

TEST REPORT

Ecodesign requirements for light sources and separate control gears

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Testing laboratory name:..... Pioneer Testing Technology (Hangzhou) Co., Ltd

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Test by (+ signature):..... Joker Fan 



Approved by (+ signature):..... Kevin Yu 

Applicant's name:..... NEWSTAR LED CO., LIMITED

Applicant's address:..... Building 3, Henhui Industrial Park, Shiyuan Town, Guangming new district 518108
Shenzhen China

Test item description

Product category:..... LED Strip

Trade mark:..... NEWSTAR

Model reference:..... See model list on page 5

Rating: See model list on page 5

Manufacture's name:..... NEWSTAR LED CO., LIMITED

Address:..... Building 3, Henhui Industrial Park, Shiyuan Town, Guangming new district 518108
Shenzhen China


Country of manufacturing:..... China

Test specifications:..... COMMISSION REGULATION (EU) 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 and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012
 COMMISSION REGULATION (EU) 2021/341 of 23 February 2021 amending Regulations (EU) 2019/424, (EU) 2019/1781, (EU) 2019/2019, (EU) 2019/2020, (EU) 2019/2021, (EU) 2019/2022, (EU) 2019/2023 and (EU) 2019/2024 with regard to ecodesign requirements for servers and data storage products, electric motors and variable speed drives, refrigerating appliances, light sources and separate control gears, electronic displays, household dishwashers, household washing machines and household washer-dryers and refrigerating appliances with a direct sales function
 COMMISSION DELEGATED REGULATION (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012.
 COMMISSION DELEGATED REGULATION (EU) 2021/340 of 17 December 2020 amending Delegated Regulations (EU) 2019/2013, (EU) 2019/2014, (EU) 2019/2015, (EU) 2019/2016, (EU) 2019/2017 and (EU) 2019/2018 with regard to energy labelling requirements for electronic displays, household washing machines and household washer-dryers, light sources, refrigerating appliances, household dishwashers, and refrigerating appliances with a direct sales function


Conclusion

Compliant with the applicable requirements set out in the regulations and standards mentioned above.

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Summary of testing:			
Samples size for test:	10pcs/model	Date of receipt of test item:	May 22, 2023
Date of tests:	May 22, 2023 ~ Nov 22, 2023	Ambient temperature for test:(°C)	25±1
Factory's name:	NEWSTAR LED CO., LIMITED		
Factory's address and testing place:	Building 3,Henhui Industrial Park,Shiyan Town,Guangming new district 518108 Shenzhen China		
Remark: These tests fulfil the requirements of standard ISO/IEC 17025. When determining the test conclusion, the Measurement Uncertainty of test has been considered.			
Summary of report:			
Index of contents:			
1. Description of reference tested and product information			
2. Reference standard			
3. Evaluation			
4. Equipment used for testing			
Annex I – Results of measurements			
Appendix II: Product information sheet			
Annex III –Information Requirements			
Annex IV –Making, packing and instruction			
Annex IV –Photos of Tested Samples			
Possible test case verdicts:			
Test object does meet the requirement:			P (Pass)
Test case does not apply to the test object:			NA (Not applicable)
Test object does not meet the requirement:			F (Fail)
Test object does not demand			ND (Not demanded)
General remarks:			
<p>"(See remark #)" refers to a remark appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>This report is a full test report. In this report, the test samples are provided by client and do the test at factory, the test results only apply to the samples and test data as received in this report.</p>			

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1. DESCRIPTION OF REFERENCES TESTED

Lighting source:	<input type="checkbox"/> Direct <input checked="" type="checkbox"/> Indirect <input type="checkbox"/> Colour-tuneable light source <input type="checkbox"/> Connected light source (CLS) <input type="checkbox"/> High luminance light source
Technology:	<input checked="" type="checkbox"/> LED (Light Emitting Diode) <input type="checkbox"/> OLED (Organic Light Emitting Diode) <input type="checkbox"/> Incandescent lamp <input type="checkbox"/> CFL <input type="checkbox"/> CFLni <input type="checkbox"/> HL (Halogen lamp) <input type="checkbox"/> FL (Fluorescent lamp) <input type="checkbox"/> LFL (Liner Fluorescent lamp) <input type="checkbox"/> Magnetic induction light source <input type="checkbox"/> HID <input type="checkbox"/> Control gear
Control gear:	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External <input type="checkbox"/> None
Use environment:	<input checked="" type="checkbox"/> Indoor <input type="checkbox"/> Outdoor <input type="checkbox"/> Industry
Other properties of the Product:	<input type="checkbox"/> Clear Lamp <input type="checkbox"/> Second Envelope <input type="checkbox"/> Anti-Glare Shield <input checked="" type="checkbox"/> None
Type of Ballast / Control Gear	<input type="checkbox"/> Dimming <input checked="" type="checkbox"/> Non-dimming
Connected light source (CLS):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Type and size of cap:	NA
Containing product:	<input type="checkbox"/> Containing product with non-separateable light source(s) or/and control gear(s) <input checked="" type="checkbox"/> Containing product with separateable light source(s) or/and control gear(s)
Declared technical data:	LED source
Model name:	
Rated current (mA)/Rate Voltage(V) & rate frequency(Hz):	DC24V
Rated lamp power (W) Pon:	9.5W
Rated useful luminous flux (lm):	1700lm
Rated beam angel (°):	NA
Rated CCT (K):	4000K
Rated life time (h):	30000h
Lamp type:	LED
Declared Colour rendering (CRI)Ra:	≥80



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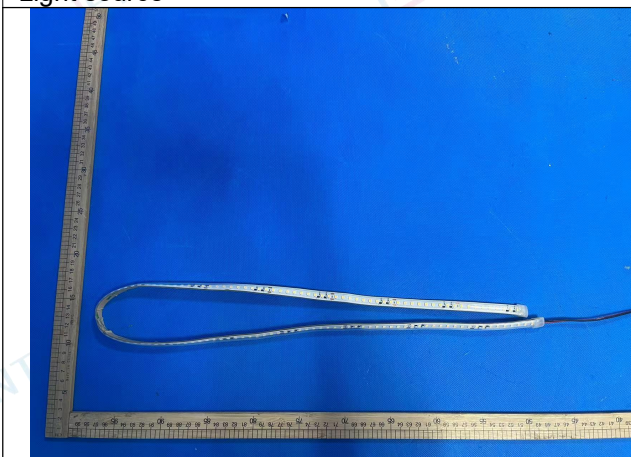
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Declared Colour rendering (CRI)R9:	1
Declared Displacement factor for LED and OLED MLS (DF) :	NA
Declared Lumen maintenance factor for LED and OLED:	≥96%
Declared Survival factor for LED and OLED:	≥90%
Declared colour consistency for LED and OLED:	<6
Declared Flicker for LED and OLED MLS (Pst LM) :	NA
Declared Stroboscopic effect for LED and OLED MLS (SVM)	NA
Standby power (Psb)(W) :	NA
Networked standby power (Pnet) (W):	NA
Declared technical data:	LED driver
Model name:	-
Rated Voltage (V):	-
Rated power (Pcg) (W):	-
No-load power (Pno) (W):	-
Standby power (Psb)(W) :	-
Networked standby power (Pnet) (W):	-
Energy efficiency:	-

Picture of the product

Light source



None



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Product information:

1. The products are light source, used as general lighting service. It is Colour temperature adjustable. Switching from 3000K/6000K, we choose the 3000K for all tests, 6000K for auxiliary test.
2. All 'verdict' in this test report based on test at rated input; other conditions were not considered.
3. All tests were performed on light source intended operating orientation (horizontal, downward).
4. Details see below table:

Table a:

Luminaire name	Light source		LED Driver	
Model name	Model name	Quantity	Model name	Quantity
NSS-2835-126C	NSS-2835-126C 4000K	1	-	-

Table b: Light source

Model name	Rated input	Declared color temperature	Energy consumption in on-mode	Pon wattage (W)
NSS-2835-126C 4000K	DC24V	4000K	10kWh/1000h	9.5W
	Nominal useful luminous flux (lm)	Ponmax (W)	Declared η_{TM} (lm/W)	Declared Energy Efficiency Class
	1700lm	15.7W	165.7lm/W	C

Summary of testing:

Model name	Testing condition
NSS-2835-126C 4000K	DC24V



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2. Test method and test conditions for measurements

For the purpose of assessing the conformity of the product with the ecodesign requirements as set in regulation (EU) No 2019/2020 & COMMISSION REGULATION (EU) 2021/341 of 23 February 2021, the following test methods have been used:

Standard reference	Describe
EN 50285:1999	Energy efficiency of electric lamps for household use – Measurement methods
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 60061-1:1993 All amendments up to A27:2014	Lamp caps and holders together with gauges for the control of interchangeability and safety Part1: Lamp caps
EN 60064:1995 Amendments A2:2003 A3:2006 A4:2007 A11:2007	Tungsten filament lamps for domestic and similar general lighting purposes – Performance requirements
EN 60357: 2003 Amendment A2:2008	Tungsten halogen lamps (non-vehicle) – Performance specifications
EN 60969: 2016	Self-ballasted lamps for general lighting services – Performance requirements
CIE 13.3: 1995	Method of Measuring and Specifying Colour Rendering Properties of Light Sources
CIE 15: 2004	Colorimetry
CIE 18.2: 1983	The Basis of Physical Photometry
CIE 84: 1989	The Measurement of Luminous Flux
CIE 97: 2005	Maintenance of indoor electric lighting systems
CIE 154: 2003	The Maintenance of outdoor lighting systems
EN 62612: 2013	Self-ballasted LED-lamps for general lighting services – Performance requirements
IEC 62717:2014	Luminaire performance – Part 1: General requirements
IEC 62722-2-1:2014	Luminaire performance – Part 2-1: Particular requirements for LED luminaires
EN 13032-1:2004 Amendment A1:2012	Light and lighting Measurement and presentation of photometric data of lamps and luminaires Part 1: Measurement and file format
IEC 62471:2006	Photobiological safety of lamps and lamp systems
EN 60968:2013	Self-ballasted lamps for general lighting services
EN 62560:2012	Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications
EN 61341:2011	Method of measurement of centre beam intensity and beam angle(s) of reflector lamps
EN 60357	Tungsten halogen lamps (non-vehicle). Performance specifications
IEC 62301:2011	Household electrical appliances - Measurement of standby power
EN 13032-4:2015+A1:2019	Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 4: LED lamps, modules and luminaires
IEC TR 63158:2018	Equipment for general lighting purposes - Objective test method for stroboscopic effects of lighting equipment

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ANNEX II: Ecodesign requirements			
1. Energy efficiency requirements			
(a): Light source	From 1 September 2021, the declared power consumption of a light source P_{on} shall not exceed the maximum allowed power P_{onmax} (in W), defined as a function of the declared useful luminous flux Φ_{use} (in lm) and the declared colour rendering index CRI (-) as follows: $P_{onmax} = C_x(L + \Phi_{use}/(F_x\eta)) \times R$	See table 1 of this report	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
	The standby power P_{sb} of a light source shall not exceed 0,5 W		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
	The networked standby power P_{net} of a connected light source shall not exceed 0,5 W. The allowable values for P_{sb} and P_{net} shall not be added together		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
(b): Control gear	From 1 September 2021, the values set in Table 3 for the minimum energy efficiency requirements of a separate control gear operating at full-load shall apply: Details see Table 3: Minimum energy efficiency for separate control gear at full-load	See table 4 of this report	<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
	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.		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
	The standby power P_{sb} of a separate control gear shall not exceed 0,5 W.		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
	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.		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
2. Functional requirements			
	From 1 September 2021, the functional requirements specified in Table 4 shall apply for light sources: Table 4: Functional requirements for light sources		<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
Colour rendering	$CRI \geq 80$ (except for HID with $\Phi_{use} > 4$ 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)	See table 1 of this report	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
Displacement factor (DF, $\cos \phi_1$) at power input P_{on} for LED and OLED MLS	No limit at $P_{on} \leq 5$ W, $DF \geq 0,5$ at 5 W $< P_{on} \leq 10$ W, $DF \geq 0,7$ at 10 W $< P_{on} \leq 25$ W $DF \geq 0,9$ at 25 W $< P_{on}$	See table 1 of this report	<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
Lumen maintenance factor (for LED and OLED)	The lumen maintenance factor XLMF% after endurance testing according to Annex V shall be at least XLMF,MIN % calculated as follows: $XLMF,MIN\% = 100 \times e^{(65 \times \ln(0.7))L70}$	See table 3 of this report	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
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	where L70 is the declared L70B50 lifetime (in hours). If the calculated value for XLMF,MIN exceeds 96,0 %, an XLMF,MIN value of 96,0 % shall be used		
Survival factor (for LED and OLED)	Light sources should be operational as specified in row 'Survival factor (for LED and OLED)' of Annex IV, Table 6, following the endurance testing given in Annex V.	See table 3 of this report	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
Colour consistency for LED and OLED light sources	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	See table 1 of this report	<input checked="" type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> Under testing
Flicker for LED and OLED MLS	Pst LM ≤ 1,0 at full-load		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
Stroboscopic effect for LED and OLED MLS	SVM ≤ 0,9 at full-load (except for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI < 80) From 1 September 2024: SVM ≤ 0,4 at full-load (except for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI < 80)		<input type="checkbox"/> P <input type="checkbox"/> F <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Under testing
3. Information requirements			
	From 1 September 2021 the following information requirements shall apply: (a) Information to be displayed on the light source itself; (b) Information to be visibly displayed on the packaging; (c) Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative; (d) Technical documentation; (e) Information for products specified in point 3 of Annex III.		<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Not checked



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EQUIPMENTS USED FOR TESTING

Equipment	Brand	Model
AC Power	Everfine	DPS1010
Numeric Multimeter	Everfine	PF310A
Spectroradiometer	Everfine	HAAS-65
DC Power	Everfine	WY3010
Start\Run Up Time Test System	Everfine	START-1000
Integral Sphere	Everfine	AIS-2 1.5m
Luminous Flux Standard Lamp	Everfine	D204
Light Intensity Standard Lamp	Everfine	28V/10A/500cd
Goniophotometer	Everfine	GO-65
Stroboscopic tester	Huipu	HFA-65



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Appendix I: – Test results

Table 1 : NSS-2835-126C tested at 4000K							
Sample No.	Measured voltage (V)	Measured current (A)	Measured Pon (W)	Measured Φuse (lm)	Pon max (W)	R9	CCT (K)
1#	24.0	0.394	9.5	1716.0	16.3	17	4065
2#	23.7	0.393	9.3	1711.8	16.2	14	3986
3#	23.8	0.394	9.4	1703.3	16.0	16	3936
4#	23.8	0.393	9.3	1705.4	16.0	16	3948
5#	23.8	0.392	9.3	1708.4	16.1	14	3986
6#	23.7	0.394	9.3	1711.5	16.1	16	3942
7#	23.6	0.392	9.3	1708.0	16.1	15	3973
8#	23.8	0.394	9.4	1701.3	16.1	14	3955
9#	23.7	0.393	9.3	1710.9	16.1	15	3945
10#	23.6	0.393	9.3	1707.3	16.1	14	3926
Average	23.8	0.393	9.3	1708.4	16.1	15	3966
Sample No.	Colour rendering (CRI)	Colour consistency (SDCM)	Displacement factor (DF)	Flicker (Pst LM)	Stroboscopic effect (SVM)	Psb (W)	Pnet (W)
1#	85.5	1.3	--	--	--	--	--
2#	83.6	1.4	--	--	--	--	--
3#	83.7	1.3	--	--	--	--	--
4#	84.3	1.2	--	--	--	--	--
5#	84.2	1.4	--	--	--	--	--
6#	84.6	1.2	--	--	--	--	--
7#	83.9	1.2	--	--	--	--	--
8#	84.5	1.1	--	--	--	--	--
9#	84.2	1.2	--	--	--	--	--
10#	83.2	1.2	--	--	--	--	--
Average	84.2	1.2	--	--	--	--	--
Required	≥ 80	≤ 6	--	≤ 1	≤ 0.4	≤ 0.5	≤ 0.5

Ponmax = C x (L + Φuse / (F x η) x R					
Correction factor	C	1.00	Efficacy factor	F	1.00
End loss factor (W)	L	1.5	Threshold efficacy (lm/W)	η	120.0
Useful luminous (lm)	Φuse	See measured Φuse	CRI factor	R	(Ra + 80)/160



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Table 2 : NSS-2835-126C tested at 4000K

Sample No.	Measured Φ_{use} (lm)	Declared Φ_{use} (lm)	Measured P_{on} (W)	Declared P_{on} (W)	F_{TM}	Measured η_{TM} (lm/W)	Declared η_{TM} (lm/W)	Energy efficiency class basing on measured values	Energy efficiency class basing on declared values
1#	1716.0	1700	9.5	9.5	0.926	167.3	165.7	--	--
2#	1711.8	1700	9.3	9.5	0.926	169.9	165.7	--	--
3#	1703.3	1700	9.4	9.5	0.926	168.5	165.7	--	--
4#	1705.4	1700	9.3	9.5	0.926	169.1	165.7	--	--
5#	1708.4	1700	9.3	9.5	0.926	169.3	165.7	--	--
6#	1711.5	1700	9.3	9.5	0.926	170.1	165.7	--	--
7#	1708.0	1700	9.3	9.5	0.926	170.5	165.7	--	--
8#	1701.3	1700	9.4	9.5	0.926	168.0	165.7	--	--
9#	1710.9	1700	9.3	9.5	0.926	170.0	165.7	--	--
10#	1707.3	1700	9.3	9.5	0.926	170.6	165.7	--	--
Average	1708.4	1700	9.3	9.5	0.926	169.3	165.7	C	C

Energy efficiency class: A: $210 \leq \eta_{TM}$ B: $185 \leq \eta_{TM} < 210$ C: $160 \leq \eta_{TM} < 185$ D: $135 \leq \eta_{TM} < 160$ E: $110 \leq \eta_{TM} < 135$ F: $85 \leq \eta_{TM} < 110$ G: $\eta_{TM} < 85$	Factors F_{TM} by light source type: <input type="checkbox"/> NDLS & MLS: 1.00 <input checked="" type="checkbox"/> NDLS & NMLS: 0.926 <input type="checkbox"/> DLS & MLS: 1.176 <input type="checkbox"/> DLS & NMLS: 1.089
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Table 3 : NSS-2835-126C tested at 4000K

Sample No.	Initial Φuse (lm)	3600H Φuse (lm)	X _{LMF,MIN} % at 3600H	Survival factor at 3600H	Measured beam angle (°)	Measured I _{max} (cd)	Measured light output within π sr
1#	1716.0	1659.5	96.7%	Yes	-	-	-
2#	1711.8	1653.4	96.6%	Yes	-	-	-
3#	1703.3	1639.7	96.3%	Yes	-	-	-
4#	1705.4	1651.6	96.8%	Yes	-	-	-
5#	1708.4	1642.3	96.1%	Yes	-	-	-
6#	1711.5	1644.5	96.1%	Yes	-	-	-
7#	1708.0	1651.3	96.7%	Yes	-	-	-
8#	1701.3	1644.4	96.7%	Yes	-	-	-
9#	1710.9	1645.5	96.2%	Yes	-	-	-
10#	1707.3	1639.3	96.0%	Yes	-	-	-
Average	1708.4	1647.2	96.4%	Yes	-	-	-
Required	--	--	≥ 96%	≥ 90%	-	-	-

Table 4 for model_LED driver

Sample No.	Measured voltage(V)	Measured current (mA)	Input wattage (W)	Output wattage (W)	Energy efficiency	P _{no} (W)	P _{sb} (W)	P _{net} (W)
1#	--	--	--	--	--	--	--	--
2#	--	--	--	--	--	--	--	--
3#	--	--	--	--	--	--	--	--
Average	--	--	--	--	--	--	--	--
Required	--	--	--	--	--	--	--	--



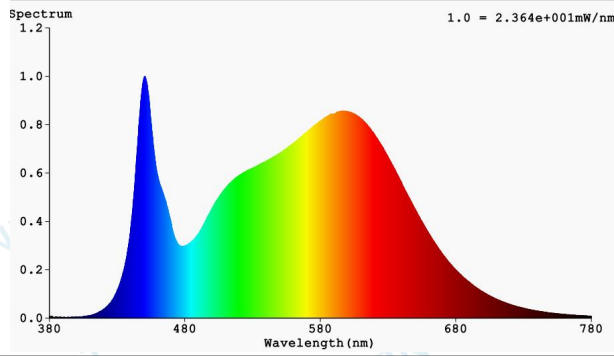
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Table 5: Spectrum & Polar Plot of 4000K



Spectrum



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Appendix II: Product information sheet

Product information sheet			
Supplier's name or trade mark:	NEWSTAR LED CO., LIMITED		
Supplier's address:	Building 3, Henhui Industrial Park, Shiyan Town, Guangming new district 518108 Shenzhen China		
Model identifier:	NSS-2835-126C 4000K		
Type of light source:	LED		
Light source cap-type:	connection by soldering		
Lighting technology used:	LED	Non-directional or directional:	NDLS
Mains or non-mains:	NMLS	Connected light source (CLS):	no
Colour-tuneable light source:	no	Envelope:	no
High luminance light source:	no		
Anti-glare shield:	no	Dimmable:	no
Product parameters			
Parameter	Value	Parameter	Value
General product parameters:			
Energy consumption in on-mode (kWh/1 000 h)	10kWh/1000h	Energy efficiency class	C
Useful luminous flux (Φ_{use}), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)	1700lm in a sphere (360°)	Correlated colour temperature, rounded to the nearest 100 K, or the range of correlated colour temperatures, rounded to the nearest 100 K, that can be set	4000K
On-mode power (P_{on}), expressed in W	9.5W	Standby power (P_{sb}), expressed in W and rounded to the second decimal	0.00
Networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal	0.00	Colour rendering index, rounded to the nearest integer, or the range of CRI values that can be set	80
Outer dimensions without separate control gear, lighting control parts and nonlighting control parts, if any (millimetre)	Height	1mm	Spectral power distribution in the range 250 nm to 800 nm, at full-load
	Width	10mm	
	Depth	1000mm	
Claim of equivalent power	-	If yes, equivalent power (W)	-
		Chromaticity coordinates (x and y)	4000K: (x: 0.3800; y: 0.3800) /
Parameters for directional light sources:			
Peak luminous intensity (cd)	-	Beam angle in degrees, or the range of beam angles that can be set	-
Parameters for LED and OLED light sources:			

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R9 colour rendering index value	1	Survival factor	90%
the lumen maintenance factor	96%		
Parameters for LED and OLED mains light sources:			
displacement factor ($\cos \phi_1$)	-	Colour consistency in McAdam ellipses	≤ 6
Claims that an LED light source replaces a fluorescent light source without integrated ballast of a particular wattage.	-	If yes then replacement claim (W)	-
Flicker metric (P_{st} LM)	-	Stroboscopic effect metric (SVM)	-



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Appendix III: Information Requirements

For COMMISSION REGULATION (EU) 2019/2020:

3. Information requirements

From 1 September 2021 the following information requirements shall apply:

- (a) Information to be displayed on the light source itself
 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.
 For directional light sources, the beam angle (°) shall also be indicated.
 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.
- (b) Information to be visibly displayed on the packaging
- (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:
- (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°);
- (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;
- (c) the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;
- (d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);
- (e) the L70B50 lifetime for LED and OLED light sources, expressed in hours;
- (f) the on-mode power (P_{on}), expressed in W;
- (g) the standby power (P_{sb}), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (h) the networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (i) the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;
- (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 $> 4\,000$ lm, this indication is not mandatory;
- (k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25$ °C or specific thermal management is necessary): information on those conditions;
- (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;
- (m) if the light source contains mercury: a warning of this, including the mercury content in mg

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rounded to the first decimal place;

- (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.

Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer; for other items this is also recommended, if space permits.

For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings. In addition, a range of obtainable values may be indicated.

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

- (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:

- (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);
- (b) the type of light source(s) for which it is intended;
- (c) the efficiency in full-load, expressed in percentage;
- (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;
- (e) the standby power (P_{sb}), 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;
- (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;
- (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;
- (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.


The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

- (c) Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative

- (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:


- (a) the information specified in point 3(b)(2), except 3(b)(2)(h);
- (b) the outer dimensions in mm;
- (c) the mass in grams of the control gear, without packaging, and without lighting control parts and

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- non-lighting parts, if any and if they can be physically separated from the control gear;
- 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;
- (d) 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 control gear during dimming, and possibly a list of compatible dimmable light sources;
- (e) recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU. The information does not need to use the exact wording in the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.
- (f)
- (d) Technical documentation
- (1) Separate control gears:
The information specified in point 3(c)(1) 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.;
- (e) Information for products specified in point 3 of Annex III
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.
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.
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.'

Article 4 Removal of light sources and separate control gears

- Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be replaced with the use of common available tools and without permanent damage to the containing product, unless a technical justification related to the functionality of the containing product is provided in the technical documentation explaining why the replacement of light sources and separate control gear is not appropriate. The technical documentation shall also provide instructions on how light sources and separate control gears can be removed without being permanently damaged for verification purposes by market surveillance authorities.
1. Manufacturers, importers or authorised representatives of containing products shall provide information about the replaceability or non-replaceability of light sources and control gears by end-users or qualified persons without permanent damage to the containing product. Such information shall be available on a free-access website. For products sold directly to end-users, this information shall be on the packaging, at least in the form of a pictogram, and in the user instructions.
2. Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be dismantled from containing products at end of life. Dismantling instructions shall be available on a free access website.
- 3.

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For COMMISSION DELEGATED REGULATION (EU) 2019/2015:**ANNEX IV: Product information**

1. Product information sheet

1.1. Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 3, including when the light source is a part in a containing product. Details see table 3: Product information sheet.

For light sources that can be tuned to emit light at full-load with different characteristics, the values of parameters that vary with these characteristics shall be reported at the reference control settings.

If the light source is no longer placed on the EU market, the supplier shall put in the product database the date (month, year) when the placing on the EU market stopped.

2. Information to be displayed in the documentation for a containing product

If a light source is placed on the market as a part in a containing product, the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency class.

If a light source is placed on the market as a part in a containing product, the following text shall be displayed, clearly legible, in the user manual or booklet of instructions:

“This product contains a light source of energy efficiency class <X>”, where <X> shall be replaced by the energy efficiency class of the contained light source.

If the product contains more than one light source, the sentence can be in the plural, or repeated per light source, as suitable.


3. Information to be displayed on the supplier’s free access website:

- (a) The reference control settings, and instructions on how they can be implemented, where applicable;
- (b) Instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption;
- (c) If the light source is dimmable: a list of dimmers it is compatible with, and the light source — dimmer compatibility standard(s) it is compliant with, if any;
- (d) If the light source contains mercury: instructions on how to clean up the debris in case of accidental breakage;
- (e) Recommendations on how to dispose of the light source at the end of its life in line with Directive 2012/19/EU of the European Parliament and of the Council (1).

4. Information for products specified in point 3 of Annex IV

For the light sources specified in point 3 of Annex IV, their intended use shall be stated on all forms of packaging, product information and advertisement, together with a clear indication that the light source is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with paragraph 3 of Article 3 of Regulation (EU) 2017/1369 shall list the technical parameters that make the product design specific to qualify for the exemption.

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Appendix V: Making, packing and instruction

Making on product					
<input type="checkbox"/> light source		<input checked="" type="checkbox"/> Luminaire			
<input type="checkbox"/> Indirect	<input type="checkbox"/> Direct	<input checked="" type="checkbox"/> removeable light source (Marking on removeable light source)		<input type="checkbox"/> non-removeable light source (Marking on Luminaire surface)	
		<input checked="" type="checkbox"/> Indirect	<input type="checkbox"/> Direct	<input type="checkbox"/> Indirect	<input type="checkbox"/> Direct
Rated luminous flux Colour temperature	Rated luminous flux Colour temperature Beam Angle	Rated luminous flux Colour temperature	Rated luminous flux Colour temperature Beam Angle	Rated luminous flux Colour temperature	Rated luminous flux Colour temperature Beam Angle
Notice: The above information is required in ERP, it should be used in conjunction with the identification required in the LVD					
Packing Required					
<input type="checkbox"/> light source		<input checked="" type="checkbox"/> Luminaire - removeable light source			
<input type="checkbox"/> Luminaire - non-removeable light source		Symbols and statement			
a. Rated luminous flux & in a sphere (360° or 120° or 90°) b. Colour temperature c. Beam Angle- (only to direct light) d. Rated electrical parameter: Voltage, Frequency, Current, Power e. Life time f. Pst: (If not applicable, no required) g. Pnet: (If not applicable, no required) h. Ra: (If Ra<80, should added: Product intended for use in outdoor applications, industrial applications or other applications) i. Ta: (if ta≠25°C, should be added) j. Dimmable or non-dimmable symbol k. Hg content: (If the product contains mercury, should show X.X mg) l. WEEE logo		<input type="checkbox"/>		Replaceable light source by a professional	
		<input checked="" type="checkbox"/>		Replaceable (LED only) light source by a professional	
		<input type="checkbox"/>		Non-replaceable light source	
		<input type="checkbox"/>		Replaceable light source by an end-user	
		<input type="checkbox"/>		Replaceable Control gear by a professional	
		<input type="checkbox"/>		Replaceable Control gear by an end-user	
		<input type="checkbox"/>		Non-replaceable Control gear	
instruction					
<input type="checkbox"/> light source		<input checked="" type="checkbox"/> Luminaire - removeable light source			
<input type="checkbox"/> Luminaire - non-removeable light source		<input checked="" type="checkbox"/> Symbols and statement on packing			
No special required		<input checked="" type="checkbox"/> This product contains X light source of energy efficiency class <Y> (X=1,2,3..., Y=A,B,C,D,E,F,G, according the actual value)			




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Appendix VI: Photos of Tested Samples

	
Over view light : NSS-2835-126C	NA

End of Report

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