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# RoHS Test Report

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Report No. : AGC02748240501-001

**SAMPLE NAME** : RFID Anti-skimming Card, RFID, Anti-skimming Card  
**MODEL NAME** : MO6200 MO9751  
**APPLICANT** : MID OCEAN BRANDS B.V  
**STANDARD(S)** : Please refer to the following page(s).  
**DATE OF ISSUE** : May 16, 2024

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Applicant : MID OCEAN BRANDS B.V  
Address : 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.  
Test Site : 5,6/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

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

Sample Name : RFID Anti-skimming Card, RFID, Anti-skimming Card  
Model : MO6200 MO9751  
Vendor code : 107961  
Country of Origin : CHINA  
Country of Destination : EUROPE  
Sample Received Date : May 11, 2024  
Testing Period : May 11, 2024 to May 16, 2024  
Test Requested : Selected test(s) as requested by client.


**Test Requested:**

2011/65/EU (RoHS) and its amendment directive (EU) 2015/863  
- Pb, Cd, Hg, Cr<sup>6+</sup>, PBBs, PBDEs, DBP, BBP, DEHP, DIBP  
-Anti-skimming test

**Conclusion**

Pass

Pass

Approved by: 

Suhongliang, Leon

Technical Director

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## Report Revise Record

Report Version	Issued Date	Valid Version	Notes
/	May 16, 2024	Valid	Initial release

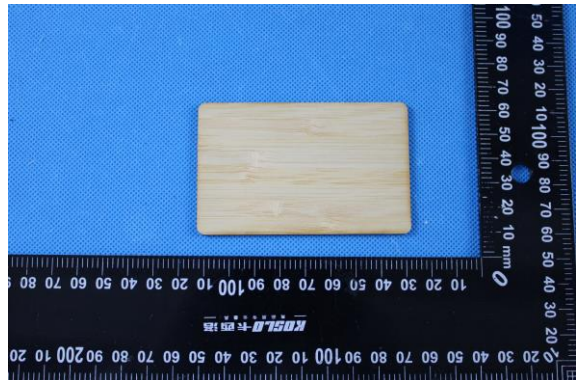
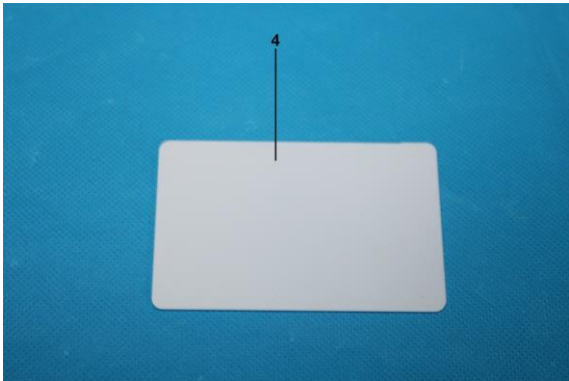
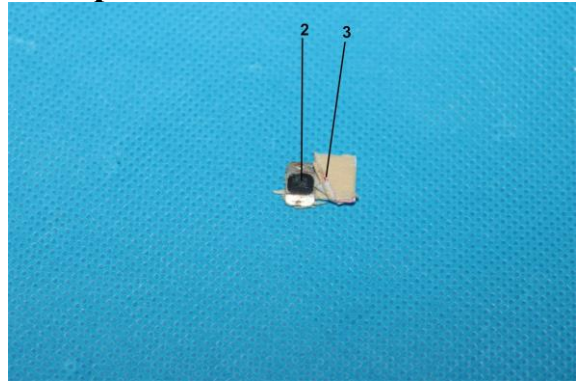
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**The photo of the sample**



The photo of AGC02748240501-001 is for use only with the original report.

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**Test Point Description**

Test point	Test module	Test parts	Test point description
Card Model : bamboo MO6200			
1	---	---	Wooden bamboo shell
2	---	---	Chip
3	---	---	Enameled wire
Card Model : MO9751			
4	---	---	White plastic sheet
5	---	---	Chip
6	---	---	Enameled wire

Note: "---" = The test point exists alone in the sample and is not attached to the test module or test parts.

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**Test Results:**

Note: N.D.=Not Detected (less than method detection limit), MDL = Method Detection Limit, 1mg/kg=0.0001%

**2011/65/EU (RoHS) and its amendment directive (EU) 2015/863**
**- Pb, Cd, Hg, Cr<sup>6+</sup>, PBBs, PBDEs, DBP, BBP, DEHP, DIBP**

Test Item	Test Method/ Instrument	MDL	Maximum Limit
Lead (Pb)	IEC 62321-3-1:2013/ XRF	/	1000mg/kg
Cadmium (Cd)		/	100mg/kg
Mercury (Hg)		/	1000mg/kg
Total Chromium		/	/
Total Bromine		/	/
<b>Chemistry Method</b>			
Lead (Pb)	IEC 62321-5:2013/ ICP-OES	2mg/kg	1000mg/kg
Cadmium (Cd)	IEC 62321-5:2013/ ICP-OES	2mg/kg	100mg/kg
Mercury (Hg)	IEC 62321-4: 2013+A1:2017/ ICP-OES	2mg/kg	1000mg/kg
Non-metal: Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321-7-2:2017/ UV-Vis	8mg/kg	1000mg/kg
Metal: Hexavalent Chromium (Cr <sup>6+</sup> )	IEC 62321-7-1:2015/ UV-Vis	0.1 µg/cm <sup>2</sup>	/
Polybrominated Biphenyls (PBBs) -Monobromobiphenyl (MonoBB) -Dibromobiphenyl (DiBB) -Tribromobiphenyl (TriBB) -Tetrabromobiphenyl (TetraBB) -Pentabromobiphenyl (PentaBB) -Hexabromobiphenyl (HexaBB) -Heptabromobiphenyl (HeptaBB) -Octabromobiphenyl (OctaBB) -Nonabromodiphenyl (NonaBB) -Decabromodiphenyl (DecaBB)	IEC 62321-6:2015/ GC-MS	Single 5mg/kg	Sum 1000mg/kg
Polybrominated Diphenylethers (PBDEs) -Monobromodiphenyl ether (MonoBDE) -Dibromodiphenyl ether (DiBDE) -Tribromodiphenyl ether (TriBDE) -Tetrabromodiphenyl ether (TetraBDE) -Pentabromodiphenyl ether (PentaBDE) -Hexabromodiphenyl ether (HexaBDE) -Heptabromodiphenyl ether (HeptaBDE) -Octabromodiphenyl ether (OctaBDE) -Nonabromodiphenyl ether (NonaBDE) -Decabromodiphenyl ether (DecaBDE)	IEC 62321-6:2015/ GC-MS	Single 5mg/kg	Sum 1000mg/kg
Di-iso-butyl phthalate (DIBP)	IEC 62321-8:2017/ GC-MS	50mg/kg	1000mg/kg
Dibutyl phthalate (DBP)		50mg/kg	1000mg/kg
Butylbenzyl phthalate (BBP)		50mg/kg	1000mg/kg
Di-(2-ethylhexyl) Phthalate (DEHP)		50mg/kg	1000mg/kg

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Test point	Test Item	X-ray Fluorescence Spectrometry (XRF) mg/kg	Wet Chemistry Method mg/kg	Conclusion	
1	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			
2	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			
3	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			
4	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			

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Test point	Test Item	X-ray Fluorescence Spectrometry (XRF) mg/kg	Wet Chemistry Method mg/kg	Conclusion	
5	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			
6	Pb	BL	/	Conformity	
	Cd	BL	/		
	Hg	BL	/		
	Cr(Cr <sup>6+</sup> )	BL	/		
	Br	PBBs	BL		/
		PBDEs			/
	DIBP	N/A	N.D.		
	DBP	N/A	N.D.		
	BBP	N/A	N.D.		
DEHP	N/A	N.D.			

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	$BL \leq 300 - 3\sigma < X$	N/A	$BL \leq 250 - 3\sigma < X$

**Remark:**

- BL= Below Limit, OL= Over limited, IN = Inconclusive, Scanning by XRF and detected by chemical method, N/A = Not applicable.
- 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.
- The XRF scanning test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- Boiling-water-extraction:(X represents the results of the tested sample)

Number	Colorimetric result (Cr(VI) concentration)	Judgement
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1	$X < 0.1 \mu\text{g}/\text{cm}^2$	Negative
2	$0.1 \mu\text{g}/\text{cm}^2 \leq X \leq 0.13 \mu\text{g}/\text{cm}^2$	Uncertainty
3	$X > 0.13 \mu\text{g}/\text{cm}^2$	Positive

Negative indicates the absence of Cr(VI) on the tested areas concentration is below the limit of quantification. The coating is considered a non-Cr(VI) based coating.

Uncertainty indicates the absence of Cr(VI) on the tested areas unavoidable coating variations may influence the determination.

Positive indicates the presence of Cr(VI) on the tested areas concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

Storage conditions and production date of the tested sample are unavailable and thus result of Cr(VI) represent status of the sample at the time of testing.

- (5) 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.

#### - Anti-skimming test

Ambient temperature/humidity: 21.5°C, 63 %RH.

Test method:

- 1) Keep the IC card and the sample close together. Put the sample gradually close to the reading machine, to see how far the IC card could be read. Mark the distance
- 2) Then the sample is separated from the IC card. And put this IC card gradually close to the reading machine, to see how far the IC card could be read. Mark the distance
- 3) Compare A and B

Requirement: IC card cannot be read at any distance for A, please issue with "PASS"

Sample: White

project	sample	Test position (mm)					
		1#	2#	3#	4#	5#	
Anti-skimming test	1	A	NG	NG	NG	NG	NG
		B	18	22	23	23	22

Remark:

A-Distance of the IC card can be read with sample;

B-Distance of the IC card can be read without sample.

NG-Negative, cannot be read

0- can be read when contact the machine

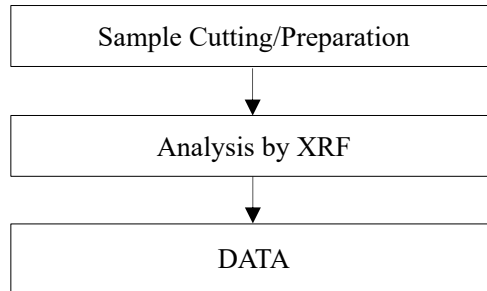
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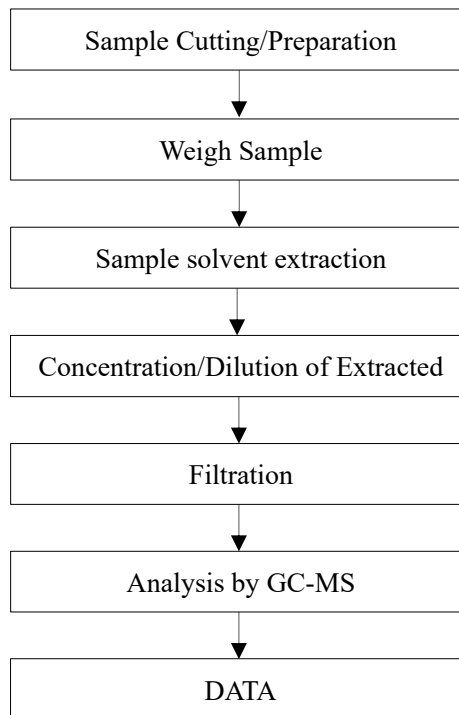
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### Test Flow Chart of XRF



### Test Flow Chart of Phthalates



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3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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

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