



LCIE



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TEST REPORT

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Version : 02

Subject

Electromagnetic compatibility (EMC) :
Publication CFR 47 PART 15 of 2013 & ICES-003 of 2012

Issued to

WITHING
Karaportti 3
ESPOO fi-02610
FINLAND

Apparatus under test

↳ Product	Bedside device
↳ Trade mark	WITHING
↳ Manufacturer	WITHING
↳ Model under test	WSD01
↳ Serial number	00:24:E4:22:A2:DE

Test date

October 21, 2016

Test location

LCIE, Fontenay Aux Roses

Test performed by

Fostoki Medjoudj

Composition of document

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Initial issue

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Written by :
Fostoki Medjoudj
Tests operator

Approved by :



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LCIE

Laboratoire Central des Industries Electriques
Une société de Bureau Veritas

33, Av du Général Leclerc
92266 Fontenay Aux Roses
FRANCE

Tél : +33 1 40 95 60 60
contact@lcie.fr
www.lcie.fr



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SUMMARY

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1. Test Program

References

- ✓ CFR 47 Part 15 Subpart B - Radio frequency devices - Unintentional radiators October 2013
- ✓ ICES -003 of 2012
- ✓ ANSI 63.4 of 2014

Emission tests:

Test Description	Main characteristics	Test result - Comments
Measurement of radiated electric field in shielded room 15.109 (a) & (c)	☐ Class A ☒ Class B	☒ PASS ☐ FAIL ☐ NA ☐ NP (Limited Program)
Measurement of radiated electric field in open space	☐ Class A ☐ Class B	☐ PASS ☐ FAIL ☒ NA ☐ NP (Limited Program)
Measurement of conducted disturbance on the AC main power port 15.107 (a) (c) (d)	☐ Class A ☒ Class B	☒ PASS ☐ FAIL ☐ NA ☐ NP (Limited Program)
Measurement of harmonic currents	-	☐ PASS ☐ FAIL ☒ NA ☐ NP (Limited Program)

The product is compliant according to CFR 47 Part 15 Subpart B - Radio frequency devices - Unintentional radiators October 2013 & ICES -003 of 2012 standards.

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 Description (declared by provider)

2.1. EQUIPMENT OF THE SAME FAMILY

-Tests are performed on the most complete product "WSD01 00:24:E4:22:A2:DE". See Table below for difference between products.

-	-	-	-
-	-	-	-

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT): WSD01

Serial Number: 00:24:E4:22:A2:DE



Equipment Under Test



Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
PowersupplyAC	230V~50Hz	-	☐	☐	☒	-

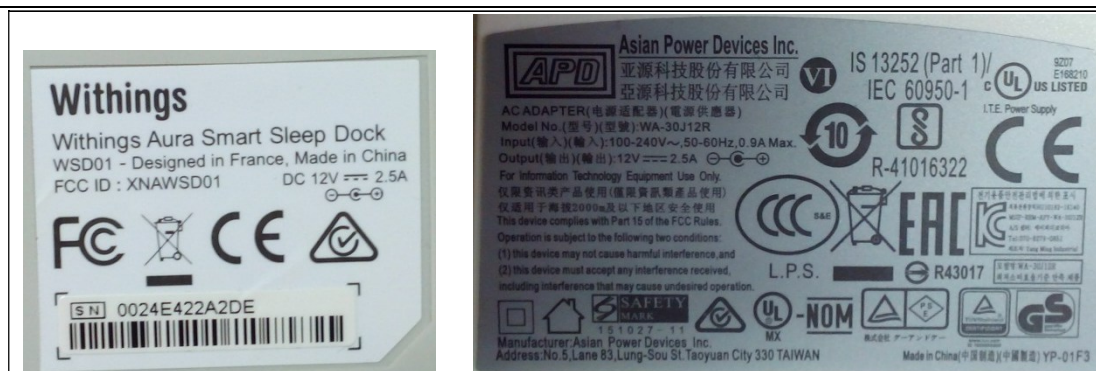
Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Power Supply	WA-30J12RUGKNBFAB	-	-
Smartphone	-	-	-
Netgear	-	-	-

Equipment information: (Declared by provider)

Apparatus Description	Bedside device			
Type of power source:	☒ AC power supply	☐ DC power supply	☐ Battery (Select Type)	
Test source voltage:	Vmin-Vmax:	Vmin-Vmax: 120V~ 60Hz	☐ Vdc	
Operating Modes	Mode 1	Every function works : Light, sound, Bluetooth and Wi-Fi		
	Mode 2	-		
	Mode 3	-		
	Mode 4	-		
Performance level defined by the manufacturer (only for immunity tests)				

2.3. EQUIPMENT LABELLING



2.4. EQUIPMENT MODIFICATIONS

☒ None ☐ Modification:



3. Measurement of radiated emissions

3.1. ENVIRONMENTAL CONDITIONS

Test performed by : **Fostoki Medjoudj**
Date of test : October 21, 2016
Ambient temperature : 20°C
Relative humidity : 40%

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:

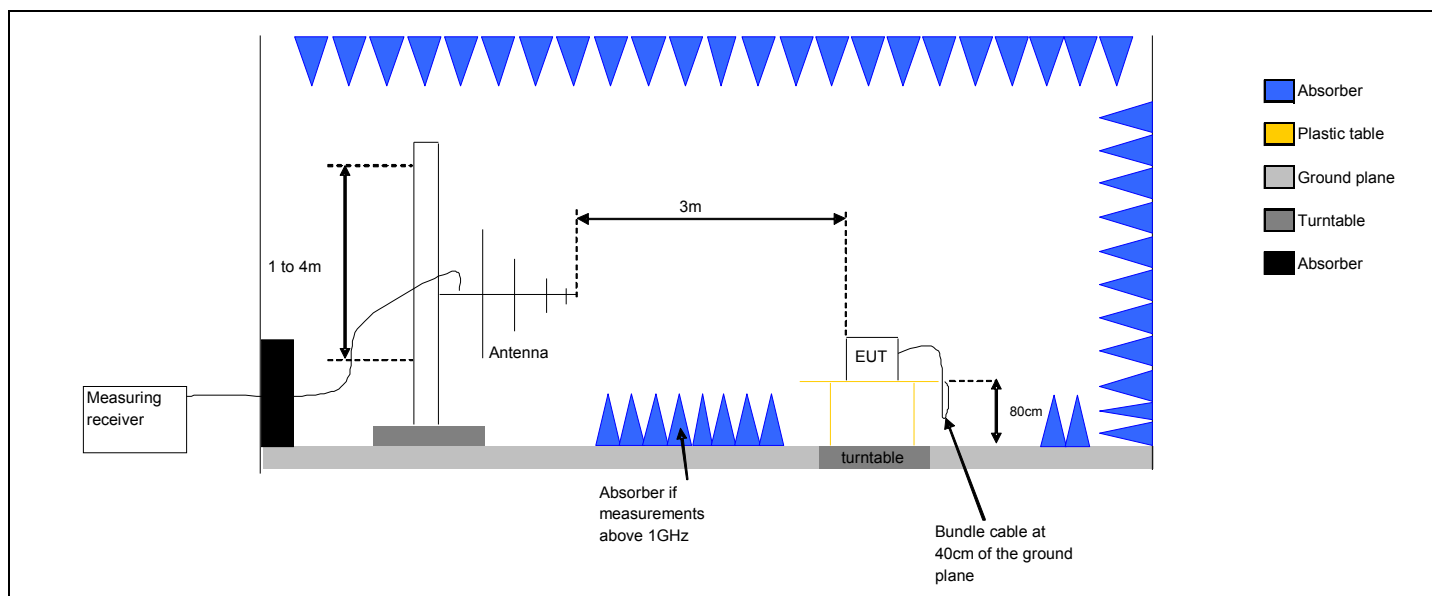
- ☐ Yes
☒ No

-Product installation:

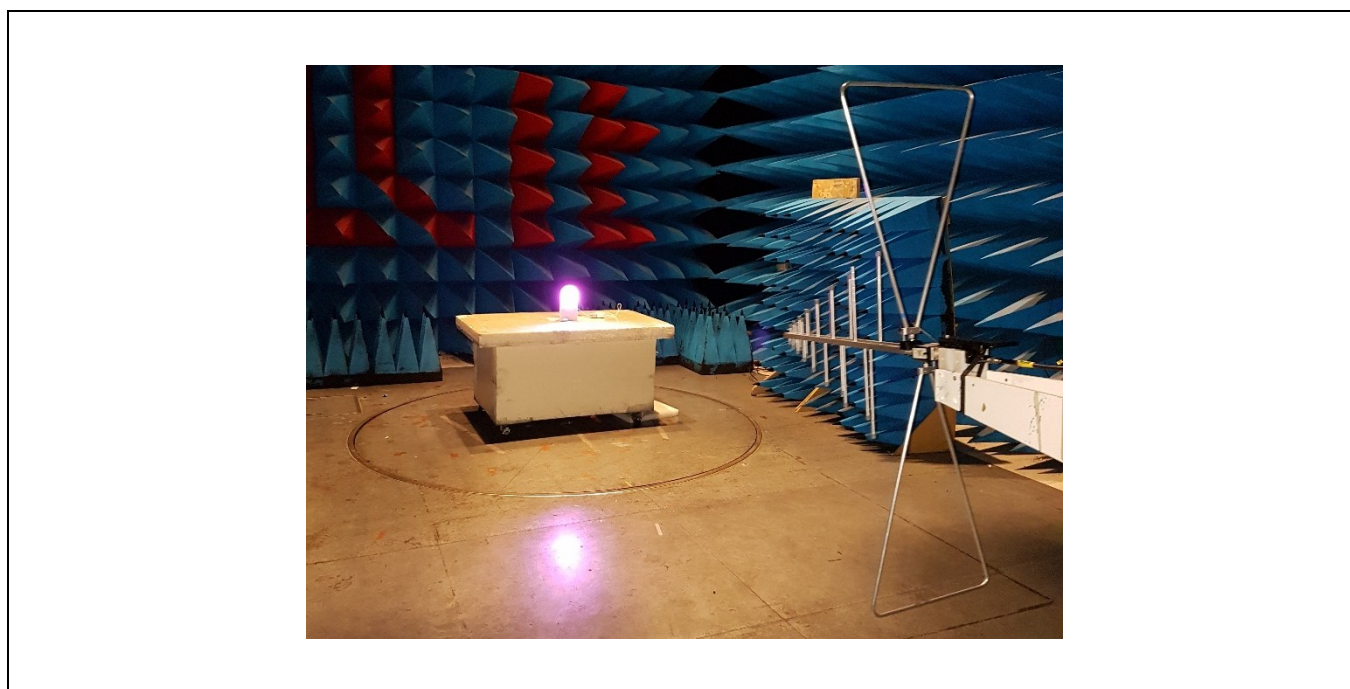
- ☒ The EUT was tested as a tabletop equipment and was placed on a non-conducting platform the top of which is 0.8m above the metal ground plane.
☐ The EUT is at 10cm height from reference plane

Operating mode:

- ☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ...



Test Set up for radiated measurement in semi anechoic chamber



Measurement of radiated disturbances.



3.3. LIMIT

☐ at 3m Class A

Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) peak	dB (µV/m) average
30-88MHz	49.5	-	-
88 – 216MHz	53.9	-	-
216 – 960 MHz	56.9	-	-
960 – 1000 MHz	60	-	-
1000-6000MHz	-	80	60

☒ at 3m Class B

Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) peak	dB (µV/m) average
30-88MHz	40	-	-
88 – 216MHz	43.5	-	-
216 – 960 MHz	46	-	-
960 – 1000 MHz	53.9	-	-
1000-6000MHz	-	73.9	53.9

☐ at 10m Class A

Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) peak	dB (µV/m) average
30-88MHz	39.5	-	-
88 – 216MHz	43.9	-	-
216 – 960 MHz	46.9	-	-
960 – 1000 MHz	50	-	-
1000-6000MHz	-	70	50

☐ at 10m Class B

Frequency Bands/frequencies	dB (µV/m) quasi-peak	dB (µV/m) peak	dB (µV/m) average
30-88MHz	30	-	-
88 – 216MHz	33.5	-	-
216 – 960 MHz	36	-	-
960 – 1000 MHz	43.9	-	-
1000-6000MHz	-	63.9	43.9

3.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/21	2016/12
Bilog antenna	SCHWARZBECK	VULB9160	C2040050	2016/03	2017/03
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440A A/2.9MD/1000	A5329428	2016/06	2017/06
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528A A/3.5MC/4000	A5329431	2016/03	2017/03
RF cable	RADIALL; CDI	30990-7M	A5329711	2016/06	2017/06
Horn antenna	A-INFOMW	LB-10180-N	C2042056	2016/07	2017/07
Pre amplifier	BONN ELEKTRONIK	BLNA 3018-8F30S	A7080053	2016/04	2017/04

3.5. RESULTS

Diagram N°1
Horizontal Polarization (30MHz-6GHz)

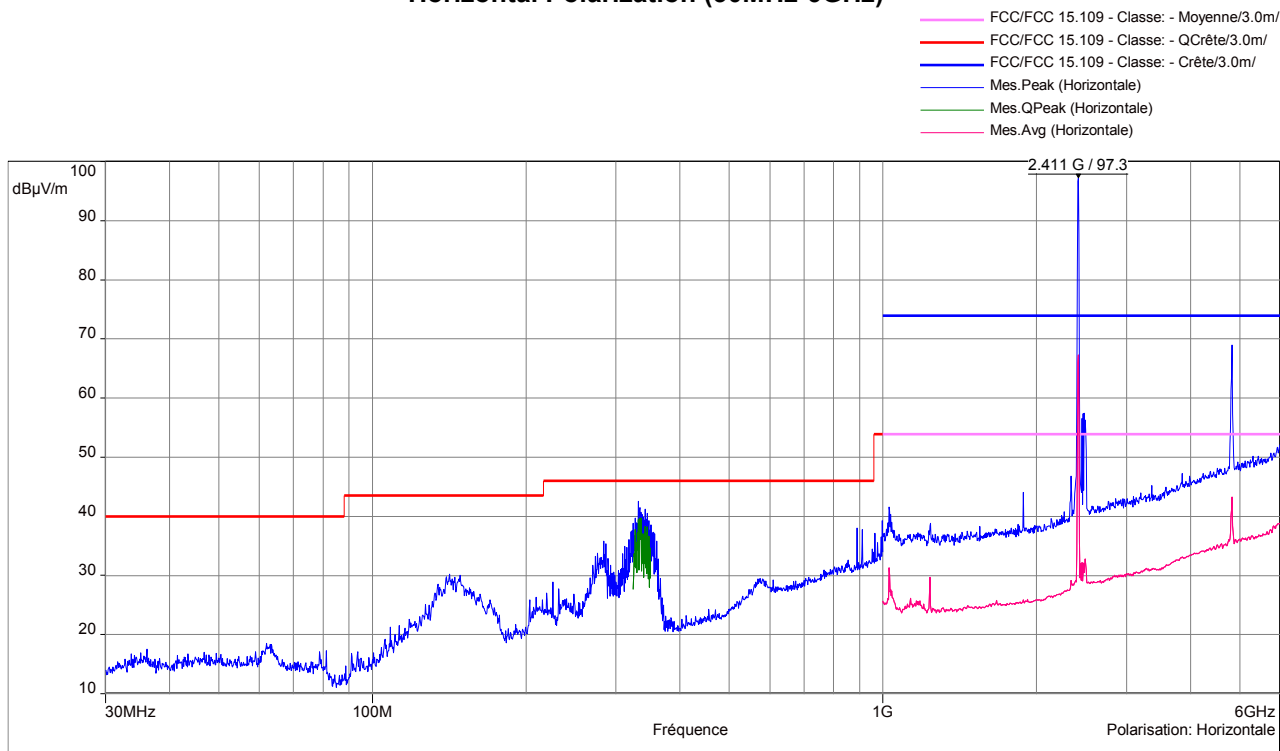
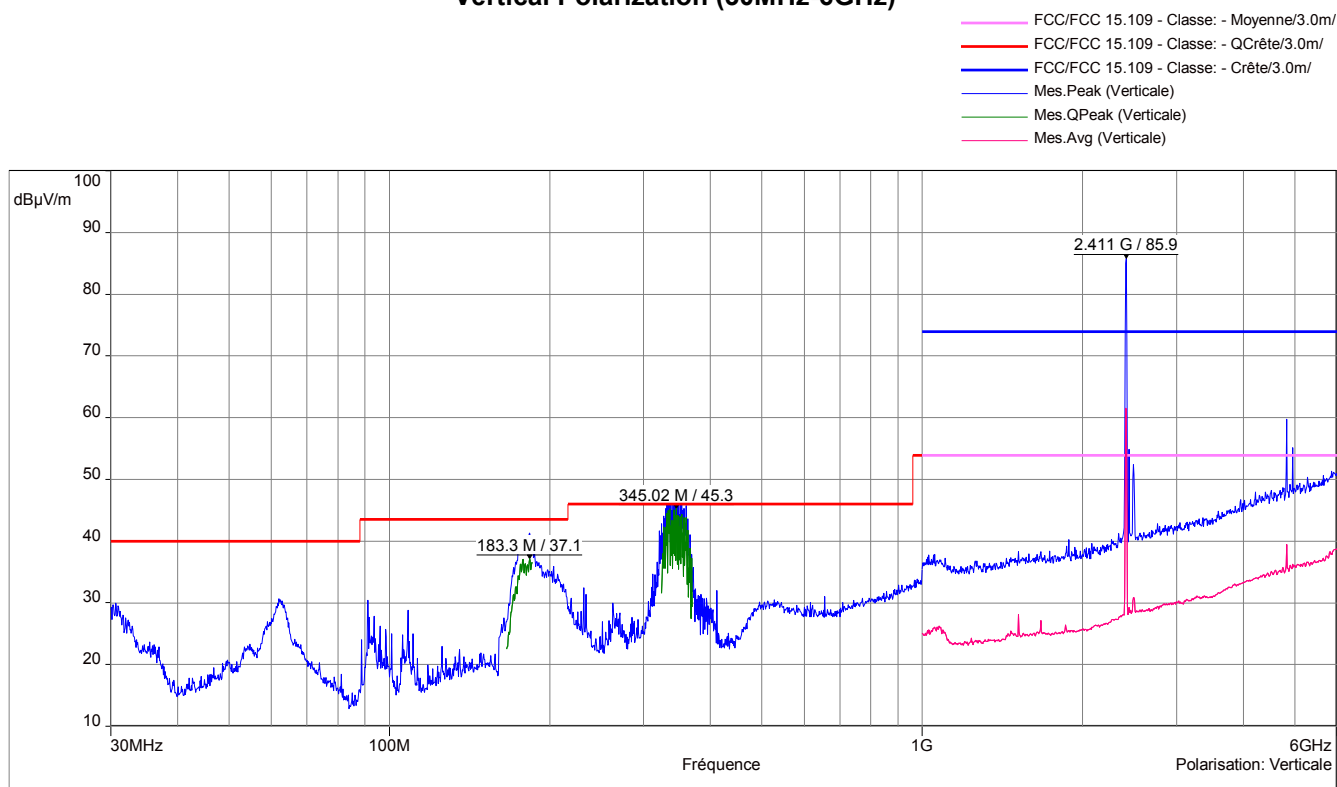


Diagram N°2
Vertical Polarization (30MHz-6GHz)





3.6. CONCLUSION

Measures of Radiated Emission, performed on the sample of the product WSD01, SN: 00:24:E4:22:A2:DE, 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 : **Christophe JABY**
Date of test : October 14, 2016
Ambient temperature : 20°C
Relative humidity : 43%

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:

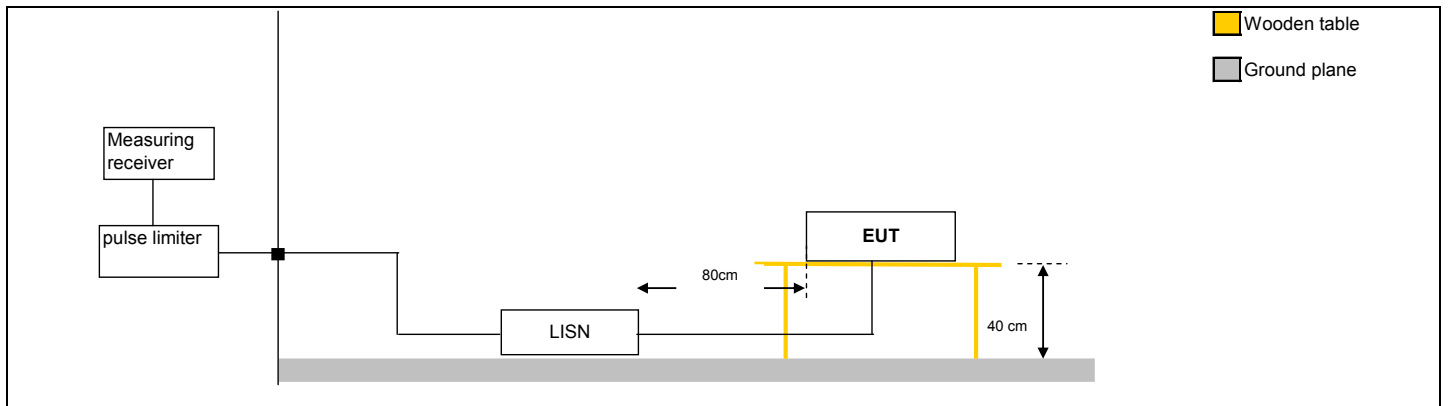
- ☐ Yes
☒ No

-Product installation:

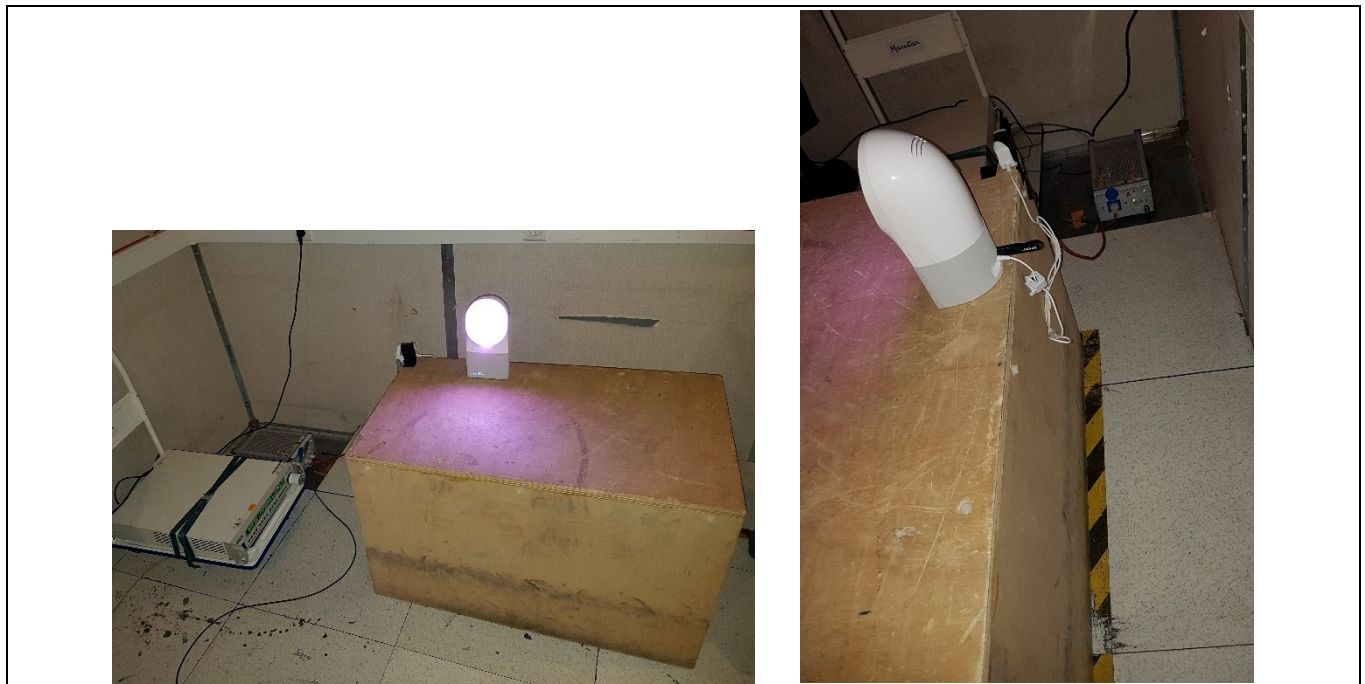
- ☒ The EUT is installed on a wooden table 80 cm above the reference plane, at 80cm of the LISN and at 40cm of the vertical conductive wall
☐ The EUT is installed on a wooden table 40 cm above the reference plane, at 80cm of the LISN.
☐ The EUT is installed 10 cm above the reference plane, at 80cm of the LISN..

Operating mode:

- ☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ...



Test set up of conducted emission on power supply



Test set up of conducted emission on power supply



4.3. LIMIT

☐ Power supply Class A

Frequency Bands/frequencies	dB (μV/m) quasi-peak	dB (μV/m) average
0.15-0.5MHz	79	66
0.5-30 MHz	73	60

☒ Power supply Class B

Frequency Bands/frequencies	dB (μV/m) quasi-peak	dB (μV/m) average
0.15-0.5MHz	66-56	56-46
0.5-5 MHz	56	46
5-30 MHz	60	50

4.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/12	2016/12
Cable	CABLES & CONNECTIQUES	-	A5329411	2016/06	2017/06
Cable	CABLES & CONNECTIQUES	-	A5329412	2016/02	2017/02
V LISN	ROHDE & SCHWARZ	ENV216	C2320163	2016/02	2017/02
Supplementary information:					

4.5. RESULTS

Diagram N°1

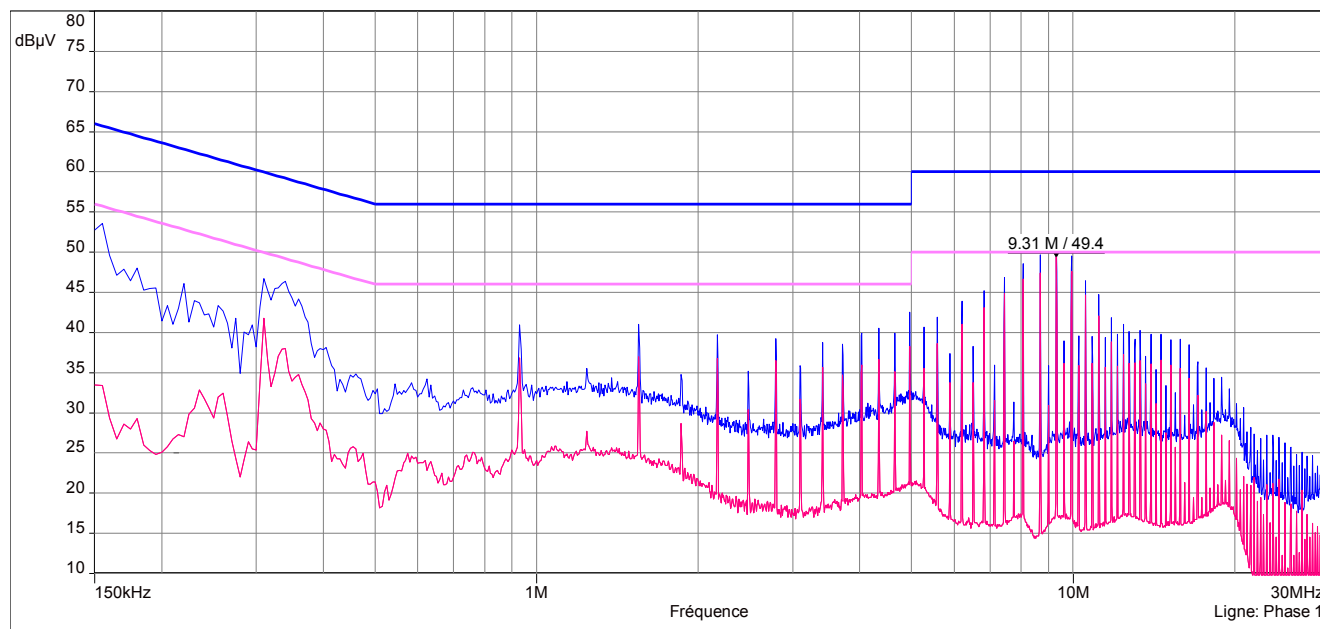
Description Sous-bande 1

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

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: 239549744, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Préselecteur: (Phase 1)

Ligne: Phase 1

FCC/FCC 15.107 - Classe:B - Moyenne/
FCC/FCC 15.107 - Classe:B - QCrête/
Mes.Pic (Phase 1)
Mes.Avg (Phase 1)



Phase

Diagram N°2

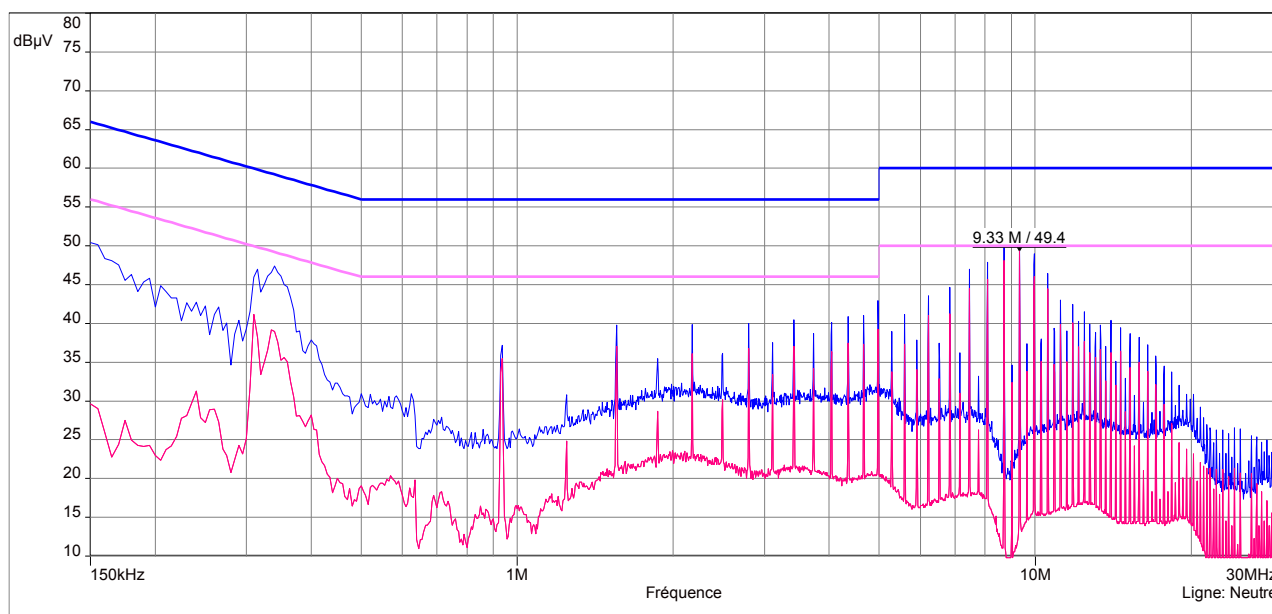
Description Sous-bande 2

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

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: 239549744, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Préselecteur: (Neutre)

Ligne: Neutre

FCC/FCC 15.107 - Classe:B - Moyenne/
FCC/FCC 15.107 - Classe:B - QCrête/
Mes.Pic (Neutre)
Mes.Avg (Neutre)



Neutral



4.6. CONCLUSION

Measures of Conducted Emission, performed on the sample of the product WSD01, SN: 00:24:E4:22:A2:DE, in configuration and description presented in this test report, show levels conform to the FCC part 15 & ICES -003 limits.



5. Uncertainties Chart

Kind of measurement	Wide uncertainty laboratory (k=2) $\pm x$ (dB)	CISPR uncertainty limit $\pm y$ (dB)
Measurement of conducted disturbances in voltage on the AC power port (9 kHz – 150 kHz)	2,67	3.8
Measurement of conducted disturbances in voltage on the AC power port (150 kHz – 30 MHz)	2,67	3.4
Measurement of conducted disturbances in voltage on the telecommunication port. (AAN)	3,67	5.0
Measurement of conducted disturbances in current (current clamp)	2,73	2.9
Measurement of disturbance power	2,67	4.5
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC V01	4,48	/
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC C01	4,48	/
Measurement of radiated electric field from 30 to 1000MHz in horizontal position on the OATS (Ecuelles)	4,88	6.3
Measurement of radiated electric field from 1 to 18GHz on the Ecuelles site	5.16	/
Measurement of radiated electric field from 30 to 1000MHz in vertical position on the OATS (Ecuelles)	4,99	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC C01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC C01	5,16	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC V01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC V01	5,15	6.3
Measurement of radiated electric field from 1 to 6 GHz C01	5,1	5.2
Measurement of radiated electric field from 1 to 6 GHz V01	4,85	5.2
Measurement of radiated magnetic field from 10kHz to 30MHz on the OATS (Ecuelles)	4,48	/

End of test report