

Analysis of materials (RoHS) **Notice** **

Analysis matter	測定物質	RoHS 6 materials: Cd, Pb, Hg, Cr6+, PBBs, PBDEs				
Analysis Compan	y 測定機関	SGS testing Korea Co.,Ltd				
Products	対象製品	Flat Chip Resistors	角形チップ抵抗器	RK73B1H,1E,1J,2A,2B,2E,W2H,W3A		
		Flat Chip Resistors(Precision)	角形チップ抵抗器(精密)	RK73H1H,1E,1J,2A,2B,2E,W2H,W3A		
		Flat Chip Jumper Resistors	角形ジャンパーチッブ抵抗器	RK73Z1H,1E,1J,2A,2B,2E,W2H,W3A		
		Flat Chip Resistors(Ultra Precision)	角形チップ抵抗器(超精密)	RK73G1H,1E,1J,2A,2B		
		Flat Chip Resistors(High Quality sound)	角形チップ抵抗器(音質)	RK73A1J,2A,2B		

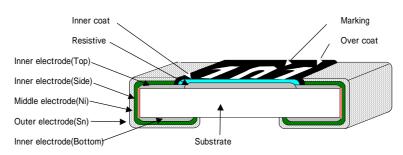
KOA CORPORATION

Product Engineering Group Thick Films Center SHIMO-INA Business Field 下伊那ビジネスフィールド 厚膜センター 製品技術グループ

Approval

DATA

【Structure 構造】



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ю	Material 構成部位			ducts 製品	SGS File No	Cd (RoHS 100ppm) Result (ppm) 結果	Pb (RoHS 1000ppm) Result (ppm) 結果	H g (RoHS 1000ppm) Result (ppm) 結果	Cr ⁶⁺ (RoHS 1000ppm) Result (ppm) 結果	PBBs (RoHS 1000ppm) Result (ppm) 結果	PBDEs (RoHS 1000ppm) Result (ppm) 結果
	Substrate	基体	RK73B H Z G A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28842	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	Inner electrode(Top)	内部電極(表面)			AYAA09-28843	N.D.	9,060 *	N.D.	N.D.	N.D.	N.D.
	Inner electrode(Bottom)	内部電極(裏面)			AYAA09-28851	N.D.	4590 *	N.D.	N.D.	N.D.	N.D.
	Inner electrode(Side)	内部電極(端面)		1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28848	N.D.	110	N.D.	N.D.	N.D.	N.D.
	Resistive	抵抗体	RK73B.H	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28854	N.D.	13.4% *	N.D.	N.D.	N.D.	N.D.
	1.00.01.70	38837614-	RK73Z	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28855	N.D.	21700 *	N.D.	N.D.	N.D.	N.D.
			RK73G	1H	AYAA09-28856	N.D.	6.9% *	N.D.	N.D.	N.D.	N.D.
				1E	AYAA09-28857	N.D.	16.1% *	N.D.	N.D.	N.D.	N.D.
				1J.2A.2B	AYAA09-28858	N.D.	18.2% *	N.D.	N.D.	N.D.	N.D.
			RK73A	1J.2A.2B	AYAA09-28856	N.D.	6.9% *	N.D.	N.D.	N.D.	N.D.
	Inner coat	内部コート	RK73B,H,Z,G	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28863	N.D.	36% *	N.D.	N.D.	N.D.	N.D.
			RK73A	1J,2A,2B	AYAA09-28864	N.D.	36.2% *	N.D.	N.D.	N.D.	N.D.
	Over coat	保護コート	RK73B,H,G	1H	AYAA09-28866	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73B	1E,1J,2A,2B	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
				2E,W2H,W3A	AYAA09-28881	N.D.	34.5% *	N.D.	1.37	N.D.	N.D.
			RK73H	1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28868	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73Z	1H,1E	AYAA09-28869	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
				1J,2A,2B	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
				2E,W2H,W3A	AYAA09-28881	N.D.	34.5% *	N.D.	1.37	N.D.	N.D.
			RK73G	1E	AYAA09-28867	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
				1J,2A,2B	AYAA09-28870	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
			RK73A	1J,2A,2B	AYAA09-28882	N.D.	35.4% *	N.D.	N.D.	N.D.	N.D.
	Marking	表示	RK73B,Z,G	1J,2A,2B	AYAA09-28884	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
				2E,W2H,W3A	AYAA09-28888	N.D.	31.9% *	N.D.	N.D.	N.D.	N.D.
			RK73H	1J,2A,2B,2E,W2H,W3A	AYAA09-28885	N.D.	N.D.	N.D.	2.85	N.D.	N.D.
			RK73A	1J,2A,2B	AYAA09-28889	N.D.	32% *	N.D.	26	N.D.	N.D.
	Middle electrode(Ni)	中間電極(Ni)	RK73B,H,Z,G,A		AYAA09-28890	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	Outer electrode(Sn)	外部電極(Sn)	RK73B,H,Z,G,A	1H,1E,1J,2A,2B,2E,W2H,W3A	AYAA09-28891	N.D.	43.7	N.D.	N.D.	N.D.	N.D.

N,D=Not Detected 未検出 (*) The Pb is PbO. It is contained for glass material. It is an exclusion item of RoHS. このPbはRoHS除外項目のガラス材のPbOです

Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Jahan

The following merchandise was submitted and identified by the client as

Product Name

: Substrate-1

SGS File No

: AYAA09-28842

Test Performing Date

: October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

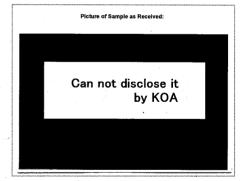
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Test Report No. F690501/LF-CTSAYAA09-28842

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Test Report No. F690501/LF-CTSAYAA09-28842

Issued Date: October 23, 2009

Page 2 of 4

: AYAA09-28842.001

Sample Description : FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	' mg/kg.	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit			
Monobromobiphenyl		Test Method	MDL	Results
	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
ribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
etrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg mg/kg	US EPA 3540C, GC/MS US EPA 3540C, GC/MS	5	

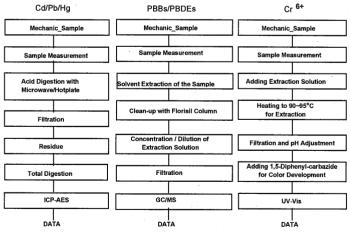
NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Test Report No. F690501/LF-CTSAYAA09-28842

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

Dami Yeom

Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

NOTE:

*** End ***

(1) N.D. = Not detected (<MDL)

(1) N.D. = Not detected.(-MDL)
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Issued Date: October 23, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

: Electrode(Top-1)

: AYAA09-28843

Test Performing Date

: October 16, 2009 : October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

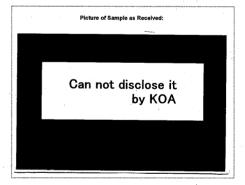
Page 1 of 4

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Test Report No. F690501/LF-CTSAYAA09-28843

Issued Date: October 23, 2009

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; AYAA09-28843.001

Sample Description : Electrode(Top-1)

Item No./Part No. Heavy Motals

:	FLAT	CHIP	RESIS'	TOF

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	9060
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Issued Date: October 23, 2009

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Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobipheny!	mg/kg	US EPA 3540C, GC/MS	15	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	. N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg .	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

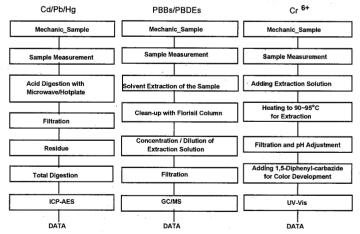
NOTE:

(1) N.D. = Not detected (<MDL) (2) mg/kg = ppm (3) MDL = Method Detection Limit (4) = No regulation (5) ** = Qualitative analysis (No Unit) (6) Negative = Undetectable / Positive = Detectable

Test Report No. F690501/LF-CTSAYAA09-28843

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom

(1) N.D. = Not detected.(<MDL)

Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
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Issued Date: October 23, 2009

KOA CORPORATION Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-m Kamina-gun Nagano-ken 399-4697 Japan

The following merchandise was submitted and identified by the client as

Product Name

: Electrode(Bottom-1)

SGS File No.

: AYAA09-28851

Received Date

: October 16, 2009

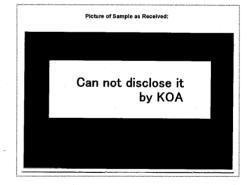
: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Test Report No. F690501/LF-CTSAYAA09-28851

Issued Date: October 23, 2009



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NOTE:

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Test Report No. F690501/LF-CTSAYAA09-28851

· AYAA09-28851 001

Sample Description : Electrode(Bottom-1)

Item No./Part No. : FLAT CHIP RESISTOR

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	4590
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Issued Date: October 23, 2009

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				and construction of the construction
Test Items	Unit	Test Method	MDL	Resul
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5.	N.D
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	· N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

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(4) = = No regulation
(6) ** = Qualitative analysis (No Unit)
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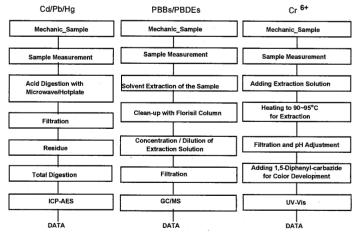
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Issued Date: October 23, 2009

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Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd.Pb.Ha. Dami Yeom

Operator

Section Chief Jeff Jang

*** End ***

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 23, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-ma
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Electrode(Side-1)

SGS File No

: AYAA09-28848

Test Performing Date

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

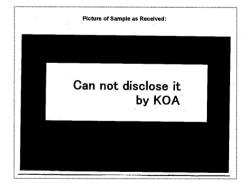
SGS Testing Korea Co. Ltd.

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Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009

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(1) N.D. = Not detected.(<MDL)

(1) N.D. = Not detected (*MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Dete

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Test Report No. F690501/LF-CTSAYAA09-28848

; AYAA09-28848.001

Sample Descript : Electrode(Side-1) : FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	110
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr Vi)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Issued Date: October 23, 2009

Page 2 of 4

Test Items	Unit	Test Method	MDL	
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5 B	Results N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobipheny!	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Tetrabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	· N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

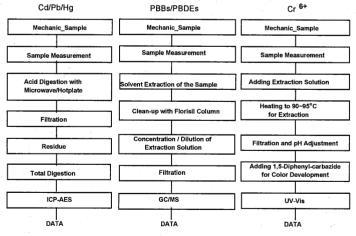
(1) N.D. = Not detected.(<MDL)
(2) mg/kg = pym
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Test Report No. F690501/LF-CTSAYAA09-28848

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom

Section Chief Jeff Jang

*** End ***

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

The descript a specific to Compay apply it is Server Condess of Enter print words, sweet in import a school of a <u>maximum brast as condess, but to the server that the server </u>

Page 1 of 4

KOA CORPORATION

Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-machi

Kamina-gun Nagano-ken 399-4697 Japan

The following merchandise was submitted and identified by the client as

: Resistive Film-1

Received Date

Test Performing Date

; October 16, 2009

· October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

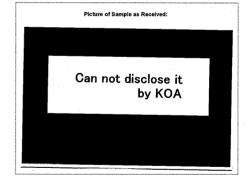
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Test Report No. F690501/LF-CTSAYAA09-28854

Issued Date: October 28, 2009

Page 3 of 4



Issued Date: October 28, 2009

Page 2 of 4

: AYAA09-28854.001

: Resistive Film-1

item No./Part No. Heavy Metals

:	FI	LAT	CHIP	RES	STOR

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	13.4
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Fetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

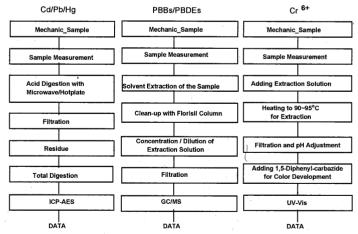
(1) N.D. = Not detected.(<MDL)
(2) myRg = ppm
(3) MML = Method Detection Limit
(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable | Positive = Detectable

SGS

Test Report No. F690501/LF-CTSAYAA09-28854

Issued Date: October 28, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

(1) N.D. = Not detected.(<MDL) (2) mg/kg = ppm (3) MDL = Method Detection Limit

Dami Yeom

Section Chief Jeff Jano

(4) -= No regulation (5) ** = Qualitative analysis (No Unit) (6) Negative = Undetectable / Positive = Detectable

*** End ***

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 23 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

; Resistive Film-2

SGS File No.

: AYAA09-28855

Received Date

: October 16, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

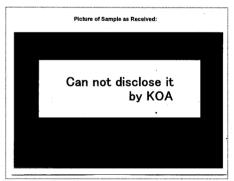
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Test Report No. F690501/LF-CTSAYAA09-28855

Issued Date: October 23, 2009

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Test Report No. F690501/LF-CTSAYAA09-28855

Issued Date: October 23, 2009

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Sample No.

· AYAA09-28855 001

Sample Descrir · Resistive Film-2 Item No./Part No. : FLAT CHIP RESISTOR

Test Items	Unit	Test Method	MDL	Results	
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.	
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	21700	
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.	
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.	

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
ribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.(<MDL)

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) -= No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

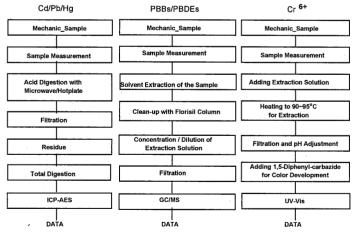
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Test Report No. F690501/LF-CTSAYAA09-28855

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr**/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

(1) N.D. = Not detected.(<MDL)

Dami Yeom

Section Chief Jeff Jang

(1) N.D. - Not described, (NDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** End ***

(1) N.D. = Not detected (<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 28, 2009

Page 1 of 4

KOA CORPORATION

Earth Wing in Pine Park 14016 Oaza, Naka-minowa minowa-machi

Kamina-gun Nagano-ken 399-4697 Japan

The following merchandise was submitted and identified by the client as

; Resistive Film-3

; AYAA09-28856

Test Performing Date

: October 16, 2009 · October 19 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Pesulte

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

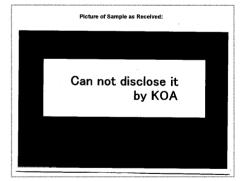
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Test Report No. F690501/LF-CTSAYAA09-28856

Issued Date: October 28, 2009

Page 3 of 4



: AYAA09-28856.001

Issued Date: October 28, 2009

Page 2 of 4

: Resistive Film-3

Sample Descriptio : FLAT CHIP RESISTOR item No./Part No.

Hea			

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	6.90
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
lexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Fribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

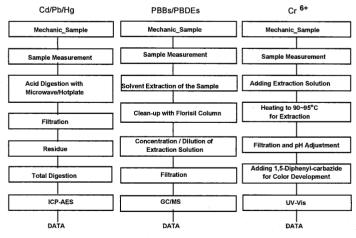
(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) -= No regulation
(3) "1 = Qualitative analysis (No Unit)
(9) "Qualitative analysis (No Unit)

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Test Report No. F690501/LF-CTSAYAA09-28856

Issued Date: October 28, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁸⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

Dami Yeom Section Chief Jeff Jang

*** End ***

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit

(3) MDL = Mercha Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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NOTE: (1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) *** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Issued Date: October 26, 2009

Page 1 of 4

KOA CORPORATION

Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-machi

Kamina-gun Nagano-ken 399-4697

The following merchandise was submitted and identified by the client as

Product Name

: Resistive Film-4

: AYAA09-28857

: October 16, 2009

Test Performing Date

. October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

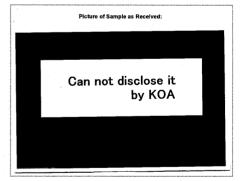
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Test Report No. F690501/LF-CTSAYAA09-28857

Issued Date: October 26, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28857

; AYAA09-28857.001

Issued Date: October 26, 2009

Sample Descripti : Resistive Film-4

Item No./Part No. : FLAT CHIP RESISTOR Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	16.1
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items				
	Unit	Test Method	MDL	Results
Monobromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.

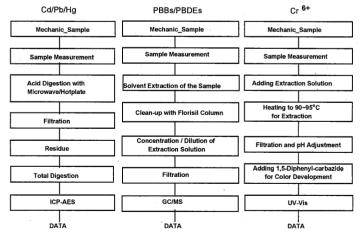
NOTE:

(1) N.D. = Not detected.(<MDL) (2) mg/kg = ppm (3) MDL = Method Detection Limit (4) -= No regulation (5)** = Qualitative analysis (No Unit) (6) Negative = Undetectable | Positive = Detectable

Test Report No. F690501/LF-CTSAYAA09-28857

Issued Date: October 26, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁸⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

*** End ***

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Operator Section Chief Jeff Jang

Dami Yeom

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) - = No regulation (5) ** = Qualitative analysis (No Unit) (6) Negative = Undetectable / Positive = Detectable

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NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit

(3) MDL - Method Detection Limit
(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Issued Date: October 27, 2009

Page 1 of 4

KOA CORPORATION ROA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

: October 16, 2009

· October 19, 2009

Product Name

: Resistive Film-5 : AYAA09-28858

Test Performing Date

Test Performed

Tost Posuite

: For further details, please refer to following page(s)

; SGS Testing Korea tested the sample(s) selected by applicant with following results

SGS Testing Korea Co. Ltd.

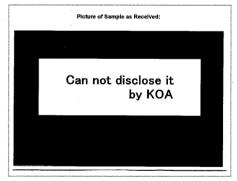
Pluto Kim Cindy Park Jinee Song/ Testing Person

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Test Report No. F690501/LF-CTSAYAA09-28858

Issued Date: October 27, 2009

Page 3 of 4



issued Date: October 27, 2009

Page 2 of 4

; AYAA09-28858.001

Sample Descrip : Resistive Film-5

: FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	18.2
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	. N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	-5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.

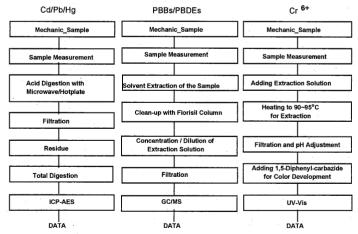
NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Test Report No. F690501/LF-CTSAYAA09-28858

Issued Date: October 27, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁸⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg. Dami Yeom

Operator Section Chief

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

NOTE:

F052 Version3

Jeff Jang

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** Fnd ***

NOTE:

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 27, 2009

KOA CORPORATION Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-machi

Kamina-gun Nagano-ken 399-4697 Japan

The following merchandise was submitted and identified by the client as

: Inner coat-1

: AYAA09-28863

Test Performing Date

: October 16, 2009

: October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

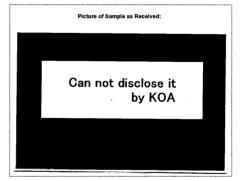
; For further details, please refer to following page(s)

Cindy Park

Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009

Page 2 of 4

· AYAA09-28863 001

Sample Description · Inner coat-1

item No./Part No. : FLAT CHIP RESISTOR

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0,5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	36.0
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit			
Monobromobiphenyl	mg/kg	Test Method	MDL	Results
Dibromobiphenyl		US EPA 3540C, GC/MS	5	N.D.
	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	· mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
deptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Vonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
ribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

(1) N.D. = Not detected (<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable | Positive = Detectable

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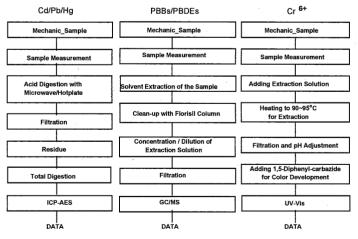
SGS

Test Report No. F690501/LF-CTSAYAA09-28863

Issued Date: October 27, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg. Dami Yeom

Operator Section Chief Jeff Jang

NOTE: (1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** End ***

NOTE: (1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) -= No regulation
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Issued Date: October 28, 2009

KOA CORPORATION

KOA CORPORATION Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-machi Kamina-gun Nagano-ken 399-4697 Japan

The following merchandise was submitted and identified by the client as

: AYAA09-28864 ; October 16, 2009

Received Date Test Performing Date

October 19, 2009

Test Performed

Test Results

: SGS Testing Korea tested the sample(s) selected by applicant with following results

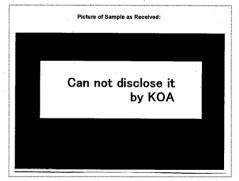
: For further details, please refer to following page(s)

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Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28864

: AYAA09-28864.001

: FLAT CHIP RESISTOR

Sample Description : Inner coat-2

Item No./Part No. <u>Heavy Metals</u>

Test Item: Lead (Pb) Mercury (Hg

 Unit	Test Method	MDL	Results
mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
 %	ASTM D1844-86	Ė	200

US EPA 3060A(1996) US EPA 7196A(1992) UV

Issued Date: October 28, 2009

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

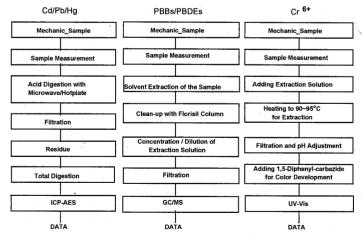
(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = 1 No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Test Report No. F690501/LF-CTSAYAA09-28864

Issued Date: October 28, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁵⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg. Operator Dami Yeom

Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) *** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** End ***

NOTE:

(1) N.D. = Not detected (<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) ** = Qualitative analysis (No Unit)
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Issued Date: October 23, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-ma
Kamina-gun
Nagano-ken 399-4697

The following merchandise was submitted and identified by the client as

SGS File No

: AYAA09-28866

Received Date

: October 16, 2009

October 19, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

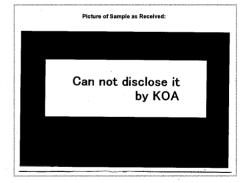
: For further details, please refer to following page(s)

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Test Report No. F690501/LF-CTSAYAA09-28866

Issued Date: October 23, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28866

Issued Date: October 23, 2009

Page 2 of 4

Sample No.

: AYAA09-28866.001

Sample Description · Over coat-1 item No./Part No · FLAT CHIP RESISTOR

ment wood at two.	
Heavy Metals	

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

lame Retardants-PBBs/PBDEs				
Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

(1) N.D. = Not detected (<MDL)

(1) N.U. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

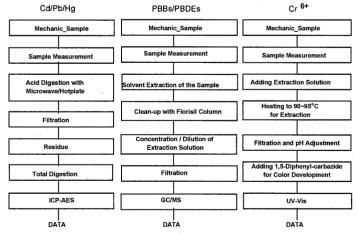
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Test Report No. F690501/LF-CTSAYAA09-28866

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

Dami Yeom

Section Chief Jeff Jang

*** End ***

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL. = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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(1) N.D. = Not detected.(<MDL)
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(6) Negative = Undetectable / Positive = Detectable

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KOA CORPORATION

ROA CORPORA HUN Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-machi Kamina-gun Nagano-ken 399-4697

The following merchandise was submitted and identified by the client as

SGS File No.

: AYAA09-28867 : October 16, 2009

Received Date

· October 19, 2009

; SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

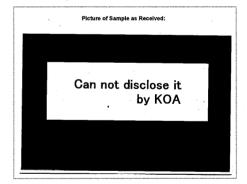
SGS Testing Korea Co. Ltd.

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Test Report No. F690501/LF-CTSAYAA09-28867

Issued Date: October 23, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28867

Page 2 of 4

- AYAA09-28867 001

Sample Descrip : Over coat-2

Item No./Part No. : FLAT CHIP RESISTOR Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	1	
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	MDL 5	Results N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS		N.D.
Pentabromobiphenyl			5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = a No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

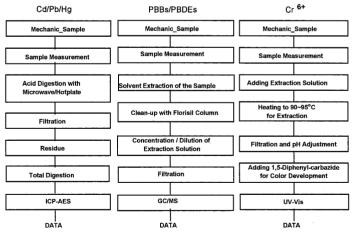
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Test Report No. F690501/LF-CTSAYAA09-28867

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr6+/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom

NOTE: (1) N.D. = Not detected.(<MDL)

Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** End ***

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit

(3) mol. – Method Detection Elinit (4) – xNo regulation (5) ** = Qualitative analysis (No Unit) (6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION Earth Wing In Pine Park 14016 Oaza, Naka-minowa minowa-m Kamina-gun Nagano-ken 399-4697

The following merchandise was submitted and identified by the client as

SGS File No. Received Date : AYAA09-28868 : October 16, 2009

Test Performing Date

October 19, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

Pluto Kim Cindy Park linee Song/ Testing Persor

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Test Report No. F690501/LF-CTSAYAA09-28868

Issued Date: October 23, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28868

Issued Date: October 23, 2009

Sample No

· AYAA09-28868 001

Sample Descr · Over coat-3 : FLAT CHIP RESISTOR

Item No./Part No.

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
ribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Nonabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

(1) N.D. = Not detected.(<m/DL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

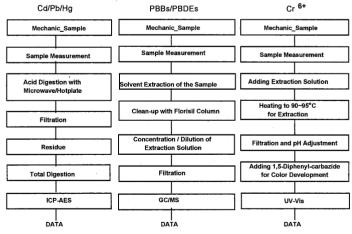
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Test Report No. F690501/LF-CTSAYAA09-28868

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr8+/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

Dami Yeom Section Chief Jeff Jang

*** End ***

(1) N.D. = Not detected (<MDL) NOTE:

(1) N.D. = Not detected, (*MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) *** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

NOTE: (1) N.D. = Not detected.(<MDL)

(1) N.D. - Not userbet(-\subb)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive ∓ Detectable

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Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Caza, Naka-minowa minowa-m
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Over coat-4

SGS File No.

: AYAA09-28869

Received Date

: October 16, 2009

October 19, 2009

; SGS Testing Korea tested the sample(s) selected by applicant with following results

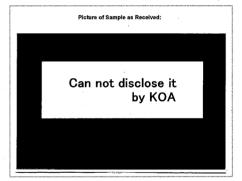
: For further details, please refer to following page(s)

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Test Report No. F690501/LF-CTSAYAA09-28869

Issued Date: October 23, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28869

Page 2 of 4

: AYAA09-28869.001

Sample Descript : Over coat-4

Item No./Part No. : FLAT CHIP RESISTOR Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
lexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
-lexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N,D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Vonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) "= Cusultative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

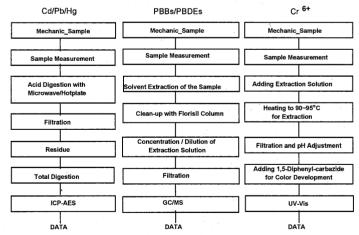
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Test Report No. F690501/LF-CTSAYAA09-28869

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

(1) N.D. = Not detected.(<MDL)

Dami Yeom Section Chief Jeff Jang

*** End ***

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NOTE: (1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

(1) N.D. = Not detected.(-MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 23, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Over coat-5

SGS File No.

· AYAA09-28870 : October 16, 2009

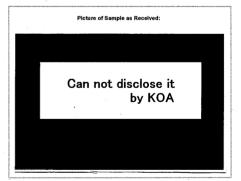
: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Test Report No. F690501/LF-CTSAYAA09-28870

Issued Date: October 23, 2009



Test Report No. F690501/LF-CTSAYAA09-28870

Issued Date: October 23, 2009

Sample No.

: AYAA09-28870.001

· FLAT CHIP RESISTOR

Sample Description Over coat-5

item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP.	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1 1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D,
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5 /	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

(1) N.D. = Not detected.(<MDL)

(1) N.D. = Not usersete() + NDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

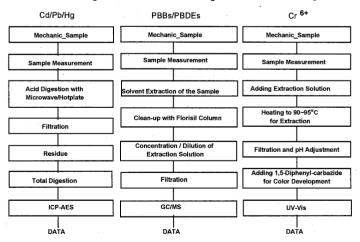
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SGS

Test Report No. F690501/LF-CTSAYAA09-28870

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{s+}/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
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Issued Date: October 28, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-mi Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Glass over coat-1

SGS File No.

: AYAA09-28881

Received Date

: October 16, 2009

: October 19, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

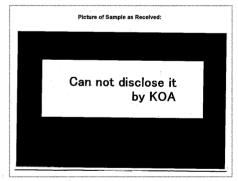
: For further details, please refer to following page(s)

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Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28881

: AYAA09-28881.001

Sample Description Item No./Part No. : FLAT CHIP RESISTOR

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	34.5
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	1.37

Issued Date: October 28, 2009

Page 2 of 4

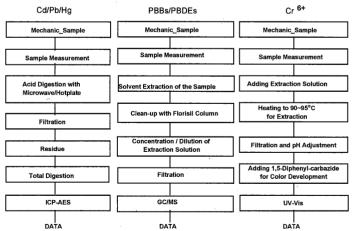
Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

(1) N.D. = Not detected (<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) *** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Test Report No. F690501/LF-CTSAYAA09-28881

Issued Date: October 28, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



ved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator

Dami Yeom

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL) (2) mg/kg = ppm (3) MDL = Method Detection Limit

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 28, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Glass over coat-2 : AYAA09-28882

SGS File No. Received Date

: October 16, 2009

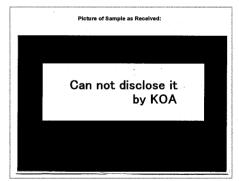
: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

Pluto Kim Cindy Park Jinee Song/ Testing Person

Test Report No. F690501/LF-CTSAYAA09-28882

Issued Date: October 28, 2009



Test Report No. F690501/LF-CTSAYAA09-28882

Issued Date: October 28, 2009

Sample No.

: AYAA09-28882.001

Sample Description · Glass over coat-2 : FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL,	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	35.4
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C; GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

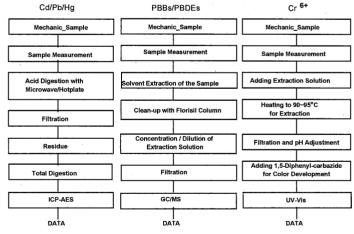
(1) N.D. = Not detected.(<MDL)

(1) N.D. - Not detected, (-MDL)
(2) mg/kg - ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Test Report No. F690501/LF-CTSAYAA09-28882

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr8+/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

*** End ***

Operator

Dami Yeom Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-ma
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Marking-1

SGS File No

: AYAA09-28884

: October 16, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results

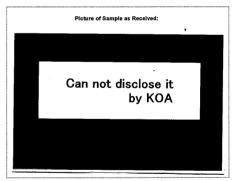
: For further details, please refer to following page(s)

Song/ Testing Person

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Test Report No. F690501/LF-CTSAYAA09-28884

Issued Date: October 23, 2009



Test Report No. F690501/LF-CTSAYAA09-28884

: AYAA09-28884.001

: Marking-1 Sample Description : FLAT CHIP RESISTOR

Item No./Part No.

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Issued Date: October 23, 2009

Page 2 of 4

			7	
Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	. N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodipheny! ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

(1) N.D. = Not detected.(<MDL)
(2) myRg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

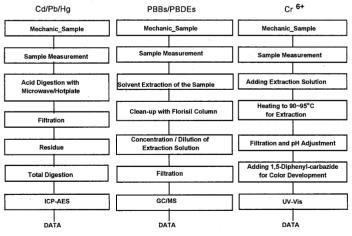
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SGS

Test Report No. F690501/LF-CTSAYAA09-28884

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

*** End ***

Operator

Dami Yeom Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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NOTE:

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Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-ma
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

: Marking-2

SGS File No.

: AYAA09-28885

Received Date

· October 16, 2009

: October 19, 2009

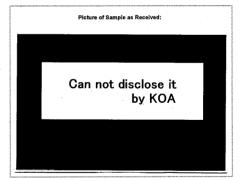
: SGS Testing Korea tested the sample(s) selected by applicant with following results : For further details, please refer to following page(s)

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Test Report No. F690501/LF-CTSAYAA09-28886

Issued Date: October 23, 2009

Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28885

: AYAA09-28885.001

Sample Description ; Marking-2 : FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	2.85

Test items	Unit	Test Method	MDL	Resu
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyi	mg/kg	US EPA 3540C, GC/MS	5	N.D
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	. mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg .	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE: (1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** - Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Page 2 of 4

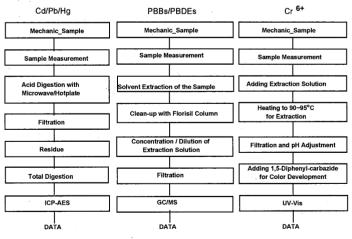
SGS

Test Report No. F690501/LF-CTSAYAA09-28885

Issued Date: October 23, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Dami Yeom

(1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm (3) MDL = Method Detection Limit

Section Chief Jeff Jang

(4) -= No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

*** End ***

NOTE:

(1) N.D. = Not detected (<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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Issued Date: October 28, 2009

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Karnina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

· Glass marking-1

SGS File No.

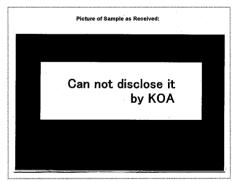
: AYAA09-28888 : October 16, 2009

; SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

Test Report No. F690501/LF-CTSAYAA09-28888

Issued Date: October 28, 2009



Test Report No. F690501/LF-CTSAYAA09-28888

Issued Date: October 28, 2009

Sample No.

: AYAA09-28888.001

Sample Description · Glass marking-1 : FLAT CHIP RESISTOR Item No./Part No.

	te.	

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0,5	N.D.
Lead (Pb)	%	ASTM D1844-86	5	31.9
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Fribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	· N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
ribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
lexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
leptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	ND

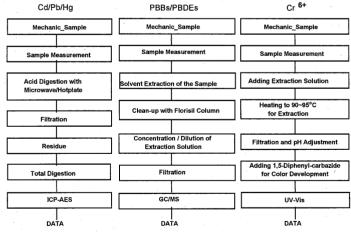
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Test Report No. F690501/LF-CTSAYAA09-28888

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{s+}/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Section Chief Jeff Jang

*** End ***

(1) N.D. = Not detected.(<MDL)

(1) NLD = Not described, (*ind.);
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) == No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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(1) N.D. = Not detected.(<MDL)
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Issued Date: October 27, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-m
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

; Glass marking-2

SGS File No.

; AYAA09-28889

Received Date

: October 16, 2009

: October 19, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

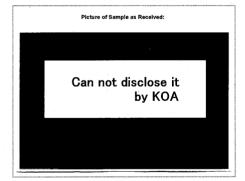
SGS Testing Korea Co. Ltd.

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Test Report No. F690501/LF-CTSAYAA09-28889

Issued Date: October 27, 2009

Page 3 of 4



: AYAA09-28889.001

; Glass marking-2 : FLAT CHIP RESISTOR

Item No./Part No. Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	%	ASTM D1844-86	- 5	32.0
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	26.0

Issued Date: October 27, 2009

Page 2 of 4

Test Items	Unit	Test Method	MDL	
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	MDL 5	Result N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobipheny!	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5 -	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable | Positive = Detectable

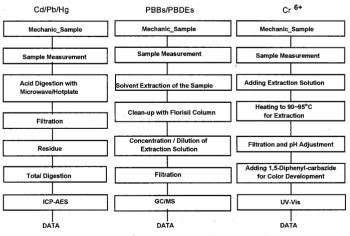
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Test Report No. F690501/LF-CTSAYAA09-28889

issued Date: October 27, 2009

Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr - /PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd.Pb.Hg.

Dami Yeom Operator

NOTE: (1) N.D. = Not detected.(<MDL) (2) mg/kg = ppm (3) MDL = Method Detection Limit

Section Chief Jeff Jang

*** End ***

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) ** = Cualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

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(4) -= No regulation (5) ** = Qualitative analysis (No Unit) (6) Negative = Undetectable / Positive = Detectable

Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Karinia-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

; Ni plating

SGS File No. Received Date : AYAA09-28890 . October 16, 2009

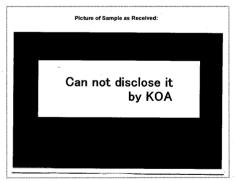
: October 19, 2009

: SGS Testing Korea tested the sample(s) selected by applicant with following results

: For further details, please refer to following page(s)

Test Report No. F690501/LF-CTSAYAA09-28890

Issued Date: October 23, 2009 Page 3 of 4



Test Report No. F690501/LF-CTSAYAA09-28890

Issued Date: October 23, 2009

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: Ni plating Sample Description : FLAT CHIP RESISTOR

Item No./Part No.

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr V!)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	-5	N.D.
Dibromobiphenyl	mg/kg ·	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	- 5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5.	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) = No regulation
(5) **= Qualitative analysis (No Unit)
(6) Negative = Undetectable | Positive = Detectable

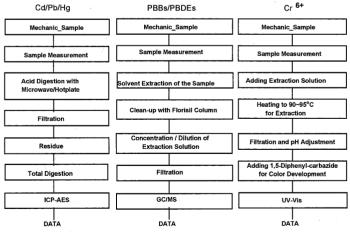
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SGS

Test Report No. F690501/LF-CTSAYAA09-28890

Issued Date: October 23, 2009

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{s+}/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

*** End ***

Operator

Dami Yeom Section Chief Jeff Jang

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Issued Date: October 23, 2009

Page 1 of 4

KOA CORPORATION
Earth Wing In Pine Park 14016
Oaza, Naka-minowa minowa-machi
Kamina-gun
Nagano-ken 399-4697
Japan

The following merchandise was submitted and identified by the client as

Product Name

; Sn plating

SGS File No.

: AYAA09-28891

Received Date

: October 16, 2009

Test Performing Date

· October 19, 2009

Test Performed

: SGS Testing Korea tested the sample(s) selected by applicant with following results

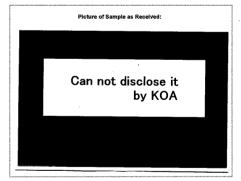
: For further details, please refer to following page(s)

SGS Testing Korea Co. Ltd.

Test Report No. F690501/LF-CTSAYAA09-28891

Issued Date: October 23, 2009

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Test Report No. F690501/LF-CTSAYAA09-28891

Issued Date: October 23, 2009

Page 2 of 4

: AYAA09-28891.001

Sample Description : Sn plating Item No./Part ELAT CUID

Heavy Metals

t NO.	: FLAI	CHIP	KESIS I	UK
##00###C00###00###	000000000000000000000000000000000000000	0000000000	SALES OF THE SALES	10000000

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP.	5	43.7
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

	41103-1-22	

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	. 5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
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Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

NOTE:

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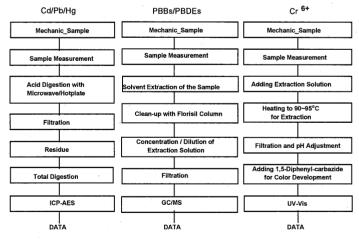
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Page 4 of 4

Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr +/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Operator Section Chief Jeff Jang

(1) N.D. = Not detected.(<MDL)

Dami Yeom

*** End ***

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