Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

RF Exposure evaluation

Report Reference No.....:	**GTS20191209008-1-13**
FCC ID. .....:	**2AVEDBL-M7668BU2**
Compiled by (position+printed name+signature) .:	File administrators Peter Xiao
Supervised by (position+printed name+signature) .:	Test Engineer Moon Tan
Approved by (position+printed name+signature) .:	Manager Simon Hu
Date of issue .....:	Dec.19,2019

Representative Laboratory Name.:	**Shenzhen Global Test Service Co.,Ltd.**
Address .....:	No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name.....:	**Shenzhen Feng Ruixiang Intelligent Technology Co., Ltd.**
Address .....:	302, Building 6, no.4 Zhongxing road, Zhangge community, Fucheng street, Longhua district, Shenzhen, Guangdong, P.R. China

Test specification.....**:**	
Standard.....:	**47CFR §1.1310** **47CFR §2.1091** **KDB447498 v06**
TRF Originator.....:	Shenzhen Global Test Service Co.,Ltd.
Master TRF .....:	Dated 2014-12

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Test item description .....:	**EEE802.11a/b/g/n/ac2T2R WIFI+BT5.0ADIO Module**
Trade Mark.....:	N/A
Manufacturer .....:	Shenzhen Feng Ruixiang Intelligent Technology Co., Ltd.
Model/Type reference .....:	BL-M7668BU2
Listed Models .....:	N/A
Modulation Type.....:	IEEE 802.11a /802.11b/802.11g/802.11n GFSK,Π/4-DQPSK,8DPSK
Operation Frequency.....:	From 2412MHz to 2462MHz, 5180MHz to 5240MHz, 5745MHz to 5825MHz, 2402 to 2480MHz
Hardware Version .....:	N/A
Software Version.....:	V1.0
Rating.....:	DC 3.3V
Result .....:	**PASS**

TEST REPORT

Test Report No. :	**GTS20191209008-1-13**	Dec.19,2019 Date of issue

Equipment under Test	:	EEE802.11a/b/g/n/ac2T2R WIFI+BT5.0ADIO Module
Model /Type	:	BL-M7668BU2
Listed Models	:	N/A
Applicant	:	**Shenzhen Feng Ruixiang Intelligent Technology Co., Ltd.**
Address	:	302, Building 6, no.4 Zhongxing road, Zhangge community, Fucheng street, Longhua district, Shenzhen, Guangdong, P.R. China
Manufacturer	:	**Shenzhen Feng Ruixiang Intelligent Technology Co., Ltd.**
Address	:	302, Building 6, no.4 Zhongxing road, Zhangge community, Fucheng street, Longhua district, Shenzhen, Guangdong, P.R. China

Test Result:	**PASS**

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.

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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

●	/	Length (m) :	/
		Shield :	/
		Detachable :	/

1.2 Product Description

Product Name	EEE802.11a/b/g/n/ac2T2R WIFI+BT5.0ADIO Module
Trade Mark	N/A
Model/Type reference	BL-M7668BU2
List Models	N/A
Model Declaration	N/A
Power supply:	DC 3.3V
Bluetooth	
Operation frequency	2402-2480MHz
Channel Number	79 channels for Bluetooth (DSS) 40 channels for Bluetooth (DTS)
Channel Spacing	1MHz for Bluetooth (DSS) 2MHz for Bluetooth (DTS)
Modulation Type	GFSK, π/4-DQPSK, 8DPSK for Bluetooth (DSS) GFSK for Bluetooth (DTS)
WIFI(2.4G Band)	
Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channel for 20MHz bandwidth(2412~2462MHz) 7 channels for 40MHz bandwidth(2422~2452MHz)
Modulation Type	802.11b: DSSS; 802.11g/n: OFDM
WIFI(5.2G Band)	
Frequency Range	5180MHz ~ 5240MHz
Channel Number	4 channels for 20MHz bandwidth(5180-5240MHz) 2 channels for 40MHz bandwidth(5190~5230MHz) 1 channels for 80MHz bandwidth(5210MHz)
Modulation Type	802.11a/n/ac: OFDM
WIFI (5.8G Band)	
Frequency Range	5745MHz ~ 5825MHz
Channel Number	5 channels for 20MHz bandwidth(5745-5825MHz) 2 channels for 40MHz bandwidth(5755~5795MHz) 1 channels for 80MHz bandwidth(5775MHz)
Modulation Type	802.11a/n/ac: OFDM
Antenna Description	Three same FPC Antenna, but WLAN support MIMO technology ANT0 used for WIFI TX/RX, 5.0dBi(Max.) for 2.4G Band and 5.0dBi(Max.) for 5G Band ANT1 used for WIFI TX/RX, 5.0dBi(Max.) for 2.4G Band and 5.0dBi(Max.) for 5G Band ANT2 used for Bluetooth, 5.0dBi(Max.)

2. TEST ENVIRONMENT

2.1 Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

2.2 Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

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 TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Global Test Service Co.,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 Shenzhen GTS laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 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 §1.1310 and §2.1091 RF exposure is calculated.
KDB447498 v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2 Requirement

Systems operating under the provisions of FCC 47 CFR 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.
In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.
In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3.3 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/cm^2)	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	($900/f^2$)*	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/cm^2)	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	($180/f^2$)*	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

3.4 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

As declared by the Applicant, the EUT transmits with the maximum soure-baed Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, r =20cm, as well as the gain of the used antenna is 1.06dBi for WLAN, and the power drift from Turn-up Procedure provide by manufacturer as following states, the RF power density can be obtained.

3.5 Antenna Information

BL-M7668BU2 can only use antennas certificated as follows provided by manufacturer;

Internal Identification	Antenna Identification in Internal photos	Antenna type and antenna number	Operate frequency band	Maximum antenna gain
Antenna 0	WLAN ANT0	External antenna	2.4 – 2.5 GHz 5.0 – 6.0 GHz	5.00dBi(Max.)
Antenna 1	WLAN ANT1	External antenna	2.4 – 2.5 GHz 5.0 – 6.0 GHz	5.00dBi(Max.)
Antenna 2	BT ANT2	External antenna	2.4 – 2.5 GHz	5.00dBi(Max.)

4. Conducted Power Results

Antenna 0:

2.4GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11b	01	2412	12.27
	06	2437	12.55
	11	2462	13.12
802.11g	01	2412	12.27
	06	2437	12.48
	11	2462	13.20
802.11n(HT20)	01	2412	10.53
	06	2437	10.17
	11	2462	10.22
802.11n(HT40)	03	2422	9.78
	06	2437	9.65
	09	2452	9.32

5.2GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	12.91
	40	5200	12.84
	48	5240	12.76
802.11n20	36	5180	12.83
	40	5200	12.63
	48	5240	13.10
802.11ac20	36	5180	11.51
	40	5200	12.09
	48	5240	11.48
802.11n40	38	5190	11.76
	46	5230	12.01
802.11ac40	38	5190	11.85
	46	5230	11.84
802.11ac80	42	5210	12.66

5.8GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	12.71
	157	5785	12.85
	165	5825	12.85
802.11n20	149	5745	12.83
	157	5785	12.55
	165	5825	12.36
802.11ac20	149	5745	11.25
	157	5785	11.23
	165	5825	11.89
802.11n40	151	5755	11.60
	159	5795	11.48
802.11ac40	151	5755	12.25
	159	5795	12.33
802.11ac80	155	5775	11.97

Antenna 1:

2.4GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11b	01	2412	12.56
	06	2437	12.18
	11	2462	13.26
802.11g	01	2412	12.63
	06	2437	12.08
	11	2462	12.36
802.11n(HT20)	01	2412	10.25
	06	2437	10.34
	11	2462	10.17
802.11n(HT40)	03	2422	9.36
	06	2437	9.52
	09	2452	9.41

5.2GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	36	5180	12.18
	40	5200	12.85
	48	5240	12.23
802.11n20	36	5180	12.83
	40	5200	12.81
	48	5240	12.83
802.11ac20	36	5180	11.94
	40	5200	11.47
	48	5240	11.85
802.11n40	38	5190	12.00
	46	5230	11.89
802.11ac40	38	5190	11.94
	46	5230	12.58
802.11ac80	42	5210	12.16

5.8GWLAN

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
802.11a	149	5745	12.24
	157	5785	12.87
	165	5825	12.41
802.11n20	149	5745	12.29
	157	5785	12.41
	165	5825	12.60
802.11ac20	149	5745	11.28
	157	5785	11.61
	165	5825	11.57
802.11n40	151	5755	12.10
	159	5795	11.31
802.11ac40	151	5755	12.44
	159	5795	12.25
802.11ac80	155	5775	12.69

Antenna 2:

Bluetooth

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
GFSK	0	2402	4.82
	39	2441	4.11
	78	2480	4.59
π/4DQPSK	0	2402	4.34
	39	2441	4.98
	78	2480	4.74
8DPSK	0	2402	4.56
	39	2440	4.01
	78	2480	4.80
GFSK(BT LE)	0	2402	4.18
	19	2440	4.42
	39	2480	3.75

5. Manufacturing Tolerance

Antenna 0:

2.4GWLAN

IEEE 802.11b (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11g (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0

5.2GWLAN

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	11.0	12.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	11.0	12.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	11.0	11.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	12.0	/	/
Tolerance ±(dB)	1.0	/	/

5.8GWLAN

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	11.0	11.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	12.0	12.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	12.0	/	/
Tolerance ±(dB)	1.0	/	/

Antenna 1:

2.4GWLAN

IEEE 802.11b (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11g (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	9.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0

5.2GWLAN

IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	12.0	11.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38	Channel 46	/
Target (dBm)	11.0	12.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 42	/	/
Target (dBm)	12.0	/	/
Tolerance ±(dB)	1.0	/	/

5.8GWLAN

IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	12.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	12.0	11.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151	Channel 159	/
Target (dBm)	12.0	12.0	/
Tolerance ±(dB)	1.0	1.0	/
IEEE 802.11ac VHT80 (Average)			
Channel	Channel 155	/	/
Target (dBm)	12.0	/	/
Tolerance ±(dB)	1.0	/	/

Antenna 2:

Bluetooth

GFSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	4.0	4.0	4.0
Tolerance ±(dB)	1.0	1.0	1.0
π/4DQPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	4.0	4.0	4.0
Tolerance ±(dB)	1.0	1.0	1.0
8DPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	4.0	4.0	4.0
Tolerance ±(dB)	1.0	1.0	1.0
GFSK BT LE (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	4.0	4.0	4.0
Tolerance ±(dB)	1.0	1.0	1.0

6. Measurement Results

6.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Antenna 0:

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11b	14.00	25.1189	5.00	3.1623	100%	0.0158	1.0000
802.11g	14.00	25.1189	5.00	3.1623	100%	0.0158	1.0000
802.11n(HT20)	11.00	12.5893	5.00	3.1623	100%	0.0079	1.0000
802.11n(HT40)	10.00	10.0000	5.00	3.1623	100%	0.0063	1.0000

5.2GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11a	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n20	14.00	25.1189	5.00	3.1623	100%	0.0158	1.0000
802.11ac20	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac40	12.00	15.8489	5.00	3.1623	100%	0.0100	1.0000
802.11ac80	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000

5.8GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11a	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n20	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac20	12.00	15.8489	5.00	3.1623	100%	0.0100	1.0000
802.11n40	12.00	15.8489	5.00	3.1623	100%	0.0100	1.0000
802.11ac40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac80	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000

Antenna 1:

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11b	14.00	25.1189	5.00	3.1623	100%	0.0158	1.0000
802.11g	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n(HT20)	11.00	12.5893	5.00	3.1623	100%	0.0079	1.0000
802.11n(HT40)	10.00	10.0000	5.00	3.1623	100%	0.0063	1.0000

5.2GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11a	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n20	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac20	12.00	15.8489	5.00	3.1623	100%	0.0100	1.0000
802.11n40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac80	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000

5.8GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
802.11a	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11n20	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac20	12.00	15.8489	5.00	3.1623	100%	0.0100	1.0000
802.11n40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac40	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000
802.11ac80	13.00	19.9526	5.00	3.1623	100%	0.0126	1.0000

Antenna 2 :

BT

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
GFSK	5.00	3.1623	5.00	3.1623	100%	0.0020	1.0000
π/4DQPSK	5.00	3.1623	5.00	3.1623	100%	0.0020	1.0000
8DPSK	5.00	3.1623	5.00	3.1623	100%	0.0020	1.0000
GFSK(BT LE)	5.00	3.1623	5.00	3.1623	100%	0.0020	1.0000

Remark:

1. Output power including tune-up tolerance;

2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

6.2 Simultaneous Transmission MPE

The sample support one Bluetooth & WLAN modular and one Bluetooth antenna,and two WLAN antennas, WLAN support MIMO, Need consider simultaneous transmission ;

The sample supports 2T2R MIMO technology for WLAN.
According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

∑ of MPE ratios ≤ 1.0

8.2.1 Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		Antenna 0 Antenna 1 Synchronization transmit
		Antenna 0	Antenna 1	
802.11b	2.4G WLAN	Yes	Yes	No
802.11g	2.4G WLAN	Yes	Yes	No
802.11n(HT20)	2.4G WLAN	Yes	Yes	Yes
802.11n(HT40)	2.4G WLAN	Yes	Yes	Yes

Modulation Type	Work Frequency Band	Transmit Antenna		Antenna 0 Antenna 1 Synchronization transmit
		Antenna 0	Antenna 1	
802.11a	UNII Band 1 / Band 3	Yes	Yes	No
802.11n20	UNII Band 1 / Band 3	Yes	Yes	Yes
802.11ac20	UNII Band 1 / Band 3	Yes	Yes	Yes
802.11n40	UNII Band 1 / Band 3	Yes	Yes	Yes
802.11ac40	UNII Band 1 / Band 3	Yes	Yes	Yes
802.11ac80	UNII Band 1 / Band 3	Yes	Yes	Yes

8.2.2 Summary simultaneous transmission results

Maximum Simultaneous transmission MPE Ratios for ***Antenna 0, Antenna 1 and Antenna 2***

Maximum MPE ratio Ant. 0	Maximum MPE ratio Ant. 1	Maximum MPE ratio Ant. 2	∑MPE ratios	Limit	Results
0.0158	0.0158	0.0020	0.0336	1.0	PASS

7. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

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