FCC Test Firm Designation Number: FR0014
SED Wireless Device Testing Laboratory CAB Number: FR0004

Matériel testé : *Equipment under test*:	**IDENTEC SOLUTIONS / IDS1000** *(Trademark / Marketing name or product reference)*

Client / Demandeur:
Customer / Applicant :
IDENTEC SOLUTIONS AG
Millennium Park 2
A-6890 Lustenau – Austria

Rapport délivré à :
Issued to:
IDENTEC SOLUTIONS AG
Karl-Heinz Feierle
Millennium Park 2
A-6890 Lustenau – Austria

Référence de la proposition :
Proposal number:
012020-23939

Numéro d'affaire :
Work number :
13324

Date de l'essai :
Date of test:
Le 6 avril 2020
April 6th, 2020

Objectif des essais :
Test purpose:
EMC qualification according to following standards:
- CFR 47, FCC Part 15, Subpart C
(Chapter 15.249 - Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz)
- Industry Canada, RSS-Gen Issue 5 & RSS-210 Issue 10, section B.10
(Bands 902–928, 2400–2483.5 and 5725–5875 MHz)
Measurement standards:
ANSI C63.10 (2013)

Lieu du test:
Test location:
SMEE, Rue de Taille
38500 VOIRON - France

Test réalisé par :
Test realized by:
Laurent CHAPUS

Conclusion :
Conclusion:
L'équipement satisfait aux prescriptions et essais des normes citées en référence.
The appliance complies with requirements and tests of above mentioned standards.

Ed.	Date	Modifications / Pages	Written by : Visa	Approved by: Visa
1	April 22, 2020	Initial Edition	Laurent CHAPUS *Technical Manager* Signature numérique de Chapus Laurent	Regis ANCEL *General Manager* Signature numérique de Ancel Régis

Contents

1. Normatives References

FCC qualification according to:		
Standards	**Applied**	**Title**
ANSI C63.10 (2013)	X	American National Standard for Testing Unlicensed Wireless Devices
CFR47, Part 15	X	Telecommunication – Federal Communication Commission – Radio frequency devices, Sections 15.207 / 15.209 / 15.249

Industry Canada qualification according to:		
Standards	**Applied**	**Title**
RSS-Gen (Issue 5/2019)	X	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 (Issue10/2019)	X	Licence-exempt Radio Apparatus: Category I Equipment, Section B.10: Devices Operating in Frequency Bands for Any Application, Band 2400-2483.5MHz.

Deviation from standards: None.

2. Test synthesis

TEST	Paragraph number FCC Part 15 IC RSS-210	Spec. FCC Part 15 IC RSS-210	RESULTS (comments)
Conducted emissions test	15.207 (a) RSS-Gen: Issue 5, §8.8	15.207 (a) Table 4, §8.8	N/A (1)
Field Strength of fundamental	15.249 (a) (c) RSS-210: Issue 9, §B.10 (a)	94dBµV/m @3m (50mV/m @ 3m)	**PASS**
Field Strength of harmonics	15.249 (a) (c) (e) RSS-210: Issue 9, §B.10 (a)	54dBµV/m @3m (0.5mV/m @ 3m)	**PASS**
Unwanted emissions outside the specified frequency band and harmonics	15.209 / 15.249 (d) (e) RSS-210: Issue 9, §B.10 (b) / RSS-Gen: Issue 5, §8.9	Whichever is less stringent, either: - 50dB below level of fundamental, or; - General field strength limits, as follow: Measure at 300m 9-490kHz: 2400µV/m/F(kHz) Measure at 30m 0.490-1.705: 24000µV/m/F(kHz) 1.705-30MHz: 30µV/m Measure at 3m 30MHz-88MHz : 40 dBµV/m 88MHz-216MHz : 43.5 dBµV/m 216MHz-960MHz : 46.0 dBµV/m Above 960MHz : 54.0 dBµV/m	**PASS**
Occupied Bandwidwth	RSS-Gen: Issue 5, §6.7	BW at 99%	**PASS**

NA: Not Applicable
(1): Battery operated equipment

- **General conclusion:**

Measures and tests performed on the sample of the product *DENTEC SOLUTIONS / IDS1000*, in configuration and description presented in this test report, show compliance with standards FCC CFR 47, PART 15, Subpart C and Industry Canada RSS-Gen & RSS-210.

3. Equipment Under Test (EUT)

Nom / *Identification*	**IDENTEC SOLUTIONS / IDS1000** *(Trademark / Marketing name or product reference)*	P/N: 456010 Sn: 0.000.355.101

FCC ID: OO4-IDS1000
IC: IC : 3538A-IDS1000
Model: IDS1000

Note : IDS1000 active tag model covers both iQ355 XP and iQ355P part names (X for ATEX certified version)
All tests are performed with the iQ355 XP version.

Alimentation / *Power supply*: 3VDC from internal battery

Auxiliaires / *Auxiliaries*:
- PC Laptop ASUS, model F200M
- i-Point Si (Identec product) Sn:1915IP0015

Entrées-Sorties / *Input / Output*

	Câbles pour essai / *Cables for test*	Blindé / *Shielded*	Prévu pour >3m / *Intended for >3m*
None	-	-	-

Mode de fonctionnement / *Running mode*

Equipment running modes are:
The tested sample is able to be set in following modes:
- Transmit a modulated carrier frequency on low, middle and high channels (902.5/915/927.5MHz)

Programme de test / *Test program /*: PC test program "Gen3 Tag Certification tool"

Informations supplémentaires / *Additional informations*

Declaration of the applicant:
- Type of technology: Proprietary RF protocol
- Emission bands: 902-928MHz
- Frequency transmission band: 902.5 to 927.5MHz.
- Equipment intended for use as a portable station
- Equipment designed for continuous operation
- Antenna type: PCB trace antenna
- Rated conducted output power: -1dBm

Dimensions de l'EST / *Dimensions of EUT*: 90mm x 42 x 13

4. Test conditions

Power supply voltage:
Equipment under test: 3V DC (Battery fully charged)
Auxiliaries: None

5. Modifications of the EUT

None.

6. Special accessories

None required for compliance with emission limits.

7. Measurement Uncertainty

Test Description	Expanded uncertainty
Conducted emissions test (150k-30MHz, AC mains)	± 3.5dB
Radiated emission test (9kHz-30MHz, electric field)	± 4.0dB
Radiated emission test (30-300MHz, OATS)	± 5.6dB
Radiated emission test (300-1000MHz, OATS)	± 5.3dB
Radiated emission test (1-40GHz, OATS / FAC)	± 5.6dB
Conducted RF output power at antenna port	± 1.6dB
Radiated RF output power (Peak, Power density)	± 5.6dB
DTS Bandwidth, 99% OBW	±4%
Temperature	± 1°C
Time and duty cycle calculation	±1%
AC and DC voltage	±1%

Note: Expended uncertainty at 95% confidence (k=2)

8. Field Strength Calculation

The field strength (level) is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follow:
FS = RA + AF + CF – AG
Where FS = Field Strength (Level)
RA = Receiver Amplitude (Meter Reading)
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain
Total factor = AF+CF-AG
Margin value = Emission level – Limit value

Example:
RA: 14.0dBµV / AF: 16.5 dBm^{-1} / CF: 3.5dB / AG: 15dB
→ Total factor: $5dBm^{-1}$
→ Field level: 19.0dBµV/m (-21.0dB for margin if limit is 40dBµV/m)

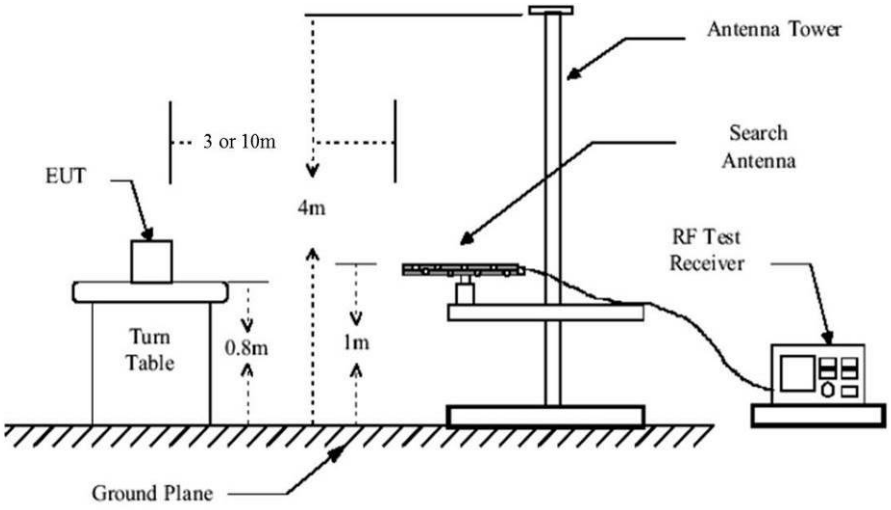
9. Field Strength of fundamental

TEST: Field strength of fundamental / FCC part 15.249 – RSS 210 §B.10		**Verdict**
Method: Measurements were made in a 3-meter Open Area Test Site (OATS) that complies to ANSI C63.4 / C63.10. Measurements were performed with a peak detector using a 100kHz RBW. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (Peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. The tested equipment is set to transmit operation with modulation on lowest, middle and highest channels. Three orthogonal axis measurements on EUT are performed to obtain the maximum peak field strength.		**Pass**
Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	20 to 30 °C	24°C ± 2
Relative Humidity	30 to 70 %	36% ± 5

Limits – FCC Part 15.249 (a) (c) / RSS-210 §B.10 (a)		
Frequency (MHz)	Limits (dBµV/m)	
	Level / Detector / Distance	Results
902 to 928 MHz	94dBµV/m / Pk / 3m	**Pass**

Supplementary information:
Test location: SMEE
Test date: April 6th, 2020. Tested by L. Chapus

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Log-periodic antenna	EMCO	3146	ANT-191-019	2019/6	2021/6
RF cable	Div	OATS/25m	CAB-101-017	2019/4	2020/4
OATS	Div	10/3m	SIT-101-001	2017/7	2020/7
Antenna mast	Innco- Systems	MA4000EP	MAT-101-001	-	-
Turntable	Innco- Systems	DS1200S	PLA-101-001	-	-
Measuring Receiver	Rohde&Schwarz	ESRP	REC-151-002	2019/9	2021/9
EMC Software	NEXIO	BAT EMC V3.18	SOF-101-001	-	-

Test Setup for radiated emission

Test setup for 30-1000MHz (3m)

Tabulated Results for Field Strength of fundamental					
FREQ	**Field Strength @ 3m**	**Detector**	**Limit**	**Margin**	**Result**
(MHz)	(dBµV/m)		(dBµV/m)	dB	
902.5	**93.9**	Pk	**Pass**	-0.1	**Pass**
915.0	**93.1**	Pk	**Pass**	-0.9	**Pass**
927.5	**93.4**	Pk	**Pass**	-0.6	**Pass**

RBW:	100kHz
Measurement distance:	3m
Limit:	FCC Part 15.249 (a) (c) / RSS-210 §B.10
Final measurement detector:	Peak
RESULT:	PASS

10. Field Strength of harmonics

TEST: Field Strength of harmonics / FCC part 15.249 – RSS-210 §B.10		**Verdict**
Method: For frequency above 1GHz, final measurements are made in a Full Anechoic Chamber (FAC) that complies with ANSI C63.10. Measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna in horizontal and vertical polarities. Three orthogonal axis measurements on EUT are performed to obtain the maximum peak field strength, with 60° rotation on each axis.(Clause 6.6.5 of ANSI C63.10). A pre-scan frequency identification of the EUT has been performed in full anechoic chamber. The measured radiated field of the EUT is performed (or corrected) at 3-meters of distance. Antenna is 1.5-meters high. The pre-characterization graphs are obtained in PEAK and Average detection with 360° continuous rotation of the device under test.		**Pass**

Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	20 to 30 °C	24°C ± 2
Relative Humidity	30 to 70 %	36% ± 5
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point
	30MHz – 25GHz	3 m measurement distance

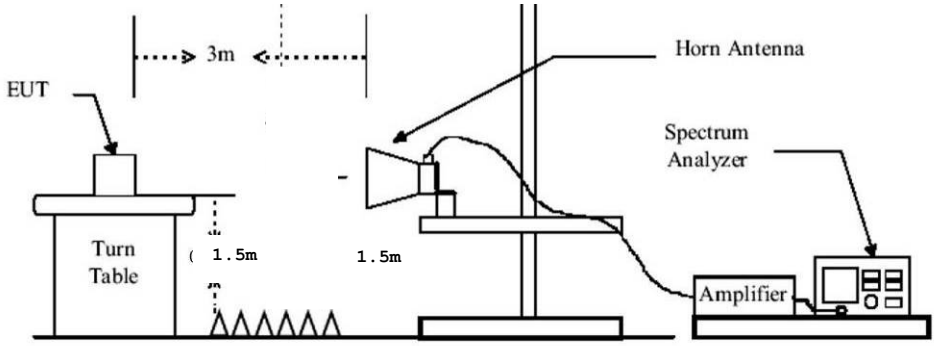
Limits – FCC Part 15.249 (a) (c) (e) / RSS-210 §B.10 (a)

Frequency bands for harmonics (MHz)	Limits (dBµV/m)	
	Level / Detector / Distance	Results
4800 to 4967	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
7200 to 7450.5	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
9600 to 9934	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
12000 to 12417.5	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
14400 to 14901	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
16800 to 17384.5	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
19200 to 19868	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
21600 to 22351.5	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**
24000 to 24835	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**

Supplementary information:
Test location: SMEE
Test date: April 6th, 2020. Tested by L. Chapus

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Horn antenna	ETS-LINDGREN	3115	ANT-141-013	2018/10	2021/10
Spectrum analyzer	Rohde&Schwarz	FSV40	ASP-171-004	2019/8	2021/8
RF cable	Pasternack RF	PE302-120	CAB-131-024	2019/4	2020/4
RF cable	HUBER+SUHNER	SF104	CAB-141-030	2019/4	2020/4
Anechoic chamber	COMTEST	214263	CAG-141-001	2017/6	2020/6
Antenna mast	Innco- Systems	MA4000EP	MAT-101-001	-	-
Turntable	Innco- Systems	DS1200S	PLA-101-001	-	-
Turntable	Innco- Systems	CT0800	PLA-141-001		
Pre-amplifier	PE	1524	PRE-101-002	2019/6	2020/6
Measuring receiver	Rohde&Schwarz	ESRP	REC-151-003	2019/9	2021/9
EMC Software	NEXIO	BAT EMC V3.18	SOF-101-001	-	-

Test Setup for radiated emission



Test setup for 1-25GHz

Tabulated Results for Field strength of harmonics (1GHz-9.3GHz)				
FREQ	**Field level**	**Detector**	**Limit**	**Result**
(MHz)	dBµV/m		(dBµV/m)	
Levels at least 10dB below limits		**Pk**	74.0	**Pass**
Levels at least 10dB below limits		**Av**	54.0	**Pass**
RBW	1MHz			
Measurement distance:	3m			
Limit:	FCC Part 15.249 (a) (c) (e)			
Final measurement detector:	Peak / Average			
RESULT:	PASS			
Notes:	(1): See pre-scan graphs in chapter 11 (Unwanted emission)			

11. Unwanted emissions

TEST: Unwanted emissions outside fundamental and harmonics bands / FCC part 15.209, 15.249 - RSS-210 §B.10 / RSS-Gen §8.9	**Verdict**
Method: Measurements were made in a 3-meter Open Area Test Site that complies to ANSI C63.4/ C63.10 for frequency below 1GHz. Measurements were made in a 3-meter Full Anechoic Chamber (FAC) that complies to ANSI C63.10 for frequency above 1GHz. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (Peak/Quasi-Peak/Average) were then performed by rotating the EUT 360° and adjusting the receive antenna height. The tested equipment is set to transmit operation with modulations on lowest, middle and highest channel. Three orthogonal axis measurements on EUT are performed to obtain the maximum peak field strength. A pre-scan frequency identification of the EUT has been performed in full anechoic chamber. The measured radiated field of the EUT is performed at 3-meters of distance for frequency 9k-1GHz. The measured radiated field of the EUT is performed at 1.6-meters of distance for frequency 1-25GHz. Antenna is 1.25m (Freq < 1GHz) or 1.5m (Freq < 1GHz) high in front of EUT.	**Pass**

Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	20 to 30 °C	24°C ± 2
Relative Humidity	30 to 70 %	36% ± 5
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point
	9kHz – 30MHz	10 m measurement distance
	30MHz – 10GHz	3 m measurement distance

Limits – FCC Part 15.209, 15.249 (d) (e) / RSS-Gen §8.9, RSS-210 §B.10 (b)

Whichever is less stringent, either:

Frequency (MHz)	Limits (dBµV/m)	
	Level / Detector / Distance	Results
30 to 1000	50dB below the fundamental / QP / 3m	Not used
Above 1GHz	50dB below the fundamental / Av / 3m 30dB below the fundamental / Pk / 3m	Not used

Or

Frequency (MHz)	Limits (dBµV/m)	
	Level / Detector / Distance	Results
0.009 to 0.090	107.6 – 87.6 / AV / 10m 127.6 – 107.6 / PK / 10m	**Pass**
0.090 to 0.110	87.6 – 85.9 / QP / 10m	**Pass**
0.110 to 0.490	85.7 – 72.9 / AV / 10m 105.7 – 92.9 / PK / 10m	**Pass**
0.490 to 1.705	52.9 – 42.1 / QP / 10m	**Pass**
1.705 to 30	48.6 / QP / 10m	**Pass**
30 to 88	40.0 / QP / 3m	**Pass**
88 to 216	43.5 / QP / 3m	**Pass**
216 to 960	46.0 / QP / 3m	**Pass**
960-1000	54.0 / QP / 3m	**Pass**

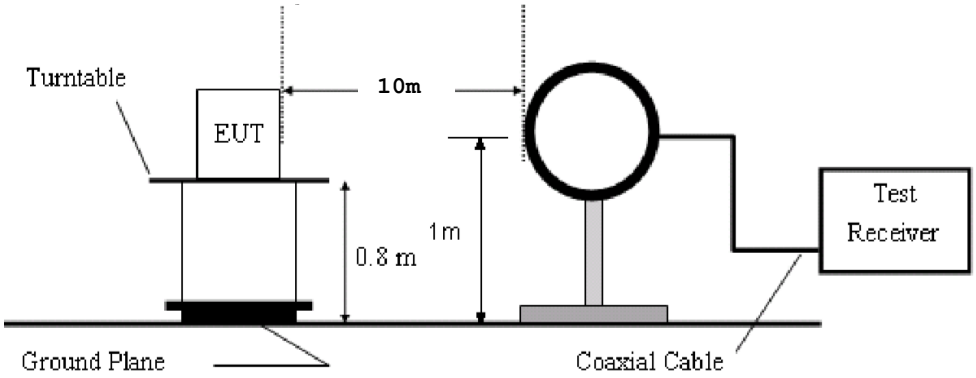
Above 1GHz	54.0 / AV / 3m 74.0 / PK / 3m	**Pass**

Supplementary information:
Test location: SMEE
Test date: November 4th, 2019. Tested by L. Chapus

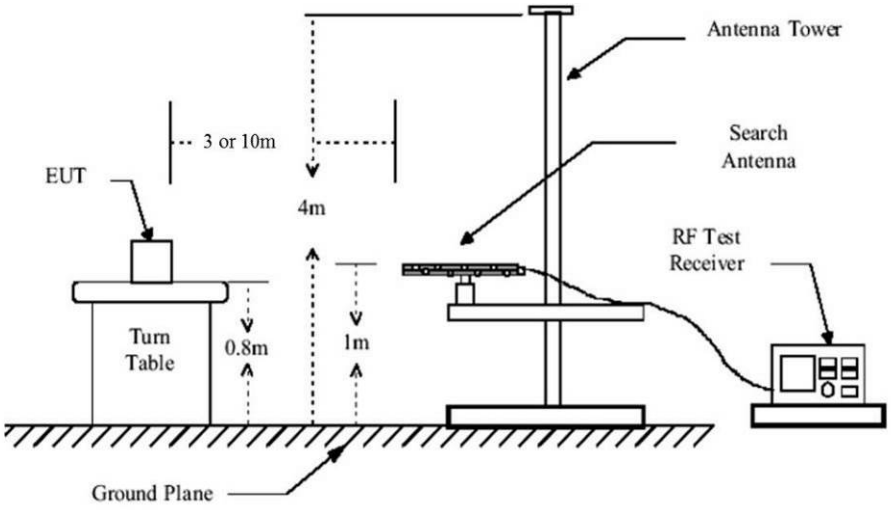
Test Equipment Used

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Log-periodic antenna	EMCO	3146	ANT-191-019	2019/6	2021/6
Biconnic antenna	COM-POWER	AB- 900	ANT-101-003	2019/6	2021/6
Loop antenna	EMCO	6502	ANT-101-009	2019/8	2021/8
BiConiLog antenna	EMCO	3142B	ANT-101-010	2019/8	2021/8
Horn antenna	ETS-LINDGREN	3115	ANT-141-013	2018/10	2021/10
Horn antenna	ETS-LINDGREN	3116	ANT-161-014	2017/12	2022/12
Spectrum analyzer	Rohde&Schwarz	FSV40	ASP-171-004	2019/8	2021/8
RF cable	Div	OATS/25m	CAB-101-017	2019/4	2020/4
RF cable	Pasternack RF	PE302-120	CAB-131-024	2019/4	2020/4
RF cable	HUBER+SUHNER	RG214U	CAB-141-026	2019/4	2020/4
RF cable	HUBER+SUHNER	RG214U	CAB-141-029	2019/4	2020/4
RF cable	HUBER+SUHNER	SF104	CAB-141-030	2019/4	2020/4
RF cable	HUBER+SUHNER	SF102 (K/2m)	CAB-171-034	2019/4	2020/4
RF cable	HUBER+SUHNER	SF102 (K/3m)	CAB-171-034	2019/4	2020/4
Pre-amplifier	Pasternack RF	PE1524	PRE-101-002	2019/6	2020/6
Pre-amplifier	SMEE	18-40GHz	PRE-171-004	2017/12	2019/12
Anechoic chamber	COMTEST	214263	CAG-141-001	2017/6	2020/6
OATS	Div	10m	SIT-101-001	2017/7	2020/7
Antenna mast	Innco- Systems	MA4000EP	MAT-101-001	-	-
Turntable	Innco- Systems	DS1200S	PLA-101-001	-	-
Turntable	Innco- Systems	CT0800	PLA-141-001	-	-
Measuring Rec	Rohde&Schwarz	ESRP	REC-151-002	2019/9	2021/9
EMC Software	NEXIO	BAT EMC V3.18	SOF-101-001	-	-

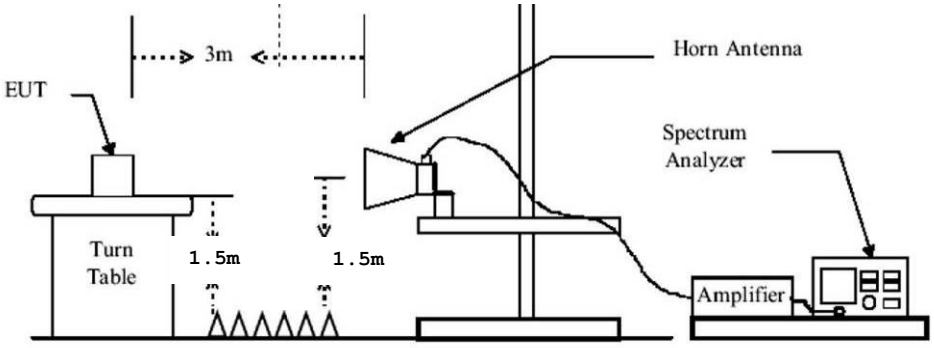
Test Setup for radiated emission



Test setup for 9k-30MHz



Test setup for 30-1000MHz (3m)

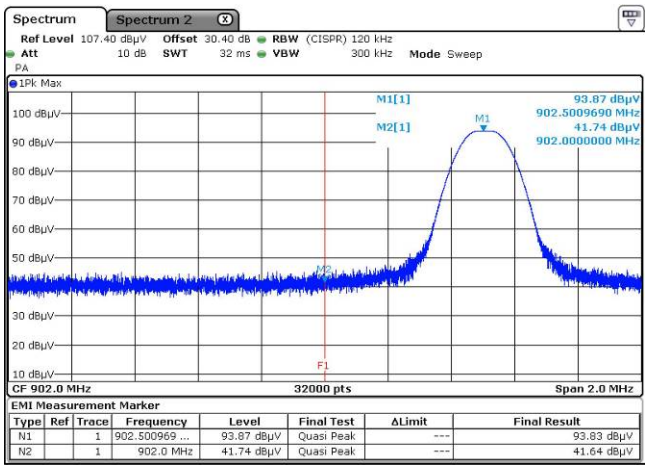
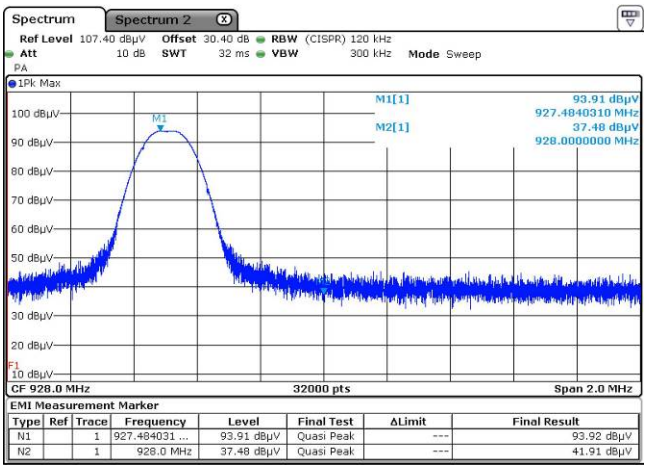


Test setup for 1-10GHz

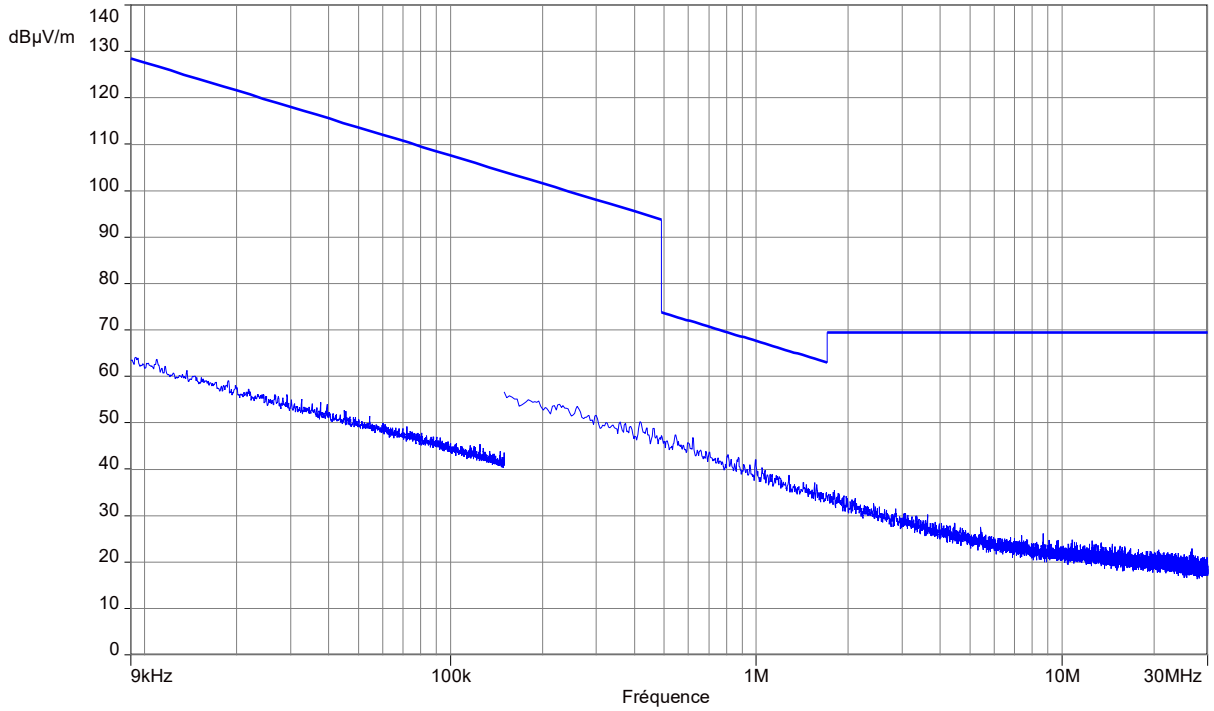
Tabulated Results for Unwanted emissions (9kHz-30MHz)							
FREQ	**RF field @ 30m**	**Limit @ 30m**	**Margin**	**Antenna**		**Table angle**	**Correc. Fact. (CF)**
MHz	(QP) dBµV/m	(QP) dBµV/m	dB	Angle (Degree)	Position	Degree	dB
Levels are at least 10dB below limits							
Supplementary information: Frequency list measured on the Open Area Test Site has been created with pre-scan results.							
Frequency band investigated:	9kHz-30MHz						
RBW:	200Hz (9kHz-150kHz)						
	9kHz (150kHz-30MHz)						
Measurement distance:	10m						
Limit:	FCC Part 15.209 – 15.249 / RSS-Gen §8.9 – RSS-210 §B.10 (b)						
Final measurement detector:	Peak / Quasi-Peak / Average						
Note:	CF: Correction factor = Antenna factor + Cable loss *1: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)						

Tabulated Results for Radiated Disturbance (3m measurement on Open Area Test Site, 30MHz-1GHz)										
FREQ	**Meter reading**	**Meter reading**	**Total Factor**	**Field level**	**Field level**	**Pol**	**Antenna height**	**Table angle**	**Limit**	**Margin**
MHz	(QP) dBµV	(Pk) dBµV	dB	(QP) dBµV/m	(Pk) dBµV/m		cm	Degré	(QP) dBµV/m	dB
Levels are at least 10dB below limits										
Supplementary information: Frequency list measured on the Open Area Test Site is created with pre-scan results.										
Frequency band investigated:	30MHz-1GHz									
RBW:	120kHz									
Measurement distance:	3m									
Limit:	FCC Part 15.209 – 15.249 / RSS-Gen §8.9 – RSS-210 §B.10 (b)									
Final measurement detector:	Quasi-Peak									
RESULT:	PASS									
Note:	Limits used are FCC part 15.209 / RSS-Gen.									

Tabulated Results for Unwanted emissions (1GHz-10GHz)				
FREQ	**Field level**	**Detector**	**Limit**	**Result**
(MHz)	dBµV/m		(dBµV/m)	
Levels at least 10dB below limits		Pk	74 Pk	**Pass**
Levels at least 10dB below limits		Av	54 Av	**Pass**
RBW	1MHz (CISPR)			
Measurement distance:	3m			
Limit:	FCC Part 15.209 – 15.249 / RSS-Gen §8.9 – RSS-210 §B.10 (b)			
Final measurement detector:	Peak / CISPR Average			
RESULT:	PASS			
Notes:	Limits used are FCC part 15.209 / RSS-Gen.			

Graphical representation of Band-edge compliance (Radiated)	
	
Low band-edge compliance M2 = 902MHz Quasi-Peak level below 902MHz is 41.6dBµV/m max at 3m (limit is 46dBµV/m) RESULT: PASS Note: Radiated measurement	*High band-edge compliance* M2 = 928MHz Quasi-Peak level below 902MHz is 41.9dBµV/m max at 3m (limit is 46dBµV/m) RESULT: PASS Note: Radiated measurement

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 9kHz-30MHz / 3m / Parallel & Perpendicular antenna position / Transmit mode)

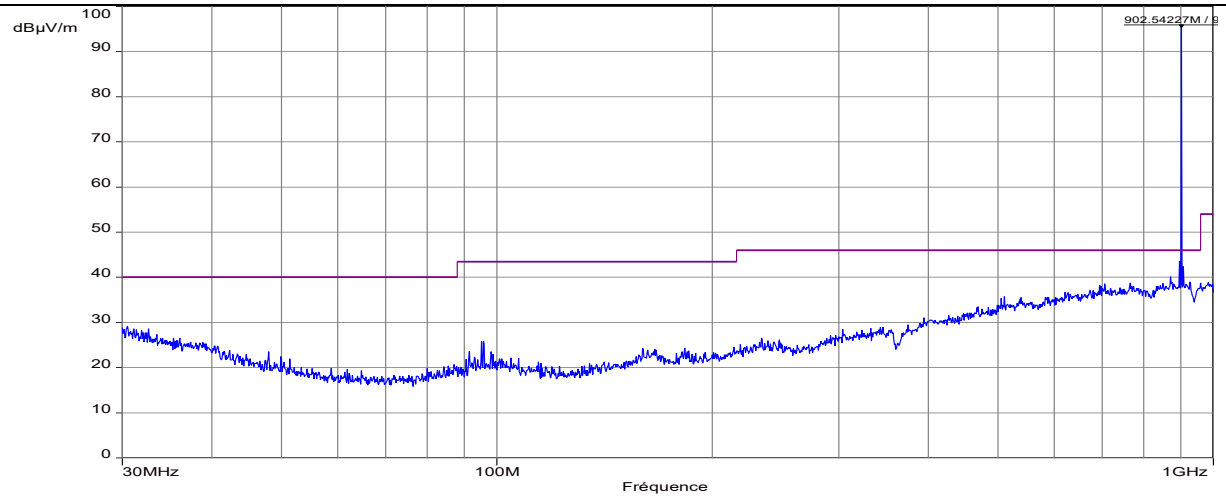


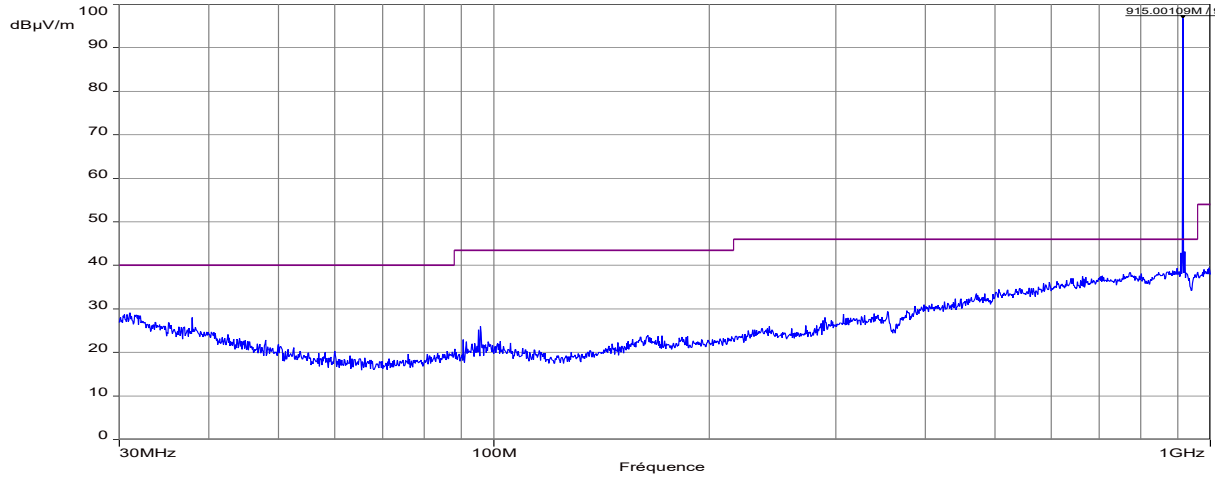
Notes: Pre-scan graph only for identification purpose.
Same result for transmit mode on all channels.

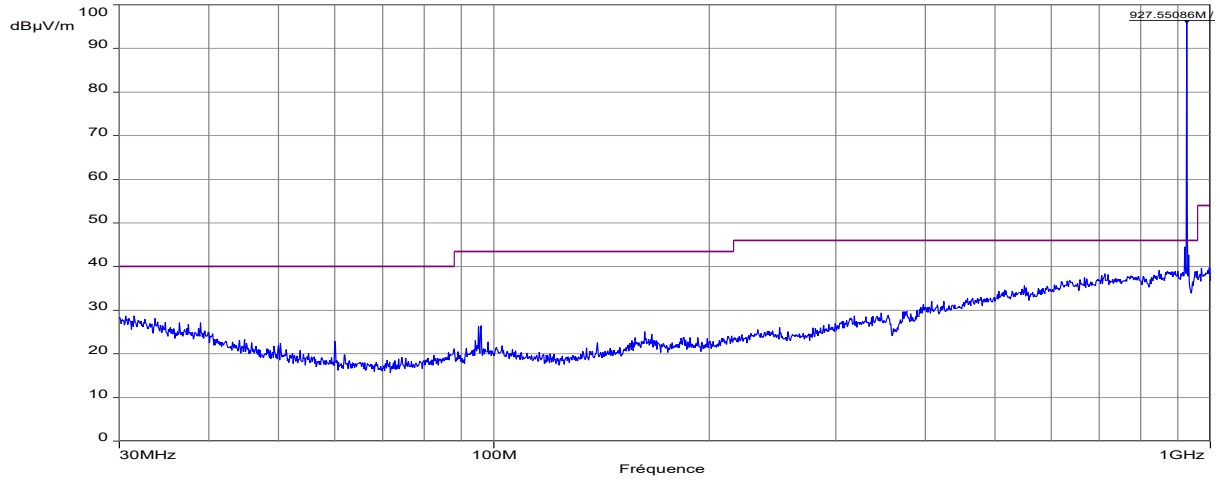
Frequency band investigated:	9kHz-30MHz
Unit :	dBµV/m
RBW :	200Hz (9kHz-150kHz) 9kHz (150kHz-30MHz)
Antenna polarization :	Parallel & Perpendicular to measurement axis
Measurement detector:	Peak

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 30MHz-1GHz / 3m)

Horizontal polarization (Low, Mid and high channels)







------ : Peak measure | ------ : QP limit (3m)

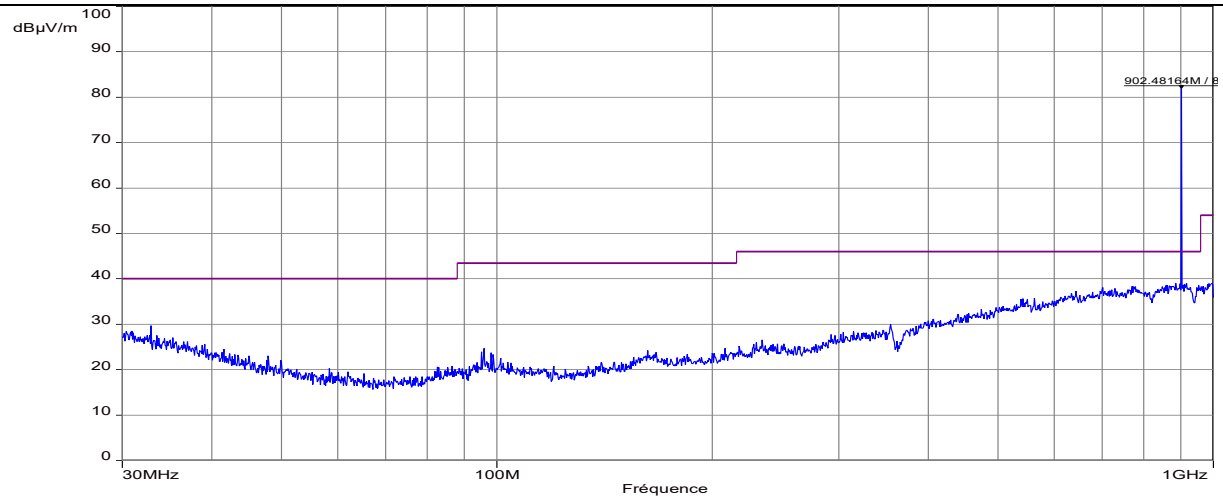
Note: Pre-scan graph only for identification purpose.

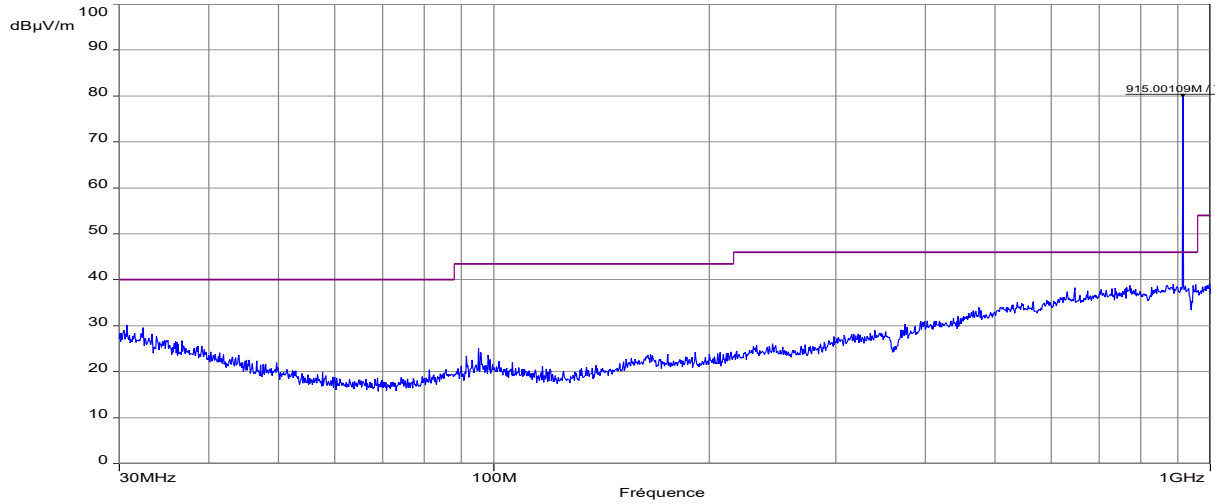
Marker List :

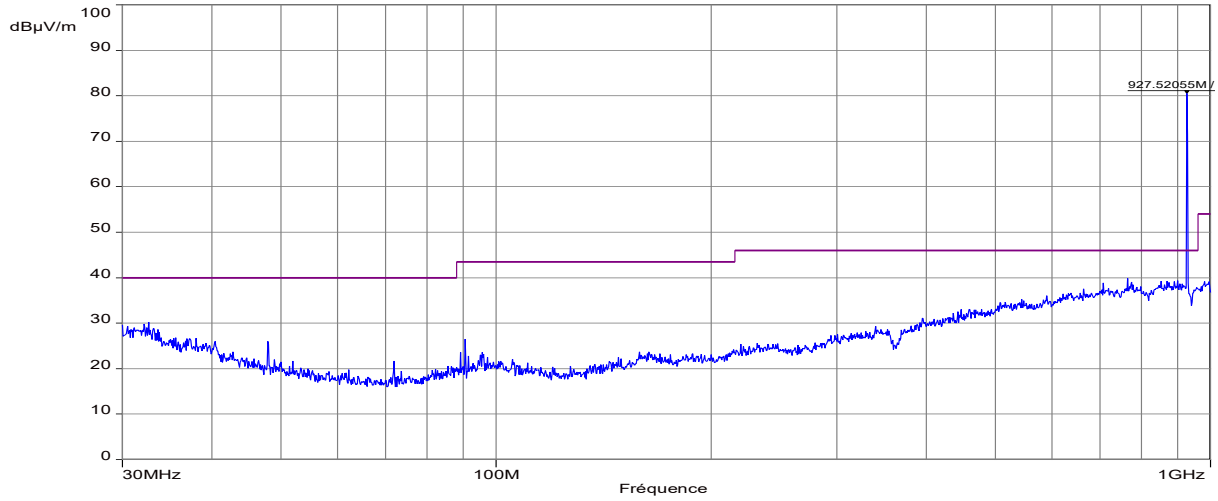
Frequency (MHz)	Peak Level (dBµV/m)	Limit (dBµV/m)	Polarization
None	-	-	-

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 30MHz-1GHz / 3m)

Vertical polarization (Low, Mid and high channels)







------ : Peak measure	------ : QP limit (3m)	

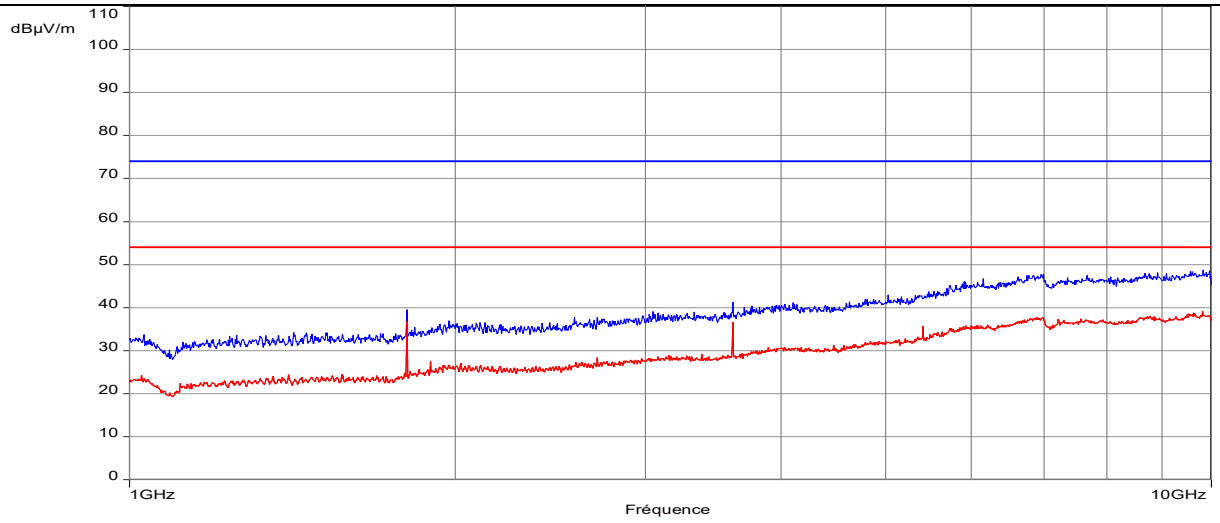
Note: Pre-scan graph only for identification purpose.

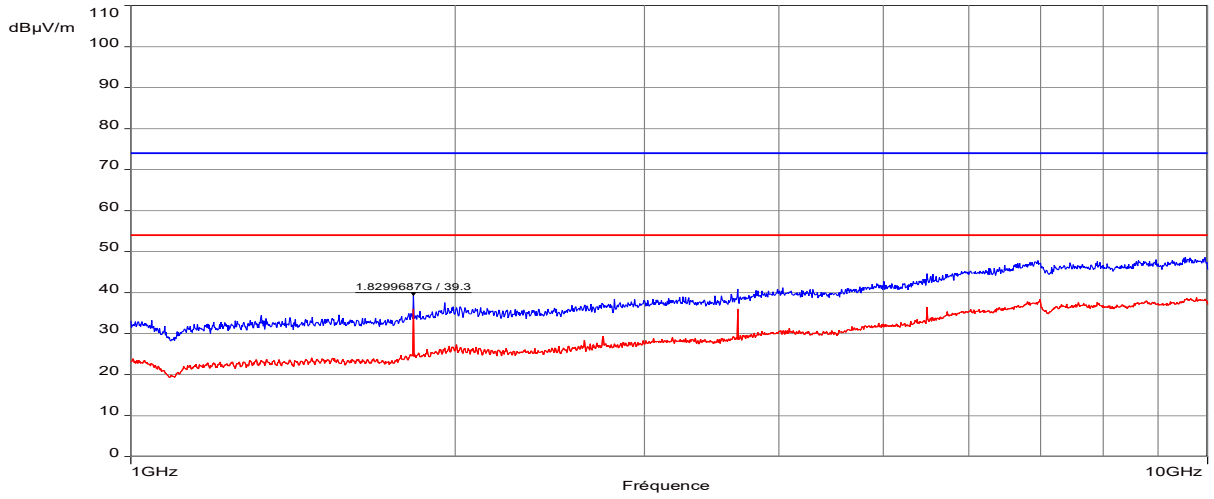
Marker List :

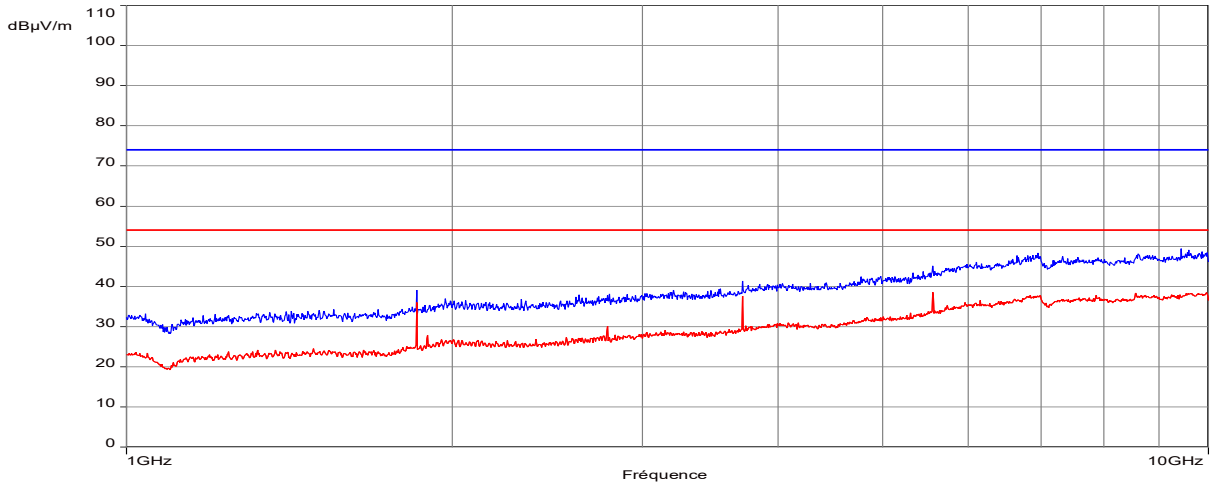
Frequency (MHz)	Peak Level (dBµV/m)	Limit (dBµV/m)	Polarization
None	-	-	-

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 1GHz-10GHz / 3m)

Horizontal polarization (Low, Mid and high channels)







------ : Peak measure / limit	------ : AVG measure / limit	

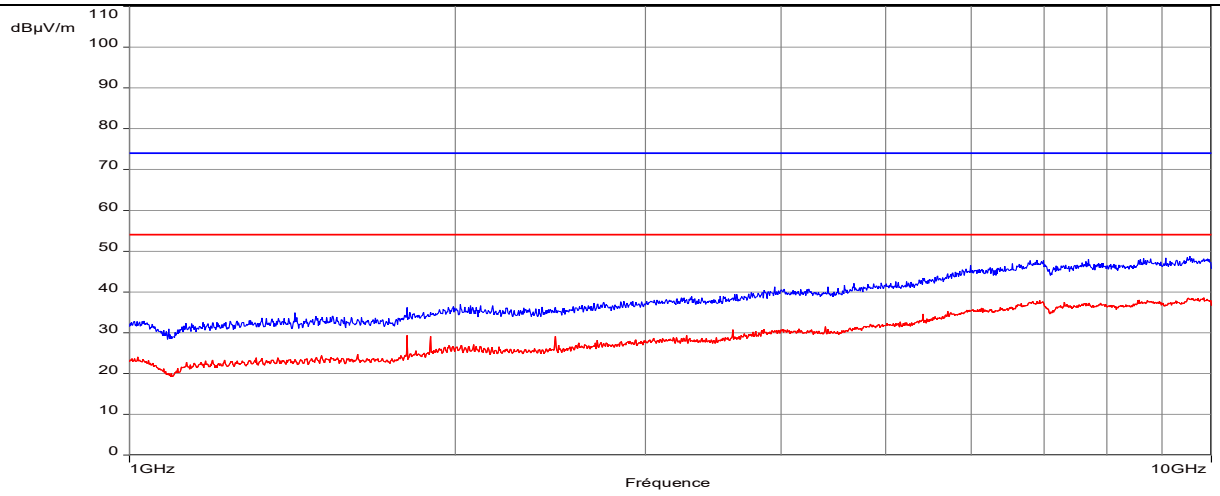
Note: Pre-scan graph only for identification purpose.

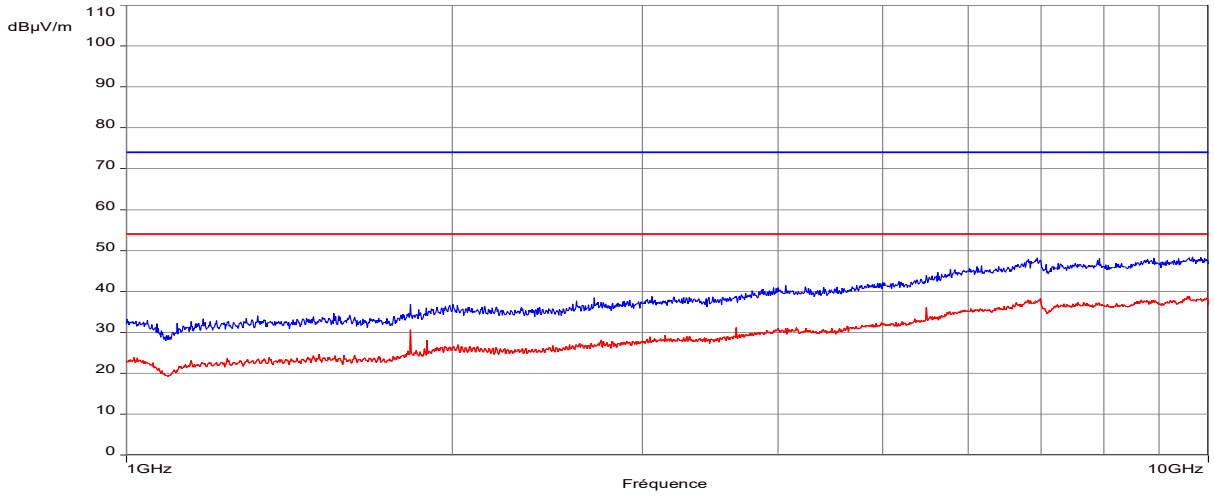
Marker List :

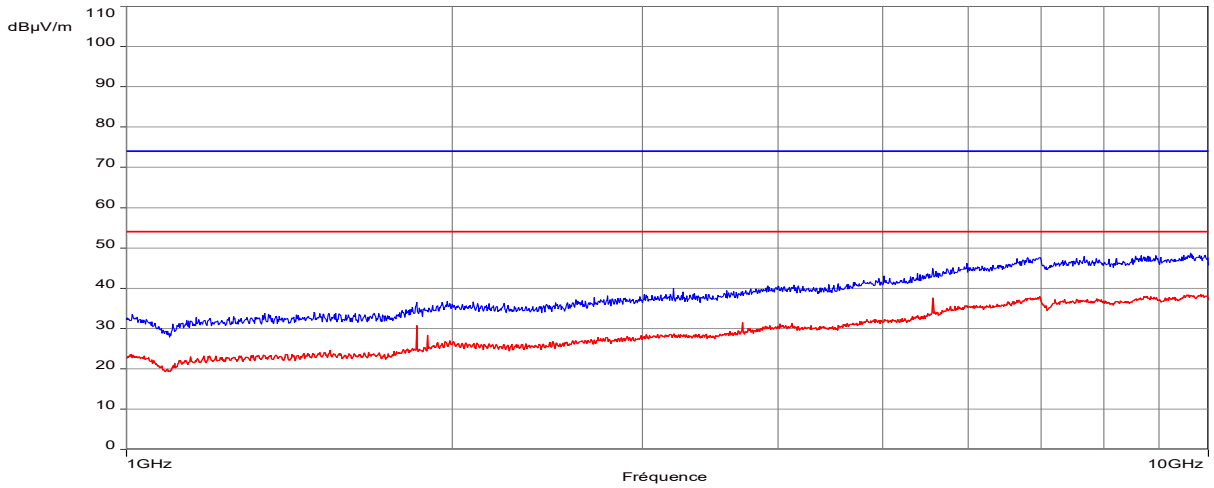
Frequency (MHz)	Peak Level (dBµV/m)	Limit (dBµV/m)	Polarization
None	-	-	-

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 1GHz-10GHz / 3m)

Vertical polarization (Low, Mid and high channels)







------ : Peak measure / limit	------ : AVG measure / limit	

Note: Pre-scan graph only for identification purpose.

Marker List :

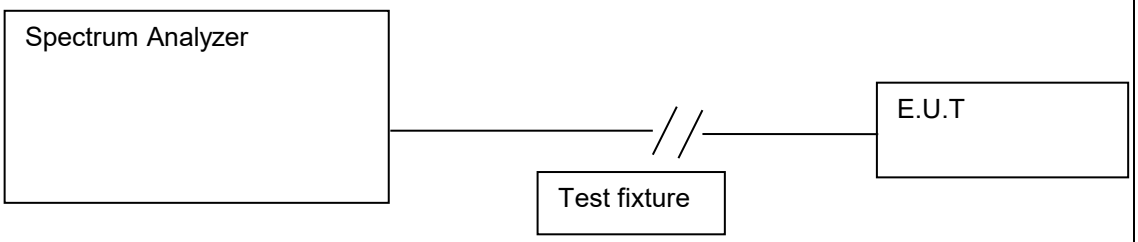
Frequency (MHz)	Peak Level (dBµV/m)	Limit (dBµV/m)	Polarization
None	-	-	-

12. Occupied bandwidth (99%)

TEST: Occupied bandwidth (99%) / RSS-GEN		**Verdict**
Method: The setup is in an anechoic chamber. The spectrum analyzer is connected to the measuring antenna. A radiated measurement is performed. The RBW is set in the range of 1% to 5% of the occupied bandwidth, with VBW ≥ 3 x RBW. The SPAN is wide enough to capture all products of the modulation process. A Peak detector is used. Measure is performed with OBW 99% function of the spectrum analyser. The tested equipment is set to transmit operation with modulation on low, mid and high channels.		**Pass**
Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	20 to 30 °C	24°C ± 2
Relative Humidity	30 to 70 %	36% ± 5
Supplementary information: Test location: SMEE Test date: November 5th, 2019		

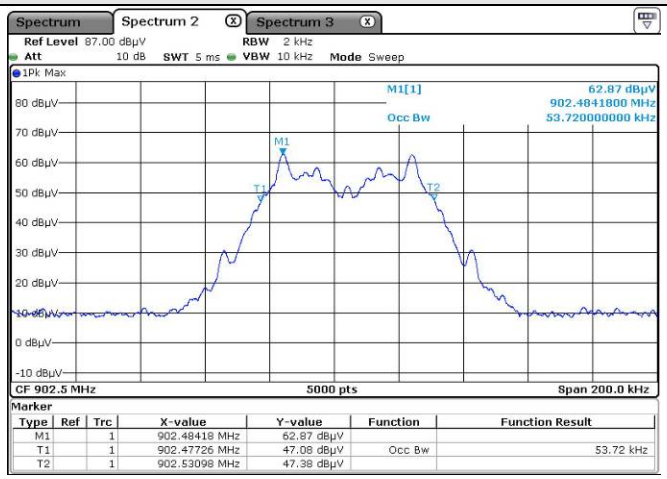
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Horn antenna	ETS-LINDGREN	3115	ANT-141-013	2018/10	2021/10
RF cable	Pasternack RF	PE302-120	CAB-131-024	2019/4	2020/4
RF cable	HUBER+SUHNER	SF104	CAB-141-030	2019/4	2020/4
Anechoic chamber	COMTEST	214263	CAG-141-001	2017/6	2020/6

Test Setup for radiated emission (Test fixture)

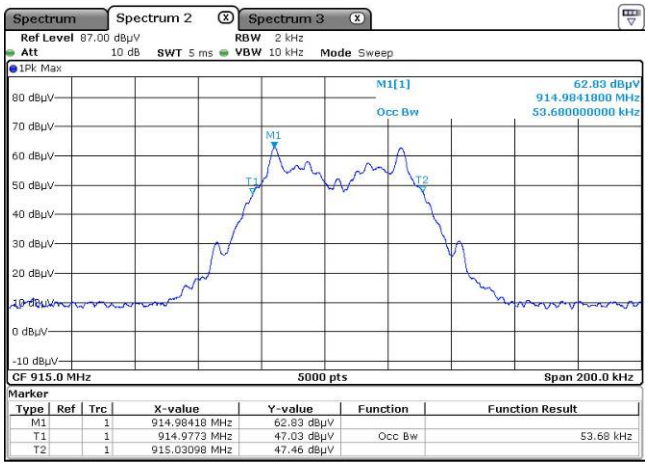


Tabulated Results for Occupied Bandwidth	
Frequency (MHz)	**99% Occupied Bandwidth** (kHz)
902.5	53.72
915.0	53.68
927.5	53.72

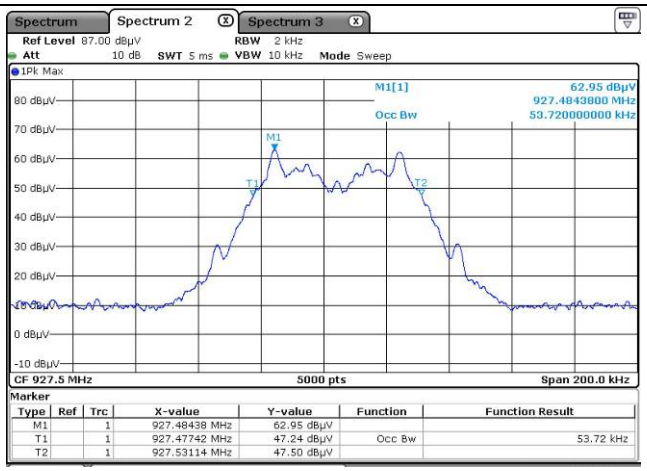
Graphical representation of Occupied Bandwidth



Low Channel



Mid Channel



High Channel

Frequency band investigated:	902 to 928MHz
RBW / VBW :	2kHz / 10kHz
Measurement detector:	Peak / Max hold