Test report issued under the responsibility of:
EMITECH ILE DE FRANCE Laboratory
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RADIO TEST REPORT

FCC 47 CFR PART 15 : 2023 (§15.247)
RSS-247_Issue 2 : 2017
RSS-Gen_Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021

Company .....:	**DAVEY BICKFORD**
Address.....:	Le Moulin Gaspard Chemin de la Pyrotechnie 89550 HERY France

Test item description. .....:	***EDGE DBD***
Trade Mark. .....:	*DaveyTronic Edge*
Manufacturer. .....:	*Davey Bickford SAS*
Model/Type reference.....:	*Not communicated*
Ratings.....:	*Not communicated*

Testing Laboratory .....:	**EMITECH ILE DE France Laboratory**
Address.....:	30-32, avenue des 3 Peuples 78180 MONTIGNY LE BRETONNEUX FRANCE

Report Reference No.....:	**RRA-EMIESS23E175DAV-02A v0**
Test procedure. .....:	FCC and CANADA marking
Diffusion.....:	Mr LO
Applicant's name. .....:	DAVEY BICKFORD
Date of issue.....:	27/11/2023
Total number of pages.....:	65
Revision. .....:	v0
Modified pages. .....:	Creation
Compiled by.....:	F. LHEUREUX (Tests technician)
Technical verification. .....:	
Quality approval.....:	

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REVISION HISTORY:

Revision	Date	Modified pages	Modifications
v0	27/11/2023	/	Creation

1. GENERAL INFORMATIONS

This document submits the results of Radio tests performed on the equipment (denominated hereafter E.U.T.: equipment under test) according to documents listed in §2 of this test report.

TESTING PROCEDURE AND TESTING LOCATION:

Testing Laboratory	**EMITECH ILE DE France Laboratory**
Address	30-32, avenue des 3 Peuples 78180 MONTIGNY LE BRETONNEUX FRANCE
Test procedure	FCC and CANADA marking
Tested by	F. LHEUREUX / L. CHEVALIER
Test supervisor	B. PELLERIN
Date of receipt of test item	02/11/2023
Dates of performance of tests	From the 02/11/2023 to 17/11/2023

APPLICANT'S GENERAL INFORMATIONS:

Company name	***DAVEY BICKFORD***
Company address	*Le Moulin Gaspard* *Chemin de la Pyrotechnie* *89550 HERY France*
Person present during the tests	Mr LELANDAIS
Responsible	Mr LO

GENERAL REMARKS:

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.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(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)
Test object was not subjected to all tests	I (Inconclusive)

DEFINITIONS AND ABBREVIATIONS:

E.U.T.	Equipement under test	AE	Auxiliary / Associated equipment
RBW	Resolution bandwidth	VBW	Video bandwidth
OATS	Open area test site	FAR	Full anechoic room
RF	Radio frequency	NTR	Nothing to report

2. REFERENCE DOCUMENTS

NORMATIVE REFERENCES:
The following referenced documents are necessary for the application of the present test report. ***FCC 47 CFR Part 15 : 2023*** Code of federal regulations Title 47- Telecommunication Chapter 1- Federal Communication Commission Part 15- Radio frequency devices Subpart B- Unintentional Radiators Limits and methods of measurement of radio disturbance Characteristic of information technology equipment. ***RSS-247 Issue 2 : 2017*** Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices ***RSS-Gen_Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021*** General Requirements and Information for the Certification of Radio Apparatus. ***ANSI C63.4 : 2014*** Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz. ***KDB 558074 D01 DTS Meas Guidance V05 r02*** Guidance for performing compliance measurement on Digital Transmission Systems (DTS) operating under § 15.247. ***ANSI C63.10 : 2013*** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
INFORMATIVE REFERENCE:
/

3. EQUIPMENT TECHNICAL DESCRIPTION

3.1. Test Conditions

Test item description.	:	*EDGE DBD*
Model/Type reference.	:	*Not communicated*
Trade Mark.	:	*DaveyTronic Edge*
Serial number (S/N).	:	*1685*
Part number (P/N).	:	*Not communicated*
Software version.	:	*V.0.2.11*
Firmware version.	:	*V.0.2.11*
Fcc ID	:	*2AUQC-EDGEDBD*
N°IC	:	*25586-EDGEDBD*
Type of sample.	:	*Prototype*
Functions.	:	*It is the central radio coordinator between the Edge modules deployed in the field and PU end Blasting machine. It contains the blast plan for the firing process.*
Manufacturer name.	:	*Davey Bickford SAS*
Address.	:	*Chemin de la Pyrotechnie* *Le Moulin Gaspard* *89550 HERY France*

General product information:

N/A

3.2. EUT Overview


Davey Bickford
DaveyTronic Edge
Enaex
EVT3 MODEM 915

3.3. EUT Marking Plate


MEAN WELL
Order No.:
GST90A12-P1M
AC/DC SWITCHING ADAPTOR
MODEL NO.(型号)(型號)(모델명): GST90A12
INPUT(輸入)(输入)(입력): 100-240VAC, 50/60Hz, 1.3A
OUTPUT(输出)(輸出)(출력): 12V⎓6.67A, 80W MAX.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
CAN ICES-3(B)/NMB-3(B)
CAUTION (警告)
DO NOT OPEN RISK OF ELECTRIC SHOCK
Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden
ATTENTION:
RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
MEAN WELL ENTERPRISES CO., LTD.
No. 28, Wuquan 3rd Rd., Wugu Dist.,
New Taipei City 24891, Taiwan
Manual:www.meanwell.com/manual.html
S/N:

3.4. Electronic board

No photograph

3.5. EUT Mechanical and Electrical Design

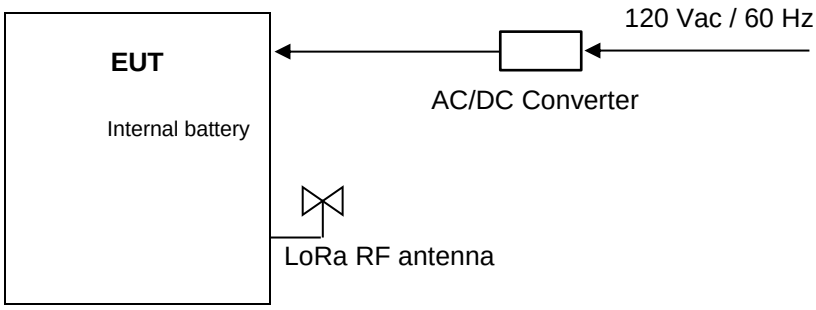
Power supply. ..... : *12 Vdc*
Power supply range. ..... : *Not communicated*
Power type. ..... : *Single phase (for power supply)*
DC (for Edge Blasting Machine)
Power (W). ..... : *80.4*
Nominal current (A). ..... : *6.7*
Dimensions (L x W x H) (mm). ..... : *185 x 185 x 55*
Weight (kg). ..... : *1.9*
Temperature range (°C). ..... : *-30 to +60*
Ground bounding strap. ..... : *No*

Comments: -

3.6. Auxiliary equipment

No auxiliary equipment

3.7. EUT Input/Output ports



PORT	NAME	TYPE	LENGHT	CABLE TYPE	COMMENTS
0	Main frame	N/E	-	-	-
1	LoRa RF antenna	RF	-	-	External antenna
2	Power supply 120 Vac / 60 Hz	AC/DC	<3m	Unshielded	①

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

① : When loading the product, the radio part is non-functional.

3.8. EUT Radio Specifications

a) General Informations

According to manufacturer's declarations :

EUT type..... : *Transceiver*
Technology..... : *SRD (LoRa technology)*
Environmental profile..... : *Heavy industry*
Temperature range..... : *Low extremes conditions: -30°C*
High extremes conditions: +60°C
Antenna type ..... : *Dedicated*
Antenna Gain..... : *+5 dBi*

Comments:

- The "LoRa" radio module is used as a hybrid system.
- The radio part is non-functional during the tests conducted emission.

b) Transmitter Paramitters (Tx)

Frequency bands..... : *915 - 928 MHz*
RF Power..... : *+9 dBm*
Number of channels / Separation..... : *8 / 125 kHz*
Modulation type ..... : *LoRa*
Duty cycle ..... : *Not communicated*
Frequency plan..... : *915.062 MHz*
915.437 MHz
915.812 MHz
916.187 MHz
918.062 MHz
918.437 MHz
918.812 MHz
919.187 MHz
Tested frequency..... : *Lowest channel : 915.062 MHz*
Middle channel : 918.062 MHz
Highest channel : 919.187 MHz

c) Receiver Parameters (Rx)

Frequency bands..... : *915 - 928 MHz*
Category/Class ..... : *Not communicated*
Bandwidth..... : *125 kHz*

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			
- Power supply 120 Vac / 60 Hz	**15.107**	**PASS**	
Radiated emission limits	**15.109**	**PASS**	

Subpart C of the standard FCC part 15 – Intentional radiators

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
Restriction bands of operation	**15.205**	**PASS**	
Measurement of conducted emission on AC mains ports	**15.207**	**N/A**	
Radiated emission limits; general requirements	**15.209**	**PASS**	
Additionalprovision to the general radiated emission limitations	**15.215**	**-**	
-(a) Alternative to general radiated emission limits		**N/A**	
-(b) Unwanted emissions outside of § 15.247 frequency bands	**-**	**N/A**	
-(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	**-**	**PASS**	
- 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)	**-**	**N/A**	
- 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	-	PASS	
- 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

Standard RSS-247 Issue 2 : 2017

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
3. Certification Requirements	-	-	
- 3.1 RSS-gen compliance	-	N/A	
5.2 Digital Modulation Systems	-	-	
- (1) -6 dB bandwidth	-	N/A	
- (2) transmitter power spectral density	-	PASS	
5.4 Transmitter Output Power and e.i.r.p. Requirement	-	-	
- 1) 902-928 MHz frequency hopping systems output power / e.i.r.p.	-	N/A	
- 2) 2400-2483.5 MHz frequency hopping systems output power / e.i.r.p	-	N/A	
- 3) 5725-5850 MHz frequency hopping systems output power / e.i.r.p.	-	N/A	
- 4) Digital modulation systems output power / e.i.r.p.	-	PASS	
- 5) point-to-point systems (2400-2483.5 and 5725-5850 MHz)	-	N/A	
- 6) Multiple directional beams antenna systems (2400-2483.5 MHz)	-	N/A	
5.5 Unwanted emission	-	PASS	

Standard RSS-Gen Issue 5 : 2019

TEST DESIGNATION	TEST PROCEDURE	VERDICT	COMMENTS
6 Technical Requirements	-		
- 6.7 Occupied Bandwidth	-	**PASS**	
- 6.9 CISPR Quasi-peak detector	-	**PASS**	
- 6.12 Transmitter Output Power	-	**PASS**	
- 6.13 Transmitter unwanted emissions	-	**PASS**	
7.2 Measurement Methods and Standard Specifications	-	-	
- 7.2.1 Measurement Bandwidths and Detector Functions	-	**N/A**	
- 7.2.2 Emissions Falling Within Restricted Frequency Bands	-	**N/A**	
- 7.2.3 Devices Employing Pulsed Operation	-	**N/A**	
- 7.2.4 AC Power Line Conducted Emissions Limits	-	**PASS**	
- 7.2.5 Transmitter Spurious Emission Limits	-	**N/A**	
- 7.2.6 Transmitter Frequency Stability	-	**N/A**	
- 7.2.7 Measurement Distance	-	**N/A**	
8.Licence-Exempt radio Apparatus	-	-	
- 8.8 AC Power Line Conducted Emission Limits for licence-Exempt Radio Apparatus	-	**N/A**	

Sample subject to the test **complies** with the requirements of the reference document listed in §2 of this test report and, where applicable, with deviations specified in this document.

To declare, or not, the compliance with the specifications, it was not explicitly taken account of uncertainty associated with the results.

Modifications : No

5. MEASUREMENT UNCERTAINTY

PARAMETER	MAXIMAL EMITECH UNCERTAINTY	MINIMAL STANDARD UNCERTAINTY
Radio frequency	± 1 x 10^{-7}	±1 x 10^{-7}
RF power, conducted		
RF power	± 0.8dB	± 1 dB
RF power (EN 300328 / EN 301893)	± 1.3dB	± 1.5 dB
Power spectral density	± 2.3dB	± 3 dB
Occuped bandwidth		
RF power	± 3.8 %	± 5 %
RF power (EN 300328 / EN 301893)	± 3.8 %	± 5 %
Maximum frequency deviation		
300 Hz < audio frequency < 6 kHz	± 1.2 %	± 5 %
6 kHz < audio frequency < 25 kHz	± 1.2 %	± 3 dB
Adjacent channel power	± 1.6 dB	± 3 dB
Sensibility of receiver (conducted)	± 2.0 dB	± 3 dB
Blocking	± 4.0 dB	± 4 dB
Transitoire		
Amplitude	± 8.5 %	± 20 %
At the frequency	± 166 Hz	± 250 Hz
Conducted emission (spurious)		
f ≤ 1 GHz	± 0.8 dB	± 3 dB
1 GHz - 12.75 GHz	± 1.6 dB	
Radiated emission (PAR / PIRE / RNE)		
f ≤ 62.5 MHz	± 5.1 dB	± 6 dB
62.5 MHz - 1 GHz	± 5.1 dB	± 6 dB
1 GHz - 18 GHz	± 5.2 dB	± 6 dB
18 GHz – 26 GHz	± 5.1 dB	± 6 dB
26 GHz – 40 GHz	± 5.4 dB	± 6 dB
RF power (EN 300328 / EN 301893)	± 5.3 dB	± 6 dB
PIRE and power spectral density with diode	± 5.4 dB	± 6 dB
Radiated emission (magnetic field)		
9kHz – 30MHz	± 3 dB	± 6 dB
RF level for a given BER	± 0.8 dB	± 1.5 dB
Supply voltages	± 3 %	± 3 %
Temperature	± 1 °C	± 1°C
Humidity	± 5 %	± 5 %
Time / Duty cycle	± 4.4 %	± 5 %
Adaptivity	± 2.9 dB	/
Radiated emission (electric field for FCC standard)		
9kHz – 30MHz	± 2.7 dB	/
30MHz – 1GHz	± 5.0 dB	/
1GHz – 18GHz	± 5.6 dB	/
18GHz – 26GHz	± 5.7 dB	/
26GHz – 40GHz	± 5.7 dB	/

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

6. TEST CONDITIONS AND RESULTS

6.1. Measurement of conducted emission on AC mains ports

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-Gen Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021
Test method:	§15.107 of FCC 47 CFR PART 15 : 2023 § 7.2.4 of RSS-Gen Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021
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.	

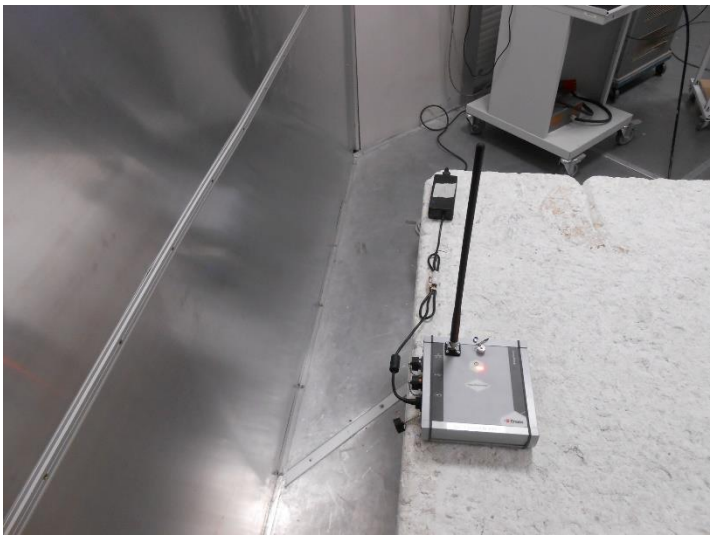
TESTED CABLE	PARAMETER	SEVERITY	VERDICT
Power supply 120 Vac / 60 Hz	150kHz-30MHz	Class A	**PASS**

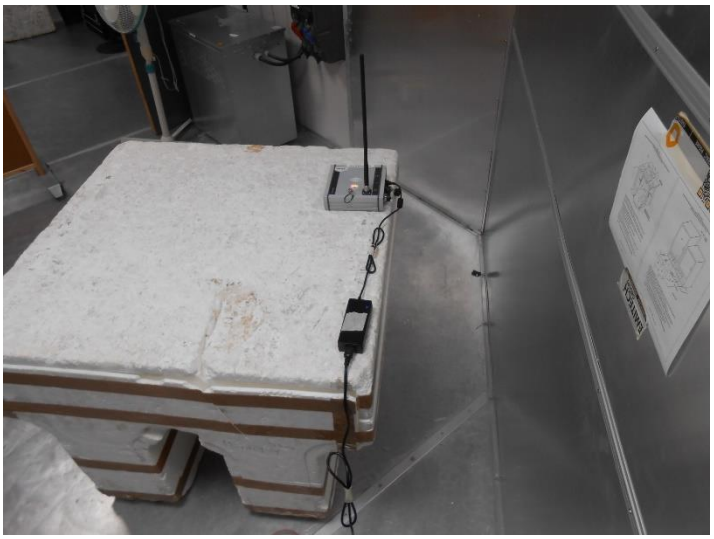
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	15 to 35 °C	22°C
Relative Humidity	30 to 60 %	45 %
Atmospheric pressure	N/A	N/A
Test method deviation: No.		
Supplementary information: The radio part is non-functional during the charging.		

TEST EQUIPMENT USED					
Order Nr	**Category**	**Manufacturer**	**Type**	**Last validity date**	**Next validity date**
16503	Cable	C&C	BNC-0.5m	25/02/2022	25/04/2024
11514	Cable	Micro-Coax	N-2m	20/06/2022	20/08/2024
09492	Cable	Emitech	Absorbeur courant de gaine	09/02/2023	09/04/2025
14565	LISN	Rohde & Schwarz	ENV216	01/06/2023	01/08/2025
10067	PE coil	Emitech	CISPR 16-2-1 : 2008		
02102	Power supply	Secas	CF1000 50/60		
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
00000	Software	Nexio	BAT EMC		
14875	Test enclosure	Emitech	HC1		

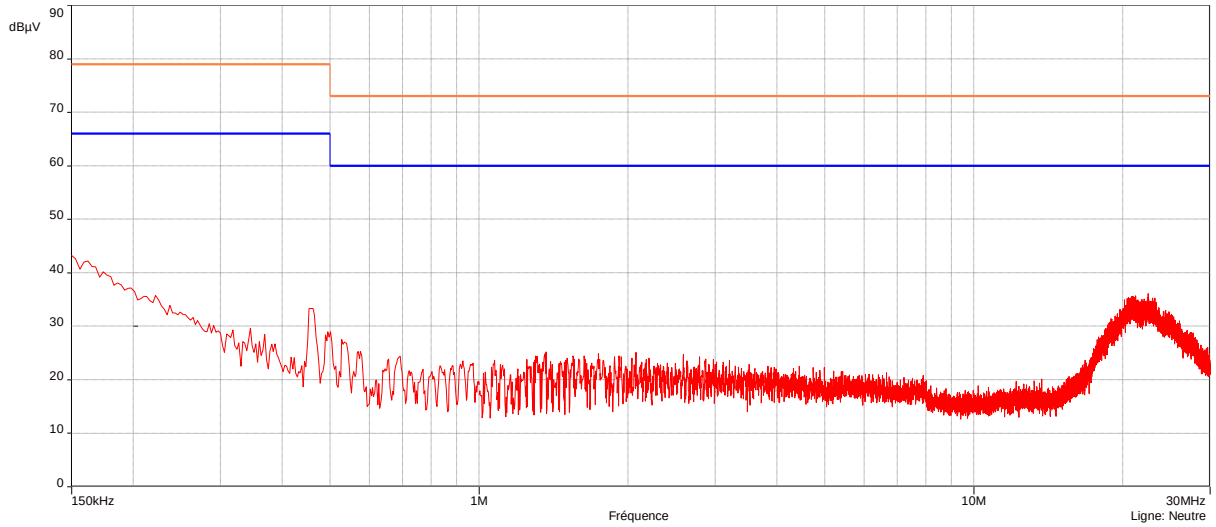
BAT-EMC software version: V3.18.0.26
Blank cells = Permanent validity

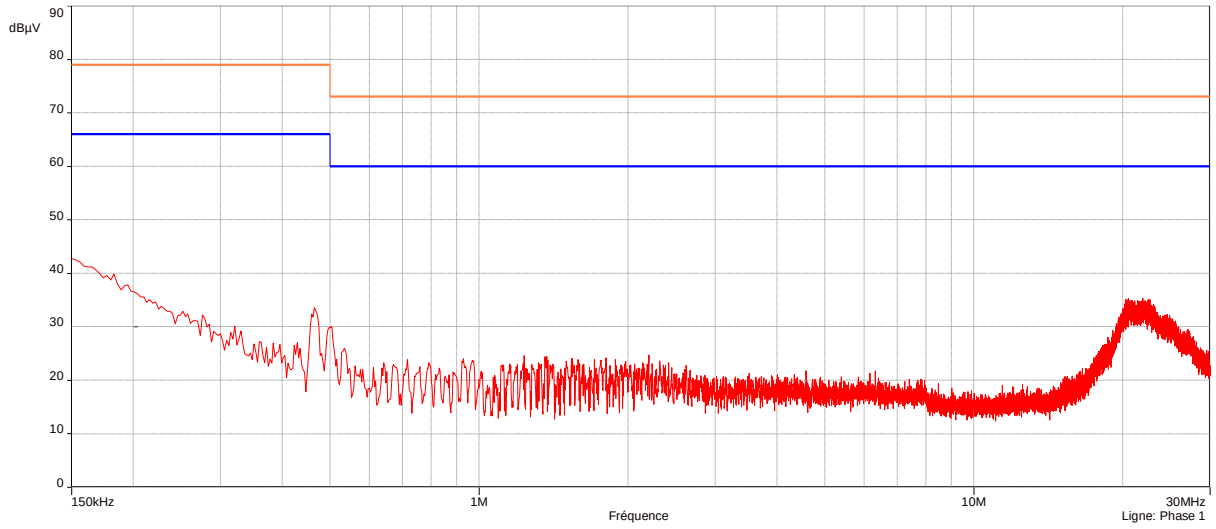
TEST SETUP PHOTOS - POWER SUPPLY 120 VAC / 60 HZ





CONDUCTED EMISSION (MEASUREMENT) - GRAPH	
POWER SUPPLY 120 VAC / 60 HZ	
E.U.T. mode: In charging	Red: Peak detection
	Orange: Quasi-Peak limit
	Blue: Average value limit





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:	-			
EUT modification: No				

6.2. 20 dB bandwidth and 99% bandwidth

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-Gen Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021
Test method:	§ 15.247 (a) (1) (i) of FCC 47 CFR PART 15 : 2023 § 6.7 of RSS-Gen Issue 5 : 2018 / AMD1: 2019 / AMD2: 2021

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	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A
Test method deviation: No		
Supplementary information: -		

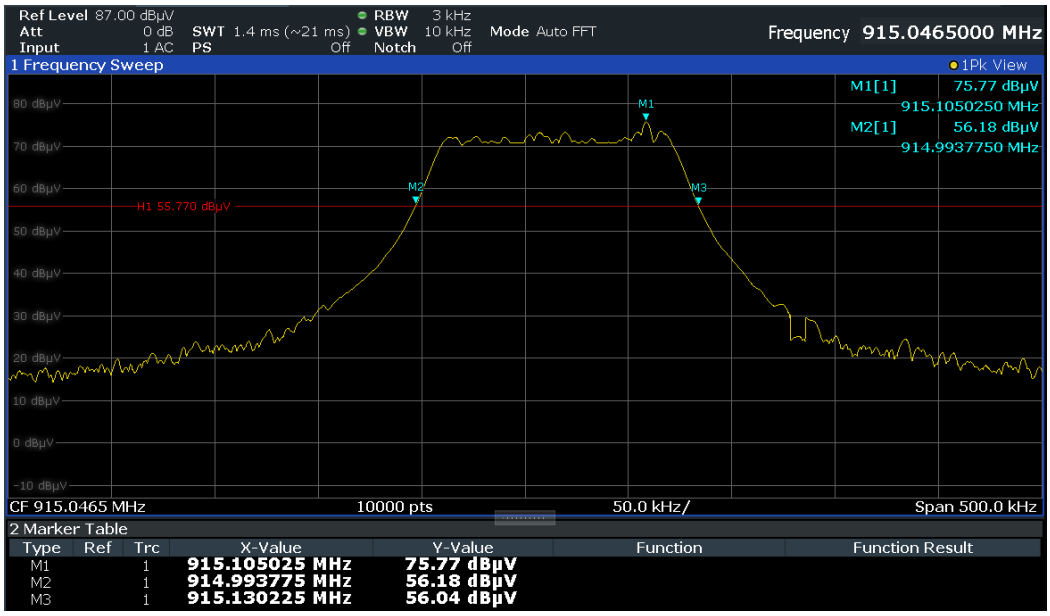
TEST EQUIPMENT USED

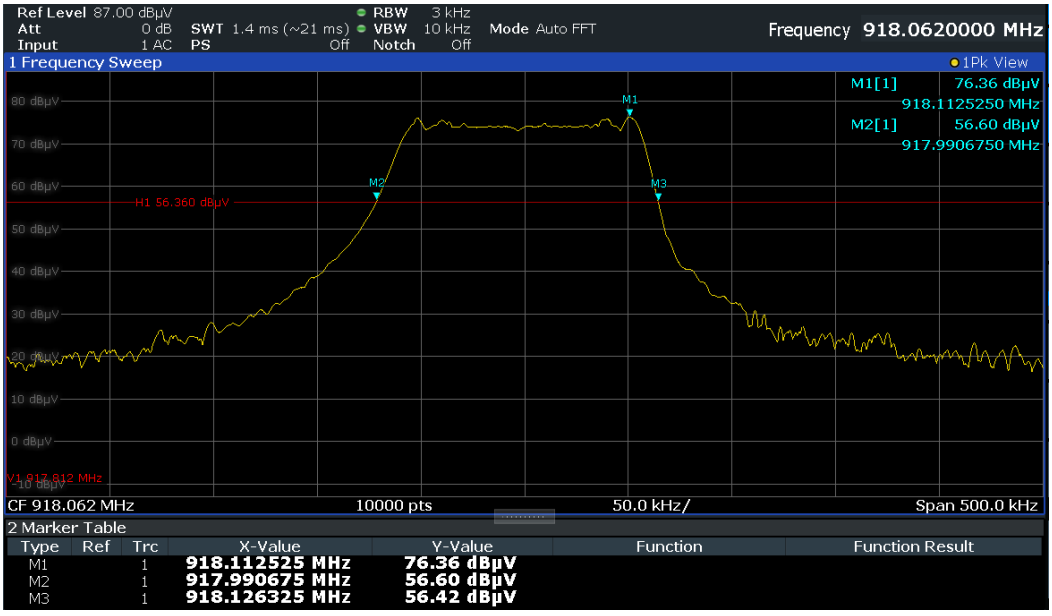
Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

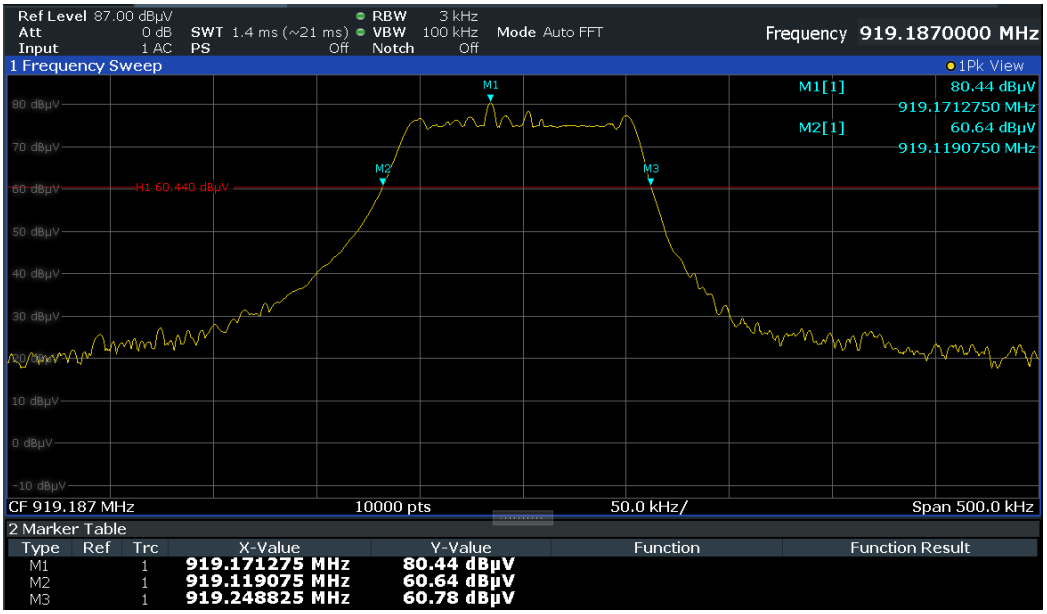
Blank cells = Permanent validity

20 dB Bandwidth

Frequency	Results (kHz)	Limit (kHz)
915.062 MHz	136.4	500
918.062 MHz	135.6	500
919.187 MHz	129.7	500

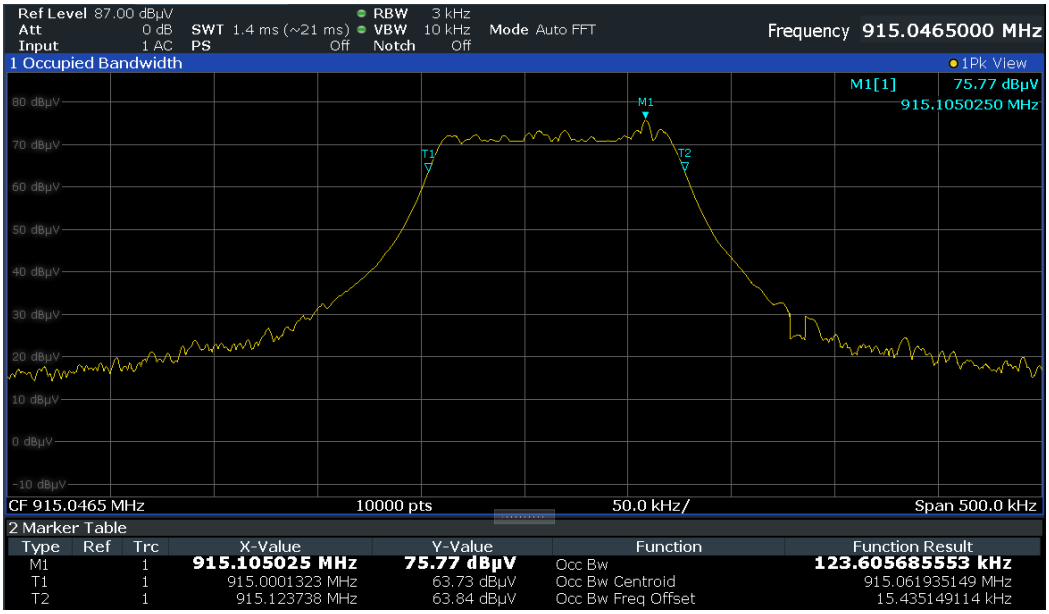


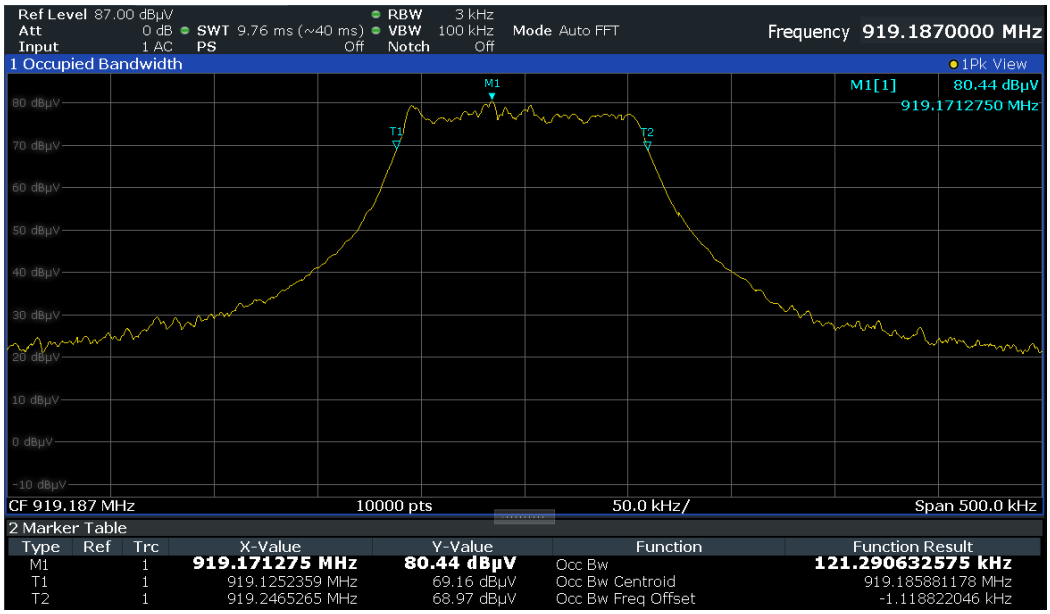




99% Bandwidth

Frequency	Results (kHz)
915.062 MHz	123.61
918.062 MHz	121.56
919.187 MHz	121.29




Ref Level 87.00 dBµV
Att 0 dB SWT 9.76 ms (~40 ms) RBW 3 kHz
Input 1 AC PS Off VBW 100 kHz Mode Auto FFT Notch Off
Frequency 919.1870000 MHz
1 Occupied Bandwidth
1Pk View
M1[1] 80.44 dBµV
919.1712750 MHz
80 dBµV
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
20 dBµV
10 dBµV
0 dBµV
-10 dBµV
CF 919.187 MHz
10000 pts
50.0 kHz/
Span 500.0 kHz
2 Marker Table
Type Ref Trc X-Value Y-Value Function Function Result
M1 1 919.171275 MHz 80.44 dBµV Occ Bw 121.290632575 kHz
T1 1 919.1252359 MHz 69.16 dBµV Occ Bw Centroid 919.185881178 MHz
T2 1 919.2465265 MHz 68.97 dBµV Occ Bw Freq Offset -1.118822046 kHz

6.3. Carrier Frequency Separation

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-247 Issue 2 : 2017
Test method:	§ 15.247 a) (1) of FCC 47 CFR PART 15 : 2023 § 5.1 a) of RSS-247 Issue 2 : 2017

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.

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.

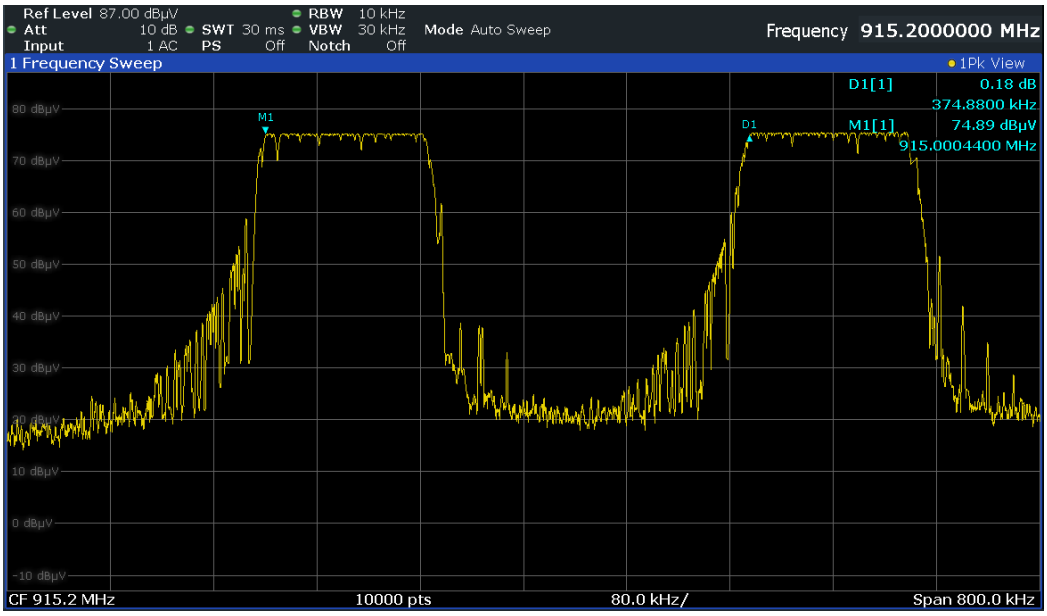
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A
Test method deviation: No		
Supplementary information: -		

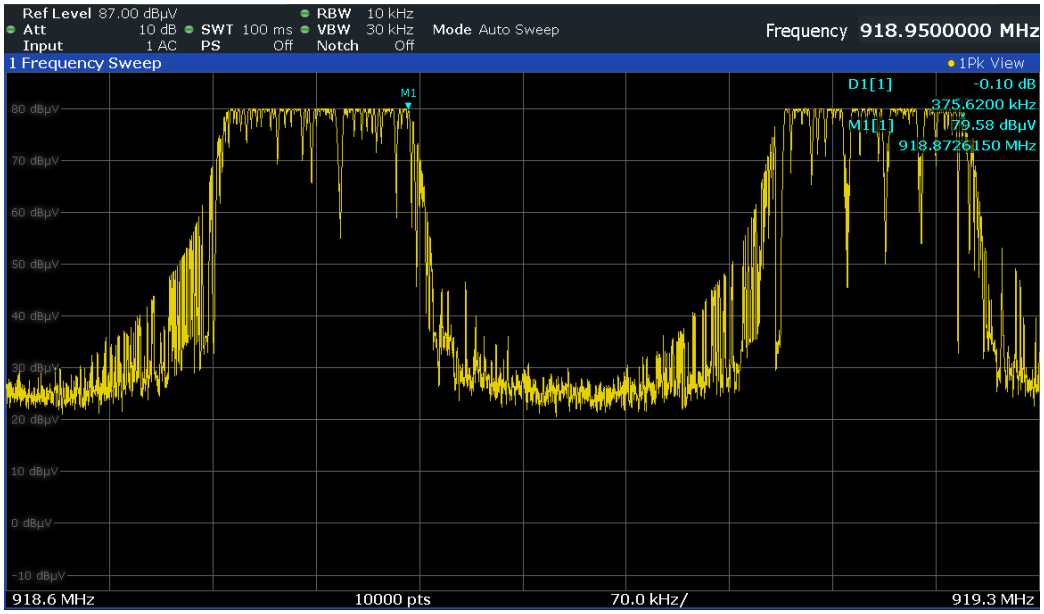
TEST EQUIPMENT USED

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

Blank cells = Permanent validity

Channel separation Results (kHz)	Limit (kHz)
375.0	> 25





6.4. Number of Hopping Channel

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-247 Issue 2 : 2017
Test method:	§ 15.247 f) of FCC 47 CFR PART 15 : 2023 § 5.1 c) of RSS-247 Issue 2 : 2017
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. 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.	

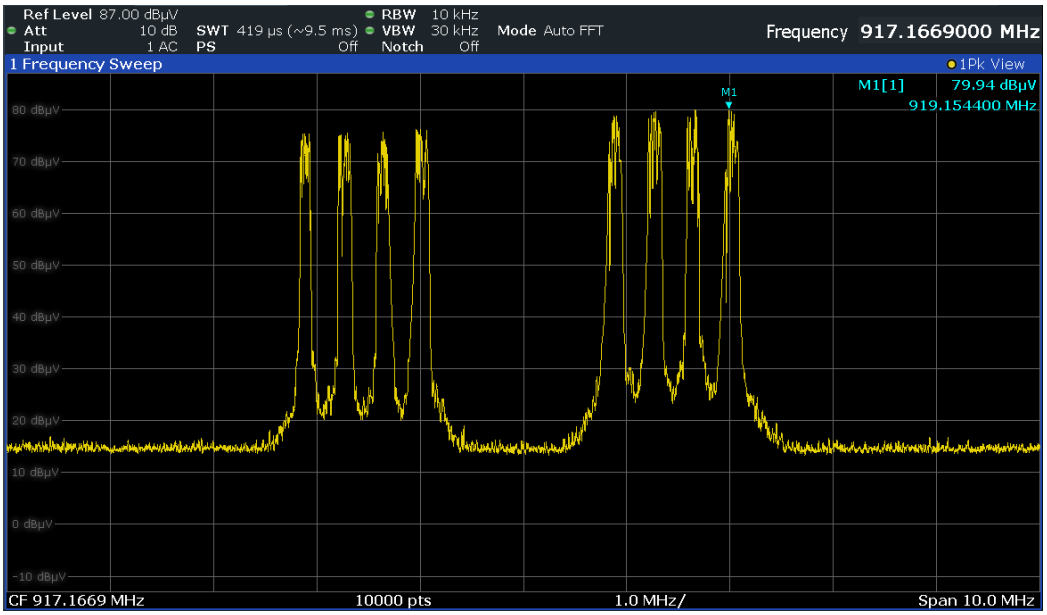
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

Blank cells = Permanent validity

Number of hopping channels Results	Limit
8	-



6.5. Dwell Time

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-247 Issue 2 : 2017
Test method:	§ 15.247 a) (1) (i) of FCC 47 CFR PART 15 : 2023 § 5.1 c) of RSS-247 Issue 2 : 2017

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.

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.

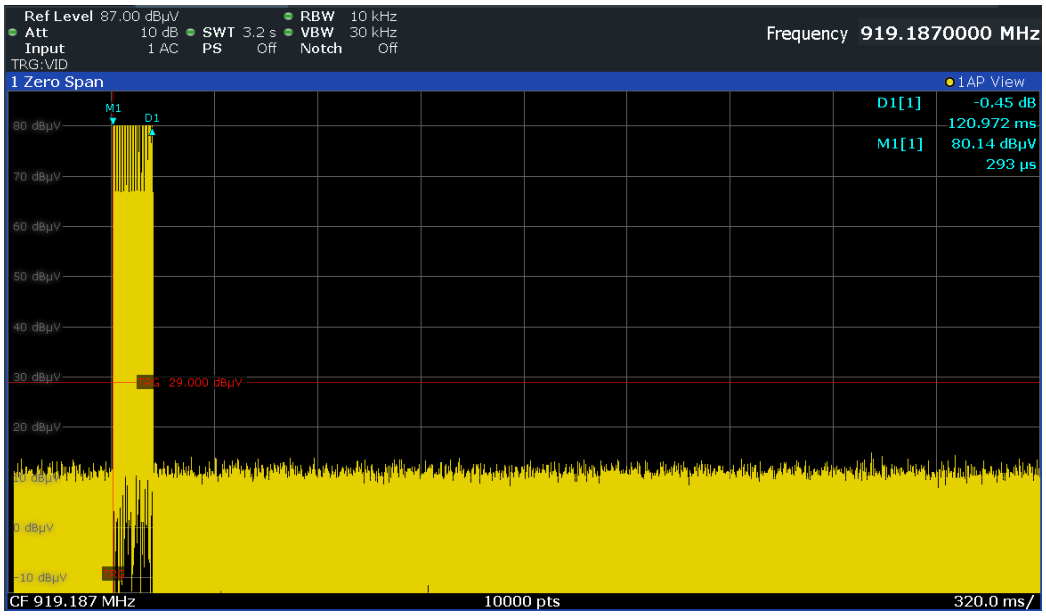
LABORATORY PARAMETERS:	REQUIRED PRIOR TO THE TEST	DURING THE TEST
Ambient Temperature	10 to 40 °C	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

Blank cells = Permanent validity

Dwell time Results (ms)	Pulse's on time (ms)	Total hops	Limit (ms)
120.97	120.97	1	< 400



6.6. Transmitter output power

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-247 Issue 2 : 2017
Test method:	§ 15.247 b) (3) of FCC 47 CFR PART 15 : 2023 § 5.4 of RSS-247 Issue 2 : 2017
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	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED

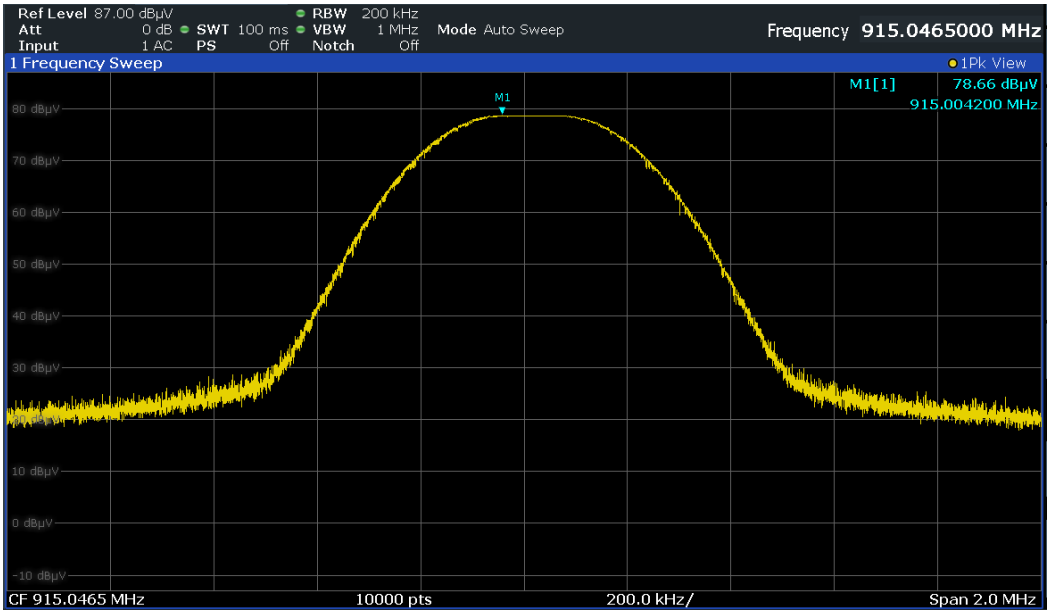
Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

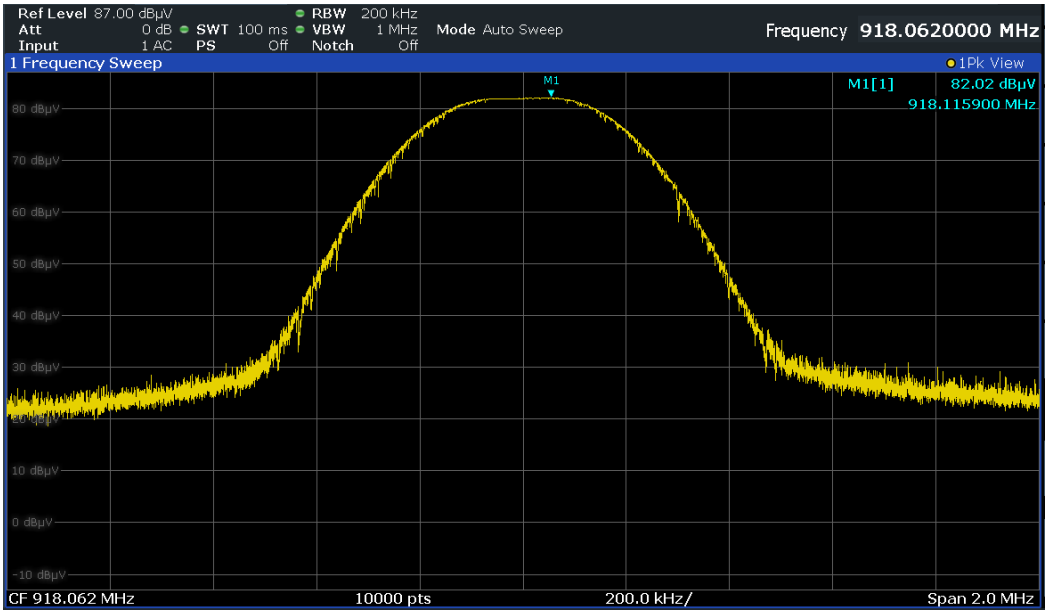
Blank cells = Permanent validity

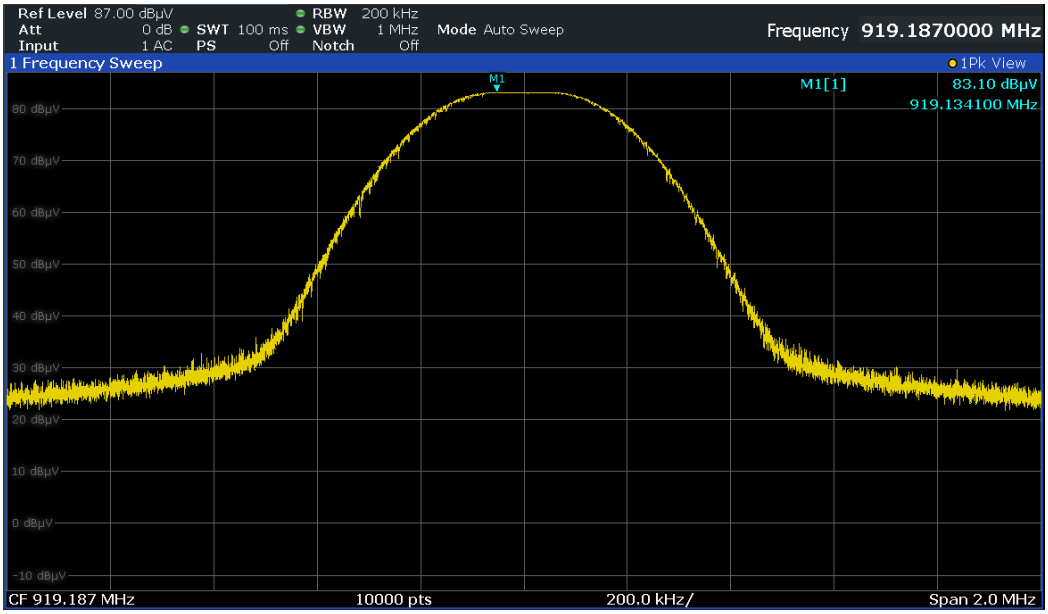
Frequency	Electro-magnetic field (dBµV/m)	TP* (dBm)	Limit (dBm)
915.062 MHz	105.28	+ 7.9	+ 30.0
918.062 MHz	108.64	+ 11.3	+ 30.0
919.187 MHz	109.76	+ 12.4	+ 30.0

* TP = $(E \times d)^2 / (30 \times 1.64)$ for d = 3 m

E.U.T. position:


Ref Level 87.00 dBµV
Att 0 dB SWT 100 ms VBW 1 MHz Mode Auto Sweep
Input 1 AC PS Off Notch Off
RBW 200 kHz
Frequency 915.0465000 MHz
1 Frequency Sweep
1Pk View
M1[1] 78.66 dBµV
915.004200 MHz
M1
80 dBµV
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
10 dBµV
0 dBµV
-10 dBµV
CF 915.0465 MHz
10000 pts
200.0 kHz/
Span 2.0 MHz


Ref Level 87.00 dBµV
Att 0 dB SWT 100 ms VBW 1 MHz Mode Auto Sweep
Input 1 AC PS Off Notch Off
RBW 200 kHz
Frequency 918.0620000 MHz
1 Frequency Sweep
1Pk View
M1[1] 82.02 dBµV
918.115900 MHz
M1
80 dBµV
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
10 dBµV
0 dBµV
-10 dBµV
CF 918.062 MHz
10000 pts
200.0 kHz/
Span 2.0 MHz


Ref Level 87.00 dBµV
Att 0 dB
Input 1 AC
SWT 100 ms
PS Off
RBW 200 kHz
VBW 1 MHz
Notch Off
Mode Auto Sweep
Frequency 919.1870000 MHz
1 Frequency Sweep
1Pk View
M1
M1[1]
83.10 dBµV
919.134100 MHz
80 dBµV
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
20 dBµV
10 dBµV
0 dBµV
-10 dBµV
CF 919.187 MHz
10000 pts
200.0 kHz/
Span 2.0 MHz

6.7. Peak power spectral density

Reference standard:	FCC 47 CFR PART 15 : 2023 RSS-247 Issue 2 : 2017
Test method:	§ 15.247 f) of FCC 47 CFR PART 15 : 2023 § 5.2 b) of RSS-247 Issue 2 : 2017
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	22°C
Relative Humidity	10 to 90 %	45%
Atmospheric pressure	N/A	N/A hPa
Test method deviation: No		
Supplementary information: -		

TEST EQUIPMENT USED

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
00294	Antenna	Rohde & Schwarz	HL223	05/05/2023	05/07/2026
11184	Cable	C&C	N-5M	22/06/2023	22/08/2024
17269	Cable	Huber + Suhner	N-6M	29/08/2022	29/10/2024
06089	Receiver	Rohde & Schwarz	ESIB26	15/11/2022	15/01/2025
14622	Shielded enclosure	Comtest	SAC 3M	27/04/2022	27/06/2025

Blank cells = Permanent validity