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Rapport d'essai / *Test report*

JDE : 92789 **N°:** 200904-5371A-R1-E

DELIVRE A / *ISSUED TO* : **INGENICO**
Rue Claude CHAPPE – BP346
07503 GUILHERAND GRANGES
FRANCE

Objet / *Subject* : Essais de compatibilité électromagnétique conformément aux normes :
Electromagnetic compatibility tests according to the standards:
FCC CFR 47 Part 15, Subpart B.
ANSI C63.4 (2003)

Matériel testé / *Apparatus under test* :

- Produit / *Product* : Terminal de paiement bancaire / *Bank payment terminal*
- Marque / *Trade mark* : INGENICO
- Constructeur / *Manufacturer* : INGENICO
- Type / *Model* : **ICT220**
- N° de série / *serial number* : 0902CT40000803
- FCC ID : XKB-ICT220

Date des essais / *Test date* : 16 avril 2009 / *April 16th, 2009*

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

Test réalisé par / Test per*formed by* : Laurent Chapus

Ce document comporte /*Composition of document:* 16 pages.

MOIRANS, LE 10 SEPTEMBRE 2009, *SEPTEMBER 10TH, 2009*

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1. TEST PROGRAM

1.1. REQUIREMENTS FOR DISTURBANCE EMISSIONS

Standard: **- FCC Part 15, Subpart B (Digital Devices)**
- ANSI C63.4 (2003)

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance at mains ports 150kHz-30MHz	**Frequency**	**Quasi-peak value (dBµV)**	**Average value (dBµV)**	**PASS**
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 30MHz-2GHz	**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**

NA: Not Applicable
NP: Not Performed

2. APPARATUS UNDER TEST: CONFIGURATION

2.1. JUSTIFICATION

The system was configured for testing in a typical fashion (as a customer would normally use it). All functions available on the ICT220 are activated during the measurement test.
The equipment is tested with the Magic Box connection cable.

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES)

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

ICT220 **Serial Number: 0902CT40000803**
FCC ID: XKB-ICT220
P/N: ICT220-01T052A
I/O connection cable N° 293523360 (MAGIC BO X)

→ With mains power adapter INGENICO Model: 153051
P/N: 179901469
Input: 120Vac 50-60Hz 400mA
Output: 8Vdc/2A

- Internal frequencies: Max is 387MHz (Application CPU clock)
- Dimensions: 195 x 85 x 60 mm
- Soft: Test CEM V01.02

- **Inputs/outputs on Magic Box:**
  - 1x DC power input (8Vdc)
  - 1x Serial link (RS232C)
  - 1x Ethernet line
  - 1x Dial-up Modem line IN

- **Cables:**
  - 1x Magic Box extension cord with I/O connectors, spiraled, unshielded: 1m
  - 1x DC power supply cable (fixed on mains power unit), unshielded: 1.75m
  - 1x Ethernet cable, Cat 5e, unshielded: 3m
  - 1x RS232 Com cable, RJ11, unshielded, 1.5m
  - 1x Line In cable, RJ11, unshielded, 1.5m

- **Auxiliaries equipment used during test:**

- 1x Smartcard (Bank card)	sn: none
- 2x SAM cards	sn: none
- 1x Laptop PC TOSHIBA SATELITE S1410-704 (PS141E-04YCM-3V) with its power supply unit (PA3201U-1ACA SEB100P2-15.0)	Sn: 13594938G
-1x TELTON Telephone line simulator TLS-5B-01	Sn: 014184

2.3. RUNNING MODE

The EUT is connected to a laptop PC with its Ethernet link. A ping function is activated between PC and ICT220.
The inboard software (TEST CEM) performed the followings tests and activates the followings functions:

- Ethernet ON (Ping function with a PC),
- Printer ON,
- Modem is online
- Smartcards reading: CAM0, SAM1 and 2 (power ON and reading)
- Backlight and display are ON.

2.4. EQUIPMENT MODIFICATIONS

None

2.5. SPECIAL ACCESSORIES

Special accessories used during testing are supplied with the equipment under test:

- Connection cable (spiraled, attached to EUT): Magic Box
- US Power supply adapter

3. MEASUREMENT OF RADIATED EMISSION (30MHZ TO 2GHZ)

3.1. TEST CONDITIONS

Date of test	: April 16th, 2009
Test performed by	: Laurent CHAPUS
Atmospheric pressure	: 985mb
Relative humidity	: 35%
Ambient temperature	: 22°C

3.2. SETUP FOR RADIATED EMISSIONS MEASUREMENT

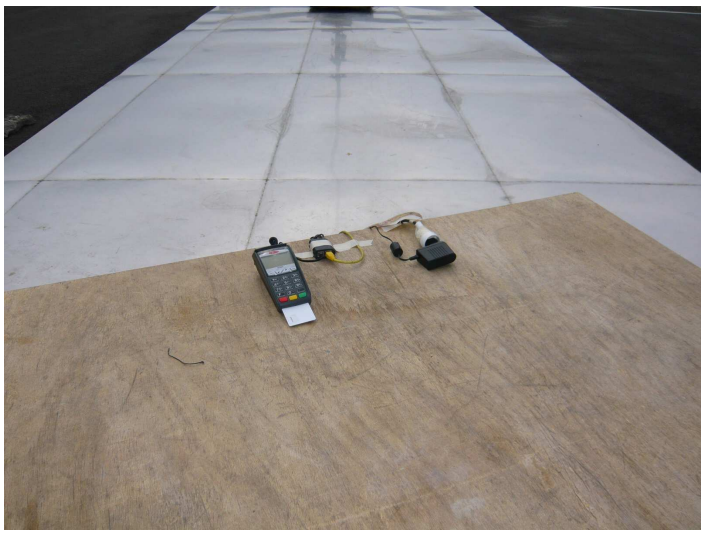
The installation of EUT is identical for pre-characterization measures in a 3 meters full anechoic chamber and for measures on the 10 meters Open site.
The EUT is set on the non-conducting table of 80 cm height.
The EUT is powered by 120Vac/60Hz.
The Ethernet port of the EUT is connected to a PC.

Pre-characterisation measurement:
A pre-scan of all the setup has been performed in a 3 meters full anechoic chamber. The distance between EUT and antenna is 3 meters. Test is performed in horizontal (H) and vertical (V) polarization.
The pre-characterization graphs are obtained in PEAK detection. During the max-hold measurement, the EUT is rotated on 360 degree range.

For frequency band 1GHz to 2GHz, a manual search is performed in the anechoic chamber in order to determine frequencies radiated by the EUT.

Characterization on 10 meters open site from 30MHz to 2GHz:
The product has been tested according to ANSI C63.4 (2003), FCC part 15 subpart B. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC.

The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart B §15.109 limits.
Measurement bandwidth was 120kHz from 30 MHz to 1GHz and 1MHz from 1GHz to 2GHz.
Antenna height search was performed from 1m to 4m for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range.
A summary of the worst case emissions found in all test configurations and modes is shown on clause 3.4 (Pre-characterization results).



3.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

3.4. MEASUREMENTS RESULTS

Pre-characterisation measurement: pre-scan measurement at 3m (PEAK detection)

30MHz-1GHz Polarisation H: graph **Emr#H** (see annex 1)
Polarisation V: graph **Emr#V** (see annex 1)
1GHz-2GHz No frequency observed

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

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

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	42.968	40.0	32.1	**-7.9**	285	V	100	12.1	
2	70.125	40.0	39.2	**-0.8**	120	V	100	9.8	
3	114.711	43.5	38.9	**-4.6**	20	V	140	15.9	
4	139.240	43.5	43.0	**-0.5**	270	V	100	14.4	
5	145.154	43.5	33.5	**-10.0**	10	V	100	14.5	
6	671.780	46.0	42.9	**-3.1**	75	H	170	24.9	
7	875.020	46.0	43.9	**-2.1**	150	H	140	27.5	
8	999.990	54.0	51.3	**-2.7**	70	H	210	29.7	

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

RESULT: PASS

3.5. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

FS = RA + AF + CF – AG

Where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 is added. The amplifier gain of 29dB is subtracted, giving 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.

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

4.1. TEST CONDITIONS

Date of test	: April 16th, 2009
Test performed by	: Laurent CHAPUS
Atmospheric pressure	: 985mb
Relative humidity	: 35%
Ambient temperature	: 22°C

4.2. SETUP FOR CONDUCTED EMISSIONS MEASUREMENT

Mains terminals:
The EUT with its auxiliaries are set on a non-conducting 80cm above the ground reference plane.
The distance between the EUT and the LISN is 80cm. The EUT is 40cm away for the vertical ground plane.
The EUT is powered through a LISN 50Ω / 50µH (measure). Auxiliaries are powered by another LISN.

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

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

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.

4.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

4.4. MEASUREMENTS RESULTS

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

Results: (PEAK detection)
Measure on L1: graph **Emc#L1** (see annex 1)
Measure on N : graph **Emc#N** (see annex 1)

RESULT: PASS

5. TEST EQUIPMENT LIST (MOIRANS SITE)

	N°LCIE	TYPE	COMPANY	REF	SN
RADIATED EMISSION MEASUREMENT (PRE-SCAN SEMI-ANECHOIC CHAMBER #2)					
	A5329032VO	Absorption clamp	LUTHI	MDS21	2826
	A5329044VO	Absorption clamp	RHODE ET SCHWARZ	85024A	194.0100.50
X	A4049060VO	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	
	A7102024VO	Amplifier 8 GHz	HEROTEK	A1080304A	222033
X	A7486006VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447F	3113A07116
	A7085008VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	2944A06838
	A7085009VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	2944A08871
	A7085010VO	Amplifier 10MHz – 1300 MHz	A-INFO INC	JXWBLA-T	
X	C2040146VO	Antenna Bi-Log XWing	TESEQ	CBL6144	25904
	C2042027VO	Antenna horn	EMCO	3115	6382
	C2042028VO	Antenna horn 26GHz	SCHWARZBECK	BBHA 9170	BBHA9170232
	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	690234
X	A5329045VO	Cable EMR (s-Anechoic chamber)			
X	A5329056VO	Cable Radiat EMI (Pre-amp/Analyzer)			
X	A5329057VO	Cable Radiat. EMI (Pre-amp/cage)			
	A2642019	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	100131
X	A4060030VO	Pre-selector RF	HEWLETT PACKARD	HP85685A	
X	A3169050VO	Radiated emission comb generator	BARDET		PR17B
X	D3044015VO	Semi-Anechoic chamber #2	SIEPEL		
X	A4060029VO	Spectrum analyzer	HEWLETT PACKARD	HP8568B	
X	A4060028VO	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	
X	F2000404VO	Turntable chamber	ETS Lingren	Model 2165	00085780
X	F2000393VO	Turntable controller chamber	ETS Lingren	Model 2066	
RADIATED EMISSION MEASUREMENT (OPEN AREA TEST SITE)					
	A5329032VO	Absorption clamp	LUTHI	MDS21	2826
	A5329044VO	Absorption clamp	RHODE ET SCHWARZ	85024A	194.0100.50
X	A4049059VO	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	2811A01134
	A7102024VO	Amplifier 8 GHz	HEROTEK	A1080304A	222033
	A7102026VO	Amplifier 8-26GHz	ALDETEC	ALS01452	1
	A7085008VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	2944A06838
	A7085009VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	2944A08871
	A7085010VO	Amplifier 10MHz – 1300 MHz	A-INFO INC	JXWBLA-T	
X	C2040050VO	Antenna biconic	EMCO	3104C	9401-4636
	C2040051VO	Antenna Bi-log	CHASE	CBL6111A	1628
	C2042027VO	Antenna horn	EMCO	3115	6382
	C2042028VO	Antenna horn 26GHz	SCHWARZBECK	BBHA 9170	BBHA9170232
X	C2040056VO	Antenna log-periodic	EMCO	3146	2178
	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	690234
X	F2000288VO	Antenna mast	EMCO	1050	
X	A5329048VO	Cable EMR OATS	SUCOFLEX	106G	553
X	A5329199VO	Cable OATS (Mast at 10m)	UTIFLEX		
X	A5329188VO	Cable OATS (Mast at 10m)	UTIFLEX		
	A5329076VO	Cable OATS (Mast at 3m)	UTIFLEX		
	A5329196VO	Cable OATS (Turntable)	UTIFLEX		
	A5329187VO	Cable OATS (Turntable)	UTIFLEX		
	A2640011VO	Measurement receiver 9kHz–30MHz	ROHDE ET SCHWARZ	ESH3	972079/117
X	A2642019	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	100131
X	A4060027VO	Pre-selector RF	HEWLETT PACKARD	HP85685A	2837A00784
X	A3169050VO	Radiated emission comb generator	BARDET		PR17B
X	A4060017VO	Spectrum analyzer	HEWLETT PACKARD	HP8568B	2732A04155
	A4060018VO	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	3409u00537
	A4060016VO	Spectrum analyzer 9kHz –1.8GHz	HEWLETT PACKARD	8591E	3536A00384
X	A4060019VO	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	2816A16603
X	F2000403VO	Turntable	ETS LINDGREN	Model 2187	
X	F2000286VO	Turntable / Antenna mast controller	ETS LINDGREN	Model 2066	
CONDUCTED MEASUREMENT EMISSION					
X	A5329061VO	Cable Conduct. EMI			
X	A5329060VO	Cable Conduct. EMI			
	A5329189VO	Shielded cable	UTIFLEX		
	A5329076VO	Shielded cable	UTIFLEX		
	A5329206VO	Shielded cable	UTIFLEX		
	A5329207VO	Shielded cable	UTIFLEX		

	N°LCIE	TYPE	COMPANY	REF	SN
	A5329060VO	Shielded cable	UTIFLEX		
	A5329071VO	Shielded cable	UTIFLEX		
	A3169049VO	Conducted emission comb generator	BARDET		CGPR12
	A4040015	Clickmeter	SCHAFFNER	DIA1512D	22338
	A5329037VO	Current injection probe	SCHAFFNER	CIP8213	52
	A1290017VO	Current probe	SCHAFFNER	CSP9160	1097
	A5329036VO	Direct Injection Module 100+50 Ohms	LCIE	MID01-100 ohms	
	A7156004VO	Direct Injection Module 100+50 Ohms	LUTHI	CR100A	221
	A5329042VO	Ferrite Tube	LUTHI	FTC 101	4485
	A1092042VO	Ferrite Tube	LUTHI	FTC101	4763
	C2320059VO	LISN	EMCO	3810/2SH	9511/1182
	C2320068VO	LISN	EMCO	3825/2	9309/2122
	C2320061VO	LISN	TELEMETER ELECTRONIC	NNB-2/16Z	98010
X	C2320062VO	LISN tri-phase ESH2-Z5	RHODE ET SCHWARZ	33852.19.53	841223/008
	C2320063VO	LISN tri-phase ESH2-Z5	RHODE ET SCHWARZ	33852.19.53	841223/007
X	C2320123VO	LISN	RHODE ET SCHWARZ	ENV216	100037
	A2640011VO	Measurement receiver 9kHz–30MHz	ROHDE ET SCHWARZ	ESH3	972079/117
X	A2642019VO	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	100131
	C2320067VO	ISN 2 x 2 wires	RHODE ET SCHWARZ	ENY22	836727/015
	C2320066VO	ISN 4 wires	RHODE ET SCHWARZ	ENY41	838119/023
	C2320124VO	ISN 4 wires	TESEQ	T400A	24873
	D3044016VO	Semi-Anechoic chamber #1	SIEPEL		
	D3044017VO	Semi-Anechoic chamber #3	SIEPEL		
	D3044015VO	Semi-Anechoic chamber #2	SIEPEL		
X	D3044010VO	Faraday Cage	RAY PROOF		4854
X	A4049061VO	Transient limiter	HEWLETT PACKARD	11947A	3107A01596
	A4089117VO	Voltage probe	LCIE		
MISCALLENOUS (CONTROL EQUIPMENT)					
	A6440068VO	Data Logger	AGILENT	34970A	US37043935
	A2120003VO	Programable PSU, HAR/FLK	HEWLETT PACKARD	6842A	3531A00109
	A6440068VO	Data Logger Board	AGILENT	34901A	MY41037442
	D1022117VO	Climatic chamber	BIA CLIMATIC	CL 6-25	200 105 6
	A7043037VO	Power supply DC 30V 10A	ELC	AL924	95/00600
	A1240170VO	Multimeter	Fluke	87	75250745
	A1240171VO	Multimeter	FLUKE	189	89770115
	A4024018VO	Oscilloscope 500 MHz	Hewlett Packard	54542C	US36040602
	A4024019VO	Oscilloscope	Hewlett Packard	54720A	7426600
X	B4204052VO	Thermo-hygrometer	HUGER		
	A7043036VO	Power supply DC 300W / 150V-6A	SODILEC	7SDLIN/GB AUTO 300	493711
	A4083040VO	Oscilloscope 100 MHz 500Ms/s	Tektronix	TDS30-25	H712103

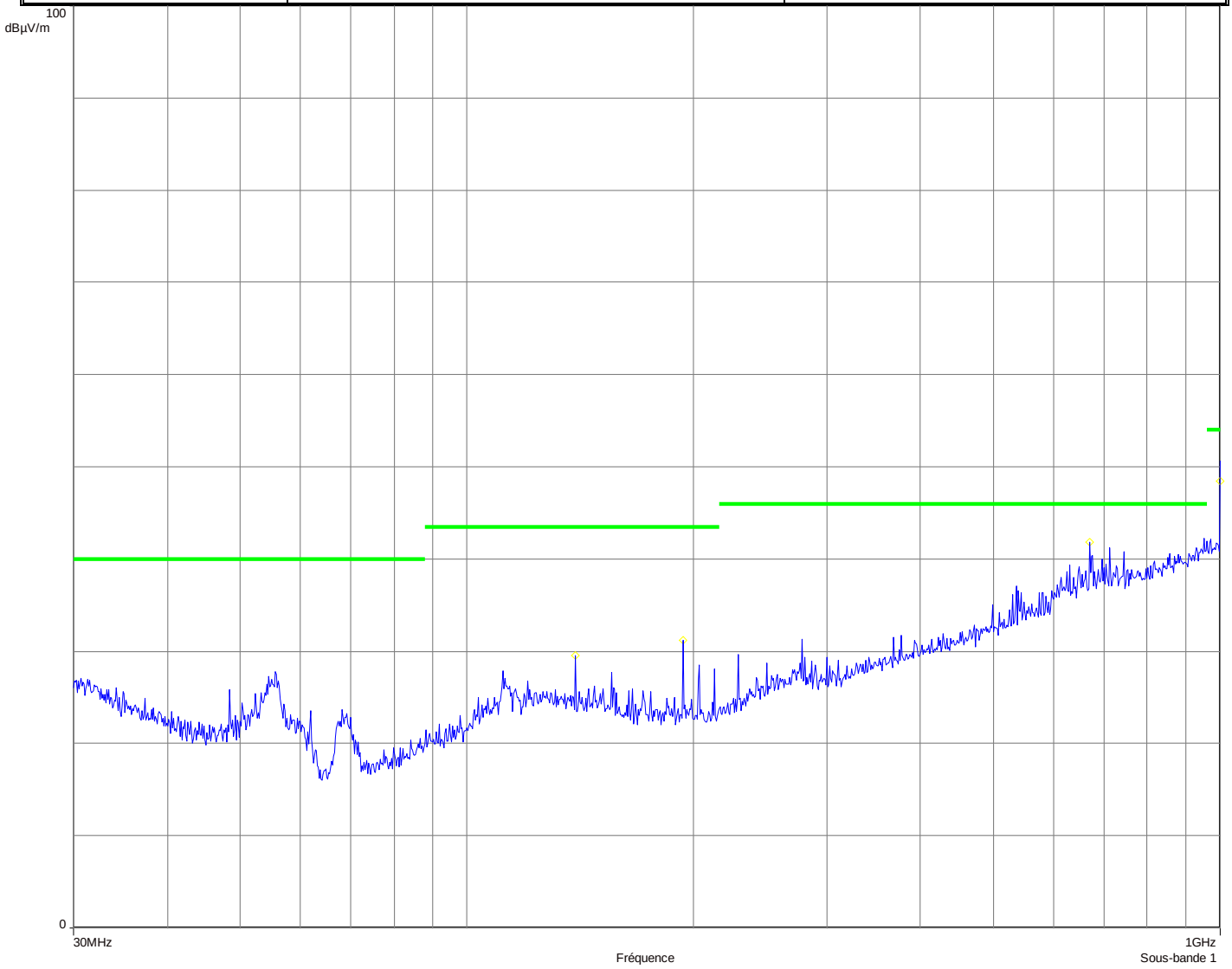
6. UNCERTAINTIES CHART

Type de mesure / *Kind of measurement*	**Incertitude élargie laboratoire / *Wide uncertainty laboratory* (k=2) ± x**	**Incertitude limite du CISPR / *CISPR uncertainty limit* ± y**
Mesure des perturbations conduites en tension sur le réseau d'énergie *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 Voiron *Measurement of radiated electric field on the Voiron open area test site*	5.07 dB	5.2 dB
Mesure du champ électrique rayonné IN SITU de 30 à 1000 MHz *IN SITU measurement of radiated electric field from 30 to 1000MHz*	A l'étude / Under consideration	5.2 dB
Mesure de la puissance perturbatrice / *Measurement of disturbance power*	3.37 dB	4.5 dB

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par le CISPR, la conformité de l'échantillon est établie directement par les niveaux limites applicables. / *The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the CISPR. The conformity of the sample is directly established by the applicable limits values.*

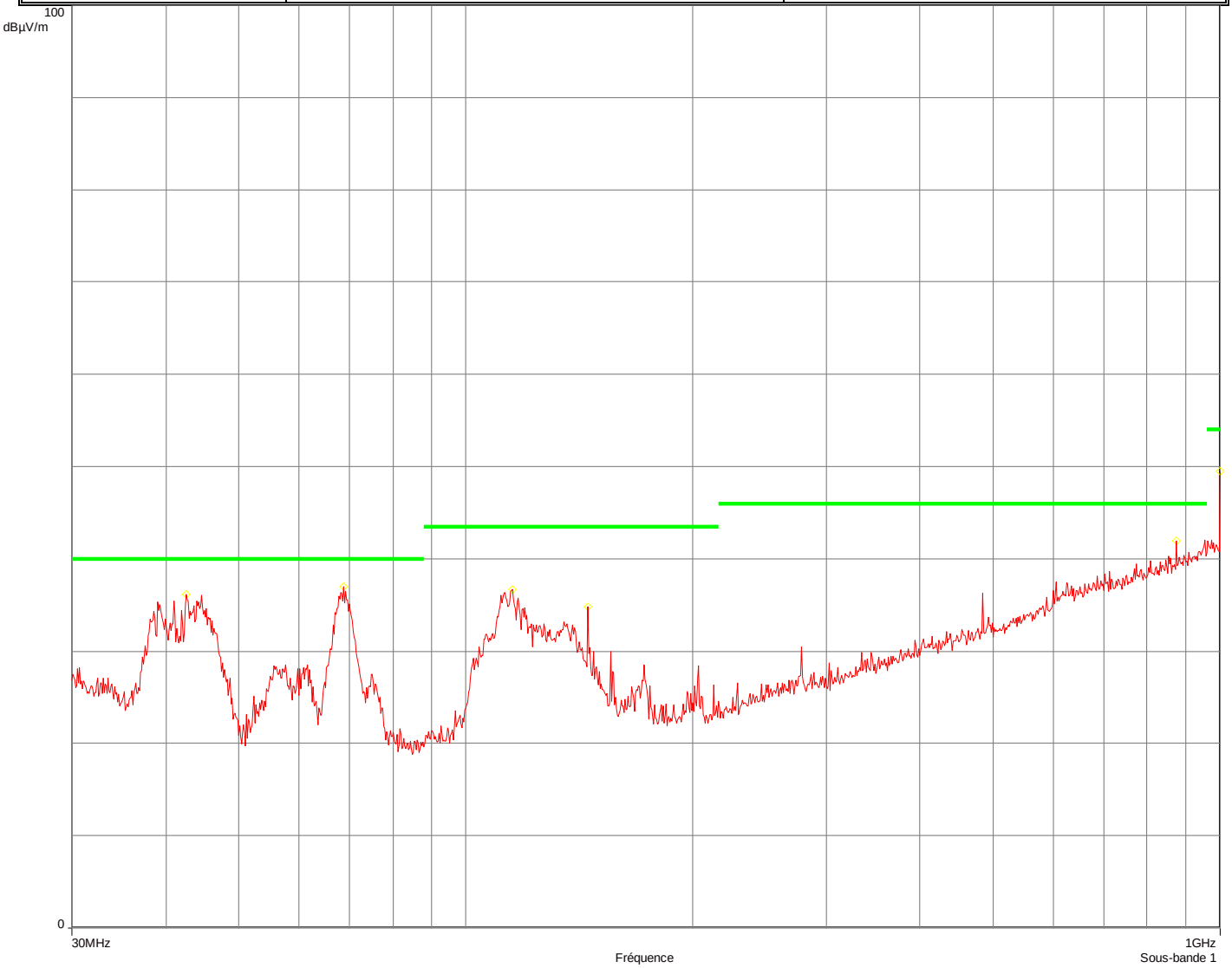
7. ANNEX 1 (GRAPHS)

RADIATED EMISSIONS		**Test configuration:**
Graph name:	**Emr#H**	
Antenna polarisation	**Horizontal**	
Azimuth:	**Max-hold measurement 0°to 360°**	
RBW / VBW :	**120kHz / 300kHz**	



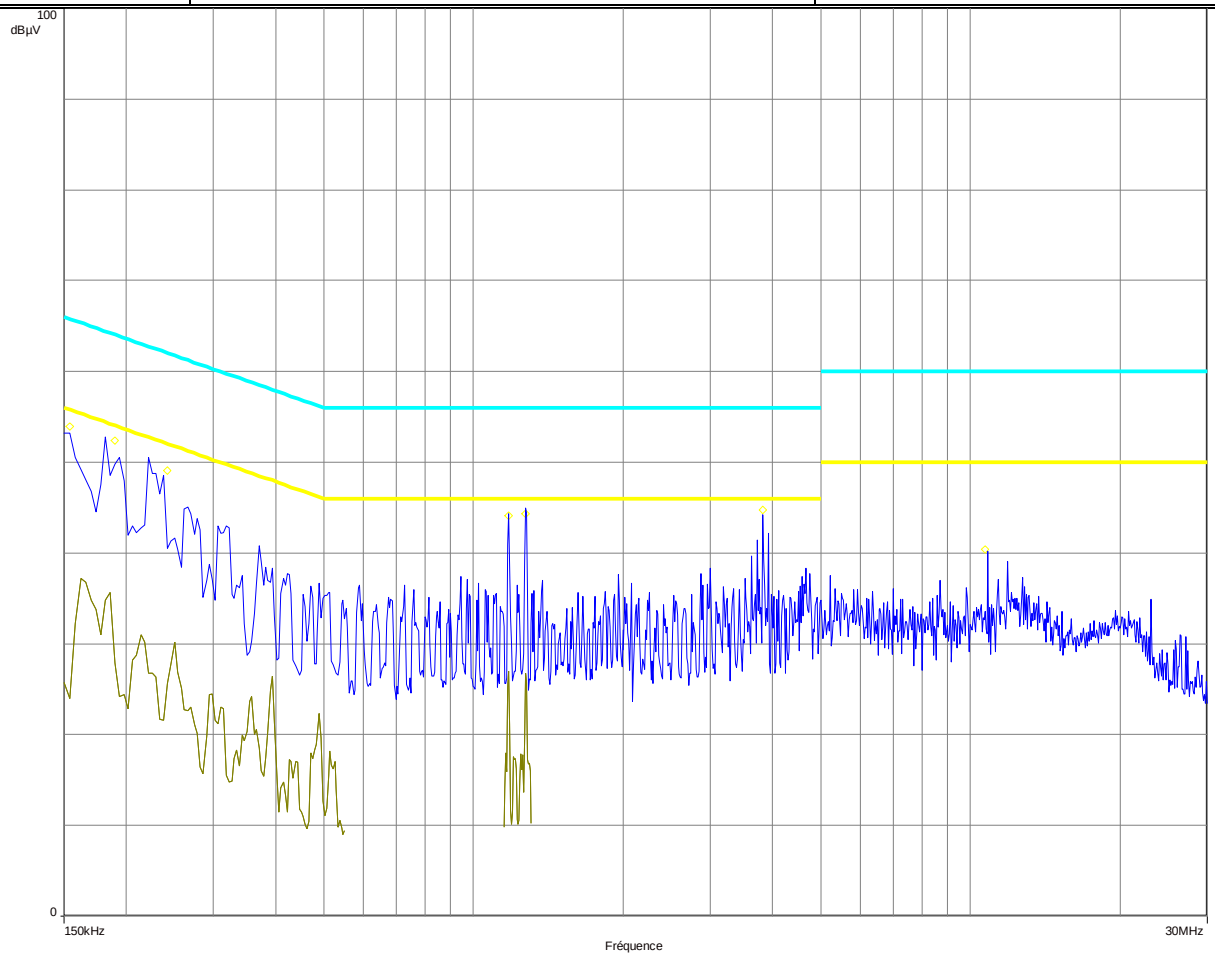
Frequency	Level
MHz	dBµV/m
139.300	29.5
193.550	31.2
671.750	41.8
999.950	48.4

RADIATED EMISSIONS		**Test configuration:**
Graph name:	**Emr#V**	
Antenna polarisation	**Vertical**	
Azimuth:	**Max-hold measurement 0°to 360°**	
RBW / VBW :	**120kHz / 300kHz**	



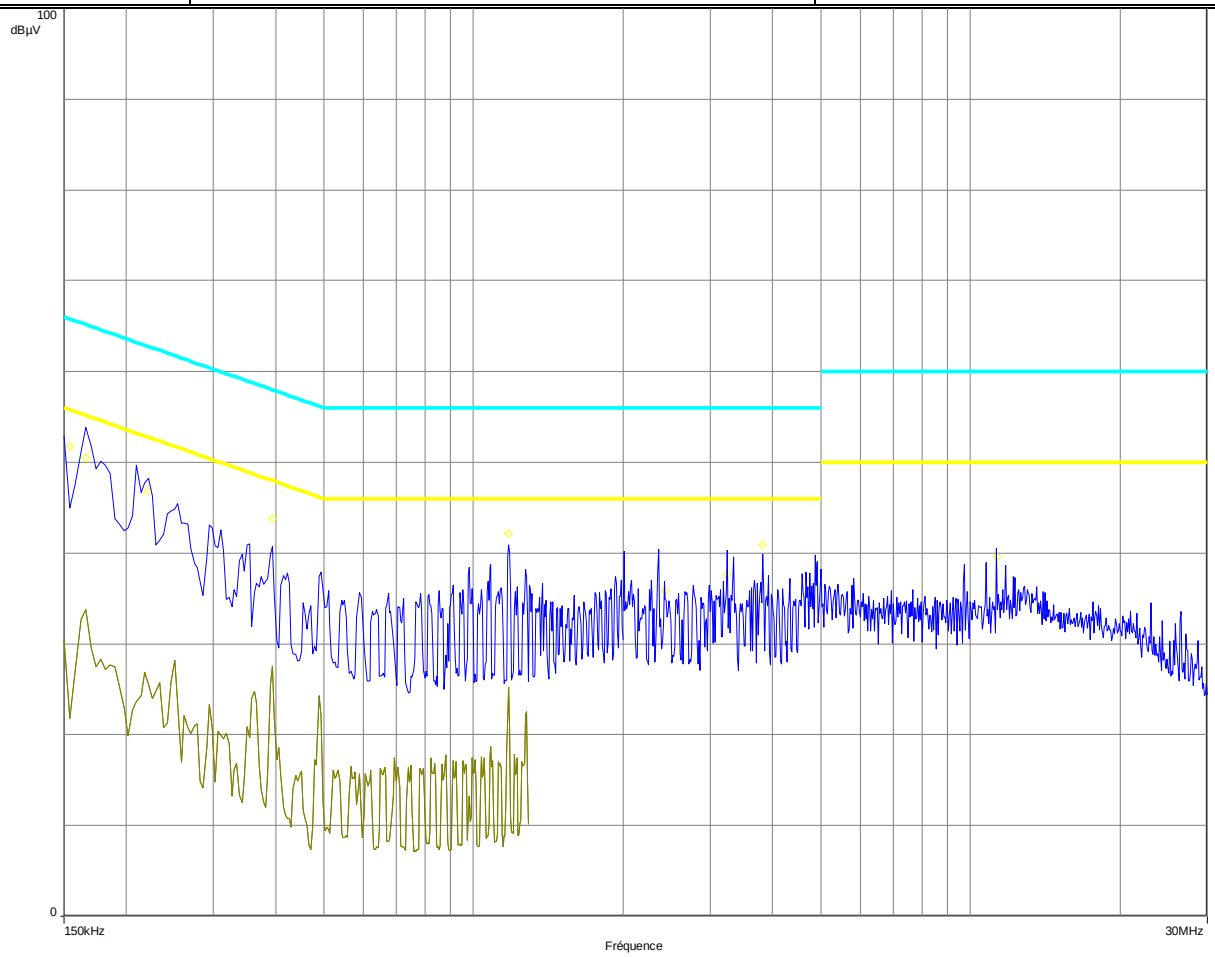
Frequency	Level
MHz	dBµV/m
42.500	36.1
68.900	37.0
115.100	36.7
145.150	34.9
875.000	42.0
1000.000	49.5

CONDUCTED EMISSIONS		**Test configuration:**
Graph name:	**Emc#L1**	
Voltage / Frequency	**120Vac/60Hz**	
Line/Port	**Phase L1**	
RBW	**9kHz**	



Frequency (MHz)	Measure Peak dBµV	Measure Average dBµV	Limit Average dBµV	Avg-Lim (Margin) dB	Measure Quasi-Peak dBµV	Limit QPeak dBµV	QPeak-Lim (Margin) dB
0.154	54.0	29.6	55.8	-26.2	48.0	65.8	-17.8
0.190	52.4	30.1	54.0	-23.9	44.4	64.0	-19.6
0.242	49.1	27.0	52.0	-25.0	40.9	62.0	-21.2
1.178	44.1	27.2	46.0	-18.8	39.8	56.0	-16.2
1.274	44.3	27.0	46.0	-19.0	39.6	56.0	-16.4
3.824	44.7	31.3	46.0	-14.7	42.3	56.0	-13.7
10.728	40.4	32.9	50.0	-17.1	35.8	60.0	-24.2

CONDUCTED EMISSIONS		**Test configuration:**
Graph name:	**Emc#N**	**Power adapter EPA-301DAN-08**
Voltage / Frequency	**120Vac/60Hz**	
Line/Port	**Phase L1**	
RBW	**9kHz**	



Frequency (MHz)	Measure Peak dBµV	Measure Average dBµV	Limit Average dBµV	Avg-Lim (Margin) dB	Measure Quasi-Peak dBµV	Limit QPeak dBµV	QPeak-Lim (Margin) dB
0.154	51.7	26.9	55.8	-28.9	44.5	65.8	-21.3
0.166	50.5	34.7	55.2	-20.5	43.6	65.2	-21.5
0.222	46.8	22.0	52.7	-30.8	39.4	62.7	-23.4
0.394	43.8	27.1	48.0	-20.8	37.5	58.0	-20.5
1.178	42.2	24.5	46.0	-21.5	36.9	56.0	-19.1
2.428	35.8	20.6	46.0	-25.4	28.1	56.0	-27.9
3.240	37.6	21.7	46.0	-24.3	29.3	56.0	-26.7
3.828	40.9	27.4	46.0	-18.6	36.9	56.0	-19.1
11.316	39.6	29.2	50.0	-20.8	35.9	60.0	-24.1