



Test Report

Report No.: CX/2012/40327A

Date: 2012/05/11

HIWIN MIKROSYSTEM CORP.
NO. 7, JINGKE RD., TAICHUNG PRECISION MACHINERY TECHNOLOGICAL PARK,
TAICHUNG CITY 408, TAIWAN

The following sample(s) was/were submitted and identified by/on behalf of the client as :

Sample Description : 1mm POSITIONING SCALE
Sample Receiving Date : 2012/04/25
Testing Period : 2012/04/25 to 2012/05/10

Test Result(s) : Please refer to next page(s).

Conclusion : Based upon the performed tests by submitted samples, the test results comply with the limits of RoHS Directive 2011/65/EU (Directive 2002/95/EC being recast by Directive 2011/65/EU).



Ellis Wei, Ph.D. / Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

1/5

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1. Material Fraction Composition

Table 1 The results of XRF screening and chemical test (Unit: mg/kg)



											
No.	Type of Components	Description		Figure	MDL Category	X-ray Screening		UV	ICP-AES	GC-MS	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	
1	SCALE	1.1	YELLOW FILM		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)					
						PBB				---	
						PBDE				---	
							1.2	WHITE TWIN ADHESIVE		Polymers	
	Cd	n.d.	---								
	Hg	n.d.	---								
	Cr	n.d.									
	Br	n.d.									
	Cr(VI)			---							
	PBB			---							
	PBDE			---							
		1.3	BLACK MAGNET		Composite Material						Pb
						Cd	---	n.d.			
						Hg	---	n.d.			
						Cr	---				
						Br	---				
						Cr(VI)			n.d.		
						PBB			n.d.		
						PBDE			n.d.		



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						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	<div>SCALE</div> 	1.4	SILVER COLORED METALLIC SHEET WITH ADHESIVE		Metals	Pb	110		---			
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	170000					
						Br	n.d.	Negative				
						Cr(VI)						
						PBB				---		
						PBDE				---		

3/5

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Test Item :	MDL (mg/kg)				XRF screening threshold (mg/kg)	Test method
XRF (X-ray fluorescence)	Category	Polymers	Composite Material	Metals	500	With reference to IEC 62321: 2008
	Element					
	Pb	50	100	100		
	Cd	50	50	50		
	Hg	50	100	100		
	Cr	50	100	100		
	Br	50	100	n.a.	250	

Test Item (s):	Test method	MDL (mg/kg)	Facilities
Cr(VI)	With reference to IEC 62321: 2008 (For Polymers and Electronics)	2	UV
	With reference to IEC 62321: 2008 (For Coatings on Metals)	*	-
Pb/Cd/Hg	With reference to IEC 62321: 2008	2	ICP-AES

Test Item (s):	Unit	Method	MDL
PBBs			
Monobromobiphenyl	mg/kg	With reference to IEC 62321: 2008. Determination of PBB and PBDE by GC/MS.	5
Dibromobiphenyl	mg/kg		5
Tribromobiphenyl	mg/kg		5
Tetrabromobiphenyl	mg/kg		5
Pentabromobiphenyl	mg/kg		5
Hexabromobiphenyl	mg/kg		5
Heptabromobiphenyl	mg/kg		5
Octabromobiphenyl	mg/kg		5
Nonabromobiphenyl	mg/kg		5
Decabromobiphenyl	mg/kg		5
PBDEs			
Monobromodiphenyl ether	mg/kg		5
Dibromodiphenyl ether	mg/kg		5
Tribromodiphenyl ether	mg/kg		5
Tetrabromodiphenyl ether	mg/kg		5
Pentabromodiphenyl ether	mg/kg		5
Hexabromodiphenyl ether	mg/kg		5
Heptabromodiphenyl ether	mg/kg		5
Octabromodiphenyl ether	mg/kg		5
Nonabromodiphenyl ether	mg/kg		5
Decabromodiphenyl ether	mg/kg		5



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1. mg/kg = ppm
2. n.d. = not detected or lower than MDL
3. MDL = Method detection limit
4. "---" = not conducted
5. n.a. = not applicable
6. *:

Spot-test:

Negative = Absence of Cr(VI) coating,

Positive = Presence of Cr(VI) coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating

Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than

0.02 mg/kg with 50 cm² sample surface area.

7. The XRF result of Br for metal sample is conducted from semi-quantitative method of polymer.
8. Magnetic samples can not be located on test position and there are breakdown risks on XRF equipment. Therefore, this kind of sample will be conducted chemical test directly.
9. If the test result by EDXRF analysis is greater than XRF screening threshold, the test sample should be further conducted by chemical test.
10. PCBA, FPC and battery are conducted by chemical test directly.

5/5

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