RF Exposure Report

Report No.:	SA170712E09
FCC ID:	2AAAS-NM01
Test Model:	NM01
Received Date:	July 12, 2017
Test Date:	July 29, 2017
Issued Date:	Aug. 15, 2017
Applicant:	Vivint, Inc.
Address:	4931 North 300 West Provo, Utah 84604 United States
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
SA170712E09	Original release.	Aug. 15, 2017

1 Certificate of Conformity

Product:	Vivint 2.4GHz/5GHz WiFi Module
Brand:	Vivint
Test Model:	NM01
Sample Status:	ENGINEERING SAMPLE
Applicant:	Vivint, Inc.
Test Date:	July 29, 2017
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 : Cindy Hsin , **Date:** Aug. 15, 2017

Cindy Hsin / Specialist

Approved by : , **Date:** Aug. 15, 2017

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				
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

2.2 MPE Calculation Formula

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

where

Pd = power density in mW/cm^2

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 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

No.	PCB Chain No	Brand	Model	Antenna Gain(dBi)	Frequency range	Antenna Type	Connector type	Cable Length (mm)	Cable Loss (dB)	excluding cable loss Antenna Gain(dBi)
1	Chain 0	NA	TE 2108517-1	2.5	2.4~2.4835GHz	PIFA	I-pex	60	0.5	3
				2	5.15~5.85GHz				1	
2	Chain 1	NA	TE 2108517-1	2	2.4~2.4835GHz	PIFA	I-pex	230	1	3
				1.5	5.15~5.85GHz				1.5	

2.5 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	553.367	5.26	20	0.36961	1
5180-5240	99.054	4.76	20	0.05897	1
5260-5320	102.513	4.76	20	0.06103	1
5500-5700	75.778	4.76	20	0.04511	1
5745-5825	74.479	4.76	20	0.04434	1

NOTE:
2.4GHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.26dBi
5 GHz : Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 4.76dBi

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 = 0.36961 / 1 + 0.06103 / 1 = 0.43064

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

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