

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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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits For Maximum Permissible Exposure (MPE)	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Antenna Gain	6
2.5 Calculation Result Of Maximum Conducted Power	7

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 ²)	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

$$Pd = (P_{out} * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

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 ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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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