



**FCC §15.247 (i), §2.1091 – RF Exposure**

**FCC ID: 2ASGVK10C**

**Applied procedures / limit**

According to FCC §15.247(i) and §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.

**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 Time  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
1500-100,000			5	6

Note: *f* is frequency in MHz

\* = Power density limit is applicable at frequencies greater than 100 MHz

**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 Time  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
1500-100,000			1.0	30

Note: *f* = frequency in MHz

\* = Plane-wave equivalent power density

**BT:2402-2480MHz**

**BLE**

	Frequency	Maximum Conducted Output Power(PK)	Conducted Output Power Limit
	(MHz)	(dBm)	dBm
GFSK	2402	-3.96	30
	2440	-2.93	30
	2480	-0.73	30



**EDR**

Modulation	Test Channel	Output Power PK(dBm)	Limit (dBm)
GFSK	Low	0.96	21
GFSK	Middle	2.87	21
GFSK	High	5.30	21
Pi/4 DQPSK	Low	-1.09	21
Pi/4 DQPSK	Middle	-0.04	21
Pi/4 DQPSK	High	1.70	21
8DPSK	Low	-0.60	21
8DPSK	Middle	0.48	21
8DPSK	High	2.26	21

**WIFI:2412-2462MHz**

Test Channel	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
<b>802.11b Mode</b>			
CH01	2412	11.86	30
CH06	2437	11.57	30
CH11	2462	11.47	30
<b>802.11g Mode</b>			
CH01	2412	9.66	30
CH06	2437	9.97	30
CH11	2462	10.57	30
<b>802.11n-HT20 Mode</b>			
CH01	2412	7.86	30
CH06	2437	7.35	30
CH11	2462	8.53	30

**WIFI:5180-5240MHz**

Mode	Frequency MHz	Total Power Conducted Output Power(PK)	LIMIT	Result
		dBm	dBm	
802.11 a	5180	10.73	23.98	PASS
	5200	10.49	23.98	PASS
	5240	9.85	23.98	PASS



802.11 n(20)	5180	10.49	23.98	PASS
	5200	10.62	23.98	PASS
	5240	9.42	23.98	PASS
802.11 n(40)	5190	9.70	23.98	PASS
	5230	9.96	23.98	PASS
802.11 ac(80)	5210	7.77	23.98	PASS

**MPE PREDICTION**

Predication of MPE limit at a given distance, Equation from 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, R=20cm

**Test Result of RF Exposure Evaluation**

**BT-EDR**

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
24402-2480MHz	5±1.0	6	3.98	2.59 (1.82)	0.00144	1.0	Pass

**BT-BLE**

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
24402-2480MHz	0±1.0	1	1.26	2.59 (1.82)	0.00046	1.0	Pass

**WIFI:2412-2462MHz**

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
2412-2462MHz	11±1.0	12	15.85	2.59 (1.82)	0.00574	1.0	Pass

**WIFI:5180-5240MHz**

	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Total Output power to antenna (mW)	Antenna Gain(dBi)	Total Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
5180-5240MHz	10±1.0	11	12.59	3.79 (2.39)	0.00599	1.0	Pass