

# **TEST REPORT**

**Report No.:** BCTC2012671097R

**Applicant:** Shenzhen Minew Technologies Co., Ltd

**Product Name:** Digital Broadcasting Device

**Product Type:** B10

**Tested Date:** 2020-12-18 to 2020-12-24

**Issued Date:** 2020-12-25

Shenzhen BCTC Testing Co., Ltd.

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Product Name	Digital Broadcasting Device
Model/Type reference	B10
Applicant	Shenzhen Minew Technologies Co., Ltd
Address	3rd Floor, Building I, Gangzhilong Science Park, Qinglong Road, Longhua
Manufacturer	Shenzhen Minew Technologies Co., Ltd
Address	Building 3, Instrument World Industrial Park, No. 306, Guanlan Guiyue Road, Longhua District, Shenzhen
Trademark	MINEW
Sample Received Date	2020-12-18
Test Type	Entrustment Test
Test Method	See page 3 for details.
Test Requested	1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.  2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.  3. As specified by client, to test the Diisobutyl phthalate(DIBP), Dibutyl phthalate(DBP), Butyl benzyl phthalate(BBP), Bis(2-ethylhexyl) phthalate(DEHP) in the submitted sample(s).
Test Standard	RoHS Directive 2011/65/EU and amendment Commission Delegated Directive (EU) 2015/863
Test Result	The samples were tested according to the entrusted requirements and test standard, and the test items of the test samples were qualified.

Tested by:

Approved by:

(Official Sealed)

Spher Oherd

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#### **Test Method:**

## A. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

Element	Screening limits of IEC 623	MDL		
	Polymers and metals	Composite material	Polymers	Other material
Pb	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(500-3σ) <x<(1500+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(1500+3σ)≤ol<>	10 mg/kg	50 mg/kg
Cd	BL≤(70-3σ) <x<(130+3σ)≤ol< td=""><td>LOD<x<(150+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(150+3σ)≤ol<></td></x<(130+3σ)≤ol<>	LOD <x<(150+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(150+3σ)≤ol<>	10 mg/kg	50 mg/kg
Hg	BL≤(700-3σ) <x<(1300+3σ)≤ol< td=""><td>BL≤(500-3σ)<x<(1500+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(1500+3σ)≤ol<></td></x<(1300+3σ)≤ol<>	BL≤(500-3σ) <x<(1500+3σ)≤ol< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<(1500+3σ)≤ol<>	10 mg/kg	50 mg/kg
Cr	BL≤(700-3σ) <x< td=""><td>BL≤(500-3σ)<x< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<></td></x<>	BL≤(500-3σ) <x< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<>	10 mg/kg	50 mg/kg
Br	BL≤(300-3σ) <x< td=""><td>BL≤(250-3σ)<x< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<></td></x<>	BL≤(250-3σ) <x< td=""><td>10 mg/kg</td><td>50 mg/kg</td></x<>	10 mg/kg	50 mg/kg

#### Note:

- -BL = Under the XRF screening limit
- -OL = Further chemical test will be conducted while result is above the screening limit
- -X= The symbol "X" marks the region where further investigation is necessary
- $-3\sigma$ = The reproducibility of analytical instruments
- -LOD= Detection limit
- -"--" = Not regulated.

#### **B. Chemical Test**

Test Item(s)	Test Method	Measured Equipment(s)	MDL	Limit
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	1000 mg/kg
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	100 mg/kg
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	2 mg/kg	1000 mg/kg
Lleveralent Chromium Cr(\(l\)	IEC 62321-7-1:2015 Ed.1.0	LIVATO		1000 mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321-7-2:2017 Ed.1.0	UV-VIS	8 mg/kg	1000 mg/kg
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015 Ed.1.0	HPLC-UV	5 mg/kg	1000 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015 Ed.1.0	HPLC-UV	5 mg/kg	1000 mg/kg
Phthalates	IEC 62321-8:2017 Ed.1.0	GC-MS	50 mg/kg	1000 mg/kg

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# Test Result(s):

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
	•	Pb	BL	/	
		Cd	BL	1	
1	Black rubber	Hg	BL	1	PASS
		Cr(Cr(VI))	BL	1	
		Br(PBBs&PBDEs)	BL	1	
		Pb	BL	1	
		Cd	BL	1	
2	Black plastic	Hg	BL	1	PASS
		Cr(Cr(VI))	BL	1	
		Br(PBBs&PBDEs)	BL	1	
		Pb	BL	1	
		Cd	BL	1	
3	Black plastic	Hg	BL	1	PASS
		Cr(Cr(VI))	BL	1	
		Br(PBBs&PBDEs)	BL	1	
		Pb	BL	1	
		Cd	BL	1	
4	Red rubber	Hg	BL	1	PASS
		Cr(Cr(VI))	BL	1	
		Br(PBBs&PBDEs)	BL	1	
		Pb	BL	1	
		Cd	BL	1	
5	Black plastic	Hg	BL	. /	PASS
		Cr(Cr(VI))	BL	/	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		Br(PBBs&PBDEs)	BL 🦎		
		Pb	BL		
		Cd	BL 📐 📐	1	
6	Red wire jacket	Hg	BL		PASS
		Cr(Cr(VI))	BL		
		Br(PBBs&PBDEs)	BL	1	
		Pb	BL	1	
		Cd	BL····	1	
7	Blue wire jacket	Hg	BL		PASS
		Cr(Cr(VI))	BL		
		Br(PBBs&PBDEs)	BL	10000000000000000000000000000000000000	4 ° 4 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6

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Red wire jacket			Pb	BL	,	
8         Red wire jacket         Hg         BL         /         PASS           Cr(Cr(VI))         BL         /         PASS           Black wire jacket         Pb         BL         /         /           Pb         BL         /         /         PASS           Black wire jacket         Pb         BL         /         /         PASS           Cd         BL         /         /         PASS		Dod wire igeket				
Cr(Cr(VI))   BL	0				·	DACC
BIGHERS   BIL	0	Red wire jacket				PASS
Pb					·	
Black wire jacket					·	
Second						
Solution   Cr(Cr(VI)   BL	•	Black wire				5100
10   White PCB   Hg   BL   /     PASS	9	jacket	_		•	PASS
Pb						
The continue of the continue					/	
10			Pb	BL	1	
Cr(Cr(VI))   BL			Cd	BL	1	
Br(PBBs&PBDEs)   3092   N.D.	10	White PCB	Hg	BL	1	PASS
11			Cr(Cr(VI))	BL	1	
11			Br(PBBs&PBDEs)	3092	N.D.	
11			Pb	BL	1	
11			Cd	BL	1	
Cr(Cr(VI)   BL	11		Hg	BL	1	PASS
Pb			Cr(Cr(VI))	BL	1	
12   Silver metal (button)   Cd			Br(PBBs&PBDEs)	1	1	
12   Silver metal (button)   Hg   BL			Pb	BL	1	
12		Cilver metal	Cd	BL	1	
Cr(Cr(VI)	12		Hg	BL	1	PASS
Pb			Cr(Cr(VI))	113169	Negative	
13   IC   Hg			Br(PBBs&PBDEs)	1	1	
13   IC   Hg   BL   /   PASS			Pb	BL	: /	g 6
13 IC			Cd	BL		
Br(PBBs&PBDEs)   BL	13	IC	Hg	BL 🦎	ſ	
Pb   BL			Cr(Cr(VI))	BL	/	
14         Crystal         Cd         BL         /         PASS           Cr(Cr(VI))         BL         /         /         DASS           Br(PBBs&PBDEs)         I			Br(PBBs&PBDEs)	BL 🔍 🛝	1	
14         Crystal         Hg         BL         /         PASS           Cr(Cr(VI))         BL         /			Pb	BL		
Cr(Cr(VI) )   BL			Cd	BL		
Cr(Cr(VI) )   BL	14	Crystal	Hg	BL	1	PASS .
Br(PBBs&PBDEs)				BL		
Pb   BL					1	
Cd   BL				BĽ************************************		
15         SMD capacitor         Hg         BL         /         PASS           Cr(Cr(VI))         BL         /				*********		
Cr(Cr(VI)) BL	15	SMD capacitor				PASS
				******************		00000000000000000000000000000000000000
		-	Br(PBBs&PBDEs)	BL	+ 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0	

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Pb   BL		I				
Hg			Pb	BL	1	
Cr(Cr(VI))   BL			Cd	BL	1	
Br(PBBs&PBDEs)   BL	16 SMD resist		Hg	BL	1	PASS
Pb			Cr(Cr(VI))	BL	1	
Cd			Br(PBBs&PBDEs)	BL	1	
Total			Pb	BL	1	
Cr(Cr(VI))   BL			Cd	BL	1	
Br(PBBs&PBDEs)   BL	17	SMD LED	Hg	BL	1	PASS
Pb			Cr(Cr(VI))	BL	1	
SMD audion			Br(PBBs&PBDEs)	BL	1	
18			Pb	BL	1	
Cr(Cr(VI))   BL			Cd	BL	1	
Br(PBBs&PBDEs)   BL	18	SMD audion	Hg	BL	1	PASS
Br(PBBs&PBDEs)   BL			Cr(Cr(VI))	BL	1	
SMD diode				BL	/	
Pass				BL	1	
Cr(Cr(VI))   BL			Cd	BL	1	
Br(PBBs&PBDEs)   BL	19	SMD diode	Hg	BL	1	PASS
Br(PBBs&PBDEs)   BL			Cr(Cr(VI))	BL	1	
Cd			Br(PBBs&PBDEs)	BL	1	
Tin solder			Pb	BL	1	
Cr(Cr(VI)   BL			Cd	BL	1	
Br(PBBs&PBDEs)	20	Tin solder	Hg	BL	1	PASS
Pb			Cr(Cr(VI))	BL	1	
Cd   BL			Br(PBBs&PBDEs)	1	1	
21         Silver metal         Hg         BL         PASS           Cr(Cr(VI))         114762         Negative           Br(PBBs&PBDEs)         /         /           Pb         BL         /           Cd         BL         /           PASS         Cr(Cr(VI))         BL           Br(PBBs&PBDEs)         BL         /           Pb         BL         /           Cd         BL         /           Cd         BL         /           Cd         BL         /           PASS         PASS         PASS			Pb	BL	. /	:
Cr(Cr(VI) )			Cd	BL	1	
Br(PBBs&PBDEs)	21	Silver metal	Hg	BL 🗽	ſ	PASS
Pb   BL   / PASS			Cr(Cr(VI))	114762	Negative	
Cd         BL         /         PASS           Black foam         Hg         BL         /           Cr(Cr(VI))         BL         /           Br(PBBs&PBDEs)         BL         /           Pb         BL         /           Cd         BL         /           Cd         BL         /           PASS         Cr(Cr(VI))         BL         /			Br(PBBs&PBDEs)	<i>I</i>	1	
Black foam         Hg         BL         /         PASS           Cr(Cr(VI))         BL         /         BL         /           Br(PBBs&PBDEs)         BL         /         Cd         BL         /           Cd         BL         /         PASS         PASS           Cr(Cr(VI))         BL         /         PASS			Pb	BL		
Cr(Cr(VI) )   BL			Cd	BL		
Br(PBBs&PBDEs)   BL	22	Black foam	Hg	BL	/	PASS
Pb         BL           Cd         BL           J         Cd           BL         J           PASS         Cr(Cr(VI))           BL         J			Cr(Cr(VI))	BL		
Cd         BL         1           Hg         BL         f           Cr(Cr(VI))         BL         f			Br(PBBs&PBDEs)	BL		
23 Silver screw Hg BL / PASS Cr(Cr(VI)) BL /			Pb	BĽ		
Cr(Cr(VI)) BL			Cd	BL	J.,	
	23	Silver screw	Hg	BL	**************************************	PASS
Br(PBBs&PBDEs)			Cr(Cr(VI))	BL		**************************************
			Br(PBBs&PBDEs)	***********************		

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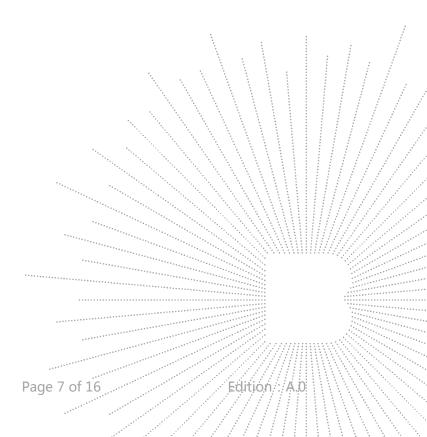
Tested Item(s)	Results Unit (mg/kg)									
(0)	1	2	3	4	5	6	7	8	9	10
Diisobutyl phthalate(DIBP) CAS #:84-69-5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dibutyl phthalate(DBP) CAS #:84-74-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate(BBP) CAS #:85-68-7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Bis(2-ethylhexyl) phthalate(DEHP) CAS #:117-81-7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

#### Note:

- -MDL = Method Detection Limit
- -N.D. = Not Detected (<MDL)
- -mg/kg = ppm = parts per million
- -" / "= Not conducted.
- -Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than  $0.1 \mu g/cm^2$  with  $50 cm^2$  sample surface area used.
- -Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than  $0.13\mu g/cm^2$  with  $50cm^2$  sample surface area used.

#### Remark:

- -The screening results are only used for reference.
- -When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.



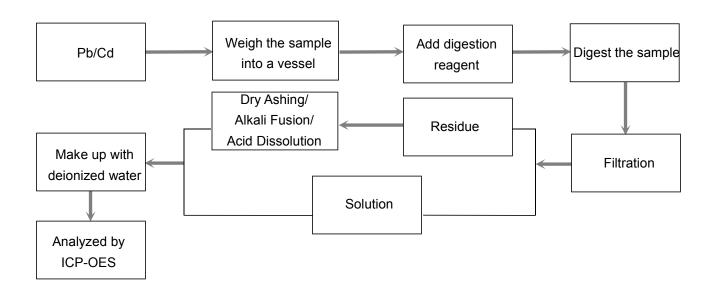
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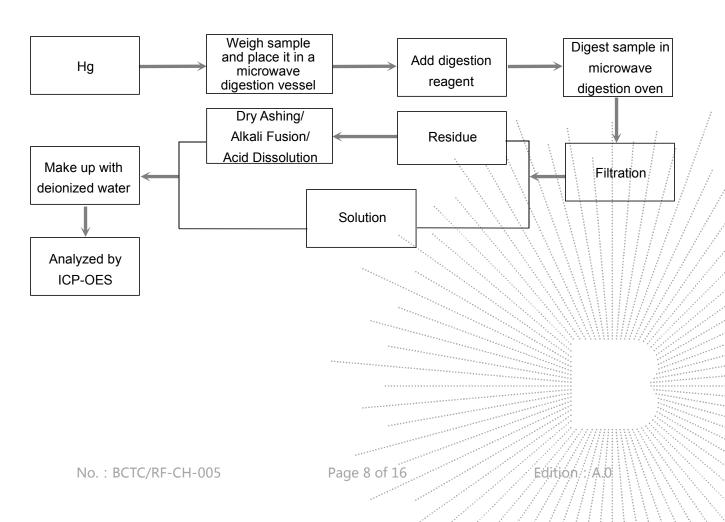
#### **Test Process:**

The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

#### ♦IEC 62321-5:2013 Ed.1.0

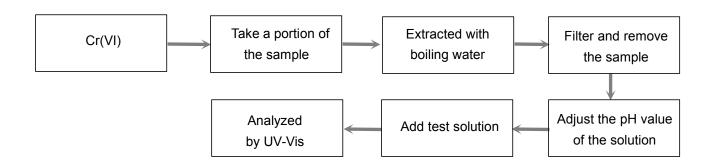


#### ♦IEC 62321-4:2013+AMD1:2017

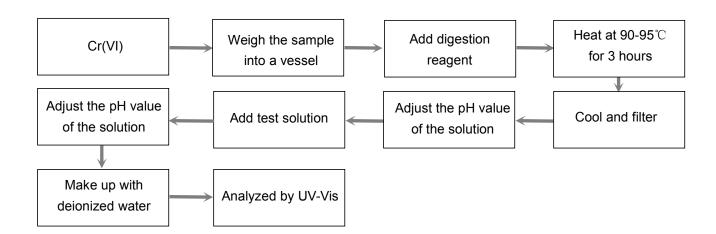




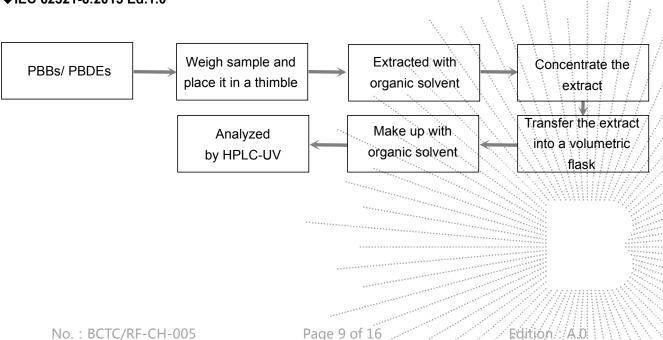
## ♦IEC 62321-7-1:2015 Ed.1.0



## ♦IEC 62321-7-2:2017 Ed.1.0



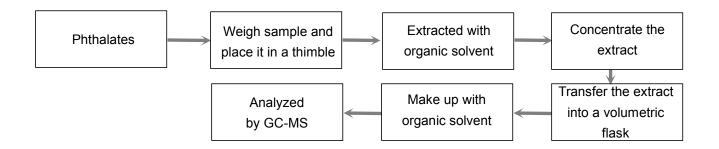
## ♦IEC 62321-6:2015 Ed.1.0





♦IEC 62321-8:2017 Ed.1.0

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# **Photograph of Sample**



Fig.1

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Fig.2



Fig.3 (Client reference photo-Untested sample)

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# Photo(s) of the tested component(s)



Fig.4



Fig.5

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Fig.6

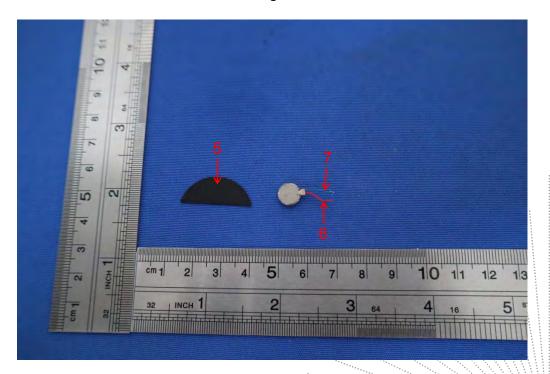


Fig.7

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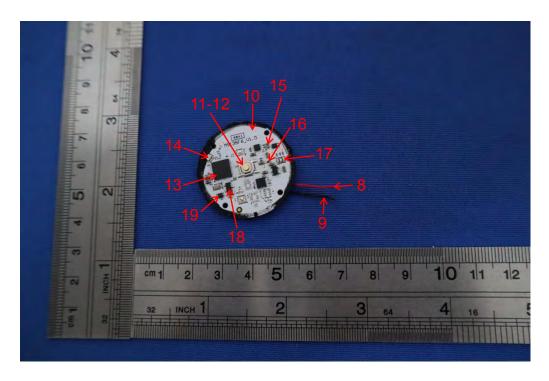
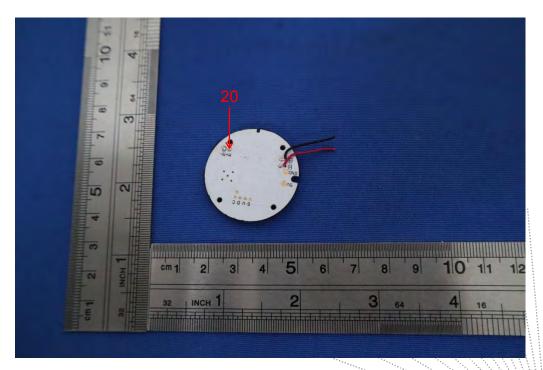


Fig.8



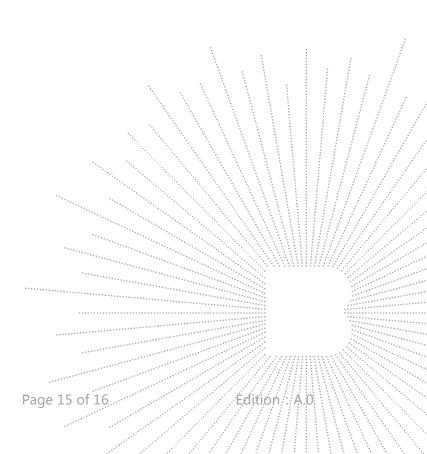


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Fig.10



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# **STATEMENT**

- 1. The equipment lists are traceable to the national reference standards.
- 2.The test report can not be partially copied unless prior written approval is issued from our lab.
- 3. The test report is invalid without stamp of laboratory.
- 4. The test report is invalid without signature of person(s) testing and authorizing.
- 5. The test process and test result is only related to the Unit Under Test.
- 6. The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

#### Address:

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