

# RF Exposure Report

**Project Number:** 4889901**Proposal Number:** SUW-202202002395**Report Number:** 4889901EMC08**Revision Level:** 0**Client:** MindMaze SA**Equipment Under Test:** Izar System**Model Name:** Izar Ball**Model Number:** MMIZ-S1**Module Model:** nrF52840**FCC ID:** 2AYHHMMIZ-S1**Applicable Standards:** 47 CFR §§ 2.1093 (Portable)

FCC KDB 447498 D01 General RF Exposure Guidance v06

**Report issued on:** July 7, 2022**Result:** Exempt from SAR evaluation

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

Report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

Prepared by:

A handwritten signature in black ink that reads 'Brandon E. Osborn'.

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## 1 General Information

### 1.1 Client Information

Name: MindMaze SA  
Address: Chemin de Roseneck 5  
City, State, Zip, Country: Lausanne, 1006, Switzerland

### 1.2 Test Laboratory

Name: SGS North America, Inc.  
Address: 620 Old Peachtree Road NW, Suite 100  
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA  
Type of lab: Testing Laboratory  
Certificate Number: 3212.01

### 1.3 General Information of EUT

Type of Product: Izar System  
Model Name: Izar Ball  
Model Number: MMIZ-S1  
Serial Number: IZAR-0E00086

Module Models: nrF52840

Frequency Ranges: 2402-2480MHz Bluetooth Low Energy – GFSK (S8, S2, 1M, and 2M Data Rates)

Antenna Gain: SMT Antenna, 3.5dBi\* (antenova, P/N: SR4W035)

Max Conducted Output Power: Bluetooth LE: 8dBm\* (7.31dBm measured)

Sample Received Date: 14 March 2022  
Dates of testing: 23 March to 4 April 2022

*\*Data was not measured by SGS laboratory and therefore not responsible for accuracy. Data obtained via customer, specification sheet, previous regulatory filing or other.*

### 1.4 Separation Distance

The closest exposure distance occurs when a user grasps the Izar Ball. Shortest distance from the hand to the antenna is 20mm.

## 2 SAR Exclusion Calculations

The highest output power in conjunction with the Upper and Lower frequency boundaries have been used to demonstrate compliance.

Power levels were referenced from the BLE report, 4889901EMC03.

The EUT is considered an extremity application.

### Bluetooth LE (FCC ID: 2AYHHMMIZ-S1)

#### 447498 D01 General RF Exposure Guidance v06

##### SAR test exclusion calculations

Section 4.3: General SAR test exclusion guidance / Section 4.3.1: Standalone SAR test exclusion considerations

Input	Select Units	
Max Power:	10.81	dBm
Duty Cycle:	100.0%	$\leq$ Source based time average duty cycle
Min separation distance:	20	mm
Frequency, f:	2402	MHz

  

Value reference Number	Values used for Calculation	Reference number definition
v1	12.000	mW [ <i>max. power of channel, including tune-up tolerance, mW</i> ] Rounded to nearest mW
v2	20	mm [ <i>min. test separation distance, mm</i> ] Rounded to nearest mm
v3	1.550	[ <i>f(GHz)</i> ]

a) For 100 MHz to 6 GHz and test separation distances  $\leq$  50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

Exclusion Calculation(1g):	0.9299	number	$\leq$ [v2 / v3] must be less than 3
Exclusion Calculation(10g):	0.9299	number	$\leq$ [v2 / v3] must be less than 7.5

**Conclusions (Body):** The EUT max power is BELOW the threshold. SAR Testing is NOT required for Body applications

**Conclusions (Extremity):** The EUT max power is BELOW the threshold. SAR Testing is NOT required for Extremity applications

#### 447498 D01 General RF Exposure Guidance v06

##### SAR test exclusion calculations

Section 4.3: General SAR test exclusion guidance / Section 4.3.1: Standalone SAR test exclusion considerations

Input	Select Units	
Max Power:	10.81	dBm
Duty Cycle:	100.0%	$\leq$ Source based time average duty cycle
Min separation distance:	20	mm
Frequency, f:	2480	MHz

  

Value reference Number	Values used for Calculation	Reference number definition
v1	12.000	mW [ <i>max. power of channel, including tune-up tolerance, mW</i> ] Rounded to nearest mW
v2	20	mm [ <i>min. test separation distance, mm</i> ] Rounded to nearest mm
v3	1.575	[ <i>f(GHz)</i> ]

a) For 100 MHz to 6 GHz and test separation distances  $\leq$  50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

Exclusion Calculation(1g):	0.9449	number	$\leq$ [v2 / v3] must be less than 3
Exclusion Calculation(10g):	0.9449	number	$\leq$ [v2 / v3] must be less than 7.5

**Conclusions (Body):** The EUT max power is BELOW the threshold. SAR Testing is NOT required for Body applications

**Conclusions (Extremity):** The EUT max power is BELOW the threshold. SAR Testing is NOT required for Extremity applications

### 3 Revision History

Revision Level	Description of changes	Revision Date
0	Initial Release	07 July 2022