

SAR Test exclusion documentation according to FCC KDB 447498

Report identification number: 1-5336/22-01-03 Exclusion (FCC)

contains the module with the following certification numbers	
FCC ID	OKY12115100A01A

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	Antenna gain
NFC 13.56 MHz	18.88 dBm (=77.2mW)	43.3 dBμV (Peak)@30m = -31.95 dBm ¹⁾	< 0 dBi

NOTE:

The measured PEAK EIRP according ²⁾, proves that the EUT antenna gain is far below 0dBi and that considering the max. declared output power is by far larger than the EIRP. Conducted values will be used for the RF exposure calculation. EIRP values are for information only.

The following table shows the max. declared Peak values and duty corrections for 13.56 MHz:

Technology	Max. decl. cond. Peak power: [dBm] ³⁾	Duty cycle ²⁾ [%]	Max. declared cond. AVG Power [dBm]
NFC 13.56 MHz	400 mW	19.3	77.2 mW

¹⁾ Test results for EIRP taken from CTC advanced GmbH report 1-5336/22-01-02-A (page 19).

²⁾ The duty cycles can be found in Annex A of this document.

³⁾ Max. output power for the 13.56 MHz RFID is 400 mW according customer declaration.

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

(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

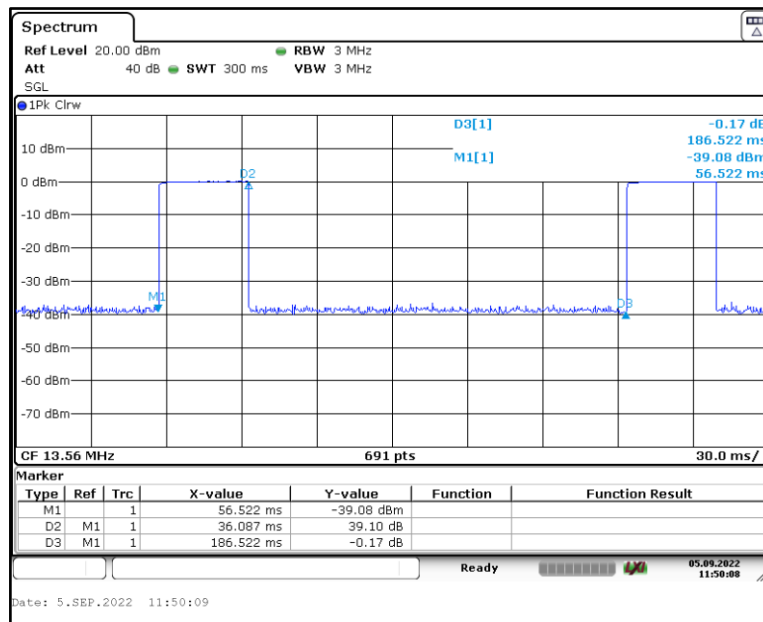
Threshold_{100MHz,50mm} is Threshold_{1-g;10-g} × d / f^{0.5}; with f = 100MHz and d=50mm

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	18.88	77.3	yes

This prediction demonstrates the following:

The power density levels for FCC that are larger than the minimum safety-distances stated above, are below the maximum levels allowed by regulations.

Annex A: Duty cycles**Duty cycle 13.56 MHz of the EUT:**

Duty Cycle 19.3%