Test report issued under the responsibility of:
Test laboratory EMITECH ILE DE FRANCE
MRA US-EU Designation Number: FR0004 (S102)

RADIO TESTS REPORT

FCC 47 CFR PART 15 : 2025

Company ..... :	***INNOVAL***
Address..... :	*Rue Eric Tabarly* *35530 NOYAL SUR VILAINE* *FRANCE*
Test item description. ..... :	***Farrowing detector***
Trade Mark. ..... :	*EASYFOAL*
Manufacturer..... :	*INNOVAL*
Model/Type reference..... :	Outdoor Collector
Ratings..... :	*Internal battery : 3.2 – 4.4V* *AC adapter : 100-240Vac/50-60Hz*
Testing Laboratory ..... :	**EMITECH ILE DE France Laboratory**
Address..... :	30-32, avenue des 3 Peuples 78180 MONTIGNY-LE-BRETONNEUX - FRANCE
Report Reference No..... :	**RRA-EMIESS24H695RFT-3A v0**
Test procedure. ..... :	FCC Certification
Diffusion..... :	M. PELTIER
Applicant's name. ..... :	*RF TRACK*
Date of issue..... :	20/10/2025
Total number of pages..... :	64
Revision. ..... :	0
Compiled by..... :	N. PEREZ (Test technician)
Technical verification & Quality approval. ..... :	 Pellerin Bruno Technical Entity Manager

Duplication of this test report is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above. This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.

REPORT INDEX:

REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	20/10/2025	/	Creation

1. GENERAL INFORMATION

TESTING PROCEDURE AND TESTING LOCATION:	
Testing Location	**EMITECH ILE DE France Laboratory**
Address.	30-32, avenue des 3 Peuples 78180 MONTIGNY-LE-BRETONNEUX FRANCE
Test procedure.	FCC Certification
Tested by	N. PEREZ
Test supervisor	B. PELLERIN
Date of receipt of test item	08/09/2025
Dates of performance of tests	From 08/09 to 26/09/2025 and 06/11/2025

APPLICANT'S GENERAL INFORMATIONS:	
Company name	***INNOVAL***
Company address.	*Rue Eric Tabarly* *35530 NOYAL SUR VILAINE* *FRANCE*
Person present during the tests.	-
Responsible.	M. PELTIER

GENERAL REMARKS:

The information in italics is declared by the manufacturer and is under his responsibility.
The test results presented in this report relate only to the object tested.
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.
Throughout this report the decimal separator is point.

POSSIBLE TEST CASE VERDICTS:	
Test case does not apply to the test object.	N/A
Test case not performed	N/P
Test object does meet the requirement.	P (Pass)
Test object does not meet the requirement.	F (Fail)

DEFINITIONS AND ABBREVIATIONS:

E.U.T	Equipment Under Test	AE	Ancillary Equipment	Pk	Peak detector
RBW	Resolution BandWidth	VBW	Video BandWidth	QP	Quasi-peak detector
FSOATS	Free Space Open Area Test Site	FAR	Full Anechoic Room	Av	Average detector
V	Vertical Polarization	H	Horizontal Polarization	RMS	Root Mean Square
RF	Radio Frequency	N.T.R	Nothing To Report	N/C	Not Communicated

2. REFERENCE DOCUMENTS

NORMATIVE REFERENCES:
The following referenced documents are necessary for the application of the present test report. **FCC 47 CFR PART 15 : 2025** Code of federal regulations Title 47- Telecommunication Chapter 1- Federal Communication Commission **ANSI C63.10 : 2020** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. Although the product standard uses obsolete technical standards, the latest versions of standards achievable by the laboratory will be used for testing.
INFORMATIVE REFERENCES:
/

3. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description.	:	Farrowing detector
Model/Type reference.....	:	Outdoor Collector
Trade Mark.	:	EASYFOAL
Serial number (S/N)....	:	25286901
Part number (P/N).	:	25286901
Software version.....	:	ReaderVelInFo__V317_022
Firmware version.	:	ReaderVelInFo__V317_022
Type of sample.	:	*Serial*
Function.	:	*Farrowing detection system*
Manufacturer name.	:	*INNOVAL*
Address.	:	Rue Eric Tabarly, 35530 NOYAL SUR VILAINE FRANCE

General product information: -

3.2. E.U.T Overview

3.2. E.U.T Overview

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3.3. E.U.T Marking Plate

3.4. E.U.T Modifications

-

3.5. E.U.T Electronic board

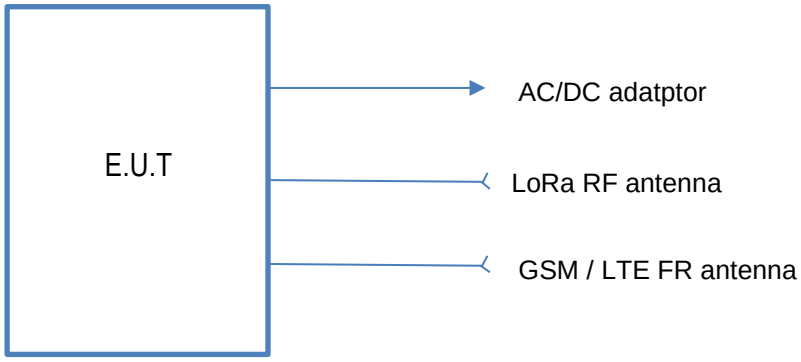
-

3.6. E.U.T Mechanical and Electrical Design

Power supply. ..... :	*Internal battery : 3.2 – 4.4V* *AC/DC adapter : 100-230Vac/50-60Hz*
Power supply range. ..... :	*100-240Vac/50-60Hz*
Power type. ..... :	*DC and Single phase without earth*
Power (W). ..... :	*21*
Nominal current (A). ..... :	*0.7*
Dimensions (L x W x H) (m). ..... :	*0.45 x 0.105 x 0.06*
Weight (kg). ..... :	*0.470*
Temperature range (°C). ..... :	*-20 / +55*
Ground bounding strap. ..... :	*No*

Comments: -

3.7. E.U.T Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	*Main frame*	*N/E*	*N/A*	*Metallic*	
1	*AC power source*	*AC/DC*	*>3m*	*-*	
2	*LoRa*	*RF*	*external*	*-*	
3	*GSM / LTE*	*RF*	*external*	*-*	

AC/DC : AC/DC Converter port
I/O .....: Input or Output port
N/E .....: Non Electrical port
AC .....: Alternative current port
TP .....: Telecommunication port
DC ..... : Direct current port
RF..... : Radio frequency port

3.8. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

a) PRODUCT TYPE	b) MANUFACTURER	c) MODEL	d) N°EMITECH / COMMENTS
Power supply	Secas	CF1000 50/60	2102

(AE)

4. RESULT SUMMARY

Subpart B of the standard FCC part 15 – Unintentional radiators

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
Measurement of conducted emission on AC mains ports	**15.107**	**PASS**	
Radiated emission limits	**15.109**	**PASS**	

Subpart C of the standard FCC part 15 – Unintentional radiators

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
Restriction bands of operation	**15.205**	**PASS**	
Measurement of conducted emission on AC mains ports	**15.207**	**PASS**	
Radiated emission limits; general requirements	**15.209**	**PASS**	
Additional provision to the general radiated emission limitations	**15.215**		
-(a) Alternative to general radiated emission limits		**PASS**	
-(b) Unwanted emissions outside of § 15.247 frequency bands		**PASS**	
-(c) 20 dB bandwidth and band-edge compliance		**PASS**	
Intentional radiated emissions	**15.247**		
- a) frequency hopping and digitally modulated		**N/A**	
- a) (1) hopping mode		**N/A**	
- a) (1) (i) frequency hopping in the band 902-928 MHz		**N/A**	
- a) (1) (ii) frequency hopping in the band 5725–5850 MHz		**N/A**	
- a) (1) (iii) frequency hopping in the band 2400–2483.5 MHz		**N/A**	
- a) (2) systems using digital modulation in the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz (6 dB bandwith)		**PASS**	
- b) maximum peak conducted			
- b) (1) frequency hopping in the bands 2400–2483.5 MHz or 5725–5850 MHz		**N/A**	
- b) (2) frequency hopping in the band 902-928 MHz		**N/A**	
- b) (3) systems using digital modulation in the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz		**PASS**	
- b) (4) maximum peak conducted > 6 dBi		**N/A**	
- b) (4) (i) frequency hopping in the band 2400–2483.5 MHz		**N/A**	
- b) (4) (ii) frequency hopping in the band 5725–5850 MHz		**N/A**	
- b) (4) (iii) fixed, point-to-point		**N/A**	
- c) directional antenna > 6 dBi		**N/A**	
- c) (1) fixed, point-to-point operation		**N/A**	
- c) (1) (i) in the band 2400–2483.5 MHz		**N/A**	
- c) (1) (ii) in the band 5725–5850 MHz		**N/A**	
- c) (1) (iii) fixed, point-to-point		**N/A**	

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
- c) (2) multiple directional beams in the band 2400–2483.5 MHz		**N/A**	
- c) (2) (i) information		**N/A**	
- c) (2) (ii) sum of the power supplied to all antennas		**N/A**	
- c) (2) (iii) one antenna for multiple directional beams		**N/A**	
- c) (2) (iv) single directional beam		**N/A**	
- d) intentional radiator		**PASS**	
- e) peak power spectral density		**PASS**	
- f) hybrid system		**N/A**	
- g) continuous data stream during the test		**N/A**	
- h) to avoid hopping on occupied channels		**N/A**	
- i) RF exposure compliance		**N/A**	**P < 500 mW**

5. EMC MEASUREMENT UNCERTAINTY

Uncertainties values presented below are required by standards:

e) PARAMETER	f) MAXIMAL EMITECH UNCERTAINTY	g) STANDARD UNCERTAINTY
Conducted emission		
Harmonics current 61000-3-2/3-12	± 5.0 %	± 5.00 %
Harmonics current 61000-3-12 (with probe)	± 5.9 %	/
Voltage fluctuation and flicker 61000-3-3/3-11	± 7.5 %	± 8.00 %
(Artificial Mains Network) 3kHz – 9kHz	± 3.8 dB	/
(Artificial Mains Network) 9kHz – 150kHz	± 3.6 dB	± 3.8 dB
(Artificial Mains Network) 150kHz – 30MHz	± 3.4 dB	± 3.4 dB
(Voltage probe) 9kHz – 30MHz	± 2.9 dB	± 2.9 dB
(Asymmetric Artificial Network) 150kHz – 30MHz	± 3.5 dB	± 5.0 dB
(Current measurement) 150kHz – 30MHz	± 2.9 dB	± 2.9 dB
(Capacitive Voltage Probe) 150kHz – 30MHz	± 3.6 dB	± 4.0 dB
(Discontinuous) 150kHz – 30MHz	± 3.4 dB	± 3.4 dB
(Van Veen) 9kHz – 30MHz	± 3.3 dB	± 3.3 dB
(Coupling Decoupling Network) 30MHz – 300MHz	± 3.5 dB	± 3.8 dB
(Splitter) 30MHz – 2.15GHz	± 3.4 dB	/
Disturbance power		
30MHz – 300MHz	± 4.4 dB	± 4.5 dB
Radiated emission		
(magnetic field) 9kHz – 30MHz	± 2.7 dB	/
(electric field in the OATS/SAC) 30MHz – 1GHz	± 5.2 dB	± 6.3 dB
(electric field in the FAR) 30MHz – 1GHz	± 5.2 dB	± 5.3 dB
(electric field in the FSOATS/FAR) 1GHz - 6GHz	± 5.0 / 5.2 dB	± 5.2 dB
(electric field in the FSOATS/FAR) 6GHz - 18GHz	± 5.3 / 5.4 dB	± 5.5 dB
(electric field) 18GHz - 40GHz	± 6.1 dB	/
(electric field) 40GHz - 140GHz	± 5.7 dB	/

For the calculation of expanded uncertainty, the confidence interval is 95 % (k=2).

OATS: Open Area Test Site
SAC: Semi Anechoic Chamber
FAR: Fully Anechoic Room

6. TEST CONDITIONS AND RESULTS

6.1. Measurement of conducted emission on AC mains ports

Reference standard:	FCC 47 CFR PART 15 : 2020
Test method:	§15.107 of FCC CFR PART 15 §15.109 of FCC CFR PART 15
General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane. All power was connected to the system through Artificial Mains Network (AMN). The AMN is placed at 40 cm from the boundary of the EUT and bonded to a ground reference plane. All tested telecommunications lines (if applicable) were connected to an Asymmetric Artificial Network (AAN) and conducted voltage measurements on telecommunications lines were made at the output of the AAN. Where an AAN was not appropriate or available, measurements were made using a Capacitive Voltage Probe and/or a Current probe.	

TESTED CABLE	PARAMETER	RESULT TAB.	VERDICT
120Vac / 60Hz - Power supply with LORA radio function in TX mode	150kHz-30MHz	EMI4432	**PASS**
120Vac / 60Hz - Power supply with radio function OFF	150kHz-30MHz	EMI4432	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	*See Graph(s)*
Relative Humidity	30 to 60 %	*See Graph(s)*
Atmospheric pressure	N/A	*See Graph(s)*

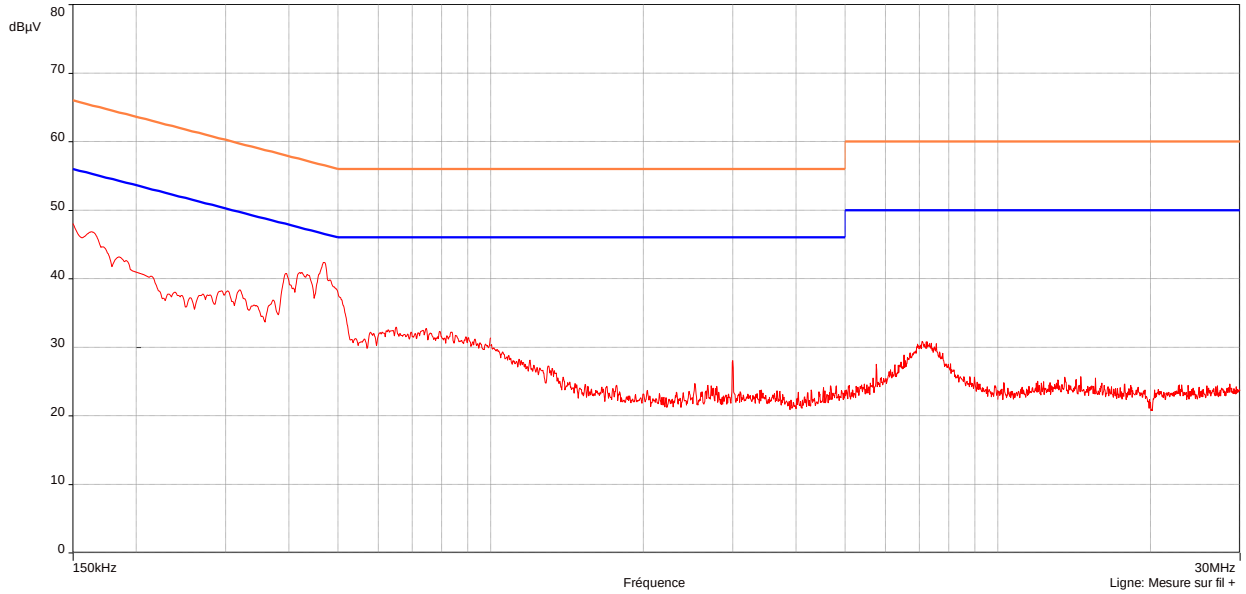
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Cable	/	Cable	02789	30/05/2024	30/07/2026
LISN	Rohde & Schwarz	LISN	14570	30/09/2025	30/11/2027
Power supply	Secas	Power supply	02102		
Receiver	Rohde & Schwarz	Receiver	19462	10/06/2025	10/08/2027
Shielded enclosure	Comtest	FAR 3m	14804		
Software	Nexio	BAT EMC	0000		

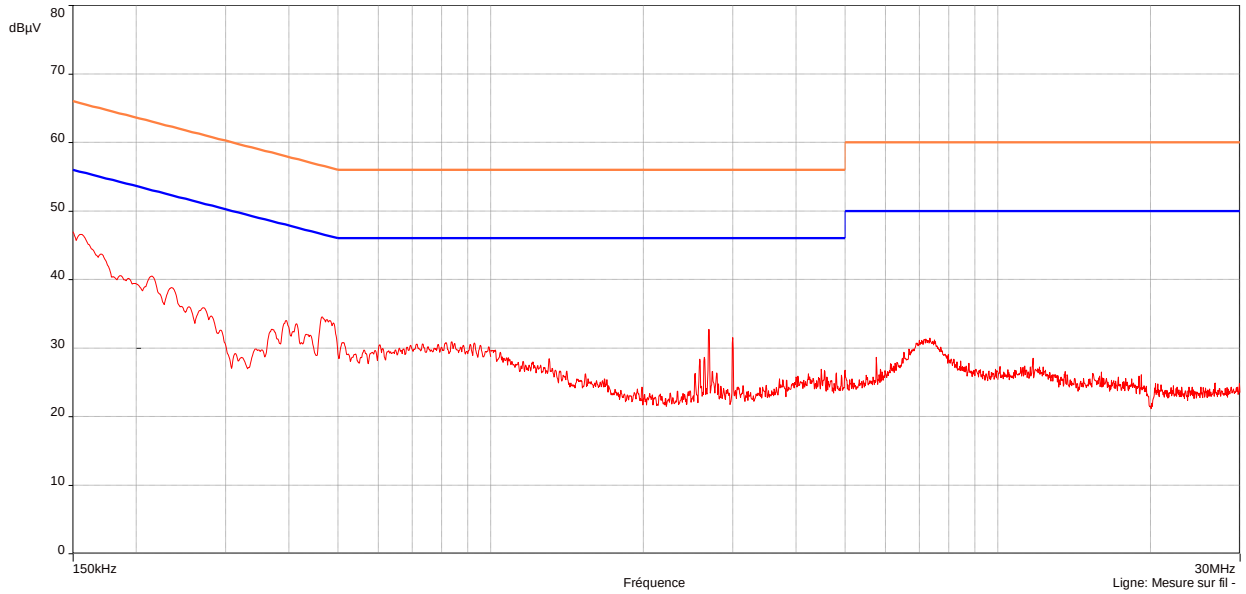
BAT-EMC software version: V3.18.0.26 Blank cells = Permanent validity

TEST SETUP PHOTO


CONDUCTED EMISSION (MEASUREMENT) - GRAPH			
120VAC / 60HZ POWER SUPPLY			
E.U.T mode:	LORA radio function in TX mode	**T (°C):**	22.5
Test Date:	06/11/2025	**H (%):**	51.8
Test Operator:	N.PEREZ	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit/detection - Blue: Average limit/detection

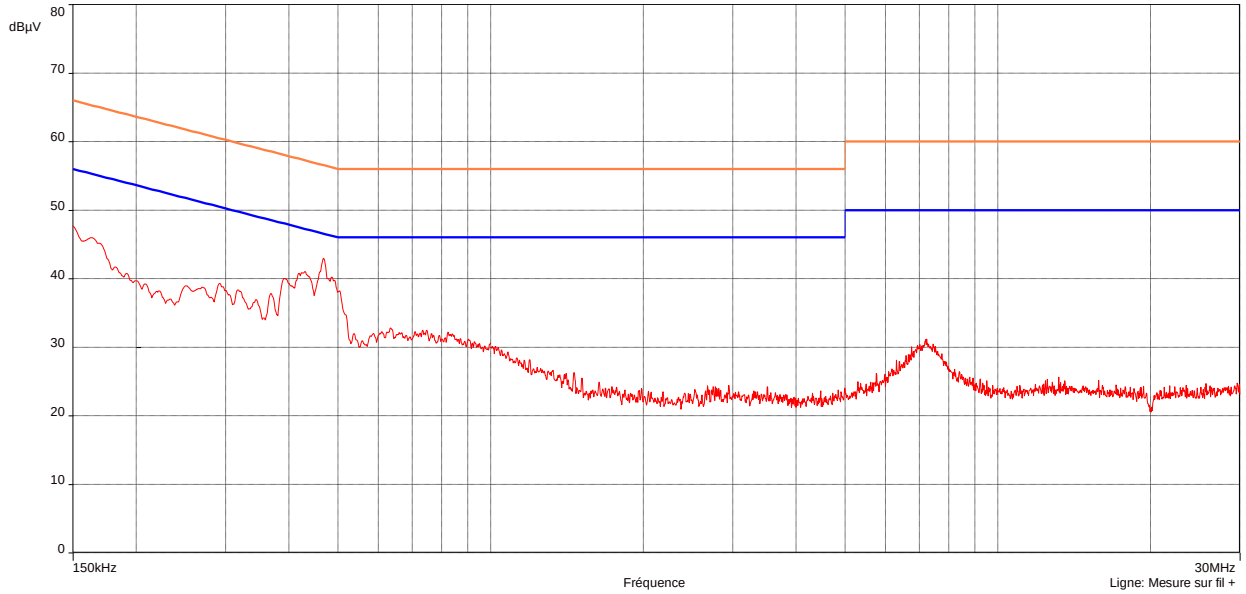


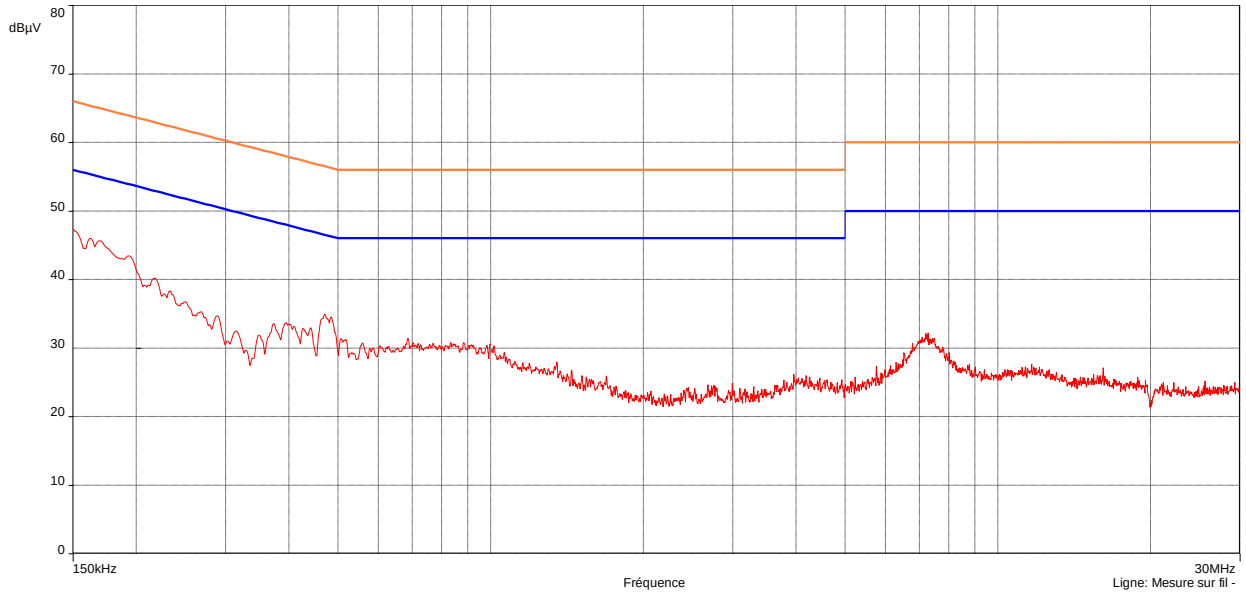


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Neutral	150kHz-1MHz	10kHz	30kHz	Peak
Neutral	1MHz-30MHz	10kHz	30kHz	Peak
Phase 1	150kHz-1MHz	10kHz	30kHz	Peak
Phase 1	1MHz-30MHz	10kHz	30kHz	Peak
Measure with:	A.M.N.			
Comments:				
E.U.T modifications: No				

CONDUCTED EMISSION (MEASUREMENT) - GRAPH			
120VAC / 60HZ POWER SUPPLY			
E.U.T mode:	radio function OFF	**T (°C):**	22.5
Test Date:	06/11/2025	**H (%):**	51.8
Test Operator:	N.PEREZ	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit/detection - Blue: Average limit/detection





POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Neutral	150kHz-1MHz	10kHz	30kHz	Peak
Neutral	1MHz-30MHz	10kHz	30kHz	Peak
Phase 1	150kHz-1MHz	10kHz	30kHz	Peak
Phase 1	1MHz-30MHz	10kHz	30kHz	Peak
Measure with:	A.M.N.			
Comments:				
E.U.T modifications: No				

6.2. Digital modulation systems

Reference standard:	FCC 47 CFR PART 15 : 2025
Test method:	§ 15.247 a) (2) of FCC 47 CFR PART 15 : 2025
General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane. Measurement are done on a normalized test site by the substitution method. The test antenna is oriented in the two polarizations (vertical and horizontal), and the product is rotated at 360° in the horizontal plane (See photo(s) for initial position of the EUT(0°)). If applicable the test antenna was raised and lowered through the specified range of height until a maximum signal level is detected. For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

LABORATORY PARAMETERS:	h) REQUIRED PRIOR TO THE TEST	i) DURING THE TEST
Ambient Temperature	10 to 40 °C	21°C
Relative Humidity	10 to 90 %	58%
Atmospheric pressure	N/A	-
Test method deviation: No		
Supplementary information: -		

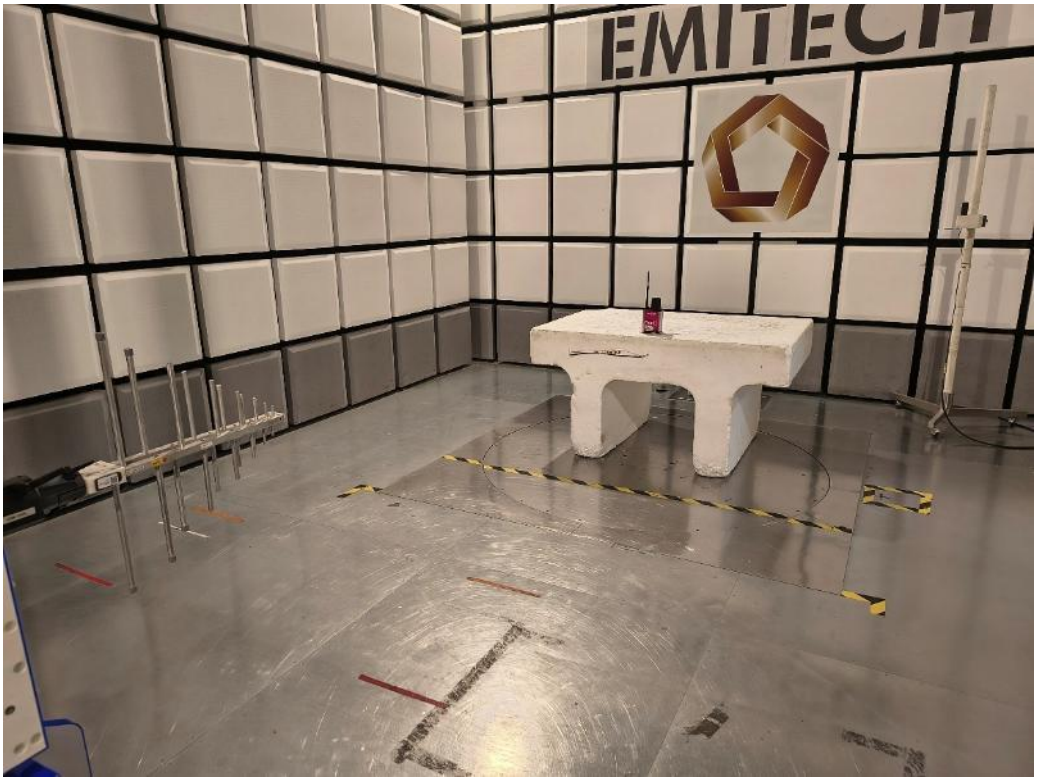
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Schwarzbeck	UHALP 9108A	3106	12/06/2025	12/08/2027
Attenuator	Hytem	03.02.917	19803	23/07/2024	23/09/2027
Cable	Huber + Suhner	N-10m	17267	29/07/2024	29/09/2026
Cable	Hytem	HY17D53UFA0200017D	19861	14/08/2024	14/10/2026
Cable	Hytem	HY17D53UFA0600017D	19865	14/08/2024	14/10/2026
Receiver	Rohde & Schwarz	ESRP7	10517	13/11/2023	13/01/2026
Shielded enclosure	Comtest	SAC 3m	14803	05/08/2025	05/10/2028

TEST SETUP PHOTOS

Test setup with charger

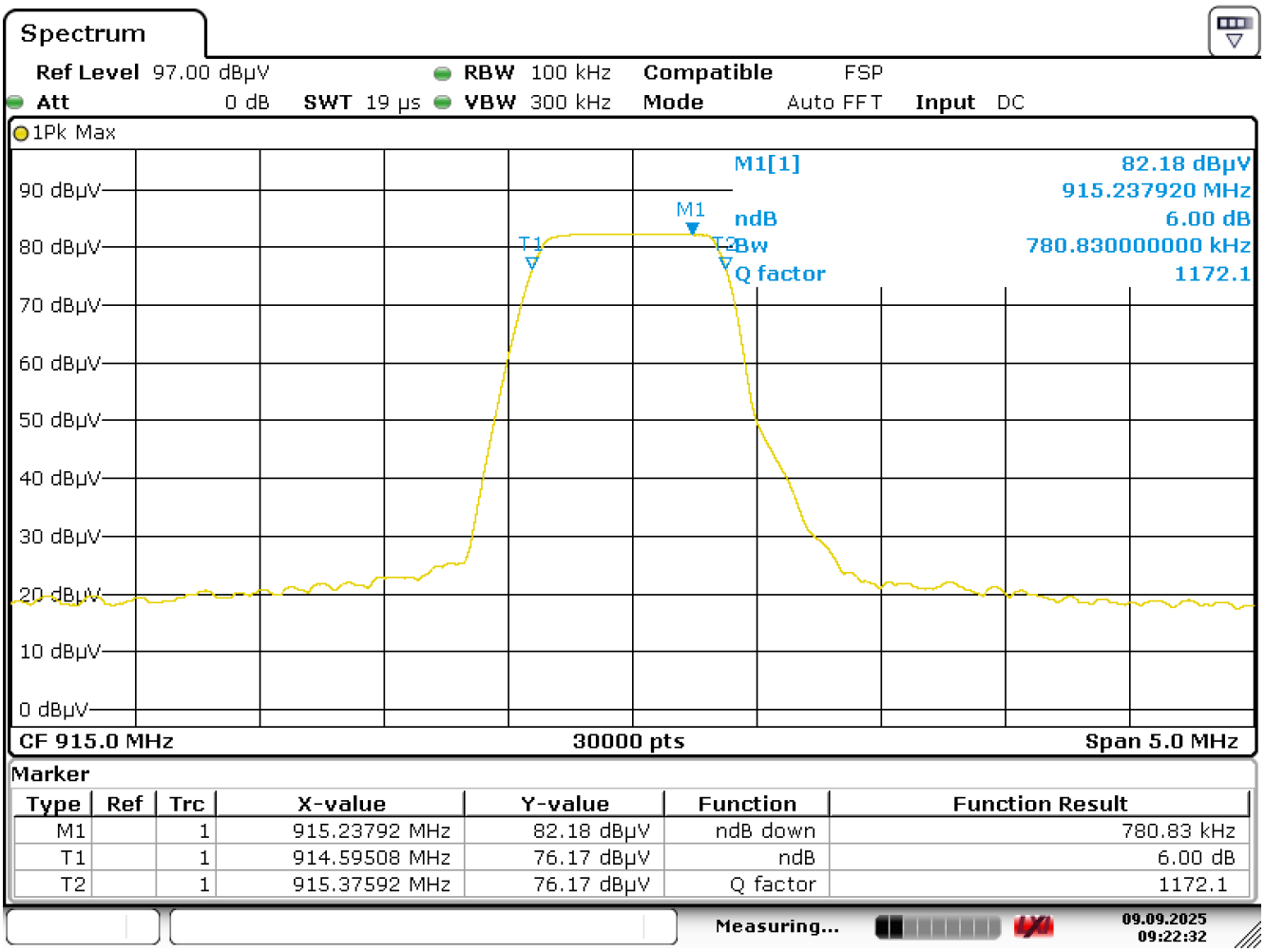
TEST SETUP PHOTOS

Test setup without the charger



6 dB Bandwidth single channel 915 MHz with the charger

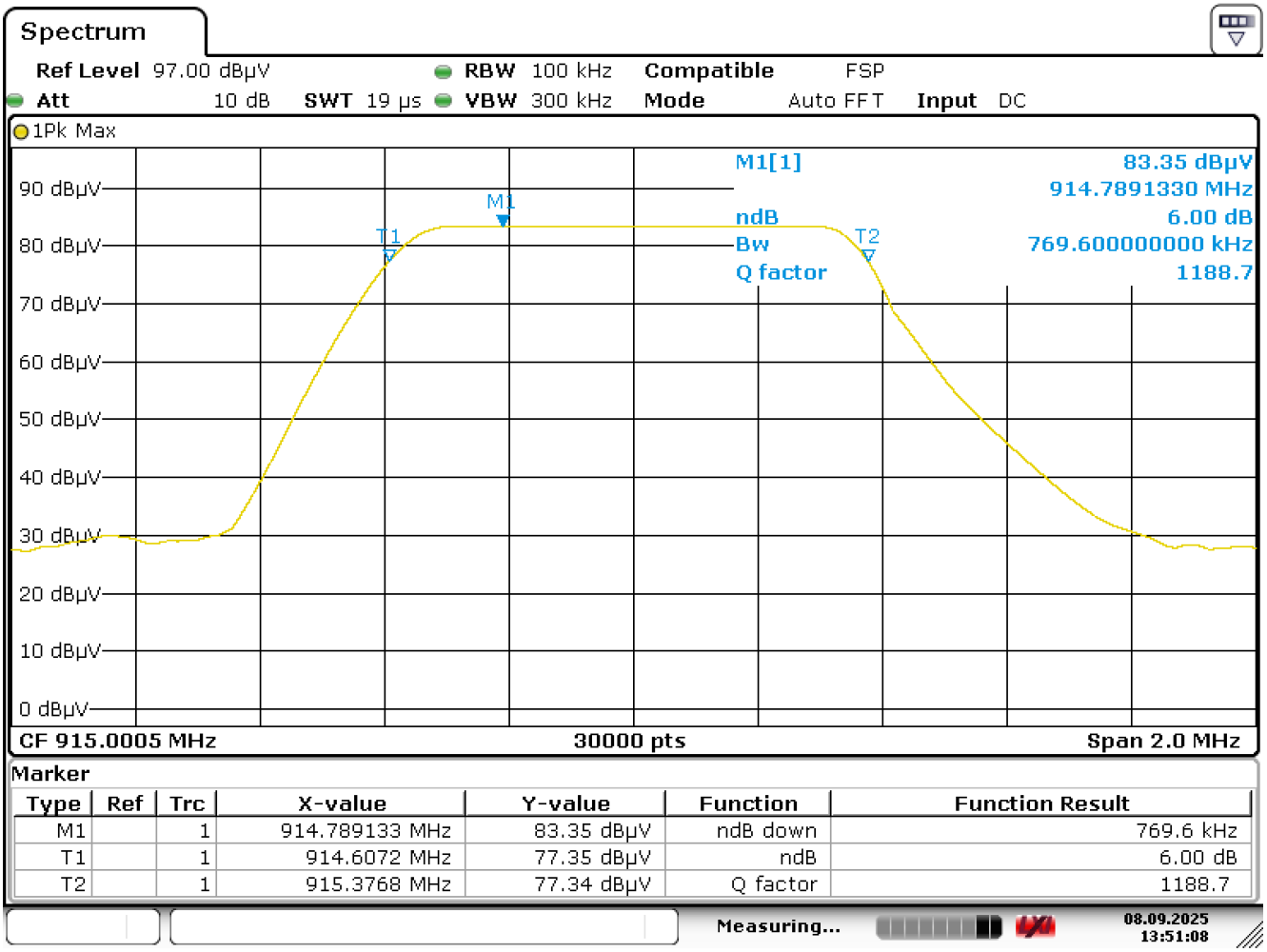
Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Results (MHz)
915.0	320	150	0.780



Date: 9.SEP.2025 09:22:33

6 dB Bandwidth single channel 915 MHz without the charger

Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Results (MHz)
915	360	150	0.769



Date: 8.SEP.2025 13:51:08

6.3. Transmitter output power

Reference standard:	FCC 47 CFR PART 15 : 2025
Test method:	§ 15.247 b) (3) of FCC 47 CFR PART 15 : 2025

General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane.

Measurement are done on a normalized test site by the substitution method.

The test antenna is oriented in the two polarizations (vertical and horizontal), and the product is rotated at 360° in the horizontal plane (See photo(s) for initial position of the EUT(0°)). If applicable the test antenna was raised and lowered through the specified range of height until a maximum signal level is detected.

For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	21°C
Relative Humidity	10 to 90 %	58%
Atmospheric pressure	N/A	-

Test method deviation: No

Supplementary information: N/A

TEST EQUIPMENT USED

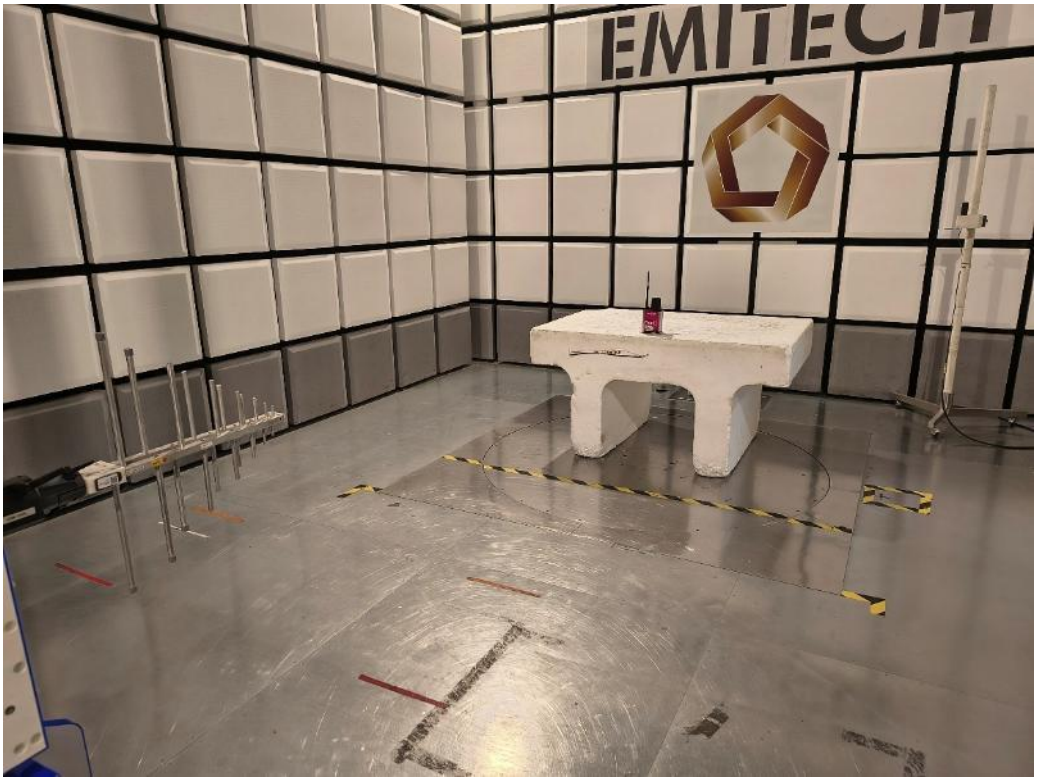
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Schwarzbeck	UHALP 9108A	3106	12/06/2025	12/08/2027
Attenuator	Hytem	03.02.917	19803	23/07/2024	23/09/2027
Cable	Huber + Suhner	N-10m	17267	29/07/2024	29/09/2026
Cable	Hytem	HY17D53UFA0200017D	19861	14/08/2024	14/10/2026
Cable	Hytem	HY17D53UFA0600017D	19865	14/08/2024	14/10/2026
Receiver	Rohde & Schwarz	ESRP7	10517	13/11/2023	13/01/2026
Shielded enclosure	Comtest	SAC 3m	14803	05/08/2025	05/10/2028

TEST SETUP PHOTOS

Test setup with charger

TEST SETUP PHOTOS

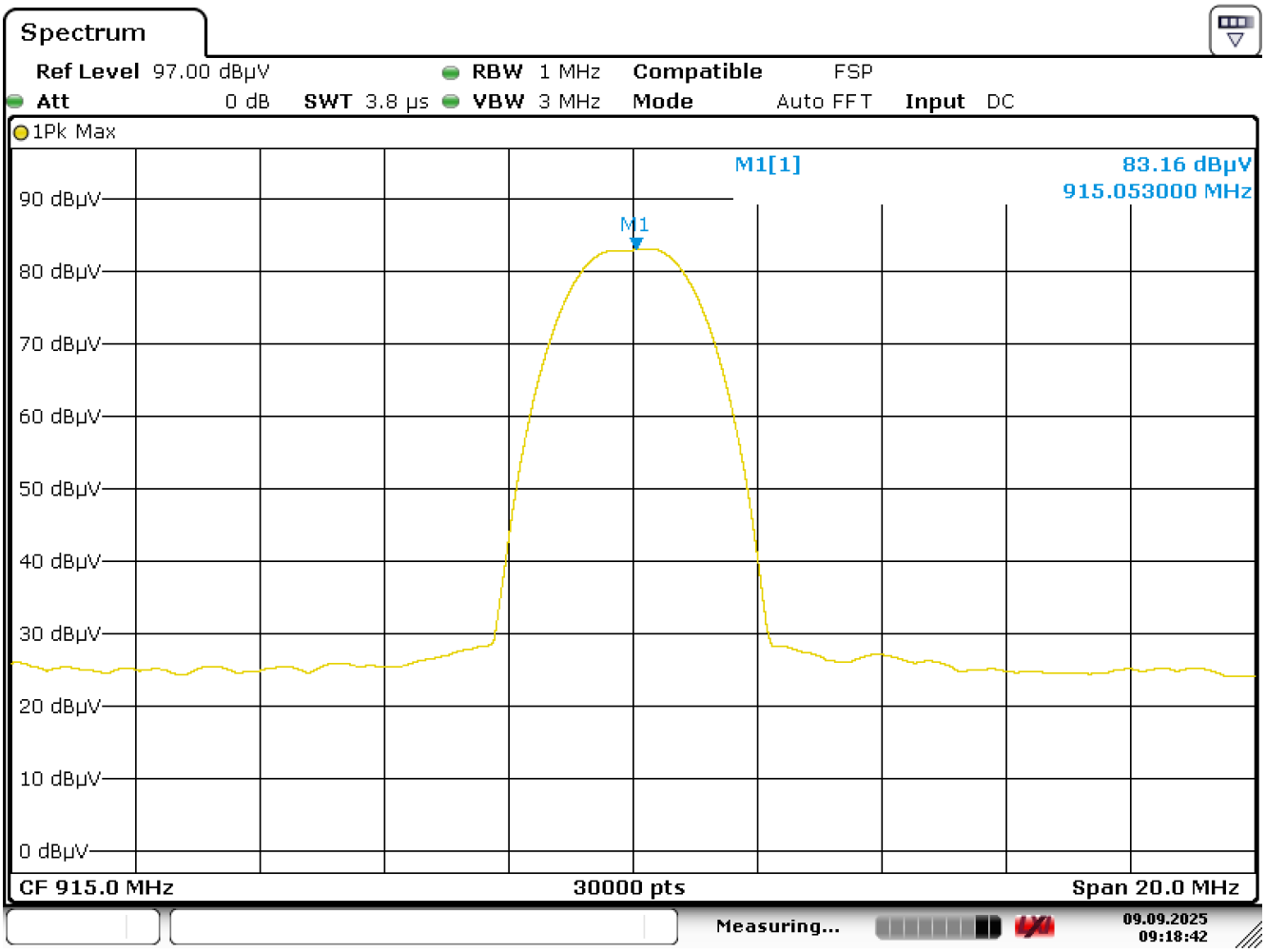
Test setup without the charger



Single channel 915 MHz with charger

Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Electro-magnetic field (dBuV/m)	TP* (dBm)	Limite (dBm)
915.0	320	150	107.8	10.3	+30

*TP = (E x d)2 / (30 x 1.64) for d = 3

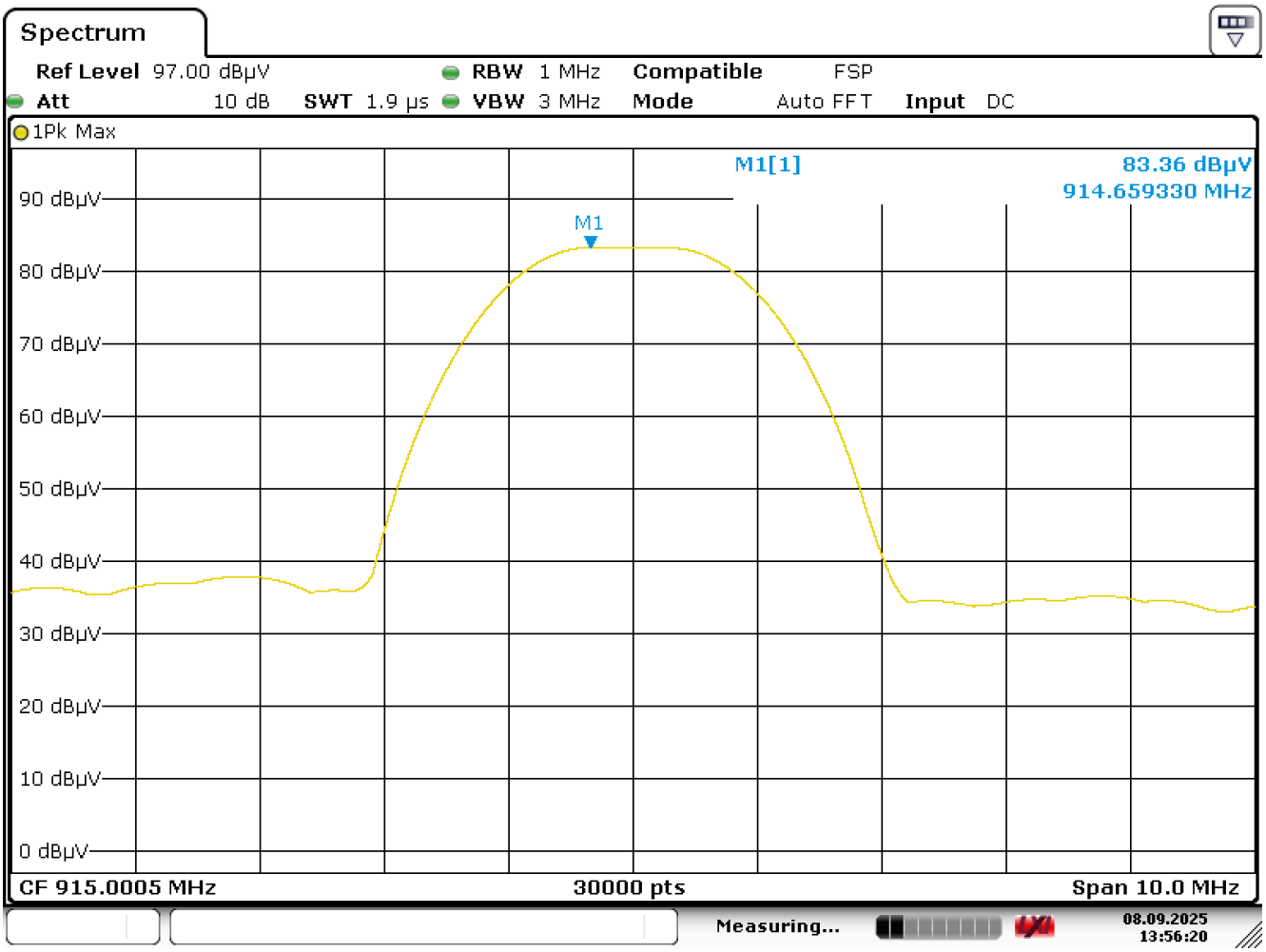


Date: 9.SEP.2025 09:18:42

Single channel 915 MHz without charger

Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Electro-magnetic field (dBuV/m)	TP* (dBm)	Limite (dBm)
915.0	360	150	107.9	10.5	+30

*TP = (E x d)2 / (30 x 1.64) for d = 3



Date: 8.SEP.2025 13:56:20

6.4. Peak power spectral density

Reference standard:	FCC 47 CFR PART 15 : 2025
Test method:	§ 15.247 2) (e) of FCC 47 CFR PART 15 : 2025
General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane. Measurement are done on a normalized test site by the substitution method. The test antenna is oriented in the two polarizations (vertical and horizontal), and the product is rotated at 360° in the horizontal plane (See photo(s) for initial position of the EUT(0°)). If applicable the test antenna was raised and lowered through the specified range of height until a maximum signal level is detected. For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	21°C
Relative Humidity	10 to 90 %	58%
Atmospheric pressure	N/A	-
Test method deviation: No		
Supplementary information: -		

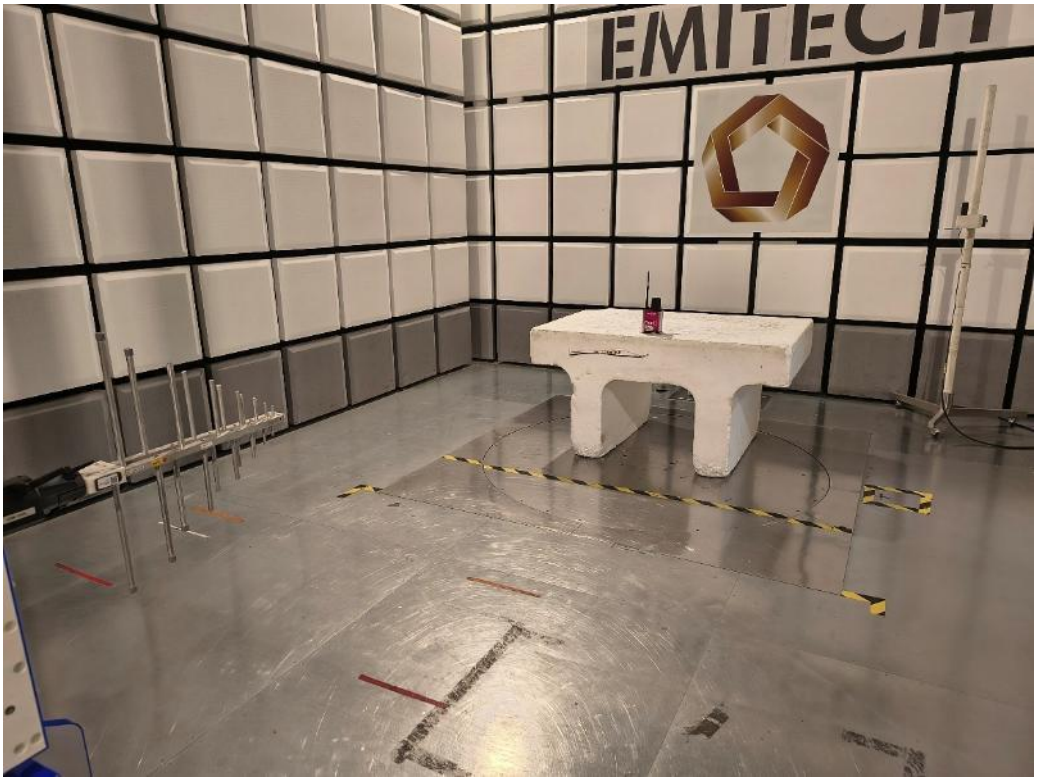
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Schwarzbeck	UHALP 9108A	3106	12/06/2025	12/08/2027
Attenuator	Hytem	03.02.917	19803	23/07/2024	23/09/2027
Cable	Huber + Suhner	N-10m	17267	29/07/2024	29/09/2026
Cable	Hytem	HY17D53UFA0200017D	19861	14/08/2024	14/10/2026
Cable	Hytem	HY17D53UFA0600017D	19865	14/08/2024	14/10/2026
Receiver	Rohde & Schwarz	ESRP7	10517	13/11/2023	13/01/2026
Shielded enclosure	Comtest	SAC 3m	14803	05/08/2025	05/10/2028

TEST SETUP PHOTOS

Test setup with charger

TEST SETUP PHOTOS

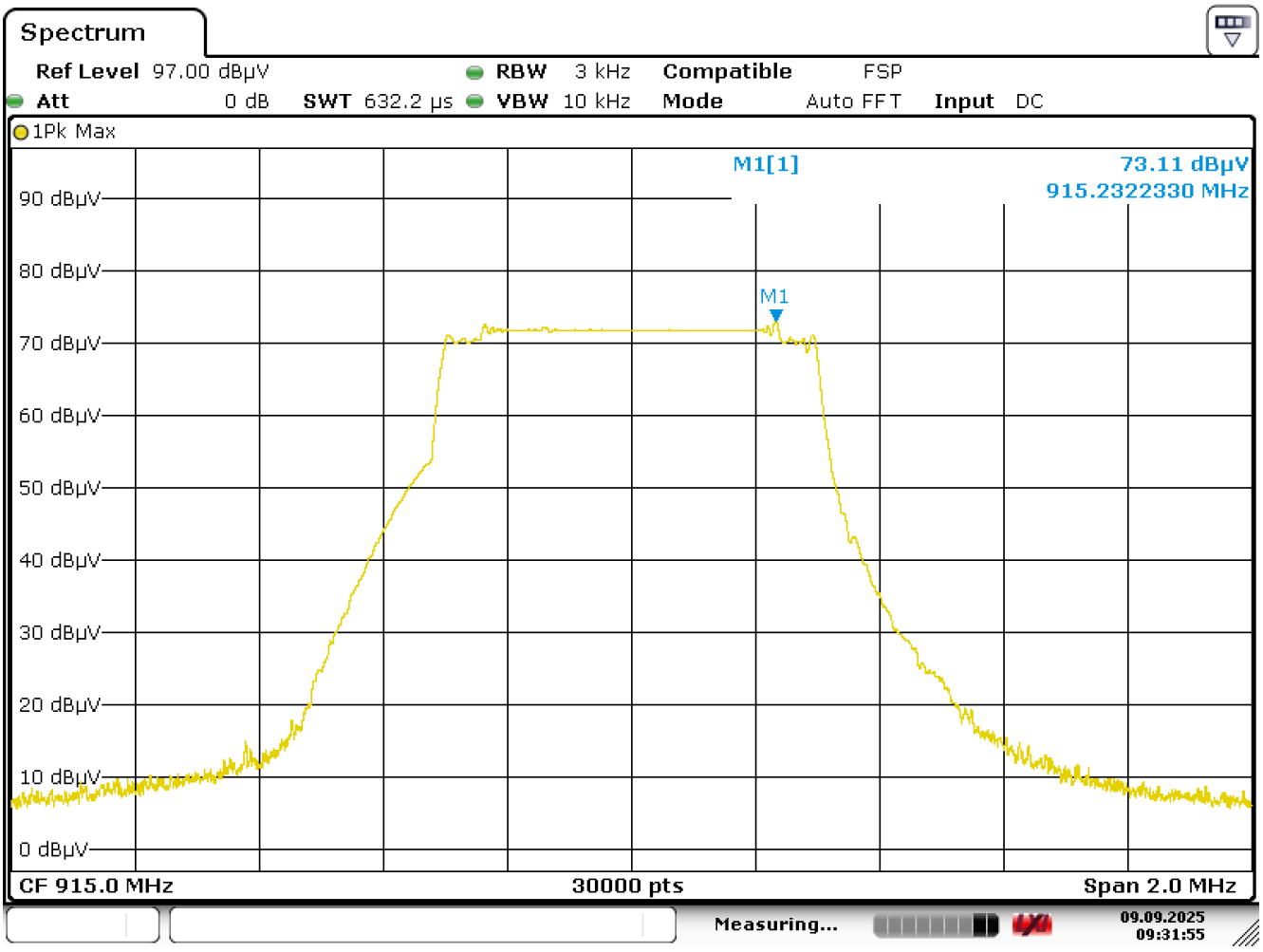
Test setup without the charger



Single channel 915 MHz with charger

Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Electro-magnetic field (dBuV/m)	PSD* (dBm/3kHz)	Limit (dBm/3kHz)
915.0	320	150	97.7	0.3	8

*PSD = (E x d)2 / (30 x 1.64) for d = 3 m

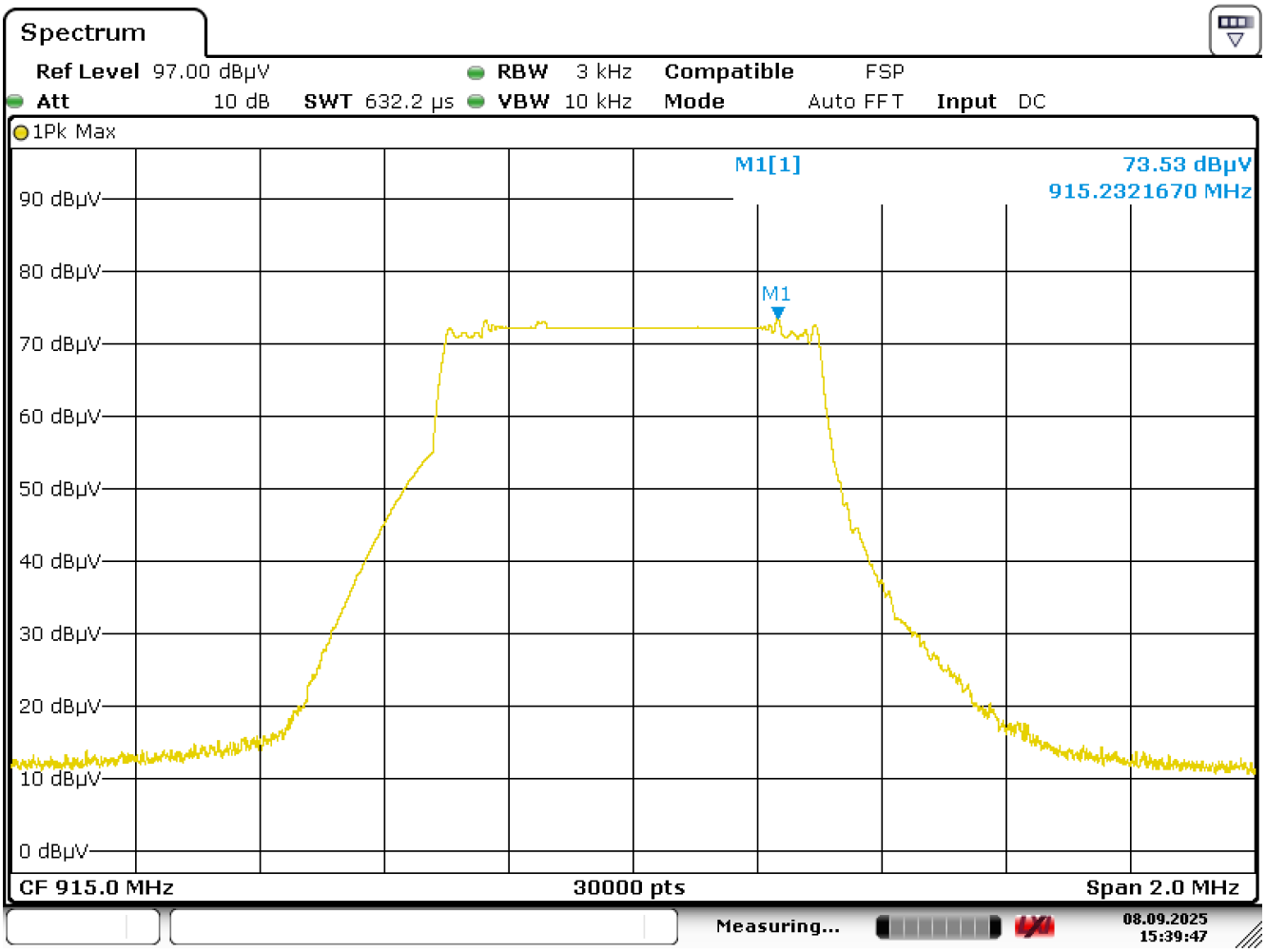


Date: 9.SEP.2025 09:31:56

Single channel 915 MHz without charger

Frequency (MHz)	Azimuth (°)	Antenna Hight (cm)	Electro-magnetic field (dBuV/m)	PSD* (dBm/3kHz)	Limit (dBm/3kHz)
915.0	360	150	98.1	0.7	8

*PSD = (E x d)2 / (30 x 1.64) for d = 3 m



Date: 8.SEP.2025 15:39:47

6.5. Additional provisions to the general radiated emissions limitation

Reference standard:	FCC 47 CFR PART 15 : 2025
Test method:	§ 15.247 2) (d) of FCC 47 CFR PART 15 : 2025

General test setup: E.U.T. is set on an insulating support at 80 cm above the ground reference plane.

Measurement are done on a normalized test site by the substitution method.

The test antenna is oriented in the two polarizations (vertical and horizontal), and the product is rotated at 360° in the horizontal plane (See photo(s) for initial position of the EUT(0°)). If applicable the test antenna was raised and lowered through the specified range of height until a maximum signal level is detected.

For portable equipements a research of maximum level is done on the 3 axes. Only the highest levels are recorded.

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	21°C
Relative Humidity	10 to 90 %	58%
Atmospheric pressure	N/A	-

Test method deviation: No

Supplementary information: -

TEST EQUIPMENT USED

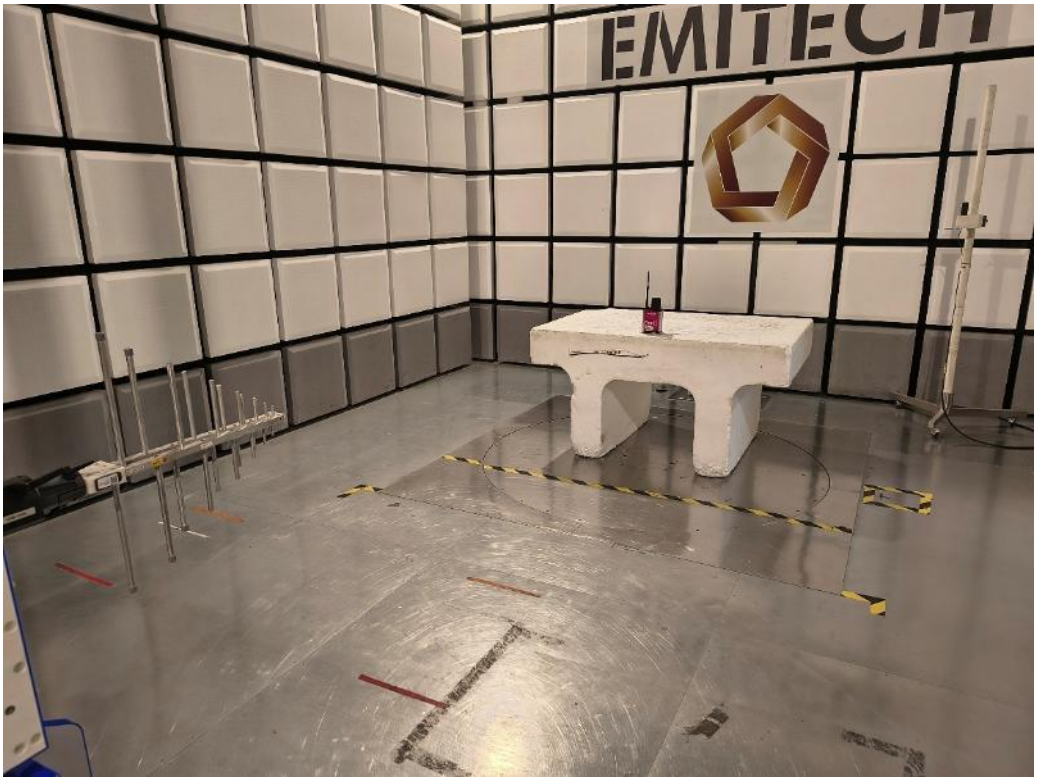
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Schwarzbeck	UHALP 9108A	3106	12/06/2025	12/08/2027
Attenuator	Hytem	03.02.917	19803	23/07/2024	23/09/2027
Cable	Huber + Suhner	N-10m	17267	29/07/2024	29/09/2026
Cable	Hytem	HY17D53UFA0200017D	19861	14/08/2024	14/10/2026
Cable	Hytem	HY17D53UFA0600017D	19865	14/08/2024	14/10/2026
Receiver	Rohde & Schwarz	ESRP7	10517	13/11/2023	13/01/2026
Shielded enclosure	Comtest	SAC 3m	14803	05/08/2025	05/10/2028

TEST SETUP PHOTOS

Test setup with charger

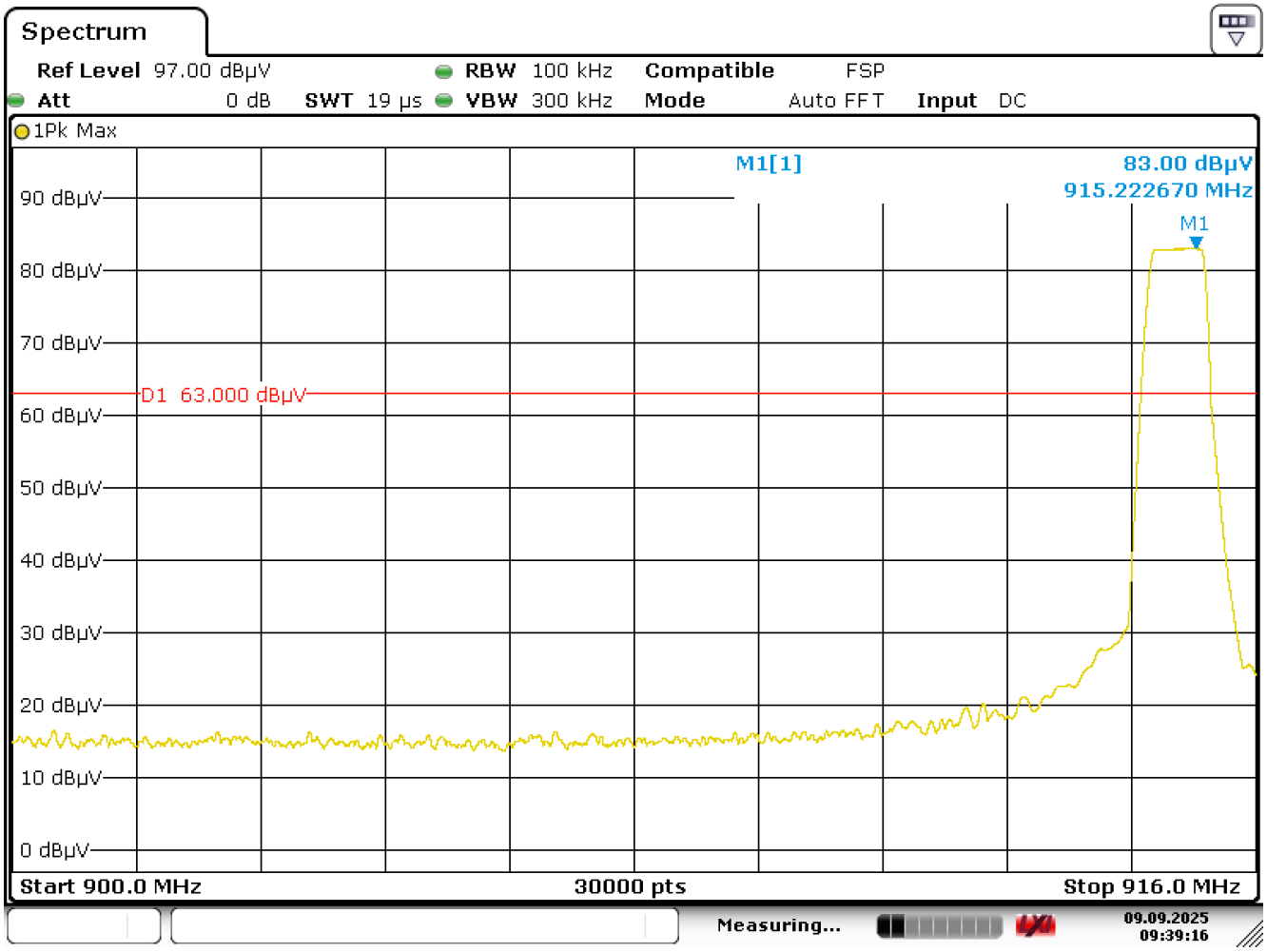
TEST SETUP PHOTOS

Test setup without the charger

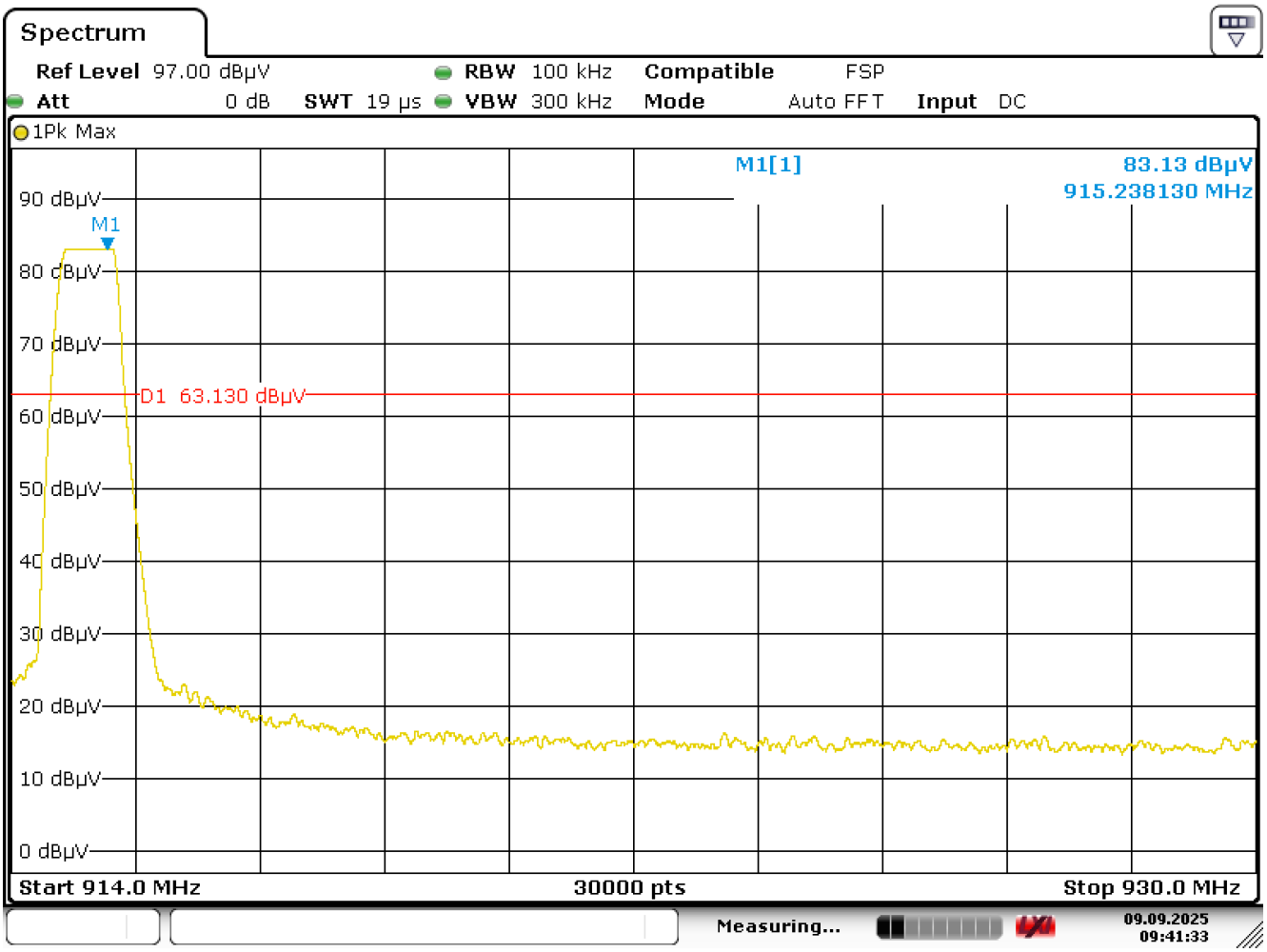


Single channel 915 MHz with charger

Lower Band Edge : from 900 MHz to 902 MHz
Upper Band Edge : from 928 MHz to 930 MHz



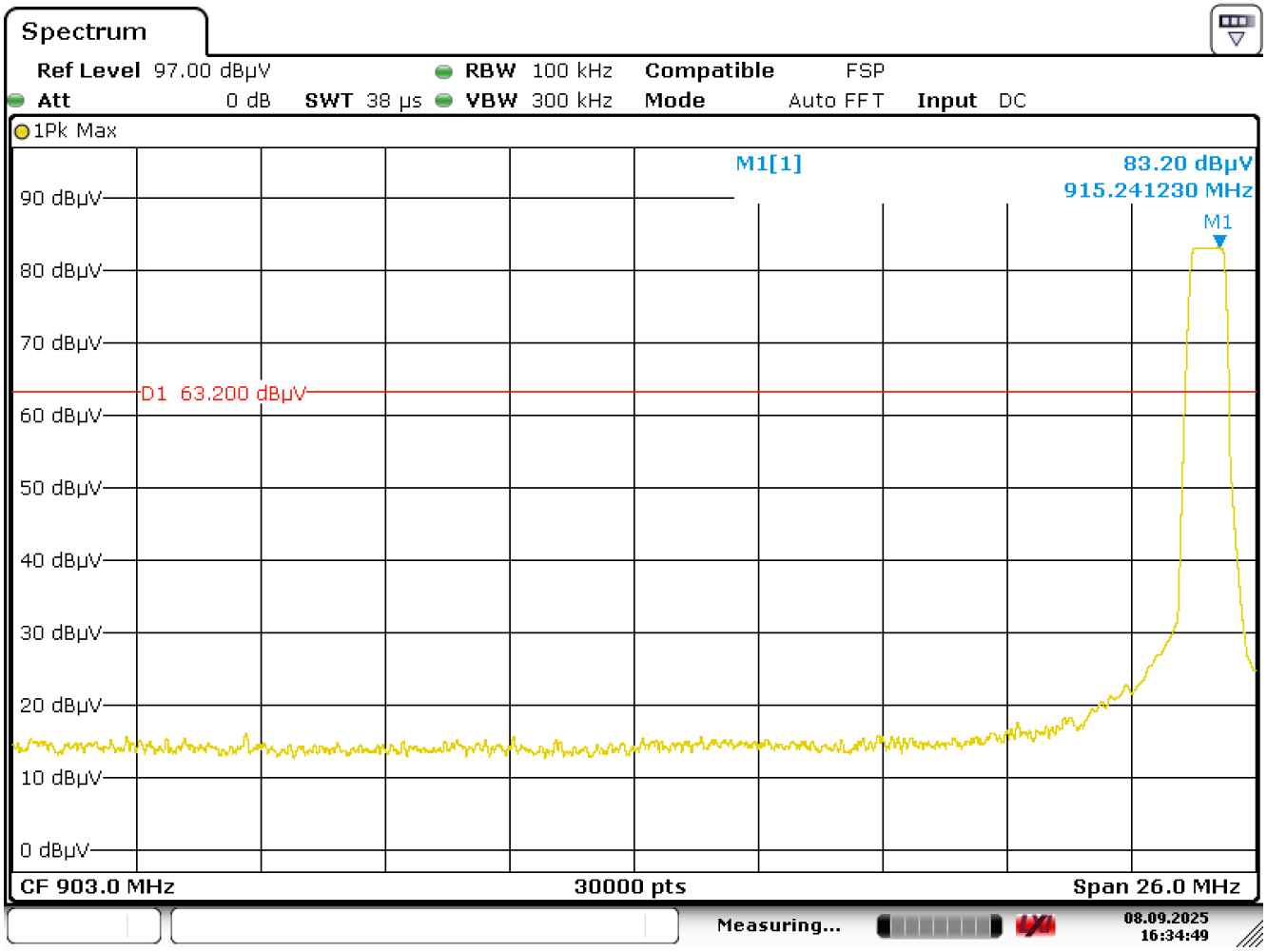
Date: 9.SEP.2025 09:39:15



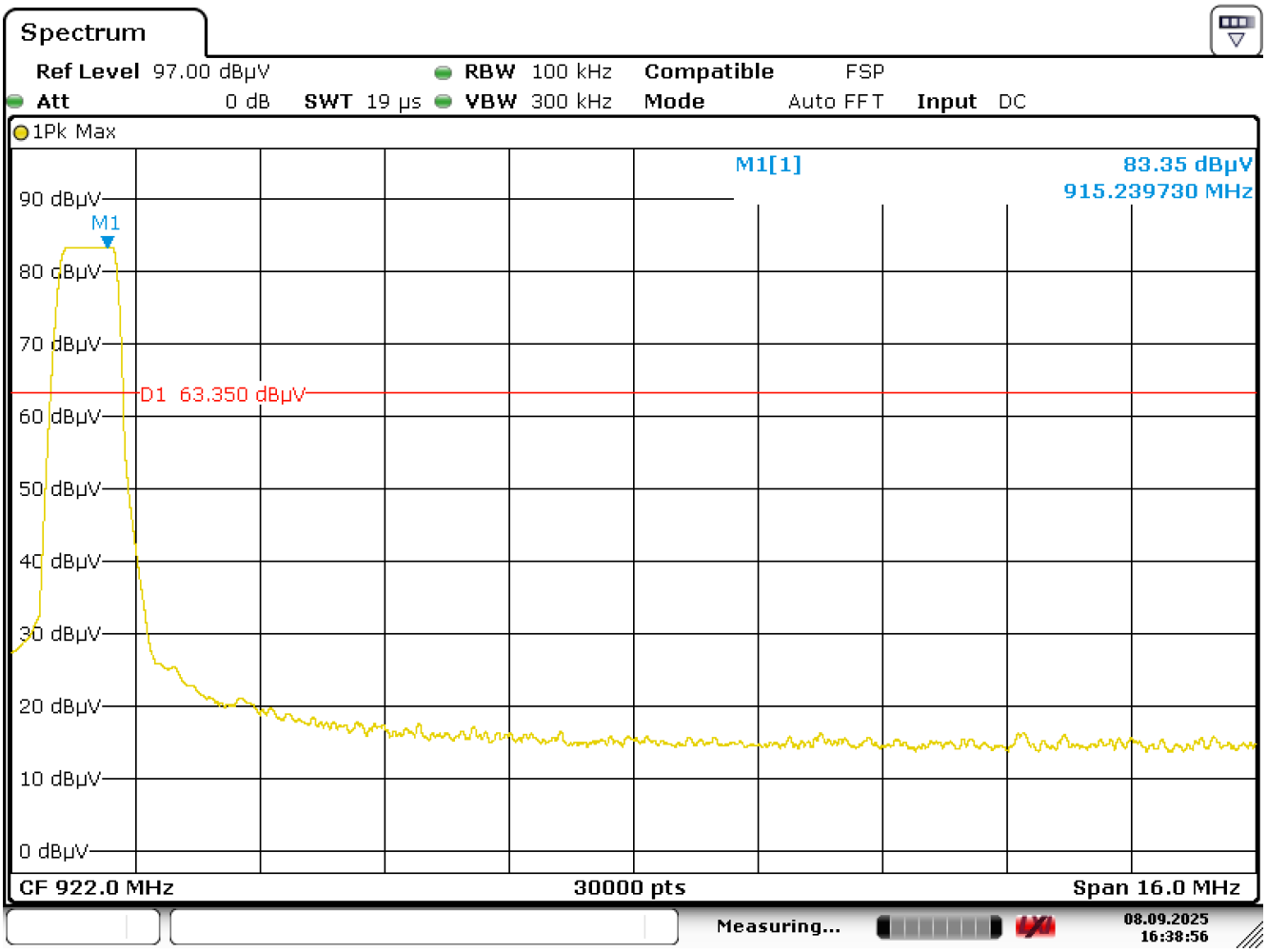
Date: 9.SEP.2025 09:41:33

Single channel 915 MHz without charger

Lower Band Edge : from 900 MHz to 902 MHz
Upper Band Edge : from 928 MHz to 930 MHz



Date: 8.SEP.2025 16:34:49



Date: 8.SEP.2025 16:38:56

6.6. Measurement of radiated disturbances

Reference standard:	FCC 47 CFR PART 15 : 2025
Test method:	§ 15.109 of FCC 47 CFR PART 15 : 2025 § 15.209 of FCC 47 CFR PART 15 : 2025
General test setup: E.U.T is set on an insulating support at 80 cm above the ground reference plane. First (peak) measurements were performed at an antenna to E.U.T separation distance of 3-meter. The E.U.T was rotated 360° about its azimuth with the receive antenna located in horizontal and vertical polarities and, for SAC method, at various heights. Final measurements (quasi-peak) were then performed in a reference test site that complies to CISPR 16-1-4. The E.U.T was rotated 360° about its azimuth and, for SAC method, adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarization, where applicable.	

TESTED CONFIGURATION	PARAMETER	RESULT TAB.	VERDICT
LORA radio function in TX mode with charger - ANT 0° Maxhold 360°	9kHz-30MHz	EMI4530	**PASS**
LORA radio function in TX mode with charger - ANT 45° Maxhold 360°	9kHz-30MHz	EMI4529	**PASS**
LORA radio function in TX mode with charger - ANT 90° Maxhold 360°	9kHz-30MHz	EMI4528	**PASS**
LORA radio function in TX mode without charger - ANT 0° Maxhold 360°	9kHz-30MHz	EMI4503	**PASS**
LORA radio function in TX mode without charger - ANT 45° Maxhold 360°	9kHz-30MHz	EMI4501	**PASS**
LORA radio function in TX mode without charger - ANT 90° Maxhold 360°	9kHz-30MHz	EMI4502	**PASS**
LORA radio function with charger in TX mode - Maxhold 360°	30MHz-1GHz	EMI4461	**PASS**
LORA radio function with charger in RX mode - Maxhold 360°	30MHz-1GHz	EMI4462	**PASS**
LORA radio function without charger in TX mode - Maxhold 360°	30MHz-1GHz	EMI4461	**PASS**
LORA radio function without charger in RX mode - Maxhold 360°	30MHz-1GHz	EMI4462	**PASS**
LORA radio function with charger in TX mode - Maxhold 360°	1GHz-10GHz	EMI4615	**PASS**
LORA radio function with charger in RX mode - Maxhold 360°	1GHz-10GHz	EMI4616	**PASS**
LORA radio function without charger in TX mode - Maxhold 360°	1GHz-10GHz	EMI4615	**PASS**
LORA radio function without charger in RX mode - Maxhold 360°	1GHz-10GHz	EMI4616	**PASS**

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	*See Graph(s)*
Relative Humidity	10 to 90 %	*See Graph(s)*
Atmospheric pressure	N/A	*See Graph(s)*
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Amplifier	Hewlett Packard	HP 8447 D	1264	28/10/2024	28/12/2025
Antenna	Schwarzbeck	UHALP 9108A	3106	12/06/2025	12/08/2027
Antenna	Emco	6502	9579	06/02/2025	06/04/2027
Antenna	Schwarzbeck	VHBB 9124 + BBA 9106	19406	15/02/2024	15/04/2026
Attenuator	Hytem	03.02.917	19803	23/07/2024	23/09/2027
Cable	N	N-10m	16065	13/10/2023	13/12/2025
Cable	MegaPhase	F135N1N28	16665	11/09/2025	11/11/2027
Cable	Huber + Suhner	N-10m	17267	29/07/2024	29/09/2026
Cable	Hytem	HY17D53UFA0200017D	19861	14/08/2024	14/10/2026
Cable	Hytem	HY17D53UFA0600017D	19865	14/08/2024	14/10/2026
Filtre passe bas	Micro-Tronics	LPM14398	6323	05/12/2022	05/02/2026
Filtre passe haut	Wainwright Instruments	WHK10-1032-1200-8000-60SS	17051	25/03/2024	25/05/2027
Filtre passe haut	Wainwright Instruments	WHKX12-2880-3200-18000-60SS	17052	25/03/2024	25/05/2027
Power supply	Secas	CF1000 50/60	2102		
Receiver	Rohde & Schwarz	ESRP7	10517	13/11/2023	13/01/2026
Software	Nexio	BAT EMC	0000		
Variable noch filter	Wainwright Instruments	WRCGV8-1725-1740-1760-1775-40SS	17049	15/05/2023	15/07/2026
Variable noch filter	Anatech electronics	AE718N2244	17093	22/08/2025	22/10/2028
Variable noch filter	Anatech electronics	AE845N2245	17094	22/08/2025	22/10/2028

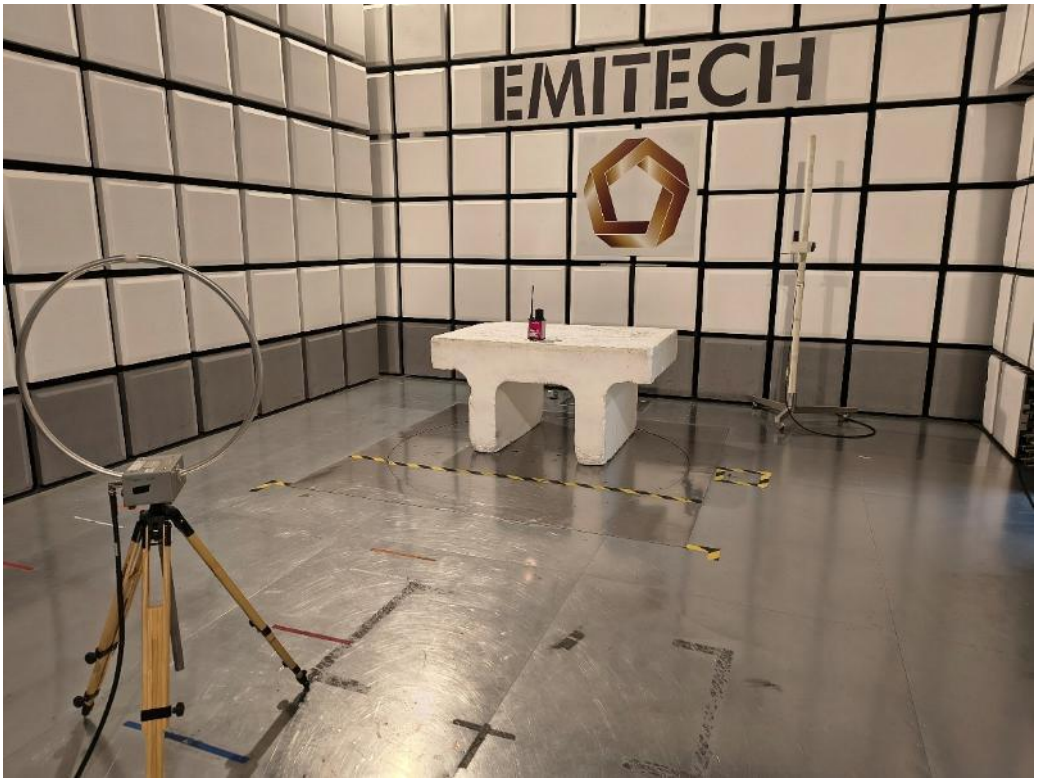
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

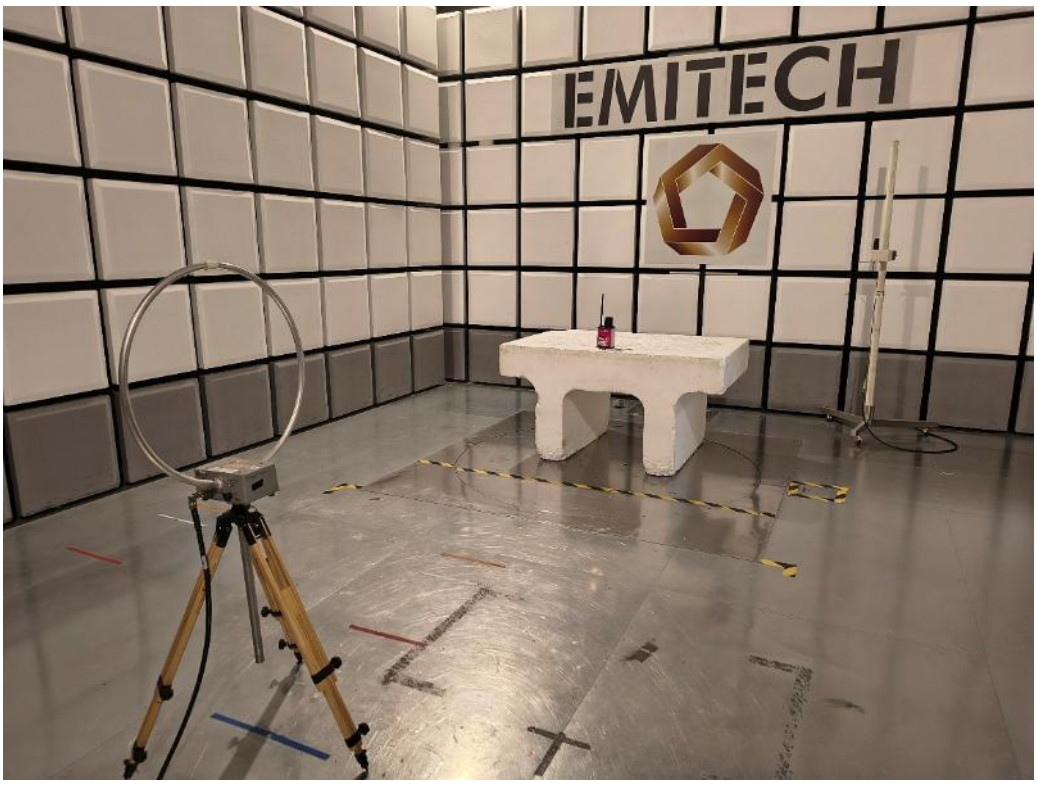
TEST SETUP PHOTOS - 9KHZ - 30 MHZ

TEST SETUP PHOTOS - 9KHZ - 30 MHZ

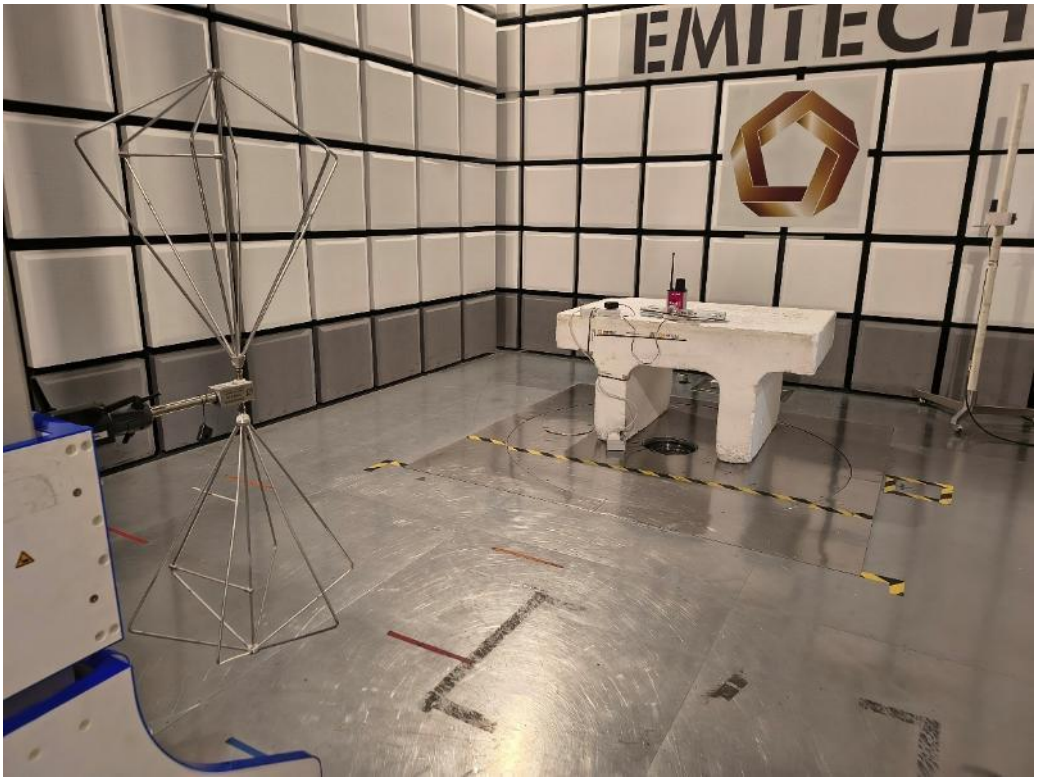
TEST SETUP PHOTOS - 9KHZ - 30 MHZ



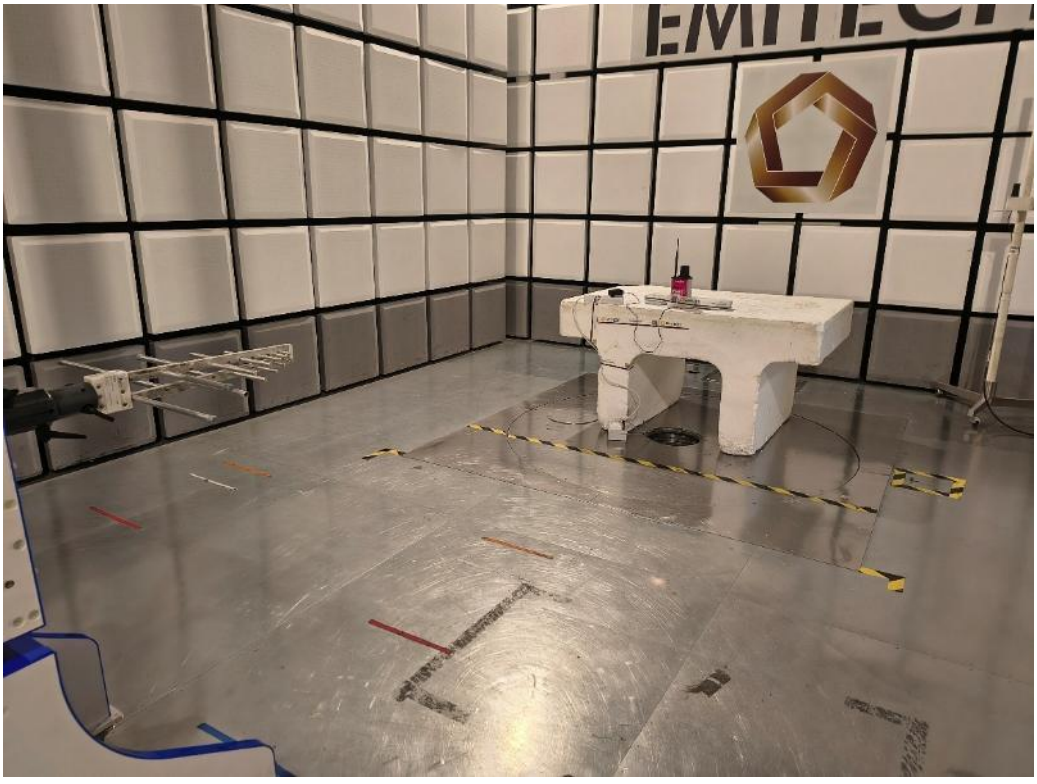
TEST SETUP PHOTOS - 9KHZ - 30 MHZ



TEST SETUP PHOTOS - 30MHZ - 1GHZ



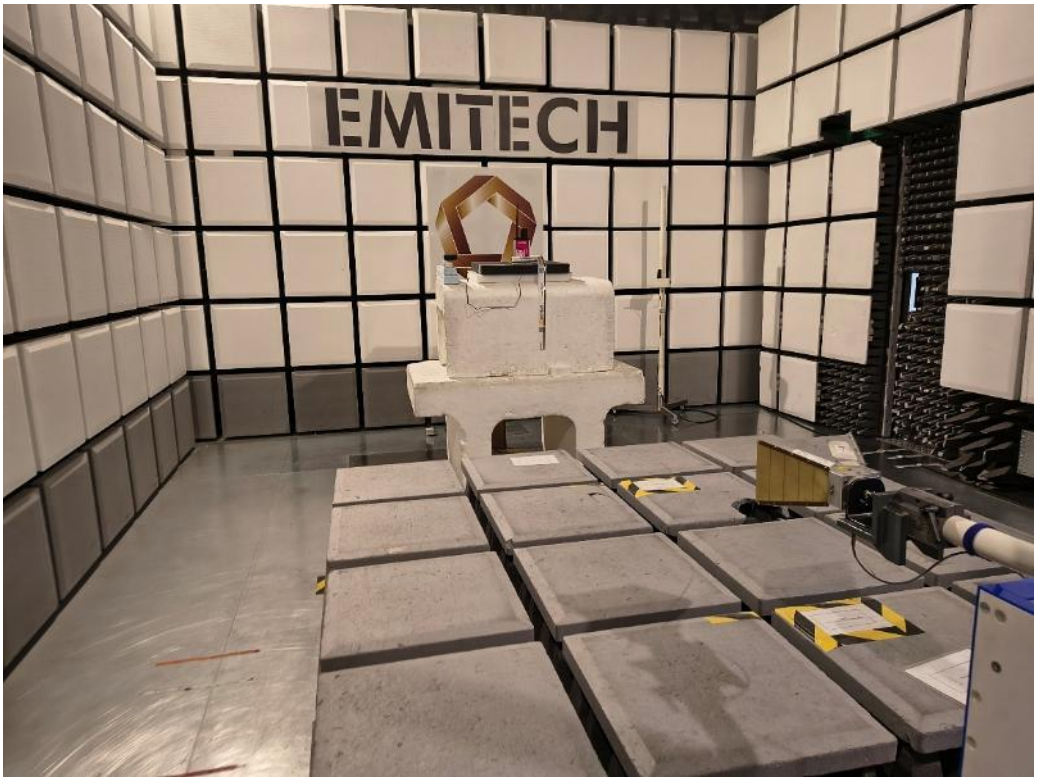
TEST SETUP PHOTOS - 30MHZ - 1GHZ

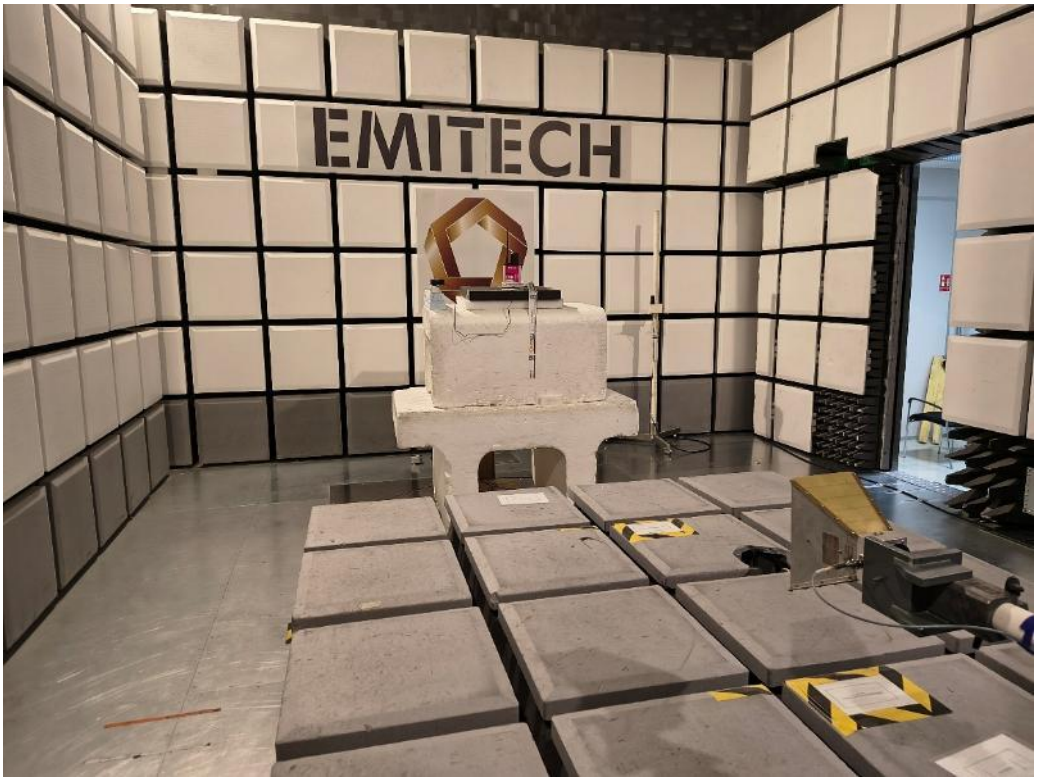


TEST SETUP PHOTOS - 30MHZ - 1GHZ

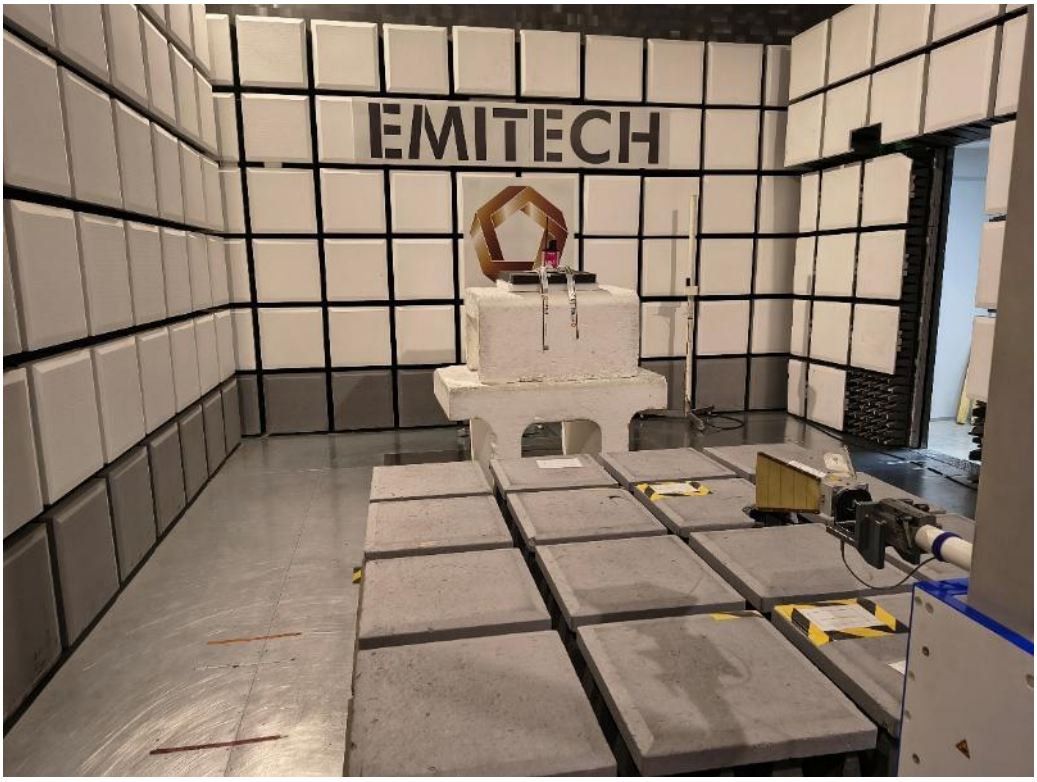
TEST SETUP PHOTOS - 30MHZ - 1GHZ

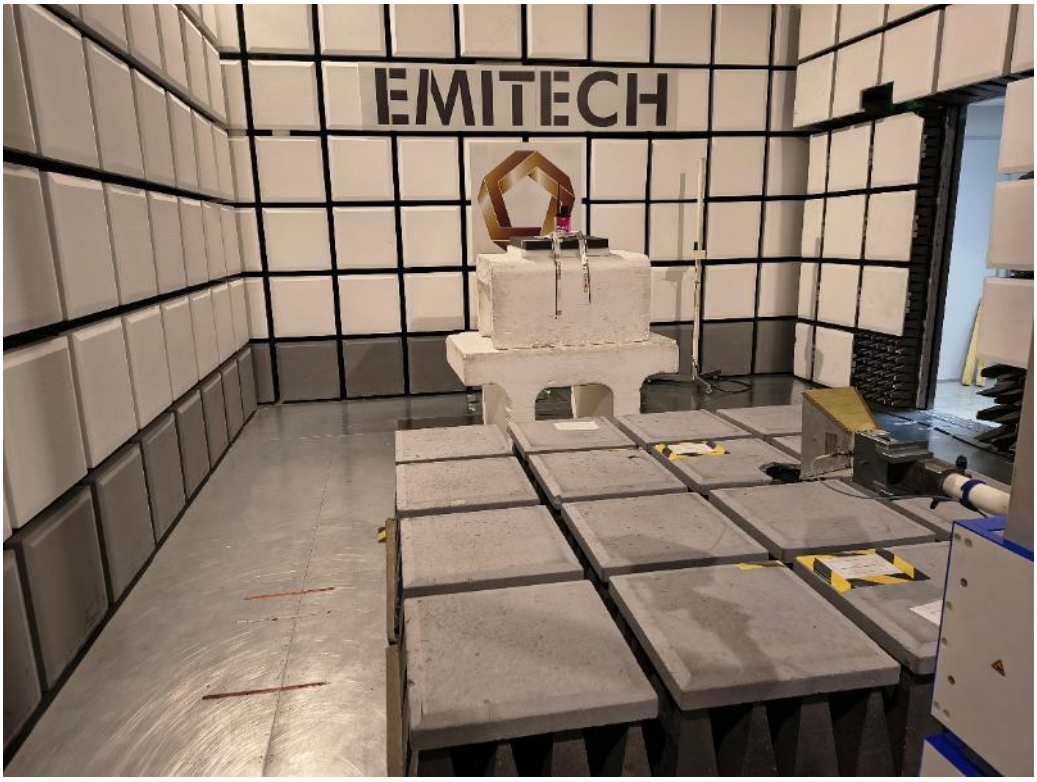
TEST SETUP PHOTOS - 1GHZ - 18GHZ





TEST SETUP PHOTOS - 1GHZ - 18GHZ

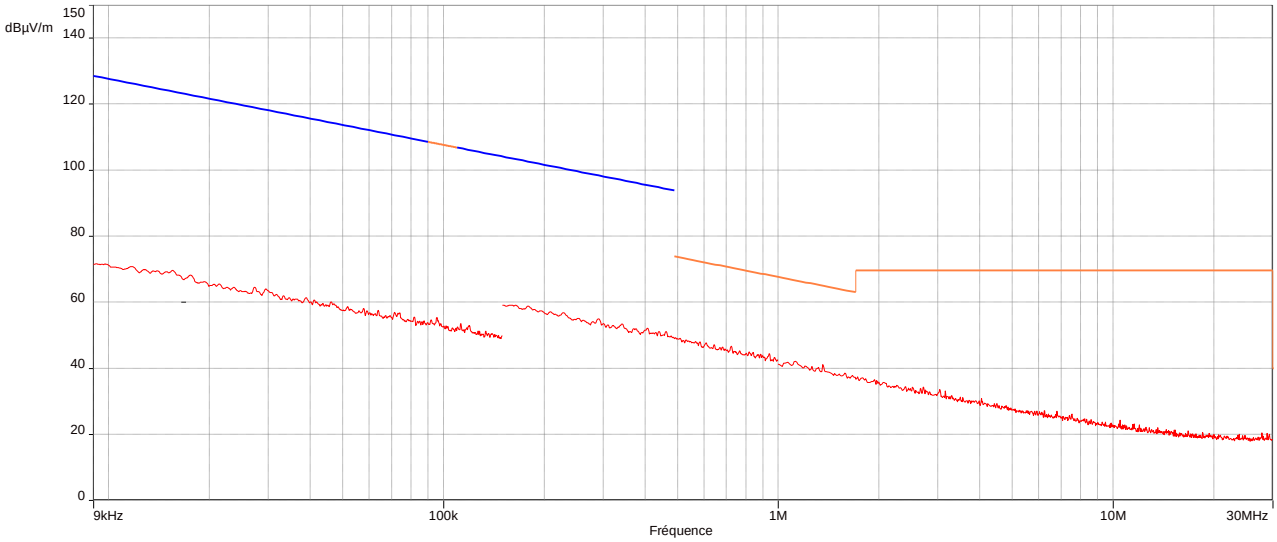




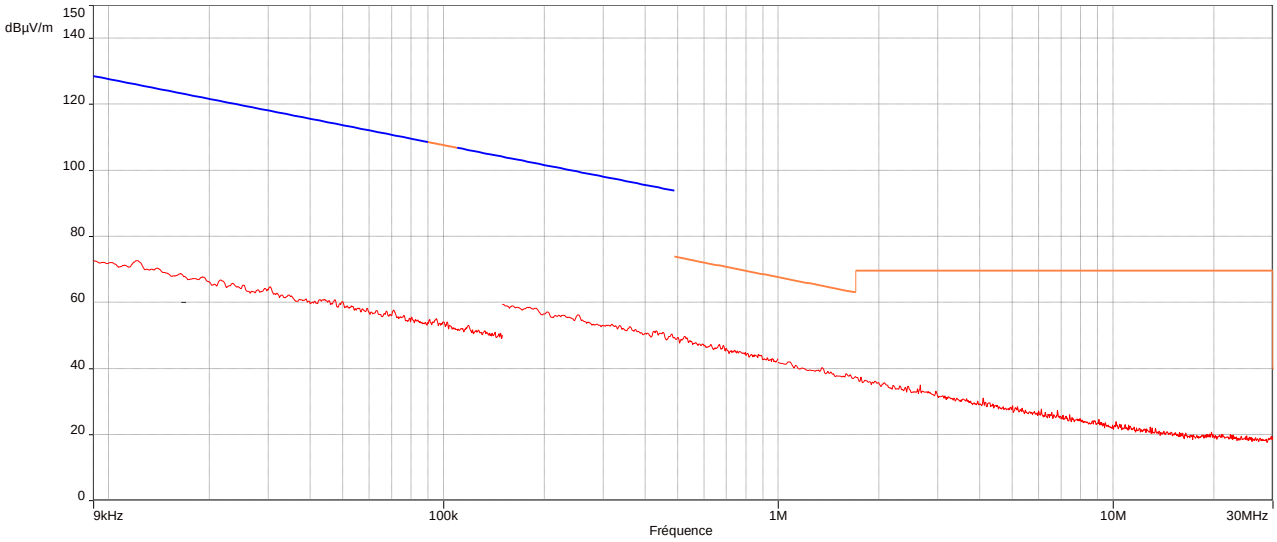
MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° 9KHZ - 30 MHZ		EMI4503	
E.U.T. mode:	LORA radio function in TX mode with charger	**T (°C):**	21
Test Date:	12/09/2025	**H (%):**	53
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit - Blue: Average limit

ANT 0°

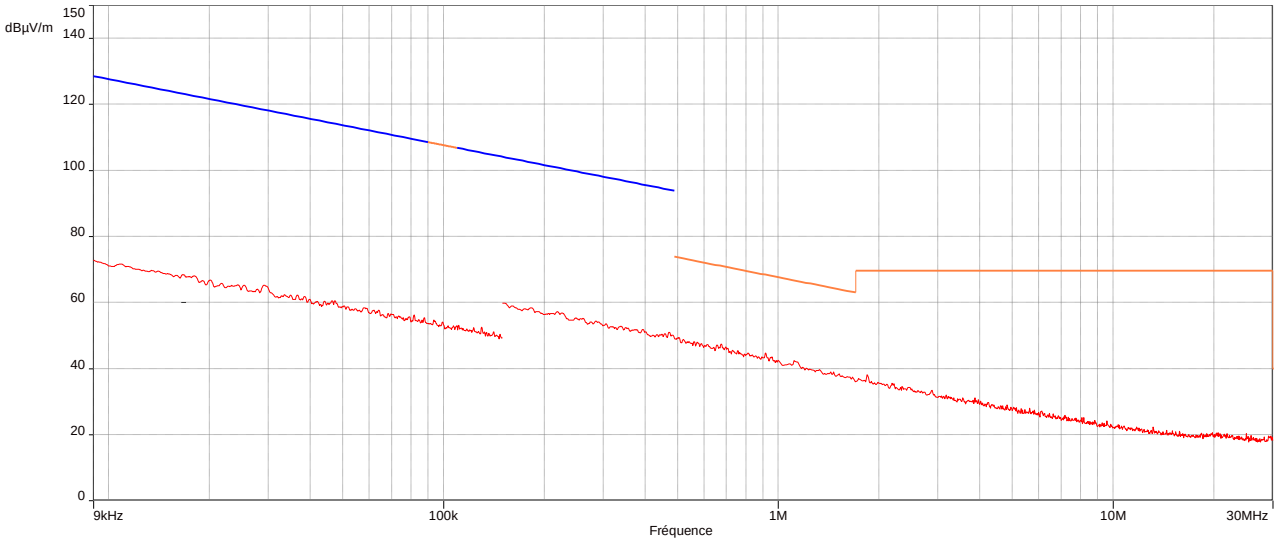


ANT 45°



MEASUREMENT OF RADIATED DISTURBANCES - GRAPH	
MAXHOLD 360° 9KHZ - 30 MHZ	EMI4503

ANT 90°

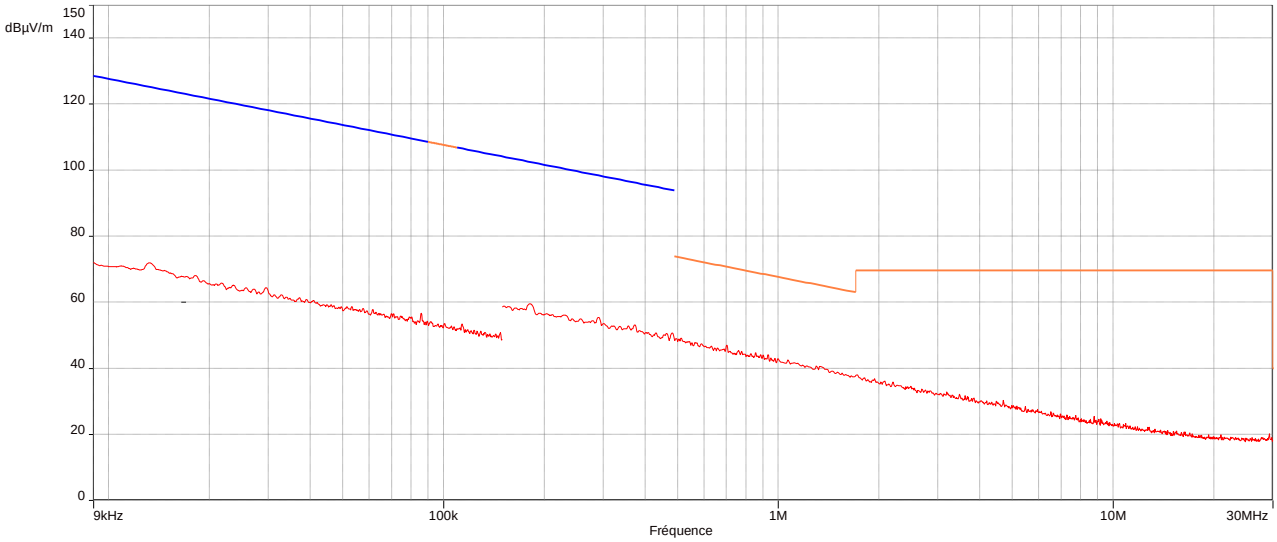


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
H/V	9kHz-150kHz	1kHz	3kHz	Peak
H/V	150kHz-1MHz	10kHz	30kHz	Peak
H/V	1MHz-30MHz	10kHz	30kHz	Peak
Configuration:	Outdoor Collector powered by internal battery while charging with an ac adapter			
Comments:	No spurious were detected.			
E.U.T. modification: No				

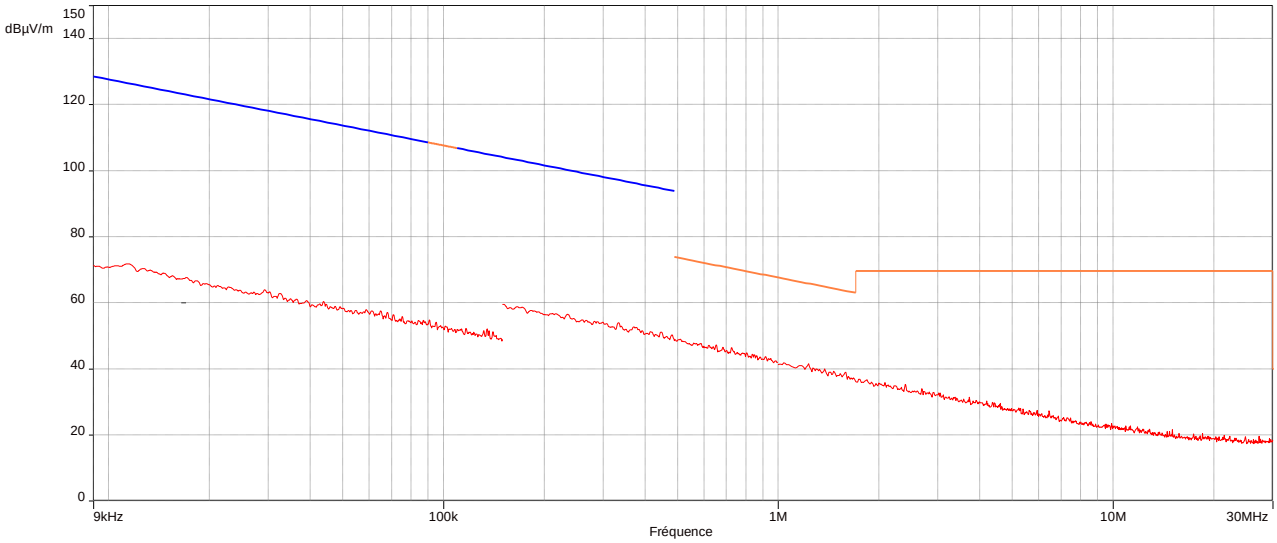
MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° 9KHZ - 30 MHZ		**EMI4503**	
E.U.T. mode:	LORA radio function in TX mode without charger	**T (°C):**	21
Test Date:	12/09/2025	**H (%):**	53
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit - Blue: Average limit

ANT 0°

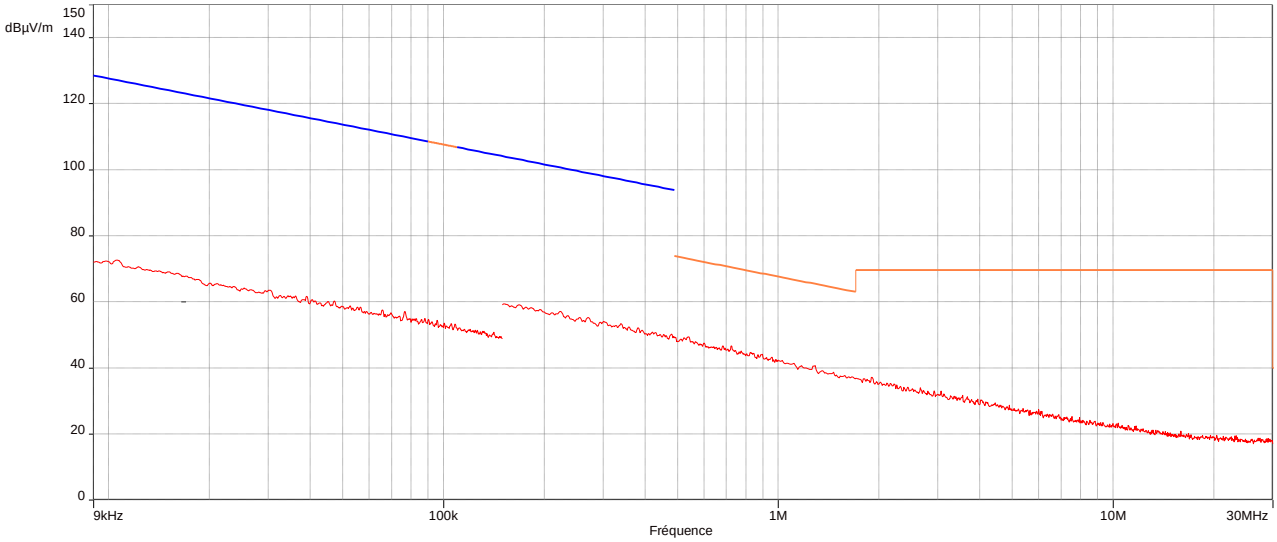


ANT 45°



MEASUREMENT OF RADIATED DISTURBANCES - GRAPH	
MAXHOLD 360° 9KHZ - 30 MHZ	EMI4503

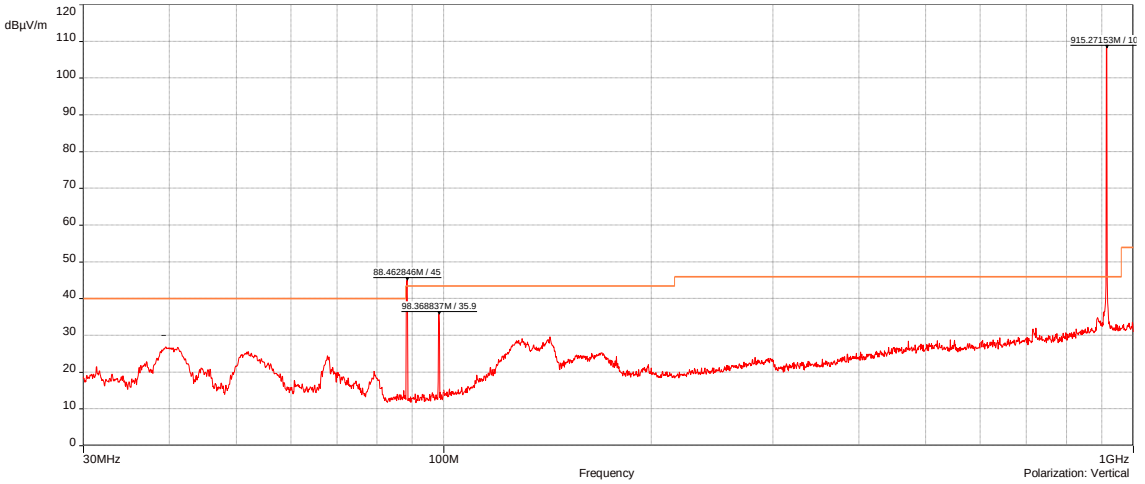
ANT 90°

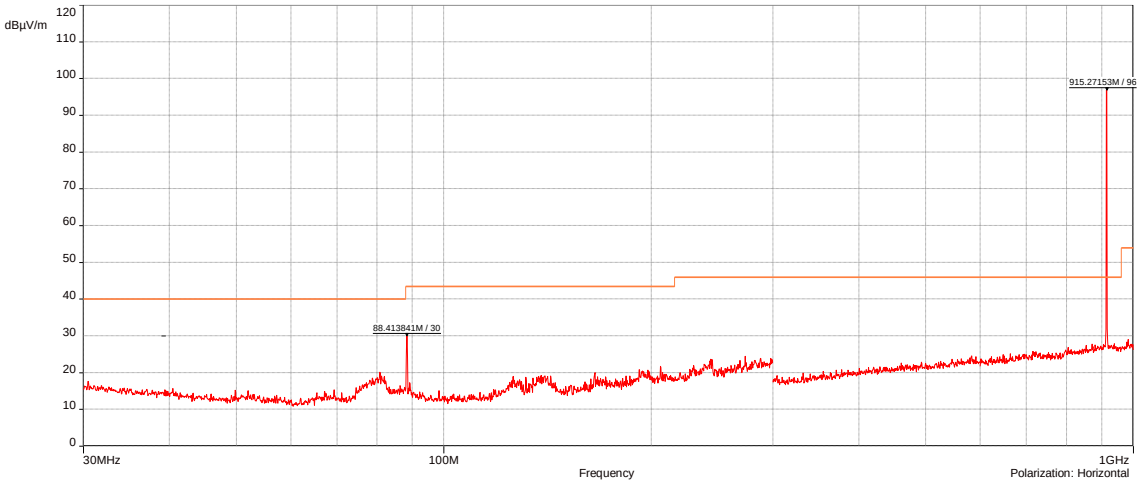


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
H/V	9kHz-150kHz	1kHz	3kHz	Peak
H/V	150kHz-1MHz	10kHz	30kHz	Peak
H/V	1MHz-30MHz	10kHz	30kHz	Peak
Configuration:	Outdoor Collector powered by an internal battery			
Comments:	No spurious were detected.			
E.U.T. modification: No				

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 30MHZ - 1GHZ		EMI4461	
E.U.T. mode:	LORA radio function with charger in TX mode	**T (°C):**	22°C
Test Date:	10/09/2025	**H (%):**	50%
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit

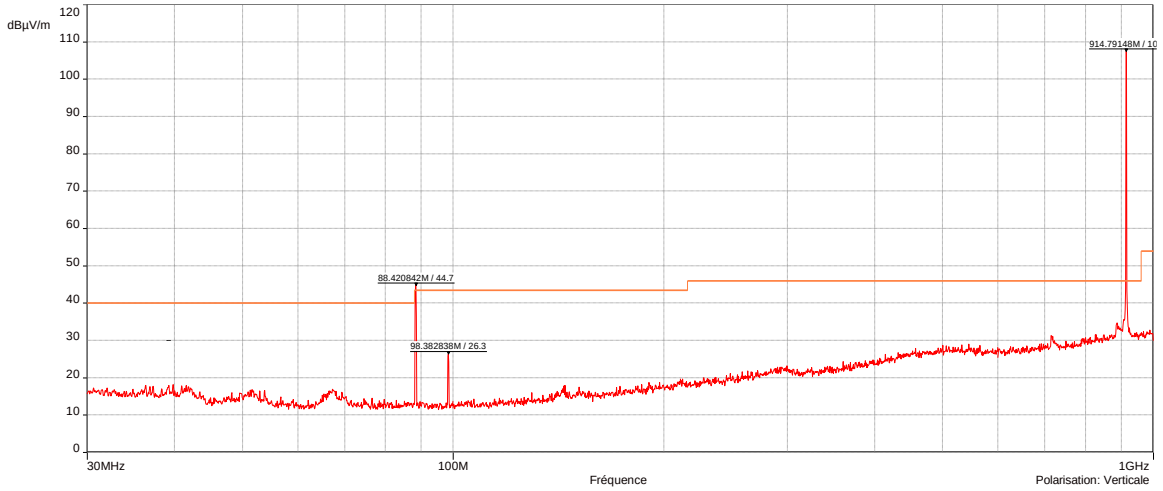


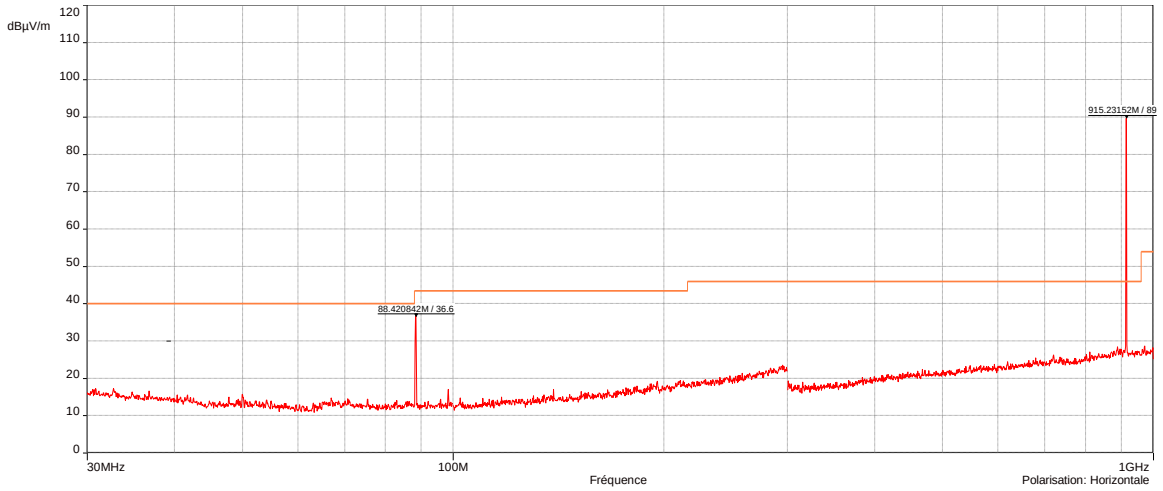


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-100MHz	100kHz	300kHz	Peak
Vertical	100MHz-300MHz	100kHz	300kHz	Peak
Vertical	300MHz-600MHz	100kHz	300kHz	Peak
Vertical	600MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-100MHz	100kHz	300kHz	Peak
Horizontal	100MHz-300MHz	100kHz	300kHz	Peak
Horizontal	300MHz-600MHz	100kHz	300kHz	Peak
Horizontal	600MHz-1GHz	100kHz	300kHz	Peak
Configuration:	Outdoor Collector powered by internal battery while charging with an ac adapter			
Comments:	The 88.4MHz and 98.4MHz frequencies are external frequencies due to emitters near the measurement site. Spurious that are lower than 10 dB of the applicable limite are not reported. The frequency at 915 MHz is the frequency used by the LoRa radio module.			
E.U.T. modification: No				

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 30MHz - 1GHz		EMI4461	
E.U.T. mode:	LORA radio function without charger in TX mode	**T (°C):**	22°C
Test Date:	10/09/2025	**H (%):**	50%
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit



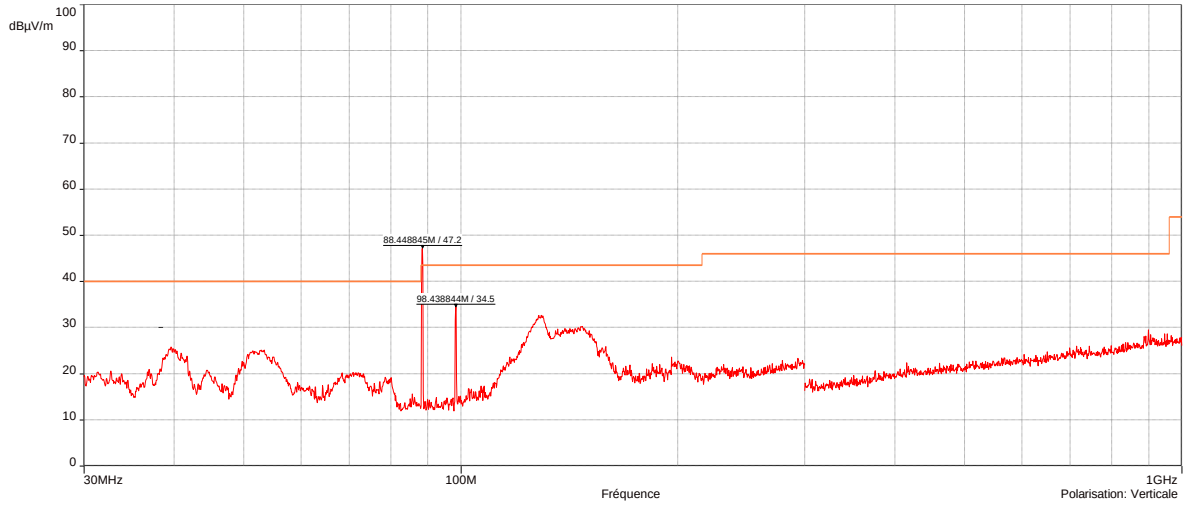


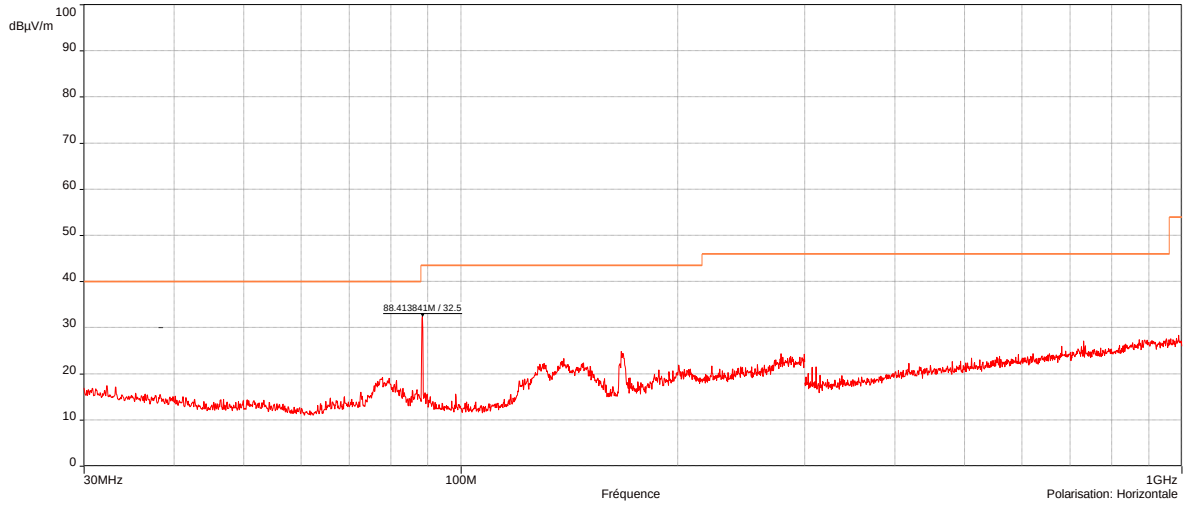
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-100MHz	100kHz	300kHz	Peak
Vertical	100MHz-300MHz	100kHz	300kHz	Peak
Vertical	300MHz-600MHz	100kHz	300kHz	Peak
Vertical	600MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-100MHz	100kHz	300kHz	Peak
Horizontal	100MHz-300MHz	100kHz	300kHz	Peak
Horizontal	300MHz-600MHz	100kHz	300kHz	Peak
Horizontal	600MHz-1GHz	100kHz	300kHz	Peak

Configuration:	Outdoor Collector powered by internal battery
Comments:	The 88.4MHz and 98.4MHz frequencies are external frequencies due to emitters near the measurement site. Spurious that are lower than 10 dB of the applicable limite are not reported. The frequency at 915 MHz is the frequency used by the LoRa radio module.
E.U.T. modification: No	

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 30MHZ - 1GHZ		EMI4462	
E.U.T. mode:	LORA radio function with charger in RX mode	**T (°C):**	22°C
Test Date:	10/09/2025	**H (%):**	50%
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit



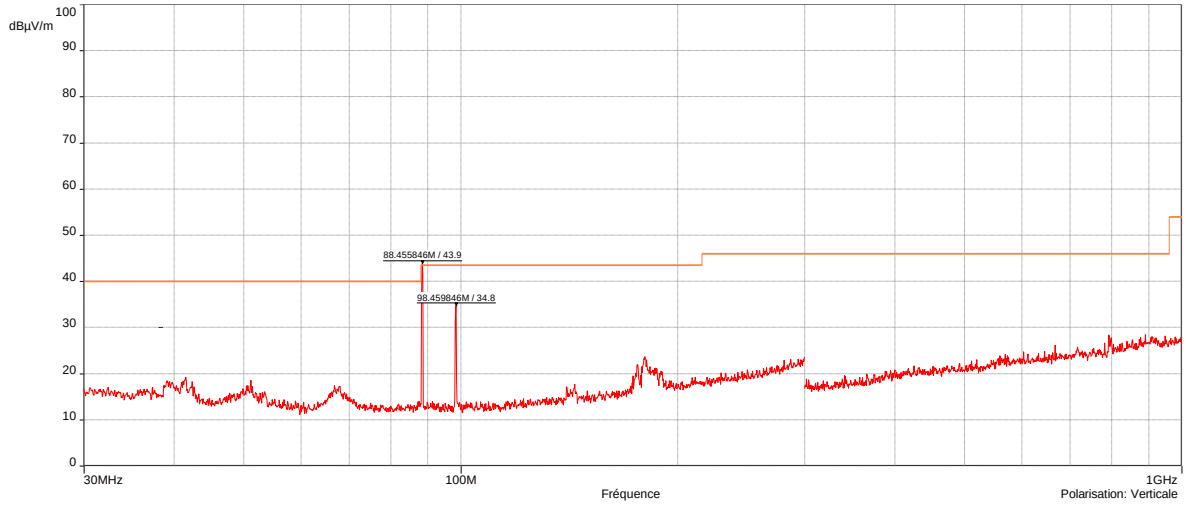


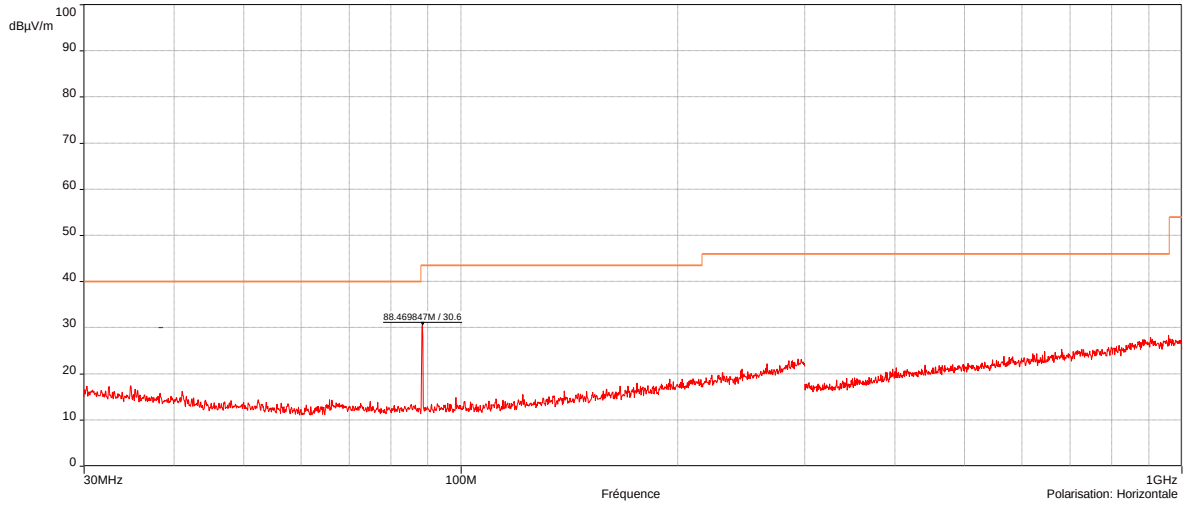
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-100MHz	100kHz	300kHz	Peak
Vertical	100MHz-300MHz	100kHz	300kHz	Peak
Vertical	300MHz-600MHz	100kHz	300kHz	Peak
Vertical	600MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-100MHz	100kHz	300kHz	Peak
Horizontal	100MHz-300MHz	100kHz	300kHz	Peak
Horizontal	300MHz-600MHz	100kHz	300kHz	Peak
Horizontal	600MHz-1GHz	100kHz	300kHz	Peak

Configuration:	Outdoor Collector powered by internal battery
Comments:	The 88.4MHz and 98.4MHz frequencies are external frequencies due to emitters near the measurement site. Spurious that are lower than 10 dB of the applicable limite are not reported.
E.U.T. modification: No	

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 30MHz - 1GHz		EMI4462	
E.U.T. mode:	LORA radio function without charger in RX mode	**T (°C):**	22°C
Test Date:	10/09/2025	**H (%):**	50%
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Orange: Quasi-peak limit



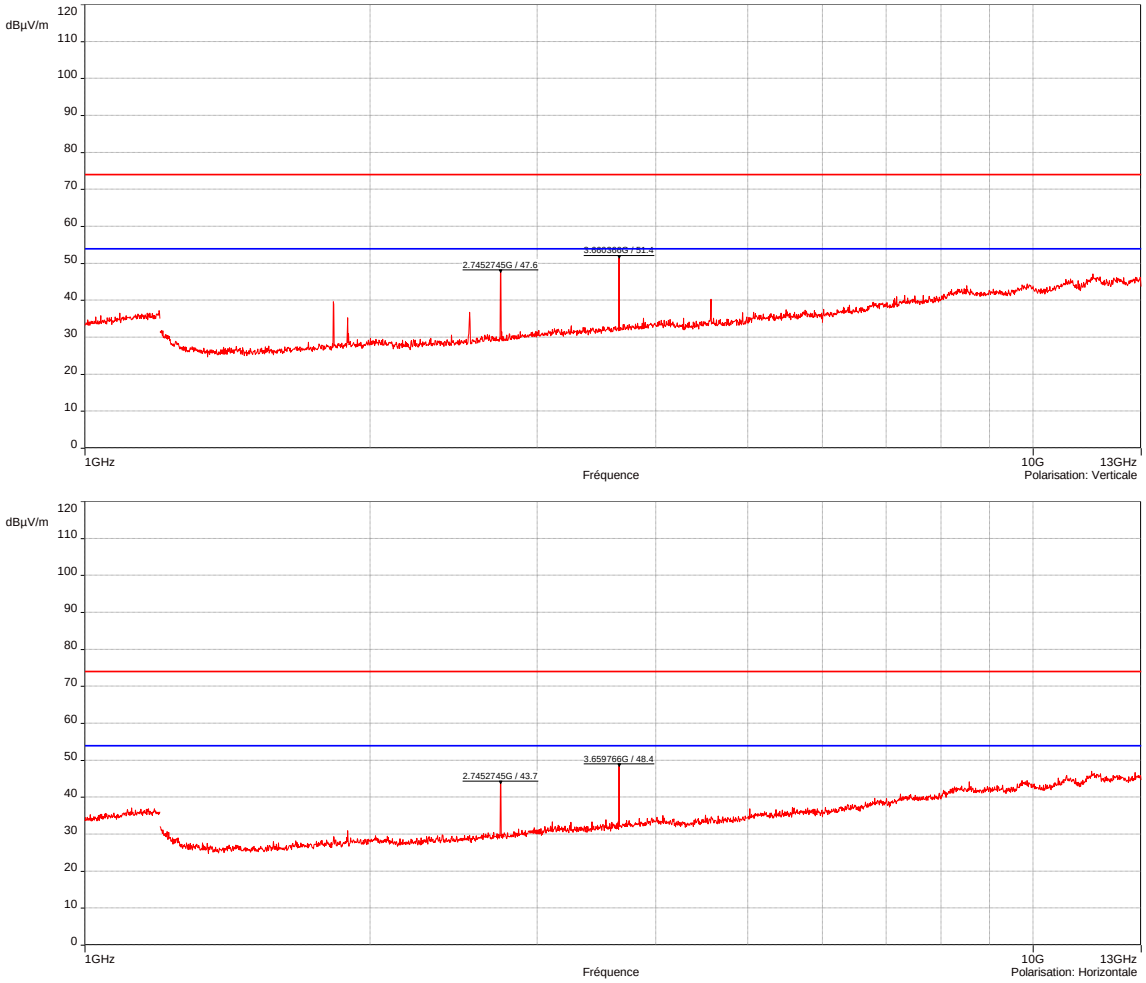


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	30MHz-100MHz	100kHz	300kHz	Peak
Vertical	100MHz-300MHz	100kHz	300kHz	Peak
Vertical	300MHz-600MHz	100kHz	300kHz	Peak
Vertical	600MHz-1GHz	100kHz	300kHz	Peak
Horizontal	30MHz-100MHz	100kHz	300kHz	Peak
Horizontal	100MHz-300MHz	100kHz	300kHz	Peak
Horizontal	300MHz-600MHz	100kHz	300kHz	Peak
Horizontal	600MHz-1GHz	100kHz	300kHz	Peak

Configuration:	Outdoor Collector powered by internal battery
Comments:	The 88.4MHz and 98.4MHz frequencies are external frequencies due to emitters near the measurement site. Spurious that are lower than 10 dB of the applicable limite are not reported
E.U.T. modification: No	

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 1GHz - 10GHz		EMI4615	
E.U.T. mode:	LORA radio function with charger in TX mode	**T (°C):**	21
Test Date:	26/09/2025	**H (%):**	41
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Blue: Average limit



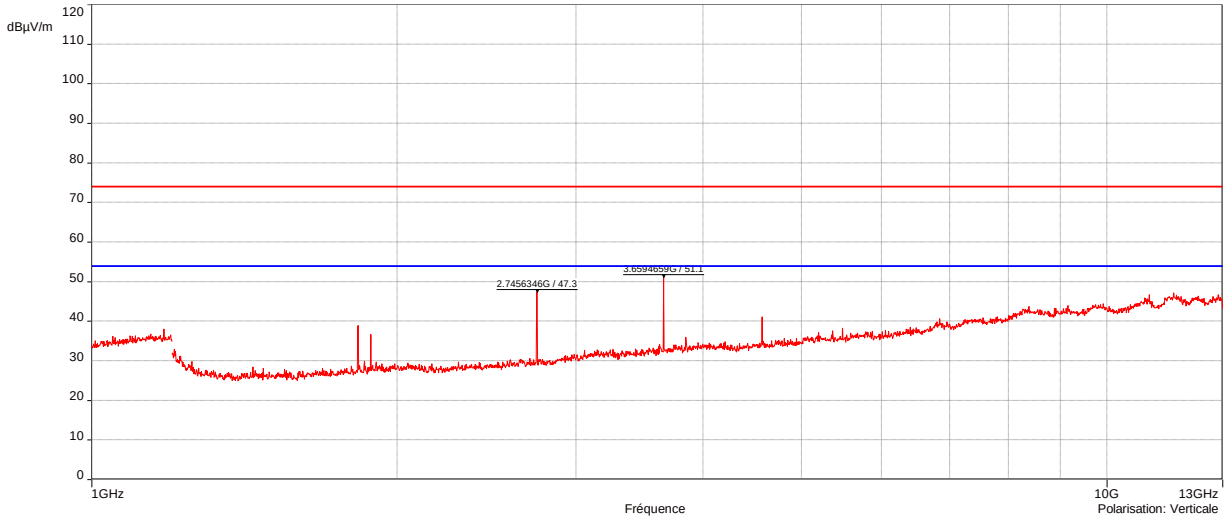
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-1.2GHz	1MHz	3MHz	Peak
Vertical	1.2GHz-3GHz	1MHz	3MHz	Peak
Vertical	3GHz-6GHz	1MHz	3MHz	Peak
Vertical	6GHz-8GHz	1MHz	3MHz	Peak
Vertical	8GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-1.2GHz	1MHz	3MHz	Peak
Horizontal	1.2GHz-3GHz	1MHz	3MHz	Peak
Horizontal	3GHz-6GHz	1MHz	3MHz	Peak
Horizontal	6GHz-8GHz	1MHz	3MHz	Peak
Horizontal	8GHz-10GHz	1MHz	3MHz	Peak

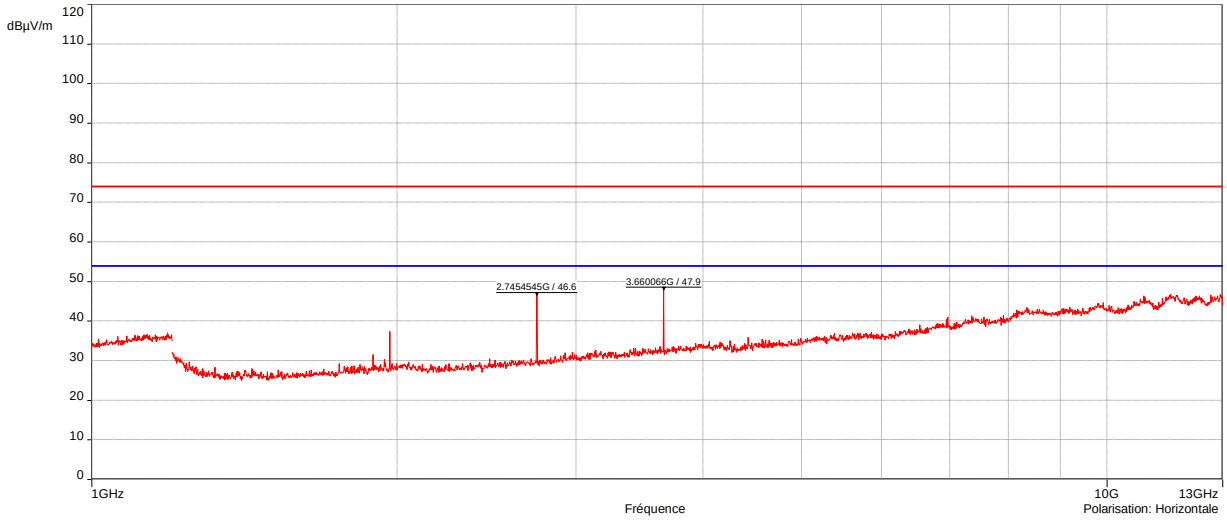
Configuration:	Outdoor Collector powered by internal battery while charging with an ac adapter
Comments:	For marked frequencies see tabulated results below. Spurious that are lower than 10 dB of the applicable limite are not reported
E.U.T. modification: No	

MEASUREMENT OF RADIATED DISTURBANCES - TABULATED RESULTS							
30MHz - 1GHz							EMI4615
Test Freq. (MHz)	**Detector (Pk/QP/Av)**	**Ant. position**	**Azimuth (°)**	**Ant Hight (cm)**	**Level (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**
2744,8	CISPR Av	V	346	143	44,4	54	-9,6
2745,1	CISPR Av	V	346	143	44,6	54	-9,4
2744,8	CISPR Av	H	140	15	40,1	54	-13,9
2745,1	CISPR Av	H	140	15	40,2	54	-13,8
3659,5	CISPR Av	V	171	150	43,8	54	-10,2
3659,8	CISPR Av	V	171	150	44,4	54	-9,6
3660,1	CISPR Av	V	171	150	44,4	54	-9,6
3660,4	CISPR Av	V	171	150	44,0	54	-10,0
3659,5	CISPR Av	H	110	30	42,4	54	-11,6
3659,8	CISPR Av	H	110	30	42,9	54	-11,0
3660,1	CISPR Av	H	110	30	43,0	54	-11,0

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 1GHZ - 10GHZ		EMI4616	
E.U.T. mode:	LORA radio function without charger in TX mode	**T (°C):**	21
Test Date:	26/09/2025	**H (%):**	41
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Blue: Average limit

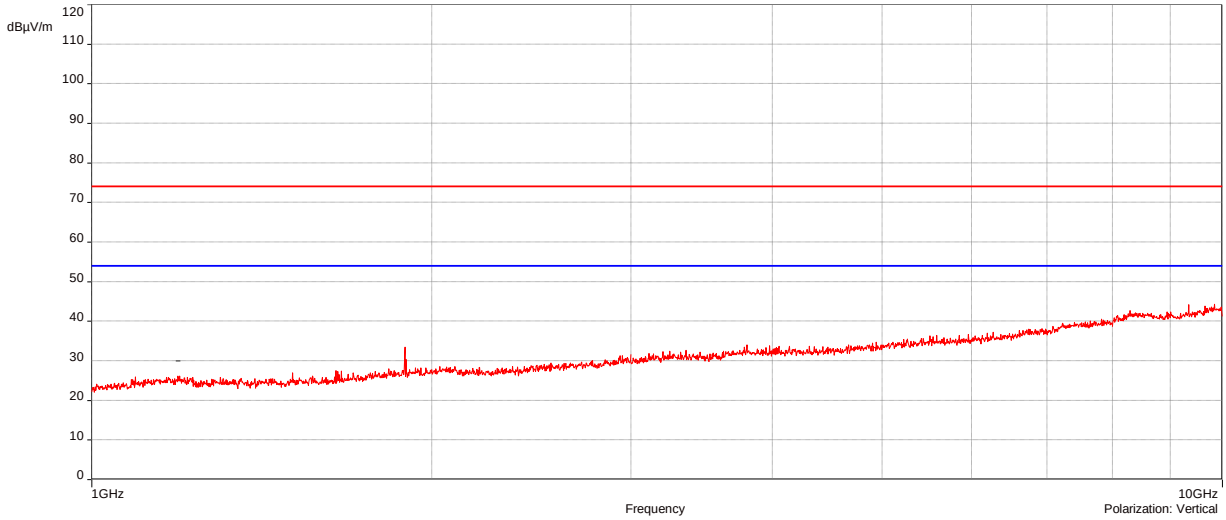


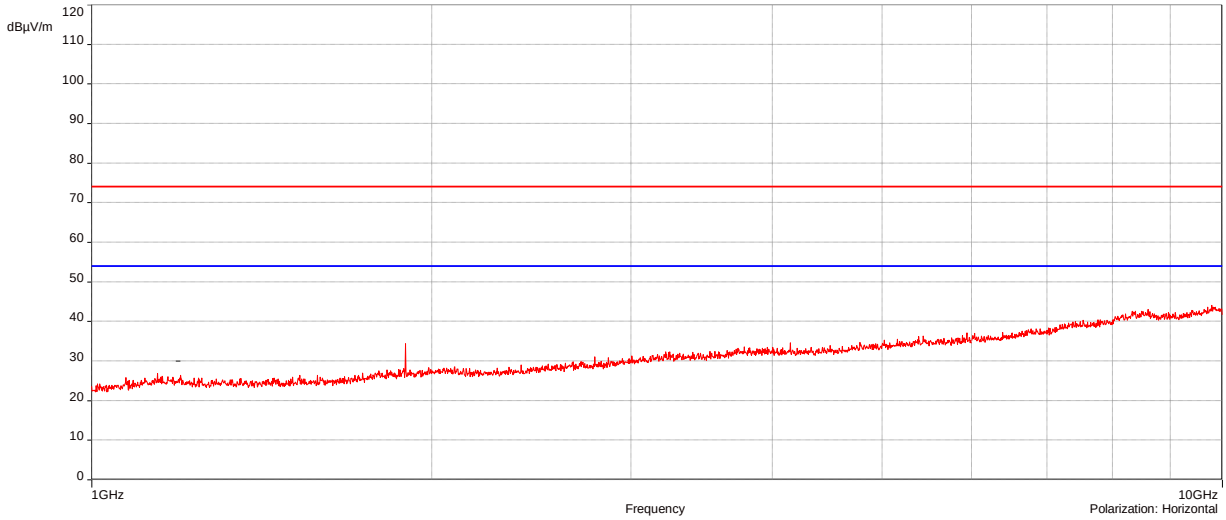


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-3GHz	1MHz	3MHz	Peak
Vertical	3GHz-6GHz	1MHz	3MHz	Peak
Vertical	6GHz-8GHz	1MHz	3MHz	Peak
Vertical	8GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-3GHz	1MHz	3MHz	Peak
Horizontal	3GHz-6GHz	1MHz	3MHz	Peak
Horizontal	6GHz-8GHz	1MHz	3MHz	Peak
Horizontal	8GHz-10GHz	1MHz	3MHz	Peak
Configuration:	Outdoor Collector powered by internal battery while charging with an ac adapter			
Comments:	Spurious that are lower than 10 dB of the applicable limite are not reported.			
E.U.T. modification: No				

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 1GHz - 10GHz		EMI4616	
E.U.T. mode:	LORA radio function with charger in RX mode	**T (°C):**	21
Test Date:	26/09/2025	**H (%):**	41
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Blue: Average limit

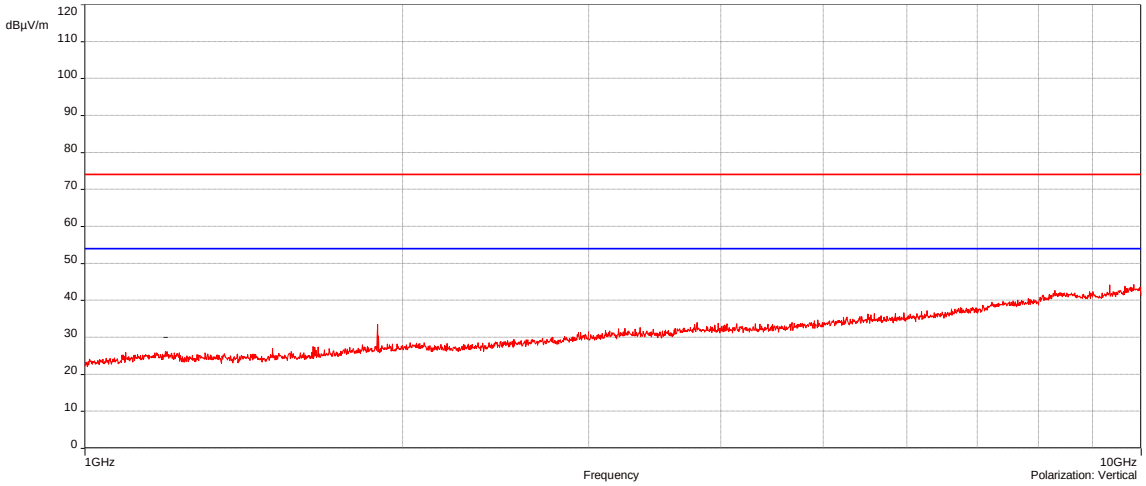


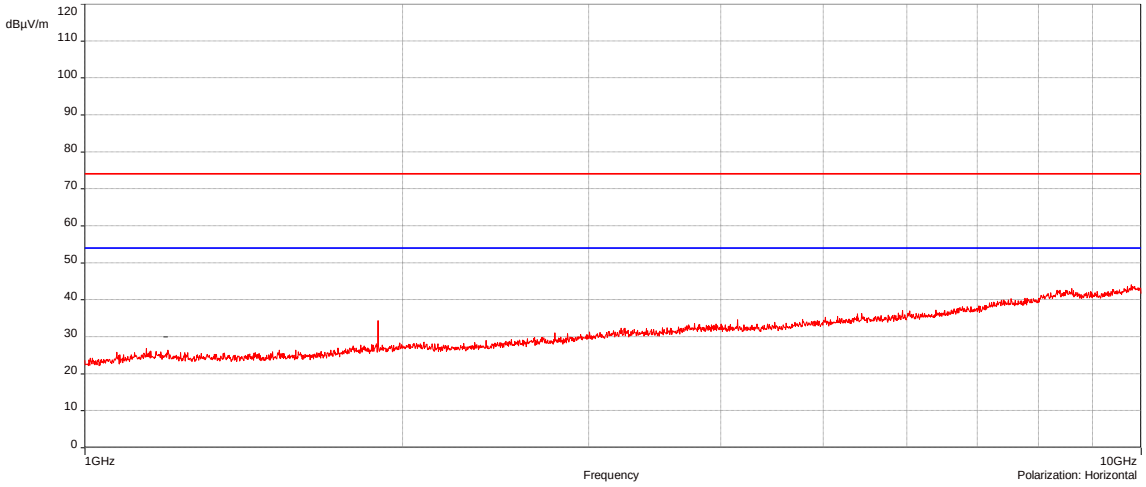


POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-3GHz	1MHz	3MHz	Peak
Vertical	3GHz-6GHz	1MHz	3MHz	Peak
Vertical	6GHz-8GHz	1MHz	3MHz	Peak
Vertical	8GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-3GHz	1MHz	3MHz	Peak
Horizontal	3GHz-6GHz	1MHz	3MHz	Peak
Horizontal	6GHz-8GHz	1MHz	3MHz	Peak
Horizontal	8GHz-10GHz	1MHz	3MHz	Peak
Configuration:	Outdoor Collector powered by internal battery while charging with an ac adapter			
Comments:	Spurious that are lower than 10 dB of the applicable limite are not reported.			
E.U.T. modification: No				

MEASUREMENT OF RADIATED DISTURBANCES - GRAPH			
MAXHOLD 360° - 1GHZ - 10GHZ		EMI4616	
E.U.T. mode:	LORA radio function without charger in RX mode	**T (°C):**	21
Test Date:	26/09/2025	**H (%):**	41
Test Operator:	NPe	**P (hPa):**	-

Red : Peak detection - Blue: Average limit





POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	1GHz-3GHz	1MHz	3MHz	Peak
Vertical	3GHz-6GHz	1MHz	3MHz	Peak
Vertical	6GHz-8GHz	1MHz	3MHz	Peak
Vertical	8GHz-10GHz	1MHz	3MHz	Peak
Horizontal	1GHz-3GHz	1MHz	3MHz	Peak
Horizontal	3GHz-6GHz	1MHz	3MHz	Peak
Horizontal	6GHz-8GHz	1MHz	3MHz	Peak
Horizontal	8GHz-10GHz	1MHz	3MHz	Peak
Configuration:	Outdoor Collector powered by internal battery			
Comments:	Spurious that are lower than 10 dB of the applicable limite are not reported.			
E.U.T. modification: No				

End of test report