1 Human Exposure Assessment

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/ cm²)**	**Averaging Time |E|²,|H|² or S (minutes)**
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
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/ cm²)**	**Averaging Time |E|²,|H|² or S (minutes)**
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
Note 1: f = frequency in MHz ; *Plane-wave equivalent power density Note 2: For the applicable limit, see FCC 1.1310				

MPE Calculation Method

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

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

E = Electric field (V/m)
P = RF output power (W)
G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)

The formula can be changed to

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

1.1.2 Result of Maximum Permissible Exposure (2.4G)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11 Protocol**	**Ch. Frequency (MHz)**	**Channel Number**	**Number of Transmit Chains (N_{TX})**	**RF Output Power (dBm)**
2400-2483.5	b	2412-2462	1-11 [11]	2	20.64
2400-2483.5	g	2412-2462	1-11 [11]	2	29.77
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	28.55
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	21.75
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result							
Exposure Environment	General Population / Uncontrolled Exposure						
Separation Distance (cm)	20						
Condition	**RF Output Power (dBm)**						
Modulation Mode	**N_{TX}**	**Chain-Port 1**	**Chain-Port 2**	**Sum Chain**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
11g	2	26.73	26.78	29.77	2.70	32.47	0.351520
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							

1.1.3 Result of Maximum Permissible Exposure (5.2G)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11 Protocol**	**Ch. Frequency (MHz)**	**Channel Number**	**Number of Transmit Chains (N_{TX})**	**RF Output Power (dBm)**
5150-5250	a	5180-5240	36-48 [4]	2	10.24
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	10.65
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	13.36
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	2	10.66
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	2	13.18
5150-5250	ac (VHT80)	5210	48 [1]	2	15.34
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result							
Exposure Environment	General Population / Uncontrolled Exposure						
Separation Distance (cm)	20						
Condition	**RF Output Power (dBm)**						
Modulation Mode	**N_{TX}**	**Chain-Port 1**	**Chain-Port 2**	**Sum Chain**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
ac (VHT80)	2	12.08	12.57	15.34	7.41	22.75	0.037493
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							

1.1.4 Result of Maximum Permissible Exposure (5.8G)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11 Protocol**	**Ch. Frequency (MHz)**	**Channel Number**	**Number of Transmit Chains (N_{TX})**	**RF Output Power (dBm) Co-location**
5725-5850	a	5745-5825	149-165 [5]	2	23.76
5725-5850	n (HT20)	5745-5825	149-165 [5]	2	24.91
5725-5850	n (HT40)	5755-5795	151-159 [2]	2	24.71
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	2	24.89
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	2	24.87
5725-5850	ac (VHT80)	5775	155 [1]	2	19.12
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result							
Exposure Environment		General Population / Uncontrolled Exposure					
Separation Distance (cm)		20					
Condition		**RF Output Power (dBm)**					
Modulation Mode	**N_{TX}**	**Chain-Port 1**	**Chain-Port 2**	**Sum Chain**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
n (HT20)	2	21.33	22.41	24.91	7.41	32.32	0.339586
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							

Worst Maximum RF Output Power Result							
Exposure Environment	General Population / Uncontrolled Exposure						
Separation Distance (cm)	20						
Condition	**RF Output Power (dBm)**						
Modulation Mode	**N_{TX}**	**Chain-Port 1**	**Chain-Port 2**	**Sum Chain**	**DG (dBi)**	**EIRP Power**	**PD (S) (mW/cm²)**
2.4 GHz	2	26.73	26.78	29.77	2.70	32.47	0.351520
5 GHz	2	21.33	22.41	24.91	7.41	32.32	0.339586
Co-location Total							0.691106
Maximum Permissible Exposure Limit (mW/cm²)							1
Note 1: N_{TX} = Number of Transmit Chains							