**CMC Centro Misure Compatibilità S.r.l.** Via della Fisica 20, 36016 Thiene (VI), Tel./Fax +39 0445 367702 - www.cmclab.it - info@cmclab.it
Accredited by ACCREDIA according to UNI CEI EN ISO/IEC 17025 accreditation n. 0168 L
Independent Testing Laboratory

# TEST REPORT
# Nr. R21241701

## Federal Communication Commission (FCC)

| | |
|---|---|
| **Report Reference No.** ..... : | R21241701 |
| Date of issue: ..... : | 13.01.2022 |
| Total number pages: ..... : | 73 |
| **Applicant´s name** ..... : | Autec S.r.l. |
| Address ..... : | Via Pomaroli, 65 – 36030 Caldogno (VI) – Italy |
| **Test specification:** | |
| Standards ..... : | FCC Rules & Regulations, Title 47:2020<br>Part 15 paragraph(s): 203, 204, 205, 207, 209, 215 and 247 |
| Non-standard test method ..... : | N/A |
| **Test Report Form No.** ..... : | 15-247_HoppingCMC |
| Test Report Form(s) Originator .. : | CMC Centro Misure Compatibilità S.r.l. |
| Master TRF ..... : | 2022-01 |

**General disclaimer:**

The test results presented in this report relate only to the object tested.
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| | |
|---|---|
| **Test item description** ..... : | Transceiver unit |
| Trademark ..... : | Autec |
| Manufacturer ..... : | Autec S.r.l. |
| Model / Type reference ..... : | Model SK4 Type LU0PH |
| FCC ID ..... : | OQA-SK4LU0PH |
| Rating(s) ..... : | 7,4 Vdc from battery |

**Report**

| | | |
|---|---|---|
| Tested by (name + signature) ..... : | G. Gandini | ..... |
| Approved by (name + signature) ..... : | F. Marenda | ..... |

# 1 Summary

| | |
|---|---|
| **2 Reference standard** | |
| FCC Rules and Regulation Title 47 part 15:2020 | -- |
| **3 List of attachments** | |
| Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references | |
| **4 Deviation(s) from test specification** | |
| None | |
| **5 Testing location** | |
| CMC Centro Misure Compatibilità S.r.l.<br>Via della Fisica, 20 – 36016 Thiene (VI) – Italy<br>Test site facility's FCC registration number: 182474 | |

| ***Revision index*** | ***Date*** | ***Change history*** |
|---|---|---|
| 1.0 | 13.01.2022 | -- |

| | |
|---|---|
| **Testing and sampling:** | |
| Date of receipt of test item | 19.10.2021 |
| Testing start date | 14.12.2021 |
| Testing end date | 21.12.2021 |
| Sampling procedure | Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion.<br>The results relate to the sample as it has been received. |
| Internal identification | Adhesive label with the product number P211186 |
| **General remarks:** | |
| This report shall not be reproduced, except in full, without the written approval of CMC.<br>The test results presented in this report relate only to the object tested.<br>"(see appended table)": refers to a table appended to the report.<br>Throughout this report a comma is used as the decimal separator. | |
| **Possible test case verdicts:** | |
| Test case does not apply to the test object: | N/A (Not Applicable) |
| Test object does meet the requirement: | P (Pass) |
| Test object does not meet the requirement: | F (Fail) |
| Test object does not performed: | N/E (Not Executed) |
| **Definition of symbols used in this test report:** | |
| ☒ Indicates that the listed condition, standard or equipment is applicable for this report.<br>☐ Indicates that the listed condition, standard or equipment is not applicable for this report. | |

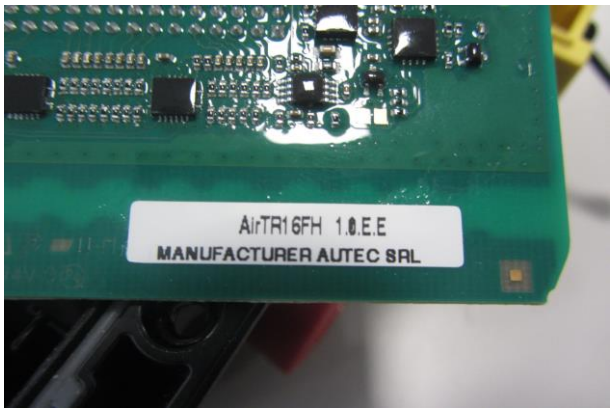
## 6 General description of tested item and testing condition(s)

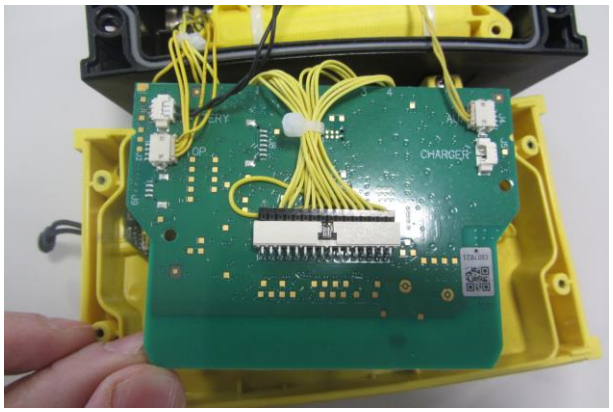
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Description ..... : | Transceiver unit | | | | | | |
| Model Number ..... : | Model SK4 Type LU0PH | | | | | | |
| FCC ID ..... : | OQA-SK4LU0PH | | | | | | |
| Serial Number ..... : | -- | | | | | | |
| Brand name ..... : | Autec | | | | | | |
| Frequency band ..... : | 902 – 928 MHz | | | | | | |
| Nominal frequencies ..... : | $F_L$: 915,05 MHz | | $F_M$: 921,40 MHz | | $F_H$: 927,80 MHz | | |
| Test power supply ..... : | | Voltage and Frequency | Reference poles | | | | |
| | | | N | L1 | L2 | L3 | PE |
| | ☐ | AC: | ☐ | ☐ | ☐ | ☐ | ☐ |
| | ☐ | AC: | ☐ | ☐ | ☐ | ☐ | ☐ |
| | ☒ | DC: 7,4 V from battery | | | | | ☐ |
| Pseudo randomly ordered list of hopping frequencies ..... : | See document sk4_lu0ph_operational_description-rev0 | | | | | | |
| Test configuration ..... : | ☐ | Table top equipment | | | | | |
| | ☐ | Floor standing equipment | | | | | |
| | ☒ | Hand-held equipment | | | | | |
| Type of equipment ..... : | ☒ | Transmitter unit | | | | | |
| | ☒ | Receiver unit | | | | | |
| Type of station ..... : | ☒ | Portable station | | | | | |
| | ☐ | Mobile station | | | | | |
| Operating modes ..... : | No. | Operating mode of test item | | | | | |
| | 1 | EUT in continuous transmission at maximum power | | | | | |
| Accessories (not part of the test item) ..... : | Accessory | | Type | | Manufacturer | | |
| | Transceiver unit | | -- | | Autec | | |

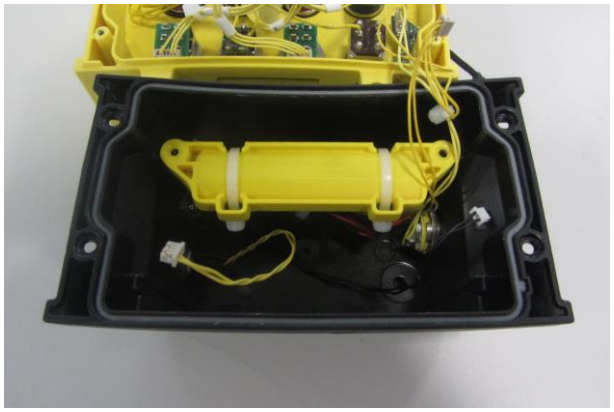
## 6.1 Photos of the test item

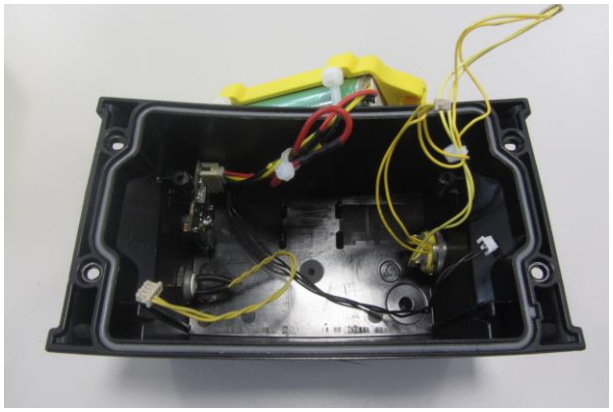


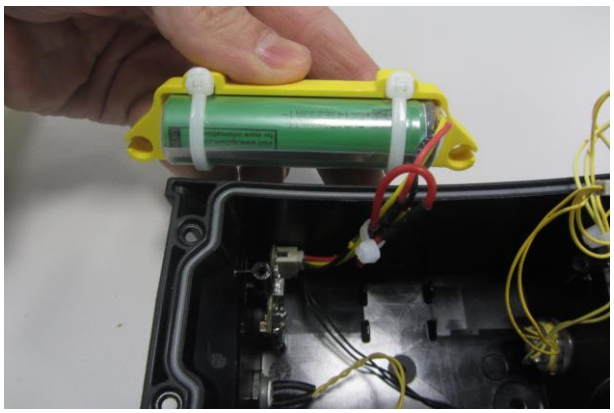


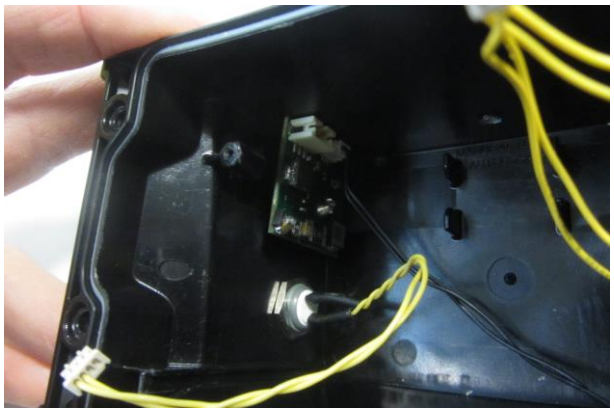


AirTR16FH 1.0.E.E
MANUFACTURER AUTEC SRL

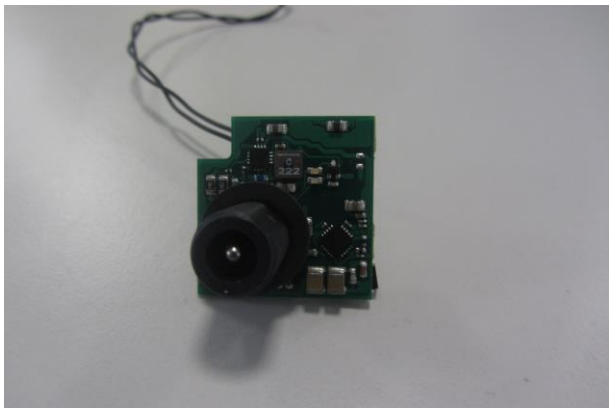
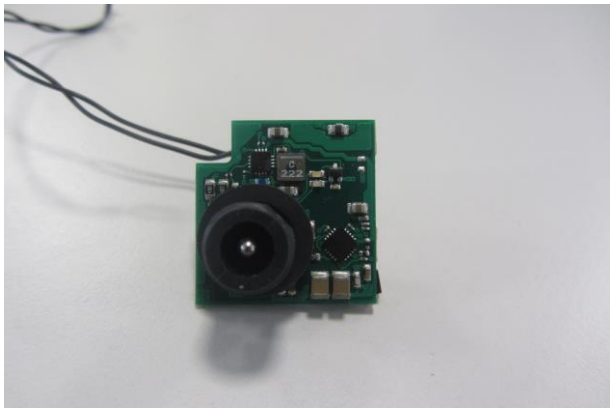
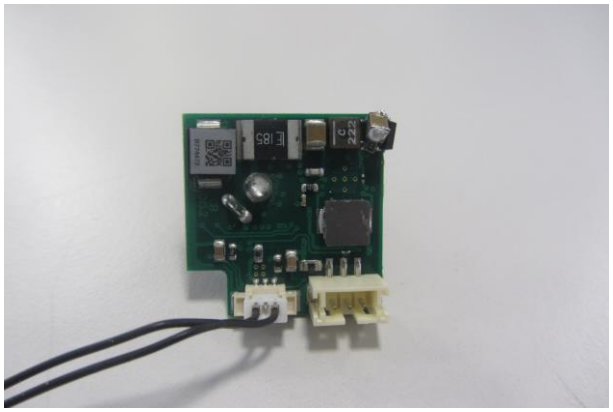
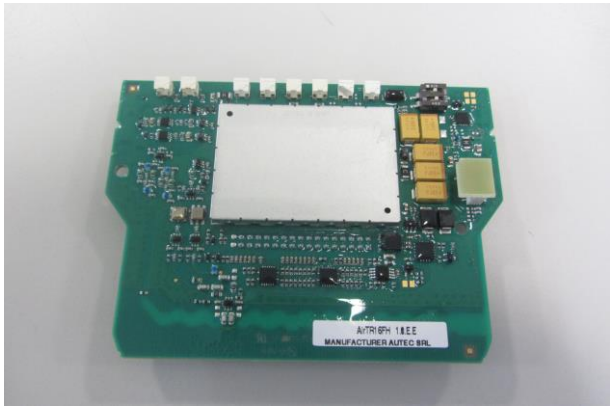
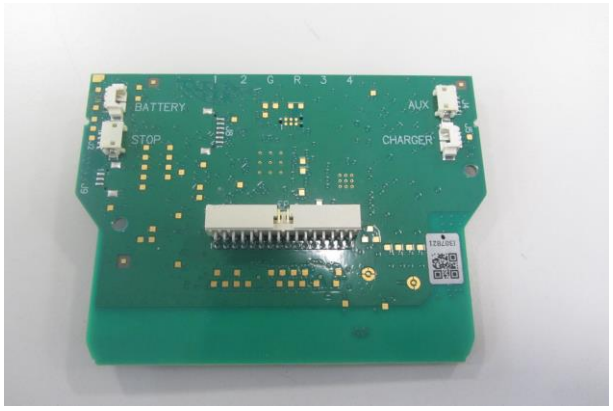




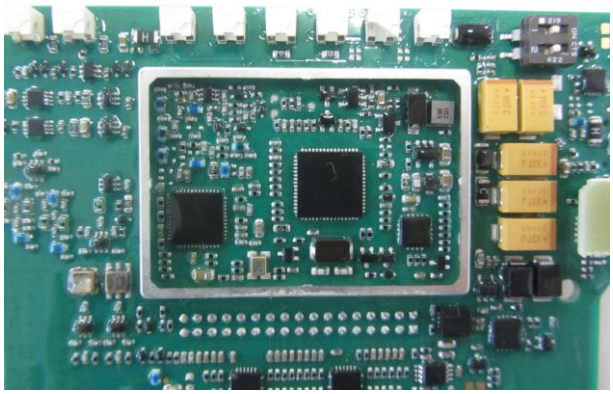











MANUFACTURER AUTEC BRL

BATTERY
STOP
AUX
CHARGER


MANUFACTURER AUTEC BRL



## 7 Verdict summary section

| FCC Rules & Regulations, Title 47:2020<br>Part 15 paragraph(s): 203, 204, 205, 207, 209, 215 and 247 | | | |
|---|---|---|---|
| **Clause** | **Requirement – Test case** | **Basic standard** | **Verdict** |
| Part 15.247 (a) (1) | Pseudo randomly ordered list of hopping frequencies | -- | **P** |
| Part 15.203 | Antenna requirements | ANSI C63.10 | **P** |
| Part 15.207 | Conducted emissions | ANSI C63.10 | **N/A (+)** |
| Part 15.209 | Radiated emissions and spurious emission | ANSI C63.10 | **P** |
| Part 15.247 | 20 dB Bandwidth | ANSI C63.10 | **P** |
| Part 15.247 | Channel Separation | ANSI C63.10 | **P** |
| Part 15.247 | Number of Hopping Channel | ANSI C63.10 | **P** |
| Part 15.247 | Time of occupancy | ANSI C63.10 | **P** |
| Part 15.247 | Band edge | ANSI C63.10 | **P** |
| Part 15.209 and 15.247 | Peak Output Power | ANSI C63.10 | **P** |

(+) Devices which only employ battery power. See FCC Part 15.207 (c)

| Normative references | |
|---|---|
| ***Reference no.*** | ***Description*** |
| FCC Rules and Regulation Title 47 part 15:2020 | -- |
| KDB 558074 D01 15.247 Meas Guidance v05r02 | Guidance for compliance measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices operating under section 15.247 of the FCC rules |
| ANSI C63.4:2014 | American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz |
| ANSI C63.10:2013 | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices |

## 8 Test conditions

### 8.1 General

<table>
<tr><td>Environmental reference conditions.....:</td><td>The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.<br>The climatic conditions during the tests were within the following limits:
<table>
<tr><th>Temperature</th><th>Humidity</th><th>Atmospheric pressure</th></tr>
<tr><td>15 °C – 35 °C</td><td>30 % - 60 %</td><td>800 hPa – 1060 hPa</td></tr>
<tr><td colspan="3">If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.</td></tr>
</table></td></tr>
<tr><td>Measurement uncertainties .....:</td><td>Attachment 1</td></tr>
</table>

# 9 Test results

## 9.1 Antenna requirements

| | | |
|---|---|---|
| Tested by ..... : | G. Gandini | |
| Test date ..... : | 14.12.2021 | |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.203 and 15.204 | |
| Test specification ..... : | An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded | |
| Antenna type..... : | ☒ | Integral antenna |
| | ☐ | External antenna |
| Antenna gain..... : | ≤ 2 dBi | |
| External R.F. power amplifier ..... : | Not Present | |

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

| | | |
|---|---|---|
| Tested by ..... : | G. Gandini | |
| Test date ..... : | 14.12.2021 | |
| Test location (stand) ..... : | Semi-anechoic chamber (CMC A070) | |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.209<br>ANSI C63.10 cl. 6.3, 6.4, 6.5 and 6.6 | |
| Test set-up description ..... : | ☒ | Table top equipment set-up (80 cm above the reference ground plane) |
| | ☐ | Floor standing equipment set-up (insulating material up to 12 mm thick) |
| | ☐ | 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 ..... : | SAC with measurement distance [m]:<br>10 m at frequencies ≤ 1 GHz<br>3 m at frequencies > 1 GHz | |
| Supplementary information..... : | -- | |

**Acceptance limits**

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

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

| ***Acceptance limits for emissions in restricted frequency bands (f ≥ 1000 MHz)*** | | | |
|---|---|---|---|
| *Frequency (MHz)* | *Test distance (m)* | *AV limits [dB(µV/m)]* | *Peak limits [dB(µV/m)]* |
| > 1000 | 3 | 54 | 74 |

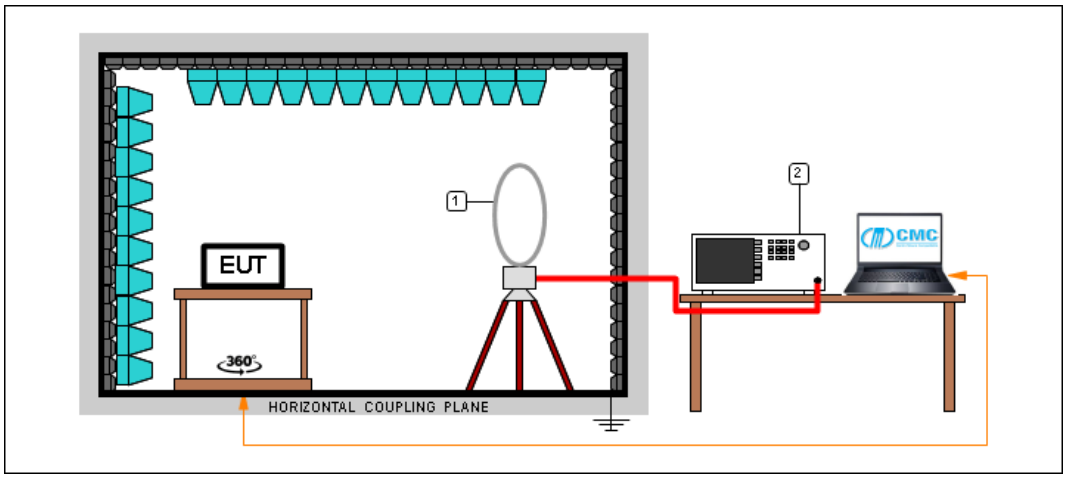
The restricted frequency bands are listed in the following table

| *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. |

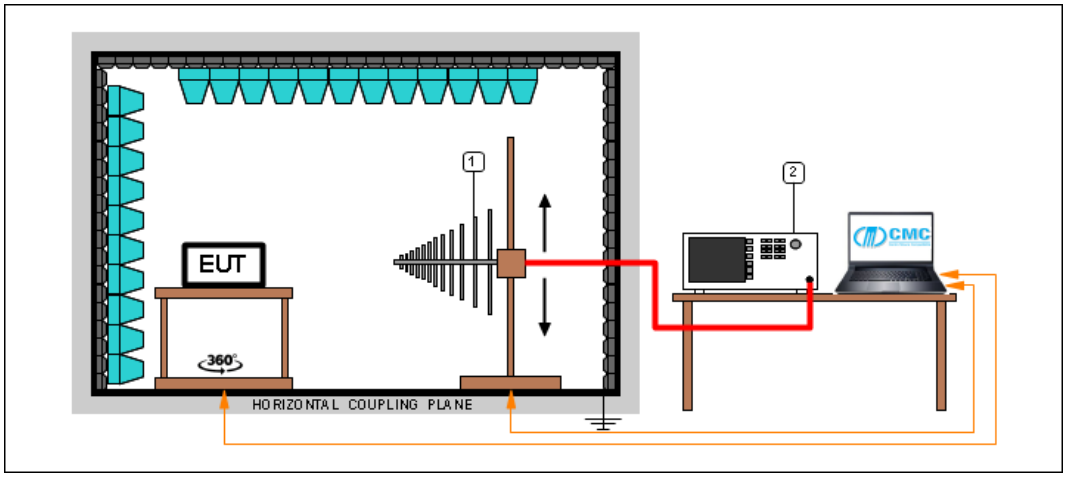
**Test setup**

**Frequency ≤ 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 |

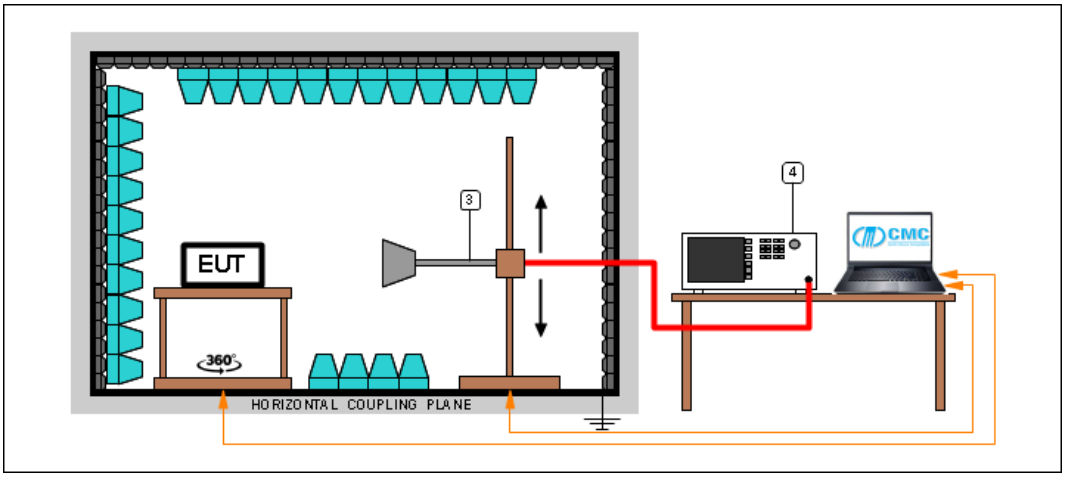
**Frequency ≤ 1 GHz**




| *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) |

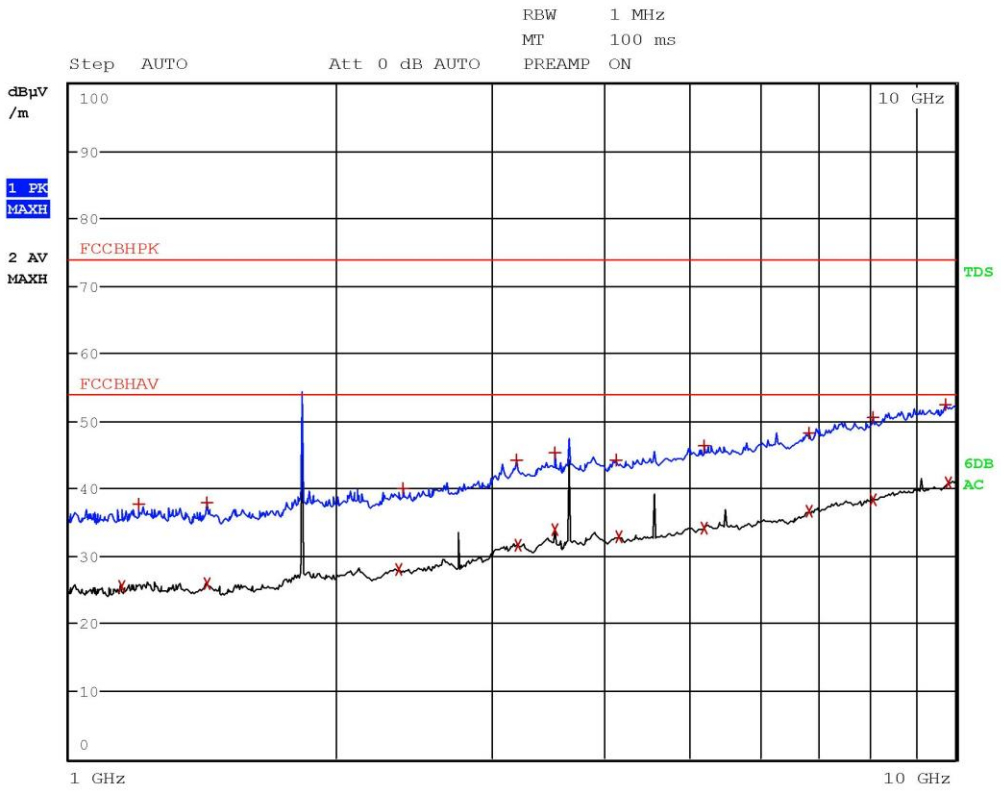
**Result**

| *Transmission channel (MHz)* | *Polarization* | *Frequency Range (MHz)* | *Graphs* | *Result* |
|---|---|---|---|---|
| 915,05 | H | 1000 – 10000 | G21241701 | P |
| 915,05 | V | 1000 – 10000 | G21241702 | P |
| 921,40 | V | 1000 – 10000 | G21241703 | P |
| 921,40 | H | 1000 – 10000 | G21241704 | P |
| 927,80 | H | 1000 – 10000 | G21241705 | P |
| 927,80 | V | 1000 – 10000 | G21241706 | P |
| 927,80 | V | 300 – 1000 | G21241707 | P |
| 927,80 | H | 300 – 1000 | G21241708 | P |
| 921,40 | H | 300 – 1000 | G21241709 | P |
| 921,40 | V | 300 – 1000 | G21241710 | P |
| 915,05 | V | 300 – 1000 | G21241711 | P |
| 915,05 | H | 300 – 1000 | G21241712 | P |
| Worst case | H | 30 – 300 | G21241713 | P |
| Worst case | V | 30 – 300 | G21241714 | P |
| Worst case | Loop | 0,009 – 30 | G21241715 | 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 40log(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 20log(test distance/10) based on the measuring distance provided by the standard.
Peaks above the limits are caused by the nominal transmitting frequencies

*Graphs Legend*
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X

**Graphs**



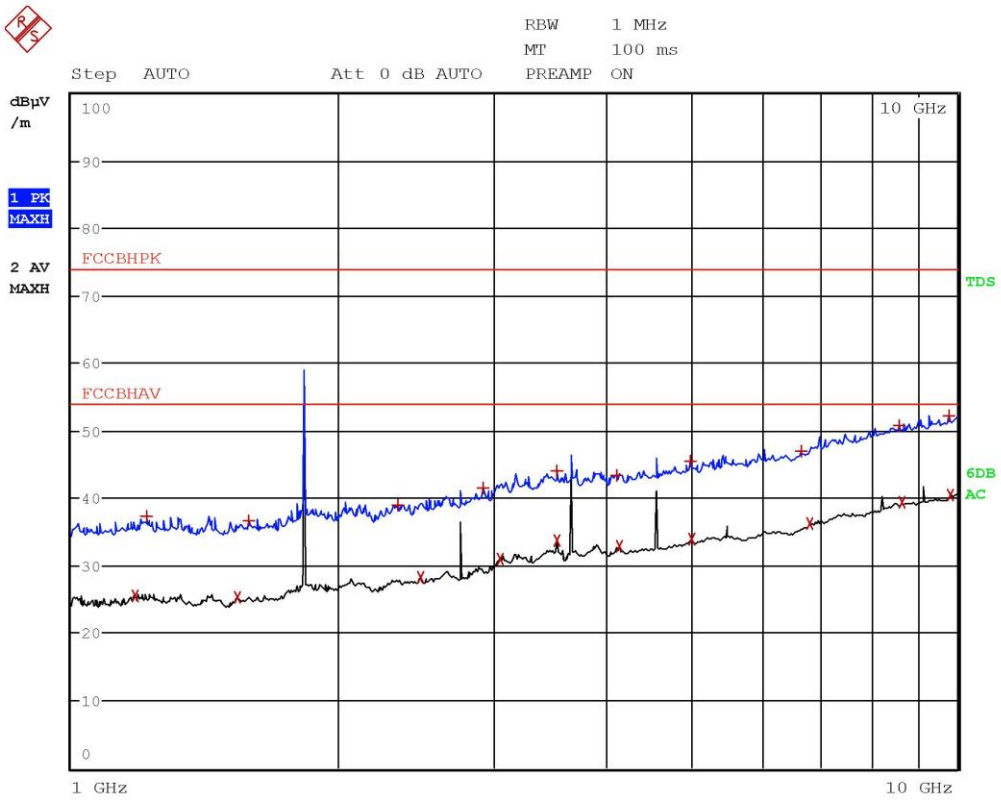

Gandini 21241701

EDIT PEAK LIST (Prescan Results)

| | |
|---|---|
| Trace1: | FCCBHPK |
| Trace2: | FCCBHAV |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 2 Average | 1.1452 GHz | 25.45 | -28.53 |
| 1 Max Peak | 1.1988 GHz | 37.63 | -36.34 |
| 2 Average | 1.4276 GHz | 25.90 | -28.07 |
| 1 Max Peak | 1.4312 GHz | 37.95 | -36.02 |
| 2 Average | 2.3548 GHz | 28.04 | -25.93 |
| 1 Max Peak | 2.3772 GHz | 40.00 | -33.97 |
| 1 Max Peak | 3.194 GHz | 44.26 | -29.71 |
| 2 Average | 3.2076 GHz | 31.58 | -22.39 |
| 2 Average | 3.5356 GHz | 34.00 | -19.97 |
| 1 Max Peak | 3.5356 GHz | 45.34 | -28.64 |
| 1 Max Peak | 4.1444 GHz | 44.29 | -29.68 |
| 2 Average | 4.1628 GHz | 32.77 | -21.20 |
| 1 Max Peak | 5.1968 GHz | 46.32 | -27.65 |
| 2 Average | 5.2104 GHz | 34.20 | -19.77 |
| 1 Max Peak | 6.8288 GHz | 48.21 | -25.76 |
| 2 Average | 6.8356 GHz | 36.63 | -17.35 |
| 1 Max Peak | 8.064 GHz | 50.60 | -23.37 |
| 2 Average | 8.0704 GHz | 38.25 | -15.73 |
| 1 Max Peak | 9.744 GHz | 52.31 | -21.66 |
| 2 Average | 9.8112 GHz | 40.92 | -13.05 |

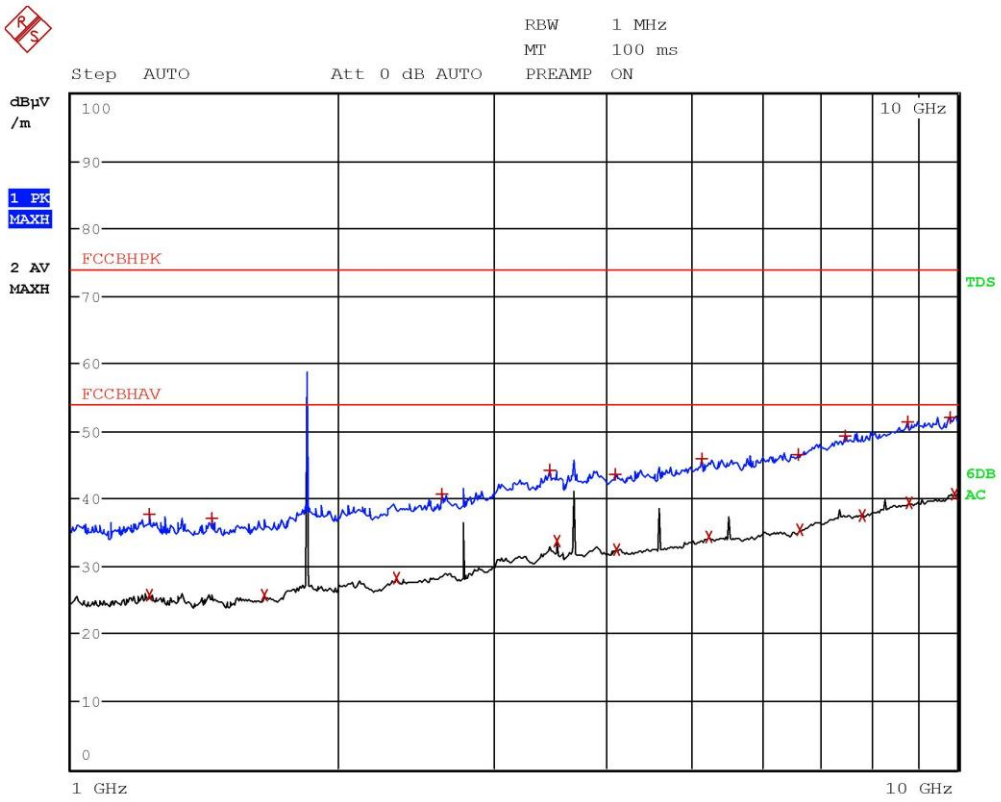
Gandini 21241701




Gandini 21241702

| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | FCCBHPK | | |
| Trace2: | FCCBHAV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
| 2 Average | 1.1784 GHz | 25.47 | -28.51 |
| 1 Max Peak | 1.2164 GHz | 37.27 | -36.70 |
| 2 Average | 1.5368 GHz | 25.22 | -28.75 |
| 1 Max Peak | 1.5856 GHz | 36.66 | -37.31 |
| 1 Max Peak | 2.3364 GHz | 38.94 | -35.03 |
| 2 Average | 2.4792 GHz | 28.30 | -25.67 |
| 1 Max Peak | 2.9116 GHz | 41.58 | -32.39 |
| 2 Average | 3.0428 GHz | 31.02 | -22.95 |
| 2 Average | 3.5356 GHz | 33.73 | -20.24 |
| 1 Max Peak | 3.5356 GHz | 44.07 | -29.90 |
| 1 Max Peak | 4.1296 GHz | 43.38 | -30.59 |
| 2 Average | 4.1608 GHz | 32.87 | -21.10 |
| 1 Max Peak | 4.9988 GHz | 45.45 | -28.52 |
| 2 Average | 5.0132 GHz | 33.86 | -20.11 |
| 1 Max Peak | 6.6744 GHz | 46.93 | -27.04 |
| 2 Average | 6.818 GHz | 36.25 | -17.72 |
| 1 Max Peak | 8.6096 GHz | 50.65 | -23.32 |
| 2 Average | 8.648 GHz | 39.42 | -14.55 |
| 1 Max Peak | 9.7908 GHz | 52.29 | -21.68 |
| 2 Average | 9.8204 GHz | 40.52 | -13.45 |

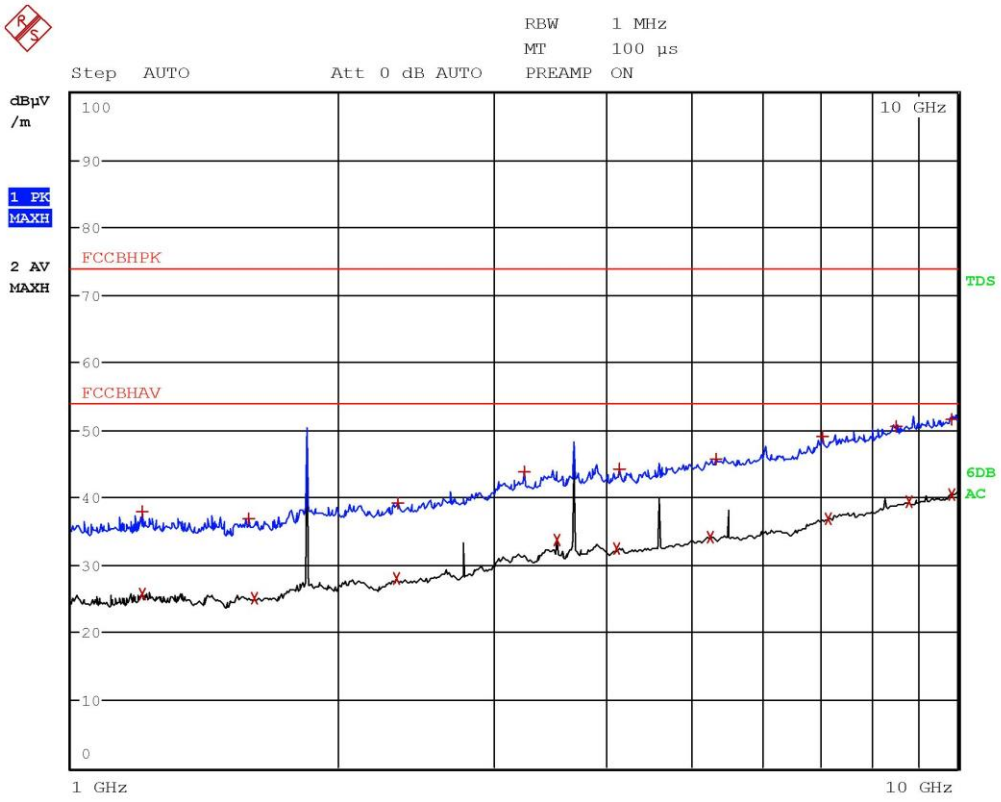
Gandini 21241702




Gandini 21241703

| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | FCCBHPK | | |
| Trace2: | FCCBHAV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
| 1 Max Peak | 1.2252 GHz | 37.66 | -36.31 |
| 2 Average | 1.226 GHz | 25.65 | -28.32 |
| 1 Max Peak | 1.4384 GHz | 36.98 | -36.99 |
| 2 Average | 1.6488 GHz | 25.65 | -28.33 |
| 2 Average | 2.3268 GHz | 28.32 | -25.65 |
| 1 Max Peak | 2.622 GHz | 40.58 | -33.39 |
| 1 Max Peak | 3.4628 GHz | 44.29 | -29.69 |
| 2 Average | 3.5356 GHz | 33.61 | -20.36 |
| 1 Max Peak | 4.1132 GHz | 43.51 | -30.46 |
| 2 Average | 4.13 GHz | 32.53 | -21.44 |
| 1 Max Peak | 5.1436 GHz | 45.88 | -28.09 |
| 2 Average | 5.244 GHz | 34.28 | -19.69 |
| 1 Max Peak | 6.6044 GHz | 46.48 | -27.49 |
| 2 Average | 6.6444 GHz | 35.41 | -18.56 |
| 1 Max Peak | 7.4728 GHz | 49.33 | -24.64 |
| 2 Average | 7.7968 GHz | 37.57 | -16.40 |
| 1 Max Peak | 8.7748 GHz | 51.41 | -22.56 |
| 2 Average | 8.82 GHz | 39.32 | -14.65 |
| 1 Max Peak | 9.7988 GHz | 51.90 | -22.07 |
| 2 Average | 9.918 GHz | 40.58 | -13.39 |

Gandini 21241703



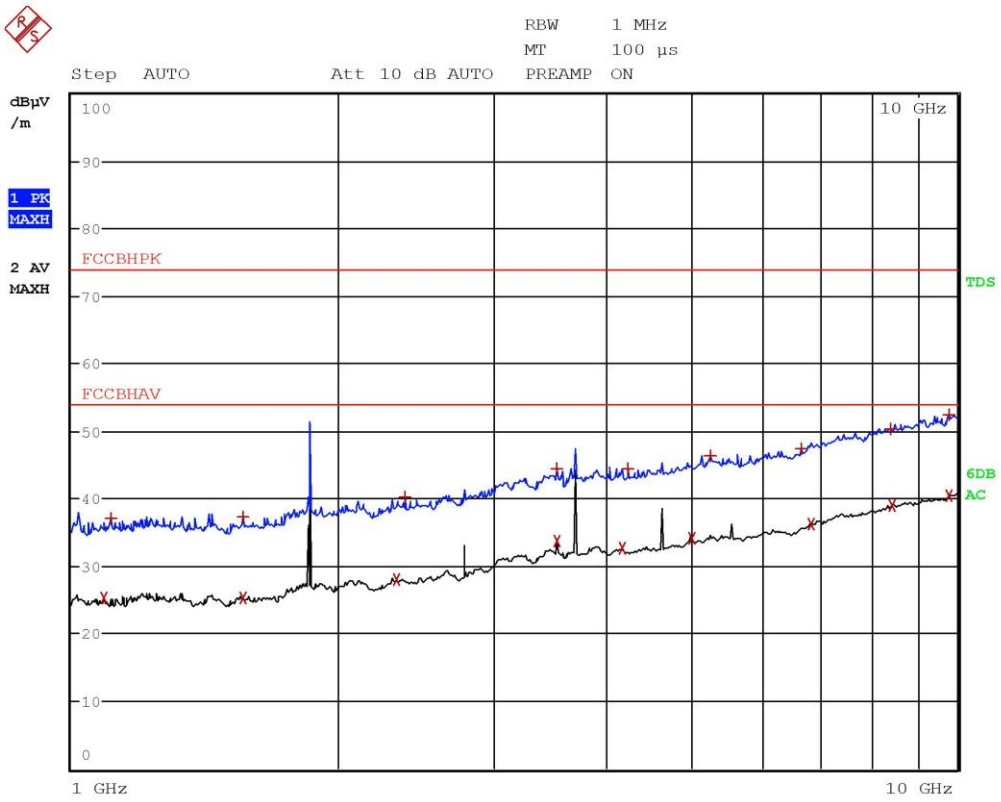

Gandini 21241704

EDIT PEAK LIST (Prescan Results)

| | |
|---|---|
| Trace1: | FCCBHPK |
| Trace2: | FCCBHAV |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 2 Average | 1.202 GHz | 25.64 | -28.33 |
| 1 Max Peak | 1.2024 GHz | 37.87 | -36.10 |
| 1 Max Peak | 1.5832 GHz | 36.94 | -37.03 |
| 2 Average | 1.6116 GHz | 25.19 | -28.78 |
| 2 Average | 2.326 GHz | 27.95 | -26.02 |
| 1 Max Peak | 2.3388 GHz | 39.14 | -34.83 |
| 1 Max Peak | 3.2472 GHz | 43.84 | -30.14 |
| 2 Average | 3.5356 GHz | 33.76 | -20.21 |
| 2 Average | 4.1284 GHz | 32.44 | -21.53 |
| 1 Max Peak | 4.1532 GHz | 44.31 | -29.66 |
| 2 Average | 5.2576 GHz | 34.13 | -19.84 |
| 1 Max Peak | 5.3452 GHz | 45.62 | -28.35 |
| 1 Max Peak | 7.0428 GHz | 48.96 | -25.01 |
| 2 Average | 7.152 GHz | 36.81 | -17.16 |
| 1 Max Peak | 8.5416 GHz | 50.48 | -23.49 |
| 2 Average | 8.8196 GHz | 39.37 | -14.60 |
| 1 Max Peak | 9.8416 GHz | 51.58 | -22.39 |
| 2 Average | 9.856 GHz | 40.34 | -13.63 |

Gandini 21241704



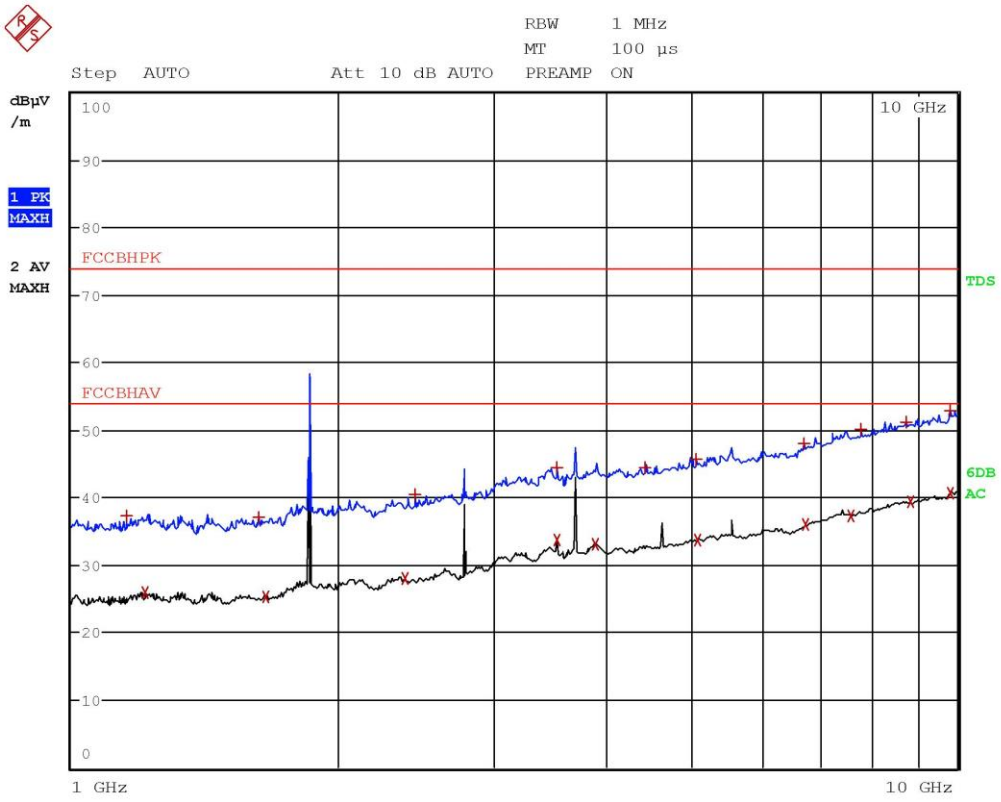

Gandini 21241705

EDIT PEAK LIST (Prescan Results)

| | |
|---|---|
| Trace1: | FCCBHPK |
| Trace2: | FCCBHAV |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 2 Average | 1.0888 GHz | 25.24 | -28.73 |
| 1 Max Peak | 1.11 GHz | 37.08 | -36.89 |
| 2 Average | 1.56 GHz | 25.33 | -28.64 |
| 1 Max Peak | 1.5604 GHz | 37.21 | -36.77 |
| 2 Average | 2.3276 GHz | 27.94 | -26.03 |
| 1 Max Peak | 2.3796 GHz | 40.12 | -33.85 |
| 1 Max Peak | 3.5356 GHz | 44.46 | -29.51 |
| 2 Average | 3.5356 GHz | 33.66 | -20.31 |
| 2 Average | 4.1916 GHz | 32.65 | -21.32 |
| 1 Max Peak | 4.2428 GHz | 44.41 | -29.56 |
| 2 Average | 5.0084 GHz | 34.17 | -19.80 |
| 1 Max Peak | 5.2564 GHz | 46.25 | -27.72 |
| 1 Max Peak | 6.6584 GHz | 47.31 | -26.66 |
| 2 Average | 6.8468 GHz | 36.19 | -17.78 |
| 1 Max Peak | 8.4024 GHz | 50.41 | -23.56 |
| 2 Average | 8.442 GHz | 38.89 | -15.08 |
| 2 Average | 9.7748 GHz | 40.44 | -13.53 |
| 1 Max Peak | 9.7984 GHz | 52.34 | -21.63 |

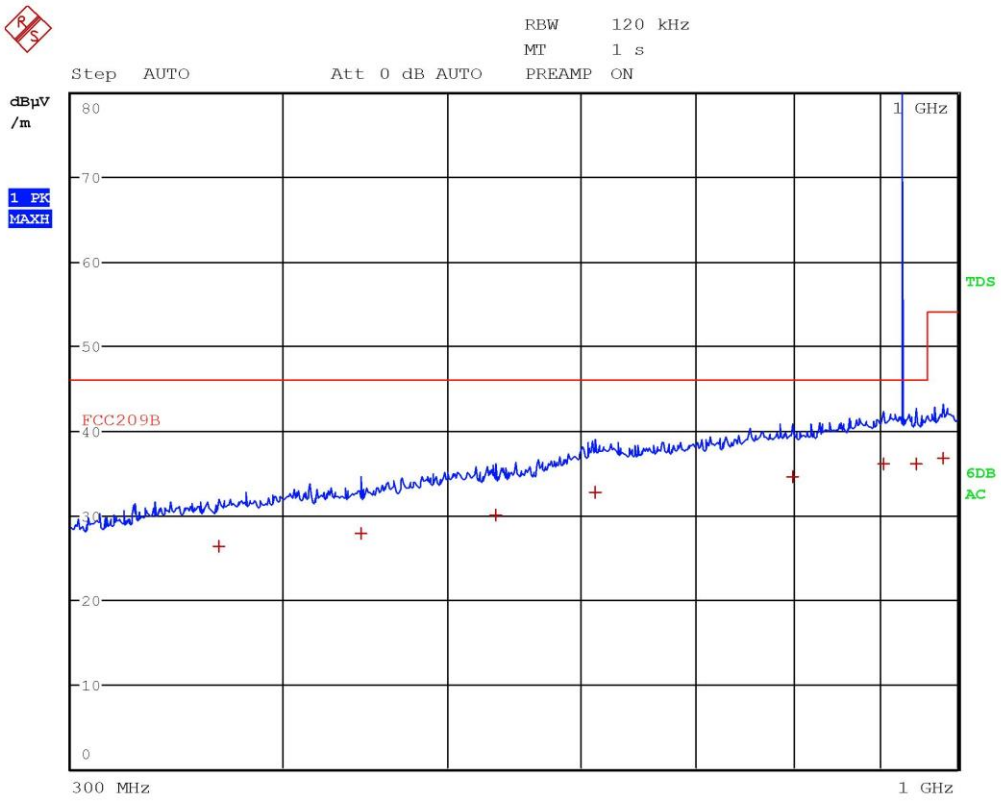
Gandini 21241705




Gandini 21241706

| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | FCCBHPK | | |
| Trace2: | FCCBHAV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
| 1 Max Peak | 1.1552 GHz | 37.23 | -36.74 |
| 2 Average | 1.2124 GHz | 25.84 | -28.14 |
| 1 Max Peak | 1.6268 GHz | 37.12 | -36.86 |
| 2 Average | 1.6596 GHz | 25.36 | -28.61 |
| 2 Average | 2.3788 GHz | 27.95 | -26.02 |
| 1 Max Peak | 2.4416 GHz | 40.41 | -33.56 |
| 1 Max Peak | 3.5356 GHz | 44.42 | -29.55 |
| 2 Average | 3.5356 GHz | 33.80 | -20.17 |
| 2 Average | 3.8976 GHz | 33.00 | -20.97 |
| 1 Max Peak | 4.4364 GHz | 44.39 | -29.58 |
| 1 Max Peak | 5.0712 GHz | 45.63 | -28.34 |
| 2 Average | 5.0896 GHz | 33.72 | -20.26 |
| 1 Max Peak | 6.7228 GHz | 48.03 | -25.94 |
| 2 Average | 6.7368 GHz | 35.98 | -17.99 |
| 2 Average | 7.576 GHz | 37.39 | -16.58 |
| 1 Max Peak | 7.7944 GHz | 50.02 | -23.95 |
| 1 Max Peak | 8.7556 GHz | 51.05 | -22.92 |
| 2 Average | 8.8512 GHz | 39.48 | -14.49 |
| 2 Average | 9.8088 GHz | 40.58 | -13.39 |
| 1 Max Peak | 9.82 GHz | 52.74 | -21.23 |

Gandini 21241706



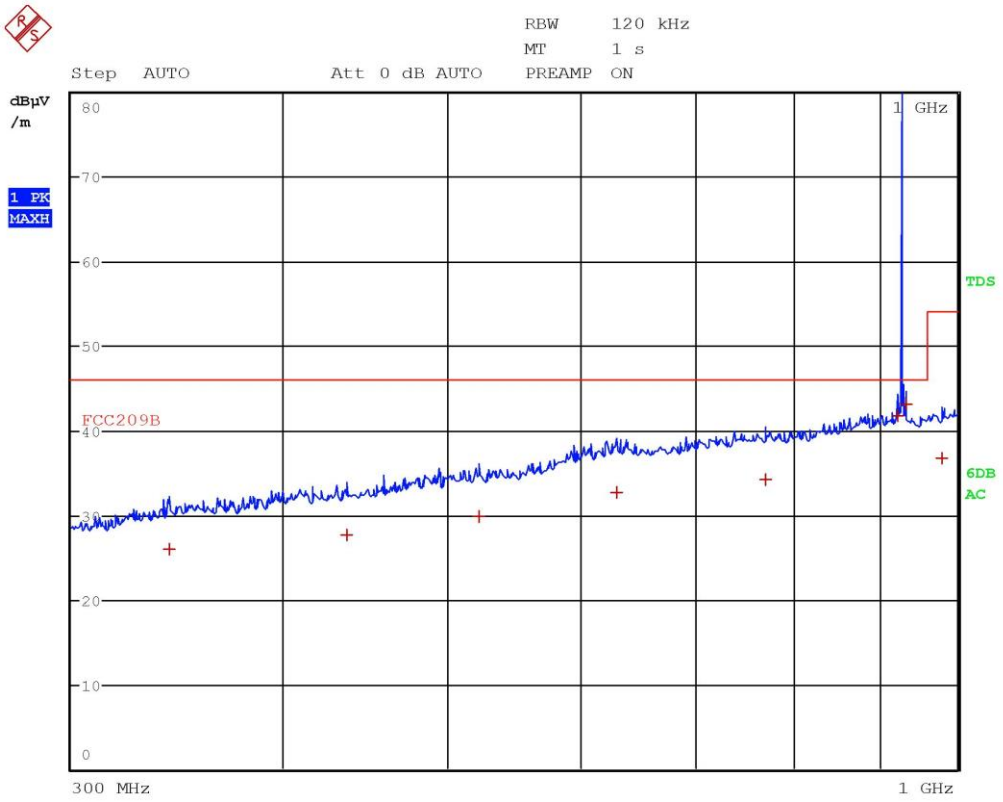

Gandini 21241707

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 366.48 MHz | 26.23 | -19.78 |
| 1 Quasi Peak | 444.48 MHz | 27.87 | -18.14 |
| 1 Quasi Peak | 534.52 MHz | 29.96 | -16.05 |
| 1 Quasi Peak | 610.8 MHz | 32.65 | -13.36 |
| 1 Quasi Peak | 799.64 MHz | 34.45 | -11.56 |
| 1 Quasi Peak | 905.36 MHz | 36.10 | -9.92 |
| 1 Quasi Peak | 944.76 MHz | 35.97 | -10.04 |
| 1 Quasi Peak | 980.76 MHz | 36.69 | -17.28 |

Gandini 21241707



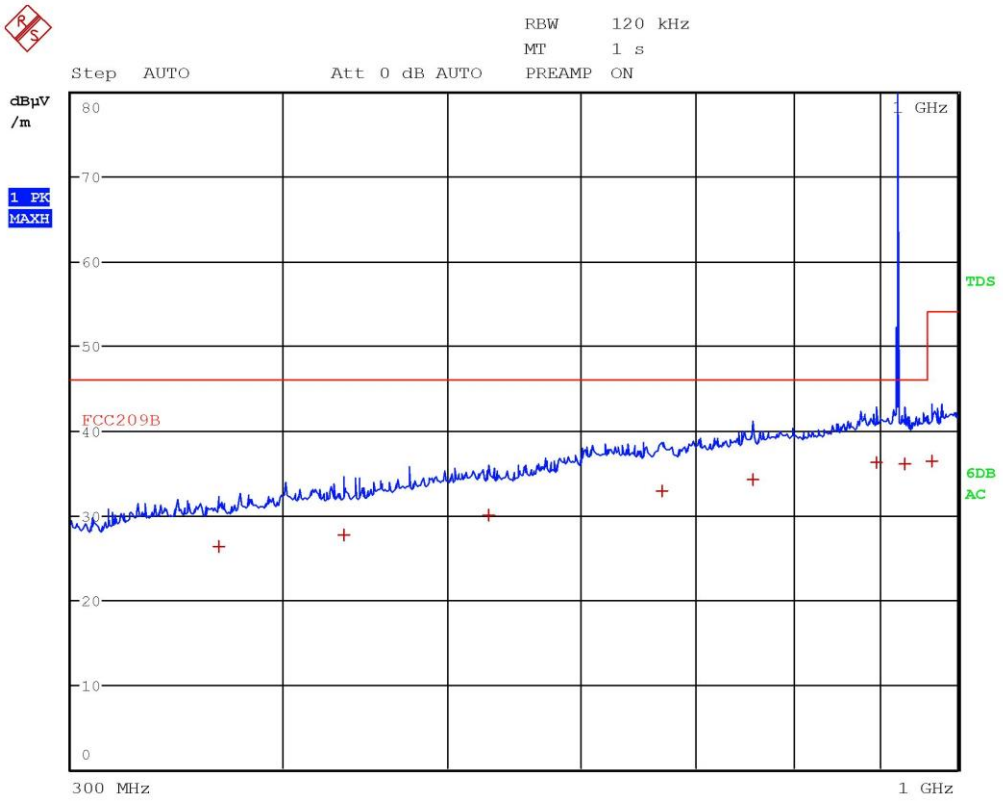

Gandini 21241708

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 343 MHz | 25.91 | -20.10 |
| 1 Quasi Peak | 436.4 MHz | 27.63 | -18.38 |
| 1 Quasi Peak | 522.24 MHz | 29.86 | -16.15 |
| 1 Quasi Peak | 629.12 MHz | 32.74 | -13.27 |
| 1 Quasi Peak | 771.16 MHz | 34.26 | -11.75 |
| 1 Quasi Peak | 922.2 MHz | 41.70 | -4.31 |
| 1 Quasi Peak | 933.4 MHz | 43.14 | -2.87 |
| 1 Quasi Peak | 979.76 MHz | 36.70 | -17.27 |

Gandini 21241708



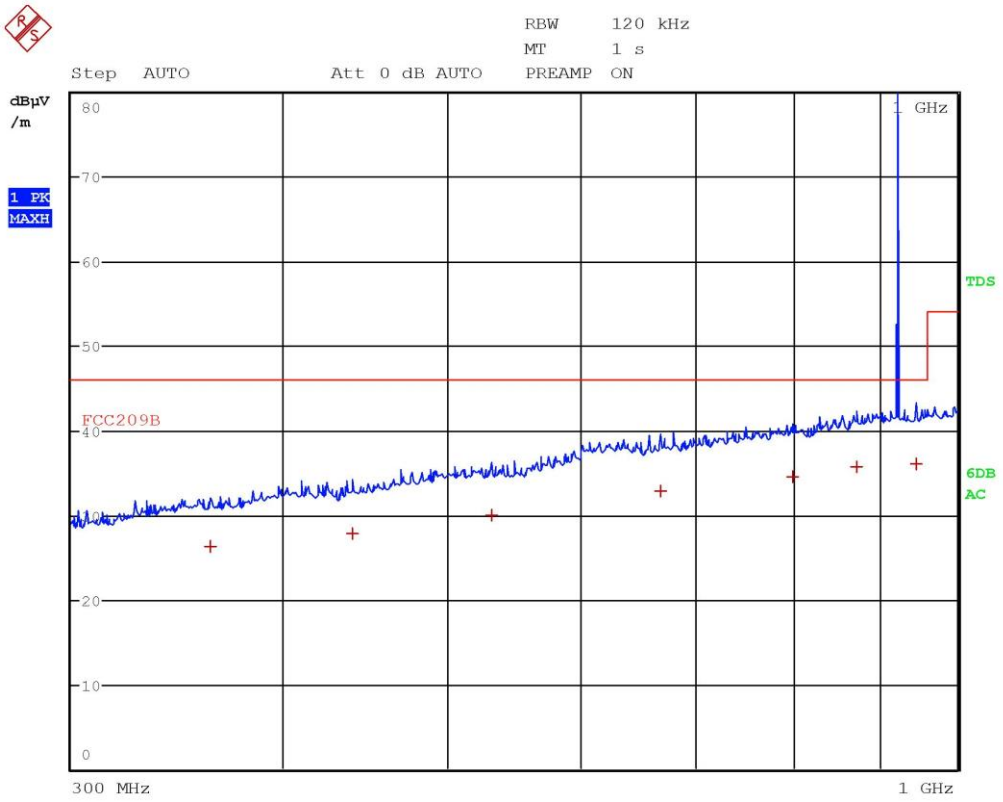

Gandini 21241709

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 366.56 MHz | 26.35 | -19.66 |
| 1 Quasi Peak | 434.36 MHz | 27.58 | -18.43 |
| 1 Quasi Peak | 529.12 MHz | 30.06 | -15.96 |
| 1 Quasi Peak | 668.8 MHz | 32.79 | -13.22 |
| 1 Quasi Peak | 757.64 MHz | 34.21 | -11.80 |
| 1 Quasi Peak | 895 MHz | 36.15 | -9.86 |
| 1 Quasi Peak | 931.52 MHz | 36.11 | -9.90 |
| 1 Quasi Peak | 965.36 MHz | 36.44 | -17.53 |

Gandini 21241709



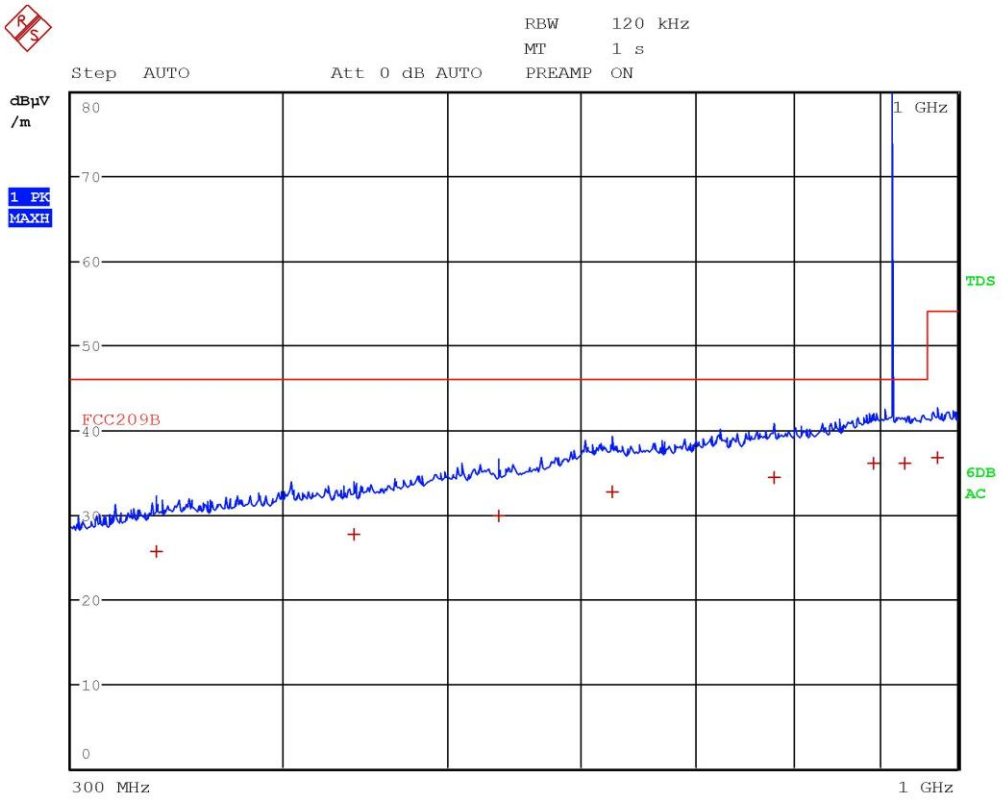

Gandini 21241710

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 362.32 MHz | 26.29 | -19.72 |
| 1 Quasi Peak | 439.12 MHz | 27.74 | -18.27 |
| 1 Quasi Peak | 531.08 MHz | 30.08 | -15.93 |
| 1 Quasi Peak | 668 MHz | 32.82 | -13.19 |
| 1 Quasi Peak | 800 MHz | 34.45 | -11.56 |
| 1 Quasi Peak | 871.96 MHz | 35.76 | -10.25 |
| 1 Quasi Peak | 945.28 MHz | 36.09 | -9.92 |

Gandini 21241710



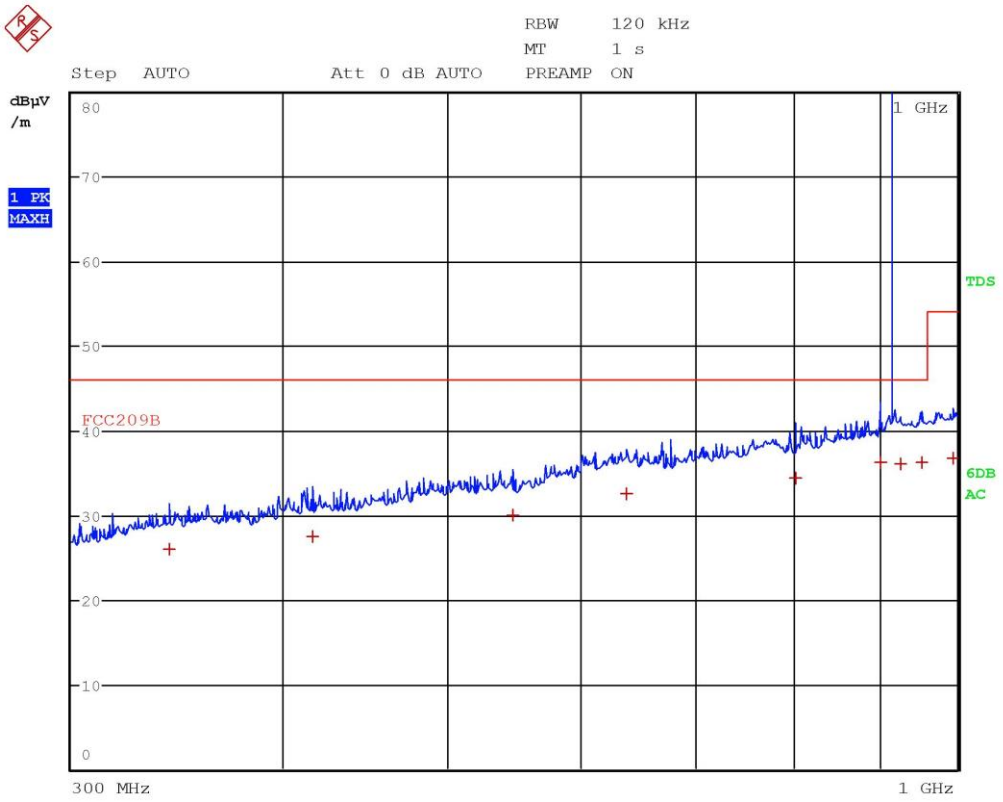

Gandini 21241711

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 336.84 MHz | 25.62 | -20.39 |
| 1 Quasi Peak | 440.52 MHz | 27.71 | -18.30 |
| 1 Quasi Peak | 536.52 MHz | 29.87 | -16.14 |
| 1 Quasi Peak | 626 MHz | 32.74 | -13.28 |
| 1 Quasi Peak | 780.16 MHz | 34.31 | -11.70 |
| 1 Quasi Peak | 893.08 MHz | 36.02 | -9.99 |
| 1 Quasi Peak | 931.24 MHz | 35.96 | -10.05 |
| 1 Quasi Peak | 972.92 MHz | 36.64 | -17.33 |

Gandini 21241711



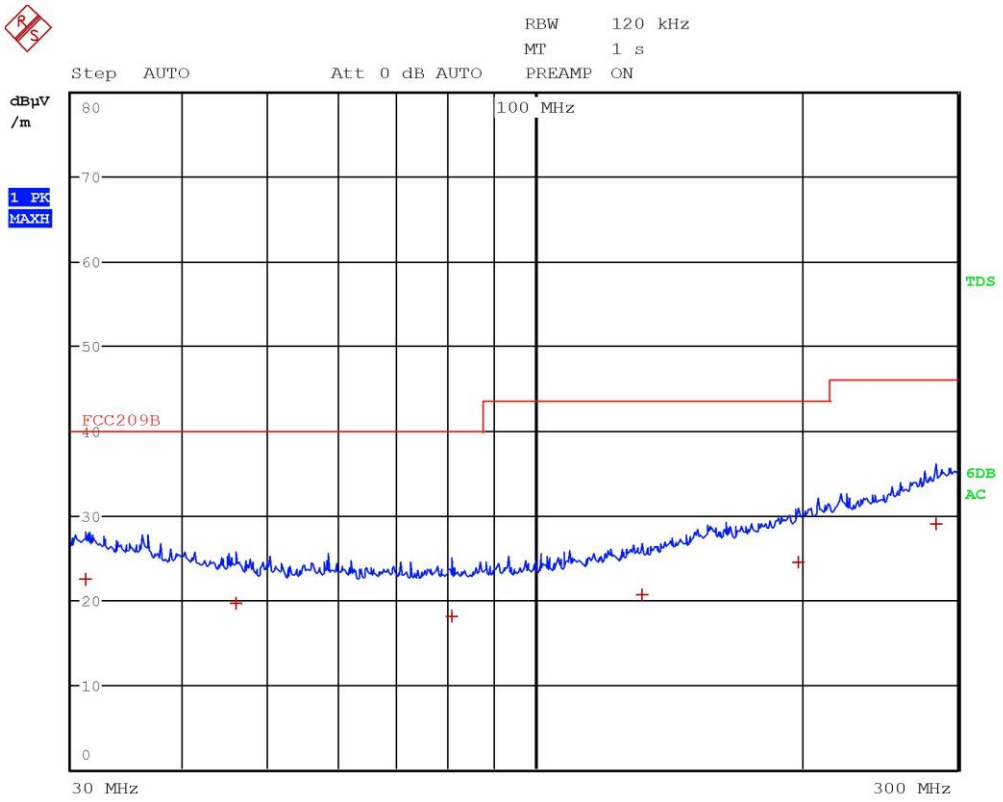

Gandini 21241712

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 342.72 MHz | 25.88 | -20.13 |
| 1 Quasi Peak | 416.24 MHz | 27.52 | -18.49 |
| 1 Quasi Peak | 546.96 MHz | 29.99 | -16.03 |
| 1 Quasi Peak | 637.76 MHz | 32.53 | -13.48 |
| 1 Quasi Peak | 802.2 MHz | 34.44 | -11.57 |
| 1 Quasi Peak | 900.76 MHz | 36.14 | -9.87 |
| 1 Quasi Peak | 925.8 MHz | 36.04 | -9.97 |
| 1 Quasi Peak | 953.08 MHz | 36.19 | -9.82 |
| 1 Quasi Peak | 994.8 MHz | 36.75 | -17.22 |

Gandini 21241712



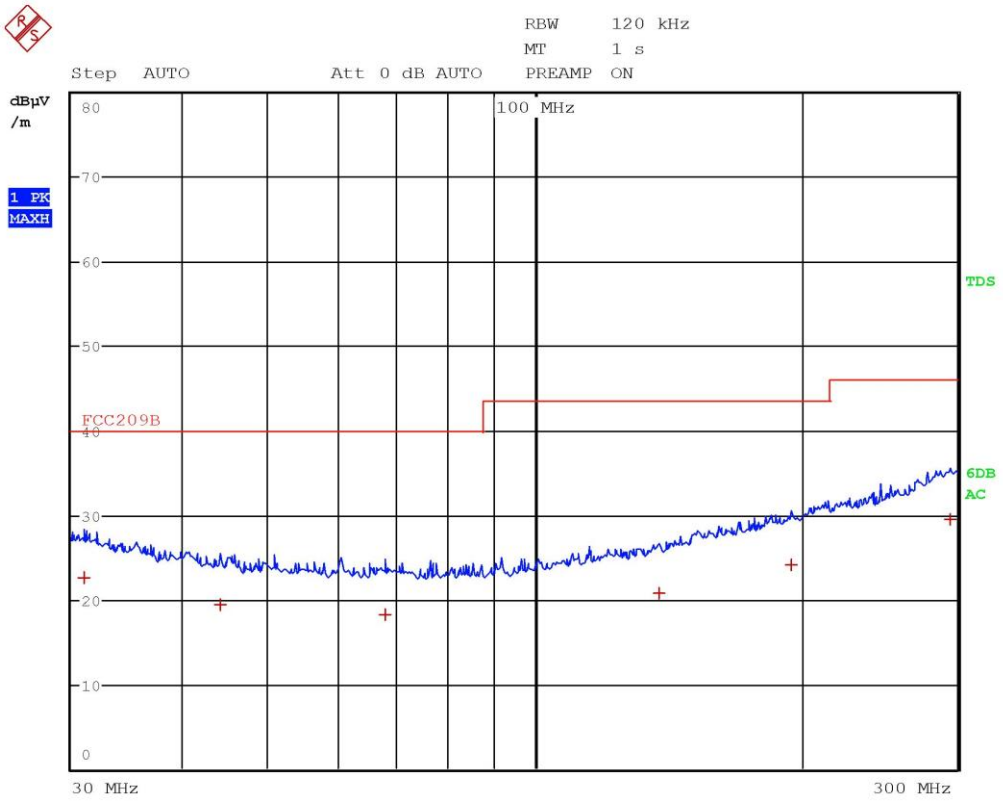

Gandini 21241713

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 31.08 MHz | 22.50 | -17.49 |
| 1 Quasi Peak | 45.96 MHz | 19.58 | -20.41 |
| 1 Quasi Peak | 80.52 MHz | 18.02 | -21.97 |
| 1 Quasi Peak | 132 MHz | 20.58 | -22.93 |
| 1 Quasi Peak | 198.6 MHz | 24.44 | -19.07 |
| 1 Quasi Peak | 284.08 MHz | 28.93 | -17.08 |

Gandini 21241713



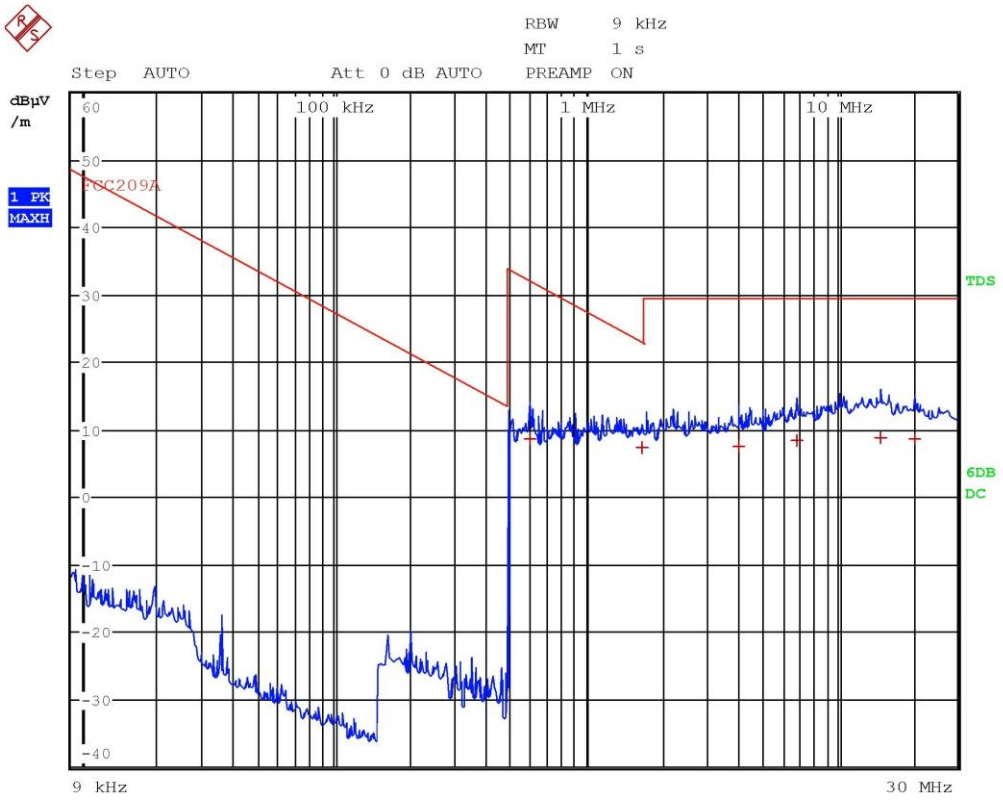

Gandini 21241714

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209B |
| Trace2: | --- |
| Trace3: | --- |

| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 31 MHz | 22.58 | -17.41 |
| 1 Quasi Peak | 44.12 MHz | 19.43 | -20.56 |
| 1 Quasi Peak | 67.68 MHz | 18.22 | -21.77 |
| 1 Quasi Peak | 138.16 MHz | 20.75 | -22.76 |
| 1 Quasi Peak | 194.44 MHz | 24.12 | -19.39 |
| 1 Quasi Peak | 294.72 MHz | 29.50 | -16.51 |

Gandini 21241714




Gandini 21241715

EDIT PEAK LIST (Final Measurement Results)

| | |
|---|---|
| Trace1: | FCC209A |
| Trace2: | --- |
| Trace3: | --- |

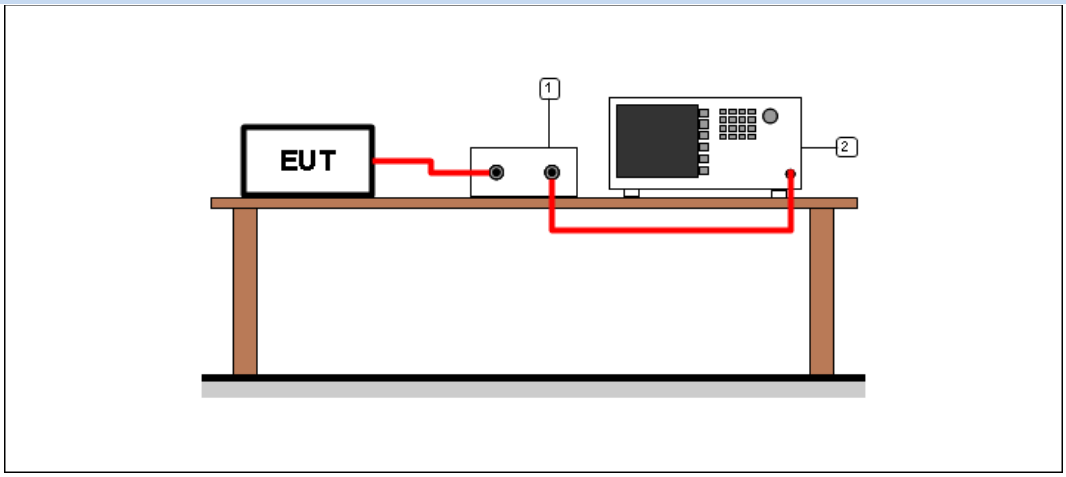
| TRACE | FREQUENCY | LEVEL dBµV/m | DELTA LIMIT dB |
|---|---|---|---|
| 1 Quasi Peak | 9.08 kHz | -3.35 | -51.80 |
| 1 Quasi Peak | 35.56 kHz | -11.64 | -48.22 |
| 1 Quasi Peak | 502 kHz | 8.73 | -24.85 |
| 1 Quasi Peak | 1.146 MHz | 7.30 | -19.11 |
| 1 Quasi Peak | 1.642 MHz | 7.10 | -16.19 |
| 1 Quasi Peak | 2.706 MHz | 7.16 | -22.37 |
| 1 Quasi Peak | 7.346 MHz | 8.04 | -21.49 |
| 1 Quasi Peak | 15.21 MHz | 8.32 | -21.21 |

Gandini 21241715

### 9.3 20 dB bandwidth

| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.215 (c)<br>ANSI C63.10 cl. 7.8.7 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Test setup**




| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

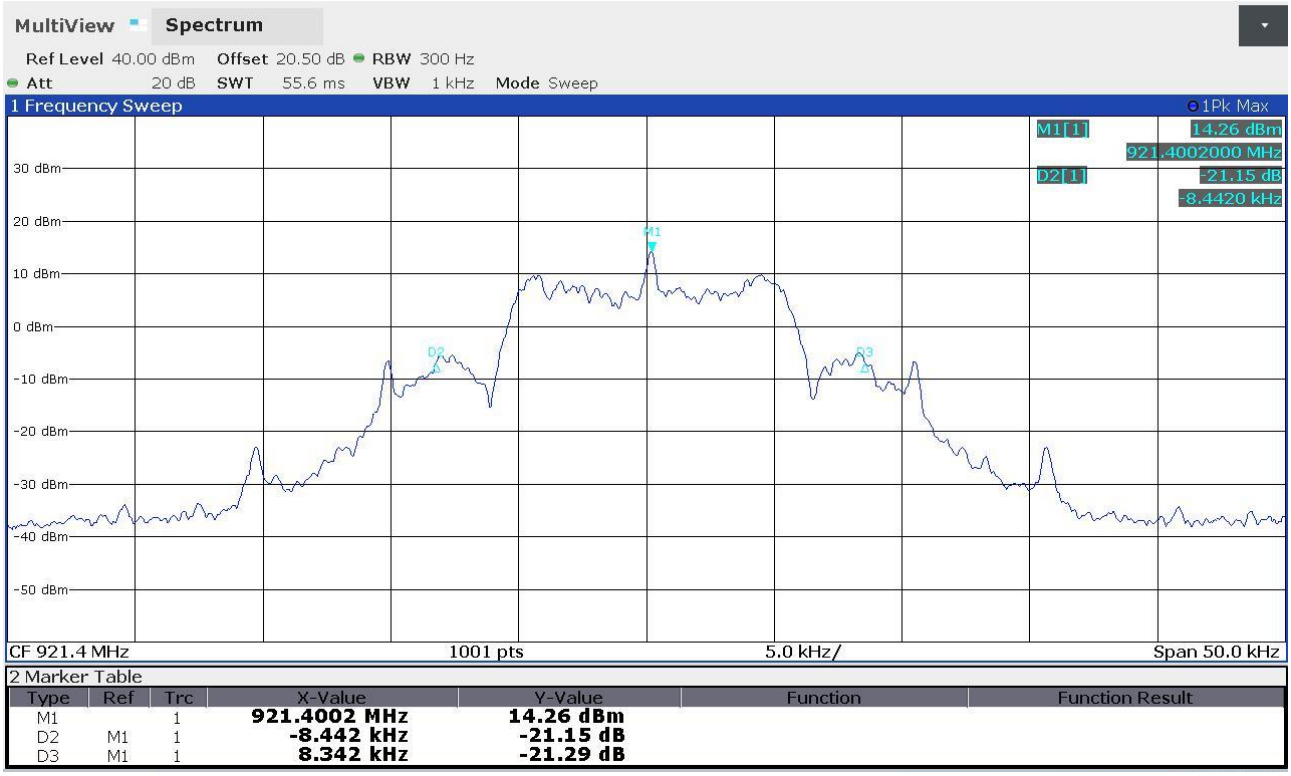
**Result**

| *Frequency (MHz)* | *Graphs* | *20 dB bandwidth (kHz)* |
|---|---|---|
| 915,05 | G21241716 | 16,284 |
| 921,40 | G21241721 | 16,784 |
| 927,80 | G21241726 | 16,784 |

## Graphs

**Gandini 21241716**


**Gandini 21241721**



**Gandini 21241726**

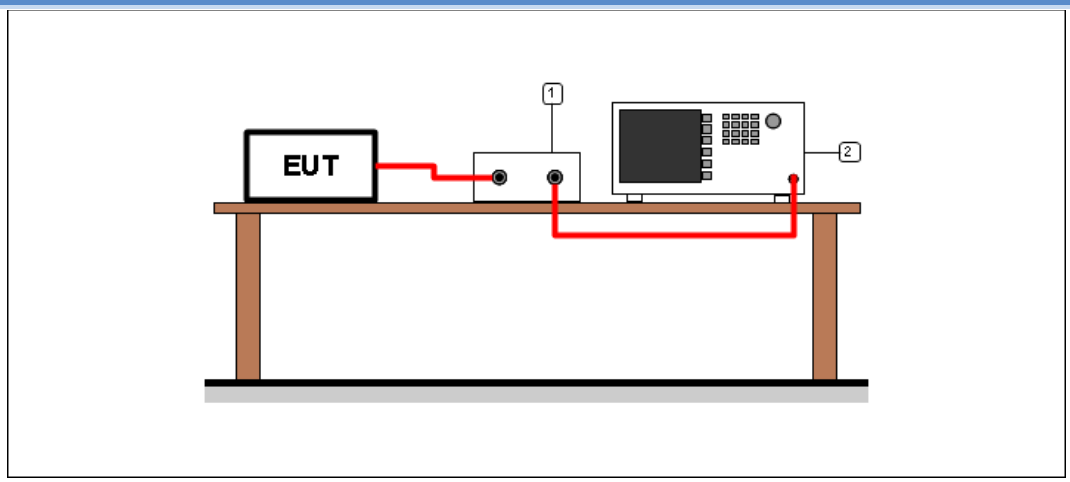
## 9.4 Channel separation

| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.247<br>KDB 558074 D01 15.247 Meas Guidance v05r02 cl. 9 b)<br>ANSI C63.10 cl. 7.8.2 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Acceptance limits**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

**Test setup**



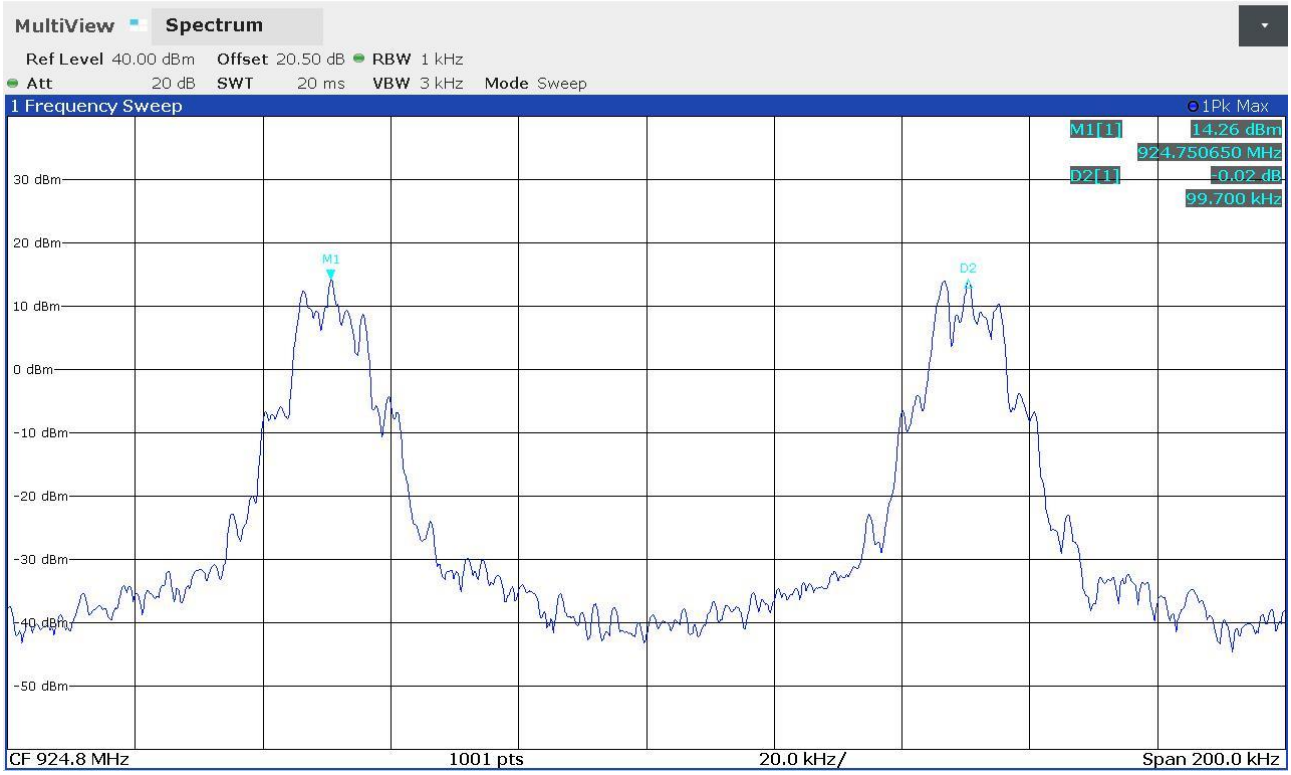

| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

**Result**

| *Frequency band (MHz)* | *Graphs* | *Channel separation (kHz)* | *Minimum channel separation required (kHz)* | *Results* |
|---|---|---|---|---|
| 902 – 928 | G21241735 | 99,7 | 25 | Complies |

## Graphs

**Gandini 21241735**



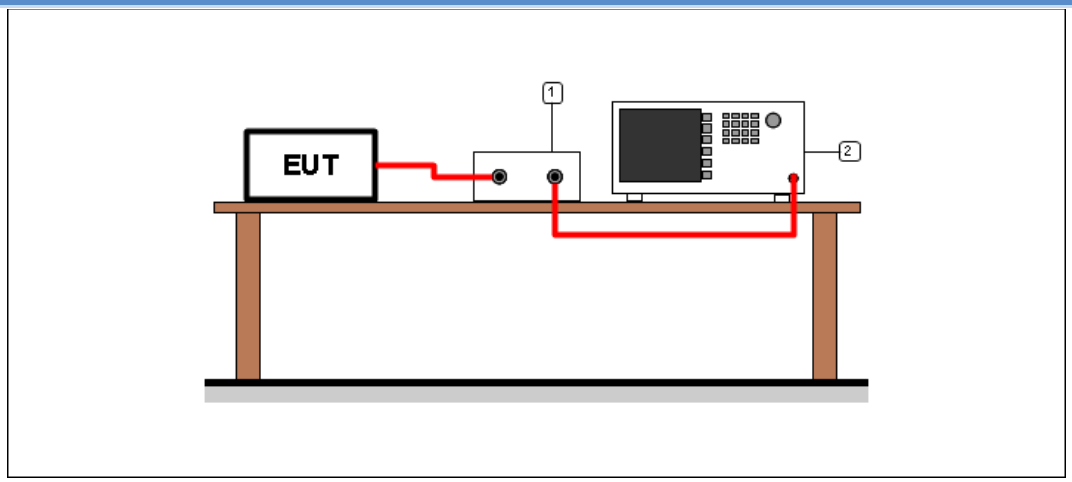
## 9.5 Number of hopping channels

| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.247<br>KDB 558074 D01 15.247 Meas Guidance v05r02 cl. 9 b)<br>ANSI C63.10 cl. 7.8.3 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Acceptance limits**

For frequency hopping systems operating in the 902 – 928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0,4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0,4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

**Test setup**



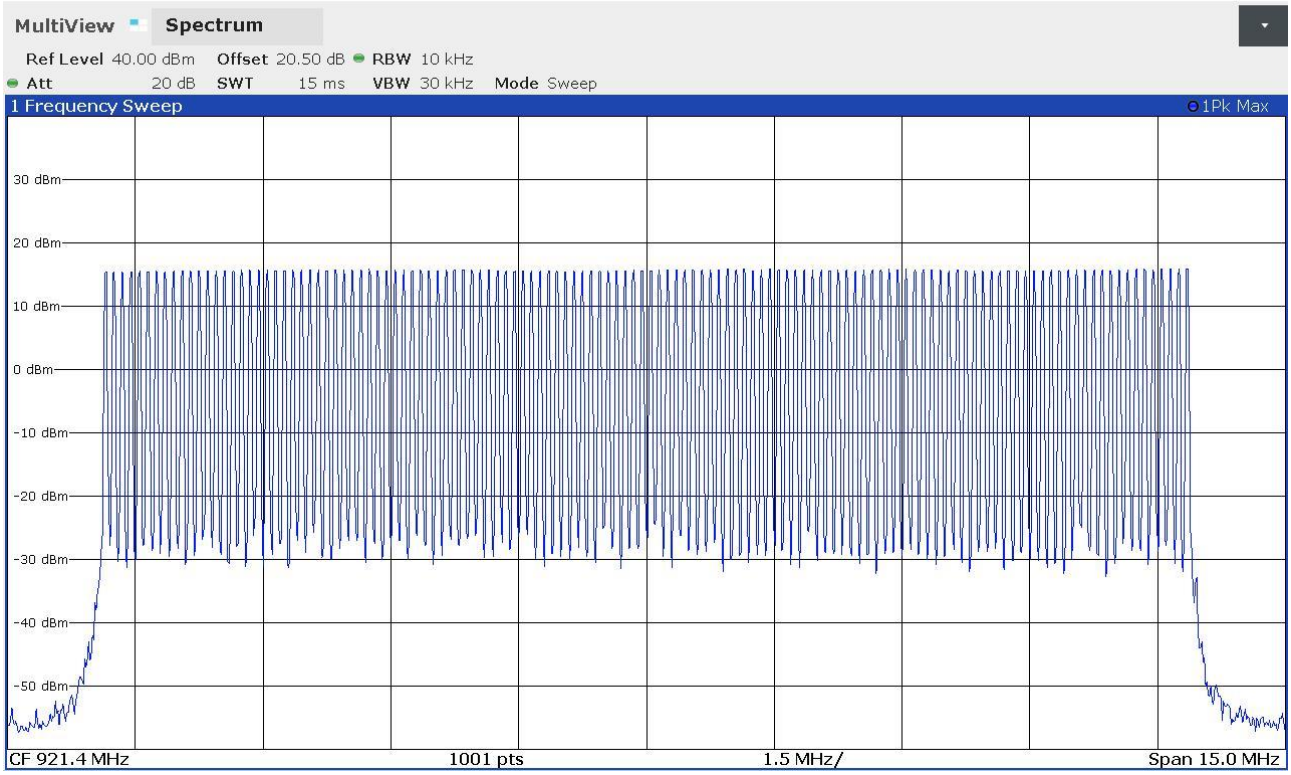

| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

**Result**

| *Frequency band (MHz)* | *Graphs* | *Number of hopping channels* | *Minimum number of hopping channels required* | *Results* |
|---|---|---|---|---|
| 902 – 928 | G21241729 | 128 | 50 | Complies |

## Graphs

**Gandini 21241729**



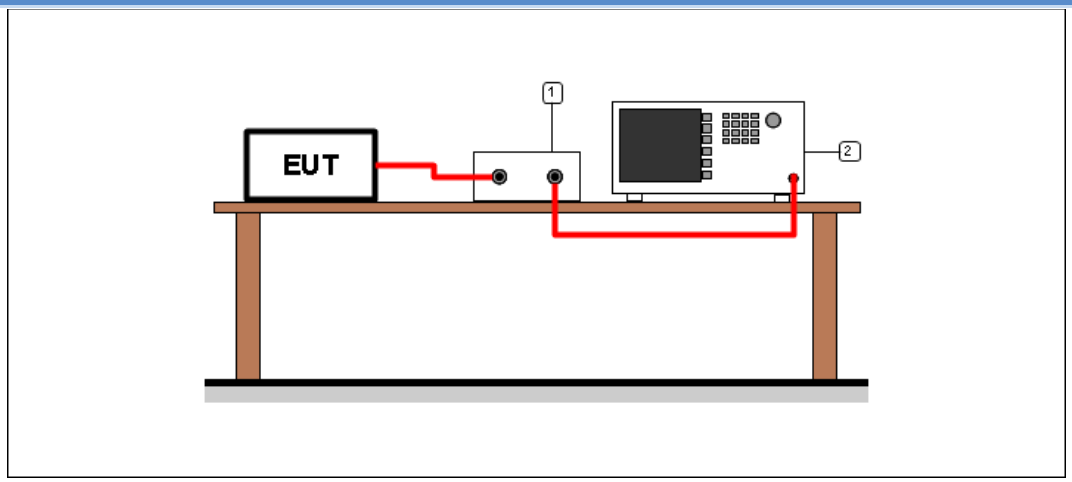
### 9.6 Time of occupancy

| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.247<br>KDB 558074 D01 15.247 Meas Guidance v05r02 cl. 9 b)<br>ANSI C63.10 cl. 7.8.4 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Acceptance limits**

For frequency hopping systems operating in the 902 – 928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0,4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0,4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

**Test setup**




| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

**Result**

| *Frequency (MHz)* | *Graphs* | *Dwell time (ms)* |
|---|---|---|
| 924,75 | G21241736 | 23,60 |

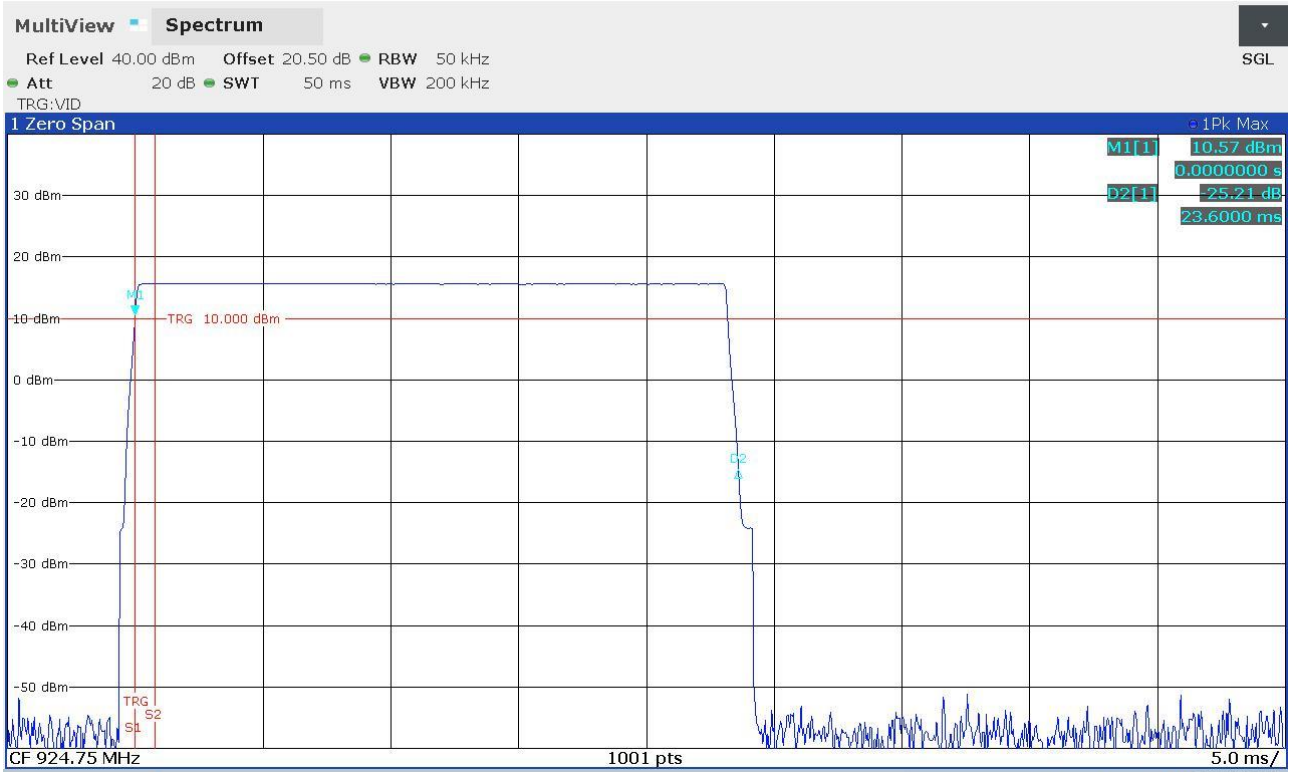
| *Frequency (MHz)* | *Graphs* | *Number of transmissions* | *Period* |
|---|---|---|---|
| 924,75 | G21241737 | 4 | 20 s |

**Remarks:** only the highest peaks have been considered. The lowest peaks are due to the auxiliary receiver unit

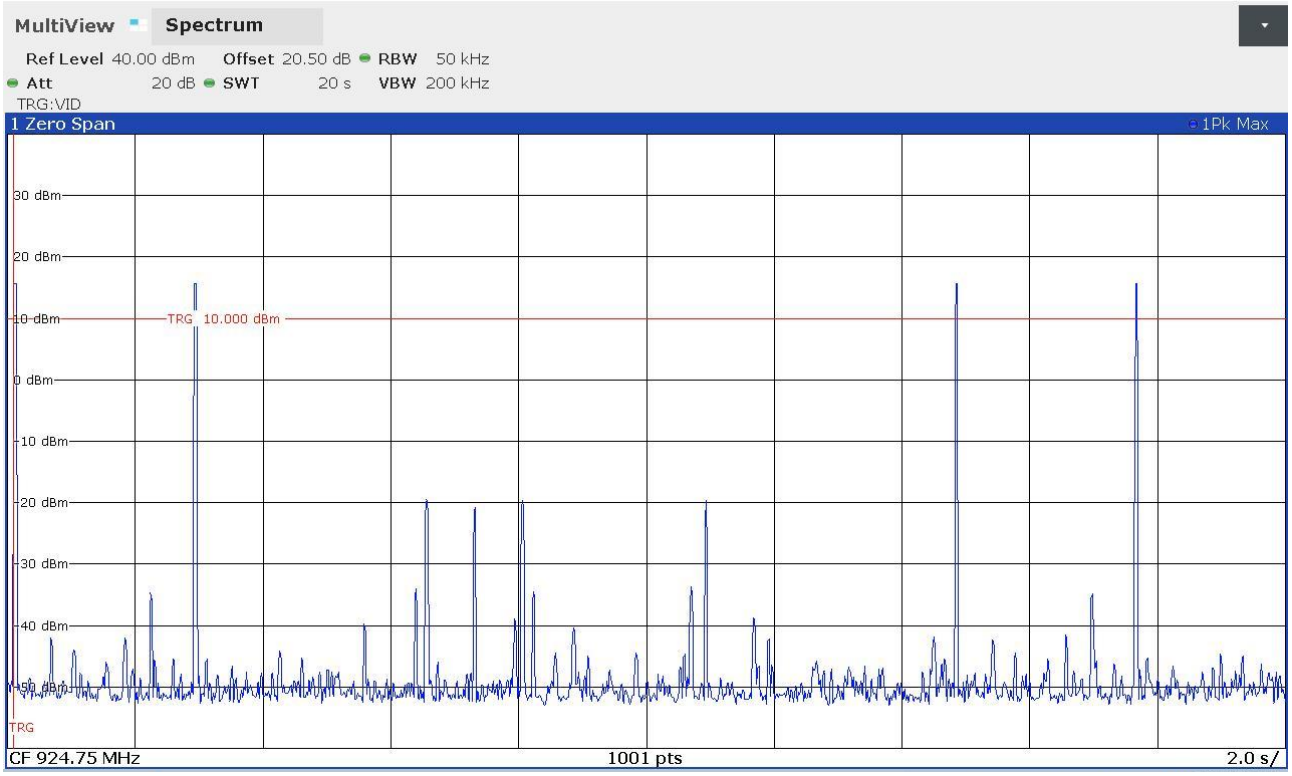
| ***Time of occupancy (Dwell time x Nr. transmissions)*** | ***Maximum allowed time of occupancy*** | ***Results*** |
|---|---|---|
| 94,40 ms | 400 ms | Complies |

## Graphs

**Gandini 21241736**




**Gandini 21241737**



## 9.7 Band edge

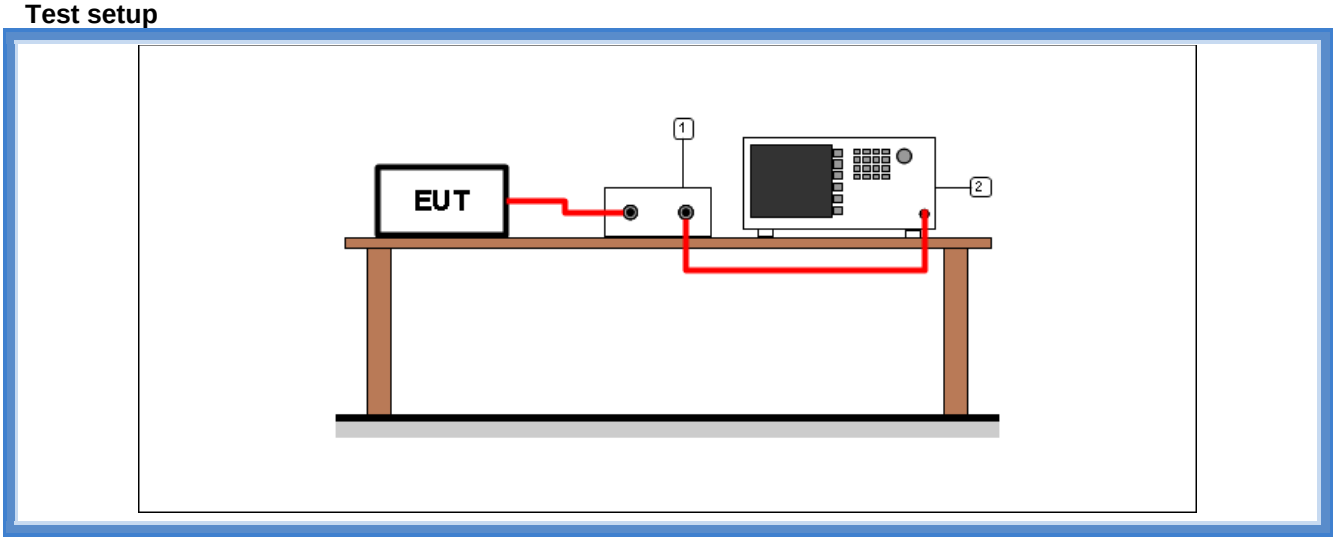
| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.247<br>ANSI C63.10 cl. 7.8.6 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Acceptance limits**

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Operation within the band 902 – 928 MHz.

**Test setup**




| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

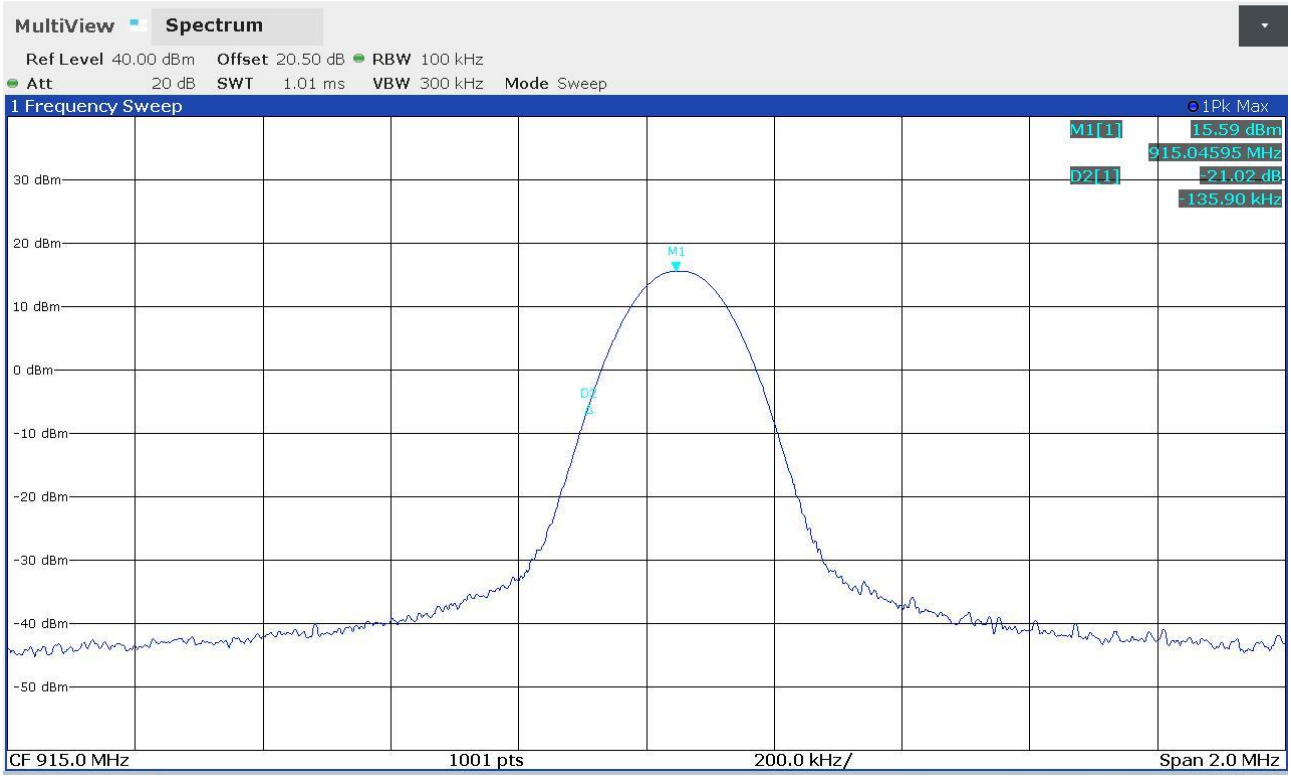
**Result**

| *Frequency (MHz)* | *Bandwidth* | *Graph(s) – Hopping* | *Results* | |
|---|---|---|---|---|
| 915,05 | 100 kHz | G21241739<br>G21241742 | $F_L$: 914,9101 MHz | Complies |
| 927,80 | 100 kHz | G21241740<br>G21241741 | $F_H$: 927,9401 MHz | Complies |

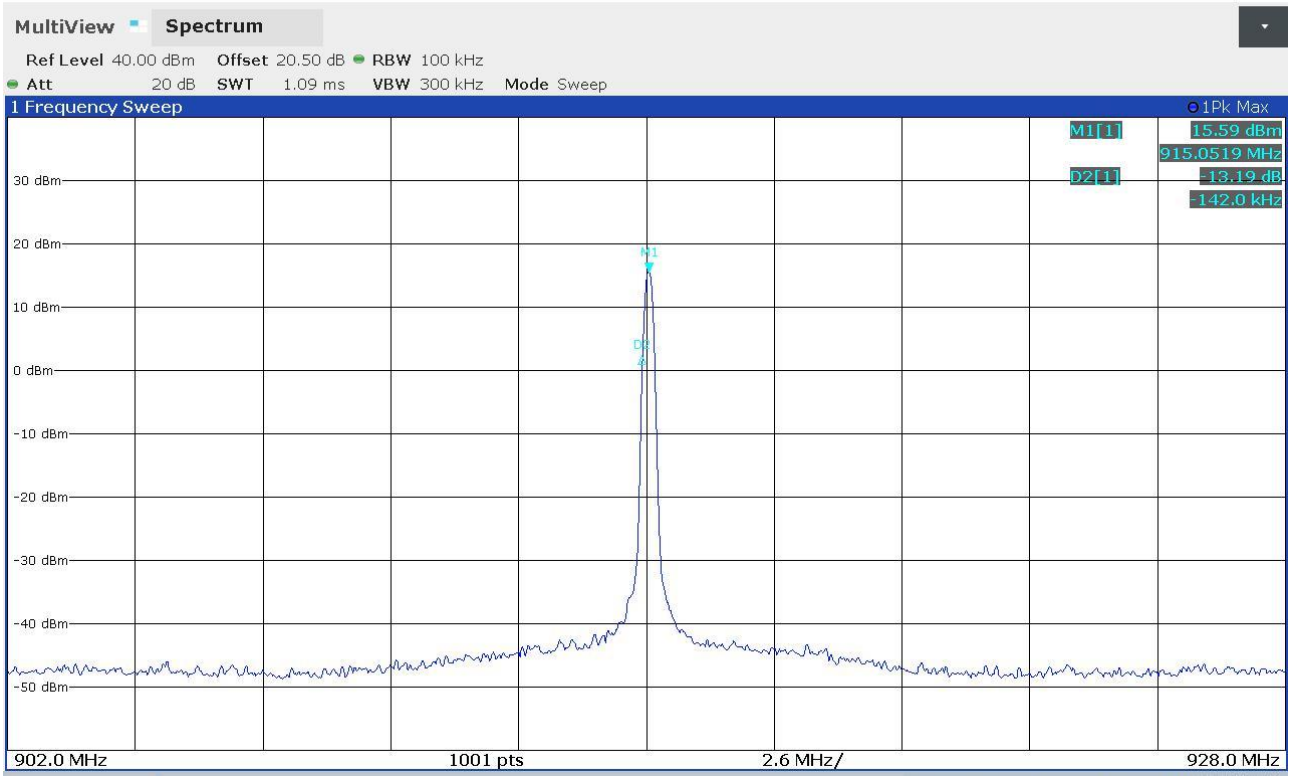
| *Frequency (MHz)* | *Bandwidth* | *Graph(s) – No hopping* | *Results* | |
|---|---|---|---|---|
| 915,05 | 100 kHz | G21192719<br>G21192720 | $F_L$: 914,9101 MHz | Complies |
| 927,80 | 100 kHz | G21192727<br>G21192728 | $F_H$: 927,9421 MHz | Complies |

## Graphs

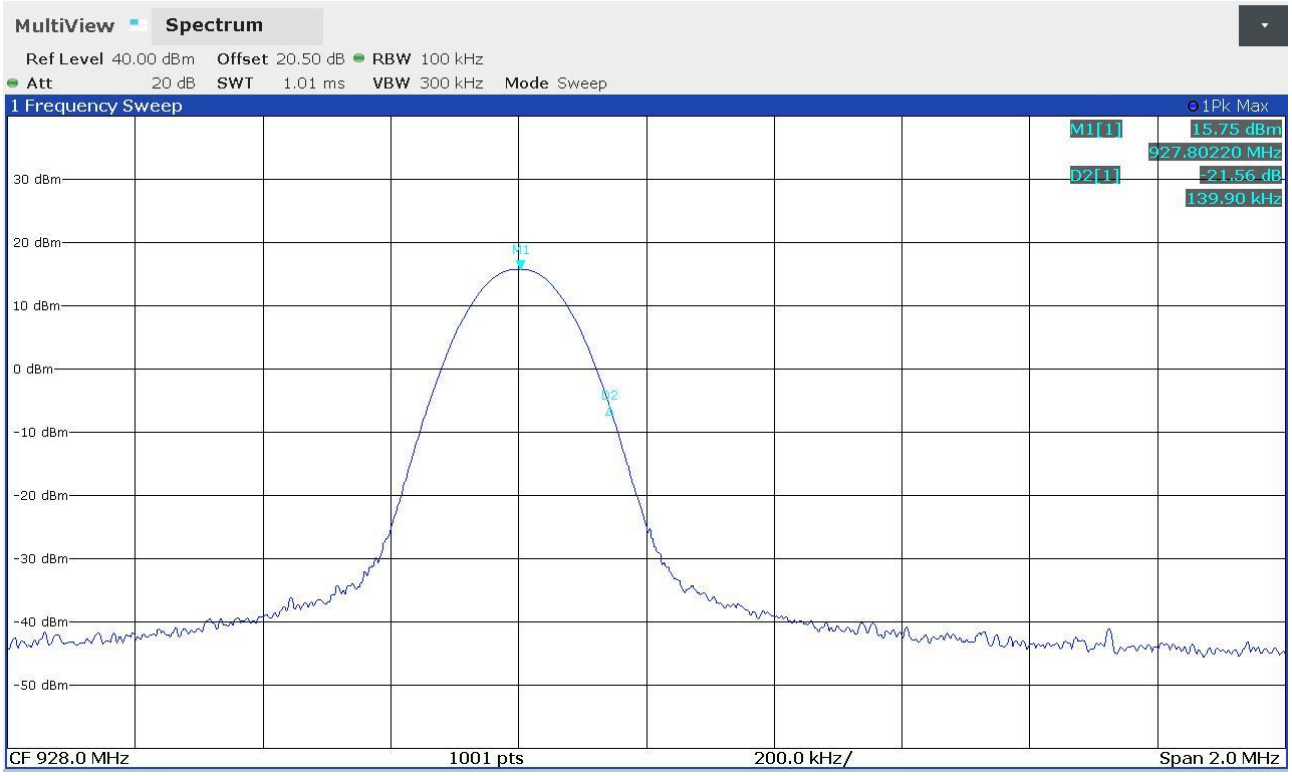
**Gandini 21241719**



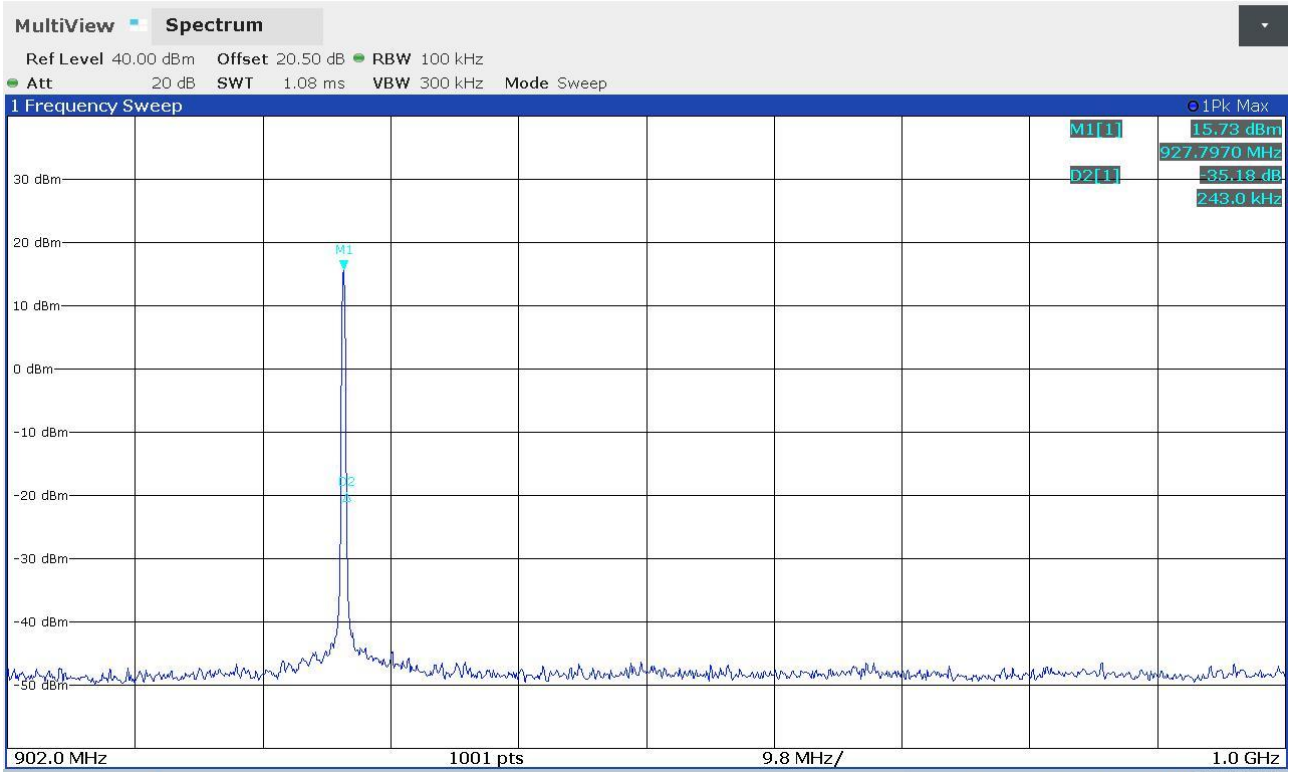

**Gandini 21241720**



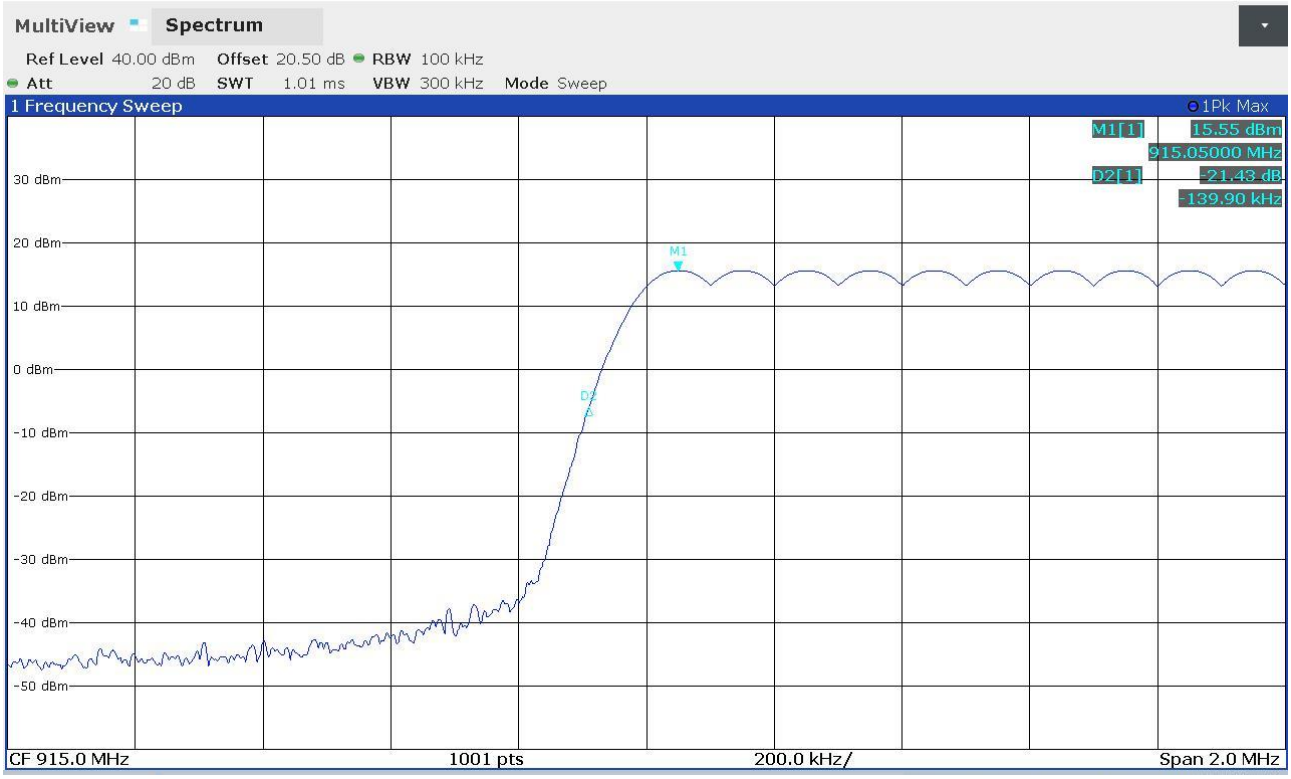
**Gandini 21241727**



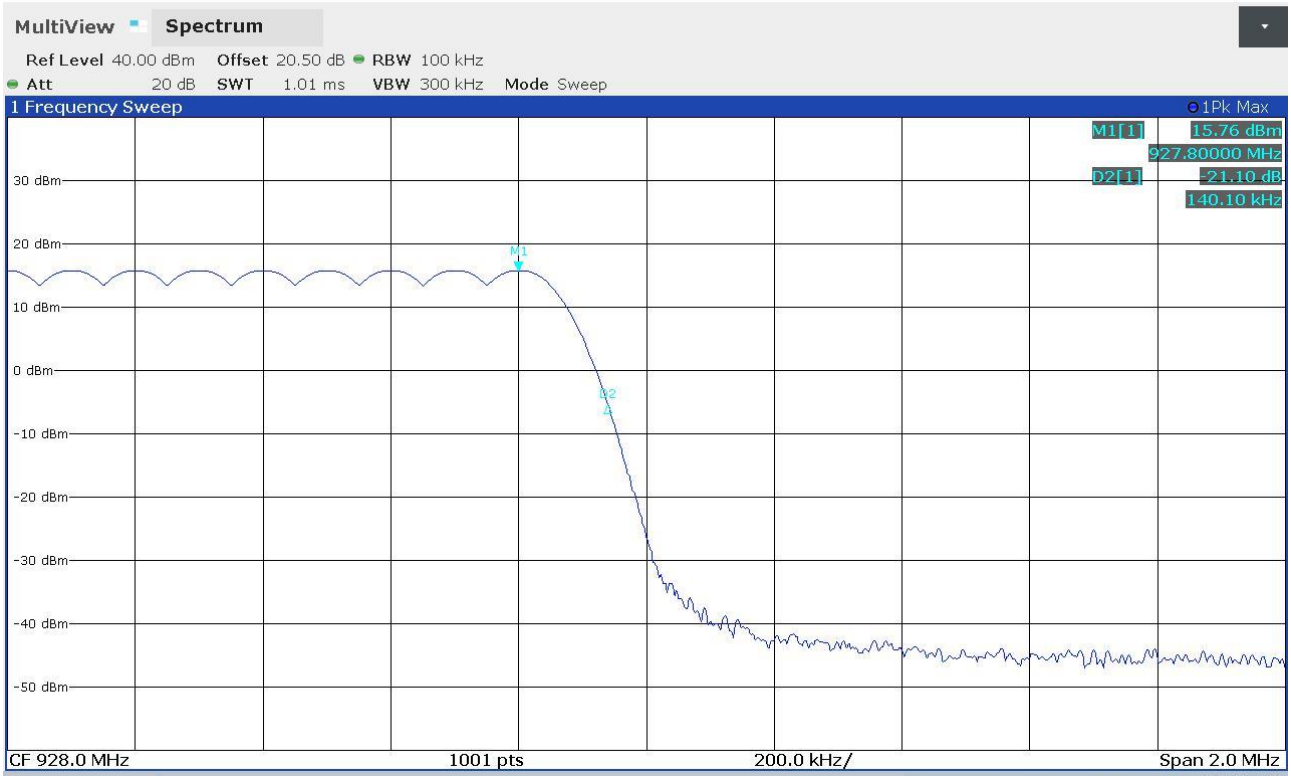

**Gandini 21241728**



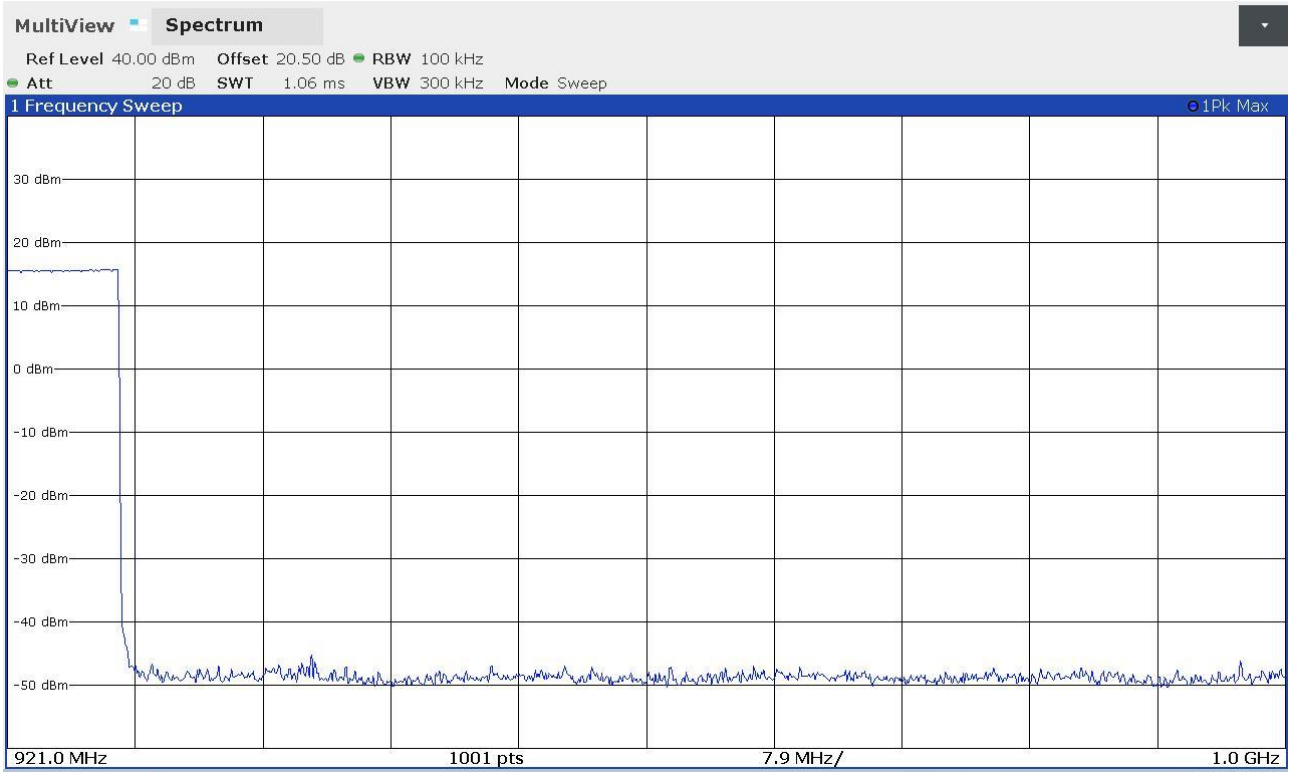
**Gandini 21241739**



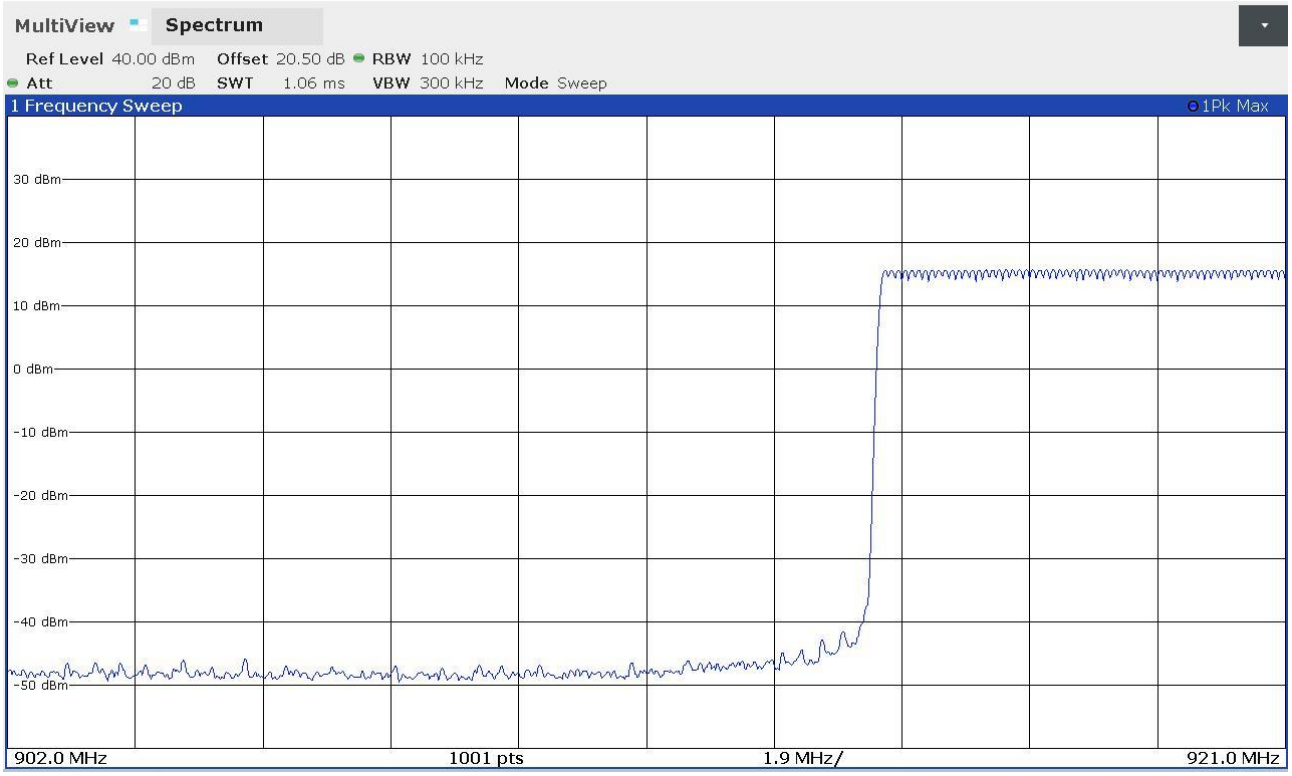

**Gandini 21241740**



**Gandini 21241741**




**Gandini 21241742**



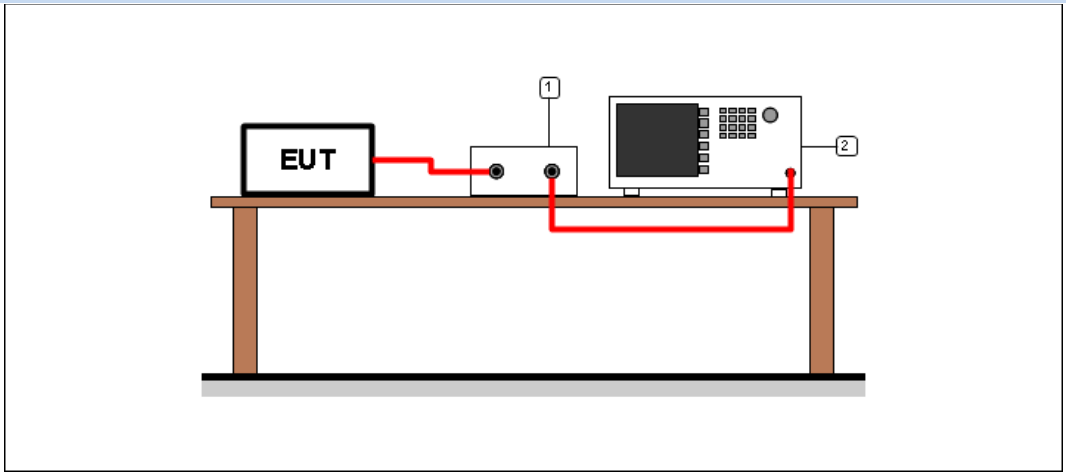
### 9.8 Peak Output Power

| | |
|---|---|
| Tested by ..... : | G. Gandini |
| Test date ..... : | 21.12.2021 |
| Test location (stand) ..... : | Laboratory |
| Reference standards ..... : | FCC Rules and Regulation; Titles 47 Part. 15.247<br>KDB 558074 D01 15.247 Meas Guidance v05r02 cl. 2.2<br>ANSI C63.10 cl. 7.8.5 |
| Supplementary test set-up description ..... : | -- |
| Supplementary information..... : | -- |

**Acceptance limits**

For frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0,25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

**Test setup**



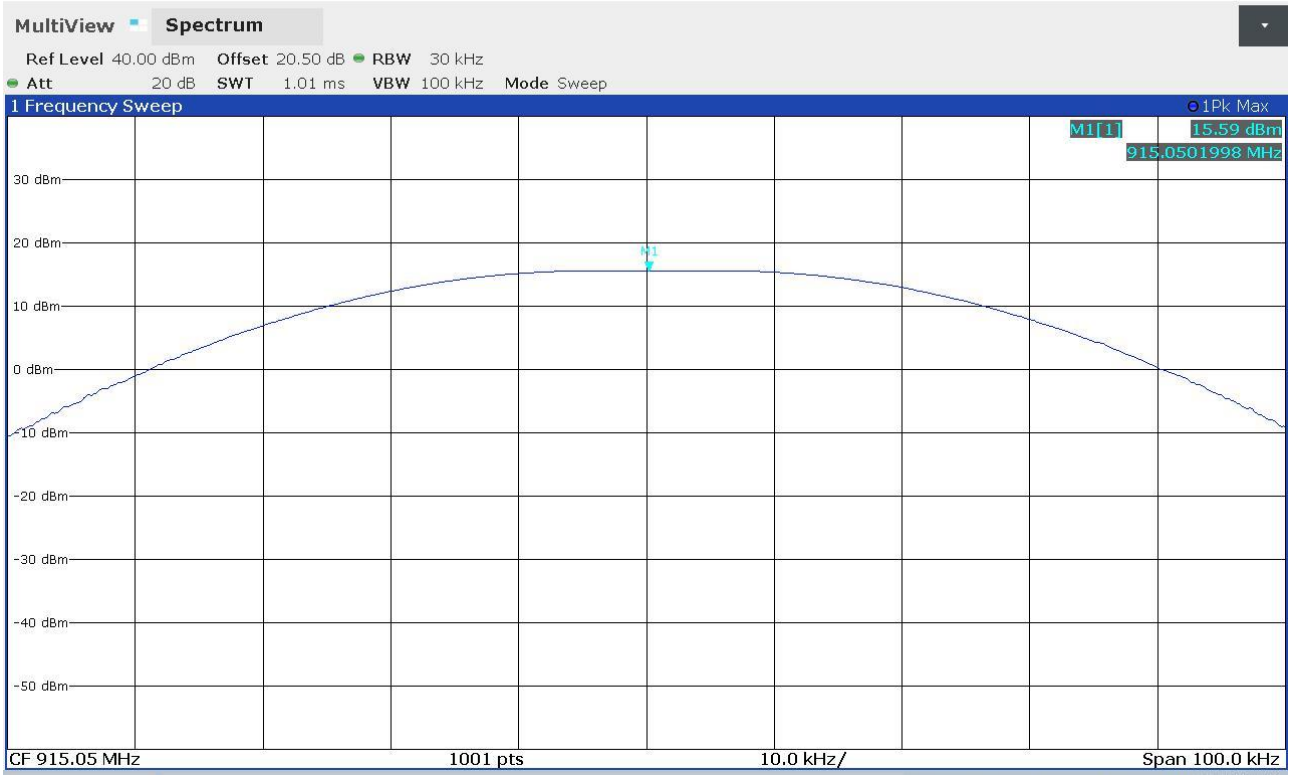

| *Test setup PR002_01* | | | | |
|---|---|---|---|---|
| *Nr.* | *Id. Number* | *Manufacturer* | *Model* | *Description* |
| 2 | CMC S295 | Rohde & Schwarz | FSW43 | Spectrum Analyzer 43 GHz |
| 1 | -- | -- | -- | Cable + attenuator (calibrated before the test) |

**Result**

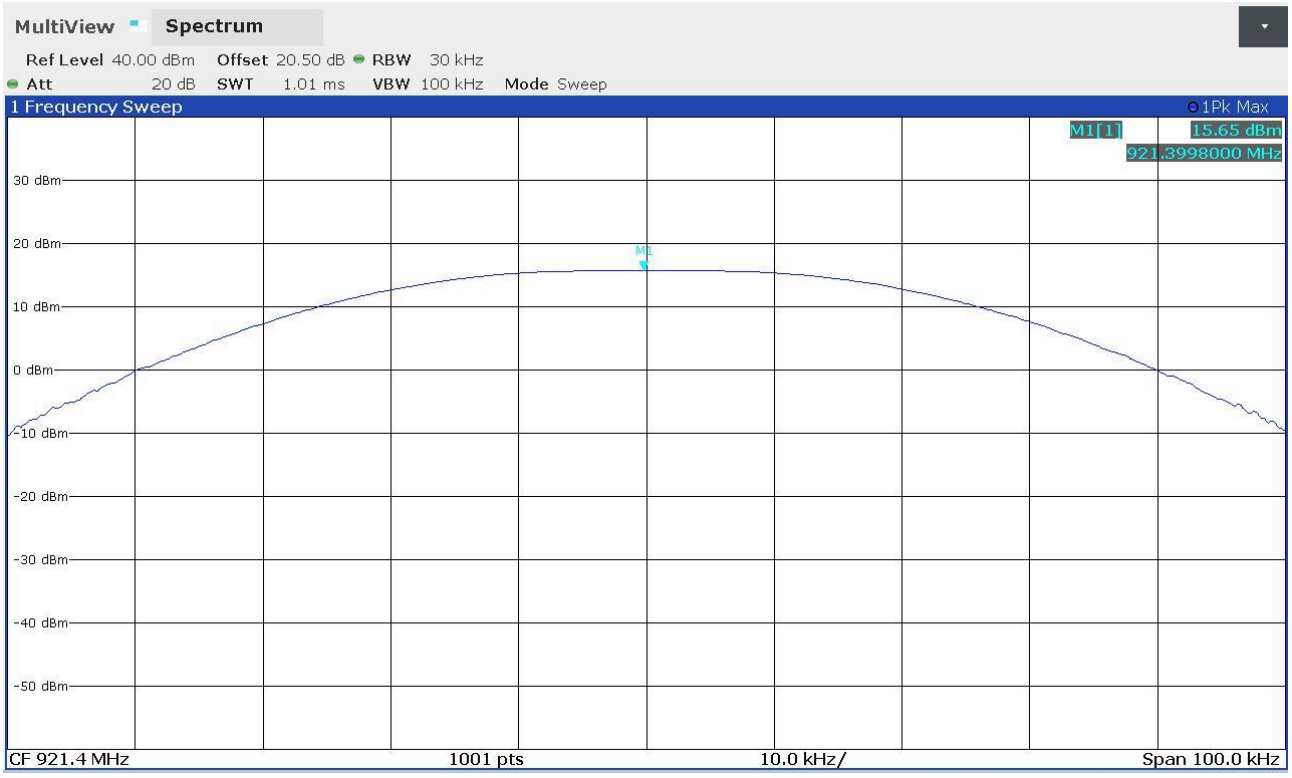
| *Frequency (MHz)* | *Graphs* | *Peak Output Power (dBm)* | *Peak Output Power (mW)* | *Limit (mW)* |
|---|---|---|---|---|
| 915,05 | G21241718 | 15,59 | 36,22 | 1000 |
| 921,40 | G21241723 | 15,65 | 36,73 | 1000 |
| 927,80 | G21241724 | 15,76 | 37,67 | 1000 |

## Graphs

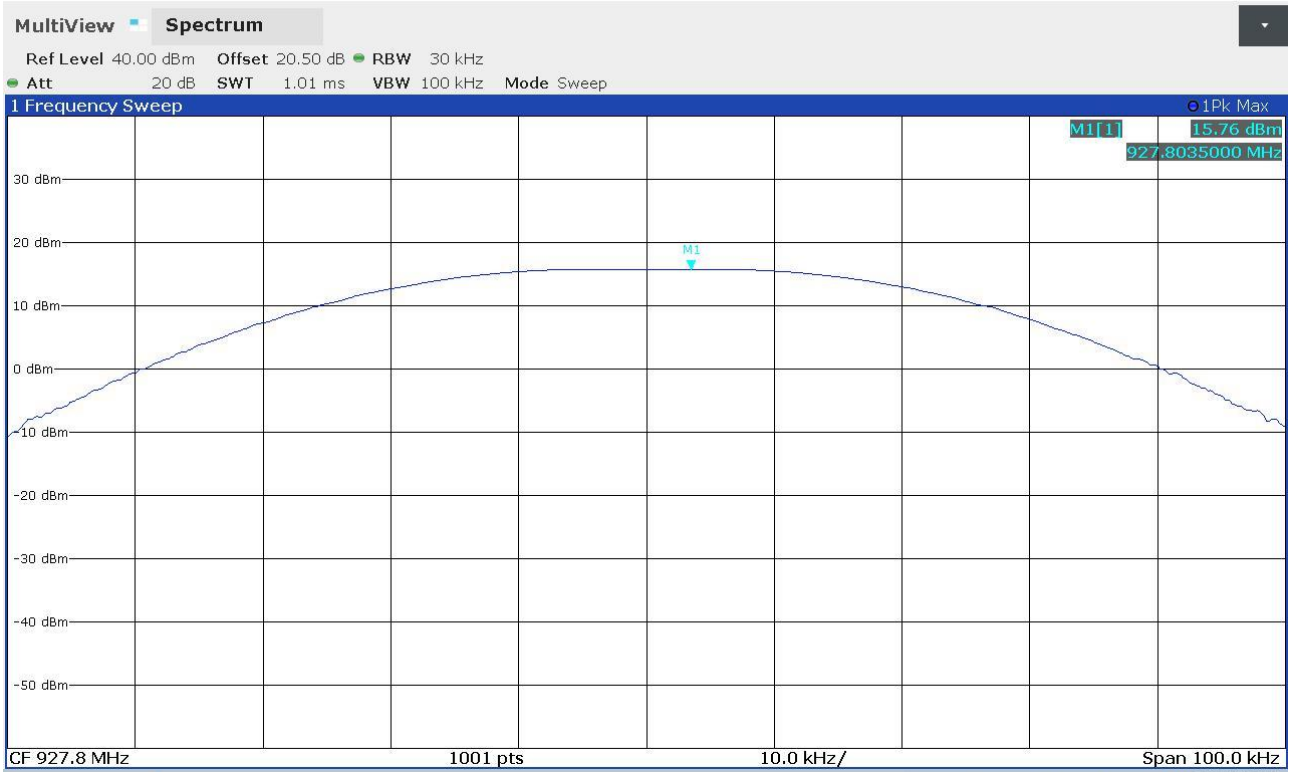
**Gandini 21241718**




**Gandini 21241723**



**Gandini 21241724**



## Attachment 1

**Instruments list**

| *Id. number* | *Manufacturer* | *Model* | *Description* | *Serial number* | *Last calibration* | *Due date calibration* |
|---|---|---|---|---|---|---|
| CMC S010 | Rohde & Schwarz | ESH3-Z2 | Impulses Limiting Device | - - - | January '21 | January '22 |
| CMC S108 | EMCO | 3115 | Horn Antenna | 9811-5622 | June '19 | June '22 |
| CMC S127 | Schaffner | HLA6120 | Loop Antenna | 1191 | November '18 | November '23 |
| CMC S200 | Schwarzbeck | NSLK 8128 | V-LISN | 8128-273 | January '21 | January '22 |
| CMC S206 | Rohde & Schwarz | ESCI 7 | EMC Receiver 9KHz-7GHz | 100781 | January '21 | January '22 |
| 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 '19 | June '22 |
| CMC S287 | Schwarzbeck | VUSLP 9111B | Log-periodic Antenna (200 MHz-3Ghz) | 9111B-203 | June '19 | June '22 |
| 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 LISN 50uH 0,009-0,0150 MHz** | PE001_01 | 3,4 dB | 1 |
| **Conducted emission CISPR 16 LISN 50uH 0,150-30,0 MHz** | PE001_01 | 3,0 dB | 1 |
| **Conducted emission CISPR 16 Voltage Probe 0,15-30 MHz** | PE001_02 | 2,3 dB | 1 |
| **Conducted emission CISPR 16 Current Probe 0,15-30 MHz** | PE001_03 | 2,6 dB | 1 |
| **Conducted emission CISPR 16 ISN 0,15-30 MHz** | PE001_04 | 4,7 dB | 1 |
| **Clic CISPR 16 LISN 50uH 0,150-30,0 MHz** | PE001_05 | 2,9 dB | 1 |
| **Radiated Emission CDNE 30-300 MHz** | PE001_06 | 3,3 dB | 1 |
| **Disturbance Power 30-300 MHz** | PE002_01 | 3,8 dB | 1 |
| **Radiated Emission LAS 0,15-30 MHz** | PE003_01 | 2,0 dB | 1 |
| **Radiated Emission CISPR 16 Loop Ant. 0,15-30 MHz** | PE004_01 | 4,2 dB | 1 |
| **Radiated Emission CISPR 16 Bicon. Ant. 30-300 MHz** | PE004_02 | 4,1 dB | 1 |
| **Radiated Emission CISPR 16 LogP. Ant. 300-1000 MHz** | PE004_03 | 3,9 dB | 1 |
| **Radiated Emission CISPR 16 Horn Ant. 1-18 GHz** | PE004_04 | 4,1 dB | 1 |
| **Human Exposure to electromagnetic fields** | PE005_01 | 16,7 % | 1 |
| **Harmonics** | PE006_01 | 10 mA + 2,9 % | 1 |
| **Flicker** | PE007_01 | 4,36 % | 1 |
| **Radiated Immunity 80 MHz - 6 GHz** | PE102_XX | 2,20 dB 0,87 V/m a 3V/m | 1 |
| **Conducted Immunity 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 9kHz-30MHz** | PR001_01 | 4,2 dB | 1 |
| **Power/Spurious ERP 30-1000MHz d=10m** | PR001_02+03 | 4,7 dB | 1 |
| **Misura della potenza EiRP 1-18GHz d=3m** | PR001_04+05 | 4,7 dB | 1 |
| **Misura della potenza EiRP 18-40GHz d=3m** | PR001_06 | 5,4 dB | 1 |
| **Frequency error** | PR002_01+02 | < 1x10-7 | 1 |
| **Timing zero span (1001pts.)** | PR002_01+02 | 0,2 % SWT | 1 |
| **Modulation bandwidth** | PR002_01+02 | < 1x10-7 | 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 Oscillotary immunity test** | PE113_01 | | 2 |
| | | | |
| *Rev_21_01 date 23/02/2021* | | | |

**Note 1:**

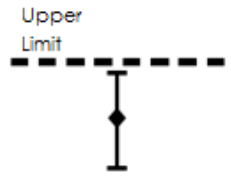
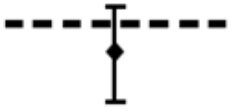
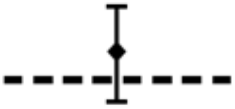
The expanded uncertainty reported according to the document EA-4-02 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

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

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. 9.5 (Quality Manual) ..... | Measurement uncertainty calculation |