

FCC §15.247 (i), §2.1091 – RF Exposure

FCC ID:2AFZ9-S

Applied procedures / limit

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

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 ²) | 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)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | F/300 | 6 |
| 1500-100,000 | | | 5 | 6 |

Note: f is frequency in MHz

* = Power density limit is applicable at frequencies greater than 100 MHz

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 ²) | 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)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

Note: f = frequency in MHz

* = Plane-wave equivalent power density

MPE PREDICTION

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

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

Where: 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

TEST RESULTS

WIFI

| TX 802.11b Mode | | | | |
|---------------------|-----------|--|--|--|
| Test Channel | Frequency | Maximum Peak Conducted Output Power (PK) | Maximum Peak Conducted Output Power (AV) | Maximum Peak Conducted Output Power (AV) |
| | (MHz) | (dBm) | (dBm) | mW |
| CH01 | 2412 | 15.85 | 12.96 | 19.77 |
| CH06 | 2437 | 15.87 | 12.98 | 19.86 |
| CH11 | 2462 | 15.84 | 12.95 | 19.72 |
| TX 802.11g Mode | | | | |
| CH01 | 2412 | 14.57 | 12.44 | 17.54 |
| CH06 | 2437 | 14.66 | 12.53 | 17.91 |
| CH11 | 2462 | 14.63 | 12.49 | 17.74 |
| TX 802.11n(20) Mode | | | | |
| CH01 | 2412 | 14.87 | 12.64 | 18.37 |
| CH06 | 2437 | 14.86 | 12.63 | 18.32 |
| CH11 | 2462 | 14.92 | 12.69 | 18.58 |
| TX 802.11n(40) Mode | | | | |
| CH03 | 2422 | 12.87 | 10.64 | 11.59 |
| CH06 | 2437 | 12.86 | 10.63 | 11.56 |
| CH09 | 2452 | 12.92 | 10.69 | 11.72 |

| Mode | Range | Maximum peak output power (dBm) | Output power (mW) | Antenna Gain (numeric) | Power Density (S) (mW/ cm ²) | Limit of Power Density (S) (mW/ cm ²) | Result |
|--------------|-------|---------------------------------|-------------------|------------------------|--|---|--------|
| 802.11b | 14~16 | 16 | 39.81 | 1(1.26) | 0.0100 | 1 | Pass |
| 802.11g | 13~15 | 15 | 31.62 | 1(1.26) | 0.0079 | 1 | Pass |
| 802.11n-HT20 | 13~15 | 15 | 31.62 | 1(1.26) | 0.0079 | 1 | Pass |
| 802.11n-HT40 | 11~13 | 13 | 19.95 | 1(1.26) | 0.0050 | 1 | Pass |