

## RF Exposure evaluation

According to 447498 D04 Interim General RF Exposure Guidance v01

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and  $f$  is in GHz,  $d$  is the separation distance (cm), and  $ERP_{20 \text{ cm}}$  is per Formula (B.1).  
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

| Frequency (MHz) | Distance (mm) |    |    |     |     |     |     |     |     |     |
|-----------------|---------------|----|----|-----|-----|-----|-----|-----|-----|-----|
|                 | 5             | 10 | 15 | 20  | 25  | 30  | 35  | 40  | 45  | 50  |
| 300             | 39            | 65 | 88 | 110 | 129 | 148 | 166 | 184 | 201 | 217 |
| 450             | 22            | 44 | 67 | 89  | 112 | 135 | 158 | 180 | 203 | 226 |
| 835             | 9             | 25 | 44 | 66  | 90  | 116 | 145 | 175 | 207 | 240 |
| 1900            | 3             | 12 | 26 | 44  | 66  | 92  | 122 | 157 | 195 | 236 |
| 2450            | 3             | 10 | 22 | 38  | 59  | 83  | 111 | 143 | 179 | 219 |
| 3600            | 2             | 8  | 18 | 32  | 49  | 71  | 96  | 125 | 158 | 195 |
| 5800            | 1             | 6  | 14 | 25  | 40  | 58  | 80  | 106 | 136 | 169 |

$$ERP/EIRP = P_T + G_T - L_C$$

ERP/EIRP is the equivalent (or effective) radiated power [in same units as  $P_T$ , typically dBW, dBm, or power spectral density (psd)], relative to either a dipole antenna (ERP) or an isotropic antenna (EIRP).

$P_T$  is the transmitter output power, in dBW, dBm, or psd (power over a specified reference bandwidth).

$G_T$  is the gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP).

$L_C$  is the signal attenuation in the connecting cable between the transmitter and the antenna, in dB.

| Mode      | Frequency (MHz) | Output power (dBm) | Output power (mw) | Ant gain (dBi) | EIRP (dBm) | EIRP (mw) | ERP (dBm) | ERP (mw) | Distance (cm) | $P_{th}$ (mW) |
|-----------|-----------------|--------------------|-------------------|----------------|------------|-----------|-----------|----------|---------------|---------------|
| 2.4G-WiFi | 2437            | 15.36              | 34.36             | 3              | 18.36      | 68.55     | 16.21     | 41.78    | 20            | 3060          |
| GSM850    | 824.2           | 25.81              | 381.07            | 0.29           | 26.1       | 407.38    | 23.95     | 248.31   | 20            | 1681          |
| GSM1900   | 1850.2          | 22.81              | 190.99            | 4.68           | 27.49      | 561.05    | 25.34     | 341.98   | 20            | 3060          |
| WCDMA B2  | 1852.4          | 25.00              | 316.23            | 4.68           | 29.68      | 928.97    | 27.53     | 566.24   | 20            | 3060          |
| WCDMA B4  | 1712.4          | 25.00              | 316.23            | 4.68           | 29.68      | 928.97    | 27.53     | 566.24   | 20            | 3060          |
| WCDMA B5  | 826.4           | 25.00              | 316.23            | 0.29           | 25.29      | 338.06    | 23.14     | 206.06   | 20            | 1686          |
| LTE B2    | 1850.7          | 25.00              | 316.23            | 4.68           | 29.68      | 928.97    | 27.53     | 566.24   | 20            | 3060          |
| LTE B4    | 1710.7          | 25.00              | 316.23            | 4.68           | 29.68      | 928.97    | 27.53     | 566.24   | 20            | 3060          |

|                     |         |       |        |      |       |        |       |        |    |      |
|---------------------|---------|-------|--------|------|-------|--------|-------|--------|----|------|
| LTE B5              | 824.70  | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1682 |
| LTE B7              | 2502.50 | 25.00 | 316.23 | 4.68 | 29.68 | 928.97 | 27.53 | 566.24 | 20 | 3060 |
| LTE B12             | 699.70  | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1427 |
| LTE B13             | 779.50  | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1631 |
| LTE B25             | 850.7   | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1735 |
| LTE<br>B26(814-824) | 814.7   | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1662 |
| LTE<br>B26(824-849) | 824.7   | 25.00 | 316.23 | 0.29 | 25.29 | 338.06 | 23.14 | 206.06 | 20 | 1682 |
| LTE B38             | 2572.5  | 25.00 | 316.23 | 4.68 | 29.68 | 928.97 | 27.53 | 566.24 | 20 | 3060 |
| LTE B41             | 2498.5  | 25.00 | 316.23 | 4.68 | 29.68 | 928.97 | 27.53 | 566.24 | 20 | 3060 |

ERP = EIRP -2.15 dB

Remark:

Then SAR evaluation is not required