RF EXPOSURE EVALUATION METHOD

FCC ID: 2BEGI-CE100

According to KDB 447498 D01 General RF Exposure Guidance v06

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

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:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,where
f(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.

Maximum measured transmitter power.

2.4G wifi:

Test Channe	Frequency	Maximum Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
TX 802.11b Mode			
CH01	2412	0.18	30
CH06	2437	1.24	30
CH11	2462	1.46	30
TX 802.11g Mode			
CH01	2412	0.88	30
CH06	2437	1.57	30
CH11	2462	1.95	30
TX 802.11n(20) Mode			
CH01	2412	0.93	30
CH06	2437	2.06	30
CH11	2462	2.35	30
TX 802.11n(40) Mode			
CH03	2422	0.11	30
CH06	2437	1.38	30
CH09	2452	1.77	30

Remark: The best case gain of the antenna is 3.7dBi.
3.7dBi logarithmic terms convert to numeric result is nearly 2.34

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:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance,mm)] • [√f(GHz)]

BLE
Field strength = 94.14dBuV/m @3m
Ant gain =3.7 dBi ; so Ant numeric gain= 2.34

Calculate the EIRP from the radiated field strength in the far field using Equation:

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

where

EIRP	is the equivalent isotropically radiated power, in dBm
E_{Meas}	is the field strength of the emission at the measurement distance, in dBμV/m
d_{Meas}	is the measurement distance, in m

The EIRP value for BLE is -1.06dBm. The maximum tune-up power(Conducted) is -4dBm.
So, the calc. result is 0.125 < 3.0

2.4G wifi:

Test Channel	Range	tune up max power (dBm)	[(max. power of channel, including tune-up tolerance, mW)	(min. test separation distance,mm)]	[f(GHz)]	Result	Limit
2.4G wifi:							
TX 802.11b Mode							
CH01	0~2	2	1.585	5	2.412	0.492	3
CH06	0~2	2	1.585	5	2.437	0.495	3
CH11	0~2	2	1.585	5	2.462	0.497	3
TX 802.11g Mode							
CH01	0~2	2	1.000	5	2.412	0.492	3
CH06	0~2	2	1.000	5	2.437	0.495	3
CH11	0~2	2	1.000	5	2.462	0.497	3
TX 802.11n(20) Mode							
CH01	0~2	2	1.585	5	2.412	0.492	3
CH06	1~3	3	1.585	5	2.437	0.623	3
CH11	1~3	3	1.585	5	2.462	0.626	3
TX 802.11n(40) Mode							
CH03	0~2	2	1.585	5	2.422	0.493	3
CH06	0~2	2	1.585	5	2.437	0.495	3
CH09	0~2	2	1.585	5	2.452	0.496	3

2.4 G WiFi and **BLE** can't simultaneously transmission, maximum is : 0.626≤ 1.

The test Result is less than 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR.

Conclusion: No SAR is required.