

RF EXPOSURE REPORT



Report No.: 15070127-FCC-H2

Supersede Report No.: N/A

| | | |
|--|--|-------------------------------------|
| Applicant | PING COMMUNICATION AS | |
| Product Name | FIBER GATEWAY (Router) | |
| Model No. | R3681-W1 | |
| Serial No. | R3601-W1, R3621-W1, R3641-W1 | |
| Test Standard | FCC 2.1091 | |
| Test Date | January 29, 2015 | |
| Issue Date | February 27, 2015 | |
| Test Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | |
| Equipment complied with the specification | | <input checked="" type="checkbox"/> |
| Equipment did not comply with the specification | | <input type="checkbox"/> |
| Dustin Wang | Alex Liu | |
| Dustin Wang Test Engineer | Alex Liu Checked By | |
| This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only | | |

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories 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 throughout 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.

Accreditations for Conformity Assessment

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

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1. Report Revision History

| Report No. | Report Version | Description | Issue Date |
|-----------------|----------------|-------------|-------------------|
| 15070127-FCC-H2 | NONE | Original | February 27, 2015 |
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| | | | |

2. Customer information

| | |
|------------------|--------------------------------------|
| Applicant Name | PING COMMUNICATION AS |
| Applicant Add | Postboks 160, 2001 Lillestrom Norway |
| Manufacturer | PING COMMUNICATION AS |
| Manufacturer Add | Postboks 160, 2001 Lillestrom Norway |

3. Test site information

| | |
|----------------------|--|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES |
| Lab Address | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108 |
| FCC Test Site No. | 718246 |
| IC Test Site No. | 4842E-1 |
| Test Software | Radiated Emission Program-To Shenzhen v2.0 |

4. Equipment under Test (EUT) Information

Description of EUT: FIBER GATEWAY (Router)

Main Model: R3681-W1

Serial Model: R3601-W1, R3621-W1, R3641-W1

Date EUT received: January 05, 2015

Test Date(s): January 29, 2015

Antenna Gain: WIFI: 3 dBi

Type of Modulation: 802.11b/g/n: DSSS, OFDM

RF Operating Frequency (ies):
 WIFI:802.11b/g/n(20M): 2412-2462 MHz
 WIFI:802.11n(40M): 2422-2452 MHz

Number of Channels:
 WIFI :802.11b/g/n(20M): 11CH
 WIFI :802.11n(40M): 7CH

Port: USB Port, WAN Port, LAN Port, RJ11 Port, SFP Port

R3681-W1, R3641-W1 Powered by adaptor;
 Model:GP304U-120-200;
 Input:100-240V~1.0 A 50/60Hz

Input Power:
 R3621-W1, R3601-W1 Powered by adaptor;
 Model:G0616U-120-100;
 Input:100-240V~0.5 A 50/60Hz
 Output:12.0V DC1.0A

Trade Name : PINGCOM

FCC ID: 2ADH4R36X1

5. FCC §2.1091 - Maximum Permissible exposure (MPE)

6.1 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

6.2 Test Result

| Test mode | CH | Freq (MHz) | Antenna 1 Power (dBm) | Antenna 1 Tune Up Power | Antenna 2 Power (dBm) | Antenna 2 Tune Up Power |
|---------------|------|------------|-----------------------|-------------------------|-----------------------|-------------------------|
| 802.11b | Low | 2412 | 13.44 | 13.5±1 | 12.88 | 13.5±1 |
| | Mid | 2437 | 16.16 | 16.5±1 | 14.25 | 13.5±1 |
| | High | 2462 | 16.76 | 16.5±1 | 13.15 | 13.5±1 |
| 802.11g | Low | 2412 | 7.26 | 7.5±1 | 8.20 | 7.5±1 |
| | Mid | 2437 | 10.39 | 10.5±1 | 8.38 | 7.5±1 |
| | High | 2462 | 9.95 | 10.5±1 | 7.41 | 7.5±1 |
| 802.11n (20M) | Low | 2412 | 7.00 | 7.5±1 | 7.59 | 7.5±1 |
| | Mid | 2437 | 10.26 | 10.5±1 | 9.76 | 10.5±1 |
| | High | 2462 | 10.15 | 10.5±1 | 7.38 | 7.5±1 |
| 802.11n (40M) | Low | 2422 | 8.34 | 7.5±1 | 4.43 | 4.5±1 |
| | Mid | 2437 | 7.52 | 7.5±1 | 6.99 | 7.5±1 |
| | High | 2452 | 6.84 | 7.5±1 | 6.82 | 7.5±1 |

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)

For the antenna manufacturer provide only used limited to ERP/EIRP or radiated spurious emission test. The MPE evaluation as below:

| Antenna 1 Max. Tune Up (dBm) | Antenna 1 Max. Tune Up (mW) | MPE (mW/cm ²) | Antenna 2 Max. Tune Up (dBm) | Antenna 2 Max. Tune Up (mW) | MPE (mW/cm ²) | Limit |
|------------------------------------|-----------------------------------|------------------------------|------------------------------------|-----------------------------------|------------------------------|-------|
| 17.5 | 56.23 | 0.022 | 14.5 | 28.18 | 0.011 | 1.0 |

Antenna Gain (typical): 3 (dBi), 1.995 (numeric)

Prediction distance: >20 (cm)

Note: The total MPE is $0.022+0.011=0.033$ mW/cm²

Result: Pass