

FCC Test Firm Designation Number: FR0014  
SED Wireless Device Testing Laboratory CAB Number: FR0004

|                                           |                                                                                                                            |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Matériel testé :<br>Equipment under test: | <b>IDENTEC SOLUTIONS /<br/>iMARK EC (IDS1014), iMARK IC (IDS1015)</b><br>(Trademark / Marketing name or product reference) |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|

Client / Demandeur:  
Customer / Applicant : **IDENTEC SOLUTIONS AG**  
Millennium Park 2  
A-6890 Lustenau – Austria

Rapport délivré à :  
Issued to: **IDENTEC SOLUTIONS AG**  
Millennium Park 2  
A-6890 Lustenau – Austria

Référence de la proposition : 10123  
Proposal number:

Numéro d'affaire : DV-10212  
Work number :

Date de l'essai : Du 4 au 12 mars 2024  
Date of test: March 4<sup>th</sup> to 12<sup>th</sup>, 2024

Objectif des essais : EMC qualification according to following standards:  
Test purpose: - CFR 47, FCC Part 15, Subpart C  
- Industry Canada, RSS-Gen Issue 5 / RSS-210 Issue 10  
Low power transmitter below 1705KHz  
Measurement standards:  
ANSI C63.10 (2013)

Lieu du test: SMEE, 385 rue René Rambaud  
Test location: 38500 VOIRON - France

Test réalisé par : Chemseddine KERMICHE  
Test realized by:

Conclusion : L'équipement satisfait aux prescriptions et essais des normes citées en référence.  
Conclusion: The appliance complies with requirements and tests of above mentioned standards.

| Ed. | Date                              | Modifications / Pages | Written by: Visa                       | Approved by: Visa                    |
|-----|-----------------------------------|-----------------------|----------------------------------------|--------------------------------------|
| 1   | September 10 <sup>th</sup> , 2024 | Initial Edition       | Chemseddine KERMICHE<br>Test operator. | Laurent CHAPUS<br>Technical Manager. |

La copie de ce document n'est permise que sous sa forme intégrale. Ce document est le résultat d'essais effectués sur un échantillon. Il ne préjuge pas de la conformité de l'ensemble des produits fabriqués à l'objet essayé. Pour la déclaration de conformité de l'équipement, il n'est pas tenu compte de l'incertitude de mesure. Cette nouvelle édition de ce rapport annule et remplace l'édition précédente. Les modifications apportées à une nouvelle édition de ce rapport sont signalées par un trait vertical à gauche de la page. L'utilisation de la marque d'accréditation COFRAC est interdite.  
This document shall not be reproduced, except in full. This document contains results related only to the item tested. It does not imply the conformity of the whole production to the item tested. For the declaration of conformity of the equipment, the measurement uncertainty is not taken into account. This new edition of this report cancels and replaces the previous edition. Changes made to a new edition of this report are indicated by a vertical line to the left of the page. The use of the COFRAC accreditation mark is prohibited.



Accréditation  
N° 1-6356  
Portée disponible sur :  
Scope available on :  
[www.cofrac.fr](http://www.cofrac.fr)

## COORDONNEES

SMEE  
385 rue René Rambaud – ZA Le Parvis 2  
38500 VOIRON – France

TEL : 04 76 65 76 50  
FAX : 04 76 66 18 30

SAS au capital de 50 000 € / RC Grenoble B534 796 453 / SIRET 534 796 453 00023 / code APE 7490B / n° TVA : FR 59 534 796 453

## Contents

|                                                          |    |
|----------------------------------------------------------|----|
| 1. NORMATIVES REFERENCES .....                           | 3  |
| 2. TEST SYNTHESIS.....                                   | 4  |
| 3. EQUIPMENT UNDER TEST (EUT) .....                      | 5  |
| 4. TEST CONDITIONS.....                                  | 5  |
| 5. MODIFICATIONS OF THE EUT .....                        | 5  |
| 6. SPECIAL ACCESSORIES .....                             | 6  |
| 7. MEASUREMENT UNCERTAINTY .....                         | 6  |
| 8. FIELD STRENGTH CALCULATION.....                       | 6  |
| 9. TEST SETUP DIAGRAM.....                               | 7  |
| 10. CONDUCTED EMISSION MEASUREMENT (150 KHZ-30MHZ) ..... | 9  |
| 11. RADIATED EMISSION MEASUREMENT (9KHZ-10GHZ).....      | 13 |
| 12. 99% AND -20DB OCCUPIED BANDWIDTH .....               | 21 |

## 1. Normatives References

| FCC qualification according to: |         |                                                                                                          |
|---------------------------------|---------|----------------------------------------------------------------------------------------------------------|
| Standards                       | Applied | Title                                                                                                    |
| ANSI C63.10 (2013)              | X       | American National Standard for Testing Unlicensed Wireless Devices                                       |
| CFR47, Part 15                  | X       | Telecommunication – Federal Communication Commission – Radio frequency devices, Sections 15.207 / 15.209 |

| ISED Canada qualification according to:          |         |                                                                               |
|--------------------------------------------------|---------|-------------------------------------------------------------------------------|
| Standards                                        | Applied | Title                                                                         |
| RSS-Gen (Issue 5/2018, amendments 2019 and 2021) | X       | General Requirements and Information for the Certification of Radio Apparatus |
| RSS-210 (Issue10/2019)                           | X       | Licence-exempt Radio Apparatus: Category I Equipment,                         |

Deviation from standards: None.

## 2. Test synthesis

| TEST                                                                  | Paragraph number<br>FCC Part 15<br>ISED RSS-210       | Spec.<br>FCC Part 15<br>ISED RSS-210                                                                                                                                                                                                                                                                                | RESULTS<br>(comments) |
|-----------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Conducted emissions test                                              | 15.207 (a)<br>RSS-Gen: Issue 5, §8.8                  | 15.207 (a)<br>Table 4, §8.8                                                                                                                                                                                                                                                                                         | PASS                  |
| Unwanted emissions outside the specified frequency band and harmonics | 15.209<br>RSS-210: Issue 10<br>RSS-Gen: Issue 5, §8.9 | Measure at 300m<br>9-490kHz: 2400µV/m/F(kHz)<br>6.370µA/m/F (kHz)<br>Measure at 30m<br>0.490-1.705: 24000µV/m/F(kHz)<br>63.70µA/m/F (kHz)<br>1.705-30MHz: 30µV/m<br>0.08µA/m<br>Measure at 3m<br>30MHz-88MHz : 40 dBµV/m<br>88MHz-216MHz : 43.5 dBµV/m<br>216MHz-960MHz : 46.0 dBµV/m<br>Above 960MHz : 54.0 dBµV/m | PASS                  |
| Occupied Bandwidth                                                    | FCC Part 15.215 c)<br>RSS-Gen: Issue 5, §6.7          | -20dB and 99% BW                                                                                                                                                                                                                                                                                                    | PASS                  |
| Antenna requirement                                                   | FCC 15.203<br>RSS-GEN § 6.8                           | Note: extern coil antenna used non-standard contactor                                                                                                                                                                                                                                                               | PASS                  |

- General conclusion:**

Measures and tests performed on the sample of the product **IDENTEC SOLUTIONS / iMark EC&IC**, in configuration and description presented in this test report, show compliance with standards FCC CFR 47, PART 15, Subpart C and Industry Canada RSS-Gen & RSS-210.

## 3. Equipment Under Test (EUT)

Nom /  
Identification

**IDENTEC SOLUTIONS /  
iMARK EC (IDS1014), iMARK IC (IDS1015)**  
(Trademark / Marketing name or product reference)

Sn:  
iMark EC 0.445.005.550  
iMark IC 0.445.004.525

FCC ID:  
IC:  
Model / HVIN:  
Product name / PMN:  
FVIN:

OO4-IDS1014  
IC: 3538A-IDS1014  
IDS1014 and IDS1015  
iMARK EC and iMARK IC  
IDS1014: V1.0-TagType18  
IDS1015: V1.0-TagType21

Modular approval:

No

Alimentation /  
Power supply

24V DC from power supply adapter (Input 100-240V)  
Model: ESC30-24 (for iMark-EC) and TRG30R240V (for iMark-IC).

Auxiliaires /  
Auxiliaries

- Laptop PC Hp pavillon g6  
- IDENTEC reader: i-POINT Si, model : IDS1001  
- Power supply adapter (Input 100-240V)  
Model: ESC30-24 (for iMark-EC) and TRG30R240V (for iMark-IC)

Entrées-Sorties /  
Input / Output

|                                                             | Câbles pour essai /<br>Cables for test | Blindé /<br>Shielded | Prévu pour >3m /<br>Intended for >3m |
|-------------------------------------------------------------|----------------------------------------|----------------------|--------------------------------------|
| DC input cable                                              | 1.5m                                   | No                   | Yes                                  |
| LF antenna connector (2 wires)<br>(Only for iMark EC model) | 1.5m to antenna coil                   | No                   | Yes                                  |

Mode de fonctionnement /  
Running mode

Equipment running modes are:  
The tested sample is able to be set in following modes:  
- Transmit a modulated carrier frequency on the LF channel (125kHz)  
- Transmit an unmodulated carrier frequency on the LF channel (125kHz)

Programme de test /  
Test program /

PC test program "Gen3 Tag Certification tool Version : 1.0.1.29513"

Informations supplémentaires /  
Additional informations

Declaration of the applicant:  
- Type of technology: LF Marker.  
- Emission bands: 125kHz.  
- Equipment intended for use as a fixed station.  
- Equipment designed for continuous operation.  
- Antenna type for iMark IC: Integral coil antenna  
- Antenna type for iMark EC: External coil (1.85mx0.8m, 2 turns)  
- Rated output power is set at 100% with 2 slots active (10 empty slots).

Dimensions de l'EST /  
Dimensions of EUT

100mm x 100mm x 40mm

## 4. Test conditions

Equipment under test: 24V DC from power supply adapter.  
Auxiliaries: 120V AC 60Hz.

## 5. Modifications of the EUT

None.

## 6. Special accessories

None required for compliance with emission limits.

## 7. Measurement Uncertainty

| Test Description                                    | Expanded uncertainty |
|-----------------------------------------------------|----------------------|
| Conducted emissions test (150k-30MHz, AC mains)     | ± 3.5dB              |
| Radiated emission test (9kHz-30MHz, electric field) | ± 4.0dB              |
| Radiated emission test (30-300MHz, OATS)            | ± 5.6dB              |
| Radiated emission test (300-1000MHz, OATS)          | ± 5.3dB              |
| Radiated emission test (1-40GHz, OATS / FAC)        | ± 5.6dB              |
| Conducted RF output power at antenna port           | ± 1.6dB              |
| Radiated RF output power (Peak, Power density)      | ± 5.6dB              |
| DTS Bandwidth, 99% OBW                              | ±4%                  |
| Temperature                                         | ± 1°C                |
| Time and duty cycle calculation                     | ±1%                  |
| AC and DC voltage                                   | ±1%                  |

Note: Expanded uncertainty at 95% confidence (k=2)

## 8. Field Strength Calculation

The field strength (level) is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follow:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength (Level)

RA = Receiver Amplitude (Meter Reading)

AF = Antenna Factor

CF = Cable Factor

AG = Amplifier Gain

Total factor = AF+CF-AG

Margin value = Emission level – Limit value

Example:

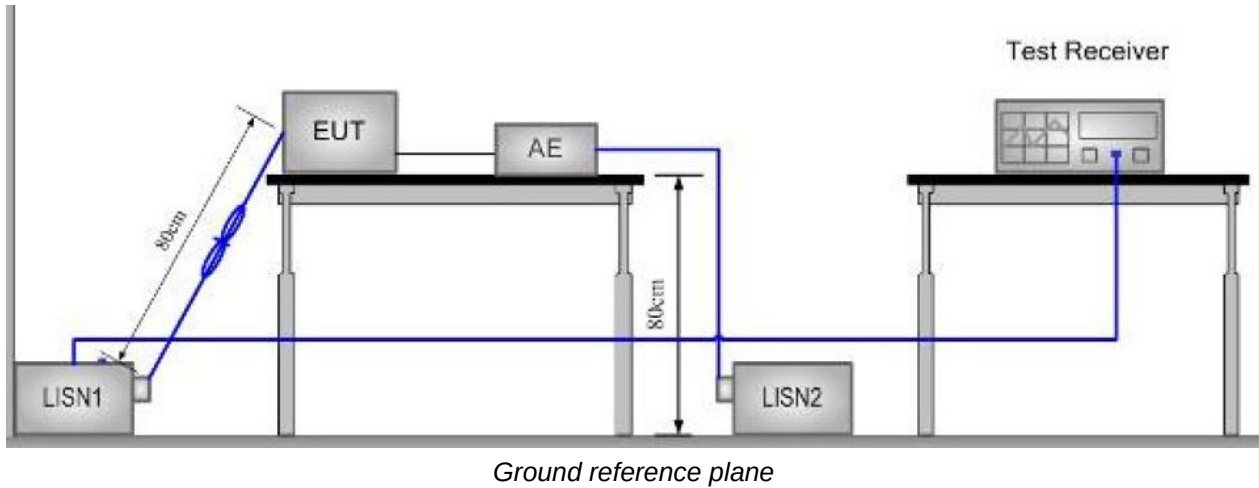
RA: 14.0dBμV / AF: 16.5 dBm<sup>-1</sup> / CF: 3.5dB / AG: 15dB

→ Total factor: 5dBm<sup>-1</sup>

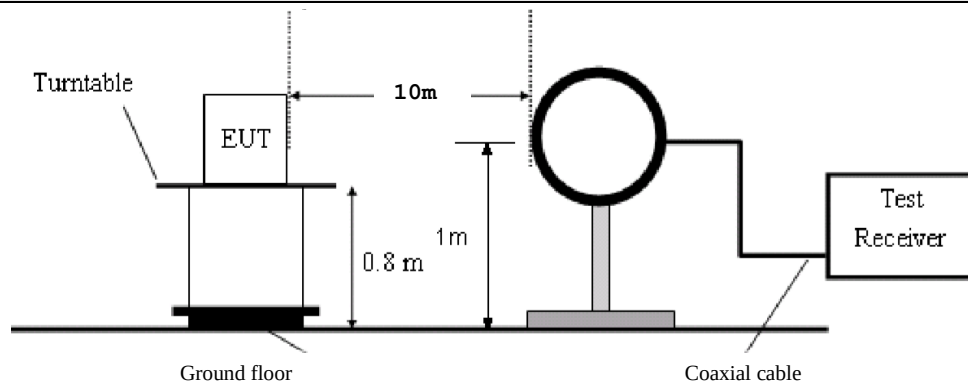
→ Field level: 19.0dBμV/m (-21.0dB for margin if limit is 40dBμV/m)

## 9. Test Setup Diagram

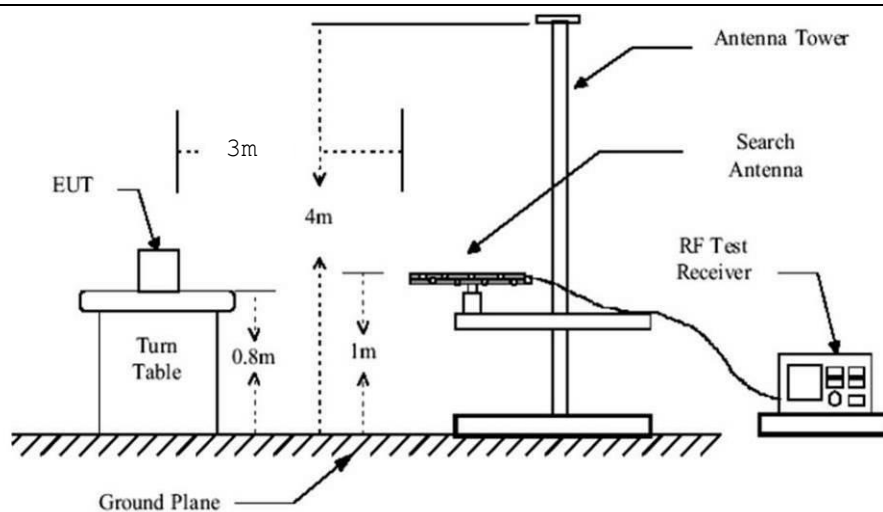
**Test Setup for conducted emission**



**Test Setup for radiated emission**

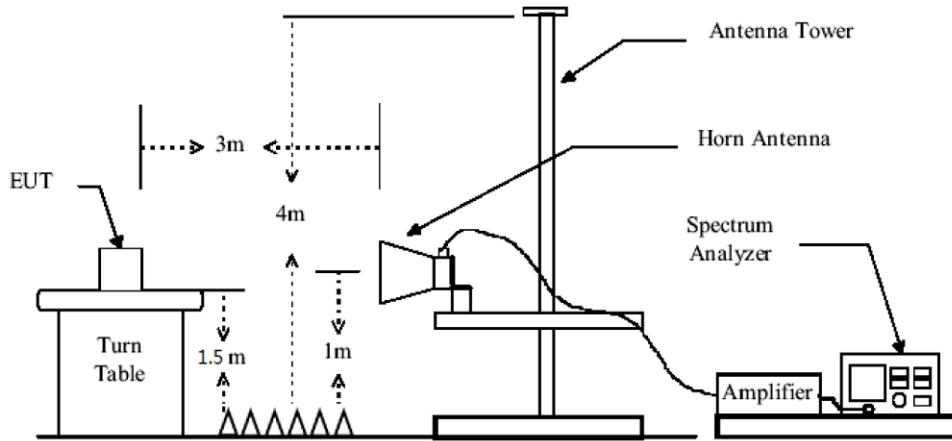


Test setup for 9k-30MHz (FS OATS)



Test setup for 30-1000MHz (SAC 3m)

## Test Setup for radiated emission



*Test setup for 1-25GHz (SAC 3m, tilt antenna mast used)*

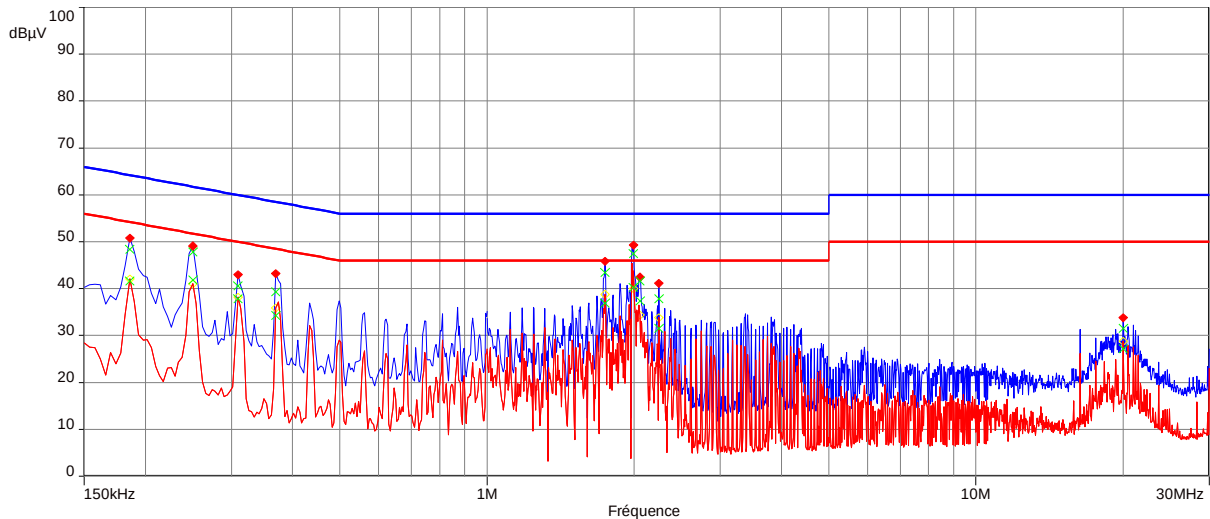


## 10. Conducted Emission Measurement (150 kHz-30MHz)

| TEST: Limits for conducted disturbance 150kHz – 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |                                      |         | Verdict                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------|---------|---------------------------|
| <u>Method:</u> The LISN is placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on lines were made at the output of the LISN. The EUT is 80cm above the ground reference plane and 40cm from the vertical ground plane. The AC power cable is 1m length. |               |                                      |         | Pass                      |
| Laboratory Parameters:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               | Required prior to the test           |         | During the test           |
| Ambient Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               | 17 - 27 °C                           |         | 21°C ± 2                  |
| Relative Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 25 - 65 %                            |         | 48% ± 5                   |
| Fully configured sample scanned over the following frequency range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               | Frequency range on each side of line |         | Measurement Point         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | 150kHz to 30MHz                      |         | AC input port (120V/60Hz) |
| Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                      |         |                           |
| Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Limit dB (µV) |                                      |         |                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Quasi-Peak    | Result                               | Average | Result                    |
| 0.15 – 0.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 66 \ 56       | PASS                                 | 56 \ 46 | PASS                      |
| 0.50 - 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 56            | PASS                                 | 46      | PASS                      |
| 5 – 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 60            | PASS                                 | 50      | PASS                      |
| Supplementary information:<br>Test location: SMEE<br>Test date: March 12 <sup>th</sup> , 2024. Tested by C. KERMICHE<br>Power supply voltage: 24V DC from power supply adapter 120V 60Hz.                                                                                                                                                                                                                                                                                                                                                                                 |               |                                      |         |                           |

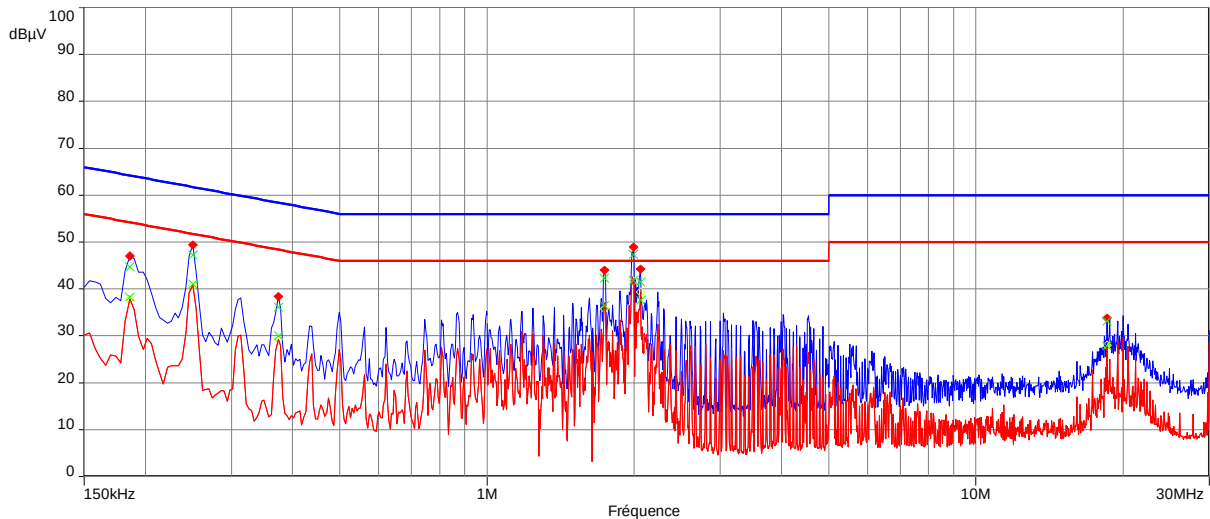
## IDS1014

### Graphical representation of Conducted Disturbance Measurement (Peak and Average detection) AC port, Line L1



Note : Same result for all transmit modes on all channels.

### Graphical representation of Conducted Disturbance Measurement (Peak and Average detection) AC port, Line Neutral



Note : Same result for all transmit modes on all channels.

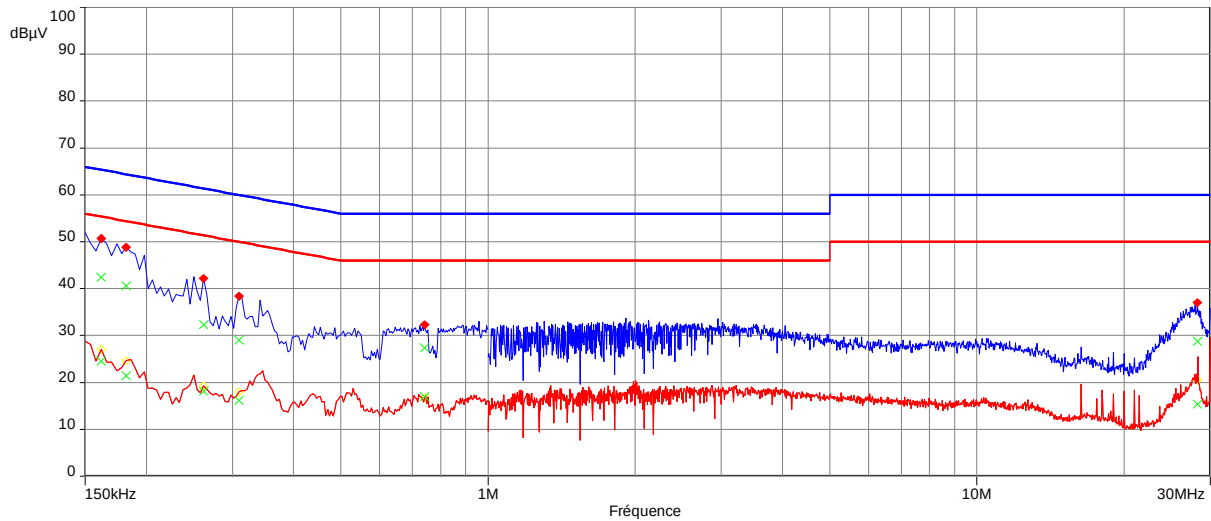
~~~~~: Peak

~~~~~: Average

| IDS1014                                                             |          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |         |          |           |      |
|---------------------------------------------------------------------|----------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|----------|-----------|------|
| Tabulated Results for Mains Terminal Disturbance Voltage on AC port |          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |         |          |           |      |
| FREQ                                                                | Meas. PK | Mes. QP | LIMIT QP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Margin QP | Mes. AV | LIMIT AV | Margin AV | Line |
| (MHz)                                                               | (dBμV)   | (dBμV)  | (dBμV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (dB)      | (dBμV)  | (dBμV)   | (dB)      |      |
| 0.186                                                               | 51.90    | 48.37   | 64.21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -15.84    | 41.67   | 54.21    | -12.54    | L1   |
| 0.25                                                                | 50.53    | 47.84   | 61.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -13.92    | 41.86   | 51.76    | -9.90     | L1   |
| 0.31                                                                | 43.19    | 40.63   | 59.97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -19.34    | 37.81   | 49.97    | -12.16    | L1   |
| 0.37                                                                | 43.91    | 39.30   | 58.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -19.20    | 34.36   | 48.50    | -14.14    | L1   |
| 1.744                                                               | 46.13    | 43.44   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -12.56    | 36.99   | 46.00    | -9.01     | L1   |
| 1.992                                                               | 49.85    | 47.43   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -8.57     | 40.21   | 46.00    | -5.79     | L1   |
| 2.056                                                               | 44.77    | 41.62   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -14.38    | 37.39   | 46.00    | -8.61     | L1   |
| 2.244                                                               | 41.36    | 37.91   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -18.09    | 31.60   | 46.00    | -14.40    | L1   |
| 20                                                                  | 35.93    | 31.53   | 60.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -28.47    | 27.18   | 50.00    | -22.82    | L1   |
| 0.186                                                               | 48.60    | 44.68   | 64.21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -19.53    | 38.27   | 54.21    | -15.95    | N    |
| 0.25                                                                | 49.50    | 47.26   | 61.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -14.49    | 41.07   | 51.76    | -10.69    | N    |
| 0.374                                                               | 39.77    | 36.13   | 58.41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -22.29    | 30.06   | 48.41    | -18.35    | N    |
| 1.74                                                                | 45.15    | 42.35   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -13.65    | 36.47   | 46.00    | -9.53     | N    |
| 1.996                                                               | 49.52    | 47.35   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -8.65     | 41.82   | 46.00    | -4.18     | N    |
| 2.06                                                                | 44.64    | 41.56   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -14.44    | 37.61   | 46.00    | -8.39     | N    |
| 18.536                                                              | 37.02    | 33.15   | 60.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -26.85    | 27.90   | 50.00    | -22.10    | N    |
| <b>RBW:</b>                                                         |          |         | 9kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |         |          |           |      |
| <b>Voltage:</b>                                                     |          |         | 120V/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |         |          |           |      |
| <b>Limit:</b>                                                       |          |         | FCC Part 15.207/ RSS-Gen: Issue 5, §8.8 Table 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |         |          |           |      |
| <b>Final measurement detector:</b>                                  |          |         | Quasi-Peak and CISPR Average (AV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |         |          |           |      |
| <b>RESULT:</b>                                                      |          |         | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |         |          |           |      |
| <b>Measured value calculation:</b>                                  |          |         | <p>The measured value (level) is calculated by adding the Cable Factor, the Transient suppressor attenuation and LISN attenuation from the receiver amplitude reading. The basic equation is as follow:</p> $\text{Meas.} = \text{RA} + \text{CF} + \text{ATT}_{\text{TRAN}} + \text{ATT}_{\text{LISN}}$ <p>Where    Meas. = Level (dBμV)<br/>                 RA = Receiver Amplitude<br/>                 CF = Cable Factor<br/>                 ATT<sub>TRAN</sub> = Transient suppressor attenuation<br/>                 ATT<sub>LISN</sub> = LISN attenuation</p> <p>Margin value = Emission level – Limit value (A negative margin shows compliance to limit)</p> |           |         |          |           |      |

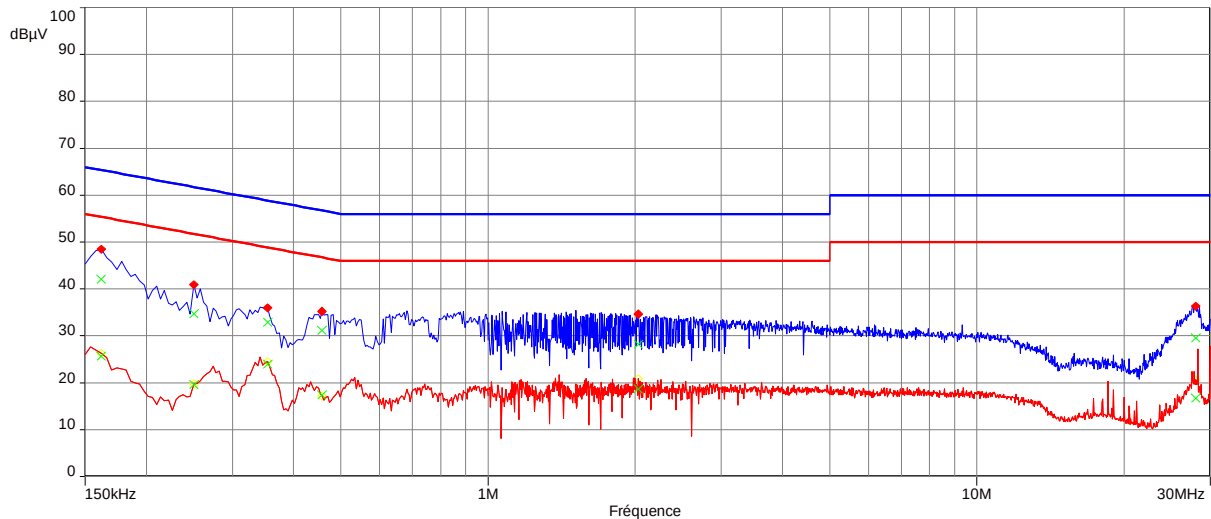
## IDS1015

### Graphical representation of Conducted Disturbance Measurement (Peak and Average detection) AC port, Line L1



Note : Same result for all transmit modes on all channels.

### Graphical representation of Conducted Disturbance Measurement (Peak and Average detection) AC port, Line Neutral



Note : Same result for all transmit modes on all channels.

~~~~~: Peak

~~~~~: Average

| IDS1015                                                             |          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |         |          |           |      |
|---------------------------------------------------------------------|----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|----------|-----------|------|
| Tabulated Results for Mains Terminal Disturbance Voltage on AC port |          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |         |          |           |      |
| FREQ                                                                | Meas. PK | Mes. QP | LIMIT QP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Margin QP | Mes. AV | LIMIT AV | Margin AV | Line |
| (MHz)                                                               | (dBμV)   | (dBμV)  | (dBμV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (dB)      | (dBμV)  | (dBμV)   | (dB)      |      |
| 0.162                                                               | 49.78    | 42.41   | 65.36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -22.95    | 24.54   | 55.36    | -30.82    | L1   |
| 0.182                                                               | 47.16    | 40.64   | 64.39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -23.75    | 21.50   | 54.39    | -32.89    | L1   |
| 0.262                                                               | 38.94    | 32.33   | 61.37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -29.04    | 18.16   | 51.37    | -33.21    | L1   |
| 0.31                                                                | 36.18    | 29.01   | 59.97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -30.96    | 16.16   | 49.97    | -33.81    | L1   |
| 0.742                                                               | 32.74    | 27.39   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -28.61    | 17.01   | 46.00    | -28.99    | L1   |
| 28.252                                                              | 35.96    | 28.81   | 60.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -31.19    | 15.41   | 50.00    | -34.59    | L1   |
| 0.162                                                               | 49.05    | 42.12   | 65.36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -23.24    | 25.73   | 55.36    | -29.63    | N    |
| 0.25                                                                | 40.90    | 34.71   | 61.76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -27.05    | 19.63   | 51.76    | -32.13    | N    |
| 0.354                                                               | 36.33    | 32.91   | 58.87                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -25.96    | 23.99   | 48.87    | -24.88    | N    |
| 0.458                                                               | 34.98    | 31.19   | 56.73                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -25.54    | 17.46   | 46.73    | -29.27    | N    |
| 2.028                                                               | 35.30    | 28.16   | 56.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -27.84    | 18.66   | 46.00    | -27.34    | N    |
| 28                                                                  | 37.06    | 29.61   | 60.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -30.39    | 16.81   | 50.00    | -33.19    | N    |
| <b>RBW:</b>                                                         |          |         | 9kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |         |          |           |      |
| <b>Voltage:</b>                                                     |          |         | 120V/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |         |          |           |      |
| <b>Limit:</b>                                                       |          |         | FCC Part 15.209 a) / RSS-Gen: Issue 5, §8.8 Table 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |         |          |           |      |
| <b>Final measurement detector:</b>                                  |          |         | Quasi-Peak and CISPR Average (AV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |         |          |           |      |
| <b>RESULT:</b>                                                      |          |         | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |         |          |           |      |
| <b>Measured value calculation:</b>                                  |          |         | <p>The measured value (level) is calculated by adding the Cable Factor, the Transient suppressor attenuation and LISN attenuation from the receiver amplitude reading. The basic equation is as follow:</p> $\text{Meas.} = \text{RA} + \text{CF} + \text{ATT}_{\text{TRAN}} + \text{ATT}_{\text{LISN}}$ <p>Where Meas. = Level (dBμV)</p> <p>RA = Receiver Amplitude</p> <p>CF = Cable Factor</p> <p>ATT<sub>TRAN</sub> = Transient suppressor attenuation</p> <p>ATT<sub>LISN</sub> = LISN attenuation</p> <p>Margin value = Emission level – Limit value (A negative margin shows compliance to limit)</p> |           |         |          |           |      |

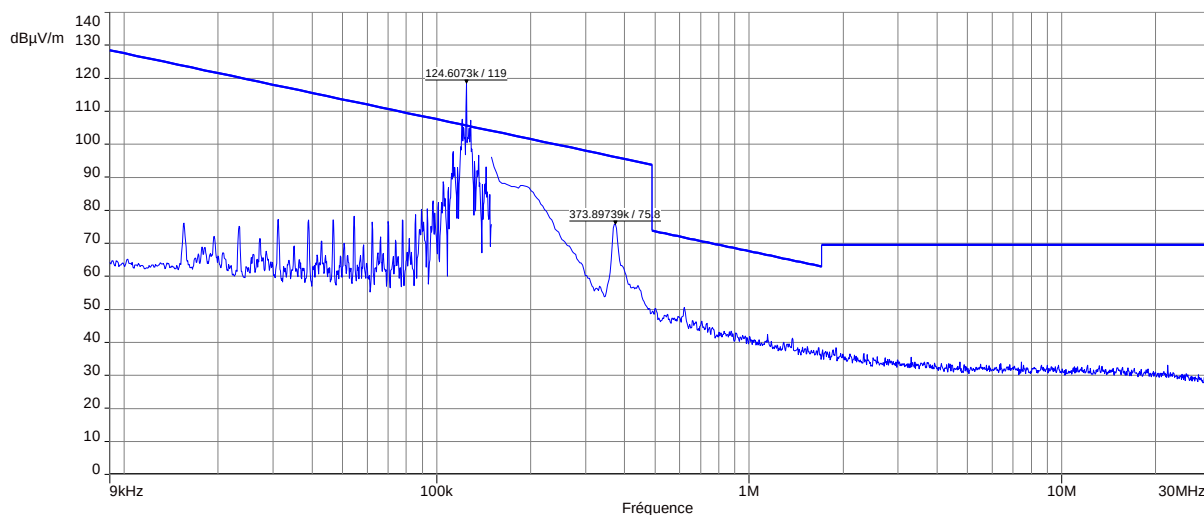
## 11. Radiated Emission Measurement (9 kHz-10GHz)

| TEST: Radiated Emission Measurement (9kHz-10GHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                    | Verdict                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------|
| <p><b>Method:</b> Measurements were made in a 3-meter Semi Anechoic Room (SAR) for frequency 30MHz to 1GHz and in a 3-meter Full Anechoic environment (SAR with floor absorbers) above 1GHz. The Semi Anechoic Room complies with CISPR16-1-4 / ANSI C63.4 requirements. For frequency 9kHz to 30MHz, measurements are performed on a free-space open area test site at 10m distance. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (Peak, Quasi-peak, Average) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.</p> |                                                    | Pass                      |
| Laboratory Parameters:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Required prior to the test                         | During the test           |
| Ambient Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 20 to 30 °C                                        | 21°C ± 2                  |
| Relative Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 30 to 70 %                                         | 45% ± 5                   |
| Fully configured sample scanned over the following frequency range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Frequency range on each side of line               | Measurement Point         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9kHz – 30MHz                                       | 10 m measurement distance |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30MHz – 10GHz                                      | 3 m measurement distance  |
| Limits – FCC Part 15.209 / RSS-GEN / RSS-210                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                    |                           |
| Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Limits (dBµV/m)                                    |                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Level / Detector / Distance                        | Results                   |
| 0.009 to 0.090                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 48.5 – 28.5 / AV / 300m<br>68.5 – 48.5 / PK / 300m | Pass                      |
| 0.090 to 0.110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 28.5 – 26.8 / QP / 300m                            | Pass                      |
| 0.110 to 0.490                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 26.8 – 13.8 / AV / 300m<br>46.8 – 33.8 / PK / 300m | Pass                      |
| 0.490 to 1.705                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 33.8 – 23.0 / QP / 30m                             | Pass                      |
| 1.705 to 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 29.5 / QP / 30m                                    | Pass                      |
| 30 to 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 40.0 / QP / 3m                                     | Pass                      |
| 88 to 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 43.5 / QP / 3m                                     | Pass                      |
| 216 to 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 46.0 / QP / 3m                                     | Pass                      |
| 960-1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 54.0 / QP / 3m                                     | Pass                      |
| Above 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 54.0 / AV / 3m<br>74.0 / PK / 3m                   | Pass                      |
| <p>Supplementary information:<br/> Test location: SMEE<br/> Test date: March 11<sup>th</sup>, 2024. Tested by C. KERMICHE<br/> Power supply voltage: 24V DC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                    |                           |

| IDS1014                                                                                                                                                                     |                |                      |                                                                                                                                                                                                                                                                                    |              |        |            |             |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|------------|-------------|--------------------|
| Tabulated Results for Unwanted emissions (9kHz-490kHz)                                                                                                                      |                |                      |                                                                                                                                                                                                                                                                                    |              |        |            |             |                    |
| FREQ                                                                                                                                                                        | RF field @ 10m | RF field @ 300m      | Limit @ 300m                                                                                                                                                                                                                                                                       | Detector     | Margin | Ant. angle | Table angle | Correc. Fact. (CF) |
| MHz                                                                                                                                                                         | dBμV/m         | dBμV/m               | dBμV/m                                                                                                                                                                                                                                                                             | Pk / QP / AV | dB     | Degree     | Degree      | dB                 |
| 0.125                                                                                                                                                                       | 95.8           | 36.7 <sup>(1)</sup>  | 45.6                                                                                                                                                                                                                                                                               | Pk           | -8.9   | 90         | 0           | 11.6               |
| 0.125                                                                                                                                                                       | 76.5           | 17.4 <sup>(1)</sup>  | 25.6                                                                                                                                                                                                                                                                               | AV           | -8.2   | 90         | 0           | 11.6               |
| 0.250                                                                                                                                                                       | 58.7           | -0.4 <sup>(1)</sup>  | 39.6                                                                                                                                                                                                                                                                               | Pk           | -40.0  | 90         | 0           | 11.5               |
| 0.250                                                                                                                                                                       | 45.2           | -13.9 <sup>(1)</sup> | 19.6                                                                                                                                                                                                                                                                               | AV           | -33.5  | 90         | 0           | 11.5               |
| 0.375                                                                                                                                                                       | 61.5           | 2.4 <sup>(1)</sup>   | 36.1                                                                                                                                                                                                                                                                               | Pk           | -33.7  | 90         | 0           | 11.5               |
| 0.375                                                                                                                                                                       | 49.9           | -9.2 <sup>(1)</sup>  | 16.1                                                                                                                                                                                                                                                                               | AV           | -25.3  | 90         | 0           | 11.5               |
| Supplementary information:<br>Frequency list measured on the Open Area Test Site has been created with pre-scan results.<br>Worst case results for all communication modes. |                |                      |                                                                                                                                                                                                                                                                                    |              |        |            |             |                    |
| Frequency band investigated:                                                                                                                                                |                |                      | 9kHz-490kHz                                                                                                                                                                                                                                                                        |              |        |            |             |                    |
| RBW:                                                                                                                                                                        |                |                      | 200Hz (9kHz-150kHz)<br>9kHz (150kHz-30MHz)                                                                                                                                                                                                                                         |              |        |            |             |                    |
| Measurement distance:                                                                                                                                                       |                |                      | 10m                                                                                                                                                                                                                                                                                |              |        |            |             |                    |
| Final measurement detector:                                                                                                                                                 |                |                      | Peak / Quasi-Peak / Average                                                                                                                                                                                                                                                        |              |        |            |             |                    |
| Limit:                                                                                                                                                                      |                |                      | FCC Part 15.209 / RSS-Gen                                                                                                                                                                                                                                                          |              |        |            |             |                    |
| Note:                                                                                                                                                                       |                |                      | CF: Correction factor = Antenna factor + Cable loss<br>(1) : Measure have been done at 10m distance and corrected according to requirements of 15.209.e / RSS-Gen clause 6.5)<br>(M@300m = M@10m-59.1dB)<br>Loop antenna used and rotated about its axis to maximize any emission. |              |        |            |             |                    |
| Tabulated Results for Unwanted emissions (490kHz-30MHz)                                                                                                                     |                |                      |                                                                                                                                                                                                                                                                                    |              |        |            |             |                    |
| FREQ                                                                                                                                                                        | RF field @ 10m | RF field @ 30m       | Limit @ 30m                                                                                                                                                                                                                                                                        | Detector     | Margin | Ant. angle | Table angle | Correc. Fact. (CF) |
| MHz                                                                                                                                                                         | dBμV/m         | dBμV/m               | dBμV/m                                                                                                                                                                                                                                                                             | QP           | dB     | Degree     | Degree      | dB                 |
| 0.500                                                                                                                                                                       | 44.6           | 25.5 <sup>(1)</sup>  | 33.6                                                                                                                                                                                                                                                                               | QP           | -8.1   | 90         | 0           | 11.5               |
| 0.625                                                                                                                                                                       | 42.4           | 23.3 <sup>(1)</sup>  | 31.7                                                                                                                                                                                                                                                                               | QP           | -8.4   | 90         | 0           | 11.6               |
| Supplementary information:<br>Frequency list measured on the Open Area Test Site has been created with pre-scan results.<br>Worst case results for all communication modes. |                |                      |                                                                                                                                                                                                                                                                                    |              |        |            |             |                    |
| Frequency band investigated:                                                                                                                                                |                |                      | 490kHz-30MHz                                                                                                                                                                                                                                                                       |              |        |            |             |                    |
| RBW:                                                                                                                                                                        |                |                      | 9kHz (150kHz-30MHz)                                                                                                                                                                                                                                                                |              |        |            |             |                    |
| Measurement distance:                                                                                                                                                       |                |                      | 10m                                                                                                                                                                                                                                                                                |              |        |            |             |                    |
| Final measurement detector:                                                                                                                                                 |                |                      | Quasi-Peak                                                                                                                                                                                                                                                                         |              |        |            |             |                    |
| Limit:                                                                                                                                                                      |                |                      | FCC Part 15.209 / RSS-Gen                                                                                                                                                                                                                                                          |              |        |            |             |                    |
| Note:                                                                                                                                                                       |                |                      | CF: Correction factor = Antenna factor + Cable loss<br>(1): Measure have been done at 10m distance and corrected according to requirements of 15.209.e / RSS-Gen clause 6.5)<br>(M@30m = M@10m-19.1dB)<br>Loop antenna used and rotated about its axis to maximize any emission.   |              |        |            |             |                    |

## IDS1014

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 9kHz-30MHz / 3m / Parallel & Perpendicular & Horizontal antenna position / Transmit mode)



Notes: Pre-scan graph only for identification purpose.

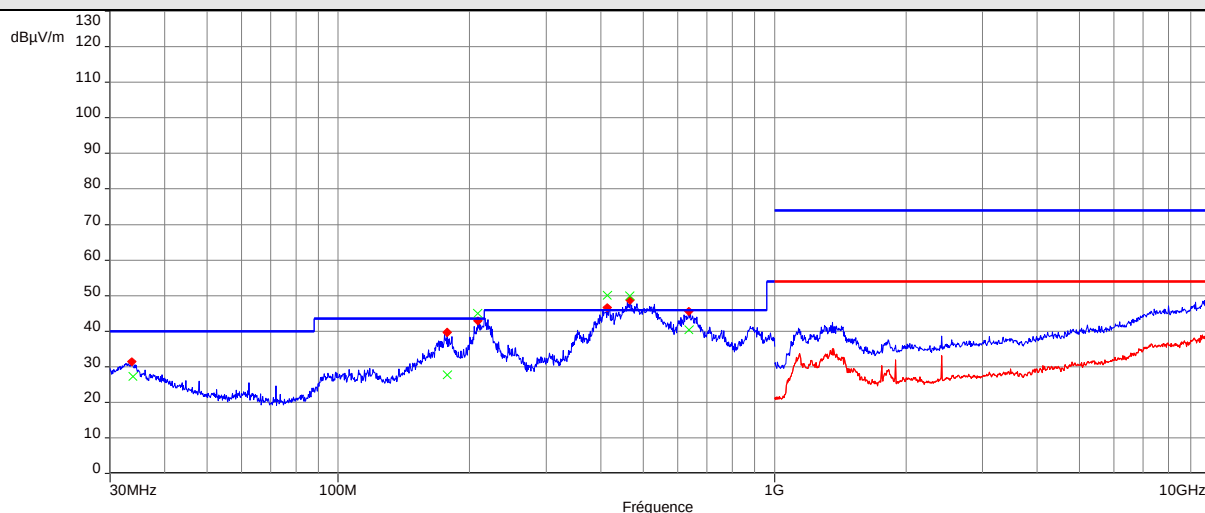
|                              |                                              |
|------------------------------|----------------------------------------------|
| Frequency band investigated: | 9kHz-30MHz                                   |
| Unit :                       | dBμV/m                                       |
| RBW :                        | 200Hz (9kHz-150kHz)<br>9kHz (150kHz-30MHz)   |
| Antenna polarization :       | Parallel & Perpendicular to measurement axis |



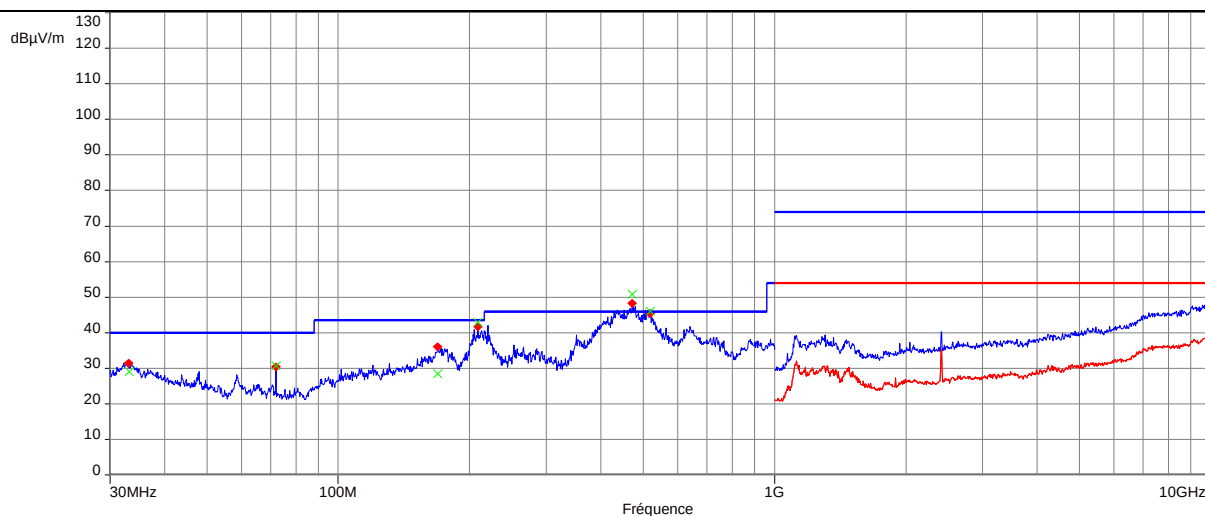
## IDS1014

### Graphical representation of Radiated Disturbance Measurement (Peak detection, Full Anechoic Chamber pre-scan, 30MHz-10GHz / 3m / Transmit mode / Worst position)

HORIZONTAL POLARIZATION



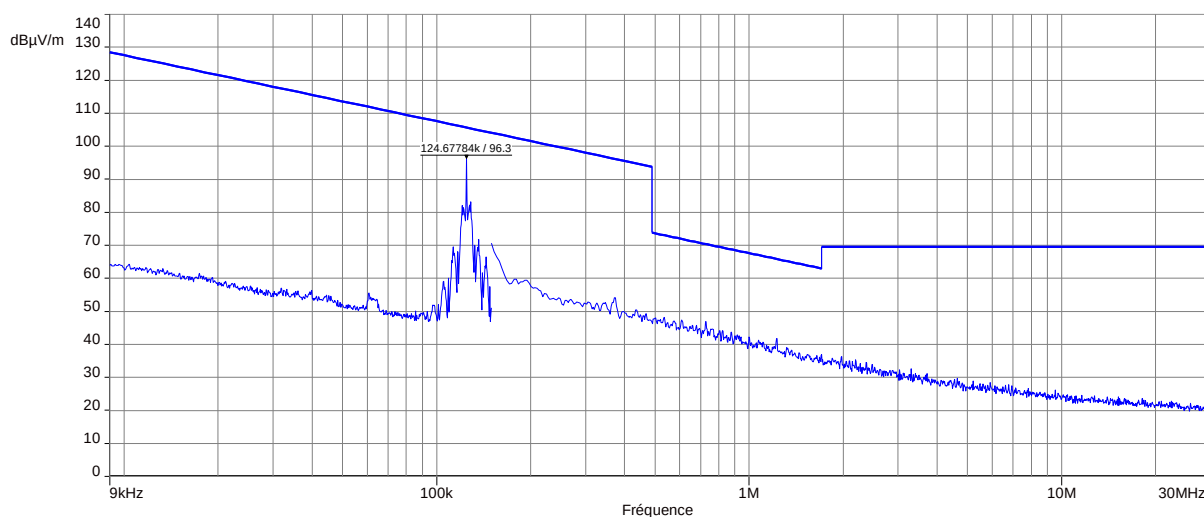
VERTICAL POLARIZATION



| FREQ (MHz)                | Field Strength 3m PK (dBμV/m) | Field Strength 3m QP or AV (dBμV/m) | Limit PK (dBμV/m)                                                                               | Margin Peak (dBμV/m) | Limit QP or AV (dB) | Margin QP or AV (dBμV/m) | Table angle (°) | Ant height (m) | Total factor (dB) | Pol (H/V) | Detector & Limit QP |
|---------------------------|-------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------|----------------------|---------------------|--------------------------|-----------------|----------------|-------------------|-----------|---------------------|
| 33.844227                 | 27.29                         | 22.72                               | -                                                                                               | -                    | 40.00               | -17.28                   | 125.10          | 1.72           | 17.88             | H         | QP                  |
| 177.875407                | 27.79                         | 23.42                               | -                                                                                               | -                    | 43.50               | -20.08                   | 148.10          | 1.00           | 16.51             | H         | QP                  |
| 209.100713                | 45.04                         | 41.94                               | -                                                                                               | -                    | 43.50               | -1.56                    | 306.00          | 1.73           | 12.50             | H         | QP                  |
| 414.02465                 | 50.03                         | 46.00                               | -                                                                                               | -                    | 46.00               | 0.00                     | 212.70          | 1.00           | 17.91             | H         | QP                  |
| 466.410547                | 50.02                         | 45.51                               | -                                                                                               | -                    | 46.00               | -0.49                    | 305.50          | 1.00           | 19.40             | H         | QP                  |
| 636.39861                 | 40.38                         | 35.50                               | -                                                                                               | -                    | 46.00               | -10.50                   | 315.10          | 1.00           | 22.46             | H         | QP                  |
| 33.210988                 | 29.06                         | 24.91                               | -                                                                                               | -                    | 40.00               | -15.09                   | 270.50          | 1.00           | 18.05             | V         | QP                  |
| 72.00085                  | 30.70                         | 28.04                               | -                                                                                               | -                    | 40.00               | -11.96                   | 360.00          | 1.00           | 7.90              | V         | QP                  |
| 168.820873                | 28.47                         | 24.61                               | -                                                                                               | -                    | 43.50               | -18.89                   | 148.10          | 2.90           | 16.48             | V         | QP                  |
| 209.080147                | 43.01                         | 39.81                               | -                                                                                               | -                    | 43.50               | -3.69                    | 268.90          | 1.73           | 12.50             | V         | QP                  |
| 471.055093                | 50.90                         | 45.55                               | -                                                                                               | -                    | 46.00               | -0.45                    | 236.00          | 1.08           | 19.52             | V         | QP                  |
| 518.214163                | 46.08                         | 41.55                               | -                                                                                               | -                    | 46.00               | -4.45                    | 212.40          | 1.00           | 20.46             | V         | QP                  |
| Frequency and Limit band: |                               |                                     | 30Mz-10GHz / FCC 15.209 / RSS-GEN                                                               |                      |                     |                          |                 |                |                   |           |                     |
| RBW and Limit detector:   |                               |                                     | Below 1GHz: RBW= 100kHz, Quasi-Peak Limit / above 1GHz: RBW= 1MHz, Peak and CISPR Average Limit |                      |                     |                          |                 |                |                   |           |                     |
| Results                   |                               |                                     | PASS                                                                                            |                      |                     |                          |                 |                |                   |           |                     |

## IDS1015

Graphical representation of Radiated Disturbance Measurement (Peak detection, Anechoic chamber pre-scan, 9kHz-30MHz / 3m / Parallel & Perpendicular & Horizontal antenna position / Transmit mode)



Notes: Pre-scan graph only for identification purpose. Nominal power LF mode. (24V or POE power supply)

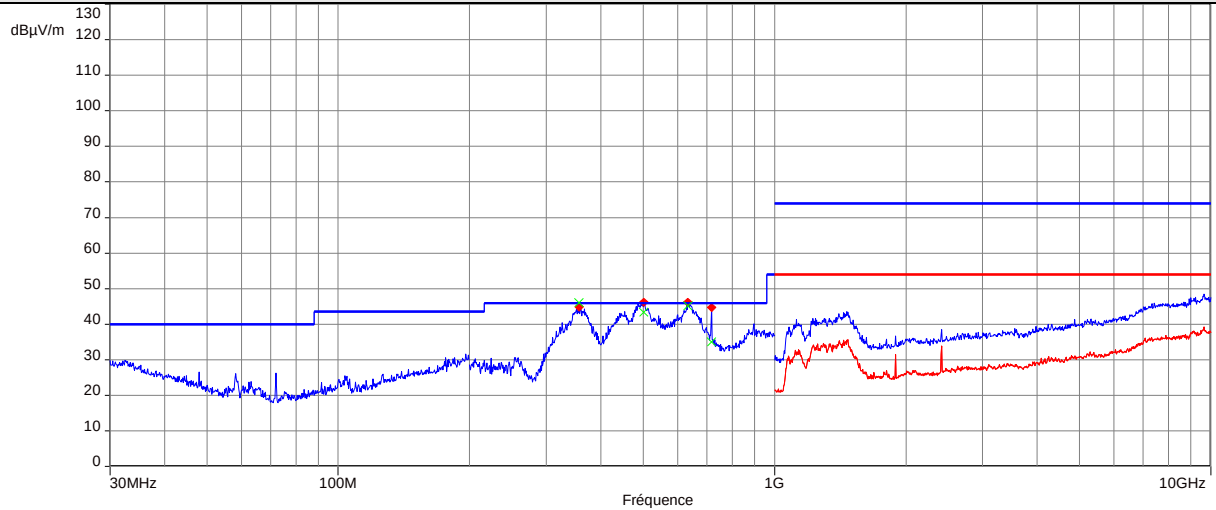
|                              |                                              |
|------------------------------|----------------------------------------------|
| Frequency band investigated: | 9kHz-30MHz                                   |
| Unit :                       | dBμV/m                                       |
| RBW :                        | 200Hz (9kHz-150kHz)<br>9kHz (150kHz-30MHz)   |
| Antenna polarization :       | Parallel & Perpendicular to measurement axis |

| IDS1015                                                                                                                                                                     |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|-------------|--------------------|--------------------|
| Tabulated Results for Unwanted emissions (9kHz-490kHz)                                                                                                                      |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
| FREQ                                                                                                                                                                        | RF field @ 10m | RF field @ 300m      | Limit @ 300m                                                                                                                                                                                                                                                                       | Detector     | Margin     | Ant. angle  | Table angle        | Correc. Fact. (CF) |
| MHz                                                                                                                                                                         | dBµV/m         | dBµV/m               | dBµV/m                                                                                                                                                                                                                                                                             | Pk / QP / AV | dB         | Degree      | Degree             | dB                 |
| 0,125                                                                                                                                                                       | 68.5           | 9.4 <sup>(1)</sup>   | 45.6                                                                                                                                                                                                                                                                               | Pk           | -36.2      | 90          | 0                  | 11.6               |
| 0,125                                                                                                                                                                       | 64.5           | 5.4 <sup>(1)</sup>   | 25.6                                                                                                                                                                                                                                                                               | AV           | -20.2      | 90          | 0                  | 11.6               |
| 0.250                                                                                                                                                                       | 62.6           | 3.5 <sup>(1)</sup>   | 39.6                                                                                                                                                                                                                                                                               | Pk           | -36.1      | 90          | 0                  | 11.5               |
| 0.250                                                                                                                                                                       | 49.5           | -9.6 <sup>(1)</sup>  | 19.6                                                                                                                                                                                                                                                                               | AV           | -29.2      | 90          | 0                  | 11.5               |
| 0.375                                                                                                                                                                       | 54.5           | -4.6 <sup>(1)</sup>  | 36.1                                                                                                                                                                                                                                                                               | Pk           | -40.7      | 90          | 0                  | 11.5               |
| 0.375                                                                                                                                                                       | 42.2           | -16.9 <sup>(1)</sup> | 16.1                                                                                                                                                                                                                                                                               | AV           | -33.0      | 90          | 0                  | 11.5               |
| Supplementary information:<br>Frequency list measured on the Open Area Test Site has been created with pre-scan results.<br>Worst case results for all communication modes. |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
| Frequency band investigated:                                                                                                                                                |                |                      | 9kHz-490kHz                                                                                                                                                                                                                                                                        |              |            |             |                    |                    |
| RBW:                                                                                                                                                                        |                |                      | 200Hz (9kHz-150kHz)<br>9kHz (150kHz-30MHz)                                                                                                                                                                                                                                         |              |            |             |                    |                    |
| Measurement distance:                                                                                                                                                       |                |                      | 10m                                                                                                                                                                                                                                                                                |              |            |             |                    |                    |
| Final measurement detector:                                                                                                                                                 |                |                      | Peak / Quasi-Peak / Average                                                                                                                                                                                                                                                        |              |            |             |                    |                    |
| Limit:                                                                                                                                                                      |                |                      | FCC Part 15.209 / RSS-Gen                                                                                                                                                                                                                                                          |              |            |             |                    |                    |
| Note:                                                                                                                                                                       |                |                      | CF: Correction factor = Antenna factor + Cable loss<br>(1) : Measure have been done at 10m distance and corrected according to requirements of 15.209.e / RSS-Gen clause 6.5)<br>(M@300m = M@10m-59.1dB)<br>Loop antenna used and rotated about its axis to maximize any emission. |              |            |             |                    |                    |
| Tabulated Results for Unwanted emissions (490kHz-30MHz)                                                                                                                     |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
| FREQ                                                                                                                                                                        | RF field @ 30m | Limit @ 30m          | Detector                                                                                                                                                                                                                                                                           | Margin       | Ant. angle | Table angle | Correc. Fact. (CF) |                    |
| MHz                                                                                                                                                                         | dBµV/m         | dBµV/m               | Pk / QP                                                                                                                                                                                                                                                                            | dB           | Degree     | Degree      | dB                 |                    |
| All levels are at least 10dB below applicable limits                                                                                                                        |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
| Supplementary information:<br>Frequency list measured on the Open Area Test Site has been created with pre-scan results.<br>Worst case results for all communication modes. |                |                      |                                                                                                                                                                                                                                                                                    |              |            |             |                    |                    |
| Frequency band investigated:                                                                                                                                                |                |                      | 490kHz-30MHz                                                                                                                                                                                                                                                                       |              |            |             |                    |                    |
| RBW:                                                                                                                                                                        |                |                      | 9kHz (150kHz-30MHz)                                                                                                                                                                                                                                                                |              |            |             |                    |                    |
| Measurement distance:                                                                                                                                                       |                |                      | 10m                                                                                                                                                                                                                                                                                |              |            |             |                    |                    |
| Final measurement detector:                                                                                                                                                 |                |                      | Quasi-Peak                                                                                                                                                                                                                                                                         |              |            |             |                    |                    |
| Limit:                                                                                                                                                                      |                |                      | FCC Part 15.209 / RSS-Gen                                                                                                                                                                                                                                                          |              |            |             |                    |                    |
| Note:                                                                                                                                                                       |                |                      | CF: Correction factor = Antenna factor + Cable loss<br>(1): Measure have been done at 10m distance and corrected according to requirements of 15.209.e / RSS-Gen clause 6.5)<br>(M@30m = M@10m-19.1dB)<br>Loop antenna used and rotated about its axis to maximize any emission.   |              |            |             |                    |                    |

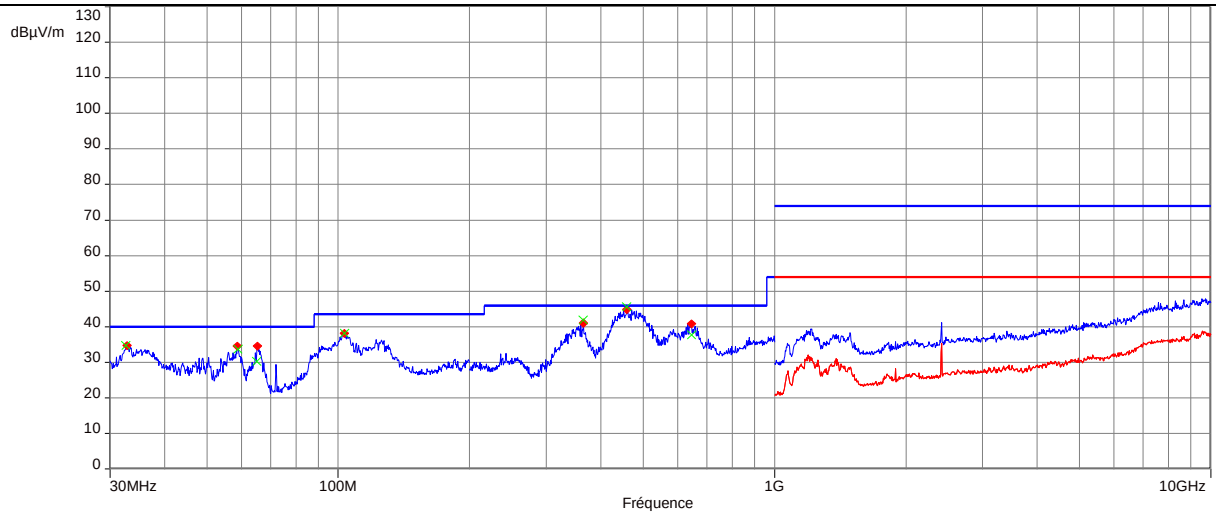
## IDS1015

### Graphical representation of Radiated Disturbance Measurement (Peak detection, Full Anechoic Chamber pre-scan, 30MHz-10GHz / 3m / Transmit mode / Worst position)

HORIZONTAL POLARIZATION



VERTICAL POLARIZATION

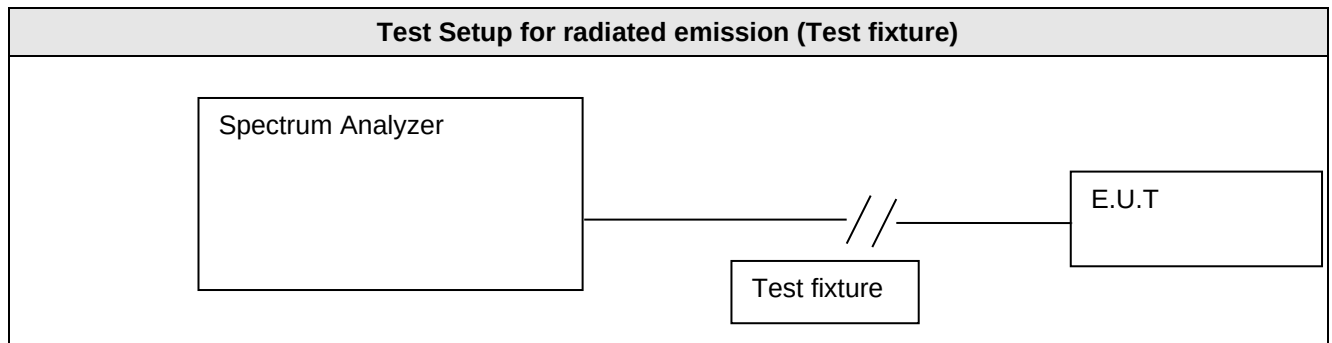


Pre-scan graph only for identification purpose.

| FREQ (MHz)                | Field Strength 3m PK (dBμV/m) | Field Strength 3m QP or AV (dBμV/m) | Limit PK (dBμV/m)                                                                               | Margin Peak (dBμV/m) | Limit QP or AV (dB) | Margin QP or AV (dBμV/m) | Table angle (°) | Ant height (m) | Total factor (dB) | Pol (H/V) | Detector & Limit QP |
|---------------------------|-------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------|----------------------|---------------------|--------------------------|-----------------|----------------|-------------------|-----------|---------------------|
| 356.166453                | 46.05                         | 42.49                               | -                                                                                               | -                    | 46.00               | -3.51                    | 92.10           | 1.00           | 16.50             | H         | QP                  |
| 501.062187                | 43.41                         | 38.83                               | -                                                                                               | -                    | 46.00               | -7.17                    | 149.30          | 1.00           | 20.52             | H         | QP                  |
| 632.914397                | 45.17                         | 40.42                               | -                                                                                               | -                    | 46.00               | -5.58                    | 210.80          | 1.00           | 22.40             | H         | QP                  |
| 717.302427                | 34.98                         | 29.09                               | -                                                                                               | -                    | 46.00               | -16.91                   | 147.10          | 2.89           | 24.31             | H         | QP                  |
| 32.649637                 | 34.76                         | 29.63                               | -                                                                                               | -                    | 40.00               | -10.37                   | 235.70          | 1.00           | 18.18             | V         | QP                  |
| 58.861428                 | 33.72                         | 28.60                               | -                                                                                               | -                    | 40.00               | -11.40                   | 360.00          | 1.00           | 8.33              | V         | QP                  |
| 65.13304                  | 30.23                         | 24.65                               | -                                                                                               | -                    | 40.00               | -15.35                   | 360.00          | 1.00           | 7.09              | V         | QP                  |
| 103.210797                | 38.21                         | 33.43                               | -                                                                                               | -                    | 43.50               | -10.07                   | 360.00          | 1.00           | 11.05             | V         | QP                  |
| 364.863193                | 41.95                         | 37.98                               | -                                                                                               | -                    | 46.00               | -8.02                    | 241.60          | 1.49           | 16.54             | V         | QP                  |
| 459.256357                | 45.58                         | 40.65                               | -                                                                                               | -                    | 46.00               | -5.35                    | 212.10          | 1.00           | 19.12             | V         | QP                  |
| 644.47005                 | 37.66                         | 32.47                               | -                                                                                               | -                    | 46.00               | -13.53                   | 46.70           | 2.91           | 22.54             | V         | QP                  |
| Frequency and Limit band: |                               |                                     | 30Mz-10GHz / FCC 15.209 / RSS-GEN                                                               |                      |                     |                          |                 |                |                   |           |                     |
| RBW and Limit detector:   |                               |                                     | Below 1GHz: RBW= 100kHz, Quasi-Peak Limit / above 1GHz: RBW= 1MHz, Peak and CISPR Average Limit |                      |                     |                          |                 |                |                   |           |                     |
| Results                   |                               |                                     | PASS                                                                                            |                      |                     |                          |                 |                |                   |           |                     |

## 12. 99% and -20dB Occupied Bandwidth

| TEST: Occupied Bandwidth / 15.215 – RSS-Gen                                                                                                                                                                                                                                                                                                                         |                            |                 | Verdict |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|---------|
| <u>Method:</u> The setup is in an anechoic chamber. The spectrum analyzer is connected to the measuring antenna.<br>The RBW is set at 1kHz, with VBW ≥ 3 x RBW.<br>The SPAN is wide enough to capture all products of the modulation process.<br>A MaxHold Peak detector is used.<br>Measures are performed with OBW 99% & -20dB function of the spectrum analyser. |                            |                 | Pass    |
| Laboratory Parameters:                                                                                                                                                                                                                                                                                                                                              | Required prior to the test | During the test |         |
| Ambient Temperature                                                                                                                                                                                                                                                                                                                                                 | 10 to 40 °C                | 20°C            |         |
| Relative Humidity                                                                                                                                                                                                                                                                                                                                                   | 10 to 90 %                 | 55%             |         |
| Supplementary information:<br>Test location: SMEE<br>Test date: March 4 <sup>th</sup> , 2024. Tested by C. KERMICHE<br>Power supply voltage: 24V DC                                                                                                                                                                                                                 |                            |                 |         |

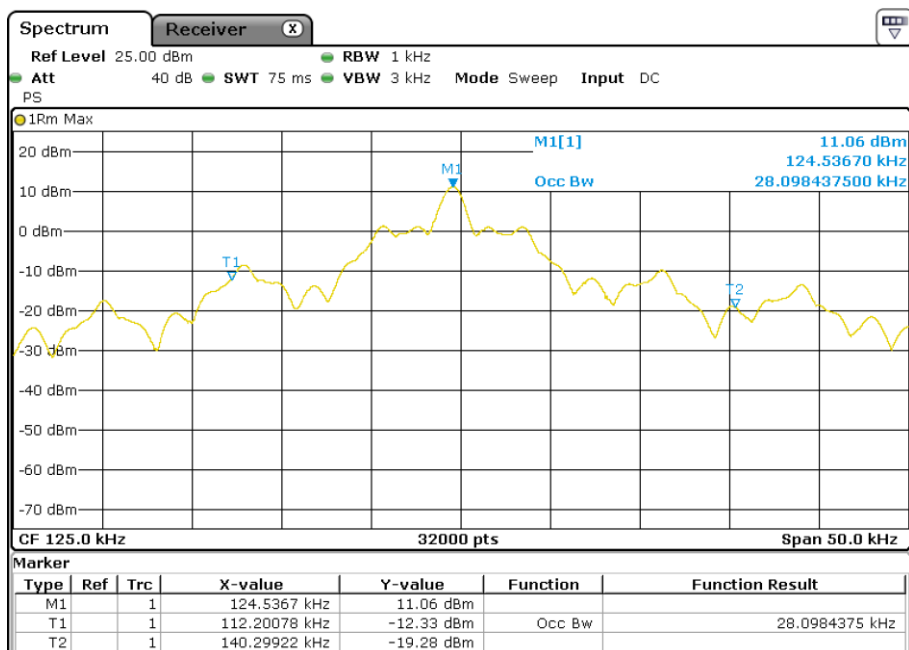


| IDS1014                                      |                  |
|----------------------------------------------|------------------|
| Tabulated Results for 99% Occupied Bandwidth |                  |
| Frequency<br>(kHz)                           | Results<br>(kHz) |
| 124.6                                        | 28.098           |
| Tabulated Results for -20dB Bandwidth        |                  |
| Frequency<br>(kHz)                           | Results<br>(kHz) |
| 124.6                                        | 11.948           |

| IDS1015                                      |                  |
|----------------------------------------------|------------------|
| Tabulated Results for 99% Occupied Bandwidth |                  |
| Frequency<br>(kHz)                           | Results<br>(kHz) |
| 124.6                                        | 23.845           |
| Tabulated Results for -20dB Bandwidth        |                  |
| Frequency<br>(kHz)                           | Results<br>(kHz) |
| 124.6                                        | 11.589           |

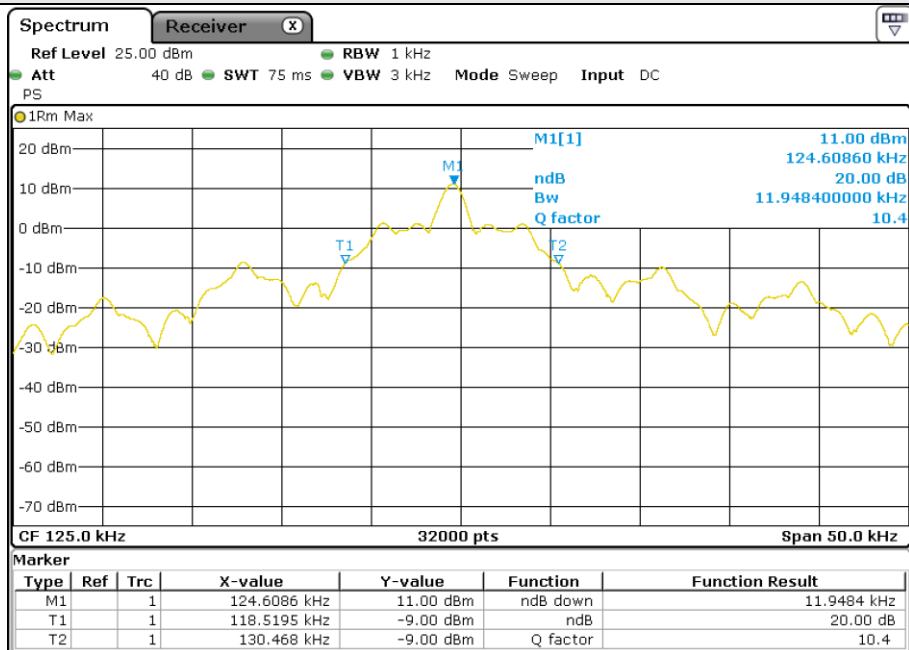
## IDS1014

### Graphical representation of Occupied Bandwidth



99% Occupied Bandwidth

### Graphical representation of -20dB Occupied Bandwidth



-20dB Occupied Bandwidth

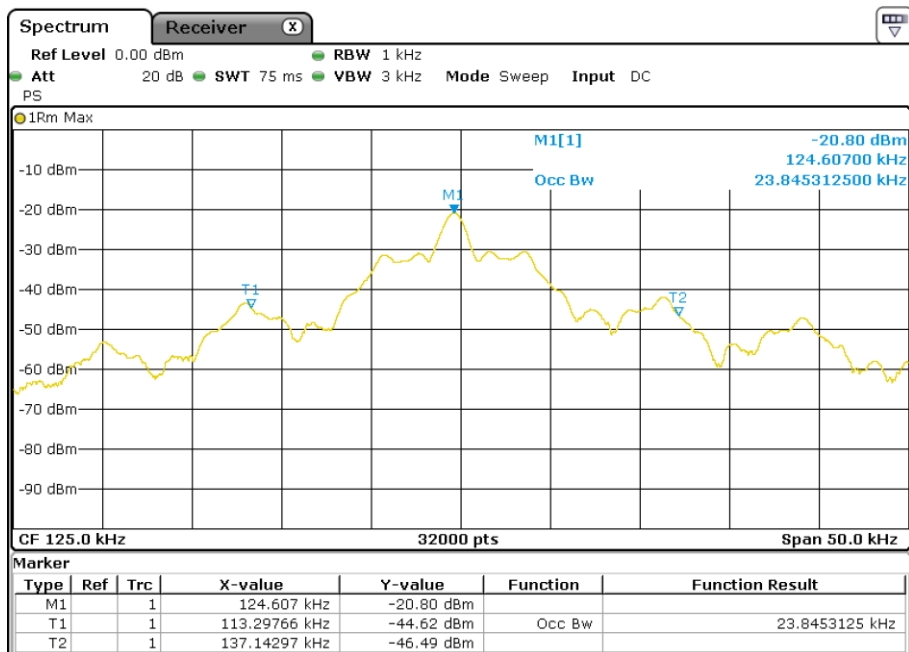
Frequency: 125kHz

RBW / VBW: 1kHz / 3kHz

Measurement detector: Peak

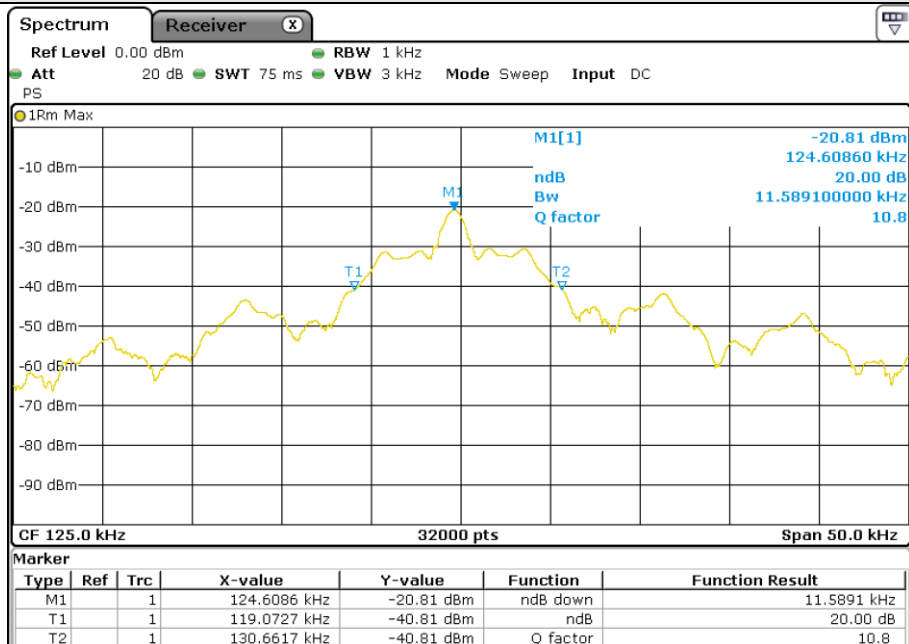
## IDS1015

### Graphical representation of Occupied Bandwidth



99% Occupied Bandwidth

### Graphical representation of -20dB Occupied Bandwidth



-20dB Occupied Bandwidth

|                       |             |
|-----------------------|-------------|
| Frequency:            | 125kHz      |
| RBW / VBW:            | 1kHz / 3kHz |
| Measurement detector: | Peak        |



### 13. Test Equipment List

| Description          | Manufacturer     | Model         | ID          | Date Cal. | Nxt. Cal. |
|----------------------|------------------|---------------|-------------|-----------|-----------|
| Loop antenna         | EMCO             | 6502          | ANT-101-009 | 2023/9    | 2025/9    |
| Log-periodic antenna | EMCO             | 3146          | ANT-191-019 | 2024/3    | 2026/3    |
| Biconnic antenna     | COM-POWER        | AB- 900A      | ANT-201-021 | 2023/01   | 2025/1    |
| Horn antenna         | COM-POWER        | AH-118        | ANT-101-004 | 2021/7    | 2024/7    |
| High-Pass filter     | Wainwright Inst. | HK6-948-1200  | FIL-141-004 | 2023/4    | 2024/4    |
| RF cable             | HUBER+SUHNER     | SF126E / 2m   | CAB-231-043 | 2023/4    | 2024/4    |
| RF cable             | HUBER+SUHNER     | SF104E / 5.3m | CAB-231-044 | 2023/4    | 2024/4    |
| RF cable             | HUBER+SUHNER     | SF126E / 7m   | CAB-231-045 | 2023/4    | 2024/4    |
| Semi anechoic room   | COMTEST          | 218292        | CAG-201-002 | 2022/4    | 2025/2    |
| FS OATS              | Div              | 10m           | SIT-201-002 | -         | -         |
| Antenna mast         | Innco- Systems   | MA4640-XP-ET  | MAT-201-002 | -         | -         |
| Turntable            | Innco- Systems   | CT0800        | PLA-141-001 | -         | -         |
| Turntable            | Innco- Systems   | DS1500-S-1t   | PLA-201-003 | -         | -         |
| Pre-amplifier        | COM-POWER        | 1-18GHz       | PRE-221-005 | 2023/4    | 2024/4    |
| Measuring Rec        | Rohde&Schwarz    | ESRP          | REC-151-002 | 2021/12   | 2024/6    |
| Spectrum analyzer    | Rohde&Schwarz    | FSV40         | ASP-171-004 | 2021/10   | 2024/4    |
| EMC Software         | NEXIO            | BAT EMC       | SOF-101-001 | -         | -         |
| Ref. Comb generator  | SMEE             | EMR-10M       | REF-111-002 | -         | -         |
| Ref. Comb generator  | SMEE             | EMR 1-6GHz    | REF-141-003 | -         | -         |

END OF REPORT.