



RF - TEST REPORT

- Human Exposure -

Type / Model Name : Radio frequency module/ MUPS-RF

Product Description : Probing system with UWB transmission

Applicant : Marposs S.p.A.

Address : Via Saliceto 13

40010 BENTIVOGLIO, ITALY

Manufacturer : Marposs S.p.A.

Address : Via Saliceto 13

40010 BENTIVOGLIO, ITALY

Test Result according to the standards
listed in clause 1 test standards:

POSITIVE

Test Report No. : **80234415-02 Rev_0**

08. January 2025

Date of issue



Deutsche
Akkreditierungsstelle
D-PL-12030-01-00

FCC ID: NXIMUPS**IC: 3066A-MUPS**

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ATTACHMENT A as separate supplement

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969

Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 1, Subpart 2, Section 2.1091	Radiofrequency radiation exposure evaluation: mobile devices .
Part 1, Subpart 2, Section 2.1093	Radiofrequency radiation exposure evaluation: portable devices .
KDB 447498 D04 v01	RF Exposure procedures and equipment authorisation policies for mobile and portable devices, November 11, 2021.
RSS-102 issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
ANSI C95.1: 2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
ETSI TR 100 028 V1.3.1: 2001-03,	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2

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2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according to his/her instructions.

2.3 Photo documentation of the EUT – See ATTACHMENT A

2.4 Equipment type, category

UWB module

2.5 Short description of the equipment under test (EUT)

The EUT is a radio frequency module which integrates two synchronous and identical low power UWB transceivers, each one with its reference crystal and its antenna, together on the same PCB.

Number of tested samples: 1
 Serial number: n. a. (pre-production sample, conducted)
 Firmware version: v0.014

2.6 Variants of the EUT

There are no variants.

2.7 Operation frequency and channel plan

The operating frequency band is 6000 MHz to 9000 MHz.

Channel plan:

Channel number	f _c (MHz)
Channel 5	6489.6
Channel 6	6988.8
Channel 8	7488.0
Channel 9	7987.2

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2.8 Transmit operating modes

Modulation: variable pulse position modulation (PPM) in combination with binary phase shift keying (BPSK).

Data rate: 250 kbit/s

2.9 Antennas

The following antennas shall be used with the EUT:

Number	Characteristic	Type	Plug	f-range (GHz)	Max. Gain (dBi)
1	Omni	Johanson Technology p/n 7000AT19A1600	PCB	6.2 -7.8	2.0

2.10 Power supply system utilised

Power supply voltage, V_{nom} : 2.5 V DC

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3 TEST RESULT SUMMARY

FCC Rule Part	RSS Rule Part	Description	Result
KDB 447498, 2.1.2	---	1-mW Test Exemption	passed
---	RSS-102, 6.5	IPD exemption limit	passed

The mentioned RSS Rule Parts in the above table are related to:
RSS-102, Issue 6

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80234415-02	0	08 January 2025	Initial test report

The test report with the highest revision number replaces the previous test reports.

3.2 Final assessment

The equipment under test fulfills the requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 20 November 2024

Testing concluded on : 20 November 2024

Checked by:



Klaus Gegenfurtner
I confirm the correctness
and integrity of this
document
2025.01.08 15:07:57
+01'00'

Klaus Gegenfurtner
Teamleader Radio

Tested by:



I am the author of
this document
2025.01.08 14:55:32
+01'00'

Franz-Xaver Schrettenbrunner
Radio Team

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Straubinger Straße 100
94447 PLATTILING
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15 - 35 °C

Humidity: 30 - 60 %

Atmospheric pressure: 86 - 106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule ($w = 0$).

Details can be found in the procedure CSA_B_V50_29.

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5 HUMAN EXPOSURE

5.1 RF output power

For test instruments and accessories used see section 6 Part HE.

5.1.1 Description of the test location

Test location: Shielded Room SR7

5.1.2 Photo documentation of the test set-up



5.1.3 Description of the measurement

The conducted output power is measured with a power meter. The two ports A and B are measured successively by terminating the other connector.

5.1.4 Test result

channel	P _c Chip A (dBm)	P _c Chip B (dBm)	EIRP Chip A (dBm)	EIRP Chip B (dBm)	EIRP Chip A (μW)	EIRP Chip B (μW)	EIRP A+B (μW)
5	-25.4	-25.1	-23.4	-23.1	4.6	4.9	9.5
6	-26.1	-25.9	-24.1	-23.9	3.9	4.1	8.0
8	-24.9	-24.5	-22.9	-22.5	5.1	5.6	10.7
9	-24.6	-24.5	-22.6	-22.5	5.5	5.6	11.1

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5.2 RF Exposure Test Exemptions for Single Source according to FCC regulations

5.2.1 Description of the test location

Test location: NONE

5.2.2 Applicable standard

According to KDB 447498 D04 v1, clause 2.1.2 (1-mW Test Exemption)

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

5.2.3 Conclusion according to FCC regulations

The EUTs maximum output power is 11.1 μ W. The EUT is a single source transmitter. Therefore, the EUT qualifies for test exemption according to KDB 447498.

The requirements are **FULFILLED**.

Remarks: None.

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5.3 RF Exposure Test Exemptions for Single Source according to ISED regulations

5.3.1 Description of the test location

Test location: NONE

5.3.2 Applicable standard

According to RSS-102 issue 6, clause 6.5 (IPD exemption limit)

A transmitter producing emissions in the 6GHz -30 GHz frequency range (i.e. where the occupied bandwidth (99% emission bandwidth) is fully contained within this range) is exempt from routine IPD evaluation if the output power (adjusted for tune-up tolerance) is less than or equal to 1 mW (0 dBm).

5.3.3 Conclusion according to ISED regulations

The EUTs maximum output power is 11.1 μ W. The EUT is a single source transmitter. According to RSS-220 test report 80234415-01 of the accredited test laboratory CSA Group Bayern GmbH, Straubinger Strasse 100, 94447 Plattling, Germany, the 99% bandwidth of the transmitter is fully contained between 6 GHz and 30 GHz. Therefore, the EUT qualifies for test exemption according to RSS-102.

The requirements are **FULFILLED**.

Remarks: None.

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6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
HE	NRP18T	02-02/07-19-001	06/09/2025	06/09/2024		

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