





FCC SAR Exclusion Report for MerchBox13K

Certification

APPLICANT KEYTH INTERNATIONAL

REPORT NO. HCT-SR-2309-FC001-R3

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(signaturg)

Accredited by KOLAS, Republic of KOREA

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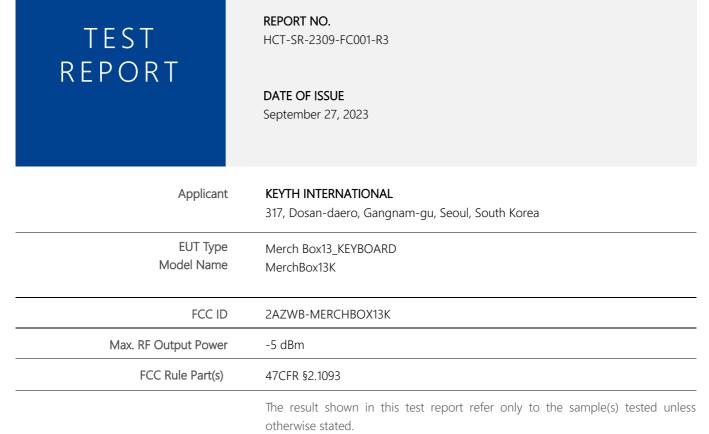
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This test results were applied only to the test methods required by the standard.









REVISION HISTORY

Revision No.	Date of Issue	Description	
0	September 05, 2023	Initial Release	
1	September 18, 2023	Revised Applicant's Address	
2	September 26, 2023	Revised Applicant's Address	
3	September 27, 2023	Revised Equipment Name	

The revision history for this test report is shown in table.

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 AND KOLAS (Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

If this report is required to confirmation of authenticity, please contact to www.hct.co.kr



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1. EUT DESCRIPTION

Model Name	MerchBox13K		
EUT Type	Merch Box13_KEYBOARD		
Power Supply	1.5 V		
Frequency Range	2.4 GHz ISM Band 2 402 MHz – 2 480 MHz		
Max. RF Output Power	-5 dBm (EIRP)		
Modulation Type	GFSK		
Modulation Technique	FHSS		
Number of Channels	40 Channels		
Channel Spacing, Bandwidth	2 MHz		
Antenna Specification	Antenna type: Printed Antenna Peak Gain: 0.43 dBi		
EUT Serial numbers	Radiated: MerchBox13K-01 Conducted: MerchBox13K-02		
Manufacturer	KEYTH INTERNATIONAL 317, Dosan-daero, Gangnam-gu, Seoul, South Korea		



2. TEST METHODOLOGY

2.1 FCC

Limb SAR and Body SAR Test Exclusions Applied _ GFSK

Since this product is a remote Keyboard product, it is used by most users in the hand, so Limb SAR standard is applied. In addition, since this product is capable of Portable device by the user, an exception evaluation is applied at a distance of 10 mm from the Body SAR.

According to the FCC KDB 447498 D01 v06 section 4.3.1, for 100 MHz to 6 GHz and test separation distances \leq 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

a) For 100 MHz to 6 GHz and test separation distances \leq 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

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

 $\frac{Max Power of Channel(mW)}{Test Separation Distance (mm)} * \sqrt{Frequency(GHz)} \le 3.0 \text{ For 1g SAR, 7.5. for 10g SAR}$

where

- f(GHz) is the RF channel transmit frequency in $\ensuremath{\,\text{GHz}}$

- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Calculation Result:

Tx frequency range: 2 402 MHz ~ 2 480 MHz Limb SAR Consideration Min. test separation distance: 5 mm Body SAR Consideration Min. test separation distance: 10 mm Maximum Output Power: -5 dBm(0.32 mW) The Highest RF channel frequency: 2 480 MHz

For Body SAR Exclusion

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
	[MHz]	[mW]	[mm]	for 1 g SAR
MerchBox13K	2 480	0.32	10	0.05

For Limb SAR exclusion

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 7.5
	[MHz]	[mW]	[mm]	for 10 g SAR
MerchBox13K	2 480	0.32	5	0.1

Based on the maximum output power of MerchBox13K and antenna to use separation distance, MerchBox13K Limb SAR and Body SAR were not required.