



LCIE

TEST REPORT

N°: 21022989 – 796784B

Version : 02

Subject

Electromagnetic compatibility (EMC):
47 CFR Part 15.107 & Part 15.109
Subpart B of 2021ANSI C63.4 of 2014
ICES-003 issue 7 of 2020 (P)

Issued to

IDEMIA Public Security France
2 Place Samuel De Champlain
92400 Courbevoie
France

Apparatus under test

↳ Product	Access control terminal with biometric and RF features
↳ Trade mark	IDEMIA
↳ Manufacturer	IDEMIA Public Security France
↳ Model under test	MPH-AC010A
↳ Serial number	2448SXP20000078
↳ FCCID number	ZBW-MPHAC010A

Test date

December 4, 2024 to February 7, 2025

Test location

LCIE, Villebon

Test performed by

Philippe Duhamel

Composition of document

27 pages

Document issue

March 31, 2025

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April 30, 2025

Written by :

Written by :
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Tests operator

Approved by :

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PUBLICATION HISTORY

Each new edition of this test report replaces and cancels the previous edition. The control of the old editions of report is under responsibility of client.

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01	March 31, 2025	Philippe Duhamel	Creation of the document
02	April 30, 2025	Philippe Duhamel	Modifications to page 1 addition of FCCID number

Date of receipt of test item: December 4, 2023 & March 7, 2025



SUMMARY

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1. Test Program

1.1. FCC Part15B / ICES-003

Standard:

- ✓ FCC Part 15, Subpart B (Digital Devices)
- ✓ ANSI C63.4 (2014)
- ✓ ICES-003 (2020) (P)

(a) Requirements for disturbance emissions – Class B

EMISSION TEST	LIMITS			RESULTS (Comments)
Limits for conducted disturbance 150kHz-30MHz FCC §15.107 / ICES-003	Access: AC power			PASS
	Frequency	Quasi-peak	Average	
	150-500kHz	66 to 56 dBµV	56 to 46 dBµV	
	0.5-5MHz	56 dBµV	46 dBµV	
	5-30MHz	60 dBµV	50 dBµV	
Radiated emissions 30MHz-1GHz FCC §15.109	Access: Enclosure port of ancillary equipment			PASS
	Frequency	Quasi-peak @3m		
	30MHz-88MHz	40.0 dBµV/m		
	88MHz-216MHz	43.5 dBµV/m		
	216MHz-960MHz	46.0 dBµV/m		
Above 960MHz	54.0 dBµV/m			
Radiated emissions 30MHz-1GHz ICES-003	Access: Enclosure port of ancillary equipment			PASS
	Frequency	Quasi-peak @3m		
	30MHz-88MHz	40.0 dBµV/m		
	88MHz-216MHz	43.5 dBµV/m		
	216MHz-230MHz	46.0 dBµV/m		
230MHz-960MHz	47.0 dBµV/m			
Above 960MHz	54.0 dBµV/m			
Radiated emissions 1GHz-6GHz* FCC §15.109 / ICES-003	Access: Enclosure port of ancillary equipment			PASS
	Frequency	Peak @3m	Average @3m	
	1- 6GHz	74.0 dBµV/m	54.0 dBµV/m	

NA: Not Applicable / NP: Not Performed, not requested by the customer (It cannot be taken into account for the declaration of conformity)

P: Divergence, the last version is used to make it possible to test the product with the standard which describes the current state of the art and thus to answer as well as possible his environment of final use. If this test is covered by the COFRAC accreditation, the declaration of conformity for product standard only are carried out outside the framework of accreditation.

***§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.

Special condition for intentional radiator:



- For a composite system comprised of a digital device using a clock frequency of 1 GHz as the highest frequency for the digital logic and an intentional radiator operating at 2.4 GHz, the composite is required to be investigated to the upper frequency of 24 GHz (in this case, 10 times the intentional radiator frequency is the higher frequency).
- For a composite system comprised of a digital device using a clock frequency of 2 GHz as the highest frequency for the digital logic and an intentional radiator operating at 913 MHz, the composite is required to be investigated to the upper frequency of 10 GHz (in this case, 5 times the unintentional radiator clock frequency is the higher frequency).

2. Equipment Description (declared by provider)

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT): MPH-AC010A

Serial Number: 2448SXP20000078



Equipment Under Test



Inputs/outputs - Cable:

Access	Inputs / Outputs	Type	Declared <3m	Shielded	Under test	Comments
Power supply	Input	L1-N	< 3 m	☐	☒	Converter AC/DC
Power supply + Network	Input	RJ45 & POE+	> 3 m	☒	☐	-

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Ethernet harness	-		Cat6
Laptop test	DELL	FSL43M3	Using for ping

Equipment information: (Declared by provider)

Apparatus Description	MorphoWave XP2 products are access controls terminals with RFID, Bluetooth and biometric features. The product is supplied by an external power supply (voltage 12 to 24 VDC) or by POE. Not that the power supply or the POE injector are not sold with the product.		
Type of power source:	☒ 12-24DC		☒ RJ45 & POE
Test source voltage:	Vmin-Vmax:	☒ 100-240VAC via converters	
Operating Modes	Mode 1	Converters AC/DC_ 12-24 VDC Mode	
	Mode 2	Converters AC/DC_ RJ45 & POE Mode	
Highest internal frequency (PLL, Quartz, Clock, Microprocessor...):		F ^{Highest} :	2400 MHz

EUT-Internal-Operating-Frequencies	
Frequency ¹ -(Mhz)	Description ²
13.56-MHz	RFID
2.4-GHz	Bluetooth

2.2. EQUIPMENT LABELLING



Converter POE/DC and Converter AC/DC

Equipment Labelling

Comment: These two converters are not sold with the tested equipment (POE/DC Converter and AC/DC Converter)

2.3. EQUIPMENT MODIFICATIONS

☒ None ☐ Modification:



2.4. 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

Example:

Assume a receiver reading of 52.5dB μ V is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dB μ V/m.

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

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

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

2.5. Test distance extrapolation – FCC/ISED

The field strength is extrapolated to the new measurement distance using formula from FCC Part15.31 (f) and §6.5-6.6 RSS-GEN:

Below 30MHz,

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

Above 30MHz,

$$FS_{\text{limit}} = FS_{\text{max}} - 20 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

Where:

FS_{limit} is the calculation of field strength at the limit distance, expressed in dB μ V/m

FS_{max} is the measured field strength, expressed in dB μ V/m

d_{measure} is the distance of the measurement point from the EUT

d_{limit} is the reference limit distance

Example:

For a limit level of 39dB μ V/m to 10m, the correspondence of the limit level to 3m will be:

$$\begin{aligned} FS_{\text{limit}}(3\text{m}) &= FS_{\text{limit}}(10\text{m}) - 20 \log (3/10) \\ &= 39\text{dB}\mu\text{Vm}/(10\text{m}) - 20 \log (3/10) \\ &= 39\text{dB}\mu\text{Vm}/(10\text{m}) - (-10.5) \\ &= 49.5\text{dB}\mu\text{Vm} \end{aligned}$$



3. Measurement of radiated emissions

3.1. ENVIRONMENTAL CONDITIONS

Test performed by : **Philippe Duhamel**
Date of test : December 4, 2024
Ambient temperature : 20°C
Relative humidity : 34%

3.2. TEST SETUP

Specifications:

Frequency	30 – 1000 MHz	RBW 120 kHz
	1-6GHz	RBW 1MHz
Detector	Peak and Quasi-Peak	

Pre characterization in semi anechoic room is performed to define the critical frequencies

Operating conditions:

- The Equipment under Test is installed:

☒ Measure in semi anechoic room

☐ Measure in open area site

- Measuring distance:

☒ 3m

☐ 10m

- Deviation method:

☐ Yes

☒ No

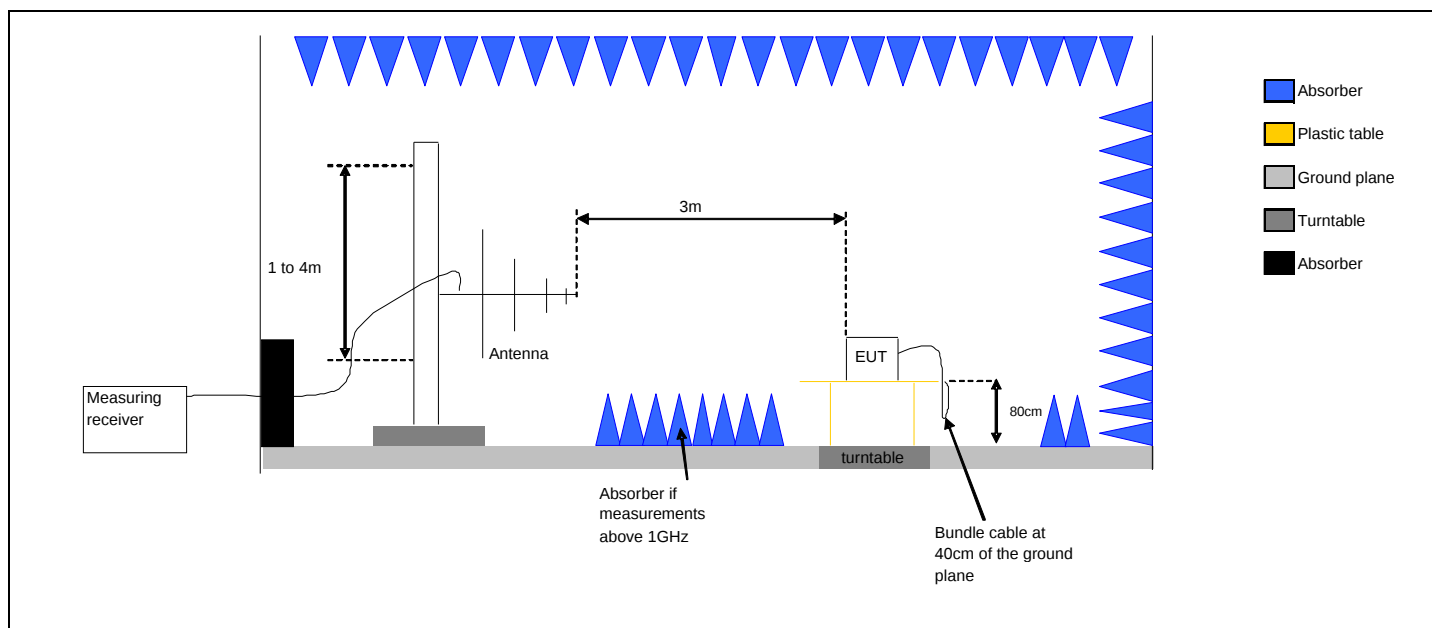
-Product installation:

☒ The EUT was tested as a tabletop equipment and was placed on a non-conducting platform the top of which is 0.8m above the metal ground plane.

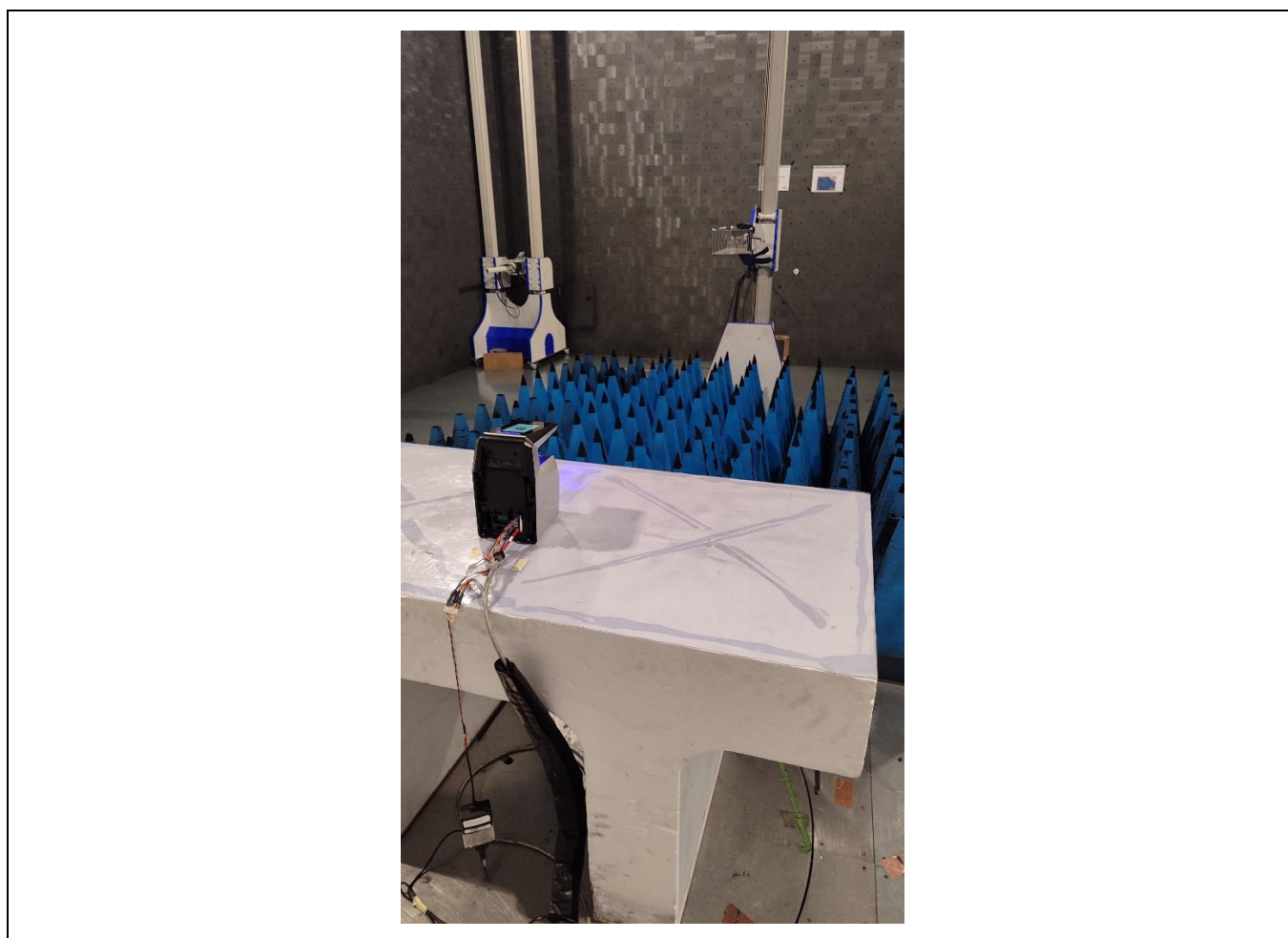
☐ The EUT is at 10cm height from reference plane

Operating mode:

☒ Mode 1 ☒ Mode 2



Test Set up for radiated measurement in semi anechoic chamber



Measurement of radiated disturbances.



3.3. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi anechoic chamber	SIEPEL	V01 (ANE)	D3044025	2024/04	2027/04
Semi anechoic chamber	SIEPEL	V01 (VSWR)	D3044025	2024/04	2027/04
Software v3.21.0.32	NEXIO	BAT-EMC	LCIE	-	-
Receiver	ROHDE & SCHWARZ	ESW26	A2642039	2024/02	2026/02
cable	-	-	A5330050	2024/04	2025/04
cable	-	-	A5329430	2024/07	2025/07
Preamplifier	SCHWARZBECK	BBV9743 B	A7080076	2023/04	2025/04
Bilog antenna	ETS LINDGREN	3142E	C2040271	2023/10	2025/10
Horn antenna	A-infoMW	Broadband 1-18	C2042056	2023/09	2025/09
Thermo-hygrometer	OREGON	BAR388HG	B4204076	2024/03	2026/03
Multimeter	FLUKE	76	A1240150	2024/06	2026/06
Variable power supply DC	SODILEC	SDRI 403	-	-	-



3.4. RESULTS

Mode 1 Diagram N°1

FCC/FCC 15.109 - Classe: - QCrête/3.0m/
Peak (Horizontale)

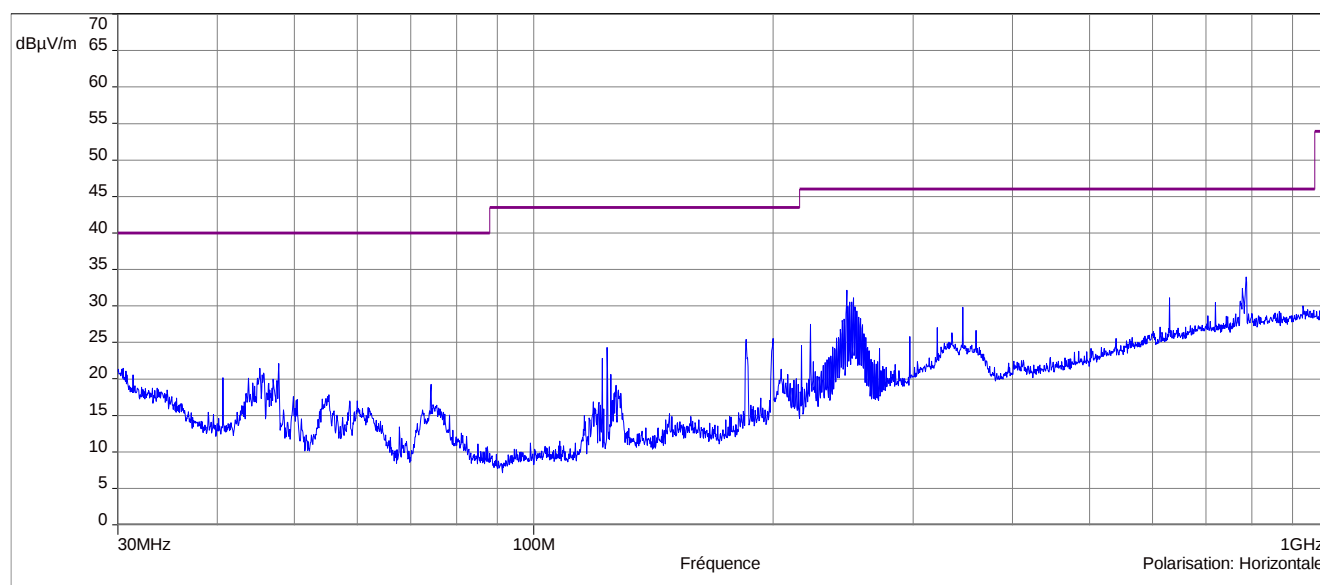
Description Sous-bande 1

Fréquences: 30 MHz - 1 GHz (Mode: Lin, Pas: 50 kHz)

Réglages: RBW: 120kHz, VBW: Auto, Durée balayage: 30 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Horizontale

Distance: 3 m



Horizontal Polarization (30MHz-1GHz)

Diagram N°2

FCC/FCC 15.109 - Classe: - Moyenne/3.0m/
FCC/FCC 15.109 - Classe: - QCrête/3.0m/
FCC/FCC 15.109 - Classe: - Crête/3.0m/
Peak (Horizontale)
Avg (Horizontale)

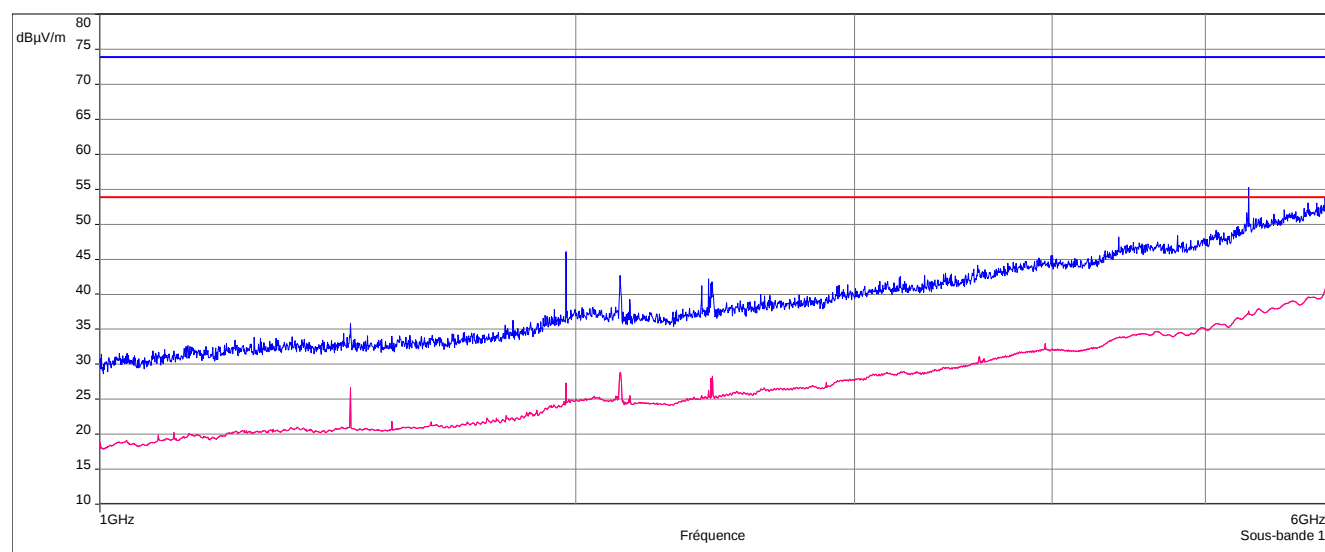
Description Sous-bande 1

Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1MHz, VBW: Auto, Durée balayage: 10 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Horizontale

Distance: 3 m



Vertical Polarization (1-6GHz)

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Diagram N°3

Description Sous-bande 1

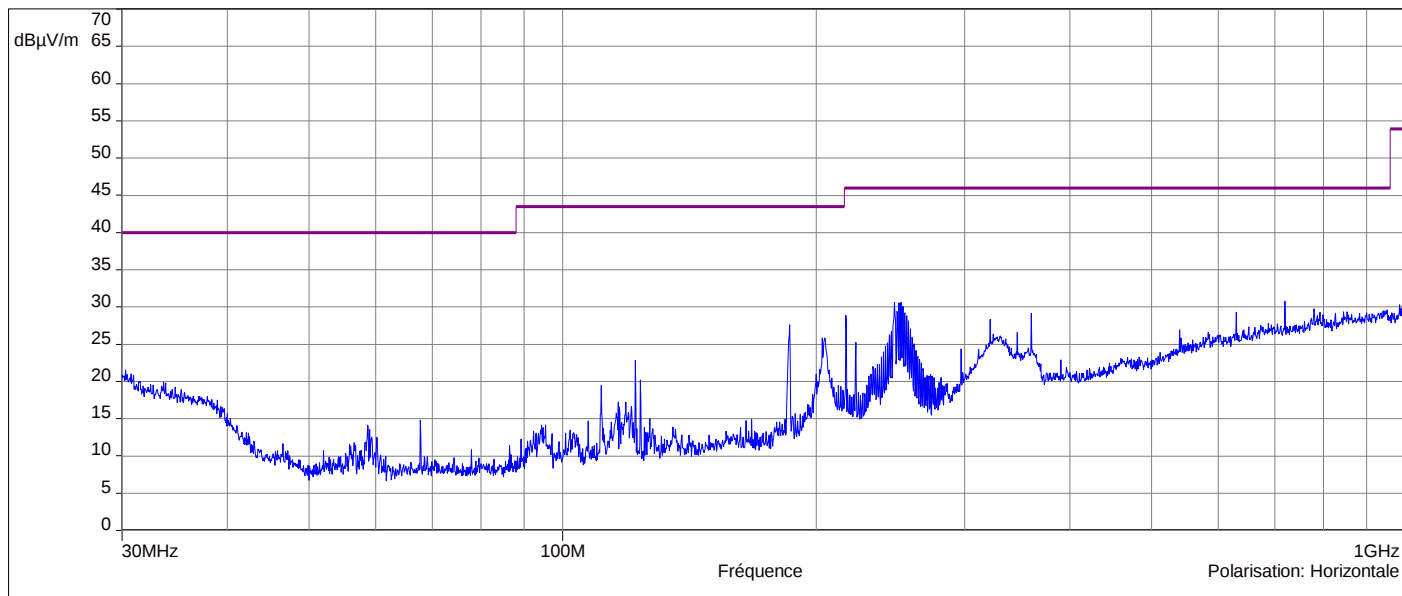
Fréquences: 30 MHz - 1 GHz (Mode: Lin, Pas: 50 kHz)

Réglages: RBW: 120kHz, VBW: Auto, Durée balayage : 30 ms/Pts, Atténuation : Auto, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur:

Polarisation: Horizontale

Distance: 3 m

FCC/FCC 15.109 - Classe: - QCrête/3.0m/
Peak (Horizontale)



Horizontal Polarization (30MHz-6GHz)

Diagram N°4

Description Sous-bande 2

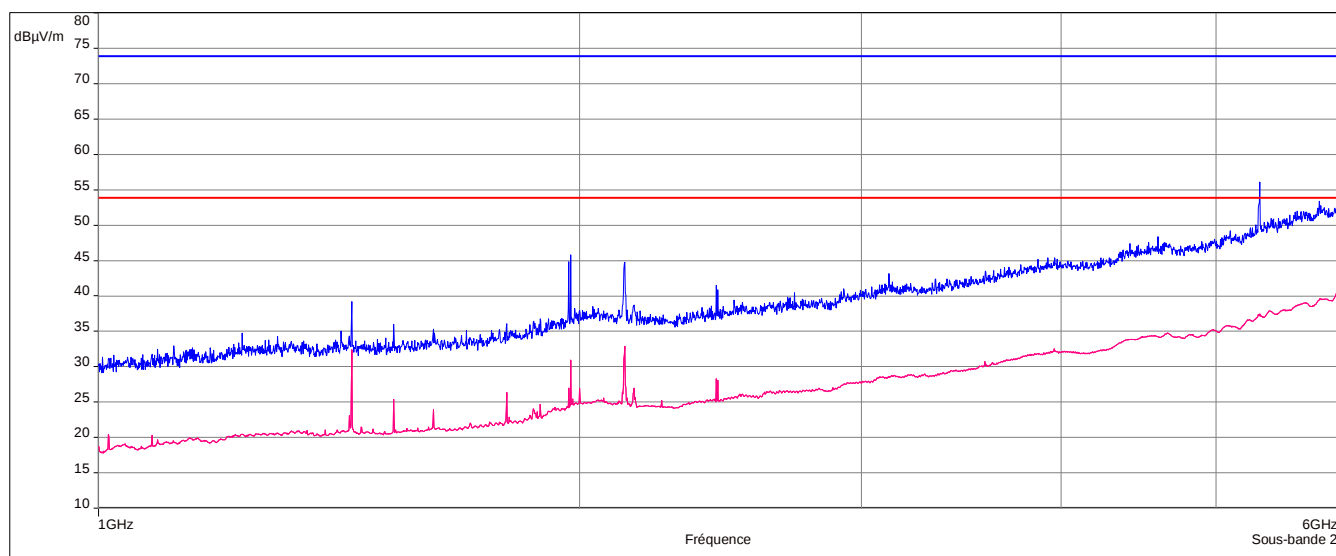
Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1MHz, VBW: Auto, Durée balayage : 10 ms/Pts, Atténuation : Auto, Nombre de Balayages : 1, Preamp : On: 10 dB, LN Preamp : Off, Preselecteur:

Polarisation: Verticale

Distance: 3 m

FCC/FCC 15.109 - Classe: - Moyenne/3.0m/
FCC/FCC 15.109 - Classe: - QCrête/3.0m/
FCC/FCC 15.109 - Classe: - Crête/3.0m/
Peak (Verticale)
Avg (Verticale)



Vertical Polarization (1-6GHz)

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Mode 2 Diagram N°5

Description Sous-bande 1

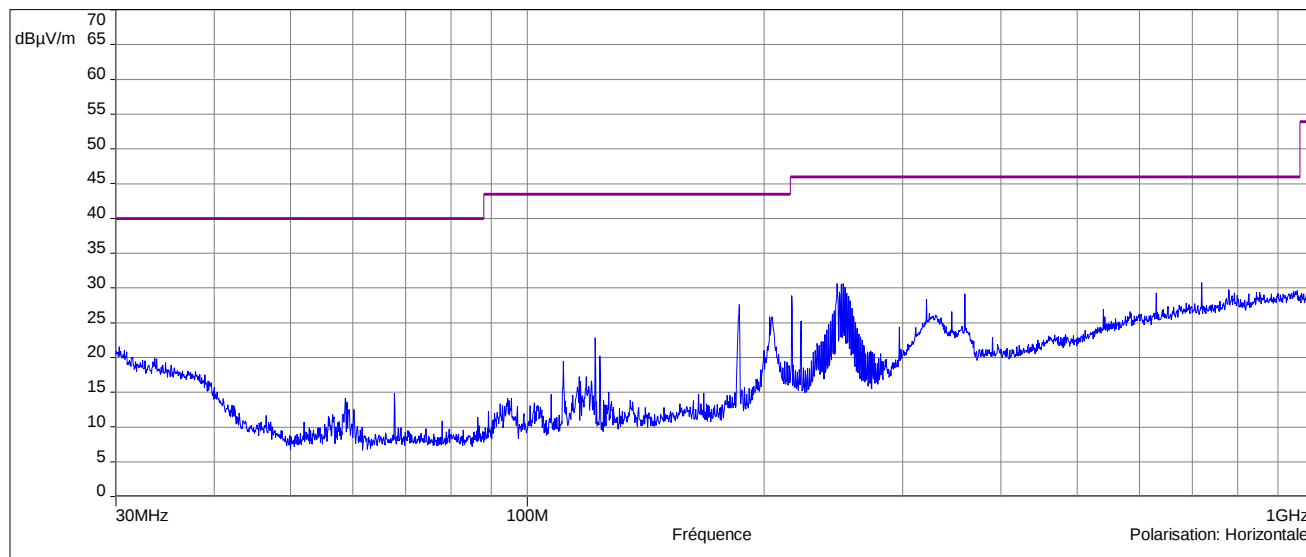
Fréquences: 30 MHz - 1 GHz (Mode: Lin, Pas: 50 kHz)

Réglages: RBW: 120kHz, VBW: Auto, Durée balayage: 30 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Horizontale

Distance: 3 m

FCC/FCC 15.109 - Classe: - QCrête/3.0m/
Peak (Horizontale)



Horizontal Polarization (30MHz-6GHz)

Diagram N°6

Description Sous-bande 1

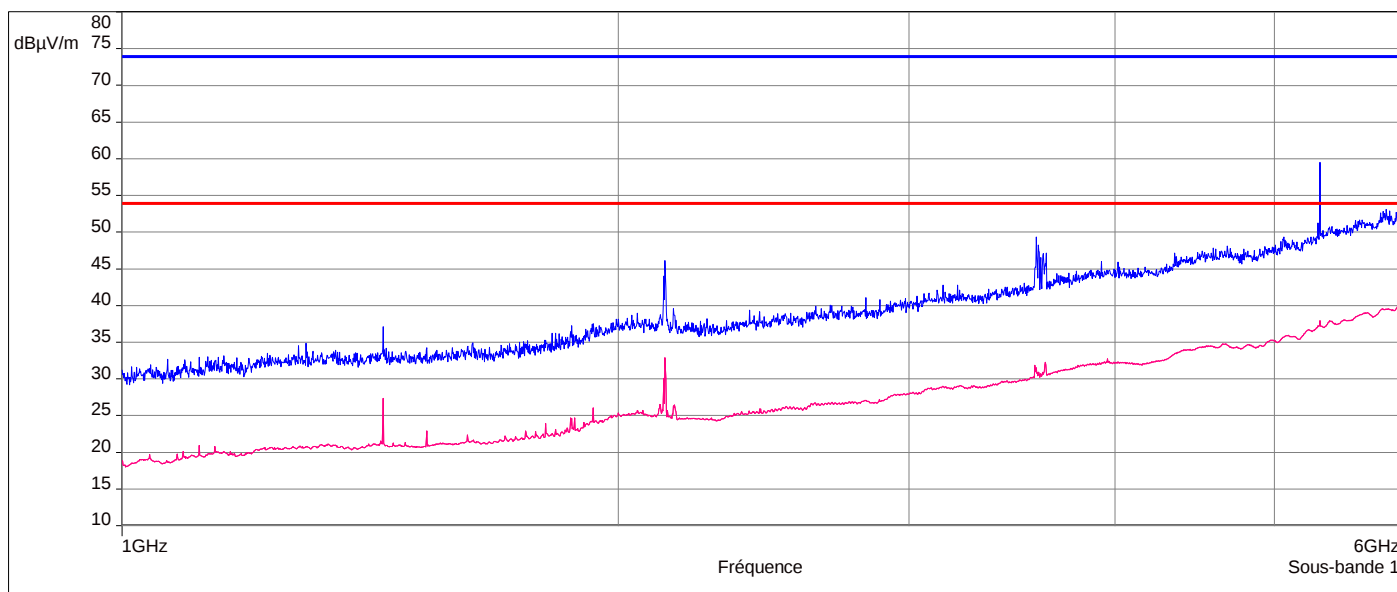
Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1MHz, VBW: Auto, Durée balayage: 10 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Horizontale

Distance: 3 m

FCC/FCC 15.109 - Classe: - Moyenne/3.0m/
FCC/FCC 15.109 - Classe: - QCrête/3.0m/
FCC/FCC 15.109 - Classe: - Crête/3.0m/
Peak (Horizontale)
Avg (Horizontale)



Horizontal Polarization (1-6GHz)



Diagram N°7

Description Sous-bande 2

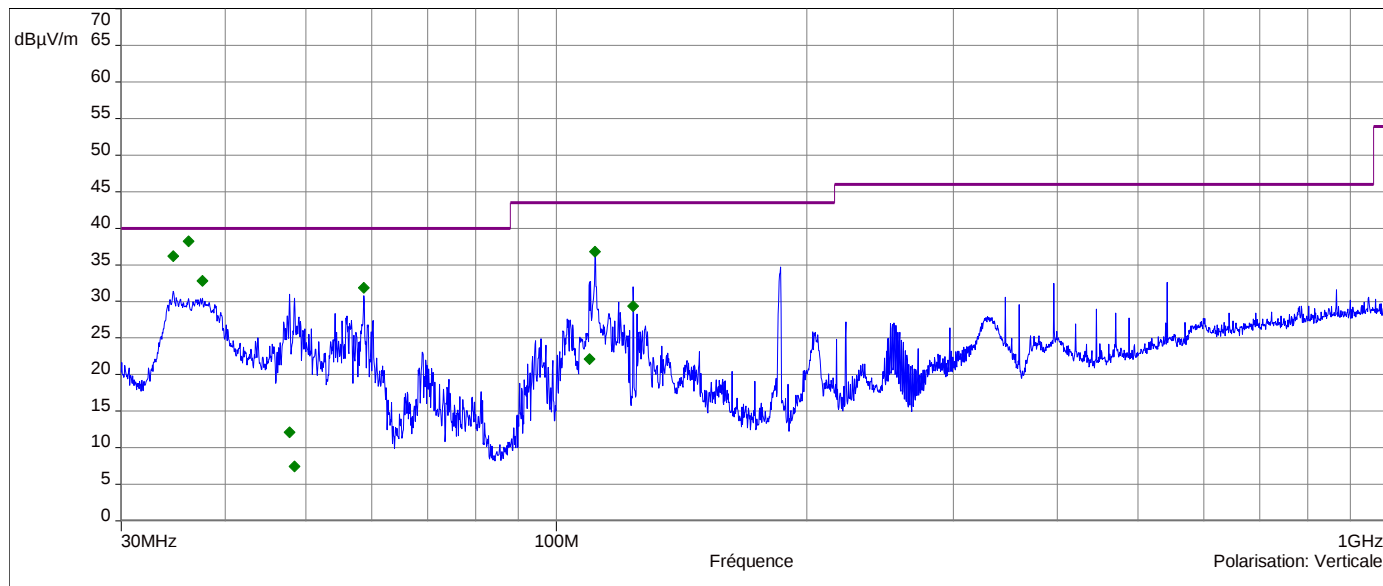
Fréquences: 30 MHz - 1 GHz (Mode: Lin, Pas: 50 kHz)

Réglages: RBW: 120kHz, VBW: Auto, Durée balayage: 30 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Verticale

Distance: 3 m

FCC/FCC 15.109 - Classe: - QCrête/3.0m/
Peak (Verticale)
Mes QPeak (Results) (Verticale)



Horizontal Polarization (30MHz-1GHz)

Diagram N°8

Description Sous-bande 2

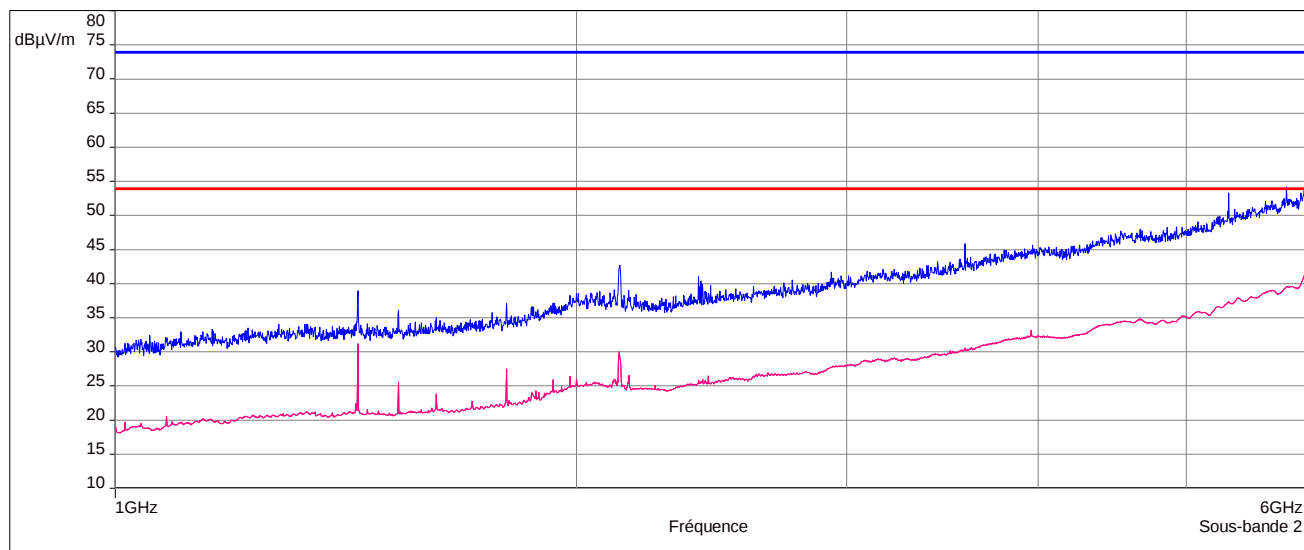
Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1MHz, VBW: Auto, Durée balayage: 10 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: On: 10 dB, LN Preamp: Off, Preselecteur:

Polarisation: Verticale

Distance: 3 m

FCC/FCC 15.109 - Classe: - Moyenne/3.0m/
FCC/FCC 15.109 - Classe: - QCrête/3.0m/
FCC/FCC 15.109 - Classe: - Crête/3.0m/
Peak (Verticale)
Avg (Verticale)



Vertical Polarization (1-6GHz)



Result mode 1

Fréquence (MHz)	SB	Mes Peak	Mes QPeak (dBμV/m)	Max Height	Max Angle	RBW	Meas.Time	Correction (dB)
34.4	2	29.22	23.13	1.02	279.20	120k	0.03	14.16
35.3	2	38.83	33.17	1.05	17.20	120k	0.03	13.61
54.2	2	31.69	26.54	1.05	300.70	120k	0.03	7.48
58.75	2	34.78	30.48	1.50	316.90	120k	0.03	7.33
61.75	2	39.17	32.13	1.92	153.90	120k	0.03	7.37
74.25	2	32.80	30.46	1.02	1.10	120k	0.03	7.77
123.75	2	32.48	30.79	2.36	175.20	120k	0.03	8.64

Result mode 2

Fréquence (MHz)	SB	Mes Peak	Mes QPeak (dBμV/m)	Max Height	Max Angle	RBW	Meas.Time	Correction (dB)
34.65	2	39.27	36.21	1.05	306.60	120k	0.03	13.99
36.15	2	40.91	38.23	1.02	263.30	120k	0.03	13.20
37.55	2	35.56	32.81	1.02	225.60	120k	0.03	12.47
47.8	2	17.43	12.13	2.14	284.30	120k	0.03	8.18
48.45	2	14.63	7.43	2.35	318.00	120k	0.03	8.02
58.7	2	35.56	31.84	1.83	181.10	120k	0.03	7.33
109.65	2	31.28	22.12	2.73	121.30	120k	0.03	8.65
111.35	2	43.38	36.76	1.80	354.00	120k	0.03	8.62
123.75	2	30.96	29.36	2.22	16.70	120k	0.03	8.64

*The measurement results of at least the six highest emissions relative to the limit, unless they are 10 dB or more below the limit, shall be recorded in the test report.

3.5. CONCLUSION

Measures of Radiated Emission, performed on the sample of the product MPH-AC010A, SN: 2448SXP20000078, in configuration and description presented in this test report, show levels conform to the FCC part 15 & ICES -003 limits.



4. Measurement of conducted disturbance

4.1. ENVIRONMENTAL CONDITIONS

Test performed by : **Philippe Duhamel**
Date of test : December 4, 2024
Ambient temperature : 20°C
Relative humidity : 34%

4.2. TEST SETUP

Specifications:

Frequency 0.15 – 30 MHz RBW 9 kHz
Detector Peak , Quasi Peak and average

The measurement is performed on power supply with a LISN and telecommunication lines with RSI or current clamp for shielded cables.

Operating conditions:

- Deviation method:

☐ Yes

☒ No

-Product installation:

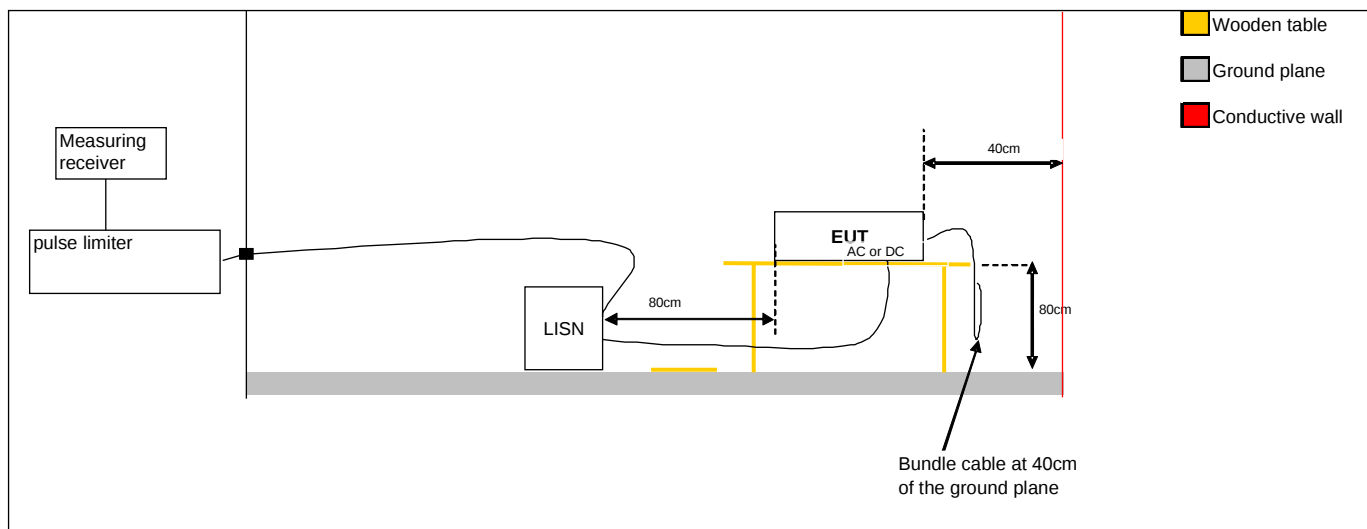
☒ The EUT is installed on a wooden table 80 cm above the reference plane, at 80cm of the LISN and at 40cm of the vertical conductive wall

☐ The EUT is installed on a wooden table 40 cm above the reference plane, at 80cm of the LISN.

☐ The EUT is installed 10 cm above the reference plane, at 80cm of the LISN..

Operating mode:

☒ Mode 1 ☒ Mode 2 ☐ Mode 3 ...



4.3. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Reference ground plane 3 x 6,5 m	LCIE	V03	-	-	-
Software v3.21.0.32	NEXIO	BAT-EMC	LCIE	-	-
Receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2023/06	2025/06
Cable		BNC/BNC_1,5m	A5330088	2024/06	2025/06
Current absorber	LCIE	-	A5329924	2023/08	2025/08
RSIL	ROHDE & SCHWARZ	ENV216	C2320163	2024/07	2025/07
RSIL	ROHDE & SCHWARZ	ENV216	C2320162	2024/12	2025/12
Thermo-hygrometer	OTIO	-	B4204095	2024/01	2026/01
Multimeter	FLUKE	76	A1240150	2024/06	2026/06
Variable power supply DC	SODILEC	SDRI 403	-	-	-



4.4. RESULTS

Mode 1: 240V/50Hz Diagram N°1

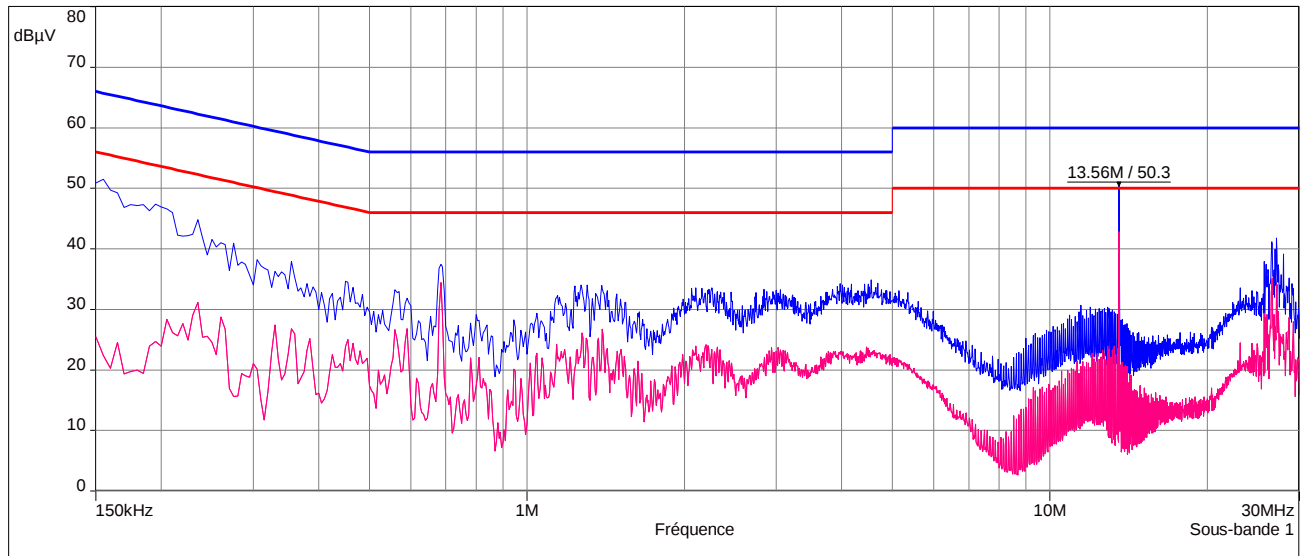
Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne: Phase 1

FCC PART 15 classe B - Classe: B - Avg/
FCC PART 15 classe B - Classe: B - Q-Peak/
Peak (Phase 1)
Avg (Phase 1)



Phase

Diagram N°2

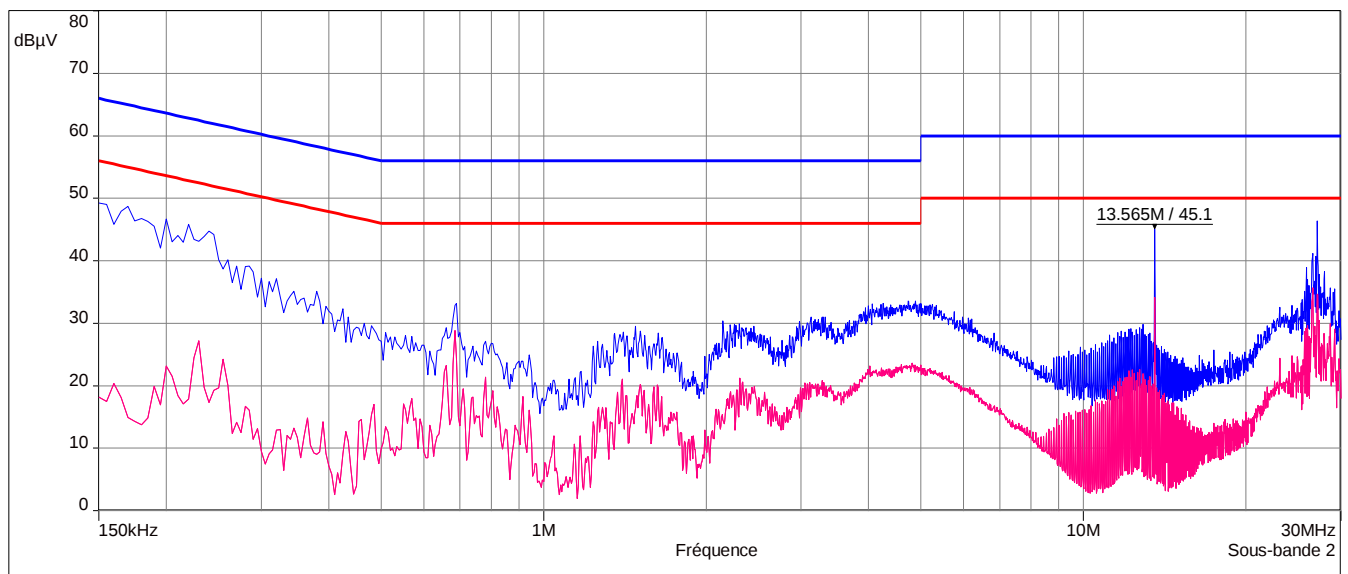
Description Sous-bande 2

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne: Neutre

FCC PART 15 classe B - Classe: B - Avg/
FCC PART 15 classe B - Classe: B - Q-Peak/
Peak (Neutre)
Avg (Neutre)



Neutral

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Diagram N°3: 120/60Hz

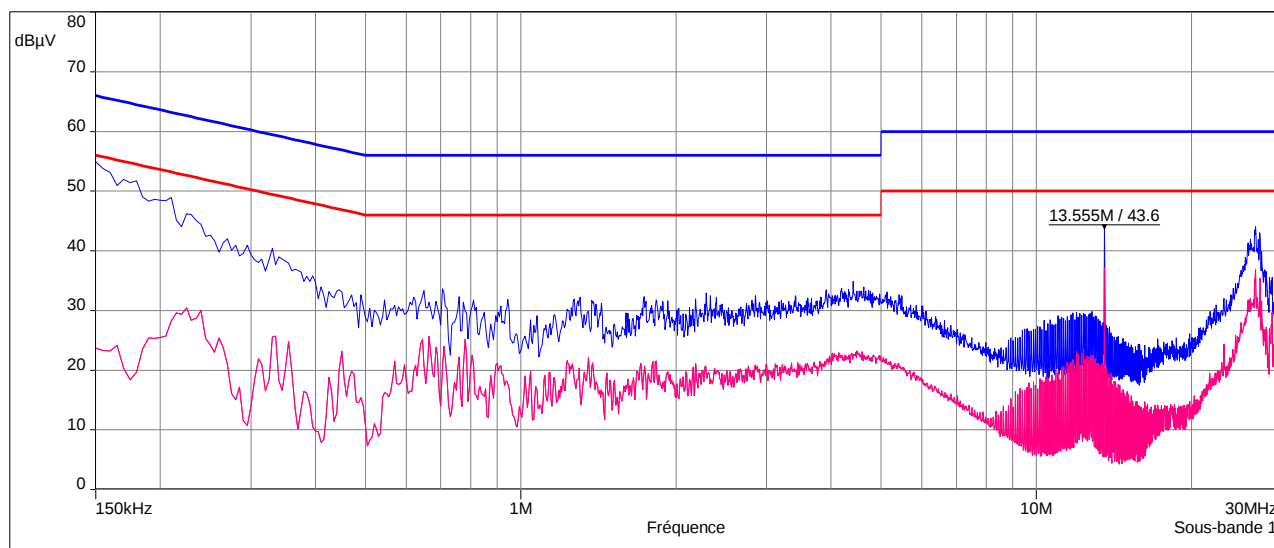
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Phase 1)
- Avg (Phase 1)

Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne:Phase 1



Phase

Diagram N°4

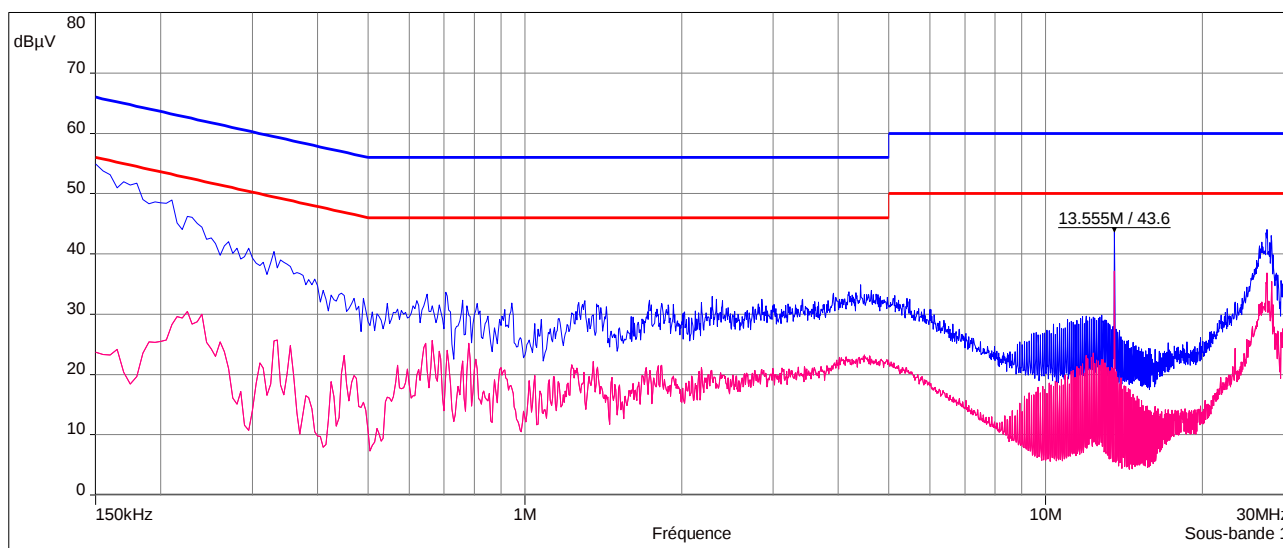
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Phase 1)
- Avg (Phase 1)

Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne:Phase 1



Neutral

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Mode 2: 240V/50Hz Diagram N°5

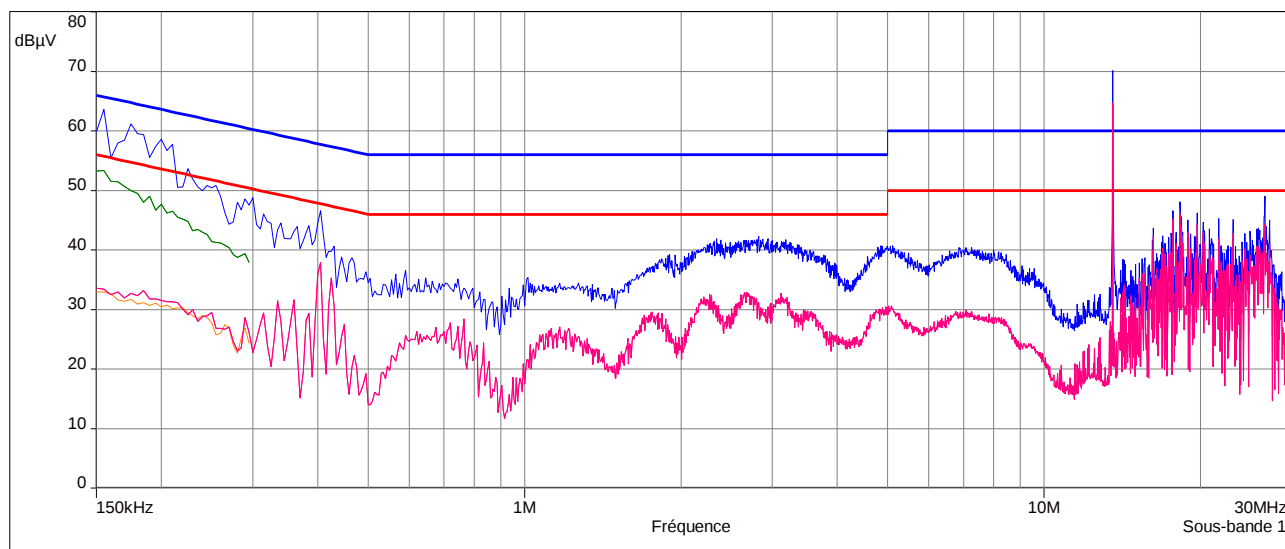
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Phase 1)
- Q-Peak (Phase 1)
- Avg (Phase 1)
- Mes.CISPR.AVG (Phase 1)

Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne:Phase 1



Phase

Diagram N°6

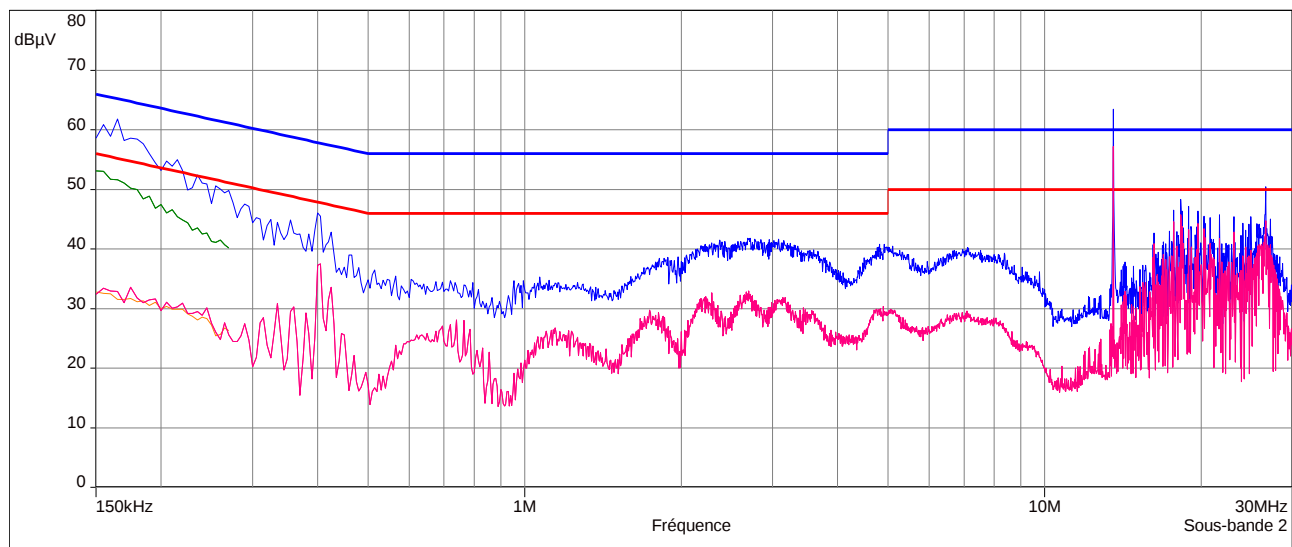
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Neutre)
- Q-Peak (Neutre)
- Avg (Neutre)
- Mes.CISPR.AVG (Neutre)

Description Sous-bande 2

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: Auto, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne:Neutre



Neutral

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Diagram N°7: 120V/60Hz

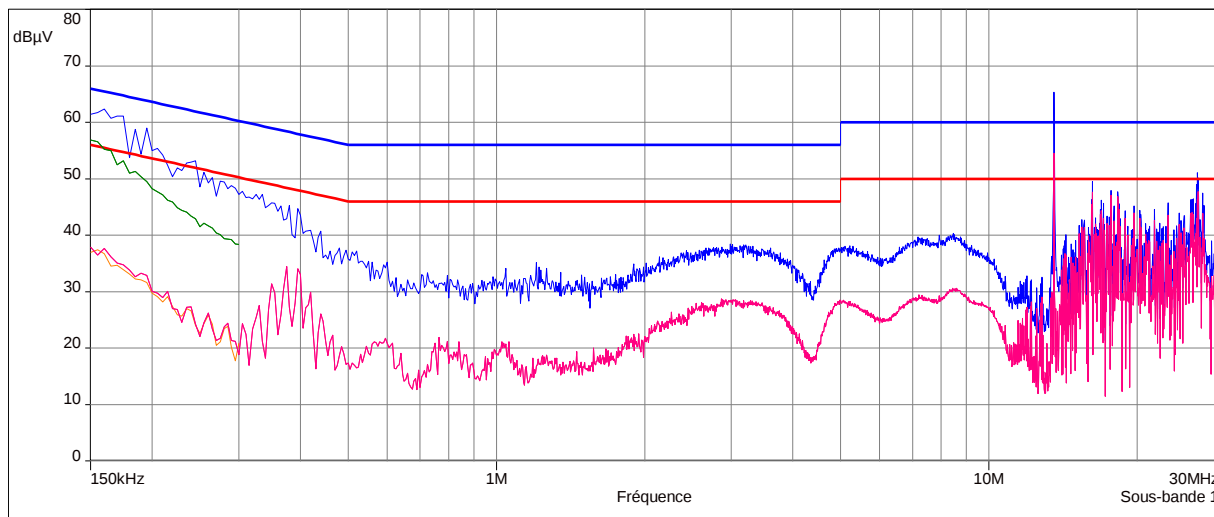
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Phase 1)
- Q-Peak (Phase 1)
- Avg (Phase 1)
- Mes.CISPR.AVG (Phase 1)

Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : Auto, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On

Ligne:Phase 1



Phase

Diagram N°8

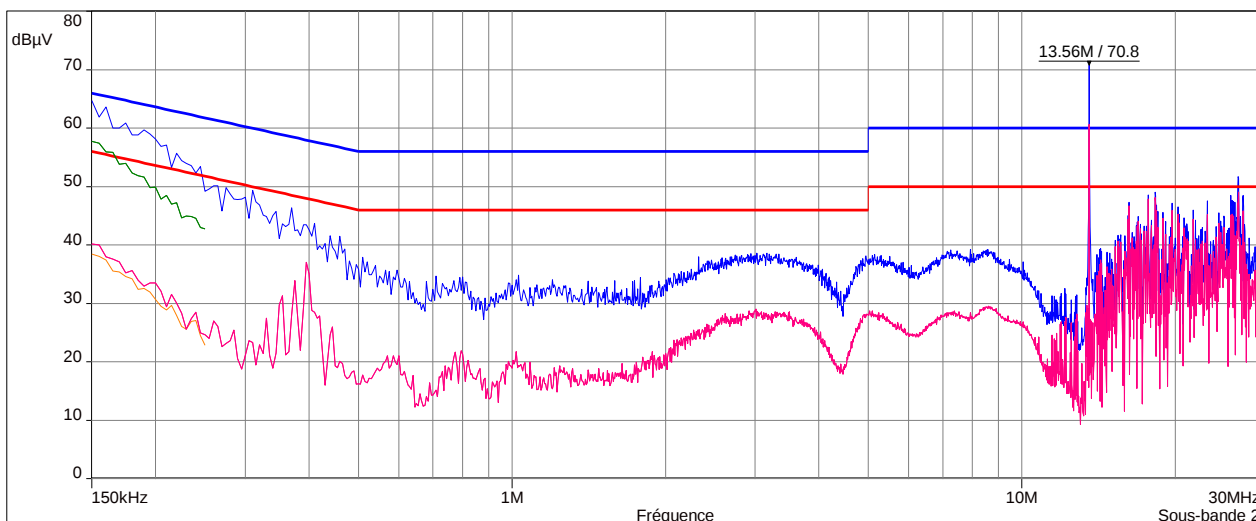
- FCC PART 15 classe B - Classe:B - Avg/
- FCC PART 15 classe B - Classe:B - Q-Peak/
- Peak (Neutre)
- Q-Peak (Neutre)
- Avg (Neutre)
- Mes.CISPR.AVG (Neutre)

Description Sous-bande 2

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9kHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : Auto, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On

Ligne:Neutre



Neutral



Frequency (MHz)*	Line	Quasi-peak measurements (dB μ V/m)	Average measurements (dB μ V/m)	Quasi-peak limits (dB μ V/m)	Average limits (dB μ V/m)
0,68	L	-	35	56	46
0,15	L	55	30	55	65
26,6	L	-	44	50	60
0,15	N	53	33	55	65
26,6	N	-	43	50	60
0.15	N	57	40	55	65

*The measurement results of at least the six highest emissions relative to the limit, unless they are 10 dB or more below the limit, shall be recorded in the test report.

4.5. CONCLUSION

Measures of Conducted Emission, performed on the sample of the product MPH-AC010A, SN: 2448SXP20000078, in configuration and description presented in this test report, show levels conform to the FCC part 15 & ICES -003 limits.



5. Uncertainties Chart

Type de mesure / Kind of measurement	Incertitude élargie laboratoire / Wide uncertainty laboratory (k=2) $\pm x$	Incertitude limite du CISPR / CISPR uncertainty limit $\pm y$
Mesure des perturbations conduites en tension sur le réseau d'énergie <i>Measurement of conducted disturbances in voltage on the power port</i> RSIL / LISN - 50Ω/50μH		
9kHz - 150kHz	3.71 dB	3.8 dB
150kHz - 30MHz	3.36 dB	3.4 dB
Mesure des perturbations conduites en tension sur le réseau d'énergie <i>Measurement of conducted disturbances in voltage on the power port</i> Sonde de tension / Voltage Probe		
9kHz - 30MHz	2.74 dB	2.9 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication <i>Measurement of conducted disturbances in voltage on the telecommunication port</i> RSI / AAN		
150kHz - 30MHz - aLCL = 55 ... 40 dBc	4.17 dB	5.0 dB
150kHz - 30MHz - aLCL = 65 ... 50 dBc	4.55 dB	5.0 dB
150kHz - 30MHz - aLCL = 75 ... 60 dBc	4.99 dB	5.0 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication <i>Measurement of conducted disturbances in voltage on the telecommunication port</i> Sonde de tension / Capacitive Voltage Probe		
150kHz - 30MHz	3.73 dB	3.9 dB
Mesure des perturbations conduites en courant sur le réseau de télécommunication <i>Measurement of conducted disturbances in current on the telecommunication port</i> Sonde de courant / Current Probe		
9kHz - 30MHz	2.88 dB	2.9 dB
Mesure des perturbations discontinues conduites en tension <i>Measurement of discontinuous conducted disturbances in voltage</i> Récepteur / Receiver		
150kHz - 30MHz	3.36 dB	3.4 dB
Mesure des harmoniques de courant <i>Measurement of current harmonics</i>		
$I_{\text{harm}} \pm 5\%$ du calibre / range	0.93 A	-
$I_{\text{harm}} \pm 0.15\%$ du calibre / range	0.03 A	-
Mesure du flicker <i>Flicker measurement</i>		
Mesure du P_{ST} / Measurement of P_{ST}	6.0 %	-
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> OATS & SAC @3m		
30MHz - 200MHz, Antenne biconique / Biconical antenna	5.88 dB	6.3 dB
30MHz - 1GHz, Antenne hybride / Hybrid antenna	5.82 dB	6.3 dB
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> OATS @10m		
30MHz - 200MHz, Antenne biconique / Biconical antenna	5.86 dB	6.3 dB
30MHz - 1GHz, Antenne hybride / Hybrid antenna	6.07 dB	6.3 dB
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> FAR @3m		
1GHz - 6GHz, Antenne cornet / Horn antenna	5.19 dB	5.2 dB
6GHz - 18GHz, Antenne cornet / Horn antenna	5.48 dB	5.5 dB
1GHz - 6GHz, Antenne hybride / Hybrid antenna	5.20 dB	5.2 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. Ce tableau regroupe l'ensemble des incertitudes maximales pour les essais réalisables dans le laboratoire, qu'ils aient été ou non réalisés dans le cadre du présent rapport / 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. This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report



Note - L'incertitude de mesure instrumentale est déterminée selon la CISPR 16-4-2. / The instrumentation measurement uncertainty is determined according to CISPR16-4-2

Type de mesure / Kind of measurement	Incertitude élargie laboratoire / Wide uncertainty laboratory (k=2) $\pm x$	Incertitude limite du CISPR / CISPR uncertainty limit $\pm y$
Immunité aux décharges électrostatiques / IEC 61000-4-2		
Immunity to electrostatic discharge immunity / IEC 61000-4-2		
Temps de montée / Rise time	30 %	/
Courant crête / Peak current	19 %	/
Intensité à 30ns / Current at 30ns	36 %	/
Intensité à 60ns / Current at 60ns	36 %	/
Tension de sortie / Output voltage	8 %	/
Immunité aux champs électromagnétiques rayonnés aux fréquences radioélectriques / IEC 61000-4-3		
Immunity to radiated, radio-frequency, electromagnetic field / IEC 61000-4-3		
Calibration / Calibration	2.9 dB	/
Niveau d'essai / Test level	3 dB	/
Immunité aux transitoires électriques rapides en sèves / IEC 61000-4-4		
Immunity to electrical fast transient/burst immunity / IEC 61000-4-4		
Temps de montée / Rise time	37 %	/
Tension crête / Peak voltage	14 %	/
Largeur d'impulsion / Pulse width	36 %	/
Immunité aux ondes de choc / IEC 61000-4-5		
Immunity to surge / IEC 61000-4-5		
Essai en Tension / Voltage test		
Temps de montée / Rise time	41 %	/
Tension crête / Peak voltage	14 %	/
Largeur d'impulsion / Pulse width	25 %	/
Essai en Courant / Current test		
Temps de montée / Rise time	24 %	/
Courant crête / Peak current	12 %	/
Largeur d'impulsion / Pulse width	24 %	/
Immunité aux perturbations conduites, induites par les champs électromagnétiques / IEC 61000-4-6		
Immunity to conducted disturbance, induced by radio-frequency fields / IEC 61000-4-6		
Calibration / Calibration	1.6 dB	/
Niveau d'essai / Test level	1.6 dB	/
Immunité aux champs magnétique à la fréquence du réseau / IEC 61000-4-8		
Immunity to power frequency magnetic field / IEC 61000-4-8		
Mesure du courant / Measurement of current	1.7 %	/



Mesure du champ magnétique / <i>Measurement of magnetic field</i>	3.3 %	/
Immunité aux champs magnétiques impulsionsnels / IEC 61000-4-9		
<i>Immunity to impulse magnetic field / IEC 61000-4-9</i>		
Durée du front / <i>Front time</i>	5.8 %	/
Courant crête / <i>Peak current</i>	6.4 %	/
Durée / <i>Duration</i>	11.7 %	/
Immunité aux creux de tension et coupures brèves / IEC 61000-4-11		
<i>Immunity to Voltage dips, short interruptions / IEC 61000-4-11</i>		
Valeur crête instantanée du sur/sous dépassement / <i>Instantaneous peak over/undershoot of the voltage</i>	7.0 %	/
Angle de phase / <i>Phase angle</i>	12.0 %	/
Immunité aux perturbations conduites en mode commun de 0 Hz à 150 kHz / IEC 61000-4-16		
<i>Immunity to common mode disturbances from 0Hz to 150kHz / IEC 61000-4-16</i>		
Niveau de test / <i>Test level :1V - 30V</i>	14.8 %	/
Niveau de test / <i>Test level :1V - 300V</i>	13.6 %	/
Immunité à l'onde oscillatoire amortie rapide / IEC 61000-4-18		
<i>Fast damped oscillatory wave immunity / IEC 61000-4-18</i>		
Circuit Ouvert / <i>Open circuit</i>		
Temps de montée de la tension / <i>Rise time of voltage</i>	1.8 µs	/
Tension crête / <i>Peak voltage</i>	12.1 %	/
Durée de la tension / <i>Duration of voltage</i>	24.1 %	/
Fréquence d'oscillation / <i>Oscillation frequency</i>	11.5 %	/
Court-circuit / <i>Short circuit</i>		
Temps de montée du courant / <i>Rise time of current</i>	0.4 µs	/
Courant crête / <i>Peak current</i>	23.4 %	/
Immunité aux champs rayonnés de proximité / IEC 61000-4-39		
<i>Immunity to radiated fields in close proximity / IEC 61000-4-39</i>		
De 9kHz à 150kHz / <i>From 9kHz to 150kHz</i>		
Calibration / <i>Calibration</i>	2.73 dB	/
Niveau d'essai / <i>Test level</i>	3.10 dB	/
De 150kHz à 26MHz / <i>From 150kHz to 26MHz</i>		
Calibration / <i>Calibration</i>	2.13 dB	/
Niveau d'essai / <i>Test level</i>	2.70 dB	/
De 380MHz à 6GHz / <i>From 380MHz to 6GHz</i>		
Calibration / <i>Calibration</i>	2.85 dB	/
Niveau d'essai / <i>Test level</i>	3.30 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. Ce tableau regroupe l'ensemble des incertitudes maximales pour les essais réalisables dans le laboratoire, qu'ils aient été ou non réalisés dans le cadre du présent rapport / *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. This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report*

Note - L'incertitude de mesure instrumentale est déterminée selon la CISPR 16-4-2. / *The instrumentation measurement uncertainty is determined according to CISPR16-4-2*

End of test report