RF Exposure Report

Report No.: SA140808E04X

FCC ID: 2AN9V-DVTRF001

Test Model: DVTRF001

Received Date: Aug. 08, 2014

Test Date: May 05 to 13, 2015; Nov. 28 to Dec. 11, 2017

Issued Date: Mar. 28, 2018

Applicant: Devialet

Address: 10 Place Vendome 75001 Paris France

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.

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

FCC Registration / Designation Number: 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA140808E04X	Original release.	Mar. 28, 2018

1   Certificate of Conformity

Product: WCBN3507A-D6

Brand: Devialet

Test Model: DVTRF001

Sample Status: R&D SAMPLE

Applicant: Devialet

Test Date: May 05 to 13, 2015; Nov. 28 to Dec. 11, 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.
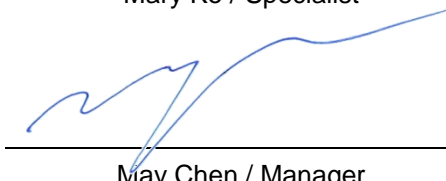
Prepared by : _Mary Ko_ , **Date:** Mar. 28, 2018

Mary Ko / Specialist

Approved by : _(signature)_ , **Date:** Mar. 28, 2018

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 antenna gain was declared by client; please refer to the following table:

Antenna set 1									
Transmitter Circuit	Brand	Model	Antenna Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dB)	5G Cable Loss (dB)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band 1&2:1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band 1&2:1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300

Antenna set 2								
Transmitter Circuit	Brand	Model	Antenna Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	Cable Loss (dB)	Connector Type	Cable Length (mm)
Chain (0)	Tongda	T-543-8201044-A (Ant 1)	PIFA	3.572	Band 1&2: 3.002 Band 3: 4.546 Band 4: 4.416	NA	IPEX	77
Chain (1)	Tongda	T-543-8201044-A (Ant 2)	PIFA	3.325	Band 1&2: 2.942 Band 3: 4.622 Band 4: 4.586	NA	IPEX	61

Antenna set 3							
Transmitter Circuit	Brand	Model	Antenna Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	Cable Loss (dB)	Connector Type
Chain (0)	ethertronics	M830520	chip	1.1	3.2	NA	IPEX
Chain (1)	ethertronics	M830520	chip	1.1	3.2	NA	IPEX

Antenna set 4							
Transmitter Circuit	Brand	Model	Antenna Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	Cable Loss (dB)	Connector Type
Chain (0)	ethertronics	1002298	PIFA	3.6	5.1	NA	IPEX
Chain (1)	ethertronics	1002298	PIFA	3.6	5.1	NA	IPEX

Note: 1. Above antenna gains of antenna are Total (H+V).

2. All of antenna can be application for WLAN and Bluetooth.

2.5　Calculation Result

For WLAN:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	469.401	6.63	20	0.42981	1
5180-5240	77.033	8.11	20	0.09918	1
5260-5320	72.825	8.11	20	0.09376	1
5500-5720	74.001	8.11	20	0.09527	1
5745-5825	61.885	8.11	20	0.07967	1

NOTE:
2.4GHz: Directional gain = 3.62dBi + 10log(2) = 6.63dBi
5GHz: Directional gain = 5.10dBi + 10log(2) = 8.11dBi

For BT-EDR:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	14.488	3.62	20	0.00663	1

For BT-LE:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	1.95	3.62	20	0.00089	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 5GHz + Bluetooth = 0.09918 / 1 + 0.00663 / 1 = 0.10581

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

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