

Light efficiency:

137 Lumen/Watt

Output: 5203 lm

Light quality:

CRI: 86.3

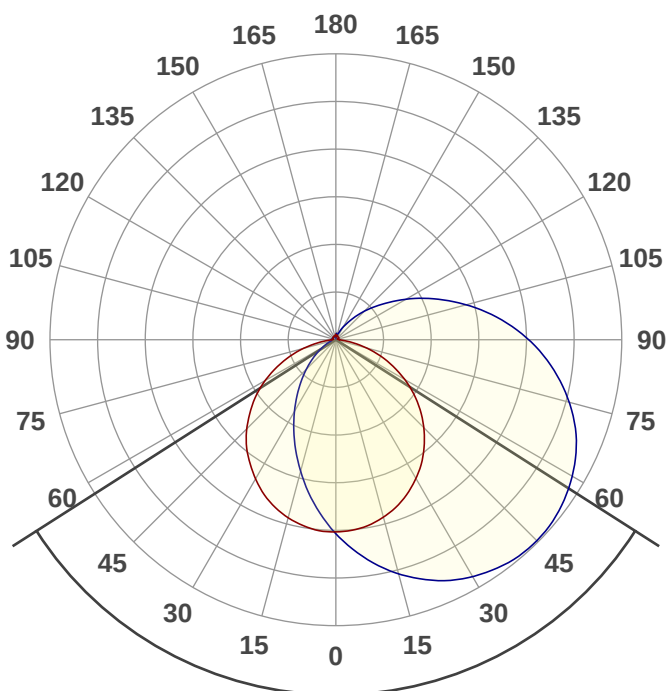
Peak: 1638 cd

Color temperature:

3983 K

Power: 38.0 W

PF: 1.0



Product name:

CRN4-40W-150K-C-FL-CT-FA at 40 W

Date and time:

9/2/2020 12:11:22 PM

Beam angle

114.9°

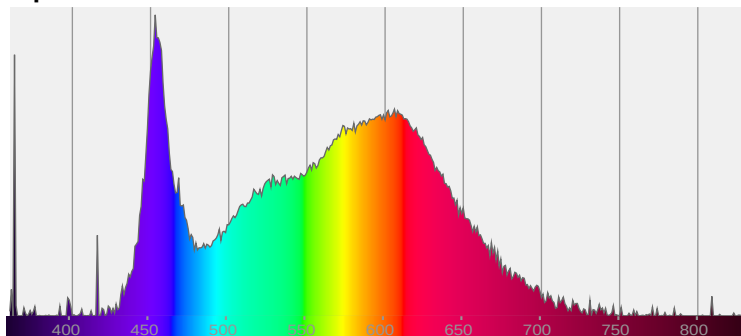


CIE 1931

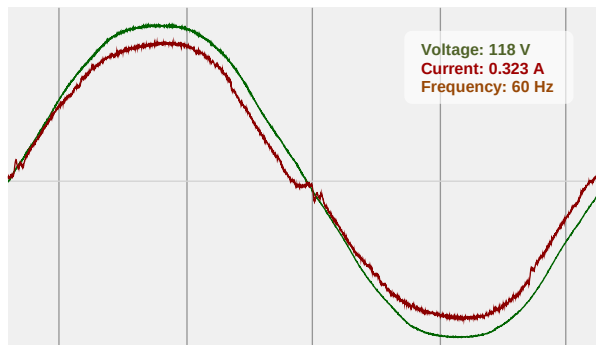
x: 0.377

y: 0.362

Spectra



Power



Voltage: 118 V
Current: 0.323 A
Frequency: 60 Hz



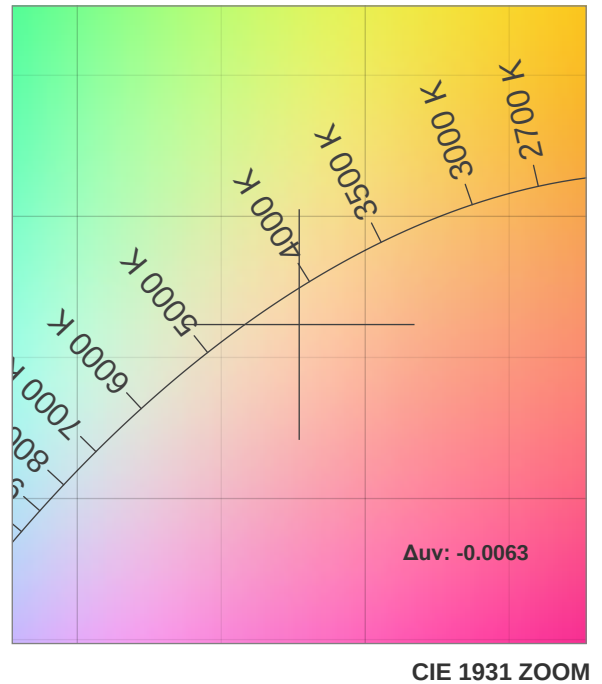
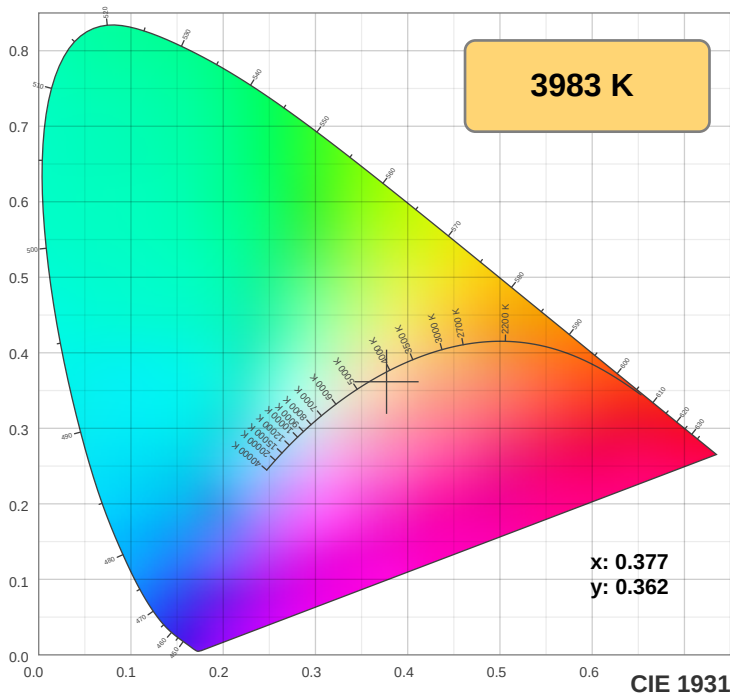
T 314.743.3067

F 314.972.6202

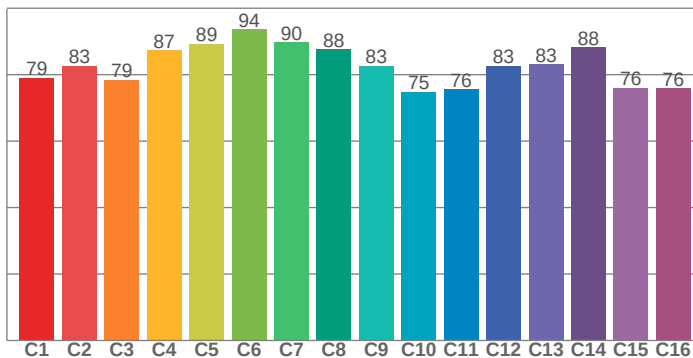
email: commercial-sales@superbrightleds.com

www.superbrightleds.com/

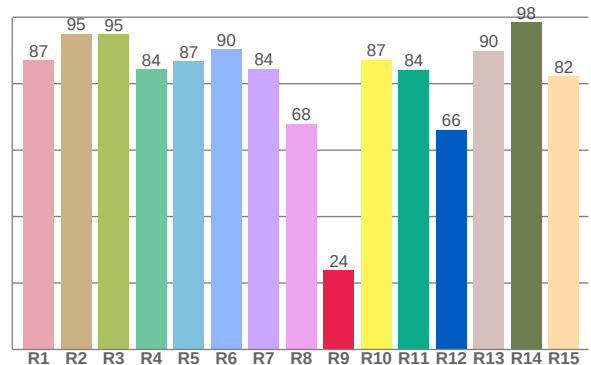
Color Specifications



TM30: 82.6



CRI: 86.3 (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
87.1	95.0	94.9	84.3	86.8	90.3	84.4	67.9	23.8	87.2	84.2	66.2	89.9	98.5	82.3

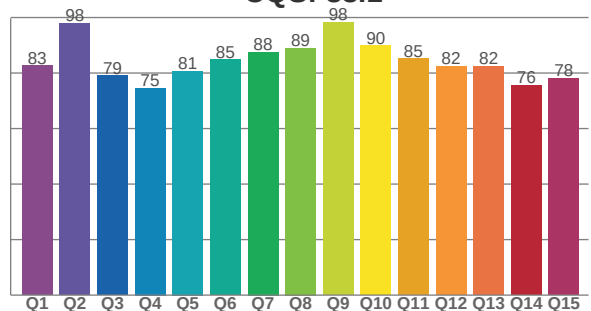
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
79.0	82.7	78.5	87.3	89.3	93.6	89.7	87.6	82.7	74.8	75.6	82.7	83.1	88.2	76.0	75.9

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
82.6	98.0	79.0	74.6	80.8	84.8	87.6	89.0	98.3	89.9	85.1	82.4	82.4	75.6	78.2

CQS: 83.1



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 deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3983 K	86.3	23.8	82.6	95.9	83.1	0.377	0.362	0.229	0.329	-0.0063



TM30 Report

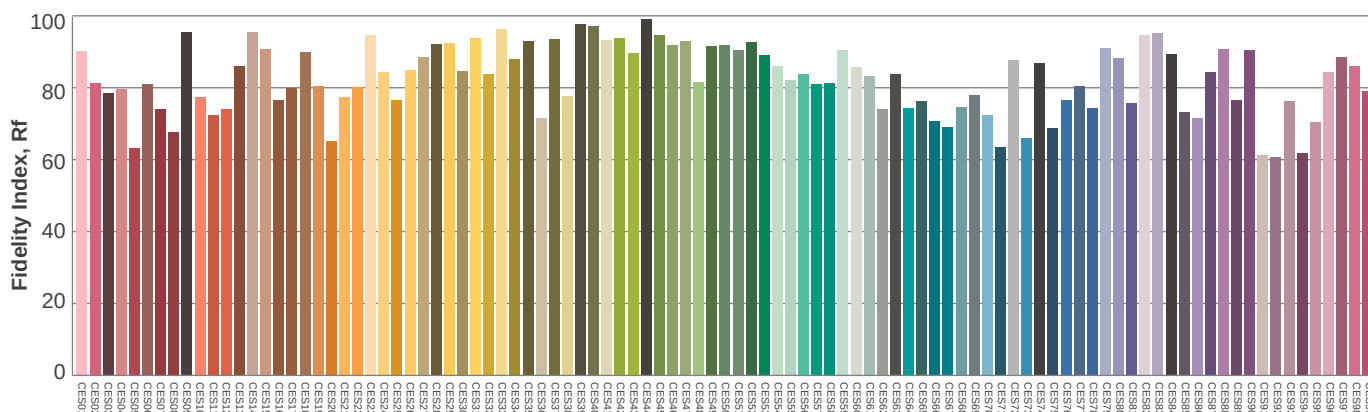
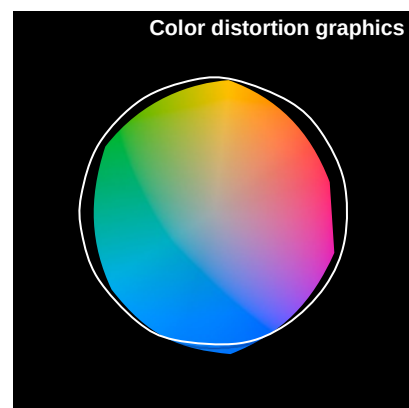
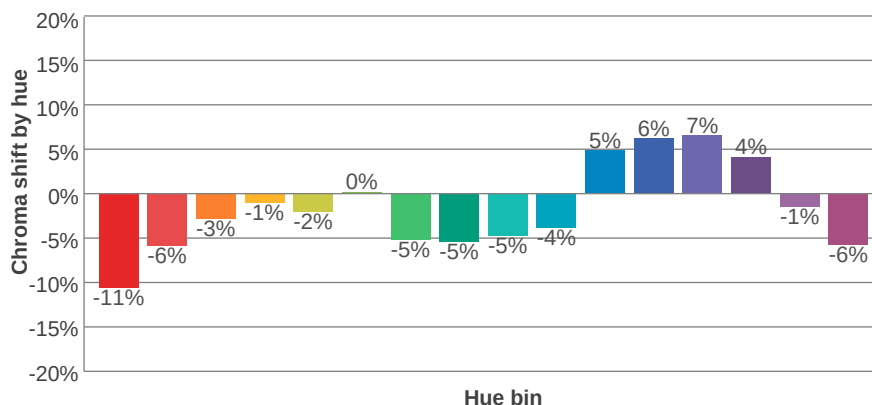
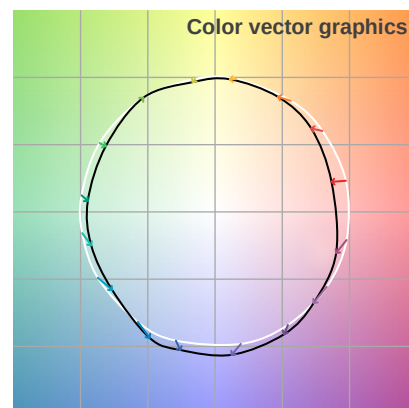
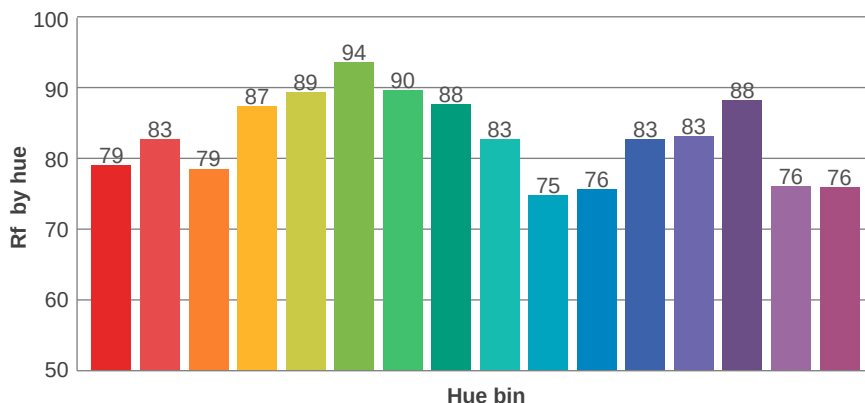
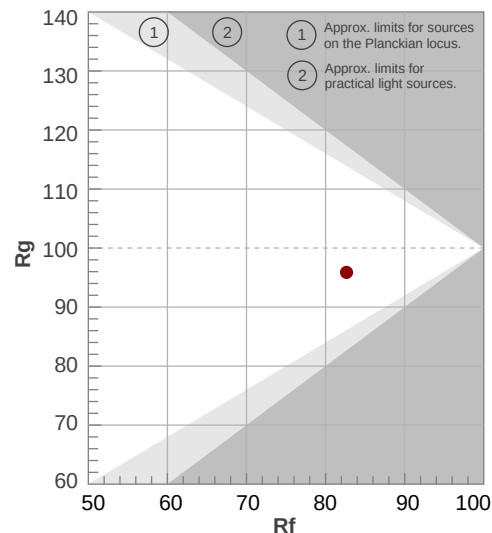
Rf 82.6

Fidelity index Rf

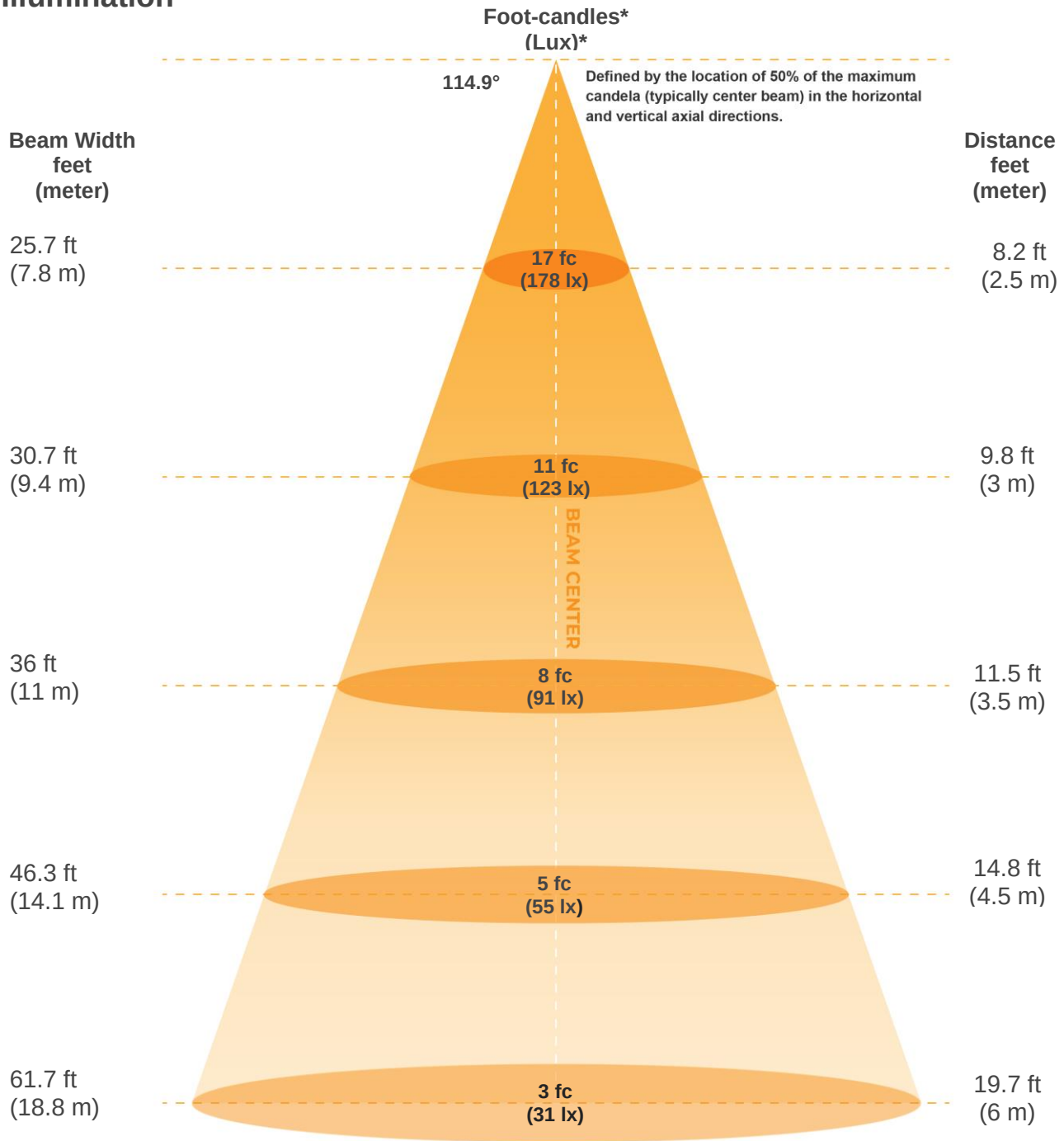
Rg 95.9

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	79	-11%	1%
2	83	-6%	6%
3	79	-3%	10%
4	87	-1%	5%
5	89	-2%	2%
6	94	0%	-1%
7	90	-5%	-1%
8	88	-5%	3%
9	83	-5%	10%
10	75	-4%	13%
11	76	5%	14%
12	83	6%	5%
13	83	7%	-8%
14	88	4%	-6%
15	76	-1%	-15%
16	76	-6%	-11%



Illumination



Beam intensities from 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
1111lx	278lx	123lx	69lx	44lx	31lx	23lx	17lx	14lx	11lx	9lx	8lx	7lx	6lx	5lx	4lx	4lx	3lx	3lx	3lx
103.2fc	25.8fcd	11.5fcd	6.5fcd	4.1fcd	2.9fcd	2.1fcd	1.6fcd	1.3fcd	1fcd	0.9fcd	0.7fcd	0.6fcd	0.5fcd	0.5fcd	0.4fcd	0.4fcd	0.3fcd	0.3fcd	0.3fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
114.9°	182.8°	219.2°	52.9%	34.2%



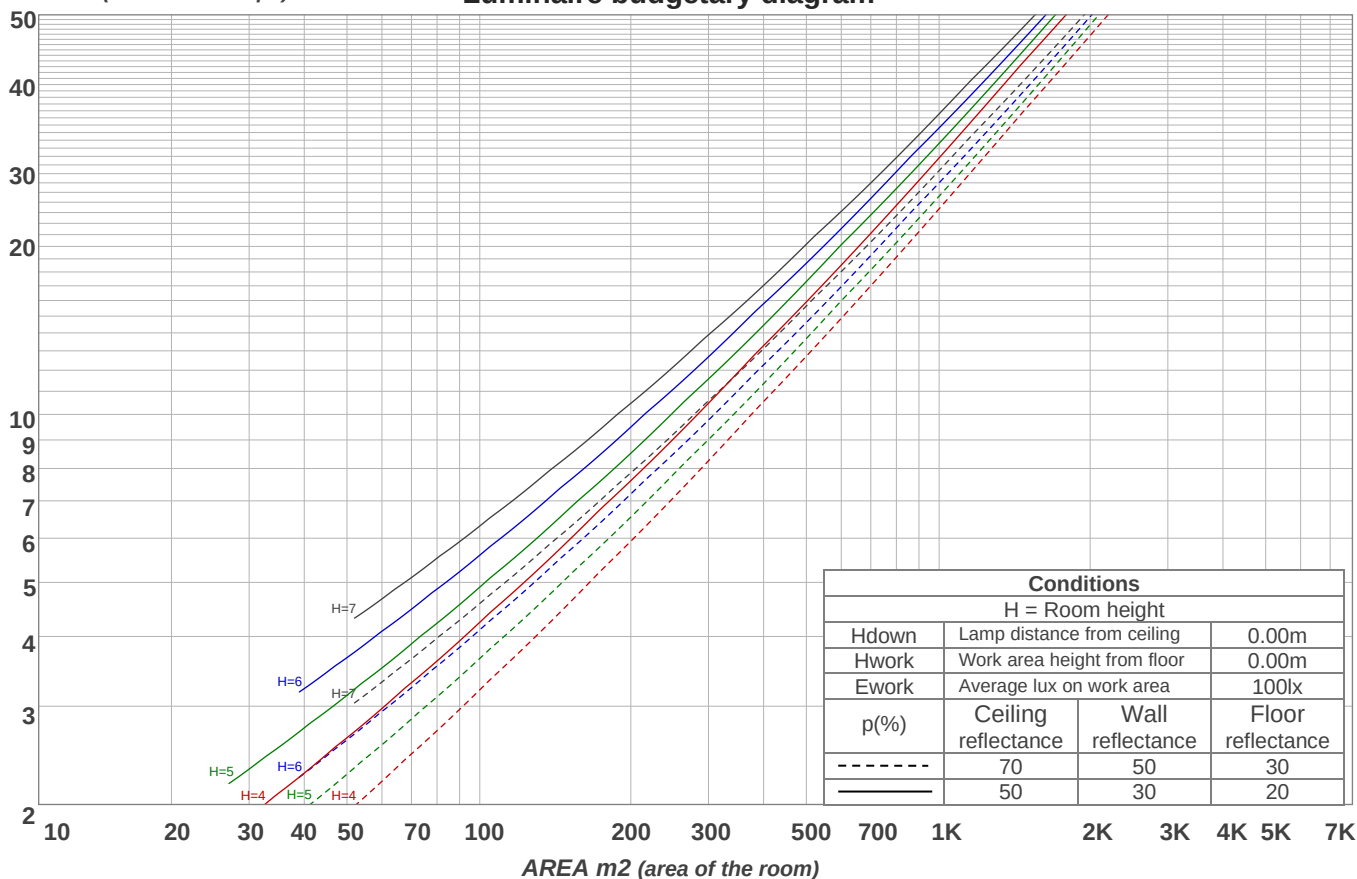
Light Planning

Coefficients of Utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	115	115	115	115	110	110	110	110	101	101	101	93	93	93	86	86	86	83
1	101	95	90	85	97	91	86	82	84	80	76	77	73	70	70	68	65	62
2	91	81	73	67	87	78	71	64	71	65	60	65	60	56	60	56	52	49
3	82	70	61	54	78	67	59	52	62	55	49	57	51	46	52	47	43	40
4	75	62	52	45	71	59	50	44	54	47	41	50	44	39	46	41	36	33
5	69	55	45	38	65	53	44	37	48	41	35	45	38	33	41	35	31	28
6	63	49	40	33	60	47	38	32	43	36	30	40	34	29	37	31	27	25
7	58	44	35	29	55	43	34	28	39	32	27	36	30	25	34	28	24	21
8	54	40	31	25	52	39	30	25	36	29	24	33	27	22	31	25	21	19
9	50	37	28	23	48	35	27	22	33	26	21	31	24	20	28	23	19	17
10	47	34	26	20	45	33	25	20	30	24	19	28	22	18	26	21	17	15

LAMPS (number of lamps)

Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
105 lm	304 lm	468 lm	584 lm	643 lm	646 lm	601 lm	521 lm	425 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
327 lm	233 lm	154 lm	92.7 lm	51.6 lm	26.1 lm	13.2 lm	6.68 lm	2.15 lm

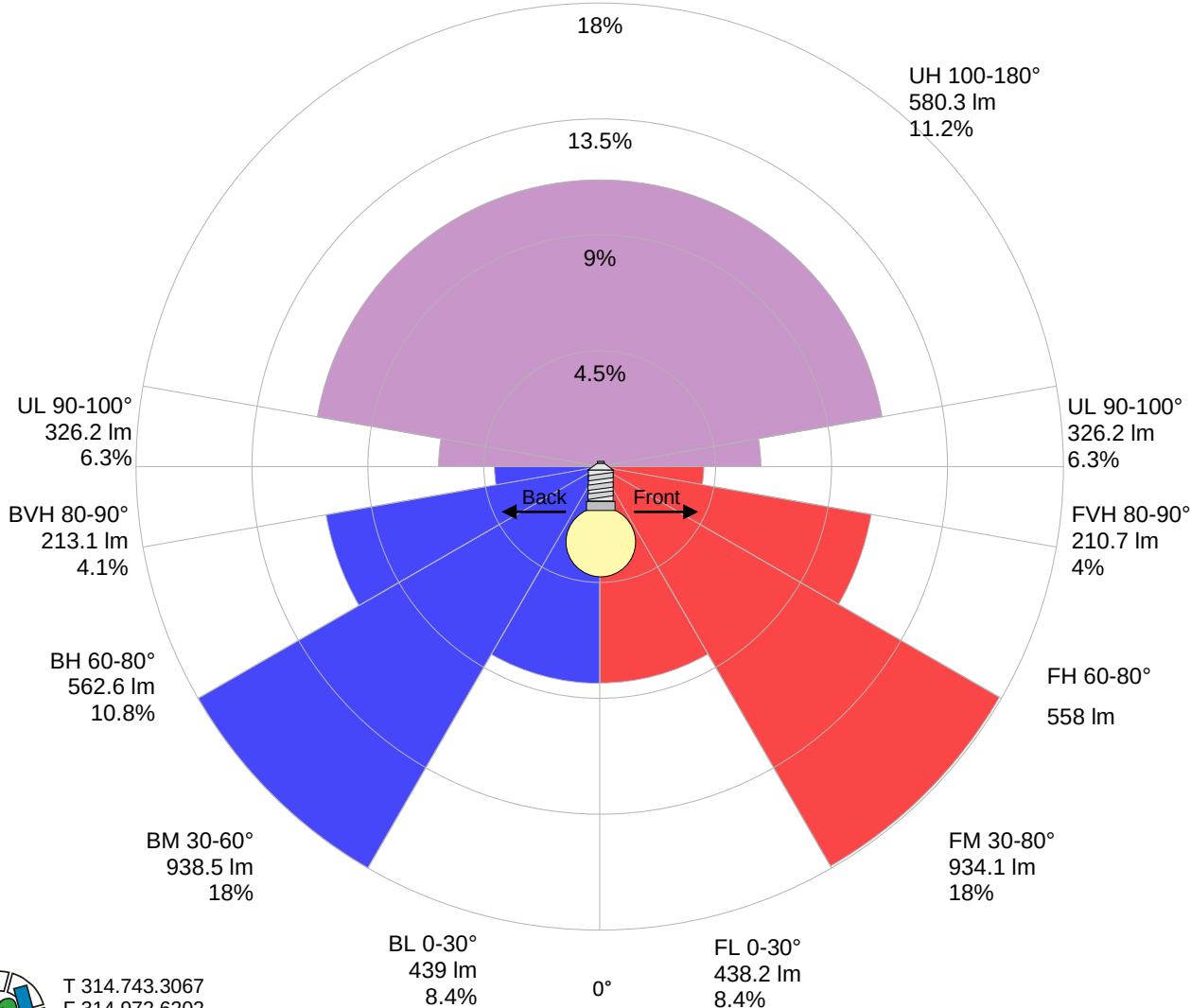


Road Report

LCS table

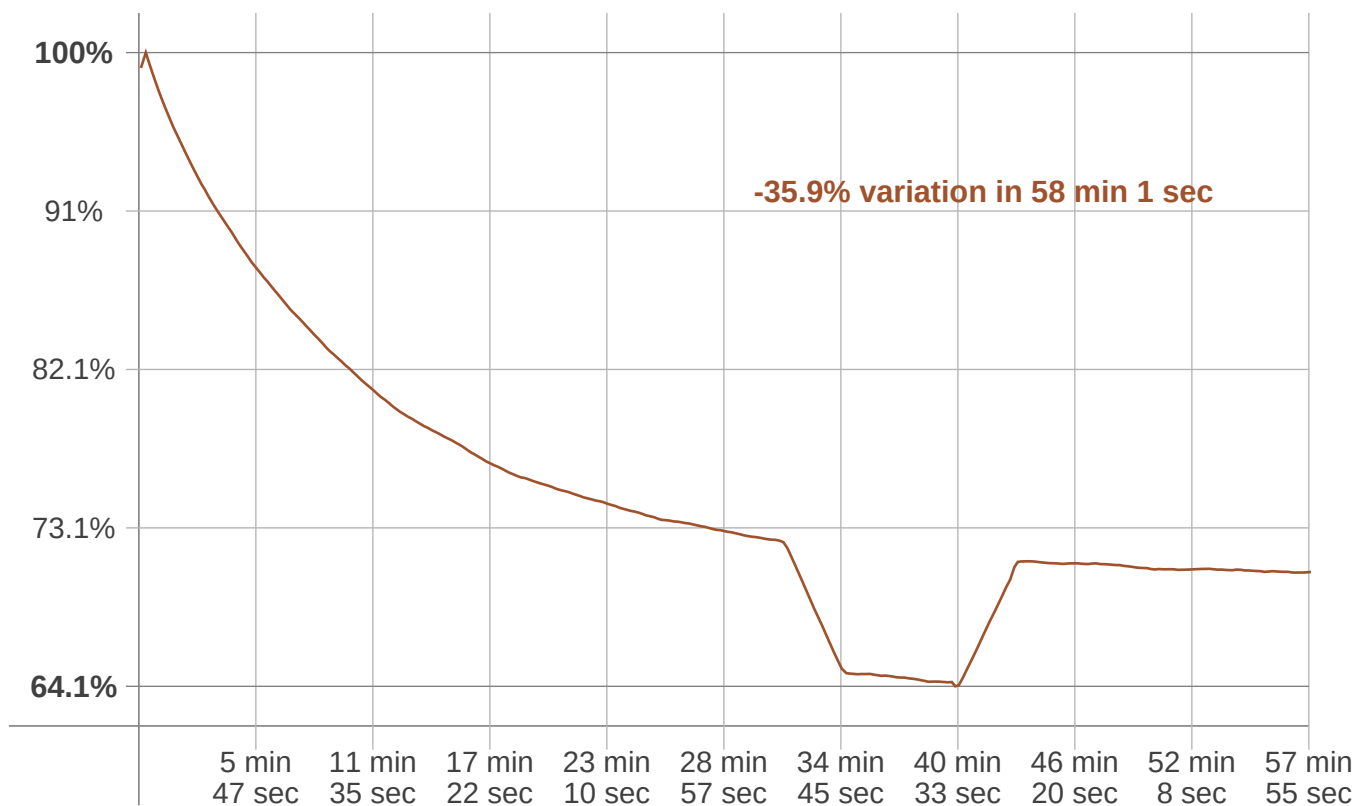
BUG rating:	B2 U4 G2	
Forward light	Lumens	Lumens %
Low(0-30):	438.2	8.4%
Medium(30-60):	934.1	18%
High(60-80):	558	10.7%
Very high(80-90):	210.7	4%
Back light		
Low(0-30):	439	8.4%
Medium(30-60):	938.5	18%
High(60-80):	562.6	10.8%
Very high(80-90):	213.1	4.1%
Uplight		
Low(90-100):	326.2	6.3%
High(100-180):	580.3	11.2%

LCS graph



Stabilization

Warmup curve



Warmup result

Warmup time:	58 min 4 sec
Warmup variation	-36.8%

Warmup conditions

Stable period:	15 min
Stable change max:	2.0%
Minimum time:	15 min

Color temperature change

CCT start	CCT change	CCT end
3955 K	+28 K	3983 K

Output change

Output start	Output change	Output end
5040 lm	+163 lm	5203 lm

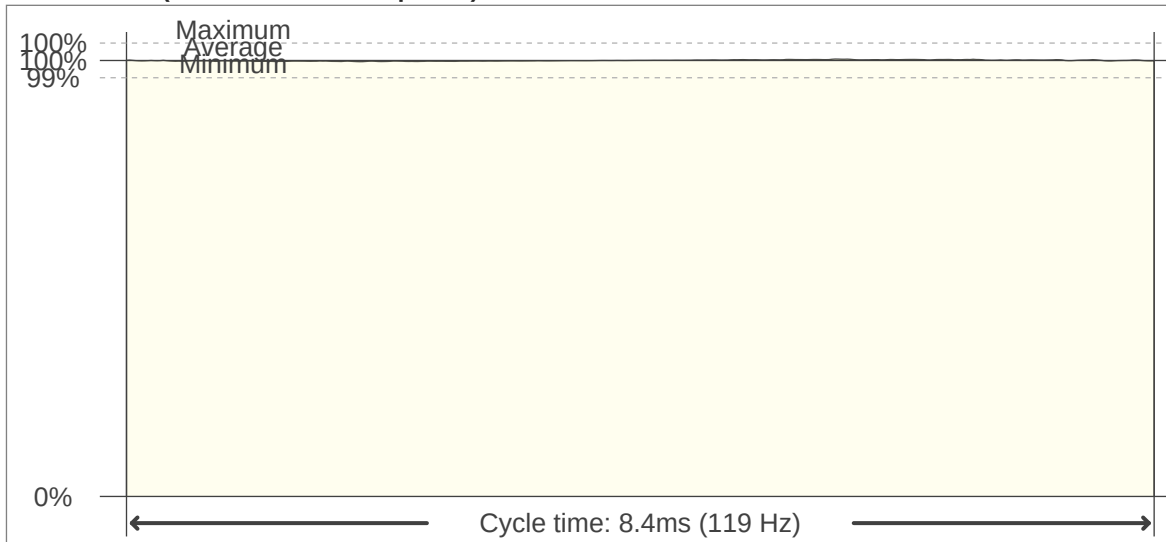


Flicker

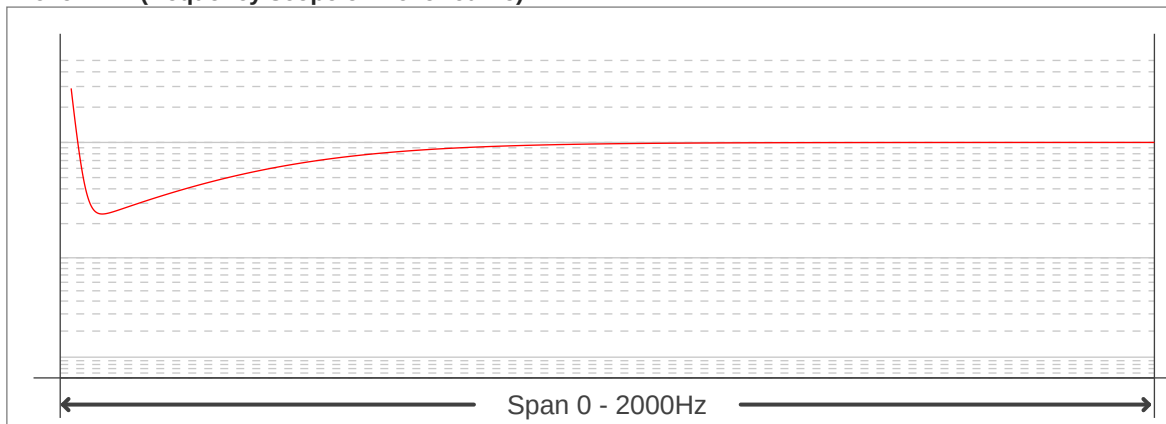
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	119.05 Hz
Flicker index:	0
Flicker percentage:	0.39 %
SVM: (Visual flicker)	0.01

Flicker conditions:

Sample rate:	40000 samples/second
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Light efficiency:

142 Lumen/Watt

Output: 3566 lm

Light quality:

CRI: 86.4

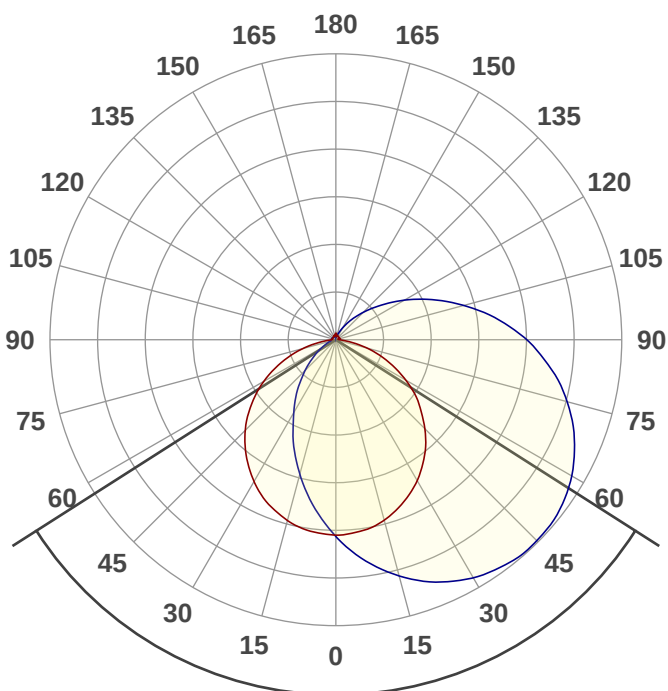
Peak: 1119 cd

Color temperature:

3994 K

Power: 25.2 W

PF: 0.99



Product name:

CRN4-40W-150K-C-FL-CT-FA at 25 W

Date and time:

9/2/2020 1:05:22 PM

Beam angle

114.9°

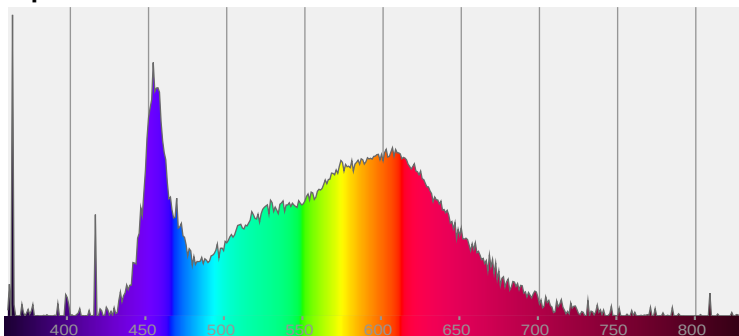


CIE 1931

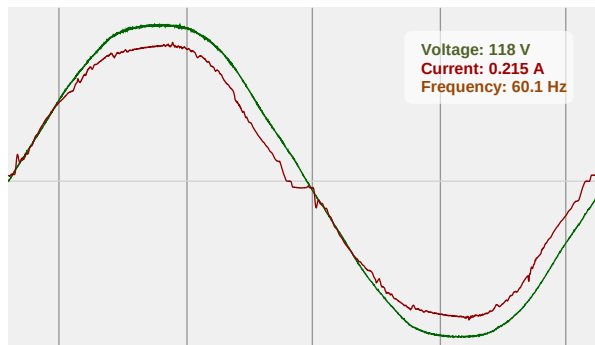
x: 0.377

y: 0.362

Spectra



Power



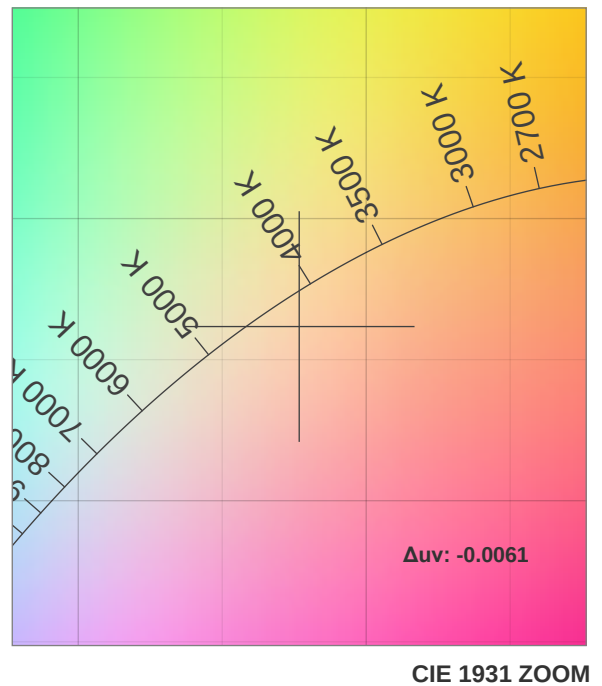
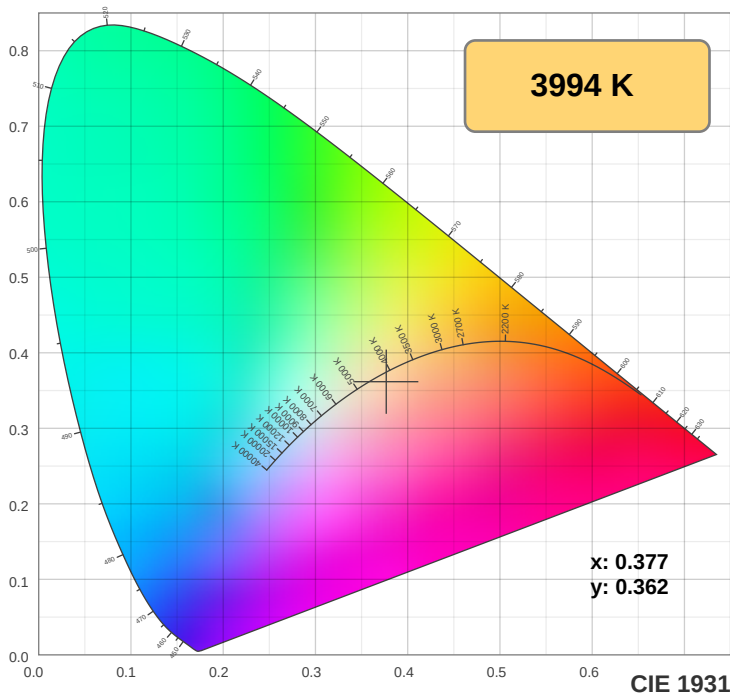
T 314.743.3067

F 314.972.6202

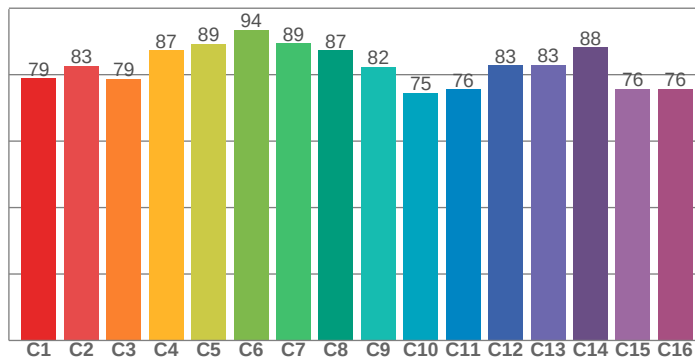
email: commercial-sales@superbrightleds.com

www.superbrightleds.com/

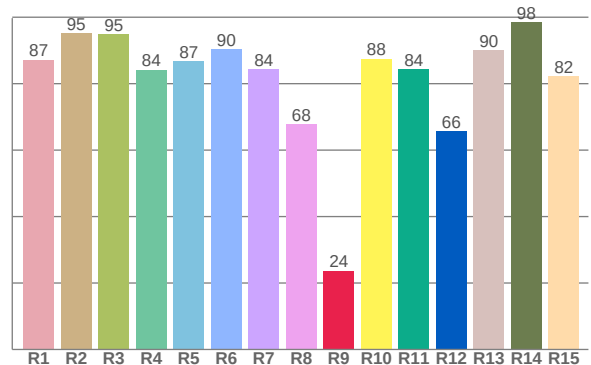
Color Specifications



TM30: 82.6



CRI: 86.4 (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
87.2	95.2	94.8	84.2	86.8	90.4	84.4	67.8	23.7	87.5	84.3	65.6	90.0	98.5	82.3

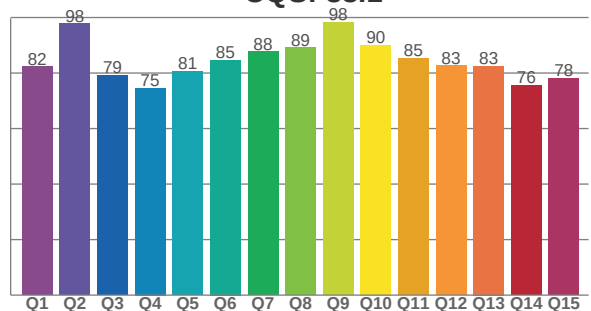
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
78.9	82.7	78.8	87.4	89.2	93.6	89.5	87.3	82.4	74.6	75.6	82.9	82.9	88.2	75.8	75.8

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
82.3	97.8	79.2	74.6	80.6	84.7	87.7	89.1	98.3	90.1	85.3	82.6	82.5	75.6	78.1

CQS: 83.1



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 deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3994 K	86.4	23.7	82.6	95.7	83.1	0.377	0.362	0.229	0.329	-0.0061



TM30 Report

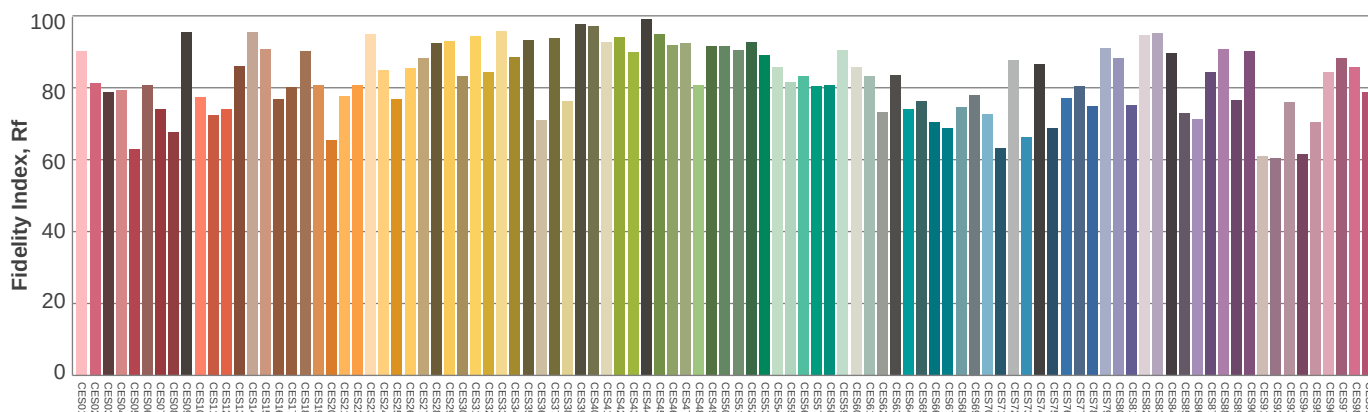
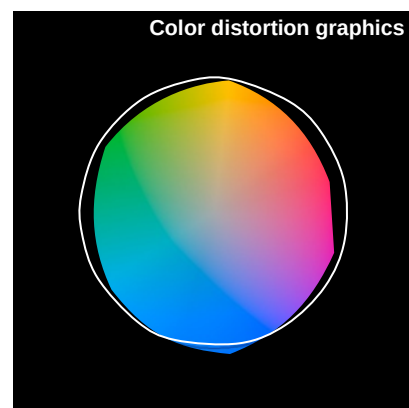
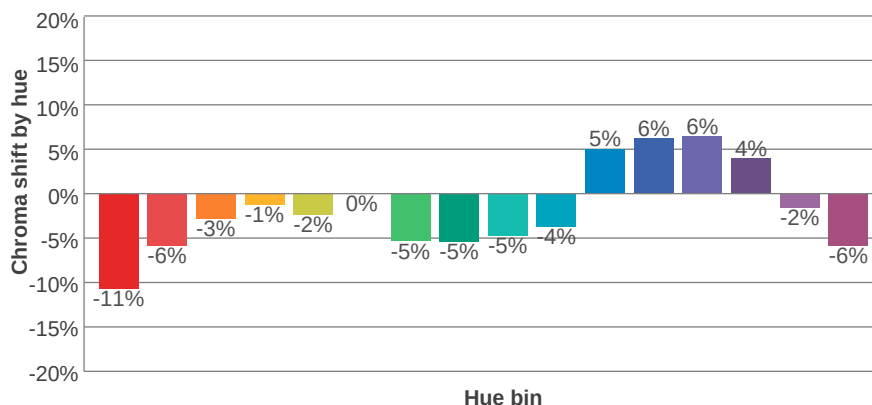
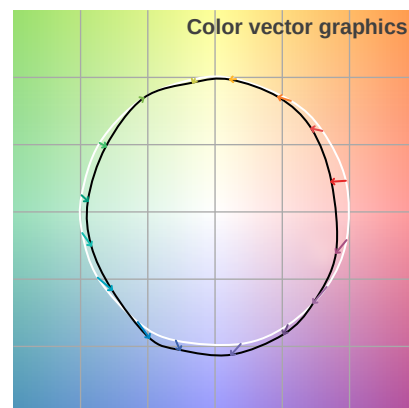
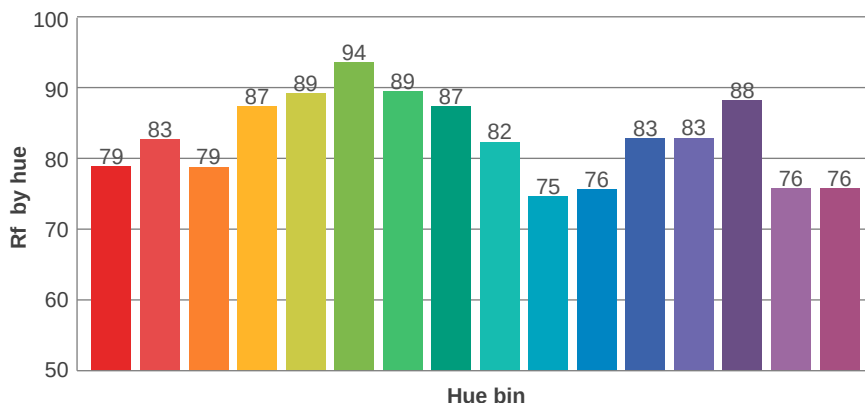
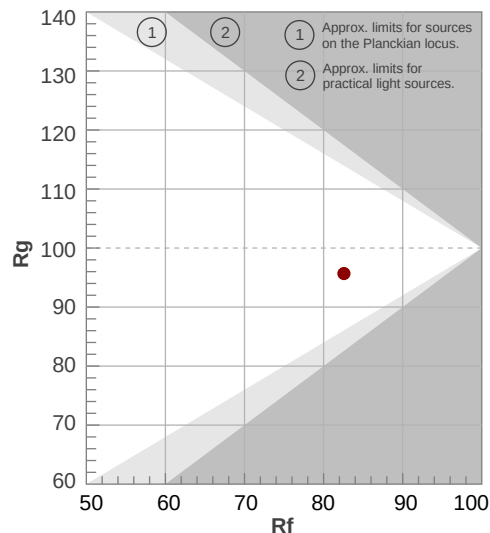
Rf 82.6

Fidelity index Rf

Rg 95.7

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	79	-11%	1%
2	83	-6%	6%
3	79	-3%	9%
4	87	-1%	4%
5	89	-2%	2%
6	94	0%	-1%
7	89	-5%	0%
8	87	-5%	3%
9	82	-5%	10%
10	75	-4%	13%
11	76	5%	14%
12	83	6%	4%
13	83	6%	-9%
14	88	4%	-6%
15	76	-2%	-15%
16	76	-6%	-11%



Color Evaluation Sample



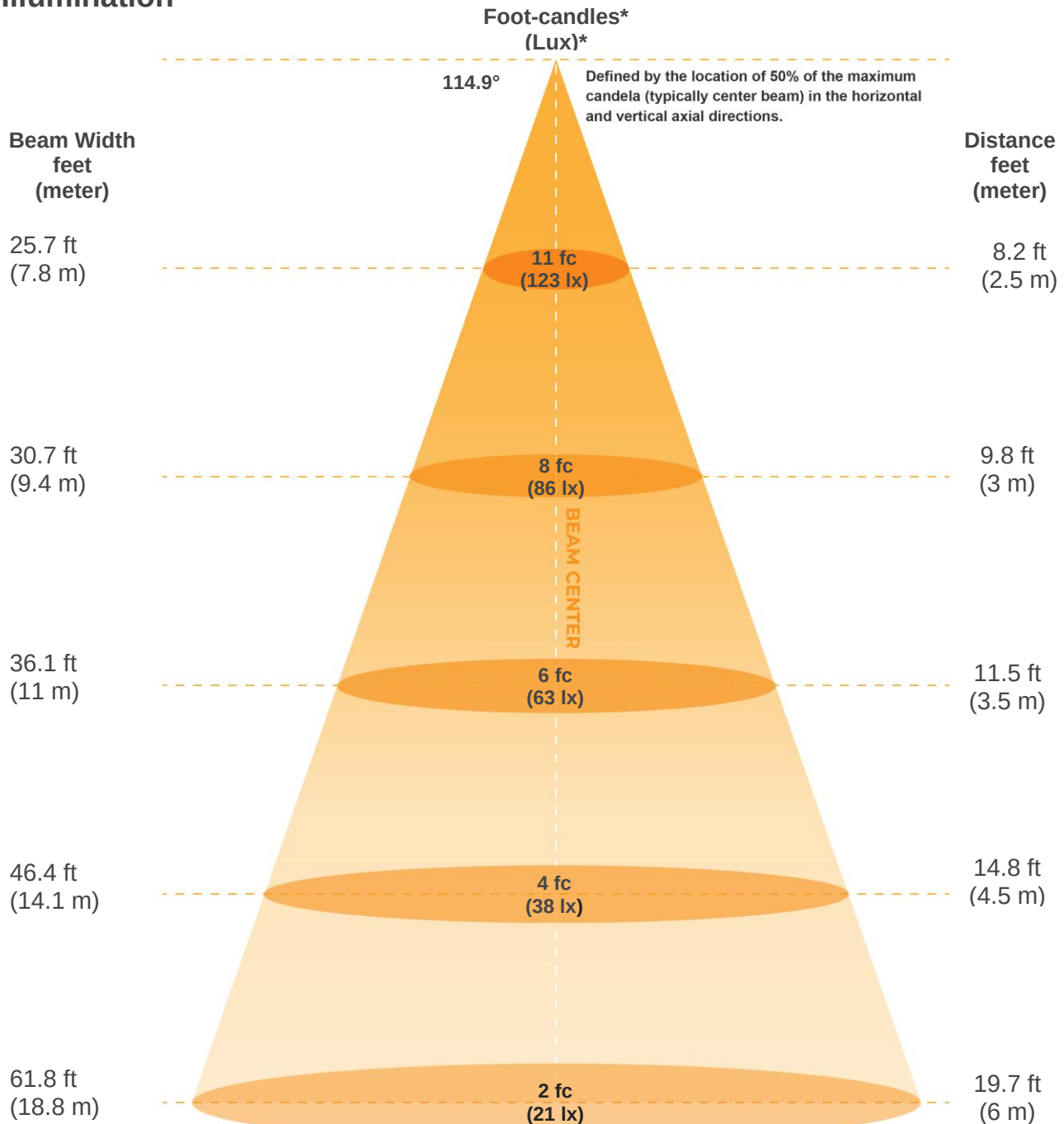
T 314.743.3067

F 314.972.6202

email: commercial-sales@superbriteleds.com

www.superbriteleds.com/

Illumination



Beam intensities from 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
770lx	193lx	86lx	48lx	31lx	21lx	16lx	12lx	10lx	8lx	6lx	5lx	5lx	4lx	3lx	3lx	3lx	2lx	2lx	2lx
71.6fcd	17.9fcd	8fcd	4.5fcd	2.9fcd	2fcd	1.5fcd	1.1fcd	0.9fcd	0.7fcd	0.6fcd	0.5fcd	0.4fcd	0.4fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
114.9°	182.6°	241.8°	53.2%	34.5%



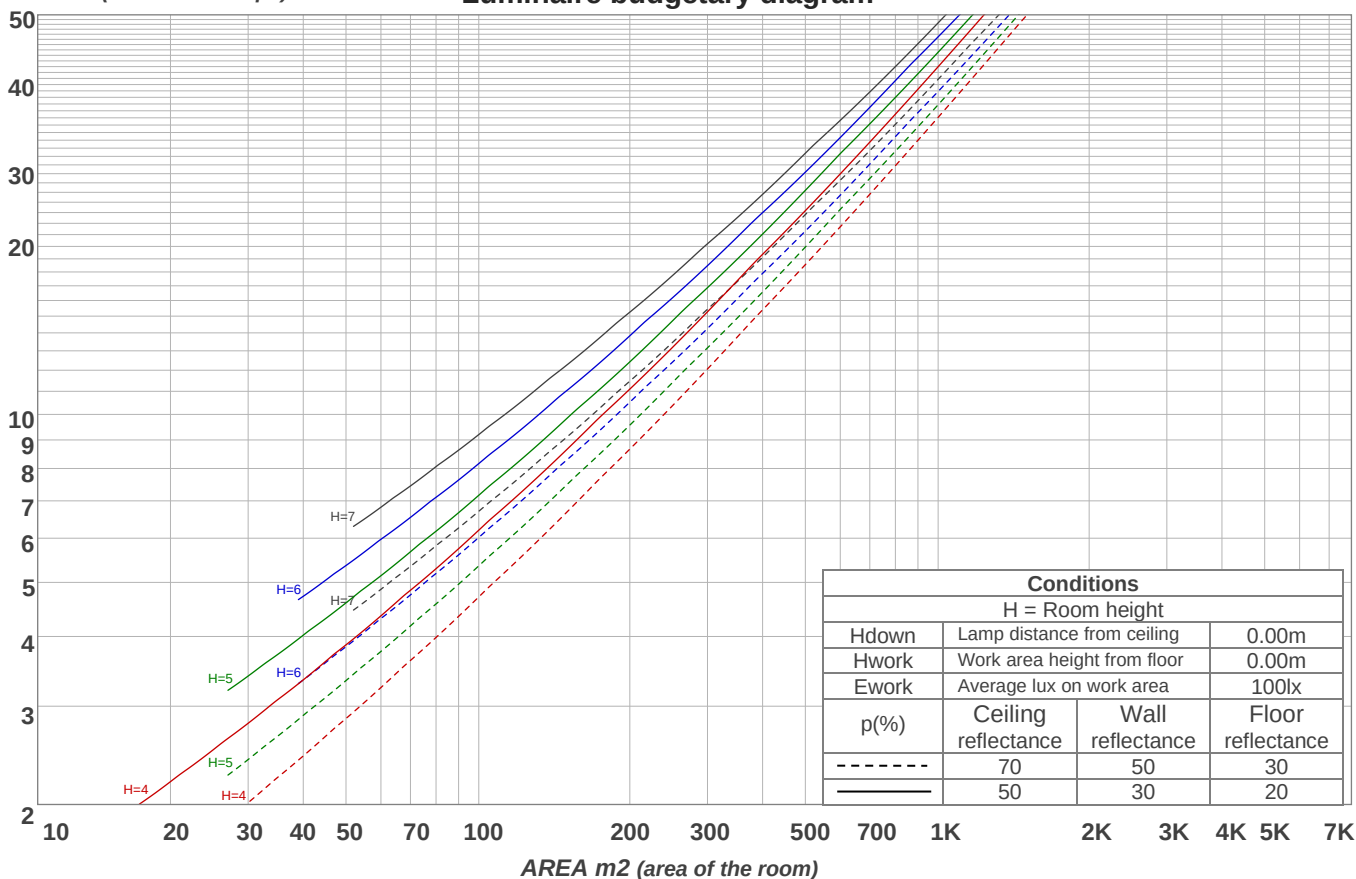
Light Planning

Coefficients of Utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	115	115	115	115	110	110	110	110	102	102	102	94	94	94	86	86	86	83
1	101	95	90	85	97	91	86	82	84	80	76	77	74	71	71	68	66	62
2	91	81	73	67	87	78	71	65	72	66	60	66	61	56	60	56	53	49
3	82	71	61	54	78	68	59	52	62	55	49	57	51	46	52	47	43	40
4	75	62	52	45	71	59	51	44	55	47	41	50	44	39	46	41	37	34
5	69	55	45	38	65	53	44	37	49	41	35	45	38	33	41	36	31	29
6	63	49	40	33	60	47	38	32	44	36	30	40	34	29	37	32	27	25
7	58	44	35	29	56	43	34	28	40	32	27	37	30	25	34	28	24	22
8	54	40	31	25	52	39	31	25	36	29	24	33	27	22	31	25	21	19
9	51	37	28	23	48	36	28	22	33	26	21	31	25	20	29	23	19	17
10	47	34	26	20	45	33	25	20	31	24	19	28	22	18	27	21	17	15

LAMPS (number of lamps)

Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
73.0 lm	210 lm	324 lm	403 lm	443 lm	444 lm	411 lm	355 lm	288 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
221 lm	157 lm	104 lm	63.1 lm	34.9 lm	17.8 lm	9.14 lm	4.70 lm	1.54 lm

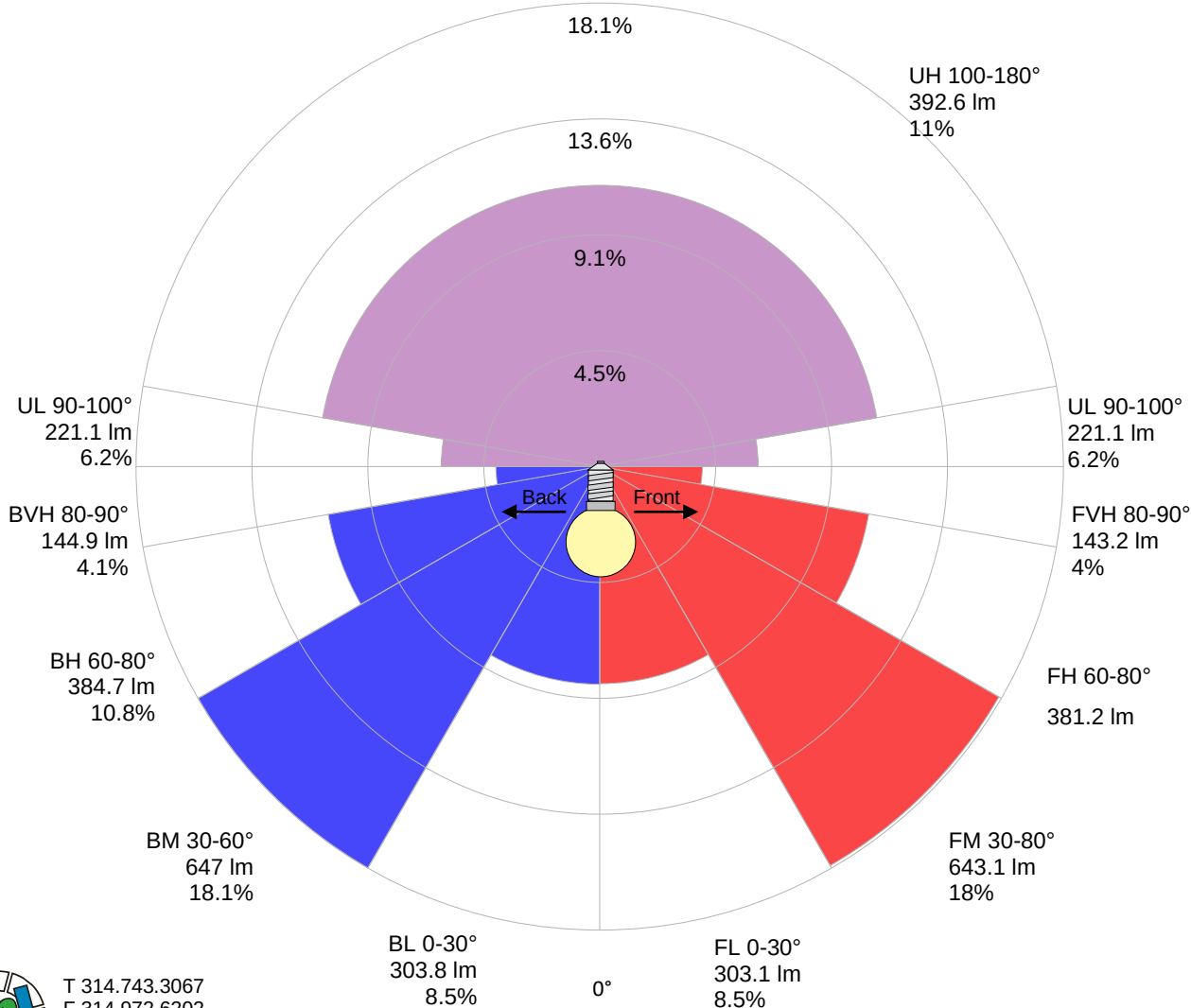


Road Report

LCS table

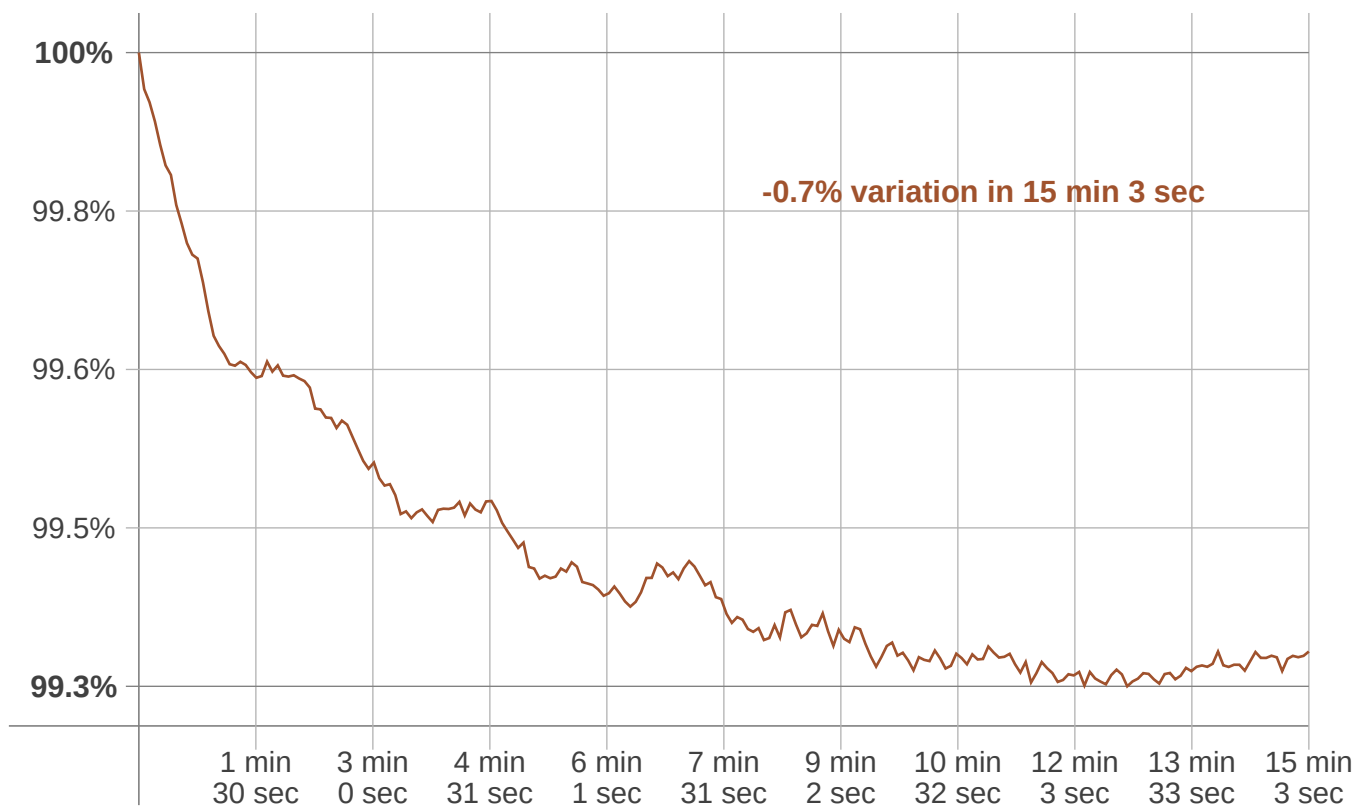
BUG rating:	B1 U3 G2	
Forward light	Lumens	Lumens %
Low(0-30):	303.1	8.5%
Medium(30-60):	643.1	18%
High(60-80):	381.2	10.7%
Very high(80-90):	143.2	4%
Back light		
Low(0-30):	303.8	8.5%
Medium(30-60):	647	18.1%
High(60-80):	384.7	10.8%
Very high(80-90):	144.9	4.1%
Uplight		
Low(90-100):	221.1	6.2%
High(100-180):	392.6	11%

LCS graph



Stabilization

Warmup curve



Warmup result

Warmup time:	15 min 3 sec
Warmup variation	-0.7%

Warmup conditions

Stable period:	15 min
Stable change max:	2.0%
Minimum time:	15 min

Color temperature change

CCT start	CCT change	CCT end
3989 K	+5 K	3994 K

Output change

Output start	Output change	Output end
3585 lm	-19 lm	3566 lm

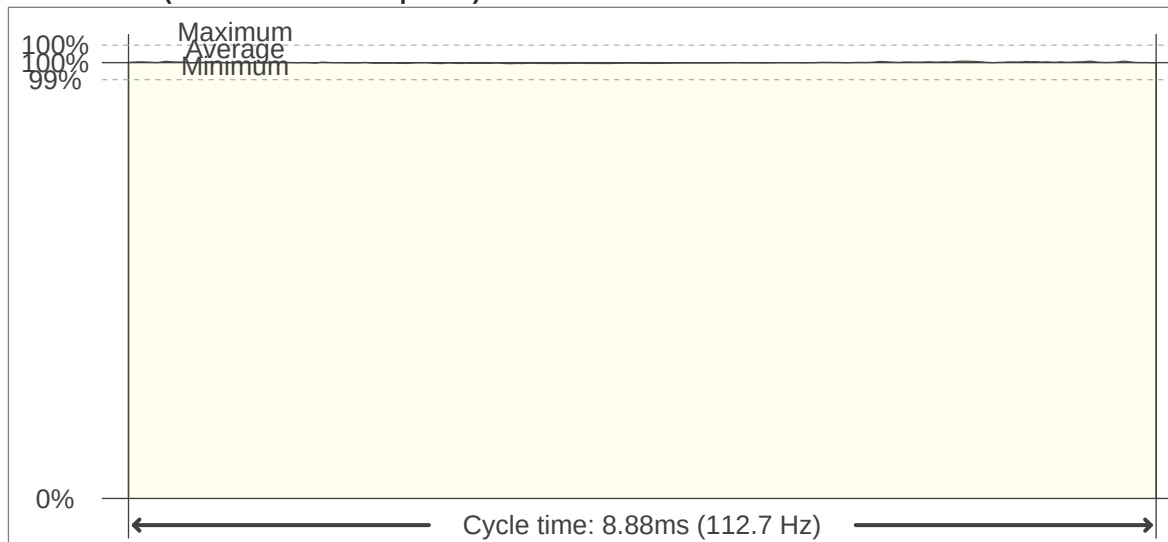


Flicker

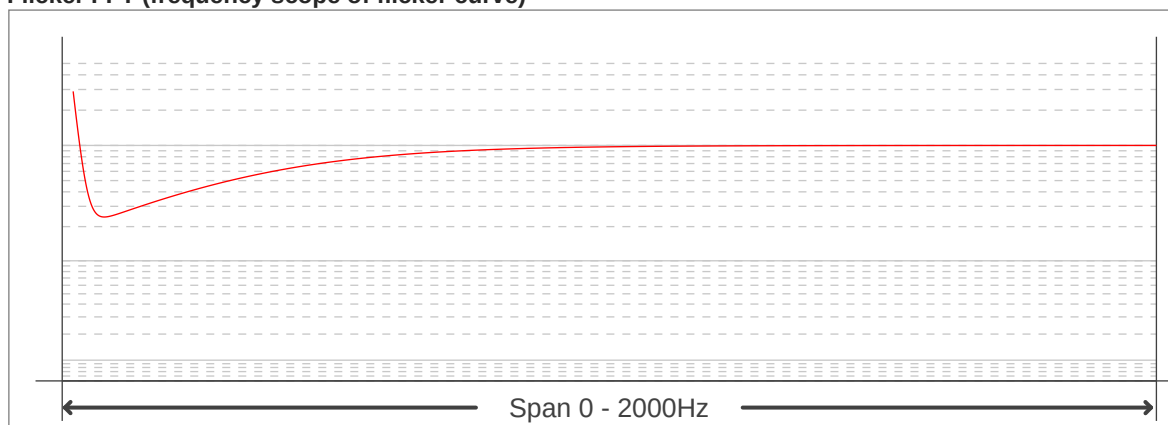
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	112.68 Hz
Flicker index:	0
Flicker percentage:	0.4 %
SVM: (Visual flicker)	0.01

Flicker conditions:

Sample rate:	40000 samples/second
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Light efficiency:

142 Lumen/Watt

Output: 2416 lm

Light quality:

CRI: 86.3

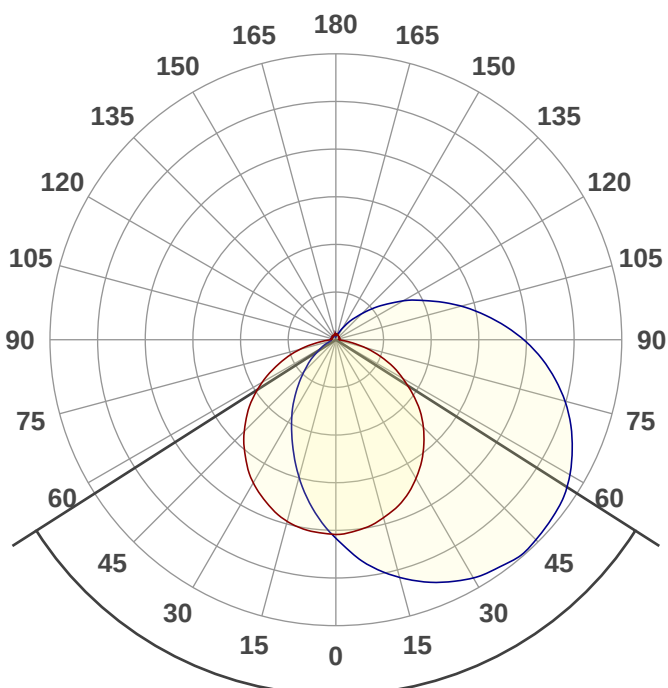
Peak: 756 cd

Color temperature:

4015 K

Power: 17.1 W

PF: 0.99



Product name:

CRN4-40W-150K-C-FL-CT-FA at 18 W

Date and time:

9/2/2020 2:19:35 PM

Beam angle

115°

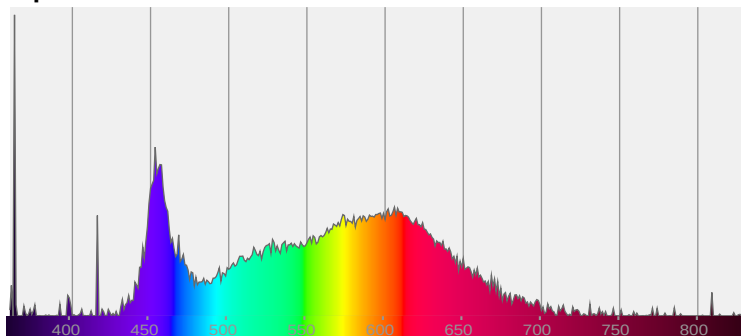


CIE 1931

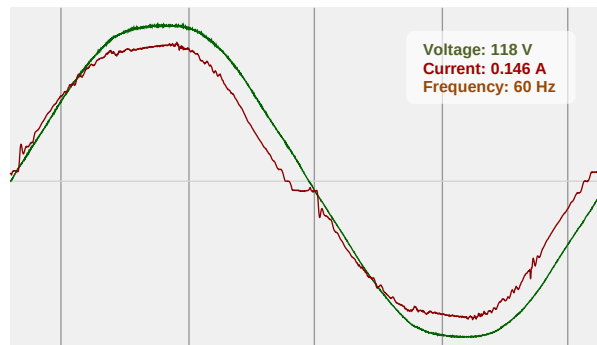
x: 0.376

y: 0.361

Spectra



Power



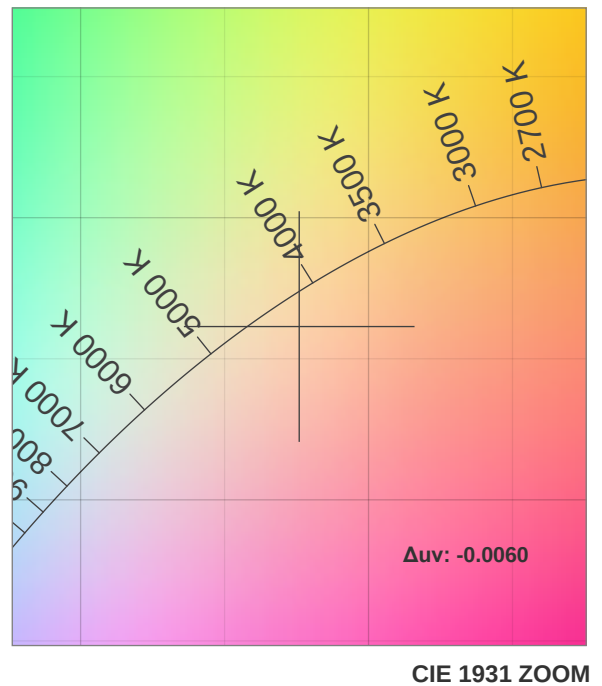
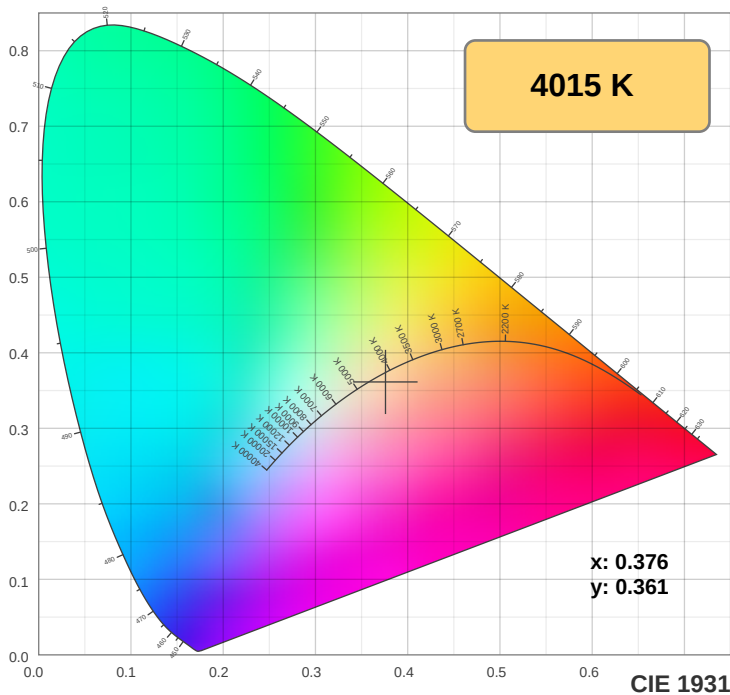
T 314.743.3067

F 314.972.6202

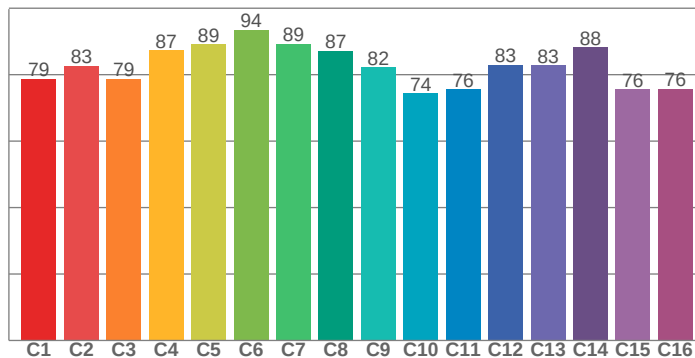
email: commercial-sales@superbrightleds.com

www.superbrightleds.com/

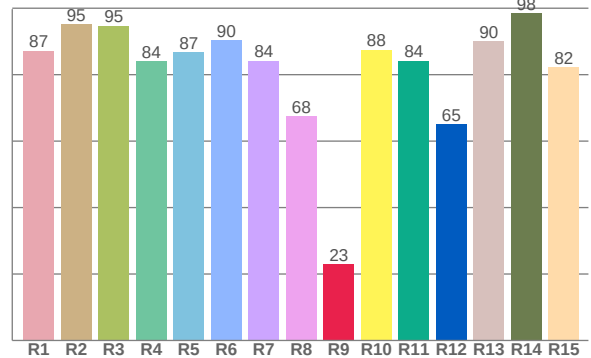
Color Specifications



TM30: 82.5



CRI: 86.3 (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
87.2	95.2	94.8	84.1	86.7	90.4	84.2	67.6	22.9	87.5	84.2	65.1	90.0	98.4	82.2

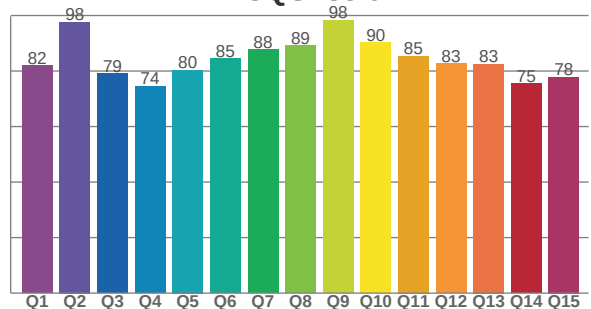
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
78.7	82.6	78.8	87.3	89.2	93.5	89.3	87.2	82.2	74.4	75.6	83.0	82.8	88.2	75.6	75.7

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
82.0	97.7	79.2	74.5	80.4	84.5	87.7	89.1	98.3	90.2	85.4	82.6	82.5	75.4	77.9

CQS: 83.0



Color parameters

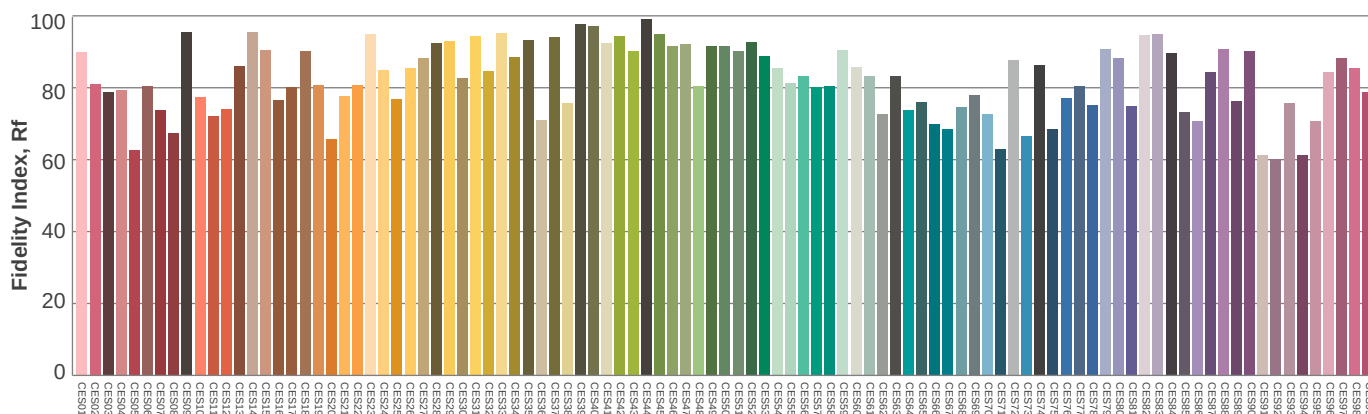
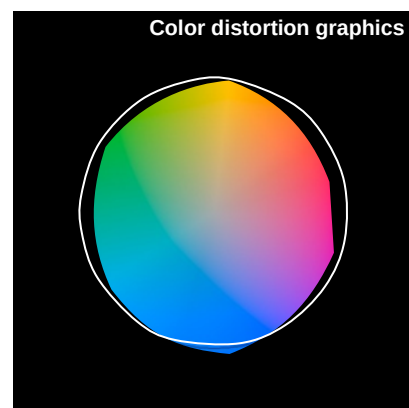
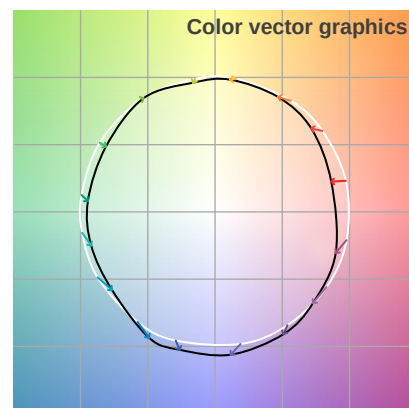
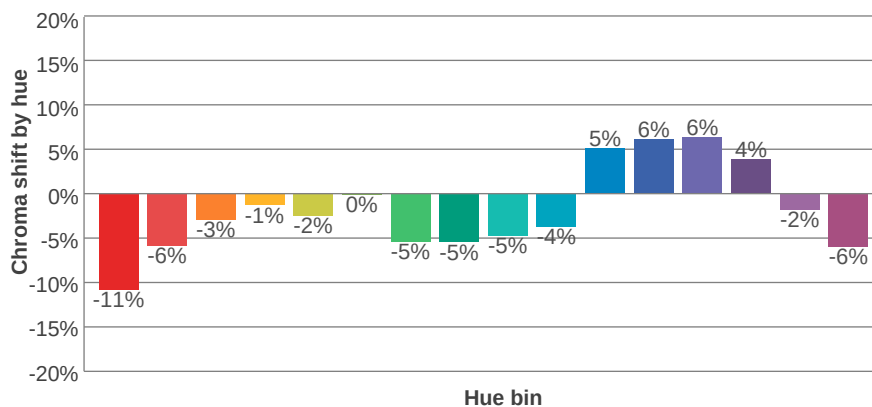
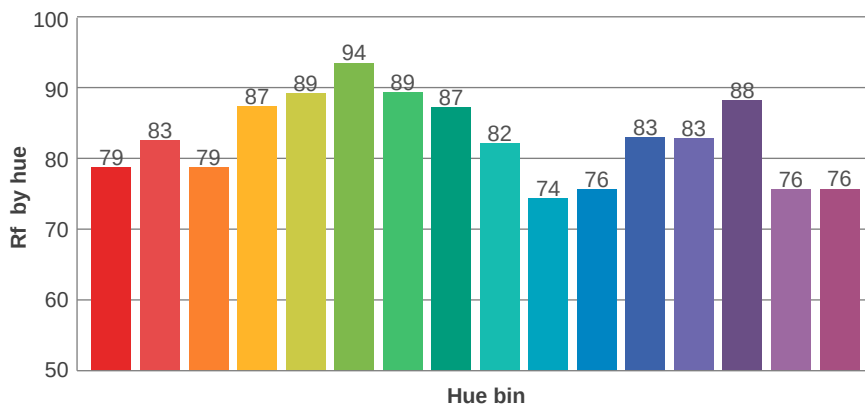
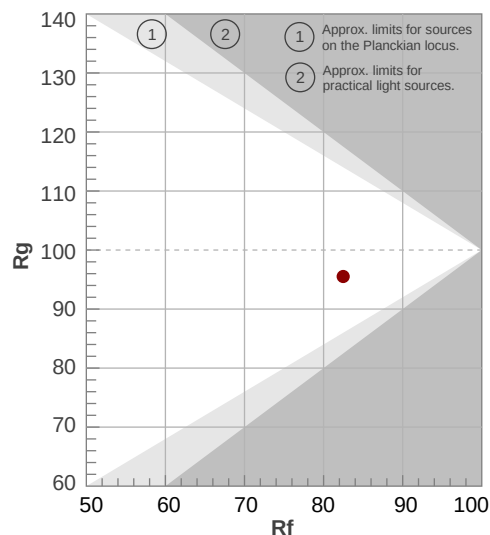
Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4015 K	86.3	22.9	82.5	95.5	83.0	0.376	0.361	0.228	0.329	-0.0060



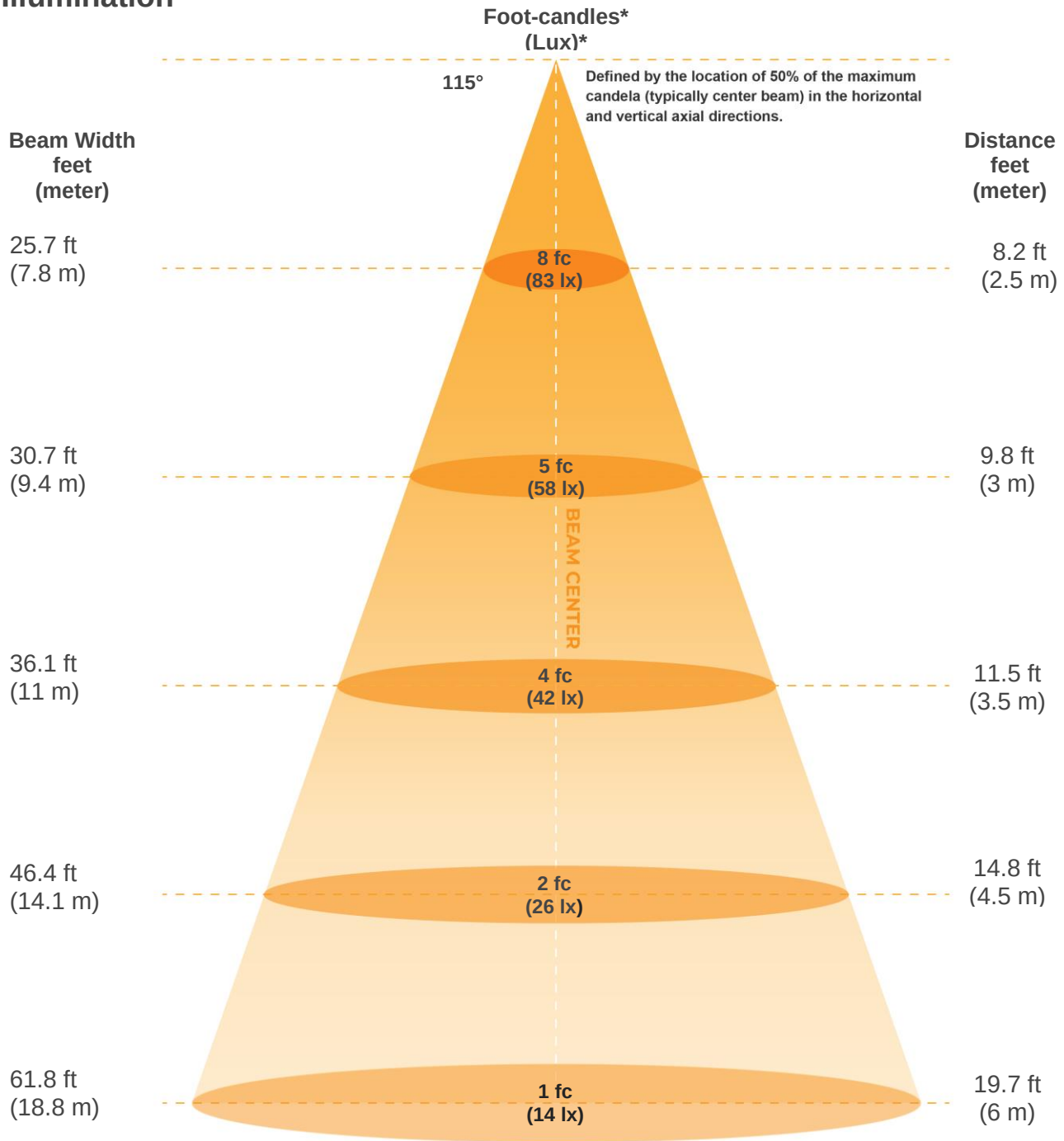
Fidelity index R_f

Gammut index Rg

		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	79	-11%	1%
2	83	-6%	6%
3	79	-3%	9%
4	87	-1%	4%
5	89	-2%	2%
6	94	0%	-1%
7	89	-5%	0%
8	87	-5%	3%
9	82	-5%	11%
10	74	-4%	14%
11	76	5%	14%
12	83	6%	4%
13	83	6%	-9%
14	88	4%	-6%
15	76	-2%	-15%
16	76	-6%	-11%



Illumination



*measured at center of beam

Beam intensities from 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
520lx	130lx	58lx	32lx	21lx	14lx	11lx	8lx	6lx	5lx	4lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx	1lx	1lx
48.3fcd	12.1fcd	5.4fcd	3fcd	1.9fcd	1.3fcd	1fcd	0.8fcd	0.6fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd	0.1fcd	0.1fcd	0.1fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
115°	182.8°	278.4°	53.0%	34.4%



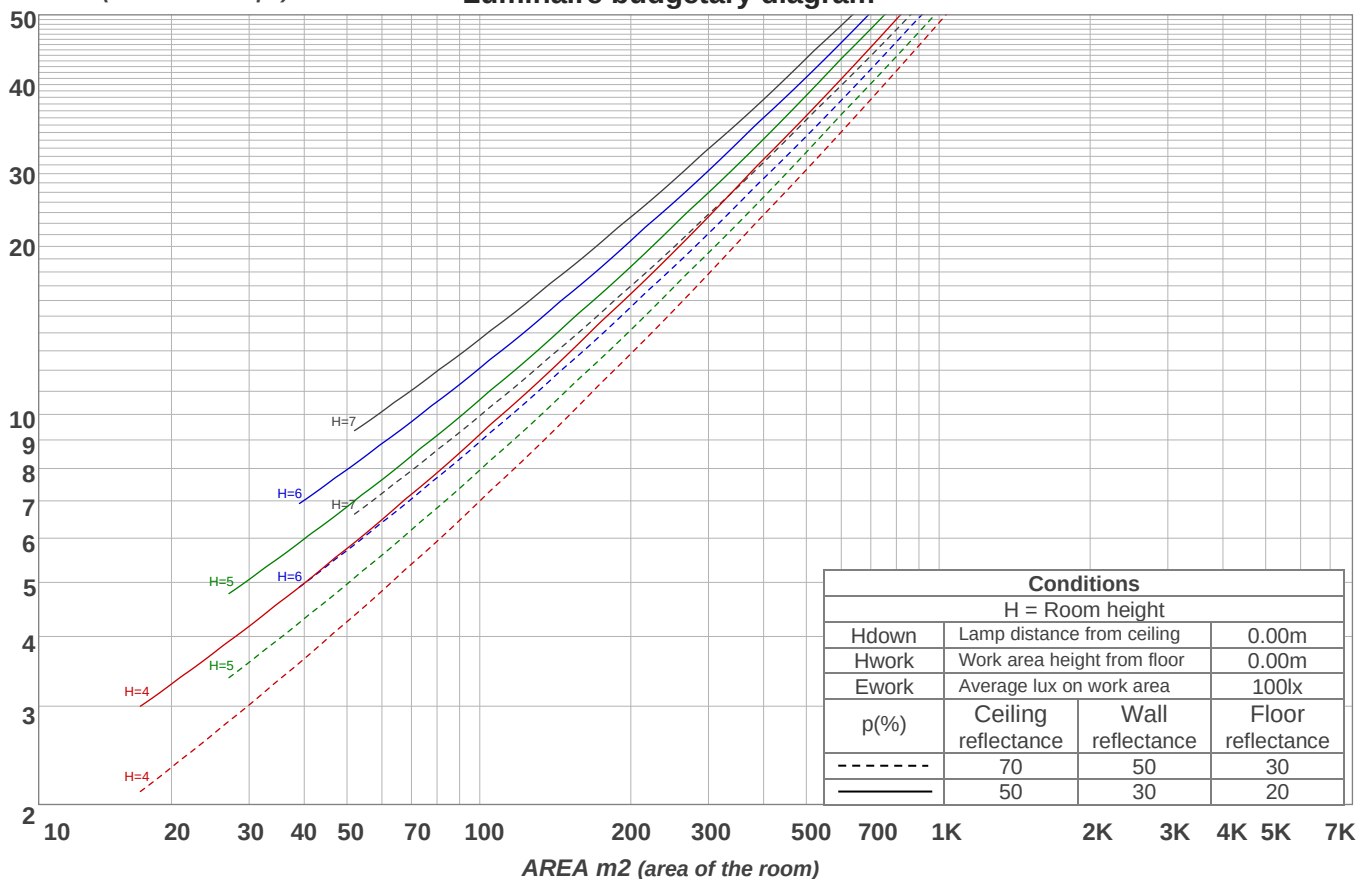
Light Planning

Coefficients of Utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	115	115	115	115	110	110	110	110	101	101	101	93	93	93	86	86	86	83
1	101	95	90	85	97	91	86	82	84	80	76	77	74	71	70	68	65	62
2	91	81	73	67	87	78	71	64	71	65	60	65	61	56	60	56	52	49
3	82	70	61	54	78	68	59	52	62	55	49	57	51	46	52	47	43	40
4	75	62	52	45	71	59	51	44	55	47	41	50	44	39	46	41	36	34
5	69	55	45	38	65	53	44	37	49	41	35	45	38	33	41	36	31	29
6	63	49	40	33	60	47	38	32	44	36	30	40	34	29	37	32	27	25
7	58	44	35	29	56	43	34	28	39	32	27	37	30	25	34	28	24	22
8	54	40	31	25	52	39	31	25	36	29	24	33	27	22	31	25	21	19
9	51	37	28	23	48	35	28	22	33	26	21	31	25	20	29	23	19	17
10	47	34	26	20	45	33	25	20	30	24	19	28	22	18	26	21	17	15

LAMPS (number of lamps)

Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
49.3 lm	142 lm	219 lm	273 lm	299 lm	299 lm	277 lm	240 lm	195 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
150 lm	107 lm	71.0 lm	43.8 lm	24.7 lm	13.1 lm	7.03 lm	3.71 lm	1.20 lm

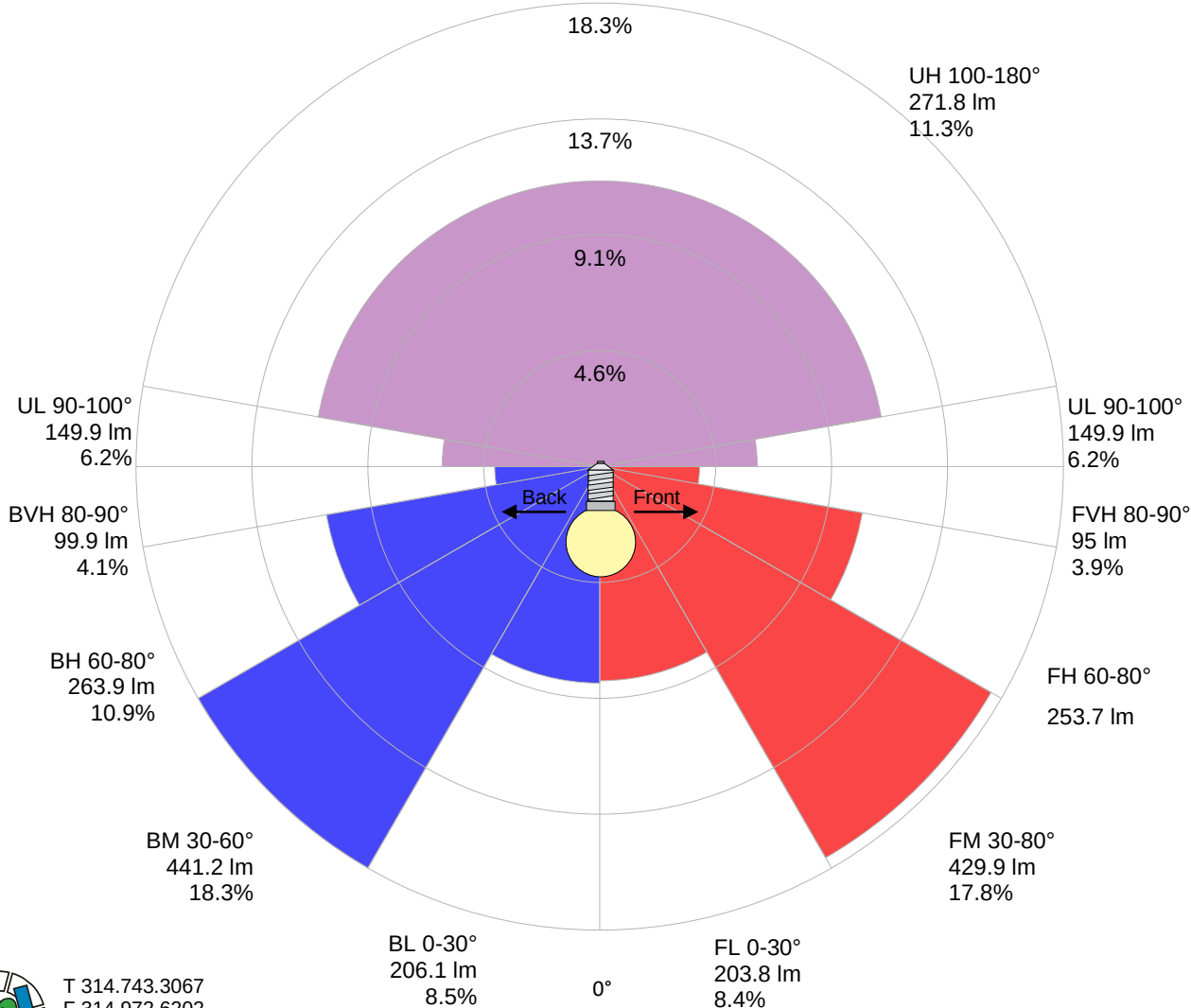


Road Report

LCS table

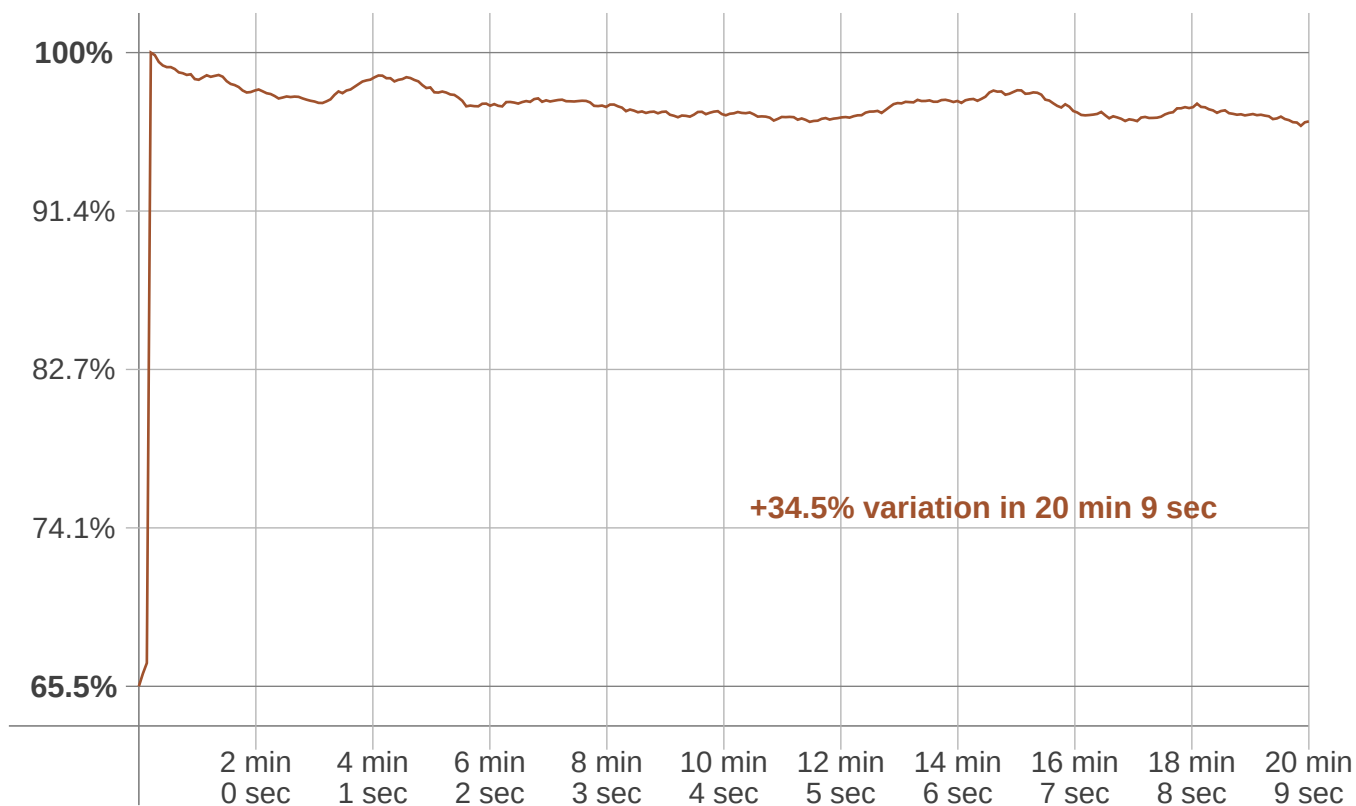
BUG rating:	B1 U3 G1	
Forward light	Lumens	Lumens %
Low(0-30):	203.8	8.4%
Medium(30-60):	429.9	17.8%
High(60-80):	253.7	10.5%
Very high(80-90):	95	3.9%
Back light		
Low(0-30):	206.1	8.5%
Medium(30-60):	441.2	18.3%
High(60-80):	263.9	10.9%
Very high(80-90):	99.9	4.1%
Uplight		
Low(90-100):	149.9	6.2%
High(100-180):	271.8	11.3%

LCS graph



Stabilization

Warmup curve



Warmup result

Warmup time:	20 min 9 sec
Warmup variation	+34.5%

Warmup conditions

Stable period:	15 min
Stable change max:	2.0%
Minimum time:	15 min

Color temperature change

CCT start	CCT change	CCT end
4005 K	+10 K	4015 K

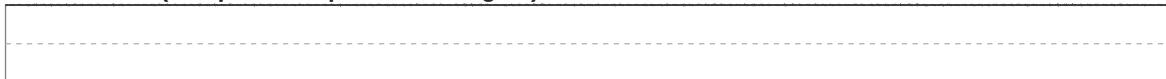
Output change

Output start	Output change	Output end
2248 lm	+168 lm	2416 lm

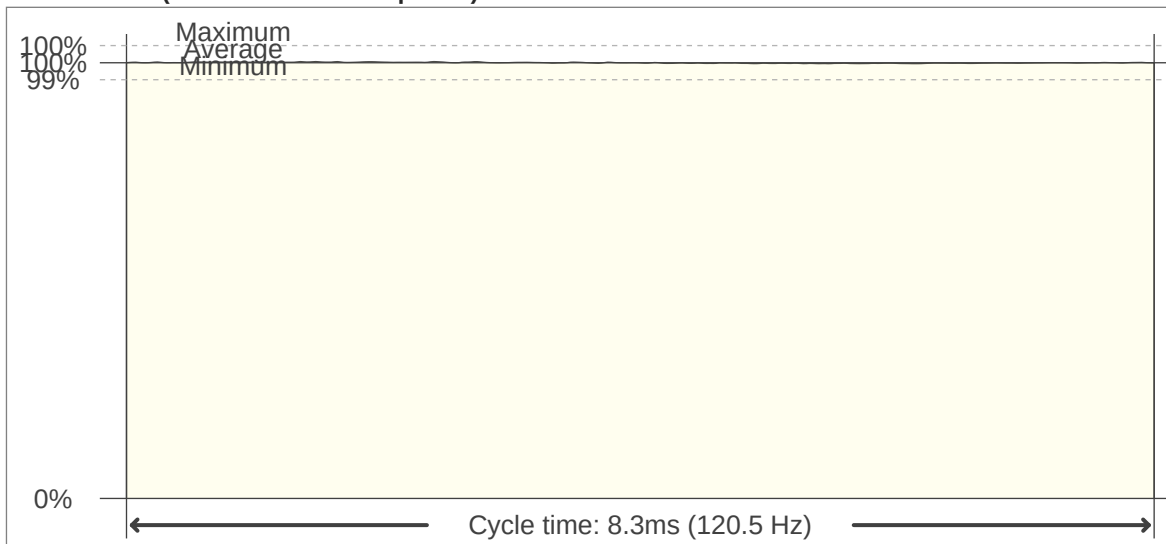


Flicker

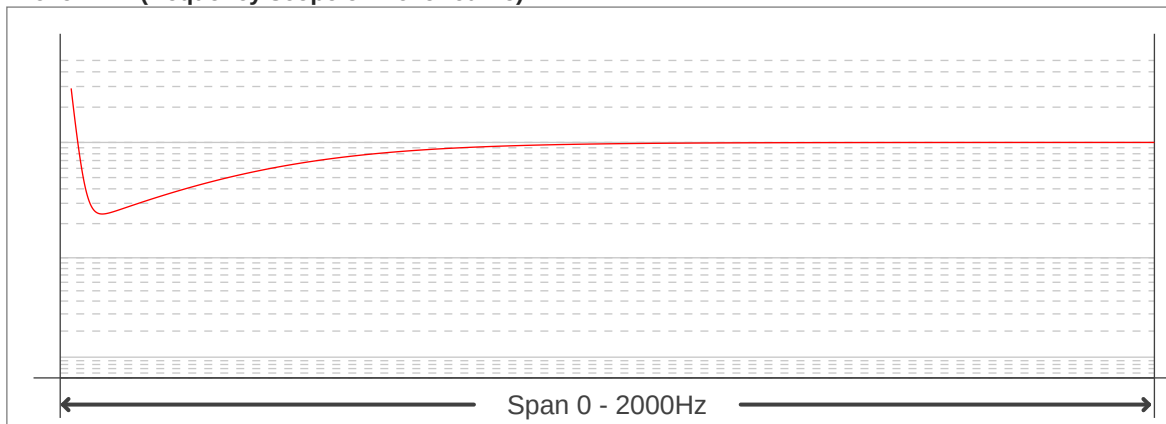
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	120.48 Hz
Flicker index:	0
Flicker percentage:	0.43 %
SVM: (Visual flicker)	0.01

Flicker conditions:

Sample rate:	40000 samples/second
--------------	----------------------



Light efficiency:

138 Lumen/Watt

Light quality:

CRI: 86.2

Color temperature:

4051 K

Output: 1601 lm

Peak: 494 cd

Power: 11.6 W

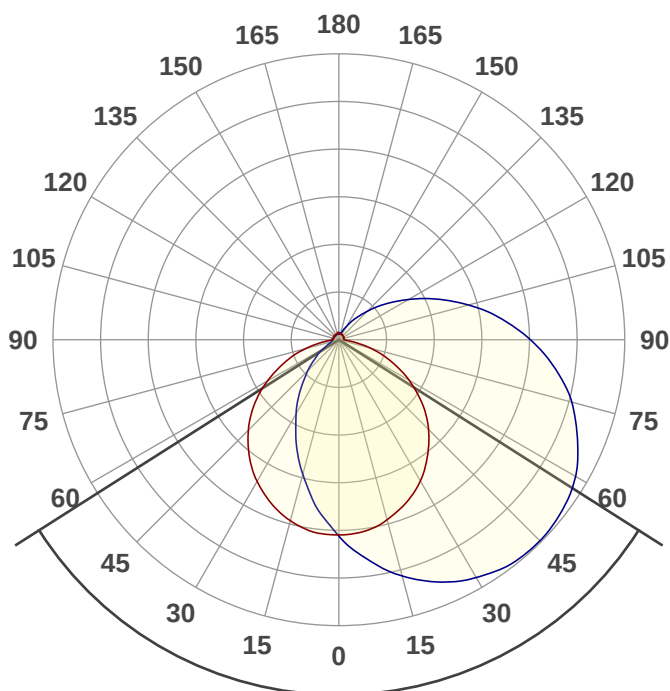
PF: 0.92

Product name:

CRN4-40W-150K-C-FL-CT-FA at 12 W

Date and time:

9/3/2020 9:49:27 AM



Beam angle

115.1°

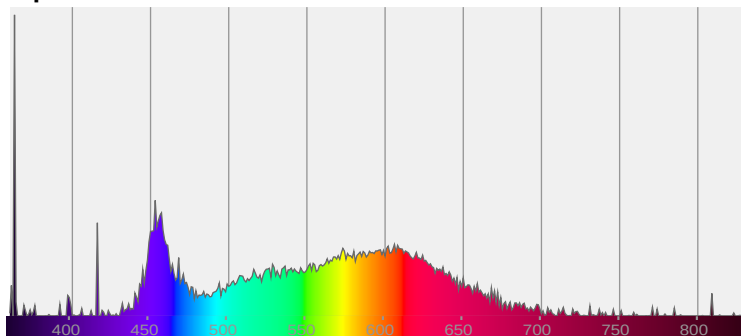


CIE 1931

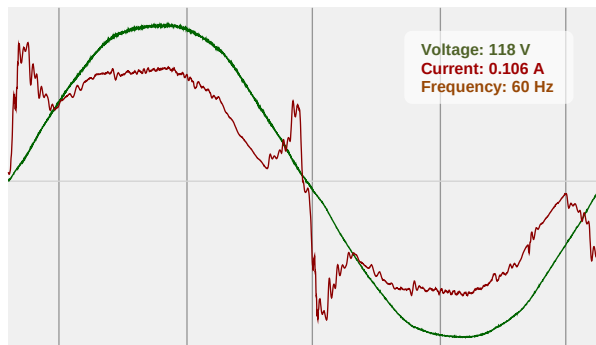
x: 0.375

y: 0.361

Spectra



Power



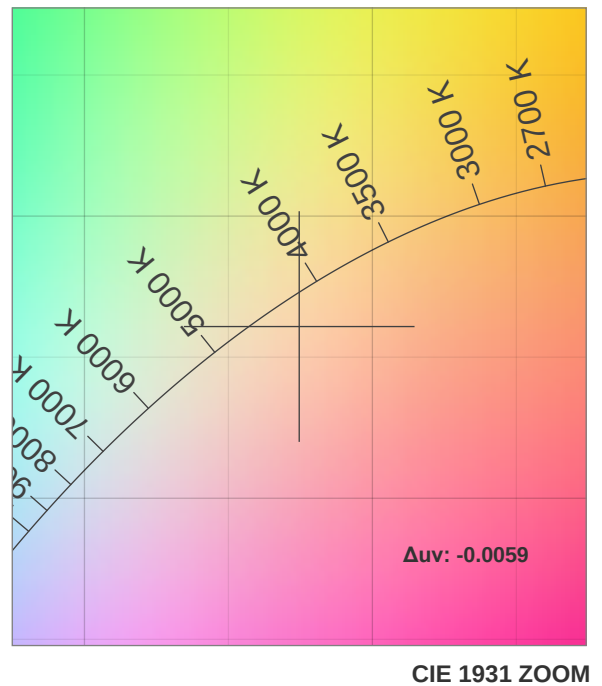
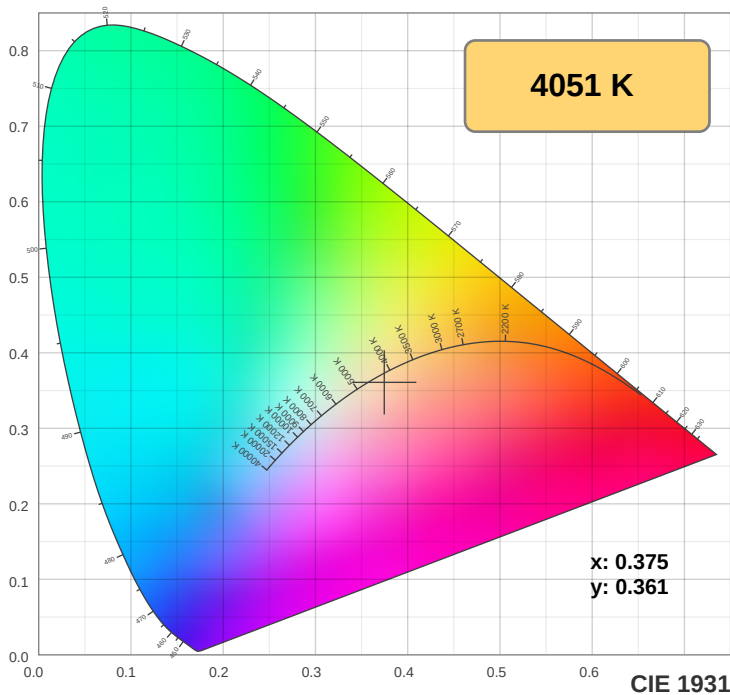
T 314.743.3067

F 314.972.6202

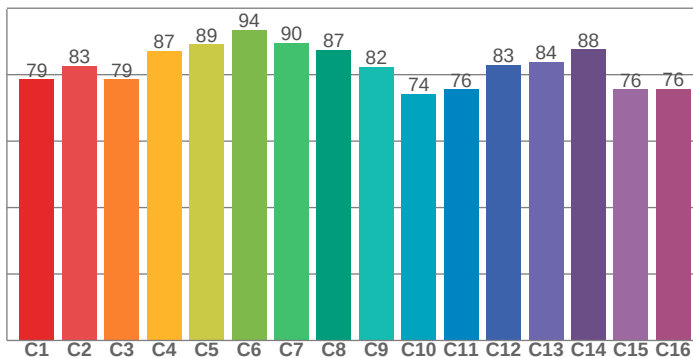
email: commercial-sales@superbrightleds.com

www.superbrightleds.com/

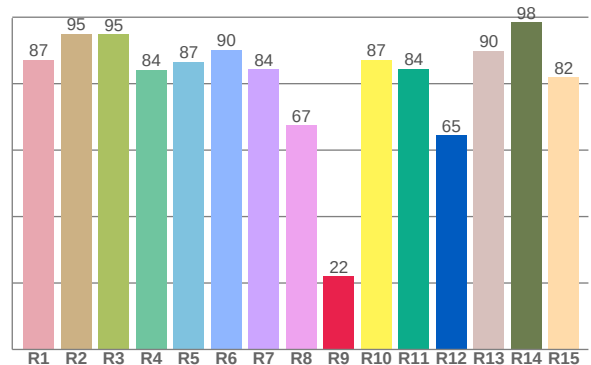
Color Specifications



TM30: 82.5



CRI: 86.2 (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
87.2	95.0	94.9	84.2	86.6	90.3	84.3	67.4	22.0	87.2	84.4	64.6	89.9	98.5	82.0

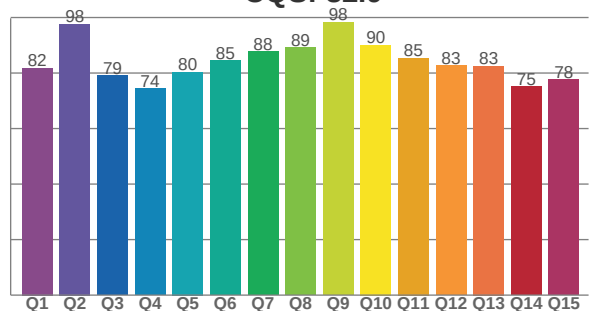
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
78.6	82.6	78.6	87.2	89.1	93.5	89.5	87.4	82.3	74.3	75.5	83.0	83.8	87.6	75.6	75.8

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
81.8	97.6	79.0	74.4	80.4	84.5	87.8	89.1	98.3	90.1	85.4	82.6	82.5	75.1	77.6

CQS: 82.9



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 deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4051 K	86.2	22.0	82.5	95.4	82.9	0.375	0.361	0.228	0.329	-0.0059



TM30 Report

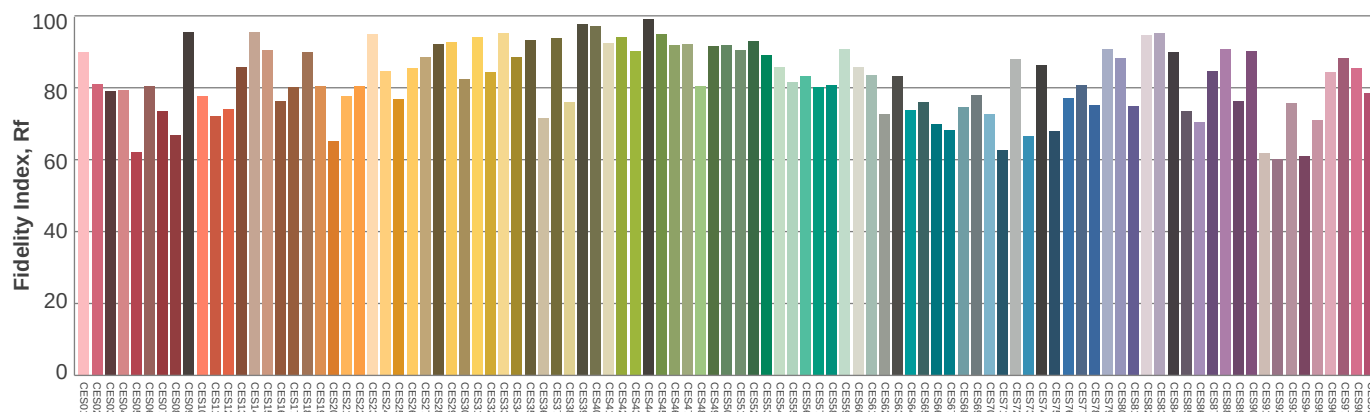
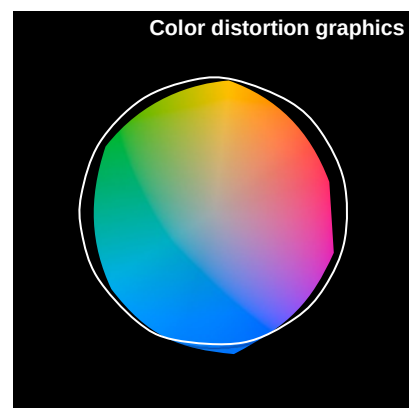
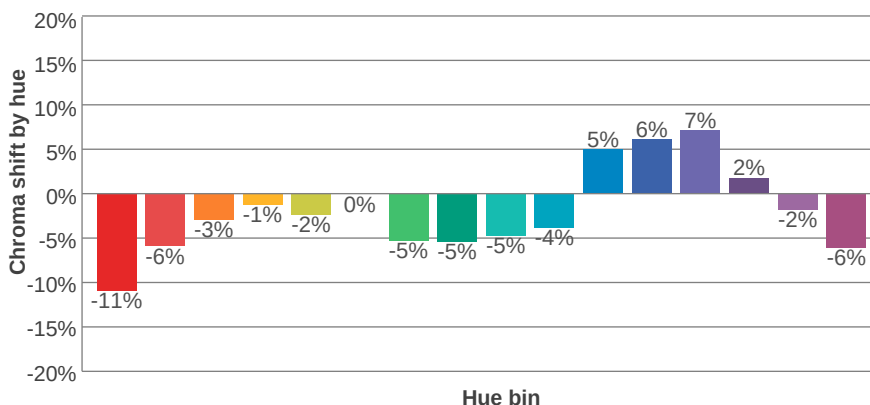
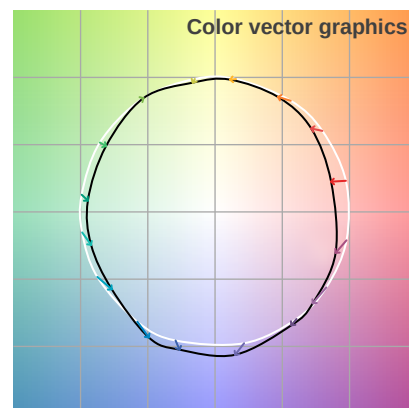
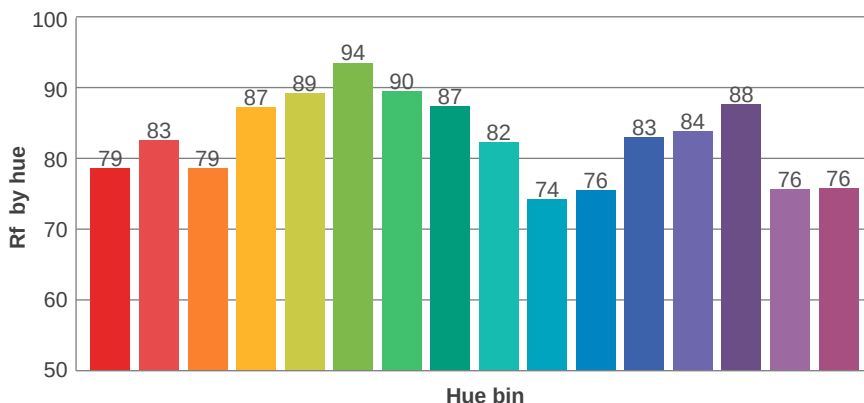
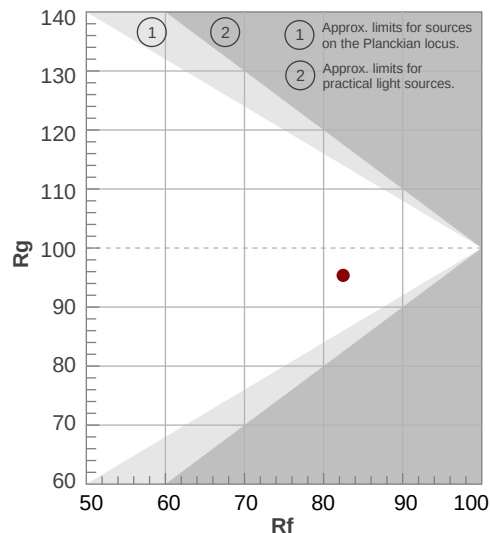
Rf 82.5

Fidelity index Rf

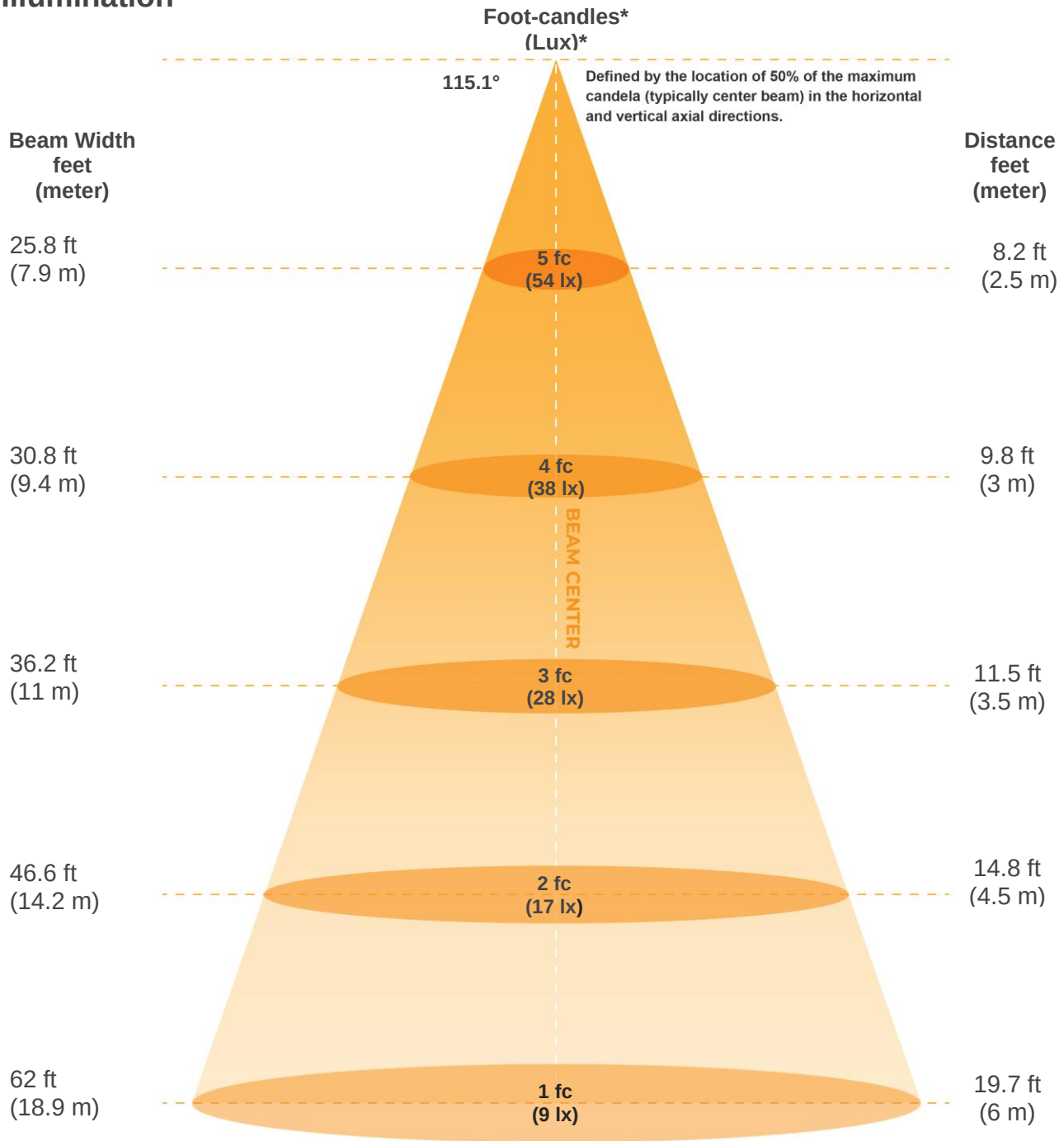
Rg 95.4

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	79	-11%	1%
2	83	-6%	6%
3	79	-3%	9%
4	87	-1%	4%
5	89	-2%	2%
6	94	0%	-1%
7	90	-5%	0%
8	87	-5%	3%
9	82	-5%	10%
10	74	-4%	14%
11	76	5%	14%
12	83	6%	4%
13	84	7%	-8%
14	88	2%	-6%
15	76	-2%	-15%
16	76	-6%	-11%



Illumination



*measured at center of beam

Beam intensities from 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
340lx	85lx	38lx	21lx	14lx	9lx	7lx	5lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx
31.6fcd	7.9fcd	3.5fcd	2fcd	1.3fcd	0.9fcd	0.6fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.1fcd	0.1fcd	0.1fcd	0.1fcd	0.1fcd	0.1fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
115.1°	184°	316°	52.5%	34.0%



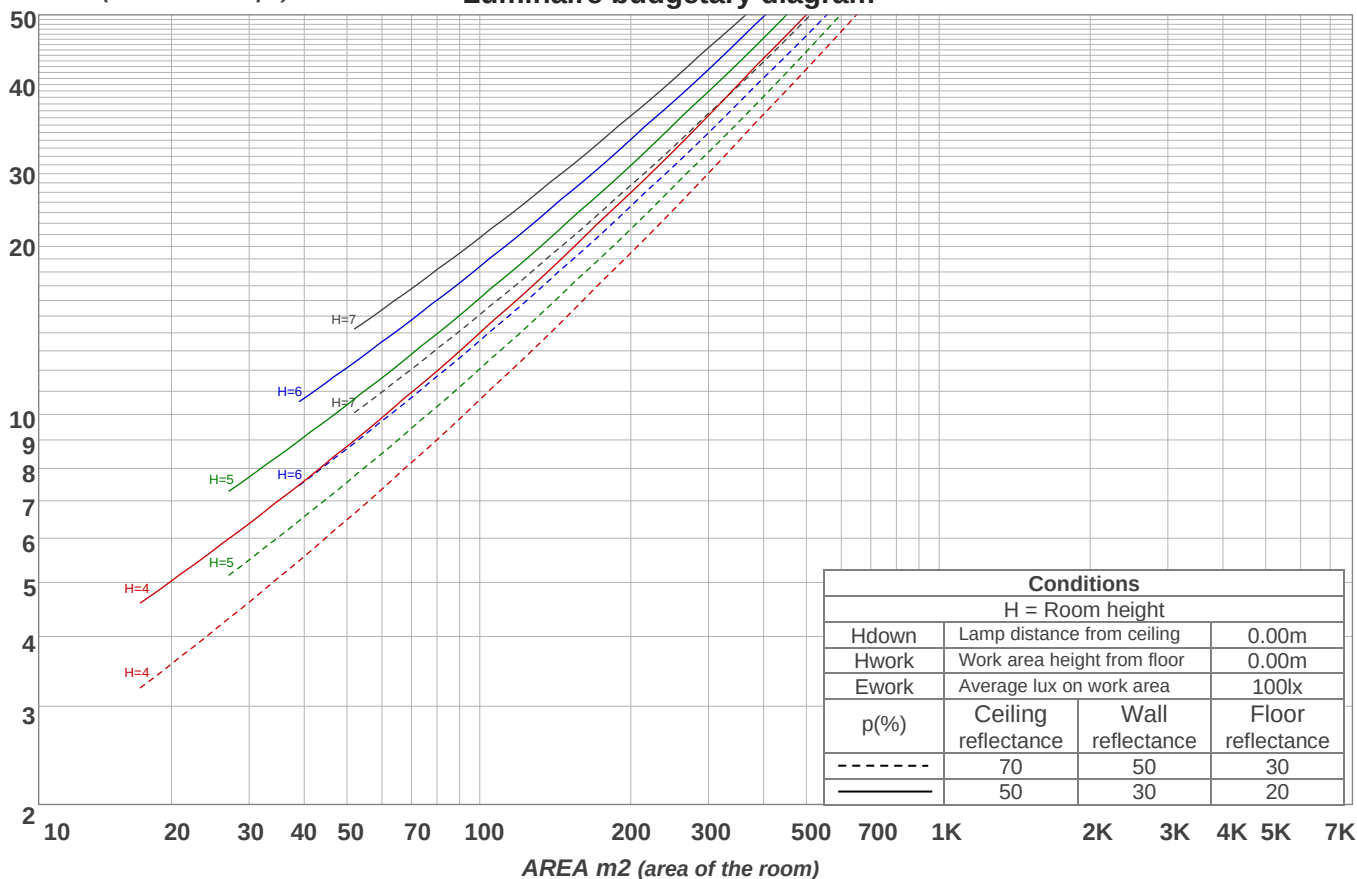
Light Planning

Coefficients of Utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	115	115	115	115	110	110	110	110	101	101	101	93	93	93	85	85	85	82
1	101	95	90	85	97	91	86	82	83	79	76	76	73	70	70	67	65	61
2	91	81	73	66	86	78	70	64	71	65	60	65	60	56	59	56	52	49
3	82	70	61	54	78	67	59	52	62	55	49	56	51	46	52	47	43	40
4	75	62	52	45	71	59	50	44	54	47	41	50	44	39	46	40	36	33
5	68	55	45	38	65	53	44	37	48	41	35	44	38	33	41	35	31	28
6	63	49	40	33	60	47	38	32	43	36	30	40	33	29	37	31	27	24
7	58	44	35	29	55	42	34	28	39	32	26	36	30	25	33	28	24	21
8	54	40	31	25	51	39	30	25	36	29	23	33	27	22	31	25	21	19
9	50	37	28	23	48	35	27	22	33	26	21	31	24	20	28	23	19	17
10	47	34	26	20	45	33	25	20	30	24	19	28	22	18	26	21	17	15

LAMPS (number of lamps)

Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
32.3 lm	93.1 lm	143 lm	178 lm	196 lm	197 lm	183 lm	159 lm	130 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
101 lm	72.6 lm	48.5 lm	30.5 lm	17.9 lm	9.95 lm	5.59 lm	3.05 lm	1.02 lm

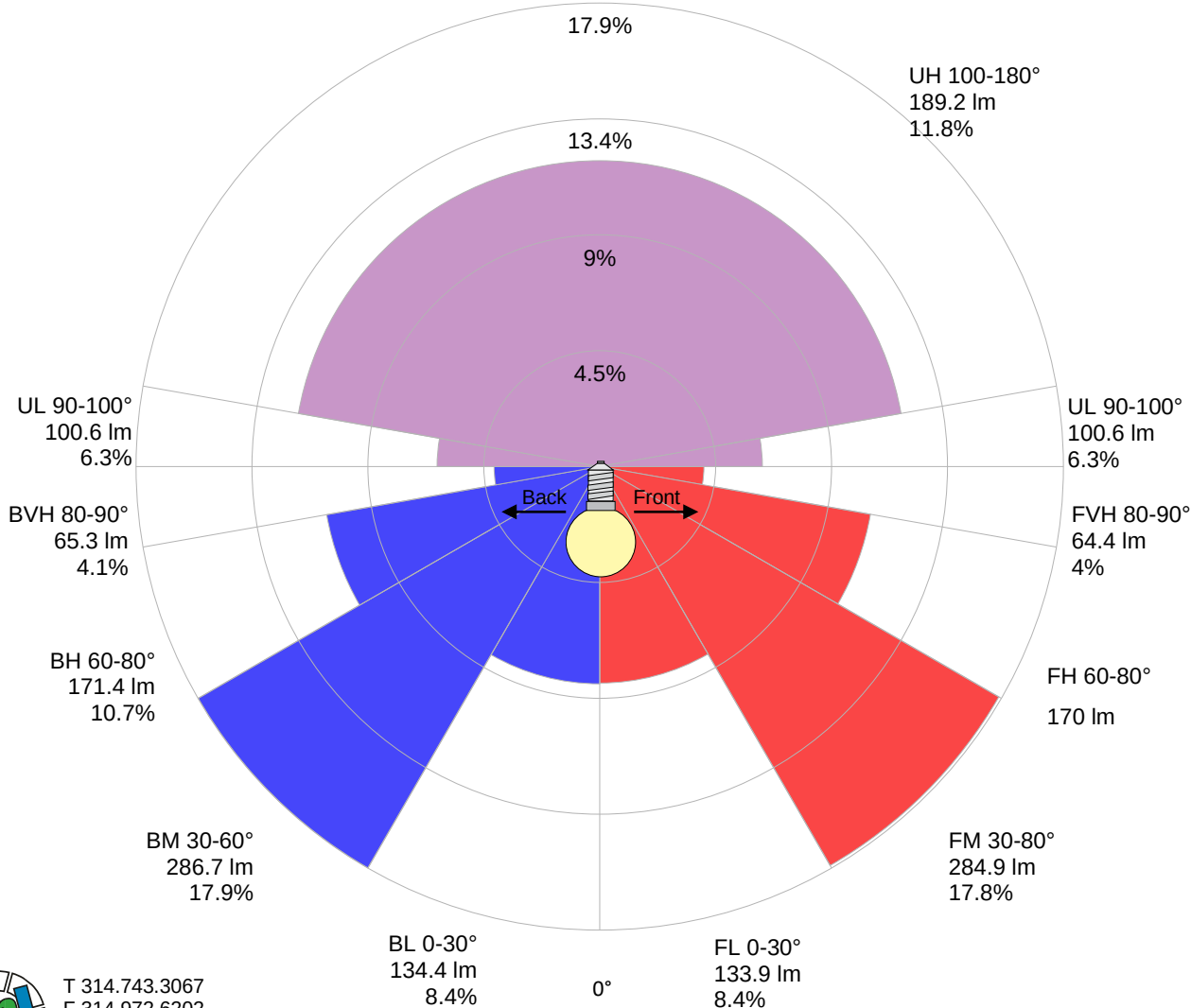


Road Report

LCS table

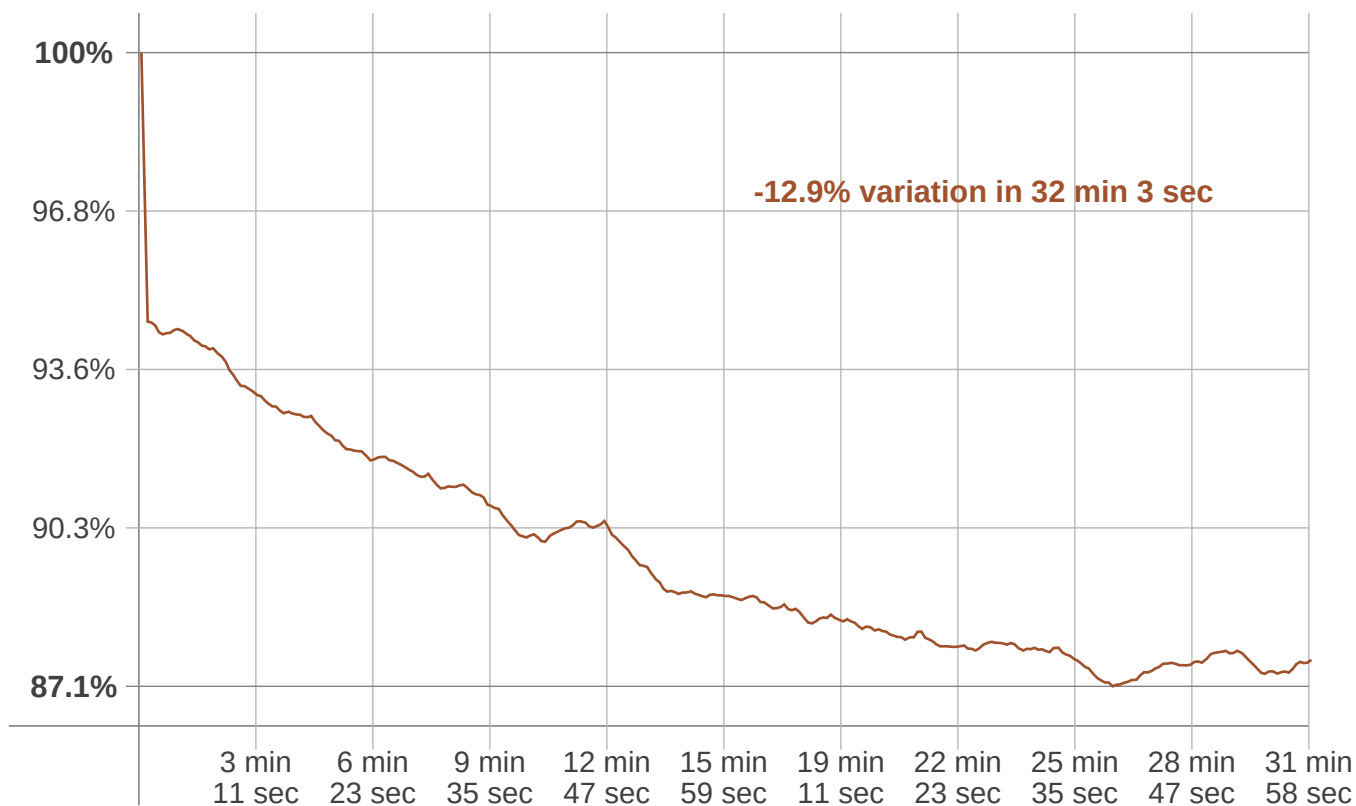
BUG rating:	B1 U3 G1	
Forward light	Lumens	Lumens %
Low(0-30):	133.9	8.4%
Medium(30-60):	284.9	17.8%
High(60-80):	170	10.6%
Very high(80-90):	64.4	4%
Back light		
Low(0-30):	134.4	8.4%
Medium(30-60):	286.7	17.9%
High(60-80):	171.4	10.7%
Very high(80-90):	65.3	4.1%
Uplight		
Low(90-100):	100.6	6.3%
High(100-180):	189.2	11.8%

LCS graph



Stabilization

Warmup curve



Warmup result

Warmup time:	32 min 3 sec
Warmup variation	-17.3%

Warmup conditions

Stable period:	15 min
Stable change max:	2.0%
Minimum time:	15 min

Color temperature change

CCT start	CCT change	CCT end
4084 K	-33 K	4051 K

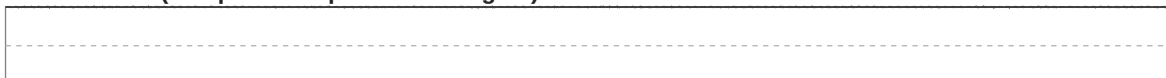
Output change

Output start	Output change	Output end
1745 lm	-143 lm	1601 lm

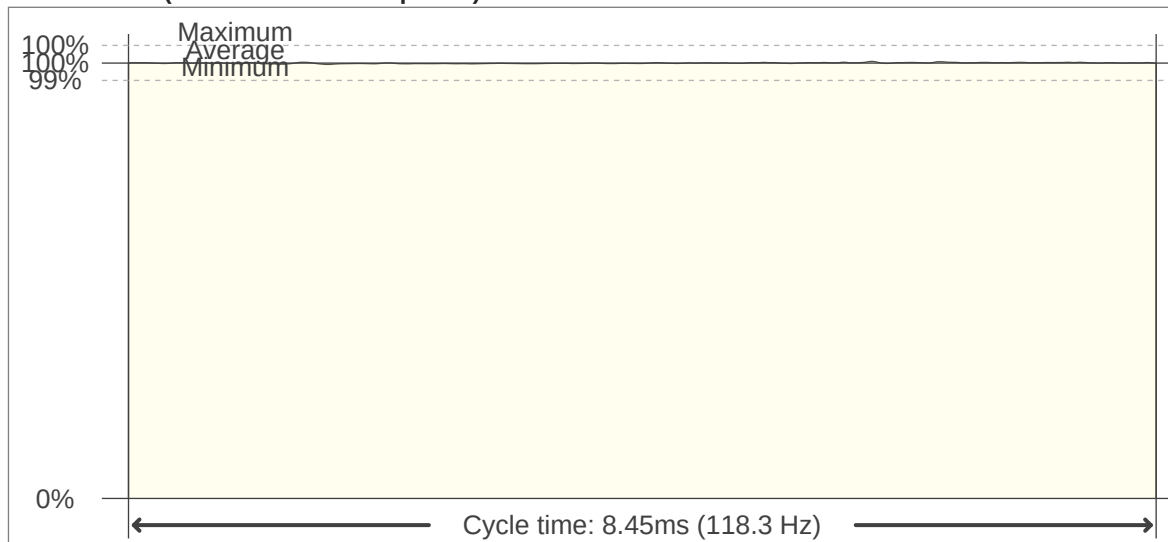


Flicker

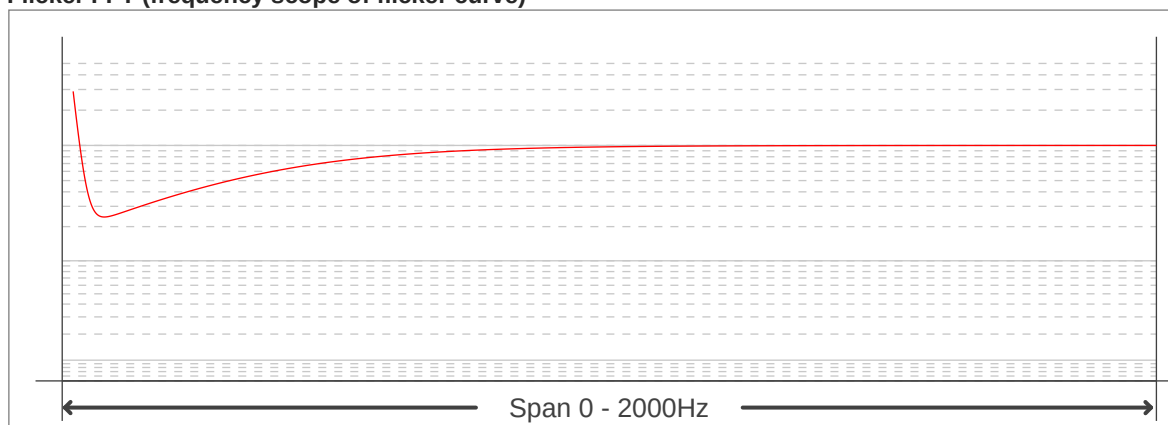
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	118.34 Hz
Flicker index:	0
Flicker percentage:	0.48 %
SVM: (Visual flicker)	0

Flicker conditions:

Sample rate:	40000 samples/second
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