EMC TEST REPORT

No. SH11010524-002

Applicant	:	ZINUS(Xiamen) Co., Ltd ZINUS Bldg., No.461-469 Huanzhu Road, Jimei District, Xiamen, China
Manufacturer	:	ZINUS(Xiamen) Co., Ltd ZINUS Bldg., No.461-469 Huanzhu Road, Jimei District, Xiamen, China
Equipment	:	MASSAGE MATTRESS
Type/Model	:	VBP

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2009): Radio Frequency Devices

ANSI C63.4 (2003): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Date of issue: Feb 23, 2011

Prepared by:

Wakeyou Wang (*Project Engineer*)

Reviewed by:

Daniel Zhao (*Reviewer*)

Description of Test Facility

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IC Assigned Code: 2042B-1

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Content

1. General Information

1.1 Applicant Information

Applicant:	ZINUS(Xiamen) Co., Ltd ZINUS Bldg., No.461-469 Huanzhu Road, Jimei District, Xiamen, China
Name of contact:	Que Haihui
Tel: Fax:	86-592-6662948 86-592-6296624
Manufacturer:	ZINUS(Xiamen) Co., Ltd ZINUS Bldg., No.461-469 Huanzhu Road, Jimei District, Xiamen, China

Sample received date	:	Jan 18, 2011
Sample Identification No	:	*0110118-15-001*
Date of test	:	Jan 18, 2011 ~ Feb 20, 2011

1.2 Identification of the EUT

Equipment:	MASSAGE MATTRESS
Type/model:	VBP
FCC ID:	VB61101-02
IC:	NA

1.3 Technical specification

Rating:	DC 24V by AC / DC adapter: Input AC 100-240V, 50/60Hz, 0.7A Output DC 24V, 1A
Description of EUT:	There is one model only. The EUT is the receiver part of a MASSAGE MATTRESS system. It can receive the control signal from the corresponding transmitter to be controlled the working conditions. The motors of the EUT, as incidental radiators, were turned off during test.

1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested with modulation and tested under its rating voltage and frequency.
The EUT was set up and tested as typically used.
The Signal generator "SMR20" together with a transmitting antenna was employed to radiate 433.92MHz CW signal in close proximity to the EUT.

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESIB 26	R&S	EC 3045	2010-4-10	2011-4-9
Semi-anechoic chamber	-	Albatross project	EC 3048	2010-11-1	2011-10-31
A.M.N.	ESH2-Z5	R&S	EC 3119	2011-1-11	2012-1-10
Test Receiver	ESCS 30	R&S	EC 2107	2010-4-10	2011-4-9
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2010-6-2	2011-6-1
Horn antenna	HF 906	R&S	EC 3049	2010-4-10	2011-4-9
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2010-9-18	2011-9-17
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2011-2-8	2012-2-7
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2011-2-8	2012-2-7
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2011-2-8	2012-2-7
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2011-2-8	2012-2-7
Test Receiver	ESIB 26	R&S	EC 3045	2010-10-22	2011-10-21

2.2 Test Standard

47CFR Part 15 (2009)
ANSI C63.4: 2003

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Radiated emission	15B	/	Pass
Power line conducted emission	15B	/	Pass

3. Radiated emission

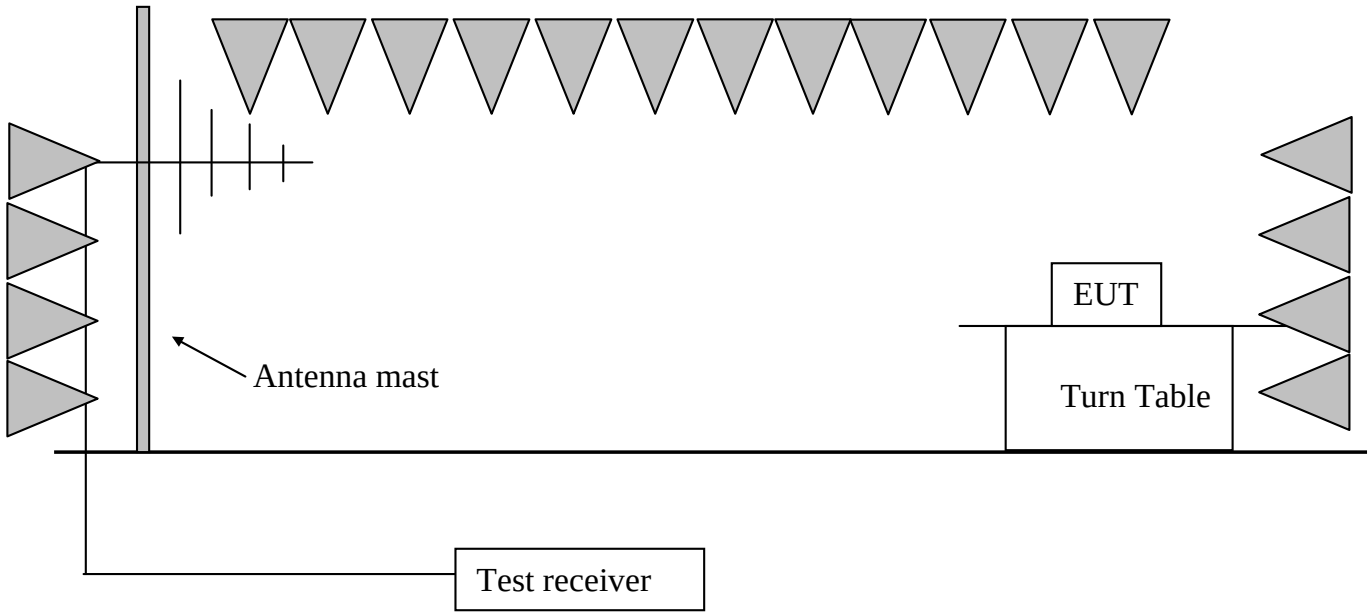
Test result: PASS

3.1 Test limit

The frequency range of radiated measurements should follow § 15.33. Here are the limits below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

3.2 Test Configuration



3.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, the pre-amplifier and high pass filter is equipped just at the output terminal of the antenna.
The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.
Both horizontal and vertical polarities of the receiving antenna were assessed and the higher reading was listed in this report.
The radiated emission was measured using the test receiver with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK)

3.4 Test protocol

Antenna	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
V	30.00	18.60	35.60	40.00	4.40	QP
V	59.16	9.50	30.50	40.00	9.50	PK
V	70.82	10.10	38.40	40.00	1.60	QP
V	76.65	10.40	33.70	40.00	6.30	PK
V	117.47	11.30	36.30	43.50	7.20	PK
V	125.25	11.30	30.90	43.50	12.60	PK
V	168.02	11.20	31.30	43.50	12.20	PK
V	1304.61	-12.80	35.20	54.00	18.80	PK

Remark: 1.Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz)
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = limit - Corrected Reading
4. If PK reading is less than QP limit, the QP test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB, Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV, limit = 40.00dBuV/m.
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m; Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m; Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

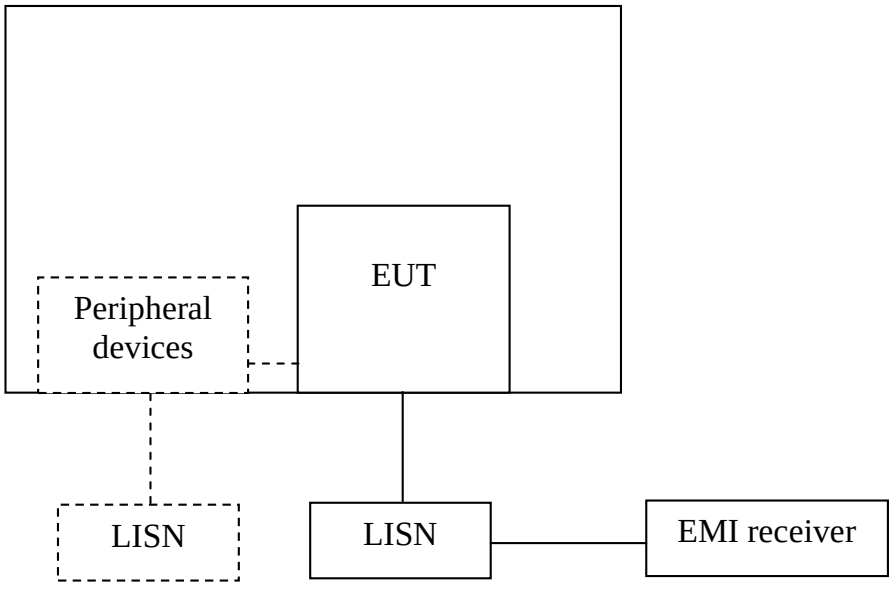
4. Power line conducted emission

Test result: **Pass**

4.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

4.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

4.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
The bandwidth of the test receiver is set at 9 kHz.

4.4 Test protocol

Frequency & Conductor line	Correct Factor (dB)	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
0.15 (N)	3.00	46.32	23.77	66.00	56.00	19.68	32.23
0.17 (N)	3.00	45.34	22.88	65.20	55.20	19.86	32.32
0.20 (N)	3.00	38.83	16.01	63.68	53.68	24.85	37.67
0.43 (N)	3.00	37.28	20.33	57.18	47.18	19.90	26.85
1.03 (L)	3.00	24.35	8.25	56.00	46.00	31.65	37.75
19.95 (L)	3.00	28.40	13.26	60.00	50.00	31.60	36.74
Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB). 2. Margin (dB) = Limit - Corrected Reading							