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Rapport d'essai / *Test report*

JDE : 104343 **N° 61915-A1-R1-E**

DELIVRE A / *ISSUED TO*	:	**FESYS** Parc des Ruires 3, rue Irène Joliot Curie 38320 EYBENS
Objet / *Subject*	:	Essais de compatibilité électromagnétique conformément aux normes : *Electromagnetic compatibility tests according to the standards:* **FCC CFR 47 Part 15, Subpart B.** **ANSI C63.4 (2009)**
Matériel testé / *Apparatus under test*	:	
• Produit / *Product*	:	**Télécommande de traçabilité / *Traceability remote control***
• Marque / *Trade mark*	:	**FESYS**
• Constructeur / *Manufacturer*	:	**FESYS**
• Type / *Model*	:	**RUID**
• N° de série / *serial number*	:	**000005**
• FCC ID	:	**YV2-RUID**
Date des essais / *Test date*	:	Le 25 Juillet 2010 et du 30 Décembre 2010 au 12 Janvier 2011 / *July 25th , 2010 and from December 30th, 2010 to January 12th, 2011*
Lieu d'essai / *Test location*	:	**LCIE SUD-EST** ZI Centr'Alp – 170 rue de Chatagnon 38430 MOIRANS - France
Test réalisé par / *Test performed by*	:	Jonathan PAUC & Nathalie GAGNAIRE

document comporte / *Composition of document:* 31 pages

MOIRANS, LE 21 JANVIER 2011/ JANUARY 21ST, 2011

Ecrit par / *Written by*
Anthony MERLIN & Nathalie GAGNAIRE

Approuvé par / *Approved by*
Jacques LOROUIN

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SUMMARY

1. TEST PROGRAM

Standard: **- FCC Part 15, Subpart B (Digital Devices)**
- ANSI C63.4 (2009)

EMISSION TEST	**LIMITS**			**RESULTS (Comments)**
Limits for conducted disturbance at mains ports 150kHz-30MHz	**Frequency**	**Quasi-peak value (dBµV)**	**Average value (dBµV)**	**PASS**
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 30MHz-12.5GHz*	**Measure at 3m** 30MHz-88MHz : 40 dBµV/m 88MHz-216MHz : 43.5 dBµV/m 216MHz-960MHz : 46.0 dBµV/m Above 960MHz : 54.0 dBµV/m			**PASS**

***§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 (EUT frequency max: 416MHz).
- 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. APPARATUS UNDER TEST: CONFIGURATION

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

- **Equipment under test (EUT):**

RUID **Serial Number: 000005**

E.U.T. : RUID

Serial number: 000005

Power supply: FRIWO
FW7662/05
(Output 5Vdc – 1.1A)

- **Inputs/outputs:**

1 x USB port (for maintenance only, not tested)
1 x DC input
1 x Mini USB

- **Cables:**

1 x USB cable (2m)

- **Auxiliaries equipment used during test:**

Laptop TOSHIBA SATELLITE PS141E-04YC sn: 13594938G

2.2. RUNNING MODE

Running mode 1: Bluetooth & Data Matrix (recording data)

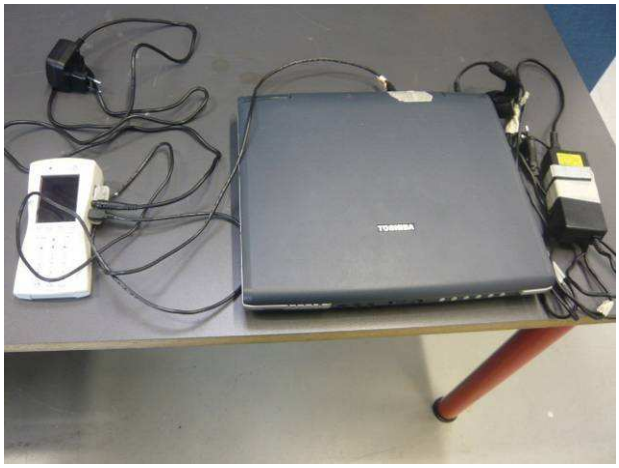
Running mode 2: transfer data to PC by USB communication

2.3. EUT CONFIGURATION

Configuration 1 :
Power supply : - Internal battery
Running mode1: - Bluetooth & Data Matrix

Configuration 2 :
Power supply : - Power supply adapter
Running mode 1: - Bluetooth & Data Matrix

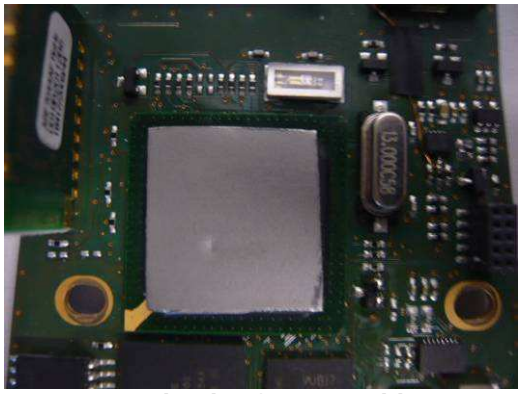
Configuration 3 :
Communication access : - USB
Power supply : - Power supply adapter EGSTON
Running mode 2: - Transfer data



2.4. EQUIPMENT MODIFICATIONS

Modifications performed for all tests.

1)



Conductive foam on chip

2) Capacitor C185 (value: 22µF) on ESF for all tests except radiated emission in configuration 1

2.5. SPECIAL ACCESSORIES

None

3. MEASUREMENT OF CONDUCTED EMISSION (150KHZ-30MHZ)

3.1. TEST CONDITIONS

Date of test : December 30th, 2010
Test performed by : Jonathan PAUC
Humidity : 30%HR

3.2. SETUP FOR CONDUCTED EMISSIONS MEASUREMENT

The product has been tested according to ANSI C63.4-(2009) and FCC Part 15 subpart B.

The product has been tested with 120V/60Hz power line voltage and compared to the FCC Part 15 subpart B §15.107 limits. Measurement bandwidth was 9kHz from 150 kHz to 30 MHz.

The EUT with its auxiliaries are set on a non-conducting 80cm above the ground reference plane.
The distance between the EUT and the LISN is 80cm. The EUT is 40cm away for the vertical ground plane.
The EUT is powered through a LISN (measure). Auxiliaries are powered by another LISN.

Measurement is made with a Rohde & Schwarz ESU8 receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. The LISN (measure and auxiliaries) is 50Ω / 50µH.

The Peak data are shown on plots in annex 1. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

Configuration #2

Configuration #3

3.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

3.4. MEASUREMENTS RESULTS

Configuration 2:

Mains terminals 120Vac/60Hz:

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

Measure on L1: graph **Emc#1** (see annex 1)
Measure on N: graph **Emc#2** (see annex 1)

Configuration 3:

Mains terminals 120Vac/60Hz:

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

Measure on L1: graph **Emc#3** (see annex 1)
Measure on N: graph **Emc#4** (see annex 1)

Mains terminals 120Vac/60Hz:

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

Measure on L1: graph **Emc#5** (see annex 1)
Measure on N: graph **Emc#6** (see annex 1)

RESULT: PASS

4. MEASUREMENT OF RADIATED EMISSION (30MHZ-2GHZ)

4.1. TEST CONDITIONS

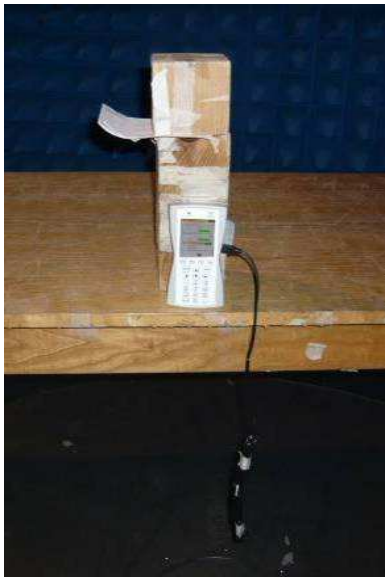
Date of test	: July 25th, 2010	December 30th, 2010	January 12th, 2011
Test performed by	: Nathalie GAGNAIRE	Jonathan PAUC	Nathalie GAGNAIRE
Humidity	: 38%HR	32%HR	30%HR

4.2. SETUP FOR RADIATED EMISSIONS MEASUREMENT

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 on the non-conducting table of 80 cm height.
The EUT is powered by 230Vac/50Hz (PC and auxiliaries)

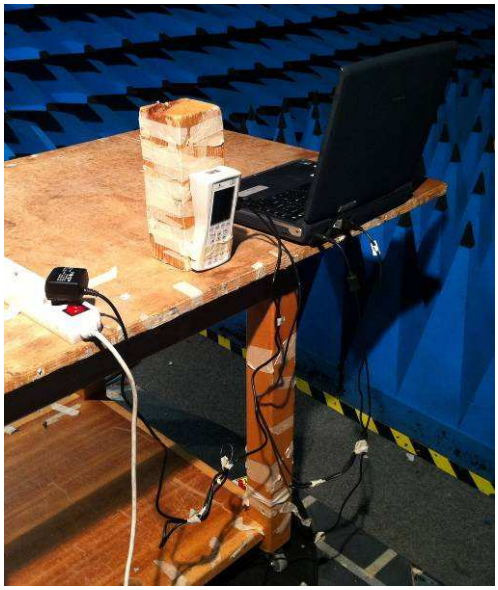
Pre-characterisation measurement:
A pre-scan of all the setup has been performed in a 3 meters semi-anechoic chamber. The distance between EUT and antenna is 3 meters. Test is performed in horizontal (H) and vertical (V) polarization. During the measurement, the EUT is rotated on a 360° range.
The pre-characterization graphs are obtained in PEAK detection.
For frequency band 1GHz to 2GHz, a search is performed in the semi-anechoic chamber in order to determine frequencies radiated by the EUT (Measuring distance reduced to 1m).

Radiated emission test setup for pre-characterisation



Configuration 1
Axis 1 (EUT V)

Configuration 2
Axis 1 (EUT V) & Axis 2 (EUT H)



Configuration 3
Axis 1 (EUT V) & Axis 2 (EUT H)

Characterization on 10 meters open site from 30MHz to 2GHz:
The product has been tested according to ANSI C63.4 (2009), FCC part 15 subpart B. 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** (30MHz to 1GHz) and **3 meters** (1GHz to 2GHz) from the antenna and corrected according to requirements of 15.109.e).
Results are compared to the FCC part 15 subpart B §15.109 limits.
Measurement bandwidth was 120kHz from 30 MHz to 1GHz and 1MHz from 1GHz to 2GHz.
Antenna height search was performed from 1m to 4m for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range.

Radiated emission test setup on open site area

Configuration 2
Axis 1 (EUT V) & Axis 2 (EUT H)

Configuration 3
Axis 1 (EUT V) & Axis 2 (EUT H)

4.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

4.4. MEASUREMENTS RESULTS

Pre-characterisation measurement (30MHz-1GHz): pre-scan measurement at 3m (PEAK detection, graph examples)

Configuration 1 (Axis 1):

Polarisation H: graph **Emr#1** (see annex 1)
Polarisation V: graph **Emr#2** (see annex 1)

Configuration 2 (Axis 1):

Polarisation H: graph **Emr#3** (see annex 1)
Polarisation V: graph **Emr#4** (see annex 1)

Configuration 2 (Axis 2):

Polarisation H: graph **Emr#5** (see annex 1)
Polarisation V: graph **Emr#6** (see annex 1)

Configuration 3 (Axis 2):

Polarisation H: graph **Emr#7** (see annex 1)
Polarisation V: graph **Emr#8** (see annex 1)

Configuration 3 (Axis 1):

Polarisation H: graph **Emr#9** (see annex 1)
Polarisation V: graph **Emr#10** (see annex 1)

QUALIFICATION: 10 / 3 meters measurement on the Open Area Test Site.

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

Frequency range 30MHz to 1GHz:
Measurements are performed using a QUASI-PEAK detection (RBW=120kHz)

Worst case: Configuration 2 (Axis 1)

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	32.180	40.0	24.3	**-15.7**	260	V	150	13.6	
2	120.123	43.5	38.2	**-5.3**	280	V	100	16.6	
3	120.123	43.5	30.3	**-13.2**	90	H	300	16.6	
4	228.036	46.0	31.3	**-14.7**	0	H	350	14.6	
5	311.889	46.0	37.2	**-8.8**	0	H	300	17.8	
6	311.894	46.0	41.7	**-4.3**	280	V	100	17.8	
7	552.618	46.0	40.9	**-5.1**	155	V	100	22.6	

Worst case: Configuration 2 (Axis 2)

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	31.570	40.0	34.8	**-5.2**	0	V	100	14.2	
2	120.145	43.5	33.5	**-10.0**	280	V	100	16.6	
3	227.468	46.0	35.2	**-10.8**	115	H	350	14.6	
4	259.926	46.0	40.1	**-5.9**	0	V	100	14.6	
5	312.151	46.0	27.6	**-18.4**	280	H	250	17.8	
6	312.340	46.0	32.8	**-13.2**	280	V	100	17.8	
7	600.666	46.0	42.3	**-3.7**	180	V	100	23.2	

Worst case: Configuration 3 (Axis 1)

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	31.610	40.0	29.9	**-10.1**	180	V	100	14.0	
2	39.960	40.0	29.5	**-10.5**	0	V	100	11.5	
3	265.806	46.0	29.4	**-16.6**	10	H	350	15.0	
4	312.181	46.0	30.8	**-15.2**	0	V	100	17.8	

Worst case: Configuration 3 (Axis 2)

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	31.563	40.0	32.3	**-7.7**	0	V	100	14.0	
2	35.925	40.0	27.1	**-12.9**	0	V	100	11.7	
3	299.613	46.0	26.8	**-19.2**	350	V	100	17.6	
4	486.068	46.0	30.9	**-15.1**	0	V	100	21.6	

Note: Measures have been done at 10m distance and corrected according to requirements of 15.109.e) (M@3m = M@10m+10.5dB)

Frequency range 1GHz to 2GHz:
Measurements are performed using a PEAK and Average detection. (RBW = 1MHz)

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
No significant frequency observed									

Note: Measures have been done at 3m distance.

RESULT: PASS

4.5. 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 is added. The amplifier gain of 29dB is subtracted, giving field strength of 32 dBµV/m.
FS = 52.5 + 7.4 + 1.1 – 29 = 32 dBµV/m
The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.
Level in µV/m = Common Antilogarithm [(32dBµV/m)/20] = 39.8 µV/m.

5. TEST EQUIPMENT LIST

USED	N°LCIE	TYPE	COMPANY	REF	CAL_DATE	CAL_DUE
x	***Radiated emission measurement (Pre-characterization)***					
x	A7102024	Amplifier 8 GHz	HEROTEK	A1080304A	10/09	10/10
x	A7486006	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447F	04/10	04/11
x	C2040145	Antenna Bi-Log XWing	TESEQ	CBL6144	03/10	03/12
x	C2040146	Antenna Bi-Log XWing	TESEQ	CBL6144	03/10	03/12
x	C2042027	Antenna horn	EMCO	3115	09/09	09/10*
x	A5329045	Cable	-	-	12/09	12/10
x	A5329056	Cable	-	-	02/10	02/11
x	A5329057	Cable	-	-	02/10	02/11
x	A5329183	Cable	-	-	02/10	02/11
x	A5329189	Cable	UTIFLEX	-	02/10	02/11
x	D3044016	Semi-Anechoic chamber #1	SIEPEL	-	08/09	08/10*
x	D3044015	Semi-Anechoic chamber #2	SIEPEL	-	08/09	08/10*
x	A3169050	Radiated emission comb generator	BARDET	-	-	-
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A4060017	Spectrum analyzer	HEWLETT PACKARD	HP8568B	06/10	06/12
x	A4060019	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	06/10	06/12
x	F2000393	Turntable controller (Cage#2-3)	ETS Lingren	Model 2066	-	-
x	F2000404	Turntable chamber (Cage#2)	ETS Lingren	Model 2165	-	-
x	F2000406	Turntable chamber (Cage#1)	MATURO Gmbh	TT 2.0 SI	-	-
x	F2000407	Antenna mast (Cage#1)	MATURO Gmbh	AM 4.0	-	-
x	F2000408	Turntable controller (Cage#1)	MATURO Gmbh	Control Unit	-	-
x	***Radiated emission measurement (OATS)***					
x	A4049060	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	06/10	06/12
x	C2040050	Antenna biconic	EMCO	3104C	01/10	01/11
x	C2040056	Antenna log-periodic	EMCO	3146	01/10	01/11
x	A5329188	Cable OATS (Mast at 10m)	UTIFLEX	-	05/10	05/11
x	A5329199	Cable OATS (Mast at 10m)	UTIFLEX	-	05/10	05/11
x	A4060030	Pre-selector RF	HEWLETT PACKARD	HP85685A	-	-
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A4060017	Spectrum analyzer	HEWLETT PACKARD	HP8568B	06/10	06/12
x	A4060019	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	06/10	06/12
x	F2000372	Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	-	-
x	F2000403	Turntable (OATS)	ETS Lindgren	Model 2187	-	-
x	***Conducted measurement emission***					
x	A5329415	Cable	-	-	03/10	03/11
x	D3044010	Faraday Cage	RAY PROOF	-	01/10	01/11
x	A3169049	Conducted emission comb generator	BARDET	-	-	-
x	C2320068	LISN	EMCO	3825/2	05/10	05/11
x	C2320123	LISN	RHODE & SCHWARZ	ENV216	05/10	05/11
x	A7152030	Load 50Ω	-	-	05/10	05/11
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11

* under derogation

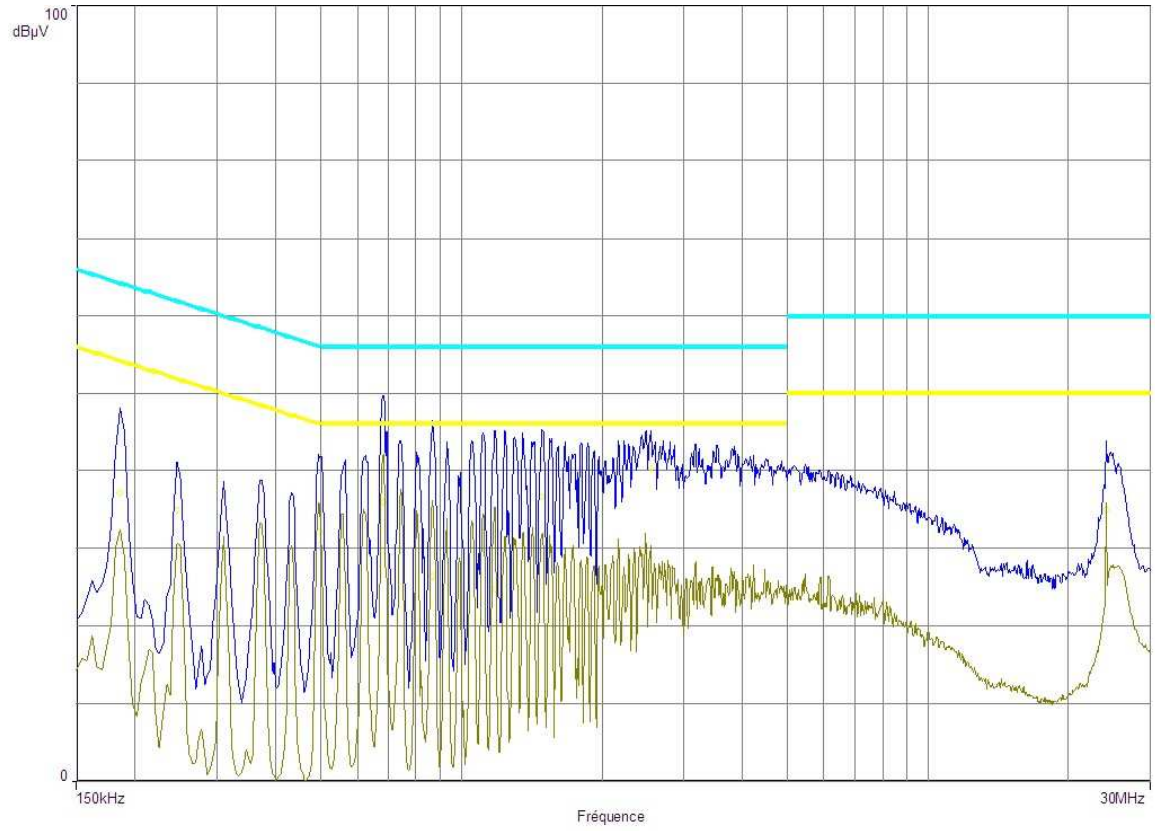
6. UNCERTAINTIES CHART

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 (triphasé) *Measurement of conducted disturbances in voltage on the power port (three phases)*	3.6 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau d'énergie (monophasé) *Measurement of conducted disturbances in voltage on the power port (single line)*	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 Voiron *Measurement of radiated electric field on the Voiron open area test site*	5.07 dB	5.2 dB
Mesure du champ électrique rayonné IN SITU de 30 à 1000 MHz *IN SITU measurement of radiated electric field from 30 to 1000MHz*	A l'étude / Under consideration	5.2 dB
Mesure de la puissance perturbatrice / *Measurement of disturbance power*	3.37 dB	4.5 dB
Mesure des harmoniques de courant / *Measurement of current harmonics*	11.11%	/
Mesure du flicker / *Flicker measurement*	9.26%	/

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par le CISPR, 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 CISPR. The conformity of the sample is directly established by the applicable limits values.*

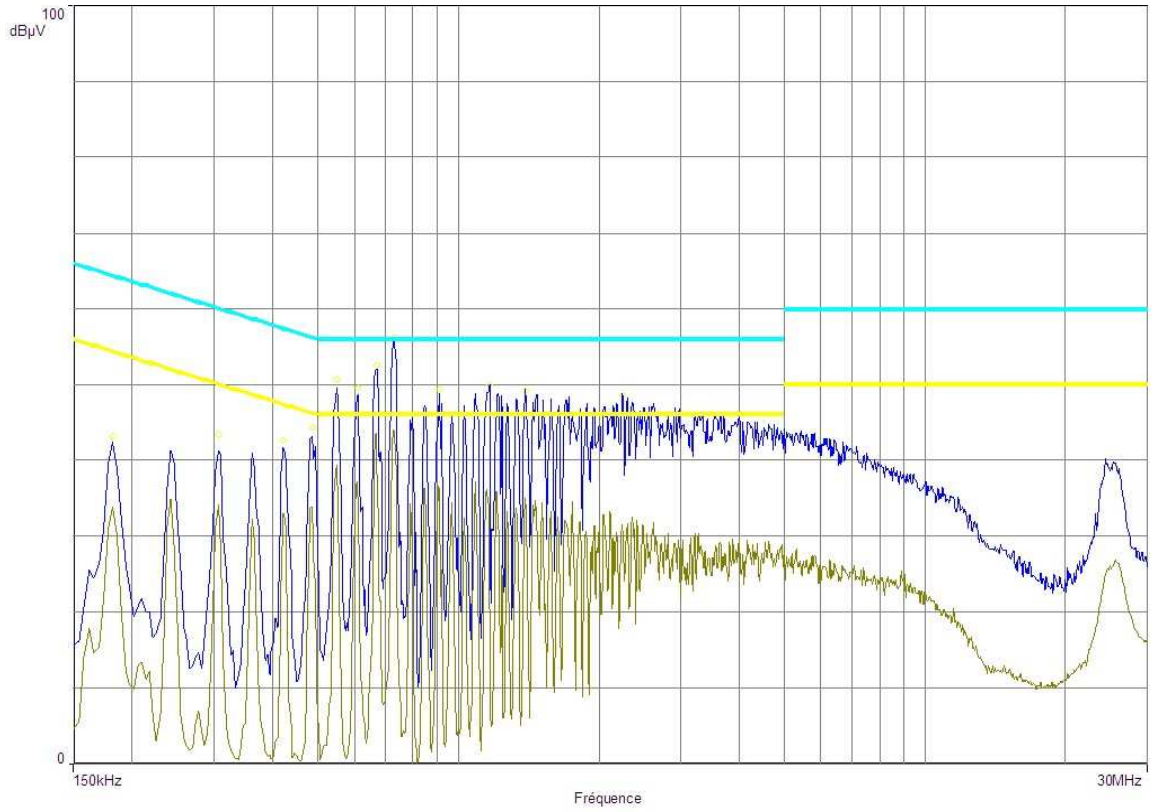
7. ANNEX 1 (GRAPHS)

N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#1**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°2 - Phase 120Vdc 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Phase1**	**Peak Measure**		**QPeak Limit**	
RBW / VBW :	**9kHz/Auto**	**Average Measure**		**Average Limit**	



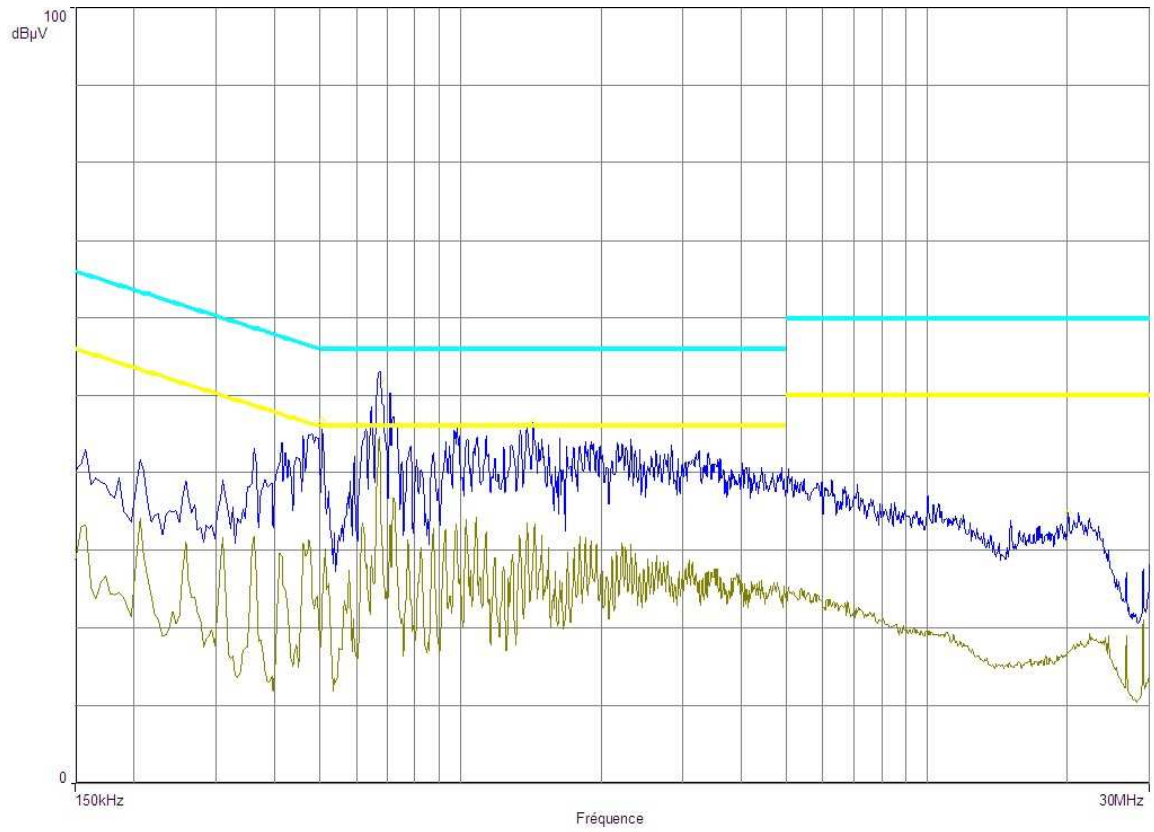
Frequency (MHz)	Peak	Avg	Lim Avg	Avg-LimAvg	QPeak	LimQPeak	QPeak-LimQPeak
0.186	37.28	26.07	54.21	-28.14	32.36	64.21	-31.85
0.246	34.92	24.57	51.89	-27.32	30.89	61.89	-31
0.494	32.18	7.35	46.1	-38.75	21.16	56.1	-34.94
0.682	35.91	10.82	46	-35.18	22.28	56	-33.72
0.87	26.41	2.74	46	-43.26	12.9	56	-43.1
1.182	24.79	7.27	46	-38.73	16.97	56	-39.03
1.49	36.6	23.97	46	-22.03	34.9	56	-21.1
2.546	40.29	11.11	46	-34.89	28.53	56	-27.47
24.026	34.96	18.5	50	-31.5	28.12	60	-31.88

N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#2**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°2 - Neutral 120Vdc 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Neutre**	**Peak Measure**	**QPeak Limit**		
RBW / VBW :	**9kHz/Auto**	**Average Measure**	**Average Limit**		



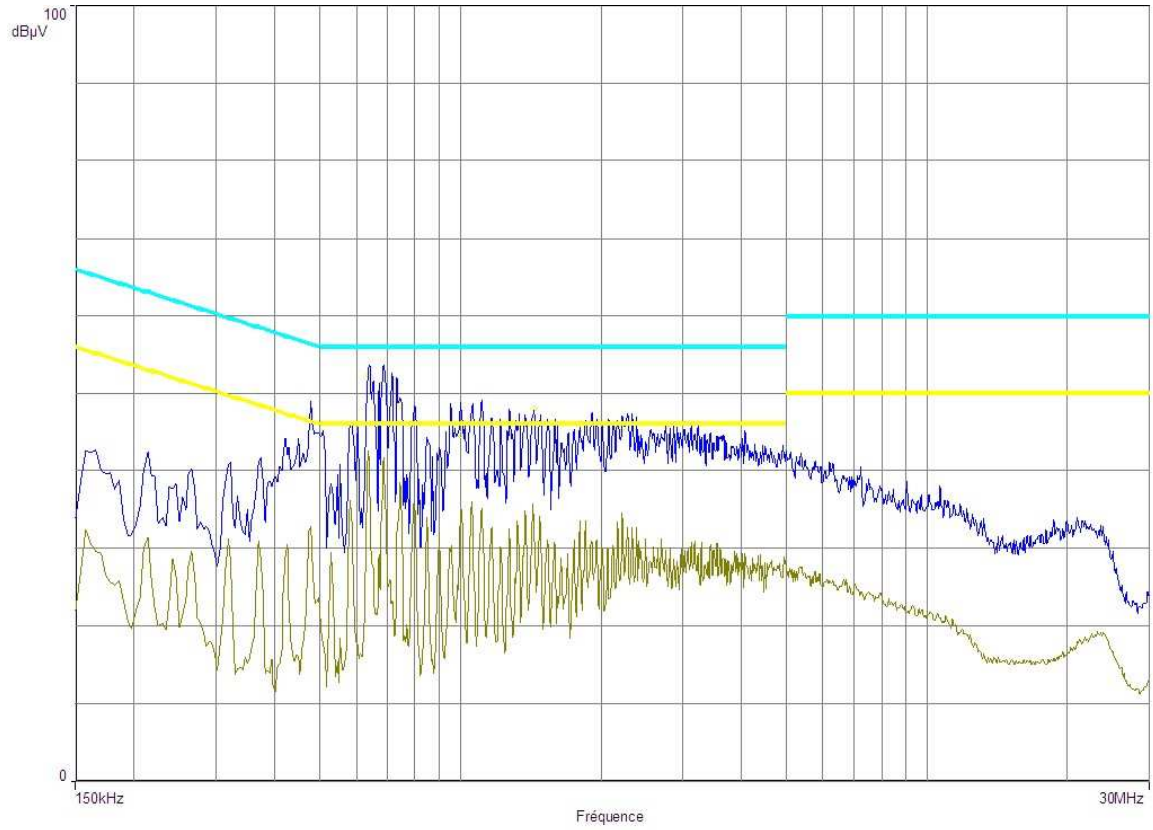
Frequency (MHz)	Peak	Avg	Lim Avg	Avg-LimAvg	QPeak	LimQPeak	QPeak-LimQPeak
0.182	43.18	35.47	54.39	-18.93	41.61	64.39	-22.79
0.306	43.45	32.53	50.08	-17.55	41.57	60.08	-18.51
0.422	42.69	32.66	47.41	-14.74	41.6	57.41	-15.81
0.486	44.34	34.6	46.24	-11.63	42.36	56.24	-13.87
0.55	50.77	36.6	46	-9.4	48.73	56	-7.27
0.61	49.64	35.65	46	-10.35	48.13	56	-7.87
0.67	52.54	40.49	46	-5.51	50.94	56	-5.06
0.726	56.25	45.56	46	-0.44	54.89	56	-1.11
0.914	49.37	34.29	46	-11.71	47.72	56	-8.28
1.166	49.93	21.51	46	-24.49	44.72	56	-11.28
1.39	49.22	34.36	46	-11.64	47.32	56	-8.68
2.25	48.53	30.94	46	-15.06	45.97	56	-10.03
25.282	39.26	25.05	50	-24.95	33.02	60	-26.98

N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#3**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°3 - Phase 120Vac 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Phase1**	**Peak Measure**	**QPeak Limit**		
RBW / VBW :	**9kHz/Auto**	**Average Measure**	**Average Limit**		



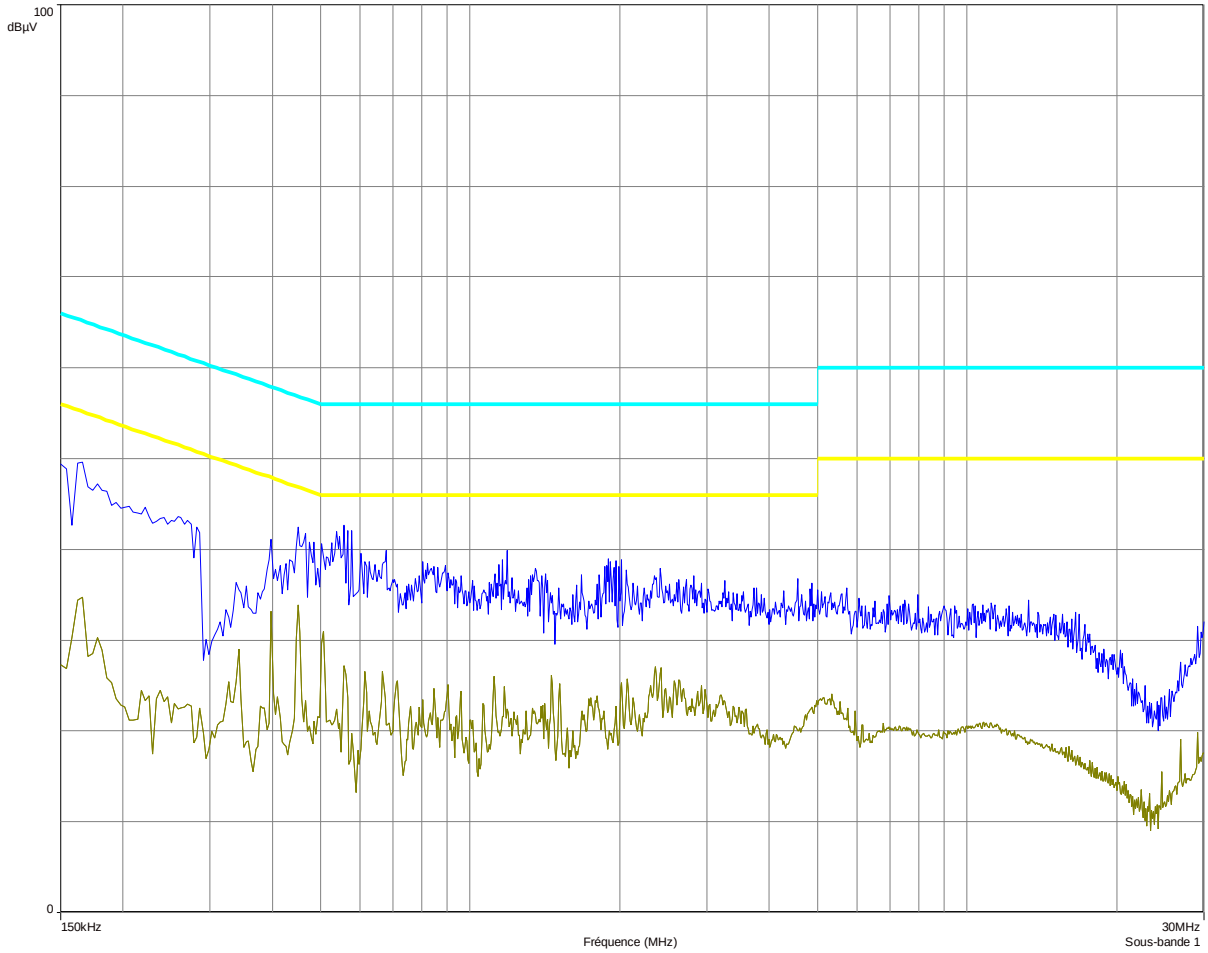
Frequency (MHz)	Peak	Avg	Lim Avg	Avg-LimAvg	QPeak	LimQPeak	QPeak-LimQPeak
0.506	46.8	22.37	46	-23.63	41.36	56	-14.64
0.674	51.78	28.74	46	-17.26	44.52	56	-11.48
0.982	45.32	27.76	46	-18.24	39.28	56	-16.72
1.434	46.51	28.03	46	-17.97	39.01	56	-16.99
2.322	42.3	24.97	46	-21.03	35.55	56	-20.45
20.054	34.79	17.72	50	-32.28	27.94	60	-32.06

N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#4**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°3 - Neutral 120Vac 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Neutre**	**Peak Measure**		**QPeak Limit**	
RBW / VBW :	**9kHz/Auto**	**Average Measure**		**Average Limit**	

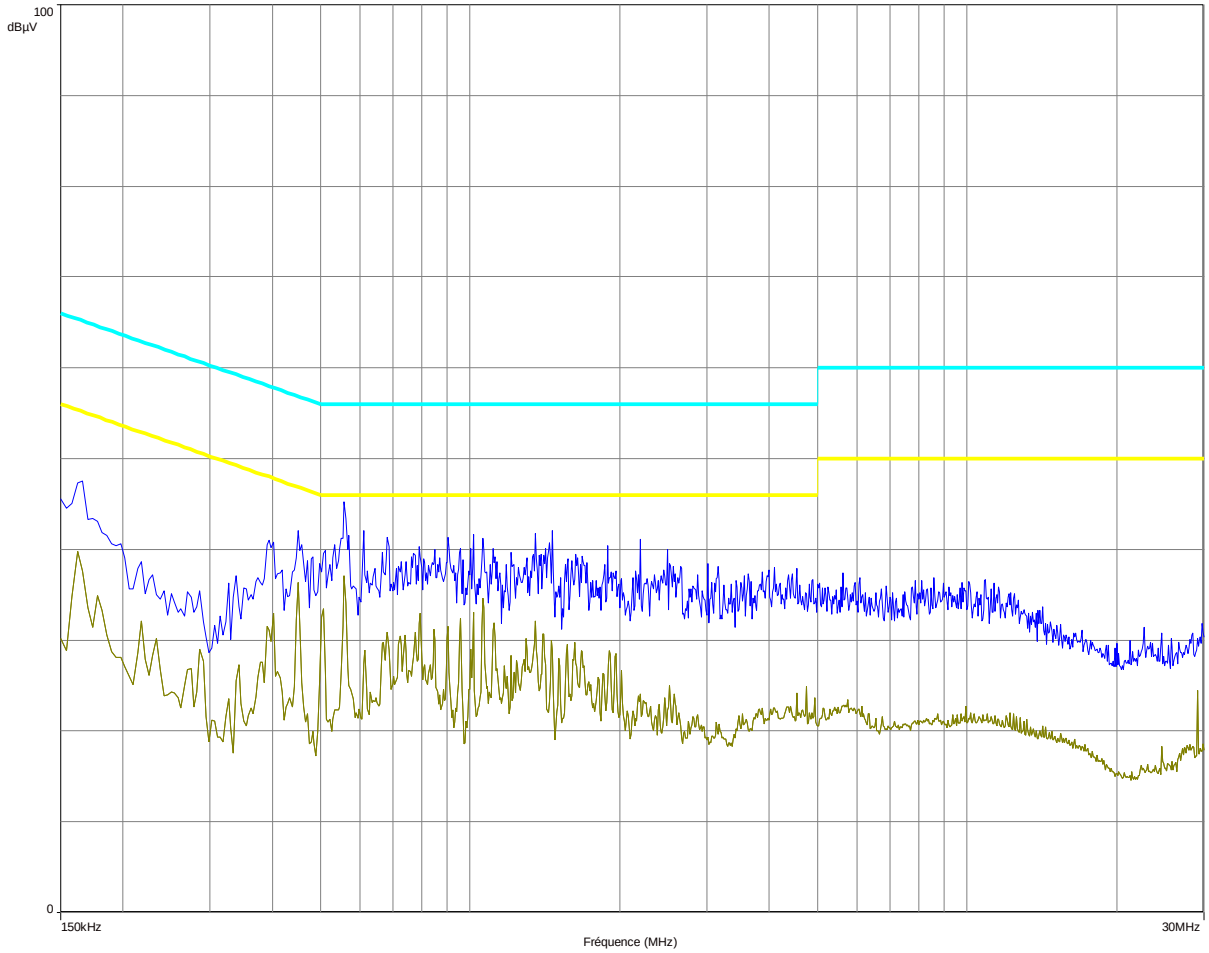


Frequency (MHz)	Peak	Avg	Lim Avg	Avg-LimAvg	QPeak	LimQPeak	QPeak-LimQPeak
0.478	47.04	28.74	46.37	-17.64	40.89	56.37	-15.48
0.638	52.34	22.66	46	-23.34	43.49	56	-12.51
0.686	51.4	23.43	46	-22.57	40.15	56	-15.85
0.742	48.48	21.78	46	-24.22	38.71	56	-17.29
1.002	44.6	25.67	46	-20.33	35.48	56	-20.52
1.114	46.53	29.13	46	-16.87	41.52	56	-14.48
1.278	46.52	29.85	46	-16.15	41.18	56	-14.82
1.438	48.01	26.91	46	-19.09	41.94	56	-14.06
1.854	45.18	22.73	46	-23.27	38.66	56	-17.34
2.218	45.45	24.53	46	-21.47	37.79	56	-18.21
2.758	45.75	29.41	46	-16.59	41.38	56	-14.62

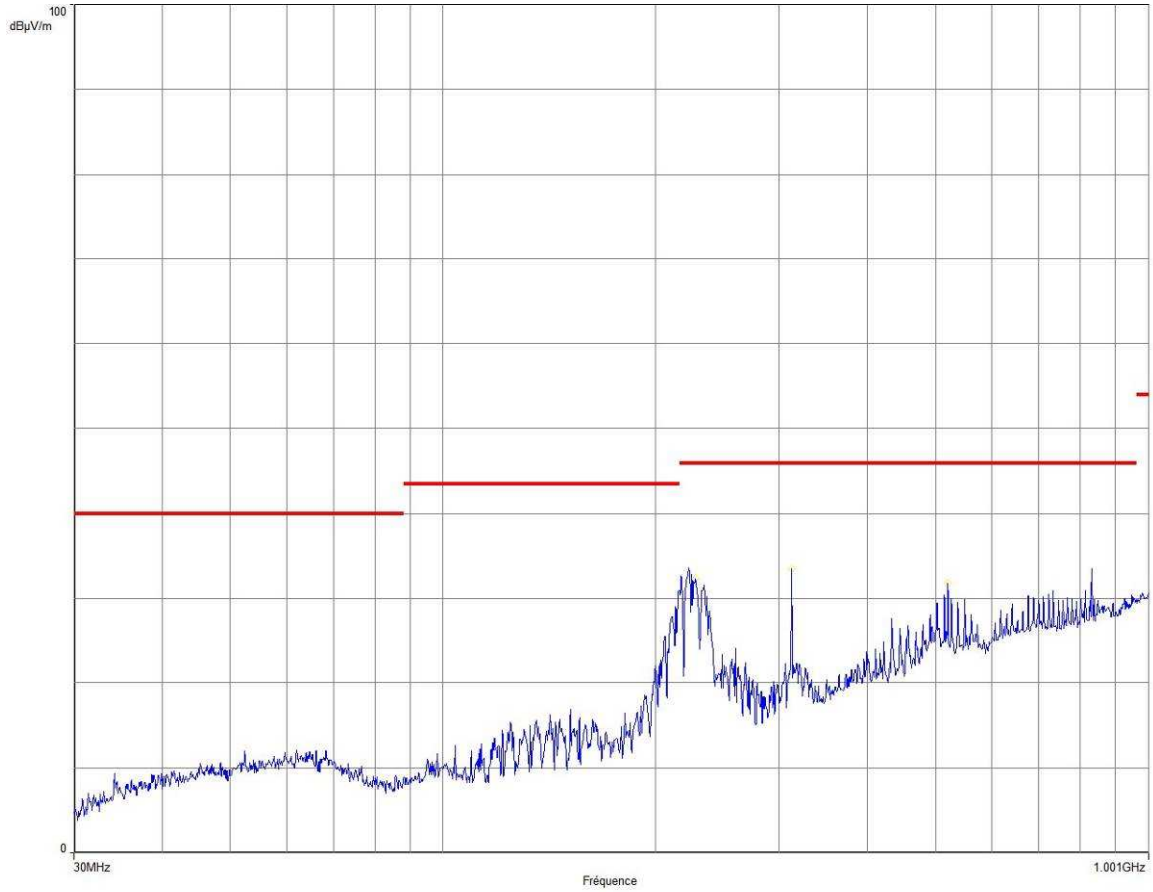
N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#4**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°3 PC- Neutral 120Vac 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Phase1**		**Peak Measure**		**QPeak Limit**
RBW / VBW :	**9kHz/Auto**		**Average Measure**		**Average Limit**



N°d'offre/Nom de projet :					
CONDUCTED EMISSIONS		**Test configuration:**			
Graph name :	**Emc#4**				
Voltage / Frequency :	**120Vac/60Hz**	**Configuration n°3 PC - Neutral 120Vac 60Hz**			
Limite / Classe :	**EN 55011 / EN55022/B**				
Line/Port :	**Neutre**	**Peak Measure**		**QPeak Limit**	
RBW / VBW :	**9kHz/Auto**	**Average Measure**		**Average Limit**	

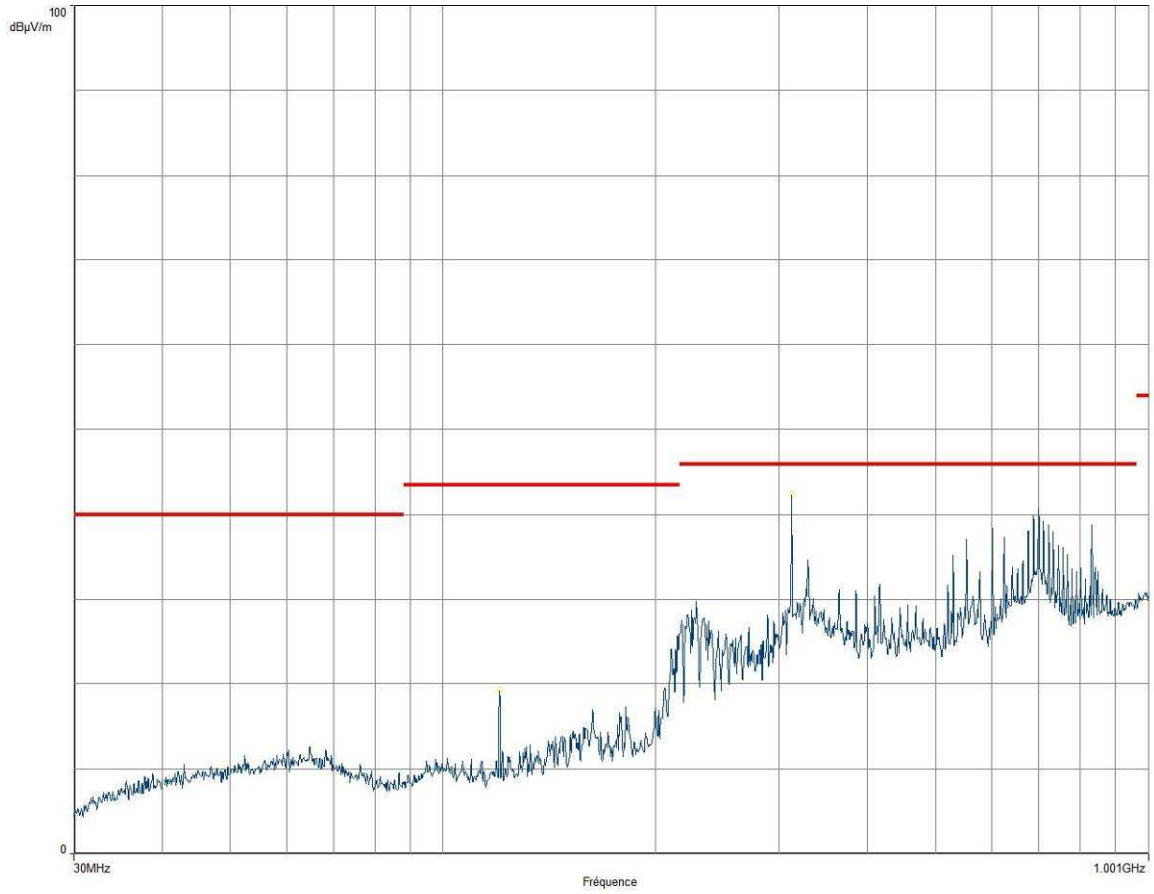


	200907-5554R-A1			
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#1**			
Azimuth :	**0°- 360°**	**Config 1 - EUT: Vertical**		
		Reading in loop		
Antenna position :	**Horizontale**			
RBW/VBW :	**120kHz/Auto**	**Peak Measure**		**QPeak Limit@3m**



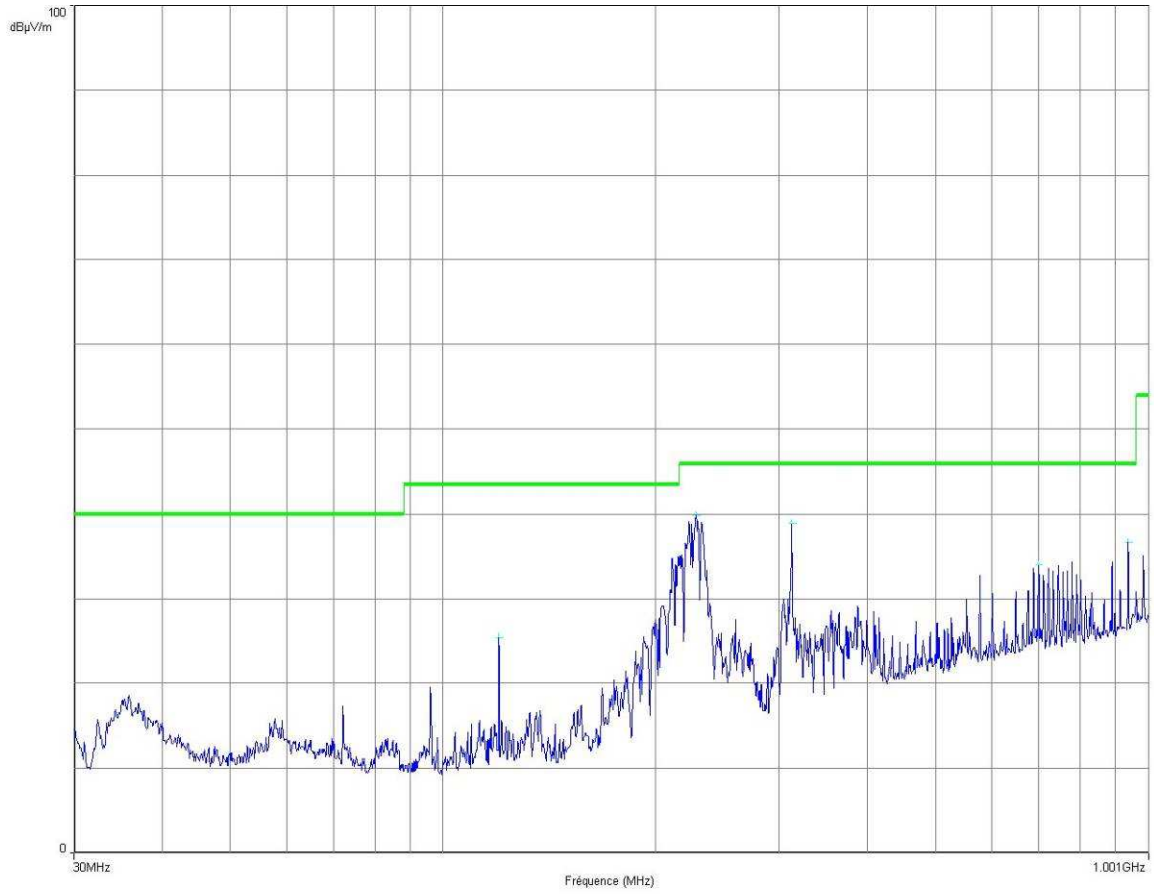
Frequency (MHz)	Peak (dBµV/m)
228.00	32.34
311.90	33.49
519.85	31.78

	200907-5554R-A1			
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#2**			
Azimuth :	**0°- 360°**	**Config 1 - EUT: Vertical**		
		Reading in loop		
Antenna position :	**Verticale**			
RBW/VBW :	**120kHz/Auto**	**Peak Measure**		**QPeak Limit@3m**



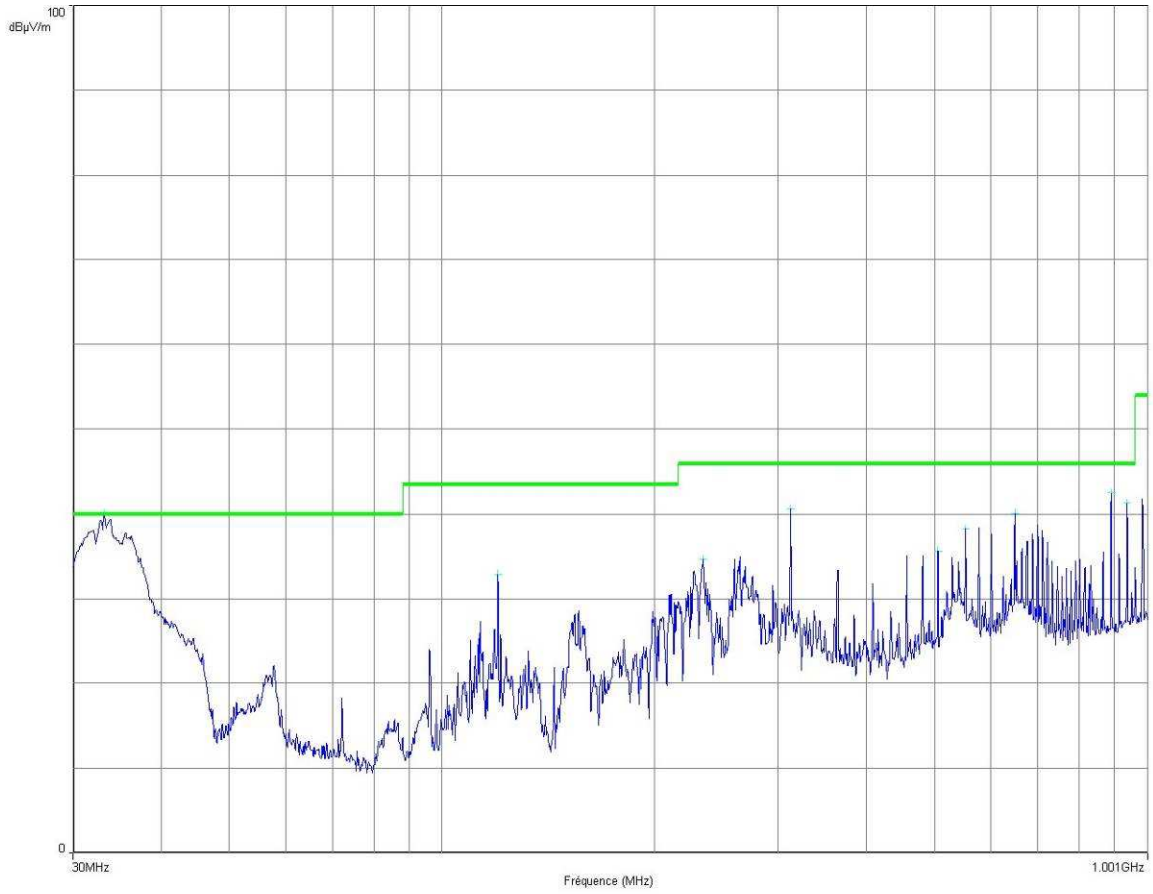
Frequency (MHz)	Peak (dBµV/m)
120.25	19.28
311.9	42.37

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#3**			
Azimuth :	**0°- 360°**	**Pol H - Config 2 Axe 1**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Horizontale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



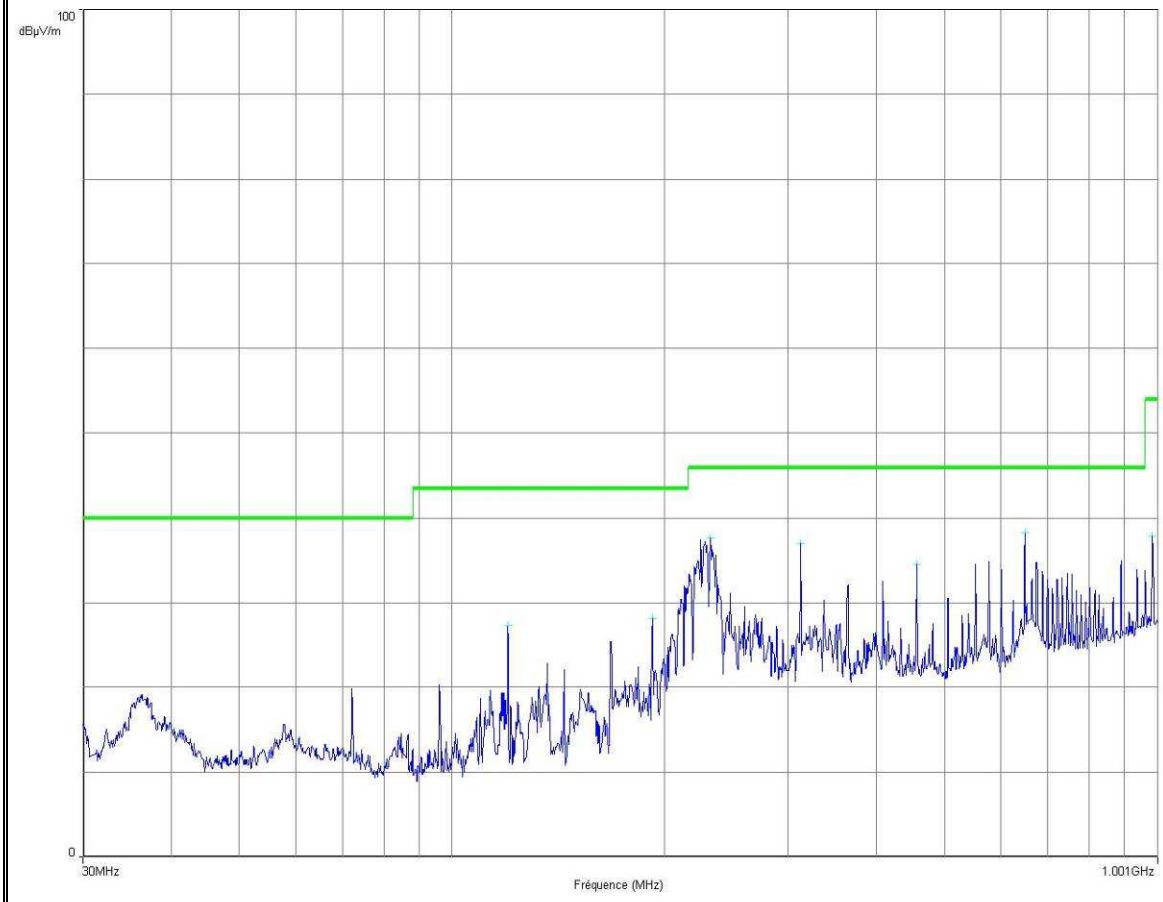
Frequency (MHz)	Peak (dBµV/m)
228.84	39.87
312	38.85
698.8	33.99
936.92	36.64

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#4**			
Azimuth :	**0°- 360°**	**Pol V - Config 2 Axe 1**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Verticale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



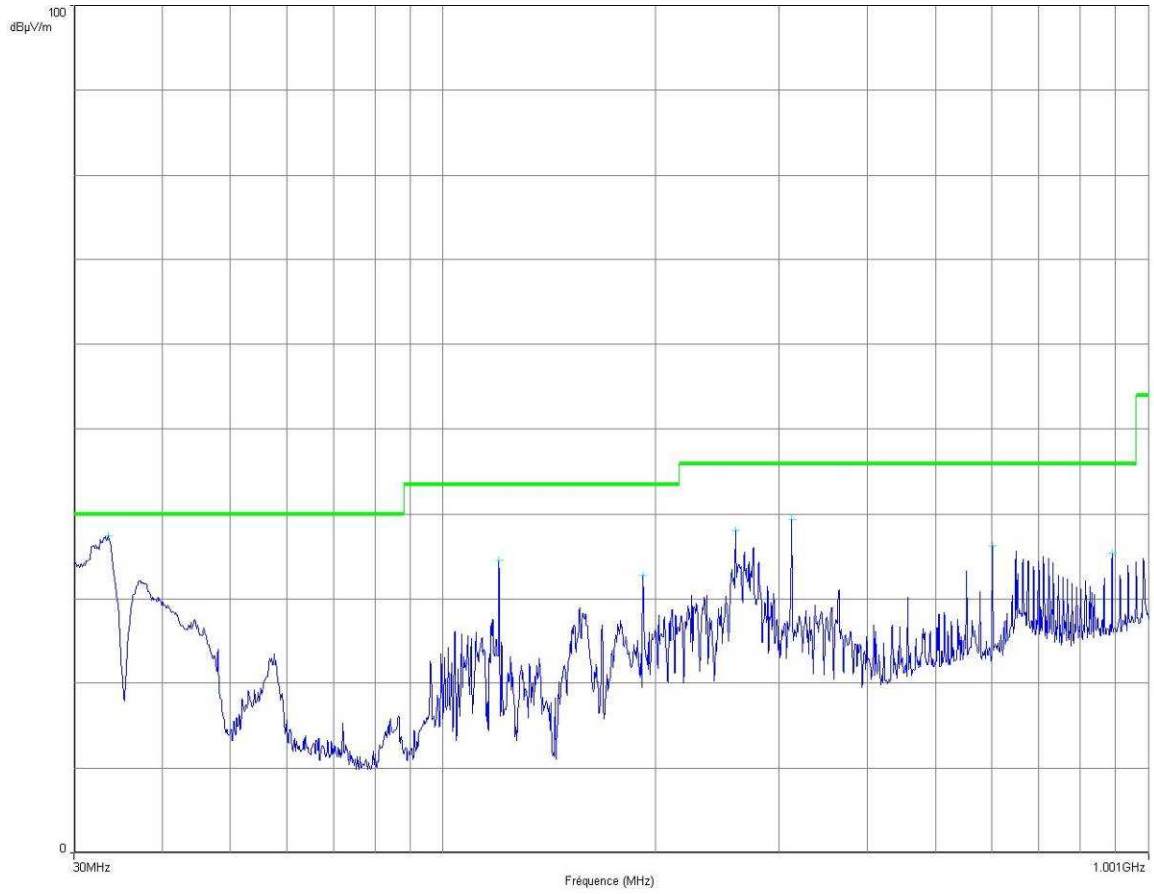
Frequency (MHz)	Peak (dBµV/m)
120.04	32.9
234.64	34.62
312	40.55
504.52	35.6
552.64	38.19
648.6	40.07
888.84	42.51
936.92	41.34

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#5**			
Azimuth :	**0°- 360°**	**Pol H - Config 2 Axe 2**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Horizontale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



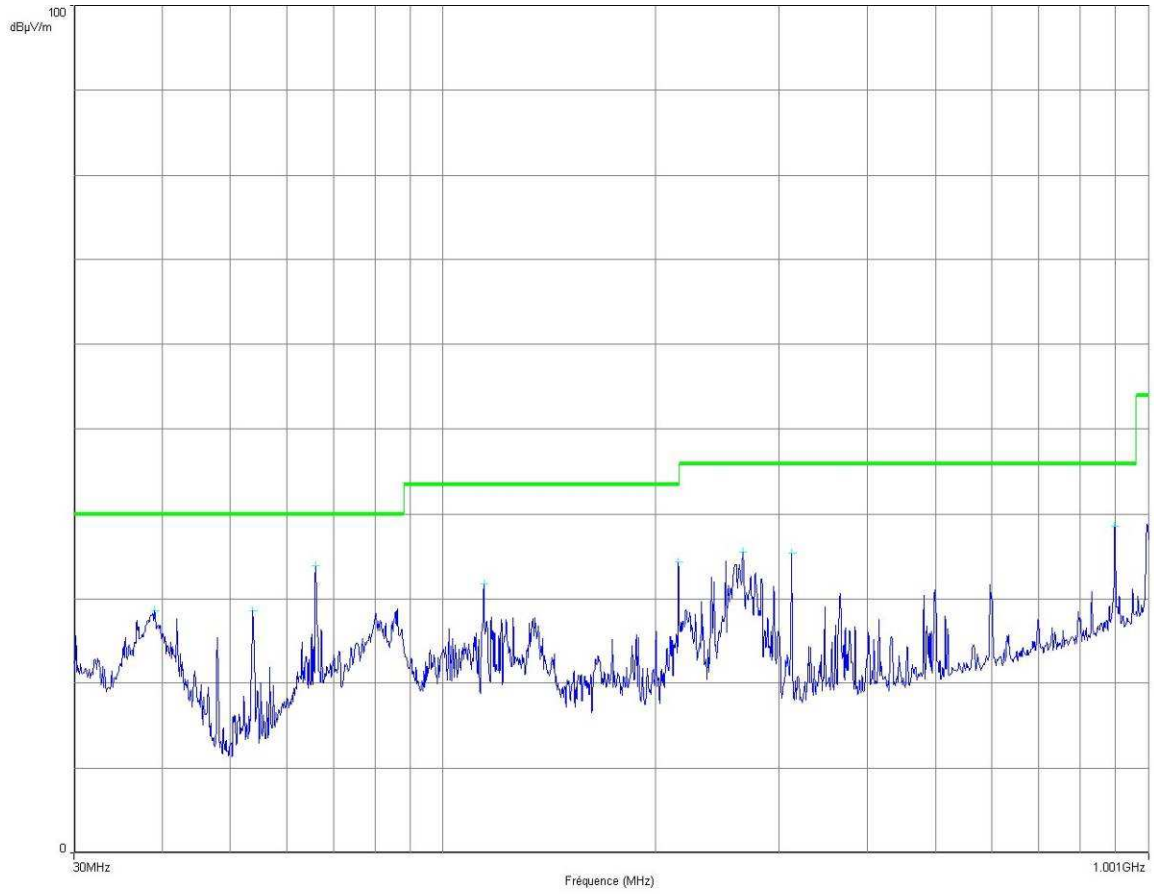
Frequency (MHz)	Peak (dBµV/m)
192.28	28.16
232.6	37.6
312	36.95
456.44	34.47
648.64	38.17
985.04	37.8

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#6**			
Azimuth :	**0°- 360°**	**Pol V - Config 2 Axe 2**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Verticale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



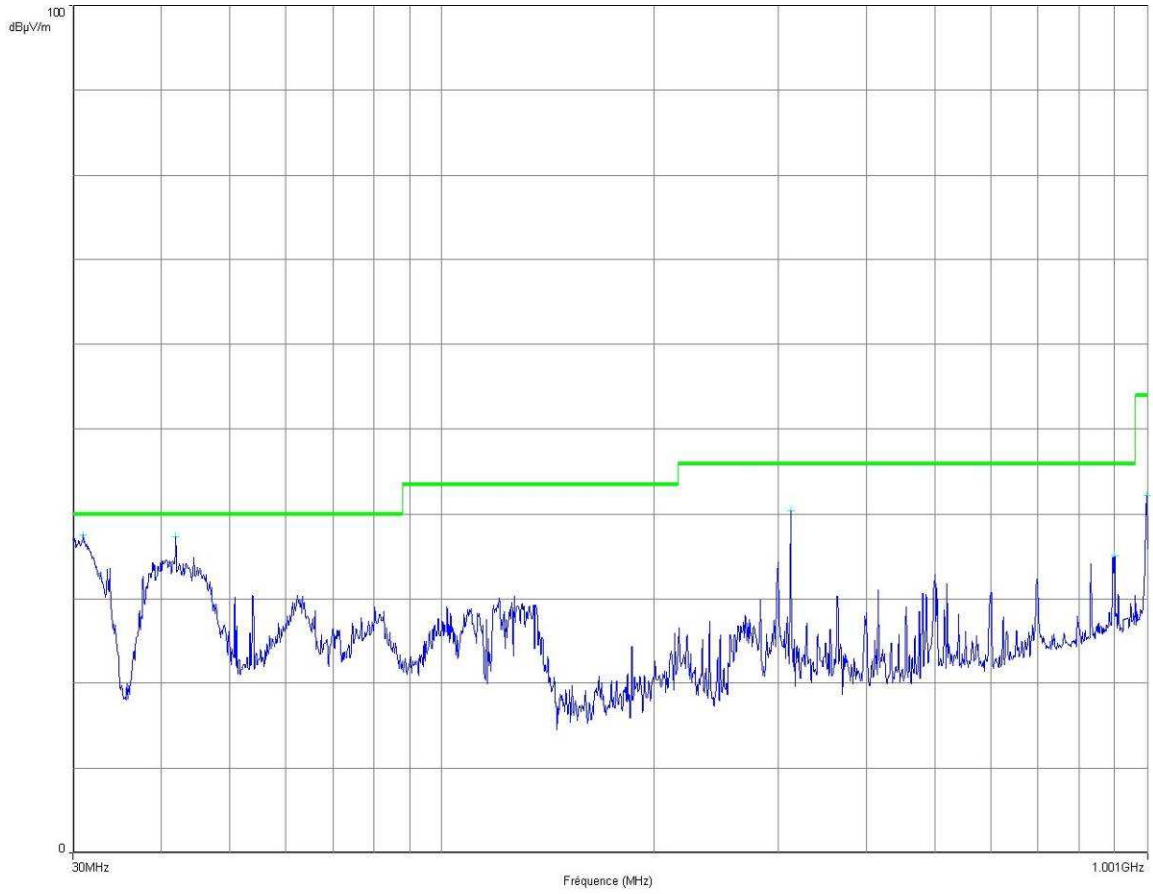
Frequency (MHz)	Peak (dBµV/m)
120.04	34.5
192.16	32.75
259.8	38.01
312	39.35
600.6	36.24
888.88	35.31

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#7**			
Azimuth :	**0°- 360°**	**Pol H - Config 3 Axe 1**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Horizontale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



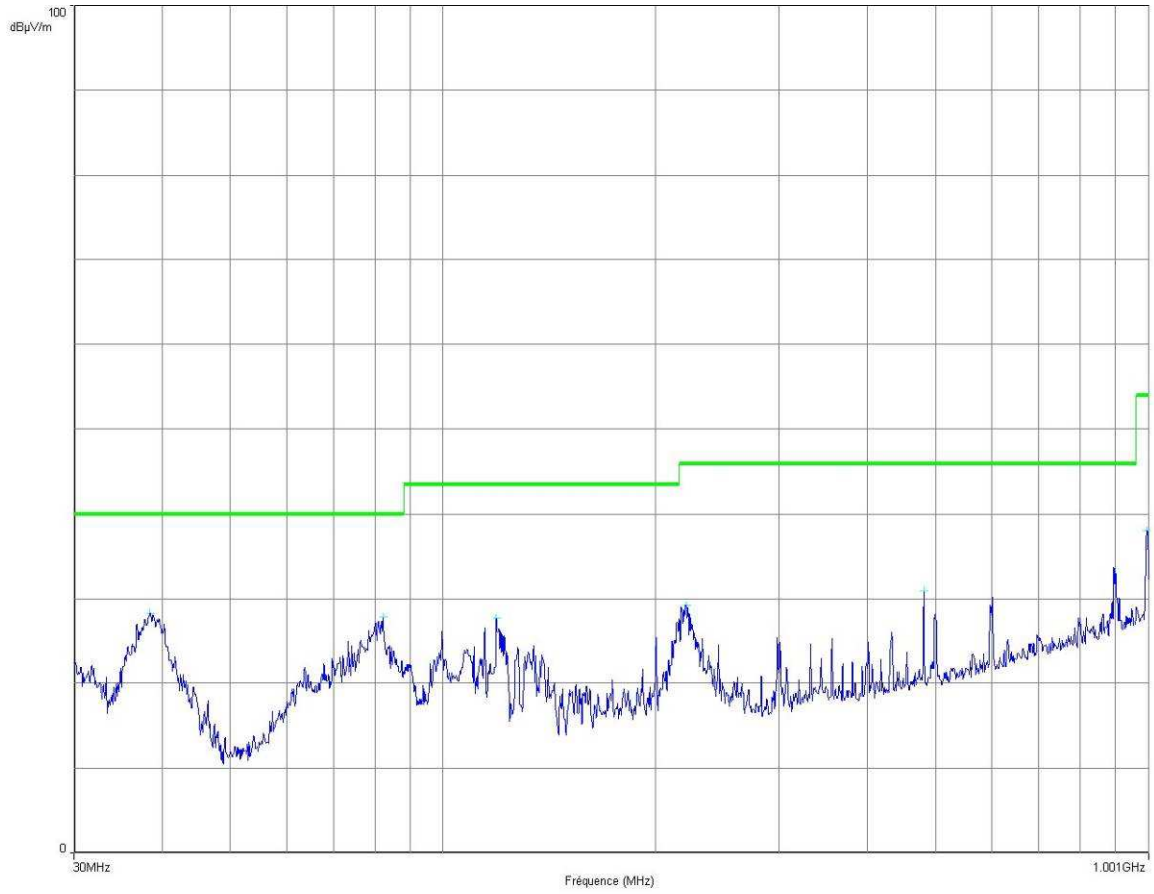
Frequency (MHz)	Peak (dBµV/m)
53.72	28.64
65.96	33.91
114.4	31.71
215.84	34.26
266.04	35.57
312	35.35
896.92	38.5

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#8**			
Azimuth :	**0°- 360°**	**Pol V - Config 3 Axe 1**		
Limite / Classe :	**FCC Part15B/B**			
Antenna position :	**Verticale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



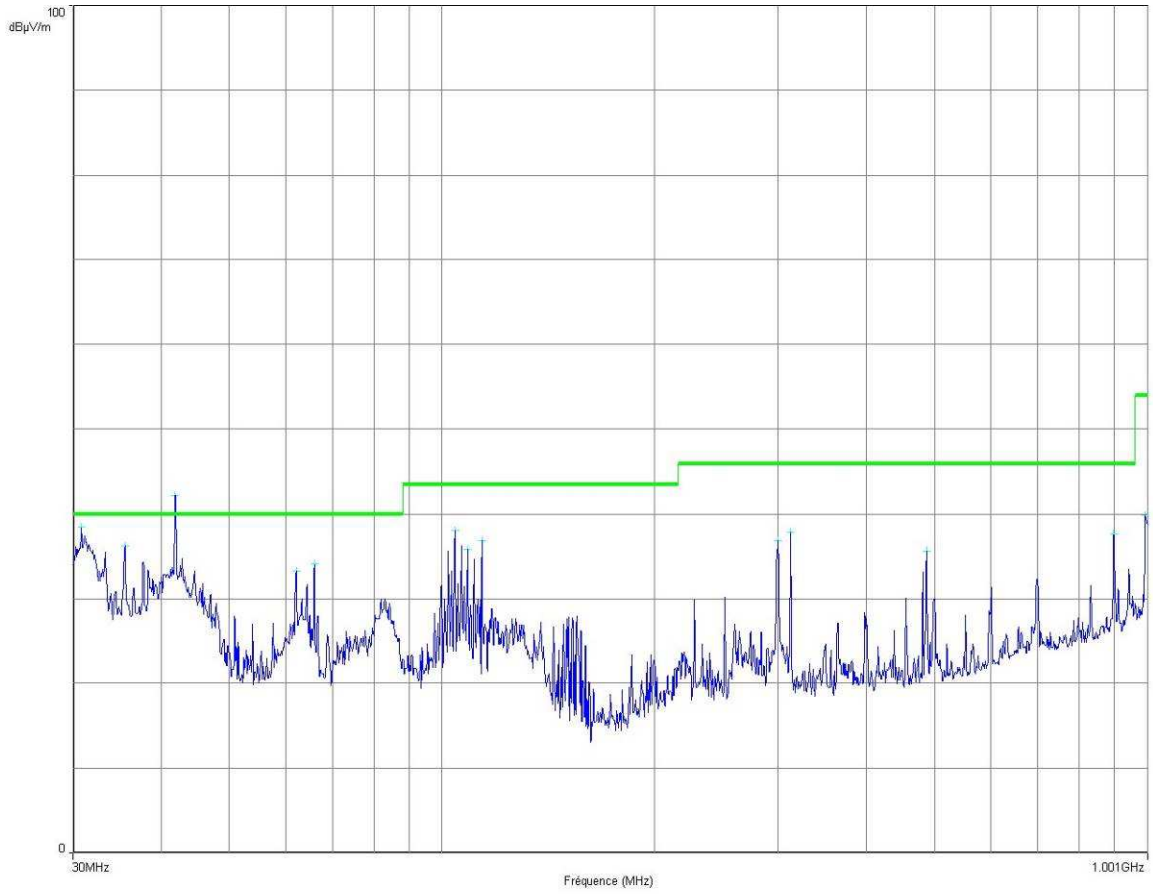
Frequency (MHz)	Peak (dBµV/m)
41.96	37.29
312	40.35
897.92	35.01
996.92	42.18

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#9**			
Azimuth :	**0°- 360°**	**Pol H - Config 3 Axe 2**		
Limite / Classe :	**55022/B**			
Antenna position :	**Horizontale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
82.24	27.76
119.16	27.66
221.08	29.2
480	30.94
994.56	38.05

N°d'offre/Nom de projet :				
RADIATED EMISSIONS		**Test configuration:**		
Graph name :	**Emr#10**			
Azimuth :	**0°- 360°**	**Pol V - Config 3 Axe 2**		
Limite / Classe :	**55022/B**			
Antenna position :	**Verticale**			
RBW/VBW :	**100kHz/300kHz**	**Peak Measure**		**QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
35.52	36.23
41.88	42.19
62.08	33.25
65.8	34.13
104.28	37.97
108.8	35.82
114	36.89
299.8	36.88
312	37.85
486.04	35.6
897.08	37.6
993.68	39.84