

# FCC ID: 2AQRL-FD2

## RF Exposure Evaluation

### Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in KDB 447498 D01 V06 and 1.1307(b) Limits for Maximum Permissible Exposure (MPE)

#### 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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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=0.2m

**TEST RESULTS**

|           | Tune up<br>Produce<br>power | Maximum<br>peak<br>output<br>power<br>(dBm) | Output<br>power to<br>antenna<br>(mW) | Antenna<br>Gain<br>(numeric) | Power<br>Density<br>(S)<br>(mW/<br>cm <sup>2</sup> ) | Limit<br>(mW<br>/ cm <sup>2</sup><br>) | Result |
|-----------|-----------------------------|---|---------------------------------------|------------------------------|--|--|--------|
| 2.4G WIFI | 14±1                        | 15  | 31.62                                 | 1.86(2.7dBi)                 | 0.01170  | 1                                      | Pass   |
| 2.4G SRD  | 5±1                         | 6   | 3.98                                  | 1.68(2.26dBi)                | 0.00133  | 1                                      | Pass   |
| 5.8G SRD  | 10±1                        | 11  | 12.59                                 | 1.67(2.23dBi)                | 0.00418  | 1                                      | Pass   |

**For the Max simultaneous transmission:**

Simultaneous transmitting=2.4G WIFI/Limit+2.4G SRD /Limit+5.8G SRD/Limit

Simultaneous transmitting =0.01170/1+0.00133/1+0.00418/1=0.01721 ≤ 1.0

For the max result : 0.01721 ≤ 1.0, compliance with FCC's RF Exposure