LCIE
Etablissement de Moirans
ZI Centr'alp
170, rue de Chatagnon
38430 Moirans

RCS Grenoble 408 363 174

Tél. : +33 4 76 07 36 36
Fax : +33 4 76 55 90 88

Rapport d'essai / *Test report*

N° 56852-A2-R1-E **JDE :** 104110

DELIVRE A / *ISSUED TO*	:	**TAGSYS SA** 785 Voie Antiope Z.I.Athélia III 13600 LA CIOTAT-FRANCE
Objet / *Subject*	:	Essais de compatibilité électromagnétique conformément aux normes **FCC CFR 47 Part 15, Subpart B et C.** *Electromagnetic compatibility tests according to the standards* ***FCC CFR 47 Part 15, Subpart B and C***
Matériel testé / *Apparatus under test*	:	
• Produit / *Product*	:	**UHF RFID LONG RANGE READER**
• Marque / *Trade mark*	:	**TAGSYS**
• Constructeur / *Manufacturer*	:	**TAGSYS**
• Type / *Model*	:	**RXU500**
• N° de série / *serial number*	:	**37010290007**
• FCC ID	:	**QHKRXU500**
Date des essais / *Test date*	:	Le 20 Décembre 2010 et le 3 Janvier 2010 / *December 10th, 2010 and January 3rd, 2010*
Lieu d'essai / *Test location*	:	**LCIE SUD-EST** ZI Centr'Alp – 170 rue de Chatagnon 38430 MOIRANS - FRANCE
Test réalisé par / *Test performed by*	:	Anthony MERLIN

Ce document comporte /*Composition of document :* 25 pages.

MOIRANS, LE 27 JANVIER 2011 / JANUARY 27TH, 2011

Ecrit par / *Written by,*
Anthony MERLIN

Approuvé par / *Approved by,*
Jacques LORQUIN

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
LCIE SUD-EST
ZI Centr'Alp
170, Rue de Chatagnon
38430 MOIRANS
Tél. 04 76 07 36 36

SUMMARY

1. TEST PROGRAM

Standard: **- FCC Part 15, Subpart C 15.247**
- ANSI C63.4 (2009)

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance at mains ports 150kHz-30MHz	**Frequency**	**Quasi-peak value (dBµV)**	**Average value (dBµV)**	**PASS**
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 9kHz-30MHz	**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**
Radiated emissions 30MHz-25GHz*	**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**
Maximum Peak Output Power 15.247 (b)	**Limit: 21dBm** Conducted or Radiated measurement			**PASS**
Hopping Channel Separation 15.247 (a) (1)	**Minimum between:** Two-third 20dB Bandwidth or 25kHz Whichever is greater			**NP*[2]**
Number of Hopping Frequencies 15.247 (a) (1) (iii)	**At least 15 channels used**			**NP*[2]**
Time of Occupancy (Dwell Time) 15.247 (a) (1) (iii)	**Maximum 0.4 sec within 31.6sec**			**NP*[2]**
Band Edge Measurement 15.247 (d)	**Limit: -20dBc**			**NP*[2]**

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

[2]: Modification ClassII, antenna changed only.

2. SYSTEM TEST CONFIGURATION

2.1. JUSTIFICATION

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

2.2. HARDWARE IDENTIFICATION

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

RXU500 Serial number: 37010290007
FCC ID: **QHKRXU500**

Antenna used:
1 x Patch antenna Array US version.

- **Input/output:**

- 1 x Power supply DC port Not used, not tested
- 1 x Ethernet port (POE)
- 1 x USB port type B
- 1 x USB port type A
- 1 x Ethernet port Console Not used, not tested
- 1 x GPIO RS port
- 2 x RP TNC antenna ports

- **Cable:**

- 1 x Ethernet cable shielded, length: 5m
- 1 x Ethernet cable shielded, length: 1m (Between Switch and PC)
- 2 x USB cables, shielded, length: 2m
- 1 x GPIO cable shielded, length: 3m

- **Auxiliaries equipment used during test:**

- 1 x Laptop DELL VOSTRO 1710, Sn: T932DA00
- 1 x Switch NETGEAR ProSafe with POE, model FS108P, Sn: 1DL20436010AB FCCID: DoC
- 1 x Adaptor AC/DC NETGEAR DSA-0421S-501, Sn: 330-10142-01, 100-240VAC 50/60Hz 1.2A, 48VDC / 0.8A.

- **Equipment information:**

- External antenna connector: YES
- Radiated fundamental frequency band: 902-928MHz
- Antenna type: External
- Stand By mode: None
- Normal power source: POE
- Modulation Technology: FHSS
- Maximum Linear Antenna Gain: 3.2dBi

2.3. EUT CONFIGURATION

1) Reading in loop of TAG
2) Communication by Ethernet between the reader and PC with the software Multireader Impinj reader v6.4.0.
3) Power output parameter: 30dBm

2.4. EQUIPMENT MODIFICATIONS

None

2.5. SPECIAL ACCESSORIES

None

3. CONDUCTED EMISSION DATA

3.1. CLIMATIC CONDITIONS

Date of test : December 20th, 2010
Test performed by : A.MERLIN
Atmospheric pressure : 997mb
Relative humidity : 33%
Ambient temperature : 21°C

3.2. SETUP FOR CONDUCTED EMISSIONS MEASUREMENT

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

The product has been tested with 120V/60Hz power line voltage of POE switch 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 with a Rohde & Schwarz ESU8 receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. The LISN (measure) is 50Ω / 50µH.

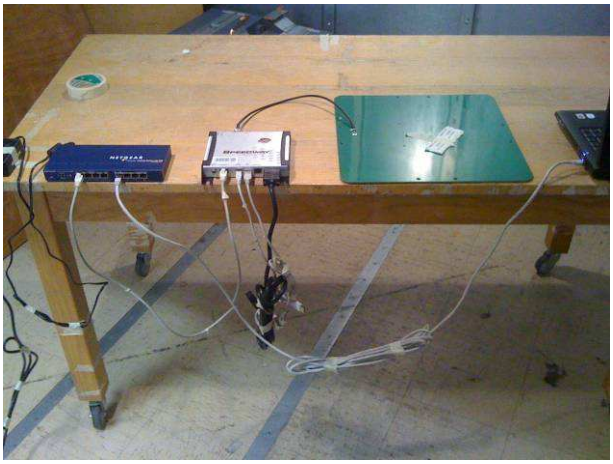
The Peak data are shown on plots in annex 1. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured.

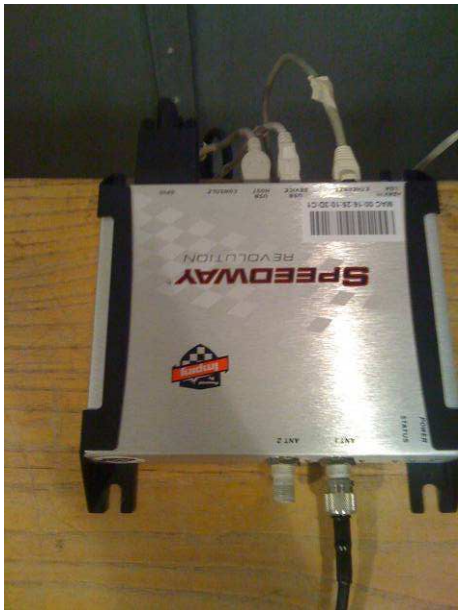
Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

3.3. 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.
Auxiliaries are powered by another LISN.
The cable has been shorted to 1meter length. The EUT is powered trough the LISN (measure).

Conducted emission test setup





3.4. 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.

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

RESULT: PASS

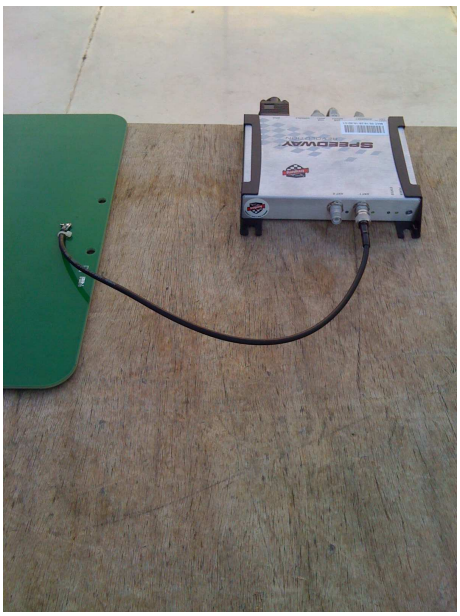
4. RADIATED EMISSION DATA

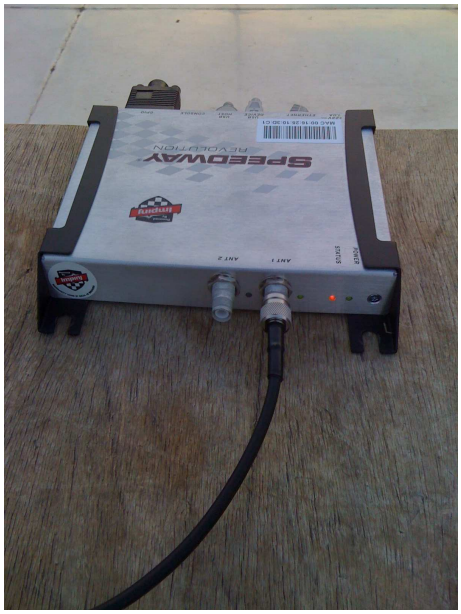
4.1. CLIMATIC CONDITIONS

Date of test : January 3rd, 2011
Test performed by : A.MERLIN
Atmospheric pressure : 981mb
Relative humidity : 31%
Ambient temperature : 21°C

4.2. 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.





Radiated emission test setup

4.3. TEST SEQUENCE AND RESULTS

4.3.1. 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: **Emr#1** (See annex 1)

4.3.2. Pre-characterization [30MHz-10GHz]

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 10GHz, a search is performed in the semi-anechoic chamber in order to determine frequencies radiated by the EUT.

See graphs for 30MHz-1GHz:

Polarisation H:	graph **Emr#2**	*Axis XY*	(see annex 1)
Polarisation V:	graph **Emr#3**	*Axis XY*	(see annex 1)
Polarisation H:	graph **Emr#4**	*Axis Z*	(see annex 1)
Polarisation V:	graph **Emr#5**	*Axis Z*	(see annex 1)

4.3.3. Characterization on 10 meters open site below 30 MHz

The product has been tested according to ANSI C63.4 (2009), 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 §15.109 limits and C §15.209.
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 in following tables.

Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m)	Qpeak-Limit (Margin dB)	Turntable Angle (deg)	Ant. Pol./ Angle (deg)	Tot Corr (dB)
No frequency observed						

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

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

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 10GHz.
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

Worst case final data result:

No	Frequency (MHz)	QPeak Limit (dBµV/m)	Qpeak * (dBµV/m)	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	30.105	40.0	31.6	**-8.4**	220	V	100	15.6	
2	31.658	40.0	30.4	**-9.6**	230	V	100	14.9	
3	32.704	40.0	30.0	**-10.0**	310	V	120	14.4	
4	33.741	40.0	31.0	**-9.0**	280	V	100	13.8	
5	34.775	40.0	32.6	**-7.4**	230	V	100	13.3	
6	36.196	40.0	31.9	**-8.1**	240	V	120	12.6	
7	37.324	40.0	31.2	**-8.8**	195	V	150	12.4	
8	78.764	40.0	33.6	**-6.4**	35	V	150	8.1	
9	84.789	40.0	32.2	**-7.8**	90	V	120	8.5	
10	596.079	46.0	40.4	**-5.6**	100	H	300	23.4	
11	694.746	46.0	42.7	**-3.3**	325	H	400	25.4	
12	794.369	46.0	40.1	**-5.9**	310	H	250	26.7	

*: 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 10GHz

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
	1805.50	54.0	38.8	**-15.2**	235	**H**	100	29.5	
	1830.50	54.0	40.0	**-14.0**	145	**H**	100	29.7	
	1854.50	54.0	39.0	**-15.0**	35	**H**	110	29.8	
	2708.25	54.0	44.9	**-9.1**	255	**H**	120	32.0	
	2745.75	54.0	45.9	**-8.1**	315	**H**	100	32.1	
	2781.75	54.0	46.4	**-7.6**	245	**H**	100	32.3	
	3611.00	54.0	35.3	**-18.7**	75	**V**	120	34.4	
	3661.00	54.0	34.2	**-19.8**	90	**V**	110	34.5	
	3709.00	54.0	34.8	**-19.2**	110	**V**	100	34.7	
	4513.75	54.0	37.4	**-16.6**	300	**V**	120	35.7	
	4576.25	54.0	38.7	**-15.3**	10	**V**	100	35.8	
	4636.25	54.0	37.4	**-16.6**	0	**V**	100	36.0	
	5416.50	54.0	45.2	**-8.8**	45	**H**	110	38.3	
	5491.50	54.0	45.0	**-9.0**	0	**H**	100	38.5	
	5563.50	54.0	44.1	**-9.9**	320	**H**	120	38.5	

No	Frequency (GHz)	Limit Peak (dBµV/m)	Measure Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
	1805.50	74.0	48.8	**-25.2**	235	**H**	100	29.5	
	1830.50	74.0	50.5	**-23.6**	145	**H**	100	29.6	
	1854.50	74.0	44.7	**-29.3**	35	**H**	110	29.8	
	2708.25	74.0	54.9	**-19.1**	255	**H**	120	32.0	
	2745.75	74.0	57.9	**-16.1**	315	**H**	100	32.1	
	2781.75	74.0	57.4	**-16.6**	245	**H**	100	32.3	
	3611.00	74.0	51.1	**-22.9**	75	**V**	120	34.4	
	3661.00	74.0	51.9	**-22.1**	90	**V**	110	34.5	
	3709.00	74.0	58.0	**-16.0**	110	**V**	100	34.7	
	4513.75	74.0	46.8	**-27.2**	300	**V**	120	35.7	
	4576.25	74.0	49.7	**-24.3**	10	**V**	100	35.8	
	4636.25	74.0	46.2	**-27.8**	0	**V**	100	36.0	
	5416.50	74.0	52.0	**-22.0**	45	**H**	110	38.2	
	5491.50	74.0	52.6	**-21.4**	0	**H**	100	38.5	
	5563.50	74.0	52.5	**-21.5**	320	**H**	120	38.5	

Note: Measures have been done at 3m distance.

RESULTS: PASS

4.4. 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.

5. MAXIMUM PEAK OUTPUT POWER (15.247)

5.1. TEST CONDITIONS

Date of test : December 21st, 2010
Test performed by : A.MERLIN
Atmospheric pressure : 991mb
Relative humidity : 34%
Ambient temperature : 21°C

5.2. 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 and using 3MHz RBW and 10MHz VBW.
The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Radiated measurement:
The product has been tested at a distance of 3 meters from the antenna and using 3MHz RBW and 10MHz VBW.
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 following table.
The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.
To demonstrate compliance with peak output power requirement of section 15.247 (b), the transmitter's peak output power is calculated using the following equation:

$$E = \frac{\sqrt{30PG}}{d}$$

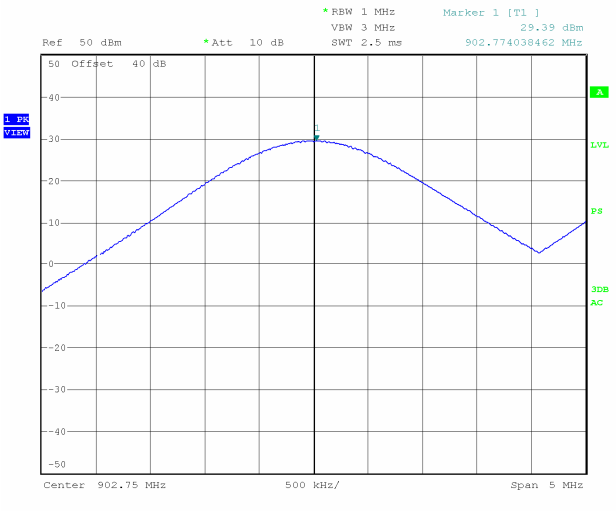
Where:
- E is the measured maximum fundamental field strength in V/m, utilizing a RBW ≥ the 20 dB bandwidth of the emission, VBW > RBW, peak detector function. Follow the procedures in C63.4-1992 with respect to maximizing the emission.
- G is the numeric gain of the transmitting antenna with reference to an isotropic radiator.
- d is the distance in meters from which the field strength was measured.
- P is the power in watts for which you are solving:

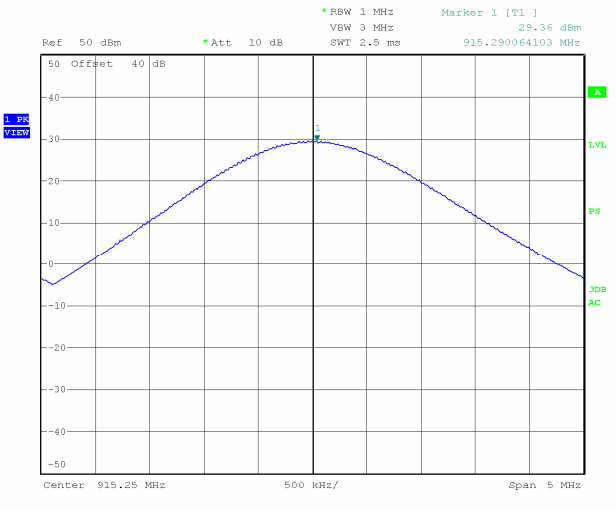
$$P = \frac{(Ed)^2}{30G}$$

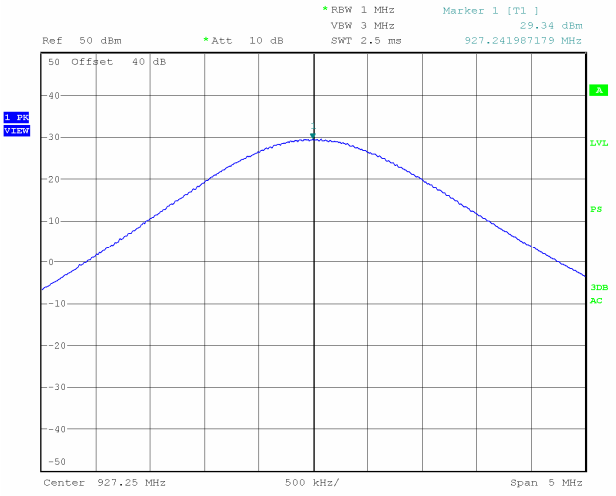
Modulation:

Channel Frequency (MHz)	Peak Output Power (dBm)	Power Limit (dBm)	PASS / FAIL
902.75	29.4	30	PASS
915.25	29.4	30	PASS
927.25	29.4	30	PASS

Graph:

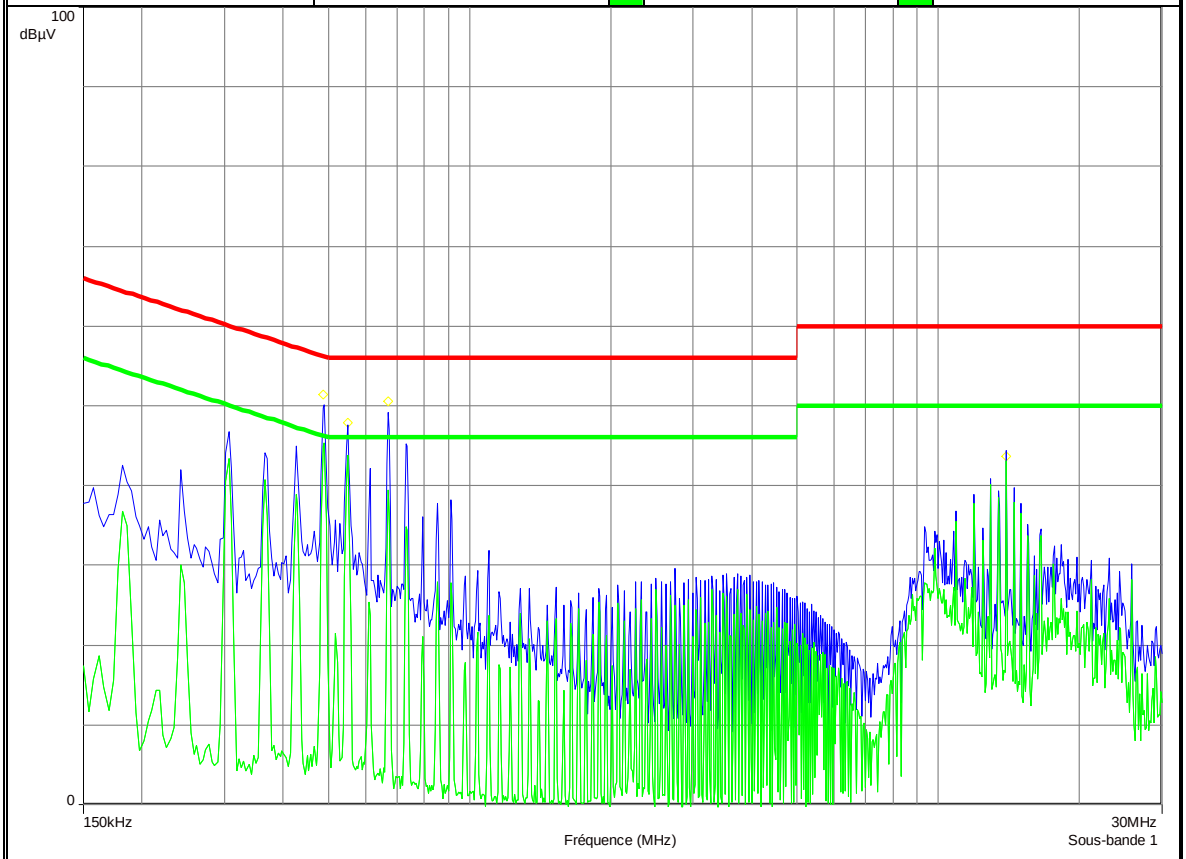






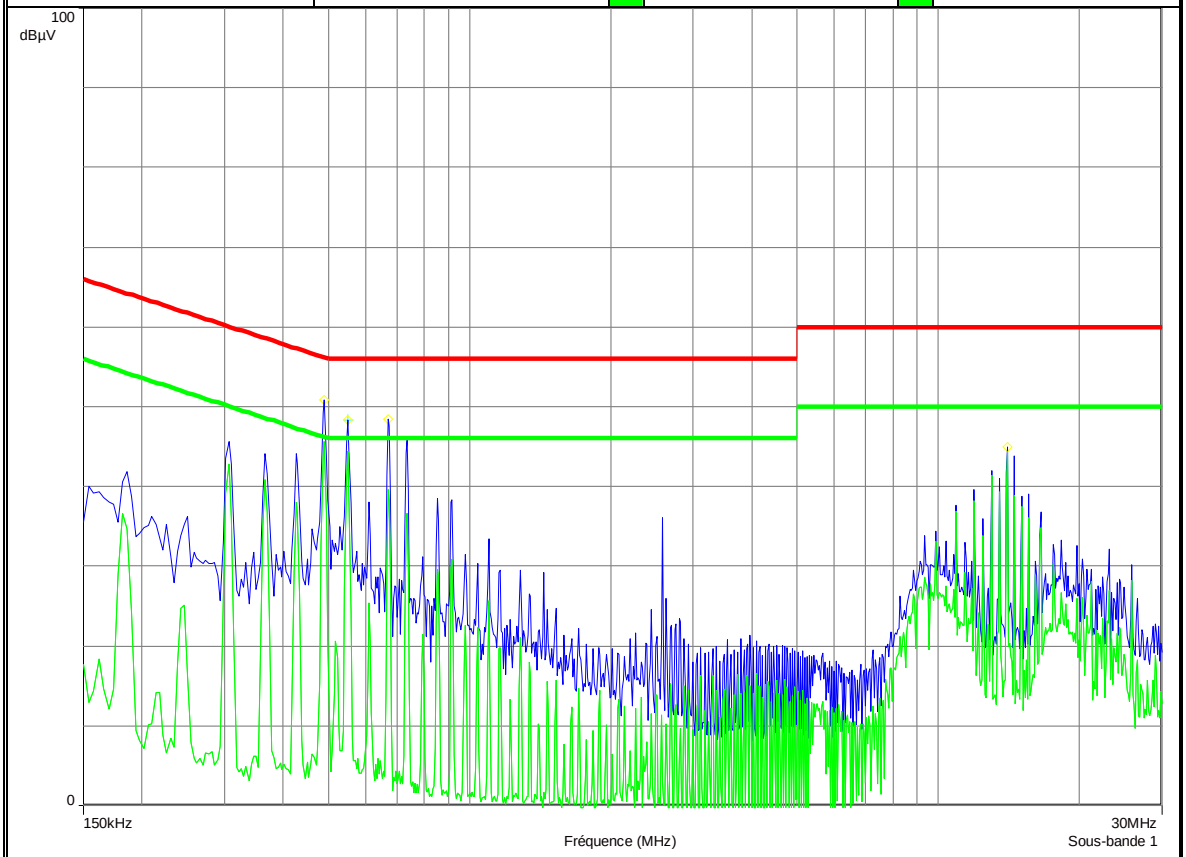
6. ANNEX 1 (GRAPHS)

CONDUCTED EMISSIONS		Test configuration:			
Graph name:	**Emc#1**				
Voltage / Frequency	**120V / 60Hz**				
Line/Port	**Phase 1**	**Peak Measure**		**QPeak Limit**	
RBW / VBW :	**9kHz / 30kHz**	**Average Measure**		**Average Limit**	



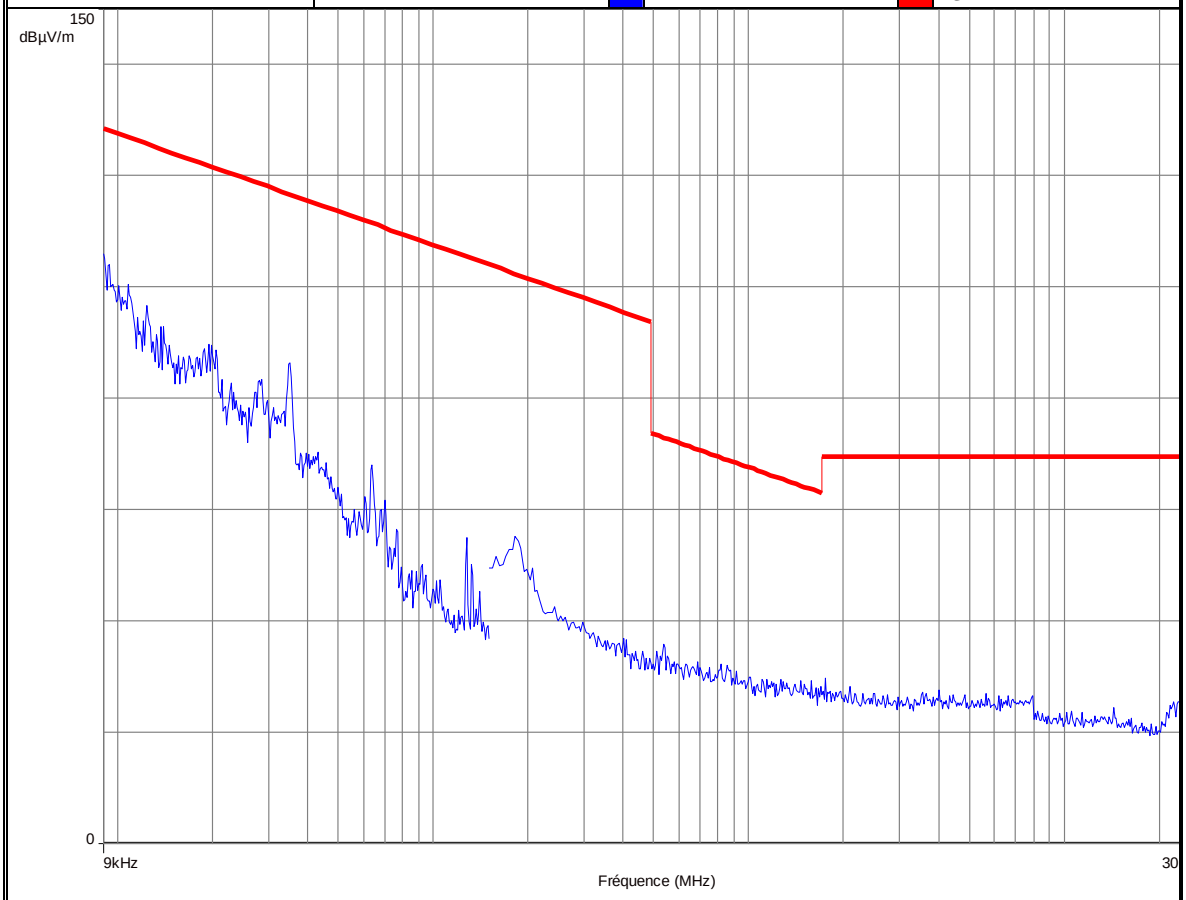
Frequency (MHz)	Avg (dBµV)	Lim Avg (dBµV)	Avg-LimAvg (dBµV)	QPeak (dBµV)	LimQPeak (dBµV)	QPeak-LimQPeak (dBµV)
0.486	45.7	46.2	**-0.5**	50.1	56.2	**-6.1**
0.550	43.8	46.0	**-2.2**	46.3	56.0	**-9.7**
0.670	40.2	46.0	**-5.8**	47.7	56.0	**-8.3**
13.974	42.3	50.0	**-7.7**	42.1	60.0	**-17.9**

CONDUCTED EMISSIONS		Test configuration:			
Graph name:	**Emc#2**				
Voltage / Frequency	**120V / 60Hz**				
Line/Port	**Neutral**	**Peak Measure**		**QPeak Limit**	
RBW / VBW :	**9kHz / 30kHz**	**Average Measure**		**Average Limit**	



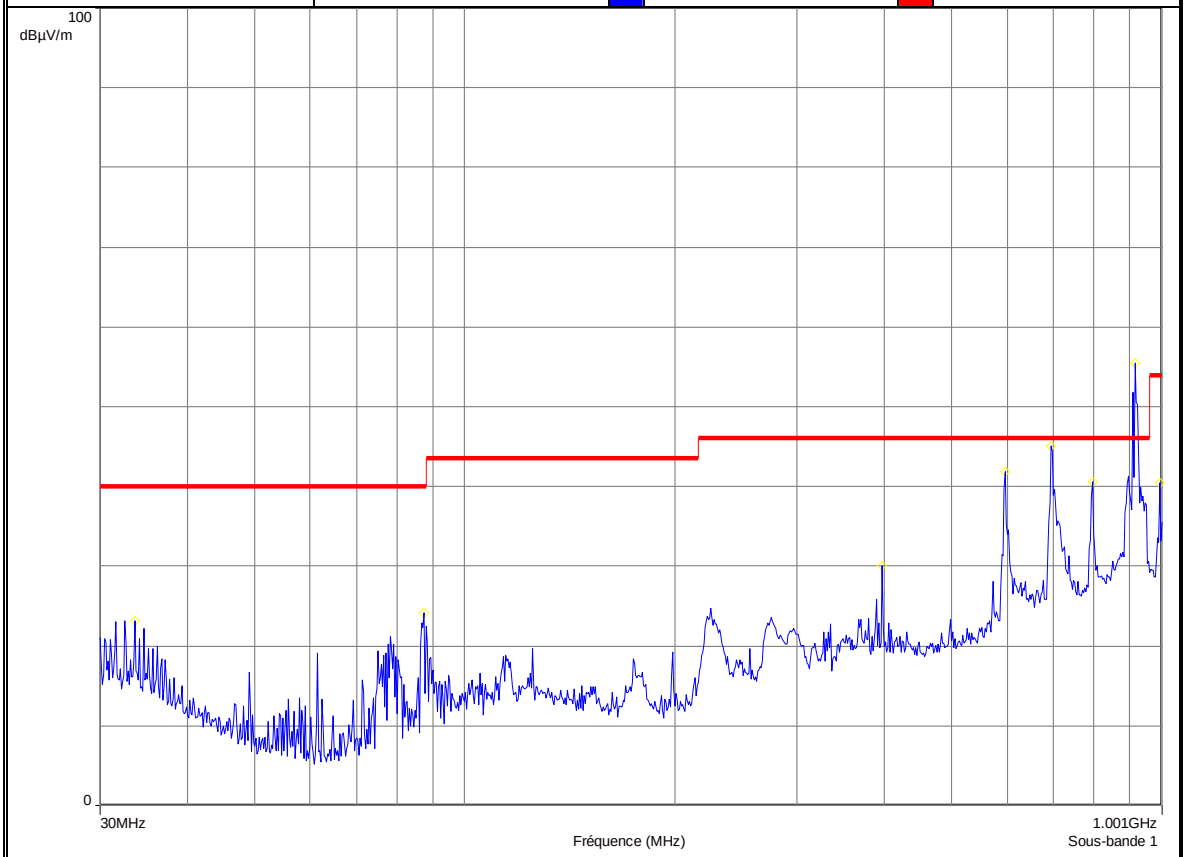
Frequency (MHz)	Avg (dBµV)	Lim Avg (dBµV)	Avg-LimAvg (dBµV)	QPeak (dBµV)	LimQPeak (dBµV)	QPeak-LimQPeak (dBµV)
0.490	45.3	46.2	**-0.9**	49.2	56.2	**-7.0**
0.550	44.1	46.0	**-1.9**	46.5	56.0	**-9.5**
0.670	41.1	46.0	**-4.9**	46.8	56.0	**-9.2**
13.994	43.4	50.0	**-6.6**	44.3	60.0	**-15.7**

RADIATED EMISSION		Test configuration: Axis XY Worst case	
Graph name:	**Emr#1**		
Azimuth:	**0°- 360°**		
RBW:	**200Hz / 9kHz**	**Peak Measure**	**QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
No frequency observed	

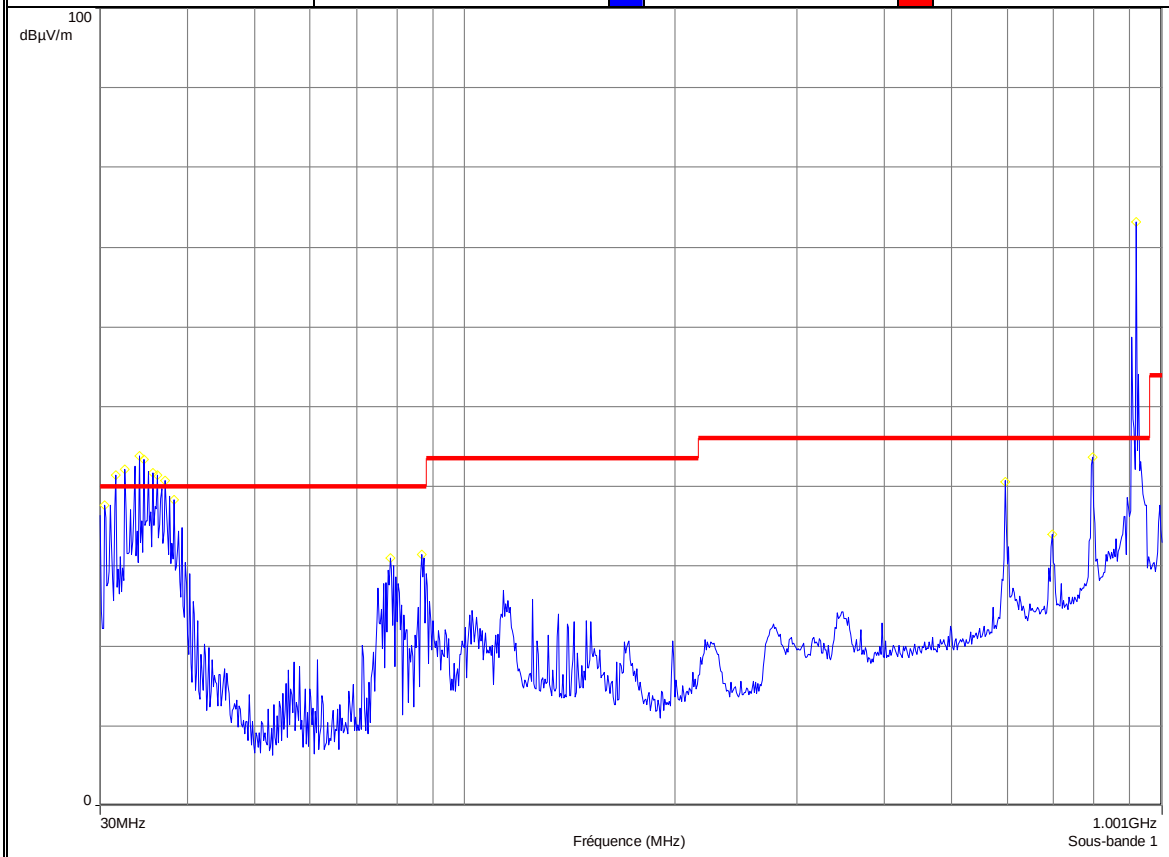
RADIATED EMISSION		Test configuration:
Graph name:	**Emr#2**	**Axis XY (EUT-Antenna)**
Antenna position:	**Horizontal**	
Azimuth:	**0° - 360°**	
RBW/VBW:	**120kHz / 300kHz**	**Peak Measure** / **QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
33.600	23.2
87.450	24.1
397.250	30.0
596.100	41.8
694.750	45.1
794.400	40.6
914.650*	55.5
993.200	40.5

***Carrier Frequency**

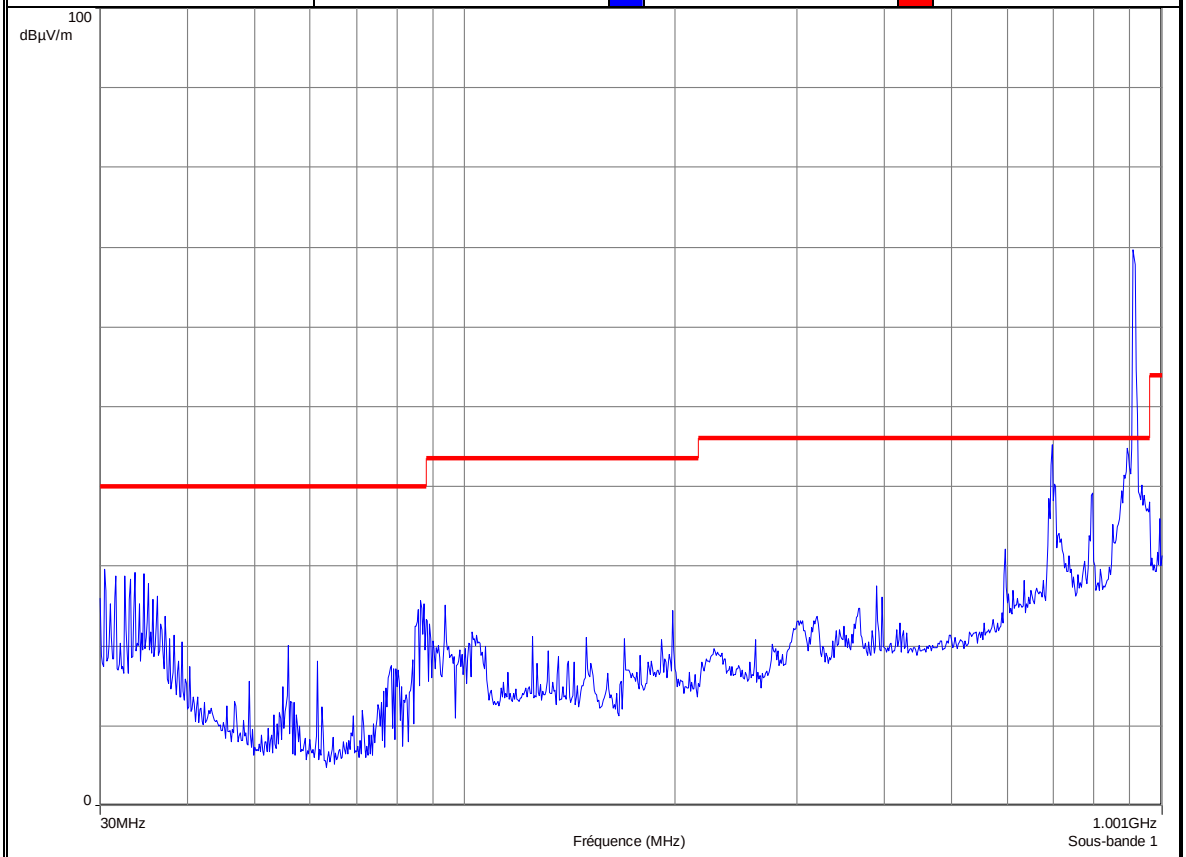
RADIATED EMISSION		Test configuration: Axis XY (EUT-Antenna)
Graph name:	**Emr#3**	
Antenna position:	**Vertical**	
Azimuth:	**0° - 360°**	
RBW/VBW:	**120kHz / 300kHz**	**Peak Measure** / **QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
30.500	37.7
31.550	41.4
32.600	42.2
34.150	43.9
34.650	43.4
35.700	41.7
36.200	41.4
37.250	40.7
38.300	38.4
78.100	31.0
86.900	31.5
596.100	40.6
696.300	33.9
794.650	43.7
919.700*	73.1

***Carrier Frequency**

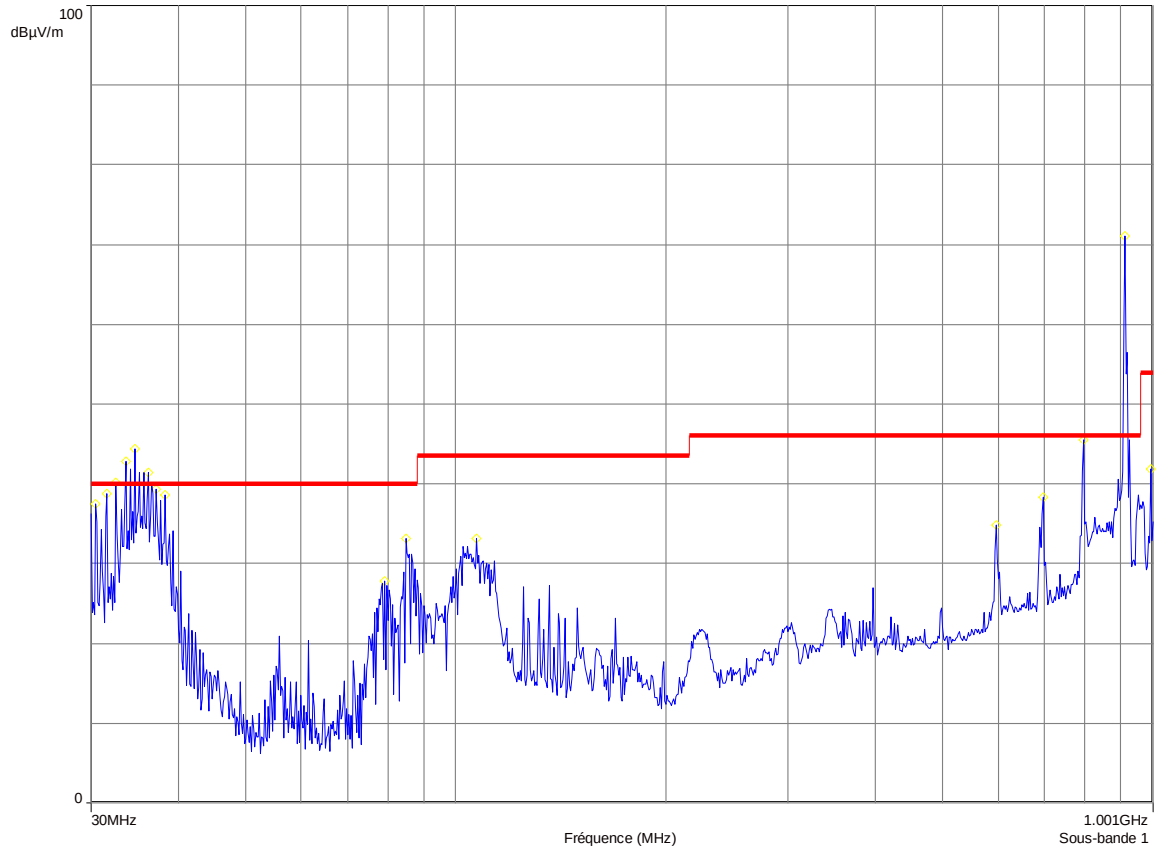
RADIATED EMISSION		Test configuration:
Graph name:	**Emr#4**	**Axis Z (EUT-Antenna)**
Antenna position:	**Horizontal**	
Azimuth:	**0° - 360°**	
RBW/VBW:	**120kHz / 300kHz**	**Peak Measure** / **QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
30.500	29.7
34.650	29.1
695.450	45.2
795.350	39.2
850.700	35.2
909.150*	69.7

***Carrier Frequency**

RADIATED EMISSION		Test configuration: Axis Z (EUT-Antenna)	
Graph name:	**Emr#5**		
Antenna position:	**Vertical**		
Azimuth:	**0° - 360°**		
RBW/VBW:	**120kHz / 300kHz**	**Peak Measure**	**QPeak Limit@3m**



Frequency (MHz)	Peak (dBµV/m)
30.500	37.5
31.550	38.7
32.600	40.2
33.600	42.8
34.650	44.4
36.200	41.5
37.250	39.3
38.250	38.6
79.150	27.8
84.800	33.1
107.050	33.1
595.950	34.9
695.600	38.3
794.600	45.5
914.050*	71.0
993.250	41.9

***Carrier Frequency**

7. TEST EQUIPMENT LIST

USED	N°LCIE	TYPE	COMPANY	REF	CAL DATE	CAL DUE
CONDUCTED EMISSION DATA						
x	A5329415	Cable	-	-	03/10	03/11
x	D3044010	Faraday Cage	RAY PROOF	-	01/10	01/11
x	A3169049	Conducted emission comb generator	BARDET	-	-	-
x	C2320123	LISN	RHODE & SCHWARZ	ENV216	05/10	05/11
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A4049061	Transient limiter	HEWLETT PACKARD	11947A	12/09	12/10
RADIATED EMISSION DATA						
x	A7102026	Amplifier 8-26GHz	ALDETEC	ALS01452	-	-
x	C2040051	Antenna Bi-log	CHASE	CBL6111A	08/10	08/12
x	C2040052	Antenna Loop	ELECTRO-METRICS	EM-6879	12/09	12/10
x	C2042027	Antenna horn	EMCO	3115	09/09	09/10
x	A5329048	Cable	-	-	12/09	12/10
x	A5329206	Cable	UTIFLEX	-	02/10	02/11
x	D3044017	Semi-Anechoic chamber #3	SIEPEL	-	-	-
x	A3169050	Radiated emission comb generator	BARDET	-	-	-
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A4060018	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	02/10	02/11
x	F2000371	Turntable chamber (Cage#3)	ETS Lingren	Model 2165	-	-
x	F2000393	Turntable controller (Cage#2-3)	ETS Lingren	Model 2066	-	-
x	A4049060	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	06/10	06/12
x	C2040050	Antenna biconic	EMCO	3104C	01/10	01/11
x	C2040056	Antenna log-periodic	EMCO	3146	01/10	01/11
x	C2042027	Antenna horn	EMCO	3115	09/09	09/10
x	A5329061	Cable	SUCOFLEX	106G	12/09	12/10
x	A5329188	Cable OATS (Mast at 10m)	UTIFLEX	-	05/10	05/11
x	A5329199	Cable OATS (Mast at 10m)	UTIFLEX	-	05/10	05/11
x	F2000409	OATS	-	-	08/10	08/11
x	A4060030	Pre-selector RF	HEWLETT PACKARD	HP85685A	-	-
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A4060017	Spectrum analyzer	HEWLETT PACKARD	HP8568B	06/10	06/12
x	A4060019	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	06/10	06/12
x	F2000372	Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	-	-
x	F2000392	Antenna mast (OATS)	ETS Lindgren	2071-2	-	-
x	F2000403	Turntable (OATS)	ETS Lindgren	Model 2187	-	-
MAXIMUM PEAK OUTPUT POWER						
x	A5329206	Cable	UTIFLEX	-	02/10	02/11
x	A2642019	Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	10/10	10/11
x	A7122167	Attenuator 10dB 18GHz 2W	JFW	-	02/10	02/11

8. 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