

Maximum Permissible Exposure (MPE)

Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

RSS 102 issue 5.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
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
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

FCC: Bluetooth mode:

Maximum Permissible Exposure (MPE) Evaluation

The worst case of peak power: refer to FCC P15C test report for detail measurement date.

Power measurement:

Bluetooth Tune-Up Power:

Frequency Range:	2402 – 2480MHz
Tune-Up Power	-3dBm +/- 2.0 dBm

Prediction of MPE limit at a given distance

Equation from page 18 of 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

Maximum output power at antenna input terminal:	-1	(dBm)
Maximum output power at antenna input terminal:	0.794328235	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	1.258925412	(mW)
Antenna gain (typical):	3	(dBi)
Maximum antenna gain:	1.995262315	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0005000	(mW/cm^2)

802.11b mode

Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
Lowest (2412MHz)	32.359	0.01020	1.0	PASS

Remark: antenna gain=2.0 dBi

Only worst case is reported

Simultaneous transmission mode

Bluetooth BLE mode + 802.11b Mode:

BT BLE Prediction frequency:	2.4	(GHz)
Power density at predication frequency at 20 (cm)	0.0005000	(mW/cm ²)

Wifi B mode Prediction frequency:	2.4	(GHz)
Power density at predication frequency at 20 (cm)	0.0102000	(mW/cm ²)
Bluetooth mode + 802.11b Power density at predication frequency at 20 (cm) distance	0.0107000	(mW/cm ²)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)

The predicted power density level at 20 cm is 0.0107 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm².

~ End of Report ~