

# RF EXPOSURE EVALUATION REPORT

**Product Name:** WIFI+BT Module  
**Trade Mark:** GSD  
**Model No.:** WCT6LA2701  
**HVIN:** WCT6PA2201  
**Report Number:** 171227005RFC-5  
**Test Standards:** FCC 47 CFR Part 1 Subpart I  
RSS-102 Issue 5  
**FCC ID:** 2AC23-WCT6LA2701  
**IC:** 12290A-WCT6LA2701  
**Test Result:** PASS  
**Date of Issue:** February 2, 2018

Prepared for:

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## CONTENTS

<b>1. GENERAL INFORMATION</b>	<b>4</b>
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
1.4 OTHER INFORMATION	8
1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	9
1.6 DEVIATION FROM STANDARDS	9
1.7 ABNORMALITIES FROM STANDARD CONDITIONS	9
1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER	9
<b>2. EQUIPMENT LIST</b>	<b>9</b>
<b>3. MPE EVALUATION</b>	<b>10</b>
3.1 REFERENCE DOCUMENTS FOR EVALUATION	10
3.2 MPE COMPLIANCE REQUIREMENT	10
3.2.1 LIMITS	10
3.2.2 TEST PROCEDURE	11
3.3 MPE CALCULATION METHOD	12
3.3.1 FCC 47 CFR PART 1 SUBPART I	12
3.3.2 RSS-102 ISSUE 5	12
3.4 MPE CALCULATION RESULTS	12
3.4.1 FOR WLAN	12
3.4.2 FOR BT	17
3.4.3 SIMULTANEOUS MULTI-BAND TRANSMISSION MPE ANALYSIS	18
<b>APPENDIX 1 PHOTOGRAPHS OF TEST SETUP</b>	<b>19</b>
<b>APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS</b>	<b>19</b>

## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

<b>Applicant:</b>	Hui Zhou Gaoshengda Technology Co.,LTD
<b>Address of Applicant:</b>	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
<b>Manufacturer:</b>	Hui Zhou Gaoshengda Technology Co.,LTD
<b>Address of Manufacturer:</b>	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China

### 1.2 EUT INFORMATION

<b>Product Name:</b>	WIFI+BT Module		
<b>Model No.:</b>	WCT6LA2701		
<b>Add. Model No.:</b>	N/A		
<b>Trade Mark:</b>	GSD		
<b>DUT Stage:</b>	Identical Prototype		
<b>EUT Supports Function:</b>	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth: V3.0+EDR & V4.1 LE	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
5 725 MHz to 5 850 MHz		IEEE 802.11a/n/ac	

### 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BT_LE	
<b>Frequency Range:</b>	2400 MHz to 2483.5 MHz
<b>Bluetooth Version:</b>	Bluetooth V4.1 LE
<b>Type of Modulation:</b>	GFSK
<b>Number of Channels:</b>	40
<b>Channel Separation:</b>	2 MHz
<b>Antenna Type:</b>	PIFA Antenna
<b>Antenna Gain:</b>	2.02 dBi
<b>Maximum Peak Power:</b>	0.50 dBm
<b>Maximum EIRP:</b>	2.52 dBm

For BT_EDR	
<b>Frequency Range:</b>	2400 MHz to 2483.5 MHz
<b>Bluetooth Version:</b>	Bluetooth V3.0+EDR
<b>Modulation Technique:</b>	Frequency Hopping Spread Spectrum(FHSS)
<b>Type of Modulation:</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>Number of Channels:</b>	79
<b>Channel Separation:</b>	1 MHz
<b>Antenna Type:</b>	PIFA Antenna
<b>Antenna Gain:</b>	1.72 dBi
<b>Maximum Peak Power:</b>	8.07 dBm
<b>Maximum EIRP:</b>	10.09 dBm

For 2.4 GHz ISM Band of Wi-Fi		
<b>Frequency Range:</b>	2400 MHz to 2483.5 MHz	
<b>Support Standards:</b>	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20, IEEE 802.11n-HT40	
<b>Type of Modulation:</b>	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT40: OFDM(64-QAM, 16-QAM, QPSK, BPSK)	
<b>Data Rate:</b>	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS15 IEEE 802.11n-HT40: Up to MCS15	
<b>Number of Channels:</b>	IEEE 802.11b: 13 IEEE 802.11g: 13 IEEE 802.11n-HT20: 13 IEEE 802.11n-HT40: 9	
<b>Channel Separation:</b>	5 MHz	
<b>Antenna Type:</b>	Chain 0	PIFA Antenna
	Chain 1	PIFA Antenna
<b>Antenna Gain:</b>	Chain 0	2.02 dBi
	Chain 1	2.29 dBi
<b>Directional gain:</b>	5.17 dBi	
<b>Maximum Peak Power:</b>	SISO_ Chain 0	IEEE 802.11b: 19.92 dBm IEEE 802.11g: 22.97 dBm IEEE 802.11n-HT20: 18.52 dBm IEEE 802.11n-HT40: 18.59 dBm
	SISO_ Chain 1	IEEE 802.11b: 20.49 dBm IEEE 802.11g: 22.82 dBm IEEE 802.11n-HT20: 17.33 dBm IEEE 802.11n-HT40: 17.26 dBm
	MIMO_ Chain 0+1	IEEE 802.11n-HT20: 20.71 dBm IEEE 802.11n-HT40: 20.90 dBm
<b>Maximum EIRP:</b>	SISO_ Chain 0	IEEE 802.11b: 21.94 dBm IEEE 802.11g: 24.99 dBm IEEE 802.11n-HT20: 20.54 dBm IEEE 802.11n-HT40: 20.61 dBm
	SISO_ Chain 1	IEEE 802.11b: 22.78 dBm IEEE 802.11g: 25.11 dBm IEEE 802.11n-HT20: 19.62 dBm IEEE 802.11n-HT40: 19.55 dBm
	MIMO_ Chain 0+1	IEEE 802.11n-HT20: 22.84 dBm IEEE 802.11n-HT40: 23.03 dBm

For 5 GHz U-NII Bands of Wi-Fi		
<b>Frequency Range:</b>	5150 MHz to 5250 MHz	
	5250 MHz to 5350 MHz	
	5470 MHz to 5725 MHz	
	5 725 MHz to 5 850 MHz	
<b>Support Standards:</b>	IEEE 802.11a/n/ac	
<b>TPC Function:</b>	Not Support	
<b>DFS Operational mode:</b>	Slave without radar Interference detection function	
<b>Type of Modulation:</b>	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)	
	IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK)	
	IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)	
<b>Channel Spacing:</b>	IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz	
	IEEE 802.11n-HT40/ac-VHT40: 40 MHz	
	IEEE 802.11ac-VHT80/: 80 MHz	
<b>Data Rate:</b>	IEEE 802.11a: Up to 54 Mbps	
	IEEE 802.11n-HT20: Up to MCS15	
	IEEE 802.11n-HT40: Up to MCS15	
	IEEE 802.11ac-VHT20: Up to MCS8	
	IEEE 802.11ac-VHT40: Up to MCS9	
	IEEE 802.11ac-VHT80: Up to MCS9	
<b>Number of Channels:</b>	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80	
	5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80	
	5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20/ac-VHT20 5 for IEEE 802.11n-HT40/ac-VHT40 2 for IEEE 802.11ac-VHT80	
	5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80	
<b>Antenna Type:</b>	Chain 0	PIFA Antenna
	Chain 1	PIFA Antenna
<b>Antenna Gain:</b>	Chain 0	5150 MHz to 5850 MHz: 2.95 dBi
		5250 MHz to 5350 MHz: 3.26 dBi
		5470 MHz to 5725 MHz: 4.52 dBi
		5725 MHz to 5850 MHz: 4.56 dBi
	Chain 1	5150 MHz to 5850 MHz: 4.06 dBi
		5250 MHz to 5350 MHz: 4.06 dBi
		5470 MHz to 5725 MHz: 4.60 dBi
		5725 MHz to 5850 MHz: 4.32 dBi
<b>Directional gain:</b>	5150 MHz to 5850 MHz:	6.53 dBi
	5250 MHz to 5350 MHz:	6.68 dBi

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	5470 MHz to 5725 MHz:	7.57 dBi			
	5725 MHz to 5850 MHz:	7.45 dBi			
<b>Maximum conducted output power (dBm):</b>	<b>SISO_Chain 0</b>	<b>U-NII-1</b>	<b>U-NII-2A</b>	<b>U-NII-2C</b>	<b>U-NII-3</b>
	IEEE 802.11a:	14.70	15.80	16.08	14.78
	IEEE 802.11n-HT20:	11.20	11.66	11.94	11.37
	IEEE 802.11n-HT40:	11.06	11.56	12.00	10.84
	IEEE 802.11ac-VHT80:	9.82	10.38	10.31	8.95
	<b>SISO_Chain 1</b>	<b>U-NII-1</b>	<b>U-NII-2A</b>	<b>U-NII-2C</b>	<b>U-NII-3</b>
	IEEE 802.11a:	14.29	14.17	13.69	14.05
	IEEE 802.11n-HT20:	10.37	11.29	10.81	9.34
	IEEE 802.11n-HT40:	10.12	11.32	9.29	9.01
	IEEE 802.11ac-VHT80:	8.15	10.40	10.51	7.24
	<b>MIMO_Chain 0+1</b>	<b>U-NII-1</b>	<b>U-NII-2A</b>	<b>U-NII-2C</b>	<b>U-NII-3</b>
	IEEE 802.11n-HT20:	13.82	14.44	14.42	13.48
	IEEE 802.11n-HT40:	13.63	14.45	13.86	13.03
	IEEE 802.11ac-VHT80:	12.08	13.40	13.42	11.19
<b>Maximum EIRP (dBm):</b>	<b>U-NII-1</b>				
		<b>SISO_Chain 0</b>	<b>SISO_Chain 1</b>	<b>MIMO_Chain 0+1</b>	
	IEEE 802.11a:	17.65	18.35	N/A	
	IEEE 802.11n-HT20:	14.15	14.43	17.30	
	IEEE 802.11n-HT40:	14.01	14.18	17.11	
	IEEE 802.11ac-VHT80:	12.77	12.21	15.51	

### 1.4 OTHER INFORMATION

Test channels for BT_LE				
Type of Modulation	Tx/Rx Frequency	Test RF Channel Lists		
GFSK	2402 MHz to 2480 MHz	Lowest(L)	Middle(M)	Highest(H)
		Channel 0	Channel 19	Channel 39
		2402 MHz	2440 MHz	2480 MHz

Test channels for BT_EDR				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
GFSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Lowest(L)	Middle(M)	Highest(H)
		Channel 0	Channel 39	Channel 78
$\pi$ /4DQPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	2402 MHz	2441 MHz	2480 MHz
		Channel 0	Channel 39	Channel 78
8DPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	2402 MHz	2441 MHz	2480 MHz
		Channel 0	Channel 39	Channel 78

Test channels for 2.4 GHz ISM Band of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
IEEE 802.11b	2412 MHz to 2462 MHz	Lowest(L)	Middle(M)	Highest(H)
		Channel 1	Channel 6	Channel 11
IEEE 802.11g	2412 MHz to 2462 MHz	2412 MHz	2437 MHz	2462 MHz
		Channel 1	Channel 6	Channel 11
IEEE 802.11n-HT20	2412 MHz to 2462 MHz	2412 MHz	2437 MHz	2462 MHz
		Channel 1	Channel 6	Channel 11
IEEE 802.11n-HT40	2422 MHz to 2452 MHz	2422 MHz	2437 MHz	2452 MHz
		Channel 3	Channel 6	Channel 9

Test channels for 5 GHz U-NII Bands of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
IEEE 802.11a IEEE 802.11n-HT20 IEEE 802.11ac-VHT20	5150 MHz to 5250 MHz	Lowest(L)	Middle(M)	Highest(H)
		Channel 36	Channel 44	Channel 48
	5180 MHz	5220 MHz	5240 MHz	
	5250 MHz to 5350 MHz	Channel 52	Channel 60	Channel 64
		5260 MHz	5300 MHz	5320 MHz
	5470 MHz to 5725 MHz	Channel 100	Channel 116	Channel 140
		5500 MHz	5580 MHz	5700 MHz
	5725 MHz to 5850 MHz	Channel 149	Channel 157	Channel 165
5745 MHz		5785 MHz	5825 MHz	
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40	5150 MHz to 5250 MHz	Channel 38	--	Channel 46
		5190 MHz	--	5230 MHz
	5250 MHz to 5350 MHz	Channel 54	--	Channel 62
		5270 MHz	--	5310 MHz
	5470 MHz to 5725 MHz	Channel 102	Channel 110	Channel 134
		5510 MHz	5550 MHz	5670 MHz



	5725 MHz to 5850 MHz	Channel 151	--	Channel 159
		5755 MHz	--	5795 MHz
IEEE 802.11ac-VHT80	5150 MHz to 5250 MHz	--	Channel 42	--
		--	5210 MHz	--
	5250 MHz to 5350 MHz	--	Channel 58	--
		--	5290 MHz	--
	5470 MHz to 5725 MHz	Channel 106	--	--
		5530 MHz	--	--
	5725 MHz to 5850 MHz	--	Channel 155	--
		--	5775 MHz	--

## 1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

**FCC 47 CFR Part 1 Subpart I**  
**RSS-102 Issue 5**

All test items have been performed and recorded as per the above standards

## 1.6 DEVIATION FROM STANDARDS

None.

## 1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

## 1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

## 2. EQUIPMENT LIST

Please refer to the RF test report.

### 3. MPE EVALUATION

#### 3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
3	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

#### 3.2 MPE COMPLIANCE REQUIREMENT

##### 3.2.1 Limits

##### 3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

##### Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> or S (minutes)
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
1500-100000	/	/	5	6

##### Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

**Note:** f = frequency in MHz: \* = Plane-wave equivalents power density.

### 3.2.1.2 RSS-102 Issue 5

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

#### RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency range (MHz)	Electric Field (E) (V/m rms)	Magnetic Field (H) (A/m rms)	Power Density (S) (W/m <sup>2</sup> )	Reference Period H   <sup>2</sup> or S (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ <i>f</i> <sup>0.25</sup>	0.1540/ <i>f</i> <sup>0.25</sup>	8.944/ <i>f</i> <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> <sup>0.3417</sup>	0.008335 <i>f</i> <sup>0.3417</sup>	<b>0.02619</b> <i>f</i> <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> <i>f</i>	616000/ <i>f</i> <sup>1.2</sup>

Note: *f* is frequency in MHz.  
 \*Based on nerve stimulation (NS).  
 \*\* Based on specific absorption rate (SAR).

#### RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency range (MHz)	Electric Field (E) (V/m rms)	Magnetic Field (H) (A/m rms)	Power Density (S) (W/m <sup>2</sup> )	Reference Period H   <sup>2</sup> or S (minutes)
0.003-10 <sup>23</sup>	170	180	-	Instantaneous*
1-10	-	1.6/ <i>f</i>	-	6**
1.29-10	193/ <i>f</i> <sup>0.5</sup>	-	-	6**
10-20	61.4	0.163	10	6
20-48	129.8/ <i>f</i> <sup>0.25</sup>	0.3444/ <i>f</i> <sup>0.25</sup>	44.72/ <i>f</i> <sup>0.5</sup>	6
48-100	49.33	0.1309	6.455	6
100-6000	15.60 <i>f</i> <sup>0.25</sup>	0.04138 <i>f</i> <sup>0.25</sup>	0.6455 <i>f</i> <sup>0.5</sup>	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	0.354 <i>f</i> <sup>0.5</sup>	9.40 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	3.33 x 10 <sup>-4</sup> <i>f</i>	616000/ <i>f</i> <sup>1.2</sup>

Note: *f* is frequency in MHz.  
 \*Based on nerve stimulation (NS).  
 \*\* Based on specific absorption rate (SAR).

### 3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3.3 MPE CALCULATION METHOD

#### 3.3.1 FCC 47 CFR Part 1 Subpart I

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

S = power density (in appropriate units, e.g., mw/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

#### 3.3.2 RSS-102 Issue 5

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

S = power density (in appropriate units, e.g., w/m<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., w)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., m)

### 3.4 MPE CALCULATION RESULTS

**Note:** For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

#### 3.4.1 For WLAN

For Wi-Fi function, operating at 2412MHz to 2462 MHz for IEEE802.11b/g/n and  
operating at 5150 MHz to 5250 MHz for IEEE802.11a/n/ac and  
operating at 5725 MHz to 5850 MHz for IEEE802.11a/n/ac.

##### 3.4.1.1 Antenna Type:

**Chain 0:** PIFA Antenna

**Chain 1:** PIFA Antenna

##### 3.4.1.2 Antenna Gain:

Chain 0:	Chain 1:
2412MHz to 2472 MHz: 2.02 dBi	2412MHz to 2472 MHz: 2.29 dBi
5150 MHz to 5250 MHz: 2.95 dBi	5150 MHz to 5250 MHz: 4.06 dBi
5250 MHz to 5350 MHz: 3.26 dBi	5250 MHz to 5350 MHz: 4.06 dBi
5470 MHz to 5725 MHz: 4.52 dBi	5470 MHz to 5725 MHz: 4.60 dBi
5725 MHz to 5850 MHz: 4.56 dBi	5725 MHz to 5850 MHz: 4.32 dBi

For MIMO mode (2Tx/2Rx), there are two transmission antennas. Both Chain 0 and Chain 1 used at the same time and antenna ports have uniform output powers. The Chain 0 and Chain 1 antenna ports can be used alone. The transmit signals are correlated with each other.

For 2.4 GHz WIFI & 5 GHz WIFI

$$Directional\ gain = 10\ log\ [(10^{G1}/20 + 10^{G2}/20 + \dots + 10^{GN}/20)^2 / NANT]\ dBi$$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

For SISO mode (1Tx/1Rx), there are two transmission antennas. Both Chain 0 and Chain 1 used at the same time and antenna ports have uniform output powers. The Chain 0 and Chain 1 antenna ports cannot be used alone

For 2.4 GHz WIFI & 5 GHz WIFI

The antenna gain = Chain 0 or Chain 1 = 1.72 dBi

**3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I**

**For SISO (1TX/1RX) Mode**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value	
	(MHz)	(dBm)		(dBi)	(dBm)	(mW)	(mW/cm <sup>2</sup> )		
SISO Chain 0	IEEE 802.11b IEEE 802.11g	2412-2462	17	2	2.02	21.02	126.4736	1	0.0252
	IEEE 802.11b IEEE 802.11g	2467-2472	12	2	2.02	16.02	39.9945	1	0.0080
	IEEE 802.11a	5180-5240	14	2	2.95	18.95	78.5236	1	0.0156
		5260-5320	15	2	3.26	20.26	106.1696	1	0.0211
		5500-5700	15	2	4.52	21.52	141.9058	1	0.0282
5745-5825		14	2	4.56	20.56	113.7627	1	0.0226	
SISO Chain 1	IEEE 802.11b IEEE 802.11g	2412-2462	17	2	2.02	21.02	126.4736	1	0.0252
	IEEE 802.11b IEEE 802.11g	2467-2472	12	2	2.02	16.02	39.9945	1	0.0080
	IEEE 802.11a	5180-5240	14	2	2.95	18.95	78.5236	1	0.0156
		5260-5320	15	2	3.26	20.26	106.1696	1	0.0211
		5500-5700	15	2	4.52	21.52	141.9058	1	0.0282
5745-5825		14	2	4.56	20.56	113.7627	1	0.0226	

**For MIMO (2TX/2RX) Mode**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive Tolerance according manufacturer	Directional Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)							
IEEE 802.11n-HT20	2412-2462	11	2	5.17	18.17	65.6145	1	0.0131
	2467-2472	10	2	5.17	17.17	52.1195	1	0.0104
IEEE 802.11n-HT40	2422-2452	11	2	5.17	18.17	65.6145	1	0.0131
	2457-2462	10	2	5.17	17.17	52.1195	1	0.0104
IEEE 802.11n-HT20	5180-5240	10	2	6.53	18.53	71.2853	1	0.0142
	5260-5320	11	2	6.68	19.68	92.8966	1	0.0185
	5500-5700	11	2	7.57	20.57	114.0250	1	0.0227
	5745-5825	10	2	7.45	19.45	88.1049	1	0.0175
IEEE 802.11n-HT40	5190-5230	10	2	6.53	18.53	71.2853	1	0.0142
	5270-5310	10	2	6.68	18.68	73.7904	1	0.0147
	5510-5670	10	2	7.57	19.57	90.5733	1	0.0180
	5755-5795	10	2	7.45	19.45	88.1049	1	0.0175
IEEE 802.11ac-VHT20	5180-5240	9	2	6.53	17.53	56.6239	1	0.0113
	5260-5320	9	2	6.68	17.68	58.6138	1	0.0117
	5500-5700	9	2	7.57	18.57	71.9449	1	0.0143
	5745-5825	9	2	7.45	18.45	69.9842	1	0.0139
IEEE 802.11ac-VHT40	5190-5230	9	2	7.45	18.45	69.9842	1	0.0139
	5270-5310	9	2	6.68	17.68	58.6138	1	0.0117
	5510-5670	9	2	7.57	18.57	71.9449	1	0.0143
	5755-5795	9	2	7.45	18.45	69.9842	1	0.0139
IEEE 802.11ac-VHT80	5210	9	2	6.53	17.53	56.6239	1	0.0113
	5290	9	2	6.68	17.68	58.6138	1	0.0117
	5530	9	2	7.57	18.57	71.9449	1	0.0143
	5775	9	2	7.45	18.45	69.9842	1	0.0139

MIMO (2TX/2RX)

**3.4.1.4 Results for RSS-102 Issue 5**

**For SISO (1TX/1RX) Mode**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value		
	(MHz)								(dBm)	(dBi)
SISO Chain 0	IEEE 802.11b IEEE 802.11g	2412-2462	17	2	2.02	21.02	0.1265	5.35	0.2516	
	IEEE 802.11b IEEE 802.11g	2467-2472	12	2	2.02	16.02	0.0400	5.35	0.0796	
	IEEE 802.11a	5180-5240	14	2	2.95	18.95	0.0785	9.01	0.1562	
		5260-5320	15	2	3.26	20.26	0.1062	9.01	0.2112	
		5500-5700	15	2	4.52	21.52	0.1419	9.01	0.2823	
		5745-5825	14	2	4.56	20.56	0.1138	9.01	0.2263	
	SISO Chain 1	IEEE 802.11b IEEE 802.11g	2412-2462	17	2	2.02	21.02	0.1265	5.35	0.2516
		IEEE 802.11b IEEE 802.11g	2467-2472	12	2	2.02	16.02	0.0400	5.35	0.0796
IEEE 802.11a		5180-5240	14	2	2.95	18.95	0.0785	9.01	0.1562	
		5260-5320	15	2	3.26	20.26	0.1062	9.01	0.2112	
		5500-5700	15	2	4.52	21.52	0.1419	9.01	0.2823	
		5745-5825	14	2	4.56	20.56	0.1138	9.01	0.2263	

**For MIMO (2TX/2RX) Mode**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive Tolerance according manufacturer	Directional Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)							
IEEE 802.11n-HT20	2412-2462	11	2	5.17	18.17	0.0656	5.35	0.1305
	2467-2472	10	2	5.17	17.17	0.0521	5.35	0.1037
IEEE 802.11n-HT40	2422-2452	11	2	5.17	18.17	0.0656	5.35	0.1305
	2457-2462	10	2	5.17	17.17	0.0521	5.35	0.1037
IEEE 802.11n-HT20	5180-5240	10	2	6.53	18.53	0.0713	9.01	0.1418
	5260-5320	11	2	6.68	19.68	0.0929	9.01	0.1848
	5500-5700	11	2	7.57	20.57	0.1140	9.01	0.2268
	5745-5825	10	2	7.45	19.45	0.0881	9.01	0.1753
IEEE 802.11n-HT40	5190-5230	10	2	6.53	18.53	0.0713	9.01	0.1418
	5270-5310	10	2	6.68	18.68	0.0738	9.01	0.1468
	5510-5670	10	2	7.57	19.57	0.0906	9.01	0.1802
	5755-5795	10	2	7.45	19.45	0.0881	9.01	0.1753
IEEE 802.11ac-VHT20	5180-5240	9	2	6.53	17.53	0.0566	9.01	0.1126
	5260-5320	9	2	6.68	17.68	0.0586	9.01	0.1166
	5500-5700	10	2	7.57	19.57	0.0906	9.01	0.1802
	5745-5825	10	2	7.45	19.45	0.0881	9.01	0.1753
IEEE 802.11ac-VHT40	5190-5230	9	2	6.53	17.53	0.0566	9.01	0.1126
	5270-5310	9	2	6.68	17.68	0.0586	9.01	0.1166
	5510-5670	9	2	7.57	18.57	0.0719	9.01	0.1431
	5755-5795	9	2	7.45	18.45	0.0700	9.01	0.1392
IEEE 802.11ac-VHT80	5210	9	2	6.53	17.53	0.0566	9.01	0.1126
	5290	9	2	6.68	17.68	0.0586	9.01	0.1166
	5530	9	2	7.57	18.57	0.0719	9.01	0.1431
	5775	9	2	7.45	18.45	0.0700	9.01	0.1392

MIMO (2TX/2RX)



**3.4.2 For BT**

For BT\_LE function, operating at 2402MHz to 2480 MHz for GFSK and

For BT\_EDR function, operating at 2402MHz to 2480 MHz for GFSK,  $\pi/4$  DQPSK, 8DPSK

**3.4.2.1 Antenna Type:**

Chain 0: PIFA Antenna

**3.4.2.2 Antenna Gain:**

Chain 0: 2402MHz to 2480 MHz: 2.02 dBi

**3.4.2.3 Results for FCC 47 CFR Part 1 Subpart I**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(mW)	(mW/cm <sup>2</sup> )	
LE	2402-2480	0	2	2.02	4.02	2.5235	1	0.0005
EDR	2402-2480	8	2	2.02	12.02	15.9221	1	0.0032

**3.4.2.4 Results for RSS-102 Issue 5**

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(W)	(W/m <sup>2</sup> )	
LE	2402-2480	0	2	2.02	4.02	0.0025	5.35	0.0050
EDR	2402-2480	8	2	2.02	12.02	0.0159	5.35	0.0317

**3.4.3 Simultaneous Multi-band Transmission MPE Analysis**

**3.4.4.1 List of Mode for Simultaneous Multi-band Transmission**

No.	Configurations	Support/Not Support
1	2.4G_SISO_WLAN + BT	Not Support
2	2.4G_MIMO_WLAN + BT	Not Support
3	5G_SISO_WLAN + BT	Not Support
4	5G_MIMO_WLAN + BT	Not Support

**3.4.4.2 Results for transmit simultaneously**

Not Applicable



## APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

N/A

## APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photographs.

\*\*\* End of Report \*\*\*

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