FCC ID: 2AC8IFT15J1900

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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) 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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

MPE Calculation Method

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=3.14115926

R= distance between observation point and center of the radiator in cm(20cm)

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.

Measurement Result

WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,
802.11n HT40: 2422-2452MHz,
Power density limited: 1mW/ cm^2
Antenna Type: Wifi Antenna: External Antenna;
WIFI antenna gain: 3dBi (ANT A), 3dBi (ANT B),
For MIMO, Antenna Gain=3+10log(N)=6.01dBi
R=20cm
mW=10^(dBm/10)
antenna gain Numeric=10^(dBi/10)= 10^(3/10)=2.00

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna		Evaluation result at 20cm			Power density Limits
		(dBm)		(dBm)		tune-up power				Gain		Power density(mW/cm2)			(mW/cm2)
						(dBm)		(mW)		Numeric					
		Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Sum	
2412	802.11b	14.3	14.2	14±1	14±1	15	15	31.623	31.623	2.00	2.00	0.01258	0.01258	/	1
2437		14.1	14.1	14±1	14±1	15	15	31.623	31.623	2.00	2.00	0.01258	0.01258	/	1
2462		14.6	13.9	14±1	14±1	15	15	31.623	31.623	2.00	2.00	0.01258	0.01258	/	1
2412	802.11g	9.8	9.5	10.2±1	10±1	11.2	11	13.183	12.589	2.00	2.00	0.00525	0.00501	/	1
2437		10.6	10.7	10.2±1	10±1	11.2	11	13.183	12.589	2.00	2.00	0.00525	0.00501	/	1
2462		11.1	9.6	10.2±1	10±1	11.2	11	13.183	12.589	2.00	2.00	0.00525	0.00501	/	1
2412	802.11n H20	9.5	9.5	10±1	10±1	11	11	12.589	12.589	2.00	2.00	0.00501	0.00501	0.00976	1
2437		9.8	9.4	10±1	10±1	11	11	12.589	12.589	2.00	2.00	0.00501	0.00501	0.00976	1
2462		9.6	9.6	10±1	10±1	11	11	12.589	12.589	2.00	2.00	0.00501	0.00501	0.00976	1
2422	802.11n H40	8.6	8.9	9±1	9±1	10	10	10	10.000	2.00	2.00	0.00398	0.00398	0.00796	1
2437		9.3	9.3	9±1	9±1	10	10	10	10.000	2.00	2.00	0.00398	0.00398	0.00796	1
2452		9.4	9.6	9±1	9±1	10	10	10	10.000	2.00	2.00	0.00398	0.00398	0.00796	1

The sum=Power density Ant A/1+Power density Ant b/1

CONCULSION:

WLAN 2.4GHz can transmit simultaneously, the formula of calculatedthe MPE is:
CPD / LPD……etc. < 1
CPD = Calculation power density
LPD = Limit of power density
Therefore, the worst-case situation is 0.01258/1=0.01258, which is less than “1”.

This confirmed that the device comply with MPE limit, No SAR is required.

Signature: **Date:** 2017-04-28

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