

# TEST REPORT

**Report No.: DG1210903-46137E**

Date: September 15, 2021

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**Shenzhen Sonoff Technologies Co.,Ltd.**

**1001, BLDG8, Lianhua Industrial Park, Shenzhen, GD, China**

Report on the submitted samples said to be:

Sample Description: RE5V1C

Style/Item No.: RE5V1C

Manufacturer: Shenzhen Sonoff Technologies Co.,Ltd.

Supplier: Shenzhen Sonoff Technologies Co.,Ltd.

Sample Receiving Date: September 03,2021

Testing Period: September 03,2021 - September 15,2021

Result: Please refer to next page(s).

Signed for and on behalf of

BACL



Checked by: \_\_\_\_\_  
Jane Xu

Approved by: \_\_\_\_\_  
Bensen Huang

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Summary of Test Result:

**TEST REQUEST**

**CONCLUSION**

A RoHS Directive 2011/65/EU and its amendment directives (EU) 2015/863

Pass

A.1 XRF screening test

Please refer to next page(s).

A.2 Wet Chemical Testing

A.2.1 Chromium VI (CrVI) content

Pass

A.2.2 PBBs & PBDEs content

Pass

A.3 Phthalates(DBP, BBP, DEHP, DIBP)content

Pass  
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**A RoHS Directive 2011/65/EU and its amendment directives (EU) 2015/863**

**A.1 XRF screening test**

Test method: IEC 62321-3-1:2013

Seq No.	Tested Part(s)	Result				
		Pb	Cd	Hg	Cr	Br
(1)*	Green PCB(PCB,RE5V1C)	BL	BL	BL	BL	IN
(2)	Silvery solder(PCB,RE5V1C)	BL	BL	BL	BL	---
(3)*	Grey printed black plastic(shell,relay,PCB,RE5V1C)	BL	BL	BL	BL	IN
(4)	Black plastic(base,relay,PCB,RE5V1C)	BL	BL	BL	BL	BL
(5)	Silvery metal(contactor,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(6)	Silvery metal(armature,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(7)*	White plastic(septum,relay,PCB,RE5V1C)	BL	BL	BL	BL	IN
(8)	Coppery metal(spring leaf,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(9)	Silvery metal(pin,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(10)	Silvery metal(core,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(11)	Coppery metal(coil,relay,PCB,RE5V1C)	BL	BL	BL	BL	---
(12)*	White plastic(bobbin,relay,PCB,RE5V1C)	BL	BL	BL	BL	IN
(13)*	Beige plastic(base,switch,PCB,RE5V1C)	BL	BL	BL	BL	IN
(14)*	Silvery metal(shell,switch,PCB,RE5V1C)	BL	BL	BL	IN	---
(15)*	Silvery metal(spring leaf,switch,PCB,RE5V1C)	BL	BL	BL	IN	---
(16)	Silvery plated golden metal(pin,switch,PCB,RE5V1C)	BL	BL	BL	BL	---
(17)	Yellow transparent plastic(film,switch,PCB,RE5V1C)	BL	BL	BL	BL	BL
(18)	Golden metal(botton,switch,PCB,RE5V1C)	BL	BL	BL	BL	---
(19)	Black/white body(LED,PCB,RE5V1C)	BL	BL	BL	BL	BL
(20)	Transparent body(LED,PCB,RE5V1C)	BL	BL	BL	BL	BL
(21)	Black body (resistor,PCB,RE5V1C)	BL	BL	BL	BL	BL
(22)	Beige body(capacitor,PCB,RE5V1C)	BL	BL	BL	BL	BL
(23)	Brown body(capacitor,PCB,RE5V1C)	BL	BL	BL	BL	BL
(24)	Black body(audion,PCB,RE5V1C)	BL	BL	BL	BL	BL
(25)*/*1	Red body(diode,PCB,RE5V1C)	OL	BL	BL	BL	BL
(26)	Black body(IC,PCB,RE5V1C)	BL	BL	BL	BL	BL
(27)	Silvery body(crystal,PCB,RE5V1C)	BL	BL	BL	BL	BL

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Note:

--- = Not Applicable.

\* = Screening by XRF and detected by chemical method. The test result of chemical method please refer to next pages.

\*1 = As claimed by the material declaration submitted by the client, the materials of the sample No. 25 is glass of electronic components. And according to RoHS directive 2011/65/EU and its amendments, Lead is exempted in glass of cathode ray tubes, electronic components and fluorescent tubes.

Remark:

i Result were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC62321-3-1:2013.

Element	Unit	Polymers	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X < 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

Note:

BL = Below Limit

OL = Over Limit

IN / X = Inconclusive (questionable, need further chemical analysis)

ii The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

iii The maximum permissible limit is quoted from the RoHS directive 2011/65/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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## A.2 Wet Chemical Testing

### A.2.1 Chromium VI (CrVI) content

Test method: IEC 62321-7-1:2015

Item	Unit	RL	Result		Limit
			(14)	(15)	
hexavalent chromium(Cr VI)	µg/cm <sup>2</sup>	0.10	N.D.	N.D.	See Remark
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	/

Limit Remark:

- The sample is positive for CrVI if the CrVI concentration is greater than 0.13µg/cm<sup>2</sup>. The sample coating is considered to contain CrVI
  - The sample is negative for CrVI if CrVI is ND (concentration less than 0.10µg/cm<sup>2</sup>). The coating is considered a non-CrVI based coating
  - The result between 0.10µg/cm<sup>2</sup> and 0.13µg/cm<sup>2</sup> is considered to be inconclusive -unavoidable coating variations may influence the determination
- For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

Note:

- N.D. = Not Detected or less than RL
- RL = Report Detection Limit
- mg/kg = ppm

### A.2.2 PBBs & PBDEs content

Test method: IEC 62321-6:2015

Item	Unit	RL	Result					Limit
			(1)	(3)	(7)	(12)	(13)	
Monobromobiphenyl (MonoBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Dibromobiphenyl(DiBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Tribromobiphenyl(TriBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Tetrabromobiphenyl(TetraBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Pentabromobiphenyl(PentaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Hexabromobiphenyl(HexaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Heptabromobiphenyl (HeptaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Octabromobiphenyl(OctaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Nonabromobiphenyl(NonaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Decabromobiphenyl(DecaBB)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Monobromodiphenyl ether (MonoBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Dibromodiphenyl ether (DiBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-

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Item	Unit	RL	Result					Limit
			(1)	(3)	(7)	(12)	(13)	
Tribromodiphenyl ether (TriBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Tetrabromodiphenyl ether (TetraBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Pentabromodiphenyl ether (PentaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Hexabromodiphenyl ether (HexaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Heptabromodiphenyl ether (HeptaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Octabromodiphenyl ether (OctaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Nonabromodiphenyl ether (NonaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
Decabromodiphenyl ether (DecaBDE)	mg/kg	5	N.D.	N.D.	N.D.	N.D.	N.D.	-
sum of MonoBDE, DiBDE, TriBDE, TetraBDE, PentaBDE, HexaBDE, HeptaBDE, OctaBDE, NonaBDE, DecaBDE	mg/kg	-	N.D.	N.D.	N.D.	N.D.	N.D.	1000
sum of MonoBB, DiBB, TriBB, TetraBB, PentaBB, HexaBB, HeptaBB, OctaBB, NonaBB, DecaBB	mg/kg	-	N.D.	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

Note:

- N.D.= Not Detected or less than RL
- RL = Report Detection Limit
- mg/kg = ppm
- The Result less than RL are not taken into account while calculating the sum contents.

### A.3 Phthalates(DBP, BBP, DEHP, DIBP)content

Test method: IEC 62321-8:2017

Item	Unit	RL	Result				Limit
			(1)+(13)+(17)	(3)	(4)	(7)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000

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Item	Unit	RL	Result				Limit
			(1)+(13)+(17)	(3)	(4)	(7)	
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

Item	Unit	RL	Result				Limit
			(12)	(19)+(20)+(21)	(22)+(23)+(24)	(25)+(26)+(27)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

Note:

- N.D. = Not Detected or less than RL
- RL = Report Detection Limit
- 0.1% = 1000 mg/kg, mg/kg = ppm
- "+" = Mixed, The admixture of specimen is tested as a whole(part)which according to the applicant' s request, the result of report as average value because of the whole specimen is regarded as constituting from the homogeneous material. If the testing of specimen may have the obvious difference, and the result may exceed the number in this report. The applicant will undertake all differences and risk.

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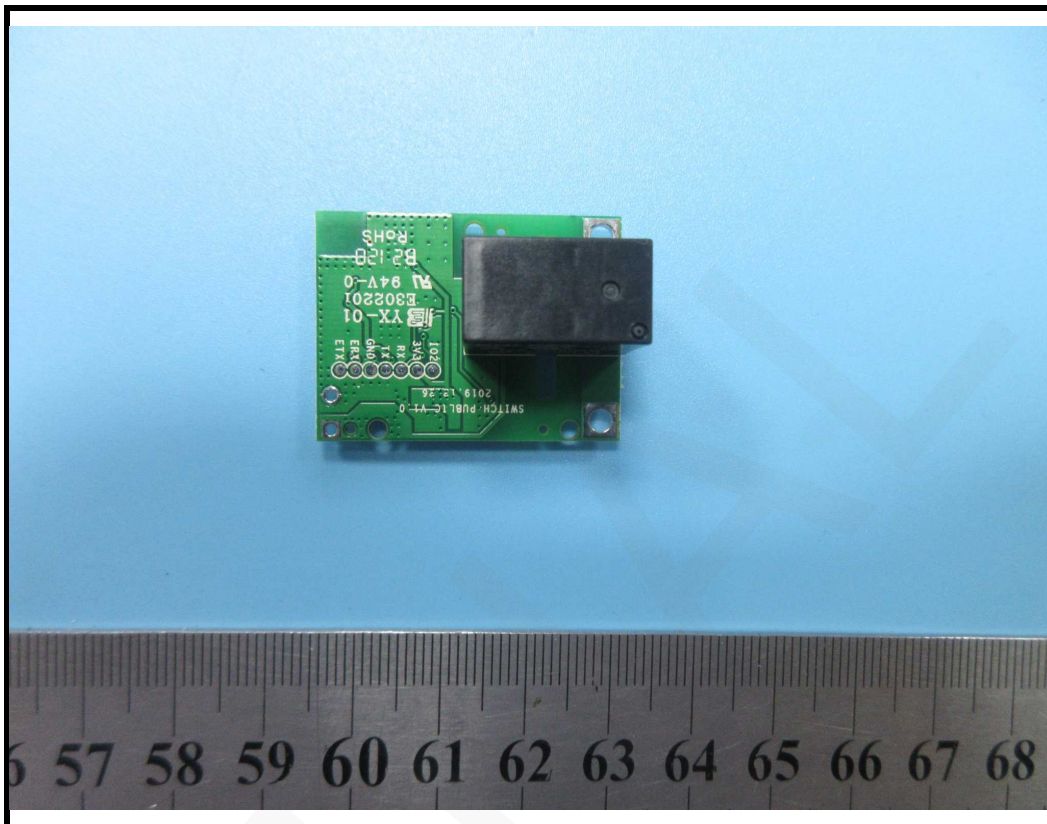
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Photograph of Sample



BACL authenticate the photo on original report only

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Statement:

- 1.This report cannot be reproduced except in full, without prior written approval of the Company.
- 2.Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
- 3.This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
- 4.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
- 5.The information which provided by the applicant, such as sample description, sample name, material component, style/item No. , P.O. No. , manufacturer, age phase, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
- 6.The test samples were in good condition before testing.
- 7.The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

\*\*\* End of Report \*\*\*