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Washroom Wizard Ltd
6b Parkway Porters Wood
St Albans
Hertfordshire
AL3 6PA

Report No. RT/ELE/12171
Date: 02/09/2013
Order No. UK016-2189
Quote No. N/A
Sample Received 20/08/2013

RoHS Risk Assessment

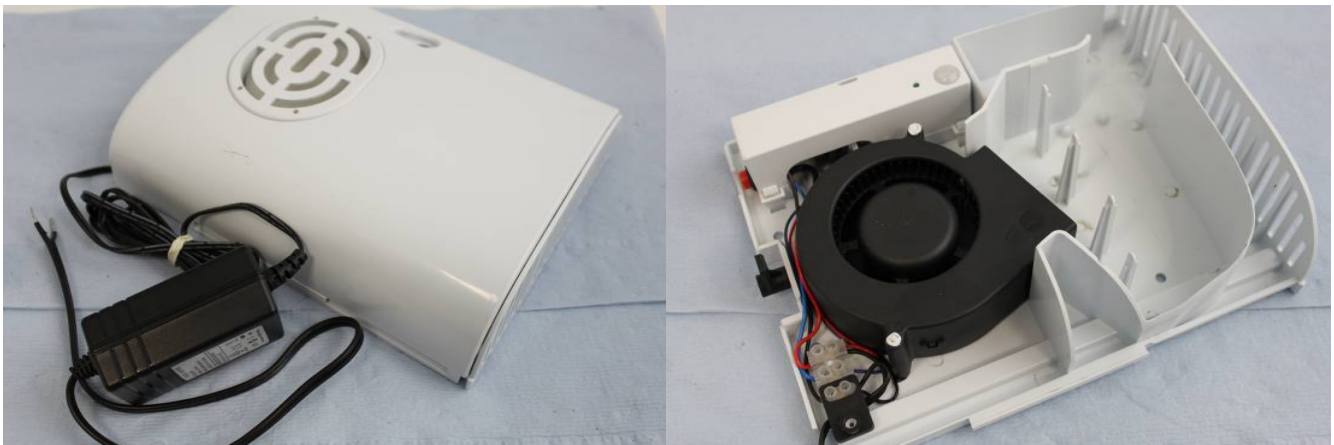
Introduction

A Fragrance Dispenser was received from Washroom Wizard, the equipment was dismantled and 45 homogenous materials were XRF pre-screened for RoHS compliance. The Printed Circuit Boards were Risk Assessed by XRF mapping.

ROHS Pre-screening

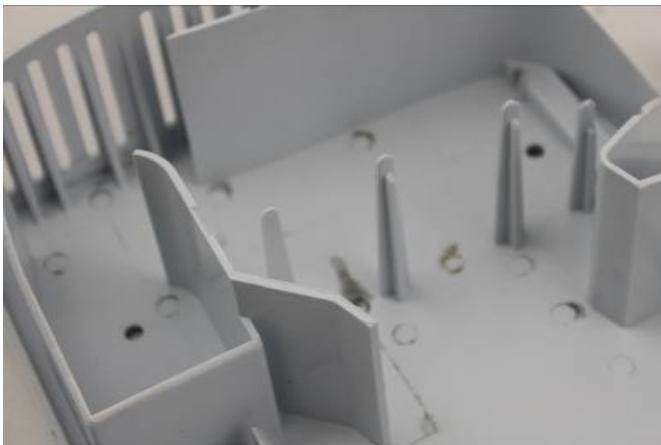
The technique used for the RoHS pre-screening was by a Seiko 6000VX energy dispersive X-Ray fluorescence spectrometer. This analysis is semi-quantitative and all failures must be run on different instrumentation. For quantitative analysis other instrumentation must also be used for example, ICP-OES. If the RoHS element is not detected or is below the Intertek pre-screening limits (see below) then the element has passed the RoHS pre-screening. This test is not UKAS accredited.

Lab Sample No: ELE-244522
Sample Description: Ecobreeze air filtration and air fragrance diffuser





244522a – White front plastic cover



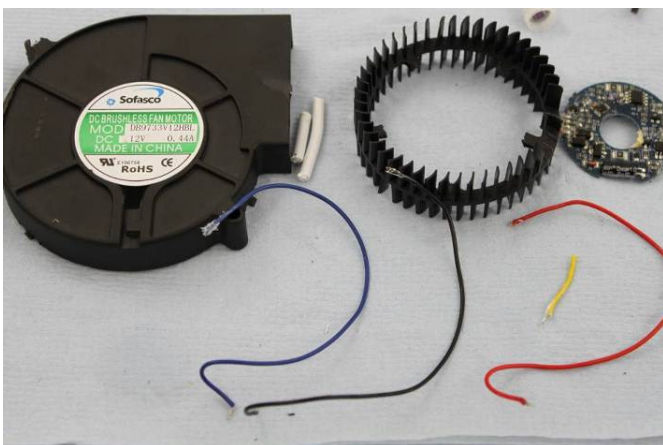
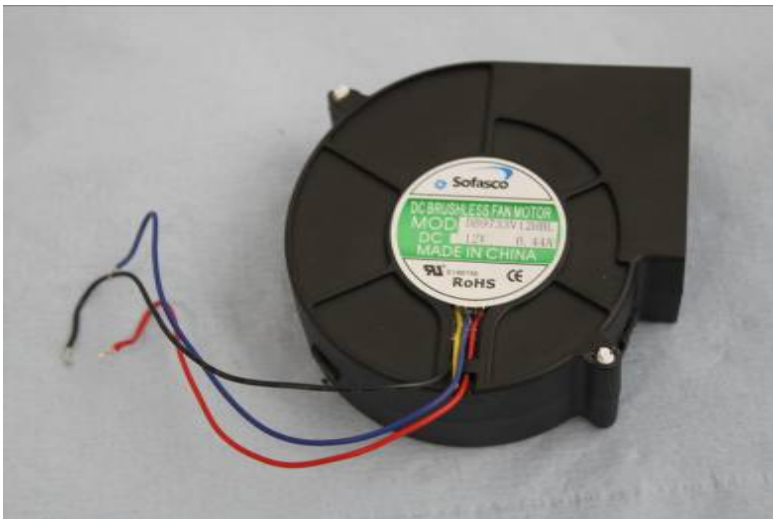
244522b – White rear plastic cover



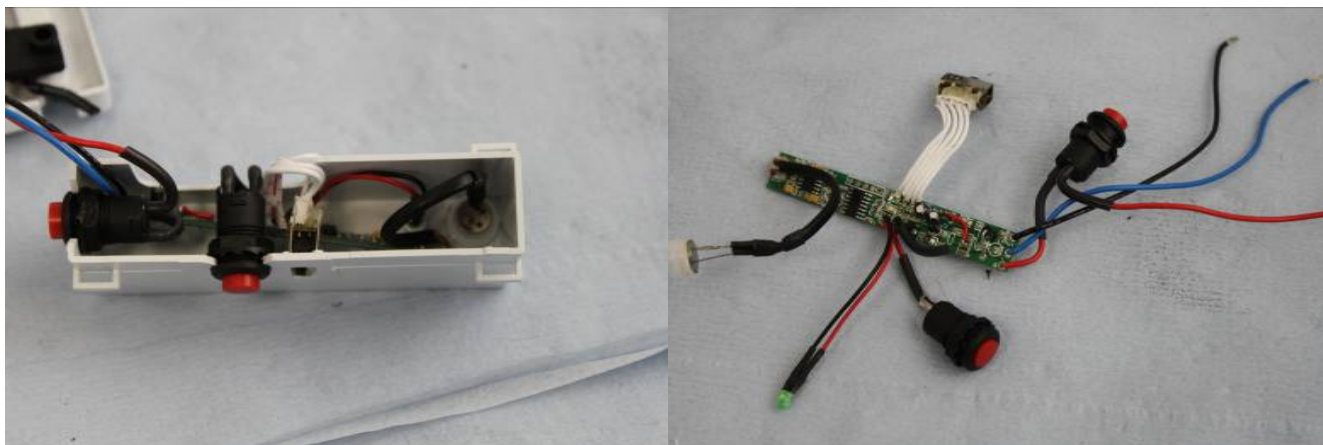
244522c – Electronics white plastic casing



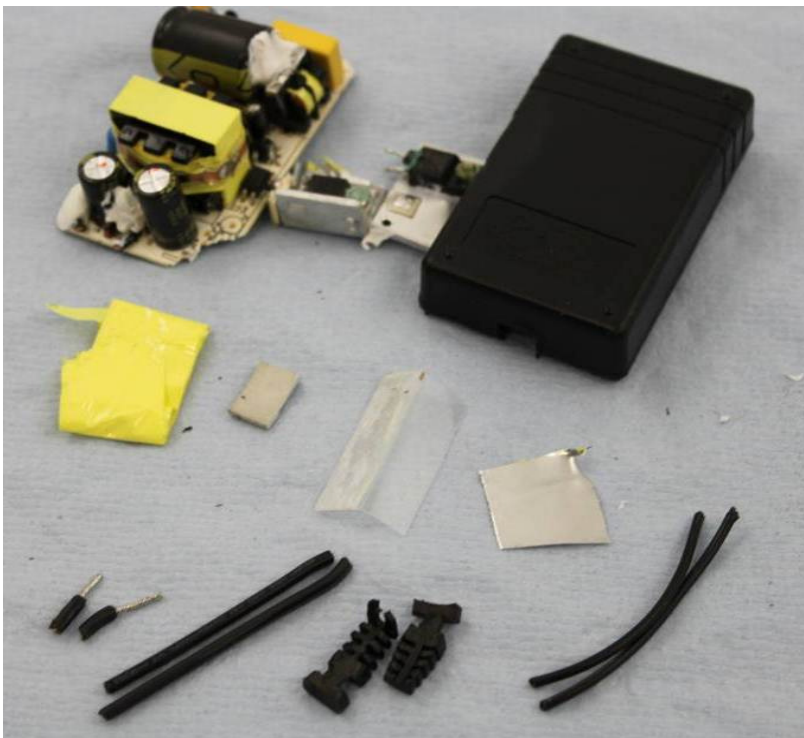
- 244522d1 – Black spacer
- 244522d2 – Clear contact box casing
- 244522d3 – Metal contacts



- 244522e1 – Fan main black casing
- 244522e2 – White supports
- 244522e3 – Fan inner black plastic
- 244522e4 – PCB see Mapping
- 244522e5 – Blue cable insulation
- 244522e6 – Black cable insulation
- 244522e7 – Yellow cable insulation
- 244522e8 – Red cable insulation



- 244522f1 – PCB see below
- 244522f2 – Green LED
- 244522f3 – Green LED solder
- 244522f4 – Black cable sheath
- 244522f5 – Red cable insulation
- 244522f6 – Black cable insulation
- 244522f7 – Black switch
- 244522f8 – White contact block
- 244522f9 – White/pink ribbon
- 244522f10 – Black cable insulation
- 244522f11 – Red cable insulation
- 244522f12 – Blue cable insulation
- 244522f13 – Red cable insulation
- 244522f14 – Black cable sheath
- 244522f15 – Red button
- 244522f16 – Black switch casing
- 244522f17 – Solder on switch
- 244522f18 – Black cable insulation
- 244522f19 – Black cable sheath
- 244522f20 – White o-ring around device
- 244522f21 – Yellow cable insulation
- 244522f22 – Red cable insulation
- 244522f23 – Solder inside device
- 244522f24 – Solder to power supply



- 244522g1 – PCB see Mapping
- 244522g2 – Black casing
- 244522g3 – Yellow tape
- 244522g4 – Grey sticky spacer
- 244522g5 – Clear Perspex
- 244522g6 – Metal casing
- 244522g7 – Solder on wires
- 244522g8 – Black cable insulation (large)
- 244522g9 – Black plastic cable ends
- 244522g10 – Black cable insulation (small)

XRF Pre-screening Results

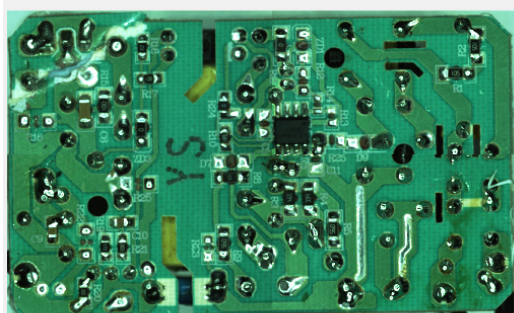
Sample No.	XRF Results (ppm)					Additional Testing Required	Comments
	Cd	Pb	Hg	Br	Cr		
244522a	ND	ND	ND	ND	ND		
244522b	ND	ND	ND	ND	29		
244522c	ND	ND	ND	909	ND	GC-MS Analysis	
244522d1	ND	ND	ND	478	ND	GC-MS Analysis	
244522d2	ND	24	ND	ND	ND		
244522d3	ND	26382	ND	25	ND		Check exemptions for brass
244522e1	ND	ND	ND	59434	ND	GC-MS Analysis	
244522e2	ND	ND	ND	ND	29		
244522e3	ND	27	ND	50770	ND	GC-MS Analysis	
244522e5	ND	ND	ND	20	ND		
244522e6	ND	ND	ND	ND	ND		
244522e7	ND	ND	ND	ND	ND		
244522e8	ND	ND	ND	ND	ND		
244522f2	ND	ND	ND	1790	ND	GC-MS Analysis	
244522f3	ND	282178	ND	ND	ND		Leaded solder detected
244522f4	ND	95	ND	ND	ND		
244522f5	ND	ND	ND	ND	ND		
244522f6	ND	ND	ND	ND	ND		
244522f7	ND	ND	ND	23	ND		
244522f8	ND	ND	ND	ND	ND		
244522f9	ND	ND	ND	22	ND		
244522f10	ND	ND	ND	ND	ND		
244522f11	ND	ND	ND	ND	ND		
244522f12	ND	ND	ND	ND	ND		
244522f13	ND	ND	ND	ND	ND		
244522f14	ND	ND	ND	ND	736		Cr low risk due to colouration
244522f15	ND	ND	ND	ND	ND		
244522f16	ND	ND	ND	185	ND		
244522f17	ND	207905	ND	ND	ND		Leaded solder detected
244522f18	ND	2762	ND	ND	ND	ICP-OES Analysis	Lead in cable insulation
244522f19	ND	36	ND	ND	ND		
244522f20	ND	ND	ND	ND	ND		
244522f21	ND	4792	ND	ND	ND	ICP-OES Analysis	Lead in cable insulation
244522f22	ND	3740	ND	ND	ND	ICP-OES Analysis	Lead in cable insulation
244522f23	ND	26	ND	100	ND		
244522f24	ND	151	ND	234	ND	GC-MS Analysis	
244522g2	ND	ND	ND	213	ND	GC-MS Analysis	
244522g3	ND	ND	ND	21	ND		
244522g4	ND	ND	ND	ND	ND		
244522g5	ND	ND	ND	ND	ND		
244522g6	ND	ND	ND	ND	ND		

244522g7	ND	123	ND	ND	ND		
244522g8	ND	ND	ND	ND	ND		
244522g9	ND	ND	ND	ND	ND		
244522g10	ND	ND	ND	ND	ND		

XRF Mapping

Sample Image

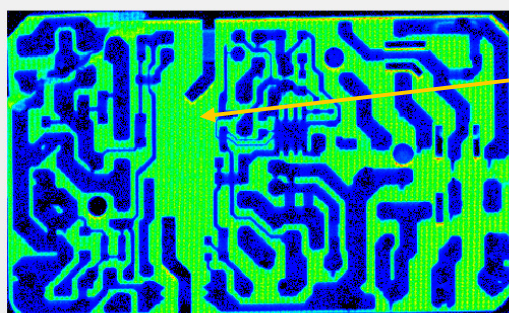
Sample image



Bromine Map

Br-Ka

4578.96



Bromine in board low risk

0.00000

Tin Map

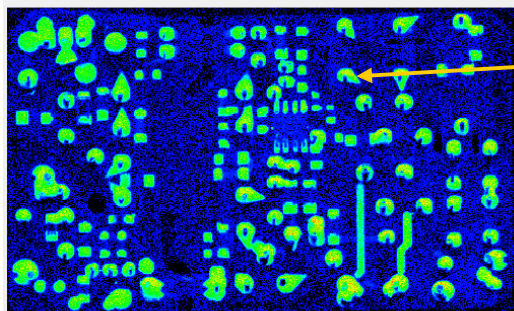
Sn-Ka

1234.31

Lead Map

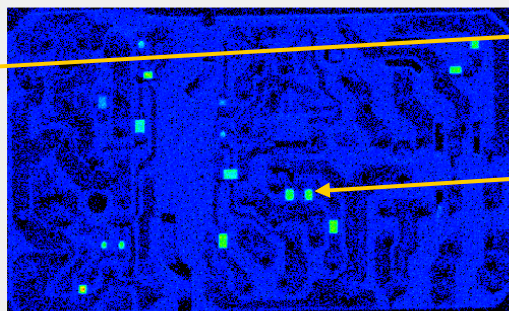
Pb-La

1008.33



Tin used in solder and component legs, not lead

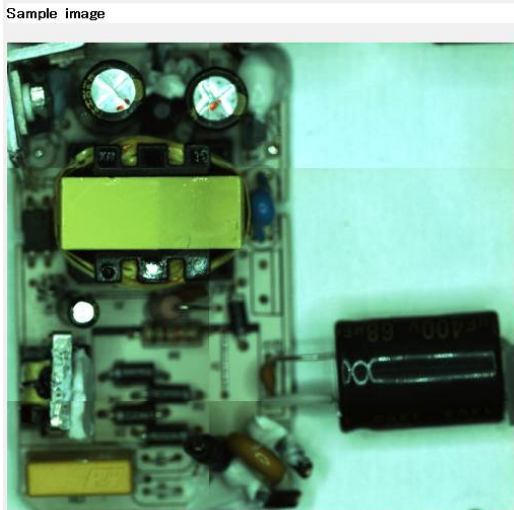
0.00000



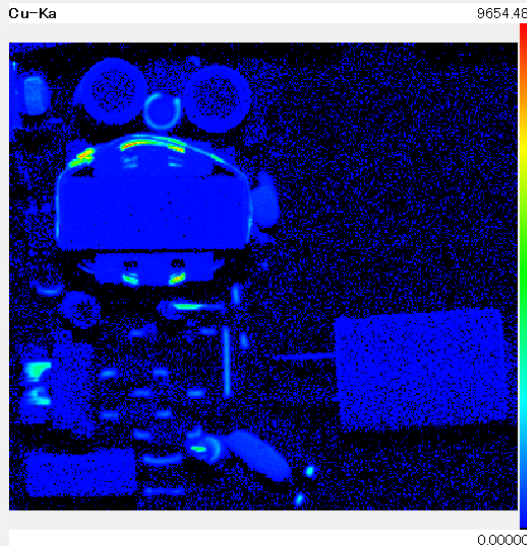
Lead detected in resistors requires checking for exemptions

0.00000

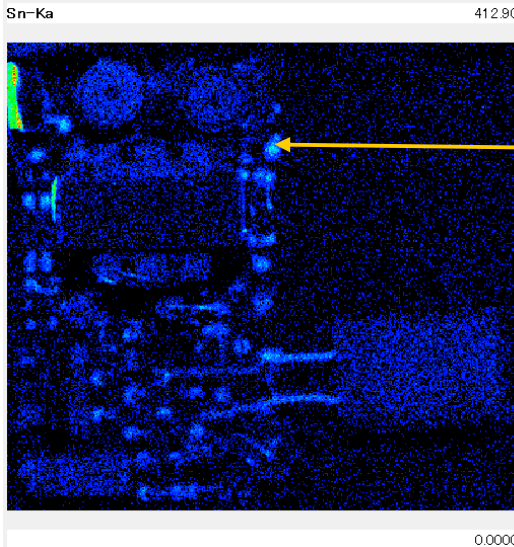
Sample Image



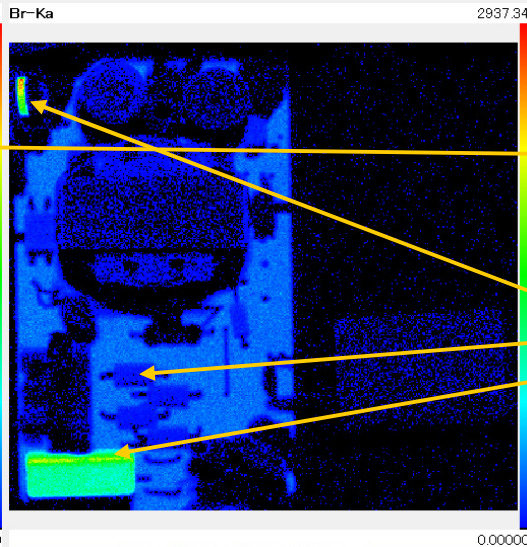
Copper Map



Tin Map



Bromine Map



Tin used in solder and component legs, not lead

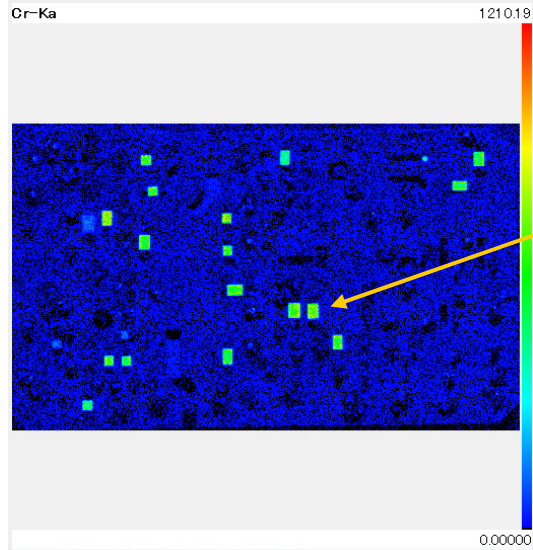
Bromine in board low risk

Bromine detected in:

- White plastic washer
- Resistors
- Yellow capacitor

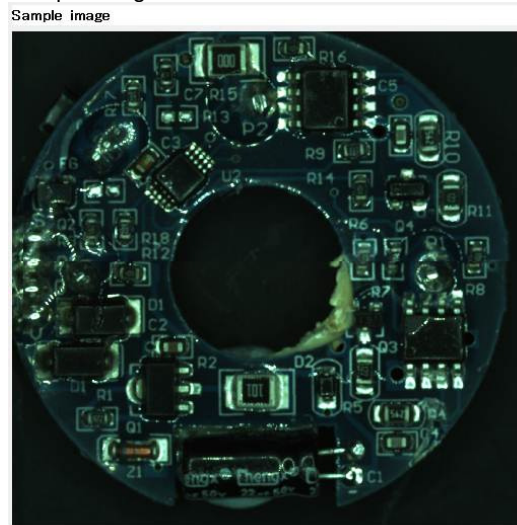
Require PBB/PBDE speciation by GC-MS Analysis and/or supplier evaluation.

Chromium Map

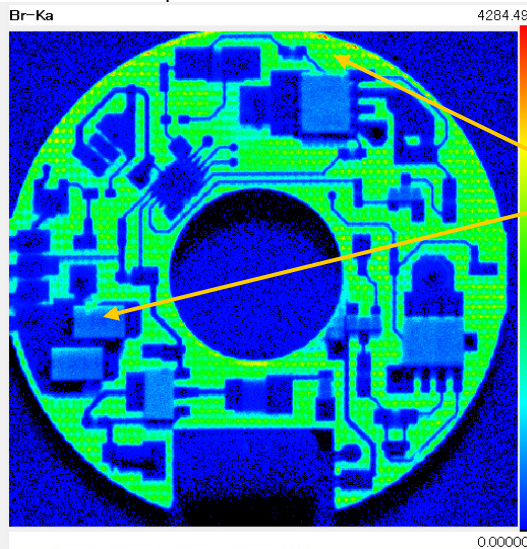


Chromium detected in resistors requires Cr VI speciation by supplier evaluation.

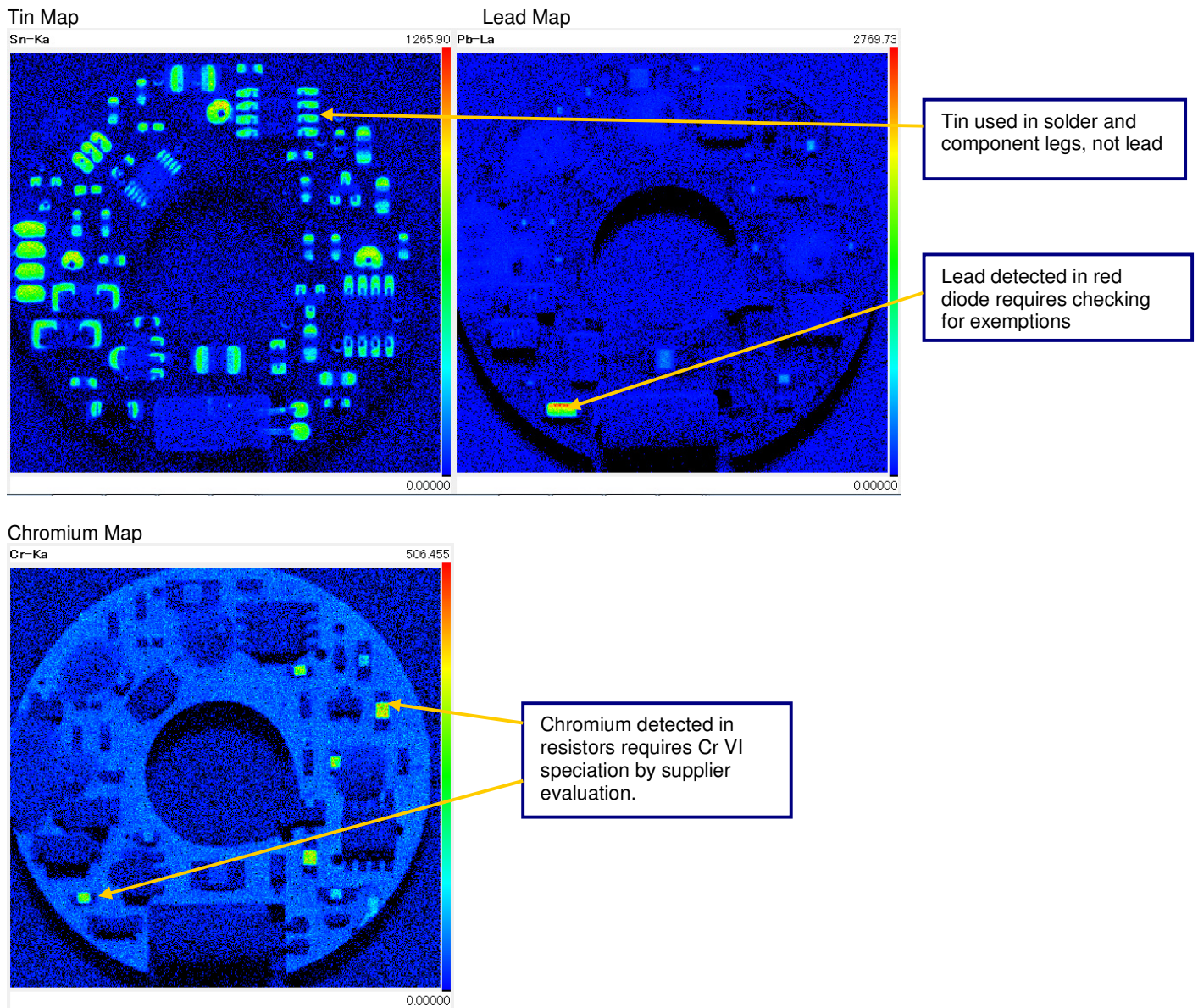
Sample Image



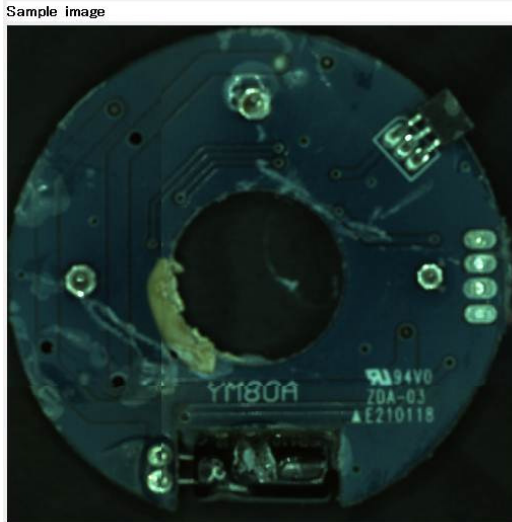
Bromine Map



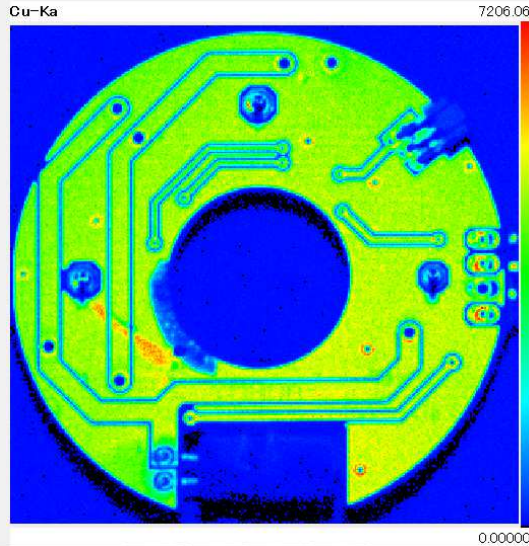
Bromine in board low risk.
Bromine detected in IC also low risk



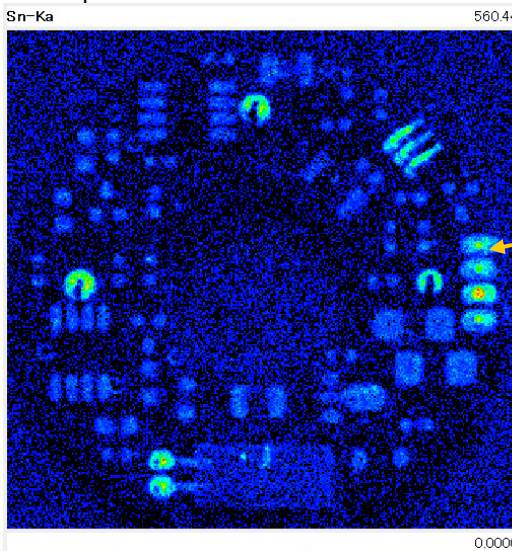
Sample Image



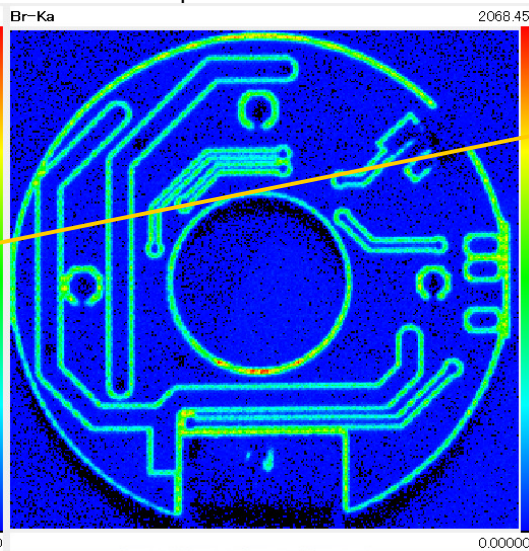
Copper map



Tin Map



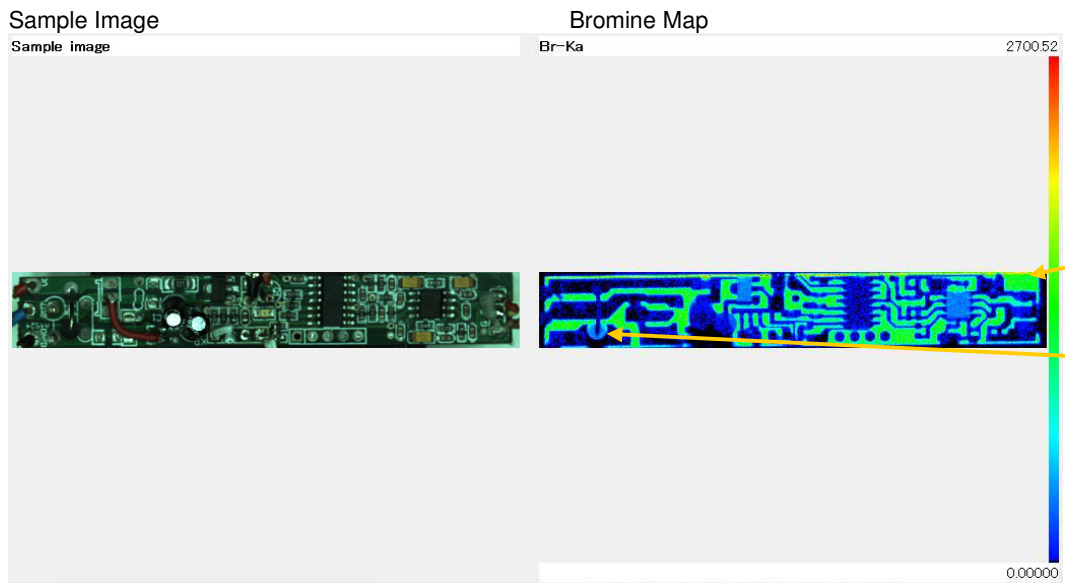
Bromine Map



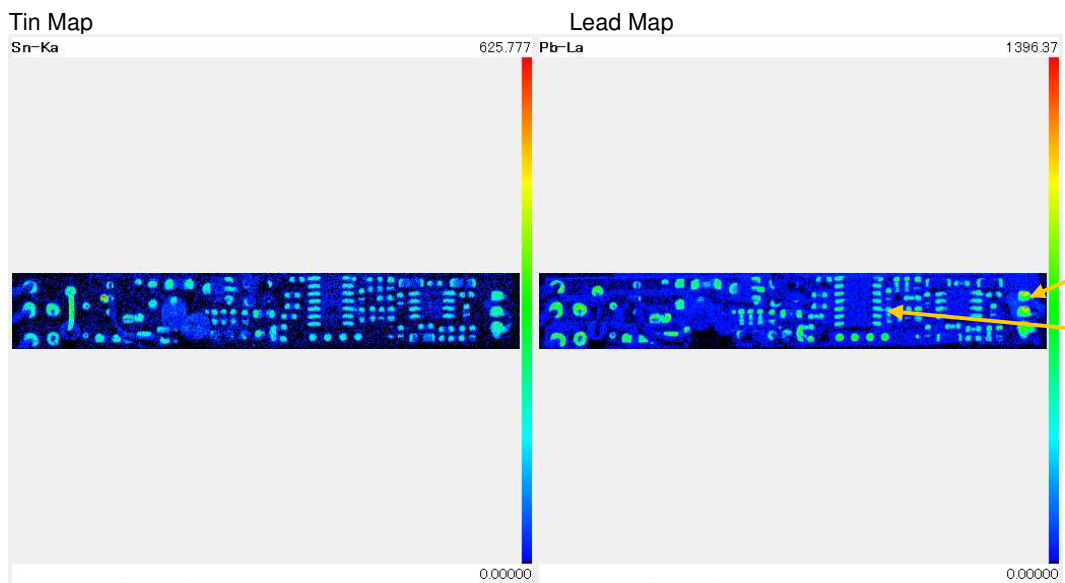
Tin used in solder and component legs, not lead

Bromine in board low risk

There was no lead solder detected in this side of the board above.

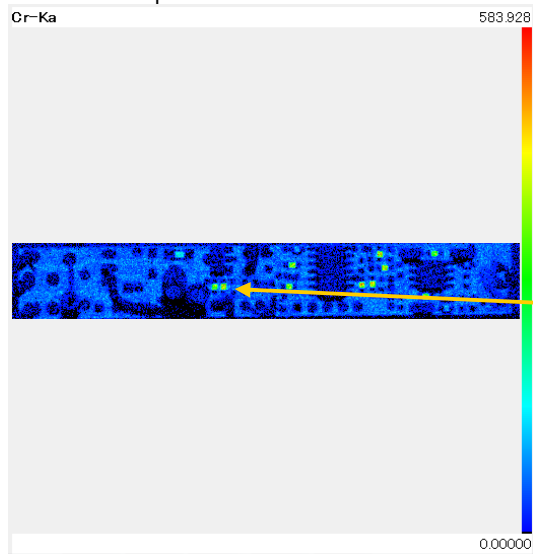


Bromine in board low risk.
Bromine detected in the black resistor requires PBB/PBDE speciation by GC-MS Analysis and/or supplier evaluation.



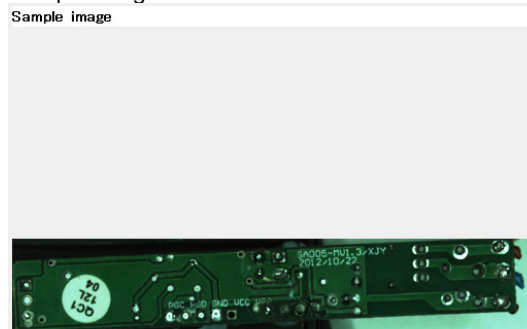
Lead used in solder and component legs throughout PCBs.

Chromium Map



Chromium detected in resistors requires Cr VI speciation by supplier evaluation.

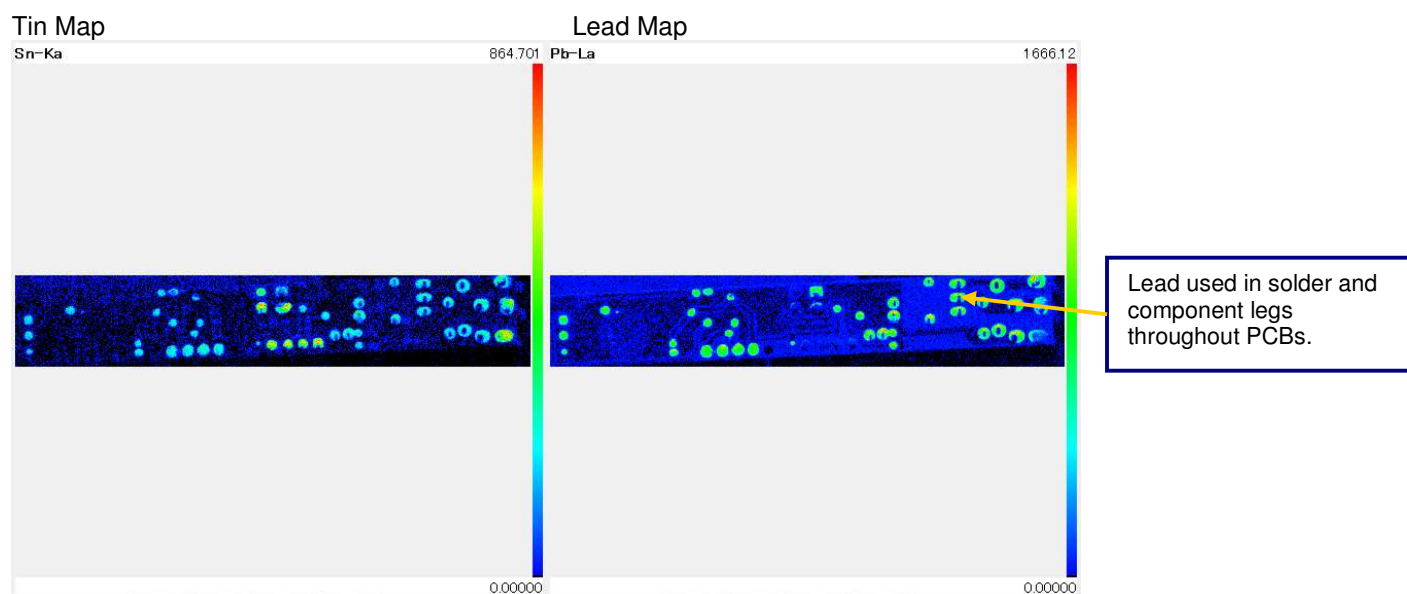
Sample Image



Bromine Map



Bromine in board low risk



Conclusion

This equipment is high risk with regards to the RoHS directive.

Leaded solder was detected in the third PCB (as indicated in the mapping). Lead was also detected in 2 solder spots and 3 cable insulations from the XRF pre-screening.

There were 11 high bromine components detected (as indicated in the report) and each would require PBB/PBDE speciation by GC-MS analysis and/or supplier evaluations. Chromium detected in PCB resistors requires Cr VI speciation by supplier evaluation.

Lead detected in the red diode and resistors require checking for exemptions.

There was no cadmium or mercury detected in the equipment.

TEST RESULTS**Screening of Elements by Energy Dispersive X-Ray Fluorescence (EDXRF) Spectrometry**

Note: Estimated detection limits (ppm) of XRF for regulated substances in various matrices

Elements	Detection limit (ppm wt)	XRF pre-screening limits
Lead (Pb)	20	600
Mercury (Hg)	20	600
Cadmium (Cd)	20	60
Chromium (Cr)	20	600
Bromine (Br)	20	200

**Limit of Restriction of Hazardous Substances Directive
Elements RoHS/ELV Limits (ppm wt)**

Elements	Reporting limit (ppm wt)
Lead (Pb)	1000
Mercury (Hg)	1000
Cadmium (Cd)	100
Chromium VI (Cr)	1000
Polybrominated Biphenyls (PBBs)	1000
Polybrominated Diphenyl Esters (PBDEs)	1000

ND = Not Detected, below estimated detection limits (ppm)

NA = Not Applicable

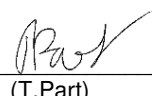
< = Less Than

ppm = mg/kg

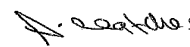
Analysis has been carried out on samples as received, independent of sampling procedure, using the latest versions of all test methods.

Samples will be disposed of after 1 month unless alternative arrangements have been made in agreement with the customer.

Reported By: _____

(T.Part)
(Elemental Analyst)

Checked By: _____

(A.Geatches)
(Technical Specialist)

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