RF Exposure Evaluation

Limits

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 Exposures				
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
300–1500			f/300	6
1500–100,000			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
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

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 = gain of antenna in linear scale, **Pi** = 3.1416;

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

Pd id 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.

Test Procedure

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

Mode	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
WiFi 802.11b	25.119	0.00889	1.0	PASS

Remark: Only worse case is reported

Remark: antenna gain=2.5 dBi

Manufacturing tolerance
2.4GHz WLAN

IEEE 802.11b (PEAK)						
Frequency	Antenna 1					
(MHz)	2412	2437	2462			
Target (dBm)	13	13	13			
Tolerance ± (dB)	1.0	1.0	1.0			
IEEE 802.11g (PEAK)						
Frequency	Antenna 1					
(MHz)	2412	2437	2462			
Target (dBm)	11	11	13			
Tolerance ± (dB)	1.0	1.0	1.0			
IEEE 802.11n HT20 (PEAK)						
Frequency	Antenna 1					
(MHz)	2412	2437	2462			
Target (dBm)	11	11	13			
Tolerance ± (dB)	1.0	1.0	1.0			
IEEE 802.11n HT40 (PEAK)						
Frequency	Antenna 1					
(MHz)	2412	2437	2462			
Target (dBm)	12	12	12			
Tolerance ± (dB)	1.0	1.0	1.0			