



**Test Report**

Number : TWNC00196771

Applicant: Cactus Technologies Ltd  
Suite C 15/F Capital Trade Center  
62 Tsun Yip Street Kwun Tong  
Kowloon Hong Kong

Date : May 12, 2011

**Sample Description:**

One (1) group of submitted samples said to be :

Sample Description : SD CARD  
(1) Printed plastic sticker  
(2) Black plastic cover  
(3) PCBA  
(4) White plastic lock

Style / Item No. : KSxxxxR(I)T-806

Date Sample Received : Mar 29, 2011

Date Test Started : Mar 31, 2011

**Test Conducted:**

As requested by the applicant, for details please refer to attached pages.

**Conclusion:**

<u>Tested Samples</u>	<u>Standard</u>	<u>Result</u>
Screening components of submitted samples	With reference to test method of IEC 62321 edition 1.0:2008 chapter 6, screening by XRF spectroscopy and chemical confirmation test for RoHS directive (2002/95/EC)	Pass

**Remark:**

As requested by the applicant, only components shown in this report were screened by XRF spectroscopy for 2002/95/EC. Other components were not screened in this report.

**Authorized By:**

On Behalf Of Intertek Testing Services  
Taiwan Limited



K. Y. Liang  
Director

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approval of the laboratory.



Number : TWNC00196771

Test Conducted

The RoHS screening analysis is performed by an ED-XRF (energy dispersive X-ray fluorescence) analyzer. The analyzer determines the chemistry of a screened component by measuring the spectrum of characteristic X-ray emitted by different elements in the sample, which subjected to X-ray radiation. In the way the analyzer is able to determine which element in the periodic system that is present in screened components.

Determination of total value of regulated substances in electro technical products, elements of cadmium (Cd), lead (Pb), mercury (Hg), chromium (Cr) and bromine (Br) content were measured by XRF spectroscopy for RoHS restricted substances. The analyzer is therefore unable to determine if it is PBB, PBDE, Cr(VI) or non restricted bromine and chromium substances in the sample.

( I ) Test Result Summary:

Screened Component	XRF Result			Chemical Confirmation Result (ppm)
	Element	Screened Result (ppm)	Conclusion	
(1)	Cd	ND	BL	Not Tested
	Pb	ND	BL	
	Hg	ND	BL	
	Cr	ND	BL	
	Br	ND	BL	
(2)	Cd	ND	BL	Not Tested
	Pb	ND	BL	
	Hg	ND	BL	
	Cr	ND	BL	
	Br	ND	BL	
(3) (#)	Cd	--	--	Cd: ND Pb: ND Hg: ND Cr <sup>6+</sup> : ND PBBs: ND PBDEs: ND
	Pb	--	--	
	Hg	--	--	
	Cr	--	--	
	Br	--	--	
(4)	Cd	ND	BL	Not Tested
	Pb	ND	BL	
	Hg	ND	BL	
	Cr	ND	BL	
	Br	ND	BL	

Remarks: ppm = Parts per million = mg/kg  
 ND = Not detected and pass, the screened sample is found to be under detection limit of table III.  
 BL = Below Limit. The screened component is found to be equal or below the lower screening threshold limit of table II.  
 # = Samples were ground and randomly selected for test.



Number : TWNC00196771

Test Conducted

(II) XRF screening limits in mg/kg for regulated elements in various matrices.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 150 ≤ OL
Pb	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Hg	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Cr	BL ≤ 700 < X	BL ≤ 700 < X	BL ≤ 500 < X
Br	BL ≤ 300 < X	Not Applicable	BL ≤ 250 < X

Remark :  
BL = Below Limit  
X = Inconclusive result  
OL = Over Limit  
mg/kg = Milligram per kilogram = ppm

(III) Estimated detection limits in mg/kg for regulated elements in various matrices.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not Applicable	200

**Disclaimers:**

The numerical test data of this XRF screening report is for reference purposes only due to the data variation incurred from various factors as described in next paragraph. 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 results 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.

## Test Conducted

## (IV) Test Method

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr <sup>6+</sup> ) content (for non-metal)	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

Remark : Reporting Limit = Quantitation limit of analyte in sample



Number : TWNC00196771

Test Conducted

(V) RoHS Requirement:

<b>Restricted Substances</b>	<b>Limits</b>
Cadmium (Cd)	0.01% (100 ppm)
Lead (Pb)	0.1% (1000 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium (VI) (Cr <sup>6+</sup> )	0.1% (1000 ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

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End Of Report

Test Conducted

### Photo

