RF Exposure Evaluation

REQUIREMENT

KDB447498 D01 General RF Exposure Guidance v06, Clause 4.3.1(a)

a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0

for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where

-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

-The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 4.1 f) is applied to determine SAR test exclusion.

b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

1) **{[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW**, for 100 MHz to 1500 MHz

2) **{[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm) • 10]} mW**, for > 1500 MHz and ≤ 6 GHz

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f(MHz))]

2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½

3) SAR measurement procedures are not established below 100 MHz.

When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any SAR test results below 100 MHz to be acceptable.

TEST RESULT

☒ **Passed**   ☐ **Not Applicable**

Type	Conducted Average Power (dBm)	Maximum Tune-up (dBm)	Calculating data	Limit	Result
BLE	-0.3	0	0.3106	3	Pass

Test Frequency	H-field strength (dBuV/m)	H-field strength (dBm)	H-field strength (mW)	Limit (mW)	Result
13.56MHz	57.78	-37.45	0.00018	443	Pass
125KHz	55.46	-39.59	0.00011	926	Pass

Consider BLE and 13.56MHz can transmitting simultaneously, the total transmitting MPE rate as below formula:

MPE rate=SAR of BLE/limit + H-field strength of 13.56MHz/limit ≤ 1

The worst case is BLE and 13.56MHz transmitting simultaneously, the result as below:

Evaluation mode	Calculation results / limit	Sum of the MPE rate	limit
BLE	0.1035	0.1035	1
13.56MHz	0.0000004063		

Note:

1) *The BLE maximum antenna gain is 0dBi.*

2) *H-field strength is the result of testing in a 3m Anechoic Chamber.*

3) *The exposure evaluation safety distance is 5mm.*