

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/cm²)
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 2.0dBi.
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

2.4GHz Band, 802.11b

Conducted Peak output Power in dBm	4.53	dBm
Max. Conducted Peak output Power in mW	2.84	mW
Prediction distance	20	cm
Prediction frequency	2412	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0225	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

2.4GHz Band, 802.11g

Conducted Peak output Power in dBm	3.26	dBm
Max. Conducted Peak output Power in mW	2.12	mW
Prediction distance	20	cm
Prediction frequency	2412	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0168	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

2.4GHz Band, 802.11n(HT20)

Conducted Peak output Power in dBm	2.73	dBm
Max. Conducted Peak output Power in mW	1.87	mW
Prediction distance	20	cm
Prediction frequency	2412	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0148	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

2.4GHz Band, 802.11n(HT40)

Conducted Peak output Power in dBm	2.21	dBm
Max. Conducted Peak output Power in mW	1.66	mW
Prediction distance	20	cm
Prediction frequency	2422	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0132	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

5GHz Band, 802.11n(HT20)

Conducted Peak output Power in dBm	4.11	dBm
Max. Conducted Peak output Power in mW	2.58	mW
Prediction distance	20	cm
Prediction frequency	5745	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0204	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

5GHz Band, 802.11n(HT40)

Conducted Peak output Power in dBm	3.69	dBm
Max. Conducted Peak output Power in mW	2.34	mW
Prediction distance	20	cm
Prediction frequency	5755	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0185	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm ²

5GHz Band, 802.11a

Conducted Peak output Power in dBm	3.19	dBm
Max. Conducted Peak output Power in mW	2.08	mW
Prediction distance	20	cm
Prediction frequency	5745	MHz
Antenna Gain(typical)	16.0	dBi
Antenna Gain(numeric)	39.81	
Power density at prediction frequency(S)	0.0165	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.