

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

Report identification number: 1-3709/21-01-13 Exclusion (FCC)

contains the module with the following certification numbers	
FCC ID	2AQYJ-FLUOREYEBS

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

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EUT technologies:

Technologies:	Max. declared cond. AVG Power	Max. measured EIRP @ 10m ¹⁾	Antenna gain	MAX EIRP for RF exposure
NFC 13.56 MHz	12.55 dBm (18.0 mW)	37.0 dBµV (Peak) = -47.77 dBm	< 0 dBi	12.55 dBm (18.0 mW)
BT LE 2450 MHz ²⁾	6.0 dBm (4.0 mW)	--	< 3.3 dBi	9.3 dBm (8.5 mW)

NOTE:

Max. power according technical documentation NXP_PN7150 is 600 mW. The duty cycle of the polling signal is 3.02% what leads to an average of 18 mW. A plot of the duty cycle is added as Annex B of this document.

1) Test setup from 10m EIRP measurement is attached in Annex A of this document.

2) Test results for BT LE can be seen in CTC advanced GmbH report 1-3709/21-01-10

Collocation overview:

Technology \ Active scenario:	1	2	3	4
NFC 13.56 MHz	x		x	
BT LE	x	x		

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 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

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

f is the RF channel transmit frequency

Threshold_{100MHz,50mm} is Threshold_{1-g;10-g} × d / f^{0.5}; with f = 100MHz and d=50mm

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.

frequency [MHz]	Threshold _{1-g;10-g}	Threshold _{100MHz,50mm}	Powerlimit [mW]	P _{max-declared}		Exclusion
				[dBm]	[mW]	
13.56	3	474.34	442.97	12.55	18.0	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 ≤ 50mm

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

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]	
2450.00	5	3	9.58	9.30	8.51	yes

Collocation:

Overview:

Technology , [MHz]	NFC, 13.56 MHz	BT, 2450
Exemption based on	SAR , 5mm distance	
Limit ERP [mW]:	442.97	9.58
Result ERP [mW]:	18.0	8.51
Limit-Exhaustion [%]	4.1	88.8
Collocated percentage [%]	92.9	
Verdict:	PASS	

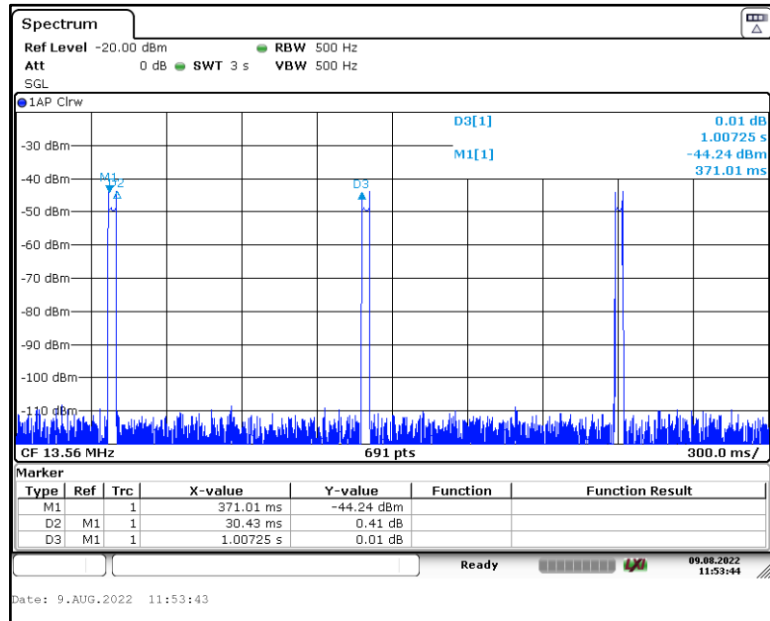
Annex A: Pictures of the EIRP measurement for 13.56MHz with 10m distance



Loop-Antenna: EMCO 6502A (Correction factor @ 13.56MHz +9.5 dB)



Annex B: Duty cycle of the EUT (polling):



Duty Cycle 3.02% polling