

## RF EXPOSURE TEST

### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and $\leq 50$ mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

| MHz  | 5   | 10  | 15  | 20  | 25  | mm                                      |
|------|-----|-----|-----|-----|-----|---|
| 150  | 39  | 77  | 116 | 155 | 194 | SAR Test<br>Exclusion<br>Threshold (mW) |
| 300  | 27  | 55  | 82  | 110 | 137 |   |
| 450  | 22  | 45  | 67  | 89  | 112 |   |
| 835  | 16  | 33  | 49  | 66  | 82  |   |
| 900  | 16  | 32  | 47  | 63  | 79  |   |
| 1500 | 12  | 24  | 37  | 49  | 61  |   |
| 1900 | 11  | 22  | 33  | 44  | 54  |   |
| 2450 | 10  | 19  | 29  | 38  | 48  |   |
| 3600 | 8   | 16  | 24  | 32  | 40  |   |
| 5200 | 7   | 13  | 20  | 26  | 33  |   |
| 5400 | 6   | 13  | 19  | 26  | 32  |   |
| 5800 | 6   | 12  | 19  | 25  | 31  |   |
| MHz  | 30  | 35  | 40  | 45  | 50  | mm                                      |
| 150  | 232 | 271 | 310 | 349 | 387 | SAR Test<br>Exclusion<br>Threshold (mW) |
| 300  | 164 | 192 | 219 | 246 | 274 |   |
| 450  | 134 | 157 | 179 | 201 | 224 |   |
| 835  | 98  | 115 | 131 | 148 | 164 |   |
| 900  | 95  | 111 | 126 | 142 | 158 |   |
| 1500 | 73  | 86  | 98  | 110 | 122 |   |
| 1900 | 65  | 76  | 87  | 98  | 109 |   |
| 2450 | 57  | 67  | 77  | 86  | 96  |   |
| 3600 | 47  | 55  | 63  | 71  | 79  |   |
| 5200 | 39  | 46  | 53  | 59  | 66  |   |
| 5400 | 39  | 45  | 52  | 58  | 65  |   |
| 5800 | 37  | 44  | 50  | 56  | 62  |   |

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,<sup>16</sup> 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<sup>17</sup>

☐ The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion.

## Bluetooth

| frequency range | Maximum Peak Conducted Output Power (dBm) | Maximum Conducted Output Power (mW) |
|-----------------|---|-------------------------------------|
| 2402            | -0.767                                    | 0.84                                |
| 2441            | 0.435                                     | 1.11                                |
| 2480            | 0.285                                     | 1.07                                |

The max.output power E.I.R.P is 0.435dBm=1.11mW, Frequency is 2.441GHz

So  $(1.11/5)^* \sqrt{2.441} = 0.346 \leq 3.0$

The maximum power tolerance is 1.5dBm=1.41mW,Max Frequency is 2.48GHz

So  $(1.41/5)^* \sqrt{2.48} = 0.443 \leq 3.0$

**Conclusion:** No SAR is required.