

SAR Exclusion Evaluation Report

Applicant : Matias Corporation

Product Type : Matias Wireless Aluminum Keyboard,
Wireless Aluminum Keyboard,
Clavier Aluminium Sans Fil,
Kabellose Aluminium Tastatur

Trade Name : matias

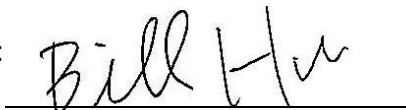
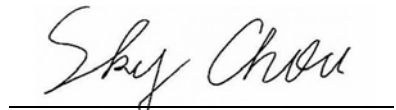
Model Number : FK418BTS, FK418BTxx-yy, FK418PCBTxx-yy(Where xx and yy can
be A-Z, a-z, 0-9, or nothing.)

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Issue by

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Mar. 03, 2016	Initial Issue	

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1. Description of Equipment under Test (EUT)

Applicant	Matias Corporation 221 Narinia Cres., Newmarket, Ontario, L3X 2E1, Canada			
Manufacturer	Lita Electronics Technology Co., Ltd. No.6, Kun Ming Road, Yao Le Village, Liaobu Town, Dongguan City, Guangdong Province, China			
Product Type	Matias Wireless Aluminum Keyboard, Wireless Aluminum Keyboard, Clavier Aluminium Sans Fil, Kabellose Aluminium Tastatur			
Trade Name	matias			
Model Number	FK418BTS, FK418BTxx-yy, FK418PCBTxx-yy(Where xx and yy can be A-Z, a-z, 0-9, or nothing.)			
Models Different Description	Those model numbers differ from each other in selling region and appearance colors.			
FCC ID	WKMFK418BT			
Operate Freq. Band	Frequency Range (MHz)	Modulation Type	Data Rate (Mbps)	Number of Channels
Bluetooth BR	2402 ~ 2480	GFSK	1	78
Antenna information	Type		Max. Gain (dBi)	
	PCB Antenna		2.78	

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1093. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

2. Reference Testing Standards

Standard	Description	Version
ANSI/IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
IEEE 1528	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques.	2013
FCC 47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices.	---
FCC KDB 865664 D01	SAR measurement 100 MHz to 6 GHz - describes SAR measurement procedures for devices operating between 100 MHz to 6 GHz	v01r04
FCC KDB 865664 D02	RF Exposure Reporting - provides general reporting requirements as well as certain specific information required to support MPE and SAR compliance.	v01r02
FCC KDB 447498 D01	General RF Exposure Guidance - provides guidance pertaining to RF exposure requirements for mobile and portable device equipment authorizations.	v06

3. **SAR Test Exclusion**

As RF exposure evaluation of portable device, SAR test is not required when the evaluation results. According to KDB 447498 4.3.1, unless excluded by specific FCC test procedures, portable devices shall include SAR data for equipment approval. SAR test necessity will be based on the exclusion result.

The test exclusion refers KDB 447498 as below:

≤50mm:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f}(\text{GHz})] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

>50mm and <200mm:

- a) $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]$
mW, at 100 MHz to 1500 MHz
- b) $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot 10]$ mW at > 1500 MHz and ≤ 6 GHz

3.1 Conducted Power

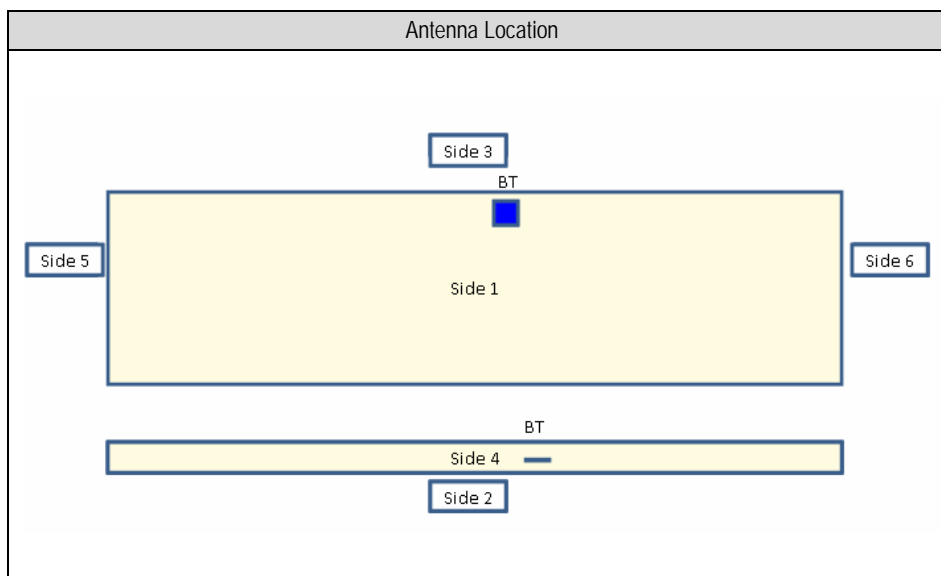
The conducted power turn-up tolerance, please reference manufacturer specification.

Operate Band	Modulation Type	Data Rate (Mbps)	Frequency (MHz)	Packet Type	Average Power (dBm)
Bluetooth BR	GFSK	1	2402	DH1	-1.57
				DH3	-1.55
				DH5	-1.53
			2441	DH1	-2.13
				DH3	-2.11
				DH5	-2.10
			2480	DH1	-2.64
				DH3	-2.62
				DH5	-2.61

3.2 Antenna Location

Transmitter and antenna implementation	
Operate Band	Bluetooth Antenna
Bluetooth BR	V

Ant. Used	Antenna to user distance (mm)					
	Side 1	Side 2	Side 3	Side 4	Side 5	Side 6
Bluetooth Antenna	9	8	6	96	232	195



3.3 Evaluation Results

The evaluation of SAR test reduction according to KDB447498

SAR test is not required when the results showed "EXEMPT".

Body SAR test reduction											
Ant. Used	Operate Band	Channel	Frequency (GHz)	Power		Calculated value and evaluated result					
				(dBm)	(mW)	Side 1	Side 2	Side 3	Side 4	Side 5	Side 6
Bluetooth Antenna	Bluetooth BR (GFSK)	78	2.480	-1	1	0.2	0.2	0.3	555.3 mW	1915.3 mW	1545.3 mW
						EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT

Exclusion Considerations: SAR is not required

- Note:
1. Calculated Value include string "mW",that is mean through comapre output power with threshold,if the output power more than threshold value the SAR test should be perform. Otherwise,the SAR test could be exempt. (> 50mm)
 2. Calculated Value only include number format,that is mean through comapre output power with threshold,if the Calculated value more than 3 the SAR test should be perform. Otherwise,the SAR test could be exempt. (<50mm)
 3. When an antenna qualifies for the standalone SAR test exclusion of KDB 447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB 447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b) "
 4. The ch and frequency used highest frequency,that result should be evaluated the worst case.
 5. Power and distance are rounded to the nearest mW and mm before calculation.
 6. The result is rounded to one decimal place for comparison.