FCC ID : WEA041086

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: $Pd= (Pout*G) \backslash (4*pi*R^2)$

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

Power density limited:
Antenna gain: Chain A: 2dBi, Chain B: 2dBi,
Directional Gain= $G_{ANT}+10\log(N_{ANT})dBi=5dBi$ (MIMO)

802.11b:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	2412	16.34	43.05266	1.58489	0.01357	1
6	2441	16.54	45.08167	1.58489	0.01421	1
11	2472	16.95	49.54502	1.58489	0.01562	1

802.11g:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	2412	15.59	36.22430	1.58489	0.01142	1
6	2441	15.09	32.28494	1.58489	0.01018	1
11	2472	15.21	33.18945	1.58489	0.01046	1

802.11n HT20 Chain A:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	2412	14.75	29.85383	1.58489	0.00941	1
6	2441	14.98	31.47748	1.58489	0.00992	1
11	2472	14.72	29.64831	1.58489	0.00935	1

802.11n HT20 Chain B:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
1	2412	14.21	26.36331	1.58489	0.00831	1
6	2441	14.12	25.82260	1.58489	0.00814	1
11	2472	14.25	26.60725	1.58489	0.00839	1

802.11n HT20 MIMO:

Channel	Channel Frequency (MHz)	Power density at 20cm(mW/cm^2) Chain A	Power density at 20cm(mW/cm^2) Chain B	Power density at 20cm(mW/cm^2) ChainA+B	Power density Limits (mW/cm2)
1	2412	0.00941	0.00831	0.01772	1
6	2441	0.00992	0.00814	0.01806	1
11	2472	0.00935	0.00839	0.01774	1

802.11n HT40 Chain A:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
3	2422	13.75	23.71374	1.58489	0.00748	1
6	2441	13.56	22.69865	1.58489	0.00716	1
9	2462	13.72	23.55049	1.58489	0.00743	1

802.11n HT40 Chain B:

Channel	Channel Frequency (MHz)	Output power (dBm)	Output power (mW)	Antenna Gain Numeric	Power density at 20cm(mW/cm^2)	Power density Limits (mW/cm2)
3	2422	13.89	24.49063	1.58489	0.00772	1
6	2441	13.64	23.12065	1.58489	0.00729	1
9	2462	13.65	23.17395	1.58489	0.00731	1

802.11n HT40 MIMO:

Channel	Channel Frequency (MHz)	Power density at 20cm(mW/cm^2) Chain A	Power density at 20cm(mW/cm^2) Chain B	Power density at 20cm(mW/cm^2) ChainA+B	Power density Limits (mW/cm2)
3	2422	0.00748	0.00772	0.0152	1
6	2441	0.00716	0.00729	0.01445	1
9	2462	0.00743	0.00731	0.01474	1