L C I E

TEST REPORT

N°: 135376-672302ACR2015-10-07

Subject

Electromagnetic compatibility (EMC) :
Publication CFR 47 Part 15 of 2013 Subpart C - Radio frequency devices - Intentional radiators standards (FCC Part 15.209 & 15.207)

Issued to	BodyCap 6, Rue de la girafe 14000 Caen FRANCE
Apparatus under test	
Product	Activator
Trade mark	BodyCap
Manufacturer	BodyCap
Model under test	Activateur / 04001
Serial number	-
Test date	May 7th, 2015 to May 26th, 2015
Test location	Fontenay Aux Roses
Test performed by	Fostoki MEDJOUDJ & Stéphane CAMBOUE
Composition of document	18 pages
Initial issued on	August 3rd, 2015
Modified on	October 07th, 2015

Written by :
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SUMMARY

1. Test Program

References

- ✓ **CFR 47 Part 15 Subpart C - Radio frequency devices - Intentional radiators standards**
- ✓ **ANSI C63.10 (2009)**
- ✓ **CISPR 16-4-2**

Emission tests:

Test Description	Main characteristics	Test result - Comments
Measurement of radiated electric field in shielded room (FCC Part 15.209)	☐ **Class A** ☑ **Class B**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP (Limited Program)**
Measurement of radiated electric field in open space (FCC Part 15.209)	☐ **Class A** ☐ **Class B**	☐ **PASS** ☐ **FAIL** ☑ **NA** ☐ **NP (Limited Program)**
Measurement of conducted disturbance on the AC main power port (FCC Part 15.207)	☐ **Class A** ☑ **Class B**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP (Limited Program)**

The product is Compliant according to CFR 47 Part 15 of 2013 Subpart C - Radio frequency devices - Intentional radiators standards (FCC Part 15.207 & 15.209).

PASS: EUT complies with standard's requirement
FAIL: EUT does not comply with standard's requirement
NA: Not Applicable
NP: Test Not Performed

2. Equipment Description (declared by provider)

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT): **Activateur / 04001** **Serial Number:** -

Equipment Under Test

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
PowersupplyAC	Input: 100-240V~ 50/60Hz 110mA Output: 5Vdc 1A	-	☑	☐	☑	Charger: TCUMINI1A1USBV2 / BB2709

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
-	-	-	-
-	-	-	-
-	-	-	-

Equipment information: (Declared by provider)

Apparatus Description	**The device is composed of an ingestible capsule, swallowed by the animal, which uses wireless telemetry to detect and transmit the animal's core body temperature to an external monitor (which is also provided).** **Transmitter frequency: 50 MHz.**  **The Activator enables the capsule**			
Type of power source:	☑ AC power supply	☐ DC power supply	☐ Battery (Select Type)	
Test source voltage:	Vmin-Vmax:	☑ 120V -60Hz	☐ Vdc	
Operating Modes	Mode 1	Activation - with capsule (which is not in transmission)		
Transmitter frequency	50MHz			

2.2. EQUIPMENT LABELLING

ACTIVATOR

CHARGER

2.3. EQUIPMENT MODIFICATIONS

☐ None ☑ Modification:

- Add ferrites on USB cable for radiated electric field (ref:74271132S)

3. Measurement of radiated emissions

3.1. ENVIRONMENTAL CONDITIONS

Test performed by : Stéphane CAMBOUE
Date of test : 2015/05/26
Ambient temperature : 20°C
Relative humidity : 38%

3.2. TEST SETUP

Specifications:

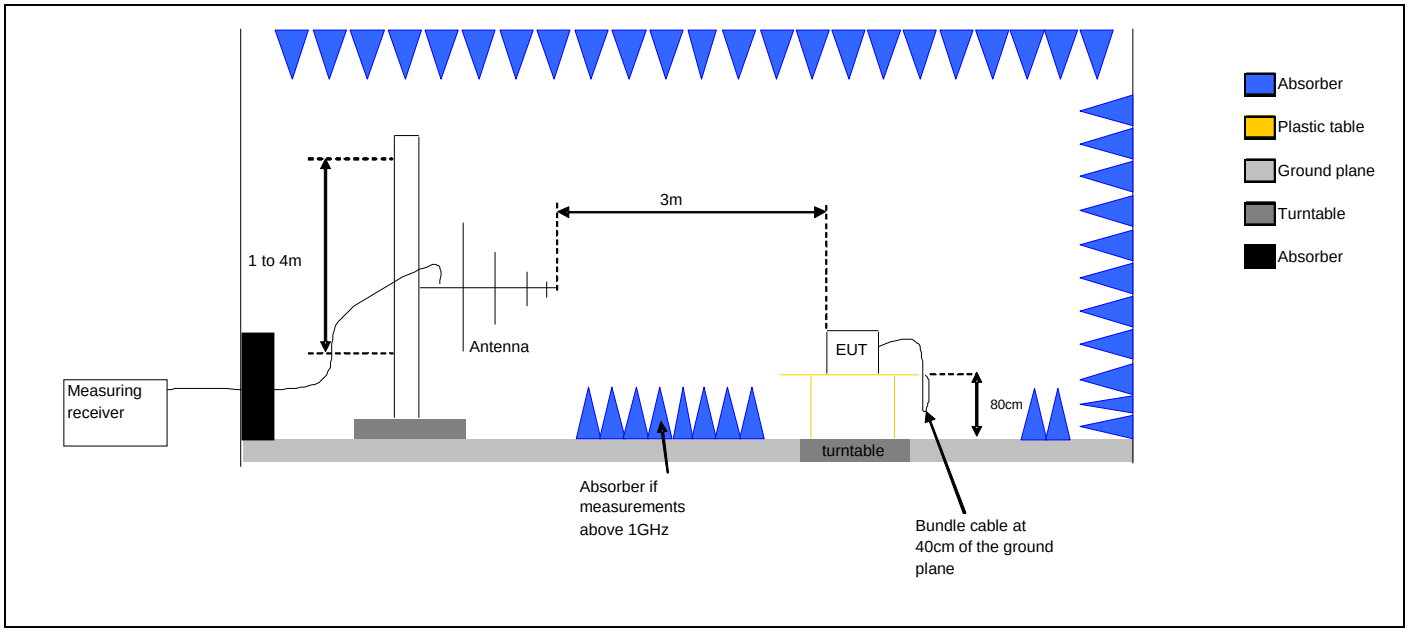
Frequency	30 – 1000 MHz	RBW 120 kHz
	1-6GHz	RBW 1MHz
Detector	Peak and Quasi-Peak	

Pre characterization in semi anechoic room is performed to define the critical frequencies

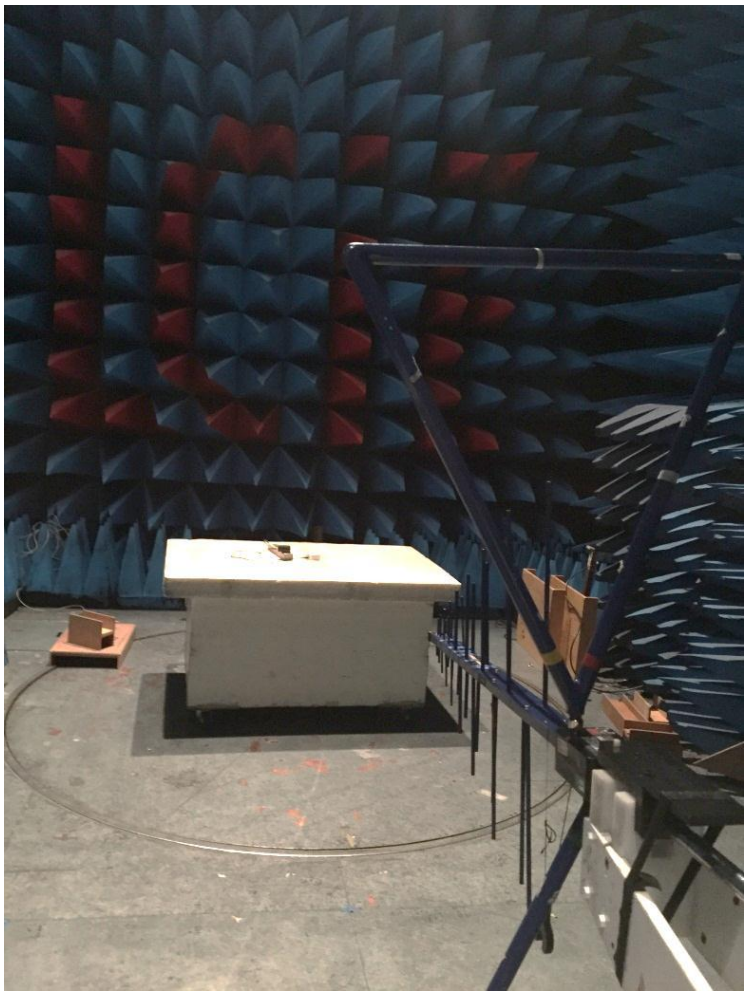
Operating conditions:

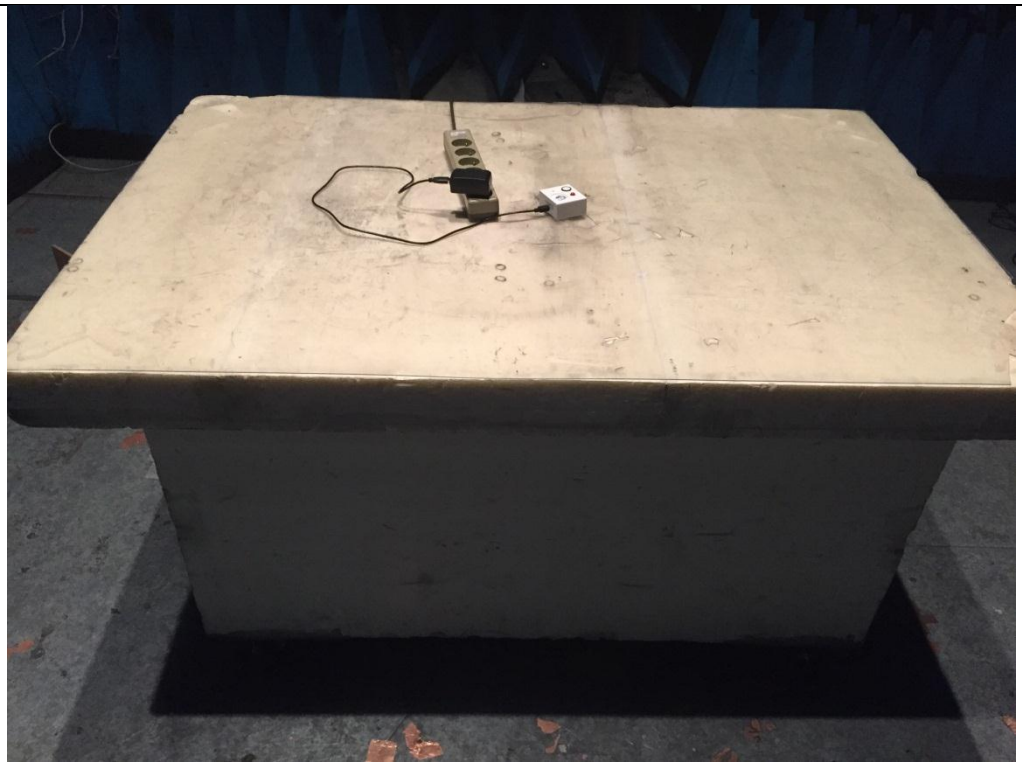
- The Equipment under Test is installed:
☑ Measure in semi anechoic room
☐ Measure in open area site
- Measuring distance:
☑ 3m
☐ 10m
- Deviation method:
☐ Yes
☑ No
-Product installation:
☑ The EUT was tested as a tabletop equipment and was placed on a non-conducting platform the top of which is 0.8m above the metal ground plane.
☐ The EUT is at 10cm height from reference plane

Operating mode:
☑ Mode 1



Test Set up for radiated measurement in semi anechoic chamber





Measurement of radiated disturbances.

3.3. LIMIT

Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) peak	dB (µV/m) average
30-88MHz	40	-	-
88 – 216MHz	43.5	-	-
216 – 960 MHz	46	-	-
960 – 1000 MHz	53.9	-	-
1000-6000MHz	-	73.9	53.9

3.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi anechoic chamber 11,8x8,1x9,5m	SIEPEL	C01	D3044008	2014/09	2015/09
Bilog antenna	CHASE	CBL6111C	C2040124	2014/09	2015/09
Spectrum analyzer	ROHDE & SCHWARZ	ESIB26	A2642021	2015/01	2016/01
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/4000	A5329374	2014/06	2015/06
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA-TDINOX/3.5MD/7000	A5329459	2014/06	2015/06
Cable	-	-	A5329261	2014/06	2015/06

3.5. RESULTS

Diagram N°1
Horizontal Polarization (30MHz-6GHz)

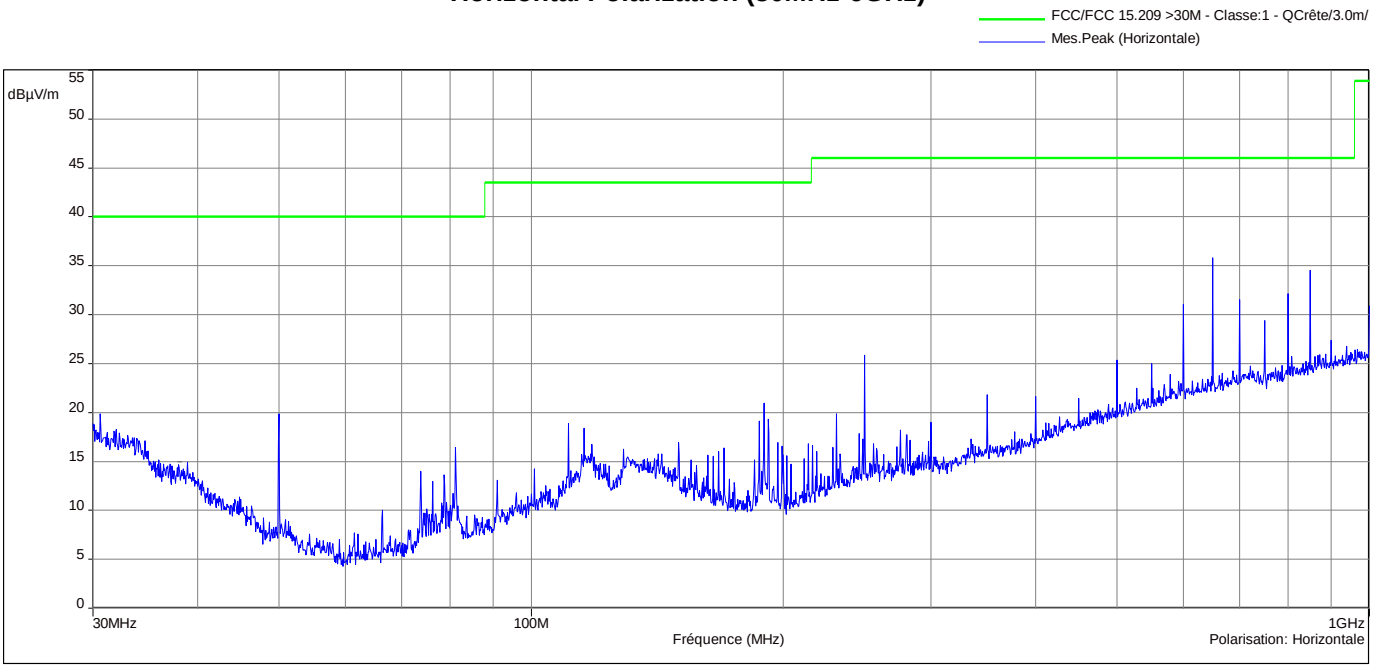
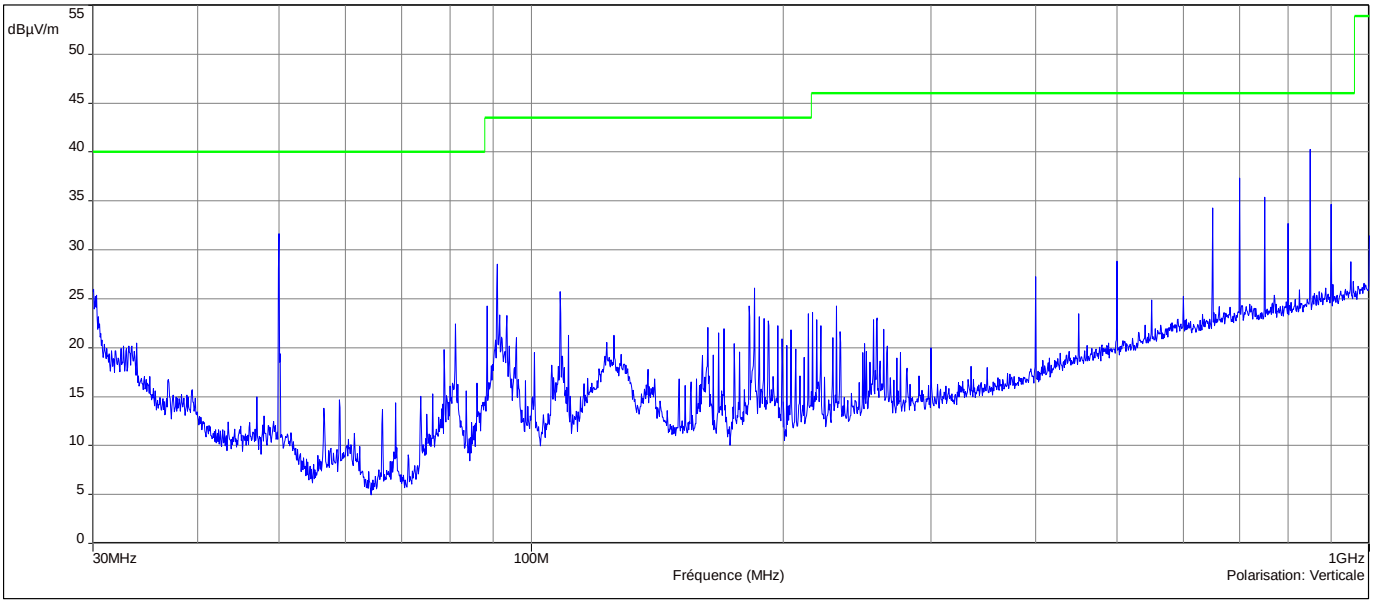


Diagram N°2
Vertical Polarization (30MHz-1GHz)



Polarisation	Frequency (MHz)	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)
V	50	31.66	-	40
V	91.05	28.52	-	43.5
V	669.98	37.35	-	46
V	750.02	35.38	-	46
V	849.980	40.25	-	46
V	1000	31.46	-	53.9

3.6. CONCLUSION

Measures of Radiated Emission, performed on the sample of the product **Activateur / 04001**, SN: **-**, in configuration and description presented in this test report, show levels **conform to** the FCC part 15.209 limits.

4. Measurement of conducted disturbance

4.1. ENVIRONMENTAL CONDITIONS

Test performed by : Fostoki MEDJOUDJ
Date of test : 2015/05/07
Ambient temperature : 20°C
Relative humidity : 38%

4.2. TEST SETUP

Specifications:

Frequency	0.15 – 30 MHz	RBW 9 kHz
Detector	Peak , Quasi Peak and average	

The measurement is performed on power supply with a LISN and telecommunication lines with RSI or current clamp for shielded cables.

Operating conditions:

- Deviation method:

☐ Yes

☑ No

-Product installation:

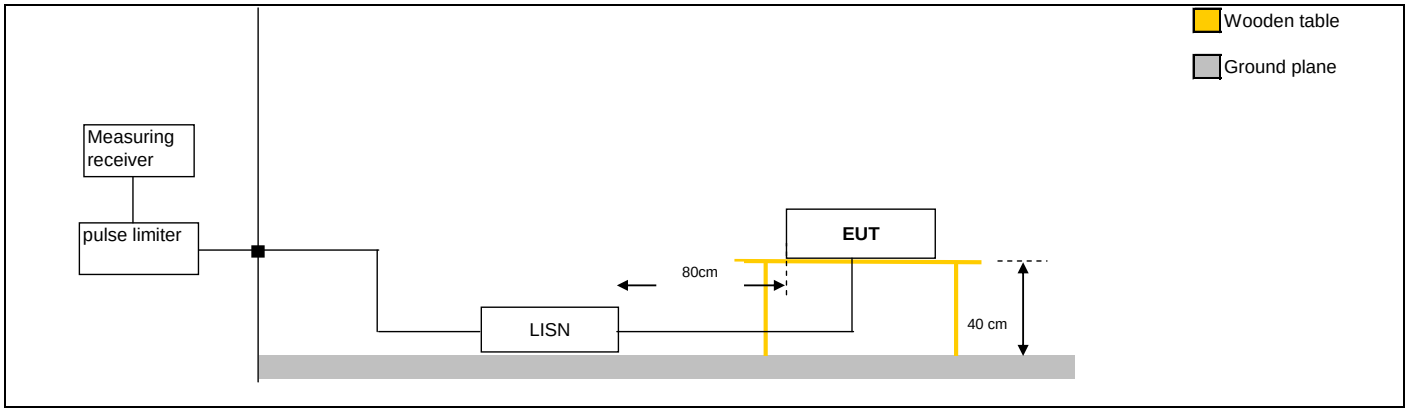
☐ The EUT is installed on a wooden table 80 cm above the reference plane, at 80cm of the LISN and at 40cm of the vertical conductive wall

☑ The EUT is installed on a wooden table 40 cm above the reference plane, at 80cm of the LISN.

☐ The EUT is installed 10 cm above the reference plane, at 80cm of the LISN..

Operating mode:

☑ Mode 1 ☐ Mode 2 ☐ Mode 3 …



Test set up of conducted emission on power supply

Test set up of conducted emission on power supply

4.3. LIMIT

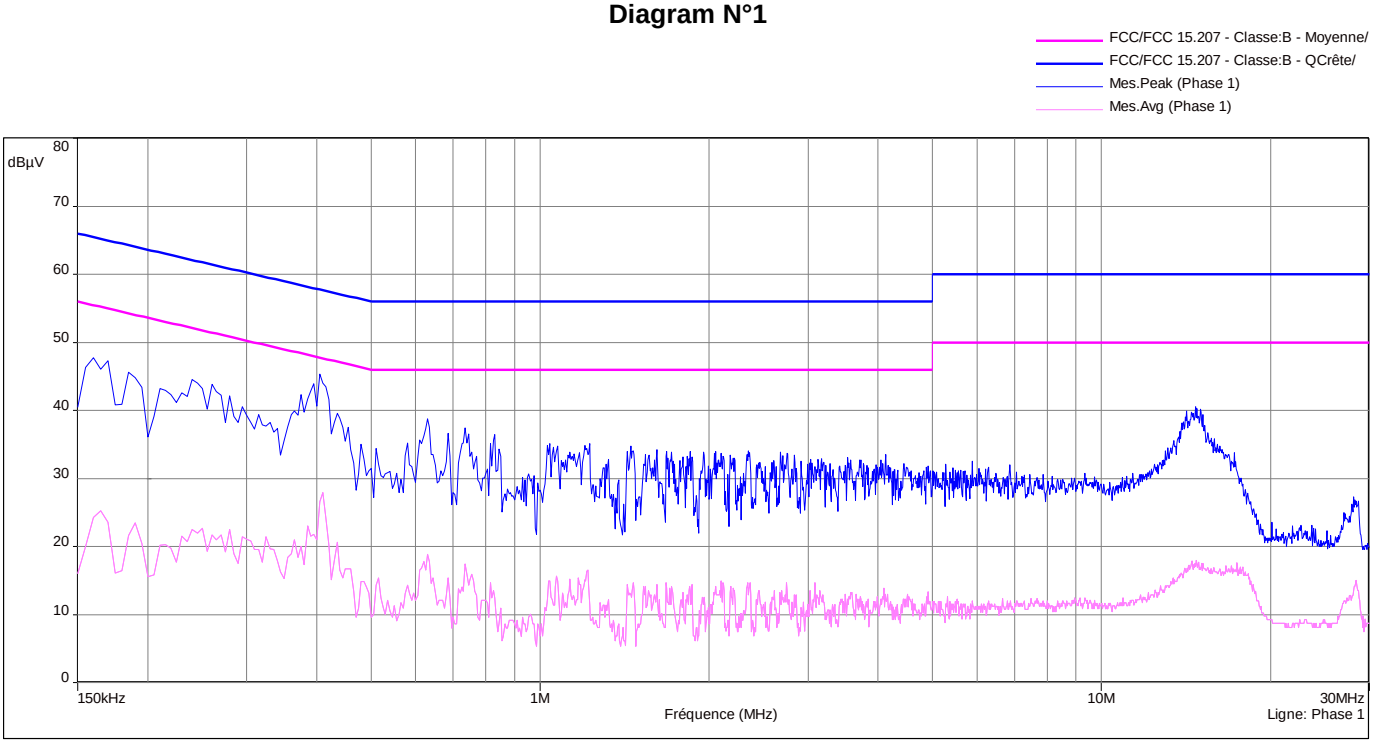
Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) average
0.15-0.5MHz	66-56	56-46
0.5-5 MHz	56	46
5-30 MHz	60	50

4.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	ROHDE & SCHWARZ	ESIB26	A2642021	2015/01	2016/01
V ISLN	ROHDE & SCHWARZ	ENV216	C2320162	2015/04	2016/04
Semi anechoic chamber 11,8x8,1x9,5m	SIEPEL	C01	D3044008	2014/09	2015/09
Cable	-	-	A5329411	2014/06	2015/06
Cable	-	-	A5329530	2014/06	2015/06

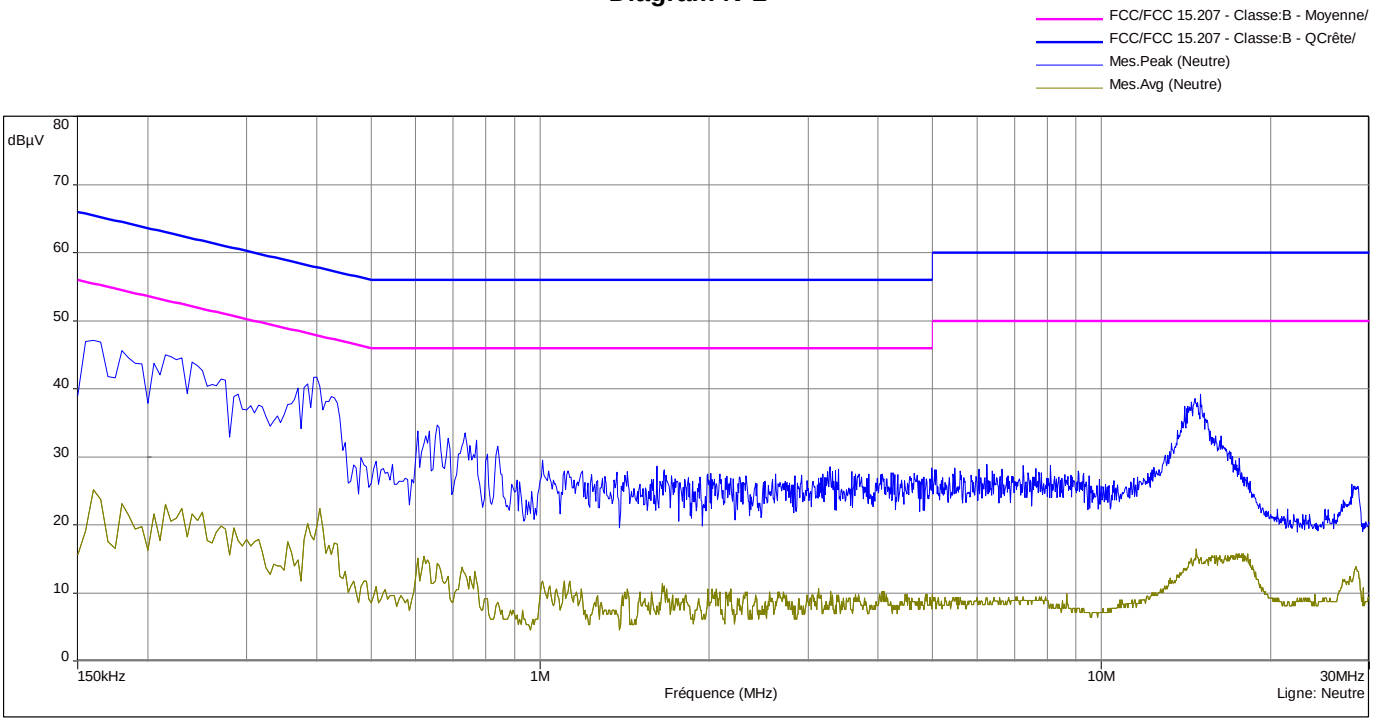
4.5. RESULTS

Diagram N°1



Phase

Diagram N°2



Neutral

Phase Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.418	46.2	-	57.5	27.9	47.5
0.633	38.1	-	56	28.3	46
14.9	40.3	-	60	17.5	50

Neutral Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.418	43.8	-	57.5	22.2	47.5
0.635	34.9	-	56	14.7	46
14.7	39.2	-	60	16.4	50

4.6. CONCLUSION

Measures of Conducted Emission, performed on the sample of the product **Activateur / 04001**, SN: **-**, in configuration and description presented in this test report, show levels **conform to** the FCC part 15.207 limits.

5. Uncertainties Chart

Kind of test	Measurement uncertainties (k=2) ±x(dB) / (Hz)	Limit for uncertainties ±y(dB)
REQUIREMENTS		
RF power conducted	±0.6dB	±1,5dB
Spurious emissions, conducted	±0.6dB	±3dB
Spurious emissions, radiated • Frequency < 1000 MHz • Frequency > 1000 MHz	 ±3.9dB ±3.1dB	±6dB
Temperature	±0.5°C	±1°C
Humidity	±2.5 %	±5%