

# RF Exposure

**FCC ID:** NCI-M360-M500

**Applicant:** VIA TECHNOLOGIES, INC.

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: AI Safety System

Refer Standard: FCC Part 2.1091: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

## FCC MPE Limited:

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density

P = power input to the antenna

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 (appropriate units, e.g., cm)

Antenna Gain information

2.4G WLAN: 2.49dBi

5G WLAN: 2.37dBi

BT/BLE: 2.49 dBi

### Worst-Case mode Conducted Output Power Results for 2.4G WIFI

802.11b mode

Channel	Frequency (MHz)	Output Power(dBm)	Tune Up tolerance(dBm)
1	2412	16.28	17 ± 1
6	2437	16.83	17 ± 1
11	2462	16.78	17 ± 1

### Worst-Case mode Conducted Output Power Results for BT /BLE

Bluetooth				
Band	Mode	Test Frequency	Power(dBm)	Tune-up tolerance(dBm)
BT EDR	GFSK	2402	5.07	5 ± 1
	GFSK	2441	4.90	5 ± 1
	GFSK	2480	4.45	5 ± 1
BLE	GFSK	2402	4.096	4 ± 1
	GFSK	2440	3.848	4 ± 1
	GFSK	2480	3.017	4 ± 1

### Worst-Case mode Conducted Power Test results of band U-NII-1/U-NII-3

802.11a mode		
Frequency (MHz)	Conducted Output Power (dBm)	Tune Up tolerance(dBm)
5180	12.88	12 ± 1
5220	12.26	12 ± 1
5240	11.93	12 ± 1
5745	12.86	12 ± 1
5785	12.48	12 ± 1
5825	12.08	12 ± 1

### Calculation results (for 2.4G WIFI): Worst-case mode

Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412	18	20	0.024	1.0
2437	18	20	0.024	
2462	18	20	0.024	

**Calculation results (for 5G WIFI): Worst-Case mode**

Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
5180	13	20	0.007	1.0
5220	13	20	0.007	
5240	13	20	0.007	
5745	13	20	0.007	
5785	13	20	0.007	
5825	13	20	0.007	

**Calculation results (for BT/BLE): Worst-case mode**

Bluetooth					
Band	Mode	Test Frequency	Power(dBm)	Result (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BT EDR	GFSK	2402	6	0.0015	1.0
	GFSK	2441	6	0.0015	
	GFSK	2480	6	0.0015	
BLE	GFSK	2402	5	0.001	
	GFSK	2440	5	0.001	
	GFSK	2480	5	0.001	

**Simultaneous Transmission Calculation (Worst-case mode)**

No.	Transmitter Combinations	Scenario Supported or not
1	2.4G WLAN+BT	Yes
2	5G WLAN+BT	Yes
3	2.4G WLAN+BT+5G WLAN	Yes

Antenna	Mode/Channel	Calculation results(mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Ratio
WLAN	2.4G WIFI	0.024	1.0	0.024
WLAN	5G WIFI	0.007	1.0	0.007
BT	BT	0.0015	1.0	0.0015

**Max Simultaneous Transmission Calculation (Worst-case mode)**

No.	Worst Mode	MPE Ratio	Results
1	2.4G WIFI+BT+5G WIFI	0.024+0.0015+0.007	0.0325<1.0(pass)