

## CENTRE OF TESTING SERVICE INTERNATIONAL

**OPERATE ACCORDING TO ISO/IEC 17025** 

# FCC ID TEST REPORT

**TEST REPORT NUMBER: CGZ3091111-03287-O** 



#### CENTRE OF TESTING SERVICE CO., LTD.

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.





	TEST REPORT For FCC ID
	47 CFR PART 15 OCT, 2009
Report Reference No	. CGZ3091111-03287-O
Date of issue	. 23 November 2009
Testing Laboratory Name	. CETRE OF TESTING SERVICE CO., LTD
Address	Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.
Testing location/ procedure	. Full application of Harmonised standards ■
	Partial application of Harmonised standards $\square$
	Other standard testing method $\square$
Applicant's name	BELLMATE HOLDINGS LTD.
Address	. Unit 206, Sterling Centre, 11 Cheung Yue Street, Cheung sha Wan, Kowloon, Hong Kong.
Test specification	
Standard	47 CFR PART 15 OCT, 2009
Test Report Form No	. CTSEMC-1.0
TRF Originator	CENTRE OF TESTING SERVICE CO., LTD
Master TRF	. Dated 2009-01
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Test item description	THERMOSTAT
Trade Mark	PRO 1
Manufacturer	BELLMATE HOLDINGS LTD.
Model/Type reference	R250W
Ratings	Battery 1.5V*2
Operating Frequency	. 916.000MHz
Result	Positive

Compiled by:

Supervised by:

Approved by:

Quty Liu / File administrators

Jackson Zhang / Technique principal

Kevin Liang / Manager

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### FCCID-TEST REPORT

Test Report No.: CGZ3091111-03287-O

Od. December 2009
Date of issue

Type / Model	R250W
EUT	THERMOSTAT
Applicant	BELLMATE HOLDINGS LTD.
Address	Unit 206, Sterling Centre, 11 Cheung Yue Street, Cheung sha Wan, Kowloon, Hong Kong.
Telephone	(852) 2785 0364
Fax	(852) 2785 0493
Contact	Mr. Xie Gui zhi
Manufacturer	BELLMATE HOLDINGS LTD.
Address	Unit 206, Sterling Centre, 11 Cheung Yue Street, Cheung sha Wan, Kowloon, Hong Kong.
Telephone	(852) 2785 0364
Fax	(852) 2785 0493
Contact	Mr. Xie Gui zhi
Test report holder	BELLMATE HOLDINGS LTD.
lest report noider	
Address	Unit 206, Sterling Centre, 11 Cheung Yue Street, Cheung sha Wan, Kowloon, Hong Kong.
Telephone	(852) 2785 0364
Fax	(852) 2785 0493
Contact	Mr. Xie Gui zhi

### Test Result according to the standards on page 3: Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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### 1 TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2009
- ANSI C63.4-2003

### 2 SUMMARY

### 2.1 GENERAL REMARKS

Date of receipt of test sample	11 November 2009
Testing commenced on	16 November 2009
_	
Testing concluded on	20 November 2009

### 2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

fulfilled.

□ - **not** fulfilled.

The equipment under test

fulfils the FCC requirements cited on page 3.

does not fulfil the FCC requirements cited on page 3.

### 3 EQUIPMENT UNDER TEST

### 3.1 Power supply system utilised

Power supply voltage : ■ Battery 1.5V\*2

### 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1

Serial number: Prototype

### 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

□ - Standby

Test program (customer specific)

Operation mode 1: 916.000MHz

Note: X position of EUT is the worst case, so only these test results be recorded in the test report.

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### 3.4 EUT configuration

### 3.4.1. Description of configuration (EUT)

### 3.4.1.1. EUT Information

Description	:	THERMOSTAT
Model Number	:	R250W
Operation frequency	:	916.000MHz ISM Band
Radio Technology	:	MSK
Modulation Technology	:	MSK modulation
Antenna	:	Integral antenna, met requirement of FCC 15.203
Antenna Assembly Gain	:	0dBi (maximum)

### 3.4.2. Tested Supporting System Details

3.4.2.1. N/A

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### 4 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China

Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406

### 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

### IC-Registration No.: 8374

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374 on June 24, 2009.

### FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.791995, July 21, 2009.

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 °C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

### 4.4 Definitions of symbols used in this test report

- The black square indicates that the listed condition, standard or equipment is applicable for this report.
- □ The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

### 4.5 Statement of the 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 all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. 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.

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### 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

<sup>(1).</sup> This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 5 Summary of standards and results

### 5.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION				
Description of Test Item	Standard	Results		
Conducted Disturbance Emission Test	FCC Part 15 C: 15.207 ANSI C63.4-2003	N/A		
Radiated Emission Test	FCC Part 15 C: 15.249 ANSI C63.4-2003	PASS		
20 dB Bandwidth Test	FCC Part 15 C: 15.249 ANSI C63.4-2003	PASS		
Band Edge Compliance Test	FCC Part 15 C: 15.249 ANSI C63.4-2003	PASS		
N/A is an abbreviation for Not Applicable.				

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### 6 Power line conducted Emission Test

(According to Paragraph (f) of FCC Part 15 section 15.207, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.)

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### 7 Radiated disturbance (electric field)

### 7.1.Test Equipment

Radia	Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2008/12	
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2008/12	
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2008/12	
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2008/12	
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2008/12	

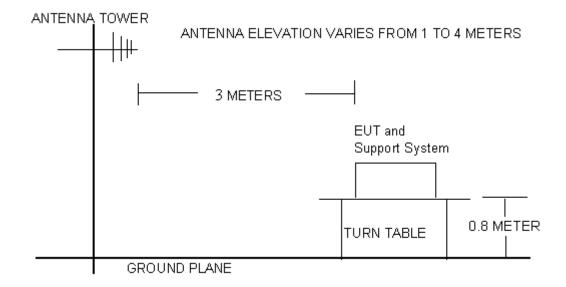
### 7.2.Block Diagram of Test Setup

### 7.2.1 Block Diagram of connection between EUT and simulators

EUT

(EUT: THERMOSTAT)

### 7.2.2 Anechoic Chamber Setup Diagram



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### 7.3. Radiated Emission Limit Standard: FCC 15.249

FREQUENCY DISTANCE		FIELD STREI	NGTHS LIMIT
MHz	Meters	μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Local Oscillator:	3	114.0 dB(μV)/m (Peak) 94.0 dB(μV)/m (Average)	
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark:

- (1) Emission level  $dB\mu V = 20 \log Emission level \mu V/m$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 7.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 7.5. Operating Condition of EUT

- 7.5.1. Setup the EUT and simulator as shown as Section 7.2.
- 7.5.2. Turn on the power of all equipment.
- 7.5.3.Let the EUT work in test mode (TX) and measurement it.

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### 7.6.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2003 on radiated emission Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 1MHz RBW above 1GHz.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with 1MHz VBW above 1GHz, A average detector with 10Hz VBW above 1GHz

Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.7

### 7.7. Radiated Emission Test Results

#### **PASSED**

The frequency range from 30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

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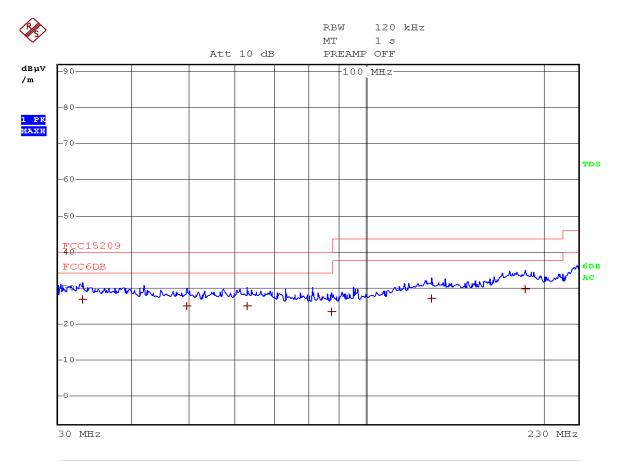
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Channel:	916.000MHz	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	30-230MHz		

EUT	THERMOSTAT	
Firm Name	BELLMATE HOLDINGS LTD.	
Operating Condition	Battery 1.5V*2	
Test Condition	Ambient Temperature: 20°C Humidity: 50%	
Operator	Roy	
MODEL NO	R250W	



TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
Quasi Peak	33.08 MHz	26.77	-13.22
Quasi Peak	49.64 MHz	24.90	-15.10
Quasi Peak	62.92 MHz	24.99	-15.00
Quasi Peak	87.72 MHz	23.48	-16.51
Quasi Peak	129.2 MHz	26.99	-16.50
Quasi Peak	186.72 MHz	29.70	-13.79

Note: 1. Emission level=Read level + Factor 2. Factor=Antenna factor + Cable loss

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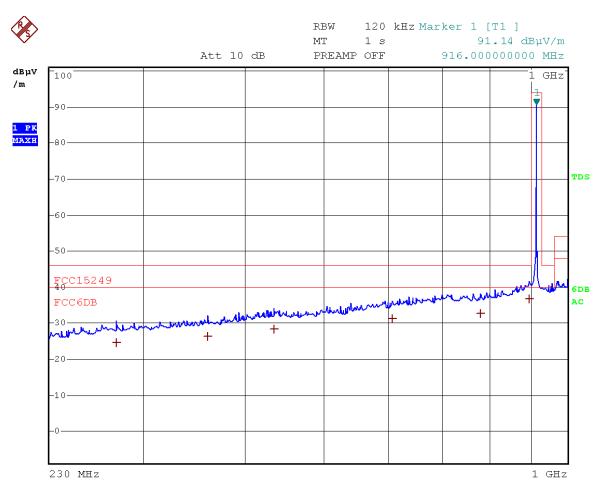
### **CENTRE OF TESTING SERVICE**





Channel:	916.000MHz	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	230-1000MHz		

EUT	THERMOSTAT		
Firm Name	BELLMATE HOLDINGS LTD.		
Operating Condition	Battery 1.5V*2		
Test Condition	Ambient Temperature: 20°C Humidity: 50%		
Operator	Roy		
MODEL NO	R250W		



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TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
Quasi Peak	278.04 MHz	24.75	-21.24
Quasi Peak	361.08 MHz	26 <b>.</b> 39	-19.60
Quasi Peak	435.56 MHz	28.42	-17.57
Quasi Peak	608.84 MHz	31.19	-14.81
Quasi Peak	781.6 MHz	32.72	-13.27
Quasi Peak	898 MHz	36.69	-9.30

Frequency	uency Result [dBµV] Limit [dBµ		ββμV]	Dlim	it[dBµV]	
[MHz]	Average	QP	Average	QP	Average	QP
916.0		91.0		94		3.0

Note: 1. Emission level=Read level + Factor

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<sup>2.</sup> Factor=Antenna factor + Cable loss

### **CENTRE OF TESTING SERVICE**





Channel:	916.000MHz	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	1G-10GHz		

EUT	THERMOSTAT		
Firm Name	BELLMATE HOLDINGS LTD.		
Operating Condition	Battery 1.5V*2		
Test Condition	Ambient Temperature: 20°C Humidity: 50%		
Operator	Roy		
MODEL NO	R250W		

Frequency	Result [dBµV]		Limit [dBµV]		Dlimit[dBµV]	
[MHz]	Average	Peak	Average	Peak	Average	Peak
1832.0	50.0	63.0	54	74	4.0	11.0
2245.6	42.1	53.3	54	74	11.9	20.7
2748.0	46.2	59.0	54	74	7.8	15.0
5287.7	47.0	56.5	54	74	7.0	27.5
7897.7	41.1	50.0	54	74	12.9	24.0
8187.4	41.5	52.0	54	74	12.5	22.0
9245.1	43.2	53.4	54	74	10.8	20.6

Note: 1. Emission level=Read level + Factor 2. Factor=Antenna factor + Cable loss

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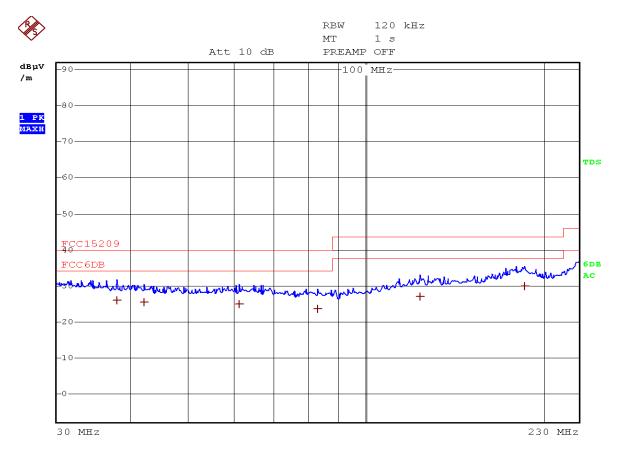
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Channel:	916.000MHz	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	30-230MHz		

EUT	THERMOSTAT		
Firm Name	BELLMATE HOLDINGS LTD.		
Operating Condition	Battery 1.5V*2		
Test Condition	Ambient Temperature: 20°C Humidity: 50%		
Operator	Roy		
MODEL NO	R250W		



TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
Quasi Peak	37.92 MHz	26.04	-13.95
Quasi Peak	42.16 MHz	25.43	-14.56
Quasi Peak	61.28 MHz	24.93	-15.06
Quasi Peak	83.12 MHz	23.53	-16.46
Quasi Peak	123.76 MHz	27.04	-16.45
Quasi Peak	186 MHz	29.79	-13.70

Note: 1. Emission level=Read level + Factor

2. Factor=Antenna factor + Cable loss

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Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406 Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn

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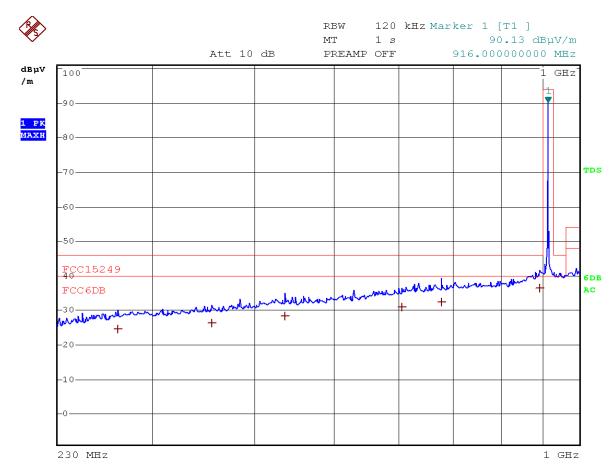
### **CENTRE OF TESTING SERVICE**





Channel:	916.000MHz	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	230-1000MHz		

EUT	THERMOSTAT
Firm Name	BELLMATE HOLDINGS LTD.
Operating Condition	Battery 1.5V*2
Test Condition	Ambient Temperature: 20°C Humidity: 50%
Operator	Roy
MODEL NO	R250W



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### **CENTRE OF TESTING SERVICE**

TRACE	FREQUENCY	LEVEL dBµV/m	DELTA LIMIT dB
Quasi Peak	273 MHz	24.53	-21.47
Quasi Peak	355.2 MHz		-19.66
Quasi Peak	436 MHz	28.41	-17.59
Quasi Peak	606.24 MHz	31.08	-14.92
Quasi Peak	678.16 MHz	32 <b>.</b> 38	-13.61
Quasi Peak	895.44 MHz	36.60	-9 <b>.</b> 39

Frequency	Result [dBµV]		Limit [dBµV]		Dlimit[dBµV]	
[MHz]	Average	QP	Average	QP	Average	QP
916.0		90.0		94		4.0

Note: 1. Emission level=Read level + Factor

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<sup>2.</sup> Factor=Antenna factor + Cable loss

### **CENTRE OF TESTING SERVICE**





Channel:	916.000MHz	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	1G-10GHz		

EUT	THERMOSTAT
Firm Name	BELLMATE HOLDINGS LTD.
Operating Condition	Battery 1.5V*2
Test Condition	Ambient Temperature: 20°C Humidity: 50%
Operator	Roy
MODEL NO	R250W

Frequency	Result [dBµV]		Limit [dBµV]		Dlimit[dBµV]	
[MHz]	Average	Peak	Average	Peak	Average	Peak
1832.0	49.8	62.9	54	74	4.2	11.1
2245.6	42.2	53.3	54	74	11.8	20.7
2748.0	46.2	59.4	54	74	7.8	14.6
5887.7	47.0	56.5	54	74	7.0	27.5
7797.7	41.1	50.0	54	74	12.9	24.0
7987.4	41.7	52.0	54	74	12.3	22.0
9249.1	42.2	53.4	54	74	11.8	20.6

Note: 1. Emission level=Read level + Factor 2. Factor=Antenna factor + Cable loss

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### 8 Band Edge Compliance Measurement

### 8.1.Test Equipment

Radiate	Radiated disturbance (electric field)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.		
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2008/12		
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2008/12		
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2008/12		

### 8.2.Test Information

EUT:	THERMOSTAT
M/N:	R250W
Test Date:	16~20 November 2009
Ambient Temperature:	20℃
Relative Humidity:	50%
Test standard:	FCC PART 15C: 15.249
Test mode:	Transmitting
Test Frequency:	916.000MHz
Test By:	Roy

### 8.3.Test Results

### PASSED.

The testing data was attached in the next pages.

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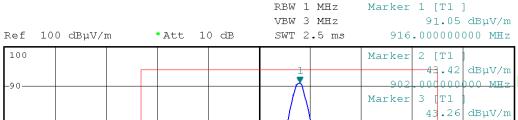




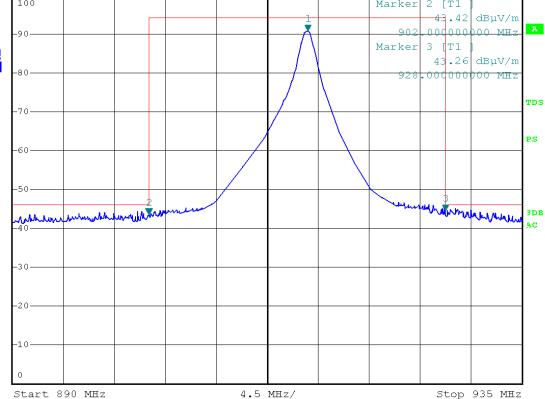
Test point:	Horizontal	Result:	■ - passed
Test Frequency:	916.000MHz		☐ - not passed

EUT	THERMOSTAT
Firm Name	BELLMATE HOLDINGS LTD.
Operating Condition	Battery 1.5V*2
Test Condition	Ambient Temperature: 20°C Humidity: 50%
Operator	Roy
MODEL NO	R250W









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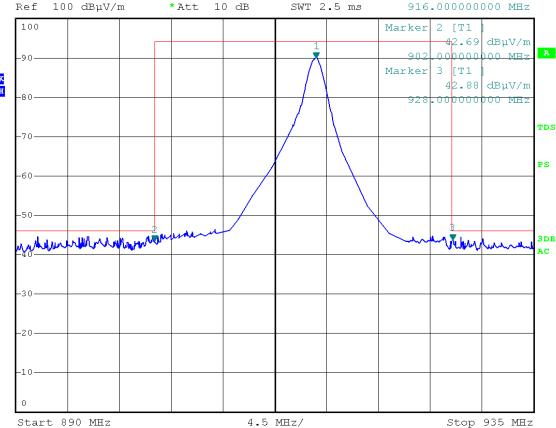
Test point:	Vertical	Result:	■ - passed
Test Frequency:	916.000MHz		☐ - not passed

EUT	THERMOSTAT
Firm Name	BELLMATE HOLDINGS LTD.
Operating Condition	Battery 1.5V*2
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## 9 Deviation to test specifications

[NONE]

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