

SAR Test exclusion documentation according to FCC KDB 447498 and FCC §2.1093

Report identification number: 1-5658_23-02-16_TR1-R01 Exclusion (FCC)

contains the module with the following certification numbers	
FCC ID	2ACAHAU5MNRR

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EUT technologies:

Technologies:	Max. measured cond. AVG Power	Antenna gain	Rated power for RF exposure
Proprietary 3.84 MHz	1.3 dBm (1.36 mW)	< 0 dBi	1.3 dBm (1.36 mW)
BT LE 2450 MHz	8.1 dBm (6.46 mW)	< 0 dBi	8.1 dBm (6.46 mW)

Note: Measured max taken from cetecom advanced GmbH 1-5658_23-02-08_TR1-R1 and customer declarations

Collocation overview:

Active scenario: Technology	1	2	3
Proprietary 3.84 MHz	x		x
BT LE 2450 MHz	x	x	

SAR test exclusion according to KDB447498 (General RF Exposure Guidance v06) and FCC §2.1093

Equation from Chapter 4.3.1: Standalone SAR test exclusion considerations page 11 and ff and tables in Annex C.

(c) (2) Standalone SAR test exclusion below 100 MHz < 50mm

$$0.5 \times (\text{Threshold}_{100\text{MHz}}) \times (1 + \log(100/f))$$

where

$\text{Threshold}_{1-g;10-g}$ is 3 for 1-g; 7.5 for 10-g

f is the RF channel transmit frequency

$\text{Threshold}_{100\text{MHz},50\text{mm}}$ is $\text{Threshold}_{1-g;10-g} \times d / f^{0.5}$; with $f = 100\text{MHz}$ and $d=50\text{mm}$

The table below gives the calculated maximal power that could be used for source based time averaged conducted power, adjusted for tune up tolerance. If this is below the calculated value SAR testing is excluded at 5 mm.

frequency [MHz]	Threshold 1-g	Threshold _{100MHz,50mm}	Powerlimit [mW]	P _{max-declared}		Exclusion
				[dBm]	[mW]	
3.84	3	474.34	572.93	1.30	1.35	yes

Equation from Chapter 4.3.1: Standalone SAR test exclusion considerations page 11 and ff.

(1) Standalone SAR test exclusion for 100 MHz to 6 GHz at test separation distances $\leq 50\text{mm}$

$$(\text{Threshold}_{1\text{-g};10\text{-g}}) \times d_{\text{separation}} / f^{0.5}$$

where

$\text{Threshold}_{1\text{-g};10\text{-g}}$ is 3 for 1-g; 7.5 for 10-g

$d_{\text{separation}}$ is the min. test separation distance; 5mm is used if the distance is less

f is the RF channel transmit frequency

The table below gives the calculated maximal power that could be used for source based time averaged conducted or radiated power, adjusted for tune up tolerance. If this is at or below the calculated value the DUT is exempted from SAR evaluation.

frequency [MHz]	$d_{\text{separation}}$ [mm]	$\text{Threshold}_{1\text{-g}}$	Powerlimit [mW]	$P_{\text{max-declared}}$		Exclusion
				[dBm]	[mW]	
2450.00	5	3	9.58	8.10	6.46	yes

Collocation:

Overview:

Technology , [MHz]	3.84 MHz	BT, 2450
Exemption based on	SAR , 5mm distance	
Limit ERP [mW]:	572.93	9.58
Result ERP [mW]:	1.36	6.46
Limit-Exhaustion [%]	0.2	67.4
Collocated percentage [%]	67.7	
Verdict:	PASS	