

# RF Exposure Statement

## 1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

### (B) Limits for General Population/Uncontrolled Exposures

| Frequency range<br>(MHz) | Electric field<br>Strength (V/m) | Magnetic field<br>Strength (A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|--------------------------|----------------------------------|----------------------------------|----------------------------------------|-----------------------------|
| 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                          |

F = frequency in MHz

\* = Plane-wave equivalent power density

## 2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

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

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

### **3. RESULTS**

#### **3-1. WCDMA 850 BAND**

|                                                             |         |                    |
|-------------------------------------------------------------|---------|--------------------|
| Average Peak output Power at antenna input terminal         | 25.000  | dBm                |
| Average Peak output Power at antenna input terminal         | 316.228 | mW                 |
| Prediction distance                                         | 20.000  | cm                 |
| Prediction frequency                                        | 826.400 | MHz                |
| Antenna Gain(Peak)                                          | 0.890   | dBi                |
| Antenna Gain(numeric)                                       | 1.227   | -                  |
| Power density at prediction frequency( S)                   | 0.077   | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 0.551   | mW/cm <sup>2</sup> |

#### **3-2. WCDMA 1900 BAND**

|                                                             |          |                    |
|-------------------------------------------------------------|----------|--------------------|
| Average Peak output Power at antenna input terminal         | 25.000   | dBm                |
| Average Peak output Power at antenna input terminal         | 316.228  | mW                 |
| Prediction distance                                         | 20.000   | cm                 |
| Prediction frequency                                        | 1852.400 | MHz                |
| Antenna Gain(Peak)                                          | 3.200    | dBi                |
| Antenna Gain(numeric)                                       | 2.089    | -                  |
| Power density at prediction frequency( S)                   | 0.131    | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000    | mW/cm <sup>2</sup> |

#### **3-3. LTE BAND 2**

|                                                             |          |                    |
|-------------------------------------------------------------|----------|--------------------|
| Average Peak output Power at antenna input terminal         | 25.700   | dBm                |
| Average Peak output Power at antenna input terminal         | 371.535  | mW                 |
| Prediction distance                                         | 20.000   | cm                 |
| Prediction frequency                                        | 1852.500 | MHz                |
| Antenna Gain(Peak)                                          | 3.200    | dBi                |
| Antenna Gain(numeric)                                       | 2.089    | -                  |
| Power density at prediction frequency( S)                   | 0.154    | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000    | mW/cm <sup>2</sup> |

### 3-4. LTE BAND 5

|                                                             |         |                    |
|-------------------------------------------------------------|---------|--------------------|
| Average Peak output Power at antenna input terminal         | 25.700  | dBm                |
| Average Peak output Power at antenna input terminal         | 371.535 | mW                 |
| Prediction distance                                         | 20.000  | cm                 |
| Prediction frequency                                        | 824.700 | MHz                |
| Antenna Gain(Peak)                                          | 0.890   | dBi                |
| Antenna Gain(numeric)                                       | 1.227   | -                  |
| Power density at prediction frequency( S)                   | 0.091   | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 0.550   | mW/cm <sup>2</sup> |

### 3-5. LTE BAND 4

|                                                             |          |                    |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal             | 25.700   | dBm                |
| Max Peak output Power at antenna input terminal             | 371.535  | mW                 |
| Prediction distance                                         | 20.000   | cm                 |
| Prediction frequency                                        | 1712.500 | MHz                |
| Antenna Gain(Peak)                                          | 2.410    | dBi                |
| Antenna Gain(numeric)                                       | 1.742    | -                  |
| Power density at prediction frequency( S)                   | 0.129    | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000    | mW/cm <sup>2</sup> |

### 3-6. LTE BAND 17

|                                                             |         |                    |
|-------------------------------------------------------------|---------|--------------------|
| Max Peak output Power at antenna input terminal             | 25.700  | dBm                |
| Max Peak output Power at antenna input terminal             | 371.535 | mW                 |
| Prediction distance                                         | 20.000  | cm                 |
| Prediction frequency                                        | 706.500 | MHz                |
| Antenna Gain(Peak)                                          | -1.440  | dBi                |
| Antenna Gain(numeric)                                       | 0.718   | -                  |
| Power density at prediction frequency( S)                   | 0.053   | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 0.471   | mW/cm <sup>2</sup> |