

EMF TEST REPORT

Test Report No. : OT-248-RWD-016
Reception No. : 2407002381
Applicant : CHIPSEN. Co., Ltd
Address : B1 C-17, 15, Gyeongin-ro 53-gil, Guro-gu, Seoul, South Korea
Manufacturer : CHIPSEN. Co., Ltd
Address : B1 C-17, 15, Gyeongin-ro 53-gil, Guro-gu, Seoul, South Korea
Type of Equipment : Wireless Communication Module
FCC ID. : 2APB6-BOT-NLE523
Model Name : BoT-nLE523
Multiple Model Name : BoT-nLE523D, BoT-nLE523DU
Serial number : N/A
Total page of Report : 7 pages (including this page)
Date of Incoming : June 27, 2024
Date of issue : August 21, 2024

SUMMARY

The equipment complies with the regulation; **FCC CFR 47 PART 2.1093**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.



유수민

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-248-RWD-016	August 21, 2024	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : CHIPSEN. Co., Ltd

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Contact Person : Young Min Park / Senior Engineer

Telephone No. : +82-70-8708-5990

FCC ID : 2APB6-BOT-NLE523

Model Name : BoT-nLE523

Brand Name : N/A

Serial Number : N/A

Date : August 21, 2024

EQUIPMENT CLASS	DTS – DIGITAL TRANSMISSION SYSTEM
E.U.T. DESCRIPTION	Wireless Communication Module
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	KDB 447498 D01 General RF Exposure Guidance v06
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT	Certification
AUTHORIZATION REQUESTED	
Modifications on the Equipment to Achieve Compliance	None

- The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The CHIPSEN. Co., Ltd, Model BoT-nLE523 (referred to as the EUT in this report) is a Wireless Communication Module. The product specification described herein was obtained from product data sheet or user's manual.

Device Type	Wireless Communication Module				
Temperature Range	-40 °C ~ +85 °C				
Operating Frequency	2 402 MHz ~ 2 480 MHz				
MAX. RF OUTPUT POWER	Bluetooth LE	1 Mbps	5.73 dBm		
		2 Mbps	5.70 dBm		
Number of Channel	Bluetooth LE	40 Channels			
Modulation Type	Bluetooth LE	GFSK			
Antenna Type	Chip Antenna				
Antenna Gain	3.50 dBi				
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	24 MHz				
Rated Supply Voltage	DC 3.3 V				

2.2 Alternative type(s)/model(s); also covered by this test report.

- The following lists consist of the added model and their differences.

Model Name	Differences	Tested
BoT-nLE523	Basic Model	<input checked="" type="checkbox"/>
BoT-nLE523D	This model is identical to the basic model except for added Pin Header board surrounding Module.	<input checked="" type="checkbox"/>
BoT-nLE523DU	This model is identical to the basic model except for mounted Pin Header board including U.FL connector and added 1 PCB Antenna, 2 Dipole Antennas	<input checked="" type="checkbox"/>

Note: 1. For multiple models, Only radiated emission test has been performed.

2. The Applicant/manufacturer is responsible for the compliance of all variants.

3. EUT MODIFICATIONS

- None

4. RF EXPOSURE EVALUATION

4.1 RF Exposure Calculation

According to the FCC rule §4.3. General SAR test exclusion guidance, the limit for 1-g and 10-g SAR test exclusion thresholds are \leq 3.0 for 1-g SAR, and \leq 7.5 for 10-g extremity SAR by the device operating 100 MHz to 6 GHz and test separation distances \leq 50 mm

4.2 EUT Description

Kind of EUT	Wireless Communication Module
Device Category	<input type="checkbox"/> Portable (< 20 cm separation) <input type="checkbox"/> Mobile (> 20 cm separation) <input checked="" type="checkbox"/> Others
Exposure Evaluation Applied	<input type="checkbox"/> MPE <input checked="" type="checkbox"/> SAR Exclusion <input type="checkbox"/> N/A

4.3 Test Result

4.3.1 Test data for 1 Mbps

Frequency (MHz)	Target Power W/tolerance (dBm)	Max tune up power (dBm)	Max tune up power (mW)	Separation distance (mm)	RF exposure
2 402	5.73	6.73	4.71	5	1.46

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is
 $[(\text{Max. Power of channel, including tune-up tolerance, mW}) / (\text{Min. test separation distance, mm})] \times [\sqrt{f(\text{GHz})}] < 3.0 =$
 $[(4.71/5)] \times \sqrt{2.402} = 1.46$

4.3.1 Test data for 2 Mbps

Frequency (MHz)	Target Power W/tolerance (dBm)	Max tune up power (dBm)	Max tune up power (mW)	Separation distance (mm)	RF exposure
2 402	5.70	6.70	4.68	5	1.45

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is
 $[(\text{Max. Power of channel, including tune-up tolerance, mW}) / (\text{Min. test separation distance, mm})] \times [\sqrt{f(\text{GHz})}] < 3.0 =$
 $[(4.68/5)] \times \sqrt{2.402} = 1.45$