



## Maximum Permissible Exposure (MPE)

According to subpart FCC §1.1307 (b)(1) and §2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure (§1.1310, §2.1091)

| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                                      |                                      |  |                                 |
|--|--------------------------------------|--------------------------------------|--|---------------------------------|
| <b>Frequency Range (MHz)</b>                                   | <b>Electric Field Strength (V/m)</b> | <b>Magnetic Field Strength (A/m)</b> | <b>Power Density (mW/cm<sup>2</sup>)</b> | <b>Averaging Time (minutes)</b> |
| 0.3–1.34   | 614                                  | 1.63                                 | *(100)                                   | 30                              |
| 1.34–30  | 824/f                                | 2.19/f                               | *(180/f <sup>2</sup> )                   | 30                              |
| 30–300   | 27.5                                 | 0.073                                | 0.2                                      | 30                              |
| 300–1500   | /                                    | /                                    | f/1500                                   | 30                              |
| 1500–100,000   | /                                    | /                                    | 1.0                                      | 30                              |

**NOTE:**

1. *f* = frequency in MHz;
2. \* = Plane-wave equivalent power density;

The RF Exposure level is calculated using the general equation:

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

Where:

S = power density (W/m<sup>2</sup>)

P = power input to the antenna (W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator (Numeric)

R = distance to the center of radiation of the antenna (m)

PG = EIRP (effective isotropic radiated power) [W]



**Result:**

Morlab has received documents from the applicant show:

Max antenna Gain <=-1dBi

Base on the RF power tested in GSM850/GSM1900 mode, Choose the max from Low/Middle/High Channels as below list.

| Band    | Frequency (MHz) | RF Power (dBm) | Antenna Gain(dBi) | R (cm) | S (mW/cm2) | Limit (mW/cm2) | Verdict    |
|---------|-----------------|----------------|-------------------|--------|------------|----------------|------------|
| GSM850  | 848.8           | 31.78          | -1                | 20     | 0.23808    | 0.56590        | compliance |
| GSM1900 | 1909.8          | 29.55          | -1                | 20     | 0.14247    | 1.00000        | compliance |

So, the power density is kept in all modes.

Regards!

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Morlab