



## RF Exposure evaluation

According to KDB 447498 D01 General RF Exposure Guidance v06 and 47CRF part 2.1093.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where  $f(\text{GHz})$  is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

Here,

### For NFC

| Fre.<br>(GHz) | E<br>(dBuV/m) | EIRP<br>(dBm) | Max<br>ERP (dBm) | Max<br>ERP (mW) | Separation<br>distance<br>(mm) | Calculation<br>Value | Threshold<br>Value |
|---------------|---------------|---------------|------------------|-----------------|--------------------------------|----------------------|--------------------|
| 13.56         | 72.93         | -22.27        | -24.42           | 0.004           | 5                              | 0.00009              | 3.0                |

$(0.004\text{mW} / 5\text{mm}) \cdot [\sqrt{0.01356(\text{GHz})}] = 0.00009 < 3.0$  for 1-g SAR

$\text{EIRP(dBm)} = \text{E(dBuV/m)} - 95.2 = 72.93 \text{ (dBuV/m)} - 95.2 = -22.27\text{dBm}$

$\text{ERP} = \text{EIRP(dBm)} - 2.15$

### For BLE

| Frequency<br>(MHz) | Max power<br>(dBm) | Max power<br>(mW) | Min. distance<br>(mm) | Calculation<br>Value | Threshold<br>Value |
|--------------------|--------------------|-------------------|-----------------------|----------------------|--------------------|
| 2440               | 1.50               | 1.41              | 5                     | 0.44                 | 3.0                |

### For 2.4G WIFI

| Frequency<br>(MHz) | Max power<br>(dBm) | Max power<br>(mW) | Min. distance<br>(mm) | Calculation<br>Value | Threshold<br>Value |
|--------------------|--------------------|-------------------|-----------------------|----------------------|--------------------|
| 2462               | 9.34               | 8.59              | 5                     | 2.78                 | 3.0                |



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**For 5.2G WIFI**

| Frequency (MHz) | Max power (dBm) | Max power (mW) | Min. distance (mm) | Calculation Value | Threshold Value |
|-----------------|-----------------|----------------|--------------------|-------------------|-----------------|
| 5240            | 7.66            | 5.83           | 5                  | 2.67              | 3.0             |

**For 5.8G WIFI**

| Frequency (MHz) | Max power (dBm) | Max power (mW) | Min. distance (mm) | Calculation Value | Threshold Value |
|-----------------|-----------------|----------------|--------------------|-------------------|-----------------|
| 5745            | 7.71            | 5.90           | 5                  | 2.83              | 3.0             |

Operate simultaneously

NFC:  $(0.004\text{mW} / 5\text{mm}) * [\sqrt{0.01356(\text{GHz})/7.5}] = 0.00001 \text{ w/kg}$

BLE:  $(1.41\text{mW} / 5\text{mm}) * [\sqrt{2.440(\text{GHz})/7.5}] = 0.059 \text{ w/kg}$

2.4GWIFI:  $(8.59\text{mW} / 5\text{mm}) * [\sqrt{2.412(\text{GHz})/7.5}] = 0.371 \text{ w/kg}$

5.2GWIFI:  $(5.83\text{mW} / 5\text{mm}) * [\sqrt{5.180(\text{GHz})/7.5}] = 0.356 \text{ w/kg}$

5.8GWIFI:  $(5.90\text{mW} / 5\text{mm}) * [\sqrt{5.825(\text{GHz})/7.5}] = 0.377 \text{ w/kg}$

If BLE+NFC+ 2.4G WIFI operate simultaneously, then  $0.059+0.371+0.00001=0.430 < 1.6\text{w/kg}$

If BLE +NFC+5.2G WIFI operate simultaneously, then  $0.059+0.356+0.00001=0.415 < 1.6\text{w/kg}$

If BLE+NFC+ 5.8G WIFI operate simultaneously, then  $0.059+0.377+0.00001=0.436 < 1.6\text{w/kg}$

So SAR test is not required