



MPE Report

According to
FCC Part 2.1091

Applicant : ATBS Technology Co.
Address : 3F., No.200, Gangqian Rd., Neihu District, Taipei City 11494, Taiwan.
Manufacturer : ATBS Technology Co.
Address : 3F., No.200, Gangqian Rd., Neihu District, Taipei City 11494, Taiwan.
Equipment : BLE TPMS
Model No. : MS3XX, X=0-9, A-Z, a-z, or blank
FCC ID : UP5-SC-MS33
Test Period : Nov.27, 2018~ Dec.24, 2018

■ The test result refers exclusively to the test presented test model / sample.,

■ Without written approval of **CERPASS TECHNOLOGY (SUZHOU) CO., LTD.** the test report shall not be reproduced except in full.

■ The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Rules and Regulations Part 15. The test report has been issued separately.

■ The test report must not be used by the clients to claim product certification approval by any agency of the Government.

Approved by:

Miro Chueh
EMC/RF Manager

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory



TAF LAB Code: 1439

Cerpass Technology (SuZhou) Co., Ltd.



A2LA LAB Code: 4981.01



Radio Frequency Exposure

LIMIT

For 2.4G Band: According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

**EUT Specification**

EUT	BLE TPMS		
Frequency band (Operating)	<input checked="" type="checkbox"/> BT: 2.402GHz ~ 2.480GHz <input type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz		
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)		
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)		
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity		
Max. output power for 2.4G Band	Mode	Power (dBm)	Power (mW)
	BLE	-13.08	0.05
Antenna gain (Max)	0dBi (numeric antenna gain: 1)		
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation*(See Remark 1) <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A		
Remark: 1. *: Simultaneous transmission is not applicable for this EUT. 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance. 3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm ² even if the calculation indicates that the power density would be larger.			

**SAR exclusion**

Per FCC KDB 447498 D01v06 section 4.3:

- 1) 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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}]$$

≤ 3.0 for 1-g SAR, and ≤ 7.5 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

5mm Test Separation

Test Mode	Frq. (MHz)	Test separation distance (mm)	Max. Tune-up Power(dBm)	Max. Tune-up Power(mW)	Test threshold	SAR Test (Y/N)
Bluetooth	2480	5	-13.08	0	0.02	N

**TEST RESULTS**

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = Field strength in Volts / meter
 P = Power in Watts
 G = Numeric antenna gain
 d = Distance in meters
 S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$
$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P / 1000) \times G}{3770 \times (d / 100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm
 P = Power in mW
 G = Numeric antenna gain
 S = Power density in mW / cm²

**Maximum Permissible Exposure**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(mW)	Max. Tune-up Power(mW)	Antenna gain	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
BLE	2402-2480	0.05	1.26	1	20	0.0003	1

Test engineer: Kerry Zhou