

# Test Report

**Report No.:** A001E20171120056

**Date:** Dec.11, 2017

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**Applicant:** Skylab M&C Technology Co.,Ltd  
**Address:** 6/F, Building9, Lijincheng Scientific&Technical park,Gongye East Road, Longhua District, Shenzhen, 518109 China

**Report on the submitted sample(s) said to be:**

**Sample Name:** WIFI Module  
**Sample Model:** SKW72-E16  
**Serial Model:** SKW72-E16, SKW72-E8, SKW72-P8, SKW72-P16  
**Brand:** SKYLAB  
**Supplier:** SKYLAB  
**Manufacturer:** Skylab M&C Technology Co.,Ltd  
**Address:** 6/F, Building9, Lijincheng Scientific&Technical park,Gongye East Road, Longhua District, Shenzhen, 518109 China  
**Sample Received Date:** Nov.20, 2017  
**Testing Period:** Nov.20, 2017 to Dec.01, 2017

**Test Requested:** Please refer to following page(s).

**Test Method:** Please refer to following page(s).

**Test Result:** Please refer to following page(s).

**Tested by:** Luoxiao

Luoxiao

Test Engineer

**Reviewed by:** Leon

Suhongliang, Leon

Test Team Leader

**Approved by:** Lewis

Liulinwen, Lewis

Technical Director



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**Test Requested:**

- 1.As specified by client, to determine the Pb, Cd, Hg, Cr<sup>6+</sup>, PBBs, PBDEs content in the submitted sample in accordance with EU RoHS Directive 2011/65/EU(RoHS) and its amendment directives on XRF and Chemical Method.
2. As specified by client, to determine the DBP, BBP, DEHP, DIBP content in the submitted sample in accordance with Directive 2011/65/EU (RoHS) and its amendment directive (EU) 2015/863.

**Conclusion**
**Pass**
**Pass**
**Test Methods:**

A: Screening by X-ray Fluorescence Spectrometry (XRF) :With reference to IEC 62321-3-1:2013 Ed 1.0 Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

B: Chemical test:

Test Item	Test Method	Measuring Instrument	MDL
Cadmium (Cd)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Lead (Pb)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Non-metal Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321-7-2:2017 Ed 1.0	UV-Vis	1 mg/kg
Metal Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321-7-1:2015 Ed 1.0	UV-Vis	/
PBBs/PBDEs	IEC 62321-6:2015 Ed 1.0	GC-MS	5 mg/kg

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Tel: +86-755 8358 3833 Fax: +86-755 2531 6612 E-mail: [agc01@agc-cert.com](mailto:agc01@agc-cert.com) 400 089 2118  
 Add: Building 2, No.171, Meihua Road, Shangmeilin, Futian District, Shenzhen, Guangdong China



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**Test Results:**
**A、EU RoHS Directive 2011/65/EU and its amendment directives on XRF**

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
1	Chip capacitor	BL	BL	BL	BL	BL
2	Patch IC(W9751G6KB-25)	BL	BL	BL	BL	BL
3	SMD triode	BL	BL	BL	BL	BL
4	chip inductor	BL	BL	BL	BL	BL
5	Patch IC(AR9331-AL3A)	BL	BL	BL	BL	BL
6	IC Ontology(IC)	BL	BL	BL	BL	BL
7	Pin(IC)	BL	BL	BL	BL	-
8	SMD blue resistor	BL	BL	BL	BL	BL
9	Copper ring(Antenna pedestal)	BL	BL	BL	BL	-
10	Copper pin(Antenna pedestal)	BL	BL	BL	BL	-
11	White plastic seat(Antenna pedestal)	BL	BL	BL	BL	BL
12	SMD crystal	BL	BL	BL	BL	BL
13	SMD black resistor	BL	BL	BL	BL	BL
14	PCB board	BL	BL	BL	BL	X*

Element	Unit	Non-metal	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	$BL \leq 300 - 3\sigma < X$	-	$BL \leq 250 - 3\sigma < X$

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Note: BL= Below Limit

OL= Over limited

X= Inconclusive

“-“= Not regulated

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

Remark:

- i Results were obtained by XRF for primary scanning, 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 above warning value according to IEC 62321-3-1:2013 Ed 1.0.
- ii The XRF scanning 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 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 Scanning 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 scanning 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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**B、The Test Results of Chemical Method:**

## 1) The Test Results of PBBs &amp; PBDEs

Unit:mg/kg

Item(s)	MDL	Result(s)	Limit
		14	
Polybrominated Biphenyls (PBBs)			
Monobromobiphenyl	5	N.D.	Total PBBs Content <1000
Dibromobiphenyl	5	N.D.	
Tribromobiphenyl	5	N.D.	
Tetrabromobiphenyl	5	N.D.	
Pentabromobiphenyl	5	N.D.	
Hexabromobiphenyl	5	N.D.	
Heptabromobiphenyl	5	N.D.	
Octabromobiphenyl	5	N.D.	
Nonabromodiphenyl	5	N.D.	
Decabromodiphenyl	5	N.D.	
Total content	/	N.D.	
Polybrominated Diphenylethers (PBDEs)			
Monobromodiphenyl ether	5	N.D.	Total PBDEs Content <1000
Dibromodiphenyl ether	5	N.D.	
Tribromodiphenyl ether	5	N.D.	
Tetrabromodiphenyl ether	5	N.D.	
Pentabromodiphenyl ether	5	N.D.	
Hexabromodiphenyl ether	5	N.D.	
Heptabromodiphenyl ether	5	N.D.	
Octabromodiphenyl ether	5	N.D.	
Nonabromodiphenyl ether	5	N.D.	
Decabromodiphenyl ether	5	N.D.	
Total content	/	N.D.	
Conclusion	/	Pass	/

Note: N.D. = Not Detected or less than MDL

MDL = Method Detection Limit

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2) For the DBP, BBP, DEHP, DIBP content

Unit: mg/kg

Test Item(s)	Test Method/ Equipment	MDL	Result(s)					Limit
			1	2	3	4	5	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		100	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>	/

Test Item(s)	Test Method/ Equipment	MDL	Result(s)						Limit
			6	8	11	12	13	14	
Di-(2-ethylhexyl) Phthalate (DEHP)	Refer to IEC 62321-8:2017 GC-MS	100	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl phthalate (DBP)		100	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl phthalate (BBP)		100	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Di-iso-butyl phthalate (DIBP)		100	N.D.	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>	<b>Pass</b>	/

**Note:** 1. MDL=Method Detection Limit  
 2. N.D.=Not Detected(less than method detection limit)

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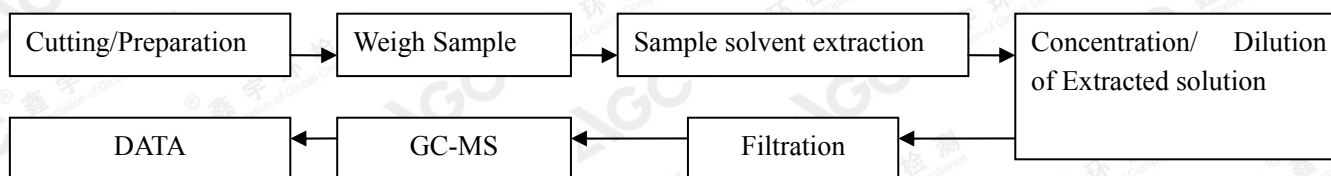
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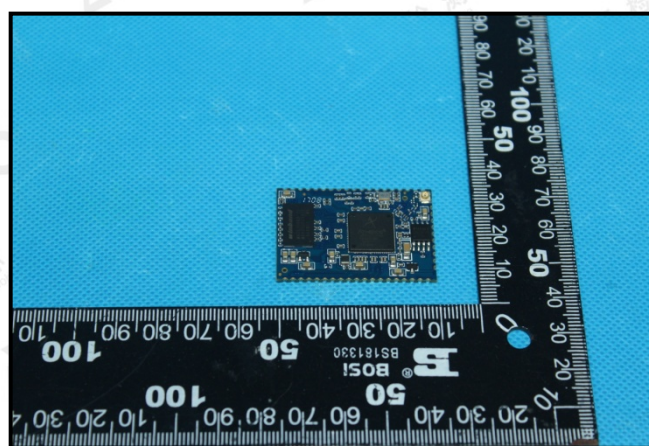
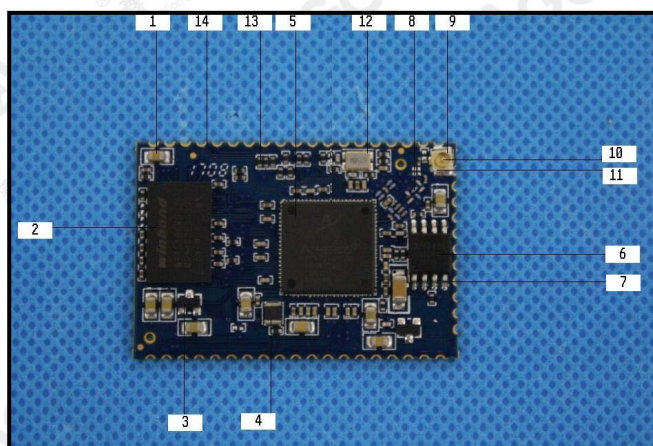
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## Test Flow Chart

1. For PBBs, PBDEs, DBP, BBP, DEHP, DIBP



## The photo of the sample



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AGC authenticate the photo only on original report

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

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