SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11497

Date of issue: *December 4, 2025*

Status: FINAL REPORT

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IES LM-79

OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID STATE LIGHTING PRODUCTS

Program: SQ-6534.V3

****

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1. FOREWORD

This report summarizes the results of the **SQ-6534.V3** proficiency testing program on the determination of photometric and electrical parameters of LED luminaires. This program is conducted in a bilateral format, following the A.3.3 classification of the ISO 17043 standard ("Split-sample testing schemes").

South Quality conducted the testing program in November 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Eng. Esteban Di Marco
Assistant Technician:	Valentyn Kravchenko
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the following parameters:

- Total luminous flux
- Electrical parameters
- Luminous efficacy

These parameters were verified using the following standard:

Standard
IES LM-79-19

To verify this, batches of lighting products have been selected.

Participants in this program have not been previously informed about the expected behavior of the samples they receive.

4. PARTICIPANT

Company: **STELLA IMPORTACAO E EXPORTAÇÃO DE LUMINÁRIAS LTDA**

Laboratory: **STELLA LAB HQ**

Country: Brazil

Client ID: C118

Contact person: Vitória Costa
Quality Supervisor
vitoria.costa@stella.com.br

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **30 units** Tested samples from each batch: **8 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LL2895	BATCH: LL2896	BATCH: LL2897
Total luminous flux	YES	YES	NO
Electrical parameters	YES	YES	NO
Luminous efficacy	YES	YES	NO

The samples for this program are taken from the selected batch identified as **LL2896**.

For the indicated batch, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

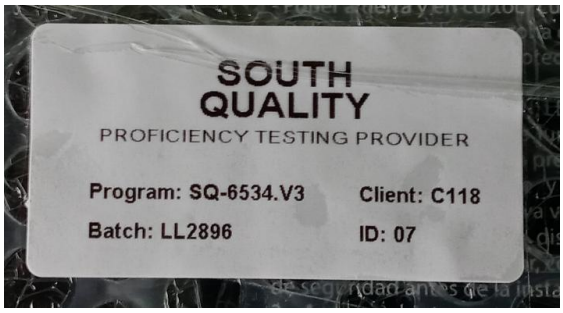
6. SAMPLE INFORMATION

The following sample was sent for testing:

Batch:	LL2896
Sample ID:	07
Characteristics:	Integrated LED luminaire Trademark: CANDELA Model: LED PLAFON BACKLIGHT REDONDO EMB. 12W CALIDA 12W – 170-265 V – 50Hz – 110 mA – 3000 K

7. IMAGES

SAMPLE



8. ASSIGNED VALUES

	BATCH: LL2896			
	Total luminous flux (lm)	Power (W)	Power factor	Luminous efficacy (lm/W)
AVG	811.25	11.72	0.542	69.3
SD	40.565	0.182	0.009	3.87

9. PARTICIPANT RESULTS (SEE APPENDIX B)

	CODE: LL2896-07			
	Total luminous flux (lm)	Power (W)	Power factor	Luminous efficacy (lm/W)
AVG	817	11.6	0.55	70

10. STATISTICS

The results must be treated as quantitative.

For quantitative results the comparison is made according B.3.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values. The results can be compare using percent difference ***z score***.

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ indicates "satisfactory" performance and generates no signal;

$2.0 < |z| < 3.0$ indicates "questionable" performance and generates a warning signal;

$|z| \geq 3.0$ indicates "unsatisfactory" performance and generates an action signal;

11. EVALUATION OF PERFORMANCE

BATCH	PARAMETER	AVERAGE		| z score |	PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE		
LL2896	Total luminous flux (lm)	817	811.25	**0.14**	**SATISFACTORY**
	Power (W)	11.6	11.72	**0.66**	**SATISFACTORY**
	Power factor	0.55	0.542	**0.89**	**SATISFACTORY**
	Elongation at fracture (%)	70	69.3	**0.18**	**SATISFACTORY**

12. CONCLUSIONS

The overall performance of this **SQ-6534.V3** program from the participant laboratory **STELLA IMPORTACAO E EXPORTAÇÃO DE LUMINÁRIAS LTDA - STELLA LAB HQ**, is **SUFFICIENT** based on expected results.

The criteria used for evaluating the overall performance are as follows:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were obtained, but one questionable result was found.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained or two questionable results were obtained.

APPENDIX A

INSTRUCTIONS

INSTRUCTIONS

PROGRAM:	Optical and electrical measurements of solid state lighting products
CODE:	SQ-6534
VERSION:	3
STANDARD:	IES LM-79
COORDINATOR:	Eng. Esteban Di Marco (edimarco@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-6534.V3 1 de 3

1 - General

This document serves as a guide for managing the results of the **SQ-6534.V3** program.

2 - Standard

IES LM-79 - 19

3 - Tests involved

TEST
Measuring photometric, and electrical quantities of LED luminaries (Total luminous flux / Electrical parameters / Luminous efficacy)

4 - Samples

CODE	SAMPLE	CHARACTERISTICS
LL2896-07	Integrated LED luminaire Trademark: CANDELA Model: LED PLAFON BACKLIGHT REDONDO EMB. 12W CALIDA	12W – 170-265 V – 50Hz 110 mA – 3000 K

5 - Notes

a) Being a bilateral program, there is no deadline for submitting results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **IES LM-79**.
d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

6 - Tests conditions

VOLTAGE (V)	FRECUENCY (Hz)
230	50

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TEST REPORT)

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Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

Foto da Amostra / Sample Photo

Fluxo Luminoso / Luminous Flux

817 lm

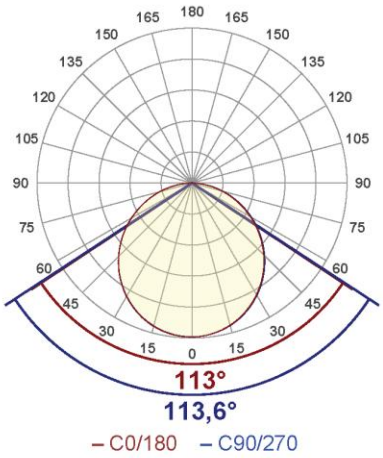
Eficiência luminosa / Luminous efficiency

70 lm/W

TCC / CCT

2931K

Ângulo de abertura / Beam angle



DADOS FOTOMÉTRICOS / PHOTOMETRIC DATA

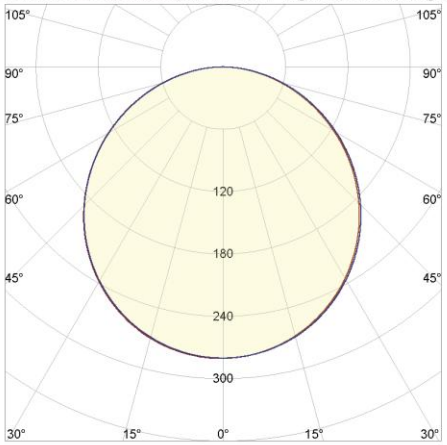
TCC / CCT: **2931K**
Δuv: -0,0020
IRC / CRI: **81,5**
R9: 1,2
Fluxo Luminoso / Luminous Flux: **817lm**
Intensidade luminosa de pico / Peak Luminous intensity: **281cd**
Luminância / Luminance: **23748cd/m²**
Eficiência luminosa / Luminous efficiency: **70lm/W**
Ângulo de abertura / Beam angle: **113,4°**
C0/180: 113° **C90/270: 113,6°**
SDCM: **UGR: 27,6**
PstLM: n/a **SVM: n/a**

DADOS ELÉTRICOS / ELECTRICAL DATA

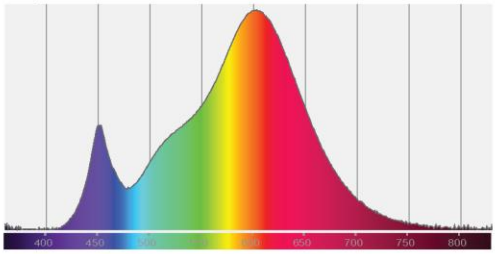
Potência / Power: **11,6W**
Tensão / Voltage: **230V**
Corrente / Current: **0,092A**
Frequência / Frequency: **50Hz**
FP / PF: **0,55**

Descrição / Description
- Medição estabilizada;
- Distância mínima: 61,3 cm;
- Distância do sensor: 112,3 cm;
- 8 planos / 1° por medição;
- Temperatura: 24,8 °C / 25,4 °C;
- Fornecedor: Candela

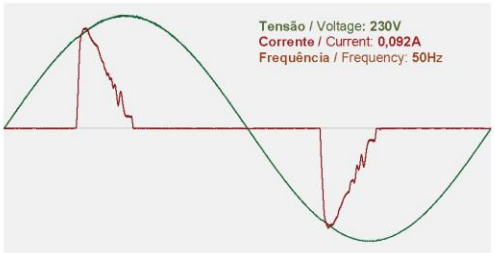
Gráfico de distribuição de luz / Light distribution graph



Espectro Luminoso / Luminous Spectrum



Alimentação / Power input



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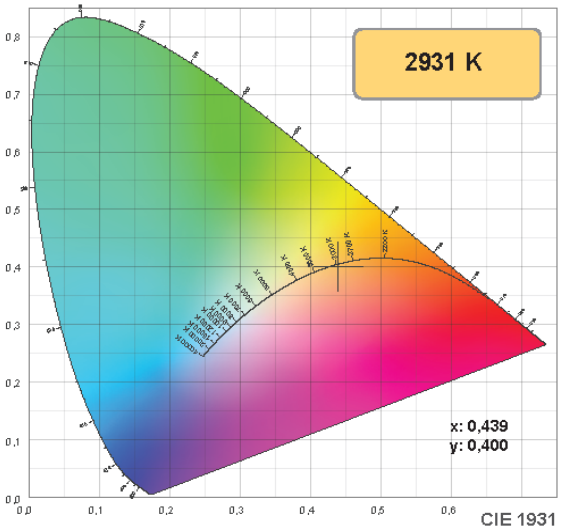
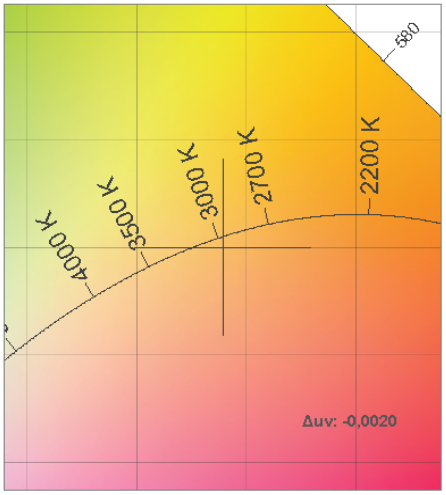
Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

Detalhes da cor / Color details



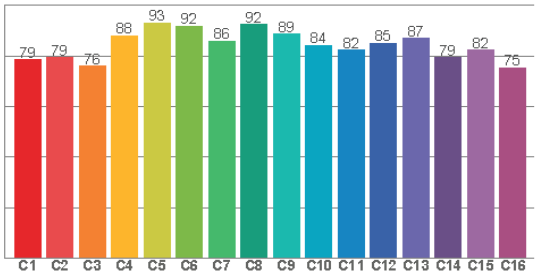
CIE 1931

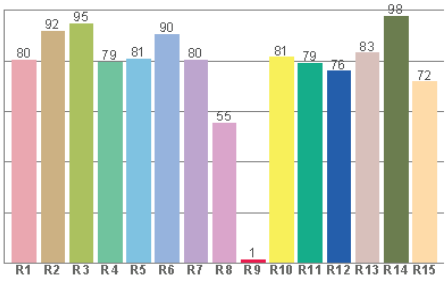


CIE 1931 ZOOM

TM30: 84,2

IRC / CRI: 81,5 (R1-R8)





Valores do IRC / CRI R values

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
80,2	91,6	94,5	79,3	80,8	90,3	80,3	55,4	1,2	81,3	79,0	75,9	83,0	97,7	71,6

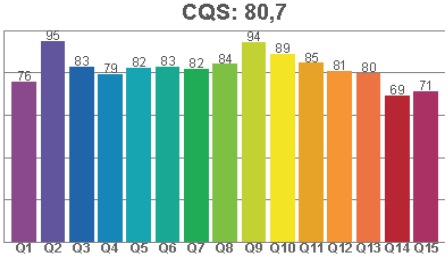
Valores da TM30 / TM30 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
78,5	79,4	76,0	88,0	93,1	91,8	85,9	92,3	88,7	84,2	82,4	85,1	87,0	79,2	82,3	75,3

Valores da CQS / CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
75,7	94,9	82,6	79,4	82,2	82,8	81,9	84,1	94,4	88,8	84,5	80,9	79,8	69,1	71,1

CQS: 80,7



Parâmetros da cor / Color parameters

Temperatura de cor Color temperature	Reprodução de cor Color rendering	Componente vermelho Red component	Fidelidade de cor Color fidelity	Gama de cores Color gamut	Qualidade da cor Color quality	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
TCC	IRC	R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2931 K	81,5	1,2	84,2	96,0	80,7	0,439	0,400	0,254	0,347	-0,0020

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Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

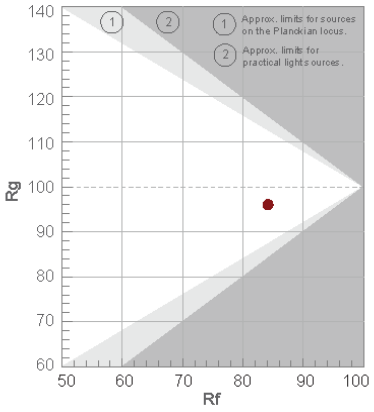
11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

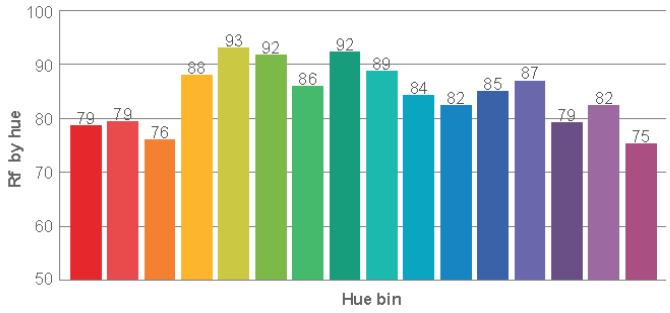
Detalhes da TM30 / TM30 details

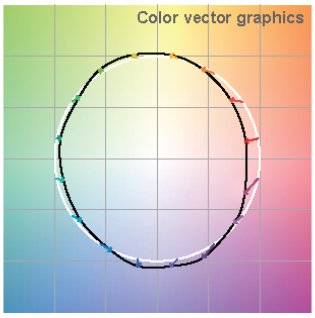
Rf 84,2
Índice de fidelidade
Fidelity index Rf

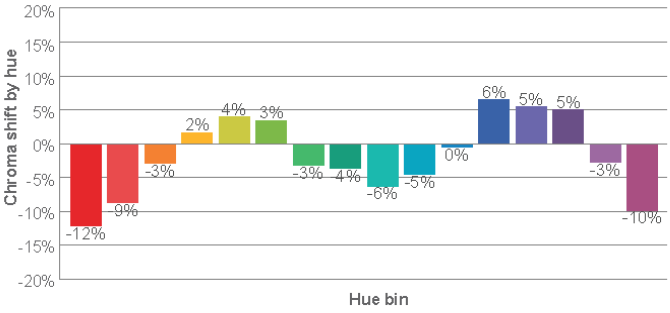
Rg 96,0
Índice de saturação
Gammut index Rg

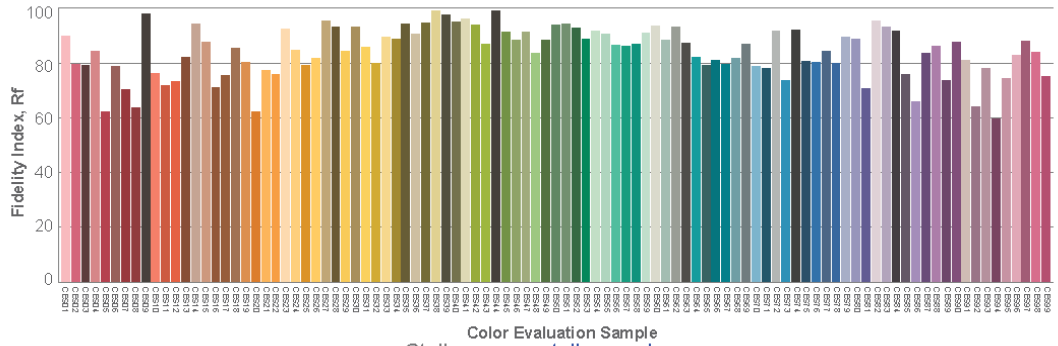
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	79	-12%	0%
2	79	-9%	8%
3	76	-3%	12%
4	88	2%	7%
5	93	4%	4%
6	92	3%	-3%
7	86	-3%	-8%
8	92	-4%	-2%
9	89	-6%	3%
10	84	-5%	9%
11	82	0%	13%
12	85	6%	3%
13	87	5%	-8%
14	79	5%	-16%
15	82	-3%	-11%
16	75	-10%	-17%











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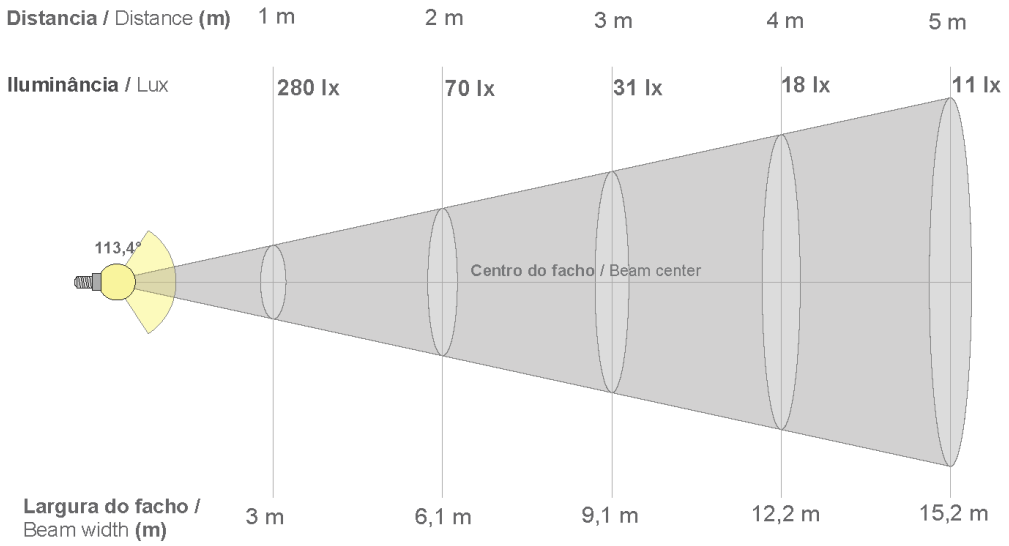
Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

Detalhes do facho luminoso / Beam details



Intensidade do facho 1-20m / Beam intensities 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	3,3m	6,6m	9,8m	13,1m	16,4m	19,7m	23m	26,2m	29,5m	32,8m
280lx	70lx	31lx	18lx	11lx	8lx	6lx	4lx	3lx	3lx	26lx	6,5lx	2,9lx	1,6lx	1lx	0,7lx	0,5lx	0,4lx	0,3lx	0,3lx

Intensidade no plano 0° / 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°
280	279	275	268	259	248	235	220	203	185	165	144	123	101	79	57	35	15	1	0
100%	99%	98%	96%	92%	88%	84%	78%	72%	66%	59%	51%	44%	36%	28%	20%	13%	5%	0%	0%

Intensidade no plano 90° / 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°
280	279	275	269	260	249	236	222	205	187	167	147	125	103	81	59	37	17	0	0
100%	99%	98%	96%	93%	89%	84%	79%	73%	67%	60%	52%	45%	37%	29%	21%	13%	6%	0%	0%

Intensidade no plano 180° / 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°
280	280	276	270	262	251	239	224	208	189	170	149	127	105	83	61	39	18	0	0
100%	100%	98%	96%	93%	90%	85%	80%	74%	68%	61%	53%	45%	38%	30%	22%	14%	7%	0%	0%

Intensidade no plano 270° / 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°
280	279	275	269	261	251	238	223	207	189	169	149	127	105	82	60	38	18	0	0
100%	100%	98%	96%	93%	89%	85%	80%	74%	67%	60%	53%	45%	37%	29%	21%	14%	6%	0%	0%

Ângulo do facho 50% / Beam angle 50%	**Ângulo de campo 10% /** Field angle 10%	**Ângulo de corte 2,5% /** Cutoff angle 2,5%	**Intensidade no cone 120° /** Intensity ratio in 120° cone	**Intensidade no cone 90° /** Intensity ratio in 90° cone
113,4°	**164,5°**	**174,9°**	**77,5%**	**52,6%**

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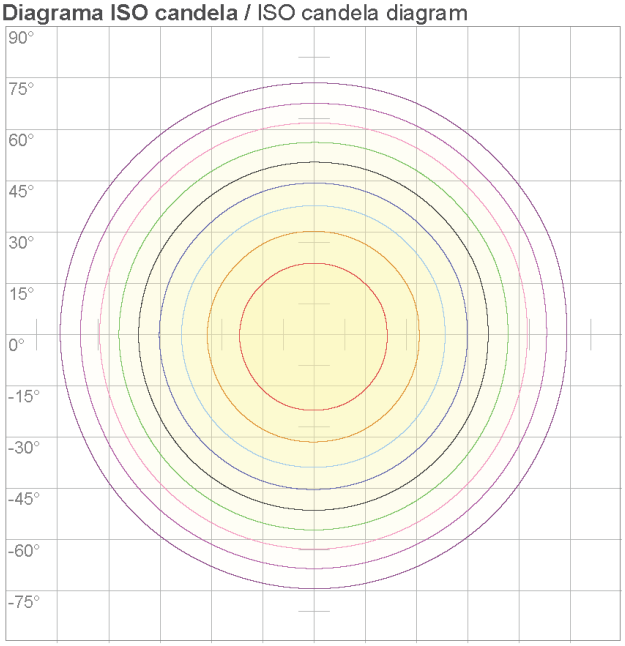
Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

Diagramas ISO / ISO Diagrams

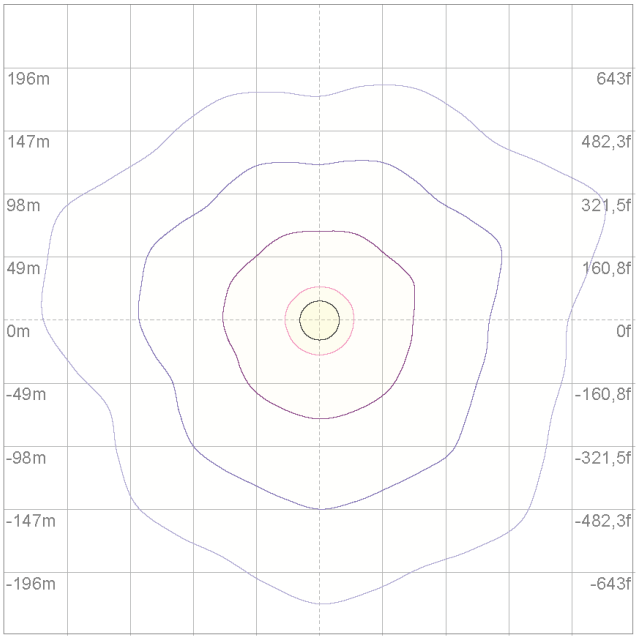
Diagrama ISO candela / ISO candela diagram



10%	28 cd
20%	56 cd
30%	84 cd
40%	112 cd
50%	140 cd
60%	168 cd
70%	196 cd
80%	224 cd
90%	252 cd

Condições / Conditions:
16 Planos / c-planes
280 cd No centro / At center

Diagrama ISO lux / ISO lux diagram



3%	84,1m lx
5%	0,140 lx
10%	0,280 lx
30%	0,841 lx
50%	1,40 lx

Condições / Conditions:
16 Planos / c-planes
2,80 lx No centro / At center

Altura de instalação / Mounting height: **10 m**

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Planejamento de luz / Light planning

Coeficientes de Utilizacão / Coefficients of Utilization

Refletância do teto	80				70				50			30			10			0
Refletância da parede	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Refletância do piso	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	**(RCR: Relação Cavidade do Recinto /** Room Cavity Ratio) Os Valores do recinto são expressos em percentual do fluxo luminoso incidindo sobre a área de trabalho Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	99	95	106	101	97	93	97	94	91	93	90	88	89	87	85	83
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69
3	90	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58
4	82	70	61	54	80	68	60	53	66	58	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	45	57	50	45	55	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	45	39	50	44	39	37
7	64	51	42	36	63	50	41	35	48	41	35	47	40	35	45	39	35	33
8	60	46	38	32	58	45	37	32	44	37	31	43	36	31	42	36	31	29
9	56	42	34	28	55	42	34	28	41	33	28	40	33	28	39	32	28	26
10	52	39	31	26	51	39	31	26	38	30	26	37	30	25	36	30	25	24

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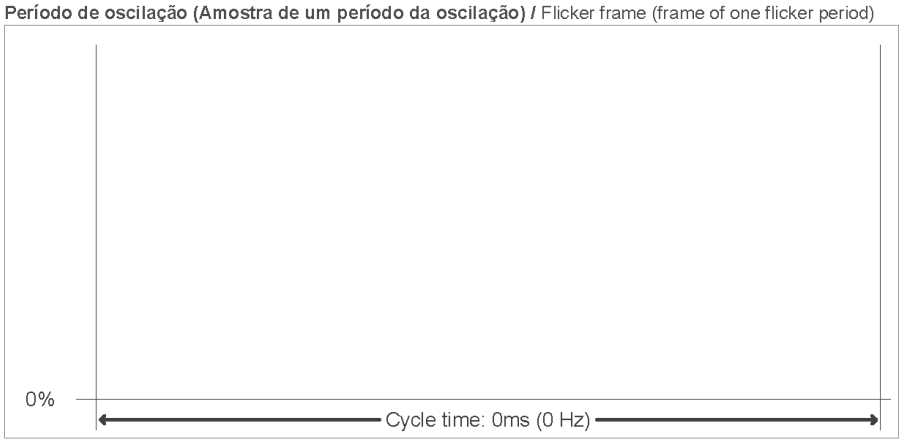
Relatório de Ensaio Fotométrico
Goniofotômetro Tipo C – LabSpion (G1)

11/11/2025 08:40:41 | 0345_2025-L-01-AA_SQ-6534.V3_230V 50Hz | William Ludwig

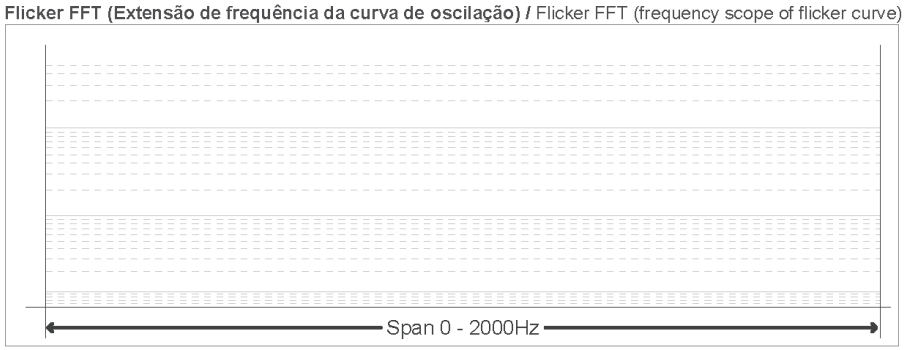
Oscilação / Flicker

Curva de oscilação (sinal completo da oscilação amostrada) / Flicker curve (complete sampled flicker signal)

Período de oscilação (Amostra de um período da oscilação) / Flicker frame (frame of one flicker period)



Flicker FFT (Extensão de frequência da curva de oscilação) / Flicker FFT (frequency scope of flicker curve)



Resultado de oscilação / Flicker results:

Frequência de oscilação / Flicker frequency	**n/a Hz**
Índice de oscilação / Flicker index	**n/a**
Percentual de oscilação / Flicker porcentage	**n/a %**
PstLM	**n/a**
SVM (Oscilação visual) / SVM (Visual flicker)	**n/a**

Condições de oscilação / Flicker conditions:

Taxa de amostragem / Sample rate	**n/a samples/second**

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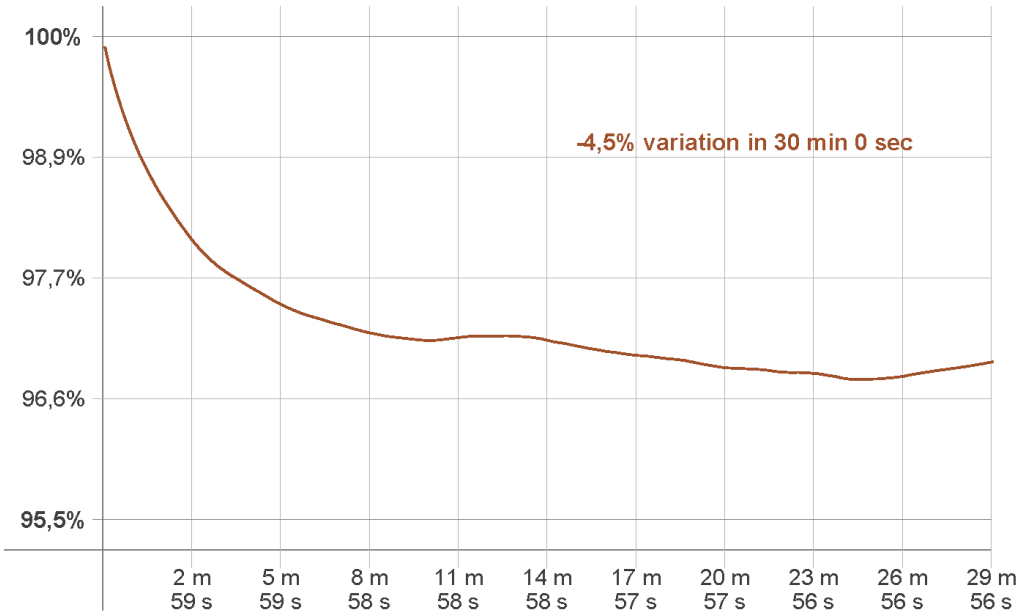
Estabilização / Stabilization

Curva de estabilização / Warmup curve



Resultado da estabilização / Warmup result

Tempo de estabilização / Warmup time:	**Lamp stabilized in 30 min 0 sec**
Variação / Variation:	**-4,5%**

Condições de estabilização / Warmup conditions

Período estável / Stable period:	15 min
Variação máxima / Stable change max:	0,5%
Tempo mínimo / Minimum time:	30 min

Variação da temperatura de cor correlata / Color temperature change

TCC inicial / CCT start	Variação da TCC / CCT change	TCC final / CCT end
2911 K	+20 K	2931 K

Variação do fluxo luminoso / Output change

Fluxo luminoso inicial Output start	Variação no fluxo luminoso Output change	Fluxo luminoso final Output end
850 lm	-34 lm	817 lm

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Intensidade luminosa por ângulo / Luminous intensity by angle

	C0	C15	C30	C45	C60	C75	C90	C105	C120	C135	C150	C165
GAMMA_0	280	280	280	280	280	280	280	280	280	280	280	280
GAMMA_5	279	279	279	279	279	279	279	279	279	279	280	280
GAMMA_10	275	274	274	275	275	275	275	275	276	276	276	276
GAMMA_15	268	268	268	268	268	269	269	269	270	270	270	270
GAMMA_20	259	259	259	260	260	260	260	261	261	262	262	262
GAMMA_25	248	248	248	249	249	249	249	250	250	251	251	251
GAMMA_30	235	235	235	236	236	237	236	237	238	238	238	239
GAMMA_35	220	220	220	221	222	222	222	222	223	223	224	224
GAMMA_40	203	203	204	204	205	206	205	206	206	207	207	208
GAMMA_45	185	185	186	186	187	188	187	188	188	189	189	189
GAMMA_50	165	166	166	167	168	168	167	168	169	169	169	170
GAMMA_55	144	145	146	146	148	148	147	147	148	148	149	149
GAMMA_60	123	123	124	125	126	126	125	126	126	127	127	127
GAMMA_65	101	102	102	103	104	104	103	104	104	105	105	105
GAMMA_70	78,6	79,7	80,4	80,6	82,2	82,3	80,9	81,2	81,7	82,4	82,5	82,7
GAMMA_75	56,5	57,6	58,2	58,3	60,0	60,1	58,5	58,8	59,3	60,1	60,1	60,3
GAMMA_80	35,2	36,3	36,9	36,9	38,6	38,7	37,2	37,3	37,8	38,7	38,5	38,6
GAMMA_85	15,1	16,1	16,6	16,5	18,1	18,1	16,6	16,7	17,1	18,0	17,9	18,0
GAMMA_90	0,540	0,312	0,160	0,083	0,048	0,020	0,000	0,008	0,022	0,043	0,014	0,007
GAMMA_95	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_100	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_105	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_110	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_115	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_120	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_125	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_130	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_135	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_140	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_145	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_150	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_155	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_160	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_165	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_170	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_175	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_180	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

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	C180	C195	C210	C225	C240	C255	C270	C285	C300	C315	C330	C345
GAMMA_0	280	280	280	280	280	280	280	280	280	280	280	280
GAMMA_5	280	279	279	279	279	279	279	279	279	279	279	279
GAMMA_10	276	276	276	276	275	275	275	275	275	275	275	275
GAMMA_15	270	270	270	270	269	269	269	269	269	268	268	268
GAMMA_20	262	262	262	262	261	261	261	261	260	260	259	259
GAMMA_25	251	251	251	251	251	250	251	250	249	249	248	248
GAMMA_30	239	239	239	238	238	238	238	237	237	236	235	235
GAMMA_35	224	224	224	224	223	223	223	223	222	221	{INT330-35}	220
GAMMA_40	208	208	208	207	207	207	207	206	205	204	204	203
GAMMA_45	189	190	189	189	189	188	189	188	187	186	185	185
GAMMA_50	170	170	170	170	169	169	169	169	168	166	166	165
GAMMA_55	149	149	149	149	148	148	149	148	147	145	145	145
GAMMA_60	127	128	127	127	126	126	127	126	125	124	123	123
GAMMA_65	105	105	105	105	104	104	105	104	103	102	101	101
GAMMA_70	82,9	82,6	82,4	82,2	81,3	81,3	82,4	82,1	81,1	79,5	79,6	79,3
GAMMA_75	60,7	60,2	59,9	59,8	58,6	58,7	60,0	59,7	58,8	57,1	57,4	57,1
GAMMA_80	39,0	38,4	38,1	38,0	37,0	37,0	38,2	38,1	37,3	35,9	36,1	35,9
GAMMA_85	18,4	17,7	17,4	17,4	16,2	16,3	{INT270-85}	17,7	17,0	15,6	16,0	15,9
GAMMA_90	0,022	0,007	0,000	0,000	0,000	0,005	0,016	0,029	0,065	0,125	0,102	0,241
GAMMA_95	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_100	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_105	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_110	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_115	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_120	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_125	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_130	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_135	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_140	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_145	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_150	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_155	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_160	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_165	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_170	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_175	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GAMMA_180	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

Fluxo luminoso por faixa de ângulo / Luminous flux per angle range

LUM0-10	26,5
LUM10-20	76,0
LUM20-30	115
LUM30-40	139
LUM40-50	145
LUM50-60	132
LUM60-70	103
LUM70-80	62,4
LUM80-90	18,7

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