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	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

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

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

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

This page has been left blank intentionally.

CONTENTS

1. REPORT REVISION HISTORY 5

2. CUSTOMER INFORMATION 5

3. TEST SITE INFORMATION 5

4. EQUIPMENT UNDER TEST (EUT) INFORMATION 6

5. FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE) 7

6.1 APPLICABLE STANDARD 7

6.2 TEST RESULT 8

1. Report Revision History

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

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
Input Power:	R3681-W1, R3641-W1 Powered by adaptor; Model:GP304U-120-200; Input:100-240V~1.0 A 50/60Hz Output:12.0V DC2.0A 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/cm^2)

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/cm^2

Result: Pass