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Test Report

Report No.: CX/2012/40325

Date: 2012/05/17

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	:	PMED-H1-1-XX-X
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 with the exempted materials below according to the declaration from applicant (Directive 2002/95/EC being recast by Directive 2011/65/EU):

1. SILVER COLORED METALLIC SCREW (No.2.2) in Table 1: Lead (Pb)
2. GOLDEN COLORED METALLIC NUT (No.2.3) in Table 1: Lead (Pb)
3. GOLDEN COLORED METALLIC PIN (No.2.5) in Table 1: Lead (Pb)
   ("6(c), Copper alloy containing up to 4% lead by weight" in Directive 2011/65/EU)
4. ELECTRONIC COMPONENT (Q0~Q8) (No.2.4) in Table 1: Lead (Pb)
   ("7(a), Lead in high melting temperature type solders (i.e. lead- based alloys containing 85% by weight or more lead)" in Directive 2011/65/EU)

SGS TAIWAN LTD

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

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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	CASE  	1.1	SILVER COLORED METALLIC FRAME		Metals	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	175000				
						Br	n.d.				
						Cr(VI)		Negative			
						PBB				---	
						PBDE				---	
		1.2	WHITE-SILVER COLORED LABEL WITH BLACK/GREEN PRINT		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
		1.3	SILVER COLORED METALLIC SCREW		Metals	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	179000				
						Br	n.d.				
						Cr(VI)		Negative			
						PBB				---	
						PBDE				---	

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						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	
1	CASE	1.4	TRANSLUCENT PLASTIC CLAMP		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
		1.5	SILVER COLORED METALLIC PLANK		Metals	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	171000				
						Br	n.d.				
						Cr(VI)		Negative			
						PBB				---	
						PBDE				---	
		1.6	COLORED PLASTIC SHEET WITH ADHESIVE		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
		1.7	SILVER COLORED METALLIC FRAME		Metals	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	

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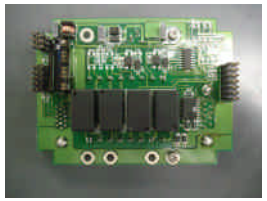
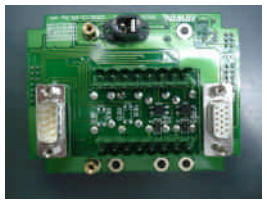
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	
1	CASE 	1.8	IVORY PLASTIC CAP		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
2	PCBA  	2.1	PCBA		Composite Material	Pb	---		16		
						Cd	---		n.d.		
						Hg	---		n.d.		
						Cr	---				
						Br	---				
						Cr(VI)		n.d.			
						PBB				n.d.	
						PBDE				n.d.	
		2.2	SILVER COLORED METALLIC SCREW		Metals	Pb	24800		*2		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
		2.3	GOLDEN COLORED METALLIC NUT		Metals	Pb	29600		*2		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	

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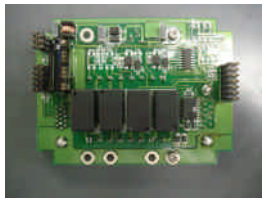
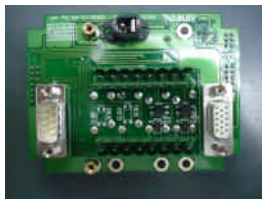
No.	Type of Components	Description		Figure	MDL Category	X-ray Screening		UV	ICP-AES	GC-MS	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	
2	PCBA	2.4	ELECTRONIC COMPONENT (Q0~Q8)		Composite Material	Pb	17800		*2		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	3550				
						Cr(VI)		---			
						PBB				n.d.	
						PBDE				n.d.	
		2.5	GOLDEN COLORED METALLIC PIN		Metals	Pb	45600		32100		*2
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	
		2.6	WHITE PLASTIC HOUSING		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	43400				
						Cr(VI)		---			
						PBB				n.d.	
						PBDE				n.d.	
		2.7	BLACK PLASTIC HOUSING		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	

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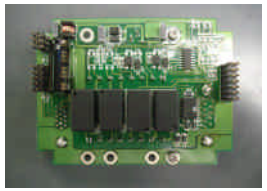
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE	
2	PCBA 	2.8	GREEN PLASTIC HOUSING		Polymers	Pb	n.d.		---		
						Cd	n.d.		---		
						Hg	n.d.		---		
						Cr	n.d.				
						Br	n.d.				
						Cr(VI)		---			
						PBB				---	
						PBDE				---	

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Test Item :	MDL (mg/kg)				XRF screening threshold (mg/kg)	Test method
	Category / Element	Polymers	Composite Material	Metals		
XRF (X-ray fluorescence)	Pb	50	100	100	500	With reference to IEC 62321: 2008
	Cd	50	50	50	50	
	Hg	50	100	100	500	
	Cr	50	100	100	500	
	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		With reference to IEC 62321: 2008. Determination of PBB and PBDE by GC/MS.	
Monobromobiphenyl	mg/kg		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 cm^2 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.

Mark	Description of Mark
*1	The sample weight is not enough to conduct chemical tests.
*2	The item is exempted from RoHS directive.
--*2	The item might be exempted from RoHS directive.
*3	The result was retested after re-getting the same sample from client.

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