

Light Measurement Report

Print date: 1/7/2026

Measurement date and time: 1/7/2026 3:53:04 PM – Measurement no. VFR-260107-0771-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

22.1 W – PF 0.95 – DPF 0.97

121 V – 0.192 A

60 Hz

Not completed – 2.0%

Tested Light Source

Product Name

Item No. and Manufacturer

Product Description (line 1)

HP1-P-I-4'-V-835-WSO-BLX2835

HP1-P-I-4'-V-835-WSO-BLX2835 – Finelite Inc.

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

2887 lm – 1.15% / 98.85%

131 lm/W

903 cd – 130.8°

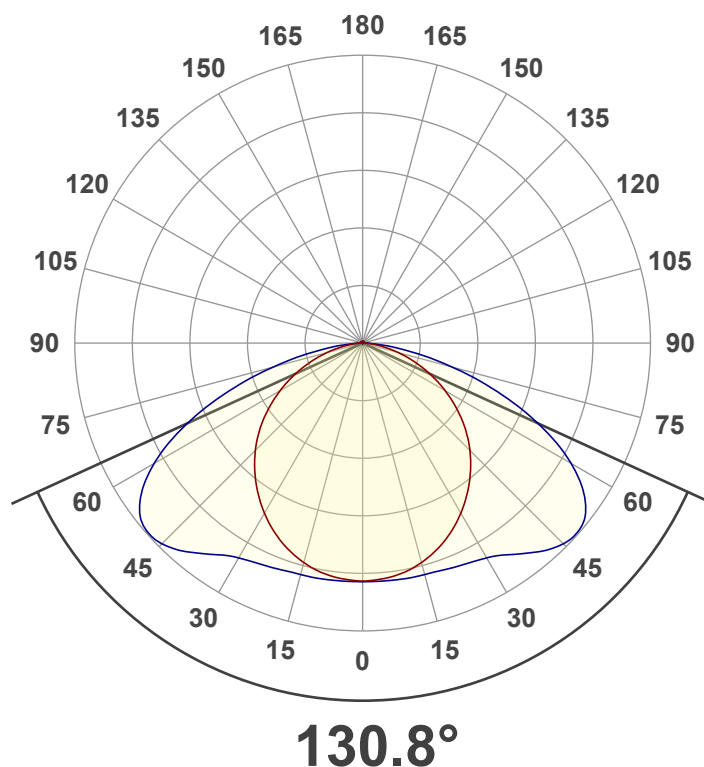
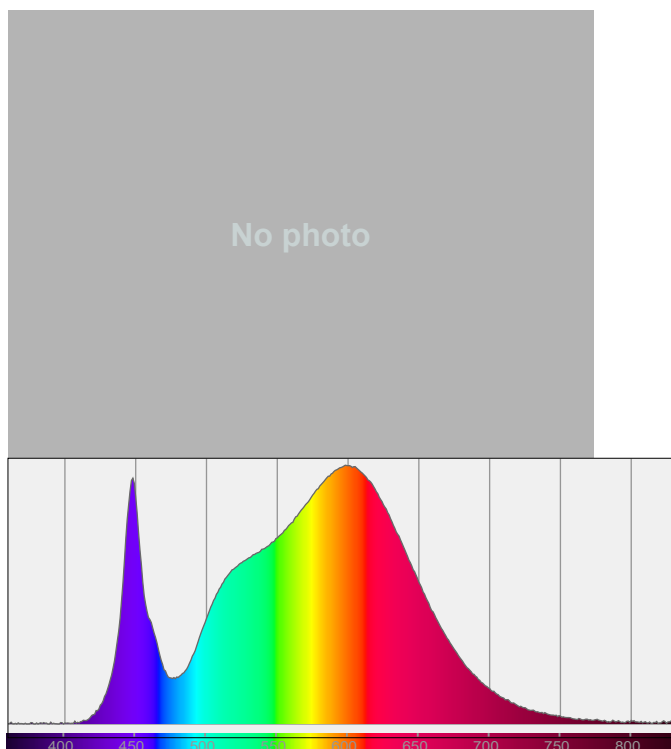
CCT = 3518 K / 3518 K

CRI 82.9

R_f 84.1 – R_g 97.7

Duv 0.0005 – SDCM n/a

SVM n/a – PstLM n/a



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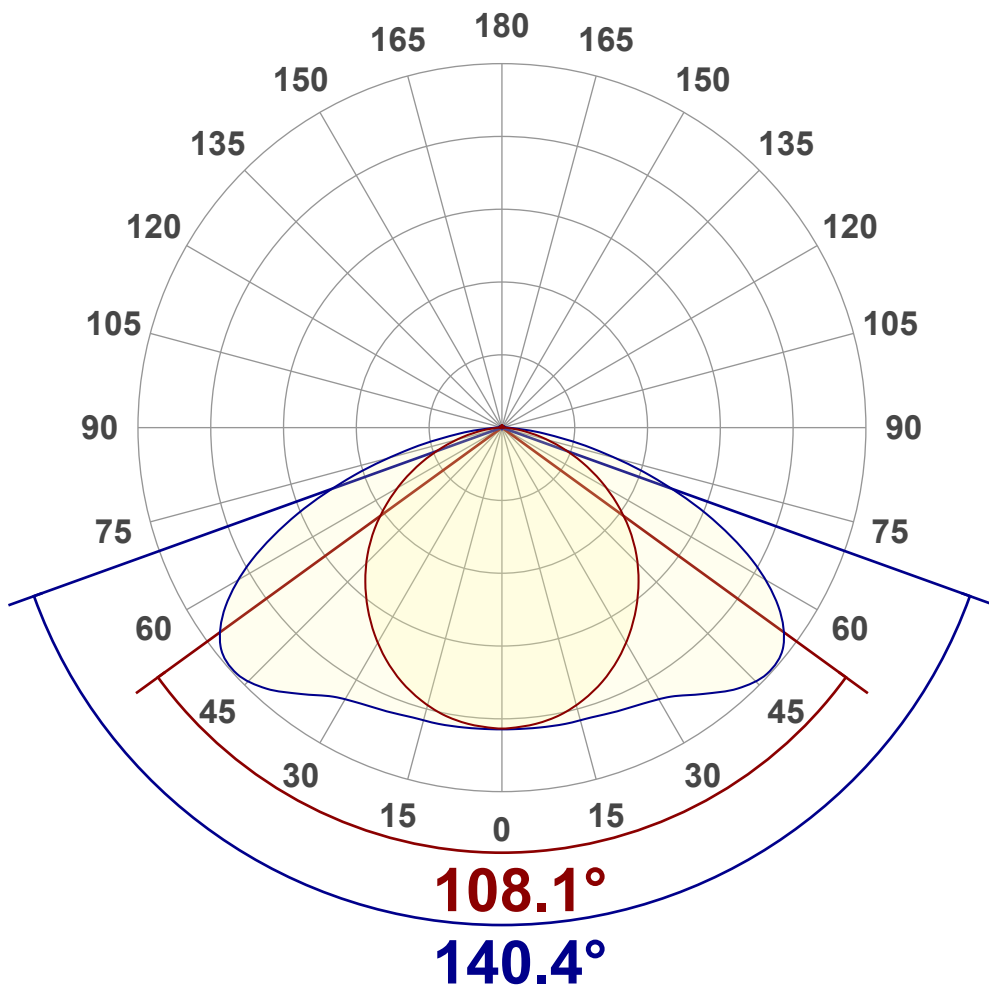
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Operator:



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	2887 lm
Lumen Up% / Down%	1.15% / 98.85%
Peak Intensity	903 cd
Beam Angle (50%)	130.8°
Beam Angle (90%)	140.4°
Beam Angle (10%)	108.1°

Cut-off Angle

Average 2,5%	177.5°
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Field Angle

Average 10%	165.1°
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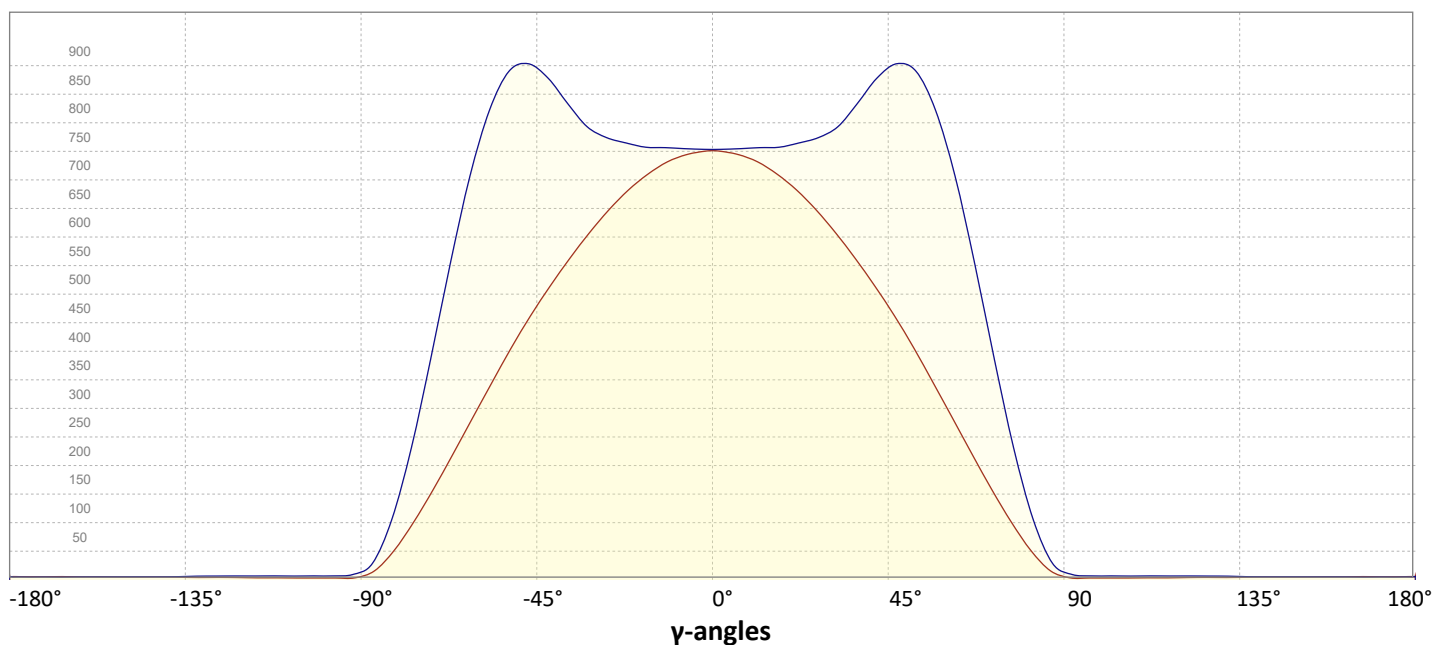
Intensity Ratio

In 120° cone	73.0%
In 90° cone	44.9%

C000-C180

C090-C270

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



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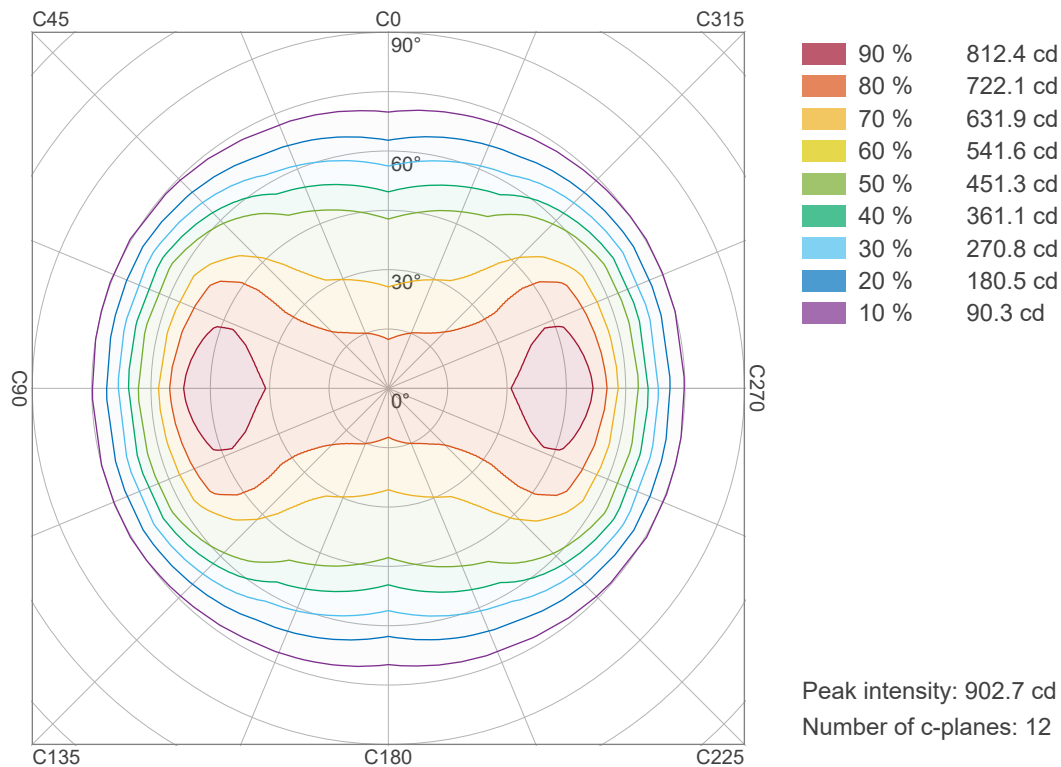
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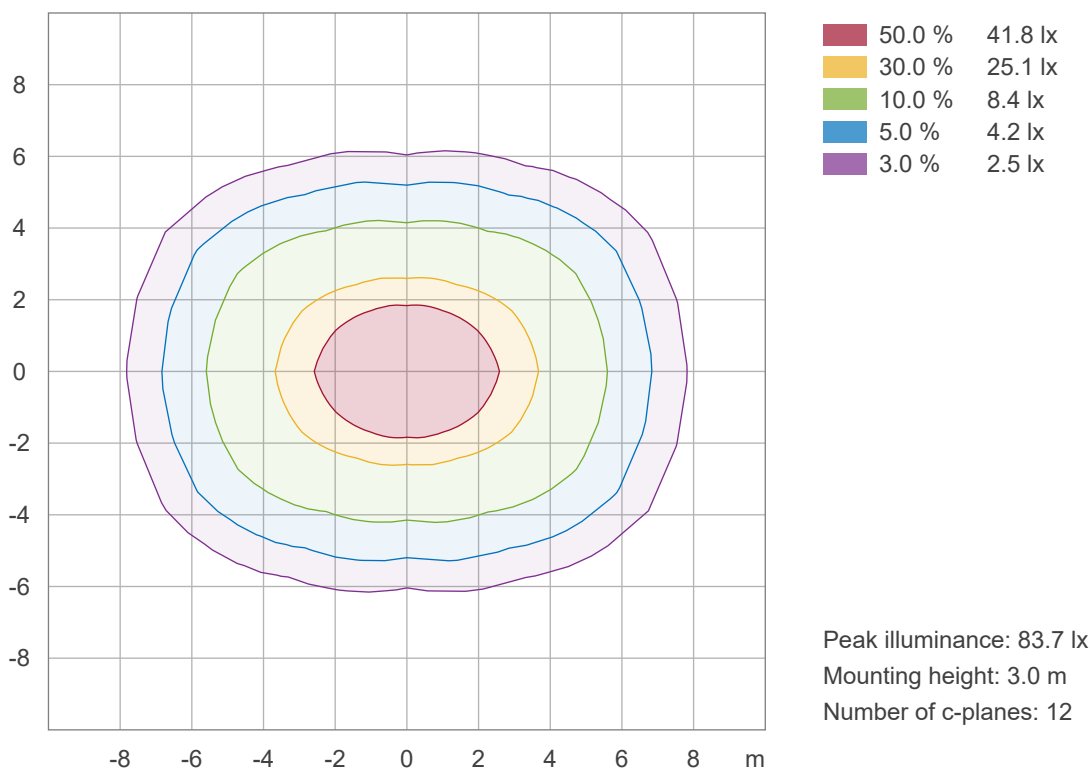
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Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



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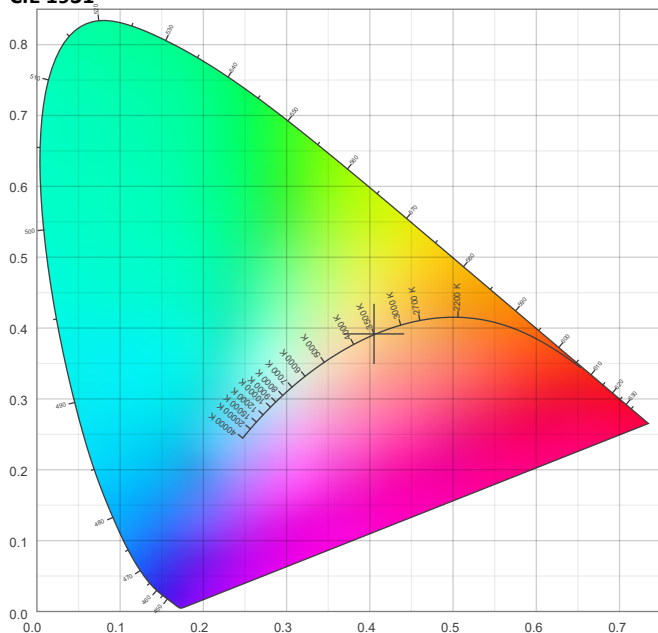


Color details

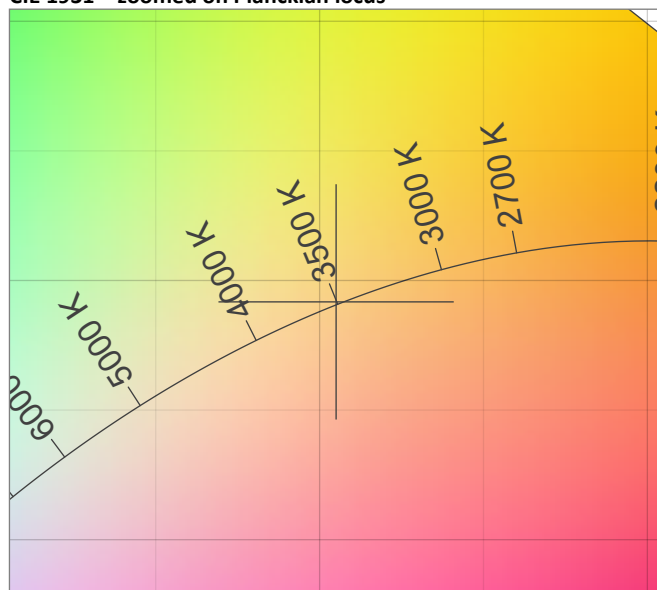
Correlated Color Temperature, Target CCT = 3518 K
Correlated Color Temperature, Measured CCT = 3518 K
Color Rendering Index CRI 82.9
Color Rendering Index, R9 (red component) R9 = 9.2
Color Rendering TM30-18 R_f 84.1 – R_g 97.7
Color Quality Scale CQS = 82.8

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0.405;0.392)
Color coordinate CIEs 1960 (u;v) = (0.235;0.341)
Color deviation from BBL Duv = 0.0005
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0.235;0.512)

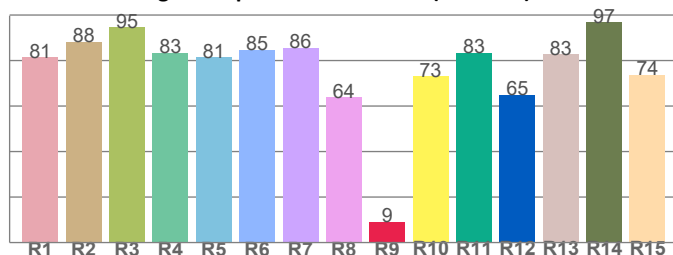
CIE 1931



CIE 1931 – zoomed on Planckian locus



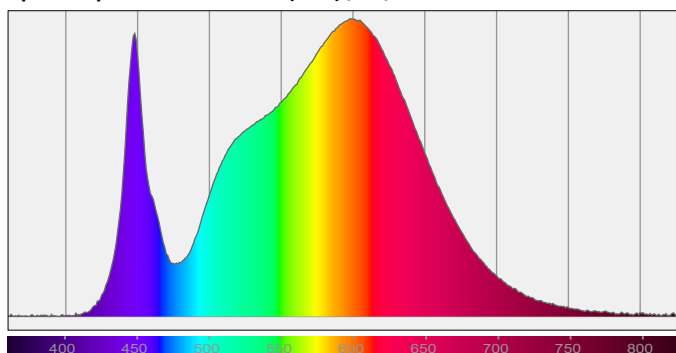
Color Rendering Index per reference color (CIE 1995)



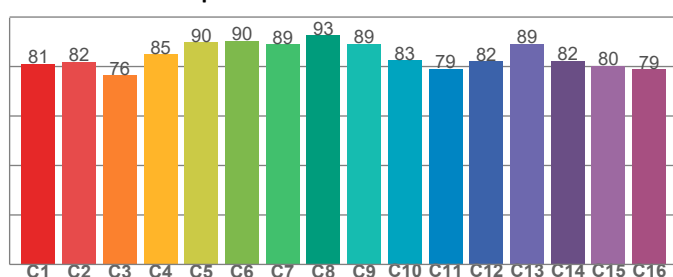
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81.4	88.3	94.5	83.3	81.4	84.8	85.6	63.8	9.2	73.0	83.5	65.0	82.8	96.9	73.8

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



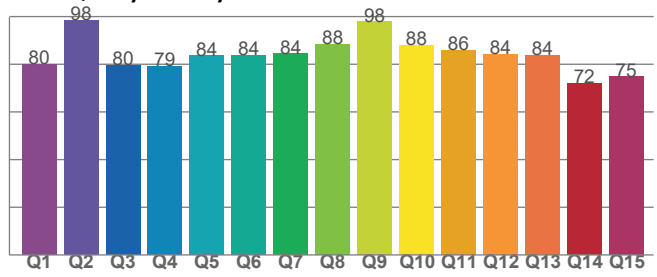
TM30-18 R_f-values per hue bin



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
81.1	81.9	76.4	84.9	89.8	90.4	89.0	92.6	89.3	82.6	79.1	82.1	89.2	82.4	80.2	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
80.1	98.4	79.7	79.3	83.7	83.8	84.5	88.4	97.8	88.0	85.8	84.3	83.8	72.0	74.8

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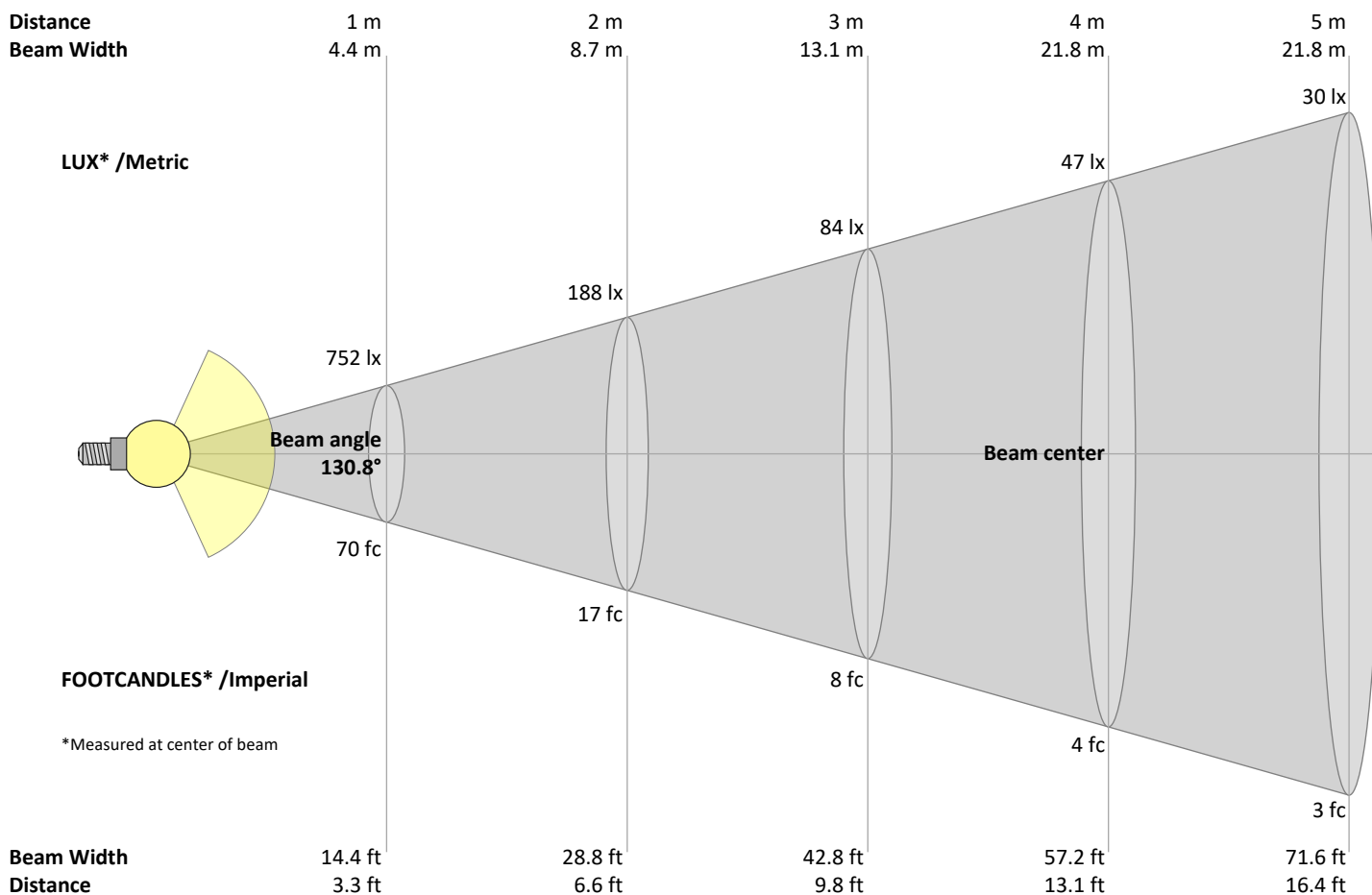
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Operator:



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
752	188	84	47	30	21	15	12	9	8	6	5	4	4	3	3	3	2	2	2	lux
69.8	17.5	7.8	4.4	2.8	1.9	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	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
752	746	736	717	691	658	620	576	529	479	423	363	301	238	176	118	66	27	7	3	cd
100%	99%	98%	95%	92%	88%	82%	77%	70%	64%	56%	48%	40%	32%	23%	16%	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
752	754	756	757	761	770	785	817	859	893	896	851	755	619	458	297	158	61	17	8	cd
100%	100%	101%	101%	101%	102%	104%	109%	114%	119%	119%	113%	100%	82%	61%	40%	21%	8%	2%	1%	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
752	746	736	717	691	658	620	576	529	479	423	363	301	238	176	118	66	27	7	3	cd
100%	99%	98%	95%	92%	88%	82%	77%	70%	64%	56%	48%	40%	32%	23%	16%	9%	4%	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
752	754	756	757	761	770	785	817	859	893	896	851	755	619	458	297	158	61	17	8	cd
100%	100%	101%	101%	101%	102%	104%	109%	114%	119%	119%	113%	100%	82%	61%	40%	21%	8%	2%	1%	of 0°val

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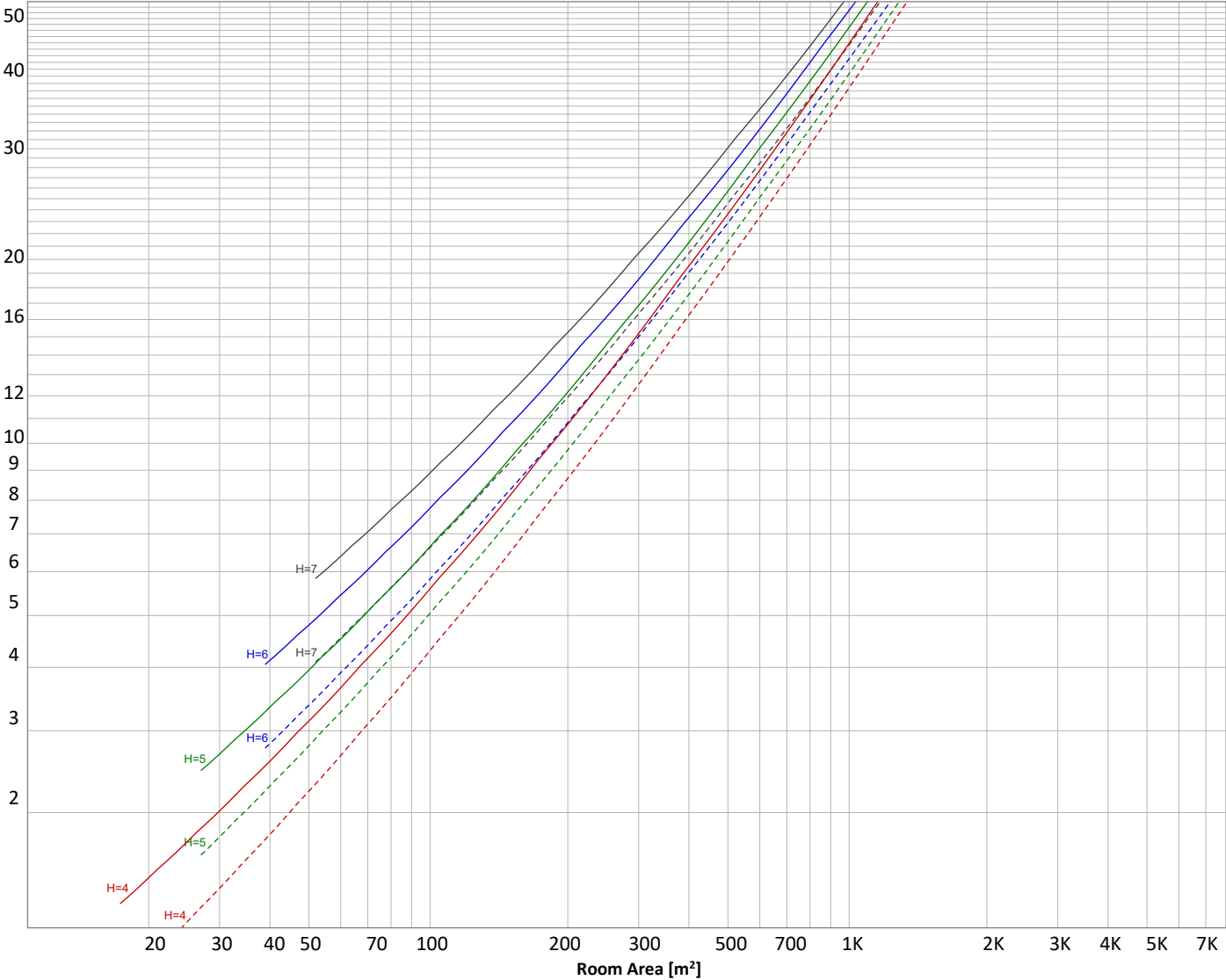
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Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 2887 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°
71.6 lm	209 lm	331 lm	434 lm	520 lm	541 lm	443 lm	244 lm	60.7 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
7.33 lm	5.47 lm	4.97 lm	4.46 lm	3.67 lm	3.03 lm	2.31 lm	1.44 lm	0.473 lm

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Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	72 lm	2.5%
10-20°	209 lm	7.2%
20-30°	331 lm	11.5%
30-40°	434 lm	15.0%
40-50°	520 lm	18.0%
50-60°	541 lm	18.8%
60-70°	443 lm	15.3%
70-80°	244 lm	8.5%
80-90°	61 lm	2.1%
90-100°	7 lm	0.3%
100-110°	5 lm	0.2%
110-120°	5 lm	0.2%
120-130°	4 lm	0.2%
130-140°	4 lm	0.1%
140-150°	3 lm	0.1%
150-160°	2 lm	0.1%
160-170°	1 lm	0.0%
170-180°	0 lm	0.0%
Total	2887 lm	100.0%

Intensity peaks

Max intensity	903 cd
Intensity, 90°	7 cd
Intensity, 0°	752 cd

Zonal Lumen summary

Zone (γ)	Lumen	% Total
0-30°	611 lm	21.2%
0-40°	1045 lm	36.2%
0-60°	2106 lm	73.0%
60-90°	748 lm	25.9%
70-100°	312 lm	10.8%
90-120°	18 lm	0.6%
0-90°	2854 lm	98.9%
90-180°	33 lm	1.1%
0-180°	2887 lm	100.0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	306 lm	10.6%
Medium(30-60°)	746 lm	25.9%
High(60-80°)	343 lm	11.9%
Very high(80-90°)	32 lm	1.1%
Back light		
Low(0-30°)	306 lm	10.6%
Medium(30-60°)	746 lm	25.9%
High(60-80°)	343 lm	11.9%
Very high(80-90°)	32 lm	1.1%

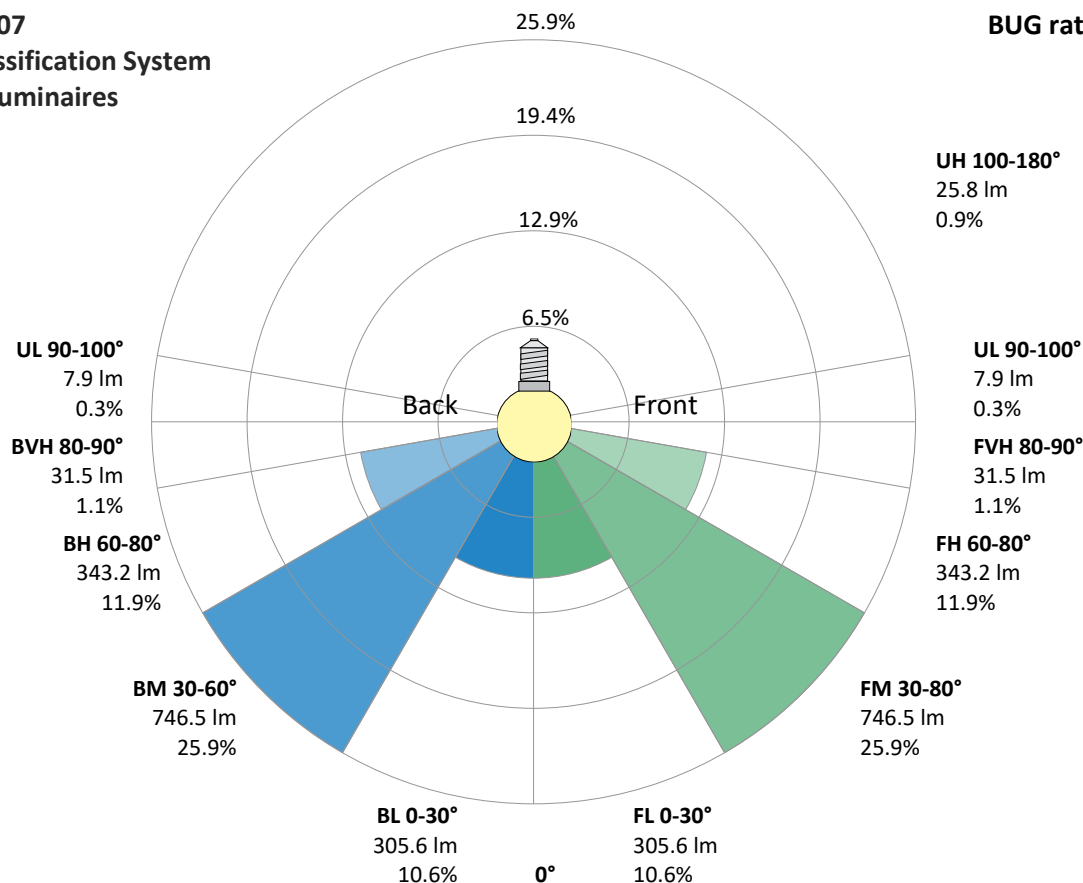
Uplight

Low(90-100°)	8 lm	0.3%
High(100-180°)	26 lm	0.9%

IESNA TM-15-07

Luminaire Classification System For Outdoor Luminaires

BUG rating B1 U2 G1



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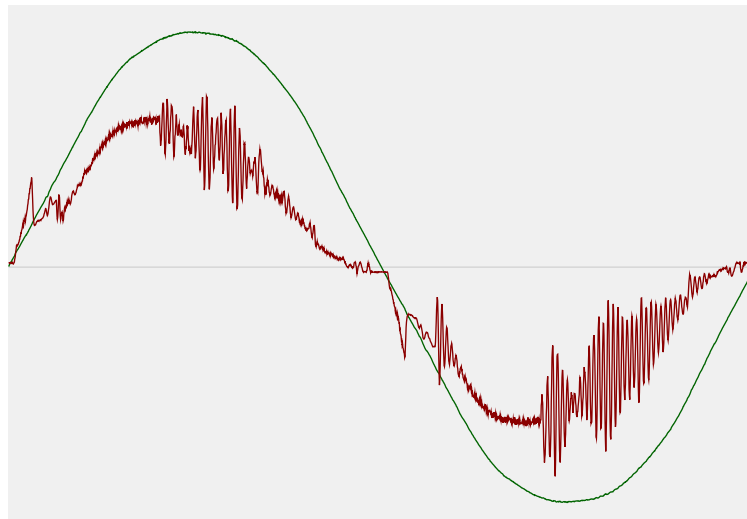


Power Details

Input Power

Power feed to light source	22.1 W
Frequency of input power	60 Hz
RMS Input voltage feed, V_{RMS}	121 V
RMS Input current feed, I_{RMS}	0.192 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	23.13 VA
Displacement factor of AC power feed	0.97
Power factor of AC current feed	0.95
Total harmonic distortion of the current	14.08%
Total harmonic distortion of the voltage	1.89%

Input Power Curve



Efficiency

Radiated power efficiency 39.3%



Lumen efficiency 131 lm/W



Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	3509 K
CCT shift	+9 K
CCT end	3518 K

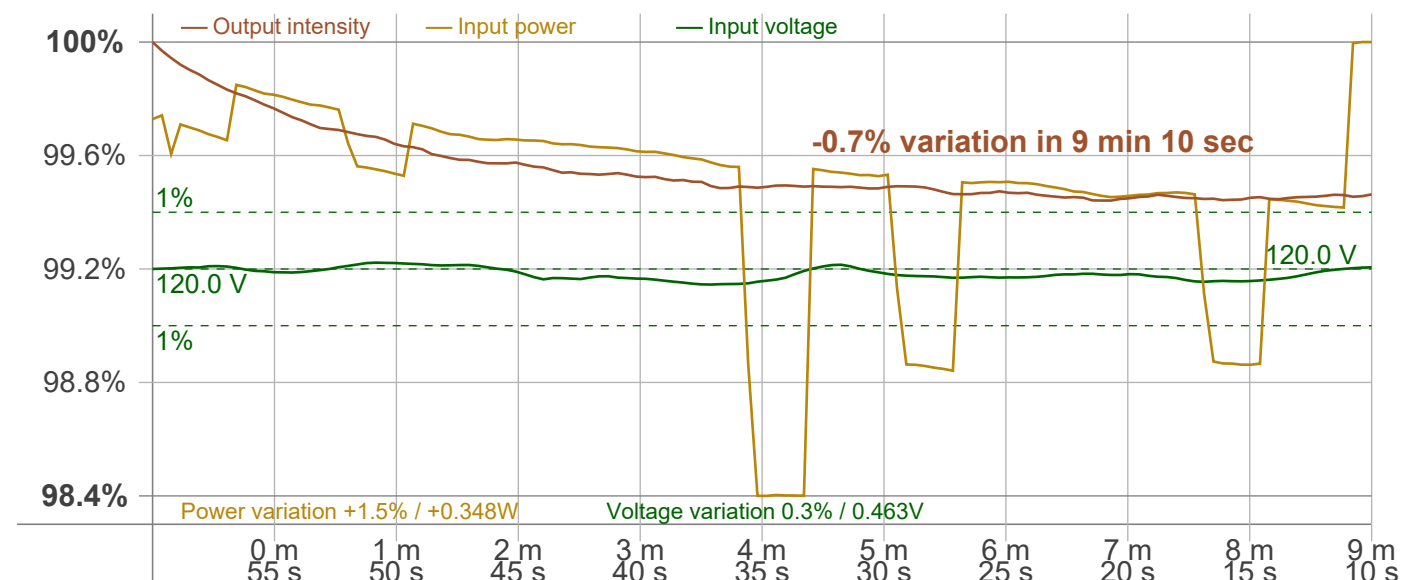
Warmup Result

Total warmup time	Not completed
Warmup variation	-0.7%

Output Change

Output start	2903 lm
Output change	-16 lm
Output end	2887 lm

Stabilization Curve



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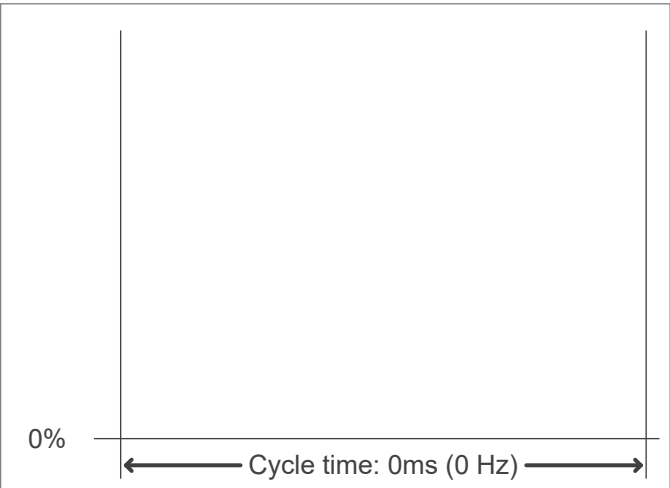
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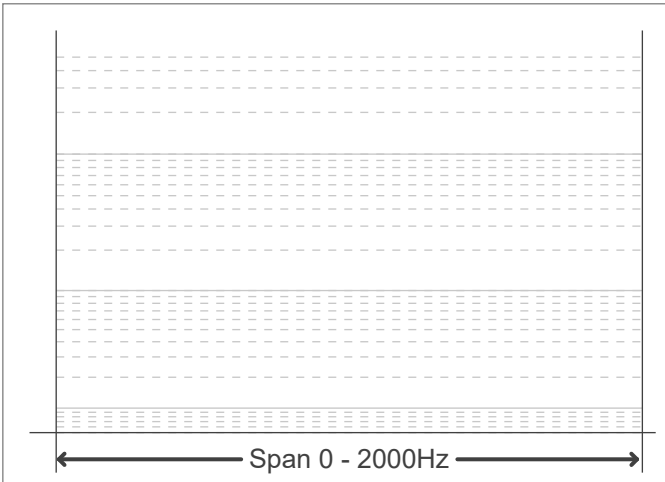
Flicker /TLA details

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

