FCC ID: 2AHEQD3EW000

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

11.1 Friis transmission formula: Pd= (Pout*G)\ ($4*pi*R^2$)

Where
Pd= Power density in mW/cm^2
Pout=output power to antenna in mW
G= Numeric gain of the antenna relative to isotropic antenna
Pi=3.1416
R= distance between observation point and center of the radiator in cm
Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Operation Frequency: 2402MHz~2480MHz
Power density limited: $1mW/ cm^2$
Antenna gain: 2.83dBi,
Bluetooth:

Channel Frequency (MHz)	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
2402	0.44	-3.56	-3±1	-2	1.92	0.0002	1
2440	0.49	-3.13	-3±1	-2	1.92	0.0002	1
2480	0.56	-2.78	-3±1	-2	1.92	0.0002	1

Operation Frequency: WIFI 2.4G 2412MHz~ 2462MHz
Power density limited: 1mW/ cm^2 Antenna gain: Chain A: 2.55dBi, Chain B: 2.82dBi,
802.11b:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	79.25	18.99	19±1	20	1.80	0.0358	1
6	88.72	19.48	19±1	20	1.80	0.0358	1
11	87.70	19.43	19±1	20	1.80	0.0358	1

802.11g:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	78.89	18.97	19.5±1	20.5	1.80	0.0402	1
6	101.39	20.06	19.5±1	20.5	1.80	0.0402	1
11	79.62	19.01	19.5±1	20.5	1.80	0.0402	1

802.11n HT20 Chain A:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	72.95	18.63	19±1	20	1.80	0.0358	1
6	76.56	18.84	19±1	20	1.80	0.0358	1
11	68.08	18.33	19±1	20	1.80	0.0358	1

802.11n HT20 Chain B:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	72.11	18.58	18±1	19	1.91	0.0303	1
6	67.45	18.29	18±1	19	1.91	0.0303	1
11	65.16	18.14	18±1	19	1.91	0.0303	1

802.11n HT40 Chain A:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
3	72.11	18.58	19±1	20	1.80	0.0358	1
6	67.45	18.29	19±1	20	1.80	0.0358	1
9	65.16	18.14	19±1	20	1.80	0.0358	1

802.11n HT40 Chain B:

Channel	Output power (mW)	Output power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
3	66.99	18.26	18±1	19	1.91	0.0303	1
6	63.10	18	18±1	19	1.91	0.0303	1
9	77.09	18.87	18±1	19	1.91	0.0303	1

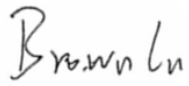
802.11n HT20 MIMO:

Channel	Channel Frequency (MHz)	Power density at 20cm(mW/cm2) Chain A	Power density at 20cm(mW/cm2) Chain B	Power density at 20cm(mW/cm2) ChainA+B	Power density Limits (mW/cm2)
1	2412	0.0358	0.0303	0.0661	1
6	2437	0.0358	0.0303	0.0661	1
11	2462	0.0358	0.0303	0.0661	1

802.11n HT40 MIMO:

Channel	Channel Frequency (MHz)	Power density at 20cm(mW/cm2) Chain A	Power density at 20cm(mW/cm2) Chain B	Power density at 20cm(mW/cm2) ChainA+B	Power density Limits (mW/cm2)
3	2422	0.0358	0.0303	0.0661	1
6	2437	0.0358	0.0303	0.0661	1
9	2452	0.0358	0.0303	0.0661	1

Conclusion:
For the max result : 0.0661≤ 3.0 for 1g SAR, No SAR is required.



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