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# Rapport d'essai / Test report

N° 456640-R1-E-Variation N°1      JDE : 121068

**DELIVRE A / ISSUED TO** : **INGENICO**  
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26958 VALENCE CEDEX 9

**Objet / Subject** : Essais de compatibilité électromagnétique partiels conformément aux normes  
*Partials electromagnetic compatibility tests according to the standards FCC CFR 47 Part 15, Subpart B et C.*  
**RSS-GEN / RSS-210**

**Matériel testé / Apparatus under test** :

- **Produit / Product** : **Lecteur sans contact / Contactless reader**
- **Marque / Trade mark** : **INGENICO**
- **Constructeur / Manufacturer** : **INGENICO**
- **Type / Model** : **IUC150-00T2396**
- **N° de série / serial number** : **12200UN70000781**
- **FCC ID** : **XKB-IUC15YCL**
- **IC** : **2586D-IUC15YCL**

**Date des essais / Test date** : Du 14 Mai au 12 Novembre 2013 / *From May 14<sup>th</sup> to November 12<sup>th</sup>, 2013*

**Lieu d'essai / Test location** : **LCIE SUD-EST**  
ZI Centr'Alp – 170 rue de Chatagnon  
38430 MOIRANS - FRANCE

**Test réalisé par / Test performed by** : Nicolas BILLAUD

**Ce document comporte / Composition of document** : 32 pages.

Ecrit par / *Written by*,  
Nicolas BILLAUD

MOIRANS, LE 12 NOVEMBRE 2013 / *NOVEMBER 12TH, 2013*

Approuvé par / *Approved by*,  
Anthony MERLIN



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**1. TEST PROGRAM**

- Standard:**
- FCC Part 15, Subpart B (Digital Devices)
  - FCC Part 15, Subpart C
  - ANSI C63.4 (2003)
  - RSS-Gen Issue 3 – Dec 2010
  - RSS-210 Issue 8 – Dec 2010

EMISSION TEST	LIMITS			RESULTS (Comments)
<b>Limits for conducted disturbance at mains ports</b> 150kHz-30MHz CFR 47 §15.207	<b>Frequency</b>	<b>Quasi-peak value (dBµV)</b>	<b>Average value (dBµV)</b>	NP
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
<b>Radiated emissions</b> 9kHz-30MHz CFR 47 §15.209 (a) CFR 47 §15.225 RSS-Gen §4.9	<b>Measure at 300m</b> 9kHz-490kHz : 67.6dBµV/m /F(kHz) <b>Measure at 30m</b> 490kHz-1.705MHz : 87.6dBµV/m /F(kHz) 1.705MHz-30MHz : 29.5 dBµV/m			PASS
<b>Radiated emissions</b> 30MHz-25GHz* CFR 47 §15.209 (a) CFR 47 §15.225 RSS-Gen §4.9	<b>Measure at 3m</b> 30MHz-88MHz : 40 dBµV/m 88MHz-216MHz : 43.5 dBµV/m 216MHz-960MHz : 46.0 dBµV/m Above 960MHz : 54.0 dBµV/m			PASS
<b>Fundamental field strength limit</b> CFR 47 §15.225 RSS-210 §A2.6	<b>Operation within the band</b> <b>13.110-14.010 MHz</b>			PASS
<b>Fundamental frequency tolerance</b> CFR 47 §15.225 RSS-210 §A2.6	<b>Operation within the band</b> <b>13.110-14.010 MHz</b>			PASS
<b>Band edge compliance</b> CFR 47 §15.225 RSS-210 §A2.6	<b>Operation within the band</b> <b>13.110-14.010 MHz</b>			PASS
<b>Occupied bandwidth</b> RSS-Gen §4.6.1	No limit			See results on §5
<b>Receiver Spurious Emission**</b> RSS-Gen §4.10	See RSS-Gen §4.10			NA**

\*§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.

- PASS: EUT complies with standard's requirement
- FAIL: EUT does not comply with standard's requirement
- N/A: Not Applicable
- N/P: Test Not Performed



## 2. SYSTEM TEST CONFIGURATION

### 2.1. JUSTIFICATION

Two references exist: IUC150-00T2396 and IUC150-00T2398.

All tests are performed on the product with the following reference (worst case): IUC150-00T2396.  
The equipment with the reference: IUC150-00T2398 has two ground stubs which change of position.

### 2.2. HARDWARE IDENTIFICATION

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

**IUC150-00T2396**

Serial number: 12200UN70000781

FCC ID: **XKB-IUC15YCL**

IC: **2586D-IUC15YCL**

- Internal max frequencies: 387MHz

- **Power supply:**

- Configuration N°1: IUC150 supplied by the USB of the laptop

- Configuration N°2: IUC150 supplied by AC/DC switching power supply: ingenico P/N: 192011331 ;  
model: PSAC05R-50 ; SN: Z11480039A1

- Rating: 5VDC.

- Frequency: DC

- **Input/output:**

- 1 x USB port

- 2 x SAM

- 1 x Earth connection

- 1 x COM

- 1 x Wake up function

- **Auxiliaries used for testing:**

- 1 x Laptop TOSHIBA SATELITE S1410-704 (PS141E-04YCM-3V), sn: 13594938G

- 1 x contactless card

- 2 x SAM

- **I/O cables used for testing:**

- 1 x USB cable, shielded, length: 1.5m

- 1 x COM cable, unshielded, length: 1.5m

- 1 x Earth cable, unshielded, length: 1.5m

- 1 x Wake up cable, unshielded, length: 15cm (specified by provider)



### **2.3. EUT CONFIGURATION**

The system was configured for testing in a typical fashion (as a customer would normally use it).

### **2.4. EQUIPMENT MODIFICATIONS**

None.

### **2.5. EUT EXERCISE SOFTWARE**

The EUT exercise program used during radiated and conducted testing was exercised the EUT in a manner similar to a typical use.

#### **Configuration n°1:**

IUC supplied by USB, followings parameters are tested in loop:

- 2 x SAM
- COM
- Cless

#### **Configuration n°2:**

IUC supplied by AC/DC adapter, followings parameters are tested in loop:

- 2 x SAM
- COM
- Cless

### **2.6. SPECIAL ACCESSORIES**

None.

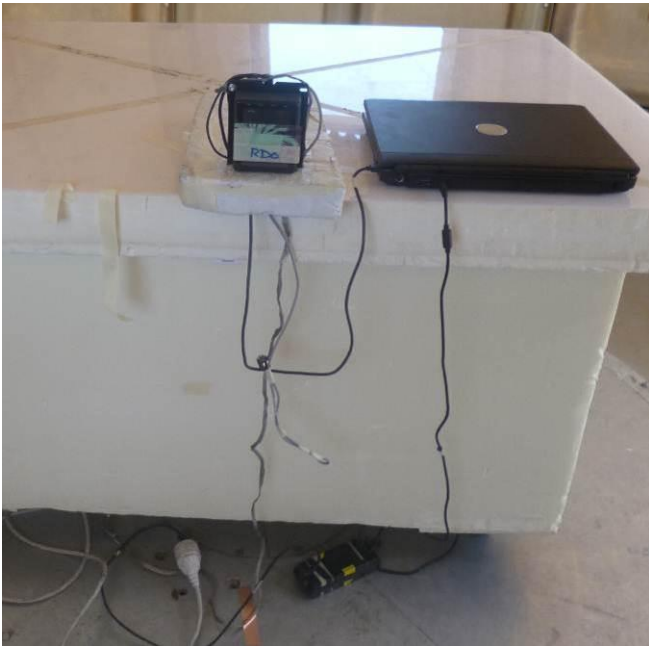
### 3. RADIATED EMISSION DATA

#### 3.1. TEST CONDITIONS

Test performed by : N. BILLAUD  
Date of test : May 14<sup>th</sup>, 2013  
Atmospheric pressure : 990mb  
Ambient temperature : 21°C  
Relative humidity : 43%

#### 3.2. TEST SETUP

The installation of EUT is identical for pre-characterization measurement in a 3 meters semi anechoic chamber and for measures on a 10 meters Open site.



Configuration N°1 test setup



Configuration N°2 test setup



L C I E

**3.3. Test equipment list**

Description	Manufacturer	Model	Identifier
Semi-Anechoic chamber #1	SIEPEL	-	D3044016
Radiated emission comb generator	BARDET	-	A3169050
Antenna Bi-Log	AH System	SAS-521-7	C2040180
Cable	-	-	A5329590
Adapter quasi-peak	HEWLETT PACKARD	HP85650A	A4049059
Spectrum analyzer	HEWLETT PACKARD	HP8568B	A4060017
Spectrum analyzer display	HEWLETT PACKARD	HP85662A	A4060019
Cable	-	-	A5329191
Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	A7085008
Cable	-	-	A5329183
Turntable controller (Cage#1)	MATURO Gmbh	Control Unit	F2000408
Turntable chamber (Cage#1)	MATURO Gmbh	TT 2.0 SI	F2000406
Antenna mast (Cage#1)	MATURO Gmbh	AM 4.0	F2000407
OATS	-	-	F2000409
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052
Radiated emission comb generator	BARDET	-	A3169050
Antenna Bi-log	CHASE	CBL6111A	C2040051
Cable	SUCOFLEX	106G	A5329061
Cable OATS (Mast at 10m)	UTIFLEX	-	A5329199
Cable OATS (Mast at 10m)	UTIFLEX	-	A5329188
Receiver 20-1000MHz	ROHDE & SCHWARZ	ESVS30	A2642006
Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	F2000372
Turntable (OATS)	ETS Lindgren	Model 2187	F2000403
Antenna mast (OATS)	LCIE	-	F2000288
Radiated emission comb generator	BARDET	-	A3169050
Antenna horn	EMCO	3115	C2042027
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019
Cable	-	-	A5329183
Cable	-	-	A5329590
Amplifier 1-13GHz	LCIE SUD EST	-	A7102067

**3.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION**

None.

**3.5. TEST SEQUENCE AND RESULTS****3.5.1. Pre-characterization at 3 meters [9kHz-30MHz]**

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. For Pre-characterization, the loop antenna was rotated during the test for maximized the emission measurement. Measurement performed on 3 axis of EUT. Frequency band investigated is 9kHz to 30MHz.

The pre-characterization graphs are obtained in PEAK detection.

**See graph for 9kHz-30MHz band:**  
(Worst case in configuration N°2)

**Emr#1** (See annex 1)

**3.5.2. Pre-characterization [30MHz-2GHz]**

For frequency band 30MHz to 1GHz, 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 with a log-periodic antenna. The EUT is being rotated on 360° and on 3 axis during the measurement. 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).

Configuration N°1: **see graphs for 30MHz-1GHz:**

V polarization  
H polarization

**Emr#2** (See annex 1)  
**Emr#3** (See annex 1)

Configuration N°1: **see graphs for 1GHz-2GHz:**

V polarization  
H polarization

**Emr#6** (See annex 1)  
**Emr#7** (See annex 1)

Configuration N°2: **see graphs for 30MHz-1GHz:**

V polarization  
H polarization

**Emr#4** (See annex 1)  
**Emr#5** (See annex 1)

Configuration N°2: **see graphs for 1GHz-2GHz:**

V polarization  
H polarization

**Emr#8** (See annex 1)  
**Emr#9** (See annex 1)





**3.5.3. Characterization on 10 meters open site below 30 MHz**

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. Antenna height was 1m for both horizontal and vertical polarization. Antenna was rotated around its vertical axis. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on 3 axis of EUT. A summary of the worst case emissions found in all test configurations and modes is shown on clauses 3.2.

Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m)	Qpeak-Limit (Margin dB)	Turntable Angle (deg)	Ant. Pol./ Angle (deg)	Tot Corr (dB)
13.56* <sup>1</sup>	84.0	43.2	-40.8	0	0	35.3
27.12* <sup>1</sup>	29.5	26.3	-3.2	0	0	42.4

\*<sup>1</sup>: 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 chapter 4 of this test report for band edge measurements.



**3.5.4. Characterization on 10 meters open site from 30MHz to 2GHz**

The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart B §15.109 limits and C §15.209 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. Measurement performed on 3 axis of EUT.

A summary of the worst case emissions found in all test configurations and modes is shown on clause 3.2

**ConfigurationN°1:**

No	Frequency (MHz)	QPeak Limit (dBµV/m)	Qpeak * (dBµV/m)	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.680	40.0	29.5	-10.5	0	PV	100	14.5	PASS*
2	54.240	40.0	24.3	-15.7	0	PV	100	8.8	PASS*
3	67.800	40.0	21.6	-18.4	0	PV	100	8.1	PASS*
4	81.360	40.0	27.3	-12.7	0	PV	100	9.8	PASS*
5	173.325	43.5	33.6	-9.9	0	PV	100	12.1	PASS*
6	178.545	43.5	22.3	-21.2	0	PH	100	11.8	PASS*
7	290.280	46.0	32.8	-13.2	300	PV	150	15.8	PASS*
8	290.325	46.0	34.8	-11.2	0	PH	100	15.8	PASS*
9	318.225	46.0	26.8	-19.2	0	PV	100	16.3	PASS*
10	870.780	46.0	38.3	-7.7	0	PH	100	27.8	PASS*
11	870.915	46.0	38.3	-7.7	0	PV	100	27.8	PASS*

\*: Measure have been done at 10m distance and corrected according to requirements of 15.209.e)

(M@3m = M@10m+10.5dB)

**ConfigurationN°2:**

No	Frequency (MHz)	QPeak Limit (dBµV/m)	Qpeak * (dBµV/m)	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.680	40.0	35.0	-5.0	0	PV	100	14.5	PASS*
2	54.240	40.0	30.3	-9.7	0	PV	100	8.8	PASS*
3	67.800	40.0	31.0	-9.0	0	PV	100	8.1	PASS*
4	81.360	40.0	28.3	-11.7	0	PV	100	9.8	PASS*
5	193.530	43.5	23.9	-19.6	0	PH	100	11.4	PASS*
6	290.235	46.0	28.6	-17.4	0	PH	100	15.8	PASS*
7	308.820	46.0	31.6	-14.4	0	PV	100	16.1	PASS*
8	677.370	46.0	41.5	-4.5	0	PV	100	24.7	PASS*
9	806.160	46.0	37.7	-8.3	0	PV	100	27.2	PASS*

\*: Measure have been done at 10m distance and corrected according to requirements of 15.209.e)

(M@3m = M@10m+10.5dB)

**Frequency band 1GHz to 2GHz**

Measurements are performed using a PEAK and Average detection. (RBW = 1MHz)

No	Frequency (GHz)	Limit Average (dBµV/m)	Measure Average (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
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No Significant Frequency observed

**Note:** Measures have been done at 3m distance.

**RESULTS: PASS**



### 3.6. 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 52.5dB $\mu$ V 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 dB $\mu$ V/m.

$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dB}\mu\text{V/m}$$

The 32 dB $\mu$ V/m value can be mathematically converted to its corresponding level in  $\mu$ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}.$$



**4. BAND-EDGE COMPLIANCE §15.209**

**4.1. TEST CONDITIONS**

Date of test : May 16<sup>th</sup>, 2013  
 Test performed by : N. BILLAUD  
 Atmospheric pressure : 977mb  
 Relative humidity : 44%  
 Ambient temperature : 20°C

**4.2. EQUIPMENT CONFIGURATION**

See § 2.3.

**4.3. TEST EQUIPMENT LIST**

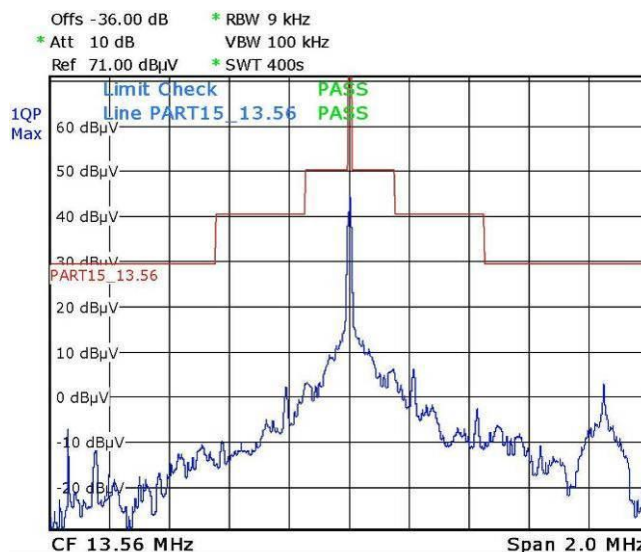
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE
Semi-Anechoic chamber #3	SIEPEL	-	D3044017
Radiated emission comb generator	BARDET	-	A3169050
Receiver 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020
Cable N/N	-	-	A5329038
Passive loop antenna	EMCO	7405-901	A2240015

**4.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION**

None.

**4.5. 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 FSL.



**5. CONDUCTED EMISSION DATA****5.1. CLIMATIC CONDITIONS**

Date of test : November 12<sup>th</sup>, 2013  
Test performed by : N. BILLAUD  
Atmospheric pressure : 1002hPa  
Relative humidity : 32%  
Ambient temperature : 23°C

**5.2. SETUP FOR CONDUCTED EMISSIONS MEASUREMENT**

The product has been tested according to ANSI C63.4-(2003) and FCC Part 15 subpart B and C.

The product has been tested with 110V/60Hz power line voltage and compared to the FCC Part 15 subpart B §15.107 and C §15.207 limits. Measurement bandwidth was 9kHz from 150 kHz to 30 MHz.

Measurement is made 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) 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.

**5.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION**

None

#### 5.4. TEST SETUP

The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm.

The cable has been shorted to 1meter length. The EUT is powered trough the LISN (measure).

##### *Configuration N°1: measures with laptop:*







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**Configuration N°2: measures with switching power supply:**





### 5.5. TEST SEQUENCE AND RESULTS

Measurements are performed on the phase (L1) and neutral (N) of power line voltage.  
Graphs are obtained in PEAK detection.  
Measures are also performed in Quasi-Peak and Average for any strong signal.

**Configuration N°1:**

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

**Configuration N°2:**

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

**RESULT: PASS**

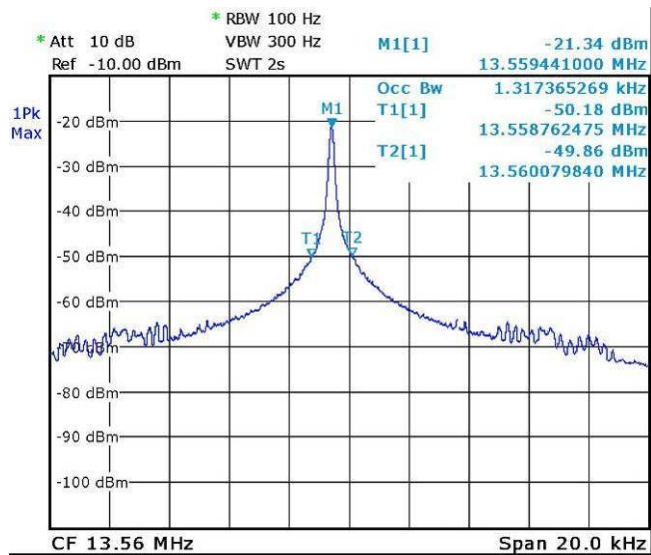


**6. OCCUPIED BANDWIDTH**

**6.1. CLIMATIC CONDITIONS**

Date of test : May 16<sup>th</sup>, 2013  
 Test performed by : N. BILLAUD  
 Atmospheric pressure : 997mb  
 Relative humidity : 44%  
 Ambient temperature : 20°C

**6.2. TEST RESULTS**



Measured occupied bandwidth is **1.3 kHz**

Measurement settings:

RBW = 100Hz / Video BW = 300Hz

The occupied bandwidth is measured with the internal function of the analyzer.

**6.3. TEST EQUIPMENT LIST**

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE
Semi-Anechoic chamber #3	SIEPEL	-	D3044017
Radiated emission comb generator	BARDET	-	A3169050
Receiver 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020
Cable N/N	-	-	A5329038
Passive loop antenna	EMCO	7405-901	A2240015

**6.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION**

None.



**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 <i>Measurement of conducted disturbances in voltage on the power port</i>	3.57 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication <i>Measurement of conducted disturbances in voltage on the telecommunication port.</i>	3.28 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension <i>Measurement of discontinuous conducted disturbances in voltage</i>	3.47 dB	3.6 dB
Mesure des perturbations conduites en courant <i>Measurement of conducted disturbances in current</i>	2.90 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans <i>Measurement of radiated electric field on the Moirans open area test site</i>	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.



L C I E

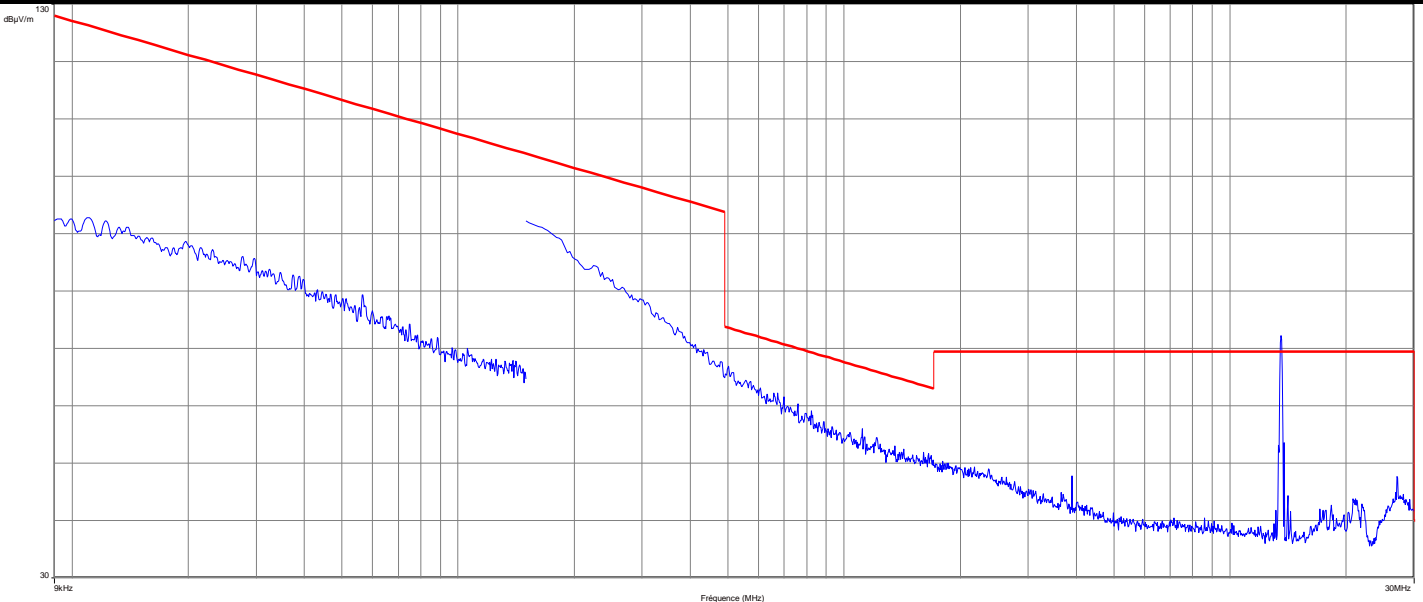
**8. ANNEX 1 (GRAPHS)**

**RADIATED EMISSIONS**

<b>Graph name :</b>	Emr#1	<b>Test configuration:</b>
<b>Limit :</b>	FCC Part15C	
<b>Class :</b>	TX	

**PARAMETERS**

<b>Antenna polarization:</b>	Vertical	<b>Legend:</b>
<b>Azimuth :</b>	0° - 360°	<span style="background-color: blue; color: white; padding: 2px;"> </span> Peak Measure
<b>RBW :</b>	100kHz	<span style="background-color: red; color: white; padding: 2px;"> </span> QPeak Limit@3m
<b>VBW :</b>	300kHz	
<b>Frequency :</b>	9kHz - 30MHz	



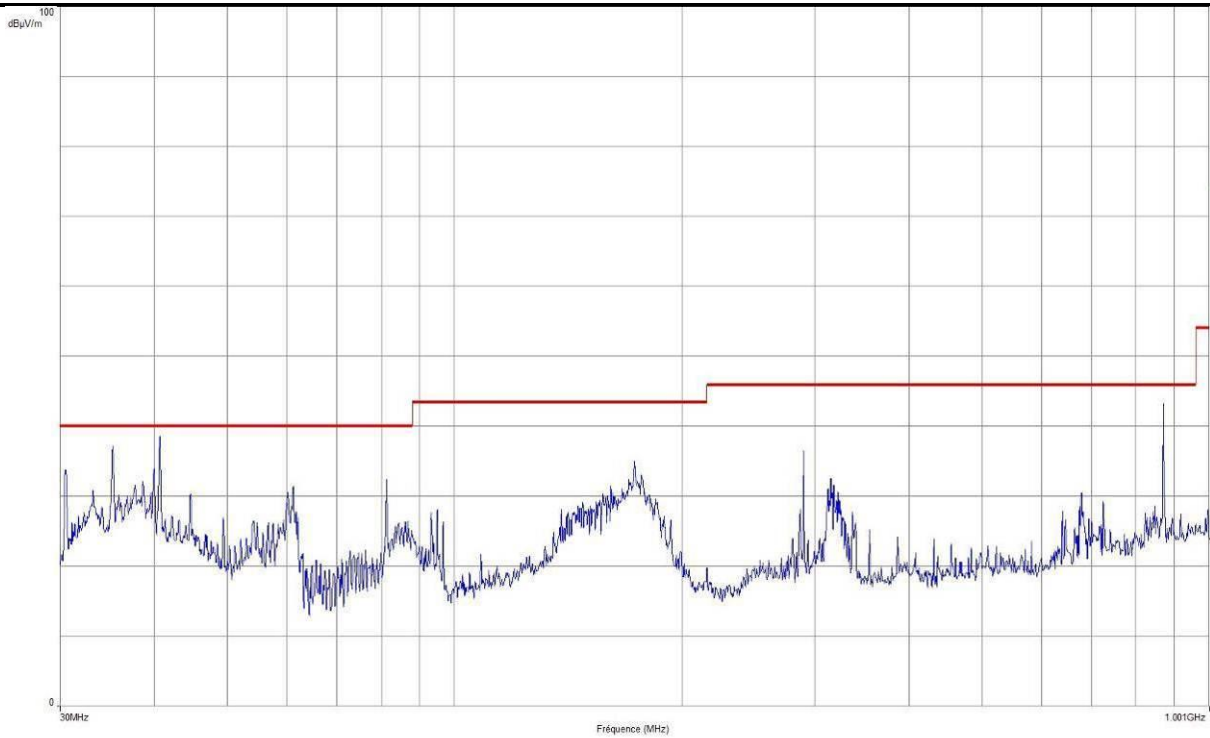
Frequency (MHz)	Level (dBµV/m)
13.560*	72.50

\*: carrier frequency.



L C I E

RADIATED EMISSIONS		
Graph name :	Emr#2	Test configuration:
Limit :	FCC Part15C	Configuration N°1
Class :	B	
PARAMETERS		
Antenna polarization:	Vertical	Legend:
Azimuth :	0° - 360°	<span style="background-color: blue; color: white;">█</span> Peak Measure
RBW :	100kHz	<span style="background-color: red; color: white;">█</span> QPeak Limit@3m
VBW :	300kHz	
Frequency :	30MHz - 1.001GHz	



Frequency (MHz)	Level (dBµV/m)
30.54	33.78
35.265	37.15
40.710*	38.68
61.140	31.40
81.345*	32.41
173.325	35.04
290.280	36.51
318.225	31.63
870.915	43.26

\* : frequency due to RFID



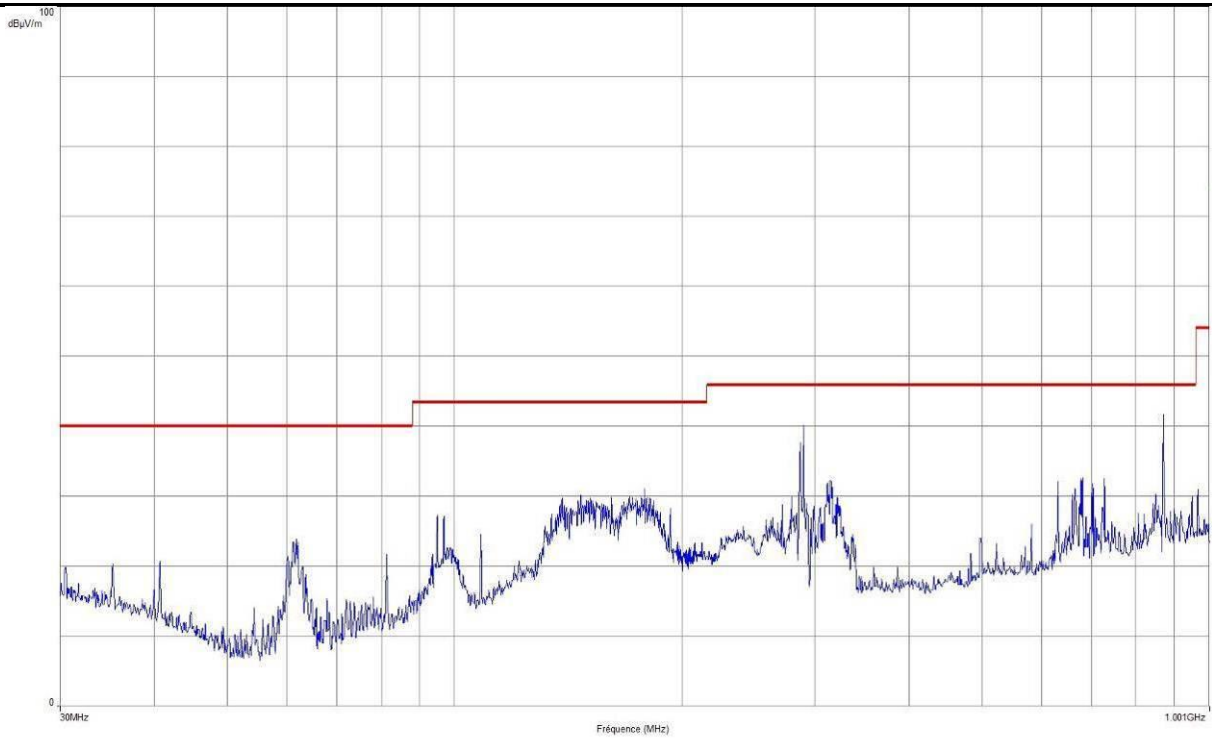
L C I E

**RADIATED EMISSIONS**

<b>Graph name :</b>	Emr#3	<b>Test configuration:</b>
<b>Limit :</b>	FCC Part15C	Configuration N°1
<b>Class :</b>	B	

**PARAMETERS**

<b>Antenna polarization:</b>	Horizontal	<b>Legend:</b>
<b>Azimuth :</b>	0° - 360°	Peak Measure
<b>RBW :</b>	100kHz	
<b>VBW :</b>	300kHz	QPeak Limit@3m
<b>Frequency :</b>	30MHz - 1.001GHz	

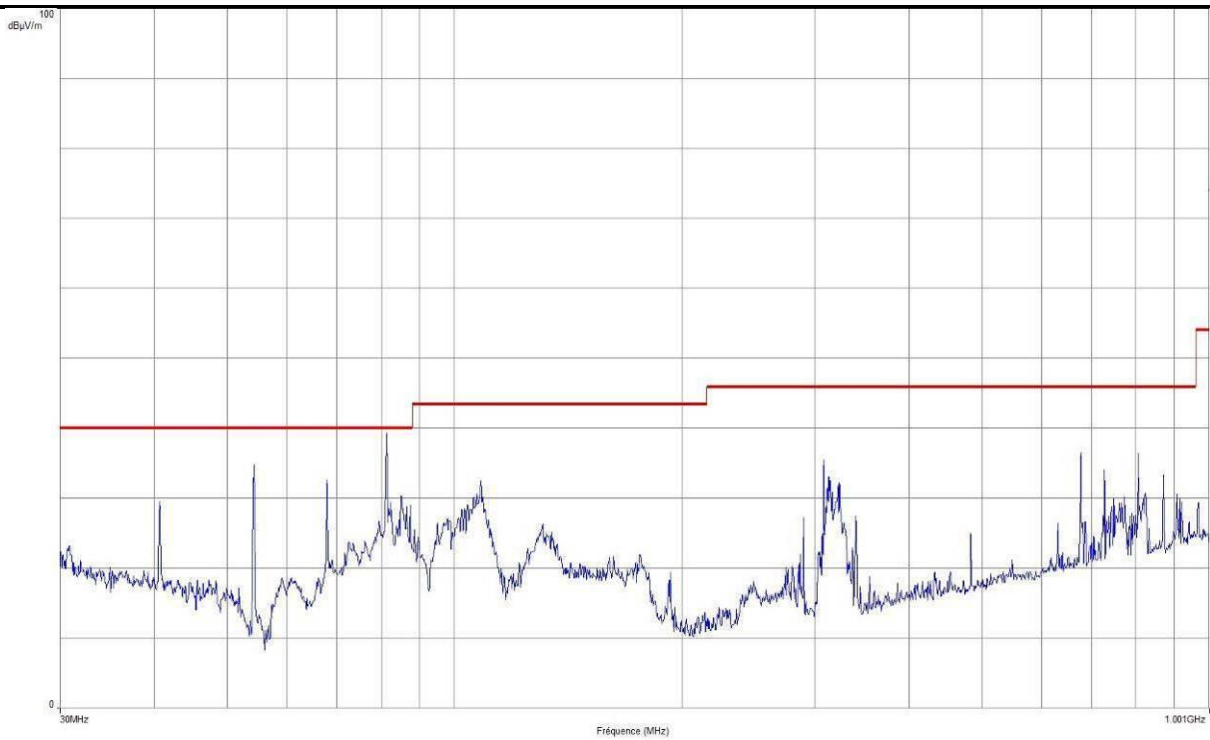


Frequency (MHz)	Level (dBµV/m)
178.545	30.98
290.325	40.11
870.780	41.66



L C I E

RADIATED EMISSIONS		
Graph name :	Emr#4	Test configuration:
Limit :	FCC Part15C	Configuration N°2
Class :	B	
PARAMETERS		
Antenna polarization:	Vertical	Legend:
Azimuth :	0° - 360°	Peak Measure
RBW :	100kHz	QPeak Limit@3m
VBW :	300kHz	
Frequency :	30MHz - 1.001GHz	



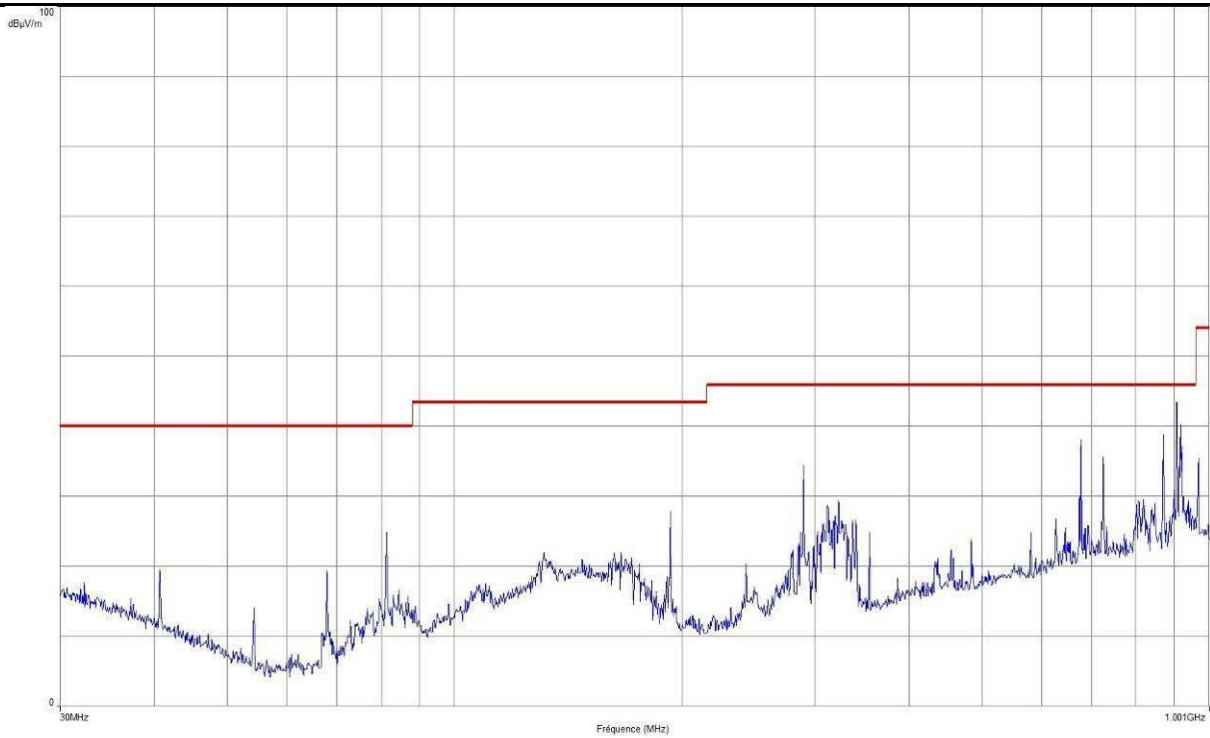
Frequency (MHz)	Level (dBµV/m)
40.665*	29.50
54.255*	34.73
67.800*	32.59
81.345*	39.21
108.435*	32.52
308.820	35.47
677.370	36.52
806.160	36.41

\* : frequency due to RFID



**L C I E**

RADIATED EMISSIONS		
Graph name :	Emr#5	Test configuration:
Limit :	FCC Part15C	Configuration N°2
Class :	B	
PARAMETERS		
Antenna polarization:	Horizontal	Legend:
Azimuth :	0° - 360°	<span style="background-color: blue; color: white;">█</span> Peak Measure
RBW :	100kHz	<span style="background-color: red; color: white;">█</span> QPeak Limit@3m
VBW :	300kHz	
Frequency :	30MHz - 1.001GHz	



Frequency (MHz)	Level (dBµV/m)
81.345*	24.81
193.530	27.84
290.235	34.51
677.325	38.12
906.060	43.41

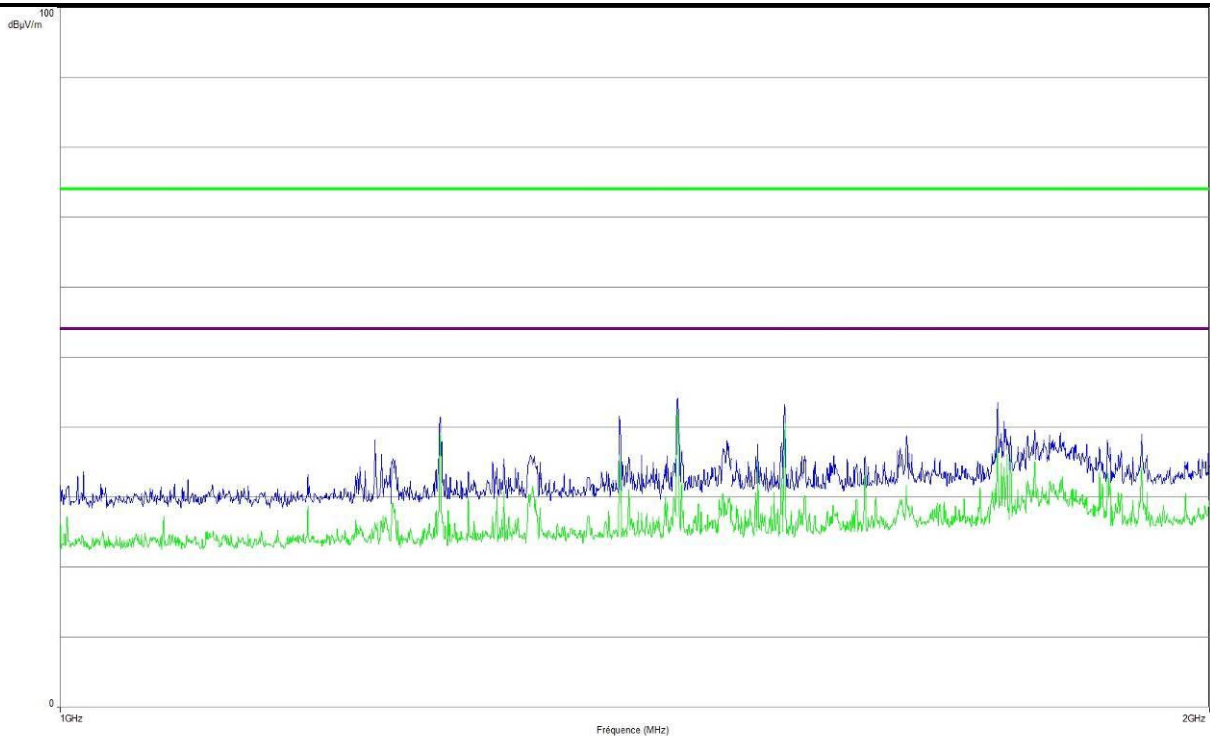
\* : frequency due to RFID





L C I E

RADIATED EMISSIONS		
Graph name :	Emr#6	Test configuration:
Limit :	FCC Part15C	Configuration N°1
Class :	B	
PARAMETERS		
Antenna polarization:	Vertical	Legend:
Azimuth :	0° - 360°	Peak Measure
RBW :	1MHz	Average Measure
VBW :	3MHz	Peak Limit@3m
Frequency :	1GHz - 2GHz	Average Limit@3m

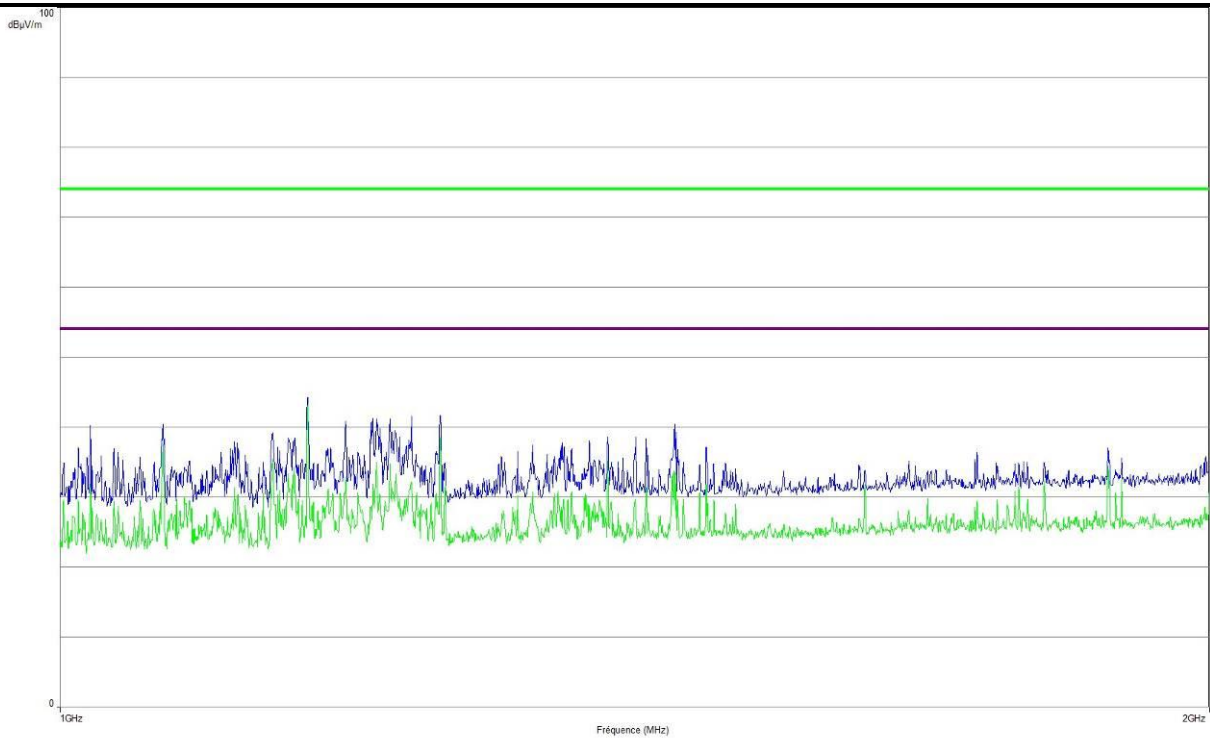


Frequency (MHz)	AVG (dBµV/m)	LimM (dBµV/m)	AVG-LimM (dB)	Angle (°)
1257.700	39.10	54	-14.9	1
1401.750	36.00	54	-18.0	1
1451.650	42.00	54	-12.0	61.6
1548.150	41.60	54	-13.4	254.8
1760.550	37.00	54	-17.0	230.6



L C I E

RADIATED EMISSIONS		
Graph name :	Emr#7	Test configuration:
Limit :	FCC Part15C	Configuration N°1
Class :	B	
PARAMETERS		
Antenna polarization:	Horizontal	Legend:
Azimuth :	0° - 360°	Peak Measure
RBW :	1MHz	Average Measure
VBW :	3MHz	Peak Limit@3m
Frequency :	1GHz - 2GHz	Average Limit@3m

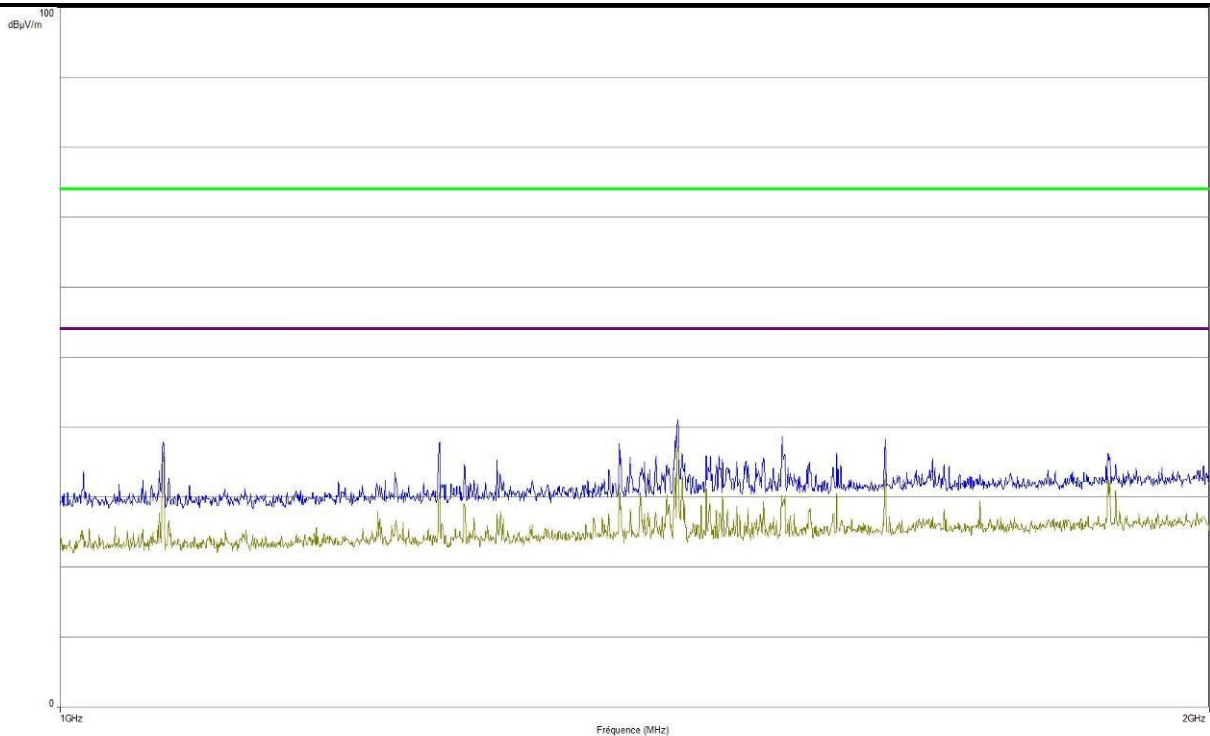


Frequency (MHz)	AVG (dBµV/m)	LimM (dBµV/m)	AVG-LimM (dB)	Angle (°)
1064.1	37.55	54	-16.45	10.2
1137.05	35.56	54	-18.44	1.2
1161.15	43.3	54	-10.70	0
1257.75	37.6	54	-16.40	196.2
1391.75	35.21	54	-18.79	208.3
1448.85	33.71	54	-20.29	196.2



L C I E

RADIATED EMISSIONS		
Graph name :	Emr#8	Test configuration:
Limit :	FCC Part15C	Configuration N°2
Class :	B	
PARAMETERS		
Antenna polarization:	Vertical	Legend:
Azimuth :	0° - 360°	Peak Measure
RBW :	1MHz	Average Measure
VBW :	3MHz	Peak Limit@3m
Frequency :	1GHz - 2GHz	Average Limit@3m

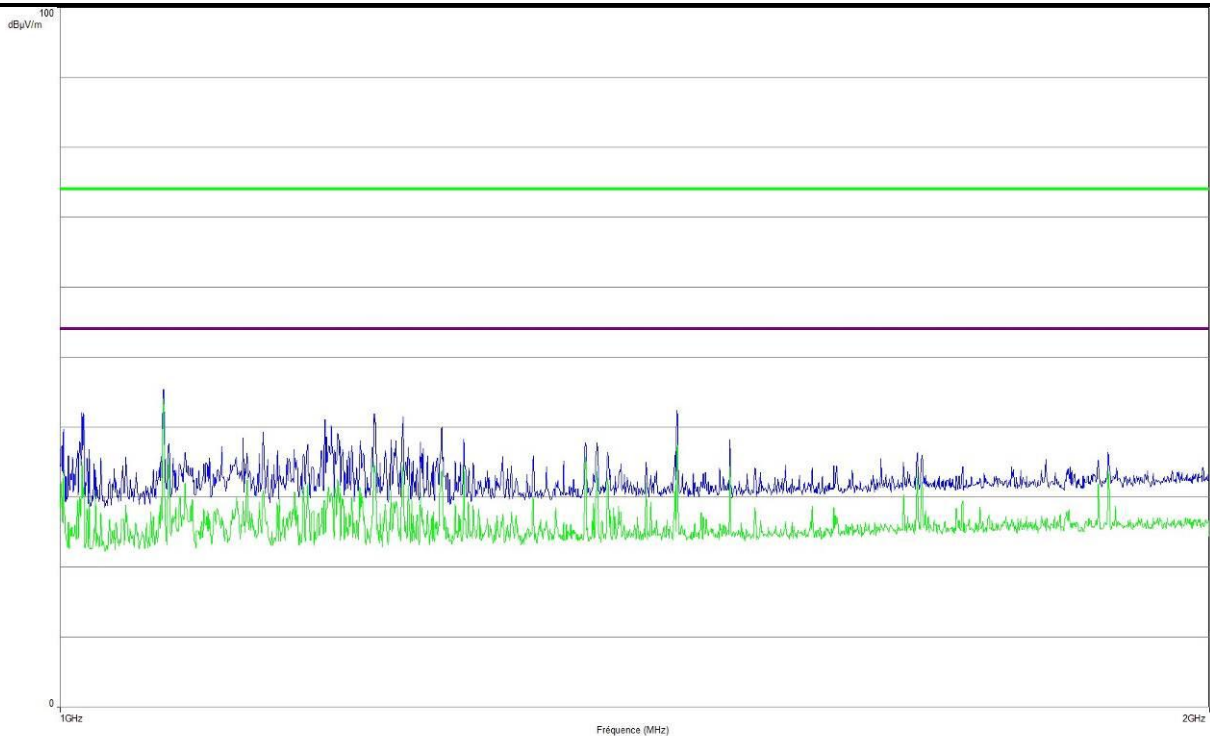


Frequency (MHz)	AVG (dBµV/m)	LimM (dBµV/m)	AVG-LimM (dB)	Angle (°)
1064.2	36.35	54	-17.65	227.3
1257.25	30.63	54	-23.37	18
1451.35	37.22	54	-16.78	242.2
1645.15	33.72	54	-20.28	177.4



L C I E

RADIATED EMISSIONS		
Graph name :	Emr#9	Test configuration:
Limit :	FCC Part15C	Configuration N°2
Class :	B	
PARAMETERS		
Antenna polarization:	Horizontal	Legend:
Azimuth :	0° - 360°	Peak Measure
RBW :	1MHz	Average Measure
VBW :	3MHz	Peak Limit@3m
Frequency :	1GHz - 2GHz	Average Limit@3m

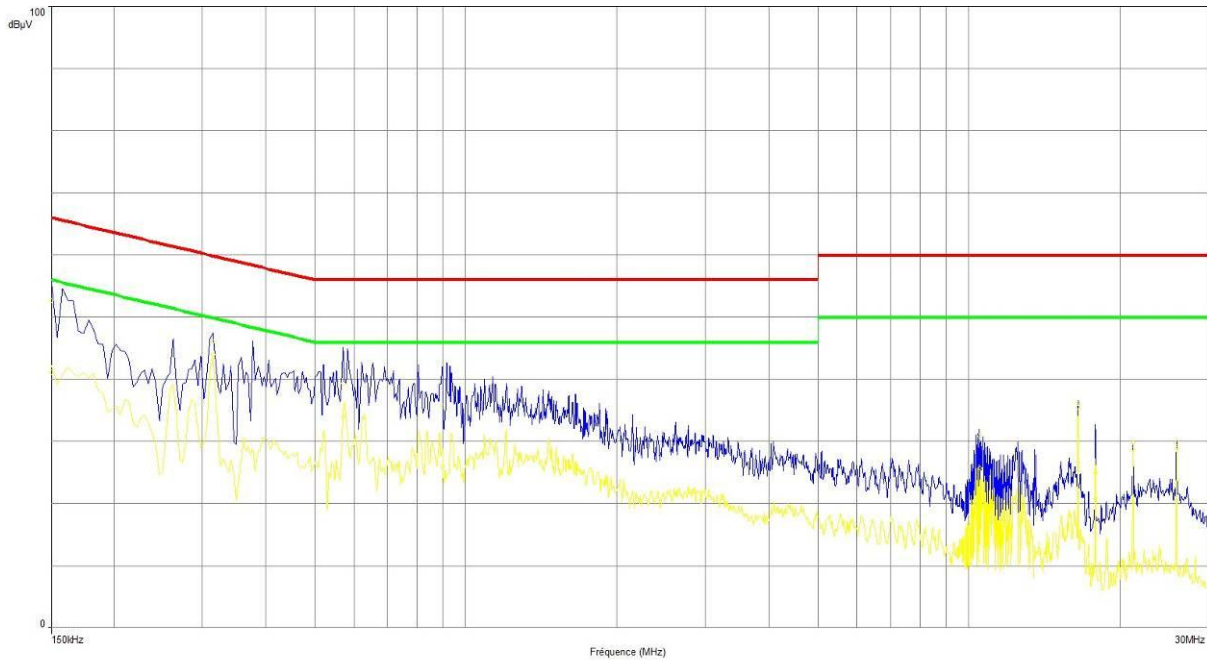


Frequency (MHz)	AVG (dBµV/m)	LimM (dBµV/m)	AVG-LimM (dB)	Angle (°)
1064.45	44.10	54	-9.90	244.2
1068.05	35.66	54	-18.34	244.2
1208.45	35.15	54	-18.85	176.6
1373.05	35.70	54	-18.30	211.8
1450.95	37.44	54	-16.56	244.2



L C I E

CONDUCTED EMISSIONS			
Graph name :	Emc#1	Test configuration:	
Limit :	FCC Part15C	Configuration N°1	
Class :	B		
PARAMETERS			
Voltage / Frequency :	110VAC / 60Hz	Legend:	
Line :	Phase 1	Peak Measure	Average Measure
RBW :	10kHz		
VBW :	30kHz	QPeak Limit	Average Limit
Frequency :	150kHz- 30MHz		

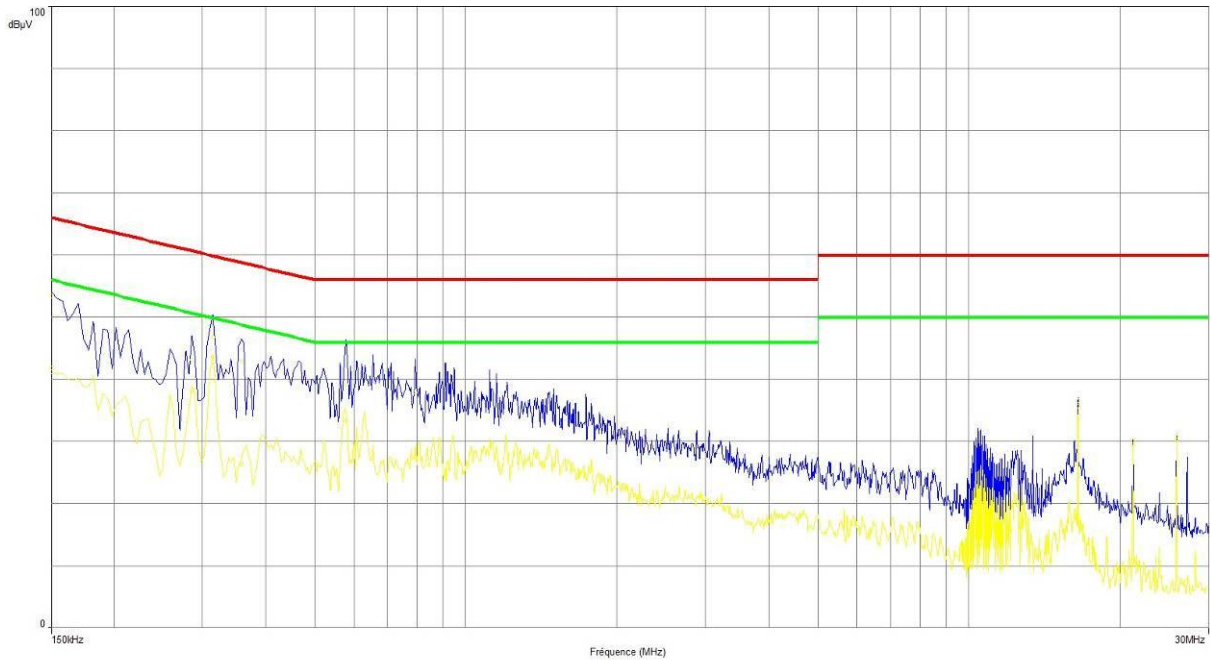


Frequency (MHz)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak -LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.150	52.67	66	-13.33	41.08	56	-14.92
0.314	46.07	59.86	-13.79	44.01	49.86	-5.85
0.570	39.35	56	-16.65	34.05	46	-11.95
0.898	35.56	56	-20.44	25.95	46	-20.05
10.506	30.85	60	-29.15	25.69	50	-24.31
16.462	36.18	60	-23.82	35.49	50	-14.51
17.822	25.02	60	-34.98	20.82	50	-29.18
21.166	29.78	60	-30.22	28.65	50	-21.35
25.870	29.72	60	-30.28	28.80	50	-21.20



L C I E

CONDUCTED EMISSIONS			
Graph name :	Emc#2	Test configuration:	
Limit :	FCC Part15C	Configuration N°1	
Class :	B		
PARAMETERS			
Voltage / Frequency :	110VAC / 60Hz	Legend:	
Line :	Neutral	Peak Measure	Average Measure
RBW :	10kHz		
VBW :	30kHz	QPeak Limit	Average Limit
Frequency :	150kHz- 30MHz		

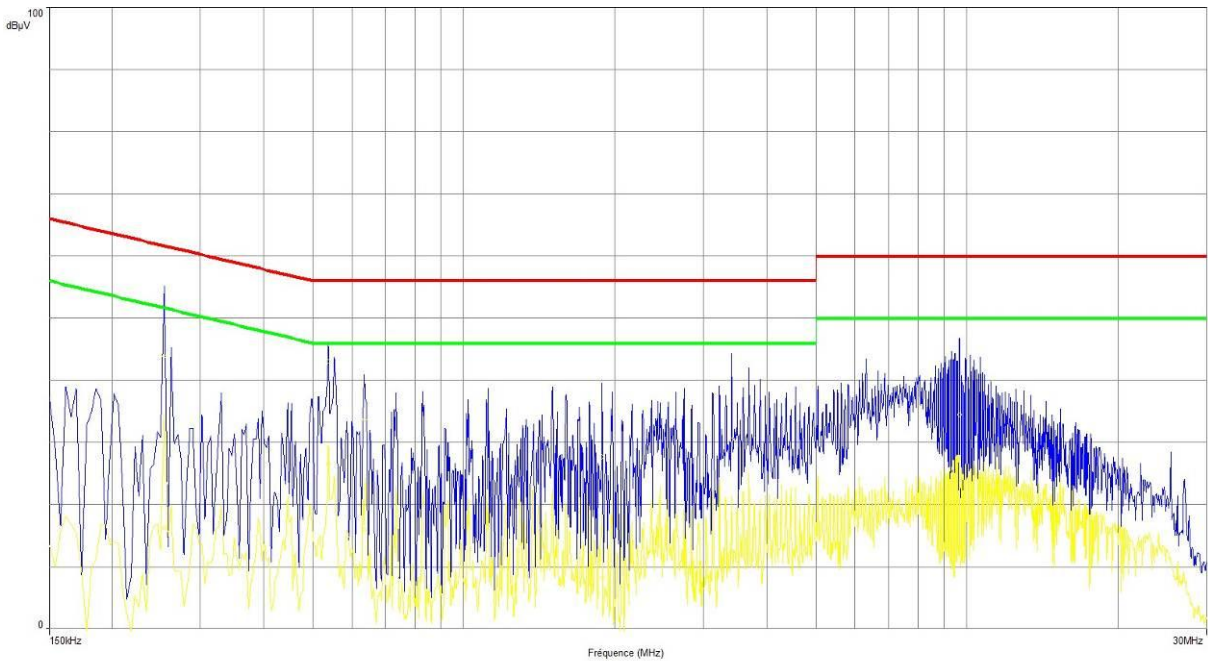


Frequency (MHz)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak -LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.150	53.44	66	-12.56	41.80	56	-14.20
0.286	43.1	60.64	-17.54	38.09	50.64	-12.55
0.314	46.75	59.86	-13.11	43.66	49.86	-6.20
0.358	42.88	58.77	-15.9	26.3	48.77	-22.48
0.578	39.26	56	-16.74	33.39	46	-12.61
0.794	37.92	56	-18.08	27.40	46	-18.60
16.462	36.54	60	-23.46	35.72	50	-14.28
21.166	30.09	60	-29.91	29.40	50	-20.60
25.870	30.84	60	-29.16	30.24	50	-19.76



L C I E

CONDUCTED EMISSIONS			
Graph name :	Emc#3	Test configuration:	
Limit :	FCC Part15C	Configuration N°2	
Class :	B		
PARAMETERS			
Voltage / Frequency :	110VAC / 60Hz	Legend:	
Line :	Phase 1	Peak Measure	Average Measure
RBW :	10kHz		
VBW :	30kHz	QPeak Limit	Average Limit
Frequency :	150kHz- 30MHz		

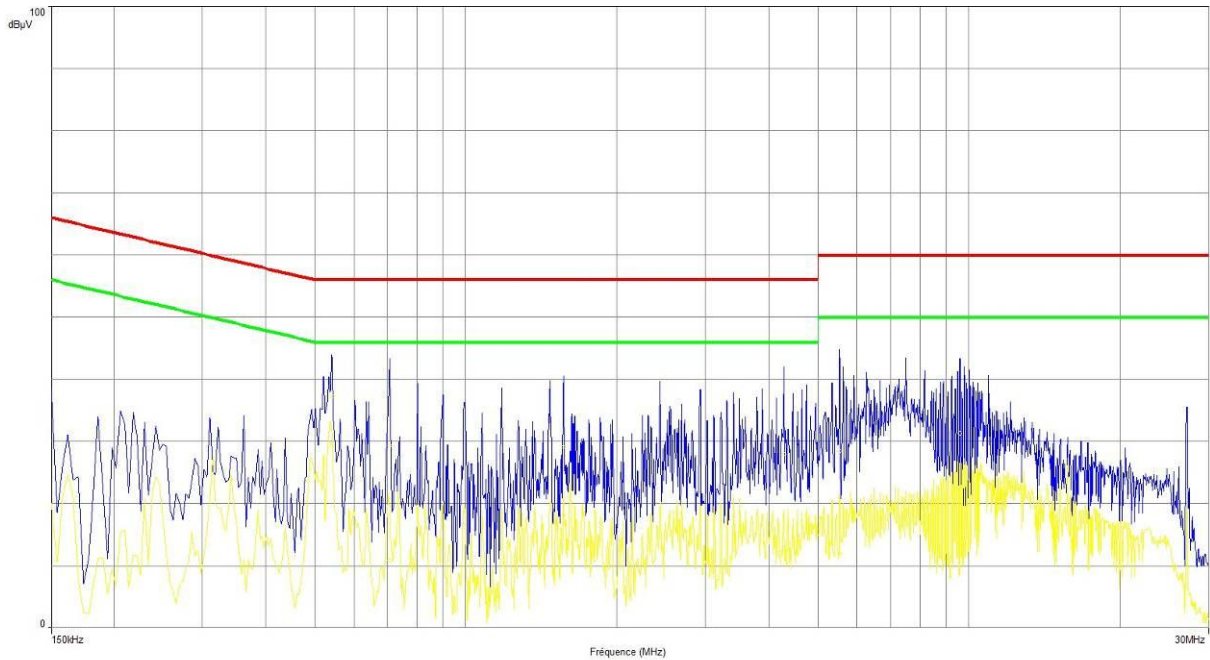


Frequency (MHz)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak -LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.254	43.85	61.63	-17.78	16.25	51.63	-35.38
0.538	42.96	56	-13.04	26.54	46	-19.46
0.634	33.64	56	-22.36	16.00	46	-30.00
1.882	27.75	56	-28.25	8.34	46	-37.66
3.410	30.49	56	-25.51	12.41	46	-33.59
9.674	34.53	60	-25.47	13.16	50	-36.84



L C I E

CONDUCTED EMISSIONS			
<b>Graph name :</b>	Emc#4	<b>Test configuration:</b>	
<b>Limit :</b>	FCC Part15C	Configuration N°2	
<b>Class :</b>	B		
PARAMETERS			
<b>Voltage / Frequency :</b>	110VAC / 60Hz	<b>Legend:</b>	
<b>Line :</b>	Neutral	Peak Measure	Average Measure
<b>RBW :</b>	10kHz		
<b>VBW :</b>	30kHz	QPeak Limit	Average Limit
<b>Frequency :</b>	150kHz- 30MHz		



Frequency (MHz)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak -LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.542	37.28	56	-18.72	29.37	46	-16.63
0.706	29.27	56	-26.73	10.95	46	-35.05
1.566	29.14	56	-26.86	18.18	46	-27.82
4.282	27.94	56	-28.06	12.81	46	-33.19
5.542	28.46	60	-31.54	12.02	50	-37.98
9.606	31.30	60	-28.70	13.70	50	-36.30