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TEST REPORT

N°: 843636-R1-E **JDE : 135776**

Subject **Electromagnetic compatibility and Radio spectrum Matters (ERM) tests according to standards: FCC CFR 47 Part 15, Subpart B et C RSS-210 Issue 8.1**

Issued to	**INGENICO** Rovaltain TGV – Quartier de la Gare 26300 ALIXAN
Apparatus under test	
Product	**IPP300**
Trade mark	**INGENICO**
Manufacturer	**INGENICO**
Model under test	**IPP350-31T3154A**
Serial number	**15138PP00008441**
FCCID	**XKB-IPP3V4**
ICID	**2586D-IPP3V4**
Test date	From June 1st to 5th, 2015
Test location	Moirans
IC Test site	6500A-1 & 6500A-3
Test performed by	Gaëtan Deschamps / Jonathan Sarto
Composition of document	48 pages
Modification of the last version	None
Document issued on	September 4th, 2015

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SUMMARY

1. TEST PROGRAM

Standard:

- **FCC Part 15, Subpart B (Digital Devices)**
- **FCC Part 15, Subpart C**
- **ANSI C63.4 (2003)**
- **RSS-210 Issue 8.1 – Feb 2015**
- **RSS-Gen Issue 4 – Nov 2014**

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance at mains ports 150kHz-30MHz *CFR 47 §15.207*	**Frequency**	**Quasi-peak value (dBµV)**	**Average value (dBµV)**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 9kHz-30MHz *CFR 47 §15.209 (a)* *CFR 47 §15.225* *RSS-Gen §4.9*	**Measure at 300m** 9kHz-490kHz : 67.6dBµV/m /F(kHz) **Measure at 30m** 490kHz-1.705MHz : 87.6dBµV/m /F(kHz) 1.705MHz-30MHz : 29.5 dBµV/m			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Radiated emissions 30MHz-1GHz* *CFR 47 §15.209 (a)* *CFR 47 §15.225* *RSS-Gen §4.9* ***Highest frequency :96MHz (Declaration of provider)***	**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** ☐ **FAIL** ☐ **NA** ☐ **NP**
Fundamental field strength limit *CFR 47 §15.225* *RSS-210 §A2.6*	**Operation within the band 13.110-14.010 MHz**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Fundamental frequency tolerance *CFR 47 §15.225* *RSS-210 §A2.6*	**Operation within the band 13.110-14.010 MHz**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Band edge compliance *CFR 47 §15.225* *RSS-210 §A2.6*	**Operation within the band 13.110-14.010 MHz**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Occupied bandwidth *RSS-Gen §4.6.1*	**No limit**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Receiver Spurious Emission** *RSS-Gen §4.10*	**See RSS-Gen §4.10**			☐ **PASS** ☐ **FAIL** ☑ **NA** ☐ **NP**

***§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.

****Testing covered the receive mode, and receiver spurious emissions are considered to be the same as transmitter.

2. SYSTEM TEST CONFIGURATION

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):
IPP350-31T3154A
Serial Number: 15138PP00008441

Photography of EUT

Power supply:
During all the tests, EUT is supplied by V_{nom}: 5VDC or 8-12VDC or 48VDC
For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Sn	Comments
Friwo	☐ AC ☑ DC ☐ Battery	8VDC	153051 / 179901469	For configuration 1*
USB	☐ AC ☑ DC ☐ Battery	5VDC	-	For configuration 5*
Phihong POE	☐ AC ☑ DC ☐ Battery	48VDC	PSA16-480 / -	For configuration 4*
Phihong	☐ AC ☑ DC ☐ Battery	8VDC	PSC16E-080 / 192011097	For configuration 2*
Phihong	☐ AC ☑ DC ☐ Battery	8VDC	PSM24W-080(IN)-R / -	For configuration 3*

**See the running mode §2.2*

Inputs/outputs – EUT:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Configuration 1/3/4*	HDMI	1.8	☑	☑	☑	Cable with ferrite near to EUT (5 centimeters)
Configuration 2/5*	HDMI	1.8	☑	☑	☑	-

**See the running mode §2.2*

Inputs/outputs – Power supply:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Friwo	DC	1.8	☑	☑	☑	Configuration 1*
USB	DC	1.8	☑	☑	☑	Configuration 5*
POE	DC	2	☑	☑	☑	Configuration 4*
Phihong PSC16E-80	DC	1.8	☑	☑	☑	Configuration 2*
Phihong PSM24W	DC	2	☑	☑	☑	Configuration 3*
Ethernet	RJ45	2	☐	☑	☑	-
RS232	RS232	0.01	☐	☑	☑	-

**See the running mode §2.2*

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
LAPTOP DELL	LATITUDE	-	-
Power supply DC	-	-	-
Contactless Card	-	-	Class B

Equipment information:

Frequency band:	[13.553 – 13.567] MHz			
RF mode:	☐Transmitter	☑Transceiver	☐Receiver	☐Standby
Antenna type:	☐External:		☑Internal:	
Antenna gain:	0 dBi			
Extreme temperature range:	☑Category I (General) -30°C to +55°C	☐Category II (Portable) -10°C to +55°C	☐Category III (Indoor) +5°C to +35°C	
Extreme test source voltage:	☑±10%: Vmin 207Vac Vmax 253Vac		☐other:	

2.2. EUT CONFIGURATION

There are 5 configurations tests, each configuration is tested in Conducted emission data, radiated emission data and the worst case is tested for the others tests.

Configuration 1:
EUT is powered by the FRIWO, model 153051.
A reading and writing process are performed on:

- SAM 1
- SAM 2
- Micro SD
- CAM 0
- CLESS

In this setup, a sequence with a continuous ping process is performed between the EUT and the LAPTOP.

Configuration 2:
EUT is powered by the Phihong, model PCS16E-080.
A reading and writing process are performed on:

- SAM 1
- SAM 2
- Micro SD
- CAM 0
- CLESS

In this setup, a sequence with a serial communication is performed (RS232 and COM 0).
Serial communication consist to performed a self-communication (RX and TX are bypassed).

Configuration 3:

EUT is powered by the Phihong PSM24W-080(IN)-R.
A reading and writing process are performed on:

- SAM 1
- SAM 2
- Micro SD
- CAM 0
- CLESS

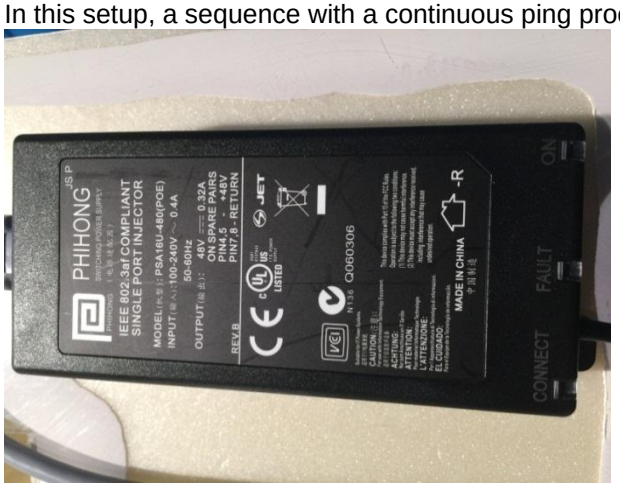
In this setup, a sequence with a continuous ping process is performed between the EUT and the LAPTOP.

Configuration 4:

EUT is powered by the Phihong POE.
A reading and writing process are performed on:

- SAM 1
- SAM 2
- Micro SD
- CAM 0
- CLESS

In this setup, a sequence with a continuous ping process is performed between the EUT and the LAPTOP.



Configuration 5:
EUT is powered by the USB.
A reading and writing process are performed on:

- SAM 1
- SAM 2
- Micro SD
- CAM 0
- CLESS

2.3. EQUIPMENT MODIFICATIONS

☑ None ☐ Modification:

2.4. 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 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.

3. CONDUCTED EMISSION DATA

3.1. ENVIRONMENTAL CONDITIONS

Date of test	:	June 5th, 2015
Test performed by	:	J.Sarto
Atmospheric pressure (hPa)	:	997
Relative humidity (%)	:	36
Ambient temperature (°C)	:	23

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.

Test setup Configuration 1:

Test setup Configuration 2:

Test setup Configuration 3:

Test setup Configuration 4:

3.3. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable + self	-	-	A5329578	05/14	05/15
Conducted emission comb generator	BARDET	-	A3169049	-	-
LISN tri-phase ESH2-Z5	RHODE & SCHWARZ	33852.19.53	C2320063	11/14	11/15
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15
Transient limiter	RHODE & SCHWARZ	ESH3-Z2	A7122204	11/14	11/15

3.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

3.5. TEST RESULTS

Mains terminals:

CONFIGURATION 1:
Measurements are performed on the phase (L1) and neutral (N) of the power line.
Results: (PEAK detection)

Graph identifier		Line	Comments	
Emc#	1	Phase	-	See annex 1
Emc#	2	Neutral	-	See annex 1

CONFIGURATION 2:
Measurements are performed on the phase (L1) and neutral (N) of the power line.
Results: (PEAK detection)

Graph identifier		Line	Comments	
Emc#	3	Phase	-	See annex 1
Emc#	4	Neutral	-	See annex 1

CONFIGURATION 3:
Measurements are performed on the phase (L1) and neutral (N) of the power line.
Results: (PEAK detection)

Graph identifier		Line	Comments	
Emc#	5	Phase	-	See annex 1
Emc#	6	Neutral	-	See annex 1

CONFIGURATION 4:
Measurements are performed on the phase (L1) and neutral (N) of the power line.
Results: (PEAK detection)

Graph identifier		Line	Comments	
Emc#	7	Phase	-	See annex 1
Emc#	8	Neutral	-	See annex 1

3.6. CONCLUSION

The sample of the equipment IPP350-31T3154A, Sn: 15138PP00008441, 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 (15.209)

4.1. ENVIRONMENTAL CONDITIONS

Date of test	:	June 3rd, 2015	June 4th, 2015
Test performed by	:	G.Deschamps	G.Deschamps
Atmospheric pressure (hPa)	:	993	994
Relative humidity (%)	:	32	30
Ambient temperature (°C)	:	23	23

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)
☐ 10cm above the ground on isolating support (Floor standing equipment)
The EUT is powered by V_{nom}.

General Test setup on OATS

General Test setup in anechoic chamber

4.3. TEST METHOD

Pre-characterisation measurement: (9kHz – 1GHz)
A pre-scan of all the setup has been performed in a 3 meters semi-anechoic chamber for frequency from 30MHz 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. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration.

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.

4.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	10/13	10/15
Antenna Bi-log	CHASE	CBL6111A	C2040172	04/13	04/15
Cable Measure @3m	-	6G OK-18G a faire	A5329038	08/14	08/15
Cable Measure @3m	-	-	A5329206	04/15	04/16
Semi-Anechoic chamber #3	SIEPEL	-	D3044017	-	-
Radiated emission comb generator	BARDET	-	A3169050	-	-
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15
Table	LCIE	-	F2000461	-	-
Antenna Bi-log	CHASE	CBL6111A	C2040051	04/14	04/16
Cable	SUCOFLEX	106G	A5329061	03/15	03/16
Cable	-	-	A5329069	10/14	10/15
Cable (OATS)	-	-	A5329623	10/14	10/15
OATS	-	-	F2000409	09/14	09/15
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	04/15	04/16
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	MATURO Gmbh	-	F2000437	-	-

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

4.6. TEST RESULTS

4.6.1. Pre-characterization at 3 meters [9kHz-30MHz]

See graph for 9kHz-30MHz band:

Configuration 1:

Graph identifier		Polarization	EUT position	Comments	
Emr#	1	0°	Axis XY	-	See annex 1
Emr#	2	90°	Axis XY	-	See annex 1

Configuration 2:

Graph identifier		Polarization	EUT position	Comments	
Emr#	3	0°	Axis XY	-	See annex 1
Emr#	4	90°	Axis XY	-	See annex 1

Configuration 3:

Graph identifier		Polarization	EUT position	Comments	
Emr#	5	0°	Axis XY	-	See annex 1
Emr#	6	90°	Axis XY	-	See annex 1

Configuration 4:

Graph identifier		Polarization	EUT position	Comments	
Emr#	7	0°	Axis XY	-	See annex 1
Emr#	8	90°	Axis XY	-	See annex 1

Configuration 5:

Graph identifier		Polarization	EUT position	Comments	
Emr#	9	0°	Axis XY	-	See annex 1
Emr#	10	90°	Axis XY	-	See annex 1

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

See graphs for 30MHz-1GHz:

Configuration 1:

Graph identifier		Polarization	EUT position	Comments	
Emr#	11	Horizontal / Vertical	Axis XY		See annex 1

Configuration 2:

Graph identifier		Polarization	EUT position	Comments	
Emr#	12	Horizontal / Vertical	Axis XY		See annex 1

Configuration 3:

Graph identifier		Polarization	EUT position	Comments	
Emr#	13	Horizontal / Vertical	Axis XY		See annex 1

Configuration 4:

Graph identifier		Polarization	EUT position	Comments	
Emr#	14	Horizontal / Vertical	Axis XY		See annex 1

Configuration 5:

Graph identifier		Polarization	EUT position	Comments	
Emr#	15	Horizontal / Vertical	Axis XY		See annex 1

4.6.3. Characterization on 10 meters open site below 30 MHz

Configuration 1:

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

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	13.56	84	16.4	**67.6**	360	0°C	100		
2	27.12	29.55	25.9	**3.65**	60	0°C	100		

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

Configuration 2:

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

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	13.56	84	25.8	**58.2**	160	0°C	100	35.1	
2	27.12	29.55	23.9	**5.65**	360	0°C	100	44.7	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

Configuration 3:

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

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	13.56	84	16.3	**67.7**	60	0°C	100	35.1	
2	27.12	29.55	25.5	**4.05**	360	0°C	100	44.7	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

Configuration 4:

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

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	13.56	84	19	**65**	207	0°C	100	35.1	
2	27.12	29.55	24	**5.55**	360	0°C	100	44.7	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

Configuration 5:
Frequency list has been created with semi-anechoic chamber pre-scan results.
Measurements are performed using a QUASI-PEAK detection.

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	13.56	84	19	**65**	360	0°C	100	35.1	
2	27.12	29.55	25	**4.55**	45	0°C	100	44.7	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

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.

4.6.4. 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.

Configuration 1:

No	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	13.560	40.0	26.9	**-13.1**	60	V	100	35.1	-
2	27.120	40.0	36.4	**-3.6**	360	V	100	44.7	-
3	40.680	40.0	38.2	**-1.8**	271	V	100	13.9	-
4	43.787	40.0	39.1	**-0.9**	360	V	100	12.2	-
5	45.500	40.0	37.1	**-2.9**	310	V	100	11.4	-
6	54.240	40.0	32.1	**-7.9**	0	V	100	8.6	-
7	58.713	40.0	32.2	**-7.8**	122	V	279	7.8	-
8	67.797	40.0	35.1	**-4.9**	0	V	250	7.8	-
9	81.356	40.0	26.1	**-13.9**	91	V	250	9.0	-

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@3m = M@10m+10.5dB)

Configuration 2:

No	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	13.560	40.0	36.3	**-3.7**	160	V	100	35.1	-
2	27.120	40.0	23.9	**-16.1**	360	V	100	44.7	-
3	39.826	40.0	30.3	**-9.7**	360	V	100	14.4	-
4	40.680	40.0	35.5	**-4.5**	213	V	100	13.9	-
5	42.852	40.0	35.8	**-4.2**	310	V	100	12.8	-
6	54.240	40.0	34.5	**-5.5**	230	V	100	8.6	-
7	67.797	40.0	32.1	**-7.9**	360	V	100	7.8	-
8	81.356	40.0	26.5	**-13.5**	0	V	250	9.0	-

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@3m = M@10m+10.5dB)

Configuration 3:

No	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	13.560	40.0	26.8	**-13.2**	60	V	100	35.1	-
2	27.120	40.0	36.0	**-4.0**	360	V	100	44.7	-
3	38.942	40.0	34.5	**-5.5**	58	V	100	14.9	-
4	40.680	40.0	35.8	**-4.2**	50	V	100	13.9	-
5	43.804	40.0	38.3	**-1.7**	75	V	100	12.2	-
6	47.799	40.0	37.2	**-2.8**	180	V	100	10.4	-
7	54.240	40.0	34.5	**-5.5**	55	V	100	8.6	-
8	67.797	40.0	29.8	**-10.2**	330	V	100	7.8	-
9	81.356	40.0	27.5	**-12.5**	160	V	250	9.0	-

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@3m = M@10m+10.5dB)

Configuration 4:

No	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	13.560	40.0	-2.9	**-42.9**	0	0°	100	35.1	-
2	27.120	40.0	3.7	**-36.3**	294	0°	100	44.7	-
3	37.783	40.0	37.8	**-2.2**				15.5	3m
4	40.680	40.0	36.2	**-3.8**				13.9	3m
5	45.074	40.0	39.6	**-0.4**	50	V	100	11.6	-
6	54.240	40.0	25.0	**-15.0**	220			8.6	3m
7	57.878	40.0	34.5	**-5.5**	271	V	100	8.0	-
8	66.278	40.0	30.6	**-9.4**	136	V	100	7.8	-
9	67.800	40.0	32.1	**-7.9**	28	V	100	7.8	-
10	81.360	40.0	28.8	**-11.2**	91	V	100	9.0	-

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@3m = M@10m+10.5dB)

Configuration 5:

No	Frequency (MHz)	Limit QPeak (dBµV/m)	Measure QPeak (dBµV/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	13.560	40.0	29.5	**-10.5**	45	0°	100	35.1	-
2	27.120	40.0	31.5	**-8.5**	360	0°	100	44.7	-
3	33.332	40.0	30.3	**-9.7**	0	V	100	18.0	-
4	39.829	40.0	33.5	**-6.5**	146	V	100	14.4	-
5	40.680	40.0	36.7	**-3.3**	213	V	100	13.9	-
6	54.240	40.0	35.3	**-4.7**	0	V	100	8.6	-
7	67.800	40.0	29.8	**-10.2**	0	V	150	7.8	-
8	81.360	40.0	28.8	**-11.2**	91	V	100	9.0	-
9	194.441	43.5	39.5	**-4.0**	274	V	279	11.2	-
10	259.000	46.0	26.0	**-20.0**	0	V	250	15.5	
11	323.300	46.0	27.4	**-18.6**	0	V	250	16.9	
12	388.880	46.0	29.7	**-16.3**	0	V	250	19.2	
13	453.720	46.0	31.2	**-14.8**	0	V	250	20.7	
14	518.320	46.0	33.0	**-13.0**	0	V	250	22.5	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@3m = M@10m+10.5dB)

4.7. CONCLUSION

The sample of the equipment IPP350-31T3154A, Sn: 15138PP00008441, tested in the configuration presented in this test report **satisfies** to requirements of class B limits of the standard FCC Part15B and C, for radiated emissions.

5. FUNDAMENTAL FREQUENCY TOLERANCE (15.225E)

5.1. ENVIRONMENTAL CONDITIONS

Date of test	:	June 5th, 2015
Test performed by	:	G.Deschamps
Atmospheric pressure (hPa)	:	997
Relative humidity (%)	:	36
Ambient temperature (°C)	:	23

5.2. TEST SETUP

Frequency of carrier: 13.56 MHz
Upper limit: 13.561356 MHz
Lower limit: 13.558644 MHz
The equipment (RF box) is set in a climatic chamber. Measure is performed on one channel of RF module.

Test setup

5.3. TEST METHOD

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency when the temperature is varied from -30°C to +55°C at the nominal power voltage and the primary power voltage is varied from 85% to 115% of the rated supply voltage at 20°C.

5.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna Loop	ELECTRO-METRICS	EM-6993	C2040210	09/14	09/15
Attenuator 10dB	AEROFLEX	-	A7122207	03/15	03/16
Cable	-	-	A5329190	12/14	12/15
HAR + Imped. Net Mono	SCHAFFNER	CCN1000	A7040078	-	-
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	12/13	12/15
Data Logger	AGILENT	34970A	A6440068	-	-
Data Logger card	AGILENT	34970A	A6449036	-	-
Multimeter	FLUKE	87	A1240170	-	-
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642049	11/14	11/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

5.6. TEST RESULTS

Temperature / Voltage	-30°C	-20°C	20°C	+50°C
Mains voltage: 110V/60Hz				
Frequency Drift (MHz)	- 0.000020	- 0.000020	**13.559580**	- 0.000079
Carrier level (dBc)	- 1.54	- 1.54	**25.8**	- 0.64
Mains voltage: 93,5V/60Hz				
Frequency Drift (MHz)	- 0.000020	- 0.000020	+ 0.000000	- 0.000099
Carrier level (dBc)	- 1.54	- 1.54	+ 0.00	- 0.62
Mains voltage: 126V/60Hz				
Frequency Drift (MHz)	- 0.000020	- 0.000020	+ 0.000000	- 0.000099
Carrier level (dBc)	- 1.54	- 1.54	+ 0.00	- 0.62

Frequency drift measured is 99**Hz** when the temperature is varied from -30°C to +50°C and voltage is varied.

5.1. CONCLUSION

The sample of the equipment IPP350-31T3154A, Sn: 15138PP00008441, tested in the configuration presented in this test report **satisfies** to requirements of the standard FCC Part15C, for fundamental frequency tolerance.

6. BAND-EDGE COMPLIANCE §15.209

6.1. ENVIRONMENTAL CONDITIONS

Date of test : June 4th, 2015
Test performed by : G.Deschamps
Atmospheric pressure (hPa) : 994
Relative humidity (%) : 30
Ambient temperature (°C) : 23

6.2. TEST SETUP

For measurement, the power level calibration of the spectrum analyzer is related to the field strength measured in chapter radiated emission data.

Test setup

6.3. TEST METHOD

Frequency band 13.110-14.010MHz
Following plots show radiated emission level in the frequency band 13.110-14.010MHz with a RBW of 9kHz and a quasi-peak detector. The graphs are obtained with a measuring receiver.

6.4. TEST EQUIPMENT LIST

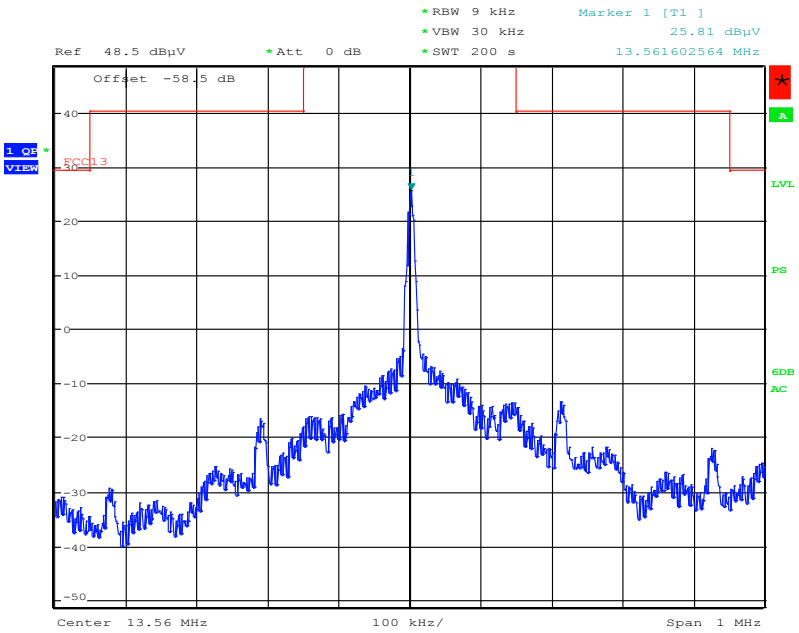
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna Loop	ELECTRO-METRICS	EM-6993	C2040210	09/14	09/15
Attenuator 10dB	AEROFLEX	-	A7122207	03/15	03/16
Cable	-	-	A5329190	12/14	12/15
HAR + Imped. Net Mono	SCHAFFNER	CCN1000	A7040078	-	-
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	12/13	12/15
Data Logger	AGILENT	34970A	A6440068	-	-
Data Logger card	AGILENT	34970A	A6449036	-	-
Multimeter	FLUKE	87	A1240170	-	-
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642049	11/14	11/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

6.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

6.6. TEST RESULTS

Frequency band 13.110-14.010MHz



6.7. CONCLUSION

The sample of the equipment IPP350-31T3154A, Sn: 15138PP00008441, tested in the configuration presented in this test report **satisfies** to requirements of the standard FCC Part15C, for band-edge compliance.

7. OCCUPIED BANDWIDTH

7.1. ENVIRONMENTAL CONDITIONS

Date of test : June 5th, 2015
Test performed by : G.Deschamps
Atmospheric pressure (hPa) : 997
Relative humidity (%) : 36
Ambient temperature (°C) : 23

7.1. SETUP

☐ ***Conducted measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

☑ ***Radiated measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Measurement Procedure:
1. RBW used should not be lower than 1% of the selected span
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. OBW 99% function of spectrum analyzer used

7.2. TEST EQUIPMENT LIST

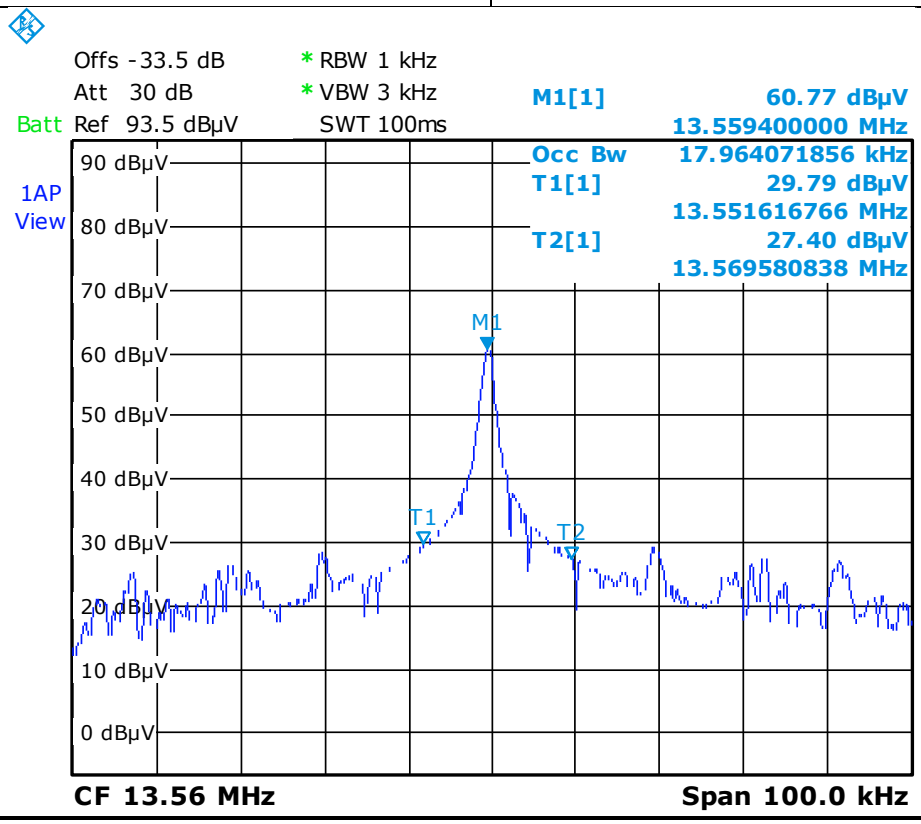
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna Loop	ELECTRO-METRICS	EM-6993	C2040210	09/14	09/15
Attenuator 10dB	AEROFLEX	-	A7122207	03/15	03/16
Cable	-	-	A5329190	12/14	12/15
HAR + Imped. Net Mono	SCHAFFNER	CCN1000	A7040078	-	-
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	12/13	12/15
Data Logger	AGILENT	34970A	A6440068	-	-
Data Logger card	AGILENT	34970A	A6449036	-	-
Multimeter	FLUKE	87	A1240170	-	-
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642049	11/14	11/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

7.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

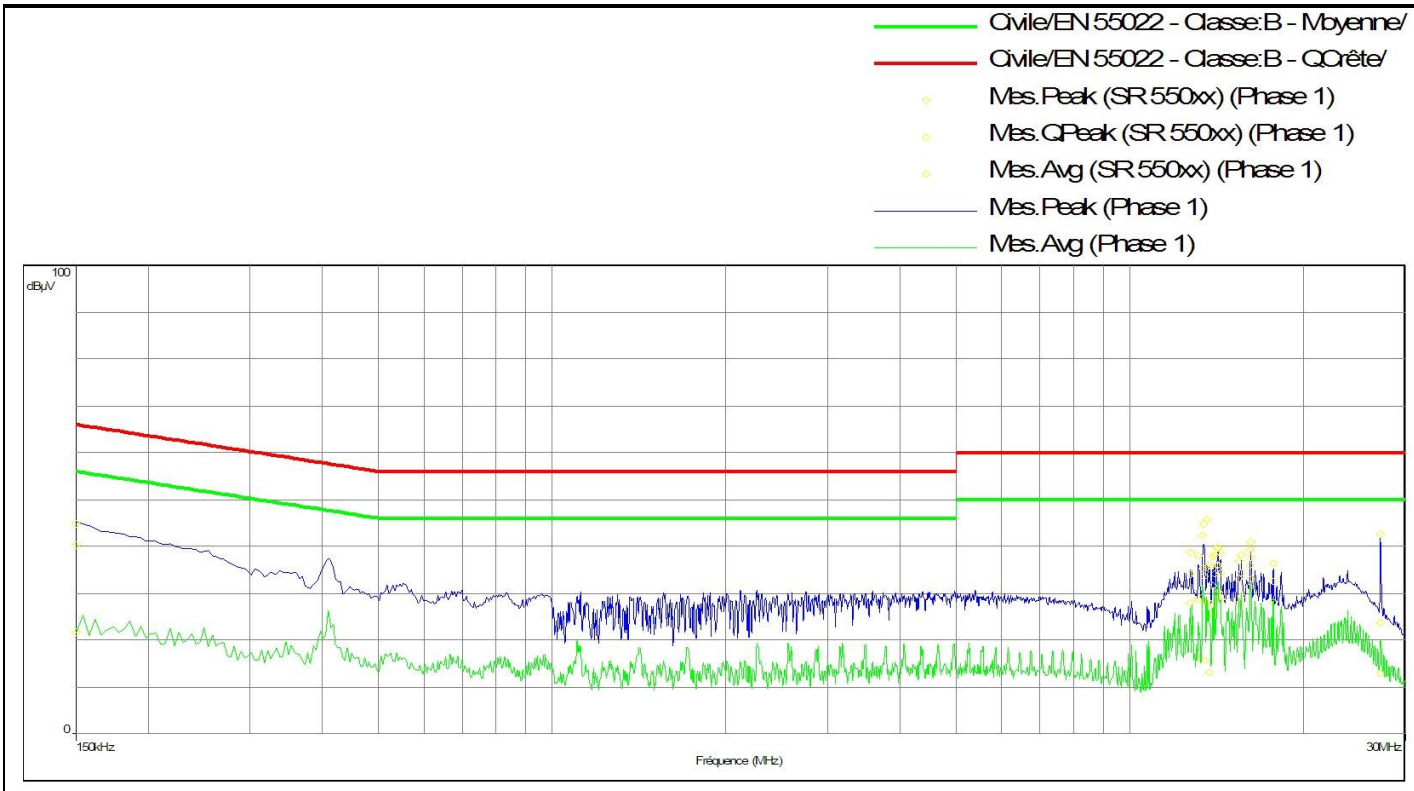
7.4. TEST SEQUENCE AND RESULTS

Channel Frequency (MHz)	99% Occupied Bandwidth (kHz)
13.56	**17.964**



8. ANNEX 1 (GRAPHS)

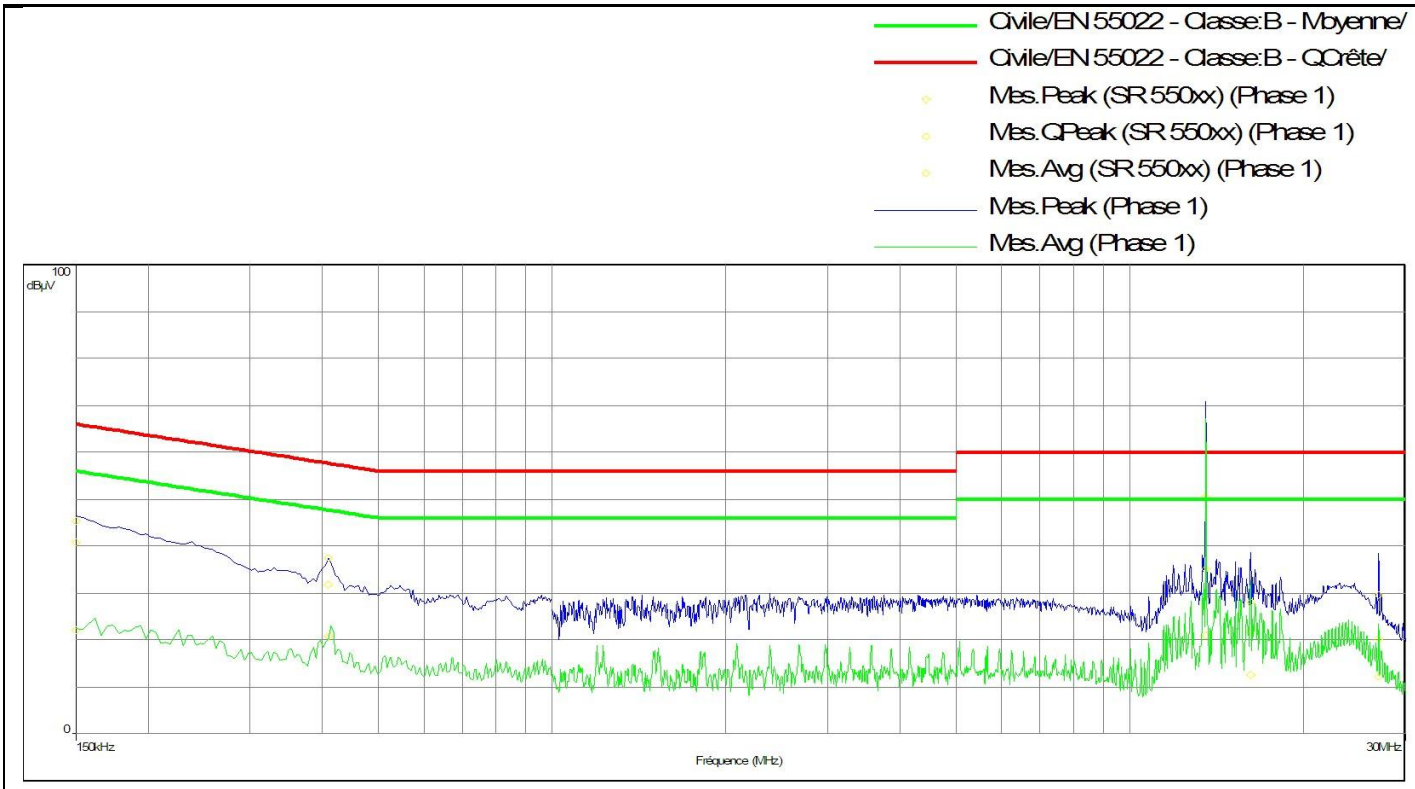
CONDUCTED EMISSIONS			
Graph name:	Emc#1	**Test configuration:**	
Limit:	EN 55022	Configuration 1 (Phase)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



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)
0.15	44.83	40.1	66	-25.9	21.71	56	-34.29
12.748	38.76	34.08	60	-25.92	27.83	50	-22.17
13.148	37.98	28.59	60	-31.41	16.06	50	-33.94
13.356	42.33	35.26	60	-24.74	29.15	50	-20.85
13.44	44.83	33.66	60	-26.34	15.53	50	-34.47
13.604	45.75	35.33	60	-24.67	27.72	50	-22.28
13.744	36.04	26.93	60	-33.07	13.02	50	-36.98
13.908	37.77	31.65	60	-28.35	25.26	50	-24.74
14.028	38.23	34.11	60	-25.89	28.28	50	-21.72
14.152	39.58	35.94	60	-24.06	30.12	50	-19.88
14.212	39.62	35.91	60	-24.09	30.24	50	-19.76
14.336	38.49	34.31	60	-25.69	28.64	50	-21.36
15.432	36.9	33.04	60	-26.96	27.78	50	-22.22
15.616	38.24	34.37	60	-25.63	29.32	50	-20.68
16.168	39.33	36	60	-24	31.42	50	-18.58
16.228	40.92	37.58	60	-22.42	33.09	50	-16.91
17.692	36.24	32.5	60	-27.5	28.08	50	-21.92
27.188	42.55	23.62	60	-36.38	12.88	50	-37.12

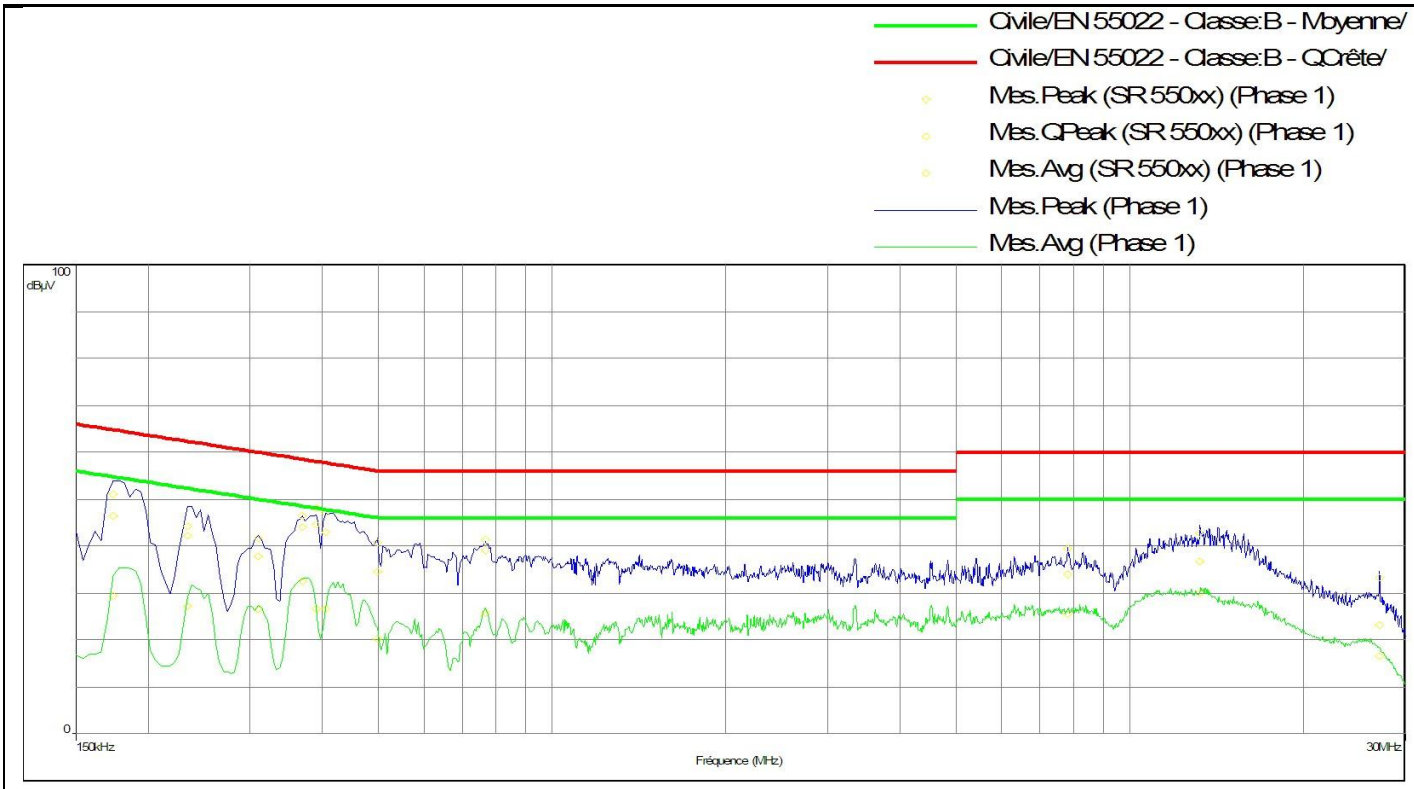
CONDUCTED EMISSIONS			
Graph name:	Emc#2	**Test configuration:**	
Limit:	EN 55022	Configuration 1 (Neutral)	
Class:	B		
Frequency range:	**[150kHz - 30MHz]**		
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz



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)
0.15	45.26	40.74	66	-25.26	22.1	56	-33.9
0.41	37.45	31.8	57.65	-25.85	20.72	47.65	-26.93
13.544	50.45	35.02	60	-24.98	20.85	50	-29.15
16.212	28.14	21.88	60	-38.12	12.39	50	-37.61
26.96	29.51	20.19	60	-39.81	12.16	50	-37.84

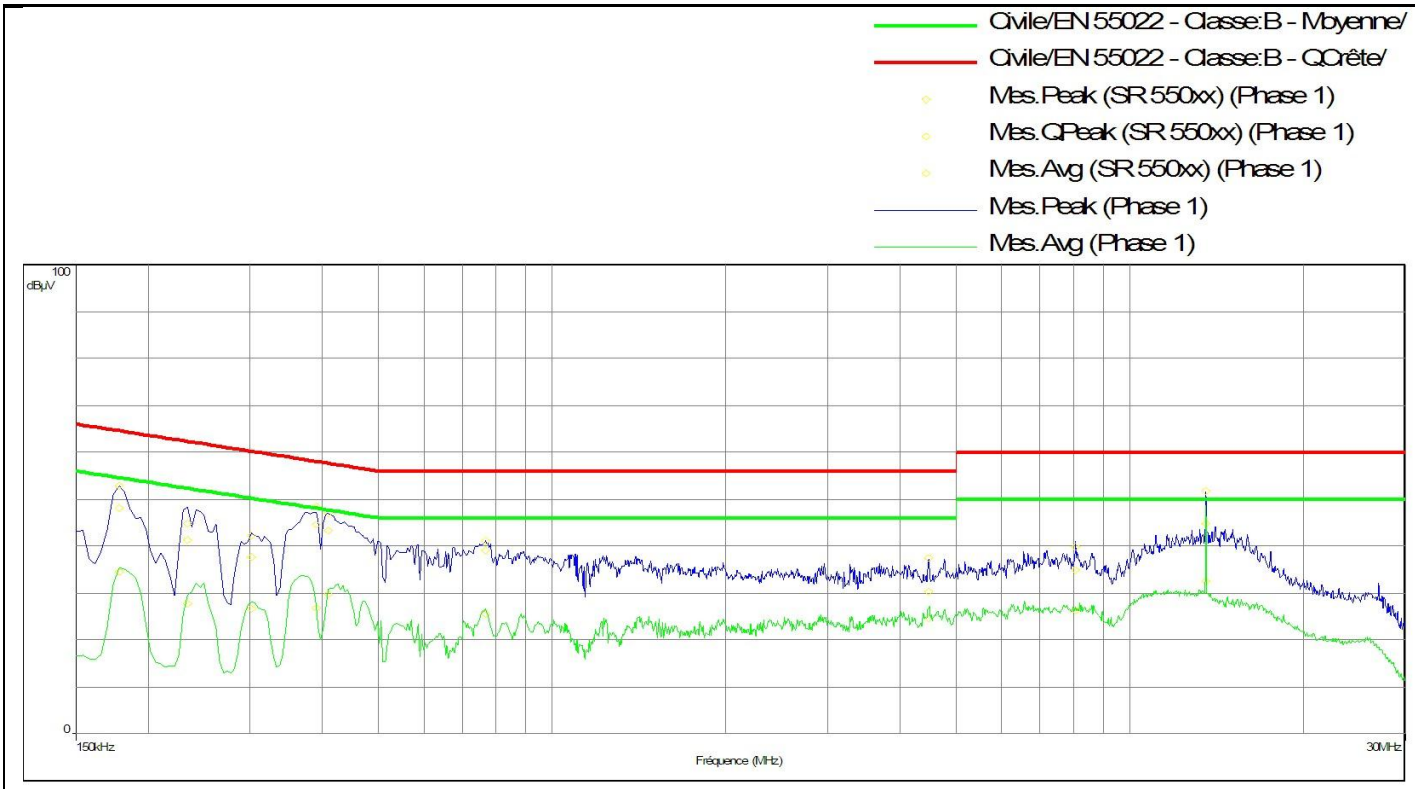
CONDUCTED EMISSIONS			
Graph name:	Emc#3	**Test configuration:**	
Limit:	EN 55022	Configuration 2 (Phase)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



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)
0.174	51.05	46.43	64.77	-18.33	29.44	54.77	-25.33
0.234	44.13	42.12	62.31	-20.19	27.12	52.31	-25.19
0.31	41.65	37.76	59.97	-22.21	26.45	49.97	-23.52
0.37	46.45	44.05	58.5	-14.45	32.44	48.5	-16.06
0.39	48.09	44.53	58.06	-13.54	26.62	48.06	-21.44
0.406	47.1	42.94	57.73	-14.79	26.7	47.73	-21.03
0.498	40.67	34.57	56.03	-21.46	20.18	46.03	-25.86
0.766	41.2	39.06	56	-16.94	25.6	46	-20.4
7.804	39.42	34.04	60	-25.96	25.48	50	-24.52
13.228	42.75	36.72	60	-23.28	29.83	50	-20.17
27.044	33.29	23.1	60	-36.9	16.51	50	-33.49

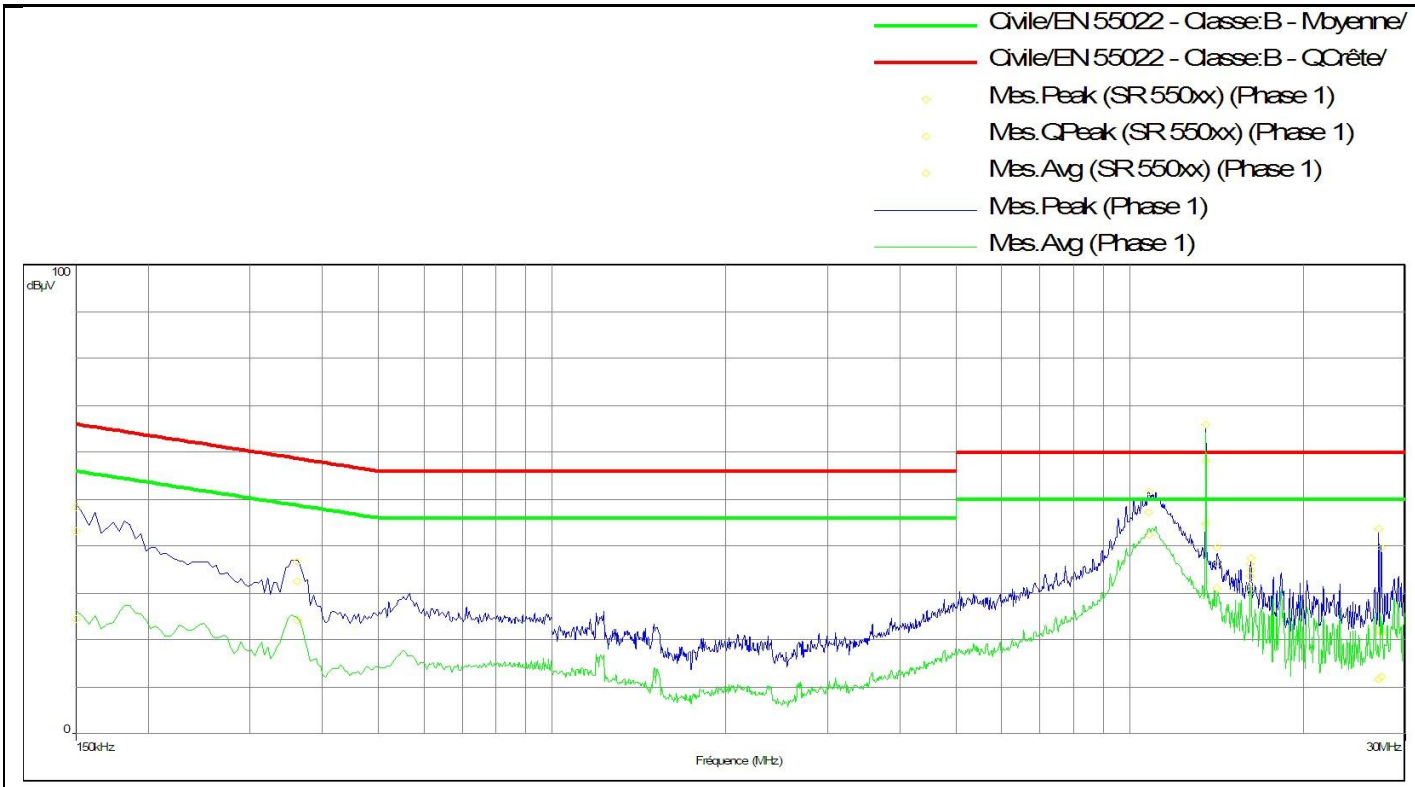
CONDUCTED EMISSIONS			
Graph name:	Emc#4	**Test configuration:**	
Limit:	EN 55022	Configuration 2 (Neutral)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz



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)
0.178	52.76	48	64.58	-16.58	34.41	54.58	-20.17
0.234	44.76	41.2	62.31	-21.1	27.77	52.31	-24.53
0.302	42.19	37.55	60.19	-22.64	26.66	50.19	-23.52
0.39	48.41	44.62	58.06	-13.45	26.78	48.06	-21.28
0.41	46.95	43.33	57.65	-14.32	29.8	47.65	-17.85
0.766	41.17	39	56	-17	25.47	46	-20.53
4.48	37.36	30.34	56	-25.66	24.63	46	-21.37
8.06	39.79	34.86	60	-25.14	26.28	50	-23.72
13.56	51.77	44.7	60	-15.3	32.53	50	-17.47

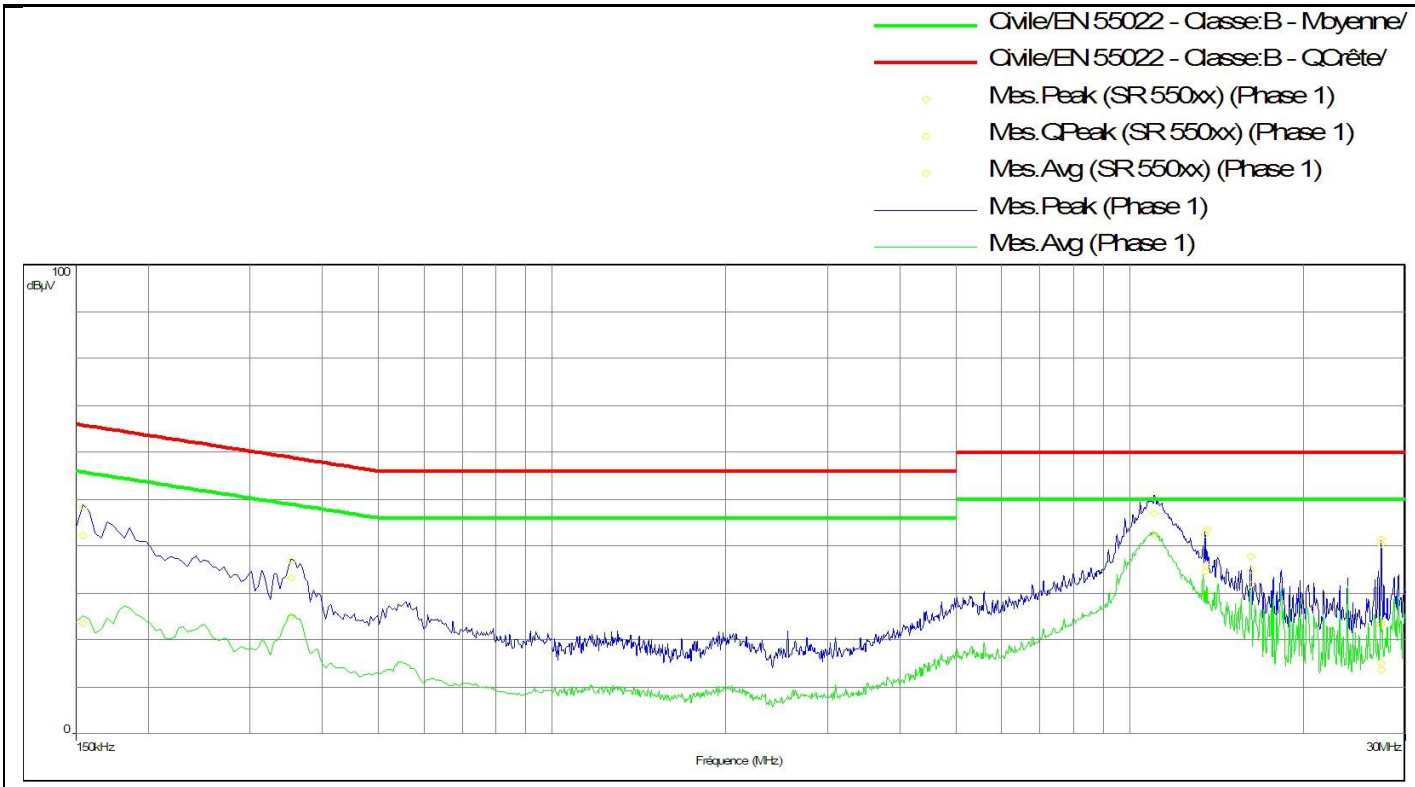
CONDUCTED EMISSIONS			
Graph name:	Emc#5	**Test configuration:**	
Limit:	EN 55022	Configuration 3 (Phase)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



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)
0.15	48.21	43.09	66	-22.91	24.43	56	-31.57
0.362	36.65	32.47	58.68	-26.21	24.21	48.68	-24.47
10.78	51.54	47.19	60	-12.81	42.44	50	-7.56
13.56	65.84	58.22	60	-1.78	44.74	50	-5.26
14.152	39.68	36.16	60	-23.84	31.1	50	-18.9
16.168	36.12	33.6	60	-26.4	30.13	50	-19.87
16.228	37.48	34.95	60	-25.05	31.78	50	-18.22
26.968	43.61	22.16	60	-37.84	11.6	50	-38.4
27.276	39.68	21.55	60	-38.45	12.16	50	-37.84

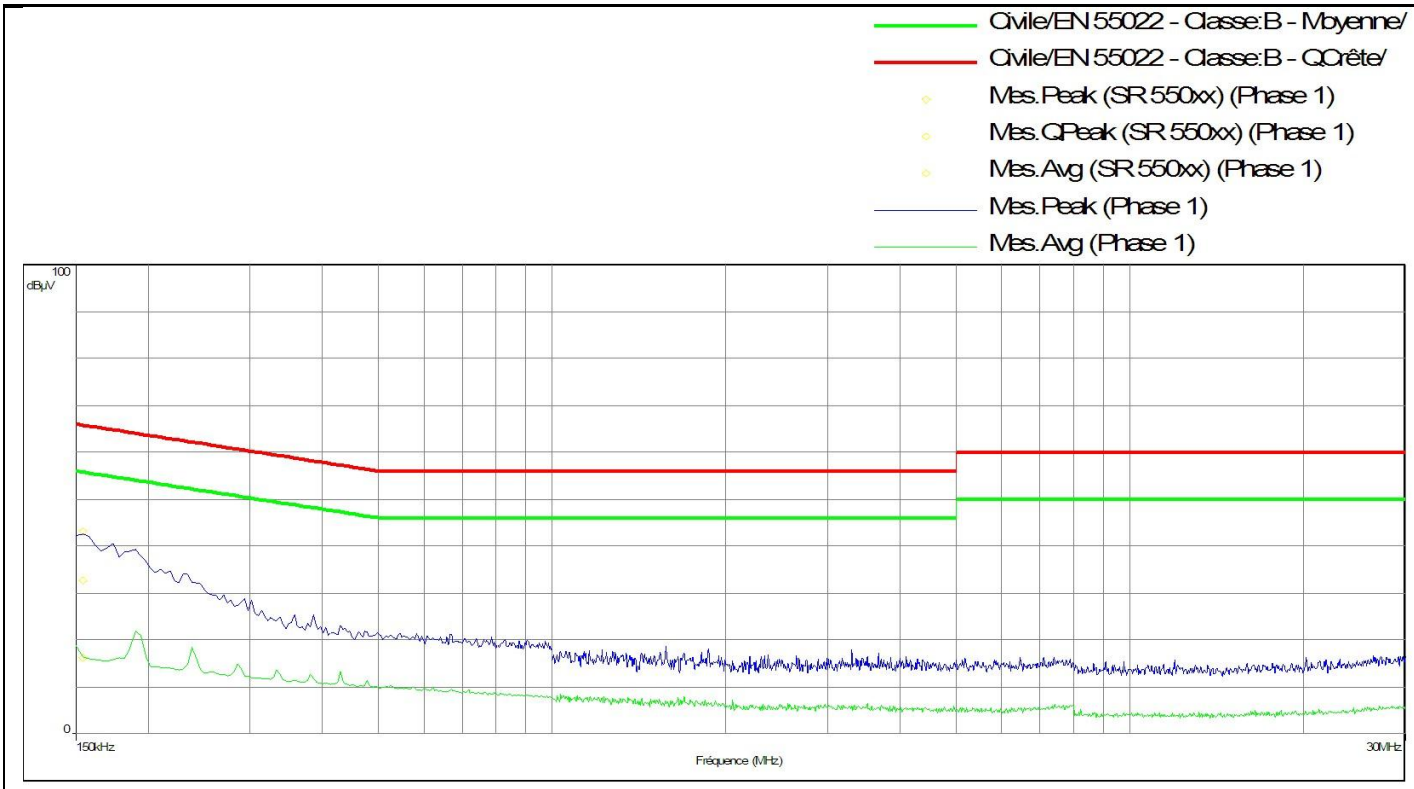
CONDUCTED EMISSIONS			
Graph name:	Emc#6	**Test configuration:**	
Limit:	EN 55022	Configuration 3 (Neutral)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz



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)
0.154	48.21	42.24	65.78	-23.54	23.5	55.78	-32.28
0.354	36.81	33.16	58.87	-25.71	24.88	48.87	-23.99
11.024	50.54	47.06	60	-12.94	42.31	50	-7.69
13.484	42.58	34.45	60	-25.55	29.11	50	-20.89
13.604	43.47	35.81	60	-24.19	30.05	50	-19.95
16.228	37.75	34.9	60	-25.1	31.83	50	-18.17
27.228	40.31	23.04	60	-36.96	13.52	50	-36.48
27.244	41.55	23.58	60	-36.42	14.98	50	-35.02

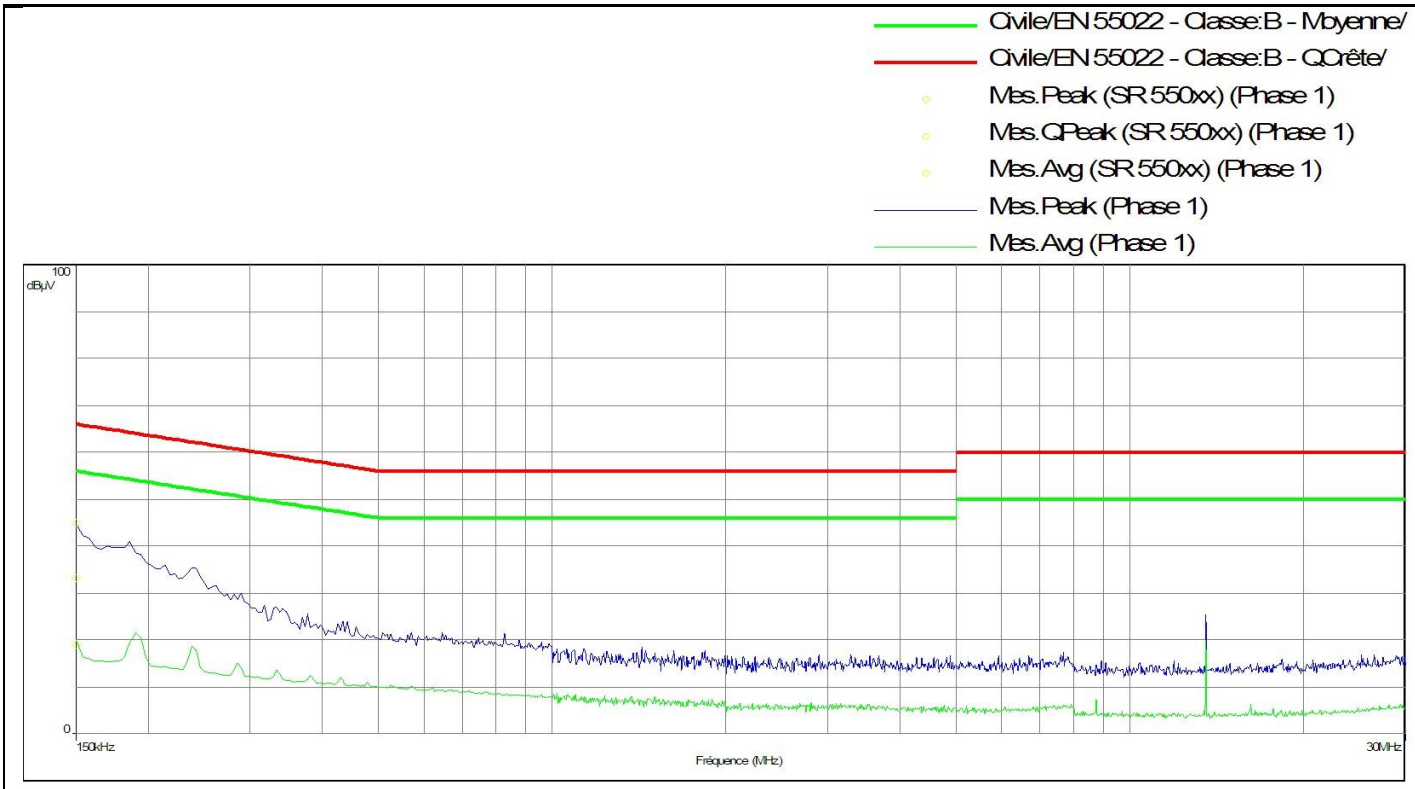
CONDUCTED EMISSIONS			
Graph name:	Emc#7	**Test configuration:**	
Limit:	EN 55022	Configuration 4 (Phase)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



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)
0.154	43.17	32.69	65.78	-33.09	16.07	55.78	-39.71

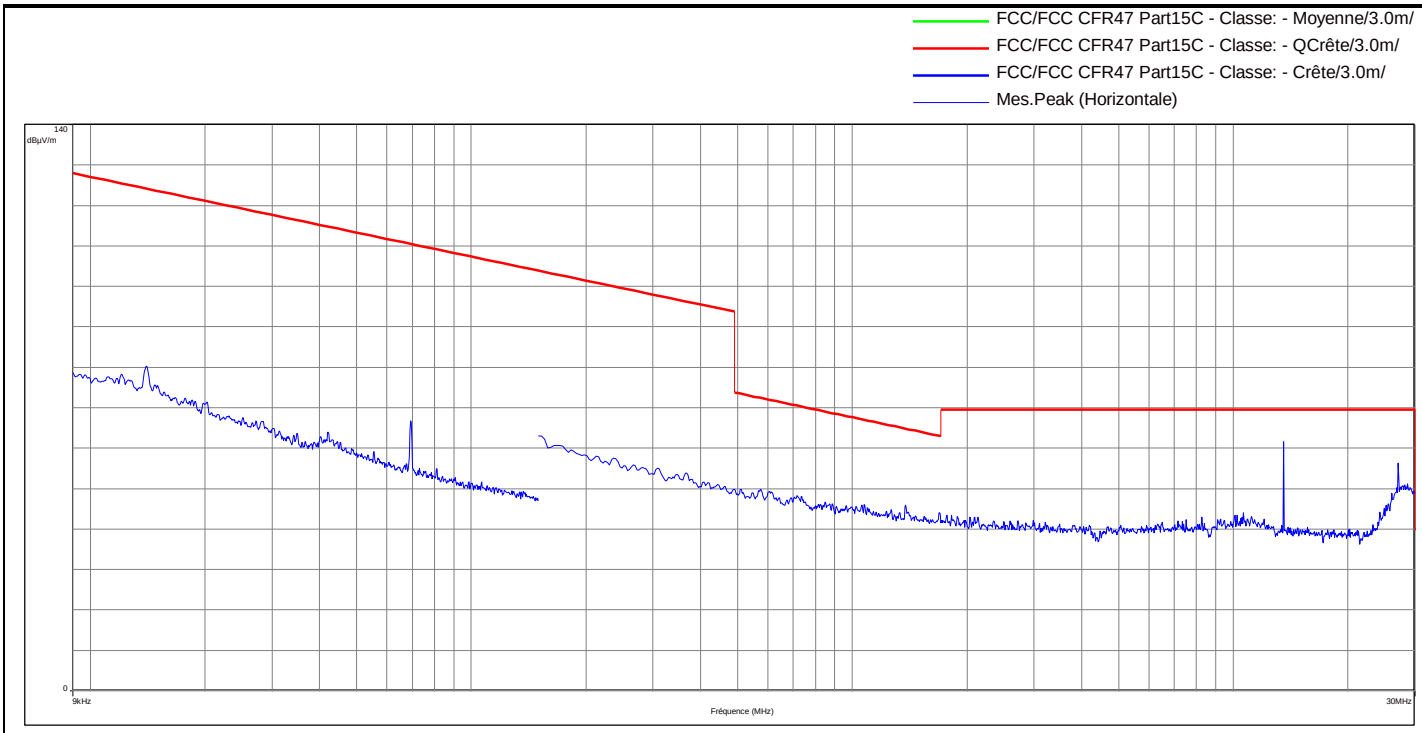
CONDUCTED EMISSIONS			
Graph name:	Emc#8	**Test configuration:**	
Limit:	EN 55022	Configuration 4 (Neutral)	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Neutral	**VBW :**	30kHz



Spurious emissions

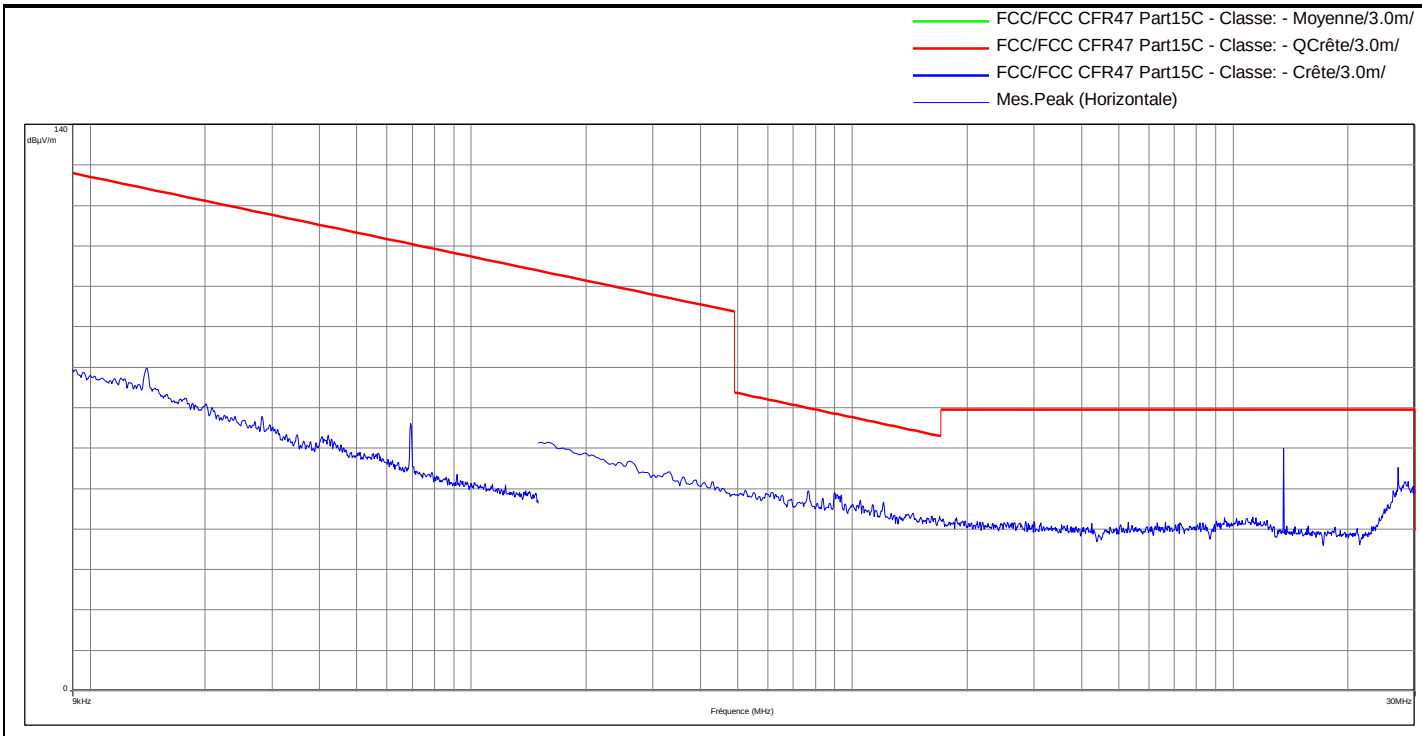
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.15	44.94	33.18	66	-32.82	18.99	56	-37.01

RADIATED EMISSIONS			
Graph name:	Emr#1	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 1 - (0°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



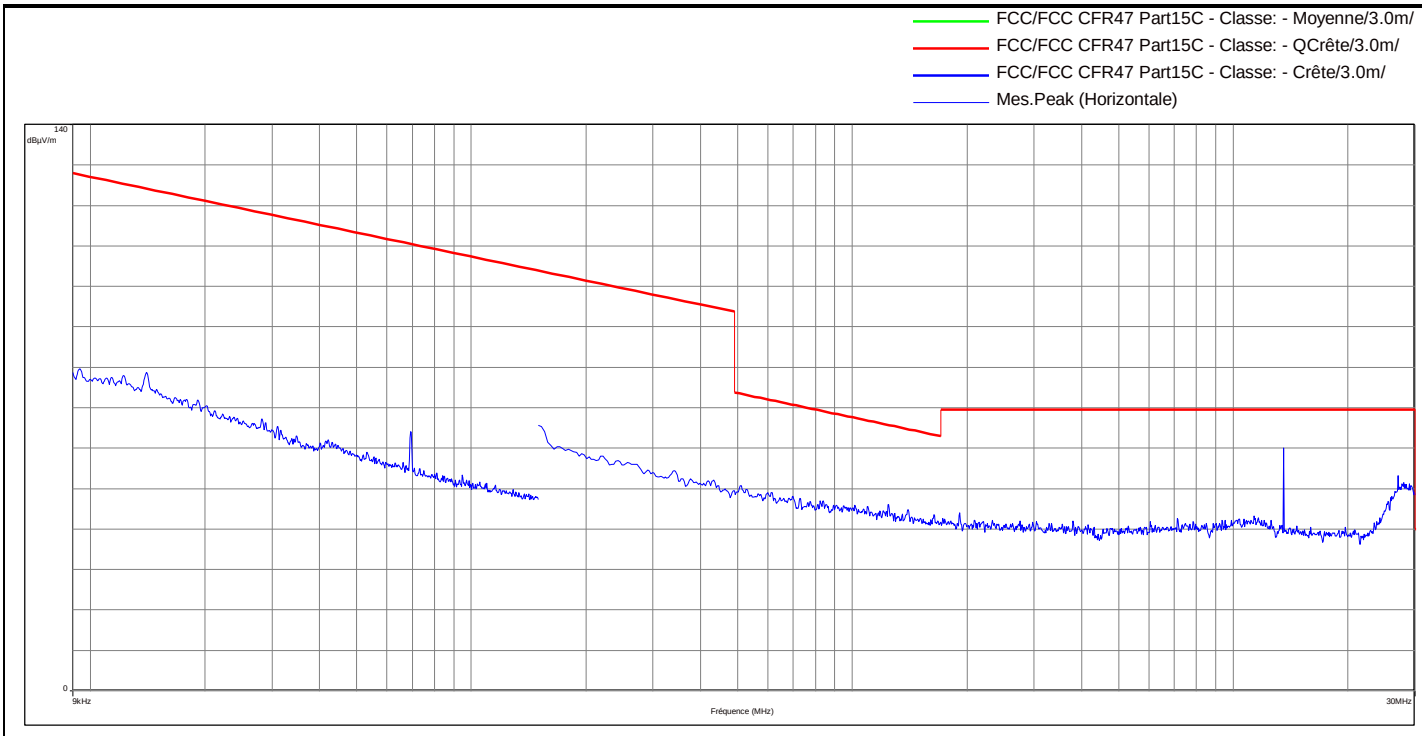
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#2	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 1 - (90°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



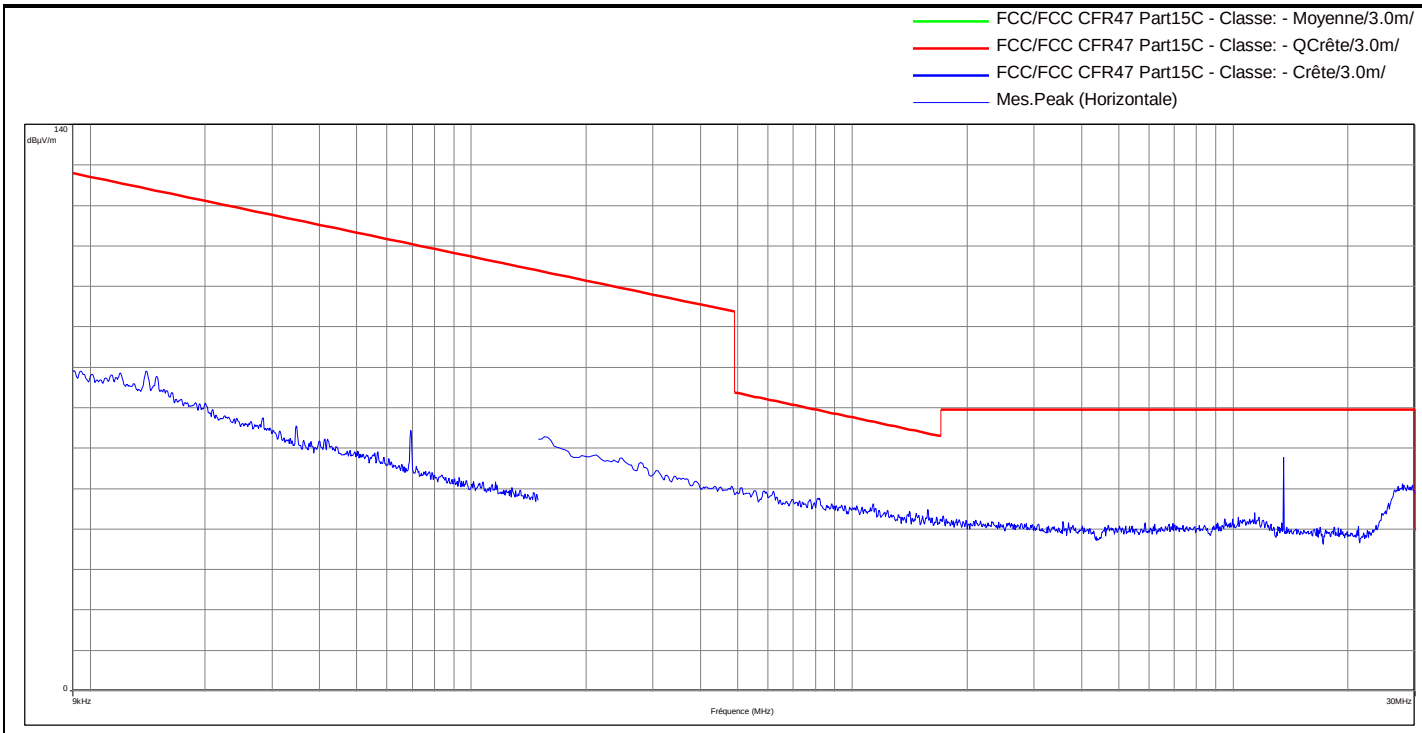
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#3	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 2 - (0°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



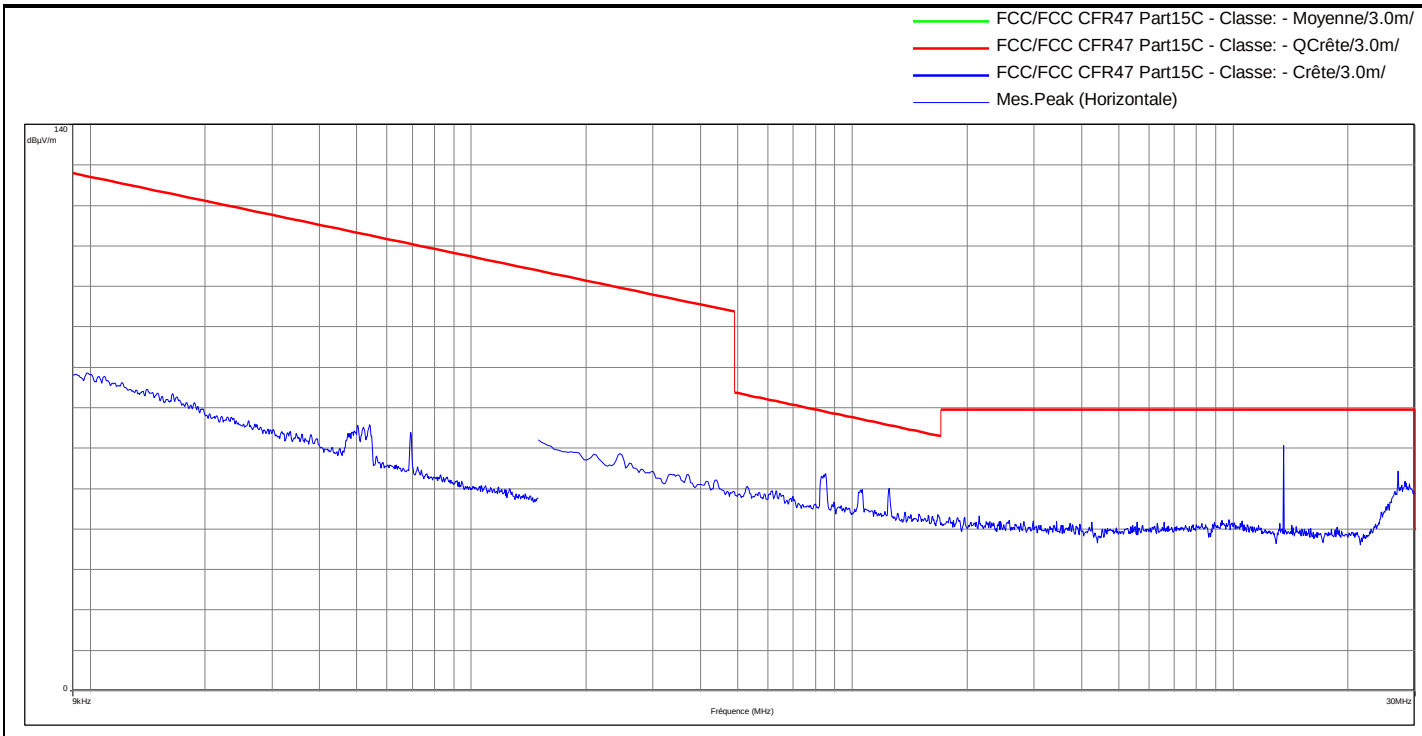
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#4	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 2 - (90°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



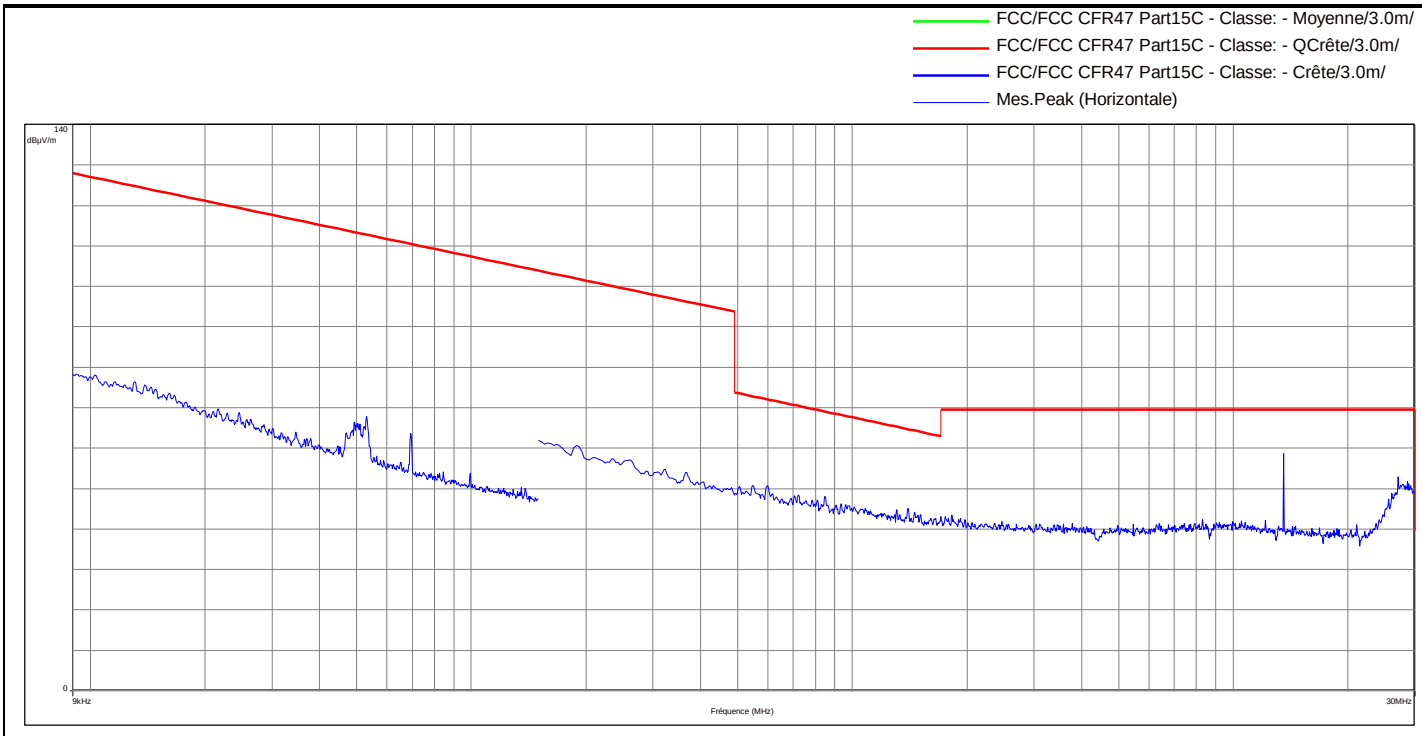
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#5	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 3 - (0°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



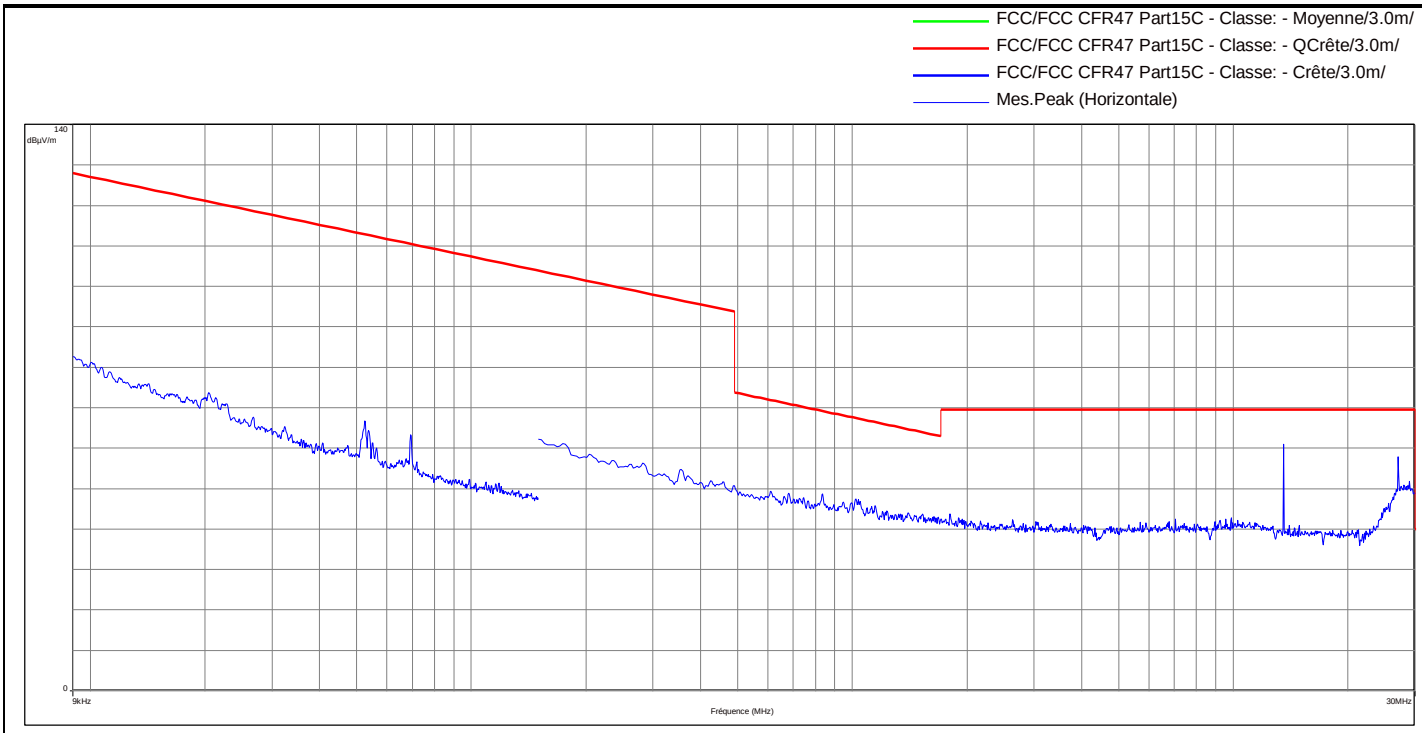
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#6	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 3 - (90°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



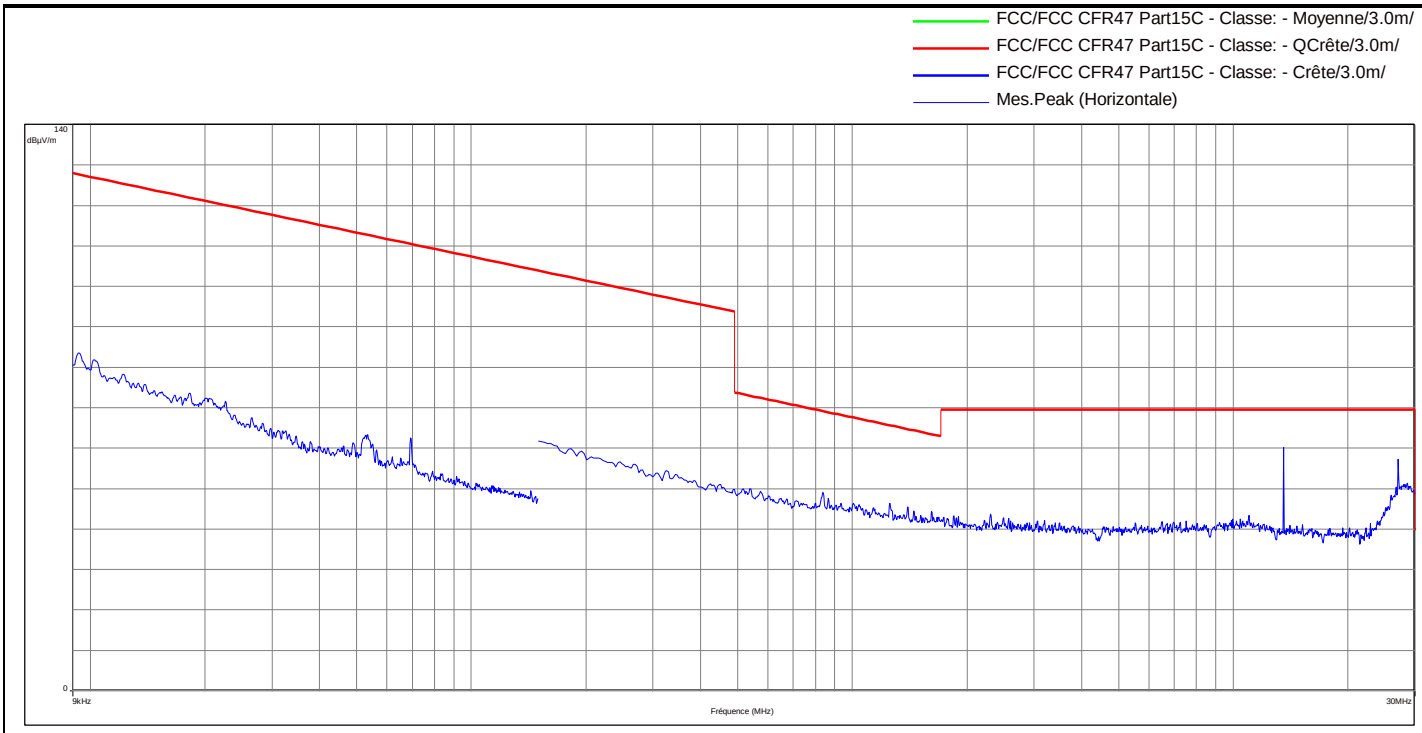
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#7	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 4 - (0°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



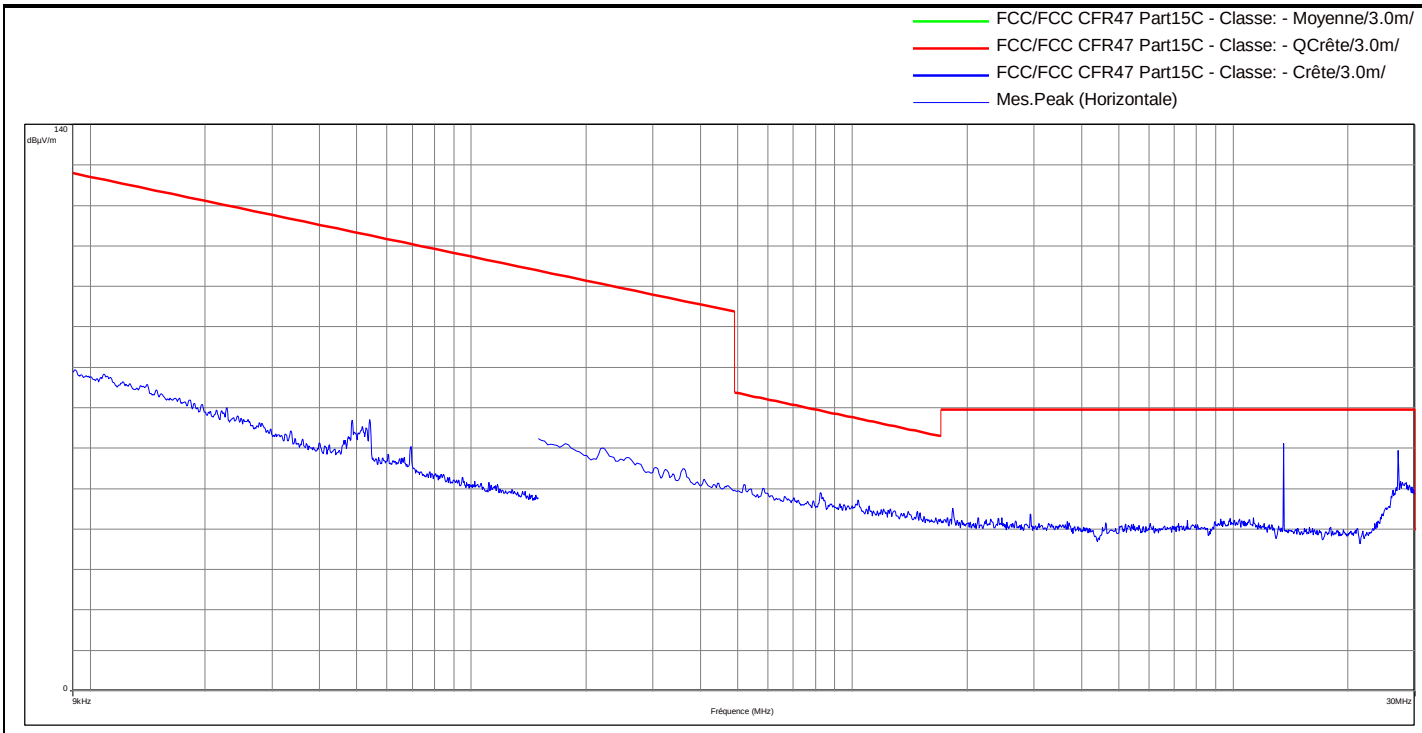
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#8	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 4 - (90°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



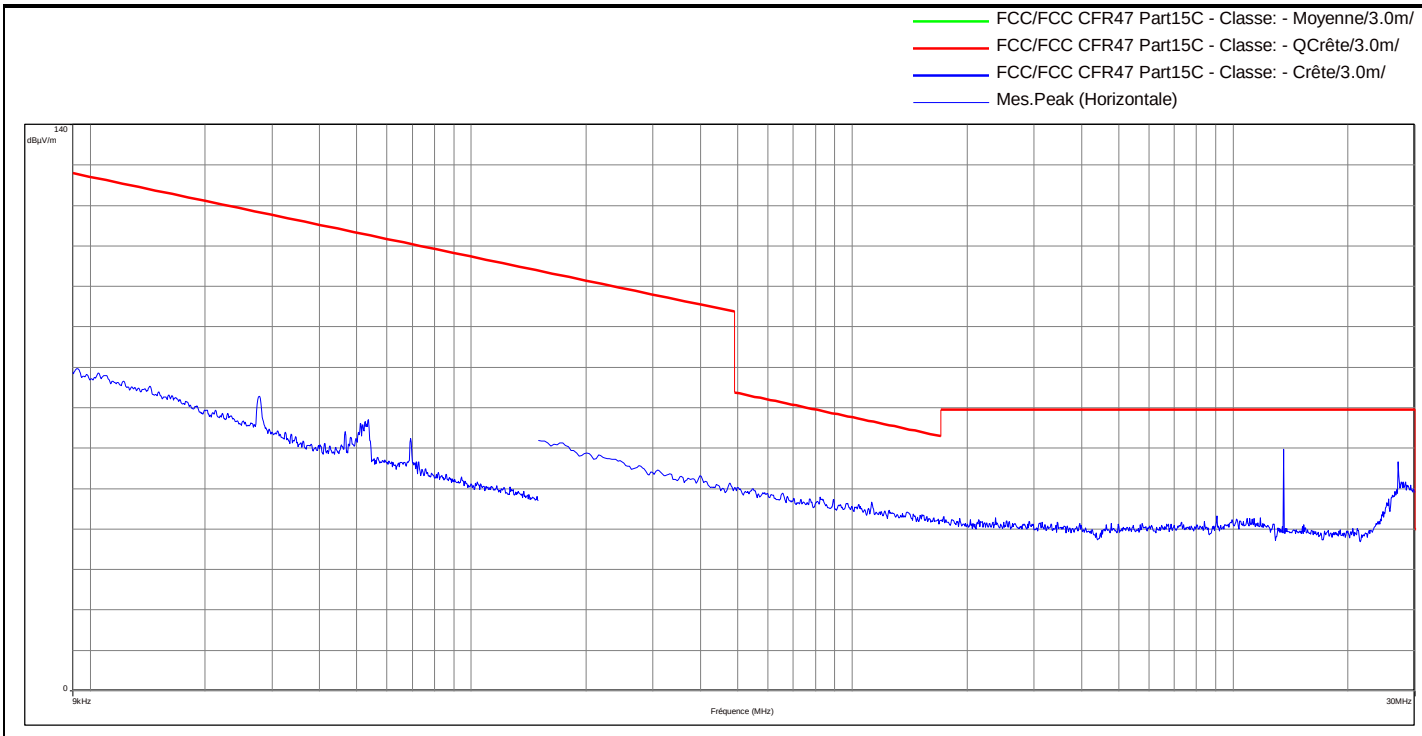
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#9	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 5 - (0°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



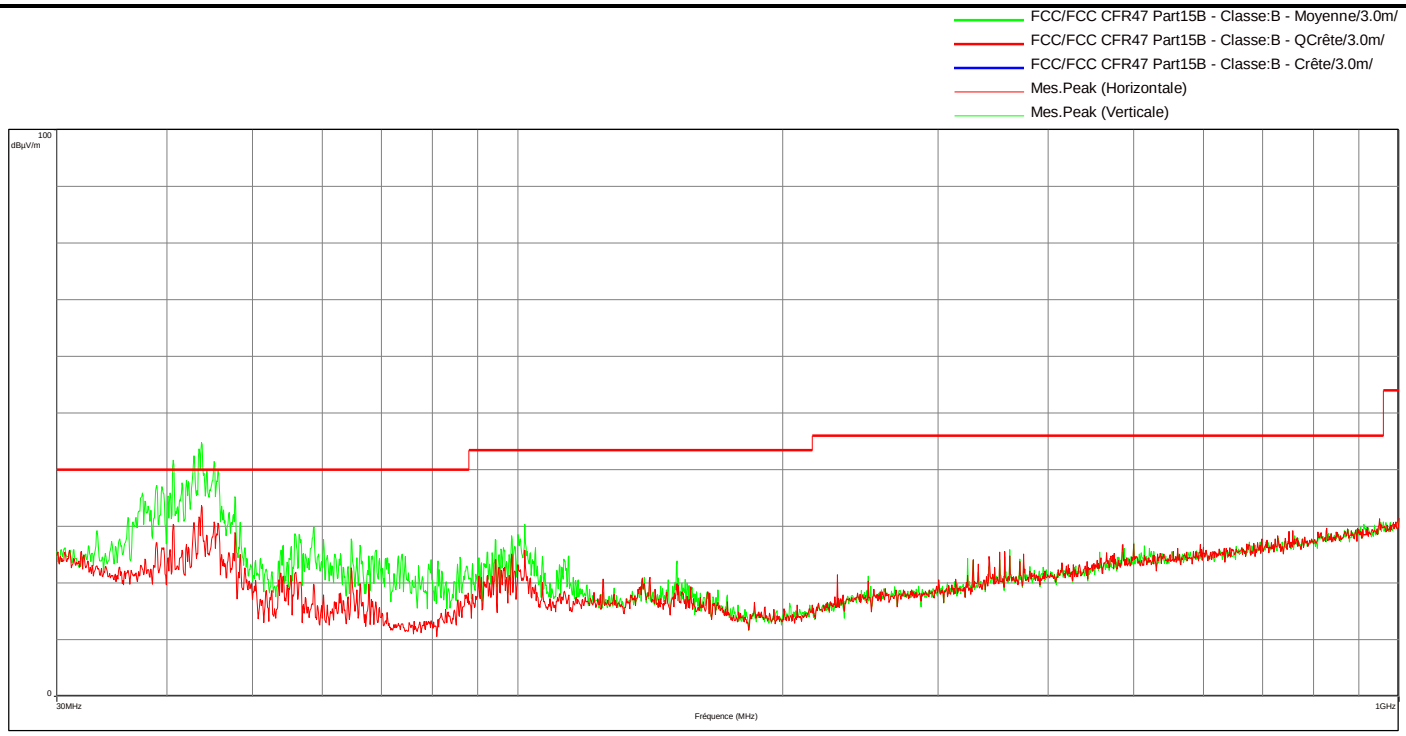
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#10	**Test configuration:**	
Limit:	FCC CFR47 Part15C	Configuration 5 - (90°)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



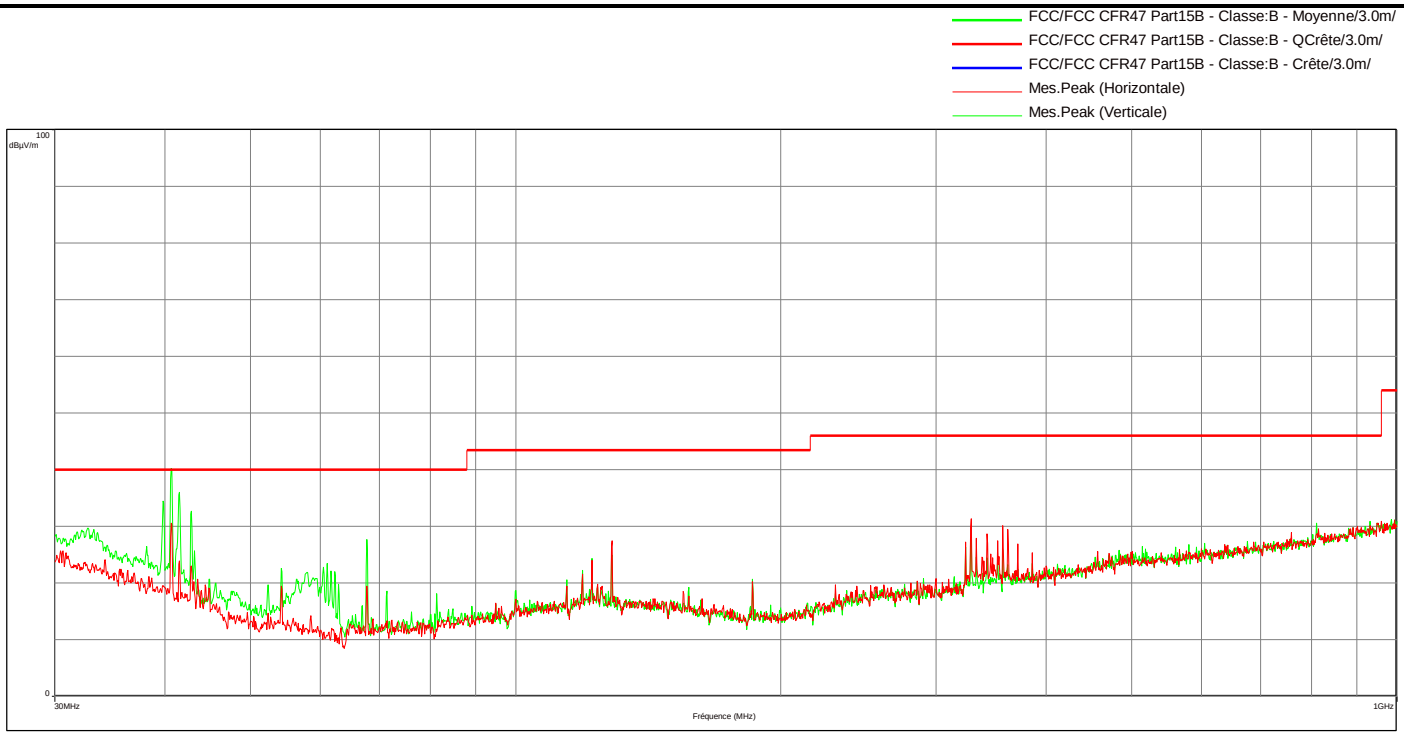
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#11	**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



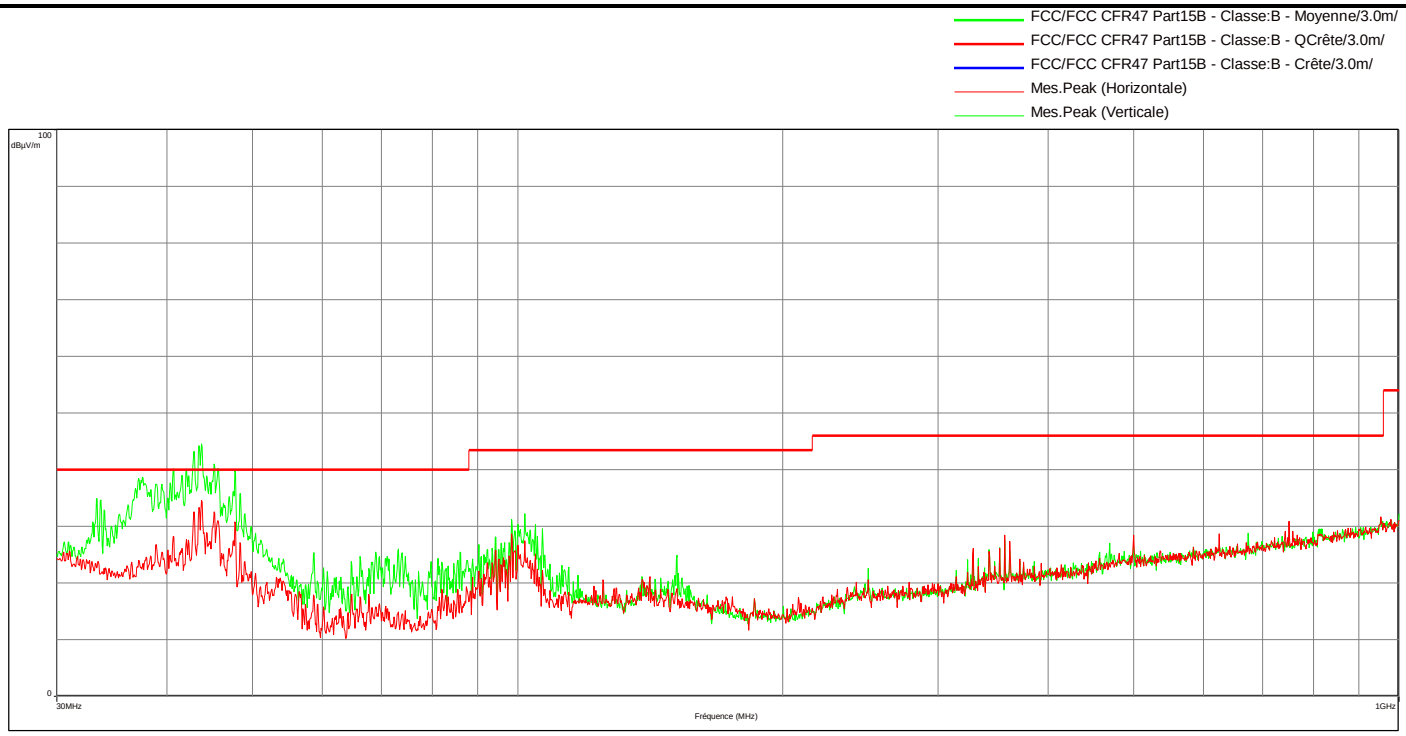
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#12	**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



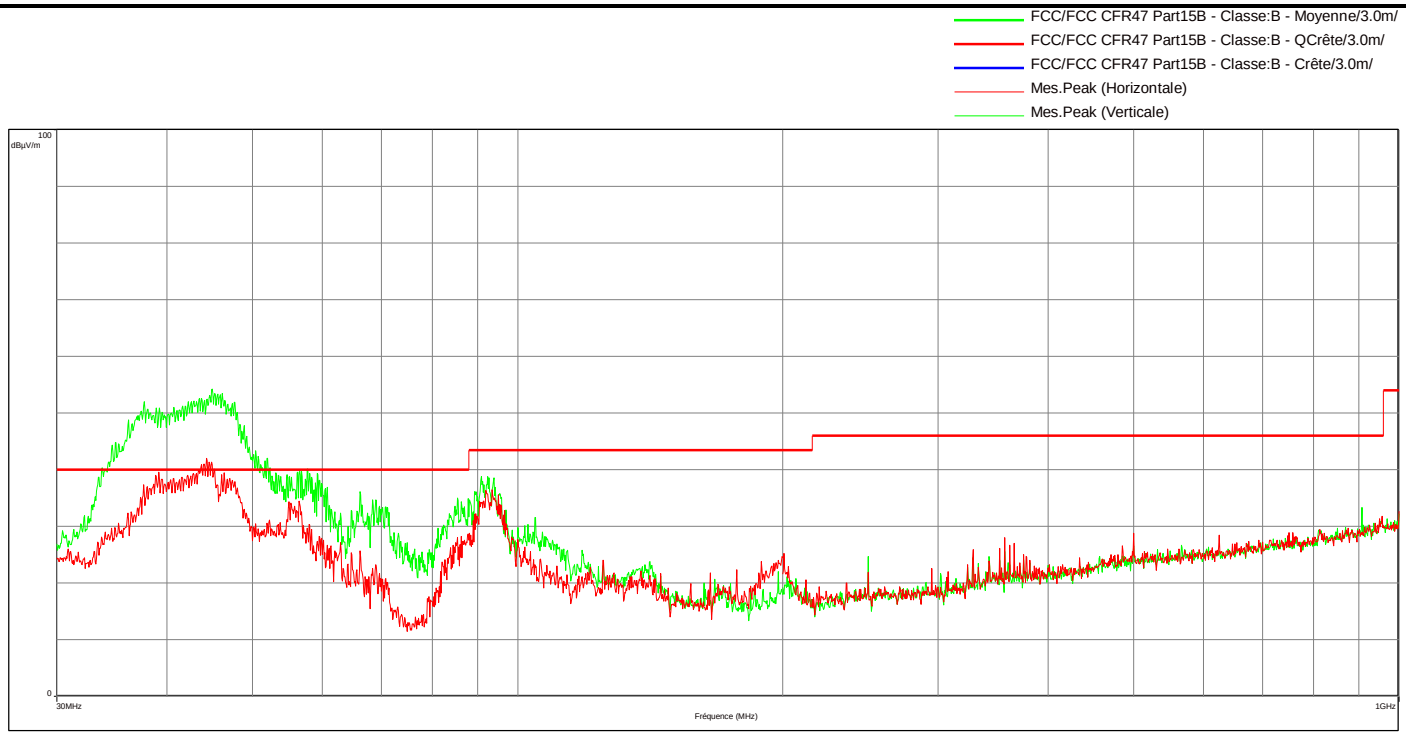
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#13	**Test configuration:**	
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 3 <1GHz	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal & Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



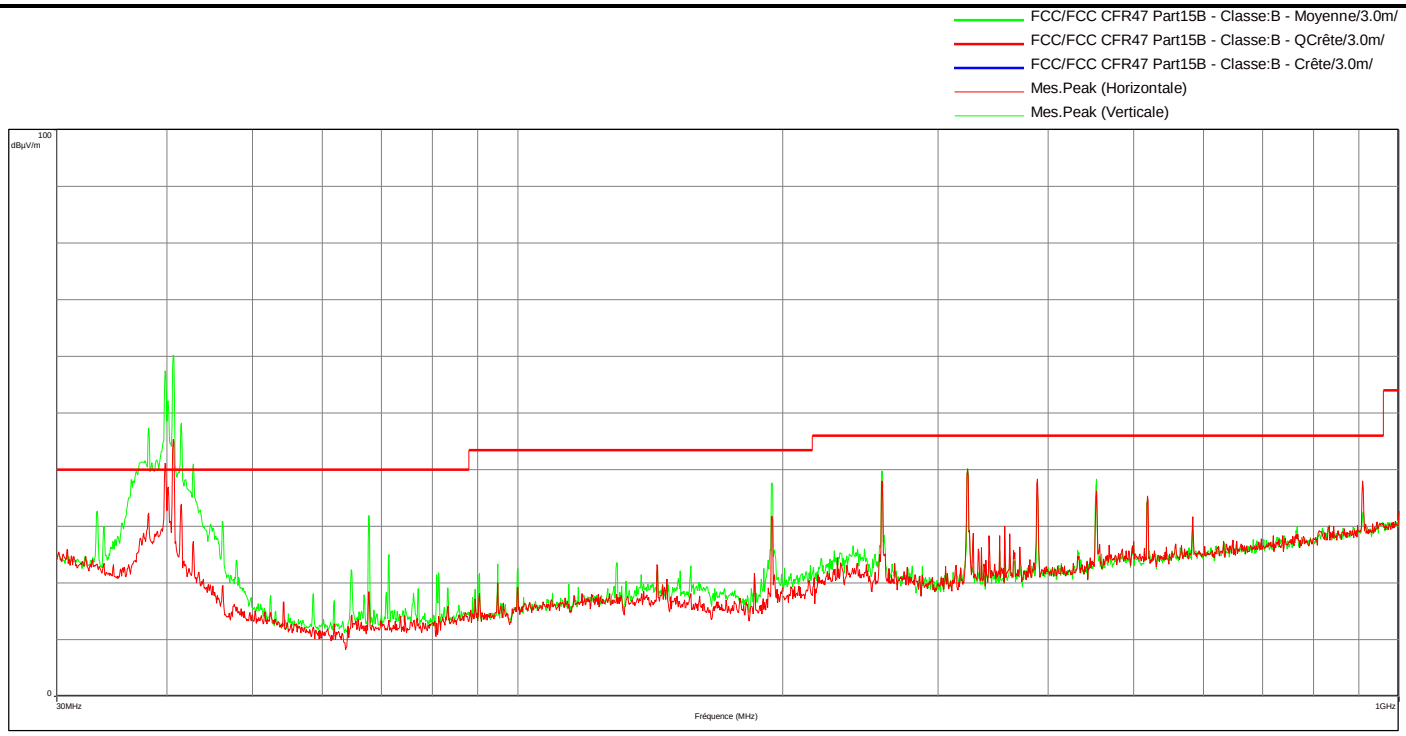
Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#14	**Test configuration:**	
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 4 <1GHz	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal & Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

RADIATED EMISSIONS			
Graph name:	Emr#15	**Test configuration:**	
Limit:	FCC CFR47 Part15B	(H+V) - Configuration 5 <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)	Polarization
194.407*	31.79	Horizontal
518.32*	35.33	Horizontal
583.64*	31.68	Horizontal
39.826*	57.45	Vertical
40.676*	60.27	Vertical
41.509*	48.26	Vertical
67.791*	31.9	Vertical
194.441*	37.63	Vertical
517.64*	34.23	Vertical

*Not due to EUT (EUT is powered by Laptop USB)

18. 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.*