



### SAR Exclusion Justification

Test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm

Guidance document reference: 447498 D01 General RF Exposure Guidance v05r01, page 11, paragraph 4.3.1(1).

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:

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

- $f(\text{GHz})$  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
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

### SAR test exclusion analysis:

Assumptions: Since the exact separation distance may vary from sensor to sensor, the minimum separation distance of 5 mm is assumed per the guidance document.

|                           |          |
|---------------------------|----------|
| Max. power of channel:    | 8.43 mW  |
| Min. separation distance: | 5 mm     |
| Max. frequency:           | 2.45 GHz |

$$[(\text{Pwr}/\text{Dist}) * \sqrt{\text{Freq.}}] = 2.6$$

The result of the above SAR threshold calculation demonstrates that the result is less than the 1-g numeric threshold of 3 and the 10-g numeric threshold of 7.5.

**Conclusion: The above analysis shows that the evaluated device qualifies for exemption from SAR testing.**

Signed:  , Senior Engineer 3/2/2016