

# 1 Maximum Permissible Exposure

## 1.1 Maximum Permissible Exposure

### 1.1.1 Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30
Note 1: f = frequency in MHz ; *Plane-wave equivalent power density				
Note 2: For the applicable limit, see FCC 1.1310				

### 1.1.2 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

**E** = Electric field (V/m)

**G** = EUT Antenna numeric gain (numeric)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**P** = RF output power (W)

**d** = Separation distance between radiator and human body (m)



**1.1.3 Result of Maximum Permissible Exposure**

<b>Transmitter Chains &amp; Receiver Chains Information</b>				
<b>IEEE Std. 802.11 Protocol</b>	<b>Number of Transmit Chains (N<sub>TX</sub>)</b>	<b>Number of Receive Chains (N<sub>RX</sub>)</b>	<b>Correlation Signals with Multiple N<sub>TX</sub></b>	<b>RF Output Power (dBm)</b>
BT-BR	1	1	Correlated	0.87
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.				

<b>Worst Maximum RF Output Power Result</b>					
<b>Exposure Environment</b>		General Population / Uncontrolled Exposure			
<b>Separation Distance (cm)</b>		20			
<b>Power Level</b>	1	<b>RF Output Power (dBm)</b>			
<b>Modulation Mode</b>	<b>N<sub>TX</sub></b>	<b>RF Output Power (dBm)</b>	<b>Gain (dBi)</b>	<b>EIRP Power</b>	<b>PD (S) (mW/cm<sup>2</sup>)</b>
BT-BR	1	0.87	-3.77	-2.90	0.00010
<b>Maximum Permissible Exposure Limit (mW/cm<sup>2</sup>)</b>					1
Note 1: N <sub>TX</sub> = Number of Transmit Chains					