

RF Exposure Compliance Requirement (BT)

The product belongs to **standalone portable device** base the FCC rule part 2.1091&2.1093. The transmission frequencies of the device are between 100 MHz and 6 GHz. The worst case test separation distance is **5mm**.

The SAR Test Exclusion Threshold for 100 MHz to 6 GHz is calculated from:

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

☐ $f(\text{GHz})$ is the RF channel transmit frequency in GHz

☐ Power and distance are rounded to the nearest mW and mm before calculation

☐ The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation *distance is* < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

The Max Conducted Output Power and SAR Test Exclusion Threshold (mW) are listed below:

Transmit frequency (GHz)	Max Conducted Output Power (dBm)	Max Conducted Output Power (mW)	SAR Test Exclusion Threshold (mW)
2.402	2.15	1.641	9.68
2.441	2.29	1.694	9.62
2.480	2.23	1.671	9.52

$\text{SAR Test Exclusion Threshold (mW)} = 3.0 \times (\text{min. test separation distance, 5mm}) / [\sqrt{f(\text{GHz})}]$

According to SAR Exclusion Threshold in KDB 447498 (D01) General RF Exposure Guidance v06, the SAR report is not required.

RF Exposure Compliance Requirement (WiFi)

1. Standard requirement

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 limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) 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

(b) 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	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

2. MPE Calculation Method

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

where: 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
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

d=20cm, G= 1.

3. Calculated Result and Limit

(1) 2.4G WiFi: 802.11b 1Mbps data rate:

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2412	1	13.45	22.131	0.00440	1	Complies
2437	1	13.26	21.184	0.00421	1	Complies
2472	1	13.33	21.528	0.00428	1	Complies

(2) 2.4G WiFi: 6Mbps data rate:

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2412	1	12.94	19.679	0.00391	1	Complies
2437	1	12.77	18.923	0.00376	1	Complies
2472	1	12.93	19.634	0.00391	1	Complies

(3) 5G WiFi: 54Mbps data rate:

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
a	1	11.62	14.521	0.00289	1	Complies
HT20	1	11.85	15.311	0.00305	1	Complies
HT40	1	11.68	14.723	0.00293	1	Complies
VHT20	1	11.46	13.996	0.00278	1	Complies
VHT40	1	11.69	14.757	0.00294	1	Complies
VHT80	1	6.68	4.656	0.00093	1	Complies