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SAR EXCLUSION DOCUMENT

Document 75940057-01 Issue 01

Bluetooth - Standalone SAR Test Exclusion Considerations (KDB 447498 D01) Section 4.3.1 a)

100 MHz – 6 GHz – Separation Distance <50 mm

The 1g SAR Test exclusion thresholds for 100 MHz to 6 GHz test separation distances ≤ 50 mm are determined by:

[(max power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] [√f (GHz)] ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

- f (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
- When the maximum test separation distance is < 5 mm, a distance of 5 mm is applied.

Frequency (GHz)	Maximum Power (Tune up Value) * (mW)	Test Separation Distance (mm)**	Threshold	Limit***	SAR Test Exclusion
2480	16.6	5	5.2	7.5	Yes

*Tune-up value is the maximum declared output power of the device
** When the maximum test separation distance is < 5 mm, a distance of 5 mm is applied
*** Select ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

The SAR exclusion threshold has been evaluated using the formula described above from information supplied by the manufacturer. Based on the calculation above, the EUT is categorically excluded from SAR testing.

Approved by .....

Nic Forsyth
Authorised Signatory

Date 04 October 2017

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13.56 MHz - Standalone SAR Test Exclusion Considerations (KDB 447498 D01) Section 4.3.1 c)

<100 MHz – Separation Distance <50 mm

The 1g SAR Test exclusion thresholds for <100 MHz are determined by:

Threshold result from Formula in Section 4.3.1 a)

[(max power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] [√f (GHz)] ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

- f (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

Formula re-arranged to give Power Allowed At Numeric Threhold for 50 mm for use in section 4.3.1(b):

Result: 7.5 / SQRT(0.01356) * 50 = 1186 mW

Threshold result from Formula in Section 4.3.1 b)

{[Power allowed at numeric threshold for 50 mm {Formula 4.3.1(a)})] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW

- f (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

>50 mm and <200 mm

Threshold result from For
mula in Section 4.3.1 b) Result * [1+log(100/f_{MHz})]
1186 * [1 + log(100/13.56)] = 2215.1 mW

<50 mm

Result from the formula above for >50 mm and <200 mm * 0.5

2215.1 / 2 = 1107.6 mW

Test Separation Distance (mm)	Power Allowed at Numeric Threshold Section 4.3.1 b) (mW)	Frequency (MHz)	Maximum Power (Tune up Value) * (mW)	SAR Exclusion Threshold (mW)
5	1186	13.56	50	1107.6

The SAR exclusion threshold has been evaluated using the formula described above from information supplied by the manufacturer. Based on the calculation above, the EUT is categorically excluded from SAR testing.