

## RF Exposure Report

**Report No.:** SA160322E08

**FCC ID:** 2ABTEG2100

**Test Model:** Fios-G2100

**Received Date:** Mar. 22, 2016

**Test Date:** June 08 to 24, 2016

**Issued Date:** Aug. 16, 2016

**Applicant:** Verizon Online LLC

**Address:** 1300 I Street NW, Room 400W, Washington, District of Columbia, 20005  
United State

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.

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### Release Control Record

Issue No.	Description	Date Issued
SA160322E08	Original release.	Aug. 16, 2016

## 1 Certificate of Conformity

**Product:** Fios-G2100

**Brand:** Verizon

**Test Model:** Fios-G2100

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Verizon Online LLC

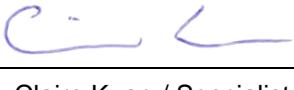
**Test Date:** June 08 to 24, 2016

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :**  \_\_\_\_\_, **Date:** Aug. 16, 2016

Claire Kuan / Specialist

**Approved by :**  \_\_\_\_\_, **Date:** Aug. 16, 2016

May Chen / Manager

## 2 RF Exposure

### 2.1 Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 24cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

WLAN						
5GHz						
Antenna No.	Transmitter Circuit	Antenna Gain(dBi) Including cable loss	Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain (0)	4.37	5150~5250	PCB	i-pex(MHF)	40
		4.92	5250~5350			
		4.23	5470~5725			
		4.23	5725~5850			
2	Chain (1)	4.13	5150~5250	PCB	i-pex(MHF)	40
		4.06	5250~5350			
		4.03	5470~5725			
		4.03	5725~5850			
3	Chain (2)	3.01	5150~5250	PCB	i-pex(MHF)	42
		3.72	5250~5350			
		4.79	5470~5725			
		4.71	5725~5850			
4	Chain (3)	3.87	5150~5250	PCB	i-pex(MHF)	135
		4.26	5250~5350			
		4.61	5470~5725			
		4.3	5725~5850			
2.4GHz						
Antenna No.	Transmitter Circuit	Antenna Gain(dBi) Including cable loss	Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	Cable Length (mm)
5	Chain (0)	3.9	2400~2483.5	PCB	i-pex(MHF)	55
6	Chain (1)	5.1				35
7	Chain (2)	3.95				70
8	Chain (3)	3.51				130
DECT						
Antenna No.	Antenna Gain(dBi)		Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	
9	5.46		1920~1930	Embedded	NA	
10	5.46		1920~1930	Embedded	NA	
Z-wave						
Antenna No.	Antenna Gain(dBi)		Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	
11	1.02		908~916	On Board Printed	NA	
Zigbee						
Antenna No.	Antenna Gain(dBi)		Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	
12	4.23		2400~2483.5	On Board Printed	NA	

Note 1. For WLAN 2.4GHz will fix transmission on Chain (0), Chain (1) and Chain (2).

## 2.5 Calculation Result Of Maximum Conducted Power

### WLAN

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	985.723	5.85	24	0.52375	1
5180-5240	813.01	4.61	24	0.32469	1
5745-5825	675.244	4.71	24	0.26320	1

NOTE:

2.4GHz:

The directional gain is 5.85dBi < 6dBi, so the power limit shall not be reduced.

5GHz:

For 5180-5240MHz: The directional gain is 4.61dBi < 6dBi, so the power limit shall not be reduced.

For 5745-5825MHz: The directional gain is 4.71dBi < 6dBi, so the power limit shall not be reduced.

### Zigbee

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2405-2475	6.776	4.23	24	0.00248	1

### Z-Wave

Frequency Band (MHz)	Field Strength of Fundamental (dBuV/m) @3m	Pout EIRP (dBm)	Pout EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
908.4	93.9	-1.33	0.736	24	0.0001	0.6056

Note:

1. Limit of Electric field=F/1500

2. Pout EIRP (dBm) = Field Strength of Fundamental (dBuV/m) @3m – 95.23 (dB)

### DECT

Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
80.91	5.46	24	0.03930	1

### Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz + Zigbee + Z-Wave + DECT = 0.52375 / 1 + 0.32469 / 1 + 0.00248 / 1 + 0.0001 / 0.6056 + 0.03930 = 0.89039

Therefore the maximum calculations of above situations are less than the “1” limit.

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