ATTACHMENT

RF EXPOSURE EVULATION

1.1   Limit

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength	Magnetic field Strength	Power density	Averaging time
1.34 - 30......................................	824/f	2.19/f	*(180/ f²)	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

* = Plane-wave equivalent power density

1.2   MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

Power density at the specific separation(BLE):

$S = PG/(4R^2 \pi)$
 	
 $S = (0.94* 1.78) / (4 * 20^2 * \pi)$
 	
 $S = 0.000336 \text{ mW/cm}^2$
	Where,
	     S = Maximum power density (mW/cm^2)
	     P = Power input to the antenna (mW)
	     G = Numeric power gain of the antenna
	     R = Distance to the center of the radiation of the antenna
	        (20 cm = limit for MPE)

Power density at the specific separation(802.11):

$S = PG/(4R^2 \pi)$
 	
 $S = (88.92* 1.58) / (4 * 20^2 * \pi)$
 	
 $S = 0.028 \text{ mW/cm}^2$
	Where,
	     S = Maximum power density (mW/cm^2)
	     P = Power input to the antenna (mW)
	     G = Numeric power gain of the antenna
	     R = Distance to the center of the radiation of the antenna
	        (20 cm = limit for MPE)

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1.3 MAXIMUM PERMISSIBLE EXPOSURE Prediction

BLE Mode

Max Peak output Power at antenna input terminal	-0.24	dBm
Max Peak output Power at antenna input terminal	0.95	mW
Prediction distance	20	cm
Prediction frequency	2,480	MHz
Antenna Gain(typical)	2.51	dBi
Antenna Gain(numeric)	1.78	-

802.11 Mode

Max Peak output Power at antenna input terminal	19.49	dBm
Max Peak output Power at antenna input terminal	88.92	mW
Prediction distance	20	cm
Prediction frequency	2,437	MHz
Antenna Gain(typical)	2.0	dBi
Antenna Gain(numeric)	1.58	-

For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B)

{[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

The max Power Density at R(20 cm) = 0.000336 mW/cm^2 + 0.000336 mW/cm^2 + 0.000336 mW/cm^2 + 0.028 mW/cm^2 = 0.029008 mW/cm^2