CTS 한국시험표준원
COREA TESTING STANDARD INSTITUTE

Test Report issued under the responsibility of:
CTS Co., Ltd.
501, Samsung Techno-park, 97, Jungbu-daero 448beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea

TEST REPORT
IEC 62321
Procedures for the determination of levels of six regulated substances (Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls, Polybrominated Diphenyl Ethers) in electrotechnical products

Report Reference No. ..... :	CTS-R15-0032
Date of issue ..... :	2015-03-31
Total number of pages	19 pages
Testing Laboratory ..... :	CTS Co., Ltd.
Address ..... :	501, Samsung Techno-park, 97, Jungbu-daero 448beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea
Applicant's name ..... :	MultimediaLink Inc.
Address ..... :	#821, DaehyeonTechnoWorld, 174, Ojeon-dong, Uiwang-si, Gyeonggi-do, 437-753, Korea
Test specification:	
Standard..... :	IEC 62321-1: 2013 + IEC 62321-2: 2013 + IEC 62321-3-1: 2013 + IEC 62321-3-2: 2013 + IEC 62321-4: 2013 + IEC 62321-5: 2013 and EN 50581: 2012
Test Report Form No. ..... :	IEC 62321-1A
Test Report Form(s) Originator..... :	SGS Fimko and modified
Master TRF ..... :	Dated 2014-12
Directive ……:	RoHS Directive 2011/65/EU

This product/component/material was tested to determine the levels of the six hazardous substances in accordance with the standard

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This report is not valid unless signed by an accepted IECEE HS Testing Laboratory and a Statement of Test Results issued by an NCB in accordance with the IECEE Rules of Procedures.

Test item description.....:	USB Touchscreen Monitor
Trade Mark..... :	—
Manufacturer ..... :	MultimediaLink Inc.
Material/Component/Series	Metal, Polymer & Electronic Component
Family/Model/Type reference ..... :	UM-760R, UM-760, UM-760RF, UM-760C, UM-760CF, UM-780, UM-780R, UM-780RF, UM-780C, UM-780CF
Ratings/Characteristics ..... :	5 V d.c., 500 mA

Testing procedure and testing location:

☐ **IECEE HS Testing Laboratory**:

Testing location/ address ..... :

☒ **Testing Laboratory:** CTS Co., Ltd.

Testing location/ address ..... : 501, Samsung Techno-park, 97, Jungbu-daero 448beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea

Tested by (name + signature)..... : Hyeon-Jun, Kim .....

Approved by (+ signature)..... : Man-Woo, Lee .....

☐ Testing procedure: TMP

Tested by (name + signature)..... :

Approved by (+ signature)..... :

Testing location/ address ..... :

☐ Testing procedure: WMT

Tested by (name + signature)..... :

Witnessed by (+ signature) ..... :

Approved by (+ signature)..... :

Testing location/ address ..... :

☐ Testing procedure: SMT

Tested by (name + signature)..... :

Approved by (+ signature)..... :

Supervised by (+ signature)..... :

Testing location/ address ..... :

☐ Testing procedure: RMT

Tested by (name + signature)..... :

Approved by (+ signature)..... :

Supervised by (+ signature)..... :

Testing location/ address ..... :

IEC 62321

Testing ..... :

Date of receipt of test item ..... : 2015-03-23

Date (s) of performance of tests ..... : 2015-03-23 to 2015-03-31

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full or the first two pages, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

General product information:

Appendix I: Verification test results
Appendix II: Declaration of RoHS Compliance
Appendix III: Photos of products

Test Equipment
- XRF: Olympus NDT / DCC-2000
- GC/MS: Shmadzu / GC-2010

Copy of marking plate (if applicable)

Appendix I

■ Verification test results

1. Screening test results by XRF

No.	Sample Description	Picture	XRF		Remarks
			Element	Data	
1	Screw		Pb	261	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	2863	
			Br	N.D.	
2	Snap ring		Pb	266	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	3144	
			Br	N.D.	
3	Mount washer		Pb	267	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	3166	
			Br	N.D.	
4	Mount		Pb	258.5	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	3256	
			Br	N.D.	
5	Mount hole		Pb	188.3	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	10.38×10^4	
			Br	N.D.	
6	Metal cover		Pb	160.3	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	2378	
			Br	N.D.	

No.	Sample Description	Picture	XRF		Remarks
			Element	Data	
7	Shaft		Pb	187.2	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	10.39×10^4	
			Br	N.D.	
8	Spring		Pb	186.4	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	2600	
			Br	N.D.	
9	Rubber cap		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	185	
			Br	N.D.	
10	Rubber		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
11	USB Port		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
12	Tact switch		Pb	N.D.	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	$> 10 \times 10^4$	
			Br	N.D.	

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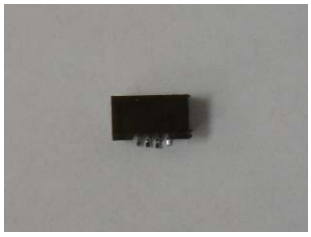
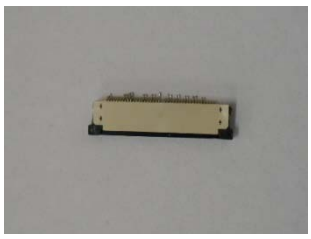
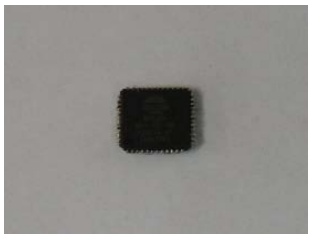
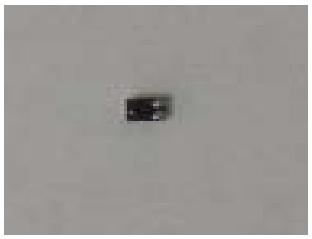
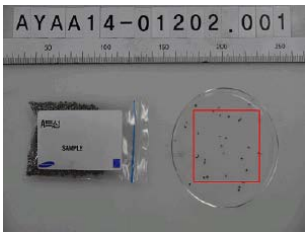
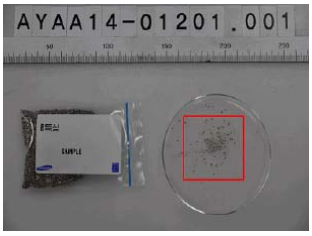
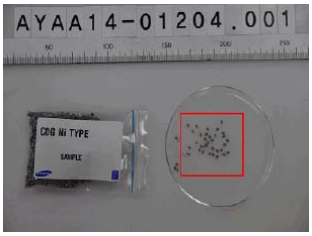
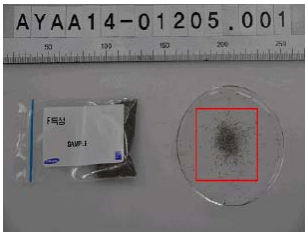
No.	Sample Description	Picture	XRF		Remarks
			Element	Data	
13	Crystal		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
14	Connector housing		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
15	FPCB Connector		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
16	IC		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
17	USB IC		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	N.D.	
18	Inductor		Pb	241.8	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	2997	
			Br	N.D.	

No.	Sample Description	Picture	XRF		Remarks
			Element	Data	
19	Fuse		Pb	N.D.	GC/MS test
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	3.56×10^4	
20	Chip inductor		Pb	203	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	3225	
			Br	N.D.	
21	IC		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	131	
22	Chip varistor		Pb	264.5	Spot test
			Cd	N.D.	
			Hg	N.D.	
			Cr	3266	
			Br	N.D.	
23	Diode		Pb	N.D.	
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	113	
24	Transistor		Pb	N.D.	GC/MS test
			Cd	N.D.	
			Hg	N.D.	
			Cr	N.D.	
			Br	3130	

2. ICP & GC/MS test results

No.	Sample Description		Picture	Element	Data	Remarks
1	PCB	Black solid Board		Pb	8	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
2	Chip Ceramic Capacitor	MLCC A(X5R) TYPE_MLCC X (X6S) TYPE_MLCC J(JIS-B)TYPE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
3		MLCC B(X7R) TYPE_MLCC Y (X7S)TYPE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
4		MLCC COG Ni TYPE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
5		MLCC F(Y5V) TYPE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	

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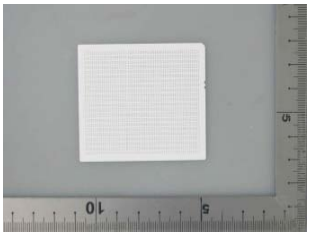
No.	Sample Description		Picture	Element	Data	Remarks
6	Chip Resistor	A1203 SUBSTRATE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
7		SR4354		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
8		THICK FILM PASTE (CONDUCTIVE PASTE)		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
9		THICK FILM PASTE (RESISTIVE PASTE)		Pb	183000	Lead (Pb) in the sample is exempted by EU RoHS
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
10		OKUNO DIELECTRIC PASTE		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	

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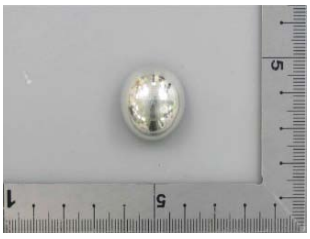
No.	Sample Description		Picture	Element	Data	Remarks
11	Chip Resistor	OHMCOAT 1036		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
12		Ni / Cr METAL		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	Negative	
				PBBs	-	
				PBDEs	-	
13		VALE Electrolytic Nickel S Rounds		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	Negative	
				PBBs	-	
				PBDEs	-	
14		PURE TIN		Pb	11	
				Cd	N.D.	
				Hg	N.D.	
				Cr	Negative	
				PBBs	N.D.	
				PBDEs	N.D.	
15	Injection	ABS XR404		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	

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No.	Sample Description		Picture	Element	Data	Remarks
16	Injection	PANLITE L1225L		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	
17		SH 5160U		Pb	N.D.	
				Cd	N.D.	
				Hg	N.D.	
				Cr	N.D.	
				PBBs	N.D.	
				PBDEs	N.D.	

3. GC/MS test results

No.	Sample Description	Picture	Element	Data	Remarks
19	Fuse		PBBs		
			Monobromobiphenyl	N.D.	
			Dibromobiphenyl	N.D.	
			Tribromobiphenyl	N.D.	
			Tetrabromobiphenyl	N.D.	
			Pentabromobiphenyl	N.D.	
			Hexabromobiphenyl	N.D.	
			Heptabromobiphenyl	N.D.	
			Octabromobiphenyl	N.D.	
			Nonabromobiphenyl	N.D.	
			Decabromobiphenyl	N.D.	
			PBDEs		
			Monobromobiphenyl	N.D.	
			Dibromobiphenyl	N.D.	
			Tribromobiphenyl	N.D.	
			Tetrabromobiphenyl	N.D.	
			Pentabromobiphenyl	N.D.	
			Hexabromobiphenyl	N.D.	
			Heptabromobiphenyl	N.D.	
			Octabromobiphenyl	N.D.	
			Nonabromobiphenyl	N.D.	
			Decabromobiphenyl	N.D.	

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No.	Sample Description	Picture	Element	Data	Remarks
24	Transistor		PBBs		
			Monobromobiphenyl	N.D.	
			Dibromobiphenyl	N.D.	
			Tribromobiphenyl	N.D.	
			Tetrabromobiphenyl	N.D.	
			Pentabromobiphenyl	N.D.	
			Hexabromobiphenyl	N.D.	
			Heptabromobiphenyl	N.D.	
			Octabromobiphenyl	N.D.	
			Nonabromobiphenyl	N.D.	
			Decabromobiphenyl	N.D.	
			PBDEs		
			Monobromobiphenyl	N.D.	
			Dibromobiphenyl	N.D.	
			Tribromobiphenyl	N.D.	
			Tetrabromobiphenyl	N.D.	
			Pentabromobiphenyl	N.D.	
			Hexabromobiphenyl	N.D.	
			Heptabromobiphenyl	N.D.	
			Octabromobiphenyl	N.D.	
			Nonabromobiphenyl	N.D.	
			Decabromobiphenyl	N.D.	

4. Spot test results

No.	Sample Description	Result	Color Development	Remarks
1	Screw		Negative	
2	Snap ring		Negative	
3	Mount washer		Negative	
4	Mount		Negative	
5	Mount hole		Negative	
6	Metal cover		Negative	

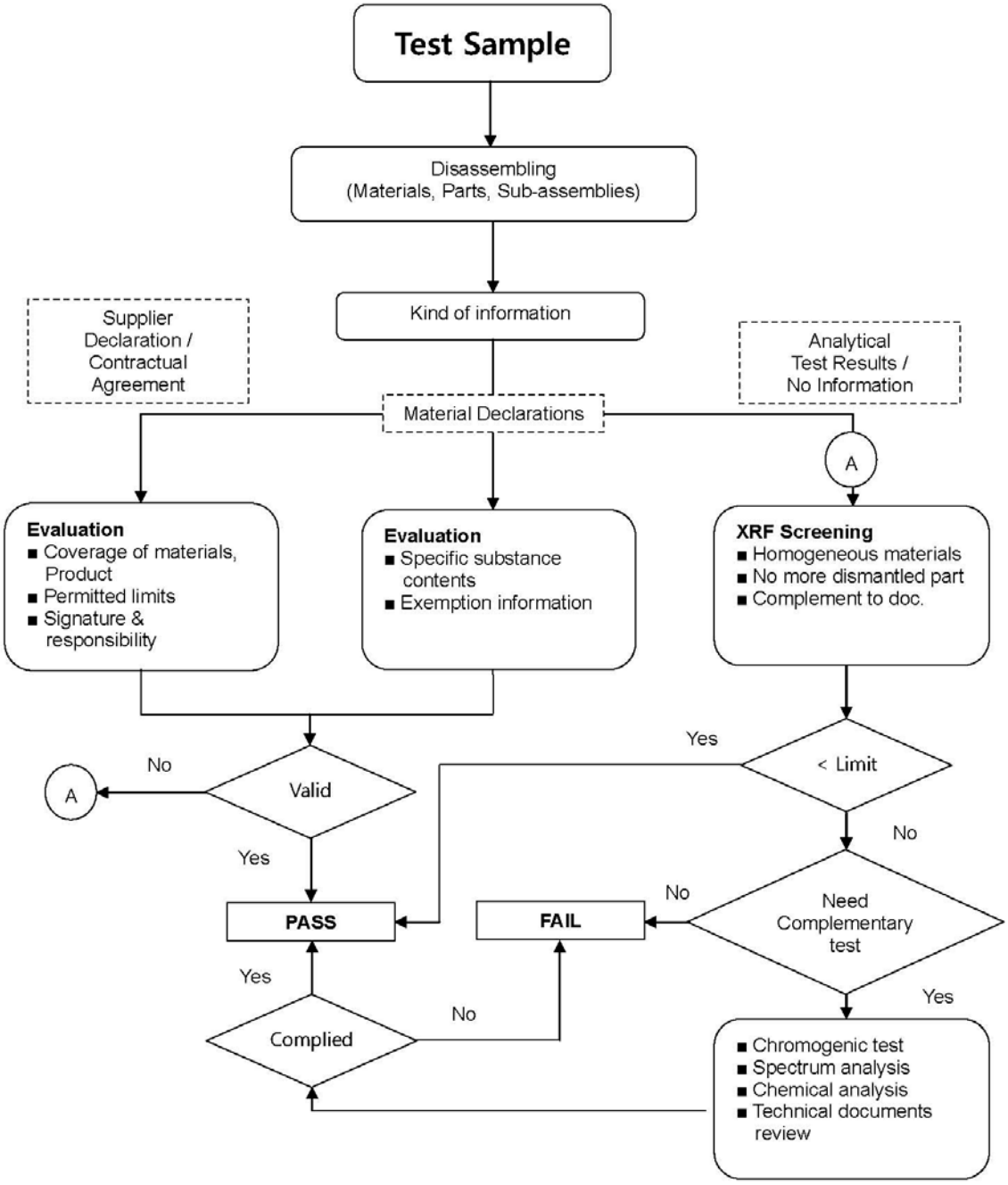
No.	Sample Description	Result	Color Development	Remarks
7	Shaft		Negative	
8	Spring		Negative	
12	Tact switch		Negative	
18	Inductor		Negative	
20	Chip inductor		Negative	
22	Chip varistor		Negative	

Notes:

mg/kg = ppm = parts per million
< = Less than
N.D. = Not detected (< MDL)
MDL = Method detection limit
N.A. = Not applicable
Positive: There are color changes during spot test
Negative: There are no color changes during spot test

Tests Items	**XRF**	**ICP**	**GC/MS**	**Screening limit**
	MDL (mg/kg)			
Cadmium (Cd)	100	0.5	-	100
Lead (Pb)	100	0.5	-	1000
Mercury (Hg)	100	0.5	-	1000
Chromium (Cr)	100	0.5	-	1000
Bromine (Br)	100	-	-	1000
Polybrominated Biphenyl (PBBs)	-	-	5	1000
Polybrominated Diphenyl Ether (PBDEs)	-	-	5	1000

5. Evaluation procedures



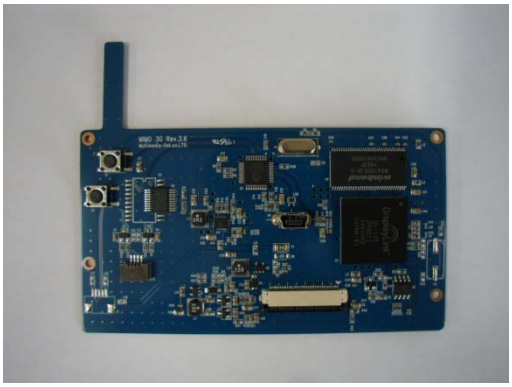
Appendix II

■ Declaration of RoHS Compliance

No.	Sample Description	Model name	Manufacture	Data	Remarks
1	LCD Display	HJ070NA-13A	INNOLUX	-	
2	SDRAM	W9412G6JH-5	winbond	2013.05.20	
3	IC	AR1100-I/SS	MICROCHIP	2014.08.27	
4	IC	24LC128ISN	MICROCHIP	2014.08.27	

Appendix III

■ Photos of products

No.	Photos	No.	Photos
1		2	
3			