



L C I E

Rapport d'essai / Test report

JDE : 60053825 N° 200612-3478C-R2-E

DELIVRE A / ISSUED TO : DIGIGRAM (M. ZANNI)
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38330 MONTBONNOT SAINT MARTIN - FRANCE

Objet / Subject : Essais de compatibilité électromagnétique conformément aux normes :
Electromagnetic compatibility tests according to the standards:
FCC CFR 47 Part 15, Subpart B.
CISPR 22 (1997) + A1 (2000)+ A2 (2002)
ANSI C63.4 (2003)

Matériel testé / Apparatus under test :

- Produit / Product : Distributeur de son sur réseau Ethernet / *Ethernet audio bridge*
- Marque / Trade mark : DIGIGRAM
- Constructeur / Manufacturer : DIGIGRAM
- Type / Model : ES881V2 / ES1241V2 / ES16161V2
- N° de série / serial number : 2316.00020001 / 2349.00020001 / 2350.00020001 *
- FCC ID : IGTES8AESV2

* : information donnée par le client / *information given by the customer*

Date des essais / Test date : Du 15 au 16 janvier 2007 / *January 15th to 16th, 2007*

Lieu d'essai / Test location : LCIE
ZI des Blanchisseries
38500 VOIRON - France

Test réalisé par / Test performed by : Laurent CHAPUS

Ce document comporte / Composition of document: 23 pages.

VOIRON, LE 23 FEVRIER 2007 / *FEBRUARY 23RD, 2007*

Ecrit par / *Written by*
Laurent CHAPUS



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1. TEST PROGRAM

Standard:

- FCC Part 15, Subpart B (Digital Devices)
- ANSI C63.4 (2003)
- CISPR 22 (1997) + A1 (2000)+ A2 (2002)

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance at mains ports 150kHz-30MHz	Frequency	Quasi-peak value (dB μ V)	Average value (dB μ V)	COMPLY
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 30MHz-1GHz	Measure at 10m (Quasi-peak) 30MHz-230MHz : 30 dB μ V/m 230MHz-1GHz : 37 dB μ V/m			COMPLY

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).

ES881V2 and ES1241V2 equipments are quasi similar (differences on audio lines type: Input or Output)

The ES16161V2 equipment has a bigger number of audio lines (32 instead of 16 for ES881V2 / ES1241V2), with SUBD connectors instead of XLR.

Radiated and conducted emissions will be performed for both equipments ES881V2 and ES16161V2.

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

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

ES881V2

Serial Number: 2316.00020001

ES1241V2

Serial Number: 2349.00020001

ES16161V2

Serial Number: 2350.00020001

FCC ID: IGTES8AESV2

- **Inputs/outputs on the ES881v2:**

- 1x Mains power supply
- 1x EtherSound input (RJ45/XLR connector)
- 1x EtherSound output (RJ45/XLR connector)
- 1x Ethersound control (RJ45 connector)
- **8x Digital mono audio inputs (4x XLR connectors)**
- **8x Digital mono audio outputs (4x XLR connectors)**
- 1x Input Synchronisation (BNC Connector)
- 1x Output Synchronisation (BNC Connector)
- 1x Serial port (SUBD 9 connector)
- 8x GPIO

- **Inputs/outputs on the ES1241v2:**

- 1x Mains power supply
- 1x EtherSound input (RJ45/XLR connector)
- 1x EtherSound output (RJ45/XLR connector)
- 1x Ethersound control (RJ45 connector)
- **4x Digital mono audio inputs (2x XLR connectors)**
- **12x Digital mono audio outputs (6x XLR connectors)**
- 1x Input Synchronisation (BNC Connector)
- 1x Output Synchronisation (BNC Connector)
- 1x Serial port (SUBD 9 connector)
- 8x GPIO

- **Inputs/outputs on the ES16161V2:**

- 1x Mains power supply
- 1x EtherSound input (RJ45/XLR connector)
- 1x EtherSound output (RJ45/XLR connector)
- 1x Ethersound control (RJ45 connector)
- **16x Digital mono audio inputs (2x SUBD connectors)**
- **16x Digital mono audio outputs (2x SUBD connectors)**
- 1x Input Synchronisation (BNC Connector)
- 1x Output Synchronisation (BNC Connector)
- 1x Serial port (SUBD 9 connector)
- 8x GPIO

- **Cables:**

- 3x AC power cords (EUT/ES8 MIC/ES8 OUT): 1.8m
- 8x Stereo XLR audio cables: 1m (for ES881V2 and ES1241V2 equipments)
- 4x Stereo XLR audio cables: 1m (SUBD 25 to XLR connectors, for ES16161V2 equipment)
- 3x Ethernet cables, shielded: 10m
- 1x BNC cable: 1.2m (for Input and Output Synchronisation)
- 8x GPIO wires: 1m
- 1x Serial, shielded cable: 1.5m

- **Auxiliaries equipment used during test:**

- EtherSound ES8mic XLR
- EtherSound ES8 OUT XLR
- PC (laptop) DELL Latitude CS-Series M/N: PMP
- Load box (DIGIGRAM tool)

Sn: 165 00000012

Sn: 150 00000134

Sn: 200118P209

2.3. RUNNING MODE

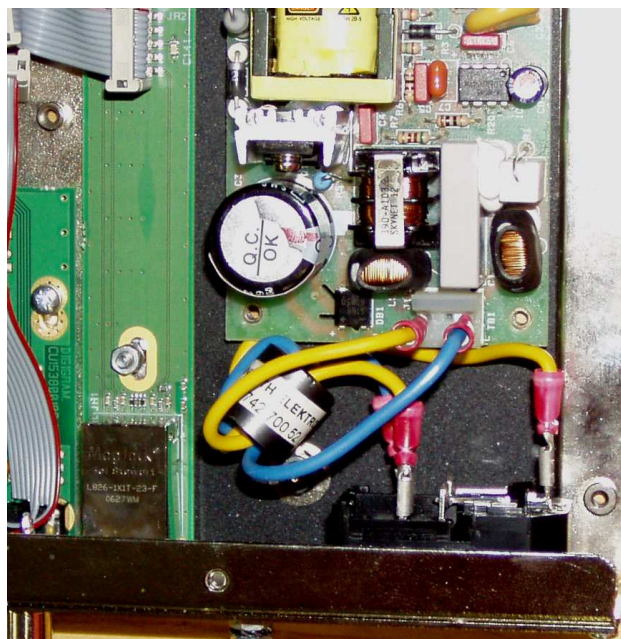
The IN EtherSound port of the EUT is connected to the OUT port of the auxiliary ES8MIC. (Receiving audio data).
The OUT Ethersound port of the EUT is connected to the IN port of the auxiliary ES8OUT. (Sending audio data).
The Ethersound Control port of the EUT is connected to the Ethernet port of a PC.

All analog Inputs / Outputs of the EUT are loaded by typical impedances:

- ES881V2 and ES1241V2: lines are loaded by the load box.
- ES16161: IN lines are looped back on OUT lines.

2.4. EQUIPMENT MODIFICATIONS

Added ferrite (Type 742 70052 from Wurth Elektronik, 2 pass) on AC mains wires.



3. MEASUREMENT OF RADIATED EMISSION (30MHz TO 1GHz)

3.1. TEST CONDITIONS

Date of test : January 15th and 16th, 2007
Test performed by : Laurent CHAPUS

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 and auxiliaries are set on the non-conducting table of 80 cm height.

The EUT is powered by 230Vac/50Hz.

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 on 4 faces of the EUT.

The pre-characterization graphs are obtained in PEAK detection.

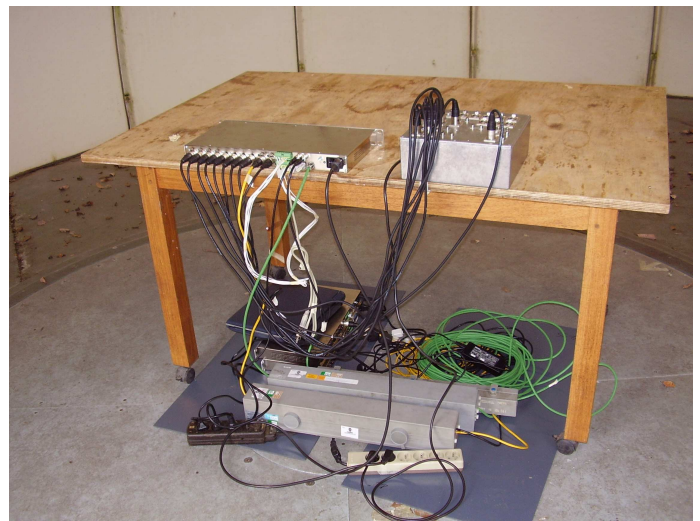
Characterization on 10 meters open site from 30MHz to 1GHz:

The product has been tested according to ANSI C63.4 (2003), FCC part 15 subpart C. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC.

The product has been tested at a distance of **10 meters** from the antenna and compared to the CISPR 22 limits. Measurement bandwidth was 120kHz from 30 MHz to 1GHz.

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).



ES881V2

ES16161V2

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, graph examples)

ES881V2 equipment:

Azimuth 270°	Polarisation H: graph Emr#1	(see annex 1)
	Polarisation V: graph Emr#2	(see annex 1)

ES1241V2 equipment:

Azimuth 270°	Polarisation H: graph Emr#3	(see annex 1)
	Polarisation V: graph Emr#4	(see annex 1)

ES16161V2 equipment:

Azimuth 270°	Polarisation H: graph Emr#5	(see annex 1)
	Polarisation V: graph Emr#6	(see annex 1)

QUALIFICATION: 10 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.

ES881V2 equipment:

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Meas-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	67.770	30.0	22.2	-7.8	150	V	140	9.4	
2	150.010	30.0	27.0	-3.0	10	V	120	14.4	
3	250.000	37.0	27.6	-9.4	300	V	100	14.8	
4	375.018	37.0	26.8	-10.2	310	V	120	18.3	
5	474.743	37.0	31.5	-5.5	340	V	270	20.7	
6	500.023	37.0	34.7	-2.3	10	V	160	21.4	
7	525.022	37.0	28.6	-8.4	345	V	345	21.8	
8	574.992	37.0	32.3	-4.7	35	H	35	22.4	

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

ES16161V2 equipment:

No	Frequency (MHz)	Limit Quasi-Peak (dBµV/m)	Measure Quasi-Peak (dBµV/m)	Margin (Meas-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. factor (dB)	Comments
1	66.049	30.0	22.0	-8.0	90	V	160	9.8	
2	150.006	30.0	20.5	-9.5	105	V	120	14.4	
3	225.000	30.0	25.1	-4.9	300	V	100	15.0	
4	375.017	37.0	31.4	-5.6	80	V	120	18.3	
5	425.038	37.0	36.0	-1.0	10	V	210	19.3	
6	475.030	37.0	33.4	-3.6	300	H	180	20.7	
7	500.024	37.0	33.2	-3.8	265	H	180	21.4	

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

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.

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

The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.

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

3.6. CONCLUSION

Samples of the equipment ES881V2 (Sn: 2316.00020001), ES1241V2 (Sn: 2349.00020001), ES16161V2 (Sn: 349.00020001), tested in the configuration presented in this test report satisfy to requirements of class B limits of the standard CISPR22 (1997+A1+A2), for radiated emissions.

4. MEASUREMENT OF CONDUCTED EMISSION

4.1. TEST CONDITIONS

Date of test : January 16th, 2007
Test performed by : Laurent CHAPUS

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 50 Ω / 50 μ H (measure) with a cable shortened to 1m. Auxiliaries are powered by another LISN.

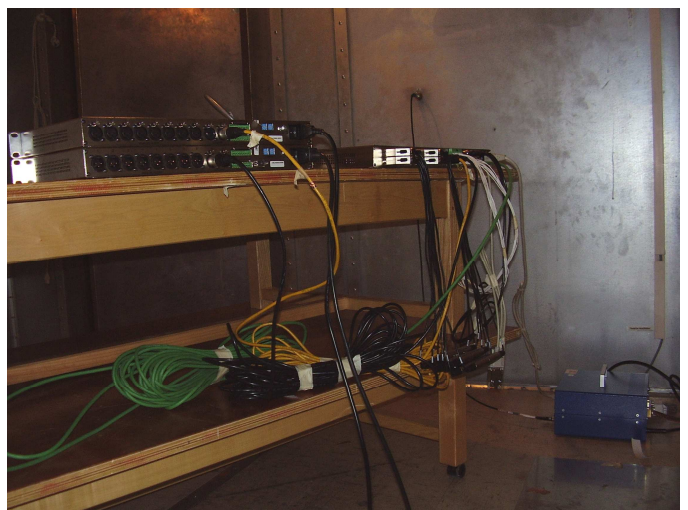
Mains: 110Vac/60Hz



ES881V2



ES881V2



4.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

4.4. MEASUREMENTS RESULTS**Mains terminals 110Vac/60Hz on ES881V2 equipment**

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

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

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

Mains terminals 110Vac/60Hz on ES16161V2 equipment

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

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

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

4.5. CONCLUSION

Samples of the equipment ES881V2 (Sn: 2316.00020001), ES1241V2 (Sn: 2349.00020001), ES16161V2 (Sn: 349.00020001), tested in the configuration presented in this test report satisfy to requirements of class B limits of the standard ANSI C63.4 (2003), for conducted emissions on mains port.

5. TEST EQUIPMENT LIST

	N°LCIE	TYPE	COMPANY	REF	SN
RADIATED EMISSION MEASUREMENT					
	C2040057VO	Antenna monopole	AH SYSTEM	SAS-551	181
	A7102026VO	Amplifier 8-26GHz	ALDETEC	ALS01452	1
X	C4040009VO	Air Compressor	ATLAS COPCO	LX111	0615-038
X	A3169050VO	Radiated emission comb generator	BARDET		PR17B
X	C2040051VO	Antenna Bi-log	CHASE	CBL6111A	1628
	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	690234
	C2042027VO	Antenna horn	EMCO	3115	6382
X	C2040050VO	Antenna biconic	EMCO	3104C	9401-4636
X	C2040056VO	Antenna log-periodic	EMCO	3146	2178
X	F2000286VO	Turntable controller	EMCO	1060-10	1217
X	F2000287VO	Antenna mast controller	EMCO	1050	8811-1295
X	F2000288VO	Antenna mast	EMCO	1050	
X	F2000289VO	Turntable	EMCO	1060	
X	F2000371VO	Turntable chamber	ETS Lingren	Model 2065	F2000371VO
X	F2000372VO	Turntable controller chamber	ETS Lingren	Model 2066	F2000372VO
X	D3044009VO	Anechoic chamber	EUROSHIELD	RDF-F-60-060	1213
	A7102024VO	Amplifier 8 GHz	HEROTEK	A1080304A	222033
X	A4060016VO	Spectrum analyzer 9kHz –1.8GHz	HEWLETT PACKARD	8591E	3536A00384
X	A7102019VO	Amplifier 9 KHz – 1300 MHz	HEWLETT PACKARD	8447F Opt 64	3113A06394
	A4060018VO	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	3409u00537
X	A4049060VO	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	2811A01134
X	A4060028VO	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	2816A16603
X	A4060029VO	Spectrum analyzer	HEWLETT PACKARD	HP8568B	2732A04155
X	A4060030VO	Pre-selector RF	HEWLETT PACKARD	HP85685A	2837A00784
	A5329032VO	Absorption clamp	LUTHI	MDS21	2826
X	A5329044VO	Absorption clamp	RHODE ET SCHWARZ	85024A	194.0100.50
	A2640011VO	Measurement receiver 9kHz–30MHz	ROHDE ET SCHWARZ	ESH3	972079/117
	C2042028VO	Antenna horn 26GHz	SCHWARZBECK	BBHA 9170	BBHA9170232
X	A5329045VO	Cable IMR&EMR (Anechoic chamber)	SMEE	KX13	
X	A5329048VO	Cable EMR OATS	SUCOFLEX	106G	553
	A5329038VO	Cable coaxial 3.5 m (Blue)	SUHNER	SUCOFLEX 106	26732/6
X	A5329056VO	Cable Radiat EMI (Pre-amp/Analyzer)			
X	A5329057VO	Cable Radiat. EMI (Pre-amp/cage)			
X	A5329059VO	Cable OATS (Mast at 10m)			
	A5329058VO	Cable OATS (Mast at 3m)			
CONDUCTED MEASUREMENT EMISSION					
X	A3169049VO	Conducted emission comb generator	BARDET		CGPR12
	A2320059VO	LISN	EMCO	3810/2SH	9511/1182
X	C2320068VO	LISN	EMCO	3825/2	9309/2122
X	A4049061VO	Transient limiter	HEWLETT PACKARD	11947A	3107A01596
	A2120003VO	Programable PSU, HAR/FLK	HEWLETT PACKARD	6842A	3531A00109
	A4060016VO	Spectrum analyzer 9kHz –1.8GHz	HEWLETT PACKARD	8591E	3536A00384
	A5329036VO	Direct Injection Module 100 Ohms	LCIE	MID01-100 ohms	
	A5329042VO	Ferrite Tube	LUTHI	FTC 101	4485
	A1092042VO	Ferrite Tube	LUTHI	FTC101	4763
X	D3044010VO	Faraday Cage	RAY PROOF		4854
	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	C2320066VO	RSI 4 wires	RHODE ET SCHWARZ	ENY41	838119/023
	C2320067VO	RSI 2 x 2 wires	RHODE ET SCHWARZ	ENY22	836727/015
X	A2640011VO	Measurement receiver 9kHz–30MHz	ROHDE ET SCHWARZ	ESH3	972079/117
	A1290017VO	Current probe	SCHAFFNER	CSP9160	1097
	A5329034VO	Current injection probe	SCHAFFNER	CIP8213	52
	A4089117VO	Voltage probe	SMEE		
X	C2320061VO	LISN	TELEMETER ELECTRONIC	NNB-2/16Z	98010
X	A5329061VO	Cable Conduct. EMI (Analyzer/cage)			
X	A5329060VO	Cable Conduct. EMI (LISN/cage)			
MISCELLANEOUS (CONTROL EQUIPMENT)					
	A6440068VO	Data Logger	AGILENT	34970A	US37043935
	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

	N°LCIE	TYPE	COMPANY	REF	SN
	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

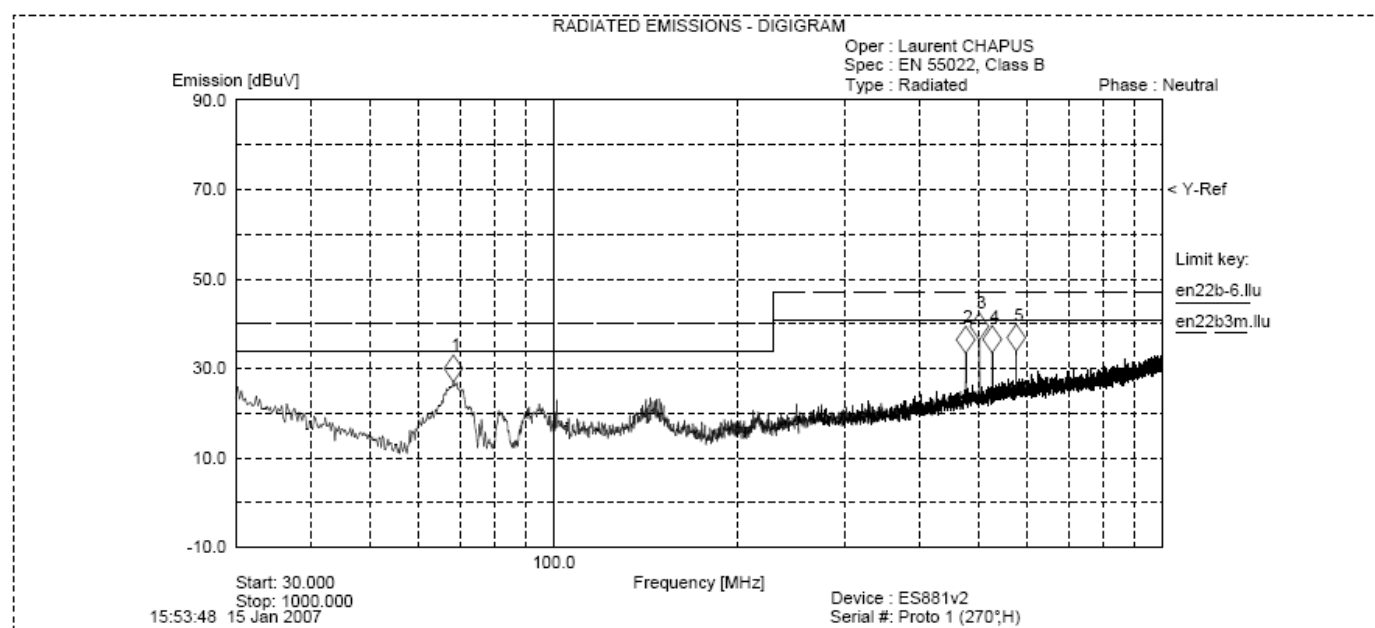
6. UNCERTAINTIES CHART

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 <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 Voiron <i>Measurement of radiated electric field on the Voiron open area test site</i>	5.07 dB	5.2 dB
Mesure du champ électrique rayonné IN SITU de 30 à 1000 MHz <i>IN SITU measurement of radiated electric field from 30 to 1000MHz</i>	A l'étude / Under consideration	5.2 dB
Mesure de la puissance perturbatrice / <i>Measurement of disturbance power</i>	3.37 dB	4.5 dB
Mesure des harmoniques de courant / <i>Measurement of current harmonics</i>	11.11%	/
Mesure du flicker / <i>Flicker measurement</i>	9.26%	/

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.

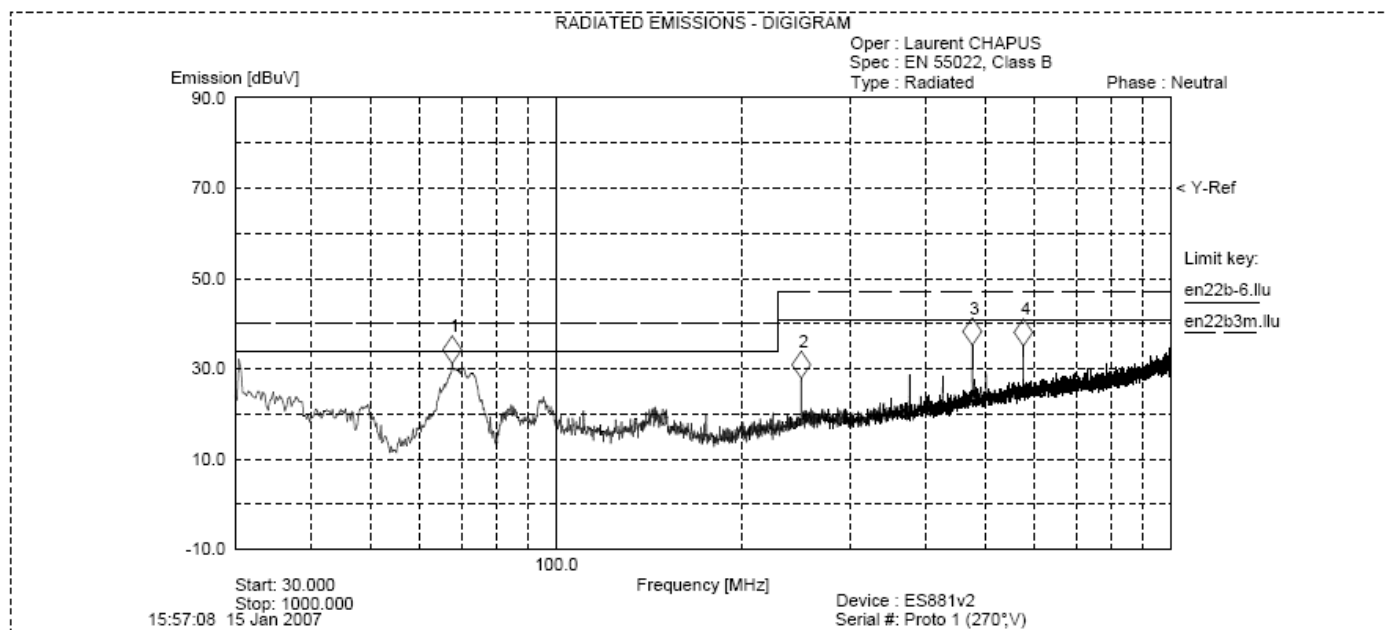
7. ANNEX 1 (GRAPHS)

RADIATED EMISSIONS		Test configuration:
Graph name:	Emr#1	ES881V2
Antenna polarisation	Horizontal	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	



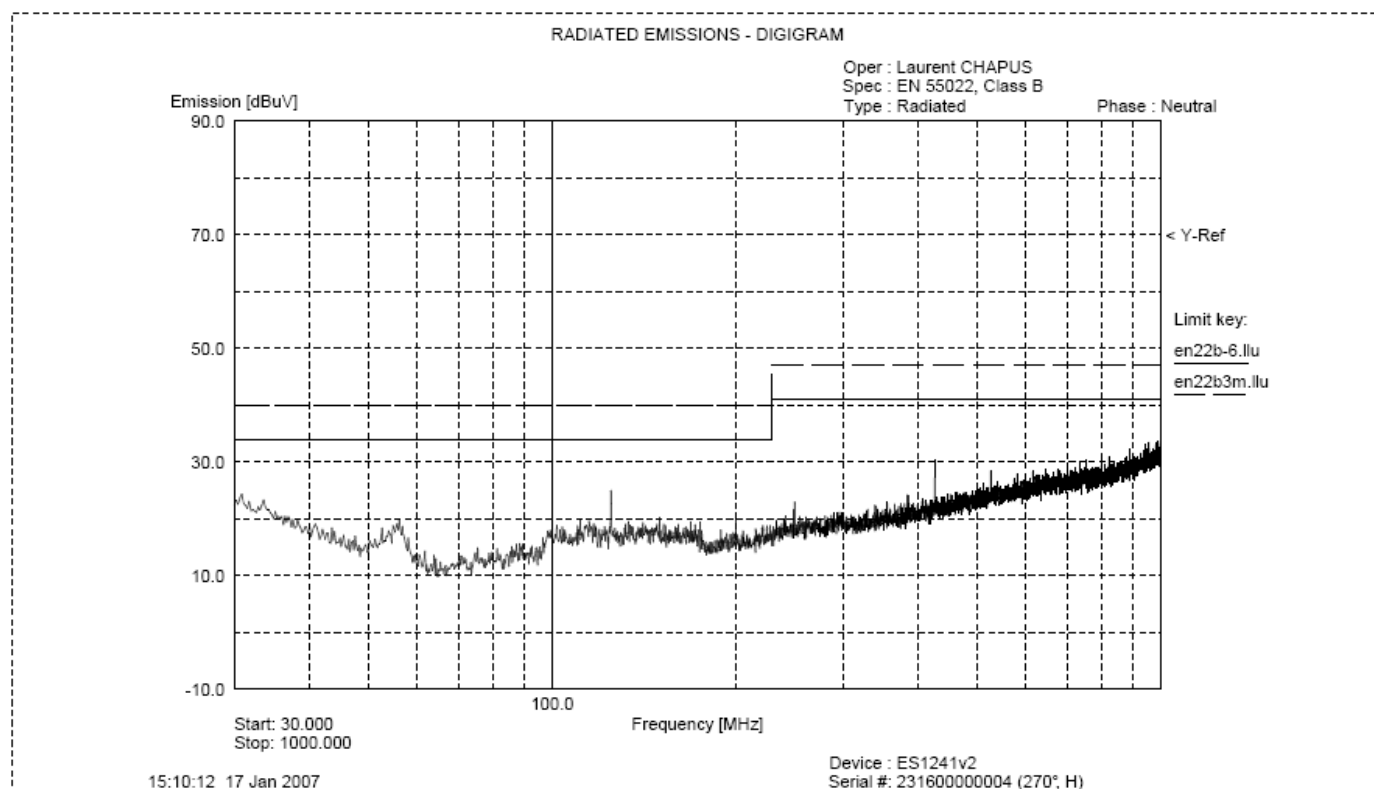
Marker ◇	Frequency [MHz]	Peak [dBuV]	Comments
1	68.36	27.00	
2	474.9	33.44	
3	500.2	36.42	
4	525.1	33.55	
5	575.2	33.90	

RADIATED EMISSIONS		Test configuration: ES881V2
Graph name:	Emr#2	
Antenna polarisation	Vertical	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	

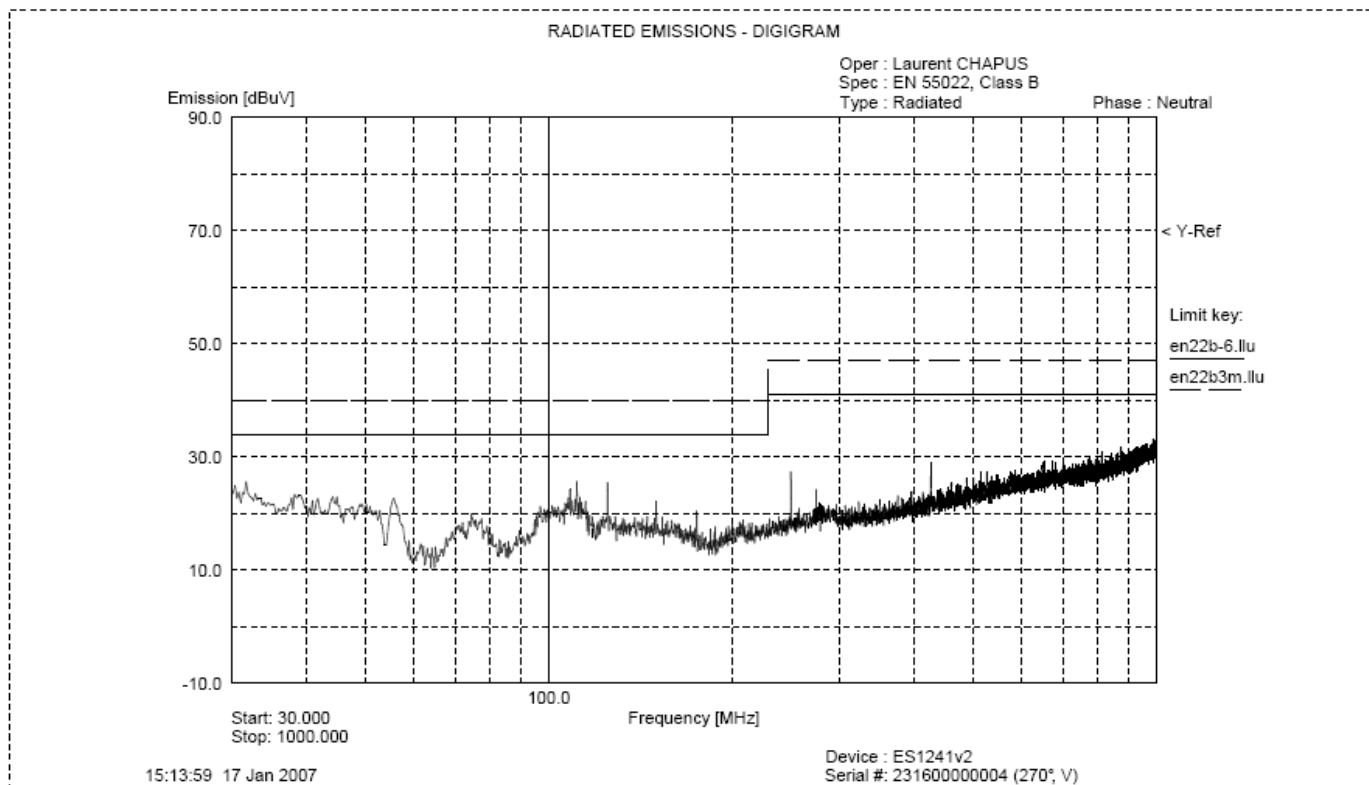


Marker ◇	Frequency [MHz]	Peak [dBuV]	Comments
1	67.70	31.24	
2	250.2	27.91	
3	474.9	35.27	
4	575.2	35.07	

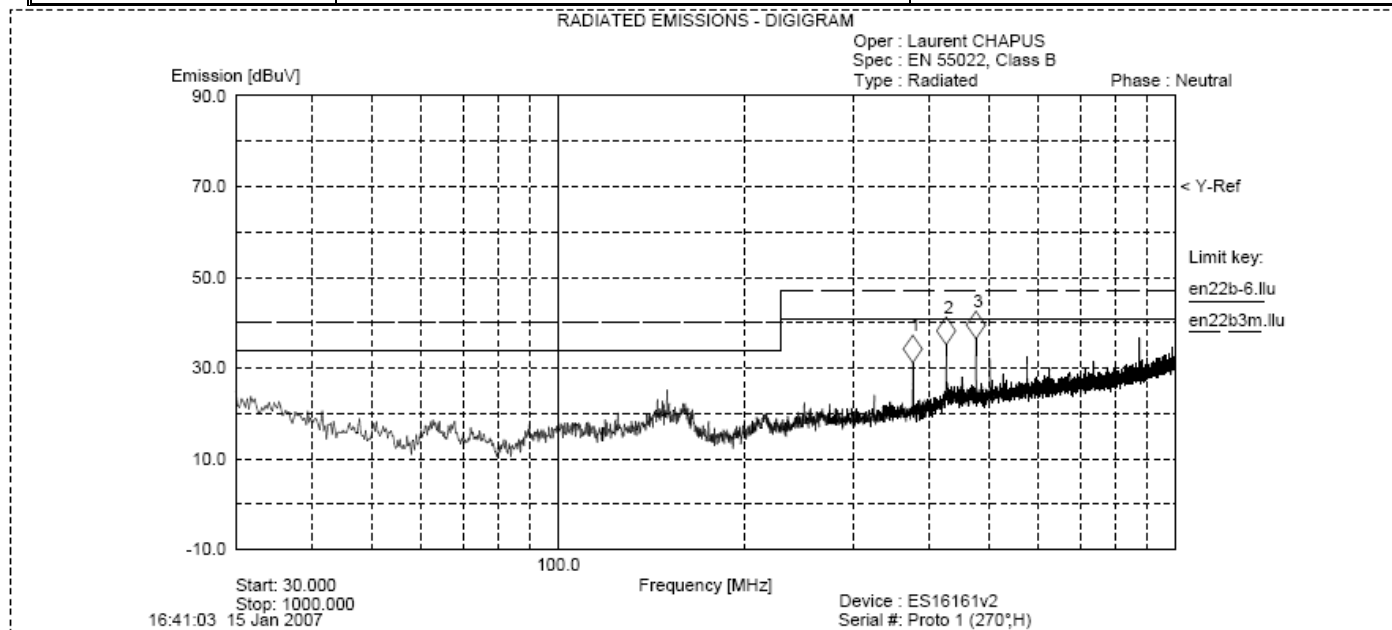
RADIATED EMISSIONS		Test configuration: ES1241V2
Graph name:	Emr#3	
Antenna polarisation	Horizontal	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	



RADIATED EMISSIONS		Test configuration: ES1241V2
Graph name:	Emr#4	
Antenna polarisation	Vertical	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	

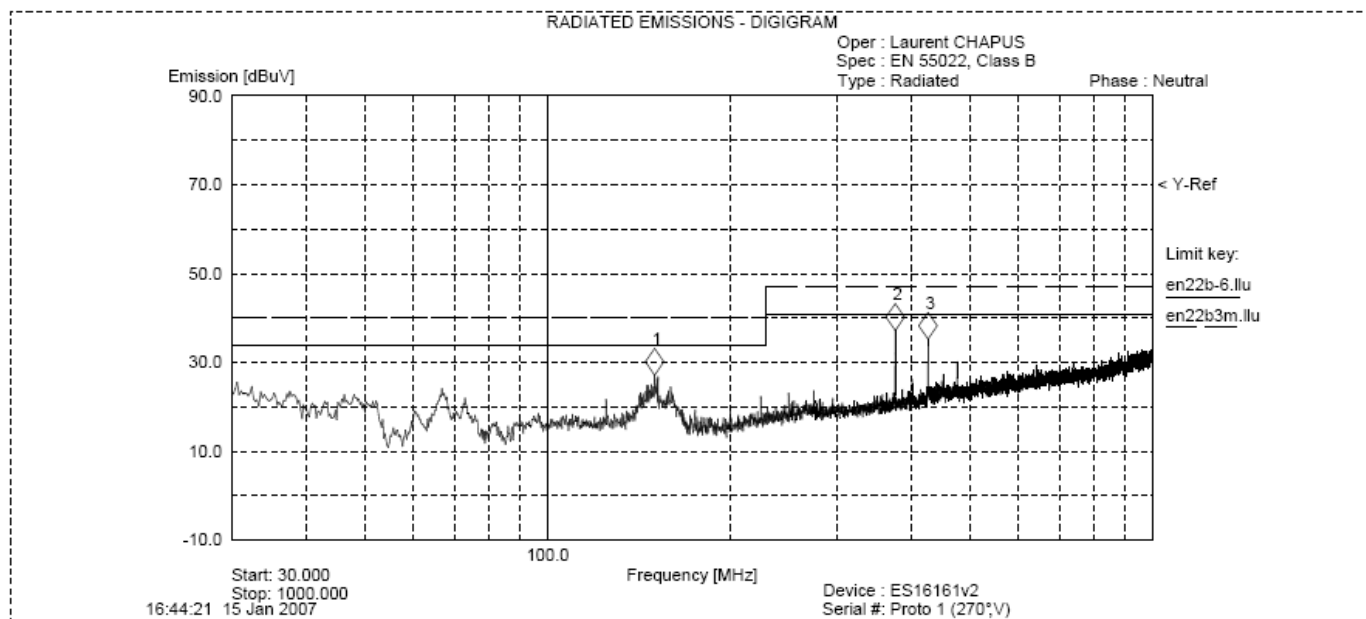


RADIATED EMISSIONS		Test configuration: ES16161V2
Graph name:	Emr#5	
Antenna polarisation	Horizontal	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	



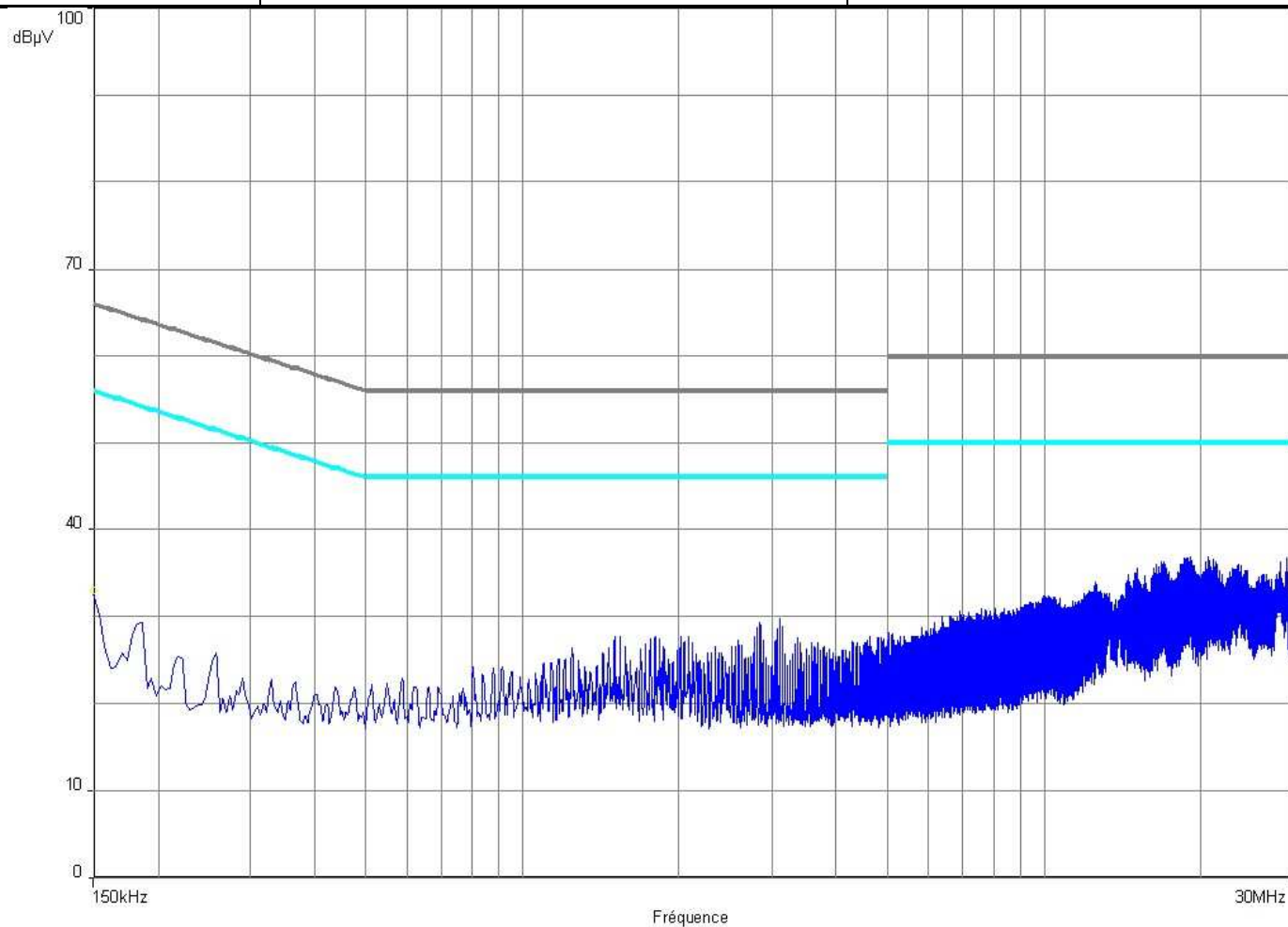
Marker ◇	Frequency [MHz]	Peak [dBuV]	Comments
1	375.2	31.22	
2	425.1	35.22	
3	474.9	36.51	

RADIATED EMISSIONS		Test configuration: ES16161V2
Graph name:	Emr#6	
Antenna polarisation	Vertical	
Azimuth:	270°	
RBW / VBW :	120kHz / 300kHz	



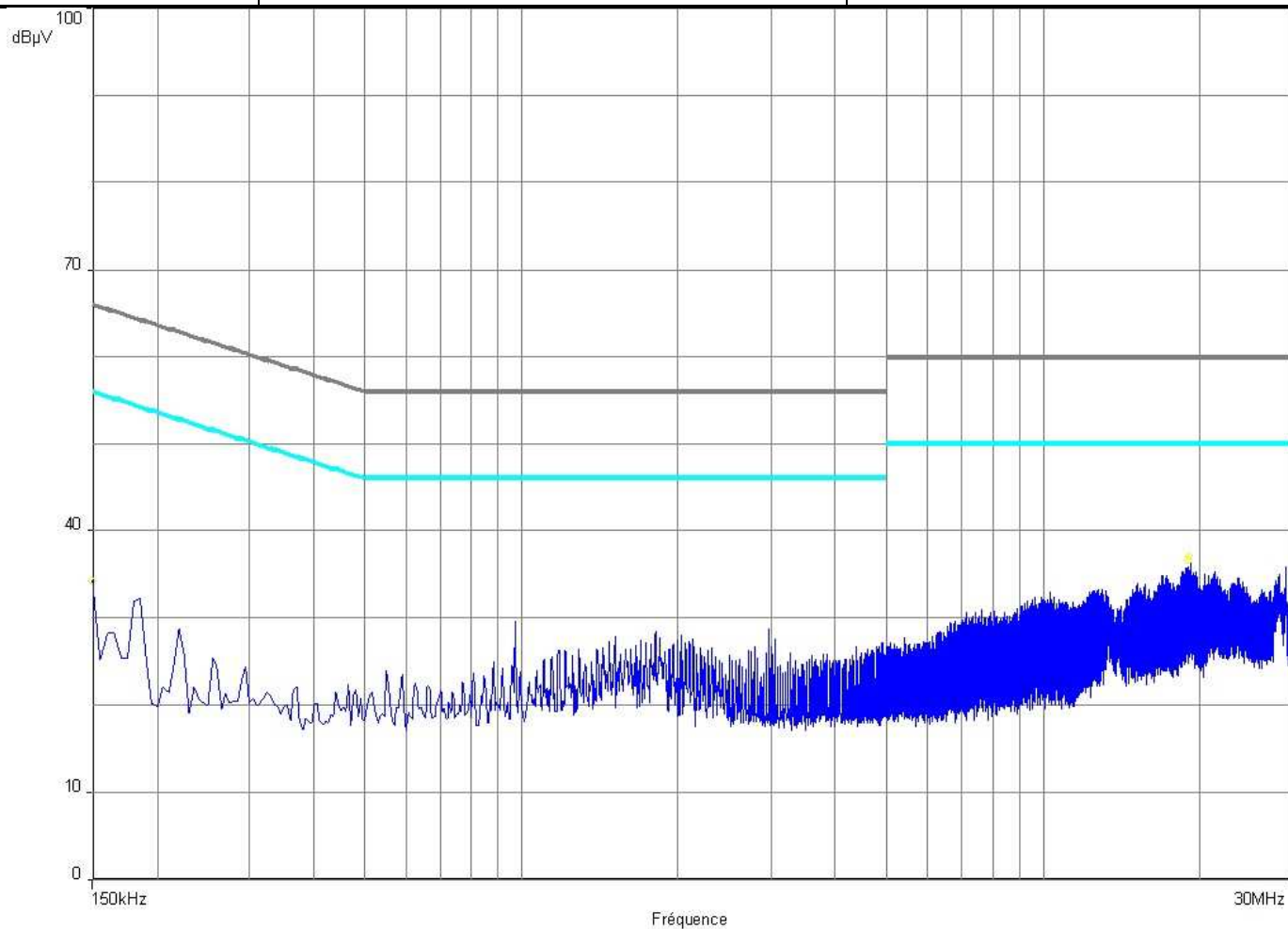
Marker ◇	Frequency [MHz]	Peak [dBuV]	Comments
1	150.1	27.15	
2	375.2	37.21	
3	425.1	35.27	

CONDUCTED EMISSIONS		Test configuration: ES881V2
Graph name:	Emc#1	
Voltage / Frequency	110Vac/60Hz	
Line/Port	Phase L1	
RBW / VBW :	9kHz / 30kHz	



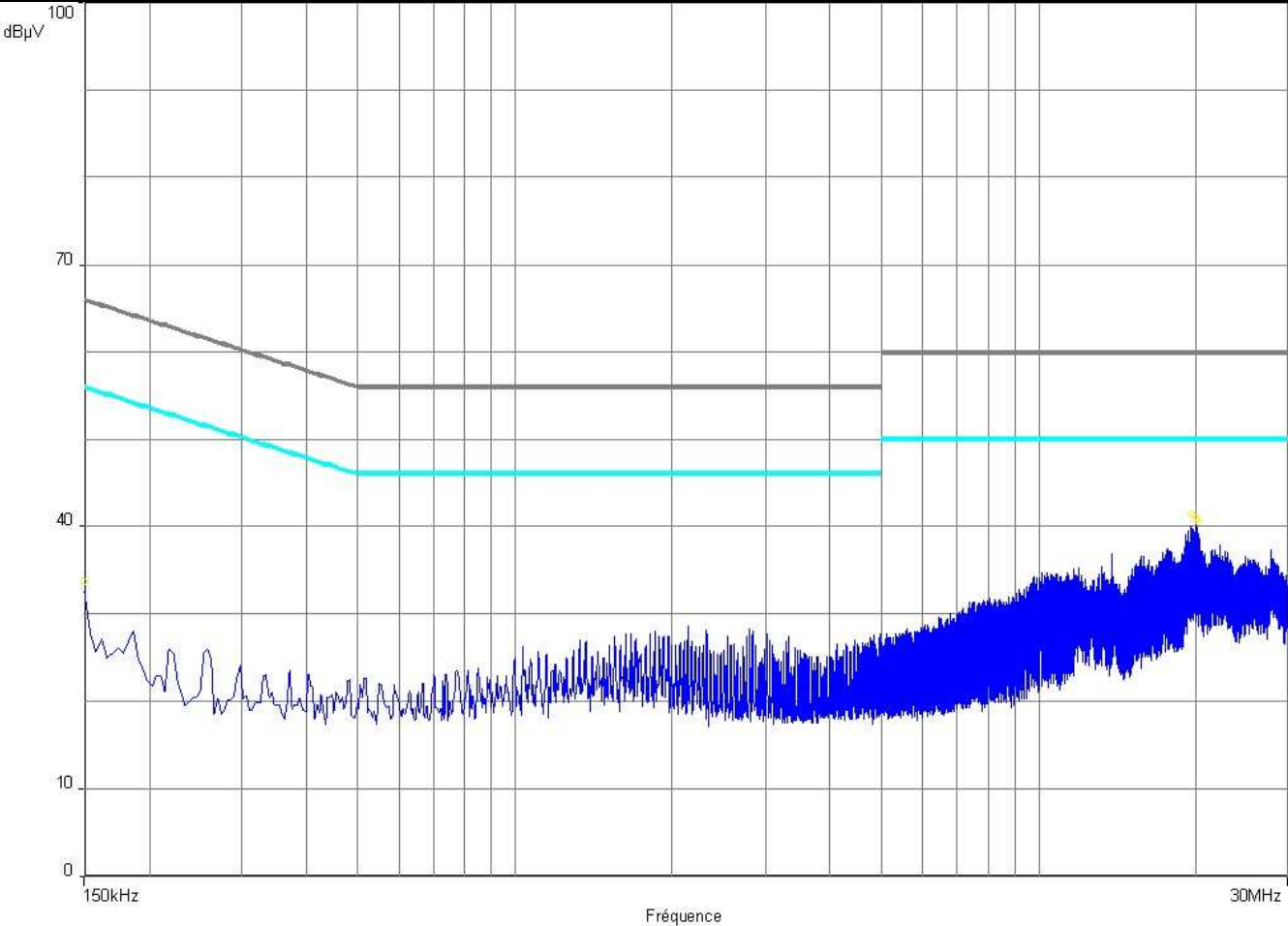
Frequency (MHz)	Measure Peak dBμV	Measure Average dBμV	Limit Average dBμV	Avg-Lim (Margin) dB	Measure Quasi-Peak dBμV	Limit QPeak dBμV	QPeak-Lim (Margin) dB
0.150	33.1	20.4	56.0	-35.6	25.0	66.0	-41.0
2.818	21.6	8.8	46.0	-37.2	12.7	56.0	-43.3
2.850	26.7	13.4	46.0	-32.6	17.9	56.0	-38.1
2.854	21.4	9.1	46.0	-36.9	12.7	56.0	-43.3
3.110	21.2	8.6	46.0	-37.4	12.5	56.0	-43.5
3.146	21.6	8.6	46.0	-37.4	12.5	56.0	-43.5
18.922	33.8	18.0	50.0	-32.0	24.8	60.0	-35.2
19.178	34.2	19.1	50.0	-30.9	25.8	60.0	-34.2
20.710	34.2	19.8	50.0	-30.2	26.0	60.0	-34.0

CONDUCTED EMISSIONS		Test configuration: ES881V2
Graph name:	Emc#2	
Voltage / Frequency	110Vac/60Hz	
Line/Port	Neutral (N)	
RBW / VBW :	9kHz / 30kHz	



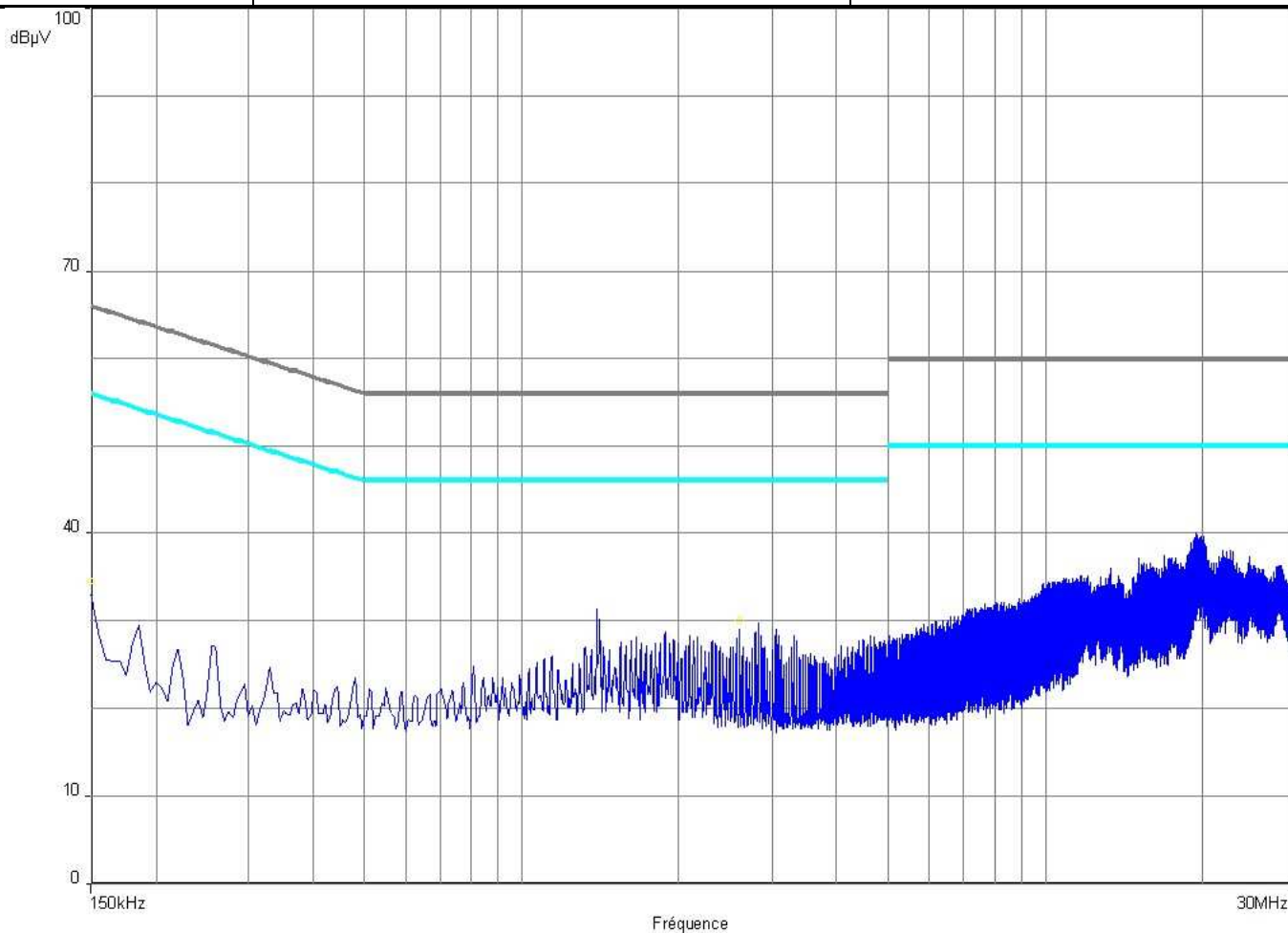
Frequency (MHz)	Measure Peak dBμV	Measure Average dBμV	Limit Average dBμV	Avg-Lim (Margin) dB	Measure Quasi-Peak dBμV	Limit QPeak dBμV	QPeak-Lim (Margin) dB
0.150	34.3	19.8	56.0	-36.2	29.0	66.0	-37.0
1.510	24.9	9.0	46.0	-37.0	13.7	56.0	-42.3
1.805	25.5	8.8	46.0	-37.2	13.2	56.0	-42.8
1.840	26.6	8.8	46.0	-37.2	13.7	56.0	-42.3
2.025	24.5	8.8	46.0	-37.2	12.8	56.0	-43.2
2.135	24.6	8.7	46.0	-37.3	13.2	56.0	-42.8
2.980	21.3	8.7	46.0	-37.3	12.6	56.0	-43.4
18.980	36.7	26.7	50.0	-23.3	31.3	60.0	-28.7
19.090	37.1	26.3	50.0	-23.7	31.5	60.0	-28.5

CONDUCTED EMISSIONS		Test configuration: ES16161V2
Graph name:	Emc#3	
Voltage / Frequency	110Vac/60Hz	
Line/Port	Phase L1	
RBW / VBW :	9kHz / 30kHz	



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
0.150	33.8	23.6	56.0	-32.4	28.4	66.0	-37.6
1.846	23.3	9.0	46.0	-37.0	13.3	56.0	-42.7
2.142	22.7	9.0	46.0	-37.0	13.1	56.0	-42.9
2.322	22.8	10.2	46.0	-35.8	14.4	56.0	-41.6
2.802	22.2	9.1	46.0	-36.9	12.8	56.0	-43.2
2.806	20.5	8.8	46.0	-37.2	12.7	56.0	-43.3
19.634	41.4	30.3	50.0	-19.7	35.3	60.0	-24.7
19.966	40.9	31.0	50.0	-19.0	35.3	60.0	-24.7
20.114	40.6	30.5	50.0	-19.5	35.1	60.0	-24.9

CONDUCTED EMISSIONS		Test configuration: ES16161V2
Graph name:	Emc#4	
Voltage / Frequency	110Vac/60Hz	
Line/Port	Neutral (N)	
RBW / VBW :	9kHz / 30kHz	



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
0.150	34.6	20.5	56.0	-35.5	29.8	66.0	-36.2
1.390	27.3	19.8	46.0	-26.2	22.1	56.0	-33.9
1.410	25.0	8.6	46.0	-37.4	13.3	56.0	-42.7
2.605	30.0	18.1	46.0	-27.9	24.3	56.0	-31.7
2.830	25.8	11.6	46.0	-34.4	17.6	56.0	-38.4
3.050	25.8	11.8	46.0	-34.2	17.2	56.0	-38.8
19.425	32.8	18.3	50.0	-31.7	24.8	60.0	-35.2
19.575	32.9	18.9	50.0	-31.1	25.1	60.0	-34.9
20.160	33.2	19.4	50.0	-30.6	24.8	60.0	-35.2