



Certificate #4312.01

RF EXPOSURE EVALUATION REPORT

Product Name: IP Phone
Trade Mark: GRANDSTREAM
Model No.: GRP2616
HVIN: GRP2616V3
Report Number: 24032310275RFC-5
Test Standards: FCC 47 CFR Part 1 Subpart I
 RSS-102 Issue 6
FCC ID: YZZGRP2616V3
IC: 11964A-GRP2616V3
Test Result: PASS
Date of Issue: July 25, 2024

Prepared for:

Grandstream Networks, Inc.
126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

Prepared by:

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Version

Version No.	Date	Description
V1.0	July 25, 2024	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

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

1.2 EUT INFORMATION

Product Name:	IP Phone		
Model No.:	GRP2616		
HVIN:	GRP2616V3		
Trade Mark:	GRANDSTREAM		
DUT Stage:	Production Unit		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n/ax	
		Bluetooth V5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac/ax
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac/ax
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac/ax
	5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac/ax	
Sample Received Date:	March 23, 2024		

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BT_LE	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth LE/2LE/LE Code
Type of Modulation:	GFSK
Number of Channels:	40
Channel Separation:	2 MHz
Antenna Type:	PCB Antenna
Antenna Gain: (Provided by the customer)	3.5 dBi
Maximum Peak Power:	7.86 dBm

For BT_EDR	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth BR + EDR
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Channel Separation:	1 MHz
Antenna Type:	PCB Antenna

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Antenna Gain: (Provided by the customer)	3.5 dBi
Maximum Peak Power:	12.37 dBm

For 2.4 GHz ISM Band of Wi-Fi	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2412 MHz to 2462 MHz
Support Standards:	IEEE 802.11b/g/n-HT20/n-HT40/ax-HE20/ax-HE40
Type of Modulation:	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) IEEE 802.11ax:OFDM/ OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7 IEEE 802.11n-HT40: Up to MCS7 IEEE 802.11ax-HE20/ HE40: Up to MCS11
Number of Channels:	IEEE 802.11b: 11 IEEE 802.11g: 11 IEEE 802.11n-HT20/ax-HE20: 11 IEEE 802.11n-HT40/ax-HE40: 7
Channel Separation:	5 MHz
Antenna Type:	PCB Antenna
Antenna Gain: (Provided by the customer)	3.5 dBi
Maximum EIRP (dBm):	IEEE 802.11b: 22.00 dBm IEEE 802.11g: 30.13dBm IEEE 802.11n-HT20: 29.73 dBm IEEE 802.11n-HT40: 29.30 dBm IEEE 802.11ax-HE20: 29.76 dBm IEEE 802.11ax-HE40: 29.34 dBm
Maximum conducted output power:	IEEE 802.11b: 18.5 dBm IEEE 802.11g: 26.63 dBm IEEE 802.11n-HT20: 26.23 dBm IEEE 802.11n-HT40: 25.8 dBm IEEE 802.11ax-HE20:26.26 dBm IEEE 802.11ax-HE40:25.84 dBm

For 5 GHz U-NII Bands of Wi-Fi	
Frequency Bands:	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)
Frequency Ranges:	5180 MHz to 5240 MHz
	5260 MHz to 5320 MHz
	5500 MHz to 5720 MHz
	5745 MHz to 5825 MHz
Support Standards:	IEEE 802.11a/n/ac/ax
TPC Function:	Not Support
DFS Operational mode:	Slave without radar Interference detection function
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)

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	IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK)				
	IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)				
	IEEE 802.11ax: OFDM/OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)				
Channel Spacing:	IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20: 20 MHz				
	IEEE 802.11n-HT40/ac-VHT40/ax-HE40: 40 MHz				
Data Rate:	IEEE 802.11a: Up to 54 Mbps				
	IEEE 802.11n-HT20: Up to MCS7				
	IEEE 802.11n-HT40: Up to MCS7				
	IEEE 802.11ac-VHT20: Up to MCS8				
	IEEE 802.11ac-VHT40: Up to MCS9				
	IEEE 802.11ax-HE20/HE40: Up to MCS11				
Number of Channels:	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20 2 for IEEE 802.11n-HT40/ac-VHT40/ax-HE40				
	5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20 2 for IEEE 802.11n-HT40/ac-VHT40/ax-HE40				
	5470 MHz to 5725 MHz: 12 for IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20 6 for IEEE 802.11n-HT40/ac-VHT40/ax-HE40				
	5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20/ax-HE20 2 for IEEE 802.11n-HT40/ac-VHT40/ax-HE40				
Antenna Type:	PCB Antenna				
Antenna Gain: (Provided by the customer)	5150 MHz to 5250 MHz: 4.0 dBi				
	5250 MHz to 5350 MHz: 4.0 dBi				
	5470 MHz to 5725 MHz: 4.0 dBi				
	5725 MHz to 5850 MHz: 4.0 dBi				
Maximum conducted output power (dBm):		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
	IEEE 802.11a:	15.29	15.19	16.66	16.70
	IEEE 802.11n-HT20:	15.45	15.29	16.67	16.73
	IEEE 802.11n-HT40:	15.10	15.14	17.13	16.93
	IEEE 802.11ac-VHT20	15.38	15.29	16.66	16.74
	IEEE 802.11ac-VHT40	15.06	15.10	17.01	16.82
	IEEE 802.11ax-HE20	15.75	15.48	16.83	16.88
	IEEE 802.11ax-HE40	15.15	15.16	17.07	16.91
Maximum EIRP (dBm):		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
	IEEE 802.11a:	19.29	19.19	20.66	20.70
	IEEE 802.11n-HT20:	19.45	19.29	20.67	20.73
	IEEE 802.11n-HT40:	19.10	19.14	21.13	20.93
	IEEE 802.11ac-VHT20	19.38	19.29	20.66	20.74
	IEEE 802.11ac-VHT40	19.06	19.10	21.01	20.82
	IEEE 802.11ax-HE20	19.75	19.48	20.83	20.88
	IEEE 802.11ax-HE40	19.15	19.16	21.07	20.91

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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
π /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 IEEE 802.11ax-HE20	2412 MHz to 2462 MHz	2412 MHz	2437 MHz	2462 MHz
		Channel 1	Channel 6	Channel 11
IEEE 802.11n-HT40 IEEE 802.11ax-HE40	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	5150 MHz to 5250 MHz	Lowest(L)	Middle(M)	Highest(H)	Straddle band
		Channel 36	Channel 44	Channel 48	--
IEEE 802.11n-HT20	5250 MHz to 5350 MHz	5180 MHz	5220 MHz	5240 MHz	--
		Channel 52	Channel 60	Channel 64	--
IEEE 802.11ac-VHT20	5470 MHz to 5725 MHz	5260 MHz	5300 MHz	5320 MHz	--
		Channel 100	Channel 116	Channel 140	Channel 144
IEEE 802.11ax-HE20	5725 MHz to 5850 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
		Channel 149	Channel 157	Channel 165	--
IEEE 802.11n-HT40	5150 MHz to 5250 MHz	5745 MHz	5785 MHz	5825 MHz	--
		Channel 38	--	Channel 46	--
IEEE 802.11ac-VHT40	5250 MHz to 5350 MHz	5190 MHz	--	5230 MHz	--
		Channel 54	--	Channel 62	--
IEEE 802.11ax-HE40	5470 MHz to 5725 MHz	5270 MHz	--	5310 MHz	--
		Channel 102	Channel 110	Channel 134	Channel 142

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		5510 MHz	5550 MHz	5670 MHz	5710 MHz
	5725 MHz to 5850 MHz	Channel 151	--	Channel 159	--
		5755 MHz	--	5795 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 6

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 6	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 ²)	Averaging Times E ² , H ² 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 ²)	Averaging Times E ² , H ² 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 equivalent power density.

3.2.1.2 RSS-102 Issue 6

According to RSS-102 Issue 6, 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 6, 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 MHz⁶ 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/cm²)

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 = 20cm, 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/ax and
 operating at 5250 MHz to 5350 MHz for IEEE802.11a/n/ac/ax and
 operating at 5470 MHz to 5725 MHz for IEEE802.11a/n/ac/ax and
 operating at 5725 MHz to 5850 MHz for IEEE802.11a/n/ac/ax.

3.4.1.1 Antenna Type:

PCB Antenna

3.4.1.2 Antenna Gain:

2412MHz to 2462 MHz: 3.5 dBi

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5150 MHz to 5250 MHz: 4.0 dBi
 5250 MHz to 5350 MHz: 4.0 dBi
 5470 MHz to 5725 MHz: 4.0 dBi
 5725 MHz to 5850 MHz: 4.0 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	Ant. Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)		(dBi)	(dBm)	(mW)	(mw/cm ²)	
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	26	1	3.5	30.5	1122.0185	1	0.2232
	2437	26	1	3.5	30.5	1122.0185	1	0.2232
	2462	26	1	3.5	30.5	1122.0185	1	0.2232
IEEE 802.11n-HT20 IEEE 802.11ax-HE20	2412	26	1	3.5	30.5	1122.0185	1	0.2232
	2437	26	1	3.5	30.5	1122.0185	1	0.2232
	2462	26	1	3.5	30.5	1122.0185	1	0.2232
IEEE 802.11n-HT40 IEEE 802.11ax-HE40	2422	25	1	3.5	29.5	891.2509	1	0.1773
	2437	25	1	3.5	29.5	891.2509	1	0.1773
	2452	25	1	3.5	29.5	891.2509	1	0.1773
IEEE 802.11a	5180	15	1	4	20	100.0000	1	0.0199
	5220	15	1	4	20	100.0000	1	0.0199
	5240	15	1	4	20	100.0000	1	0.0199
	5260	15	1	4	20	100.0000	1	0.0199
	5300	15	1	4	20	100.0000	1	0.0199
	5320	15	1	4	20	100.0000	1	0.0199
	5500	16	1	4	21	125.8925	1	0.0250
	5580	16	1	4	21	125.8925	1	0.0250
	5700	16	1	4	21	125.8925	1	0.0250
	5720	16	1	4	21	125.8925	1	0.0250
	5745	16	1	4	21	125.8925	1	0.0250
	5785	16	1	4	21	125.8925	1	0.0250
	5825	16	1	4	21	125.8925	1	0.0250
IEEE 802.11n-HT20 802.11ac-VHT20 IEEE 802.11ax-HE20	5180	15	1	4	20	100.0000	1	0.0199
	5220	15	1	4	20	100.0000	1	0.0199
	5240	15	1	4	20	100.0000	1	0.0199
	5260	15	1	4	20	100.0000	1	0.0199
	5300	15	1	4	20	100.0000	1	0.0199
	5320	15	1	4	20	100.0000	1	0.0199
	5500	16	1	4	21	125.8925	1	0.0250
	5580	16	1	4	21	125.8925	1	0.0250
	5700	16	1	4	21	125.8925	1	0.0250
	5720	16	1	4	21	125.8925	1	0.0250
	5745	16	1	4	21	125.8925	1	0.0250
	5785	16	1	4	21	125.8925	1	0.0250
	5825	16	1	4	21	125.8925	1	0.0250
IEEE 802.11n-HT40 IEEE 802.11ac-VHT40 IEEE 802.11ax-HE40	5190	15	1	4	20	100.0000	1	0.0199
	5230	15	1	4	20	100.0000	1	0.0199
	5270	15	1	4	20	100.0000	1	0.0199
	5310	15	1	4	20	100.0000	1	0.0199
	5510	16	1	4	21	125.8925	1	0.0250
	5550	16	1	4	21	125.8925	1	0.0250
	5670	16	1	4	21	125.8925	1	0.0250
	5710	16	1	4	21	125.8925	1	0.0250
	5755	17	1	4	22	158.4893	1	0.0315
5795	17	1	4	22	158.4893	1	0.0315	

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3.4.1.4 Results for RSS-102 Issue 6

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)	
OSIS	IEEE 802.11b	2412	17.5	1	3.5	22	0.1585	2.6840
		2437	17.5	1	3.5	22	0.1585	2.7030
		2462	17.5	1	3.5	22	0.1585	2.7219
	IEEE 802.11g	2412	26.5	1	3.5	31	1.2589	2.6840
		2437	26.5	1	3.5	31	1.2589	2.7030
		2462	26.5	1	3.5	31	1.2589	2.7219
	IEEE 802.11n-HT20 IEEE 802.11ax-HE20	2412	26.5	1	3.5	31	1.2589	2.6840
		2437	26.5	1	3.5	31	1.2589	2.7030
		2462	26.5	1	3.5	31	1.2589	2.7219
	IEEE 802.11n-HT40 IEEE 802.11ax-HE40	2422	25.5	1	3.5	30	1.0000	2.6916
		2437	25.5	1	3.5	30	1.0000	2.7030
		2452	25.5	1	3.5	30	1.0000	2.7144
OSIS	IEEE 802.11a	5180	15	1	4	20	0.1000	4.5253
		5220	15	1	4	20	0.1000	4.5491
		5240	15	1	4	20	0.1000	4.5610
		5260	15	1	4	20	0.1000	4.5729
		5300	15	1	4	20	0.1000	4.5966
		5320	15	1	4	20	0.1000	4.6085
		5500	16	1	4	21	0.1259	4.7145
		5580	16	1	4	21	0.1259	4.7613
		5700	16	1	4	21	0.1259	4.8310
		5720	16	1	4	21	0.1259	4.8426
		5745	16	1	4	21	0.1259	4.8570
		5785	16	1	4	21	0.1259	4.8801
	5825	16	1	4	21	0.1259	4.9031	
	IEEE 802.11n-HT20 IEEE 802.11ac-VHT20 IEEE 802.11ax-HE20	5180	15	1	4	20	0.1000	4.5253
		5220	15	1	4	20	0.1000	4.5491
		5240	15	1	4	20	0.1000	4.5610
		5260	15	1	4	20	0.1000	4.5729
		5300	15	1	4	20	0.1000	4.5966
		5320	15	1	4	20	0.1000	4.6085
		5500	16	1	4	21	0.1259	4.7145
		5580	16	1	4	21	0.1259	4.7613
		5700	16	1	4	21	0.1259	4.8310
		5720	16	1	4	21	0.1259	4.8426
		5745	16	1	4	21	0.1259	4.8570
5785		16	1	4	21	0.1259	4.8801	
5825	16	1	4	21	0.1259	4.9031		
IEEE 802.11n-HT40 802.11ac-VHT40 IEEE 802.11ax-HE40	5190	15	1	4	20	0.1000	4.5312	
	5230	15	1	4	20	0.1000	4.5551	
	5270	15	1	4	20	0.1000	4.5789	
	5310	15	1	4	20	0.1000	4.6026	
	5510	16	1	4	21	0.1259	4.7204	
	5550	16	1	4	21	0.1259	4.7437	
	5670	16	1	4	21	0.1259	4.8136	
	5710	16	1	4	21	0.1259	4.8368	
5755	17	1	4	22	0.1585	4.8628		
5795	17	1	4	22	0.1585	4.8859		

3.4.2 For BT

For BT_LE/2LE/ LE Code 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:

PCB Antenna

3.4.2.2 Antenna Gain:

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 ²)	
LE/2LE/ LE Code	2402-2480	7	1	3.5	11.5	14.1254	1	0.0028
EDR	2402-2480	10	3	3.5	16.5	44.6684	1	0.0089

3.4.2.4 Results for RSS-102 Issue 6

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)
LE/2LE/ LE Code	2402-2480	7	1	3.5	11.5	0.0141	2.6764
EDR	2402-2480	10.5	3	3.5	17	0.0501	2.6764

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_WLAN + BT	Support
2	5G_WLAN + BT	Support
3	2.4G_WLAN + 5G_WLAN	Not Support

3.4.4.1 Results for transmit simultaneously

FCC 47 CFR Part 1 Subpart I

No.	Configurations	Maximum MPE Value			Limits
		WLAN (mw/cm ²)	BT (mw/cm ²)	Transmit simultaneously	
1	2.4G_WLAN + BT	0.2232	0.0028	0.226	1
2	5G_WLAN + BT	0.0250	0.0028	0.0278	1

Note:

According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \Sigma \text{ of MPE ratios}$$

$$\text{MPE ratios} = \text{Field strengths or power density} / \text{MPE limit at the test frequency}$$

RSS-102 Issue 6

No.	Configurations	Maximum MPE Value			Limits
		WLAN	BT	Transmit simultaneously	
		W	W		
1	2.4G_WLAN + BT	1.2589	0.0501	0.9703	1
2	5G_WLAN + BT	0.1585	0.0501	0.1021	1

Note:

According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \Sigma \text{ of MPE ratios}$$

$$\text{MPE ratios} = \text{Field strengths or power density} / \text{MPE limit at the test frequency}$$

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 ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
