



Test report issued under the responsibility of:

EMITECH MONTPELLIER laboratory

MRA US-EU Designation Number: FR0006

Registration Number: 954701

Canadian CAB Identifier: FR0003

Registration Number: 4379C

RADIO TEST REPORT

FCC 47 CFR PART 15: Septembre 2025

RSS-210, Issue 11: June 2024

RSS-Gen, Issue 5: Apr. 2018 AMD1: Mar. 2019 / AMD2: Feb. 2021

Company: **STMICROELECTRONICS (Rousset) SAS**
Address.....: 190 AVENUE CELESTIN COQ
13106 ROUSSET
FRANCE

Test item description: **NFC extension board**
Trade Mark: 
Manufacturer.....: STMICROELECTRONICS
Model/Type reference.....: X-NUCLEO-NFC13A1
FCC ID :.....: YCPNFC13A1
IC :: 8976A-NFC13A1
Ratings.....: 5Vdc (2.5W, via Mini USB)

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

Report Reference No.....: **RR-EVE-25G757-2A**
Test procedure: FCC IC Certification
Diffusion.....: M. MAURAN Julien
Applicant's name: STMICROELECTRONICS (Rousset) SAS
Date of issue.....: April 1, 2026
Total number of pages.....: 36
Revision: 0
Compiled by.....: Célien FOUGEROLLE
Approved by (+ signature).....: David MONTAULON (Laboratory 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:

1. GENERAL INFORMATIONS	3
2. REFERENCE DOCUMENT(S)	4
3. EQUIPMENT TECHNICAL DESCRIPTION	5
3.1. TEST CONDITIONS	5
3.2. E.U.T. MARKING PLATE	5
3.3. E.U.T. MODIFICATION(S)	6
3.4. E.U.T. GENERAL VIEW	6
3.5. E.U.T. ELECTRONIC BOARD	6
3.6. E.U.T. MECHANICAL AND ELECTRICAL DESIGN	8
3.7. E.U.T. INPUT/OUTPUT PORTS	8
3.8. SUPPORTING EQUIPMENT USED DURING TEST	8
3.9. EUT RADIO SPECIFICATIONS	10
4. RESULT SUMMARY	11
5. MEASUREMENT UNCERTAINTY	12
6. TEST CONDITIONS AND RESULTS	13
6.1. CONDUCTED LIMITS	13
6.2. TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz	16
6.3. TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz	22
6.4. OCCUPIED BANDWIDTH	26
6.5. FIELD STRENGTH IN THE BAND 13.553MHz TO 13.567MHz	29
6.6. FIELD STRENGTH OUTSIDE THE BAND 13.553MHz TO 13.567MHz	32
6.7. FREQUENCY STABILITY	35

REVISION HISTORY:

Revision	Date	Modified pages	Modifications
0	April 1, 2026	/	Creation

1. GENERAL INFORMATION

This document submits the results of Radio tests performed on the equipment **NFC extension board X-NUCLEO-NFC13A1** (denominated hereafter E.U.T.: equipment under test) according to document(s) listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:					
Testing Location		EMITECH MONTPELLIER laboratory & Open Area Test Site in SALINELLES (30)			
Address		145 rue de Massacan 34740 VENDARGUES FRANCE			
Test procedure		FCC IC Certification			
Tested by		Célien FOUGEROLLE			
Test supervisor		Olivier AELBRECHT			
Date of receipt of test item		December 8 th , 2025			
Date (s) of performance of tests		December, the 9 th and the 10 th of 2025			
APPLICANT'S GENERAL INFORMATION:					
Company name		STMICROELECTRONICS (Rousset) SAS			
Company address		190 AVENUE CELESTIN COQ 13106 ROUSSET FRANCE			
Person(s) present during the tests		No representative for company attended the tests.			
Responsible		M. MAURAN Julien			
GENERAL REMARKS:					
The information in <i>italics</i> 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
VP	Vertical Polarization	HP	Horizontal Polarization	RMS	Root Mean Square
RF	Radio Frequency	N.T.R	Nothing To Report	N/C	Not Communicated
SAC	Semi Anechoic Chamber				

2. REFERENCE DOCUMENT(S)

NORMATIVE REFERENCES:

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

FCC 47 CFR PART 15: September 2025

Code of federal regulations – Title 47 telecommunication - Part 15 - Radio frequency devices

FCC 47 CFR PART 15.225: September 2025

Operation within the band 13.110-14.010 MHz

RSS-210, Issue 11: June 2024

Licence-Exempt Radio Apparatus: Category I Equipment

RSS-Gen, Issue 5: Apr. 2018 AMD1: Mar. 2019 / AMD2: Feb. 2021Fcc part 15.225

General Requirements for Compliance of Radio Apparatus

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. The evolution of methods that increase the requirements of the product standard are not considered.

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. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description. : NFC extension board
Model/Type reference..... : X-NUCLEO-NFC13A1
Trade Mark. : 
Serial number (S/N)..... : Not communicated
Part number (P/N). : Not communicated
Software version..... : *Not communicated*
Firmware version..... : *Not communicated*
Type of sample..... : Serial
Function(s)..... : NFC extension board for use in designs offices, R&D centers, schools etc..
Manufacturer name. : STMICROELECTRONICS
Address. : 776 Rue ALBERT CAQUOT
SKY SOPHIA BAT B
06410 BIOT
FRANCE

General product information:

N/A

3.2. E.U.T. Marking plate



3.3.E.U.T. Modification(s)

No modifications

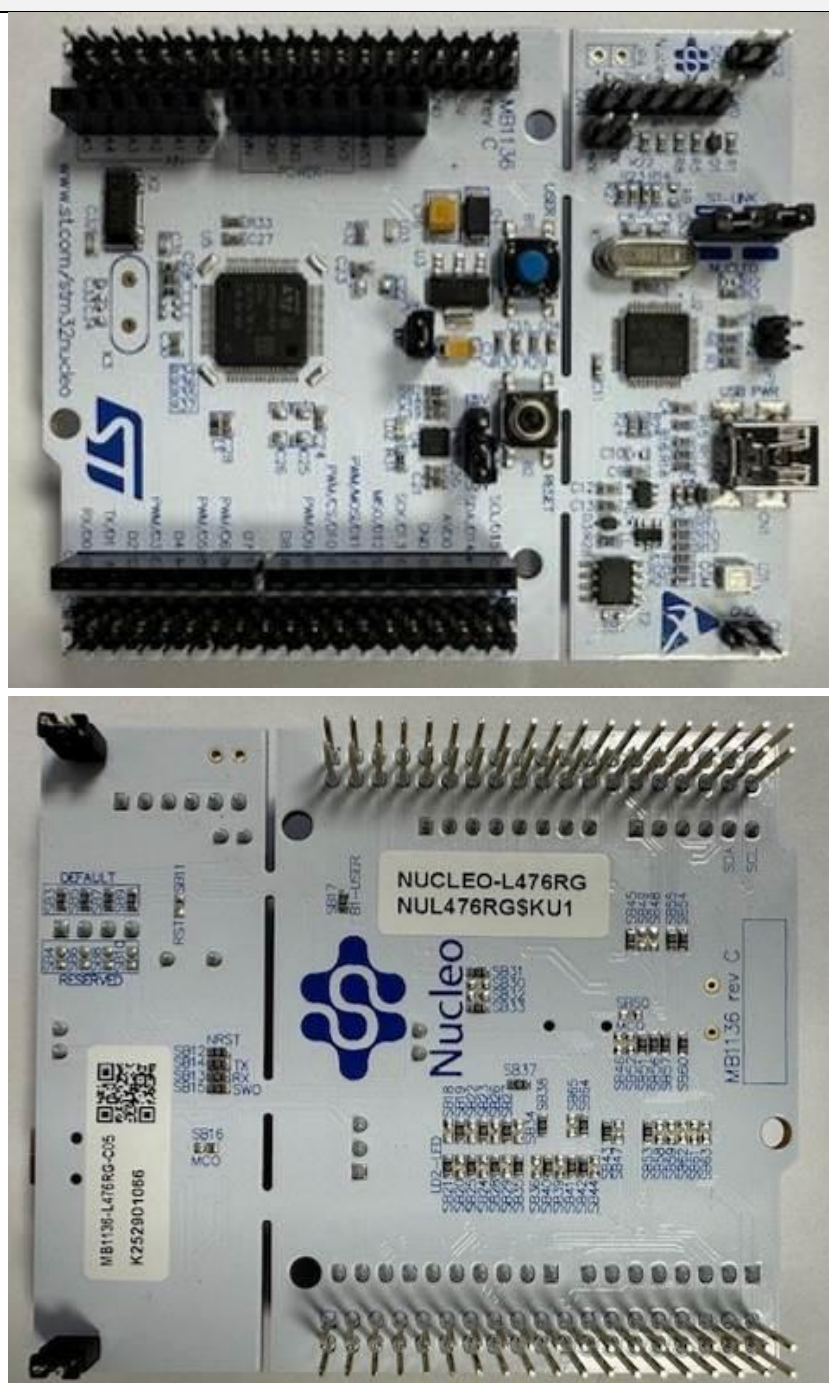
3.4.E.U.T. General view



3.5.E.U.T. Electronic board



3.5.E.U.T. Electronic board



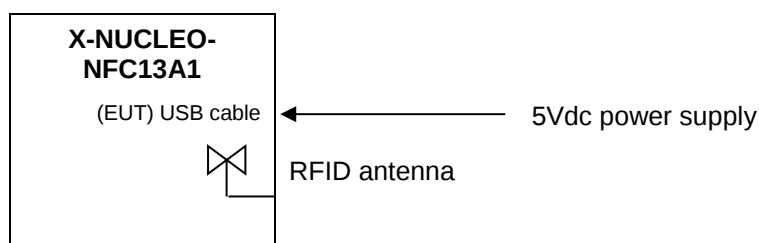
3.6.E.U.T. Mechanical and Electrical Design

Power supply. : 5Vdc
Power supply range..... : 5Vdc
Power type..... : *Mini USB*
Power (W)..... : 2.5W
Nominal current (A). : 0.5
Dimensions (L x W x H) (m). : 104 mm x 54 mm x 10 mm
Weight (kg). : 0.01
Temperature range (°C). : 0-60°C
Ground bounding strap..... : No

Comments:

For testing purposes, some tests were carried out with a standard external power supply 110-230Vac; 50/60Hz

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



PORT	NAME	TYPE	LENGTH	CABLE TYPE	COMMENTS
0	Main frame	N/E	N/A	N/A	Electronic demo board
1	5Vdc power supply	DC	0.5m	μUSB	
2	RFID antenna	RF	N/A	N/A	13.56MHz

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

3.8. Supporting Equipment Used During Test

Sample subject to the tests was tested with following equipment.

PRODUCT TYPE	MANUFACTURER	MODEL	N°EMITECH / COMMENTS
Switching adapter	HN Electronic Components GmbH & Co. KG	HNP06-USBL6	
Tagstand	STMICROELECTRONICS	ST25T02KC	

SWITCHING ADAPTER (AE)



TAGSTAND (AE)



3.9. EUT Radio Specifications

a) GENERAL INFORMATIONS	
According to manufacturer's declarations :	
EUT type.....	Demo board
Technology.....	RFID (NFC)
Environmental profile.....	Residential (School) and light industry (Design office)
Temperature range.....	0-60°C
Antenna type	Integral
Antenna Gain.....	Integrated
Comments:	
EUT is a demo board for desgin offices	
b) TRANSMITTER PARAMETERS (Tx)	
Frequency bands.....	13.56MHz +/- 7kHz
RF Power.....	N/C
Number of channels / Separation.....	1
Modulation type	N/C
Duty cycle	N/C
Tested frequency.....	13.56MHz
c) RECEIVER PARAMETERS (Rx)	
Frequency bands.....	13.56MHz +/- 7kHz
Category/Class	1
Bandwidth	14kHz

4. RESULT SUMMARY

TEST DESIGNATION	SEVERITY	VERDICT	BASIC STANDARDS / COMMENTS
Conducted limits			FCC part 15.207 RSS 210 ANSI C63.10
- 120Vac/60Hz power supply	§15.207	PASS	
Transmitter radiated spurious emissions at frequencies <30MHz			FCC part 15.225 a) RSS 210 ANSI C63.10
- Radiated measurement / 90°	§15.209	PASS	
- Radiated measurement / 45°	§15.209	PASS	
- Radiated measurement / 0°	§15.209	PASS	
Transmitter radiated spurious emissions at frequencies >30MHz			FCC part 15.109, 15.209 RSS 210, RSS Gen ANSI C63.10
- Radiated measurement > 30MHz	§15.209	PASS	
Occupied bandwidth			FCC part 15.225 RSS 210 ANSI C63.10
- OBW / 25°C / 5Vdc	<14kHz	PASS	
- 20dB bandwidth / 25°C / 5Vdc	<14kHz	PASS	
Field strength in the band 13.553MHz to 13.567MHz			FCC part 15.225 a) RSS 210 ANSI C63.10
- 13.56MHz (OATS) / 25°C / 5Vdc	15848µV/m	PASS	
Field strength outside the band 13.553MHz to 13.567MHz			FCC part 15.225 b) c) & d) RSS 210 ANSI C63.10
- RFID Mask	§15.225	PASS	
Frequency Stability			FCC 47 CRF Part 15.225 e) RSS-210
- 13.56MHz	+/- 0.01%	PASS	

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)
ANSI C63.10: 2020	N/A

5. 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)	$\pm 1.2\text{dB}$	$\pm 1.5 \text{ dB}$
Power spectral density	$\pm 2.7\text{dB}$	$\pm 3 \text{ dB}$
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	$\pm 1.2 \%$	$\pm 3 \text{ dB}$
Adjacent channel power	$\pm 1.6 \text{ dB}$	$\pm 3 \text{ dB}$
Sensitivity of receiver (conducted)	$\pm 1.9 \text{ dB}$	$\pm 3 \text{ dB}$
Blocking	$\pm 3.9 \text{ dB}$	$\pm 4 \text{ dB}$
Transient		
Amplitude	$\pm 8.5 \%$	$\pm 20 \%$
At the frequency	$\pm 166 \text{ Hz}$	$\pm 250 \text{ Hz}$
Conducted emission (spurious)		
$f \leq 1 \text{ GHz}$	$\pm 0.8 \text{ dB}$	$\pm 3 \text{ dB}$
1 GHz - 12.75 GHz	$\pm 1.6 \text{ dB}$	
Radiated power (ERP / EIRP / spurious)		
$f \leq 62.5 \text{ MHz}$	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
62.5 MHz - 1 GHz	$\pm 5.4 \text{ dB}$	$\pm 6 \text{ dB}$
1 GHz - 18 GHz(–)	$\pm 5.2 \text{ dB}$	$\pm 6 \text{ dB}$
18 GHz – 40 GHz	$\pm 5.9 \text{ dB}$	$\pm 6 \text{ dB}$
40 GHz – 110 GHz	$\pm 5.9 \text{ dB}$	Between ± 6 to 10 dB
180-1000 MHz / 1 – 12.75 GHz (EN 301908-1)	$\pm 2.8 / 2.7 \text{ dB}$	$\pm 3 \text{ dB}$
RF power (EN 300328 / EN 301893)	$\pm 5.3 \text{ dB}$	$\pm 6 \text{ dB}$
EIRP and power spectral density with diode	$\pm 5.4 \text{ dB}$	$\pm 6 \text{ dB}$
Radiated emission (magnetic field)		
9kHz – 30MHz	$\pm 4,3 \text{ dB}$	$\pm 6 \text{ dB}$
RF level for a given BER	$\pm 0.8 \text{ dB}$	$\pm 1.5 \text{ dB}$
Supply voltages	$\pm 2,9 \%$	$\pm 3 \%$
Temperature	$\pm 0,95 \text{ }^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 4,6 \%$	$\pm 5 \%$
Time / Duty cycle (power probe)	$\pm 4.4 \%$	$\pm 5 \%$
Time (spectrum analyzer)	$\pm 0.3 \%$	/
Adaptivity	$\pm 4.2 \text{ dB}$	/
Conducted emission (FCC)		
(Artificial Mains Network) 150kHz – 30MHz	$\pm 3.7 \text{ dB}$	/
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	$\pm 4.3 \text{ dB}$	/
30MHz – 1GHz	$\pm 5.9 \text{ dB}$	/

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

6. TEST CONDITIONS AND RESULTS

6.1. Conducted limits

Reference standard:	FCC part 15.207 RSS-210, RSS-Gen
Test method:	ANSI C63.10: 2020
General test setup: EUT is set on an insulating support at 40cm from the ground reference plane. All power was connected to the system through Artificial Mains Network (AMN). The AMN is placed at 80cm 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. Additional ground terminals (if any) are connected to earth terminal of the AMN.	

TESTED CABLE	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
120Vac/60Hz power supply	150kHz-30MHz	15.207	EMI4555	PASS

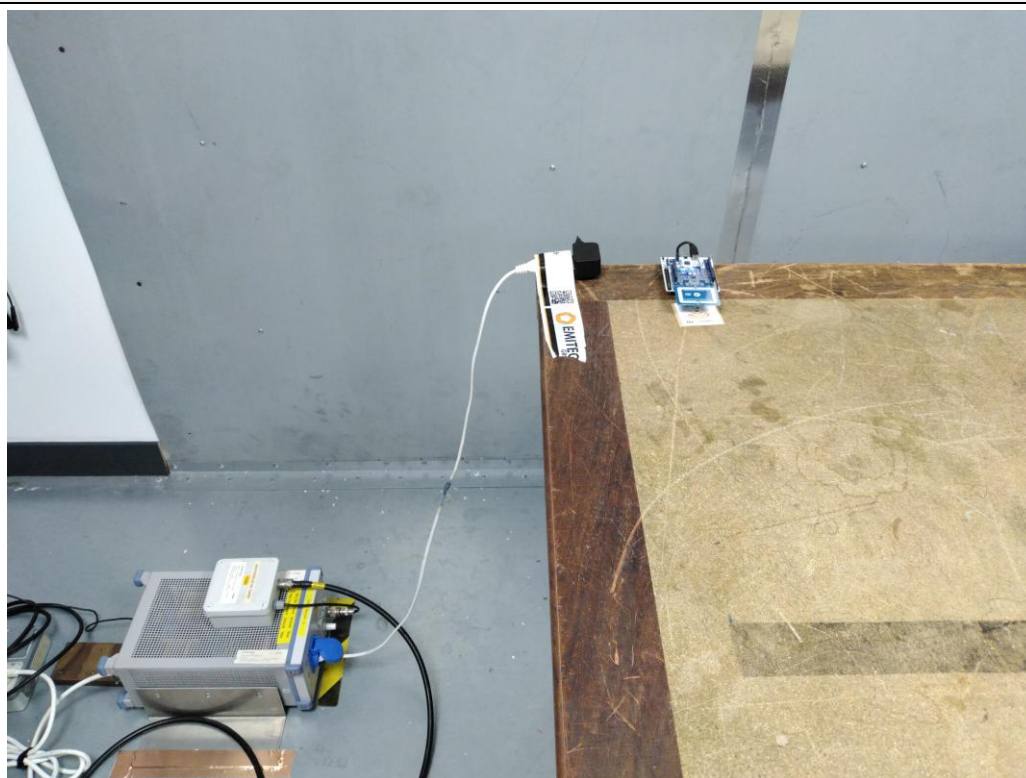
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	See Graph(s)
Relative Humidity	10 to 90 %	See Graph(s)
Atmospheric pressure	N/A	See Graph(s)
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
AC power source	KIKUSUI	PCR 4000L	15322	27/05/2025	27/07/2027
Cable	EMITECH	Current absorber sheath	18366	03/09/2025	03/11/2027
Cable	C&C	N-3m	14335	09/06/2025	09/08/2027
Ground plane	EMITECH	Test area	11569		
LISN	Rohde & Schwarz	ENV216	17925	06/12/2023	06/02/2026
PE choke	EMITECH	CISPR 16-2-1	10071		
Receiver	Rohde & Schwarz	ESI	9704	31/03/2025	31/05/2026
Software	Nexio	BAT EMC	0000		
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermo-Hygromètre	Testo	608-H1	19386	13/03/2024	13/05/2026

BAT-EMC software version: V3.18.0.26

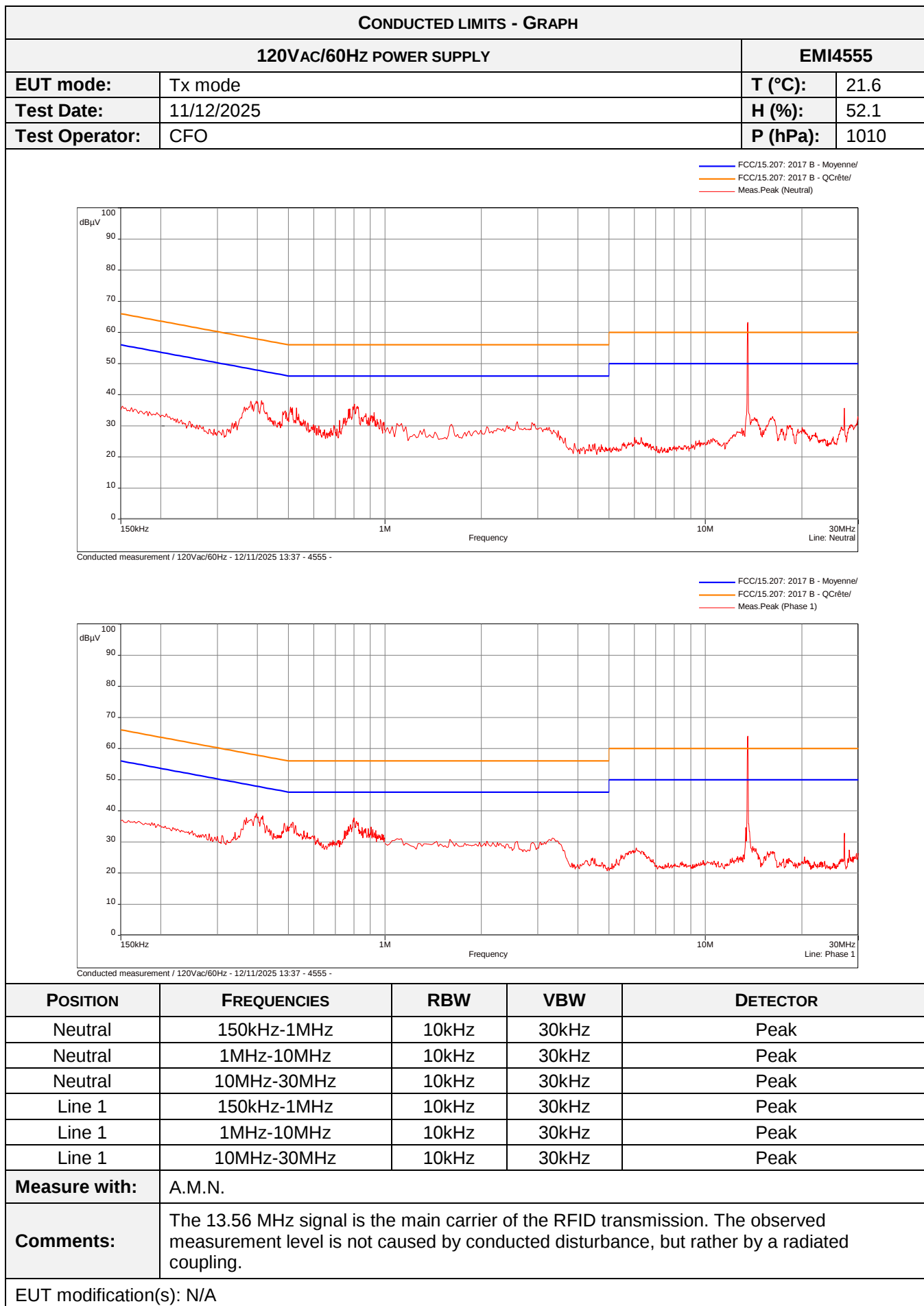
Blank cells = Permanent validity

TEST SETUP PHOTO(S) – 120VAC/60HZ POWER SUPPLY



CONDUCTED EMISSION (MEASUREMENT) - TABULATED RESULTS

120VAC/60HZ POWER SUPPLY					EMI4555	
Terminal	Test Frequency (MHz)	Detector (Pk/QP/Av)	Gain/Loss Factor (dB)	Level dB (μV)	Limit dB (μV)	Margin (dB)
Neutre	0.412	Pk	9.61	38.09	47.60	-9.51
Neutre	0.804	Pk	9.63	36.98	46.00	-9.02
Neutre	1.090	Pk	9.64	30.73	46.00	-15.27
Neutre	2.587	Pk	9.69	31.32	46.00	-14.68
Neutre	16.213	Pk	9.95	33.00	50.00	-17.00
Neutre	27.154	Pk	10.04	35.69	50.00	-14.31
Line	0.152	Pk	9.60	36.96	55.91	-18.94
Line	0.397	Pk	9.61	39.20	47.92	-8.72
Line	0.801	Pk	9.63	37.76	46.00	-8.24
Line	1.090	Pk	9.64	31.05	46.00	-14.95
Line	3.345	Pk	9.71	31.22	46.00	-14.78
Line	27.154	Pk	10.04	32.78	50.00	-17.22
Supplementary information: N/A						



6.2. Transmitter radiated spurious emissions at frequencies <30MHz

Reference standard:	FCC part 15.209 RSS 210, RSS Gen
Test method:	ANSI C63.10: 2020
Test description: : Spurious domain emission limits are limits on emissions at frequencies other than those of the carrier and sidebands associated with normal test modulation. EUT is set on an insulating support at 80cm above the ground reference plane. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter in a anechoic chamber. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°). Final measurements (quasi-peak) were then performed in a 10-meter Open Area Test Site that complies to CISPR 16 in the same measurement conditions. All frequencies were investigated, where applicable.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement / 90°	9kHz-30MHz	§15.209	EMI4596	PASS
Radiated measurement / 45°	9kHz-30MHz	§15.209	EMI4630	PASS
Radiated measurement / 0°	9kHz-30MHz	§15.209	EMI4631	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: Limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.		

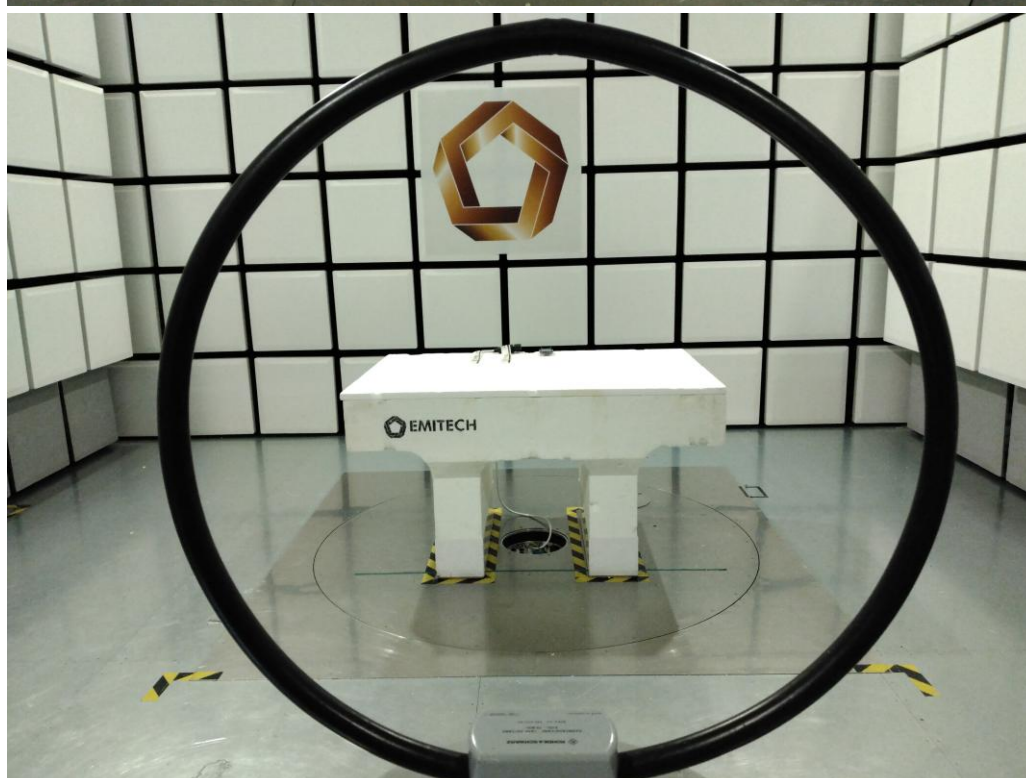
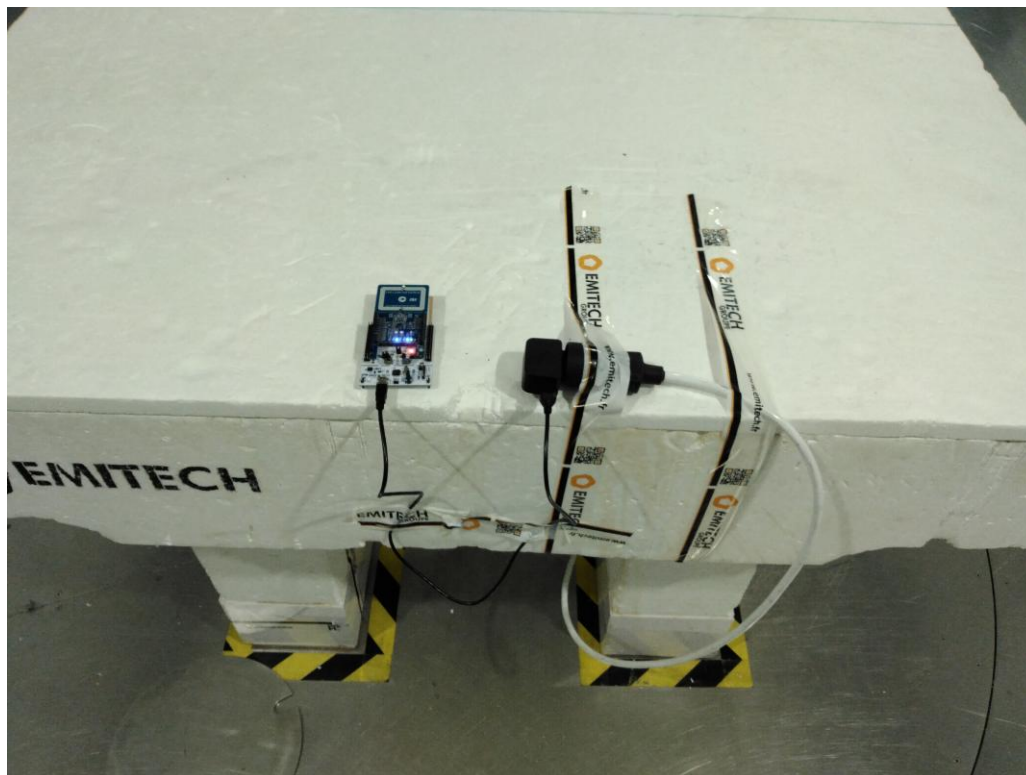
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	25/04/2025	25/06/2027
Cable	SUCOFLEX	N-3m	14379	01/09/2025	01/11/2027
Cable	SUCOFLEX	N-6,5m	14380	17/08/2023	17/10/2026
Cable	Techniwave	N-8m	18349 ⁽¹⁾	17/08/2023	17/04/2026
Receiver	Rohde & Schwarz	ESW8	19536	13/08/2025	13/10/2027
Shielded enclosure	COMTEST	SAC 3m	14494	08/08/2023	08/10/2026
Software	Nexio	BAT EMC	0000		
Thermohygrometer	Testo	608-H2	12269	18/02/2025	18/04/2027
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

⁽¹⁾ Under derogation "EQSDER000S4100156"

TEST SETUP PHOTO(S) - RADIATED MEASUREMENT <30MHZ



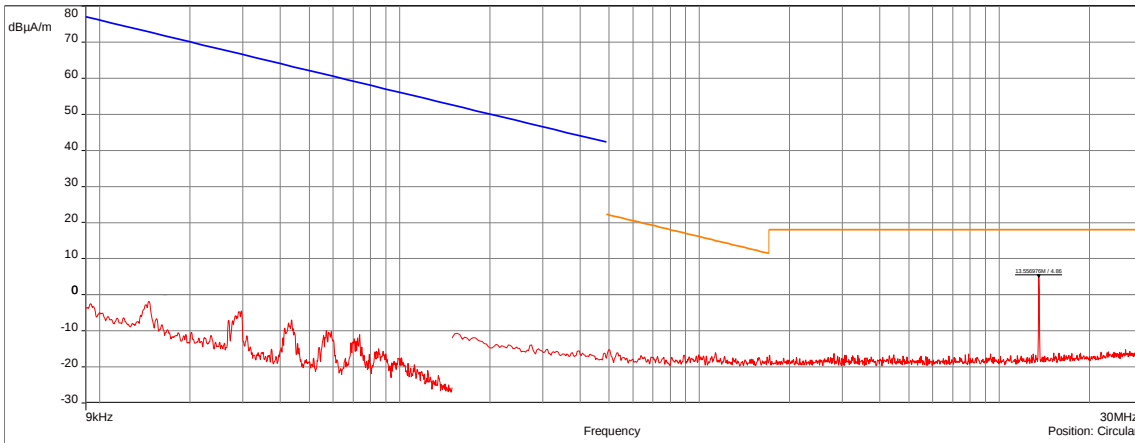
TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS					
RADIATED MEASUREMENT / 90°				EMI4596	
Frequency (MHz)	Level Peak (dBμA/m)	Level Avg (dBμA/m)	Level Qpeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected, no measurement on OATS is done.					

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS					
RADIATED MEASUREMENT / 45°				EMI4630	
Frequency (MHz)	Level Peak (dBμA/m)	Level Avg (dBμA/m)	Level Qpeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected, no measurement on OATS is done.					

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS					
RADIATED MEASUREMENT / 0°				EMI4631	
Frequency (MHz)	Level Peak (dBμA/m)	Level Avg (dBμA/m)	Level Qpeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information: No spurious emissions were detected, no measurement on OATS is done.					

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH					
RADIATED MEASUREMENT / 90°				EMI4596	
EUT mode:	Tx mode			T (°C):	23.2
Test Date:	09/12/2025			H (%):	38.2
Test Operator:	CFO			P (hPa):	1006
FCC/FCC Part 15 §209 Tx - Moyenne/3.0m/ FCC/FCC Part 15 §209 Tx - QCrête/3.0m/ Meas.Peak dBµA/m 80 70 60 50 40 30 20 10 0 -10 -20 -30 9kHz <					

Page 20 on 36

TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHZ - GRAPH					
RADIATED MEASUREMENT / 0°				EMI4631	
EUT mode:	Tx mode			T (°C):	23.2
Test Date:	09/12/2025 14:23:26			H (%):	38.2
Test Operator:	CFO			P (hPa):	1006
FCC/FCC Part 15 §209 Tx - Moyenne/3.0m/ FCC/FCC Part 15 §209 Tx - QCrête/3.0m/ Meas.Peak 					
POSITION	FREQUENCIES	RBW	VBW	DETECTOR	
Circular	9kHz-150kHz	300Hz	1kHz	Peak	
Circular	150kHz-30MHz	10kHz	30kHz	Peak	
Configuration:	N/A				
Comments:	13.56MHz is the main carrier signal frequency. Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor.				
EUT modification(s): N/A					

6.3. Transmitter radiated spurious emissions at frequencies >30MHz

Reference standard:	FCC part 15.109, 15.209 RSS 210, RSS Gen
Test method:	ANSI C63.10: 2020
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. 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 equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
Radiated measurement > 30MHz	30MHz-1GHz	§15.209	EMI4598	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		

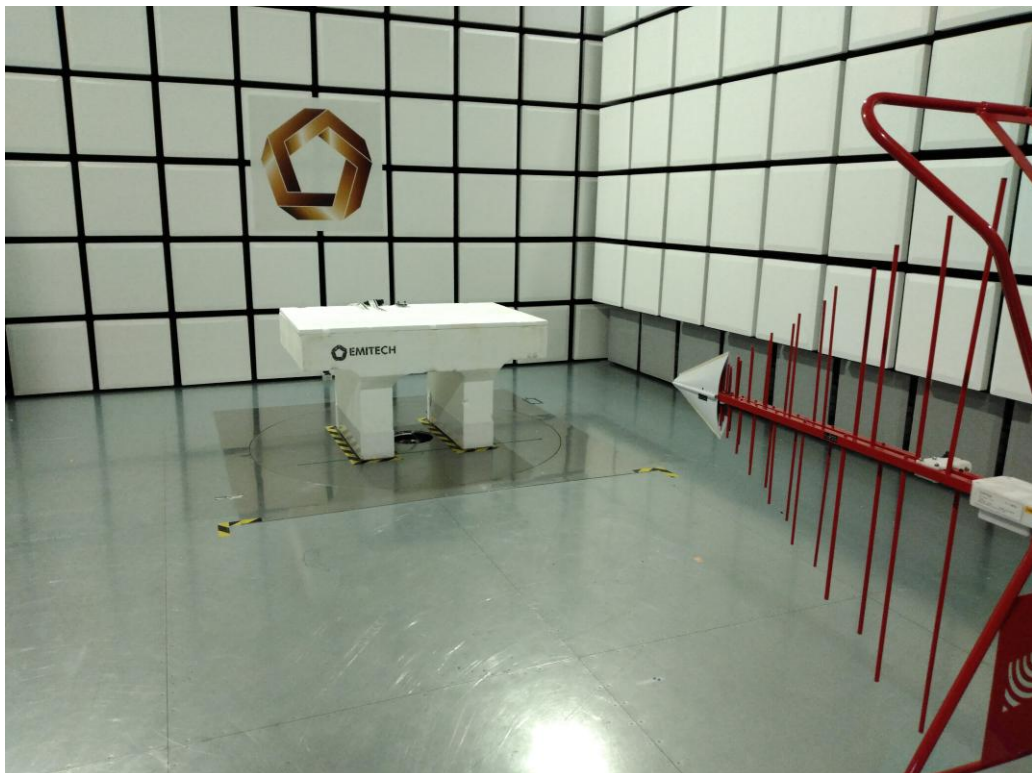
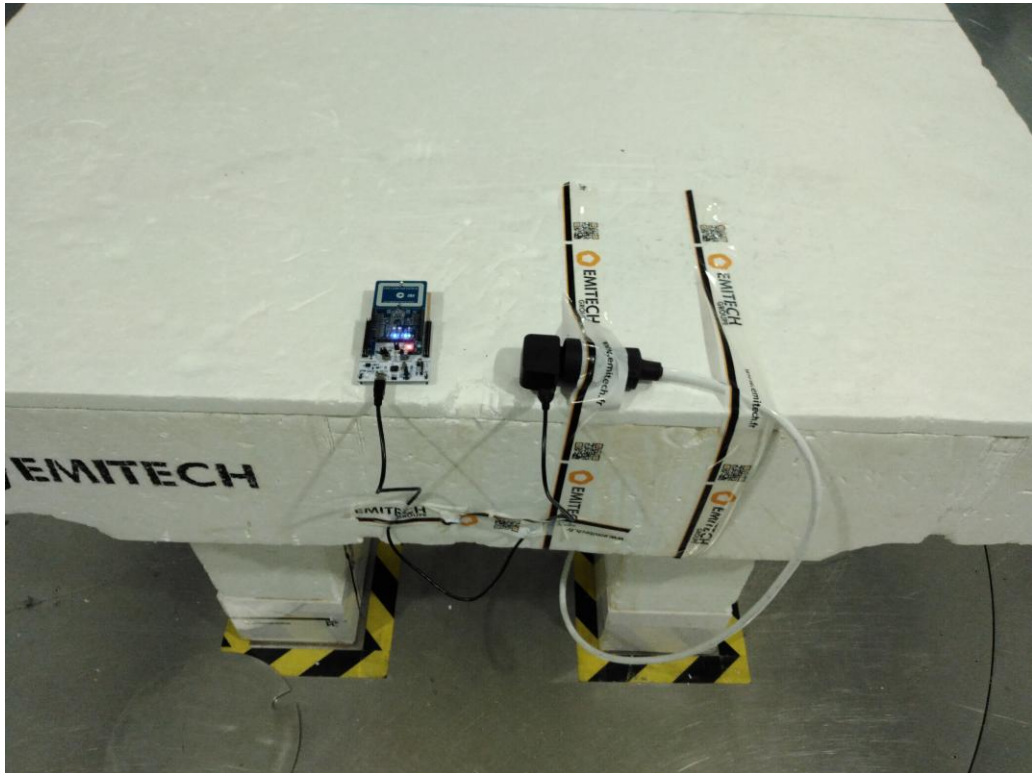
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	ETS lindgren	3142E	14523	14/08/2025	14/10/2028
Cable	SUCOFLEX	N-3m	14379	01/09/2025	01/11/2027
Cable	SUCOFLEX	N-6,5m	14380	17/08/2023	17/10/2026
Cable	Techniwave	N-8m	18349 ⁽¹⁾	17/08/2023	17/04/2026
Receiver	Rohde & Schwarz	ESW8	19536	13/08/2025	13/10/2027
Shielded enclosure	COMTEST	SAC 3m	14494	08/08/2023	08/10/2026
Software	Nexio	BAT EMC	0000		
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermohygrometer	Testo	608-H2	12269	18/02/2025	18/04/2027

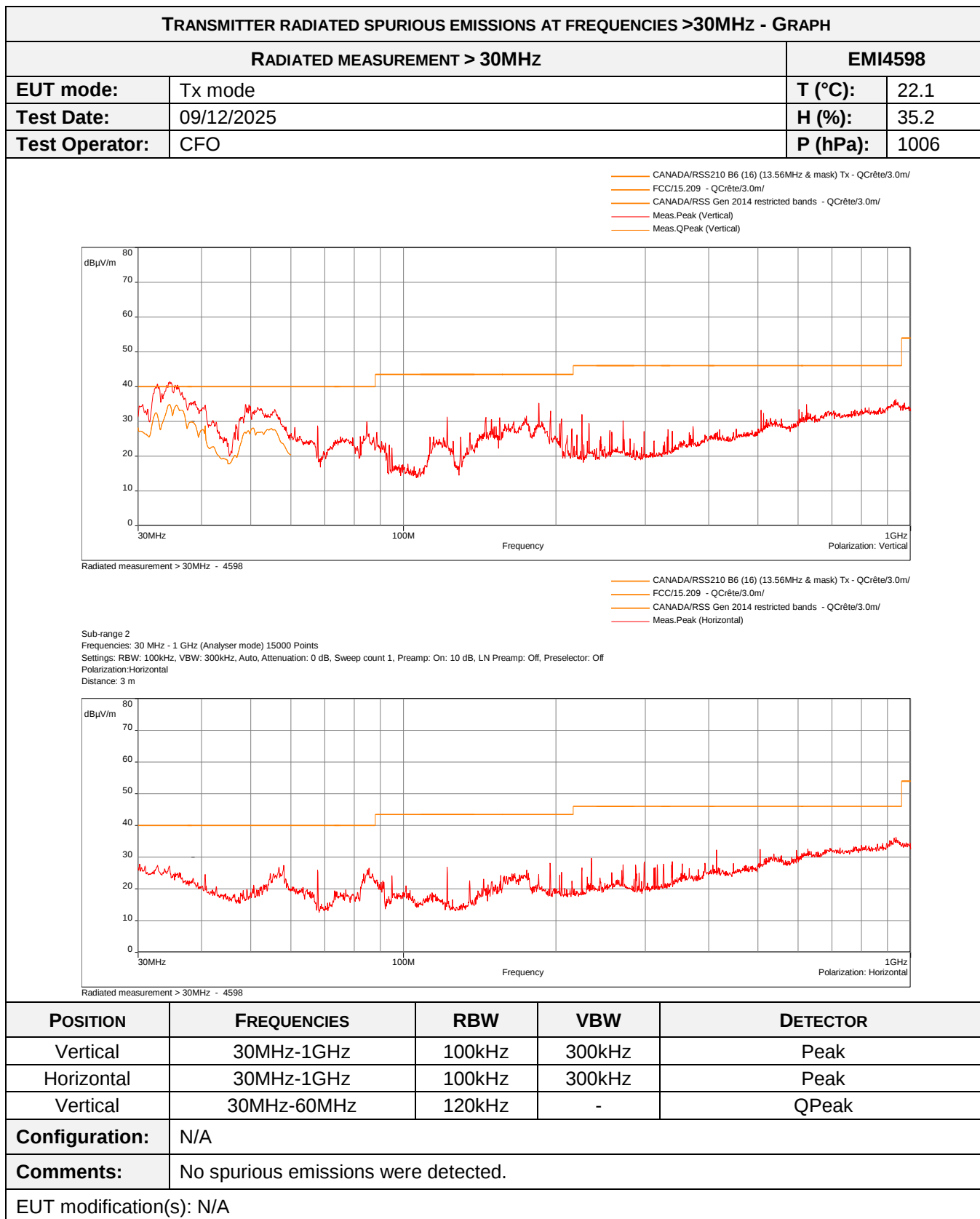
BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

⁽¹⁾ Under derogation "EQSDER000S4100156"

TEST SETUP PHOTO(S) - RADIATED MEASUREMENT > 30MHZ





TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS								
RADIATED MEASUREMENT > 30MHz							EMI4598	
Frequency (MHz)	Detector (Pk/QP/Av)	Ant. position	Azimuth (°)	Ant. Height (cm)	Cor. Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
34.59	QP	Vertical	0	100	22.46	34.91	40.00	-5.09
35.70	QP	Vertical	0	100	21.85	34.67	40.00	-5.33
50.55	QP	Vertical	0	100	14.68	28.09	40.00	-11.91
84.71	Pk	Vertical	N/A	N/A	14.02	29.94	40.00	-10.06
184.89	Pk	Vertical	N/A	N/A	18.19	35.23	43.50	-8.27
935.72	Pk	Vertical	N/A	N/A	36.06	36.37	46.00	-9.63
30.19	Pk	Horizontal	N/A	N/A	24.96	27.80	40.00	-12.20
58.07	Pk	Horizontal	N/A	N/A	15.70	27.47	40.00	-12.53
122.03	Pk	Horizontal	N/A	N/A	14.92	26.86	43.50	-16.64
194.59	Pk	Horizontal	N/A	N/A	18.60	28.08	43.50	-15.42
505.14	Pk	Horizontal	N/A	N/A	28.37	32.48	46.00	-13.52
935.72	Pk	Horizontal	N/A	N/A	36.06	36.36	46.00	-9.64
Supplementary information: When margin between peak measurements and QPeak limit is > 6dB, no QPeak measurements were performed.								

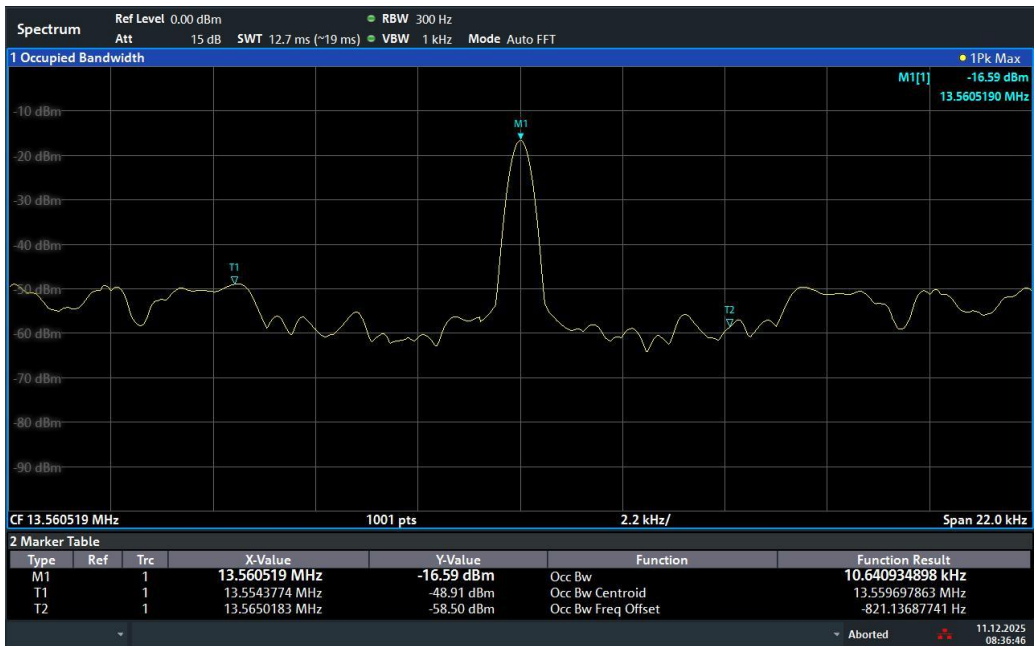
6.4. Occupied Bandwidth

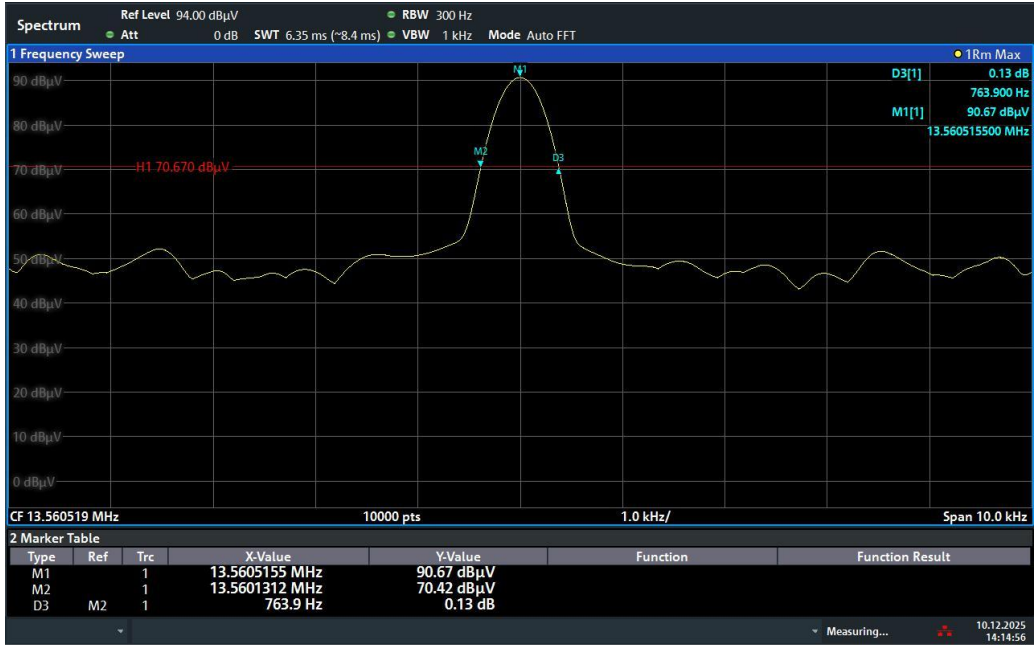
Reference standard:	FCC part 15.225 RSS 210
Test method:	ANSI C63.10: 2020
General test setup: The occupied bandwidth (OBW) is the Frequency Range in which 99 % of the total mean power of a given emission falls. The residual part of the total power being denoted as β, which, in cases of symmetrical spectra, splits up into $\beta/2$ on each side of the spectrum. Unless otherwise specified, $\beta/2$ is taken as 0,5 %. The maximum occupied bandwidth includes all associated side bands above the appropriate emissions level and the frequency error or drift under extreme test conditions. EUT is connected to the measuring receiver via 50Ω attenuator(s).	

TESTED CABLE	FREQUENCY	SEVERITY	RESULT TAB.	VERDICT
OBW / 25°C / 5Vdc	13.56MHz	<14kHz	4545	PASS
20dB bandwidth / 25°C / 5Vdc	13.56MHz	<14kHz	4643	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	23.1 °C
Relative Humidity	20 to 75 %	53.2 %
Atmospheric pressure	N/A	1010 hPa
Test method deviation: N/A		
Supplementary information:		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	EMITECH	3.5 cm	4653		
Attenuator	Radiall	R412710124	4390	23/10/2025	23/12/2028
Cable	MegaPhase	TM18-N1N1-118	12842	15/05/2025	15/07/2027
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Spectrum analyzer	Rohde & Schwarz	FPL1007	17908	04/04/2025	04/06/2026
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermo-Hygromètre	Testo	608-H1	19386	08/03/2024	08/05/2026
Thermometer contactless	GHM Greisinger	GMH 3710	12968	26/05/2025	26/07/2027

OCCUPIED BANDWIDTH - GRAPH	
OBW / 25°C / 5Vdc	
EMI4545	
EUT mode:	TX mode
Test Date:	10/12/2025
Test Operator:	CFO
 08:36:46 11.12.2025	
Result	EUT has an OBW of 10.640kHz
EUT modification(s): N/A	

OCCUPIED BANDWIDTH - GRAPH	
20dB Bandwidth	
EUT mode:	TX mode
Test Date:	10/12/2025
Test Operator:	CFO
 14:14:57 10.12.2025	
Result	EUT has an 20dB bandwidth of 763.9Hz
EUT modification(s): N/A	

6.5. Field strength in the band 13.553MHz to 13.567MHz

Reference standard:	FCC part 15.225 a) RSS 210
Test method:	ANSI C63.10: 2020
Test description: EUT is set on an insulating support at 80cm. Measurements were then performed in a 10-meter Open Area Test Site that complies to CISPR 16. The EUT was rotated 360° in order to maximize radiated levels. Test antenna was oriented in 3 axes (0°, 45° and 90°). For portable equipments a research of maximum level is done on the 3 axes. Only the highest levels are recorded.	

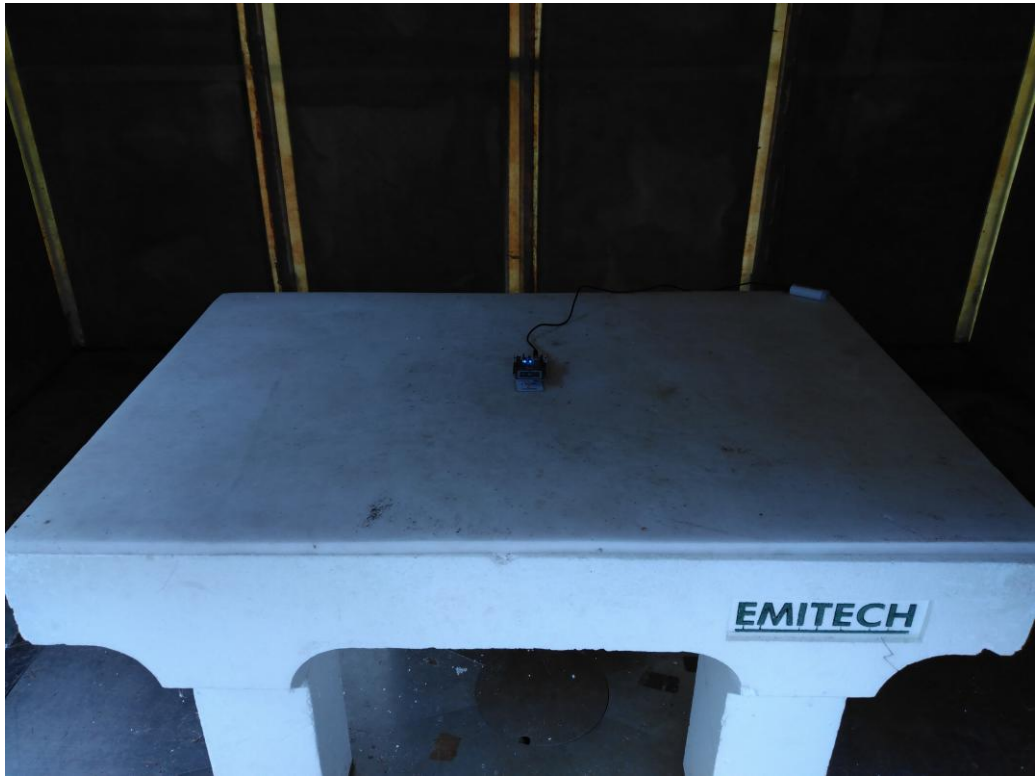
TEST CASE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
13.56MHz (OATS) / 25°C / 5Vdc	Tx mode	15848µV/m at 30m	EMI4546	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	23.1°C
Relative Humidity	20 to 75 %	53.2%
Atmospheric pressure	N/A	1010hPa
Test method deviation: N/A		
Supplementary information: N/A		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	EMITECH	3.5 cm	4653		
Antenna	Rohde & Schwarz	HFH2-Z2	5825	25/04/2025	25/06/2027
Attenuator	Radiall	R412710124	4390	23/10/2025	23/12/2028
Cable	Huber + Suhner	N-20m	8385	13/05/2025	13/07/2027
Cable	MegaPhase	TM18-N1N1-118	12842	15/05/2025	15/07/2027
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Open area test site	EMITECH	Salinelles	3482	13/05/2025	13/07/2028
Spectrum analyzer	Rohde & Schwarz	FPL1007	17908	04/04/2025	04/06/2026
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermo-Hygromètre	Testo	608-H1	19386	08/03/2024	08/05/2026
Thermometer contactless	GHM Greisinger	GMH 3710	12968	26/05/2025	26/07/2027

Blank cells = Permanent validity

TEST SETUP PHOTO(S) - 13.56MHz (OATS) / 25°C / 5Vdc



H-FIELD (RADIATED) - TABULATED RESULTS				
TEST CONDITION	FREQUENCY	LEVEL	LIMIT AT 10M (dBμA/m)	LIMIT AT 30M (μV/m)
13.56MHz (OATS) / 25°C / 5Vdc	13.56MHz	-7.97dBμA/m (Azimuth: 90°) (Antenna Pos: 0°)	51.58	15848

Maximun level at 10m is -7.97dBμA/m for a limit at 51.58 dBμA/m.
Using an extrapolation factor of 40dB/dec and a conversion factor of -51.5dB, level at 30m is 24.45dBμV/m for a limit at 84 dBμV/m.

EUT MODIFICATIONS	OPERATOR	TEST DATE	RESULT TAB.
N/A	CFO	10/12/2025	EMI4546

6.6. Field strength outside the band 13.553MHz to 13.567MHz

Reference standard:	FCC part 15.225 b) c) & d) RSS 210.
Test method:	ANSI C63.10: 2020
Test description: EUT is set inside the climatic enclosure. Carrier level are correlated with the maximum carrier level measured in normal conditions.	

TESTED CONFIGURATION	PARAMETER	SEVERITY	RESULT TAB.	VERDICT
RFID Mask	Below 13.110MHz	§15.209	See graphic §6.1 of this report	PASS
	13.110-13.410MHz	106µV/m at 30m	EMI4597	PASS
	13.410-13.553MHz	334µV/m at 30m	EMI4597	PASS
	13.553-13.567MHz	15,848µV/m at 30m	See graphic §6.4 of this report	PASS
	13.567-13.710MHz	334µV/m at 30m	EMI4597	PASS
	13.710-14.010MHz	106µV/m at 30m	EMI4597	PASS
	Above 14.010MHz	§15.209	See graphic §6.2 of this report	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		

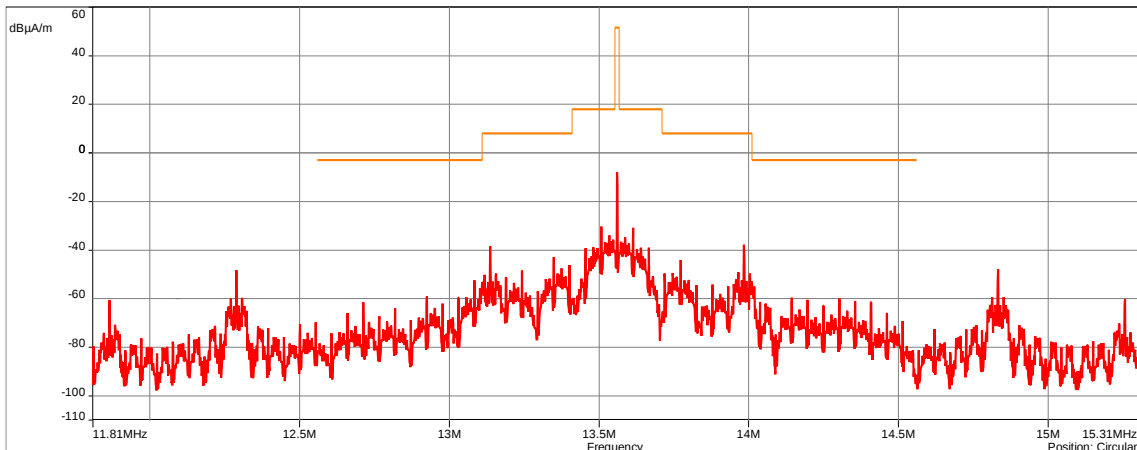
TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Software	Nexio	BAT EMC	0000		
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261	19/09/2025	19/11/2026
Multimeter	FLUKE	8808A	10382	08/09/2025	08/11/2026
Receiver	Rohde & Schwarz	FPL1007	17908	04/04/2025	04/06/2026
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermo-Hygromètre	Testo	608-H1	19386	08/03/2024	08/05/2026
Thermometer contactless	GHM Greisinger	GMH 3710	12968	26/05/2025	26/07/2027

BAT-EMC software version: V3.18.0.26

Blank cells = Permanent validity

TEST SETUP PHOTO(S) – CLIMATIC ENCLOSURE



FIELD STRENGTH OUTSIDE THE BAND 13.553MHZ TO 13.567MHZ - GRAPH					
RFID MASK				EMI4597	
EUT mode:	Tx mode			T (°C):	23.1
Test Date:	10/12/2025			H (%):	53.2
Test Operator:	CFO			P (hPa):	1010
Sub-range 1 Frequencies: 11.81 MHz - 15.31 MHz (Analyser mode) 10000 Points Settings: RBW: 300Hz, VBW: 1kHz, Auto, Attenuation: Auto, Sweep count 1, Preamp: Off, LN Preamp: Off, Preselector: Off Position: Circular Distance: 10 m FCC/FCC Part 15 §225 Tx - QCrête/10.0m/ Meas.Peak  RFID Mask / 25°C / 5Vdc - 4597					
POSITION	FREQUENCIES		RBW	VBW	DETECTOR
Circular	11.81MHz-15.31MHz		300Hz	1kHz	Peak
Configuration:	N/A				
Comments:	Limit indicated on these plots are calculated with 40 dB/decade extrapolation factor and 51.5dB conversion factor. No spurious were detected.				
EUT modification(s): N/A					

6.7. Frequency Stability

Reference standard:	FCC 47 CRF Part 15.225 e) RSS-210
Test method:	ANSI C63.10: 2020
General test setup: The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. EUT is set inside the climatic enclosure. Carrier level are correlated with the maximum carrier level measured in normal conditions.	

TESTED CABLE	EUT MODE	SEVERITY	RESULT TAB.	VERDICT
13.56MHz	Modulated Tx mode	+/-0.01%	4544	PASS

LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	23.1 °C
Relative Humidity	20 to 75 %	53.2 %
Atmospheric pressure	N/A	1010 hPa
Test method deviation: N/A		
Supplementary information:		

TEST EQUIPMENT USED					
CATEGORY	BRAND	TYPE	IDENTIFIER	CAL. DATE	CAL. DUE
Antenna	EMITECH	3.5 cm	4653		
Attenuator	Radiall	R412710124	4390	23/10/2025	23/12/2028
Cable	MegaPhase	TM18-N1N1-118	12842	15/05/2025	15/07/2027
Climatic enclosure	CLIMATS	EXCAL 7714-HA	14261		
Spectrum analyzer	Rohde & Schwarz	FPL1007	17908	04/04/2025	04/06/2026
Thermo-Hygro-Barometer	LUFFT	OPUS 20	17844	20/05/2025	20/07/2026
Thermo-Hygromètre	Testo	608-H1	19386	08/03/2024	08/05/2026
Thermometer contactless	GHM Greisinger	GMH 3710	12968	26/05/2025	26/07/2027

TEST SETUP PHOTO(S) – CLIMATIC ENCLOSURE



FREQUENCY STABILITY – TABULATED RESULTS

13.56MHz				EMI4544	
Test Case (Temperature variation)	TEMPERATURE (°C)	POWER SUPPLY (VDC)	FREQUENCY (MHz)	FREQUENCY ERROR (%)	LIMIT (%)
Normal conditions	+25	5	13.5605155	0	0.01
Extremes tests conditions	0	5	13.56053825	0.0002	0.01
	+60	5	13.56054947	0.0003	0.01

EUT MODIFICATIONS	OPERATOR	TEST DATE
N/A	CFO	10/12/2025

End of test report