



Product Service

# Amendment I – EMC EMISSION TEST REPORT

(Supplement to Test Report: 708880510501)

Project Number : 708880510501-A1-Part 1 Date of Issue: February 02, 2007

Model / Serial No. : TC-16/H,TC-25/H, TC-18/H(b),TC-24/H(b)

Product Type : Thermal Cycler

Applicant : Hangzhou Bioer Technology Co., Ltd.

Manufacturer : Hangzhou Bioer Technology Co., Ltd.

License holder : Hangzhou Bioer Technology Co., Ltd.

Address : 1192BinAn Rd,Binjiang District, 310053 Hangzhou

: People's Republic of China

Test Result :

Positive  Negative

Total pages including  
Appendices

16



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*JIANGSU TÜV PRODUCT SERVICE LTD. SHANGHAI BRANCH reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. Jiangsu TÜV Product Service Ltd. Shanghai Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Jiangsu TÜV Product Service Ltd. Shanghai Branch issued reports.*

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## DIRECTORY - EMISSIONS

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## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

■ - EMC - Directive 2004/108/EC

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- EN 61000-6-3/A11: 2004

- EN 55011 /A2: 2002

- EN 55013 : 2001

■ - EN 61326-1:2006

- EN 55014 -1 : 2006

- EN 55015 /A2:2002

- EN 55022 /A1 : 2000

- EN 61000-3-2/ A2: 2005

- EN 61000-3-3 /A2: 2005

- BS

- VCCI

- FCC

- AS 3548 (1992)

- CISPR 11 (1997)

- CISPR 22 (1997) /A2:2002

- Group 1

- Class A

■ - Class A

- Household appliances and similar

- Electric tools

- Semiconductor devices

- Class A

- Class A

- Class A

- Class A

- Group 1

- Class A

- Class A

- Group 2

- Class B

- Class B

- Class B

- Class B

- Class B

- Class B

- Group 2

- Class B

- Class B



Product Service

## Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 26 °C
Relative Humidity:	: 57 %
Atmospheric Pressure:	: 1028 mBar

## Power Supply Utilized:

Power supply system : 230-240V AC /50Hz

## Statement of Measurement Uncertainty:

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for measurements listed in this test report according to CISPR16-4:2002 "Uncertainty in EMC measurements" and is documented in the Jiangsu TÜV Product Service Quality System according to ISO/IEC17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## Symbol Definitions:

- - Applicable
- - Not Applicable



### Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Normal Operating Mode

- Power on

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#### Configuration of the equipment under test:

- See Constructional Data Form in Appendix B
- See Product Information Form(s) in Appendix B

The following peripheral devices and interface cables were connected during the testing:

<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____
<input type="checkbox"/> - _____	Type : _____

- unshielded power cable

- unshielded cables

- shielded cables

TUV  
PS.No.: \_\_\_\_\_

- customer specific cables

- \_\_\_\_\_

- \_\_\_\_\_



### Emissions Test Results:

#### Conducted Emissions, 150 kHz - 30 MHz

- PASS       - FAIL       - NOT APPLICABLE

Minimum limit margin      \_\_\_\_\_ >6 dB      At      0.15-30 MHz  
Maximum limit exceeding      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz

Remarks: \_\_\_\_\_  
\_\_\_\_\_

#### Radiated Emissions (Magnetic Field), 9 kHz - 30 MHz

- PASS       - FAIL       - NOT APPLICABLE

Minimum limit margin      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz  
Maximum limit exceeding      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz

Remarks: \_\_\_\_\_  
\_\_\_\_\_

#### Radiated Emissions (Electric Field), 30 MHz - 1000 MHz

- PASS       - FAIL       - NOT APPLICABLE

Minimum limit margin      \_\_\_\_\_ 1.4 dB      At      59.7 MHz  
Maximum limit exceeding      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz

Remarks: \_\_\_\_\_  
\_\_\_\_\_

#### Interference Power at the Mains and Interface Cables, 30 MHz - 300 MHz

- PASS       - FAIL       - NOT APPLICABLE

Minimum limit margin      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz  
Maximum limit exceeding      \_\_\_\_\_ -- dB      At      \_\_\_\_\_ MHz

Remarks: \_\_\_\_\_  
\_\_\_\_\_

#### Harmonic Current Emissions and Voltage Fluctuations and Flicker

- PASS       - FAIL       - NOT APPLICABLE

Harmonic measurement exceeding limit      \_\_\_\_\_ -- Above      At      \_\_\_\_\_ -- Harmonic  
Flicker measurement exceeding limit      \_\_\_\_\_ -- Above      The      \_\_\_\_\_ -- Requirement

Remarks: \_\_\_\_\_  
\_\_\_\_\_



**GENERAL REMARKS:**

**NOTICE: This report is a SUPPLEMENT OF PROJECT 708880510501. So this report is not valid without the report of 708880510501.**

The Directive 89/336/EEC relating to electromagnetic compatibility has been repealed as from 20 July 2007 by the new Directive 2004/108/EC.

According to the client's declaration, two models: TC-18/H(b) and TC-24/H(b) were added on the E8N attestation.

These two models TC-18/H(b) and TC-24/H(b) have the same electrical structure with model TC-25/H which was certified before except for the different type of test tube rack.

Standard: EN 61326/A3:2003 has been replaced by EN 61326-1: 2006. As to the product, the test requirements on EN 61326-1: 2006 are same as EN 61326/A3:2003

Model TC-24/H(b) was chosen to perform all the tests.

The additional test results are attached in appendix A.

The product photos of the new models are attached in Appendix C.

Warning: Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

**SUMMARY:**

All tests according to the regulations cited on page 3 were

- Performed

- Not Performed

The Equipment Under Test

- **Fulfills** the general approval requirements cited on page 3.

- **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date: January 14, 2008

Testing End Date: January 14, 2008

- JIANGSU TÜV PRODUCT SERVICE LTD. SHANGHAI BRANCH-

Reviewed by:

Prepared by:

Zang Keping 2-02-08  
Keping ZANG  
Project Manager

Feng LU 2-2-08  
Feng LU  
Project Engineer



Product Service

## Appendix A

Test Data Sheets





Product Service

# 150kHz-30MHz Conducted Emission Test

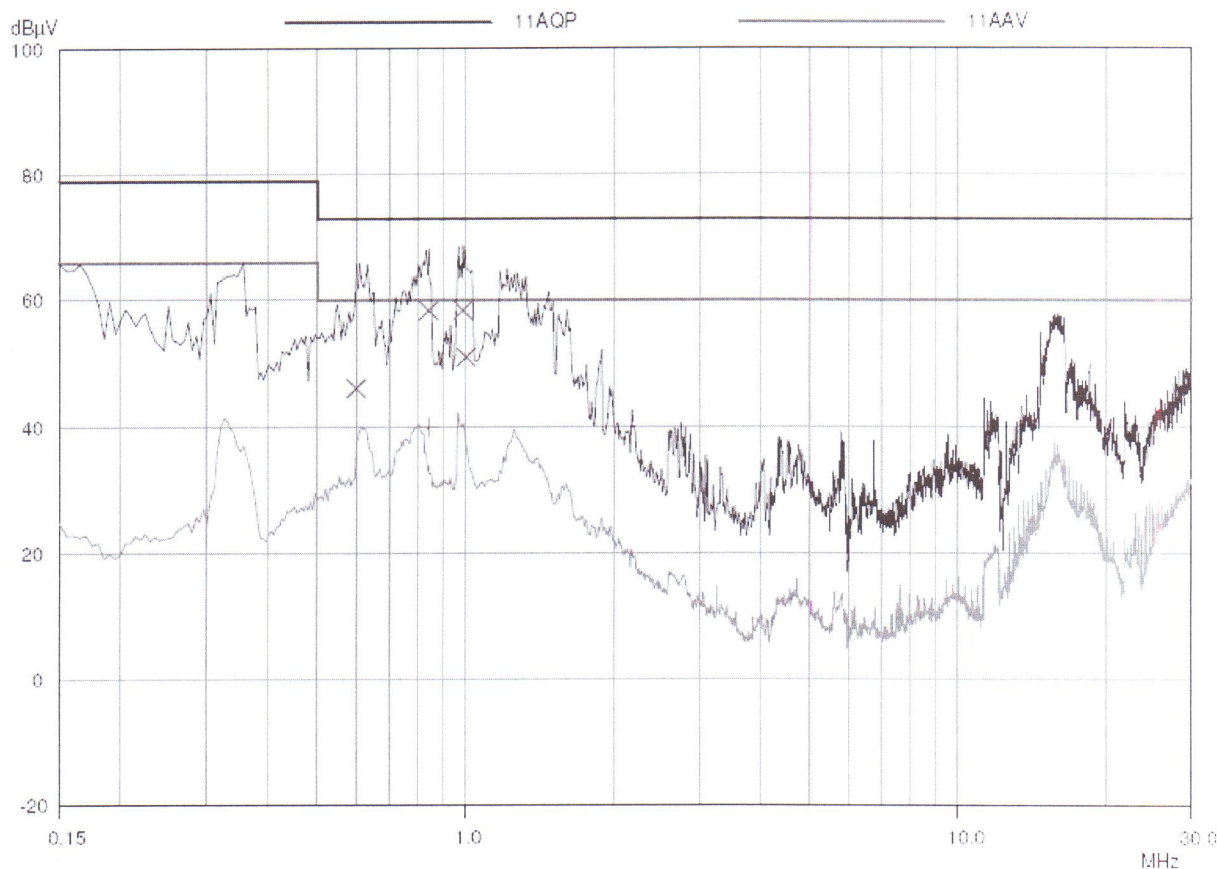
## TC-24/H(b)

EUT: Thermal Cycler  
Manuf: Hangzhou Bioer Technology Co.,Ltd.  
Op Cond: Power on  
Operator: Hongzhang Li  
Test Spec: CISPR 11 classA  
Comment: Phase L  
Sample No:71226181  
Result File: tc\_1.dat : New Measurement

Scan Settings (2 Ranges)			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	1000kHz	5kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	
1000kHz	30MHz	10kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	NSLK

Final Measurement: Detectors: X QP / +AV  
Meas Time: 1sec  
Subranges: 16  
Acc Margin: 8 dB





Product Service

### 150kHz-30MHz Conducted Emission Test TC-24/H(b)

EUT: Thermal Cyclor  
 Manuf: Hangzhou Bioer Technology Co.,Ltd.  
 Op Cond: Power on  
 Operator: Hongzhang Li  
 Test Spec: CISPR 11 classA  
 Comment: Phase L  
 Sample No:71226181  
 Result File: tc\_1.dat : New Measurement

Scan Settings (2 Ranges)			Receiver Settings						
Frequencies			IF BW	Detector	M-Time	Atten	Preamp	OpRge	
Start	Stop	Step							
150kHz	1000kHz	5kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	
1000kHz	30MHz	10kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	NSLK

Final Measurement: Detectors: X OP / + AV  
 Meas Time: 1sec  
 Subranges: 16  
 Acc Margin: 8 dB

#### Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB
0.6	46.10	73.00	26.90
0.64	58.35	73.00	14.65
0.965	58.37	73.00	14.63
1.0	51.01	73.00	21.99

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
0.64	39.67	60.00	20.13

\* limit exceeded



# 150kHz-30MHz Conducted Emission Test TC-24/H(b)

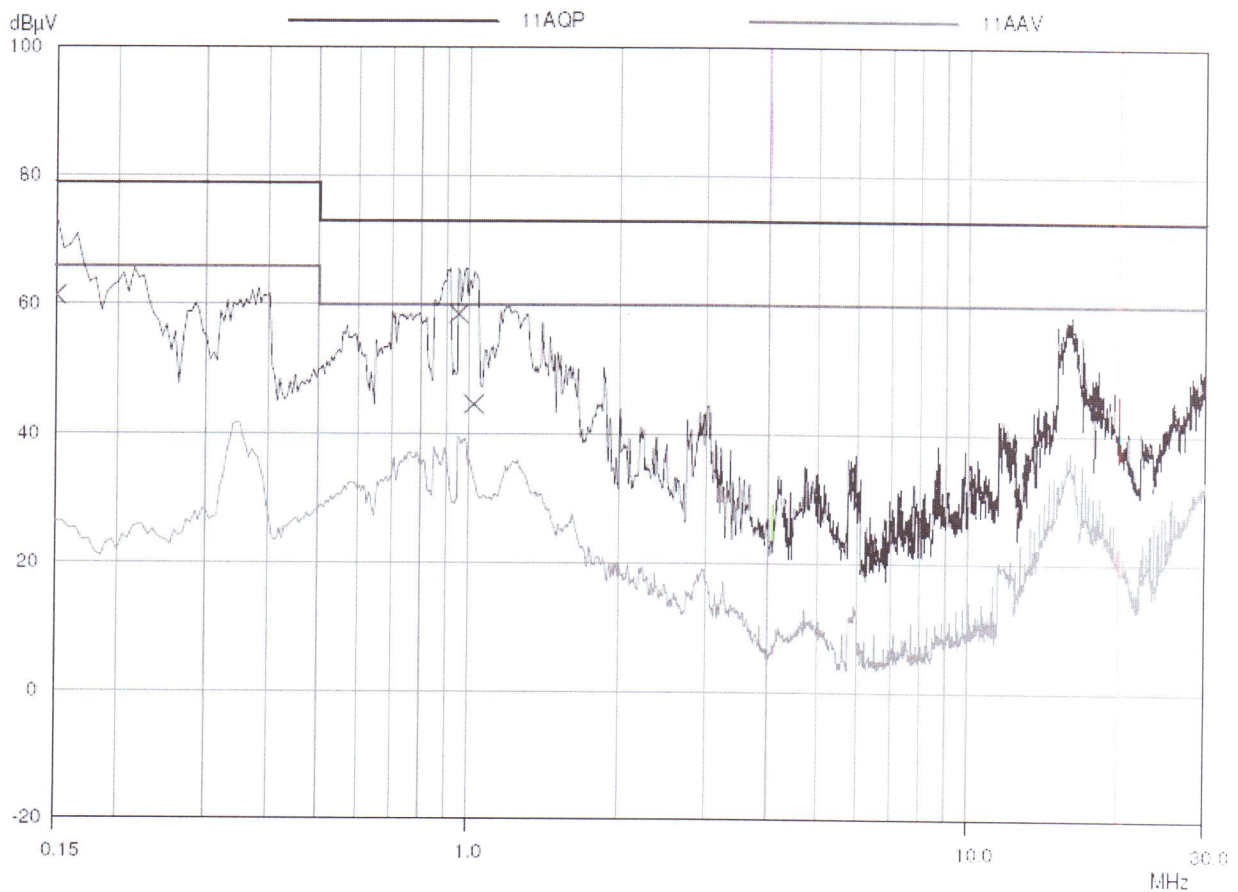
EUT: Thermal Cycler  
Manuf: Hangzhou Bioer Technology Co.,Ltd.  
Op Cond: Power on  
Operator: Hongzhang Li  
Test Spec: CISPR 11 classA  
Comment: Phase N  
Sample No:71226181  
Result File: TC\_n.dat : New Measurement

### Scan Settings (2 Ranges)

Frequencies			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	1000kHz	5kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	
1000kHz	30MHz	10kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	NSLK

Final Measurement: Detectors: X QP / -AV  
Meas Time: 1sec  
Subranges: 16  
Acc Margin: 8 dB





Product Service

### 150kHz-30MHz Conducted Emission Test

#### TC-24/H(b)

EUT: Thermal Cycler  
 Manuf: Hangzhou Bioer Technology Co.,Ltd.  
 Op Cond: Power on  
 Operator: Hongzhang Li  
 Test Spec: CISPR 11 classA  
 Comment: Phase N  
 Sample No:71226161  
 Result File: TC\_n.dat : New Measurement

#### Scan Settings (2 Ranges)

Frequencies			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	1000kHz	5kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	
1000kHz	30MHz	10kHz	10kHz	PK+AV	20msec	Auto	OFF	60dB	

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	NSLK

Final Measurement: Detectors: X QP / - AV  
 Meas Time: 1sec  
 Subranges: 16  
 Acc Margin: 8 dB

#### Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB
0.15	61.42	79.00	17.58
0.95	58.59	73.00	14.41
1.02	44.67	73.00	28.33

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
No results			

\* limit exceeded



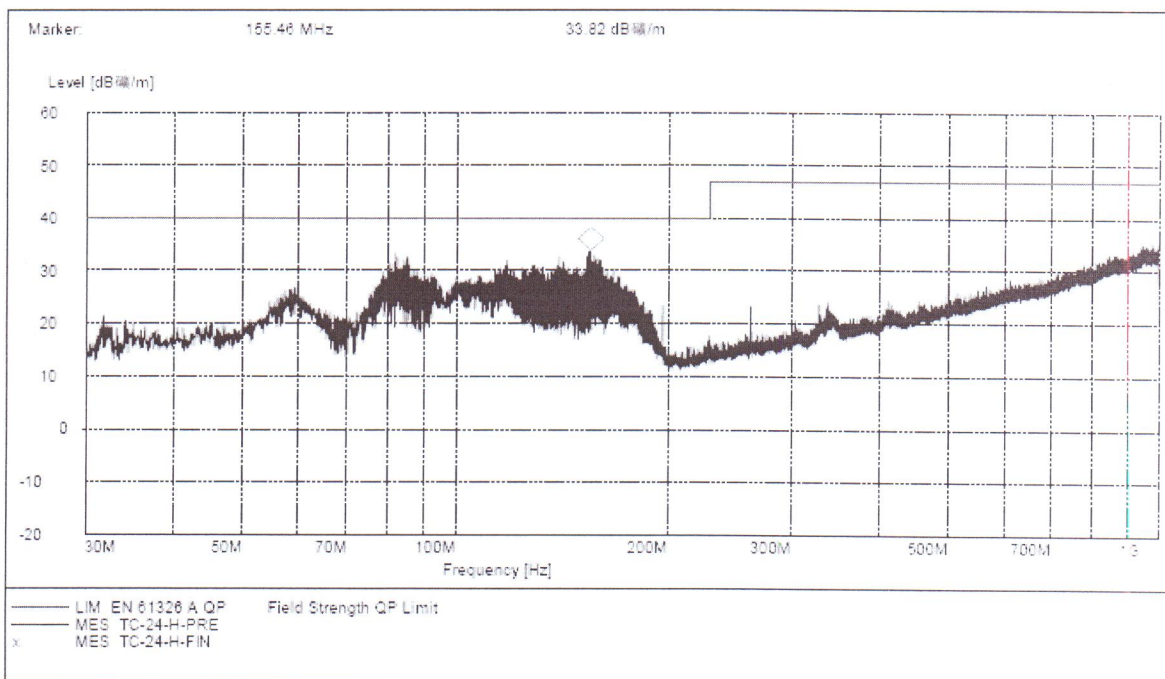
30MHz-1000MHz Radiated Emission Test

TC-24/H(b)

EUT: Thermal Cycler  
 Manufacturer: Hangzhou Bior Technology Co.,Ltd.  
 Operating Condition: Power on  
 Test Site: TUVPS 10m Chamber  
 Operator: Hongzhang Li  
 Test Specification: EN61326-1 class A  
 Comment: Horizontal

SCAN TABLE: "EN61326"

Short Description: EN 61326 Field Strength  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 30.0 MHz 1.0 GHz 60.0 kHz MaxPeak 1.0 ms 120 kHz RE\_field06



MEASUREMENT RESULT: "TC-24-H-FIN"

14/01/2008 09:42

Frequency MHz	Level dBuV/m
82.020000	25.48
155.460000	25.78



Product Service

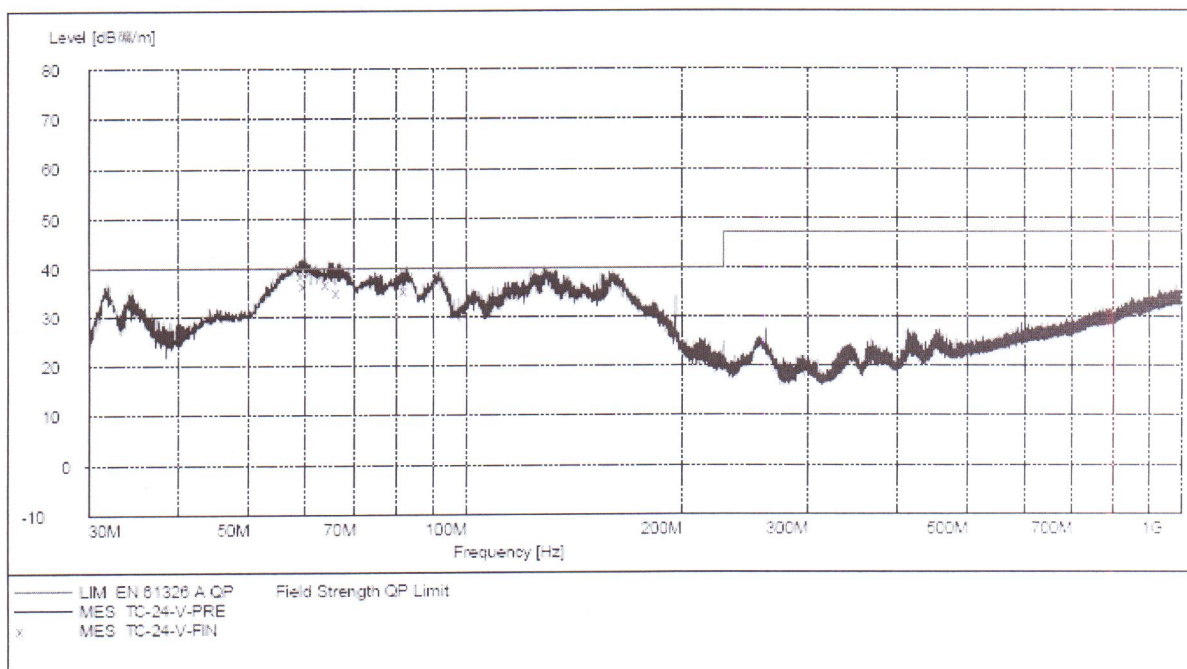
### 30MHz-1000MHz Radiated Emission Test

TC-24/H(b)

EUI: Thermal Cycler  
 Manufacturer: Hangzhou Bior Technology Co.,Ltd.  
 Operating Condition: Power on(FOR)  
 Test Site: TUVPS 10m Chamber  
 Operator: Hongzhang Li  
 Test Specification: EN61326-1 class A  
 Comment: Vertical

#### SCAN TABLE: "EN61326"

Short Description: EN 61326 Field Strength  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 30.0 MHz 1.0 GHz 60.0 kHz MaxPeak 1.0 ms 120 kHz RE\_field06



#### MEASUREMENT RESULT: "TC-24-V-FIN"

14/01/2008 09:43

Frequency MHz	Level dBuV/m
59.700000	38.60
60.060000	36.22
64.620000	36.88
66.640000	34.97
82.800000	35.48
128.880000	36.18



Product Service

## Appendix B

Constructional Data Form

and

Product Information Form(s)

**Please refer to Appendix B of EMC EMISSION-TEST REPORT 708880510501**



China

# Amendment I – EMC IMMUNITY TEST REPORT

(supplement to Test Report: 708880510501)

Project Number : 708880510501-A1-Part 1 Date of Issue: Februaay 02 2007

Model / Serial No. : TC-16/H,TC-25/H, TC-18/H(b),TC-24H/(b)

Product Type : Thermal Cyclcr

Applicant : Hangzhou Bioer Technology Co., Ltd.

Manufacturer : Hangzhou Bioer Technology Co., Ltd.

License holder : Hangzhou Bioer Technology Co., Ltd.

Address : 1192BinAn Rd,Binjiang District, 310053 Hangzhou

: People's Republic of China

Test Result :  Positive  Negative

Total pages including  
Appendices

4

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## DIRECTORY - IMMUNITY

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<b>A) Documentation</b>	
Test Report	1 -4
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Test Regulations	3
General Remarks and Summary	4
Test Setups (Photographs)	N/A
Test Setups (Drawings)	N/A
<b>B) Test data: Immunity against</b>	
Electrostatic Discharge	N/A
Radiated Electromagnetic Fields	N/A
Fast Transients (Burst)	N/A
Surge Transients	N/A
Conducted Disturbance	N/A
RF Frequency Magnetic Fields	N/A
Voltage Dips, Interruptions & Variations	N/A
<b>C) Appendix A</b>	
Constructional Data Form and Product Information Forms	N/A

Note: NA means Not Applicable.



China

## IMMUNITY TEST REGULATIONS :

The immunity tests were performed according to the following regulations :

■ - EMC - Directive 2004/108/EC

- EN 61000-6-1 : 2001
- EN 61000-6-2 : 2001
- EN 55020 : 2002
- EN 55014-2/A1:2001
- EN 60601-1-2 : 2001
- EN 61547/A1:2000

■ - EN 61326-1:2006

- EN 61000-4-2 /A2:2001
- EN 61000-4-3 : 2002
- EN 61000-4-4 /A2:2001
- EN 61000-4-5 /A1:2001
- EN 61000-4-6 : 2001
- EN 61000-4-8 /A1:2001
- EN 61000-4-11 /A1:2001

- ENV 50204 : 1995

- IEC 61000-4-2 : 2001
- IEC 61000-4-3 : 2002
- IEC 61000-4-4 /A2:2001
- IEC 61000-4-5 : 2001
- IEC 61000-4-6 : 2001
- IEC 61000-4-8 : 2001
- IEC 61000-4-11 : 2001

### Symbol Definitions:

- - Applicable
- Not Applicable

Note: For undated references, the latest edition of the publication at the time of testing (including amendments) was applied.

