

8. RADIO FREQUENCY EXPOSURE

8.1. Limit

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

Table: Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Power Density (S) (mW/cm ²)
0.3–1.34	*(100)
1.34–30	*(180/f ²)
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

F = frequency in MHz

* = Plane-wave equivalent power density

Maximum Permissible Exposure

The MPE was calculated at 20cm to show compliance with the power density limit.

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna.

Note:

1. Manufacturer declared that the maximum antenna gain is 5.0dBi for TX.
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

802.11b

Conducted Peak output Power in dBm	16.00	dBm
Tune up power tolerance	15.5 ± 0.5	dBm
Max. Conducted Peak output Power in mW	39.8107	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.02504	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

802.11g

Conducted Peak output Power in dBm	12.80	dBm
Tune up power tolerance	12.3 ± 0.5	dBm
Max. Conducted Peak output Power in mW	19.0546	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.01198	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

802.11n-HT20

Conducted Peak output Power in dBm	12.50	dBm
Tune up power tolerance	12.0 ± 0.5	dBm
Max. Conducted Peak output Power in mW	17.7828	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.01118	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

802.11n-HT40

Conducted Peak output Power in dBm	10.00	dBm
Tune up power tolerance	9.5 ± 0.5	dBm
Max. Conducted Peak output Power in mW	10.0000	mW
Prediction distance	20	cm
Prediction frequency	2452	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.00628	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

GFSK(BT V3.0)

Conducted Peak output Power in dBm	4.7	dBm
Tune up power tolerance	4.2 ± 0.5	dBm
Max. Conducted Peak output Power in mW	2.9512	mW
Prediction distance	20	cm
Prediction frequency	2480	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.0019	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

GFSK (BT V4.0)

Conducted Peak output Power in dBm	2.5	dBm
Tune up power tolerance	2.0 ± 0.5	dBm
Max. Conducted Peak output Power in mW	1.7783	mW
Prediction distance	20	cm
Prediction frequency	2480	MHz
Antenna Gain(typical)	5.0	dBi
Antenna Gain(numeric)	3.16	
Power density at prediction frequency(S)	0.0011	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

8.2 Test Results

The power density level worst case at 20 cm is below the uncontrolled exposure limit.