



Test report issued under the responsibility of:
EMITECH MONTPELLIER laboratory

RADIO TEST REPORT

EN 300 220-1 V3.1.1
EN 300 220-2 V3.1.1
ERC Recommendation 70-03
(Partial tests)

Company: **UNABIZ**
Address.....: 425 RUE JEAN ROSTAND
BAT E - VOLUTION
31670 LABEGE
FRANCE

Test item description: **IoT object**
Trade Mark: **unabiz**
Manufacturer: UNABIZ
Model/Type reference.....: LCD
Ratings.....: 2Vdc to 3.6Vdc

Testing Laboratory: **EMITECH MONTPELLIER laboratory**
Address.....: 145 rue de Massacan
34740 VENDARGUES
FRANCE

Report Reference No.....: **RR-EVE-23E250-1A**
Test procedure: CE Marking
Diffusion.....: Mrs BARREIRO MOURIZ Susana
Applicant's name: UNABIZ
Date of issue.....: September 27, 2023
Total number of pages.....: 37
Revision.....: 0
Compiled by.....: Alexis TOUZET
Approved by (+ signature).....: David MONTAULON (Technical 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.*

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REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	September 27, 2023	/	Creation

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

The following referenced documents are necessary for the application of the present test report.

EN 300 220-1 V3.1.1

Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz;
Part 1: Technical characteristics and methods of measurement.

EN 300 220-2 V3.1.1

Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz;
Part 2: Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU for non specific radio equipment.

ERC Recommendation 70-03, 16 June 2023

Relating to the use of Short Range Devices (SRD)

Although the product standard uses obsolete technical standards, the latest versions of standards achievable by the laboratory will be used for testing.

INFORMATIVE REFERENCES:

The following referenced documents are not necessary for the application of the present test report but they assist the user with regard to a particular subject area.

3.4. E.U.T. General view



3.5. E.U.T. Electronic board



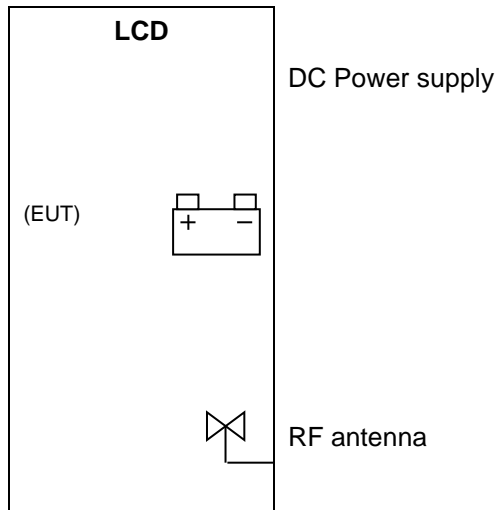
3.6. E.U.T. Mechanical and Electrical Design

Power supply..... : 3Vdc
 Power supply range..... : 2Vdc to 3.6Vdc
 Power type..... : Battery powered
 Power (W)..... : 0.13
 Nominal current (A). : 0.042
 Dimensions (L x W x H) (m). : 0.08 x 0.04 x 0.002
 Weight (kg). : 0.01
 Temperature range (°C). : -20 to +60
 Ground bounding strap..... : No

Comments:

N/A

3.7. E.U.T. Input/Output ports



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	PCB	-
1	DC Power supply	DC	-	N/A	CR2032 3.0Vdc
2	RF antenna	RF	N/A	N/A	Sigfox 868MHz

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. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	: <i>Transmitter</i>
Technology	: <i>Sigfox</i>
Environmental profile	: <i>Data transmission</i>
Temperature range	: <i>Category I (General) (-20°C to +60°C)</i>
Antenna type	: <i>External</i>
Antenna Gain.....	: <i>0dBi</i>
Comments:	
<i>N/A</i>	
b) TRANSMITTER PARAMETERS (TX)	
Frequency bands.....	: <i>868MHz to 868.6MHz</i>
RF Power.....	: <i>+14dBm</i>
Number of channels / Separation	: <i>Not communicated</i>
Modulation type	: <i>SIGFOX</i>
Duty cycle	: <i>Not communicated</i>
Tested frequency.....	: <i>868.034MHz</i>
	: <i>868.130MHz</i>
	: <i>868.226MHz</i>
c) RECEIVER PARAMETERS (RX)	
Frequency bands.....	: <i>N/A</i>
Category/Class	: <i>N/A</i>
Bandwidth.....	: <i>N/A</i>

4. OPINION(S) AND INTERPRETATION(S)

TEST(S) PERFORMED	DEVIATION(S) TO TEST METHOD(S)
EN 300 220-1 V3.1.1 §5.1	N/A
EN 300 220-1 V3.1.1 §5.9.1.1	N/A
EN 300 220-1 V3.1.1 §5.2.2.2	N/A

Comments: N/A

5. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Operating frequency			EN 300 220-1 V3.1.1 §5.1
- Radio module n°1 (Declared by the manufacturer)	-	-	Declared by the manufacturer
Radiated spurious emissions (transmitter)			EN 300 220-1 V3.1.1 §5.9.1.1
- Tx mode / All channels / Not shielded / Position 1	Tx	PASS	
- Tx mode / All channels / Not shielded / Position 2	Tx	PASS	
- Tx mode / All channels / Not shielded / Position 3	Tx	PASS	
- Spectrum Mask / 868.13MHz / Not shielded / Position 1	Tx	PASS	
- Spectrum Mask / 868.13MHz / Not shielded / Position 2	Tx	PASS	
- Spectrum Mask / 868.13MHz / Not shielded / Position 3	Tx	PASS	
Radiated spurious emissions (receiver)	-	N/P	Customer's request (Partial tests)
Effective radiated power			EN 300 220-1 V3.1.1 §5.2.2.2
- ERP / All channels / Not shielded / Position 1	Band M	PASS	
- ERP / All channels / Not shielded / Position 2	Band M	PASS	
- ERP / All channels / Not shielded / Position 3	Band M	PASS	
Maximum Effective Radiated Power spectral density	-	N/A	Transmitter using Annex B, Band I, L, or Schedule C Band X (other than FHSS).
Duty Cycle		N/P	Customer's request (Partial tests)
Occupied Bandwidth	-	N/P	Customer's request (Partial tests)
Frequency error	-	N/P	Customer's request (Partial tests)
Tx Out Of Band Emissions		N/P	Customer's request (Partial tests)
Transient power		N/P	Customer's request (Partial tests)
Adjacent channel power	-	N/A	Applicable for OCW<=25 kHz
TX behaviour under Low Voltage Conditions		N/P	Customer's request (Partial tests)
Adaptive Power Control	-	N/A	Applies to all EUT with adaptive power control using annex C band AA.
FHSS Equipment	-	N/A	Applies to all FHSS equipment.
Short term behaviour	-	N/A	Applies to EUT operating in bands of annex C, table C.1 or NRI where Ton/Toff limits are specified.
Receiver sensitivity	-	N/A	Applies to EUT with polite spectrum access.
Blocking	-	N/P	Customer's request (Partial tests)
Polite spectrum access	-	N/A	Applies to EUT with polite spectrum access.

Sample subject to the test complies for tests done with the requirements of the reference document(s) listed in §2 of this test report and, where applicable, with deviation(s) specified in this document.

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the results with the exception of emission tests based on CISPR standards.

TEST(S) PERFORMED	MODIFICATION(S)
EN 300 220-1 V3.1.1 §5.1	N/A
EN 300 220-1 V3.1.1 §5.9.1.1	N/A
EN 300 220-1 V3.1.1 §5.2.2.2	N/A

6. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	$\pm 1 \times 10^{-7}$	$\pm 1 \times 10^{-7}$
RF power, conducted		
RF power	$\pm 0.8\text{dB}$	$\pm 1 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 1.3\text{dB}$	$\pm 1.5 \text{ dB}$
Power spectral density	$\pm 2.3\text{dB}$	$\pm 3 \text{ dB}$
Occupied bandwidth		
RF power	$\pm 3.8 \%$	$\pm 5 \%$
RF power (EN 300328 / EN 301893)	$\pm 3.8 \%$	$\pm 5 \%$
Maximum frequency deviation		
300 Hz < audio frequency < 6 kHz	$\pm 1.2 \%$	$\pm 5 \%$
6 kHz < audio frequency < 25 kHz	$\pm 1.2 \%$	$\pm 3 \text{ dB}$
Radiated emission (PAR / PIRE / RNE)		
f \leq 62.5 MHz	$\pm 5.7 \text{ dB}$	$\pm 6 \text{ dB}$
62.5 MHz - 1 GHz	$\pm 5.8 \text{ dB}$	$\pm 6 \text{ dB}$
1 GHz - 18 GHz	$\pm 5.6 \text{ dB}$	$\pm 6 \text{ dB}$
18 GHz – 40 GHz	$\pm 5.6 \text{ dB}$	$\pm 6 \text{ dB}$
40 GHz – 110 GHz	$\pm 5.9 \text{ dB}$	Between ± 6 to 10 dB
180-1000 MHz / 1 – 12.75 GHz (EN 301 908-1)	$\pm 3.0 / 2.9 \text{ dB}$	$\pm 3 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 5.3 \text{ dB}$	$\pm 6 \text{ dB}$
PIRE and power spectral density with diode	$\pm 5.7 \text{ dB}$	$\pm 6 \text{ dB}$
Supply voltages	$\pm 3 \%$	$\pm 3 \%$
Temperature	$\pm 1 \text{ }^\circ\text{C}$	$\pm 1^\circ\text{C}$
Humidity	$\pm 5 \%$	$\pm 5 \%$
Time / Duty cycle	$\pm 4.4 \%$	$\pm 5 \%$

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

7. TEST CONDITIONS AND RESULTS

7.1. Operating frequency

Reference standard:	EN 300 220-2 V3.1.1 §4.2.1
Test method:	EN 300 220-1 V3.1.1 §5.1
Description: The nominal Operating Frequency is the centre of a channel of width OCW.	

Test method deviation: N/A
Supplementary information: N/A

OPERATING FREQUENCY - TABULATED RESULTS	
RADIO MODULE N°1 (DECLARED BY THE MANUFACTURER)	EMI4470
Operational Frequency band – OFB:	Band M (868 MHz to 868.6 MHz)
Nominal Operating Frequency:	868.034 MHz 868.130 MHz 868.226 MHz
Operating Channel width – OCW:	192 kHz
EUT available operating mode(s):	D-M1 D-M2
<i>EUT modifications: N/A</i>	

7.2. Radiated spurious emissions (transmitter)

Reference standard:	EN 300 220-2 V3.1.1 §4.2.2
Test method:	EN 300 220-1 V3.1.1 §5.9.1.1
<p>General test setup: EUT is set on an insulating support at 150cm above the ground reference plane. Measurement are done on a normalized test site by the substitution method.</p> <p>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.</p> <p>For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.</p>	

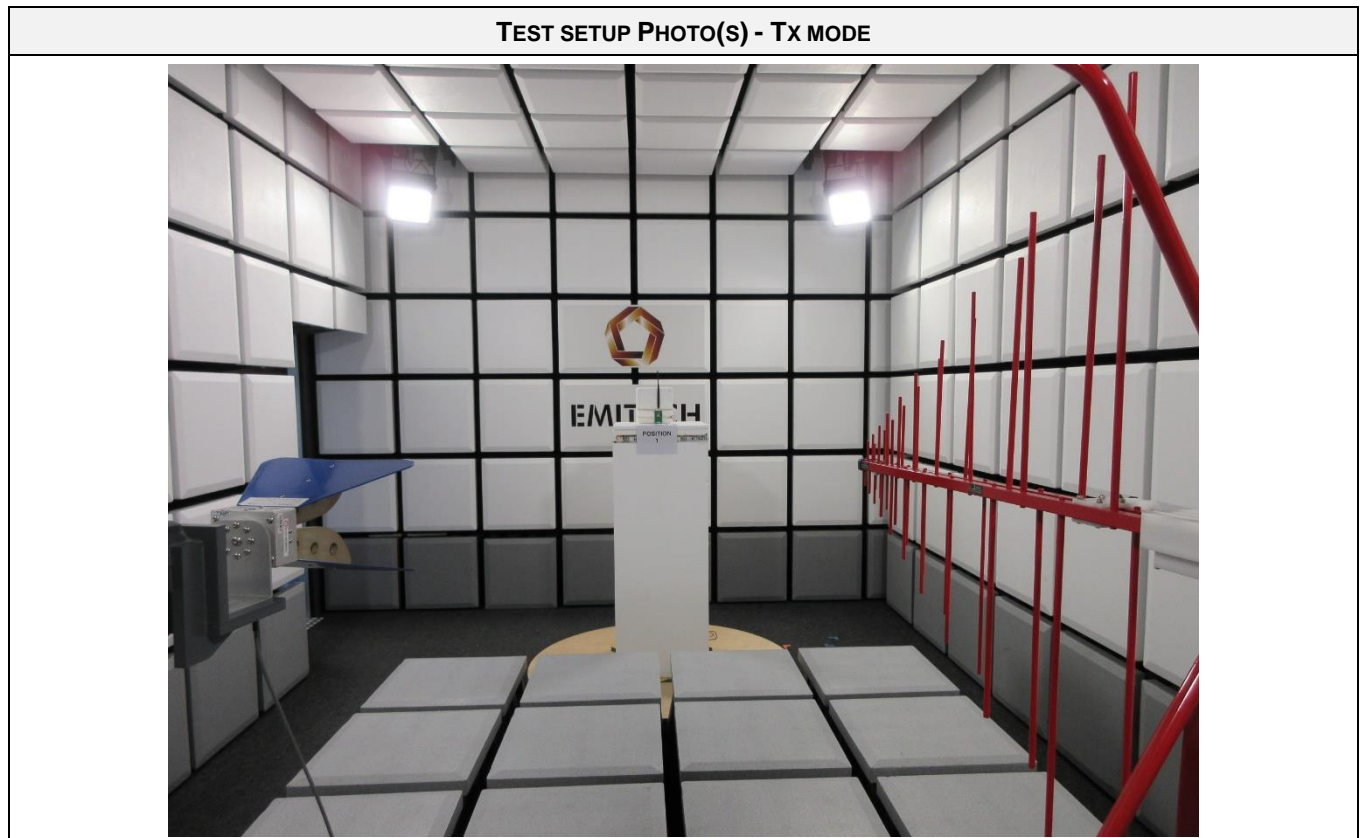
TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Tx mode / All channels / Not shielded / Position 1	25MHz-6GHz	Tx	EMI4658	PASS
Tx mode / All channels / Not shielded / Position 2	25MHz-6GHz	Tx	EMI4659	PASS
Tx mode / All channels / Not shielded / Position 3	25MHz-6GHz	Tx	EMI4660	PASS
Spectrum Mask / 868.13MHz / Not shielded / Position 1	858.13MHz-878.13MHz	Tx	EMI4520	PASS
Spectrum Mask / 868.13MHz / Not shielded / Position 2	858.13MHz-878.13MHz	Tx	EMI4663	PASS
Spectrum Mask / 868.13MHz / Not shielded / Position 3	858.13MHz-878.13MHz	Tx	EMI4664	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS lindgren	3143B	17930	12/08/2021	12/10/2024
Antenna	AARONIA	Powerlog 70180	15306	04/01/2023	04/03/2026
Attenuator	EMITECH	SUB.V4-H	18112	10/03/2023	10/05/2024
Attenuator	EMITECH	SUB.V4-V	18111	10/03/2023	10/05/2024
Cable	Techniwave	N-1.5m	18341	25/01/2022	25/03/2024
Cable	Techniwave	N-1.5m	18342	25/01/2022	25/03/2024
Cable	/	N-1m	3625	02/05/2023	02/07/2025
Cable	Techniwave	N-3.5m	18353	25/01/2022	25/03/2024
Cable	Techniwave	N-4m	18355	25/01/2022	25/03/2024
Converter		2.15	9988		
Filter	Micro-Tronics	HPM18865	12843	24/08/2021	24/10/2024
Multimeter	FLUKE	8808A	10382	16/05/2023	16/07/2024
Power supply	TTI	PL303QMD	8496		
Preamplifier	IMPULSE	CA118-546ACN	9169	15/06/2023	15/08/2024
Receiver	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Shielded enclosure	COMTEST	FAR-3m	18014	17/08/2021	17/10/2024
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrometer	Bioblock Scientific	Météostar	0963	09/06/2021	09/02/2024

BAT-EMC software version: V3.18.0.26

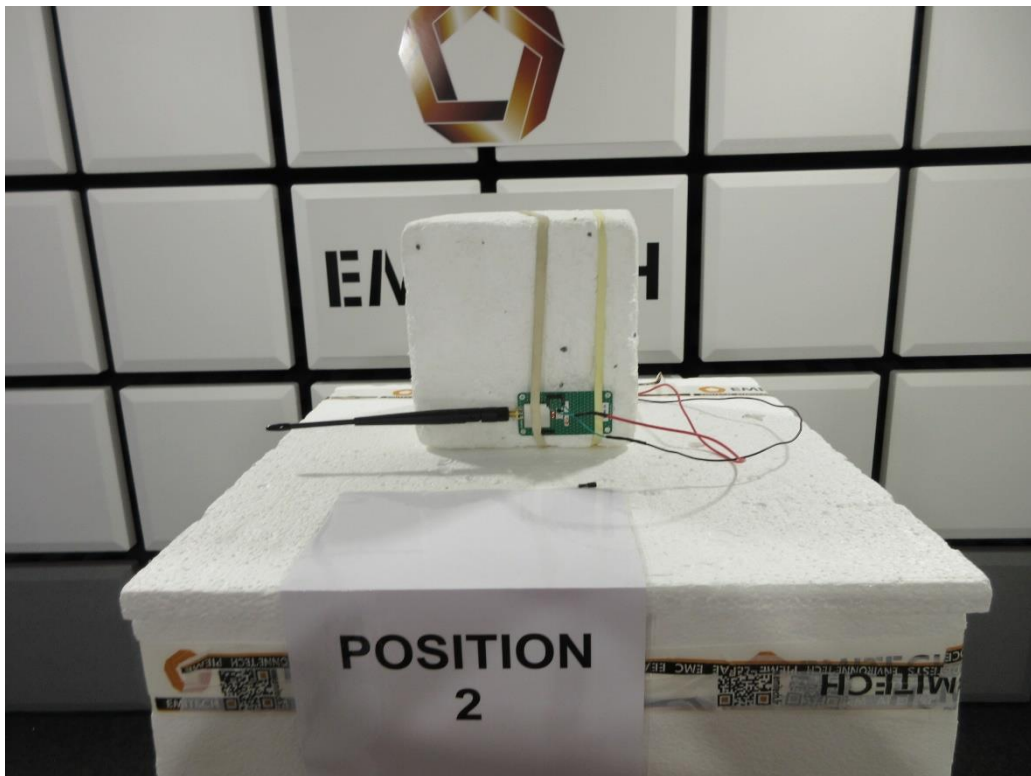
Blank cells = Permanent validity



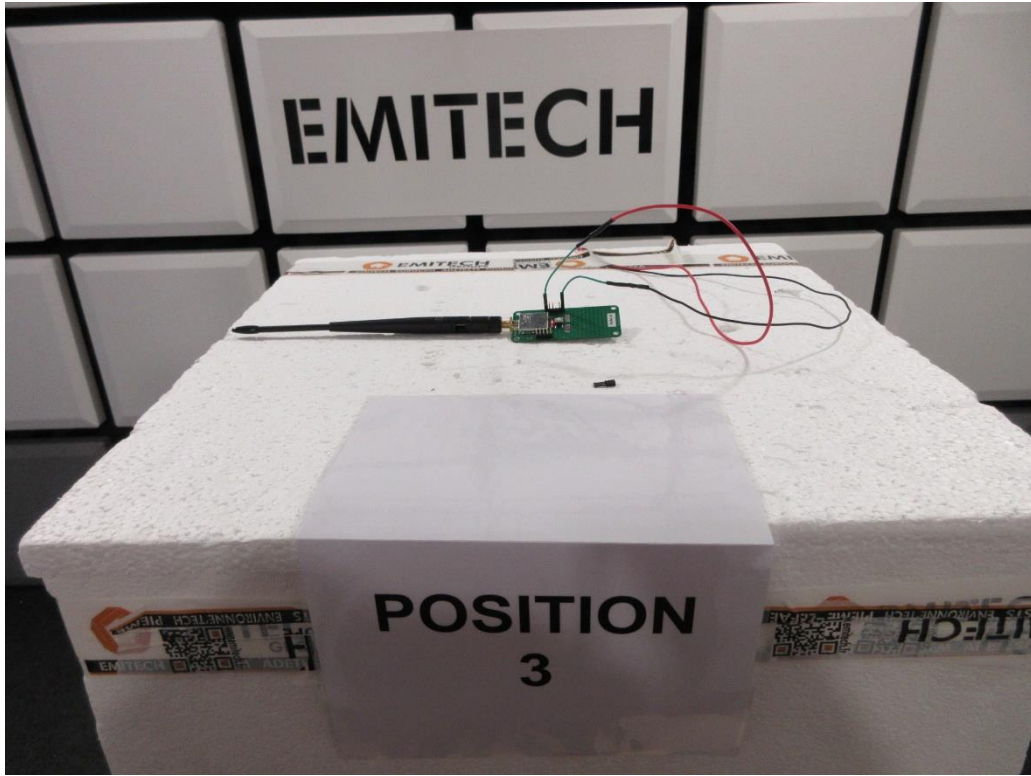
TEST SETUP PHOTO(S) - POSITION 1



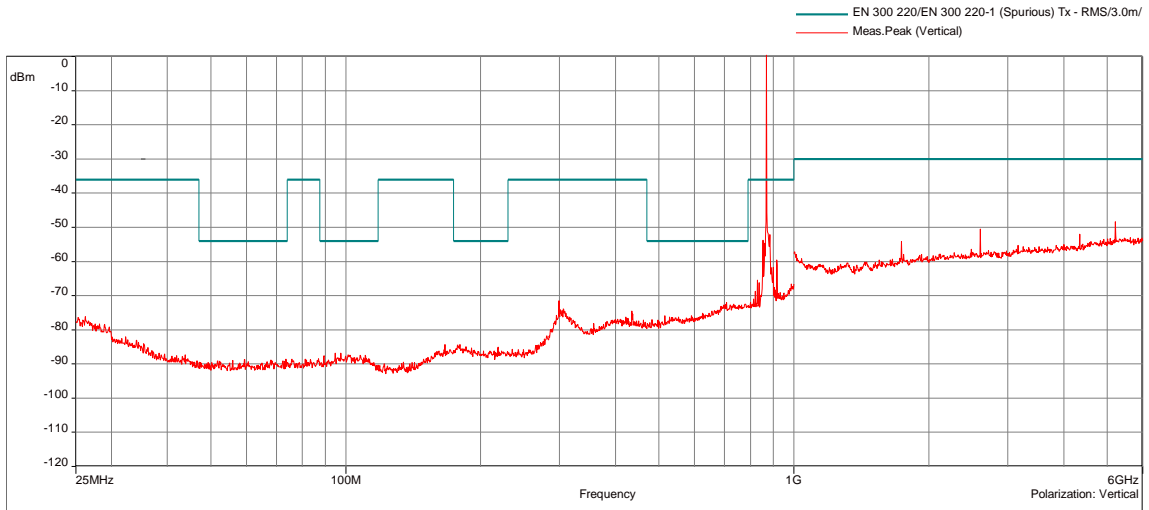
TEST SETUP PHOTO(S) - POSITION 2



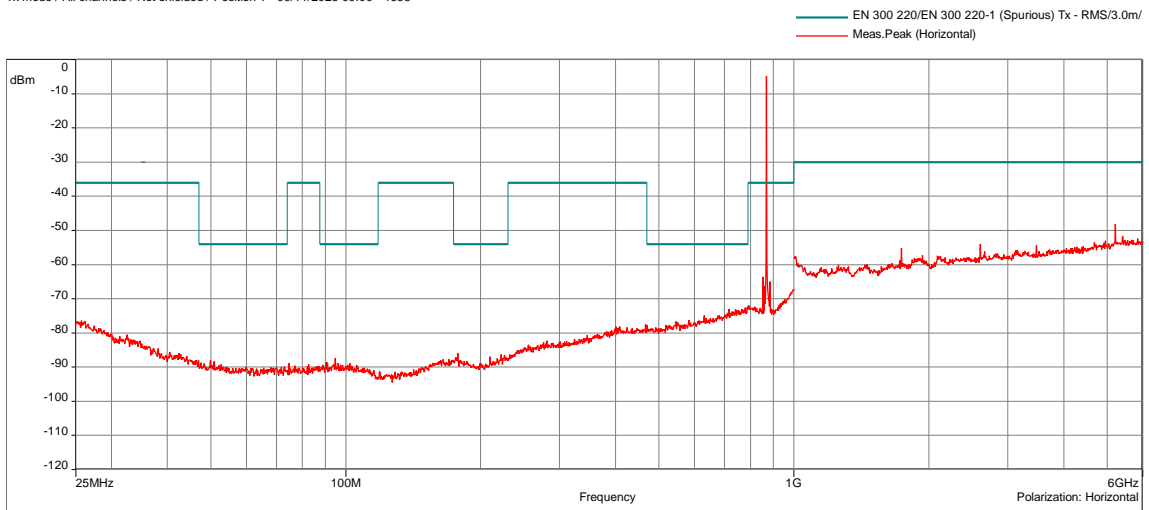
TEST SETUP PHOTO(S) - POSITION 3



RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 1			EMI4658
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Tx mode / All channels / Not shielded / Position 1 - 09/11/2023 09:00 - 4658



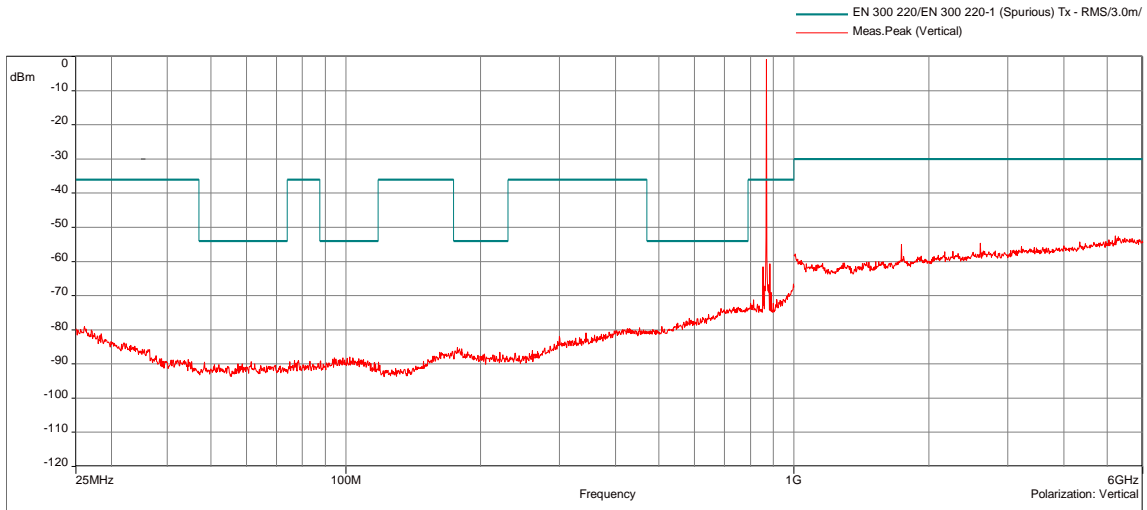
Tx mode / All channels / Not shielded / Position 1 - 09/11/2023 09:00 - 4658

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	25MHz-1GHz	100kHz	300kHz	Peak
Horizontal	25MHz-1GHz	100kHz	300kHz	Peak
Vertical	1GHz-6GHz	1MHz	3MHz	Peak
Horizontal	1GHz-6GHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

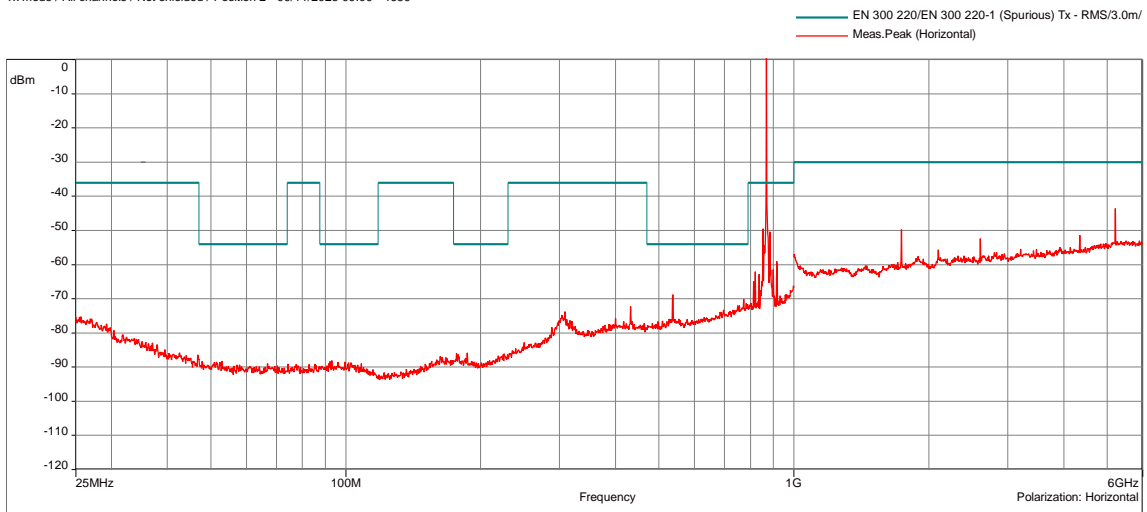
RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 1			EMI4658
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 2			EMI4659
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Tx mode / All channels / Not shielded / Position 2 - 09/11/2023 09:09 - 4659



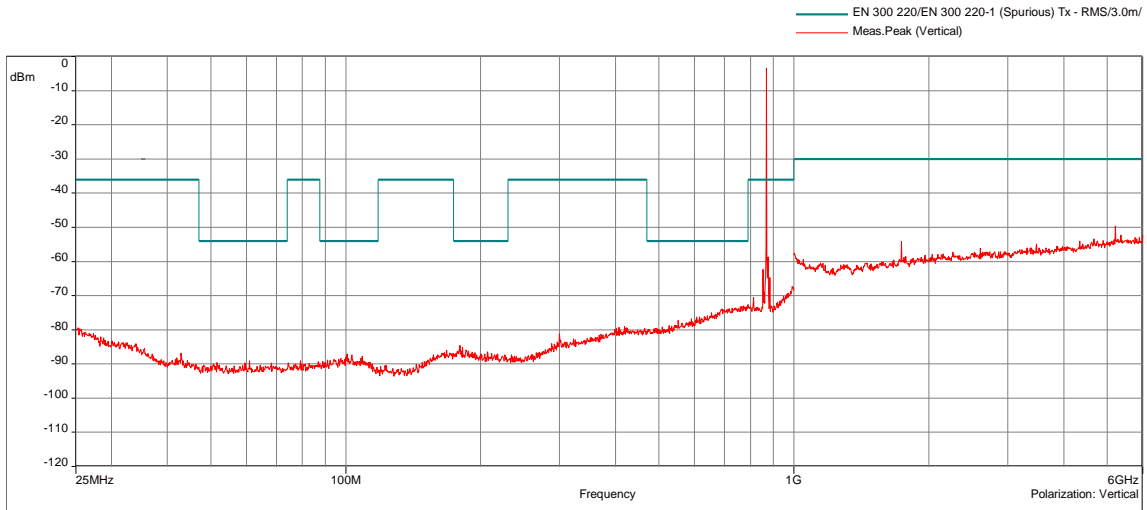
Tx mode / All channels / Not shielded / Position 2 - 09/11/2023 09:09 - 4659

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	25MHz-1GHz	100kHz	300kHz	Peak
Horizontal	25MHz-1GHz	100kHz	300kHz	Peak
Vertical	1GHz-6GHz	1MHz	3MHz	Peak
Horizontal	1GHz-6GHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

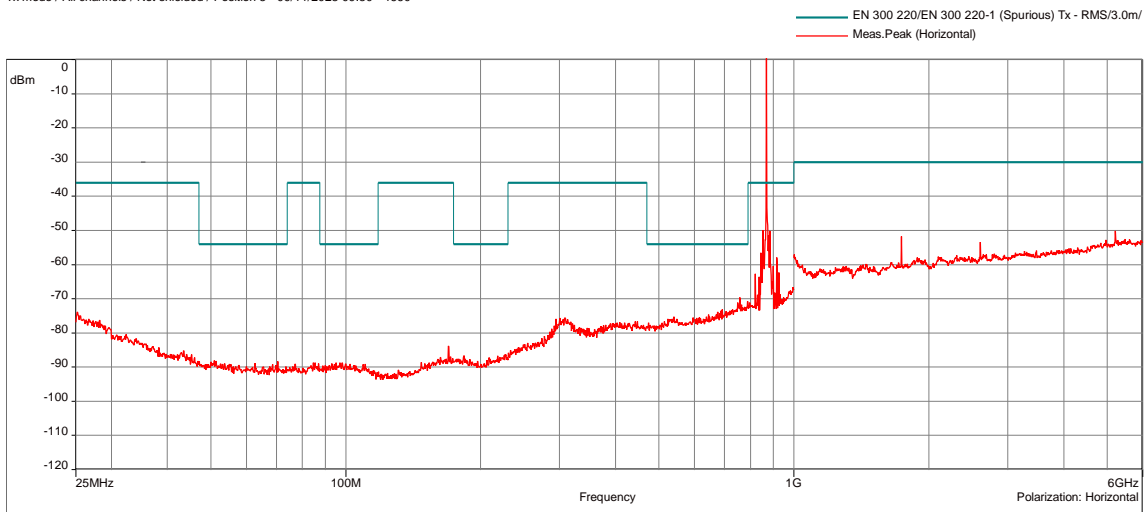
RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 2			EMI4659
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 3			EMI4660
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Tx mode / All channels / Not shielded / Position 3 - 09/11/2023 09:30 - 4660



Tx mode / All channels / Not shielded / Position 3 - 09/11/2023 09:30 - 4660

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	25MHz-1GHz	100kHz	300kHz	Peak
Horizontal	25MHz-1GHz	100kHz	300kHz	Peak
Vertical	1GHz-6GHz	1MHz	3MHz	Peak
Horizontal	1GHz-6GHz	1MHz	3MHz	Peak

Configuration: N/A

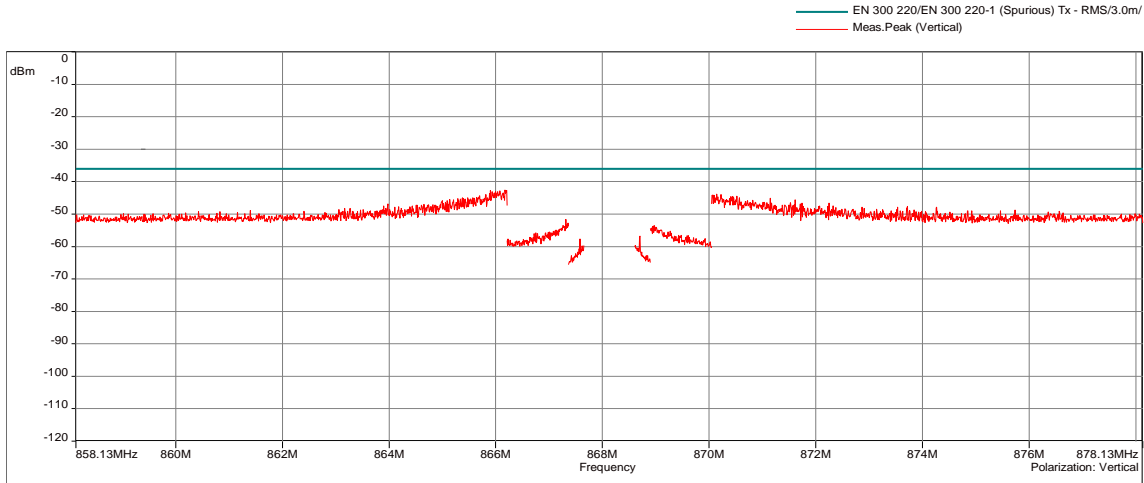
Comments: N/A

EUT modification(s): N/A

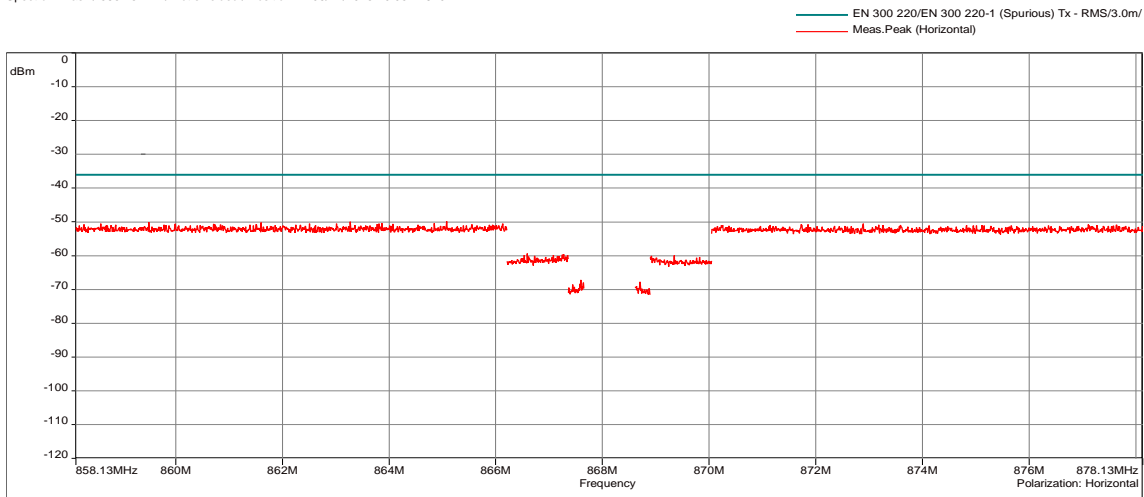
RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
TX MODE / ALL CHANNELS / NOT SHIELDED / POSITION 3			EMI4660
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 1			EMI4520
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Spectrum Mask / 868.13MHz / Not shielded / Position 1 - 09/11/2023 10:03 - 4520



Spectrum Mask / 868.13MHz / Not shielded / Position 1 - 09/11/2023 10:03 - 4520

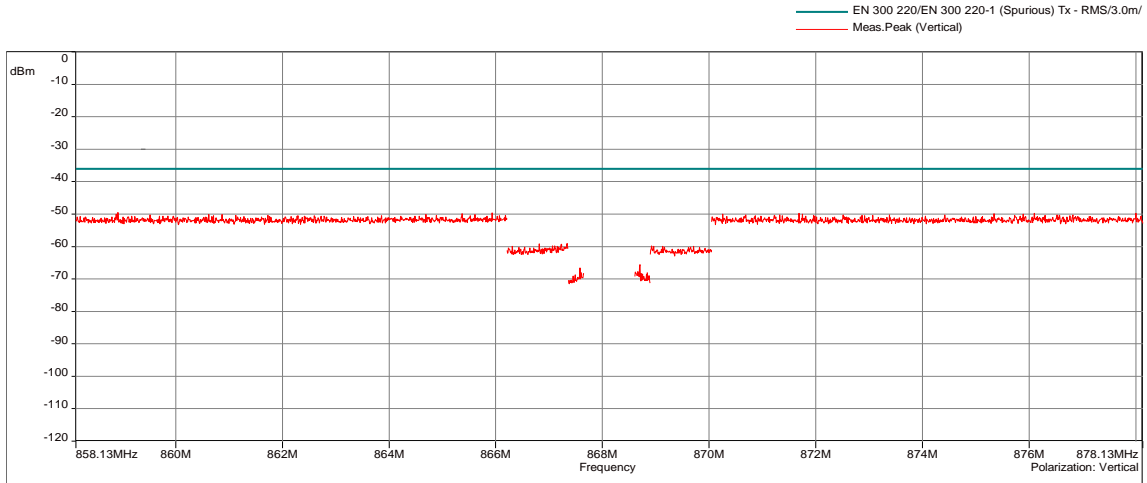
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Vertical	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Vertical	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Vertical	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Vertical	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Vertical	870.05MHz-878.13MHz	100kHz	300kHz	Peak
Horizontal	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Horizontal	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Horizontal	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Horizontal	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Horizontal	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Horizontal	870.05MHz-878.13MHz	100kHz	300kHz	Peak

Configuration:	N/A
Comments:	N/A
EUT modification(s): N/A	

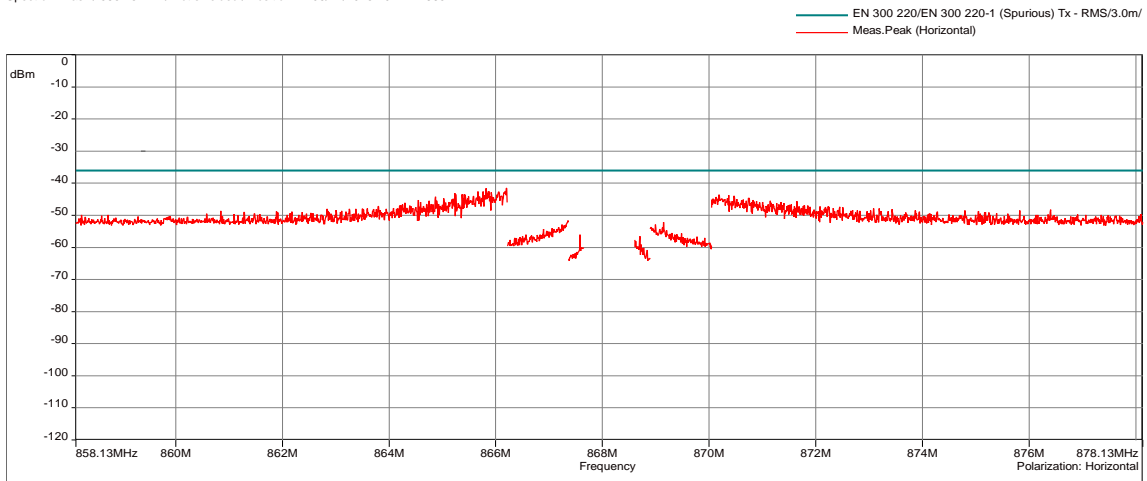
RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 1			EMI4520
U_{Start} (start of the test):	3Vdc	U_{End} (end of the test):	3Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 2			EMI4663
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Spectrum Mask / 868.13MHz / Not shielded / Position 2 - 09/11/2023 10:12 - 4663



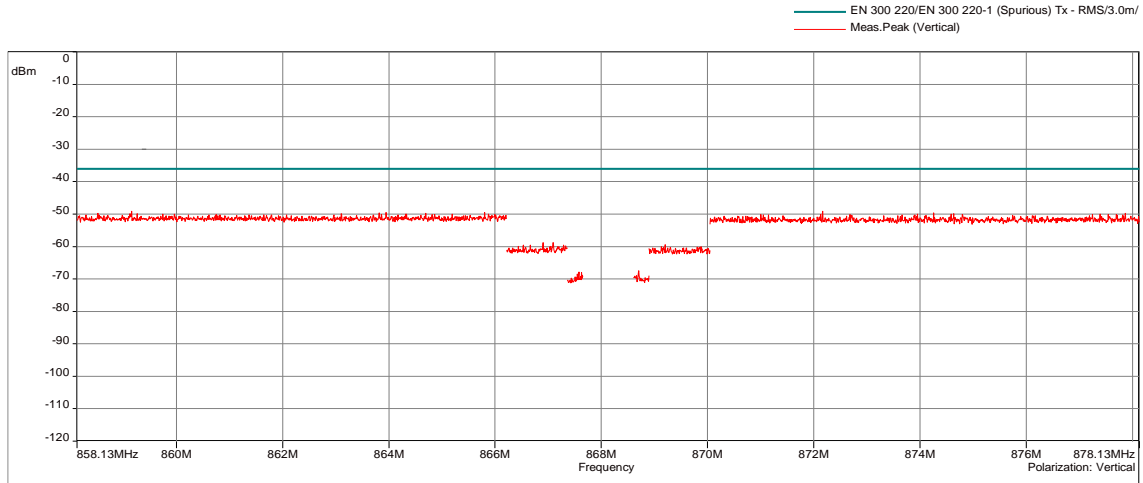
Spectrum Mask / 868.13MHz / Not shielded / Position 2 - 09/11/2023 10:12 - 4663

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Vertical	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Vertical	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Vertical	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Vertical	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Vertical	870.05MHz-878.13MHz	100kHz	300kHz	Peak
Horizontal	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Horizontal	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Horizontal	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Horizontal	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Horizontal	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Horizontal	870.05MHz-878.13MHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

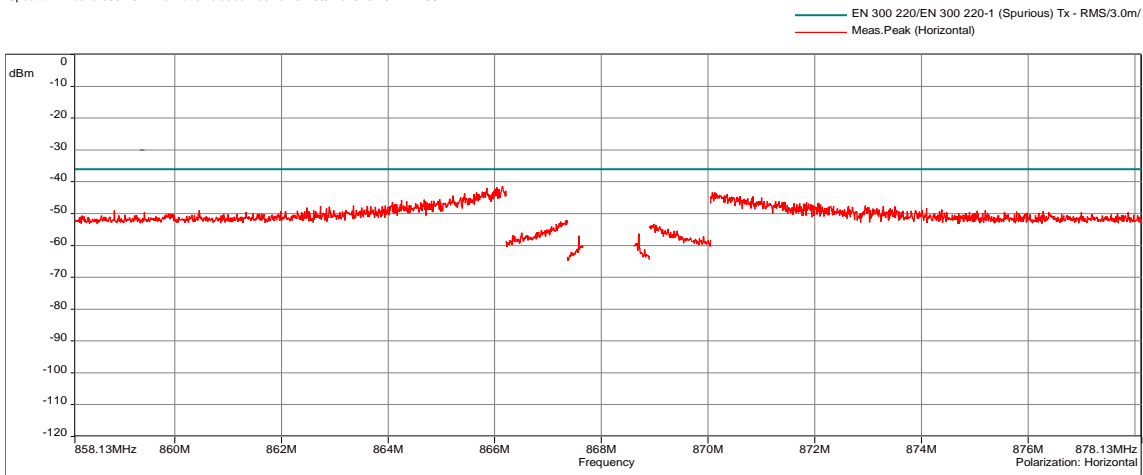
RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 2			EMI4663
U_{Start} (start of the test):	3Vdc	U_{End} (end of the test):	3Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - GRAPH			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 3			EMI4664
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



Spectrum Mask / 868.13MHz / Not shielded / Position 3 - 09/11/2023 10:21 - 4664



Spectrum Mask / 868.13MHz / Not shielded / Position 3 - 09/11/2023 10:21 - 4664

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Vertical	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Vertical	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Vertical	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Vertical	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Vertical	870.05MHz-878.13MHz	100kHz	300kHz	Peak
Horizontal	858.13MHz-866.21MHz	100kHz	300kHz	Peak
Horizontal	866.21MHz-867.362MHz	10kHz	30kHz	Peak
Horizontal	867.362MHz-867.65MHz	1kHz	3kHz	Peak
Horizontal	868.61MHz-868.898MHz	1kHz	3kHz	Peak
Horizontal	868.898MHz-870.05MHz	10kHz	30kHz	Peak
Horizontal	870.05MHz-878.13MHz	100kHz	300kHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

RADIATED SPURIOUS EMISSIONS (TRANSMITTER) - TABULATED RESULTS			
SPECTRUM MASK / 868.13MHz / NOT SHIELDED / POSITION 3			EMI4664
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
N/A	N/A	N/A	N/A

No spurious emissions were detected.

7.3. Effective radiated power

Reference standard:	EN 300 220-2 V3.1.1 §4.3.1
Test method:	EN 300 220-1 V3.1.1 §5.2.2.2
<p>General test setup: EUT is set on an insulating support at 150cm above the ground reference plane. Measurement are done on a normalized test site by the substitution method.</p> <p>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.</p> <p>For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.</p>	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
ERP / All channels / Not shielded / Position 1	865.63MHz-870.63MHz	Band M	EMI4654	PASS
ERP / All channels / Not shielded / Position 2	865.63MHz-870.63MHz	Band M	EMI4655	PASS
ERP / All channels / Not shielded / Position 3	865.63MHz-870.63MHz	Band M	EMI4656	PASS

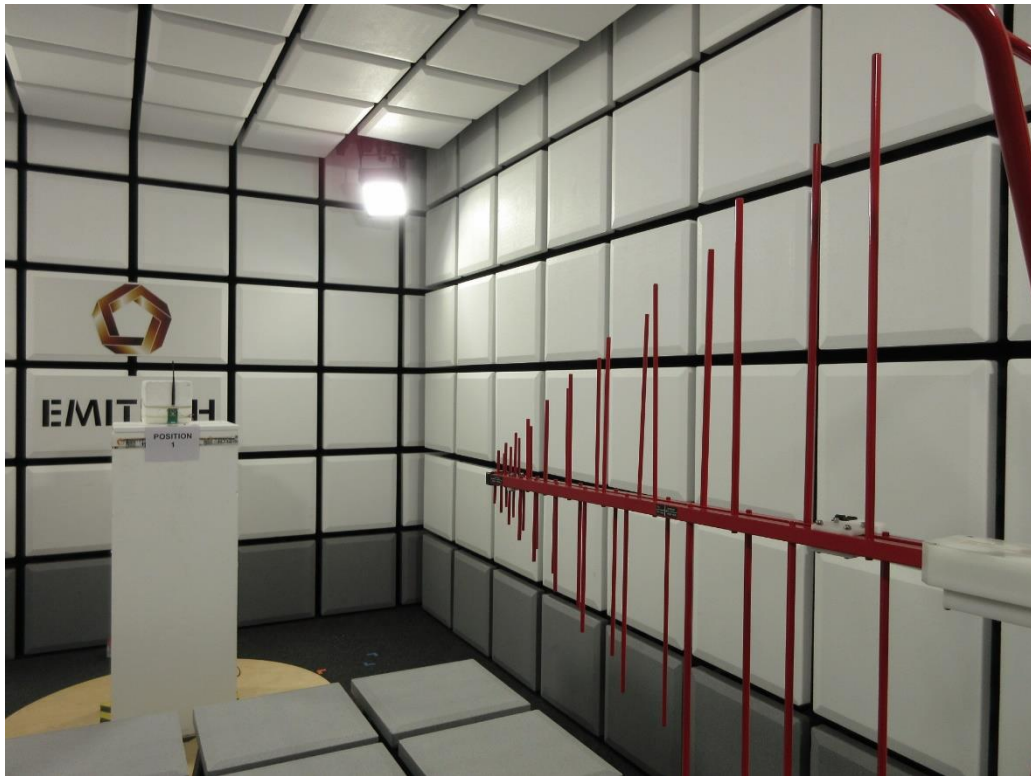
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	20 to 75 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS lindgren	3143B	17930	12/08/2021	12/10/2024
Attenuator	EMITECH	SUB.V4-H	18112	10/03/2023	10/05/2024
Attenuator	EMITECH	SUB.V4-V	18111	10/03/2023	10/05/2024
Cable	/	N-1m	3625	02/05/2023	02/07/2025
Cable	Techniwave	N-3.5m	18353	25/01/2022	25/03/2024
Cable	Techniwave	N-4m	18355	25/01/2022	25/03/2024
Converter		2.15	9988		
Multimeter	FLUKE	8808A	10382	16/05/2023	16/07/2024
Power supply	TTI	PL303QMD	8496		
Receiver	Rohde & Schwarz	FSW43	14830	10/08/2022	10/10/2024
Shielded enclosure	COMTEST	FAR-3m	18014	17/08/2021	17/10/2024
Software	Nexio	BAT EMC	0000		
Thermohygrograph	Testo	608-H2	12269	07/06/2022	07/08/2024
Thermohygrograph	Bioblock Scientific	Météostar	0963	09/06/2021	09/02/2024

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

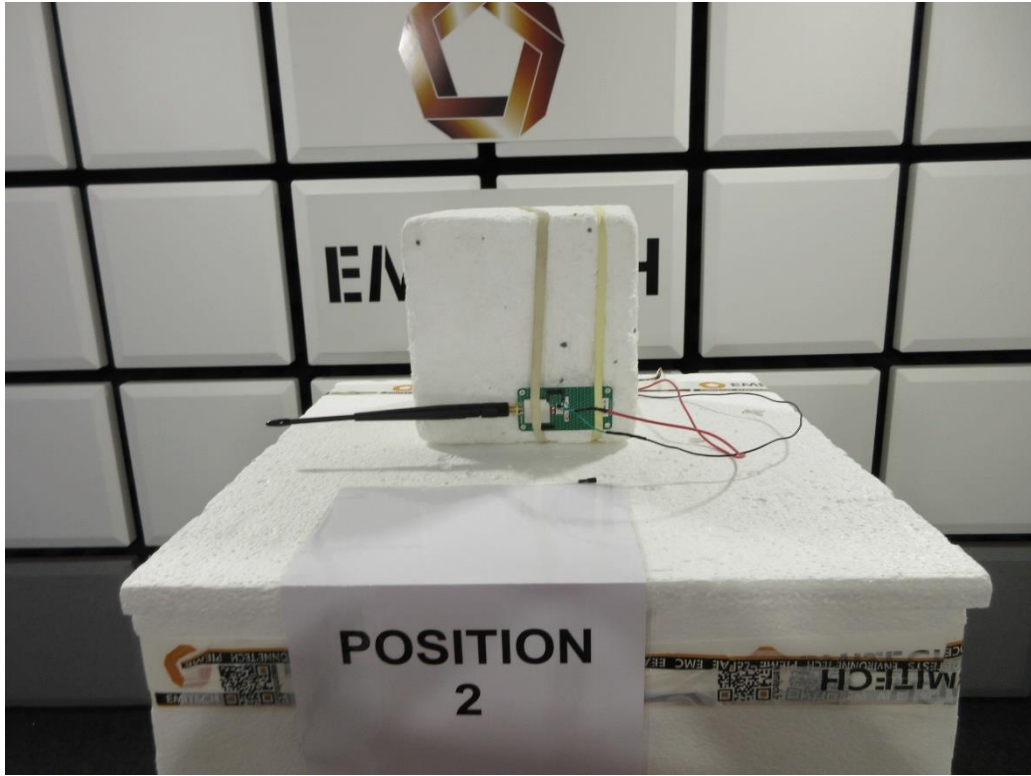
TEST SETUP PHOTO(S) - ERP



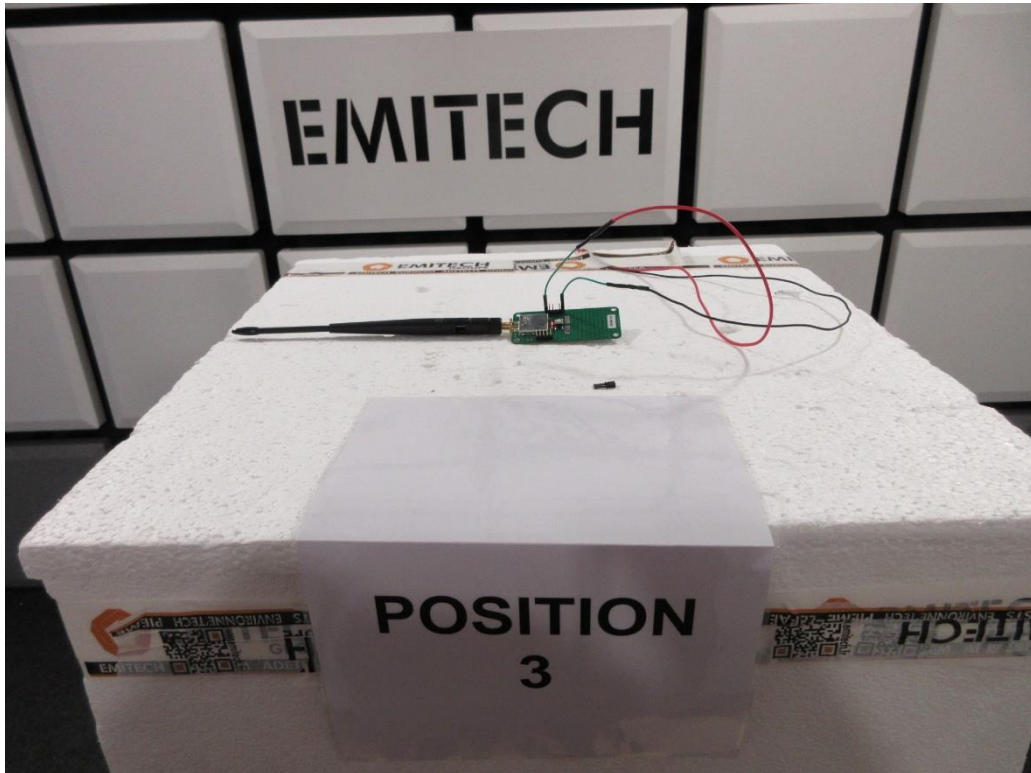
TEST SETUP PHOTO(S) - ERP / POSITION 1



TEST SETUP PHOTO(S) - ERP / POSITION 2

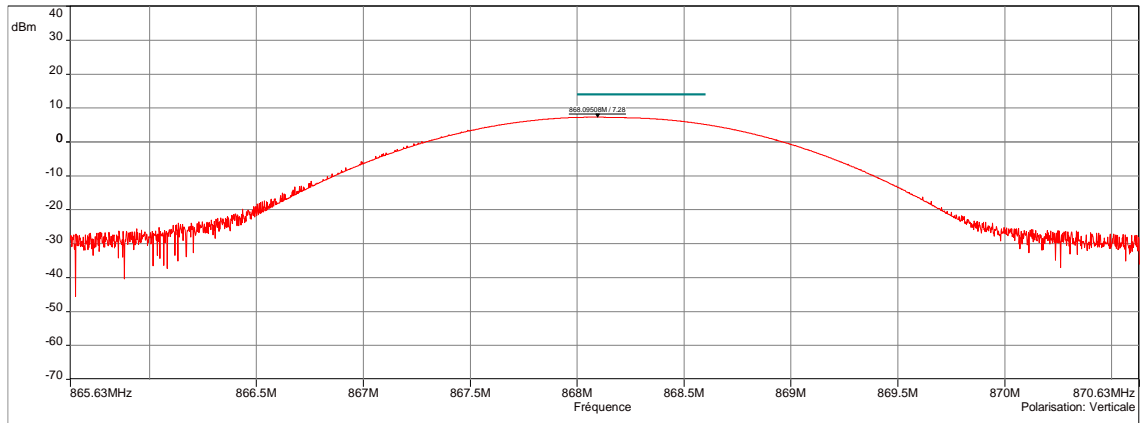


TEST SETUP PHOTO(S) - ERP / POSITION 3



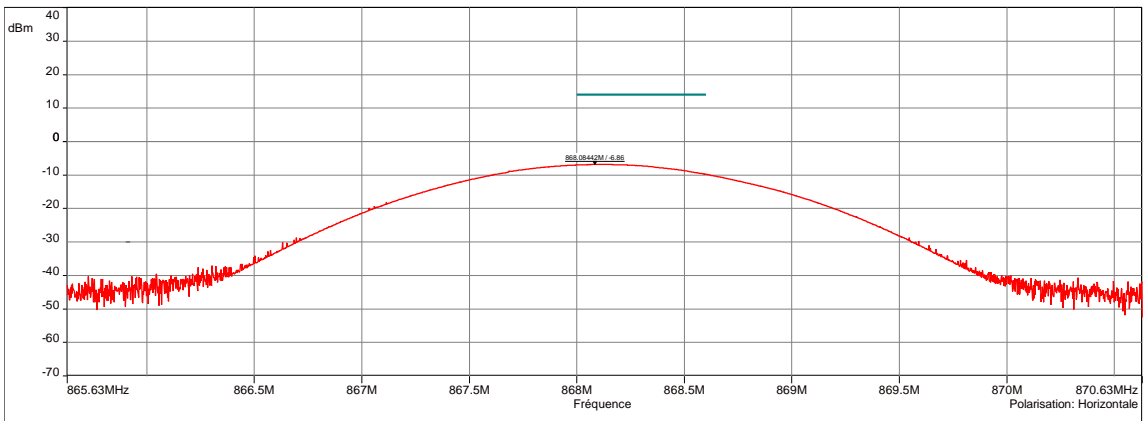
EFFECTIVE RADIATED POWER - GRAPH			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 1			EMI4654
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999

Description Sous-bande 1
 Fréquences:865.63 MHz - 870.63 MHz (Mode analyseur) 30000 Points
 Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : Auto, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
 Polarisation:Verticale
 Distance: 3 m



ERP / All channels / Not shielded / Position 1 - 11/09/2023 08:40 - 4654

Description Sous-bande 2
 Fréquences:865.63 MHz - 870.63 MHz (Mode analyseur) 30000 Points
 Réglages: RBW: 1MHz, VBW: 3MHz, Auto, Atténuation : Auto, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: Off
 Polarisation:Horizontale
 Distance: 3 m

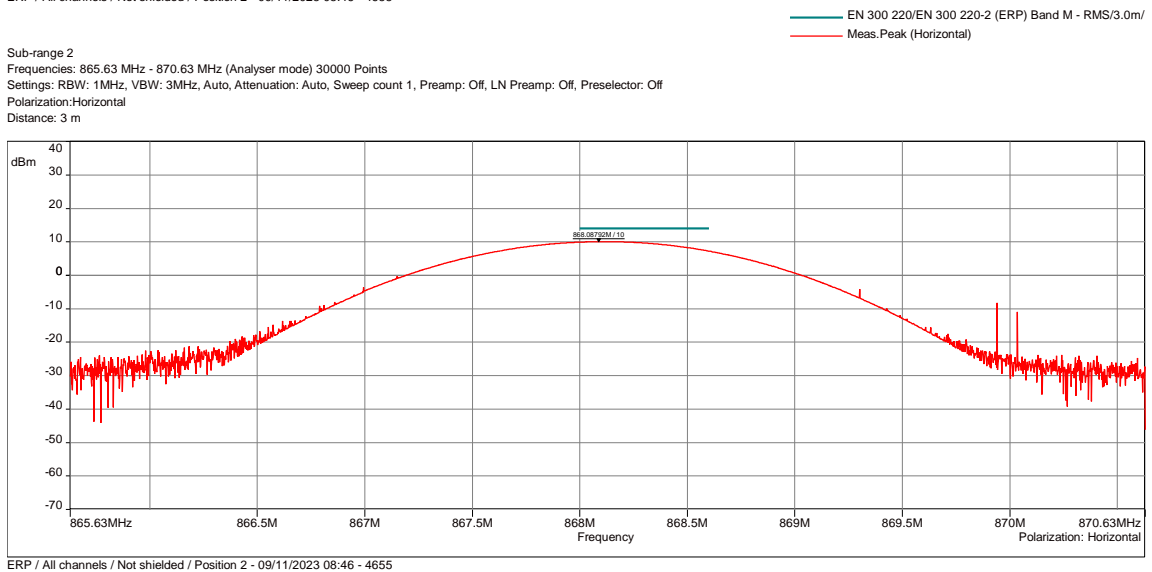
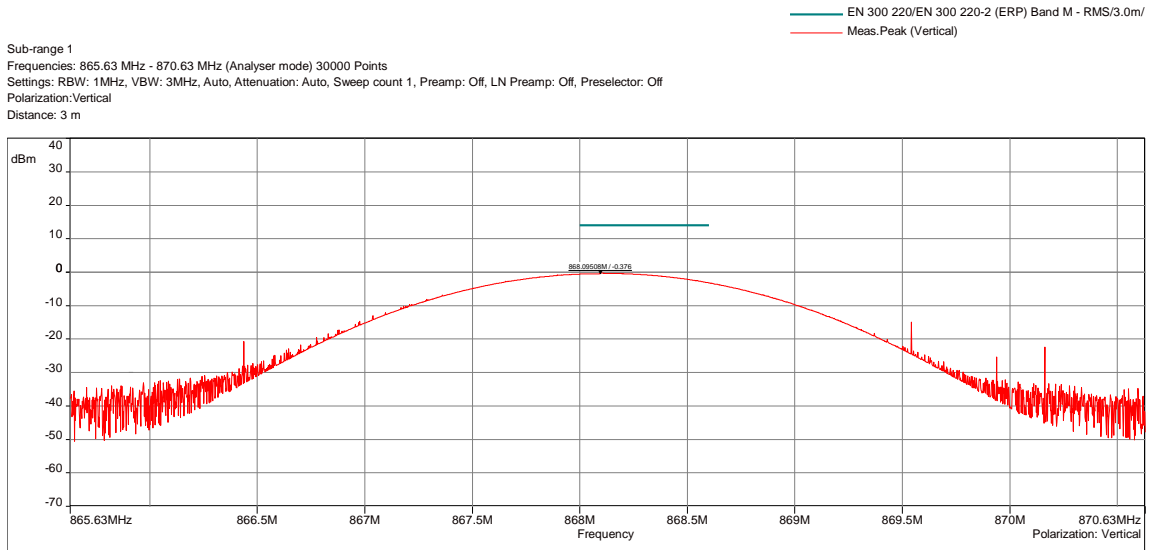


ERP / All channels / Not shielded / Position 1 - 11/09/2023 08:40 - 4654

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Horizontal	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

EFFECTIVE RADIATED POWER - TABULATED RESULTS			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 1			EMI4654
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
868.13	Vertical	7.28	14.00
868.13	Horizontal	-6.86	14.00

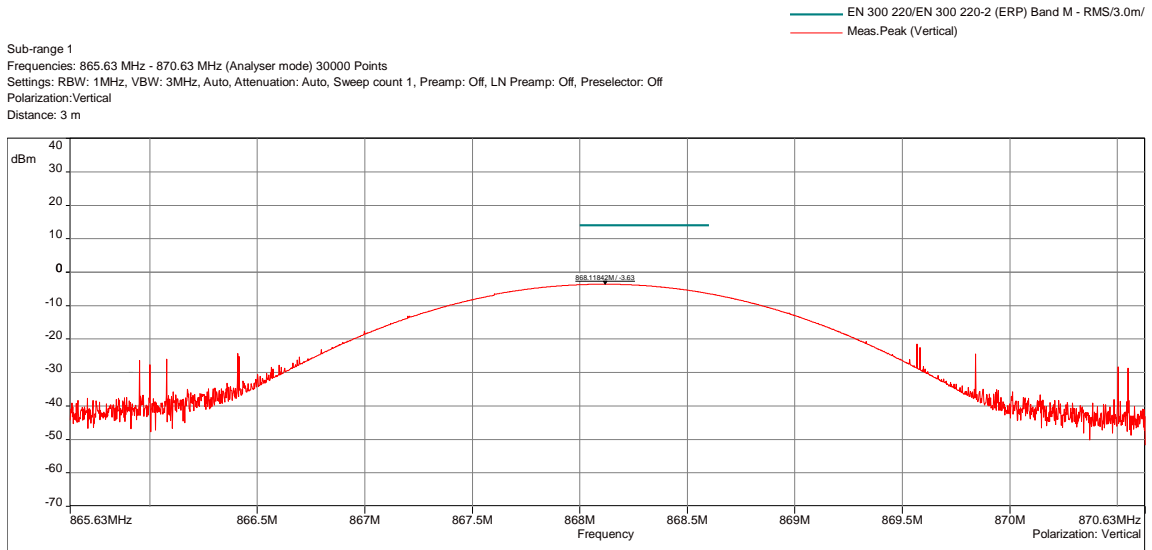
EFFECTIVE RADIATED POWER - GRAPH			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 2			EMI4655
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



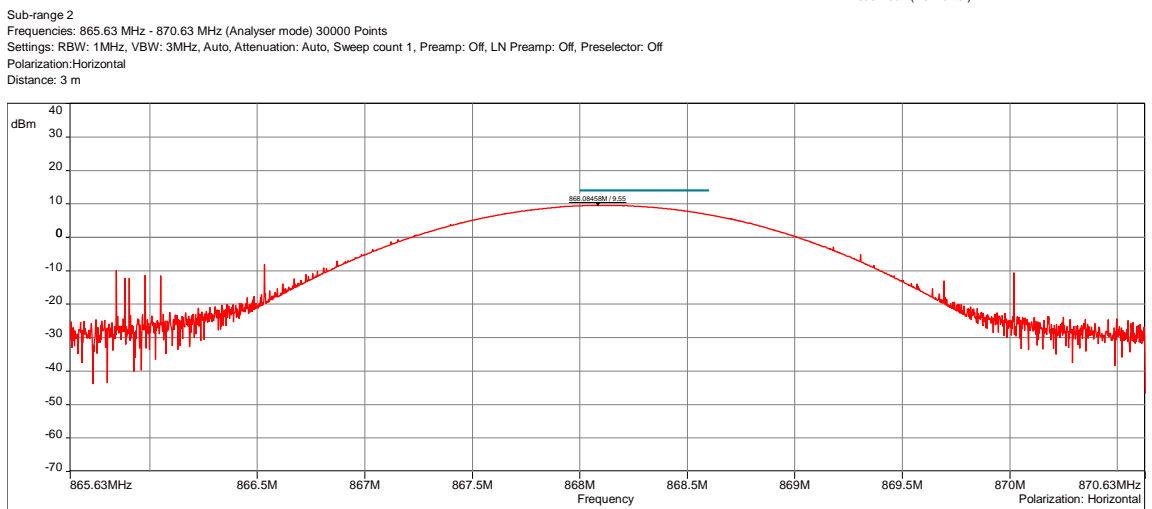
POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Horizontal	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

EFFECTIVE RADIATED POWER - TABULATED RESULTS			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 2			EMI4655
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
868.13	Vertical	-0.376	14.00
868.13	Horizontal	10.00	14.00

EFFECTIVE RADIATED POWER - GRAPH			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 3			EMI4656
EUT mode:	D-M2	T (°C):	21.0
Test Date:	11/09/2023	H (%):	60.0
Test Operator:	ATO	P (hPa):	999



ERP / All channels / Not shielded / Position 3 - 09/11/2023 08:50 - 4656



ERP / All channels / Not shielded / Position 3 - 09/11/2023 08:50 - 4656

POSITION	FREQUENCIES	RBW	VBW	DETECTOR
Vertical	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Horizontal	865.63MHz-870.63MHz	1MHz	3MHz	Peak
Configuration:	N/A			
Comments:	N/A			
EUT modification(s): N/A				

EFFECTIVE RADIATED POWER - TABULATED RESULTS			
ERP / ALL CHANNELS / NOT SHIELDED / POSITION 3			EMI4656
U_{Start} (start of the test):	3.0Vdc	U_{End} (end of the test):	3.0Vdc
Voltage drop:	0%	Limit:	+/- 5%
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)
868.13	Vertical	-3.63	14.00
868.13	Horizontal	9.55	14.00

End of test report