

Light efficiency:

123 Lumen/Watt

Output: 49367 lm

Light quality:

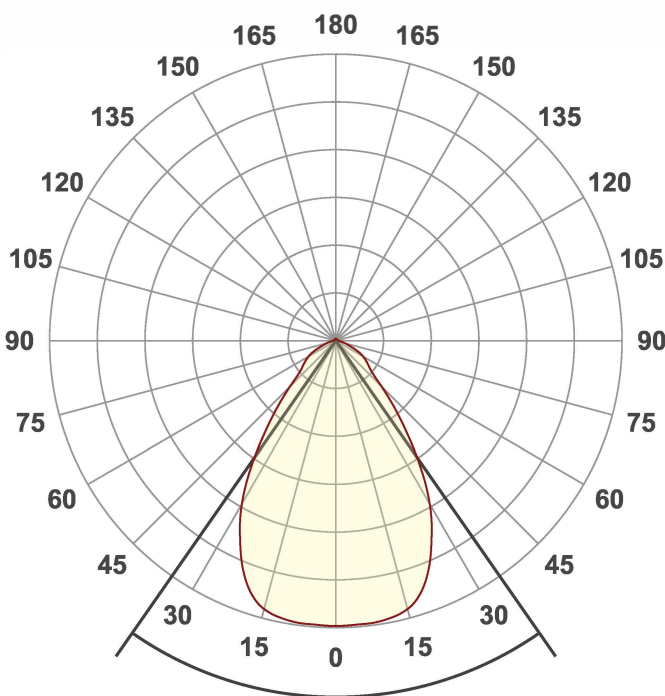
Peak: 32503 cd

CRI: 83.7

Power: 403 W

Color temperature:

5074 K



Beam angle

69.8°

Product name:

HBUD-50K400W-120-PR

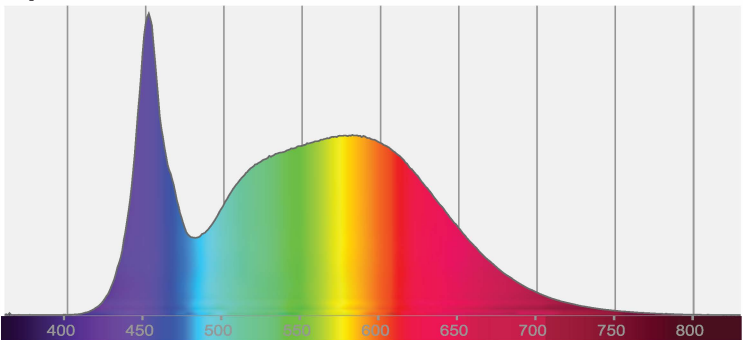
Date and time:

3/5/2019 1:44:02 PM



CIE 1931
x: 0.344
y: 0.356

Spectra



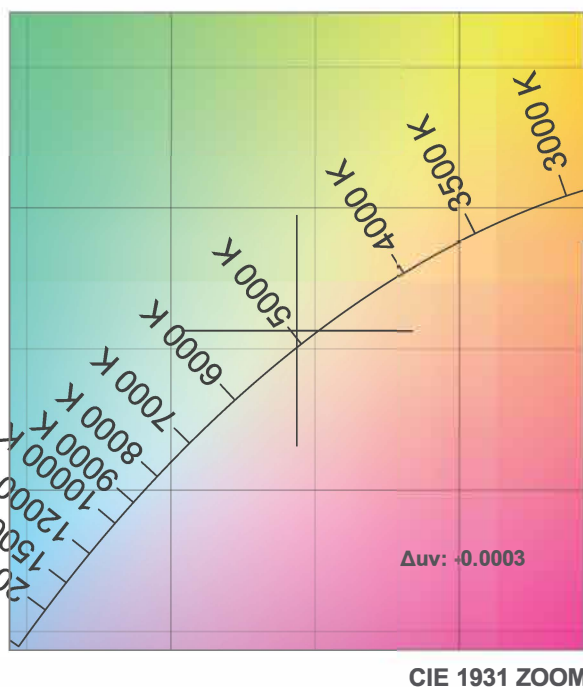
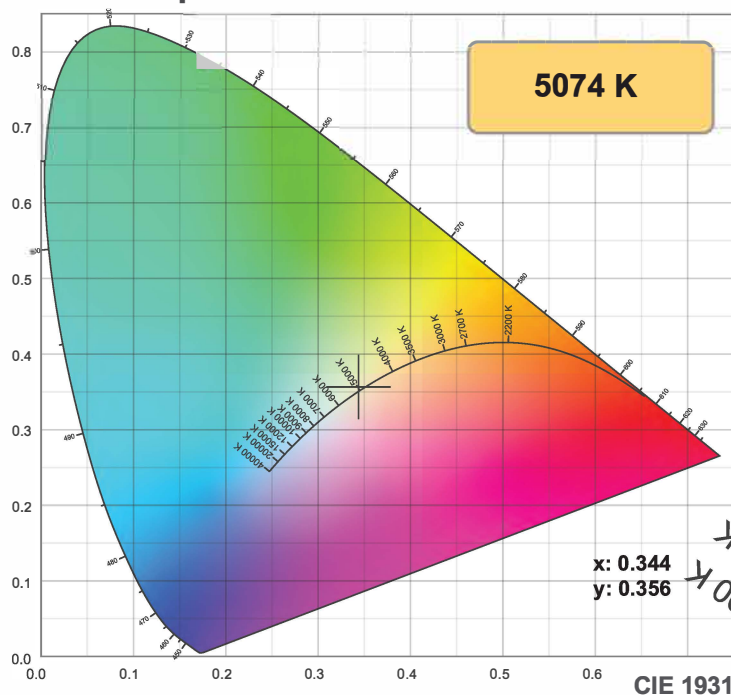
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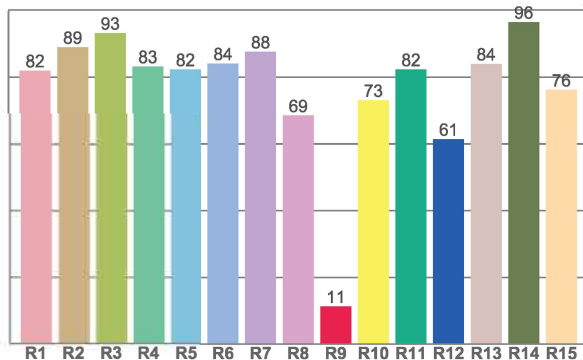
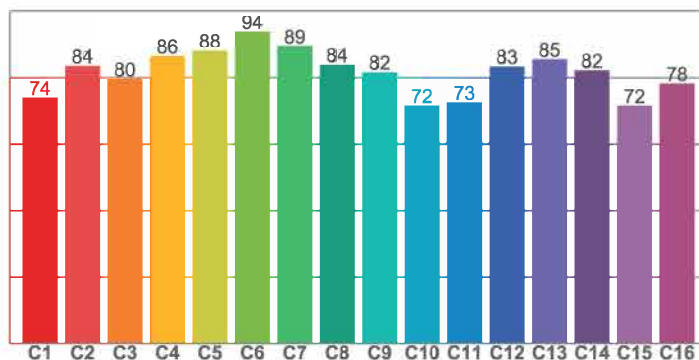
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Color Specifications



TM30: 81.9

CRI: 83.7 (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
81.9	88.9	93.1	83.2	82.3	84.0	87.5	68.5	11.3	73.1	82.3	61.4	83.9	96.4	76.2

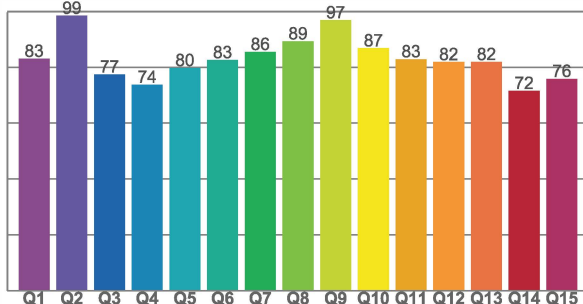
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
74.0	83.6	79.6	86.5	88.1	93.8	89.4	83.9	81.6	71.6	72.6	83.4	85.5	82.2	71.6	78.3

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
83.1	98.5	77.4	73.8	79.8	82.6	85.6	89.4	96.9	86.9	82.9	81.9	81.9	71.6	75.9

CQS: 81.7



Color parameters

Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
5074 K	83.7	11.3	81.9	94.2	81.7	0.344	0.356	0.209	0.325	-0.0003



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TM30 Report

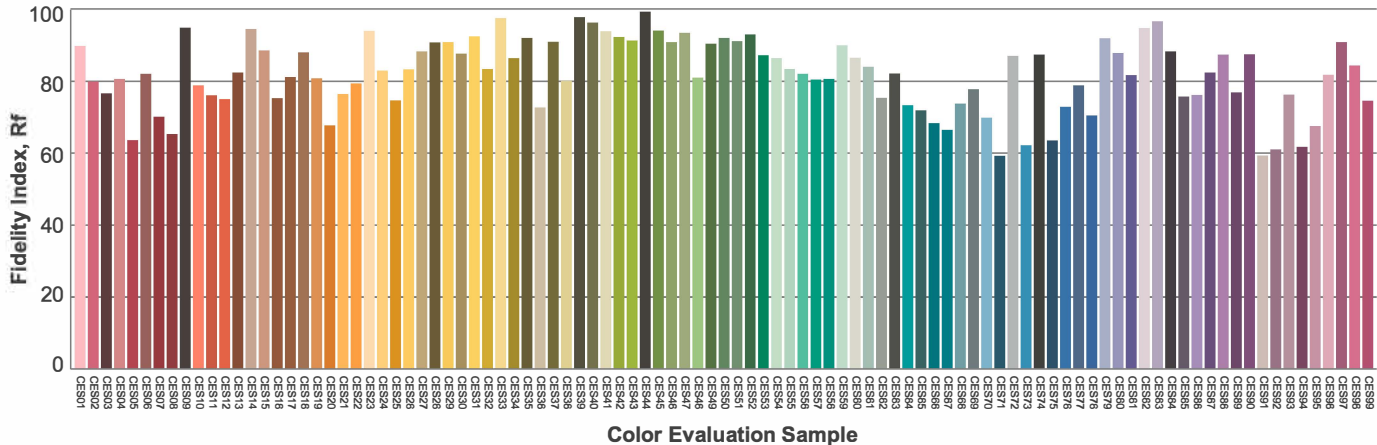
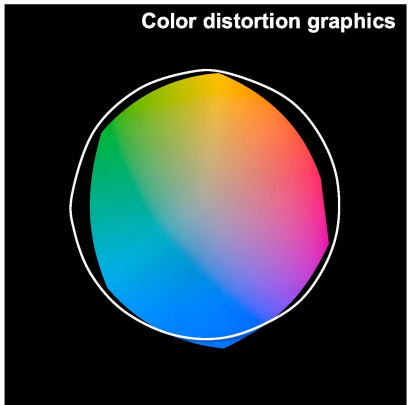
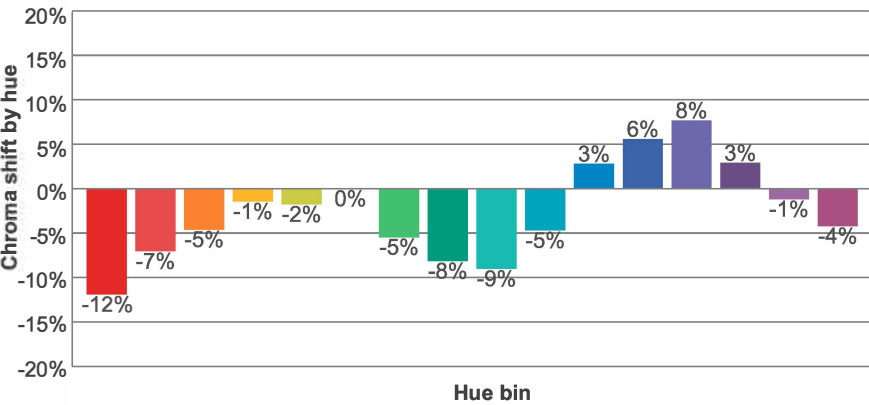
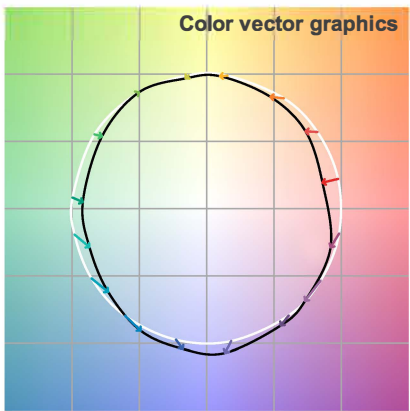
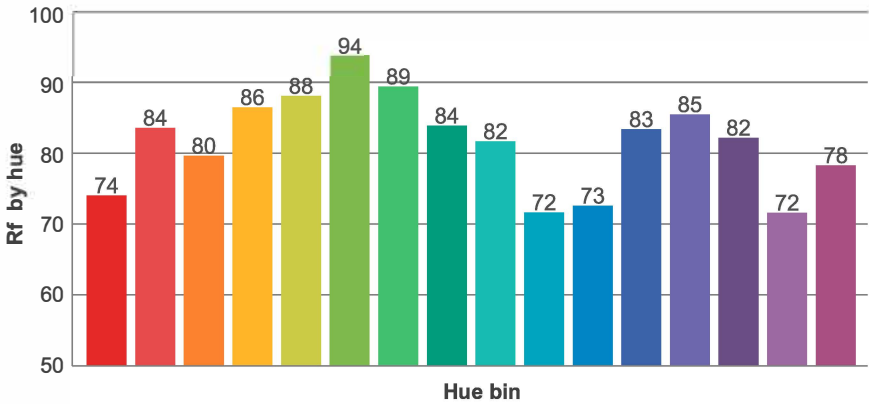
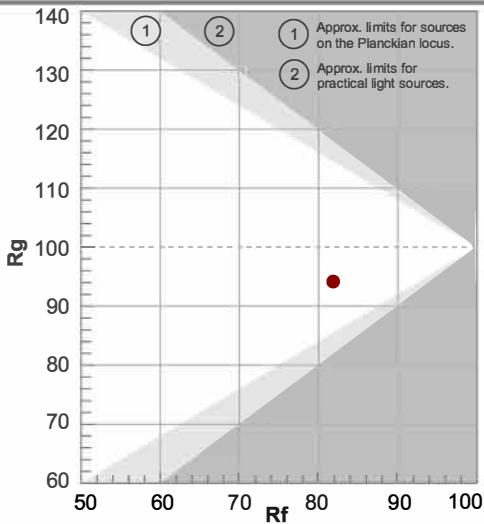
Rf 81.9

Fidelity index Rf

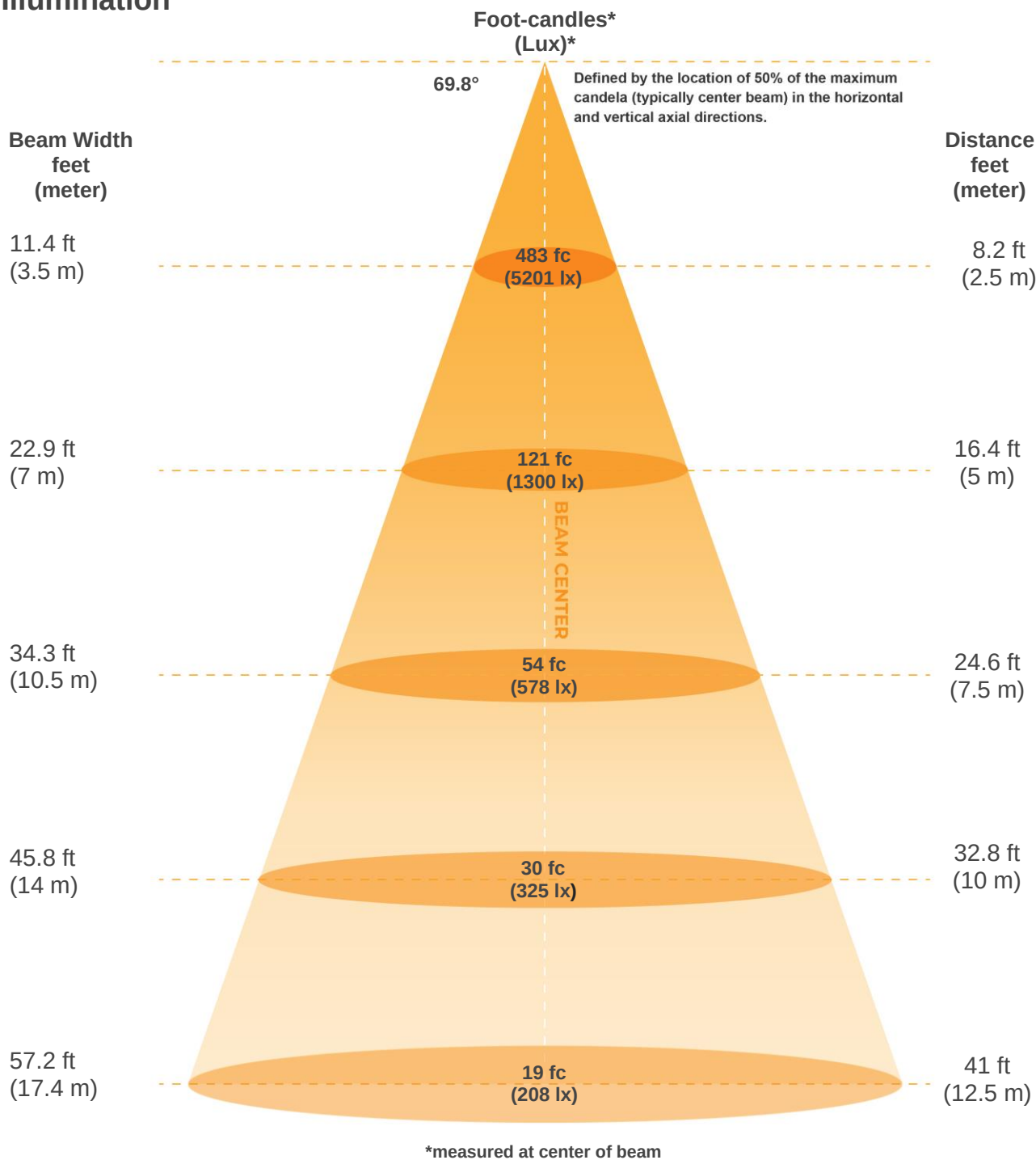
Rg 94.2

Gammut index Rg

Hue Bin	Rr	Graphic shifts (%)	
		Chroma	Hue
1	74	-12%	0%
2	84	-7%	5%
3	80	-5%	9%
4	86	-1%	5%
5	88	-2%	3%
6	94	0%	-1%
7	89	-5%	-2%
8	84	-8%	2%
9	82	-9%	11%
10	72	-5%	15%
11	73	3%	16%
12	83	6%	6%
13	85	8%	-6%
14	82	3%	-9%
15	72	-1%	-19%
16	78	-4%	-11%



Illumination



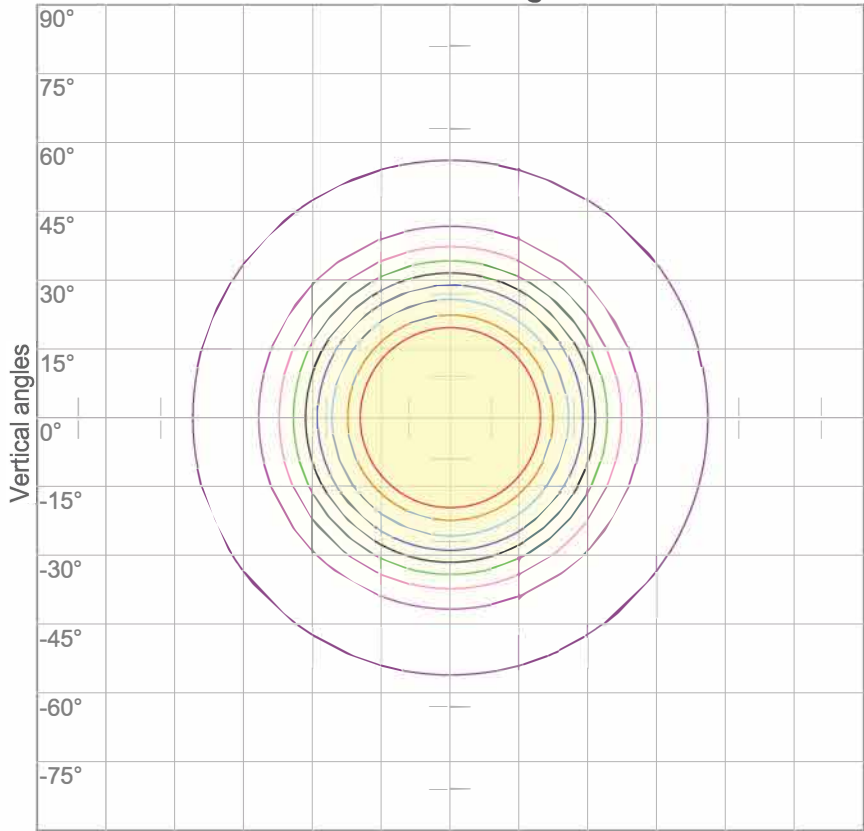
Beam intensities from 1-20m

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
32503lx	8126lx	3611lx	2031lx	1300lx	903lx	663lx	508lx	401lx	325lx	269lx	226lx	192lx	166lx	144lx	127lx	112lx	100lx	90lx	81lx
3019.6fc	754.9fc	335.5fc	188.7fc	120.8fc	83.9fcd	61.6fcd	47.2fcd	37.3fcd	30.2fcd	25fcd	21fcd	17.9fcd	15.4fcd	13.4fcd	11.8fcd	10.4fcd	9.3fcd	8.4fcd	7.5fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
69.8°	124.1°	155.7°	88.4%	75.4%



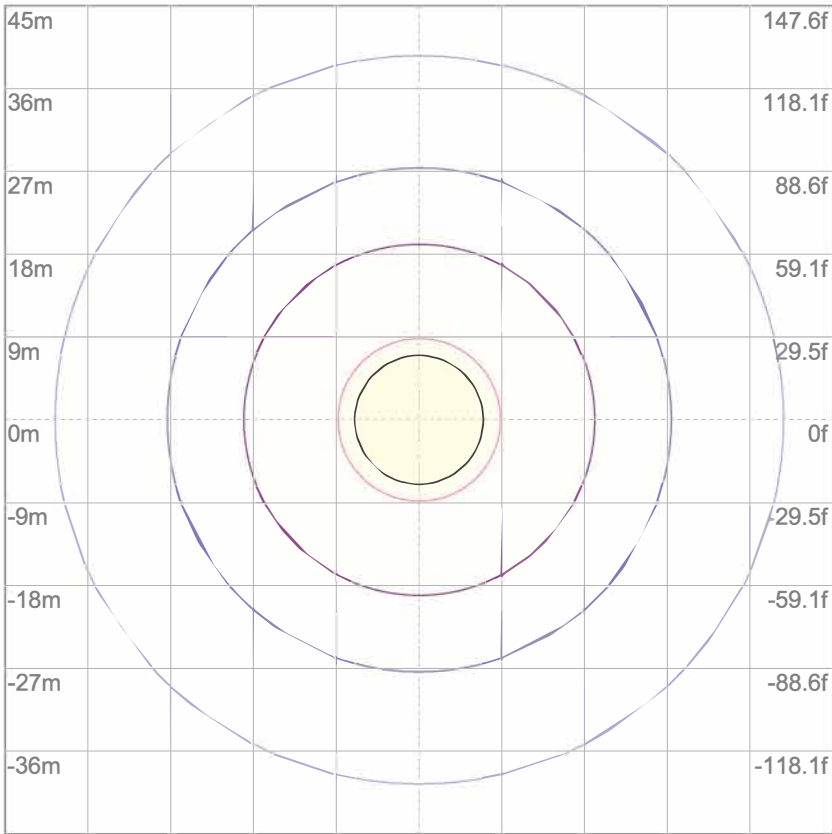
ISO Diagrams ISO candela diagram



10%	3250 cd
20%	6501 cd
30%	9751 cd
40%	13001 cd
50%	16252 cd
60%	19502 cd
70%	22752 cd
80%	26003 cd
90%	29253 cd

Conditions:
Number of c-planes: 16
Candela at center: 32503 cd

ISO lux diagram



3%	9.75 lx
5%	16.3 lx
10%	32.5 lx
30%	97.5 lx
50%	163 lx

Conditions:
Number of c-planes: 16
Lux at center: 325 lx

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

Mounting height: 10 meters (33 feet)



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UGR

Glare Evaluation According to UGR

p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	35.8	36.7	36.1	37.0	37.3	35.8	36.7	36.1	37.0	37.3
	3H	36.5	37.4	36.9	37.7	38.0	36.5	37.4	36.9	37.7	38.0
	4H	36.8	37.6	37.1	37.9	38.2	36.8	37.6	37.1	37.9	38.2
	6H	37.0	37.7	37.4	38.1	38.4	37.0	37.7	37.4	38.1	38.4
	8H	37.0	37.8	37.4	38.1	38.5	37.0	37.8	37.4	38.1	38.5
	12H	37.1	37.8	37.5	38.2	38.6	37.1	37.8	37.5	38.2	38.6
4H	2H	36.2	37.0	36.5	37.3	37.6	36.2	37.0	36.5	37.3	37.6
	3H	37.0	37.7	37.4	38.1	38.5	37.0	37.7	37.4	38.1	38.5
	4H	37.4	38.0	37.8	38.4	38.8	37.4	38.0	37.8	38.4	38.8
	6H	37.7	38.2	38.1	38.6	39.1	37.7	38.2	38.1	38.6	39.1
	8H	37.8	38.3	38.3	38.7	39.2	37.8	38.3	38.3	38.7	39.2
	12H	38.0	38.4	38.4	38.8	39.3	38.0	38.4	38.4	38.8	39.3
8H	4H	37.5	38.0	38.0	38.4	38.9	37.5	38.0	38.0	38.4	38.9
	6H	37.9	38.3	38.4	38.7	39.2	37.9	38.3	38.4	38.7	39.2
	8H	38.1	38.4	38.6	38.9	39.4	38.1	38.4	38.6	38.9	39.4
	12H	38.3	38.6	38.9	39.1	39.7	38.3	38.6	38.9	39.1	39.7
12H	4H	37.5	37.9	38.0	38.4	38.8	37.5	37.9	38.0	38.4	38.8
	6H	37.9	38.2	38.4	38.7	39.3	37.9	38.2	38.4	38.7	39.3
	8H	38.2	38.4	38.7	38.9	39.5	38.2	38.4	38.7	38.9	39.5
Variation of the observer position for the luminaire distance S											
S = 1.0H		+0.5 / -0.6					+0.5 / -0.6				
S = 1.5H		+1.3 / -0.9					+1.3 / -0.9				
S = 2.0H		+2.2 / -1.5					+2.2 / -1.5				
Standard table		BK03					BK03				
Correction summand		20.3					20.3				
Corrected glare indices referring to 49367 lm total luminous flux											



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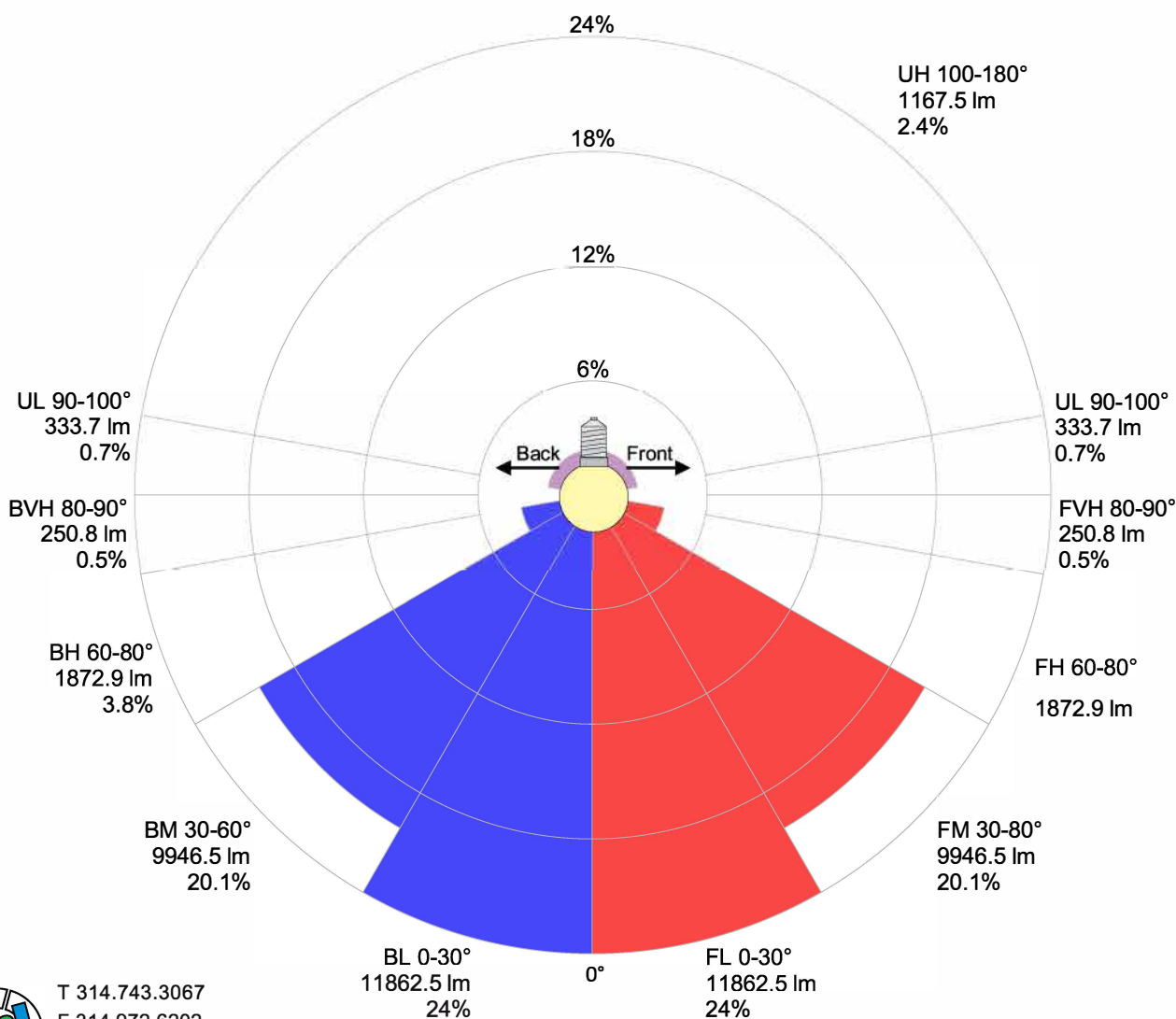
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Road Report

LCS table

BUG rating:	B5 U5 G3	
Forward light	Lumens	Lumens %
Low(0-30):	11862.5	24%
Medium(30-60):	9946.5	20.1%
High(60-80):	1872.9	3.8%
Very high(80-90):	250.8	0.5%
Back light		
Low(0-30):	11862.5	24%
Medium(30-60):	9946.5	20.1%
High(60-80):	1872.9	3.8%
Very high(80-90):	250.8	0.5%
Uplight		
Low(90-100):	333.7	0.7%
High(100-180):	1167.5	2.4%

LCS graph



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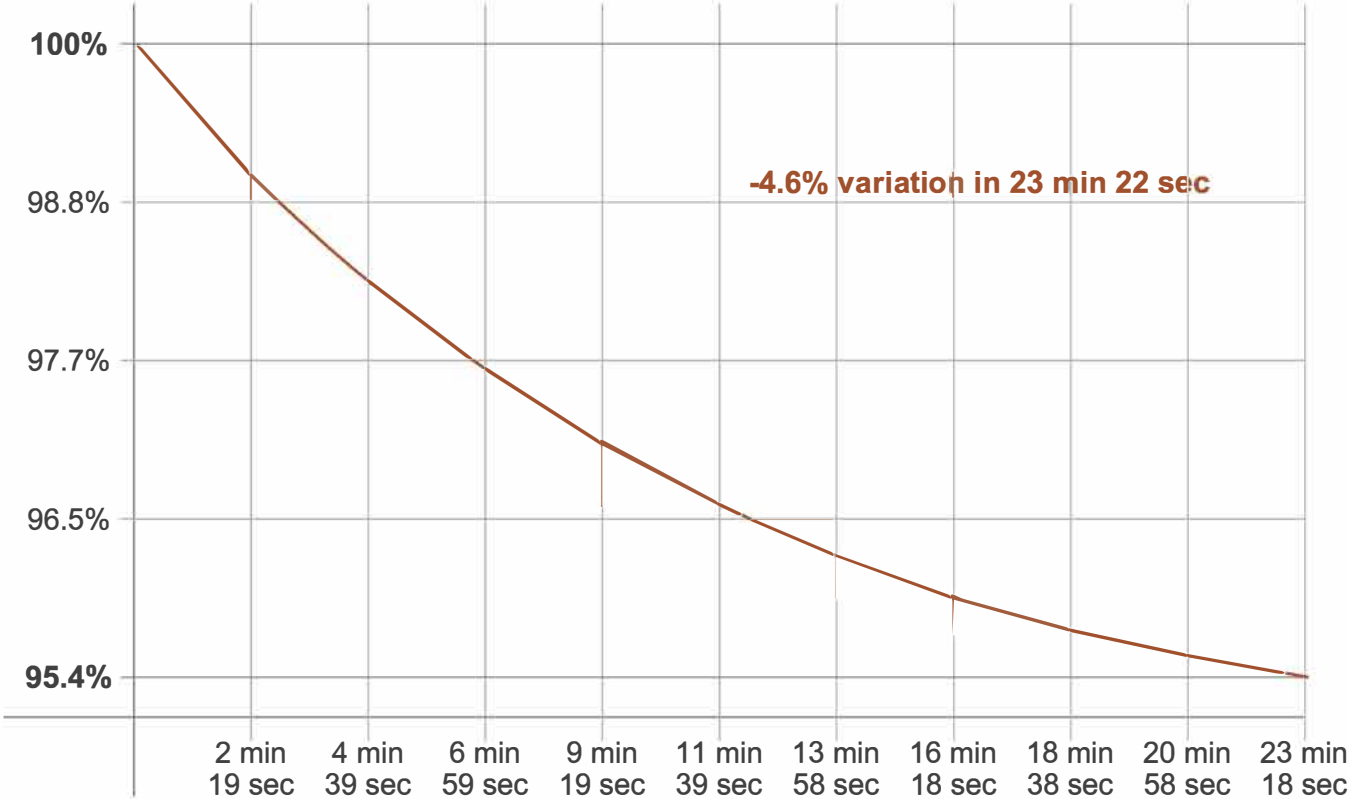
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Stabilization

Warmup curve



Warmup result

Warmup time:	23 min 22 sec
Warmup variation	-4.7%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
4978 K	+96 K	5074 K

Output change

Output start	Output change	Output end
51734 lm	-2367 lm	49367 lm

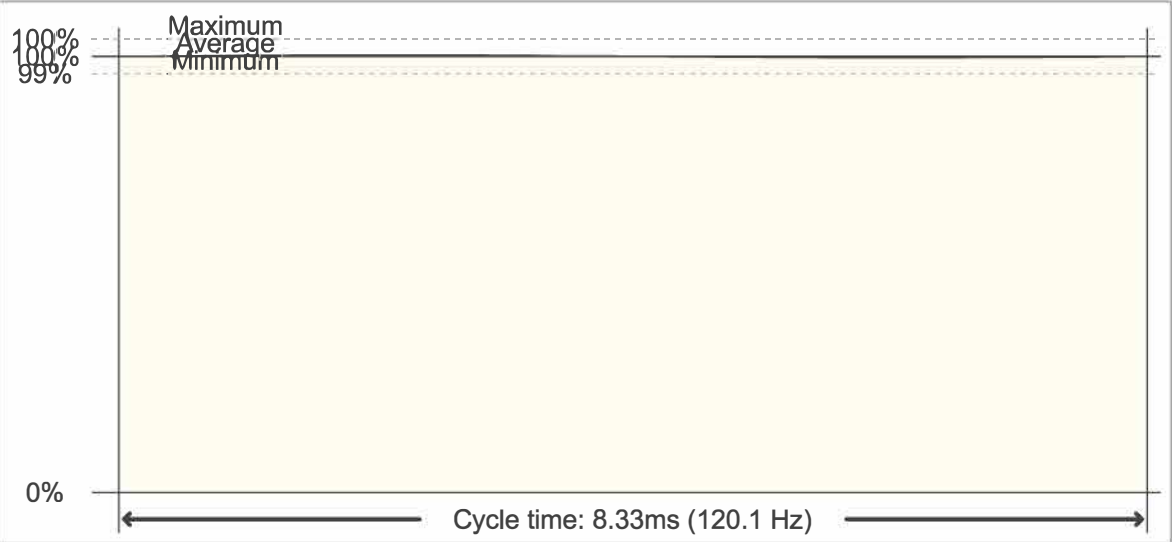


Flicker Specifications

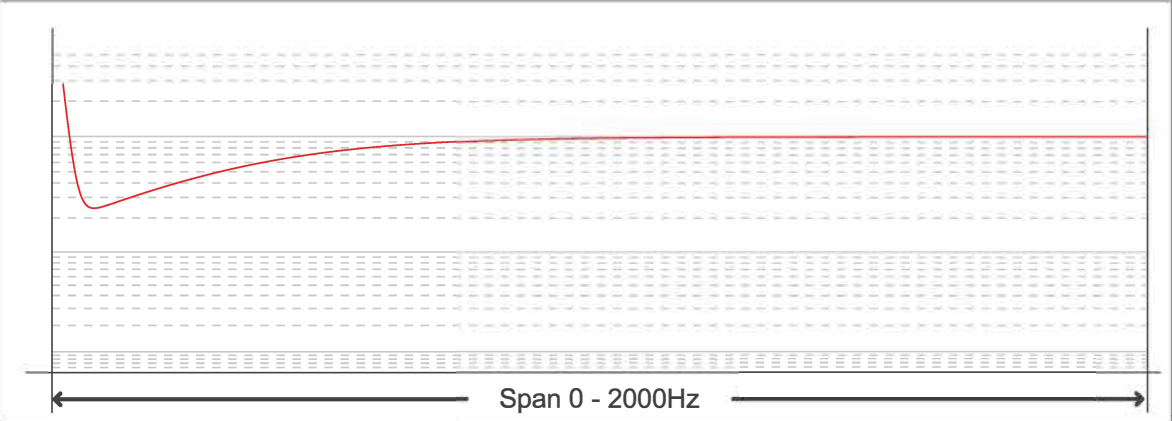
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	120.12 Hz
Flicker index:	0
Flicker percentage:	0.36 %
SVM: (Visual flicker)	0.01

Flicker conditions:

Sample rate:	40000 samples/second
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