

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



BNetzA-CAB-13/21-08

This SAR test exclusion document is referring to the Test report identification no. FCC ID: 23012923_Rev.00 and IC ID: 23012999_Rev.00.

module with the Certification numbers	
FCC ID	PJMLRM5400
IC ID	6633A-LRM5400
HVIN (Hardware Version Identification Number)	ID LRM5400
PMN (Product Marketing Name)	---
FVIN (Firmware Version Identification Number)	RF-Stack V1.00
HMN (Host Marketing Name)	ID ANT1710/690-A+ID ANT1710/690-B, ID ANT1710/690-EA+ID ANT1710/690-EB, ID ANT1520/680-A+ID ANT1520/680-B, ID ANT1520/700-HPDA+ID ANT1520/700-HPDB

Equipment under Test (EUT)					
EUT	Tech.	EUT operating modes	Operating Frequency	Max. output Power.	Antenna Gain
ID LRM5400	RFID	OP1 (ID ANT1710/690-A + ID ANT1710/690-B)	13.56 MHz	46.7 dBm**	0 dBi
ID LRM5400	RFID	OP2 (ID ANT1710/690-EA + ID ANT1710/690-EB)	13.56 MHz	543.3 dBm**	0 dBi
ID LRM5400	RFID	OP3 (ID ANT1520/680-A + ID ANT1520/680-B)	13.56 MHz	15.3 dBm**	0 dBi
ID LRM5400	RFID	OP4 (ID ANT1520/700-HPDA + ID ANT1520/700-HPDB)	13.56 MHz	695.0 dBm**	0 dBi

** measurement result is taken from TÜV Nord HF Test report no. FCC ID: 23012923_Rev.00/IC ID: 23012999_Rev.00

Calculation:

$E_{\text{measured}} = 111.9 \text{ dB}\mu\text{V/m @ 3-meter OP1 (ID ANT1710/690-A + ID ANT1710/690-B)}$
 $E_{\text{measured}} = 122.5 \text{ dB}\mu\text{V/m @ 3-meter OP2 (ID ANT1710/690-EA + ID ANT1710/690-EB)}$
 $E_{\text{measured}} = 107.0 \text{ dB}\mu\text{V/m @ 3-meter OP3 (ID ANT1520/680-A + ID ANT1520/680-B)}$
 $E_{\text{measured}} = 123.6 \text{ dB}\mu\text{V/m @ 3-meter OP4 (ID ANT1520/700-HPDA + ID ANT1520/700-HPDB)}$

According to ANSI 63.10-2013,

$\text{Power}_{\text{EIRP}} = E_{\text{meas.}} + 20 \log(d_{\text{meas}}) - 104.7 \text{ dBm} = 46.7 \text{ dBm} - \text{OP1 (ID ANT1710/690-A + ID ANT1710/690-B)}$
 $\text{Power}_{\text{EIRP}} = E_{\text{meas.}} + 20 \log(d_{\text{meas}}) - 104.7 \text{ dBm} = 543.3 \text{ dBm} - \text{OP2 (ID ANT1710/690-EA + ID ANT1710/690-EB)}$
 $\text{Power}_{\text{EIRP}} = E_{\text{meas.}} + 20 \log(d_{\text{meas}}) - 104.7 \text{ dBm} = 15.3 \text{ dBm} - \text{OP3 (ID ANT1520/680-A + ID ANT1520/680-B)}$
 $\text{Power}_{\text{EIRP}} = E_{\text{meas.}} + 20 \log(d_{\text{meas}}) - 104.7 \text{ dBm} = 695.0 \text{ dBm} - \text{OP4 (ID ANT1520/700-HPDA + ID ANT1520/700-HPDB)}$

SAR test exclusion according to KDB 447498 (General RF Exposure Guidance v06)

SAR test exclusion for RFID

According to KDB 447498 subsection 4.3.1 c) and the table in Appendix C, the EUT is exempted from SAR evaluation.

RFID Freq. [MHz]	EUT operating modes	d _{separation} [mm]	Power measured. [mW]	Power limit [mW]	Exclusion [Yes/No]
13.56	OP1	190	46.7	1059.0	Yes
13.56	OP2	190	543.3	1059.0	Yes
13.56	OP3	190	15.3	1059.0	Yes
13.56	OP4	190	695.0	1059.0	Yes

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

According to RSS-102 Issue 5, if the EUT operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1 of the section 2.5.1, then it is exempted from SAR evaluation.

SAR test exclusion for RFID

RFID Freq. [MHz]	EUT operating modes	d _{separation} [mm]	Tissue volume	Power measured. [mW]	Power limit [mW]	Exclusion [Yes/No]
13.56	OP1	200	1 g	46.7	1000.0	Yes
13.56	OP2	200	1 g	543.3	1000.0	Yes
13.56	OP3	200	1 g	15.3	1000.0	Yes
13.56	OP4	200	1 g	695.0	1000.0	Yes

ATTESTATION: I attest that the EUT meets the exemption from the routine evaluation limits in section 4.3.1 “Standalone SAR test exclusion considerations” of KDB 447498 as well as meets the exemption from the routine evaluation limits in section 2.5 “Exemption Limits for Routine Evaluation” of RSS-105 issue 5; that the Technical Brief was prepared and the information contained therein is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of FCC KDB 447498 and RSS-102 issue 5.

Signature	 Digital unterschrieben von Trepper Ralf Datum: 2023.12.18 16:12:51 +01'00'
Name	Mr. Ralf Trepper
Designation	Laboratory-Manager
Date of issue	2023-12-18