

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

FCC ID: 2A9DL-AIRGO

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, R=20cm

Test Result of RF Exposure Evaluation

| | Modes & Channel Freq. (MHz) | Tune up Produce power | Maximum peak output power (dBm) | Output power to antenna (mW) | Antenna Gain (numeric) | Power Density (S) (mW/cm ²) | Limit (mW/cm ²) | Result |
|----------------|-----------------------------|-----------------------|---------------------------------|------------------------------|------------------------|---|-----------------------------|--------|
| 2.4G WIFI ANT1 | 802.11b&2437 | 8±1 | 9 | 7.9433 | 1.9634 (2.93dBi) | 0.00310 | 1 | Pass |
| 2.4G WIFI ANT2 | 802.11b&2412 | 8±1 | 9 | 7.9433 | 1.9634 (2.93dBi) | 0.00310 | 1 | Pass |
| 5.2G WIFI ANT1 | 802.11n(H T20)&5240 | 8±1 | 9 | 7.9433 | 3.8282 (5.83dBi) | 0.00605 | 1 | Pass |
| 5.2G WIFI ANT2 | 802.11a &5200 | 8±1 | 9 | 7.9433 | 3.8282 (5.83dBi) | 0.00605 | 1 | Pass |
| 5.8G WIFI ANT1 | 802.11a &5825 | 8±1 | 9 | 7.9433 | 2.3227 (3.66dBi) | 0.00367 | 1 | Pass |
| 5.8G WIFI ANT2 | 802.11n(H T20)&5825 | 8±1 | 9 | 7.9433 | 2.3227 (3.66dBi) | 0.00367 | 1 | Pass |

| Technology | Modes & Channel Freq. (MHz) | Tune up Produce power(dBm) | | Maximum Tune-up (dBm) | | Antenna Gain(ANT 1/ANT 2) (numeric) | Power Density (S) (mW/ cm2) | | MPE Limit (mW/ cm2) | Σ MPE Ratio | Σ MPE Ratio Limit | Result |
|----------------|------------------------------|----------------------------|---------|-----------------------|-------|--|-----------------------------|-------------|---------------------|-------------|-------------------|--------|
| | | ANT 1 | ANT 2 | ANT 1 | ANT 2 | | ANT 1 | ANT 2 | | | | |
| 2.4G WIFI MIMO | 802.11b&2437 802.11b&2412 | 8± 1 | 8± 1 | 9 | 9 | ANT1:1.9634 2.93dBi ANT2:1.9634 (2.93dBi) | 0.0031 0 | 0.0031 0 | 1 | 0.0062 | 1 | Pass |

| Technology | Modes & Channel Freq. (MHz) | Tune up Produce power(dBm) | | Maximum Tune-up (dBm) | | Antenna Gain(ANT 1/ANT 2) (numeric) | Power Density (S) (mW/ cm2) | | MPE Limit (mW/ cm2) | Σ MPE Ratio | Σ MPE Ratio Limit | Result |
|--------------|---|----------------------------|---------|-----------------------|-------|--|-----------------------------|-------------|---------------------|-------------|-------------------|--------|
| | | ANT 1 | ANT 2 | ANT 1 | ANT 2 | | ANT 1 | ANT 2 | | | | |
| 5G WIFI MIMO | 802.11n(HT20)& 5240 802.11a &5200 | 8± 1 | 8± 1 | 9 | 9 | ANT1:3.8282 (5.83dBi) ANT2:3.8282 (5.83dBi) | 0.0060 5 | 0.0060 5 | 1 | 0.0121 | 1 | Pass |