



SAR Test exclusion documentation according to FCC KDB 447498, RSS-102

Report identification number: 1-7810/19-05-07 Exclusion (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	2AC8P-MBT1
ISED number	12310A-MBT1
HVIN (Hardware Version Identification Number)	MBT-1
PMN (Product Marketing Name)	MBT-1
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

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Document authorised:



Alexander Hnatovskiy
Lab Manager
Radio Communications & EMC



Marco Scigliano
Testing Manager
Radio Communications & EMC

EUT technologies:

Technologies:	Max. power [dBm]		Antenna gain max.: [dBi] *	Declared max.EIRP from customer	#
	conducted	EIRP			
Proprietary FHSS 900 to 928 MHz	decl. 14.0 (peak) meas. 11.9 (peak)	decl. 14.0 (peak) meas. 12.6 (peak)	<0.0	13 dBm +/-1 dB	A
Bluetooth LE 2450 MHz	decl. 6.0 (avg) meas. 5.2 (avg)	decl. 10.0 (avg) meas. 7.6 (avg)	<2.4	9 dBm +/-1 dB	B

Details and origins of the measurements shown in the table above:

#	Results from:	Additional information
A	1-7810/19-05-05-A CTC Advanced GmbH	Antenna gain page 20, Max conducted and ERP page 31
B	1-7810/19-05-06 CTC Advanced GmbH	Antenna gain page 20, Max conducted page 26

)* worst case of all antenna types, channels and modulations (overrated)

SAR test exclusion according to KDB447498 (General RF Exposure Guidance v06)

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 ≤ 50 mm

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

where

Threshold_{1-g;10-g} is 3 for 1-g; 7.5 for 10-g

d_{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 _{separation} [mm]	Threshold _{1-g}	Powerlimit [mW]	P _{max-declared}		Exclusion
				[dBm]	[mW]	
900.00	8	3	25.30	14.00	25.12	yes
2450.00	8	3	15.33	6.00	3.98	yes

Informational calculation for hand held devices:

Standalone SAR test exclusion (Limb worn)							
Communication system	freq. (MHz)	distance (mm)	P _{avg} (dBm)	P _{avg} (mW)	threshold _{10g} comparison value	SAR _{10g} test exclusion thresholds	SAR _{10g} test exclusion
FHSS	900	5	14.0	25.1	4.8	7.5	yes
BT LE	2450	5	6.0	4.0	1.2	7.5	yes

SAR test exclusion according to RSS-102 Issue 5 Section 2.5.1/Table 1

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 _{separation} [mm]	tissue volume	Powerlimit [mW]	P _{max-declared}		Exclusion
				[dBm]	[mW]	
900.00	15	1 g	40.54	14.00	25.12	yes
2450.00	15	1 g	15.00	10.00	10.00	yes

Informational calculation for hand held devices:

Standalone SAR test exclusion considerations for Limb position						
Communication system	freq. (MHz)	distance (mm)	P _{avg} (dBm)	P _{avg} (mW)	Exemption Limits _{10g} (mW) (×2.5)	SAR test exclusion
FHSS	900	5	14.0	25.12	41.0	yes
BT LE	2450	5	10.0	10.0	10.0	yes

The limits above are defined for body worn application and therefore cover all use cases.