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Report On

RF Exposure Estimation of the Vertex Telecom, Inc. DB1016US
DamaiBox1.0+

COMMERCIAL-IN-CONFIDENCE

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RF Exposure Estimation of the
The Vertex Telecom, Inc.
DB1016US DamaiBox1.0+

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PREPARED FOR

Vertex Telecom, Inc.
980 Corporate Center Dr, Pomona, CA 91768

PREPARED BY

A handwritten signature in black ink, appearing to read "Zhao Guiying".

G Zhao
Engineer

APPROVED BY

A handwritten signature in black ink, appearing to read "Zhang Chengxin".

C Zhang
Manager

DATED

04 August 2015

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Part 1 and 2. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

A handwritten signature in black ink, appearing to read "Zhao Guiying".

G Zhao



RF Exposure Measurement

1 Introduction

This document was prepared to analyze the expected level of Radiofrequency Radiation Exposure caused by the radio transmission equipment DB1016US DamaiBox1.0+ belonging to The Vertex Telecom, Inc.

2 Limits and Guidelines on Maximum Permissible Exposure (MPE)

Based on Section FCC Part 1.1307(b) requirements for environmental impact of human exposure to radio-frequency (RF) radiation, according to the KBD447498 Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies, a device may be used in mobile exposure condition with no restrictions when output power is $\leq 60/f_{\text{(GHz)}}$ mW as specified in the following table:

Limits for Maximum Permissible Exposure

Exposure Category	Limit
General Population	$1.0\text{mW}/\text{cm}^2$ or $10\text{W}/\text{m}^2$

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

3 Calculation of Output Power threshold for DB1016US DamaiBox1.0+

Below method describes a theoretical approach to compare the output power of the DB1016US DamaiBox1.0+ based on a typical configuration mobile device.

In accordance with 47CFR FCC Part 2.1091, the product was defined as a mobile device.

3.1 Typical Configuration of the DB1016US DamaiBox1.0+

The DB1016US DamaiBox1.0+ supports frequency band of 2400MHz - 2483.5MHz. It supports DSSS and OFDM modulation.



3.2 Antennas and Technical Description of DB1016US DamaiBox1.0+

20MHz Bandwidth

Max. output power at antenna connector(dBm)	Modulation Type	CH Bottom (2412MHz)	CH Middle (2437MHz)	CH Top (2462MHz)
	DSSS	16.63	16.38	16.43
	OFDM	19.26	19.38	19.50
Transmitter frequency band	2400MHz - 2483.5MHz			
Number of antenna ports	1			
Antenna gain	5dBi			

40MHz Bandwidth

Max. output power at antenna connector(dBm)	Modulation Type	CH Bottom (2412MHz)	CH Middle (2437MHz)	CH Top (2462MHz)
	OFDM	15.16	15.12	15.41
Transmitter frequency band	2400MHz - 2483.5MHz			
Number of antenna ports	1			
Antenna gain	5dBi			

3.3 Calculation result

This WLAN device operate with distance $d \geq 20\text{cm}$,
 The maximum measured antenna conducted power, $P_{\text{max}}=19.50\text{dBm}$
 The antenna gain, $G=5\text{dBi}$,

So, the maximum EIRP power= $P+G=24.50\text{dBm}$, or 281.84mW
 The limit for Maximum Permissible Exposure (MPE) for transmitter at 2.4GHz is $1.0\text{mW}/\text{cm}^2$

The power density is related to EIRP with the equation:
 $S = \text{EIRP}/4\pi D^2$, which equal to $1=281.84\text{mW} / 4\pi D^2$, $\pi = 3.1416$, thus $D=4.74\text{cm}$

The minimum safe separation distance $D= 4.74\text{cm}$, which is below 20cm .