TEST REPORT

Subject	**Electromagnetic compatibility and Radio spectrum Matters** **(ERM) tests according to standards:** **FCC CFR 47 Part 15, Subpart B ICES-003 Issue 5**
Issued to	**INGENICO** 9 Avenue de la gare Rovaltin TGV- BP 25156 FRANCE

Apparatus under test

✎ Product	**Terminal de paiement / *payment terminal***
✎ Trade mark	**INGENICO**
✎ Manufacturer	**INGENICO**
✎ Model under test	**DESK/5000 Eth/Mod**
✎ Part number	**TCA30000003B**
✎ Serial number	**15149732300000301003919 & 15149732300000301003935**
✎ FCCID	**XKB-D5000M00**
✎ ICID	**2586D- D5000M00**
Test date	From July 31st to October 16th; 2015
Test location	Moirans
IC Test site	6500A-1 & 6500A-3
Test performed by	Jonathan PAUC / Gaëtan DESCHAMPS
Composition of document	33 pages
Modification of the last version	None
Document issued on	March 21st, 2016
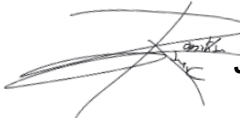
Written by :
Jonathan PAUC
Tests operator

Approved by :
Anthony MERLIN
Technical manager

SUMMARY

1. TEST PROGRAM

Standard:
- FCC Part 15, Subpart B (Digital Devices)
- ANSI C63.4 (2014)
- ICES-003 Issue 5

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance at mains ports 150kHz-30MHz	**Frequency**	**Quasi-peak value**	**Average value**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
	150-500kHz	66.0 dBµV to 56.0 dBµV	56.0 dBµV to 46.0 dBµV	
	0.5-5MHz	56.0 dBµV	46.0 dBµV	
	5-30MHz	60.0 dBµV	50.0 dBµV	
Radiated emissions 30MHz-1GHz	**Frequency**	**Quasi-peak value @3m**		☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
	30MHz-88MHz	40.0 dBµV/m		
	88MHz-216MHz	43.5 dBµV/m		
	216MHz-960MHz	46.0 dBµV/m		
	Above 960MHz	54.0 dBµV/m		
Radiated emissions 1GHz-6GHz* *Highest frequency : 1020 (Declaration of provider)*	**Frequency**	**Peak value @3m**	**Average value @3m**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
	1-6GHz	74.0 dBµV/m	54.0 dBµV/m	

***§15.33:** The highest internal source of a testing device is defined like more the highest frequency generated or used in the testing device or on which the testing device works or agrees.
- If the highest frequency of the internal sources of the testing device is lower than 108 MHz, measurement must be only performed until 1GHz.
- If the highest frequency of the internal sources of the testing device ranges between 108 MHz and 500 MHz, measurement must be only performed until 2GHz.
- If the highest frequency of the internal sources of the testing device ranges between 500 MHz and 1 GHz, measurement must be only performed until 5GHz.
If the highest frequency of the internal sources of the testing device is above 1 GHz, measurement must be only performed until 5 times the highest frequency or 40 GHz, while taking smallest of both.

2. SYSTEM TEST CONFIGURATION

2.1. RANGE

There are 3 models in DESK range:
1. Desk/5000 /Eth
2. Desk/5000 /Mod
3. Desk/5000 /Eth/Mod   *Full options*

In this test report, full option model will be tested and presented.

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

2.2.1. Equipment under test (EUT):

DESK/5000 Eth/Mod   **Serial Number:**   **15149732300000301003919**
                                                            15149732300000301003935

Photography of EUT

2.2.1.1. Power supply:

During all the tests, EUT (Primary of AC/DC power supply converter) is supplied by V_{nom}: 240 / 50Hz VAC (Radiated Emission) & 110V / 60Hz (Conducted Emission Test)
For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference	Sn	Comments
AC/DC Adaptor#1	☑ AC	100-240V—50-60Hz	INGENICO PSC16E-080	P/N: 192011097	/
AC/DC Adaptor#2	☑ AC	230V/50-60Hz/210mA	FW7577/EU/08	P/N 192025794	/
AC/DC Adaptor#5	☑ AC	100-240V 50-60Hz	PSM32W-080L6IN-R	None	/

2.2.1.2. _Inputs/outputs - Cable:_

Inputs/outputs - Cable: on DESK/5000 /Eth/Mod						
Access	**Type**	**Length used (m)**	**Declared <3m**	**Shielded**	**Under test**	**Comments**
Twist cable to Magicbox	Power supply Jack	2	☑	☐	☑	Supply Terminal
	RJ11 port					COM0
	RJ45 port					Ethernet line
	RJ11 port					Modem line
SAM1	SAM card	/	/	/	☑	/
SAM2	SAM card	/	/	/	☑	/
CAM0	SMART Card	/	/	/	☑	/
USB	USB port (Micro-B)	1	☐	☑	☑	/
USB HOST	USB port (Type A)	1	☐	☑	☑	/

Inputs/outputs - Cable: on Magicbox 51/2014 CUST P/N: 296100075 INGELEC P/N : MUL0885C						
Access	**Type**	**Length used (m)**	**Declared <3m**	**Shielded**	**Under test**	**Comments**
Supply Magicbox	Power supply Jack	1.5	☑	☐	☑	/
COM0	RJ11	3	☐	☐	☑	/
Ethernet	RJ45	5	☐	☐	☑	/
Modem	RJ11	5	☐	☐	☑	/
Magicbox cable twisted	Twist cable	2	☑	☐	☑	/

2.2.1.3. _Auxiliary equipment used during test:_

Type	**Reference**	**Sn**	**Comments**
Line simulator	TELTONE TLS-5	017652	/
Laptop	DELL LATITUDE	/	/
2 x SAM Card	/	/	/
1 x SmartCard	/	/	/

2.3. EUT CONFIGURATION

Configuration n°1 :
- 2 x SAM
- 2 x USB
- CAM0
- Magicbox   51/2014 CUST P/N: 296100075 INGELEC P/N : MUL0885C
    - Power supply n°1 :   PSC16E-080
    - Modem RTC
    - Ethernet
    - RS232-COM1

Configuration n°2 :
- 2 x SAM
- 2 x USB
- CAM0
- Magicbox   51/2014 CUST P/N: 296100075 INGELEC P/N : MUL0885C
    - Power supply n°2 :   FW7577/EU/08
    - Modem RTC
    - Ethernet
    - RS232-COM1

Configuration n°8 :
- 2 x SAM
- 2 x USB
- CAM0
- Magicbox   51/2014 CUST P/N: 296100075 INGELEC P/N : MUL0885C
    - Power supply n°3 :   PSM32W-080L6IN-R
    - Modem RTC
    - Ethernet
    - RS232-COM1

During the test :
- ✓ SAM :   Reading in loop
- ✓ USB: Reading between both in loop
- ✓ CAM: Reading card in loop
- ✓ BACKLIGHT   Screen display Backlight is ON

- ✓ MODEM: With simulator
- ✓ LAN: Ping in loop
- ✓ RS232:   Connection between PIN to read in loop
- ✓ PRINTING   Ticket Printing

2.4.   EQUIPMENT MODIFICATIONS

☑ None   ☐ Modification:

2.5.   FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

$$FS = RA + AF + CF - AG$$

Where   FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dBµV/m.
$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dBµV/m}$$
The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.
Level in µV/m = Common Antilogarithm $[(32\text{dBµV/m})/20] = 39.8$ µV/m.

2.6.   CALIBRATION DATE

The calibration intervals are extended at 12+2 months. This extended interval is based on the fact that there is sufficient calibration data to statistically establish a trend or based on experience of use of the test equipment to assure good measurement results for a longer period

3. CONDUCTED EMISSION DATA

3.1. ENVIRONMENTAL CONDITIONS

Date of test	: July 31st, 2015	October 13th, 2015	October 16th, 2015	March 21st, 2016
Test performed by	: J.PAUC	J.PAUC	J.PAUC	G.Deschamps
Atmospheric pressure (hPa)	: 991	990	997	990
Relative humidity (%)	: 31	47	33	32
Ambient temperature (°C)	: 24	21	23	22

3.2. TEST SETUP

Mains terminals

The EUT and auxiliaries are set:

☑ 80cm above the ground on the non-conducting table (Table-top equipment)

☐ 10cm above the ground on isolating support (Floor standing equipment)

The distance between the EUT and the LISN is 80cm. The EUT is 40cm away for the vertical ground plane.

The EUT is powered by V$_{nom}$.

The EUT is powered through a LISN (measure). Auxiliaries are powered by another LISN.
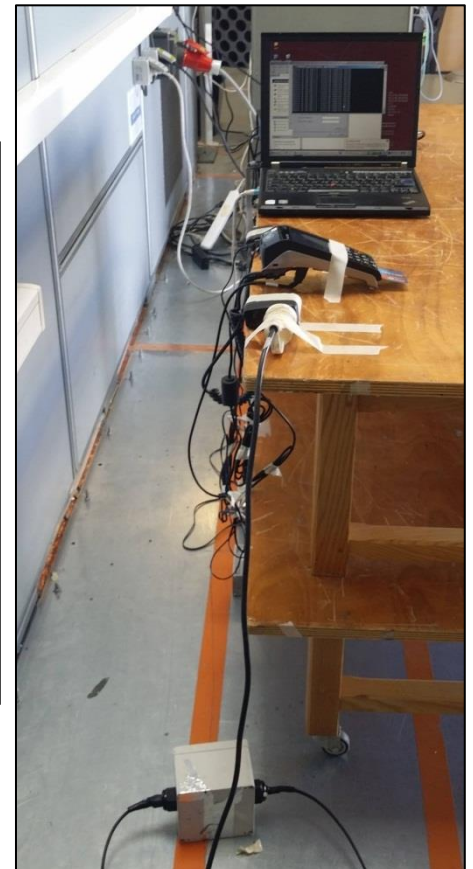
General Test setup -Configurations 1 & 2 & 8

3.3. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable + self	-	-	A5329585	06/15	06/16
Conducted emission comb generator	BARDET	-	A3169049	-	-
LISN	TELEMETER ELECTRONIC	NNB-2/16Z	C2320061	-	-
LISN	RHODE & SCHWARZ	ENV216	C2320123	02/15	02/16
Load 50Ω	-	-	A7152036	03/15	03/16
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	04/15	04/16
Transient limiter	RHODE & SCHWARZ	ESH3-Z2	A7122204	10/15	10/16

3.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None   ☐ Divergence:

3.5. TEST RESULTS

Mains terminals:

CONFIGURATION N°1
Measurements are performed on the phase (L1) and neutral (N) of the power line.

Graph identifier		Line	Comments	
Emc#	1	Phase	Sample (sn): **15149732300000301003919**	See annex 1
Emc#	2	Neutral		**PEAK detection**

CONFIGURATION N°2
Measurements are performed on the phase (L1) and neutral (N) of the power line.

Graph identifier		Line	Comments	
Emc#	3	Phase	Sample(sn) : **15149732300000301003919**	See annex 1
Emc#	4	Neutral		**PEAK detection**

CONFIGURATION N°8
Measurements are performed on the phase (L1) and neutral (N) of the power line.

Graph identifier		Line	Comments	
Emc#	5	Phase	Sample(sn) : **15149732300000301003919**	See annex 1
Emc#	6	Neutral		**PEAK detection**

3.6. CONCLUSION

The sample of the equipment DESK/5000 Eth/Mod Sn: 15149732300000301003919 & 15149732300000301003935 tested in the configuration presented in this test report satisfies to requirements of class B limits of the standard FCC Part15B, for conducted emissions.

4. RADIATED EMISSION DATA

4.1. ENVIRONMENTAL CONDITIONS

Date of test	:	October 9th , 2015	March 21st, 2016
Test performed by	:	J.PAUC	G.Deschamps
Atmospheric pressure (hPa)	:	990	990
Relative humidity (%)	:	41	32
Ambient temperature (°C)	:	22	22

4.2. TEST SETUP

The installation of EUT is identical for pre-characterization measures in a 3 meters semi- anechoic chamber and for measures on the 10 meters Open site.
The EUT and auxiliaries are set:
☑ 80cm above the ground on the non-conducting table (Table-top equipment)   -
☐ 150cm above the ground on the non-conducting table (Table-top equipment) -
☐ 10cm above the ground on isolating support (Floor standing equipment)
The EUT is powered by V_{nom}.

Test setup in anechoic chamber (Configuration n°1)
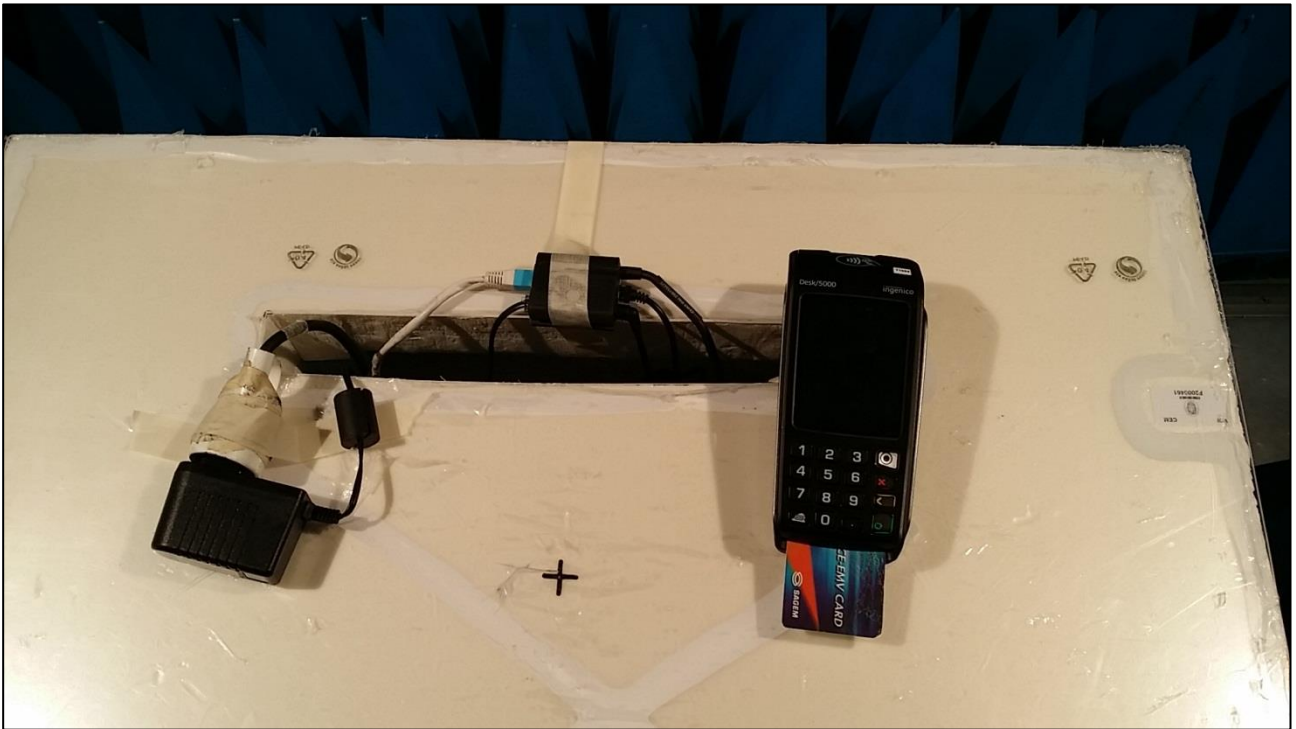
Test setup in anechoic chamber (Configuration n°2)

Test setup in anechoic chamber (Configuration n°8)

Test setup in OATS (Configuration n°1)

Test setup in OATS (Configuration n°2)

Test setup in OATS (Configuration n°8)

4.3. TEST METHOD

Pre-characterisation measurement: (9kHz – 6GHz)

A pre-scan of all the setup has been performed in a 3 meters semi-anechoic chamber for frequency from 30MHz to 6GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test for maximized the emission measurement. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration.
The pre-characterization graphs are obtained in PEAK detection and PEAK/AVERAGE from 1GHz to 6GHz.

Characterization on 10 meters open site from 9kHz to 1GHz:

The product has been tested according to ANSI C63.4 (2003), FCC part 15 subpart C. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC. The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart C §15.225 limits in the frequency range 13.553MHz 13.567MHz. Measurement bandwidth was 9kHz below 30MHz and 120kHz from 30 MHz to 1GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test for maximized the emission measurement. The height antenna is varied from 1m to 4m. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown.
Frequency list has been created with anechoic chamber pre-scan results.

Characterization on 3 meters full anechoic chamber from 1GHz to -6GHz:

The product has been tested at a distance of **3 meters** from the antenna and compared to the FCC part 15 subpart B §15.109 limits and C §15.209 limits. Measurement bandwidth was 1MHz from 1GHz to 6GHz.
Test is performed in horizontal (H) and vertical (V) polarization. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown.The height antenna is
☐ On mast, varied from 1m to 4m
☑ Fixed and centered on the EUT (EUT smaller than the beamwidth of the measurement antenna, ANSI C63.10 §6.6.5)
Frequency list has been created with anechoic chamber pre-scan results.

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4.4. TEST EQUIPMENT LIST

	Anechoic chamber				
DESCRIPTION	**MANUFACTURER**	**MODEL**	**N° LCIE**	**Cal_Date**	**Cal_Due**
Antenna Bi-log	CHASE	CBL6111A	C2040172	06/15	06/17
Cable Measure @3m	-	-	A5329038	08/14	10/15
Cable Measure @3m	-	-	A5329206	04/15	04/16
Semi-Anechoic chamber #3	SIEPEL	-	D3044017	-	-
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Turntable chamber (Cage#3)	ETS Lingren	Model 2165	F2000371	-	-
Table	LCIE	-	F2000461	-	-
Horn Antenna	EMCO	3115	C2042029	09/15	09/16
Amplifier 1-6GHz	HEWLETT PACKARD	-	A7085016	10/15	10/16

	OATS				
DESCRIPTION	**MANUFACTURER**	**MODEL**	**N° LCIE**	**Cal_Date**	**Cal_Due**
Antenna Bi-log	CHASE	CBL6111A	C2040051	04/14	04/16
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	10/14	10/16
Cable	SUCOFLEX	106G	A5329061	03/15	03/16
Cable (OATS)	-	-	A5329623	10/15	10/16
Radiated emission comb generator	BARDET	-	A3169050	-	-
OATS	-	-	F2000409	09/15	09/16
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	04/15	04/16
Receiver 20-1000MHz	ROHDE & SCHWARZ	ESVS30	A2642006	05/15	05/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	07/15	07/16
Antenna mast (OATS)	LCIE	-	F2000288	-	-
Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	F2000372	-	-
Antenna mast (OATS)	ETS Lindgren	2071-2	F2000392	-	-
Turntable (OATS)	ETS Lindgren	Model 2187	F2000403	-	-
Table	LCIE	-	F2000438	-	-

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None   ☐ Divergence:

4.6. TEST RESULTS

4.6.1. Pre-characterization at 3 meters [30MHz-1GHz]

See graphs for 30MHz-1GHz:

Graph identifier	Pol	Position	Conf	Sample (sn)	Comments
Emr# 5b2	H & V	Axis XY	1	**151497323000000301003919**	See annex 1
Emr# 6b2	H & V	Axis XY	2	**151497323000000301003919**	See annex 1
Emr# 7b2	H & V	Axis XY	8	**151497323000000301003919**	See annex 1

4.6.2. Pre-characterization at 3 meters [1GHz-6GHz]

See graphs for 1GHz-6GHz:

Graph identifier	Pol	position	Conf	Sample (sn)	Comments
Emr# 5b3	H & V	Axis XY	1	**151497323000000301003919**	See annex 1
Emr# 6b3	H & V	Axis XY	2	**151497323000000301003919**	See annex 1
Emr# 7b3	H & V	Axis XY	8	**151497323000000301003919**	See annex 1

Limits Sub clause §15.225

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
13.553-13.567	15 848 84 dBµV/m	30
13.410-13.553 13.567-13.710	334 50.5 dBµV/m	30
13.110-13.410 13.710-14.010	106 40.5 dBµV/m	30

See following chapter of this test report for band edge measurements.

4.6.3. Characterization on 10 meters open site from 30MHz to 1GHz

Worst case final data result:

Frequency list has been created with semi-anechoic chamber pre-scan results.
Measurements are performed using a QUASI-PEAK detection.

id	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
			Configuration n°1						
1	33.451	40.0	32.8	**-7.2**	75	V	100	17.9	-
2	38.942	40.0	32.4	**-7.6**	105	V	100	14.9	-
3	45.725	40.0	35.4	**-4.6**	305	V	100	11.3	-
4	64.765	40.0	28.5	**-11.5**	135	V	100	7.7	-
5	79.266	40.0	27.2	**-12.8**	265	V	100	8.7	-
6	173.242	43.5	24.3	**-19.2**	45	H	355	11.9	-
7	480.000	46.0	45.4	**-0.6**	180	H	300	21.4	-
8	960.005	54.0	42.5	**-11.5**	320	H	200	29.1	-

id	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
			Configuration n°2						
9	34.624	40.0	33.5	**-6.5**	10	V	100	17.2	-
10	37.361	40.0	30.1	**-9.9**	0	V	100	15.7	-
11	43.845	40.0	35.6	**-4.4**	250	V	110	12.2	-
12	51.811	40.0	33.2	**-6.8**	45	V	100	9.1	-
13	64.774	40.0	32.8	**-7.2**	105	V	100	7.7	-
14	77.200	40.0	32.0	**-8.0**	310	V	100	8.5	-
15	480.000	46.0	45.3	**-0.7**	190	H	245	21.4	-
16	960.005	54.0	43.3	**-10.7**	330	H	190	29.1	-

id	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
			Configuration n°8						
17	43.767	40.0	33.4	**-6.6**	136	V	100	12.3	-
18	47.799	40.0	32.9	**-7.1**	0	V	100	10.4	-
19	67.797	40.0	33.4	**-6.6**	295	V	100	7.8	-
20	216.920	46.0	33.0	**-13.0**	100	V	45	12.5	-
21	390.304	46.0	36.2	**-9.8**	100	V	200	19.3	-
22	446.240	46.0	42.1	**-3.9**	152	V	55	20.4	-
23	479.999	46.0	43.2	**-2.8**	320	H	217	21.4	-
24	576.110	46.0	34.6	**-11.4**	209	H	250	23.3	-
25	658.747	46.0	43.9	**-2.1**	90	H	78	25.0	-
26	960.005	54.0	44.4	**-9.6**	334	V	209	29.1	-

4.6.4. Characterization on 3meters anechoic chamber from 1GHz to 6GHz

Worst case final data result:
The frequency list is created from the results obtained during the pre-characterization in anechoic chamber.
Measurements are performed using a PEAK and AVERAGE detection.

According to Pre-characterisation
No significatives frequencies observed.

Note: Measures have been done at 3m distance.

4.7. CONCLUSION

The sample of the equipment DESK/5000 Eth/Mod Sn: 151497323000000301003919 & 151497323000000301003935 tested in the configuration presented in this test report satisfies to requirements of class B limits of the standard FCC Part15B, for radiated emissions.
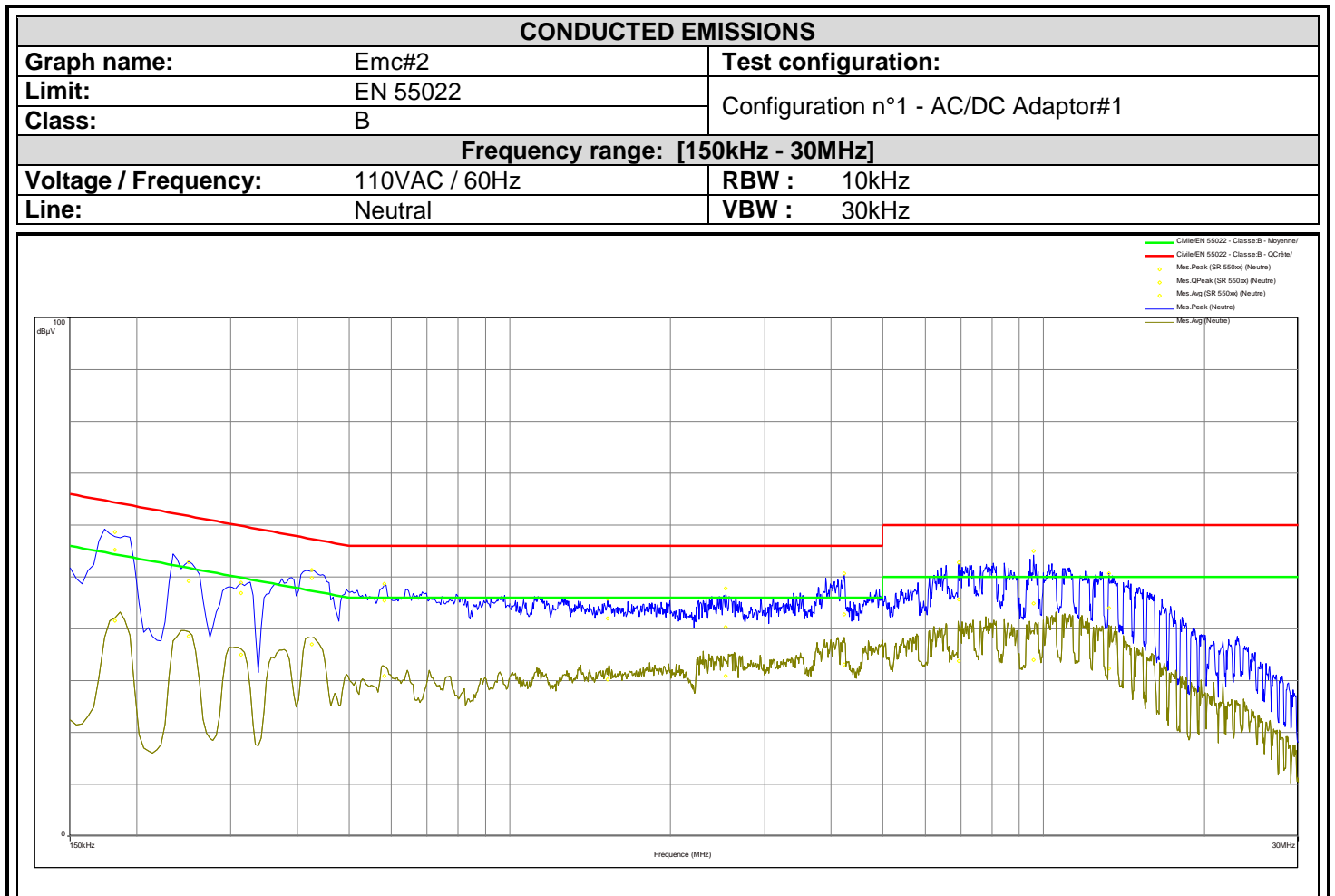
6. ANNEX 1 (GRAPHS)

CONDUCTED EMISSIONS			
Graph name:	Emc#1	**Test configuration:**	
Limit:	EN 55022	Configuration n°1 - AC/DC Adaptor#1	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	phase	**VBW :**	30kHz
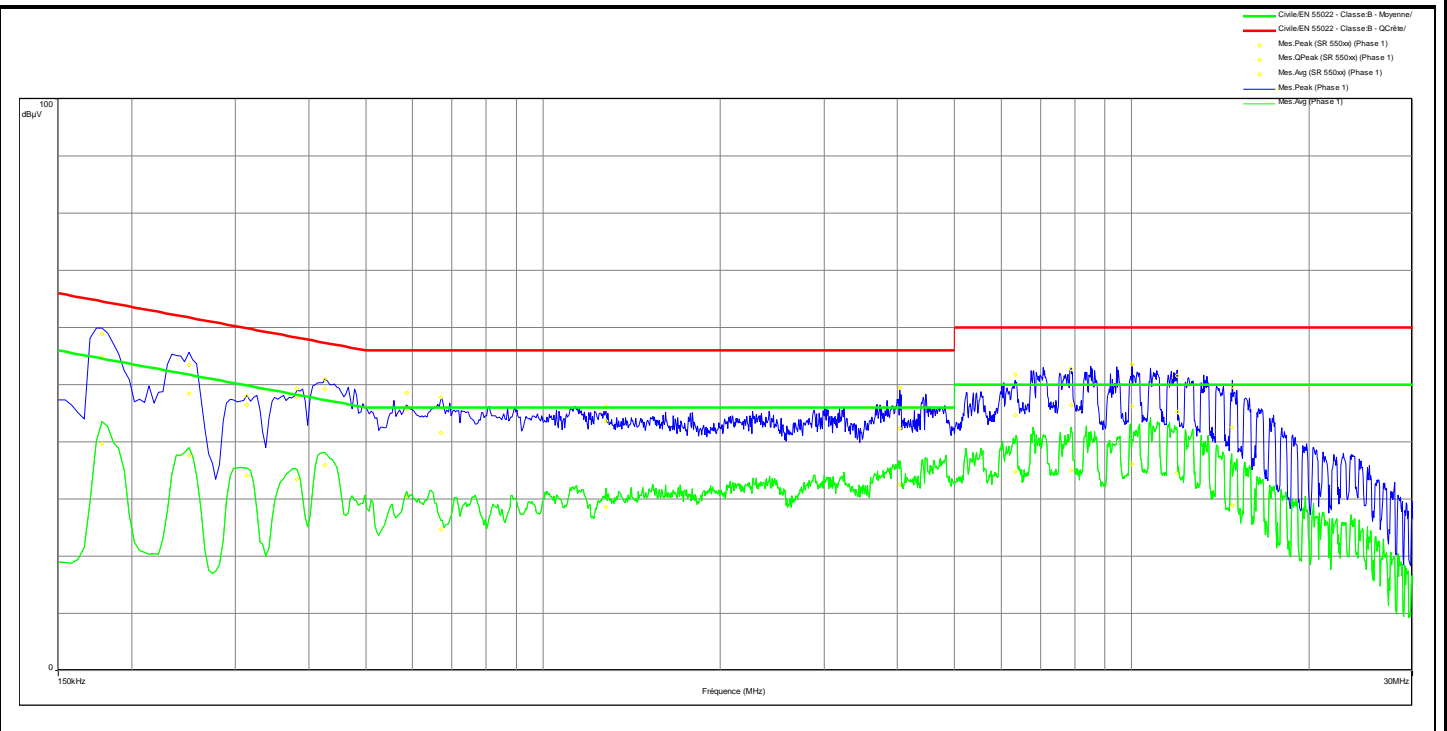
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.178	58.92	54.87	64.58	-9.71	39.65	54.58	-14.93
0.25	53.43	48.47	61.76	-13.29	37.56	51.76	-14.2
0.314	48.01	46.4	59.86	-13.47	34.09	49.86	-15.77
0.382	49.37	47.86	58.24	-10.37	33.45	48.24	-14.79
0.426	50.95	49.22	57.33	-8.11	35.86	47.33	-11.47
0.586	48.6	45.77	56	-10.23	30.55	46	-15.45
0.67	47.81	41.56	56	-14.44	24.66	46	-21.34
1.28	46.27	43.62	56	-12.38	28.54	46	-17.46
4.04	49.42	42.34	56	-13.66	32.53	46	-13.47
6.344	51.79	44.67	60	-15.33	34.75	50	-15.25
7.892	52.83	46.47	60	-13.53	35.03	50	-14.97
10.012	53.55	46.24	60	-13.76	36.12	50	-13.88
11.94	51.55	45.25	60	-14.75	34.52	50	-15.48
14.82	49.64	42.56	60	-17.44	28.84	50	-21.16

| CONDUCTED EMISSIONS		
Graph name:	Emc#2	**Test configuration:**
Limit:	EN 55022	Configuration n°1 - AC/DC Adaptor#1
Class:	B	
Frequency range: [150kHz - 30MHz]		
Voltage / Frequency:	110VAC / 60Hz	**RBW :** 10kHz
Line:	Neutral	**VBW :** 30kHz

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.182	58.7	55.28	64.39	-9.12	41.55	54.39	-12.84
0.25	52.86	49.23	61.76	-12.52	38.52	51.76	-13.24
0.314	48.84	46.92	59.86	-12.95	35	49.86	-14.86
0.426	51.3	49.8	57.33	-7.53	37.02	47.33	-10.31
0.582	48.65	45.48	56	-10.52	30.91	46	-15.09
1.524	45.73	42.05	56	-13.95	30.17	46	-15.83
2.54	47.76	40.32	56	-15.68	30.88	46	-15.12
4.236	50.67	42.78	56	-13.22	33.11	46	-12.89
6.928	52.74	45.63	60	-14.37	33.81	50	-16.19
9.576	55.05	44.83	60	-15.17	34.03	50	-15.97
13.268	50.66	44.02	60	-15.98	32.33	50	-17.67

| CONDUCTED EMISSIONS		
Graph name:	Emc#3	**Test configuration:**
Limit:	EN 55022	Configuration n°2 - AC/DC Adaptor#2
Class:	B	
Frequency range: [150kHz - 30MHz]		
Voltage / Frequency:	110VAC / 60Hz	**RBW :** 10kHz
Line:	phase	**VBW :** 30kHz
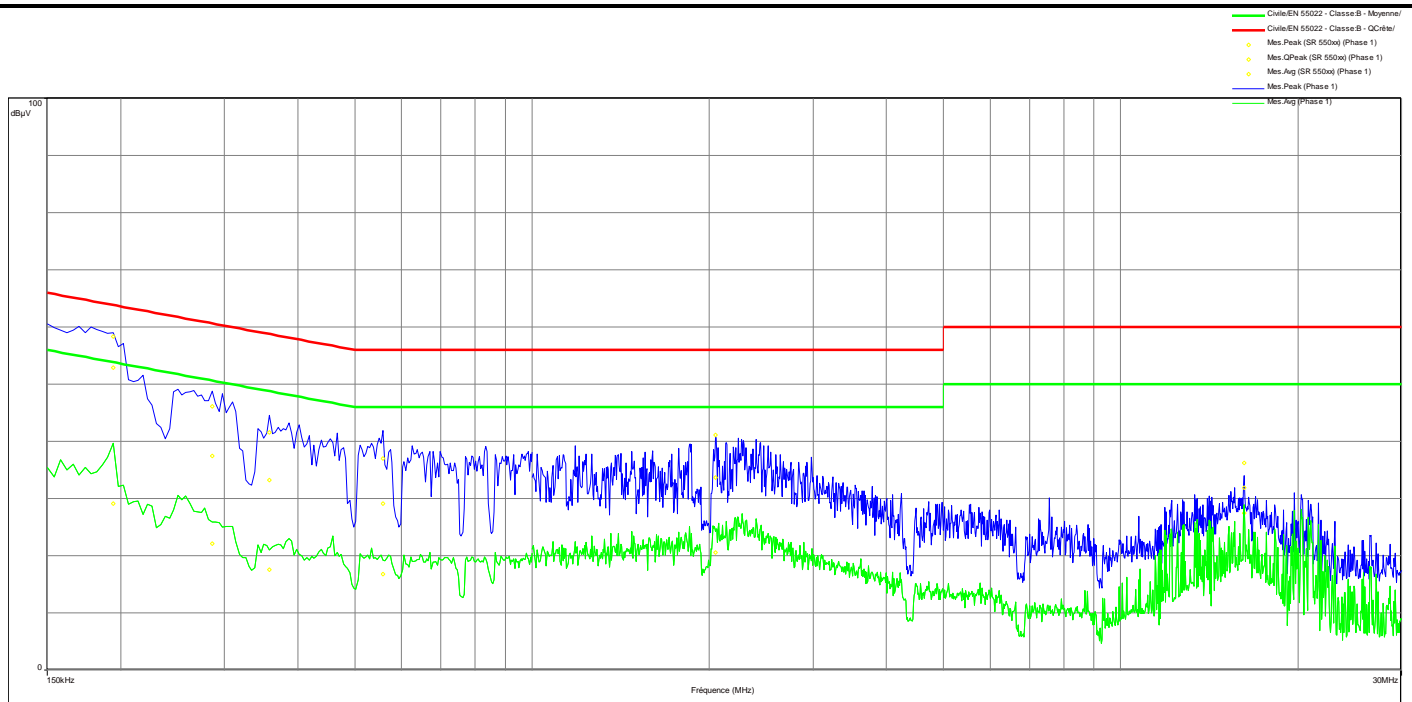
Spurious emissions

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.194	58.39	52.87	63.86	-10.99	29.1	53.86	-24.76
0.286	46.09	37.43	60.64	-23.21	22.09	50.64	-28.55
0.358	41.57	33.22	58.77	-25.56	17.57	48.77	-31.2
0.558	37.06	29.09	56	-26.91	16.73	46	-29.27
2.048	41.14	33.63	56	-22.37	20.53	46	-25.47
16.228	36.19	31.9	60	-28.1	27.44	50	-22.56

|	CONDUCTED EMISSIONS		
Graph name:	Emc#4	**Test configuration:**	
Limit:	EN 55022	Configuration n°2 - AC/DC Adaptor#2	
Class:	B		
	Frequency range: [150kHz - 30MHz]		
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz
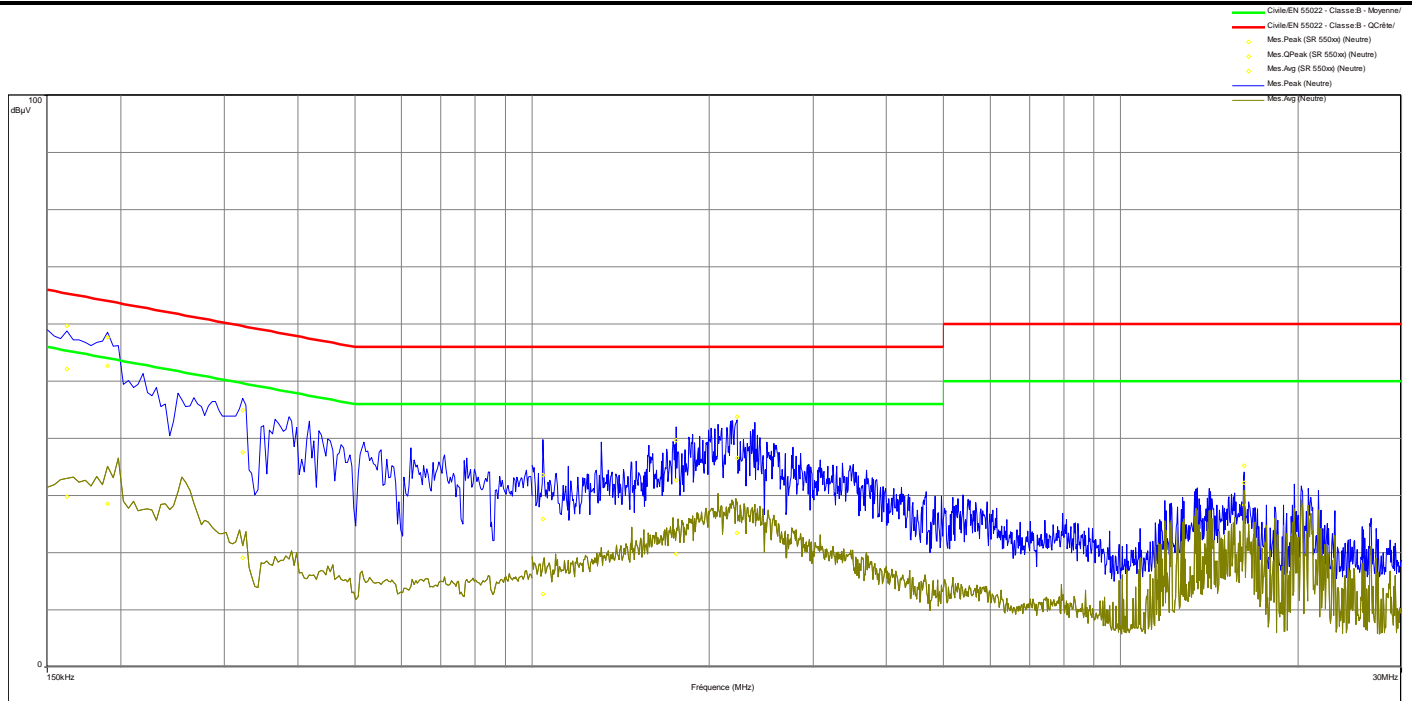
Spurious emissions

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.162	59.65	52.08	65.36	-13.28	29.8	55.36	-25.57
0.19	57.69	52.69	64.04	-11.35	28.55	54.04	-25.49
0.322	44.83	37.54	59.66	-22.11	19.12	49.66	-30.53
1.044	33.61	25.86	56	-30.14	12.8	46	-33.2
1.756	39.71	32.67	56	-23.33	19.81	46	-26.19
2.228	43.74	36.59	56	-19.41	23.42	46	-22.58
16.228	35.22	32.23	60	-27.77	28.31	50	-21.69

| CONDUCTED EMISSIONS			
Graph name:	Emc#5	**Test configuration:**	
Limit:	EN 55022	Configuration n°8 - AC/DC Adaptor#5	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz
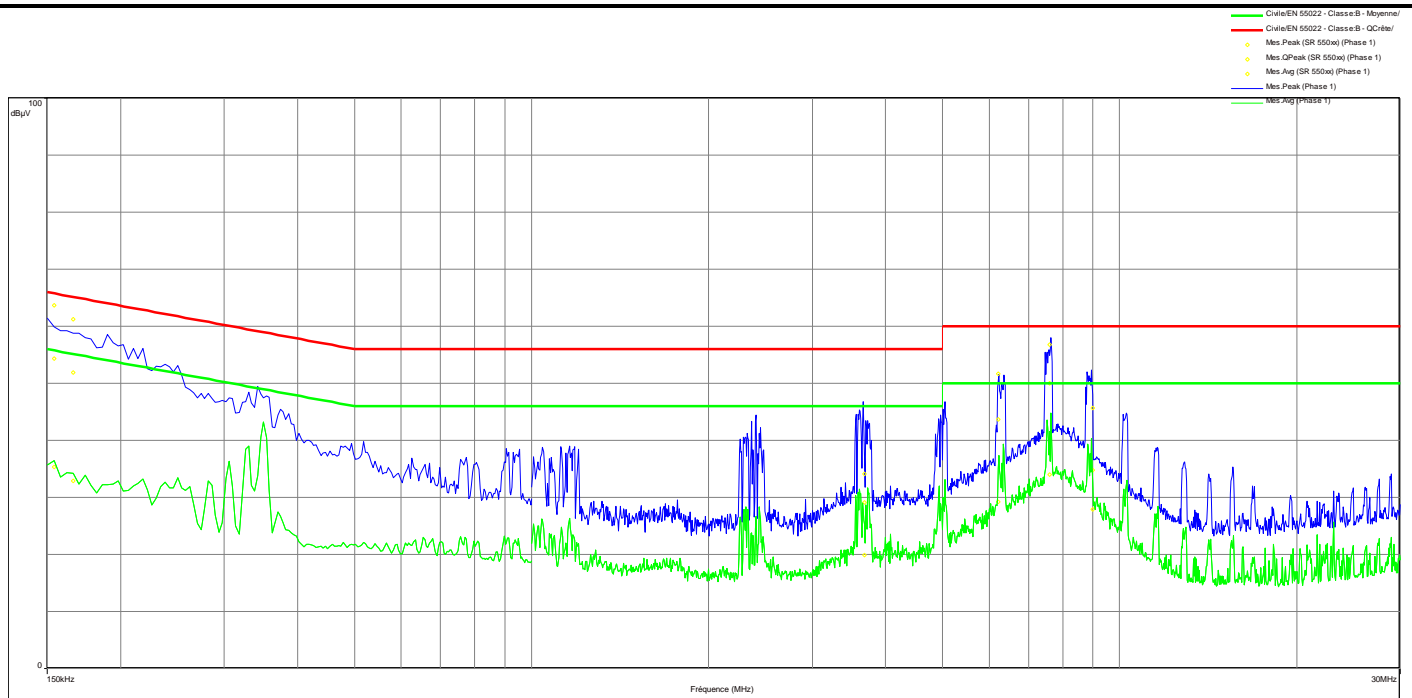
Spurious emissions

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)	Line
0.155	63.7	54.3	65.8	-11.4	35.4	55.8	-20.4	Phase 1
0.168	61.2	51.9	62.9	-11.0	32.9	52.9	-20.0	Phase 1
3.680	34.1	29.2	56.0	-26.8	19.9	46.0	-26.1	Phase 1
6.217	51.6	43.7	60.0	-16.3	29.2	50.0	-20.8	Phase 1
7.597	56.8	50.0	60.0	-10.0	34.0	50.0	-16.0	Phase 1
8.987	45.7	34.8	60.0	-25.2	27.9	50.0	-22.1	Phase 1

| CONDUCTED EMISSIONS			
Graph name:	Emc#6	**Test configuration:**	
Limit:	EN 55022	Configuration n°8 - AC/DC Adaptor#5	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz
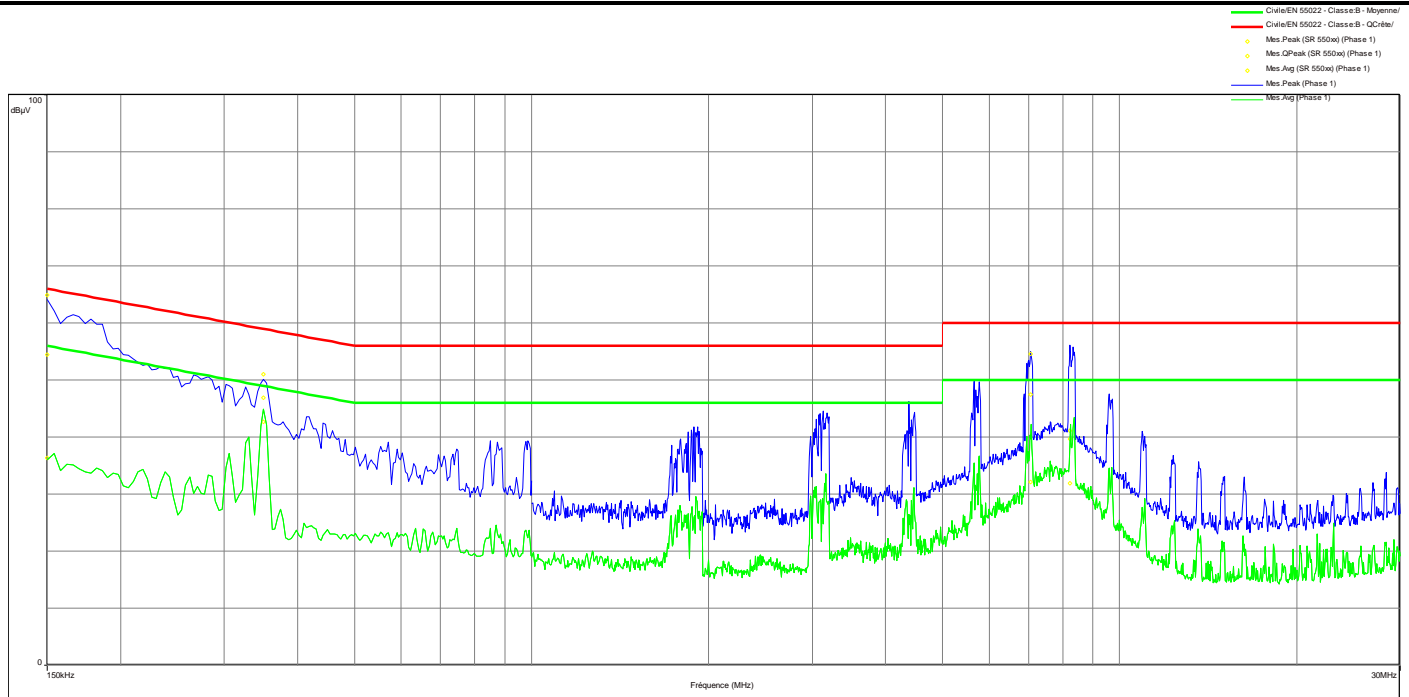
Spurious emissions

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)	Line
0.150	64.9	54.4	64.2	-9.8	36.4	54.2	-17.8	Phase 1
0.350	51.0	46.9	59.0	-12.1	42.6	49.0	-6.3	Phase 1
7.050	54.6	47.5	60.0	-12.5	32.1	50.0	-17.9	Phase 1
8.223	41.1	39.7	60.0	-20.3	31.9	50.0	-18.1	Phase 1

RADIATED EMISSIONS		
Graph name:	Emr#5b2	**Test configuration:**
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 1 <1GHz
Class:	B	
Frequency range: [30MHz - 1GHz]		
Antenna polarization:	Horizontal & Vertical	**RBW :** 100kHz
Azimuth:	0° - 360°	**VBW :** 300kHz
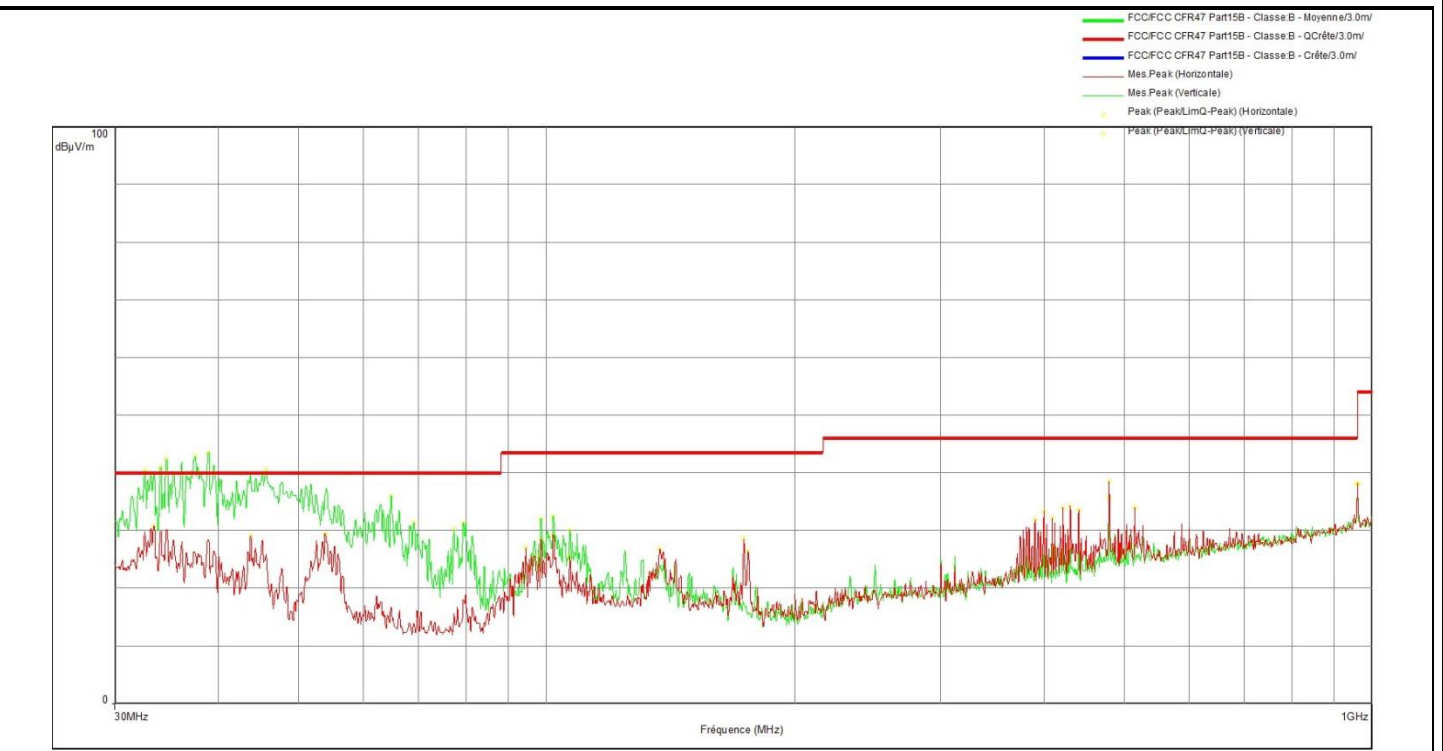
Frequency (MHz)	Peak Level (dBµV/m)
32.584	40.53
34.08	40.99
34.624	42.49
37.514	42.93
38.942	43.54
45.725	40.52
64.765	36.05
68.998	31.49
77.192	30.36
79.266	31.4
98.459	32.03
101.893	32.55
106.704	30.06
136.896	26.87
173.242	28.53
175.401	26.39
390.32	32.05
399.96	33.36
409.2	32.12
421.96	33.97
431.16	34.23
440.8	33.5
480	38.61
516	33.96
960	38.32

RADIATED EMISSIONS			
Graph name:	Emr#6b2	**Test configuration:**	
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 2 <1GHz	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal & Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz
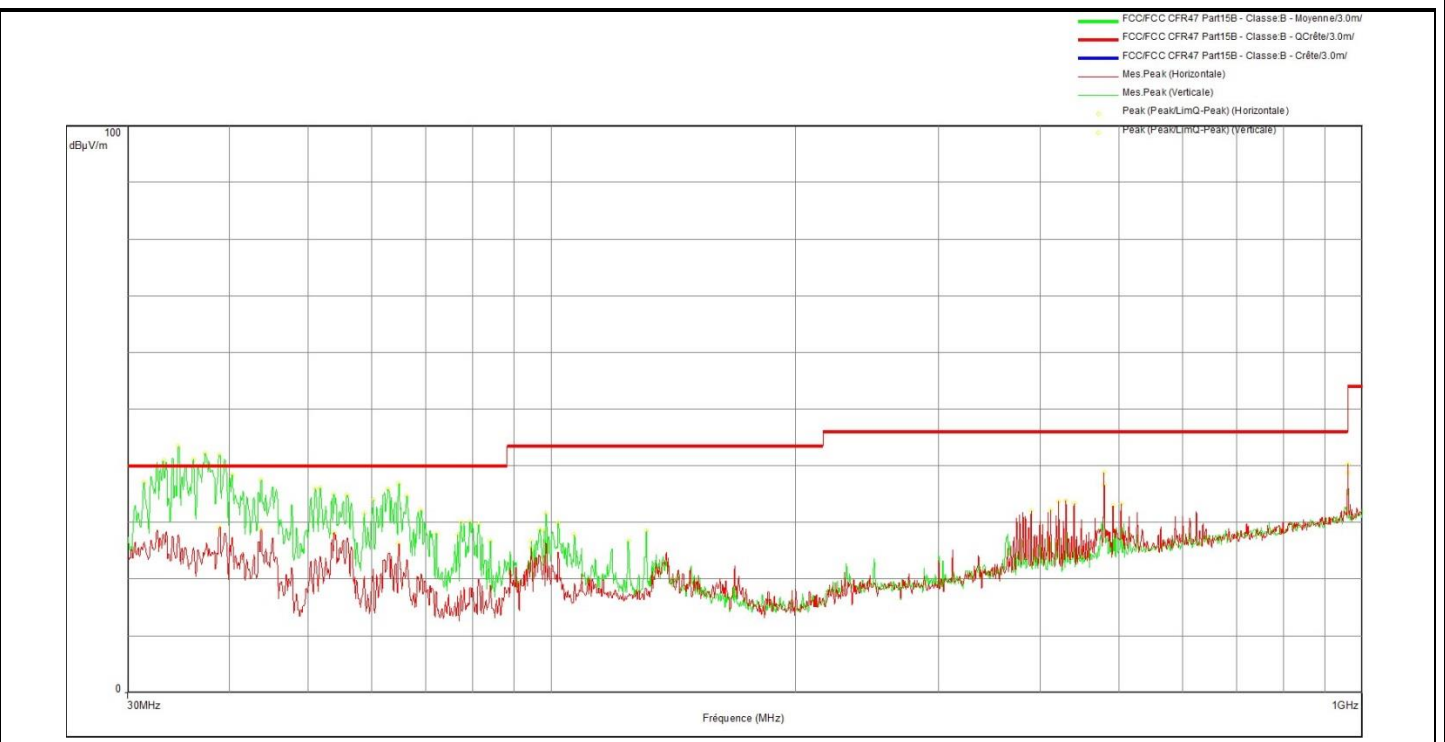
Frequency (MHz)	Peak Level (dBµV/m)	Frequency (MHz)	Peak Level (dBµV/m)
31.394	37.2	94.362	26.78
33.162	41	96.657	28.72
34.624	43.55	97.83	28.56
36.137	41.15	98.442	31.54
37.361	42.21	101.876	29.88
38.908	42.02	106.704	27.83
40.336	38.45	124.231	26.76
43.804	37.61	130.776	28.6
51.063	36.04	390.32	32.12
51.811	36.17	412.28	32.16
53.851	35	421.92	33.69
55.874	34.84	431.16	33.86
58.713	31.63	440.8	33.49
60.209	33.97	480	38.91
62.759	35.86	492	33.06
64.765	36.91	504	33.33
66.278	34.7	960	40.26
69.032	32.22		
72.007	28.04		
76.546	27.84		
77.209	30.21		
79.249	30.1		
81.187	29.7		
83.992	26.75		

RADIATED EMISSIONS			
Graph name:	Emr#7b2	**Test configuration:**	
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 8 <1GHz	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal & Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz
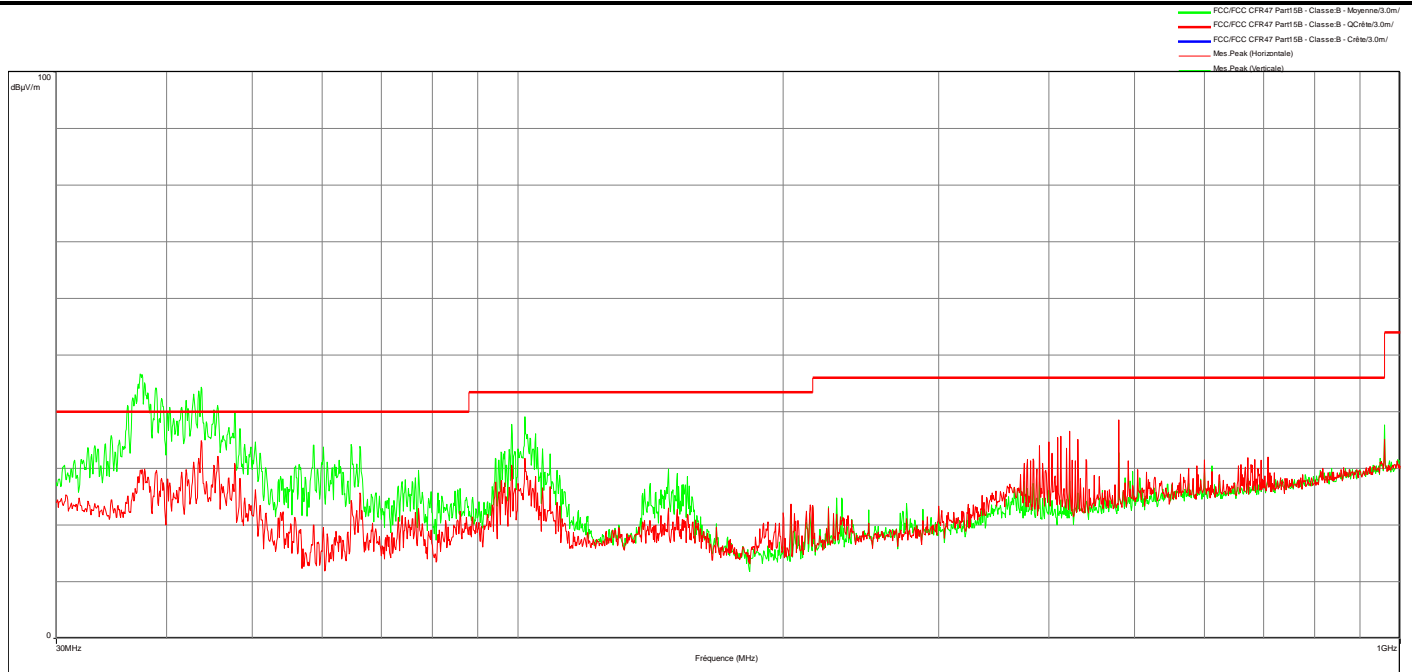
Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarisation
37.361	30.9	40.0	-9.1	Horizontal
43.787	35.4	40.0	-4.6	Horizontal
45.725	33.2	40.0	-6.8	Horizontal
47.799	32.9	40.0	-7.1	Horizontal
58.713	25.5	40.0	-14.5	Horizontal
66.278	25.6	40.0	-14.4	Horizontal
86.032	25.6	40.0	-14.4	Horizontal
98.425	30.1	43.5	-13.4	Horizontal
101.893	31.5	43.5	-12.0	Horizontal
104.749	28.7	43.5	-14.8	Horizontal
374.680	31.9	46.0	-14.1	Horizontal
377.760	32.6	46.0	-13.4	Horizontal
381.040	31.6	46.0	-14.4	Horizontal
383.960	31.3	46.0	-14.7	Horizontal
390.320	35.5	46.0	-10.5	Horizontal
396.680	31.9	46.0	-14.1	Horizontal
399.960	35.7	46.0	-10.3	Horizontal
403.040	32.1	46.0	-13.9	Horizontal
409.200	34.6	46.0	-11.4	Horizontal
412.280	32.3	46.0	-13.7	Horizontal
418.840	32.4	46.0	-13.6	Horizontal
421.920	35.6	46.0	-10.4	Horizontal
425.000	32.3	46.0	-13.7	Horizontal

431.160	33.0	46.0	-13.0	Horizontal
440.800	32.0	46.0	-14.0	Horizontal
480.000	38.5	46.0	-7.5	Horizontal
600.000	31.7	46.0	-14.3	Horizontal
600.000	32.0	46.0	-14.0	Horizontal
684.000	32.9	46.0	-13.1	Horizontal
696.000	32.6	46.0	-13.4	Horizontal
37.361	47.7	40.0	7.7	Vertical
38.942	44.2	40.0	4.2	Vertical
43.787	44.1	40.0	4.1	Vertical
47.799	40.7	40.0	0.7	Vertical
58.713	33.9	40.0	-6.1	Vertical
60.209	33.4	40.0	-6.6	Vertical
64.765	36.0	40.0	-4.0	Vertical
71.140	27.8	40.0	-12.2	Vertical
73.180	29.7	40.0	-10.3	Vertical
73.911	29.3	40.0	-10.7	Vertical
77.192	29.2	40.0	-10.8	Vertical
94.379	33.6	43.5	-9.9	Vertical
96.674	33.5	43.5	-10.0	Vertical
97.830	34.1	43.5	-9.4	Vertical
98.442	38.0	43.5	-5.4	Vertical
101.876	38.8	43.5	-4.6	Vertical
102.505	35.6	43.5	-7.9	Vertical
104.749	36.0	43.5	-7.5	Vertical
106.687	33.1	43.5	-10.4	Vertical
108.812	32.0	43.5	-11.5	Vertical
148.116	28.8	43.5	-14.7	Vertical
151.584	29.6	43.5	-14.0	Vertical
155.630	28.9	43.5	-14.6	Vertical
480.000	32.9	46.0	-13.1	Vertical
611.960	31.1	46.0	-14.9	Vertical
960.000	38.6	46.0	-7.4	Vertical

RADIATED EMISSIONS		
Graph name:	Emr#5b3	**Test configuration:**
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 1 >1GHz
Class:	B	
Frequency range: [1GHz - 6GHz]		
Antenna polarization:	Horizontal & Vertical	**RBW :** 1MHz
Azimuth:	0° - 360°	**VBW :** 3MHz
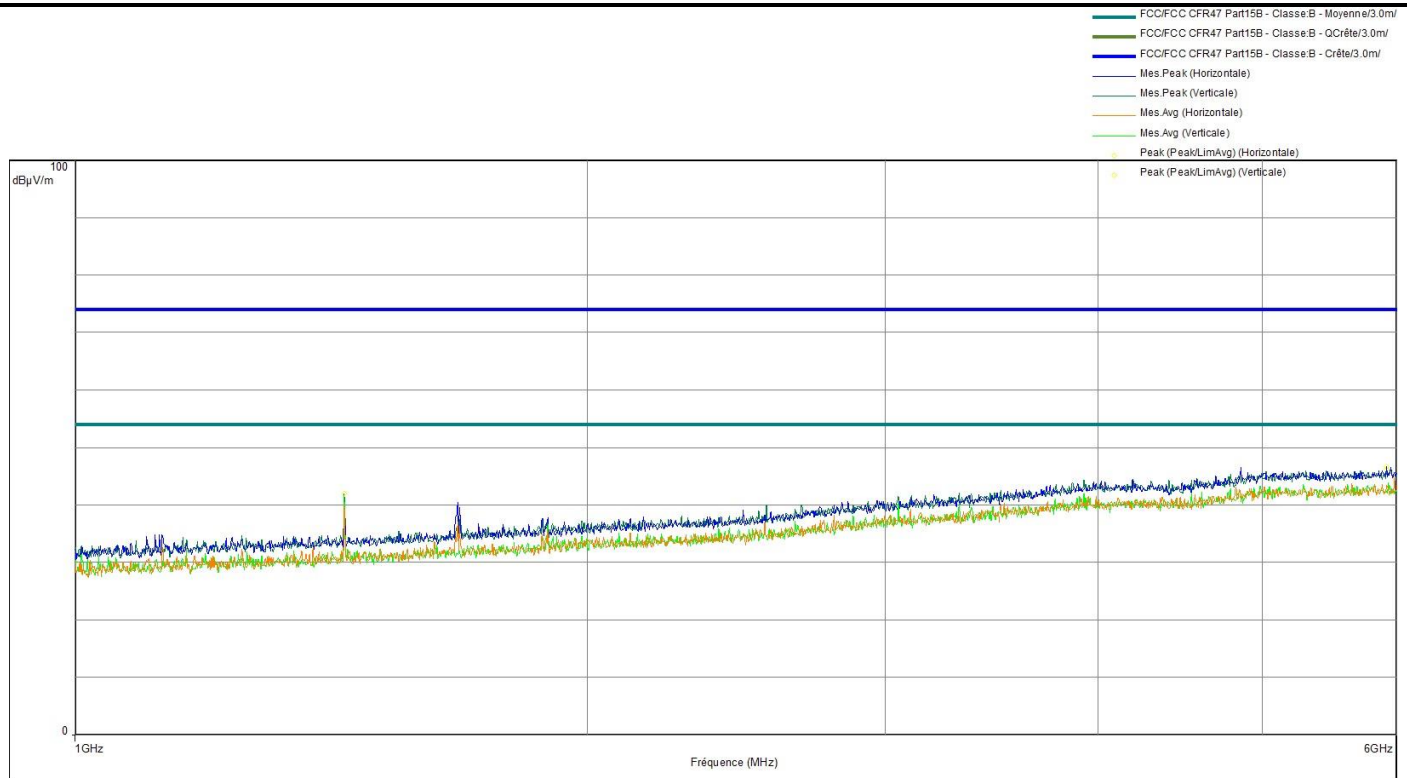
Frequency (MHz)	Peak Level(dBμV/m)
5915.5	46.59
1440	42.01
5915	46.25

RADIATED EMISSIONS		
Graph name:	Emr#6b3	**Test configuration:**
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 2 >1GHz
Class:	B	
Frequency range: [1GHz - 6GHz]		
Antenna polarization:	Horizontal & Vertical	**RBW :** 1MHz
Azimuth:	0° - 360°	**VBW :** 3MHz
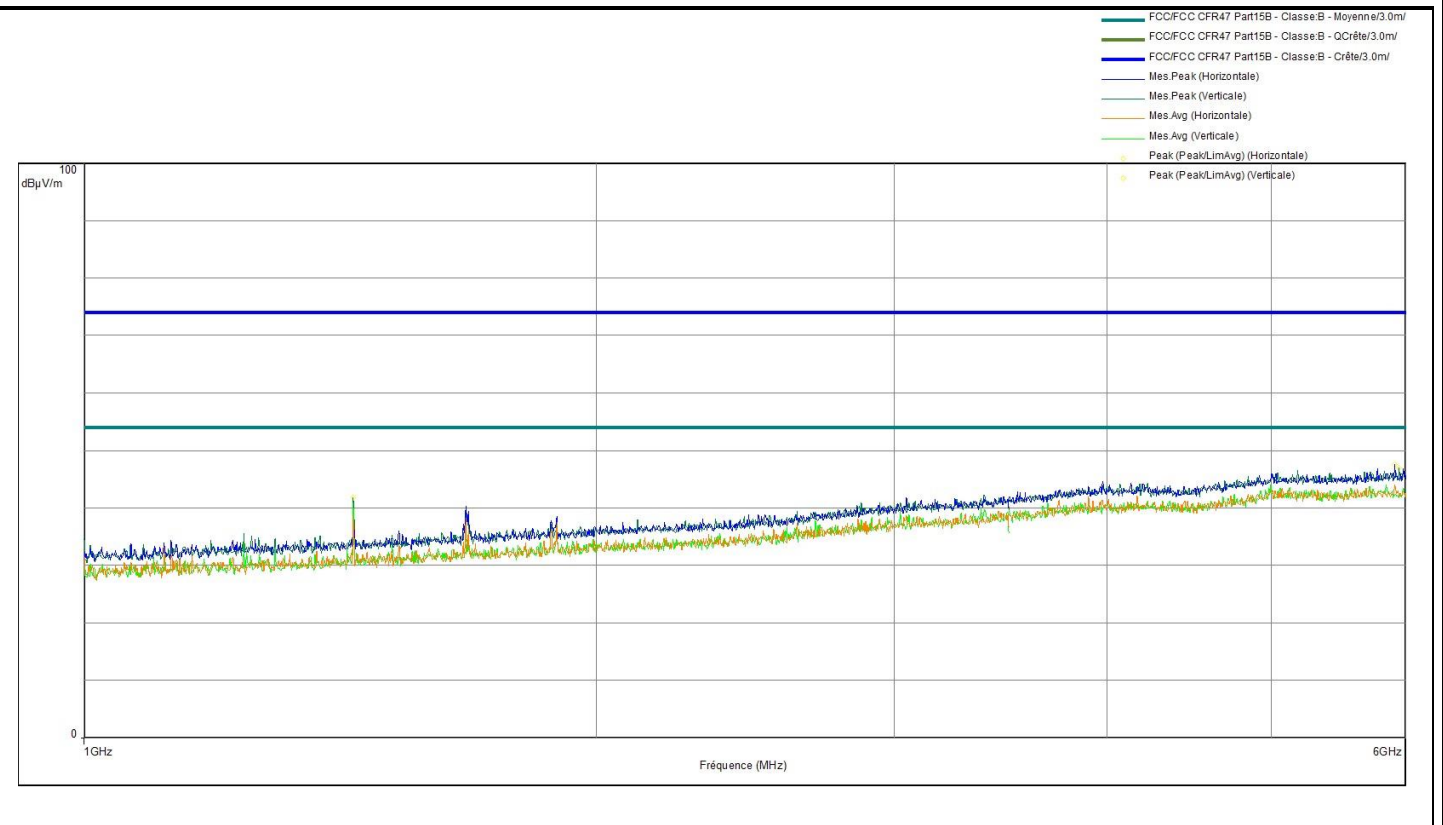
Frequency (MHz)	Peak Level(dBµV/m)
5912.25	47.47
1440.25	41.78
5942.25	47

RADIATED EMISSIONS		
Graph name:	Emr#7b3	**Test configuration:**
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 8 >1GHz
Class:	B	
Frequency range: [1GHz - 6GHz]		
Antenna polarization:	Horizontal & Vertical	**RBW :** 1MHz
Azimuth:	0° - 360°	**VBW :** 3MHz
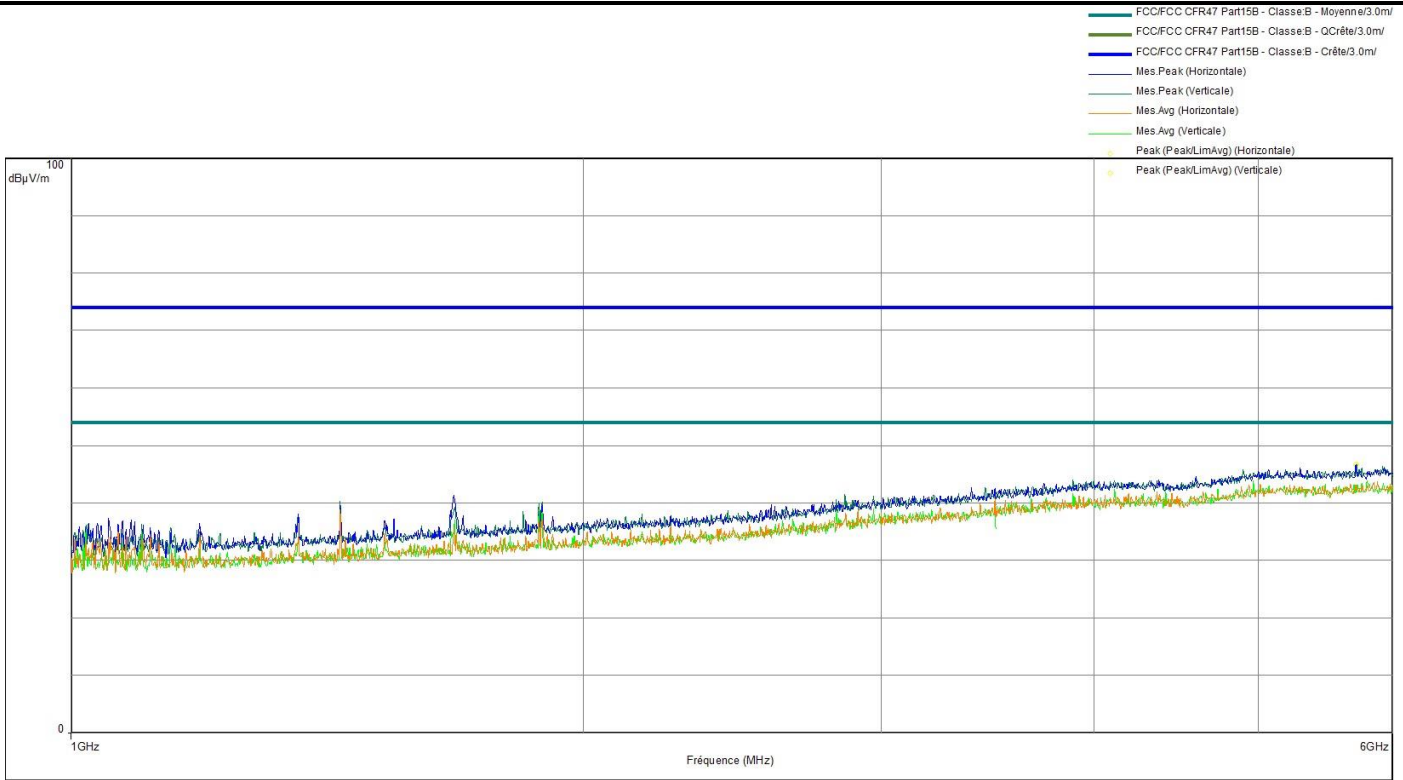
Frequency (MHz)	Peak Level(dBµV/m)
5703.25	46.64
5713	46.82

7. UNCERTAINTIES CHART

Type de mesure / *Kind of measurement*	Incertitude élargie laboratoire / *Wide uncertainty laboratory* (k=2) ± x	Incertitude limite du CISPR / *CISPR uncertainty limit* ± y
Mesure des perturbations conduites en tension sur le réseau d'énergie *Measurement of conducted disturbances in voltage on the power port*	3.57 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication *Measurement of conducted disturbances in voltage on the telecommunication port.*	3.28 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension *Measurement of discontinuous conducted disturbances in voltage*	3.47 dB	3.6 dB
Mesure des perturbations conduites en courant *Measurement of conducted disturbances in current*	2.90 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans *Measurement of radiated electric field on the Moirans open area test site*	5.07 dB	5.2 dB

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par la norme, la conformité de l'échantillon est établie directement par les niveaux limites applicables. / *The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the standard. The conformity of the sample is directly established by the applicable limits values.*