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.

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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%		<== *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	*[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:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 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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	Input	Select Units	
Max Power:	10.81	dBm	
Duty Cycle:	100.0%		<== *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	*[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:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 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