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# RF EXPOSURE EVALUATION REPORT

Product Name: IP Phone  
 Trade Mark: GRANDSTREAM  
 Model No. / HVIN: GRP2624  
 Report Number: 200829033RFC-5  
 Test Standards: FCC 47 CFR Part 1 Subpart I  
 RSS-102 Issue 5  
 FCC ID: YZZGRP2624  
 IC: 11964A-GRP2624  
 Test Result: PASS  
 Date of Issue: December 14, 2020

Prepared for:

**Grandstream Networks, Inc.**  
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Prepared by:

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**Version**

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# 1. GENERAL INFORMATION

## 1.1 CLIENT INFORMATION

<b>Applicant:</b>	Grandstream Networks, Inc.
<b>Address of Applicant:</b>	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
<b>Manufacturer:</b>	Grandstream Networks, Inc.
<b>Address of Manufacturer:</b>	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

## 1.2 EUT INFORMATION

<b>Product Name:</b>	IP Phone		
<b>Model No. / HVIN:</b>	GRP2624		
<b>Trade Mark:</b>	GRANDSTREAM		
<b>DUT Stage:</b>	Production Unit		
<b>EUT Supports Function:</b>	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth V4.2	
	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	
<b>Sample Received Date:</b>	October 10, 2020		

## 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BT_LE	
<b>Frequency Band:</b>	2400 MHz to 2483.5 MHz
<b>Frequency Range:</b>	2402 MHz to 2480 MHz
<b>Bluetooth Version:</b>	Bluetooth LE
<b>Type of Modulation:</b>	GFSK
<b>Number of Channels:</b>	40
<b>Channel Separation:</b>	2 MHz
<b>Antenna Type:</b>	Dipole Antenna
<b>Antenna Gain:</b>	3.5 dBi
<b>Maximum Peak Power:</b>	3.42 dBm

For BT_EDR	
<b>Frequency Band:</b>	2400 MHz to 2483.5 MHz
<b>Frequency Range:</b>	2402 MHz to 2480 MHz
<b>Bluetooth Version:</b>	Bluetooth BR + 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>	Dipole Antenna
<b>Antenna Gain:</b>	3.5 dBi
<b>Maximum Peak Power:</b>	6.933 dBm

For 2.4 GHz ISM Band of Wi-Fi	
<b>Frequency Band:</b>	2400 MHz to 2483.5 MHz
<b>Frequency Range:</b>	2412 MHz to 2462 MHz
<b>Support Standards:</b>	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20
<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)
<b>Data Rate:</b>	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7
<b>Number of Channels:</b>	IEEE 802.11b: 11 IEEE 802.11g: 11 IEEE 802.11n-HT20: 11
<b>Channel Separation:</b>	5 MHz
<b>Antenna Type:</b>	Dipole Antenna
<b>Antenna Gain:</b>	3.5 dBi
<b>Maximum EIRP (dBm):</b>	IEEE 802.11b: 21.94 dBm IEEE 802.11g: 27.15 dBm IEEE 802.11n-HT20: 26.94 dBm
<b>Maximum Peak Power:</b>	IEEE 802.11b: 18.44 dBm IEEE 802.11g: 23.65 dBm IEEE 802.11n-HT20: 23.44 dBm

For 5 GHz U-NII Bands of Wi-Fi	
<b>Frequency Bands:</b>	5150 MHz to 5250 MHz (U-NII-1)
	5250 MHz to 5350 MHz (U-NII-2A)
	5470 MHz to 5725 MHz (U-NII-2C)
	5 725 MHz to 5 850 MHz (U-NII-3)
<b>Frequency Ranges:</b>	5180 MHz to 5240 MHz
	5260 MHz to 5320 MHz
	5500 MHz to 5700 MHz
	5 745 MHz to 5 825 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
<b>Number of Channels:</b>	IEEE 802.11ac-VHT80: Up to MCS9
	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40

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	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>	Dipole Antenna				
<b>Antenna Gain:</b>	5150 MHz to 5250 MHz: 3.0 dBi				
	5250 MHz to 5350 MHz: 3.0 dBi				
	5470 MHz to 5725 MHz: 3.0 dBi				
	5725 MHz to 5850 MHz: 3.0 dBi				
<b>Maximum EIRP (dBm):</b>	<b>Chain 0</b>	<b>U-NII-1</b>			
	IEEE 802.11a:	18.56			
	IEEE 802.11n-HT20:	18.11			
	IEEE 802.11n-HT40:	17.22			
	IEEE 802.11ac-VHT20:	18.13			
	IEEE 802.11ac-VHT40:	17.08			
	IEEE 802.11ac-VHT80:	16.82			
<b>Maximum conducted output power (dBm):</b>		<b>U-NII-1</b>	<b>U-NII-2A</b>	<b>U-NII-2C</b>	<b>U-NII-3</b>
	IEEE 802.11a:	15.56	15.61	15.71	16.36
	IEEE 802.11n-HT20:	15.11	15.13	14.96	15.97
	IEEE 802.11n-HT40:	14.22	14.23	14.01	15.90
	IEEE 802.11ac-VHT20	15.13	15.23	14.98	15.93
	IEEE 802.11ac-VHT40	14.08	14.07	13.93	15.80
	IEEE 802.11ac-VHT80:	13.82	13.99	13.77	18.48

### 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
		2402 MHz	2441 MHz	2480 MHz
$\pi$ /4DQPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Lowest(L)	Middle(M)	Highest(H)
		Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz

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8DPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz

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

Test channels for 5 GHz U-NII Bands of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11a IEEE 802.11n-HT20 IEEE 802.11ac-VHT20	5150 MHz to 5250 MHz	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	--

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## 1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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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

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## 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	/	/	<b>1</b>	30

**Note:** f = frequency in MHz: \* = Plane-wave equivalent 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.

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 exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz<sup>6</sup> and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

### 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

### 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)

## 3.4 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 5250 MHz to 5350 MHz for IEEE802.11a/n/ac and  
 operating at 5470 MHz to 5725 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:** Dipole Antenna

#### 3.4.1.2 Antenna Gain:

**Chain 0:** 2412MHz to 2462 MHz: 3.5 dBi  
 5150 MHz to 5250 MHz: 3.0 dBi

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5250 MHz to 5350 MHz: 3.0 dBi  
 5470 MHz to 5725 MHz: 3.0 dBi  
 5725 MHz to 5850 MHz: 3.0 dBi

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

Operating Mode	Freq.	Declared maximum conducted 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> )	
IEEE 802.11b	2412	18	1	3.5	22.5	177.8279	1	0.0354
	2437	18	1	3.5	22.5	177.8279	1	0.0354
	2462	18	1	3.5	22.5	177.8279	1	0.0354
IEEE 802.11g	2412	23	1	3.5	27.5	562.3413	1	0.1119
	2437	23	1	3.5	27.5	562.3413	1	0.1119
	2462	23	1	3.5	27.5	562.3413	1	0.1119
IEEE 802.11n-HT20	2412	23	1	3.5	27.5	562.3413	1	0.1119
	2437	23	1	3.5	27.5	562.3413	1	0.1119
	2462	23	1	3.5	27.5	562.3413	1	0.1119
IEEE 802.11a	5180	15	1	3	19	79.4328	1	0.0158
	5220	15	1	3	19	79.4328	1	0.0158
	5240	15	1	3	19	79.4328	1	0.0158
	5260	15	1	3	19	79.4328	1	0.0158
	5300	15	1	3	19	79.4328	1	0.0158
	5320	15	1	3	19	79.4328	1	0.0158
	5500	15	1	3	19	79.4328	1	0.0158
	5580	15	1	3	19	79.4328	1	0.0158
	5700	15	1	3	19	79.4328	1	0.0158
	5745	16	1	3	20	100.0000	1	0.0199
	5785	16	1	3	20	100.0000	1	0.0199
	5805	16	1	3	20	100.0000	1	0.0199
IEEE 802.11n-HT20	5180	15	1	3	19	79.4328	1	0.0158
	5220	15	1	3	19	79.4328	1	0.0158
	5240	15	1	3	19	79.4328	1	0.0158
	5260	15	1	3	19	79.4328	1	0.0158
	5300	15	1	3	19	79.4328	1	0.0158
	5320	15	1	3	19	79.4328	1	0.0158
	5500	15	1	3	19	79.4328	1	0.0126
	5580	15	1	3	19	79.4328	1	0.0126
	5700	15	1	3	19	79.4328	1	0.0126
	5745	15	1	3	19	79.4328	1	0.0158
	5785	15	1	3	19	79.4328	1	0.0158
	5805	15	1	3	19	79.4328	1	0.0158
IEEE 802.11ac-VHT20	5180	15	1	3	19	79.4328	1	0.0158
	5220	15	1	3	19	79.4328	1	0.0158
	5240	15	1	3	19	79.4328	1	0.0158
	5260	15	1	3	19	79.4328	1	0.0158
	5300	15	1	3	19	79.4328	1	0.0158
	5320	15	1	3	19	79.4328	1	0.0158
	5500	15	1	3	19	79.4328	1	0.0126
	5580	15	1	3	19	79.4328	1	0.0126
	5700	15	1	3	19	79.4328	1	0.0126
	5745	15	1	3	19	79.4328	1	0.0158
5785	15	1	3	19	79.4328	1	0.0158	

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Operating Mode	Freq.	Declared maximum conducted 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> )	
	5805	15	1	3	19	79.4328	1	0.0158
IEEE 802.11n-HT40	5190	14	1	3	18	63.0957	1	0.0126
	5230	14	1	3	18	63.0957	1	0.0126
	5270	14	1	3	18	63.0957	1	0.0126
	5310	14	1	3	18	63.0957	1	0.0126
	5510	14	1	3	18	63.0957	1	0.0112
	5550	14	1	3	18	63.0957	1	0.0112
	5670	14	1	3	18	63.0957	1	0.0112
	5755	15	1	3	19	79.4328	1	0.0158
	5795	15	1	3	19	79.4328	1	0.0158
IEEE 802.11ac-VHT40	5190	14	1	3	18	63.0957	1	0.0126
	5230	14	1	3	18	63.0957	1	0.0126
	5270	14	1	3	18	63.0957	1	0.0126
	5310	14	1	3	18	63.0957	1	0.0126
	5510	14	1	3	18	63.0957	1	0.0100
	5550	14	1	3	18	63.0957	1	0.0100
	5670	14	1	3	18	63.0957	1	0.0100
	5755	15	1	3	19	79.4328	1	0.0158
	5795	15	1	3	19	79.4328	1	0.0158
IEEE 802.11ac-VHT80	5210	13	1	3	17	50.1187	1	0.0100
	5290	13	1	3	17	50.1187	1	0.0100
	5530	13	1	3	17	50.1187	1	0.0100
	5775	18	1	3	22	158.4893	1	0.0315

3.4.1.4 Results for RSS-102 Issue 5

Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	Declare Limit
	(MHz)	(dBm)		(dBi)	(dBm)	(W)	(W)
IEEE 802.11b	2412	18	1	3.5	22.5	0.1778	2.6840
	2437	18	1	3.5	22.5	0.1778	2.7030
	2462	18	1	3.5	22.5	0.1778	2.7219
IEEE 802.11g	2412	23	1	3.5	27.5	0.5623	2.6840
	2437	23	1	3.5	27.5	0.5623	2.7030
	2462	23	1	3.5	27.5	0.5623	2.7219
IEEE 802.11n-HT20	2412	23	1	3.5	27.5	0.5623	2.6840
	2437	23	1	3.5	27.5	0.5623	2.7030
	2462	23	1	3.5	27.5	0.5623	2.7219
IEEE 802.11a	5180	15	1	3	19	0.0794	4.5253
	5220	15	1	3	19	0.0794	4.5491
	5240	15	1	3	19	0.0794	4.5610
	5260	15	1	3	19	0.0794	4.5729
	5300	15	1	3	19	0.0794	4.5966
	5320	15	1	3	19	0.0794	4.6085
	5500	15	1	3	19	0.0794	4.7145
	5580	15	1	3	19	0.0794	4.7613
	5700	15	1	3	19	0.0794	4.8310
	5745	16	1	3	20	0.1000	4.8570

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Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	Declare Limit
	(MHz)	(dBm)		(dBi)	(dBm)	(W)	(W)
IEEE 802.11n-HT20	5785	16	1	3	20	0.1000	4.8801
	5805	16	1	3	20	0.1000	4.8916
	5180	15	1	3	19	0.0794	4.5253
	5220	15	1	3	19	0.0794	4.5491
	5240	15	1	3	19	0.0794	4.5610
	5260	15	1	3	19	0.0794	4.5729
	5300	15	1	3	19	0.0794	4.5966
	5320	15	1	3	19	0.0794	4.6085
	5500	15	1	3	19	0.0794	4.7145
	5580	15	1	3	19	0.0794	4.7613
	5700	15	1	3	19	0.0794	4.8310
	5745	15	1	3	19	0.0794	4.8570
	5785	15	1	3	19	0.0794	4.8801
	5805	15	1	3	19	0.0794	4.8916
IEEE 802.11ac-VHT20	5180	15	1	3	19	0.0794	4.5253
	5220	15	1	3	19	0.0794	4.5491
	5240	15	1	3	19	0.0794	4.5610
	5260	15	1	3	19	0.0794	4.5729
	5300	15	1	3	19	0.0794	4.5966
	5320	15	1	3	19	0.0794	4.6085
	5500	15	1	3	19	0.0794	4.7145
	5580	15	1	3	19	0.0794	4.7613
	5700	15	1	3	19	0.0794	4.8310
	5745	15	1	3	19	0.0794	4.8570
	5785	15	1	3	19	0.0794	4.8801
	5805	15	1	3	19	0.0794	4.8916
IEEE 802.11n-HT40	5190	14	1	3	18	0.0631	4.5312
	5230	14	1	3	18	0.0631	4.5551
	5270	14	1	3	18	0.0631	4.5789
	5310	14	1	3	18	0.0631	4.6026
	5510	14	1	3	18	0.0631	4.7204
	5550	14	1	3	18	0.0631	4.7437
	5670	14	1	3	18	0.0631	4.8136
	5755	15	1	3	19	0.0794	4.8628
IEEE 802.11ac-VHT40	5795	15	1	3	19	0.0794	4.8859
	5190	14	1	3	18	0.0631	4.5312
	5230	14	1	3	18	0.0631	4.5551
	5270	14	1	3	18	0.0631	4.5789
	5310	14	1	3	18	0.0631	4.6026
	5510	14	1	3	18	0.0631	4.7204
	5550	14	1	3	18	0.0631	4.7437
	5670	14	1	3	18	0.0631	4.8136
IEEE 802.11ac-VHT80	5755	15	1	3	19	0.0794	4.8628
	5795	15	1	3	19	0.0794	4.8859
	5210	13	1	3	17	0.0501	4.5432
	5290	13	1	3	17	0.0501	4.5907
	5530	13	1	3	17	0.0501	4.7321
	5775	18	1	3	22	0.1585	4.8743

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**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: Dipole Antenna

**3.4.2.2 Antenna Gain:**

Chain 0: 2402MHz to 2480 MHz: 3.5 dBi

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

Operating Mode	Freq.	Declared maximum conducted 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	3	1	3.5	7.5	5.6234	1	0.0011
EDR	2402-2480	6	2	3.5	11.5	14.1254	1	0.0028

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

Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	Limit
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(W)	(W)
2402	3	1	3.5	7.5	0.0056	2.6764	0.0112
2402	6	2	3.5	11.5	0.0141	2.6764	0.0281

**3.4.3 Simultaneous Multi-band Transmission MPE Analysis****3.4.3.1 List of Mode for Simultaneous Multi-band Transmission**

No.	Configurations	Support/Not Support
1	2.4G_WLAN + BT	Not Support
2	5G_WLAN + BT	Not Support

**APPENDIX 1 PHOTOS OF TEST SETUP**

N/A

**APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS**

Refer to Appendix 2 for EUT external and internal Photos.

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

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