



KL PAR FC - NSP

Photometric Test Report

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Testing Process

Total Lumen Measurements

Lumens are measured using a Viso Systems Lab Spion. As a goniophotometer, the Viso calculates the field lumens of the fixture by taking multiple measurements across the light beam.

Many lumens figures provided for entertainment lighting fixtures are only 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.

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](#)

Total Lumen Output: 6132 lm

Color Temperature: 2724 K

CRI: 88.3

TLCI: 91

TM30: 91.9

CQS: 86.9

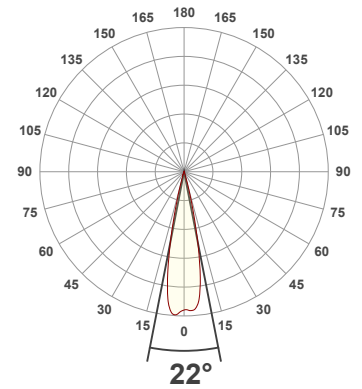
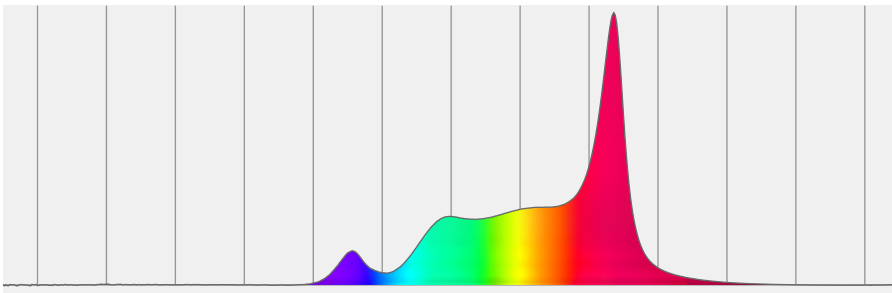
Measurement Date: 6/28/2021

Voltage: 110 V, Current: 2.02 A

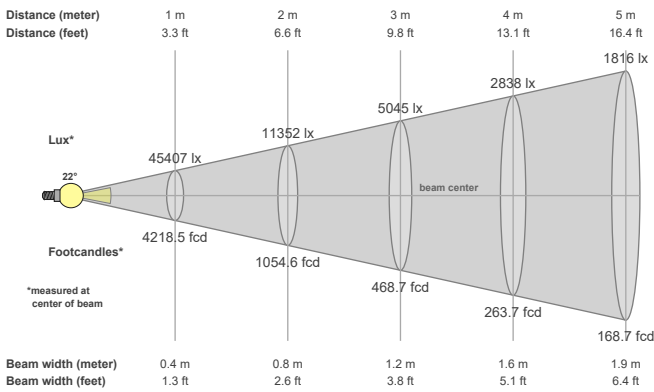
Power: 220.5 W

Efficacy: 28 Lumen/Watt

Spectral distribution
Dominant Wavelength 583



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	31.1°	36.4°

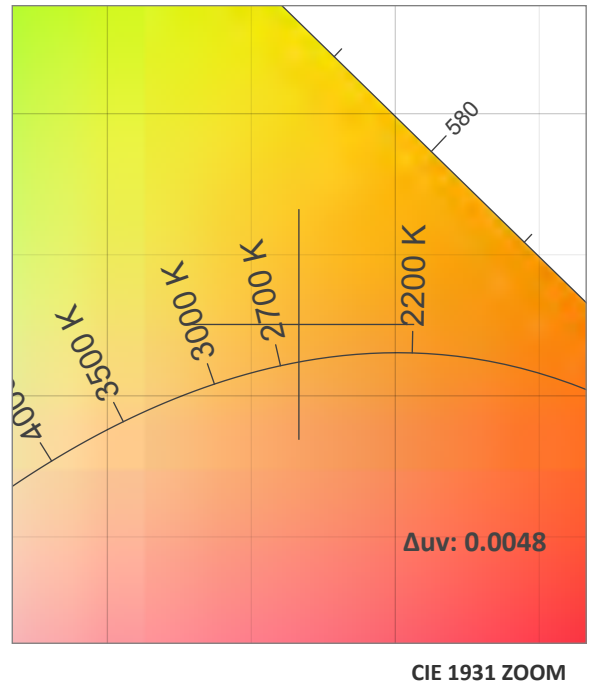
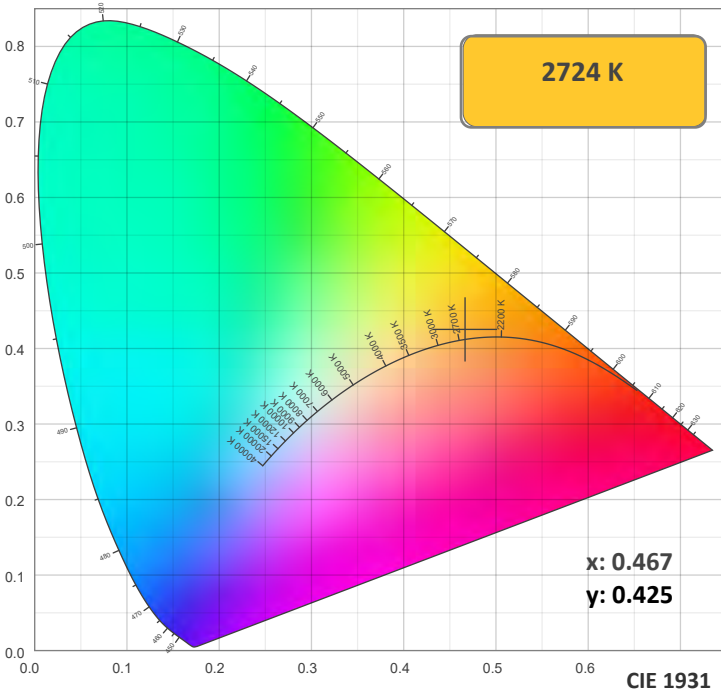
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
46963 cd	99.9%	99.6%

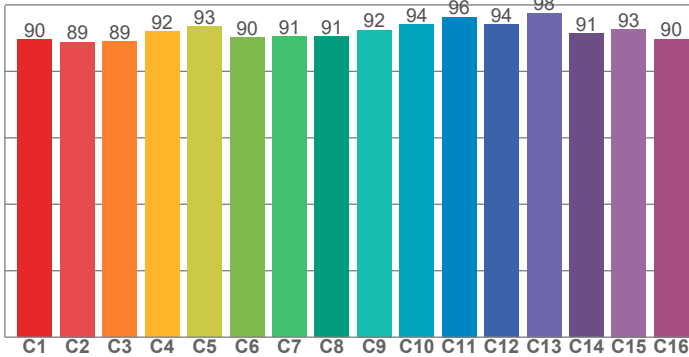
Beam Intensities from 1-20m

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	45407	11352	5045	2838	1816	1261	927	709	561	454	375	315	269	232	202	177	157	140	126	114
FC	4218.5	1054.6	468.7	263.7	168.7	117.2	86.1	65.9	52.1	42.2	34.9	29.3	25	21.5	18.7	16.5	14.6	13	11.7	10.5

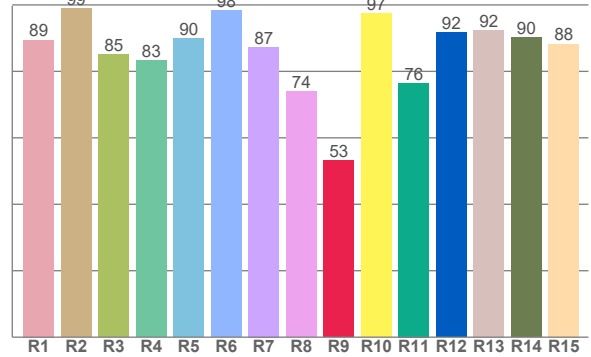
Color Details



TM30: 91.9



CRI: 88.3 (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
89.5	98.9	85.0	83.2	89.9	98.3	87.3	74.0	53.1	97.4	76.5	91.6	92.5	90.1	88.3

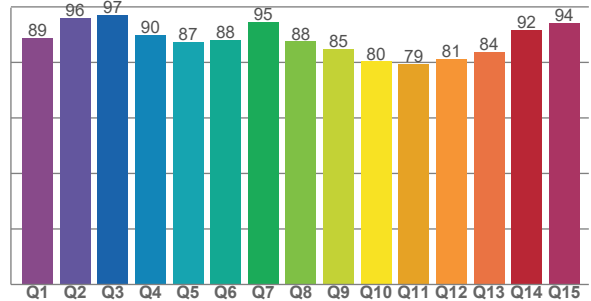
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89.6	88.8	89.0	92.1	93.4	90.2	90.6	90.6	92.5	94.0	96.4	94.2	97.6	91.3	92.7	89.7

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
88.8	96.1	96.9	90.0	87.3	88.1	94.7	87.5	84.8	80.3	79.5	81.3	83.7	91.7	94.2

CQS: 86.9



Color Parameters

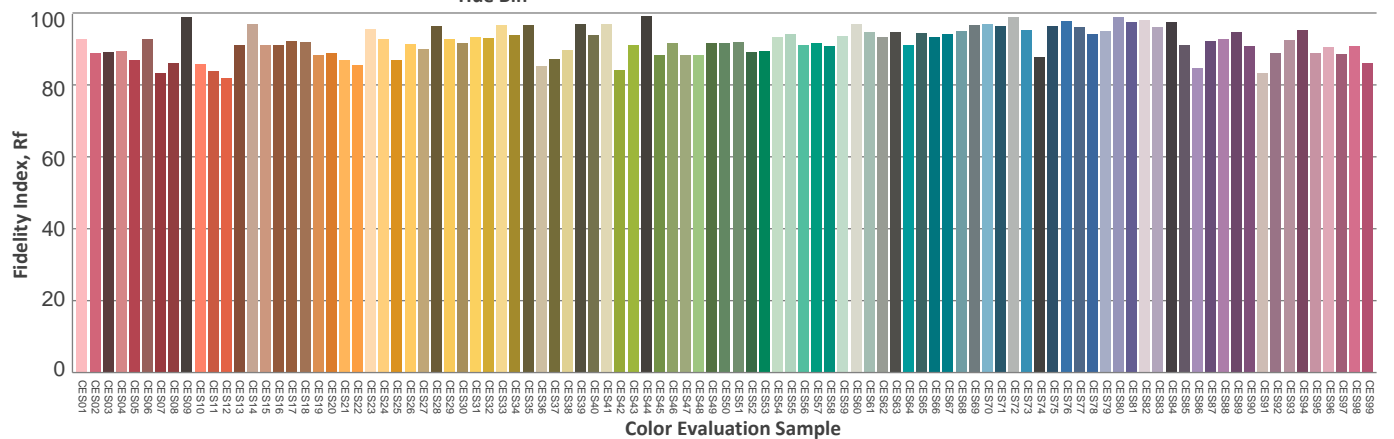
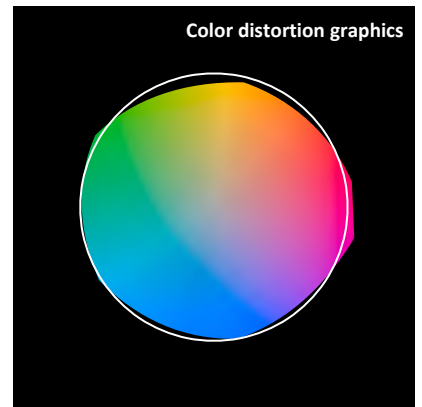
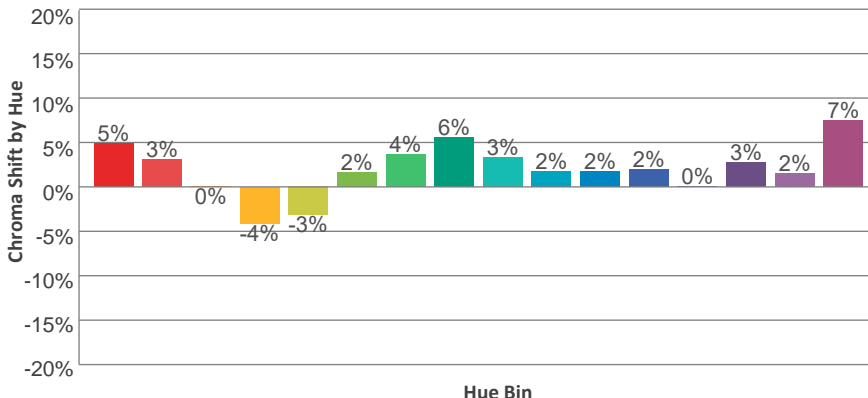
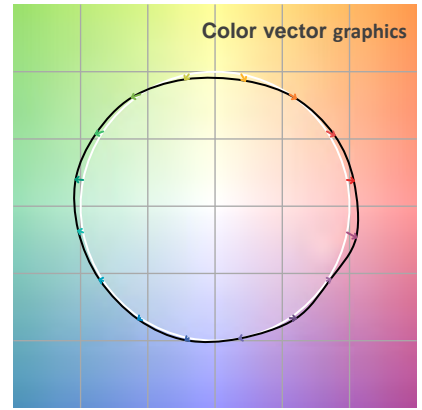
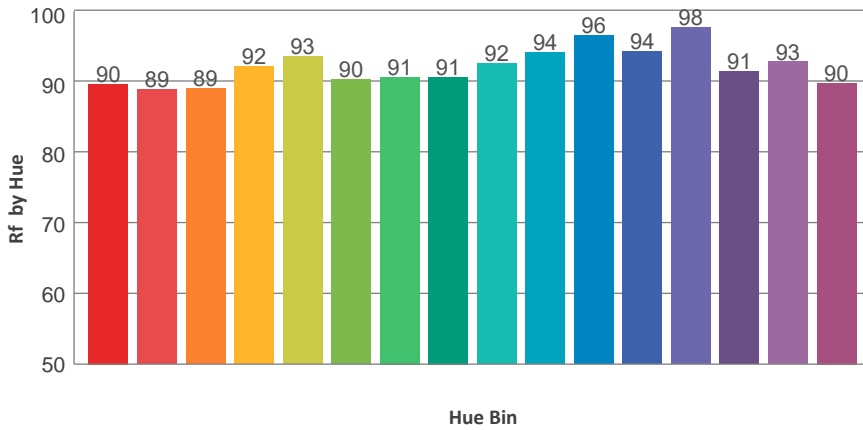
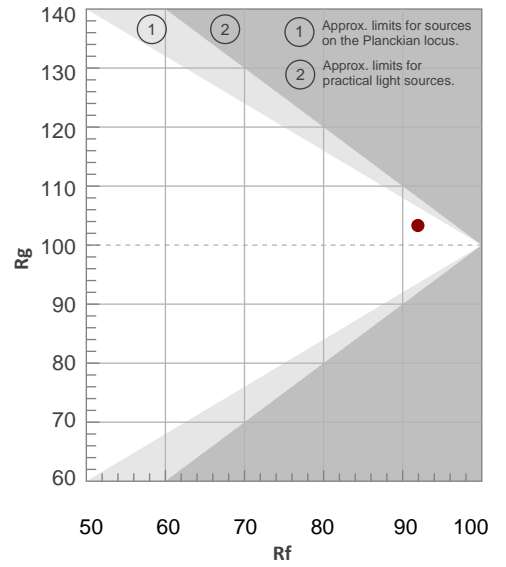
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2724 K	88.3	53.1	91.9	103.3	86.9	0.467	0.425	0.260	0.356	0.0048

TM30 Details

Rf 91.9
Fidelity Index Rf

Rg 103.3
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	90	5%	-2%
2	89	3%	-6%
3	89	0%	-5%
4	92	-4%	-4%
5	93	-3%	3%
6	90	2%	7%
7	91	4%	5%
8	91	6%	1%
9	92	3%	-2%
10	94	2%	-2%
11	96	2%	-1%
12	94	2%	-2%
13	98	0%	-1%
14	91	3%	4%
15	93	2%	3%
16	90	7%	-2%



Total Lumen Output: 6984 lm

Color Temperature: 3196 K

CRI: 89.8

TLCI: 95

TM30: 92.7

CQS: 91.1

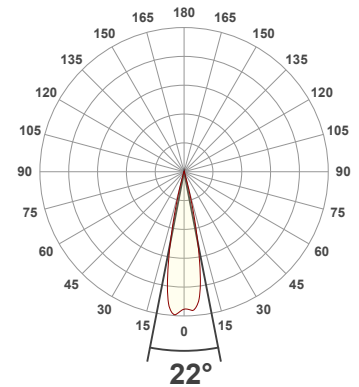
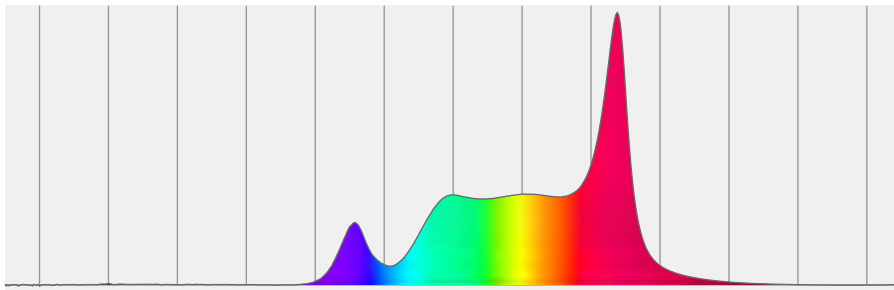
Measurement Date: 6/28/2021

Voltage: 109 V, Current: 2.21 A

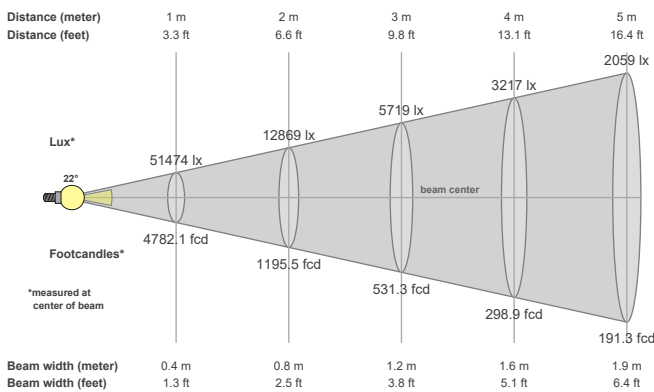
Power: 240.4 W

Efficacy: 29 Lumen/Watt

Spectral distribution
Dominant Wavelength 581



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	30.9°	36.2°

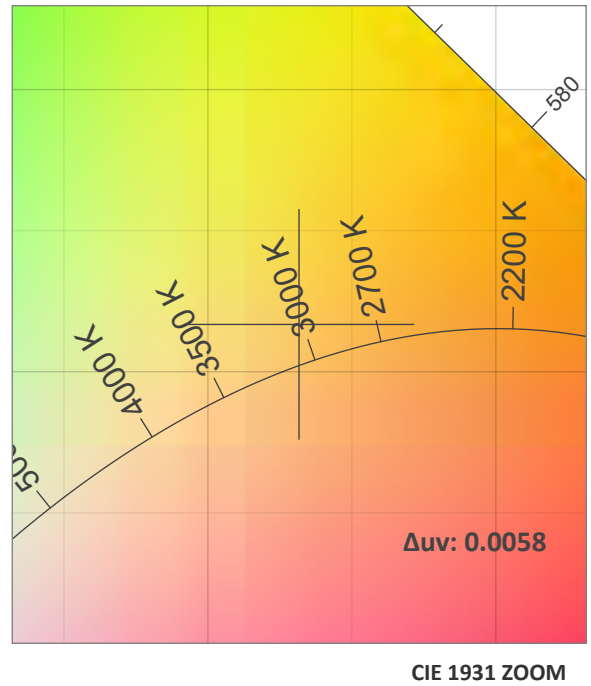
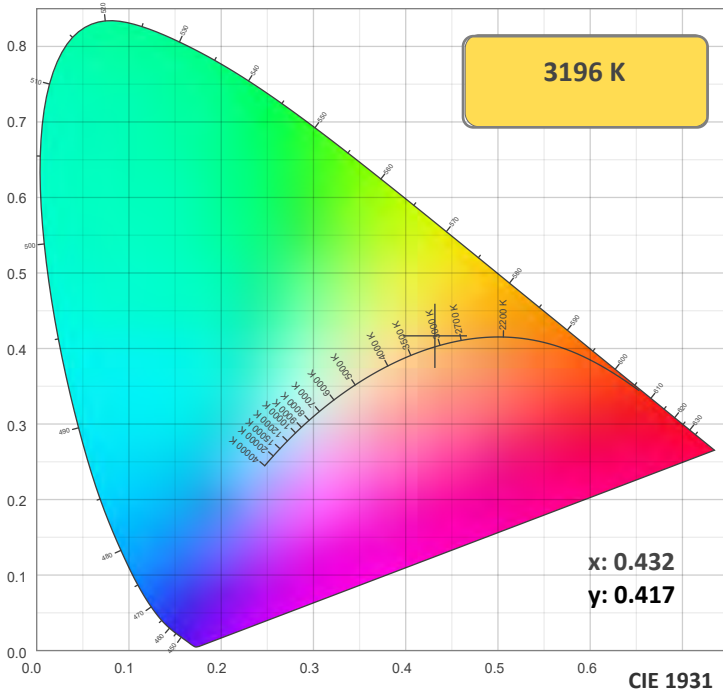
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
53562 cd	99.9%	99.6%

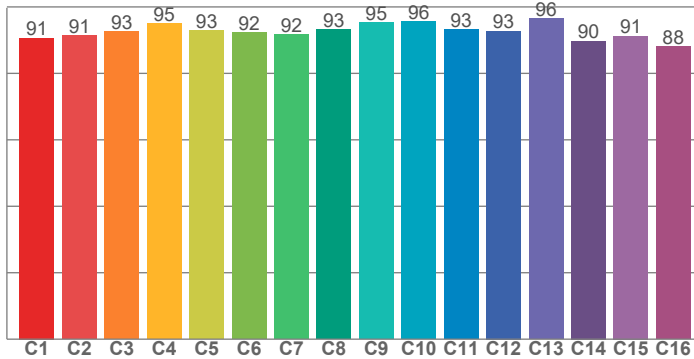
Beam Intensities from 1-20m

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	51474	12869	5719	3217	2059	1430	1050	804	635	515	425	357	305	263	229	201	178	159	143	129
FC	4782.1	1195.5	531.3	298.9	191.3	132.8	97.6	74.7	59	47.8	39.5	33.2	28.3	24.4	21.3	18.7	16.5	14.8	13.2	12

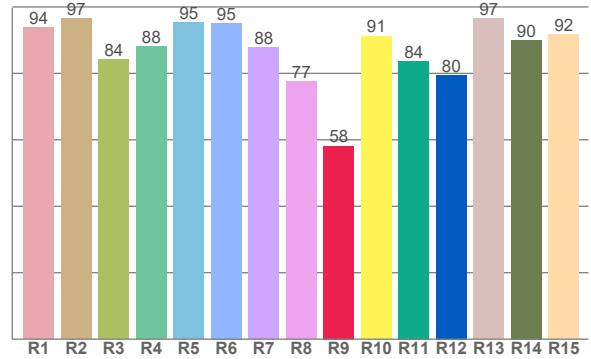
Color Details



TM30: 92.7



CRI: 89.8 (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
93.8	96.6	84.2	88.1	95.3	95.2	87.8	77.5	58.2	91.3	83.7	79.5	96.6	90.0	91.6

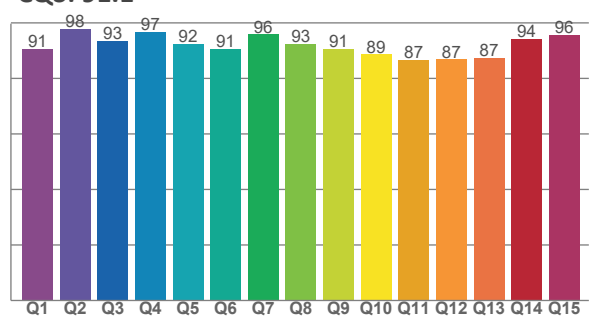
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.6	91.4	92.7	94.9	93.0	92.3	91.7	93.2	95.4	95.6	93.1	92.8	96.5	89.8	91.3	88.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
90.7	97.9	93.5	96.8	92.5	90.5	95.8	92.5	90.6	88.7	86.6	86.8	87.3	94.1	95.7

CQS: 91.1



Color Parameters

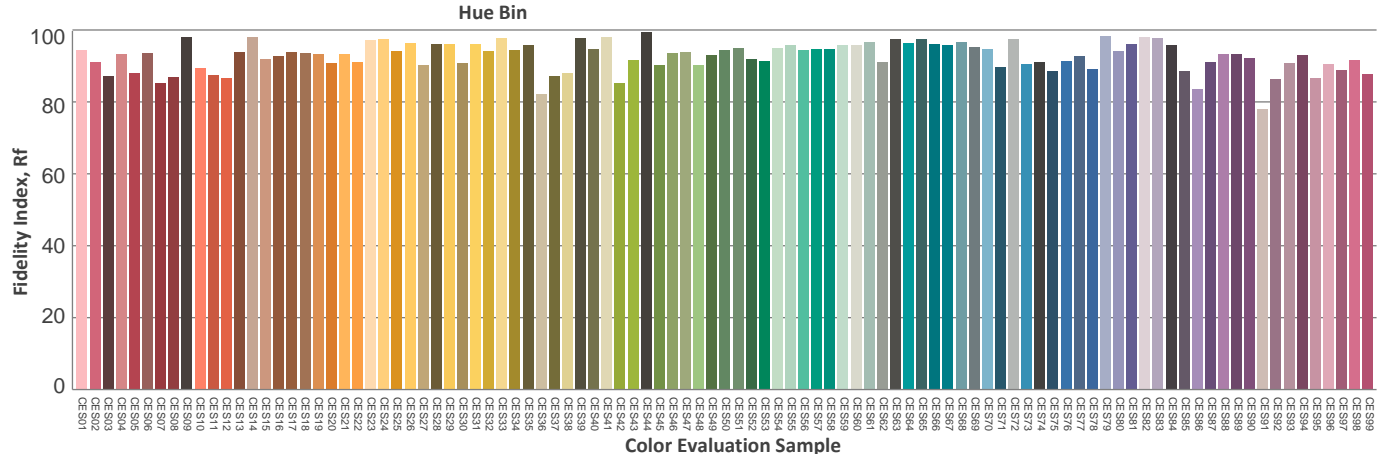
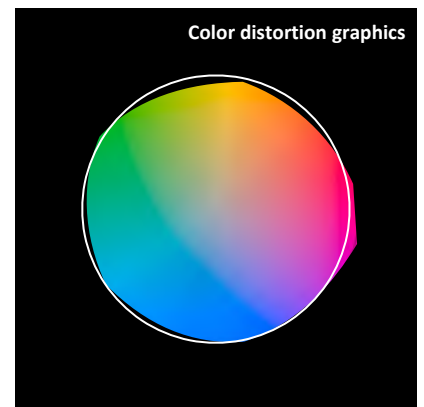
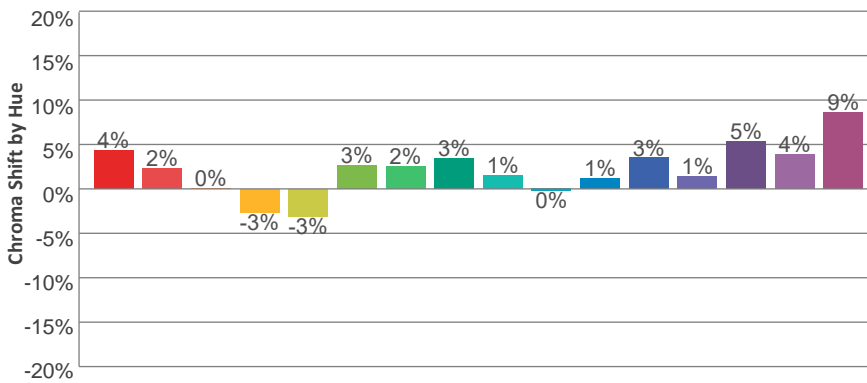
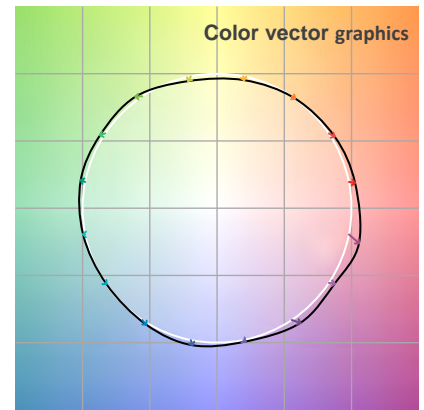
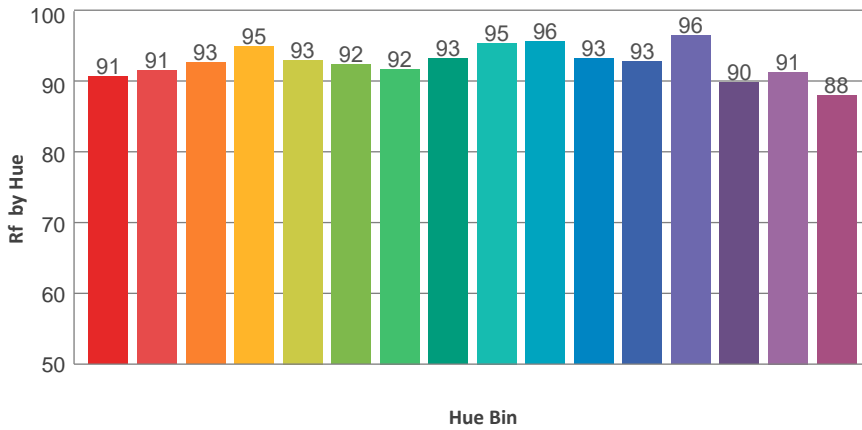
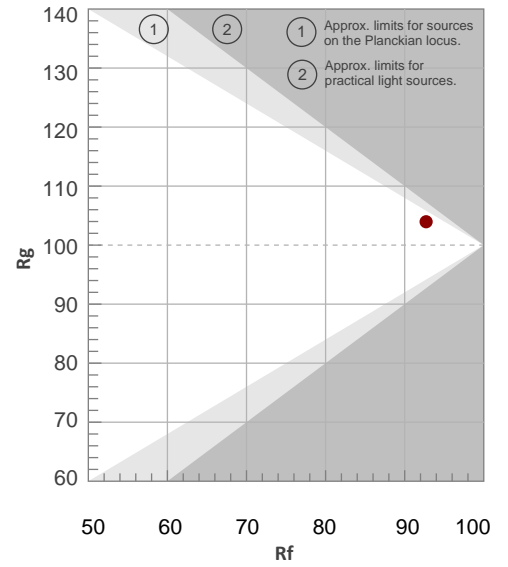
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3196 K	89.8	58.2	92.7	104.0	91.1	0.432	0.417	0.242	0.350	0.0058

TM30 Details

Rf 92.7
Fidelity Index Rf

Rg 104.0
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	91	4%	-2%
2	91	2%	-4%
3	93	0%	-3%
4	95	-3%	-1%
5	93	-3%	3%
6	92	3%	4%
7	92	2%	3%
8	93	3%	-1%
9	95	1%	0%
10	96	0%	1%
11	93	1%	4%
12	93	3%	2%
13	96	1%	1%
14	90	5%	4%
15	91	4%	2%
16	88	9%	-5%



Total Lumen Output: 8060 lm

Color Temperature: 4541 K

CRI: 91.6

TLCI: 94

TM30: 91.4

CQS: 93.4

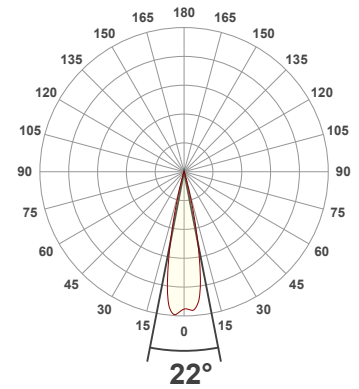
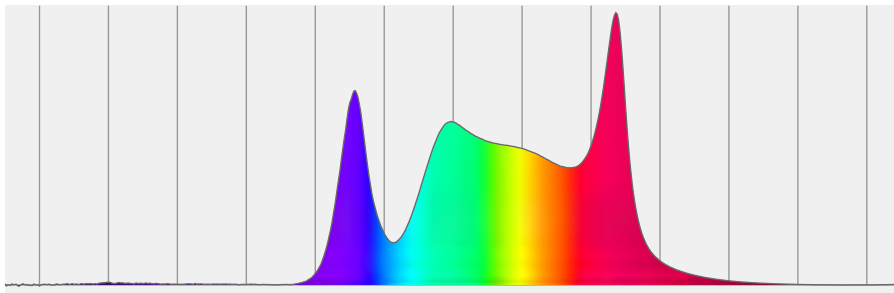
Measurement Date: 6/28/2021

Voltage: 109 V, Current: 2.30 A

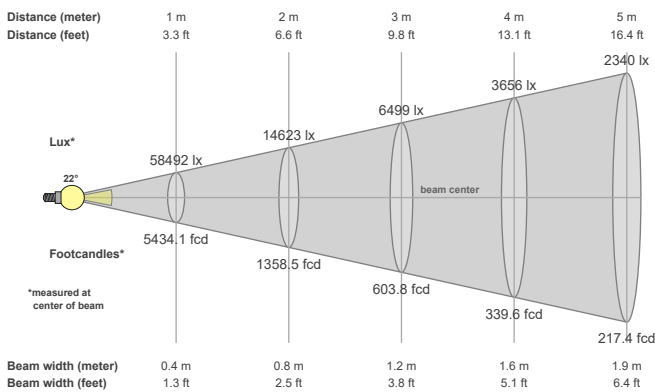
Power: 248.9 W

Efficacy: 32 Lumen/Watt

Spectral distribution
Dominant Wavelength 576



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	30.9°	36.5°

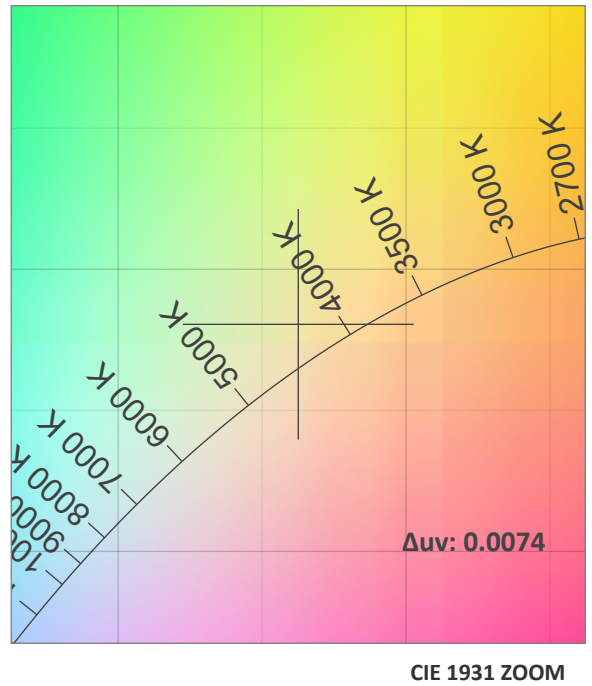
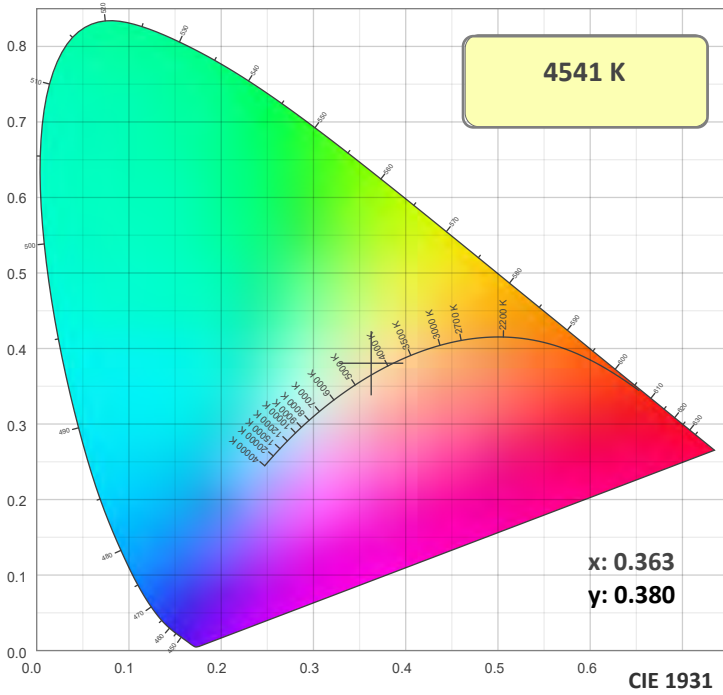
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
60901 cd	99.9%	99.4%

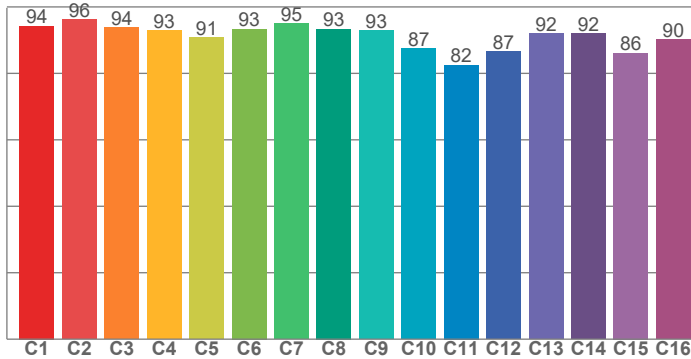
Beam Intensities from 1-20m

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	58492	14623	6499	3656	2340	1625	1194	914	722	585	483	406	346	298	260	228	202	181	162	146
FC	5434.1	1358.5	603.8	339.6	217.4	150.9	110.9	84.9	67.1	54.3	44.9	37.7	32.2	27.7	24.2	21.2	18.8	16.8	15.1	13.6

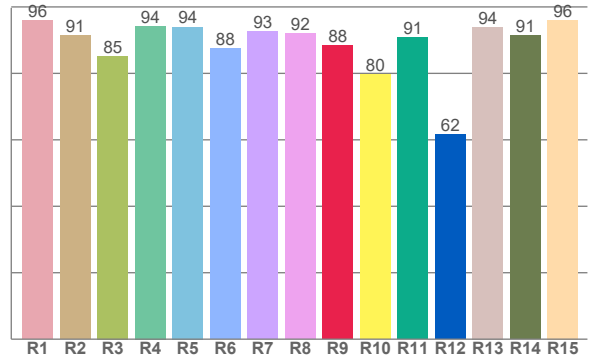
Color Details



TM30: 91.4



CRI: 91.6 (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
96.0	91.4	85.2	94.2	94.0	87.6	92.6	92.0	88.4	79.7	90.8	61.7	93.9	91.4	96.1

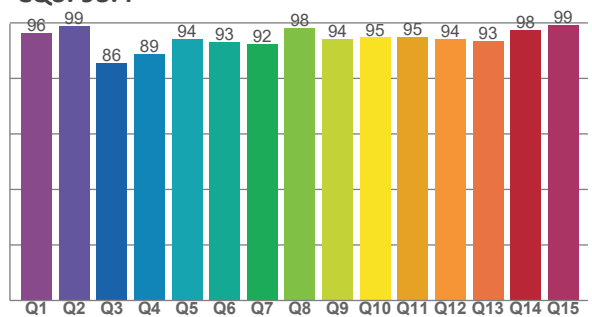
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.2	96.1	93.9	92.9	90.9	93.4	95.0	93.3	92.9	87.4	82.5	86.7	92.0	92.1	86.2	90.2

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.4	98.9	85.5	88.8	94.2	93.0	92.4	98.2	94.2	94.7	94.9	94.3	93.4	97.6	99.2

CQS: 93.4



Color Parameters

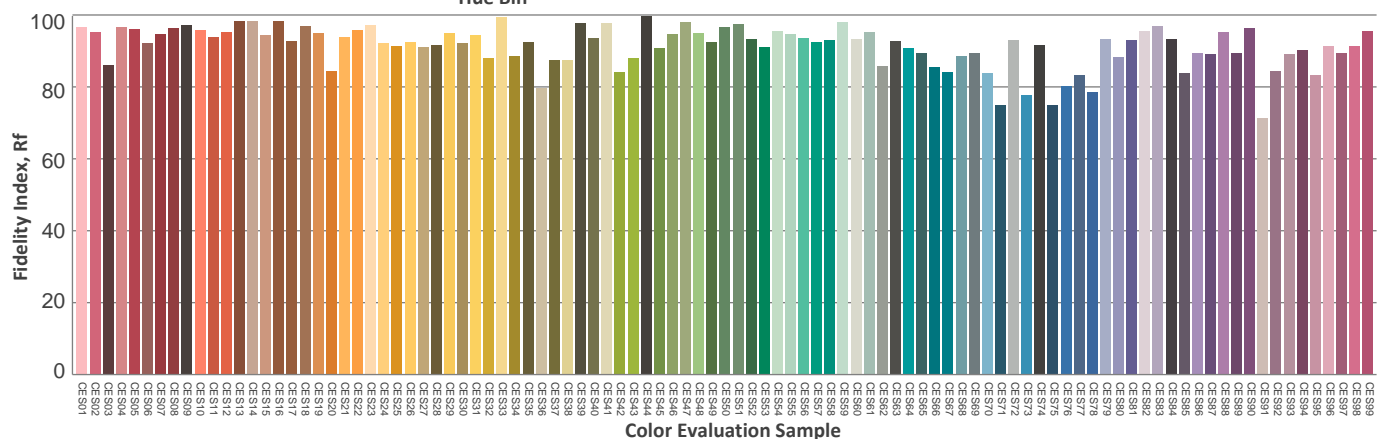
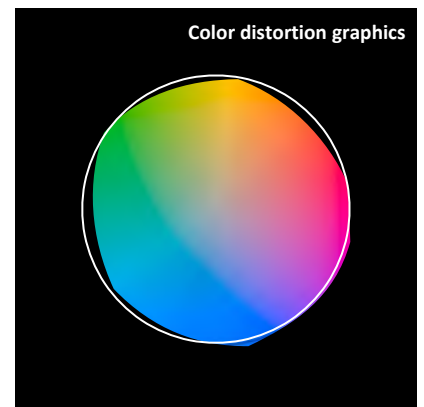
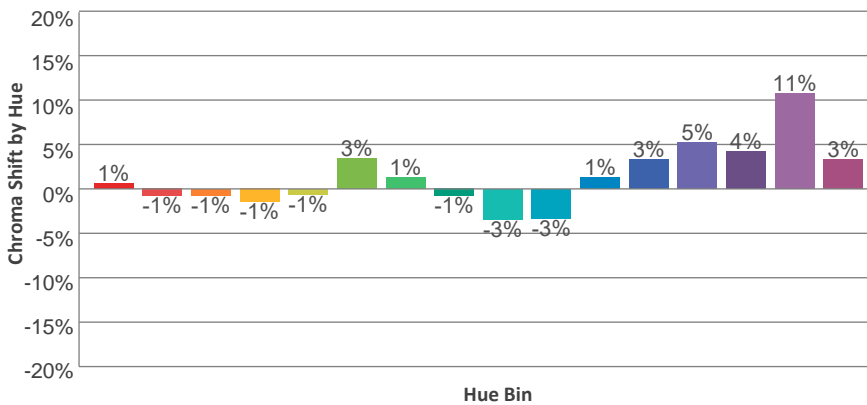
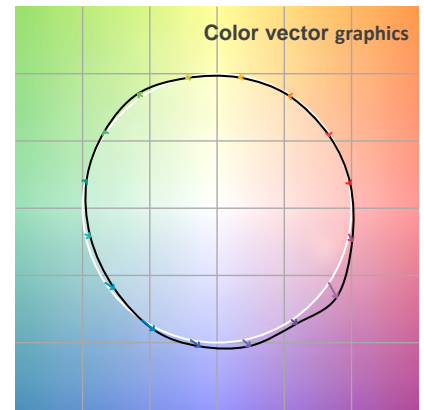
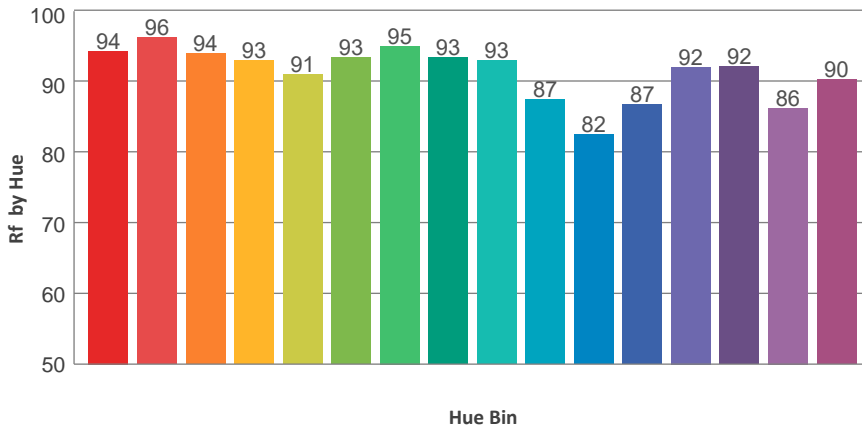
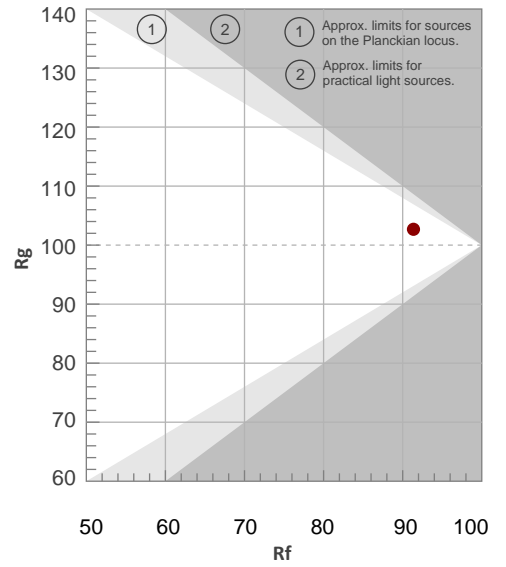
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4541 K	91.6	88.4	91.4	102.7	93.4	0.363	0.380	0.212	0.334	0.0074

TM30 Details

Rf 91.4
Fidelity Index Rf

Rg 102.7
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	1%	-2%
2	96	-1%	-2%
3	94	-1%	2%
4	93	-1%	3%
5	91	-1%	3%
6	93	3%	2%
7	95	1%	-1%
8	93	-1%	-1%
9	93	-3%	2%
10	87	-3%	7%
11	82	1%	11%
12	87	3%	7%
13	92	5%	4%
14	92	4%	1%
15	86	11%	-6%
16	90	3%	-4%



Total Lumen Output: 8002 lm

Color Temperature: 5619 K

CRI: 91.3

TLCI: 94

TM30: 90.5

CQS: 92.5

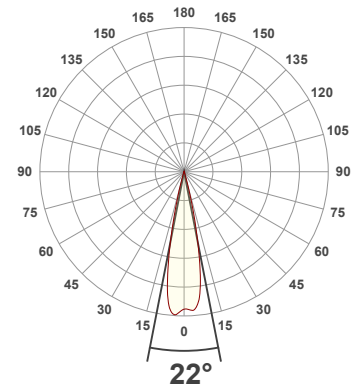
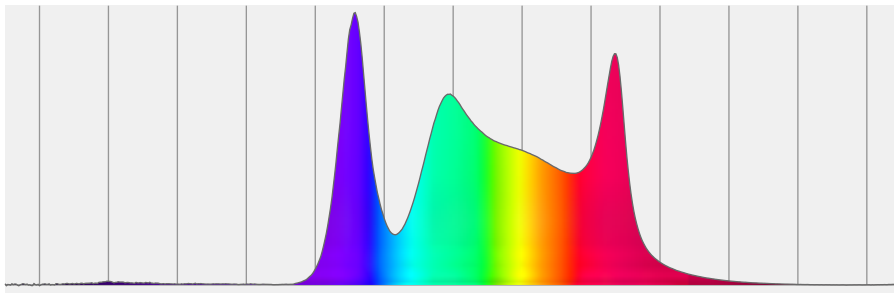
Measurement Date: 6/28/2021

Voltage: 110 V, Current: 2.27 A

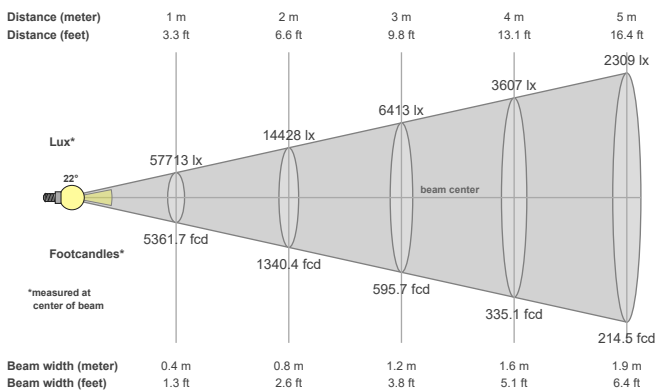
Power: 247.3 W

Efficacy: 32 Lumen/Watt

Spectral distribution
Dominant Wavelength 572



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	30.9°	36.5°

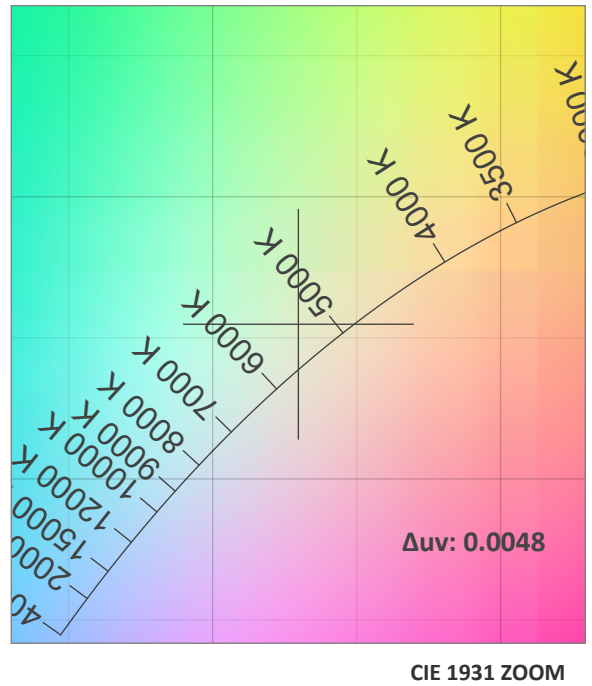
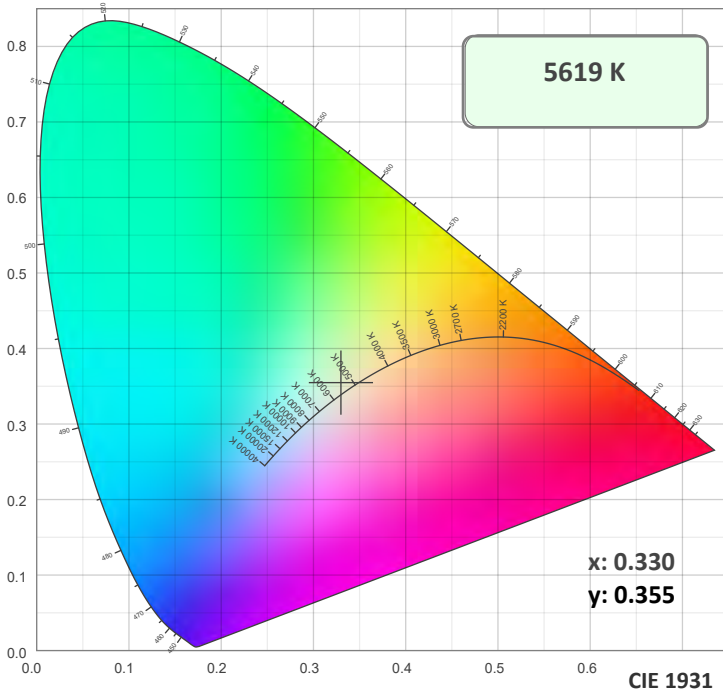
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
60071 cd	99.9%	99.3%

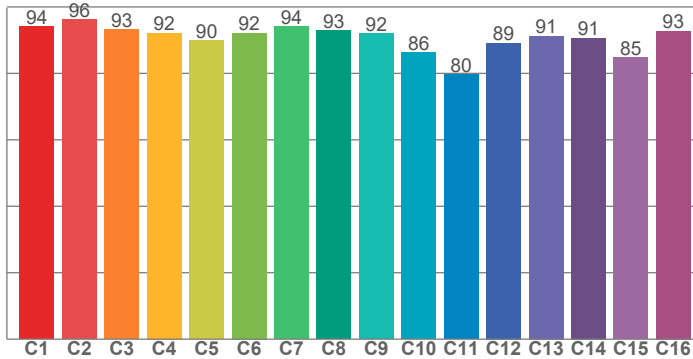
Beam Intensities from 1-20m

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	57713	14428	6413	3607	2309	1603	1178	902	713	577	477	401	341	294	257	225	200	178	160	144
FC	5361.7	1340.4	595.7	335.1	214.5	148.9	109.4	83.8	66.2	53.6	44.3	37.2	31.7	27.4	23.8	20.9	18.6	16.5	14.9	13.4

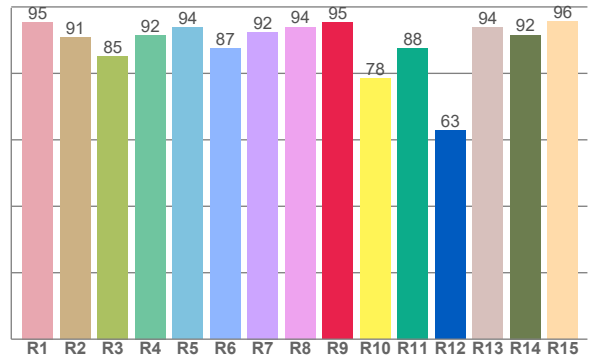
Color Details



TM30: 90.5



CRI: 91.3 (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
95.5	90.7	85.2	91.6	93.8	87.4	92.5	94.0	95.3	78.4	87.6	62.8	93.7	91.6	95.7

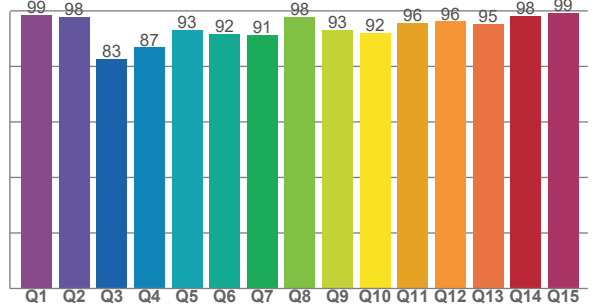
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.1	96.3	93.3	92.1	89.8	92.2	94.2	92.9	92.0	86.2	79.7	89.1	91.2	90.7	84.8	92.8

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
98.6	97.7	82.8	86.8	93.2	91.7	91.2	97.9	93.3	92.0	95.5	96.2	95.4	98.2	99.4

CQS: 92.5



Color Parameters

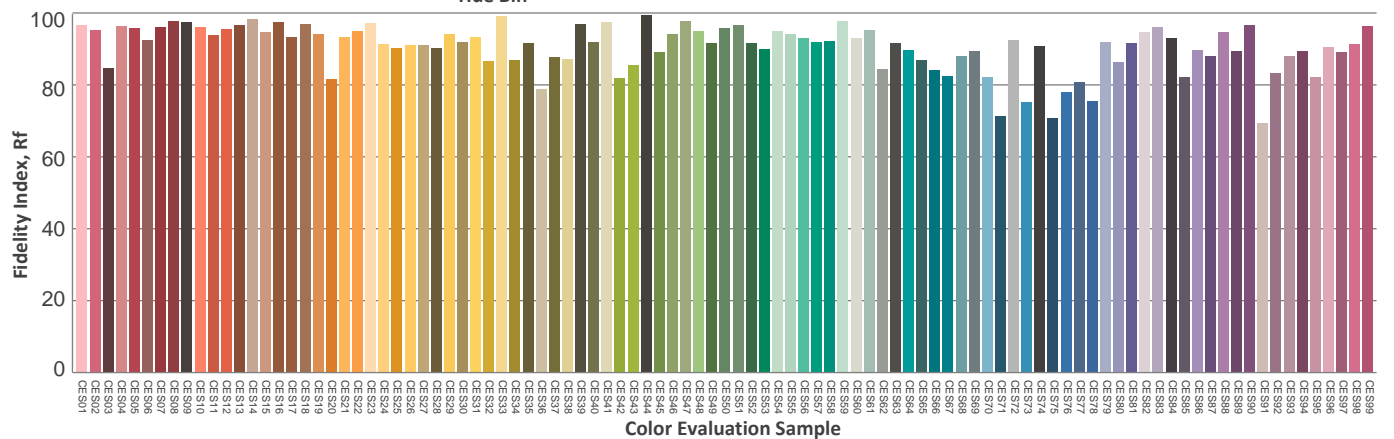
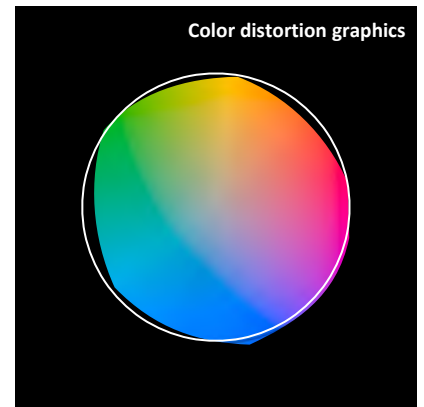
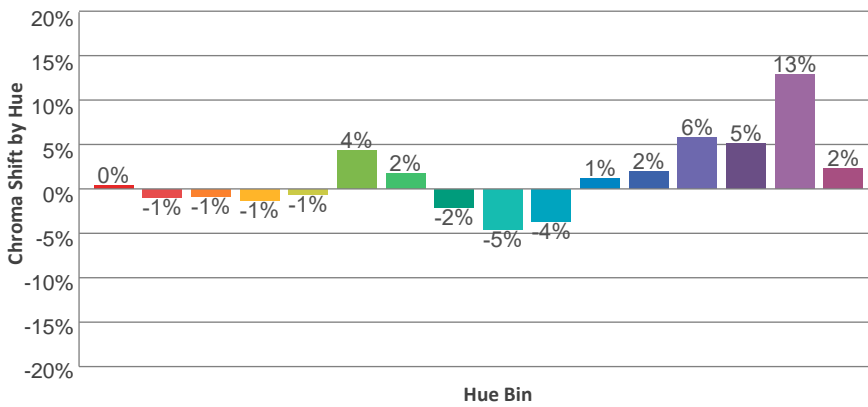
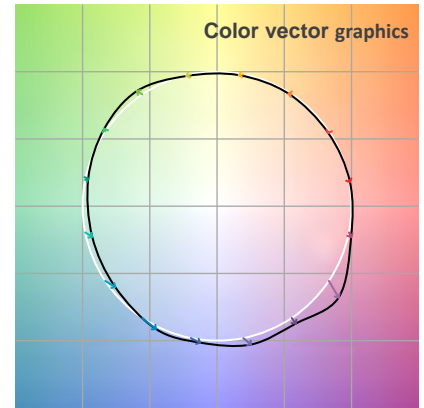
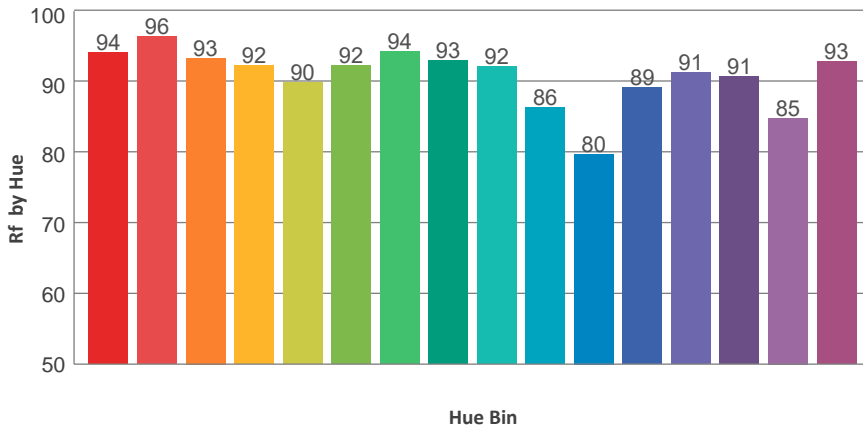
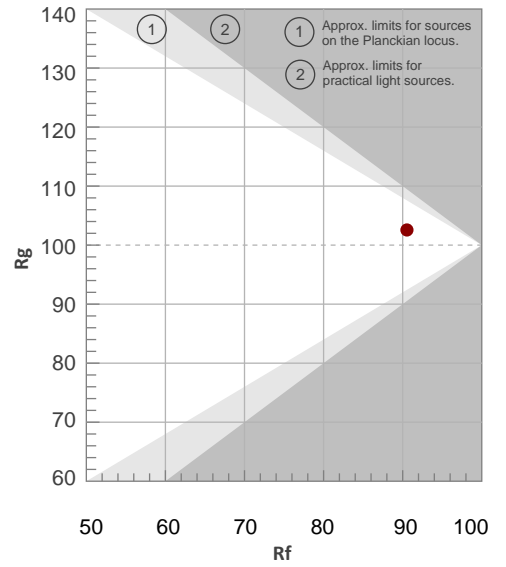
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5619 K	91.3	95.3	90.5	102.6	92.5	0.330	0.355	0.200	0.323	0.0048

TM30 Details

Rf 90.5
Fidelity Index Rf

Rg 102.6
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	0%	-2%
2	96	-1%	-1%
3	93	-1%	2%
4	92	-1%	3%
5	90	-1%	3%
6	92	4%	2%
7	94	2%	-1%
8	93	-2%	-1%
9	92	-5%	4%
10	86	-4%	8%
11	80	1%	13%
12	89	2%	7%
13	91	6%	5%
14	91	5%	0%
15	85	13%	-6%
16	93	2%	-3%



Total Lumen Output: 7572 lm

Color Temperature: 6026 K

CRI: 91.2

TLCI: 94

TM30: 90.2

CQS: 92.5

Measurement Date: 6/28/2021

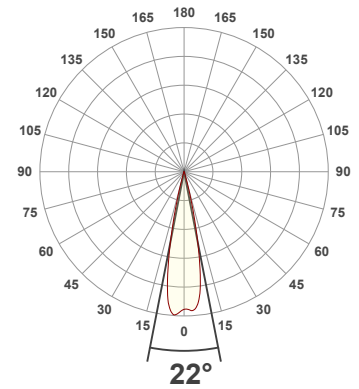
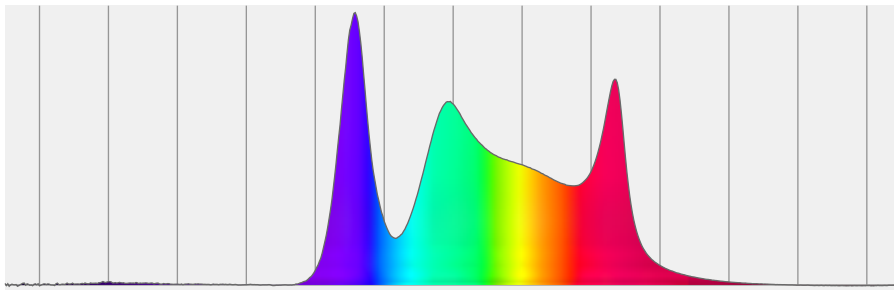
Voltage: 110 V, Current: 2.27 A

Power: 247.7 W

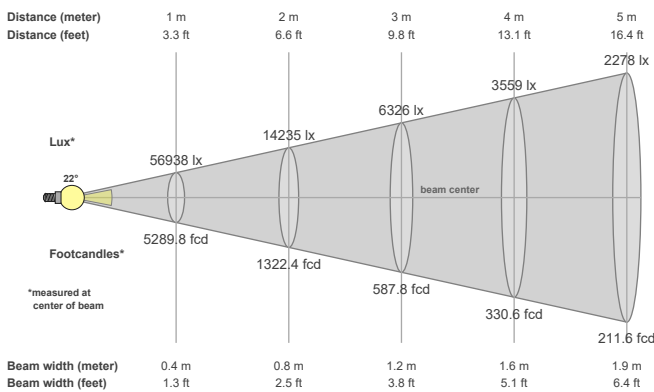
Efficacy: 31 Lumen/Watt

Spectral distribution

Dominant Wavelength 567



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	30.9°	35.8°

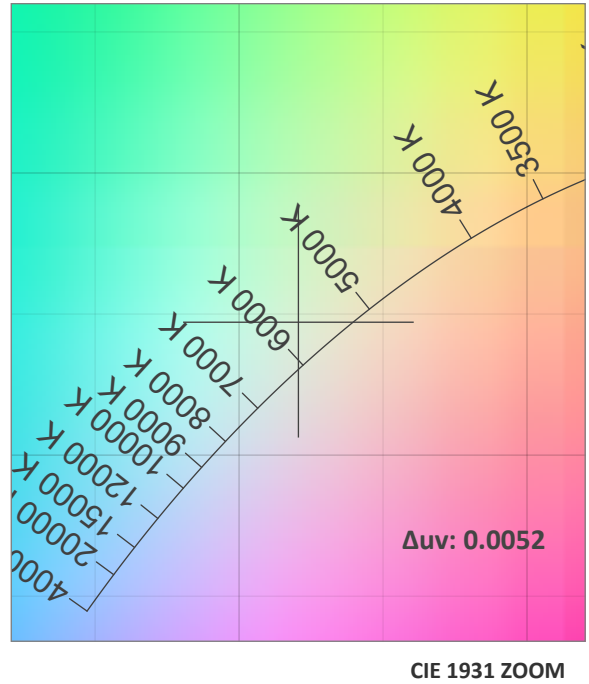
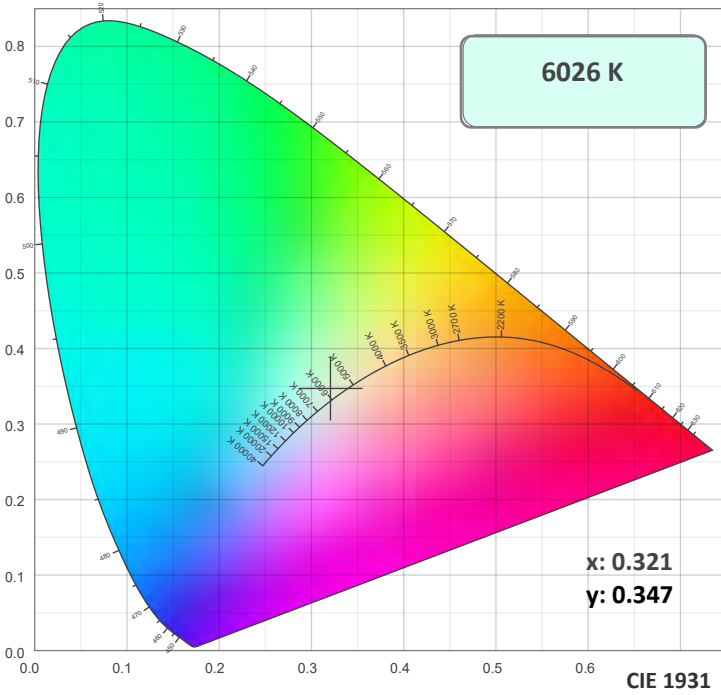
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
59223 cd	100.0%	100.0%

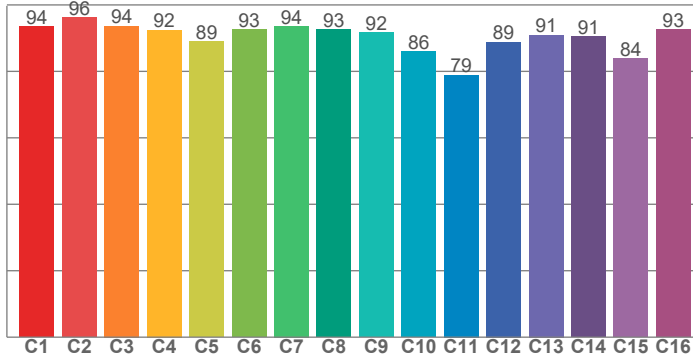
Beam Intensities from 1-20m

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	56938	14235	6326	3559	2278	1582	1162	890	703	569	471	395	337	291	253	222	197	176	158	142
FC	5289.8	1322.4	587.8	330.6	211.6	146.9	108	82.7	65.3	52.9	43.7	36.7	31.3	27	23.5	20.7	18.3	16.3	14.7	13.2

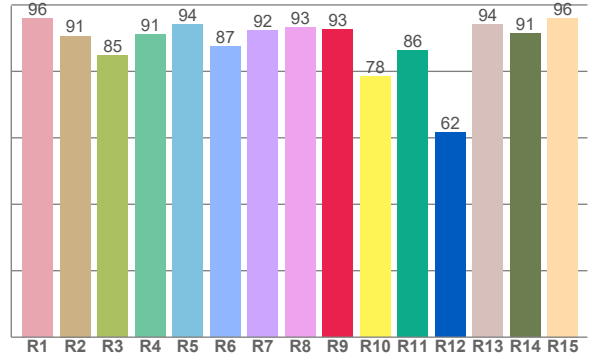
Color Details



TM30: 90.2



CRI: 91.2 (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
95.9	90.7	84.8	91.1	94.1	87.5	92.3	93.3	92.5	78.5	86.2	61.5	94.0	91.4	96.1

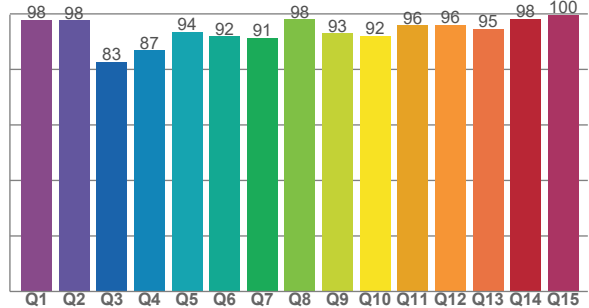
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.5	96.1	93.6	92.5	88.9	92.6	93.6	92.6	91.7	85.9	78.9	88.8	90.9	90.6	84.0	92.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.9	97.6	82.8	86.8	93.5	91.9	91.4	98.0	93.0	92.2	95.8	95.9	94.5	98.2	99.8

CQS: 92.5



Color Parameters

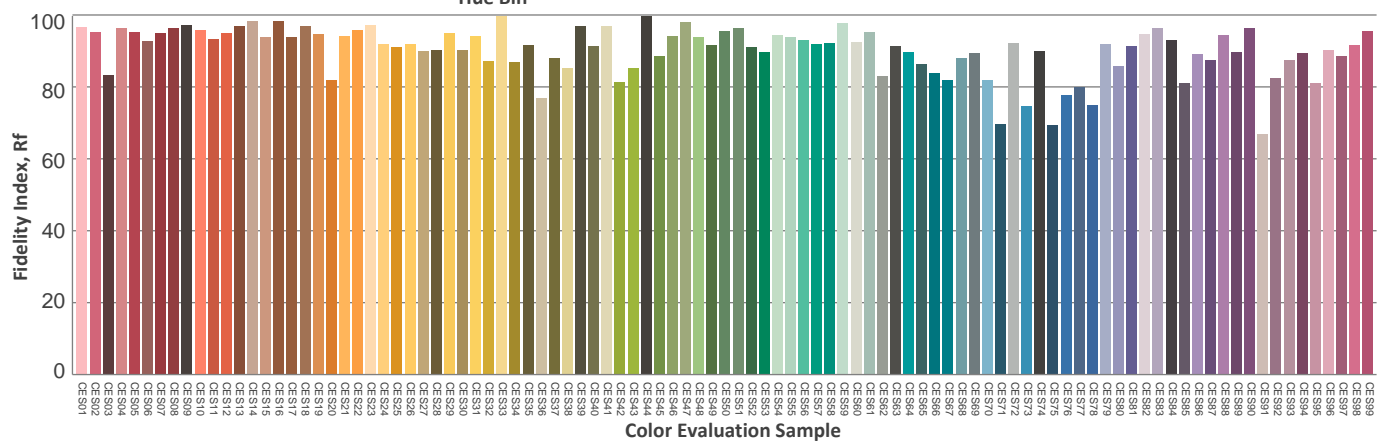
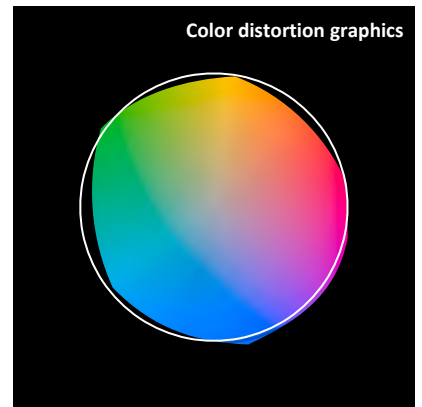
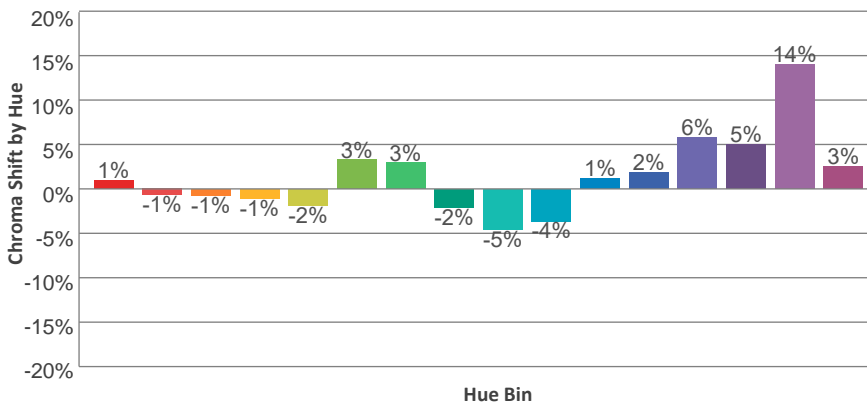
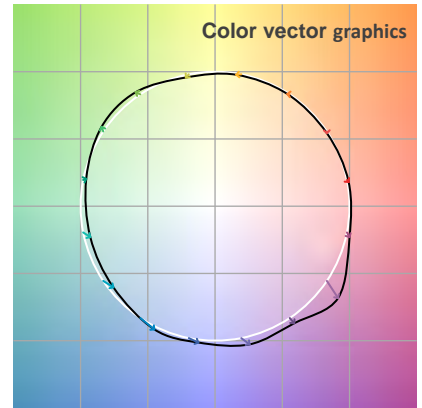
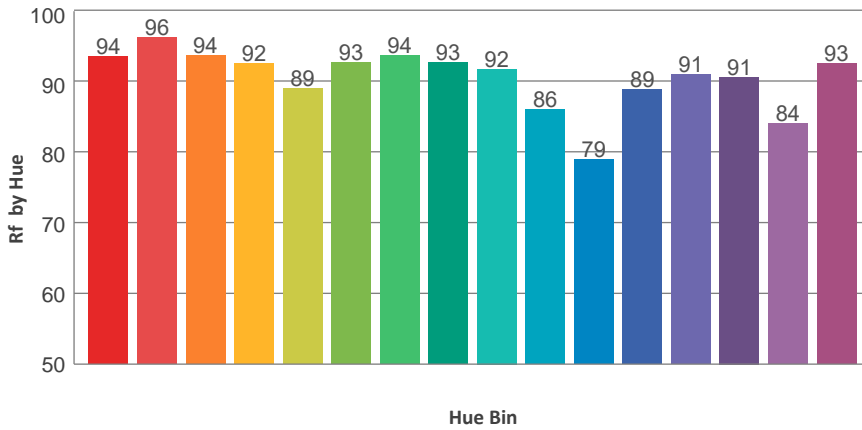
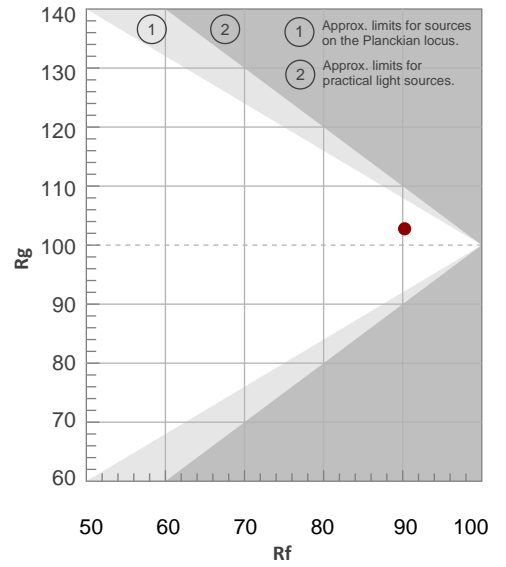
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6026 K	91.2	92.5	90.2	102.8	92.5	0.321	0.347	0.197	0.319	0.0052

TM30 Details

Rf 90.2
Fidelity Index Rf

Rg 102.8
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	1%	-2%
2	96	-1%	-1%
3	94	-1%	2%
4	92	-1%	4%
5	89	-2%	3%
6	93	3%	2%
7	94	3%	-2%
8	93	-2%	-1%
9	92	-5%	4%
10	86	-4%	8%
11	79	1%	13%
12	89	2%	8%
13	91	6%	5%
14	91	5%	1%
15	84	14%	-6%
16	93	3%	-3%



Total Lumen Output: 7792 lm

Color Temperature: 6488 K

CRI: 91.3

TLCI: 94

TM30: 89.9

CQS: 92.3

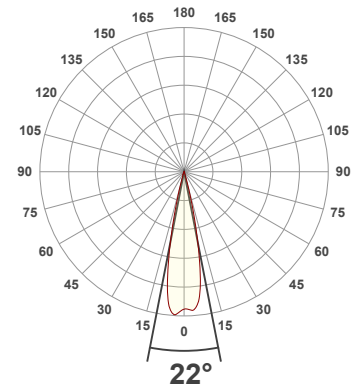
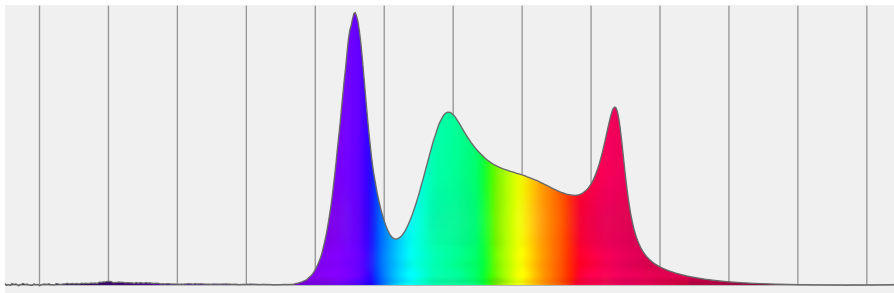
Measurement Date: 6/28/2021

Voltage: 109 V, Current: 2.28 A

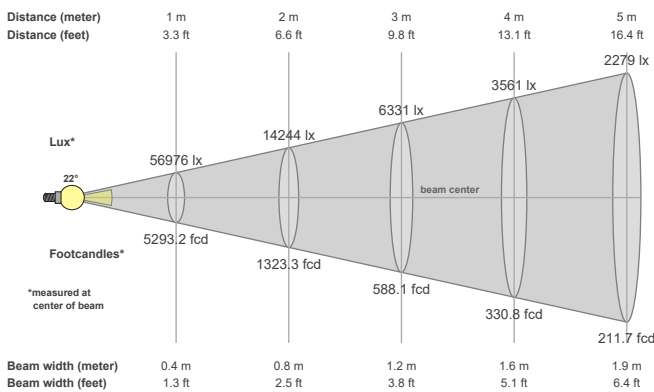
Power: 247.6 W

Efficacy: 31 Lumen/Watt

Spectral distribution
Dominant Wavelength 547



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	30.9°	36.4°

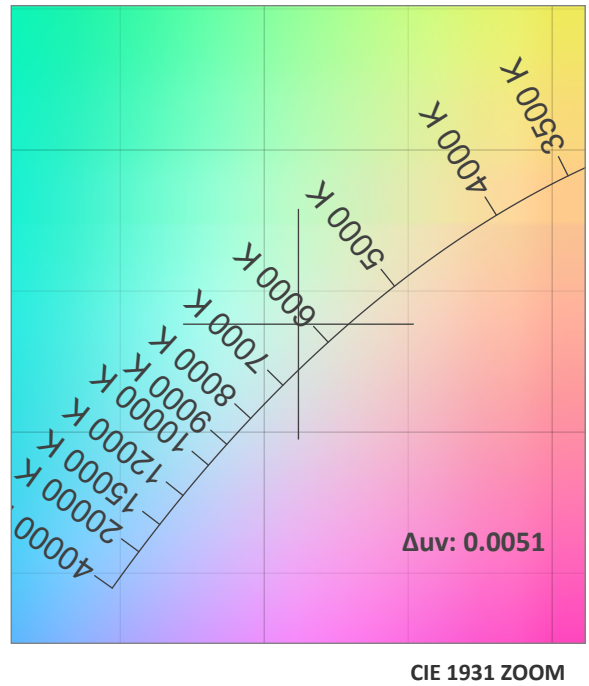
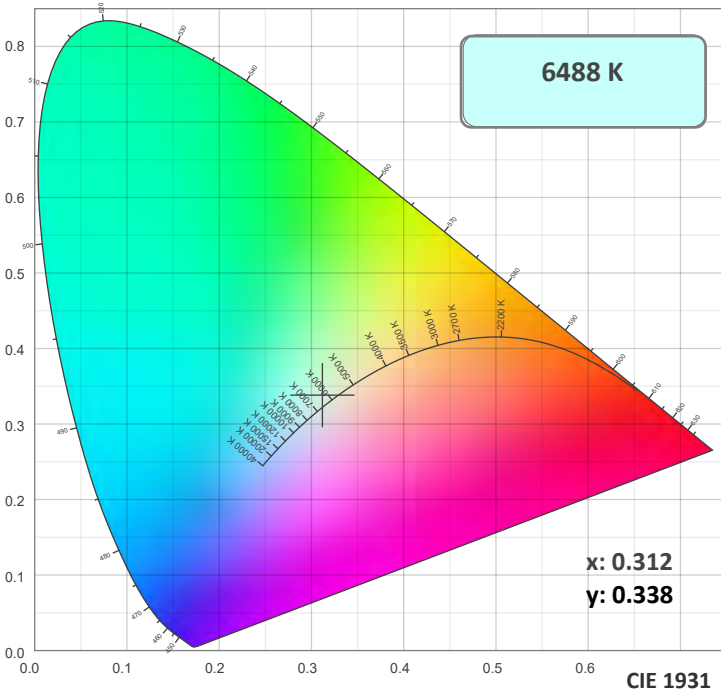
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
59307 cd	100.0%	99.7%

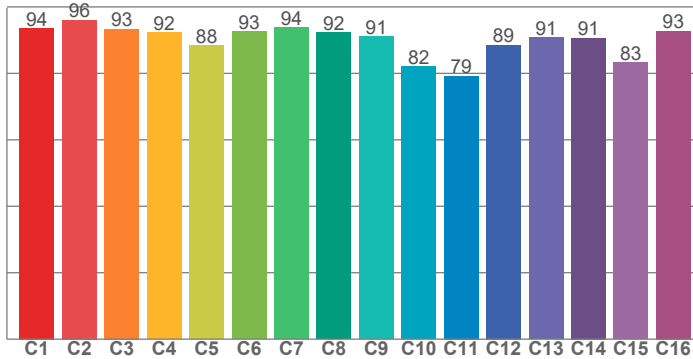
Beam Intensities from 1-20m

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	56976	14244	6331	3561	2279	1583	1163	890	703	570	471	396	337	291	253	223	197	176	158	142
FC	5293.2	1323.3	588.1	330.8	211.7	147	108	82.7	65.3	52.9	43.7	36.8	31.3	27	23.5	20.7	18.3	16.3	14.7	13.2

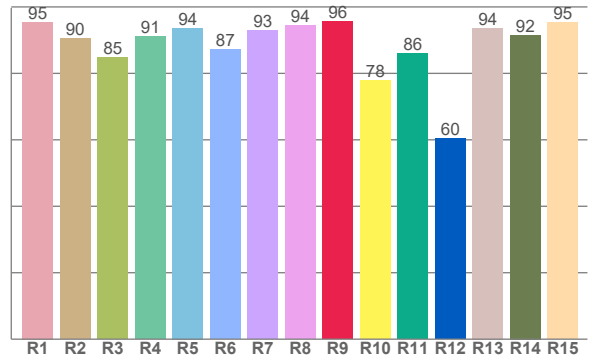
Color Details



TM30: 89.9



CRI: 91.3 (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
95.5	90.5	84.9	91.2	93.6	87.2	92.8	94.4	95.6	77.9	86.0	60.4	93.7	91.5	95.3

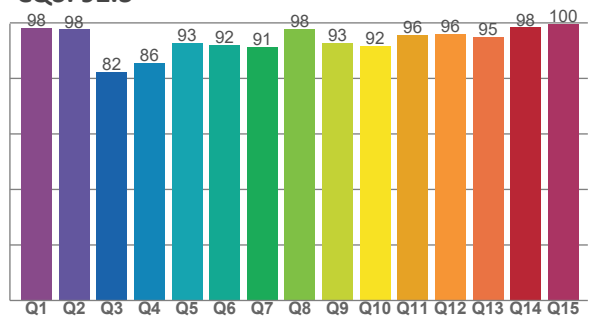
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.6	96.1	93.3	92.2	88.5	92.5	93.9	92.2	91.0	82.0	79.2	88.6	90.9	90.7	83.4	92.7

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
98.2	97.6	82.3	85.7	92.9	92.2	91.4	97.9	92.9	91.7	95.6	96.0	94.8	98.4	99.6

CQS: 92.3



Color Parameters

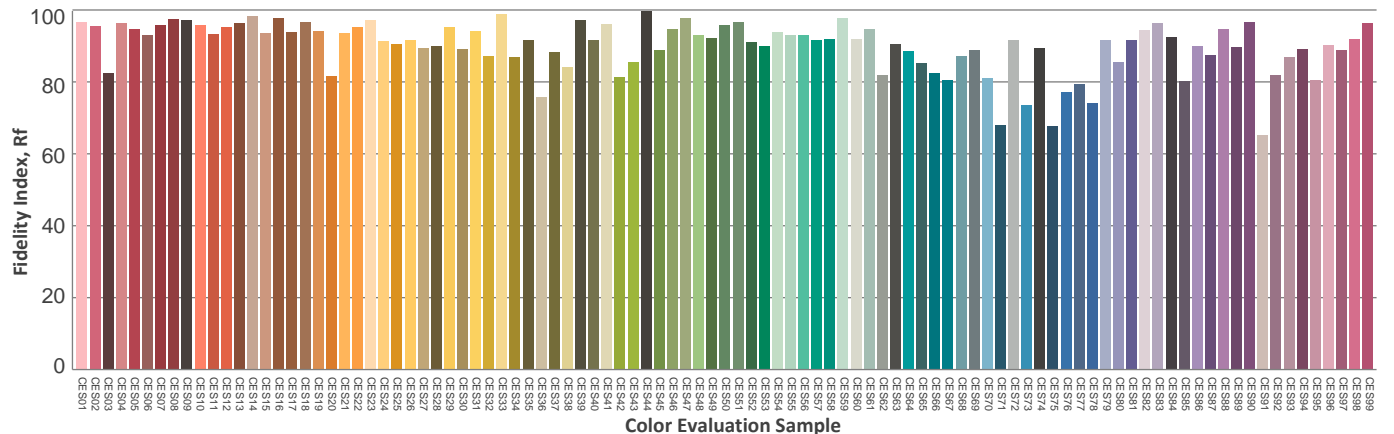
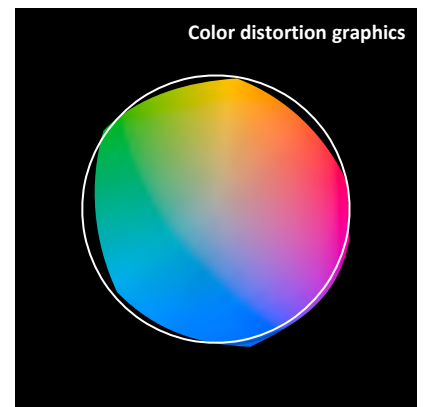
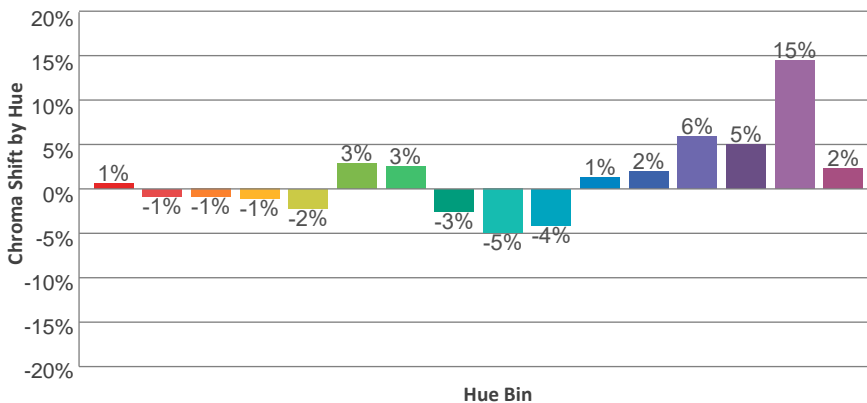
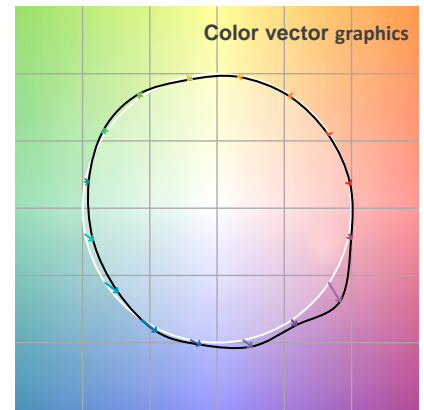
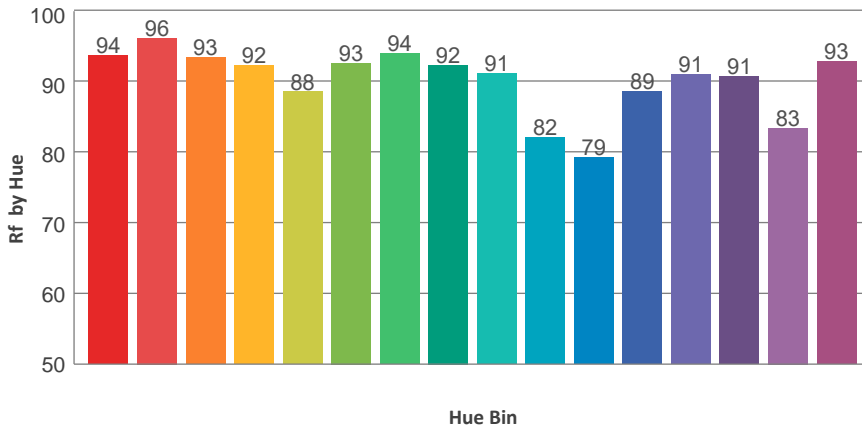
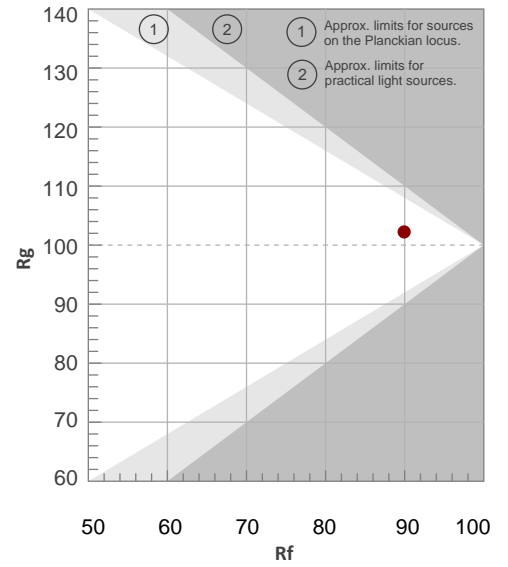
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6488 K	91.3	95.6	89.9	102.2	92.3	0.312	0.338	0.194	0.315	0.0051

TM30 Details

Rf 89.9
Fidelity Index Rf

Rg 102.2
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	1%	-2%
2	96	-1%	-1%
3	93	-1%	2%
4	92	-1%	4%
5	88	-2%	2%
6	93	3%	2%
7	94	3%	-2%
8	92	-3%	-1%
9	91	-5%	5%
10	82	-4%	11%
11	79	1%	13%
12	89	2%	8%
13	91	6%	5%
14	91	5%	0%
15	83	15%	-7%
16	93	2%	-3%



Total Lumen Output: 8993 lm

Color Temperature: 6338 K

CRI: 90.9

TLCI: 93

TM30: 89.1

CQS: 91.3

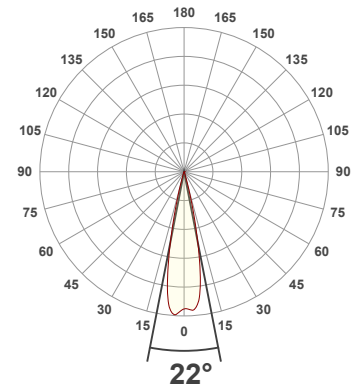
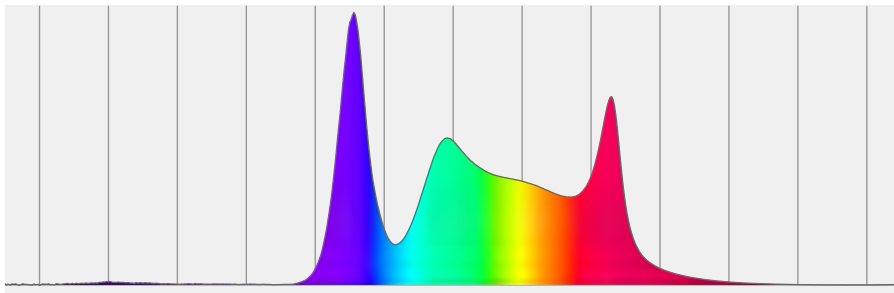
Measurement Date: 6/30/2021

Voltage: 111 V, Current: 2.53 A

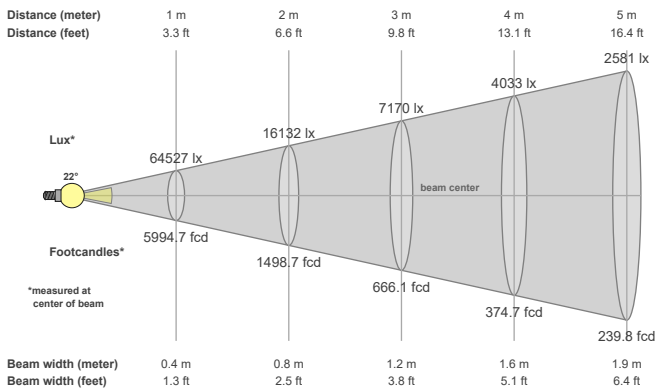
Power: 280 W

Efficacy: 32 Lumen/Watt

Spectral distribution
Dominant Wavelength 829



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
22°	31°	36.6°

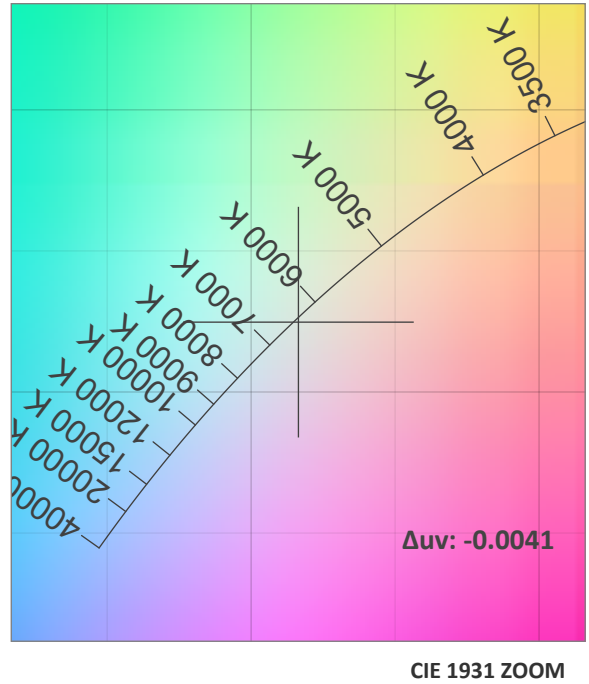
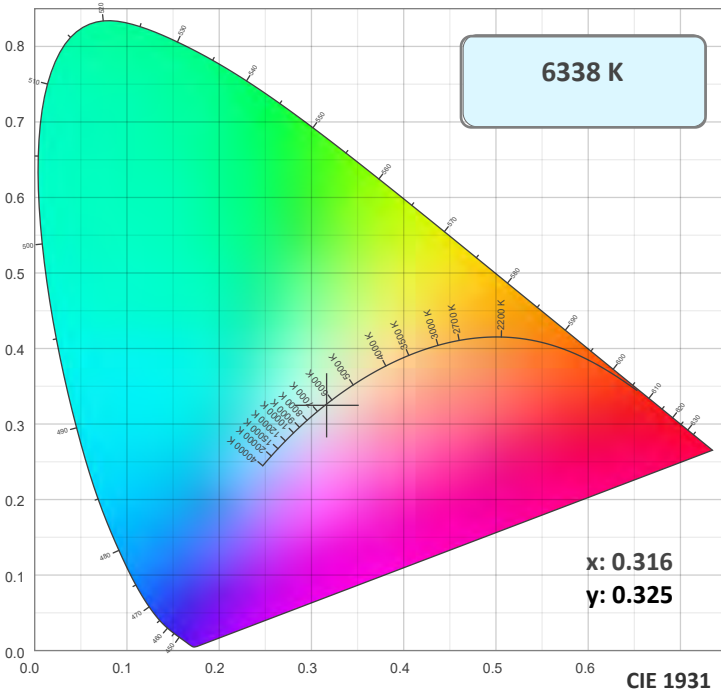
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
67268 cd	99.9%	99.2%

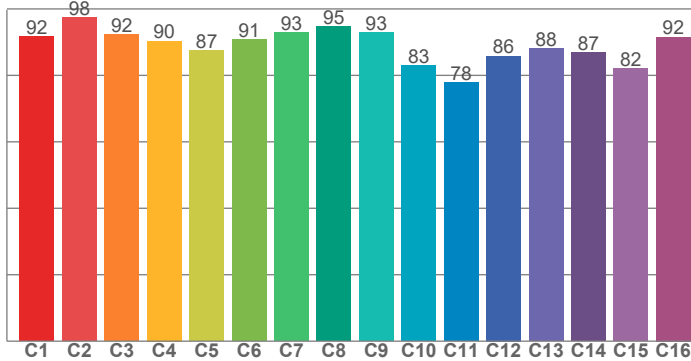
Beam Intensities from 1-20m

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	64527	16132	7170	4033	2581	1792	1317	1008	797	645	533	448	382	329	287	252	223	199	179	161
FC	5994.7	1498.7	666.1	374.7	239.8	166.5	122.3	93.7	74	59.9	49.5	41.6	35.5	30.6	26.6	23.4	20.7	18.5	16.6	15

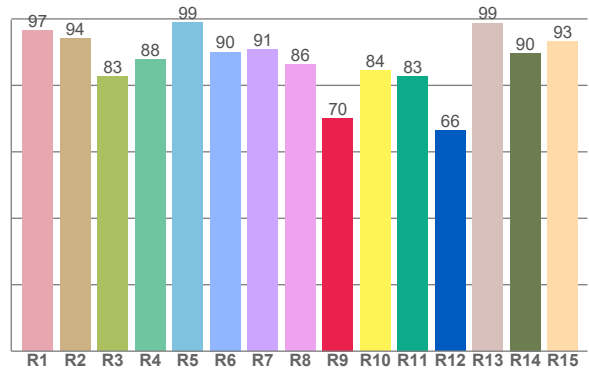
Color Details



TM30: 89.1



CRI: 90.9 (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
96.5	94.0	82.8	87.9	99.1	90.1	90.8	86.4	70.1	84.4	82.8	66.3	98.8	89.7	93.1

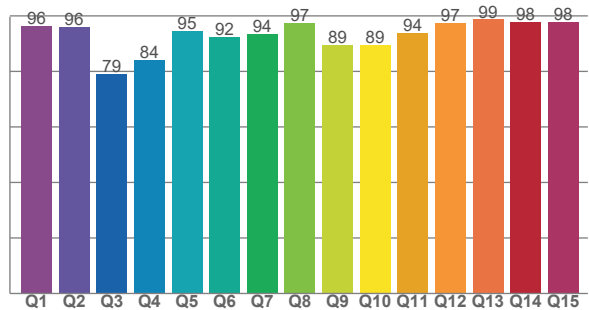
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91.8	97.5	92.3	90.3	87.4	90.8	92.9	94.8	92.8	82.9	77.9	85.8	88.0	86.9	82.1	91.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.4	95.9	79.2	84.1	94.6	92.3	93.6	97.5	89.5	89.4	93.7	97.4	98.7	97.8	97.9

CQS: 91.3



Color Parameters

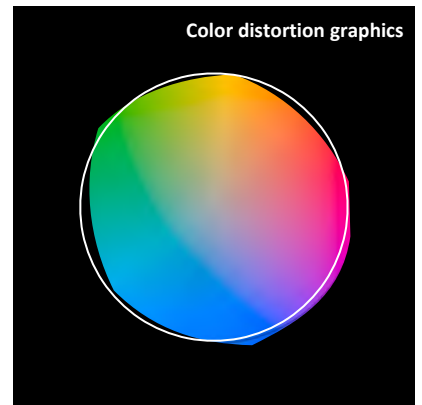
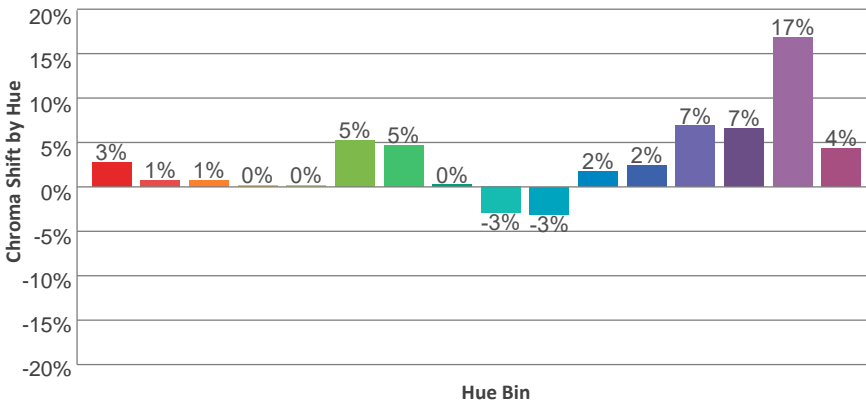
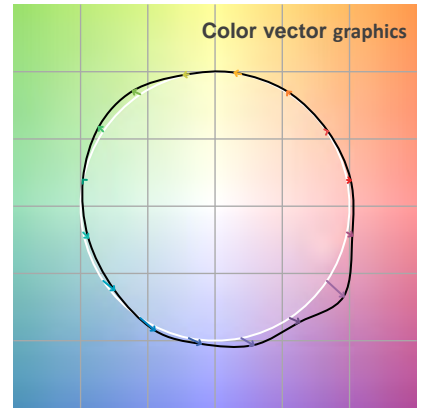
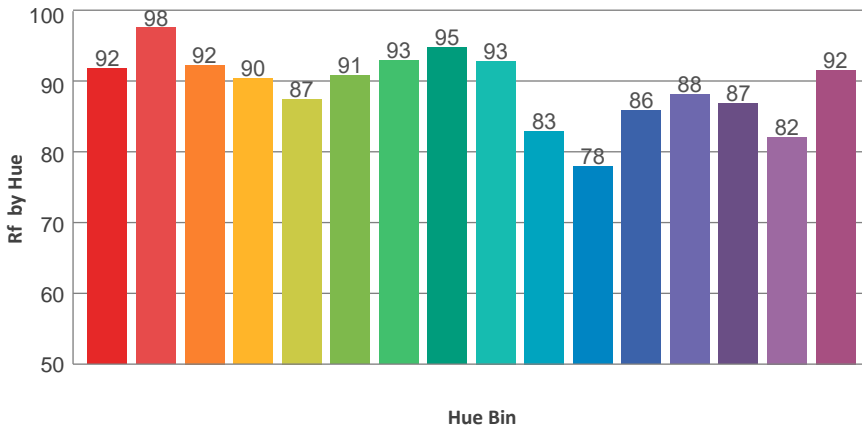
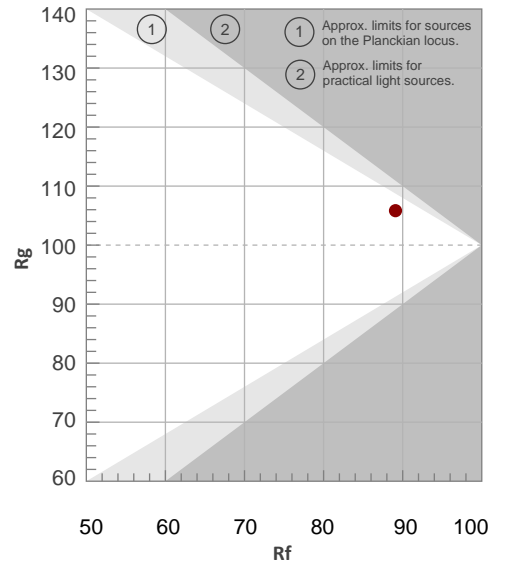
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Deviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6338 K	90.9	70.1	89.1	105.8	91.3	0.316	0.325	0.202	0.311	-0.0041

TM30 Details

Rf 89.1
Fidelity Index Rf

Rg 105.8
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	92	3%	-1%
2	98	1%	0%
3	92	1%	3%
4	90	0%	5%
5	87	0%	4%
6	91	5%	3%
7	93	5%	-1%
8	95	0%	0%
9	93	-3%	5%
10	83	-3%	10%
11	78	2%	14%
12	86	2%	10%
13	88	7%	8%
14	87	7%	4%
15	82	17%	-3%
16	92	4%	-1%



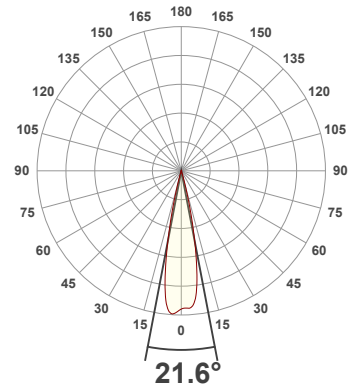
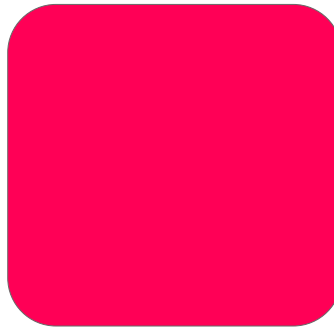
Total Lumen Output: 1280 lm

Voltage: 112 V, Current: 0.774 A

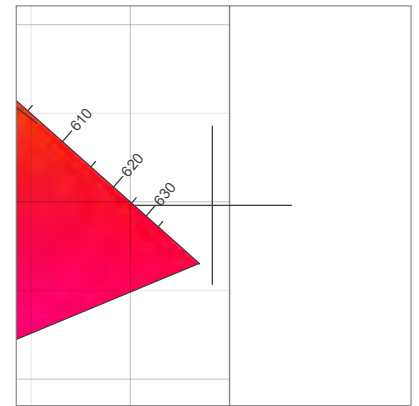
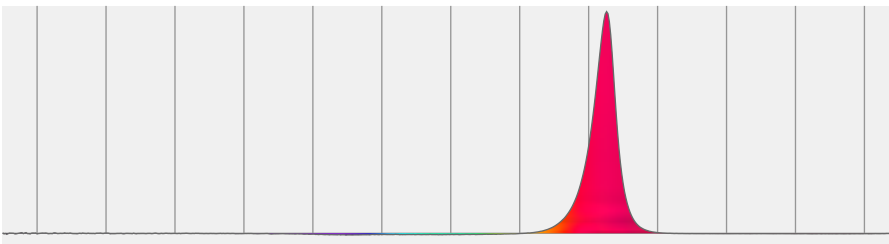
Power: 83.1 W

Efficacy: 15 Lumen/Watt

Measurement Date: 6/28/2021

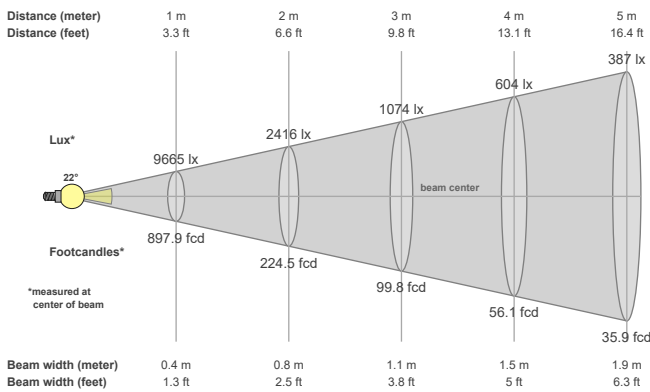


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
624	0.741	0.298	0.582	0.351

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
21.6°	30.5°	35.5°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
10003 cd	99.9%	99.1%

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	9665	2416	1074	604	387	268	197	151	119	97	80	67	57	49	43	38	33	30	27	24
FC	897.9	224.5	99.8	56.1	35.9	24.9	18.3	14	11.1	9	7.4	6.2	5.3	4.6	4	3.5	3.1	2.8	2.5	2.2

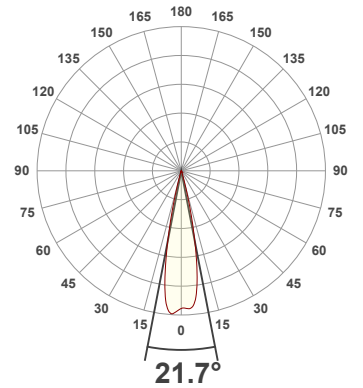
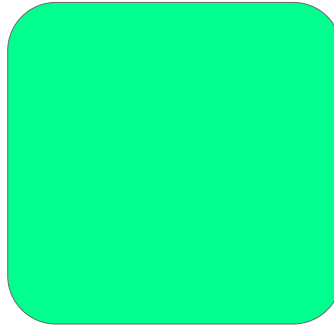
Total Lumen Output: 2102 lm

Voltage: 113 V, Current: 0.590 A

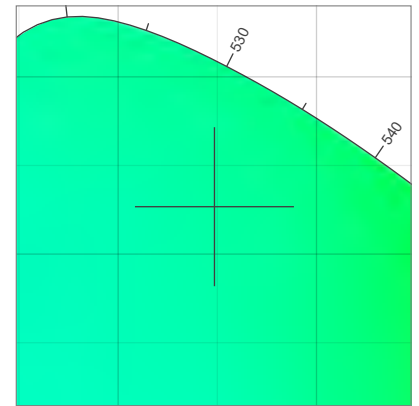
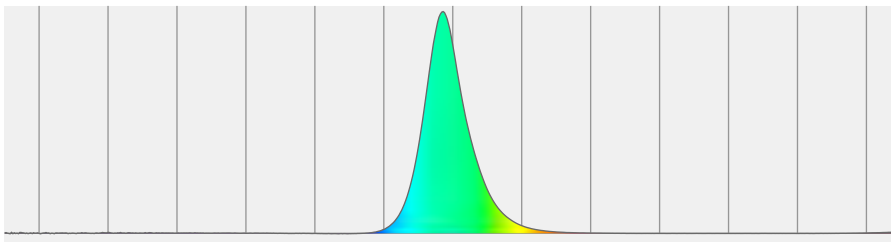
Power: 62.1 W

Efficacy: 34 Lumen/Watt

Measurement Date: 6/28/2021

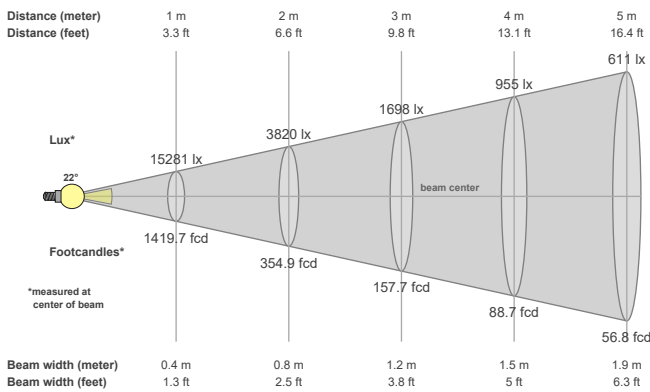


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
524	0.149	0.727	0.052	0.382

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
21.7°	30.7°	36.1°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
15882 cd	99.7%	98.5%

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	15281	3820	1698	955	611	424	312	239	189	153	126	106	90	78	68	60	53	47	42	38
FC	1419.7	354.9	157.7	88.7	56.8	39.4	29	22.2	17.5	14.2	11.7	9.9	8.4	7.2	6.3	5.5	4.9	4.4	3.9	3.5

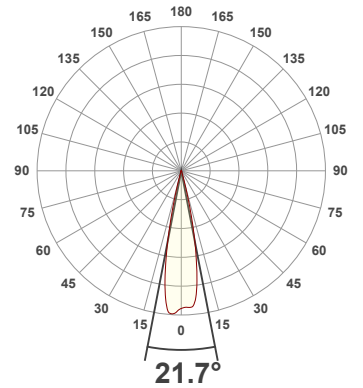
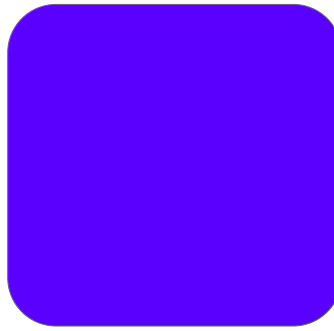
Total Lumen Output: 566 lm

Voltage: 112 V, Current: 0.816 A

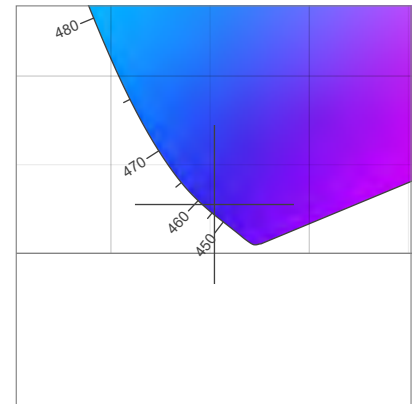
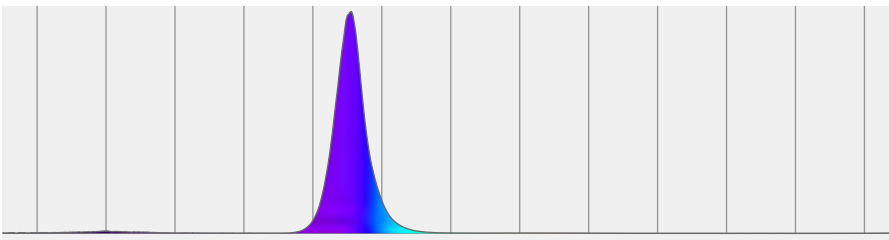
Power: 88.0 W

Efficacy: 6 Lumen/Watt

Measurement Date: 6/28/2021

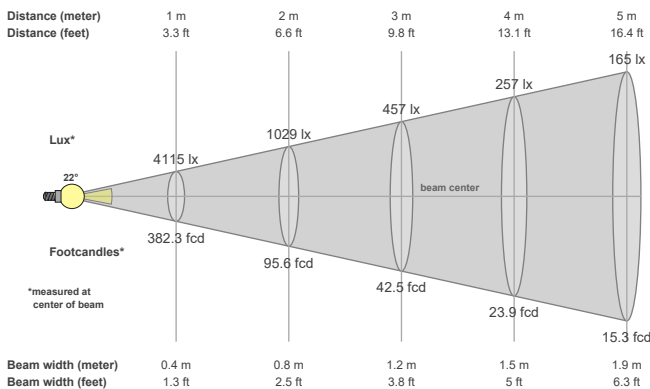


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
456	0.152	0.028	0.201	0.055

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
21.7°	30.5°	35.9°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
4279 cd	99.4%	98.0%

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	4115	1029	457	257	165	114	84	64	51	41	34	29	24	21	18	16	14	13	11	10
FC	382.3	95.6	42.5	23.9	15.3	10.6	7.8	6	4.7	3.8	3.2	2.7	2.3	2	1.7	1.5	1.3	1.2	1.1	1

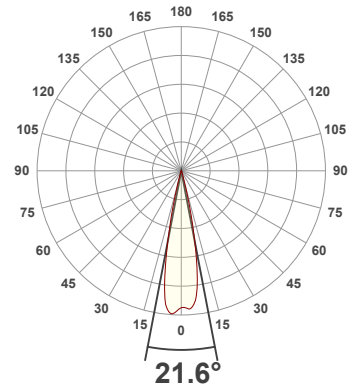
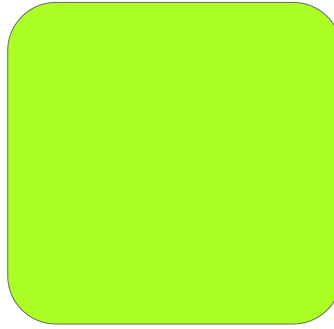
Total Lumen Output: 10194 lm

Voltage: 110 V, Current: 1.80 A

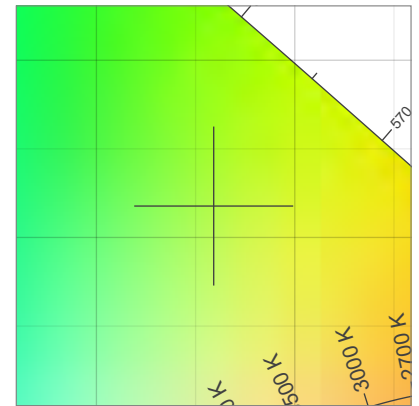
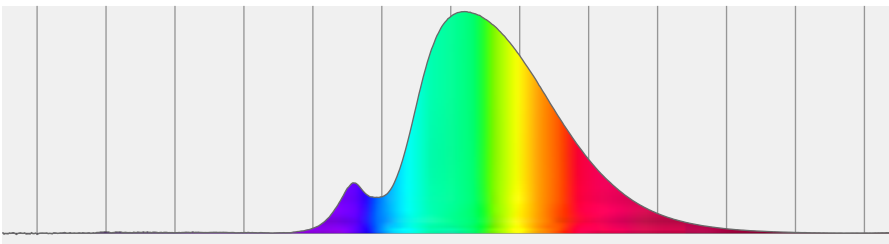
Power: 195.5 W

Efficacy: 52 Lumen/Watt

Measurement Date: 6/28/2021

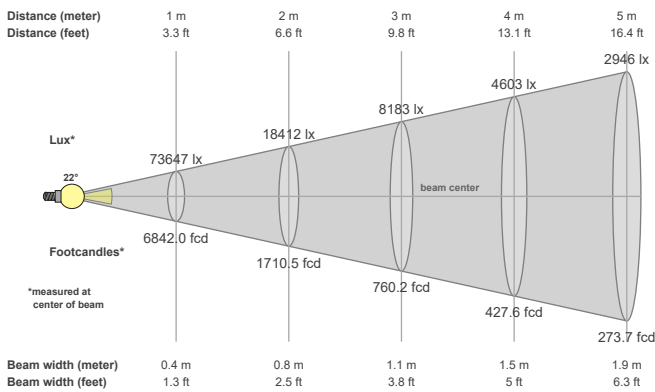


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
561	0.359	0.518	0.169	0.366

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
21.6°	30.4°	36°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
76924 cd	99.7%	98.3%

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	73647	18412	8183	4603	2946	2046	1503	1151	909	736	609	511	436	376	327	288	255	227	204	184
FC	6842	1710.5	760.2	427.6	273.7	190.1	139.6	106.9	84.5	68.4	56.5	47.5	40.5	34.9	30.4	26.7	23.7	21.1	19	17.1

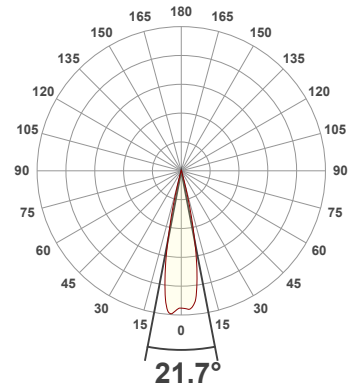
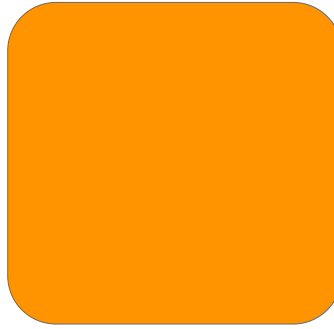
Total Lumen Output: 2206 lm

Voltage: 112 V, Current: 0.874 A

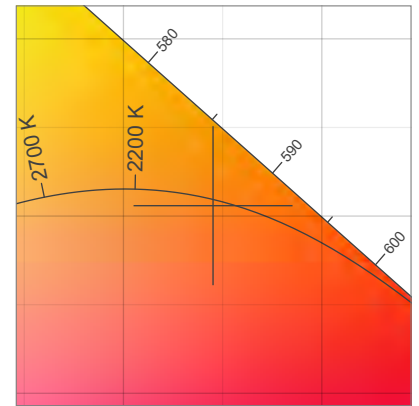
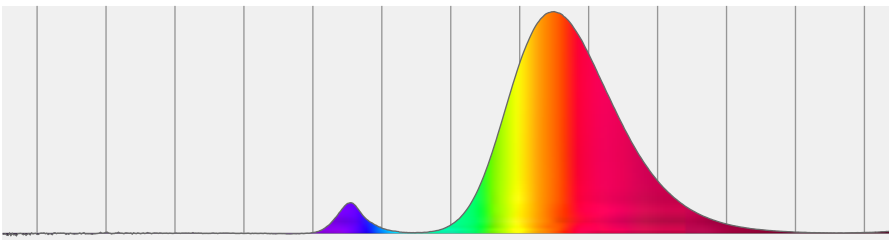
Power: 95.2 W

Efficacy: 23 Lumen/Watt

Measurement Date: 6/28/2021

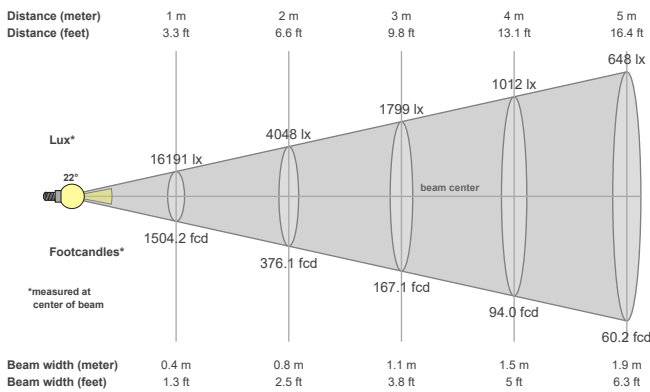


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
591	0.545	0.406	0.322	0.359

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
21.7°	30.4°	35.8°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
16879 cd	99.7%	98.5%

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	16191	4048	1799	1012	648	450	330	253	200	162	134	112	96	83	72	63	56	50	45	40
FC	1504.2	376.1	167.1	94	60.2	41.8	30.7	23.5	18.6	15	12.4	10.4	8.9	7.7	6.7	5.9	5.2	4.6	4.2	3.8