Relay2, Inc.

Wireless Router

Main Model: R2-CAP-ND-900N
Serial Model: N/A

November 13, 2013

Report No.: 13070456-FCC-H2

(This report supersedes NONE)

Modifications made to the product : None

This Test Report is Issued Under the Authority of:

Herith shi	Alex Liu	
Herith Shi **Compliance Engineer**	**Alex Liu** **Technical Manager**	

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Test result presented in this test report is applicable to the representative sample only.

EMC Test Report
To: FCC 2.1091

SIEMIC, INC.
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Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management through out a project. Our extensive experience with China, Asia Pacific, North America, European, and international compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

SIEMIC (Shenzhen-China) Laboratories Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC , RF/Wireless , Telecom
Canada	EMC, RF/Wireless , Telecom
Taiwan	EMC, RF, Telecom , Safety
Hong Kong	RF/Wireless ,Telecom
Australia	EMC, RF, Telecom , Safety
Korea	EMI, EMS, RF , Telecom, Safety
Japan	EMI, RF/Wireless, Telecom
Singapore	EMC , RF , Telecom
Europe	EMC, RF, Telecom , Safety

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1 EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programmer was to demonstrate compliance of the Relay2, Inc., Wireless Router and Model: R2-CAP-ND-900N against the current Stipulated Standards. The Wireless Router has demonstrated compliance with the FCC 2.1091.

EUT Information

EUT Description	:	**Wireless Router**
Main Model	:	**R2-CAP-ND-900N**
Serial Model		**N/A**
Antenna Gain	:	**WIFI 2.4GHz: 3dBi** **WIFI 5GHz: 5dBi**
Input Power	:	**Adapter:** **Model:FSP025-1AD207A** **Input: AC 100-240V 50/60Hz 0.7A** **Output: DC 48V 0.52A**
Classification Per Stipulated Test Standard	:	**Class B Emission Product Per FCC 2.1091**

2 TECHNICAL DETAILS

Purpose	**Compliance testing of Wireless Router with stipulated standards**
Applicant / Client	**Relay2, Inc. 1525 McCarthy Blvd., Suite 209, Milpitas, CA 95035, USA**
Manufacturer	**N/A**
Laboratory performing the tests	**SIEMIC (Shenzhen-China) Laboratories Zone A, Floor 1, Building 2, Wan Ye Long Technology Park, South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-0755-2601 4629 / 2601 4953 Fax: +86-0755-2601 4953-810 Email: China@siemic.com.cn**
Test report reference number	**13070456-FCC-H2**
Date EUT received	**October 10, 2013**
Standard applied	**FCC 2.1091**
Dates of test (from – to)	**October 10 to November 12, 2013**
No of Units	**#1**
Equipment Category	**JBP**
Trade Name	**N/A**
RF Operating Frequency (ies)	**WIFI(802.11a/b/g/n20): 2412-2462 MHz; 5180-5240 MHz; 5745-5825MHz WIFI (802.11n40): 2422-2452 MHz; 5190-5230 MHz; 5755-5795 MHz**
Number of Channels	**WIFI 2.4G(802.11a/b/g/n-20): 11CH WIFI 5.18-5.24G(802.11a/ n-20): 8CH WIFI 5.745-5.825G(802.11a/ n-20): 5CH WIFI 2.4G(n-40): 7CH WIFI 5.19-5.23G(n-40):2CH WIFI 5.755-5.795G(n-40): 2CH**
Modulation	**WIFI(802.11a/b/g/n): DSSS/OFDM**
FCC ID	**2AAA9-R2CAPND900N**

3 FCC §2.1091 - MaximuM Permissible exposure (MPE)

3.1 Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

3.2 Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.4GHz
802.11n40
Maximum peak output power at antenna input terminal: 26.77 (dBm)
Maximum peak output power at antenna input terminal: 475.31 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2422 (MHz)
Antenna Gain (typical): 3 (dBi)

Antenna Gain (typical): 1.995(numeric)
The worst case is power density at predication frequency at 20 cm: 0.189 (mW/cm^2)

MPE limit for general population exposure at prediction frequency: 1 (mW/cm^2)

0.189 (mW/cm^2) <1 (mW/cm^2)

5GHz
802.11n40

Maximum peak output power at antenna input terminal: 27.34 (dBm)
Maximum peak output power at antenna input terminal: 541.94 (mW)

Prediction distance: >20 (cm)
Predication frequency: 5825(MHz)
Antenna Gain (typical): 5 (dBi)

Antenna Gain (typical): 3.162 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.341 (mW/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mW/cm^2)

0.341(mW/cm^2) < 1 (mW/cm^2)

2.4GHz and 5GHz total/sum MPE
The worst case is power density at predication frequency: 2422 MHz at 20 cm: 0.189 (mW/cm^2)
The worst case is power density at predication frequency 5825 MHz at 20 cm: 0.341 (mW/cm^2)

The worst case is 2.4GHz and 5GHz total/sum=0.341 (mW/cm^2) + 0.189 (mW/cm^2) =0.53 (mW/cm^2)

MPE limit for general population exposure at prediction frequency: 1 (mW/cm^2)

0.53(mW/cm^2) < 1 (mW/cm^2)

Result: Pass