



L C I E

## TEST REPORT

Number  
Composition of document

## RADIO

133305-667820E  
36 pages

FCC Registration Number  
Industry Canada Number

166175 (FAR) or 888863 (Ecuelles)  
6230B

### Standards

47 CFR Part 15.225  
RSS-210, Issue 8  
RSS-Gen, Issue 4

### Issued to

SAFRAN MORPHO  
18, Chaussée Jules CESAR  
F-95520 OSNY  
France

### Apparatus under test

Trade mark  
Manufacturer  
Reference  
Model  
Serial number  
IC  
FCC ID

Physical Access Control – MA SIGMA Lite Series  
Morpho  
Morpho  
MA SIGMA Lite Series  
MPH-AC001B  
15210ML0000003  
11472A-MPHAC001B  
ZBW-MPHAC001B

### Test date

2015/06/11 to 2015/06/30 & 2015/07/03

### Tests performed by

Laurent DENEUX & Armand MAHOUNGOU & Stéphane CAMBOUE

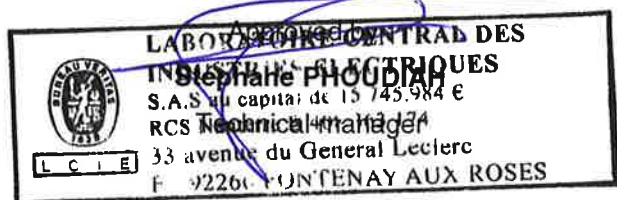
### Test site

Fontenay aux Roses/ Ecuelles

### Date of issue

2015/08/12

Written by :  
**Armand MAHOUNGOU & Laurent DENEUX &  
Stéphane CAMBOUE**  
Tests operator



This document shall not be reproduced, except in full, without the written approval of the LCIE. This document contains results related only to the item tested. It does not imply the conformity of the whole production to the items tested. Unless otherwise specified, the decision of conformity takes into account the uncertainty of measures. This document doesn't anticipate any certification decision.



<b>SUMMARY</b>
----------------

1.	TEST PROGRAM .....	3
2.	EQUIPMENT DESCRIPTION.....	4
3.	OCCUPIED BANDWIDTH.....	7
4.	FREQUENCY TOLERANCE .....	11
5.	AC POWER LINE CONDUCTED EMISSIONS.....	15
6.	FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHZ.....	20
7.	FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHZ .....	23
8.	TEST EQUIPMENT LIST .....	29
9.	UNCERTAINTIES CHART .....	30
10.	ANNEX (GRAPHS) .....	31



## 1. TEST PROGRAM

- References**

Standards:

- 47 CFR Part 15C
- RSS-210
- RSS-Gen
- CISPR 16-4-2
- ANSI C63.4

Standard Section	Test Description	TEST RESULT - Comments
RSS-Gen § 4.6.1	Occupied Bandwidth	PASS
CFR 47 § 15.225 (e) RSS-210 § A2.6	Frequency tolerance	PASS
CFR 47 § 15.207 RSS-Gen § 7.2.4	AC Power Line Conducted Emissions	PASS
CFR 47 § 15.225 (a) (b) (c) RSS-210 § A2.6 (a) (b) (c)	Field strength within the band 13.110-14.010 MHz	PASS
CFR 47 § 15.209 (a) CFR 47 § 15.225 (d) RSS-210 § A2.6 (d)	Field strength outside of the bands 13.110-14.010 MHz	PASS
RSS-Gen § 4.10	Receiver Radiated emissions	NA (Transceiver equipment. Include in Field strength test)

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

NA: Not Applicable

NP: Test Not Performed



## 2. EQUIPMENT DESCRIPTION

### 2.1. HARDWARE & SOFTWARE IDENTIFICATION

- Equipment under test (EUT):



Photograph of EUT



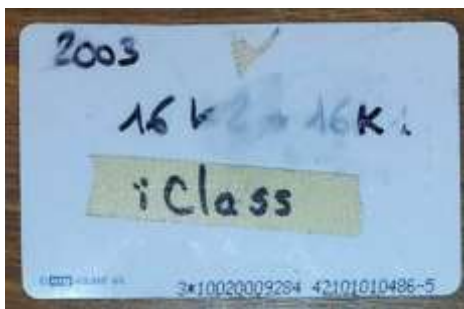
- Auxiliary equipment (AE) used for testing:



Power supply POE-164



Power supply FW7362/12



iclass card

Photograph of AE (Not sell with the product)



- **Input/output:**

- Input Power
- Ethernet

- **Software identification:**

- Software version: MA 2.02.A1

- **Equipment information:**

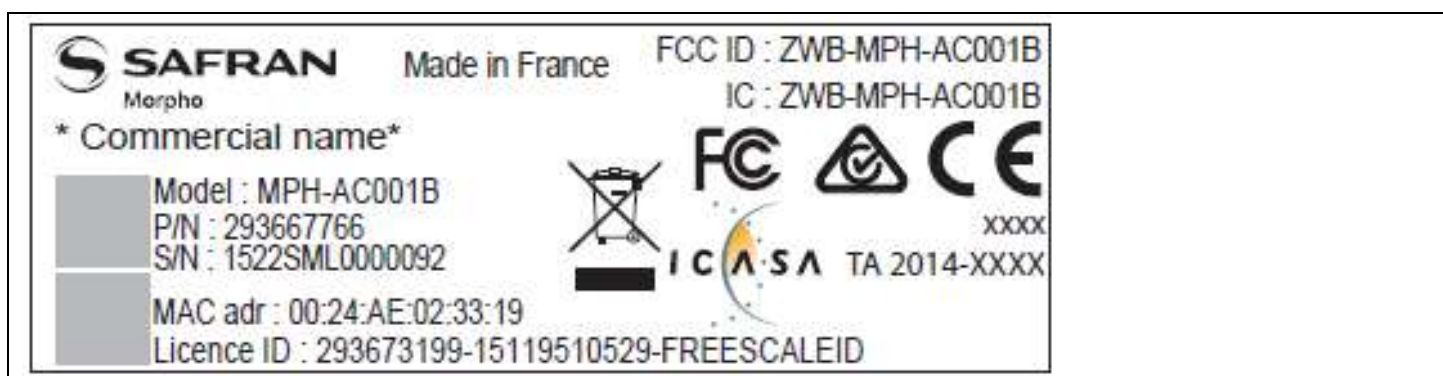
- External antenna connector: No
- Frequency band allocated: 13.553MHz to 13.567MHz
- Frequency band used: 13.56MHz
- Modulation: 100% ASK & 10% ASK
- Number of channel: 1
- Antenna type: Integral
- Stand By mode: No
- Type of power source: External power supply
- Power supply: Vmin : 108 V  
Vnom: 120 V  
Vmax : 132 V
- Temperature range: Tmin: -30°C (IC) -20°C (FCC)  
Tnom: 20°C  
Tmax: +60°C

## 2.2. RUNNING MODE

The EUT is set in the following modes during tests:

- Permanent emission-reception with modulation powered by Power supply POE-164
- Permanent emission-reception with modulation powered by Power supply FW7362/12

## 2.3. EQUIPEMENT LABELLING



## 2.4. EQUIPMENT MODIFICATIONS

No equipment modification has been necessary during testing.



### 3. OCCUPIED BANDWIDTH

#### 3.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU  
Date of test : 2015/07/03  
Ambient temperature : 30°C  
Relative humidity : 52%

#### 3.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the RSS-GEN § 4.6.1 reference method.

##### **Spectrum Analyzer Setting:**

Center frequency= 13.56MHz  
Span= At least twice the emission spectrum  
Amplitude= Sufficient to observe the signal amplitude  
RBW= 1% of span  
VBW= 3\*RBW  
Sweep= Auto  
Trace= Max Hold  
Detector= Peak  
Occupied Bandwidth 99% activated



Power supply POE-164



Power supply FW7362/12

Photograph for Occupied Bandwidth





Power supply POE-164



Power supply FW7362/12

Photograph for Occupied Bandwidth



### 3.3. RESULTS

Power supply POE-164

<b>Temperature</b>	<b>Tnom</b>
<b>Voltage</b>	<b>Vnom</b>
Frequency	Fnom
Occupied Bandwidth (kHz)	1707.0

Power supply FW7362/12

<b>Temperature</b>	<b>Tnom</b>
<b>Voltage</b>	<b>Vnom</b>
Frequency	Fnom
Occupied Bandwidth (kHz)	1711.2

**Result:** **PASS**

**Limit:** → None



## 4. FREQUENCY TOLERANCE

### 4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU  
Date of test : 2015/07/03  
Ambient temperature : 27°C  
Relative humidity : 52%

### 4.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access.

#### **Spectrum Analyzer Setting:**

Center frequency= 13.56MHz  
Span= At least twice the emission spectrum  
Amplitude= Sufficient to observe the signal amplitude  
RBW= 1% of span  
VBW= 3\*RBW  
Sweep= Auto  
Trace= Max Hold  
Detector= Peak

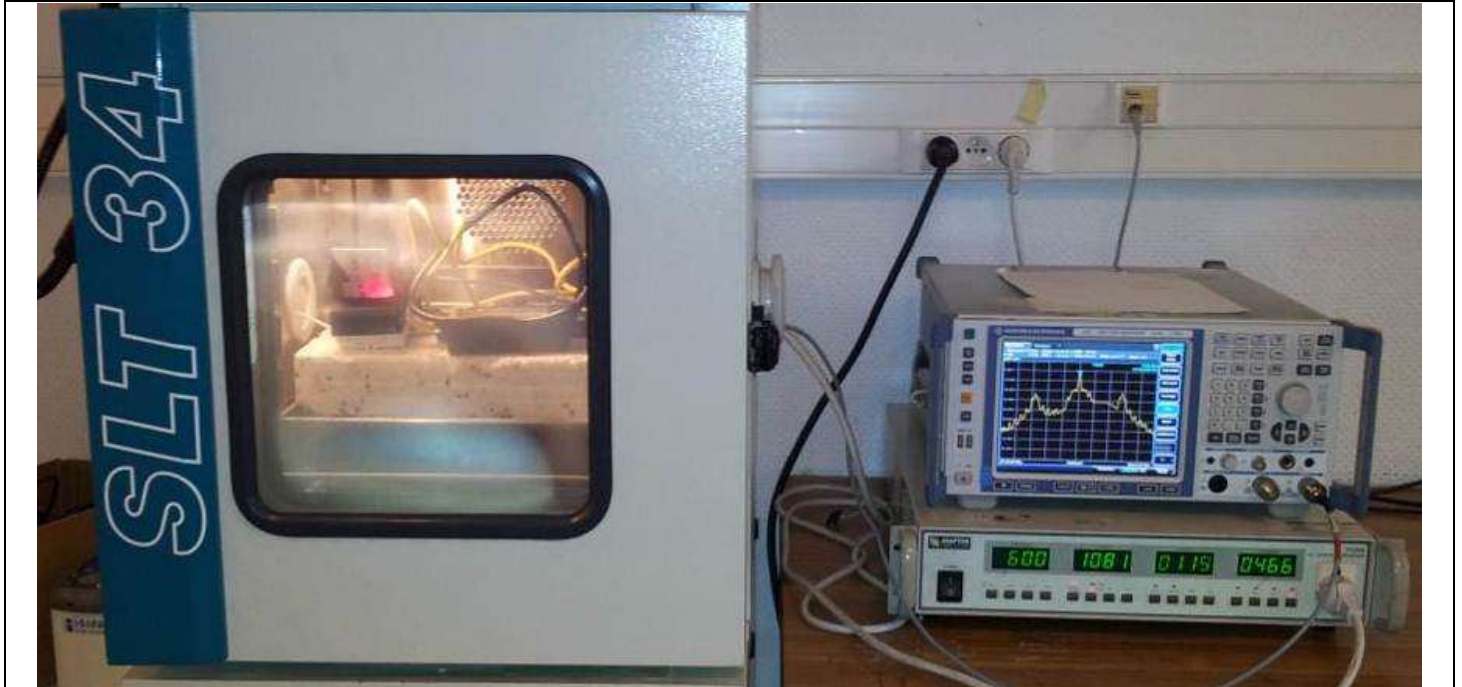


Power supply POE-164



Power supply FW7362/12

Photograph for Frequency tolerance in normal test condition



Power supply POE-164



Power supply FW7362/12

Photograph for Frequency tolerance in extreme test condition



### 4.3. RESULTS

Power supply POE-164

Temperature	Tmin (IC)	Tmin (FCC)	Tnom	Tmax
<b>Voltage:</b>	<b>Vmin</b>			
Frequency (MHz)	13,5601	13,55988	13,55985	13,55989
Frequency Drift (%)	-0,0015	-0,0031	-0,0033	-0,0030
<b>Voltage:</b>	<b>Vnom</b>			
Frequency (MHz)	13,56015	13,559855	13,5603	13,55985
Frequency Drift (%)	-0,0011	-0,0033	0,00	-0,0033
<b>Voltage:</b>	<b>Vmax</b>			
Frequency (MHz)	13,56015	13,55992	13,55987	13,55995
Frequency Drift (%)	-0,0011	-0,0028	-0,0032	-0,0026

Power supply FW7362/12

Temperature	Tmin (IC)	Tmin (FCC)	Tnom	Tmax
<b>Voltage:</b>	<b>Vmin</b>			
Frequency (MHz)	13,559873	13,55989	13,559895	13,56045
Frequency Drift (%)	0,0002	0,0003	0,0003	0,0044
<b>Voltage:</b>	<b>Vnom</b>			
Frequency (MHz)	13,559857	13,55985	13,55985	13,56015
Frequency Drift (%)	0,0001	0,0000	0,00	0,0022
<b>Voltage:</b>	<b>Vmax</b>			
Frequency (MHz)	13,559859	13,559888	13,559895	13,56115
Frequency Drift (%)	0,0001	0,0003	0,0003	0,0096

**Result: PASS**

**Limit:** → +/- 0.01%



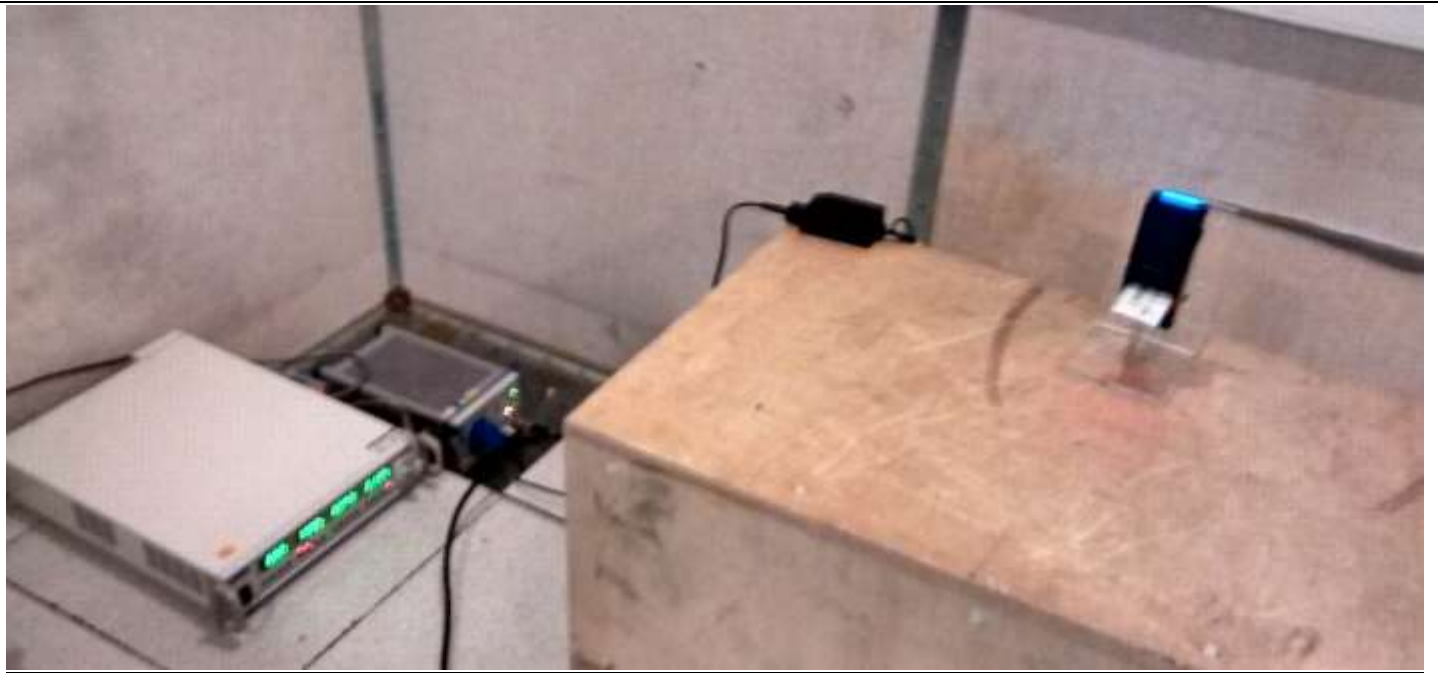
## 5. AC POWER LINE CONDUCTED EMISSIONS

### 5.1. TEST CONDITIONS

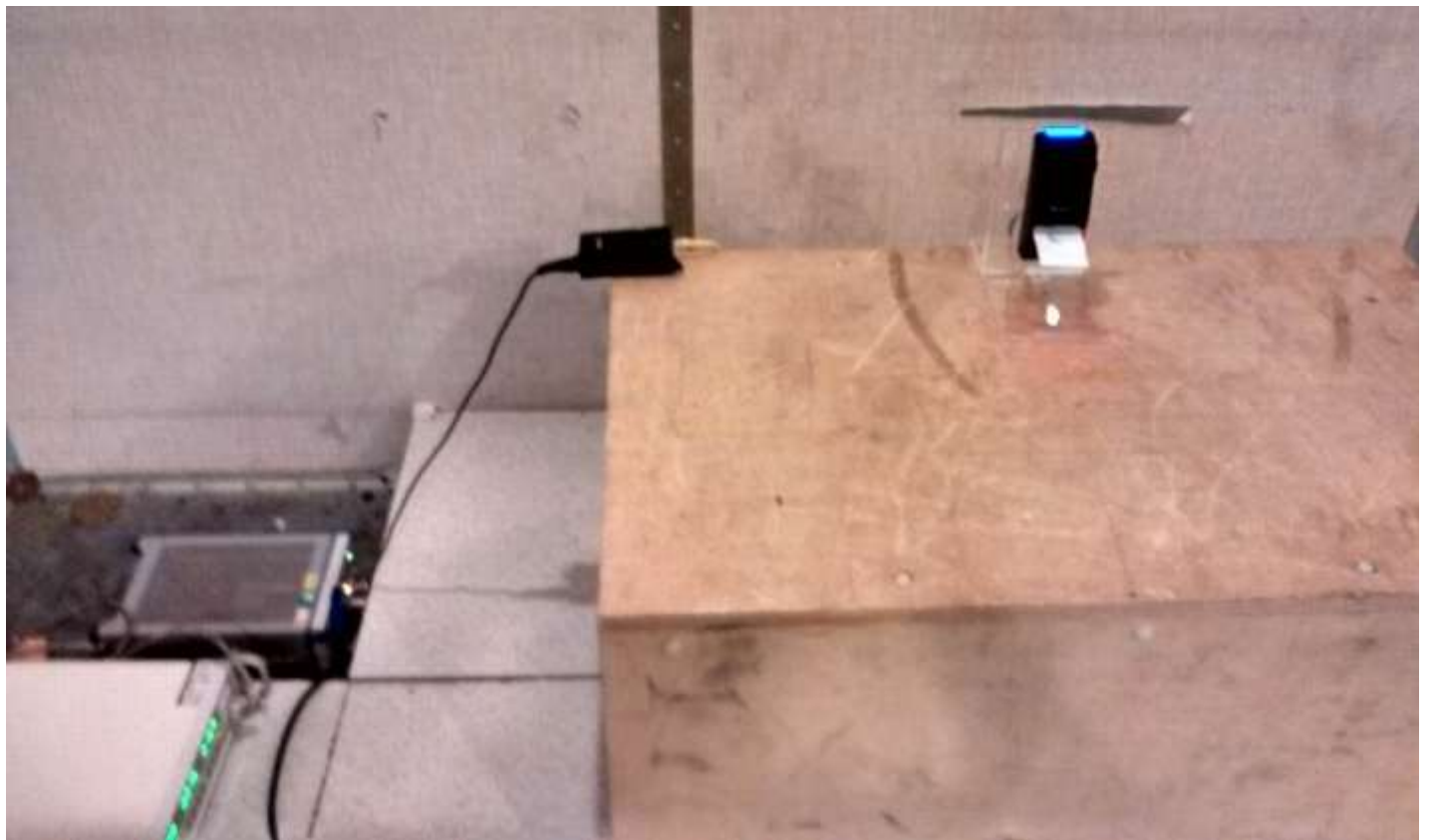
Test performed by : Armand MAHOUNGOU  
Date of test : 2015/07/03  
Ambient temperature : 27°C  
Relative humidity : 52%

### 5.2. TEST SETUP

The product has been tested according to ANSI C63.4-(2003) method. 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. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT is powered through the LISN. Measurement is made with a 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) is  $50\Omega / 50\mu\text{H}$ . Interconnecting cables and equipment's were moved to position that maximized emission.



Power supply FW7362/12



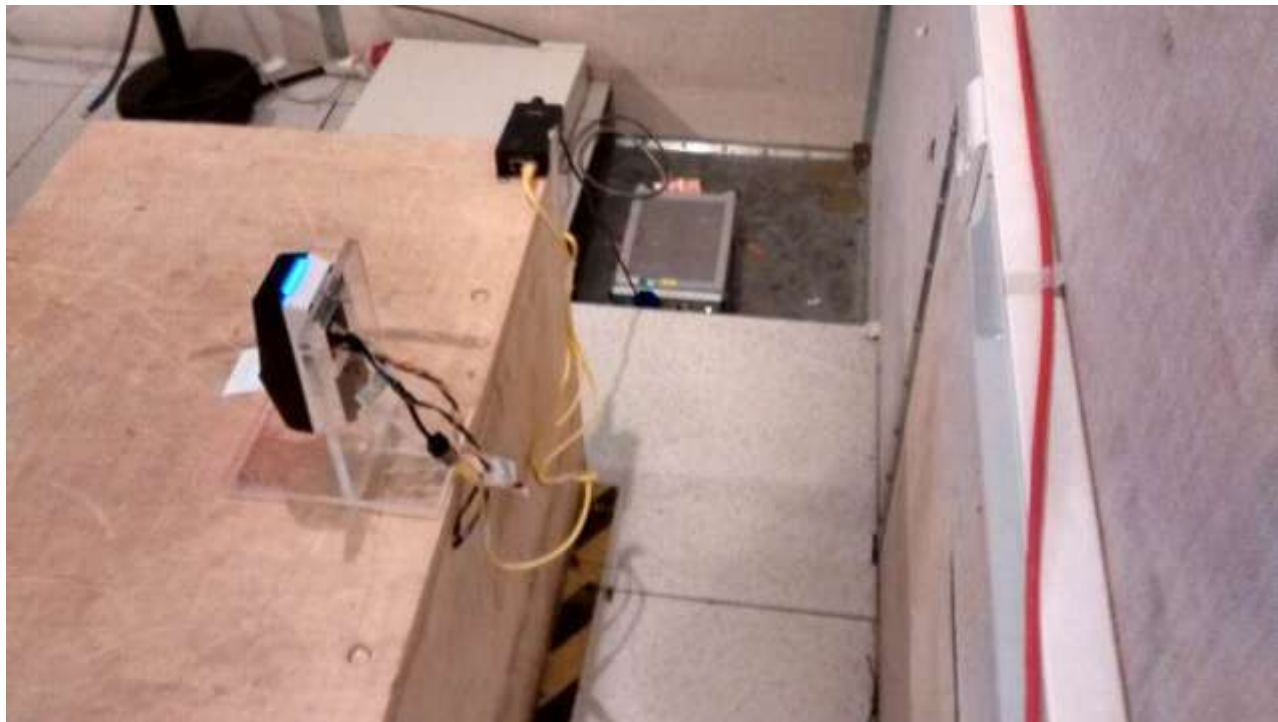
Power supply POE-164

Photograph for AC Power Line Conducted Emissions (Front view)





Power supply FW7362/12



Power supply POE-164

Photograph for AC Power Line Conducted Emissions (Rear view)



**5.3. RESULTS**

**Power supply POE  
Phase Line**

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.15	55.1	-	66	31.41	56
0.43	53.1	-	57.1	44.45	47.1
0.63	42.7	-	56	33.4	46
1.72	40.8	-	56	29.83	46
8.62	43.3	-	60	38.38	50
11.64	46.24	-	60	38.35	50
12.94	49.94	-	60	46.13	50
13.37	49.44	-	60	42.82	50
13.56	57.73	-	60	49.00	50
14.23	51.04	-	60	49.77	50
14.66	49.66	-	60	44.59	50
15.96	49.43	-	60	42.81	50
21.13	48.34	-	60	38.17	50
22.86	48.59	-	60	38.5	50

**Power supply POE  
Neutral Line**

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.15	51.54	-	66	29.53	56
0.43	54.83	-	57.1	43.97	47.1
0.63	40.51	-	56	32.18	46
1.72	35.22	-	56	24.52	46
11.64	45.59	-	60	39.41	50
12.94	49.27	-	60	46.14	50
13.37	49.72	-	60	47	50
13.56	55.32	-	60	47.1	50
14.23	51.04	-	60	45.31	50
14.66	48.64	-	60	44.47	50
15.96	50.11	-	60	42.95	50
21.13	47.53	-	60	36.59	50
23.32	48.01	-	60	43.5	50



**Power supply FW7362/12**

**Phase Line**

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Average Level (dBμV)	Average Limit (dBμV)
0.17	45.39	-	64.9	26.37	54.9
0.67	26.12	-	56	21.18	46
13.56	49.33	-	60	42.75	50
24	33.33	-	60	28.47	50
27.12	41.89	-	60	30.89	50

**Power supply FW7362/12**

**Neutral Line**

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Average Level (dBμV)	Average Limit (dBμV)
0.17	45.89	-	64.9	28.14	54.9
0.74	25.04	-	56	19.75	46
13.56	51.26	-	60	45.91	50
24	32.66	-	60	28.37	50
27.11	39.74	-	60	28.41	50

See annex for graphics

**Result: PASS**

**Limit: → Quasi-Peak**  
 0,15kHz to 0,5MHz: 66dBμV to 56dBμV\*  
 0,5MHz to 5MHz: 56dBμV  
 5MHz to 30MHz: 60dBμV

**Average**  
 0,15kHz to 0,5MHz: 56dBμV to 46dBμV\*  
 0,5MHz to 5MHz: 46dBμV  
 5MHz to 30MHz: 50dBμV

\*Decreases with the logarithm of the frequency



## 6. FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHZ

### 6.1. TEST CONDITIONS

Test performed by : Laurent DENEUX  
Date of test : June 30<sup>th</sup>, 2015  
Ambient temperature : 19°C  
Relative humidity : 50%

### 6.2. TEST SETUP

The product has been tested according to ANSI C63.4 (2003). The EUT is placed on an open area test site. Distance between measuring antenna and the EUT is 3m. Test is performed in parallel and perpendicular axis with a loop antenna. Measurement bandwidth was 9kHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m.



Photograph for Field strength within the band 13.110-14.010MHz



### 6.3. RESULTS

- Characterization on an open test site:

#### Power supply POE-164 Parallel Axis

Frequency (MHz)	QPeak Level (dB $\mu$ V/m) (3m)	Limit (dB $\mu$ V/m) (3m)
Below 13.110	38.5	69.5
13.110 to 13.410	27	80.5
13.410 to 13.553	33	90.5
13.553 to 13.567	67.4	124
13.567 to 13.710	36	90.5
13.710 to 14.010	34.4	80.5
Above 14.010	35	69.5

#### Power supply POE-164 Perpendicular Axis

Frequency (MHz)	QPeak Level (dB $\mu$ V/m) (3m)	Limit (dB $\mu$ V/m) (3m)
Below 13.110	39.5	69.5
13.110 to 13.410	35	80.5
13.410 to 13.553	42.8	90.5
13.553 to 13.567	62.7	124
13.567 to 13.710	36.8	90.5
13.710 to 14.010	35.5	80.5
Above 14.010	31.5	69.5



**Power supply FW7362/12**

**Parallel Axis**

Frequency (MHz)	QPeak Level (dBµV/m) (3m)	Limit (dBµV/m) (3m)
Below 13.110	42	69.5
13.110 to 13.410	37	80.5
13.410 to 13.553	41.2	90.5
13.553 to 13.567	68.7	124
13.567 to 13.710	39	90.5
13.710 to 14.010	40	80.5
Above 14.010	30.5	69.5

**Power supply FW7362/12**

**Perpendicular Axis**

Frequency (MHz)	QPeak Level (dBµV/m) (3m)	Limit (dBµV/m) (3m)
Below 13.110	38	69.5
13.110 to 13.410	35	80.5
13.410 to 13.553	38	90.5
13.553 to 13.567	64.5	124
13.567 to 13.710	36.5	90.5
13.710 to 14.010	38	80.5
Above 14.010	35.5	69.5

**Result: PASS**

**Limit: →**

Below 13.110MHz:	69.5dBµV/m (3m) or 29.5dBµV/m (30m)
13.110MHz to 13.410MHz:	106µV/m (30m) or 80.5dBµV/m (3m)
13.410MHz to 13.553MHz:	334µV/m (30m) or 90.5dBµV/m (3m)
13.553MHz to 13.567MHz:	15848µV/m (30m) or 124dBµV/m (3m)
13.567MHz to 13.710MHz:	334µV/m (30m) or 90.5dBµV/m (3m)
13.710MHz to 14.010MHz:	106µV/m (30m) or 80.5dBµV/m (3m)
Above 14.010MHz:	69.5dBµV/m (3m) or 29.5dBµV/m (30m)



## 7. FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHZ

### 7.1. TEST CONDITIONS

Test performed by : Laurent DENEUX & Stéphane CAMBOUE  
Date of test : June 30<sup>th</sup>, 2015 & June 11<sup>st</sup>, 2015  
Ambient temperature : 19°C & 20°C  
Relative humidity : 50% & 40%

### 7.2. TEST SETUP

The product has been tested according to ANSI C63.4 (2003). The EUT is placed on an open area test site below 30MHz and in a semi-anechoic chamber above 30MHz. Distance between measuring antenna and the EUT is 3m.

Test is performed in parallel and perpendicular axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m.

Test is performed in horizontal (H) and vertical (V) polarization with Loop antenna between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m.



Photograph for Field strength outside of the bands 13.110-14.010 MHz



Photograph for Field strength outside of the bands 13.110-14.010 MHz



Photograph for Field strength outside of the bands 13.110-14.010 MHz





### 7.3. RESULTS

- Characterization on an open test site (9kHz to 30MHz):

#### Power supply POE

<b>Frequency (MHz)</b>	<b>Perpendicular/parallel</b>	<b>Measure (dBμVm) at 3m</b>	<b>Limit (dBμVm) at 3m</b>
4.378	<i>Perpendicular</i>	23.5	69.5
6.562	<i>Perpendicular</i>	22.9	69.5
6.932	<i>Perpendicular</i>	27.8	69.5
7.316	<i>Perpendicular</i>	27.6	69.5
9.492	<i>Perpendicular</i>	31.8	69.5
10.06	<i>Perpendicular</i>	27.0	69.5
10.452	<i>Perpendicular</i>	24.3	69.5
10.794	<i>Perpendicular</i>	29.6	69.5
11.646	<i>Perpendicular</i>	29.5	69.5
12.504	<i>Perpendicular</i>	25.4	69.5
15.55	<i>Perpendicular</i>	33.7	69.5
16.18	<i>Perpendicular</i>	26.1	69.5
20	<i>Perpendicular</i>	22.5	69.5
20.554	<i>Perpendicular</i>	26.7	69.5
25.38	<i>Perpendicular</i>	25.6	69.5
25.81	<i>Perpendicular</i>	25.9	69.5
26.314	<i>Perpendicular</i>	22.7	69.5
26.746	<i>Perpendicular</i>	27.0	69.5
27.12	<i>Perpendicular</i>	28.6	69.5
27.64	<i>Perpendicular</i>	23.0	69.5
28.046	<i>Perpendicular</i>	23.2	69.5
28.47	<i>Perpendicular</i>	23.4	69.5
28.902	<i>Perpendicular</i>	23.3	69.5
29.332	<i>Perpendicular</i>	23.1	69.5
14.64	<i>parallel</i>	33.9	69.5
20	<i>parallel</i>	21.9	69.5
25.42	<i>parallel</i>	22.3	69.5
26.58	<i>parallel</i>	22.9	69.5
26.712	<i>parallel</i>	22.9	69.5
27.12	<i>parallel</i>	22.7	69.5
27.572	<i>parallel</i>	23.1	69.5
28.428	<i>parallel</i>	23.2	69.5
29.292	<i>parallel</i>	23.0	69.5



• Characterization in a semi anechoic chamber (30MHz to 6GHz):

**Power supply POE  
Vertical Polarization**

Below 1GHz

Frequency (MHz)	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)
30.65	37.14	-	40
47.5	38.39	-	40
110.75	30.56	-	43.5
230.54	35.59	-	46
290	40.64	-	46

Above 1GHz

Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
2056	41.24	53.9	28.03	73.9

**Power supply POE  
Horizontal Polarization**

Below 1GHz

Frequency (MHz)	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)
87.5	31.85	-	40
125	33.12	-	43.5
189.8	35.69	-	43.5
289.94	35.54	-	46

Above 1GHz

Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
1196	23.9	53.9	36.54	73.9



**Power supply FW7362/12**

<b>Frequency (MHz)</b>	<b>Perpendicular/parallel</b>	<b>Measure (dBµV/m) at 3m</b>	<b>Limit (dBµV/m) at 3m</b>
9.996	<i>Perpendicular</i>	31.2	69.5
20	<i>Perpendicular</i>	22.3	69.5
27.12	<i>Perpendicular</i>	24.7	69.5
27.12	<i>parallel</i>	29.5	69.5

• **Characterization in a semi anechoic chamber (30MHz to 6GHz):**

**Power supply FW7362/12**

**Vertical Polarization**

Below 1GHz

<b>Frequency (MHz)</b>	<b>Peak Level (dBµV/m)</b>	<b>QPeak Level (dBµV/m)</b>	<b>Limit (dBµV/m)</b>
32.35	35.17	-	40
64.2	32.92	-	40
125	33.88	-	43.5
230.6	35.31	-	46
271.2	38.19	-	46
290.12	38.64	-	46

Above 1GHz

<b>Frequency (MHz)</b>	<b>Average Level (dBµV/m)</b>	<b>Average Limit (dBµV/m)</b>	<b>Peak Level (dBµV/m)</b>	<b>Peak Limit (dBµV/m)</b>
2057	27.26	53.9	40.49	73.9

**Power supply FW7362/12**

**Horizontal Polarization**

Below 1GHz

<b>Frequency (MHz)</b>	<b>Peak Level (dBµV/m)</b>	<b>QPeak Level (dBµV/m)</b>	<b>Limit (dBµV/m)</b>
30.65	31.33	-	40
77.2	30.52	-	40
125	36.04	-	43.5
210.02	34.15	-	43.5
289.94	32.58	-	46

Above 1GHz

<b>Frequency (MHz)</b>	<b>Average Level (dBµV/m)</b>	<b>Average Limit (dBµV/m)</b>	<b>Peak Level (dBµV/m)</b>	<b>Peak Limit (dBµV/m)</b>
1584	27.45	53.9	39.94	73.9



See annex for graphics

Result: **PASS**

Limit: →

9kHz to 0,490MHz:	2400/F(kHz) $\mu$ V/m (300m) or 20log(2400/F(kHz))dB $\mu$ V/m (3m) QPeak
0,490MHz to 1.705MHz:	240000/F(kHz) $\mu$ V/m (30m) or 20log(240000/F(kHz))dB $\mu$ V/m (3m) QPeak
1.705MHz to 30MHz:	30 $\mu$ V/m (30m) or 69.5dB $\mu$ V/m (3m) QPeak
30MHz to 88MHz:	100 $\mu$ V/m (3m) or 40dB $\mu$ V/m (3m) QPeak
88MHz to 216MHz:	150 $\mu$ V/m (3m) or 43,5dB $\mu$ V/m (3m) QPeak
216MHz to 960MHz:	200 $\mu$ V/m (3m) or 46dB $\mu$ V/m (3m) QPeak
960MHz to 1000MHz:	500 $\mu$ V/m (3m) or 53.9dB $\mu$ V/m (3m) QPeak
Above 1000MHz:	5012 $\mu$ V/m (3m) or 73.9dB $\mu$ V/m Peak 500 $\mu$ V/m (3m) or 53.9dB $\mu$ V/m (3m) Average



## 8. TEST EQUIPMENT LIST

Frequency Tolerance & Occupied Bandwidth					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Climatic chamber	SECASI Technologies	SLT-34	D1024029	Verified with calibrated thermometer	Verified with calibrated thermometer
Programmable AC power supply	ADAPTIVE POWER SYSTEM	FC210	A7360017	2014/08	2015/08
Thermometer	AOIP	TM 6630	B4041042	2014/12	2016/06
Field strength outside of the bands 13.110-14.010 MHz					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
Open test site	LCIE	-	F2000400	2015-06	2016-06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB	A2642021	2015-01	2016-01
cable		-	A5329362	2015-03	2016-03
Loop Antenna	RHODE & SCHWARZ	HF H2 Z2	C2040007	2014-06	2015-06
Semi anechoic chamber 11,8x8,1x9,5m	SIEPEL	C01	D3044008	2014/09	2015/09
Programmable AC power supply	ADAPTIVE POWER SYSTEM	FC210	A7360017	2014/08	2015/08
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	2014/12	2015/12
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/4000	A5329374	2015/06	2016/06
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA-TDINOX/3.5MD/7000	A5329457	2015/02	2016/02
Preamplifier	LCIE	-	A7086012	2015/05	2016/05
Horn antenna	EMCO	3115	C2042018	2015/05	2016/05
Bilog antenna	CHASE	CBL6111C	C2040124	2014/09	2015/09
Software	NEXIO	BAT-EMC	-	-	-
Field strength within the band 13.110-14.010MHz					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
Open test site	LCIE	-	F2000400	2015-06	2016-06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB	A2642021	2015-01	2016-01
cable		-	A5329362	2015-03-25	2016-03
Loop Antenna	RHODE & SCHWARZ	HF H2 Z2	C2040007	2014-06-2014	2015-06
AC Power Line Conducted Emissions					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
Semi anechoic chamber 11,8x8,1x9,5m	SIEPEL	C01	D3044008	-	-
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/01	2016/01
Cable	CABLES & CONNECTIQUES	-	A5329411	2015/06	2016/06
V LISN	ROHDE & SCHWARZ	ENV216	C2320162	2015/04	2016/04

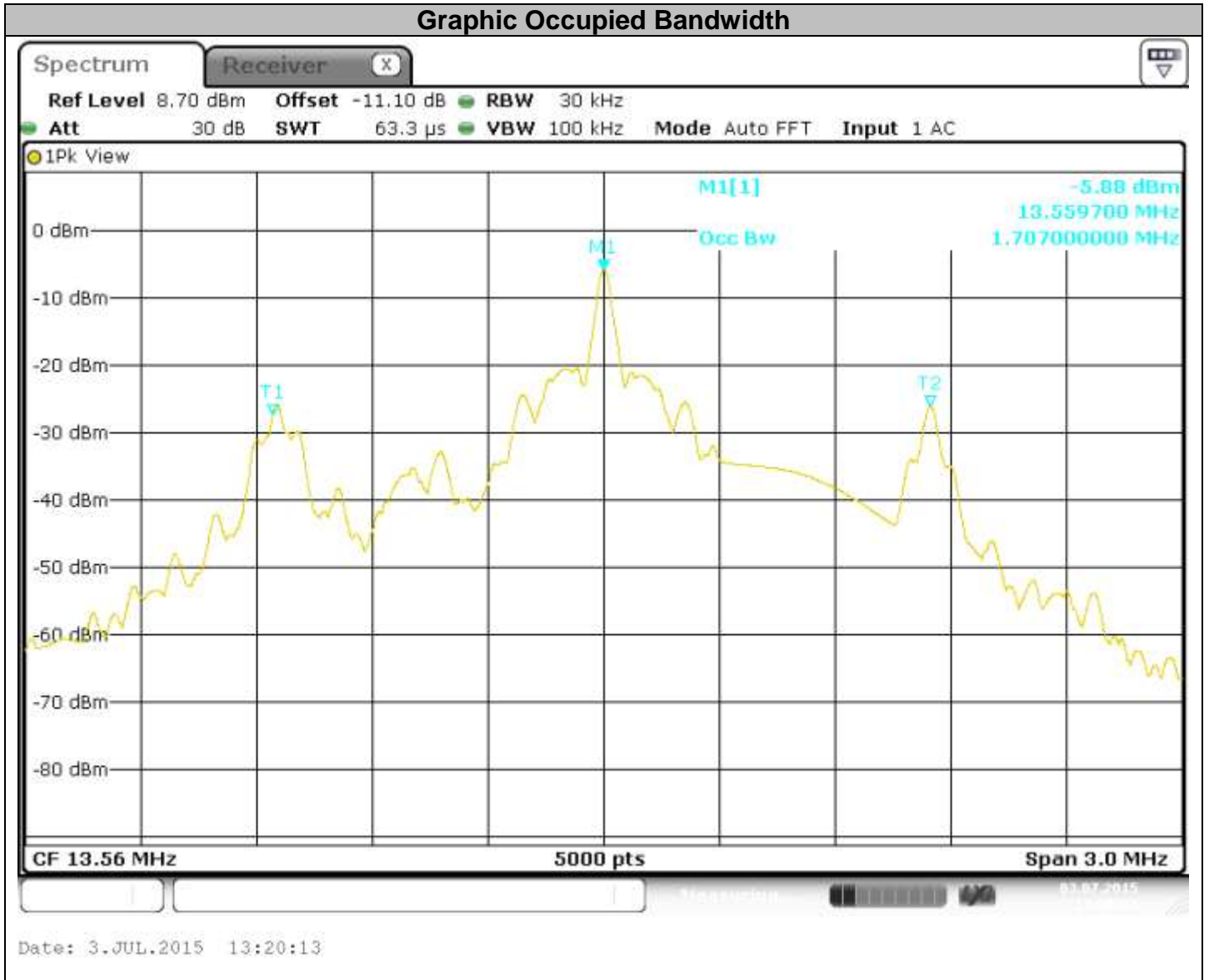


**9. UNCERTAINTIES CHART**

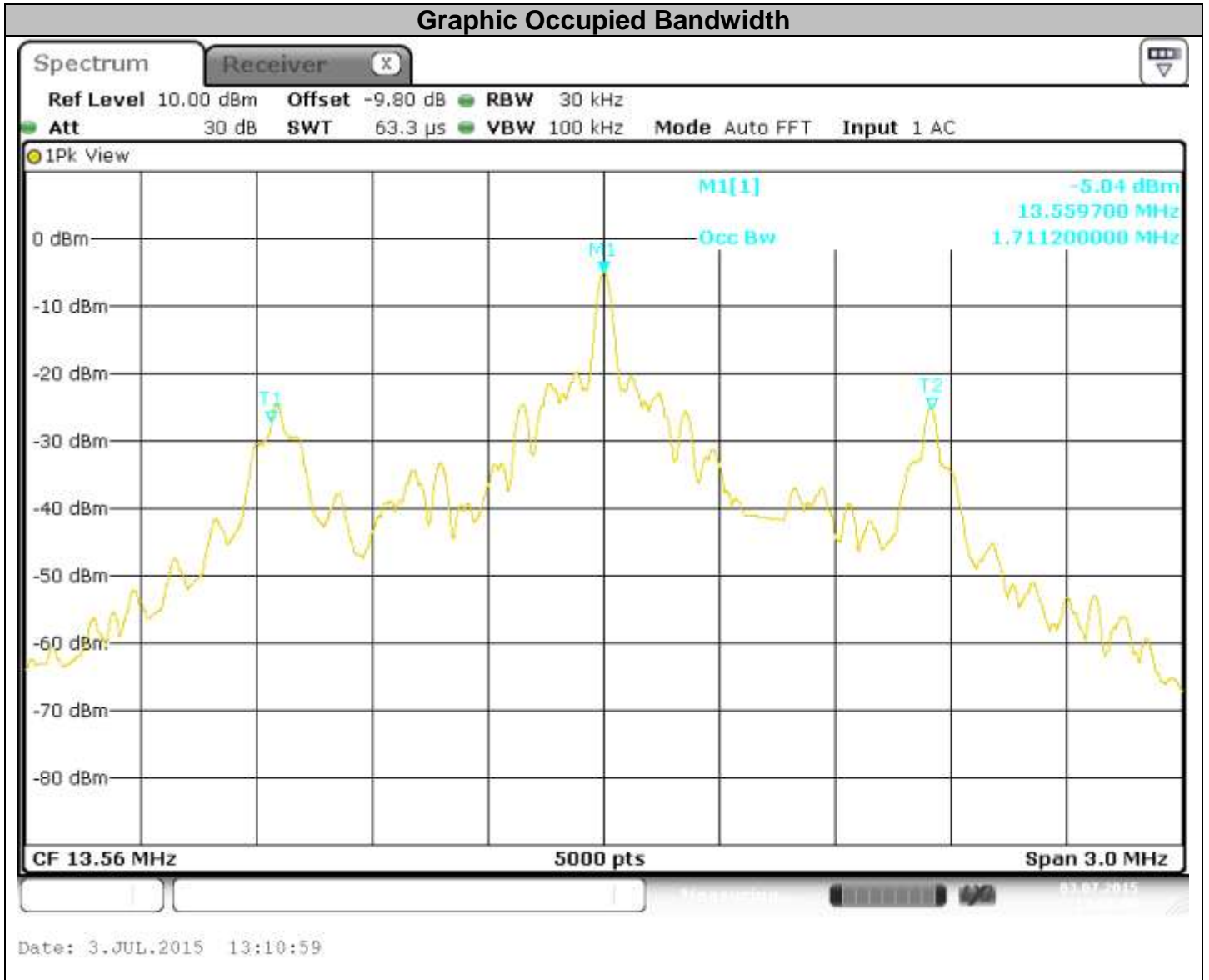
Kind of test	Measurement uncertainties (k=2) $\pm x(\text{dB}) / (\text{Hz})$	Limit for uncertainties $\pm y(\text{dB})$
<b>TRANSMITTER REQUIREMENTS</b>		
Radio frequency	$\pm 2.10^{-8}$ Hz	$\pm 1.10^{-7}$ Hz
RF Conducted power	$\pm 0.6$ dB	$\pm 1.5$ dB
Spurious emissions <ul style="list-style-type: none"> <li>• Frequency &lt; 1000 MHz</li> <li>• Frequency &gt; 1000 MHz</li> </ul>	$\pm 3.9$ dB $\pm 3.1$ dB	$\pm 6$ dB
Spurious in conduction	$\pm 1.6$ dB	$\pm 3$ dB
Temperature	$\pm 0.5^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 2.5$ %	$\pm 10$ %



10. ANNEX (GRAPHS)



Powered supply POE

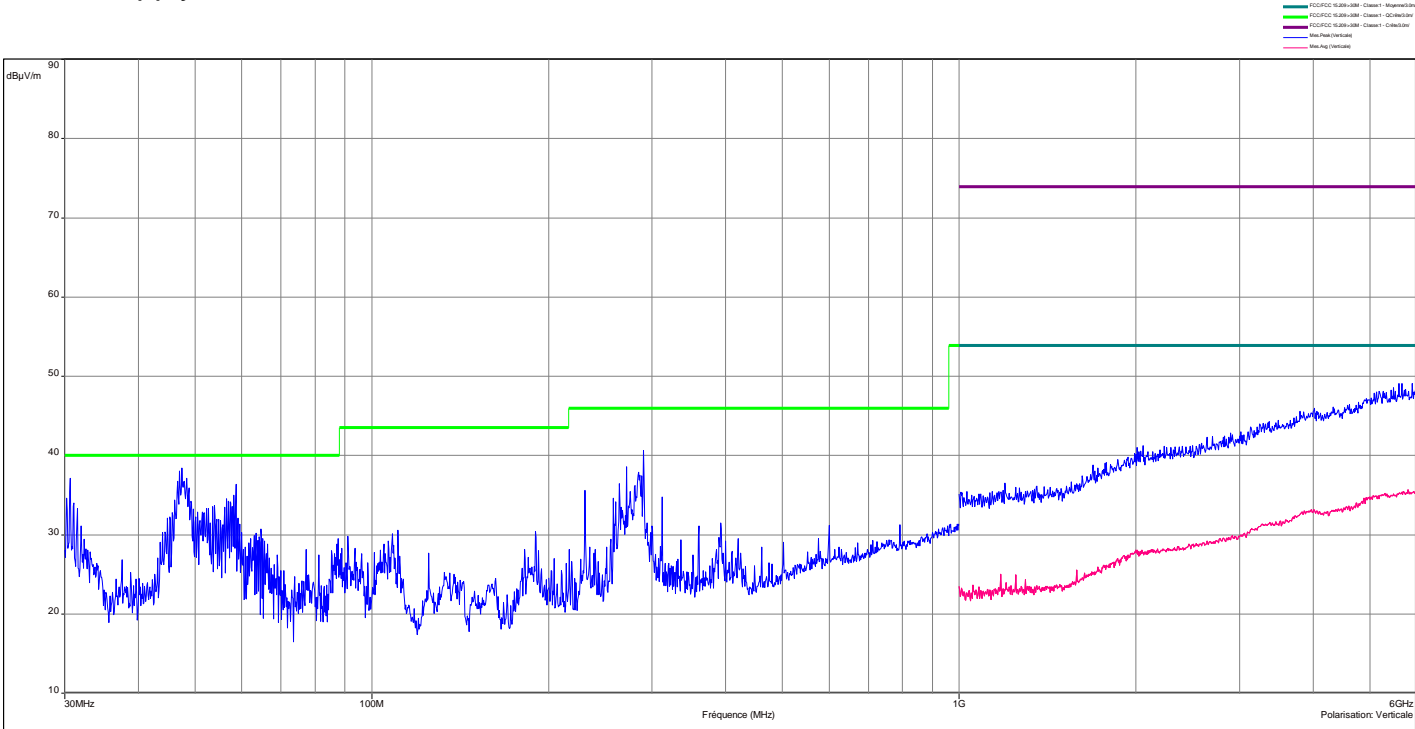


Power supply FW7362/12

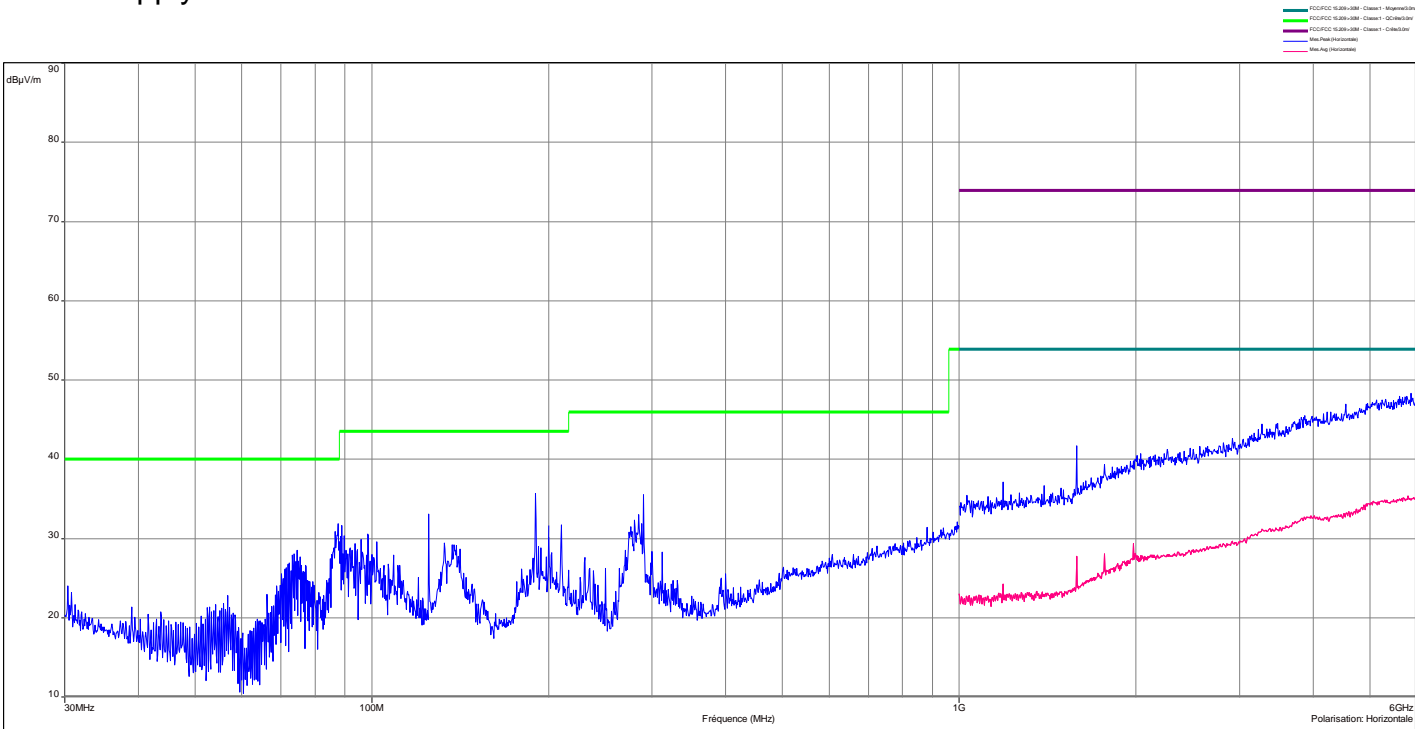




Radiated Emission  
Vertical polarization  
Power supply POE

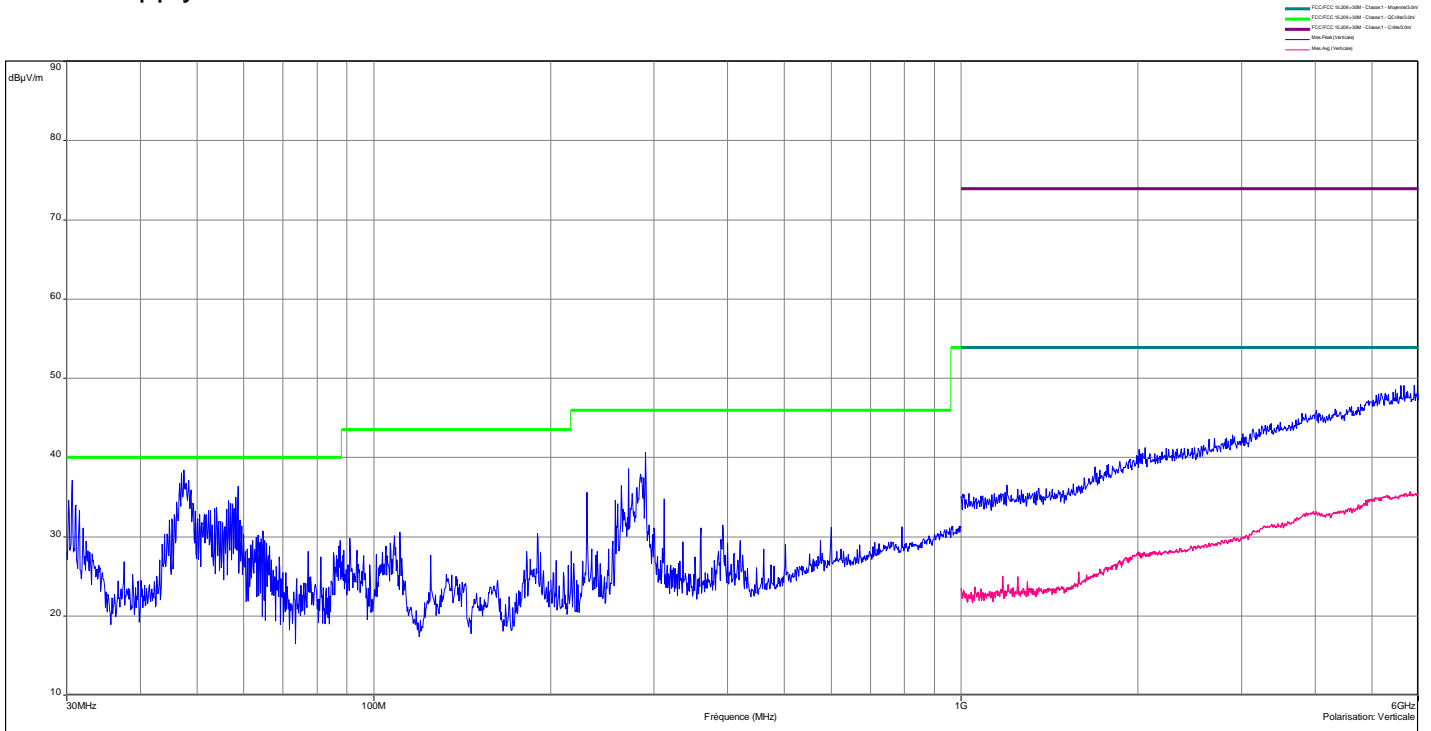


Radiated Emission  
Horizontal polarization  
Power supply POE

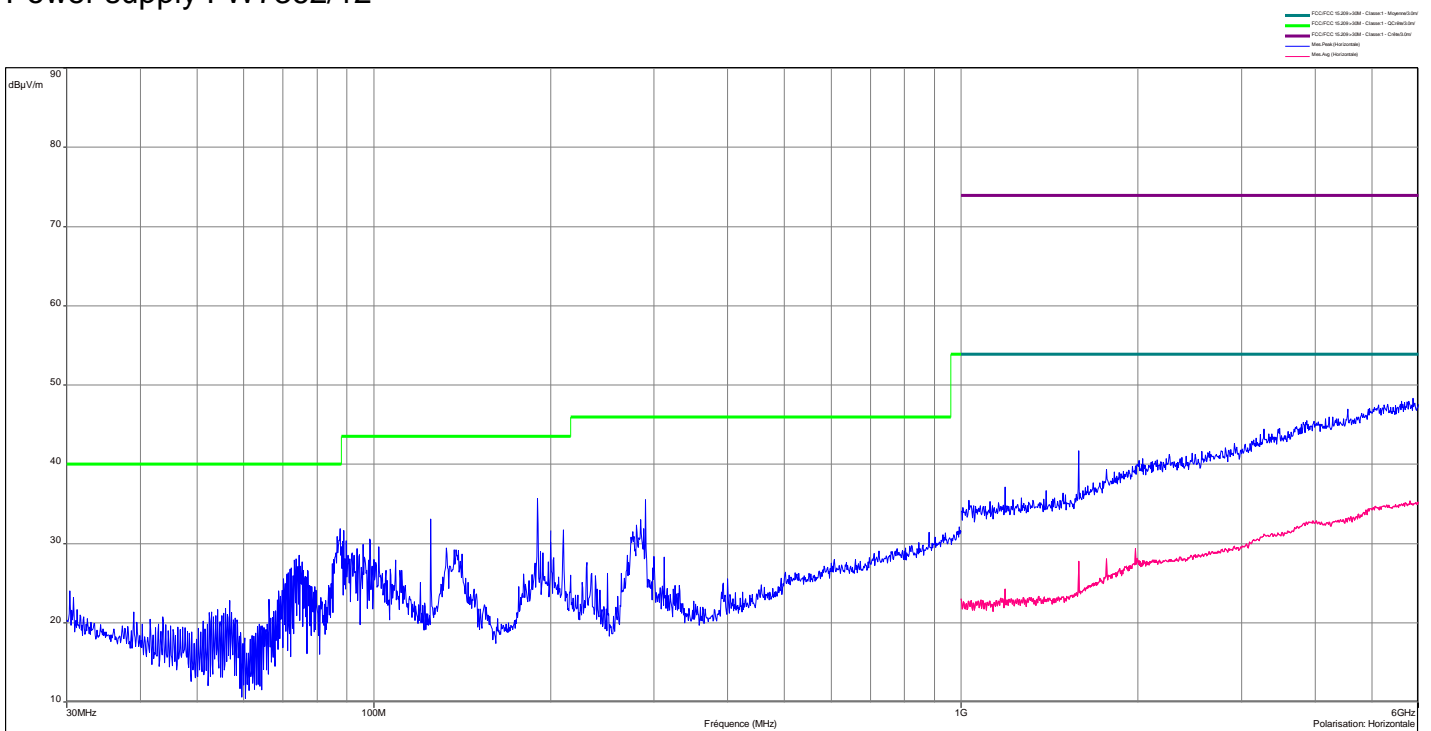




### Radiated Emission Vertical polarization Power supply FW7362/12



### Radiated Emission Horizontal polarization Power supply FW7362/12

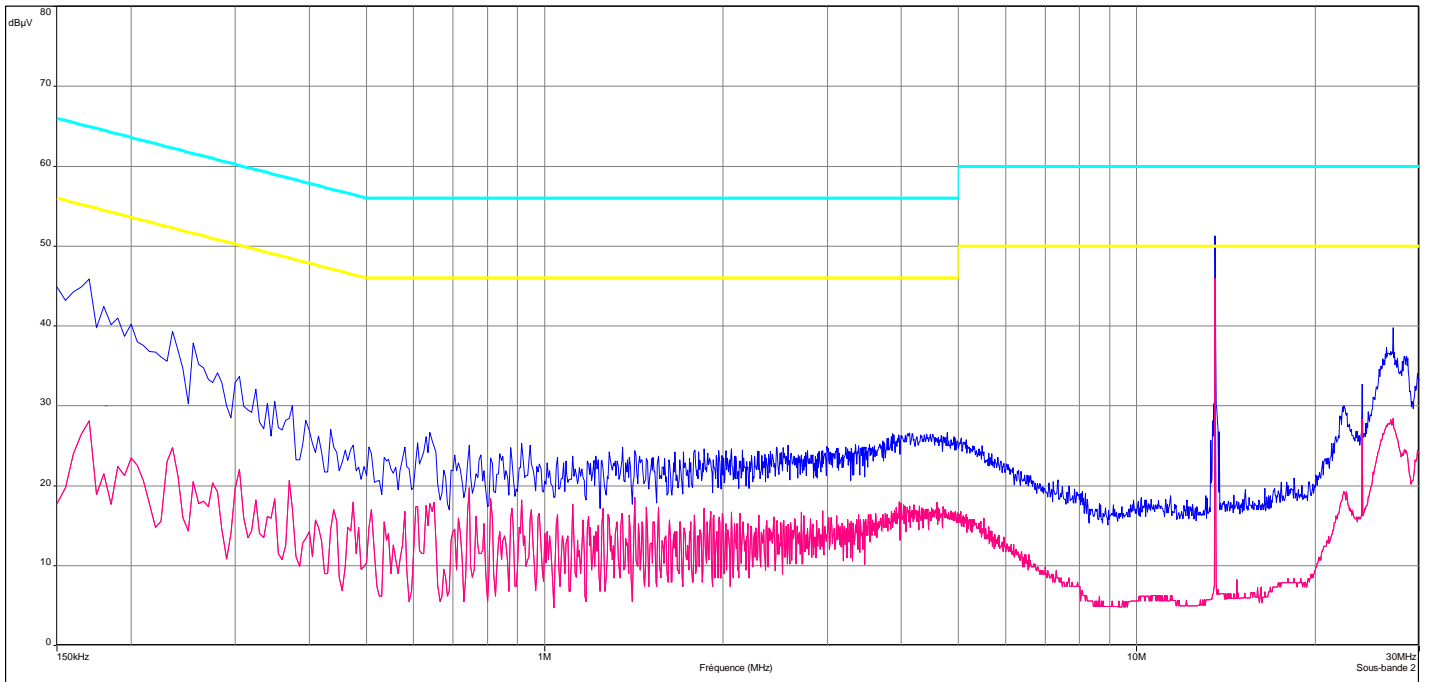




### AC power line conducted emissions Neutral Line Power supply FW7362/12

Client: Suez  
Projet: Suez - 10000 (Modèle de Test 10000)  
Appareil: Suez 10000 (Modèle de Test 10000)  
Lieu: Suez - 10000 (Modèle de Test 10000)  
Ligne: Suez 10000

— FCCFC 15.20 - Classe B - Moyenne  
— FCCFC 15.20 - Classe B - QCM  
— Max Peak (Phase 1)  
— Max Avg (Phase 1)



### AC power line conducted emissions Phase Line Power supply FW7362/12

Client: Suez  
Projet: Suez - 10000 (Modèle de Test 10000)  
Appareil: Suez 10000 (Modèle de Test 10000)  
Lieu: Suez - 10000 (Modèle de Test 10000)  
Ligne: Suez 10000

— FCCFC 15.20 - Classe B - Moyenne  
— FCCFC 15.20 - Classe B - QCM  
— Max Peak (Phase 1)  
— Max Avg (Phase 1)

