ZIGBEE Template: Release October 22nd, 2022

TEST REPORT

N°: 15266217-779404-A(FILE#4222448) **Version : 02**

Subject	**Radio spectrum matters tests according to standards: 47 CFR Part 15.247 & RSS-247 Issue 2 & RSS-Gen Issue 5**
Issued to	**Schneider Electric** 28 Rue Henri Tarze 38000 - Grenoble France
Apparatus under test	
Product	**PowerLogic PD100**
Trade mark	**Schneider Electric**
Manufacturer	**Schneider Electric**
Model under test	**PD100**
Serial number	**MP2219400162399**
FCC ID	**2AHP8-PD100X001**
IC	**21245-PD100X001**
Conclusion	See Test Program chapter
Test date	July 20, 2022 to August 24, 2022
Test location	Moirans
FCC Test site	FR0008 - 197516
ISED Test site	FR0008 - 6500A
Sample receipt date	July 20, 2022
Composition of document	52 pages
Document issued on	August 25, 2022

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PUBLICATION HISTORY

Version	Date	Author	Modification
01	August 11, 2022	Majid MOURZAGH	Creation of the document
02	August 25, 2022	Majid MOURZAGH	Change test for conducted method §3, §4, §5, §6 and §7

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

1. TEST PROGRAM

References

- **47 CFR Part 15.247**
- **RSS 247 Issue 2**
- **RSS Gen Issue 5**
- **KDB 558074 D01 DTS Meas Guidance v05r02**
- **ANSI C63.10-2013**

Radio requirement:

Clause (47CFR Part 15.247 & RSS-247 Issue 2 & RSS-Gen Issue 5) Test Description	Test result - Comments
Occupied Bandwidth	☑ PASS ☐ FAIL ☐ NA ☐ NP(1)
6dB Bandwidth	☑ PASS ☐ FAIL ☐ NA() ☐ NP(1)
Duty Cycle	☐ PASS ☐ FAIL ☑ NA ☐ NP(1)
Maximum Conducted Output Power	☑ PASS ☐ FAIL ☐ NA ☐ NP(1)
Power Spectral Density	☑ PASS ☐ FAIL ☐ NA ☐ NP(1)
Conducted Spurious Emission at the Band Edge	☑ PASS ☐ FAIL ☐ NA() ☐ NP(1)
Unwanted Emissions into Non-Restricted Frequency Bands	☑ PASS ☐ FAIL ☐ NA() ☐ NP(1)
AC Power Line Conducted Emission	☑ PASS ☐ FAIL ☐ NA(2) ☐ NP(1)
Unwanted Emissions into Restricted Frequency Bands	☑ PASS ☐ FAIL ☐ NA ☐ NP(1)
Receiver Radiated emissions	☐ PASS ☐ FAIL ☑ NA ☐ NP(1)
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

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):
Schneider Electric PD100 **Serial Number: MP2219400162399**

Equipment Under Test

Power supply:
During all the tests, EUT is supplied by V_{nom}: 24VDC
For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Sn	Comments
Supply1	☐ AC ☑ DC ☐ Battery	24V/48VDC		

Voltage table used (for Power Line Conducted Emissions):

Type	Measurement performed:	
☑ AC	☑ **120VAC/60Hz**	☑ **240VAC/50Hz**
☑ DC	☑ **+24VDC**	☑ **-**+24**VDC**

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Supply1	2wires	1.1	☐	☐	☑	
Coupling Element cablet	4 wires	1.1	☐	☐	☑	
VDIS_cable	4 wires	1.1	☐	☐	☑	

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Laptop LENOVO	ThinkBook	/	/
BT interface board	/	/	/
Power supply DC	METRIX AX503	/	LCIE: A7042308

Equipment information:

Type:	☑ **ZIGBEE**		☐ **RF4CE**
Frequency band:	[2400 – 2483.5] MHz		
Number of Channel:	16		
Spacing channel:	5MHz		
Channel bandwidth:	2MHz		
Antenna Type:	☑ Integral	☐ External	☐ Dedicated
Antenna connector:	☐ Yes	☑ No	☐ Temporary for test
Transmit chains:	1		
	Single antenna		
	Gain: 4.7dBi		
Beam forming gain:	No		
Receiver chains	1		
Antenna requirements §15.203	Select Antenna Requirements		
Type of equipment:	☑ Stand-alone	☐ Plug-in	☐ Combined
Ad-Hoc mode:	☐ Yes		☑ No
Adaptivity mode:	☐ Yes (Load Based)	☐ Off mode	☑ No
	Clear Channel Assessment Time:		Xµs
Duty cycle:	☐ Continuous duty	☐ Intermittent duty	☐ 100% duty
Equipment type:	☑ Production model		☐ Pre-production model
Operating temperature range:	Tnom:	20°C	
Type of power source:	☐ AC power supply	☑ DC power supply	☐ Battery
Operating voltage range:	Vnom:	☐ 230V/50Hz	☑ 24Vdc

CHANNEL PLAN	
Channel	**Frequency (MHz)**
Cmin: 11	2405
12	2410
13	2415
14	2420
15	2425
16	2430
17	2435
Cmid: 18	2440
19	2445
20	2450
21	2455
22	2460
23	2465
24	2470
25	2475
Cmax: 26	2480

DATA RATE		
Data Rate (Mbps)	**Modulation Type**	**Worst Case Modulation**
0.25	O-QPSK	☑

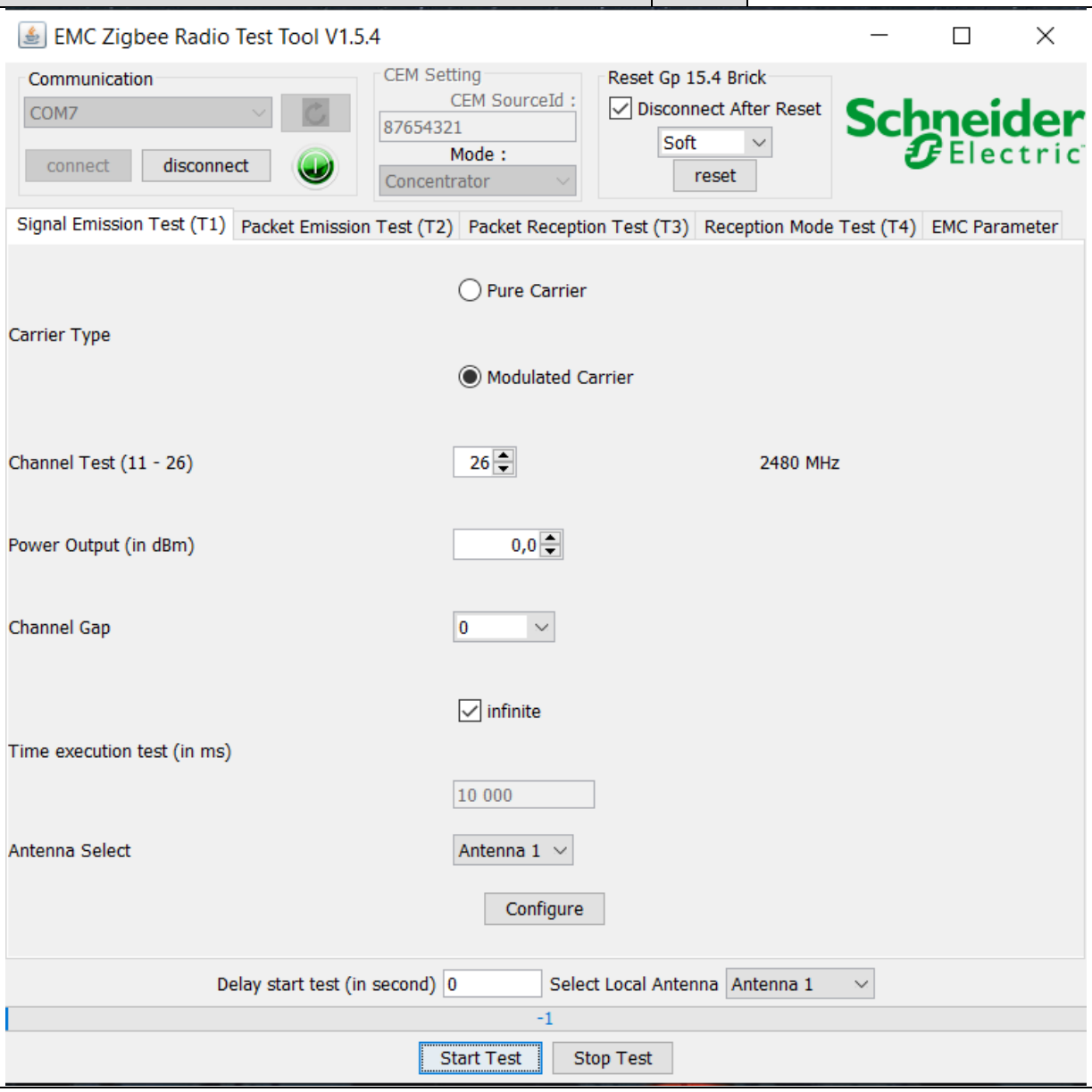
2.2. RUNNING MODE

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
Test mode 2	Permanent reception

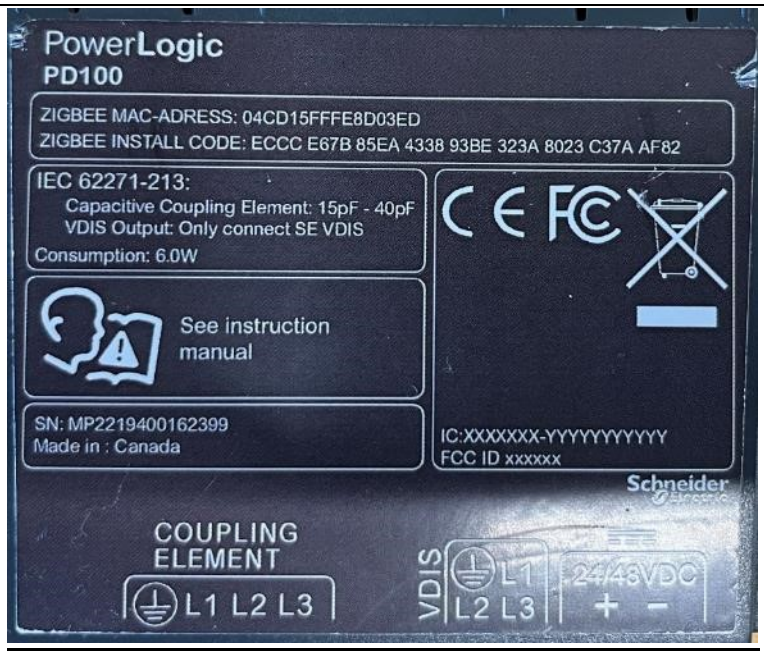
Test	Running mode	
Occupied Bandwidth	☑ Test mode 1 (1)	☐ Alternative test mode()
6dB Bandwidth	☑ Test mode 1 (1)	☐ Alternative test mode()
Maximum Conducted Output Power	☑ Test mode 1 (1)	☐ Alternative test mode()
Power Spectral Density	☑ Test mode 1 (1)	☐ Alternative test mode()
Conducted Spurious Emission at the Band Edge	☑ Test mode 1 (1)	☐ Alternative test mode()
Unwanted Emissions into Non-Restricted Frequency Bands	☑ Test mode 1 (1)	☐ Alternative test mode()
AC Power Line Conducted Emission	☑ Test mode 1 (1)	☐ Alternative test mode()
Unwanted Emissions into Restricted Frequency Bands	☑ Test mode 1 (1)	☐ Alternative test mode()

(1) Following commands with the specific test software “EMC Zigbee Radio Test Tool V1.5.4” are used to set the product:

Hardware information		
Software (if applicable):	**V. :**	



2.3. EQUIPMENT LABELLING



2.4. EQUIPMENT MODIFICATION

☑ None ☐ Modification:

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

Test performed by	: Majid MOURZAGH
Date of test	: August 24, 2022
Ambient temperature	: 24 °C
Relative humidity	: 40 %

3.2. TEST SETUP

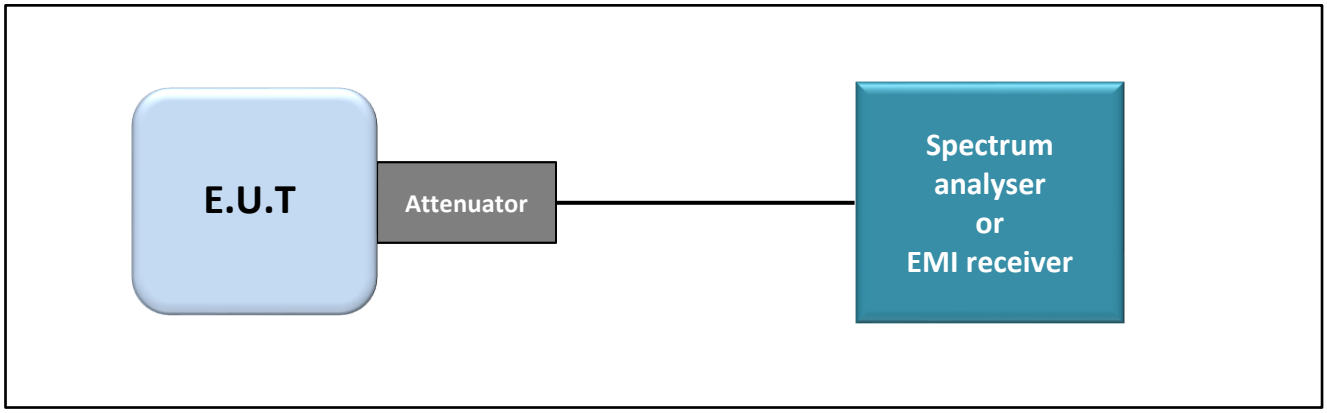
- The Equipment under Test is installed:
☐ On a table
☑ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

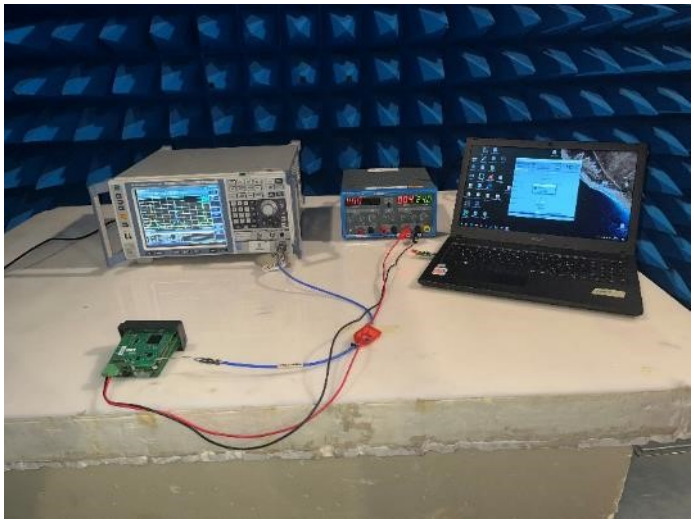
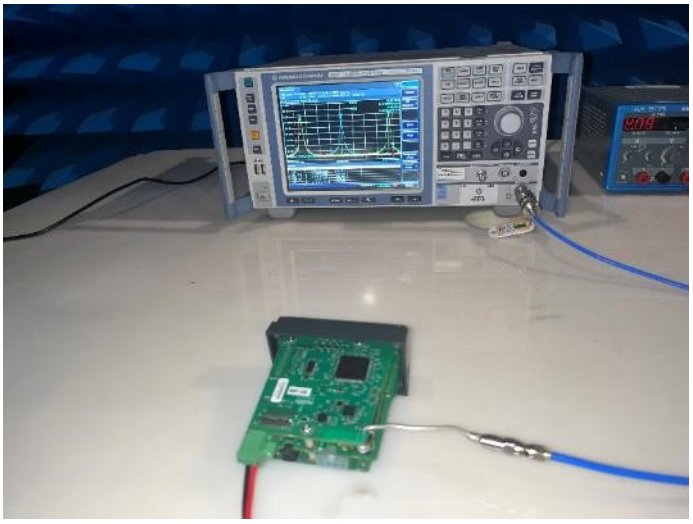
- Test Procedure:
☐ RSS-Gen Issue 5 § 6.7
☑ ANSI C63.10 § 6.9.2

Measurement Procedure:

a) RBW shall be in the range of 1% to 5% of the anticipated occupied bandwidth
b) Set the video bandwidth (VBW) ≥ 3 x RBW
c) SPAN = Capture all products of the modulation process
d) Detector = Peak.
e) Trace mode = max hold.
f) Sweep = auto couple.
g) Allow the trace to stabilize.
h) OBW 99% function of spectrum analyzer used



Test set up of Occupied Bandwidth

Photograph for Occupied bandwidth

3.3. *LIMIT*

None

3.4. TEST EQUIPMENT LIST

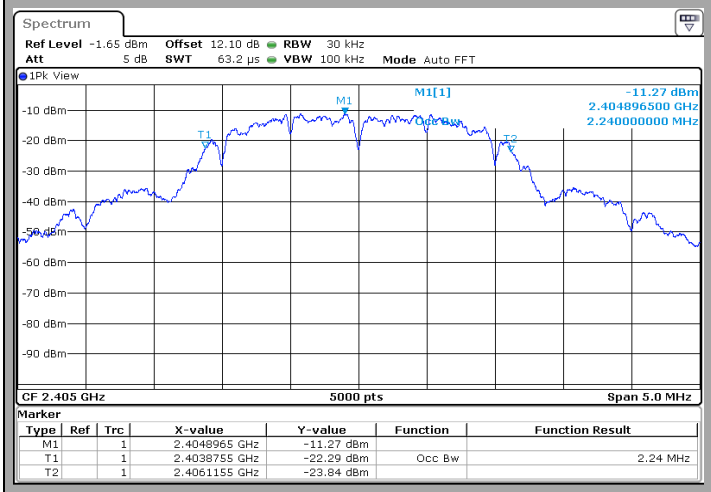
TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Attenuator 10dB	AEROFLEX	_	A7122268	08/21	08/23
Cable SMA 60cm (smj)	TELEDYNE	18GHz	A5329687	05/21	05/23
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	09/20	09/22
Semi-Anechoic chamber #1	SIEPEL	_	D3044016	07/22	07/23
Thermo-hygrometer (C1)	OREGON	WMR 80	B4206013	09/20	09/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

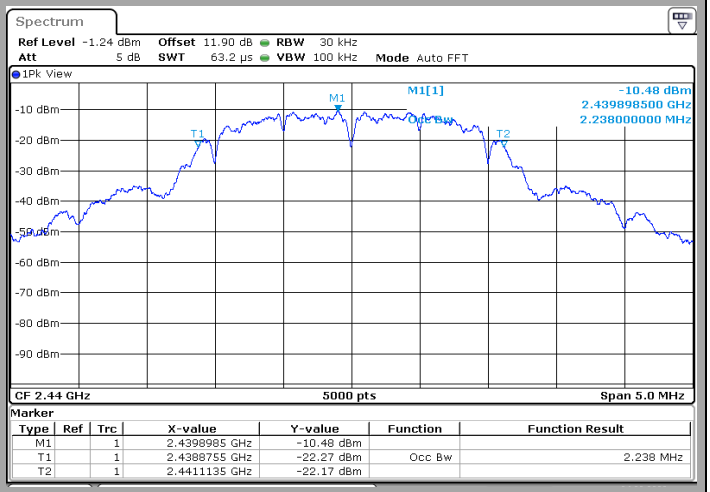
3.5. RESULTS

Occupied Bandwidth

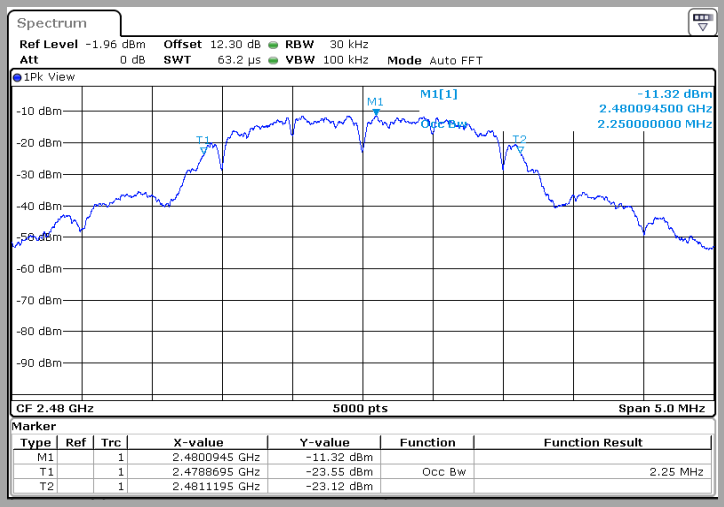
Cmin



Cnom



Cmax



Temperature	Tnom		
Channel	**Cmin**	**Cmid**	**Cmax**
Occupied Channel bandwith (MHz)	**2.240**	**2.238**	**2.250**
Lowest frquency (MHz)	**2403.8755**	**2438.8755**	**2478.8695**
Highest frequency (MHz)	**2406.1155**	**2441.1135**	**2481.1195**

3.6. *CONCLUSION*

Occupied Channel Bandwidth measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS-GEN ISSUE 5** limits.

4. 6dB Emission Bandwidth

4.1. TEST CONDITIONS

Test performed by	: Majid MOURZAGH
Date of test	: August 24, 2022
Ambient temperature	: 24 °C
Relative humidity	: 40 %

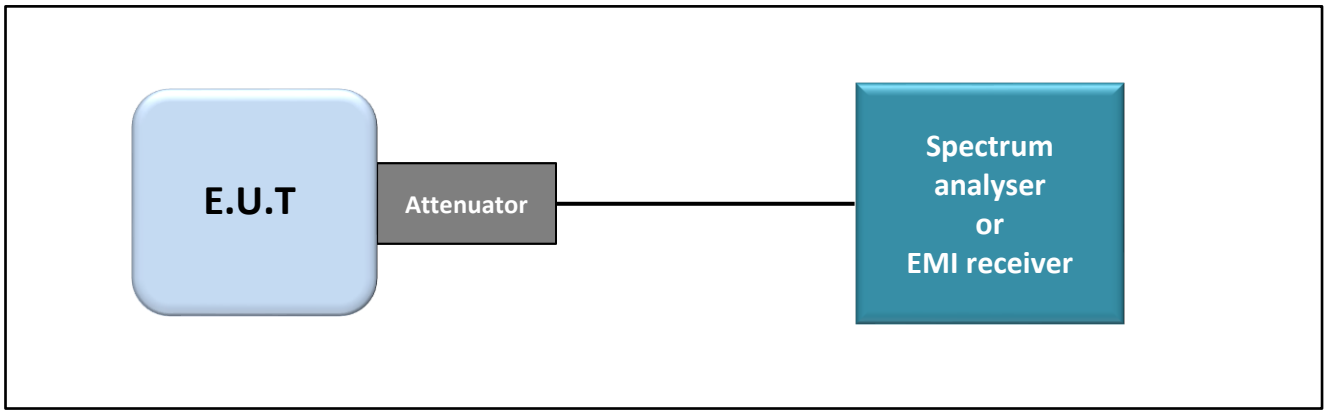
4.2. TEST SETUP

- The Equipment under Test is installed:
☐ On a table
☑ In an anechoic chamber

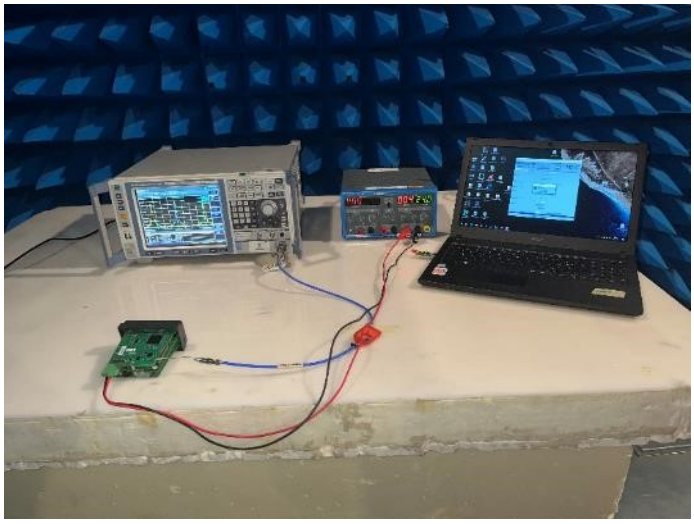
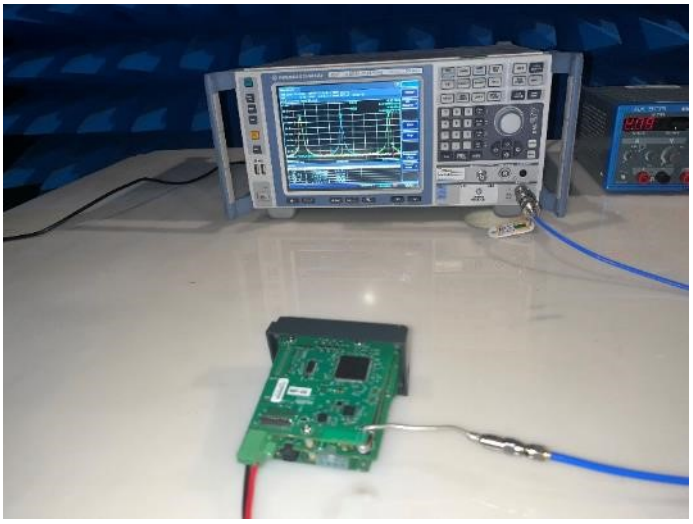
- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.2

Measurement Procedure:
1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Compare the resultant bandwidth with the RBW setting of the analyzer.



Test set up of 6dB Emission Bandwidth

Photograph for 6dB emission bandwidth

4.3. LIMIT

The 6dB bandwidth shall be at least 500kHz

4.4. TEST EQUIPMENT LIST

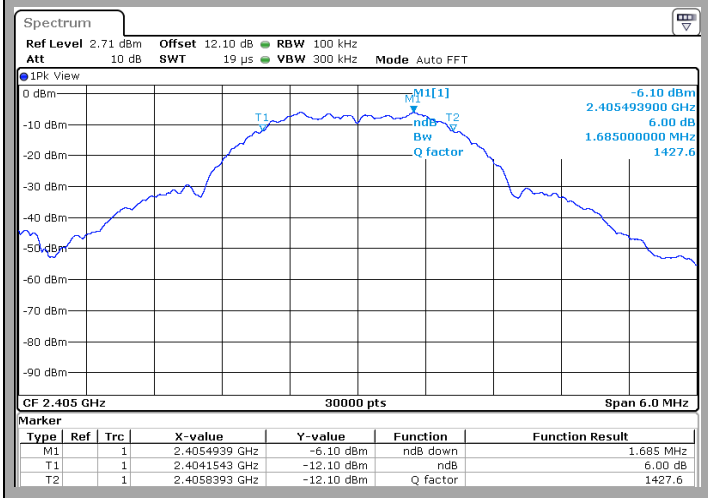
TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Attenuator 10dB	AEROFLEX	_	A7122268	08/21	08/23
Cable SMA 60cm (smj)	TELEDYNE	18GHz	A5329687	05/21	05/23
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	09/20	09/22
Semi-Anechoic chamber #1	SIEPEL	_	D3044016	07/22	07/23
Thermo-hygrometer (C1)	OREGON	WMR 80	B4206013	09/20	09/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

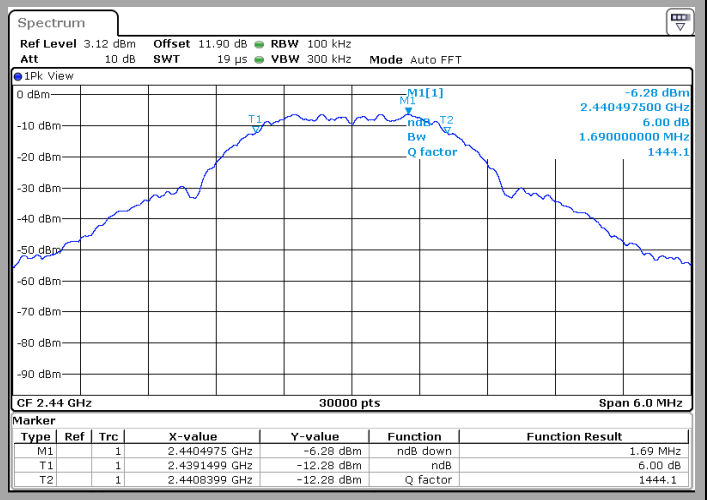
4.5. RESULTS

6dB Emission Bandwidth

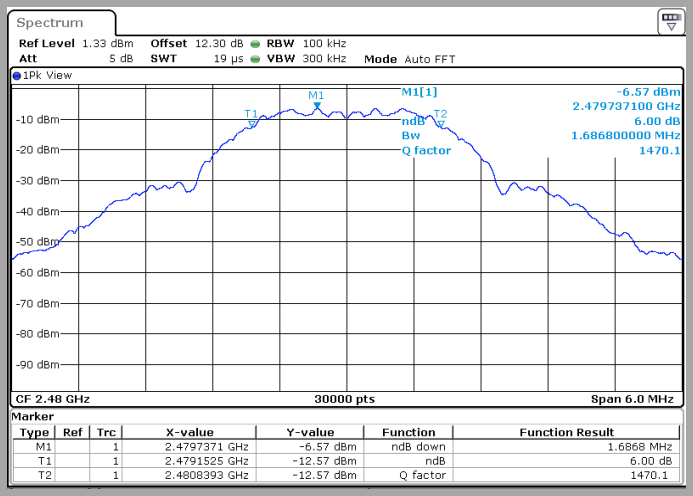
Cmin



Cnom



Cmax



Channel	6dB Emission Bandwidth (MHz)	Limit (MHz)
Cmin	**1.685**	Minimum 0.5
Cnom	**1.690**	Minimum 0.5
Cmax	**1.687**	Minimum 0.5

4.6. CONCLUSION

6dB Emission Bandwidth measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

5. MAXIMUM CONDUCTED OUTPUT POWER

5.1. TEST CONDITIONS

Test performed by	: Majid MOURZAGH
Date of test	: August 24, 2022
Ambient temperature	: 24 °C
Relative humidity	: 40 %

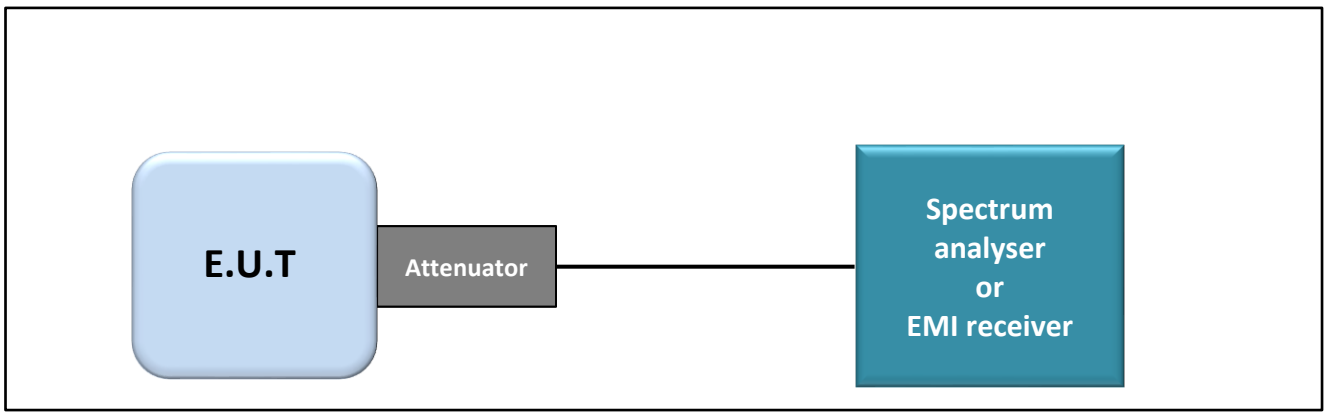
5.2. TEST SETUP

- The Equipment under Test is installed:
☐ On a table
☑ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.3.1.1
This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.
a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ 3 x RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

☐ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.3.1.2
This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.
a) Set the RBW = 1 MHz.
b) Set the VBW ≥ 3 x RBW
c) Set the span ≥ 1.5 x DTS bandwidth.
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges



Test set up of Maximum Conducted Output Power

Photograph for Maximum Conducted Output Power

5.3. LIMIT

Maximum Conducted Output power:
2400MHz-2483.5MHz: Shall not exceed 30dBm
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

5.4. TEST EQUIPMENT LIST

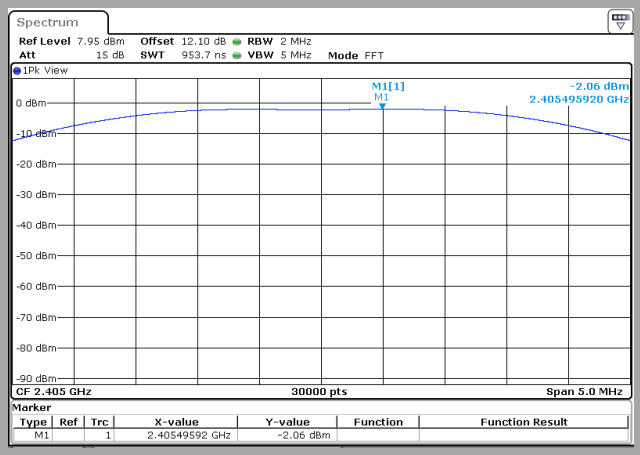
TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Attenuator 10dB	AEROFLEX	_	A7122268	08/21	08/23
Cable SMA 60cm (smj)	TELEDYNE	18GHz	A5329687	05/21	05/23
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	09/20	09/22
Semi-Anechoic chamber #1	SIEPEL	_	D3044016	07/22	07/23
Thermo-hygrometer (C1)	OREGON	WMR 80	B4206013	09/20	09/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

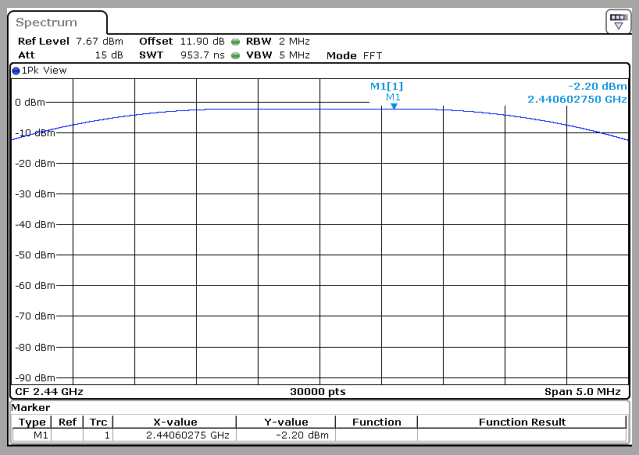
5.5. RESULTS

Maximum Conducted Output Power

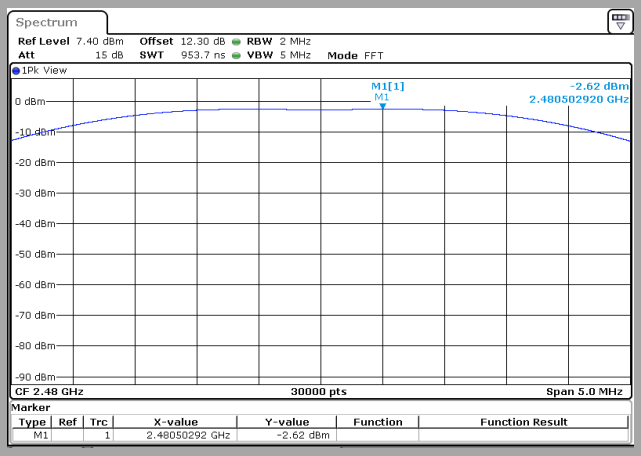
Cmin



Cnom



Cmax



Channel	Offset Cable + Att (dB)	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	**12.1**	4.7	-2.06	30. Reduced by G-6dBi if Antenna Gain above 6dBi
Cnom	**11.9**	4.7	-2.20	30. Reduced by G-6dBi if Antenna Gain above 6dBi
Cmax	**12.3**	4.7	-2.562	30. Reduced by G-6dBi if Antenna Gain above 6dBi

5.6. CONCLUSION

Maximum Conducted Output Power measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

6. POWER SPECTRAL DENSITY

6.1. TEST CONDITIONS

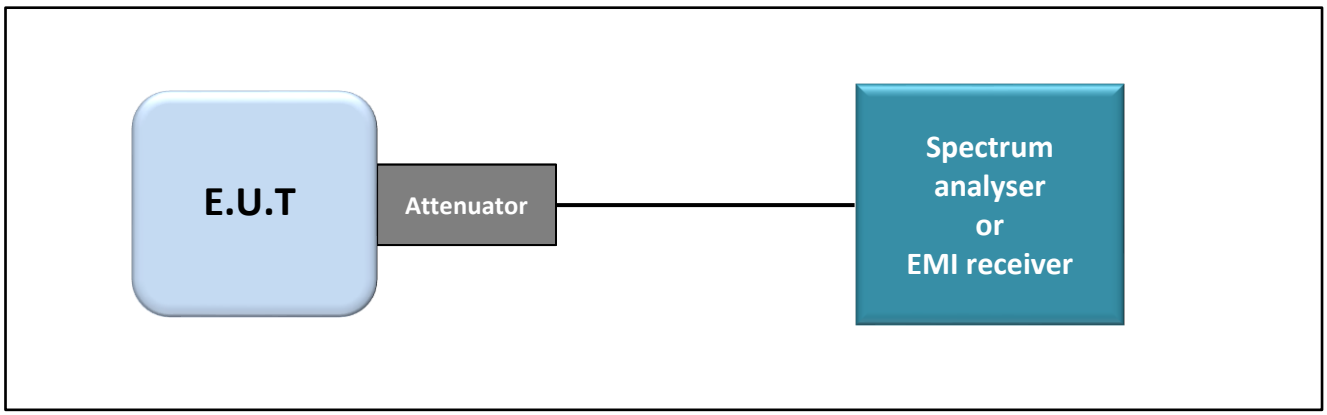
Test performed by	: Majid MOURZAGH
Date of test	: August 24, 2022
Ambient temperature	: 24 °C
Relative humidity	: 40 %

6.2. TEST SETUP

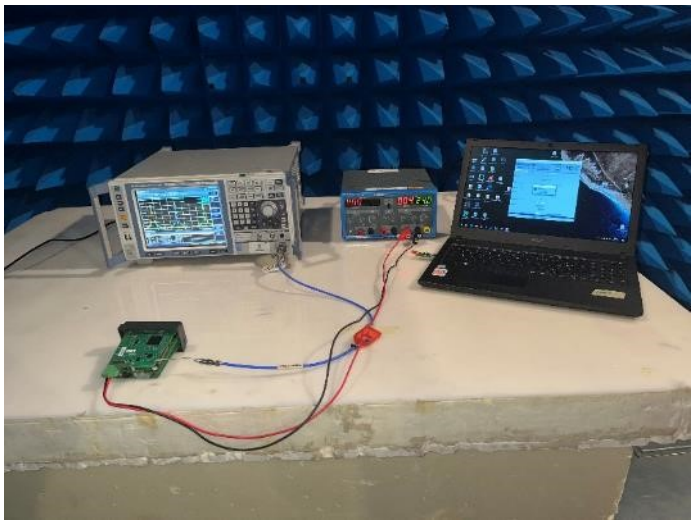
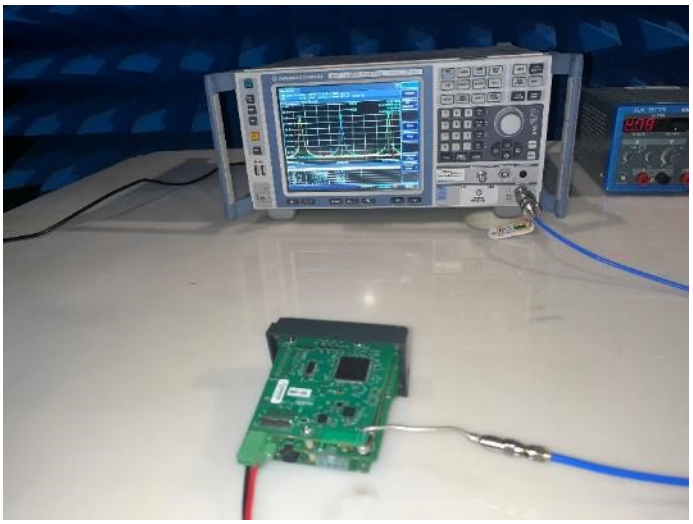
- The Equipment Under Test is installed:
☐ On a table
☑ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.4 (Method PKPSD)
a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz.
d) Set the VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



Test set up of Power Spectral Density

Photograph for Power Spectral Density

6.3. LIMIT

Power Spectral Density:
2400MHz-2483.5MHz: Shall not exceed 8dBm/3kHz
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

6.4. TEST EQUIPMENT LIST

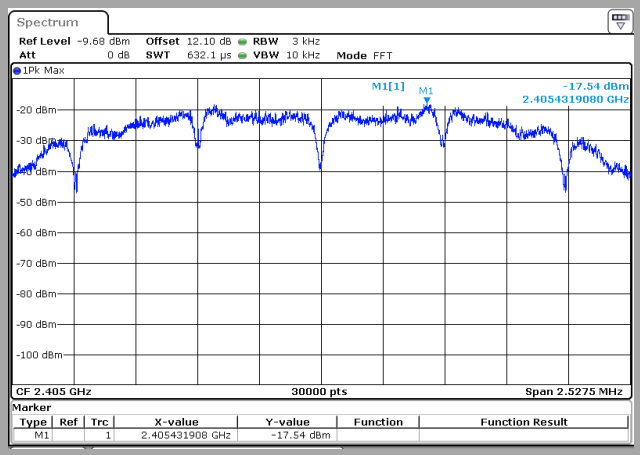
TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Attenuator 10dB	AEROFLEX	_	A7122268	08/21	08/23
Cable SMA 60cm (smj)	TELEDYNE	18GHz	A5329687	05/21	05/23
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	09/20	09/22
Semi-Anechoic chamber #1	SIEPEL	_	D3044016	07/22	07/23
Thermo-hygrometer (C1)	OREGON	WMR 80	B4206013	09/20	09/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

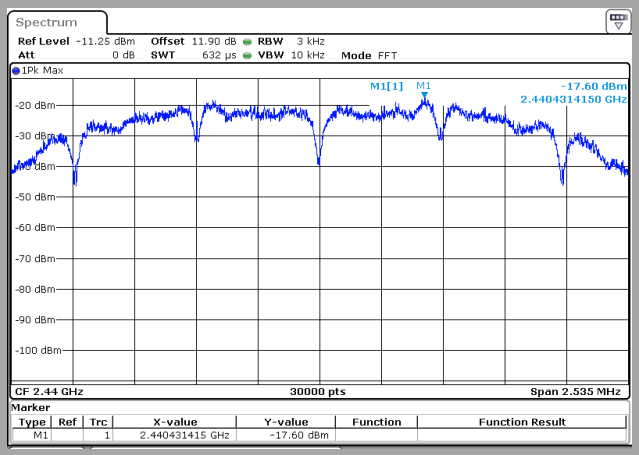
6.5. RESULTS

Power Spectral Density

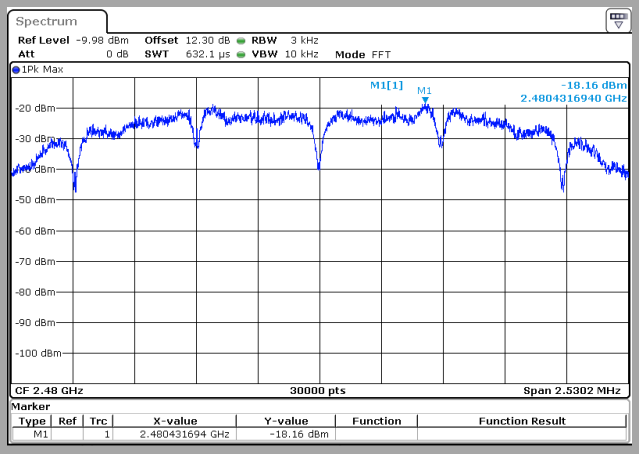
Cmin



Cnom



Cmax



Channel	Offset Cable + Att (dB)	Antenna Gain (dBi)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Cmin	**12.1**	4.7	-17.54	8. Reduced by G-6dBi if Antenna Gain above 6dBi
Cnom	**11.9**	4.7	-17.60	8. Reduced by G-6dBi if Antenna Gain above 6dBi
Cmax	**12.3**	4.7	-18.16	8. Reduced by G-6dBi if Antenna Gain above 6dBi

6.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

7. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS AT THE BAND EDGE

7.1. TEST CONDITIONS

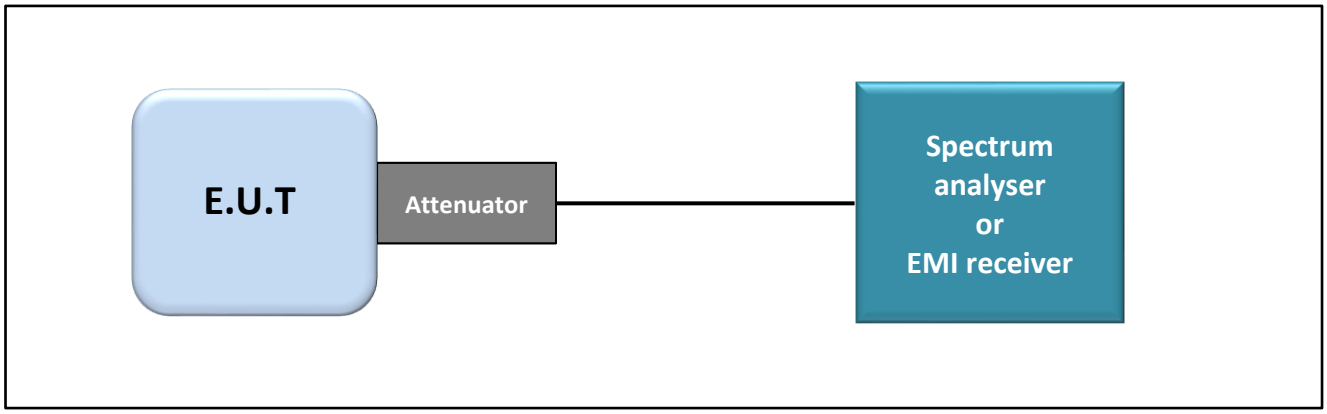
Test performed by	: Majid MOURZAGH
Date of test	: August 24, 2022
Ambient temperature	: 24 °C
Relative humidity	: 40 %

7.2. TEST SETUP

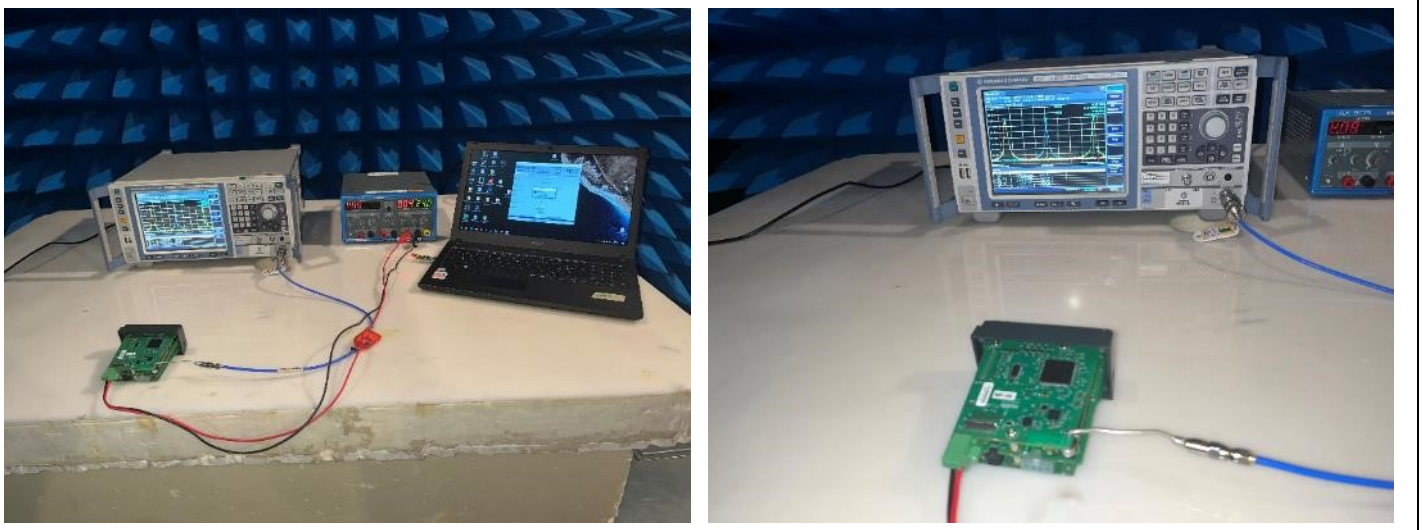
- The Equipment Under Test is installed:
☐ On a table
☑ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.5



Test set up of Unwanted Emissions into Non-Restricted Frequency Bands at the Band Edge



Photograph for Unwanted Emission into non-restricted frequency bands at the band edge

7.3. LIMIT

All Spurious Emissions must be at least 20dB below the Fundamental Radiator Level at the Band Edge Edge “2400MHz & 2483,5MHz”

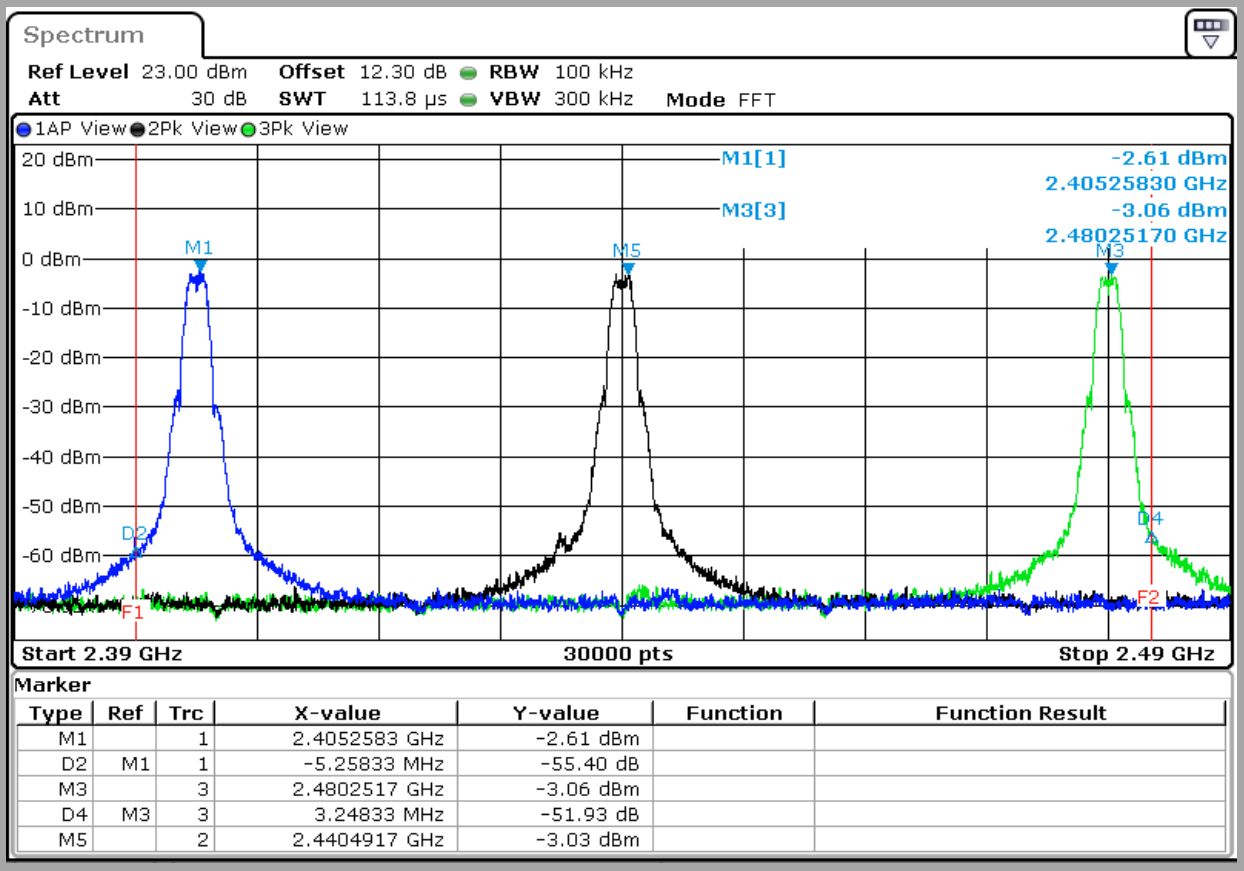
7.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Attenuator 10dB	AEROFLEX	_	A7122268	08/21	08/23
Cable SMA 60cm (smj)	TELEDYNE	18GHz	A5329687	05/21	05/23
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060051	09/20	09/22
Semi-Anechoic chamber #1	SIEPEL	_	D3044016	07/22	07/23
Thermo-hygrometer (C1)	OREGON	WMR 80	B4206013	09/20	09/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

7.5. RESULTS

Cmin/Cnom/Cmax



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4052583 GHz	-2.61 dBm		
D2	M1	1	-5.25833 MHz	-55.40 dB		
M3		3	2.4802517 GHz	-3.06 dBm		
D4	M3	3	3.24833 MHz	-51.93 dB		
M5		2	2.4404917 GHz	-3.03 dBm		

Frequency (MHz)	Level (dBc)	Limit (dBc)
2400	**-55.40**	20
2483.5	**-51.93**	20

7.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands at the band edge measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

8. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

8.1. TEST CONDITIONS

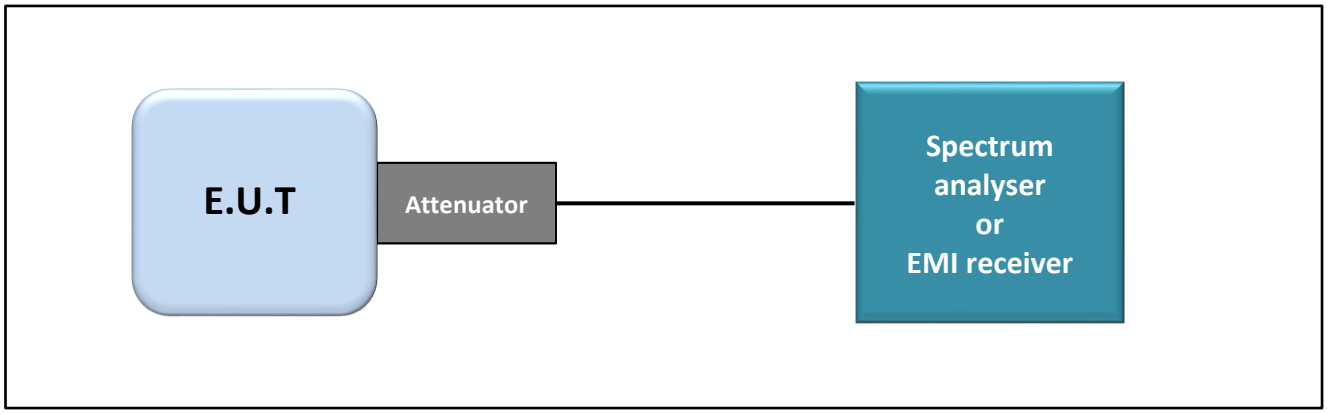
Test performed by	: Majid MOURZAGH
Date of test	: July 21, 2022
Ambient temperature	: 23 °C
Relative humidity	: 38 %

8.2. TEST SETUP

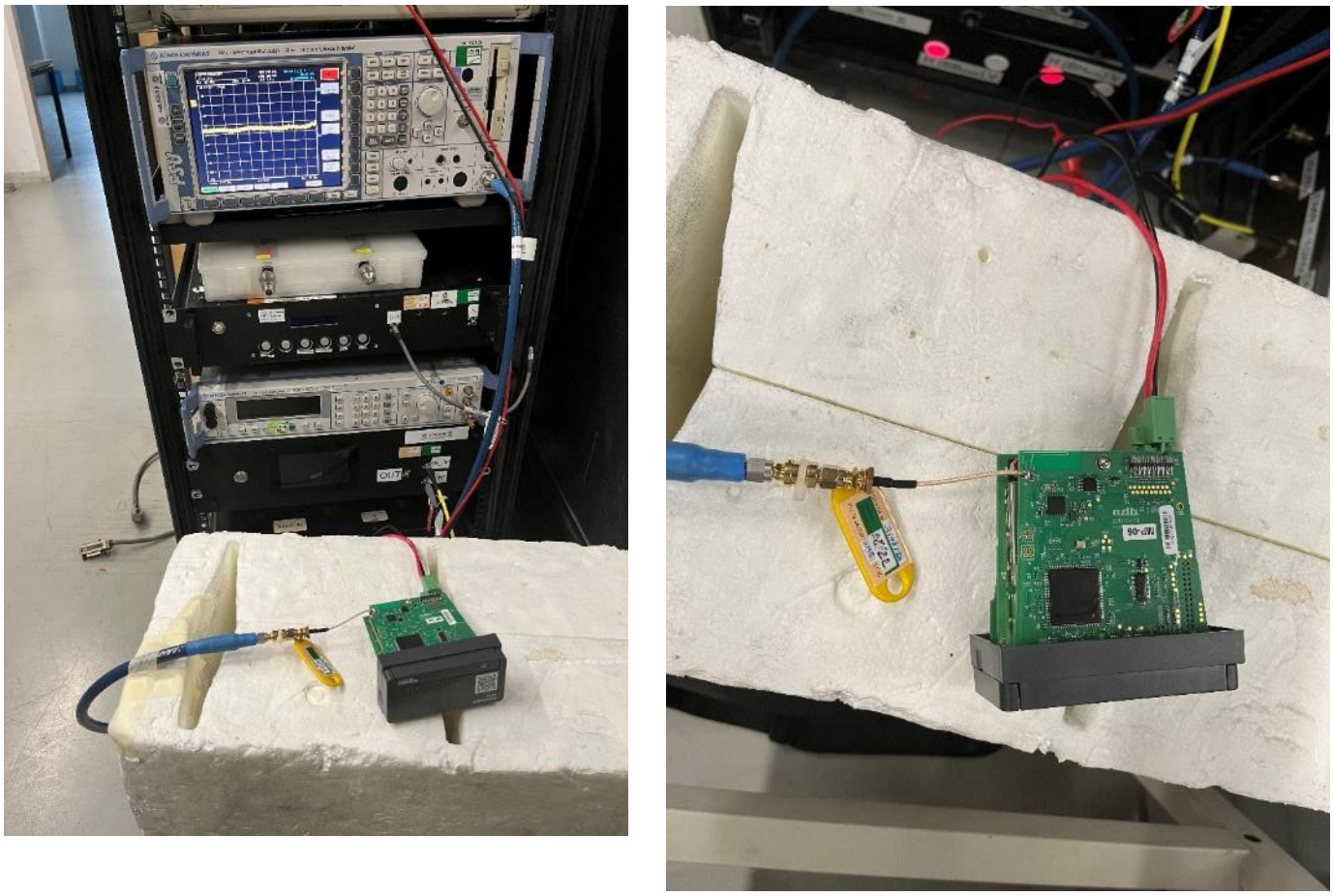
- The Equipment under Test is installed:
☐ On a table
☑ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.5



Test set up of Unwanted Emissions into Non-Restricted Frequency Bands



Photograph for Unwanted Emission into non-restricted frequency bands

8.3. LIMIT

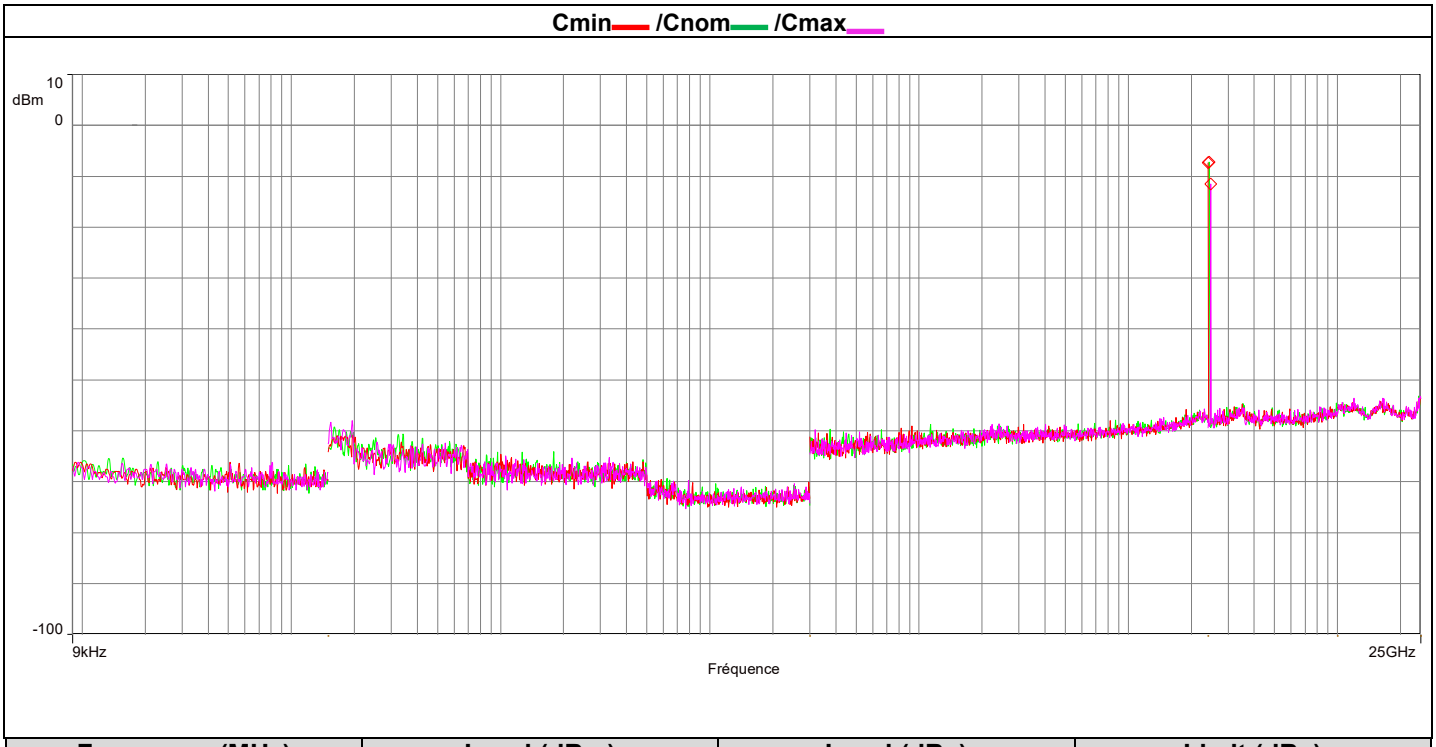
All Spurious Emissions must be at least 20 below the Fundamental Radiator Level

8.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	11/21	11/23
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	02/21	02/23
Attenuator 10dB	TECHNIWAVE	_	A7122273	08/20	08/22
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	08/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

8.5. RESULTS



Frequency (MHz)	Level (dBm)	Level (dBc)	Limit (dBc)
2405.00	-7.27		
2440.00	-7.25		
2480.00	-11.52		

8.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

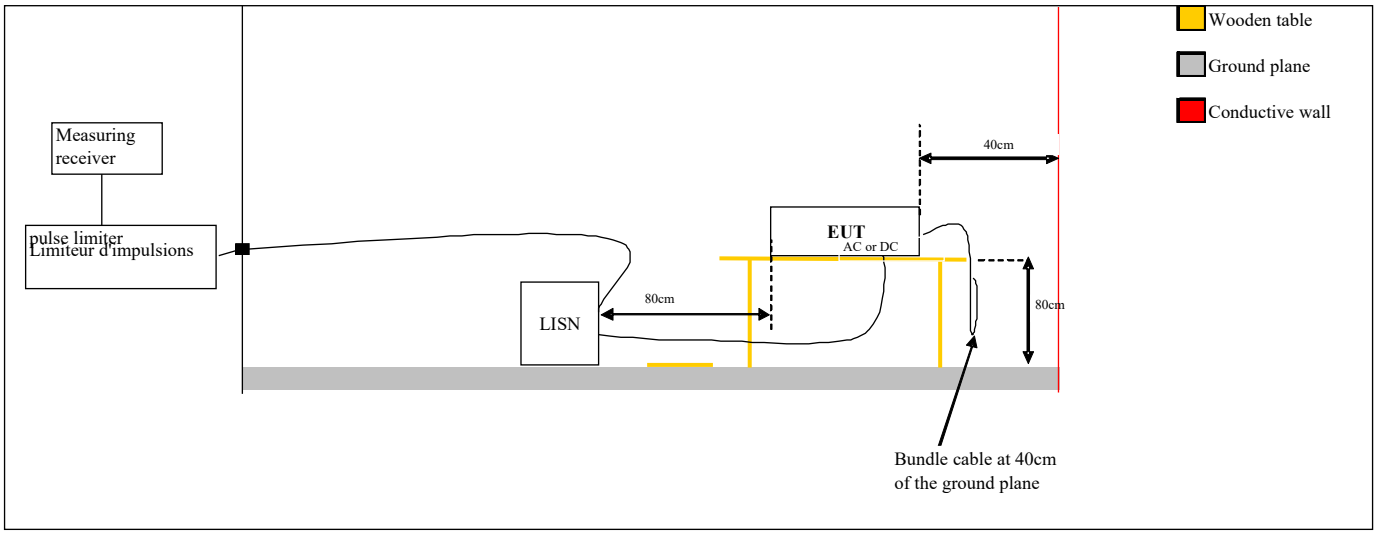
9. AC POWER LINE CONDUCTED EMISSIONS

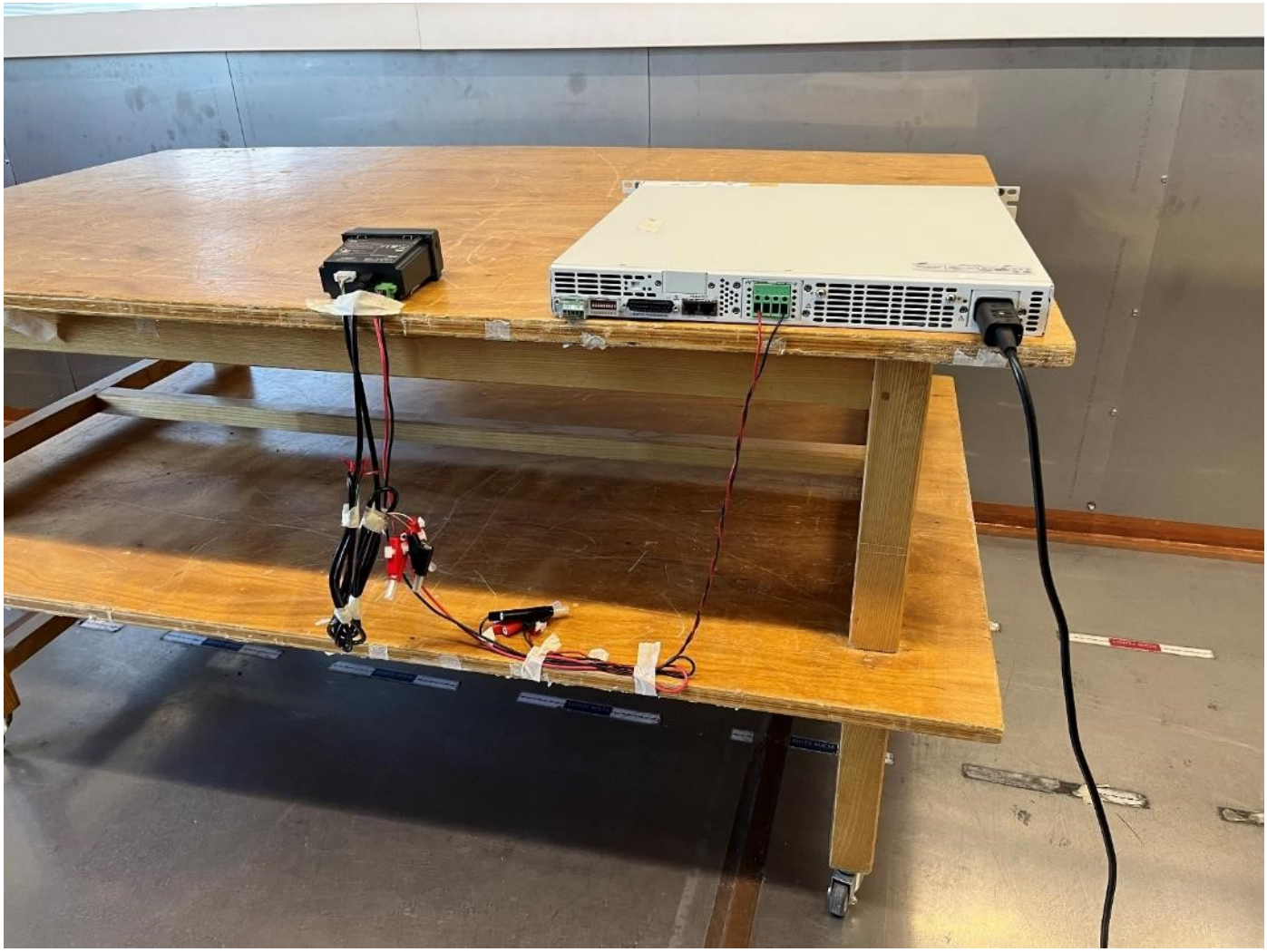
9.1. TEST CONDITIONS

Test performed by	: Majid MOURZAGH
Date of test	: July 27, 2022
Ambient temperature	: 22 °C
Relative humidity	: 40 %

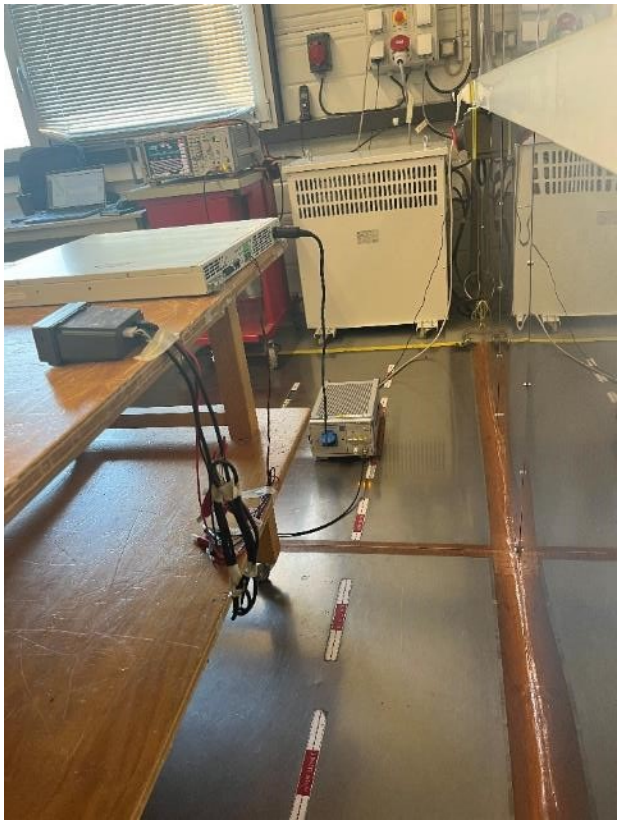
9.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) method. The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT is powered through the LISN. 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. The LISN (measure) is 50Ω / 50µH. Interconnecting cables and equipment's were moved to position that maximized emission.





Photograph for AC Power Line Conducted Emissions (Front view)



Photograph for AC Power Line Conducted Emissions (Setup)

9.3. LIMIT

Frequency range	Level	Detector
0,15kHz to 0,5MHz	66dBµV to 56µV*	QPeak
	56dBµV to 46µV*	Average
0,5MHz to 5MHz	56dBµV	QPeak
	46dBµV	Average
5MHz to 30MHz	60BµV	QPeak
	50dBµV	Average

*Decreases with the logarithm of the frequency

9.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
BAT EMC	NEXIO	v3.21.0.32	L1000115	¤	¤
Cable + self	_	_	A5329578	05/22	05/23
EMC comb generator	LCIE SUD EST	_	A3169098	¤	¤
LISN	ROHDE & SCHWARZ	ENV216	C2320291	08/21	08/22
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
Transient limiter	ROHDE & SCHWARZ	ESH3-Z2	A7122204	08/20	08/22
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	10/20	10/22

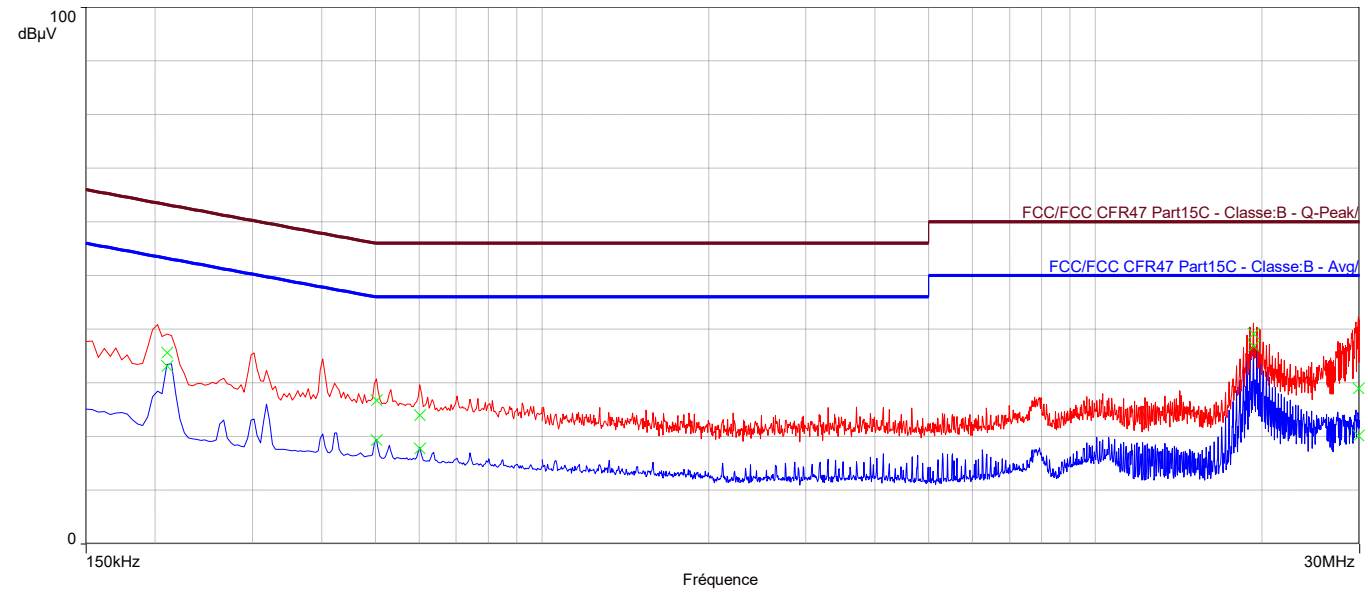
Note: In our quality system, the test equipment calibration due is more & less 2 months

9.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

9.6. RESULTS

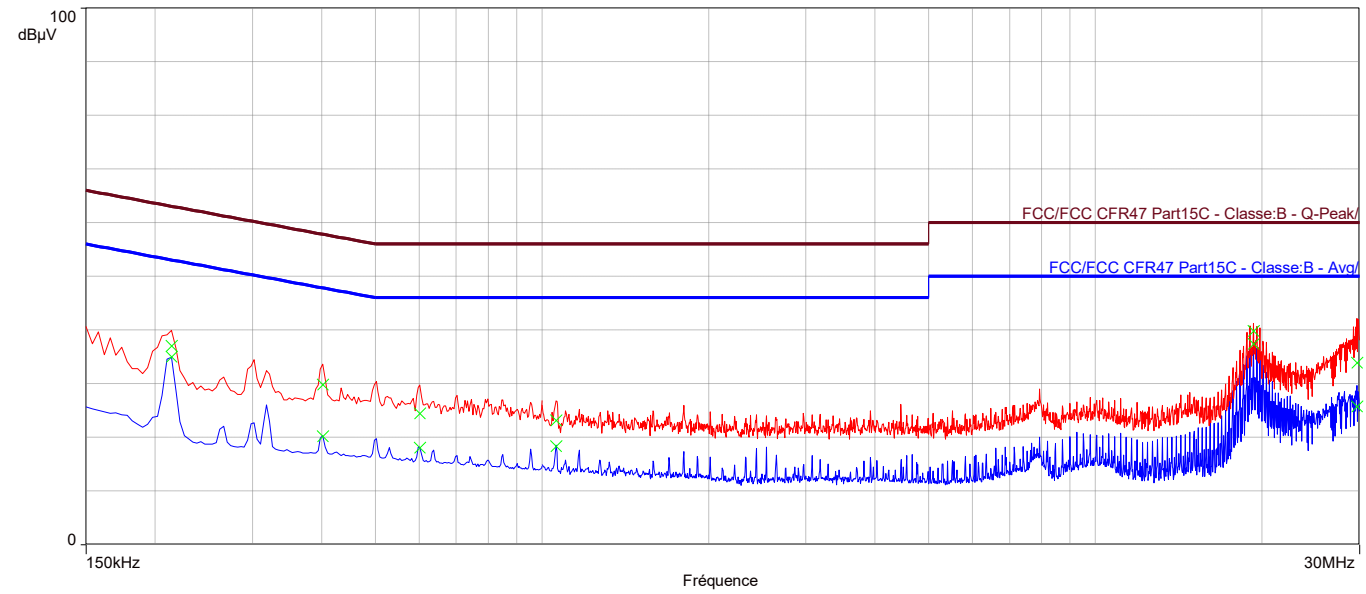
CONDUCTED EMISSIONS			
Graph name:	Emc#1	**Test configuration:**	
Limit:	FCC CFR47 Part15C	240Vac 50Hz- Neutral	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:		**RBW:** 10kHz	**VBW:** 30kHz
Line:		**Trace color & detector:**	PEAK AVG



Spurious emissions

Frequency (MHz)	QPeak (dBµV)	Lim.QPeak (dBµV)	QPeak-Lim.QPeak (dB)	CISPR.AVG (dBµV)	Lim.CISPR.AVG (dBµV)	CISPR.AVG-Lim.CISPR.AVG (dB)
0.210	35.6	63.2	-27.6	33.2	53.2	-20.0
0.502	26.8	56.0	-29.2	19.3	46.0	-26.7
0.602	24.0	56.0	-32.0	17.8	46.0	-28.2
19.308	39.2	60.0	-20.8	36.8	50.0	-13.2
29.892	29.0	60.0	-31.0	20.2	50.0	-29.8

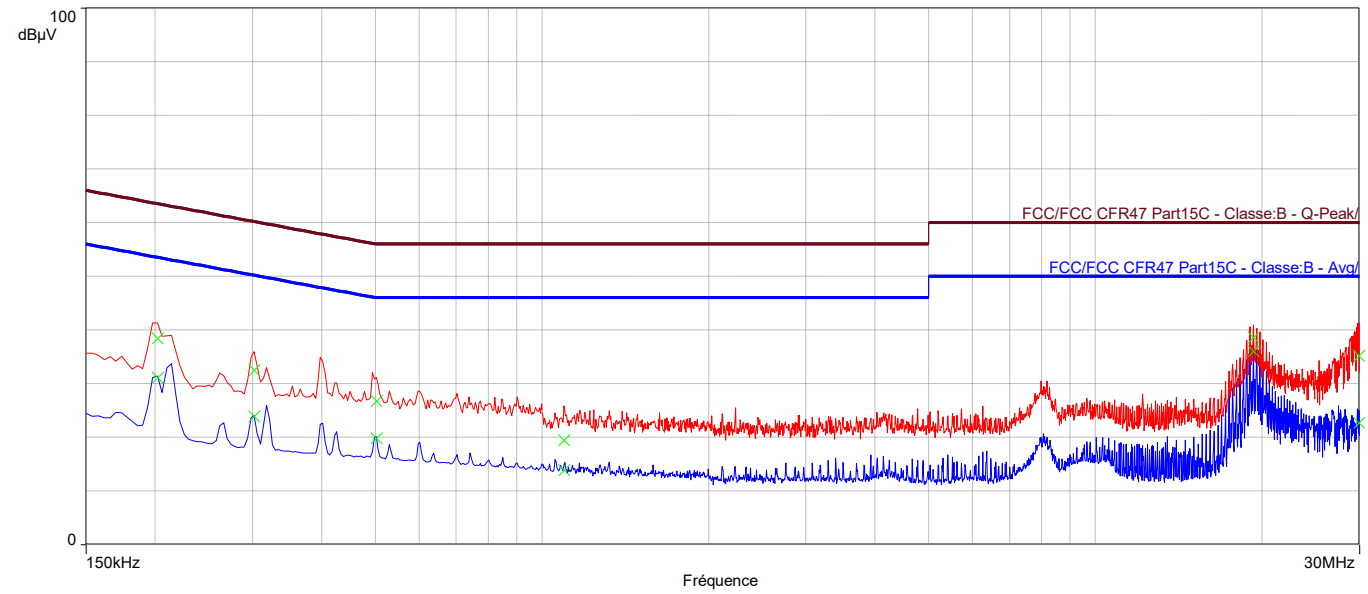
CONDUCTED EMISSIONS			
Graph name:	Emc#2	**Test configuration:**	
Limit:	FCC CFR47 Part15C	240Vac 50Hz- Line	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:		**RBW:** 10kHz	**VBW:** 30kHz
Line:		**Trace color & detector:**	PEAK AVG



Spurious emissions

Frequency (MHz)	Q-Peak (dBµV)	CISPR AVG (dBµV)
0.214	37.0	35.0
0.402	29.8	20.2
0.602	24.4	18.1
1.060	23.1	18.3
19.304	39.8	37.4
29.704	33.9	25.7

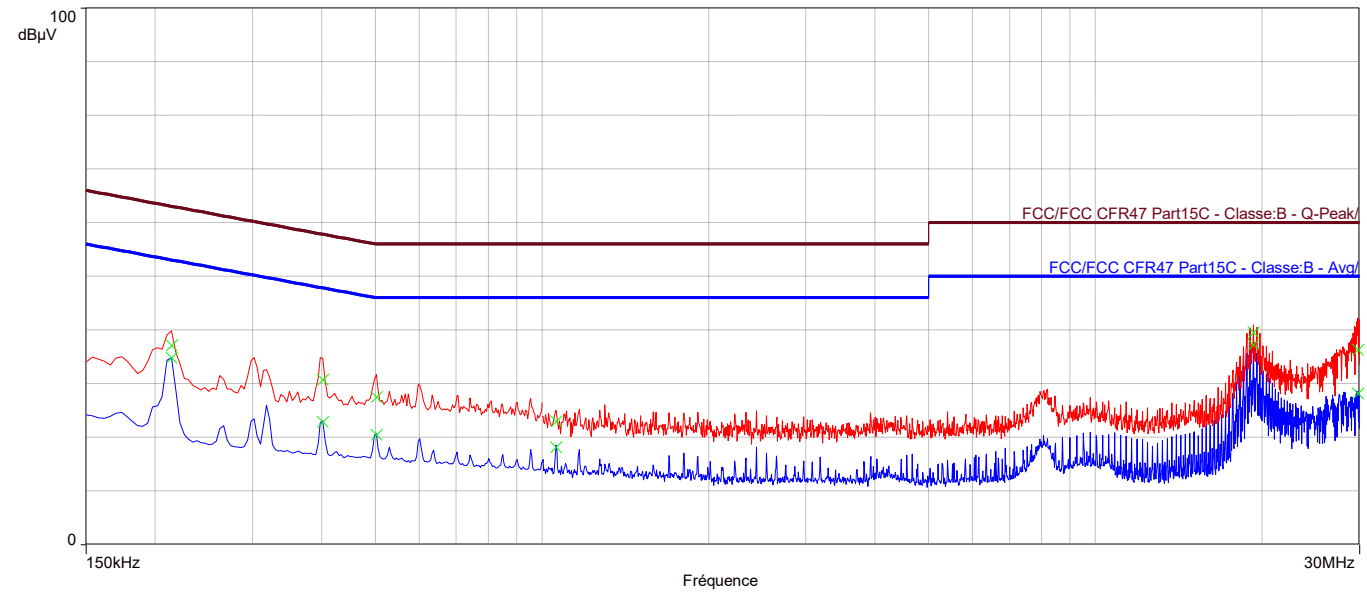
CONDUCTED EMISSIONS			
Graph name:	Emc#3	**Test configuration:**	
Limit:	FCC CFR47 Part15C	120Vac 60Hz- Neutral	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:		**RBW:** 10kHz	**VBW:** 30kHz
Line:		**Trace color & detector:**	PEAK AVG



Spurious emissions

Frequency (MHz)	Q-Peak (dBµV)	CISPR AVG (dBµV)
0.202	38.4	31.1
0.302	32.5	23.9
0.502	26.8	19.9
1.096	19.5	13.9
19.300	38.6	36.0
29.940	35.2	22.7

CONDUCTED EMISSIONS			
Graph name:	Emc#4	**Test configuration:**	
Limit:	FCC CFR47 Part15C	120Vac 60Hz- Line	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:		**RBW:** 10kHz	**VBW:** 30kHz
Line:		**Trace color & detector:**	PEAK AVG



Spurious emissions

Frequency (MHz)	Q-Peak (dBµV)	CISPR AVG (dBµV)
0.214	37.1	34.9
0.402	30.8	22.9
0.502	27.5	20.5
1.060	23.0	18.1
19.304	39.5	37.3
29.824	36.3	28.2

9.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 2 limits.

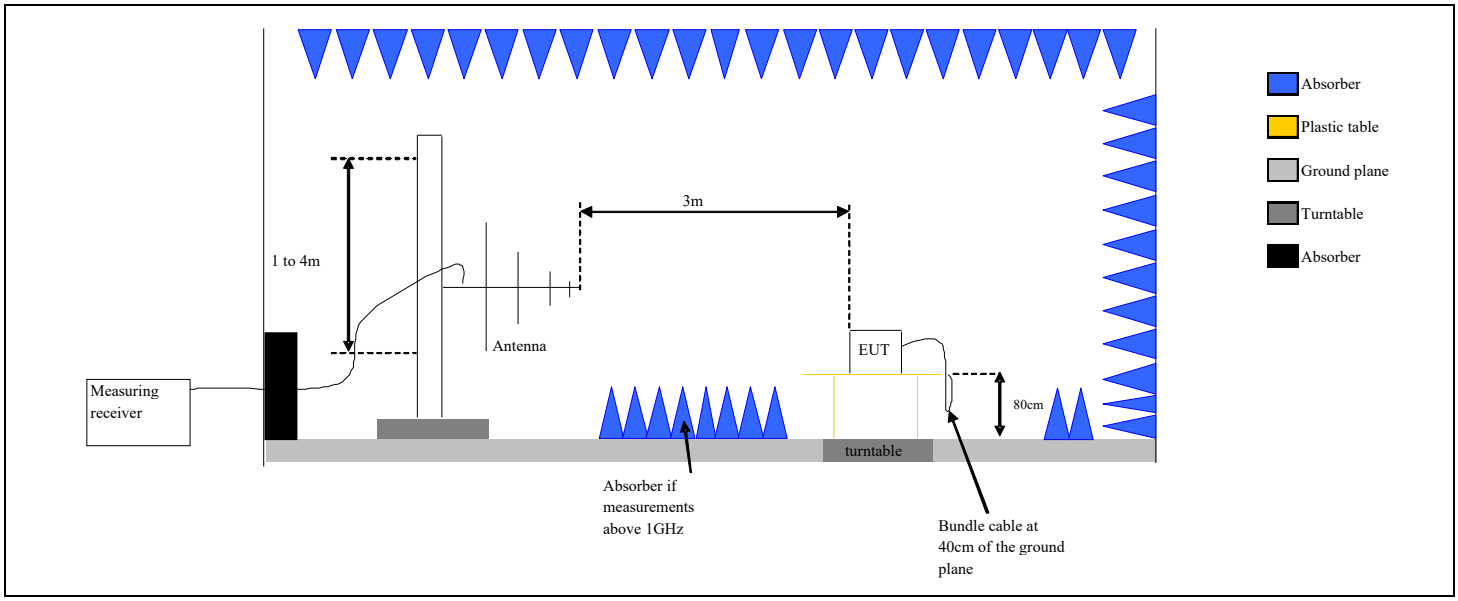
10. UNWANTED EMISSIONS IN RESTRICTED FREQUENCY BANDS

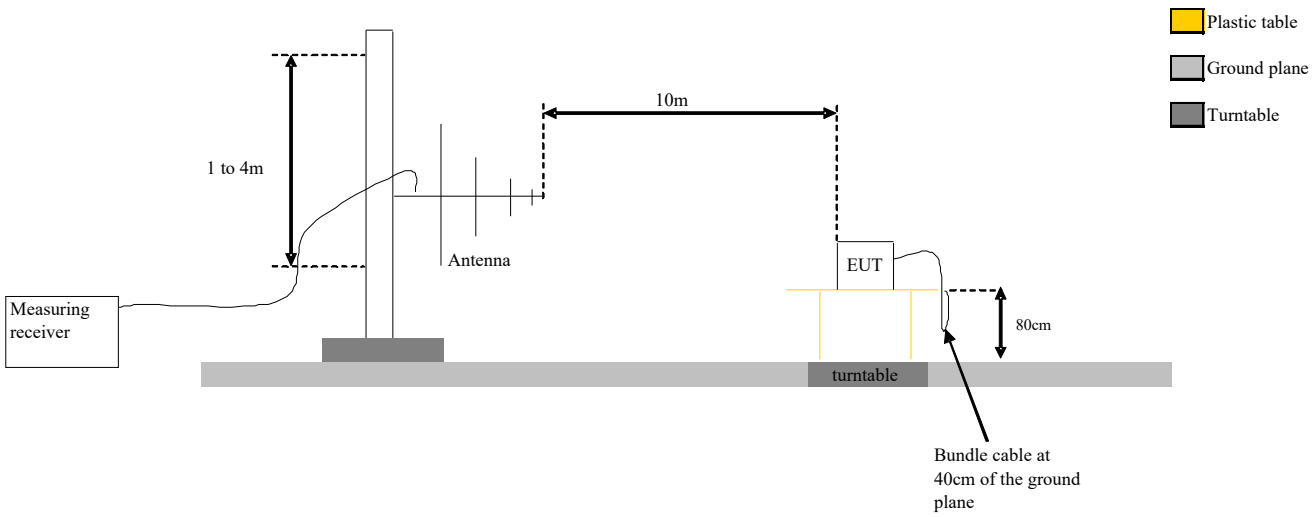
10.1. TEST CONDITIONS

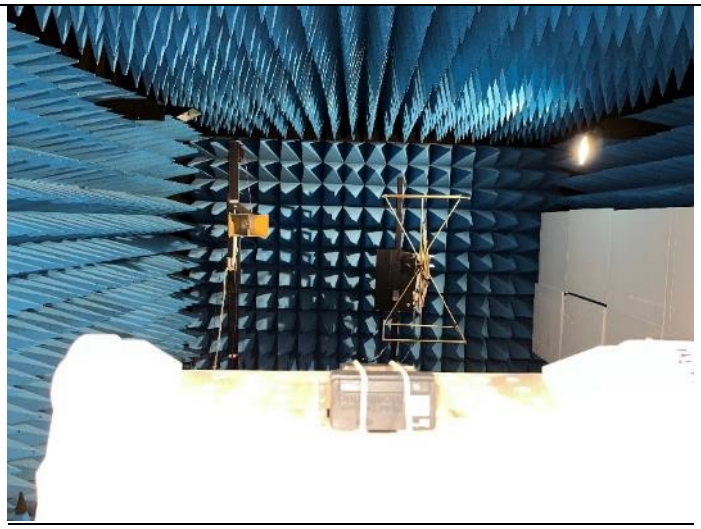
Test performed by	: Majid MOURZAGH
Date of test	: July 20, 2022
Ambient temperature	: 22 °C
Relative humidity	: 39 %

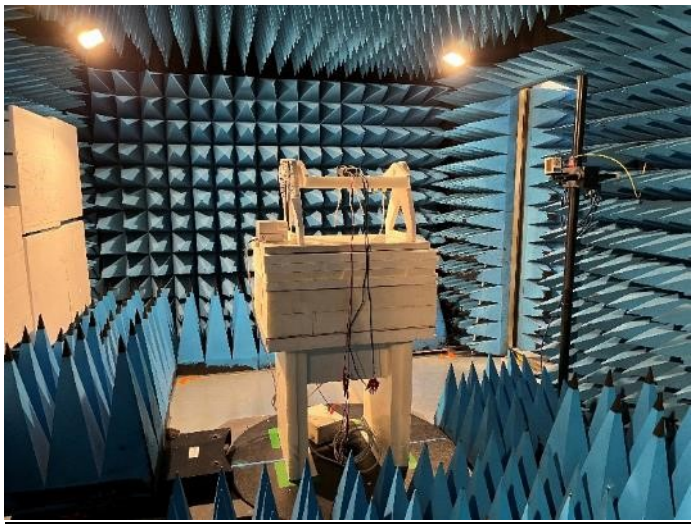
10.2. TEST SETUP

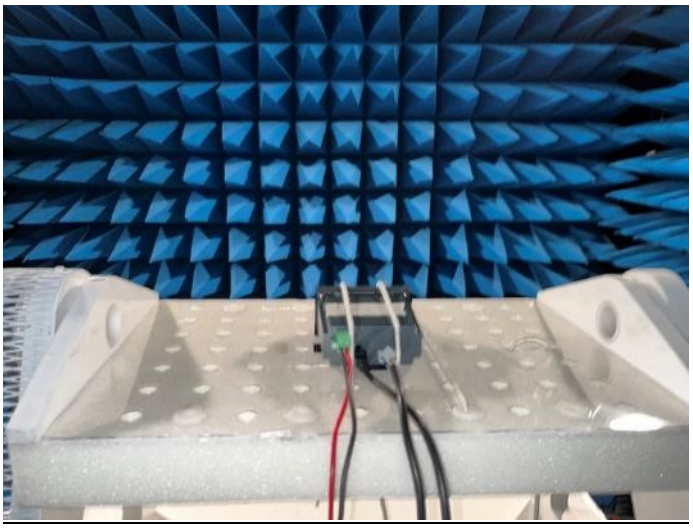
The product has been tested according to ANSI C63.10 (2013) and FCC part15 subpart C.
Test is performed in parallel, perpendicular and ground parallel axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. Antenna height was 1m. The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **10m**.
Test is performed in horizontal (H) and vertical (V) polarization with **bilog** between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. The EUT is place at 1.5m high above 1GHz and at 0.8m high under 1GHz. The EUT is placed **in a full anechoic chamber** above 1GHz and **on an open area test site** from 30MHz to 1GHz. Distance between measuring antenna and the EUT is **3m**.
The height antenna is varied from 1m to 4m from 30MHz to 1GHz and above 1GHz is:
☐ On mast, varied from 1m to 4m
☑ Fixed and centered on the EUT (EUT smaller than the beamwidth of the measurement antenna, ANSI C63.10 §6.6.5)
Frequency list has been created with anechoic chamber pre-scan results.

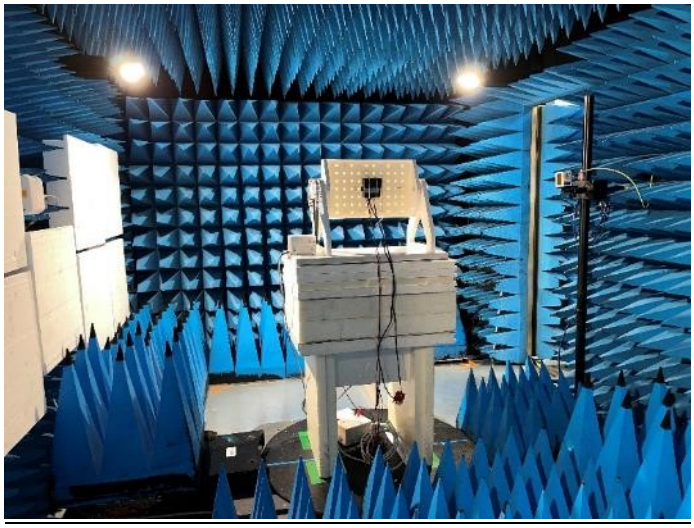


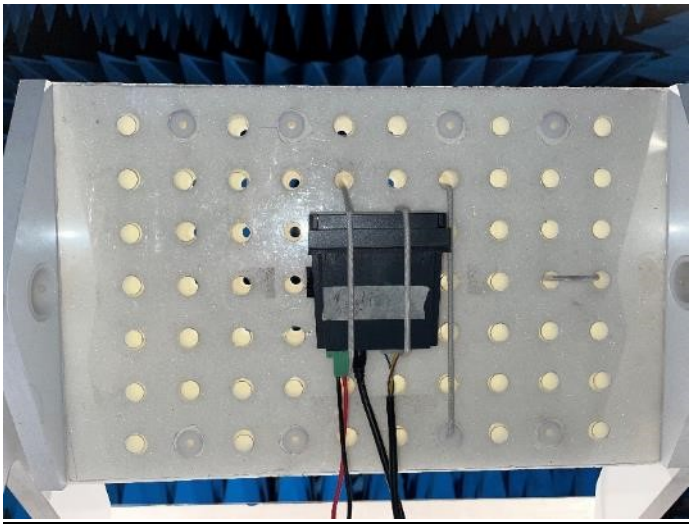

Plastic table
Ground plane
Turntable
10m
1 to 4m
Antenna
EUT
80cm
Measuring receiver
turntable
Bundle cable at 40cm of the ground plane











Photograph for Unwanted Emission in restricted frequency bands on FAR

Photograph for Unwanted Emission in restricted frequency bands on OATS

10.3. LIMIT

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

10.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	**Manufacturer**	**Model**	**Identifier**	**Cal_Date**	**Cal_Due**
Amplifier 9kHz - 40GHz	LCIE SUD EST	_	A7102082	05/22	05/24
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	06/19	06/22
Biconic Antenna	EATON	94455-1	C2040234	03/21	03/23
Antenna Bi-log	AH System	SAS-521-7	C2040180	02/21	02/23
Antenna horn 18GHz	EMCO	3115	C2042029	03/22	03/25
BAT EMC	NEXIO	v3.21.0.32	L1000115	¤	¤
Cable SMA 40GHz 40cm	WITHWAVE	W101-SM1-0.4M	A5329979	04/21	08/22
Comb EMR HF	YORK	CGE01	A3169114	¤	¤
CONTROLLER	INNCO	CO3000	D3044034	¤	¤
Emission Cable (SMA 1m)	TELEDYNE	26GHz	A5329874	08/21	08/22
Emission Cable (SMA 3.3m)	TELEDYNE	26GHz	A5329875	08/21	08/22
Emission Cable <1GHz (Ampl <-> Cage)	INTELLICONNECT	C-KPKP-1503-500MM	A5329988	04/21	08/22
Filter Matrice	LCIE SUD EST	Combined filters	A7484078	09/20	09/22
Multimeter - CEM	FLUKE	189	A1240171	09/21	09/23
Rehausse Table C3	LCIE	_	F2000511	¤	¤
Rehausse Table C3	LCIE	_	F2000507	¤	¤
Semi-Anechoic chamber #3 (BF)	SIEPEL	_	D3044017_BF	04/22	04/25
Semi-Anechoic chamber #3 (VSWR)	SIEPEL	_	D3044017_VSWR	04/22	04/25
Spare C3 Cable Measure	TELEDYNE	26GHz	A5329681	09/20	09/22
Spectrum analyzer	ROHDE & SCHWARZ	FSU 26	A4060058	09/21	09/23
Table C3	LCIE	_	F2000461	¤	¤
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	02/21	02/23
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
TILT	INNCO	TILT	D3044033	¤	¤
Turntable chamber (Cage#3)	ETS Lingren	Model 2165	F2000371	¤	¤
Turntable controller (Cage#3)	ETS Lingren	Model 2090	F2000444	¤	¤
Emission Cable	MICRO-COAX	1GHz	A5329656	08/21	08/22
OATS	_	_	F2000409	04/21	08/22
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	10/20	10/22
Table C1/OATS	LCIE	_	F2000445	¤	¤
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
Turntable (OATS)	ETS Lingren	Model 2187	F2000403	¤	¤
Turntable / Mast controller (OATS)	ETS Lingren	Model 2066	F2000372	¤	¤

Note: In our quality system, the test equipment calibration due is more & less 2 months

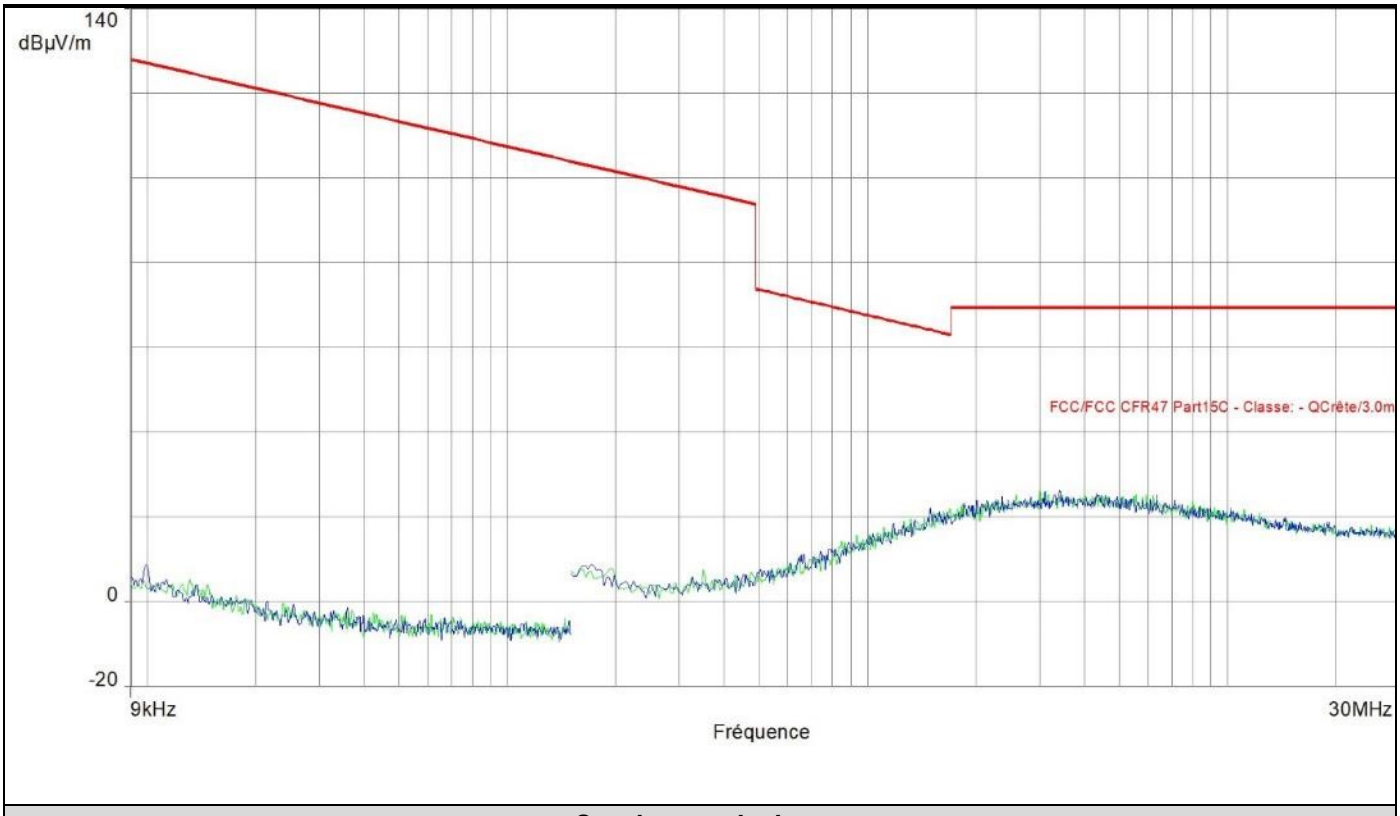
10.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

10.6. RESULTS

Results in the frequency band [0.009-30] MHz: Worst case presented

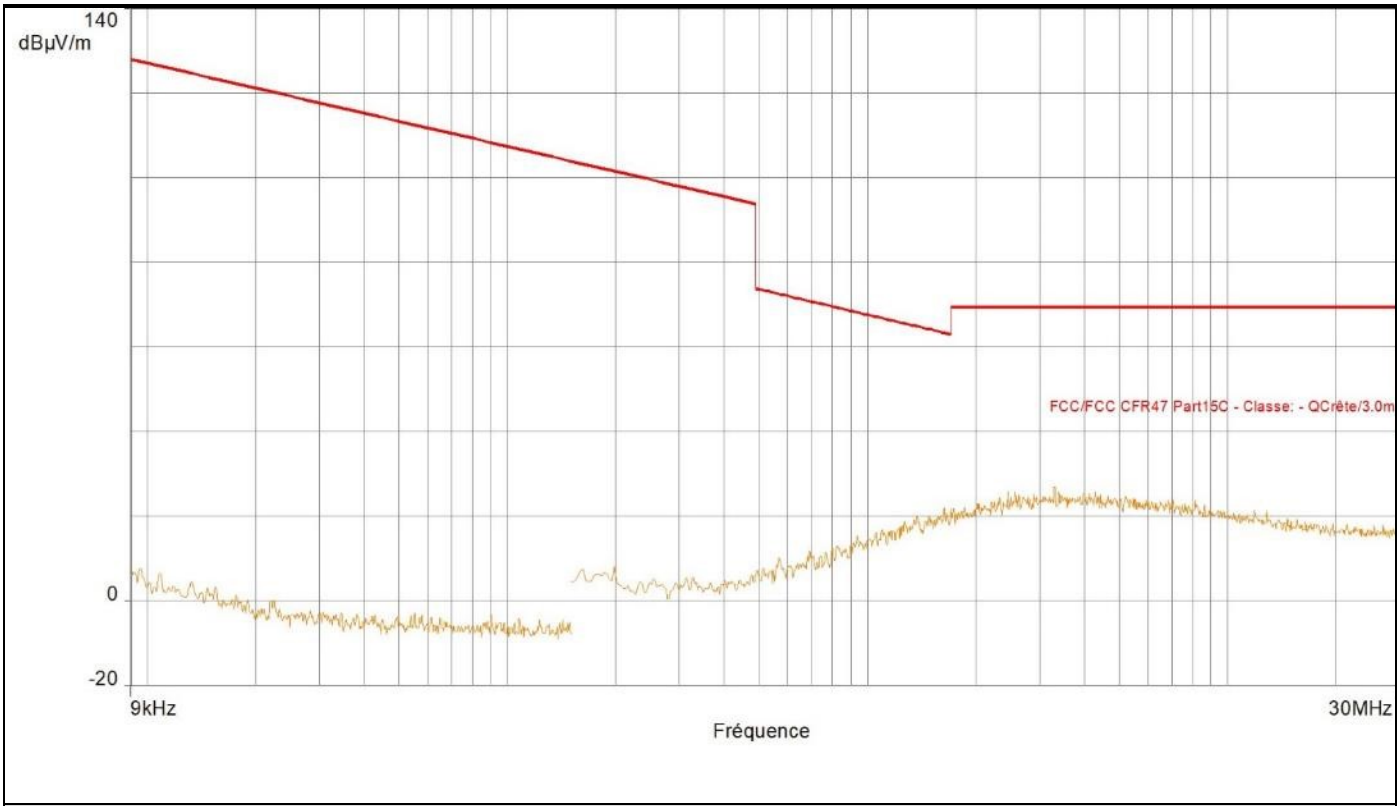
RADIATED EMISSIONS			
Graph name:	Emr#1	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(0°/90°) - TX mode - Axis XY/Z (Worst case presented)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:		**RBW :**	200Hz to 10kHz
Azimuth:	0° - 360°	**VBW :**	1kHz to 30kHz



Spurious emissions

No significative frequency observed

RADIATED EMISSIONS			
Graph name:	Emr#2	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(180°) - TX mode - Axis XY/Z (Worst case presented)	
Class:			
Frequency range: [9kHz - 30MHz]			
Antenna polarization:		**RBW :**	200Hz to 10kHz
Azimuth:	0° - 360°	**VBW :**	1kHz to 30kHz

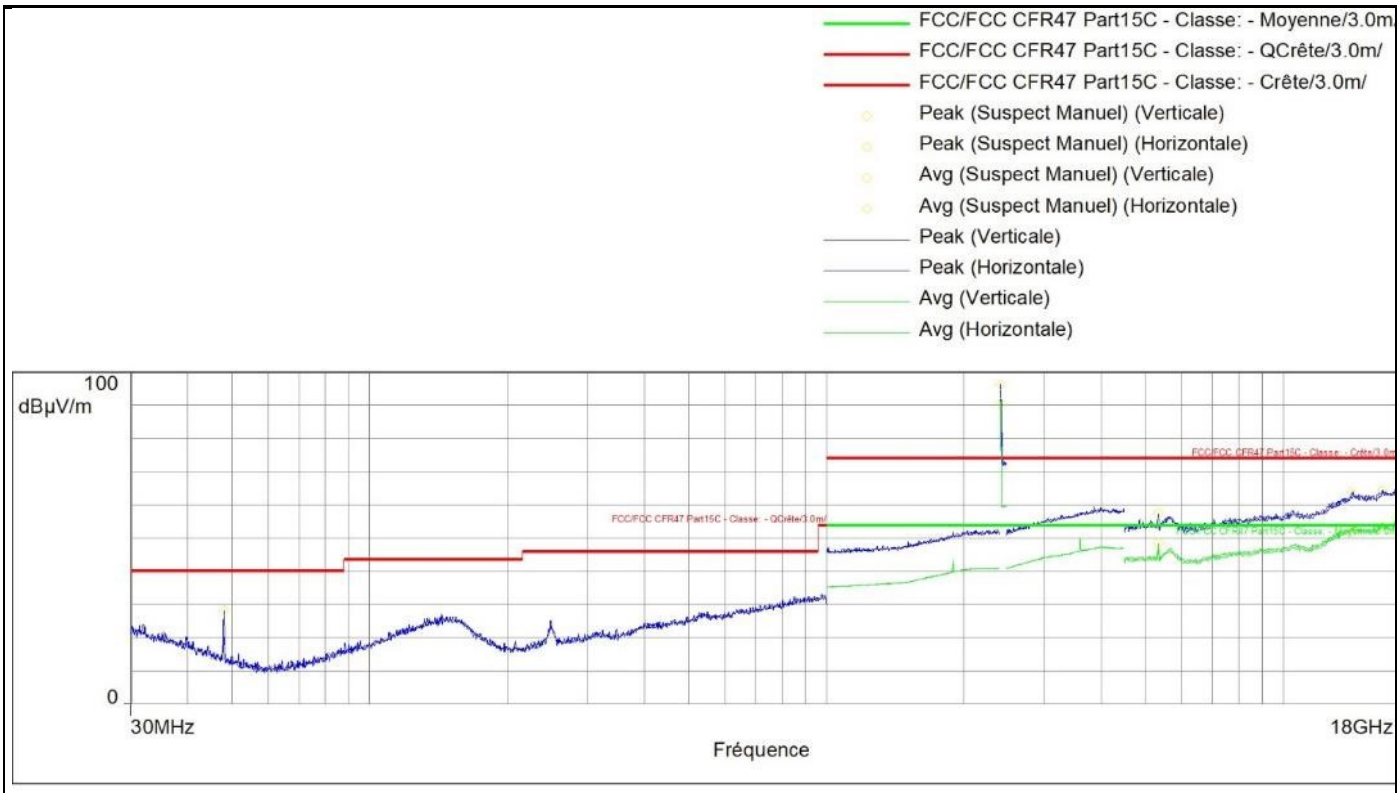


Spurious emissions

No significative frequency observed

Results in the frequency band [30-18000] MHz: Worst case presented

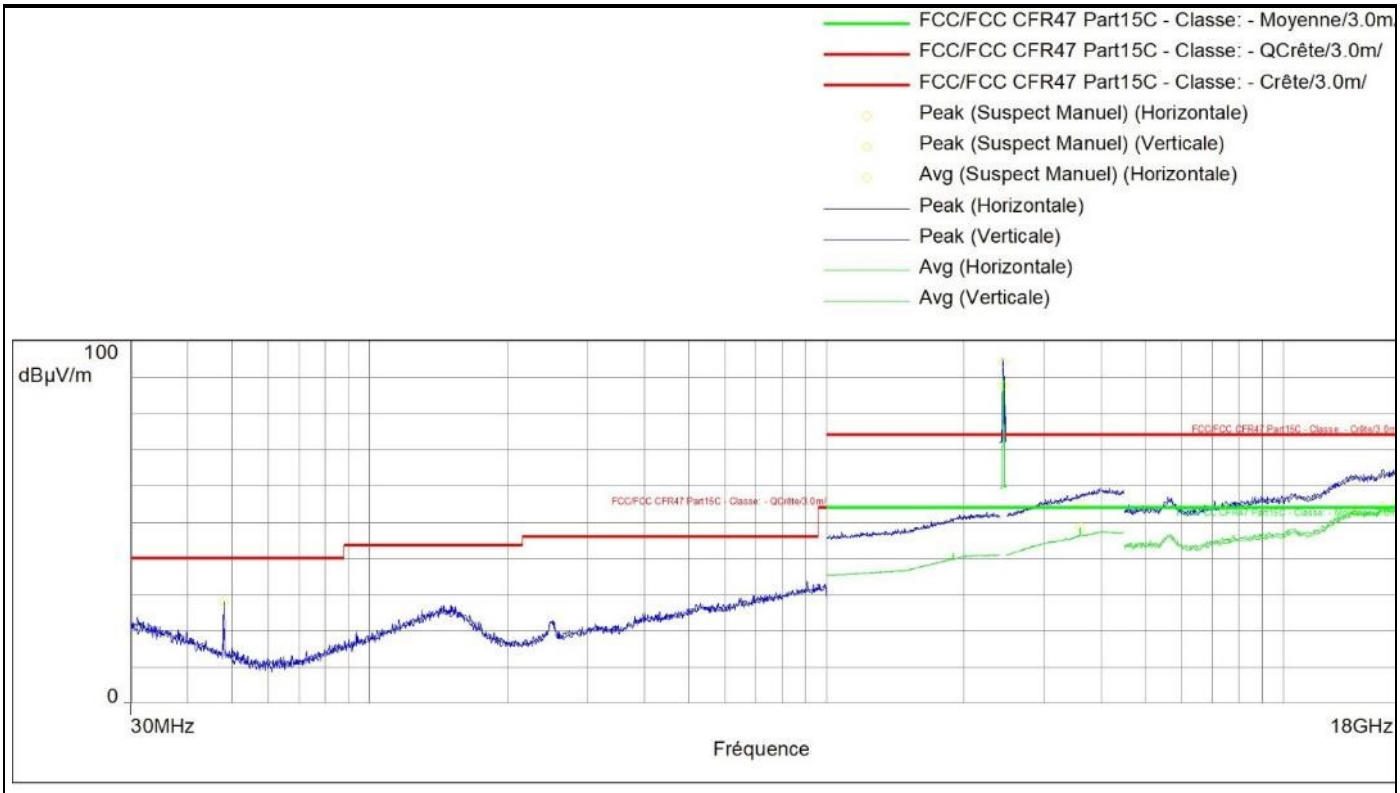
RADIATED EMISSIONS			
Graph name:	Emr#3	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(H+V) - Cmin - TX mode - Automatic Axis	
Class:			
Frequency range: [30MHz - 18GHz]			
Antenna polarization:		**RBW :**	100kHz to 1MHz
Azimuth:	0° - 360°	**VBW :**	300kHz to 3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Polarization	Correction (dB)
5326.031	57.4	74.0	48.4	54.0	Horizontal	-13.6
14140.688	63.9	74.0	51.9	54.0	Horizontal	-2.4
16479.562	64.5	74.0	53.4	54.0	Horizontal	10.3
17991.562	67.4	74.0	56.3	54.0	Horizontal	21.8
2405.469	96.2	/	90.6	/	Vertical	34.8

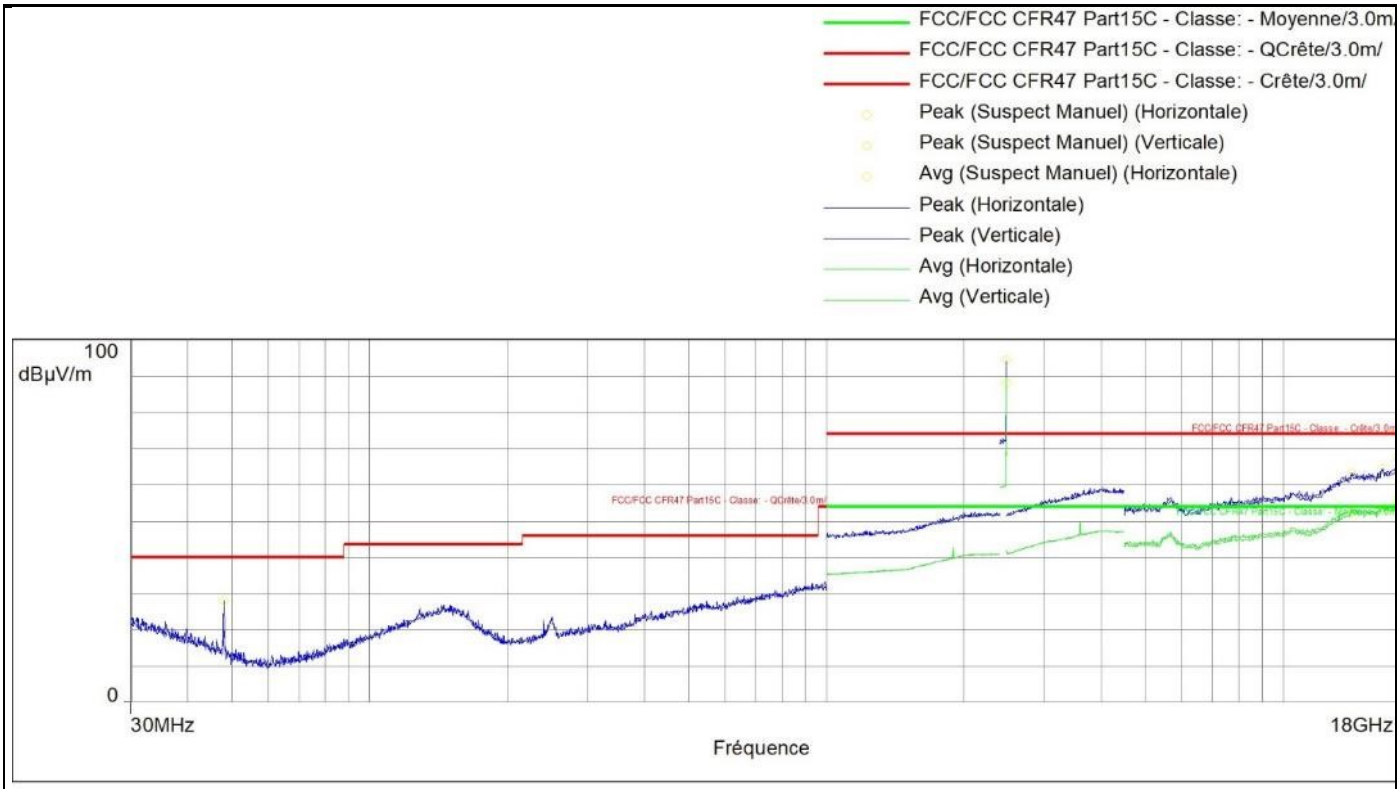
RADIATED EMISSIONS			
Graph name:	Emr#4	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(H+V) - Cmid - TX mode - Automatic Axis	
Class:			
Frequency range: [30MHz - 18GHz]			
Antenna polarization:		**RBW :**	100kHz to 1MHz
Azimuth:	0° - 360°	**VBW :**	300kHz to 3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Polarization	Correction (dB)
2440.539	94.0	/	87.8	/	Horizontal	34.8
3599.834	54.8	74.0	48.7	54.0	Horizontal	39.1
14284.969	61.6	74.0	53.6	54.0	Horizontal	-1.3
16549.594	62.3	74.0	54.3	54.0	Horizontal	10.5
17973.000	67.0	74.0	56.3	54.0	Horizontal	21.6

RADIATED EMISSIONS			
Graph name:	Emr#5	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(H+V) - Cmax - TX mode - Automatic Axis	
Class:			
Frequency range: [30MHz - 18GHz]			
Antenna polarization:		**RBW :**	100kHz to 1MHz
Azimuth:	0° - 360°	**VBW :**	300kHz to 3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Lim.Q-Peak (dBµV/m)	Polarization	Correction (dB)
2480.536	94.3	74.0	88.1	54.0		Horizontal	34.8
14152.500	63.3	74.0	52.2	54.0		Horizontal	-2.3
16572.375	64.6	74.0	53.5	54.0		Horizontal	10.5
17963.719	67.5	74.0	55.6	54.0		Horizontal	21.5

QUALIFICATION (30MHz-1GHz): 10 meters measurement on the Open Area Test Site.
Frequency list has been created with semi-anechoic chamber pre-scan results.
Measurements are performed using a QUASI-PEAK detection.

Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth Tilt (°)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
No significant frequency observed										

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

Results in the frequency band [1-18] GHz: Worst case presented

QUALIFICATION (1GHz- 18GHz): The frequency list is created from the results obtained during the pre-characterization in anechoic chamber.
Measurements are performed using a PEAK and AVERAGE detection.

Worst case presented Cmin

Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth (Degrees)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
5326.031	66.68	Pk	V	0	150	-13.6	53.1	74.0	**-20.9**	Cmin
5326.031	67.17	Pk	H	0	150	-13.6	53.6	74.0	**-20.4**	Cmin
5326.031	53.65	AV	V	0	150	-13.6	40.1	54.0	**-13.9**	Cmin
5326.031	53.70	AV	H	0	150	-13.6	40.1	54.0	**-13.9**	Cmin
14140.688	64.67	Pk	H	90	150	-2.4	62.3	74.0	**-11.7**	Cmin
14140.688	65.21	Pk	V	90	150	-2.4	62.8	74.0	**-11.2**	Cmin
16479.562	53.50	Pk	H	150	150	10.3	63.8	74.0	**-10.2**	Cmin
16479.562	53.67	Pk	V	150	150	10.3	64.0	74.0	**-10.0**	Cmin
17991.562	45.15	Pk	H	120	150	21.8	66.9	74.0	**-7.1**	Cmin
17991.562	45.43	Pk	V	120	150	21.8	67.2	74.0	**-6.8**	Cmin
14140.688	51.38	AV	V	90	150	-2.4	49.0	54.0	**-5.0**	Cmin
14140.688	51.41	AV	H	90	150	-2.4	49.0	54.0	**-5.0**	Cmin
16479.562	40.36	AV	V	150	150	10.3	50.7	54.0	**-3.3**	Cmin
16479.562	40.38	AV	H	150	150	10.3	50.7	54.0	**-3.3**	Cmin
17991.562	30.54	AV	V	120	150	21.8	52.3	54.0	**-1.7**	Cmin
17991.562	30.57	AV	H	120	150	21.8	52.4	54.0	**-1.6**	Cmin

Worst case presented Cmid

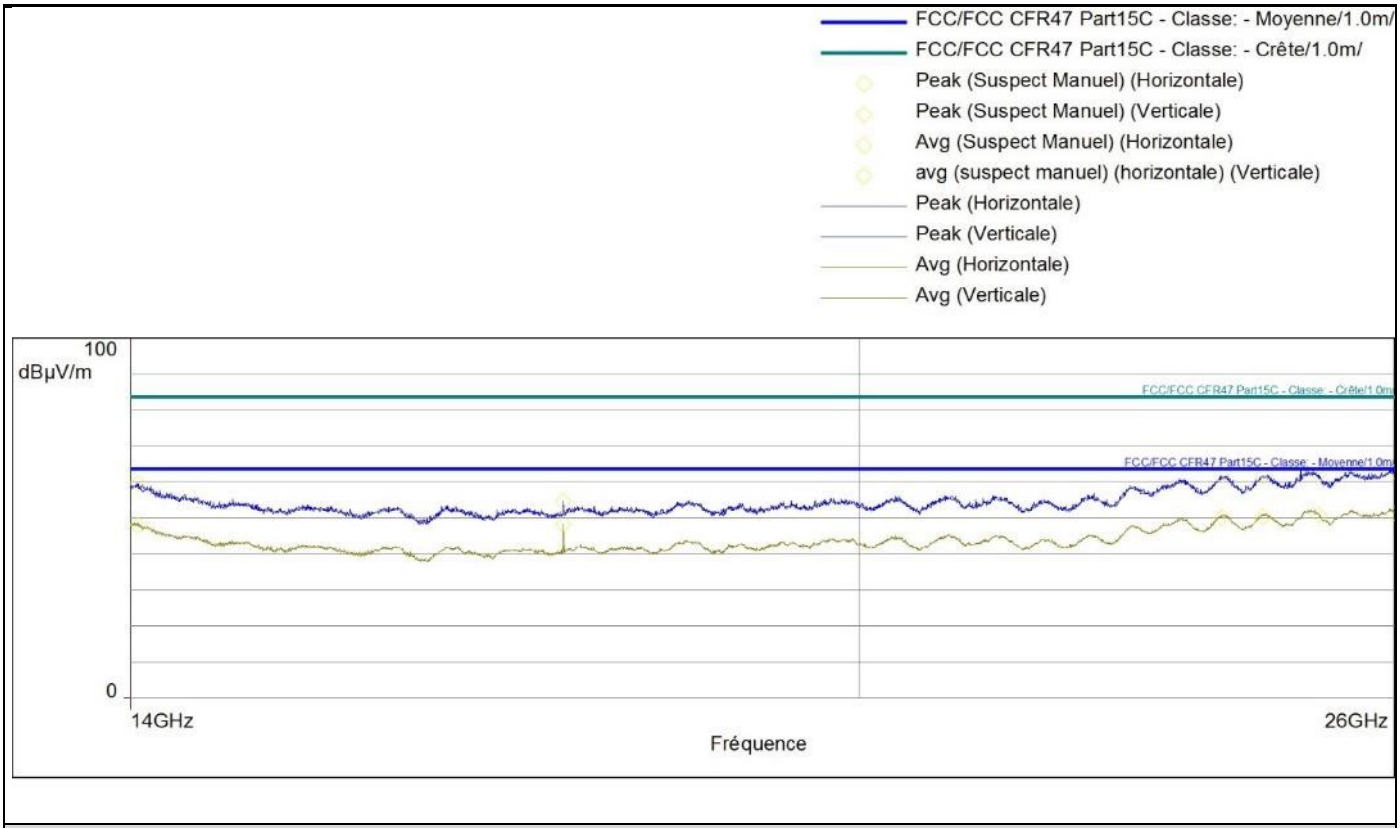
Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth Tilt (°)	Transducer Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
3599.834	18.47	Pk	H	0	39.1	57.6	74	**-16.4**	Cmid
3599.834	6.02	AV	H	0	39.1	45.1	54	**-8.9**	Cmid
3599.834	18.17	Pk	V	0	39.1	57.3	74	**-16.7**	Cmid
3599.834	6.02	AV	V	0	39.1	45.1	54	**-8.9**	Cmid
14284.969	63.64	Pk	H	60	-1.3	62.3	74	**-11.7**	Cmid
14284.969	50.77	AV	H	60	-1.3	49.5	54	**-4.5**	Cmid
14284.969	64.29	Pk	V	60	-1.3	63	74	**-11**	Cmid
14284.969	50.73	AV	V	60	-1.3	49.4	54	**-4.6**	Cmid
16549.594	54.04	Pk	H	0	10.5	64.5	74	**-9.5**	Cmid
16549.594	40.3	AV	H	0	10.5	50.8	54	**-3.2**	Cmid
16549.594	53.87	Pk	V	0	10.5	64.4	74	**-9.6**	Cmid
16549.594	40.3	AV	V	0	10.5	50.8	54	**-3.2**	Cmid
17973	44.79	Pk	H	90	21.6	66.4	74	**-7.6**	Cmid
17973	30.52	AV	H	90	21.6	52.1	54	**-1.9**	Cmid
17973	45.58	Pk	V	90	21.6	67.2	74	**-6.8**	Cmid
17973	30.51	AV	V	90	21.6	52.1	54	**-1.9**	Cmid

Worst case presented Cmax

Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth Tilt (°)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
14152.500	65.83	Pk	H	90	150	-2.3	63.5	74.0	**-10.5**	Cmax
14152.500	52.02	Av	H	90	150	-2.3	49.7	54.0	**-4.3**	Cmax
14152.500	65.61	Pk	V	90	150	-2.3	63.3	74.0	**-10.7**	Cmax
14152.500	51.61	Av	V	90	150	-2.3	49.3	54.0	**-4.7**	Cmax
16572.375	54.02	Pk	H	30	150	10.5	64.5	74.0	**-9.5**	Cmax
16572.375	40.48	AV	H	30	150	10.5	51.0	54.0	**-3.0**	Cmax
16572.375	53.74	Pk	V	30	150	10.5	64.2	74.0	**-9.8**	Cmax
16572.375	40.22	AV	V	30	150	10.5	50.7	54.0	**-3.3**	Cmax
17963.719	45.30	Pk	H	0	150	21.5	66.8	74.0	**-7.2**	Cmax
17963.719	30.08	AV	H	0	150	21.5	51.6	54.0	**-2.4**	Cmax
17963.719	45.16	Pk	V	0	150	21.5	66.7	74.0	**-7.3**	Cmax
17963.719	30.23	AV	V	0	150	21.5	25.3	54.0	**-2.3**	Cmax

Results in the frequency band [18-26] GHz: Worst case presented

RADIATED EMISSIONS			
Graph name:	Emr#12	**Test configuration:**	
Limit:	FCC CFR47 Part15C	(H+V) - CMax - TX mode - Angle2 = (0°-150°) step 30°	
Class:			
Frequency range: [14GHz - 26GHz]			
Antenna polarization:		**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

QUALIFICATION (18GHz- 25GHz): The frequency list is created from the results obtained during the pre-characterization in anechoic chamber.
Measurements are performed using a PEAK and AVERAGE detection.

No significant frequency observed

10.7. CONCLUSION

Unwanted Emission in restricted frequency bands measurement performed on the sample of the product **Schneider Electric PD100**, SN: **MP2219400162399**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 2 limits.

11. 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**
Measurement of conducted disturbances in voltage on the power port	3.29dB	3.4 dB
Measurement of conducted disturbances in voltage on the telecommunication port.	3.26 dB	5dB
Measurement of discontinuous conducted disturbances in voltage	3.33 dB	3.4 dB
Measurement of conducted disturbances in current	2.67 dB	2.9dB
Spurious emission, radiated (Semi anechoic chamber & open test site)	*5.60 dB*	*6 dB*
Spurious emission, radiated (Full anechoic chamber above 1GHz)	*±3.8 dB*	*±6 dB*
Occupied Channel Bandwidth	*±2.8 %*	*±5 %*
RF power, conducted	*±1.2 dB*	*±1.5 dB*
Power Spectral Density, Conducted	*±1.7 dB*	*±3 dB*
Spurious emission, conducted	*±2.3 dB*	*±3 dB*
Temperature	*±0.75 °C*	*±3 °C*
Supply Voltages	*±1.7 %*	*±3 %*

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par la norme, 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 standard. The conformity of the sample is directly established by the applicable limits values.*