

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 \leq 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$

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

-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 \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 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) $\{[\text{Power allowed at numeric threshold for 50 mm in step a}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$ mW, for 100 MHz to 1500 MHz

2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for $>$ 1500 MHz and \leq 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 $[1 + \log(100/f(\text{MHz}))]$

2) For test separation distances \leq 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$

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

Test Frequency	H-field strength (dBuV/m)	H-field strength (dBm)	H-field strength (mW)	Limit (mW)	Result
433.92MHz	79.00	-16.20	0.0032	3.0	Pass

Note:

- 1) The 13.56MHz maximum antenna gain is -9.8dBi
- 2) The exposure evaluation safety distance is 5mm.
- 3) $(dBm) = E(dBuV/m) + 20\log(d) - 104.77 = E(dBuV/m) - 95.2$