RESPOSTA CONTRARRAAZÕES PREGÃO ELETRONICO 76/2021

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3 de dezembro de 2021 15:18

Para: licitacao@coronelvivida.pr.gov.br, fernando@coronelvivida.pr.gov.br

Cc: "BTM Ind. Com. de Metais Ltda. Epp" <pergentino@sunnybtm.com.br>

Fernando

boa tarde

Segue a resposta referente ao recurso imposto das empresas JD REALIZE e LUMINARIA LED, sobre os itens 1 e 2 do Pregão 76/2021;

Segue anexo a resposta do recurso bem como o laudo do inmetro atualizado, e laudos do Datasheet e Led.

Estamos disponíveis para quaisquer esclarecimentos, e envio de amostras para a equipe técnica.

Ricardo Tadeu
GREEN LIGHT LICITAÇÕES

11 93500-3232 - 11 4747-1920

MAPRETRON
Relé Fotoelétrico

RELÉ FOTOELETRÔNICO BIVOLT NF

Relé fotoeletrônico para iluminação publica, tipo de circuito (NF), tensão de alimentação entre 105V e 305V - 50/60Hz , , Grau de Proteção IP65 (invólucro), pinos de latão estanhados, invólucro em policarbonato estabilizado aos raios U.V., capacidade de comutação de 1000W para lâmpadas mistas e incandescentes e 1800VA para lâmpadas de descarga, proteção contra surtos na rede de alimentação. Nível de iluminância para ligar a carga: 3 a 20 lux Nível de iluminância para desligar a carga: máximo 80 lux.

CARACTERÍSTICAS ELÉTRICAS:

- Tensão 105V a 305V
- Potência de Carga 1800VA
- Corrente Nominal 10A
- Frequência 50/60 Hz
- Grau de Proteção IP65
- Proteção contra surtos por varistor
- Tipo de sensor Fototransistor
- Tampa Policarbonato estabilizado contra UV
- Contatos Latão estanhado.

ENSAIOS REALIZADOS EM LABORATÓRIO CONF. NBR: 5123/98

- Ensaio de Operação Liga / Desliga
- Ensaio de Capacidade Fechamento dos Contatos
- Ensaio de Durabilidade de Contatos
- Ensaio de Estanqueidade
- Grau de Proteção IP65
- Impacto Mecânico
- Rigidez Dielétrica Aplicada sobre Terminais e Circuito Eletrônico

Valdemar Maprelian
Diretor Geral

MAPRETRONIC

ENSAIO DE COMPORTAMENTO

ENSAIO DO **ÚNICO** LOTE DE RELÉS FOTOELÉTRICOS MODELO : **DS-08 / NF**

5 UNIDADES , **bivolt** VOLTS, **60** HZ , OF. N.º **------**

REFERENTE AO PEDIDO : **-** DO **-**

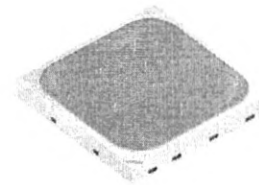
NORMAS UTILIZADAS : **NBR - 5123 /98 - ABNT**

TENSÃO DE ALIMENTAÇÃO DO RELÉ (110%) 242 VOLTS .
NÍVEL DE ILUMINAMENTO NA CÂMARA . 3.000 LUX .
TEMPO DE FUNCIONAMENTO À 70 ° C . 3 HORA .
TEMPO DE REPOUSO À TEMP. AMBIENTE . 2 HORA .

AMOSTRAS	LIGA (LUX)	DESLIGA (LUX)	RELAÇÃO DESL. / LIG.
01	10	21	2.15
02	10	20,5	2.10
03	9.5	20.5	2.15
04	9.0	20.	2.15
05	9.5	20	2.14

DATA	LOCAL	INSPETOR	ENSAIADO POR	RESULTADO
20/04/2020	MAPRETRONIC		ADEMIR	APROVADO

GW P9LR35.PM Gen5



DURIS® S 8

The latest Duris® S 8 generation of LEDs offers an impressive efficacy performance combined with DLC Premium Lifetime achievement. This 5050 leadframe package offers customers a perfect solution for High Efficacy and Compact Luminaire designs for Outdoor Professional lighting; High-Bays, Streetlights, Area Lights, Flood Lights.

Applications

- Highbay Industrial
- Street, Tunnel and Outdoor

Features:

- Package: white SMT package, colored diffused silicone resin
- Typ. Radiation: 120° (Lambertian emitter)
- Color temperature: 3000K - 6500K
- CRI: 70 (min.)
- Lumen maintenance: Testing according to IESNA LM-80 in progress
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- Luminous Flux: typ. 215 lm @ 4000 K
- Luminous efficacy: typ. 215 lm/W @ 4000 K

Ordering Information

Type	Color temperature	Luminous Flux [1] I_F = 180 mA Φ_V	Ordering Code
GW P9LR35.PM-M3M7-XX57-1-G5	3000 K	200 ... 250 lm	Q65112A8662
GW P9LR35.PM-M4MF-XX55-1-G5	4000 K	210 ... 280 lm	Q65112A8660
GW P9LR35.PM-M4MF-XX53-1-G5	5000 K	210 ... 280 lm	Q65112A8364
GW P9LR35.PM-M3MF-XX52-1-G5	5700 K	200 ... 280 lm	Q65113A0278
GW P9LR35.PM-M3M9-XX51-1-G5	6500 K	200 ... 270 lm	Q65112A8661

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min. max.	-40 °C 100 °C
Storage Temperature	T_{stg}	min. max.	-40 °C 100 °C
Junction Temperature	T_j	max.	125 °C
Forward Current T_J = 25 °C	I_F	min. max.	40 mA 1050 mA
Surge Current t ≤ 10 µs; D = 0.005 %; T_J = 25 °C	I_{FS}	max.	1200 mA
Reverse voltage [2)]	V_R		Not designed for reverse operation
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM)	V_{ESD}		2 kV

Characteristics

I_F = 180 mA; T_J = 25 °C

Parameter	Symbol		Values
Viewing angle at 50% I_V	2φ	typ.	120 °
Forward Voltage [3]	V_F	min. typ. max.	5.20 V 5.55 V 5.80 V
Reverse current [2]	I_R		Not designed for reverse operation
Color Rendering Index [4]	CRI	min.	70
Electrical thermal resistance junction/solderpoint with efficiency η_e = 59 %	$R_{thJS\ elec.}$	typ.	1.5 K / W

Electro - Optical Characteristics [5]

T_J = 25 °C; CRI = 70; 4000 K

Forward Current I_F	Forward Voltage typ. V_F	Power typ. P	Luminous Flux typ. Φ_V	Luminous efficacy typ. η
180 mA	5.55 V	1.0 W	215 lm	215 lm/W
360 mA	5.82 V	2.1 W	415 lm	198 lm/W
600 mA	6.11 V	3.7 W	666 lm	180 lm/W
640 mA	6.19 V	4.0 W	702 lm	176 lm/W
800 mA	6.35 V	5.1 W	860 lm	169 lm/W
1050 mA	6.59 V	6.9 W	1085 lm	157 lm/W

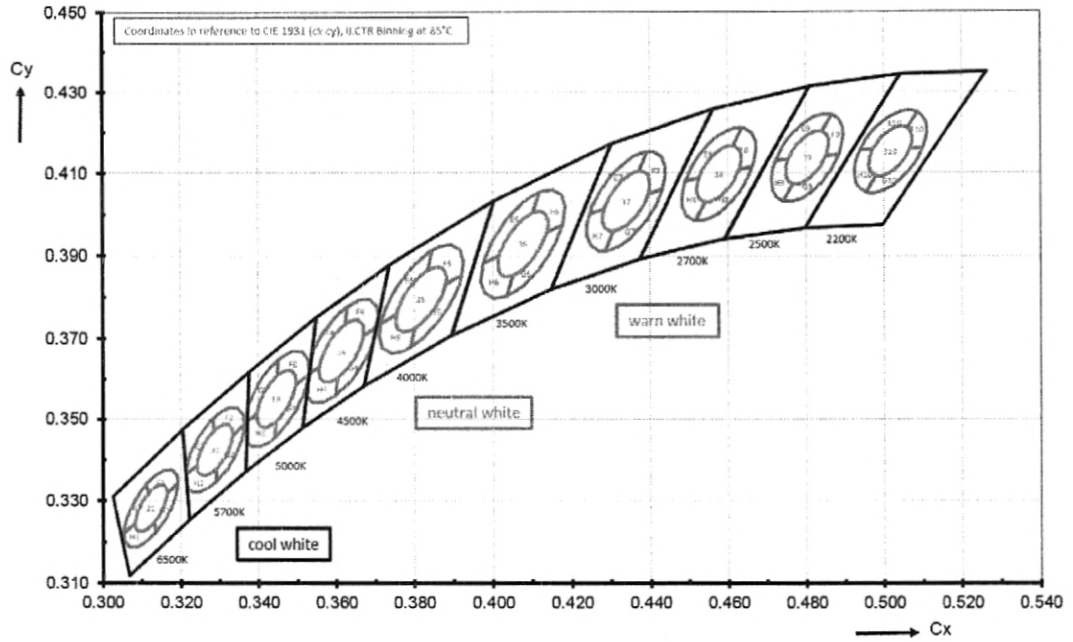
Brightness Groups

Group	Luminous Flux [1] I_F = 180 mA min. Φ_V	Luminous Flux [1] I_F = 180 mA max. Φ_V
M3	200 lm	210 lm
M4	210 lm	220 lm
M5	220 lm	230 lm
M6	230 lm	240 lm
M7	240 lm	250 lm
M8	250 lm	260 lm
M9	260 lm	270 lm
MF	270 lm	280 lm

Forward Voltage Groups

Group	Forward Voltage [3] min. V_F	Forward Voltage [3] max. V_F
Z	5.20 V	5.40 V
A	5.40 V	5.60 V
B	5.60 V	5.80 V

Chromaticity Coordinate Groups [6)]



Chromaticity Coordinate Groups

CCT	Center Cx	Center Cy	3step a	3step b	5step a	5step b	Ø
2200 K	0.5020	0.4156	0.0072	0.0040	0.0120	0.0067	39.9
2500 K	0.4804	0.4138	0.0076	0.0041	0.0126	0.0068	53.1
2700 K	0.4577	0.4098	0.0080	0.0041	0.0133	0.0068	54.1
3000 K	0.4339	0.4032	0.0086	0.0042	0.0142	0.0069	53.7
4000 K	0.3818	0.3796	0.0094	0.0041	0.0157	0.0068	53.4
5000 K	0.3446	0.3551	0.0081	0.0035	0.0135	0.0059	59.8
5700 K	0.3287	0.3425	0.0072	0.0032	0.0119	0.0052	58.8
6500 K	0.3123	0.3282	0.0066	0.0027	0.0110	0.0045	58.1

		1		2		3		4		5	
CCT	Group	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
2200 K	E	0.5088	0.4249	0.4941	0.4156	0.4973	0.4157	0.5061	0.4210		
	F	0.5088	0.4249	0.5101	0.4161	0.5068	0.4160	0.5061	0.4210		
	G	0.5101	0.4161	0.4955	0.4054	0.4981	0.4093	0.5068	0.4158		
	H	0.4981	0.4093	0.4973	0.4157	0.4941	0.4156	0.4955	0.4054		
2700 K	E	0.4637	0.4212	0.4491	0.4081	0.4526	0.4088	0.4613	0.4166		
	F	0.4637	0.4212	0.4663	0.4115	0.4628	0.4108	0.4613	0.4166		
	G	0.4663	0.4115	0.4517	0.3984	0.4541	0.4030	0.4628	0.4108		
	H	0.4541	0.4030	0.4526	0.4088	0.4491	0.4081	0.4517	0.3984		
3000 K	E	0.4393	0.4153	0.4246	0.4002	0.4283	0.4014	0.4371	0.4105		
	F	0.4393	0.4153	0.4432	0.4062	0.4395	0.4050	0.4371	0.4105		
	G	0.4432	0.4062	0.4285	0.3911	0.4307	0.3960	0.4395	0.4050		
	H	0.4307	0.3960	0.4283	0.4014	0.4246	0.4002	0.4285	0.3911		
4000 K	E	0.3845	0.3913	0.3714	0.3737	0.3756	0.3760	0.3834	0.3866		
	F	0.3845	0.3913	0.3922	0.3855	0.3880	0.3832	0.3834	0.3866		
	G	0.3922	0.3855	0.3791	0.3679	0.3802	0.3726	0.3880	0.3832		
	H	0.3802	0.3726	0.3756	0.3760	0.3714	0.3737	0.3791	0.3679		
5000 K	E	0.3451	0.3648	0.3372	0.3528	0.3371	0.3496	0.3396	0.3514	0.3449	0.3609
	F	0.3451	0.3648	0.3530	0.3612	0.3496	0.3588	0.3449	0.3609		
	G	0.3530	0.3612	0.3441	0.3454	0.3443	0.3493	0.3496	0.3588		
	H	0.3443	0.3493	0.3396	0.3514	0.3371	0.3496	0.3369	0.3445	0.3441	0.3454
5700 K	E	0.3283	0.3502	0.3212	0.3373	0.3213	0.3365	0.3242	0.3388	0.3284	0.3471
	F	0.3283	0.3502	0.3363	0.3486	0.3332	0.3462	0.3284	0.3471		
	G	0.3363	0.3486	0.3291	0.3348	0.3290	0.3379	0.3332	0.3462		
	H	0.3291	0.3348	0.3215	0.3337	0.3213	0.3365	0.3242	0.3388	0.3290	0.3379
6500 K	E	0.3110	0.3340	0.3054	0.3220	0.3082	0.3245	0.3115	0.3317		
	F	0.3110	0.3340	0.3192	0.3344	0.3165	0.3319	0.3115	0.3317		
	G	0.3192	0.3344	0.3136	0.3224	0.3131	0.3247	0.3165	0.3319		
	H	0.3136	0.3224	0.3054	0.3220	0.3082	0.3245	0.3131	0.3247		

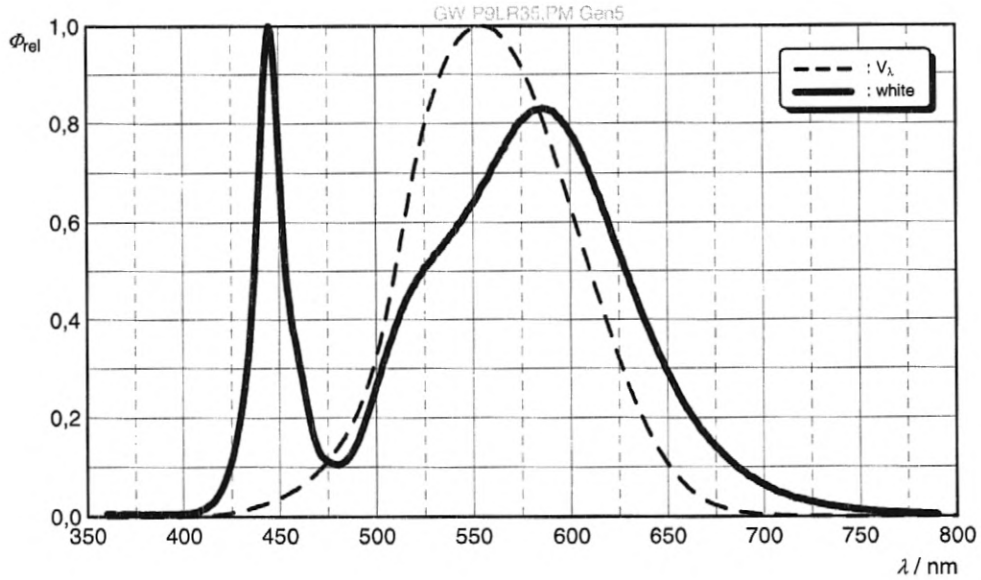
Group Name on Label

Example: M3-A

Brightness	Forward Voltage
M3	A

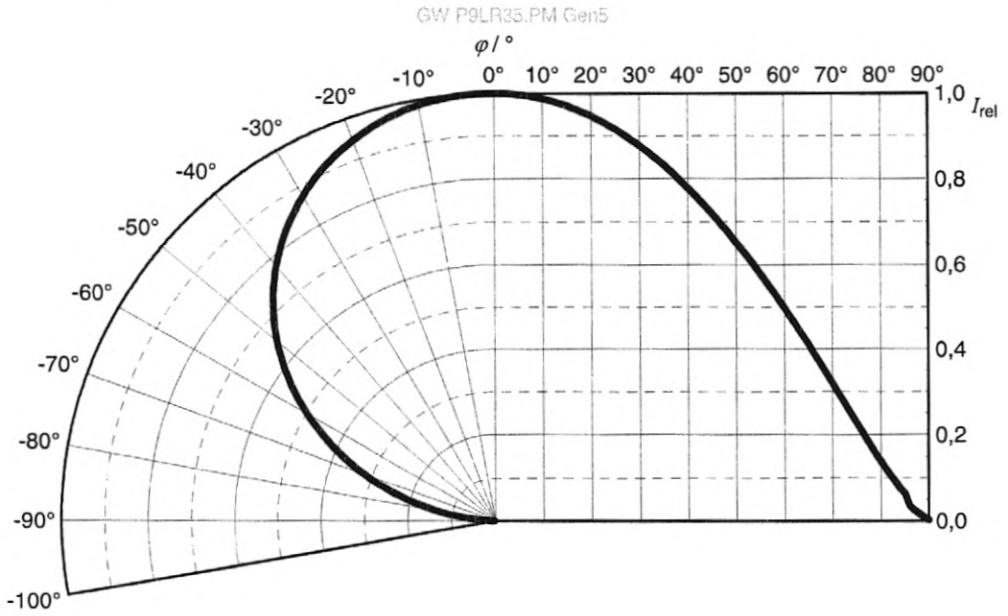
Relative Spectral Emission [5)]

$\Phi_{rel} = f(\lambda)$; $I_F = 180$ mA; $T_J = 25$ °C



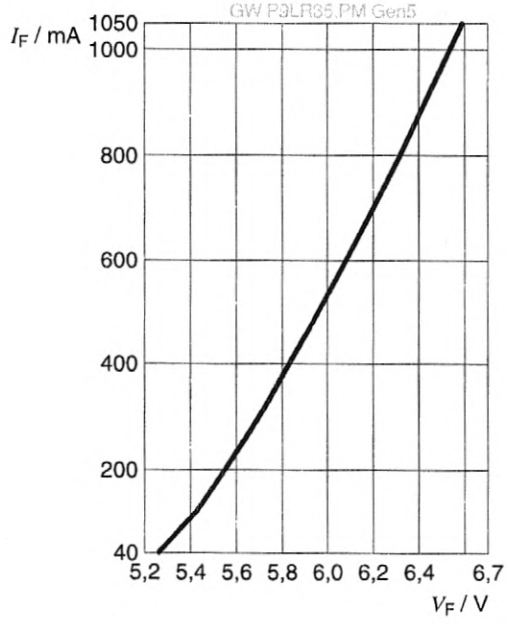
Radiation Characteristics [5)]

$I_{rel} = f(\phi)$; $T_J = 25$ °C



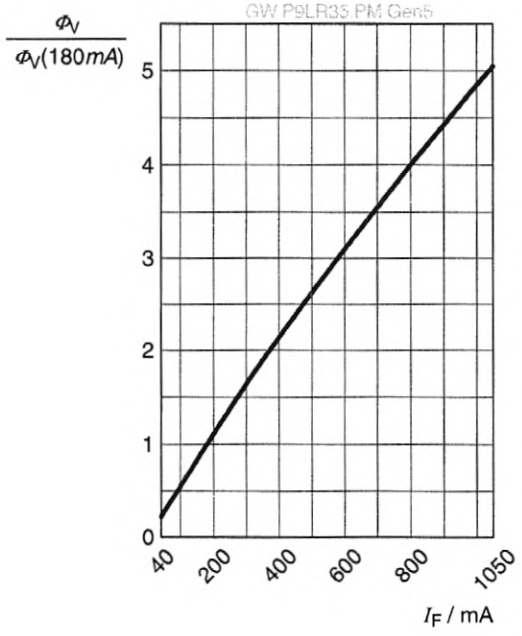
Forward current [5]

$I_F = f(V_F)$; $T_J = 25$ °C



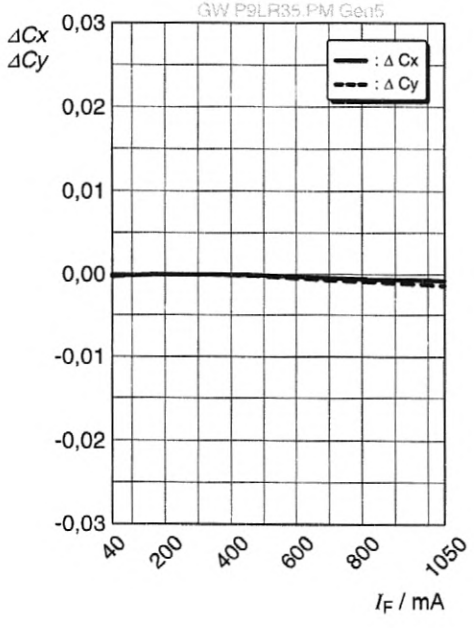
Relative Luminous Flux [5], [7]

$\Phi_v/\Phi_v(180\ mA) = f(I_F)$; $T_J = 25$ °C



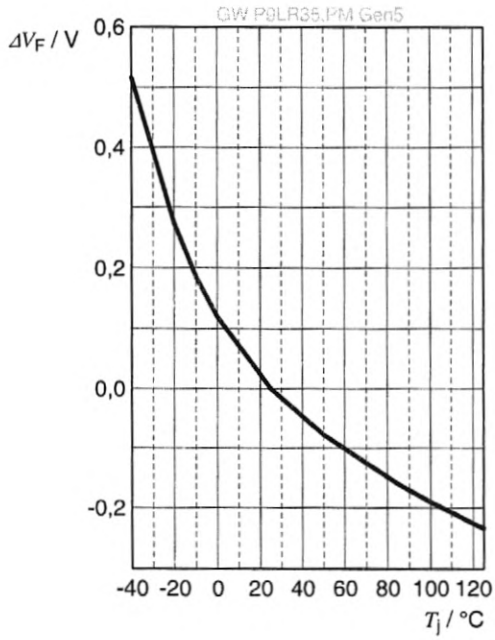
Chromaticity Coordinate Shift [5]

Cx, Cy = $f(I_F)$; $T_J = 25$ °C



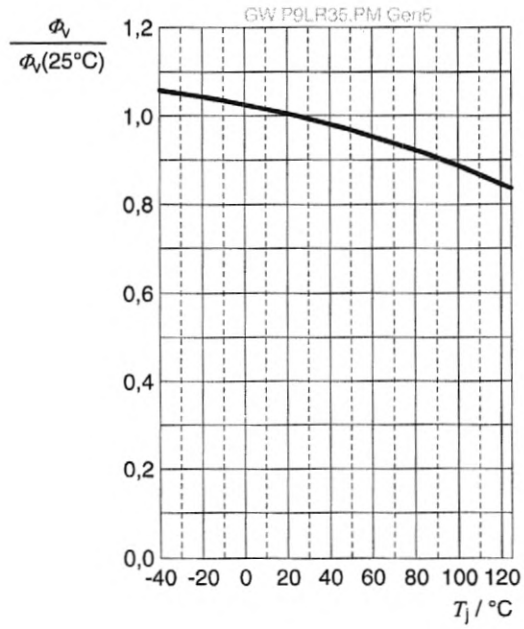
Forward Voltage [5)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 180\ mA$



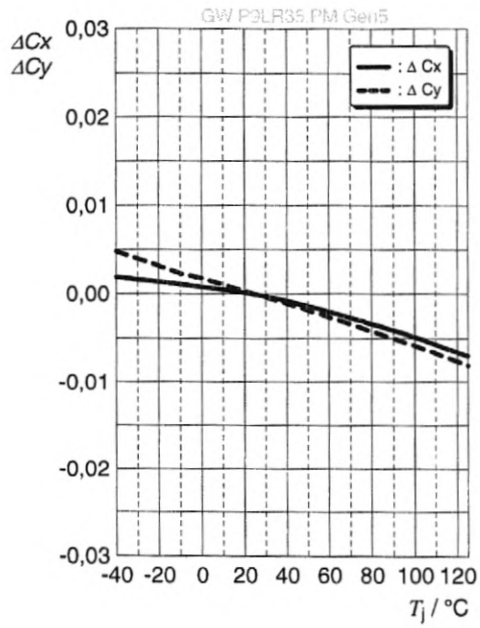
Relative Luminous Flux [5)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 180\ mA$



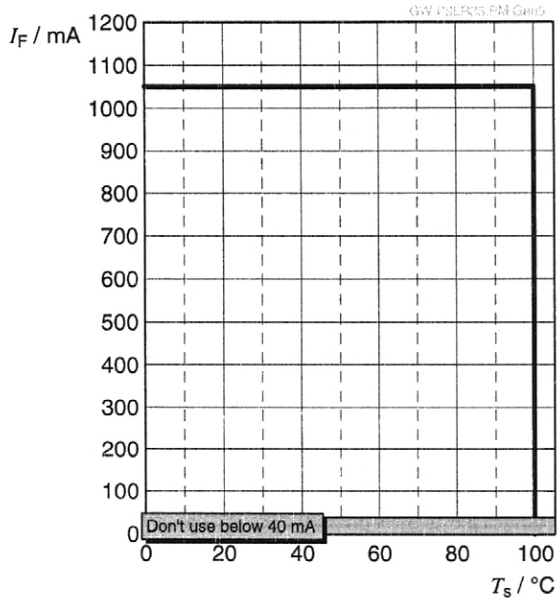
Chromaticity Coordinate Shift [5)]

Cx, Cy = $f(T_j)$; I_F = 180 mA

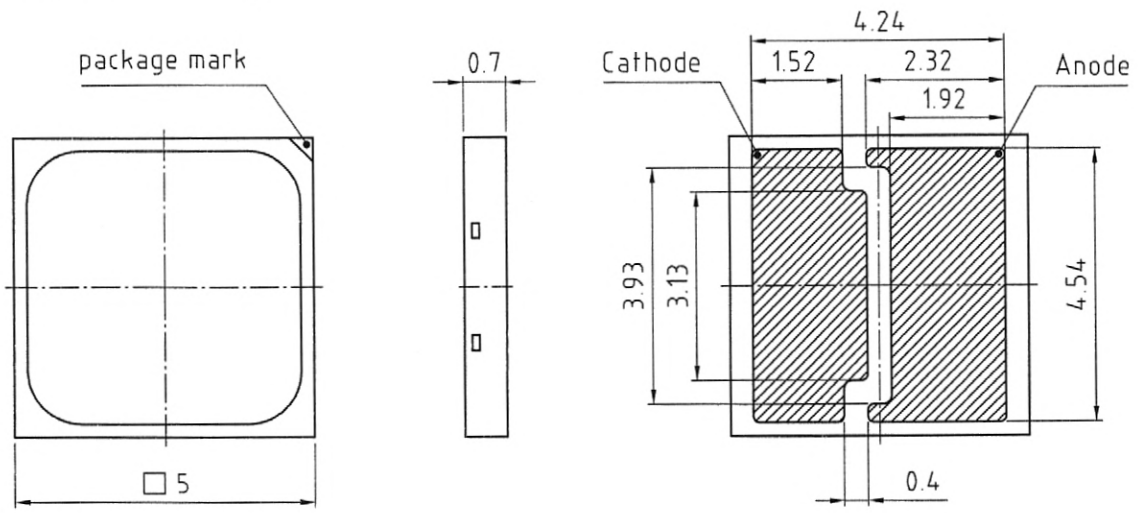


Max. Permissible Forward Current

$I_F = f(T)$



Dimensional Drawing [8)]



general tolerance ± 0.1
lead finish Ag

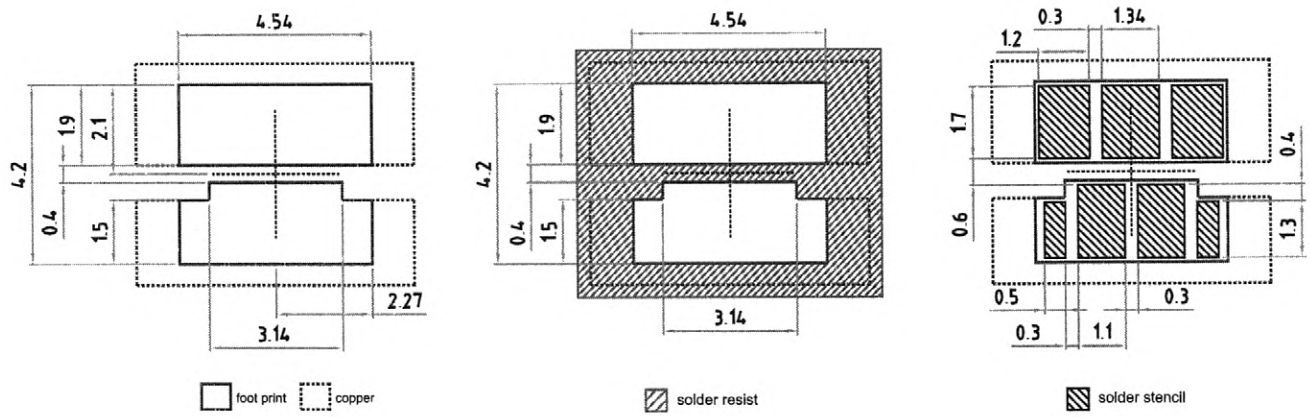
C63062-A4274-A1..-02

Further Information:

Approximate Weight: 63.0 mg

Package marking: Cathode

Recommended Solder Pad [8)]

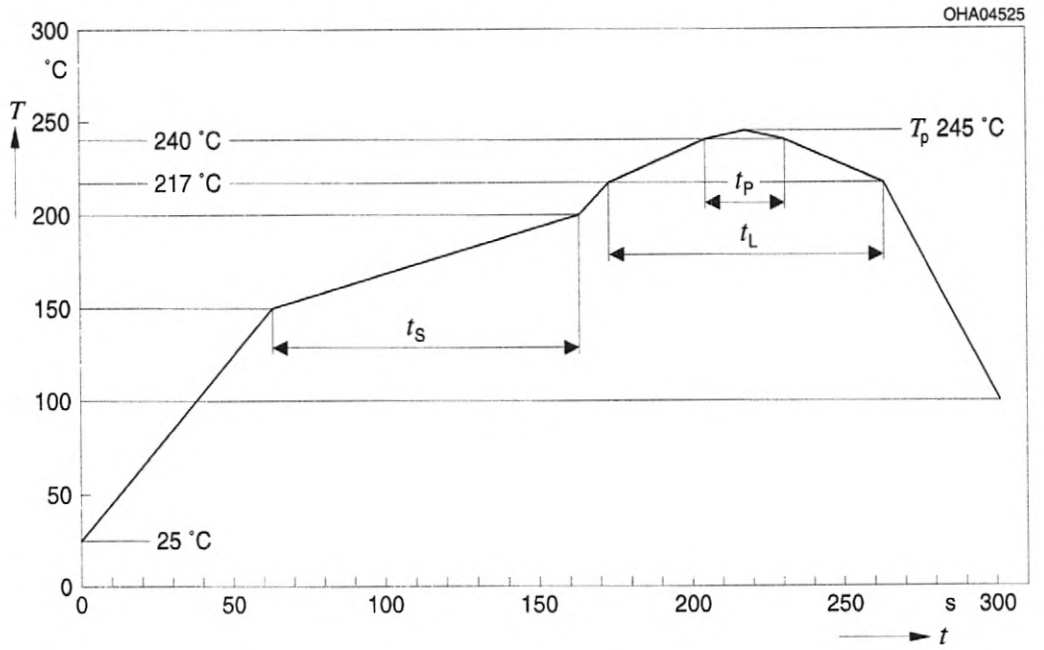


E067.0346.08-01

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for ultra sonic cleaning.

Reflow Soldering Profile

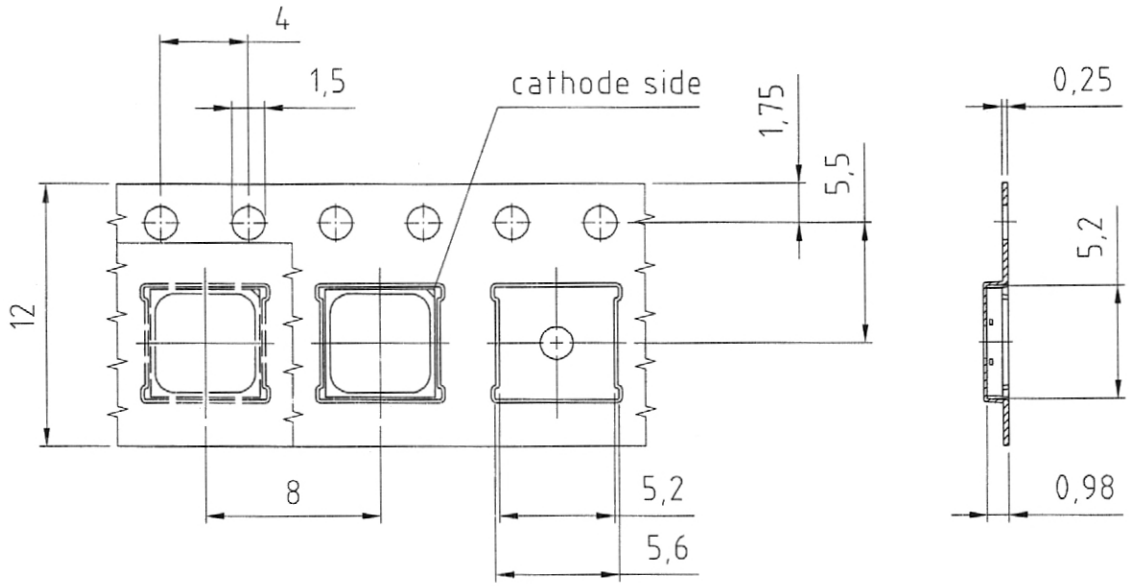
Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature T_P - 5 K	t_P	10	20	30	s
Ramp-down rate* T_P to 100 °C			3	6	K/s
Time 25 °C to T_P				480	s

All temperatures refer to the center of the package, measured on the top of the component
* slope calculation DT/Dt: Dt max. 5 s; fulfillment for the whole T-range

Taping [8)]



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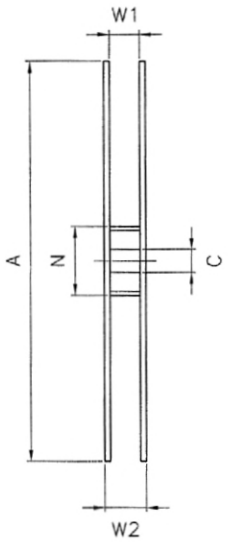
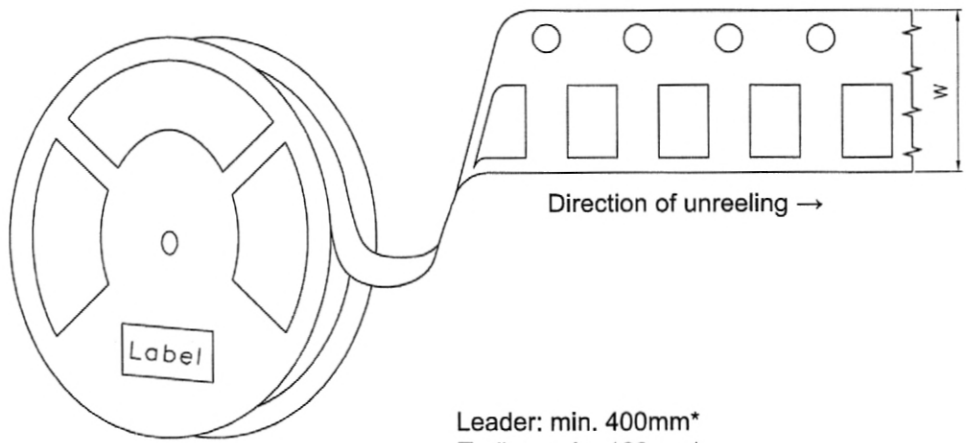
Tape and Reel [9)]



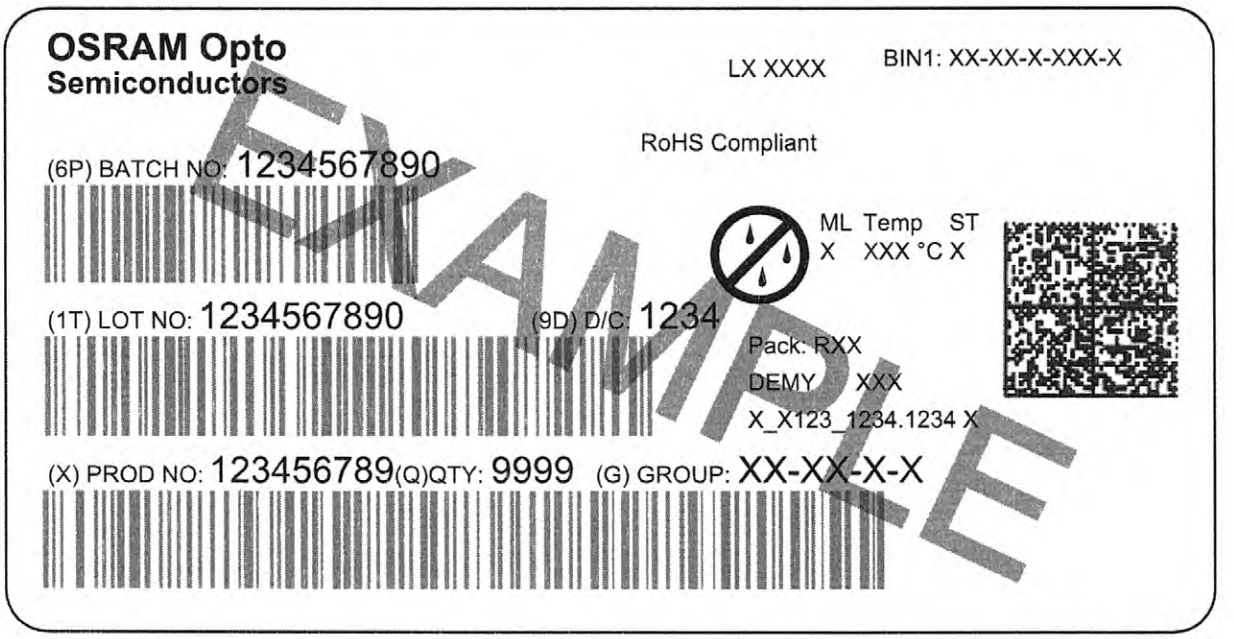


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

Reel Dimensions

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	1500

Barcode-Product-Label (BPL)



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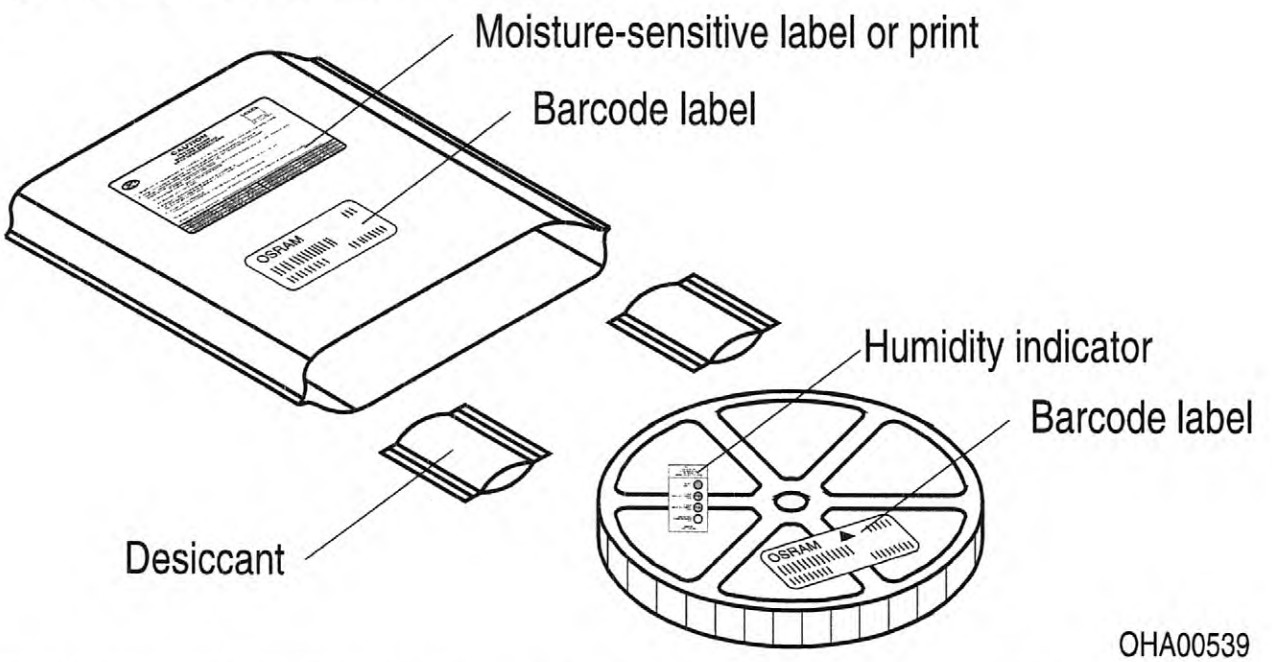
Dry Packing Process and Materials



OHA00539

Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the device specified in this data sheet falls into the class **moderate risk (exposure time 0.25 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

This device is designed for specific/recommended applications only. Please consult OSRAM Opto Semiconductors Sales Staff in advance for detailed information on other non-recommended applications (e.g. automotive).

Change management for this component is aligned with the requirements of the lighting market.

For further application related information please visit www.osram-os.com/appnotes

Disclaimer

Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.
For information on the types in question please contact our Sales Organization.
If printed or downloaded, please find the latest version on the OSRAM OS website.

Packing
Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Product and functional safety devices/applications or medical devices/applications
OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.
OSRAM OS products are not qualified at module and system level for such application.

In case buyer – or customer supplied by buyer – considers using OSRAM OS components in product safety devices/applications or medical devices/applications, buyer and/or customer has to inform the local sales partner of OSRAM OS immediately and OSRAM OS and buyer and /or customer will analyze and coordinate the customer-specific request between OSRAM OS and buyer and/or customer.

Glossary

1) **Brightness:** Brightness values are measured during a current pulse of typically 10 ms, with a tolerance of +/- 7%.

2) **Reverse Operation:** Not designed for reverse operation. Continuous reverse operation can cause migration and damage of the device.

3) **Forward Voltage:** The Forward voltage is measured during a current pulse duration of typically 1 ms with a tolerance of ± 0.05V .

4) **Color reproduction index:** Color reproduction index values (CRI-RA) are measured during a current pulse of typically 10 ms and with a tolerance of ±2.

5) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

6) **Chromaticity coordinate groups:** Chromaticity coordinate groups are measured during a current pulse duration of typically 10ms with a tolerance of ±0.005.

7) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.

8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ±0.1 and dimensions are specified in mm.

9) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

Revision History

Version	Date	Change
1.2	2020-01-09	Ordering Information Dimensions of Transportation Box Schematic Transportation Box

Published by OSRAM Opto Semiconductors GmbH
Leibnizstraße 4, D-93055 Regensburg

EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，不含有毒有害物质或元素。

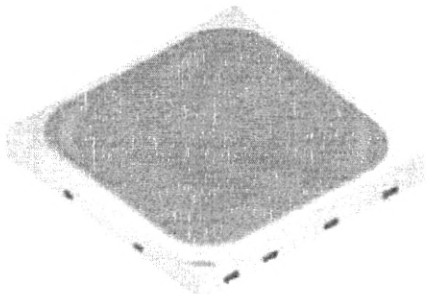
Light is OSRAM

OSRAM
Opto Semiconductors

DURIS® S 8
White (CCT 4000 K – 6500 K)

IES LM-80-15 Test Report

Test Documentation No.: 180259W8 (Document No.: OSRM020-02-220) – 20th Jan 2021



CSA GROUP™

NVLAP®
TESTING
NVLAP LAB CODE 500055-0

LM80 17000 Hour Interval Test Report

IES LM-80-15 Approved Method for Measuring Lumen Maintenance of LED Light Sources

CSA Group Report: OSRM020-02-220

December 18, 2020

Manufacturer:	**OSRAM**
Models tested:	**GW P9LT31.PM**
Test conditions:	24 devices @ 55.0 C, 0.090 A 24 devices @ 85.0 C, 0.090 A 24 devices @ 105.0 C, 0.090 A

Prepared for:
OSRAM Opto Semiconductors (Malaysia) Sdn.
Bayan Lepas Free Industrial Zone Phase 1,
11900 Bayan Lepas, Penang, Malaysia

Attn:

Testing performed by:
CSA Group Seattle
14833 NE 87th St
Redmond, WA 98052
425-605-8500
www.csagroupseattle.org

Test report prepared by:

Gabriel Trippel

Project Engineer,
Test and Measurement Services

Test report approved by:

KC Fletcher

Project Manager,
Test and Measurement Services

1.0 Statement of test conditons, summary of results, and reporting requirements:

Part number: GW P9LT31.PM					
Life test conditions				Summary of results	
Test condition	**Drive current (A)**	**Case temperature (°C)**	**Elapsed life test time (hrs)**	**Average lumen maintenance (%)**	**Average chromaticity shift (Δu'v')**
TC1	0.090	55	17000	100.7	0.0003
TC2	0.090	85	17000	98.6	0.0013
TC3	0.090	105	17000	95.5	0.0029

LM80-15 Reporting requirements	
1. Number of samples tested:	24 per test condition
2. Description of LED light sources	LED Package[1]
3. Description of auxiliary equipment	see section 6.1 below
4. Operating cycle	LED packages are driven at constant current for life test and are pulsed for photometric test.
5. Ambient conditions, airflow, relative humidity	LED's are operated on controlled thermal plates in an environment that complies with the requirements given in Section 4.4 of LM80-15. Case temperature (Ts): controlled to within -2°C, Surrounding air temp: controlled to within -5°C of Ts, Humidity: < 65 RH, No forced air flow
6. Case temperature (test point temperature)	See summary table above for test conditions. The temperature measurment point is shown in Sec. 6.3.
7. Drive current during life test	see summary table above
8. Initial luminous flux and forward voltage	see data tables for individual test conditions
9. Lumen maintenance data for each individual LED light source	see data tables for individual test conditions
10. Observation of LED light source failures	see data tables for individual test conditions
11. LED light source monitoring intervals	see data tables for individual test conditions
12. Photometric measurement uncertainty	k=2 expanded measurement uncertainty for relative luminous flux measurements is ±2.0%
13. Chromaticity shift reported over the measurement time	see data tables for individual test conditons
14. Test start date	August 11, 2017
15. ANSI target and calculated CCT values	see data tables

Notes:

1. per ANSI/IESNA RP-16-05 Addendum b, *Nomenclature and Definitions for Illuminating Engineering*

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TABLE 1.1 - Initial ANSI Target & Calculated CCT Results GW P9LT31.PM

Load board ID	Device number	Zero hour measurements	
		ANSI Target* CCT (K)	Initial Calculated CCT (K)
24000001082BA031C	D1	3985±275	4005
	D2	3985±275	3948
	D4	3985±275	3928
	D5	3985±275	3986
	D7	3985±275	3973
3E000001083EA031C	D1	3985±275	3979
	D3	3985±275	3946
	D4	3985±275	3997
	D5	3985±275	3990
	D6	3985±275	3982
	D8	3985±275	4001
5600001091 6C031C	D1	3985±275	3969
	D3	3985±275	3976
	D4	3985±275	3965
	D5	3985±275	3945
	D8	3985±275	3974
2800001097 55031C	D1	3985±275	3985
	D2	3985±275	3974
	D3	3985±275	3962
	D4	3985±275	3962
	D5	3985±275	3999
	D6	3985±275	3976
	D8	3985±275	3995
6600001097 56031C	D4	3985±275	3978
	D5	3985±275	3953
	D7	3985±275	3996
	D8	3985±275	3981
BF0000108A46031C	D1	3985±275	3959
	D4	3985±275	3981
	D5	3985±275	3969
	D6	3985±275	3939
	D7	3985±275	3956
3600001094C9031C	D2	3985±275	3971
	D3	3985±275	3992
	D4	3985±275	3971
	D8	3985±275	3968
8900001091C1031C	D2	3985±275	3993
	D3	3985±275	3982
	D5	3985±275	3988
	D7	3985±275	3966
	D8	3985±275	3991
BE0000107F30031C	D1	3985±275	4005
	D2	3985±275	3985
	D3	3985±275	3987
	D4	3985±275	3996
	D5	3985±275	3939
	D6	3985±275	3961
	D7	3985±275	3953
	D8	3985±275	3980

* target CCT as defined in ANSI C78.377-2008

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Load board ID	Device number	Zero hour measurements	
		ANSI Target* CCT (K)	Initial Calculated CCT (K)
760000108CEF031C	D1	3985±275	3995
	D2	3985±275	3998
	D3	3985±275	3977
	D4	3985±275	4002
	D5	3985±275	3970
	D6	3985±275	3967
	D7	3985±275	3969
	D8	3985±275	4013

Load board ID	Device number	Zero hour measurements	
		ANSI Target* CCT (K)	Initial Calculated CCT (K)
DD0000107D16031C	D1	3985±275	3954
	D2	3985±275	3972
	D3	3985±275	3972
	D4	3985±275	3952
	D5	3985±275	3952
	D6	3985±275	3959
	D7	3985±275	3958
	D8	3985±275	3971

Load board ID	Device number	Zero hour measurements	
		ANSI Target* CCT (K)	Initial Calculated CCT (K)
CB000010092F2031C	D1	3985±275	3979
	D2	3985±275	3976
	D3	3985±275	3989
	D4	3985±275	3978
	D5	3985±275	3978
	D6	3985±275	3994
	D7	3985±275	3994

* target CCT as defined in ANSI C78.377-2008

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Test Condition 1 55 °C 0.090 A

TABLE 2.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)										
		Flux (lm)	Vf (V)	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2400001082BA031C	D1	423.18	29.05	99.6	100.2	100.2	100.3	100.4	100.4	100.3	100.4	100.4	100.3	100.4
	D2	421.20	29.28	100.1	100.5	100.6	100.6	100.7	100.7	100.6	100.8	100.7	100.7	100.7
	D4	420.44	29.33	99.7	100.2	100.4	100.5	100.6	100.7	100.6	100.8	100.7	100.7	100.7
	D5	418.75	29.28	99.9	100.2	100.4	100.5	100.5	100.5	100.4	100.6	100.6	100.5	100.5
	D7	423.26	29.12	99.7	100.1	100.2	100.3	100.3	100.3	100.2	100.3	100.2	100.2	100.2
3E000001083EA031C	D1	424.89	29.18	100.1	100.5	100.6	100.6	100.7	100.6	100.5	100.7	100.6	100.6	100.5
	D3	422.59	29.09	99.5	100.0	100.1	100.2	100.4	100.2	100.1	100.3	100.1	100.1	100.1
	D4	423.40	29.21	99.8	100.3	100.4	100.5	100.5	100.4	100.3	100.5	100.4	100.4	100.4
	D5	425.21	29.30	99.9	100.3	100.4	100.5	100.5	100.4	100.4	100.5	100.5	100.4	100.4
	D6	427.28	29.13	99.5	100.0	100.1	100.2	100.2	100.1	100.1	100.2	100.2	100.2	100.2
	D8	420.47	29.28	100.0	100.5	100.6	100.7	100.8	100.7	100.7	100.8	100.8	100.8	100.8
5600001091 6C031C	D1	415.93	29.24	99.5	99.9	100.0	100.2	100.2	100.1	100.1	100.2	100.2	100.2	100.1
	D3	418.65	29.26	99.7	100.1	100.2	100.4	100.4	100.3	100.4	100.5	100.5	100.4	100.4
	D4	413.27	29.25	100.3	100.8	100.9	101.0	101.1	101.0	101.0	101.1	101.1	101.1	101.1
	D5	418.78	29.13	100.0	100.4	100.5	100.6	100.7	100.6	100.6	100.7	100.7	100.7	100.7
	D8	419.29	29.21	99.9	100.4	100.5	100.6	100.7	100.6	100.7	100.8	100.8	100.8	100.8

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TABLE 2.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Flux (lm)	Vf (V)	Lumen Maintenance (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
760000108CEF031C	D1	414.44	29.27	99.6	100.1	100.3	100.4	100.4	100.4	100.3	100.5	100.4	100.4	100.3
	D2	411.89	29.31	99.5	100.0	100.1	100.3	100.4	100.3	100.3	100.5	100.4	100.4	100.3
	D3	412.07	29.30	100.0	100.6	100.6	100.8	100.8	100.9	100.9	101.0	101.0	101.0	100.9
	D4	413.64	29.19	99.4	100.0	100.2	100.3	100.4	100.4	100.3	100.5	100.4	100.4	100.4
	D5	410.14	29.10	100.0	100.5	100.5	100.7	100.7	100.7	100.6	100.7	100.7	100.7	100.6
	D6	404.66	29.32	99.0	99.5	99.7	99.9	99.9	99.9	99.9	100.0	99.9	100.0	99.9
	D7	411.58	29.12	99.5	100.0	100.0	100.1	100.2	100.1	100.1	100.2	100.1	100.1	100.1
	D8	411.51	29.23	99.1	99.7	99.8	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.1
			n	24	24	24	24	24	24	24	24	24	24	24
			mean	99.7	100.2	100.3	100.4	100.5	100.4	100.4	100.5	100.5	100.5	100.4
			median	99.7	100.2	100.3	100.4	100.5	100.4	100.4	100.5	100.4	100.4	100.4
			std. dev.	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
			min	99.0	99.5	99.7	99.9	99.9	99.9	99.9	100.0	99.9	100.0	99.9
			max	100.3	100.8	100.9	101.0	101.1	101.0	101.0	101.1	101.1	101.1	101.1

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Test Condition 1 55 °C 0.090 A

TABLE 2.0 - LUMEN MAINTENANCE RESULTS **GW P9LT31.PM**

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)										
		Flux (lm)	Vf (V)	12000	13000	14000	15000	16000	17000					
2400001082BA031C	D1	423.18	29.05	100.3	100.4	100.5	100.4	100.5	100.5					
	D2	421.20	29.28	100.7	100.1	101.0	100.8	100.9	100.9					
	D4	420.44	29.33	100.8	100.8	101.0	100.9	101.0	101.0					
	D5	418.75	29.28	100.5	100.6	100.7	100.7	100.8	100.8					
	D7	423.26	29.12	100.2	100.3	100.4	100.3	100.4	100.4					
3E000010 83EA031C	D1	424.89	29.18	100.5	100.5	100.7	100.7	100.6	100.6					
	D3	422.59	29.09	100.1	99.9	100.3	100.3	100.3	100.2					
	D4	423.40	29.21	100.4	100.3	100.6	100.6	100.6	100.6					
	D5	425.21	29.30	100.4	100.4	100.7	100.6	100.7	100.6					
	D6	427.28	29.13	100.2	100.2	100.3	100.3	100.4	100.4					
	D8	420.47	29.28	100.8	100.8	101.0	101.0	101.1	101.1					
560000109 16C031C	D1	415.93	29.24	100.1	100.2	100.3	100.3	100.3	100.3					
	D3	418.65	29.26	100.4	100.5	100.7	100.6	100.7	100.7					
	D4	413.27	29.25	101.1	101.2	101.3	101.3	101.4	101.4					
	D5	418.78	29.13	100.7	100.7	100.9	100.9	100.9	100.9					
	D8	419.29	29.21	100.9	100.9	101.1	101.1	101.1	101.2					

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TABLE 2.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM
Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Flux (lm)	Vf (V)	Lumen Maintenance (%) 12000	13000	14000	15000	16000	17000					
760000108CEF031C	D1	414.44	29.27	100.4	100.4	100.6	100.5	100.5	100.5					
	D2	411.89	29.31	100.4	100.5	100.6	100.6	100.7	100.7					
	D3	412.07	29.30	101.0	101.0	101.2	101.1	101.1	101.2					
	D4	413.64	29.19	100.4	100.5	100.7	100.6	100.6	100.7					
	D5	410.14	29.10	100.6	100.7	100.8	100.7	100.8	100.8					
	D6	404.66	29.32	100.0	100.0	100.1	100.0	100.0	100.0					
	D7	411.58	29.12	100.1	100.2	100.3	100.3	100.3	100.3					
	D8	411.51	29.23	100.1	100.2	100.3	100.3	100.3	100.4					
			n	24	24	24	24	24	24					
			mean	100.5	100.5	100.7	100.6	100.7	100.7					
			median	100.4	100.4	100.7	100.6	100.6	100.7					
			std. dev.	0.3	0.3	0.3	0.3	0.3	0.4					
			min	100.0	99.9	100.1	100.0	100.0	100.0					
			max	101.1	101.2	101.3	101.3	101.4	101.4					

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Test Condition 1 55 °C 0.090 A

TABLE 2.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2400001082BA031C	D1	0.2244	0.5029		0.0006	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002
	D2	0.2250	0.5049		0.0004	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	D4	0.2255	0.5051		0.0005	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002
	D5	0.2246	0.5034		0.0006	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002
	D7	0.2247	0.5040		0.0006	0.0003	0.0003	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002
3E00001083EA031C	D1	0.2244	0.5044		0.0005	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	D3	0.2252	0.5045		0.0005	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002
	D4	0.2244	0.5033		0.0004	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
	D5	0.2247	0.5031		0.0005	0.0003	0.0002	0.0002	0.0001	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002
	D6	0.2252	0.5025		0.0005	0.0002	0.0001	0.0001	0.0000	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002
	D8	0.2245	0.5028		0.0004	0.0002	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
5600001091 6C031C	D1	0.2252	0.5032		0.0006	0.0003	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
	D3	0.2251	0.5031		0.0006	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	D4	0.2252	0.5035		0.0005	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002
	D5	0.2249	0.5054		0.0006	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001
	D8	0.2246	0.5042		0.0005	0.0001	0.0001	0.0000	0.0000	0.0000	0.0001	0.0002	0.0001	0.0001	0.0001

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TABLE 2.1 - CHROMATICITY SHIFT RESULTS — **GW P9LT31.PM**

Test Condition 1 55 °C 0,090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
760000108CEF031C	D1	0.2254	0.5012		0.0005	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001
	D2	0.2255	0.5009		0.0004	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0002	0.0002	0.0002	0.0002
	D3	0.2254	0.5023		0.0005	0.0003	0.0003	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001
	D4	0.2250	0.5018		0.0004	0.0002	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001	0.0002	0.0001	0.0001
	D5	0.2256	0.5023		0.0005	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001
	D6	0.2263	0.5010		0.0004	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0002	0.0002	0.0002	0.0002
	D7	0.2258	0.5019		0.0004	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
	D8	0.2252	0.5007		0.0004	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002
	n				24	24	24	24	24	24	24	24	24	24	24
	mean				0.0005	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
	median				0.0005	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
	std. dev.				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
	min				0.0004	0.0001	0.0001	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
	max				0.0006	0.0003	0.0003	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002

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Test Condition 1 | 55 °C | 0.090 A

TABLE 2.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'	Chromaticity shift (Δu'v') 12000	13000	14000	15000	16000	17000
2400001082BA031C	D1	0.2244	0.5029	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
	D2	0.2250	0.5049	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
	D4	0.2255	0.5051	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003
	D5	0.2246	0.5034	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
	D7	0.2247	0.5040	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003
3E000010 83EA031C	D1	0.2244	0.5044	0.0002	0.0002	0.0003	0.0003	0.0002	0.0003
	D3	0.2252	0.5045	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002
	D4	0.2244	0.5033	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
	D5	0.2247	0.5031	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003
	D6	0.2252	0.5025	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
	D8	0.2245	0.5028	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
560000109 16C031C	D1	0.2252	0.5032	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003
	D3	0.2251	0.5031	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003
	D4	0.2252	0.5035	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	D5	0.2249	0.5054	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
	D8	0.2246	0.5042	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002

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TABLE 2.1 - CHROMATICITY SHIFT RESULTS **GW P9LT31.PM**

Test Condition 1 **55 °C** **0.090 A**

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 12000	13000	14000	15000	16000	17000
760000108CEF031C	D1	0.2254	0.5012		0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
	D2	0.2255	0.5009		0.0002	0.0002	0.0002	0.0003	0.0003	0.0003
	D3	0.2254	0.5023		0.0002	0.0002	0.0003	0.0002	0.0002	0.0003
	D4	0.2250	0.5018		0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
	D5	0.2256	0.5023		0.0002	0.0002	0.0002	0.0003	0.0002	0.0002
	D6	0.2263	0.5010		0.0002	0.0002	0.0002	0.0003	0.0002	0.0003
	D7	0.2258	0.5019		0.0002	0.0002	0.0002	0.0003	0.0002	0.0003
	D8	0.2252	0.5007		0.0001	0.0002	0.0002	0.0003	0.0002	0.0003
	n				24	24	24	24	24	24
	mean				0.0002	0.0002	0.0002	0.0002	0.0002	0.0003
	median				0.0002	0.0002	0.0002	0.0003	0.0002	0.0003
	std. dev.				0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	min				0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
	max				0.0002	0.0003	0.0003	0.0003	0.0003	0.0003

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Test Condition 1 55 °C 0.090 A

TABLE 2.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)		Forward Voltage Maintainence (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2400001082BA031C	D1		29.05	99.97	100.05	100.08	100.09	100.11	100.12	100.14	100.16	100.17	100.18	100.20
	D2		29.28	99.98	100.06	100.08	100.10	100.12	100.13	100.14	100.16	100.18	100.19	100.20
	D4		29.33	100.07	100.16	100.20	100.22	100.24	100.26	100.28	100.30	100.32	100.34	100.35
	D5		29.28	99.90	99.95	99.98	100.00	100.01	100.02	100.03	100.05	100.06	100.07	100.08
	D7		29.12	100.04	100.13	100.16	100.19	100.21	100.23	100.25	100.27	100.29	100.31	100.32
3E000010083EA031C	D1		29.18	100.01	100.07	100.09	100.09	100.11	100.12	100.13	100.14	100.15	100.16	100.16
	D3		29.09	99.99	100.07	100.09	100.12	100.14	100.15	100.16	100.19	100.20	100.21	100.22
	D4		29.21	99.96	100.02	100.03	100.05	100.06	100.07	100.07	100.09	100.10	100.10	100.11
	D5		29.30	99.97	100.03	100.05	100.06	100.08	100.08	100.09	100.11	100.12	100.12	100.13
	D6		29.13	99.87	99.94	99.98	100.00	100.02	100.04	100.06	100.08	100.10	100.12	100.14
	D8		29.28	99.90	99.96	99.98	100.00	100.01	100.03	100.04	100.06	100.06	100.07	100.09
5600001091 6C031C	D1		29.24	99.95	100.00	100.01	100.01	100.02	100.02	100.04	100.05	100.07	100.07	100.09
	D3		29.26	100.06	100.13	100.15	100.16	100.18	100.19	100.20	100.22	100.23	100.24	100.27
	D4		29.25	100.01	100.08	100.10	100.12	100.14	100.15	100.16	100.18	100.20	100.21	100.24
	D5		29.13	99.95	100.03	100.05	100.08	100.09	100.11	100.12	100.15	100.16	100.18	100.20
	D8		29.21	100.00	100.06	100.08	100.10	100.11	100.13	100.14	100.15	100.17	100.18	100.19

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TABLE 2.2 - FORWARD VOLTAGE MAINTENANCE RESULTS **GW P9LT31.PM**

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)	Forward Voltage Maintainence (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
760000108CEF031C	D1	29.27	99.98	100.02	100.03	100.03	100.04	100.04	100.05	100.05	100.07	100.07	100.05
	D2	29.31	100.04	100.12	100.15	100.17	100.19	100.21	100.22	100.24	100.25	100.27	100.26
	D3	29.30	99.97	100.04	100.06	100.08	100.10	100.11	100.12	100.14	100.16	100.17	100.16
	D4	29.19	100.00	100.05	100.05	100.06	100.06	100.07	100.07	100.08	100.09	100.09	100.09
	D5	29.10	99.99	100.06	100.08	100.10	100.12	100.14	100.15	100.17	100.18	100.20	100.20
	D6	29.32	100.00	100.02	100.03	100.03	100.04	100.04	100.04	100.05	100.05	100.06	100.05
	D7	29.12	99.99	100.04	100.03	100.04	100.04	100.04	100.05	100.06	100.06	100.07	100.06
	D8	29.23	100.00	100.05	100.05	100.05	100.06	100.06	100.06	100.07	100.08	100.08	100.08
		n	24	24	24	24	24	24	24	24	24	24	24
		mean	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.2
		median	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.2	100.2
		std. dev.	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		min	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.1
		max	100.1	100.2	100.2	100.2	100.2	100.3	100.3	100.3	100.3	100.3	100.4

Test Condition 1 55 °C 0.090 A

TABLE 2.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 1 55 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)		Forward Voltage Maintainence (%) 12000	13000	14000	15000	16000	17000
2400001082BA031C	D1		29.05	100.23	100.22	100.24	100.24	100.27	100.26
	D2		29.28	100.22	100.23	100.24	100.25	100.26	100.26
	D4		29.33	100.38	100.38	100.39	100.39	100.41	100.43
	D5		29.28	100.11	100.10	100.11	100.12	100.12	100.14
	D7		29.12	100.35	100.35	100.37	100.37	100.39	100.40
3E00001083EA031C	D1		29.18	100.18	100.18	100.20	100.21	100.20	100.21
	D3		29.09	100.24	100.20	100.26	100.28	100.27	100.29
	D4		29.21	100.12	100.10	100.13	100.14	100.14	100.15
	D5		29.30	100.15	100.13	100.15	100.16	100.16	100.19
	D6		29.13	100.16	100.15	100.18	100.20	100.21	100.24
	D8		29.28	100.10	100.09	100.12	100.12	100.13	100.15
5600001091 6C031C	D1		29.24	100.10	100.09	100.10	100.09	100.11	100.12
	D3		29.26	100.27	100.27	100.28	100.28	100.29	100.30
	D4		29.25	100.24	100.24	100.25	100.25	100.27	100.28
	D5		29.13	100.21	100.22	100.23	100.22	100.25	100.26
	D8		29.21	100.20	100.23	100.22	100.22	100.24	100.25

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TABLE 2.2 - FORWARD VOLTAGE MAINTENANCE RESULTS **GW P9LT31.PM**

Test Condition 1 55 °C 0.090 A

Load board ID	Device number	Zero hour measurements Vf (V)	Photometric test drive current: 0.090 A Photometric test ambient temperature: 25 ± 2 °C Failures observed: none Forward Voltage Maintainence (%)					
			12000	13000	14000	15000	16000	17000
760000108CEF031C	D1	29.27	100.09	100.08	100.09	100.09	100.10	100.10
	D2	29.31	100.30	100.30	100.31	100.31	100.33	100.34
	D3	29.30	100.20	100.20	100.21	100.20	100.22	100.23
	D4	29.19	100.10	100.10	100.11	100.10	100.11	100.12
	D5	29.10	100.23	100.23	100.25	100.25	100.27	100.28
	D6	29.32	100.07	100.06	100.07	100.07	100.07	100.08
	D7	29.12	100.08	100.08	100.09	100.07	100.09	100.10
	D8	29.23	100.09	100.09	100.10	100.09	100.10	100.12
	n		24	24	24	24	24	24
	mean		100.2	100.2	100.2	100.2	100.2	100.2
	median		100.2	100.2	100.2	100.2	100.2	100.2
	std. dev.		0.1	0.1	0.1	0.1	0.1	0.1
	min		100.1	100.1	100.1	100.1	100.1	100.1
	max		100.4	100.4	100.4	100.4	100.4	100.4

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Test Condition 2 85 °C 0.090 A

TABLE 3.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)										
		Flux (lm)	Vf (V)	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2800001097550 31C	D1	415.56	29.20	99.4	99.7	99.6	99.5	99.4	99.3	99.1	99.2	99.1	98.9	98.8
	D2	415.79	29.30	99.1	99.5	99.5	99.4	99.4	99.2	99.0	99.1	99.0	98.9	98.8
	D3	401.77	29.28	99.3	99.5	99.4	99.3	99.2	99.1	98.9	98.9	98.8	98.6	98.5
	D4	401.23	29.21	100.4	100.7	100.5	100.5	100.3	100.1	100.0	99.9	99.8	99.7	99.6
	D5	404.54	29.26	99.2	99.5	99.3	99.2	99.1	98.9	98.8	98.8	98.7	98.5	98.4
	D6	414.55	29.16	99.7	100.0	99.9	99.9	99.8	99.6	99.5	99.5	99.4	99.3	99.2
	D8	419.30	29.25	99.9	100.2	100.1	100.0	99.9	99.7	99.6	99.7	99.6	99.4	99.4
6600001097560 31C	D4	403.83	29.28	99.6	99.9	99.8	99.7	99.6	99.3	99.2	99.2	99.1	98.9	98.8
	D5	416.73	29.25	99.9	100.2	100.0	99.9	99.8	99.6	99.5	99.5	99.2	99.2	99.1
	D7	414.11	29.28	99.6	99.8	99.6	99.5	99.4	99.1	98.9	99.0	98.8	98.7	98.5
	D8	409.90	29.23	99.7	100.1	100.0	100.0	99.9	99.7	99.6	99.6	99.4	99.3	99.2
BF0000108A460 31C	D1	417.59	29.23	99.9	100.1	100.0	100.0	99.8	99.6	99.5	99.6	99.5	99.3	99.2
	D4	410.22	29.25	99.8	100.1	100.0	99.9	99.8	99.6	99.4	99.5	99.3	99.2	99.1
	D5	404.67	29.25	100.0	100.3	100.1	100.1	100.0	99.8	99.7	99.7	99.6	99.5	99.4
	D6	415.93	29.23	99.7	100.1	99.9	99.9	99.8	99.5	99.4	99.5	99.4	99.2	99.2
	D7	407.76	29.40	99.0	99.3	99.1	99.1	99.1	98.8	98.7	98.7	98.7	98.5	98.5

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TABLE 3.0 - LUMEN MAINTENANCE RESULTS — GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)										
		Flux (lm)	Vf (V)	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
DD0000107D16031C	D1	417.90	29.28	99.4	99.7	99.6	99.6	99.6	99.3	99.2	99.2	99.1	99.0	98.9
	D2	422.70	29.29	99.4	99.7	99.8	99.7	99.7	99.5	99.3	99.4	99.3	99.2	99.1
	D3	427.71	29.25	99.5	99.6	99.6	99.5	99.4	99.1	98.9	98.9	98.8	98.6	98.5
	D4	420.14	29.30	99.6	99.8	99.9	99.8	99.8	99.5	99.4	99.4	99.3	99.2	99.0
	D5	420.65	29.28	99.5	99.8	99.8	99.8	99.8	99.6	99.5	99.5	99.4	99.3	99.1
	D6	419.60	29.27	99.3	99.6	99.6	99.6	99.6	99.3	99.2	99.2	99.1	99.0	98.9
	D7	425.30	29.19	99.5	99.6	99.5	99.5	99.4	99.1	99.0	99.0	98.8	98.7	98.6
	D8	413.66	29.23	99.5	99.6	99.6	99.4	99.4	99.1	98.9	98.9	98.8	98.7	98.6
			n	24	24	24	24	24	24	24	24	24	24	24
			mean	99.6	99.9	99.8	99.7	99.6	99.4	99.3	99.3	99.2	99.0	98.9
			median	99.6	99.8	99.8	99.7	99.7	99.4	99.3	99.3	99.1	99.1	99.0
			std. dev.	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
			min	99.0	99.3	99.1	99.1	99.1	98.8	98.7	98.7	98.7	98.5	98.4
			max	100.4	100.7	100.5	100.5	100.3	100.1	100.0	99.9	99.8	99.7	99.6

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Test Condition 2 85 °C 0.090 A

TABLE 3.0 - LUMEN MAINTENANCE RESULTS **GW P9LT31.PM**

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)					
		Flux (lm)	Vf (V)	12000	13000	14000	15000	16000	17000
2800001097550 31C	D1	415.56	29.20	98.7	98.7	98.7	98.6	98.4	98.1
	D2	415.79	29.30	98.7	98.7	98.9	98.7	98.6	98.5
	D3	401.77	29.28	98.5	98.5	98.5	98.5	98.4	98.4
	D4	401.23	29.21	99.5	99.5	99.6	99.6	99.6	99.6
	D5	404.54	29.26	98.3	98.3	98.5	98.4	98.4	98.4
	D6	414.55	29.16	99.2	99.1	99.2	99.1	99.1	99.1
	D8	419.30	29.25	99.4	99.3	99.5	99.5	99.5	99.5
6600001097560 31C	D4	403.83	29.28	98.6	98.7	98.8	98.8	98.8	98.7
	D5	416.73	29.25	98.8	98.8	98.6	98.1	97.2	96.6
	D7	414.11	29.28	98.4	98.5	98.6	98.5	98.4	98.3
	D8	409.90	29.23	99.2	99.2	99.3	99.2	99.2	99.2
BF0000108A46031C	D1	417.59	29.23	99.2	99.2	99.3	99.2	99.2	99.2
	D4	410.22	29.25	99.1	99.0	99.2	99.1	99.2	99.1
	D5	404.67	29.25	99.4	99.4	99.5	99.5	99.6	99.6
	D6	415.93	29.23	99.2	99.2	99.3	99.2	99.2	99.2
	D7	407.76	29.40	98.5	98.4	98.6	98.5	98.5	98.2

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TABLE 3.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Flux (lm)	Vf (V)	Lumen Maintenance (%) 12000	13000	14000	15000	16000	17000
DD0000107D16031C	D1	417.90	29.28	98.9	98.8	98.9	98.8	98.8	98.8
	D2	422.70	29.29	99.0	99.0	99.1	99.0	98.8	98.8
	D3	427.71	29.25	98.5	98.5	98.5	98.4	98.4	98.3
	D4	420.14	29.30	99.0	99.0	99.1	99.1	99.1	99.1
	D5	420.65	29.28	99.0	98.8	98.6	98.1	97.6	97.2
	D6	419.60	29.27	98.9	98.9	99.0	99.0	99.0	99.0
	D7	425.30	29.19	98.5	98.1	98.4	98.2	98.1	98.0
	D8	413.66	29.23	98.6	98.4	98.6	98.5	98.5	98.5
	n			24	24	24	24	24	24
	mean			98.9	98.8	98.9	98.8	98.7	98.6
	median			98.9	98.8	98.9	98.8	98.8	98.7
	std. dev.			0.3	0.4	0.4	0.4	0.6	0.7
	min			98.3	98.1	98.4	98.1	97.2	96.6
	max			99.5	99.5	99.6	99.6	99.6	99.6

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Test Condition 2 85 °C 0.090 A

TABLE 3.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements			Chromaticity shift (Δu'v')										
		u'	v'		1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2800001097550 31C	D1	0.2248	0.5030		0.0004	0.0002	0.0003	0.0003	0.0004	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007
	D2	0.2248	0.5038		0.0005	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0005	0.0006	0.0006	0.0007
	D3	0.2253	0.5035		0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0006	0.0006	0.0007	0.0007	0.0008
	D4	0.2251	0.5038		0.0002	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0006	0.0006
	D5	0.2248	0.5024		0.0005	0.0003	0.0004	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008
	D6	0.2250	0.5031		0.0004	0.0002	0.0002	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007
	D8	0.2247	0.5028		0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0007	0.0007
6600001097560 31C	D4	0.2250	0.5031		0.0004	0.0003	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009
	D5	0.2252	0.5042		0.0004	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0006	0.0007
	D7	0.2247	0.5026		0.0005	0.0004	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0009	0.0010
	D8	0.2250	0.5028		0.0004	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009
BF0000108A46 031C	D1	0.2254	0.5033		0.0004	0.0003	0.0002	0.0003	0.0003	0.0004	0.0005	0.0005	0.0006	0.0006	0.0006
	D4	0.2249	0.5032		0.0005	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0007	0.0007	0.0007
	D5	0.2253	0.5030		0.0005	0.0003	0.0003	0.0004	0.0004	0.0004	0.0006	0.0006	0.0007	0.0008	0.0008
	D6	0.2258	0.5036		0.0004	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	0.0005	0.0005	0.0005	0.0005
	D7	0.2252	0.5040		0.0004	0.0002	0.0002	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0006	0.0006

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TABLE 3.1 - CHROMATICITY SHIFT RESULTS — GW P9LT31.PM
Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
DD0000107D16031C	D1	0.2253	0.5039		0.0005	0.0003	0.0003	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0007
	D2	0.2252	0.5031		0.0005	0.0003	0.0002	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0007	0.0007
	D3	0.2251	0.5031		0.0005	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0008	0.0007	0.0008
	D4	0.2249	0.5049		0.0004	0.0002	0.0001	0.0002	0.0002	0.0003	0.0004	0.0004	0.0005	0.0005	0.0006
	D5	0.2253	0.5039		0.0005	0.0002	0.0002	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006
	D6	0.2250	0.5041		0.0005	0.0003	0.0002	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006
	D7	0.2252	0.5038		0.0005	0.0003	0.0003	0.0003	0.0004	0.0005	0.0006	0.0007	0.0007	0.0008	0.0008
	D8	0.2251	0.5033		0.0004	0.0002	0.0002	0.0003	0.0004	0.0004	0.0005	0.0005	0.0007	0.0006	0.0007
				n	24	24	24	24	24	24	24	24	24	24	24
				mean	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0007	0.0007	0.0007
				median	0.0004	0.0003	0.0003	0.0003	0.0004	0.0004	0.0005	0.0006	0.0006	0.0007	0.0007
				std. dev.	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
				min	0.0002	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0004	0.0005	0.0005	0.0005
				max	0.0005	0.0004	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0009	0.0009	0.0010

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Test Condition 2 85 °C 0.090 A

TABLE 3.1 - CHROMATICITY SHIFT RESULTS **GW P9LT31.PM**

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 12000	13000	14000	15000	16000	17000
2800001097550 31C	D1	0.2248	0.5030		0.0007	0.0009	0.0010	0.0011	0.0012	0.0014
	D2	0.2248	0.5038		0.0007	0.0008	0.0008	0.0009	0.0010	0.0011
	D3	0.2253	0.5035		0.0008	0.0009	0.0009	0.0009	0.0009	0.0009
	D4	0.2251	0.5038		0.0007	0.0008	0.0009	0.0009	0.0009	0.0010
	D5	0.2248	0.5024		0.0008	0.0009	0.0010	0.0010	0.0010	0.0010
	D6	0.2250	0.5031		0.0007	0.0008	0.0009	0.0009	0.0009	0.0010
	D8	0.2247	0.5028		0.0007	0.0008	0.0009	0.0009	0.0009	0.0010
6600001097560 31C	D4	0.2250	0.5031		0.0009	0.0010	0.0011	0.0011	0.0011	0.0011
	D5	0.2252	0.5042		0.0008	0.0010	0.0014	0.0020	0.0033	0.0043
	D7	0.2247	0.5026		0.0010	0.0012	0.0012	0.0013	0.0015	0.0016
	D8	0.2250	0.5028		0.0009	0.0010	0.0011	0.0011	0.0011	0.0011
BF0000108A460 31C	D1	0.2254	0.5033		0.0007	0.0008	0.0008	0.0008	0.0008	0.0008
	D4	0.2249	0.5032		0.0008	0.0009	0.0010	0.0010	0.0010	0.0010
	D5	0.2253	0.5030		0.0008	0.0009	0.0010	0.0011	0.0010	0.0011
	D6	0.2258	0.5036		0.0006	0.0007	0.0007	0.0007	0.0007	0.0008
	D7	0.2252	0.5040		0.0007	0.0008	0.0008	0.0009	0.0010	0.0014

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TABLE 3.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'	Chromaticity shift (Δu'v') 12000	13000	14000	15000	16000	17000
DD0000107D16031C	D1	0.2253	0.5039	0.0007	0.0008	0.0009	0.0009	0.0009	0.0010
	D2	0.2252	0.5031	0.0008	0.0008	0.0009	0.0010	0.0010	0.0012
	D3	0.2251	0.5031	0.0008	0.0009	0.0009	0.0010	0.0009	0.0009
	D4	0.2249	0.5049	0.0006	0.0006	0.0007	0.0008	0.0008	0.0008
	D5	0.2253	0.5039	0.0007	0.0009	0.0014	0.0020	0.0027	0.0033
	D6	0.2250	0.5041	0.0007	0.0008	0.0008	0.0008	0.0008	0.0008
	D7	0.2252	0.5038	0.0008	0.0010	0.0009	0.0009	0.0009	0.0009
	D8	0.2251	0.5033	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011
			n	24	24	24	24	24	24
			mean	0.0008	0.0009	0.0009	0.0010	0.0011	0.0013
			median	0.0008	0.0008	0.0009	0.0010	0.0010	0.0010
			std. dev.	0.0001	0.0001	0.0002	0.0003	0.0006	0.0008
			min	0.0006	0.0006	0.0007	0.0007	0.0007	0.0008
			max	0.0010	0.0012	0.0014	0.0020	0.0033	0.0043

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Test Condition 2 85 °C 0.090 A

TABLE 3.2 - FORWARD VOLTAGE MAINTENANCE RESULTS **GW P9LT31.PM**

Test Condition 2 85 °C 0.090 A

Load board ID	Device number	Zero hour measurements Vf (V)		Photometric test drive current: 0.090 A Photometric test ambient temperature: 25 ± 2 °C Failures observed: none Forward Voltage Maintainence (%)										
				1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
2800001097550 31C	D1		29.20	100.00	100.07	100.10	100.11	100.12	100.15	100.15	100.17	100.18	100.20	100.23
	D2		29.30	100.01	100.09	100.12	100.15	100.17	100.20	100.21	100.24	100.25	100.27	100.31
	D3		29.28	100.14	100.21	100.25	100.28	100.30	100.32	100.33	100.35	100.37	100.39	100.41
	D4		29.21	100.05	100.12	100.15	100.18	100.21	100.23	100.24	100.27	100.29	100.32	100.34
	D5		29.26	100.19	100.28	100.32	100.35	100.37	100.41	100.41	100.42	100.44	100.46	100.47
	D6		29.16	100.04	100.11	100.14	100.17	100.18	100.22	100.22	100.24	100.25	100.27	100.29
	D8		29.25	100.05	100.12	100.15	100.19	100.20	100.24	100.24	100.26	100.27	100.30	100.31
6600001097560 31C	D4		29.28	100.10	100.18	100.22	100.26	100.28	100.30	100.32	100.34	100.36	100.38	100.40
	D5		29.25	100.05	100.18	100.25	100.31	100.36	100.40	100.44	100.48	100.48	100.55	100.59
	D7		29.28	99.93	100.01	100.05	100.07	100.09	100.11	100.13	100.16	100.17	100.19	100.21
	D8		29.23	100.04	100.11	100.16	100.18	100.19	100.21	100.23	100.26	100.27	100.29	100.31
BF0000108A46031C	D1		29.23	100.03	100.10	100.13	100.15	100.15	100.19	100.20	100.22	100.25	100.26	100.28
	D4		29.25	100.13	100.22	100.27	100.31	100.34	100.36	100.39	100.41	100.43	100.46	100.47
	D5		29.25	100.09	100.17	100.23	100.26	100.28	100.30	100.33	100.35	100.39	100.39	100.41
	D6		29.23	100.03	100.10	100.15	100.16	100.20	100.21	100.23	100.25	100.28	100.27	100.30
	D7		29.40	99.93	99.94	99.94	99.94	99.95	99.94	99.94	99.95	99.95	99.94	99.95

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TABLE 3.2 - FORWARD VOLTAGE MAINTENANCE RESULTS — GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)	Forward Voltage Maintainence (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
DD000107D16031C	D1	29.28	100.04	100.15	100.19	100.22	100.25	100.27	100.29	100.33	100.35	100.36	100.38
	D2	29.29	100.07	100.15	100.20	100.23	100.26	100.27	100.28	100.31	100.33	100.34	100.35
	D3	29.25	99.95	100.04	100.10	100.14	100.18	100.21	100.24	100.27	100.30	100.33	100.35
	D4	29.30	100.12	100.23	100.29	100.33	100.37	100.39	100.41	100.44	100.47	100.49	100.51
	D5	29.28	100.11	100.20	100.26	100.29	100.31	100.34	100.35	100.38	100.40	100.41	100.42
	D6	29.27	100.04	100.11	100.14	100.17	100.19	100.20	100.21	100.23	100.25	100.26	100.27
	D7	29.19	100.00	100.05	100.07	100.09	100.10	100.10	100.11	100.13	100.14	100.15	100.16
	D8	29.23	100.04	100.10	100.12	100.15	100.16	100.17	100.18	100.20	100.22	100.22	100.23
		n	24	24	24	24	24	24	24	24	24	24	24
		mean	100.0	100.1	100.2	100.2	100.2	100.2	100.3	100.3	100.3	100.3	100.3
		median	100.0	100.1	100.2	100.2	100.2	100.2	100.2	100.3	100.3	100.3	100.3
		std. dev.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		min	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	100.0	99.9	100.0
		max	100.2	100.3	100.3	100.3	100.4	100.4	100.4	100.5	100.5	100.6	100.6

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Test Condition 2 85 °C 0.090 A

TABLE 3.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Load board ID	Device number	Zero hour measurements Vf (V)		Photometric test drive current: 0.090 A Photometric test ambient temperature: 25 ± 2 °C Failures observed: none Forward Voltage Maintainence (%)										
				12000	13000	14000	15000	16000	17000					
2800001097550 31C	D1		29.20	100.23	100.23	100.25	100.25	100.27	100.28					
	D2		29.30	100.31	100.32	100.33	100.34	100.36	100.37					
	D3		29.28	100.45	100.42	100.43	100.43	100.45	100.46					
	D4		29.21	100.38	100.35	100.37	100.38	100.39	100.41					
	D5		29.26	100.48	100.49	100.51	100.51	100.53	100.54					
	D6		29.16	100.30	100.31	100.33	100.33	100.35	100.37					
	D8		29.25	100.32	100.33	100.35	100.36	100.37	100.38					
6600001097560 31C	D4		29.28	100.39	100.43	100.44	100.45	100.47	100.49					
	D5		29.25	100.60	100.65	100.69	100.71	100.74	100.78					
	D7		29.28	100.21	100.24	100.26	100.25	100.27	100.29					
	D8		29.23	100.31	100.33	100.37	100.37	100.37	100.39					
BF0000108A46031C	D1		29.23	100.30	100.31	100.32	100.33	100.34	100.36					
	D4		29.25	100.49	100.51	100.53	100.54	100.56	100.59					
	D5		29.25	100.44	100.45	100.47	100.48	100.50	100.53					
	D6		29.23	100.32	100.33	100.34	100.35	100.37	100.40					
	D7		29.40	99.97	99.99	99.97	99.96	99.97	99.98					

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TABLE 3.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 2 85 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)	12000	13000	14000	15000	16000	17000
DD0000107D16031C	D1	29.28	100.40	100.41	100.43	100.43	100.46	100.62
	D2	29.29	100.37	100.37	100.39	100.39	100.41	100.57
	D3	29.25	100.38	100.40	100.43	100.44	100.46	100.49
	D4	29.30	100.53	100.54	100.57	100.57	100.59	100.61
	D5	29.28	100.44	100.45	100.46	100.47	100.49	100.51
	D6	29.27	100.28	100.29	100.30	100.31	100.33	100.34
	D7	29.19	100.17	100.14	100.18	100.18	100.20	100.21
	D8	29.23	100.24	100.22	100.27	100.26	100.28	100.29
		n	24	24	24	24	24	24
		mean	100.3	100.4	100.4	100.4	100.4	100.4
		median	100.3	100.3	100.4	100.4	100.4	100.4
		std. dev.	0.1	0.1	0.1	0.1	0.1	0.2
		min	100.0	100.0	100.0	100.0	100.0	100.0
		max	100.6	100.7	100.7	100.7	100.7	100.8

Forward Voltage Maintainence (%) columns: 12000–17000

Test Condition 3 105 °C 0.090 A

TABLE 4.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)										
		Flux (lm)	Vf (V)	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
3600001094C9031C	D2	408.95	29.20	98.9	98.6	98.1	98.0	97.5	97.2	97.0	96.7	96.5	96.2	96.1
	D3	409.63	29.08	99.4	98.8	98.2	98.0	97.6	97.4	97.1	96.9	96.7	96.5	96.3
	D4	416.35	29.16	99.1	98.5	97.9	97.7	97.2	97.0	96.7	96.5	96.2	96.0	95.8
	D8	409.71	29.28	99.2	98.5	97.9	97.6	97.1	96.9	96.6	96.4	96.1	95.9	95.7
8900001091C1031C	D2	413.33	29.21	99.1	98.7	98.1	97.7	97.4	97.1	96.9	96.6	96.4	96.1	95.9
	D3	415.39	29.13	99.6	99.2	98.7	98.4	98.1	97.8	97.6	97.4	97.2	97.0	96.9
	D5	415.09	29.20	98.8	98.5	97.9	97.7	97.4	97.0	96.9	96.6	96.4	96.2	95.8
	D7	408.97	29.08	99.4	98.8	98.1	97.7	97.4	97.0	96.8	96.6	96.4	96.2	95.9
	D8	406.48	29.26	99.3	98.9	98.4	98.1	97.7	97.4	97.2	97.0	96.8	96.6	96.4
BE0000107F30031C	D1	427.69	29.13	98.9	98.4	97.9	97.7	97.2	97.0	96.7	96.5	96.3	96.1	95.9
	D2	420.45	29.25	99.1	98.8	98.3	98.1	97.7	97.5	97.2	96.8	96.7	96.5	96.4
	D3	425.26	29.24	99.1	98.6	98.0	97.8	97.4	97.1	96.8	96.6	96.4	96.2	96.0
	D4	424.33	29.19	98.9	98.6	98.0	97.8	97.4	97.1	96.8	96.6	96.3	96.1	95.9
	D5	427.92	29.22	99.1	98.6	98.0	97.7	97.2	97.0	96.6	96.4	96.2	96.0	95.8
	D6	430.58	29.23	99.1	98.5	97.8	97.5	97.0	96.7	96.4	96.2	95.9	95.7	95.5
	D7	426.08	29.32	99.2	99.0	98.5	98.3	97.9	97.7	97.4	97.2	97.0	96.8	96.6
	D8	431.88	29.22	99.1	98.6	97.9	97.6	97.1	96.8	96.4	96.2	95.9	95.7	95.5

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TABLE 4.0 - LUMEN MAINTENANCE RESULTS — **GW P9LT31.PM**

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Flux (lm)	Vf (V)	Lumen Maintenance (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
CB00001092F2031C	D1	410.64	29.20	98.8	98.2	97.9	97.6	97.2	97.0	96.7	96.6	96.4	96.1	96.0
	D2	415.04	29.07	99.3	98.8	98.4	98.2	97.8	97.4	97.3	97.2	97.0	96.8	96.6
	D3	414.79	29.25	98.7	97.7	97.3	97.1	96.7	96.3	96.1	96.0	95.8	95.5	95.4
	D4	403.71	29.23	98.7	98.1	97.9	97.6	97.2	96.9	96.7	96.5	96.3	96.1	95.9
	D5	410.71	29.21	98.5	97.8	97.4	97.2	96.8	96.5	96.3	96.1	95.9	95.7	95.5
	D6	410.79	29.21	98.5	97.9	97.5	97.3	96.8	96.5	96.3	96.2	95.9	95.7	95.5
	D7	416.87	29.18	100.0	99.4	99.1	98.8	98.4	98.1	97.9	97.7	97.6	97.3	97.1
			n	24	24	24	24	24	24	24	24	24	24	24
			mean	99.1	98.6	98.1	97.8	97.4	97.1	96.9	96.6	96.4	96.2	96.0
			median	99.1	98.6	98.0	97.7	97.4	97.0	96.8	96.6	96.4	96.1	95.9
			std. dev.	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
			min	98.5	97.7	97.3	97.1	96.7	96.3	96.1	96.0	95.8	95.5	95.4
			max	100.0	99.4	99.1	98.8	98.4	98.1	97.9	97.7	97.6	97.3	97.1

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Test Condition 3 105 °C 0.090 A

TABLE 4.0 - LUMEN MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements		Lumen Maintenance (%)					
		Flux (lm)	Vf (V)	12000	13000	14000	15000	16000	17000
3600001094C9031C	D2	408.95	29.20	95.9	95.8	95.9	95.6	95.4	95.2
	D3	409.63	29.08	96.2	96.1	96.2	96.0	95.9	95.7
	D4	416.35	29.16	95.6	95.5	95.5	95.3	95.1	94.9
	D8	409.71	29.28	95.6	95.5	95.6	95.5	95.5	95.4
8900001091C1031C	D2	413.33	29.21	95.8	95.7	95.7	95.6	95.6	95.4
	D3	415.39	29.13	96.8	96.6	96.8	96.7	96.7	96.6
	D5	415.09	29.20	96.0	95.8	95.8	95.6	95.4	95.2
	D7	408.97	29.08	95.9	95.7	95.9	95.7	95.7	95.6
	D8	406.48	29.26	96.4	96.2	96.3	96.2	96.2	96.2
BE0000107F30031C	D1	427.69	29.13	95.8	95.7	95.8	95.7	95.6	95.5
	D2	420.45	29.25	96.2	96.1	96.2	96.1	96.0	96.0
	D3	425.26	29.24	95.8	95.7	95.8	95.7	95.6	95.5
	D4	424.33	29.19	95.5	95.6	95.8	95.6	95.6	95.5
	D5	427.92	29.22	95.6	95.5	95.6	95.5	95.4	95.3
	D6	430.58	29.23	95.3	95.2	95.4	95.2	95.1	95.0
	D7	426.08	29.32	96.4	96.3	96.5	96.3	96.2	96.0
	D8	431.88	29.22	95.3	95.2	95.4	95.2	95.1	95.0

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TABLE 4.0 - LUMEN MAINTENANCE RESULTS — GW P9LT31.PM

Test Condition 3 — 105 °C — 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements: Flux (lm)	Zero hour measurements: Vf (V)	Lumen Maintenance (%) 12000	13000	14000	15000	16000	17000
CB00001092F2031C	D1	410.64	29.20	95.8	95.5	95.5	95.2	95.0	94.7
	D2	415.04	29.07	96.5	96.3	96.4	96.2	96.2	96.1
	D3	414.79	29.25	95.4	95.2	95.3	95.2	95.1	95.0
	D4	403.71	29.23	95.9	95.6	95.6	95.4	95.2	95.0
	D5	410.71	29.21	95.5	95.3	95.4	95.2	95.2	95.1
	D6	410.79	29.21	95.4	95.1	95.1	94.8	94.7	94.6
	D7	416.87	29.18	97.0	96.8	96.9	96.7	96.6	96.3
			n	24	24	24	24	24	24
			mean	95.9	95.8	95.8	95.7	95.6	95.5
			median	95.8	95.7	95.8	95.6	95.5	95.4
			std. dev.	0.5	0.5	0.5	0.5	0.5	0.5
			min	95.3	95.1	95.1	94.8	94.7	94.6
			max	97.0	96.8	96.9	96.7	96.7	96.6

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Test Condition 3 105 °C 0.090 A

TABLE 4.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
3600001094C9031C	D2	0.2249	0.5038		0.0007	0.0009	0.0011	0.0013	0.0014	0.0015	0.0018	0.0019	0.0020	0.0021	0.0022
	D3	0.2250	0.5022		0.0007	0.0010	0.0013	0.0015	0.0016	0.0018	0.0019	0.0021	0.0022	0.0023	0.0024
	D4	0.2252	0.5031		0.0008	0.0011	0.0014	0.0016	0.0017	0.0018	0.0021	0.0022	0.0023	0.0024	0.0025
	D8	0.2254	0.5029		0.0009	0.0013	0.0015	0.0018	0.0019	0.0021	0.0024	0.0024	0.0026	0.0027	0.0028
8900001091C1031C	D2	0.2255	0.5010		0.0006	0.0009	0.0012	0.0014	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
	D3	0.2253	0.5022		0.0007	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0022	0.0023
	D5	0.2259	0.5006		0.0007	0.0009	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0022	0.0024
	D7	0.2258	0.5021		0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0022	0.0023	0.0024	0.0025	0.0026
	D8	0.2252	0.5020		0.0007	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0022	0.0023	0.0024	0.0025
BE0000107F30031C	D1	0.2248	0.5020		0.0008	0.0010	0.0013	0.0015	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
	D2	0.2246	0.5036		0.0008	0.0009	0.0012	0.0014	0.0016	0.0017	0.0020	0.0021	0.0021	0.0022	0.0024
	D3	0.2248	0.5030		0.0008	0.0010	0.0013	0.0015	0.0017	0.0018	0.0021	0.0021	0.0023	0.0024	0.0025
	D4	0.2246	0.5028		0.0008	0.0011	0.0013	0.0015	0.0017	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
	D5	0.2252	0.5050		0.0008	0.0010	0.0013	0.0015	0.0017	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
	D6	0.2251	0.5039		0.0008	0.0010	0.0014	0.0016	0.0017	0.0019	0.0021	0.0021	0.0023	0.0023	0.0025
	D7	0.2251	0.5044		0.0007	0.0008	0.0010	0.0012	0.0013	0.0014	0.0017	0.0018	0.0019	0.0019	0.0021
	D8	0.2249	0.5031		0.0008	0.0010	0.0013	0.0016	0.0018	0.0019	0.0021	0.0022	0.0024	0.0024	0.0026

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TABLE 4.1 - CHROMATICITY SHIFT RESULTS — **GW P9LT31.PM**

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
CB00001092F2031C	D1	0.2256	0.5018		0.0007	0.0009	0.0012	0.0013	0.0015	0.0017	0.0018	0.0019	0.0020	0.0022	0.0023
	D2	0.2252	0.5029		0.0007	0.0008	0.0011	0.0013	0.0014	0.0016	0.0018	0.0018	0.0020	0.0021	0.0022
	D3	0.2254	0.5015		0.0009	0.0013	0.0015	0.0017	0.0019	0.0021	0.0022	0.0023	0.0024	0.0026	0.0026
	D4	0.2257	0.5017		0.0007	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018	0.0019	0.0020	0.0021	0.0022
	D5	0.2261	0.5008		0.0008	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0022	0.0023	0.0024	0.0025
	D6	0.2253	0.5016		0.0008	0.0010	0.0013	0.0014	0.0016	0.0018	0.0019	0.0020	0.0021	0.0023	0.0023
	D7	0.2251	0.5019		0.0006	0.0008	0.0010	0.0011	0.0013	0.0014	0.0016	0.0017	0.0018	0.0020	0.0021
				n	24	24	24	24	24	24	24	24	24	24	24
				mean	0.0007	0.0010	0.0013	0.0015	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
				median	0.0008	0.0010	0.0013	0.0015	0.0016	0.0018	0.0020	0.0021	0.0022	0.0023	0.0024
				std. dev.	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
				min	0.0006	0.0008	0.0010	0.0011	0.0013	0.0014	0.0016	0.0017	0.0018	0.0019	0.0021
				max	0.0009	0.0013	0.0015	0.0018	0.0019	0.0021	0.0024	0.0024	0.0026	0.0027	0.0028

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Test Condition 3 105 °C 0.090 A

TABLE 4.1 - CHROMATICITY SHIFT RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements			Chromaticity shift (Δu'v')					
		u'	v'		12000	13000	14000	15000	16000	17000
3600001094C9031C	D2	0.2249	0.5038		0.0022	0.0024	0.0025	0.0027	0.0029	0.0031
	D3	0.2250	0.5022		0.0025	0.0026	0.0028	0.0029	0.0031	0.0033
	D4	0.2252	0.5031		0.0026	0.0027	0.0029	0.0031	0.0033	0.0035
	D8	0.2254	0.5029		0.0028	0.0029	0.0031	0.0031	0.0031	0.0031
8900001091C1031C	D2	0.2255	0.5010		0.0025	0.0026	0.0027	0.0028	0.0028	0.0027
	D3	0.2253	0.5022		0.0023	0.0025	0.0025	0.0026	0.0026	0.0027
	D5	0.2259	0.5006		0.0023	0.0025	0.0026	0.0027	0.0028	0.0029
	D7	0.2258	0.5021		0.0027	0.0028	0.0028	0.0030	0.0029	0.0030
	D8	0.2252	0.5020		0.0026	0.0027	0.0028	0.0030	0.0030	0.0030
BE0000107F30031C	D1	0.2248	0.5020		0.0024	0.0025	0.0027	0.0028	0.0028	0.0029
	D2	0.2246	0.5036		0.0024	0.0026	0.0026	0.0028	0.0028	0.0029
	D3	0.2248	0.5030		0.0025	0.0027	0.0028	0.0030	0.0029	0.0031
	D4	0.2246	0.5028		0.0026	0.0026	0.0027	0.0028	0.0028	0.0029
	D5	0.2252	0.5050		0.0025	0.0026	0.0026	0.0027	0.0027	0.0028
	D6	0.2251	0.5039		0.0025	0.0027	0.0027	0.0028	0.0028	0.0028
	D7	0.2251	0.5044		0.0021	0.0022	0.0023	0.0025	0.0025	0.0026
	D8	0.2249	0.5031		0.0026	0.0027	0.0027	0.0029	0.0029	0.0030

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TABLE 4.1 - CHROMATICITY SHIFT RESULTS — **GW P9LT31.PM**

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements u'	Zero hour measurements v'		Chromaticity shift (Δu'v') 12000	13000	14000	15000	16000	17000					
CB00001092F2031C	D1	0.2256	0.5018		0.0024	0.0026	0.0028	0.0029	0.0032	0.0034					
	D2	0.2252	0.5029		0.0022	0.0024	0.0025	0.0025	0.0026	0.0026					
	D3	0.2254	0.5015		0.0027	0.0028	0.0029	0.0029	0.0029	0.0029					
	D4	0.2257	0.5017		0.0022	0.0023	0.0025	0.0026	0.0026	0.0027					
	D5	0.2261	0.5008		0.0025	0.0026	0.0027	0.0027	0.0028	0.0028					
	D6	0.2253	0.5016		0.0024	0.0025	0.0026	0.0026	0.0026	0.0027					
	D7	0.2251	0.5019		0.0022	0.0023	0.0025	0.0025	0.0027	0.0029					
				n	24	24	24	24	24	24					
				mean	0.0024	0.0026	0.0027	0.0028	0.0028	0.0029					
				median	0.0025	0.0026	0.0027	0.0028	0.0028	0.0029					
				std. dev.	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002					
				min	0.0021	0.0022	0.0023	0.0025	0.0025	0.0026					
				max	0.0028	0.0029	0.0031	0.0031	0.0033	0.0035					

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Test Condition 3 105 °C 0.090 A

TABLE 4.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Load board ID	Device number	Zero hour measurements Vf (V)	Photometric test drive current: 0.090 A Photometric test ambient temperature: 25 ± 2 °C Failures observed: none Forward Voltage Maintainence (%)										
			1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
36000010 94C9031C	D2	29.20	100.10	100.17	100.20	100.23	100.25	100.27	100.29	100.31	100.33	100.35	100.35
	D3	29.08	100.09	100.19	100.25	100.30	100.34	100.38	100.41	100.45	100.48	100.51	100.54
	D4	29.16	100.10	100.23	100.30	100.37	100.42	100.47	100.51	100.56	100.61	100.64	100.68
	D8	29.28	100.11	100.22	100.24	100.28	100.32	100.34	100.45	100.39	100.43	100.46	100.48
89000010 91C1031C	D2	29.21	100.04	100.10	100.13	100.13	100.16	100.19	100.22	100.20	100.22	100.23	100.25
	D3	29.13	100.05	100.14	100.18	100.24	100.27	100.29	100.34	100.35	100.39	100.41	100.44
	D5	29.20	100.04	100.10	100.11	100.13	100.15	100.15	100.16	100.17	100.19	100.19	100.17
	D7	29.08	100.08	100.19	100.25	100.29	100.33	100.36	100.40	100.42	100.46	100.49	100.50
	D8	29.26	100.10	100.20	100.26	100.31	100.33	100.36	100.39	100.41	100.45	100.48	100.48
BE0000107F30031C	D1	29.13	100.03	100.16	100.24	100.29	100.37	100.39	100.45	100.48	100.56	100.57	100.62
	D2	29.25	100.15	100.27	100.31	100.36	100.42	100.42	100.46	100.45	100.52	100.52	100.54
	D3	29.24	99.97	100.07	100.11	100.16	100.20	100.20	100.23	100.25	100.30	100.31	100.34
	D4	29.19	100.04	100.13	100.16	100.20	100.25	100.24	100.27	100.28	100.32	100.33	100.36
	D5	29.22	100.12	100.28	100.34	100.38	100.44	100.44	100.49	100.52	100.56	100.59	100.62
	D6	29.23	100.04	100.21	100.29	100.34	100.41	100.42	100.48	100.52	100.57	100.62	100.66
	D7	29.32	100.17	100.30	100.35	100.41	100.44	100.49	100.50	100.53	100.57	100.60	100.63
	D8	29.22	100.01	100.15	100.22	100.30	100.34	100.40	100.44	100.47	100.52	100.57	100.61

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TABLE 4.2 - FORWARD VOLTAGE MAINTENANCE RESULTS — **GW P9LT31.PM**

Test Condition 3 105 °C 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements	Vf (V)	Forward Voltage Maintainence (%) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000
CB00001092F2031C	D1		29.20	100.02	100.07	100.10	100.11	100.13	100.14	100.23	100.17	100.18	100.20	100.21
	D2		29.07	100.04	100.13	100.18	100.22	100.25	100.25	100.31	100.34	100.37	100.40	100.42
	D3		29.25	100.04	100.08	100.11	100.16	100.15	100.15	100.18	100.19	100.20	100.22	100.23
	D4		29.23	100.01	100.04	100.06	100.10	100.09	100.09	100.11	100.12	100.14	100.15	100.16
	D5		29.21	100.01	100.05	100.07	100.10	100.10	100.10	100.12	100.13	100.14	100.16	100.16
	D6		29.21	100.01	100.05	100.07	100.09	100.10	100.10	100.12	100.13	100.14	100.16	100.17
	D7		29.18	100.12	100.22	100.28	100.34	100.38	100.41	100.45	100.48	100.52	100.55	100.58
			n	24	24	24	24	24	24	24	24	24	24	24
			mean	100.1	100.2	100.2	100.2	100.3	100.3	100.3	100.3	100.4	100.4	100.4
			median	100.0	100.2	100.2	100.3	100.3	100.3	100.4	100.4	100.4	100.4	100.5
			std. dev.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
			min	100.0	100.0	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.2
			max	100.2	100.3	100.4	100.4	100.4	100.5	100.5	100.6	100.6	100.6	100.7

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Test Condition 3 105 °C 0.090 A

TABLE 4.2 - FORWARD VOLTAGE MAINTENANCE RESULTS GW P9LT31.PM

Test Condition 3 105 °C 0.090 A

Load board ID	Device number	Zero hour measurements Vf (V)	Photometric test drive current: 0.090 A Photometric test ambient temperature: 25 ± 2 °C Failures observed: none Forward Voltage Maintainence (%)					
			12000	13000	14000	15000	16000	17000
3600001094C9031C	D2	29.20	100.38	100.39	100.42	100.42	100.44	100.46
	D3	29.08	100.59	100.61	100.66	100.66	100.69	100.72
	D4	29.16	100.74	100.76	100.82	100.83	100.87	100.91
	D8	29.28	100.51	100.54	100.53	100.57	100.60	100.63
8900001091C1031C	D2	29.21	100.26	100.27	100.31	100.29	100.32	100.31
	D3	29.13	100.46	100.49	100.52	100.54	100.59	100.60
	D5	29.20	100.23	100.22	100.23	100.23	100.25	100.25
	D7	29.08	100.55	100.58	100.63	100.63	100.69	100.68
	D8	29.26	100.53	100.56	100.62	100.62	100.66	100.64
BE0000107F30031C	D1	29.13	100.65	100.71	100.78	100.78	100.81	100.99
	D2	29.25	100.57	100.60	100.65	100.63	100.65	100.81
	D3	29.24	100.35	100.41	100.41	100.61	100.47	100.48
	D4	29.19	100.34	100.41	100.42	100.62	100.48	100.48
	D5	29.22	100.63	100.69	100.73	100.75	100.79	100.83
	D6	29.23	100.67	100.74	100.78	100.80	100.84	100.89
	D7	29.32	100.63	100.68	101.05	100.85	100.82	100.85
	D8	29.22	100.63	100.69	101.11	100.86	100.86	100.90

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TABLE 4.2 - FORWARD VOLTAGE MAINTENANCE RESULTS — GW P9LT31.PM

Test Condition 3 — 105 °C — 0.090 A

Photometric test drive current: 0.090 A
Photometric test ambient temperature: 25 ± 2 °C
Failures observed: none

Load board ID	Device number	Zero hour measurements Vf (V)	Forward Voltage Maintainence (%) 12000	13000	14000	15000	16000	17000
C800001092F2031C	D1	29.20	100.24	100.26	100.26	100.28	100.29	100.30
	D2	29.07	100.46	100.48	100.50	100.53	100.56	100.57
	D3	29.25	100.26	100.27	100.28	100.29	100.29	100.31
	D4	29.23	100.19	100.20	100.20	100.21	100.21	100.23
	D5	29.21	100.17	100.19	100.19	100.20	100.21	100.21
	D6	29.21	100.18	100.19	100.20	100.20	100.21	100.24
	D7	29.18	100.62	100.64	100.67	100.69	100.73	100.78
		n	24	24	24	24	24	24
		mean	100.5	100.5	100.5	100.5	100.6	100.6
		median	100.5	100.5	100.5	100.6	100.6	100.6
		std. dev.	0.2	0.2	0.3	0.2	0.2	0.3
		min	100.2	100.2	100.2	100.2	100.2	100.2
		max	100.7	100.8	101.1	100.9	100.9	101.0

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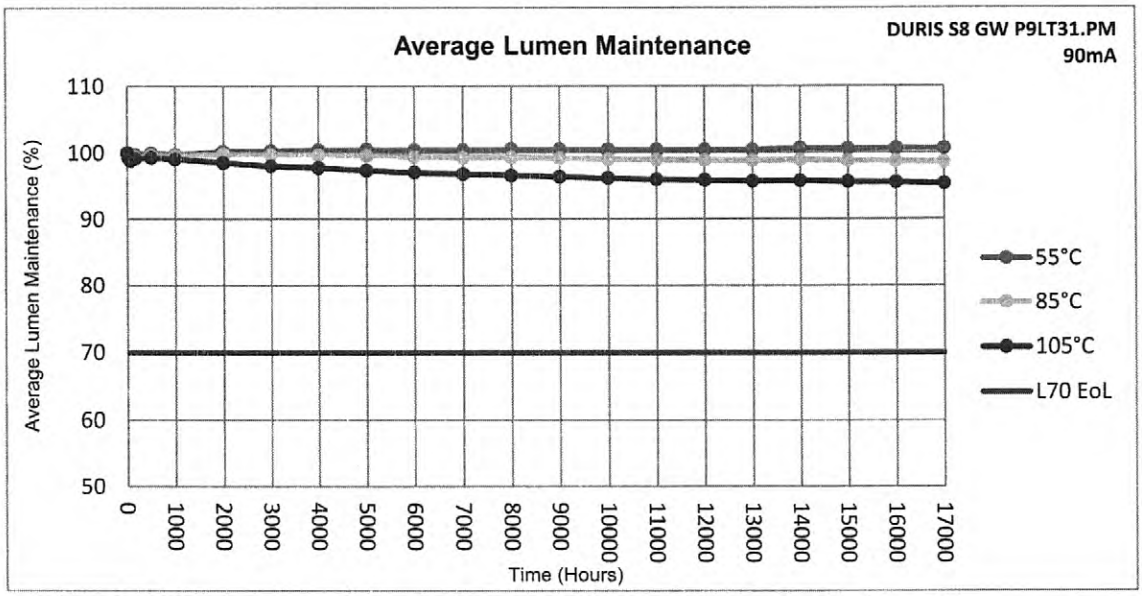
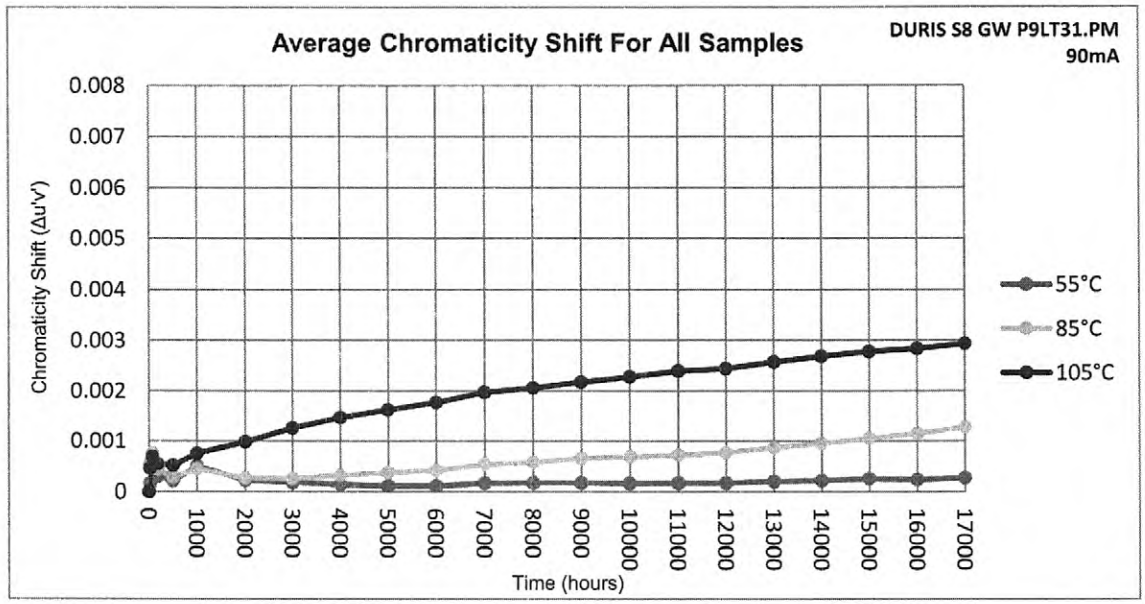
5.0 Charts:





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6.0 Additional Information

6.1 Auxilliary Equipment

Lifetest thermal chamber:	Orb Optronix Thermal Platform - resistive heating, liquid cooling, no forced air flow
Lifetest current source:	Orb Optronix 12-channel driver
Photometric test current source:	Keithley 2425
Photometric test thermal control:	Orb Optronix TEC-100
Spectrometer:	Instrument Systems, CAS 140CT
Integrating Sphere:	Gamma Scientific 20"
Photometric reference standards:	LabSphere SCL-50

6.2 Additional Test Information

6.3 Photographs

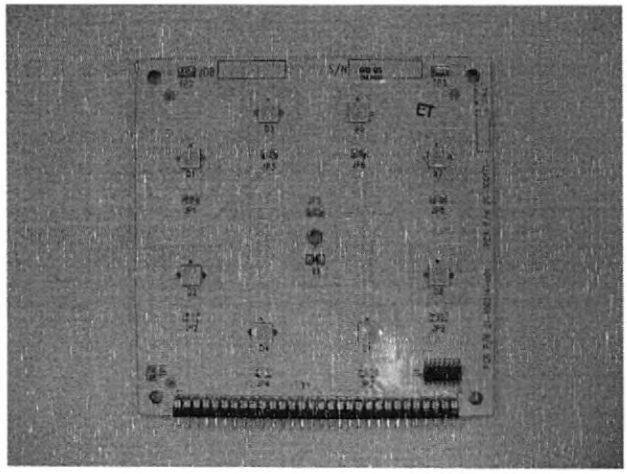

Fig. 1 DURIS S8 load board example.

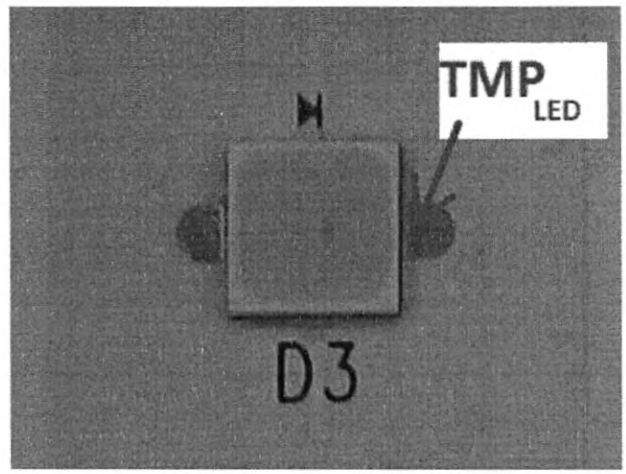

Fig. 2 DURIS S8 type LED model GW P9LT31.PM and temperature measurement point.

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6.4 Dimensional Drawing*

* all dimension in millimeters

This report alone may not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- END OF REPORT -

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Appendix A:
Energy Star® LM-80 Application

ENERGY STAR® LM-80 Cover Page

Administrative Information

Tested subcomponent series	DURIS® S 8
Tested subcomponent model number	GW P9LT31.PM
Report issue date	18th Dec 2020
Report revision date (if applicable)	Not Applicable
Testing start date	11th Aug 2017
Testing completion date	18th Dec 2020
DUT sampling method	According to ANSI/IES LM-80 Test Method

DUT Identification

DUT manufacturer's name	OSRAM Opto Semiconductors (Malaysia) Sdn Bhd
DUT identification	GW P9LT31.PM
Description of DUT	LED Package

DUT Characteristics

Total input power (W)	2.63
Average current density per LED die (mA/mm²)	180
Average power density per LED Package (W/mm²)	0.11
Representative CRI (Ra) of the tested sample set	70
Minimum die edge to die edge spacing (mm)	0.2

Appendix B:
Lumen Maintenance Projection (IES TM-21-11)

For Information Only!

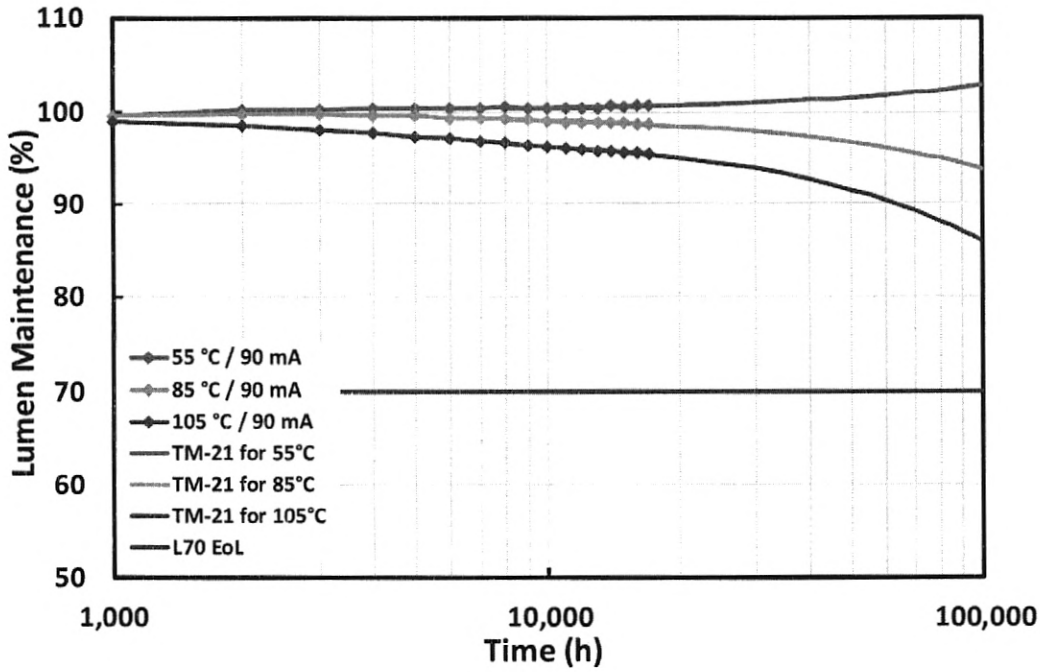
1. General Information

Description of LED light source tested	DURIS® S 8 GW P9LT31.PM
Sample size per temperature	24
LED drive current used in the test	90 mA
Current per die	90 mA
Test duration	17,000 hours
Test duration used for projection	8,000 hours to 17,000 hours

2. Projection Data

	I	II	III
Case temperature (solder point)	T_S = 55 °C	T_S = 85 °C	T_S = 105 °C
α	-2.571E-07	6.068E-07	1.262E-06
B	1.002E+00	9.968E-01	9.748E-01
Reported L70	> 102,000 hours	> 102,000 hours	> 102,000 hours
Reported L80	> 102,000 hours	> 102,000 hours	> 102,000 hours
Reported L90	> 102,000 hours	> 102,000 hours	63,263 hours

3. Graphic chart



Appendix C:
Additional Models Covered By Testing

The 28 September 2017 *ENERGY STAR® Requirements for the Use of LM-80 Data defines conditions for which a LM-80 report is applied to cover models that have not been directly tested.*

The test results in this report applies to the following list of models:

- DURIS® S 8 GW P9LT31.PM with CCT 4000 K – 6500 K up to 90mA
- DURIS® S 8 GW P9LR31.PM with CCT 4000 K – 6500 K up to 90mA
- DURIS® S 8 GW P9LT32.PM with CCT 4000 K – 6500 K up to 450mA
- DURIS® S 8 GW P9LR34.PM with CCT 4000 K – 6500 K up to 103mA
- DURIS® S 8 GW P9LR34.PM Gen5 with CCT 4000 K – 6500 K up to 103mA
- DURIS® S 8 GW P9LR35.PM with CCT 4000 K – 6500 K up to 410mA
- DURIS® S 8 GW P9LR35.PM Gen5 with CCT 4000 K – 6500 K up to 410mA

Note: The devices are stressed and tested at average current density per LED die of 180mA/mm². This report can be referenced when the current employed in application is lower than the specified current of the respective devices as stated above.

Disclaimer

Please carefully read the below terms and conditions before using the Information.
If you do not agree with any of these terms and conditions, do not use the Information.

The Information contained in this document does not constitute an independent warranty. The committed behavior is described in the Product data sheet.

Further explanations:
Data: The Data used in this Document consider the reliability test results under the mentioned driving conditions only. For Product information on the maximum operating conditions please refer to the Product data sheet or contact your local sales partner.
Conditions: The conditions for the generation of the data are as follows:
1. The Data and curves shown in this Document are based on experiments carried out under laboratory conditions on a random sample size of LED with readouts at discrete readout times (where applicable). Thus, the Data above represent a limited number of production lots only and may differ between different assembly lots over time (including chip or package changes). Thus, the behavior of the LED in the final application may differ from the Data. The behavior of the LED at conditions or readout times deviating from those stated above may not be deduced from the Data.
2. For long term operation additional failure modes of the chip or package can occur which are not shown in this Document.
3. Possible differences in the thermal management of OSRAM OS and customer's setup may lead to a different aging behavior.
4. The lifetime projection data presented in this Document has been evaluated in accordance with the lifetime extrapolation method described and defined in IES TM-21-11. The lifetime projection is based on the Data shown in this Document. The Data had been collected and assembled according to IES LM-80-15.

END OF DOCUMENT

OSRAM Opto Semiconductors
GmbH

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93055 Regensburg, Germany
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www.osram-os.com

OSRAM
Opto Semiconductors

GREEN LIGHT – ILUMINAÇÃO E ELETRICIDADE EIRELI

Rua Padre Pedro Rota, Nr. 226 – Vila Macedópolis
São Paulo – SP – Cep. 03.237-060
Vendas (11) 4648-1306 – 2077 4285-2915 – 2916
e-mail : vendas@sunnybtm.com.br
Site: www.sunnybtm.com.br

MUNICÍPIO DE
CORONEL VIVIDA

PREFEITURA MUN PREFEITURA MUNICIPAL DE CORONEL VIVIDA - PR
PREGÃO ELETRÔNICO Nº 76/2021

RESPOSTA AO RECURSO

Referência: - Recurso da Luminare Led
- Recurso da JD Realize Construtora Ltda

Contrarrazões de recursos interposto pela empresa
- Green Light Iluminação e Eletricidade Eireli

OBJETO: Implantação de registro de preços para futura e eventual aquisição de luminárias públicas de LED para manutenção e conservação da iluminação pública para atender a Secretaria de Obras, Viação e Urbanismo

Ementa: Itens 1 e 2, Luminárias de LED de 50W e 120W

I – DOS FATOS (JD REALIZE)

A empresa JD REALIZE apresentou um recurso solicitando a desclassificação da empresa GREEN LIGHT, utilizando como argumentos:

lote	EXIGIDO EM EDITAL	CERTIFICADO DE CONFORMIDADE
01	Fator de Potencia mínimo 0,98 Fluxo luminoso mínimo 7.800lw	Fator de Potencia 0,95 Fluxo luminoso 7.000lw

II – EM RESPOSTA (GREEN LIGHT)

A Green Light visa melhorar diariamente seus produtos a fim de atender diversos fornecedores em âmbito nacional e internacional, portando estava em tramite junto ao Inmetro um pedido de revisão de suas luminárias.

Em anexo a nova liberação do Inmetro que atinge o Fator de Potência e Fluxo Luminoso.

Luminárias para Iluminação Pública Viária *Fixtures for Roadway Lighting*

Luminária Pública para iluminação viária Tecnologia LED OSRAM DURIS S8 G5 / IP66 / 102.000 HORAS/
Public luminaire for street lighting LED technology OSRAM DURIS S8 G5 / IP66 / 102.000 HOURS

Marca	Modelo ou Código	Descrição										Código de Barras
		Potência		Fluxo Luminoso		Eficiência luminosa		Fator de Potência		TCC(K)		
SUNNY ILUMINACAO	LED – BRASILIA II 50W 4K	50W	/	7.750 lm	/	155 lm/W	/	>0,98	/	5000		
SUNNY ILUMINACAO	LED – BRASILIA II 100W 4K	100W	/	15.500 lm	/	155 lm/W	/	>0,98	/	5000		
SUNNY ILUMINACAO	LED – BRASILIA II 120W 4K	120W	/	18.600 lm	/	155 lm/W	/	>0,98	/	5000		
SUNNY ILUMINACAO	LED – BRASILIA II 150W 4K	150W	/	23.250 lm	/	155 lm/W	/	>0,98	/	5000		
SUNNY ILUMINACAO	LED – BRASILIA II 180W 4K	180W	/	27.900 lm	/	155 lm/W	/	>0,98	/	5000		

III – DOS FATOS (LUMINARE LED)

A empresa LUMINARE LED apresentou um recurso solicitando a desclassificação da empresa GREEN LIGHT, utilizando como argumentos:

ITEM 1 – Luminária de Led 50W

A- No site do INMETRO não existe registro de luminária SUNNYBTM! LED BRASILIA 50W (anexo

B- LUZ NA COR 4000K, o Certificado de Conformidade de Produto apresentado é de uma luminária na cor 5.000k, em consulta ao site do fabricante da luminária https://sunnyled.com.br/, comprovasse que o mesmo não fabrica luminárias em 4.000k, assim não atendendo o termo de referência deste edital (anexo 02)

C- FATOR DE POTÊNCIA MÍNIMO 0.98, o Certificado de Conformidade de Produto apresentado, deixa claro que o fator de potência é de 0,95, assim não atendendo o 0,98 exigido no termo de referência deste edital.

D- FLUXO LUMINOSO MÍNIMO 7.800 LÚMENS, o Certificado de Conformidade de Produto apresentado, declara um fluxo luminoso de 7.000 lumens para a luminária de 50W, assim não atendendo os 7.800 lumens exigidos no termo de referência deste edital.

E- COM FOTOCÉLULA INCORPORADA OU TOMADA, MAIS FOTOCÉLULA ELETROMAGNTICA, em pesquisa detalhada ao site de licitante, https://sunnyled.com.br/productiluminaria-publica-led-brasilia-50w/ verifica-se que a luminária ofertada, SUNNYBTM/ LED BRASILIA 50W, não possui fotocélula incorporada e não apresentou se esta ou não ofertado a fotocélula, nem marca e modelo do rele fotocélula, assim caracterizando uma oferta incompleta que não atende o termo de referência deste edital.

F- LUMINÁRIA E FOTOCÉLULA DEVERÃO TER GARANTIA MÍNIMA DE 06 ANOS ASSINADA PELO FABRICANTE DO PRODUTO EM CARTA PERSONALIZADA COM O NOME DO MUNICÍPIO. APRESENTAR NO ATO DA LICITAÇÃO REGISTRO DO INMETRO E GARANTIAS. A licitante não apresentou carta de garantia de 06 anos do relé fotocélula, assim não atendendo o termo de referência deste edital.

ITEM 2 – Luminária de Led 120W

A- No site do INMETRO não existe registro de luminária SUNNYBTM/ LED BRASILIA 120W (anexo 01), esta referência não existe no site do fabricante https:/!sunnyled.com.br/ existe a possibilidade desta luminária não ser fabricada

B- LUZ NA COR 4000K, o Certificado de Conformidade de Produto apresentado é de uma luminária na cor 5.000k, em consulta ao site do fabricante da luminária https://sunnyled.com.br/, comprovasse que o mesmo não fabrica luminárias em 4.000k, assim não atendendo o termo de referência deste edital (anexo 02)

C- FLUXO LUMINOSO MÍNIMO 18.700 LÚMENS, o Certificado de Conformidade de Produto apresentado, não contempla a luminária de potencia de 120W tão pouco fluxo luminoso que atenda o termo de referencia com potencias menores, assim não atendendo o termo de referencia deste edital

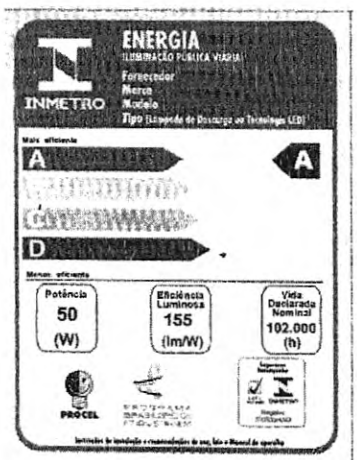
IV – EM RESPOSTA (GREEN LIGHT)

Segue as contrarrazões em resposta aos questionamentos da empresa Luminare LED:

Item 1 - Luminária de Led 50W

a) A Luminária está registrada no Inmetro do fabricante Sunnybtm Modelo: Led Brasilia 50W

SUNNY ILUMINACAO	LED – BRASILIA II 50W 4K	50W	/	7.750 lm	/	155 lm/W	/	>0,98	/	5000	----------



b) A empresa Fabrica luminárias em 4K conforme certificação do Inmetro

LED – BRASILIA II 50W 4K

c) Fator de Potência é > 0,98

Fator de Potência
Power factor

>0,98

d) Fluxo Luminoso de 7.750 lumens, a legislação permite uma variação de 10% pra mais ou pra menos.

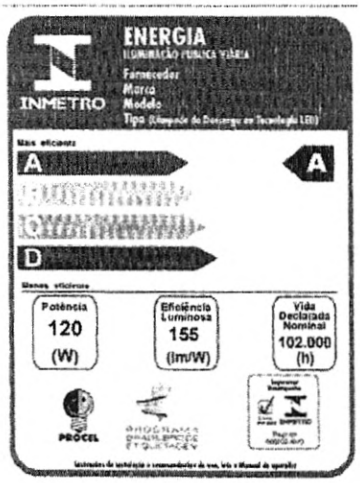
e) Sobre a Fotocélula Incorporado ou Tomada para Relê, as Luminárias Led Brasilia vão incorporadas Tomadas e Relê Fotocélula.

f) Enviamos a Carta de Garantia do Fabricante de 6 anos, no Registro do Inmetro são 102.000 mil horas equivalente a 10 anos.

ITEM 2 – Luminária de Led 120W

a) A Luminária Led Brasilia 120W esta registrada no Inmetro

SUNNY ILUMINACAO	LED – BRASILIA II 120W 4K	120W	/	18.600 lm	/	155 lm/W	/	>0,98	/	5000



b) A Luminária LED Brasilia 120W é uma luminária em fabricação 4k;

LED – BRASILIA II 120W 4K

c) Fluxo Luminoso de 18.600 lumens, legislação permite uma variaçáó de 10% pra mais ou pra menos.

V – CONCLUSÃO

A empresa GREEN LIGHT fornece luminárias em sua família da LED BRASILIA, que atendem todos os requisitos do Edital, e todas contrarrazões impostas foram respondidas, cabendo ao Pregoeiro a análise dos argumentos e decidir sobre nossa participação.

Entendemos que nosso produtos é de qualidade, 100% nacional, podendo ter referencias de outros municípios que fornecemos via pregão, tais como: Presidente Epitácio(SP), Esteio (RS), Itarana(ES).

Em anexo ao email estamos enviando o Certificado do Inmetro, os atestados da Osram sobre a vida útil.

E por fim estamos disponíveis para envio da amostra das Luminárias para que a parte técnica possa avaliar a qualidade das luminárias, bem como suas especificações técnicas.

Anexos:

- Certificado Inmetro
- Certificados Osram
- Data Shit Led

São Paulo (SP), 03 de Dezembro de 2021

GREEN LIGHT – ILUMINAÇÃO E ELETRICIDADE EIRELI
ANUNCIATA FERRACCIU FERRAZ
RG nº 7.143.788 e CPF nº 636.007.738-87

Certificado de Conformidade de Produto

Certificate of Conformity of the Product

Certificado n° *Certificate number:* 2112598
Contrato n° *Contract number:* 2021ELE213
Modelo da Certificação *Certification Model.* Modelo 5
Data emissão *Date of issue:* 02/12/2021
Validade deste Certificado *Expiry date:* 02/12/2025
Página *Page:* 1/4
Revisão *Review:* 00
Certificado de Conformidade válido somente acompanhado das páginas 01 a 04

CATA Certificadora

Organismo de Certificação Acreditado pela Coordenação Geral de Acreditação – CGCRE vinculada ao Instituto Nacional de Metrologia, Qualidade e Tecnologia INMETRO. *Certification Body accredited by the General Coordination of Accreditation – CGCRE, linked to the National Institute of Metrology, Quality and Technology INMETRO.*

Certifica a Empresa Fabricante *Manufacturer Company*

BTM Industria e Comercio de Metais – EIRELI

Estrada do Bom Sucesso, 2186 - Rio abaixo – CEP 08579-000 - Itaquaquecetuba – SP
CNPJ: 02.983.139/0001-28

Nome Fantasia *Fantasy Name*

SUNNY ILUMINACAO

Para o seguinte Escopo / Produtos(s) *Scope / Products*

Luminárias para Iluminação Pública Viária

Luminária Pública para iluminação viária Tecnologia LED
OSRAM DURIS S8 G5 / IP66 / 102.000 HORAS

Referência Técnica/Legal *Regulation*

Portarias INMETRO Nº 200 de 29/04/2021 e Nº 20 de 15/02/2017

São Paulo, 02 de dezembro de 2021.

CREA-SP 0601850304 SINQC Nº 29091
Sergio Constantino
Diretor de Certificação - CATA Certificadora

CATA Certificadora
Sergio Constantino
Executivo Sênior
Senior business analyst

Certificação de Produtos
OCP 0085

A validade deste Certificado de Conformidade está atrelada à realização das avaliações de manutenção e tratamento de possíveis não conformidades de acordo com as orientações do CATA Certificadora previstas no Relatório de Avaliação da Conformidade – RAC – específico. Para verificação da condição atualizada de regularidade deste Certificado de Conformidade deve ser consultado o banco de dados de produtos e serviços certificados do Inmetro. Este Certificado está vinculado ao endereço e contrato acima descrito. *The validity of this Certificate of Conformity is tied to the performance of the maintenance and treatment evaluations of possible nonconformities according to the CATA Certificadora guidelines provided in the specific RAC - Conformity Assessment Report. In order to verify the updated condition of regularity of this Certificate of Conformity, the database of certified products and services of Inmetro must be consulted. This Certificate is bound to the address and contract described above.*

CATA Certificadora

Certificado de Conformidade de Produto

Certificate of Conformity of the Product

Empresa Fabricante *Manufacturer Company*
BTM Industria e Comercio de Metais – EIRELI
Estrada do Bom Sucesso, 2186 - Rio abaixo – CEP 08579-000 - Itaquaquecetuba – SP
CNPJ: 02.983.139/0001-28

Nome Fantasia *Fantasy Name*
SUNNY ILUMINACAO

Escopo / Produtos (s) *Scope / Products*
Luminária Pública para iluminação viária Tecnologia LED
OSRAM DURIS S8 G5 / IP66 / 102.000 HORAS

Referência Técnica/Legal *Regulation*
Portarias INMETRO Nº 200 de 29/04/2021 e Nº 20 de 15/02/2017

Certificado nº *Certificate number:* 2112598
Contrato nº *Contract number:* 2021ELE213
Modelo da Certificação *Certification Model:* Modelo 5
Data emissão *Date of issue:* 02/12/2021
Validade deste Certificado *Expiry date:* 02/12/2025
Página *Page:* 2/4
Revisão *Review:* 00

Luminárias para Iluminação Pública Viária *Fixtures for Roadway Lighting*

Luminária Pública para iluminação viária Tecnologia LED OSRAM DURIS S8 G5 / IP66 / 102.000 HORAS/
Public luminaire for street lighting LED technology OSRAM DURIS S8 G5 / IP66 / 102,000 HOURS

Marca *Brand*	Modelo ou Código *Modelo or Code*	Descrição *Description*									Código de Barras *Bar Codes*
		Potência *Power*		Fluxo Luminoso *Luminous Flux*		Eficiência luminosa *Luminous efficiency*		Fator de Potência *Power factor*		TCC(K) *TCC(K)*	
SUNNY ILUMINACAO	LED – BRASILIA II 50W 4K	50W	/	7.750 lm	/	155 lm/W	/	>0,98	/	5000	----------
SUNNY ILUMINACAO	LED – BRASILIA II 100W 4K	100W	/	15.500 lm	/	155 lm/W	/	>0,98	/	5000	----------
SUNNY ILUMINACAO	LED – BRASILIA II 120W 4K	120W	/	18.600 lm	/	155 lm/W	/	>0,98	/	5000	----------
SUNNY ILUMINACAO	LED – BRASILIA II 150W 4K	150W	/	23.250 lm	/	155 lm/W	/	>0,98	/	5000	----------
SUNNY ILUMINACAO	LED – BRASILIA II 180W 4K	180W	/	27.900 lm	/	155 lm/W	/	>0,98	/	5000	----------

Nota: Relatório de ensaio provisórios nº FOR-ENS-16 -50W, FOR-ENS-16 -100W, FOR-ENS-16 -120W, FOR-ENS-16 150W, FOR-ENS-16 180W datado de 22/11/2021 – Laboratório interno BTM Industria e Comercio de Metais – EIRELI.
Note: Provisional test report No. FOR-ENS-16 -50W, FOR-ENS-16 -100W, FOR-ENS-16 -120W, FOR-ENS-16 150W, FOR-ENS-16 180W dated 11/22/ 2021 – BTM Industria e Comercio de Metais internal laboratory – EIRELI.

A validade deste Certificado de Conformidade está atrelada à realização das avaliações de manutenção e tratamento de possíveis não conformidades de acordo com as orientações do CATA Certificadora previstas no Relatório de Avaliação da Conformidade – RAC – específico. Para verificação da condição atualizada de regularidade deste Certificado de Conformidade deve ser consultado o banco de dados de produtos e serviços certificados do Inmetro. Este Certificado está vinculado ao endereço e contrato acima descrito. *The validity of this Certificate of Conformity is tied to the performance of the maintenance and treatment evaluations of possible nonconformities according to the CATA Certificadora guidelines provided in the specific RAC - Conformity Assessment Report In order to verify the updated condition of regularity of this Certificate of Conformity, the database of certified products and services of Inmetro must be consulted. This Certificate is bound to the address and contract described above.*

CREA-SP 060680606 SIQC Nº 29091
Sérgio Constantino
Diretor de Certificação - CATA Certificadora

Certificado de Conformidade de Produto

Certificate of Conformity of the Product

Certificado n° *Certificate number:* 2112598
Contrato n° *Contract number:* 2021ELE213
Modelo da Certificação *Certification Model:* Modelo 5
Data emissão *Date of issue:* 02/12/2021
Validade deste Certificado *Expiry date:* 02/12/2025

Revisão *Review:* 00

ANEXO DA PORTARIA INMETRO Nº 20 / 2017

ANEXO D - MODELO DA PLANILHA DE ESPECIFICAÇÕES TÉCNICAS

INMETRO	PROGRAMA BRASILEIRO DE ETIQUETAGEM LUMINÁRIAS DE ILUMINAÇÃO PÚBLICA VIÁRIA LÂMPADAS DE DESCARGA E TECNOLOGIA LED PLANILHA DE ESPECIFICAÇÕES TÉCNICAS	ETIQUETAGEM PET/002-LED DATA APROVAÇÃO: DEZ/2016 — ORIGEM: INMETRO REVISÃO: 00 — DATA ÚLTIMA REVISÃO: DEZ/2016

01 - DENOMINAÇÃO COMERCIAL	
MARCA	SUNNY BTM
FORNECEDOR	BTM – INDÚSTRIA E COMÉRCIO DE METAIS LTDA
FABRICANTE	BTM – INDÚSTRIA E COMÉRCIO DE METAIS LTDA

02 - IDENTIFICAÇÃO DA FAMÍLIA	
FAMÍLIA (*)	LUMINÁRIA PÚBLICA PARA ILUMINAÇÃO VIÁRIA TECNOLOGIA LED / OSRAM DURIS S8 G5 / IP66 / 102.000 HORAS
MARCA/MODELO DO LED	OSRAM DURIS S8 G5
TIPO DE LUMINÁRIA	VIÁRIA TECNOLOGIA LED
VIDA DECLARADA (h)	102.000 HORAS

(*) Composição do Código da Família:
LUMINÁRIA TECNOLOGIA LED: Tipo de Luminária / Marca e Modelo do LED / IP da Luminária / Vida declarada nominal
LUMINÁRIA COM LÂMPADA DESCARGA: Tipo de Luminária / Tipo de Luminária / Tipo de refator e difusor / Vida declarada nominal

CÓDIGO DE BARRAS	MODELO	TENSÃO DE ENSAIO (V)	FREQ. (HZ)	POTÊNCIA (W)	FATOR DE POTÊNCIA	FLUXO LUMINOSO (lm)	RENDIMENTO ÓTICO (***) (%)	EE (**) (lm/W)	IRC	TCC (K)	Nº RELATÓRIO ENSAIO/ LABORATÓRIO
----------	LED – BRASILIA II 50W 5K	127~227	50/60	50	>0,98	7.750	***	155	>80	5000	FOR-ENS-16 -50W
----------	LED – BRASILIA II 100W 5K	127~227	50/60	100	>0,98	15.500	***	155	>80	5000	FOR-ENS-16 -100W
----------	LED – BRASILIA II 120W 5K	127~227	50/60	120	>0,98	18.600	***	155	>80	5000	FOR-ENS-16 -120W
----------	LED – BRASILIA II 150W 5K	127~227	50/60	150	>0,98	23.250	***	155	>80	5000	FOR-ENS-16 150W
----------	LED – BRASILIA II 180W 5K	127~227	50/60	180	>0,98	27.900	***	155	>80	5000	FOR-ENS-16 180W

(**) EE – Eficiência Energética. (***) Aplicável somente para Luminárias com lâmpadas de descarga

03 - DATA	04 - CARIMBO E ASSINATURA	

INMETRO
Divisão de Programas de Avaliação da Conformidade - DIPAC/DCONF
Programa Brasileiro de Etiquetagem - PBE
Endereço: Rua da Estrela, 67 – 2° andar – Rio Comprido – Rio de Janeiro – RJ
CEP: 20.251-900
Telefones: (021) 3216-1006/1091 - Fax: (021) 3216-1093
E-mail: dipac@inmetro.gov.br

PROGRAMA BRASILEIRO DE ETIQUETAGEM

CREA-SP 060168034 SFQC Nº 25091
Sergio Constantino
Diretor de Certificação - CATA Certificadora

Certificado de Conformidade de Produto

Certificate of Conformity of the Product

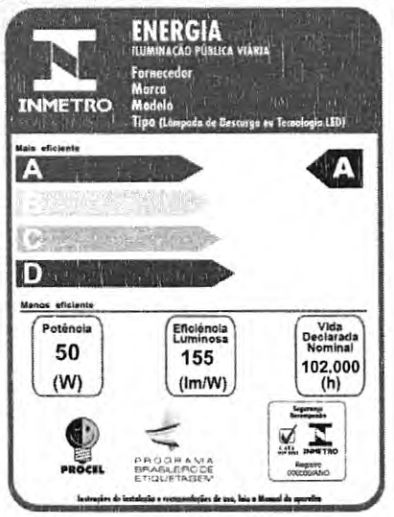
Certificado n° *Certificate number:* 2112598
Contrato n° *Contract number:* 2021ELE213
Modelo da Certificação *Certification Model:* Modelo 5
Data emissão *Date of issue:* 02/12/2021
Validade deste Certificado *Expiry date:* 02/12/2025

Revisão *Review:* 00

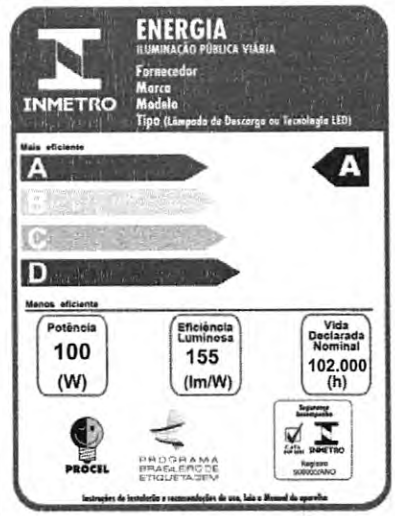
Etiquetas ENCE dos produtos Certificados

Conforme descrição na página 2
Label ENCE of the certified products
According to description on page 2

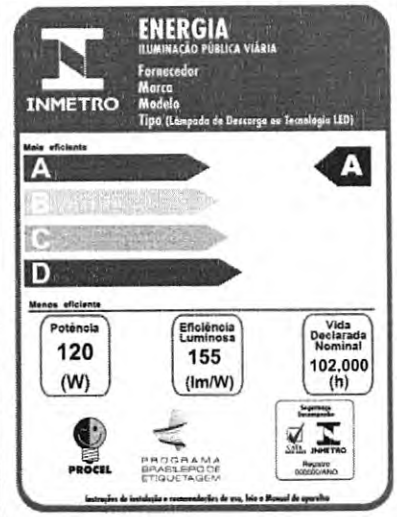
Modelo de etiqueta ENCE com dados fornecidos pelo detentor da Certificação *Models of labels ENCE provided for the applicant*



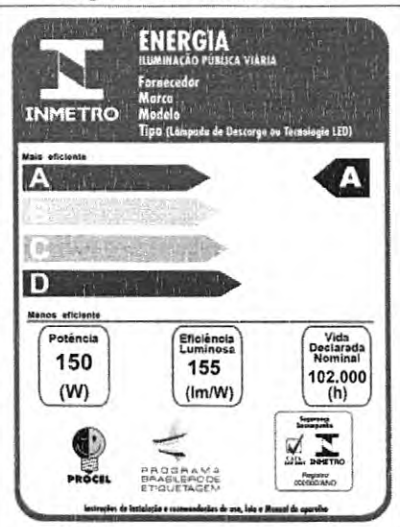
Código *Code:* LED – BRASILIA II 50W 5K



Código *Code:* LED – BRASILIA II 100W 5K



Código *Code:* LED – BRASILIA II 120W 5K



Código *Code:* LED – BRASILIA II 150W 5K

Código *Code:* LED – BRASILIA II 180W 5K

Sergio Constantino
Diretor de Certificação - CATA Certificadora