



# EMC Bayswater Pty Ltd

Page 1 of 8

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## RF Radiation Exposure Evaluation

*In accordance with:*

CFR47 FCC Part 2, Subpart J, 2.1093  
FCC KDB 447498 D01 v06

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Tournicare Pty Ltd

08

ARMA

FCC ID: 2BD2B-ARMA-08

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REPORT: E2207-1563-4 Rev1

DATE: September, 2024

*This report replaces the previously issued report E2207-1563-4.  
Please refer to section 2 of this report for details of any previously issued reports.*



# RF Radiation Exposure Evaluation Report

EMC Bayswater Test Report: E2207-1563-4 Rev1  
Issue Date: September, 2024

**Product:** ARMA  
**Model No:** 08  
**Serial No:** LIM+08  
**FCC ID:** 2BD2B-ARMA-08

**Client Details:** Mr. Niels Van Sparrentak  
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Australia

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**Standard(s):** CFR47 FCC Part 2, Subpart J, 2.1093  
Radiofrequency radiation exposure evaluation: portable devices.

FCC KDB 447498 D01 v06  
RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES  
FOR MOBILE AND PORTABLE DEVICES

**Results Summary:** RF Radiation exposure requirements **Complied**

**Test Date(s):** 28<sup>th</sup> of October, 2022

**Test House (Issued By):** EMC Bayswater Pty Ltd  
18/88 Merrindale Drive  
Croydon South  
Victoria, 3136  
Australia

FCC Accredited Test Firm Registration number: 527798  
FCC Accredited Test Firm Designation number: AU0004

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The Tournicare Pty Ltd, 08, ARMA, measured EIRP/customer declared power is below the SAR exception threshold (5mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations therefore complied with the requirements of CFR47 FCC Part 2, Subpart J, 2.1093.

This is to certify that the necessary evaluations were made by EMC Bayswater Pty Ltd, and that the Tournicare Pty Ltd, 08, ARMA, has been tested in accordance with requirements contained in the appropriate commission regulations.

Prepared by:



Approved by:

24/09/2024 13:54

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Adnan Zaman  
(EMC Test Engineer)

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Neville Liyanapatabendige  
(Manager)

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Date

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## RF Radiation Exposure Evaluation for Tournicare Pty Ltd

### Contents

1. Introduction .....	4
2. Test Report Revision History.....	4
3. Report Information .....	4
4. Product Details .....	5
4.1. Product Sample Details .....	5
4.2. Product description .....	5
5. SAR and RF Exposure exception evaluation.....	6
5.1. SAR exception evaluation.....	6
5.2. RF Exposure Evaluation (MPE) .....	7
6. Conclusion.....	8

## 1. Introduction

RF Radiation Exposure evaluation was performed on a Tournicare Pty Ltd, 08, ARMA in accordance with CFR47 FCC Part 2, Subpart J, 2.1093.

## 2. Test Report Revision History

ISSUE	DATE	Description	AUTHORISED BY
E2207-1563-4	25-08-2023	Original	Neville Liyanapatabendige (Manager)
E2207-1563-4 Rev1	24-09-2024	As per the customer's request, product name, model number and customer details were updated, and the FCC ID was corrected.	Neville Liyanapatabendige (Manager)

## 3. Report Information

EMC Bayswater Pty Ltd reports apply only to the specific samples tested under the stated test conditions. All samples tested were in good operating condition throughout the entire test program unless otherwise stated. EMC Bayswater Pty Ltd does not in any way guarantees the later performance of the product/equipment. It is the manufacturer's responsibility to ensure that additional production units of the tested model are manufactured with identical electrical and mechanical components. EMC Bayswater Pty Ltd shall have no liability for any deductions, inference or generalisations drawn by the clients or others from EMC Bayswater Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Bayswater Pty Ltd. This report shall not be reproduced except in full, without the written approval of EMC Bayswater Pty Ltd. This document may be altered or revised by EMC Bayswater Pty Ltd personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by EMC Bayswater Pty Ltd will nullify the document.

## 4. Product Details

### 4.1. Product Sample Details

The device, as supplied by the client, is described as follows:

Product:	ARMA	
Model No:	08	
Serial No:	LIM+08	
Firmware:	firmware_limpet_v0.4.0 (EMC Mode ON via device_overide.py)	
Main PCBA revision:	E01	
Power Specifications:	1050mAh Lithium Polymer Battery (3.7V)	
Dimensions:	98 x 110 x 176mm (Width x Height x Length)	
Weight:	450g	
EUT Type:	Tested as table-top	
Transmitter details:	Description:	Bluetooth Low Energy
	Wireless Protocol:	BLE v5.2
	Part Number:	STM32WB55RGV6
	Max Transmit Power:	6 dBm (Typical)
	Modulation Scheme:	GFSK
	Frequency of Operation:	2402 MHz to 2480 MHz
	Antenna Details:	P/N: AN3359, MFG: ST, copper trace meander style
	Peak Antenna Gain:	1.96dBi

*(Customer supplied product information)*

### 4.2. Product description

The device has been described by the customer as follows:

“The device is a blood pressure monitor designed for home use only. The device is placed around the patient’s upper arm via a clamp style ratchet mechanism, and with one button press inflates a plastic TPU bladder against the patients carotid artery on the inner arm to measure bladder pressure readings that accumulate on the device to form an oscillogram that is used to identify the key blood pressure measurement metrics. Results are shown on the LCD display as well as sent via Bluetooth to a connected smart phone once the test is complete.

The device is supplied with a Micro-USB charge cable, but no wall mounted power adapter. The device cannot be used while being charged due to the orientation of the charging port which obstructs use of the device on an arm.”

*(Customer supplied product description information)*

## 5. SAR and RF Exposure exception evaluation

### 5.1. SAR exception evaluation

As per Appendix A of KDB 447498 D01 General RF Exposure Guidance v06

#### ***SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and $\leq 50$ mm***

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	<i>SAR Test Exclusion Threshold (mW)</i>
300	27	55	82	110	137	
450	22	45	67	89	112	
835	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	

SAR test exclusion threshold for 2402MHz transmitter is 10.08mW for 5mm distance.  
 SAR test exclusion threshold for 2480MHz transmitter is 9.94mW for 5mm distance.

- The customer declared maximum conducted power (including tune up tolerance) is 3.98mW (+6dBm).
- The measured maximum EIRP is 2.4mW (Worst-case, Without Duty Cycle correction factor).

*The measurement uncertainty was calculated at  $\pm 4.83$ dB. The reported uncertainty is an expanded uncertainty calculated using a coverage factor of approximately  $k=2$  which gives a level of confidence of approximately 95%.*

The measured EIRP/customer declared power is below the SAR exception threshold for 5mm distance.

## 5.2. RF Exposure Evaluation (MPE)

As per section 1.1310 of CFR 47 following Maximum Permissible Exposure (MPE) limits are applicable.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density

Limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields for 2402 to 2480MHz as per Table 1 of Section 15.1310 is 1 mW/cm<sup>2</sup> (General Population/Un-controlled).

Prediction Worst case:

Using equation

$$S = PG / 4\pi R^2$$

where: S = Power density

P = Power input to the antenna

G = Antenna gain

R = Distance to the center of radiation of the antenna

Band	Maximum EIRP (dBm)	Maximum EIRP (mW)	Distance (cm)	Calculated Power Density at 20cm (mW/cm <sup>2</sup> )	Power Density Limit** (mW/cm <sup>2</sup> )
2.4GHz BLE	3.9	2.4	20	0.000488	1

\*Worst-case, Without Duty Cycle correction factor

\*\* MPE limit for General Population/Un-controlled exposure

Table 1: Results for MPE Evaluation – Measured EIRP

Band	Customer declared Maximum Conducted Power @ Antenna (dBm)*	Antenna Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Distance (cm)	Calculated Power Density at 20cm (mW/cm <sup>2</sup> )	Power Density Limit** (mW/cm <sup>2</sup> )
2.4GHz	+6.0	+1.96	+7.96	6.2	20	0.00124	1

\*Worst-case, Without Duty Cycle correction factor

\*\* MPE limit for General Population/Un-controlled exposure

Table 2: Results for MPE Evaluation – Customer declared.

## 6. Conclusion

The measured/Customer declared EIRP is below the SAR exception threshold (5mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations.