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

802.11b mode

Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	E.I.R.P (mW)	Limit (mW/cm^2)	Result
Lowest (2412MHz)	28.379	0.00895	44.978	1.0	PASS
Middle (2437MHz)	28.510	0.00899	45.186	1.0	PASS
Highest (2462MHz)	29.376	0.00926	46.559	1.0	PASS

802.11g mode

Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	E.I.R.P (mW)	Limit (mW/cm^2)	Result
Lowest (2412MHz)	17.989	0.00567	28.510	1.0	PASS
Middle (2437MHz)	17.179	0.00542	27.227	1.0	PASS
Highest (2462MHz)	16.711	0.00527	26.485	1.0	PASS

802.11n(H20) mode

Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	E.I.R.P (mW)	Limit (mW/cm^2)	Result
Lowest (2412MHz)	17.378	0.00548	27.542	1.0	PASS
Middle (2437MHz)	17.458	0.00550	27.669	1.0	PASS
Highest (2462MHz)	18.750	0.00591	29.717	1.0	PASS

802.11n(H40) mode

Channel	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	E.I.R.P (mW)	Limit (mW/cm^2)	Result
Lowest (2422MHz)	11.749	0.00370	18.621	1.0	PASS
Middle (2437MHz)	11.561	0.00365	18.323	1.0	PASS
Highest (2452MHz)	10.965	0.00346	17.378	1.0	PASS

Remark: antenna gain=2.0 dBi