Fangguang Inspection & Testing Co., Ltd.

RF Exposure Evaluation Declaration

Report No.: S20240801482702

Issue Date: 09-14-2024

Applicant:	INVENTRONICS (HANGZHOU), INC.
	Inventronics Science and Technology Park, #459
Address:	Jianghong Rd. Binjiang District, Hangzhou, Zhejiang
	310052, China
FCC ID:	2BC8G-LUL04
Product:	BLE module
Model No.:	ETWBCLUL04
Trade Mark:	INVENTRONICS
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (15.247)
Item Receipt date:	Aug. 01, 2024
Test Date:	Aug 07 ~ Aug 26, 2024

Compiled By _____
(Stone Zhang)
Senior Test Engineer

Approved By _____
(Line Chen)
Engineer Manager

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 558074 D01. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of Fangguang Inspection & Testing Co., Ltd. Wuxi Branch

The test report must not be used by the client to claim product certifications, approval, or endorsement by NVLAP, NIST or any agency of U.S. Government.

Revision History

Report No.	Version	Description	Issue Date
S20240801482702	Rev. 01	/	09-14-2024

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	BLE module
Model Name:	ETWBCLUL04
Trade Mark:	INVENTRONICS
Input Voltage Range:	DC: 3.3V
Bluetooth Version:	5.0

1.2. Product Specification Subjective to this Report

Bluetooth Frequency	2402~2480MHz
Number of Channels	40
Channel Spacing	2 MHz
Type of modulation	GFSK
Data Rate	1Mbps
Antenna Type:	PCB Antenna
Antenna Gain:	-1.39 dBi

Note:

1. The maximum Antenna Gain was declared by the manufacturer.

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Result of RF Exposure Evaluation

Product	BLE module
Test Item	RF Exposure Evaluation

Mode	Frequency (MHz)	Maximum Conducted OutputPower (dBm)	Antenna Gain (dBi)	PG		MPE (mW/cm²)	MPE Limits (mW/cm²)
				(dBm)	(mW)		
BLE	2402~2480	8.32	-1.39	6.93	4.93	0.01	1.00

Remark: 1.MPE use distance is 20cm from manufacturer declaration of user manual.

Remark: 2. Use the maximum gain of all bands when evaluating

CONCULISON:

The Max Power Density at R (20 cm) = 0.01mW/cm^2 < 1mW/cm^2.

So the EUT complies with the requirement.

—————————————— The End ——————————————