

TEST REPORT

FCC SAR Exclusion Report for SLEEPade Certification

APPLICANT
BrainU Co., Ltd.

REPORT NO.
HCT-SR-2307-FC002-R1

DATE OF ISSUE
July 18, 2023

Technical Manager
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(signature)



Accredited by KOLAS, Republic of KOREA

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TEST REPORT

FCC Bluetooth LE
Test for SLEEPade

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Applicant

BrainU Co., Ltd.

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Republic of Korea

EUT Type Model Name

Sleep Monitoring System
SLEEPade

FCC ID

2BBOF-SLEEPADE

FCC Classification

Digital Transmission System(DTS)

FCC Rule

47CFR §2.1093

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

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

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	July 12, 2023	Initial Release
1	July 18, 2023	Revised page 5

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.

Test Report Statement:

The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS (Korea Laboratory Accreditation Scheme) / A2LA(American Association for Laboratory Accreditation), which signed the ILAC-MRA.

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	SLEEPade
EUT Type	Sleep Monitoring System
Power Supply	DC 3.70 V
Frequency Range	2 402 MHz – 2 480 MHz
Max. Tune-up Output Power	-6 dBm (0.25 mW)
Max. Aver. Output Power	-7.225 dBm (0.19 mW)
Max. Peak. Output Power	-7.42 dBm (0.18 mW)
Modulation Type	GFSK
Bluetooth Version	5.0
Number of Channels	40 Channels
Antenna Specification	Antenna type: External(Multilayer Chip Antenna) Peak Gain : 2.3 dBi
EUT Serial Numbers	Radiated: SLA01 00011 23 B Conducted: SLA01 00012 23 B

2. TEST METHODOLOGY

2.1 FCC

Body SAR for Test Exclusions Applied _Bluetooth LE 5.0

The SLEEPade is a wireless device attached forehead and has a minimum separation distance of 0 mm from the user. Please check the technical document for details.

Per FCC KDB 447498 D01 General RF Exposure Guidance v06 sec.4.3.1. Standalone SAR test exclusion considerations:

These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

According to the FCC KDB 447498 D01 v06 section 4.3.1,b) for 100 MHz to 6 GHz and test separation distances > 50 mm

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

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

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

Power and distance are rounded to the nearest mW and mm before calculation.

The result is rounded to one decimal place for comparison

The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

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

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

Calculation Result:

Tx frequency range: 2 402 MHz ~ 2 480 MHz

SAR Consideration Min. separation distance: 5 mm

Maximum Tune-up. Output Power: 0.25 mW

The Highest RF channel frequency: 2 480 MHz

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0 for 1g SAR
	[MHz]	[mW]	[mm]	
Bluetooth LE	2 480	0.25	5	0.08

Based on the maximum output power of Bluetooth LE and antenna to use separation distance, Bluetooth LE SAR Test was not required.

*Note: "The test exclusion conditions of the SAR test were satisfied by evaluating the exemption threshold power according to the FCC KDB 447498 D01v06, sec.4.3.1."