

Shenzhen Sonoff Technologies Co., Ltd.

TEST REPORT

SCOPE OF WORK

PERFORMANCE TESTING ACCORDING TO ECODESIGN REQUIREMENT- LED LIGHT SOURCE
MODEL NO.: B05-BL-A60/B05-B-A60/B05-A60, L05-BL-A60/L05-B-A60/L05-A60

REPORT NUMBER

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TEST REPORT

ECODESIGN REQUIREMENTS FOR LIGHT SOURCES AND SEPARATE CONTROL GEARS OF COMMISSION REGULATION (EU) 2019/2020 & AMENDING REGULATION (EU) 2021/341 PURSUANT TO DIRECTIVE 2009/125/EC & AMENDING REGULATION (EU) 2021/340 OF THE EUROPE PARLIAMENT AND OF THE COUNCIL.

Applicant, identification of the Test Sample

Applicant	Shenzhen Sonoff Technologies Co., Ltd.		
Applicant Address	1001, BLDG8, Lianhua Industrial Park, shenzhen, GD, China		
Brand Name	SONOFF		
Product	Wi-Fi Smart RGB LED Bulb		
Model/Type	B05-BL-A60/B05-B-A60/B05-A60, L05-BL-A60/L05-B-A60/L05-A60		
Manufacturer	Hengdian Group Tospo Lighting Co., Ltd.		
Electrical Rating	230VAC, 50Hz, Pon: 9W, 800lm, Pnet<0.5W, Ra:80, 15000h, Dimming and colour tuneable: 2700K-6500K+RGB, non-directional, with E27 Caps		
Declared Mains Efficacy:	87Lm/W	Energy Efficiency Class:*	F
Testing Requested	Performance Tests According to Commission Regulation (Eu)2019/2020		
No. of Sample	10 pcs		
Date Received	September 6, 2021		
Date Test Conducted	September 6, 2021 ~ September 26, 2021		

Summary of test results

The test results are evaluated and in compliance with the ecodesign requirements of the Commission Regulation (EU) 2019/2020 and amending regulation (EU) 2021/341 except endurance and Lumen Maintenance Test at 3600 hours.

*Energy efficiency is calculated according to Annex II of Commission DELEGATED REGULATION (EU) No 2019/2015 & AMENDING REGULATION (EU) 2021/340, and the result is for reference.

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ADDITIONAL INFORMATION*

Test Item:	<input checked="" type="checkbox"/> LED lamp
Lighting technology:	<input checked="" type="checkbox"/> LED <input type="checkbox"/> Fluorescent <input type="checkbox"/> CFLni <input type="checkbox"/> OLED
Intended Use:	<input checked="" type="checkbox"/> Non-directional <input type="checkbox"/> Directional
Mains or non-mains:	<input checked="" type="checkbox"/> MLS <input type="checkbox"/> NMLS
Connected or not:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> No
Colour tuneable:	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> No
Multiple operation modes:	<input checked="" type="checkbox"/> Variable CCT: Tuneable light source 2700K-6500K+RGB <input type="checkbox"/> Variable CRI <input type="checkbox"/> Other
Tested control setting:	@6500K at max. input power and light output
Dimmable or not	<input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> Dimmed by wifi control <input type="checkbox"/> No

*information in this table was declared by applicant.

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DESCRIPTION OF TESTING

<p>Test Laboratory</p> <p>Address</p> <p>Test Location</p>	<p>Intertek Testing Service Zhejiang LTD Hangzhou Branch</p> <p>4th floor,Building 4#,No.22,22nd Street, Qiantang District, Hangzhou, 310018 China.</p> <p>Hengdian Group Tospo Lighting Co., Ltd.(TEST CENTRE)</p> <p>Hengdian Industrial Zone, Dongyang City, Zhejiang Province, China</p>
<p>Tested at</p> <p>Ambient temp.</p> <p>THD</p> <p>Measuring device</p>	<p>230 VAC/ 50,0Hz (±0.2 % during measurement, ±2.0 % during life test)</p> <p>25,0°C±1°C (During measurement except life test)</p> <p><3,0% (Up to and including the 13th harmonic)</p> <p>Refer to next page equipment list</p>
<p>Reference Standard</p> <p>(partial used or reference)</p>	<p><input type="checkbox"/> EN 60061:1993+all amendments up to A40:2008;</p> <p><input type="checkbox"/> EN 60064:1995+A2:2003+A3:2006+A4:2007+A11:2007;</p> <p><input type="checkbox"/> EN 60357:2003+A1:2008;</p> <p><input type="checkbox"/> EN 60969:1993+A1:1993+A2:2000;</p> <p><input checked="" type="checkbox"/> CIE 13.3:1995;</p> <p><input checked="" type="checkbox"/> CIE 15:2004;</p> <p><input checked="" type="checkbox"/> CIE 18.2:1983;</p> <p><input checked="" type="checkbox"/> CIE 84:1989;</p> <p><input checked="" type="checkbox"/> CIE 97:2005;</p> <p><input checked="" type="checkbox"/> CIE 127:2007;</p> <p><input checked="" type="checkbox"/> IEC 62722-2-1: 2014;</p> <p><input checked="" type="checkbox"/> IEC 62612 ED1.2;</p> <p><input type="checkbox"/> IEC 62717-1 ED1.2;</p> <p><input type="checkbox"/> IEC 62722-2-1 ED1.0;</p> <p><input type="checkbox"/> IEC 62384 ed.1.1</p> <p><input checked="" type="checkbox"/> Commission Regulation EU 2019/2020;</p> <p><input checked="" type="checkbox"/> Commission Regulation EU 2019/2015;</p> <p><input checked="" type="checkbox"/> Commission Regulation EU 2021/341;</p> <p><input checked="" type="checkbox"/> Commission Regulation EU 2021/340;</p>

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Equipment List

Equipment name	Model No	Specifications	Manufacturer
Goniophotometers	GO-R5000	scale A zero position: $\leq \pm 0.2^\circ$	EVERFINE
Integrating sphere	HAAS-2000	Wavelength 380nm~780nm; 1000K-100000K;	EVERFINE
Digital power meter	PF310	U:0.1V-600V;I:0.002A-20A; PF:-1.000-+1.000; Hz:10Hz -500KHz;	EVERFINE
AC testing power source	DPS1005	Max.output:1000VA; 40-65Hz; 0-150V:9.2A; 0-300V:4.6A	EVERFINE
Integrating Sphere	2.0m	2.0m	EVERFINE
Light flicker analyzer	LFA-3000	Sampling Rate : 100ks/s	EVERFINE

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Test and Verification Results

Article 1 (Clause)	Scope of Regulation (EU) 2019/2020	Result - Remark	Verdict
1.a	Light source		P
1.b	Separated control gear		N/A
	LS and SCG in a containing product		N/A

Annex I (Clause)	Definitions in Regulation (EU) 2019/2020	Result - Remark	Verdict
(3)	Directional Light Source: at least 80 % of total luminous flux within a cone with angle of 120°	Non-directional	N/A
(15)	Useful luminous flux Φ_{use}	800lm	P
-	for NDLS: Φ_{use} = total flux emitted in a solid angle of 4π sr (corresponding to a 360° sphere)	corresponding to a 360° sphere	P
-	for DLS with beam angle $\geq 90^\circ$: Φ_{use} flux emitted in a solid angle of π sr (a cone with angle of 120°)		N/A
-	for DLS with beam angle $< 90^\circ$: Φ_{use} =flux emitted in a solid angle of $0,586\pi$ sr (a cone with angle of 90°)		N/A

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Test and Verification Results

Annex II (Clause)	Energy Efficiency Requirements in Regulation (EU) 2019/2020	Result - Remark	Verdict
1.(a)	Energy Efficiency Requirements – Light Source		P
	Declared on-mode Power P_{on} (W):	9W	P
	Maximum Allowed Power P_{onmax} (W): $P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R$	Ponmax: 10.23W	P
	Threshold efficacy η (lm/W): η for LED: 120.0		P
	End loss factor L (W):1.5for LED L for LED: 1.5		P
	End loss factor L (W):2.0 for CLS		N/A
	Efficacy Factor F: 1.00 for NDLS		P
	Efficacy Factor F: 0.85 for DLS		N/A
	CRI Factor R:0.65 for CRI \leq 25		N/A
	CRI Factor R:(CRI+80)/160 for CRI > 25		P
	Correction Factor C Depending on Light Source Characteristics in Table 2		P
	NDLS not operating on mains (NMLS): 1.00		N/A
	NDLS operating on mains (MLS): 1.08		P
	DLS not operating on mains (NMLS): 1.15		N/A
	DLS operating on mains (MLS): 1.23		N/A
	Special Light Source Bonus on C		N/A

Annex II (Clause)	Energy Efficiency Requirements in Regulation (EU) 2019/2020	Result - Remark	Verdict
1.(a)	Standby power – Light Source		P
	The standby power P_{sb} of a light source shall not exceed 0.5 W		N/A
	The networked standby power P_{net} of a connected light source shall not exceed 0.5 W	Refer to test data	P
	The allowable values for P_{sb} and P_{net} shall not be added together		N/A

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Test and Verification Results

Annex II (Clause)	Functional Requirements in Regulation (EU) 2019/2020	Result - Remark	Verdict
2.	Functional Requirements – Light Source (Table 4)		P
	Colour Rendering Index CRI: ≥ 80 ;except	Refer to test data	P
	For outdoor/Industrial or other <80 application if clear indication on package		N/A
	Displacement Factor DF at Power Input P_{on} for LED and OLED MLS: DF ≥ 0.5 at $5\text{ W} < P_{on} \leq 10\text{ W}$, DF ≥ 0.7 at $10\text{ W} < P_{on} \leq 25\text{ W}$ DF ≥ 0.9 at $25\text{ W} < P_{on}$	Refer to test data	P
	Lumen Maintenance Factor (for LED and OLED): $X_{LMF,MIN}\% = 100 \times e^{-\frac{(3000 \times \ln(0.7))}{L_{70}}}$	required: min.93.1%	P
	Survival Factor (for LED and OLED): <i>At least 9 light sources of the test sample must be operational after completing the test in Annex V of this Regulation.</i>	Refer to test data	P
	Colour consistency for LED and OLED light sources: <i>Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.</i>	Refer to test data	P
	Flicker for LED and OLED MLS: $P_{st} LM \leq 1.0$ at full-load	Refer to test data	P
	Stroboscopic effect for LED and OLED MLS: $SVM \leq 0.9$ at full-load (≤ 0.4 till 2024); except	Refer to test data	P
	for outdoor/Industrial or other application allow <80		N/A

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Test and Verification Results

Annex II (Clause)	Information Requirements in Regulation (EU) 2019/2020	Result - Remark	Verdict
3.(a)	Information to be displayed on the light source itself		P
	Useful luminous flux (lm)	800lm	P
	Correlated colour temperature (K)	2700K-6500K+RGB	P
	Beam angle (°) for directional light sources		N/A
3.(b)	Information to be visibly displayed on the packaging		P
3.(b)(1)	Light source placed on the market, not in a containing product		P
	(a) Useful luminous flux (lm): - <i>In a font at least twice as large as the display of the on-mode power (P_{on})</i> - <i>Clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°)</i>	800lm 9W in a sphere cone(360°)	P
	(b) Correlated Colour Temperature, rounded to the nearest 100 K	2700K-6500K+RGB	P
	(c) Beam angle in degrees for directional light sources		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)	230V, 50Hz E27	P
	(e) L ₇₀ B ₅₀ lifetime for LED and OLED light sources, expressed in hours	15000h	P
	(f) on-mode power (P _{on}), expressed in W	9W	P
	(g) standby power (P _{sb}), expressed in W and rounded to the second decimal. <i>If the value is zero, it may be omitted from the packaging</i>		N/A
	(h) networked standby power (P _{net}) for CLS, expressed in W and rounded to the second decimal. <i>If the value is zero, it may be omitted from the packaging</i>	<0.5W	P
	(i) Colour Rendering Index, rounded to the nearest integer	80	P
	(j) Clear indication to this effect 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.		N/A

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Test and Verification Results

	(k) Information on non-standard conditions (such as ambient temperature $T_a \neq 25\text{ }^\circ\text{C}$ or specific thermal management is necessary)		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	Dimming By wifi	P
	(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
	Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer		P
	For LS with different characteristics, the reference control setting shall be reported		N/A

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Appendix-Test Data Sheet

1. Initial Photometric and electrical Measurement

Model No.	Sample No.	Current (A)	Power Pon(W)	Disp. Factor	Useful Luminous Flux Φ 360 (lm)	η tm Efficacy (lm/W)	CCT (K)	CRI(Ra)	R9	CIE colour Coordinate		SDCM	Pnet network standby (W)	Flicker Pst LM	Stroboscopic Effect SVM
										X	Y				
B05-BL-A60/B05-B-A60/B05-A60	1	0.0608	8.8	0.938	817.6	93.0	6567	85.0	33	0.3114	0.3305	3.6	0.360	0.000	0.000
	2	0.0626	9.1	0.947	823.9	90.8	6533	85.2	34	0.3118	0.3317	3.0	0.368	0.000	0.000
	3	0.0631	9.2	0.944	829.3	90.6	6518	85.0	31	0.3120	0.3320	2.8	0.355	0.000	0.000
	4	0.0612	8.8	0.941	804.7	91.1	6620	84.7	30	0.3104	0.3302	3.6	0.340	0.000	0.000
	5	0.0626	9.1	0.942	818.6	89.9	6455	84.4	29	0.3131	0.3327	2.9	0.385	0.000	0.000
	6	0.0616	8.9	0.945	807.8	90.6	6618	84.9	30	0.3106	0.3293	4.1	0.365	0.000	0.000
	7	0.0617	8.9	0.941	810.6	90.7	6560	84.3	27	0.3113	0.3313	3.1	0.351	0.000	0.000
	8	0.062	9.0	0.935	819.2	91.3	6518	85.4	37	0.3121	0.3314	3.3	0.344	0.000	0.000
	9	0.0618	8.9	0.934	811.5	90.7	6538	85.0	31	0.3118	0.3313	3.2	0.374	0.000	0.000
	10	0.062	9.0	0.935	809.0	90.3	6530	85.2	32	0.3118	0.3320	2.8	0.343	0.000	0.000
Average	--	0.0619	9.0	0.94	815.2	90.9	6546	84.9	31	0.3116	0.3312	3.2	0.359	0.000	0.000

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Appendix-Test Data Sheet

2. Energy efficiency classes of light sources under EU 2019/2015

Model No.	Item.	Total mains Efficacy . $\eta_{TM} = (\Phi_{use} / P_{on}) \times FTM$	EEI Class Tested	EEI Class	
				Energy efficiency class	η_{TM}
B05-BL-A60/B05-B-A60/B05-A60	EEI Rated (base on Rate)	88	F	A B C D	$210 \leq \eta_{TM}$ $185 \leq \eta_{TM} < 210$ $160 \leq \eta_{TM} < 185$ $135 \leq \eta_{TM} < 160$
	EEI Tested (base on average of test result)	90.9	F	E F G	$110 \leq \eta_{TM} < 135$ $85 \leq \eta_{TM} < 110$ $\eta_{TM} < 85$

3. Endurance and & Lumen Maintenance Test

Ambient temperature: 25 °C±5°C

No.	No.	1200 cycles (150min on 30min off)	Flux Φ_{use} (3.6 khrs) (lm)		Maintenance Factor (%) (3.6 khrs)		Survival Factor (≥9)
			-	-	-	-	
B05-BL-A60/B05-B-A60/B05-A60	1	Yes	TBD		TBD		TBD
	2	Yes	TBD		TBD		TBD
	3	Yes	TBD		TBD		TBD
	4	Yes	TBD		TBD		TBD
	5	Yes	TBD		TBD		TBD
	6	Yes	TBD		TBD		TBD
	7	Yes	TBD		TBD		TBD
	8	Yes	TBD		TBD		TBD
	9	Yes	TBD		TBD		TBD
	10	Yes	TBD		TBD		TBD
Average	--	Yes	TBD		TBD		TBD

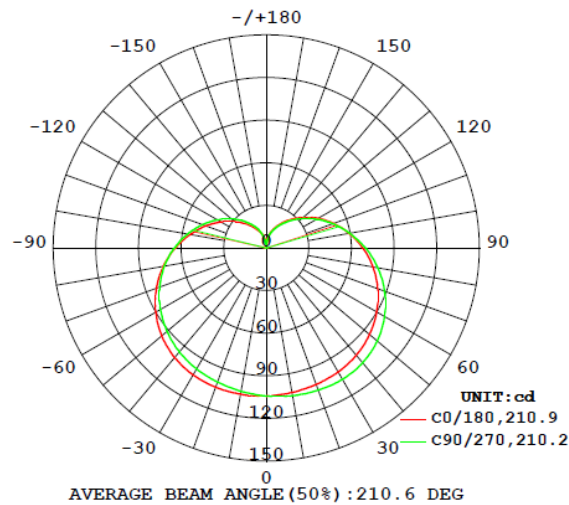
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Appendix-Test Data Sheet

4. Zonal Lumen Summary and Light Distribution (Representative)

Zone	Lumens (lm)	% Luminaire (%)
0-30	86.91	10.80
0-60	310.18	38.55
0-90	558.60	69.43
0-120	726.70	90.32
0-180	804.58	100.00



Test Item	Results
Beam Angle	210.6°
Peak Intensity	107.0cd

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Remarks:

1. The product is connected LED lamp in which the CCT can be tuneable by wireless control (wifi connection).
2. All models are exactly identical except model name.
3. According to request of applicant, all photometry and colour test, efficiency, functional, endurance and lumen maintenance tests were performed at 6500K in maximum input power and light output.
4. The network standby power was measured in condition of the lamp was connected to the mains supply, but the lamp was not emitted due to waiting for a wireless control signal.
5. The results tabulated in this report are representative of the actual test samples submitted for this report only.
6. when determining the test conclusion, the Measurement Uncertainty of test has been considered according to Accuracy Method stated in IEC Guide 115.
7. "N/A" means test case does not apply to the test object, "TBD" means test result to be determined, "P" means meet the requirement.

Attachment: - Product Photos

In Charge of Tests:
Intertek Testing Services
Zhejiang Ltd Hangzhou Branch



<Judy Hu>
<Engineer>
Lighting Division

Report Reviewed By:
Intertek Testing Services
Zhejiang Ltd Hangzhou Branch

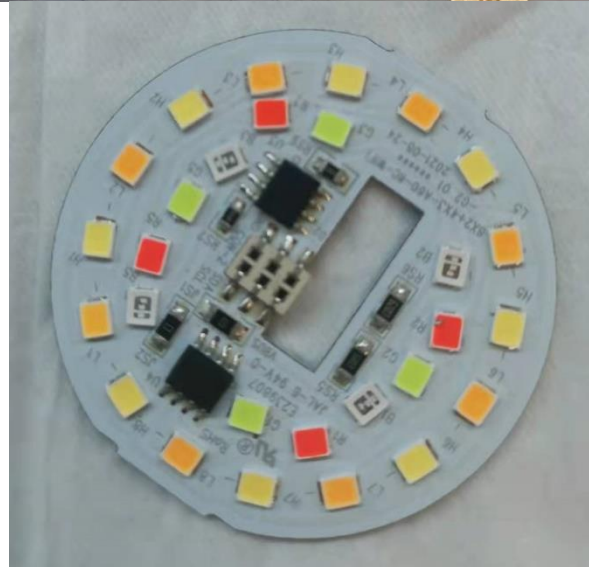


<Meng Wang>
<Reviewer>
Lighting Division

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Appendix -Pictures:

OVERVIEW



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