Test Report

Customer : Advanced Card Systems Ltd.

Address : Units 2010-2013, 20th Floor, Chevalier Commercial Centre, 8 Wang Hoi Road, Kowloon Bay, Hong Kong.

Report on the submitted sample said to be

Sample Name	:	Contactless Smart Card Reader
Model No.	:	ACR122
Sample Receiving Date	:	January 9, 2008; February 28,2008; March 5,2008
Testing Period	:	From January 9, 2008 to March 24, 2008
The Lately Sample Receiving Date	:	March 5, 2008
Test Requested	:	With reference to RoHS Directive 2002/95/EC, and its amendment directives As specified by client, to determine the Lead, Cadmium, Mercury, Chromium and Bromine content in the submitted sample.
Test Method	:	With reference to IEC62321,Ed.111/54CDV IEC 62321, Ed. 1: Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products Screening by XRF Spectroscopy SN/T2003.1-2005 Heavy metal-Determination in electrical and electronic equipment X-ray fluorometry
Results	:	Please refer to next page(s).

Signed for and on behalf of
BACL

_____
John Chan
Lab Manager

Bay Area Compliance Laboratories Corp.(Shenzhen)
6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China
Tel: +86-755-33320018 Fax: +86-755-33320008

1. Test Results on XRF:

Item	Sample Description	Results (1)				
		Cd	Pb	Hg	Cr	Br
1	Black body with silvery metal edge (10μH)	BL	BL	BL	BL	BL
2	Black / white body with silvery metal edge (102)	BL	BL	BL	X_{1044}	BL
3	Dark-grey body silvery metal edge (1μF)	BL	BL	BL	BL	BL
4	Black / white body with silvery metal edge (000)	BL	BL	BL	X_{1100}	BL
5	Brown body with silvery metal edge (100μF)	BL	BL	BL	BL	BL
6	Black body with silvery metal pin (2A)	BL	BL	BL	BL	X_{5357}
7	Black body with silvery metal pin (L4W74)	BL	BL	BL	BL	X_{6266}
8	Grey body with silvery metal edge (47PF)	BL	BL	BL	BL	BL
10	Black / white body with silvery metal edge (105)	BL	BL	BL	X_{1159}	BL
12	Dark-grey body with silvery metal edge (22PF)	BL	BL	BL	BL	BL
13	Black / white body with silvery metal edge (103)	BL	BL	BL	X_{1154}	BL
14	Black body with silvery metal pin (V4Y513)	BL	BL	BL	BL	X_{5485}
15	Black body with silvery metal pin (1AM6)	BL	BL	BL	BL	X_{8419}
16	Black / white body with silvery metal edge (3R3)	BL	BL	BL	X_{1024}	BL
17	Dark-grey body with silvery metal edge (120PF)	BL	BL	BL	BL	BL
18	Grey body with silvery metal edge (100PF)	BL	BL	BL	BL	BL
19	Grey body with silvery metal edge (27PF)	BL	BL	BL	BL	BL
20	Dark-grey body with silvery metal edge (1μF)	BL	BL	BL	BL	BL
21	Light-black body with silvery metal edge (1μH)	BL	BL	BL	BL	BL
22	Black body with silvery metal edge (1μF)	BL	BL	BL	BL	BL
23	Black / white body with silvery metal edge (251)	BL	BL	BL	X_{1054}	BL
24	Black / white body with silvery metal edge (220 /2.7K)	BL	BL	BL	X_{1026}	BL
25	Black / white body with silvery metal edge (220 /22Ω)	BL	BL	BL	X_{1257}	BL
26	Black / white body with silvery metal edge (331)	BL	BL	BL	X_{1106}	BL
27	Black / white body with silvery metal edge (472)	BL	BL	BL	X_{1012}	BL
28	Black / white body with silvery metal edge (221)	BL	BL	BL	X_{1231}	BL
29	Black body with silvery metal pin (IC08)	BL	BL	BL	BL	X_{7636}
30	Black body (662μ)	BL	BL	BL	BL	X_{6603}
31	Silvery metal pin (662μ)	BL	BL	BL	BL	---
32	Black body (IC STSCR)	BL	BL	BL	BL	X_{4841}
33	Silvery metal pin (IC STSCR)	BL	BL	BL	BL	---
34	Black body (SIC147)	BL	BL	BL	BL	X_{320}
35	Silvery metal sheet (SIC147)	BL	BL	BL	BL	---
36	Yellow body with silvery metal edge (6.8μF)	BL	BL	BL	BL	X_{9360}
37	Yellow body with silvery metal edge (10μF)	BL	BL	BL	BL	X_{9746}
38	Transparent / white / green material (D4G+D4R LED)	BL	BL	BL	BL	X_{1293}
39	Red paper sheet (D4G+D4R LED)	BL	BL	BL	BL	BL
40	Black rubber (bottom cushion 脚垫)	BL	BL	BL	BL	BL
41	Double-side adhesive tape (bottom cushion 脚垫)	BL	BL	BL	BL	BL
42	Silvery metal screw (1.7X5)	BL	BL	BL	BL	---

Item	Sample Description	Results (1)				
		Cd	Pb	Hg	Cr	Br
43	Silvery metal screw (2X6mm)	BL	BL	BL	BL	---
44	Silvery metal screw (1.7X5)	BL	BL	BL	BL	---
45	Black magnet (inductor)	BL	BL	BL	BL	BL
49	Silvery metal pin (D4.000)	BL	BL	BL	BL	---
50	Silvery metal body (D27.120)	BL	BL	BL	BL	---
51	Silvery metal pin (D27.120)	BL	BL	BL	BL	---
52	Base material / green oil / coppery metal mixed (PCB)	BL	BL	BL	BL	X_{56277}
53	Cream plastic shell (PCB)	BL	BL	BL	BL	BL
54	White plastic (USB wire)	BL	BL	BL	BL	BL
55	Silvery metal wire (USB wire)	BL	BL	BL	BL	---
56	Silvery metal (USB)	BL	BL	BL	BL	---
57	White plastic	BL	BL	BL	BL	BL
58	Beige plastic	BL	BL	BL	BL	BL
59	copper / silvery metal pin	BL	BL	BL	BL	---
60	Silvery / light-blue metal	BL	BL	BL	BL	BL
61	Silvery metal wire core	BL	BL	BL	BL	---
62	Black plastic cable jacket	BL	BL	BL	BL	BL
63	Red plastic cable jacket	BL	BL	BL	BL	BL
64	Green plastic cable jacket	BL	BL	BL	BL	BL
65	White plastic cable jacket	BL	BL	BL	BL	BL
66	Tin wire	BL	BL	BL	BL	---
67	Yellow glue	BL	BL	BL	BL	BL
68	Tin poultice	BL	BL	BL	BL	---

Note :

BL = Below Limit by XRF analysis

OL = Over Limit by XRF analysis

X = Inconclusive (questionable, need further chemical analysis)

= Insufficient sample for screening test

Remark :

(1) Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for CrVI) and GCMS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321 Ed. 1.

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	BL ≤70-3 σ < X <130+3 σ ≤ OL	BL ≤70-3 σ < X <130+3 σ ≤ OL	LOD < X < 250+3 σ ≤ OL
Pb	mg/kg	BL ≤700-3 σ < X < 1300+3 σ ≤ OL	BL ≤700-3 σ < X < 1300+3 σ ≤ OL	BL ≤500-3 σ < *X* <1500+3 σ ≤ OL
Hg	mg/kg	BL ≤700-3 σ < X <1300+3 σ ≤ OL	BL ≤700-3 σ < X <1300+3 σ ≤ OL	BL ≤500-3 σ < *X* < 1500+3 σ ≤ OL
Cr	mg/kg	BL ≤700-3 σ < X	BL ≤700-3 σ < X	BL ≤500-3 σ < *X*
Br	mg/kg	BL ≤300-3 σ < X	--	BL ≤250-3 σ < *X*

BL = below limit
OL = over limit
X = Inconclusive
LOD = Limit of Detection

(2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

(3) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC:

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

Remark:

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

Disclaimers:

This XRF Screening 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 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.

2. Test Results with chemical analysis:

Item	Unit	MDL	9	11	Limit
Lead Content (Pb)	ppm	2	1111	1524	1000ppm
Cadmium Content (Cd)	ppm	2	11	N.D.	100ppm
Mercury Content (Hg)	ppm	2	N.D.	N.D.	1000ppm
Hexavalent Chromium (Cr VI)	ppm	2	N.D.	N.D.	1000ppm

Sample Description:

9. Black/ white body with silvery metal edge (181)
11. Black/ white body with silvery metal edge (473)

Note :

- N.D. = Not detected (<5)
- ppm = mg/kg
- MDL= Method Detection Limit
- Results shown are of the total weight of dry samples.

Bay Area Compliance Laboratories Corp.(Shenzhen)
6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China
Tel: +86-755-33320018 Fax: +86-755-33320008

Exemptions in force:

1 Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.

2 Mercury in straight fluorescent lamps for general purposes not exceeding
__halophosphate 10 mg
__triphosphate with normal lifetime 5 mg
__triphosphate with long lifetime 8 mg

3 Mercury in straight fluorescent lamps for special purposes.

4 Mercury in other lamps not specifically mentioned in this Annex.

5 Lead in glass of cathode ray tubes, electronic components and fluorescent tub

6 Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminium containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight.

7 Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead),
— lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications,
— lead in electronic ceramic parts (e.g. piezoelectronic devices).

8 Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC (*) amending Directive 76/769/EEC (**) relating to restrictions on the marketing and use of certain dangerous substances and preparations.

9 Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.
9a DecaBDE in polymeric applications
9b Lead in lead-bronze bearing shells and bushes

10 Within the procedure referred to in Article 7(2), the Commission shall evaluate the applications for:
- Deca BDE,
- mercury in straight fluorescent lamps for special purposes,
- lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications (with a view to setting a specific time limit for this exemption), and
- light bulbs,
as a matter of priority in order to establish as soon as possible whether these items are to be amended accordingly.

11 Lead used in compliant pin connector systems.

12 Lead as a coating material for the thermal conduction module c-ring.

13 Lead and cadmium in optical and filter glass.

14 Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight.

15 Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

16 Lead in linear incandescent lamps with silicate coated tubes

17 Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications

18 Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphorus such as BSP ($BaSi_2O_5$:Pb) as well as when used as speciality lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes containing phosphorus such as SMS ($(Sr,Ba)_2MgSi_2O_7$:Pb)

19 Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy Saving Lamps (ESL)

20 Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD)

21 Lead and cadmium in printing inks for the application of enamels on borosilicate glass.

22 Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communications systems.

23 Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead frames.

24 Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors.

25 Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes.

26 Lead oxide in the glass envelope of Black Light Blue (BLB) lamps.

27 Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers.

28 Hexavalent chromium in corrosion preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC (IT and telecommunications equipment). Exemption granted until 1 July 2007.

29 Lead bound in crystal glass as defined in Annex I (Categories1,2,3,and 4) of Council Directive 69/493/EEC.

*** End of Report ***

Bay Area Compliance Laboratories Corp.(Shenzhen)
6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China
Tel: +86-755-33320018 Fax: +86-755-33320008