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				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

Friis Formula

Friis transmission formula : $P_d = (P_{out}*G)/(4*p_i*r^2)$
Where
P_d = power density in mW/cm^2
P_{out} = output power to antenna in mW
G = gain of antenna in linear scale
P_i = 3.1416
r = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance “r” where the MPE limit is reached.

EUT Operating Condition

A software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

Test Result of RF Exposure Evaluation

Test Item ： RF Exposure Evaluation Data
Test Mode ： Normal Operation

Antenna Gain

Antenna Gain：The maximum Gain measured in fully anechoic chamber is 4.5dBi linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance

Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Antenna Gain	Power Density at 20cm (mW/cm2)	LIMITS (mW/cm^2)
CH 1	2412	26.03	4.5	0.224766	1
CH 6	2437	25.61	4.5	0.204047	1
CH 11	2462	26.08	4.5	0.227368	1

Note : 1. For 802.11b Mode (11Mbps)
2. The power density Pd (4th column) at a distance of 20cm calculated from the fries transmission formula is far below the limit of 1 mW/cm^2 . The EUT is classified as mobile product. So, RF exposure limit warning or SAR test are not required.
3. The EUT is classified as mobile module. RF exposure evaluation will be evaluated after the EUT is installed with the host.

Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Antenna Gain	Power Density at 20cm (mW/cm2)	LIMITS (mW/cm^2)
CH 1	2412	23.55	4.5	0.126978	1
CH 6	2437	23.90	4.5	0.137635	1
CH 11	2462	23.64	4.5	0.129637	1

Note : 1. For 802.11g Mode (54Mbps).
2. The power density Pd (4th column) at a distance of 20cm calculated from the fries transmission formula is far below the limit of 1 mW/cm^2 . The EUT is classified as mobile product. So, RF exposure limit warning or SAR test are not required.
3. The EUT is classified as mobile module. RF exposure evaluation will be evaluated after the EUT is installed with the host.

Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Antenna Gain	Power Density at 20cm (mW/cm2)	LIMITS (mW/cm^2)
6	2437	22.75	4.5	0.105616	1

Note : 1. For 802.11g Turbo mode (108 Mbps)
2. The power density Pd (4th column) at a distance of 20cm calculated from the fries transmission formula is far below the limit of 1 mW/cm^2 . The EUT is classified as mobile product. So, RF exposure limit warning or SAR test are not required.
3. The EUT is classified as mobile module. RF exposure evaluation will be evaluated after the EUT is installed with the host.