

R410-16-106055-4A - MPA/CVO

## RADIO TEST REPORT

According to the standard(s):

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

Equipment under test:

MDHF2413  
(Model XPELL)

FCC ID: XFJELL  
IC: 8392A-ELL

Company:

XPLORER

Diffusion: Mr LOUBET

(Company: XPLORER)

Number of pages: 28 including 1 annex

Ed.	Date	Modified page(s)	Technical verification	
			Name	Visa
0	21 Nov. 18	Creation	Olivier HEYER Laboratory Manager	

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**NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)** : MDHF2413  
(Model XPELL)  
  
FCC ID: XFJELL  
IC: 8392A-ELL

**Serial number** : Not communicated

**P/N** : Not communicated

**Software version** : Not communicated

**MANUFACTURER'S NAME** : XPLOER

**APPLICANT'S ADDRESS:**

**Company** : XPLOER

**Address** : 40 chemin du Moulin  
31320 MERVILLA  
FRANCE

**Person(s) present during the tests** : No representative for company has been at test.

**Responsible** : Mr LOUBET

**DATE(S) OF TESTS** : Between October 31<sup>st</sup> and November 16<sup>th</sup> of 2018

**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)** : Morgan PATEY

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### 1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the **MDHF2413** (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 5, April 2018 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 search coil for a portable metal detector, generating a magnetic wave at low frequencies (under 100 kHz), commonly used to search for and discern metallic objects that are buried or masked by vegetation covering the ground. Such detectors are essentially used for leisure, to search for coins, jewels, treasures. It uses the well-known principle of measuring the phase between an alternating electromagnetic signal transmitted by a coil energized by an electric voltage, and the signal received by another coil close to the first one.

The search coil, the headphones and the remote control communicate with each other via a radio link. In the case of the search coil, a transceiver reference nRF24L01P from Nordic Semiconductor has been used to create this radio link.

Model: XPELL  
FCC ID: XFJELL  
IC: 8392A-ELL

**4. TECHNICAL SPECIFICATIONS**

Frequency range used by E.U.T.: 2402MHz à 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)

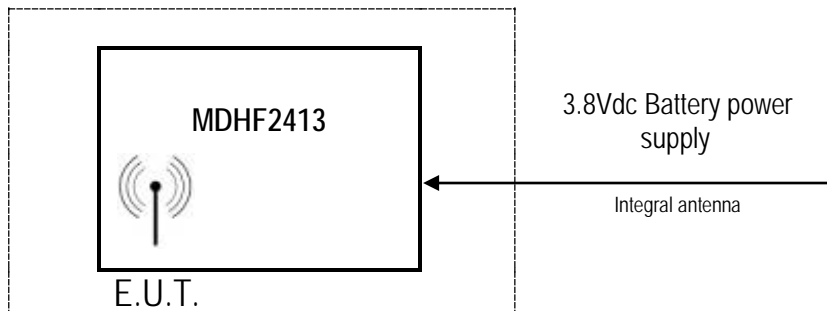
**Mechanical and electrical design:**

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
<b>Antenna requirement</b> - FCC part 15.203	N.A	Integral antenna (PCB)
<b>Restricted band of operation</b> - FCC part 15.205 / RSS-Gen §8.10	YES	
<b>Conducted limits</b> - FCC part 15.207 / RSS-Gen §8.8	YES	
<b>Unwanted radiated emissions</b> - FCC part 15.209 / RSS-Gen §8.9	YES	
<b>Operation within the bands 2400-2483.5MHz</b> - FCC part 15.249 / RSS-210 §B.10; 15.215	YES	
<b>Occupied bandwidth 99%</b> - RSS-Gen §6.7	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	CAL. DATE	CAL. DUE.
Cable	EMITECH	Current absorber sheath	10653	19/10/2018	19/12/2020
Cable	MICRO-COAX	N-3m	10535	06/04/2017	06/06/2019
Cable	MICRO-COAX	N-5m	10528	12/10/2017	12/12/2019
LISN	AFJ	LT42C10	12007	14/08/2018	14/10/2019
PE chocke	EMITECH	PE chocke 100A	10071	#	#
PE chocke	EMITECH	PE chocke 16A	10080	#	#
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Receiver	Rohde & Schwarz	ESHS10	3371	20/09/2018	20/11/2019
Shielded enclosure	RAY PROOF	C.GS3	1123	#	#
Software	Nexio	BAT EMC	0000	#	#
Thermohygrometer	Testo	608-H1	7561	27/12/2016	27/02/2019
Thermohygrometer	Bioblock Scientific	Météostar	0963	27/12/2016	27/02/2019

#: Permanent validity

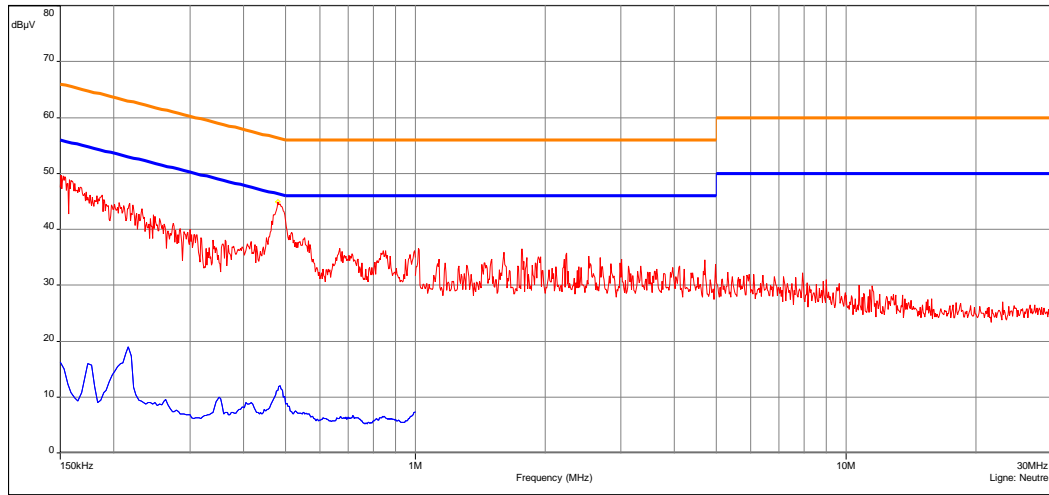
BAT-EMC software version: V3.6.0.32

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

Measurement uncertainty: +/- 3.53 dB

**Conducted emission**  
**110Vac/60Hz power supply**
**EMI2485**

— C.E.M. (civil)FCC Part 15 §107 - Class B - Moyenne/  
 — C.E.M. (civil)FCC Part 15 §107 - Class B - QCrête/  
 — Mes. Peak (Neutre)  
 — Mes. Avg (Neutre)  
 ◊ Peak/LimAvg (Neutre)



Date: 09/11/2018 09:12:10

Technician: MPA

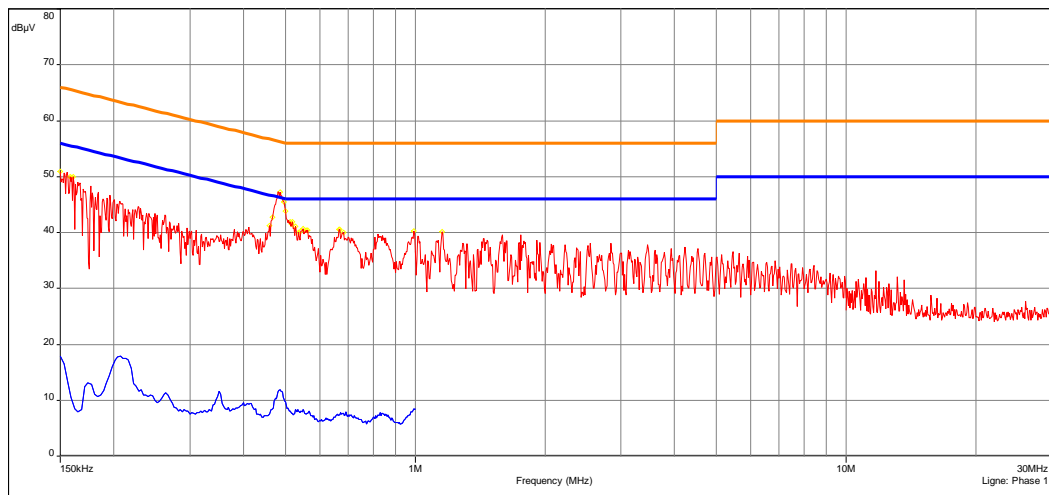
 Detection:  
 Peak and average

 T (°C): 26.5  
 H (%): 49  
 P (hpa): 1010

 Comments:  
 /

 Modification(s) during test:  
 No

— C.E.M. (civil)FCC Part 15 §107 - Class B - Moyenne/  
 — C.E.M. (civil)FCC Part 15 §107 - Class B - QCrête/  
 — Mes. Peak (Phase 1)  
 — Mes. Avg (Phase 1)  
 ◊ Peak/LimAvg (Phase 1)





### 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	CAL. DATE	CAL. DUE.
Antenna	ETS-Lindgren	3117	8387	23/04/2018	23/06/2019
Cable	MegaPhase	TM18-N1N1-197	12840	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12841	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12842	09/05/2018	09/07/2020
Preamplifier	Techniwave	APS16-0087	14040	31/01/2018	31/03/2019
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Shielded enclosure	RAY PROOF	C.V1	1123	#	#
Software	Nexio	BAT EMC v3.6.0.32	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	27/12/2016	27/02/2019
Thermohygrometer	Testo	608-H1	7562	27/12/2016	27/02/2019

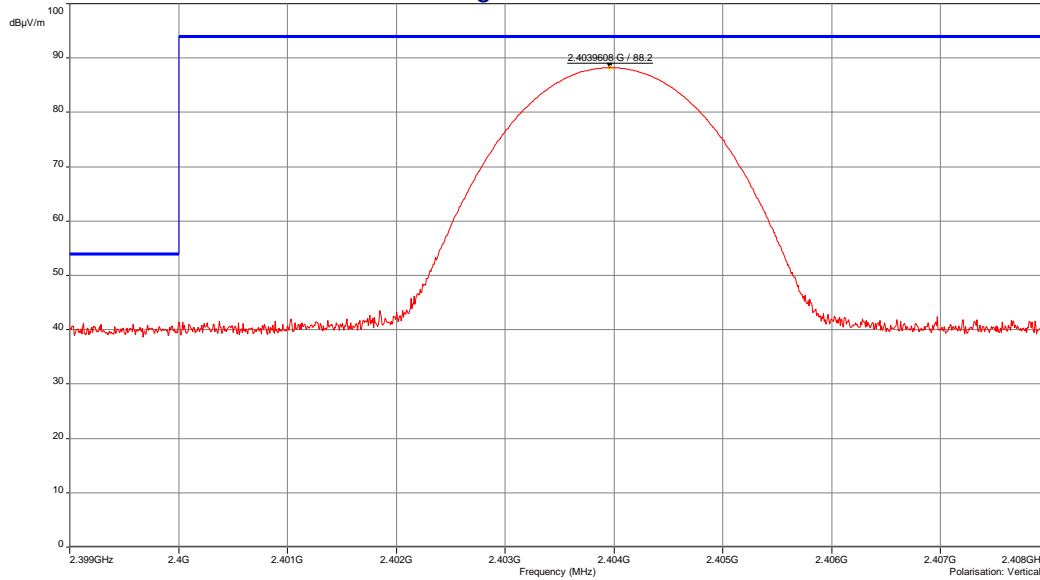
#: Permanent validity

BAT-EMC software version: V3.6.0.32

Results: See Graph(s) hereafter.

Frequency (MHz)	Polar.	Azimuth (degree)	Antenna Height (cm)	Meas Peak (dB $\mu$ V/m)	Lim Peak (dB $\mu$ V/m)	Meas Aver (dB $\mu$ V/m)	Lim Aver (dB $\mu$ V/m)	Comments
2404	Vertical	180	150	88.2	114	88.1	94	C
2440	Vertical	180	150	88.1	114	88.0	94	C
2476	Vertical	180	150	87.9	114	87.8	94	C

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

**Radiated electric field measurement**
**EMI4072**
**Band Edge / Low Channel**


Date: 15/11/2018 09:40:30

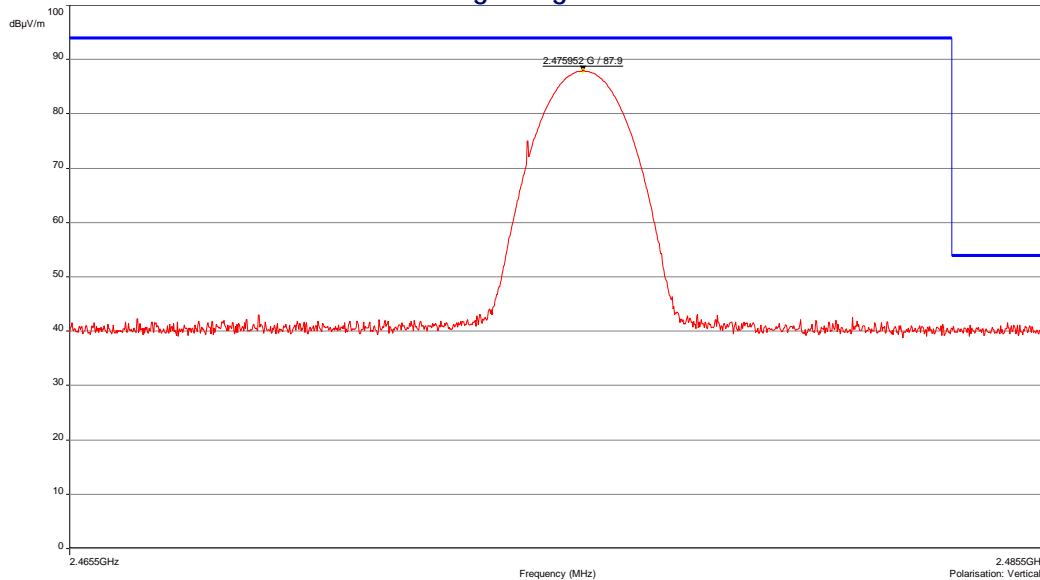
Technician: MPA

 Detection:  
 Peak

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

 Comments:  
 /

 Modification(s) during test:  
 No

**Radiated electric field measurement**
**EMI4073**
**Band Edge / High Channel**


Date: 15/11/2018 09:43:07

Technician: MPA

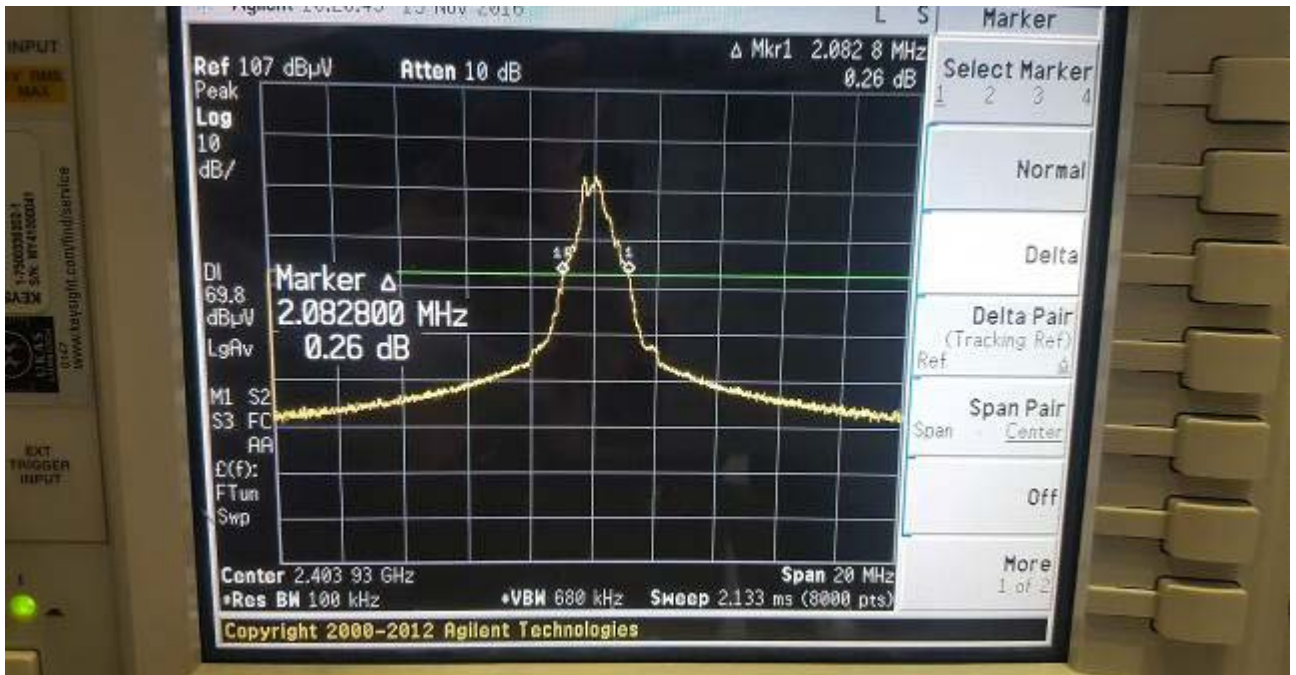
 Detection:  
 Peak and average

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

 Comments:  
 /

 Modification(s) during test:  
 No

20dB Bandwidth Low Channel: 2.0828MHz (RBW=100 kHz)



20dB Bandwidth Middle Channel: 2.8004MHz (RBW=100 kHz)



20dB Bandwidth High Channel: 3.7605MHz (RBW=100 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 fully anechoic chamber:**

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
9kHz-150kHz	360°	200Hz	1kHz	Peak	80cm
150kHz-30MHz	360°	10kHz	30kHz	Peak	80cm
30MHz-1GHz	360°	100kHz	300kHz	Peak	80cm
1GHz-25GHz	360°	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. Main carrier frequency is rejected with a notch filter.

**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	CAL. DATE	CAL. DUE.
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/09/2017	20/11/2019
Antenna	Electro Metrics	BIA-30HF	1107	13/06/2018	13/09/2021
Antenna	Rohde & Schwarz	HL223	1137	13/06/2018	13/09/2021
Antenna	ETS lindgren	3160-09	14690	25/09/2017	25/11/2020
Antenna	ETS-Lindgren	3117	8387	23/04/2018	23/06/2019
Cable	C&C	N-3m	10558	12/10/2017	12/12/2019
Cable	C&C	N-5m	10560	12/10/2017	12/12/2019
Cable	MegaPhase	TM18-N1N1-197	12840	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12841	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12842	09/05/2018	09/07/2020
Cable	SUCOFLEX	SMA-2m	12913	29/03/2018	29/05/2020
Cable	SUCOFLEX	K-2m	12917	11/04/2018	11/06/2020
Cable	Pasternack	SMA-0.5m	3544	29/03/2018	29/05/2020
Filter	Micro-Tronics	HPM 15162	10273	05/10/2016	05/12/2018
Filter	Wainwright Instruments	WRCG 2400/2483	9771	05/10/2016	05/12/2018
Preamplifier	Techniwave	APS16-0087	14040	31/01/2018	31/03/2019
Preamplifier	Wright Technologie	ASL40-B3015	14851	07/03/2018	07/05/2019
Preamplifier	IMPULSE	CA118-546ACN	9169	29/10/2018	29/12/2019
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Shielded enclosure	RAY PROOF	C.V1	1123	#	#
Software	Nexio	BAT EMC	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	27/12/2016	27/02/2019
Thermohygrometer	Testo	608-H1	7561	27/12/2016	27/02/2019

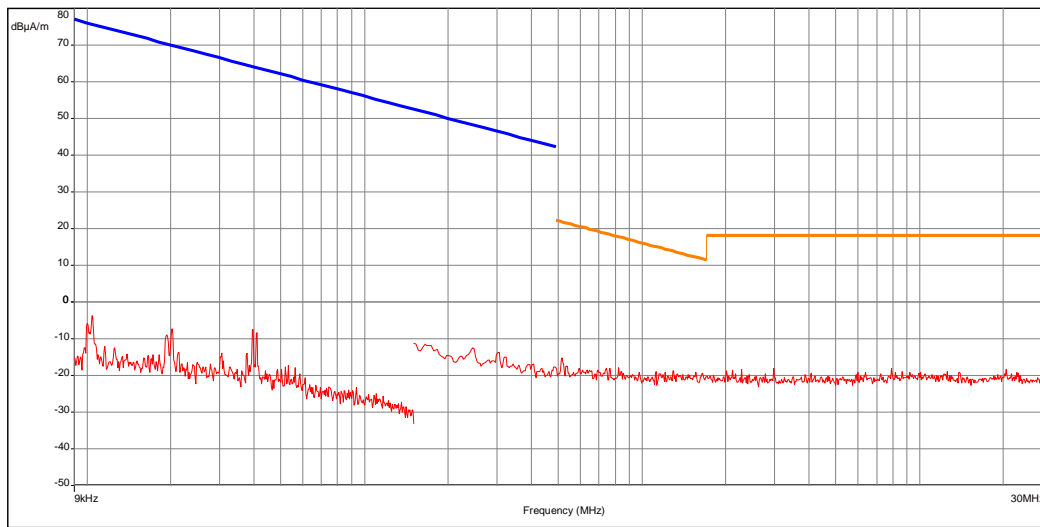
#: Permanent validity

*BAT-EMC software version: V3.6.0.32*
**Results:** See **Graphs** hereafter.

Above 18GHz no significant radiated emissions were detected.

**Radiated field strength**  
**0° / Tx mode**
**EMI2560**

— RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/  
 — RADIO/FCC Part 15 §209 - Class:Tx - QCrête/3.0m/  
 — Mes.Peak



Date: 12/11/2018 17:20:26

Technician: MPA

 Detection:  
 Peak

 T (°C): 25.7  
 H (%): 25.9  
 P (hpa): 1010

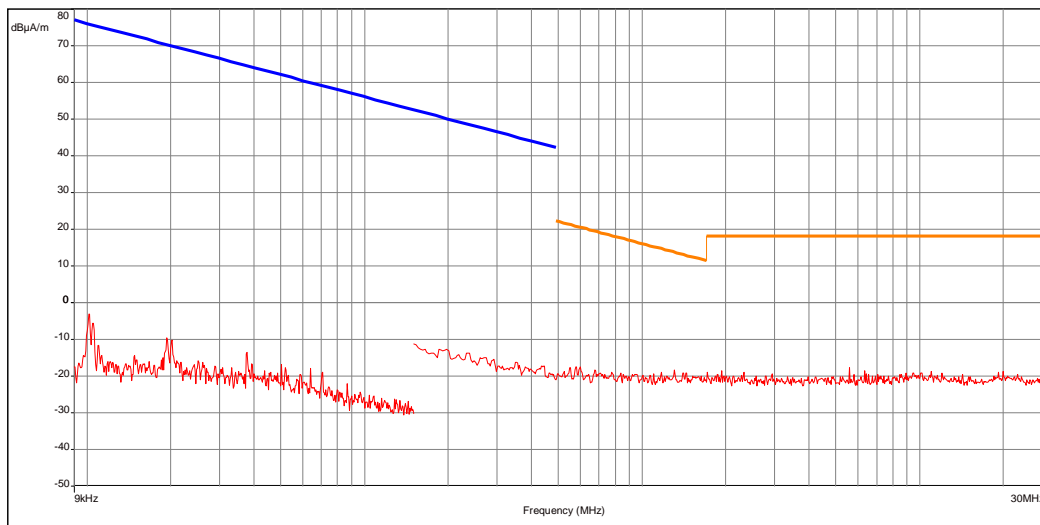
 Comments:  
 /

 Modification(s) during test:  
 None

0° / Tx mode / Disque 7

**Radiated field strength**  
**45° / Tx mode**
**EMI2561**

— RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/  
 — RADIO/FCC Part 15 §209 - Class:Tx - QCrête/3.0m/  
 — Mes.Peak



Date: 12/11/2018 17:18:02

Technician: MPA

 Detection:  
 Peak

 T (°C): 25.3  
 H (%): 25.9  
 P (hpa): 1010

 Comments:  
 /

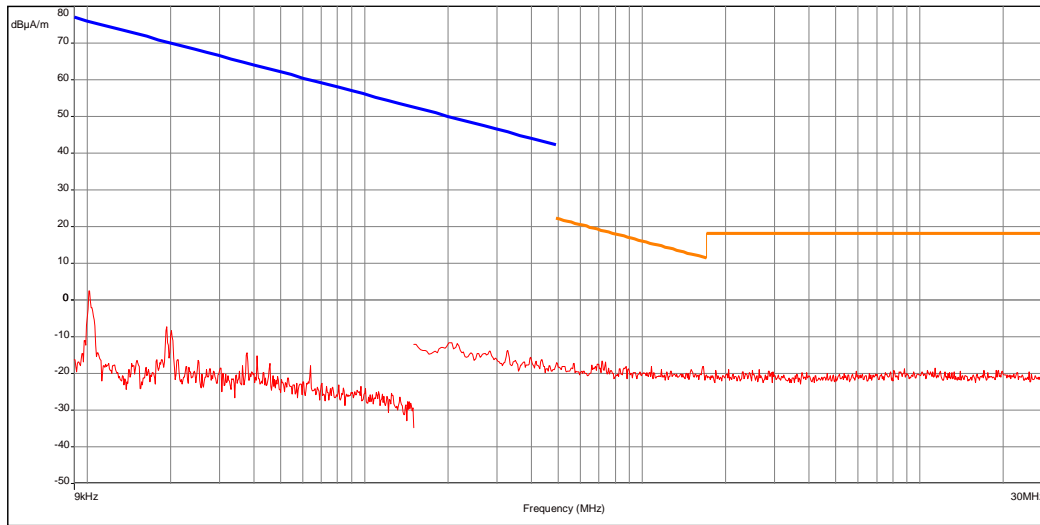
 Modification(s) during test:  
 None

45° / Tx mode / Disque 7

**Radiated field strength**  
90° / Tx mode

EMI2562

— RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/  
— RADIO/FCC Part 15 §209 - Class:Tx - QCrête/3.0m/  
— Mes.Peak



Date: 12/11/2018 17:15:30

Technician: MPA

Detection:  
Peak

T (°C): 25.7  
H (%): 25.9  
P (hpa): 1010

Comments:

Modification(s) during test:  
None

**TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES <30MHz - TABULATED RESULTS (MAX VALUES)**

TX MODE				
Frequency MHz	Antenna position	Level peak dBµA/m	Limit dBµA/m	Margin dB
0.010	90°	2.58	76.10	73.52
0.019	90°	-7.31	70.53	77.84
0.039	0°	-7.45	64.28	71.73

All other unwanted radiated spurious are at least 20dB below specified limits.



Radiated electric field measurement  
Tx mode < 1GHz

EMI2572

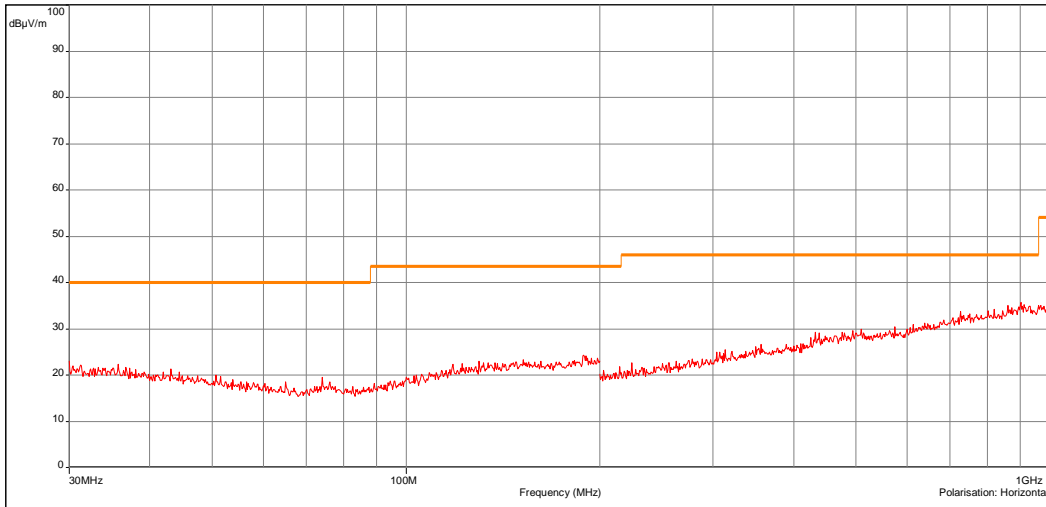
- RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - OCrête/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - Crête/3.0m/
- Mes.Peak (Horizontale)

Date: 12/11/2018 17:48:07

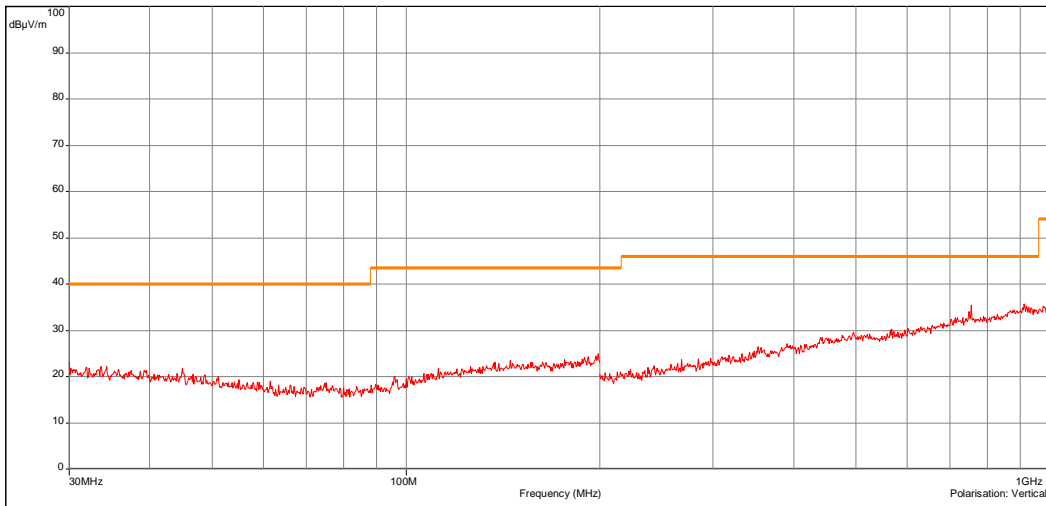
Technician: MPA

Detection:  
Peak

Comments:



- RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - OCrête/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - Crête/3.0m/
- Mes.Peak (Verticale)



Radiated electric field measurement  
Low Channel / Tx mode > 1GHz

EMI2578

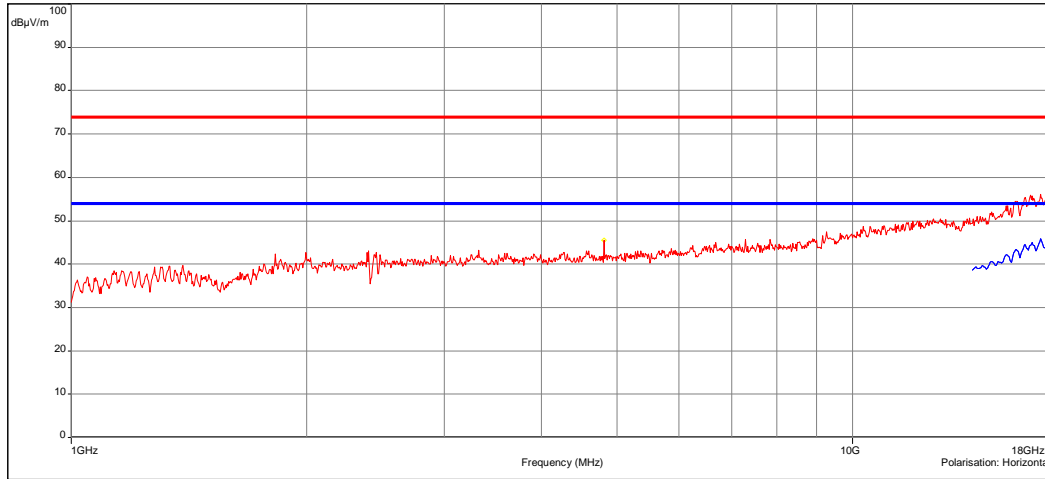
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- RADIO/FCC Part 15 §209 - Class:Tx - OCrête/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Avg (Horizontale)
- ◊ Peak/LimAvg (Horizontale)

Date: 12/11/2018 09:06:18

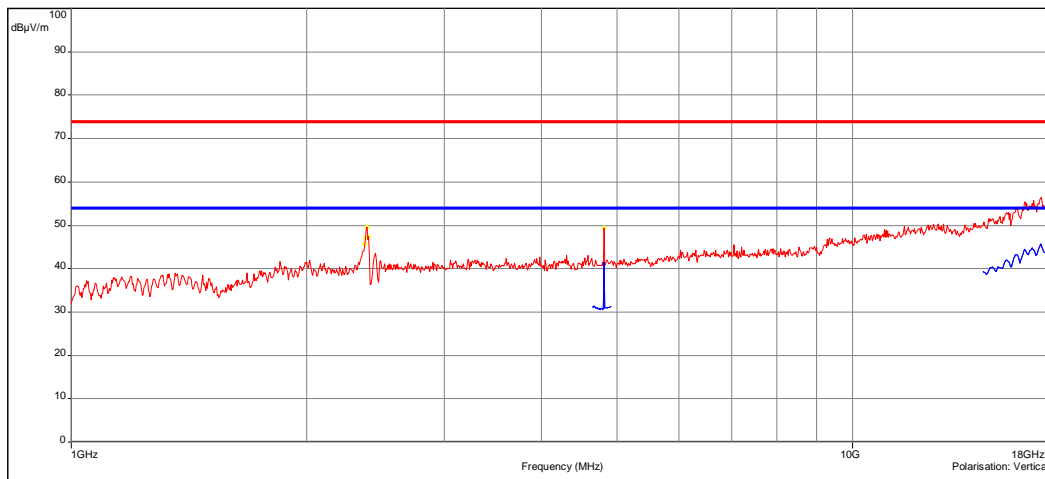
Technician: MPA

Detection:  
Peak

Comments:  
2.402-2.476GHz: Rejected main carrier



- RADIO/FCC Part 15 §209 - Class:Tx - Moyenne/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - OCrête/3.0m/
- RADIO/FCC Part 15 §209 - Class:Tx - Crête/3.0m/
- Mes.Peak (Verticale)
- Mes.Avg (Verticale)
- ◊ Peak/LimAvg (Verticale)



Radiated electric field measurement  
Mid Channel / Tx mode > 1GHz

EMI2579

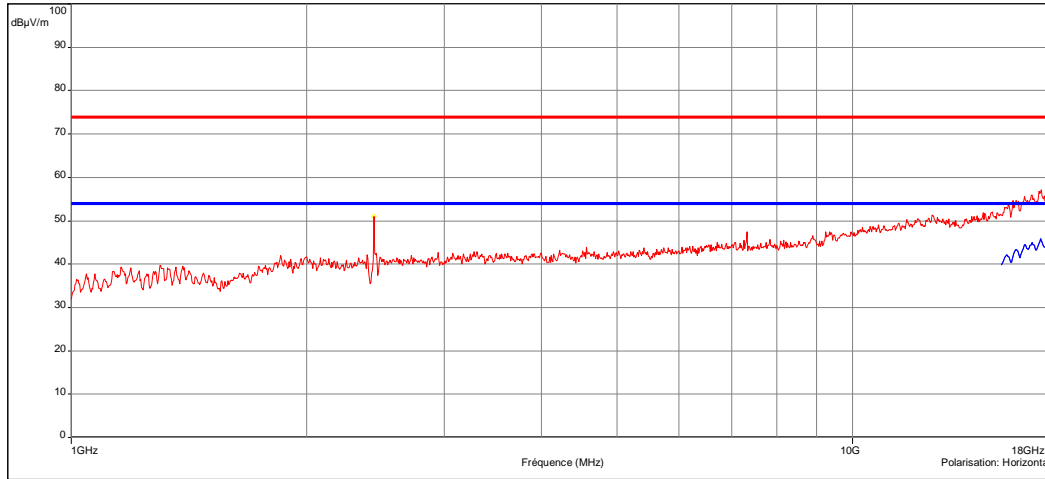
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne(3.0m/
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête(3.0m/
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête(3.0m/
- Mes.Peak (Horizontale)
- Mes.Avg (Horizontale)
- ◊ Peak/LimAvg (Horizontale)

Date: 12/11/2018 09:18:43

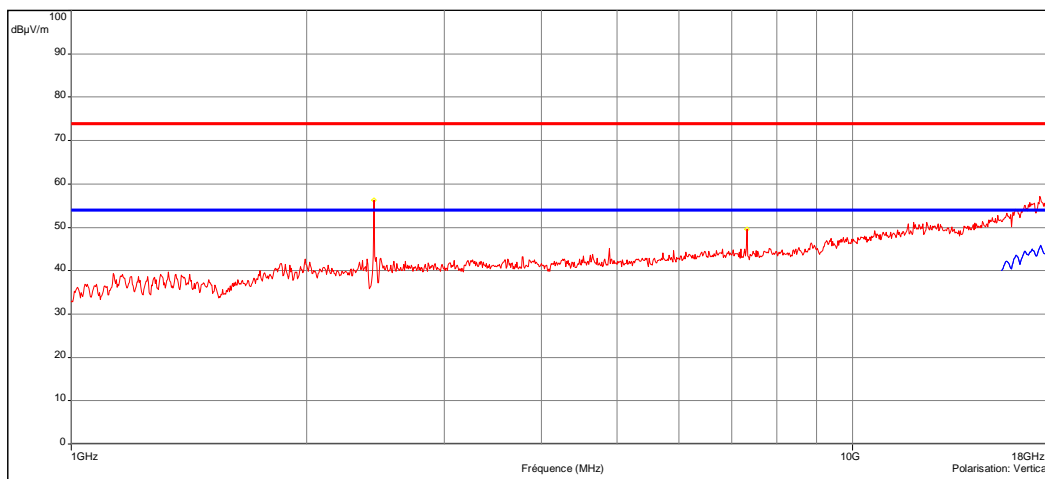
Technician: MPA

Detection:  
Peak

Comments:  
2.402-2.476GHz: Rejected main carrier



- 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)
- Mes.Avg (Verticale)
- ◊ Peak/LimAvg (Verticale)



**Radiated electric field measurement**  
**High Channel / Tx mode > 1GHz**

EMI2580

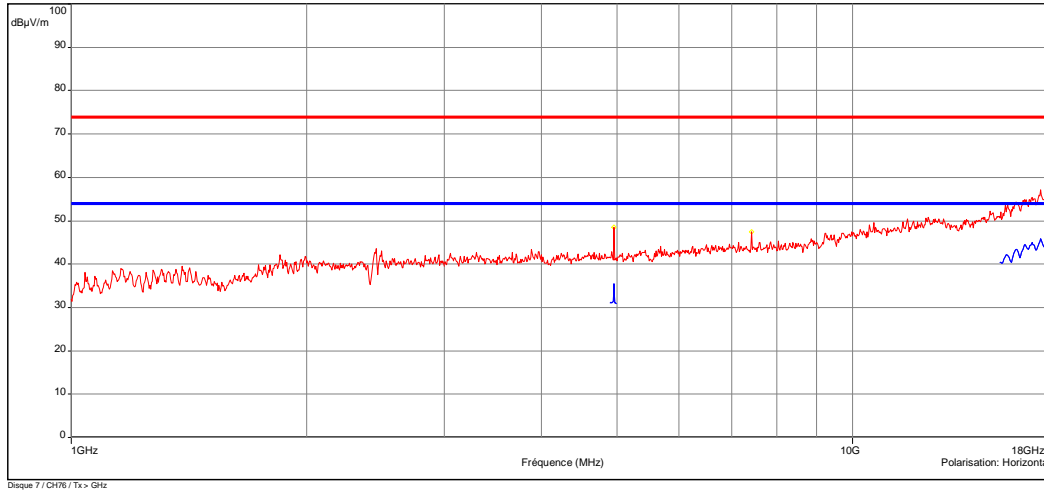
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - Moyenne/3.0m/
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - QCrête/3.0m/
- FCC/CNR/FCC Part 15 §209 - Classe:Tx - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Avg (Horizontale)
- Peak/LimAvg (Horizontale)

Date: 12/11/2018 09:28:35

Technician: MPA

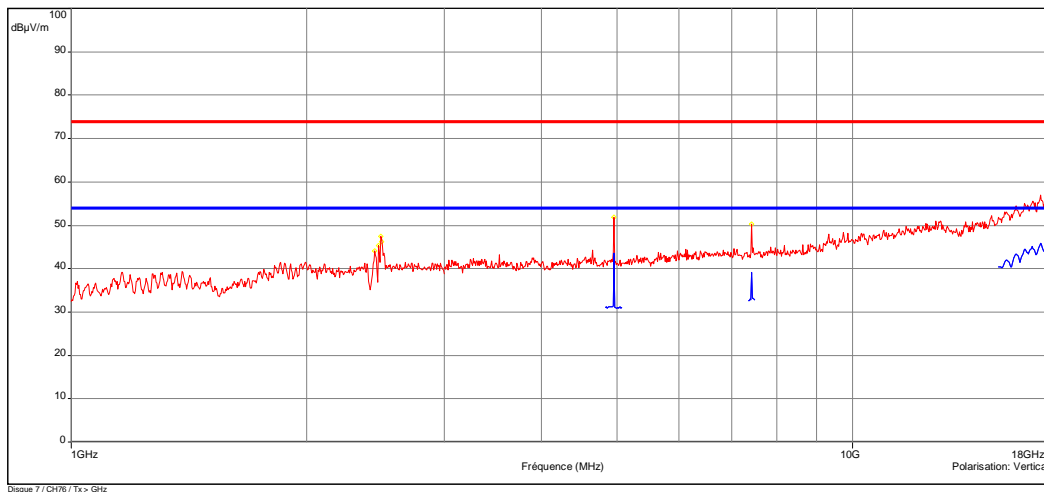
Detection:  
Peak

Comments:  
2.402-2.476GHz: Rejected main carrier



Disque 7 / CH76 / Tx > GHz

- 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)
- Mes.Avg (Verticale)
- Peak/LimAvg (Verticale)



Disque 7 / CH76 / Tx > GHz

**TRANSMITTER RADIATED SPURIOUS EMISSIONS AT FREQUENCIES >30MHz - TABULATED RESULTS (MAX VALUES)**

TX MODE								
Frequency MHz	Polarization	Channel	Level peak dBµV/m	Limit peak dBµV/m	Margin dB	Level Average dBµV/m	Limit Average dBµV/m	Margin dB
4809	Verticale	Low	48.54	74	25.46	41.53	54	12.47
17394	Verticale	Low	56.21	74	17.79	45.71	54	8.29
17386	Horizontale	Low	56.15	74	17.85	45.8	54	8.20
17377	Verticale	Middle	56.69	74	16.81	45.93	54	8.07
17440	Horizontale	Middle	56.62	74	16.80	45.82	54	8.18
4950	Verticale	High	51.07	74	22.93	43.51	54	10.49
7428	Verticale	High	50.23	74	23.77	39.21	54	14.79
17386	Verticale	High	56.55	74	16.95	45.87	54	8.13
17422	Horizontale	High	56.69	74	16.91	45.78	54	8.22

All other unwanted radiated spurious are at least 20dB below specified limits.

**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 dB $\mu$ A/m instead of dB $\mu$ V/m (conversion factor: 51.5dB) and measuring distance is 10 meters instead of 300m.

**Test equipment list:**

CATEGORY	BRAND	TYPE	N° EMITECH	CAL. DATE	CAL. DUE.
Antenna	Electro Metrics	BIA-30HF	1107	13/06/2018	13/09/2021
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/09/2017	20/11/2019
Antenna	Rohde & Schwarz	HL223	1137	13/06/2018	13/09/2021
Antenna mast	INNCO	MA4000-EP-O	10261	#	#
Cable	Huber Suhner	N-20m	8385	11/10/2017	11/12/2019
Cable	Huber Suhner	N-14m	8146	11/10/2017	11/12/2019
Mast controller	INNCO	CO3000	10260	#	#
Open area test site	EMITECH	Salinelles	3482	10/10/2017	10/12/2020
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Receiver	Rohde & Schwarz	ESVS10	3211	24/09/2018	24/11/2019
Thermohygrometer	Testo	608-H2	12269	27/11/2017	27/01/2020
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 and f<1GHz, Vertical)
- +/- 4.78 dB (f>200MHz and f<1GHz, Horizontal)
- +/- 5.16 dB (f>1GHz)

**9. OCCUPIED BANDWIDTH**

**Standard:** CNR-Gen § 6.7

**Test method:** CNR-Gen § 6.7

**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:**

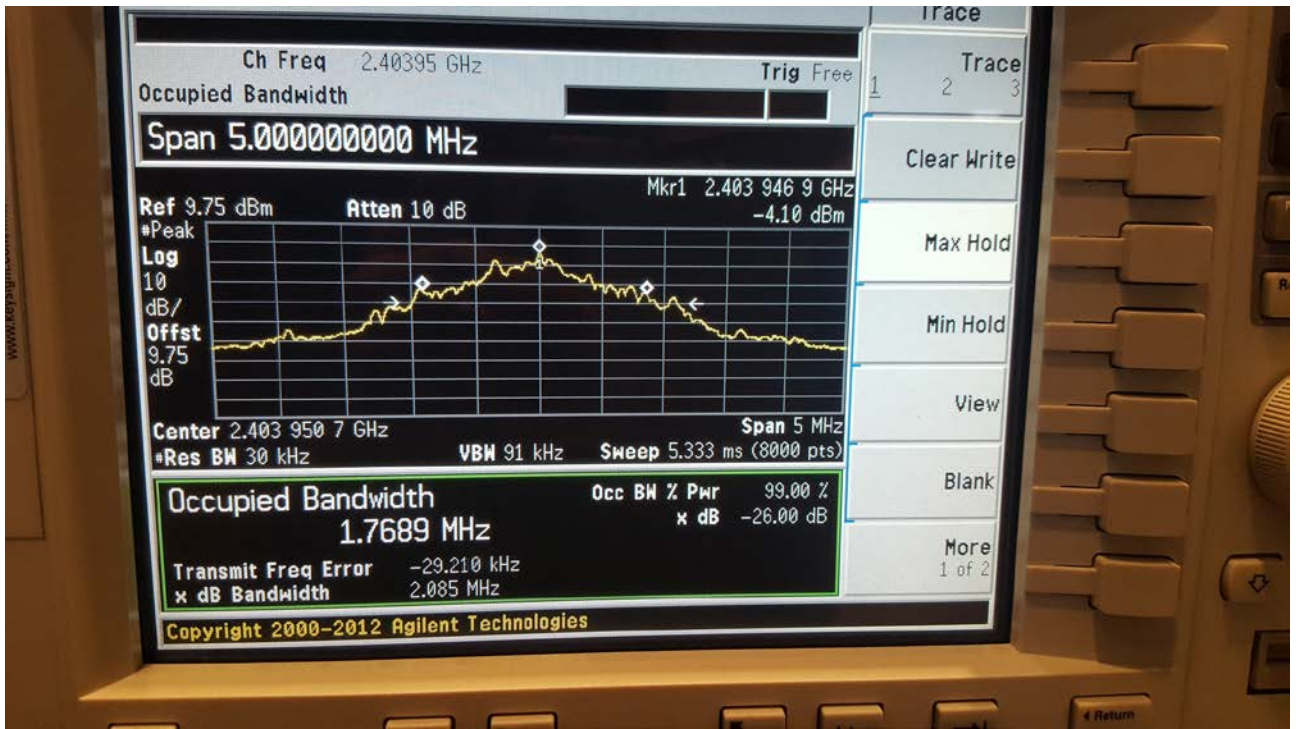
CATEGORY	BRAND	TYPE	N° EMITECH	CAL. DATE	CAL. DUE
Antenna	ETS-Lindgren	3117	8387	13/06/2018	13/09/2021
Cable	MegaPhase	TM18-N1N1-197	12840	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12841	09/05/2018	09/07/2020
Cable	MegaPhase	TM18-N1N1-118	12842	09/05/2018	09/07/2020
Preamplifier	Techniwave	APS16-0087	14040	31/01/2018	31/03/2019
Receiver	Agilent Technologies	E4440A	5824	18/04/2018	18/06/2020
Shielded enclosure	RAY PROOF	C.V1	1123	#	#
Software	Nexio	BAT EMC	0000	#	#
Thermohygrometer	Bioblock Scientific	Météostar	0963	27/12/2016	27/02/2019
Thermohygrometer	Testo	608-H1	7561	27/12/2016	27/02/2019

#: Permanent validity

BAT-EMC software version: V3.6.0.32

**Results:** See Graph(s) hereafter

Occupied Bandwidth 99% Low Channel: 1.7689 MHz (RBW=30 kHz)

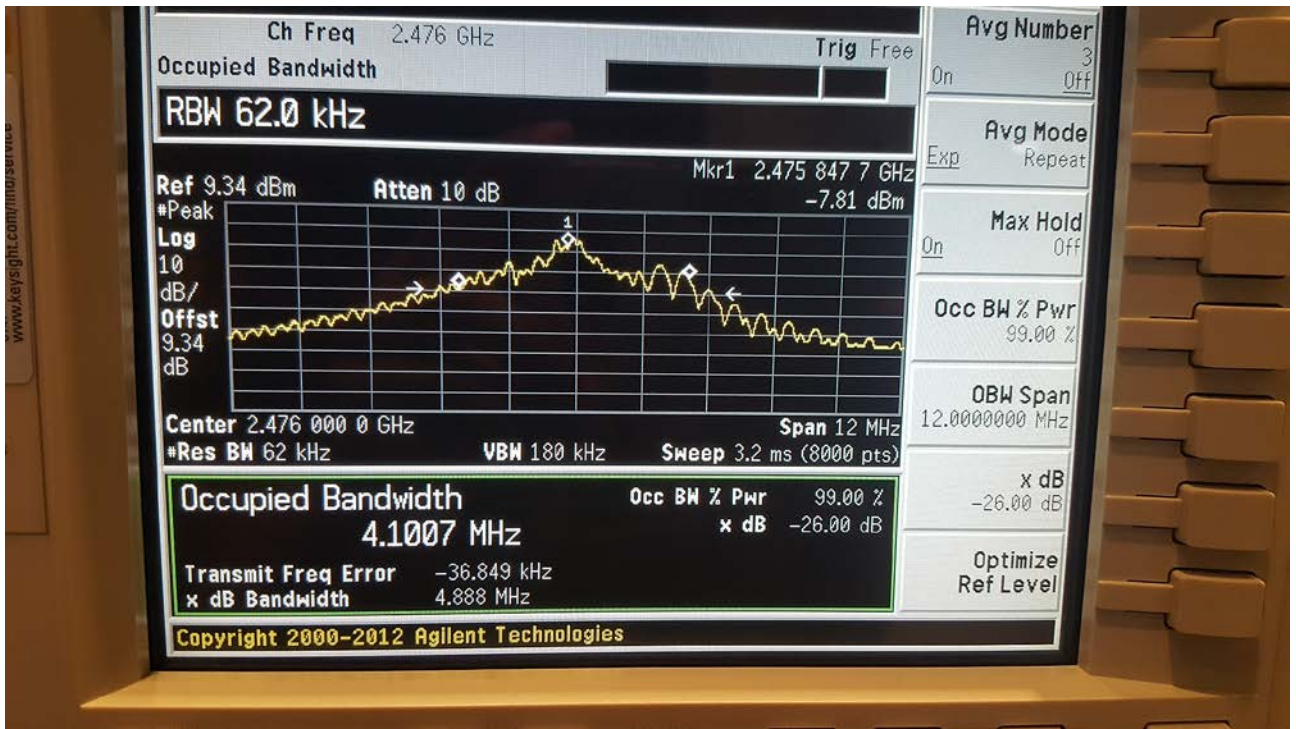


Occupied Bandwidth 99% Middle Channel: 1.9117 MHz (RBW=47 kHz)





Occupied Bandwidth 99% High Channel: 4.1000 MHz (RBW=62 kHz)



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



# ANNEX: PHOTOGRAPH(S)

E.U.T. (front side)



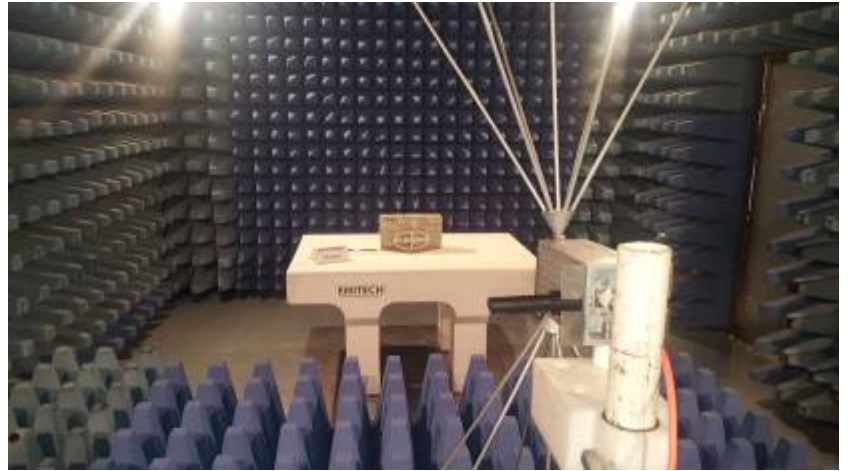
E.U.T. internal view



E.U.T. internal view



Radiated pre measurement



Radiated pre measurement



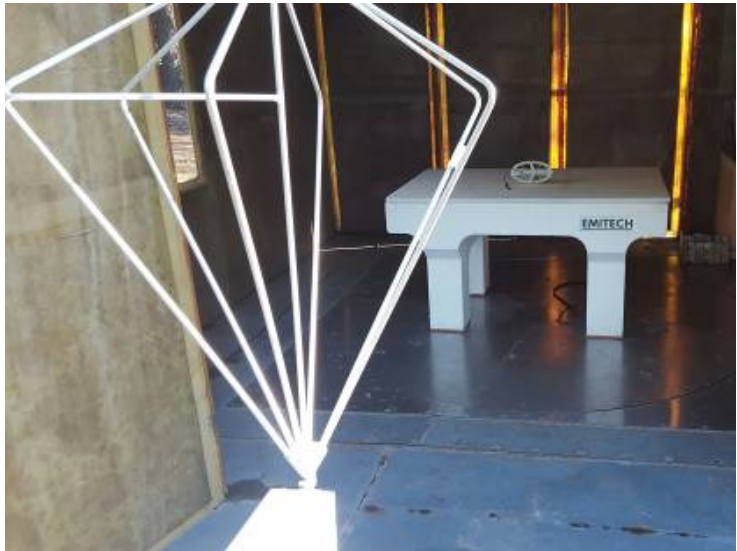
Unwanted emissions (f>1GHz)



Unwanted emissions (f<30MHz)  
(OATS)



Unwanted emissions (f<1GHz)  
(OATS)



Unwanted emissions (f<1GHz)  
(OATS)

