

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

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Prepared by:

Brandon Osborn, EMC/RF Project Engineer

Reviewed by:

Stephen Whalen, SAR/EMC Manager

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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* (antenna, 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)

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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%	
Min separation distance:	20	mm
Frequency, f:	2402	MHz

<== Source based time average duty cycle

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

- a) 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:

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

Exclusion Calculation(1g):	0.9299	number	<== [v2 / v3] must be less than 3
Exclusion Calculation(10g):	0.9299	number	<== [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

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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%	
Min separation distance:	20	mm
Frequency, f:	2480	MHz

<== Source based time average duty cycle

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

- a) 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:

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

Exclusion Calculation(1g):	0.9449	number	<== [v2 / v3] must be less than 3
Exclusion Calculation(10g):	0.9449	number	<== [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