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FCC RF EXPOSURE REPORT REVIEW

REPORT NUMBER: M2211030-6

STANDARD: FCC KDB 447498 D01

CLIENT: AIMWELL PTY LTD

**DEVICE: AYO WEARABLE BREATH
MEASUREMENT**

**MODEL: AYO BT+ BOOST MODULE
SET (BT+LE)**

FCC ID: X8WBC805M

DATE OF ISSUE: 22 FEBRUARY 2023

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Customer Equipment (CE): AYO Wearable Breath Measurement

REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	22/02/2023

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FCC RF EXPOSURE EXEMPTION REPORT

Device: AYO Wearable Breath Measurement
Model Number: AYO BT+ Boost Module Set (BT+LE)
Operating Frequency: 2400 – 2483.5 MHz

Manufacturer: Aimwell Pty Ltd

Client: Aimwell Pty Ltd
Address: Suite 2.5, 56 Delhi Road, Macquarie Park, NSW, 2113, Australia
Phone Number: 0421897494
Contact: Eric Fu
Email: ericf.x@aimwellbreathing.com

Inspected for compliance with EMR standards: **FCC KDB 447498 D01 General RF Exposure Guidance v6**

Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

Statement of Compliance: Based on an assessment of the documentation provided and the declared separation distance from the human body under normal use, the AYO WEARABLE BREATH MEASUREMENT model AYO BT+ Boost Module Set (BT+LE), complies with the RF exposure requirements of 447498 D01 V06. Refer to Report M2211030-6 for full details.

Inspection Date: 25 November 2022

Issue Date: 22 February 2023

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1 INTRODUCTION

The transmitter was assessed against FCC KDB 447498 D01 General RF Exposure Guidance v6.

This report shows the SAR exclusion on the AYO Wearable Breath Measurement, Model AYO BT+ Boost Module Set (BT+LE), in accordance with FCC KDB 447498 D01 clause 4.3.1.

The test sample was provided by the Client. The conclusion herein is based on the information provided by the client.

1.1 Laboratory Overview

EMC Technologies Pty. Ltd. is an independently owned Australian company that is NATA accredited to ISO 17025 for both testing and calibration and ISO 17020 for Inspection. – **Accreditation Number 5292.**

1.2 Test Laboratory/Accreditations

Inspection was performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

Table 1-1: Accreditations for Conformity Assessment

Country/Region	Body	
Australia/New Zealand	NATA	Accreditation Number: 5292
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001 (Melb)
Canada	ISED Canada	Company Number: 3569B(Melb)
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

2 DEVICE DETAILS

(Based on information supplied by the Client)

AYO BT+ is a battery-powered breathing training and measurement respirator designed and manufactured by Aimwell. Typically, a user wears the device while doing various exercises, and a nearby mobile phone communicates and receives the breathing data via BLE communication. Charging is via a USB cable either from a computer or a mobile phone charger.

Manufacturer:	Aimwell Pty Ltd
Inspected Sample:	AYO Wearable Breath Measurement
Model Number:	AYO BT+ Boost Module Set (BT+LE)
Distance from human body in normal use:	Less than 5 mm (Wearable)

Transmitter parameters were provided by the client and are shown below:

Table 2-1: Transmitter 1 Parameters

Wireless Interface:	FANSTEL BC805M Module Bluetooth Low Energy
Operating Frequency:	2400 – 2483.5 MHz
RF Output Power Level:	5.2 dBm
Antenna Type:	Integrated PCB trace antenna
Antenna Gain:	0.14 dBi

3 SAR TEST EXCLUSION THRESHOLD FOR 100MHZ TO 6GHZ AND ≤50MM

Table 3-1: SAR Test Exclusion Threshold 100MHz - 6GHz

Frequency (MHz)	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
435	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{\text{max. power of channel, including tune – up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(\text{GHz})} \leq 3.0$$

Where:

- f(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 test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz.
- The minimum test separation distance less than 5mm

4 UNCERTAINTY

EMC Technologies has evaluated the tools and methods used to perform Radiated Electromagnetic Field predictions.

The estimated inspection uncertainties for the test shown within this report are as follows:

Electromagnetic Modelling

30 MHz to 100GHz ±2.8 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

5 ASSUMPTIONS IN THIS ASSESSMENT

This assessment does not include accumulated RF fields from nearby sites/antennas or possible radio signal reflections or attenuation due to buildings or the general environment.

Antenna Parameters and power settings were supplied by the customer.

A 100% duty cycle is assumed.

The aperture of the radiating element assumed to be a point source in free space and far field conditions.

6 EVALUATION RESULT

The standalone transmitter is exempted from SAR if the below condition satisfied in conjunction with threshold power condition in table 3-1

$$\frac{\text{max. power of channel, including tune – up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(\text{GHz})} \leq 3.0$$

Where

Minimum test separation distance is (< 5mm):

The minimum test separation distance is determined by the smallest distance from the antenna (radiating structures) to the outer surface of the device

Maximum power of channel (mW):

Time-averaged maximum conducted output power

$$\frac{\text{max. power of channel, including tune – up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(\text{GHz})}$$

$$= \frac{3.31\text{mW}}{5\text{mm}} * \sqrt{2.48 \text{ GHz}}$$

$$= 1.04 \leq 3.0$$

Table 4-1: Evaluation result

Band	Exposure condition	Maximum Power (dBm)	Distance (mm)	Frequency (GHz)	Calculation result	SAR Threshold
BT	Body	5.2	5	2.48	1.04	3.0

As the transmitted power is 3.31 mW which is less than 10 mW indicated in table (3-1) and the result of the above condition is 1.04 (less than 3), therefore further evaluation of the Bluetooth transmitter is not required.

APPENDIX A

Referenced Documents

Document	Comments
Form 005 Customer and EUT Information	EUT and transmitter details
BC805M_Product_Specification	Transmitter Specifications
Maximum Permissible Exposure	Transmitter Human Exposure Report



Accreditation No.5292

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