TEST REPORT

COMMISSION REGULATION (EU) No 2019/2020 of 1 October 2019 laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council

Report Number.....:	N02A22070743L01101
Date of issue.....:	Sep. 06, 2022
Total number of pages .....:	15
Name of Testing Laboratory preparing the Report .....:	Guangdong Meide Testing Technology Co., Ltd.
Applicant's name .....:	Zhongshan MLS Power Supply CO., LTD.
Address.....:	Building 4, No.1, Mulinsen Industrial Avenue, Xiaolan Town, Zhongshan City, 528415 Guangdong P.R. China
Test specification:	
Standard.....:	(EU) 2019/2020: 2019-10-01 with Corrigendum; (EU) 2021/341: 2021-02-23;
Test Report Form No. .....:	02-N003-2A
Test Report Form(s) Originator ....:	GTG
Master TRF .....:	Dated 2022-07-01

General disclaimer:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Testing Laboratory.

The authenticity of this Test Report and its contents can be verified by contacting the GTG, responsible for this Test Report.

Type of test object .....:	AC/DC Adapter
Trade Mark.....:	N/A
Manufacturer .....:	Same as applicant
Model/Type reference.....:	M240100-A033EU
All Model .....:	M240100-A033EU, M240100-A033BS, M240100-A036EU (Different models differ only in appearance and plug)
Ratings.....:	Input: 220-240V ~ 50/60Hz 0.6A Output: 24.0V 1A 24.0W

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **Testing Laboratory:**	Guangdong Meide Testing Technology Co., Ltd.	
Testing location/ address.....:	1st Floor, Area B, Jinbaisheng Industrial Park, 2nd Road, Songshan Lake High-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.	
Tested by (name, function, signature).....:	Jarvis Zhang Project handler	
Reviewed by(name, function, signature)....:	Sandy Chen Reviewer	
Approved by (name, function, signature)...:	Jessie Li Authorized Signatory	

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Photometric test record of light source at initial measurement

Attachment No. 2: Light intensity distribution record of light source at initial measurement

Attachment No. 3: Photo documentation

Summary of testing:	**Testing location:**
The sample(s) tested complies with the requirements of COMMISSION REGULATION (EU) No 2019/2020. These tests were conducted by test lab that fulfils the requirements of standard ISO/IEC 17025.	Guangdong Meide Testing Technology Co., Ltd. 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Possible test case verdicts:
- test case does not apply to the test object ..... : N/A (not applicable/not included in the order)
- test object does meet the requirement ..... : P (Pass)
- test object does not meet the requirement ..... : F (Fail)
Testing ..... :
Date of receipt of test item ..... : Aug. 29, 2022
Date (s) of performance of tests ..... : Sep. 05, 2022
General remarks:
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**
When differences exist; they shall be identified in the General product information section.
General product information: Unless otherwise specified, total 3 pcs control gears per model were chosen to perform all tests.

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict

0	**Measurement methods**		**P**
	Recognized state of art measurement methods incl. the one published in the Official Journal taking into account the measurement methods of (EU) 2019/2020		P
	Sample		**P**
	Number of sample used for test ……:	3 pcs	P
Annex Ⅱ	**Ecodesign requirements**		**P**
1	**Energy efficiency requirements**		**N/A**
a	Light source P_{on}		N/A
	Evaluation : $P \leq P_{onmax}$	P: P_{onmax}:	N/A
	Limit definition:		N/A
	$P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R$		N/A
	The values for threshold efficacy (η in lm/W) and end loss factor (L in W) are specified in Table 1, depending on the light source type.		N/A

Table 1

Threshold efficacy (η) and end loss factor (L)

Light source description	**η** [lm/W]	**L** [W]
LFL T5-HE	98,8	1,9
LFL T5-HO, 4 000 ≤ Φ ≤ 5 000 lm	83,0	1,9
LFL T5-HO, other lm output	79,0	1,9
FL T5 circular	79,0	1,9
FL T8 (including FL T8 U-shaped)	89,7	4,5
From 1 September 2023, for FL T8 of 2-, 4- and 5-foot	120,0	1,5
Magnetic induction light source, any length/flux	70,2	2,3
CFLni	70,2	2,3
FL T9 circular	71,5	6,2
HPS single-ended	88,0	50,0
HPS double-ended	78,0	47,7
MH ≤ 405 W single-ended	84,5	7,7
MH > 405 W single-ended	79,3	12,3
MH ceramic double-ended	84,5	7,7
MH quartz double-ended	79,3	12,3
Organic light-emitting diode (OLED)	65,0	1,5
Until 1 September 2023: HL G9, G4 and GY6.35	19,5	7,7
HL R7s ≤ 2 700 lm	26,0	13,0
Other light sources in scope not mentioned above	120,0	1,5 (*)
(*) For connected light sources (CLS) a factor L = 2,0 shall be applied		

N/A

<table>
<tr><th colspan="4">(EU) No 2019/2020</th></tr>
<tr><th>Clause</th><th>Requirement - Test</th><th>Result - Remark</th><th>Verdict</th></tr>
<tr><td></td><td>Basic values for correction factor (C) depending on light source type, and additions to C for special light source features are specified in Table 2.</td><td></td><td>N/A</td></tr>
<tr><td></td><td>Table 2
Correction factor C depending on light source characteristics
<table>
<tr><th>Light source type</th><th>Basic C value</th></tr>
<tr><td>Non-directional (NDLS) not operating on mains (NMLS)</td><td>1,00</td></tr>
<tr><td>Non-directional (NDLS) operating on mains (MLS)</td><td>1,08</td></tr>
<tr><td>Directional (DLS) not operating on mains (NMLS)</td><td>1,15</td></tr>
<tr><td>Directional (DLS) operating on mains (MLS)</td><td>1,23</td></tr>
<tr><th>Special light source feature</th><th>Bonus on C</th></tr>
<tr><td>FL or HID with CCT > 5 000 K</td><td>+0,10</td></tr>
<tr><td>FL with CRI > 90</td><td>0,10</td></tr>
<tr><td>HID with second envelope</td><td>+0,10</td></tr>
<tr><td>MH NDLS > 405 W with non-clear envelope</td><td>+0,10</td></tr>
<tr><td>DLS with anti-glare shield</td><td>+0,20</td></tr>
<tr><td>Colour-tuneable light source (CTLS)</td><td>+0,10</td></tr>
<tr><td>High luminance light sources (HLLS)</td><td>+0,0058 • Luminance HLLS - 0,0167</td></tr>
</table></td><td></td><td>N/A</td></tr>
<tr><td></td><td>Efficacy factor (F) :</td><td></td><td>N/A</td></tr>
<tr><td></td><td>1,00 for non-directional light sources (NDLS, using total flux)</td><td></td><td>N/A</td></tr>
<tr><td></td><td>0,85 for directional light sources (DLS, using flux in a cone)</td><td></td><td>N/A</td></tr>
<tr><td></td><td>CRI factor (R):</td><td></td><td>N/A</td></tr>
<tr><td></td><td>0,65 for CRI ≤ 25</td><td></td><td>N/A</td></tr>
<tr><td></td><td>(CRI+80)/160 for CRI > 25</td><td></td><td>N/A</td></tr>
<tr><td></td><td>The standby power P_{sb} of a light source shall not exceed 0,5 W.</td><td></td><td>N/A</td></tr>
<tr><td></td><td>The networked standby power P_{net} of a connected light source shall not exceed 0,5 W.</td><td></td><td>N/A</td></tr>
<tr><td></td><td>The allowable values for P_{sb} and P_{net} shall not be added together.</td><td></td><td>N/A</td></tr>
<tr><td>b</td><td>Minimum energy efficiency for separate control gear at full-load</td><td></td><td>P</td></tr>
<tr><td></td><td>Declared output power of the control gear (P_{cg}) or declared power of the light source (P_{ls}) in W, as applicable</td><td>Minimum energy efficiency</td><td></td><td>P</td></tr>
<tr><td rowspan="2"></td><td>Control gear for HL light sources:</td><td></td><td></td><td>N/A</td></tr>
<tr><td>all wattages P_{cg}</td><td>0,91</td><td></td><td>N/A</td></tr>
<tr><td rowspan="3"></td><td colspan="3">Control gear for FL light sources:</td><td>N/A</td></tr>
<tr><td>$P_{ls} \leq 5$</td><td>0,71</td><td></td><td>N/A</td></tr>
<tr><td>$5 < P_{ls} \leq 100$</td><td>$Pls/(2 \times \sqrt{(P_{ls}/36)} + 38/36$</td><td></td><td>N/A</td></tr>
</table>

(EU) No 2019/2020				
Clause	Requirement - Test		Result - Remark	Verdict
		× P_{ls}+1)		
	100 < P_{ls}	0,91		N/A
	Control gear for HID light sources:			N/A
	P_{ls} ≤ 30	0,78		N/A
	30 < P_{ls} ≤ 75	0,85		N/A
	75 < P_{ls} ≤ 105	0,87		N/A
	105 < P_{ls} ≤ 405	0,90		N/A
	405 < P_{ls}	0,92		N/A
	Control gear for LED or OLED light sources:			P
	all wattages P_{cg}	$P_{cg}^{0,81}$/(1,09 × $P_{cg}^{0,81}$ + 2,10)		P
	The no-load power P_{no} of a separate control gear shall not exceed 0,5 W. This applies only to separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for no-load mode.			P
	The standby power P_{sb} of a separate control gear shall not exceed 0,5 W.			N/A
	The networked standby power P_{net} of a connected separate control gear shall not exceed 0,5 W. The allowable values for P_{sb} and P_{net} shall not be added together.			N/A
2	**Functional requirements for light sources**			**N/A**
	Colour rendering			N/A
	CRI ≥ 80			N/A
	except for HID with Φ_{use} > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, when a clear indication to this effect is shown on the light source packaging and in all relevant printed and electronic documentation			N/A
	Displacement factor (DF, cos φ1) at power input P_{on} for LED and OLED MLS			N/A
	P_{on} ≤ 5 W:No limit			N/A
	5 W < P_{on} ≤ 10 W:DF ≥ 0,5			N/A
	10 W < P_{on} ≤ 25 W:DF ≥ 0,7			N/A
	25 W < P_{on}:DF ≥ 0,9			N/A
	Lumen maintenance factor (for LED and OLED)			N/A
	X_{LMF}%≥ $X_{LMF,MIN}$% $X_{LMF,MIN}$% = 100 × e $^{(3000 \times \ln(0.7)) / L70}$			N/A
	Survival factor (for LED and OLED)			N/A
	SF ≥ 90%			N/A
	Colour consistency for LED and OLED light sources			N/A
	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.			N/A
	Flicker for LED and OLED MLS			N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	P_{st} LM ≤ 1,0 at full-load		N/A
	Stroboscopic effect for LED and OLED MLS		N/A
	SVM ≤ 0,9 at full-load		N/A
	except for HID with Φ_{use} > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80		N/A
3	**Information requirements**		**N/A**
(a)	Information to be displayed on the light source itself		N/A
	For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the value and physical unit of the useful luminous flux (lm) and correlated colour temperature (K) shall be displayed in a legible font on the surface if, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.		N/A
	For directional light sources, the beam angle (°) shall also be indicated.		N/A
	If there is room for only two values, the useful luminous flux and the correlated colour temperature shall be displayed. If there is room for only one value, the useful luminous flux shall be displayed.		N/A
(b)	Information to be visibly displayed on the packaging		N/A
(1)	Light source placed on the market, not in a containing product: If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging:		N/A
(a)	the useful luminous flux (Φ_{use}) in a font at least twice as large as the display of the on-mode power (P_{on}), clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°);		N/A
(b)	the correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;		N/A
(c)	the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;		N/A
(d)	electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);		N/A
(e)	the $L_{70}B_{50}$ lifetime for LED and OLED light sources, expressed in hours;		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
(f)	the on-mode power (Pon), expressed in W;		N/A
(g)	the standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;		N/A
(h)	the networked standby power (Pnet) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;		N/A
(i)	the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;		N/A
(j)	if CRI< 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, a clear indication to this effect. For HID light sources with useful luminous flux > 4000 lm, this indication is not mandatory;		N/A
(k)	if the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta ≠ 25 °C or specific thermal management is necessary): information on those conditions;		N/A
(l)	a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods shall be provided on the manufacturer's website;		N/A
(m)	if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place;		N/A
(n)	if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste.		N/A
(2)	Separate control gears: If a separate control gear is placed on the market as a stand-alone product and not as a part of a containing product, in a packaging containing information to be visibly displayed to potential buyers, prior to their purchase, the following information shall be clearly and prominently displayed on the packaging:		P
(a)	the maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID);		P

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
(b)	the type of light source(s) for which it is intended;		P
(c)	the efficiency in full-load, expressed in percentage;		N/A
(d)	the no-load power (P_{no}), expressed in W and rounded to the second decimal, or the indication that the gear is not intended to operate in no-load mode. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;		N/A
(e)	the standby power (Psb), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;		N/A
(f)	where applicable, the networked standby power (P_{net}), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;		N/A
(g)	a warning if the control gear is not suitable for dimming of light sources or can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods. In the latter cases, detailed information on the conditions in which the control gear can be used for dimming shall be provided on the manufacturer's or importer's website;		N/A
(h)	a QR-code redirecting to a free-access website of the manufacturer, importer or authorised representative, or the internet address for such a website, where full information on the control gear can be found.		N/A
(c)	Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative		N/A
(1)	Separate control gears: For any separate control gear that is placed on the EU market, the following information shall be displayed on at least one free-access website:		N/A
(a)	the information specified in point 3(b)(2), except 3(b)(2)(h);		N/A
(b)	the outer dimensions in mm;		N/A
(c)	the mass in grams of the control gear, without packaging, and without lighting control parts and non-lighting parts, if any and if they can be physically separated from the control gear;		N/A
(d)	instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes;		N/A
(e)	if the control gear can be used with dimmable light sources, a list of minimum characteristics that the light sources should have to be fully compatible with the		N/A

(EU) No 2019/2020			
Clause	Requirement - Test	Result - Remark	Verdict
	control gear during dimming, and possibly a list of compatible dimmable light sources;		
(f)	recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU.		N/A
(d)	Technical documentation		N/A
(1)	Separate control gears: The information specified in point 3(c)(2) of this Annex shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC.		N/A
(e)	Information for products specified in point 3 of Annex II		N/A
	For the light sources and separate control gears specified in point 3 of Annex III the intended purpose shall be stated in the technical documentation for compliance assessment as per Article 5 of this Regulation and on all forms of packaging, product information and advertisement, together with an explicit indication that the light source or separate control gear is not intended for use in other applications.		N/A
	The technical documentation file drawn up for the purposes of conformity assessment, in accordance with Article 5 of this Regulation shall list the technical parameters that make the product design specific to qualify for the exemption.		N/A
	In particular for light sources indicated in point 3(p) of Annex III it shall be stated: 'This light source is only for use by photo sensitive patients. Use of this light source will lead to increased energy cost compared to an equivalent more energy efficient product.'		N/A

Table 1-- Minimum energy efficiency for separate control gear at full-load test data				
LED Driver Model:	M240100-A033EU			
Test Voltage (V) /Frequency(Hz):	230V, 50Hz			
Measured Value				
Sample No.	no-load power P_{no}(W)	standby power P_{sb}(W)	networked standby power P_{net}(W)	Minimum energy efficiency at full-load
A22080242001	0.14	--	--	89.55%
A22080242003	0.17	--	--	89.43%
A22080242004	0.15	--	--	89.47%
Average	0.15	--	--	89.49%
Limit	⩽ 0.5W	⩽0.5W	⩽0.5W	≥80.00%
Verdict	P	N/A	N/A	P

Remark：

The control gear (P_{cg}) is LED or OLED control gear Declared output power.

Limit requirement:

Minimum energy efficiency at full-load limit ⩾ P_{cg}0,81/(1,09 × P_{cg}0,81 + 2,10) =80.00%

The no-load power Pno of a separate control gear shall not exceed 0,5 W.

Attachment No. 3: Photo documentation

Figure 1: Outlook view of LED driver For M240100-A033EU

Figure 2: Outlook view of LED driver For M240100-A033EU

Figure 3: Outlook view of LED driver For M240100-A033BS

Figure 4: Outlook view of LED driver For M240100-A033BS

Figure 5: Outlook view of LED driver For M240100-A036EU

Figure 6: Outlook view of LED driver For M240100-A036EU

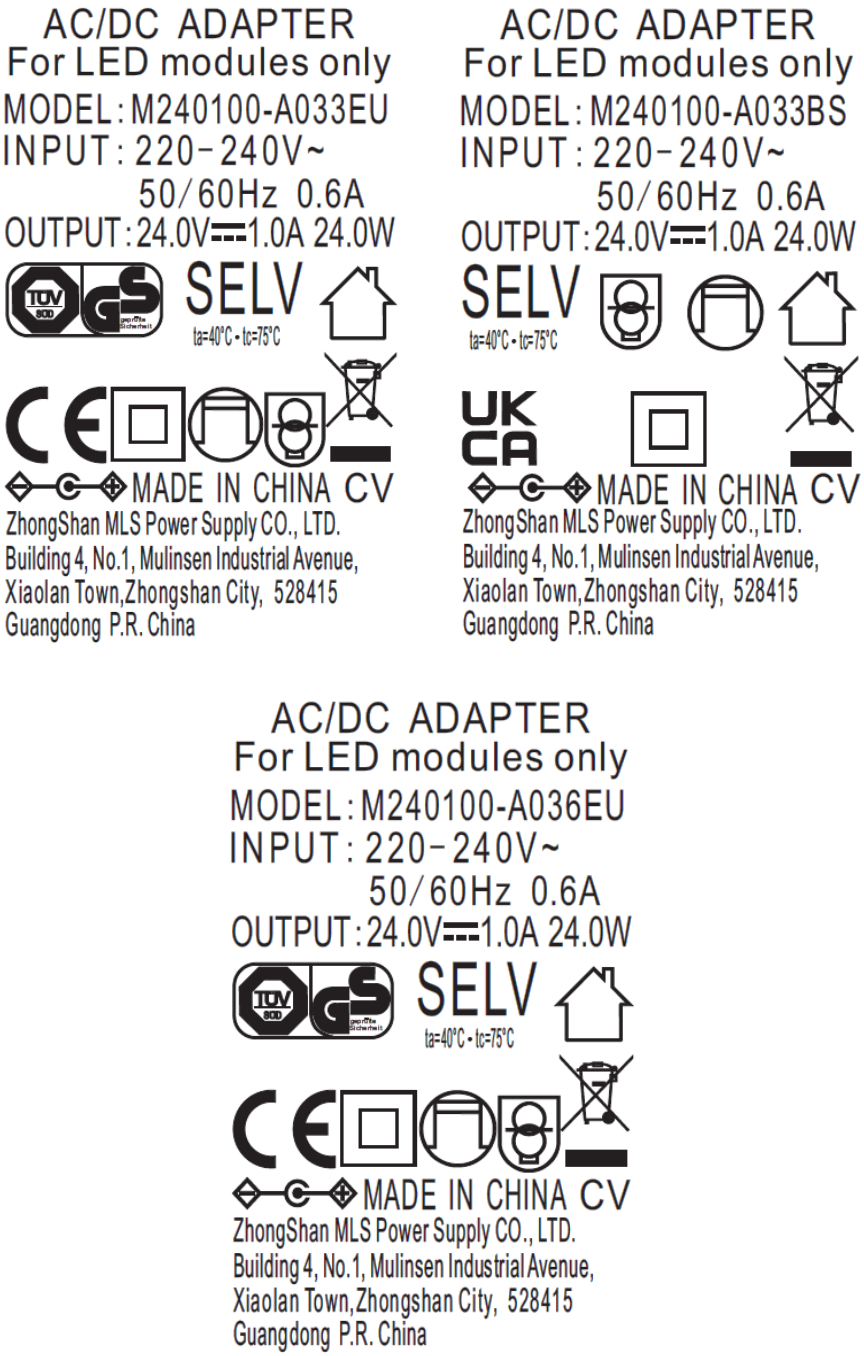

Figure 7: Label view of LED driver

---------- **END OF REPORT**----------