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MPE Test Report

FCC Per 47 CFR 2.1091(b)

Report Reference No.....:	**CTL120814802-WM**
Compiled by (position+printed name+signature)..:	File administrators Andy Zhang
Name of the organization performing the tests (position+printed name+signature)..:	Test Engineer Tracy Qi
Approved by (position+printed name+signature)..:	Manager Tracy Qi
Date of issue.....:	Sept. 15, 2012
Testing Laboratory Name.....:	**Shenzhen CTL Electromagnetic Technology Co., Ltd.**
Address.....:	Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China
Applicant's name.....:	**ValenceTech Limited**
Address.....:	Unit1, 20/F., APEC Plaza, 49 Hoi Yuen Road, Kwun Tong, Kowloon, HK
Test specification:	
Standard.....:	**FCC Per 47 CFR 2.1091(b)** **OET Bulletin 65 Supplement C[June 2001]**
TRF Originator.....:	Shenzhen CTL Electromagnetic Technology Co., Ltd.
Master TRF.....:	Dated 2011-01

Test item description..... :	Bluetooth Module
Trade Mark..... :	/
Model/Type reference.....:	iBT-03
Modulation……..:	FHSS
Power Supply……..:	DC 12.5V
Operating Frequency Range…..……:	From 2400 MHz to 2483.5 MHz
Result.....:	**Positive**

TEST REPORT

Test Report No. :	CTL120814802-WM	Sept. 15, 2012 Date of issue

Equipment under Test	:	Bluetooth Module
Model /Type	:	iBT-03
Listed Models	:	/
Applicant	:	ValenceTech Limited
Address	:	Unit1, 20/F., APEC Plaza, 49 Hoi Yuen Road, Kwun Tong, Kowloon, HK
Manufacture	:	ValenceTech Limited
Address	:	Unit1, 20/F., APEC Plaza, 49 Hoi Yuen Road, Kwun Tong, Kowloon, HK

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

1.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 5V from USB

1.3. Short description of the Equipment under Test (EUT)

The ValenceTech Limited's Model: iBT-03 or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

Name of EUT	Bluetooth Module
Model Number	iBT-03
FCC ID	ORP-IBT-03
Rated Output Power	0.000573 Watts(-2.42dBm)

1.4. Note

The EUT is is a 2.4G frequency band (2400-2483.5MHz) Bluetooth Module, The functions of the EUT listed as below:

	Test Standards	Reference Report
Radio	FCC Part 90	CTL120814802-WF
MPE	OET 65	CTL120814802-WM

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

2.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

2.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Bontek laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.30 dB	(1)
Transmitter power Radiated	2.20 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §RSS-102, Devices that have a radiating element normally operating at separation distances greater than 20 cm between the user and the device shall undergo an RF exposure evaluation. SAR evaluation may be performed in lieu of an RF exposure evaluation for devices operating below 6 GHz with a separation distance of greater than 20 cm between the user and the device.

According to §1.1310 and §2.1091 RF exposure is calculated.

OET Bulletin 65 Supplement C [June 2001]: Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	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

3.3. MPE Calculation Method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the center of radiation of the antenna

From the peak EUT RF output power, the minimum mobile separation distance, R=20 cm, as well as the maximum gain of the used antenna is -1.0 dBi, the RF power density can be obtained.

TEST RESULTS

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm^2)	Power Density At 20 cm (mW/cm^2)	Test Results
2480	20.00	-2.42	0.573	0.7943	1.0	0.000091	Compliance

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 (b) for the controlled RF Exposure.

.....End of Report.....