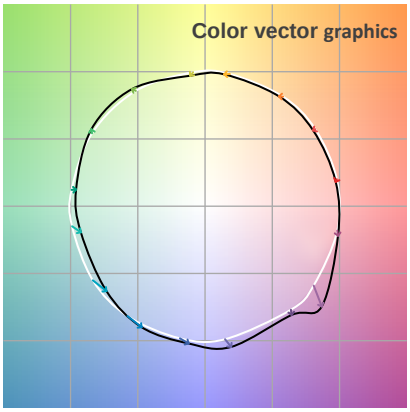
Rg 100.9

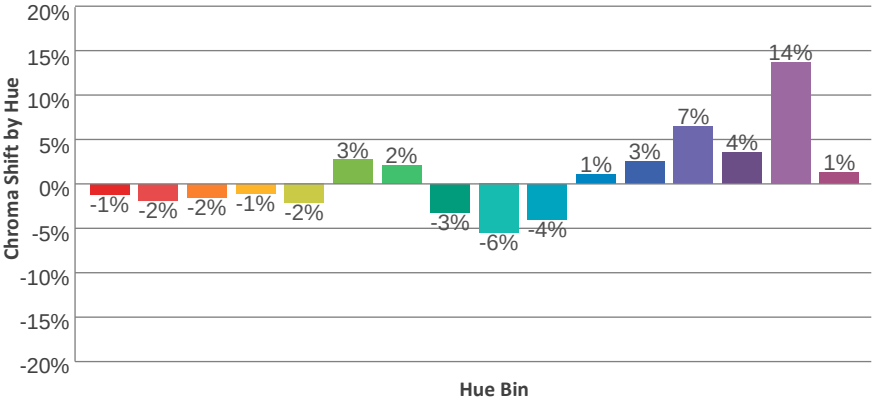
Gamut Index Rg

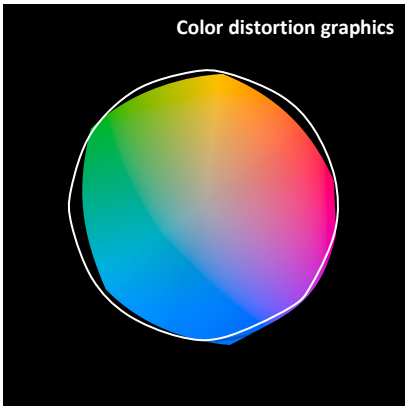
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	93	-1%	-2%
2	95	-2%	0%
3	92	-2%	3%
4	90	-1%	4%
5	87	-2%	3%
6	92	3%	2%
7	94	2%	-2%
8	91	-3%	-1%
9	89	-6%	6%
10	80	-4%	12%
11	74	1%	13%
12	88	3%	7%
13	90	7%	3%
14	91	4%	-2%
15	80	14%	-10%
16	92	1%	-4%

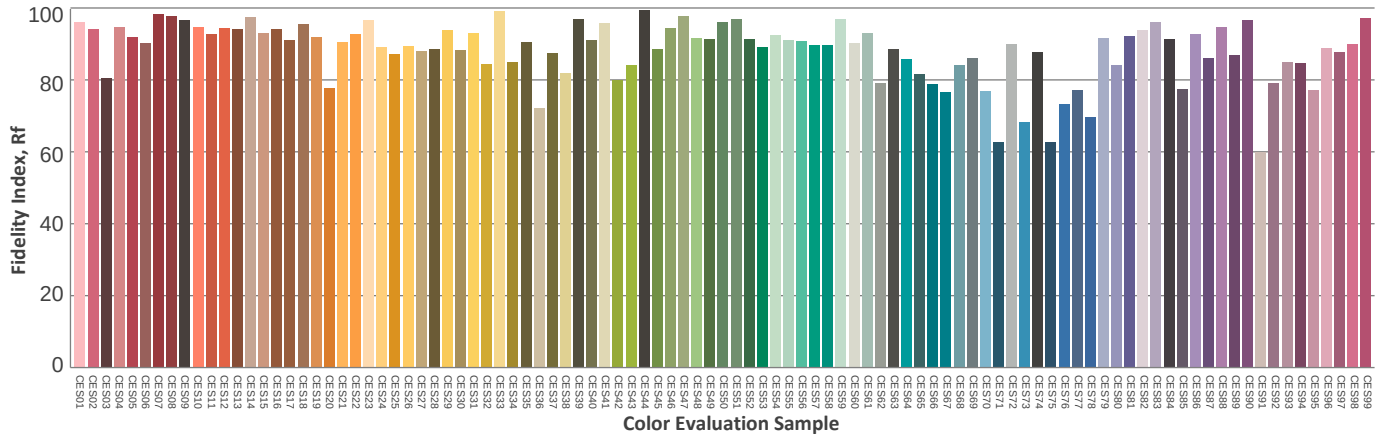












Fuze Spot-Profile Zoom In

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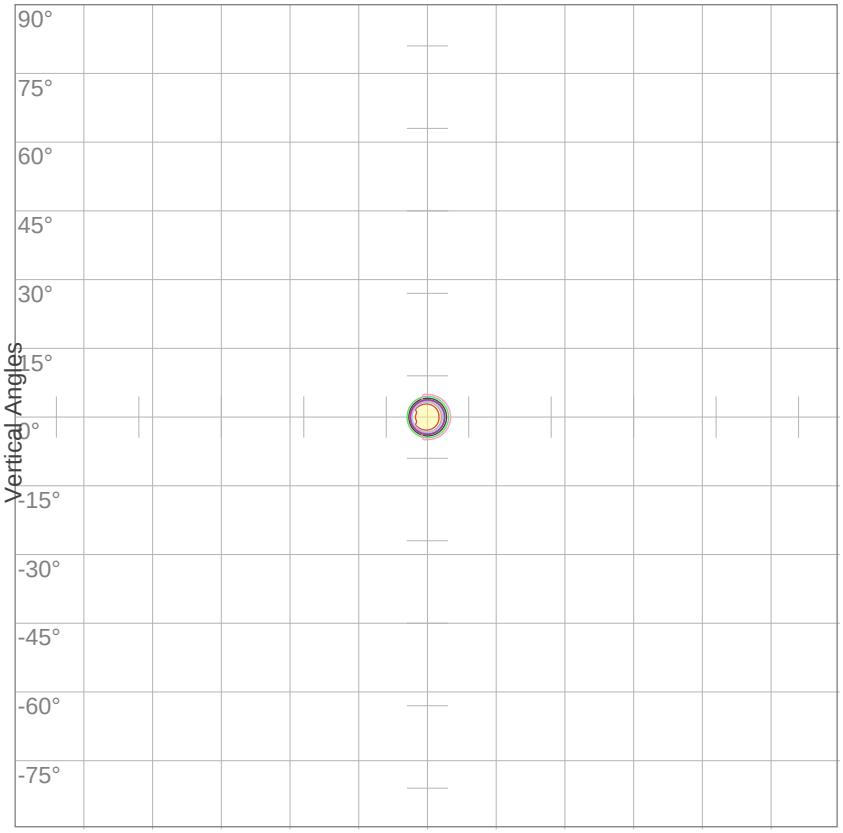
ISO Diagrams

ISO Candela Diagram



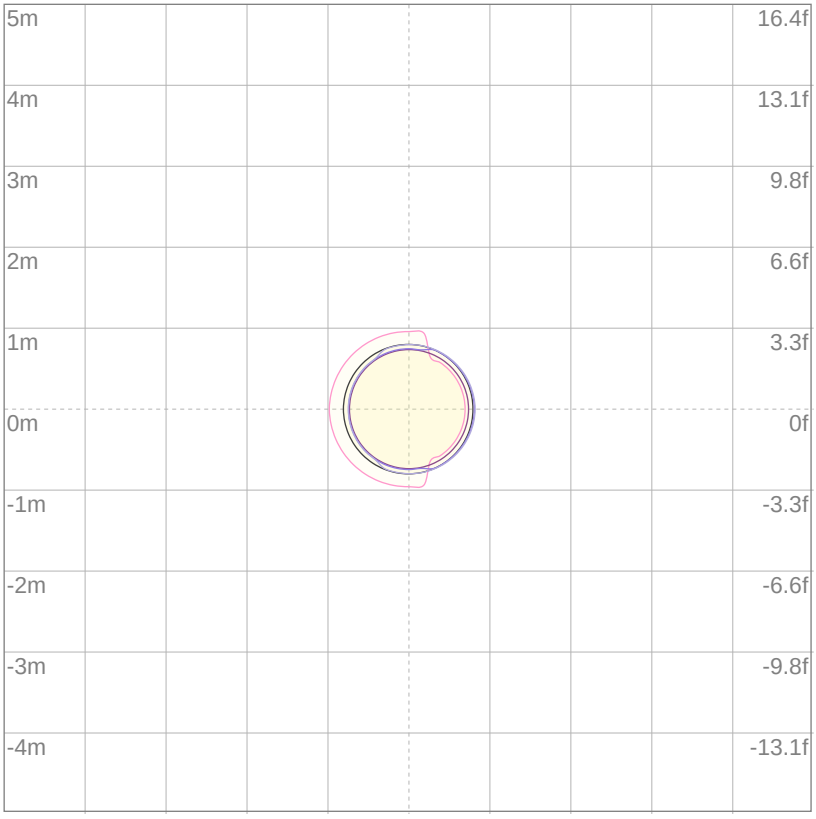
10%	45274 cd
20%	90548 cd
30%	135822 cd
40%	181096 cd
50%	226370 cd
60%	271643 cd
70%	316917 cd
80%	362191 cd
90%	407465 cd

Conditions:

Number of c-planes: 2

Candela at center: 452739 cd

ISO Lux Diagram



Mounting Height: 10 meters (33 feet)

3%	136 lx
5%	226 lx
10%	453 lx
30%	1358 lx
50%	2264 lx

Conditions:

Number of c-planes: 2

Lux at center: 4527 lx

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

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Photometric Report

Total Lumen Output*

Integrating Sphere	**10119 lm**
VISO Lab Spion	**8740 lm**

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
17.6°	20.5°	21.6°

Color Temperature: 6630 K

CRI: 90.6

TLCI: 93

TM30: 87.8

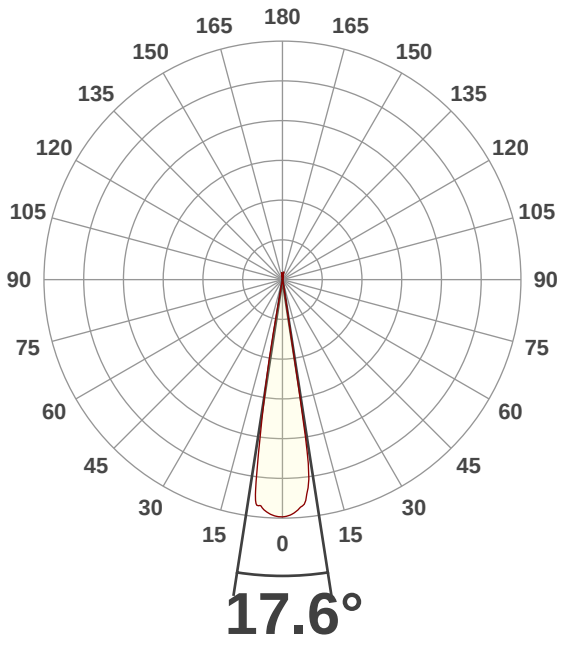
CQS: 91.3

Voltage: 116 V, Current: 3.39 A

Power: 393 W

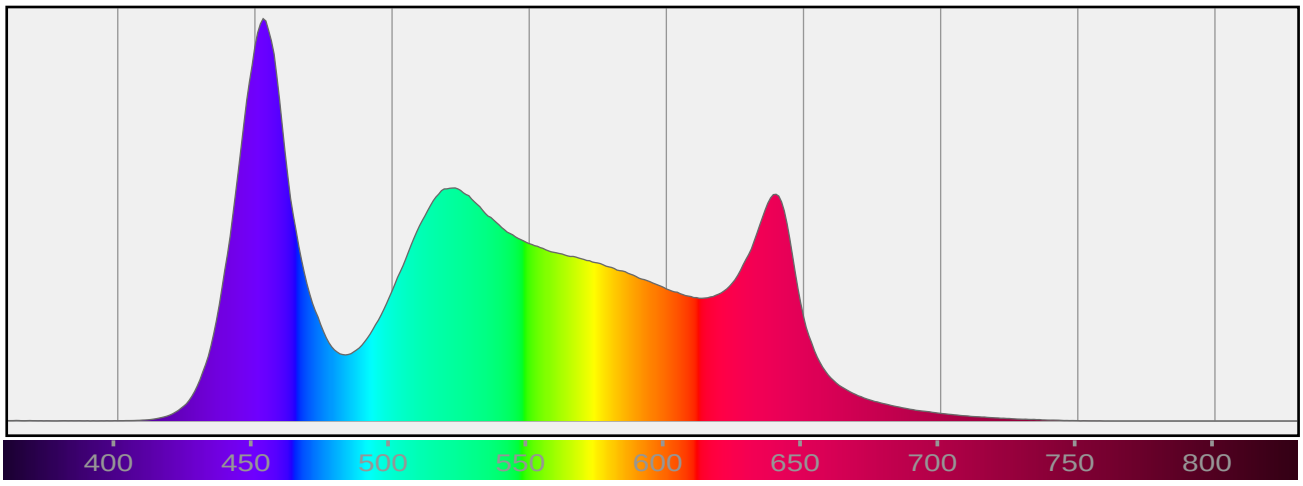
Efficacy: 22 Lumen/Watt

Measurement Date: 7/23/2019



Spectral Distribution

Dominant Wavelength 523 nm



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

Fuze Spot-Profile Zoom 50%

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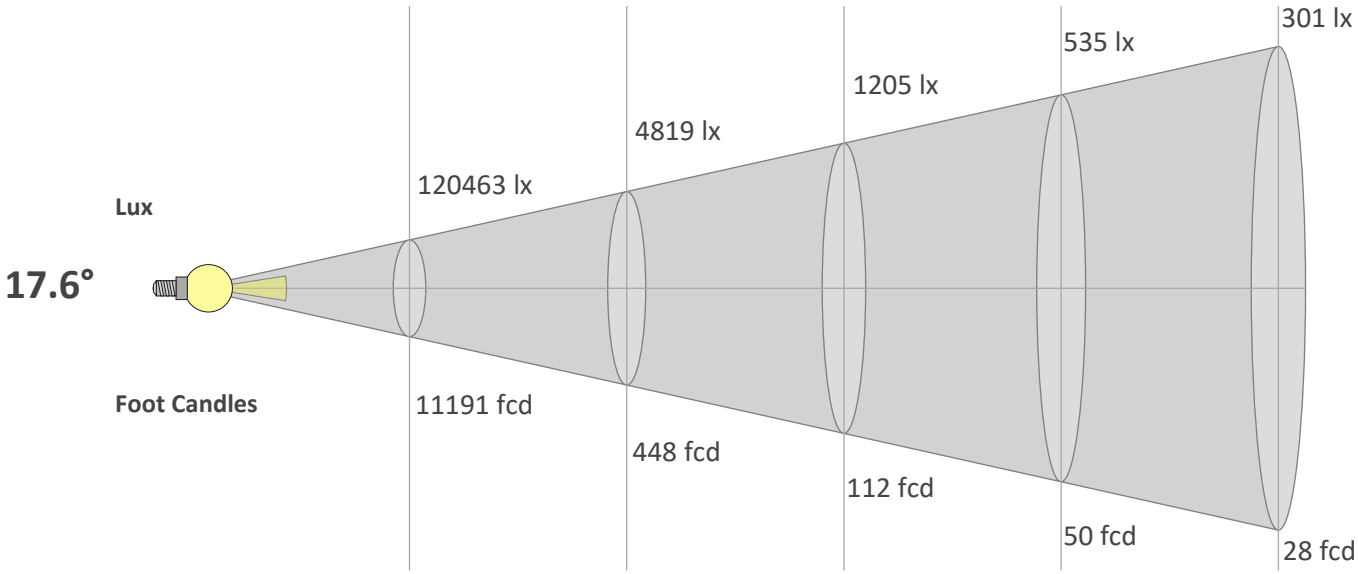
Beam Details

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
17.6°	**20.5°**	**21.6°**

Distance (m)	1	5	10	15	20
Distance (ft)	3.3	16.4	32.8	49.2	65.6

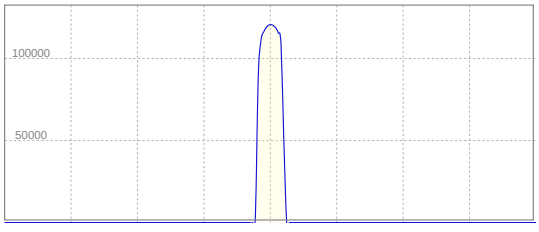


Beam Width (m)	0.3	1.6	3.1	4.7	6.2
Beam Width (ft)	1	5.1	10.2	15.3	20.3

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	120463	30116	13385	7529	4819	3346	2458	1882	1487	1205	996	837	713	615	535	471	417	372	334	301
FC	11191.4	2797.8	1243.5	699.5	447.7	310.9	228.4	174.9	138.2	111.9	92.5	77.7	66.2	57.1	49.7	43.7	38.7	34.5	31	28

Linear Distribution



Peak Candela

120498 cd

Calculate Center Beam Intensities

lux = 120498 / distance(m)^2

fc = 120498 / distance(ft)^2

Fuze Spot-Profile Zoom 50%

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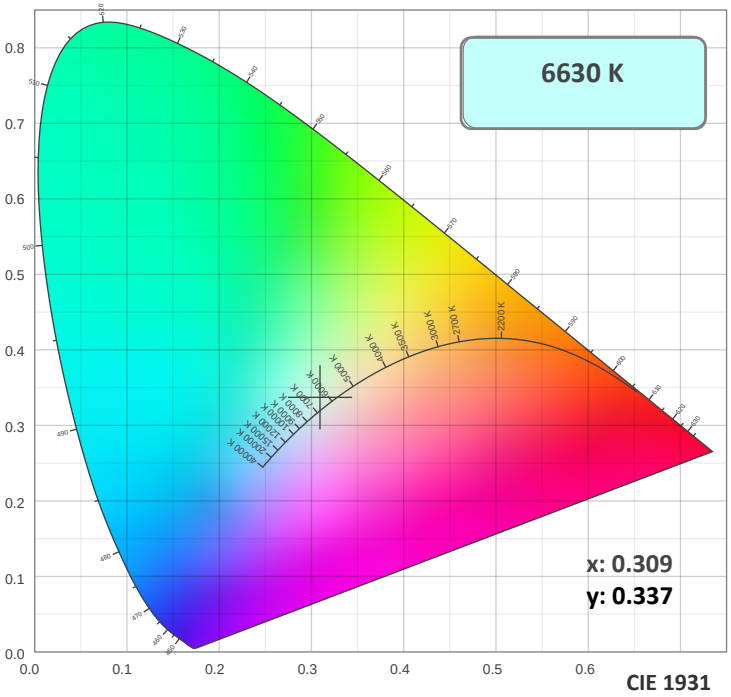
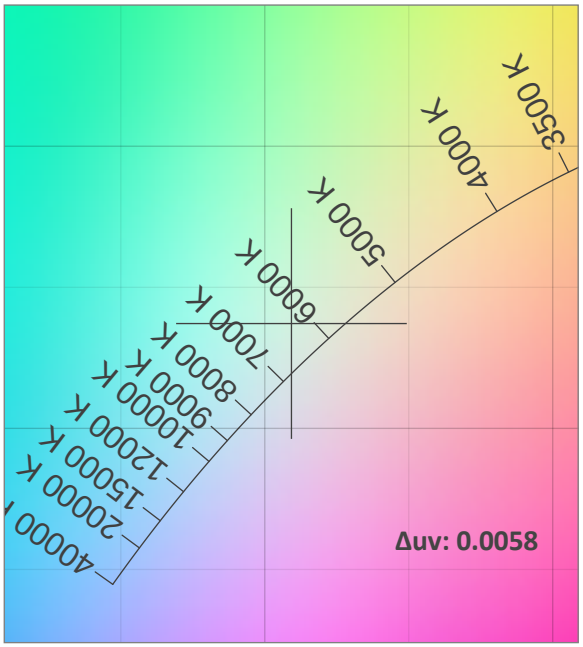
Color Details

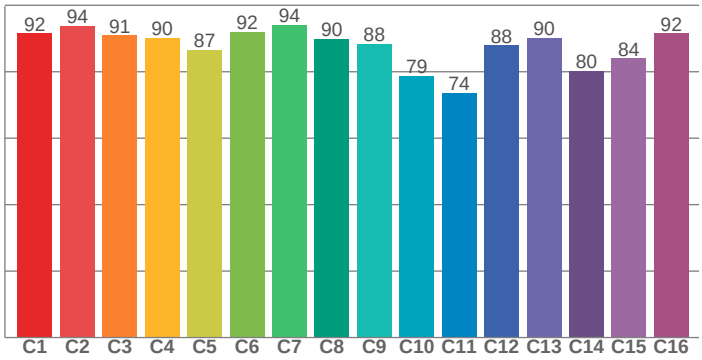


CIE 1931

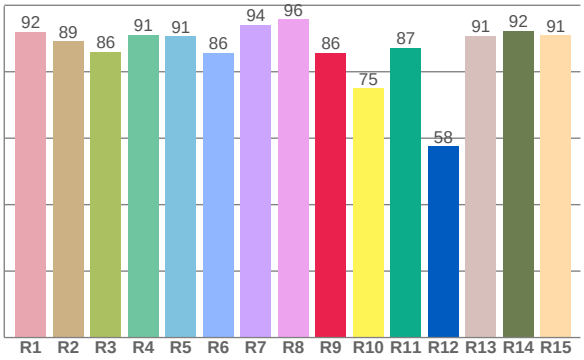


CIE 1931 ZOOM

TM30: 87.8



CRI: 90.6 (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
92.0	89.2	86.0	91.1	90.6	85.7	94.1	95.7	85.7	75.0	87.3	57.6	90.8	92.3	91.0

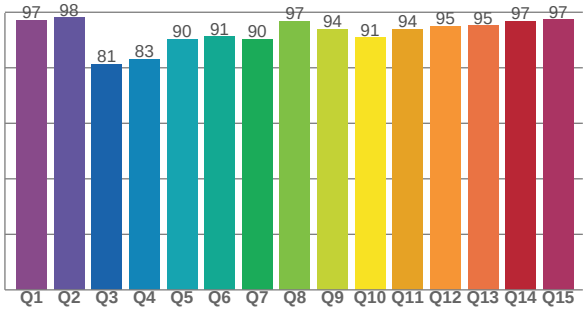
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91.5	93.8	90.9	90.1	86.6	92.1	94.1	89.8	88.3	78.8	73.7	88.0	90.2	80.3	84.0	91.6

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.2	98.2	81.3	83.0	90.3	91.2	90.4	96.7	94.0	90.9	94.0	95.0	95.2	96.9	97.4

CQS: 91.3



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
6630 K	90.6	85.7	87.8	100.8	91.3	0.309	0.337	0.192	0.315	0.0058

Fuze Spot-Profile Zoom 50%

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TM30 Details

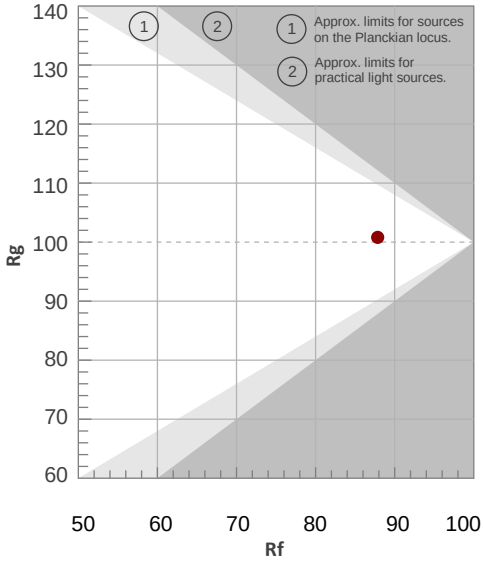
Rf 87.8

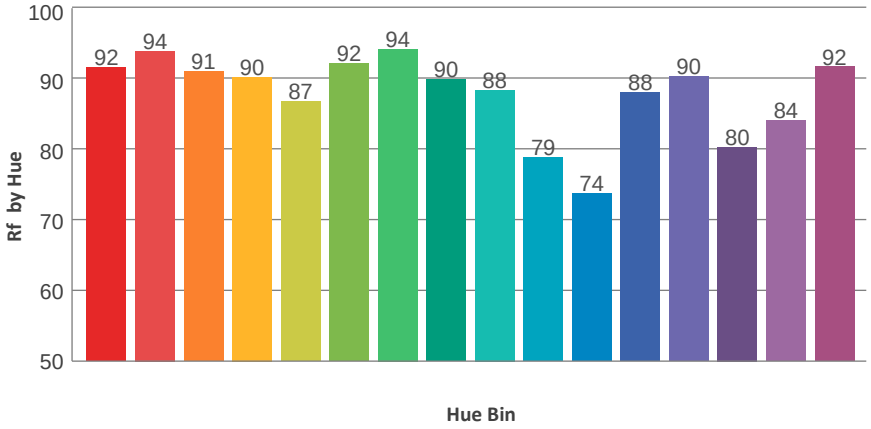
Fidelity Index Rf

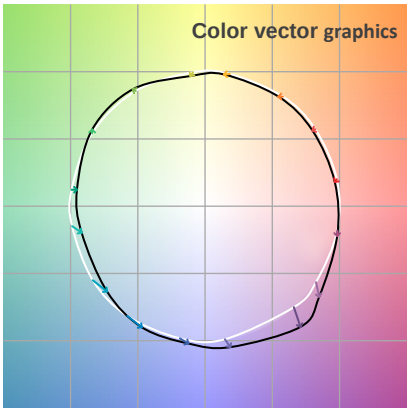
Rg 100.8

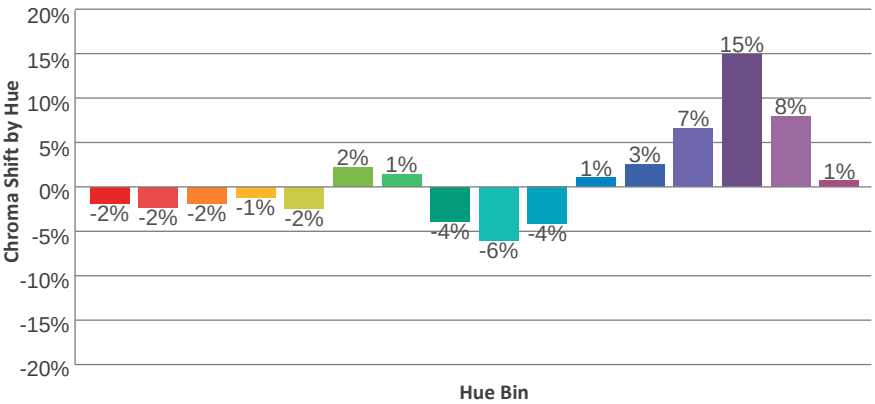
Gamut Index Rg

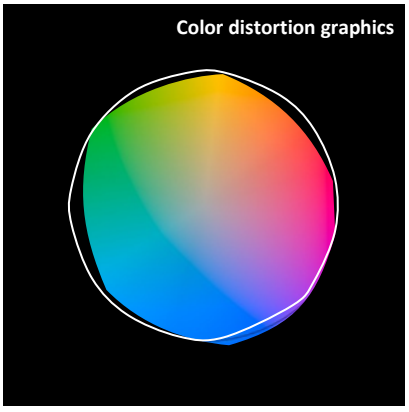
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	92	-2%	-2%
2	94	-2%	0%
3	91	-2%	3%
4	90	-1%	4%
5	87	-2%	2%
6	92	2%	1%
7	94	1%	-2%
8	90	-4%	-1%
9	88	-6%	6%
10	79	-4%	13%
11	74	1%	14%
12	88	3%	7%
13	90	7%	3%
14	80	15%	-4%
15	84	8%	-8%
16	92	1%	-4%

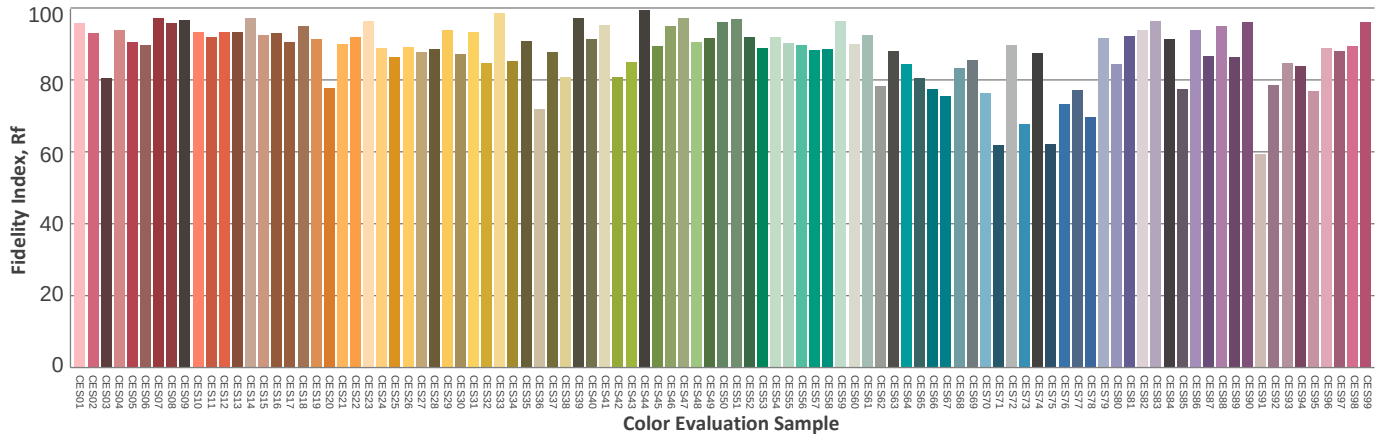












Fuze Spot-Profile Zoom 50%

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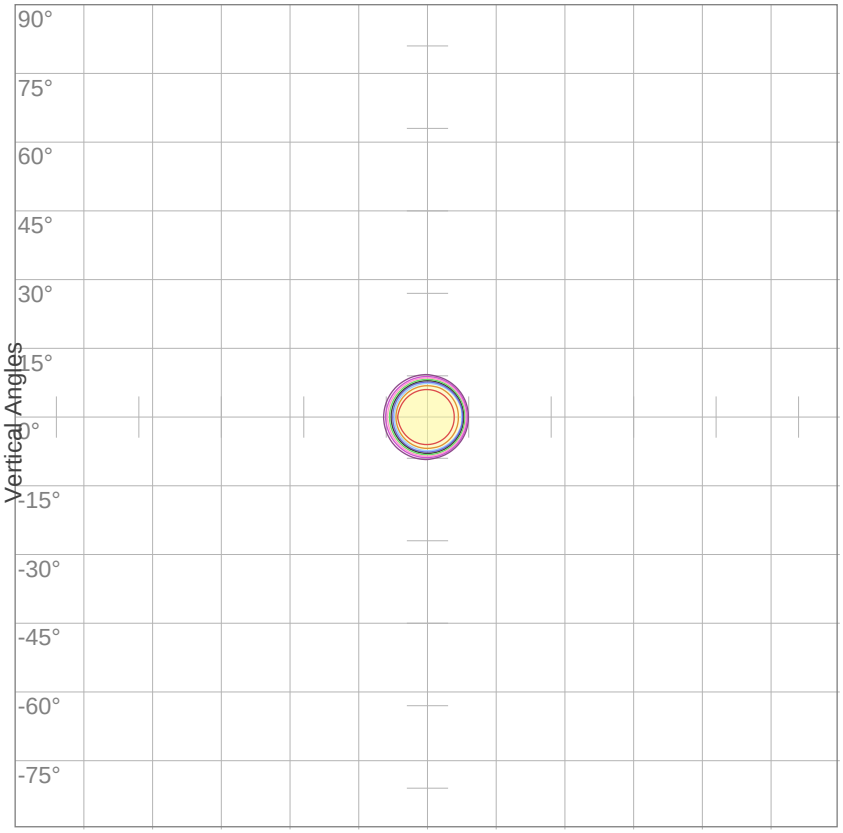
ISO Diagrams

ISO Candela Diagram



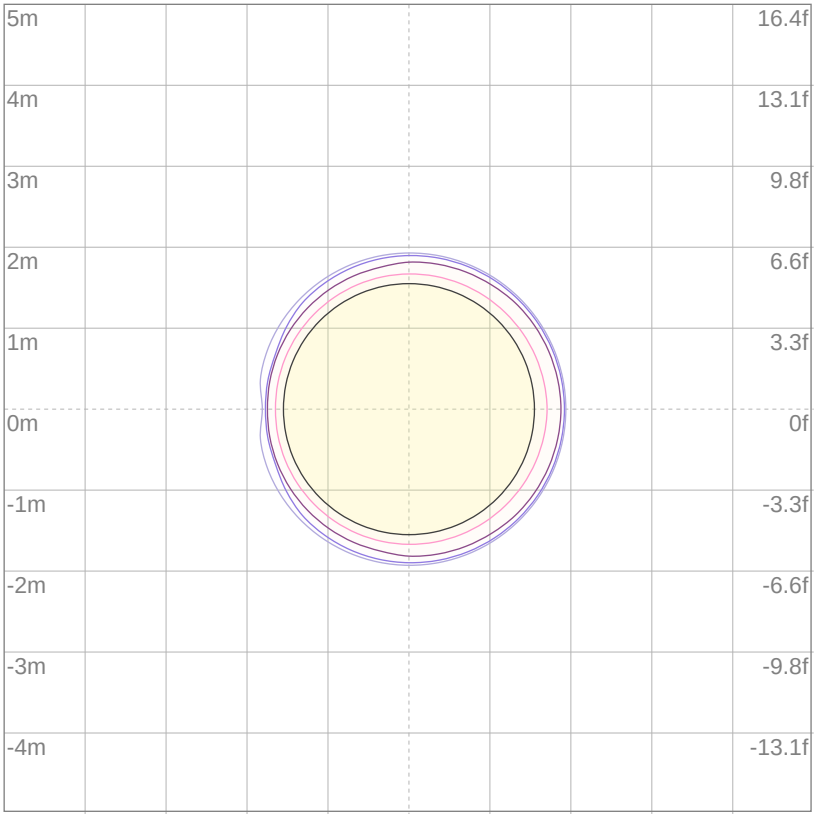
10%	12046 cd
20%	24093 cd
30%	36139 cd
40%	48185 cd
50%	60231 cd
60%	72278 cd
70%	84324 cd
80%	96370 cd
90%	108417 cd

Conditions:

Number of c-planes: 2

Candela at center: 120463 cd

ISO Lux Diagram



Mounting Height: 10 meters (33 feet)

3%	36.1 lx
5%	60.2 lx
10%	120 lx
30%	361 lx
50%	602 lx

Conditions:

Number of c-planes: 2

Lux at center: 1205 lx

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

Prepared For ELATION PROFESSIONAL

Photometric Report

Total Lumen Output*

Integrating Sphere	**9709 lm**
VISO Lab Spion	**8754 lm**

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
39.9°	44.2°	46°

Color Temperature: 6627 K

CRI: 90.4

TLCI: 93

TM30: 87.8

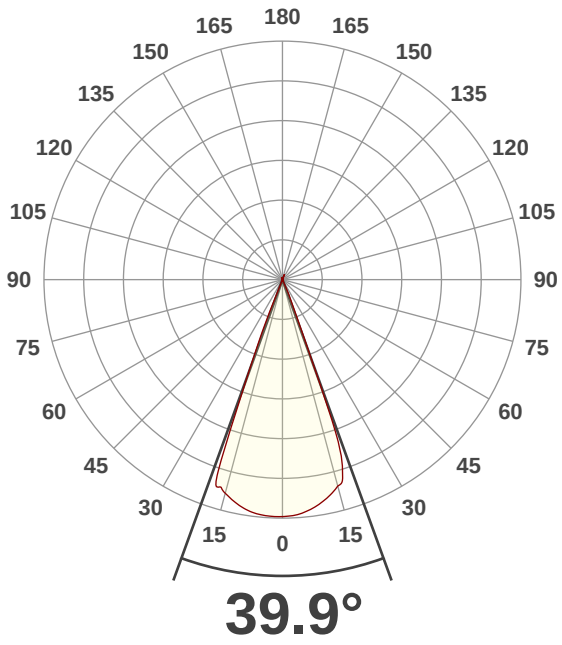
CQS: 91.2

Voltage: 116 V, Current: 3.39 A

Power: 393 W

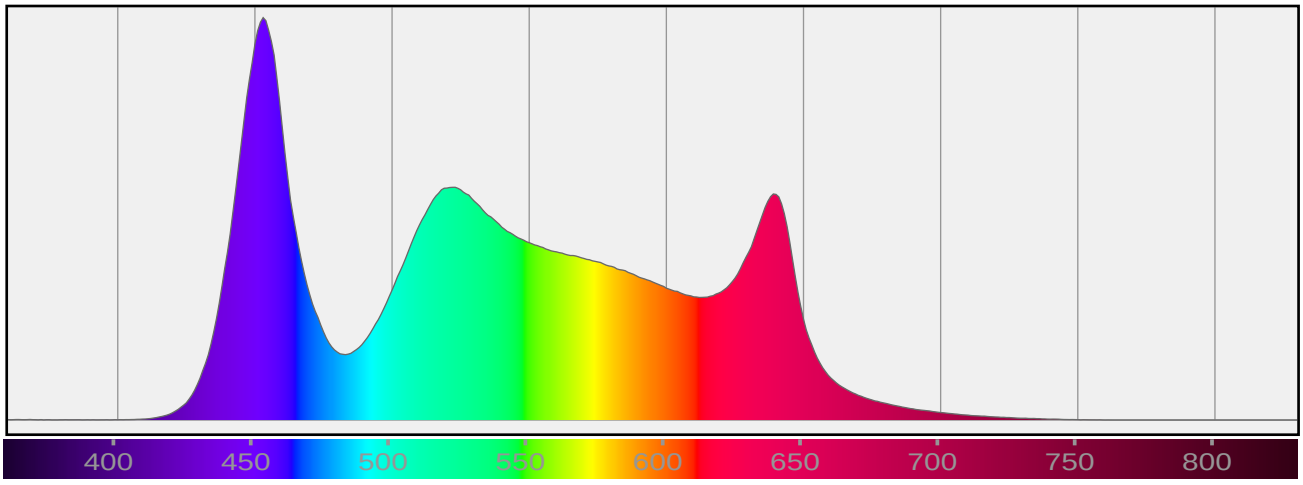
Efficacy: 22 Lumen/Watt

Measurement Date: 7/23/2019



Spectral Distribution

Dominant Wavelength 524 nm



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

Fuze Spot-Profile Zoom Out

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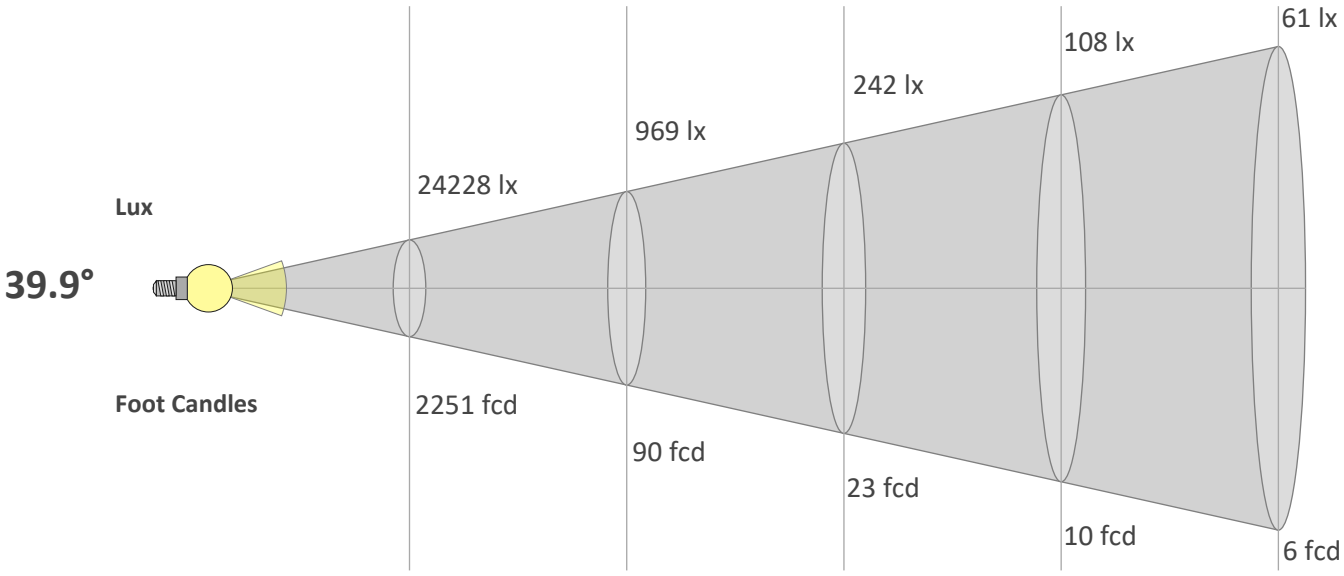
Beam Details

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
39.9°	**44.2°**	**46°**

Distance (m)	1	5	10	15	20
Distance (ft)	3.3	16.4	32.8	49.2	65.6

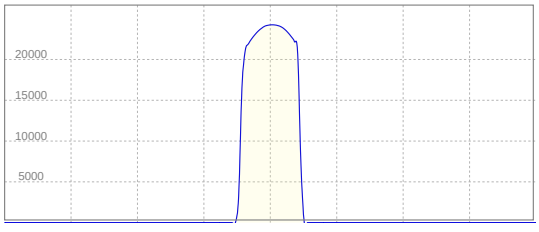


Beam Width (m)	0.7	3.6	7.3	10.9	14.5
Beam Width (ft)	2.4	11.9	23.8	35.7	47.6

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	24228	6057	2692	1514	969	673	494	379	299	242	200	168	143	124	108	95	84	75	67	61
FC	2250.8	562.7	250.1	140.7	90	62.5	45.9	35.2	27.8	22.5	18.6	15.6	13.3	11.5	10	8.8	7.8	6.9	6.2	5.6

Linear Distribution



Peak Candela

24245 cd

Calculate Center Beam Intensities

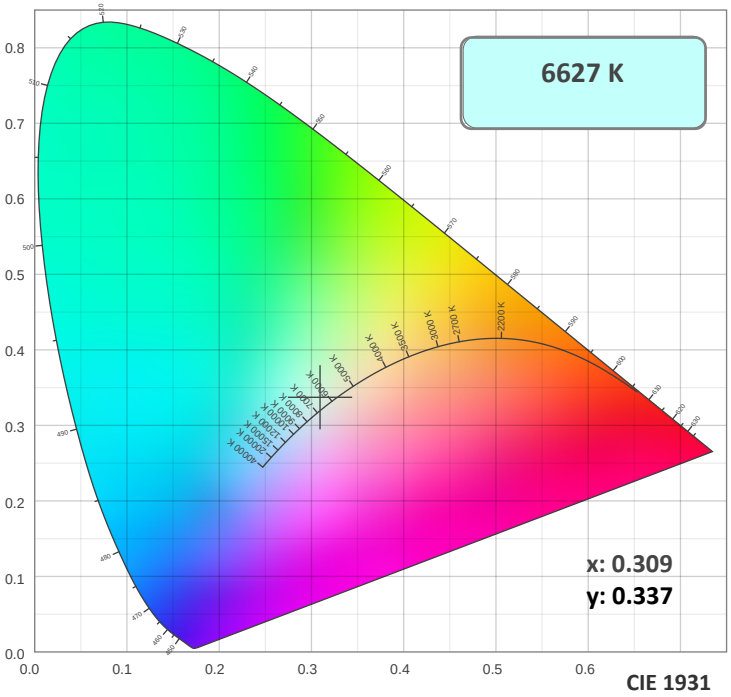
lux = 24245 / distance(m)²

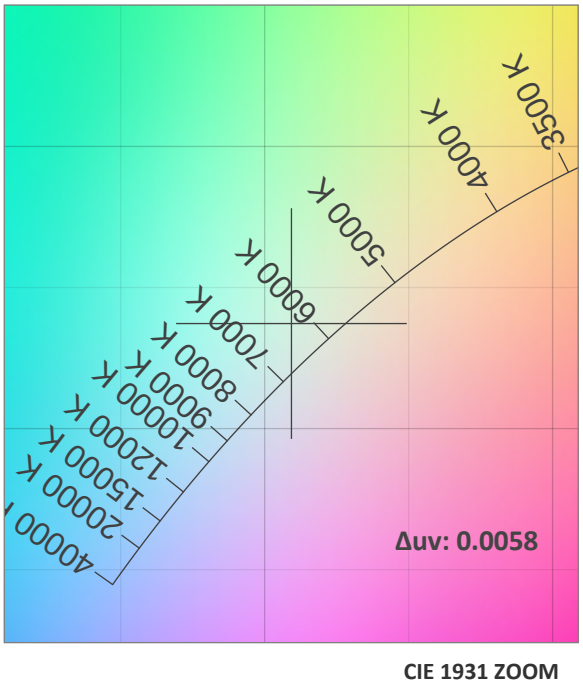
fc = 24245 / distance(ft)²

Fuze Spot-Profile Zoom Out

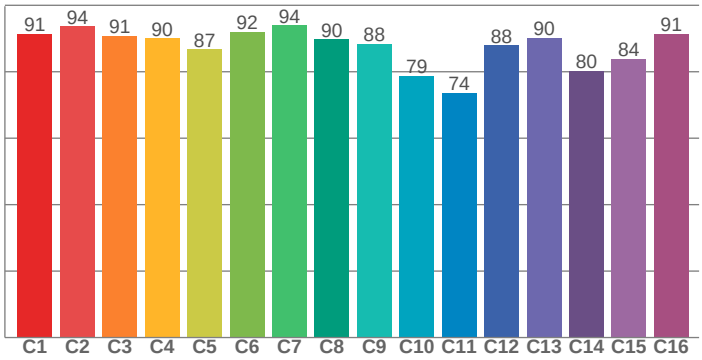
Prepared For ELATION PROFESSIONAL

Color Details

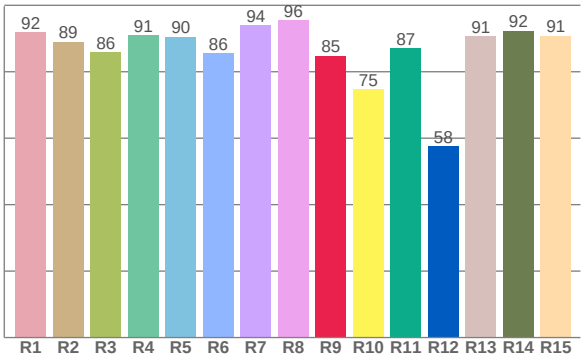




TM30: 87.8



CRI: 90.4 (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
91.9	89.1	85.9	91.0	90.5	85.6	94.0	95.5	84.8	74.7	87.2	57.5	90.7	92.3	90.8

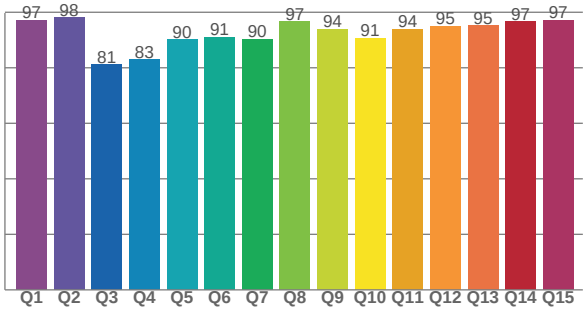
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91.3	93.7	90.8	90.0	86.7	92.0	94.0	89.8	88.4	78.8	73.6	87.9	90.2	80.2	83.9	91.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.1	98.1	81.2	83.0	90.2	91.1	90.3	96.7	94.0	90.8	93.8	94.9	95.2	96.7	97.1

CQS: 91.2



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
6627 K	90.4	84.8	87.8	100.8	91.2	0.309	0.337	0.192	0.315	0.0058

Fuze Spot-Profile Zoom Out

Prepared For ELATION PROFESSIONAL

TM30 Details

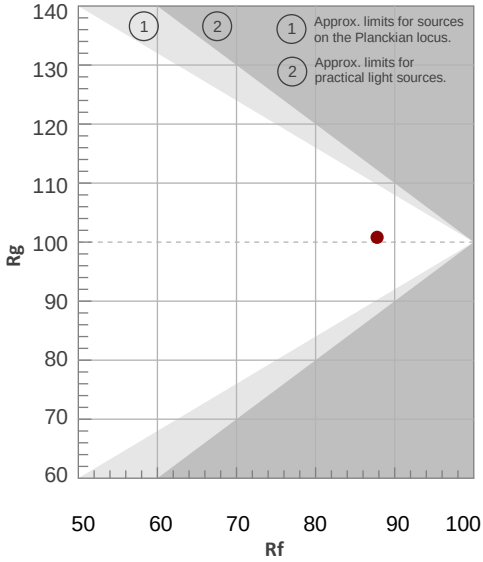
Rf 87.8

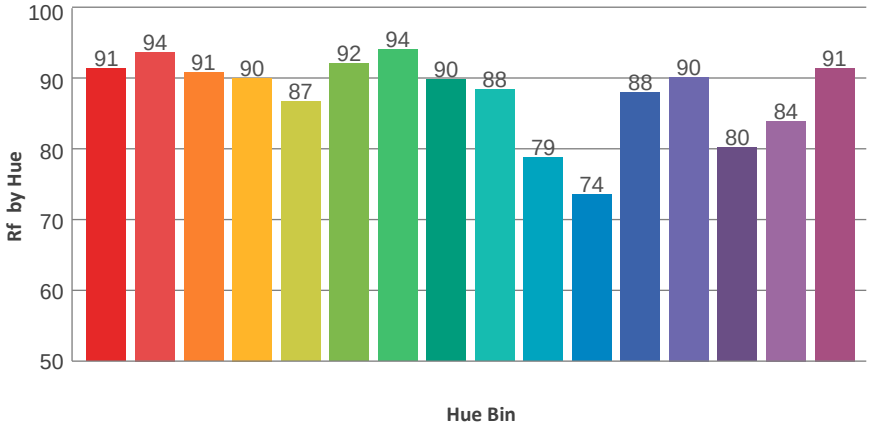
Fidelity Index Rf

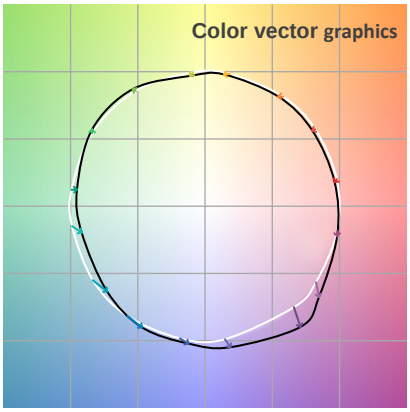
Rg 100.8

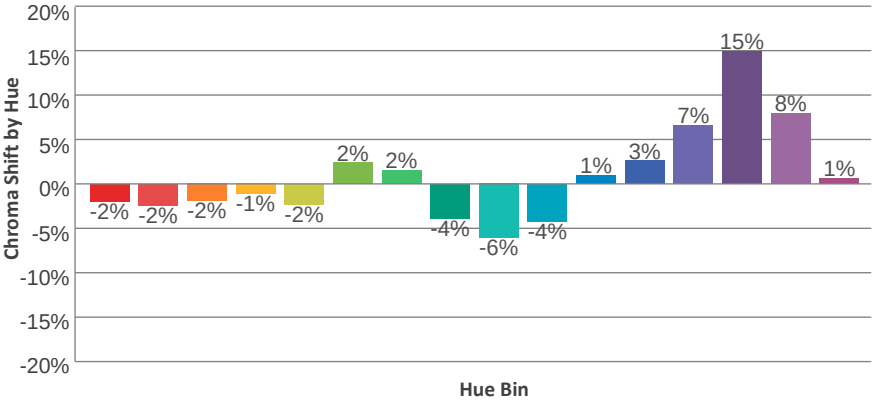
Gamut Index Rg

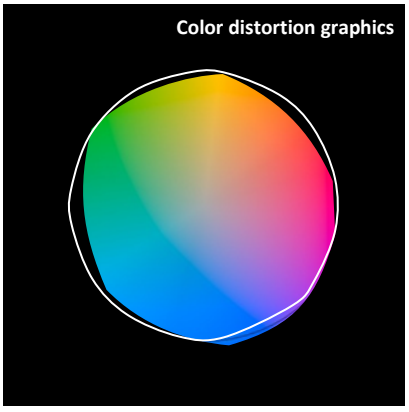
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	91	-2%	-2%
2	94	-2%	0%
3	91	-2%	3%
4	90	-1%	4%
5	87	-2%	3%
6	92	2%	1%
7	94	2%	-2%
8	90	-4%	-1%
9	88	-6%	6%
10	79	-4%	13%
11	74	1%	14%
12	88	3%	7%
13	90	7%	3%
14	80	15%	-4%
15	84	8%	-8%
16	91	1%	-4%

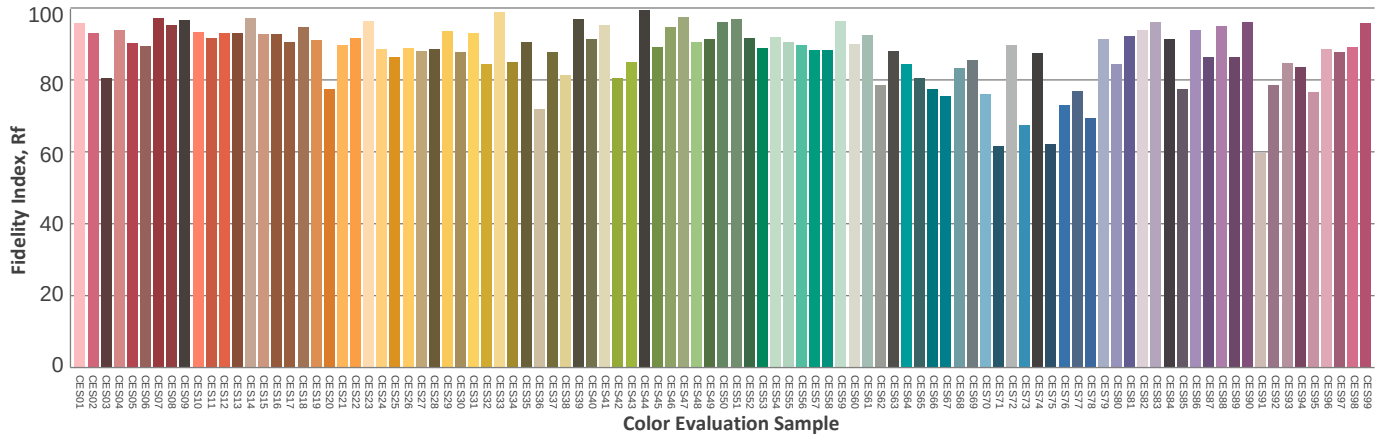












Fuze Spot-Profile Zoom Out

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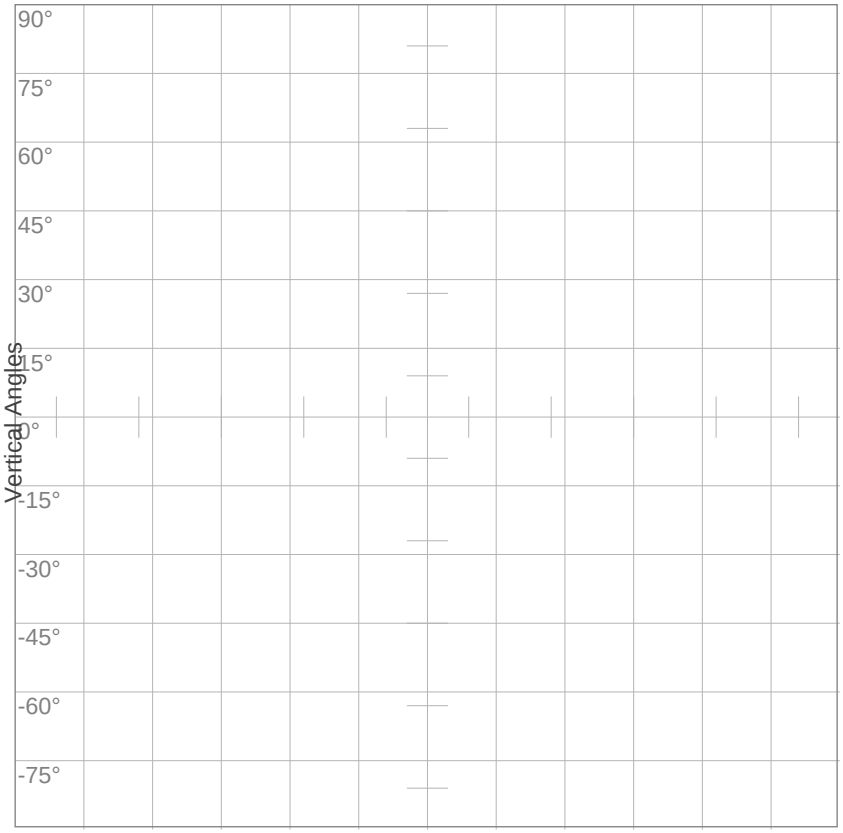
ISO Diagrams

ISO Candela Diagram



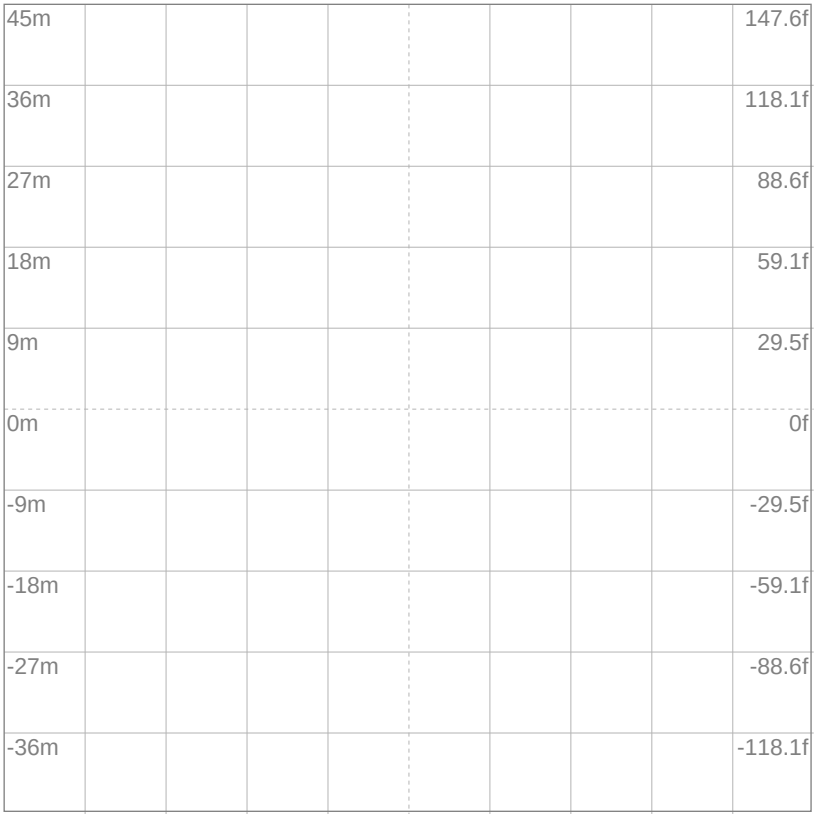
10%	2423 cd
20%	4846 cd
30%	7268 cd
40%	9691 cd
50%	12114 cd
60%	14537 cd
70%	16959 cd
80%	19382 cd
90%	21805 cd

Conditions:

Number of c-planes: 2

Candela at center: 24228 cd

ISO Lux Diagram



Mounting Height: 10 meters (33 feet)

3%	7.27 lx
5%	12.1 lx
10%	24.2 lx
30%	72.7 lx
50%	121 lx

Conditions:

Number of c-planes: 2

Lux at center: 242 lx

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

Prepared For ELATION PROFESSIONAL

Photometric Report

Total Lumen Output*

Integrating Sphere	**5286 lm**
VISO Lab Spion	**4656 lm**

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2.5%
17.6°	21°	21.9°

Color Temperature: 3217 K

CRI: 94.9

TLCI: 88

TM30: 91.2

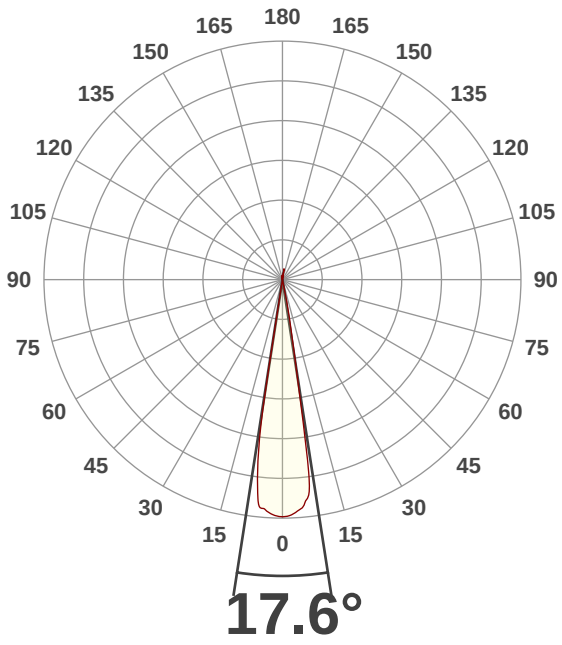
CQS: 92.6

Voltage: 116 V, Current: 3.39 A

Power: 393 W

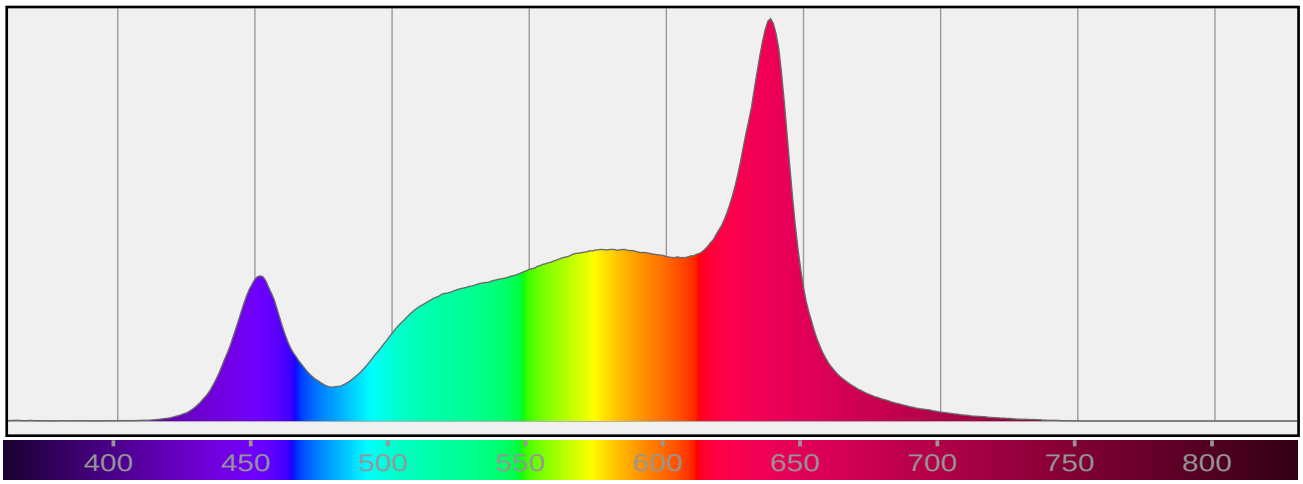
Efficacy: 12 Lumen/Watt

Measurement Date: 7/23/2019



Spectral Distribution

Dominant Wavelength 583 nm



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

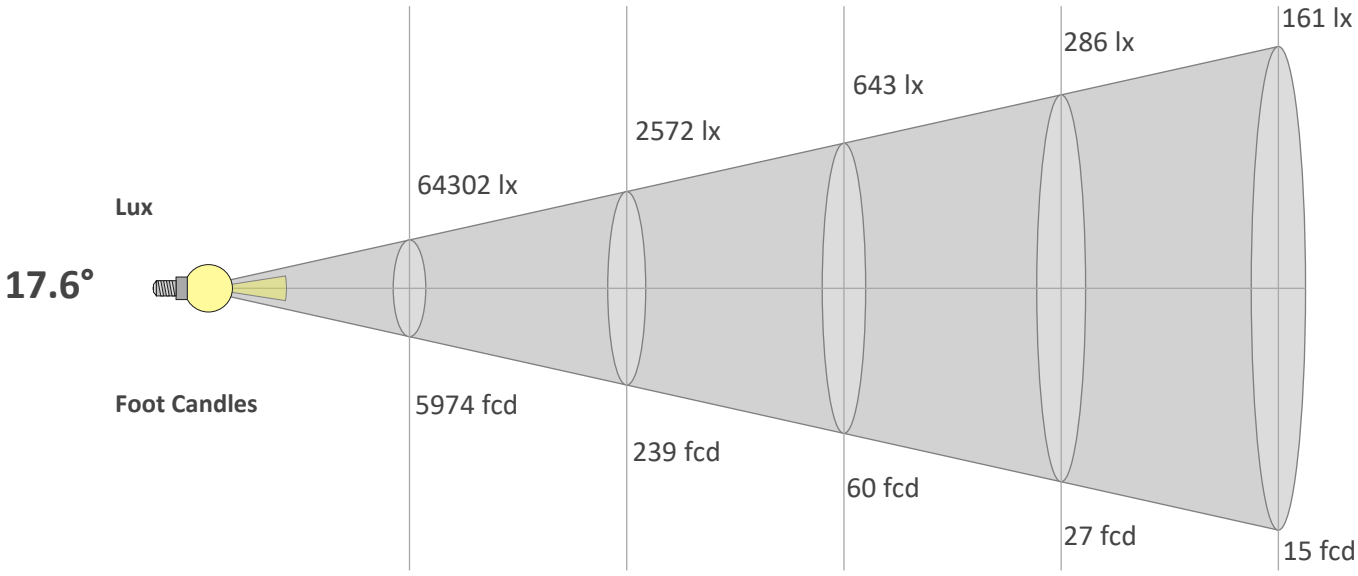
Fuze Spot-Profile 3200K

Prepared For ELATION PROFESSIONAL

Beam Details

Beam Angle 50%	Field Angle 10%	Cutoff Angle 2,5%
17.6°	**21°**	**21.9°**

Distance (m)	1	5	10	15	20
Distance (ft)	3.3	16.4	32.8	49.2	65.6

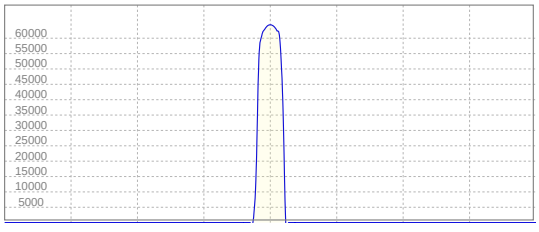


Beam Width (m)	0.3	1.6	3.1	4.7	6.2
Beam Width (ft)	1	5.1	10.2	15.3	20.3

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	64302	16075	7145	4019	2572	1786	1312	1005	794	643	531	447	380	328	286	251	222	198	178	161
FC	5973.9	1493.5	663.8	373.4	239	165.9	121.9	93.3	73.8	59.7	49.4	41.5	35.3	30.5	26.6	23.3	20.7	18.4	16.5	14.9

Linear Distribution



Peak Candela

64343 cd

Calculate Center Beam Intensities

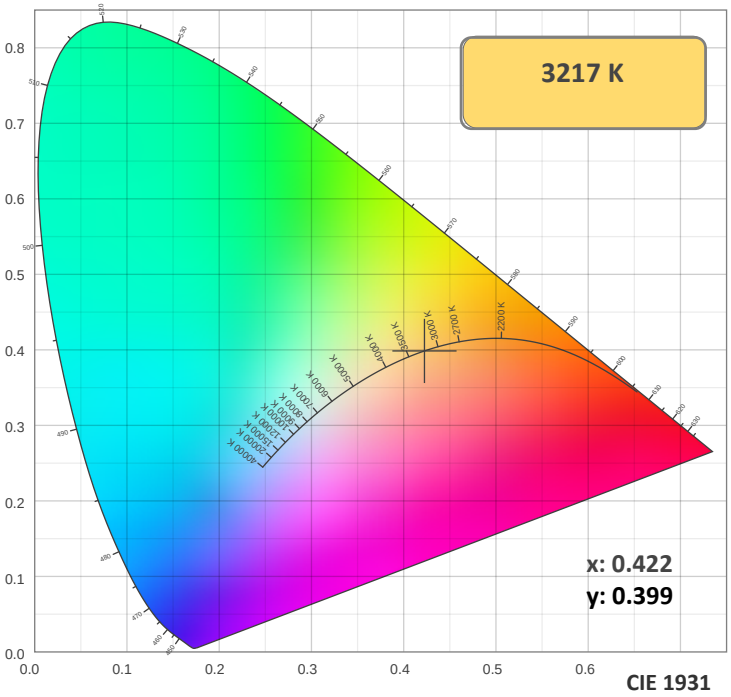
lux = 64343 / distance(m)^2

fc = 64343 / distance(ft)^2

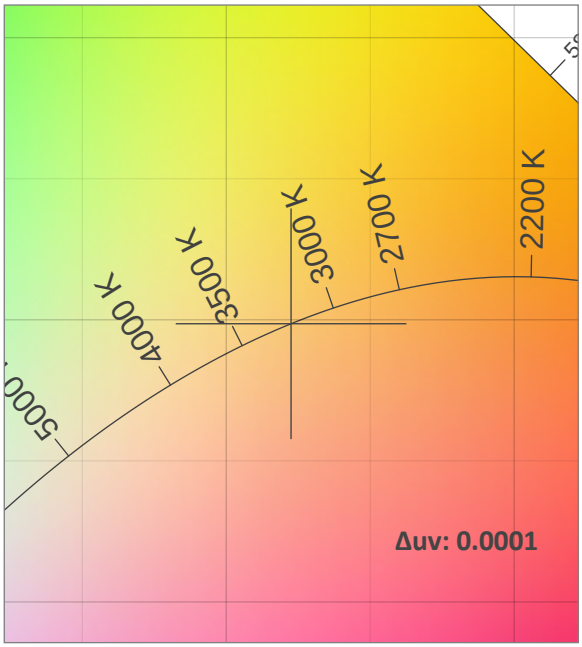
Fuze Spot-Profile 3200K

Prepared For ELATION PROFESSIONAL

Color Details

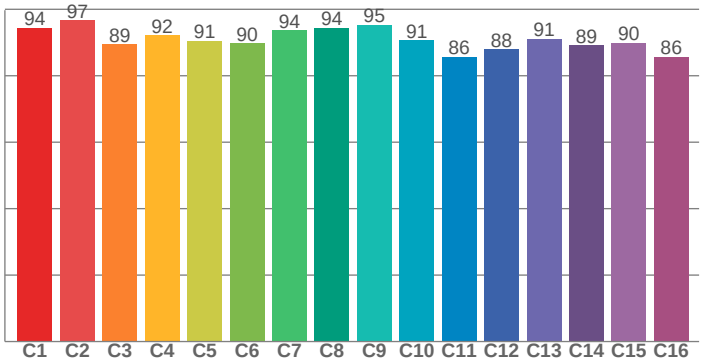


CIE 1931

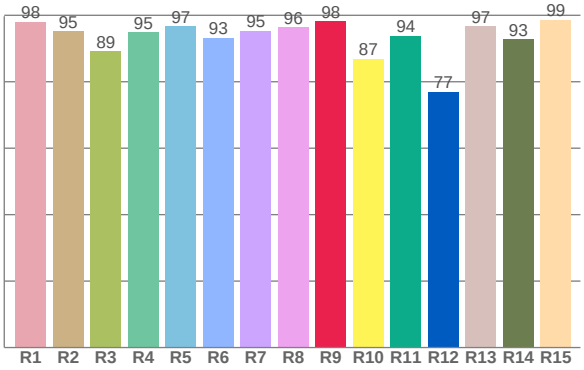


CIE 1931 ZOOM

TM30: 91.2



CRI: 94.9 (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
98.0	95.2	89.1	94.9	96.8	93.2	95.4	96.4	98.3	87.0	93.8	77.0	96.7	92.8	98.7

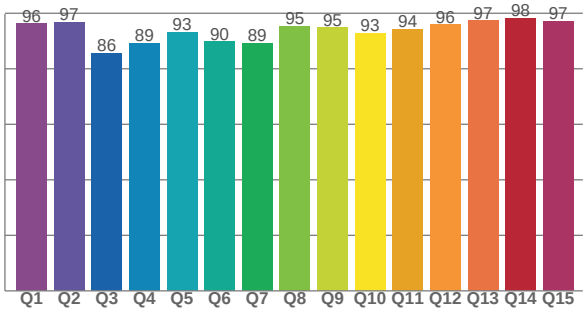
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.5	96.7	89.5	92.1	90.6	89.8	93.6	94.4	95.2	90.6	85.6	88.0	91.1	89.2	90.0	85.6

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.3	96.8	85.7	89.3	93.1	89.7	89.2	95.4	94.8	92.8	94.3	95.9	97.4	98.3	97.1

CQS: 92.6



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 Deviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3217 K	94.9	98.3	91.2	103.9	92.6	0.422	0.399	0.244	0.345	0.0001

Fuze Spot-Profile 3200K

Prepared For ELATION PROFESSIONAL

TM30 Details

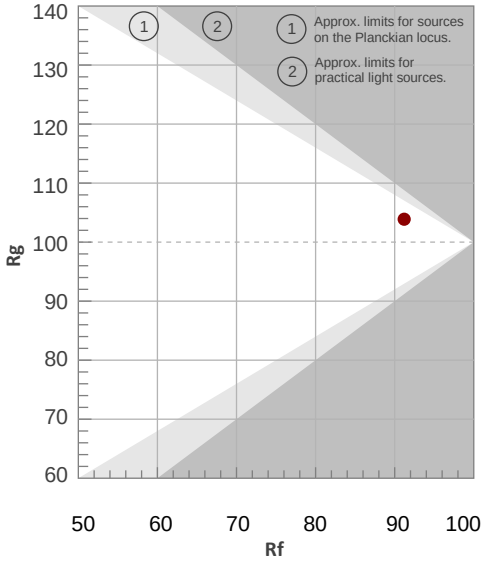
Rf 91.2

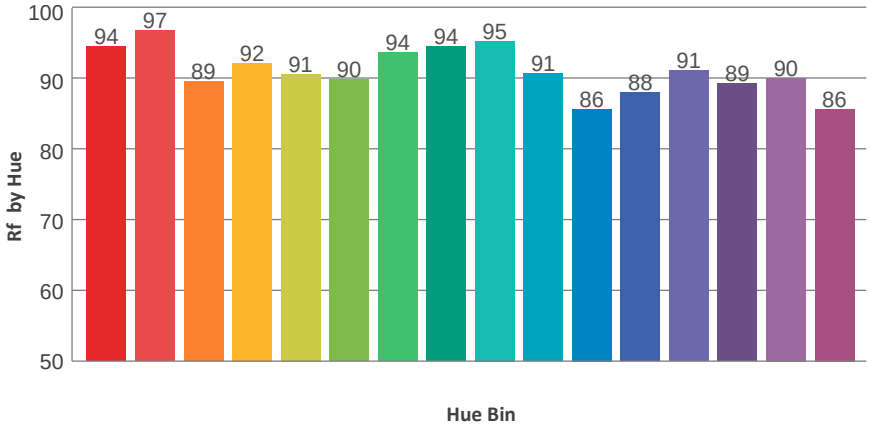
Fidelity Index Rf

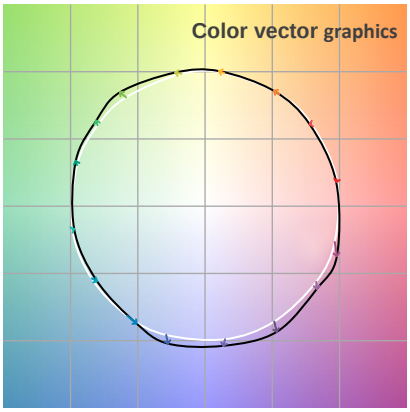
Rg 103.9

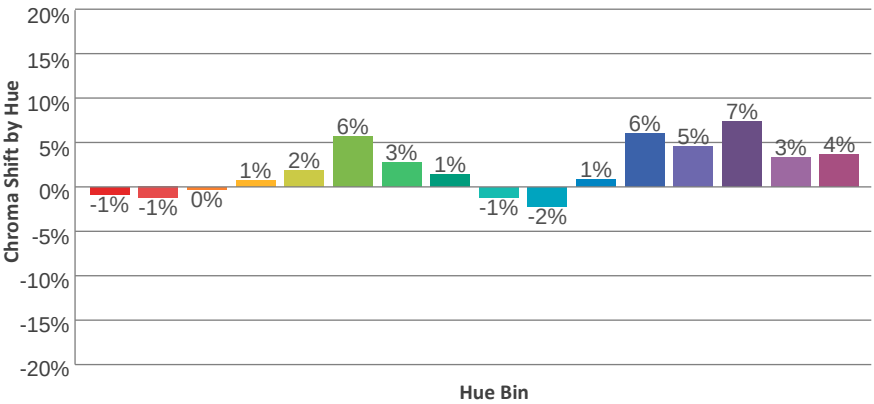
Gamut Index Rg

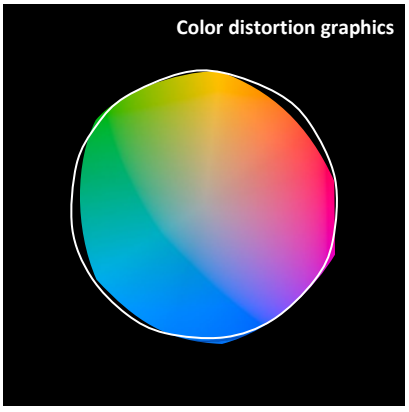
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	94	-1%	-2%
2	97	-1%	0%
3	89	0%	4%
4	92	1%	4%
5	91	2%	4%
6	90	6%	2%
7	94	3%	-2%
8	94	1%	-3%
9	95	-1%	0%
10	91	-2%	4%
11	86	1%	9%
12	88	6%	3%
13	91	5%	-2%
14	89	7%	-3%
15	90	3%	-4%
16	86	4%	-10%

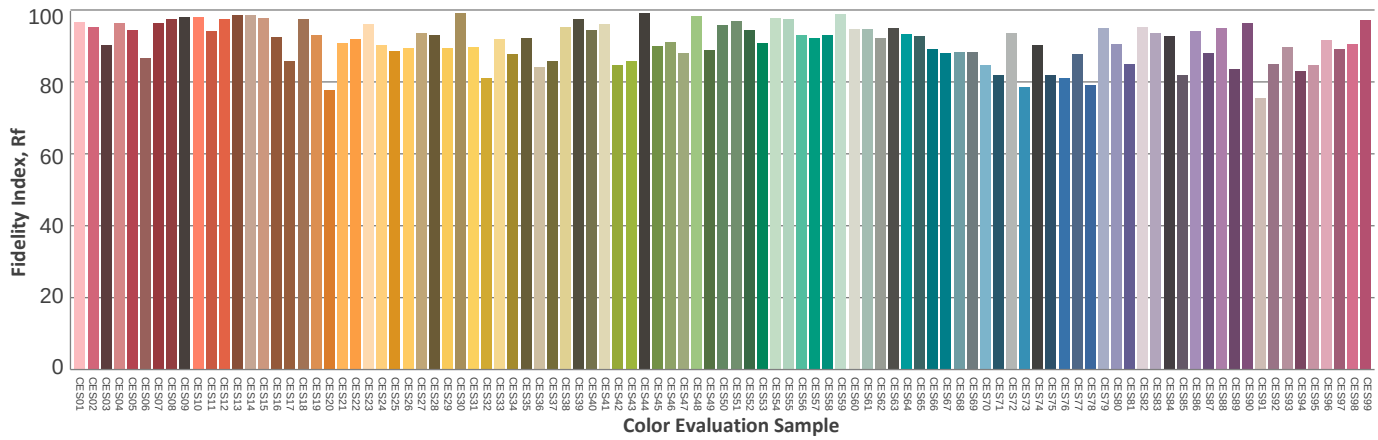












Fuze Spot-Profile 3200K

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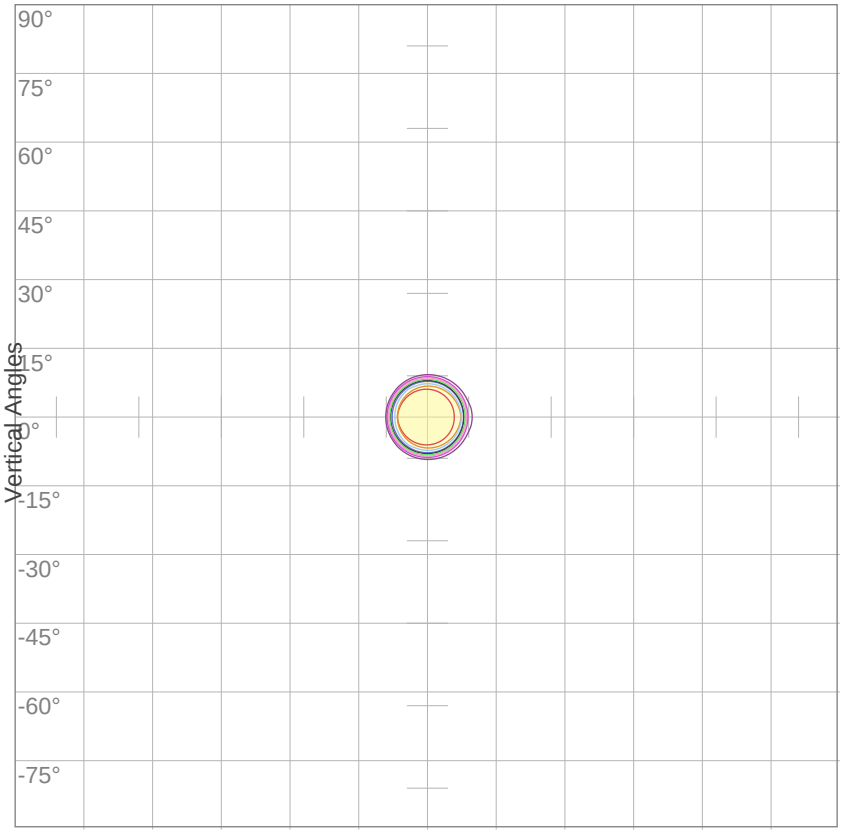
ISO Diagrams

ISO Candela Diagram



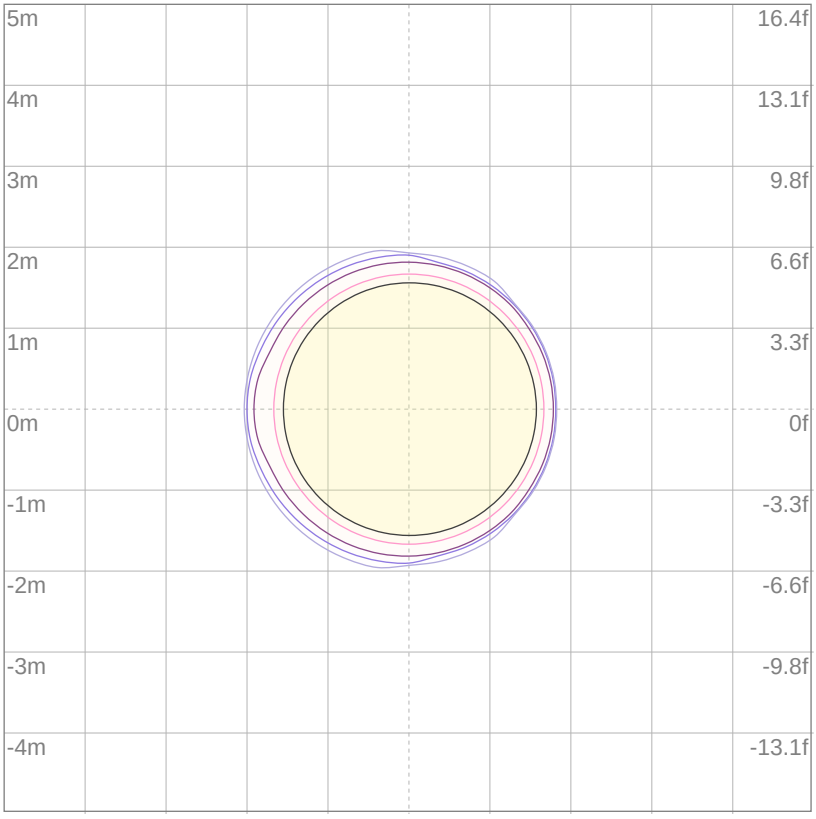
10%	6430 cd
20%	12860 cd
30%	19291 cd
40%	25721 cd
50%	32151 cd
60%	38581 cd
70%	45011 cd
80%	51442 cd
90%	57872 cd

Conditions:

Number of c-planes: 2

Candela at center: 64302 cd

ISO Lux Diagram



Mounting Height: 10 meters (33 feet)

3%	19.3 lx
5%	32.2 lx
10%	64.3 lx
30%	193 lx
50%	322 lx

Conditions:

Number of c-planes: 2

Lux at center: 643 lx

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