

RF Exposure

FCC ID: NCI-M360-M800

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 ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	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	16.82	17 ± 1
6	2437	16.64	17 ± 1
11	2462	16.93	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	5.22	5 ± 1
	GFSK	2441	4.97	5 ± 1
	GFSK	2480	4.90	5 ± 1
BLE	GFSK	2402	4.571	4 ± 1
	GFSK	2440	4.107	4 ± 1
	GFSK	2480	3.507	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	12.52	12 ± 1
5220	12.44	12 ± 1
5240	12.39	12 ± 1
5745	12.95	12 ± 1
5785	12.75	12 ± 1
5825	12.35	12 ± 1

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

Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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

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

Antenna	Mode/Channel	Calculation results(mW/cm ²)	Limit (mW/cm ²)	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	0.024+0.0015+0.007	0.0325<1.0(pass)