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. ..... :	N02A23100061L00101
Date of issue ..... :	Oct. 18, 2023
Total number of pages ..... :	11
Name of Testing Laboratory preparing the Report ..... :	Guangdong Meide Testing Technology Co., Ltd.
Applicant's name ..... :	NanoGrid Limited
Address ..... :	#1301-483A Castle Peak Rd, Kowloon, Hong Kong
Test specification:	
Standard ..... :	(EU) 2019/2020: 2019-10-01 with Corrigendum; (EU) 2021/341: 2021-02-23
Test Report Form No. ..... :	02-N003-2B
Test Report Form(s) Originator .... :	GTG
Master TRF ..... :	Dated 2023-02-01

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.

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	Jarvis Zhang
Reviewed by(name, function, signature) .... :	Sandy Chen Reviewer	Sandy Chen
Approved by (name, function, signature) ... :	Mo Jiakeng Authorized Signatory	Mo Jiakeng

Test item description ..... :	Smart Holiday String Lights
Trade Mark ..... :	nanoleaf®
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	NL71K1E25
All Model ..... :	Wi-Fi_BLE-RGBIC-500, Wi-Fi_BLE-RGBIC-400, Wi-Fi_BLE-RGBIC-250, Wi-Fi_BLE-RGBIC-200, Wi-Fi_BLE-RGBIC-100, NL71K1E25, NL71K1E20, NL71K1E10 (Different Model of light sources have different lengths, different power, and different dimming methods)
Ratings ..... :	220-240V, 50/60Hz

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: Photo documentation

Summary of testing: The product is not apply to the ecodesign requirements of (EU) 2019/2020.	**Testing location:** 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 ..... : Oct. 12, 2023

Date (s) of performance of tests ..... : Oct. 17, 2023

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.

Name and address of factory (ies) ..... : Dongguan ZOYO Electronics Technology Co., Ltd.
1st Building，NO.11,Nange west Road,Nanya Village Dao jiao Town,Dongguan,Guangdong,China.

General product information:

/

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

	Exemptions		**P**
1	Do not apply to the definitions of “light source” in this regulation:		P
a	chromaticity coordinates x and y in the range $x < 0,270$ or $x > 0,530$ and $y < 2,3172\ x^2 + 2,3653\ x - 0,2199$ or $y > -2,3172\ x^2 + 2,3653\ x - 0,1595$;	See Table 1	P
b	a luminous flux > 500 lumen per mm^2 of projected light-emitting surface area		N/A
c	a luminous flux < 60 or > 82 000 lumen		N/A
d	a colour rendering index (CRI) < 0		N/A
e	Light sources include:		N/A
1)	LED dies or LED chips		N/A
2)	LED packages;		N/A
3)	products containing light source(s) from which these light source(s) can be removed for verification		N/A
4)	light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source		N/A
2	light sources and separate control gears specifically tested and approved to operate:		N/A
a	in potentially explosive atmospheres		N/A
b	for emergency use		N/A
c	in radiological and nuclear medicine installations		N/A
d	in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft, as set out in Member States’ regulations or in documents issued by the European Defence Agency		N/A
e	in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units		N/A
f	in or on non-road mobile machinery		N/A
g	in or on interchangeable equipment as set out in Directive 2006/42/EC intended to be towed or to be mounted and fully raised from the ground or that cannot articulate around a vertical axis when the vehicle to which it is attached is in use on a road by vehicles as set out in Regulation (EU) No 167/2013		N/A
h	in or on civil aviation aircraft		N/A
i	in railway vehicle lighting		N/A
j	in marine equipment		N/A
k	in medical devices		N/A
3	double-capped fluorescent T5 light sources with power $P \leq 13$ W		N/A
4	electronic displays		N/A

(EU) No 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
5	light sources and separate control gears in battery-operated products		N/A
6	light sources for spectroscopy and photometric applications		N/A
7	light sources and separate control gears on bicycles and other non-motorised vehicles.		N/A
8	Any light source or separate control gear are specifically designed and marketed for their intended use in at least one of the following applications:		N/A
a	signalling (including, but not limited to, road-, railway-, marine- or air traffic- signalling, traffic control or airfield lamps);		N/A
b	image capture and image projection (including, but not limited to, photocopying, printing (directly or in pre-processing), lithography, film and video projection, holography);		N/A
c	light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content;		N/A
d	light sources with a peak radiation around 253,7 nm and intended for germicidal use (destruction of DNA);		N/A
e	light sources emitting 5 % or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20 % or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;		N/A
f	light sources with the primary purpose of emitting radiation around 185,1 nm and intended to be used for the generation of ozone;		N/A
g	light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses;		N/A
h	FL light sources emitting 80 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;		N/A
i	HID light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;		N/A
j	light sources with a photosynthetic efficacy > 1,2 µmol/J, and/or emitting 25 % or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture;		N/A
k	HID light sources with correlated colour temperature CCT > 7 000 K and intended for use in applications requiring such a high CCT;		N/A
l	light sources with a beam angle of less than 10° and intended for spot-lighting applications requiring a very narrow light beam;		N/A
m	halogen light sources with cap-type G9.5, GX9.5, GY9.5, GZ9.5, GZX9.5, GZY9.5, GZZ9.5, K39d, G9.5HPL, G16d, GES/E40 (low		N/A

(EU) No 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
	voltage (24V) silver crown only), GX16, GX16d, GY16, G22, G38, GX38, GX38Q, P28s, P40s, PGJX28, PGJX 36, PGJX50, R7s with a luminous flux > 12 000 lm, QXL, designed and marketed specifically for scene-lighting use in film studios, TV studios, and photographic studios, or for stage-lighting use in theatres, discos and during concerts or other entertainment events;		
n	colour-tuneable light sources that can be set to at least the colours listed in this point and which have for each of these colours, measured at the dominant wavelength, a minimum excitation purity of: Blue 440nm - 490nm 90% Green 520nm - 570nm 65% Red 610nm - 670nm 95% and are intended for use in applications requiring high-quality coloured light;		P
o	light sources accompanied by an individual calibration certificate detailing the exact radiometric flux and/or spectrum under specified conditions, and intended for use in photometric calibration (of e.g. wavelength, flux, colour temperature, colour rendering index), or for laboratory use or quality control applications for the evaluation of coloured surfaces and materials under standard viewing conditions (e.g. standard illuminants);		N/A
p	light sources provided specifically for use by photosensitive patients, to be sold in pharmacies and other authorised selling points (e.g. suppliers of disability products), upon presentation of a medical prescription;		N/A
q	incandescent light sources (not including halogen light sources) fulfilling all of the following conditions: power $\leqslant$ 40 W, length $\leqslant$ 60 mm, diameter $\leqslant$ 30 mm, declared suitable for operation at ambient temperature $\geqslant$ 300 ° C, and intended for use in high temperature applications such as ovens;		N/A
r	halogen light sources fulfilling all of the following conditions: cap-type G4, GY6.35 or G9, power $\leqslant$ 60 W, declared suitable for operation at ambient temperature $\geqslant$ 300 ° C, and intended for use in high temperature applications such as ovens;		N/A
s	halogen light sources with blade contact-, metal lug-, cable-, litz wire- or non-standard customised electrical interface, specifically designed and marketed for industrial or professional electro-heating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening);		N/A

(EU) No 2019/2020			
Clause	Requirement – Test	Result - Remark	Verdict
t	halogen light sources fulfilling all of the following conditions: R7s cap, CCT ≤ 2 500 K, length not in the ranges 75-80 mm and 110-120 mm, specifically designed and marketed for industrial or professional electro-heating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening);		N/A
u	single capped fluorescent lamps (CFLni) having a diameter of 16 mm (T5), 2G11 4 pin base, with CCT = 3 200 K and chromaticity coordinates x = 0,415 y = 0,377, or with CCT = 5 500 K and chromaticity coordinates x = 0,330 y = 0,335, specifically designed and marketed for studio and video applications for traditional filmmaking;		N/A
v	LED or OLED light sources, complying with the definition of 'original works of art' as defined in Directive 2001/84/EC of the European Parliament and of the Council (17), made by the artist him/herself in a limited number below 10 pieces;		N/A
w	white light sources which (1) are designed and marketed specifically for scene-lighting use in film-studios, TV-studios and locations, and photographic-studios and locations, or for stage-lighting use in theatres, during concerts or other entertainment events; and which: (2) provide two or more of the following specifications: (a) LED with high CRI > 90; (b) GES/E40, K39d socket with changeable Colour Temperature down to 1 800 K (undimmed), used with low voltage power supply; (c) LED rated at 180W and greater and arranged to direct output to an area smaller than the light emitting surface; (d) DWE lamp type which is a tungsten lamp defined by its wattage (650 W) voltage (120 V) and terminal type (pressure screw terminal); (e) white bi-colour LED sources; (f) fluorescent tubes: Min BI Pin T5 and Bi Pin T12 with CRI ≥ 85 and CCT 2 900, 3 000, 3 200, 5 600 or 6 500 K.		N/A

Table 1-- Functional requirements for light source test data (Initial)

Test Ambient Temperature(Integrating sphere internal temperature): 25.1℃;

Test orientation: Downward; stabilization time(Min.): 30min

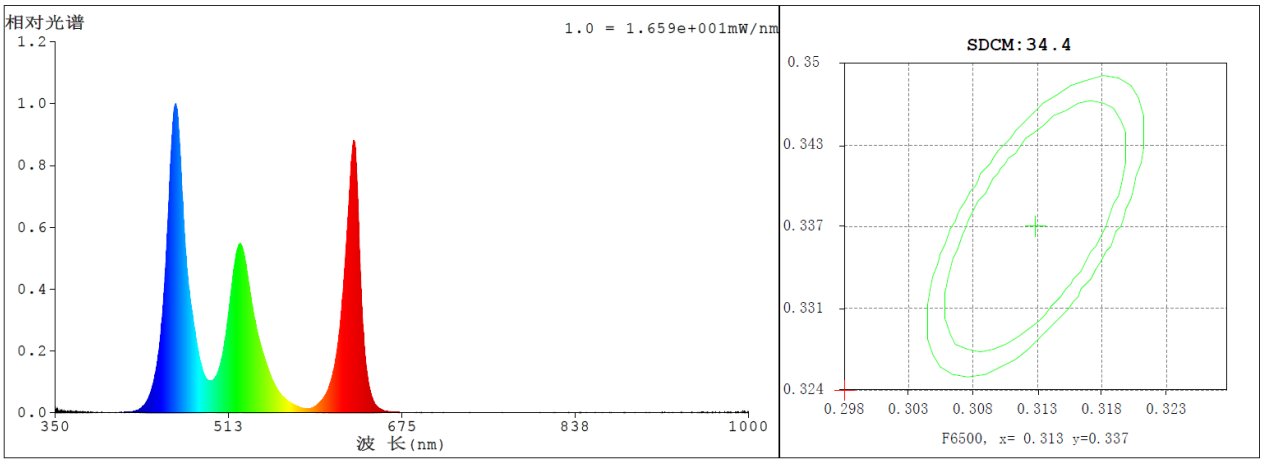
Model:	NL71K1E25	Voltage (V):	230	Frequency (Hz):	50

Measured Value

Mode	U (V)	I (A)	P (W)	Φ (lm)	CRI	Chromaticity coordinates x	Chromaticity coordinates y
White	229.9	0.1149	14.73	241.21	49	0.268	0.2782
Red	229.9	0.1357	17.91	56.829	24.3	0.6949	0.3049
Green	229.9	0.1318	17.3	165.56	0	0.1801	0.7425
Blue	229.9	0.1301	17.01	28.817	0	0.1357	0.0532

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

Spectrum Test Report for White Mode



CIE颜色参数

色品坐标: x = 0.2680 y = 0.2782 / u' = 0.1848 v' = 0.4315 (duv=2.79e-03)

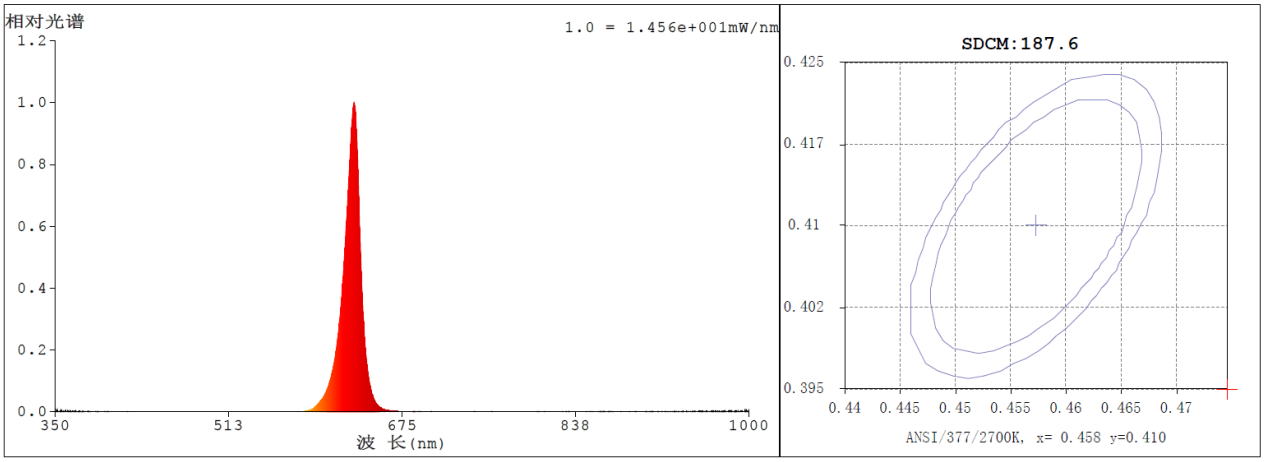
相关色温:CCT=12476K 主波长:λd=479.7nm 色纯度:Purity=27.1%

峰值波长:λp=463nm 半峰带宽:FWHM=18.9nm 色比:R=23.2% G=67.1% B=9.7%

显色指数: Ra = 49.0 TM30:Rf=56 Rg=117

R1 =29	R2 =67	R3 =75	R4 =46	R5 =52	R6 =65	R7 =58	
R8 =0	R9 =0	R10=33	R11=35	R12=62	R13=36	R14=79	R15=9

Spectrum Test Report for Red Mode



CIE颜色参数

色品坐标: x = 0.6949 y = 0.3049 / u' = 0.5275 v' = 0.5208 (duv=-8.00e-02)

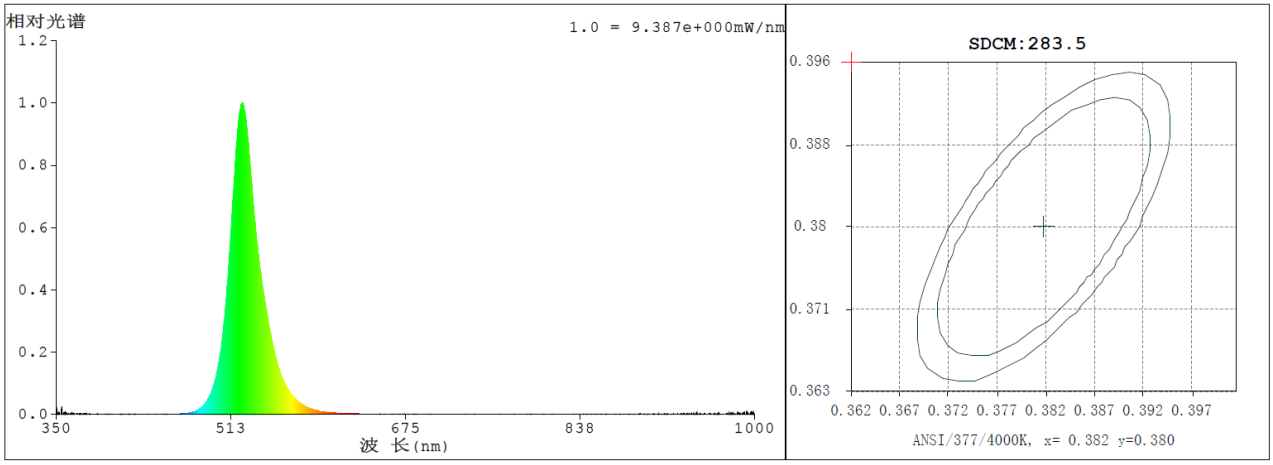
相关色温:CCT=1001K 主波长:λd=621.8nm 色纯度:Purity=100.0%

峰值波长:λp=630nm 半峰带宽:FWHM=15.5nm 色比:R=97.1% G=2.9% B=0.0%

显色指数: Ra = 24.3 TM30:Rf=0 Rg=0

R1 =2	R2 =77	R3 =26	R4 =0	R5 =0	R6 =89	R7 =0	
R8 =0	R9 =0	R10=70	R11=0	R12=79	R13=27	R14=57	R15=0

Spectrum Test Report for Green Mode



CIE颜色参数

色品坐标: x = 0.1801 y = 0.7425 / u' = 0.0624 v' = 0.5786 (duv=1.57e-01)

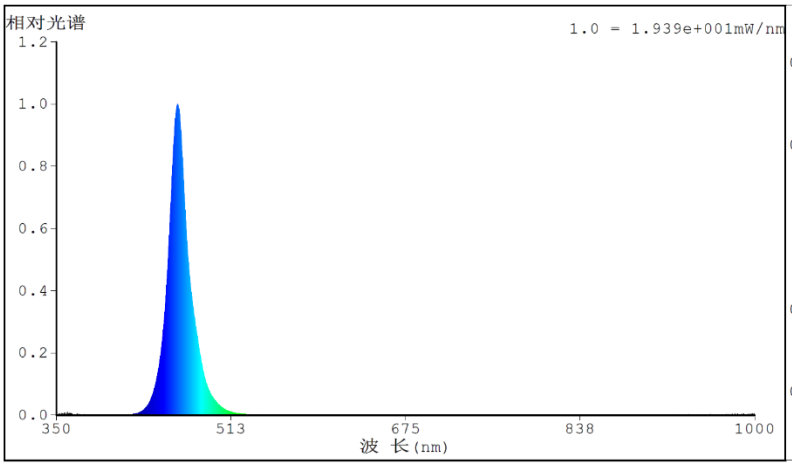
相关色温:CCT=7068K 主波长:λd=530.3nm 色纯度:Purity=86.8%

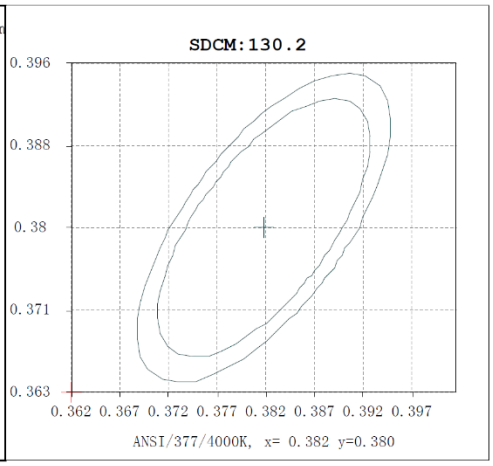
峰值波长:λp=523nm 半峰带宽:FWHM=27.7nm 色比:R=0.2% G=98.8% B=1.0%

显色指数: Ra = 0.0 TM30:Rf=1 Rg=5

R1 =0	R2 =0	R3 =0	R4 =0	R5 =0	R6 =0	R7 =0	
R8 =0	R9 =0	R10=0	R11=0	R12=0	R13=0	R14=35	R15=0

Spectrum Test Report for Blue Mode





CIE颜色参数

色品坐标: x = 0.1357 y = 0.0532 / u' = 0.1612 v' = 0.1423 (duv=-1.72e-01)

相关色温:CCT>=100000K 主波长:λd=467.2nm 色纯度:Purity=97.7%

峰值波长:λp=463nm 半峰带宽:FWHM=18.8nm 色比:R=0.2% G=10.8% B=89.0%

显色指数: Ra = 0.0 TM30:Rf=0 Rg=47

R1 =0	R2 =0	R3 =0	R4 =0	R5 =0	R6 =0	R7 =0	
R8 =0	R9 =0	R10=0	R11=0	R12=0	R13=0	R14=0	R15=0

Attachment No. 2: Photo documentation

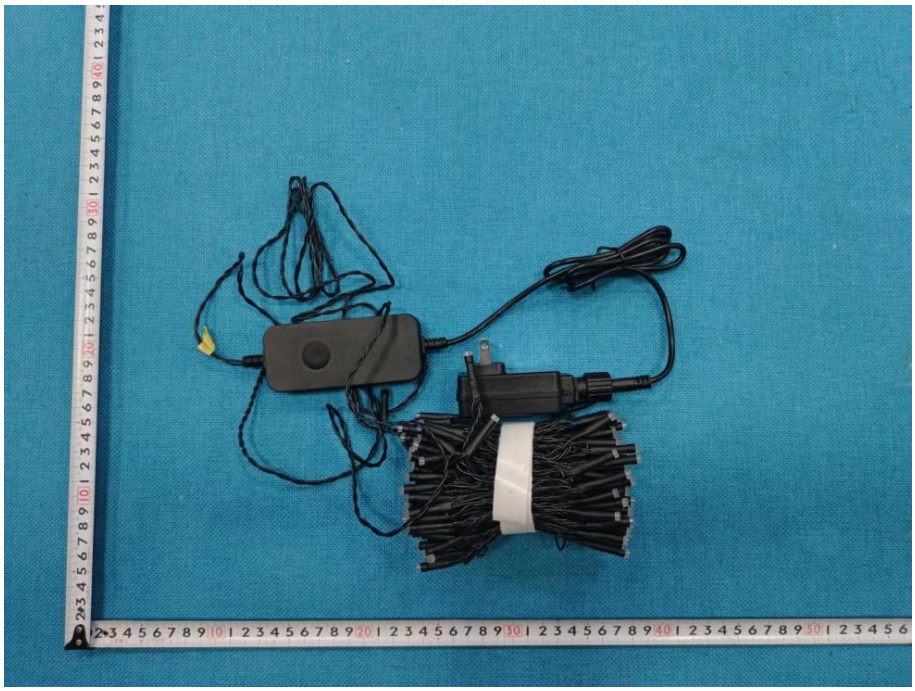


Figure 1: Outlook view

---End of Report---