



KL Panel

Photometric Test Report

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Elation Professional USA | 6122 S. Eastern Ave. | Los Angeles, CA. 90040

323-582-3322 | 323-832-9142 fax | www.elationlighting.com | info@elationlighting.com

Elation Professional B.V. | Junostraat 2 | 6468 EW Kerkrade, The Netherlands

+31 45 546 85 66 | +31 45 546 85 96 fax | www.elationlighting.eu | info@elationlighting.eu

Elation Professional Mexico | AV Santa Ana 30 | Parque Industrial Lerma, Lerma, Mexico 52000

+52 (728) 282-7070

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KL Panel	Diffuser	No Diffuser
2700K	5	35
3200K	8	38
4000K	11	41
4500K	14	44
5600K	17	47
6000K	20	50
6500K	23	53
8000K	26	56
Red	29	
Green	30	
Blue	31	
White	32	
Lime	33	
Cyan	34	

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: 20819 lm

Color Temperature: 2688 K

CRI: 95.2

TLCI: 84

TM30: 92.0

CQS: 91.4

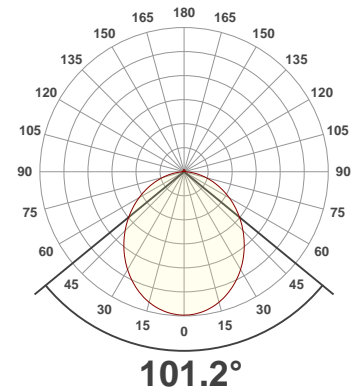
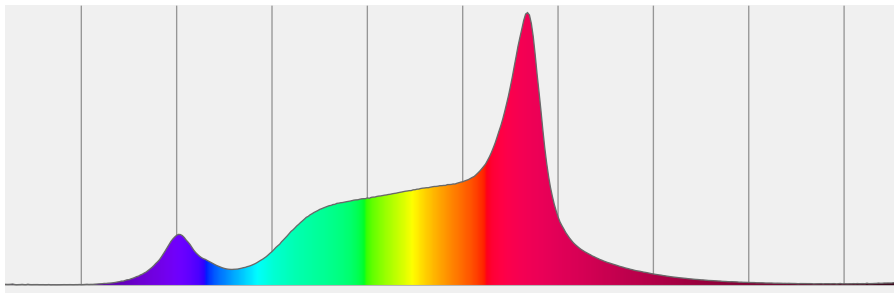
Measurement Date: 7/15/2020

Voltage: 110 V, Current: 2.30 A

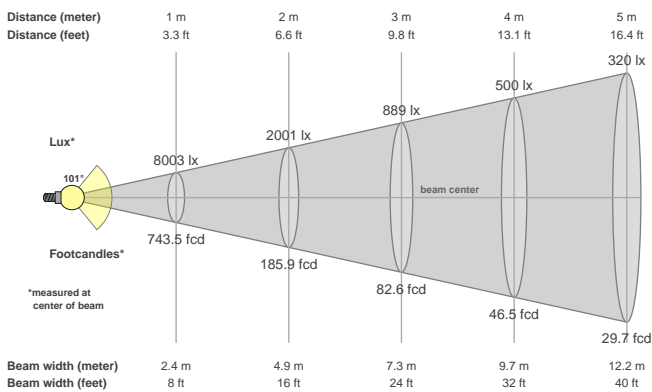
Power: 249.3 W

Efficacy: 84 Lumen/Watt

Spectral distribution
Dominant Wavelength 584



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.2°	159.4°	173.5°

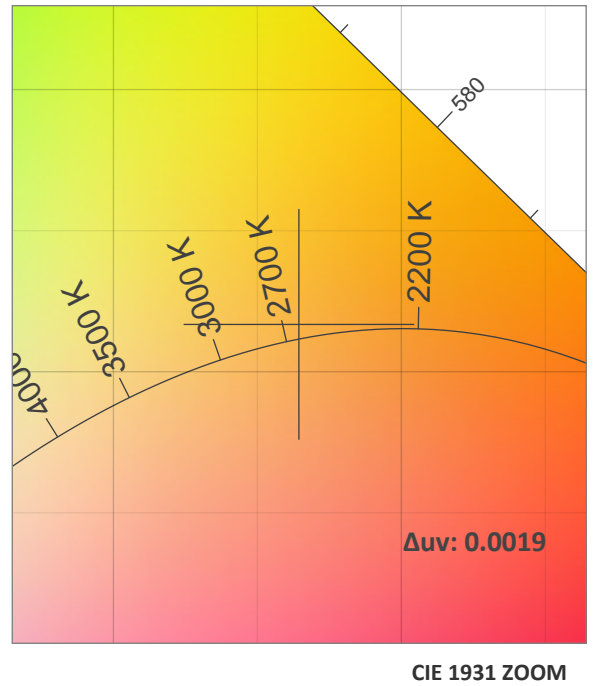
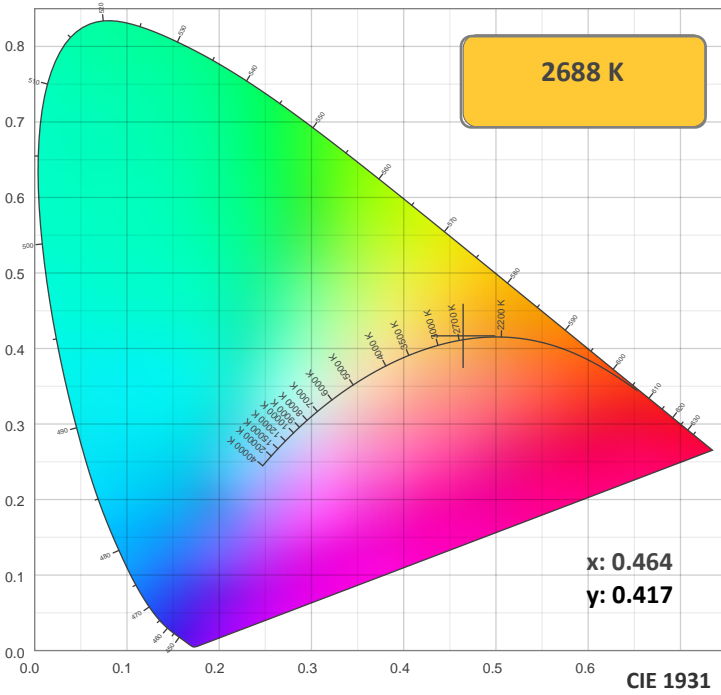
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8009 cd	78.5%	55.0%

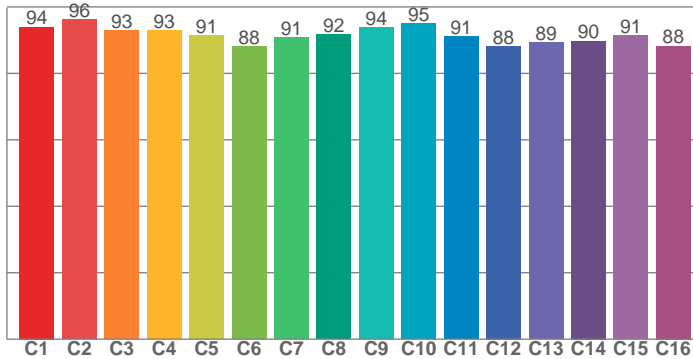
Beam Intensities from 1-20m

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	8003	2001	889	500	320	222	163	125	99	80	66	56	47	41	36	31	28	25	22	20
FC	743.5	185.9	82.6	46.5	29.7	20.7	15.2	11.6	9.2	7.4	6.1	5.2	4.4	3.8	3.3	2.9	2.6	2.3	2.1	1.9

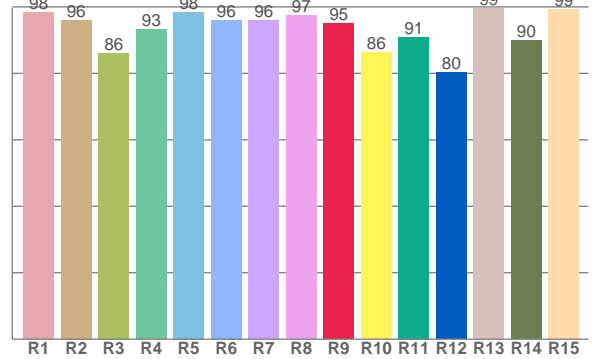
Color Details



TM30: 92.0



CRI: 95.2 (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
98.3	96.1	86.1	93.2	98.5	96.0	95.9	97.5	94.9	86.3	91.0	80.2	99.4	89.9	99.3

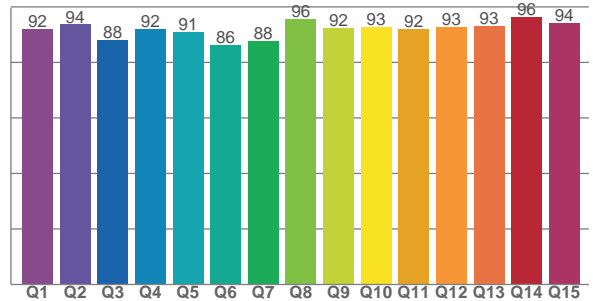
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.0	96.2	92.8	93.0	91.4	88.1	90.8	91.6	93.8	95.0	91.1	88.2	89.3	89.7	91.4	88.3

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
92.2	93.7	88.2	92.0	90.9	86.2	87.7	95.7	92.5	92.9	92.1	92.8	93.1	96.3	94.3

CQS: 91.4



Color Parameters

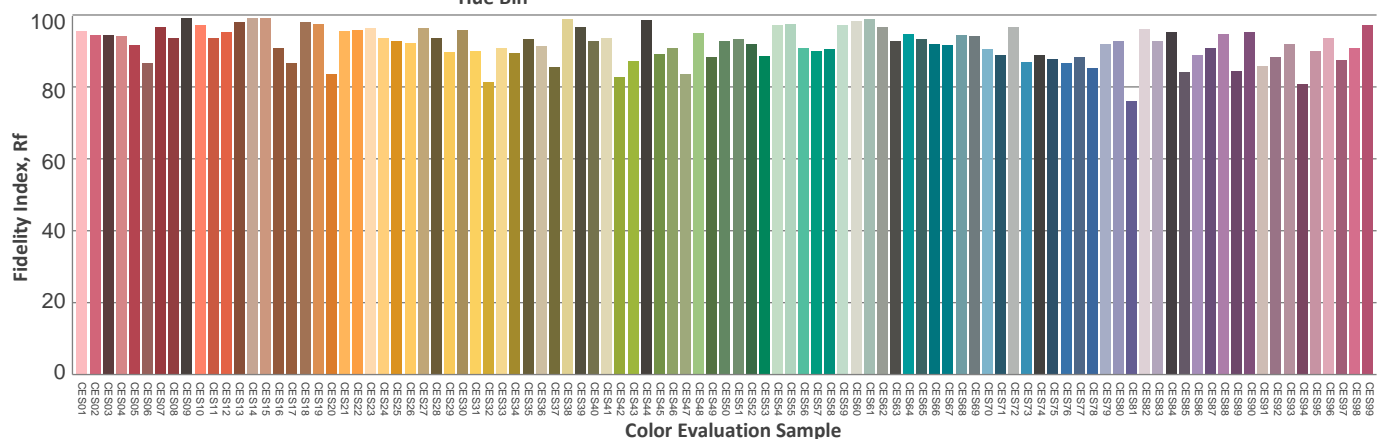
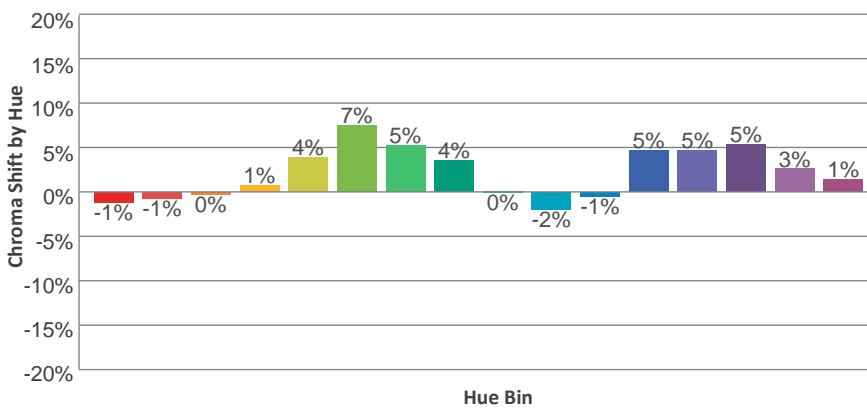
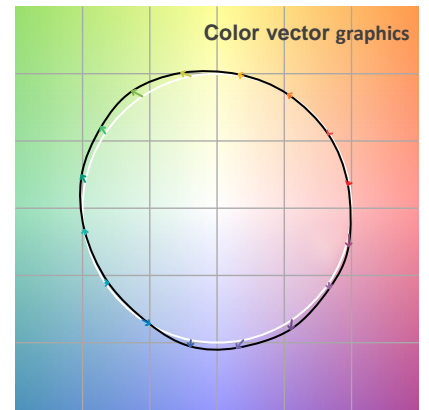
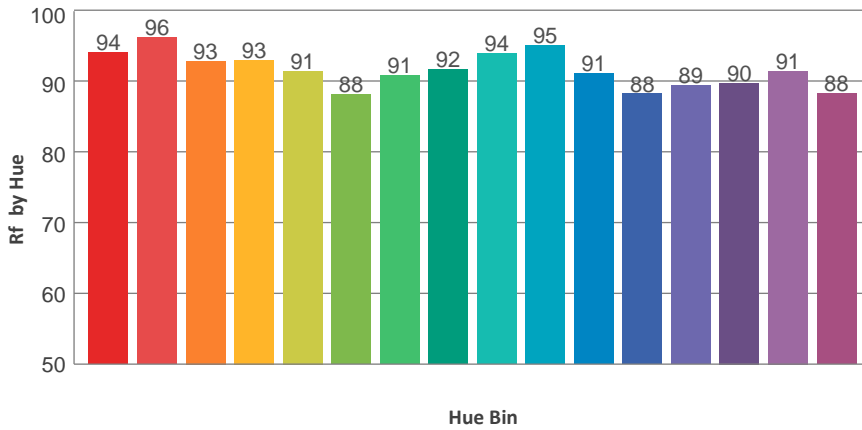
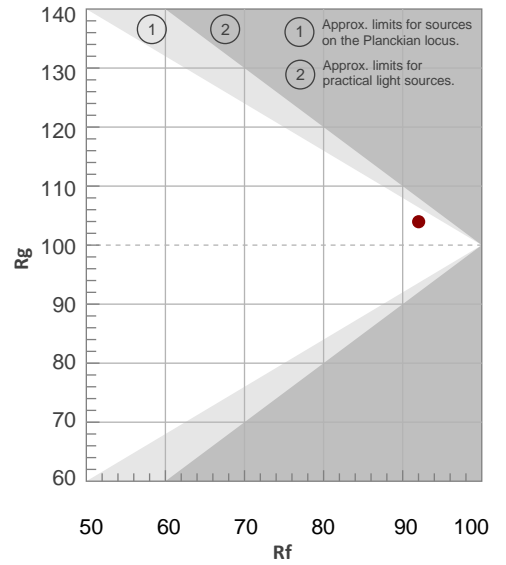
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2688 K	95.2	94.9	92.0	104.0	91.4	0.464	0.417	0.263	0.354	0.0019

TM30 Details

Rf 92.0
Fidelity Index Rf

Rg 104.0
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	-1%	-2%
2	96	-1%	0%
3	93	0%	3%
4	93	1%	4%
5	91	4%	6%
6	88	7%	4%
7	91	5%	-2%
8	92	4%	-4%
9	94	0%	-3%
10	95	-2%	1%
11	91	-1%	6%
12	88	5%	0%
13	89	5%	-6%
14	90	5%	-4%
15	91	3%	-3%
16	88	1%	-9%



Total Lumen Output: 21741 lm

Color Temperature: 3241 K

CRI: 95.9

TLCI: 90

TM30: 92.8

CQS: 93.6

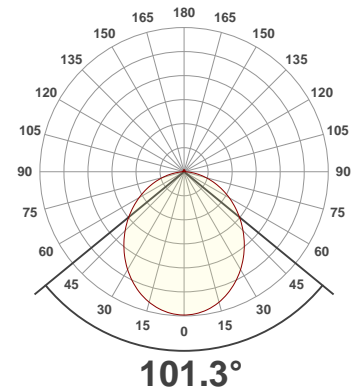
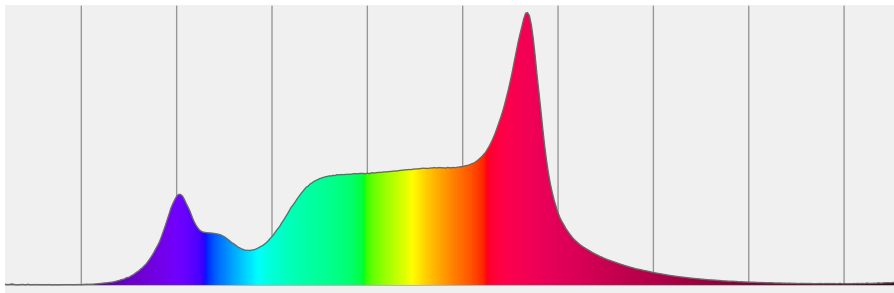
Measurement Date: 7/15/2020

Voltage: 110 V, Current: 2.36 A

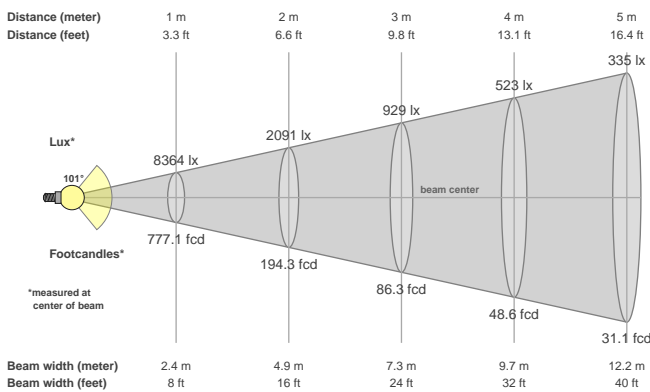
Power: 255.7 W

Efficacy: 85 Lumen/Watt

Spectral distribution
Dominant Wavelength 582



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.3°	159.3°	174.3°

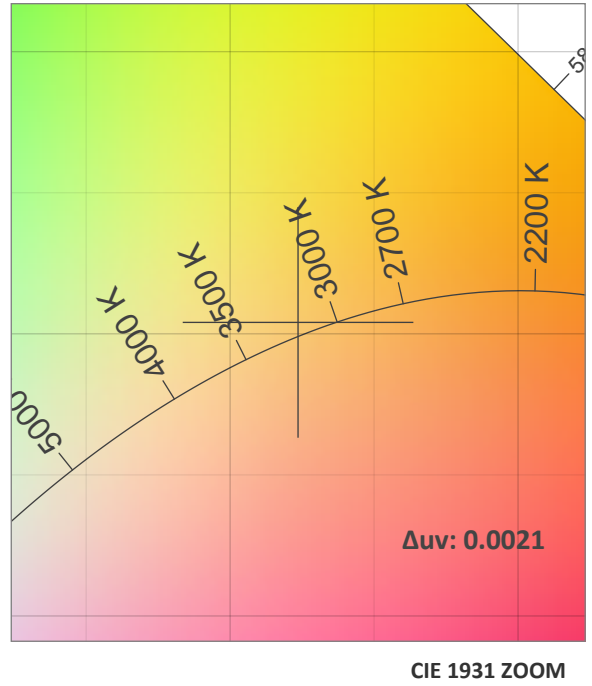
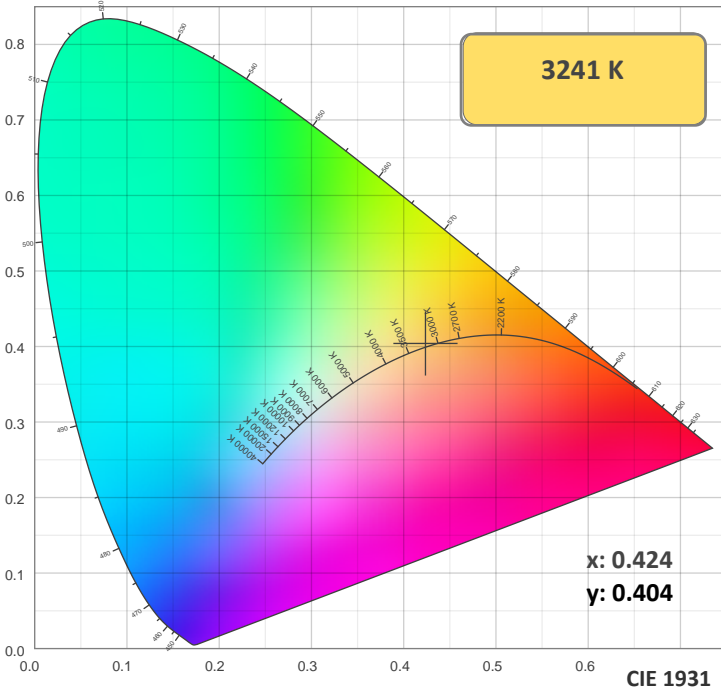
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8368 cd	78.5%	55.0%

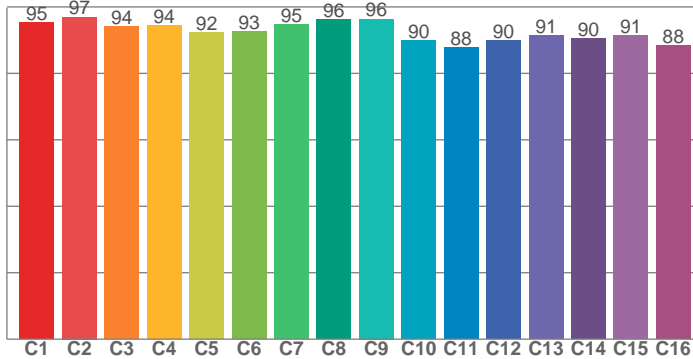
Beam Intensities from 1-20m

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	8364	2091	929	523	335	232	171	131	103	84	69	58	49	43	37	33	29	26	23	21
FC	777.1	194.3	86.3	48.6	31.1	21.6	15.9	12.1	9.6	7.8	6.4	5.4	4.6	4	3.5	3	2.7	2.4	2.2	1.9

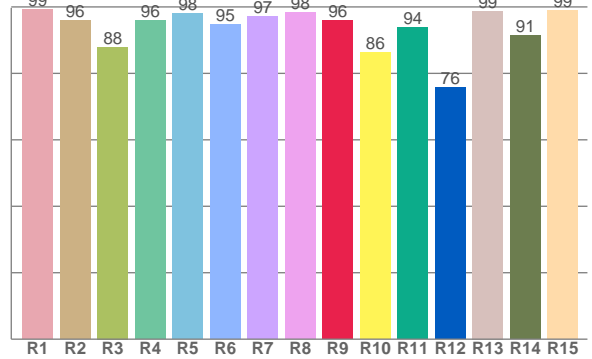
Color Details



TM30: 92.8



CRI: 95.9 (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
99.3	95.9	87.9	95.9	98.0	94.8	97.1	98.3	96.0	86.3	93.9	75.7	98.8	91.4	99.0

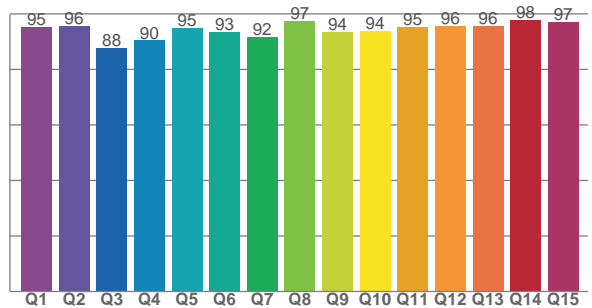
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
95.3	97.0	94.0	94.4	92.3	92.5	94.7	96.3	96.4	89.8	87.8	89.8	91.4	90.5	91.4	88.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
95.2	95.7	87.7	90.4	94.8	93.4	91.8	97.3	93.6	93.8	95.2	95.8	95.5	97.8	97.0

CQS: 93.6



Color Parameters

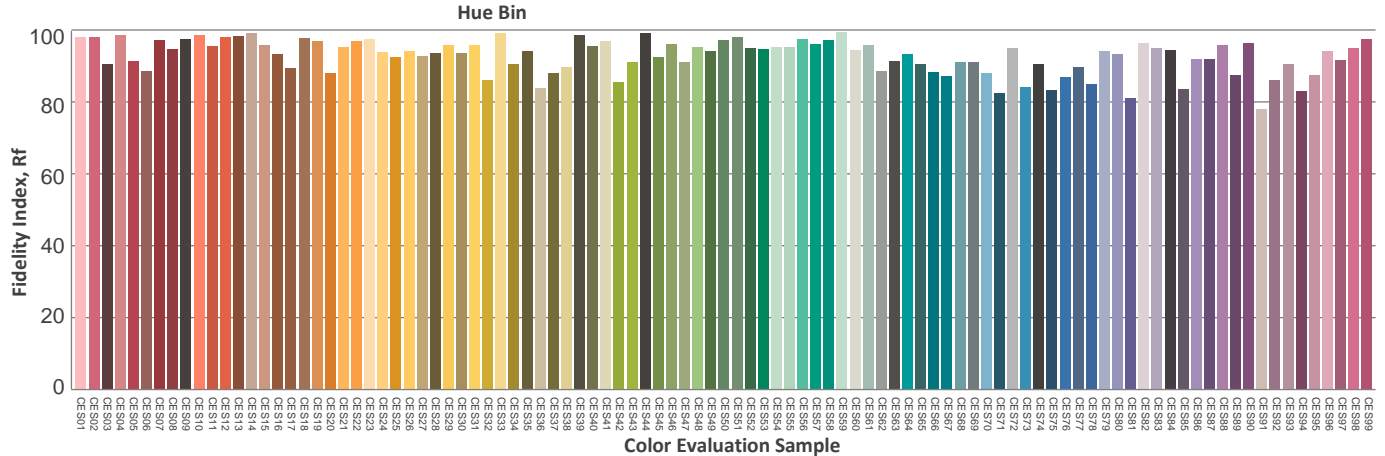
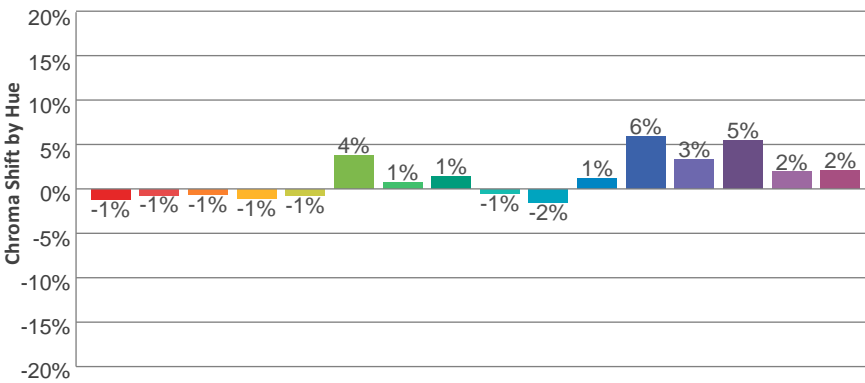
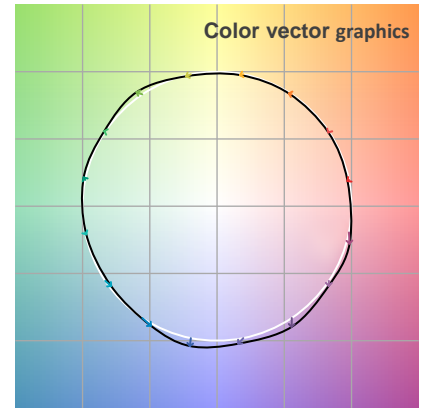
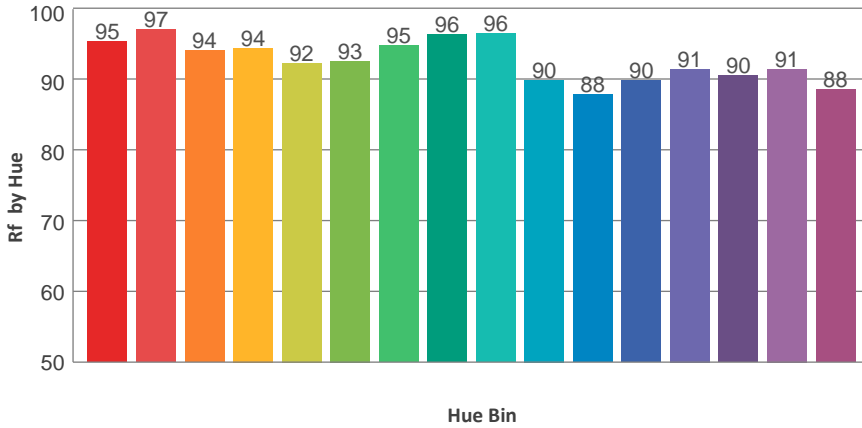
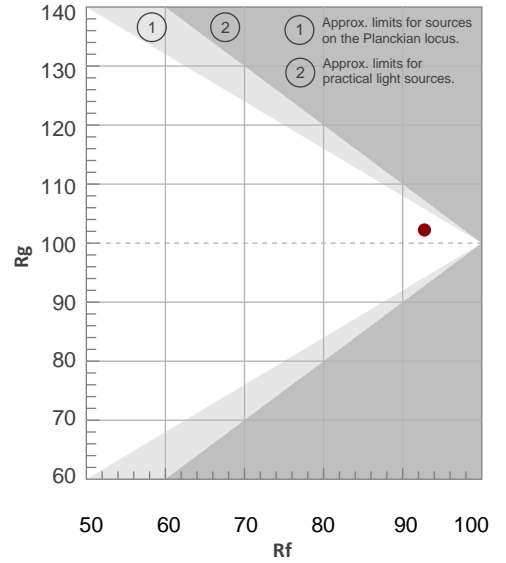
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3241 K	95.9	96.0	92.8	102.2	93.6	0.424	0.404	0.242	0.346	0.0021

TM30 Details

Rf 92.8
Fidelity Index Rf

Rg 102.2
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	95	-1%	-1%
2	97	-1%	0%
3	94	-1%	2%
4	94	-1%	2%
5	92	-1%	4%
6	93	4%	3%
7	95	1%	0%
8	96	1%	-2%
9	96	-1%	2%
10	90	-2%	6%
11	88	1%	8%
12	90	6%	0%
13	91	3%	-4%
14	90	5%	-4%
15	91	2%	-3%
16	88	2%	-8%



Total Lumen Output: 21775 lm

Color Temperature: 4015 K

CRI: 94.0

TLCI: 87

TM30: 91.1

CQS: 93.2

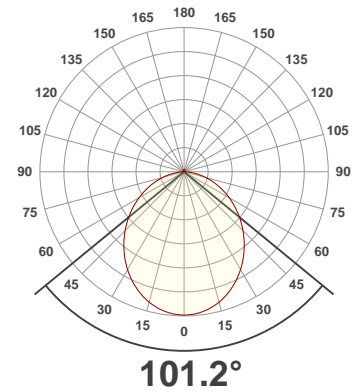
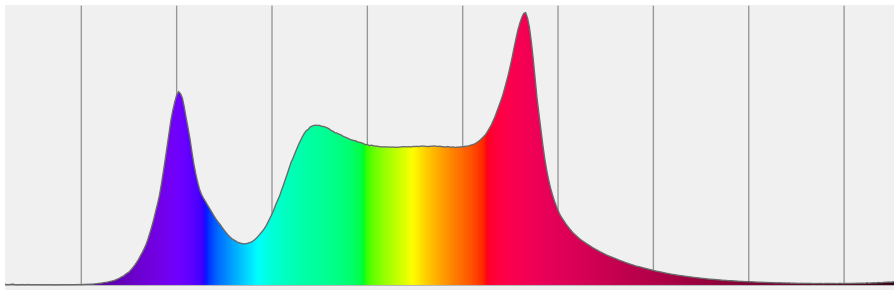
Measurement Date: 7/1/2020

Voltage: 111 V, Current: 2.35 A

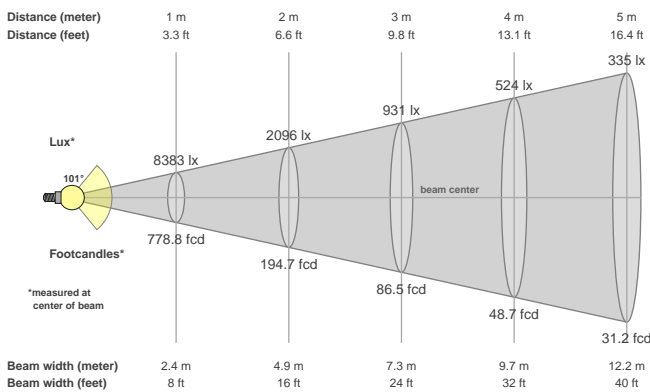
Power: 257.3 W

Efficacy: 85 Lumen/Watt

Spectral distribution
Dominant Wavelength 580



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.2°	159.2°	174.3°

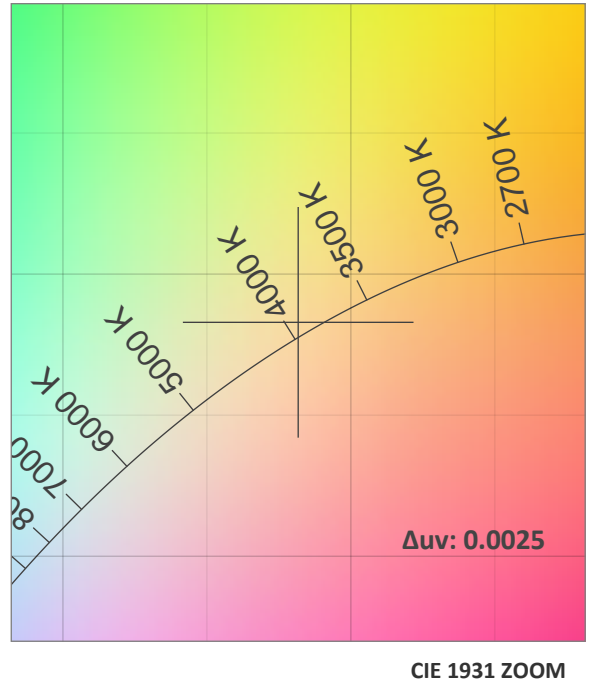
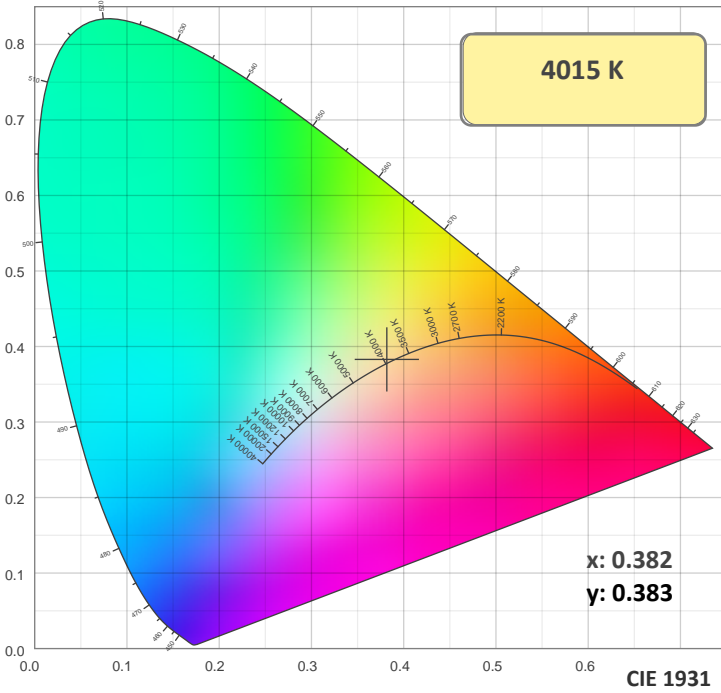
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8385 cd	78.5%	55.0%

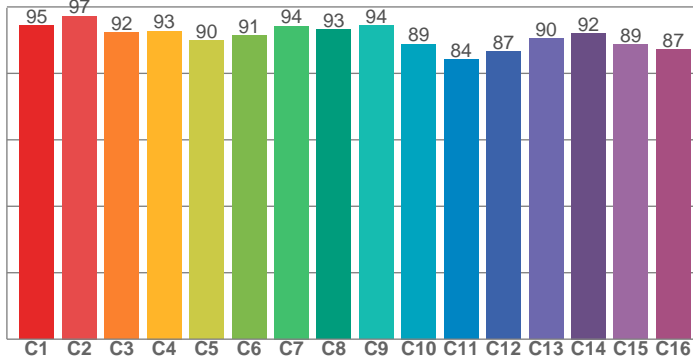
Beam Intensities from 1-20m

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	8383	2096	931	524	335	233	171	131	103	84	69	58	50	43	37	33	29	26	23	21
FC	778.8	194.7	86.5	48.7	31.2	21.6	15.9	12.2	9.6	7.8	6.4	5.4	4.6	4	3.5	3	2.7	2.4	2.2	1.9

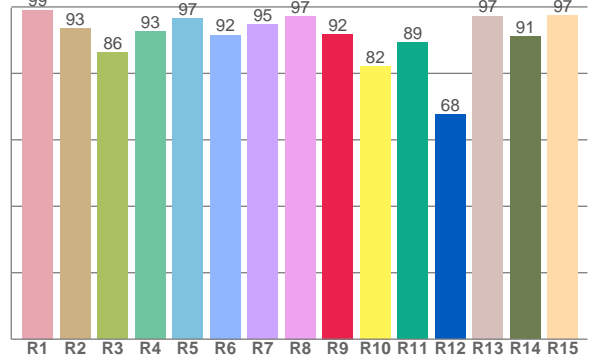
Color Details



TM30: 91.1



CRI: 94.0 (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
99.1	93.5	86.3	92.7	96.5	91.6	94.6	97.3	91.8	82.2	89.3	67.6	97.3	91.0	97.4

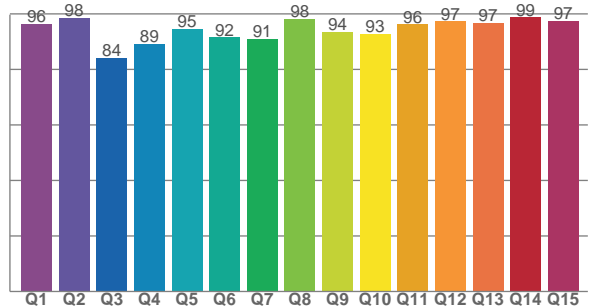
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.5	97.2	92.2	92.7	90.0	91.3	94.2	93.3	94.5	88.8	84.1	86.6	90.5	92.1	88.7	87.1

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.3	98.4	84.3	89.2	94.6	91.5	91.1	98.2	93.6	92.7	96.2	97.3	96.8	98.7	97.3

CQS: 93.2



Color Parameters

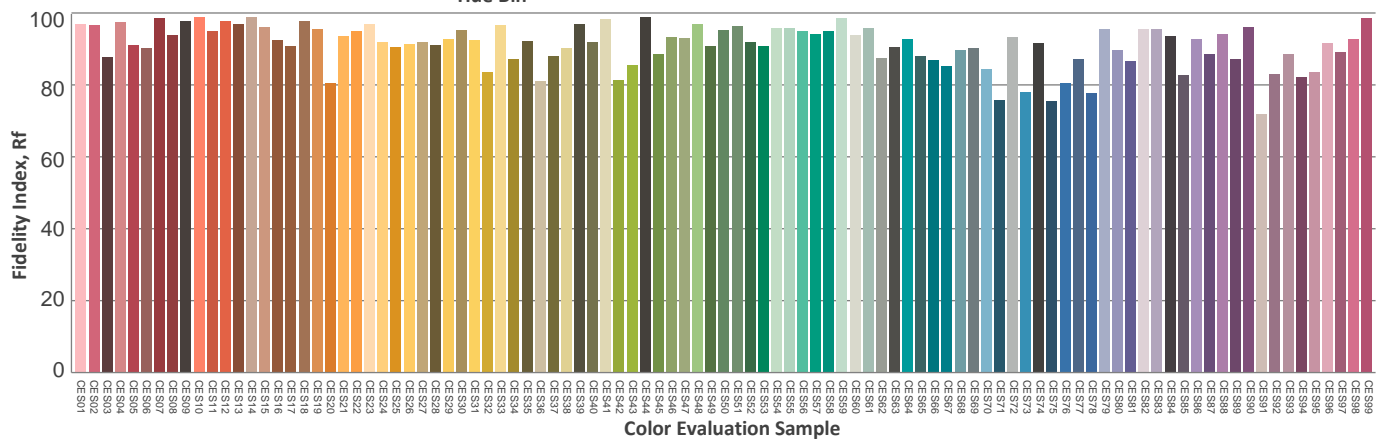
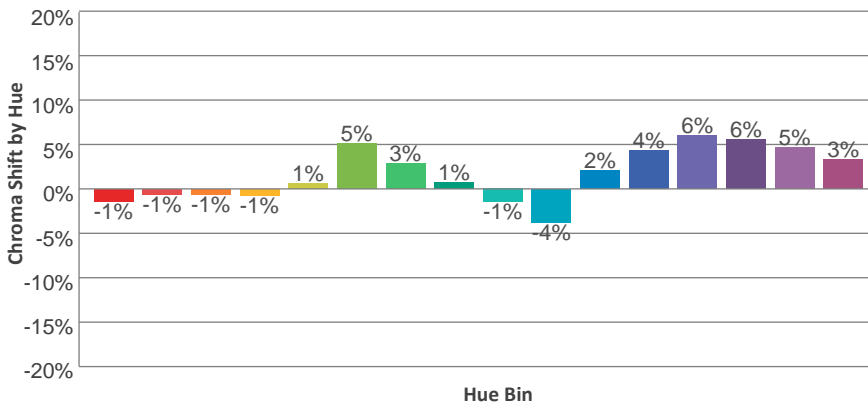
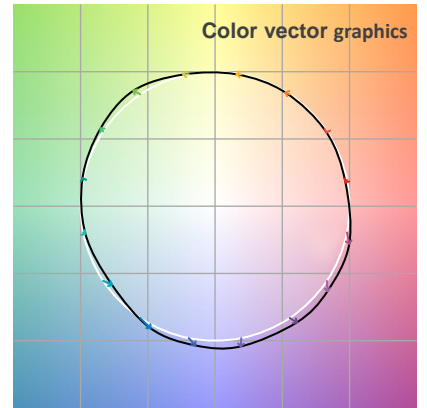
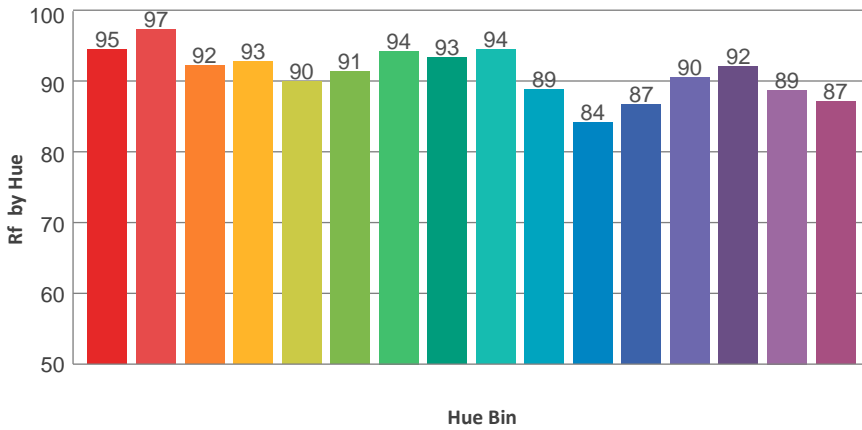
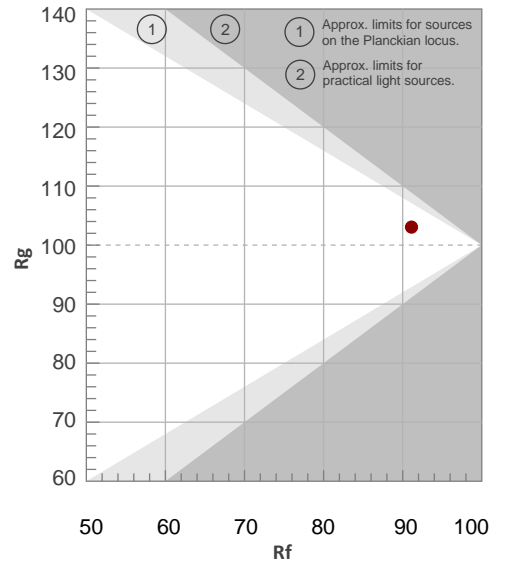
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4015 K	94.0	91.8	91.1	103.1	93.2	0.382	0.383	0.223	0.336	0.0025

TM30 Details

Rf 91.1
Fidelity Index Rf

Rg 103.1
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	95	-1%	-2%
2	97	-1%	-1%
3	92	-1%	3%
4	93	-1%	3%
5	90	1%	4%
6	91	5%	3%
7	94	3%	-1%
8	93	1%	-1%
9	94	-1%	1%
10	89	-4%	6%
11	84	2%	10%
12	87	4%	6%
13	90	6%	-2%
14	92	6%	3%
15	89	5%	-6%
16	87	3%	-8%



Total Lumen Output: 21458 lm

Color Temperature: 4483 K

CRI: 93.3

TLCI: 88

TM30: 90.4

CQS: 92.6

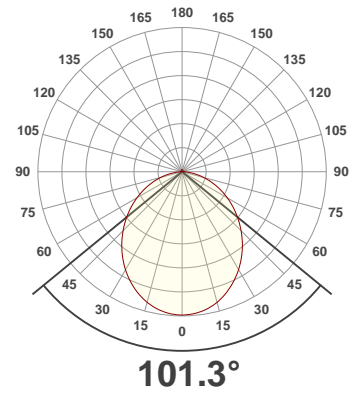
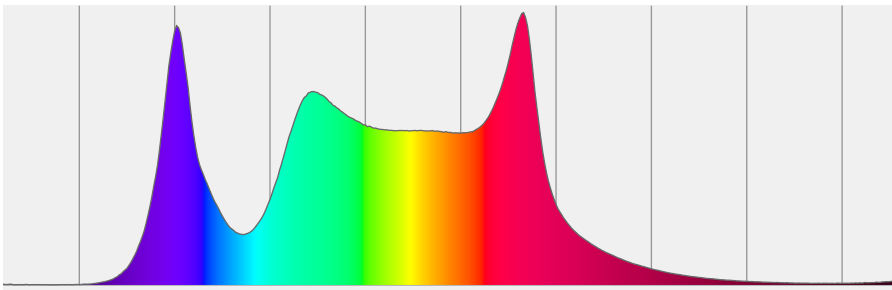
Measurement Date: 7/1/2020

Voltage: 110 V, Current: 2.35 A

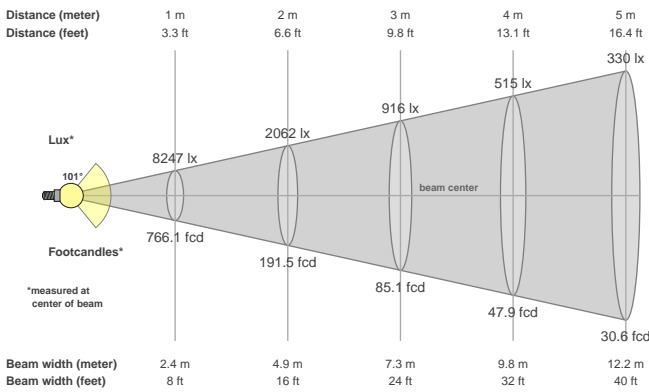
Power: 256.9 W

Efficacy: 84 Lumen/Watt

Spectral distribution
Dominant Wavelength 579



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.3°	159.2°	174.1°

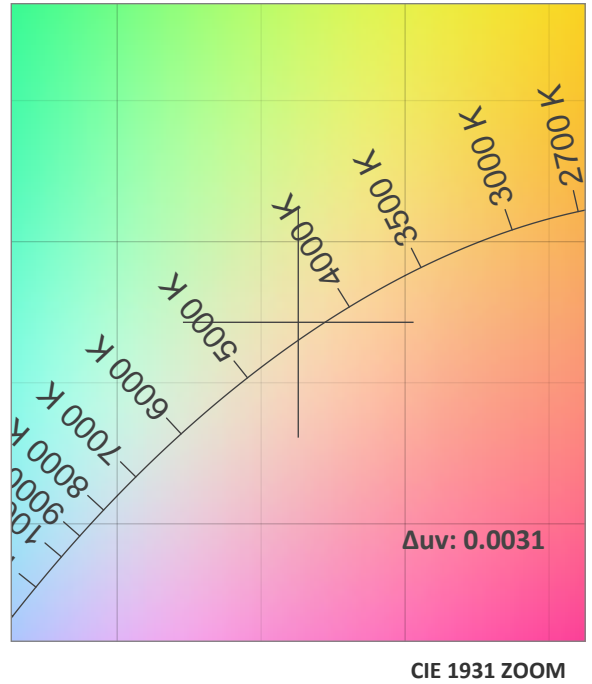
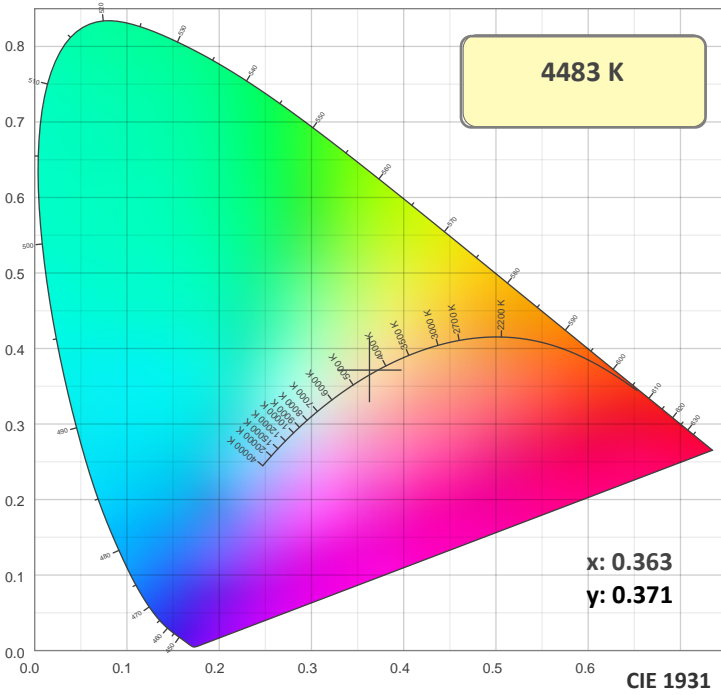
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8252 cd	78.5%	55.0%

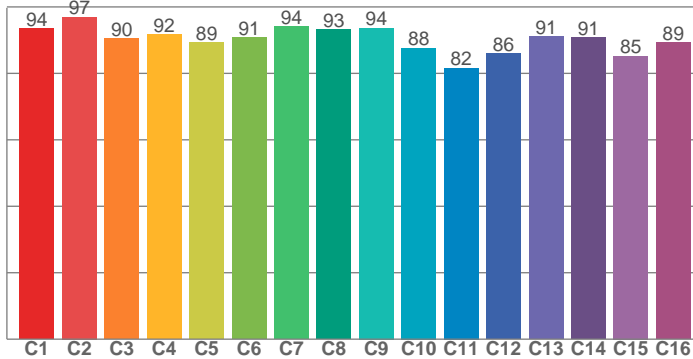
Beam Intensities from 1-20m

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	8247	2062	916	515	330	229	168	129	102	82	68	57	49	42	37	32	29	25	23	21
FC	766.1	191.5	85.1	47.9	30.6	21.3	15.6	12	9.5	7.7	6.3	5.3	4.5	3.9	3.4	3	2.7	2.4	2.1	1.9

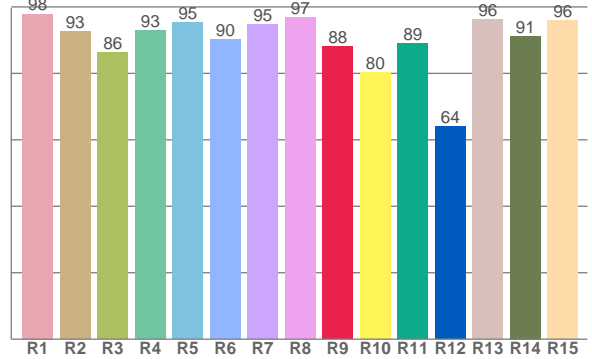
Color Details



TM30: 90.4



CRI: 93.3 (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
97.9	92.5	86.2	92.8	95.3	90.1	94.7	96.9	88.2	80.4	89.1	64.0	96.1	91.3	95.9

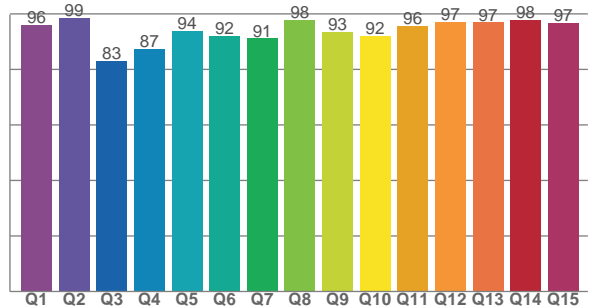
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.6	97.0	90.5	91.7	89.2	90.8	94.1	93.3	93.6	87.6	81.7	86.0	91.1	90.8	85.3	89.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.0	98.5	82.9	87.3	93.8	92.1	91.2	98.0	93.5	92.1	95.8	97.1	96.9	97.9	96.7

CQS: 92.6



Color Parameters

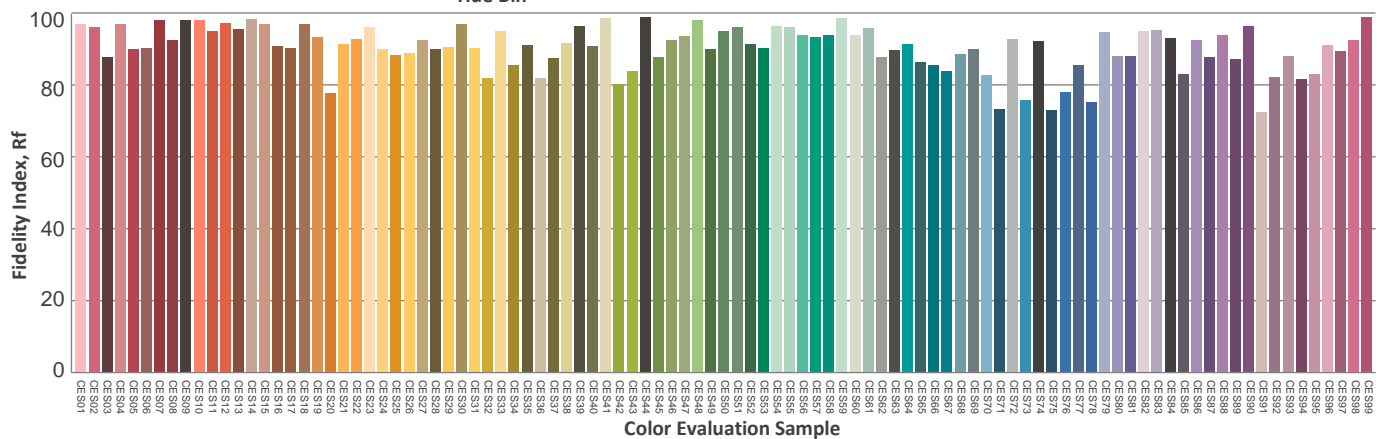
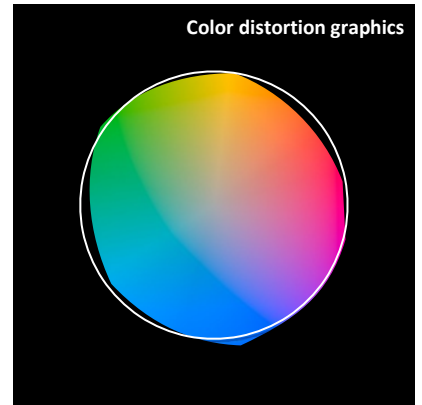
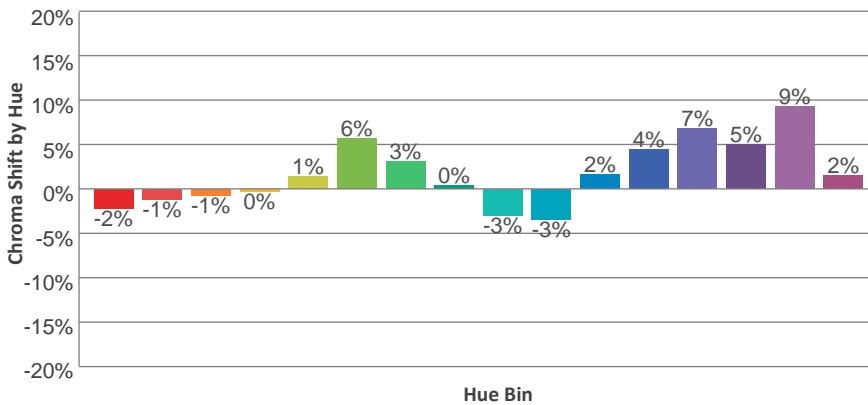
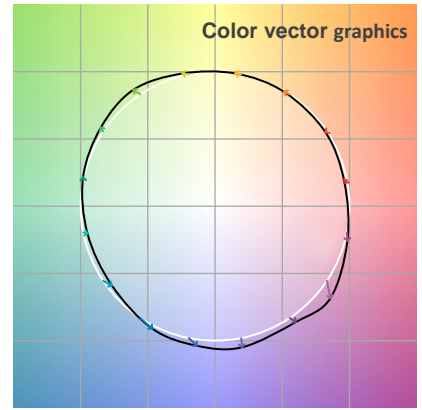
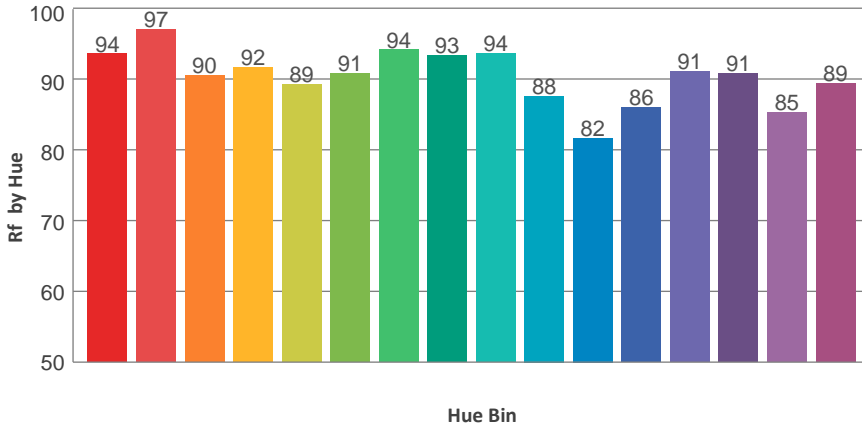
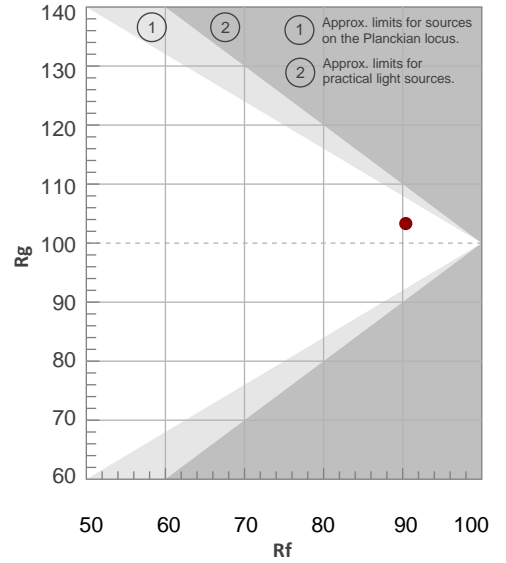
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4483 K	93.3	88.2	90.4	103.3	92.6	0.363	0.371	0.216	0.331	0.0031

TM30 Details

Rf 90.4
Fidelity Index Rf

Rg 103.3
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	-2%	-2%
2	97	-1%	0%
3	90	-1%	5%
4	92	0%	4%
5	89	1%	5%
6	91	6%	2%
7	94	3%	-1%
8	93	0%	-2%
9	94	-3%	1%
10	88	-3%	6%
11	82	2%	12%
12	86	4%	7%
13	91	7%	-1%
14	91	5%	2%
15	85	9%	-9%
16	89	2%	-6%



Total Lumen Output: 20625 lm

Color Temperature: 5739 K

CRI: 91.4

TLCI: 88

TM30: 89.0

CQS: 90.9

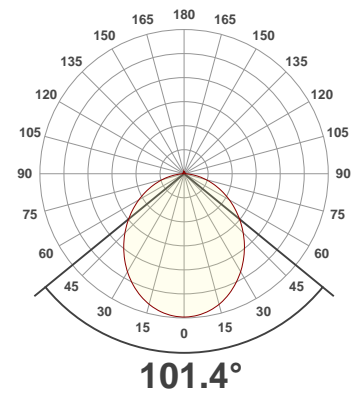
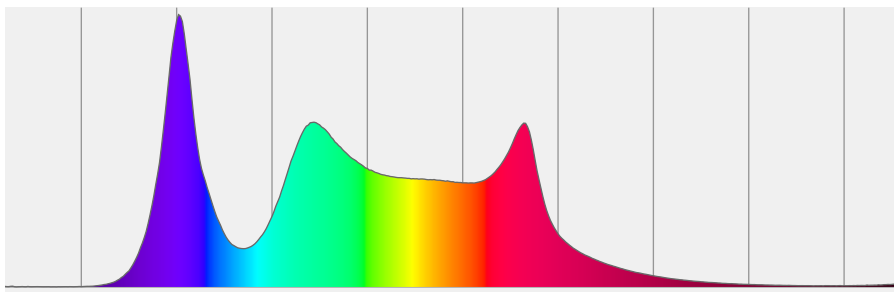
Measurement Date: 7/1/2020

Voltage: 111 V, Current: 2.36 A

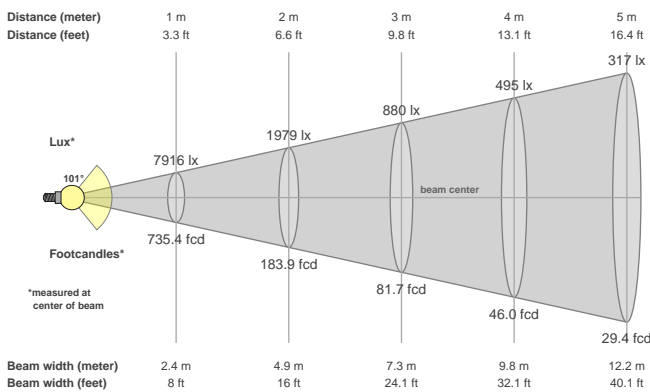
Power: 259.4 W

Efficacy: 80 Lumen/Watt

Spectral distribution
Dominant Wavelength 577



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.4°	159.3°	174.3°

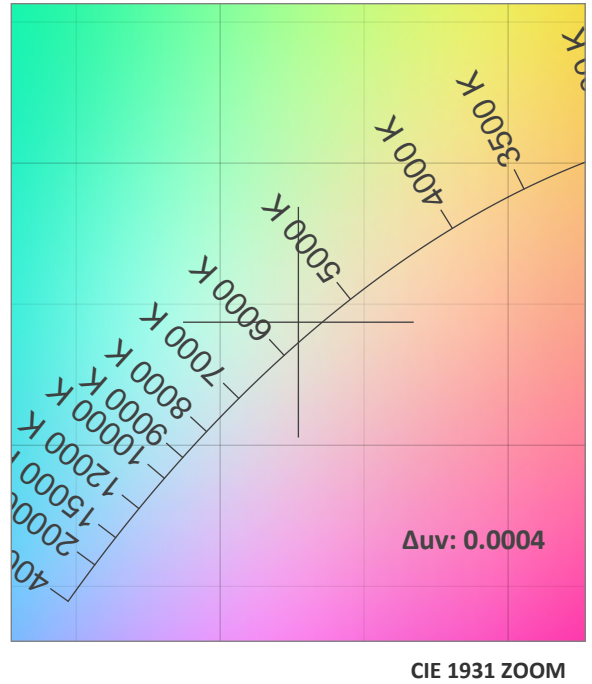
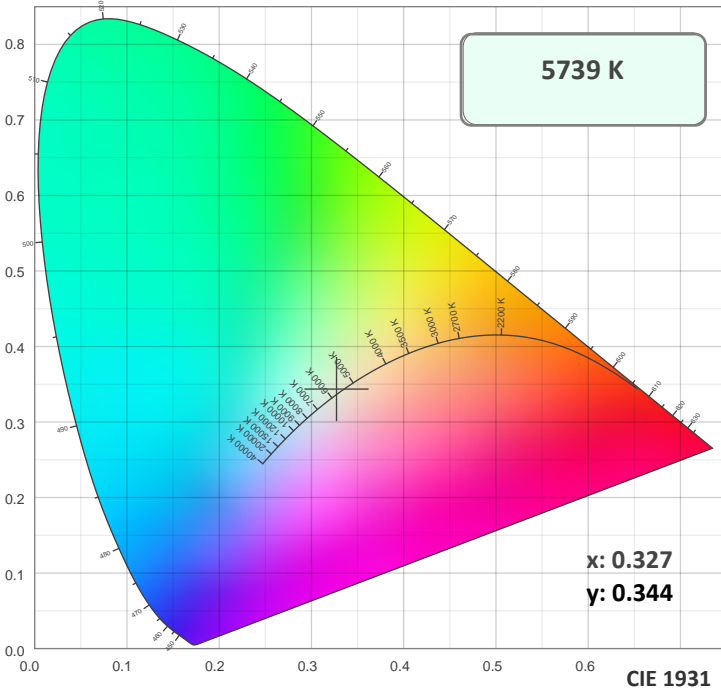
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7921 cd	78.5%	55.0%

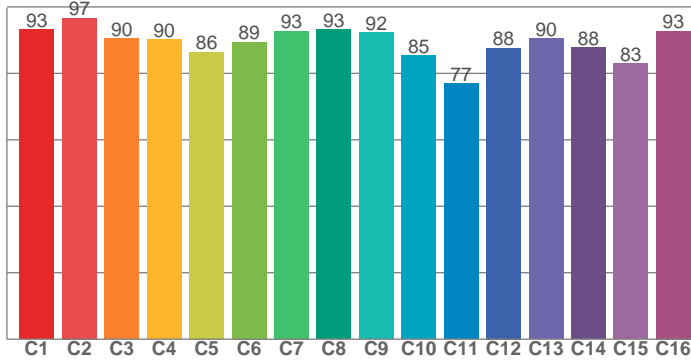
Beam Intensities from 1-20m

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	7916	1979	880	495	317	220	162	124	98	79	65	55	47	40	35	31	27	24	22	20
FC	735.4	183.9	81.7	46	29.4	20.4	15	11.5	9.1	7.4	6.1	5.1	4.4	3.8	3.3	2.9	2.5	2.3	2	1.8

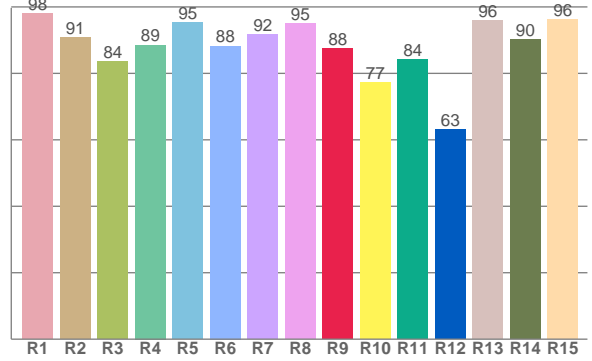
Color Details



TM30: 89.0



CRI: 91.4 (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
98.0	90.9	83.7	88.6	95.4	88.3	91.7	94.9	87.5	77.2	84.1	63.1	95.9	90.2	96.3

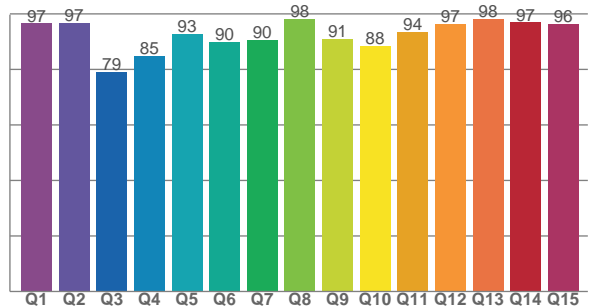
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.2	96.7	90.4	90.2	86.4	89.5	92.8	93.3	92.3	85.4	76.9	87.7	90.4	87.8	82.9	92.8

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.5	96.7	79.0	84.7	92.8	90.0	90.5	98.1	91.1	88.4	93.6	96.5	98.2	96.9	96.4

CQS: 90.9



Color Parameters

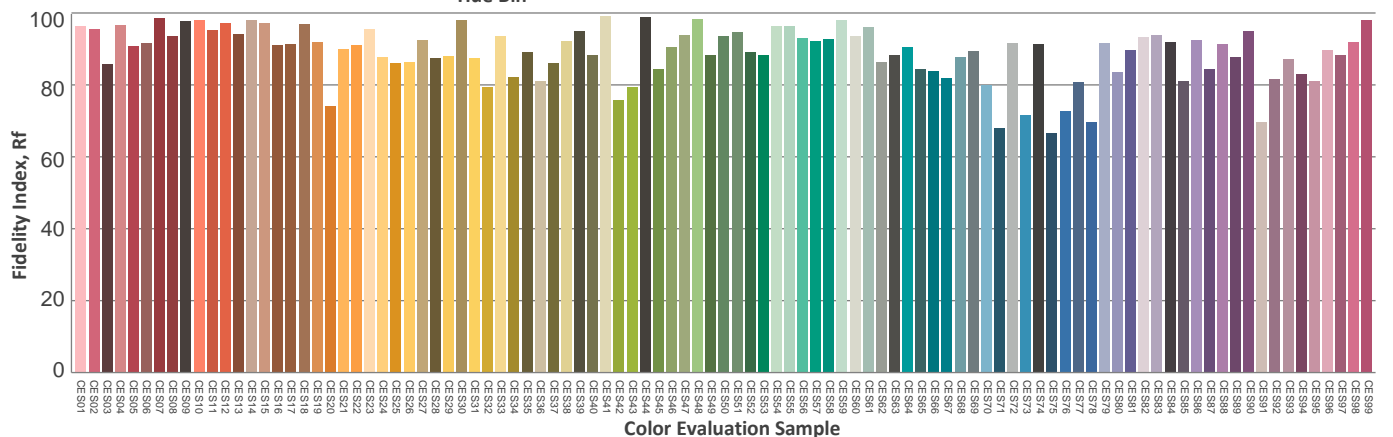
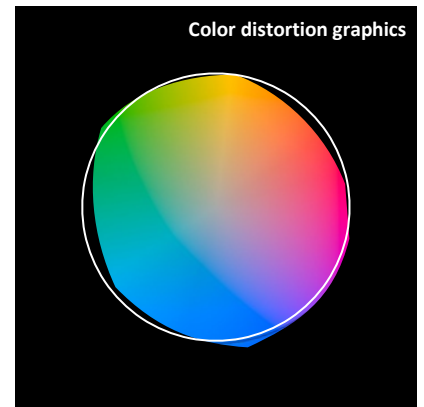
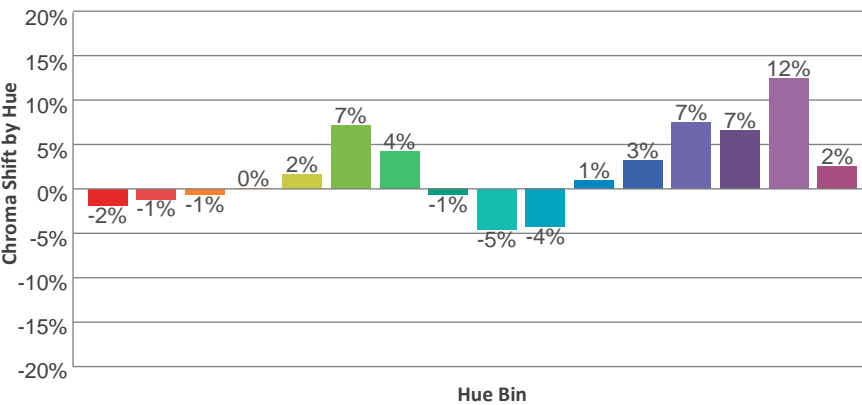
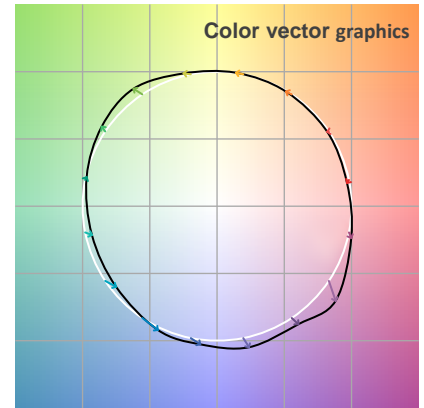
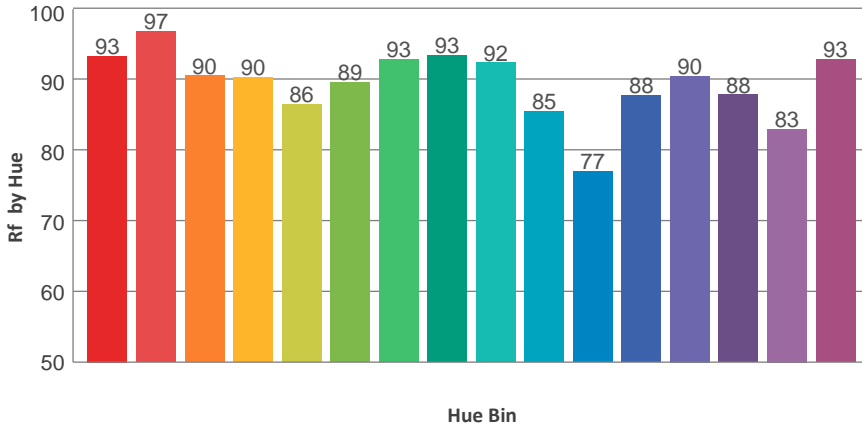
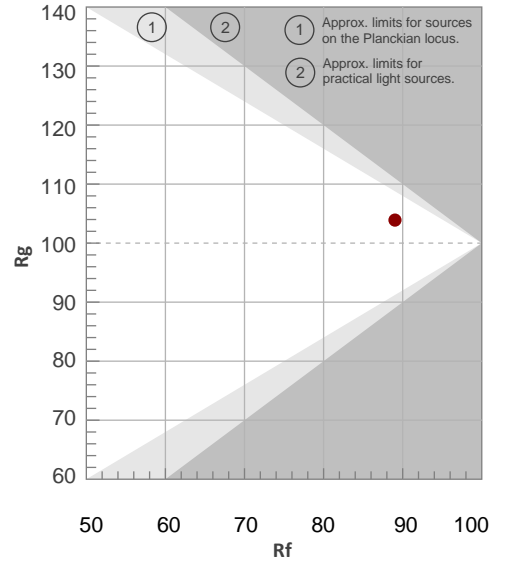
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5739 K	91.4	87.5	89.0	103.9	90.9	0.327	0.344	0.202	0.319	0.0004

TM30 Details

Rf 89.0
Fidelity Index Rf

Rg 103.9
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	-2%	-2%
2	97	-1%	0%
3	90	-1%	5%
4	90	0%	6%
5	86	2%	5%
6	89	7%	3%
7	93	4%	-2%
8	93	-1%	-2%
9	92	-5%	3%
10	85	-4%	8%
11	77	1%	14%
12	88	3%	8%
13	90	7%	3%
14	88	7%	2%
15	83	12%	-9%
16	93	2%	-4%



Total Lumen Output: 20454 lm

Color Temperature: 5981 K

CRI: 91.5

TLCI: 89

TM30: 89.0

CQS: 91.0

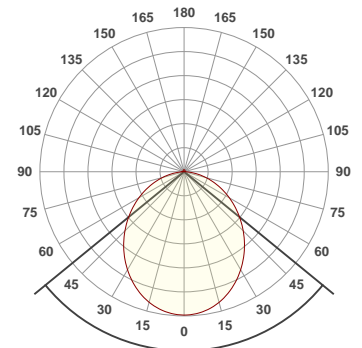
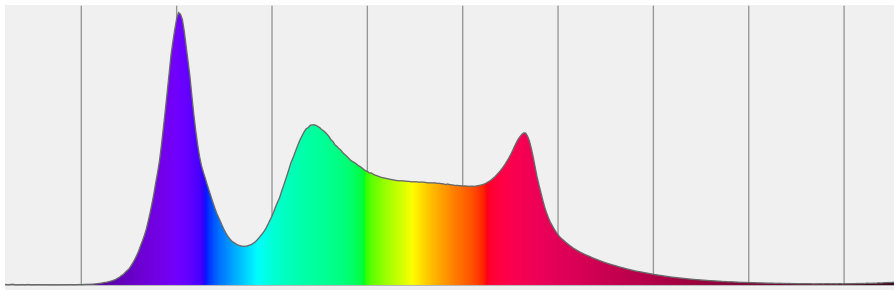
Measurement Date: 7/1/2020

Voltage: 111 V, Current: 2.35 A

Power: 258.9 W

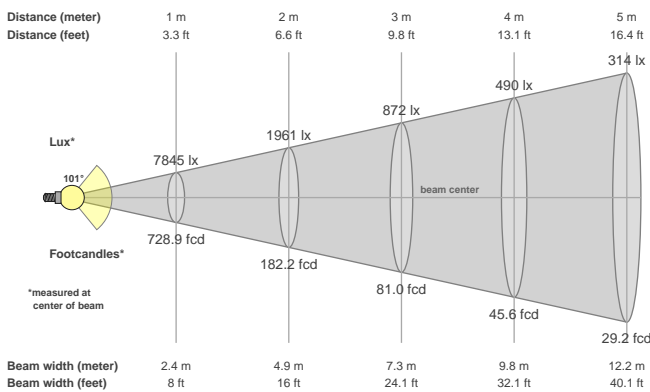
Efficacy: 79 Lumen/Watt

Spectral distribution
Dominant Wavelength 576



101.4°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.4°	159.3°	174.1°

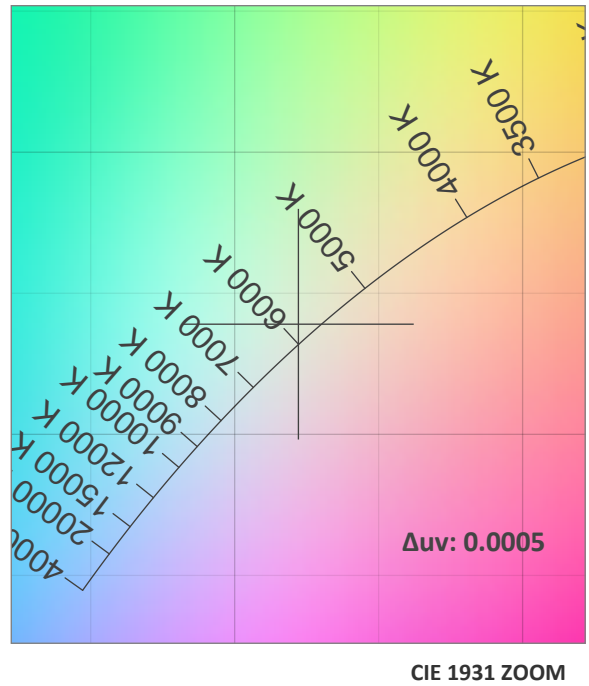
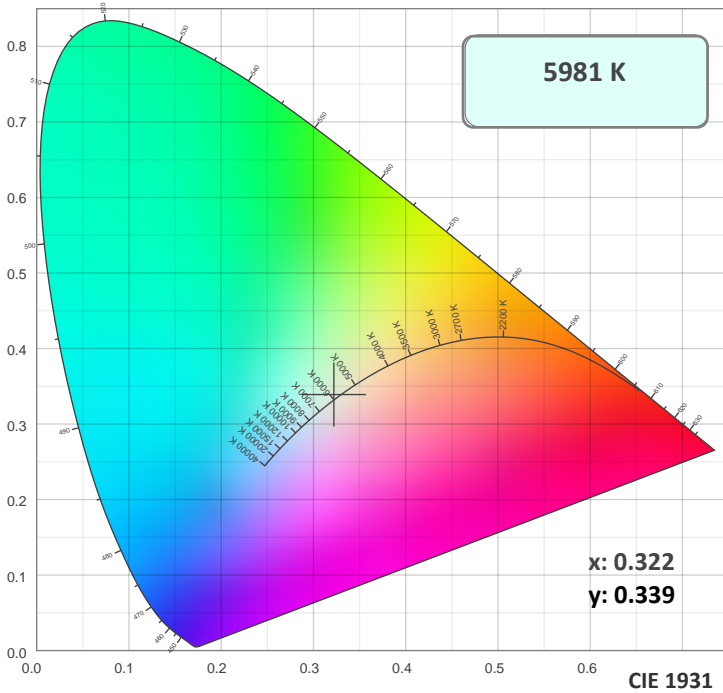
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7852 cd	78.5%	55.0%

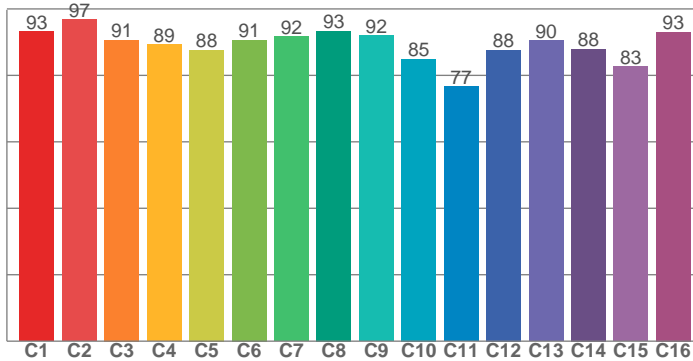
Beam Intensities from 1-20m

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	7845	1961	872	490	314	218	160	123	97	78	65	54	46	40	35	31	27	24	22	20
FC	728.9	182.2	81	45.6	29.2	20.2	14.9	11.4	9	7.3	6	5.1	4.3	3.7	3.2	2.8	2.5	2.2	2	1.8

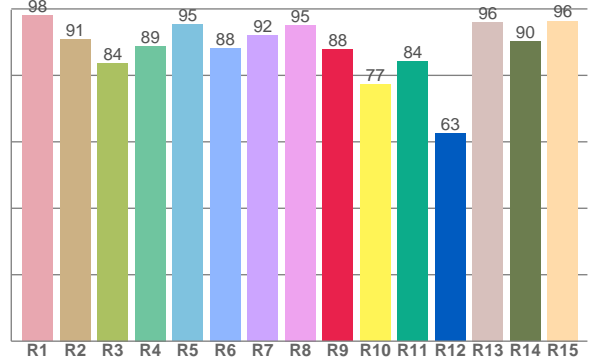
Color Details



TM30: 89.0



CRI: 91.5 (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
98.0	90.9	83.7	88.8	95.4	88.2	92.0	95.1	87.7	77.3	84.1	62.5	96.0	90.2	96.4

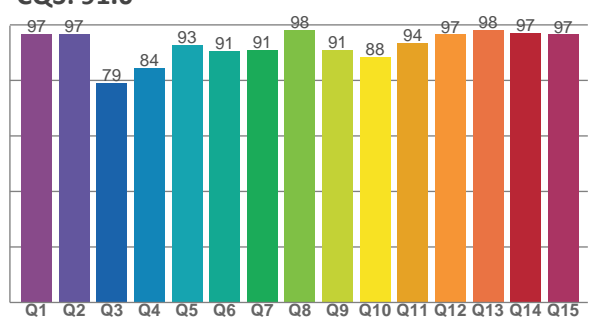
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.3	96.7	90.7	89.3	87.6	90.7	91.8	93.4	92.1	85.0	76.6	87.7	90.5	87.9	82.7	93.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.8	96.7	79.1	84.4	92.8	90.5	90.9	98.1	91.1	88.4	93.6	96.6	98.2	97.0	96.5

CQS: 91.0



Color Parameters

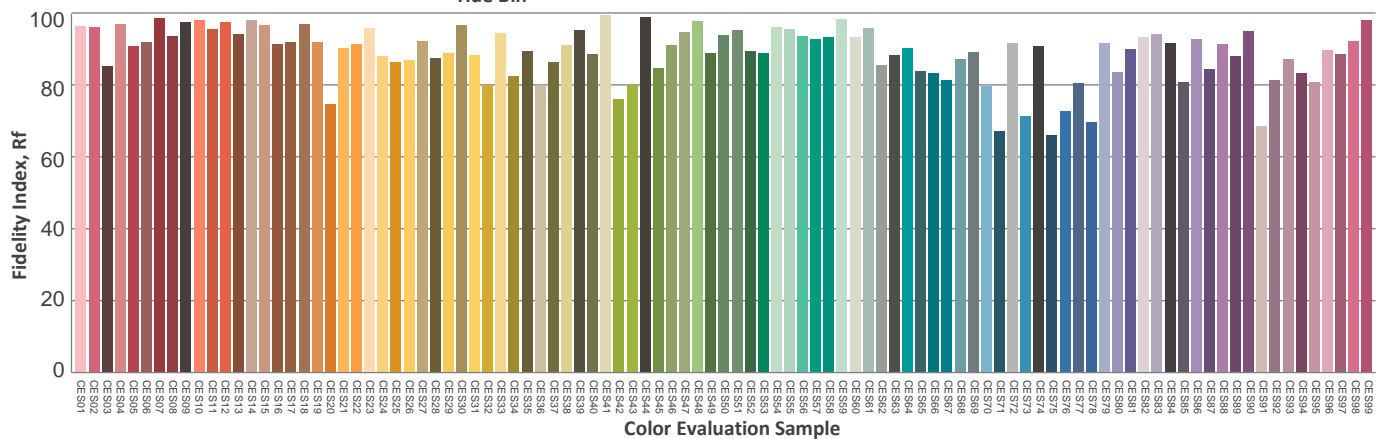
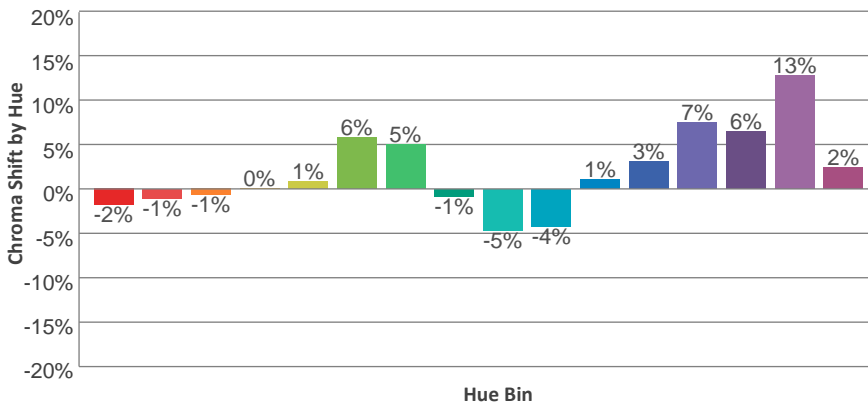
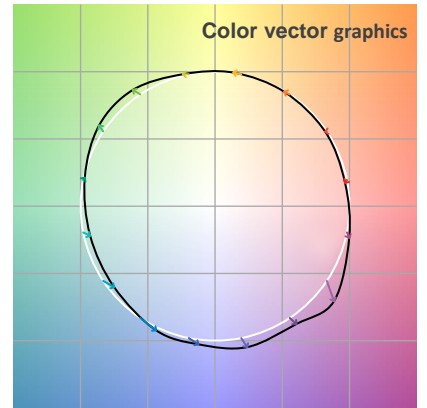
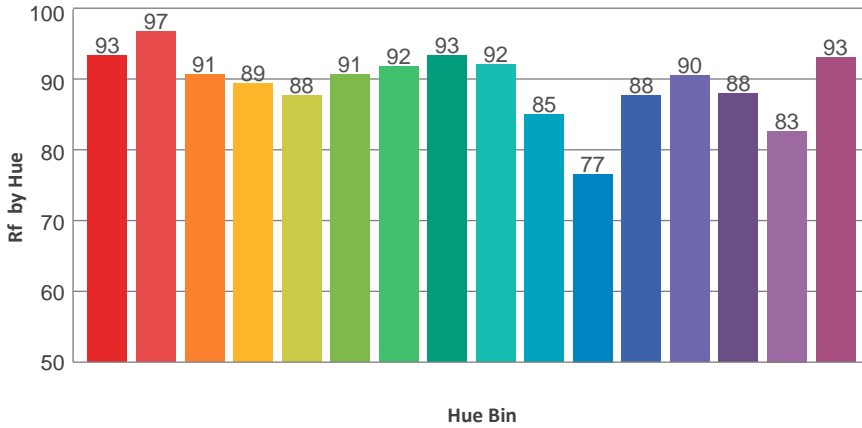
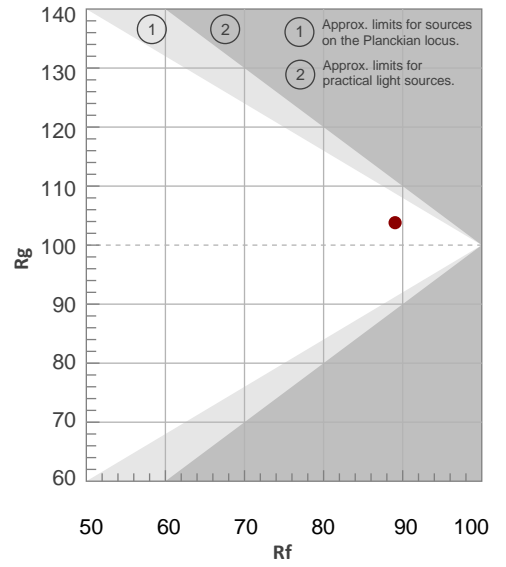
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5981 K	91.5	87.7	89.0	103.8	91.0	0.322	0.339	0.201	0.317	0.0005

TM30 Details

Rf 89.0
Fidelity Index Rf

Rg 103.8
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	-2%	-2%
2	97	-1%	0%
3	91	-1%	4%
4	89	0%	6%
5	88	1%	4%
6	91	6%	3%
7	92	5%	-2%
8	93	-1%	-2%
9	92	-5%	3%
10	85	-4%	8%
11	77	1%	15%
12	88	3%	8%
13	90	7%	3%
14	88	6%	2%
15	83	13%	-10%
16	93	2%	-4%



Total Lumen Output: 20427 lm

Color Temperature: 6558 K

CRI: 92.5

TLCI: 91

TM30: 89.5

CQS: 91.4

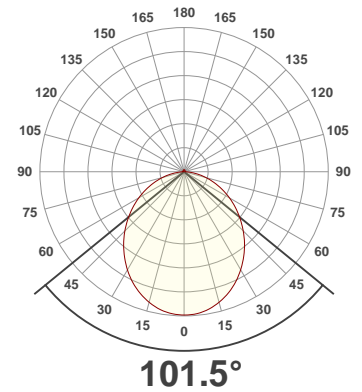
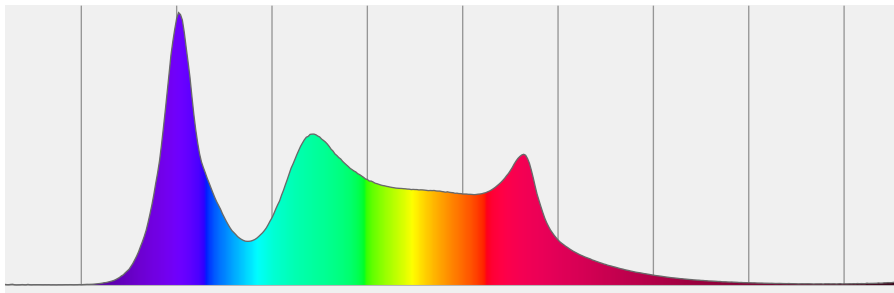
Measurement Date: 7/2/2020

Voltage: 112 V, Current: 2.35 A

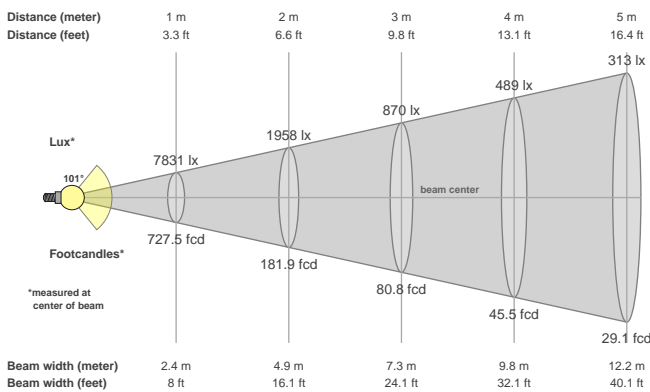
Power: 260.5 W

Efficacy: 78 Lumen/Watt

Spectral distribution
Dominant Wavelength 492



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.5°	159.3°	174.4°

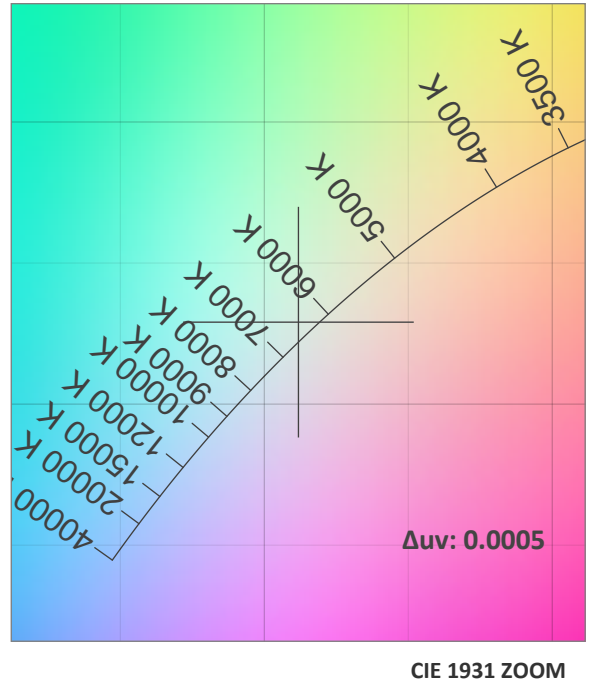
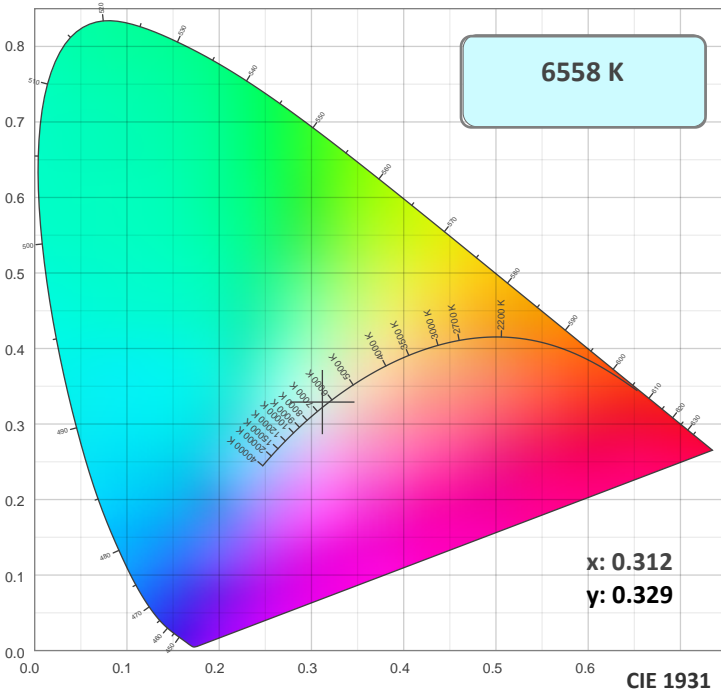
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7834 cd	78.4%	54.9%

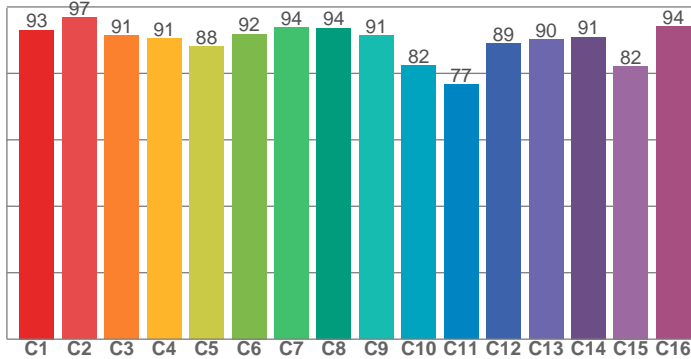
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	7831	1958	870	489	313	218	160	122	97	78	65	54	46	40	35	31	27	24	22	20
FC	727.5	181.9	80.8	45.5	29.1	20.2	14.8	11.4	9	7.3	6	5.1	4.3	3.7	3.2	2.8	2.5	2.2	2	1.8

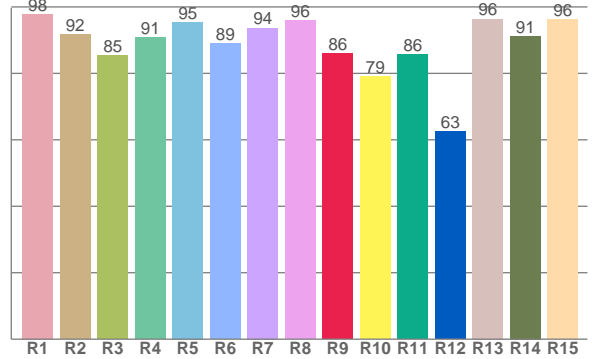
Color Details



TM30: 89.5



CRI: 92.5 (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
97.9	91.8	85.3	90.8	95.5	88.9	93.7	95.9	85.9	79.0	85.7	62.5	96.4	91.2	96.2

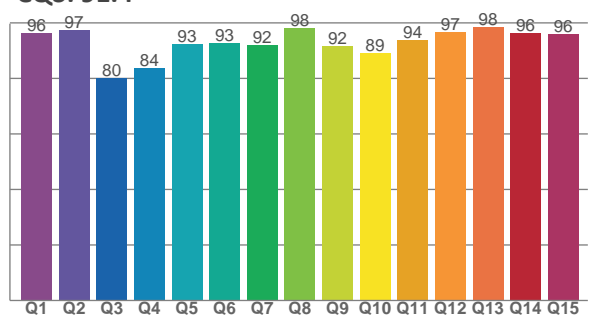
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.0	96.8	91.5	90.5	88.1	91.8	93.7	93.7	91.5	82.5	76.6	89.0	90.3	90.9	82.2	94.2

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.5	97.4	80.2	83.8	92.5	92.7	92.1	98.2	91.8	89.3	93.8	96.7	98.5	96.3	96.2

CQS: 91.4



Color Parameters

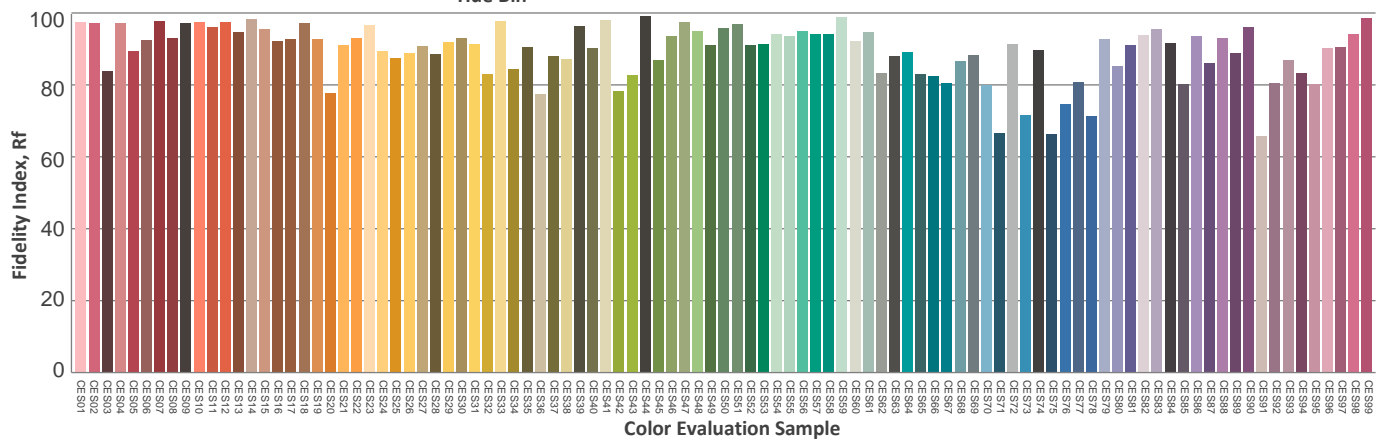
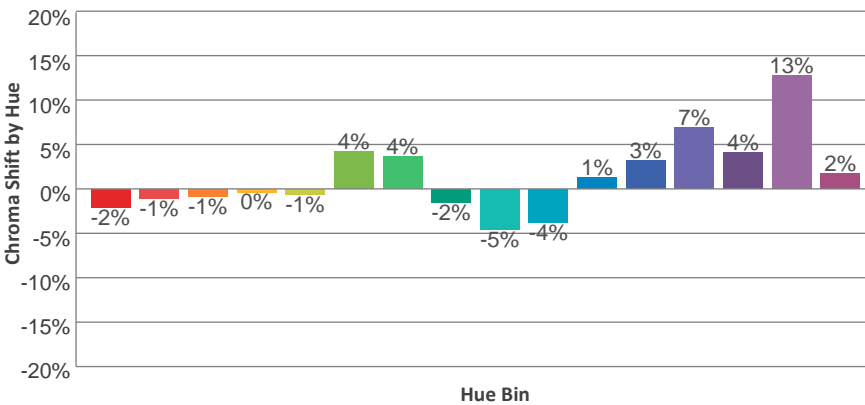
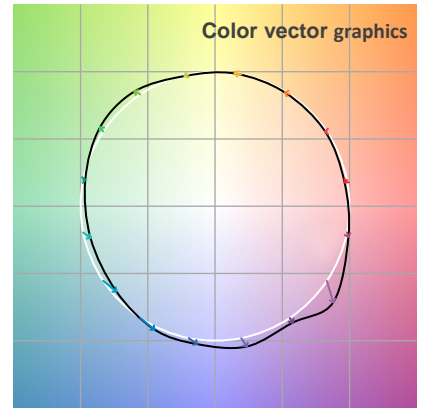
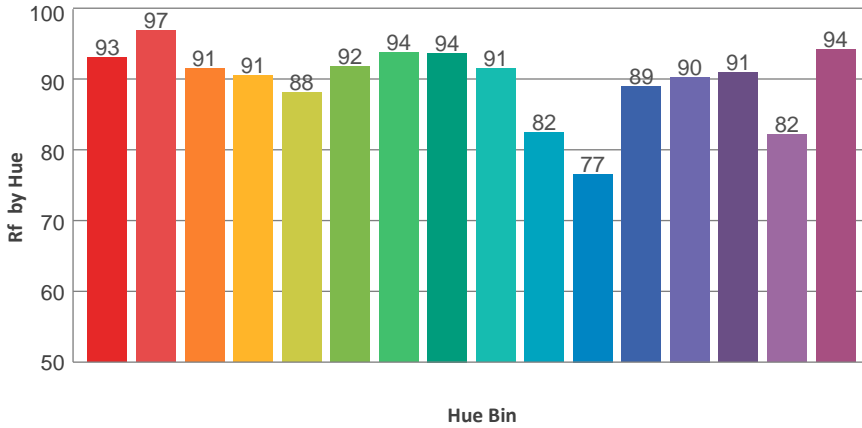
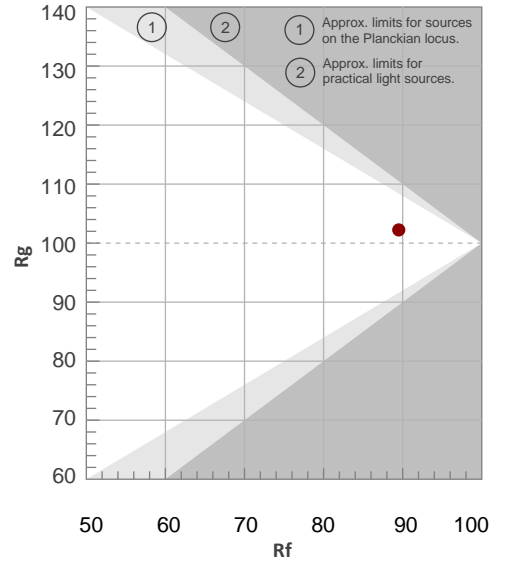
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6558 K	92.5	85.9	89.5	102.2	91.4	0.312	0.329	0.197	0.312	0.0005

TM30 Details

Rf 89.5
Fidelity Index Rf

Rg 102.2
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	-2%	-1%
2	97	-1%	1%
3	91	-1%	4%
4	91	0%	5%
5	88	-1%	3%
6	92	4%	2%
7	94	4%	-1%
8	94	-2%	0%
9	91	-5%	5%
10	82	-4%	12%
11	77	1%	13%
12	89	3%	7%
13	90	7%	3%
14	91	4%	0%
15	82	13%	-11%
16	94	2%	-3%



Total Lumen Output: 19886 lm

Color Temperature: 8009 K

CRI: 93.9

TLCI: 93

TM30: 89.7

CQS: 91.7

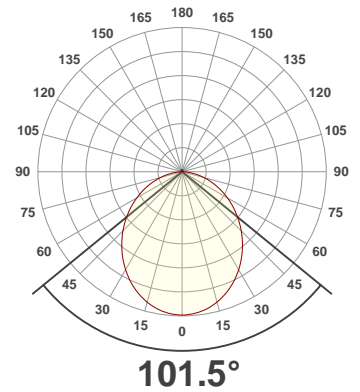
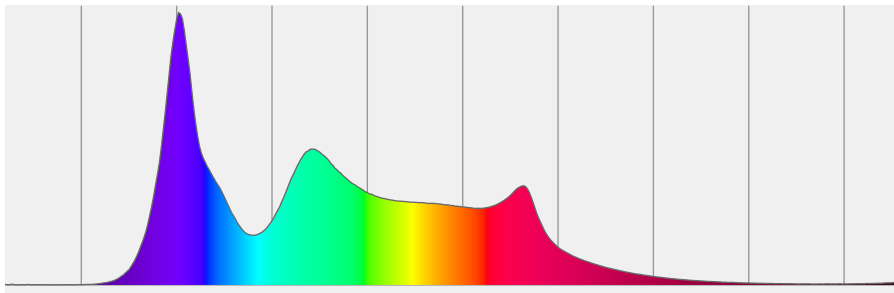
Measurement Date: 7/2/2020

Voltage: 113 V, Current: 2.33 A

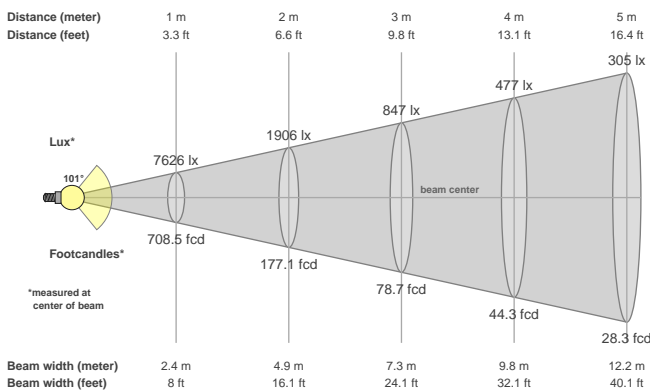
Power: 260.9 W

Efficacy: 76 Lumen/Watt

Spectral distribution
Dominant Wavelength 478



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.5°	159.3°	174.4°

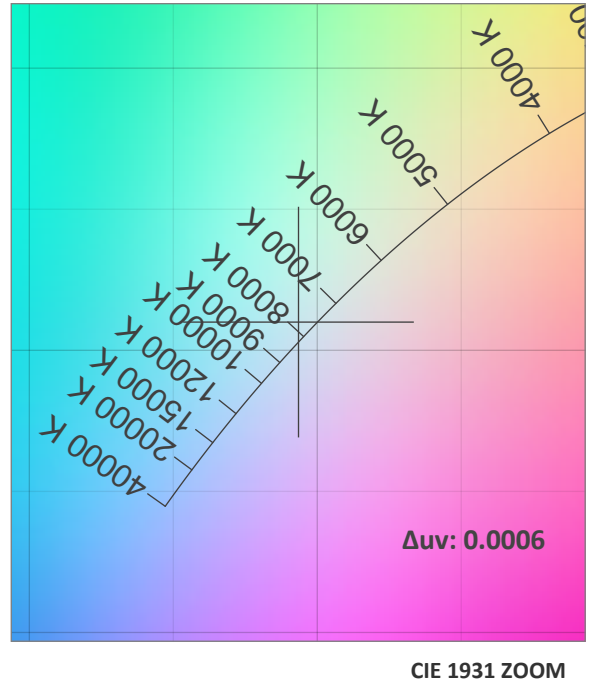
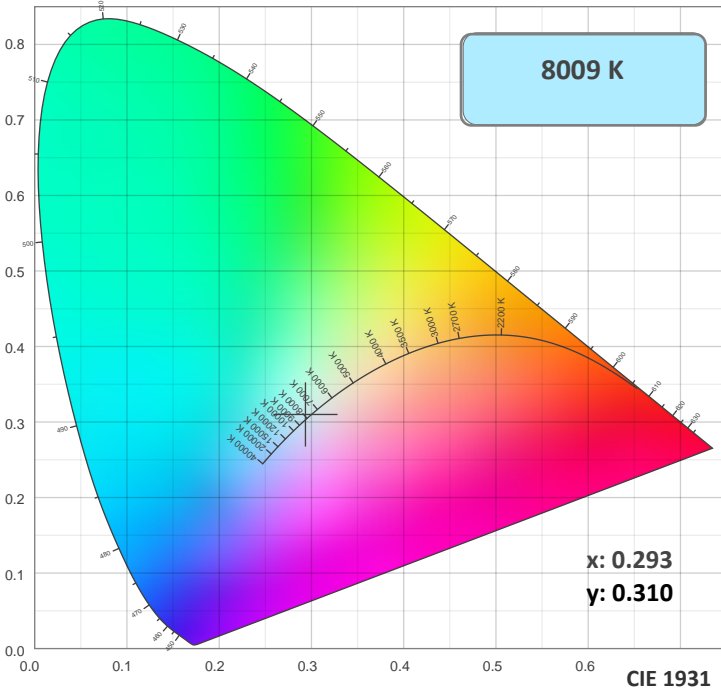
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7630 cd	78.4%	54.9%

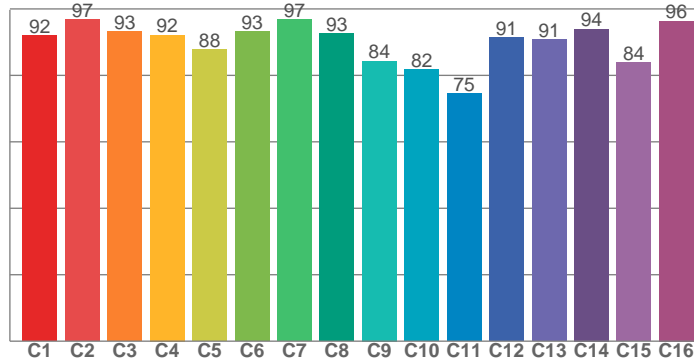
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	7626	1906	847	477	305	212	156	119	94	76	63	53	45	39	34	30	26	24	21	19
FC	708.5	177.1	78.7	44.3	28.3	19.7	14.5	11.1	8.7	7.1	5.9	4.9	4.2	3.6	3.1	2.8	2.5	2.2	2	1.8

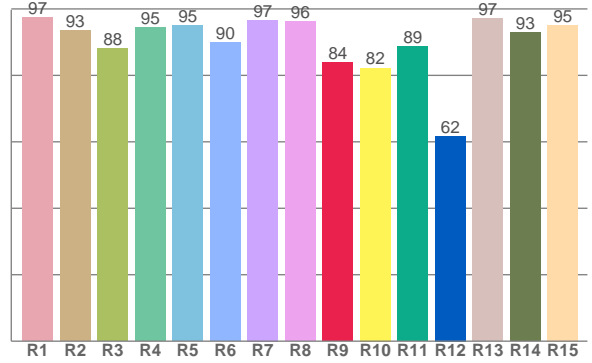
Color Details



TM30: 89.7



CRI: 93.9 (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
97.4	93.4	88.1	94.5	95.0	89.9	96.6	96.1	83.8	82.3	88.6	61.7	97.1	92.9	95.2

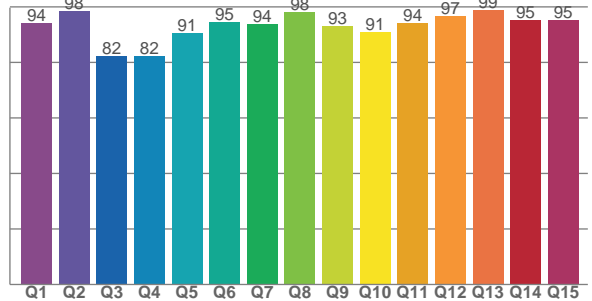
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91.9	96.9	93.1	92.1	87.8	93.2	96.9	92.6	84.4	81.8	74.6	91.4	90.8	93.9	83.9	96.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
94.1	98.5	82.3	82.3	90.8	94.5	93.8	98.3	93.1	90.9	94.3	96.9	98.8	95.4	95.1

CQS: 91.7



Color Parameters

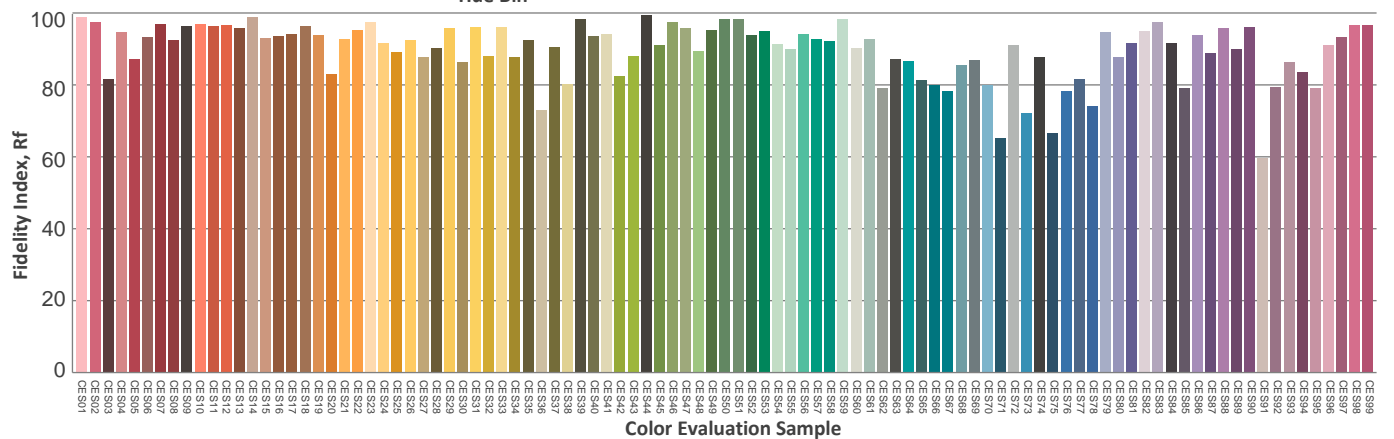
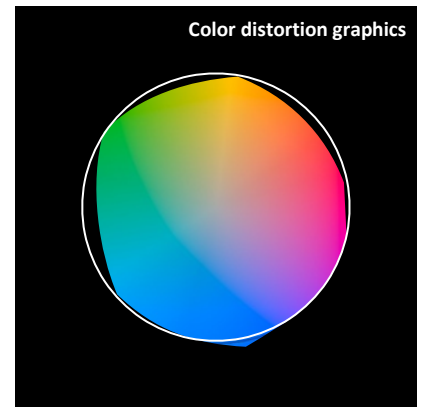
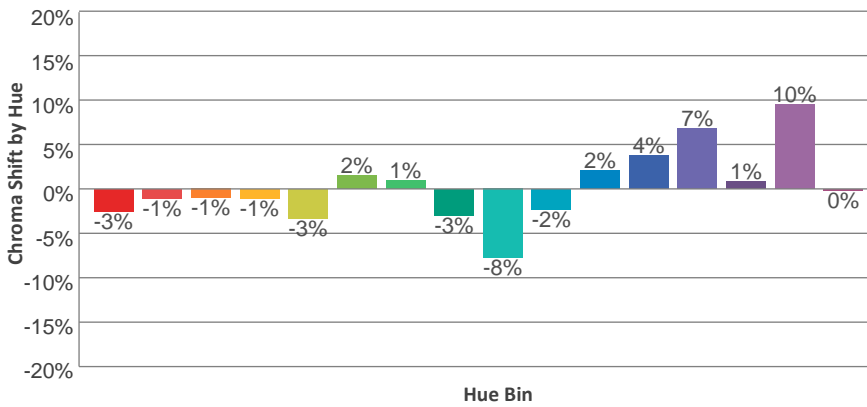
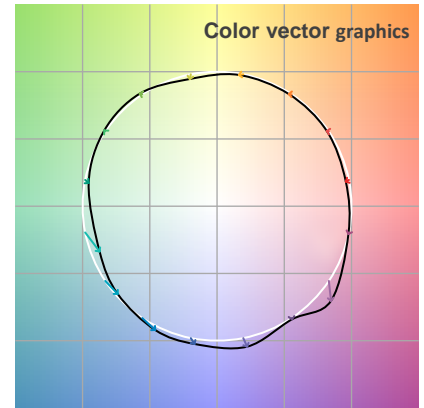
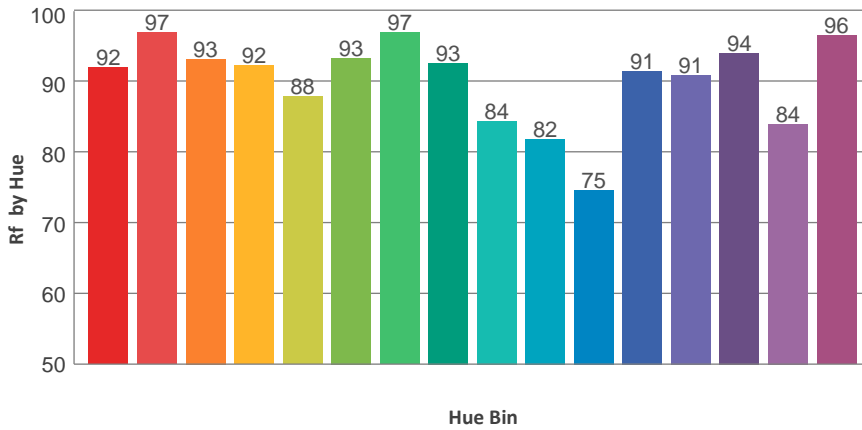
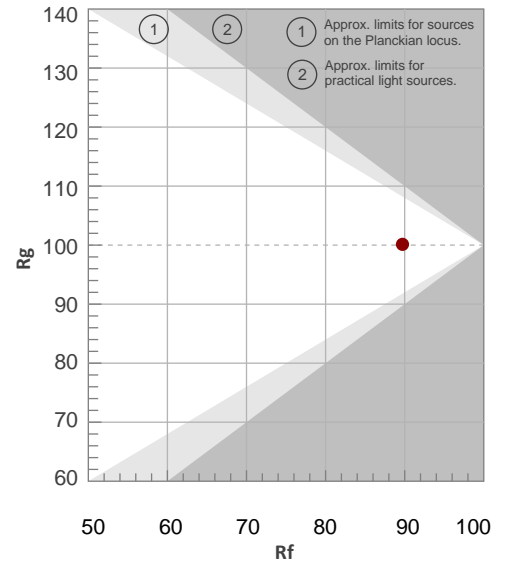
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
8009 K	93.9	83.8	89.7	100.1	91.7	0.293	0.310	0.191	0.303	0.0006

TM30 Details

Rf 89.7
Fidelity Index Rf

Rg 100.1
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	92	-3%	-1%
2	97	-1%	1%
3	93	-1%	2%
4	92	-1%	3%
5	88	-3%	1%
6	93	2%	1%
7	97	1%	0%
8	93	-3%	2%
9	84	-8%	16%
10	82	-2%	13%
11	75	2%	13%
12	91	4%	4%
13	91	7%	2%
14	94	1%	0%
15	84	10%	-11%
16	96	0%	-1%



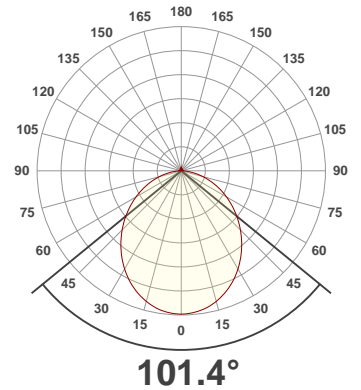
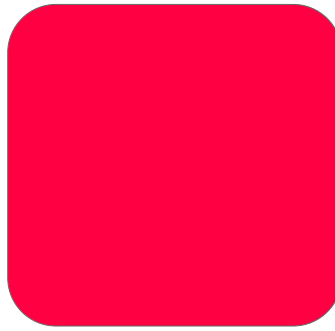
Total Lumen Output: 3115 lm

Voltage: 115 V, Current: 0.756 A

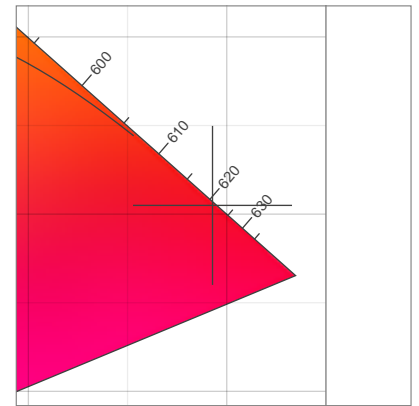
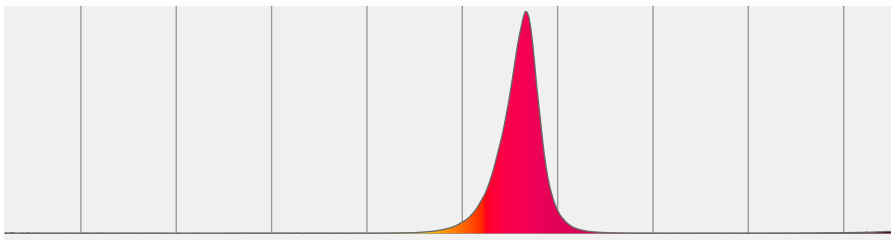
Power: 83.3 W

Efficacy: 37 Lumen/Watt

Measurement Date: 7/1/2020

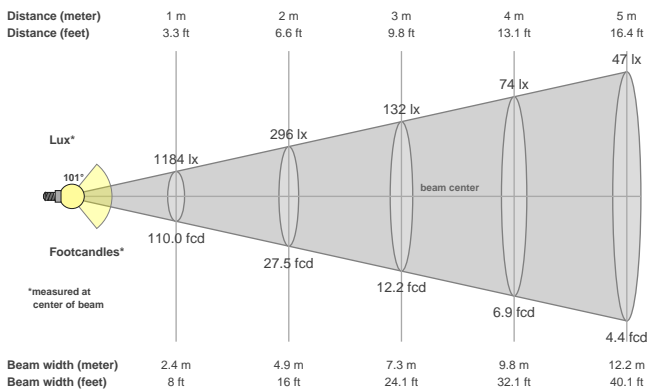


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
622	0.693	0.305	0.526	0.347

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101.4°	159.4°	175.2°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
1185 cd	77.8%	54.5%

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	1184	296	132	74	47	33	24	19	15	12	10	8	7	6	5	5	4	4	3	3
FC	110	27.5	12.2	6.9	4.4	3.1	2.2	1.7	1.4	1.1	0.9	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3

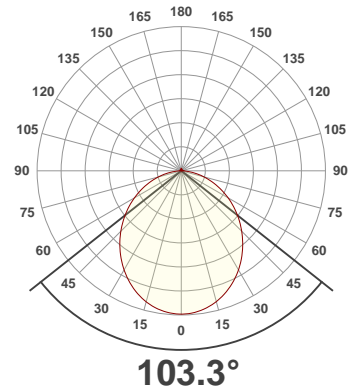
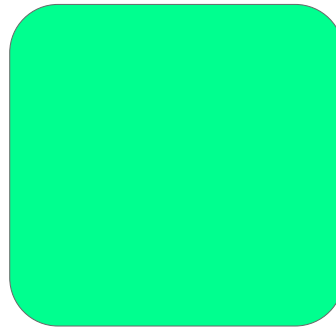
Total Lumen Output: 6211 lm

Voltage: 112 V, Current: 0.962 A

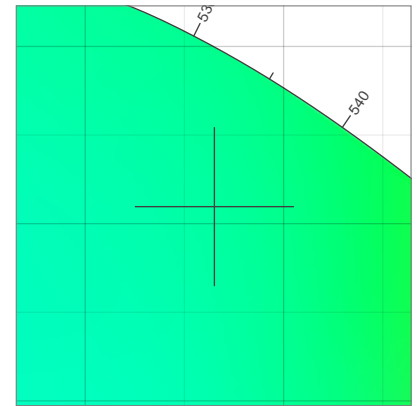
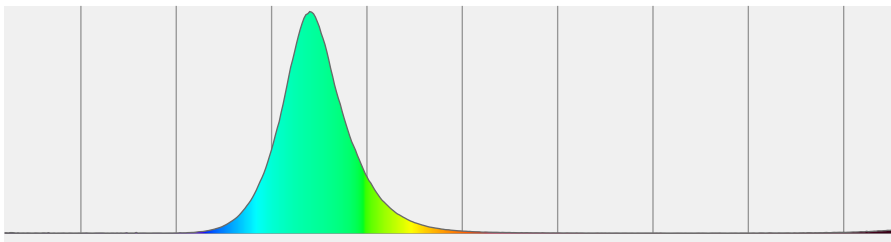
Power: 105.2 W

Efficacy: 59 Lumen/Watt

Measurement Date: 7/15/2020

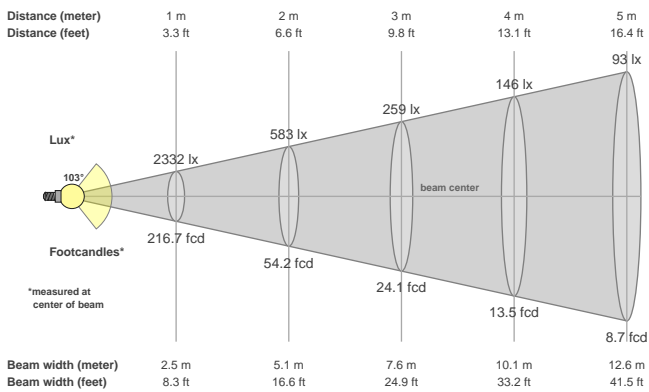


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
526	0.165	0.710	0.059	0.381

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
103.3°	160.2°	174.8°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
2334 cd	78.0%	54.4%

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	2332	583	259	146	93	65	48	36	29	23	19	16	14	12	10	9	8	7	6	6
FC	216.7	54.2	24.1	13.5	8.7	6	4.4	3.4	2.7	2.2	1.8	1.5	1.3	1.1	1	0.8	0.7	0.7	0.6	0.5

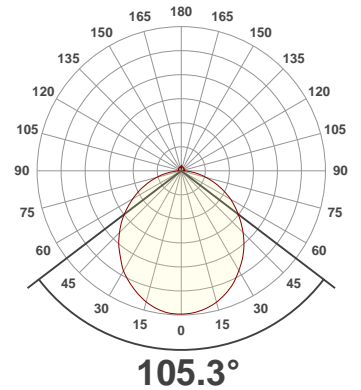
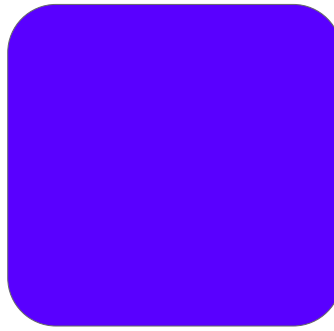
Total Lumen Output: 1684 lm

Voltage: 114 V, Current: 0.826 A

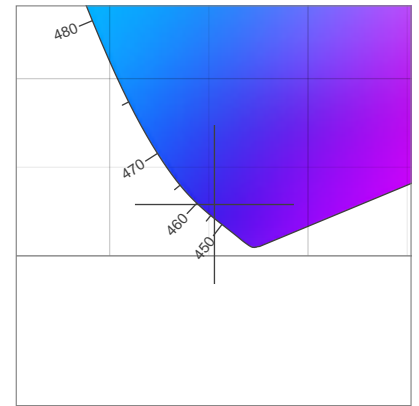
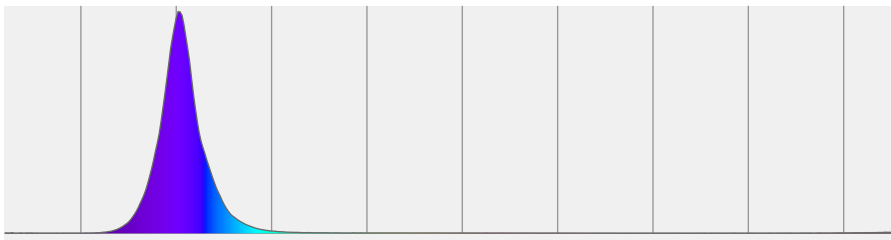
Power: 92.6 W

Efficacy: 18 Lumen/Watt

Measurement Date: 7/1/2020

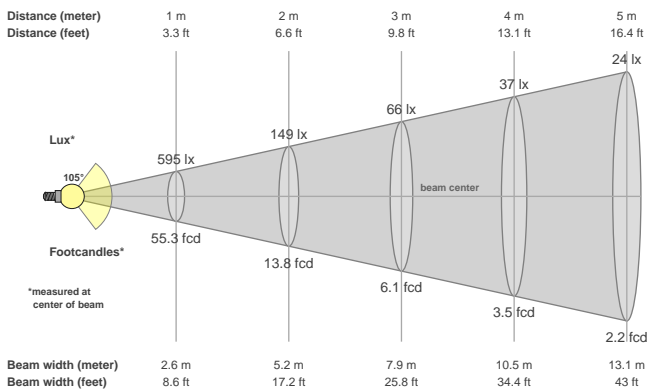


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
456	0.153	0.029	0.201	0.057

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
105.3°	162.7°	360°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
595 cd	74.5%	51.6%

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	595	149	66	37	24	17	12	9	7	6	5	4	4	3	3	2	2	2	2	1
FC	55.3	13.8	6.1	3.5	2.2	1.5	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1

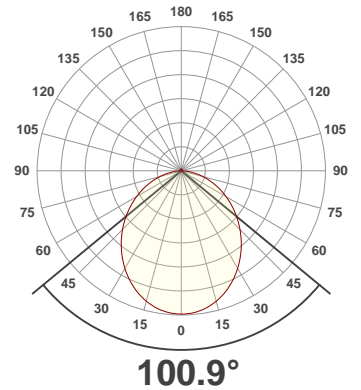
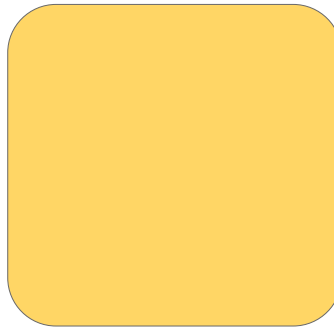
Total Lumen Output: 8925 lm

Voltage: 114 V, Current: 0.869 A

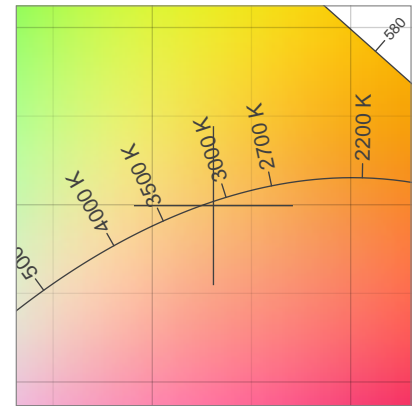
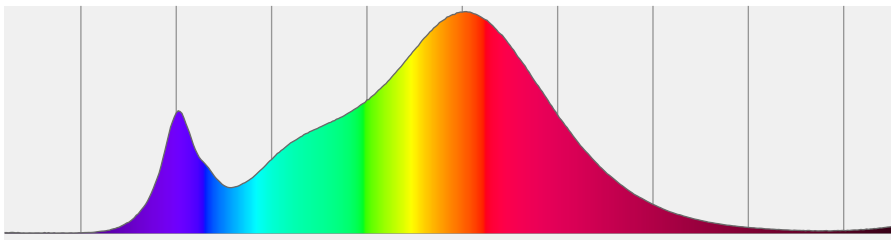
Power: 97.3 W

Efficacy: 92 Lumen/Watt

Measurement Date: 7/1/2020

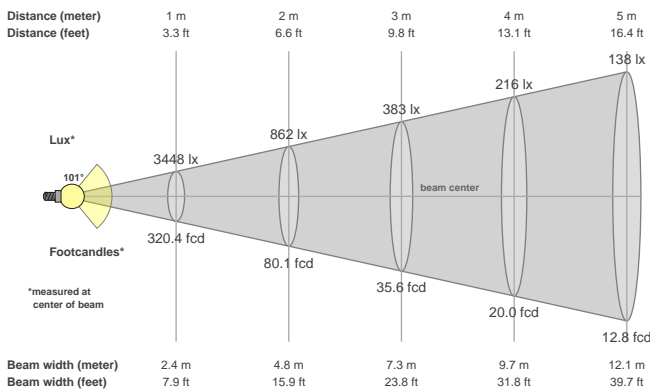


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
584	0.431	0.399	0.249	0.346

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
100.9°	159.1°	174.2°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
3449 cd	78.6%	55.1%

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	3448	862	383	216	138	96	70	54	43	34	28	24	20	18	15	13	12	11	10	9
FC	320.4	80.1	35.6	20	12.8	8.9	6.5	5	4	3.2	2.6	2.2	1.9	1.6	1.4	1.3	1.1	1	0.9	0.8

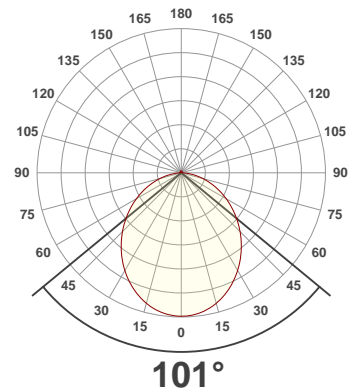
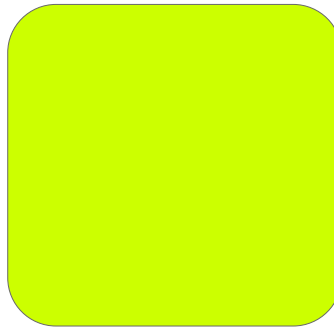
Total Lumen Output: 12848 lm

Voltage: 114 V, Current: 0.894 A

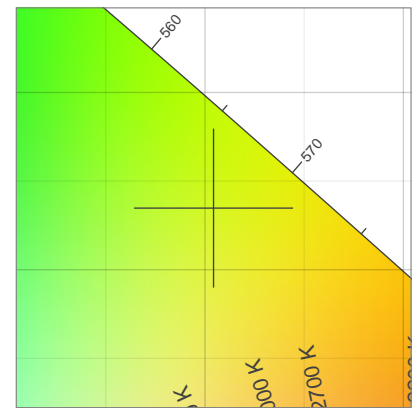
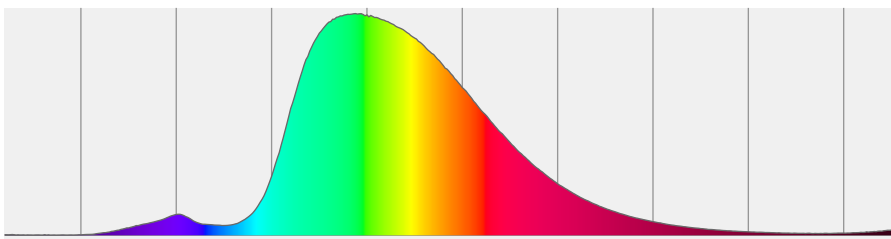
Power: 99.7 W

Efficacy: 129 Lumen/Watt

Measurement Date: 7/1/2020

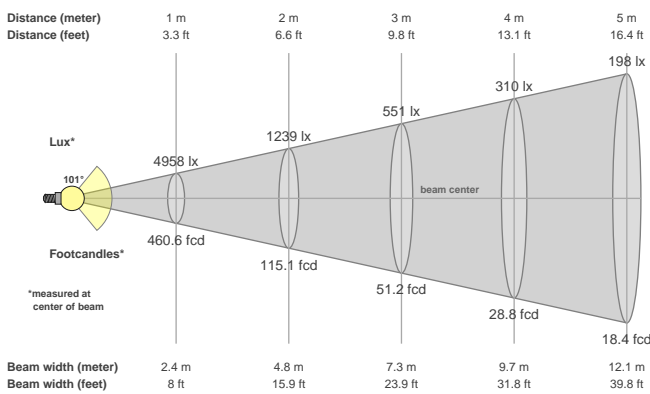


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
567	0.404	0.535	0.188	0.373

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
101°	159.2°	173.3°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
4961 cd	78.6%	55.2%

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	4958	1239	551	310	198	138	101	77	61	50	41	34	29	25	22	19	17	15	14	12
FC	460.6	115.1	51.2	28.8	18.4	12.8	9.4	7.2	5.7	4.6	3.8	3.2	2.7	2.3	2	1.8	1.6	1.4	1.3	1.2

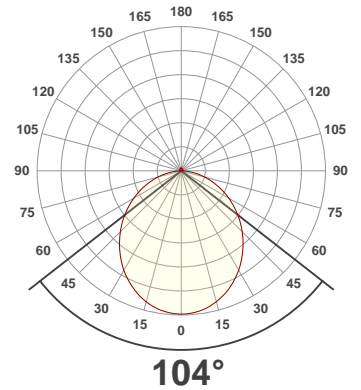
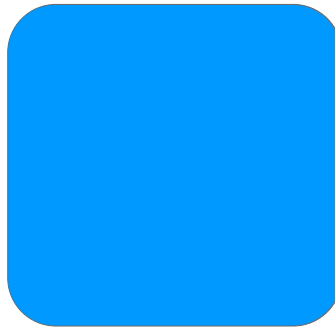
Total Lumen Output: 3092 lm

Voltage: 114 V, Current: 0.845 A

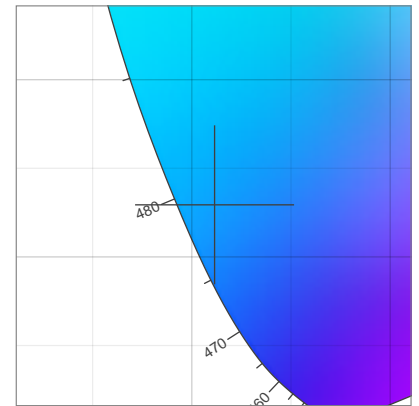
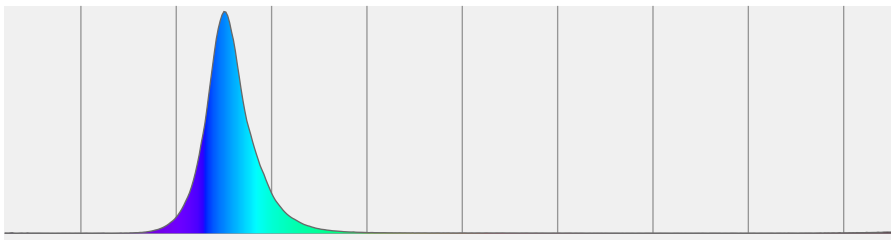
Power: 94.5 W

Efficacy: 33 Lumen/Watt

Measurement Date: 7/1/2020

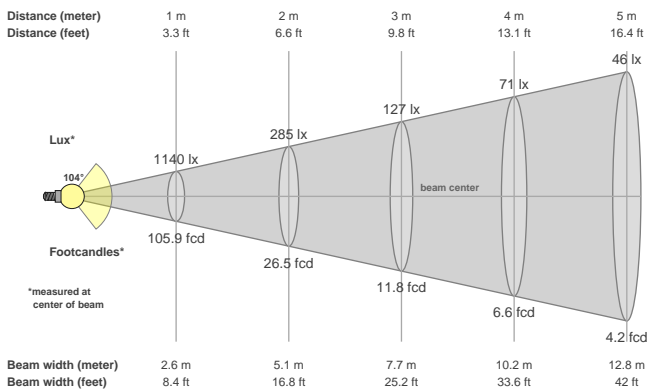


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
478	0.111	0.129	0.103	0.179

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
104°	160.7°	175.9°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
1141 cd	77.0%	53.6%

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	1140	285	127	71	46	32	23	18	14	11	9	8	7	6	5	4	4	4	3	3
FC	105.9	26.5	11.8	6.6	4.2	2.9	2.2	1.7	1.3	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3

Total Lumen Output: 23390 lm

Color Temperature: 2705 K

CRI: 95.1

TLCI: 84

TM30: 92.0

CQS: 91.4

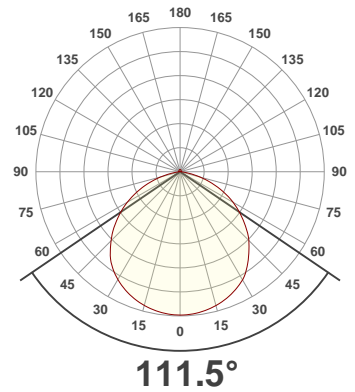
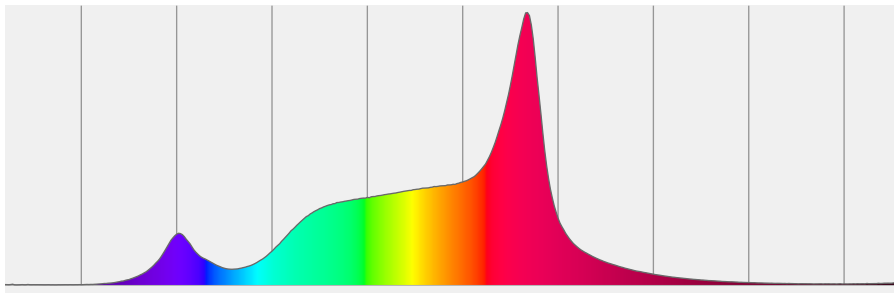
Measurement Date: 7/2/2020

Voltage: 113 V, Current: 2.23 A

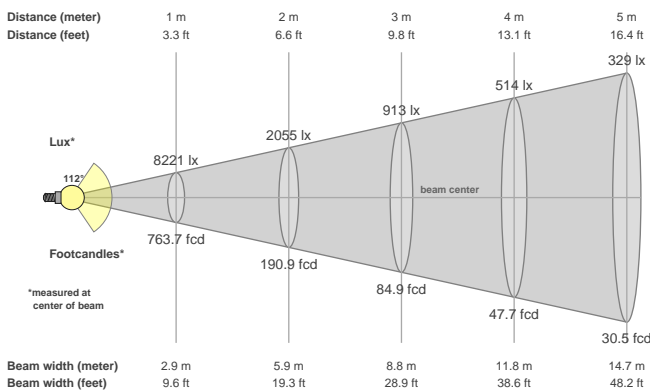
Power: 248.3 W

Efficacy: 94 Lumen/Watt

Spectral distribution
Dominant Wavelength 584



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
111.5°	155.2°	167.2°

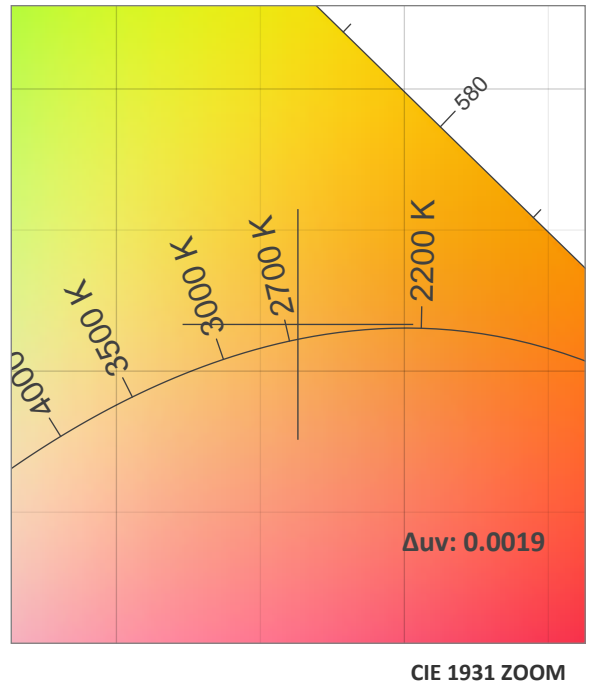
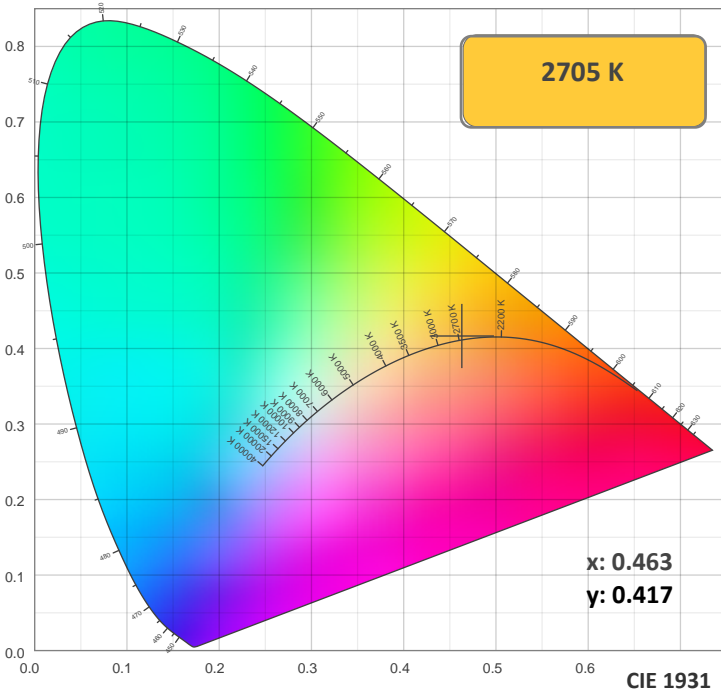
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8225 cd	80.1%	54.9%

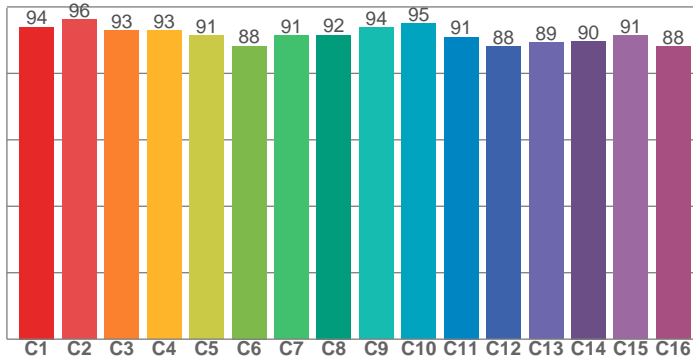
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	8221	2055	913	514	329	228	168	128	101	82	68	57	49	42	37	32	28	25	23	21
FC	763.7	190.9	84.9	47.7	30.5	21.2	15.6	11.9	9.4	7.6	6.3	5.3	4.5	3.9	3.4	3	2.6	2.4	2.1	1.9

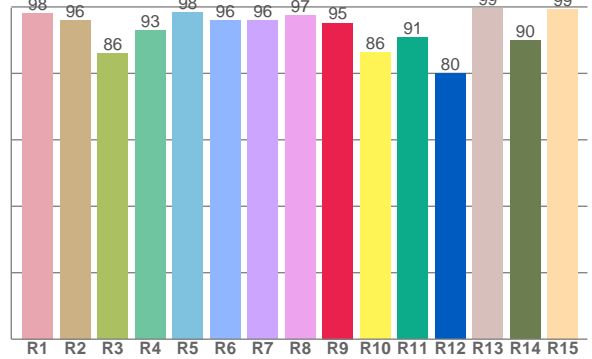
Color Details



TM30: 92.0



CRI: 95.1 (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
98.2	96.1	86.0	93.0	98.5	96.0	95.8	97.3	95.2	86.2	90.8	80.0	99.5	89.8	99.3

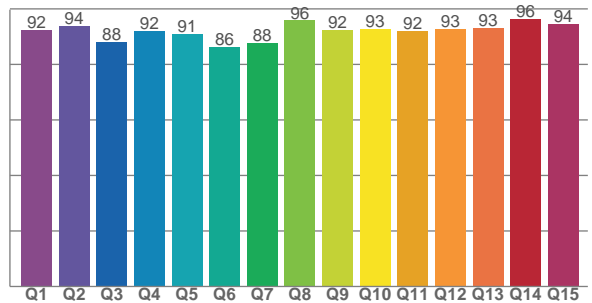
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.0	96.1	92.9	93.0	91.4	88.2	91.4	91.6	93.8	95.0	91.0	88.2	89.4	89.7	91.4	88.2

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
92.3	93.8	88.2	92.1	90.9	86.2	87.8	95.9	92.5	92.9	92.2	92.8	93.1	96.4	94.4

CQS: 91.4



Color Parameters

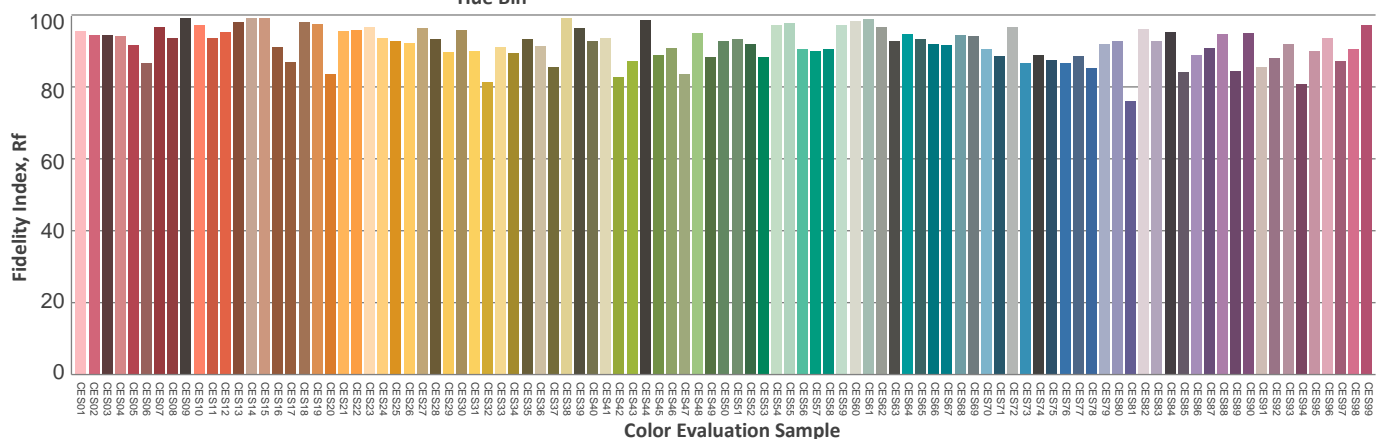
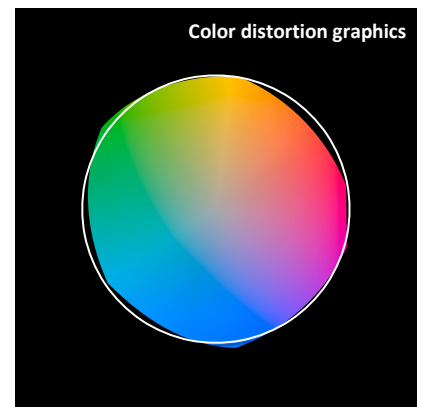
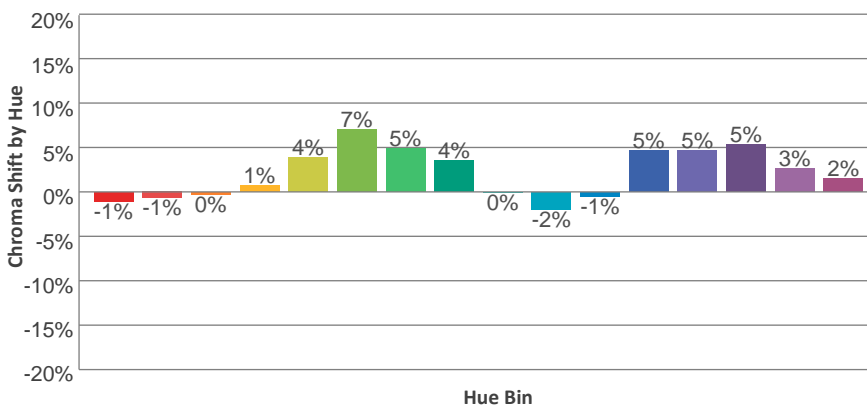
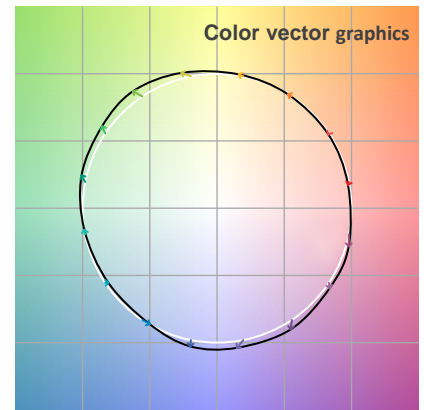
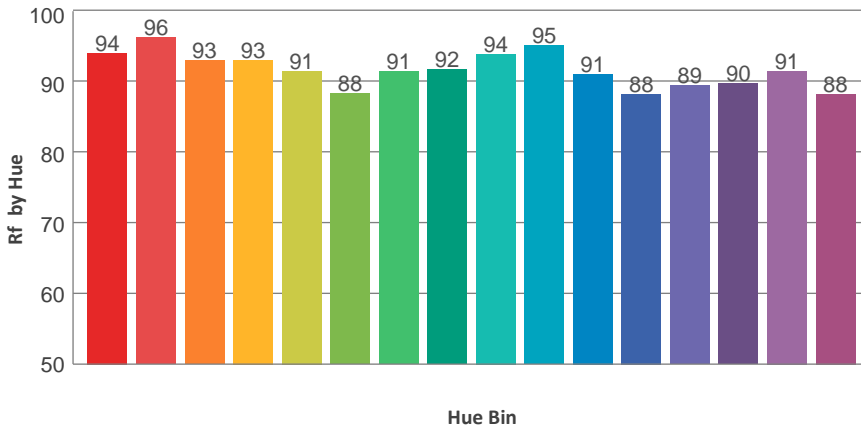
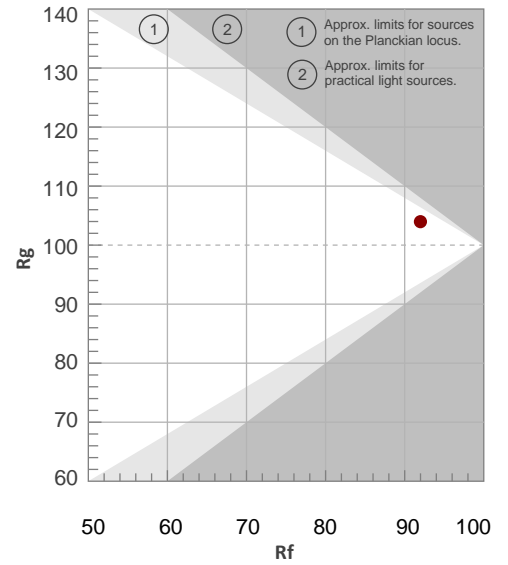
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2705 K	95.1	95.2	92.0	104.0	91.4	0.463	0.417	0.262	0.353	0.0019

TM30 Details

Rf 92.0
Fidelity Index Rf

Rg 104.0
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	-1%	-2%
2	96	-1%	0%
3	93	0%	3%
4	93	1%	4%
5	91	4%	6%
6	88	7%	4%
7	91	5%	-3%
8	92	4%	-4%
9	94	0%	-3%
10	95	-2%	1%
11	91	-1%	6%
12	88	5%	1%
13	89	5%	-6%
14	90	5%	-4%
15	91	3%	-3%
16	88	2%	-9%



Total Lumen Output: 24674 lm

Color Temperature: 3256 K

CRI: 95.9

TLCI: 90

TM30: 92.7

CQS: 93.7

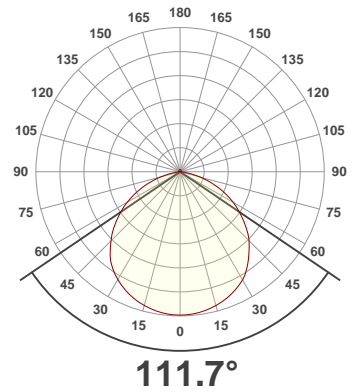
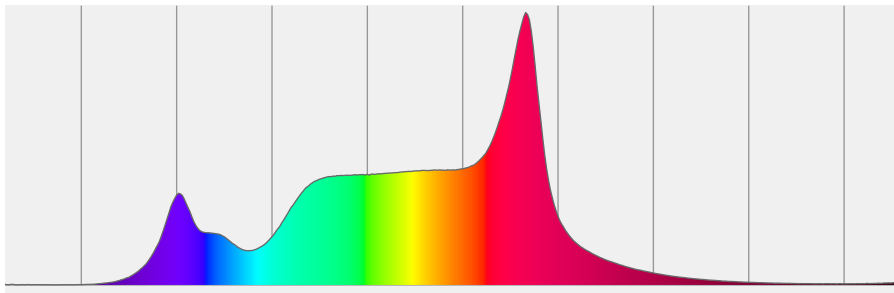
Measurement Date: 7/2/2020

Voltage: 112 V, Current: 2.31 A

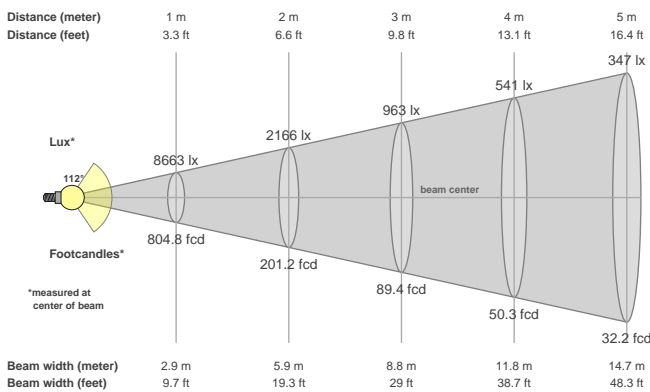
Power: 256.1 W

Efficacy: 96 Lumen/Watt

Spectral distribution
Dominant Wavelength 582



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
111.7°	155.3°	167.2°

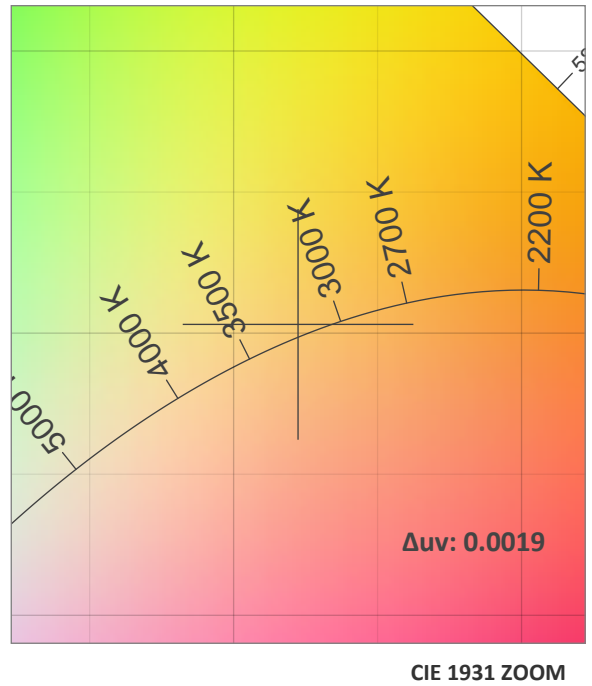
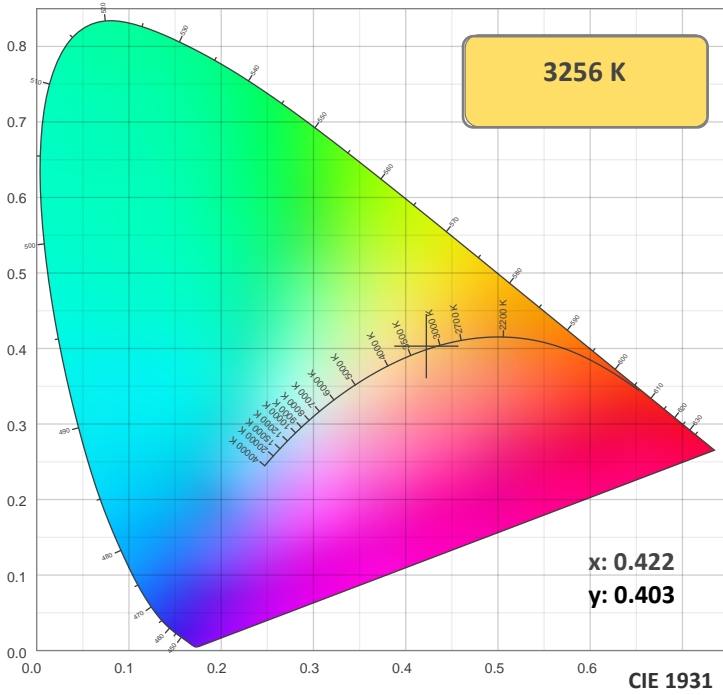
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8667 cd	80.1%	54.9%

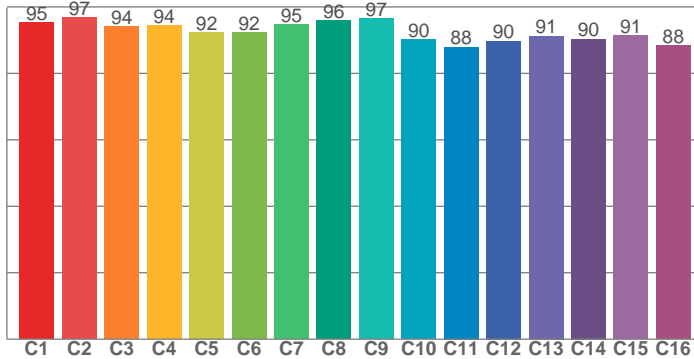
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	8663	2166	963	541	347	241	177	135	107	87	72	60	51	44	39	34	30	27	24	22
FC	804.8	201.2	89.4	50.3	32.2	22.4	16.4	12.6	9.9	8	6.7	5.6	4.8	4.1	3.6	3.1	2.8	2.5	2.2	2

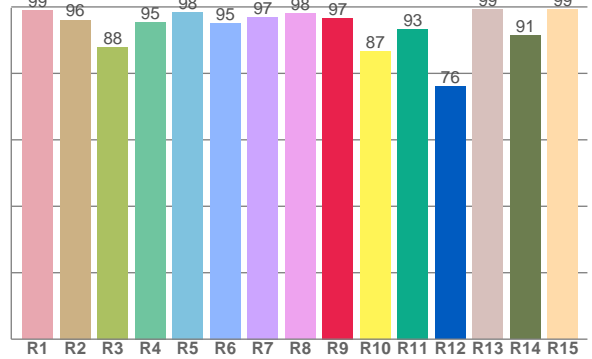
Color Details



TM30: 92.7



CRI: 95.9 (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
98.9	96.1	87.9	95.4	98.5	95.1	97.0	98.0	96.6	86.7	93.3	76.1	99.1	91.3	99.3

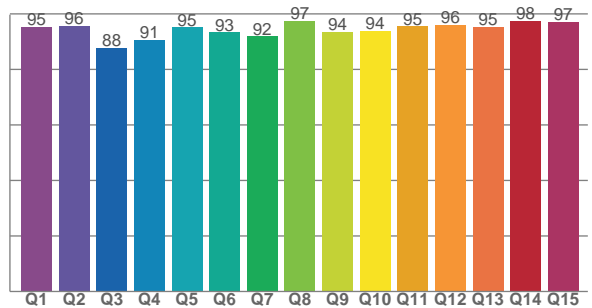
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
95.2	96.9	94.2	94.5	92.2	92.3	94.7	96.0	96.5	90.2	88.0	89.7	91.3	90.4	91.3	88.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
95.3	95.7	87.8	90.8	95.1	93.3	91.9	97.5	93.6	93.9	95.5	95.9	95.4	97.6	97.1

CQS: 93.7



Color Parameters

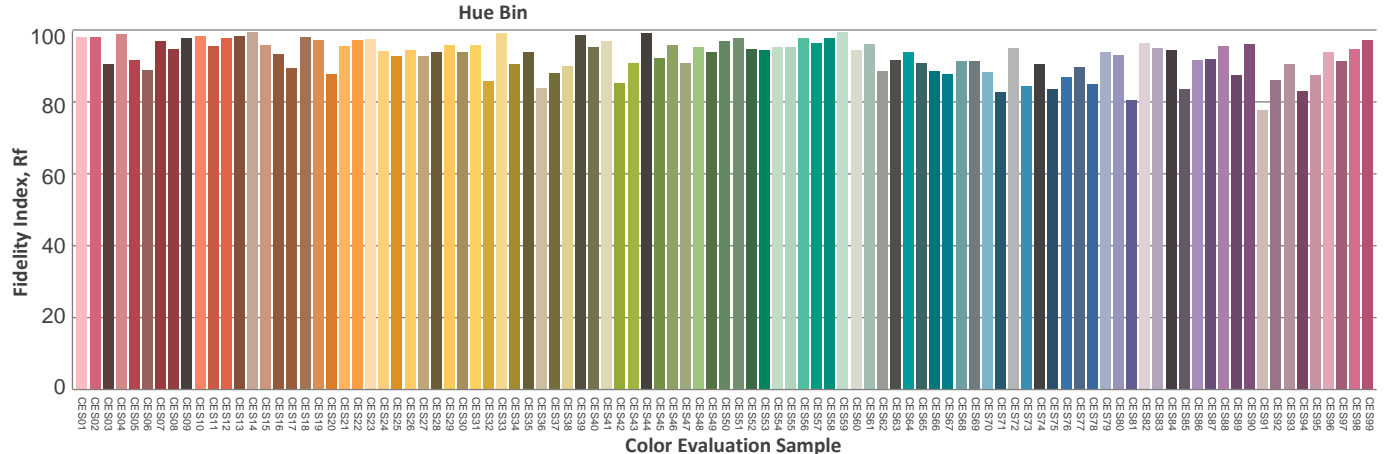
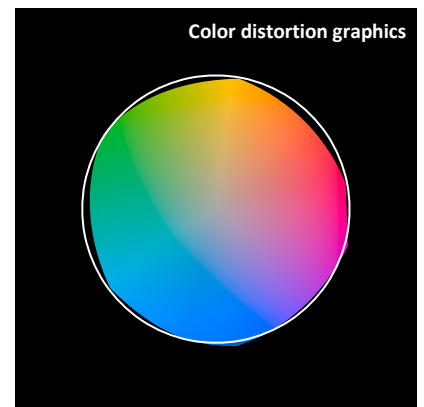
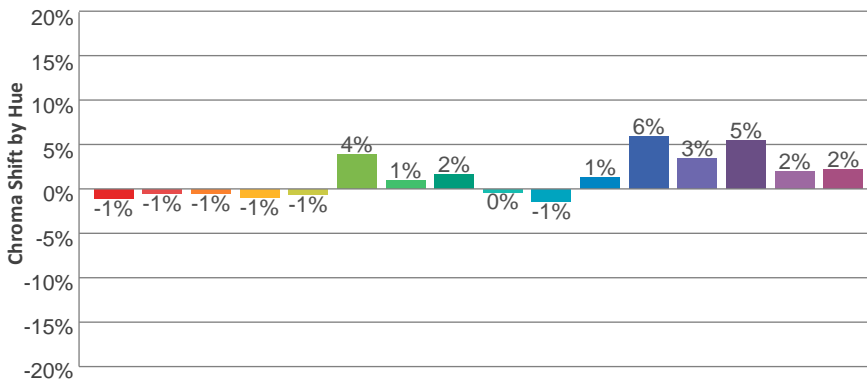
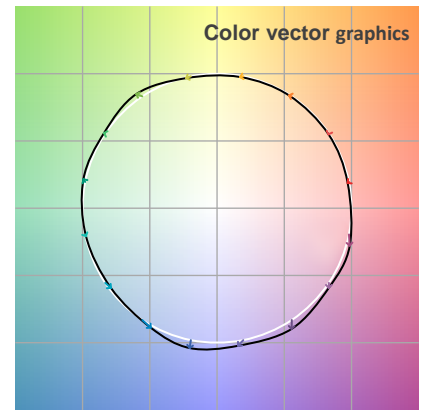
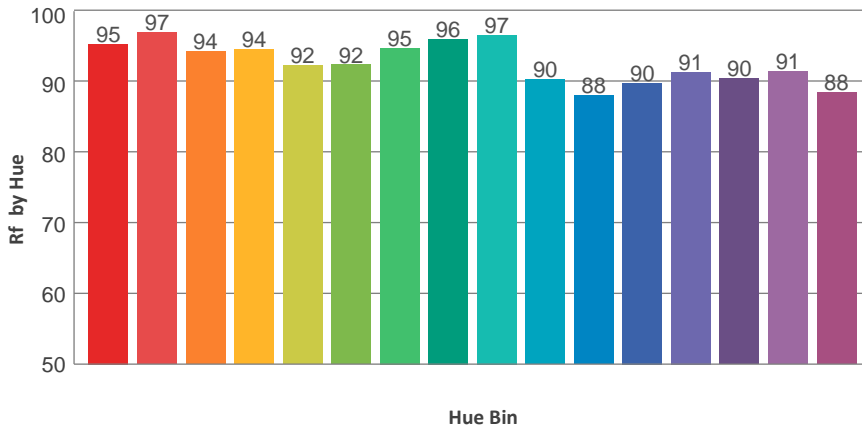
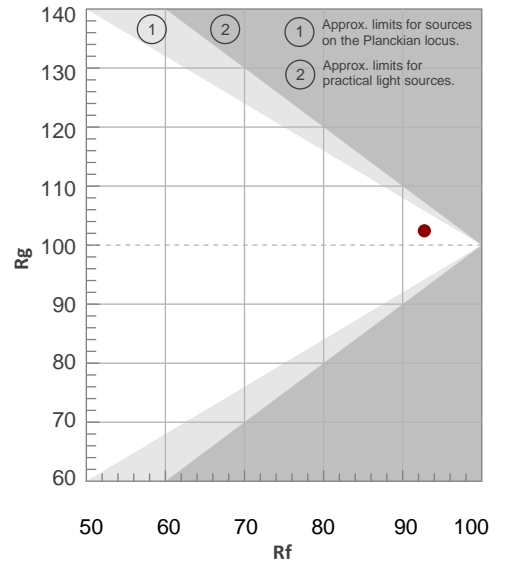
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3256 K	95.9	96.6	92.7	102.4	93.7	0.422	0.403	0.242	0.346	0.0019

TM30 Details

Rf 92.7
Fidelity Index Rf

Rg 102.4
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	95	-1%	-1%
2	97	-1%	0%
3	94	-1%	2%
4	94	-1%	2%
5	92	-1%	4%
6	92	4%	3%
7	95	1%	0%
8	96	2%	-2%
9	97	0%	1%
10	90	-1%	5%
11	88	1%	8%
12	90	6%	0%
13	91	3%	-5%
14	90	5%	-4%
15	91	2%	-3%
16	88	2%	-8%



Total Lumen Output: 24214 lm

Color Temperature: 3969 K

CRI: 95.4

TLCI: 90

TM30: 91.9

CQS: 94.0

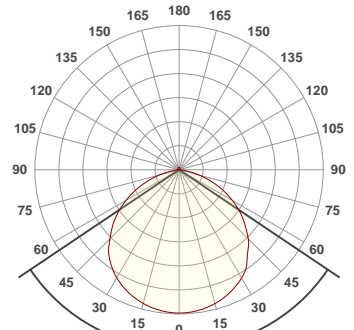
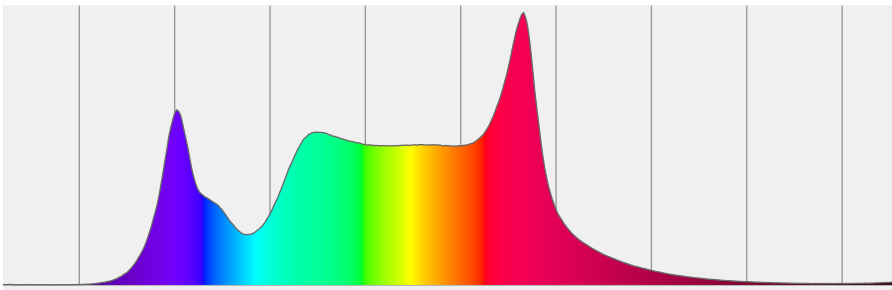
Measurement Date: 7/2/2020

Voltage: 112 V, Current: 2.32 A

Power: 257 W

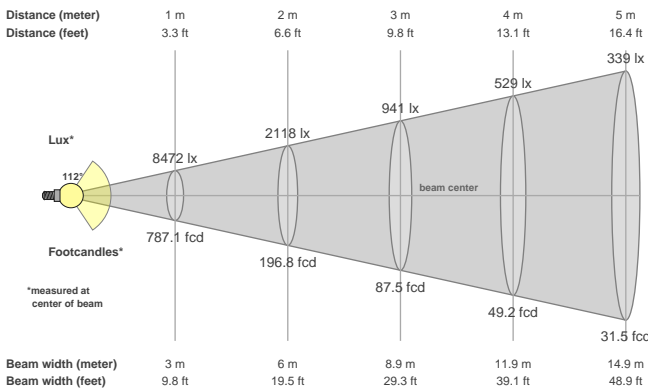
Efficacy: 94 Lumen/Watt

Spectral distribution
Dominant Wavelength 580



112.2°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
112.2°	155.3°	167.2°

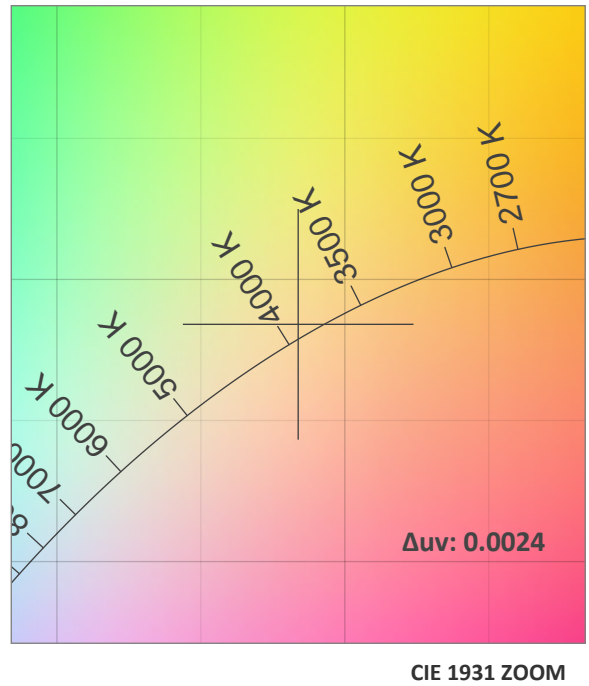
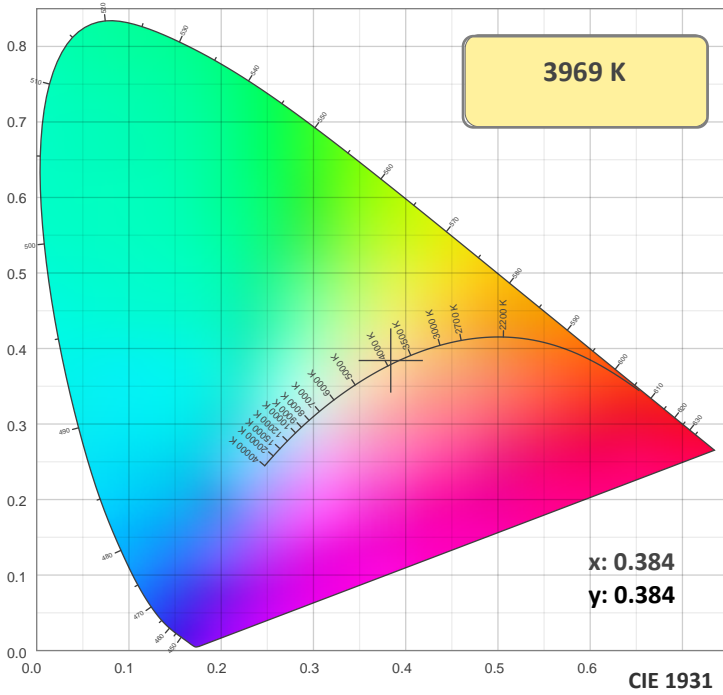
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8476 cd	80.1%	54.8%

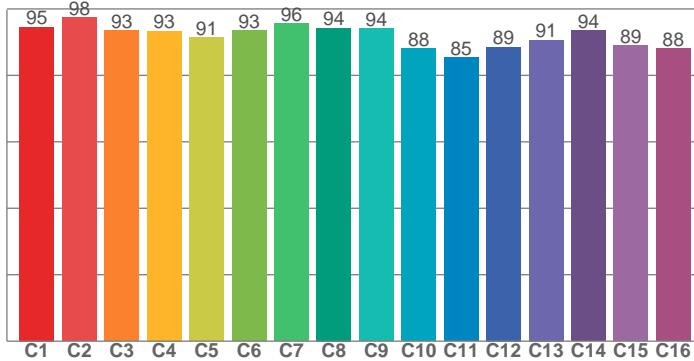
Beam Intensities from 1-20m

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	8472	2118	941	529	339	235	173	132	105	85	70	59	50	43	38	33	29	26	23	21
FC	787.1	196.8	87.5	49.2	31.5	21.9	16.1	12.3	9.7	7.9	6.5	5.5	4.7	4	3.5	3.1	2.7	2.4	2.2	2

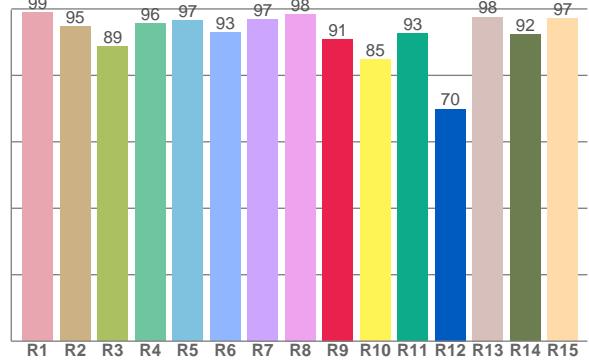
Color Details



TM30: 91.9



CRI: 95.4 (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
99.0	94.8	88.6	95.7	96.6	93.0	97.0	98.5	90.9	84.8	92.7	69.9	97.6	92.3	97.1

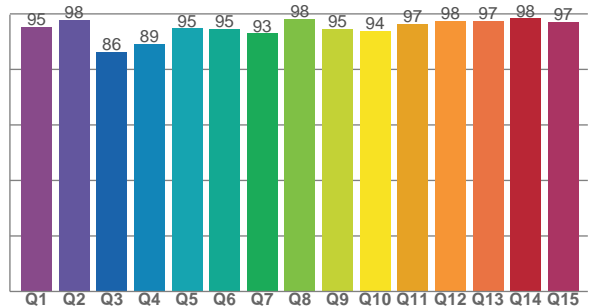
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.6	97.5	93.5	93.4	91.4	93.5	95.7	94.2	94.1	88.1	85.3	88.5	90.6	93.6	88.9	88.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
95.4	97.8	86.2	89.1	94.7	94.6	93.0	98.3	94.6	94.0	96.5	97.5	97.3	98.4	97.0

CQS: 94.0



Color Parameters

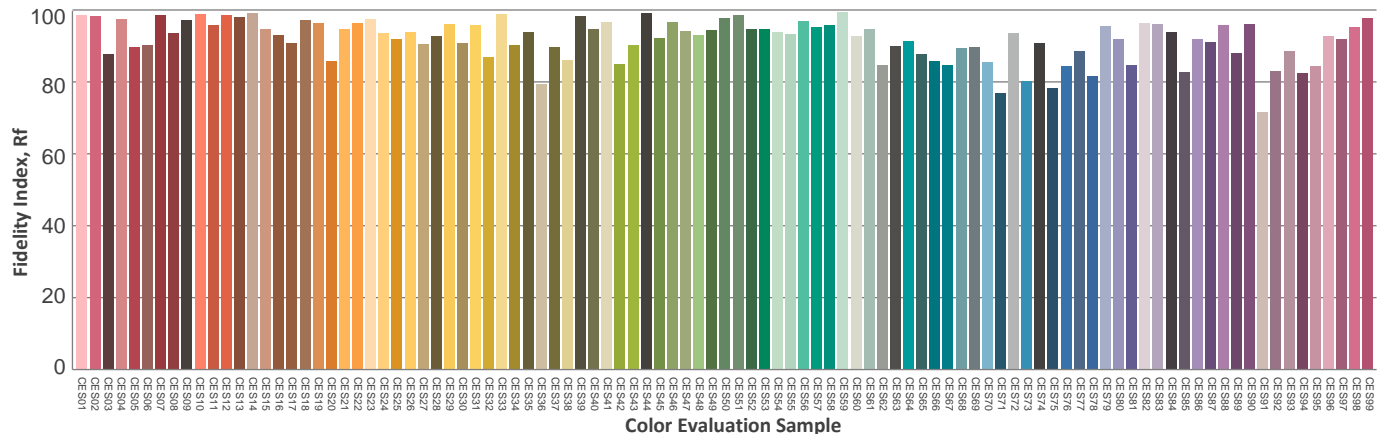
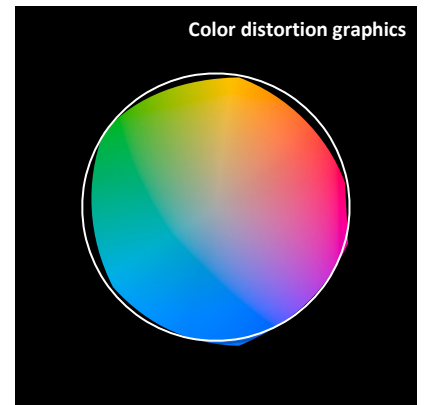
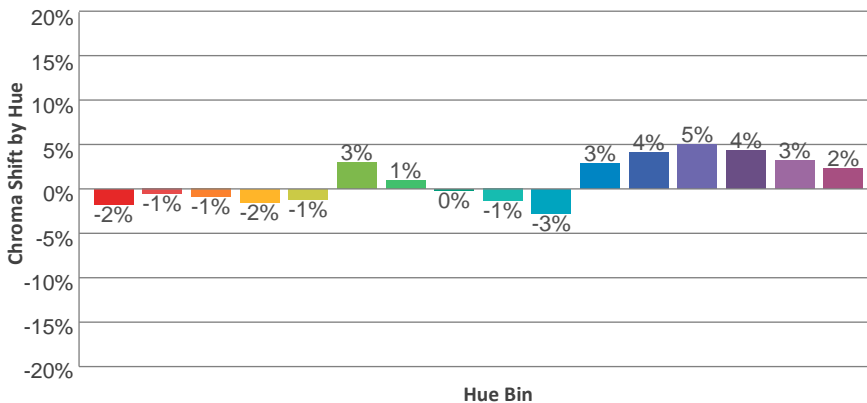
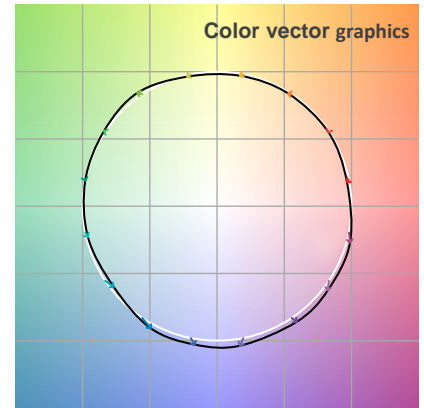
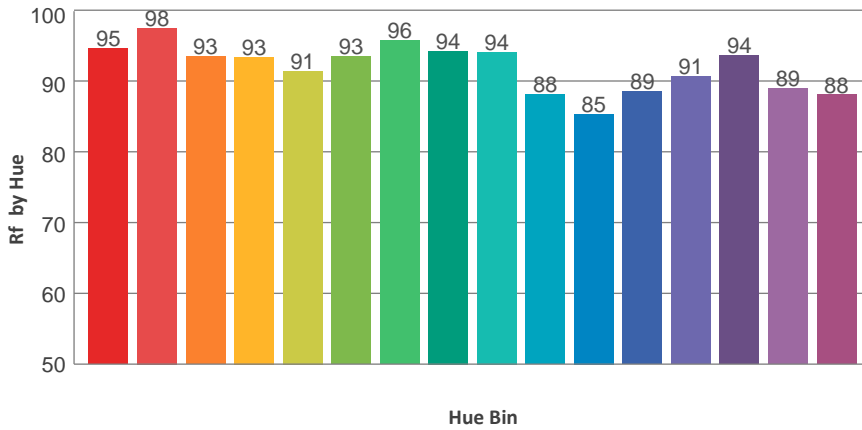
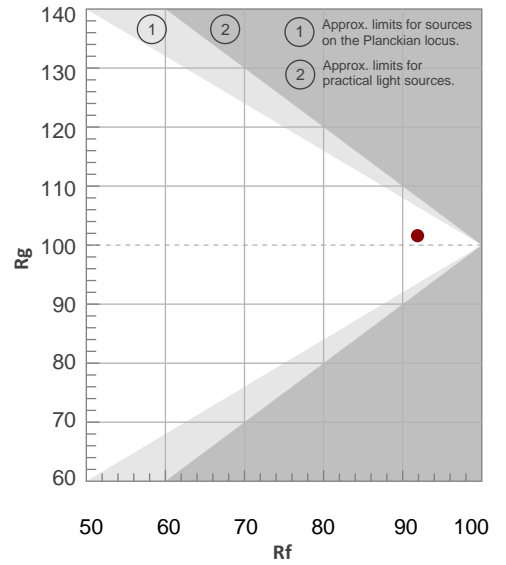
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3969 K	95.4	90.9	91.9	101.6	94.0	0.384	0.384	0.224	0.337	0.0024

TM30 Details

Rf 91.9
Fidelity Index Rf

Rg 101.6
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	95	-2%	-1%
2	98	-1%	0%
3	93	-1%	2%
4	93	-2%	2%
5	91	-1%	3%
6	93	3%	2%
7	96	1%	0%
8	94	0%	0%
9	94	-1%	4%
10	88	-3%	7%
11	85	3%	9%
12	89	4%	4%
13	91	5%	-3%
14	94	4%	2%
15	89	3%	-6%
16	88	2%	-7%



Total Lumen Output: 23996 lm

Color Temperature: 4544 K

CRI: 93.3

TLCI: 88

TM30: 90.3

CQS: 92.6

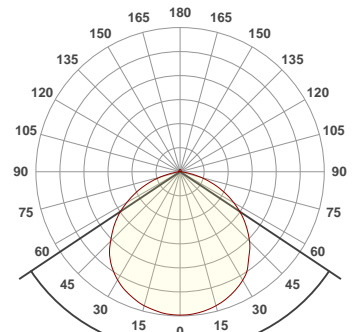
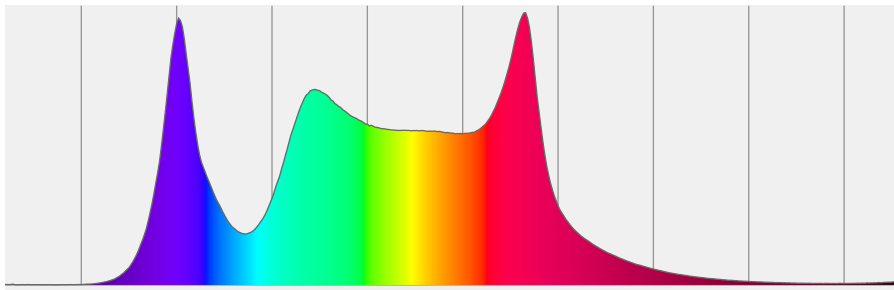
Measurement Date: 7/2/2020

Voltage: 112 V, Current: 2.32 A

Power: 256.8 W

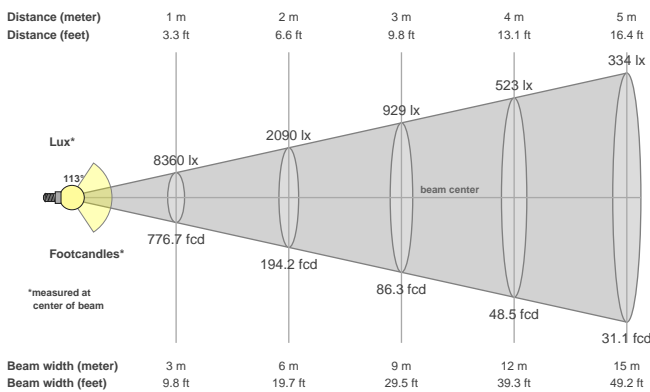
Efficacy: 93 Lumen/Watt

Spectral distribution
Dominant Wavelength 579



112.6°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
112.6°	155.5°	167.1°

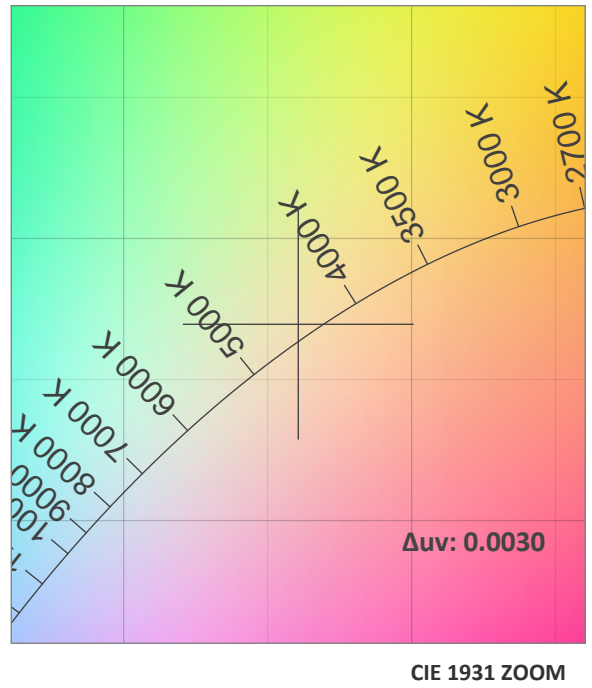
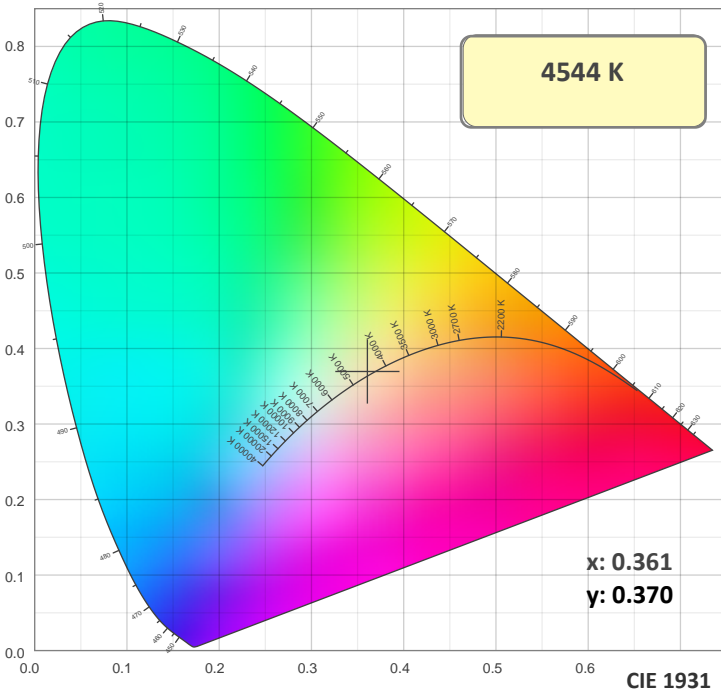
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8363 cd	80.0%	54.7%

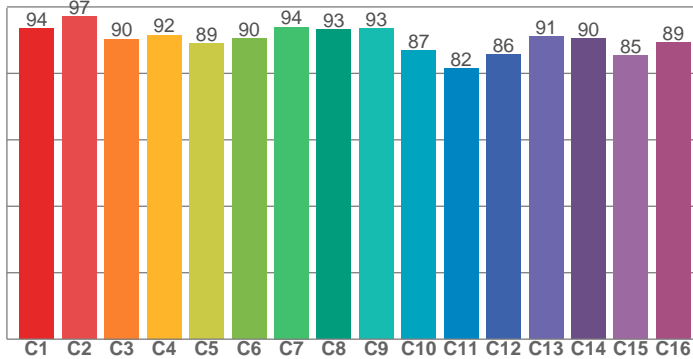
Beam Intensities from 1-20m

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	8360	2090	929	523	334	232	171	131	103	84	69	58	49	43	37	33	29	26	23	21
FC	776.7	194.2	86.3	48.5	31.1	21.6	15.9	12.1	9.6	7.8	6.4	5.4	4.6	4	3.5	3	2.7	2.4	2.2	1.9

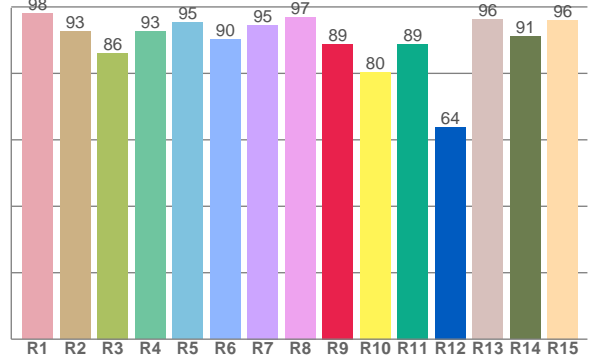
Color Details



TM30: 90.3



CRI: 93.3 (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
98.0	92.5	86.1	92.6	95.4	90.1	94.6	97.0	88.8	80.4	88.8	63.9	96.2	91.2	96.1

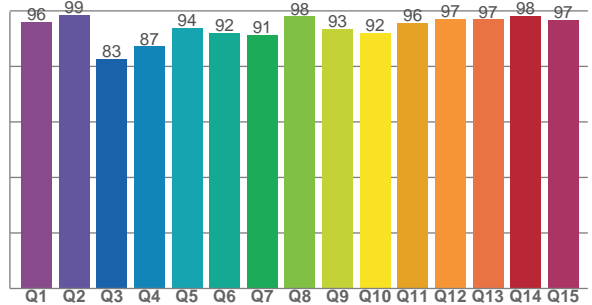
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.6	97.0	90.3	91.6	89.1	90.5	94.0	93.3	93.5	86.9	81.6	85.7	91.1	90.5	85.3	89.3

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.1	98.5	82.7	87.2	93.8	92.1	91.2	98.0	93.4	92.0	95.8	97.2	96.9	98.1	96.9

CQS: 92.6



Color Parameters

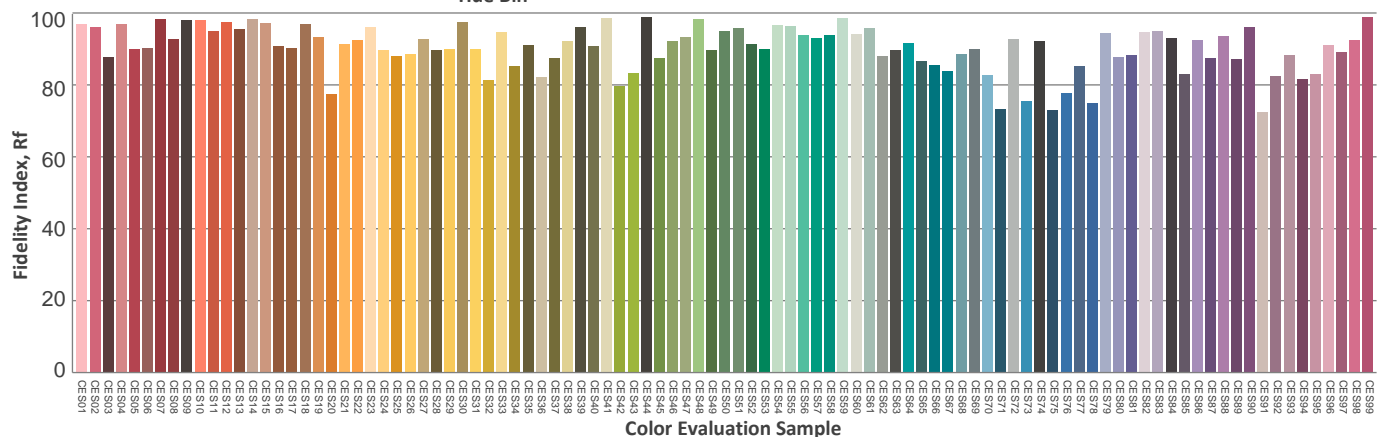
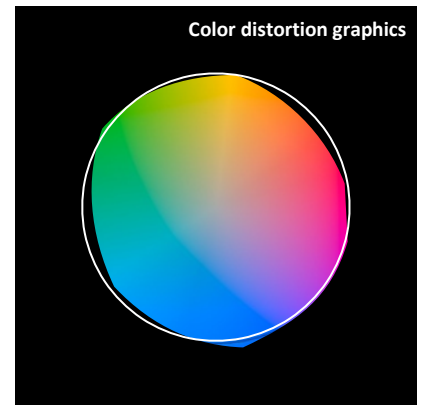
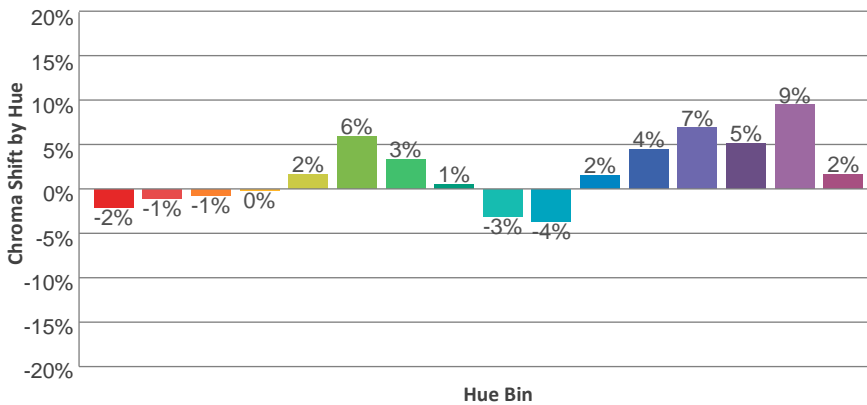
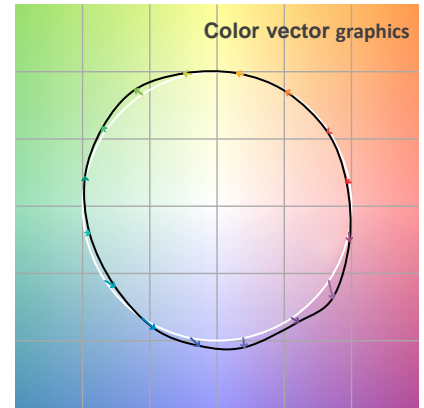
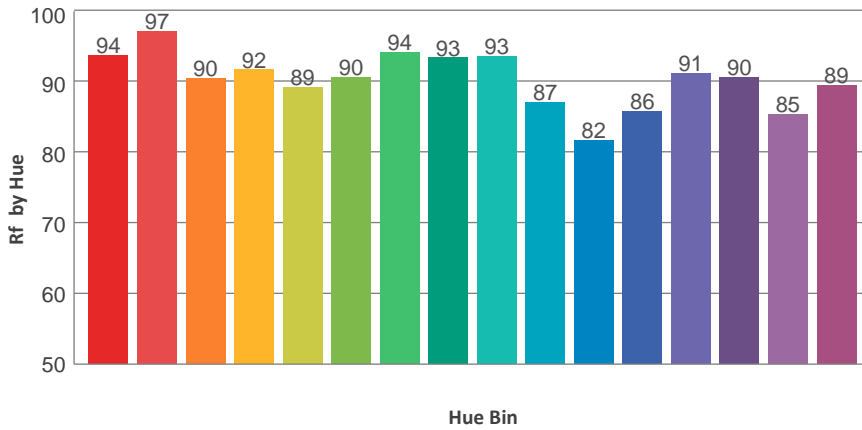
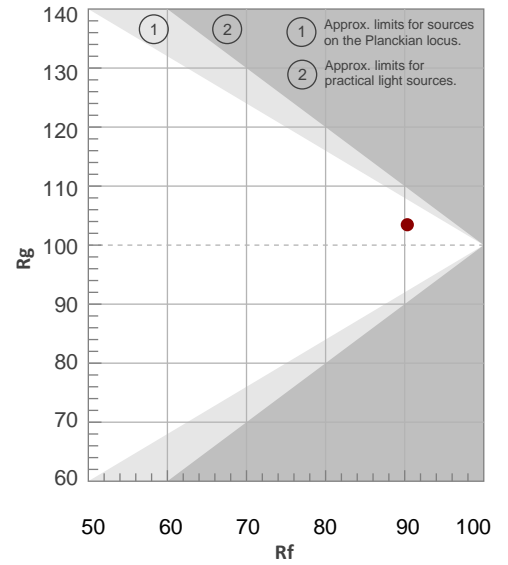
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4544 K	93.3	88.8	90.3	103.5	92.6	0.361	0.370	0.215	0.330	0.0030

TM30 Details

Rf 90.3
Fidelity Index Rf

Rg 103.5
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	-2%	-2%
2	97	-1%	0%
3	90	-1%	5%
4	92	0%	5%
5	89	2%	5%
6	90	6%	2%
7	94	3%	-1%
8	93	1%	-2%
9	93	-3%	1%
10	87	-4%	7%
11	82	2%	12%
12	86	4%	7%
13	91	7%	-1%
14	90	5%	2%
15	85	9%	-9%
16	89	2%	-6%



Total Lumen Output: 23086 lm

Color Temperature: 5619 K

CRI: 92.2

TLCI: 89

TM30: 89.7

CQS: 91.6

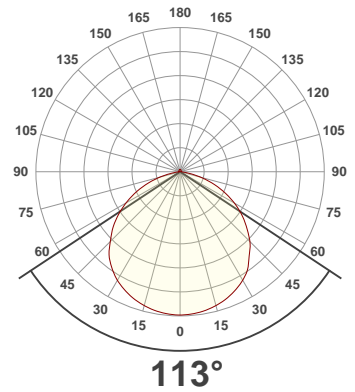
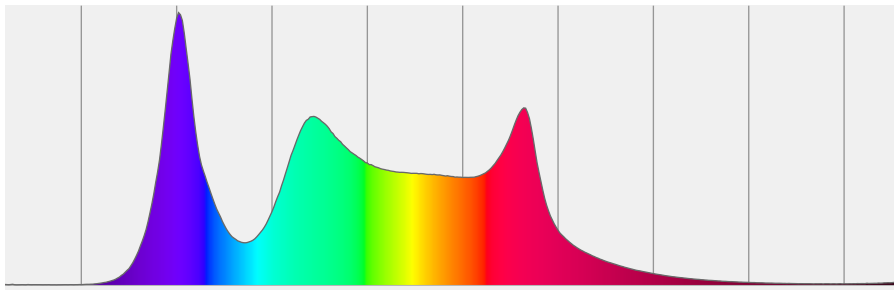
Measurement Date: 7/2/2020

Voltage: 111 V, Current: 2.36 A

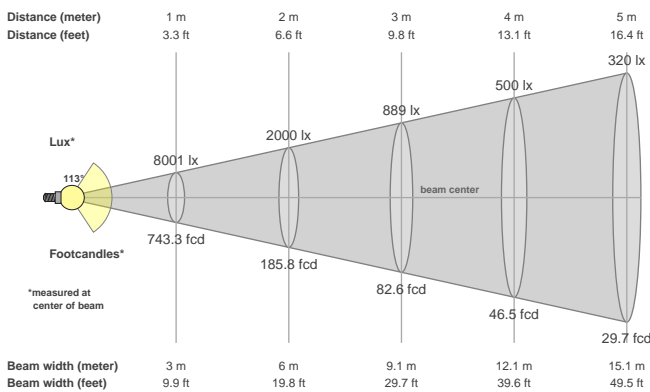
Power: 259.1 W

Efficacy: 89 Lumen/Watt

Spectral distribution
Dominant Wavelength 577



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
113°	155.7°	167.4°

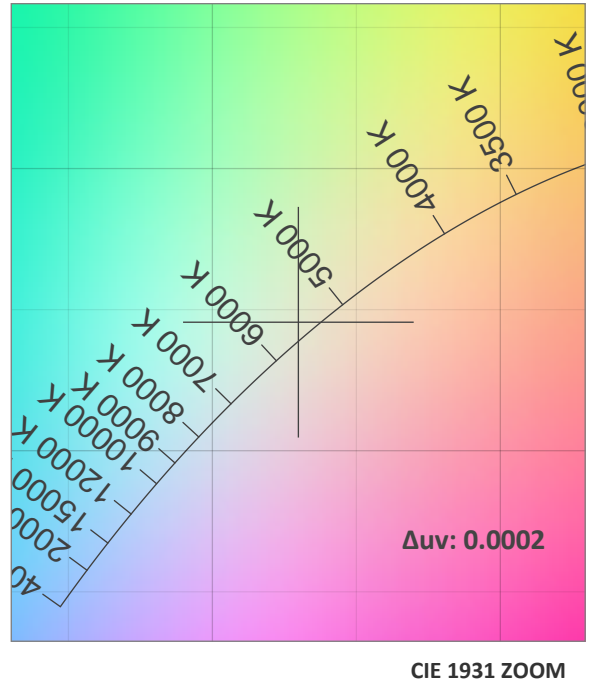
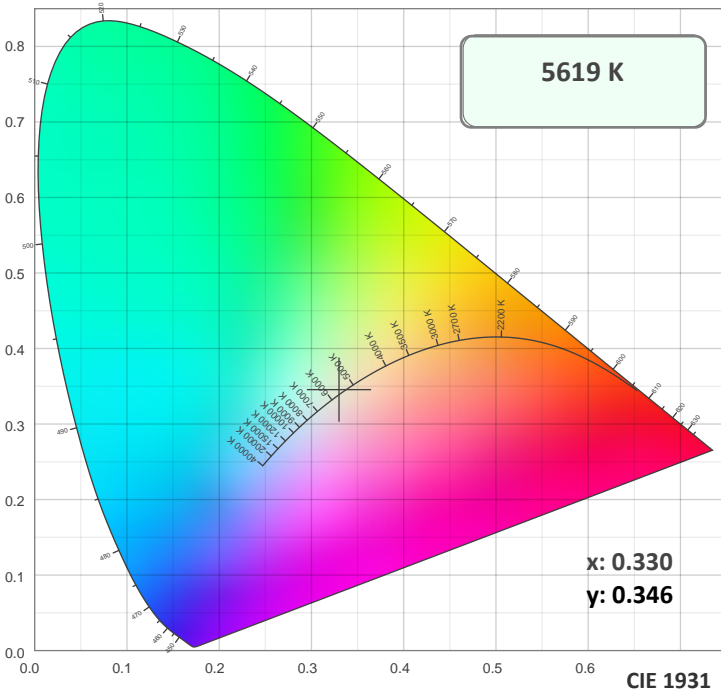
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
8004 cd	79.8%	54.5%

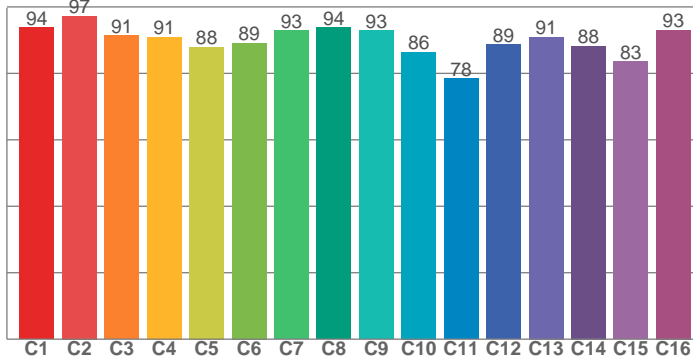
Beam Intensities from 1-20m

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	8001	2000	889	500	320	222	163	125	99	80	66	56	47	41	36	31	28	25	22	20
FC	743.3	185.8	82.6	46.5	29.7	20.6	15.2	11.6	9.2	7.4	6.1	5.2	4.4	3.8	3.3	2.9	2.6	2.3	2.1	1.9

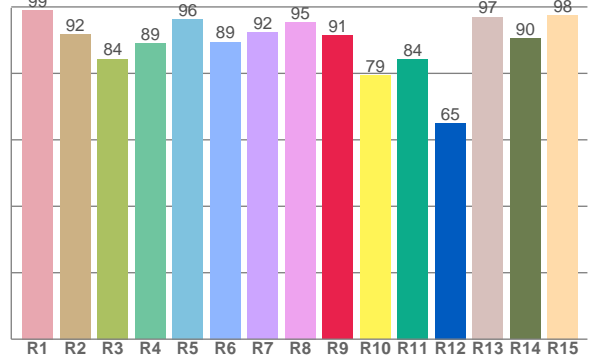
Color Details



TM30: 89.7



CRI: 92.2 (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
99.1	91.8	84.4	88.9	96.4	89.5	92.2	95.4	91.5	79.3	84.3	65.1	97.0	90.5	97.6

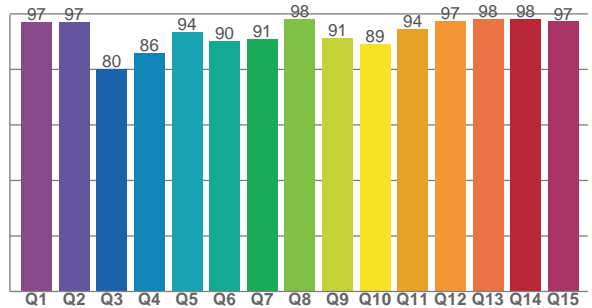
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.8	97.2	91.3	91.0	88.0	89.2	92.9	93.7	92.8	86.5	78.4	88.8	90.9	88.2	83.5	93.1

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.1	97.1	80.1	85.9	93.6	90.4	91.1	98.3	91.4	89.3	94.5	97.3	98.2	98.0	97.3

CQS: 91.6



Color Parameters

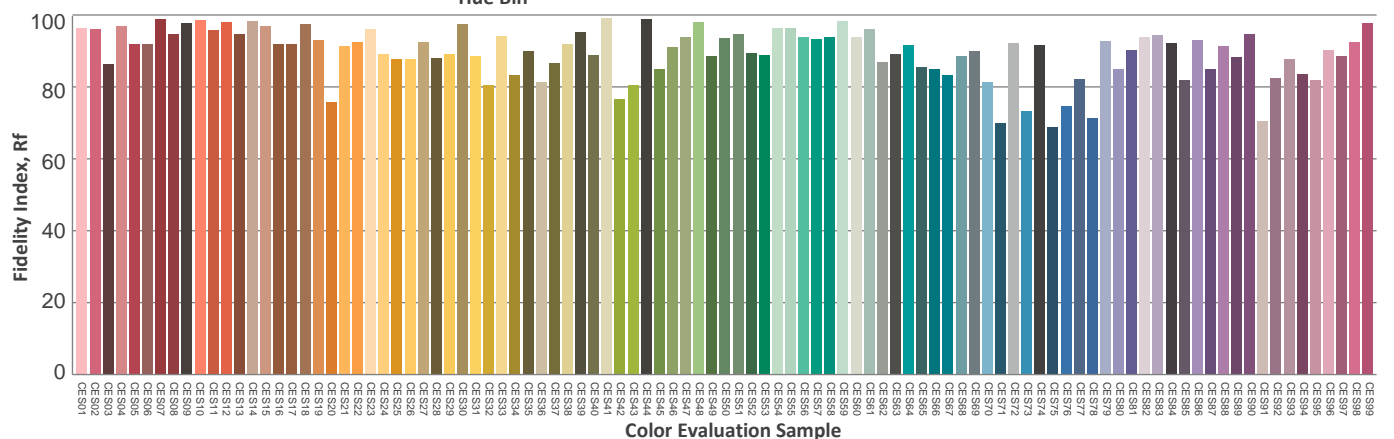
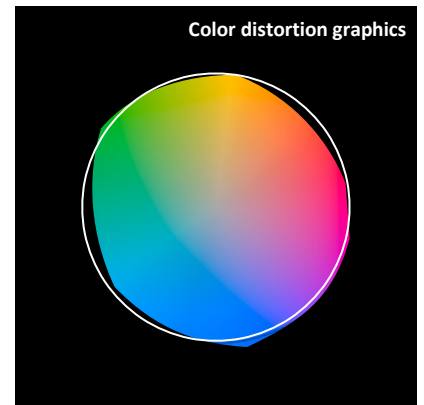
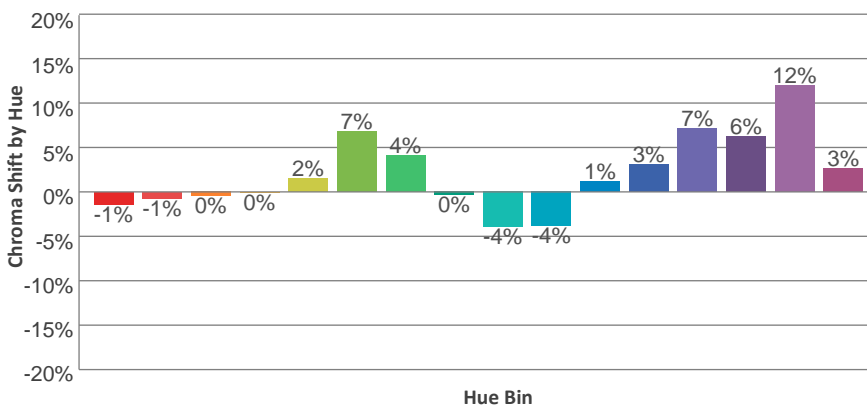
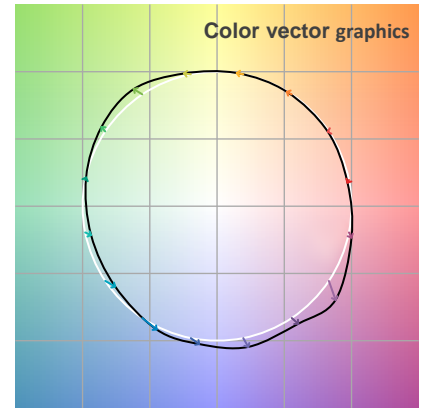
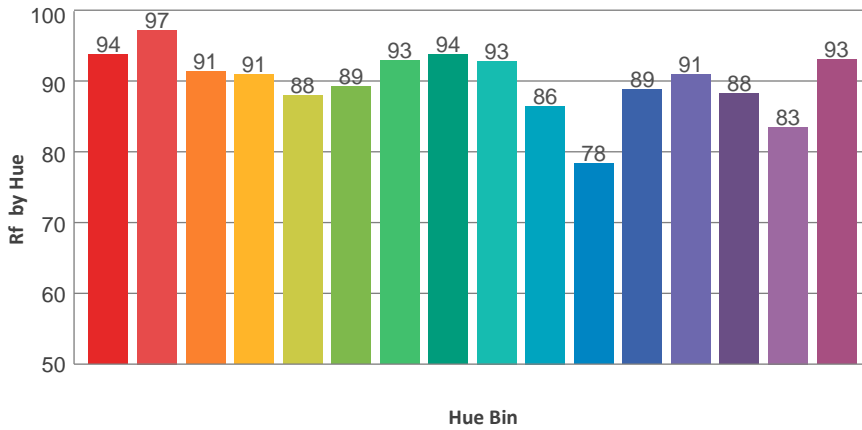
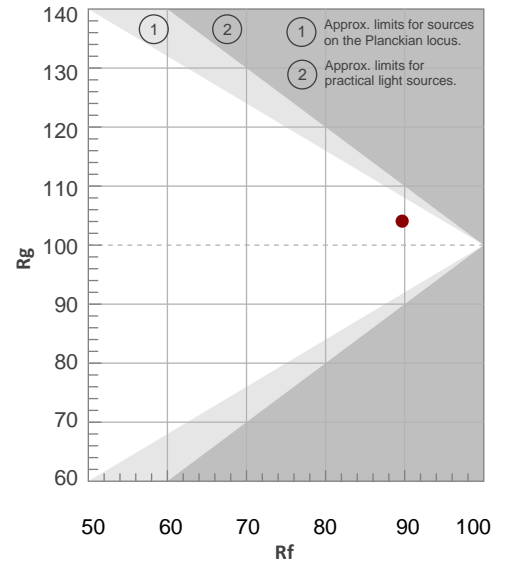
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5619 K	92.2	91.5	89.7	104.1	91.6	0.330	0.346	0.203	0.320	0.0002

TM30 Details

Rf 89.7
Fidelity Index Rf

Rg 104.1
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	-1%	-2%
2	97	-1%	0%
3	91	0%	4%
4	91	0%	5%
5	88	2%	5%
6	89	7%	3%
7	93	4%	-1%
8	94	0%	-2%
9	93	-4%	3%
10	86	-4%	7%
11	78	1%	14%
12	89	3%	7%
13	91	7%	2%
14	88	6%	2%
15	83	12%	-9%
16	93	3%	-3%



Total Lumen Output: 22948 lm

Color Temperature: 5997 K

CRI: 91.3

TLCI: 89

TM30: 88.9

CQS: 90.8

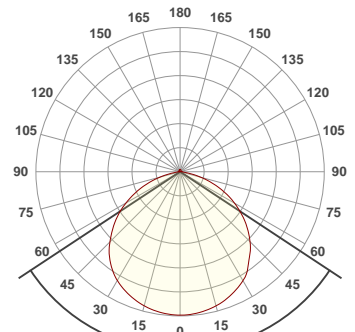
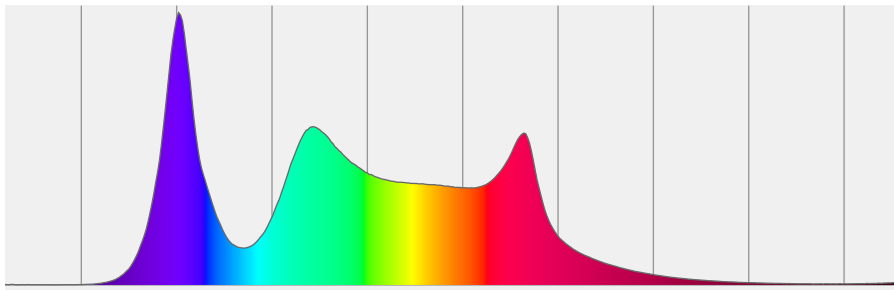
Measurement Date: 7/2/2020

Voltage: 112 V, Current: 2.35 A

Power: 259.1 W

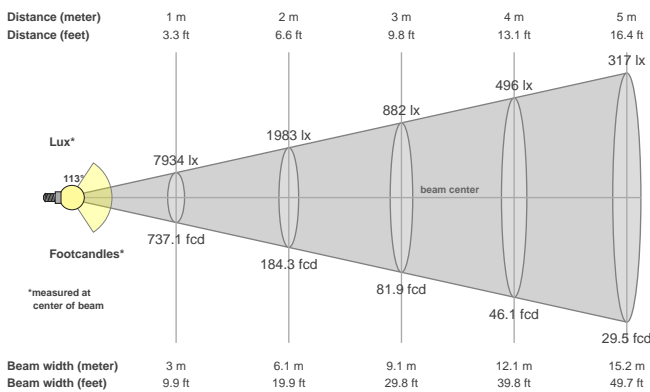
Efficacy: 89 Lumen/Watt

Spectral distribution
Dominant Wavelength 577



113.1°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
113.1°	155.6°	167.3°

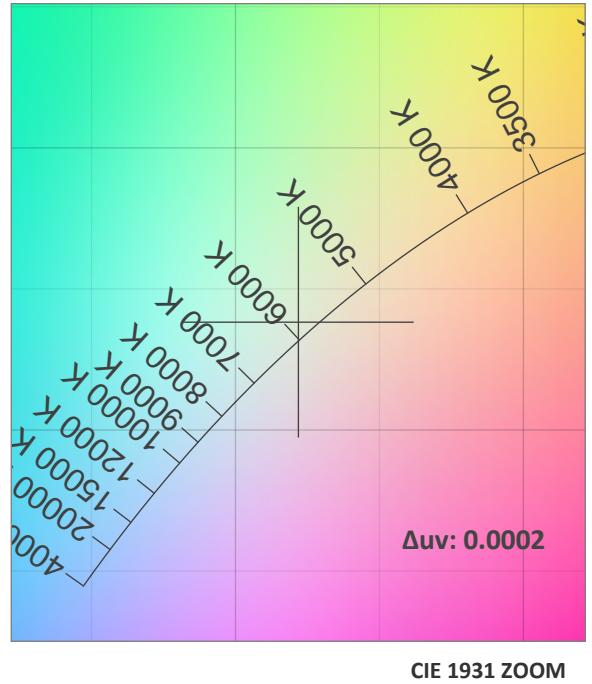
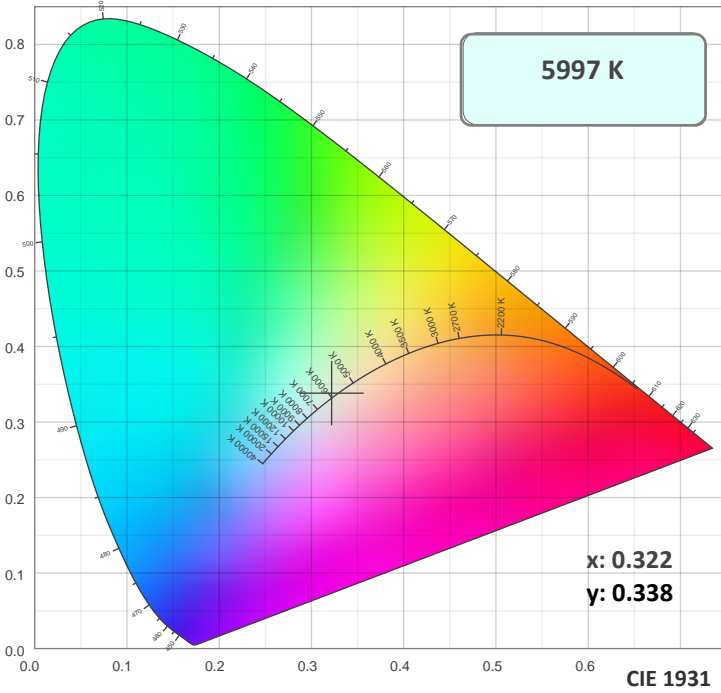
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7935 cd	79.9%	54.5%

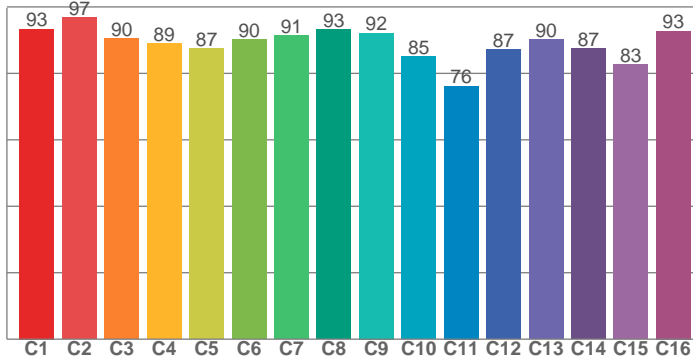
Beam Intensities from 1-20m

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	7934	1983	882	496	317	220	162	124	98	79	66	55	47	40	35	31	27	24	22	20
FC	737.1	184.3	81.9	46.1	29.5	20.5	15	11.5	9.1	7.4	6.1	5.1	4.4	3.8	3.3	2.9	2.6	2.3	2	1.8

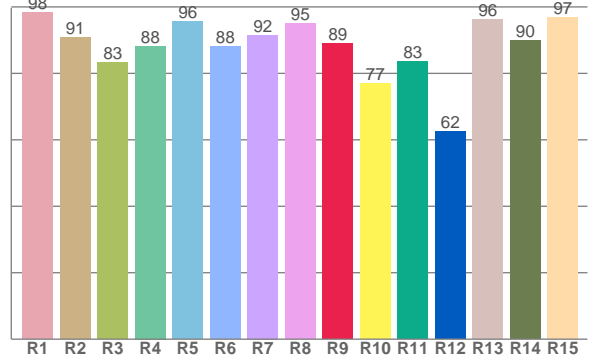
Color Details



TM30: 88.9



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
98.3	90.8	83.2	88.2	95.6	88.1	91.6	94.9	88.9	77.0	83.5	62.5	96.2	89.9	96.8

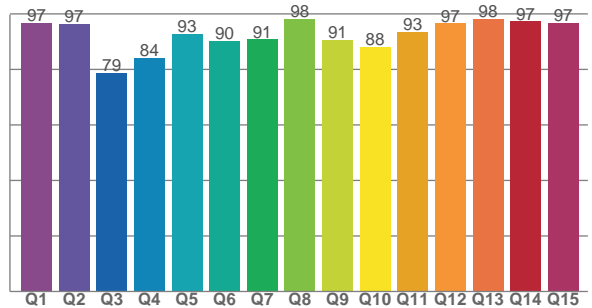
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.4	96.8	90.5	89.0	87.4	90.3	91.4	93.3	92.1	85.0	76.2	87.2	90.2	87.5	82.6	92.8

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.9	96.5	78.7	84.3	92.8	90.1	90.8	98.1	90.7	88.1	93.4	96.5	98.2	97.3	96.8

CQS: 90.8



Color Parameters

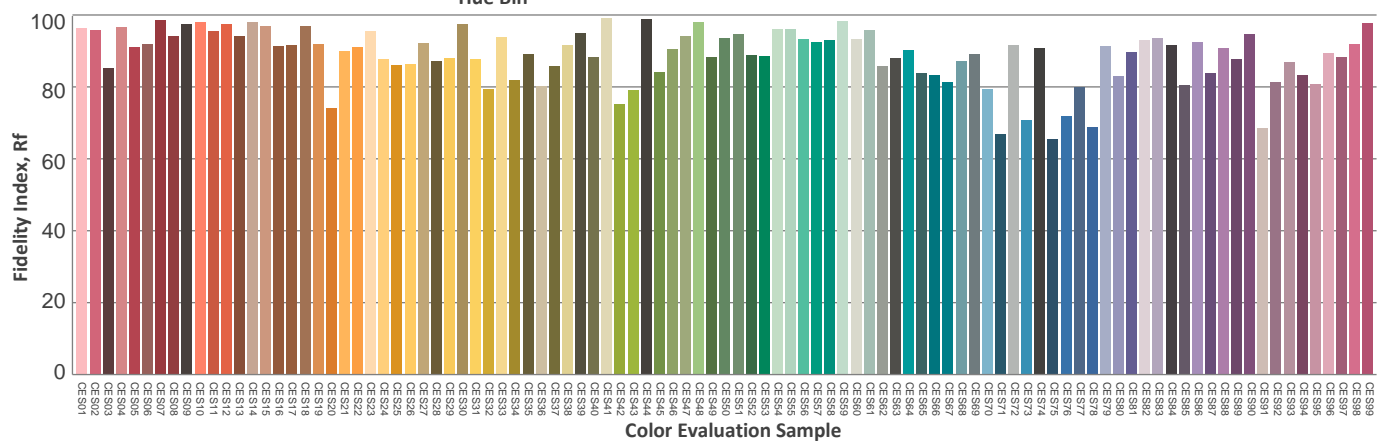
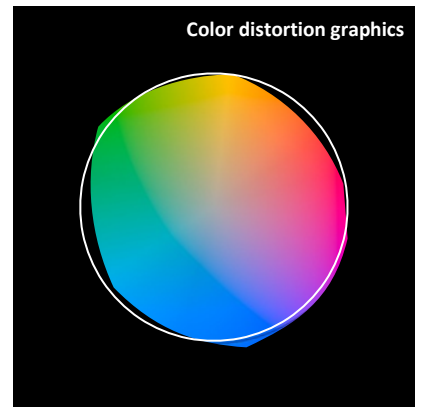
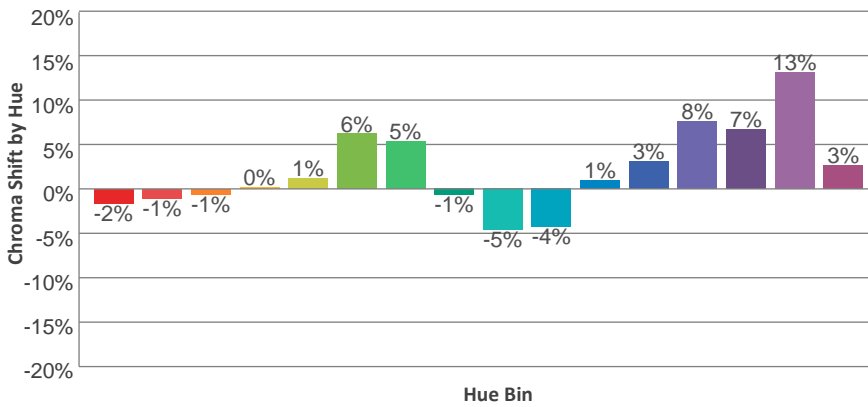
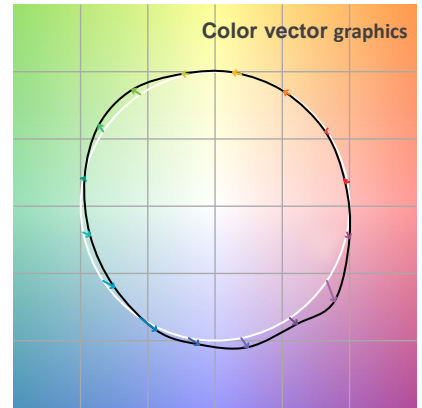
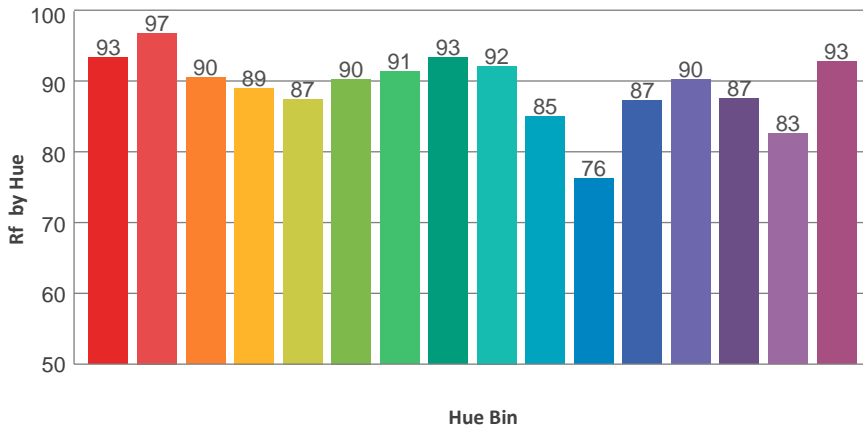
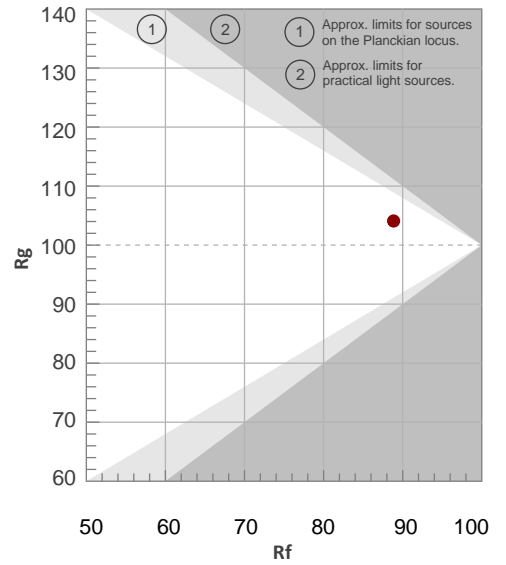
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5997 K	91.3	88.9	88.9	104.1	90.8	0.322	0.338	0.201	0.316	0.0002

TM30 Details

Rf 88.9
Fidelity Index Rf

Rg 104.1
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	-2%	-2%
2	97	-1%	0%
3	90	-1%	5%
4	89	0%	6%
5	87	1%	5%
6	90	6%	3%
7	91	5%	-2%
8	93	-1%	-2%
9	92	-5%	3%
10	85	-4%	8%
11	76	1%	15%
12	87	3%	8%
13	90	8%	3%
14	87	7%	2%
15	83	13%	-9%
16	93	3%	-4%



Total Lumen Output: 22680 lm

Color Temperature: 6479 K

CRI: 92.1

TLCI: 91

TM30: 89.3

CQS: 91.2

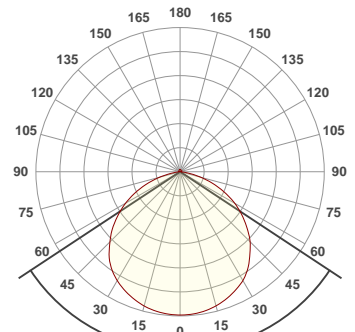
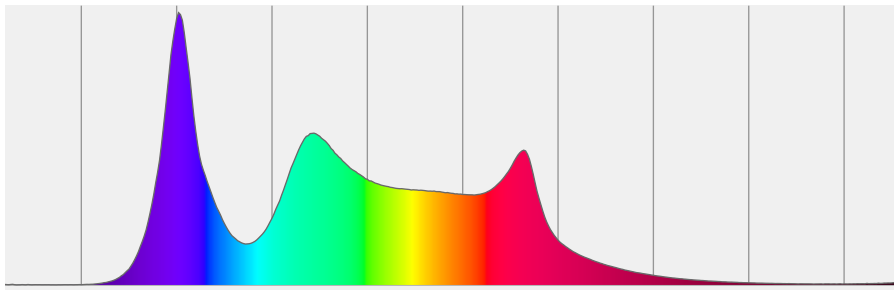
Measurement Date: 7/2/2020

Voltage: 111 V, Current: 2.35 A

Power: 259.2 W

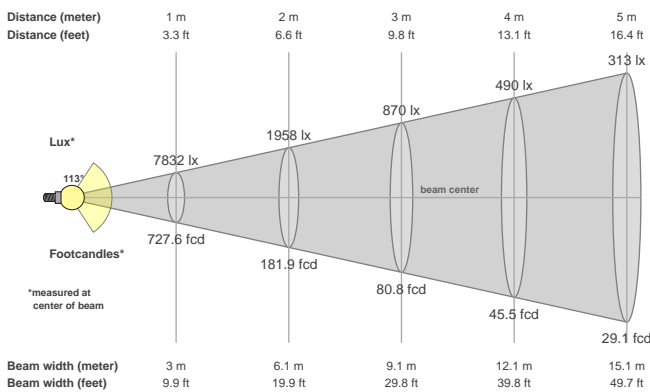
Efficacy: 88 Lumen/Watt

Spectral distribution
Dominant Wavelength 565



113.1°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
113.1°	155.8°	167.6°

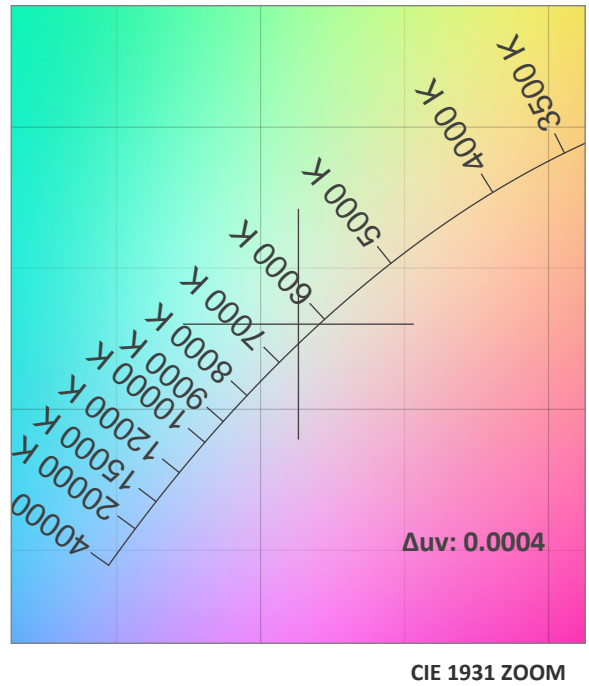
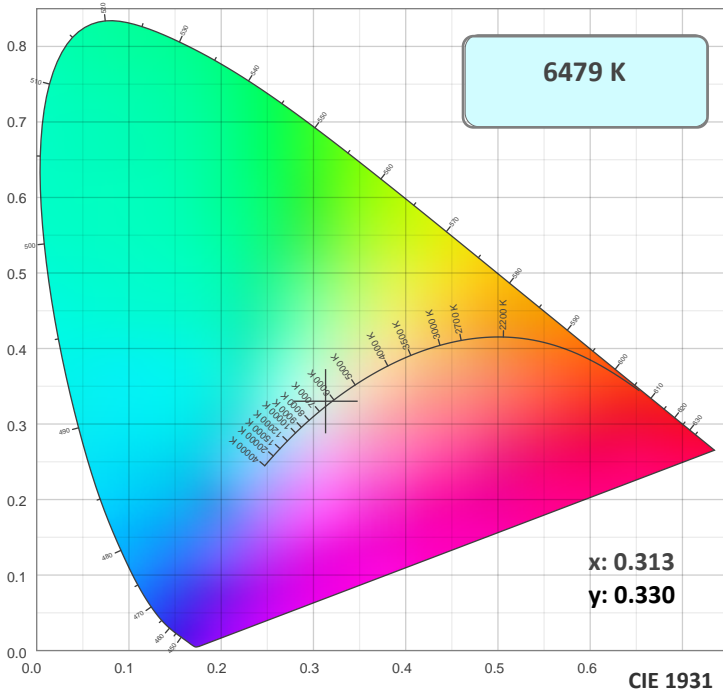
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7834 cd	79.8%	54.4%

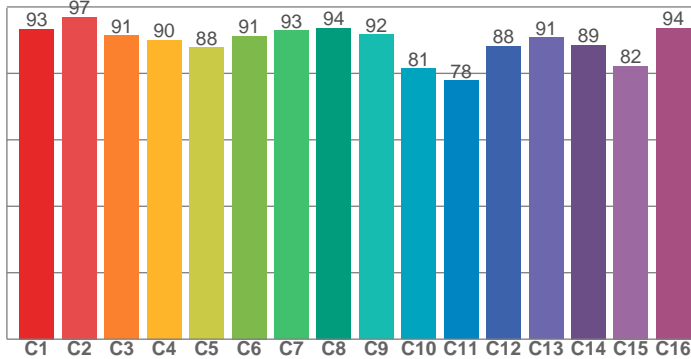
Beam Intensities from 1-20m

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	7832	1958	870	490	313	218	160	122	97	78	65	54	46	40	35	31	27	24	22	20
FC	727.6	181.9	80.8	45.5	29.1	20.2	14.8	11.4	9	7.3	6	5.1	4.3	3.7	3.2	2.8	2.5	2.2	2	1.8

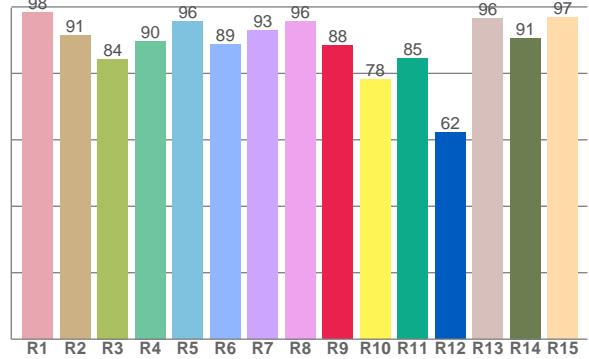
Color Details



TM30: 89.3



CRI: 92.1 (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
98.2	91.5	84.3	89.7	95.7	88.6	92.9	95.8	88.4	78.3	84.6	62.3	96.5	90.7	96.8

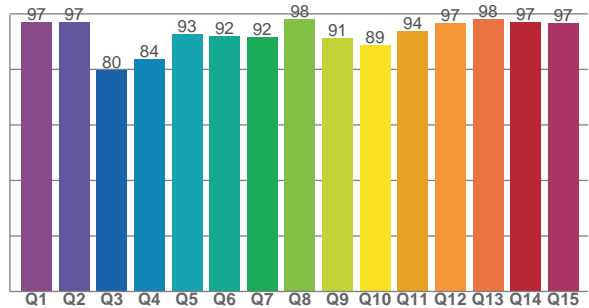
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.4	96.9	91.3	90.0	87.8	91.3	92.9	93.6	91.7	81.4	77.8	88.2	90.7	88.5	82.2	93.7

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.1	97.0	79.7	83.9	92.8	91.9	91.8	98.2	91.2	88.8	93.8	96.8	98.3	97.1	96.8

CQS: 91.2



Color Parameters

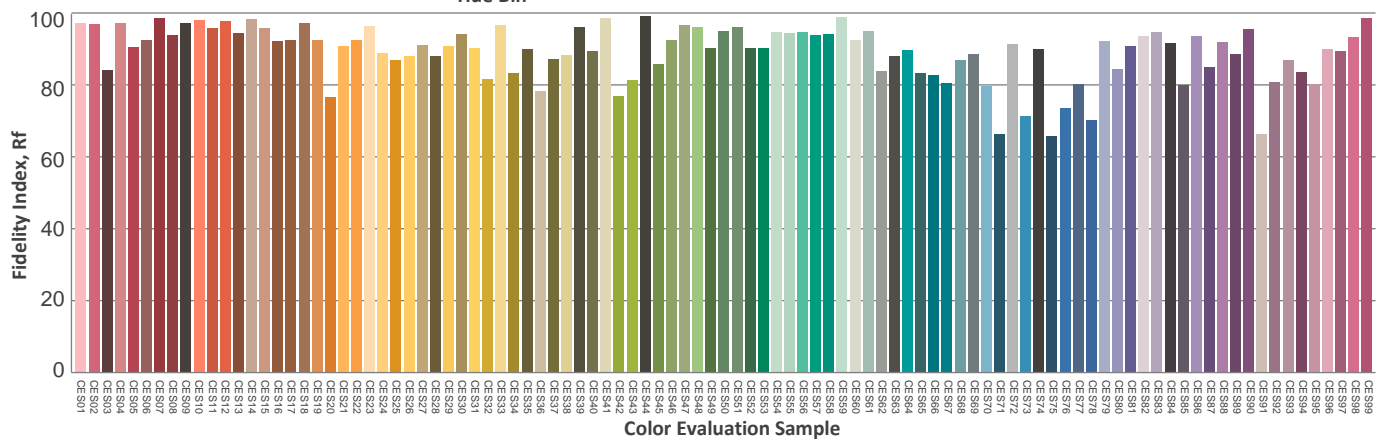
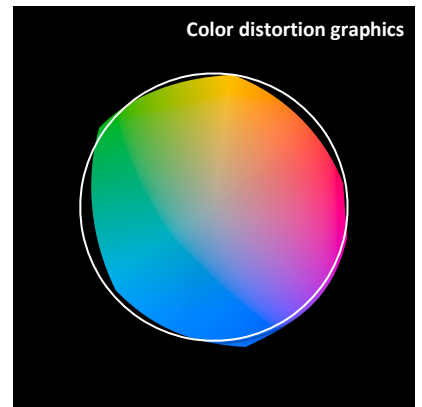
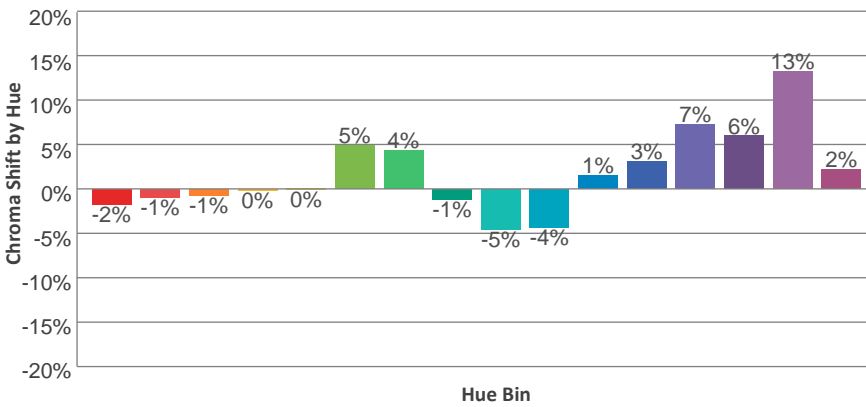
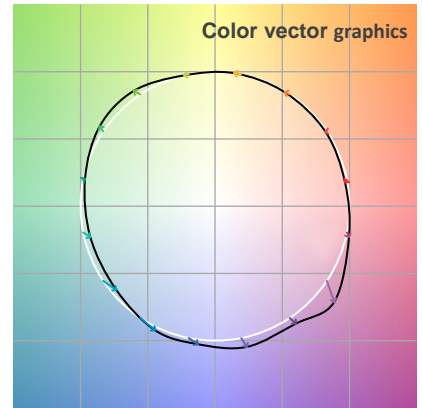
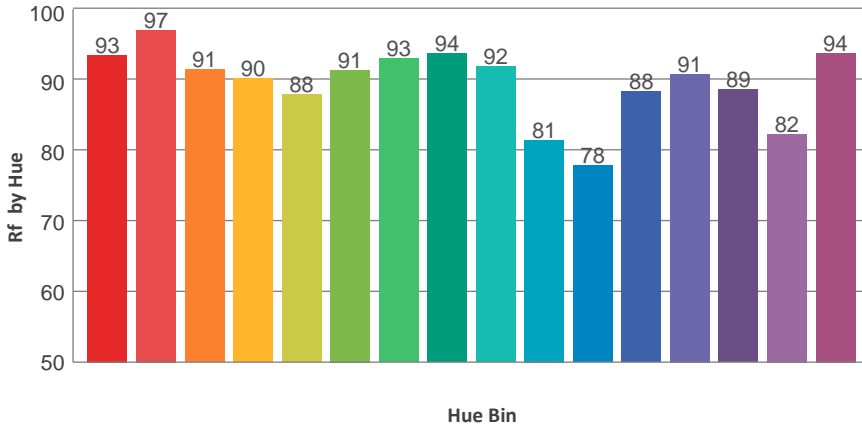
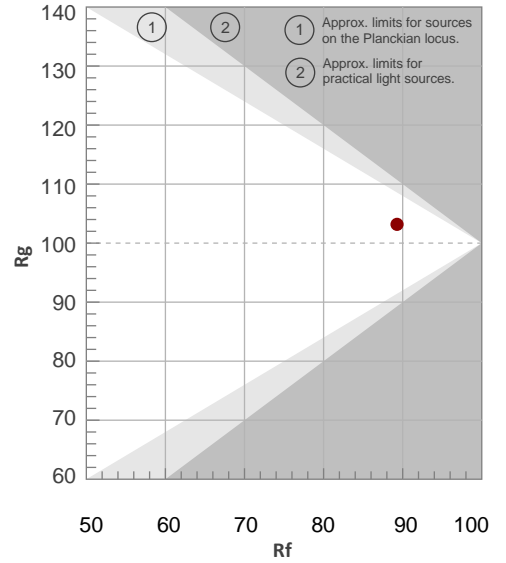
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6479 K	92.1	88.4	89.3	103.2	91.2	0.313	0.330	0.198	0.313	0.0004

TM30 Details

Rf 89.3
Fidelity Index Rf

Rg 103.2
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	-2%	-2%
2	97	-1%	0%
3	91	-1%	4%
4	90	0%	5%
5	88	0%	4%
6	91	5%	3%
7	93	4%	-2%
8	94	-1%	-1%
9	92	-5%	4%
10	81	-4%	11%
11	78	1%	14%
12	88	3%	7%
13	91	7%	3%
14	89	6%	2%
15	82	13%	-10%
16	94	2%	-3%



Total Lumen Output: 22150 lm

Color Temperature: 8016 K

CRI: 93.4

TLCI: 93

TM30: 89.5

CQS: 91.5

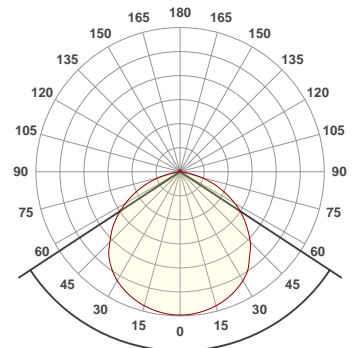
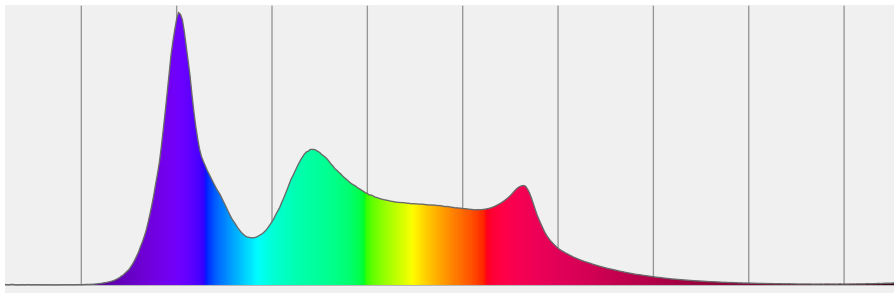
Measurement Date: 7/2/2020

Voltage: 111 V, Current: 2.37 A

Power: 260.4 W

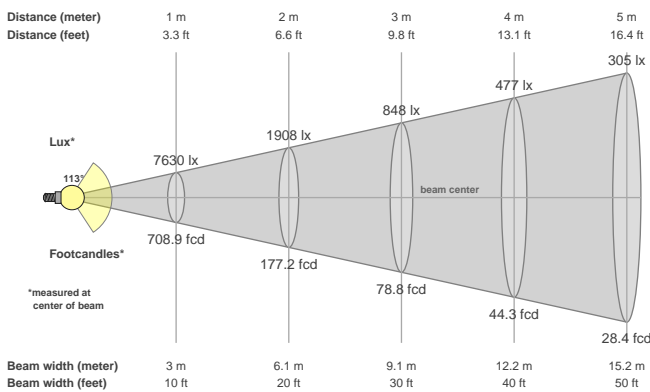
Efficacy: 85 Lumen/Watt

Spectral distribution
Dominant Wavelength 479



113.4°

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
113.4°	155.9°	167.6°

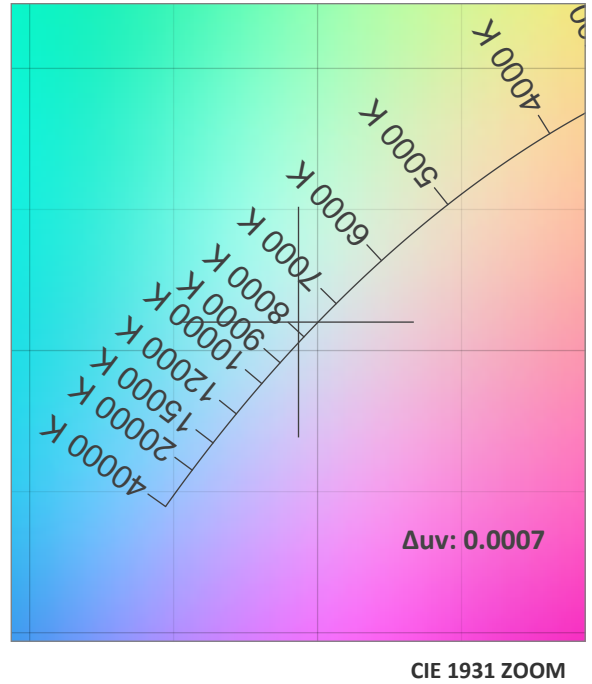
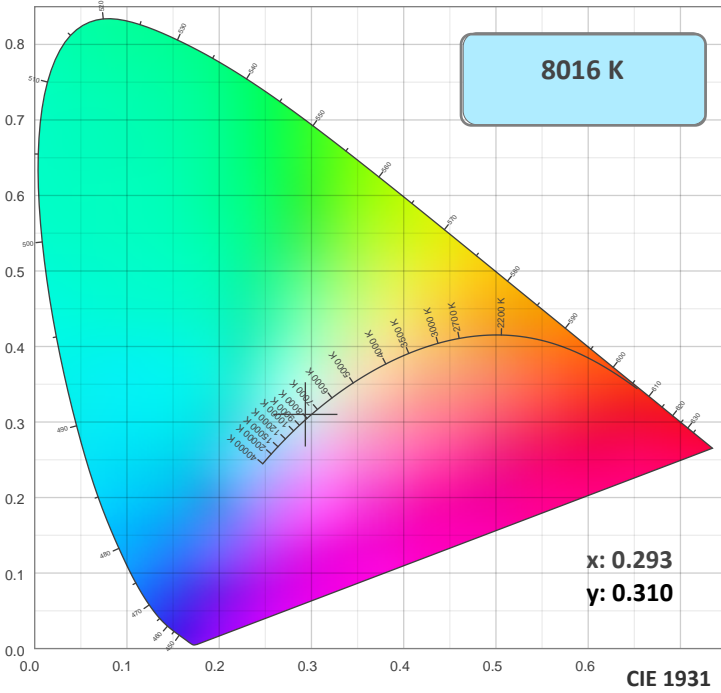
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
7633 cd	79.7%	54.3%

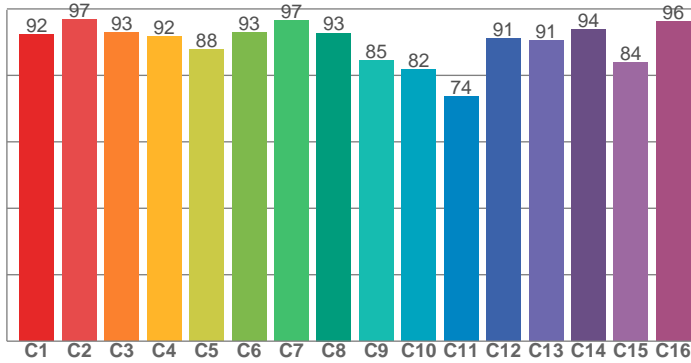
Beam Intensities from 1-20m

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	7630	1908	848	477	305	212	156	119	94	76	63	53	45	39	34	30	26	24	21	19
FC	708.9	177.2	78.8	44.3	28.4	19.7	14.5	11.1	8.8	7.1	5.9	4.9	4.2	3.6	3.2	2.8	2.5	2.2	2	1.8

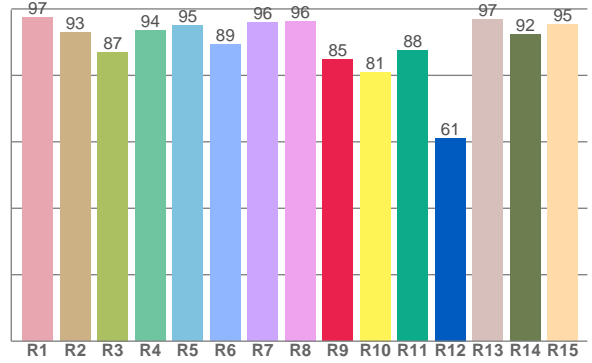
Color Details



TM30: 89.5



CRI: 93.4 (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
97.5	92.8	87.0	93.5	95.0	89.4	95.9	96.4	84.7	81.0	87.5	61.1	96.8	92.4	95.4

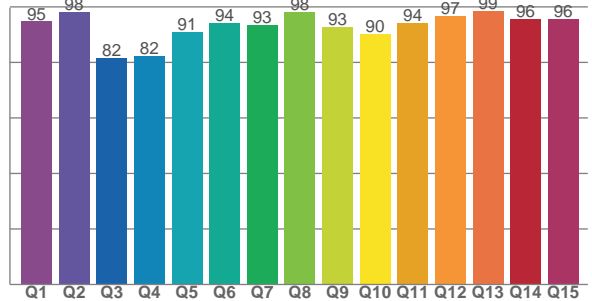
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
92.2	96.9	92.9	91.7	87.8	92.8	96.5	92.8	84.6	81.7	73.6	91.0	90.5	93.7	83.8	96.1

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
94.7	98.2	81.7	82.2	91.0	94.4	93.5	98.3	92.6	90.3	94.1	96.8	98.6	95.8	95.6

CQS: 91.5



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
8016 K	93.4	84.7	89.5	100.5	91.5	0.293	0.310	0.191	0.303	0.0007

TM30 Details

Rf 89.5
Fidelity Index Rf

Rg 100.5
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	92	-2%	-1%
2	97	-1%	1%
3	93	-1%	2%
4	92	-1%	4%
5	88	-3%	2%
6	93	2%	2%
7	97	1%	0%
8	93	-3%	1%
9	85	-8%	15%
10	82	-3%	13%
11	74	2%	13%
12	91	4%	4%
13	91	7%	2%
14	94	1%	0%
15	84	10%	-11%
16	96	0%	-1%

