

## RF Exposure Report

**Report No.:** SA171031D16C

**FCC ID:** 2AN9V-DVTRF001

**Test Model:** DVTRF001

**Received Date:** June 21, 2019

**Test Date:** July 23 to 29, 2019

**Issued Date:** Aug. 13, 2019

**Applicant:** Devialet

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
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**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
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**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA171031D16C	Original release.	Aug. 13, 2019

## 1 Certificate of Conformity

**Product:** WCBN3507A-D6

**Brand:** Devialet

**Test Model:** DVTRF001

**Sample Status:** R&D SAMPLE

**Applicant:** Devialet

**Test Date:** July 23 to 29, 2019

**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 :** Phoenix Huang , **Date:** Aug. 13, 2019  
Phoenix Huang / Specialist

**Approved by :** May Chen , **Date:** Aug. 13, 2019  
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				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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<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 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

<b>Original</b>									
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	
<b>Newly</b>									
Antenna set 5									
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)	Devialet	DVT-BA-M-1311-P	Monopole G	3.4	5.8	0.8	1.5	IPEX	150
Chain (1)	Devialet	DVT-BA-PF-1408-P	IFA	5.2	3.3	0.8	1.5	IPEX	150
<b>Note:</b> 1. All of antenna can be application for WLAN and Bluetooth. 2. The Bluetooth technology will fix transmission on Chain (0)									

## 2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN (2.4GHz)	2437	469.401	7.36	20	0.50848	1
WLAN (U-NII-1)	5240	77.033	7.65	20	0.08921	1
WLAN (U-NII-2A)	5300	72.825	7.65	20	0.08434	1
WLAN (U-NII-2C)	5580	74.001	7.65	20	0.08570	1
WLAN (U-NII-3)	5785	61.885	7.65	20	0.07167	1
BT-EDR	2480	14.488	3.4	20	0.00631	1
BT-LE	2480	1.95	3.4	20	0.00085	1

Note:

2.4GHz: For newly antenna set, the directional gain =  $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 7.36 \text{ dBi}$

5GHz: For newly antenna set, the directional gain =  $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 7.65 \text{ dBi}$

### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 5GHz + Bluetooth =  $0.08921 / 1 + 0.00631 / 1 = 0.09552$

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

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