

Light efficiency:

110 Lumen/Watt

Light quality:

CRI: 86.5

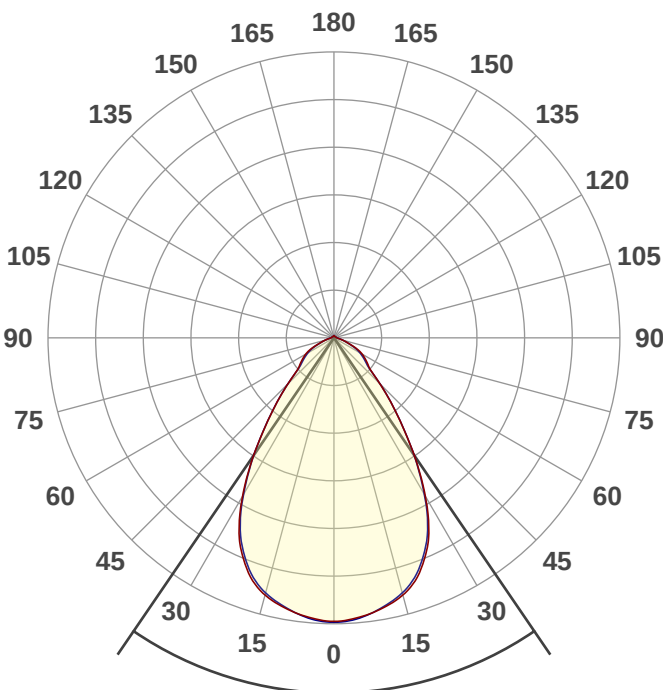
Color temperature:

5175 K

Output: 55302 lm

Peak: 37459 cd

Power: 504 W



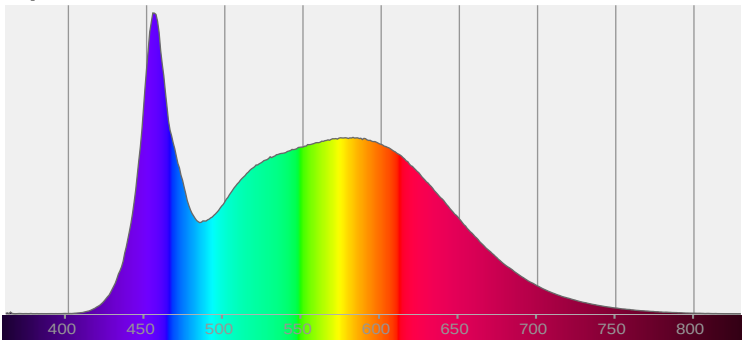
Beam angle **68.7°**

Product name:
HBUD-50K500W-120-PR
Date and time:
3/8/2019 1:40:33 PM



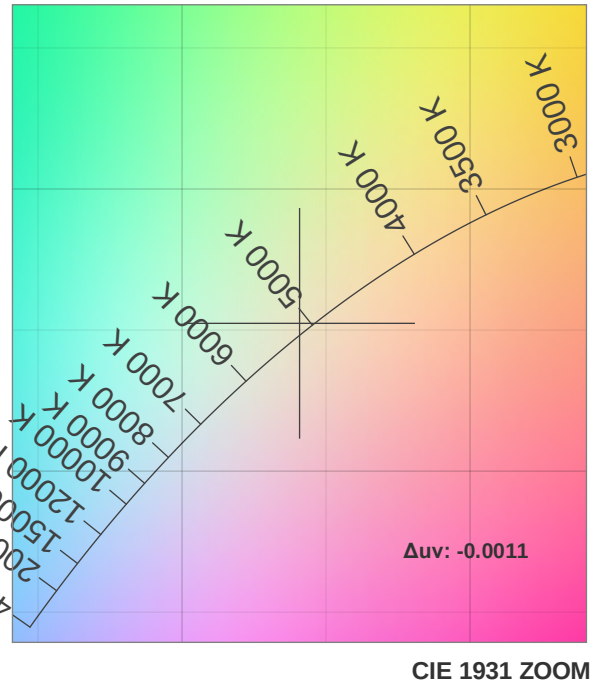
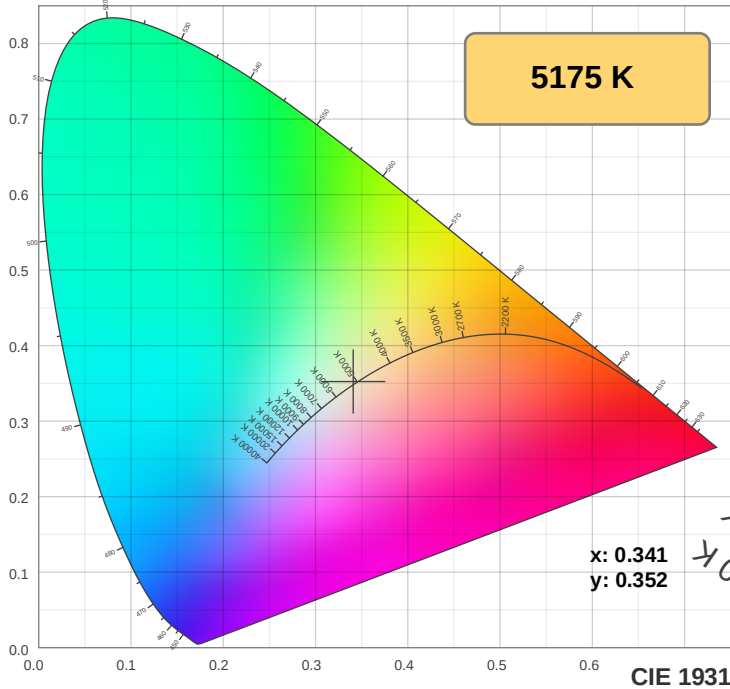
CIE 1931
x: 0.341
y: 0.352

Spectra

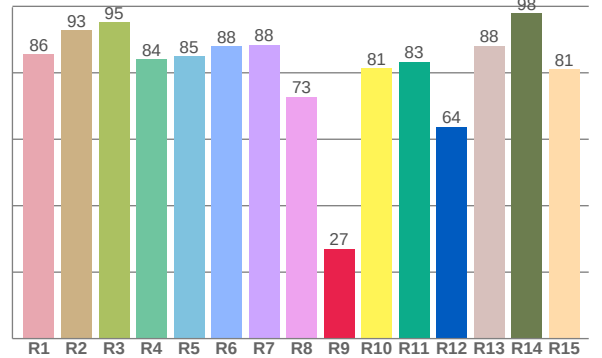
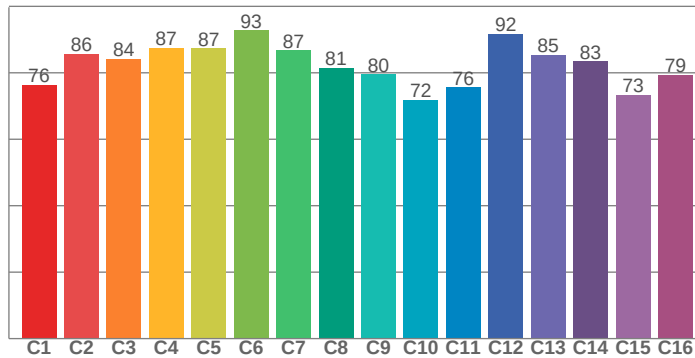


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Color Specifications



CRI: 86.5 (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
85.6	92.8	95.3	84.2	85.0	87.9	88.4	72.8	27.0	81.3	83.4	63.7	88.1	97.9	81.1

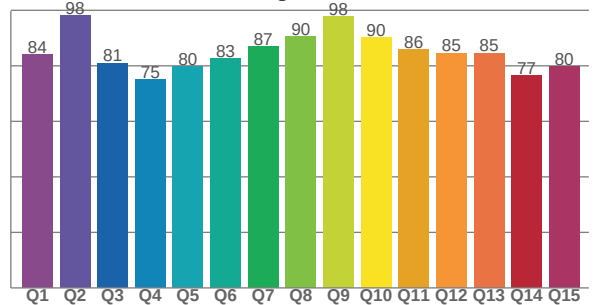
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
76.3	85.7	84.2	87.5	87.4	92.8	86.8	81.5	79.6	71.8	75.7	91.8	85.4	83.5	73.4	79.4

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
84.0	98.2	80.9	75.0	79.7	82.5	87.0	90.5	97.8	90.2	85.9	84.6	84.5	76.5	79.6

CQS: 83.7



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
5175 K	86.5	27.0	82.7	93.4	83.7	0.341	0.352	0.208	0.323	-0.0011



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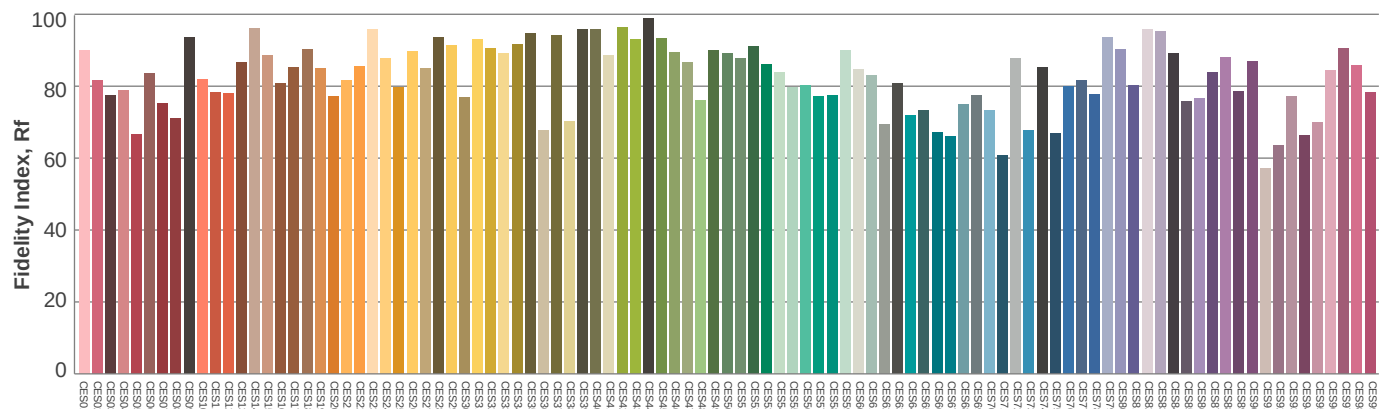
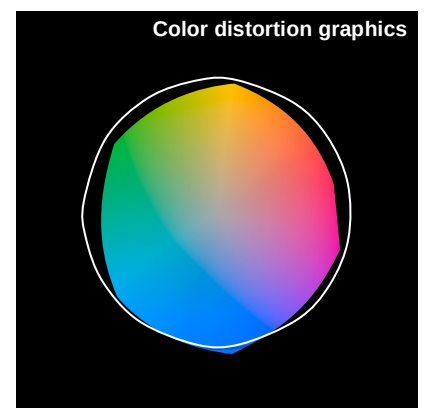
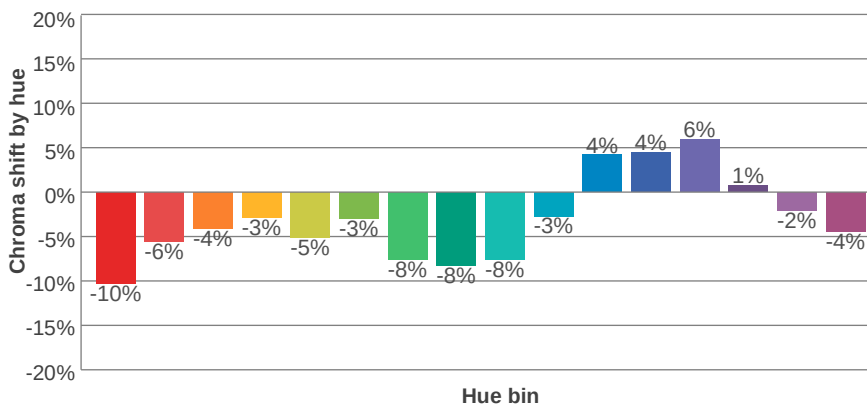
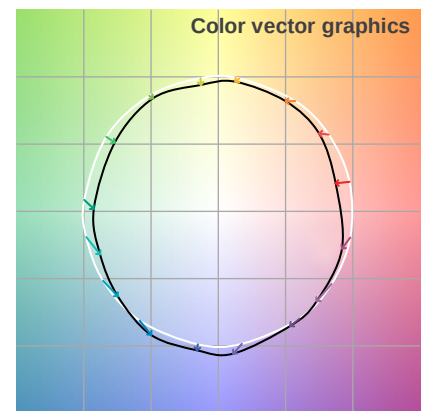
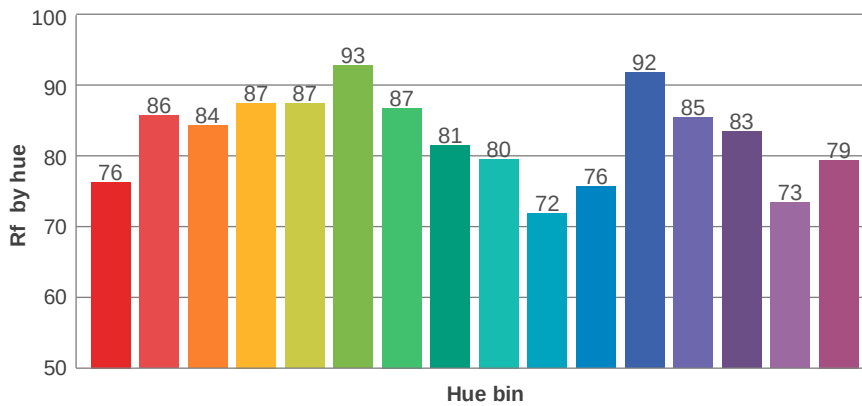
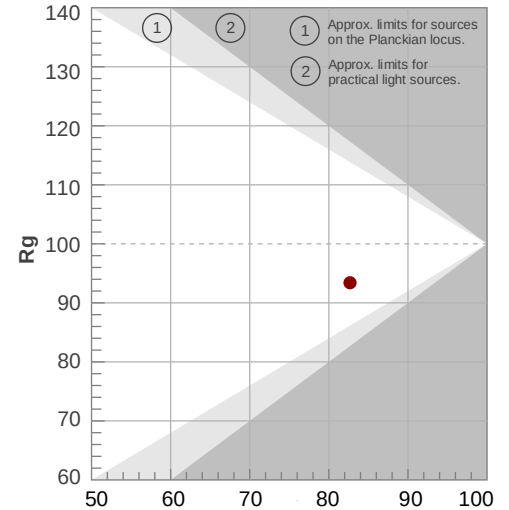
TM30 Report

Rf 82.7

Rg 93.4

Gammut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	76	-10%	1%
2	86	-6%	5%
3	84	-4%	6%
4	87	-3%	2%
5	87	-5%	1%
6	93	-3%	-1%
7	87	-8%	0%
8	81	-8%	5%
9	80	-8%	15%
10	72	-3%	16%
11	76	4%	13%
12	92	4%	0%
13	85	6%	-8%
14	83	1%	-9%
15	73	-2%	-17%
16	79	-4%	-9%



Color Evaluation Sample



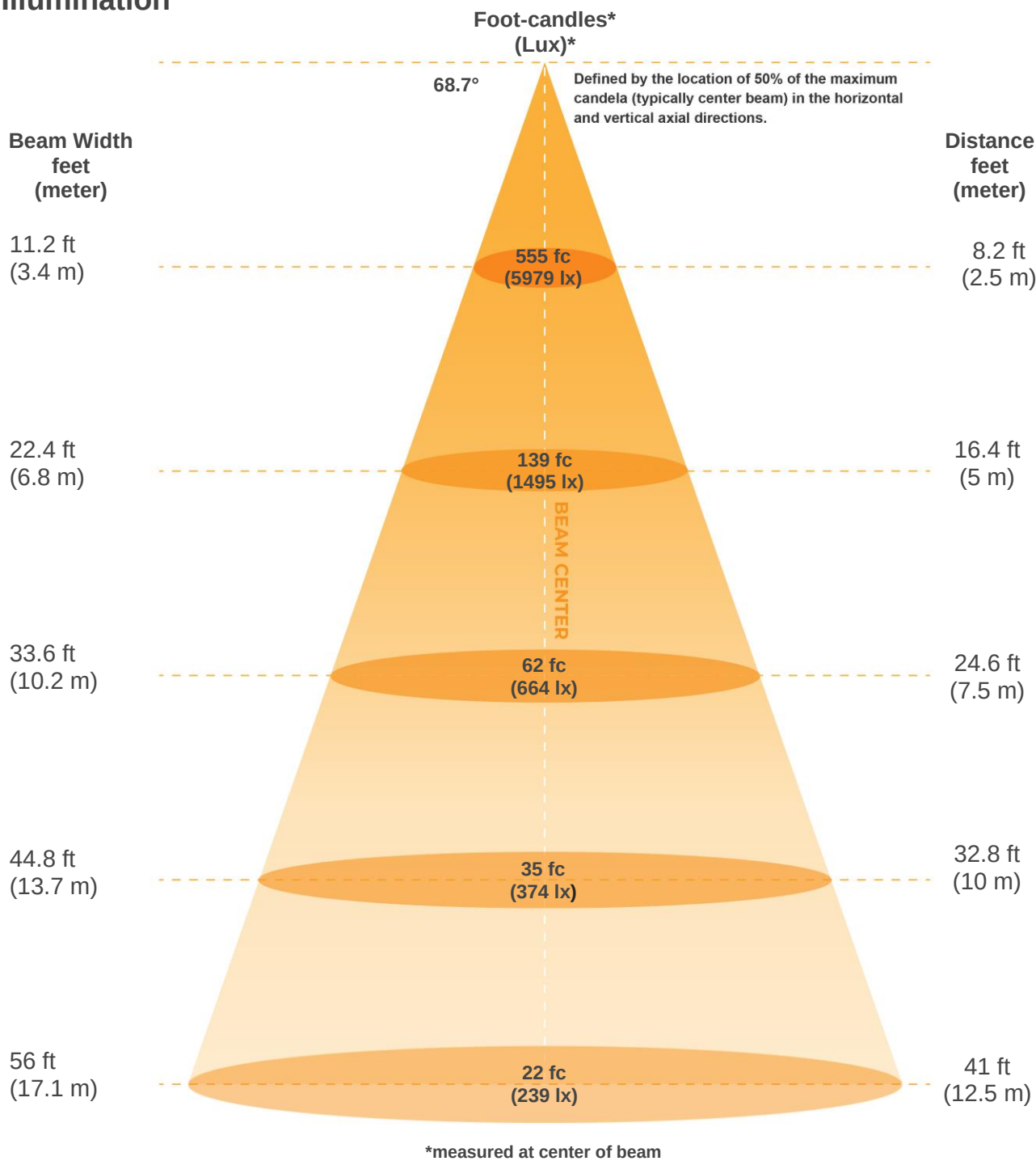
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Illumination



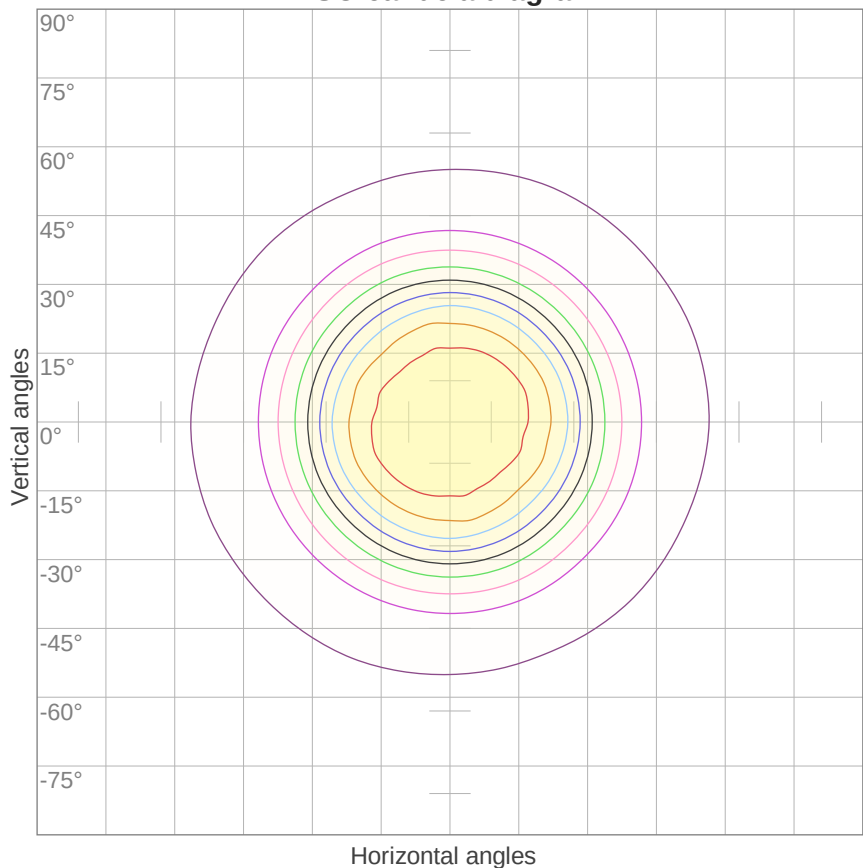
Beam intensities from 1-20m

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
37367lx	9342lx	4152lx	2335lx	1495lx	1038lx	763lx	584lx	461lx	374lx	309lx	259lx	221lx	191lx	166lx	146lx	129lx	115lx	104lx	93lx
3471.5fc	867.9fc	385.7fc	217fcd	138.9fc	96.4fcd	70.8fcd	54.2fcd	42.9fcd	34.7fcd	28.7fcd	24.1fcd	20.5fcd	17.7fcd	15.4fcd	13.6fcd	12fcd	10.7fcd	9.6fcd	8.7fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
68.7°	123.5°	155.9°	88.2%	75.0%



ISO Diagrams ISO candela diagram



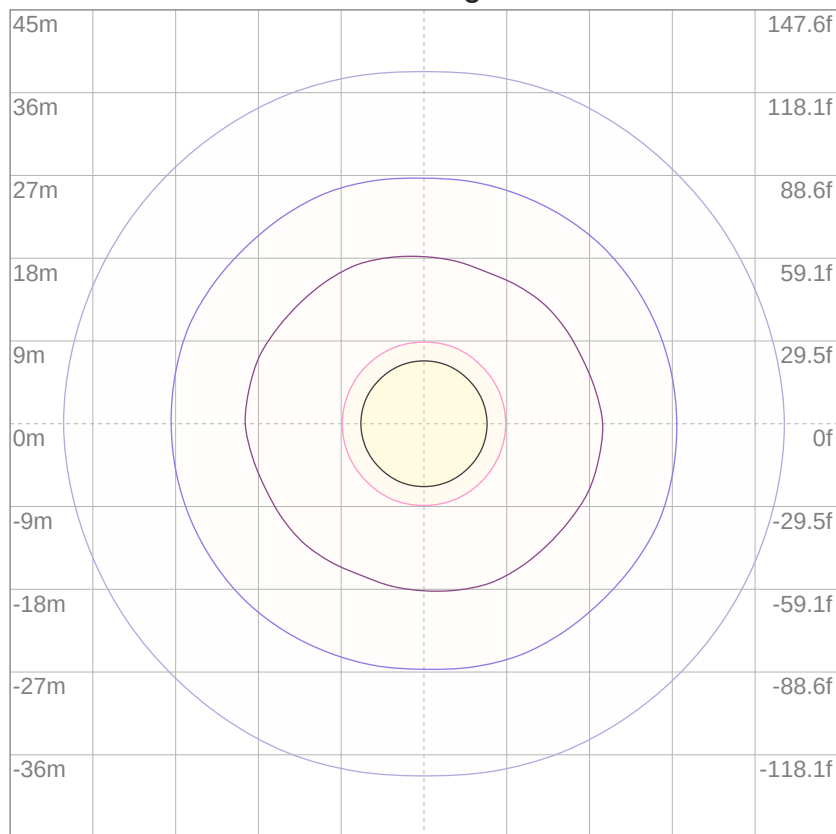
10%	3737 cd
20%	7473 cd
30%	11210 cd
40%	14947 cd
50%	18683 cd
60%	22420 cd
70%	26157 cd
80%	29893 cd
90%	33630 cd

Conditions:

Number of c-planes: 16

Candela at center: 37367 cd

ISO lux diagram



3%	11.2 lx
5%	18.7 lx
10%	37.4 lx
30%	112 lx
50%	187 lx

Conditions:

Number of c-planes: 16

Lux at center: 374 lx

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



T 314.743.3067 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	36.3	37.3	36.6	37.5	37.8	36.1	37.1	36.4	37.3	37.6
	3H	37.1	38.0	37.4	38.3	38.6	36.9	37.7	37.2	38.0	38.3
	4H	37.3	38.2	37.7	38.5	38.8	37.1	37.9	37.5	38.2	38.6
	6H	37.5	38.3	37.9	38.6	39.0	37.3	38.1	37.7	38.4	38.8
	8H	37.6	38.3	38.0	38.7	39.1	37.4	38.1	37.8	38.5	38.9
	12H	37.7	38.4	38.1	38.8	39.2	37.5	38.2	37.9	38.6	39.0
4H	2H	36.6	37.5	37.0	37.8	38.1	36.5	37.3	36.9	37.6	38.0
	3H	37.6	38.3	38.0	38.6	39.0	37.4	38.1	37.8	38.4	38.8
	4H	37.9	38.5	38.4	38.9	39.3	37.7	38.3	38.2	38.7	39.2
	6H	38.2	38.8	38.7	39.2	39.6	38.1	38.6	38.5	39.0	39.5
	8H	38.4	38.8	38.8	39.3	39.8	38.2	38.7	38.7	39.1	39.6
	12H	38.5	39.0	39.0	39.4	39.9	38.4	38.8	38.9	39.3	39.8
8H	4H	38.0	38.5	38.5	39.0	39.4	37.9	38.3	38.3	38.8	39.2
	6H	38.5	38.8	39.0	39.3	39.8	38.3	38.7	38.8	39.2	39.7
	8H	38.7	39.0	39.2	39.5	40.0	38.6	38.9	39.1	39.4	39.9
	12H	38.9	39.2	39.5	39.7	40.3	38.8	39.1	39.4	39.6	40.2
12H	4H	38.0	38.5	38.5	38.9	39.4	37.9	38.3	38.4	38.7	39.2
	6H	38.5	38.8	39.0	39.3	39.9	38.3	38.7	38.9	39.2	39.7
	8H	38.8	39.0	39.3	39.6	40.1	38.6	38.9	39.2	39.4	40.0
Variation of the observer position for the luminaire distance S											
S = 1.0H		+0.5 / -0.5					+0.5 / -0.5				
S = 1.5H		+1.2 / -0.7					+1.2 / -0.8				
S = 2.0H		+2.1 / -1.4					+2.1 / -1.5				
Standard table		BK04					BK04				
Correction summand		21.3					21.1				
Corrected glare indices referring to 55302 lm total luminous flux											



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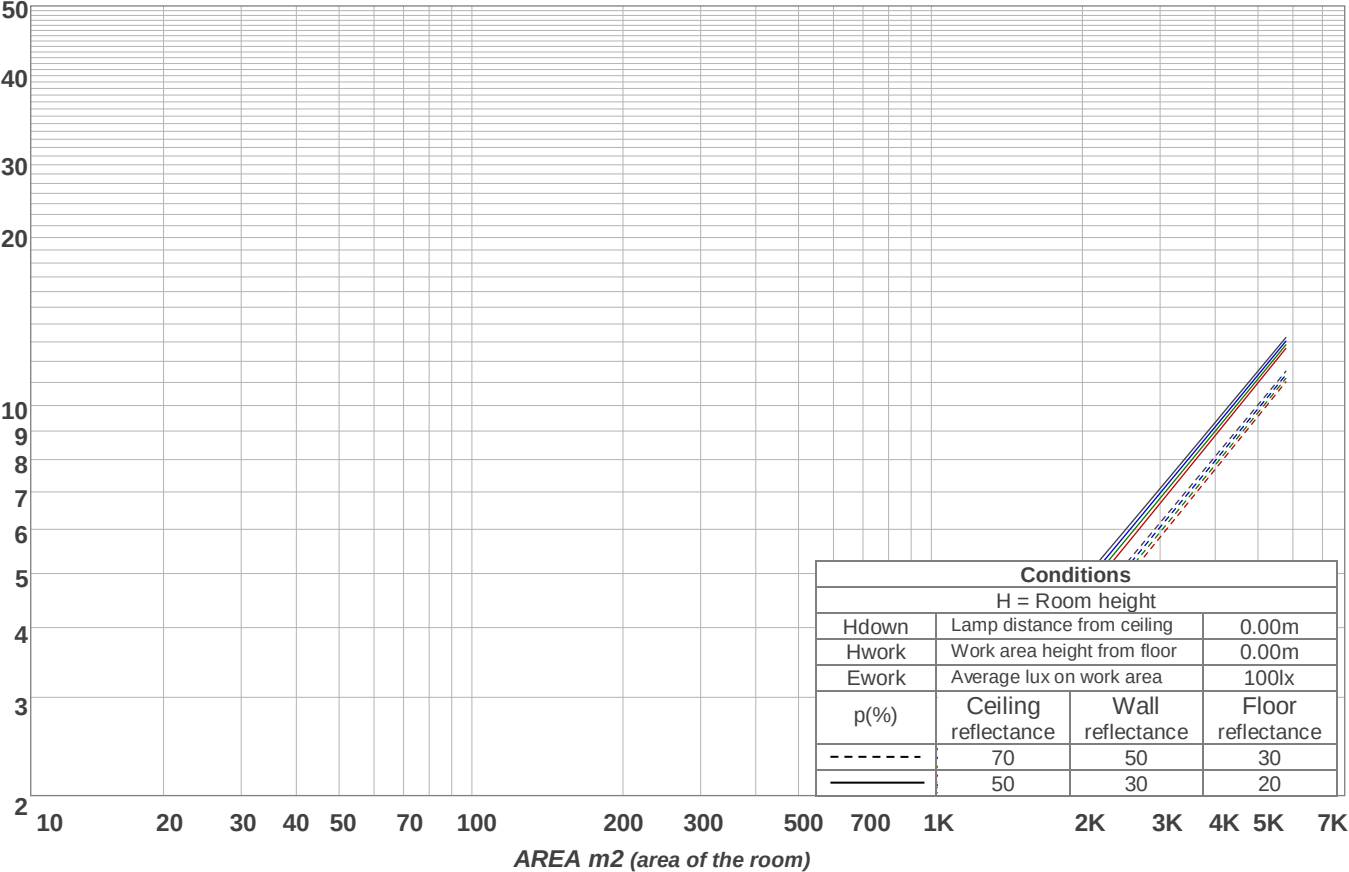
Light Planning

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	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99	97
1	111	107	104	101	108	104	101	99	100	97	95	95	93	92	91	90	88	86
2	103	97	91	87	100	94	90	85	91	87	83	87	84	81	84	81	79	77
3	96	88	81	76	93	86	80	75	83	78	74	80	75	72	77	73	70	68
4	90	80	73	67	87	78	72	67	76	70	66	73	68	65	71	67	63	62
5	84	73	66	60	82	72	65	60	70	64	59	68	62	58	66	61	58	56
6	78	67	60	55	77	66	59	54	64	58	54	63	57	53	61	56	52	51
7	74	62	55	50	72	61	55	50	60	54	49	58	53	49	57	52	48	46
8	69	58	51	46	68	57	50	46	56	50	45	54	49	45	53	48	44	43
9	65	54	47	42	64	53	47	42	52	46	42	51	45	41	50	45	41	39
10	62	50	44	39	61	50	43	39	49	43	39	48	42	38	47	42	38	37

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°
3506 lm	9787 lm	13175 lm	11122 lm	6762 lm	4411 lm	2964 lm	1332 lm	586 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
377 lm	300 lm	265 lm	226 lm	180 lm	132 lm	91.8 lm	60.8 lm	25.3 lm

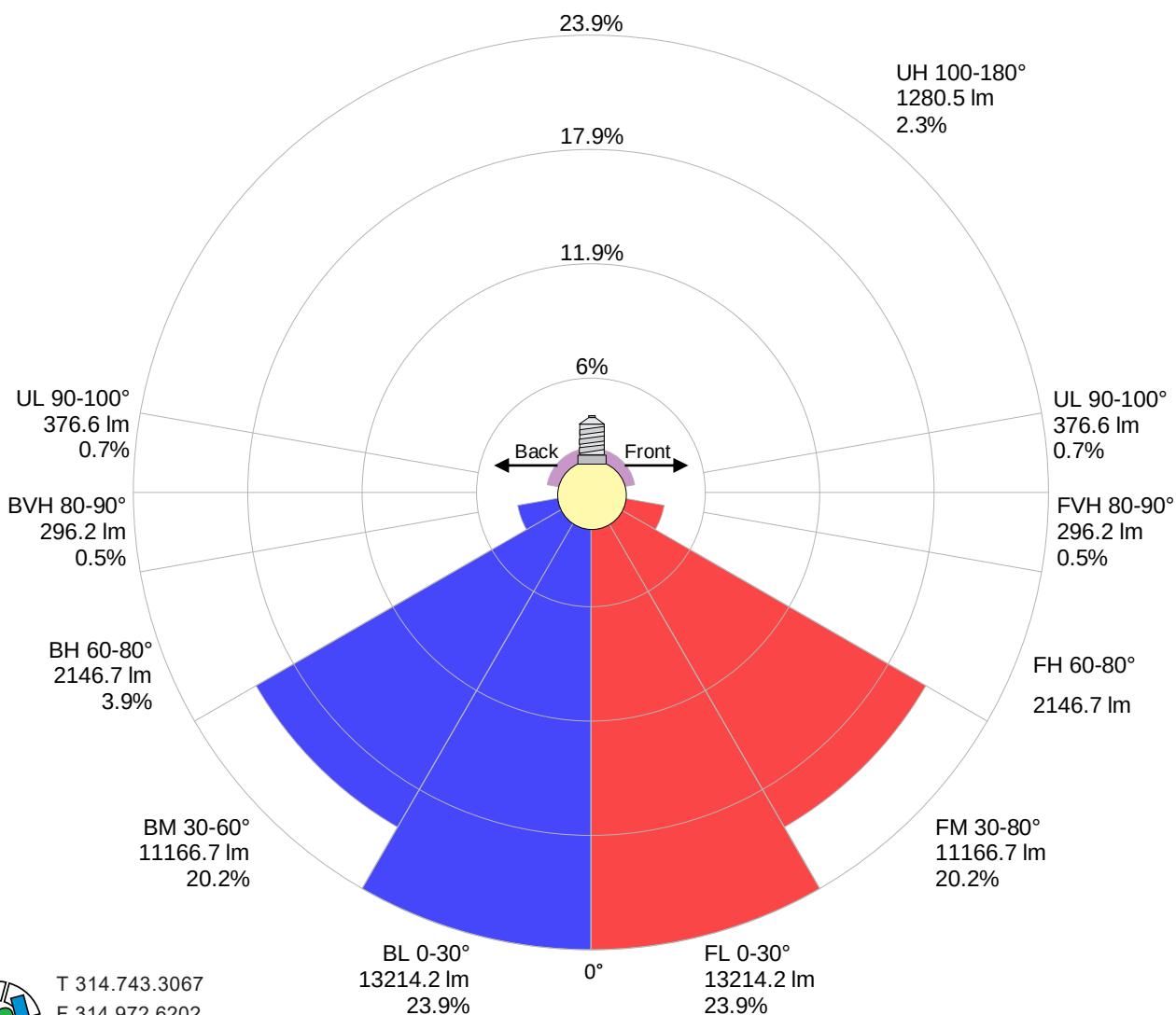


Road Report

LCS table

BUG rating:	B5 U5 G3	
Forward light	Lumens	Lumens %
Low(0-30):	13214.2	23.9%
Medium(30-60):	11166.7	20.2%
High(60-80):	2146.7	3.9%
Very high(80-90):	296.2	0.5%
Back light		
Low(0-30):	13214.2	23.9%
Medium(30-60):	11166.7	20.2%
High(60-80):	2146.7	3.9%
Very high(80-90):	296.2	0.5%
Uplight		
Low(90-100):	376.6	0.7%
High(100-180):	1280.5	2.3%

LCS graph



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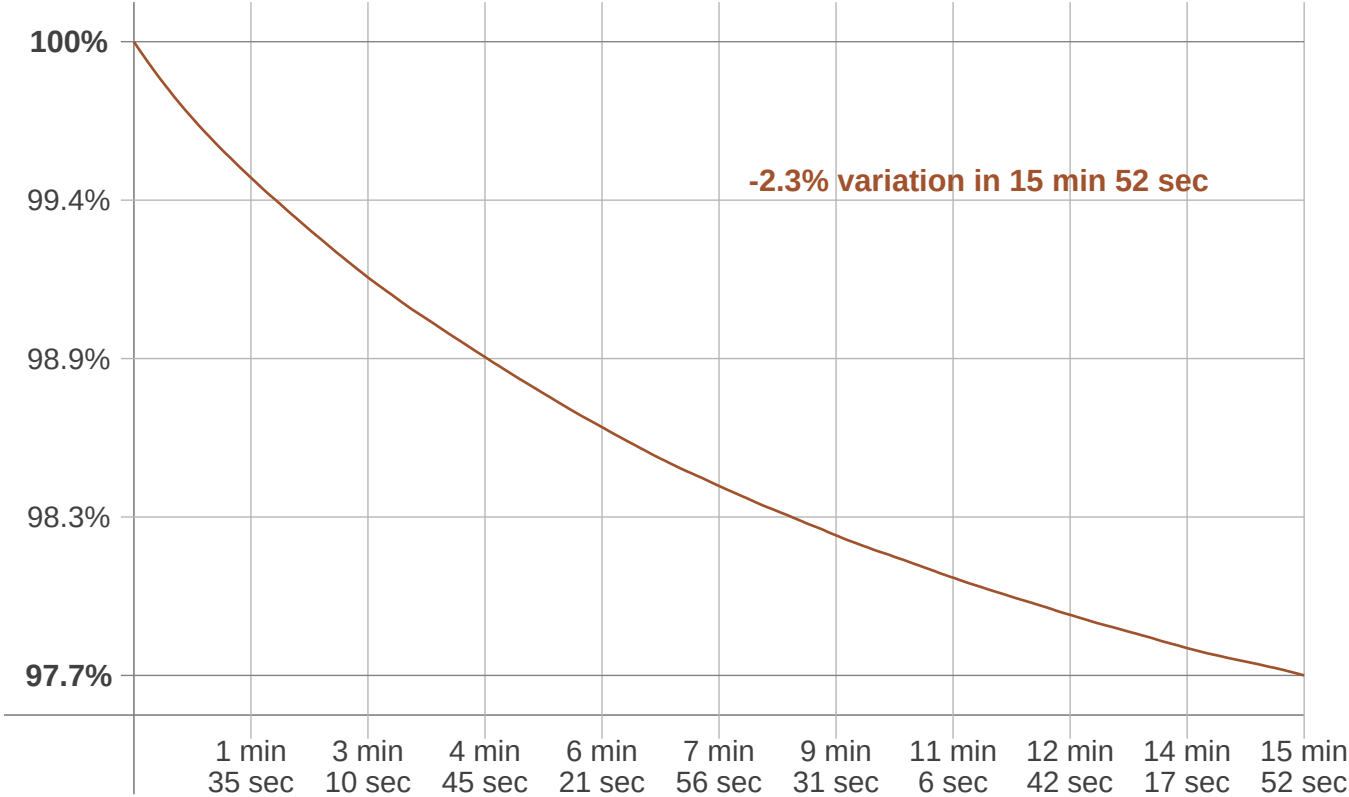
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Stabilization

Warmup curve



Warmup result

Warmup time:	15 min 52 sec
Warmup variation	-2.3%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
5137 K	+38 K	5175 K

Output change

Output start	Output change	Output end
56549 lm	-1247 lm	55302 lm

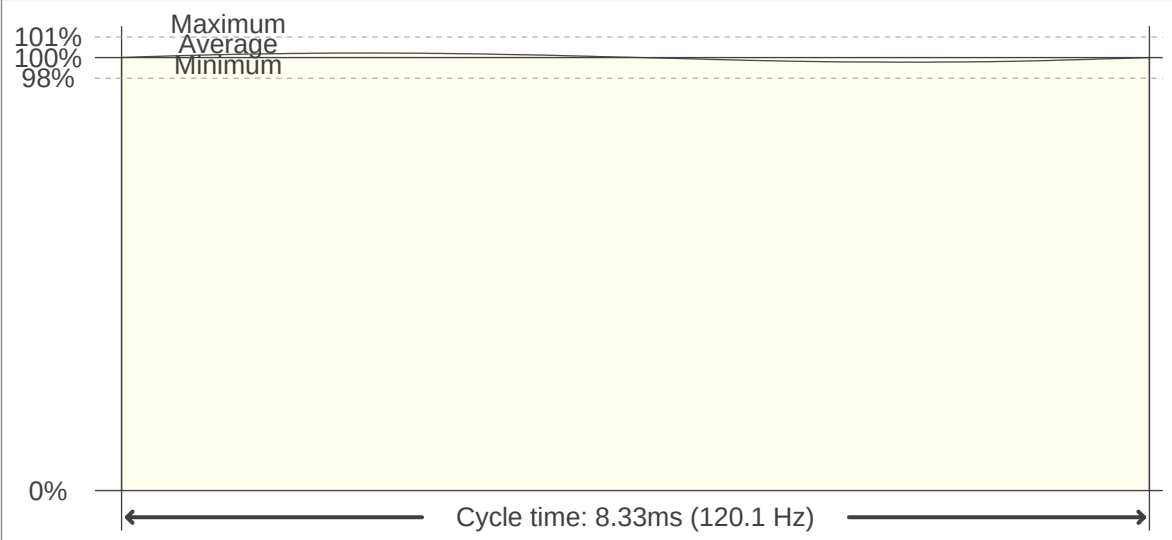


Flicker Specifications

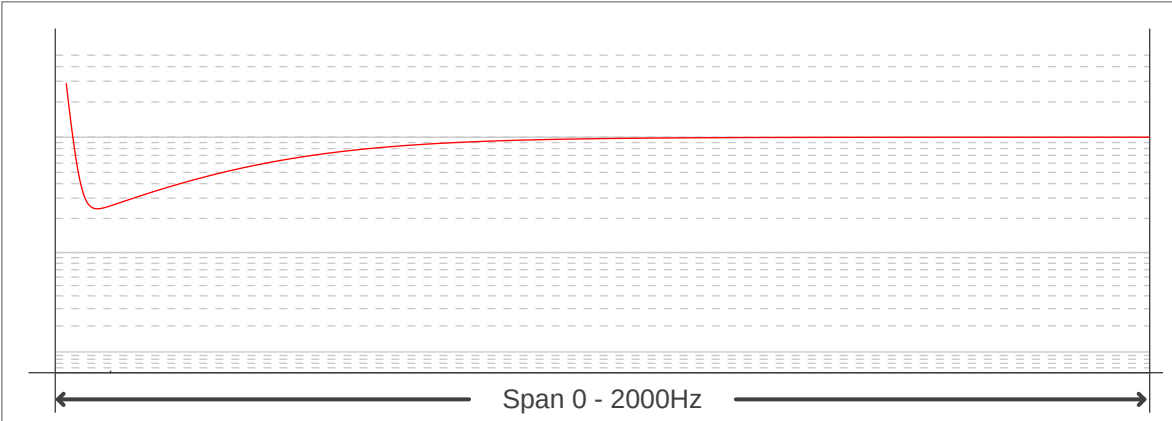
Flicker curve (complete sampled flicker signal)



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:	1.1 %
SVM: (Visual flicker)	0.04

Flicker conditions:

Sample rate:	40000 samples/second
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