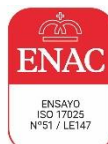


Test report No:
69260REM.002A1

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B
(10-1-21 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	TRX module
(*) Trademark	MIPOT
(*) Model and /or type reference	32001505BUS
Other identification of the product	FCC ID: 2AGJP-MIP IC: 28566-MIP
(*) Features	Features: LoRaWAN US915 HW version: rev. 2 SW version: FW01010002
Manufacturer	MIPOT S.p.A. VIA CORONA 5, 34071 Cormons (GO) - ITALY
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager  Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456)
Date of issue	2023-10-03
Report template No	FDT08_24 (*) "Data provided by the client"



Index

ACRONYMS3

COMPETENCES AND GUARANTEES3

GENERAL CONDITIONS4

UNCERTAINTY4

DATA PROVIDED BY THE CLIENT4

USAGE OF SAMPLES5

TEST SAMPLE DESCRIPTION6

IDENTIFICATION OF THE CLIENT7

TESTING PERIOD AND PLACE7

DOCUMENT HISTORY7

ENVIRONMENTAL CONDITIONS8

REMARKS AND COMMENTS9

TESTING VERDICTS9

LIST OF EQUIPMENT USED DURING THE TEST9

SUMMARY10

APPENDIX A: TEST RESULTS11

Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
OM	Operation Mode
S/	Sample
V	Verdict

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the measured conducted disturbance characteristics of EUT from 150 kHz to 30 MHz is $I = \pm 3,9$ dB for quasi-peak measurements, $I = \pm 3,2$ dB for peak measurements ($k = 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is $I = \pm 4,9$ dB for quasi-peak measurements, $I = \pm 4,6$ dB for peak measurements ($k = 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 12.75 GHz is $I = \pm 2,6$ dB for peaks and average measurements ($k = 2$).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested")
2. The sample consists of a TRX module, model **32001505BUS**.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	69260B_12.1	Module	32001505BUS	1	2021-09-21	Element Under Test
S/01	69260B_14.1	Power cable			2021-09-21	Auxiliary Element
S/01	69260B_5.1	Antenna	--	--	2021-09-21	Auxiliary Element
S/01	69260B_7.1	USB Cable	--	--	2021-09-21	Auxiliary Element

Notes referenced to samples during the project:

None.

Test sample description

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	Power Supply		10	[X]	[]	[]	
	UART		10	[X]	[]	[]	
.....			[]	[]	[]		
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:	[]	[]	[]	[]	[]
	[X]	DC: 1.9 V to 3.6 V					
Rated Power	140 mA						
Clock frequencies.....	48 MHz						
Other parameters							
Software version	FW01010002						
Hardware version	rev. 2						
Dimensions in cm (W x H x D)	1.13 x 0.25 x 0.89						
Mounting position	[]	Table top equipment					
	[]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					
	[X]	Other: ANY POSITION					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		
	32001505BUS		TRX		MIPOT S.P.A.		
							
Accessories (not part of the test item)	Description		Type		Manufacturer		
	32001495		BOARD		MIPOT S.P.A.		
							
Documents as provided by the applicant..... :	Description		File name		Issue date		
	TEST GUI USER MANUAL						
	TEST ITEM DOCUMENTATION (LAYOUT + BoM)						
							

⁽³⁾ Only for Medical Equipment

Identification of the client

MIPOT S.p.A
VIA CORONA 5, 34071 Cormons (GO) - ITALY

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2021-09-29
Date (finish)	2021-09-30

Document history

Report number	Date	Description
69260REM.002	2023-05-22	First release
69260REM.002A1	2023-10-03	It is modified due to a change in the FCC ID field. This modification test report cancels and replaces the test report 69260REM.002

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Abel Gil Pensado.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
4729	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-1M	BONN ELEKTRONIK	2023-02-11
6195	PRE-AMPLIFIER G>55dB 1-18GHz	AMF-7D-01001800-22-10P	NARDA	2023-05-19
6607	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2023-04-29
6666	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2022-02-05
6815	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2022-02-01
7007	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2022-05-24
7614	SEMIANECHOIC ABSORBER LINED CHAMBER V	FACT 3 200 STP	ETS LINDGREN	---
7743	HORN ANTENNA 0,75-18GHz	3115	ETS LINDGREN	2023-08-24

Summary

Test Specification.	Requirement – Test case	Verdict	Remark
FCC CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)	RE Radiated emission. Electromagnetic field measure	Pass	--
	CE Conducted emission	N/A	1)
<u>Supplementary information and remarks:</u> 1) TRX module with power supply 1.9 V to 3.6 Vdc			

Appendix A: Test results

Appendix A content

DESCRIPTION OF THE OPERATION MODES13

TEST STANDARDS VERSION APPLIED14

TEST CASES DETAILS15

RE Radiated emission. Electromagnetic field measure15

Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.
The operation modes used by the samples to which the present report refers, are shown in the following table:

Id	Description
OM/01	EUT ON. Without TX mode. Power supply: 3 Vdc.

Test standards version applied

The product standards and test standards applied for each test cases are shown in the following table:

Product Test Standard	Test standard	Requirement – Test case
FCC CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)	ANSI C63.4 (2014)	RE Radiated emission.

Test Cases Details

RE Radiated emission. Electromagnetic field measure

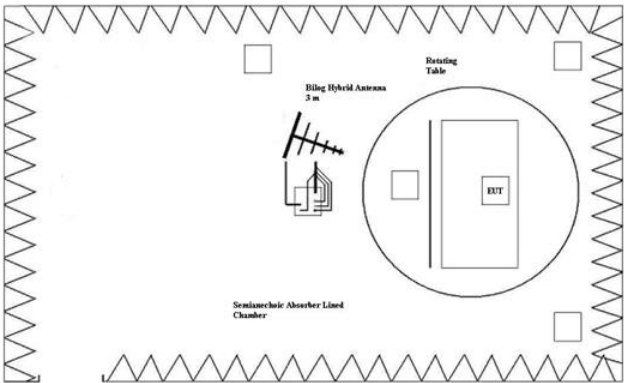
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-21 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

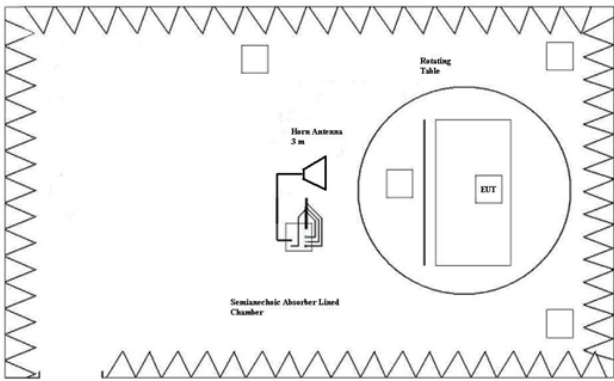
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
216 to 230	200	46	200	46	---	---
230 to 960	200	46	224	47	---	---
960 to 1000	500	54	500	54	---	---
Above 1000	---	---	---	---	74	54

Limits according to FCC Part 15B, equal to o more stringent than those of ICES-003 Issue 7.

Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

Results

S/	OM	Code	Freq Rng (MHz)	V
01	OM/01	RE0101LR	[30, 1000]	P
01	OM/01	RE0101HR	[1000, 6000]	P

Verdict

Pass

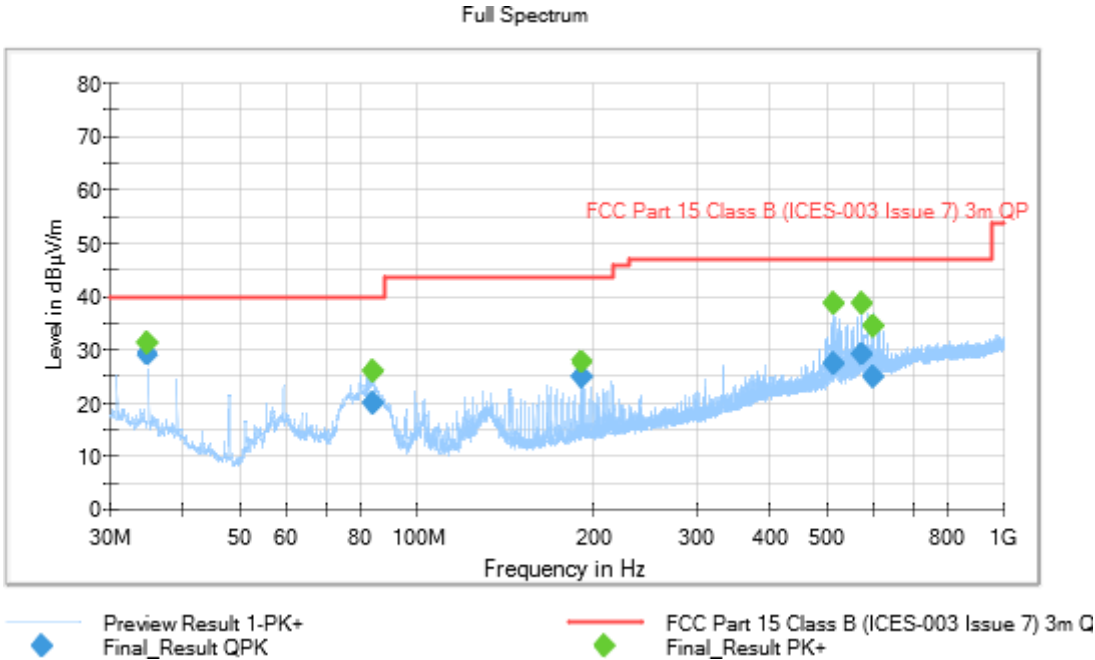
Attachments

EMC Test Code = RE0101LR, Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Without TX mode. Power supply: 3 Vdc..

Images:



Documents:

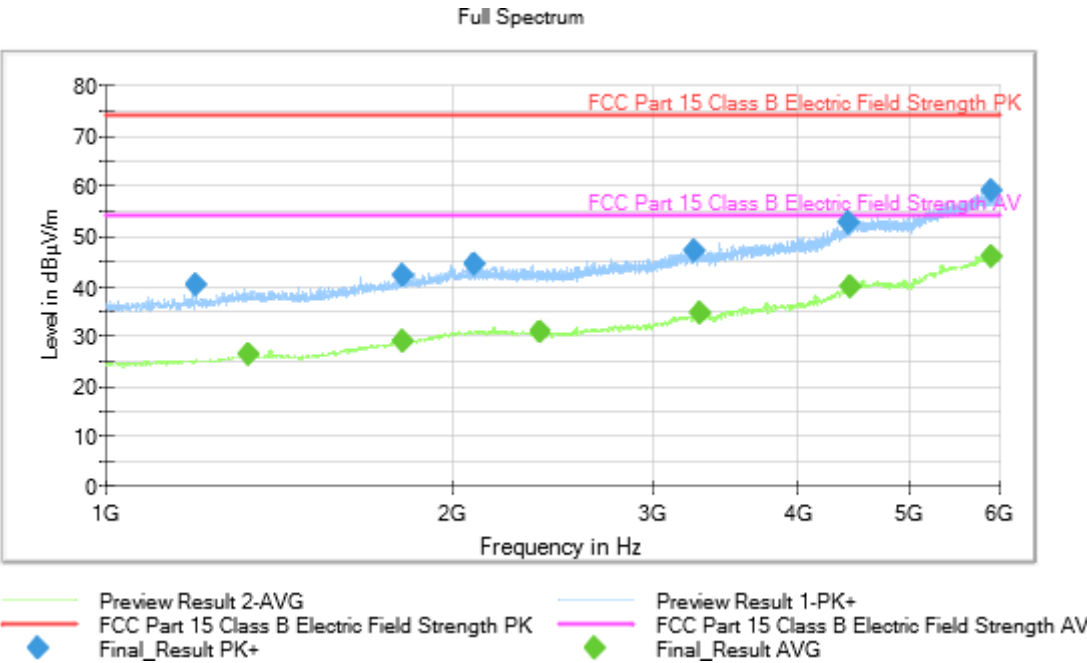
Frequency(MHz)	QuasiPeak(dBµV/m)	MaxPeak(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Height(cm)	Pol	Azimuth(deg)
34.802000	29.17	---	40.00	10.83	100.0	V	136.0
34.802000	---	31.26	---	---	100.0	V	136.0
84.334000	19.87	---	40.00	20.13	104.0	V	131.0
84.334000	---	25.82	---	---	104.0	V	131.0
192.005000	24.67	---	43.52	18.85	142.0	H	140.0
192.005000	---	27.47	---	---	142.0	H	140.0
515.353000	27.31	---	47.00	19.69	184.0	H	177.0
515.353000	---	38.50	---	---	184.0	H	177.0
576.090000	---	38.62	---	---	135.0	H	156.0
576.090000	29.14	---	47.00	17.86	135.0	H	156.0
600.068000	---	34.49	---	---	124.0	H	292.0
600.068000	24.78	---	47.00	22.22	124.0	H	292.0

EMC Test Code = RE0101HR, Frequency Range MHz = [1000, 6000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. Without TX mode. Power supply: 3 Vdc..

Images:



Documents:

Frequency(MHz)	MaxPeak(dBµV/m)	Average(dBµV/m)	Limit(dBµV/m)	Margin(dB)
1196.400000	40.05	---	73.97	33.92
1332.400000	---	26.10	53.97	27.87
1814.000000	---	28.97	53.97	25.00
1815.600000	41.95	---	73.97	32.02
2093.600000	44.28	---	73.97	29.69
2393.600000	---	30.87	53.97	23.10
3262.000000	47.12	---	73.97	26.85
3288.400000	---	34.41	53.97	19.56
4429.600000	52.45	---	73.97	21.52
4448.800000	---	39.64	53.97	14.33
5901.200000	---	45.75	53.97	8.22
5918.400000	59.02	---	73.97	14.95