

RCE-300-17-105782-1-A

E.M.C Test Report

According to the standards:

FCC 47 CFR PART 15 : 2017 (§15.247)

RSS-247 issue 2 : 2017

RSS-Gen Issue 4 : 2014

Equipment under test:

LORIX ONE (915 MHz version)

FCC ID : 2APAZLORIXONE

IC : 23715-LORIXONE

Company:

WIFX

FCC accredited: FR0004

IC accredited: 4379A

DISTRIBUTION: Mr. AUDRIAZ

(Company: WIFX)

Number of pages: 53 with 4 annexes

Ed.	Date	Modified page(s)	Written by		Technical Verification and Quality Approval	
			Name	Visa	Name	Visa
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 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
 production of the item tested.*



TEST CERTIFICATION FOR: FCC Certification and CANADA certification

NAME OF THE EQUIPMENT UNDER TEST: LORIX ONE

Serial number: FC:C2:3D:0D:A9:CD MAC adress

Reference / model (P/N): -

Software version: 1.0c (HVIN)

NAME OF THE MANUFACTURER: WIFX

ADDRESS OF THE APPLICANT:

Company: WIFX

Address: Rue des petits champs 15
1400 YVERDON LES BAINS
SUISSE

Person in charge: Mr. AUDRIAZ

Person present during the tests None

DATES OF TESTS: 15/02/2018 to 19/02/2018, 03/04/2018 and 16/05/2018

TESTS LOCATION: EMITECH laboratory in Montigny Le Bretonneux (78)
FRANCE.

TESTS OPERATORS: F. LHEUREUX / K. HOUVENAGEL / B.PELLERIN

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1. INTRODUCTION

This document presents the results of Electromagnetic Compatibility tests performed on the equipment «**LORIX ONE**» according to reference documents listed below.

2. REFERENCE DOCUMENTS

FCC 47 CFR Part 15: 2017

Code of Federal Regulations. Title 47- Telecommunication
Chapter 1- Federal Communication Commission
Part 15- Radio frequency devices

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 4 : November 2014

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 V04

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.

3. PRODUCT DESCRIPTION

Class: B (residential environment)

Antenna type and gain: Integral antenna: 4.15 dBi

Operating frequency range: from 903 MHz to 927 MHz

Number of channels: Not communicated

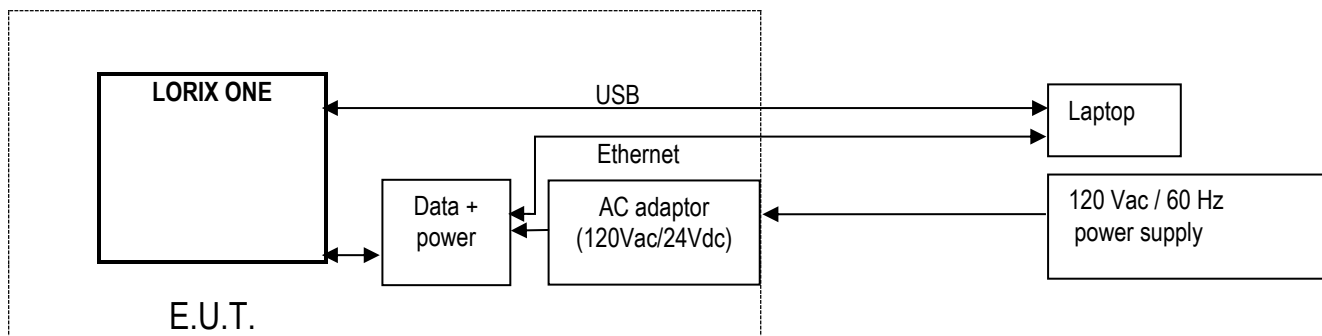
Channel spacing: 500 kHz

Modulation: LORA

Power source: 120 Vac / 60 Hz

Software power setting: -

Modification of the equipment during the tests: No.



4. TESTS AND CONCLUSION

The following table summarizes test results of the EUT.

Subpart B of the standard FCC part 15 – Unintentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.107	Measurement of conducted emission on AC mains ports	X				
15.109	Radiated emission limits	X				

Subpart C of the standard FCC part 15 – Intentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.205	Restricted bands of operation	X				
15.207	Measurement of conducted emission on AC mains ports	X				
15.209	Radiated emission limits; general requirements	X				
15.215	Additional provisions to the general radiated emission limitations					
	(a) Alternative to general radiated emission limits	X				
	(b) Unwanted emissions outside of § 15.247 frequency bands	X				
	(c) 20 dB bandwidth and band-edge compliance	X				
15.247	Intentional radiated emissions					
	a) frequency hopping and digitally modulated					
	a) (1) hopping mode			X		
	a) (1) (i) frequency hopping in the band 902-928 MHz			X		
	a) (1) (ii) frequency hopping in the band 5725–5850 MHz			X		
	a) (1) (iii) frequency hopping in the band 2400–2483.5 MHz			X		
	a) (2) systems using digital modulation in the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz (6 dB bandwidth)	X				
	b) maximum peak conducted					
	b) (1) frequency hopping in the bands 2400–2483.5 MHz or 5725–5850 MHz			X		
	b) (2) frequency hopping in the band 902-928 MHz			X		

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
	b) (3) systems using digital modulation in the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz	X				
	b) (4) maximum peak conducted > 6 dBi					
	b) (4) (i) frequency hopping in the band 2400–2483.5 MHz			X		
	b) (4) (ii) frequency hopping in the band 5725–5850 MHz			X		
	b) (4) (iii) fixed, point-to-point			X		
	c) directional antenna > 6 dBi					
	c) (1) fixed, point-to-point operation			X		
	c) (1) (i) in the band 2400–2483.5 MHz			X		
	c) (1) (ii) in the band 5725–5850 MHz			X		
	c) (1) (iii) fixed, point-to-point			X		
	c) (2) multiple directional beams in the band 2400–2483.5 MHz			X		
	c) (2) (i) information			X		
	c) (2) (ii) sum of the power supplied to all antennas			X		
	c) (2) (iii) one antenna for multiple directional beams			X		
	c) (2) (iv) single directional beam			X		
	d) intentional radiator	X				
	e) peak power spectral density	X				
	f) hybrid system			X		
	g) continuous data stream during the test			X		
	h) to avoid hopping on occupied channels			X		
	i) RF exposure compliance			X		P < 500 mW

N.A.: Not Applicable

N.P.: Not Performed

Standard RSS-247 Issue 2 : 2017

Designation of test	Test results				Comments
	Pass	Fail	N.A.	N.P.	
1. Scope					
3. Certification Requirements					
3.1 RSS-gen compliance			X		See RSS-Gen Issue 4
			X		See RSS-Gen Issue 4
			X		See RSS-Gen Issue 4
			X		See CS-03
			X		See RSS-Gen Issue 4
5.2 Digital Modulation Systems					
(1) -6 dB bandwidth	X				
(2) transmitter power spectral density	X				
5.4 Transmitter Output Power and e.i.r.p. Requirements					
1) 902-928 MHz frequency hopping systems output power / e.i.r.p.			X		
2) 2400-2483.5 MHz frequency hopping systems output power / e.i.r.p.			X		
3) 5725-5850 MHz frequency hopping systems output power / e.i.r.p.			X		
4) Digital modulation systems output power / e.i.r.p.	X				
5) point-to-point systems (2400-2483.5 and 5725-5850 MHz)			X		
6) Multiple directional beams antenna systems (2400-2483.5 MHz)			X		
5.5 Unwanted emission	X				

Standard RSS-Gen Issue 4 : November 2014

Designation of test	Test results				Comments
	Pass	Fail	N.A.	N.P.	
1. Scope					
2. Purpose and application					
2.1 Certification of Radio Apparatus			X		
2.2 Categories of radio Equipment					Category 1
2.3 Exclusions			X		
2.4 Determination of Interference			X		
3. Normative Reference Publications					
4. application for an Exemption					
5. Receivers					
5.1 Scanner Receivers			X		
5.2 Stand-Alone Receivers Operating in the Band 30-960 MHz (Category II)			X		
5.3 Receivers Exempted From Industry Canada Requirement (Category II)			X		
6. Technical Requirements					
6.1 Test Site Facilities					See ANSI C63.4-2014
6.2 Test report					
6.3 External control			X		
6.4 Near Field Measurement Method Below 30 MHz			X		
6.5 Measurement Distance Above 30 MHz					
6.6 Occupied Bandwidth	X				See RSS 247
6.7 Transmitter Antenna for Licensed Radio Apparatus			X		
6.8 Operating Bands and Selection of Test Frequencies			X		
6.9 CISPR Quasi-peak Detector	X				
6.10 Pulsed Operation			X		
6.11 Transmitter Frequency Stability			X		
6.12 Transmitter Output Power	X				See RSS 247
6.13 Transmitter unwanted Emissions	X				
7. Receiver limit					
8. Licence-Exempt radio Apparatus					
8.1 Measurement Bandwidths and Detector Functions	X				
8.2 Amplifiers			X		
8.3 Transmitter Antenna for Licence-Exempt Radio Apparatus			X		
8.4 User Manual notice for Licence-Exempt Radio Apparatus			X		
8.5 Measurement of Licence-Exempt Devices On-Site (in-situ)			X		
8.6 Operating frequency Range of Device in Master/Slave networks			X		
8.7 Radio Frequency identification (RFID) Devices			X		
8.8 AC Power Line Conducted Emission Limits for licence-Exempt Radio Apparatus	X				
8.9 Transmitter Emission limits for Licence-Exempt Radio Apparatus			X		
8.10 Restricted Frequency bands			X		
8.11 Frequency Stability for Licence-Exempt transmitters			X		

Designation of test	Test results				Comments
	Pass	Fail	N.A.	N.P.	
7. Licence-exempt Radio Apparatus					
7.1 General Informations					
7.1.1 External Amplifiers			X		
7.1.2 Transmitter Antenna			X		
7.1.3 User manual Notice			X		User manual shall include the required statements
7.1.4 Radio Apparatus Containing Digital Circuits			X		See ICES-003
7.1.5 Measurement After Installation			X		
7.1.6 operating Frequency range of Devices in Master/Slave Networks			X		
7.1.7 Home-built Devices			X		
7.1.8 RFID Devices			X		
7.2 Measurement Methods and Standard Specifications					
7.2.1 Measurement Bandwidths and Detector Functions	X				
7.2.2 Emissions Falling Within Restricted Frequency Bands			X		
7.2.3 Devices Employing Pulsed Operation			X		
7.2.4 AC Power Line Conducted Emissions Limits			X		
7.2.5 Transmitter Spurious Emission Limits	X				
7.2.6 Transmitter Frequency Stability			X		
7.2.7 Measurement Distance			X		

Note 1: Single / Split / limited modular transmitter.

The host devices of the certified module(s) shall be properly labeled to identify the module(s) within.

Note 2: Spectrum investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz to the 10th harmonic of the highest fundamental frequency or 40 GHz, whichever is lower (F<10 GHz) or to the 5th harmonic of the highest fundamental frequency or 100 GHz, whichever is lower (F≥10 GHz).

Note 3: Spectrum investigated from the lowest frequency internally generated or used in the receiver or 30 MHz, whichever is higher to at least 3 times the highest tuneable or local oscillator frequency, whichever is higher without exceeding 40 GHz.

Note 4: The certificate holder shall be able to demonstrate a quality control process used for production. Inspection and testing in accordance with good engineering practices.

Note 5: The device must be properly identified and labeled.

Note 6: Suppliers of radio apparatus shall provide notices and user information in both English and French.

Note 7: The device shall not have any external controls accessible to the user.

Note 8: When transitioning between bands, the equipment shall not actively transmit

Conclusion:

The tested sample « **LORIX ONE** » submitted to the tests complies with the requirements of the standards:

- FCC 47 CFR PART 15 : 2017
- RSS-247 issue 2: 2017
- RSS-Gen Issue 4 : November 2014

According to the limits specified in this report.

5. DIGITAL MODULATION SYSTEMS

Standards: FCC 47 CFR PART 15 : 2017
RSS-247 Issue 2 : 2017

Sections: §15.247 a) (2)
§5.2 a) of RSS-247 issue 2 : 2017
§6.6 of CNR-Gen issue4 : 2014

Test configuration:

The system is tested in normalized test site.

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

Distance of antenna: 3 meters

Instrumentation test list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
03106	Antenna	Schwarzbeck	UHALP 9108	07/04/2017	07/06/2019
11174	Cable	C&C	N-8m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
11178	Cable	C&C	N-2m	16/04/2016 04/05/2018	16/04/2018 04/07/2020
11182	Cable	C&C	N-2m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
12811	Spectrum analyzer	Rohde & Schwarz	ESR7	01/08/2017	01/10/2018
14803	Shielded enclosure	COMTEST	SAC 3m	---	---

Equipment under test operating condition:

EUT is in continuous transmission mode.

Measure conditions:

Ambient temperature (°C): 22

Relative humidity (%): 50

Resolution bandwidth: 100 kHz

For frequency 903.0 MHz :

```
sudo ./util_tx_continuous --r 1257 --f 903.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 911.5 MHz :

```
sudo ./util_tx_continuous --r 1257 --f 911.5 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 927.0 MHz :

```
sudo ./util_tx_continuous --r 1257 --f 927.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

Results:

Power source: 120 Vac / 60 Hz

6 dB bandwidth

Frequency	Results	Comments
903.0 MHz	591.0 kHz	See annex n°4
911.5 MHz	589.5 kHz	See annex n°4
927.0 MHz	583.5 kHz	See annex n°4

20 dB bandwidth

Frequency	Results	Comments
903.0 MHz	643.5 kHz	See annex n°4
911.5 MHz	648.0 kHz	See annex n°4
927.0 MHz	642.0 kHz	See annex n°4

Test conclusion: Complies with the requirements of the standards.

6. TRANSMITTER OUTPUT POWER

Standards: FCC 47 CFR PART 15 : 2017
RSS-247 Issue 2 : 2017

Sections: §15.247 b) (3)
§5.4 of RSS-247 issue 2 : 2017

Test configuration:

The system is tested in normalized test site.

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

Distance of antenna: 3 meters

Instrumentation test list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
03106	Antenna	Schwarzbeck	UHALP 9108	07/04/2017	07/06/2019
11174	Cable	C&C	N-8m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
11178	Cable	C&C	N-2m	16/04/2016 04/05/2018	16/04/2018 04/07/2020
11182	Cable	C&C	N-2m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
14768	Receiver	Rohde & Schwarz	ESR7	15/11/2017	15/01/2019
14803	Shielded enclosure	COMTEST	SAC 3m	---	---

Equipment under test operating condition:

EUT is in continuous transmission mode.

Measure conditions:

Ambient temperature (°C): 22

Relative humidity (%): 50

Resolution bandwidth: 1 MHz

For frequency 903.0 MHz:

```
sudo ./util_tx_continuous --r 1257 --f 903.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 911.5 MHz:

```
sudo ./util_tx_continuous --r 1257 --f 911.5 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 927.0 MHz:

```
sudo ./util_tx_continuous --r 1257 --f 927.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

Results:

Power source: 120 Vac / 60 Hz

Frequency	Electro-magnetic field (dB μ V/m)	TP* (dBm)	Limit (dBm)
903.0 MHz	122.95	+25.6	+ 30
911.5 MHz	123.25	+25.9	+ 30
927.0 MHz	122.10	+24.7	+ 30

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

Test conclusion: Complies with the requirements of the standards.

7. PEAK POWER SPECTRAL DENSITY

Standards: FCC 47 CFR PART 15 : 2017
RSS-247 Issue 2 : 2017

Sections: §15.247 e)
§5.2 b) of RSS-247 issue 2 : 2017

Test configuration:

The system is tested in normalized test site.

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

Distance of antenna: 3 meters

Instrumentation test list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
03106	Antenna	Schwarzbeck	UHALP 9108	07/04/2017	07/06/2019
11174	Cable	C&C	N-8m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
11178	Cable	C&C	N-2m	16/04/2016 04/05/2018	16/04/2018 04/07/2020
11182	Cable	C&C	N-2m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
14768	Receiver	Rohde & Schwarz	ESR7	15/11/2017	15/01/2019
14803	Shielded enclosure	COMTEST	SAC 3m	---	---

Equipment under test operating condition:

EUT is in continuous transmission mode.

Measure conditions:

Ambient temperature (°C): 22

Relative humidity (%): 50

Resolution bandwidth: 3 kHz

Video bandwidth: 10 kHz

For frequency 903.0 MHz:

```
sudo ./util_tx_continuous --r 1257 --f 903.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 911.5 MHz:

```
sudo ./util_tx_continuous --r 1257 --f 911.5 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 927.0 MHz:

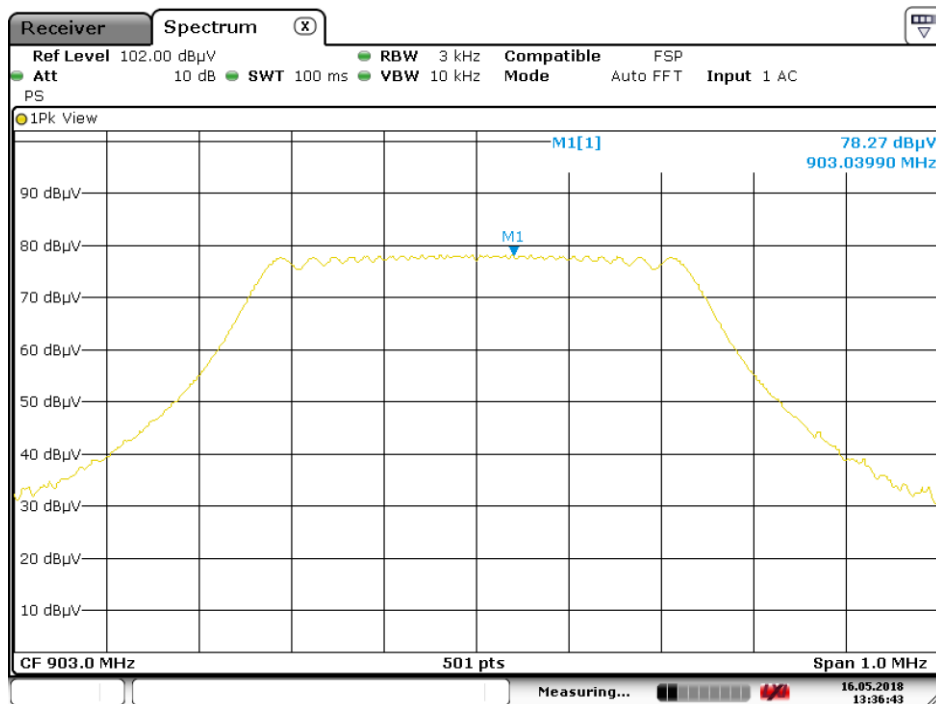
```
sudo ./util_tx_continuous --r 1257 --f 927.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

Results:

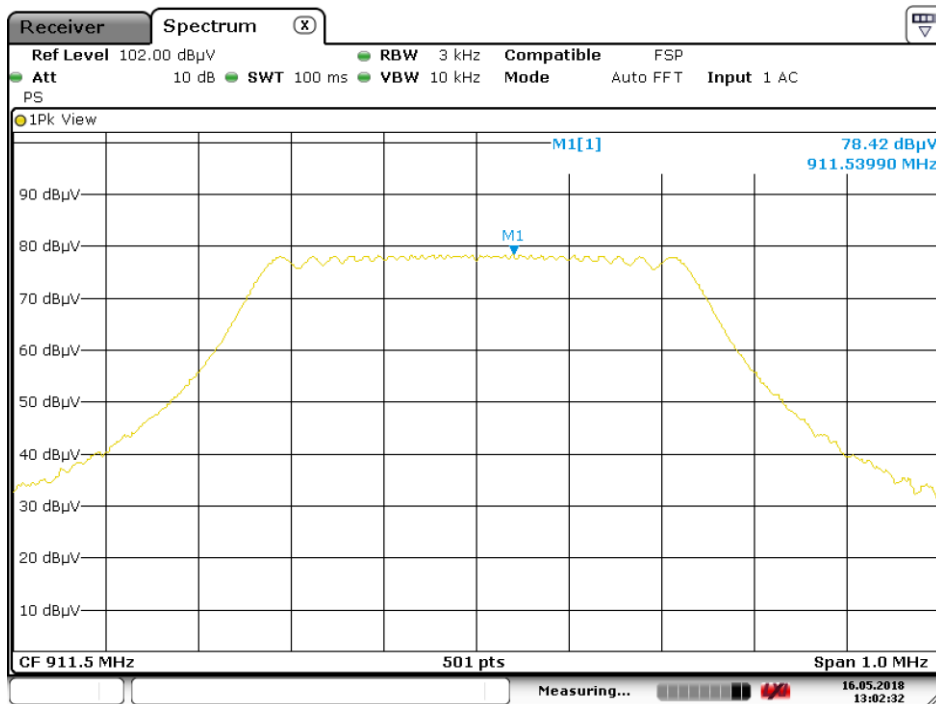
Power source: 120 Vac / 60 Hz

Frequency	Electro-magnetic field measured (dB μ V/m)	Cable Loss (dB)	Antenna Factor (dB)	Electro-magnetic field (dB μ V/m)	PPSD* (dBm)	Limit (dBm)
903.0 MHz	78.22	3.4	21.7	103.33	+6.0	+ 8.0
911.5 MHz	78.42	3.4	22.2	104.00	+6.8	
927.0 MHz	77.90	3.4	21.7	103.00	+5.6	

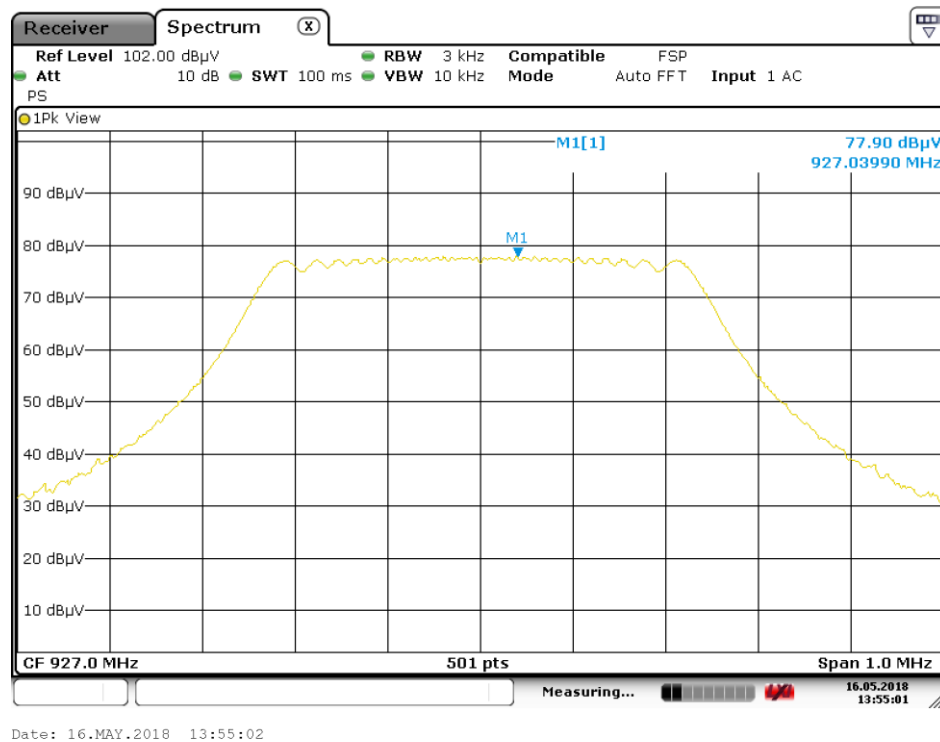
* PPST = $(E \times d)^2 / (30 \times 1.64)$ for d = 3 m



Date: 16.MAY.2018 13:36:44



Date: 16.MAY.2018 13:02:33



Date: 16.MAY.2018 13:55:02

Test conclusion: Complies with the requirements of the standards.

8. ADDITIONAL PROVISIONS TO THE GENERAL RADIATED EMISSIONS LIMITATION

Standard: FCC 47 CFR PART 15 : 2015

Sections: §15.215 (b) and §15.247 (d)
§5.5 of RSS-247 issue 2 : 2017

Instrumentation test list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
03106	Antenna	Schwarzbeck	UHALP 9108	07/04/2017	07/06/2019
11174	Cable	C&C	N-8m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
11178	Cable	C&C	N-2m	16/04/2016 04/05/2018	16/04/2018 04/07/2020
11182	Cable	C&C	N-2m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
14803	Shielded enclosure	COMTEST	SAC 3m	---	---
12811	Spectrum analyzer	Rohde & Schwarz	ESR7	01/08/2017	01/10/2018

Equipment under test arrangement:

The system is tested in normalized test site.

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The level was maximised in antenna height, azimuth and polarization. The maximum level measured on the spectrum analyser was recorded.

For frequency 903.0 MHz :

```
sudo ./util_tx_continuous --r 1257 --f 903.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

For frequency 927.0 MHz :

```
sudo ./util_tx_continuous --r 1257 --f 927.0 --mod LORA --pa 3 --mix 13 --dig 2 --sf 7 --bw 500
```

Results:

Ambient temperature (°C): 22

Relative humidity (%): 50

Polarization of test antenna: Vertical (height = 150 cm)
Position of equipment: azimuth = 200°

} For 903.0 MHz

Polarization of test antenna: Vertical (height = 145 cm)
Position of equipment: azimuth = 180°

} For 927 MHz

Fundamental frequency (MHz)	Field Strength Level of fundamental (dB μ V/m)	Detector (Peak or Average)	Frequency of maximum Band-edges Emission (MHz)	Delta Marker (dB) *	Calculated Max Out of Band Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
903.0	122.95	Peak	903.06	59.3	63.6	102.95	39.4
927.0	122.10	Peak	927.06	58.0	64.1	102.10	38.0

The band edge readings were performed with a peak detector and with the E.U.T. set in a constant 100 % transmit state.

* According to step 2 of Marker-Delta Method DA 00-705.

Band-edge curves are given in annex 4.

9. UNINTENTIONAL RADIATED EMISSIONS AND TRANSMITTER UNWANTED EMISSION IN THE BAND 9 KHz – 10 GHz

Standards: FCC 47 CFR PART 15 : 2017
RSS-Gen Issue 4 : November 2014

Sections: §15.205; 15.209 and §5.247
§6.13 of RSS-Gen

Equipment under test arrangement:

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal metal ground plane.

For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization. The frequency azimuth and antenna height are presented in the table on the next pages.

The E.U.T. is blocked in continuous transmission.

Frequencies range: 9 kHz – 30 MHz
30 MHz - 1 GHz
1 GHz – 10 GHz

Detection mode: Quasi-peak for 9 kHz – 30 MHz
Quasi-peak for 30 MHz - 1 GHz
Average for 1 GHz – 10 GHz

Resolution bandwidth: 200 Hz for 9 kHz – 150 kHz
9 kHz for 150 kHz – 30 MHz
120 kHz for 30 MHz - 1 GHz
1 MHz for 1 GHz – 10 GHz

Measurement distance: 3 meters from 9 kHz to 30 MHz
3 meters from 30 MHz to 10 GHz

- Limit for emission radiated outside the frequency band, except the harmonics, shall be attenuated by at least 20 dB below the level of fundamental or the general radiated emission limits.

From 9 kHz to 30 MHz

Frequencies range	Limit ($\mu\text{V/m}$)
9 – 490 kHz	$2400/F$ (F in kHz) *
490 – 1705 kHz	$24000/F$ (F in kHz) **
1.705 – 30 MHz	30 **

* Limits in $\mu\text{V/m}$ can be extrapolated to 3 m using 40 dB / decade.

** Limits in $\mu\text{V/m}$ can be extrapolated to 3 m using 20 dB / decade.

From 30 MHz to 10 GHz

Frequencies range (MHz)	Limit	
	(dB $\mu\text{V/m}$)	($\mu\text{V/m}$)
30 to 88	40.0	100
88 to 216	43.5	150
216 to 960	46.0	200
Above 960	54.0	500

Instrumentation test list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
05744	Amplifier	Mini-circuit	ZFL-1000LN	25/09/2017	25/11/2018
14287	Antenna	ETS lindgren	3142E	24/10/2017	24/12/2018
00941	Antenna	Emco	3115	28/10/2015	28/12/2018
14227	Cable	C&C	N-4m	02/09/2016 18/04/2018	18/04/2018 18/06/2020
14226	Cable	C&C	N-4m	02/09/2016	02/11/2018
11176	Cable	C&C	N-2m	18/04/2016 18/04/2018	18/04/2018 18/06/2020
14224	Cable	C&C	N-6m	02/09/2019 18/04/2018	02/09/2018 18/06/2020
00803	Filter	Trilithic	3VNF500/1000	03/11/2016	03/01/2019
01097	Filter	Trilithic	6HC1300-2.5-KK	10/05/2017	10/07/2019
02102	Power supply	SECAS	CF1000 50/60	---	---
14622	Shielded enclosure	COMTEST	SAC 3m	---	---
12811	Spectrum analyzer	Rohde & Schwarz	ESR7	01/08/2017	01/10/2018
05175	Spectrum analyzer	Rohde & Schwarz	FSP40 (V 4.00SP1-V3.0-10-2)	01/04/2016	01/06/2018

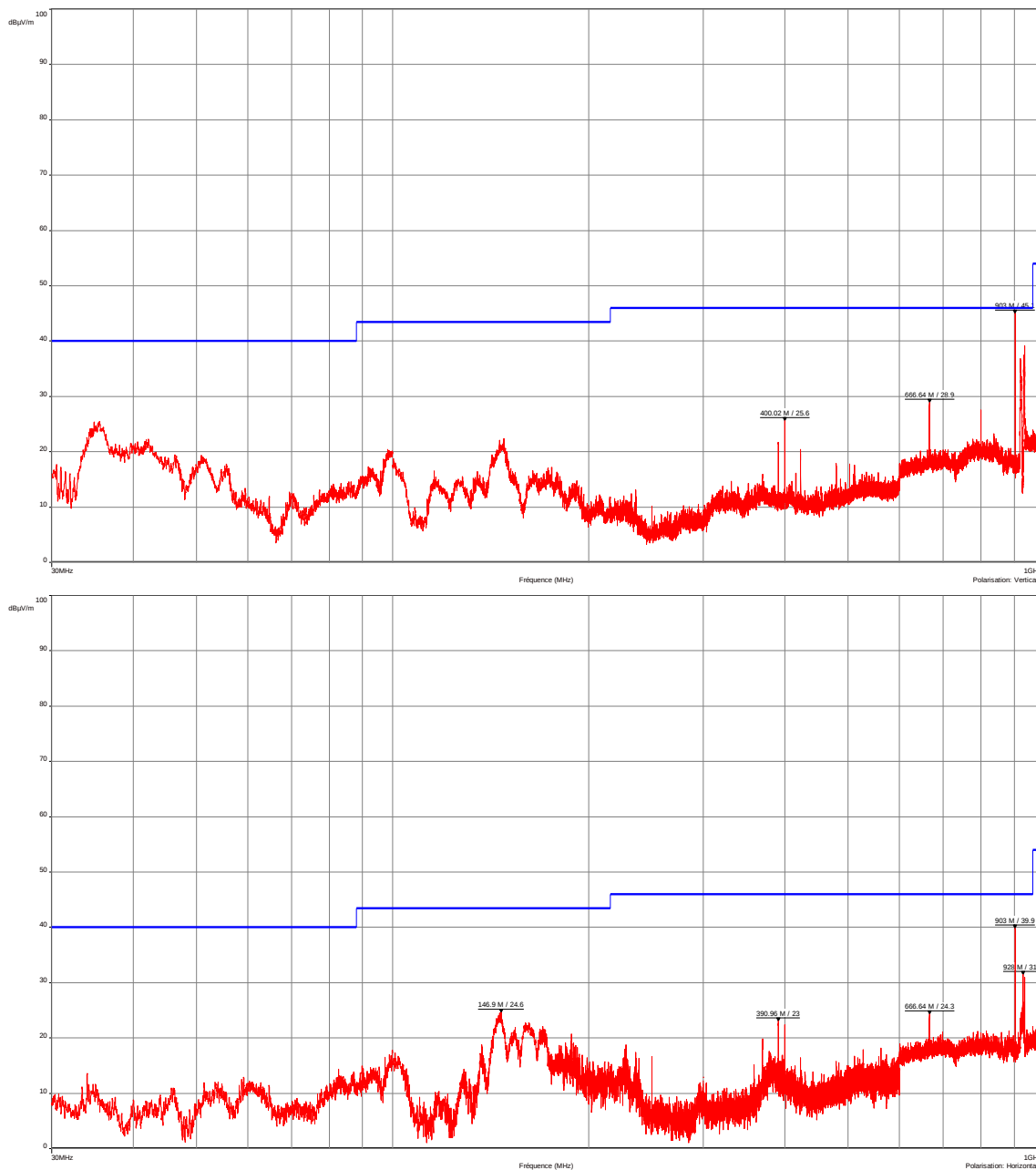
Results:

Ambient temperature (°C): 22

Relative humidity (%): 50

Power source: 120 Vac / 60 Hz

Frequency 903 MHz

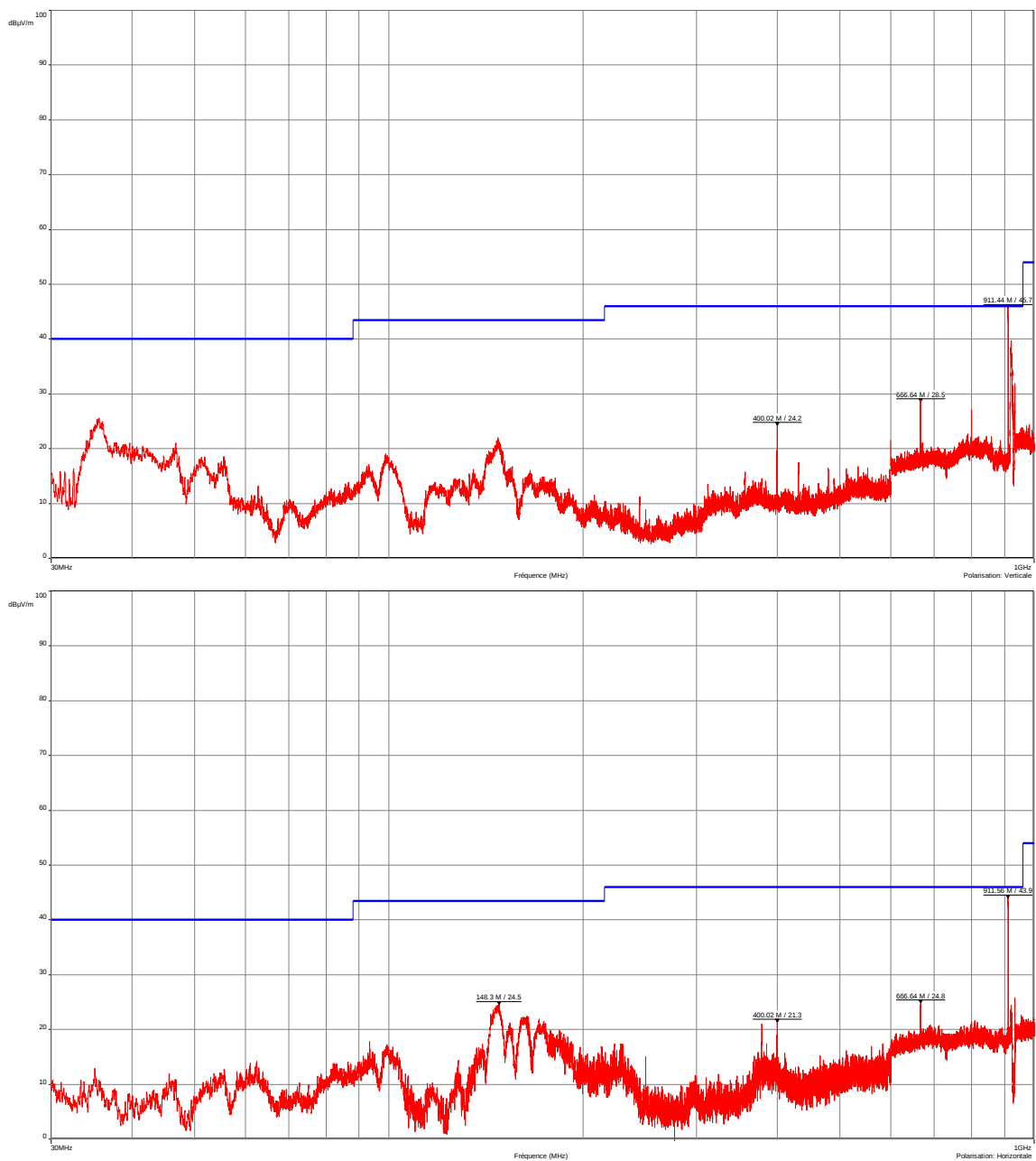


Frequency (MHz)	Polarization	Electro-magnetic field (dBμV/m)	Limit (dBμV/m)
400.02	Vertical	25.6	40
666.64	Vertical	28.9	46
146.90	Horizontal	24.6	43.5
390.96	Horizontal	23.0	46
666.64	Horizontal	24.3	46

No significant frequency has been found other than those given above between 9 kHz to 30 MHz and 1 GHz to 10 GHz.

The frequency at 903.0 MHz corresponds to the carrier frequency.

Frequency 911.5 MHz.

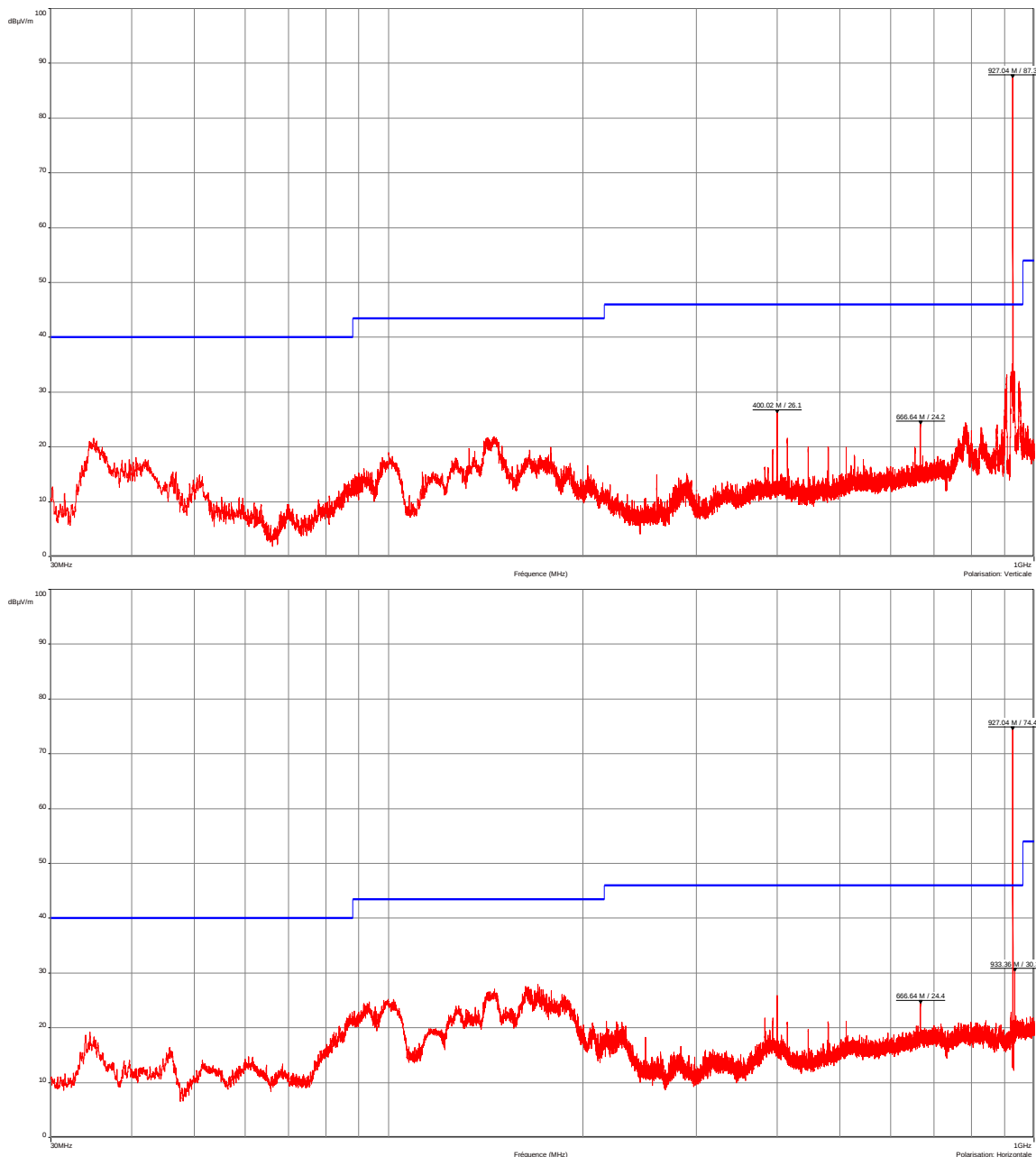


Frequency (MHz)	Polarization	Electro-magnetic field (dBμV/m)	Limit (dBμV/m)
400.02	Vertical	24.2	40
666.64	Vertical	28.5	46
148.30	Horizontal	24.5	43.5
400.02	Horizontal	21.3	46
666.64	Horizontal	24.8	46

No significant frequency has been found other than those given above between 9 kHz to 30 MHz and 1 GHz to 10 GHz.

The frequency at 911.44 MHz corresponds to the carrier frequency.

Frequency 927 MHz.



Frequency (MHz)	Polarization	Electro-magnetic field (dBμV/m)	Limit (dBμV/m)
400.02	Vertical	26.1	40
666.64	Vertical	24.2	46
148.30	Horizontal	24.5	43.5
666.64	Horizontal	24.4	46

No significant frequency has been found other than those given above between 9 kHz to 30 MHz and 1 GHz to 10 GHz.

The frequency at 927.04 MHz corresponds to the carrier frequency.

Test conclusion:

The equipment complies with the requirements of the standards.

10. CONDUCTED EMISSION

Standards: FCC 47 CFR PART 15: 2017
RSS-Gen Issue 4 : November 2014

Test methods: § 15.207 of FCC 47 CFR PART 15: 2017
§ 8.8 of RSS-Gen Issue 4 : November 2014

Test configuration:

Tested cable	Measure with	E.U.T. height
120 Vac / 60 Hz power supply	L.I.S.N.	80 cm

Frequency band	Tested cable	Resolution bandwidth	Video bandwidth
150kHz - 30MHz	120 Vac / 60 Hz power supply	10 kHz	30 kHz

Test equipment list:

Order Nr	Category	Manufacturer	Type	Last validity date	Next validity date
10063	PE Coil	EMITECH	CISPR 16-2-1 : 2008	---	---
04312	Cable	/	BNC-0.5m	02/05/2016 02/05/2018	02/05/2018 02/07/2020
02803	Cable	/	N-2m	16/04/2016 18/04/2018	16/04/2020 18/06/2020
02871	Cable	/	N-3m	16/04/2016 18/04/2018	18/04/2018 18/06/2020
14565	LISN	Rohde & Schwarz	ENV216	09/06/2017	09/08/2018
12366	Multimeter	EMITECH	Absorbeur courant de gaine	31/10/2017	31/12/2019
00825	Receiver	Rohde & Schwarz	ESH3 (V 335.8017.52)	18/12/2017	18/02/2020
00000	Software	Nexio	BAT EMC v3.6.0.32	---	---
12575	Spectrum analyzer	Rohde & Schwarz	FSEA	26/02/2016 26/02/2018	26/02/2018 26/04/2020
00240	Surges Suppressor	Hewlett Packard	11947A	03/04/2017	03/06/2019
01804	Test enclosure	EMITECH	JD1	---	---

Results:

See curves below including detections and limits in peak (red), average (green) and quasi-peak (blue).

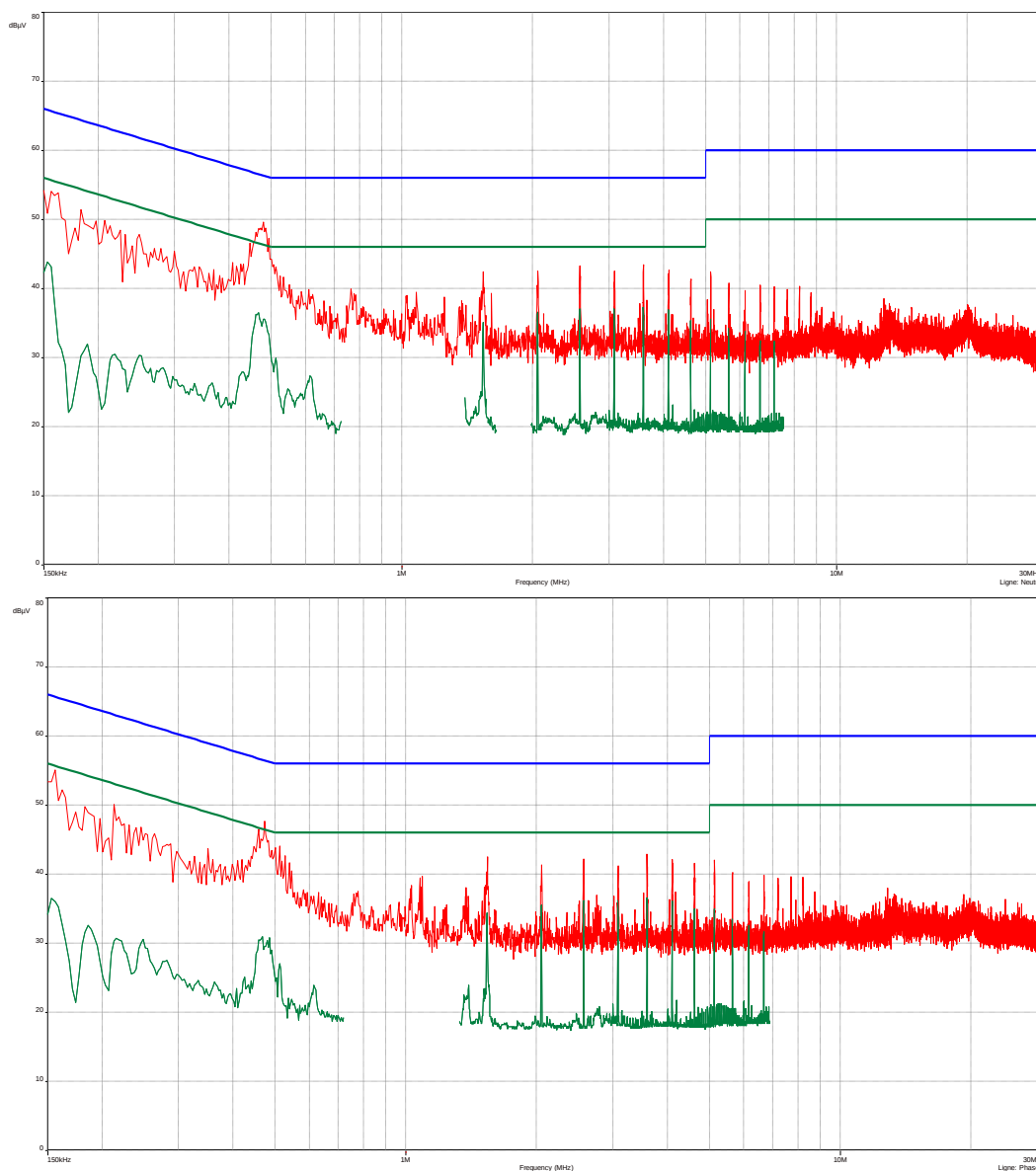
Maximal uncertainty: 3.38 dB

Curves 1 and 2

LORIX ONE

Conducted voltage emission (measurement): 120Vac/60Hz power supply in peak and average value detection.

19/02/2018



Frequency (MHz)	Lline	Detector	Electro-magnetic field (dBμV)	Limit (dBμV)
0.153	neutral	Average	43.9	56 to 46
0.468	neutral	Average	36.5	56 to 46
2.055	neutral	Average	36.6	46
2.568	neutral	Average	37.1	46
3.081	neutral	Average	37.1	46
3.594	neutral	Average	37.3	46
0.153	phase	Average	36.5	56 to 46
0.468	phase	Average	31.0	56 to 46
2.568	phase	Average	36.2	46
3.081	phase	Average	36.2	46
4.107	phase	Average	36.1	46

« □□□ End of report, 4 annexes to be forwarded □□□ »

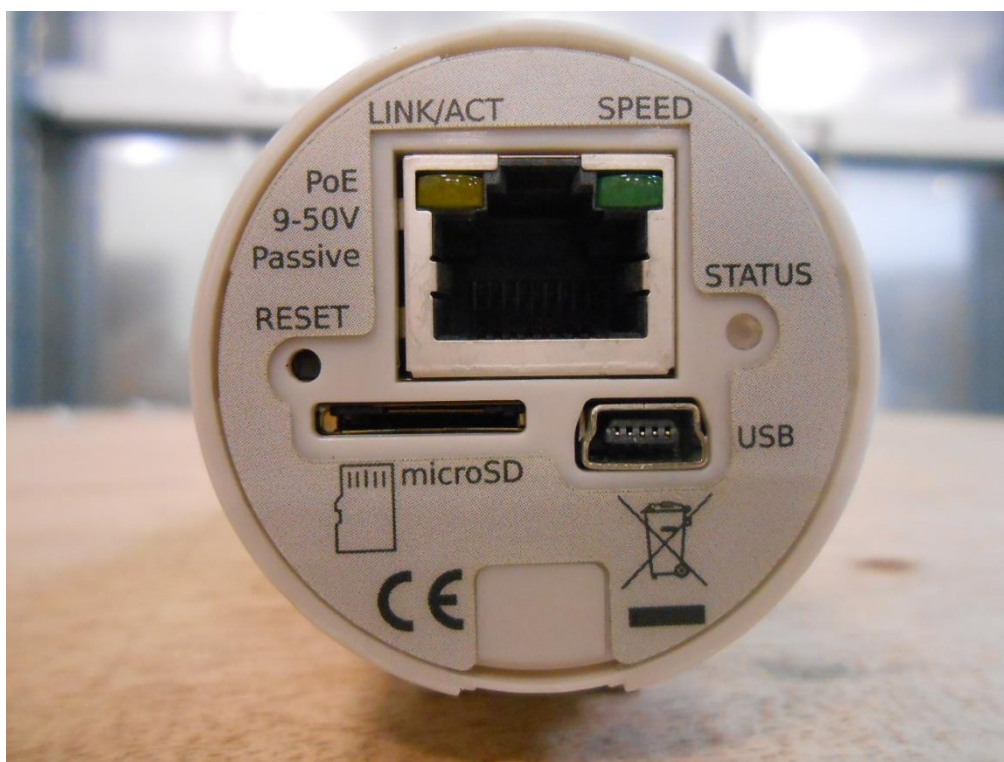
ANNEX 1

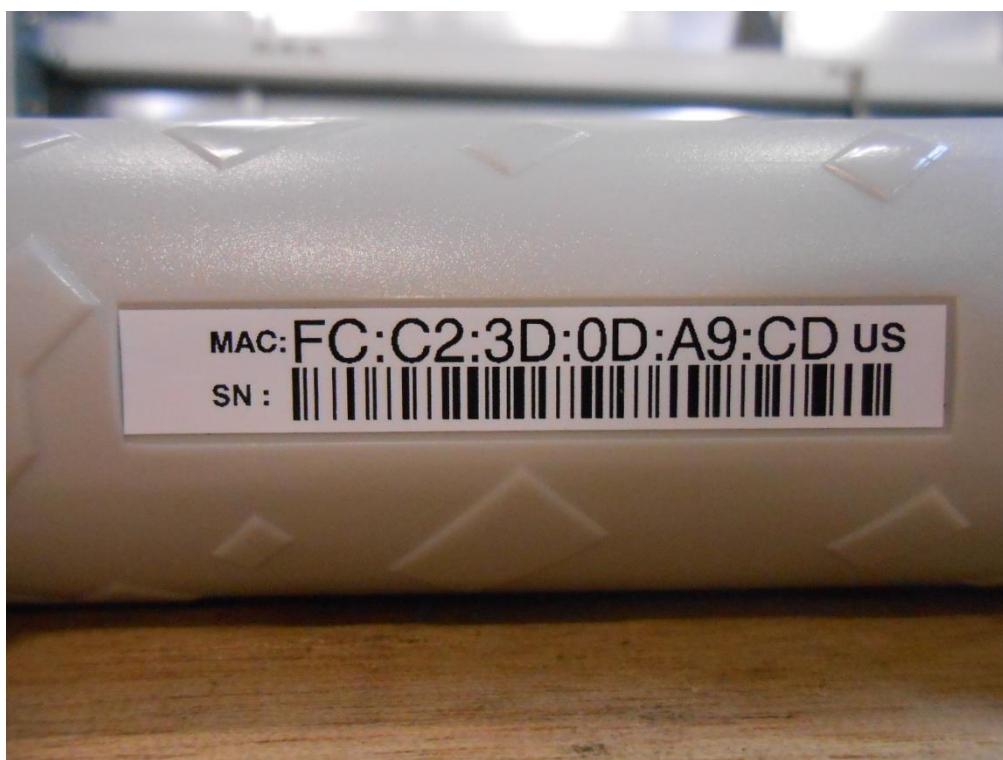
EXTERNAL PHOTOGRAPHS





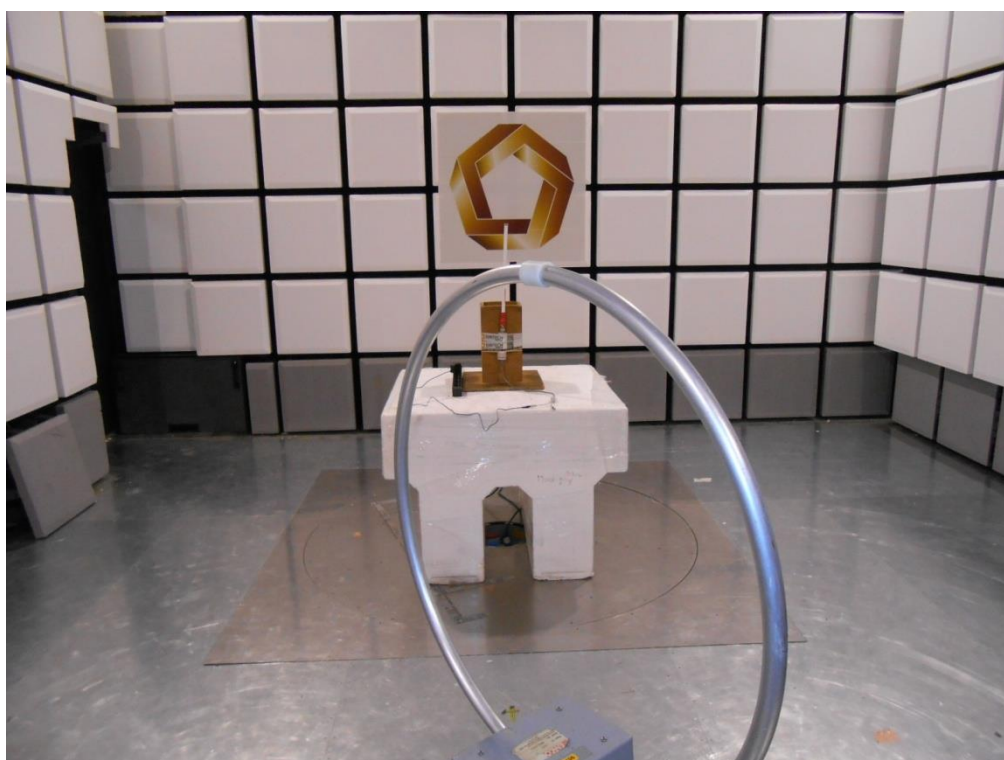






ANNEX 2

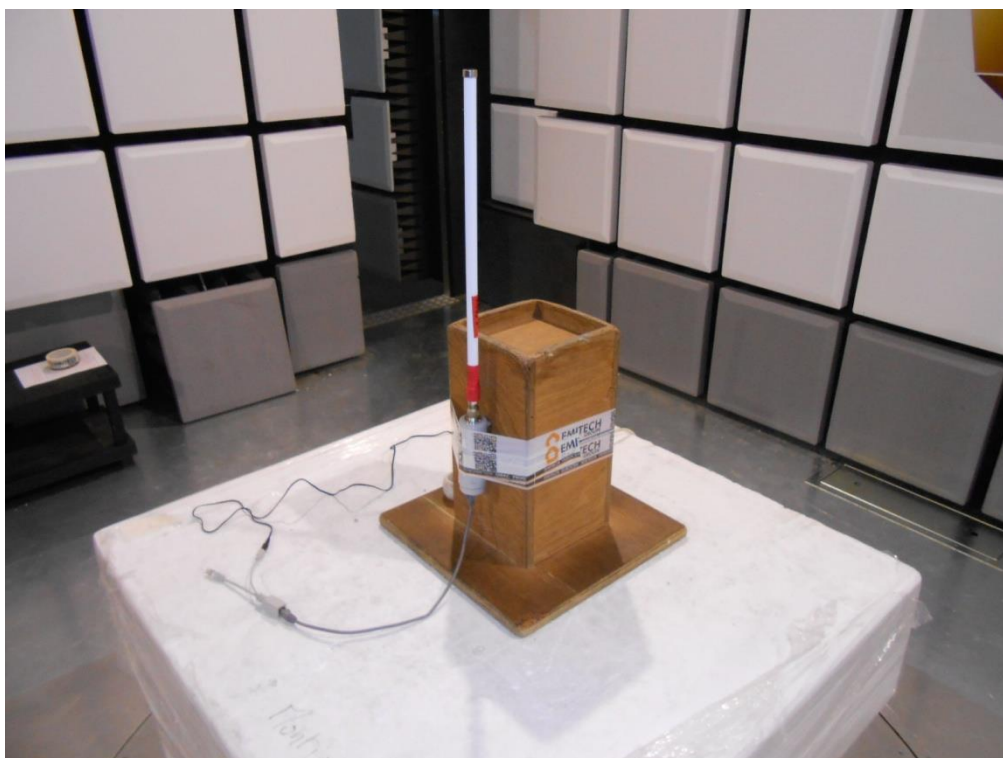
TEST SETUP PHOTOGRAPHS

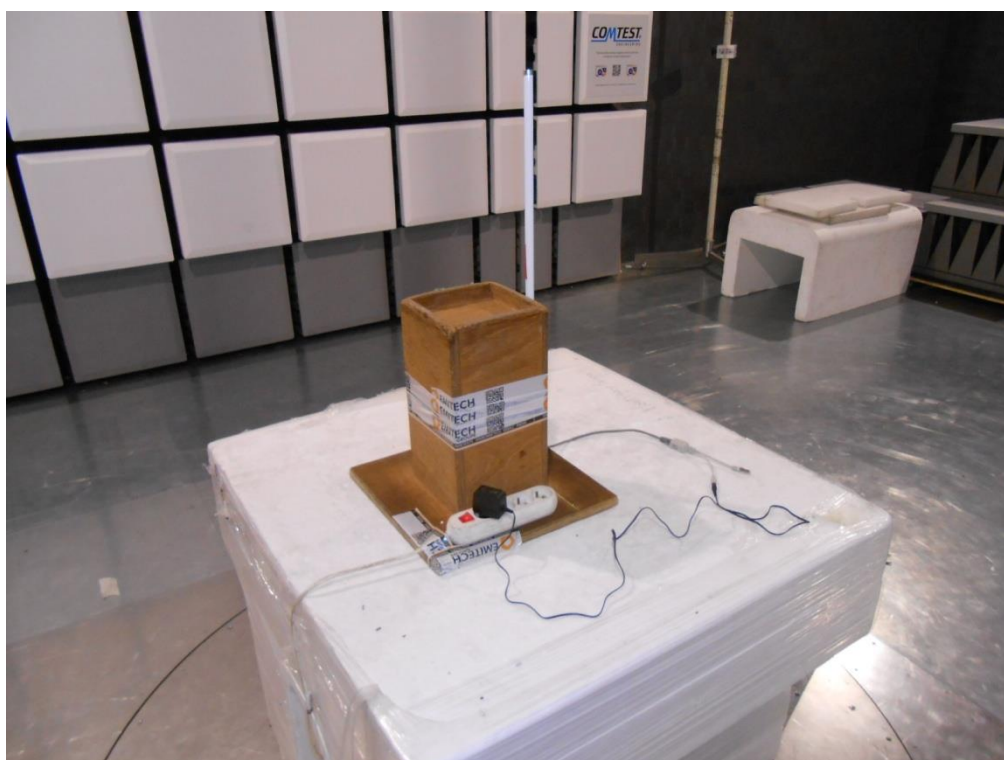
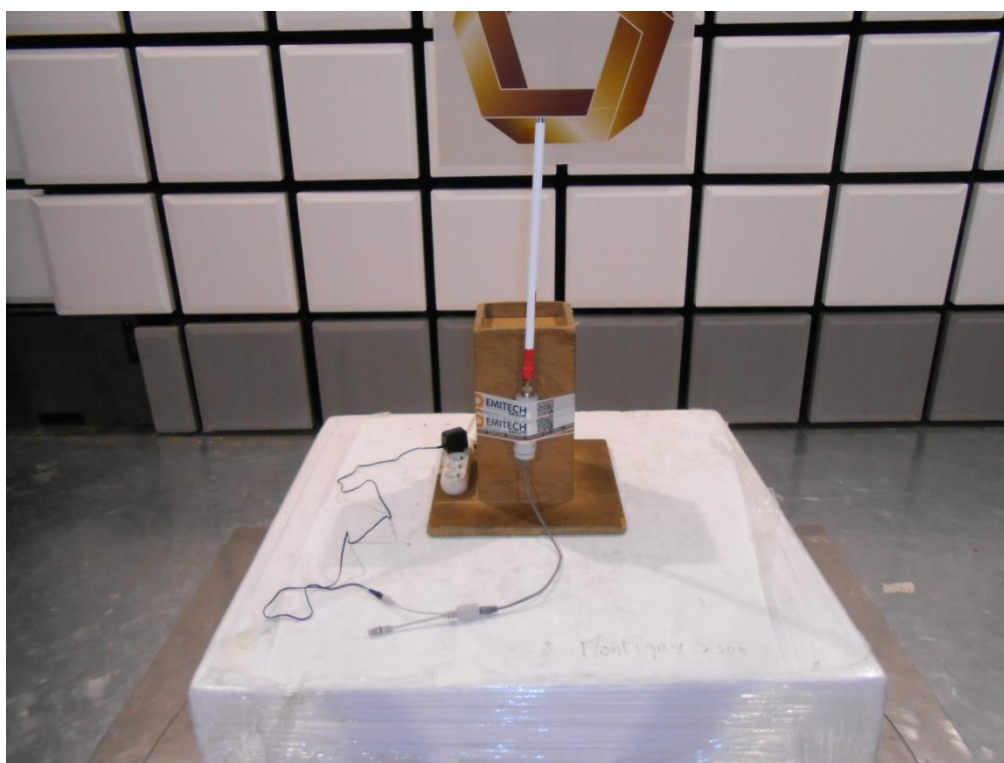










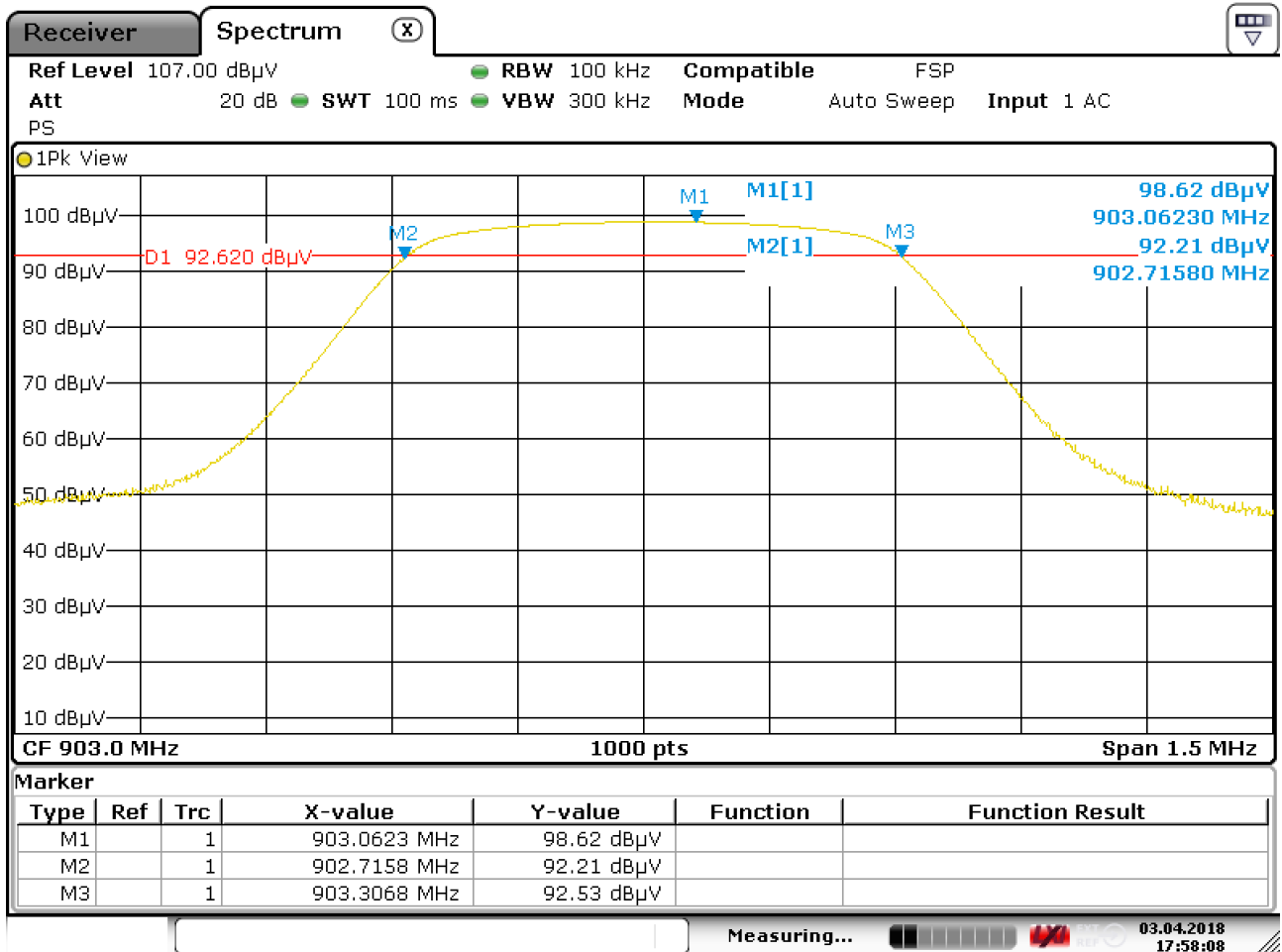


ANNEX 3

6 dB BANDWIDTH
20 dB BANDWIDTH

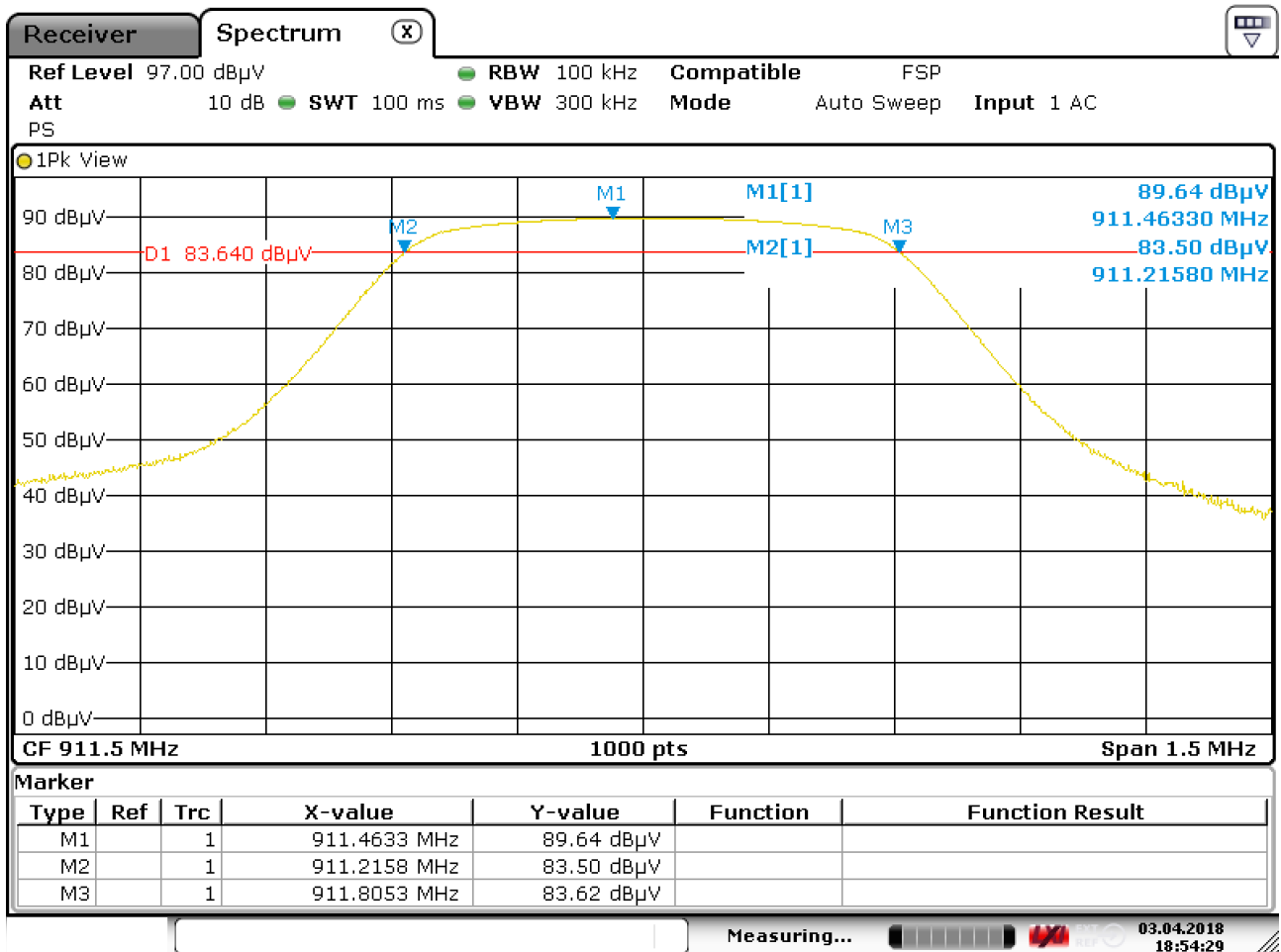
6 dB BANDWIDTH

Frequency 903.0 MHz



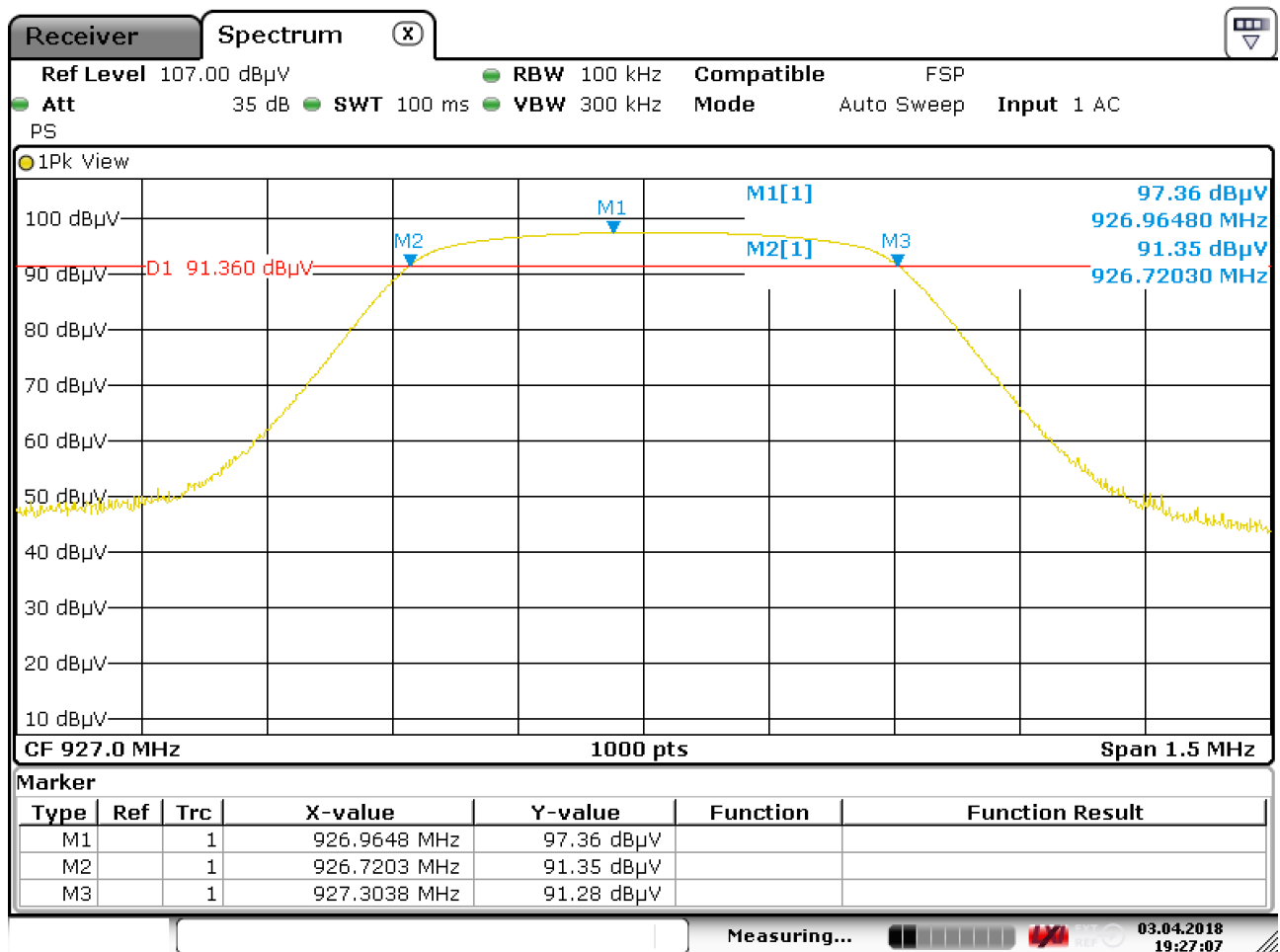
Date: 3.APR.2018 17:58:08

Frequency 911.5 MHz



Date: 3.APR.2018 18:54:30

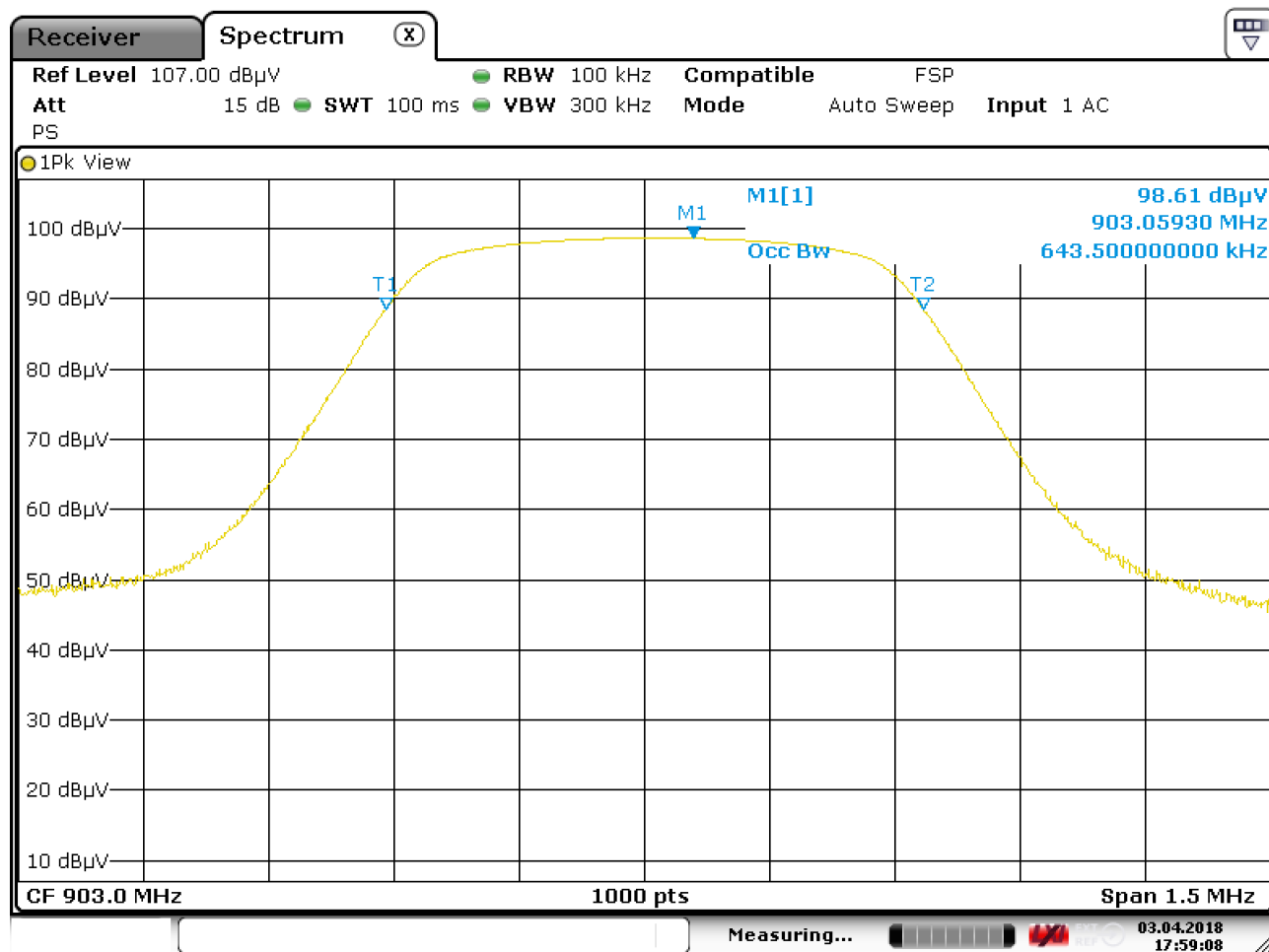
Frequency 927.0 MHz



Date: 3.APR.2018 19:27:08

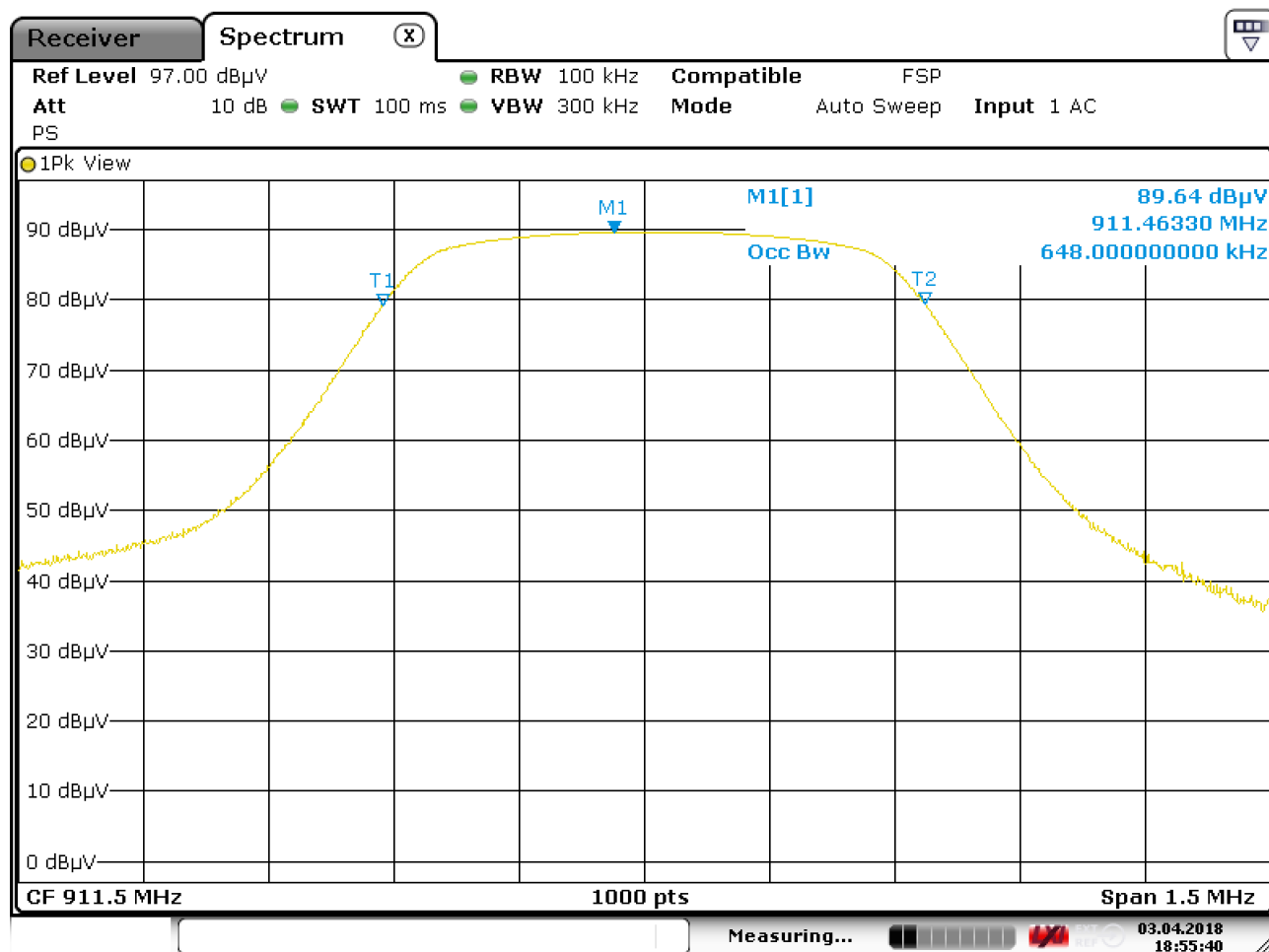
20 dB BANDWIDTH

Frequency 903.0 MHz



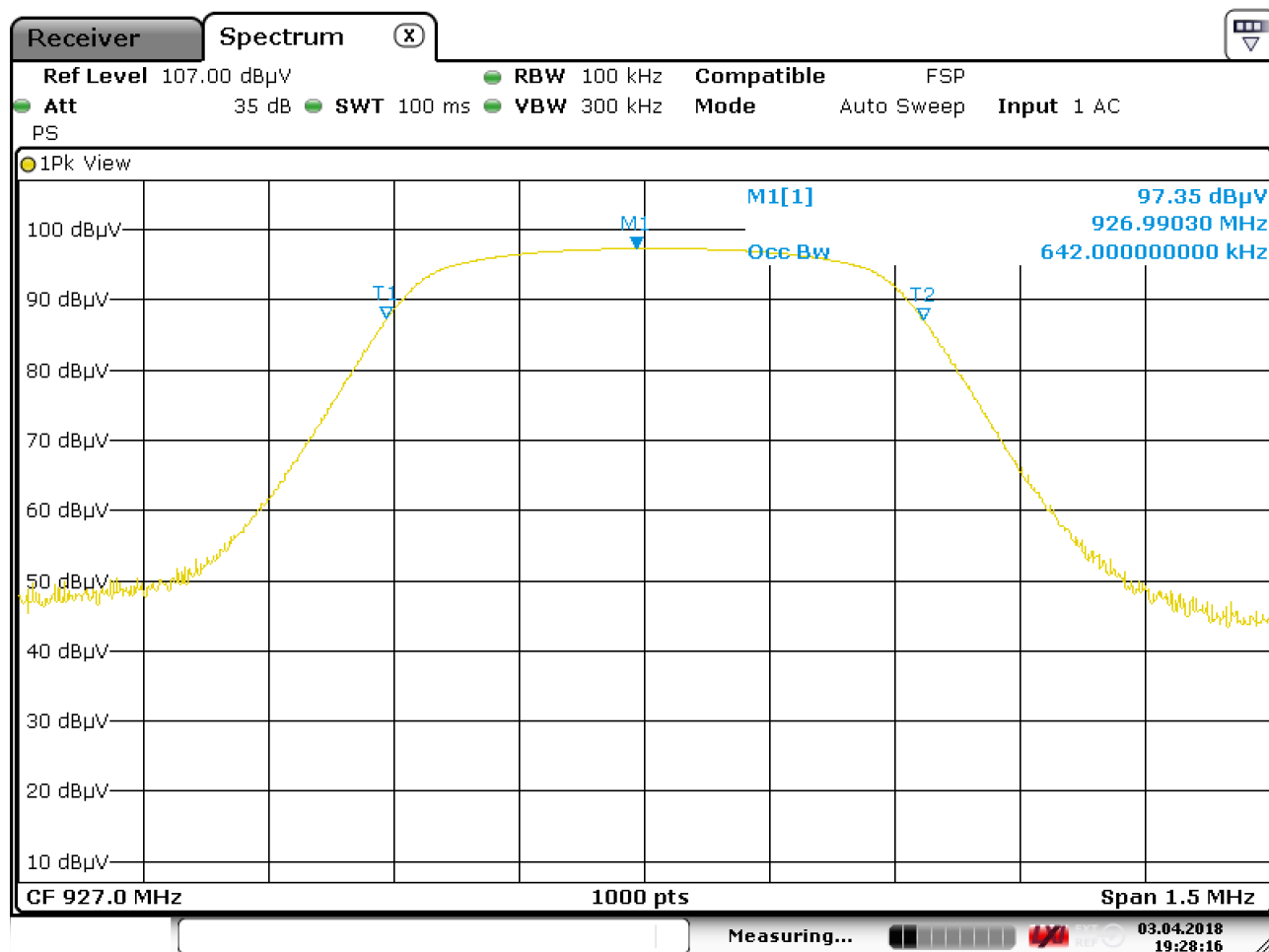
Date: 3.APR.2018 17:59:09

Frequency 911.5 MHz



Date: 3.APR.2018 18:55:40

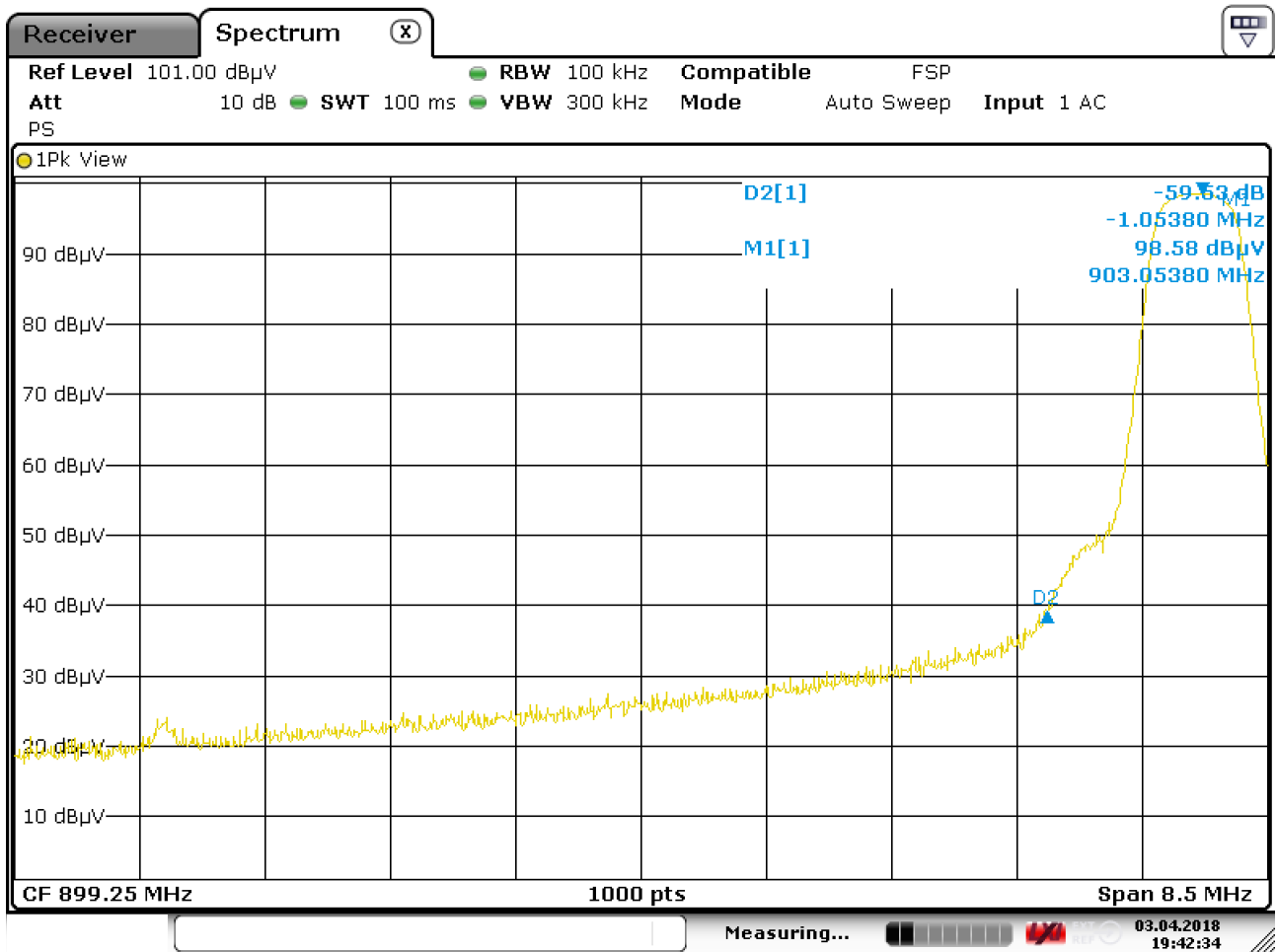
Frequency 927.0 MHz



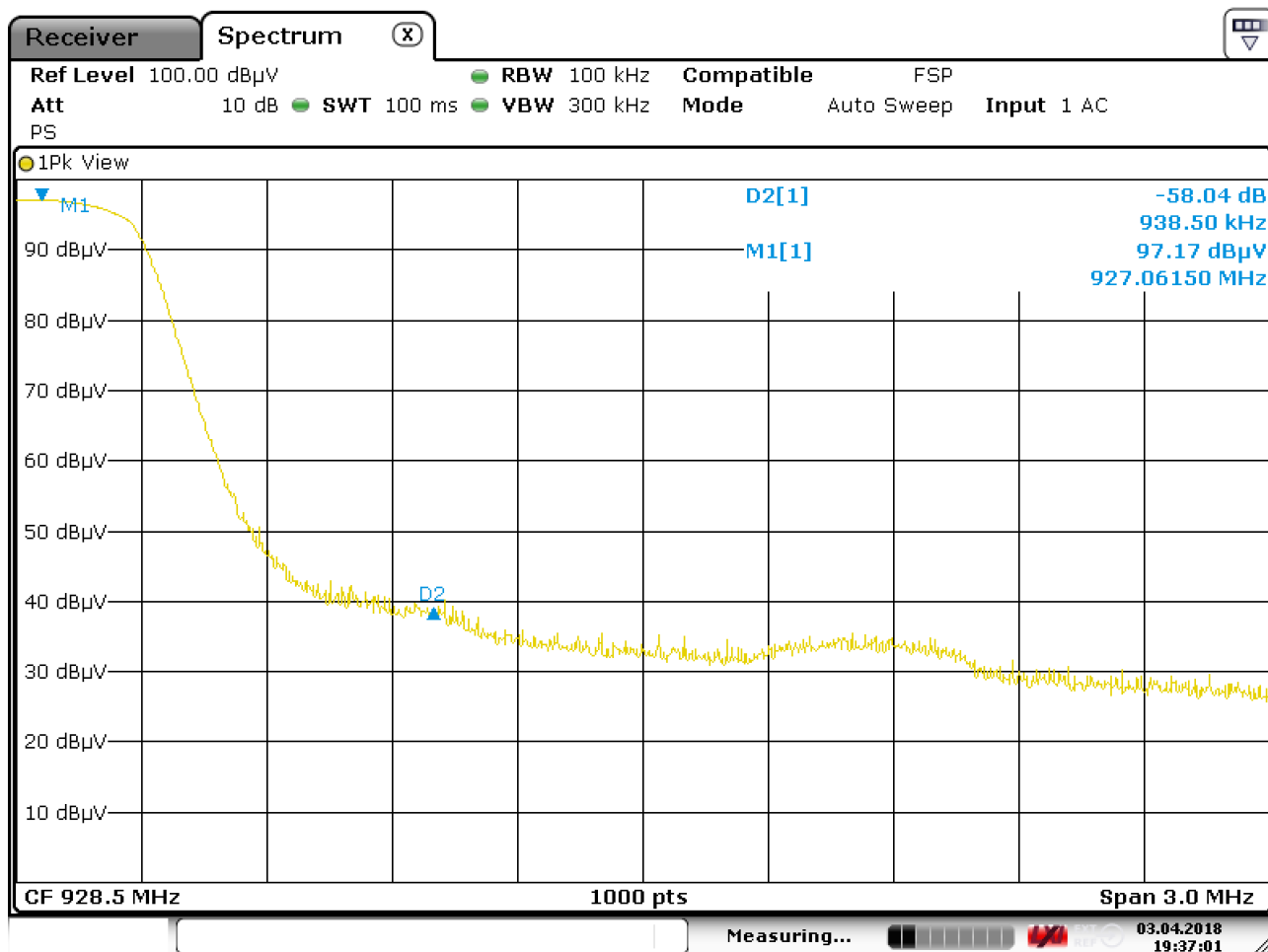
Date: 3.APR.2018 19:28:17

ANNEX 4

BAND EDGE



Date: 3.APR.2018 19:42:34



Date: 3.APR.2018 19:37:02