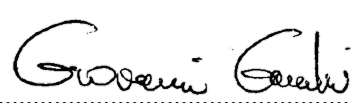
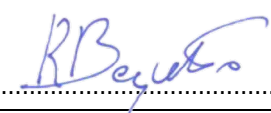




## TEST REPORT Nr. R20222501

### Federal Communication Commission (FCC)

|                                                                                                                                                                                                            |                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Report Reference No.</b> .....                                                                                                                                                                          | R20222501                                                                                            |
| Date of issue: .....                                                                                                                                                                                       | 11.01.2021                                                                                           |
| Total number pages: .....                                                                                                                                                                                  | 80                                                                                                   |
| <b>Applicant's name</b> .....                                                                                                                                                                              | Caen RFID S.r.l.                                                                                     |
| Address .....                                                                                                                                                                                              | Via Vetraia, 11 – 55049 Viareggio (LU) – Italy                                                       |
| <b>Test specification:</b>                                                                                                                                                                                 |                                                                                                      |
| Standards .....                                                                                                                                                                                            | FCC Rules & Regulations, Title 47:2019<br>Part 15 paragraph(s): 203, 204, 205, 207, 209, 215 and 247 |
| Non-standard test method .....                                                                                                                                                                             | N/A                                                                                                  |
| <b>Test Report Form No.</b> .....                                                                                                                                                                          | 15-247_HoppingCMC                                                                                    |
| Test Report Form(s) Originator ..                                                                                                                                                                          | CMC Centro Misure Compatibilità S.r.l.                                                               |
| Master TRF .....                                                                                                                                                                                           | 2020-10                                                                                              |
| <b>General disclaimer:</b>                                                                                                                                                                                 |                                                                                                      |
| The test results presented in this report relate only to the object tested.<br>This report shall not be reproduced, except in full, without the written approval of CMC Centro Misure Compatibilità S.r.l. |                                                                                                      |
| <b>Test item description</b> .....                                                                                                                                                                         | R1280IU – skid – RAIN RFID Mini Sled Reader FCC                                                      |
| Trademark .....                                                                                                                                                                                            | Caen RFID                                                                                            |
| Manufacturer .....                                                                                                                                                                                         | Caen RFID S.r.l.                                                                                     |
| Model / Type reference .....                                                                                                                                                                               | WR1280IXUSAA                                                                                         |
| FCC ID .....                                                                                                                                                                                               | UVECAENRFID032                                                                                       |
| Rating(s) .....                                                                                                                                                                                            | 3,7 Vdc from battery<br>5 Vdc from USB                                                               |
| <b>Report</b>                                                                                                                                                                                              |                                                                                                      |
| Tested by (name + signature) .....                                                                                                                                                                         | G. Gandini      |
| Approved by (name + signature) .....                                                                                                                                                                       | R. Beghetto     |



## 1 Summary

|     |                                                                                   |    |
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|                                                                                                                                                    |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>2 Reference standard</b>                                                                                                                        |    |
| FCC Rules and Regulation Title 47 part 15:2019                                                                                                     | -- |
| <b>3 List of attachments</b>                                                                                                                       |    |
| Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references                                     |    |
| <b>4 Deviation(s) from test specification</b>                                                                                                      |    |
| None                                                                                                                                               |    |
| <b>5 Testing location</b>                                                                                                                          |    |
| CMC Centro Misure Compatibilità S.r.l.<br>Via della Fisica, 20 – 36016 Thiene (VI) – Italy<br>Test site facility's FCC registration number: 182474 |    |

| Revision index | Date       | Change history |
|----------------|------------|----------------|
| 1.0            | 11.01.2021 | --             |



| Testing and sampling:                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of receipt of test item .....                                                                                                                                                                                                                                                                                          | 13.11.2020                                                                                                                                                                             |
| Testing start date .....                                                                                                                                                                                                                                                                                                    | 26.11.2020                                                                                                                                                                             |
| Testing end date .....                                                                                                                                                                                                                                                                                                      | 21.12.2020                                                                                                                                                                             |
| Sampling procedure.....                                                                                                                                                                                                                                                                                                     | Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion.<br>The results relate to the sample as it has been received. |
| Internal identification .....                                                                                                                                                                                                                                                                                               | Adhesive label with the product number P201186                                                                                                                                         |
| General remarks:                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                        |
| <p>This report shall not be reproduced, except in full, without the written approval of CMC.<br/>The test results presented in this report relate only to the object tested.<br/>“(see appended table)”: refers to a table appended to the report.<br/>Throughout this report a comma is used as the decimal separator.</p> |                                                                                                                                                                                        |
| Possible test case verdicts:                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                        |
| Test case does not apply to the test object:                                                                                                                                                                                                                                                                                | N/A (Not Applicable)                                                                                                                                                                   |
| Test object does meet the requirement:                                                                                                                                                                                                                                                                                      | P (Pass)                                                                                                                                                                               |
| Test object does not meet the requirement:                                                                                                                                                                                                                                                                                  | F (Fail)                                                                                                                                                                               |
| Test object does not performed:                                                                                                                                                                                                                                                                                             | N/E (Not Executed)                                                                                                                                                                     |
| Definition of symbols used in this test report:                                                                                                                                                                                                                                                                             |                                                                                                                                                                                        |
| <input checked="" type="checkbox"/> Indicates that the listed condition, standard or equipment is applicable for this report.<br><input type="checkbox"/> Indicates that the listed condition, standard or equipment is not applicable for this report.                                                                     |                                                                                                                                                                                        |



## 6 General description of test item(s)

|                                                           |                                                 |                                                 |                             |                                     |                                     |                          |                          |
|-----------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-----------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| Description .....                                         | R1280IU – skid – RAIN RFID Mini Sled Reader FCC |                                                 |                             |                                     |                                     |                          |                          |
| Model Number .....                                        | WR1280IXUSAA                                    |                                                 |                             |                                     |                                     |                          |                          |
| FCC ID .....                                              | UVECAENRFID032                                  |                                                 |                             |                                     |                                     |                          |                          |
| Serial Number .....                                       | 0001000120400001                                |                                                 |                             |                                     |                                     |                          |                          |
| Brand name .....                                          | Caen RFID                                       |                                                 |                             |                                     |                                     |                          |                          |
| Frequency band .....                                      | 902 – 928 MHz                                   |                                                 |                             |                                     |                                     |                          |                          |
| Nominal frequencies .....                                 | F <sub>L</sub> : 902,75 MHz                     |                                                 | F <sub>M</sub> : 921,75 MHz |                                     | F <sub>H</sub> : 927,25 MHz         |                          |                          |
| Ports.....                                                | Port name and description                       |                                                 | Cable                       |                                     |                                     |                          |                          |
|                                                           |                                                 |                                                 | Specified length [m]        | Attached during test                | Shielded                            |                          |                          |
|                                                           | USB cable                                       |                                                 | < 3                         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                          |                          |
| Rated power supply .....                                  |                                                 | Voltage and Frequency                           | Reference poles             |                                     |                                     |                          |                          |
|                                                           |                                                 |                                                 | N                           | L1                                  | L2                                  | L3                       | PE                       |
|                                                           | <input type="checkbox"/>                        | AC:                                             | <input type="checkbox"/>    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
|                                                           | <input type="checkbox"/>                        | AC:                                             | <input type="checkbox"/>    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
|                                                           | <input checked="" type="checkbox"/>             | DC: 5 V from USB                                |                             |                                     |                                     |                          | <input type="checkbox"/> |
| Software version .....                                    | 1.3.1                                           |                                                 |                             |                                     |                                     |                          |                          |
| Pseudo randomly ordered list of hopping frequencies ..... | See document R1280IU_Operational_Description    |                                                 |                             |                                     |                                     |                          |                          |
| Test configuration .....                                  | <input type="checkbox"/>                        | Table top equipment                             |                             |                                     |                                     |                          |                          |
|                                                           | <input type="checkbox"/>                        | Floor standing equipment                        |                             |                                     |                                     |                          |                          |
|                                                           | <input checked="" type="checkbox"/>             | Hand-held equipment                             |                             |                                     |                                     |                          |                          |
| Type of equipment .....                                   | <input checked="" type="checkbox"/>             | Transmitter unit                                |                             |                                     |                                     |                          |                          |
|                                                           | <input checked="" type="checkbox"/>             | Receiver unit                                   |                             |                                     |                                     |                          |                          |
| Type of station .....                                     | <input type="checkbox"/>                        | Fixed station                                   |                             |                                     |                                     |                          |                          |
|                                                           | <input checked="" type="checkbox"/>             | Portable station                                |                             |                                     |                                     |                          |                          |
|                                                           | <input type="checkbox"/>                        | Mobile station                                  |                             |                                     |                                     |                          |                          |
| Operating modes .....                                     | No.                                             | Operating mode of test item                     |                             |                                     |                                     |                          |                          |
|                                                           | 1                                               | EUT in continuous transmission at maximum power |                             |                                     |                                     |                          |                          |



## 6.1 Photos of the test item







## 7 Verdict summary section

| FCC Rules & Regulations, Title 47:2019<br>Part 15 paragraph(s): 203, 204, 205, 207, 209, 215 and 247 |                                                     |                |         |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------|---------|
| Clause                                                                                               | Requirement – Test case                             | Basic standard | Verdict |
| Part 15.247 (a) (1)                                                                                  | Pseudo randomly ordered list of hopping frequencies | --             | P       |
| Part 15.203                                                                                          | Antenna requirements                                | ANSI C63.10    | P       |
| Part 15.207                                                                                          | Conducted emissions                                 | ANSI C63.10    | P       |
| Part 15.209                                                                                          | Radiated emissions and spurious emission            | ANSI C63.10    | P       |
| Part 15.247                                                                                          | 20 dB Bandwidth                                     | ANSI C63.10    | P       |
| Part 15.247                                                                                          | Channel Separation                                  | ANSI C63.10    | P       |
| Part 15.247                                                                                          | Number of Hopping Channel                           | ANSI C63.10    | P       |
| Part 15.247                                                                                          | Time of occupancy                                   | ANSI C63.10    | P       |
| Part 15.247                                                                                          | Band edge                                           | ANSI C63.10    | P       |
| Part 15.209 and 15.247                                                                               | Peak Output Power                                   | ANSI C63.10    | P       |



| Normative references                           |                                                                                                                                                                                          |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference no.                                  | Description                                                                                                                                                                              |
| FCC Rules and Regulation Title 47 part 15:2019 | --                                                                                                                                                                                       |
| KDB 558074 D01 15.247 Meas Guidance v05r02     | Guidance for compliance measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices operating under section 15.247 of the FCC rules |
| ANSI C63.4:2014                                | American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz                         |
| ANSI C63.10:2013                               | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices                                                                                           |



## 8 Test conditions

### 8.1 General

|                                          |                                                                                                                                                                                                                                 |                 |                             |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| Environmental reference conditions.....: | The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.<br>The climatic conditions during the tests were within the following limits: |                 |                             |
|                                          | <b>Temperature</b>                                                                                                                                                                                                              | <b>Humidity</b> | <b>Atmospheric pressure</b> |
|                                          | 15 °C – 35 °C                                                                                                                                                                                                                   | 30 % - 60 %     | 800 hPa – 1060 hPa          |
|                                          | If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.                                                                        |                 |                             |
| Measurement uncertainties .....          | Attachment 1                                                                                                                                                                                                                    |                 |                             |



## 9 Test results

### 9.1 Antenna requirements

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Tested by .....                     | G. Gandini                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |
| Test date .....                     | 26.11.2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |
| Reference standards .....           | FCC Rules and Regulation; Titles 47 Part. 15.203 and 15.204                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |
| Test specification .....            | An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded |                   |
| Antenna type.....                   | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Integral antenna  |
|                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | External antenna  |
|                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Dedicated antenna |
| Antenna gain.....                   | 3 dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| External R.F. power amplifier ..... | Not Present                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |



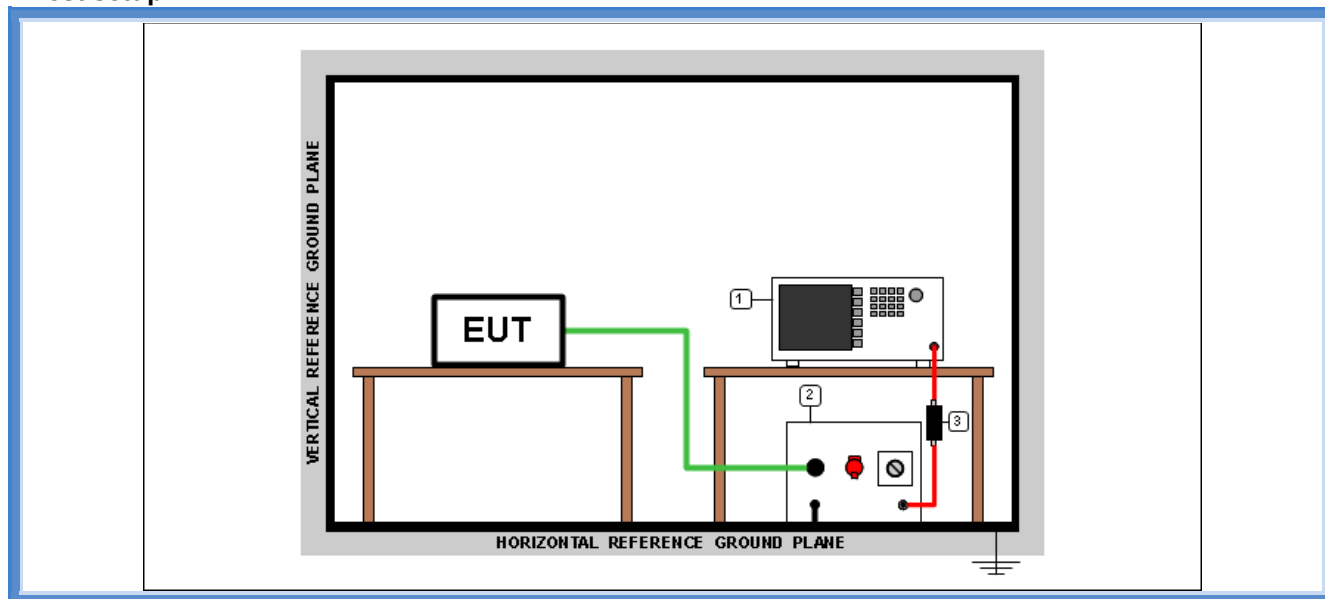
## 9.2 Conducted emission

|                                             |                                                                         |                                                                                                              |
|---------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Tested by .....                             | G. Gandini                                                              |                                                                                                              |
| Test date .....                             | 27.11.2020                                                              |                                                                                                              |
| Test location (stand) .....                 | Shielded chamber (CMC A001)                                             |                                                                                                              |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part. 15.207<br>ANSI C63.10 cl. 6.2 |                                                                                                              |
| Test set-up description .....               | <input checked="" type="checkbox"/>                                     | Table top equipment set-up (80 cm above the reference ground plane)                                          |
|                                             | <input type="checkbox"/>                                                | Floor standing equipment set-up (insulating material up to 12 mm thick)                                      |
|                                             | <input type="checkbox"/>                                                | False floor installation equipment set-up (insulating material up to 34 cm above the reference ground plane) |
| Supplementary Test set-up description ..... | --                                                                      |                                                                                                              |
| Test method applied .....                   | <input checked="" type="checkbox"/>                                     | Artificial mains network, 50 $\mu$ H/50 $\Omega$ LISN                                                        |
|                                             | <input type="checkbox"/>                                                | Other:                                                                                                       |

### Acceptance limits

| Frequency range (MHz) | <i>dB(<math>\mu</math>V) Quasi-peak</i> | <i>dB(<math>\mu</math>V) Average</i> |
|-----------------------|-----------------------------------------|--------------------------------------|
| 0,15 to 0,50          | 66 to 56                                | 56 to 46                             |
| 0,5 to 5              | 56                                      | 46                                   |
| 5 to 30               | 60                                      | 50                                   |

## Test setup



Test setup PE001\_01

| Test setup PE001_01 |            |                 |           |                                   |
|---------------------|------------|-----------------|-----------|-----------------------------------|
| Nr.                 | Id. Number | Manufacturer    | Model     | Description                       |
| 3                   | CMC S010   | Rohde & Schwarz | ESH3-Z2   | Pulse limiter                     |
| 2                   | CMC S200   | Schwarzbeck     | NSLK 8128 | V-LISN                            |
| 1                   | CMC S353   | Rohde & Schwarz | ESW26     | EMI Test Receiver 1 Hz - 26.5 GHz |

## Result

| Line | Frequency Range (MHz) | Graphs    | Remarks | Result |
|------|-----------------------|-----------|---------|--------|
| N    | 0,15 – 30             | G20222529 | --      | P      |
| L1   | 0,15 – 30             | G20222530 | --      | P      |

**Remarks:** test performed on 120 Vac side of auxiliary PC power unit

### Graphs Legend

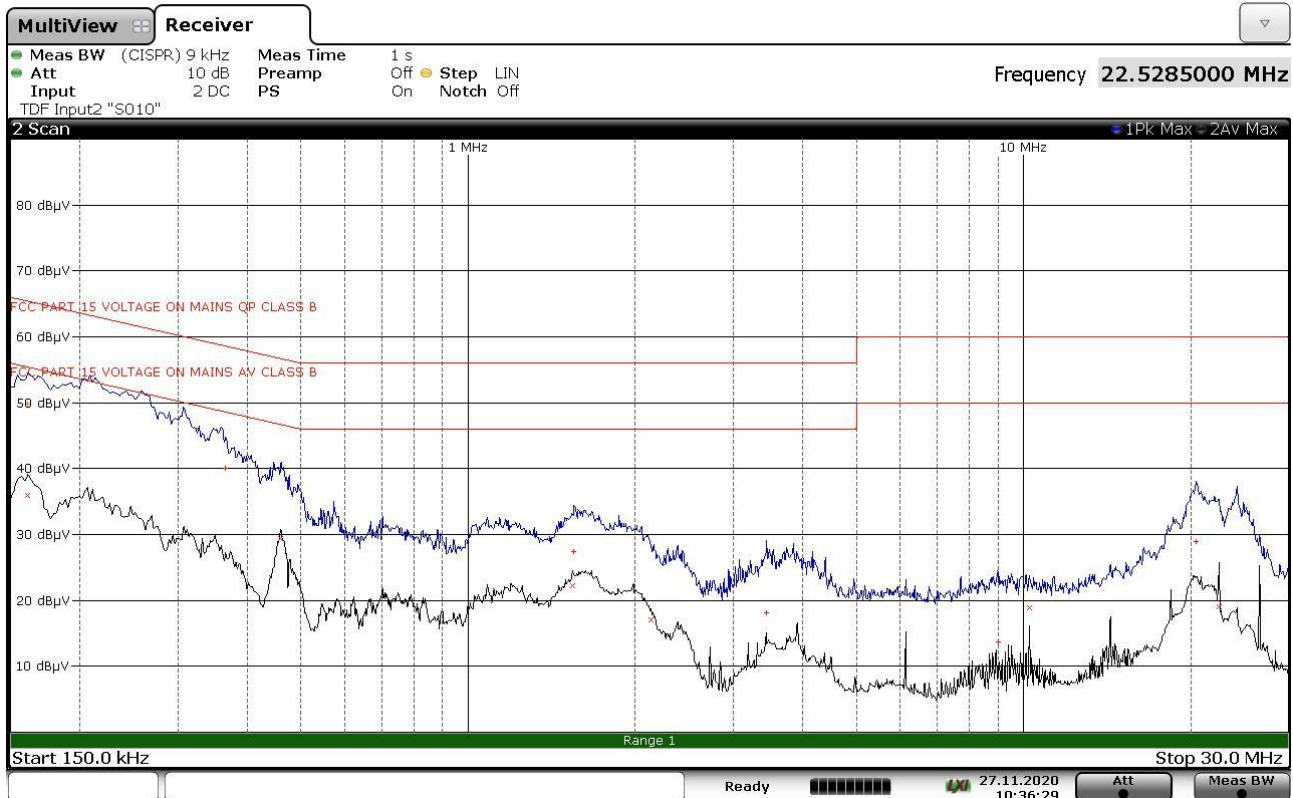
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +

AV: Average; AV [1s] (average at 1 second) values are marked with a X



## Graphs

Gandini 20222529



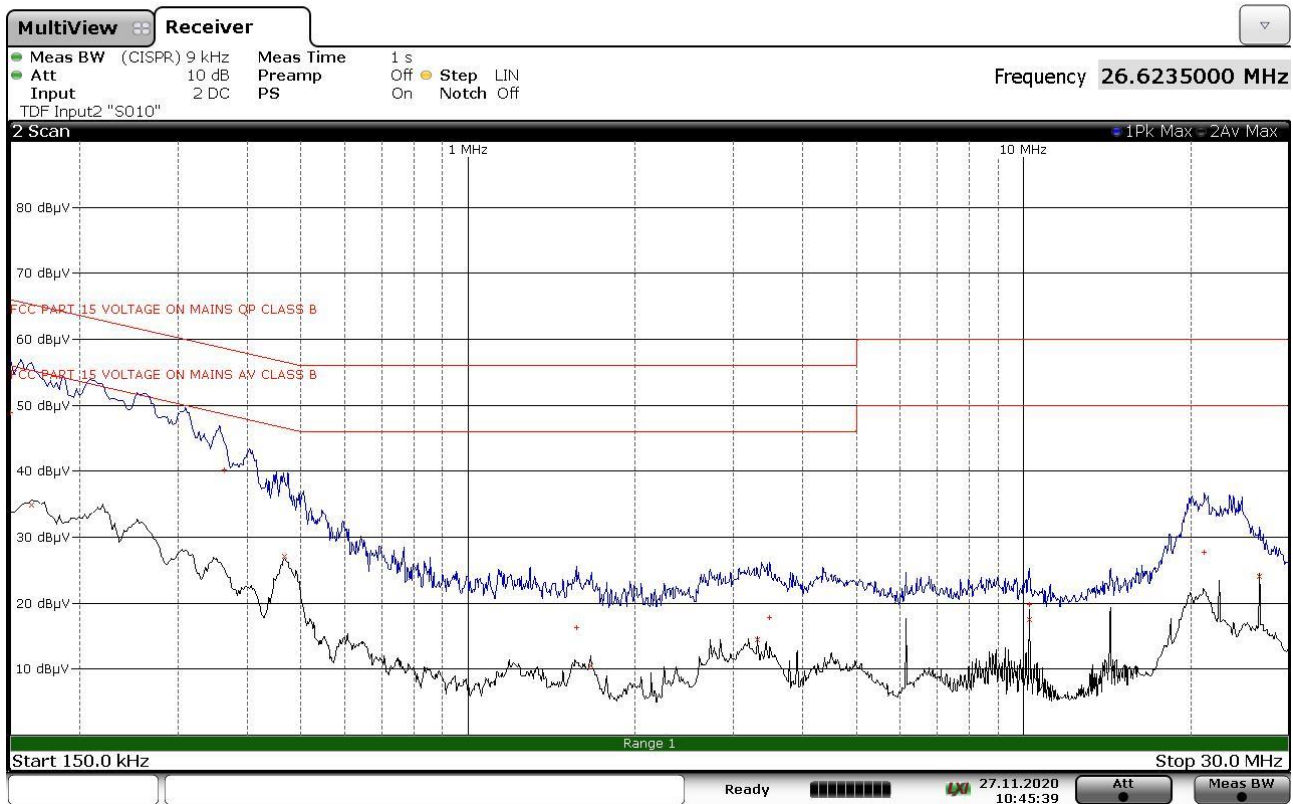
FINAL RESULT TABLE

| QUASI PEAK |          |           | AVERAGE  |          |           |
|------------|----------|-----------|----------|----------|-----------|
| Freq Hz    | Lev dBuV | Margin dB | Freq Hz  | Lev dBuV | Margin dB |
| 161250     | +49,77   | -15,63    | 161250   | +35,89   | -19,51    |
| 366000     | +40,09   | -18,50    | 460500   | +29,37   | -17,31    |
| 1549500    | +27,45   | -28,55    | 1542750  | +22,29   | -23,71    |
| 3446250    | +18,18   | -37,82    | 2132250  | +17,11   | -28,89    |
| 8992500    | +13,69   | -46,31    | 10239000 | +18,93   | -31,07    |
| 20467500   | +28,97   | -31,03    | 22528500 | +19,06   | -30,94    |

20222529\_2



Gandini 20222530



#### FINAL RESULT TABLE

##### QUASI PEAK

| Freq Hz  | Lev dBuV | Margin dB |
|----------|----------|-----------|
| 150000   | +48,82   | -17,18    |
| 363750   | +40,14   | -18,50    |
| 1567500  | +16,23   | -39,77    |
| 3493500  | +17,81   | -38,19    |
| 10241250 | +19,77   | -40,23    |
| 21174000 | +27,73   | -32,27    |

##### AVERAGE

| Freq Hz  | Lev dBuV | Margin dB |
|----------|----------|-----------|
| 163500   | +34,86   | -20,42    |
| 467250   | +27,16   | -19,40    |
| 1664250  | +10,53   | -35,47    |
| 3320250  | +14,48   | -31,52    |
| 10239000 | +17,55   | -32,45    |
| 26623500 | +24,03   | -25,97    |

20222530\_2



### 9.3 Emissions in restricted frequency bands and in unrestricted frequency bands

|                                             |                                                                                           |                                                                                                              |
|---------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Tested by .....                             | G. Gandini                                                                                |                                                                                                              |
| Test date .....                             | 26.11.2020                                                                                |                                                                                                              |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)                                                          |                                                                                                              |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part. 15.209<br>ANSI C63.10 cl. 6.3, 6.4, 6.5 and 6.6 |                                                                                                              |
| Test set-up description .....               | <input checked="" type="checkbox"/>                                                       | Table top equipment set-up (80 cm above the reference ground plane)                                          |
|                                             | <input type="checkbox"/>                                                                  | Floor standing equipment set-up (insulating material up to 12 mm thick)                                      |
|                                             | <input type="checkbox"/>                                                                  | False floor installation equipment set-up (insulating material up to 34 cm above the reference ground plane) |
| Supplementary test set-up description ..... | --                                                                                        |                                                                                                              |
| Test method applied .....                   | <input checked="" type="checkbox"/>                                                       | SAC with measurement distance [m]:<br>10 m at frequencies $\leq 1$ GHz<br>3 m at frequencies $> 1$ GHz       |
| Supplementary information .....             | --                                                                                        |                                                                                                              |

#### Acceptance limits

| Acceptance limits for emissions in restricted frequency bands ( $f < 1000$ MHz) |                   |                         |
|---------------------------------------------------------------------------------|-------------------|-------------------------|
| Frequency range (MHz)                                                           | Test distance (m) | Limits [dB( $\mu$ V/m)] |
| 0,009 to 0,490                                                                  | 300               | 48,5 to 13,8            |
| 0,490 to 1,705                                                                  | 30                | 33,8 to 22,9            |
| 1,705 to 30                                                                     | 30                | 29,5                    |
| 30 to 88                                                                        | 3                 | 40                      |
| 88 to 216                                                                       | 3                 | 43,5                    |
| 216 to 960                                                                      | 3                 | 46,0                    |
| 960 to 1000                                                                     | 3                 | 54                      |

**Remarks:** The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz and 110–490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector. The results have been extrapolated to the specified distance using an extrapolation factor

| Acceptance limits for emissions in restricted frequency bands ( $f \geq 1000$ MHz) |                   |                            |                              |
|------------------------------------------------------------------------------------|-------------------|----------------------------|------------------------------|
| Frequency (MHz)                                                                    | Test distance (m) | AV limits [dB( $\mu$ V/m)] | Peak limits [dB( $\mu$ V/m)] |
| $> 1000$                                                                           | 3                 | 54                         | 74                           |



The restricted frequency bands are listed in the following table

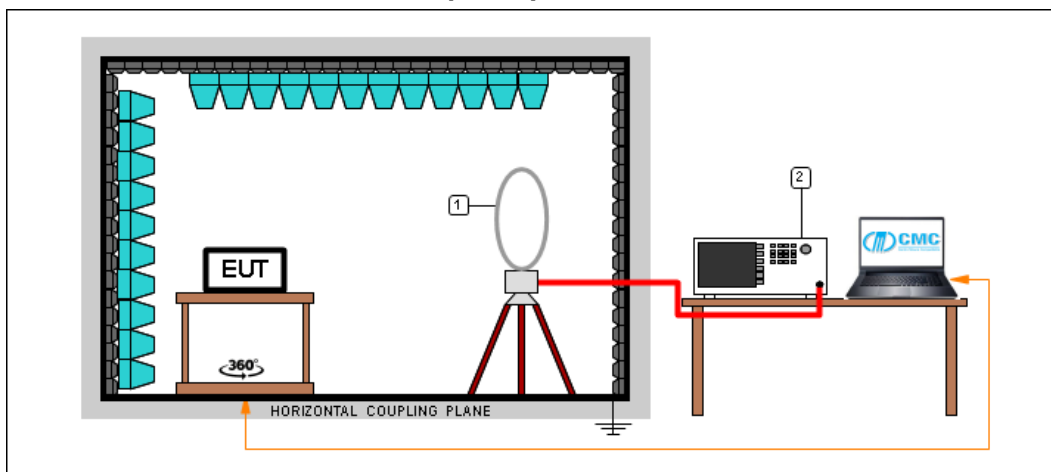
| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0,090 – 0,110       | 16,42 – 16,423        | 399,9 – 410     | 4,5 – 5,15    |
| 0,495 – 0,505       | 16,69475 – 16,69525   | 608 – 614       | 5,35 – 5,46   |
| 2,1735 – 2,1905     | 16,80425 – 16,80475   | 960 – 1240      | 7,25 – 7,75   |
| 4,125 – 4,128       | 25,5 – 25,67          | 1300 – 1427     | 8,025 – 8,5   |
| 4,17725 – 4,17775   | 37,5 – 38,25          | 1435 – 1626,5   | 9,0 – 9,2     |
| 4,20725 – 4,20775   | 73 – 74,6             | 1645,5 – 1646,5 | 9,3 – 9,5     |
| 6,215 – 6,218       | 74,8 – 75,2           | 1660 – 1710     | 10,6 – 12,7   |
| 6,26775 – 6,26825   | 108 – 121,94          | 1718,8 – 1722,2 | 13,25 – 13,4  |
| 6,31175 – 6,31225   | 123 – 138             | 2200 – 2300     | 14,47 – 14,5  |
| 8,291 – 8,294       | 149,9 – 150,05        | 2310 – 2390     | 15,35 – 16,2  |
| 8,362 – 8,366       | 156,52475 – 156,52525 | 2483,5 – 2500   | 17,7 – 21,4   |
| 8,37625 – 8,38675   | 156,7 – 156,9         | 2690 – 2900     | 22,01 – 23,12 |
| 8,41425 – 8,41475   | 162,0125 – 167,17     | 3260 – 3267     | 23,6 – 24,0   |
| 12,29 – 12,293      | 167,72 – 173,2        | 3332 – 3339     | 31,2 – 31,8   |
| 12,51975 – 12,52025 | 240 – 285             | 3345,8 – 3358   | 36,43 – 36,5  |
| 12,57675 – 12,57725 | 322 – 335,4           | 3600 – 4400     | Above 38,6    |
| 13,36 – 13,41       |                       |                 |               |

**Acceptance limits for emissions in non-restricted frequency bands**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

## Test setup

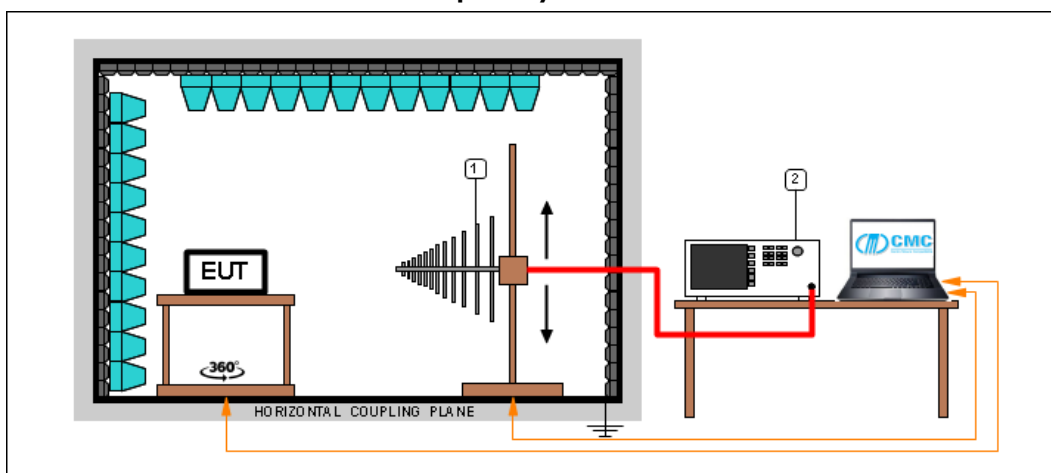
### Frequency $\leq 30$ MHz



#### Test setup PE004\_01

| Nr. | Id. Number | Manufacturer    | Model   | Description               |
|-----|------------|-----------------|---------|---------------------------|
| 2   | CMC S164   | Rohde & Schwarz | ESU26   | Receiver 20 Hz - 26.5 GHz |
| 1   | CMC S127   | Schaffner       | HLA6120 | Loop Antenna 9kHz - 30MHz |

### Frequency $\leq 1$ GHz



#### Test setup PE004\_02

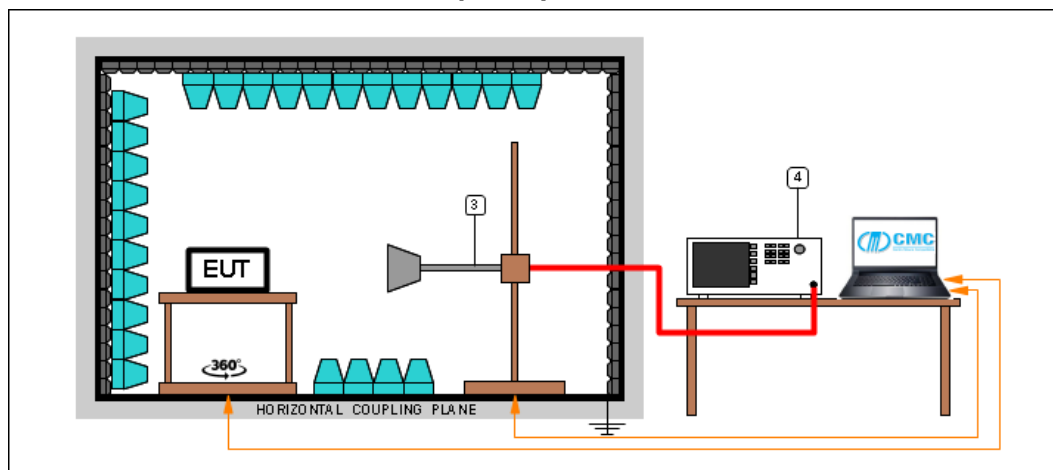
| Nr. | Id. Number | Manufacturer    | Model                | Description               |
|-----|------------|-----------------|----------------------|---------------------------|
| 2   | CMC S164   | Rohde & Schwarz | ESU26                | Receiver 20 Hz - 26.5 GHz |
| 1   | CMC S271   | Schwarzbeck     | BBA 9106 + VHBB 9124 | Broadband Antenna         |

#### Test setup PE004\_03

| Nr. | Id. Number | Manufacturer    | Model       | Description               |
|-----|------------|-----------------|-------------|---------------------------|
| 2   | CMC S164   | Rohde & Schwarz | ESU26       | Receiver 20 Hz - 26.5 GHz |
| 1   | CMC S287   | Schwarzbeck     | VUSLP 9111B | Broadband Antenna         |



### Frequency > 1 GHz



Test setup PE004\_04

| Nr. | Id. Number | Manufacturer    | Model | Description               |
|-----|------------|-----------------|-------|---------------------------|
| 4   | CMC S164   | Rohde & Schwarz | ESU26 | Receiver 20 Hz - 26.5 GHz |
| 3   | CMC S108   | Emco            | 3115  | Waveguide antenna         |



## Result

| Polarization | Frequency Range (MHz) | Graphs    | Remarks         | Result |
|--------------|-----------------------|-----------|-----------------|--------|
| V            | 300 – 1000            | G20222501 | Lowest channel  | P      |
| H            | 300 – 1000            | G20222502 | Lowest channel  | P      |
| H            | 300 – 1000            | G20222503 | Medium channel  | P      |
| V            | 300 – 1000            | G20222504 | Medium channel  | P      |
| V            | 300 – 1000            | G20222505 | Highest channel | P      |
| H            | 300 – 1000            | G20222506 | Highest channel | P      |
| H            | 30 – 300              | G20222507 | Worst case      | P      |
| V            | 30 – 300              | G20222508 | Worst case      | P      |
| Loop         | 0,009 – 30            | G20222509 | Worst case      | P      |
| V            | 1000 – 10000          | G20222531 | Lowest channel  | P      |
| H            | 1000 – 10000          | G20222532 | Lowest channel  | P      |
| H            | 1000 – 10000          | G20222533 | Medium channel  | P      |
| V            | 1000 – 10000          | G20222534 | Medium channel  | P      |
| V            | 1000 – 10000          | G20222535 | Highest channel | P      |
| H            | 1000 – 10000          | G20222536 | Highest channel | P      |

**Remarks:** EUT was tested in 3 orthogonal planes, graphs are related to the highest detected levels.

Measurements at frequencies lower than 30 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor  $40\log(\text{test distance}/10)$  based on the measuring distance provided by the standard.

Measurements at frequencies higher than 30 MHz and lower than 1000 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor  $20\log(\text{test distance}/10)$  based on the measuring distance provided by the standard.

Peaks above the limits are caused by the nominal transmitting frequencies

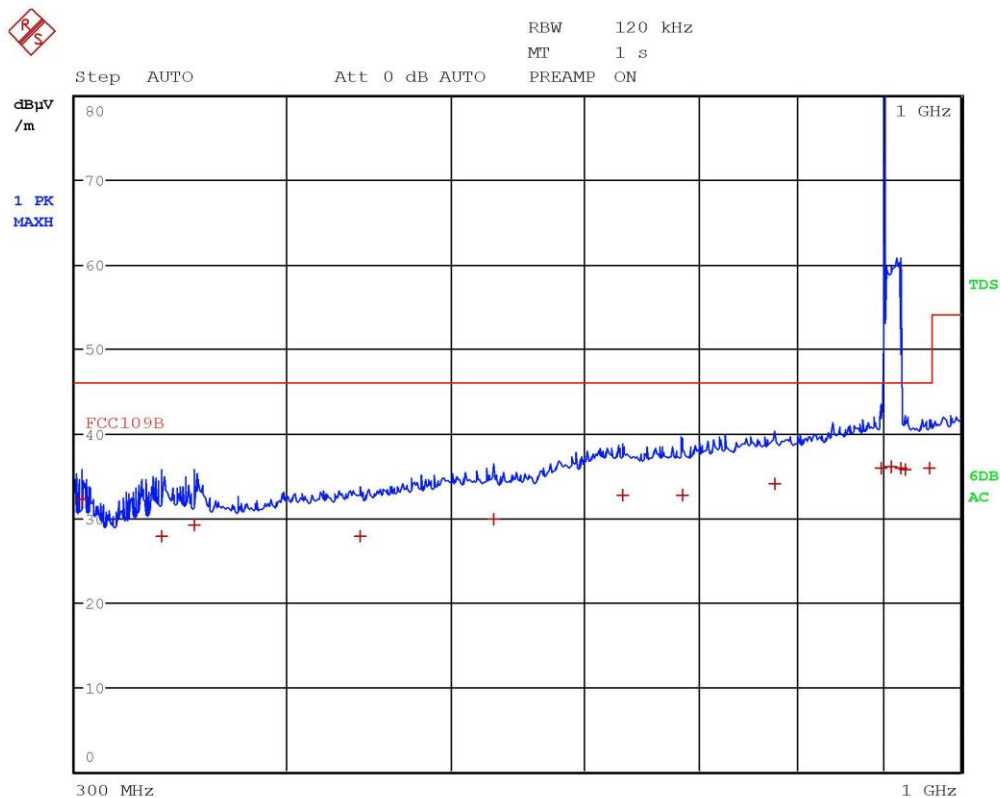
### Graphs Legend

PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +

AV: Average; AV [1s] (average at 1 second) values are marked with a X



## Graphs

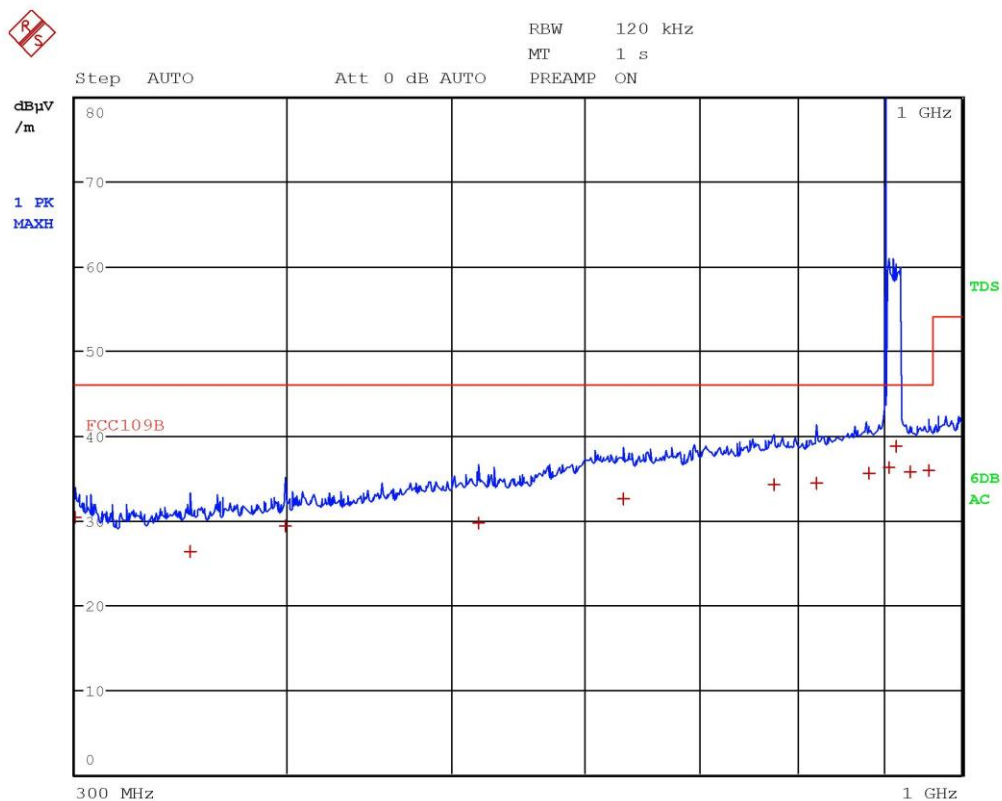


Gandini 20222501



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBµV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 303.04 MHz | 32.12        | -13.89         |
| 1 Quasi Peak                               | 337.52 MHz | 27.82        | -18.20         |
| 1 Quasi Peak                               | 352.96 MHz | 29.17        | -16.84         |
| 1 Quasi Peak                               | 441.84 MHz | 27.76        | -18.25         |
| 1 Quasi Peak                               | 529.68 MHz | 29.82        | -16.19         |
| 1 Quasi Peak                               | 631.84 MHz | 32.61        | -13.40         |
| 1 Quasi Peak                               | 685.04 MHz | 32.61        | -13.40         |
| 1 Quasi Peak                               | 776.52 MHz | 34.02        | -11.99         |
| 1 Quasi Peak                               | 897.24 MHz | 35.82        | -10.19         |
| 1 Quasi Peak                               | 910.16 MHz | 35.99        | -10.02         |
| 1 Quasi Peak                               | 921.88 MHz | 35.79        | -10.22         |
| 1 Quasi Peak                               | 926.76 MHz | 35.75        | -10.26         |
| 1 Quasi Peak                               | 958.4 MHz  | 35.93        | -10.08         |

Gandini 20222501

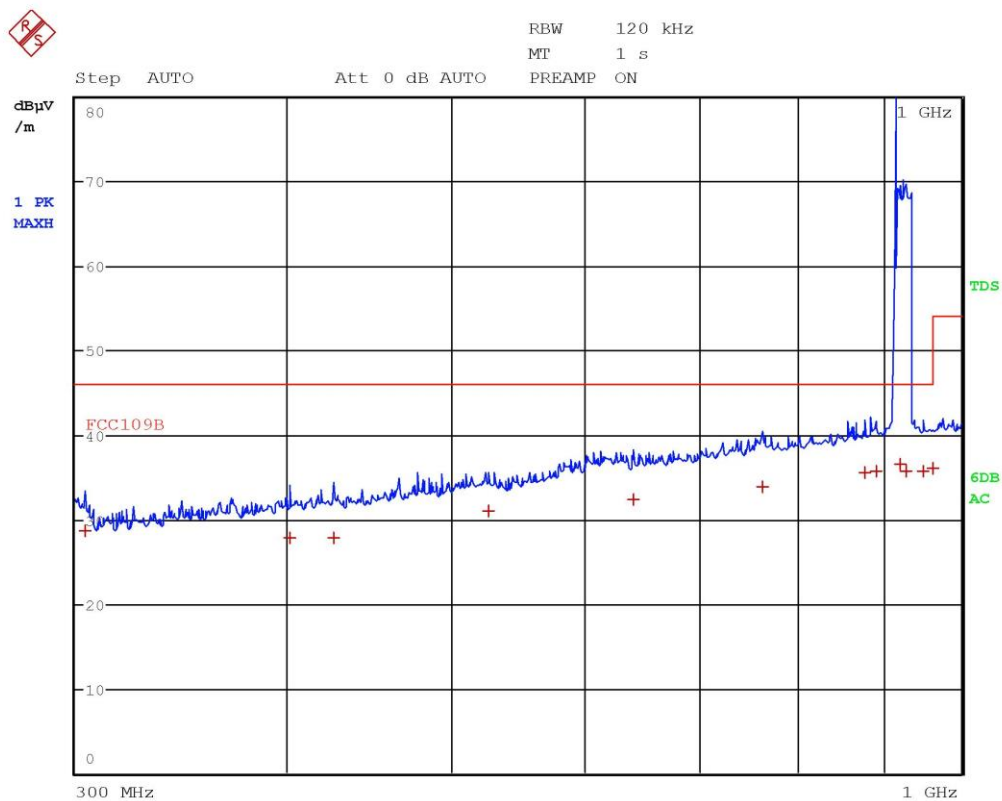


Gandini 20222502



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 300.16 MHz | 30.39        | -15.62         |
| 1 Quasi Peak                               | 351.04 MHz | 26.31        | -19.70         |
| 1 Quasi Peak                               | 399.36 MHz | 29.39        | -16.62         |
| 1 Quasi Peak                               | 518.92 MHz | 29.62        | -16.39         |
| 1 Quasi Peak                               | 632.2 MHz  | 32.51        | -13.50         |
| 1 Quasi Peak                               | 775.6 MHz  | 34.13        | -11.89         |
| 1 Quasi Peak                               | 820.92 MHz | 34.31        | -11.70         |
| 1 Quasi Peak                               | 881.64 MHz | 35.54        | -10.47         |
| 1 Quasi Peak                               | 906.64 MHz | 36.23        | -9.78          |
| 1 Quasi Peak                               | 914.96 MHz | 38.70        | -7.31          |
| 1 Quasi Peak                               | 932.4 MHz  | 35.71        | -10.30         |
| 1 Quasi Peak                               | 956.64 MHz | 35.88        | -10.14         |

Gandini 20222502

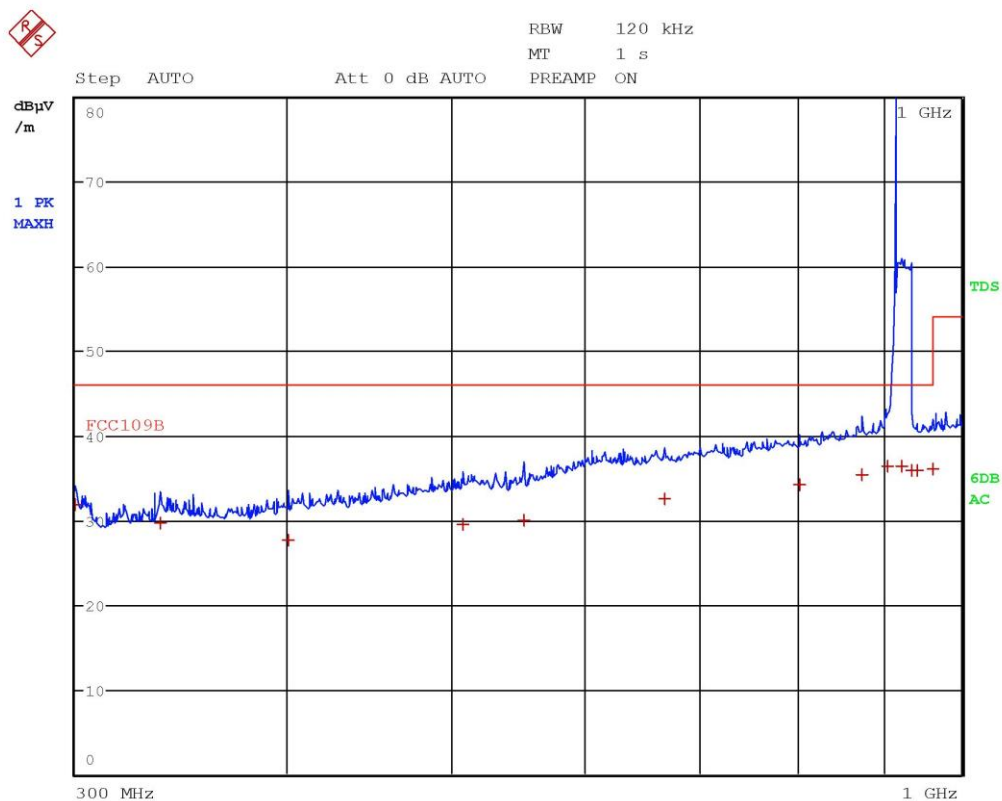


Gandini 20222503



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 304.16 MHz | 28.62        | -17.39         |
| 1 Quasi Peak                               | 401.12 MHz | 27.74        | -18.27         |
| 1 Quasi Peak                               | 426.12 MHz | 27.83        | -18.18         |
| 1 Quasi Peak                               | 526.32 MHz | 30.97        | -15.04         |
| 1 Quasi Peak                               | 640.84 MHz | 32.31        | -13.70         |
| 1 Quasi Peak                               | 763.56 MHz | 33.89        | -12.12         |
| 1 Quasi Peak                               | 876.76 MHz | 35.47        | -10.54         |
| 1 Quasi Peak                               | 890 MHz    | 35.63        | -10.38         |
| 1 Quasi Peak                               | 920.92 MHz | 36.52        | -9.49          |
| 1 Quasi Peak                               | 927.52 MHz | 35.65        | -10.36         |
| 1 Quasi Peak                               | 949.28 MHz | 35.73        | -10.28         |
| 1 Quasi Peak                               | 961.96 MHz | 36.04        | -17.93         |

Gandini 20222503

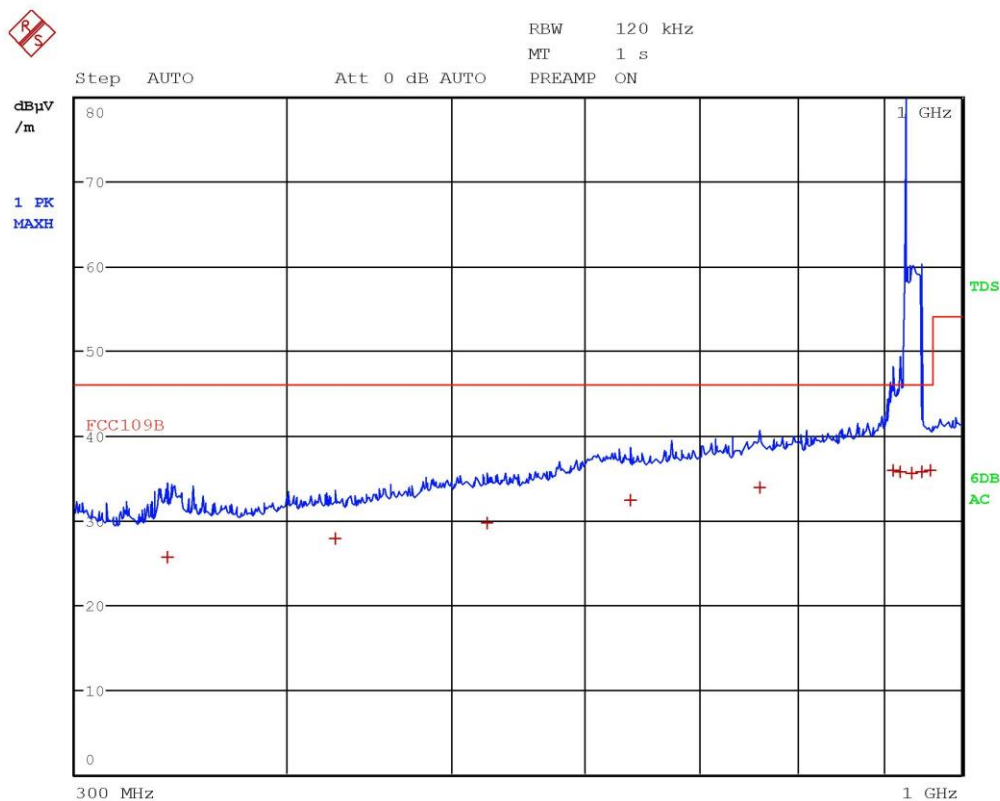


Gandini 20222504



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 300.16 MHz | 31.78        | -14.23         |
| 1 Quasi Peak                               | 336.84 MHz | 29.60        | -16.41         |
| 1 Quasi Peak                               | 401 MHz    | 27.65        | -18.36         |
| 1 Quasi Peak                               | 507.6 MHz  | 29.50        | -16.51         |
| 1 Quasi Peak                               | 552.36 MHz | 29.92        | -16.09         |
| 1 Quasi Peak                               | 668.28 MHz | 32.53        | -13.48         |
| 1 Quasi Peak                               | 802.68 MHz | 34.21        | -11.80         |
| 1 Quasi Peak                               | 872.92 MHz | 35.37        | -10.64         |
| 1 Quasi Peak                               | 904.88 MHz | 36.41        | -9.60          |
| 1 Quasi Peak                               | 922.96 MHz | 36.37        | -9.64          |
| 1 Quasi Peak                               | 933.8 MHz  | 35.86        | -10.15         |
| 1 Quasi Peak                               | 941.56 MHz | 35.87        | -10.15         |
| 1 Quasi Peak                               | 962.56 MHz | 36.05        | -17.92         |

Gandini 20222504

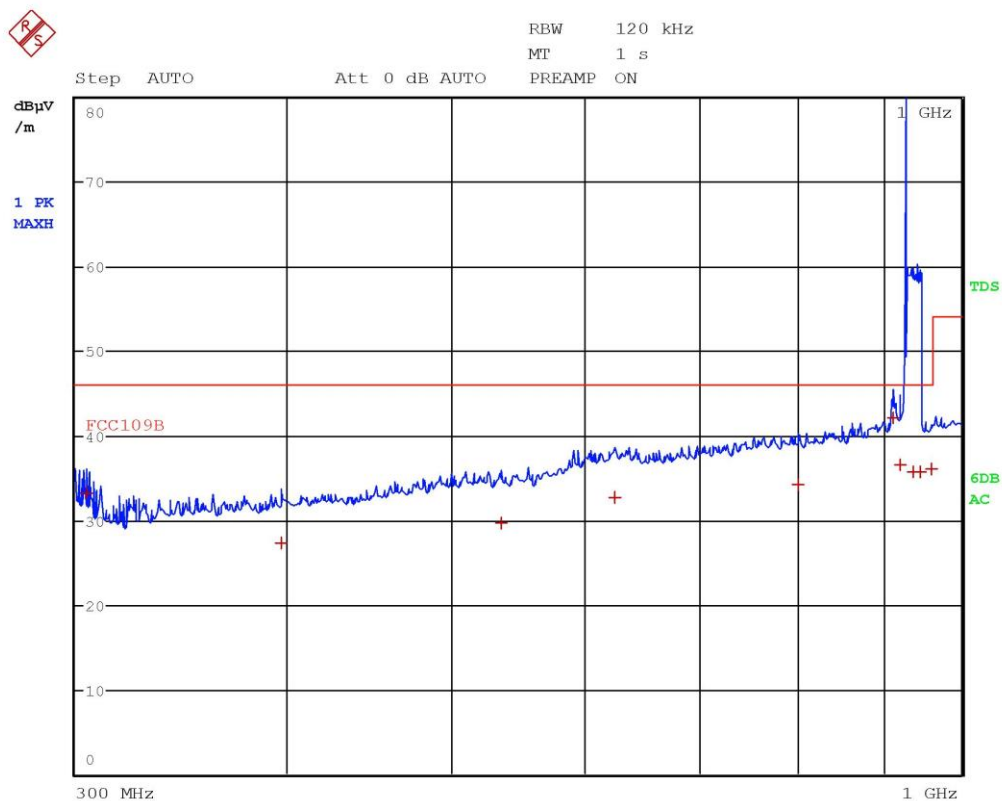


Gandini 20222505



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 339.84 MHz | 25.69        | -20.32         |
| 1 Quasi Peak                               | 426.88 MHz | 27.77        | -18.24         |
| 1 Quasi Peak                               | 525.32 MHz | 29.69        | -16.32         |
| 1 Quasi Peak                               | 637.72 MHz | 32.27        | -13.74         |
| 1 Quasi Peak                               | 760.12 MHz | 33.93        | -12.08         |
| 1 Quasi Peak                               | 912.04 MHz | 35.81        | -10.21         |
| 1 Quasi Peak                               | 920.76 MHz | 35.79        | -10.22         |
| 1 Quasi Peak                               | 935.28 MHz | 35.62        | -10.39         |
| 1 Quasi Peak                               | 947.2 MHz  | 35.66        | -10.35         |
| 1 Quasi Peak                               | 958.24 MHz | 35.89        | -10.12         |

Gandini 20222505

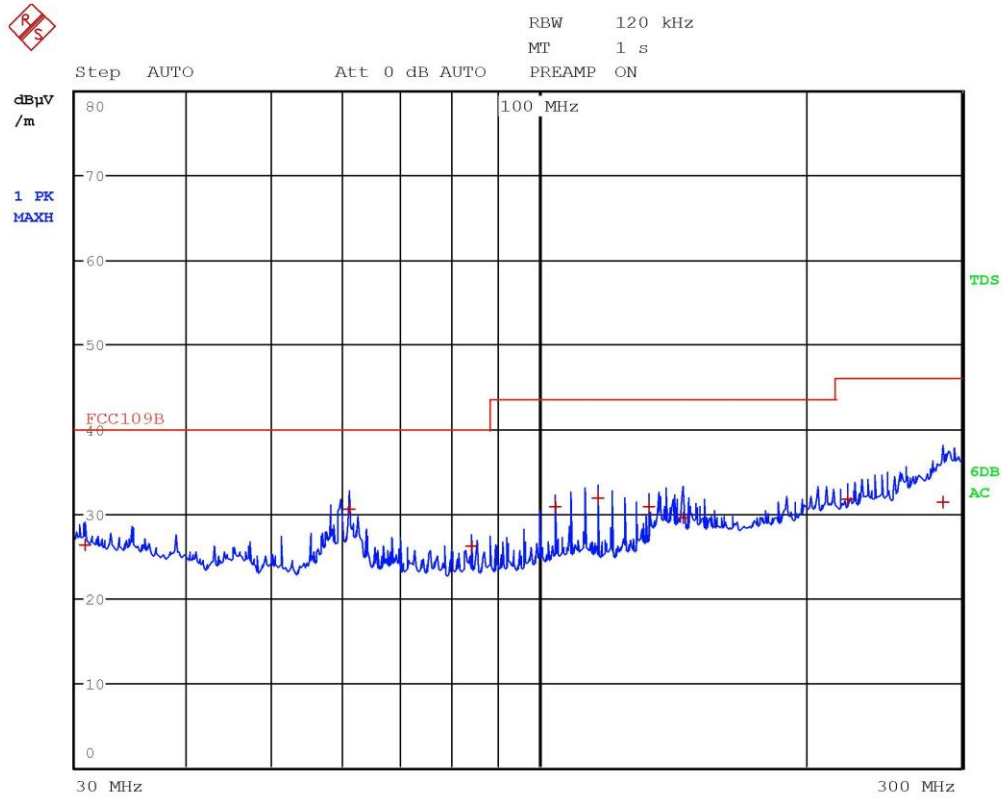


Gandini 20222506



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 304.6 MHz  | 33.26        | -12.75         |
| 1 Quasi Peak                               | 397 MHz    | 27.35        | -18.67         |
| 1 Quasi Peak                               | 535.64 MHz | 29.74        | -16.27         |
| 1 Quasi Peak                               | 624.4 MHz  | 32.60        | -13.41         |
| 1 Quasi Peak                               | 800.4 MHz  | 34.21        | -11.80         |
| 1 Quasi Peak                               | 912.04 MHz | 42.06        | -3.96          |
| 1 Quasi Peak                               | 920.76 MHz | 36.53        | -9.48          |
| 1 Max Peak                                 | 927.24 MHz |              |                |
| 1 Quasi Peak                               | 936.4 MHz  | 35.74        | -10.27         |
| 1 Quasi Peak                               | 945.24 MHz | 35.71        | -10.30         |
| 1 Quasi Peak                               | 959.36 MHz | 35.97        | -10.04         |

Gandini 20222506

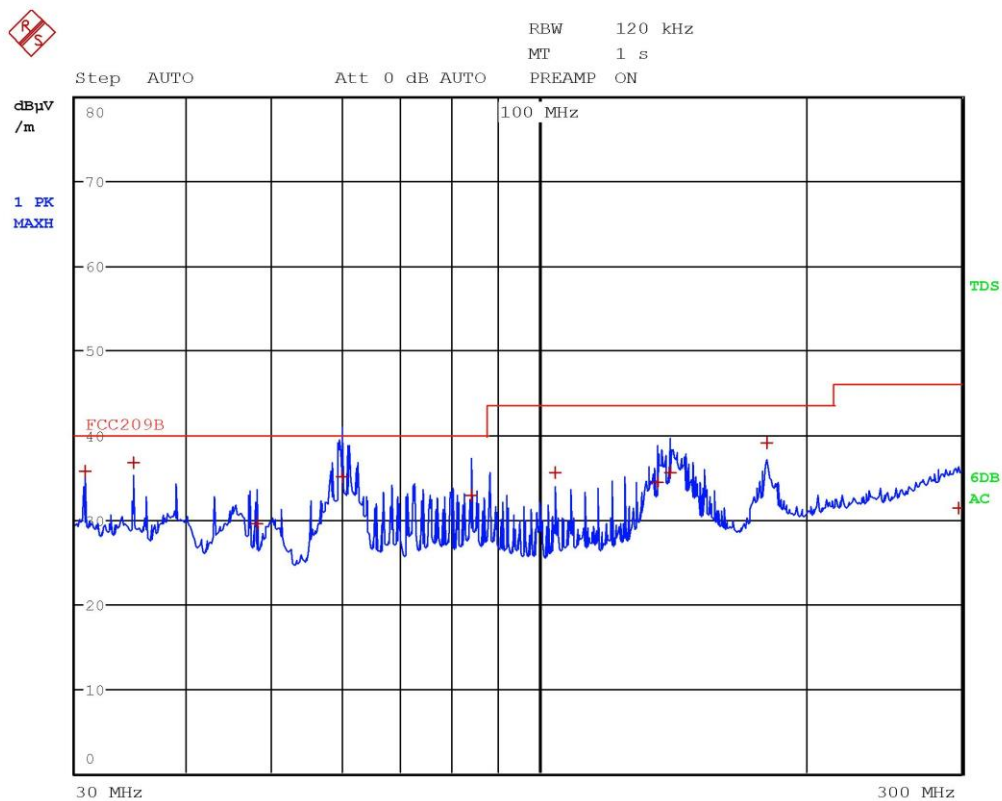


Gandini 20222507



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC109B    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 30.72 MHz  | 26.38        | -13.62         |
| 1 Quasi Peak                               | 61.16 MHz  | 30.55        | -9.44          |
| 1 Quasi Peak                               | 83.96 MHz  | 26.07        | -13.92         |
| 1 Quasi Peak                               | 104.44 MHz | 30.76        | -12.75         |
| 1 Quasi Peak                               | 116.72 MHz | 31.80        | -11.72         |
| 1 Quasi Peak                               | 133.12 MHz | 30.82        | -12.69         |
| 1 Quasi Peak                               | 145.4 MHz  | 29.51        | -14.00         |
| 1 Quasi Peak                               | 223.24 MHz | 31.72        | -14.29         |
| 1 Quasi Peak                               | 285.48 MHz | 31.41        | -14.60         |

Gandini 20222507

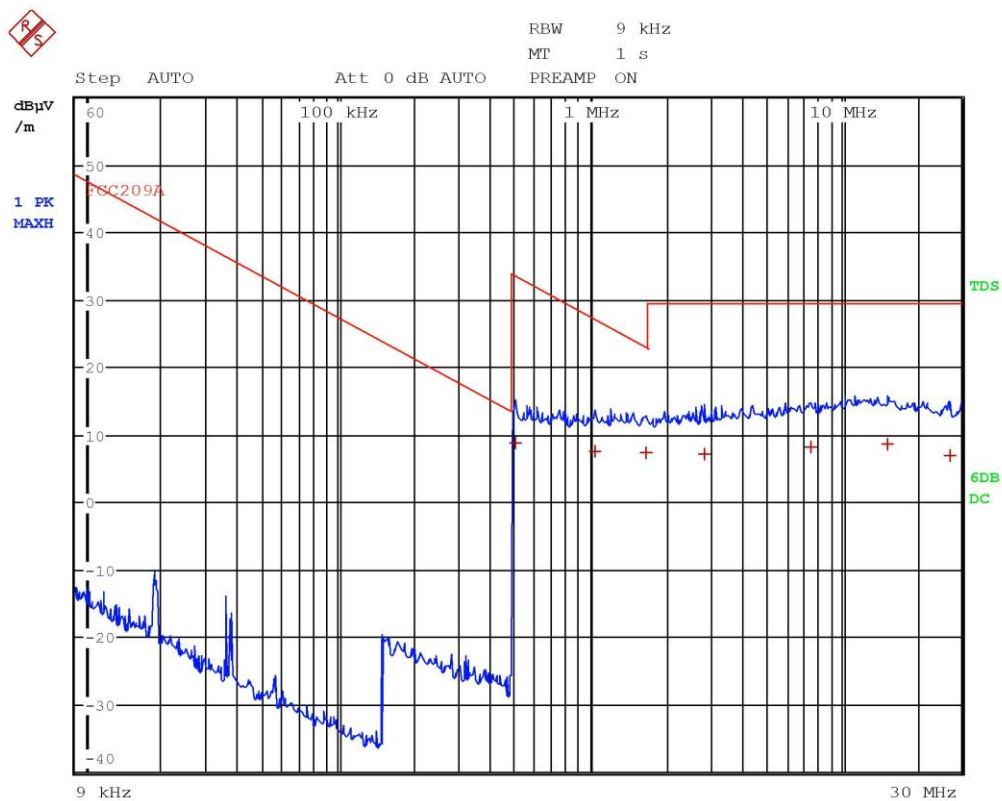


Gandini 20222508



| EDIT PEAK LIST (Final Measurement Results) |            |               |                |
|--------------------------------------------|------------|---------------|----------------|
| Trace1:                                    | FCC209B    |               |                |
| Trace2:                                    | ---        |               |                |
| Trace3:                                    | ---        |               |                |
| TRACE                                      | FREQUENCY  | LEVEL, dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 30.72 MHz  | 35.73         | -4.26          |
| 1 Quasi Peak                               | 34.8 MHz   | 36.72         | -3.27          |
| 1 Quasi Peak                               | 48 MHz     | 29.46         | -10.53         |
| 1 Quasi Peak                               | 60 MHz     | 35.01         | -4.99          |
| 1 Quasi Peak                               | 84 MHz     | 32.80         | -7.19          |
| 1 Quasi Peak                               | 104.44 MHz | 35.61         | -7.90          |
| 1 Quasi Peak                               | 136.28 MHz | 34.32         | -9.19          |
| 1 Quasi Peak                               | 140.8 MHz  | 35.48         | -8.03          |
| 1 Quasi Peak                               | 180.6 MHz  | 39.00         | -4.51          |
| 1 Quasi Peak                               | 297.92 MHz | 31.37         | -14.64         |

Gandini 20222508

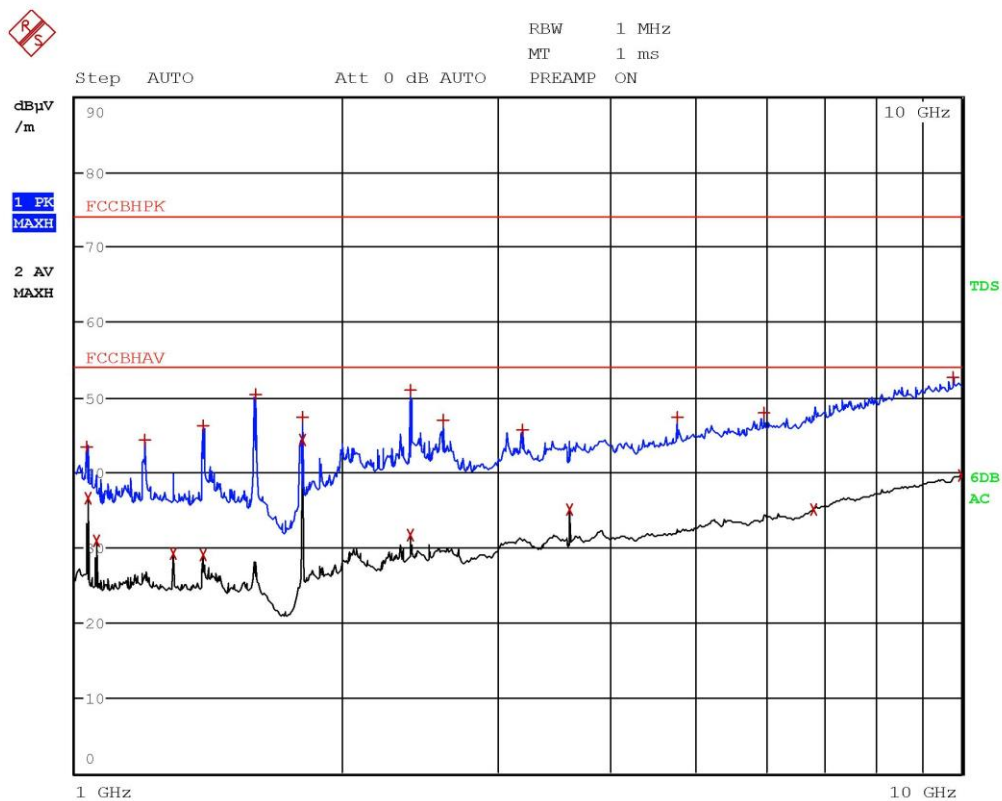


Gandini 20222509



| EDIT PEAK LIST (Final Measurement Results) |            |              |                |
|--------------------------------------------|------------|--------------|----------------|
| Trace1:                                    | FCC209A    |              |                |
| Trace2:                                    | ---        |              |                |
| Trace3:                                    | ---        |              |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV/m | DELTA LIMIT dB |
| 1 Quasi Peak                               | 502 kHz    | 8.88         | -24.70         |
| 1 Quasi Peak                               | 1.042 MHz  | 7.50         | -19.74         |
| 1 Quasi Peak                               | 1.674 MHz  | 7.29         | -15.83         |
| 1 Quasi Peak                               | 2.846 MHz  | 7.21         | -22.32         |
| 1 Quasi Peak                               | 7.546 MHz  | 8.26         | -21.27         |
| 1 Quasi Peak                               | 15.294 MHz | 8.70         | -20.83         |
| 1 Quasi Peak                               | 27.162 MHz | 6.94         | -22.59         |

Gandini 20222509



Gandini 20222531



| EDIT PEAK LIST (Prescan Results) |            |               |                |
|----------------------------------|------------|---------------|----------------|
| Trace1:                          | FCCBHPK    |               |                |
| Trace2:                          | FCCBHAV    |               |                |
| Trace3:                          | ---        |               |                |
| TRACE                            | FREQUENCY  | LEVEL, dBμV/m | DELTA LIMIT dB |
| 1 Max Peak                       | 1.0312 GHz | 43.40         | -30.58         |
| 2 Average                        | 1.0316 GHz | 36.63         | -17.34         |
| 2 Average                        | 1.0548 GHz | 30.99         | -22.98         |
| 1 Max Peak                       | 1.1996 GHz | 44.40         | -29.58         |
| 2 Average                        | 1.2892 GHz | 29.15         | -24.82         |
| 1 Max Peak                       | 1.3936 GHz | 46.19         | -27.78         |
| 2 Average                        | 1.3956 GHz | 28.93         | -25.04         |
| 1 Max Peak                       | 1.5964 GHz | 50.37         | -23.60         |
| 2 Average                        | 1.8056 GHz | 44.38         | -9.59          |
| 1 Max Peak                       | 1.8056 GHz | 47.36         | -26.61         |
| 1 Max Peak                       | 2.3908 GHz | 50.98         | -22.99         |
| 2 Average                        | 2.392 GHz  | 31.74         | -22.23         |
| 1 Max Peak                       | 2.598 GHz  | 47.07         | -26.91         |
| 1 Max Peak                       | 3.1944 GHz | 45.57         | -28.40         |
| 2 Average                        | 3.6112 GHz | 35.10         | -18.87         |
| 1 Max Peak                       | 4.7852 GHz | 47.27         | -26.70         |
| 1 Max Peak                       | 5.9948 GHz | 47.89         | -26.08         |
| 2 Average                        | 6.8052 GHz | 35.05         | -18.92         |
| 1 Max Peak                       | 9.7868 GHz | 52.71         | -21.26         |
| 2 Average                        | 9.9836 GHz | 39.65         | -14.32         |

Gandini 20222531