



LCIE



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TEST REPORT

N°: **26047135-810814-B**

Version: **02**

Subject Electromagnetic compatibility tests according to the standards:
FCC CFR 47 Part 15.225 & ANSI C63.10
RSS 210 & RSS-Gen Issue 5.2

Issued to **BIOLOG ID**
1, Rue du Commandant Robert Malrait
27300 – BERNAY
France

Apparatus under test

↳ Product **Smart Storage Agitator SST-A 60**
↳ Trade mark **BIOLOG ID**
↳ Manufacturer **BIOLOG ID**
↳ Family range **SST-A**
↳ Model under test **PRD_7150300B**
↳ Serial number **02BI2323000769**
↳ FCCID **2AKUFSSTA-V3**
↳ IC **23919-SSTAV3**

Conclusion See Test Program chapter

Test date April 29, 2025 to May 16, 2025
Test location LCIE Fontenay-aux-Roses & Ecuelles
FCC Test site FR0010 - 157910 (FAR)
ISED Test site 6230B (FAR)
Sample receipt date April 28, 2025
Composition of document 47 pages
Document issued on August 12, 2025

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PUBLICATION HISTORY

Version	Date	Author	Modification
01	June 10, 2025	Julien Palard	Creation of the document
01	August 12, 2025	Julien Palard	Minor modification of RSS 210 issue page 4

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.



SUMMARY

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1. TEST PROGRAM

References

- 47 CFR Part 15.225 (2022)
- RSS 210 Issue 11
- RSS Gen Issue 5.2
- ANSI C63.10 (2013)

Radio requirement:

Clause - Test Description	Test result - Comments
Occupied Bandwidth	PASS
20dB Bandwidth	PASS
AC Power Line Conducted Emission	PASS
Frequency Tolerance	PASS
Field strength within the band [13.110-14.010] MHz	PASS
Field strength outside of the bands [13.110-14.010] MHz	PASS
Receiver Radiated Emissions	PASS(3)

This table is a summary of test report, see conclusion of each clause of this test report for detail.

(1): Limited program

(2): EUT not directly or indirectly connected to the AC Power Public Network

(3): Testing covered the receive mode, and receiver spurious emissions are considered to be the same as transmitter.

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

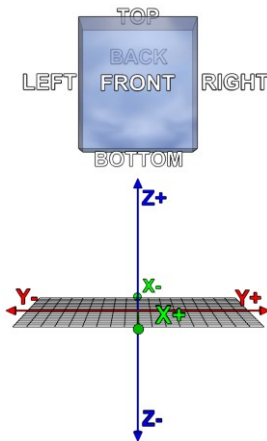
NA: Not Applicable

NP: Test Not Performed

2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

Model under test:	PRD_7150300B		
Serial Number:	02BI2323000769		
			
Dimensions:	82cm x 40cm x 40cm (Length x Width x Height)		
Type:	Table-Top		



Power supply:

Name	Type	Rating	Reference / Sn	Comments
Supply1	Power supply AC/DC Globtek	100-240V ;50/60Hz	GTM96900P9015-T2	-

NC: Not communicated by provider

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Comments
1	Power supply	1.8	☒	☐	☒
2	Ethernet	5	☐	☒	☒
3	CAN bus	2	☐	☐	☒

NC: Not communicated by provider

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Laptop	-	-	Use to set the EUT
Platelet Agitator HELMER	PF96-PRO	2109641	-
Calculator BIOLOG ID	SPR_71301A	04ER2238000613	

NC: Not communicated by provider


Equipment information (declaration of provider):

Type:	RFID		
Frequency band:	[13.553 to 13.567] MHz		
Number of Channel:	1		
Antenna Type:	Internal		
Transmit chains:	1		
Receiver chains	1		
Operating temperature range:	T _{min} :	☐ -20°C	☒ -30°C*
	T _{nom} :	20°C	
	T _{max} :	☐ 50°C	☒ 55°C*
Operating voltage:	V _{min} (85% V _{nom}):	☒ 102V/60Hz	☒ 10.8Vdc
	V _{nom} :	☒ 120V/60Hz	☒ 15Vdc
	V _{max} (115% V _{nom}):	☒ 138V/60Hz	☒ 16VdcNC

*Ask from provider

Antenna Characteristic			
Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
NC	NC	NC	NC

Modulation Type
-
-

Hardware information		
Firmware (if applicable):	V:	NC
Software (if applicable):	V:	NC

NC: Not communicated by provider

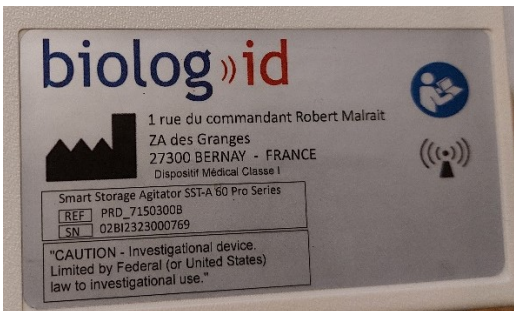
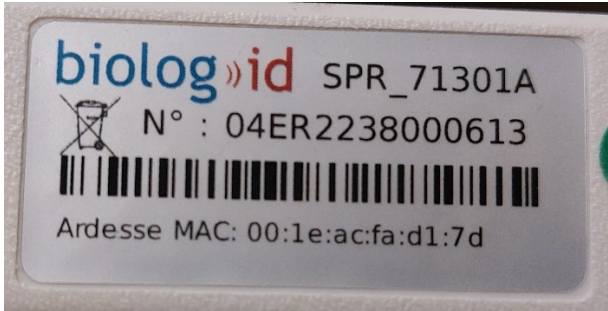
2.2. RUNNING MODE

Test mode	Description of test mode
Test mode 1	Permanent emission with modulation on a fixed channel in the data rate that produced the highest power. Tests are performed with "TAG".
Test mode 2	Permanent reception

Test	Running mode
Occupied Bandwidth	Test mode 1
Frequency Tolerance	Test mode 1
AC Power Line Conducted Emission	Test mode 1
Field strength within the band 13.110-14.010MHz	Test mode 1
Field strength outside of the bands 13.110-14.010 MHz	Test mode 1
Receiver Radiated Emissions	Test mode 2 (1)

- (1) The test can't be performed because the transmitter and receiver are operating at the same frequency and the transmitter cannot be switched off as the carrier is used as receiver injection signal

2.3. EQUIPMENT LABELLING

Label
  



2.4. EQUIPMENT MODIFICATIONS DURING THE TESTS

None

2.5. 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

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.

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

2.6. 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

2.7. CALIBRATION DATE

The calibration intervals are extended at 12+2 months. This extended interval is based on the fact that there is sufficient calibration data to statistically establish a trend or based on experience of use of the test equipment to assure good measurement results for a longer period.

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

Date of test : May 14, 2025
Test performed by : Julien Palard
Atmospheric pressure (hPa) : -
Relative humidity (%) : 46
Ambient temperature (°C) : 23

3.2. TEST SETUP

The Equipment Under Test is installed in a climatic chamber.
Measurement is performed with a spectrum analyzer in radiated method.

The EUT is turned ON, the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Test Procedure:

- ☑ RSS-Gen Issue 5.2 § 6.7
 - RBW used in the range of 1% to 5% of the anticipated emission bandwidth
 - Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
 - Detector = Peak.
 - Trace mode = Max Hold.
 - Sweep = Auto couple.
 - Allow the trace to stabilize.
 - OBW 99% function of spectrum analyzer used

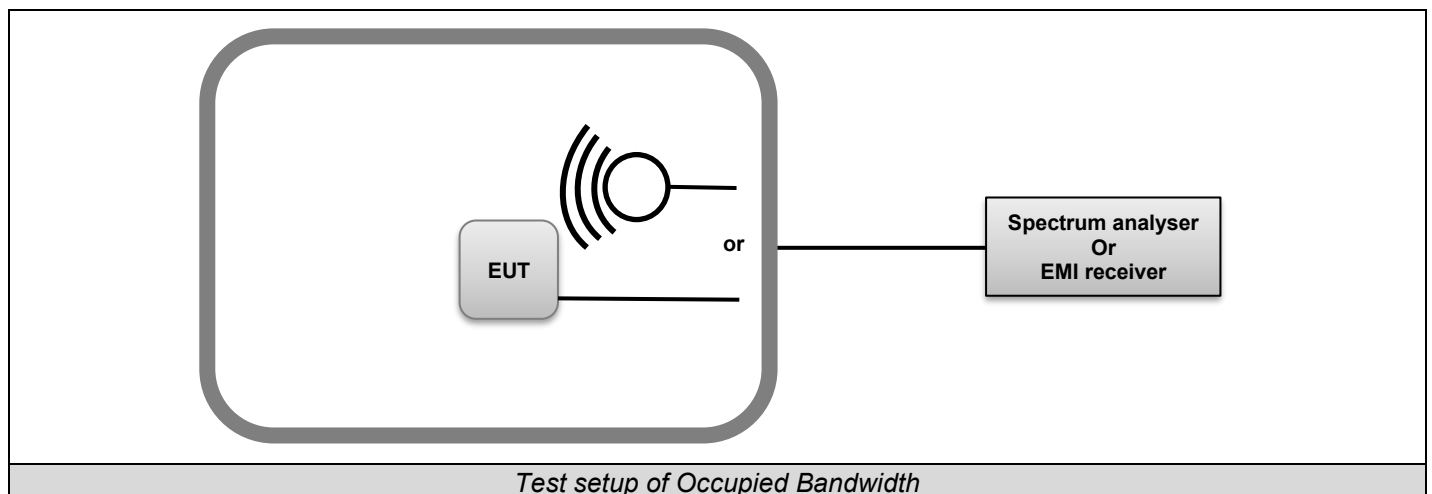




Photo of Occupied bandwidth

3.3. LIMIT

None

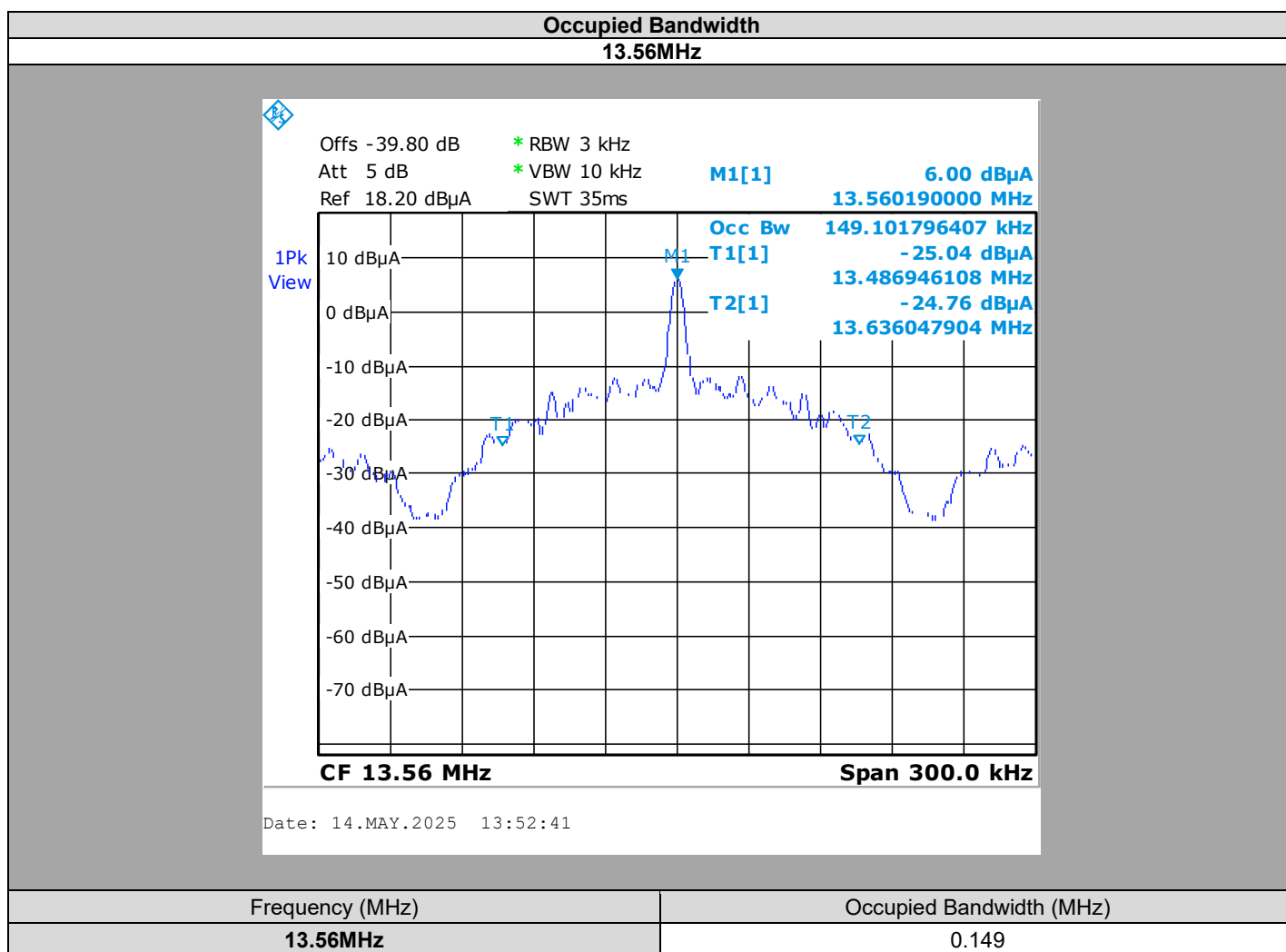
3.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Climatic chamber	SECASI	14M3	D1024029	2024/04	2026/04
Thermometer	FLUKE	FLUKE52	B4043164	2024/01	2026/01
Thermocouple Voie 1	FLUKE	Type K	B4043164/1	2024/01	2026/01
Thermocouple Voie 2	FLUKE	Type K	B4043164/2	2024/01	2026/01
EMI receiver	ROHDE & SCHWARZ	FSL6	A4060032	2022/10	2025/10
13,56MHz Test fixture Antenna	-	-	A5329422	Calibrated with EMI receiver	
Power supply	KIKUSUI	PCR500M	A7040079	Calibrated with Multimeter	
Power supply	ROHDE & SCHWARZ	NGSM32/10	A7040074	Calibrated with Multimeter	
Multimeter	KEITHLEY	2000	A1241084	2023/05	2025/05
Thermo-hygrometer	OREGON	-	B4204075	2024/05	2026/05

3.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

3.6. RESULTS



3.7. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **RSS-GEN** limits.

4. 20dB EMISSION BANDWIDTH

4.1. TEST CONDITIONS

Date of test : May 14, 2025
Test performed by : Julien Palard
Atmospheric pressure (hPa) : -
Relative humidity (%) : 46
Ambient temperature (°C) : 23

4.2. TEST SETUP

The Equipment Under Test is installed in a climatic chamber.
Measurement is performed with a spectrum analyzer in radiated method.

Test Procedure:

☒ ANSI C63.10 § 6.9.2:

The EUT is turn ON; levels have been corrected to be in compliant with the Peak Output Power measured; and using the MaxHold function, the frequency separation of two frequencies that were attenuated 20dB from the Peak Output Power level. A delta marker is used to measure the frequency difference as the emission bandwidth.

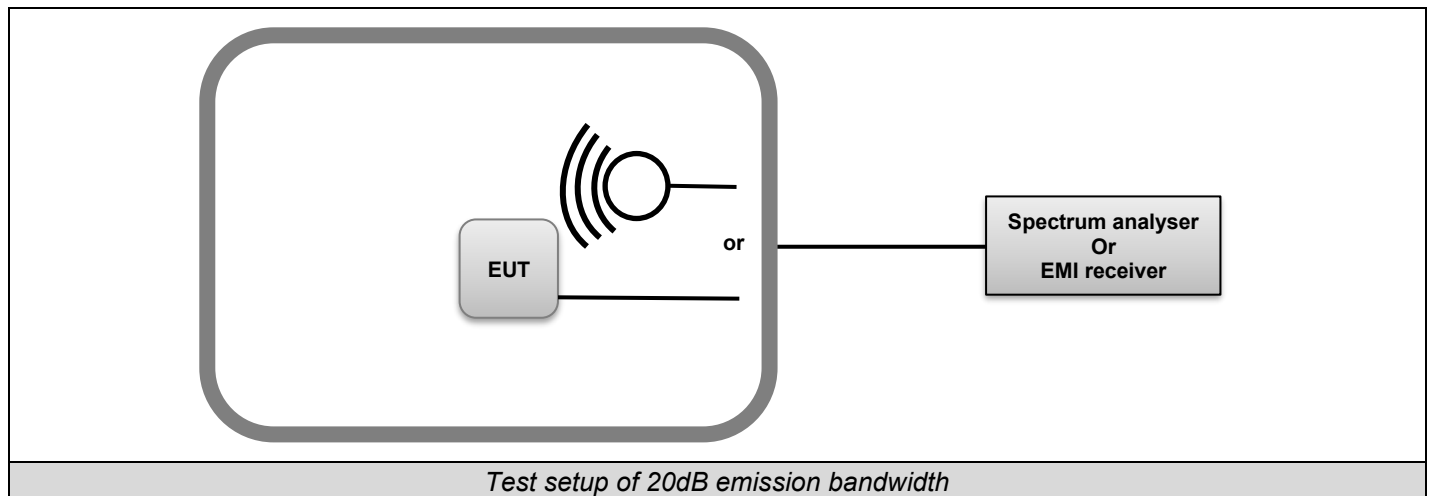




Photo of 20dB emission bandwidth

4.3. LIMIT

No Limit

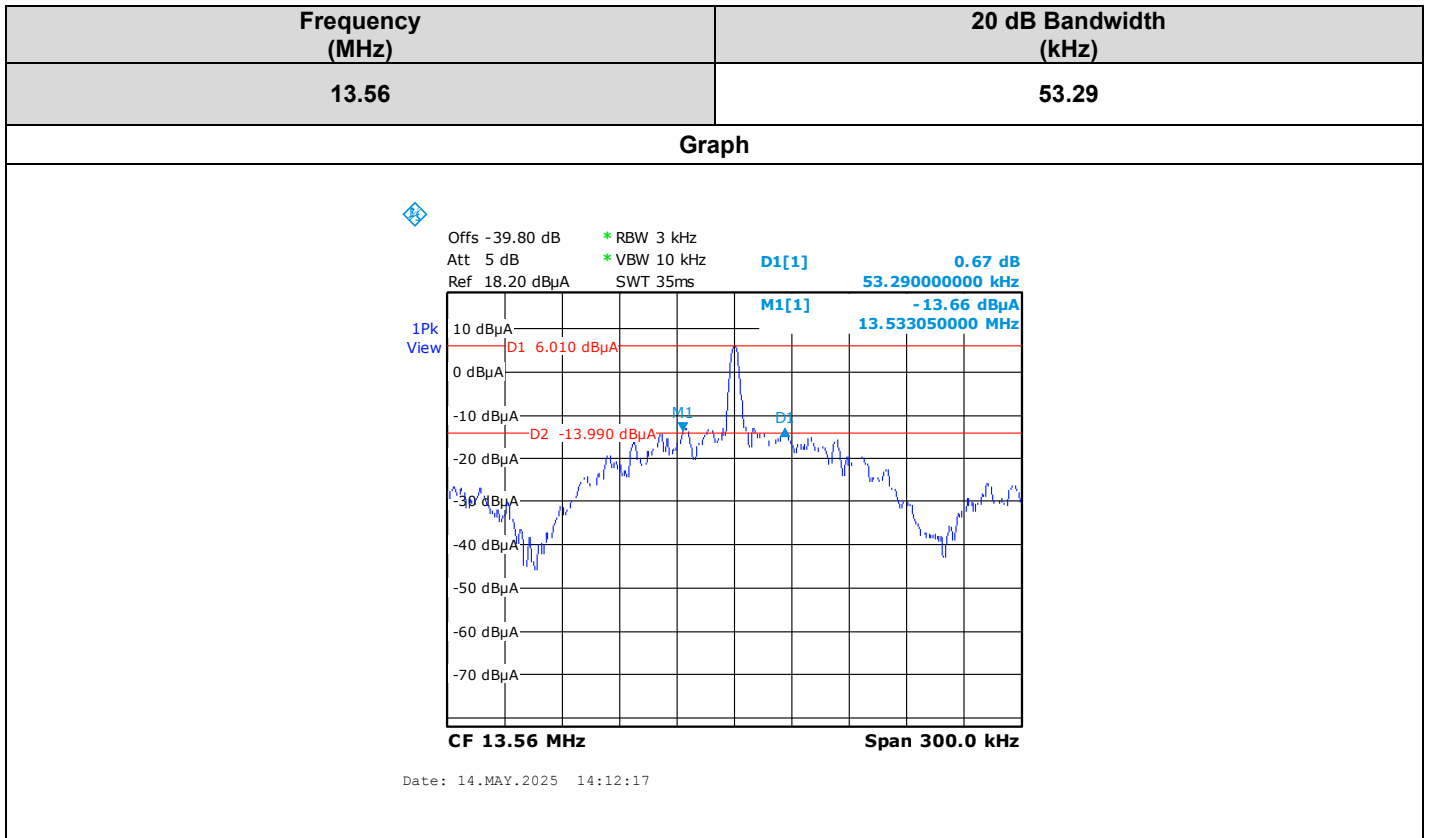
4.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Climatic chamber	SECASI	14M3	D1024029	2024/04	2026/04
Thermometer	FLUKE	FLUKE52	B4043164	2024/01	2026/01
Thermocouple Voie 1	FLUKE	Type K	B4043164/1	2024/01	2026/01
Thermocouple Voie 2	FLUKE	Type K	B4043164/2	2024/01	2026/01
EMI receiver	ROHDE & SCHWARZ	FSL6	A4060032	2022/10	2025/10
13,56MHz Test fixture Antenna	-	-	A5329422	Calibrated with EMI receiver	
Power supply	KIKUSUI	PCR500M	A7040079	Calibrated with Multimeter	
Power supply	ROHDE & SCHWARZ	NGSM32/10	A7040074	Calibrated with Multimeter	
Multimeter	KEITHLEY	2000	A1241084	2023/05	2025/05
Thermo-hygrometer	OREGON	-	B4204075	2024/05	2026/05

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

4.6. RESULTS



4.7. CONCLUSION

20dB Emission Bandwidth measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.

5. FREQUENCY TOLERANCE

5.1. TEST CONDITIONS

Date of test : May 14, 2025 & May 15, 2025
Test performed by : Julien Palard
Atmospheric pressure (hPa) : -
Relative humidity (%) : 46 & 41
Ambient temperature (°C) : 23 & 22

5.2. TEST SETUP

The Equipment Under Test is installed in a climatic chamber.
Measurement is performed with a spectrum analyzer in radiated method.

Test Procedure:

☒ ANSI C63.10 § 6.8

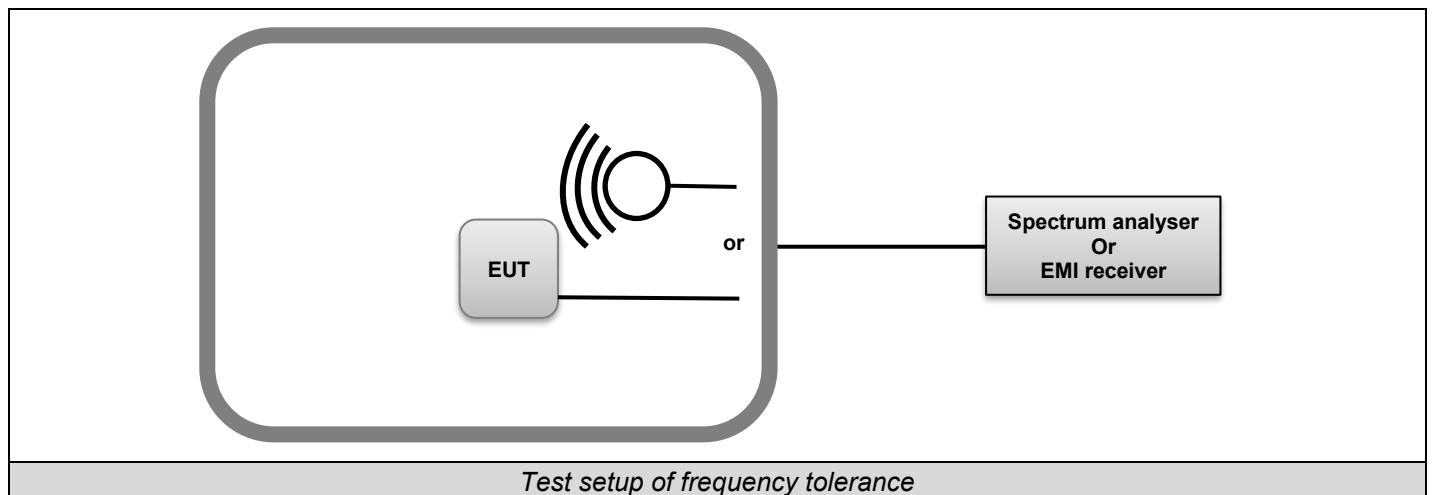




Photo of frequency tolerance



5.3. LIMIT

$\pm 0.01\%$ ($\pm 100\text{ppm}$)

5.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Climatic chamber	SECASI	14M3	D1024029	2024/04	2026/04
Thermometer	FLUKE	FLUKE52	B4043164	2024/01	2026/01
Thermocouple Voie 1	FLUKE	Type K	B4043164/1	2024/01	2026/01
Thermocouple Voie 2	FLUKE	Type K	B4043164/2	2024/01	2026/01
EMI receiver	ROHDE & SCHWARZ	FSL6	A4060032	2022/10	2025/10
13,56MHz Test fixture Antenna	-	-	A5329422	Calibrated with EMI receiver	
Power supply	KIKUSUI	PCR500M	A7040079	Calibrated with Multimeter	
Power supply	ROHDE & SCHWARZ	NGSM32/10	A7040074	Calibrated with Multimeter	
Multimeter	KEITHLEY	2000	A1241084	2023/05	2025/05
Thermo-hygrometer	OREGON	-	B4204075	2024/05	2026/05

5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

5.6. RESULTS

Frequency (MHz)	13,56	DC Mode								
EUT ACTIVATION	Start up									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602555	13,5602675	13,5602595	13,5602315	13,5601876	13,5601557	13,5601158	13,5600838	13,5600798
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0017	0,0014	0,0011	0,0009	0,0006	0,0006
EUT ACTIVATION	2min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602555	13,5602675	13,5602595	13,5602315	13,5601876	13,5601557	13,5601158	13,5600838	13,5600798
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0017	0,0014	0,0011	0,0009	0,0006	0,0006
EUT ACTIVATION	5min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602555	13,5602675	13,5602595	13,5602315	13,5601876	13,5601557	13,5601158	13,5600838	13,5600798
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0017	0,0014	0,0011	0,0009	0,0006	0,0006
EUT ACTIVATION	10min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602555	13,5602675	13,5602595	13,5602315	13,5601876	13,5601517	13,5601158	13,5600838	13,5600798
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0017	0,0014	0,0011	0,0009	0,0006	0,0006

Temperature	Tnom		
Voltage	Vmin	Vnom	Vmax
Frequency (MHz)	13,560187600	13,560183600	13,560183600
Frequency Drift (%)	0,0014	0,0014	0,0014



Frequency (MHz)	13,56	AC Mode								
EUT ACTIVATION	Start up									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602515	13,5602675	13,5602635	13,5602196	13,5601956	13,5601152	13,5601158	13,5600789	13,5600599
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0016	0,0014	0,0008	0,0009	0,0006	0,0004
EUT ACTIVATION	2min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602515	13,5602675	13,5602635	13,5602196	13,5601956	13,5601152	13,5601158	13,5600789	13,5600599
Frequency Drift (%)	0,0015	0,0019	0,0020	0,0019	0,0016	0,0014	0,0008	0,0009	0,0006	0,0004
EUT ACTIVATION	5min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602475	13,5602675	13,5602635	13,5602196	13,5601956	13,5601152	13,5601158	13,5600789	13,5600599
Frequency Drift (%)	0,0015	0,0018	0,0020	0,0019	0,0016	0,0014	0,0008	0,0009	0,0006	0,0004
EUT ACTIVATION	10min									
Voltage	Vnom									
Temperature	-30	-20	-10	0	10	20	30	40	50	55
Frequency (MHz)	13,5601996	13,5602475	13,5602675	13,5602635	13,5602196	13,5601956	13,5601152	13,5601158	13,5600789	13,5600599
Frequency Drift (%)	0,0015	0,0018	0,0020	0,0019	0,0016	0,0014	0,0008	0,0009	0,0006	0,0004

Temperature	Tnom		
Voltage	Vmin	Vnom	Vmax
Frequency (MHz)	13,560195600	13,560195600	13,560195600
Frequency Drift (%)	0,0014	0,0014	0,0014

5.7. CONCLUSION

Frequency tolerance measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.

6. AC POWER LINE CONDUCTED EMISSIONS

6.1. TEST CONDITIONS

Date of test : April 29, 2025
 Test performed by : Laurent Deneux
 Atmospheric pressure (hPa) : -
 Relative humidity (%) : 41
 Ambient temperature (°C) : 21

6.2. TEST SETUP

Test procedure:

☒ ANSI C63.10 & FCC Part 15 subpart C

The EUT and auxiliaries are set 80cm above the ground on the non-conducting table (Table-top equipment) at 80cm from the LISN, the cable has been shorted to 1meter length. The distance between the EUT and the vertical ground plane is 40cm. Measurement is made with a receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. Interconnecting cables and equipment's were moved to position that maximized emission. The EUT is powered like specified in following table, through a LISN (measure); auxiliaries are powered by another LISN.

Type	Measurement performed:	
☒ AC / ☐ DC (Auxiliary used)	☒ 120VAC/60Hz	☒ 240VAC/50Hz
☐ USB (Laptop auxiliary)	☐ 120VAC/60Hz (Laptop auxiliary)	☐ 240VAC/50Hz (Laptop auxiliary)

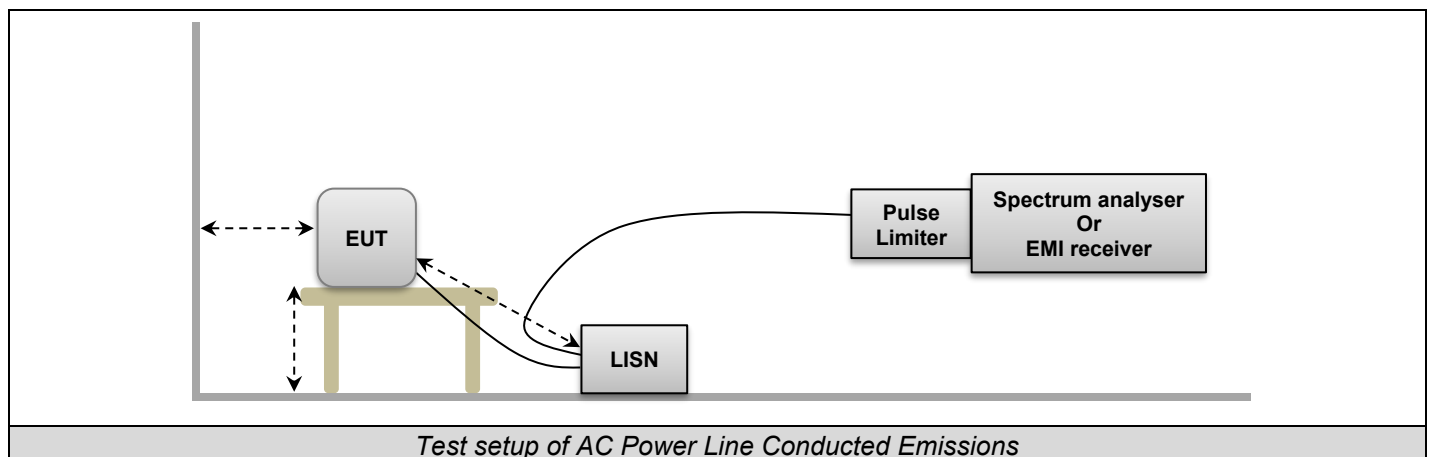




Photo of AC Power Line Conducted Emissions

6.3. LIMIT

Frequency range	Level	Detector
0,15kHz to 0,5MHz	66dB μ V to 56 μ V*	QPeak
	56dB μ V to 46 μ V*	Average
0,5MHz to 5MHz	56dB μ V	QPeak
	46dB μ V	Average
5MHz to 30MHz	60B μ V	QPeak
	50dB μ V	Average

*Decreases with the logarithm of the frequency



6.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Receiver	ROHDE & SCHWARZ	ESU	A2642018	2023/03	2025/05
Limiter	ROHDE & SCHWARZ	ESH3-Z2	A2649008	2024/08	2025/08
Network V / V ISLN	ROHDE & SCHWARZ	ESH2-Z5	C2322002	2025/01	2026/01
Absorber cable	LCIE	-	A5329589	2023/11	2025/11
Cable	-	-	A5329417	2024/11	2025/11
Power supply	DANA	DSC5000	A7044076	-	-
Software V3.21.0.9	NEXIO	BAT-EMC	-	-	-

6.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

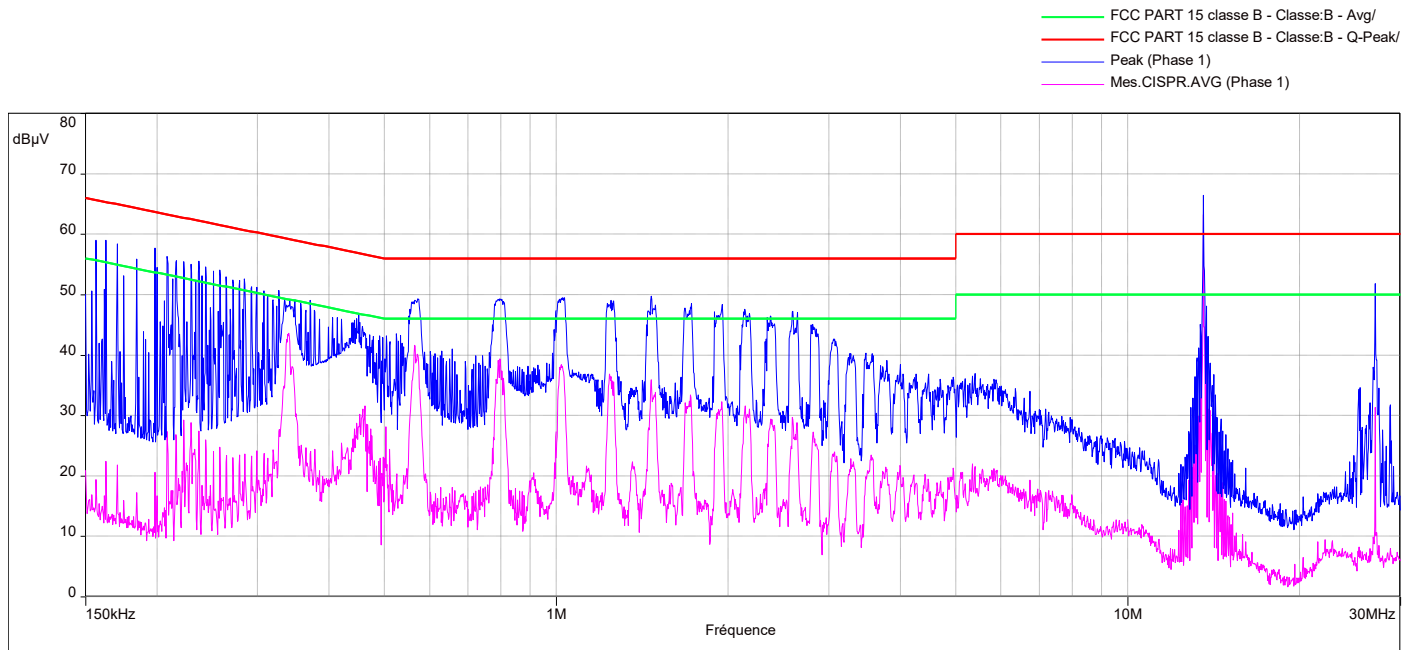
None

6.6. TEST RESULTS

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

Diagram N°1

Phase 240V/50Hz



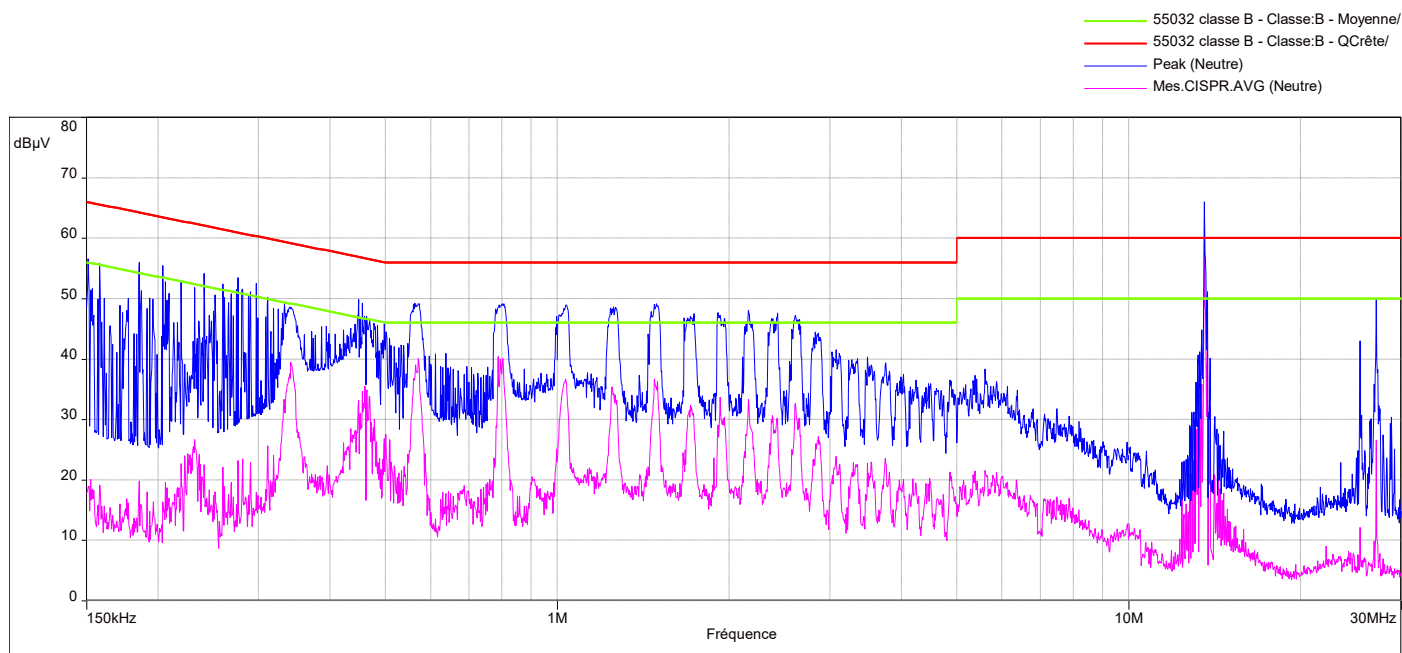
Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balyage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,343	48	-	59,2	11,2	43,59	49,2	5,61
0,566	49	-	56	7	41,5	46	4,5
1,466	49,7	-	56	6,3	35,8	46	10,2
13,56	66,5	-	60	-6,5	63,07	50	-13,07
27,12	51,8	-	60	8,2	31,3	50	18,7

Diagram N°2

Neutral 240V/50Hz



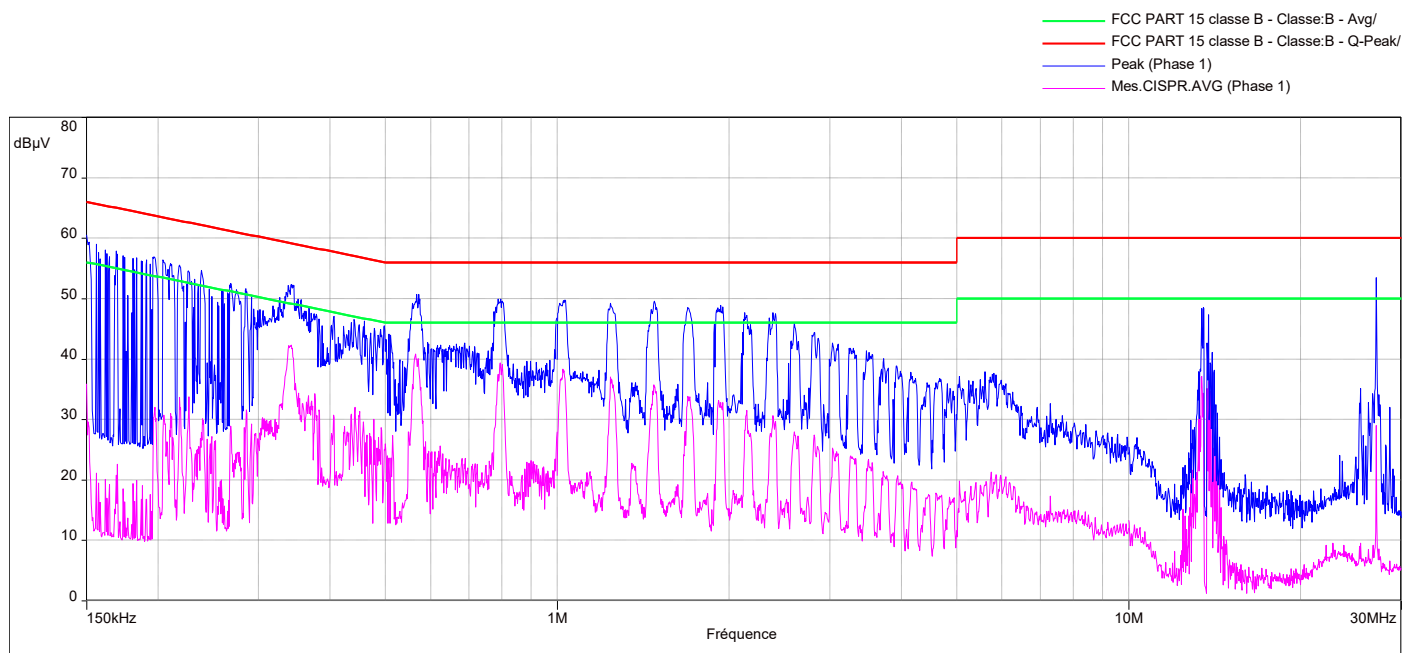
Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balayage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,343	48,5	-	59,2	10,7	39,5	49,2	9,7
0,802	48,8	-	56	7,2	39,4	46	6,6
1,49	49,1	-	56	6,9	35,4	46	10,6
13,56	66	-	60	-6	65,8	50	-15,8
27,12	49,9	-	60	10,1	26,5	50	23,5

Diagram N°3

Phase 120/60Hz



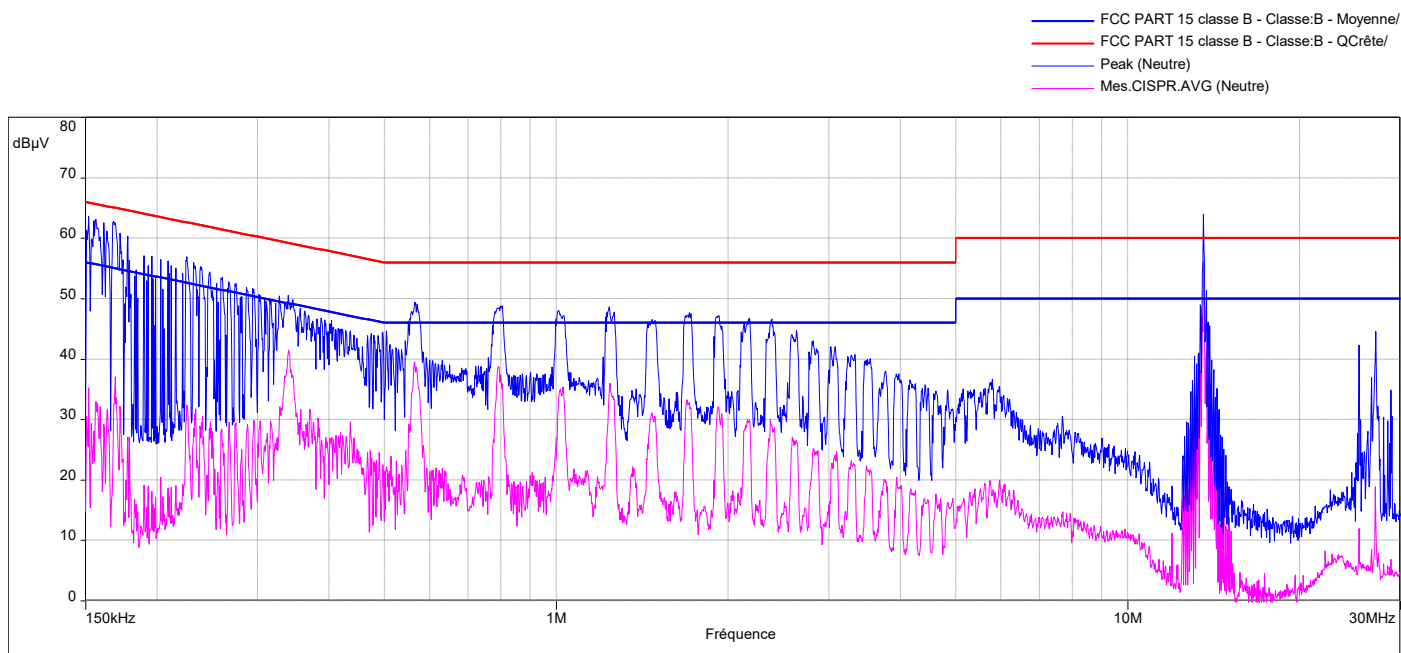
Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balayage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,343	52,4	-	59,2	6,8	42,3	49,2	6,9
0,796	50	-	56	6	38,3	46	7,7
1,69	48,5	-	56	7,5	33,5	46	12,5
13,56	48,5	-	60	11,5	34,2	50	15,8
27,12	52,8	-	60	7,2	29,7	50	20,3

Diagram N°4

Neutral 120/60Hz

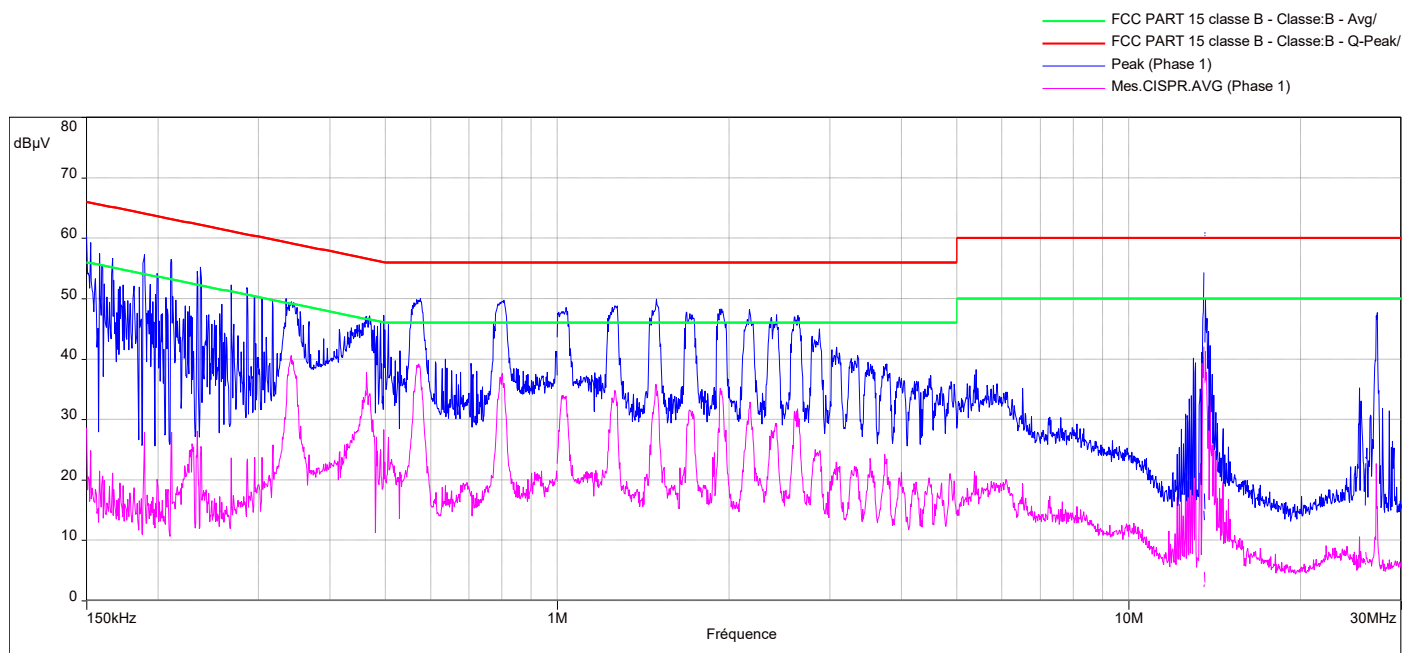


Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balyage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,343	50,5	-	59,2	8,7	41	49,2	8,2
0,793	48,3	-	56	7,7	38,3	46	7,7
1,62	47	-	56	9	33,2	46	12,8
13,56	65	-	60	-5	56	50	-6
27,12	30,6	-	60	29,4	27,18	50	22,82

Diagram N°5
(without antenna)
Phase 240V/50Hz

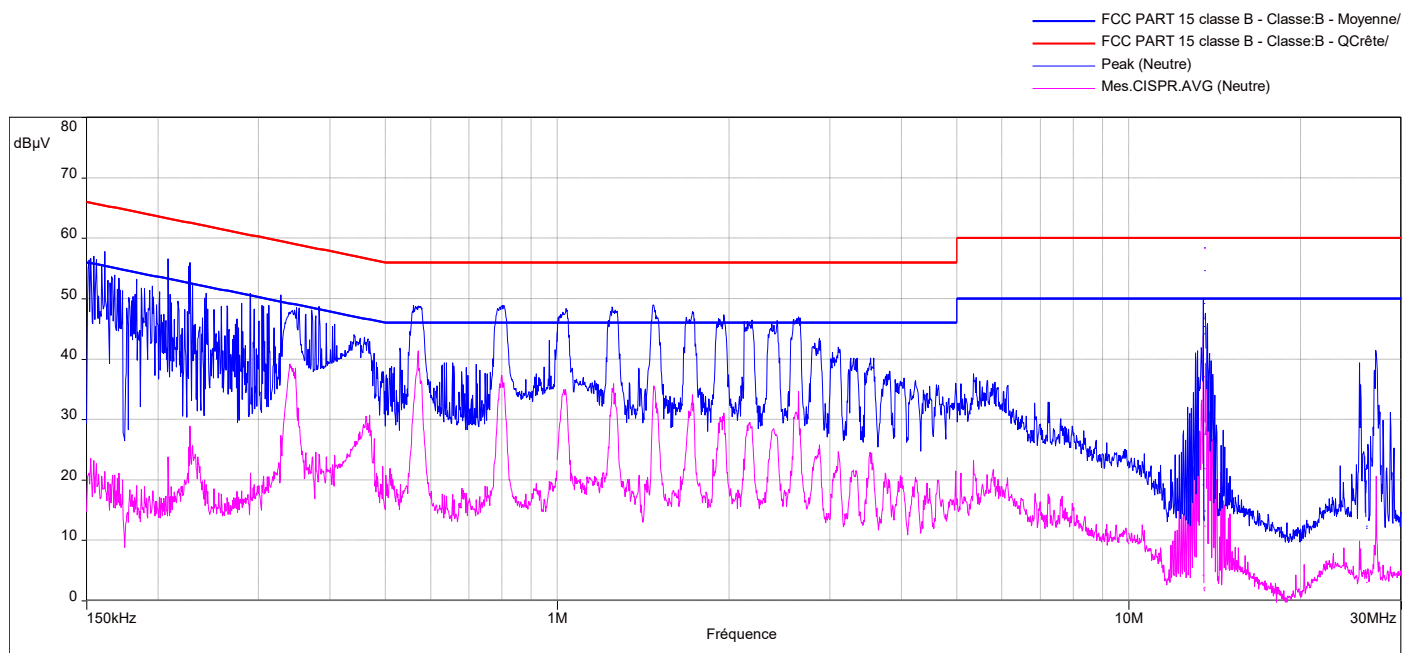


Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balayage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,15	59,2	-	66	6,8	24,8	56	31,2
0,566	49,6	-	56	6,4	38,6	46	7,4
1,48	48,9	-	56	7,1	35,8	46	10,2
13,56	47,7	-	60	12,3	41	50	9
27,12	47,1	-	60	12,9	22,6	50	27,4

Diagram N°6
(without antenna)
Neutral 240V/50Hz

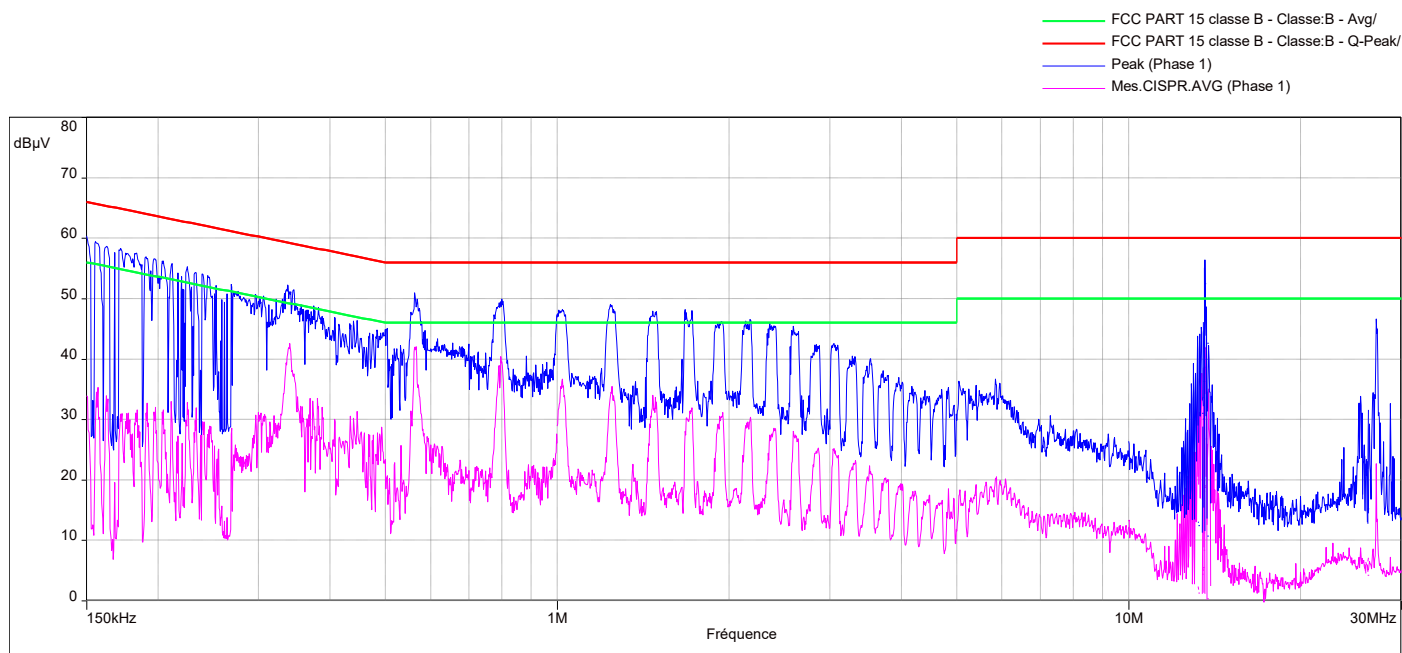


Fréquences: 150kHz-30MHz(Mode :lin, Pas :5kHz)

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balayage :1, Préamp :On , LN preamp : Off, Préselecteur : On

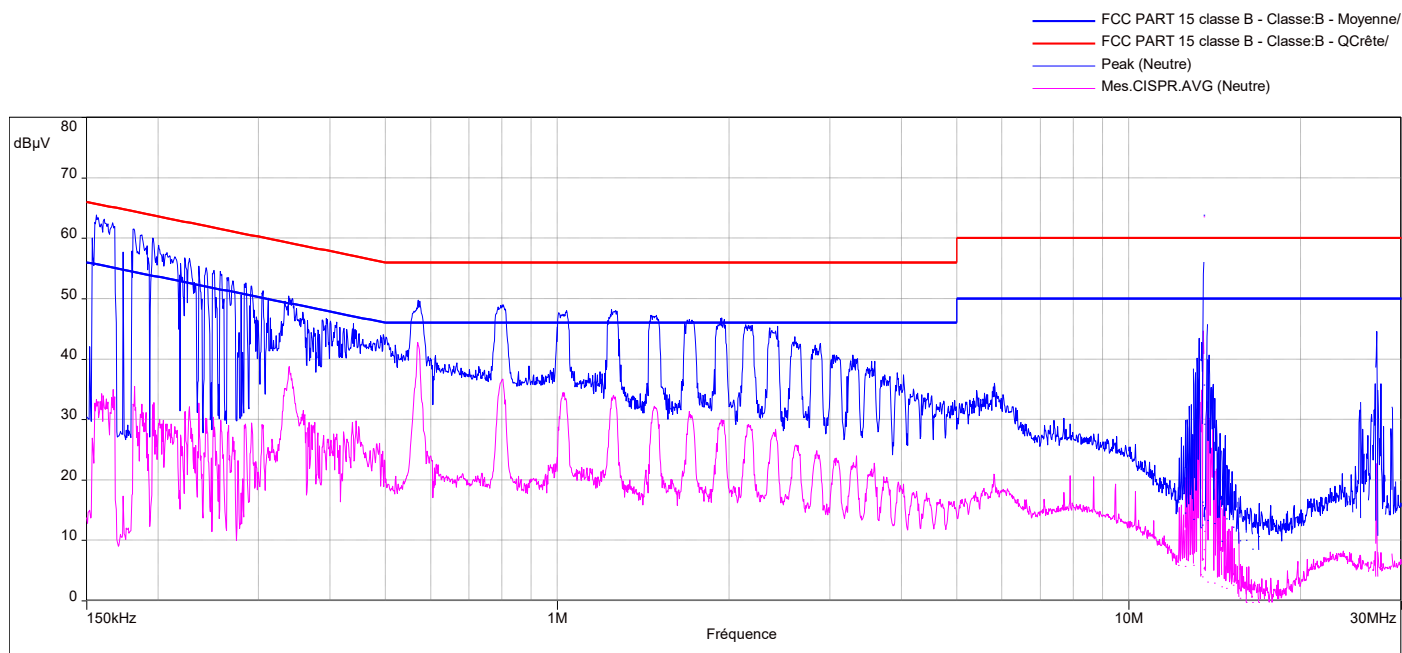
Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,15	56,4	-	66	9,6	25	56	31
0,57	48,7	-	56	7,3	41,4	46	4,6
1,25	48	-	56	8	35,8	46	10,2
13,56	50	-	60	10	43,9	50	6,1
27,12	40,8	-	60	19,2	20,6	50	29,4

Diagram N°7
(without antenna)
Phase 120/60Hz



Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,15	60,4	-	66	5,6	33,88	56	22,12
0,566	50,9	-	56	5,1	41,9	46	4,1
1,24	48,8	-	56	7,2	35,4	46	10,6
13,56	56,4	-	60	3,6	41,9	50	8,1
27,12	44,8	-	60	15,2	22,6	50	27,4

Diagram N°8
(without antenna)
Neutral 120/60Hz



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

Réglages :RBW :9kHz, VBW :Auto, Durée balayage : 20ms/pts, Atténuation :auto, Nombre de balayage :1, Préamp :On , LN preamp : Off, Préselecteur : On

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Margin peak/Quasi Peak (dB)	Average Level (dBμV)	Average Limit (dBμV)	Margin Avg/Avg (dB)
0,15	63	-	66	3	32,14	56	23,86
0,56	48,3	-	56	7,7	42,7	46	3,3
1,7	45,8	-	56	10,2	30,4	46	15,6
13,56	54	-	60	6	44,6	50	5,4
27,12	40,5	-	60	19,5	22,6	50	27,4

6.7. CONCLUSION

AC Power Line Conducted Emission measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS Gen** limits.



7. FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHz

7.1. TEST CONDITIONS

Date of test : April 30, 2025
Test performed by : Laurent Deneux
Atmospheric pressure (hPa) : -
Relative humidity (%) : 36
Ambient temperature (°C) : 22

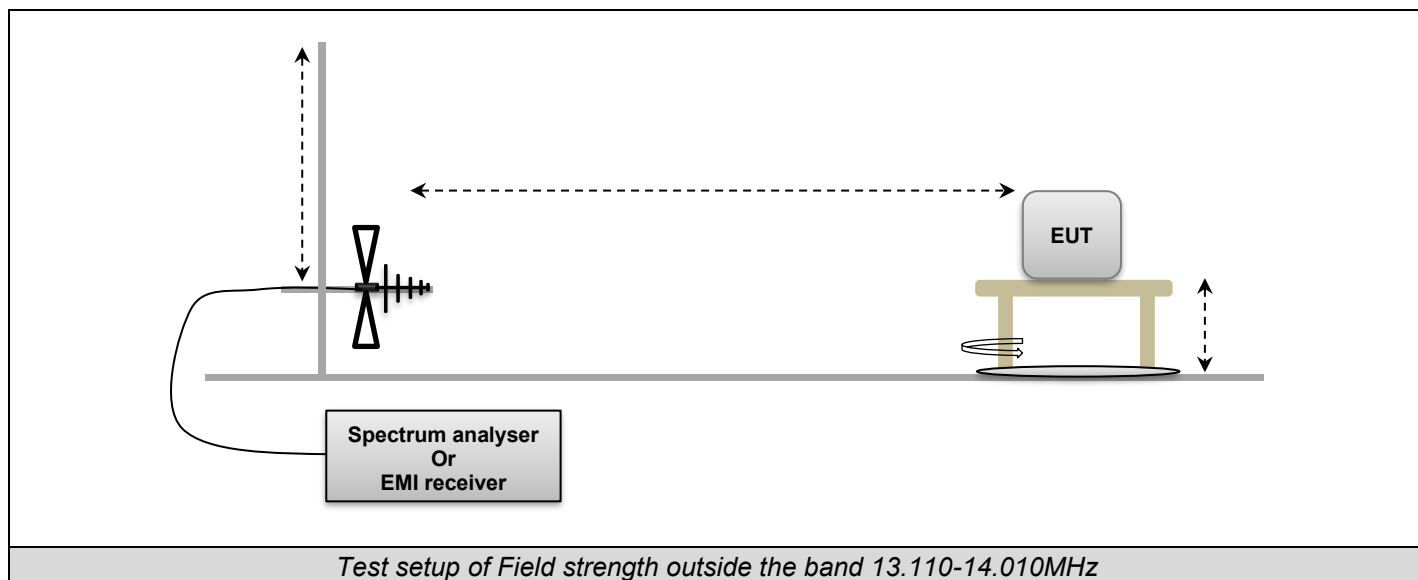
7.2. TEST SETUP

Test procedure:

☒ ANSI C63.10 & FCC Part 15 subpart C

Following frequency ranges, test setup parameters are different and specified in this table:

Frequency range:	Below 30MHz	From 30MHz to 1GHz
Antenna Polarization:	Parallel, Perpendicular And Ground parallel	Horizontal And Vertical
Antenna Height:	1m	Varied from 1m to 4m
Antenna Type:	Loop	Bi-Log
RBW Filter:	200Hz below 150kHz 9kHz above 150kHz	120kHz
Maximization:	Turntable rotation of 360 degrees range	
EUT height:	0.8m	
Pre-Characterization site:	Open Aera Test Site	Open Aera Test Site
Qualification site:	Open Aera Test Site	Open Aera Test Site
Distance EUT - Antenna:	3m	10m



Same setup is used in semi anechoic chamber during pre-characterization, with a distance of 3m between EUT and antenna.



Photo of Field strength outside the band 13.110-14.010MHz

7.3. LIMIT

Measure at 300m		
Frequency range	Level	Detector
9kHz-490kHz	67.6dB μ V/m /F(kHz)	QPeak
Measure at 30m		
Frequency range	Level	Detector
490kHz-1.705MHz	87.6dB μ V/m /F(kHz)	QPeak
1.705MHz-30MHz	29.5dB μ V/m	QPeak
Measure at 10m		
Frequency range	Level	Detector
30MHz to 88MHz	29.5dB μ V/m	QPeak
88MHz to 216MHz	33dB μ V/m	QPeak
216MHz to 960MHz	35.5dB μ V/m	QPeak
960MHz to 1000MHz	43.5dB μ V/m	QPeak
Above 1000MHz	63.5dB μ V/m	Peak
	43.5dB μ V/m	Average
Measure at 3m		
Frequency range	Level	Detector
30MHz to 88MHz	40dB μ V/m	QPeak
88MHz to 216MHz	43.5dB μ V/m	QPeak
216MHz to 960MHz	46B μ V/m	QPeak
960MHz to 1000MHz	54dB μ V/m	QPeak
Above 1000MHz	74dB μ V/m	Peak
	54dB μ V/m	Average



7.4. TEST EQUIPMENT LIST

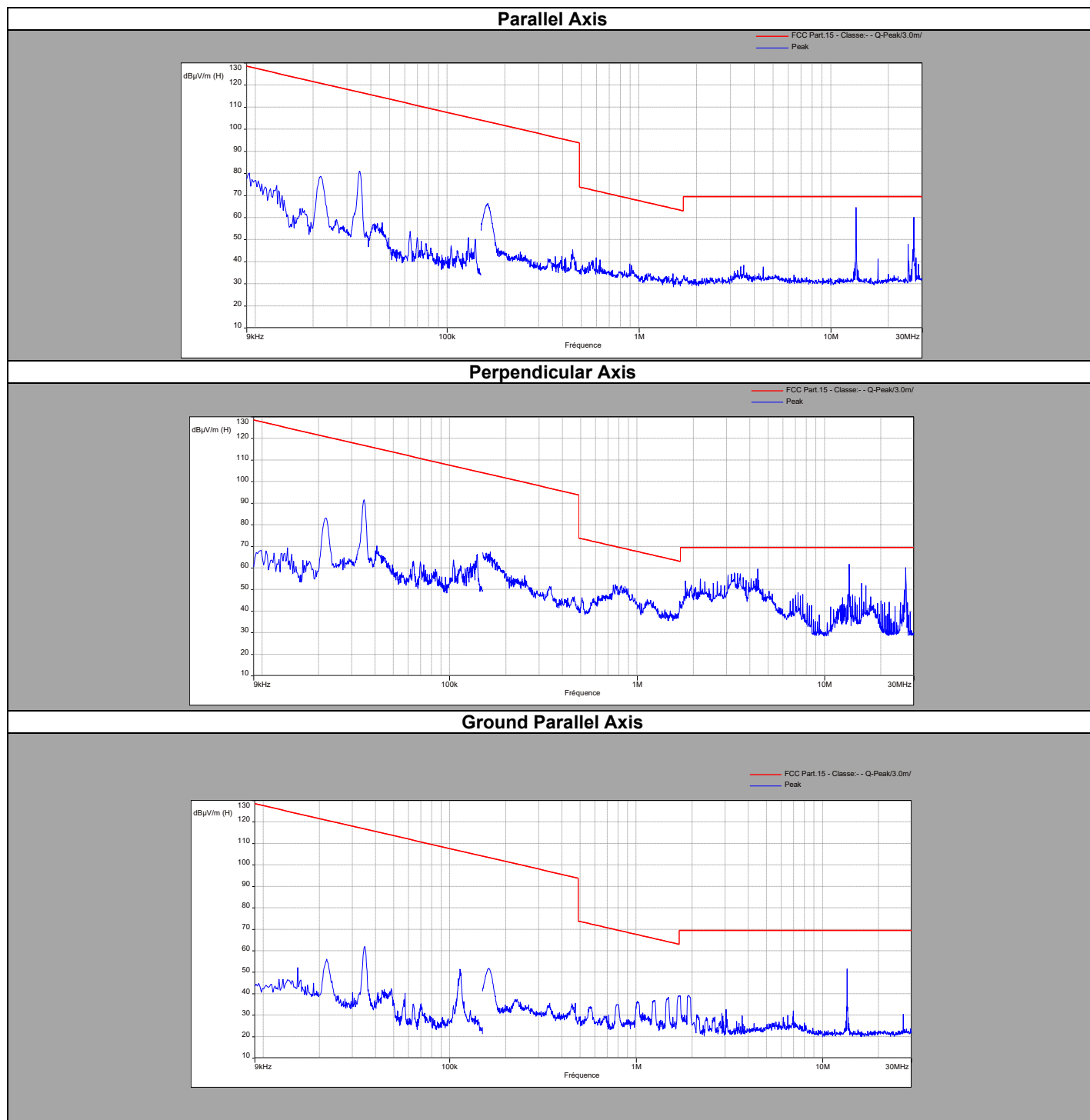
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
OATS	-	-	F2000400	2024/03	2026/03
Receiver	ROHDE & SCHWARZ	ESU	A2642018	2023/03	2025/05
Cable			A5329368	2025/04	2026/04
Cable			A5329449	2024/11	2025/11
Loop antenna	R&S	HFH2-Z2	C2040269	2025/01	2027/01
Cable	-	-	A5329416	2025/04	2026/04
Antenna bilog	Schwarzbeck	VULB9160	C2040150	2023/09	2025/09
Cable	-	-	A5330051	2024/12	2025/12
Cable			A5330052	2024/12	2025/12
Cable			A5330053	2024/12	2025/12
Cable			A5330084	2024/11	2025/11
Software V3.21.0.9	NEXIO	BAT-EMC	-	-	-

7.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

7.6. RESULTS

7.6.1. 9kHz to 30MHz

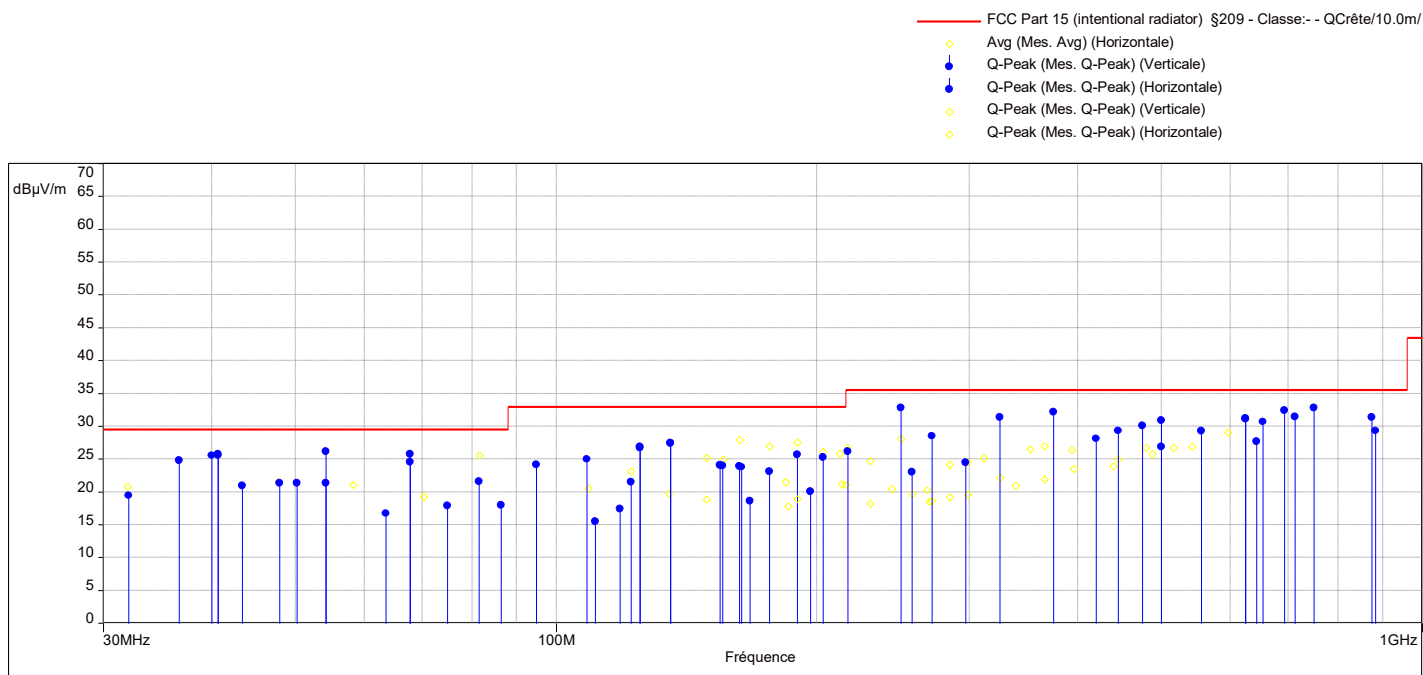




Final measurement:

9kHz to 30MHz					
Frequency (MHz)	Polarisation	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)	Margin QPeak (dBµV/m)
27.12	<i>Perpendicular</i>	-	35.4	69.5	34.1
27.12	<i>parallel</i>	-	30.9	69.5	38.6
0.78	Ground Parallel		34.7	69.7	35
1.71	Ground Parallel	-	38.9	69.5	30.6
27.12	Ground Parallel	-	25.7	69.5	43.8

7.6.2. 30MHz to 1GHz



Polarity	Frequency (MHz)	level (dBμV/m)	limit FCC	Margin
Vertical	40	25,61	29,5	3,89
Vertical	40,7	25,59	29,5	3,91
Vertical	54,2	26,18	29,5	3,32
Vertical	67,8	25,72	29,5	3,78
Vertical	135,6	27,43	33	5,57
Vertical	250	32,81	35,5	2,69
Vertical	375	32,13	35,5	3,37
Vertical	625	31,15	35,5	4,35
Vertical	750	32,77	35,5	2,73
Horizontal	875	31,33	35,5	4,17
Horizontal	883,2	29,38	35,5	6,12
Horizontal	125	26,87	33	6,13
Horizontal	135,6	27,43	33	5,57
Horizontal	625	31,19	35,5	4,31
Horizontal	693	32,37	35,5	3,13
Horizontal	712,8	31,45	35,5	4,05



7.7. CONCLUSION

Field strength outside of the bands 13.110-14.010 MHz measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS-Gen** limits.



8. FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHz

8.1. TEST CONDITIONS

Date of test : May 02, 2025
Test performed by : Laurent Deneux
Atmospheric pressure (hPa) : -
Relative humidity (%) : 37
Ambient temperature (°C) : 22

8.2. TEST SETUP

The Equipment Under Test is installed in a climatic chamber, related to measure from OATS..
Measurement is performed with a spectrum analyzer in radiated method.

Test Procedure:

☒ ANSI C63.10

The EUT is placed on an open area test site. Distance between measuring antenna and the EUT is 10m. Test is performed in parallel, perpendicular, and ground parallel axis with a loop antenna below 30MHz. Measurement bandwidth was 9kHz between 150kHz & 30MHz. The level has been maximized by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. Antenna height search was performed from 1 to 4m. The EUT is place at 0.8m.

Ambient temperature: 37 °C

Relative humidity: 22 %

Note: It is impracticable to carry out tests under normal condition as specified in standard.

When measurement with test fixture is used, the power level calibration of the spectrum analyzer shall then be related to the power level or field strength measured with temperature during OATS measure taking in consideration in climatic chamber. The calculation will be used to calculate the absolute level of the sideband power.

Frequency band 13.110-14.010MHz

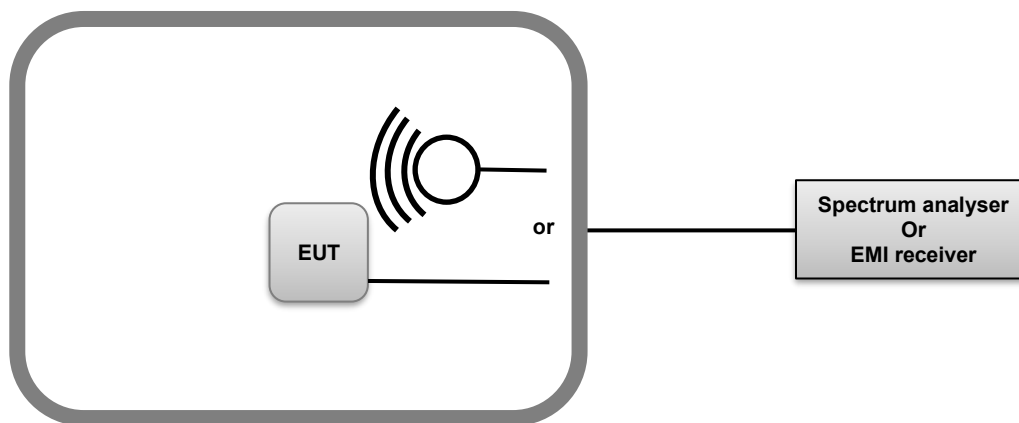
Following plots show radiated emission level in the frequency band 13.110-14.010MHz with a RBW of 9kHz and a quasi-peak detector. The graphs are obtained with a measuring receiver.



Test setup of Field strength within the band 13.110-14.010MHz in OATS



Photo of Field strength within the band 13.110-14.010MHz in OATS



Test setup of Field strength within the band 13.110-14.010MHz in Climatic Chamber

Photo of Field strength within the band 13.110-14.010MHz in Climatic Chamber



8.3. LIMIT

Frequency (MHz)	Field strength ($\mu\text{V/m}$) @30m	Field strength ($\text{dB}\mu\text{V/m}$) @30m	Field strength ($\text{dB}\mu\text{V/m}$) @3m
13.553-13.567	15 848	84.0	124.0
13.410-13.553 13.567-13.710	334.0	50.5	90.5
13.110-13.410 13.710-14.010	106.0	40.5	80.5
Below 13.110MHz Above 14.010MHz	30.0	29.5	69.5

8.4. TEST EQUIPMENT LIST

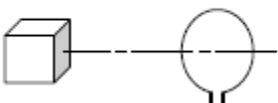
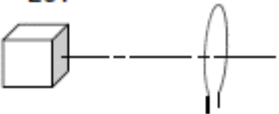
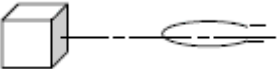
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
OATS	-	-	F2000400	2024/03	2026/03
Receiver	ROHDE & SCHWARZ	ESU	A2642018	2023/03	2025/05
Cable			A5329368	2025/04	2026/04
Loop antenna	R&S	HFH2-Z2	C2040269	2025/01	2027/01
Cable	-	-	A5329416	2025/04	2026/04
Cable			A5330084	2024/11	2025/11
Software V3.21.0.9	NEXIO	BAT-EMC	-	-	-

8.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

8.6. RESULTS

8.6.1. Results on OATS test conditions:

Frequency (MHz)	QPeak Limit (dB μ V/m) @ 30m	QPeak (dB μ V/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
13.56								
 Parallel Axis (0°)  Perpendicular Axis (90°)  Ground Parallel Axis (180°)								

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

8.6.2. Results under Normal condition

Parallel Axis			
Frequency (MHz)	Peak Level (dB μ V/m) (3m)	QPeak Level (dB μ V/m) (3m)	Limit (dB μ V/m) (3m)
Below 13.110	-	19.1	69.5
13.110 to 13.410	-	21	80.5
13.410 to 13.553	-	40.1	90.5
13.553 to 13.567	-	70	124.0
13.567 to 13.710	-	41.6	90.5
13.710 to 14.010	-	29.5	80.5
Above 14.010	-	18.2	69.5

Ground Parallel Axis			
Frequency (MHz)	Peak Level (dB μ V/m) (3m)	QPeak Level (dB μ V/m) (3m)	Limit (dB μ V/m) (3m)
Below 13.110	-	25.9	69.5
13.110 to 13.410	-	24.9	80.5
13.410 to 13.553	-	42.5	90.5
13.553 to 13.567	-	67.2	124.0
13.567 to 13.710	-	43.4	90.5
13.710 to 14.010	-	26.1	80.5
Above 14.010	-	24.4	69.5

Perpendicular Axis			
Frequency (MHz)	Peak Level (dB μ V/m) (3m)	QPeak Level (dB μ V/m) (3m)	Limit (dB μ V/m) (3m)
Below 13.110	-	18.3	69.5
13.110 to 13.410	-	26.5	80.5
13.410 to 13.553	-	35.4	90.5
13.553 to 13.567	-	78.8	124
13.567 to 13.710	-	40.6	90.5
13.710 to 14.010	-	25	80.5
Above 14.010	-	25.4	69.5

8.7. CONCLUSION

Field strength within the band 13.110-14.010MHz measurement performed on the sample of the product **PRD_7150300B**, Sn: **02BI2323000769**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.

9. 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	3.64 dB	3.8 dB
150kHz - 30MHz	3.21 dB	3.4 dB
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> OATS & SAC @3m		
30MHz - 200MHz, Antenne biconique / <i>Biconical antenna</i>	5.74 dB	6.3 dB
30MHz - 1GHz, Antenne hybride / <i>Hybrid antenna</i>	5.65 dB	6.3 dB
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> OATS @10m		
30MHz - 200MHz, Antenne biconique / <i>Biconical antenna</i>	5.72 dB	6.3 dB
30MHz - 1GHz, Antenne hybride / <i>Hybrid antenna</i>	5.91 dB	6.3 dB
Mesure des perturbations rayonnées <i>Measurement of radiated disturbances</i> FAR @3m		
1GHz - 6GHz, Antenne cornet ou hybride / <i>Horn or hybride antenna</i>	4.77 dB	5.2 dB
1GHz - 6GHz, Antenne cornet ou hybride et préamplificateur / <i>Horn or hybride antenna and preamplifier</i>	5.02 dB	5.2 dB
6GHz - 18GHz, Antenne cornet et préamplificateur / <i>Horn antenna and preamplifier</i>	5.41 dB	5.5 dB
Type de mesure / Kind of measurement	Incertitude élargie laboratoire / Wide uncertainty laboratory (k=2) $\pm x$	Incertitude limite du CISPR / CISPR uncertainty limit $\pm y$
<i>Spurious emission, radiated (Semi anechoic chamber & open test site)</i>	5.60 dB	6 dB
<i>Spurious emission, radiated (Full anechoic chamber above 1GHz)</i>	± 3.8 dB	± 6 dB
<i>Occupied Channel Bandwidth</i>	± 2.8 %	± 5 %
<i>RF power, conducted</i>	± 1.2 dB	± 1.5 dB
<i>Power Spectral Density, Conducted</i>	± 1.7 dB	± 3 dB
<i>Spurious emission, conducted</i>	± 2.3 dB	± 3 dB
<i>Temperature</i>	± 1.2 °C	± 3 °C
<i>Supply Voltages</i>	± 1.7 %	± 3 %
<i>Time</i>	± 2.3 %	± 5 %

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*