R410-16-104934-2A - FMO / CBU

This report cancels and replaces the test report n° R410-16-104934-2A Ed.0

RADIO TEST REPORT

According to the standard(s):

FCC part 15 Subpart C
RSS-210 Issue 9, August 2016

Equipment under test:

PINPOINTER MI-6
(Model MI61)

FCC ID: XFJA01
IC: 8392A-A01

Company:

XPLORER

Diffusion: Mr BENOIT (Company: XPLORER)

Number of pages: 35 including 1 annex

Ed.	Date	Modified page(s)	Technical verification Quality approval Name / Visa
1	26 Jun. 17	Refer to lines in the margin	David MONTAULON **P.O. Olivier HEYER**

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NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)	:	PINPOINTER MI-6
Serial number	:	Not communicated
P/N	:	Not communicated
Software version	:	Not communicated
MANUFACTURER'S NAME	:	XPLORER

APPLICANT'S ADDRESS:

Company	:	XPLORER
Address	:	40 chemin du Moulin 31320 MERVILLA FRANCE
Person(s) present during the tests	:	No representative for company has been at test.
Responsible	:	Mr BENOIT
DATE(S) OF TESTS	:	Between September 6th and October 7th of 2016 and january 20th of 2017.
TESTS LOCATION(S)	:	EMITECH MONTPELLIER laboratory in VENDARGUES (34) - FRANCE MRA US-EU Designation Number: FR0006 IC Assigned Code:4379C
TESTS SUPERVISOR(S)	:	David MONTAULON
TESTS OPERATOR(S)	:	Fabien MOINACHE

CONTENTS

1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the PINPOINTER MI-6 (denominated hereafter E.U.T.: equipment under test) according to document(s) listed below.

2. REFERENCE DOCUMENT(S)

Code of Federal Regulations	Title 47 – Telecommunications Chapter 1 – Federal Communications Commission Subchapter A -General Part 15 – Radio frequency devices Subpart C – Intentional Radiators
RSS-210	Issue 9, August 2016 Licence-exempt Radio Apparatus: Category I Equipment
RSS-Gen	Issue 4, November 2014 General Requirements for Compliance of Radio Apparatus
ANSI C63.10	2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

3. EQUIPMENT UNDER TEST CONFIGURATION

Equipment under test (E.U.T.) description:

The product is a handheld metal detector called a PinPointer. It is mainly used in conjunction with a more traditional metal detector and helps to precisely locate targets underground thanks to its reduced detection area and its adjustable sensitivity. The product uses a magnetic wave around 12 kHz to energize and detect targets.
The MCU that has been used in this product (nRF51822 from Nordic Semiconductor) integrates an RF transceiver: this PinPointer can then communicate with other products from Xplorer (e.g. metal detector DEUS) using a radio link, providing enhanced and innovative features.

Model: MI61
FCC ID: XFJA01
IC: 8392A-A01

4. TECHNICAL SPECIFICATIONS

Frequency range used by E.U.T.: 2404MHz to 2476MHz

- Type of antenna: PCB antenna.
- Channel spacing: 2 MHz
- Frequency deviation: 320 kHz
- Data rate: 2 Mbps
- Maximum output power: +4 dBm
- Modulation: GFSK
- Duty cycle: 16.8% (168µs every millisecond)

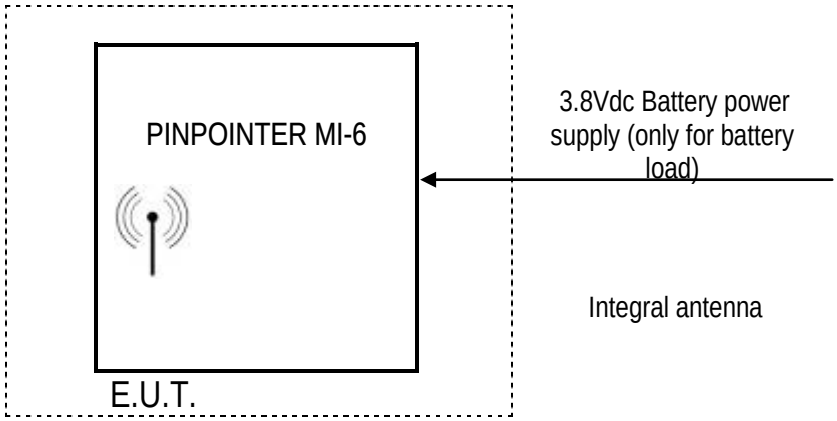
Test frequency: 2404MHz, 2440MHz; 2476MHz

Equipment: multi frequency
Total channel available: 38

Power source: 3.8Vdc (Lithium/Leclanché battery)

Mechanical and electrical design:

Power source / Battery type:	3.8Vdc rechargeable
Antenna type:	Integral



Auxiliary test equipment: No

Equipment modifications applied during tests: No

5. SUMMARY OF TEST RESULTS

Tests designation	Results satisfying?	Comments
Antenna requirement - FCC part 15.203	N.A	Integral antenna (PCB)
Restricted band of operation - FCC part 15.205 / RSS-Gen §8.10	YES	
Conducted limits - FCC part 15.207 / RSS-Gen §8.8	YES	
Unwanted radiated emissions - FCC part 15.209 / RSS-Gen §8.9	YES	
Operation within the bands 2400-2483.5MHz - FCC part 15.249 / RSS-210 §B.10; 15.215	YES	
Occupied bandwidth 99% - RSS-Gen §6.6	YES	

N.P.: Not Performed. N.A.: Not Applicable.

- In emission:

Sample submitted to test complies with prescriptions of standard(s) CFR 47 Part 15 - Subpart C and RSS-210 according to limits specified in this test report.

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

6. CONDUCTED LIMITS

Standards: FCC part 15.207 / RSS-Gen §8.8

Tests methods: ANSI C63.10

Test configuration:

Tested cable(s)	Measure with	E.U.T. height
110Vac/60Hz power supply	L.I.S.N.	40cm

Frequency band	Tested cable(s)	Resolution bandwidth	Video bandwidth	Detection mode
150kHz-30MHz	110Vac/60Hz power supply	10KHz	30kHz	Peak and average

Test method deviation: No

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	DATE CAL.	DATE VAL.
Cable	EMITECH	Current absorber sheath	10653	24/11/2015	24/01/2018
Cable	MICRO-COAX	N-3m	10535	24/11/2015	24/01/2018
Cable	MICRO-COAX	N-5m	10527	24/11/2015	24/01/2018
LISN	AFJ	LT42C\10	12007	04/05/2015	31/12/2016 (*)
PE chocke	EMITECH	PE chocke 100A	10071	#	#
PE chocke	EMITECH	PE chocke 16A	10080	#	#
Receiver	Agilent Technologies	E4440A	5824	11/01/2016	11/03/2018
Receiver	Rohde & Schwarz	ESHS10	3371	16/04/2015	16/06/2017
Shielded enclosure	RAY PROOF	C.GS3	1123	#	#
Software	Nexio	BAT EMC	0000	#	#
Thermohygrometer	Testo	608-H1	7561	26/09/2014	26/11/2016
Thermohygrometer	Bioblock Scientific	Météostar	0963	31/10/2014	31/12/2016

#: Permanent validity *BAT-EMC software version: V3.6.0.32*

(*) Under Derogation EQSDER000S4100040: Extended periodicity until 31/12/2016

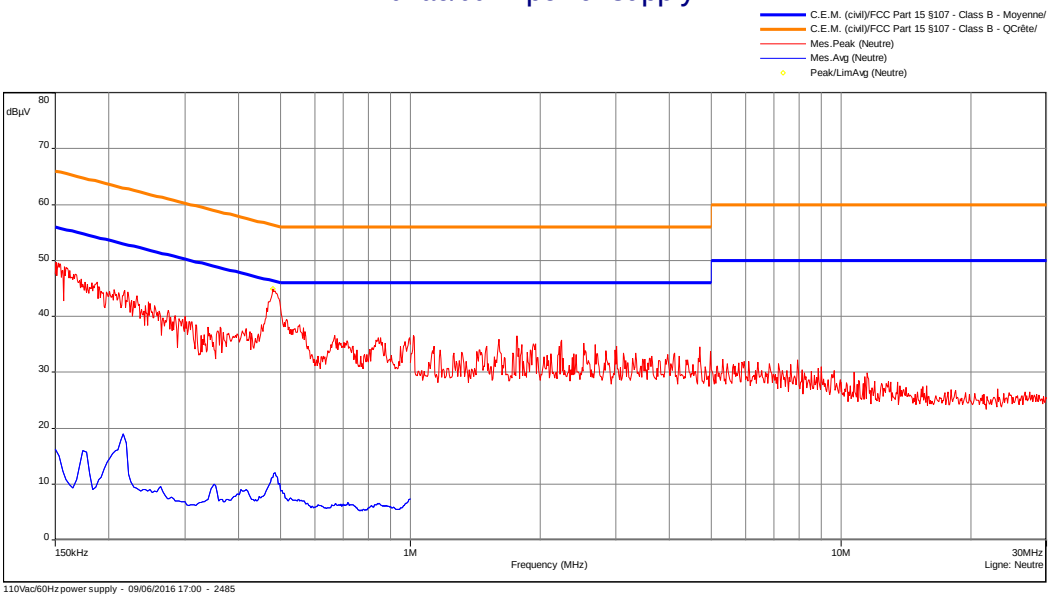
Results: See Graph(s) hereafter. Limits on the graphs are average and quasi-peak limits (upper limit).

Measurement uncertainty: +/- 3.53 dB

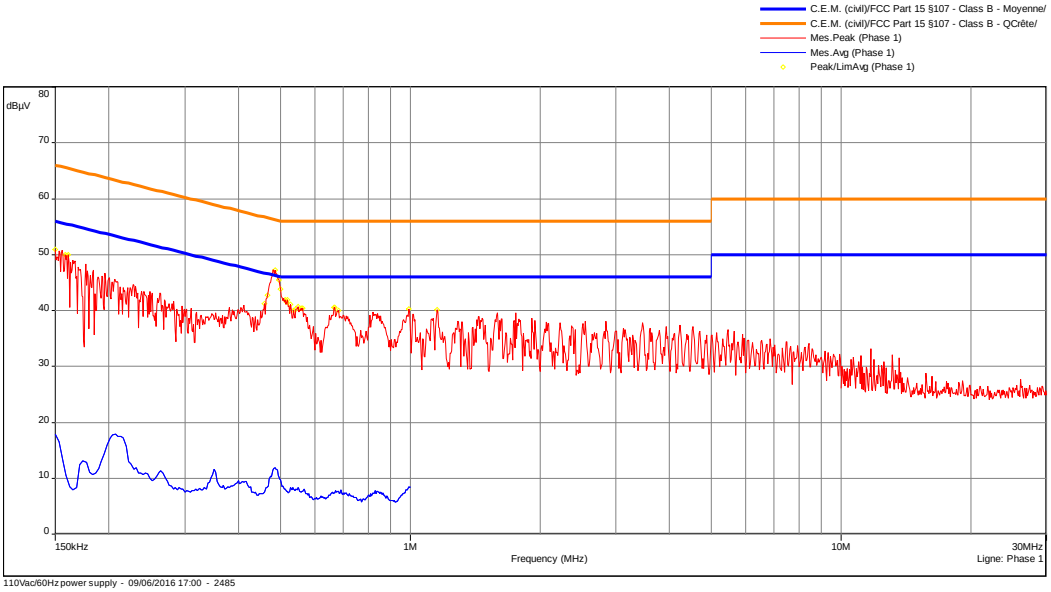
Conducted emission

EMI2485

110Vac/60Hz power supply



110Vac/60Hz power supply - 09/06/2016 17:00 - 2485



110Vac/60Hz power supply - 09/06/2016 17:00 - 2485

Date: 06/09/2016 17:00:10

Technician: RB

Detection:
Peak and average

T (°C): 26.5
H (%): 49
P (hpa): 1010

Comments:
/

Modification(s) during test:
No

7. OPERATION WITHIN THE BANDS 2400-2483.5MHZ

Standard: CFR 47 Part 15 – Subpart C §15.249 / RSS-210 §B.10

Test method: ANSI C63.10

Test configuration:

Frequency band	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
2399MHz-2485MHz	1MHz	3MHz	Max-hold Peak	150cm

Test is done in fully anechoic shielded chamber at 3m. E.U.T. is set on a styrofoam table. Measurements are done in max-hold peak detection, maximized at 360°.
Measurements are performed on lower, middle and upper channels groups.

Test method deviation: No

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	DATE CAL.	DATE VAL
Antenna	ETS-Lindgren	3117	8387	16/03/2016	16/05/2017
Cable	MegaPhase	TM18-N1N1-197	12840	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12841	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12842	05/04/2016	05/06/2018
Preamplifier	Techniwave	APS16-0087	14040	27/07/2016	27/09/2017
Receiver	Agilent Technologies	E4440A	5824	11/01/2016	11/03/2018
Shielded enclosure	RAY PROOF	C.V2	1423	#	#
Software	Nexio	BAT EMC v3.6.0.32	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	31/10/2014	31/12/2016
Thermohygrometer	Testo	608-H1	7562	26/09/2014	26/11/2016

#: Permanent validity *BAT-EMC software version: V3.6.0.32*

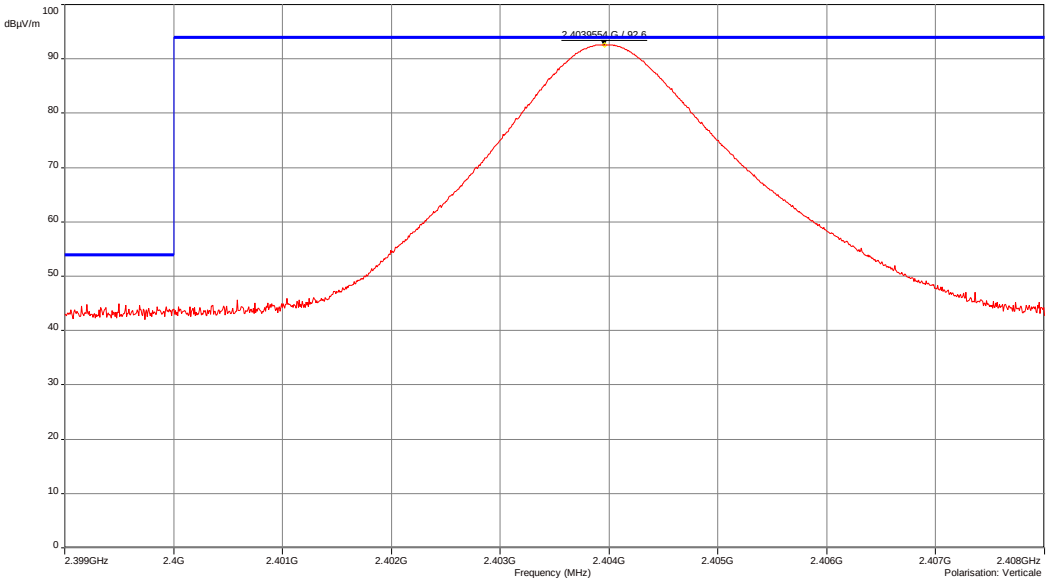
Results:

Frequency (MHz)	Polarization	Azimuth (degree)	Antenna Height (cm)	Measure (dBµV/m)	Limit (dBµV/m)	Comments
2404	Vertical	160	150	92.6	94	C
2440	Vertical	160	150	92.5	94	C
2476	Vertical	160	150	92.8	94	C

Measurement uncertainty: +/- 5.16 dB (f>1GHz)

Radiated electric field measurement — EMI4066

Band Edge / Low Channel



Date: 14/11/2016 14:34:29

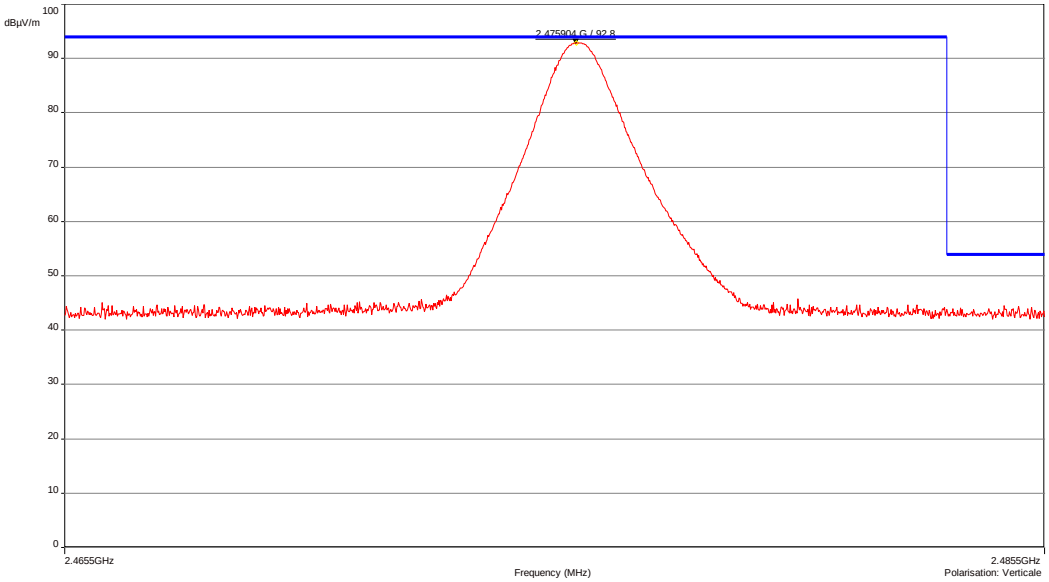
Technician: RB

Detection:
Peak

T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Radiated electric field measurement — EMI4067

Band Edge / High Channel



Date: 14/11/2016 15:25:01

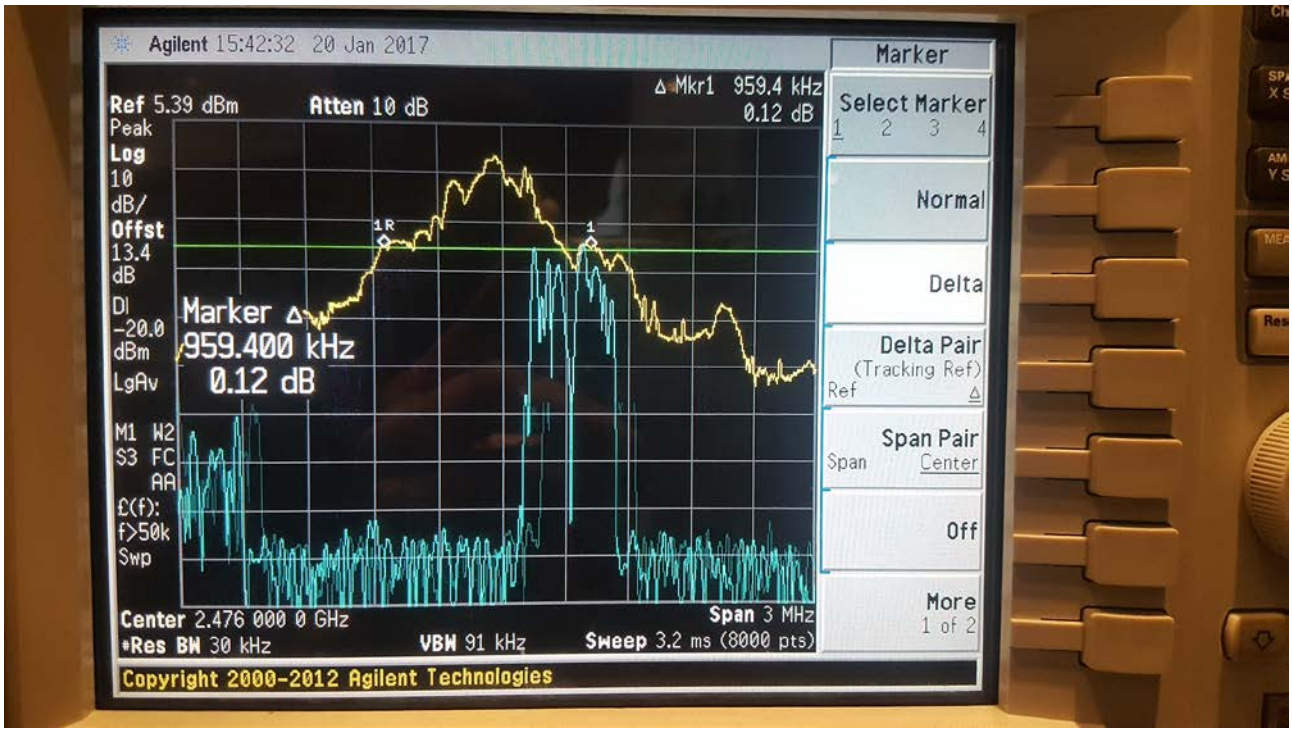
Technician: RB

Detection:
Peak

T (°C): 24.8
H (%): 52.6
P (hpa): 1009

20dB Bandwidth Low Channel: 1.024628MHz (RBW=30 kHz)

20dB Bandwidth High Channel: 959.4 kHz (RBW=30 kHz)



8. UNWANTED RADIATED EMISSIONS

Standards: CFR 47 Part 15 – Subpart C §15.209 / RSS-Gen §8.9

Tests methods: ANSI C63.10

a) *Measurement in anechoic chamber*:

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
9kHz-150kHz	Front side	200Hz	1kHz	Peak	80cm
150kHz-30MHz	Front side	10kHz	30kHz	Peak	80cm
30MHz-1GHz	Front side	100kHz	300kHz	Peak	80cm
1GHz-25GHz	Front side	1MHz	3MHz	Peak and average	150cm

In order to find highest levels, tests are done on 3 axes of E.U.T. Measurements are done in max-hold peak detection maximized at 360°. E.U.T. is set on a Styrofoam table.

Measurements below 30MHz are done with a loop antenna on a normalized Open Area Test Site as describe in the standard. Measure is done with an antenna position of 0°, 90° and 45°.
Below 1GHz pre-measurements are done in a semi anechoic chamber at 3m. Finals measurements are conducted on a normalized Open Area Test Site.
Above 1GHz test is done in fully anechoic shielded chamber at 3m.

Limits: From 9 kHz to 30MHz: Limit indicated on the curves is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.

From 30MHz to 1GHz: quasi peak limit provided is the limit given in 15.209 and RSS Gen.

Above 1GHz average limits in restricted bands and general limits are 54dBµV/m.

Test method deviation: From 9 kHz to 30MHz: measurements are made in peak detection instead of average mode in frequency band 9 kHz-500 kHz

- Measurements are given in dBµA/m instead of µV/m
- Measuring distance is 3 meters instead of 30 and 300 meters

Radiated emissions limits in this frequency band are specified at 30 or 300 meters. Pre measurement distance used during the test, subject of this report, is 3 meters. Then published limits come from a theoretical conversion using an extrapolation factor of 40dB / decade.

Measuring distance: 3 meters

Test equipment list:

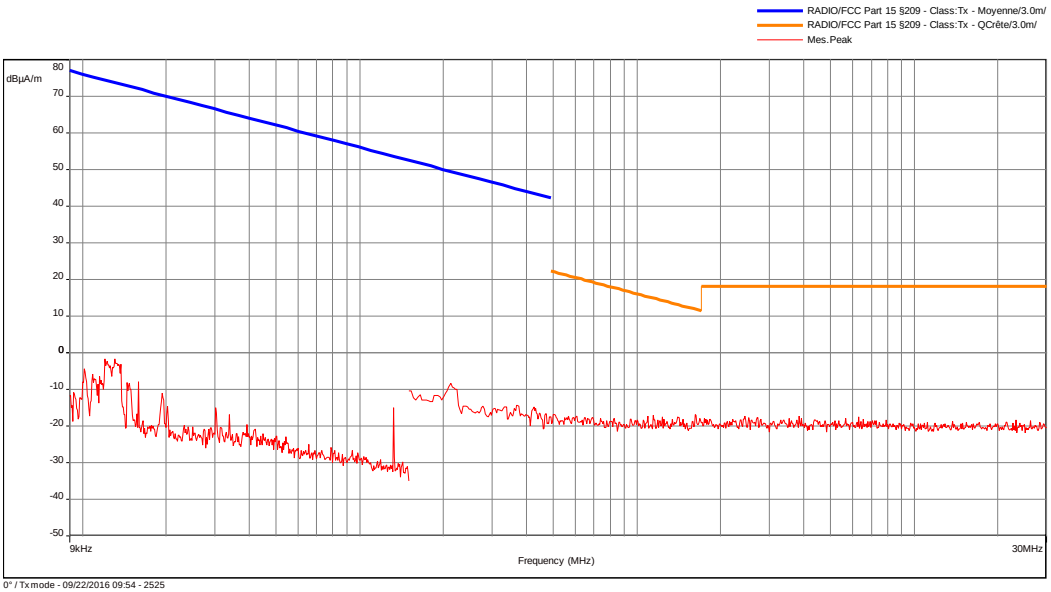
CATEGORY	BRAND	TYPE	N° EMITECH	DATE CAL.	DATE VAL
Antenna	Rohde & Schwarz	HFH2-Z2	5825	27/01/2015	27/03/2017
Antenna	Electro Metrics	BIA-30HF	0824	25/04/2015	25/06/2018
Antenna	Electro Metrics	LPA-30	0855	25/04/2015	25/06/2018
Antenna	Electro Metrics	BIA-30HF	1107	25/05/2015	25/07/2018
Antenna	Rohde & Schwarz	HL223	1137	25/04/2015	25/06/2018
Antenna	IMC	WR42	1940	16/05/2016	16/07/2019
Antenna	ETS-Lindgren	3117	8387	16/03/2016	16/05/2017
Cable	C&C	N-3m	10558	24/11/2015	24/01/2018
Cable	C&C	N-5m	10560	25/11/2015	25/01/2018
Cable	MegaPhase	TM18-N1N1-197	12840	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12841	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12842	05/04/2016	05/06/2018
Cable	SUCOFLEX	SMA-2m	12913	28/04/2016	28/06/2018
Cable	SUCOFLEX	K-2m	12917	28/04/2016	28/06/2018
Cable	Pasternack	SMA-0.5m	3544	06/08/2015	06/10/2017
Filter	Micro-Tronics	HPM 15162	10273	23/04/2015	23/06/2017
Filter	Wainwright Instruments	WRCG 2400/2483	9771	12/02/2015	12/04/2017
Preamplifier	Techniwave	APS16-0087	14040	25/08/2016	25/10/2017
Preamplifier	ALC Microwave Inc.	ALN02-0102	3036	06/08/2015	06/10/2017
Preamplifier	IMPULSE	CA118-546ACN	9169	11/08/2015	11/10/2017
Receiver	Agilent Technologies	E7405A	2161	11/05/2015	11/07/2017
Receiver	Agilent Technologies	E4440A	5824	11/01/2016	11/03/2018
Shielded enclosure	RAY PROOF	C.V2	1423	#	#
Software	Nexio	BAT EMC	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	31/10/2014	31/12/2016
Thermohygrometer	Testo	608-H1	7562	26/09/2014	26/11/2016

#: Permanent validity *BAT-EMC software version: V3.6.0.32*

Results: See Graphs hereafter.

Radiated field strength — EMI2525

0° / Tx mode / Postion 1



0° / Tx mode - 09/22/2016 09:54 - 2525

Date: 22/09/2016 09:54:22

Technician: FMO

Detection:
Peak

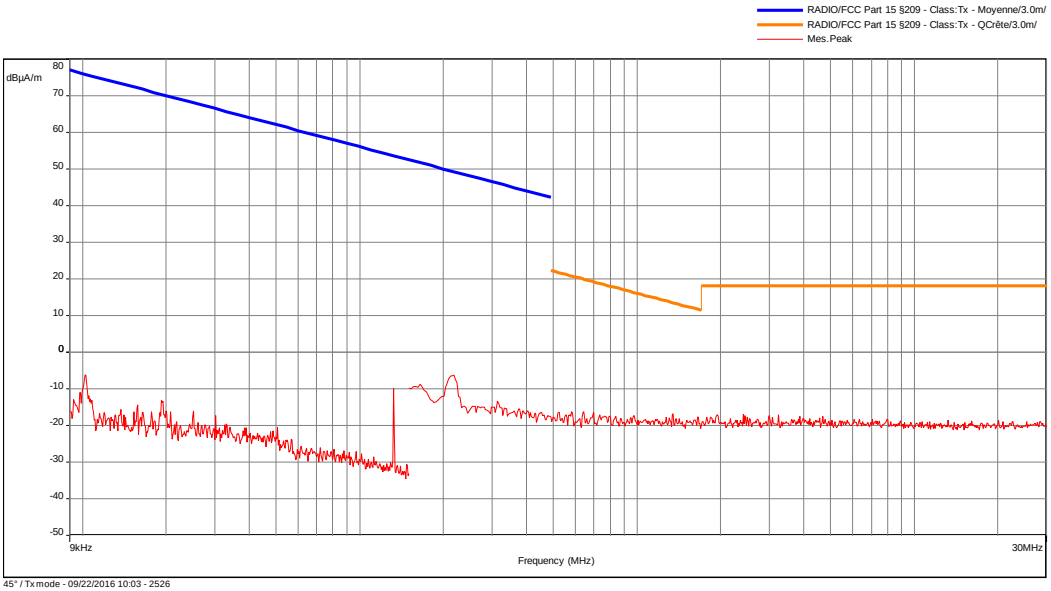
T (°C): 22.3
H (%): 42.5
P (hpa): 1005

Comments:
/

Modification(s) during test:
None

Radiated field strength — EMI2526

45° / Tx mode / Position 1



45° / Tx mode - 09/22/2016 10:03 - 2526

Date: 22/09/2016 10:03:19

Technician: FMO

Detection:
Peak

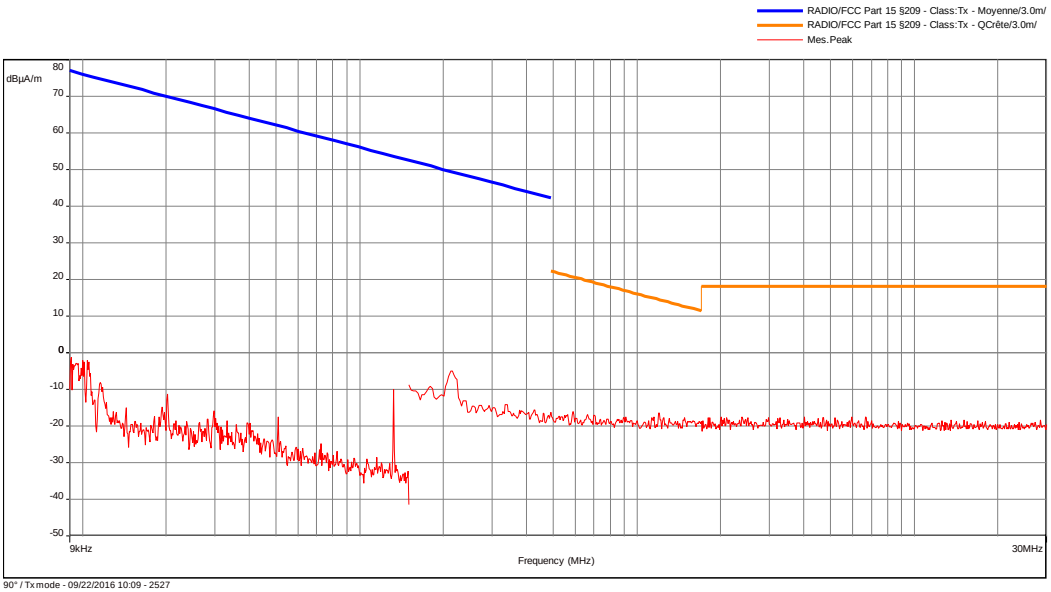
T (°C): 2.3
H (%): 42.5
P (hpa): 1005

Comments:

Modification(s) during test:
None

Radiated field strength — EMI2527

90° / Tx mode / Position 1



90° / Tx mode - 09/22/2016 10:09 - 2527

Date: 22/09/2016 10:09:06

Technician: FMO

Detection:
Peak

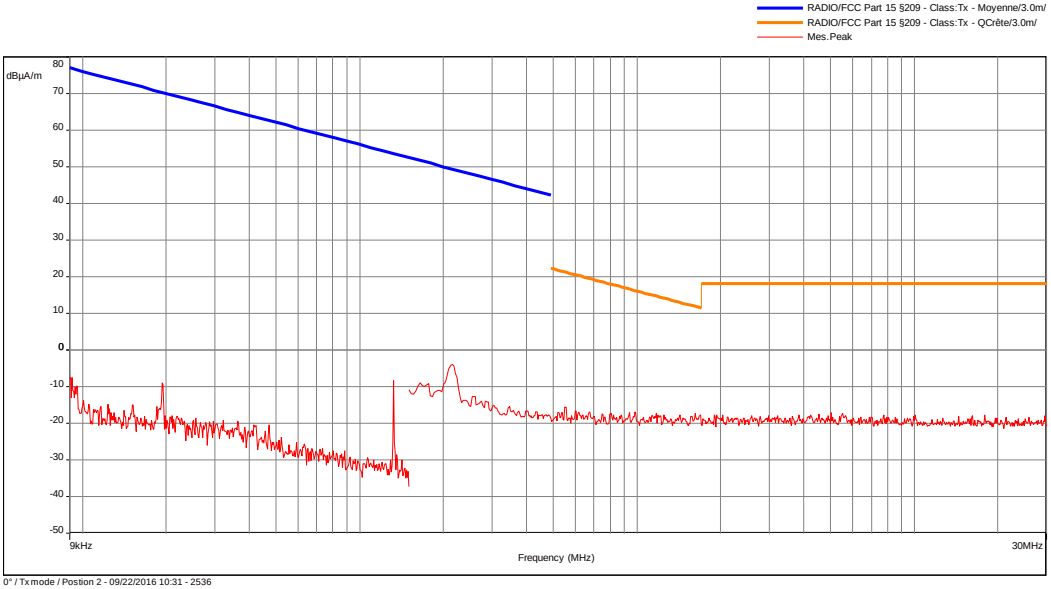
T (°C): 22.3
H (%): 42.5
P (hpa): 1005

Comments:

Modification(s) during test:
None

Radiated field strength — EMI2536

0° / Tx mode / Postion 2



0° / Tx mode / Postion 2 - 09/22/2016 10:31 - 2536

Date: 22/09/2016 10:31:19

Technician: FMO

Detection:
Peak

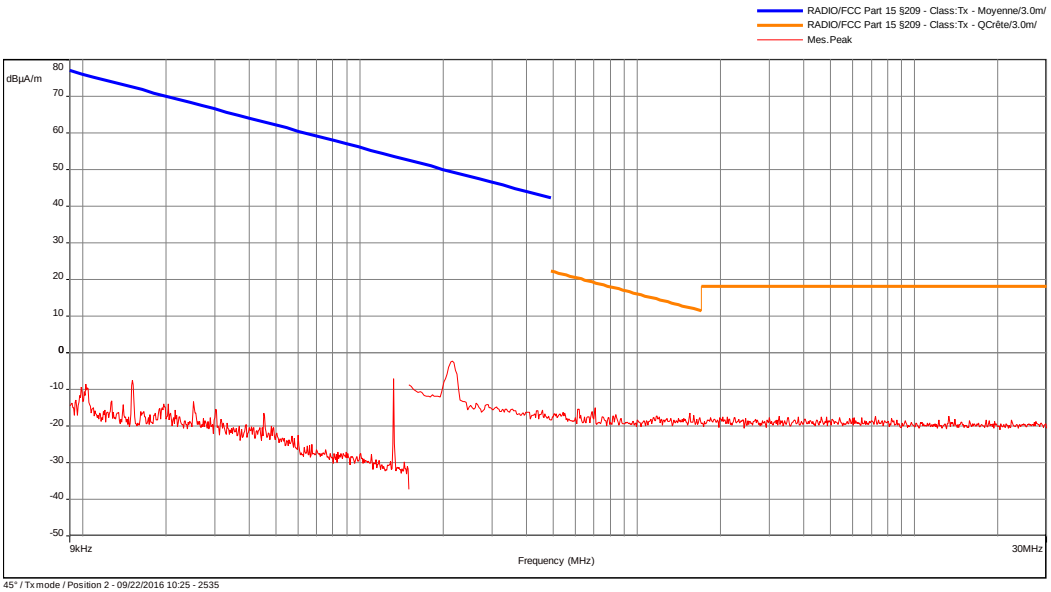
T (°C): 22.3
H (%): 42.5
P (hpa): 1005

Comments:

Modification(s) during test:
None

Radiated field strength — EMI2535

45° / Tx mode / Position 2



45° / Tx mode / Position 2 - 09/22/2016 10:25 - 2535

Date: 22/09/2016 10:25:44

Technician: FMO

Detection:
Peak

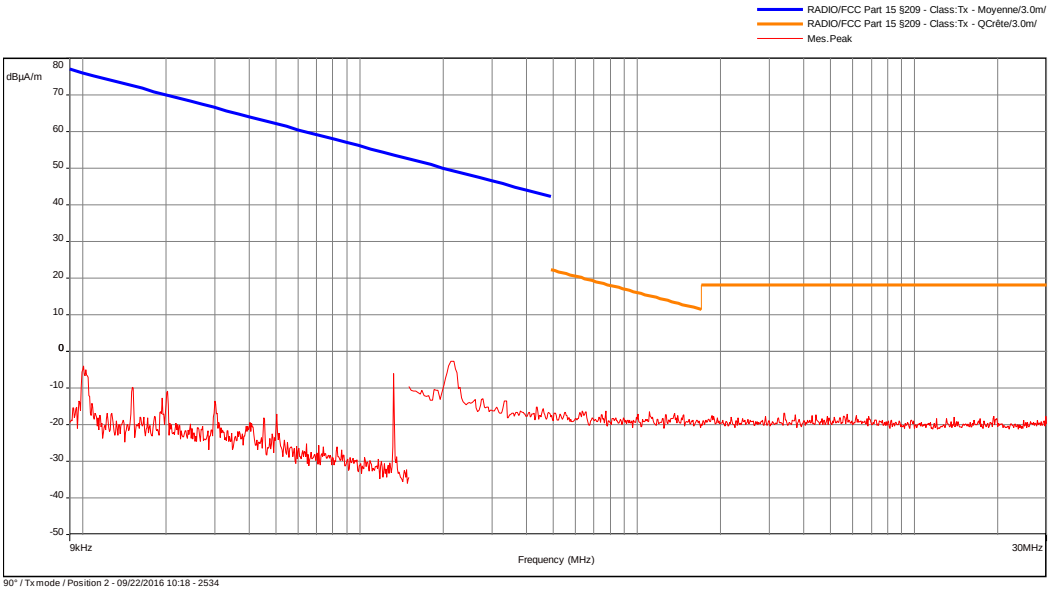
T (°C): 2.3
H (%): 42.5
P (hpa): 1005

Comments:

Modification(s) during test:
None

Radiated field strength — EMI2534

90° / Tx mode / Position 2



90° / Tx mode / Position 2 - 09/22/2016 10:18 - 2534

Date: 22/09/2016 10:18:31

Technician: FMO

Detection:
Peak

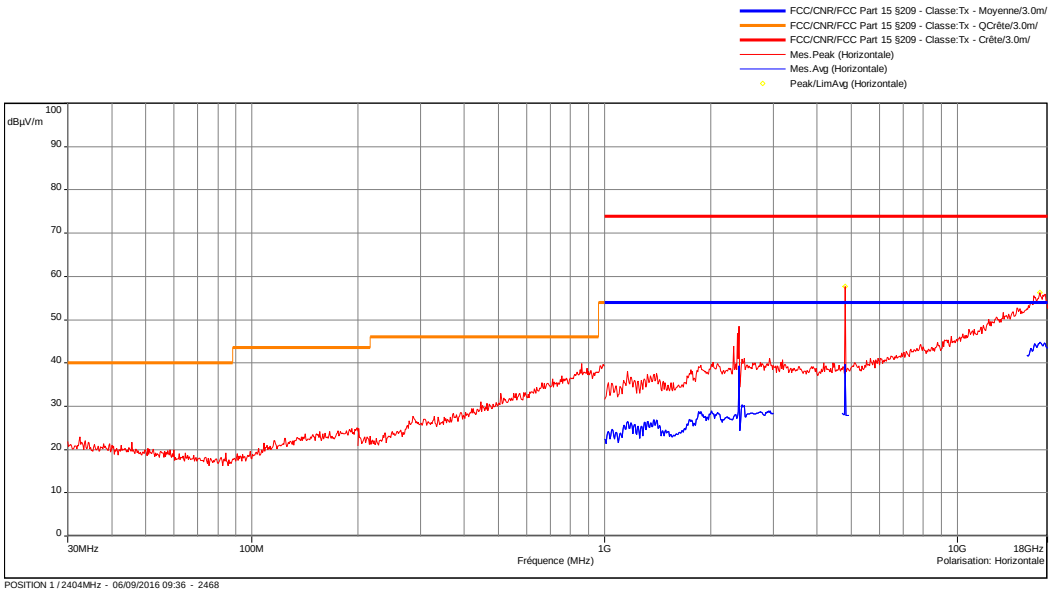
T (°C): 22.3
H (%): 42.5
P (hpa): 1005

Comments:

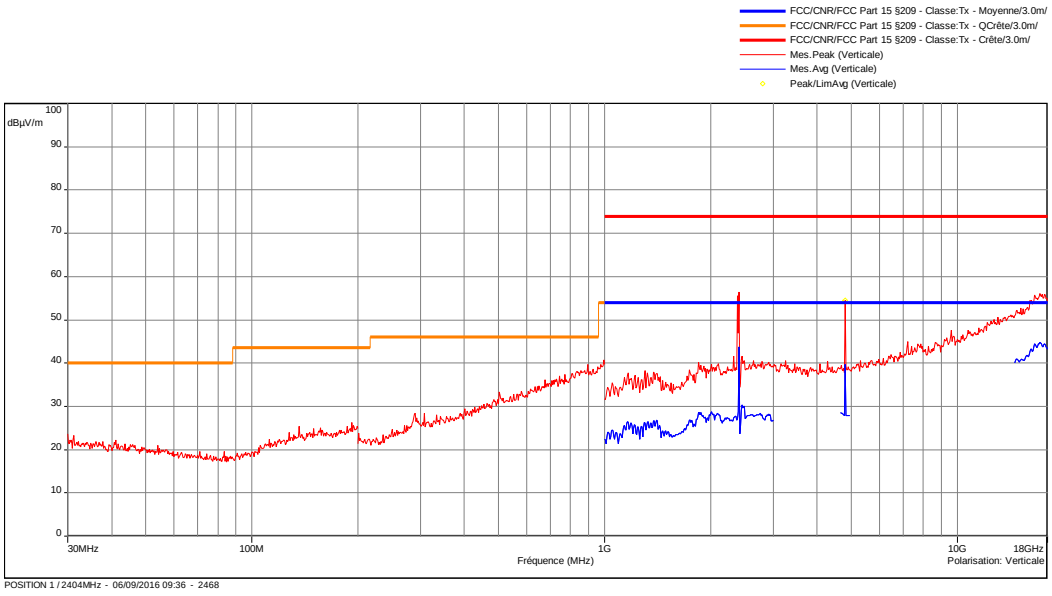
Modification(s) during test:
None

Radiated electric field measurement | EMI2468

POSITION 1 / 2404MHz



POSITION 1 / 2404MHz - 06/09/2016 09:36 - 2468



POSITION 1 / 2404MHz - 06/09/2016 09:36 - 2468

Date: 06/09/2016 09:36:42

Technician: RB

Detection:
Peak

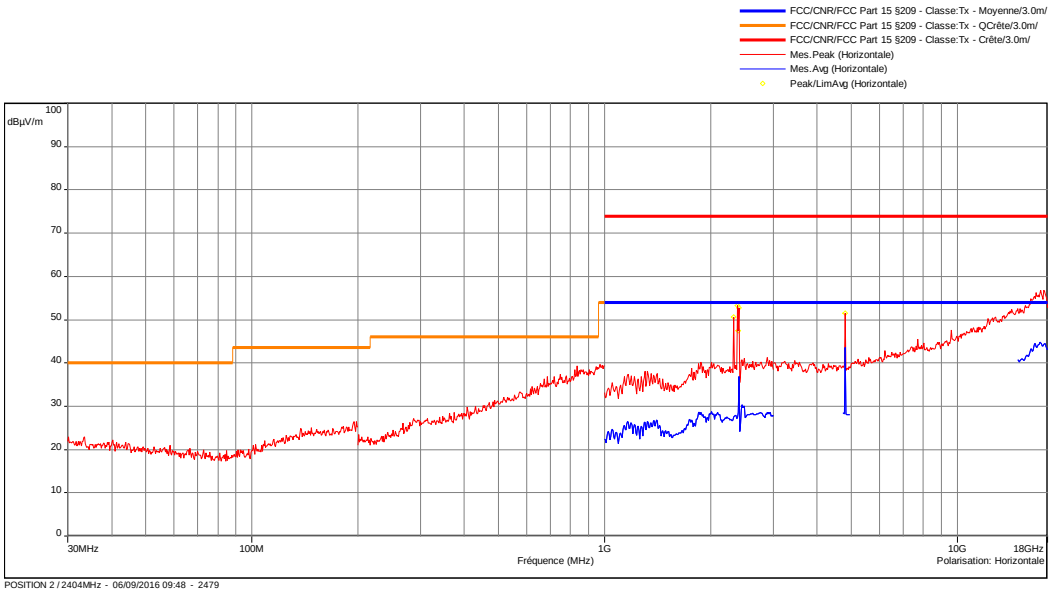
T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

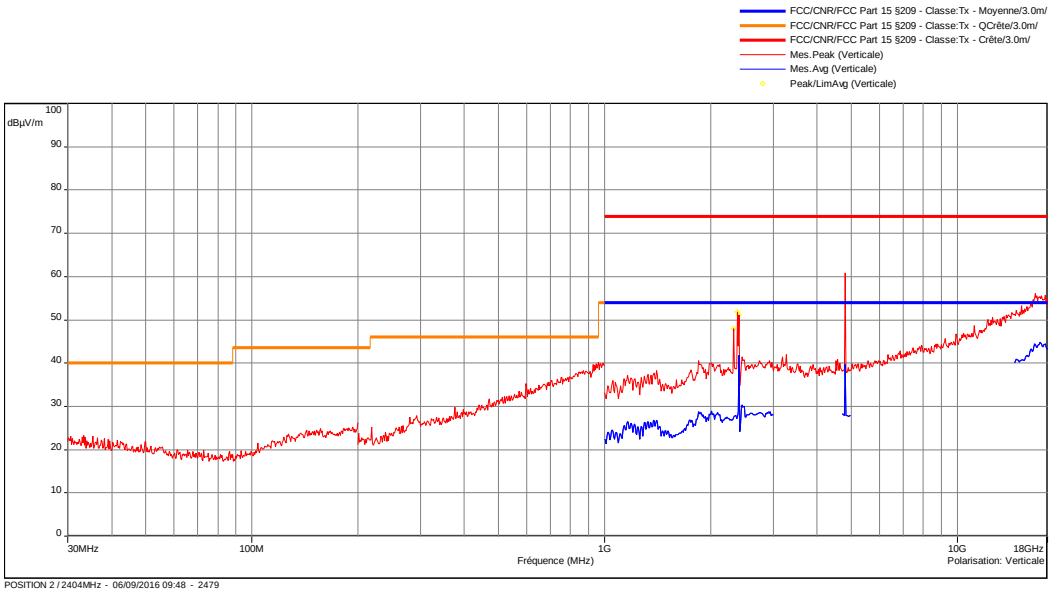
Modification(s) during test:
None

Radiated electric field measurement | EMI2479

POSITION 2 / 2404MHz



POSITION 2 / 2404MHz - 06/09/2016 09:48 - 2479



POSITION 2 / 2404MHz - 06/09/2016 09:48 - 2479

Date: 06/09/2016 09:48:56

Technician: RB

Detection:
Peak and average

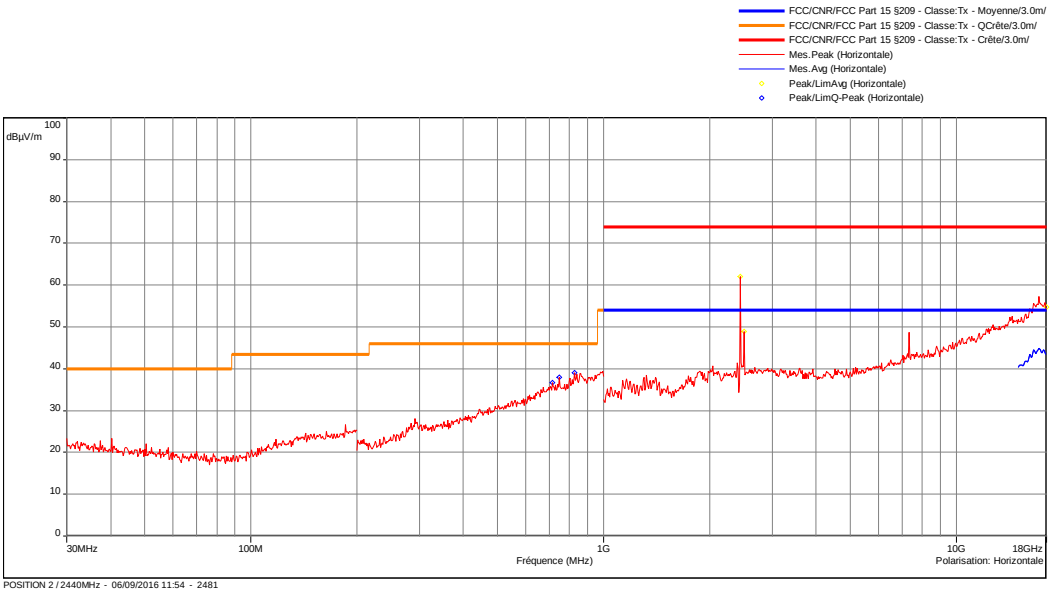
T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

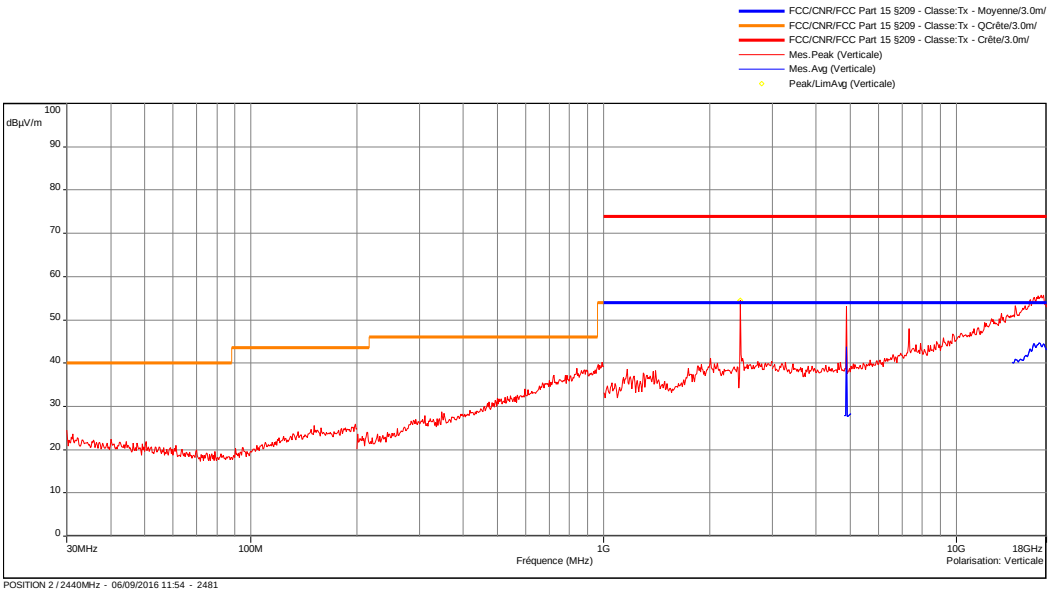
Modification(s) during test:
None

Radiated electric field measurement | EMI2481

POSITION 2 / 2440MHz



POSITION 2 / 2440MHz - 06/09/2016 11:54 - 2481



POSITION 2 / 2440MHz - 06/09/2016 11:54 - 2481

Date: 06/09/2016 11:54:27

Technician: RB

Detection:
Peak and average

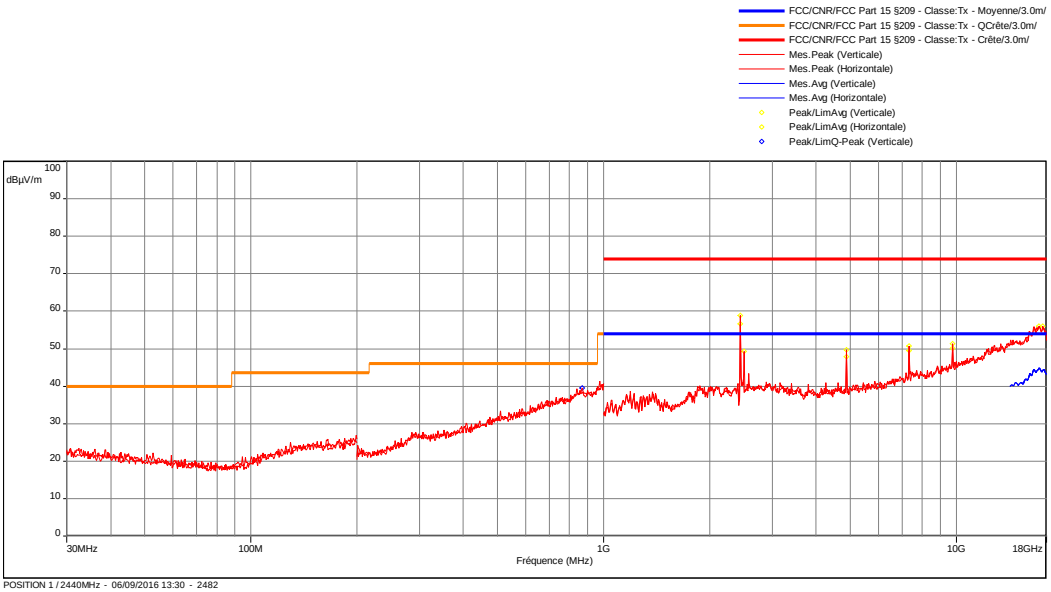
T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

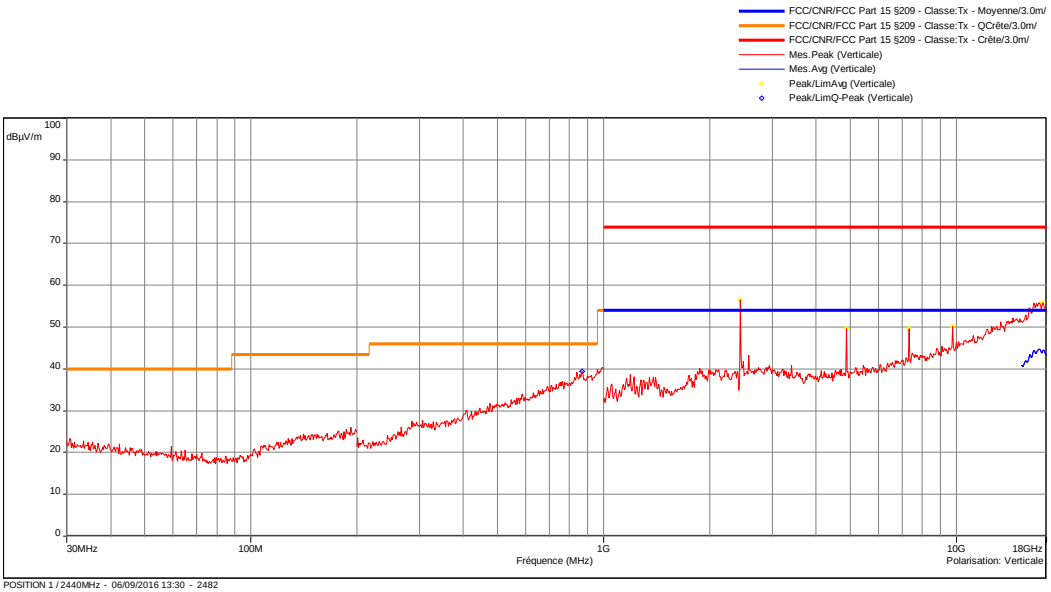
Modification(s) during test:
None

Radiated electric field measurement | EMI2482

POSITION 1 / 2440MHz



POSITION 1 / 2440MHz - 06/09/2016 13:30 - 2482



POSITION 1 / 2440MHz - 06/09/2016 13:30 - 2482

Date: 06/09/2016 13:30:36

Technician: RB

Detection:
Peak and average

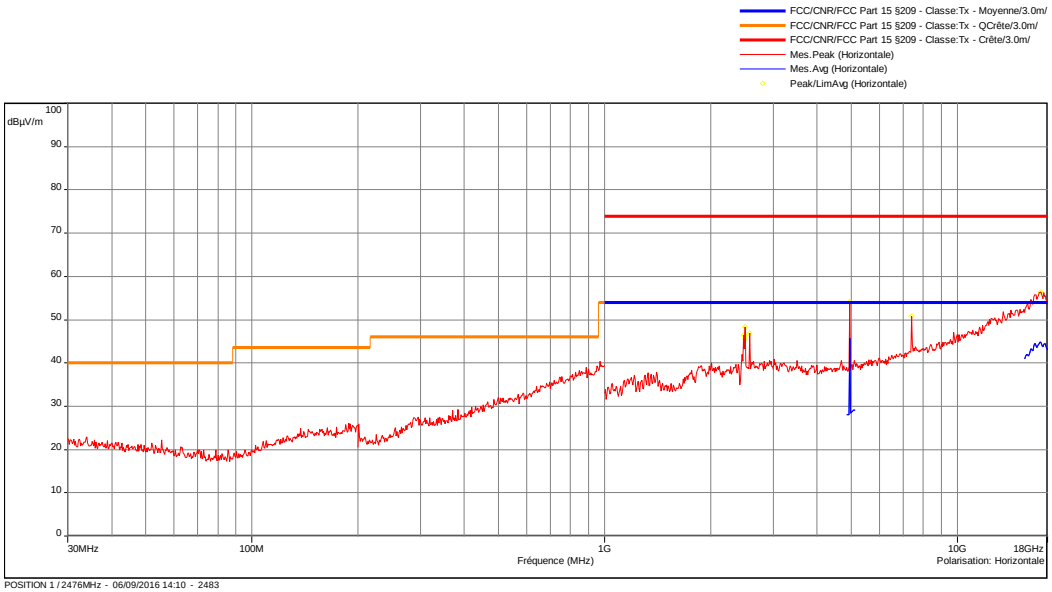
T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

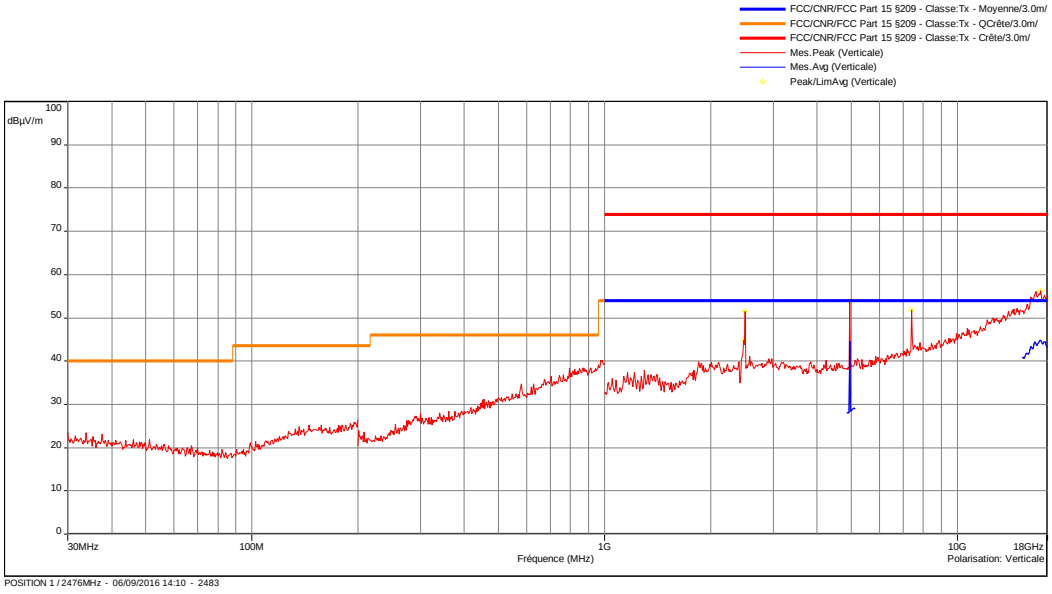
Modification(s) during test:
None

Radiated electric field measurement | EMI2483

POSITION 1 / 2476MHz



POSITION 1 / 2476MHz - 06/09/2016 14:10 - 2483



POSITION 1 / 2476MHz - 06/09/2016 14:10 - 2483

Date: 06/09/2016 14:10:15

Technician: RB

Detection:
Peak and average

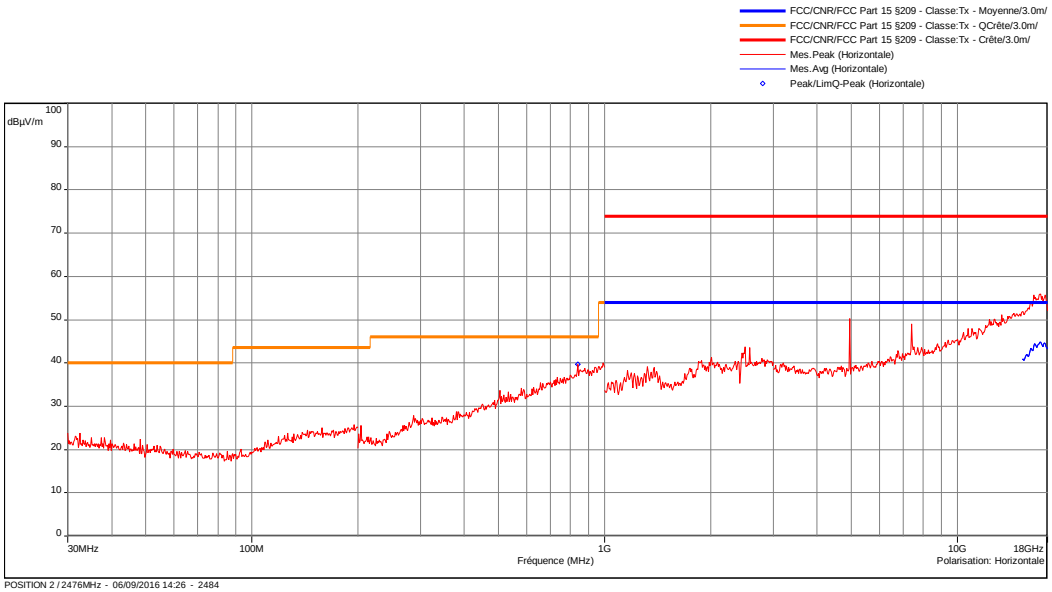
T (°C): 25.4
H (%): 50.8
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

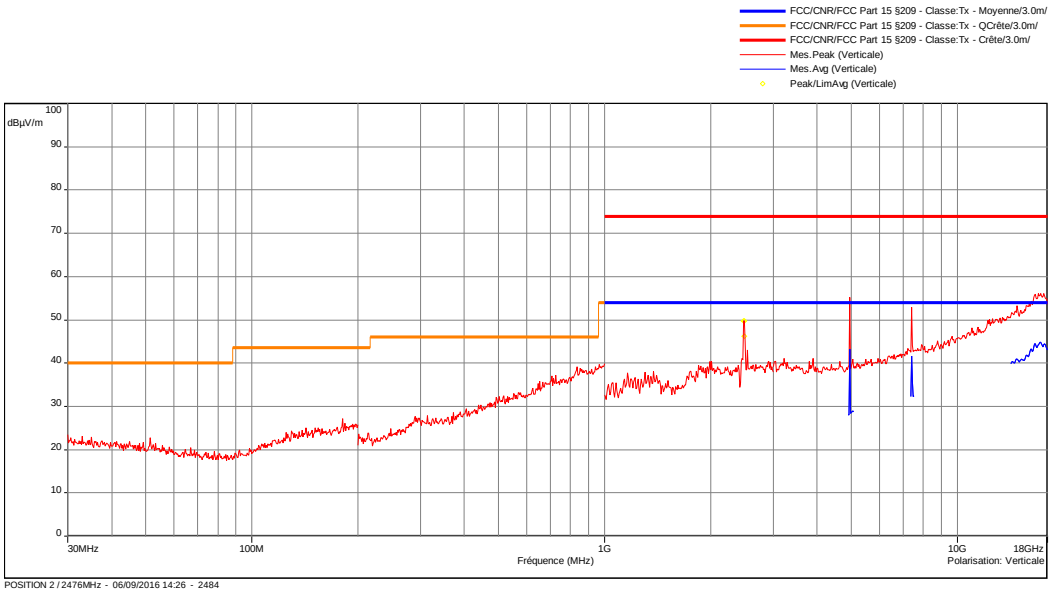
Modification(s) during test:
None

Radiated electric field measurement | EMI2484

POSITION 2 / 2476MHz



POSITION 2 / 2476MHz - 06/09/2016 14:26 - 2484



POSITION 2 / 2476MHz - 06/09/2016 14:26 - 2484

Date: 06/09/2016 14:26:51

Technician: RB

Detection:
Peak and average

T (°C): 25.4
H (%): 50.8
P (hpa): 1009

Comments:
2.402-2.476GHz: Rejected main carrier

Modification(s) during test:
None

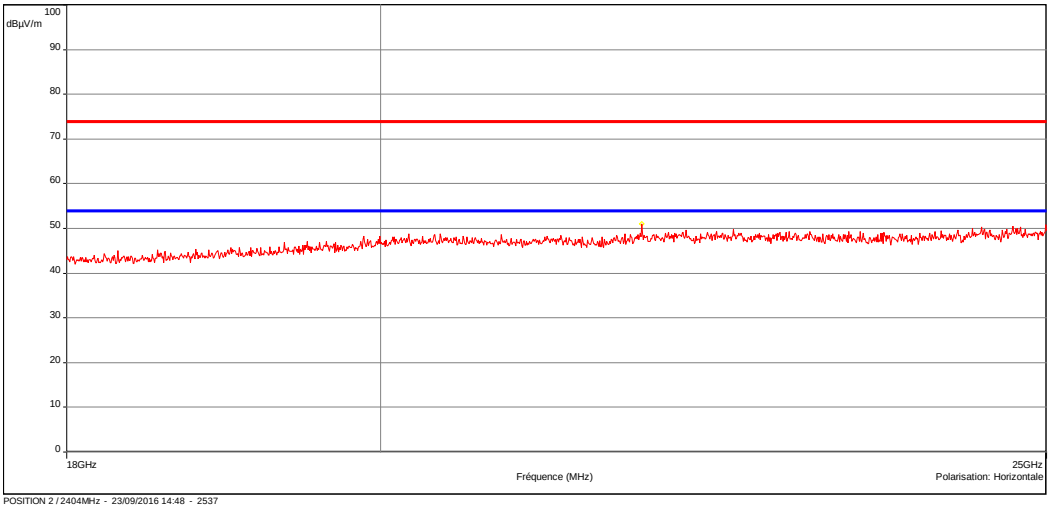
Radiated electric field measurement

EMI2537

POSITION 2 / 2404MHz

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Horizontale
Distance: 3 m

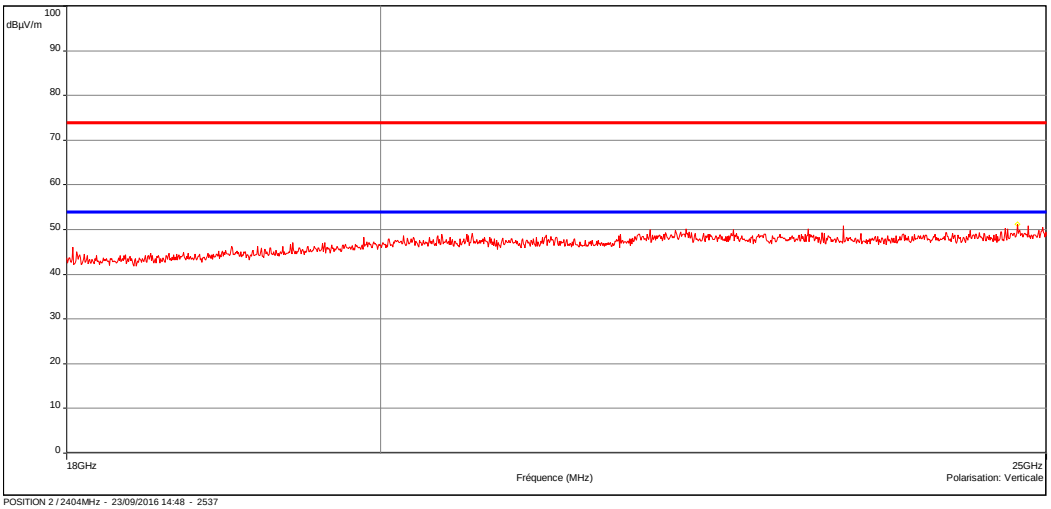
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Horizontale)
Peak/LimAvg (Horizontale)



POSITION 2 / 2404MHz - 23/09/2016 14:48 - 2537

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Verticale
Distance: 3 m

FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Verticale)
Peak/LimAvg (Verticale)



POSITION 2 / 2404MHz - 23/09/2016 14:48 - 2537

Date: 23/09/2016 14:48:38

Technician: RB

Detection:
Peak and average

T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:

Modification(s) during test:
None

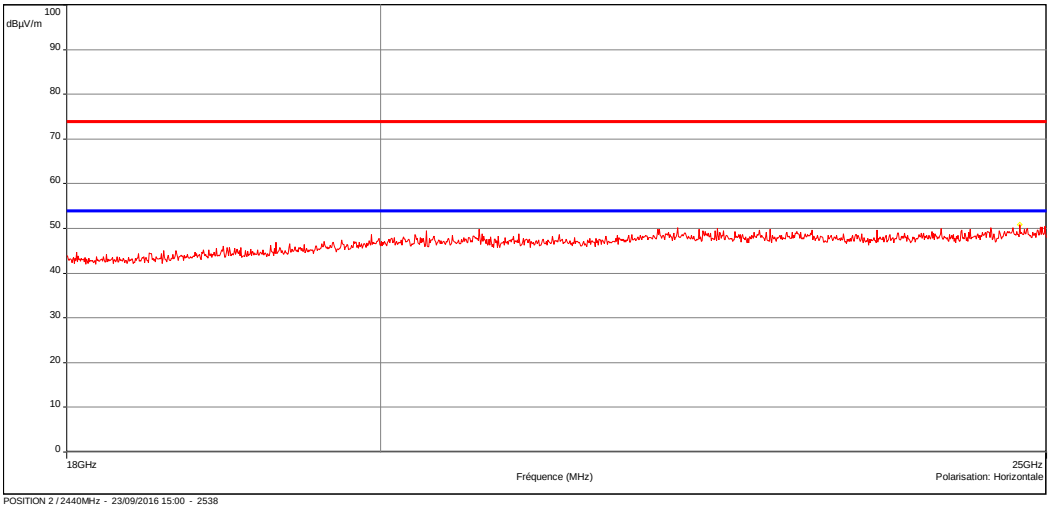
Radiated electric field measurement

EMI2538

POSITION 2 / 2440MHz

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Horizontale
Distance: 3 m

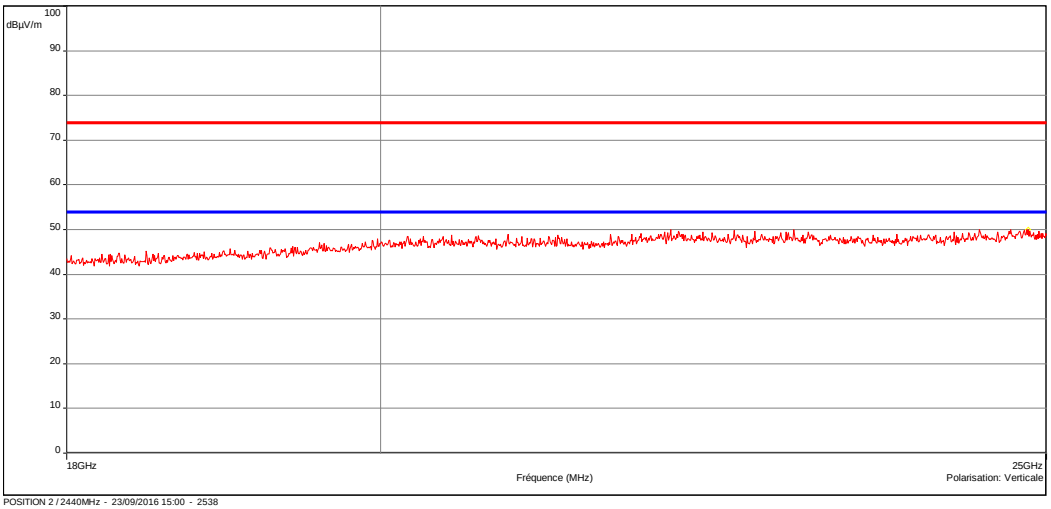
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Horizontale)
Peak/LimAvg (Horizontale)



POSITION 2 / 2440MHz - 23/09/2016 15:00 - 2538

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Verticale
Distance: 3 m

FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Verticale)
Peak/LimAvg (Verticale)



POSITION 2 / 2440MHz - 23/09/2016 15:00 - 2538

Date: 23/09/2016 15:00:20

Technician: RB

Detection:
Peak and average

T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:

Modification(s) during test:
None

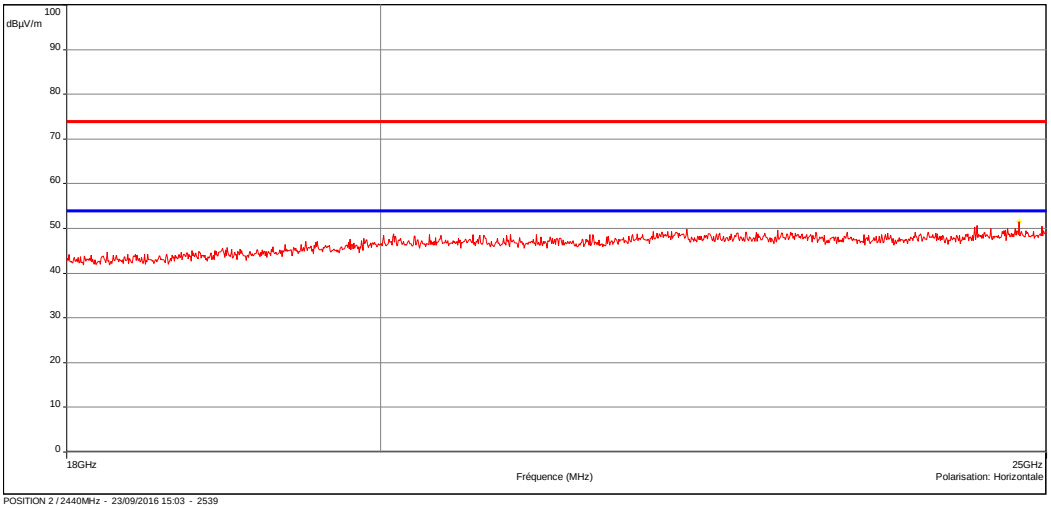
Radiated electric field measurement

EMI2539

POSITION 2 / 2476MHz

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Horizontale
Distance: 3 m

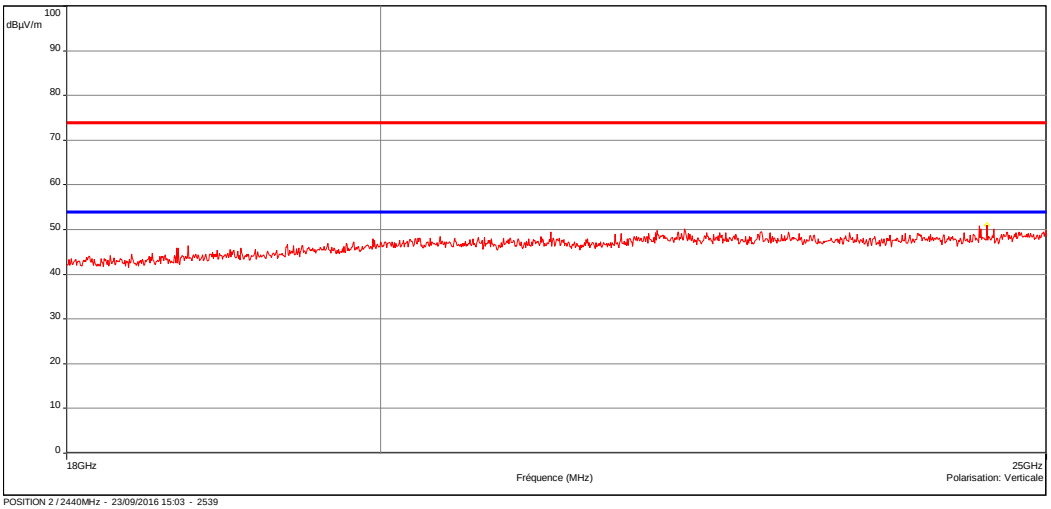
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Horizontale)
Peak/LimAvg (Horizontale)



POSITION 2 / 2440MHz - 23/09/2016 15:03 - 2539

Fréquence (MHz) : 18 GHz - 25 GHz (Mode analyseur)
Réglage: RBW: 1 MHz, VBW: 3 MHz, Auto, nombre de Balayages 1
Polarisation : Verticale
Distance: 3 m

FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
Mes.Peak (Verticale)
Peak/LimAvg (Verticale)



POSITION 2 / 2440MHz - 23/09/2016 15:03 - 2539

Date: 23/09/2016 15:03:45

Technician: RB

Detection:
Peak and average

T (°C): 24.8
H (%): 52.6
P (hpa): 1009

Comments:

Modification(s) during test:
None

b) Measurement at 3 meters on open area test site:

Temperature (°C): 26.5 *Humidity (%HR):* 45 *Pressure (hPa):* -

Test configuration: For each measured frequencies, E.U.T is set via a turntable in order to find the highest level. Test antenna is set between 1m and 4m in order to find the highest level in vertical and horizontal polarization. Only highest levels are recorded.

Frequency band	Initial position (0°)	Resolution bandwidth	Measuring distance	Detection mode	E.U.T. height
9kHz-150kHz	Front side	200Hz	10m	Quasi-peak	80cm
150kHz-30MHz	Front side	10kHz	10m	Quasi-peak	80cm
30MHz-1GHz	Front side	120kHz	3m	Quasi-peak	80cm

Test method deviation: Between 9 kHz to 30MHz: measurements are given in dBµA/m instead of dBµV/m (conversion factor: 51.5dB) and measuring distance is 10 meters instead of 300m.

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	DATE CAL.	DATE CAL.
Antenna	Electro Metrics	BIA-30HF	1107	25/05/2015	25/07/2018
Antenna	Rohde & Schwarz	HFH2-Z2	5825	27/01/2015	27/03/2017
Antenna	Rohde & Schwarz	HL223	1137	25/04/2015	25/06/2018
Antenna mast	INNCO	MA4000-EP-O	10261	#	#
Cable	Huber Suhner	N-20m	8385	23/04/2015	23/06/2017
Cable	Huber Suhner	N-14m	8146	25/09/2015	25/11/2017
Receiver	Agilent Technologies	E4440A	5824	11/01/2016	11/03/2018
Receiver	Rohde & Schwarz	ESVS10	3211	17/04/2015	17/06/2017
Mast controller	INNCO	CO3000	10260	#	#
Open area test site	Emitech	Salinelles	3482	18/04/2014	18/06/2017
Thermohygrometer	Testo	608-H2	12269	20/08/2015	20/10/2017
Turntable	Heinrich Deisel	D4420	4038	#	#
Turntable controller	Heinrich Deisel	HD100	4036	#	#

#: Permanent validity

Results:

No unwanted radiated spurious are at least 20 dB below specified limits

Measurement uncertainty: +/- 4.84 dB (f<200MHz, Vertical)
+/- 4.62 dB (f<200MHz, Horizontal)
+/- 4.77 dB (f>200MHz, Vertical)
+/- 4.78 dB (f<200MHz, Horizontal)
+/- 5.16 dB (f>1GHz)

9. OCCUPIED BANDWITH

Standard: CNR-Gen § 6.6

Test method: CNR-Gen § 6.6

Test configuration: Measurement is done on an Open Area Test Site. For each measured frequencies, E.U.T. is set via a turntable in order to find the highest level. Test antenna is set to 1.5m in vertical and horizontal polarization.

Frequency band	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
2399MHz-2485MHz	1MHz	3MHz	Max-hold Peak	150cm

Test method deviation: No

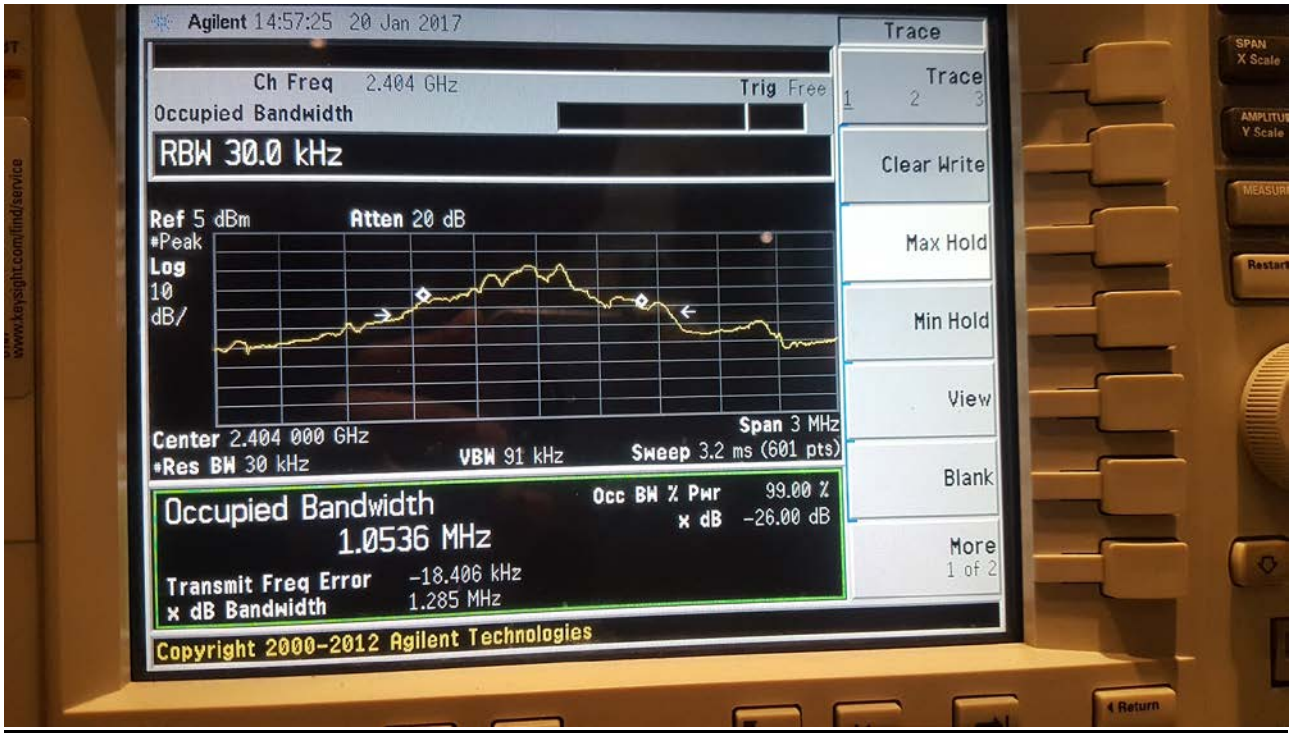
Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	DATE CAL.	DATE VAL
Antenna	ETS-Lindgren	3117	8387	16/03/2016	16/05/2017
Cable	MegaPhase	TM18-N1N1-197	12840	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12841	05/04/2016	05/06/2018
Cable	MegaPhase	TM18-N1N1-118	12842	05/04/2016	05/06/2018
Preamplifier	Techniwave	APS16-0087	14040	27/07/2016	27/09/2017
Receiver	Agilent Technologies	E7405A	2161	11/05/2015	11/07/2017
Receiver	Agilent Technologies	E4440A	5824	11/01/2016	11/03/2018
Shielded enclosure	RAY PROOF	C.V2	1423	#	#
Software	Nexio	BAT EMC v3.6.0.32	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	31/10/2014	31/12/2016
Thermohygrometer	Testo	608-H1	7562	26/09/2014	26/11/2016

#: Permanent validity *BAT-EMC software version: V3.6.0.32*

Results: See Graph(s) hereafter

Occupied Bandwidth 99% Low Channel: 1.0536 MHz (RBW=30 kHz)

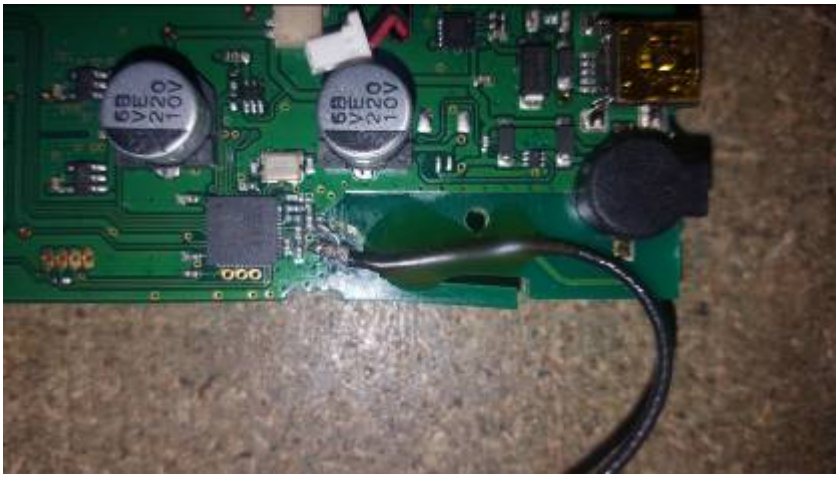


Occupied Bandwidth 99% High Channel: 1.1095MHz (RBW=30 kHz)

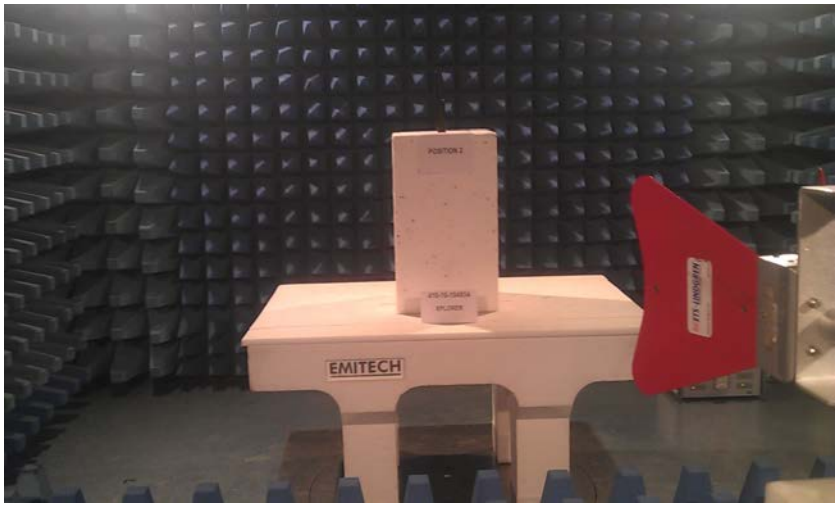
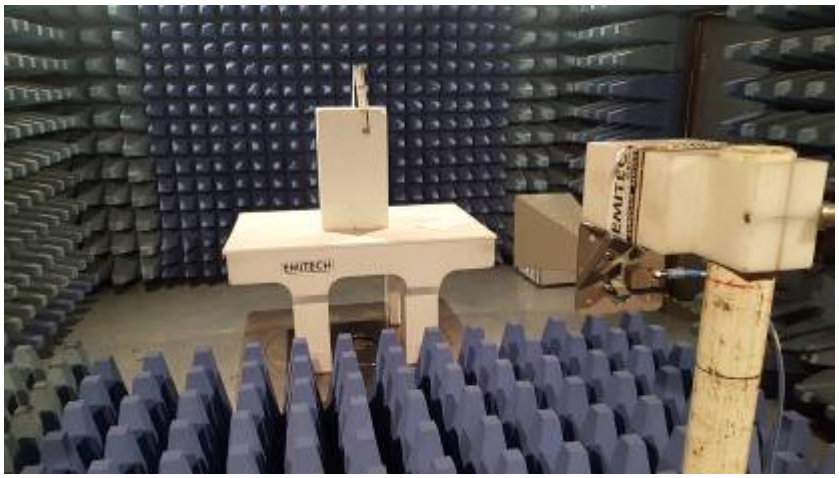
□□□ End of report – 1 annex to be forwarded □□□

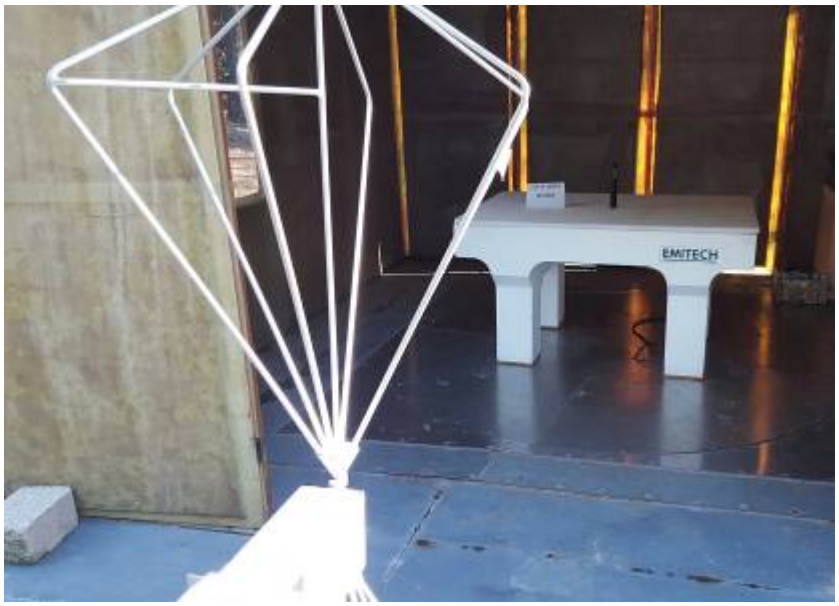
ANNEX:
PHOTOGRAPH(S)

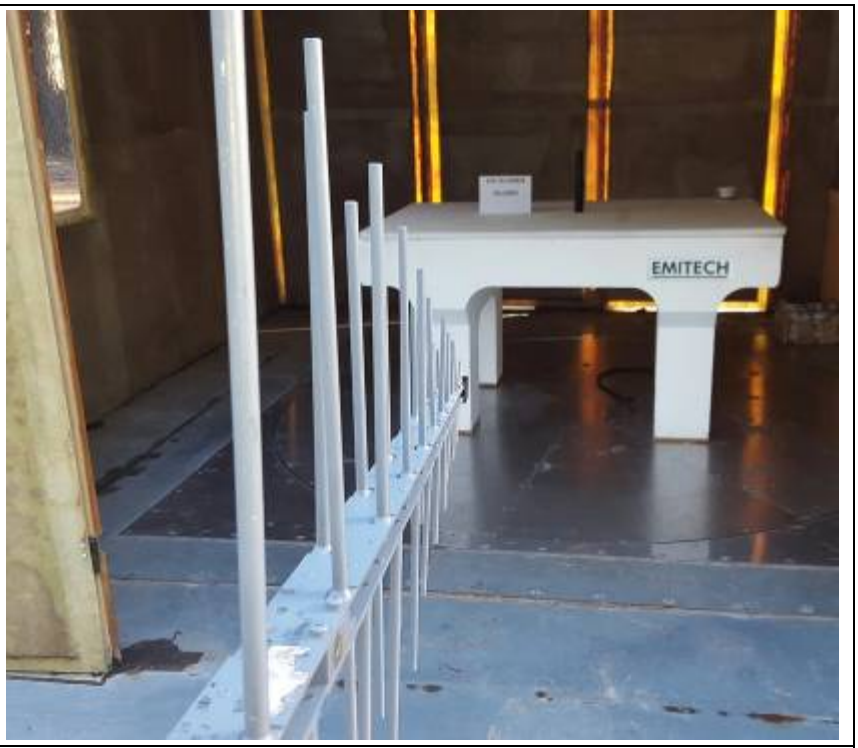
E.U.T General view (Top view)	
E.U.T. internal view	

E.U.T. internal view	
E.U.T. internal view (Radio part)	

Radiated pre measurement	
Radiated pre measurement	

Unwanted emissions (f>1GHz)	
Unwanted emissions (f>1GHz)	

Unwanted emissions (f<1GHz) (OATS)	
Unwanted emissions (f<1GHz) And carrier measurement (OATS)	

Unwanted emissions (f<1GHz) (OATS)	
Conducted emissions