

10. RADIO FREQUENCY EXPOSURE

10.1. 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 for Wi-Fi and Zigbee is 1.0dBi(Max.)
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

Test Mode	Channel	Frequency (MHz)	Power (dBm, Peak)	Power Tune Up (dBm, Peak)
802.11b	Low	2412	15.20	15.0 ± 1.0
	Middle	2437	15.15	15.0 ± 1.0
	High	2462	15.34	15.0 ± 1.0
802.11g	Low	2412	15.24	15.0 ± 1.0
	Middle	2437	15.23	15.0 ± 1.0
	High	2462	15.26	15.0 ± 1.0
802.11n HT20	Low	2412	15.12	15.0 ± 1.0
	Middle	2437	15.22	15.0 ± 1.0
	High	2462	15.25	15.0 ± 1.0
802.11n HT40	Low	2422	15.22	15.0 ± 1.0
	Middle	2437	15.23	15.0 ± 1.0
	High	2452	15.15	15.0 ± 1.0
Zigbee	Low	2405	8.011	8.0 ± 1.0
	Middle	2440	8.625	8.0 ± 1.0
	High	2480	8.749	8.0 ± 1.0

10.2 Test Results

Test Mode	Channel	Max. Tune Up Power (dBm, Peak)	Max. Tune Up Power (mW)	MPE (mW/cm ²)	Limit (mW/cm ²)
802.11b	Low	16.0	39.81	0.0100	1.0
	Middle	16.0	39.81	0.0100	1.0
	High	16.0	39.81	0.0100	1.0
802.11g	Low	16.0	39.81	0.0100	1.0
	Middle	16.0	39.81	0.0100	1.0
	High	16.0	39.81	0.0100	1.0
802.11n HT20	Low	16.0	39.81	0.0100	1.0
	Middle	16.0	39.81	0.0100	1.0
	High	16.0	39.81	0.0100	1.0
802.11n HT40	Low	16.0	39.81	0.0100	1.0
	Middle	16.0	39.81	0.0100	1.0
	High	16.0	39.81	0.0100	1.0
Zigbee	Low	9.0	7.94	0.0020	1.0
	Middle	9.0	7.94	0.0020	1.0
	High	9.0	7.94	0.0020	1.0

Antenna Gain (typical): Wi-Fi&Zigbee: 1dBi, 1.26 (numeric)

Prediction distance: $\geq 20\text{cm}$

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

Simultaneous transmission:

This device doesn't support simultaneous transmission. Only single operating mode at the same time is allowed.