

## TEST REPORT

### Nr. R22007601

### Federal Communication Commission (FCC)

|                                                                                                                                                                                                            |                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Report Reference No.</b> .....                                                                                                                                                                          | R22007601                                                                                  |
| <b>Date of issue:</b> .....                                                                                                                                                                                | 24.06.2022                                                                                 |
| <b>Total number pages:</b> .....                                                                                                                                                                           | 60                                                                                         |
| <b>Customer name</b> .....                                                                                                                                                                                 | Microgate S.r.l.                                                                           |
| <b>Address</b> .....                                                                                                                                                                                       | Via Waltraud Gebert Deeg, 3e – 39100 Bolzano (BZ) – Italy                                  |
| <b>Test specification:</b>                                                                                                                                                                                 |                                                                                            |
| <b>Standards</b> .....                                                                                                                                                                                     | FCC Rules & Regulations, Title 47:2020<br>Part 15 paragraph(s): 203, 204, 207, 209 and 231 |
| <b>Non-standard test method</b> .....                                                                                                                                                                      | N/A                                                                                        |
| <b>Test Report Form No.</b> .....                                                                                                                                                                          | 15-231                                                                                     |
| <b>Test Report Form(s) Originator</b> ..                                                                                                                                                                   | CMC Centro Misure Compatibilità S.r.l.                                                     |
| <b>Master TRF</b> .....                                                                                                                                                                                    | 2022-06                                                                                    |
| <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> .....                                                                                                                                                                     | WITTYPRO SEM – Traffic Light                                                               |
| <b>(*) Trademark</b> .....                                                                                                                                                                                 | Microgate                                                                                  |
| <b>(*) Manufacturer</b> .....                                                                                                                                                                              | Microgate S.r.l.                                                                           |
| <b>(*) Model / Type reference</b> .....                                                                                                                                                                    | WIT205                                                                                     |
| <b>(*) FCC ID</b> .....                                                                                                                                                                                    | 2ADEOWIT205                                                                                |
| <b>(*) Rating(s)</b> .....                                                                                                                                                                                 | 3,7 Vdc from battery                                                                       |
| <b>Report</b>                                                                                                                                                                                              |                                                                                            |
| <b>Tested by (name + signature)</b> .....                                                                                                                                                                  | M. Segalla                                                                                 |
| <b>Approved by (name + signature)</b> .....                                                                                                                                                                | F. Marenda                                                                                 |

(\*) information provided by the customer

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| <b>2 Reference standard</b>                                                                                                                        |    |
| FCC Rules and Regulation Title 47 part 15:2020                                                                                                     | -- |
| <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 Misura Compatibilità S.r.l.<br>Via della Fisica, 20 – 36016 Thiene (VI) – Italy<br>Test site facility's FCC registration number: 182474 |    |

| <i>Revision index</i> | <i>Date</i> | <i>Change history</i> |
|-----------------------|-------------|-----------------------|
| 1.0                   | 24.06.2022  | --                    |

|                                                                                                                                                                                                                                                                                                                                      |                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Testing and sampling:</b>                                                                                                                                                                                                                                                                                                         |                                                          |
| Date of receipt of test item .....                                                                                                                                                                                                                                                                                                   | 12.01.2022                                               |
| Testing start date .....                                                                                                                                                                                                                                                                                                             | 13.06.2022                                               |
| Testing end date .....                                                                                                                                                                                                                                                                                                               | 16.06.2022                                               |
| Sampling procedure.....                                                                                                                                                                                                                                                                                                              | Equipment used for testing was picked up by the customer |
| Internal identification .....                                                                                                                                                                                                                                                                                                        | Adhesive label with the product number P220029           |
| <b>General remarks:</b>                                                                                                                                                                                                                                                                                                              |                                                          |
| <p>This report shall not be reproduced, except in full, without the written approval of CMC.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>“(see appended table)”: refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> |                                                          |
| <b>Possible test case verdicts:</b>                                                                                                                                                                                                                                                                                                  |                                                          |
| 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)                                       |
| <b>Definition of symbols used in this test report:</b>                                                                                                                                                                                                                                                                               |                                                          |
| <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 .....              | WITTYPRO SEM – Traffic Light                                                                              |                                                 |                          |                                              |                          |                          |                          |
| Model Number .....             | WIT205                                                                                                    |                                                 |                          |                                              |                          |                          |                          |
| FCC ID .....                   | 2ADEOWIT205                                                                                               |                                                 |                          |                                              |                          |                          |                          |
| Serial Number .....            | 000004                                                                                                    |                                                 |                          |                                              |                          |                          |                          |
| Brand name .....               | Microgate                                                                                                 |                                                 |                          |                                              |                          |                          |                          |
| Nominal frequency .....        | F <sub>L</sub> : 433,31 MHz                                                                               |                                                 |                          | F <sub>H</sub> : 434,71 MHz                  |                          |                          |                          |
| 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: 3,7 V from battery                          |                          |                                              |                          |                          | <input type="checkbox"/> |
| Type of equipment .....        | <input checked="" type="checkbox"/> Transmitter unit<br><input checked="" type="checkbox"/> Receiver unit |                                                 |                          |                                              |                          |                          |                          |
| Type of station .....          | <input type="checkbox"/> Portable station<br><input checked="" type="checkbox"/> Mobile station           |                                                 |                          |                                              |                          |                          |                          |
| Software version .....         | Bootloader Version 2.0.3<br>Application Version 2.1.14                                                    |                                                 |                          |                                              |                          |                          |                          |
| Test arrangements of EUT ..... | <i>Intended operational arrangement(s) of EUT</i>                                                         |                                                 |                          | <i>Test arrangement (see basic standard)</i> |                          |                          |                          |
|                                | <input checked="" type="checkbox"/> Table-top only                                                        |                                                 |                          | Table-top                                    |                          |                          |                          |
|                                | <input type="checkbox"/> Floor-standing only                                                              |                                                 |                          | Floor-standing                               |                          |                          |                          |
|                                | <input type="checkbox"/> Can be floor-standing or table-top                                               |                                                 |                          | Table-top                                    |                          |                          |                          |
|                                | <input type="checkbox"/> Rack mounted                                                                     |                                                 |                          | In rack or table-top                         |                          |                          |                          |
|                                | <input type="checkbox"/> Other, for example wall mounted, ceiling mounted, handheld, body worn            |                                                 |                          | Table-top                                    |                          |                          |                          |
| 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**

| <b>FCC Rules &amp; Regulations, Title 47:2019<br/>Part 15 paragraph(s): 203, 204, 207, 209 and 231</b> |                                    |                       |                |
|--------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------|----------------|
| <b>Clause</b>                                                                                          | <b>Requirement – Test case</b>     | <b>Basic standard</b> | <b>Verdict</b> |
| Part 15.203                                                                                            | Antenna requirements               | ANSI C63.10           | P              |
| Part 15.207                                                                                            | Conducted emissions                | ANSI C63.10           | P              |
| Part 15.209                                                                                            | Radiated emissions                 | ANSI C63.10           | P              |
| Part 15.209 and 15.231(b) (e)                                                                          | Field strength of fundamental      | ANSI C63.10           | P              |
| Part 15.209 and 15.231                                                                                 | Spurious emissions (> 1 GHz)       | ANSI C63.10           | P              |
| Part 15.231(c)                                                                                         | Occupied channel bandwidth         | ANSI C63.10           | P              |
| Part 15.231(a) (e)                                                                                     | Periodic operation characteristics | ANSI C63.10           | P              |

| Normative references                           |                                                                                                                                                                  |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference no.                                  | Description                                                                                                                                                      |
| FCC Rules and Regulation Title 47 part 15:2020 | --                                                                                                                                                               |
| 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.        |                 |                             |
|                                          | 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 .....                     | M. Segalla                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |
| Test date .....                     | 13.06.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |
| Reference standards .....           | FCC Rules and Regulation; Titles 47 Part. 15.203 and 15.204                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |
| Test specification .....            | <p>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</p> |                  |
| Antenna type.....                   | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Integral antenna |
|                                     | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | External antenna |
| Antenna gain.....                   | -4,70 dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |
| External R.F. power amplifier ..... | Not Present                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |

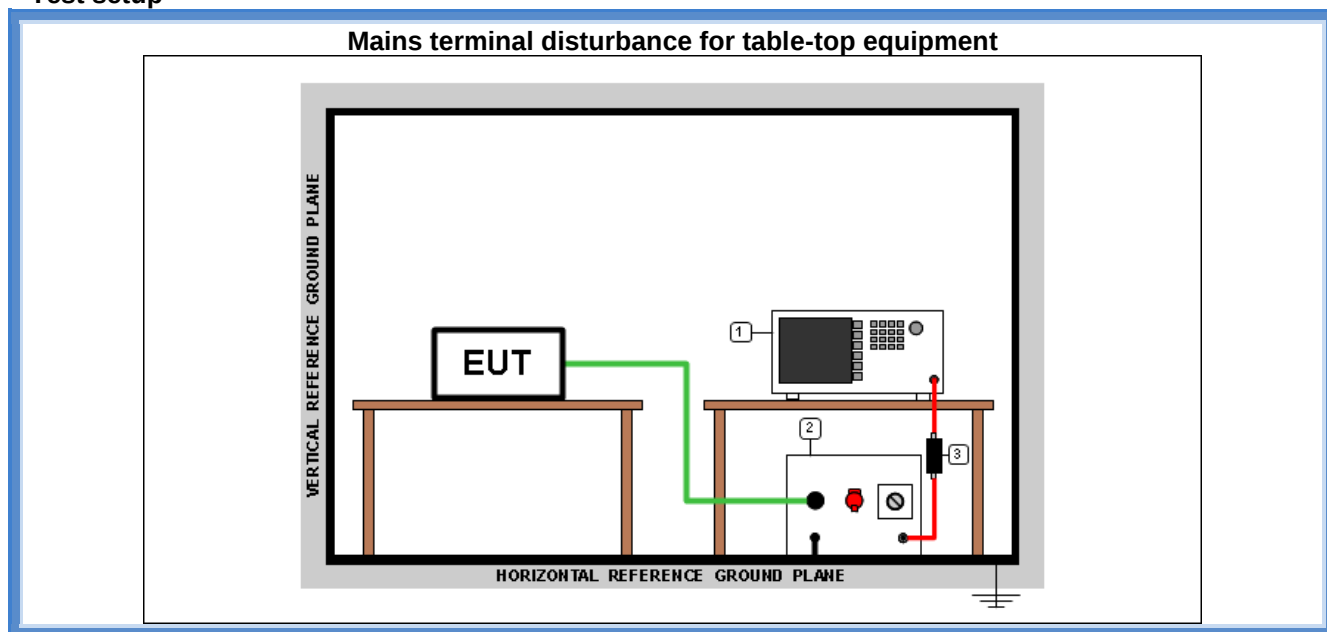
## 9.2 Conducted emissions

|                                             |                                                                         |                                                                                                              |
|---------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Tested by .....                             | M. Segalla                                                              |                                                                                                              |
| Test date .....                             | 16.06.2022                                                              |                                                                                                              |
| 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*

| 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 S206   | Rohde & Schwarz | ESCI 7    | EMC Receiver 9KHz-7GHz |

## Result

| Transmission channel (MHz) | Line | Frequency Range (MHz) | Graphs    | Result |
|----------------------------|------|-----------------------|-----------|--------|
| 433,31                     | L1   | 0,15 – 30             | G22007616 | P      |
| 433,31                     | N    | 0,15 – 30             | G22007617 | P      |
| 434,71                     | N    | 0,15 – 30             | G22007666 | P      |
| 434,71                     | L1   | 0,15 – 30             | G22007667 | P      |

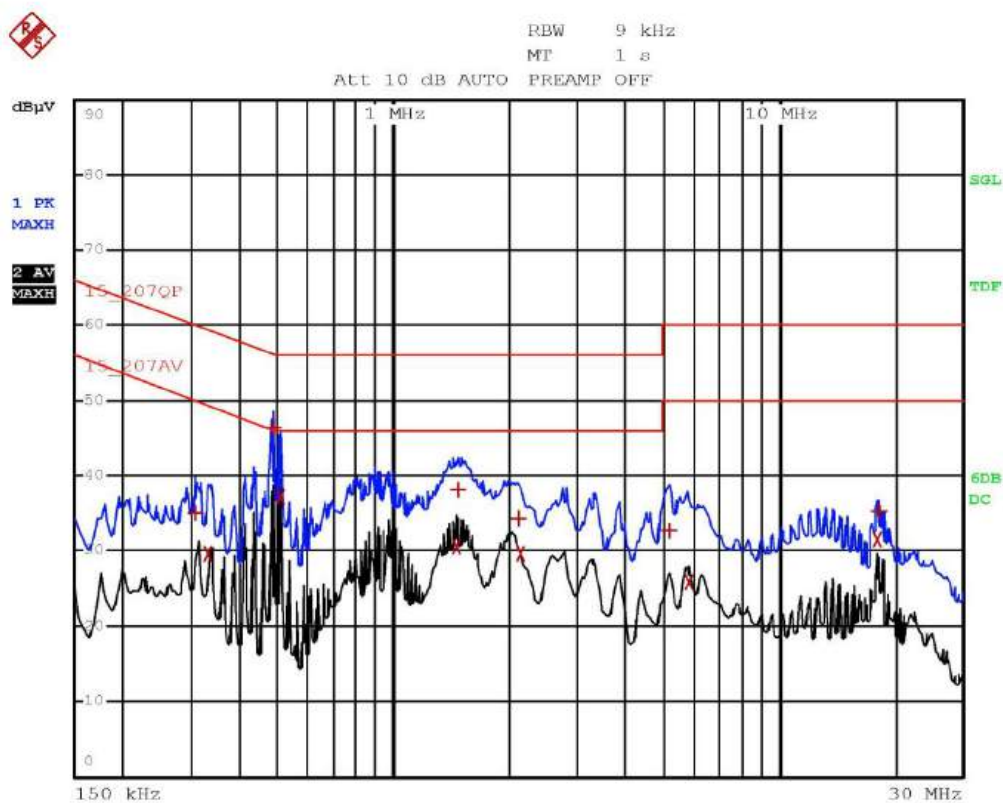
**Remarks:** tests performed on 110 V ~ 60 Hz side of USB FW8002MUSB/05 power unit

### 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

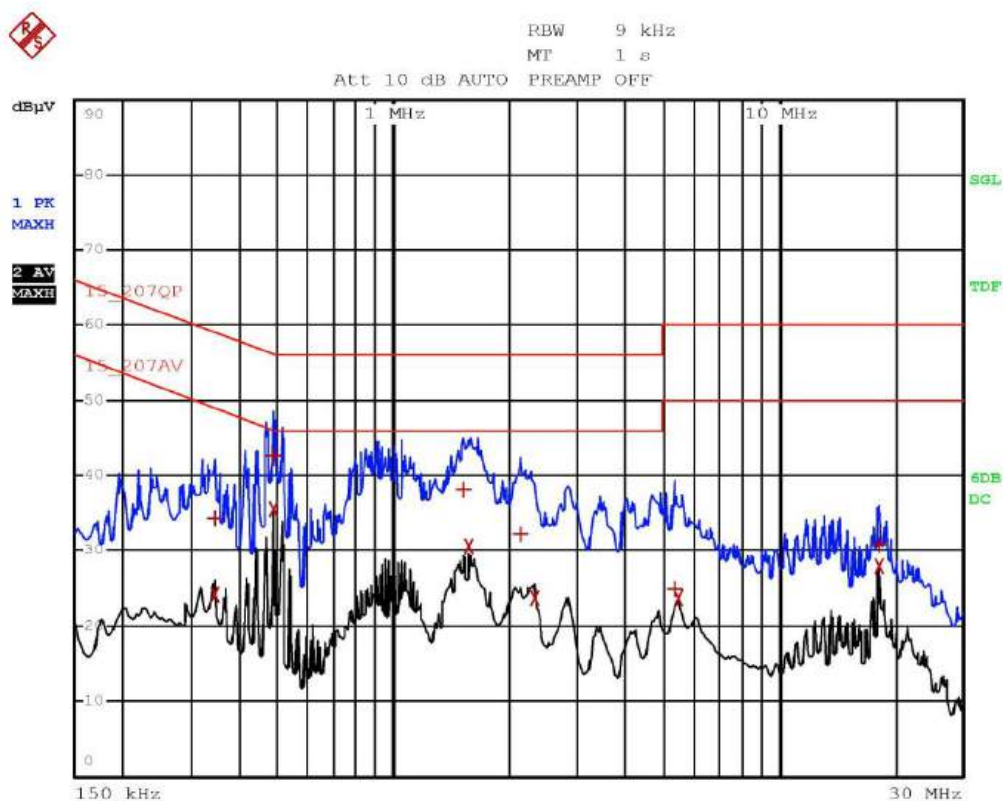
## Graphs



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| EDIT PEAK LIST (Final Measurement Results) |            |            |                |
|--------------------------------------------|------------|------------|----------------|
| Trace1:                                    | 15_207QP   |            |                |
| Trace2:                                    | 15_207AV   |            |                |
| Trace3:                                    | ---        |            |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV | DELTA LIMIT dB |
| 1 Quasi Peak                               | 306 kHz    | 35.12      | -24.95         |
| 2 Average                                  | 334 kHz    | 29.72      | -19.62         |
| 1 Quasi Peak                               | 486 kHz    | 46.37      | -9.85          |
| 2 Average                                  | 510 kHz    | 37.31      | -8.68          |
| 2 Average                                  | 1.454 MHz  | 30.67      | -15.33         |
| 1 Quasi Peak                               | 1.482 MHz  | 38.13      | -17.86         |
| 1 Quasi Peak                               | 2.122 MHz  | 34.38      | -21.61         |
| 2 Average                                  | 2.138 MHz  | 29.58      | -16.41         |
| 1 Quasi Peak                               | 5.234 MHz  | 32.75      | -27.24         |
| 2 Average                                  | 5.842 MHz  | 25.76      | -24.23         |
| 2 Average                                  | 18.13 MHz  | 31.52      | -18.47         |
| 1 Quasi Peak                               | 18.154 MHz | 35.24      | -24.75         |

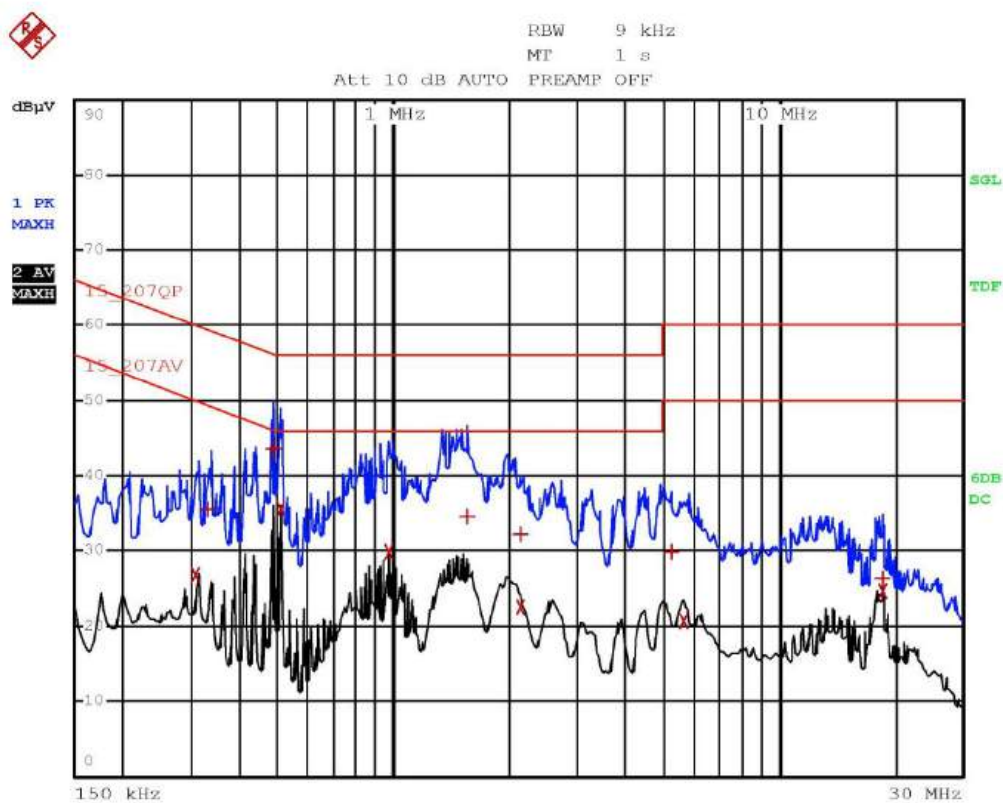
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| EDIT PEAK LIST (Final Measurement Results) |            |            |                |
|--------------------------------------------|------------|------------|----------------|
| Trace1:                                    | 15_207QP   |            |                |
| Trace2:                                    | 15_207AV   |            |                |
| Trace3:                                    | ---        |            |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV | DELTA LIMIT dB |
| 1 Quasi Peak                               | 342 kHz    | 34.35      | -24.80         |
| 2 Average                                  | 342 kHz    | 24.19      | -24.96         |
| 1 Quasi Peak                               | 490 kHz    | 42.54      | -13.62         |
| 2 Average                                  | 490 kHz    | 35.45      | -10.71         |
| 1 Quasi Peak                               | 1.522 MHz  | 39.20      | -17.79         |
| 2 Average                                  | 1.57 MHz   | 30.47      | -15.52         |
| 1 Quasi Peak                               | 2.13 MHz   | 32.26      | -23.73         |
| 2 Average                                  | 2.318 MHz  | 23.68      | -22.31         |
| 1 Quasi Peak                               | 5.366 MHz  | 24.95      | -35.04         |
| 2 Average                                  | 5.478 MHz  | 23.70      | -26.30         |
| 2 Average                                  | 10.154 MHz | 20.10      | -21.90         |
| 1 Quasi Peak                               | 10.25 MHz  | 30.02      | -29.17         |

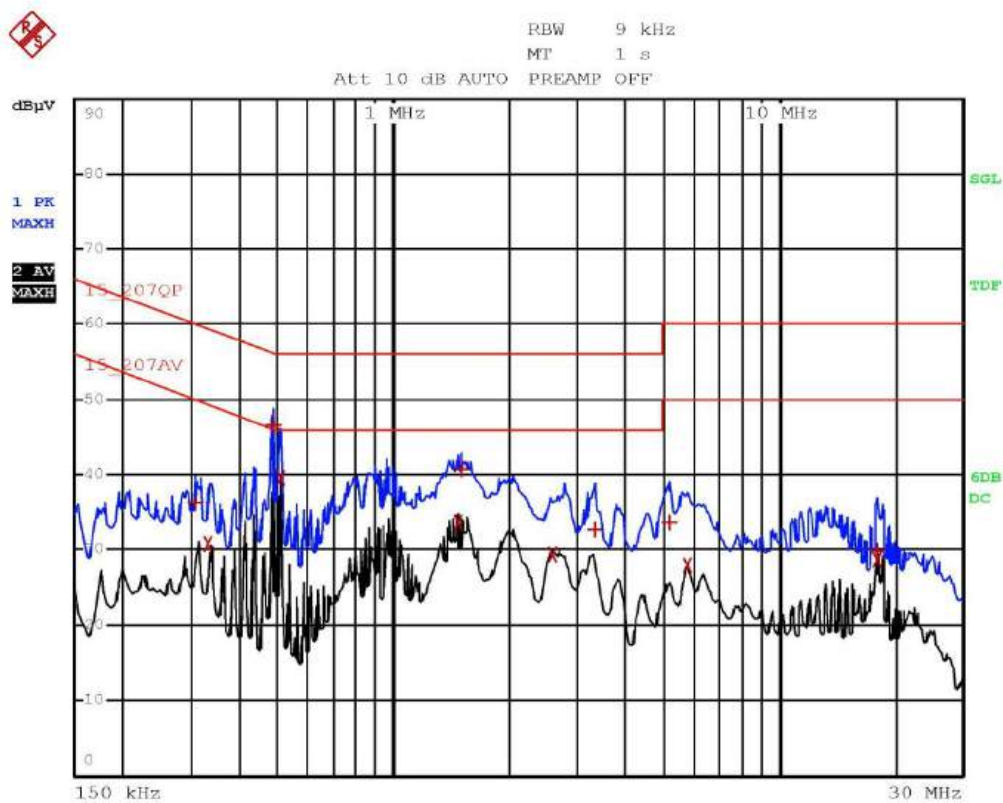
Segalla 22007617



Segalla 22007666

| EDIT PEAK LIST (Final Measurement Results) |            |            |            |                |
|--------------------------------------------|------------|------------|------------|----------------|
| Trace1:                                    |            | 15_207QP   |            |                |
| Trace2:                                    |            | 15_207AV   |            |                |
| Trace3:                                    |            | ---        |            |                |
|                                            | TRACE      | FREQUENCY  | LEVEL dBμV | DELTA LIMIT dB |
| 2                                          | Average    | 310 kHz    | 26.81      | -23.15         |
| 1                                          | Quasi Peak | 334 kHz    | 35.48      | -23.86         |
| 1                                          | Quasi Peak | 486 kHz    | 43.47      | -12.76         |
| 2                                          | Average    | 510 kHz    | 35.46      | -10.53         |
| 2                                          | Average    | 970 kHz    | 29.89      | -16.10         |
| 1                                          | Quasi Peak | 1.562 MHz  | 34.58      | -21.41         |
| 1                                          | Quasi Peak | 2.13 MHz   | 32.33      | -23.66         |
| 2                                          | Average    | 2.13 MHz   | 22.65      | -23.34         |
| 1                                          | Quasi Peak | 5.25 MHz   | 29.84      | -30.16         |
| 2                                          | Average    | 5.706 MHz  | 20.61      | -29.38         |
| 2                                          | Average    | 18.618 MHz | 24.68      | -25.31         |
| 1                                          | Quasi Peak | 18.646 MHz | 26.28      | -33.71         |

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| EDIT PEAK LIST (Final Measurement Results) |            |            |                |
|--------------------------------------------|------------|------------|----------------|
| Trace1:                                    | 15_207QP   |            |                |
| Trace2:                                    | 15_207AV   |            |                |
| Trace3:                                    | ---        |            |                |
| TRACE                                      | FREQUENCY  | LEVEL dBμV | DELTA LIMIT dB |
| 1 Quasi Peak                               | 306 kHz    | 36.37      | -23.70         |
| 2 Average                                  | 334 kHz    | 30.93      | -18.41         |
| 1 Quasi Peak                               | 486 kHz    | 46.73      | -9.50          |
| 2 Average                                  | 510 kHz    | 39.58      | -6.41          |
| 2 Average                                  | 1.478 MHz  | 33.76      | -12.24         |
| 1 Quasi Peak                               | 1.506 MHz  | 40.69      | -15.30         |
| 2 Average                                  | 2.602 MHz  | 29.33      | -16.66         |
| 1 Quasi Peak                               | 3.342 MHz  | 32.61      | -23.39         |
| 1 Quasi Peak                               | 5.21 MHz   | 33.75      | -26.24         |
| 2 Average                                  | 5.794 MHz  | 27.88      | -22.11         |
| 1 Quasi Peak                               | 18.05 MHz  | 29.80      | -30.19         |
| 2 Average                                  | 18.106 MHz | 28.77      | -21.22         |

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### 9.3 Radiated emissions and spurious emissions

|                                             |                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tested by .....                             | M. Segalla                                                                                                                                                                                                                                                                                                                                           |
| Test date .....                             | 13.06.2022                                                                                                                                                                                                                                                                                                                                           |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)                                                                                                                                                                                                                                                                                                                     |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part. 15.209 and 15.231<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)<br><input type="checkbox"/> Floor standing equipment set-up (insulating material up to 12 mm thick)<br><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]: 10 or 3                                                                                                                                                                                                                                                                       |
| Supplementary information.....              | --                                                                                                                                                                                                                                                                                                                                                   |

#### Acceptance limits

| <b>Acceptance limits for emissions in restricted frequency bands (<math>f &lt; 1000</math> MHz)</b> |                   |                         |
|-----------------------------------------------------------------------------------------------------|-------------------|-------------------------|
| 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

| <b>FCC Part 15.231 (b)</b>  |                                                       |
|-----------------------------|-------------------------------------------------------|
| Fundamental frequency (MHz) | Field strength of spurious emissions [dB( $\mu$ V/m)] |
| 40,66 to 40,70              | 47,04                                                 |
| 70 to 130                   | 41,94                                                 |
| 130 to 174                  | 41,94 to 51,48                                        |
| 174 to 260                  | 51,48                                                 |
| 260 to 470                  | 51,48 to 61,94                                        |
| Above 470                   | 61,94                                                 |

| <b>Acceptance limits for emissions in restricted frequency bands (<math>f \geq 1000</math> MHz)</b> |                   |                            |                              |
|-----------------------------------------------------------------------------------------------------|-------------------|----------------------------|------------------------------|
| 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

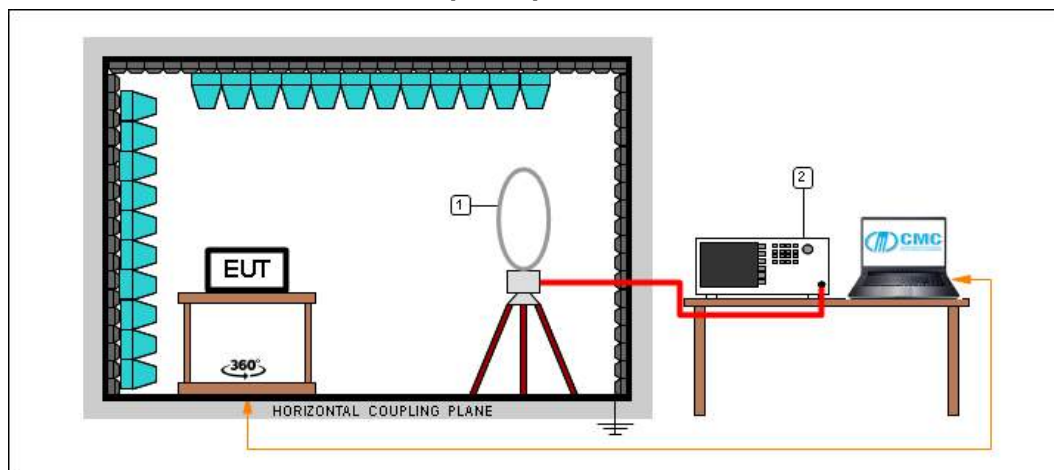
| MHz                 | MHz                   | MHz             | GHz           |
|---------------------|-----------------------|-----------------|---------------|
| 0,090 – 0,110       | 16,42 – 16,423        | 399,9 – 410     | 4,5 – 5,15    |
| 0,495 – 0,505       | 16,69475 – 16,69525   | 608 – 614       | 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

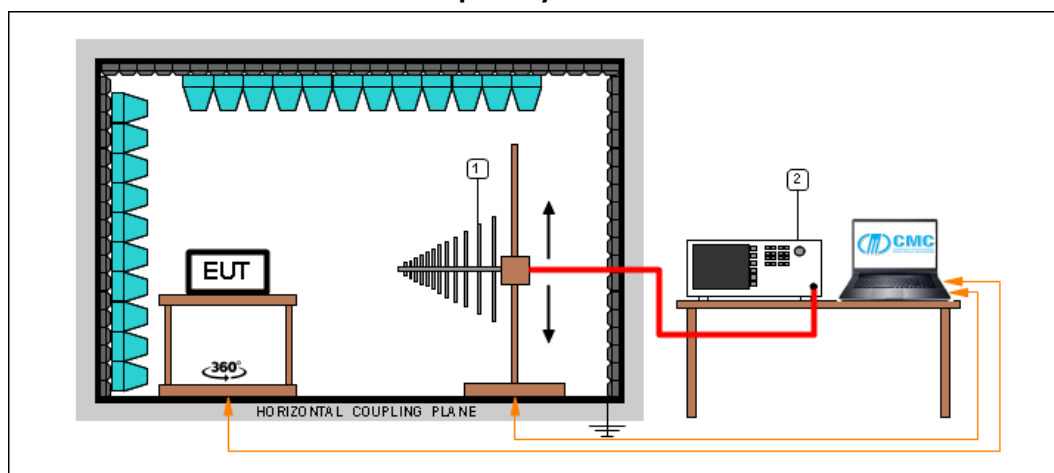
### Frequency $\leq 30$ MHz



Test setup PE004\_01

| Nr. | Id. Number | Manufacturer    | Model   | Description                       |
|-----|------------|-----------------|---------|-----------------------------------|
| 2   | CMC S353   | Rohde & Schwarz | ESW26   | EMI Test Receiver 1 Hz - 26.5 GHz |
| 1   | CMC S127   | Schaffner       | HLA6120 | Loop Antenna 9kHz - 30MHz         |

### Frequency $\leq 1$ GHz



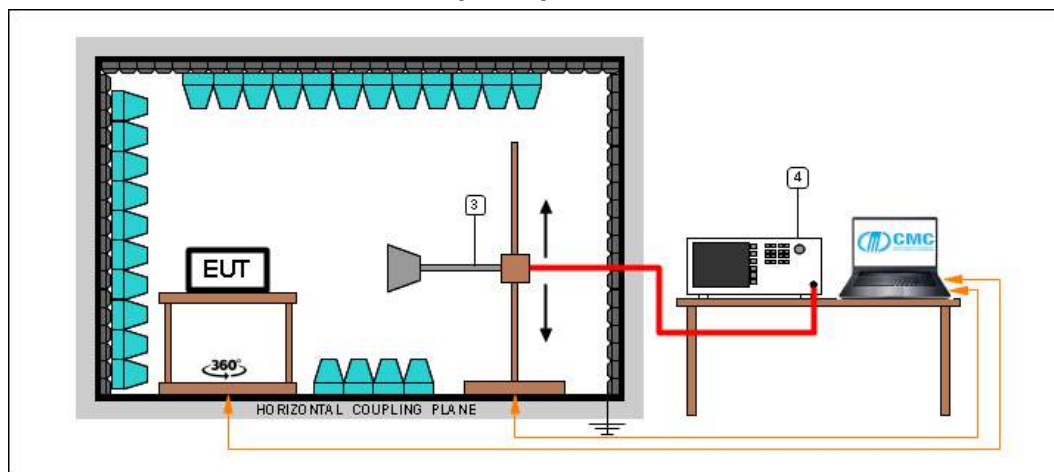
Test setup PE004\_02

| Nr. | Id. Number | Manufacturer    | Model                | Description                       |
|-----|------------|-----------------|----------------------|-----------------------------------|
| 2   | CMC S353   | Rohde & Schwarz | ESW26                | EMI Test Receiver 1 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 S353   | Rohde & Schwarz | ESW26       | EMI Test Receiver 1 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 S353   | Rohde & Schwarz | ESW26 | EMI Test Receiver 1 Hz - 26.5 GHz |
| 3   | CMC S108   | Emco            | 3115  | Waveguide antenna                 |

Test setup PE004\_05

| Nr. | Id. Number | Manufacturer    | Model     | Description                       |
|-----|------------|-----------------|-----------|-----------------------------------|
| 4   | CMC S353   | Rohde & Schwarz | ESW26     | EMI Test Receiver 1 Hz - 26.5 GHz |
| 3   | CMC S290   | Schwarzbeck     | BBHA 9170 | Horn Antenna (15-40 GHz)          |

**Result**

| Transmission channel (MHz) | Polarization | Frequency Range (MHz) | Graphs    | Result |
|----------------------------|--------------|-----------------------|-----------|--------|
| 433,31                     | Loop         | 0,009 – 30            | G22007601 | P      |
| 433,31                     | H            | 300 – 1000            | G22007606 | P      |
| 433,31                     | V            | 300 – 1000            | G22007607 | P      |
| 433,31                     | V            | 30 – 300              | G22007608 | P      |
| 433,31                     | H            | 30 – 300              | G22007609 | P      |
| 433,31                     | H            | 1000 – 3000           | G22007610 | P      |
| 433,31                     | V            | 1000 – 3000           | G22007611 | P      |
| 433,31                     | V            | 3000 – 18000          | G22007612 | P      |
| 433,31                     | H            | 3000 – 18000          | G22007613 | P      |
| 433,31                     | H            | 18000 – 26000         | G22007614 | P      |
| 433,31                     | V            | 18000 – 26000         | G22007615 | P      |
| 434,71                     | H            | 30 – 300              | G22007650 | P      |
| 434,71                     | V            | 30 – 300              | G22007651 | P      |
| 434,71                     | V            | 300 – 1000            | G22007652 | P      |
| 434,71                     | H            | 300 – 1000            | G22007653 | P      |
| 434,71                     | Loop         | 0,009 – 30            | G22007659 | P      |
| 434,71                     | V            | 1000 – 3000           | G22007660 | P      |
| 434,71                     | H            | 1000 – 3000           | G22007661 | P      |
| 434,71                     | H            | 3000 – 18000          | G22007662 | P      |
| 434,71                     | V            | 3000 – 18000          | G22007663 | P      |
| 434,71                     | V            | 18000 – 26000         | G22007664 | P      |
| 434,71                     | H            | 18000 – 26000         | G22007665 | P      |

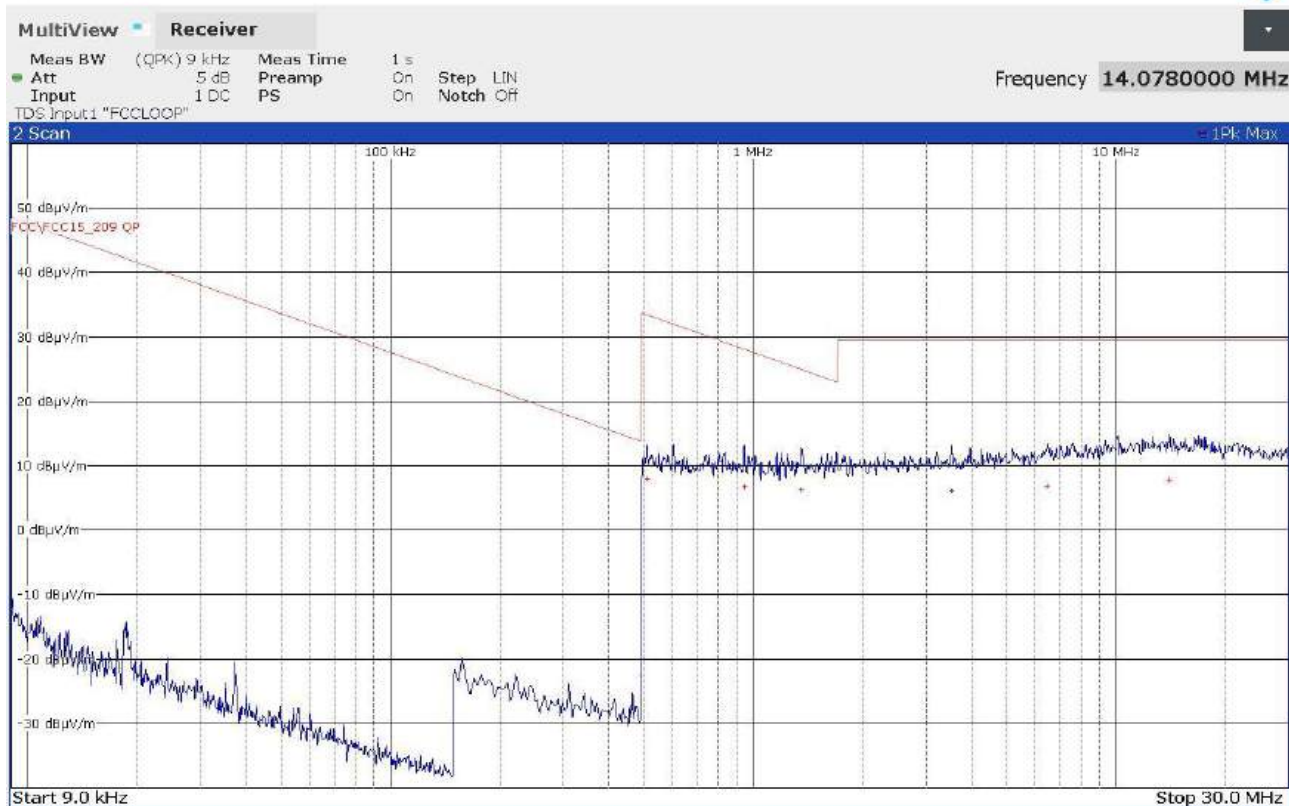
**Remarks:** EUT was tested in 3 orthogonal planes, graphs are related to the highest detected levels. Measurements at frequencies lower than 30 MHz have been performed with an EUT – antenna distance of 10 m. Measured values have been corrected with conversion factor  $40\log(\text{test distance}/10)$  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

Segalla 22007601

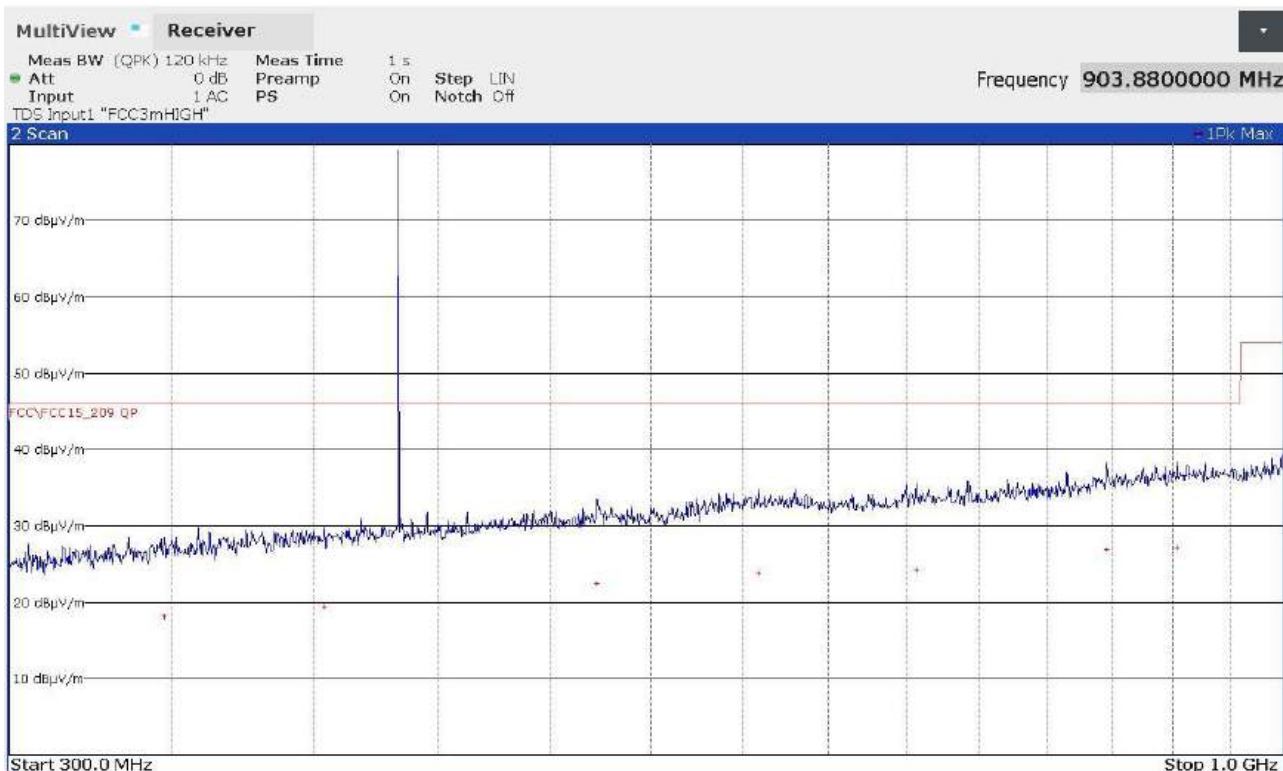


FINAL RESULT TABLE

| QUASI PEAK |            |           |
|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB |
| 510000     | +7,97      | -25,48    |
| 946000     | +6,66      | -21,43    |
| 1358000    | +6,30      | -18,65    |
| 3530000    | +6,04      | -23,50    |
| 6462000    | +6,91      | -22,63    |
| 14078000   | +7,78      | -21,76    |

22007601\_2

Segalla 22007606



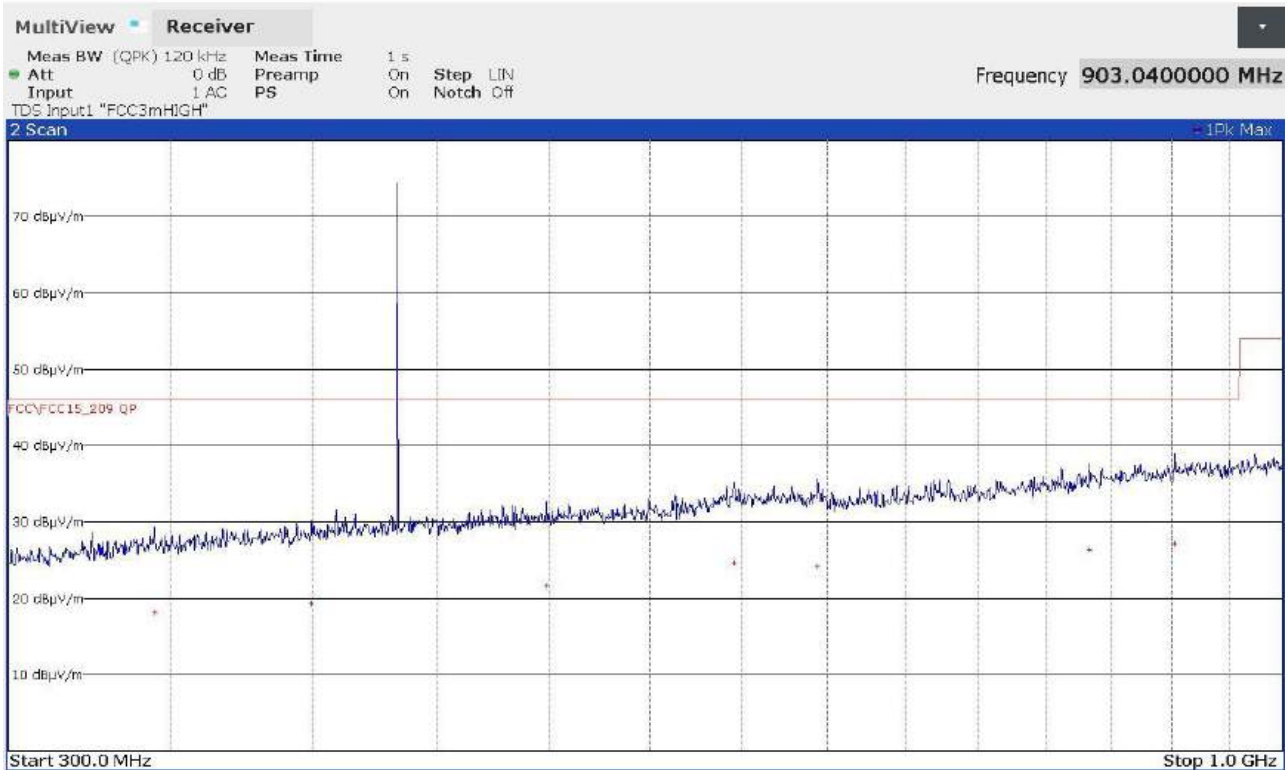
### FINAL RESULT TABLE

#### QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 347400000 | +18,06     | -27,96    |
| 404000000 | +19,36     | -26,66    |
| 522880000 | +22,48     | -23,54    |
| 608800000 | +23,89     | -22,13    |
| 706720000 | +24,31     | -21,71    |
| 845560000 | +26,92     | -19,10    |
| 903880000 | +27,21     | -18,81    |

22007606\_2

Segalla 22007607



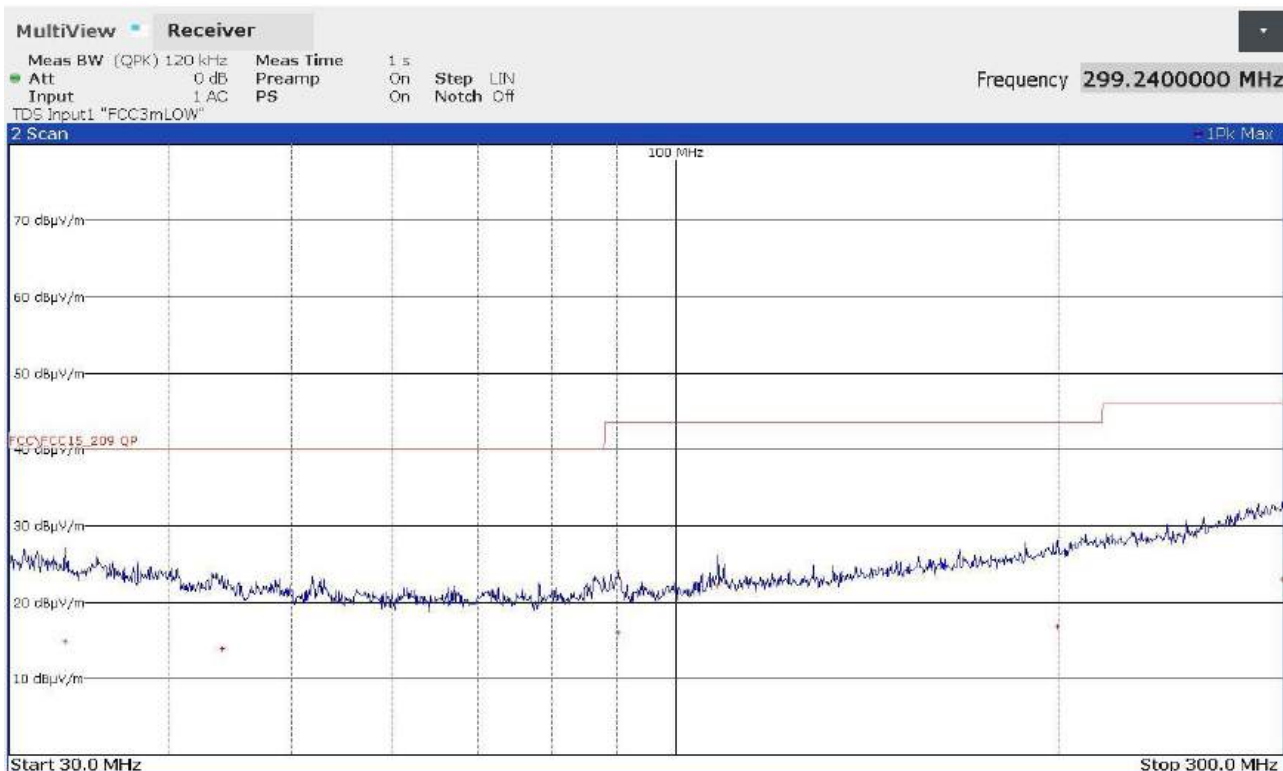
### FINAL RESULT TABLE

#### QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 344600000 | +18,14     | -27,88    |
| 399720000 | +19,26     | -26,76    |
| 498800000 | +21,66     | -24,36    |
| 595600000 | +24,61     | -21,41    |
| 644160000 | +24,13     | -21,89    |
| 833000000 | +26,36     | -19,66    |
| 903040000 | +27,17     | -18,85    |

22007607\_2

Segalla 22007608

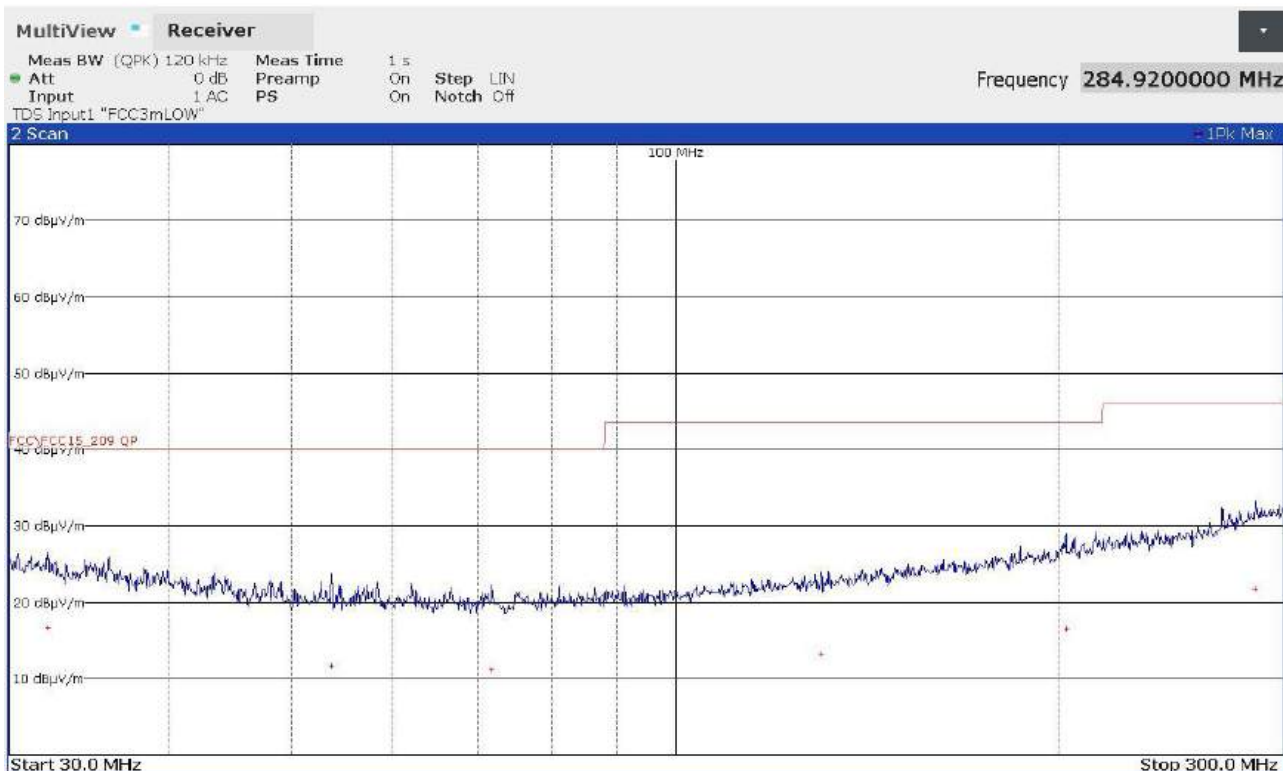


FINAL RESULT TABLE

| QUASI PEAK |            |           |
|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB |
| 33200000   | +14,87     | -25,13    |
| 44120000   | +13,96     | -26,04    |
| 90120000   | +15,97     | -27,55    |
| 108000000  | +22,21     | -21,31    |
| 199200000  | +16,78     | -26,74    |
| 299240000  | +22,97     | -23,05    |

22007608\_2

Segalla 22007609

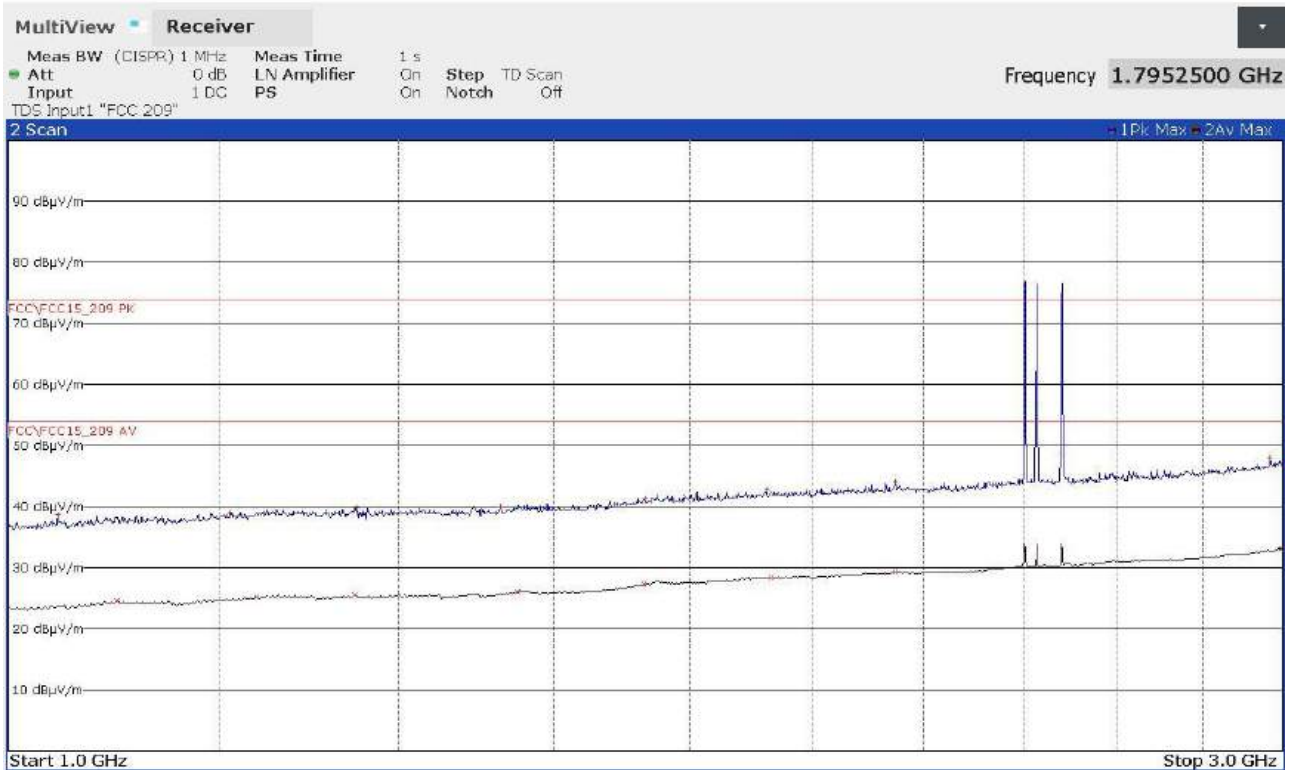


FINAL RESULT TABLE

| QUASI PEAK |            |           |
|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB |
| 32200000   | +16,72     | -23,28    |
| 53720000   | +11,67     | -28,33    |
| 71720000   | +11,15     | -28,85    |
| 129960000  | +13,31     | -30,21    |
| 202440000  | +16,51     | -27,01    |
| 284920000  | +21,80     | -24,22    |

22007609\_2

Segalla 22007610

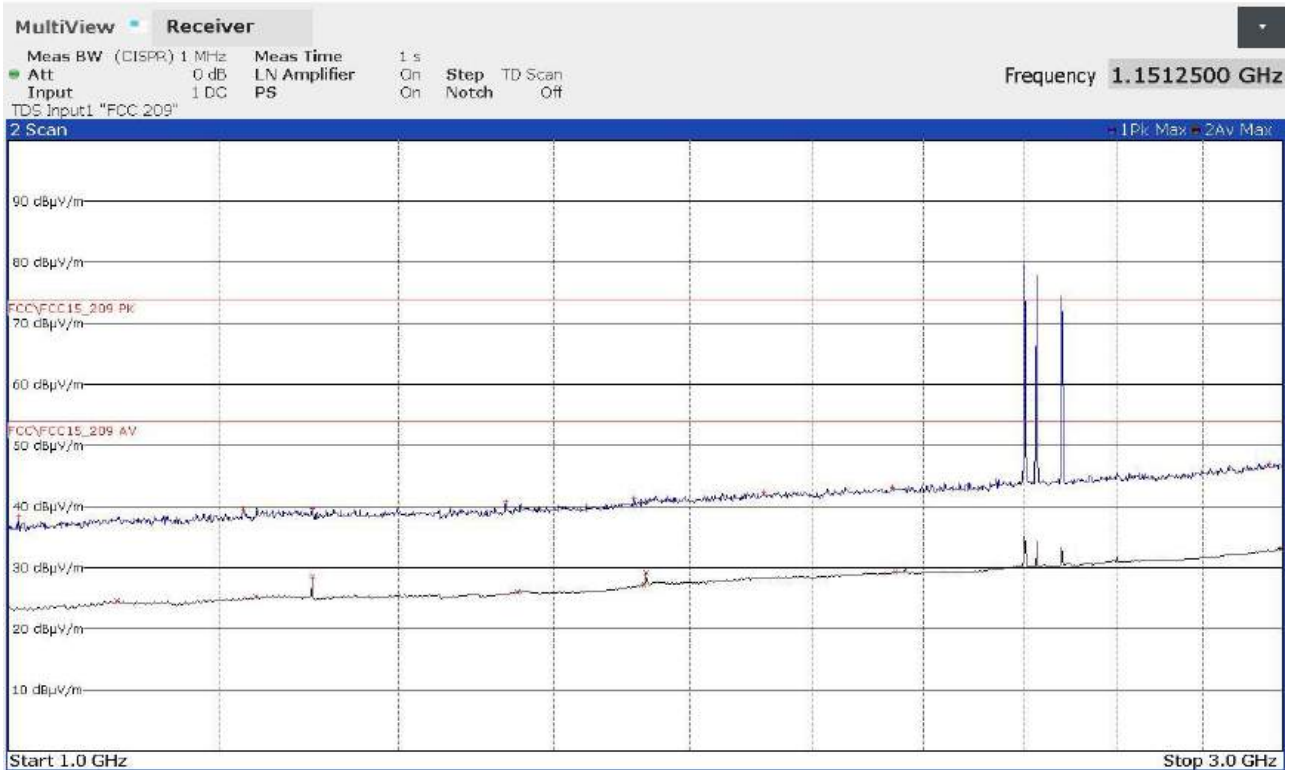


FINAL RESULT TABLE

| MAX PEAK   |            |           | AVERAGE    |            |           |
|------------|------------|-----------|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB | Freq Hz    | Lev dBuV/m | Margin dB |
| 1044000000 | +38,69     | -35,29    | 1099000000 | +24,66     | -29,32    |
| 1210750000 | +39,08     | -34,90    | 1238250000 | +25,29     | -28,69    |
| 1350000000 | +39,89     | -34,09    | 1347500000 | +25,59     | -28,39    |
| 1529000000 | +39,99     | -33,99    | 1551750000 | +26,02     | -27,96    |
| 1731250000 | +41,37     | -32,61    | 1730250000 | +27,30     | -26,68    |
| 1923750000 | +42,80     | -31,18    | 1930000000 | +28,44     | -25,54    |
| 2148500000 | +44,09     | -29,89    | 2148500000 | +29,31     | -24,67    |
| 2967000000 | +48,00     | -25,98    | 2994000000 | +33,19     | -20,79    |

22007610\_2

Segalla 22007611

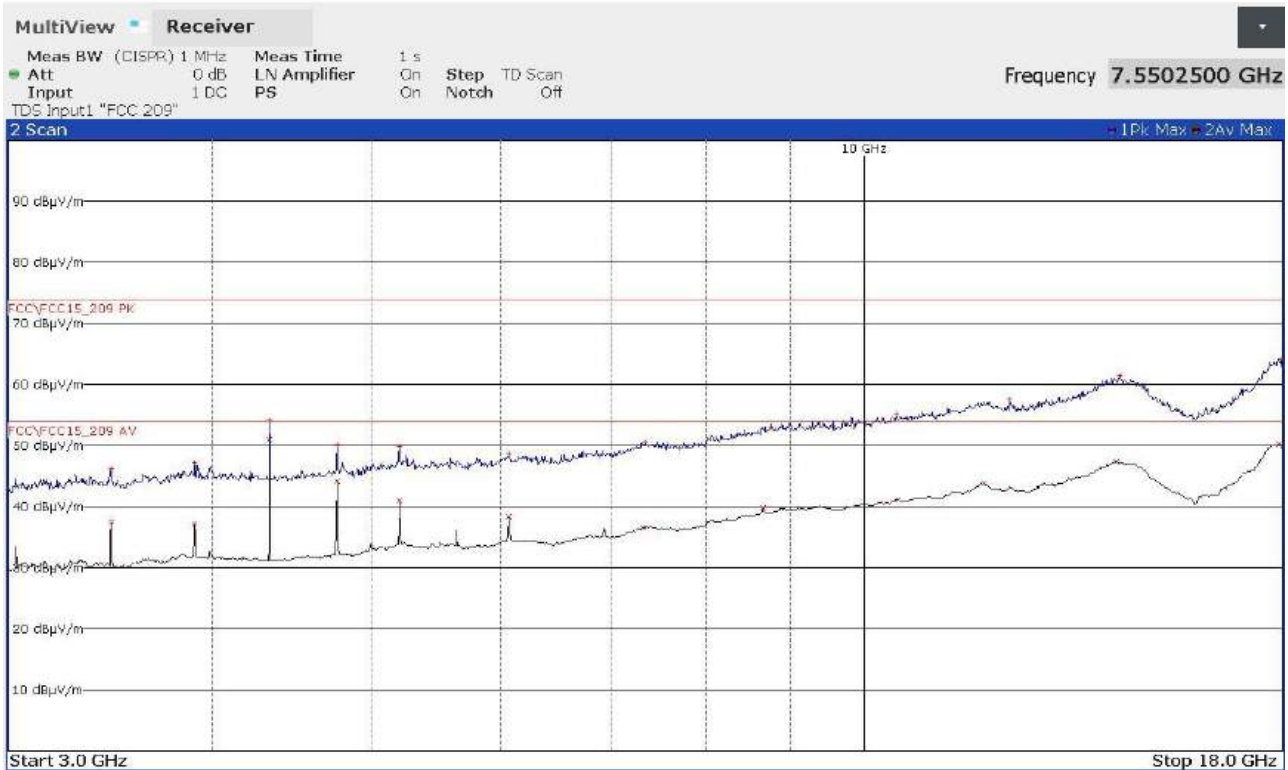


FINAL RESULT TABLE

| MAX PEAK   |            |           | AVERAGE    |            |           |
|------------|------------|-----------|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB | Freq Hz    | Lev dBuV/m | Margin dB |
| 1009500000 | +38,35     | -35,63    | 1098750000 | +24,63     | -29,35    |
| 1225000000 | +39,54     | -34,44    | 1238000000 | +25,28     | -28,70    |
| 1299750000 | +39,71     | -34,27    | 1300000000 | +28,59     | -25,39    |
| 1535000000 | +40,79     | -33,19    | 1551750000 | +26,01     | -27,97    |
| 1714500000 | +41,53     | -32,45    | 1730000000 | +27,29     | -26,69    |
| 1918750000 | +42,52     | -31,46    | 1733250000 | +29,19     | -24,79    |
| 2143000000 | +43,19     | -30,79    | 2148500000 | +29,30     | -24,68    |
| 2964250000 | +47,09     | -26,89    | 2994000000 | +33,18     | -20,80    |

22007611\_2

Segalla 22007612

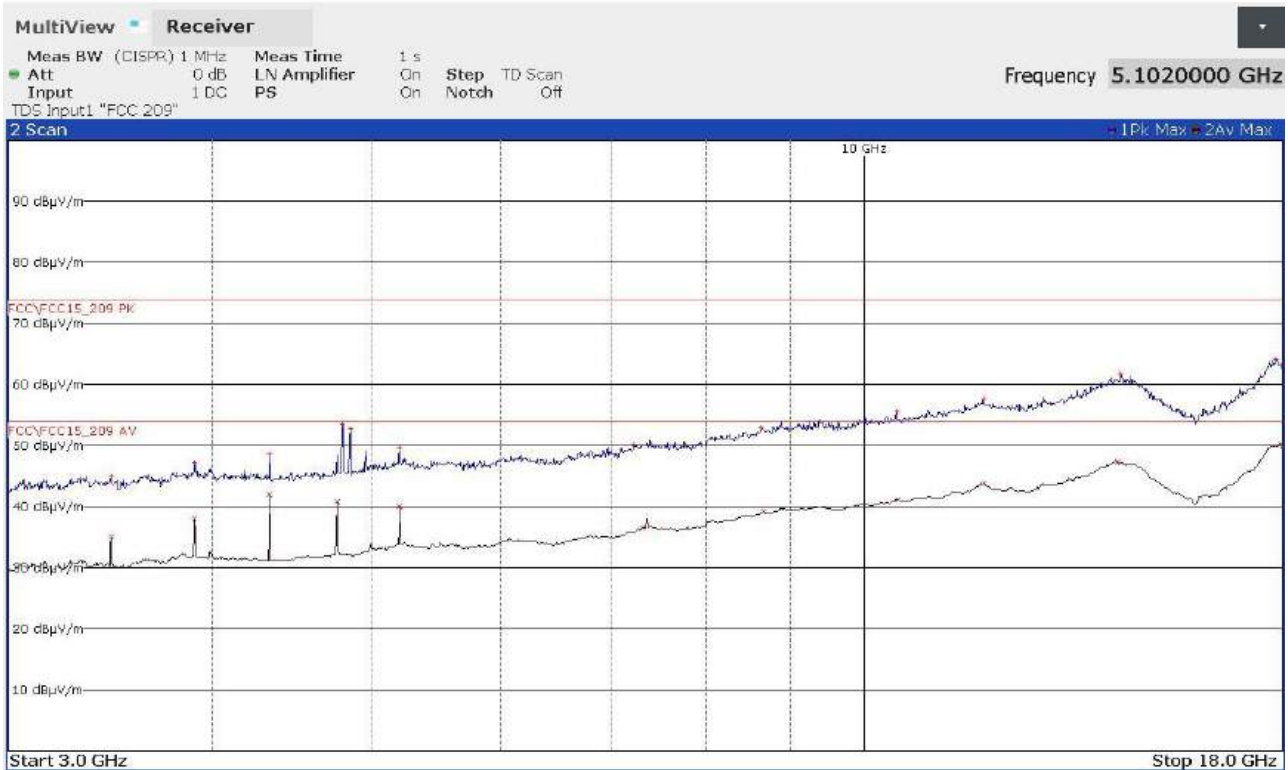


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 3466500000  | +46,17     | -27,81    | 3466500000  | +37,49     | -16,49    |
| 3899750000  | +47,17     | -26,81    | 3899750000  | +37,16     | -16,82    |
| 4333000000  | +54,06     | -19,92    | 4333250000  | +51,04     | -2,94     |
| 4766500000  | +50,16     | -23,82    | 4766500000  | +44,17     | -9,81     |
| 5199750000  | +49,91     | -24,07    | 5199750000  | +41,06     | -12,92    |
| 6066250000  | +48,63     | -25,35    | 6066500000  | +38,38     | -15,60    |
| 7345500000  | +50,43     | -23,55    | 7323000000  | +36,55     | -17,43    |
| 8769250000  | +53,12     | -20,86    | 8666250000  | +39,81     | -14,17    |
| 10456500000 | +55,16     | -18,82    | 10479750000 | +41,11     | -12,87    |
| 12254000000 | +57,58     | -16,40    | 11820000000 | +43,83     | -10,15    |
| 14318000000 | +61,45     | -12,53    | 14259500000 | +47,44     | -6,54     |
| 17959500000 | +64,10     | -9,88     | 17896500000 | +50,21     | -3,77     |

22007612\_2

Segalla 22007613

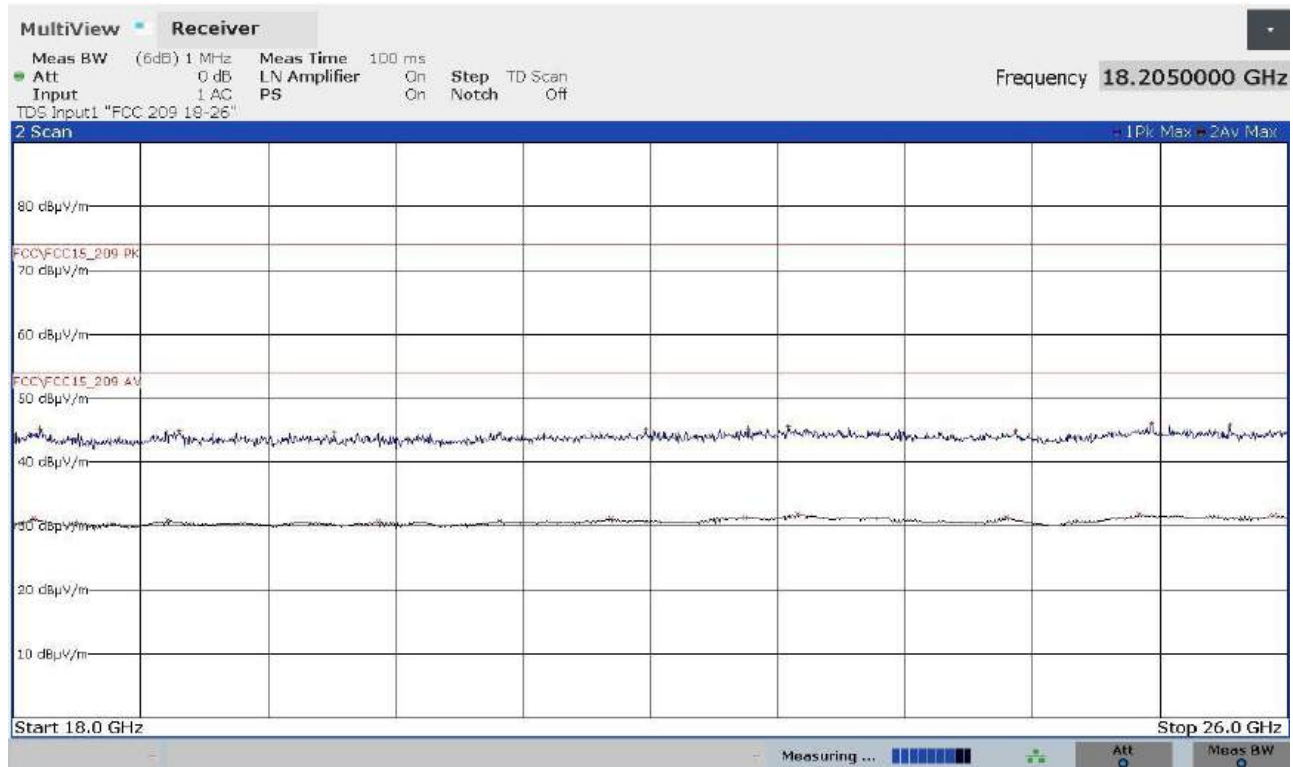


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 3466500000  | +44,90     | -29,08    | 3466500000  | +35,10     | -18,88    |
| 3899750000  | +47,17     | -26,81    | 3899750000  | +37,97     | -16,01    |
| 4333000000  | +48,54     | -25,44    | 4333250000  | +41,90     | -12,08    |
| 4803500000  | +53,44     | -20,54    | 4766500000  | +40,89     | -13,09    |
| 4852500000  | +52,80     | -21,18    | 5199750000  | +40,05     | -13,93    |
| 5199750000  | +49,43     | -24,55    | 7322750000  | +36,54     | -17,44    |
| 7226250000  | +50,15     | -23,83    | 8666250000  | +39,25     | -14,73    |
| 8644250000  | +52,92     | -21,06    | 10480000000 | +41,11     | -12,87    |
| 10467250000 | +55,50     | -18,48    | 11820000000 | +43,83     | -10,15    |
| 11814500000 | +57,78     | -16,20    | 14260000000 | +47,44     | -6,54     |
| 14334500000 | +61,77     | -12,21    | 17939750000 | +50,16     | -3,82     |
| 17823500000 | +64,04     | -9,94     |             |            |           |

22007613\_2

Segalla 22007614

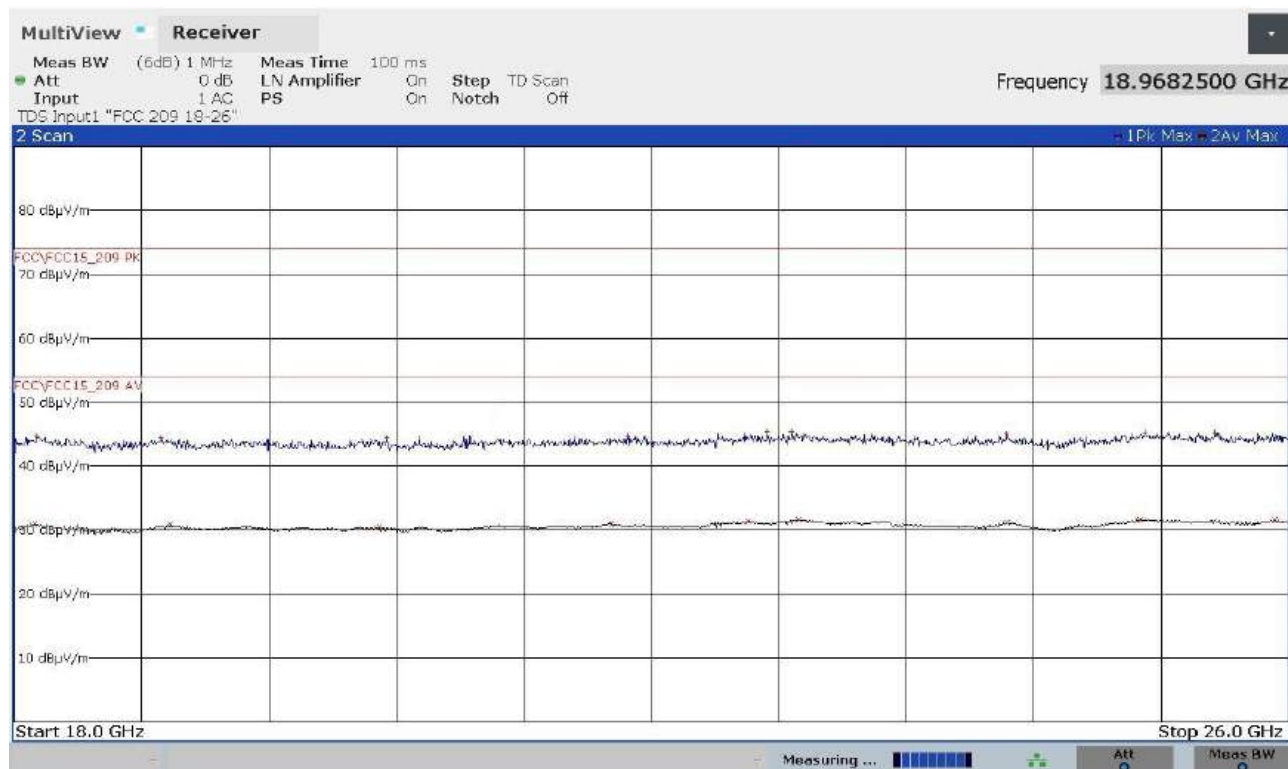


**FINAL RESULT TABLE**

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 18169750000 | +45,29     | -28,69    | 18130000000 | +31,08     | -22,90    |
| 19045500000 | +44,99     | -28,99    | 18965000000 | +30,89     | -23,09    |
| 20017500000 | +44,62     | -29,36    | 20293750000 | +30,72     | -23,26    |
| 21969250000 | +45,03     | -28,95    | 21749500000 | +31,10     | -22,88    |
| 22615500000 | +45,16     | -28,82    | 22593750000 | +31,35     | -22,63    |
| 22863500000 | +45,53     | -28,45    | 22919750000 | +31,73     | -22,25    |
| 24289250000 | +44,96     | -29,02    | 24234000000 | +31,23     | -22,75    |
| 25142250000 | +45,94     | -28,04    | 25066250000 | +31,75     | -22,23    |
| 25632500000 | +45,72     | -28,26    | 25910750000 | +31,69     | -22,29    |

22007614\_2

Segalla 22007615

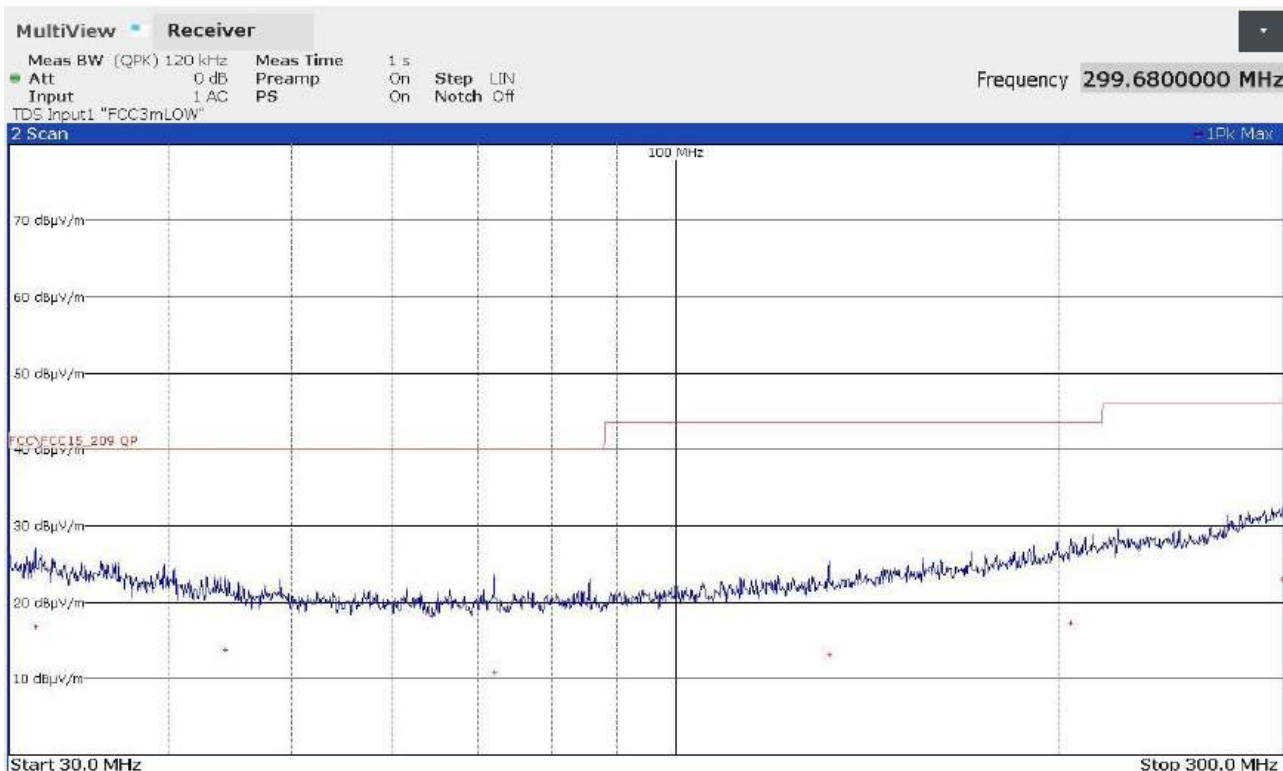


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 18143250000 | +44,79     | -29,19    | 18130000000 | +31,00     | -22,98    |
| 18925750000 | +44,45     | -29,53    | 18982000000 | +30,83     | -23,15    |
| 20337750000 | +44,42     | -29,56    | 20292500000 | +30,57     | -23,41    |
| 21854000000 | +44,71     | -29,27    | 21749250000 | +31,00     | -22,98    |
| 22725250000 | +45,40     | -28,58    | 22607750000 | +31,26     | -22,72    |
| 22878250000 | +45,35     | -28,63    | 22919750000 | +31,60     | -22,38    |
| 24229750000 | +45,08     | -28,90    | 24233500000 | +31,12     | -22,86    |
| 25094250000 | +45,17     | -28,81    | 25066000000 | +31,67     | -22,31    |
| 25536250000 | +45,29     | -28,69    | 25911250000 | +31,59     | -22,39    |

22007615\_2

Segalla 22007650



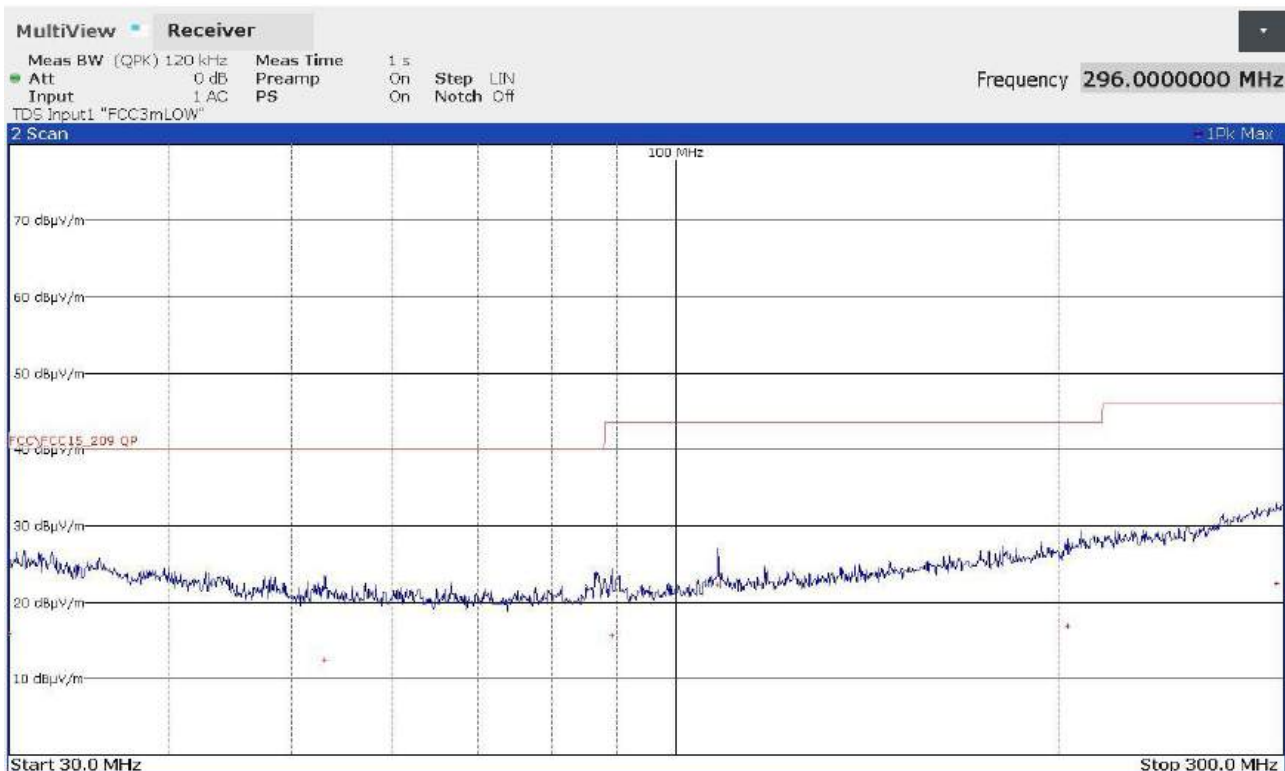
FINAL RESULT TABLE

QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 31480000  | +16,84     | -23,16    |
| 44320000  | +13,78     | -26,22    |
| 72080000  | +10,81     | -29,19    |
| 131920000 | +13,09     | -30,43    |
| 204160000 | +17,37     | -26,15    |
| 299680000 | +22,95     | -23,07    |

22007650\_2

Segalla 22007651



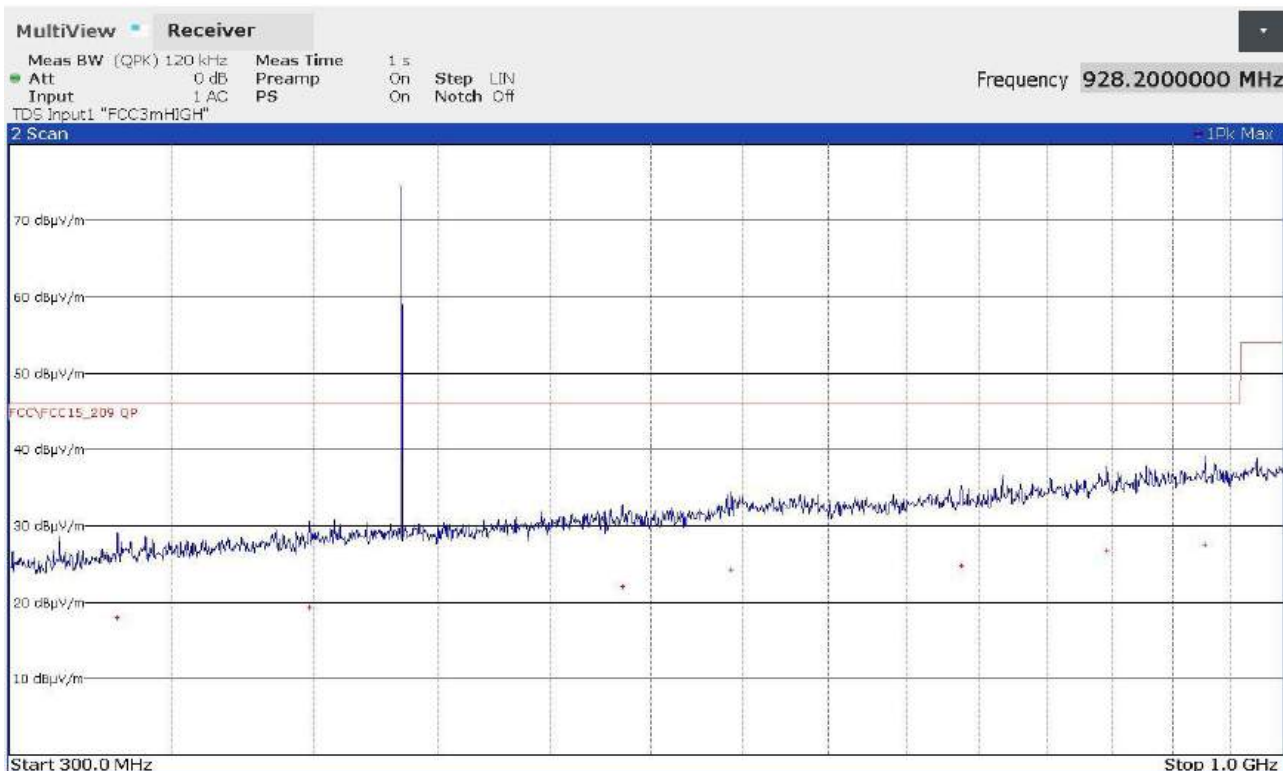
### FINAL RESULT TABLE

#### QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 30000000  | +15,88     | -24,12    |
| 53080000  | +12,45     | -27,55    |
| 89120000  | +15,63     | -27,89    |
| 108000000 | +22,23     | -21,29    |
| 203000000 | +16,90     | -26,62    |
| 296000000 | +22,37     | -23,65    |

22007651\_2

Segalla 22007652



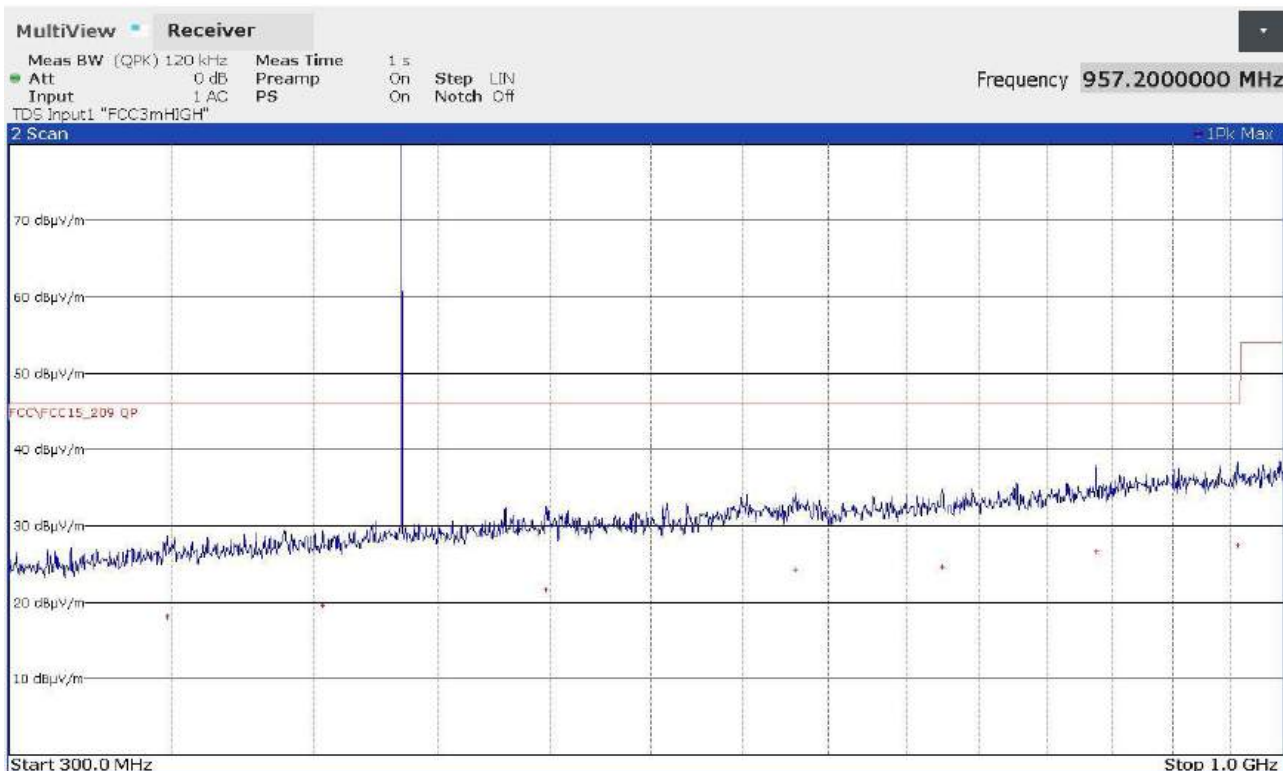
FINAL RESULT TABLE

QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 332400000 | +17,94     | -28,08    |
| 398480000 | +19,23     | -26,79    |
| 535560000 | +22,01     | -24,01    |
| 593400000 | +24,25     | -21,77    |
| 737480000 | +24,79     | -21,23    |
| 845840000 | +26,80     | -19,22    |
| 928200000 | +27,55     | -18,47    |

22007652\_2

Segalla 22007653



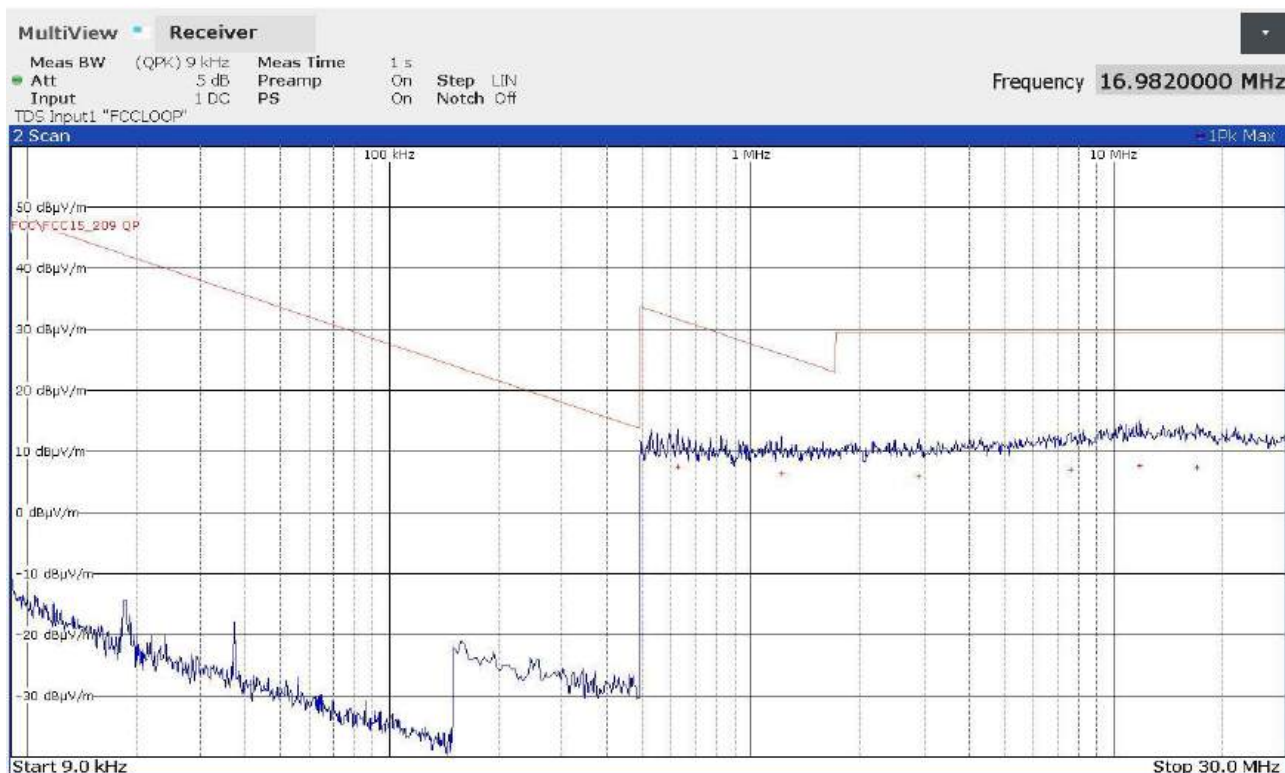
### FINAL RESULT TABLE

#### QUASI PEAK

| Freq Hz   | Lev dBuV/m | Margin dB |
|-----------|------------|-----------|
| 348280000 | +18,10     | -27,92    |
| 403480000 | +19,58     | -26,44    |
| 498280000 | +21,62     | -24,40    |
| 630440000 | +24,29     | -21,73    |
| 724280000 | +24,64     | -21,38    |
| 837560000 | +26,61     | -19,41    |
| 957200000 | +27,47     | -18,55    |

22007653\_2

Segalla 22007659



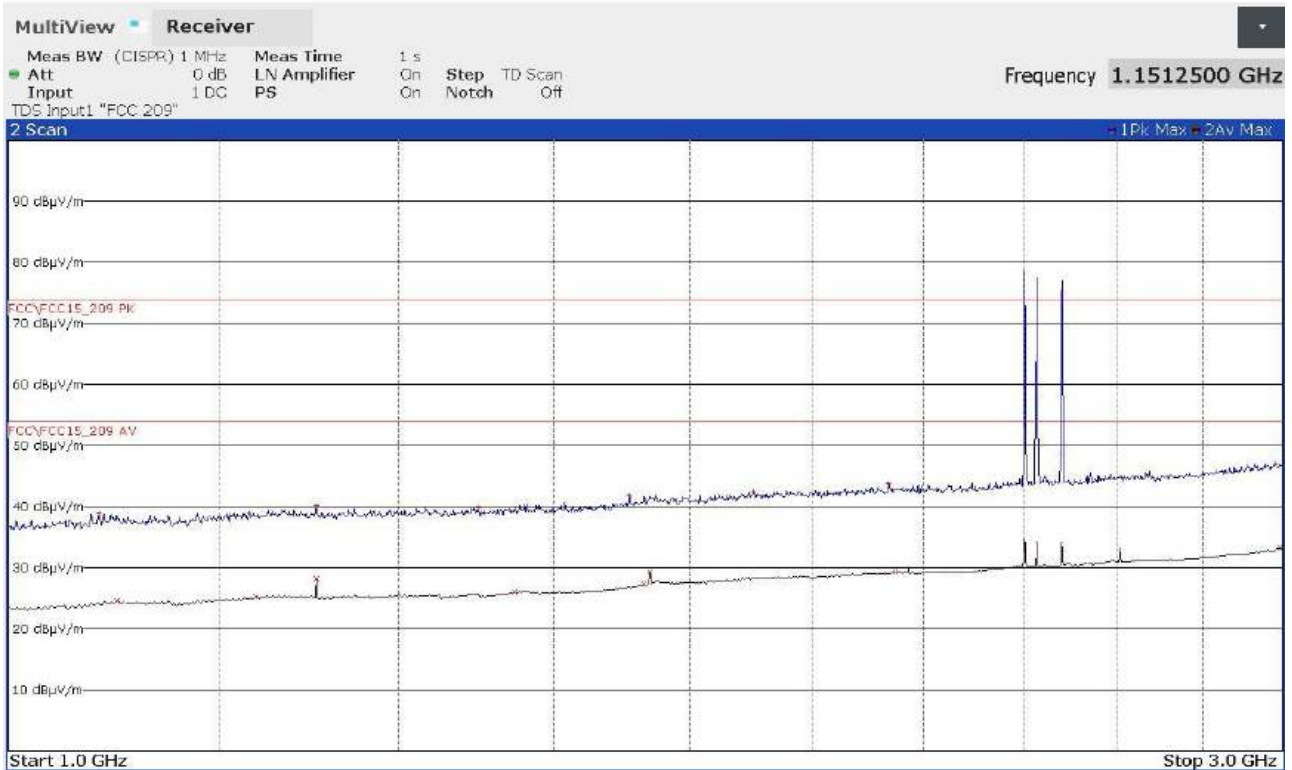
### FINAL RESULT TABLE

#### QUASI PEAK

| Freq Hz  | Lev dBuV/m | Margin dB |
|----------|------------|-----------|
| 626000   | +7,55      | -24,12    |
| 1214000  | +6,34      | -19,58    |
| 2902000  | +5,93      | -23,61    |
| 7602000  | +7,11      | -22,43    |
| 11858000 | +7,66      | -21,88    |
| 16982000 | +7,38      | -22,16    |

22007659\_2

Segalla 22007660

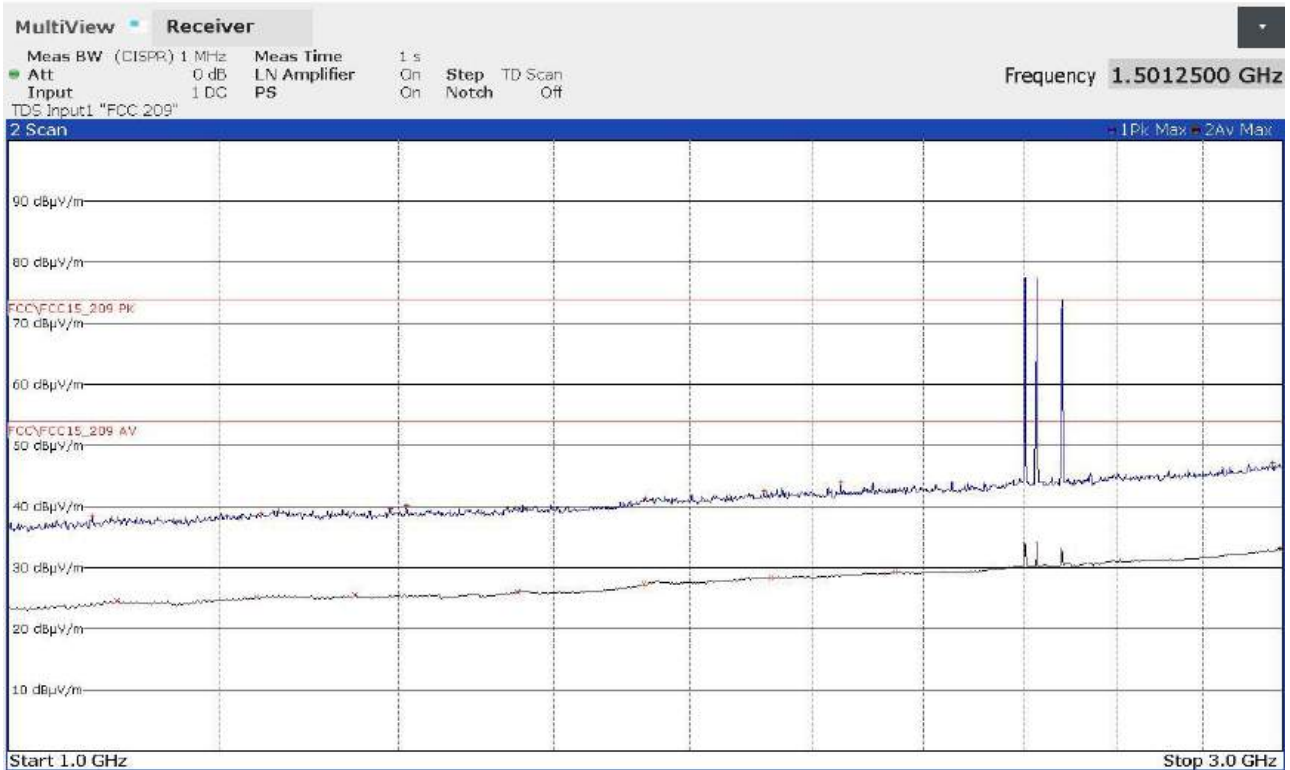


FINAL RESULT TABLE

| MAX PEAK   |            |           | AVERAGE    |            |           |
|------------|------------|-----------|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB | Freq Hz    | Lev dBuV/m | Margin dB |
| 1081250000 | +38,78     | -35,20    | 1099000000 | +24,65     | -29,33    |
| 1231250000 | +38,89     | -35,09    | 1238000000 | +25,30     | -28,68    |
| 1304250000 | +40,10     | -33,88    | 1304250000 | +28,26     | -25,72    |
| 1499750000 | +39,87     | -34,11    | 1547500000 | +26,00     | -27,98    |
| 1708250000 | +41,84     | -32,14    | 1730000000 | +27,30     | -26,68    |
| 1900750000 | +42,45     | -31,53    | 1738750000 | +29,37     | -24,61    |
| 2135750000 | +43,76     | -30,22    | 2148500000 | +29,31     | -24,67    |
| 2981500000 | +47,07     | -26,91    | 2993500000 | +33,20     | -20,78    |

22007660\_2

Segalla 22007661

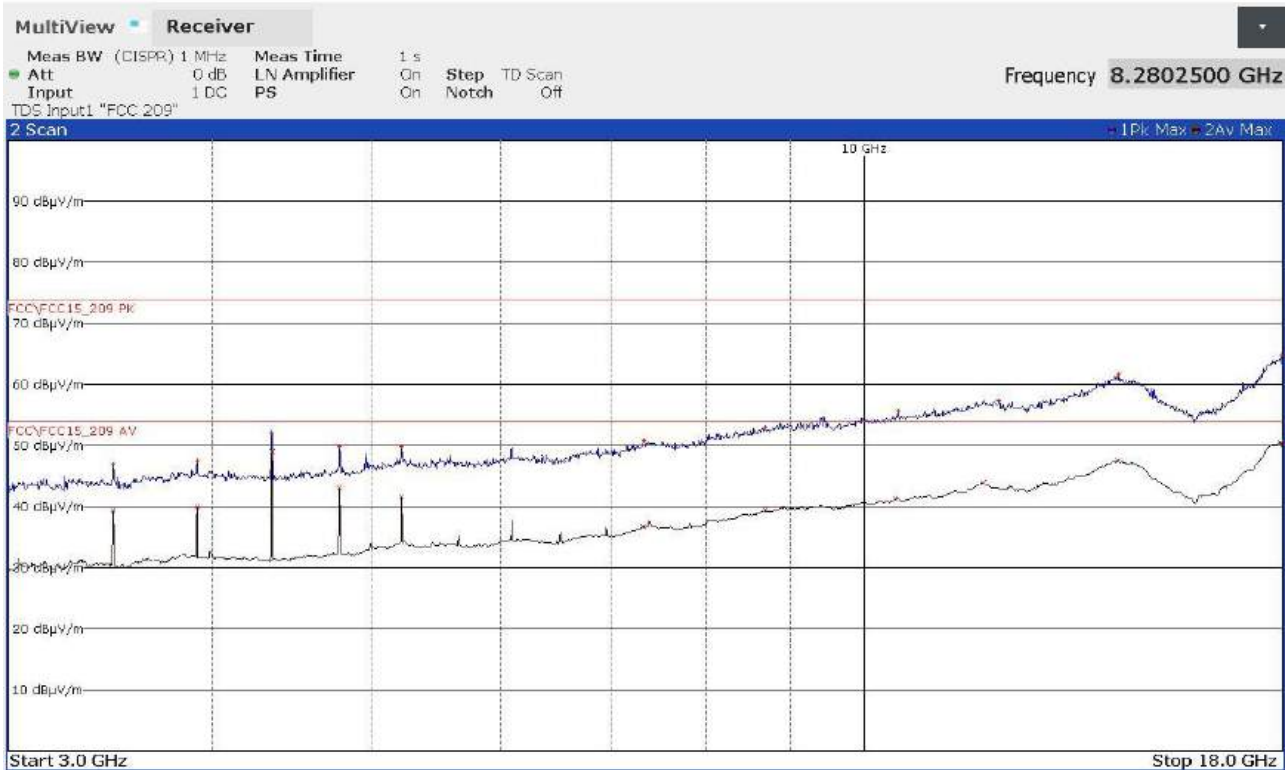


FINAL RESULT TABLE

| MAX PEAK   |            |           | AVERAGE    |            |           |
|------------|------------|-----------|------------|------------|-----------|
| Freq Hz    | Lev dBuV/m | Margin dB | Freq Hz    | Lev dBuV/m | Margin dB |
| 1075500000 | +38,49     | -35,49    | 1099000000 | +24,65     | -29,33    |
| 1244500000 | +38,93     | -35,05    | 1238250000 | +25,30     | -28,68    |
| 1390000000 | +39,73     | -34,25    | 1347750000 | +25,61     | -28,37    |
| 1409750000 | +40,19     | -33,79    | 1551750000 | +26,01     | -27,97    |
| 1730750000 | +41,52     | -32,46    | 1730000000 | +27,30     | -26,68    |
| 1918500000 | +42,61     | -31,37    | 1929750000 | +28,42     | -25,56    |
| 2049750000 | +43,91     | -30,07    | 2148750000 | +29,30     | -24,68    |
| 2974250000 | +47,23     | -26,75    | 2994250000 | +33,19     | -20,79    |

22007661\_2

Segalla 22007662

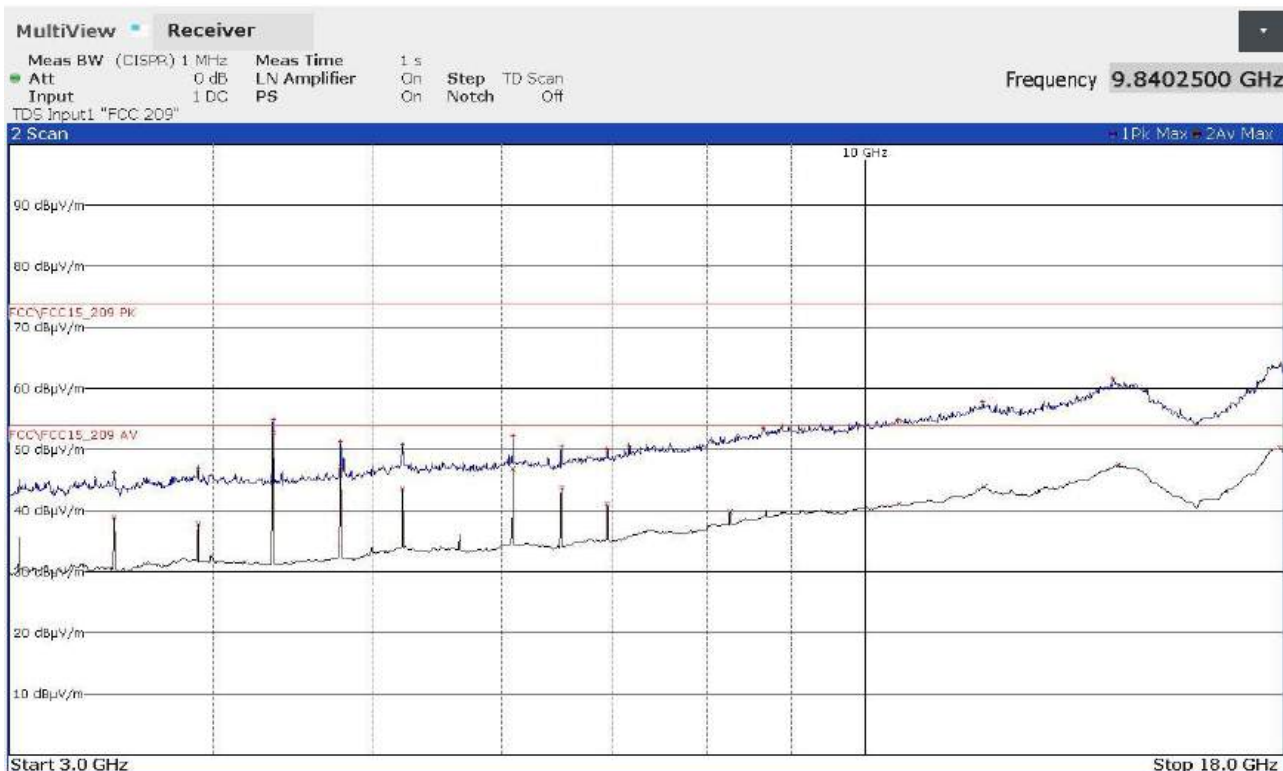


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 3477750000  | +46,81     | -27,17    | 3477750000  | +39,39     | -14,59    |
| 3912500000  | +47,52     | -26,46    | 3912500000  | +39,93     | -14,05    |
| 4347000000  | +52,15     | -21,83    | 4347250000  | +49,03     | -4,95     |
| 4781750000  | +49,82     | -24,16    | 4781750000  | +43,14     | -10,84    |
| 5216500000  | +49,82     | -24,16    | 5216500000  | +41,67     | -12,31    |
| 7332000000  | +50,85     | -23,13    | 7322250000  | +36,70     | -17,28    |
| 8695500000  | +53,00     | -20,98    | 8694250000  | +39,57     | -14,41    |
| 10483000000 | +55,55     | -18,43    | 10440000000 | +41,30     | -12,68    |
| 12072000000 | +57,43     | -16,55    | 11819000000 | +43,97     | -10,01    |
| 14280000000 | +61,61     | -12,37    | 14260000000 | +47,59     | -6,39     |
| 17971000000 | +64,68     | -9,30     | 17939250000 | +50,51     | -3,47     |

22007662\_2

Segalla 22007663

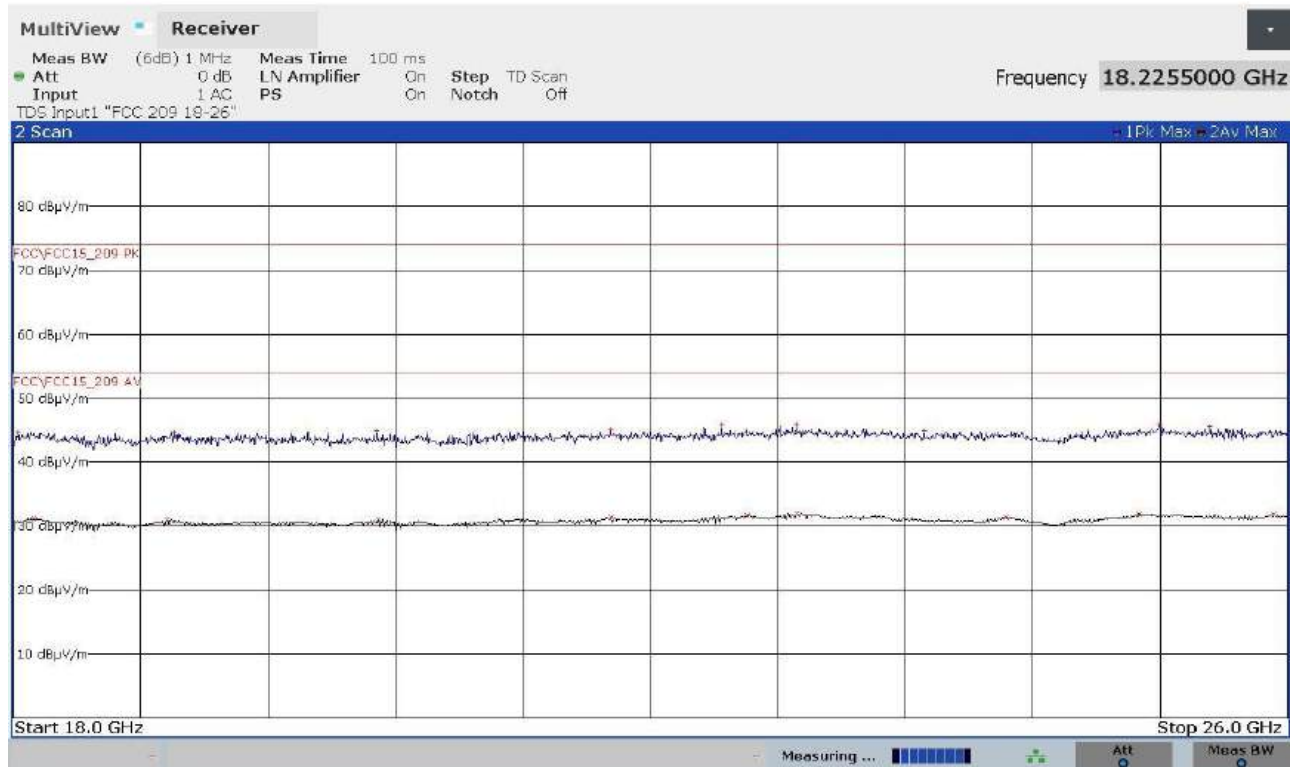


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 3477750000  | +46,23     | -27,75    | 3477750000  | +38,80     | -15,18    |
| 3912500000  | +47,08     | -26,90    | 3912500000  | +37,85     | -16,13    |
| 4347250000  | +54,93     | -19,05    | 4347250000  | +52,71     | -1,27     |
| 4781750000  | +51,39     | -22,59    | 4781750000  | +47,27     | -6,71     |
| 5216500000  | +50,84     | -23,14    | 5216500000  | +43,62     | -10,36    |
| 6086000000  | +52,32     | -21,66    | 6086000000  | +46,88     | -7,10     |
| 6520750000  | +50,45     | -23,53    | 6520750000  | +43,82     | -10,16    |
| 6955250000  | +50,21     | -23,77    | 6955500000  | +41,21     | -12,77    |
| 7174500000  | +50,69     | -23,29    | 8259500000  | +39,83     | -14,15    |
| 8661750000  | +53,37     | -20,61    | 10480000000 | +41,18     | -12,80    |
| 10474500000 | +54,90     | -19,08    | 11820000000 | +43,88     | -10,10    |
| 11789250000 | +57,92     | -16,06    | 14260000000 | +47,51     | -6,47     |
| 14157750000 | +61,62     | -12,36    | 17896500000 | +50,32     | -3,66     |
| 17917250000 | +64,00     | -9,98     |             |            |           |

22007663\_2

Segalla 22007664

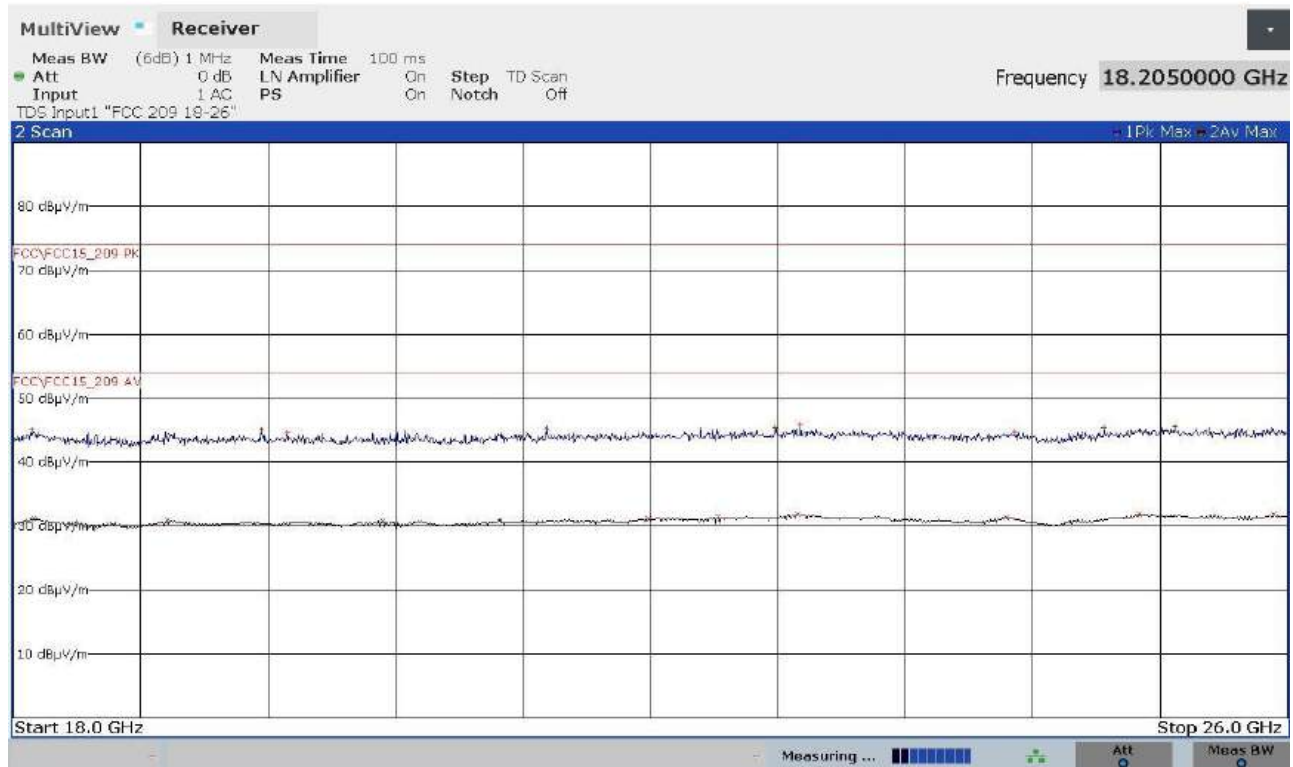


FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 18033000000 | +44,64     | -29,34    | 18131500000 | +31,19     | -22,79    |
| 19014000000 | +44,55     | -29,43    | 18967250000 | +31,02     | -22,96    |
| 20282250000 | +44,85     | -29,13    | 20293750000 | +31,00     | -22,98    |
| 21748750000 | +45,10     | -28,88    | 21749000000 | +31,30     | -22,68    |
| 22448000000 | +45,84     | -28,14    | 22607750000 | +31,56     | -22,42    |
| 22912500000 | +45,88     | -28,10    | 22919500000 | +31,97     | -22,01    |
| 23717500000 | +45,00     | -28,98    | 24234750000 | +31,38     | -22,60    |
| 25194000000 | +45,82     | -28,16    | 25066750000 | +31,85     | -22,13    |
| 25510500000 | +45,62     | -28,36    | 25910750000 | +31,80     | -22,18    |

22007664\_2

Segalla 22007665



FINAL RESULT TABLE

| MAX PEAK    |            |           | AVERAGE     |            |           |
|-------------|------------|-----------|-------------|------------|-----------|
| Freq Hz     | Lev dBuV/m | Margin dB | Freq Hz     | Lev dBuV/m | Margin dB |
| 18120250000 | +45,03     | -28,95    | 18132000000 | +31,15     | -22,83    |
| 19557250000 | +45,08     | -28,90    | 18965500000 | +30,89     | -23,09    |
| 19721500000 | +44,67     | -29,31    | 20319000000 | +30,80     | -23,18    |
| 21347000000 | +45,16     | -28,82    | 21983500000 | +31,09     | -22,89    |
| 22784750000 | +45,40     | -28,58    | 22423750000 | +31,43     | -22,55    |
| 22939250000 | +45,93     | -28,05    | 22919500000 | +31,80     | -22,18    |
| 24283250000 | +44,70     | -29,28    | 24233250000 | +31,31     | -22,67    |
| 24844250000 | +45,34     | -28,64    | 25066250000 | +31,82     | -22,16    |
| 25288000000 | +45,47     | -28,51    | 25911250000 | +31,78     | -22,20    |

22007665\_2

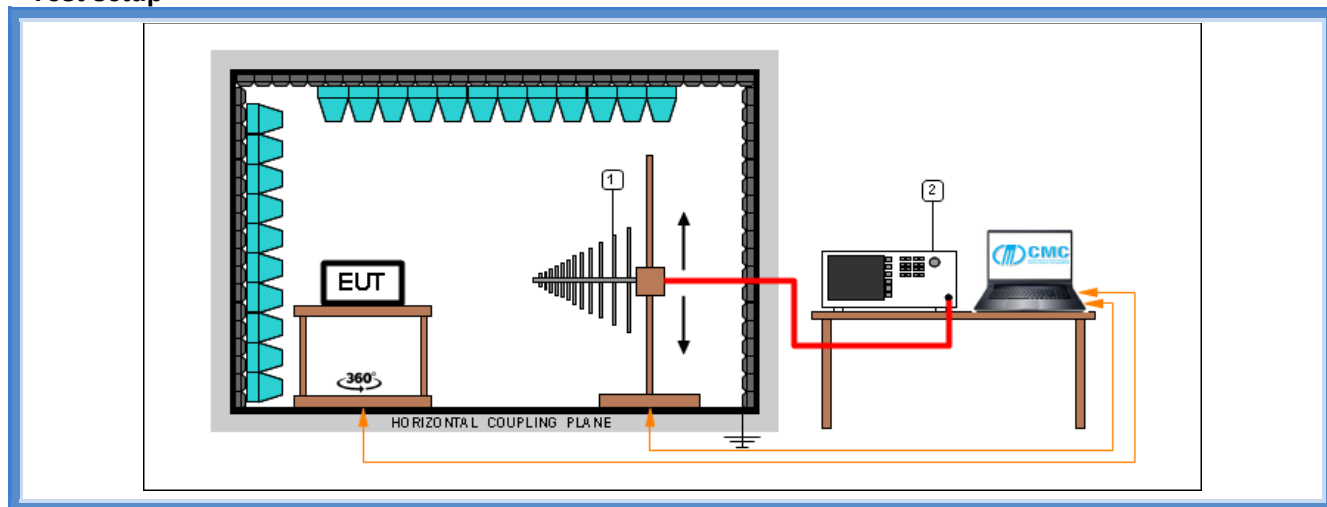
#### 9.4 Field strength of fundamental

|                                             |                                                                 |
|---------------------------------------------|-----------------------------------------------------------------|
| Tested by .....                             | M. Segalla                                                      |
| Test date .....                             | 13.06.2022                                                      |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)                                |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part. 15.209 and 15.231 (b) |
| Supplementary test set-up description ..... | EUT – antenna distance: 10 m                                    |
| Supplementary information.....              | --                                                              |

#### Acceptance limits

| <b>FCC Part 15.231 (b)</b>         |                                                 |
|------------------------------------|-------------------------------------------------|
| <i>Fundamental frequency (MHz)</i> | <i>Field strength of fundamental [dB(μV/m)]</i> |
| 40,66 to 40,70                     | 67,04                                           |
| 70 to 130                          | 61,94                                           |
| 130 to 174                         | 61,94 to 71,48                                  |
| 174 to 260                         | 71,48                                           |
| 260 to 470                         | 71,48 to 81,94                                  |
| Above 470                          | 81,94                                           |

## Test setup



Test setup PE004\_03

| Nr. | Id. Number | Manufacturer    | Model       | Description                       |
|-----|------------|-----------------|-------------|-----------------------------------|
| 2   | CMC S353   | Rohde & Schwarz | ESW26       | EMI Test Receiver 1 Hz - 26.5 GHz |
| 1   | CMC S287   | Schwarzbeck     | VUSLP 9111B | Broadband Antenna                 |

## Result

| Frequency (MHz) | Graph(s)  | Peak level (dBμV/m) | Level (mW) | Limits (dBμV/m) |
|-----------------|-----------|---------------------|------------|-----------------|
| 433,31          | G22007603 | 79,33               | 0,286      | 80,11           |
| 434,71          | G22007654 | 79,91               | 0,326      | 80,18           |

**Remarks:** EUT was tested in 3 orthogonal planes. The results in this table show the highest value.

$$P = (E \times d)^2 / (30 \times G)$$

Where:

E = the measured maximum fundamental field strength in V/m

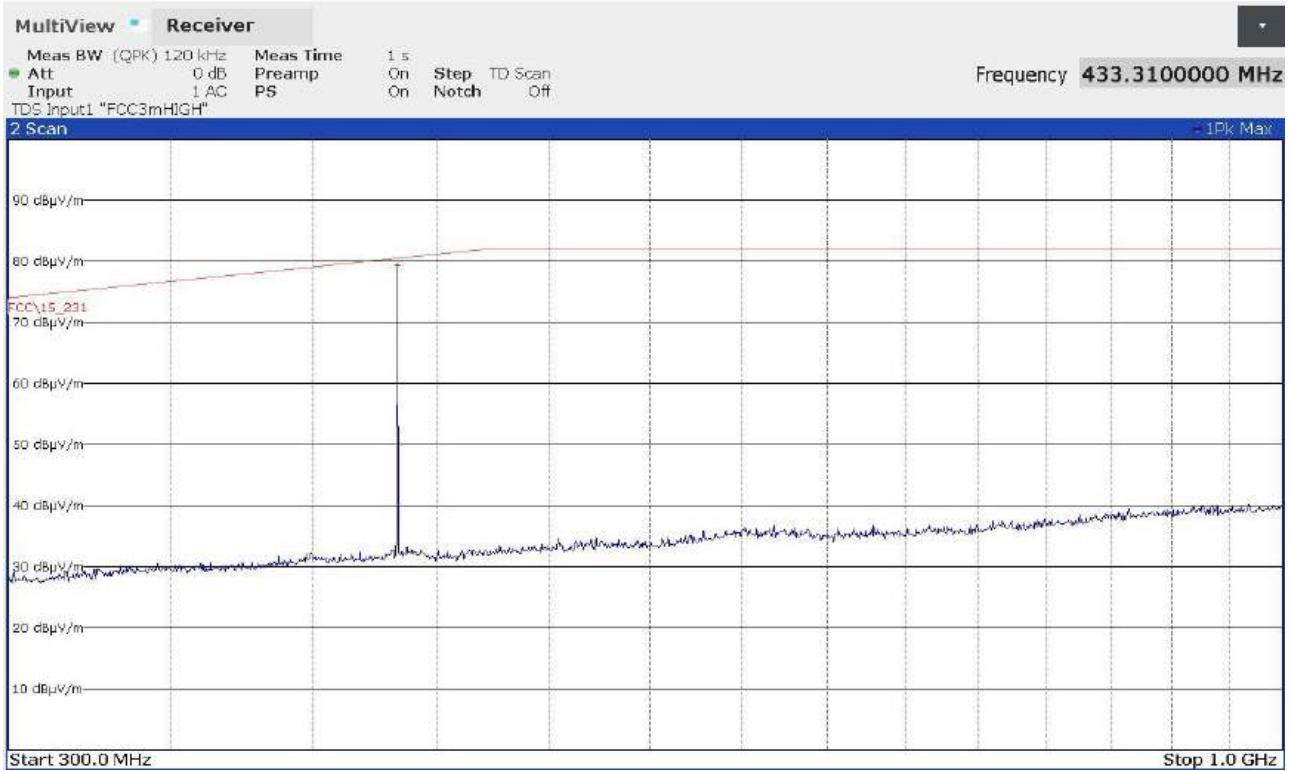
G = the numeric gain of the transmitting antenna: 1 (0 dBi)

d = the distance in meters from which the field strength was measured (10 m)

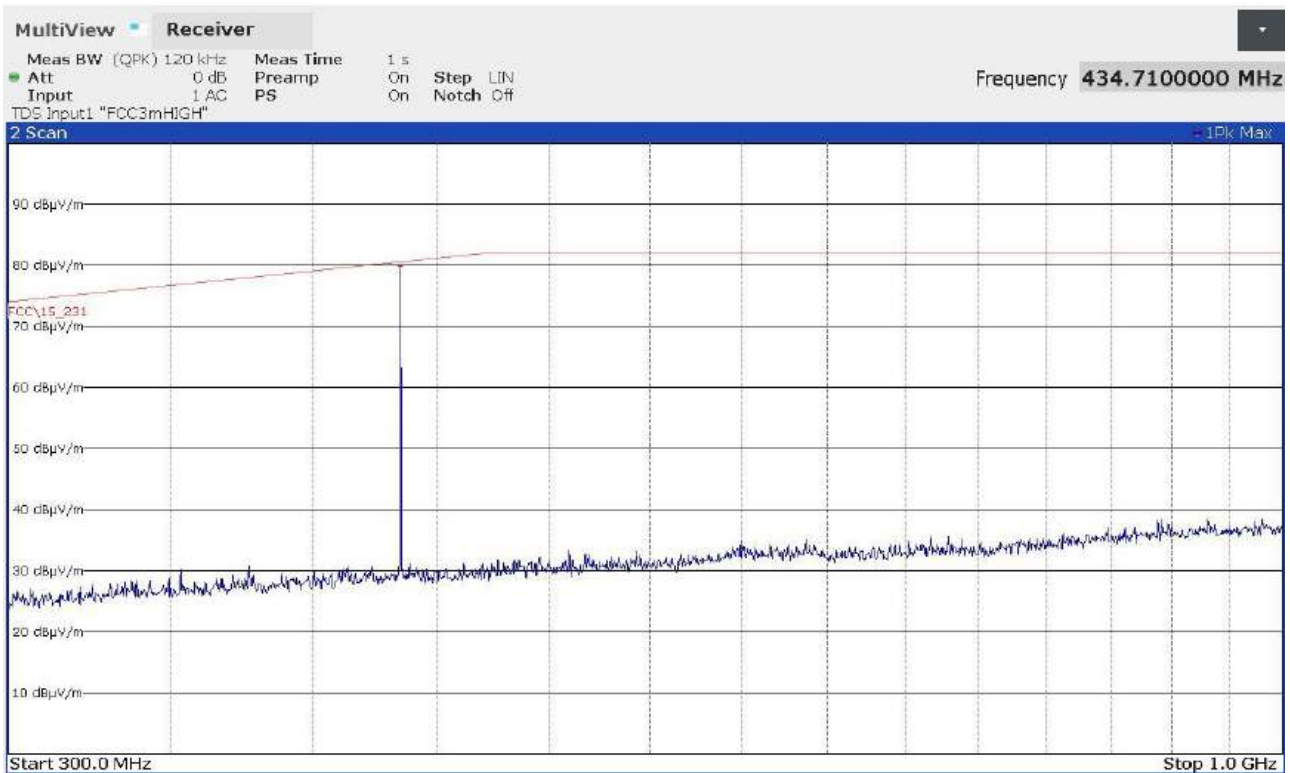
P = the power in watts

## Graphs

Segalla 22007603



Segalla 22007654



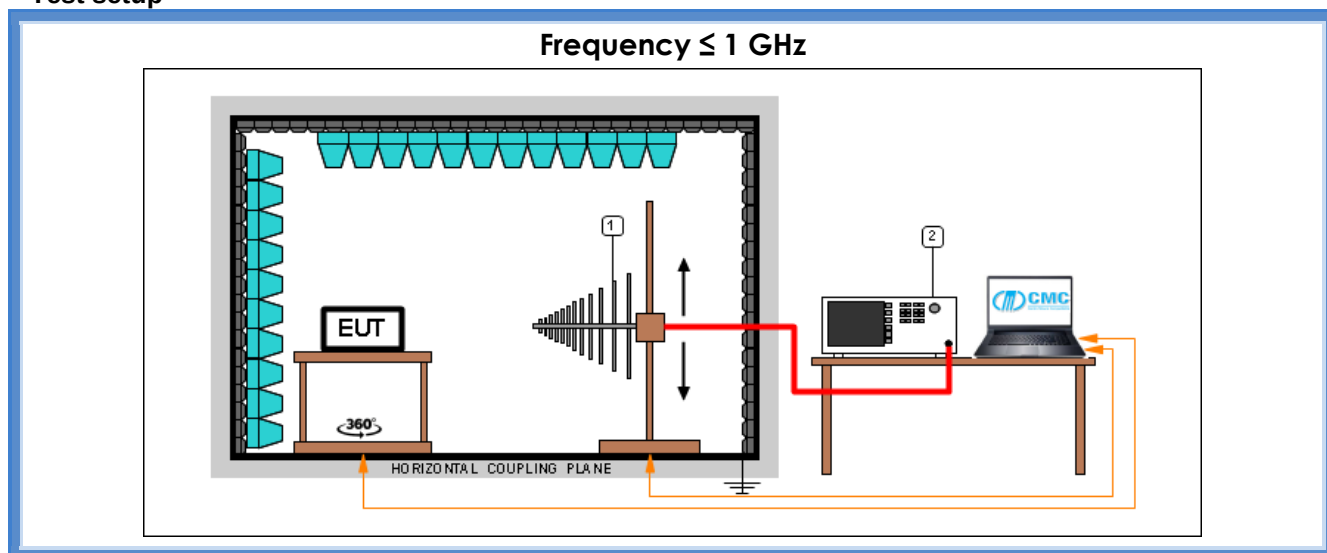
## 9.5 Occupied channel bandwidth

|                                             |                                                      |
|---------------------------------------------|------------------------------------------------------|
| Tested by .....                             | M. Segalla                                           |
| Test date .....                             | 13.06.2022                                           |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)                     |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part. 15.231 (c) |
| Supplementary test set-up description ..... | --                                                   |
| Supplementary information.....              | --                                                   |

### Acceptance limits

| Limits                                           |                                 |
|--------------------------------------------------|---------------------------------|
| Devices operating above 70 MHz and below 900 MHz | Devices operating above 900 MHz |
| 0,25% of the center frequency                    | 0,5% of the center frequency    |

### Test setup



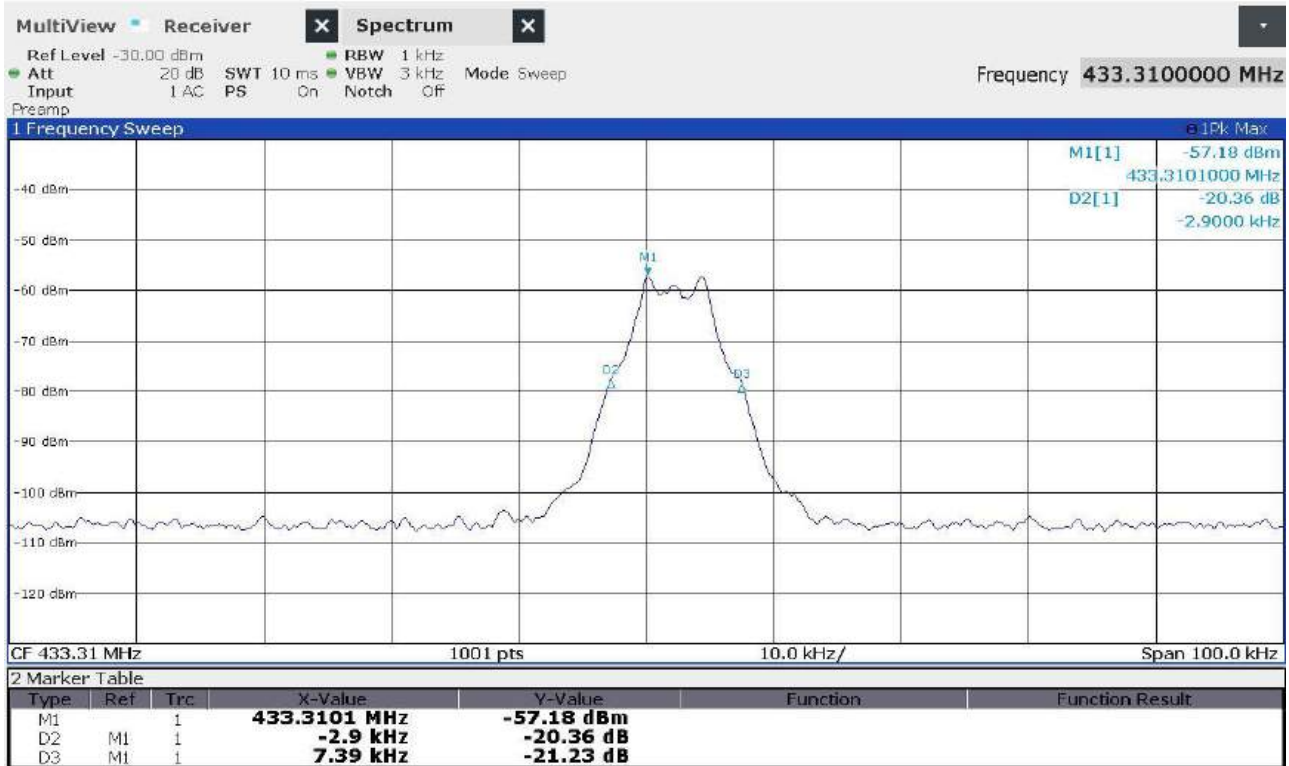
| Test setup PE004_03 |            |                 |             |                                   |
|---------------------|------------|-----------------|-------------|-----------------------------------|
| Nr.                 | Id. Number | Manufacturer    | Model       | Description                       |
| 2                   | CMC S353   | Rohde & Schwarz | ESW26       | EMI Test Receiver 1 Hz - 26.5 GHz |
| 1                   | CMC S287   | Schwarzbeck     | VUSLP 9111B | Broadband Antenna                 |

### Result

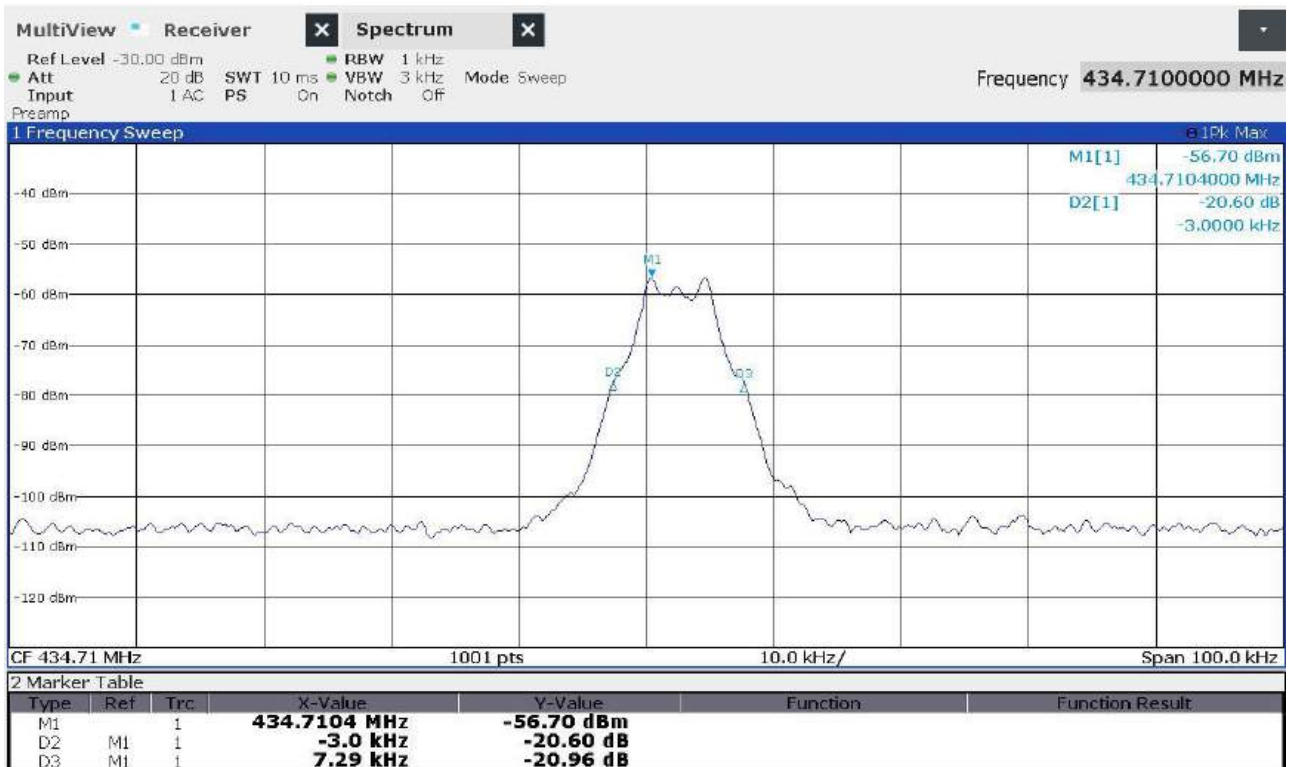
| Frequency (MHz) | Graphs    | 20 dB bandwidth (kHz) | Limit (kHz) |
|-----------------|-----------|-----------------------|-------------|
| 433,31          | G22007604 | 10,29                 | 1083,27     |
| 434,71          | G22007656 | 10,29                 | 1086,78     |

## Graphs

Segalla 22007604



Segalla 22007656



**9.6 Periodic operation characteristics**

|                             |                                                          |                                     |
|-----------------------------|----------------------------------------------------------|-------------------------------------|
| Tested by .....             | M. Segalla                                               |                                     |
| Test date .....             | 13.06.2022                                               |                                     |
| Test location (stand) ..... | Laboratory                                               |                                     |
| Reference standards .....   | FCC Rules and Regulation; Titles 47 Part. 15.231 (a) (e) |                                     |
| Type of transmission.....   | <input checked="" type="checkbox"/>                      | Manually operated transmitter       |
|                             | <input type="checkbox"/>                                 | Transmitter activated automatically |

**Acceptance limits**

The provisions of this section are restricted to periodic operation within the band 40,66 – 40,70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation

15.231(a1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

| <i>Transmission channel<br/>(MHz)</i> | <i>Graphs</i> | <i>Transmitter deactivation<br/>time</i> | <i>Limits</i> |
|---------------------------------------|---------------|------------------------------------------|---------------|
| 433,31                                | G22007620     | 0,346 s                                  | 5 s           |
| 434,71                                | G22007658     | 0,346 s                                  | 5 s           |

15.231(a2) A transmitter activated automatically shall cease transmission within 5 seconds after activation

**Result:** N.A.

15.231(a3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour

**Result:** The EUT does not employ periodic transmission.

15.231(a4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

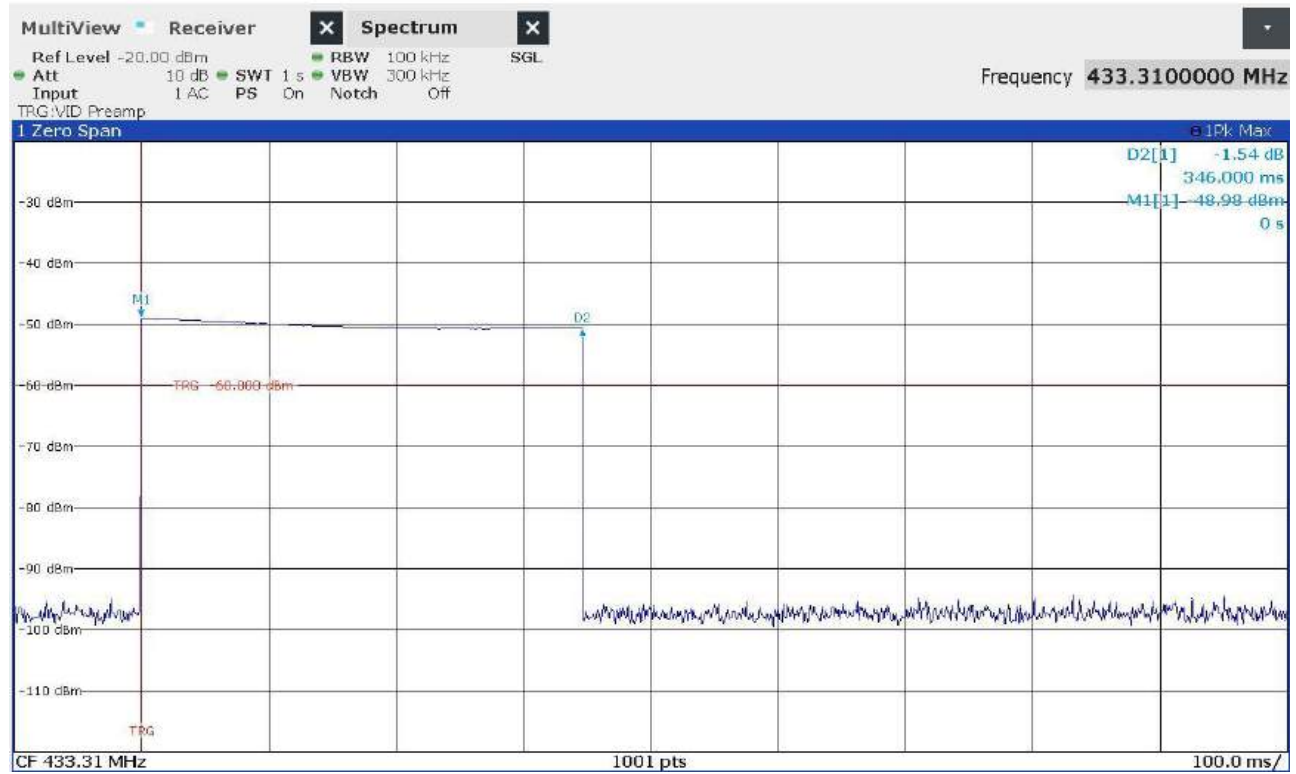
**Result:** N.A.

15.231(a5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data

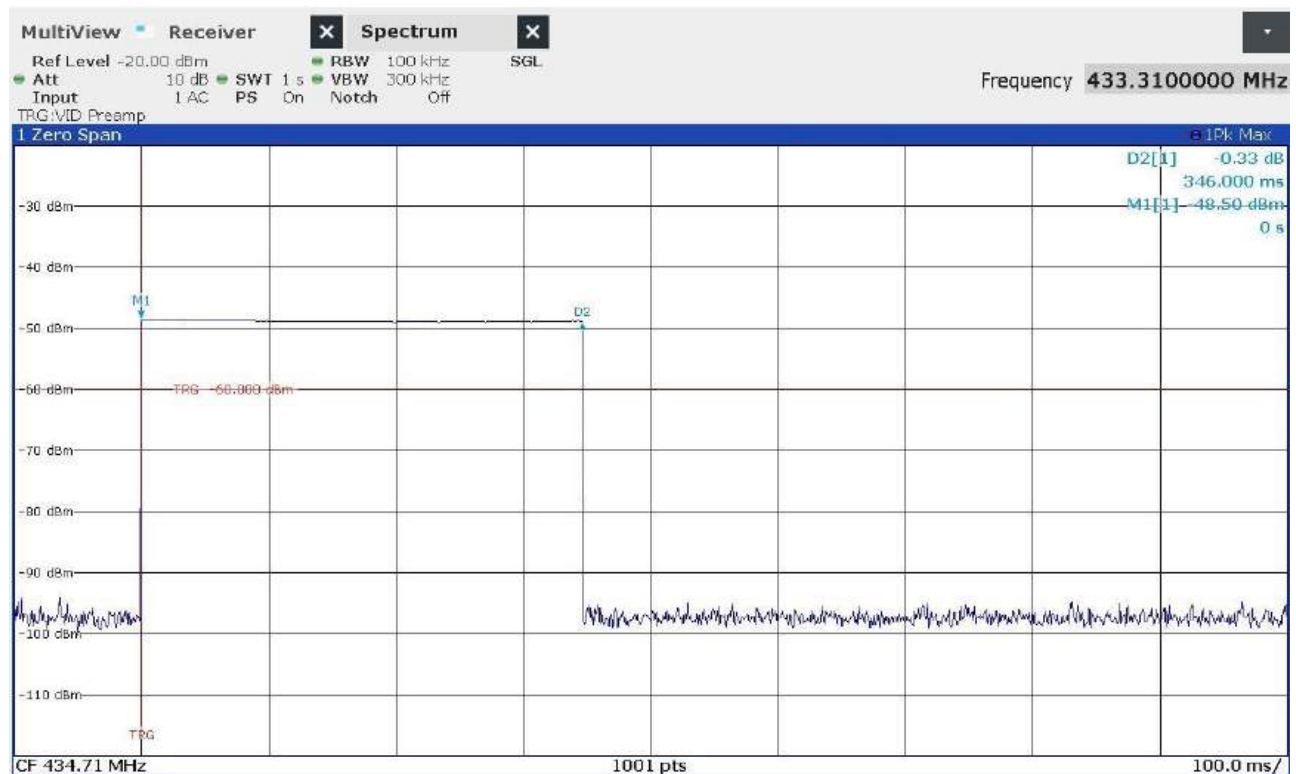
**Result:** N.A.

## Graphs

Segalla 22007620



Segalla 22007658



## Attachment 1

### Instruments list

| <i><b>Id. number</b></i> | <i><b>Manufacturer</b></i> | <i><b>Model</b></i>  | <i><b>Description</b></i>           | <i><b>Serial number</b></i> | <i><b>Last calibration</b></i> | <i><b>Due date calibration</b></i> |
|--------------------------|----------------------------|----------------------|-------------------------------------|-----------------------------|--------------------------------|------------------------------------|
| CMC S010                 | Rohde & Schwarz            | ESH3-Z2              | Impulses Limiting Device            | - - -                       | January '22                    | January '23                        |
| CMC S108                 | EMCO                       | 3115                 | Horn Antenna                        | 9811-5622                   | June '22                       | June '25                           |
| CMC S127                 | Schaffner                  | HLA6120              | Loop Antenna                        | 1191                        | November '18                   | November '23                       |
| CMC S200                 | Schwarzbeck                | NSLK 8128            | V-LISN                              | 8128-273                    | January '22                    | January '23                        |
| CMC S206                 | Rohde & Schwarz            | ESCI 7               | EMC Receiver 9KHz-7GHz              | 100781                      | January '22                    | January '23                        |
| CMC S260                 | CMC                        | Wfr_N                | Shielded Cable                      | Wfr_ant10-1                 | November '21                   | November '22                       |
| CMC S261                 | CMC                        | Wfr_N                | Shielded Cable                      | Wfr_ant20-1                 | November '21                   | November '22                       |
| CMC S262                 | CMC                        | Wfr_N_fix            | Shielded Cable                      | Wfr_fix32-1                 | November '21                   | November '22                       |
| CMC S263                 | CMC                        | Wfr_N_fix            | Shielded Cable                      | Wfr_fix31-1                 | November '21                   | November '22                       |
| CMC S264                 | CMC                        | Wfr_N                | Shielded Cable                      | Wfr_ext03-1                 | November '21                   | November '22                       |
| CMC S271                 | Schwarzbeck                | BBA 9106 + VHBB 9124 | Biconical Antenna (30-300MHz)       | 831                         | June '22                       | June '25                           |
| CMC S287                 | Schwarzbeck                | VUSLP 9111B          | Log-periodic Antenna (200 MHz-3Ghz) | 9111B-203                   | June '22                       | June '25                           |
| CMC S288                 | CMC                        | W_sma_white          | Joint Shielded Cable                | W_001                       | November '21                   | November '22                       |
| CMC S295                 | Rohde & Schwarz            | FSW43                | Spectrum Analyzer 43GHz             | 104059                      | November '19                   | November '22                       |
| CMC S353                 | Rohde & Schwarz            | ESW26                | Emi Test Receiver 1 Hz - 26.5 GHz   | 101492                      | September '20                  | September '22                      |

## Attachment 1

### Measurement uncertainty

| Test                                                      | Test Setup | Expanded uncertainty |                   | Note |
|-----------------------------------------------------------|------------|----------------------|-------------------|------|
| Conducted emission CISPR 16<br>LISN 50uH 0,009-0,0150 MHz | PE001_01   | 3,4 dB               |                   | 1    |
| Conducted emission CISPR 16<br>LISN 50uH 0,150-30,0 MHz   | PE001_01   | 3,0 dB               |                   | 1    |
| Conducted emission CISPR 16<br>Voltage Probe 0,15-30 MHz  | PE001_02   | 2,3 dB               |                   | 1    |
| Conducted emission CISPR 16<br>Current Probe 0,15-30 MHz  | PE001_03   | 2,6 dB               |                   | 1    |
| Conducted emission CISPR 16<br>ISN 0,15-30 MHz            | PE001_04   | 4,7 dB               |                   | 1    |
| Clic CISPR 16<br>LISN 50uH 0,150-30,0 MHz                 | PE001_05   | 2,9 dB               |                   | 1    |
| Radiated Emission CDNE<br>30-300 MHz                      | PE001_06   | 3,3 dB               |                   | 1    |
| Disturbance Power<br>30-300 MHz                           | PE002_01   | 3,8 dB               |                   | 1    |
| Radiated Emission LAS<br>0,15-30 MHz                      | PE003_01   | 2,0 dB               |                   | 1    |
| Radiated Emission CISPR 16<br>Loop Ant. 0,15-30 MHz       | PE004_01   | 4,1 dB               |                   | 1    |
| Radiated Emission CISPR 16<br>Bicon. Ant. 30-300 MHz      | PE004_02   | 4,7 dB               |                   | 1    |
| Radiated Emission CISPR 16<br>LogP. Ant. 300-1000 MHz     | PE004_03   | 4,6 dB               |                   | 1    |
| Radiated Emission CISPR 16<br>Horn Ant. 1-18 GHz          | PE004_04   | 4,7 dB               |                   | 1    |
| Human Exposure to electromagnetic fields                  | PE005_01   | 16,7 %               |                   | 1    |
| Harmonics                                                 | PE006_01   | 10 mA +              | 2,9 %             | 1    |
| Flicker                                                   | PE007_01   | 4,15 %               |                   | 1    |
| Radiated Immunity<br>80 MHz - 6 GHz                       | PE102_XX   | 2,20 dB              | 0,86 V/m a 3V/m   | 1    |
| Conducted Immunity<br>0,15 - 230 MHz                      | PE105_XX   | 1,20 dB              | 0,44 V a 3V       | 1    |
| AC Magnetic field                                         | PE106_01   | 1,55 %               | 0,15 A/m a 10A/m  | 1    |
| Pulse Magnetic field                                      | PE107_01   | 6,23 %               | 18,7 A/m a 300A/m | 1    |
| Dumped Magnetic field                                     | PE108_01   | 6,23 %               | 1,87 A/m a 30A/m  | 1    |
| Common mode conducted immunity                            | PE112_01   | 2,16 %               | 0,22 V a 10V      | 1    |

## Attachment 1

| Test                                       | Test Setup  | Expanded uncertainty | Note |
|--------------------------------------------|-------------|----------------------|------|
| Power/Spurious<br>9kHz-30MHz               | PR001_01    | 4,1 dB               | 1    |
| Power/Spurious ERP<br>30-1000MHz d=10m     | PR001_02+03 | 4,7 dB               | 1    |
| Misura della potenza EIRP<br>1-18GHz d=3m  | PR001_04+05 | 4,7 dB               | 1    |
| Misura della potenza EIRP<br>18-40GHz d=3m | PR001_06    | 5,4 dB               | 1    |
| Frequency error                            | PR002_01+02 | $< 1 \times 10^{-7}$ | 1    |
| Timing zero span (1001pts.)                | PR002_01+02 | 0,2 % SWT            | 1    |
| Modulation bandwidth                       | PR002_01+02 | $< 1 \times 10^{-7}$ | 1    |
| Conducted RF power and spurious emission   | PR002_01+02 | 1,1 dB               | 1    |
| Adjacent channel power                     | PR002_01+02 | 1,1 dB               | 1    |
| Blocking                                   | PR002_01+02 | 1,1 dB               | 1    |

| Test                                             | Test Setup | Expanded uncertainty | Note |
|--------------------------------------------------|------------|----------------------|------|
| Electrostatic discharge immunity test            | PE101_0X   |                      | 2    |
| Electrical fast transients / burst immunity test | PE103_0X   |                      | 2    |
| Surge immunity test                              | PE104_0X   |                      | 2    |
| Short interruption immunity test                 | PE109_01   |                      | 2    |
| Ring Wave immunity test                          | PE110_01   |                      | 2    |
| Low frequency immunity test                      | PE111_01   |                      | 2    |
| Dumped Oscillatory immunity test                 | PE113_01   |                      | 2    |
| Rev. 22_01 date 31/01/2022                       |            |                      |      |

### Note 1:

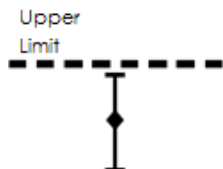
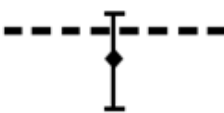
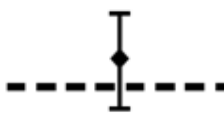
The expanded uncertainty reported according to the document EA-4-02 is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of  $p = 95\%$

### Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor  $k=2$

## Attachment 1

### Judgement of compliance

| Case 1                                                                                                                                                                                                                                                       | Case 2                                                                                                                                                                                                                                                                                              | Case 3                                                                                                                                                                                                                                                                                                  | Case 4                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>The sample complies with the requirements.</p> <p>The measurement results is within the specification limit when the measurement uncertainty is taken into account.</p> |  <p>The sample complies with the requirements.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.</p> |  <p>The sample does not comply with the requirements.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.</p> |  <p>The sample does not comply with the requirements.</p> <p>The measurement results is outside the specification limit when the measurement uncertainty is taken into account.</p> |

In agreement with ILAC-G8:09/2019 cl.4.2.1 Guidelines on Decision Rules and Statements of Conformity

### Quality manual references – Internal procedure

|                                                          |                                     |
|----------------------------------------------------------|-------------------------------------|
| Internal Procedure PM001 rev. 3.1 (Quality Manual) ..... | Measure procedure                   |
| Internal Procedure INC_M rev. 9.7 (Quality Manual) ..... | Measurement uncertainty calculation |