



KL PAR FC - MFL

Photometric Test Report

©2021 ELATION PROFESSIONAL all rights reserved. Information, specifications, diagrams, images, and instructions herein are subject to change without notice. ELATION PROFESSIONAL logo and identifying product names and numbers herein are trademarks of ELATION PROFESSIONAL. Copyright protection claimed includes all forms and matters of copyrightable materials and information now allowed by statutory or judicial law or hereinafter granted. Product names used in this document may be trademarks or registered trademarks of their respective companies and are hereby acknowledged. All non-ELATION brands and product names are trademarks or registered trademarks of their respective companies.

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

CONTENTS

Testing Process	4
2700K	5
3200K	8
4500K	11
5600K	14
6000K	17
6500K	20
Full On	23
Red	26
Green	27
Blue	28
Mint	29
Amber	30

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: 6256 lm

Color Temperature: 2725 K

CRI: 88.0

TLCI: 91

TM30: 91.8

CQS: 86.8

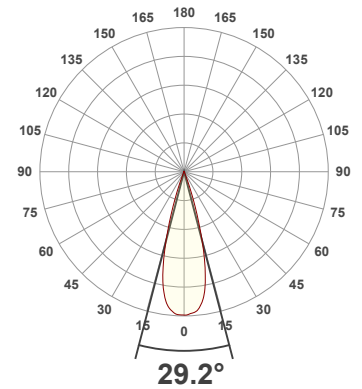
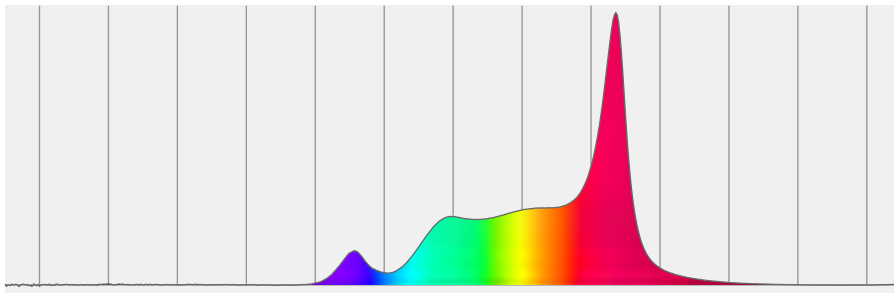
Measurement Date: 6/29/2021

Voltage: 111 V, Current: 2.02 A

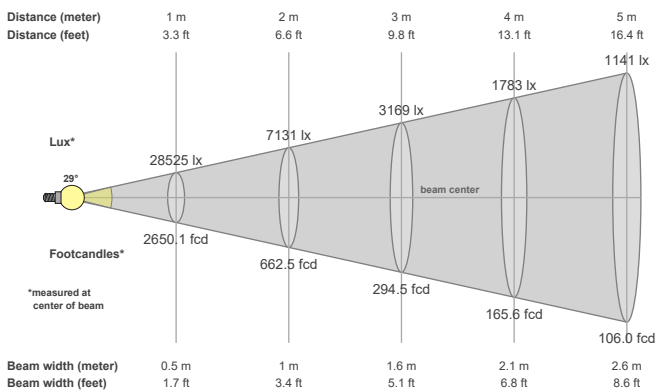
Power: 221.9 W

Efficacy: 28 Lumen/Watt

Spectral distribution
Dominant Wavelength 583



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.5°	45.7°

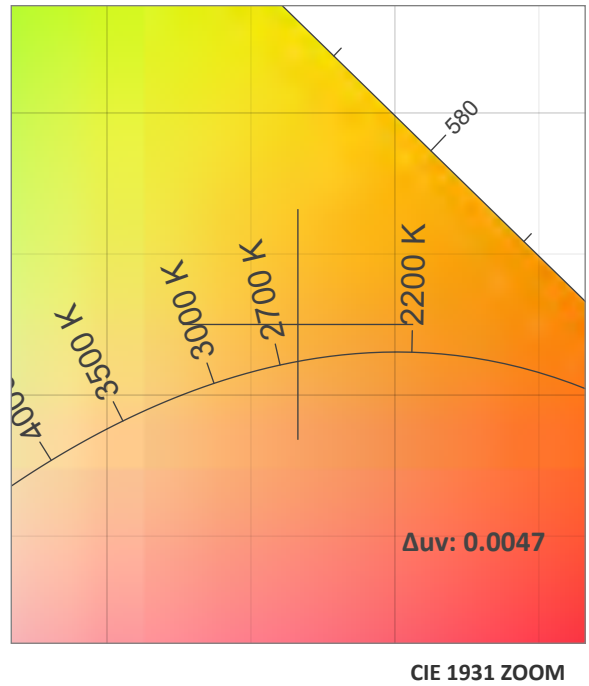
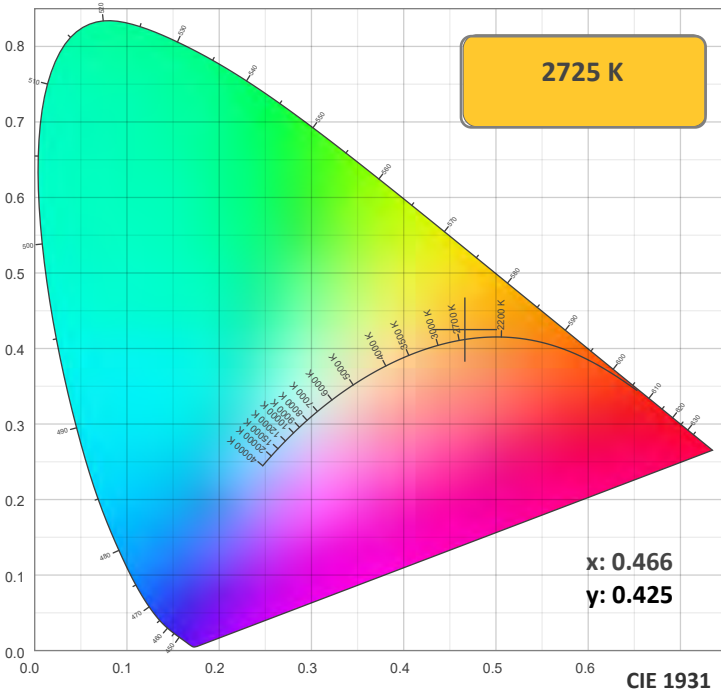
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
28533 cd	99.9%	99.8%

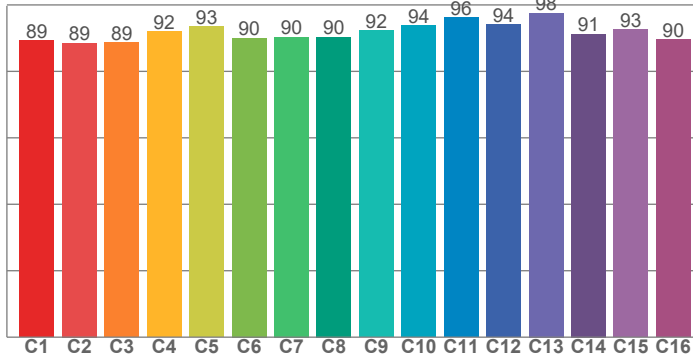
Beam Intensities from 1-20m

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	28525	7131	3169	1783	1141	792	582	446	352	285	236	198	169	146	127	111	99	88	79	71
FC	2650.1	662.5	294.5	165.6	106	73.6	54.1	41.4	32.7	26.5	21.9	18.4	15.7	13.5	11.8	10.4	9.2	8.2	7.3	6.6

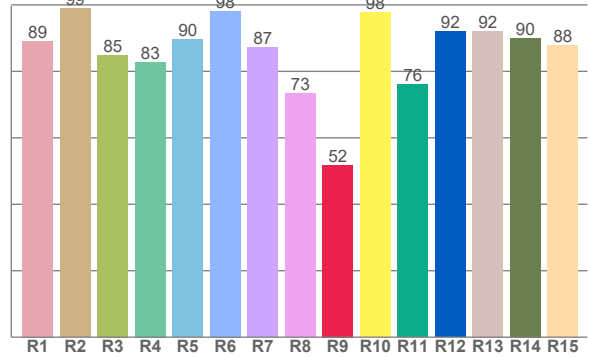
Color Details



TM30: 91.8



CRI: 88.0 (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
89.1	98.9	84.9	82.8	89.5	98.1	87.1	73.4	51.8	97.6	76.0	92.0	92.1	90.0	87.8

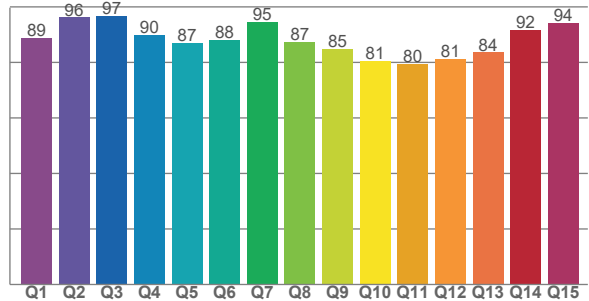
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89.3	88.6	88.8	92.0	93.5	90.1	90.4	90.4	92.3	93.8	96.3	94.1	97.6	91.2	92.6	89.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
88.7	96.2	96.9	89.8	87.1	88.0	94.7	87.4	84.9	80.5	79.6	81.3	83.6	91.7	94.1

CQS: 86.8



Color Parameters

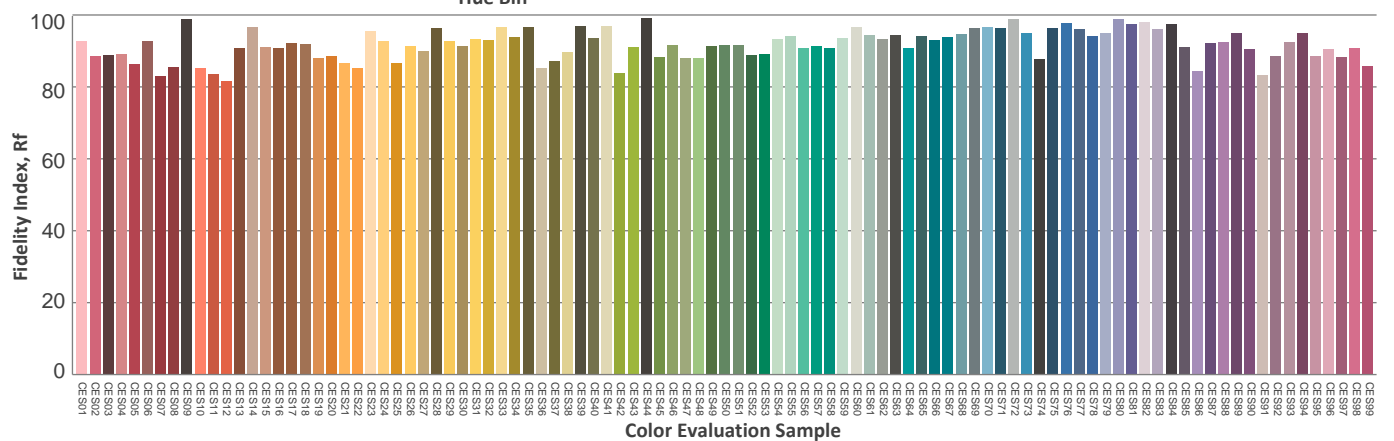
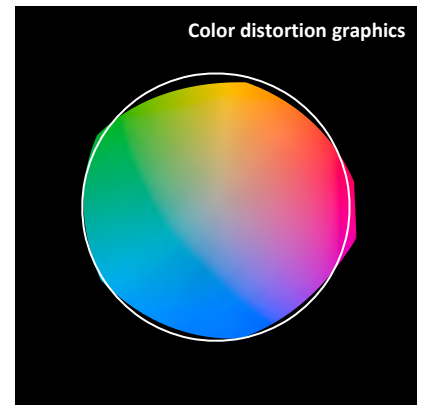
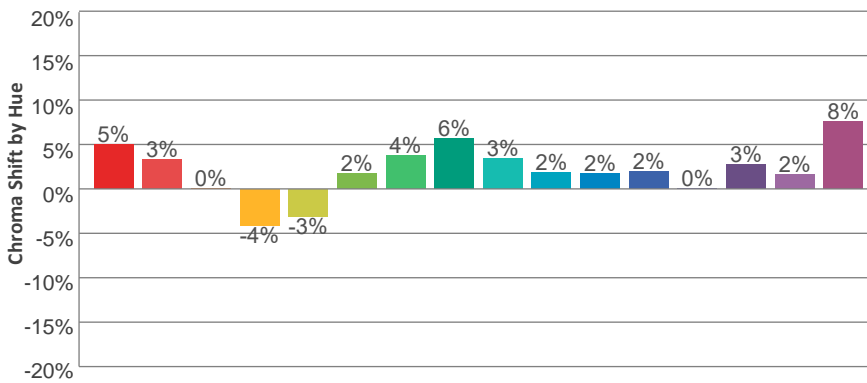
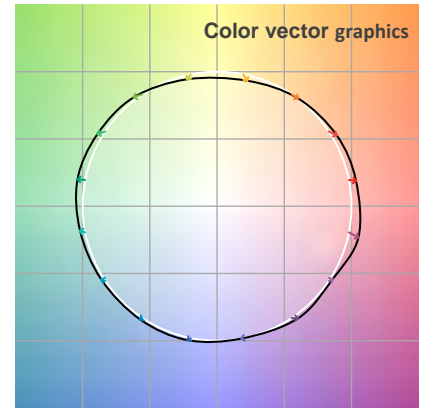
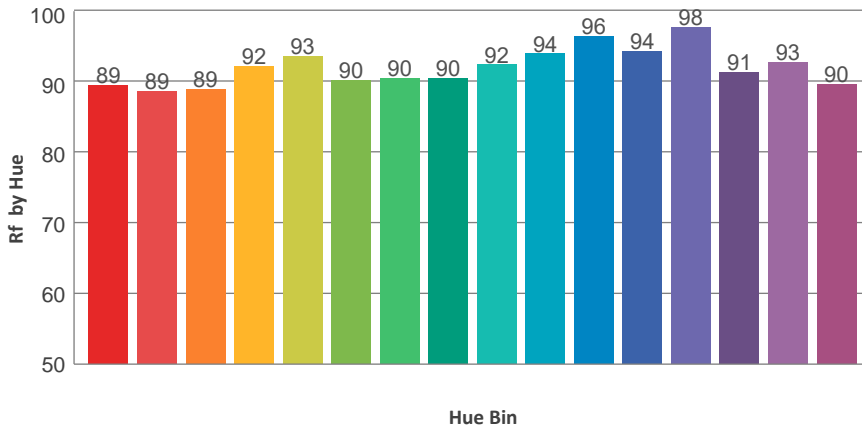
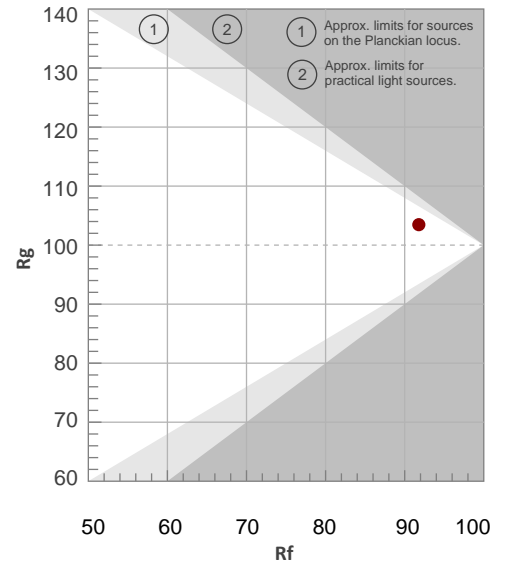
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2725 K	88.0	51.8	91.8	103.5	86.8	0.466	0.425	0.260	0.356	0.0047

TM30 Details

Rf 91.8
Fidelity Index Rf

Rg 103.5
Gamut Index Rg

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



Total Lumen Output: 7314 lm

Color Temperature: 3194 K

CRI: 89.7

TLCI: 94

TM30: 92.7

CQS: 91.1

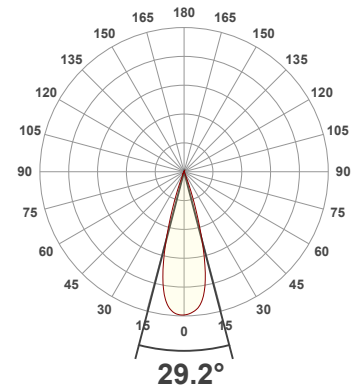
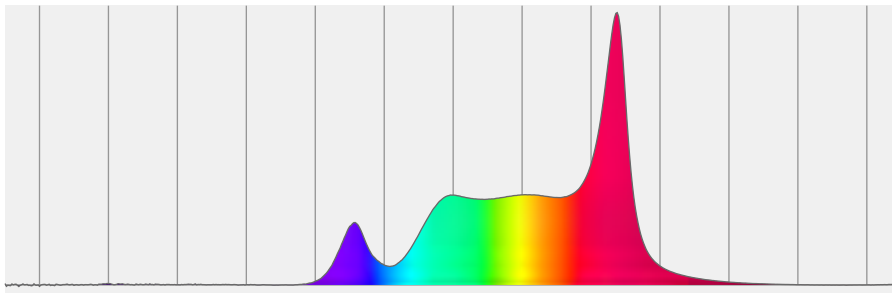
Measurement Date: 6/29/2021

Voltage: 109 V, Current: 2.27 A

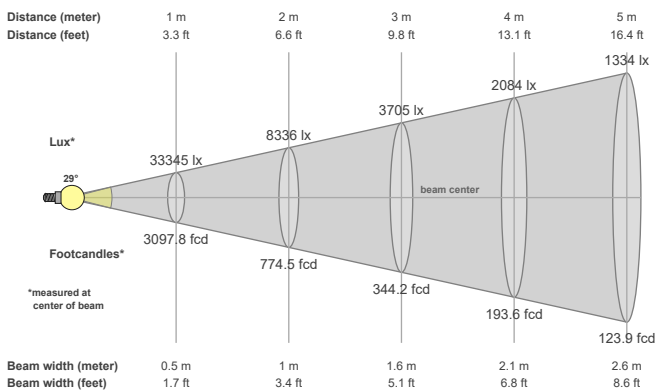
Power: 246.6 W

Efficacy: 30 Lumen/Watt

Spectral distribution
Dominant Wavelength 581



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.4°	45.8°

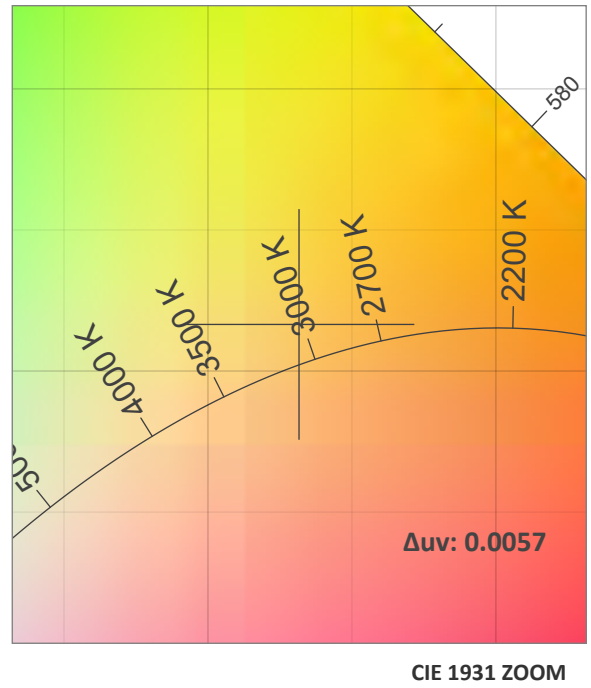
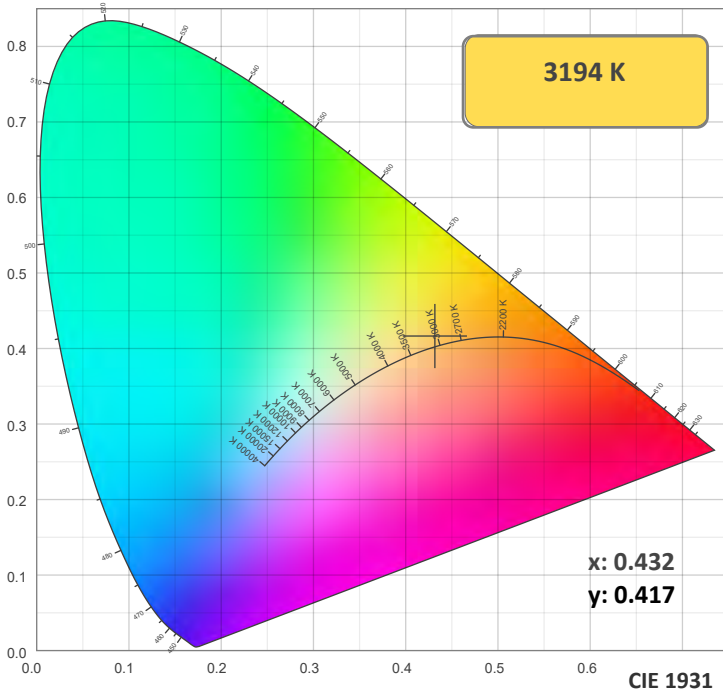
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
33384 cd	100.0%	99.8%

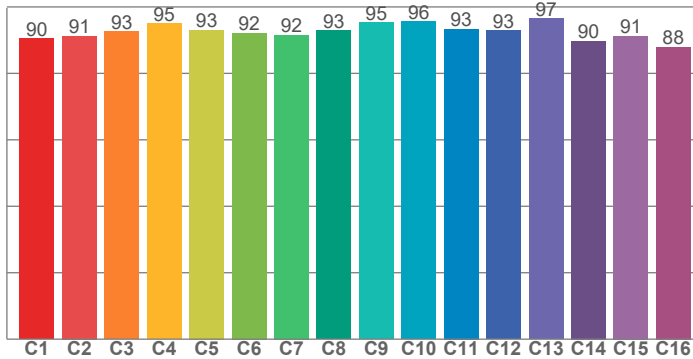
Beam Intensities from 1-20m

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	33345	8336	3705	2084	1334	926	681	521	412	333	276	232	197	170	148	130	115	103	92	83
FC	3097.8	774.5	344.2	193.6	123.9	86.1	63.2	48.4	38.2	31	25.6	21.5	18.3	15.8	13.8	12.1	10.7	9.6	8.6	7.7

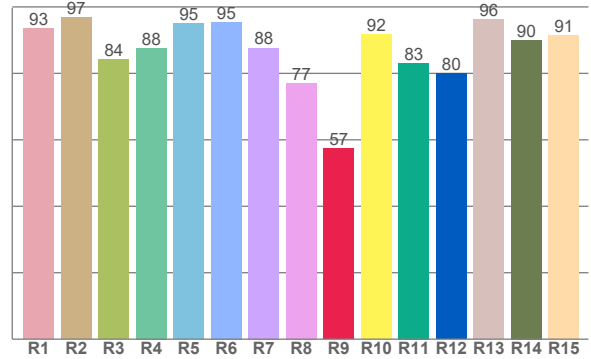
Color Details



TM30: 92.7



CRI: 89.7 (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
93.5	96.7	84.1	87.6	95.0	95.5	87.7	77.1	57.5	91.7	83.1	80.0	96.3	90.0	91.3

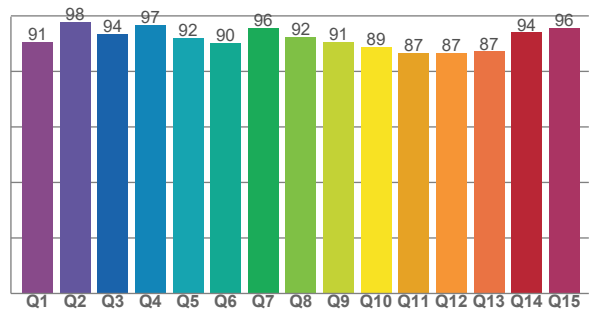
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.5	91.3	92.5	95.0	93.0	92.1	91.6	92.9	95.2	95.7	93.4	92.9	96.6	89.8	91.2	88.0

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
90.7	97.9	93.6	96.6	92.1	90.2	95.8	92.4	90.7	88.8	86.6	86.7	87.2	94.0	95.6

CQS: 91.1



Color Parameters

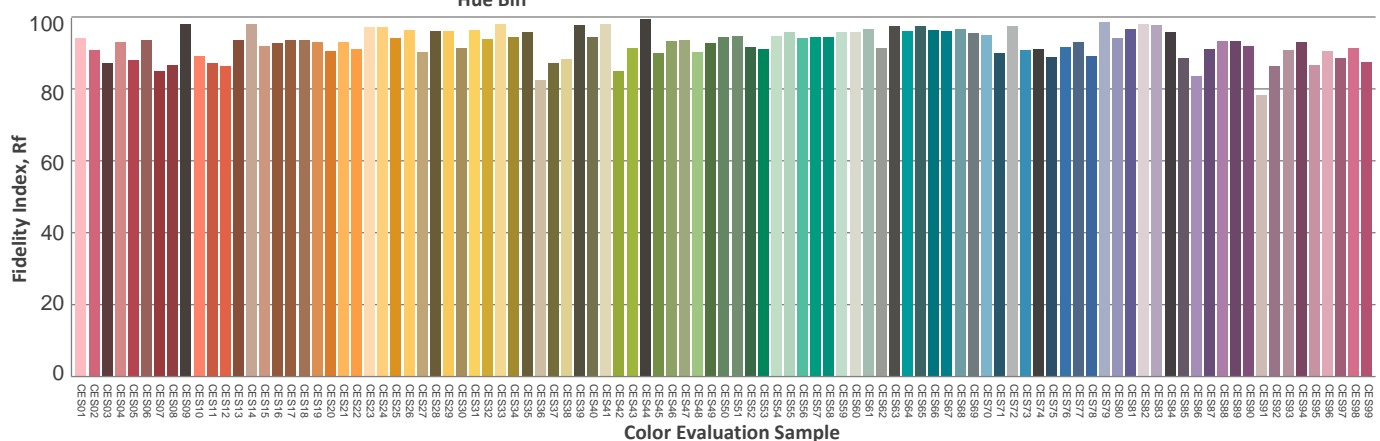
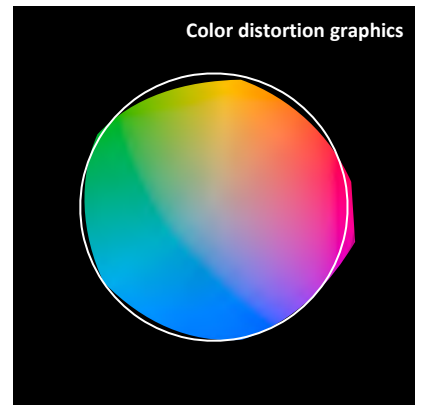
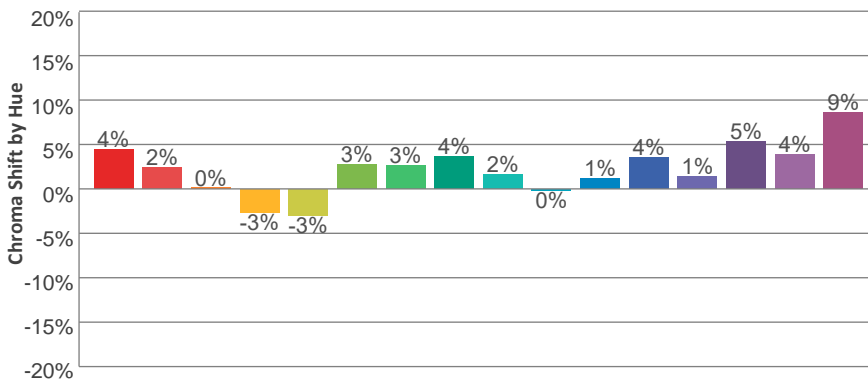
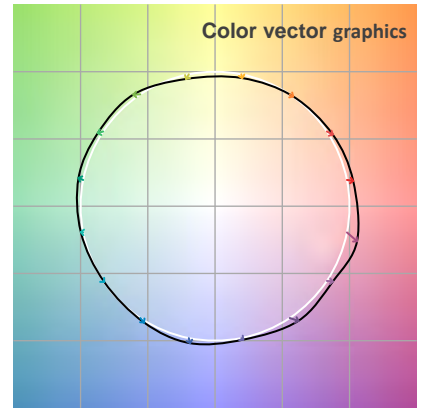
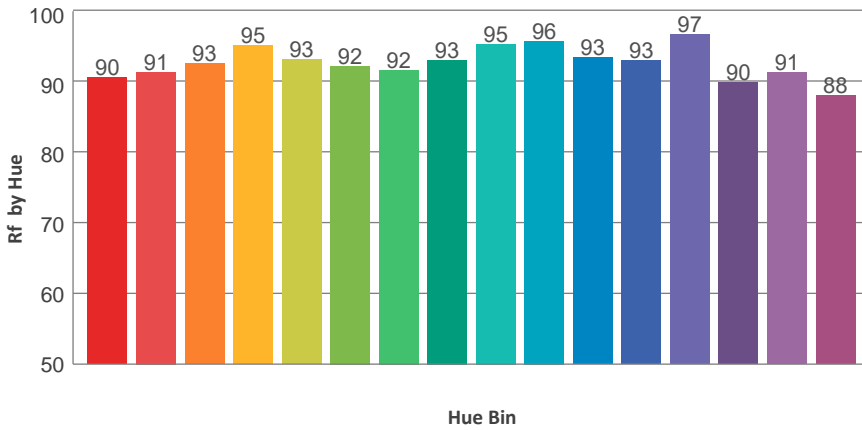
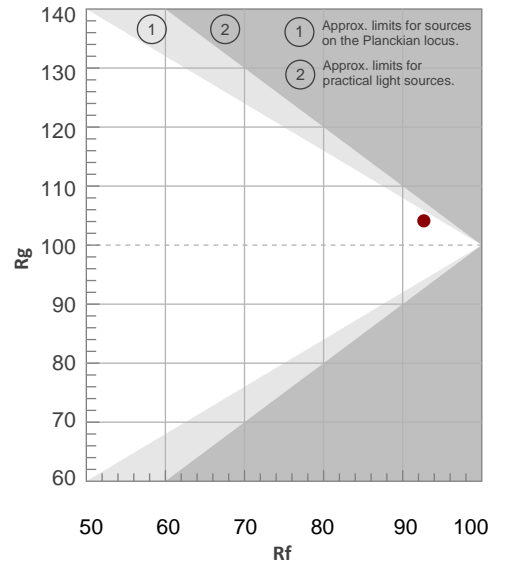
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3194 K	89.7	57.5	92.7	104.1	91.1	0.432	0.417	0.242	0.350	0.0057

TM30 Details

Rf 92.7
Fidelity Index Rf

Rg 104.1
Gamut Index Rg

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



Total Lumen Output: 8381 lm

Color Temperature: 4551 K

CRI: 91.6

TLCI: 94

TM30: 91.4

CQS: 93.4

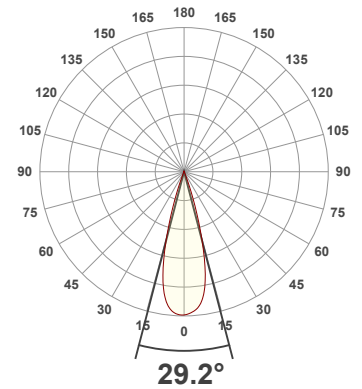
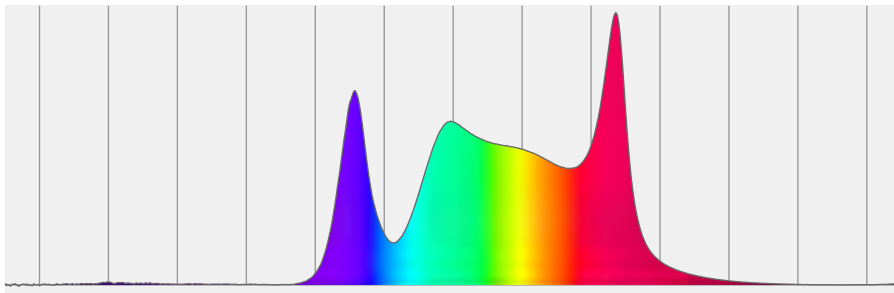
Measurement Date: 6/29/2021

Voltage: 110 V, Current: 2.33 A

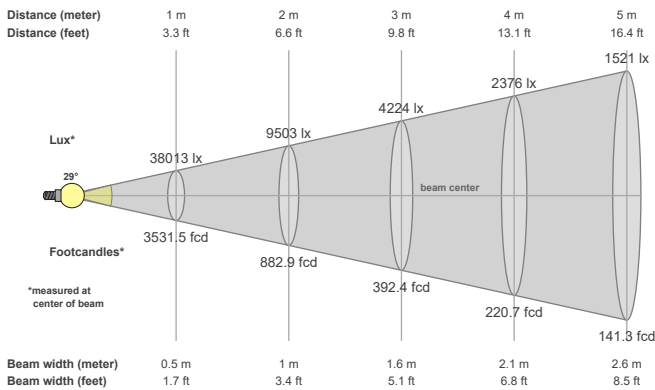
Power: 253.9 W

Efficacy: 33 Lumen/Watt

Spectral distribution
Dominant Wavelength 576



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.5°	46°

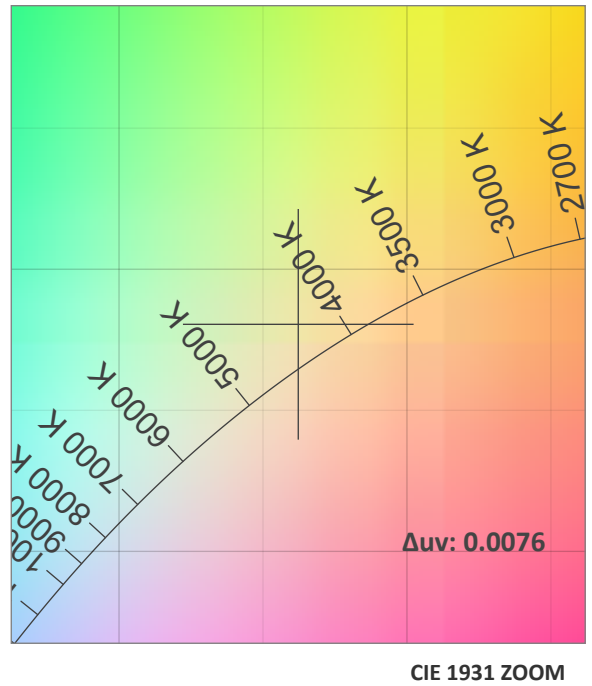
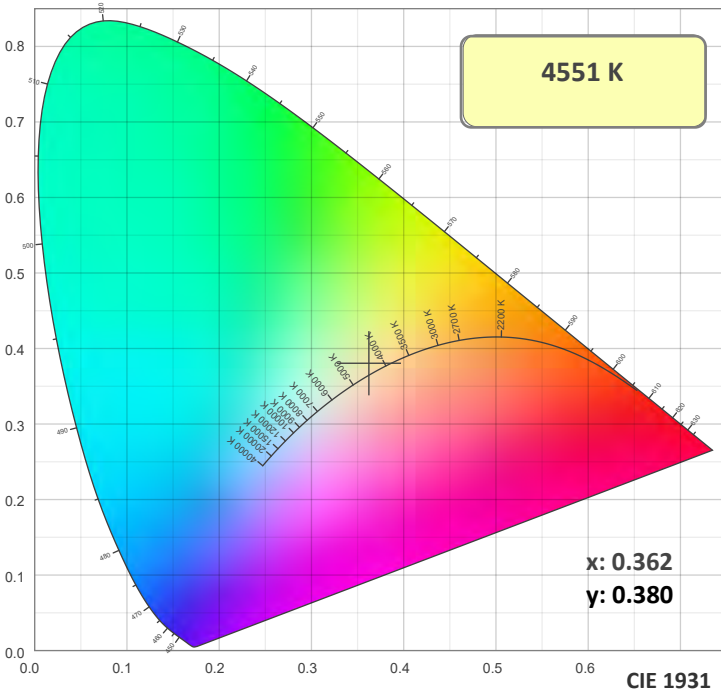
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
38063 cd	100.0%	99.7%

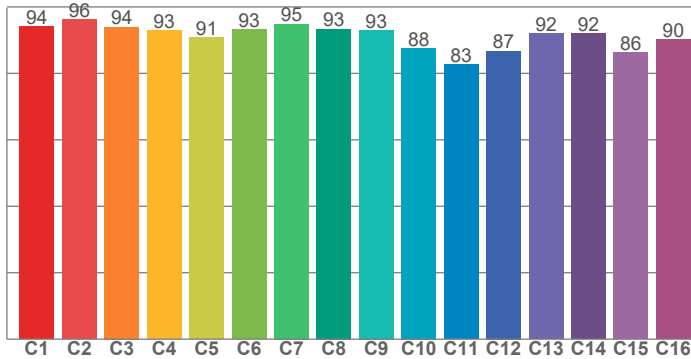
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	38013	9503	4224	2376	1521	1056	776	594	469	380	314	264	225	194	169	148	132	117	105	95
FC	3531.5	882.9	392.4	220.7	141.3	98.1	72.1	55.2	43.6	35.3	29.2	24.5	20.9	18	15.7	13.8	12.2	10.9	9.8	8.8

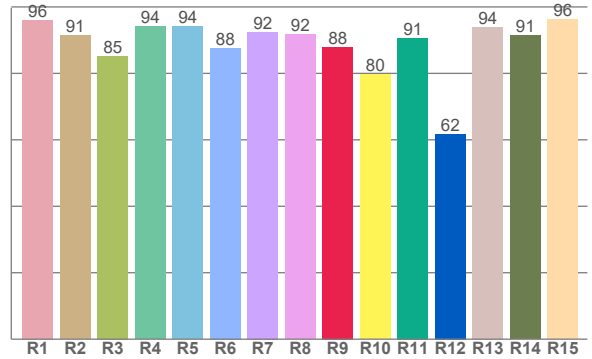
Color Details



TM30: 91.4



CRI: 91.6 (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
96.0	91.4	85.2	94.1	94.1	87.6	92.4	91.7	87.9	79.7	90.6	61.8	94.0	91.3	96.2

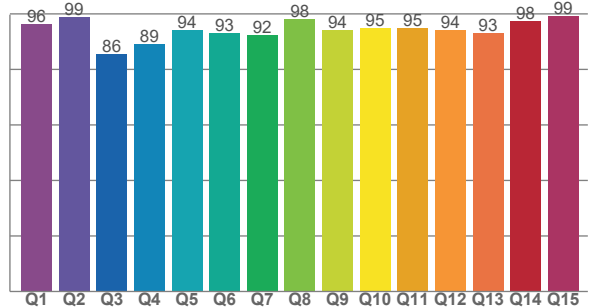
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.2	96.1	93.9	93.0	90.9	93.3	94.9	93.3	93.0	87.6	82.6	86.7	92.0	92.0	86.2	90.2

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
96.4	98.9	85.6	89.0	94.3	93.0	92.5	98.2	94.2	94.8	94.8	94.1	93.2	97.6	99.2

CQS: 93.4



Color Parameters

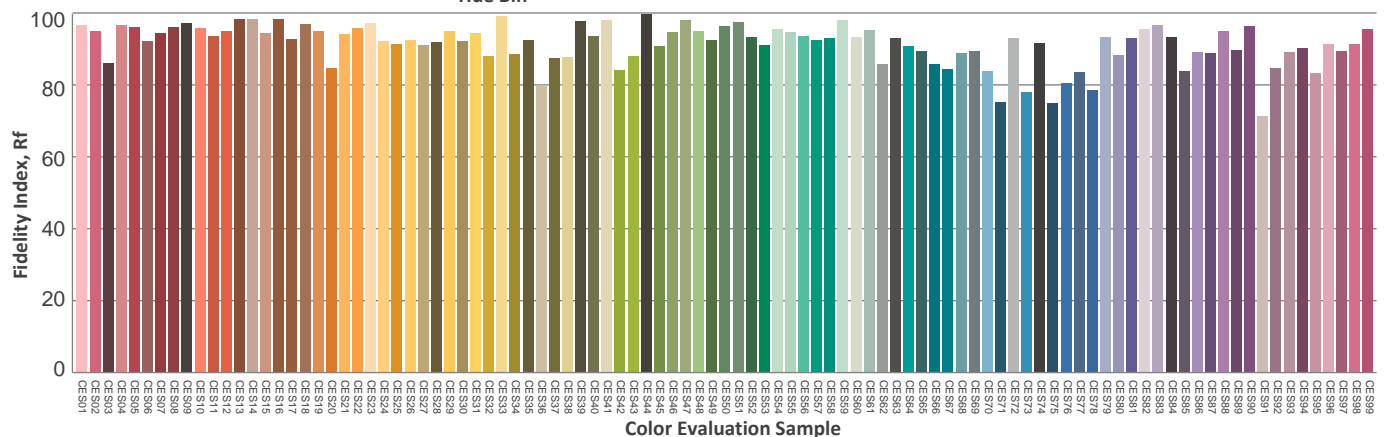
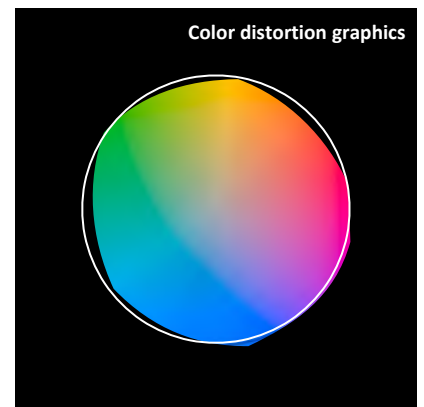
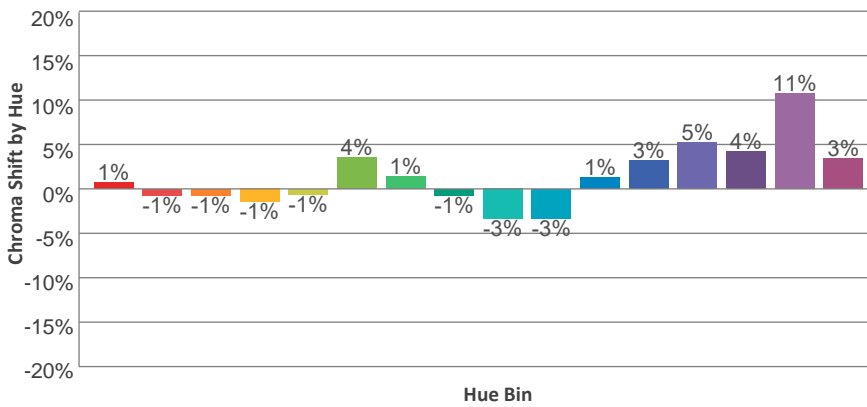
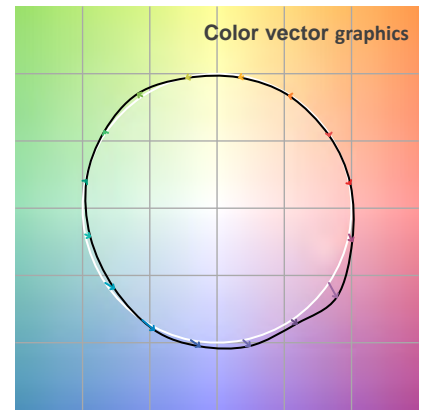
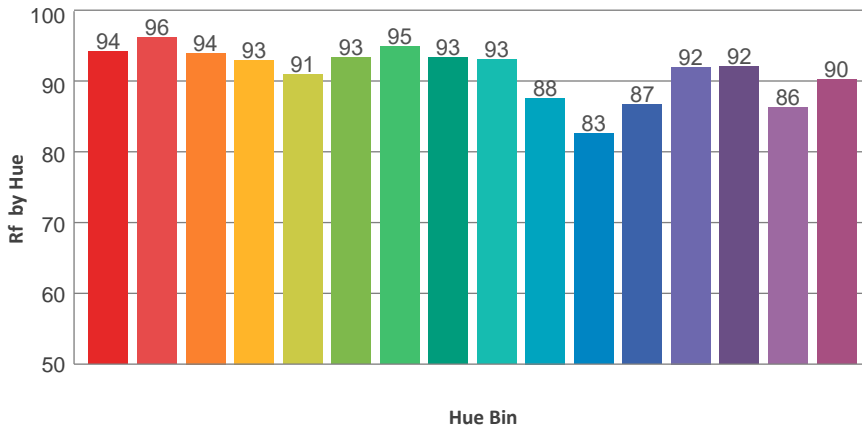
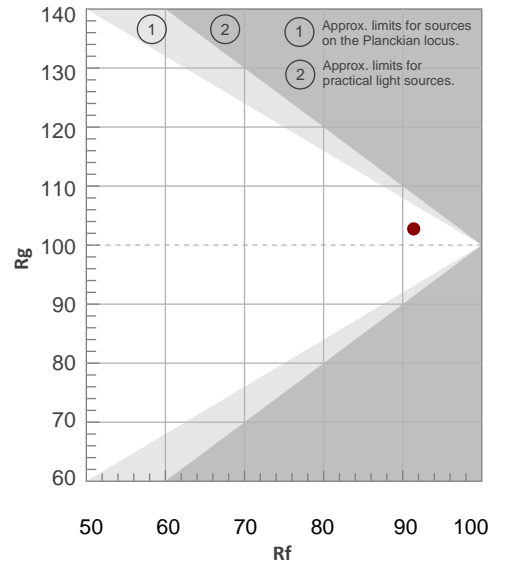
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4551 K	91.6	87.9	91.4	102.7	93.4	0.362	0.380	0.212	0.334	0.0076

TM30 Details

Rf 91.4
Fidelity Index Rf

Rg 102.7
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	94	1%	-2%
2	96	-1%	-2%
3	94	-1%	2%
4	93	-1%	3%
5	91	-1%	3%
6	93	4%	2%
7	95	1%	-1%
8	93	-1%	-1%
9	93	-3%	2%
10	88	-3%	7%
11	83	1%	11%
12	87	3%	7%
13	92	5%	4%
14	92	4%	2%
15	86	11%	-6%
16	90	3%	-4%



Total Lumen Output: 8198 lm

Color Temperature: 5638 K

CRI: 91.3

TLCI: 94

TM30: 90.6

CQS: 92.6

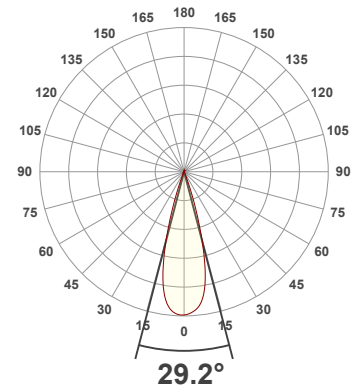
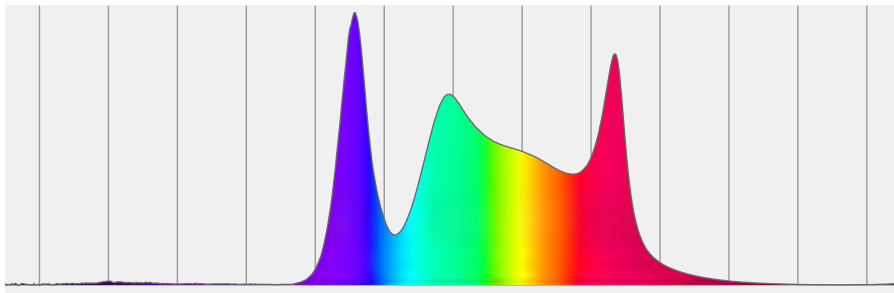
Measurement Date: 6/29/2021

Voltage: 110 V, Current: 2.27 A

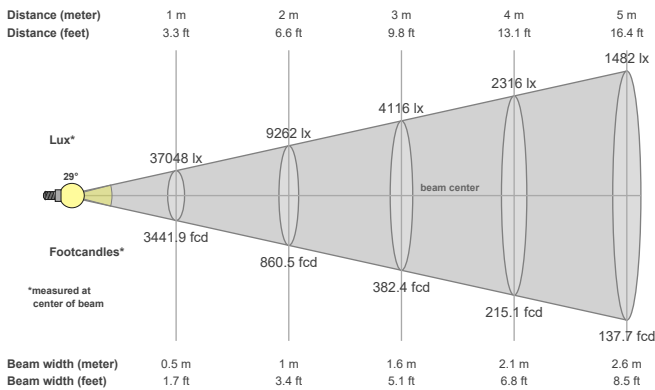
Power: 249.3 W

Efficacy: 33 Lumen/Watt

Spectral distribution
Dominant Wavelength 571



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.5°	46°

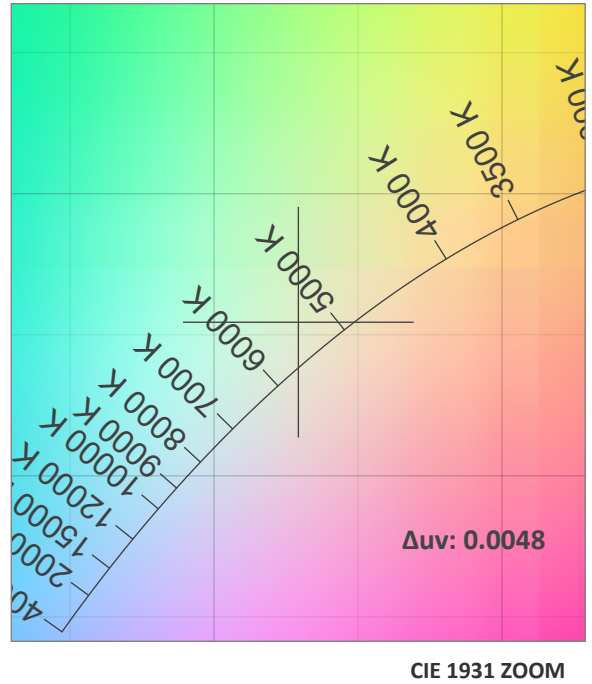
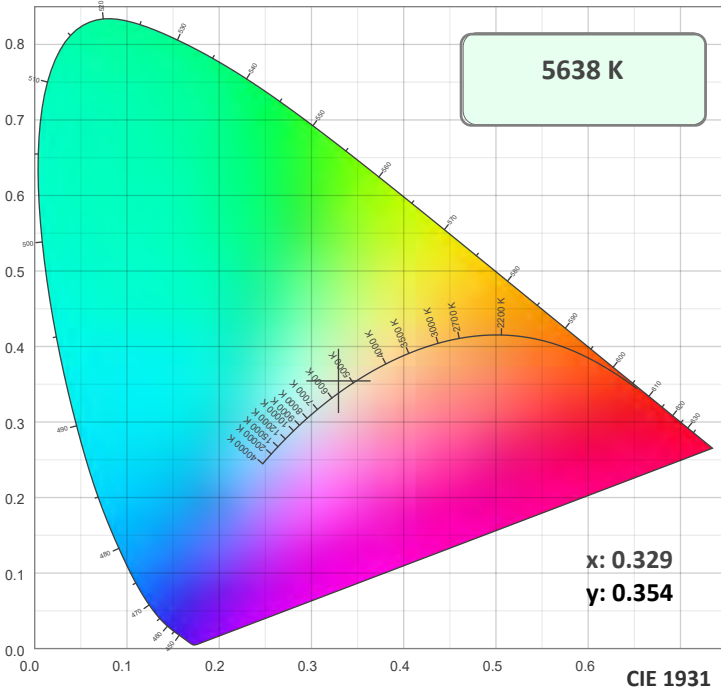
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
37091 cd	100.0%	99.7%

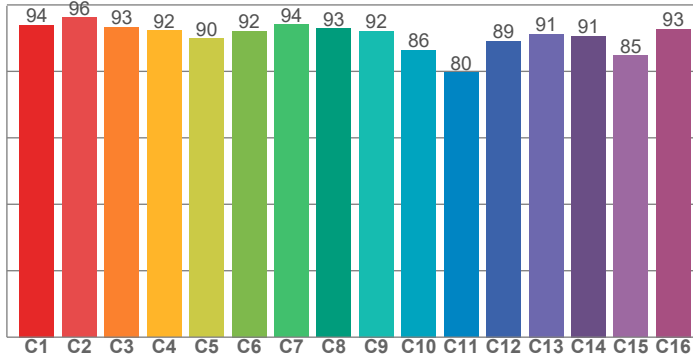
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	37048	9262	4116	2316	1482	1029	756	579	457	370	306	257	219	189	165	145	128	114	103	93
FC	3441.9	860.5	382.4	215.1	137.7	95.6	70.2	53.8	42.5	34.4	28.4	23.9	20.4	17.6	15.3	13.4	11.9	10.6	9.5	8.6

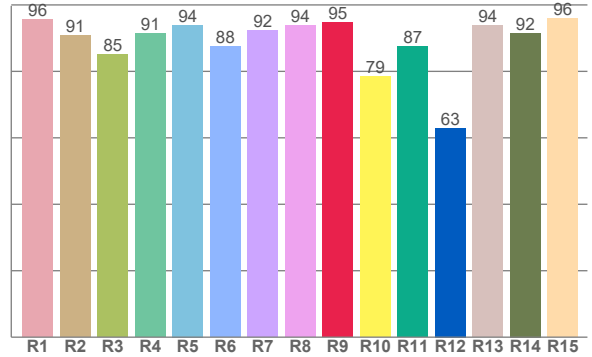
Color Details



TM30: 90.6



CRI: 91.3 (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
95.6	90.7	85.1	91.4	93.9	87.5	92.3	93.8	94.6	78.5	87.4	63.0	93.8	91.5	95.9

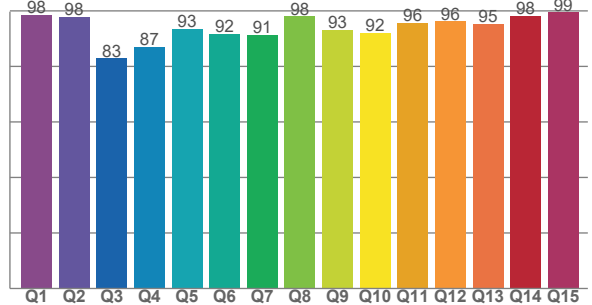
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
94.0	96.3	93.4	92.2	89.8	92.1	94.1	92.9	92.1	86.4	79.7	89.1	91.2	90.6	84.8	92.7

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
98.5	97.7	82.9	87.0	93.4	91.7	91.2	98.0	93.2	92.1	95.6	96.2	95.3	98.2	99.4

CQS: 92.6



Color Parameters

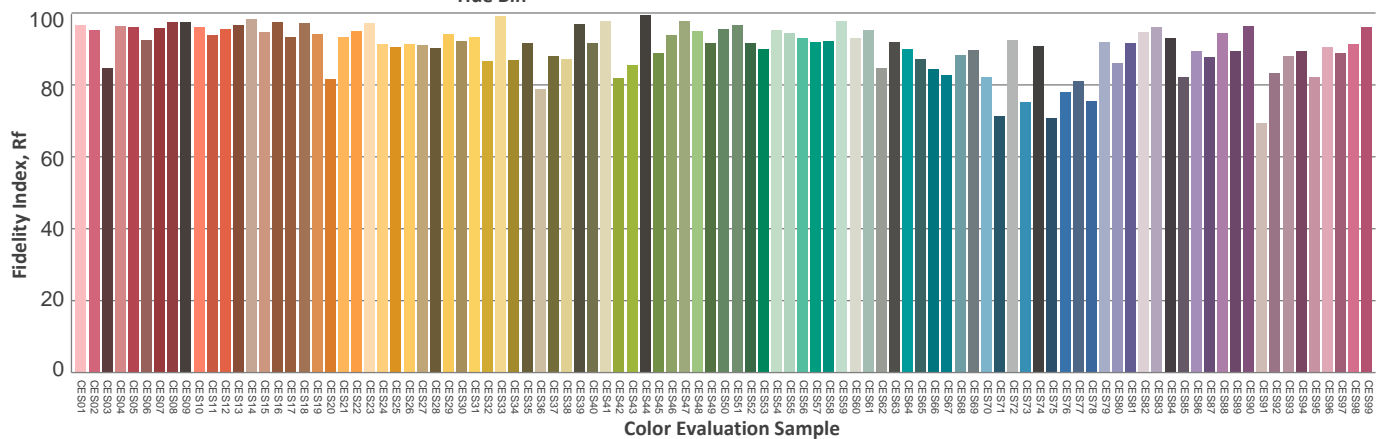
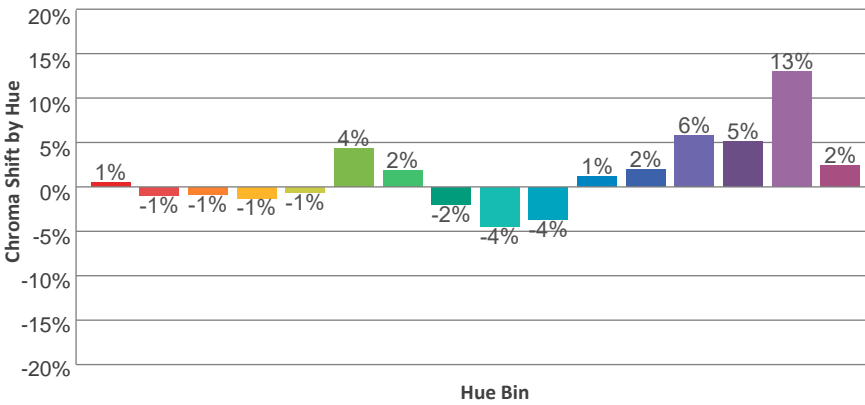
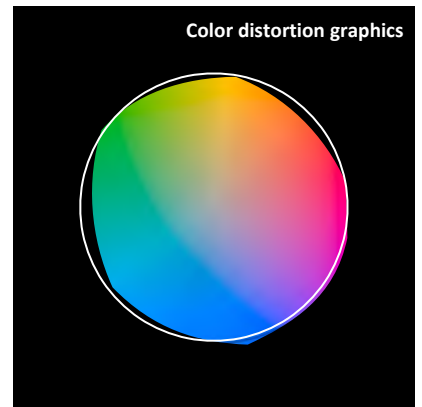
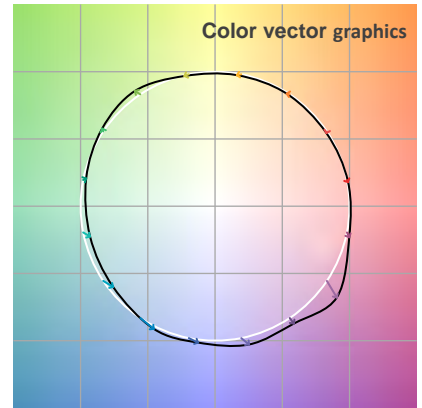
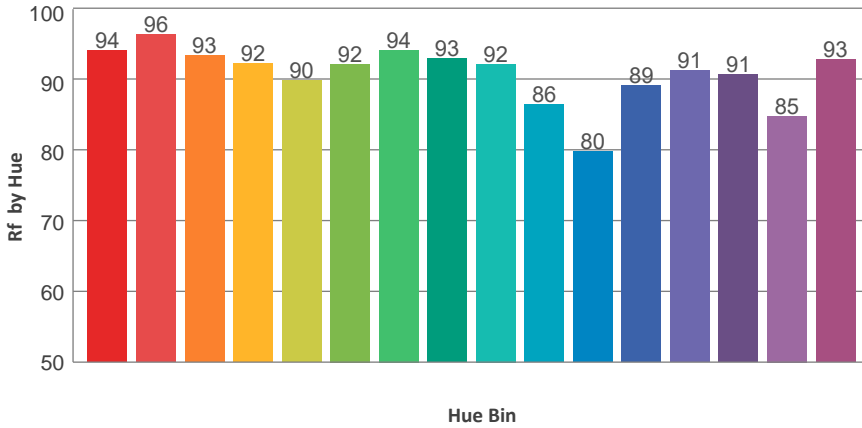
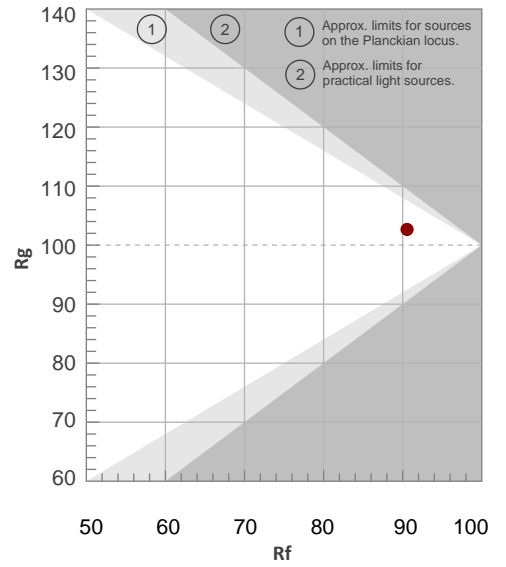
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5638 K	91.3	94.6	90.6	102.7	92.6	0.329	0.354	0.200	0.322	0.0048

TM30 Details

Rf 90.6
Fidelity Index Rf

Rg 102.7
Gamut Index Rg

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



Total Lumen Output: 8091 lm

Color Temperature: 5966 K

CRI: 91.3

TLCI: 94

TM30: 90.4

CQS: 92.6

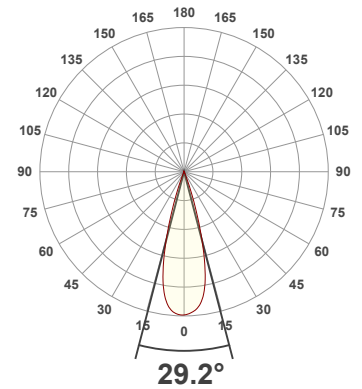
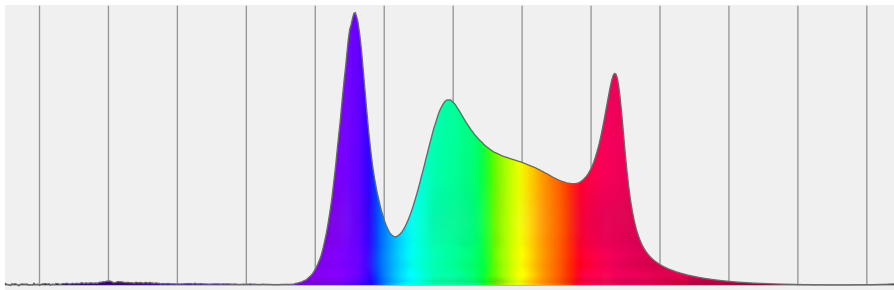
Measurement Date: 6/29/2021

Voltage: 109 V, Current: 2.41 A

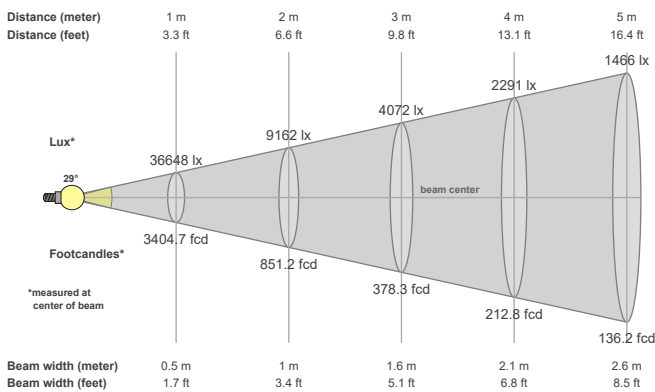
Power: 261.7 W

Efficacy: 31 Lumen/Watt

Spectral distribution
Dominant Wavelength 568



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.7°	46°

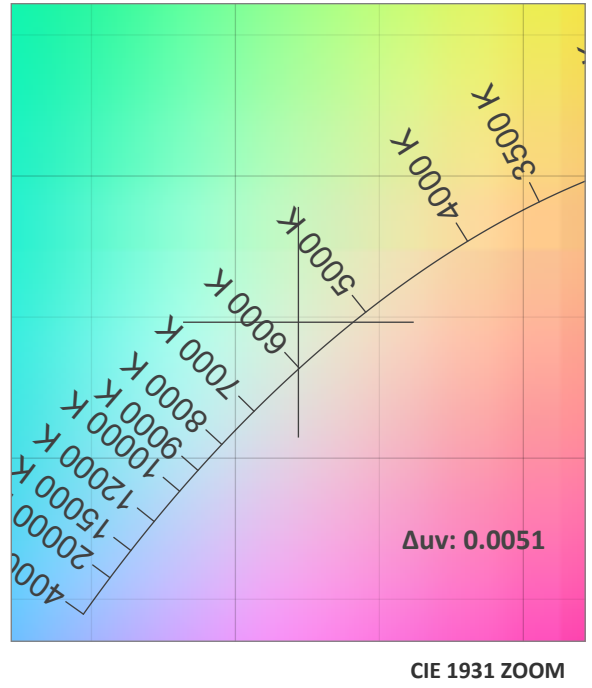
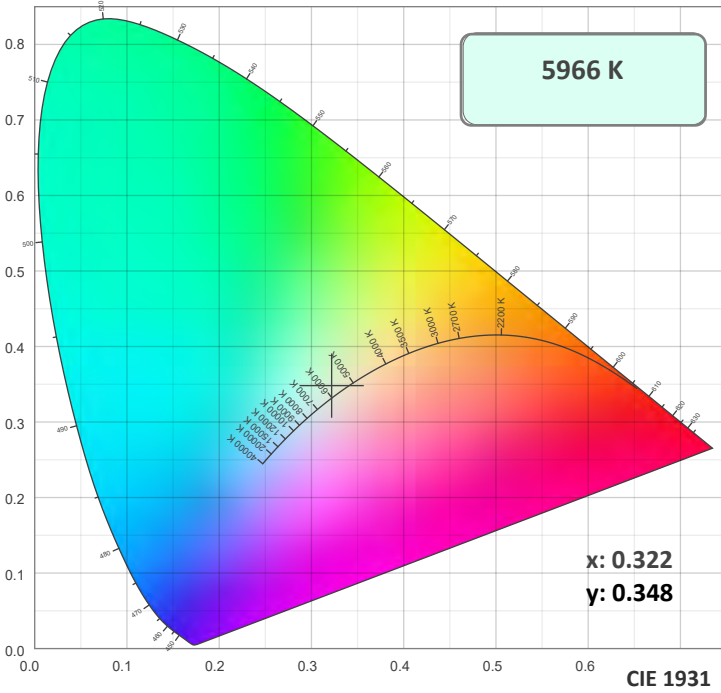
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
36716 cd	100.0%	99.8%

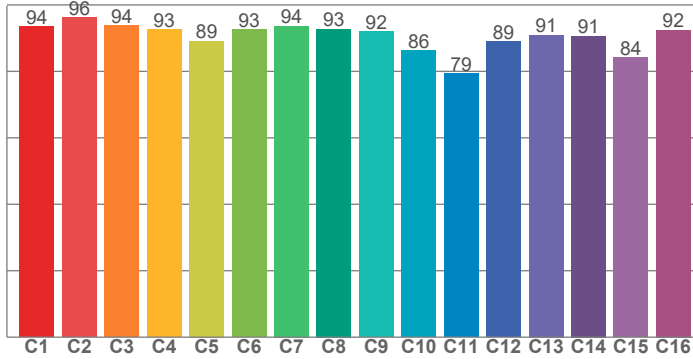
Beam Intensities from 1-20m

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	36648	9162	4072	2291	1466	1018	748	573	452	366	303	255	217	187	163	143	127	113	102	92
FC	3404.7	851.2	378.3	212.8	136.2	94.6	69.5	53.2	42	34	28.1	23.6	20.1	17.4	15.1	13.3	11.8	10.5	9.4	8.5

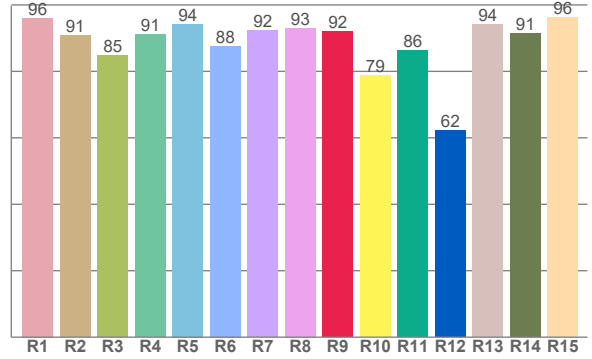
Color Details



TM30: 90.4



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
96.1	90.8	84.9	91.1	94.2	87.7	92.2	93.1	92.0	78.8	86.3	62.3	94.2	91.4	96.3

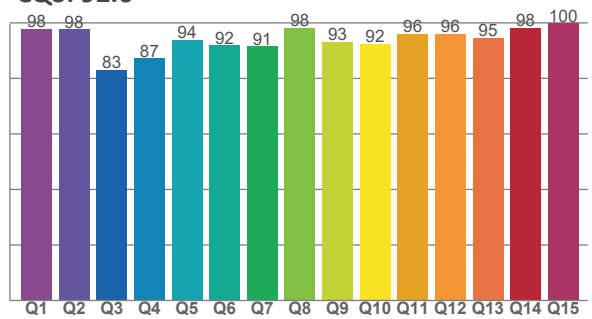
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.5	96.2	93.7	92.6	89.1	92.7	93.6	92.7	91.9	86.3	79.4	89.0	91.0	90.6	84.2	92.5

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.9	97.7	83.0	87.2	93.7	91.9	91.5	98.0	93.0	92.3	95.9	95.9	94.6	98.2	99.8

CQS: 92.6



Color Parameters

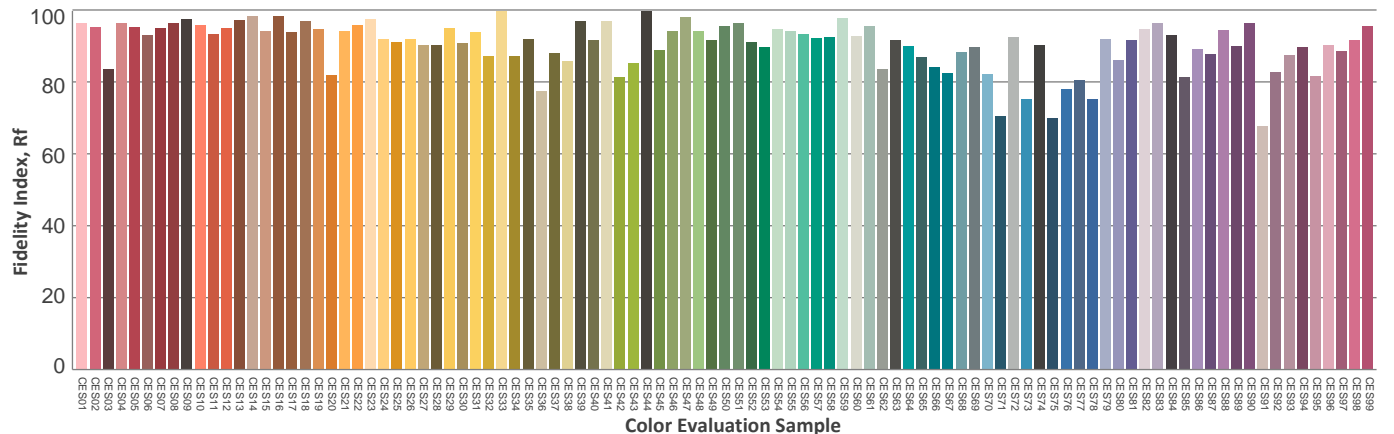
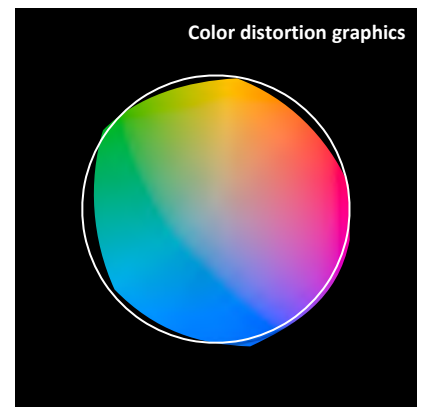
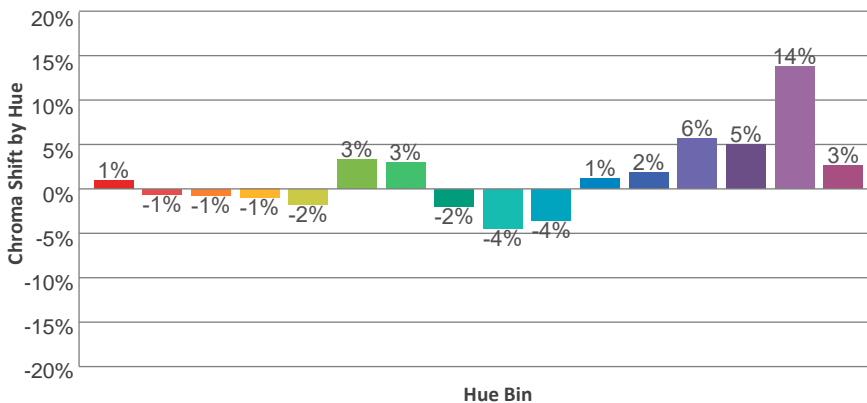
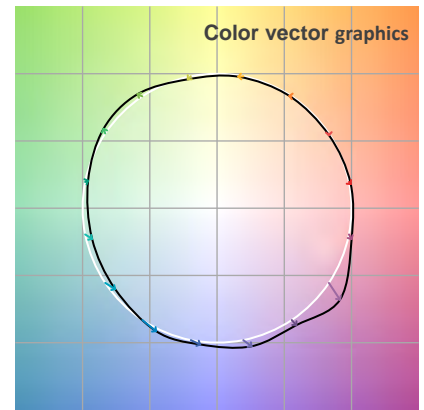
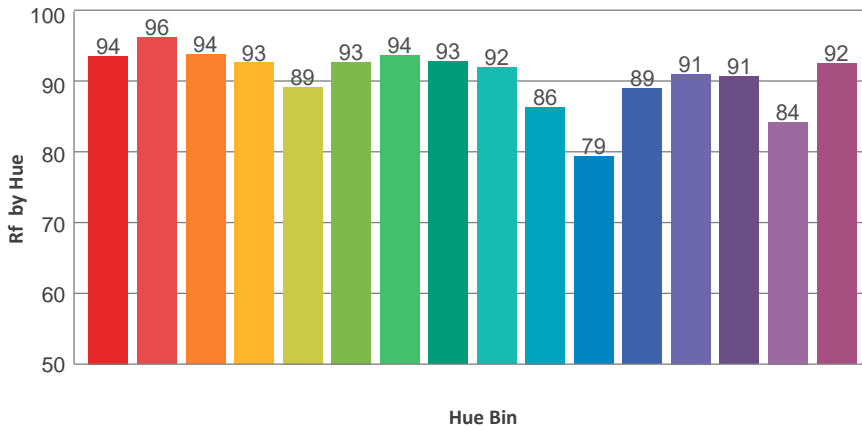
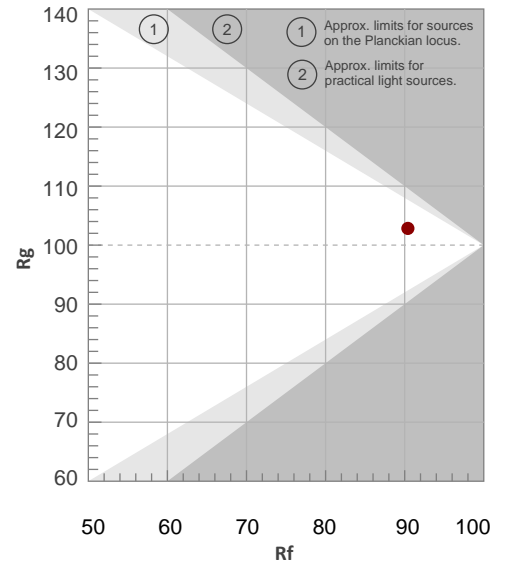
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5966 K	91.3	92.0	90.4	102.8	92.6	0.322	0.348	0.197	0.320	0.0051

TM30 Details

Rf 90.4
Fidelity Index Rf

Rg 102.8
Gamut Index Rg

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



Total Lumen Output: 7872 lm

Color Temperature: 6488 K

CRI: 91.2

TLCI: 94

TM30: 89.9

CQS: 92.2

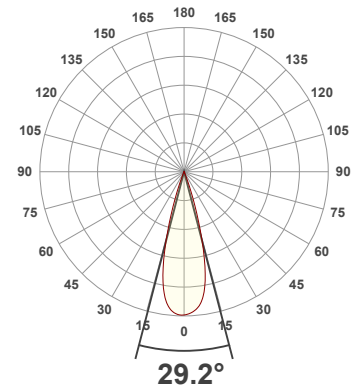
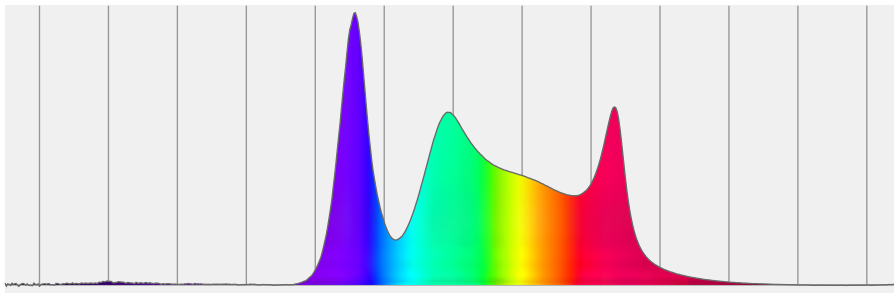
Measurement Date: 6/29/2021

Voltage: 109 V, Current: 2.30 A

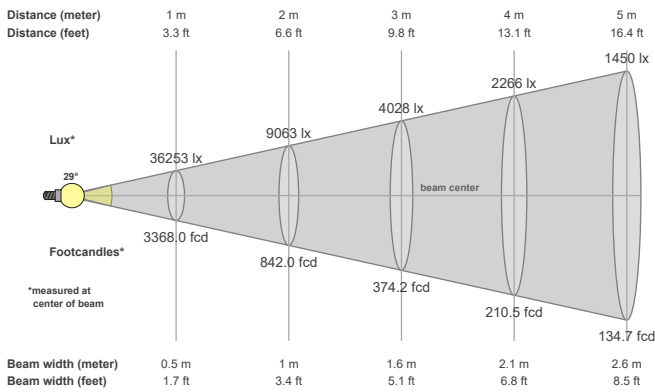
Power: 249.2 W

Efficacy: 32 Lumen/Watt

Spectral distribution
Dominant Wavelength 547



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.5°	45.7°

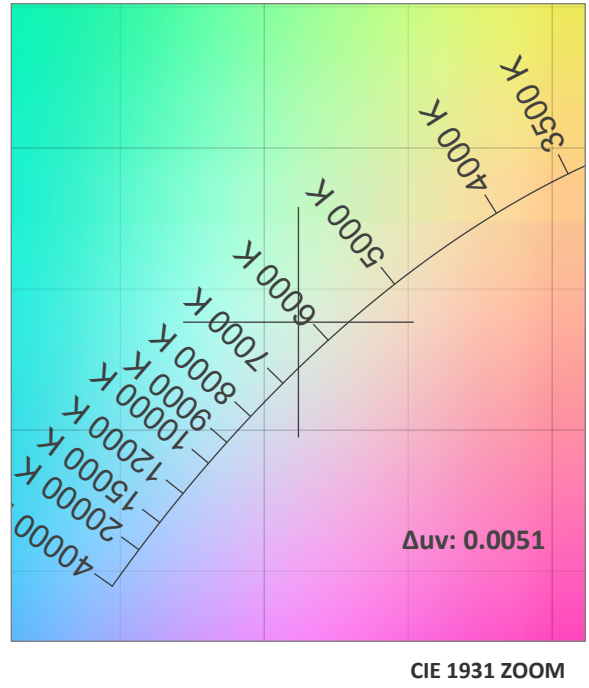
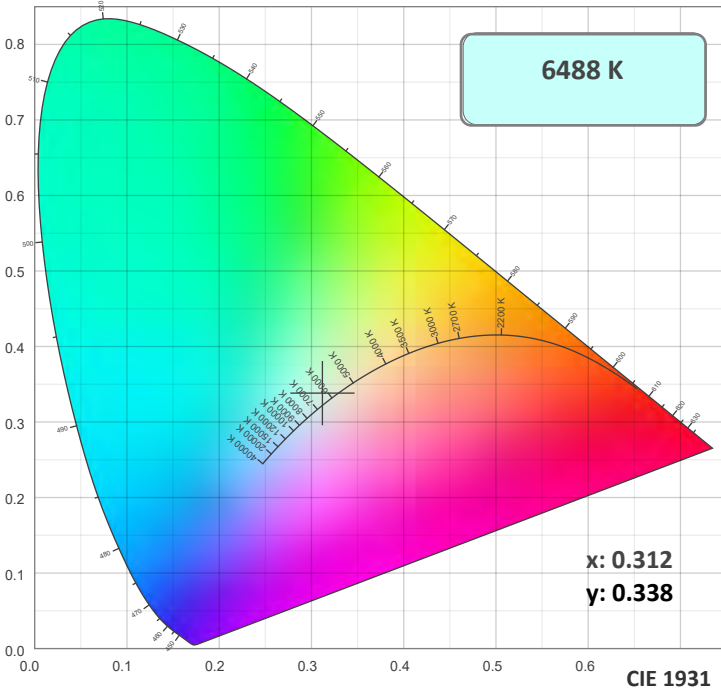
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
36287 cd	100.0%	100.0%

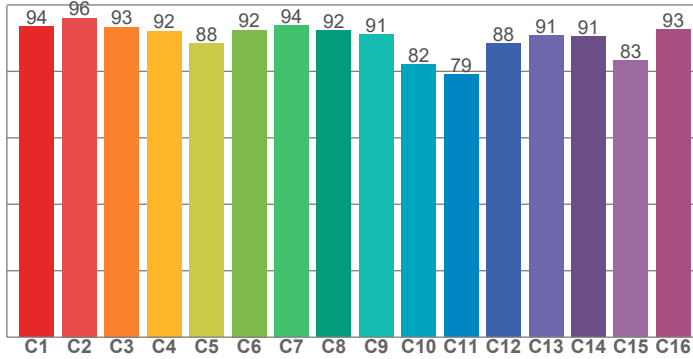
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	36253	9063	4028	2266	1450	1007	740	566	448	363	300	252	215	185	161	142	125	112	100	91
FC	3368	842	374.2	210.5	134.7	93.6	68.7	52.6	41.6	33.7	27.8	23.4	19.9	17.2	15	13.2	11.7	10.4	9.3	8.4

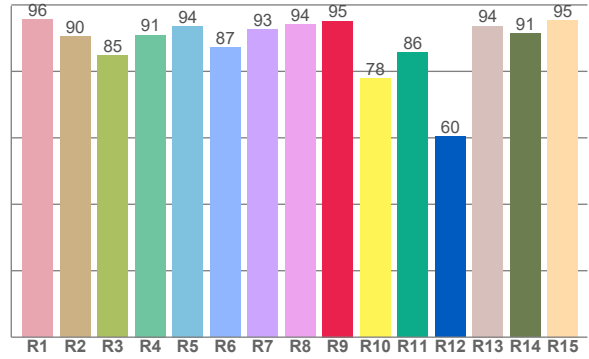
Color Details



TM30: 89.9



CRI: 91.2 (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
95.5	90.5	84.7	91.0	93.7	87.2	92.7	94.2	95.2	77.8	85.8	60.3	93.7	91.5	95.4

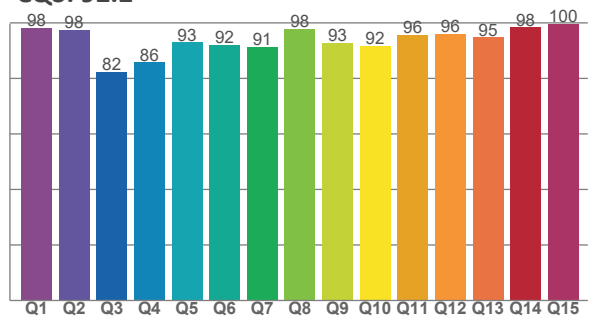
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.6	96.1	93.3	92.2	88.5	92.5	93.7	92.2	91.1	82.1	79.1	88.5	90.8	90.5	83.3	92.6

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
98.2	97.6	82.3	85.8	93.0	92.1	91.4	97.9	92.9	91.7	95.7	96.0	94.7	98.4	99.6

CQS: 92.2



Color Parameters

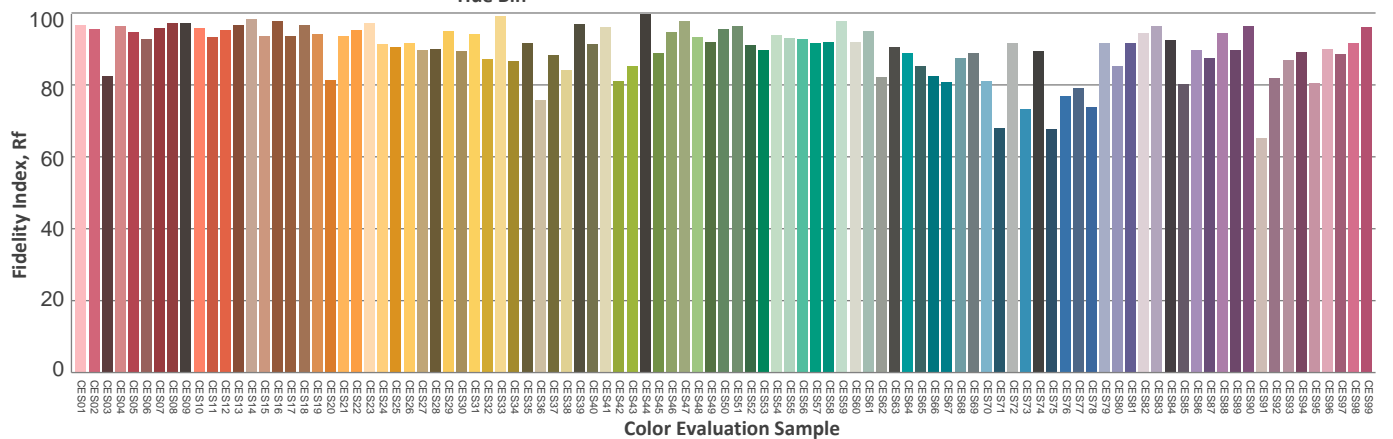
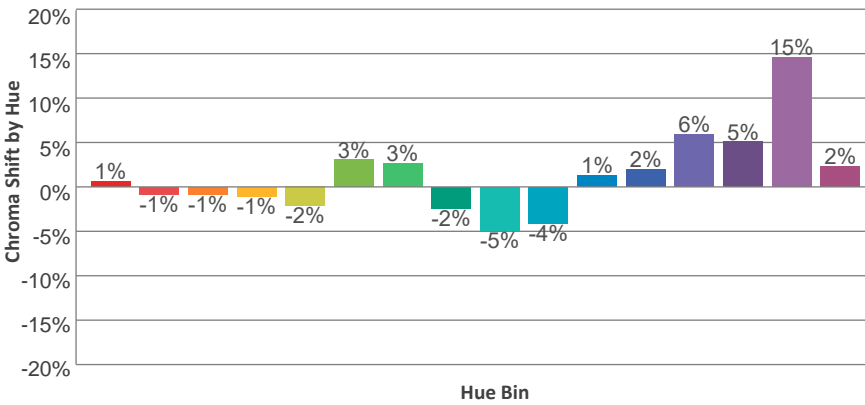
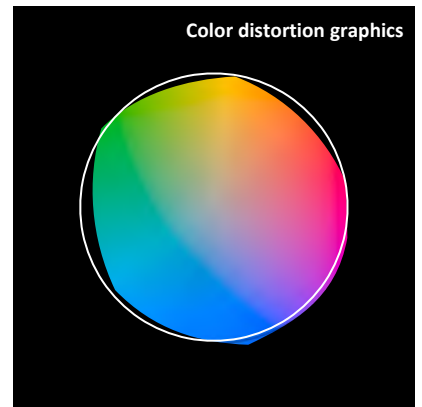
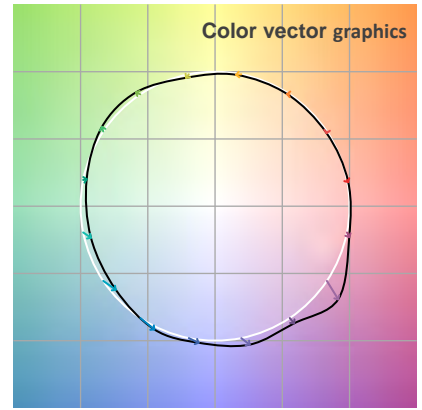
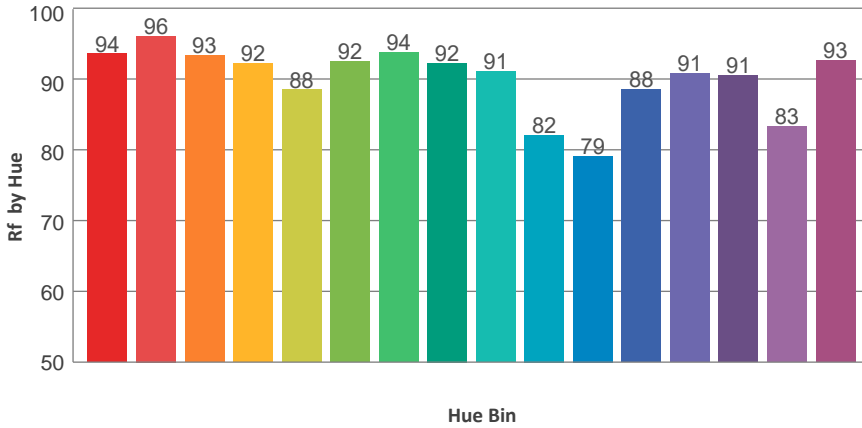
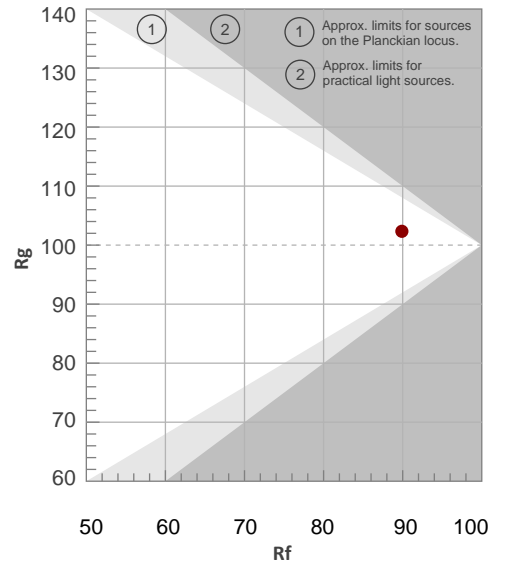
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6488 K	91.2	95.2	89.9	102.3	92.2	0.312	0.338	0.194	0.315	0.0051

TM30 Details

Rf 89.9
Fidelity Index Rf

Rg 102.3
Gamut Index Rg

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



Total Lumen Output: 8574 lm

Color Temperature: 6562 K

CRI: 92.1

TLCI: 94

TM30: 89.2

CQS: 91.0

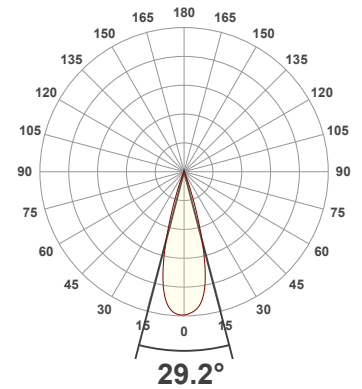
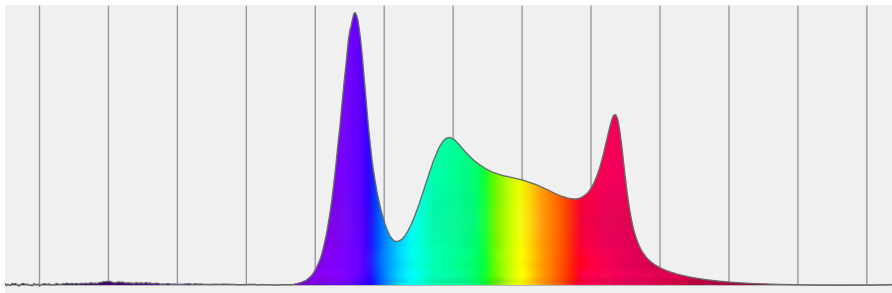
Measurement Date: 6/29/2021

Voltage: 109 V, Current: 2.56 A

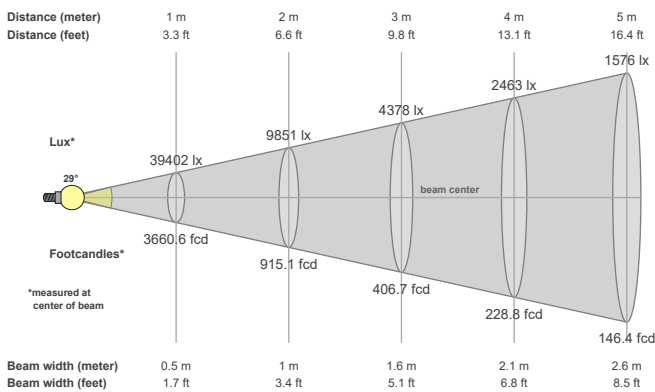
Power: 277.6 W

Efficacy: 31 Lumen/Watt

Spectral distribution
Dominant Wavelength 360



Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.4°	45.8°

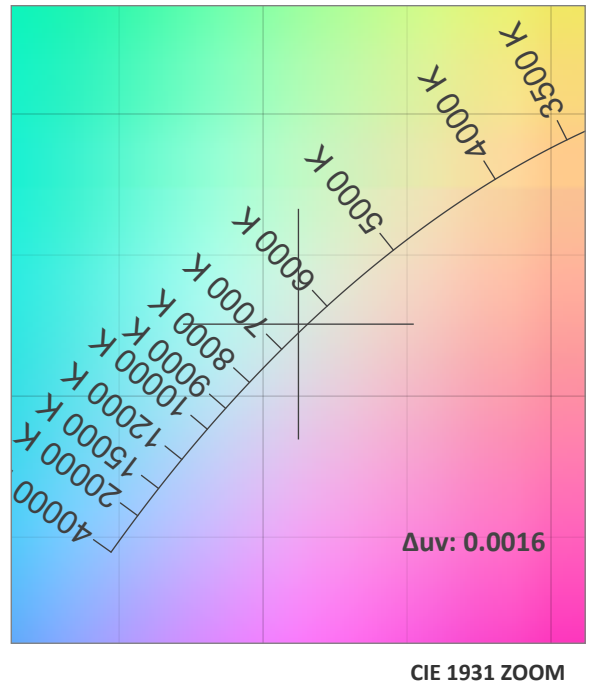
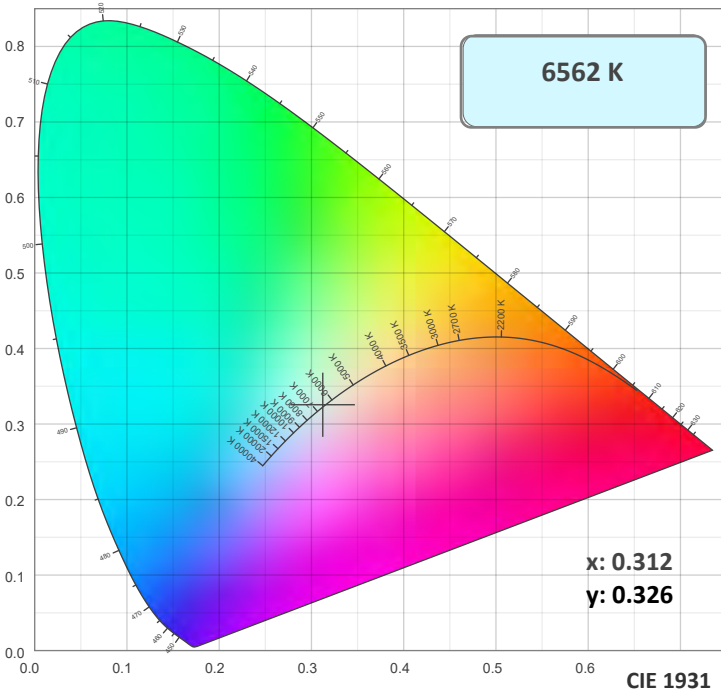
Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
39448 cd	100.0%	100.0%

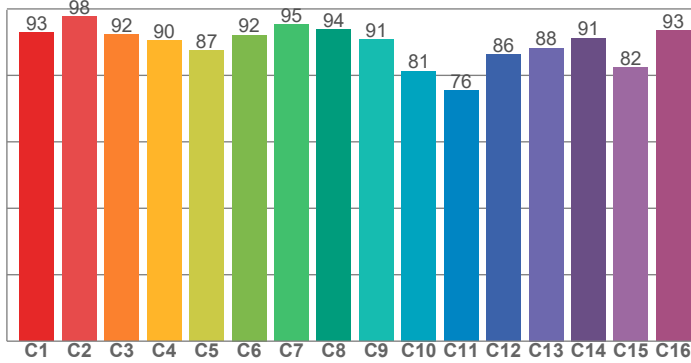
Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	39402	9851	4378	2463	1576	1095	804	616	486	394	326	274	233	201	175	154	136	122	109	99
FC	3660.6	915.1	406.7	228.8	146.4	101.7	74.7	57.2	45.2	36.6	30.3	25.4	21.7	18.7	16.3	14.3	12.7	11.3	10.1	9.2

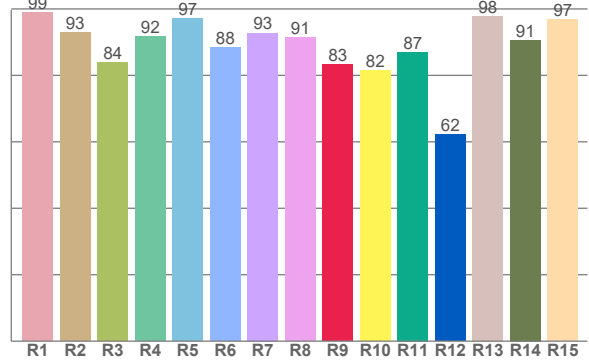
Color Details



TM30: 89.2



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
99.0	92.9	83.9	91.7	97.0	88.4	92.8	91.4	83.3	81.5	87.0	62.2	97.8	90.6	96.7

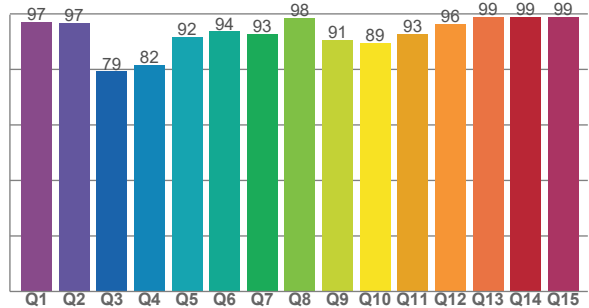
TM30 C Values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
92.8	97.7	92.3	90.4	87.4	92.2	95.2	93.9	90.8	81.3	75.5	86.3	88.2	91.2	82.4	93.4

CQS Q Values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
97.2	96.6	79.3	81.7	91.6	93.7	92.7	98.4	90.6	89.5	92.9	96.3	98.9	99.0	98.8

CQS: 91.0



Color Parameters

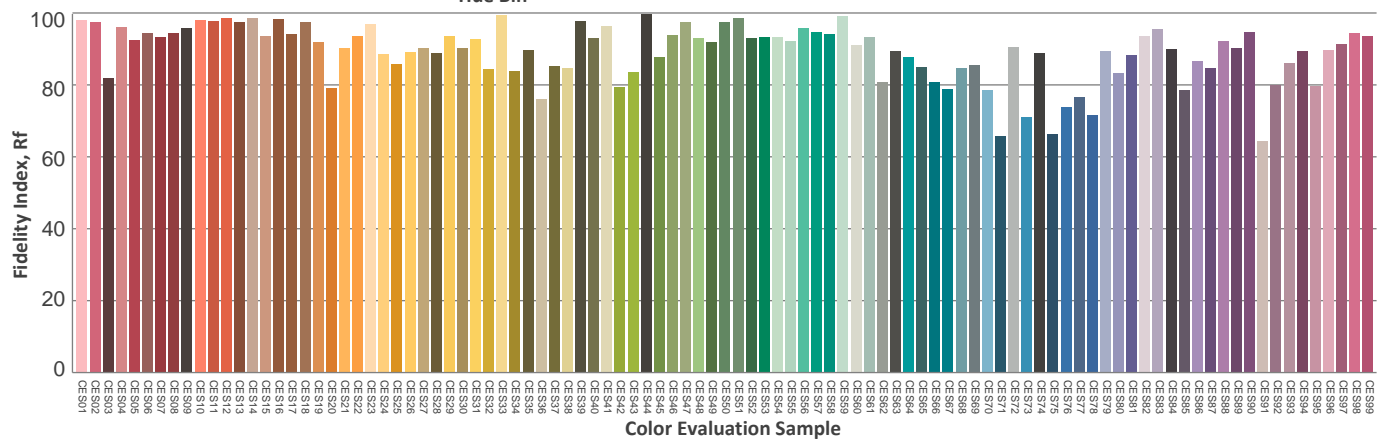
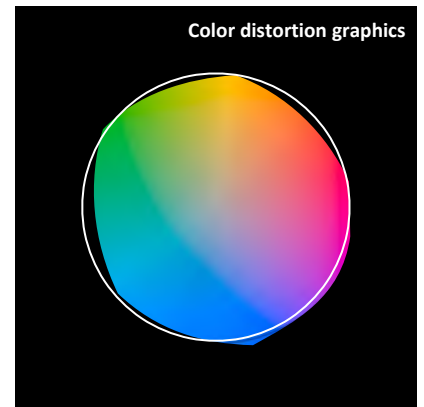
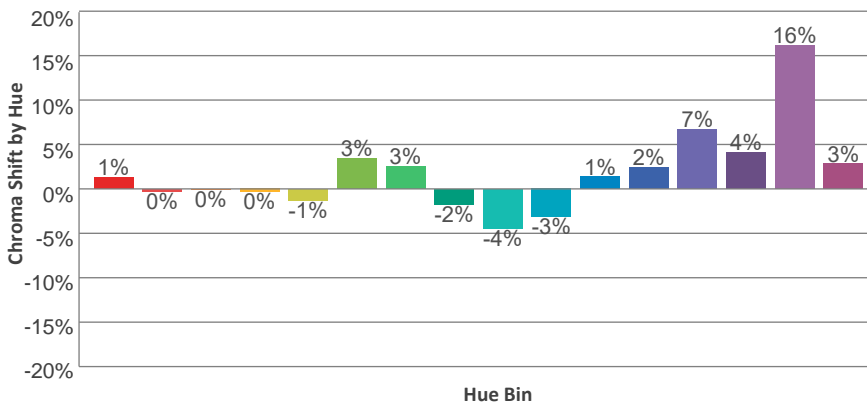
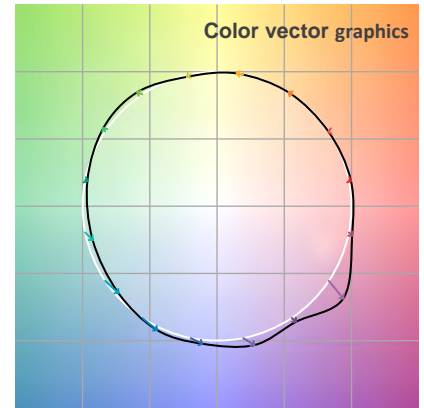
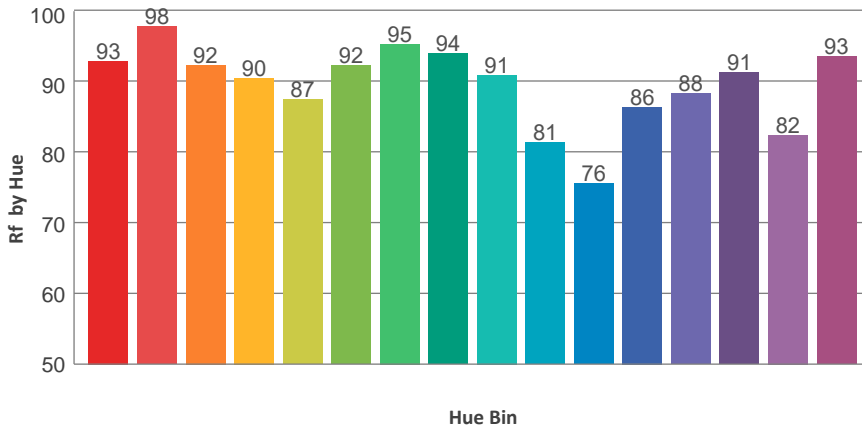
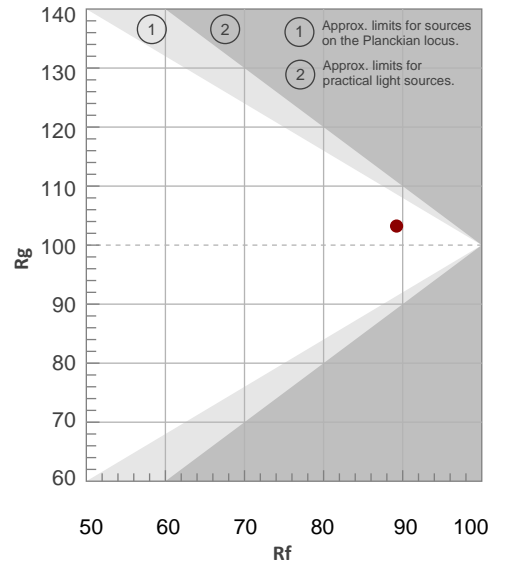
Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate	Color Coordinate	Color Diviation from Black
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
6562 K	92.1	83.3	89.2	103.2	91.0	0.312	0.326	0.199	0.311	0.0016

TM30 Details

Rf 89.2
Fidelity Index Rf

Rg 103.2
Gamut Index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	93	1%	-1%
2	98	0%	0%
3	92	0%	3%
4	90	0%	5%
5	87	-1%	3%
6	92	3%	2%
7	95	3%	-1%
8	94	-2%	0%
9	91	-4%	7%
10	81	-3%	13%
11	76	1%	14%
12	86	2%	9%
13	88	7%	7%
14	91	4%	1%
15	82	16%	-5%
16	93	3%	-2%



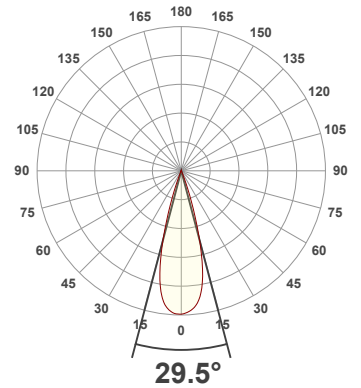
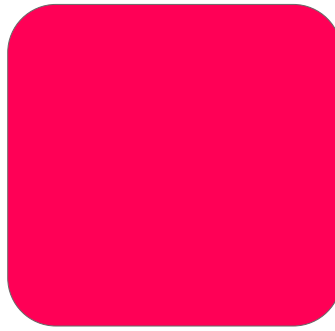
Total Lumen Output: 1322 lm

Voltage: 113 V, Current: 0.760 A

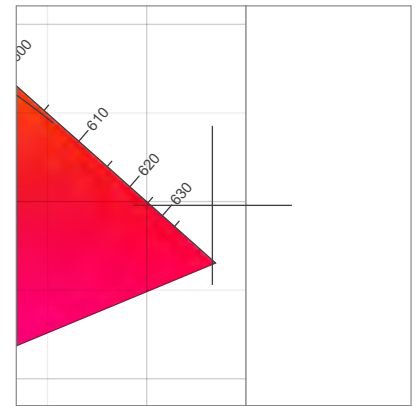
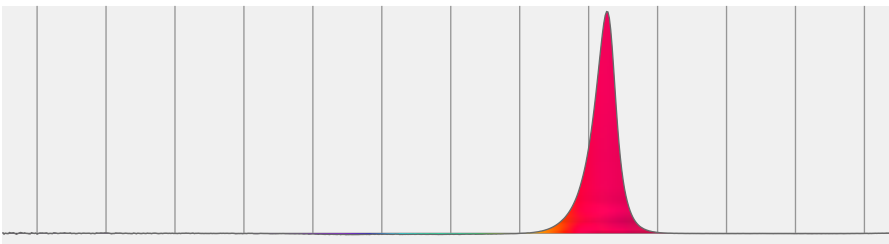
Power: 81.9 W

Efficacy: 16 Lumen/Watt

Measurement Date: 6/29/2021

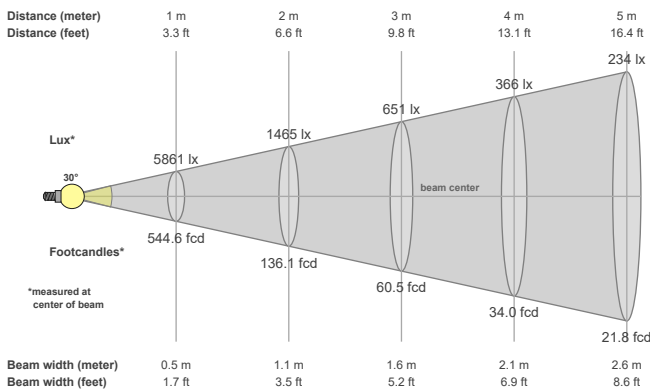


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
624	0.733	0.298	0.574	0.350

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.5°	40.9°	46.4°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
5862 cd	99.8%	99.4%

Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	5861	1465	651	366	234	163	120	92	72	59	48	41	35	30	26	23	20	18	16	15
FC	544.6	136.1	60.5	34	21.8	15.1	11.1	8.5	6.7	5.4	4.5	3.8	3.2	2.8	2.4	2.1	1.9	1.7	1.5	1.4

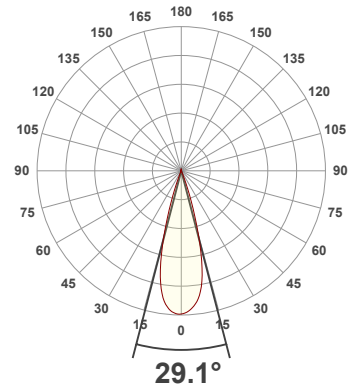
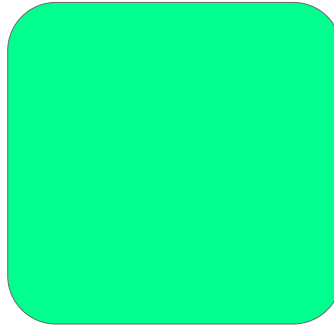
Total Lumen Output: 2177 lm

Voltage: 113 V, Current: 0.581 A

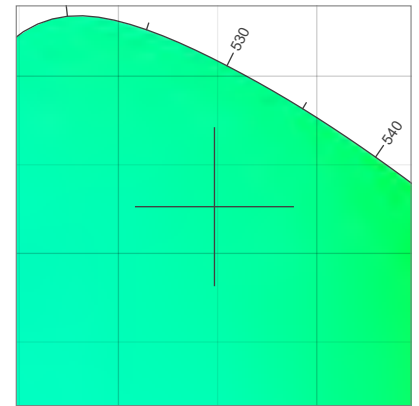
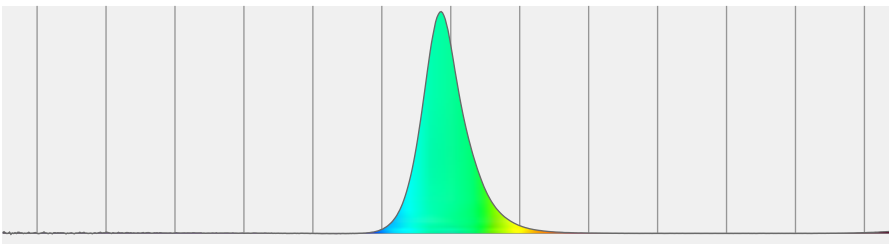
Power: 61.3 W

Efficacy: 36 Lumen/Watt

Measurement Date: 6/29/2021

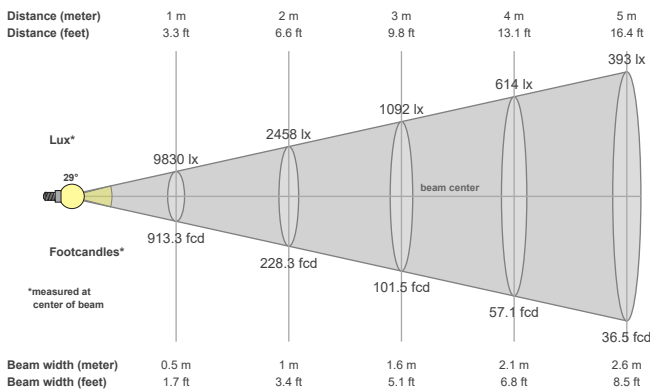


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
524	0.148	0.726	0.052	0.382

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.1°	40.7°	46.3°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
9840 cd	99.7%	99.2%

Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	9830	2458	1092	614	393	273	201	154	121	98	81	68	58	50	44	38	34	30	27	25
FC	913.3	228.3	101.5	57.1	36.5	25.4	18.6	14.3	11.3	9.1	7.5	6.3	5.4	4.7	4.1	3.6	3.2	2.8	2.5	2.3

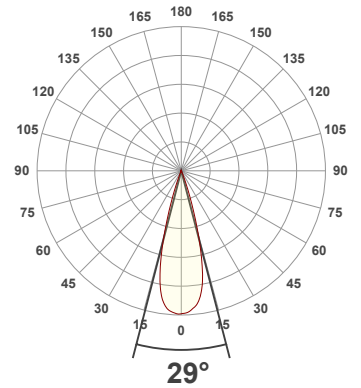
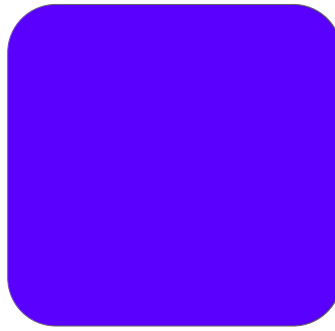
Total Lumen Output: 580 lm

Voltage: 113 V, Current: 0.805 A

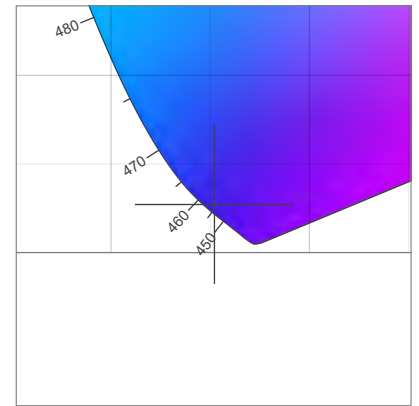
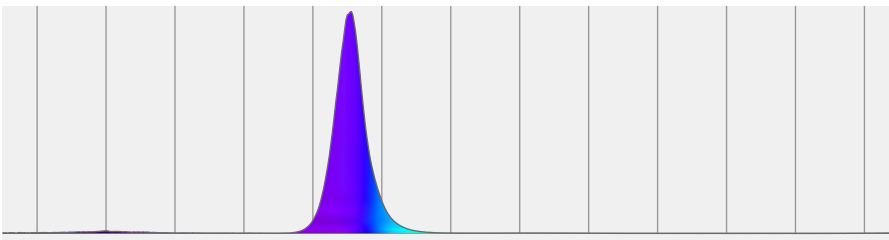
Power: 87.3 W

Efficacy: 7 Lumen/Watt

Measurement Date: 6/29/2021

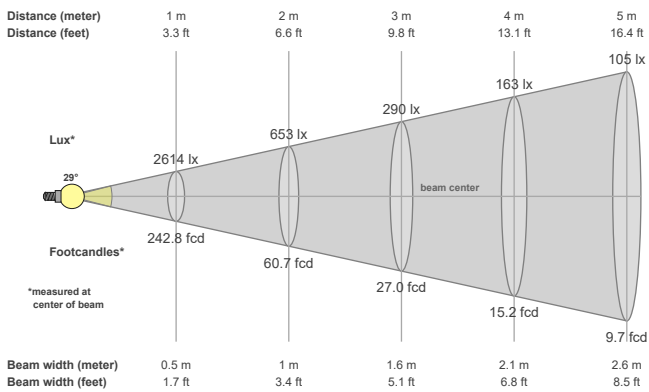


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
456	0.152	0.027	0.201	0.054

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29°	40.3°	46.1°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
2622 cd	99.6%	99.0%

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	2614	653	290	163	105	73	53	41	32	26	22	18	15	13	12	10	9	8	7	7
FC	242.8	60.7	27	15.2	9.7	6.7	5	3.8	3	2.4	2	1.7	1.4	1.2	1.1	0.9	0.8	0.7	0.7	0.6

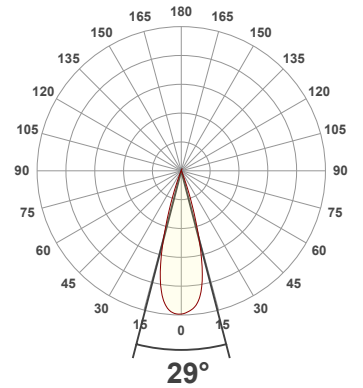
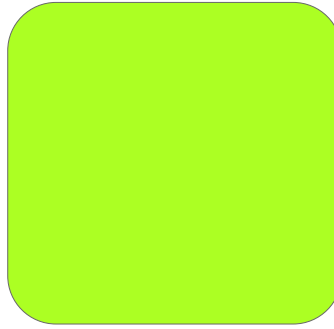
Total Lumen Output: 10325 lm

Voltage: 112 V, Current: 1.76 A

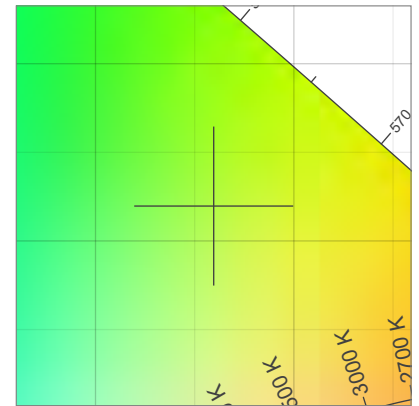
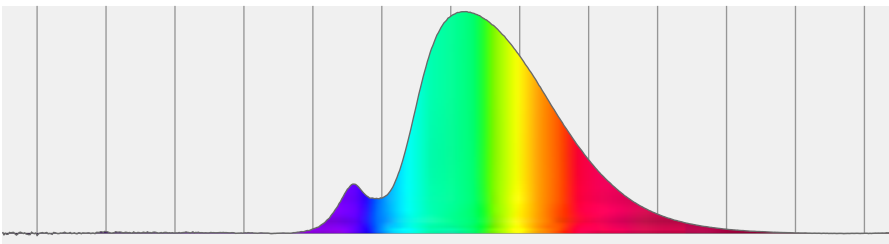
Power: 193.6 W

Efficacy: 53 Lumen/Watt

Measurement Date: 6/29/2021

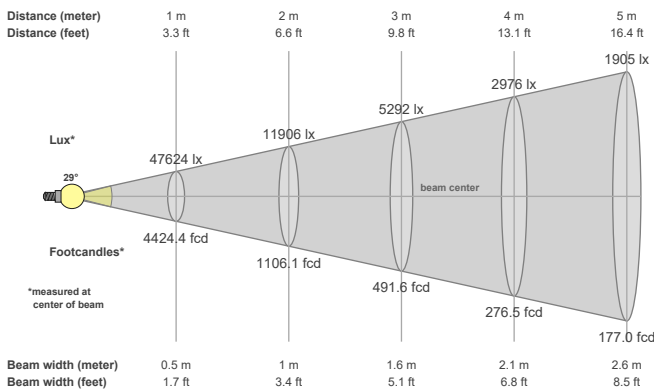


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
561	0.360	0.520	0.169	0.366

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29°	40.3°	45.7°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
47678 cd	100.0%	99.9%

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	47624	11906	5292	2976	1905	1323	972	744	588	476	394	331	282	243	212	186	165	147	132	119
FC	4424.4	1106.1	491.6	276.5	177	122.9	90.3	69.1	54.6	44.2	36.6	30.7	26.2	22.6	19.7	17.3	15.3	13.7	12.3	11.1

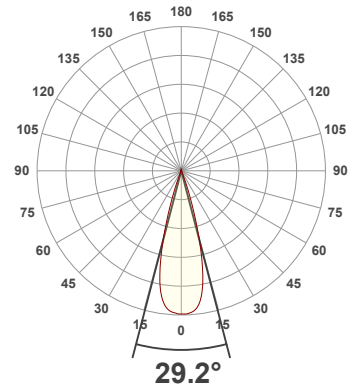
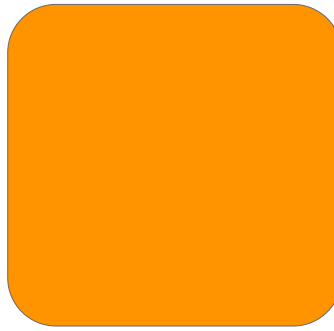
Total Lumen Output: 2296 lm

Voltage: 113 V, Current: 0.870 A

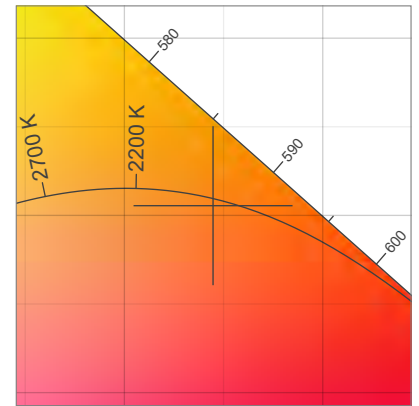
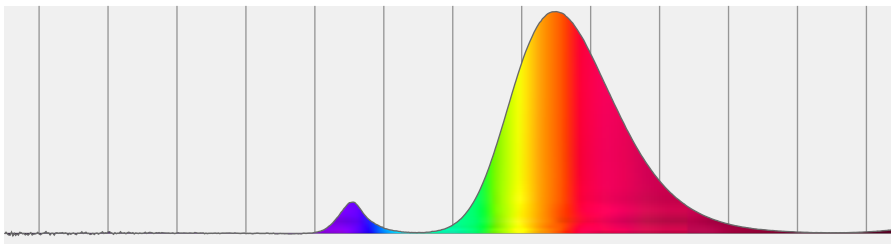
Power: 95.0 W

Efficacy: 24 Lumen/Watt

Measurement Date: 6/29/2021

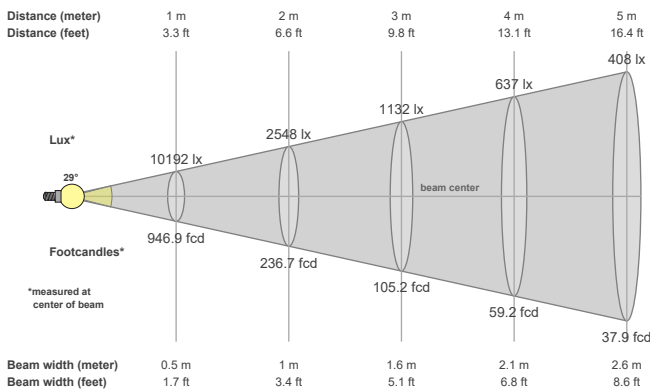


Spectral distribution



Dominant Wavelength	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate
nm	x	y	u	v
591	0.545	0.405	0.322	0.359

Beam details



Beam angles

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%
29.2°	40.6°	46.2°

Beam intensities

Peak intensity	Int. ratio in 120° cone	Int. ratio in 90° cone
10203 cd	99.7%	99.1%

Beam Intensities from 1-20m

M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FT	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
LX	10192	2548	1132	637	408	283	208	159	126	102	84	71	60	52	45	40	35	31	28	25
FC	946.9	236.7	105.2	59.2	37.9	26.3	19.3	14.8	11.7	9.5	7.8	6.6	5.6	4.8	4.2	3.7	3.3	2.9	2.6	2.4