

## Test Report

Prepared for: Southwest Engineering Concepts

Model: i POP Wrist Sensor

Description: Wrist Sensor

Serial Number: NA  
FCC ID: 2A9WT-CSW  
IC ID: 30031-CSW

To

FCC Part 1.1310

Date of Issue: June 30, 2023

On the behalf of the applicant:

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### Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	6/30/2023	John Michalowicz	Original Document

## ANAB

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The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

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**FCC Site Reg. #349717**

**IC Site Reg. #2044A-2**

### Non-accredited tests contained in this report:

N/A

### EUT Description

**Model:** Wrist Sensor

**Description:** Sensor placed on wrist

**Firmware:** v1

**Software:** N/A

**Serial Number:** N/A

### Additional Information:

The EUT is a companion device to the Glove Sensor. The EUT incorporates a BLE transmitter. The EUT is an original filing. The EUT incorporates a chip antenna with a peak gain of 3.12 dBi. The antenna gain was provided by the manufacturer.

## MPE Evaluation

This is a portable device used in Uncontrolled Exposure environment.

### Limits Controlled Exposure

47 CFR 1.1310

Table 1, (A)

0.3-3.0 MHz:	Limit [mW/cm <sup>2</sup> ] = 100
3.0-30 MHz:	Limit [mW/cm <sup>2</sup> ] = (900/f <sup>2</sup> )
30-300 MHz:	Limit [mW/cm <sup>2</sup> ] = 1.0
300-1500 MHz:	Limit [mW/cm <sup>2</sup> ] = f/300
1500-100,000 MHz	Limit [mW/cm <sup>2</sup> ] = 5

### Limits Uncontrolled Exposure

47 CFR 1.1310

Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm <sup>2</sup> ] = 100
1.34-30 MHz:	Limit [mW/cm <sup>2</sup> ] = (180/f <sup>2</sup> )
30-300 MHz:	Limit [mW/cm <sup>2</sup> ] = 0.2
300-1500 MHz:	Limit [mW/cm <sup>2</sup> ] = f/1500
1500-100,000 MHz	Limit [mW/cm <sup>2</sup> ] = 1.0

## Test Data

Test Frequency, MHz	2480
Power, Conducted, mW (P)	1.16
Antenna Gain Isotropic	3.12 dBi
Antenna Gain Numeric (G)	2.05
Antenna Type	chip
Distance (R)	0.5 cm

1.1307(b)(3)(i)(B) P Threshold						
Portable 2.1093						
Frequency GHz	ERP <sub>20cm</sub> mW	x	d cm	P <sub>th</sub> (0.5 ≤ d ≤ 20 cm) mW	dBm	Limit Ratio ERP <sub>dut</sub> / P <sub>th</sub>
0.3 - 1.5	4900.080	2.102	0.5	2.100	3.221	1.137
1.5 - 6	3060.000	1.898	0.5	2.788	4.452	0.857

## Per KDB

This is for calculating a SAR exclusion per KDB 447498.

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

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, 25 where}$$

- $f_{\text{GHz}}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>26</sup>
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum *test separation distance* is  $\leq$  50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is  $<$  5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

## Appendix A

### **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	SAR Test Exclusion Threshold (mW)
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	

END OF TEST REPORT