

Light Measurement Report

Print date: 1/7/2026

Measurement date and time: 1/7/2026 5:31:06 PM – Measurement no. VFR-260107-0784-MS

Measurement tracking No. and Link: [n/a](#)

Operator:



Laboratory and Equipment

Laboratory Owner and Location

Goniospectrometer System and Type

Sensor Name, Calibr. Date and Serial No.

Spectrometer Manufacturer and Model

Viso Systems, Copenhagen V, Denmark

LabSpion – Type C, horizontal

LabSensor Model2 – 4/8/2025 – 1516006613

Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

Measurement Conditions

Number of C-planes and Resolution

γ (gamma)-Resolution

Test Distance

Input Power, Power and Displ. Factors

Input RMS Voltage and Current

Frequency of Input Power

Warm-up Time and Variation

12 planes – 30°

5°

10.57 m

8.2 W – PF 0.98 – DPF 0.99

120 V – 0.070 A

60 Hz

Not completed – 2.0%

Tested Light Source

Product Name

Item No. and Manufacturer

Product Description (line 1)

HP1-P-I-4'-S-835-F-BLX2835

HP1-P-I-4'-S-835-F-BLX2835 –

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)

Efficiency

Peak Intensity and Beam Angle

Correlated Color Temperature, Target/Measured

Color Rendering Index

Color Rendering TM30-18

Color Shift, CIE duv and MacAdam Steps

Flicker

962 lm – 0.89% / 99.11%

117 lm/W

378 cd – 100.1°

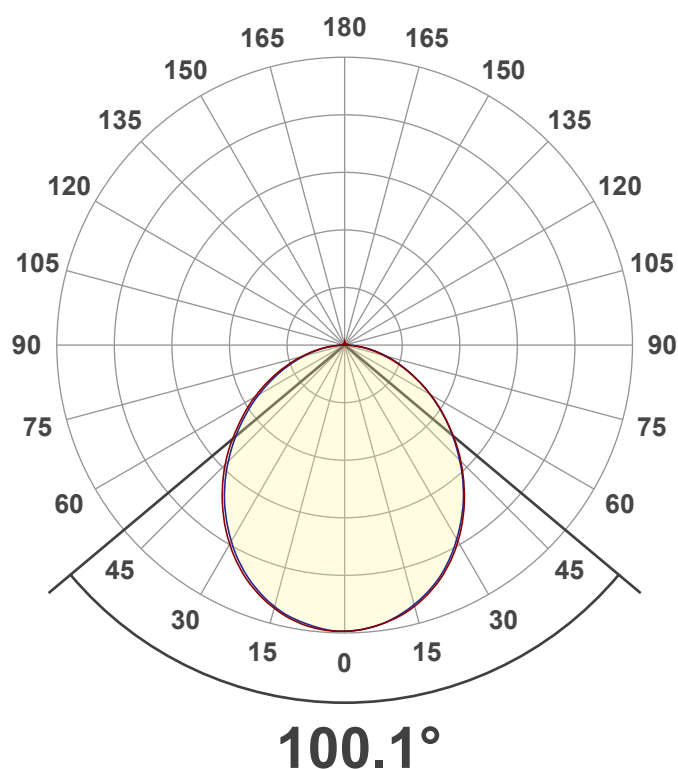
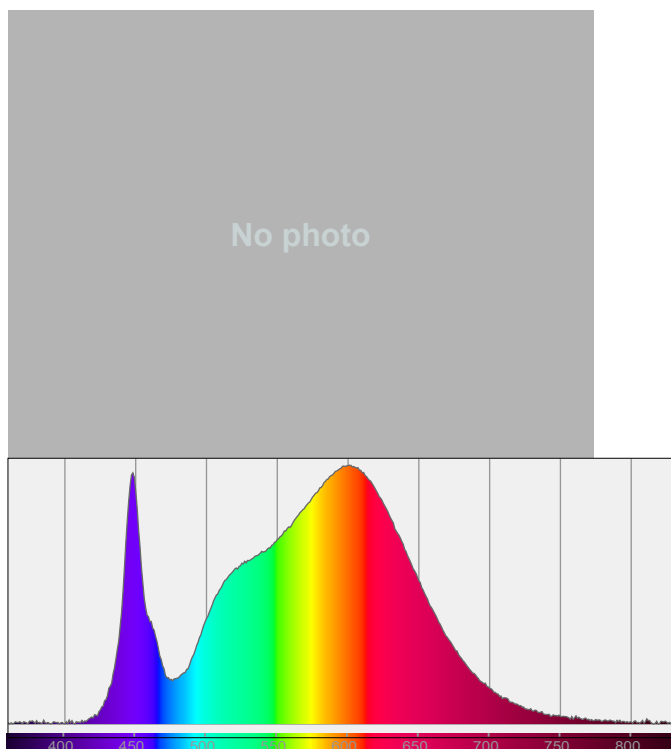
CCT = 3487 K / 3487 K

CRI 83.2

R_f 84.3 – R_g 97.7

Duv 0.0003 – SDCM n/a

SVM n/a – PstLM n/a



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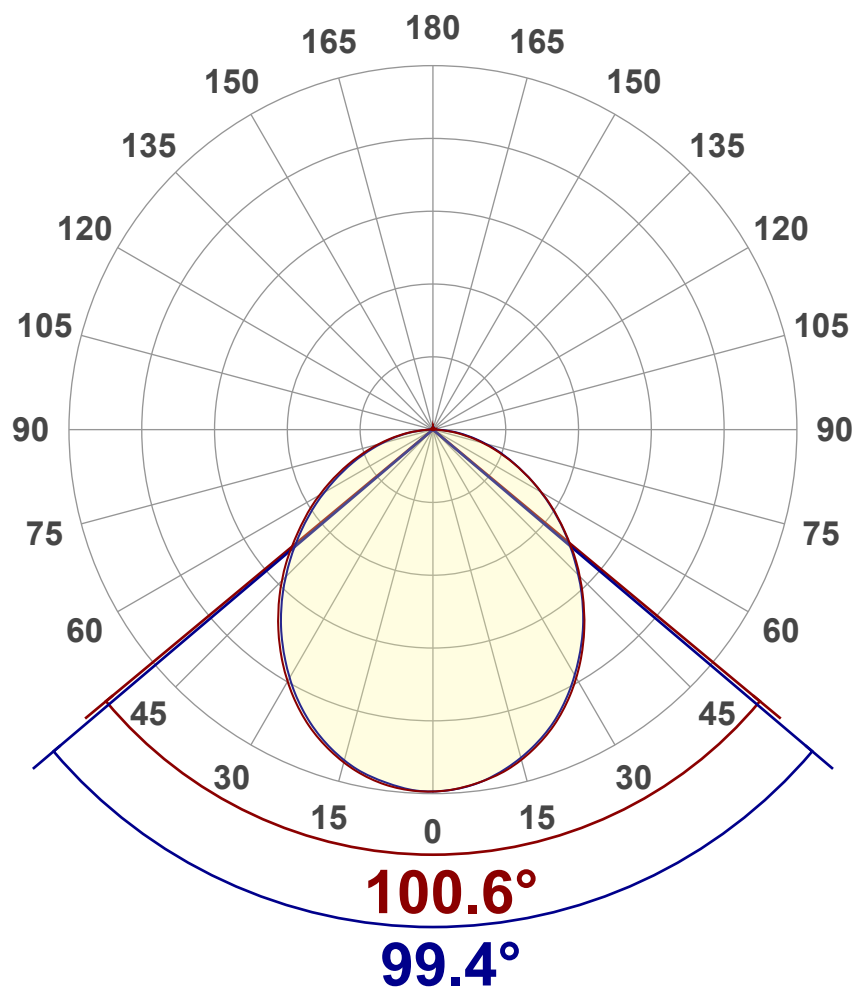
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Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	962 lm
Lumen Up% / Down%	0.89% / 99.11%
Peak Intensity	378 cd
Beam Angle (50%)	100.1°
Beam Angle (90%)	99.4°
Beam Angle (10%)	100.6°

Cut-off Angle

Average 2,5%	174.4°
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Field Angle

Average 10%	158.9°
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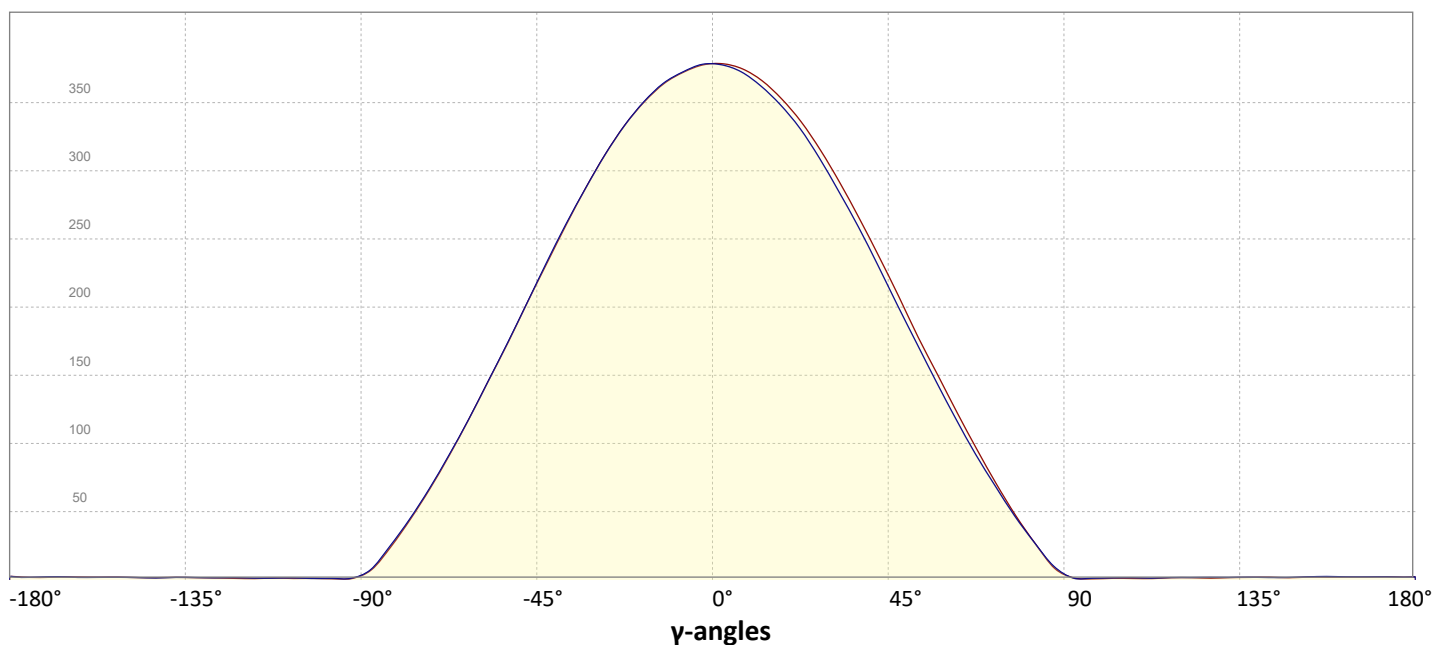
Intensity Ratio

In 120° cone	80.1%
In 90° cone	56.6%

C000-C180

C090-C270

Linear distribution diagram - Intensity (candela) vs γ-angle

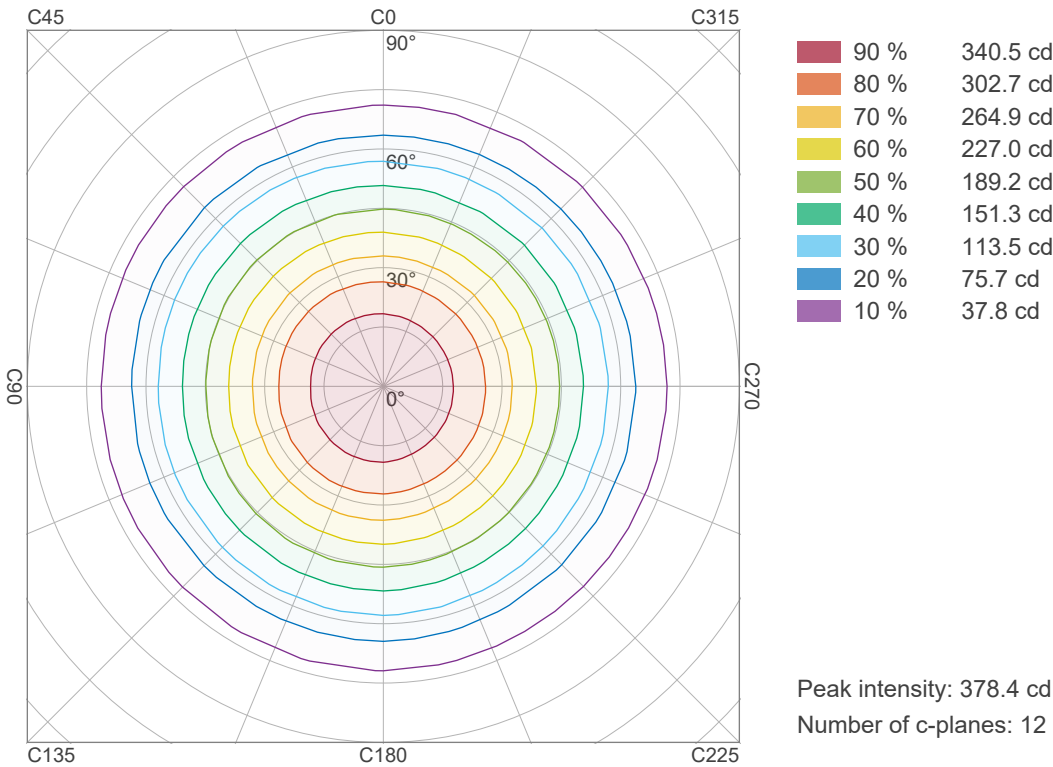


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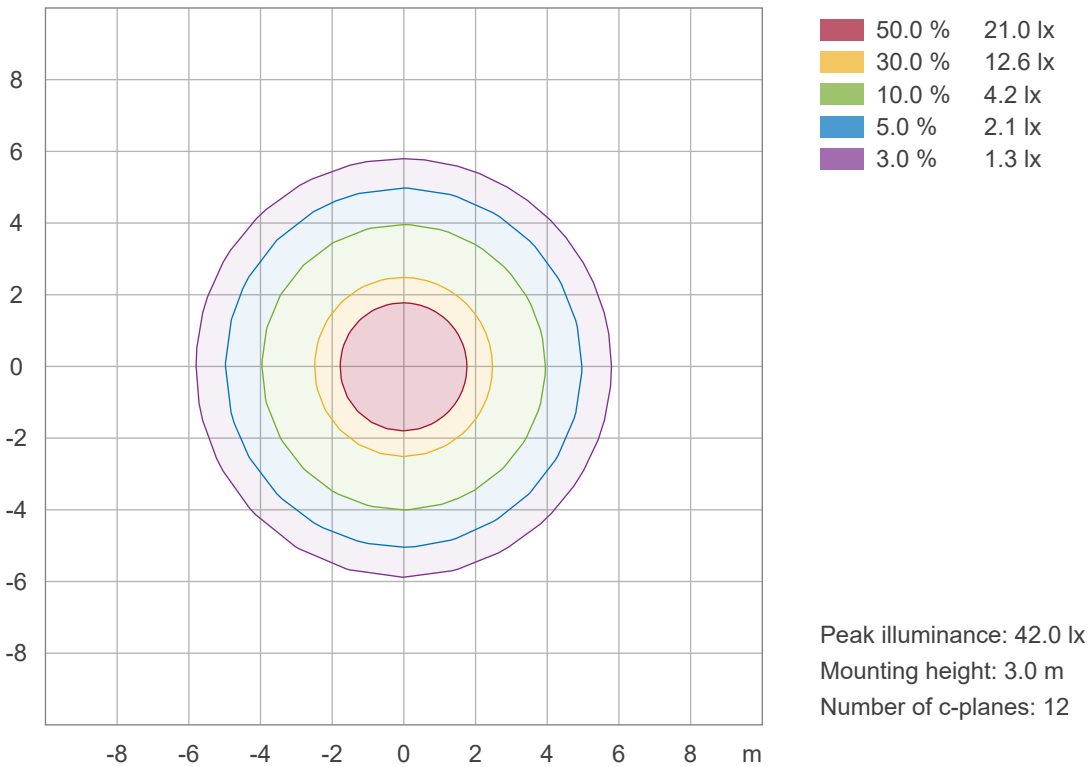
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Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



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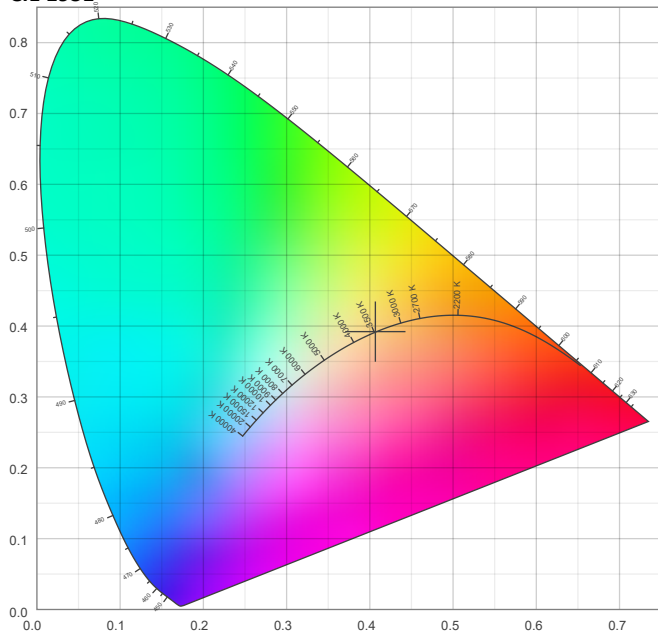


Color details

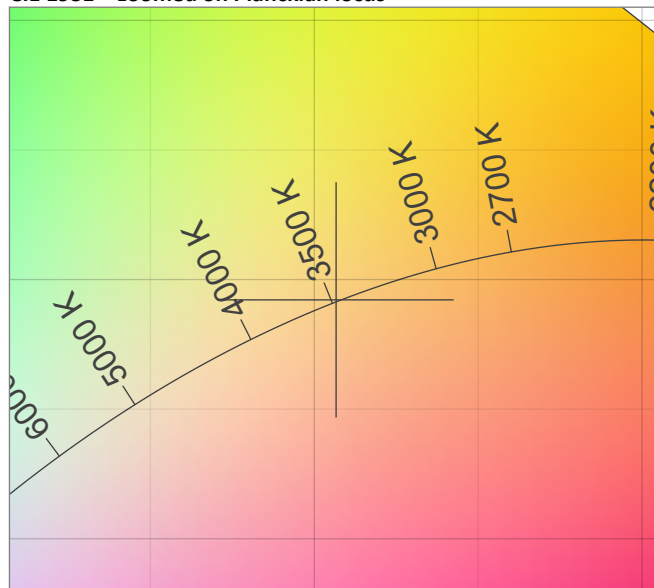
Correlated Color Temperature, Target CCT = 3487 K
Correlated Color Temperature, Measured CCT = 3487 K
Color Rendering Index CRI 83.2
Color Rendering Index, R9 (red component) R9 = 10.4
Color Rendering TM30-18 R_f 84.3 – R_g 97.7
Color Quality Scale CQS = 83.1

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0.407;0.392)
Color coordinate CIEs 1960 (u;v) = (0.236;0.341)
Color deviation from BBL Duv = 0.0003
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0.236;0.512)

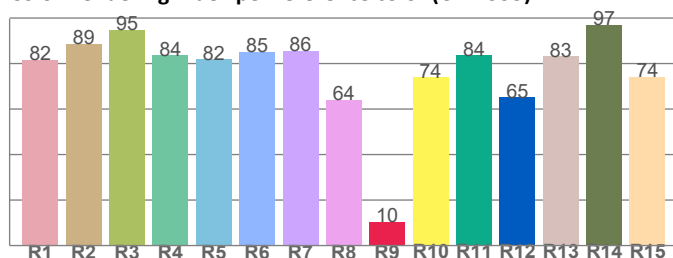
CIE 1931



CIE 1931 – zoomed on Planckian locus



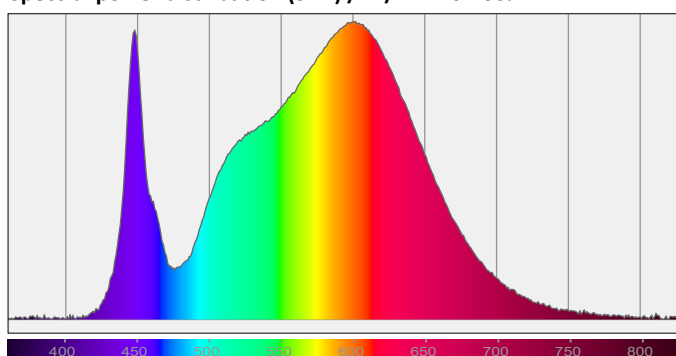
Color Rendering Index per reference color (CIE 1995)



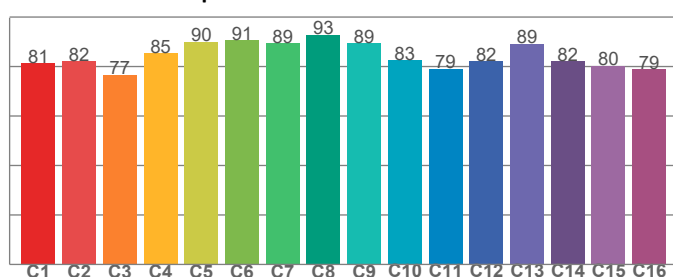
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81.7	88.6	94.8	83.6	81.8	85.3	85.6	64.0	10.4	73.9	83.8	65.1	83.2	97.1	74.2

Spectral power distribution (SPD) / W/nm – 0-100%



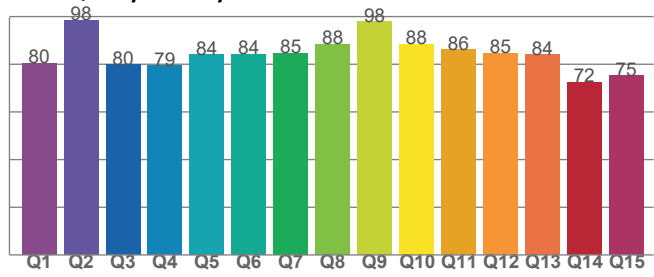
TM30-18 R_f-values per hue bin



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
81.2	82.1	76.7	85.4	90.0	90.6	89.3	92.8	89.4	82.6	79.1	82.3	89.2	82.3	80.3	78.9

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
80.3	98.5	79.8	79.4	83.9	84.1	84.7	88.5	97.9	88.3	86.1	84.5	84.1	72.4	75.1

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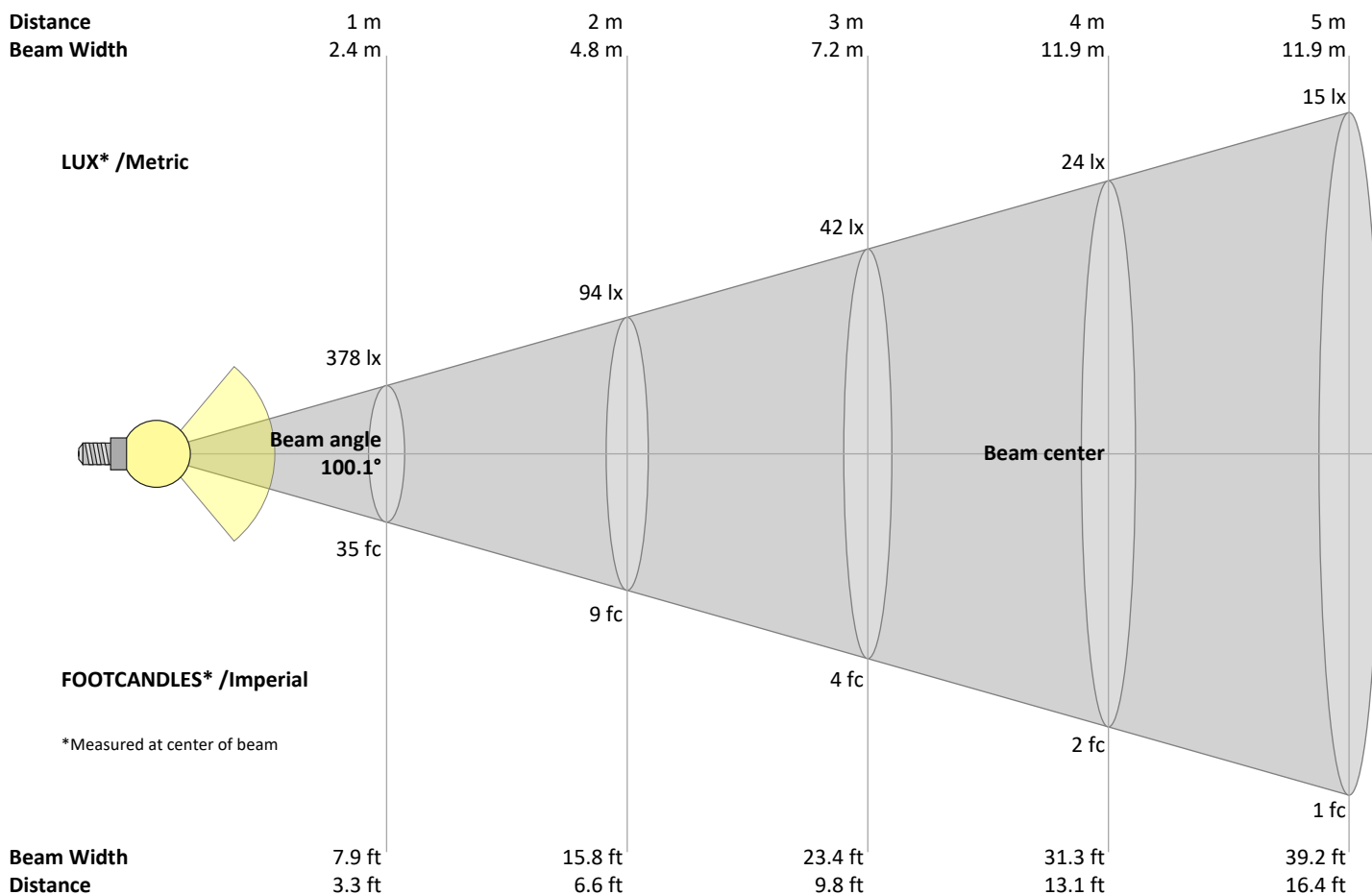
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Beam Details



Beam intensities from 1 – 20 m

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	m
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	ft
378	94	42	24	15	10	8	6	5	4	3	3	2	2	2	1	1	1	1	1	lux
35.1	8.8	3.9	2.2	1.4	1	0.7	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	fc

Intensities in 0° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
378	375	368	357	342	323	300	274	246	217	188	159	131	104	78	55	34	15	4	1	cd
100%	99%	97%	95%	91%	85%	79%	72%	65%	58%	50%	42%	35%	28%	21%	15%	9%	4%	1%	0%	of 0°val

Intensities in 90° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
378	375	367	355	339	320	296	271	244	215	186	158	131	104	80	57	37	18	5	1	cd
100%	99%	97%	94%	90%	85%	78%	72%	65%	57%	49%	42%	35%	28%	21%	15%	10%	5%	1%	0%	of 0°val

Intensities in 180° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
378	377	371	360	345	326	304	279	252	223	194	165	137	110	84	59	37	18	5	1	cd
100%	100%	98%	95%	91%	86%	80%	74%	67%	59%	51%	44%	36%	29%	22%	16%	10%	5%	1%	0%	of 0°val

Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
378	375	368	358	342	323	300	274	247	218	188	159	131	104	79	56	35	16	4	1	cd
100%	99%	98%	95%	91%	85%	79%	73%	65%	58%	50%	42%	35%	28%	21%	15%	9%	4%	1%	0%	of 0°val

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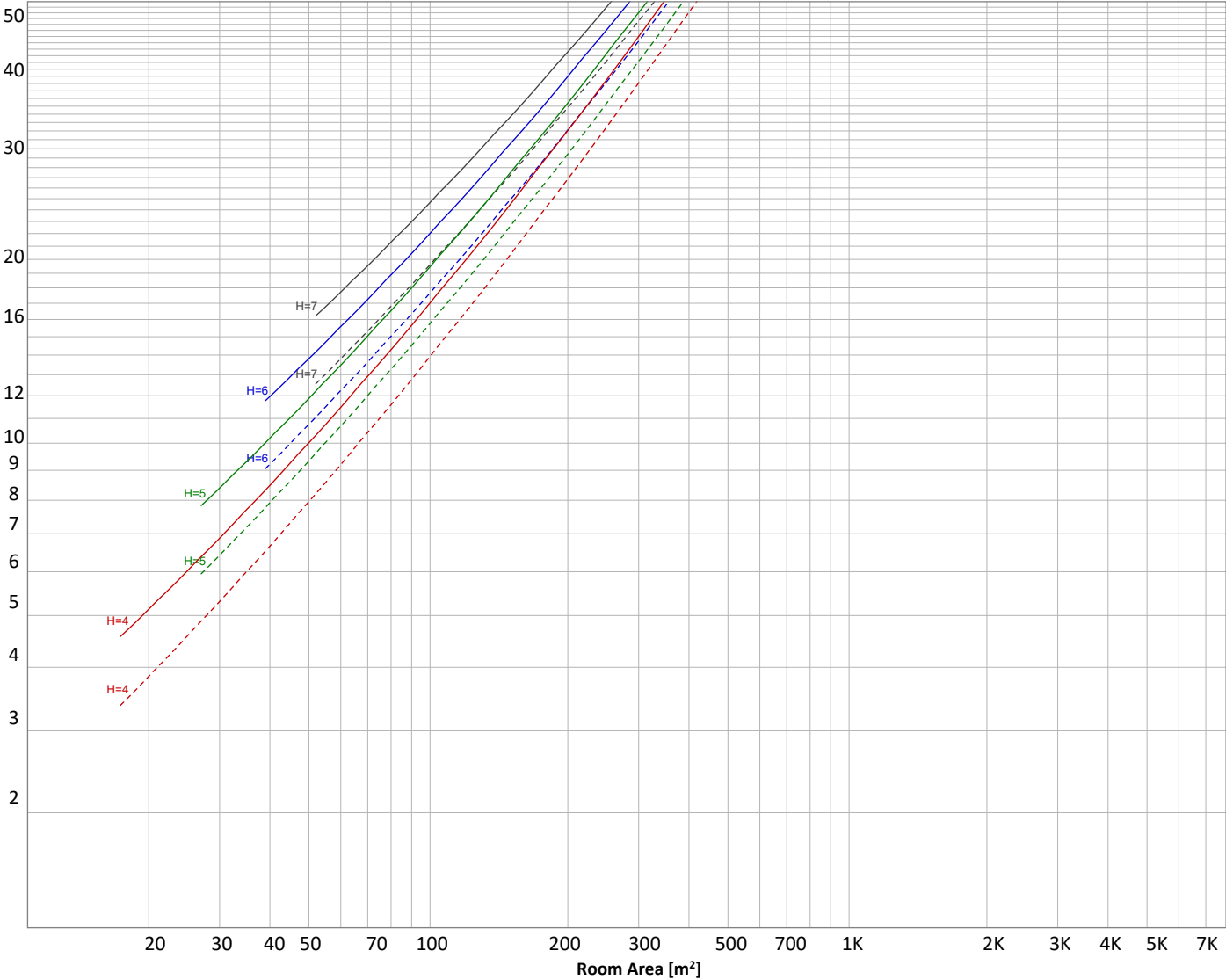
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Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 962 lm	p(%)		
H _{down} = Lamp distance from ceiling =	0.00 m	Line type	Ceiling reflectance	Wall reflectance
H _{work} = Work area height from floor =	0.00 m	-----	70	50
E _{work} = Average lux on work area =	100 lx	-----	50	30
				Floor reflectance
				20

Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
35.7 lm	101 lm	149 lm	172 lm	169 lm	144 lm	105 lm	59.9 lm	18.6 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
1.13 lm	1.14 lm	1.21 lm	1.22 lm	1.22 lm	1.05 lm	0.865 lm	0.562 lm	0.188 lm

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Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	36 lm	3.7%
10-20°	101 lm	10.5%
20-30°	149 lm	15.5%
30-40°	172 lm	17.9%
40-50°	169 lm	17.5%
50-60°	144 lm	14.9%
60-70°	105 lm	10.9%
70-80°	60 lm	6.2%
80-90°	19 lm	1.9%
90-100°	1 lm	0.1%
100-110°	1 lm	0.1%
110-120°	1 lm	0.1%
120-130°	1 lm	0.1%
130-140°	1 lm	0.1%
140-150°	1 lm	0.1%
150-160°	1 lm	0.1%
160-170°	1 lm	0.1%
170-180°	0 lm	0.0%
Total	962 lm	100.0%

Intensity peaks

Max intensity	378 cd
Intensity, 90°	4 cd
Intensity, 0°	378 cd

Zonal Lumen summary

Zone (γ)	Lumen	% Total
0-30°	286 lm	29.7%
0-40°	458 lm	47.6%
0-60°	770 lm	80.1%
60-90°	183 lm	19.0%
70-100°	80 lm	8.3%
90-120°	3 lm	0.4%
0-90°	953 lm	99.1%
90-180°	9 lm	0.9%
0-180°	962 lm	100.0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	142 lm	14.8%
Medium(30-60°)	240 lm	25.0%
High(60-80°)	81 lm	8.5%
Very high(80-90°)	9 lm	1.0%
Back light		
Low(0-30°)	143 lm	14.9%
Medium(30-60°)	243 lm	25.3%
High(60-80°)	83 lm	8.7%
Very high(80-90°)	10 lm	1.0%

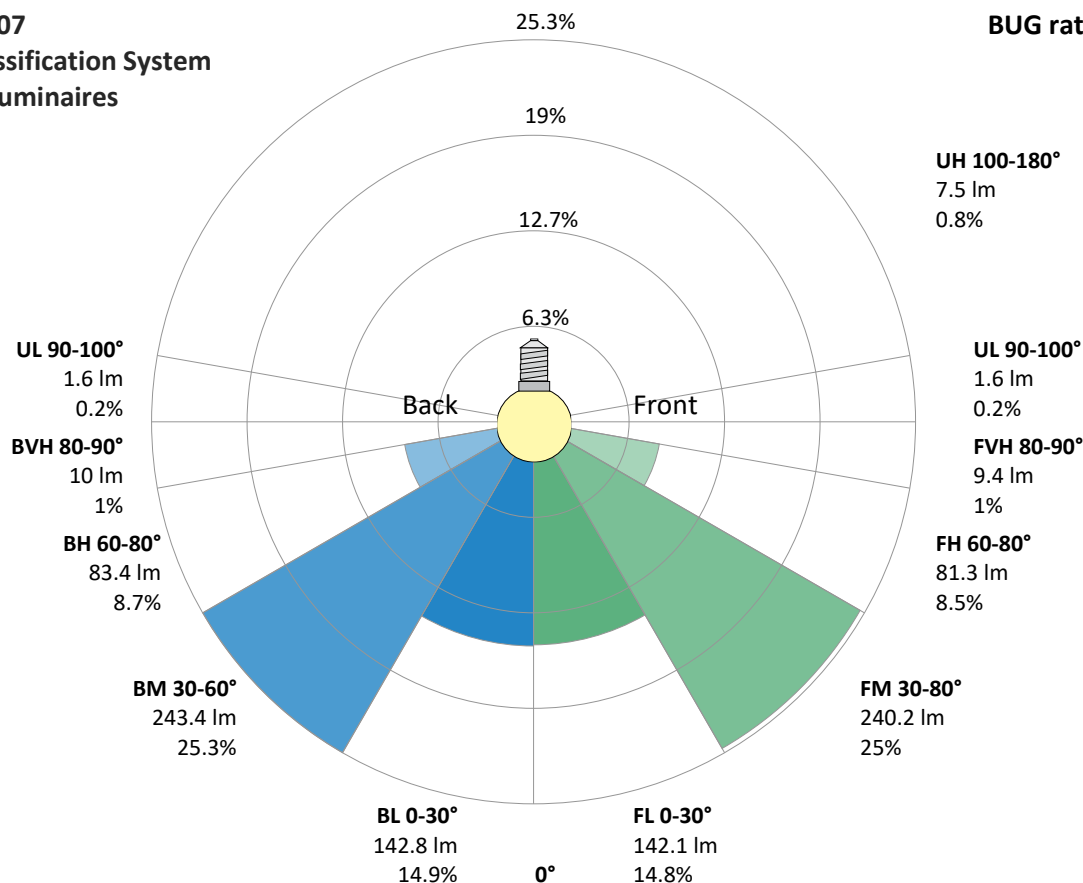
Uplight

Low(90-100°)	2 lm	0.2%
High(100-180°)	7 lm	0.8%

IESNA TM-15-07

Luminaire Classification System For Outdoor Luminaires

BUG rating B1 U1 G0



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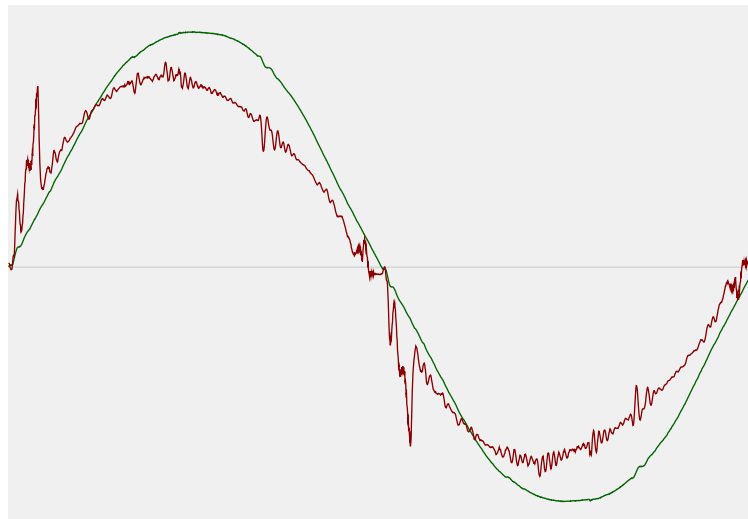


Power Details

Input Power

Power feed to light source	8.2 W
Frequency of input power	60 Hz
RMS Input voltage feed, V_{RMS}	120 V
RMS Input current feed, I_{RMS}	0.070 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	8.37 VA
Displacement factor of AC power feed	0.99
Power factor of AC current feed	0.98
Total harmonic distortion of the current	10.35%
Total harmonic distortion of the voltage	1.98%

Input Power Curve



Efficiency

Radiated power efficiency 35.4%



Lumen efficiency 117 lm/W



Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	3486 K
CCT shift	+1 K
CCT end	3487 K

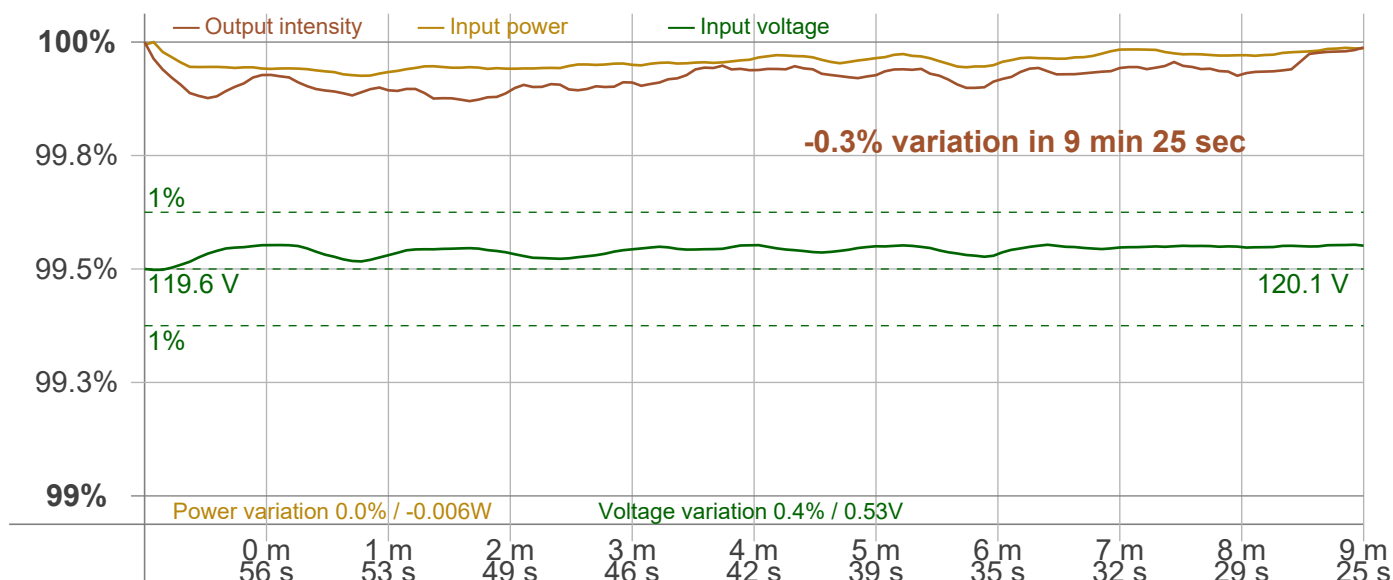
Warmup Result

Total warmup time	Not completed
Warmup variation	-0.3%

Output Change

Output start	962 lm
Output change	-1 lm
Output end	962 lm

Stabilization Curve



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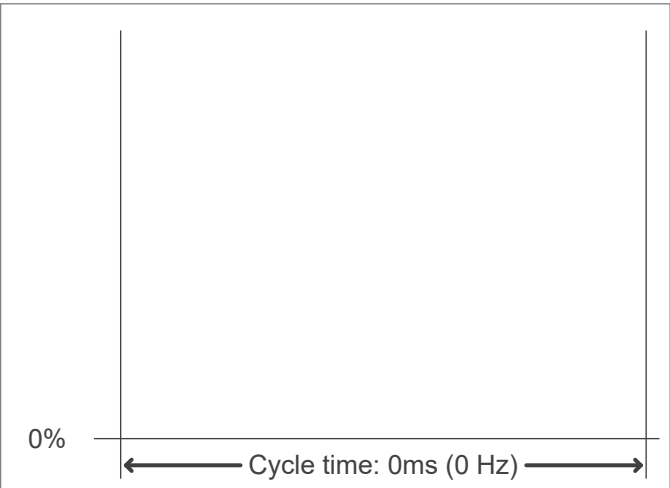
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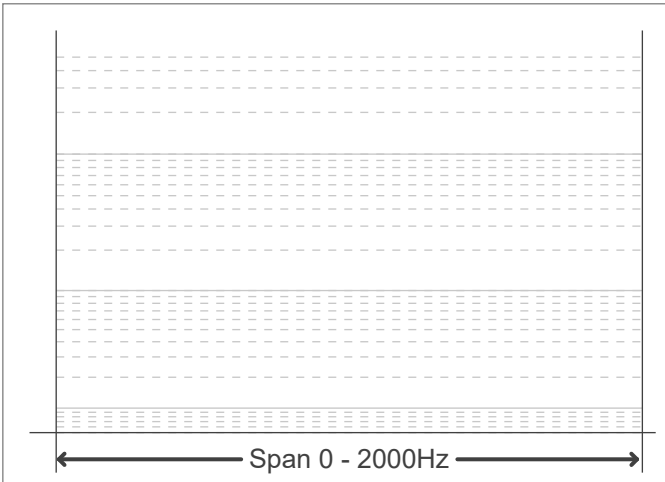
Flicker /TLA details

Flicker Meter Type	Viso Systems LabFlicker	Measurement time	
Frequency of input power	60 Hz	PstLM	180 sec
Flicker/TLA sample rate	n/a samples/s	All other indices	1,2 sec
Flicker indices according to Illuminating Engineering Society (IES)		Flicker indices according to California Energy Commission (CEC) 2016b	
Flicker frequency	n/a Hz	JA8/10 40 Hz	n/a %
Percent Flicker	n/a %	JA8/10 90 Hz	n/a %
Flicker index	n/a	JA8/10 200 Hz	n/a %
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)		JA8/10 400 Hz	n/a %
PstLM value (F < 80 Hz)	n/a	JA8/10 1000 Hz	n/a %
SVM value (80 < F < 2000 Hz)	n/a	Flicker indices according to Lighting Research Center (2015)	
		Perception metric, Assist Mp	n/a

Flicker frame (frame of one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

