FCC CFR47 PART 15 SUBPART C
CERTIFICATION TEST REPORT

FOR

HOTEL CARD LOCK

MODEL NUMBER: ALFH

FCC ID: VBU-ALFH

REPORT NUMBER: 07J11068-1

ISSUE DATE: JUNE 07, 2007

Prepared for
MIWA LOCK CO., LTD
3-1-12, SHIBA, MINATO-KU
TOKYO 105-8510, JAPAN

Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	06/07/07	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	MIWA LOCK CO., LTD 3-1-12, SHIBA, MINATO-KU TOKYO 105-8510, JAPAN
EUT DESCRIPTION:	HOTEL CARD LOCK
MODEL:	ALFH
SERIAL NUMBER:	01963
DATE TESTED:	MAY 18-19 and MAY30-31, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By: Tested By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

DOUG ANDERSON
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Radiated Emission, Above 2000 MHz	+/- 4.3 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT is a low power transmitter for hotel card lock and its fundamental frequency is 13.56MHz.

GENERAL INFORMATION

CHASSIS/ ENCLOSURE MATERIAL	METAL
POWER REQUIREMENTS	3.0VDC
POWERLINE FILTER MANUFACTURER AND MODEL	N/A
LIST OF ALL OSCILLATOR FREQUENCIES GREATER THAN OR EQUAL TO 9 kHz	13.56MHz, 22.1184MHz

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral antenna.

5.3. SOFTWARE AND FIRMWARE

EUT turn on to transmit.

5.4. TEST CONFIGURATION

The following configuration was investigated during testing:

EUT Configuration	Description
Typical Configuration	EUT at Normal operating position

5.5. MODE(S) OF OPERATION

Mode	Description
Normal Mode	Transmit Continuously

5.6. MODIFICATIONS

No modifications were made during testing.

5.7. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT

No support equipment was used for the operation of the EUT.

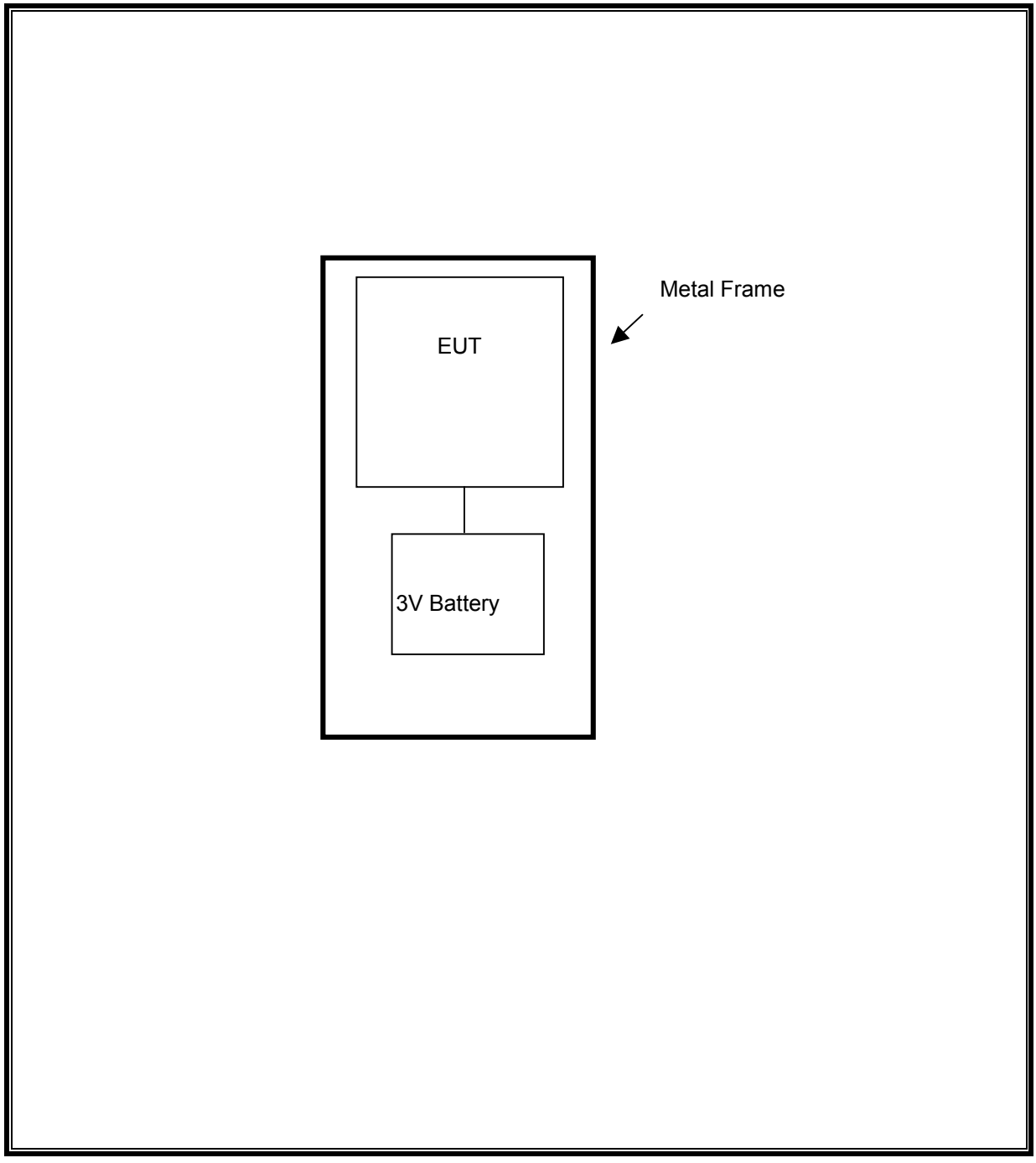
I/O CABLES

N/A

TEST SETUP

EUT is a stand-alone unit and is continuously transmitting when the unit is powered.

TEST SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer 9KHz ~ 26.5	Agilent / HP	E4407B	MY41444592	10/6/07
Antenna, Loop 9 kHz ~ 30 MHz	EMCO	6502	9202-2722	10/24/08
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	8/13/07
Antenna, Loop 9 kHz ~ 30 MHz	EMCO	6502	9202-2722	10/24/08
Spectrum Analyzer 9KHz ~ 26.5	Agilent / HP	E4407B	MY41444592	10/6/07
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	1/20/08
Quasi-Peak Adaptor	Agilent / HP	85650A	3145A01654	1/21/08
SA RF Section, 1.5 GHz	Agilent / HP	85680B	2814A04227	1/7/08
SA Display Section 2	Agilent / HP	85662A	2816A16696	4/7/08

7. LIMITS AND RESULTS

7.1. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

No non-compliance noted:

99% Bandwidth

Frequency (MHz)	99% Bandwidth (KHz)
13.56	11.8754

99% BANDWIDTH

7.2. RADIATED EMISSIONS

7.2.1. OPERATION WITHIN THE BAND 13.110 – 14.010 MHz

TEST PROCEDURE

ANSI C63.4

LIMIT

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.
(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209.

TRANSMITTER SPURIOUS EMISSIONS BELOW 30MHz

FCC Part 15, Subpart B & C **10 Meter Distance Measurement At Open Field**

Company: MIWA LOCK CO., LTD
Project #: 07J11068
EUT Description: Low Power Transmitter Wireless Hotel Card Lock, 13.56MHz
Model #: ALFH
Tester: Chin Pang
Date: MAY 31, 2007

Frequency (MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On:												
13.56	35			10.56	-19.08	26.47		84.00		-57.5		10m distance
27.12	30			9.046	-19.08	19.96		29.54		-9.6		10m distance
Loop Antenna Face Off:												
13.56	32			10.56	-19.08	23.47		84.00		-60.5		10m distance
27.12	27.6			9.046	-19.08	17.56		29.54		-12.0		10m distance

Rev. 5.1.6

* No more emissions were found up to 30MHz

Note: The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 10000Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector.

P.K. = Peak
Q.P. = Quasi Peak Readings
A.F. = Antenna factor

7.2.2. TRANSMITTER RADIATED SPURIOUS EMISSIONS

TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 13.56 MHz, therefore the frequency range was investigated from 9 kHz to 1000 MHz.

LIMIT

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

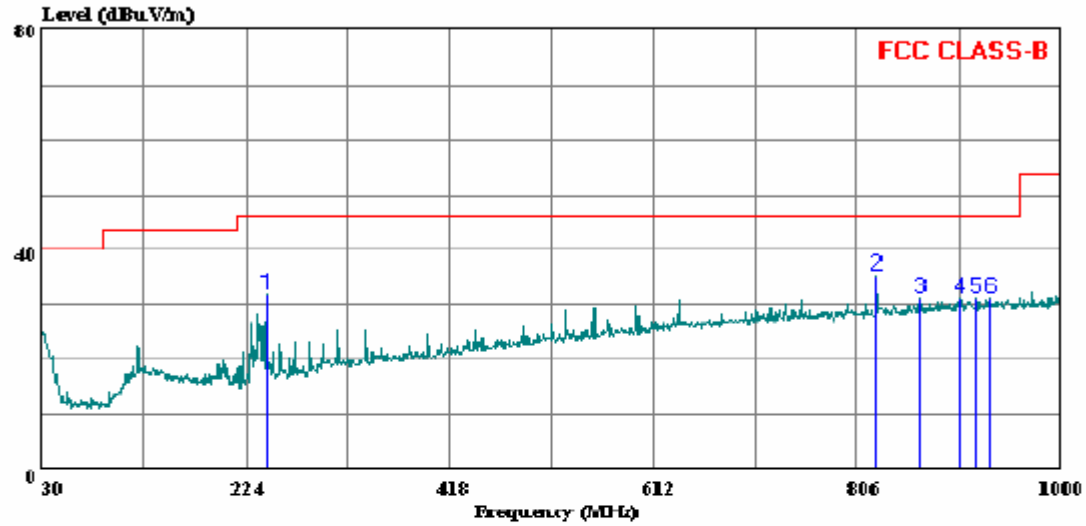
RESULTS

No non-compliance noted:

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 14 File#: 07J11068emi.EMI Date: 05-30-2007 Time: 15:34:23



Trace: 13 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Tom Chen
Project #: : 07J11068
Company: : MIWA LOCK CO., LTD
Configuration:: EUT Only
Mode : : TX
Target: : FCC Class B
: With Metal Plate

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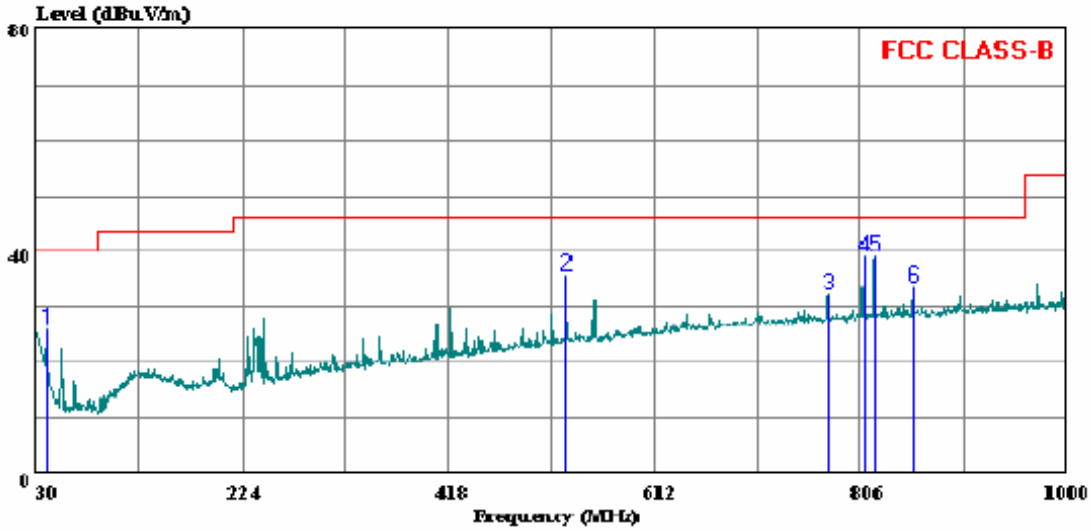
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	243.400	46.10	-14.40	31.70	46.00	-14.30	Peak
2	824.430	37.30	-1.86	35.44	46.00	-10.56	Peak
3	865.170	32.40	-1.39	31.01	46.00	-14.99	Peak
4	903.000	32.20	-1.02	31.18	46.00	-14.82	Peak
5	918.520	32.00	-0.99	31.01	46.00	-14.99	Peak
6	933.070	31.90	-0.83	31.07	46.00	-14.93	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 16 File#: 07J11068emi.EMI Date: 05-30-2007 Time: 16:26:56



Trace: 15 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Tom Chen
Project #: : 07J11068
Company: : MIWA LOCK CO., LTD
Configuration:: EUT Only
Mode : : TX
Target: : FCC Class B
: With Metal PLATE

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	39.700	38.20	-12.19	26.01	40.00	-13.99	Peak
2	528.580	42.30	-6.80	35.50	46.00	-10.50	Peak
3	774.960	34.50	-2.40	32.10	46.00	-13.90	Peak
4	808.910	41.00	-2.01	38.99	46.00	-7.01	Peak
5	819.580	40.90	-1.92	38.98	46.00	-7.02	Peak
6	854.500	35.20	-1.55	33.65	46.00	-12.35	Peak

7.3. FREQUENCY STABILITY

LIMIT

15.225 (e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.3.1 and 2.3.2

RESULTS

No non-compliance noted.

Reference Frequency: EUT Channel 13.56MHz @ 20*C Limit: ± 100 ppm = 135.603 KHz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.00	50	13.55993	0.296	± 100
3.00	40	13.56031	0.016	± 100
3.00	30	13.56035	-0.019	± 100
3.00	***20***	***13.56033***	***0.000***	***± 100***
3.00	10	13.56041	-0.061	± 100
3.00	0	13.56024	0.062	± 100
3.00	-10	13.56031	0.011	± 100
3.00	-20	13.56032	0.009	± 100
2.55	25	13.56032	0.009	± 100
3.45	25	13.56038	-0.039	± 100

8. SETUP PHOTOS

RADIATED EMISSION (30-1000 MHz)

RADIATED EMISSIONS (FRONT)

RADIATED EMISSIONS (BACK)

RADIATED EMISSIONS (0.009-30 MHz)

RADIATED EMISSIONS (Below 30 MHz)

RADIATED EMISSIONS (0.009-30 MHz)

RADIATED EMISSIONS (Below 30 MHz)

TEMPERATURE CHAMBER

END OF REPORT