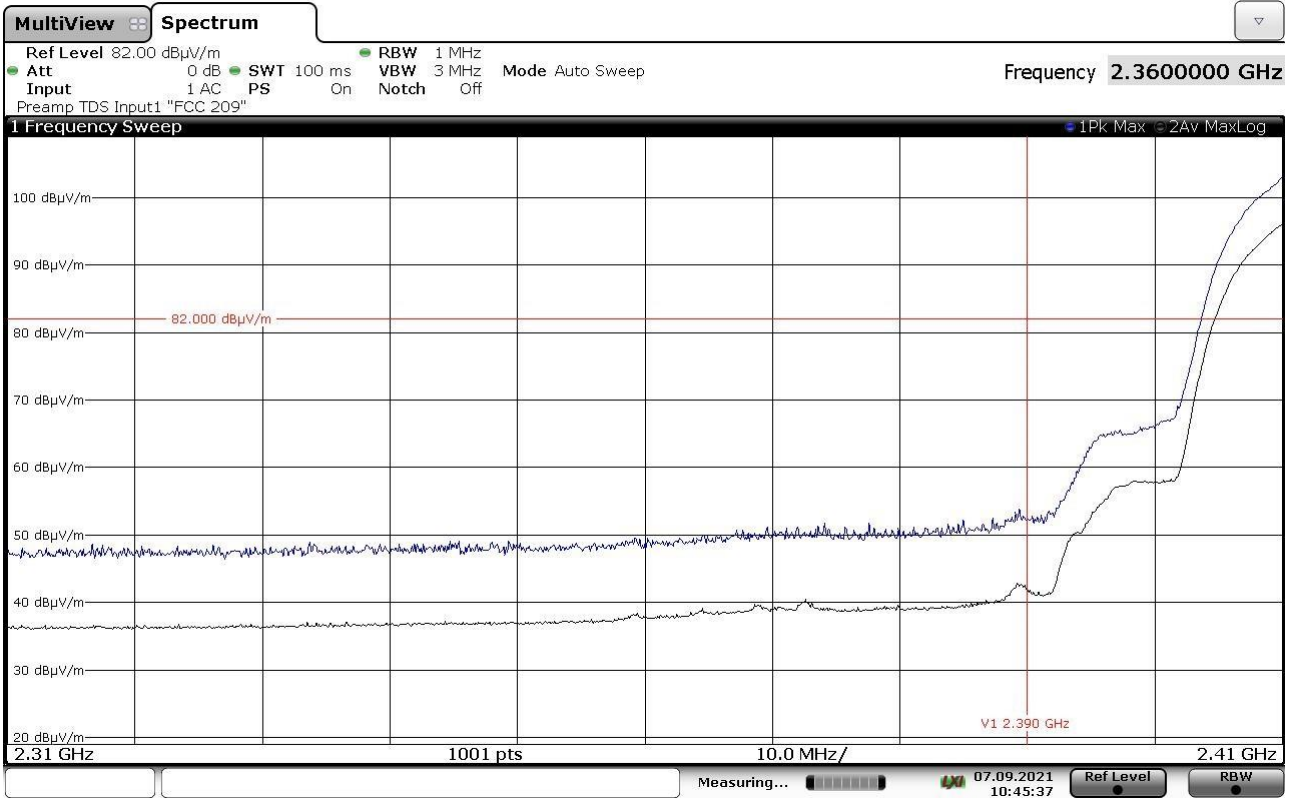


## Graphs

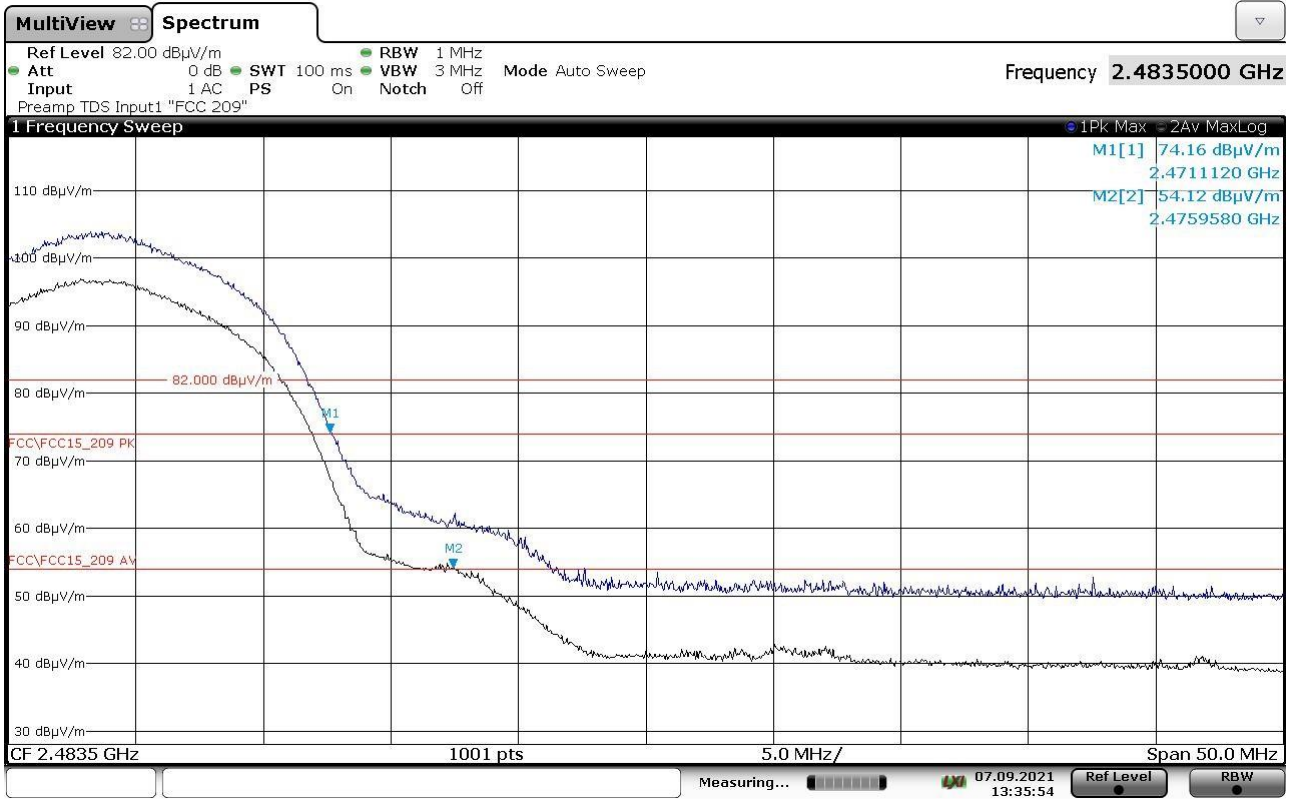
De Rosso 21184031B ch1 mod B



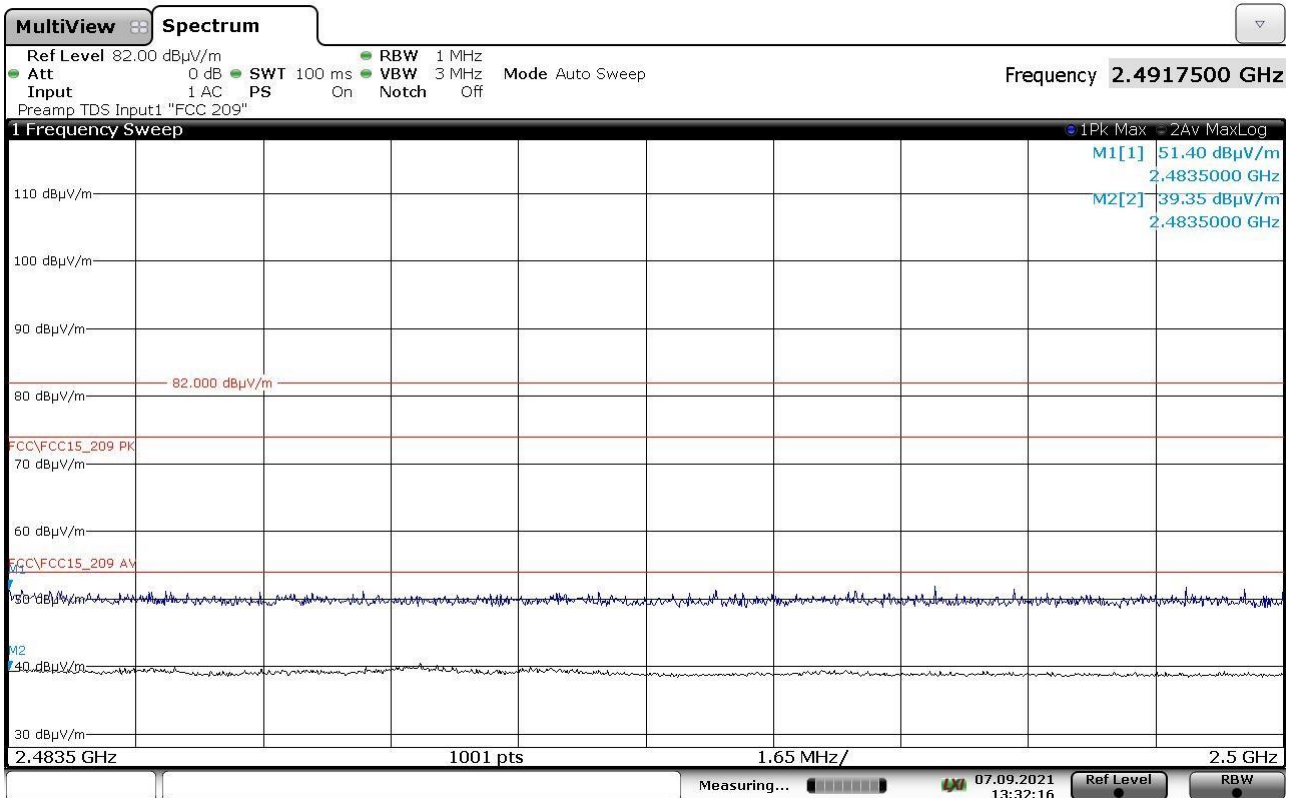
De Rosso 21184032B ch1 mod B



De Rosso 21184043B ch11 mod B



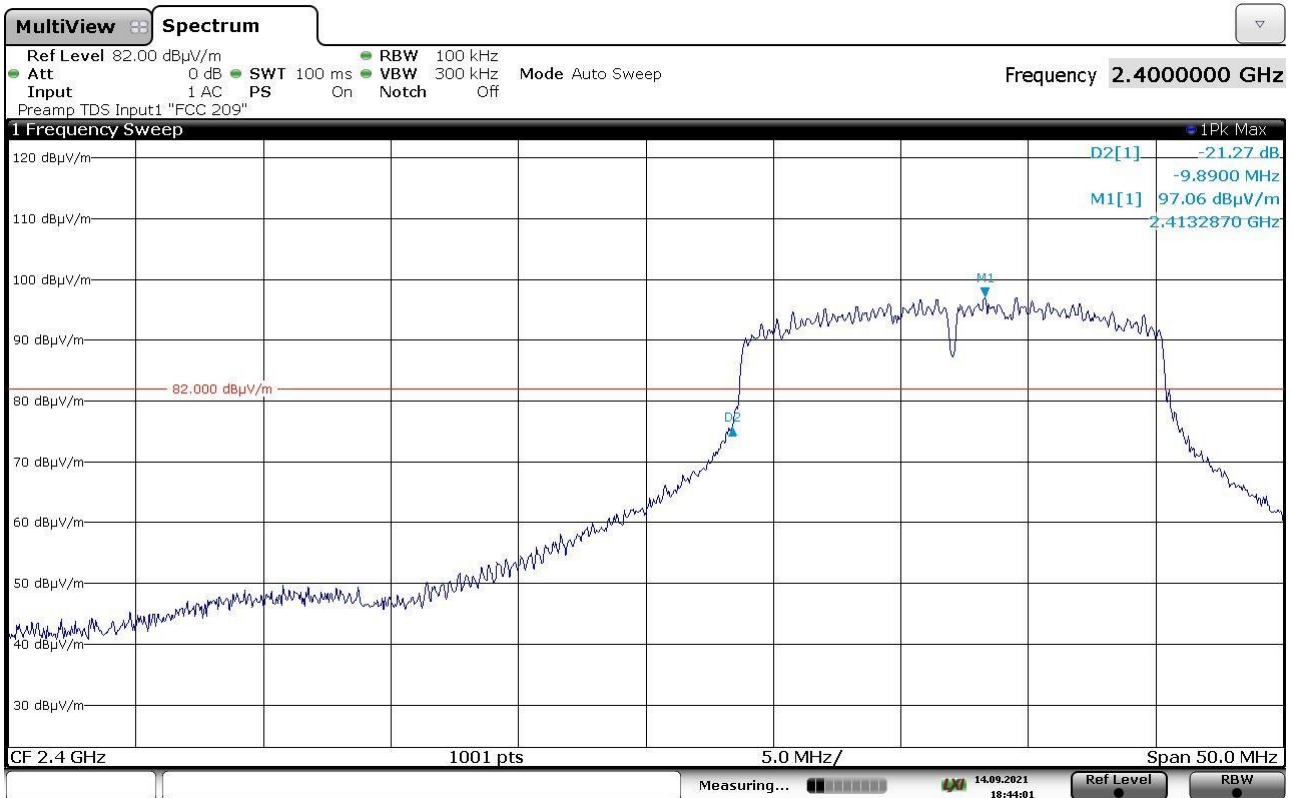
De Rosso 21184044B ch11 mod B



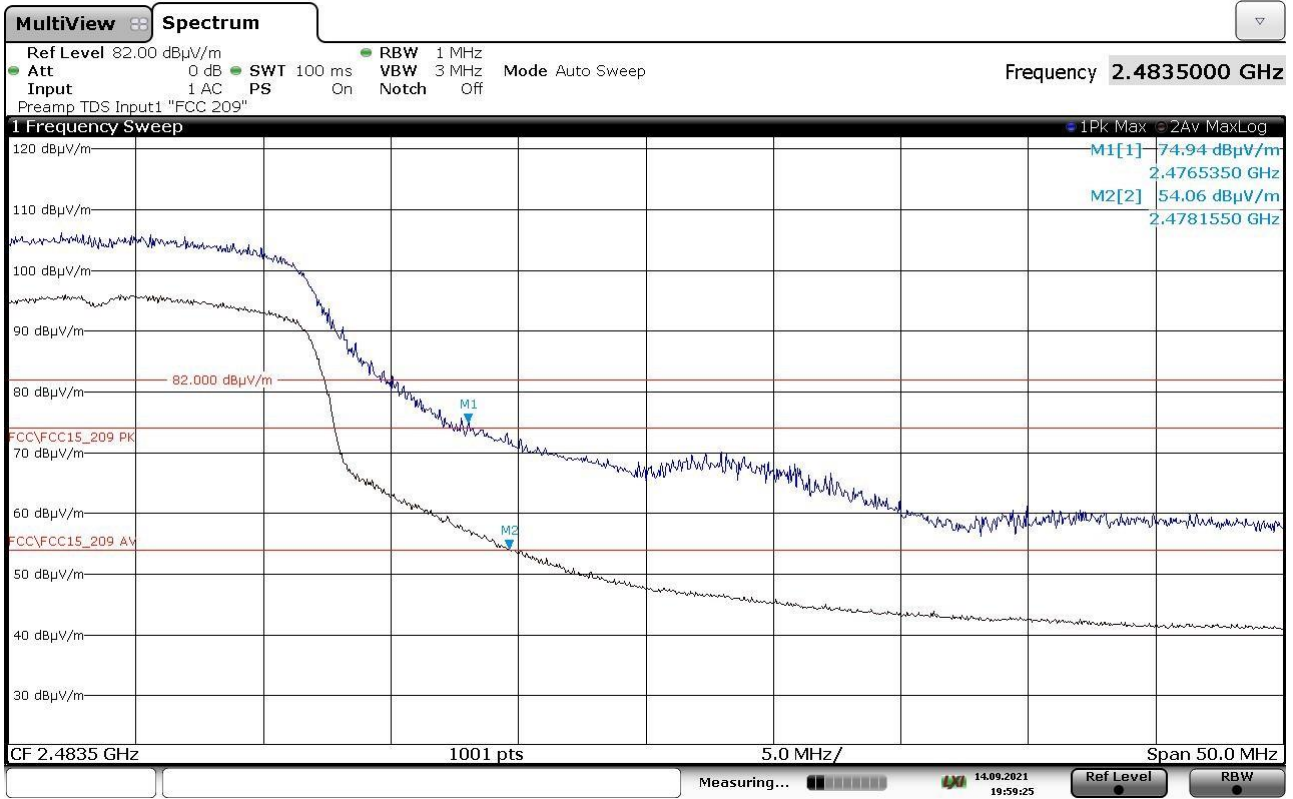
De Rosso 211840310 ch1 mod 6



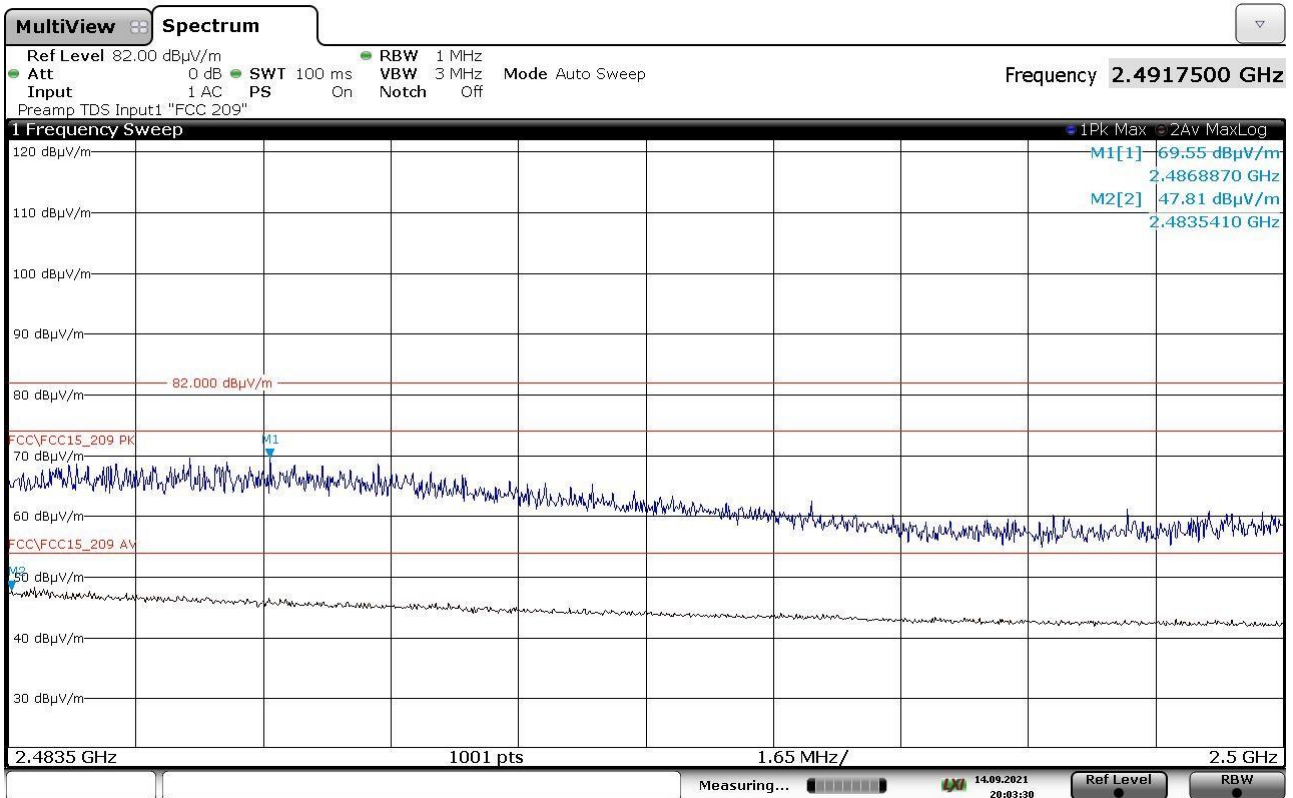
De Rosso 211840326 ch1 mod 6



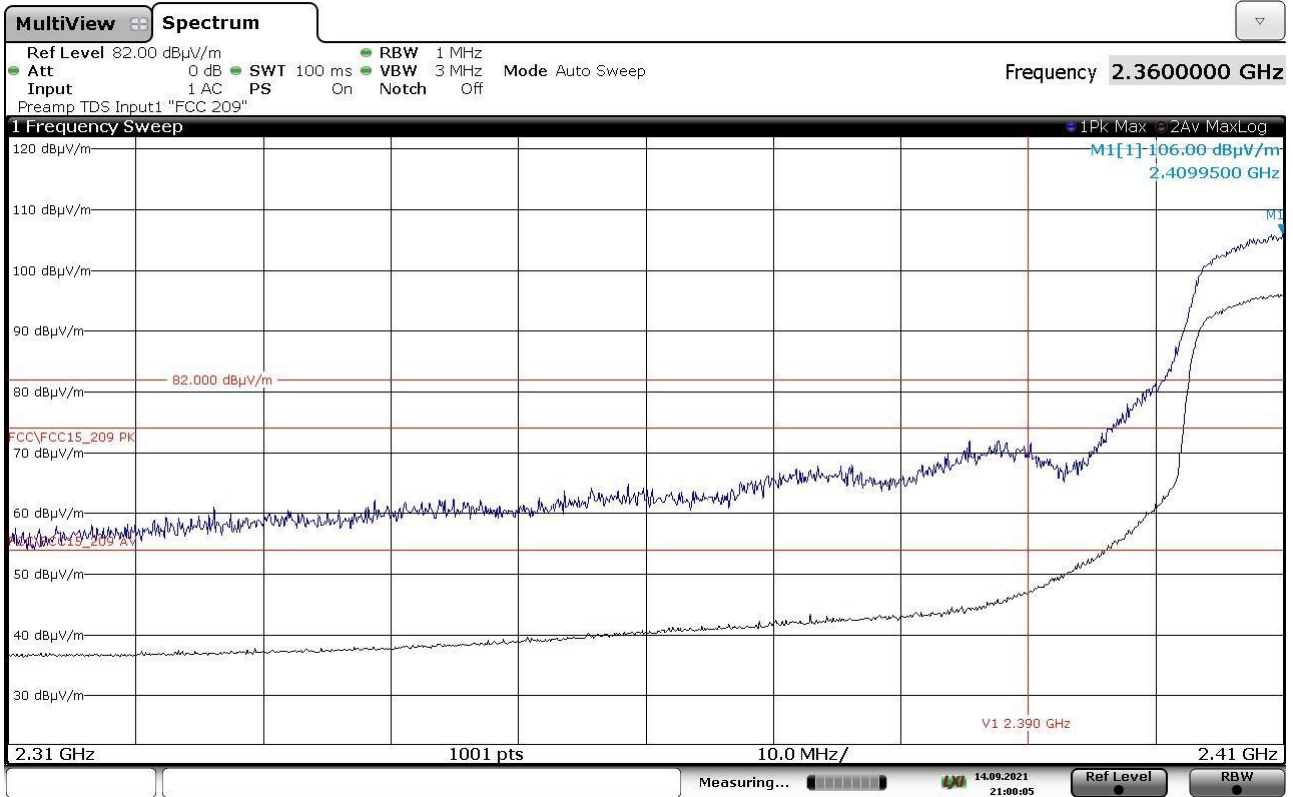
De Rosso 211840436 ch11 mod 6



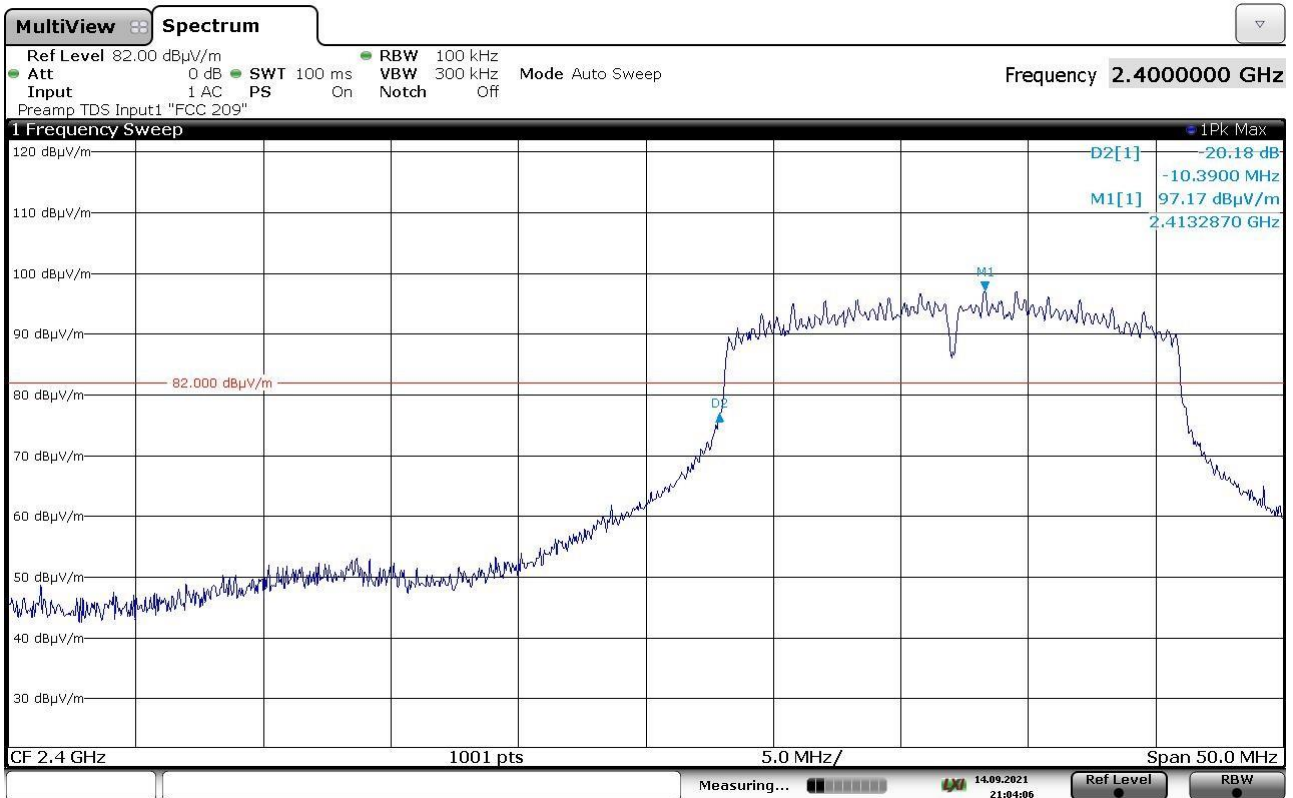
De Rosso 211840446 ch11 mod 6



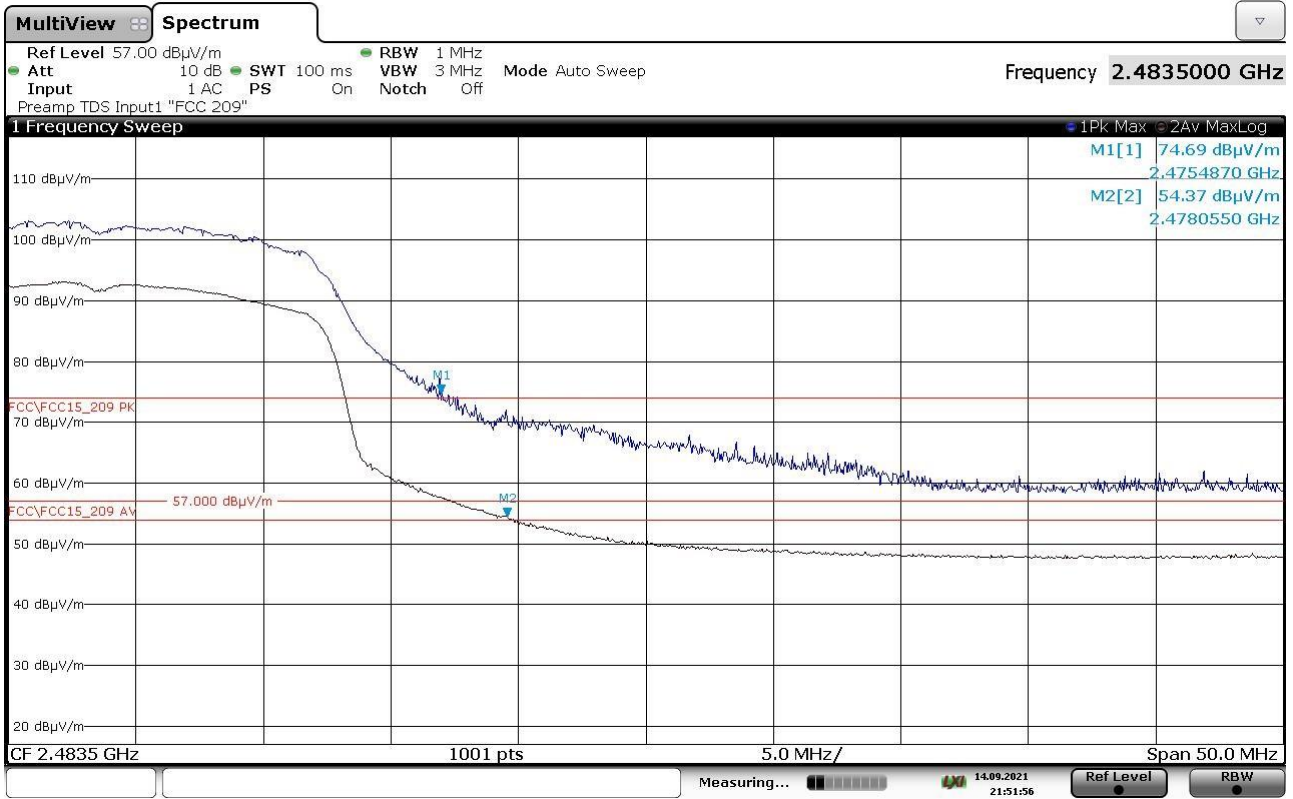
De Rosso 21184031N ch1 mod N



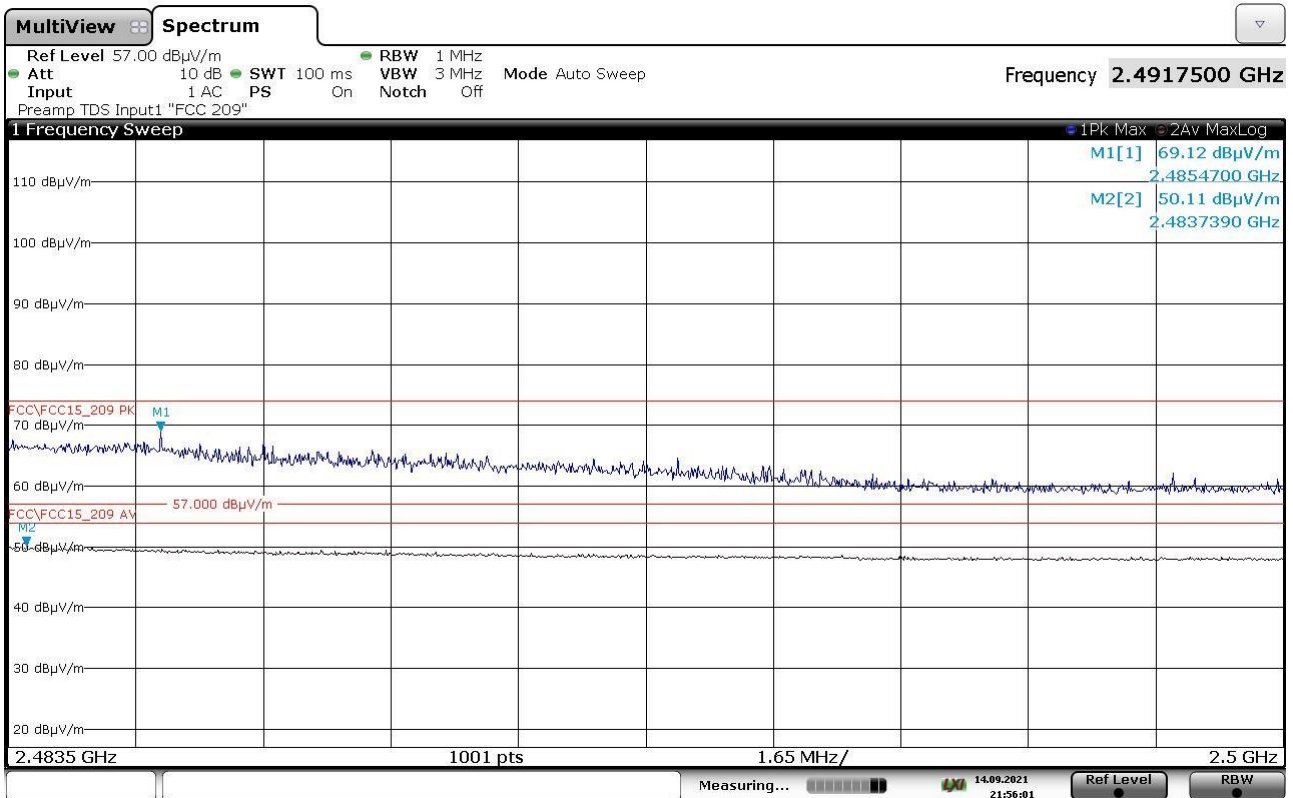
De Rosso 21184032N ch1 mod N



De Rosso 21184043N ch11 mod H



De Rosso 21184044N ch11 mod H



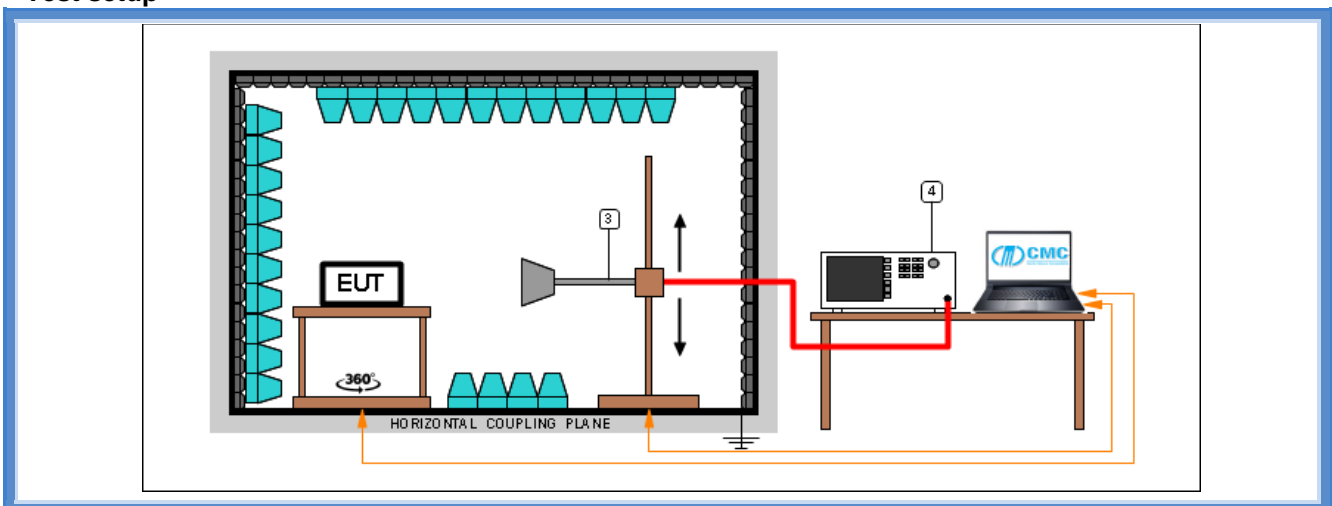
## 9.7 Fundamental emission output power

|   |  |
|---|--|
| Tested by .....                             | F. De Rosso  |
| Test date .....                             | 07.09.2021   |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)   |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part 15.247 (b) (3)<br>ANSI C63.10 cl. 11.9.1.1<br>KDB 558074 D01 DTS Meas Guidance v05r02 cl. 8.3.1.1 |
| Supplementary test set-up description ..... | EUT – antenna distance: 3 m  |

### Acceptance limits

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt

### Test setup



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                 |

### Result – WiFi mode B

| Frequency (MHz) | Polarization | Graphs     | Measured level (dB $\mu$ V/m) | Peak Output Power (mW) | Limit (mW) |
|-----------------|--------------|------------|-------------------------------|------------------------|------------|
| 2412            | Worst case   | G21184033B | 109,42                        | 13,156                 | 1000       |
| 2442            | Worst case   | G21184038B | 111,49                        | 21,190                 | 1000       |
| 2462            | Worst case   | G21184045B | 108,68                        | 11,095                 | 1000       |

### Remarks

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

Where:

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

G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

P = the power in watts

### Result – WiFi mode G

| Frequency (MHz) | Polarization | Graphs     | Measured level (dB $\mu$ V/m) | Peak Output Power (mW) | Limit (mW) |
|-----------------|--------------|------------|-------------------------------|------------------------|------------|
| 2412            | Worst case   | G21184033G | 118,05                        | 95,967                 | 1000       |
| 2442            | Worst case   | G21184038G | 116,40                        | 65,633                 | 1000       |
| 2462            | Worst case   | G21184045G | 117,27                        | 80,190                 | 1000       |

### Remarks

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

Where:

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

G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

### Result – WiFi mode N

| Frequency (MHz) | Polarization | Graphs     | Measured level (dB $\mu$ V/m) | Peak Output Power (mW) | Limit (mW) |
|-----------------|--------------|------------|-------------------------------|------------------------|------------|
| 2412            | Worst case   | G21184033N | 116,87                        | 73,134                 | 1000       |
| 2442            | Worst case   | G21184038N | 116,30                        | 64,139                 | 1000       |
| 2462            | Worst case   | G21184045N | 115,06                        | 48,208                 | 1000       |

### Remarks

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

Where:

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

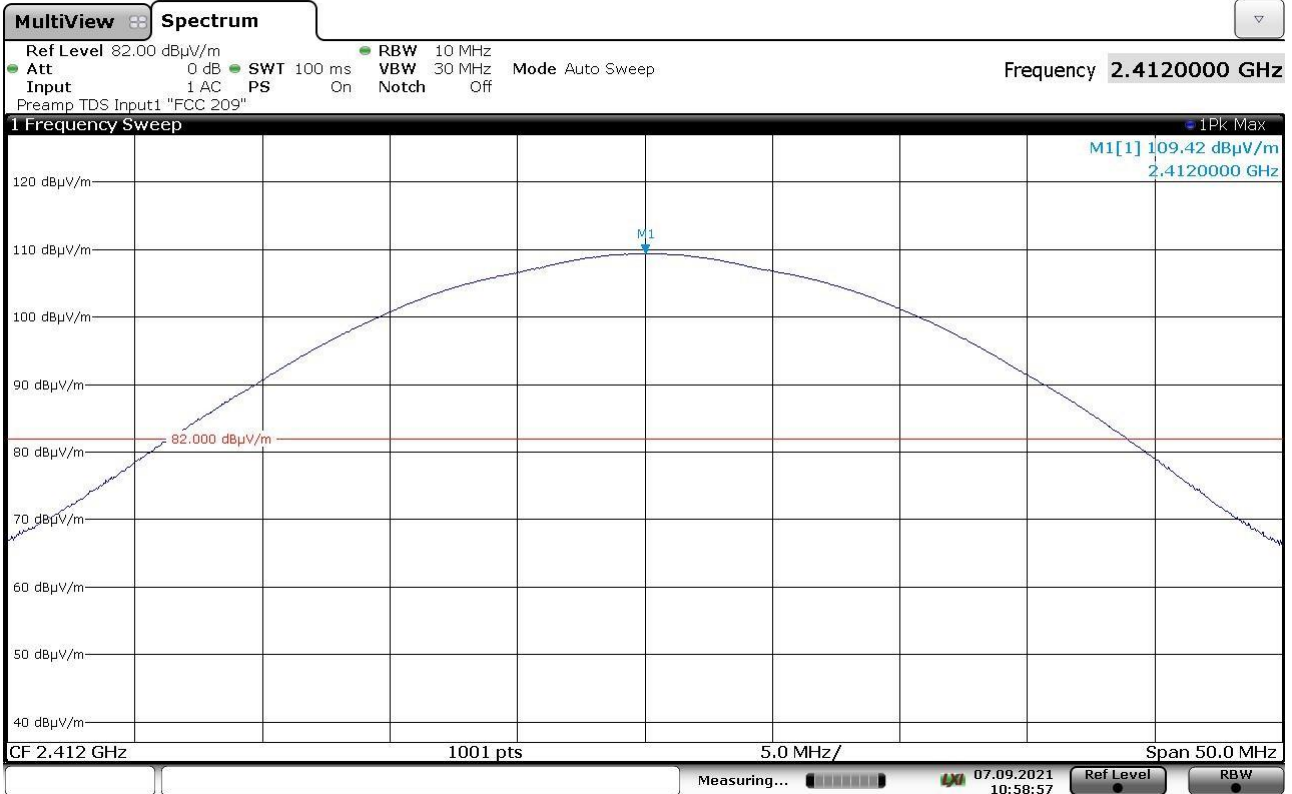
G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

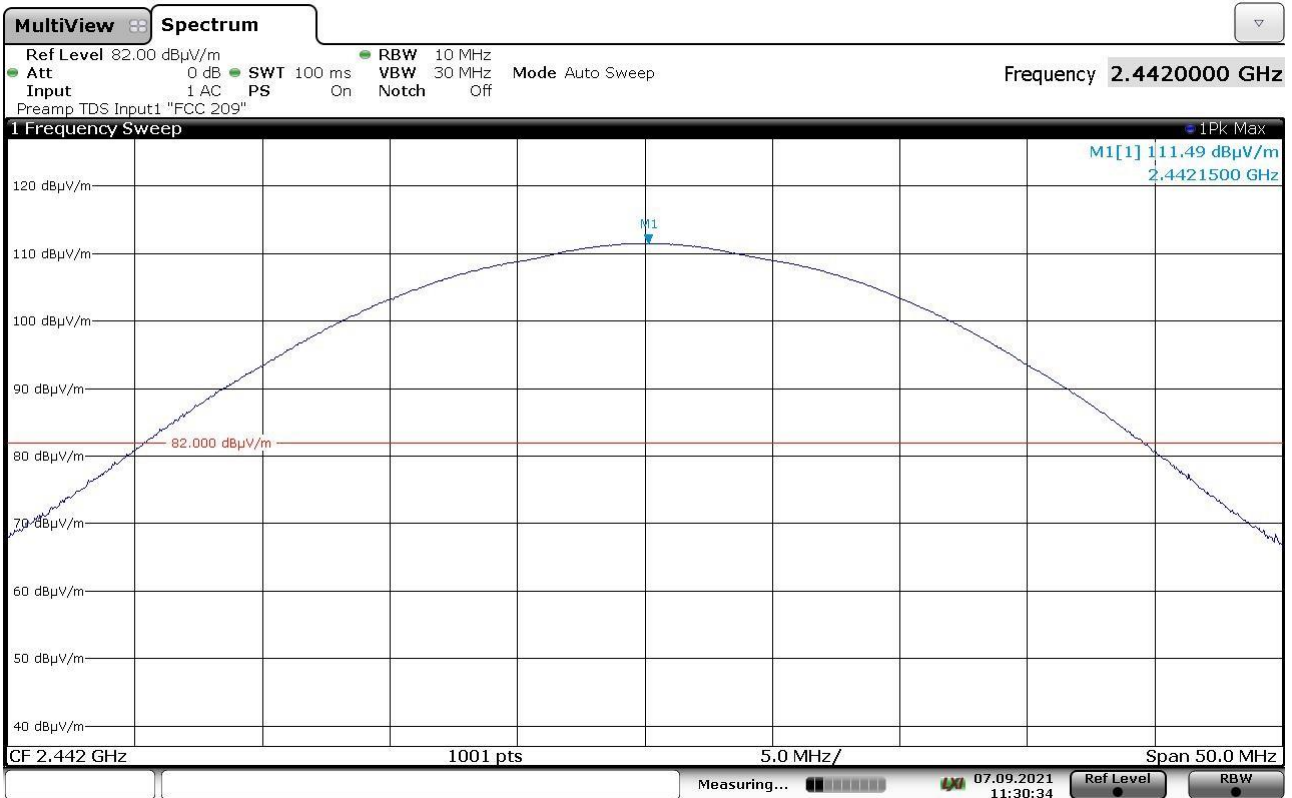


## Graphs

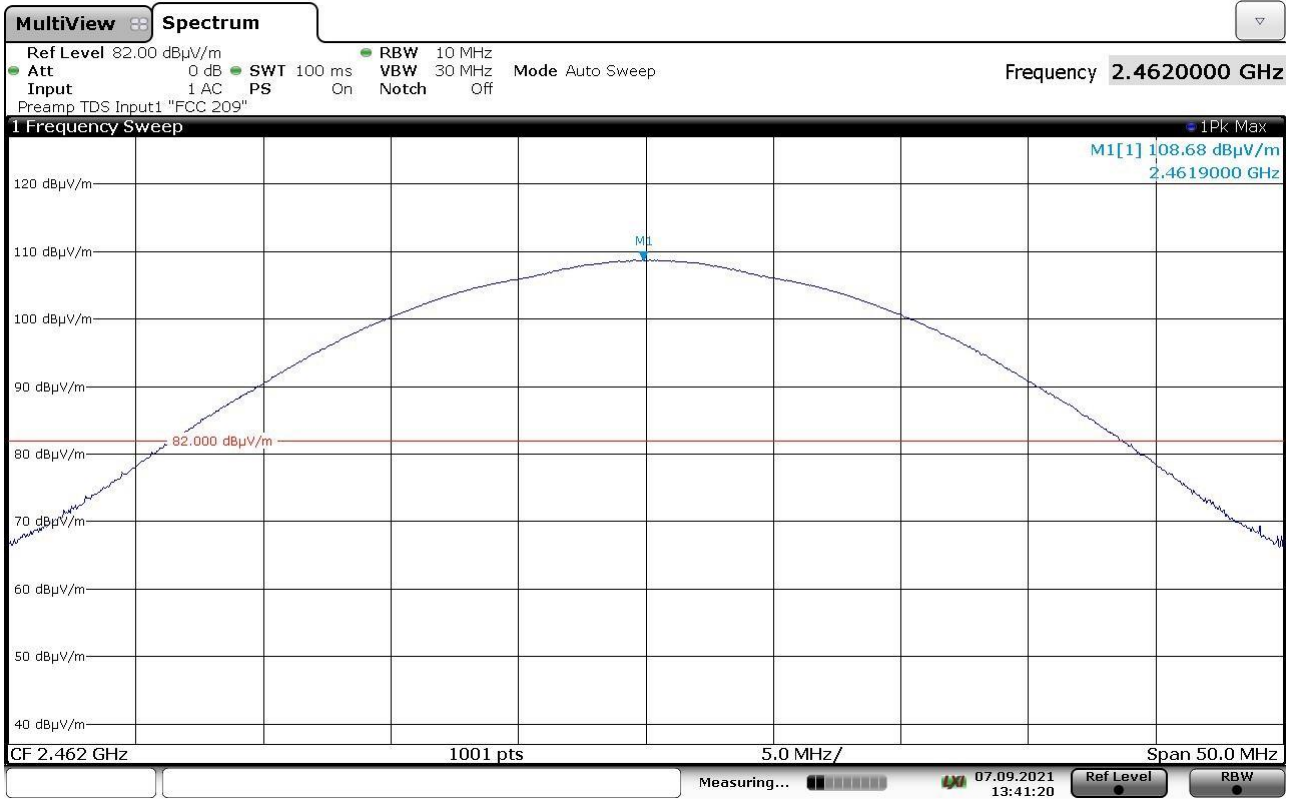
De Rosso 21184033B ch1 mod B



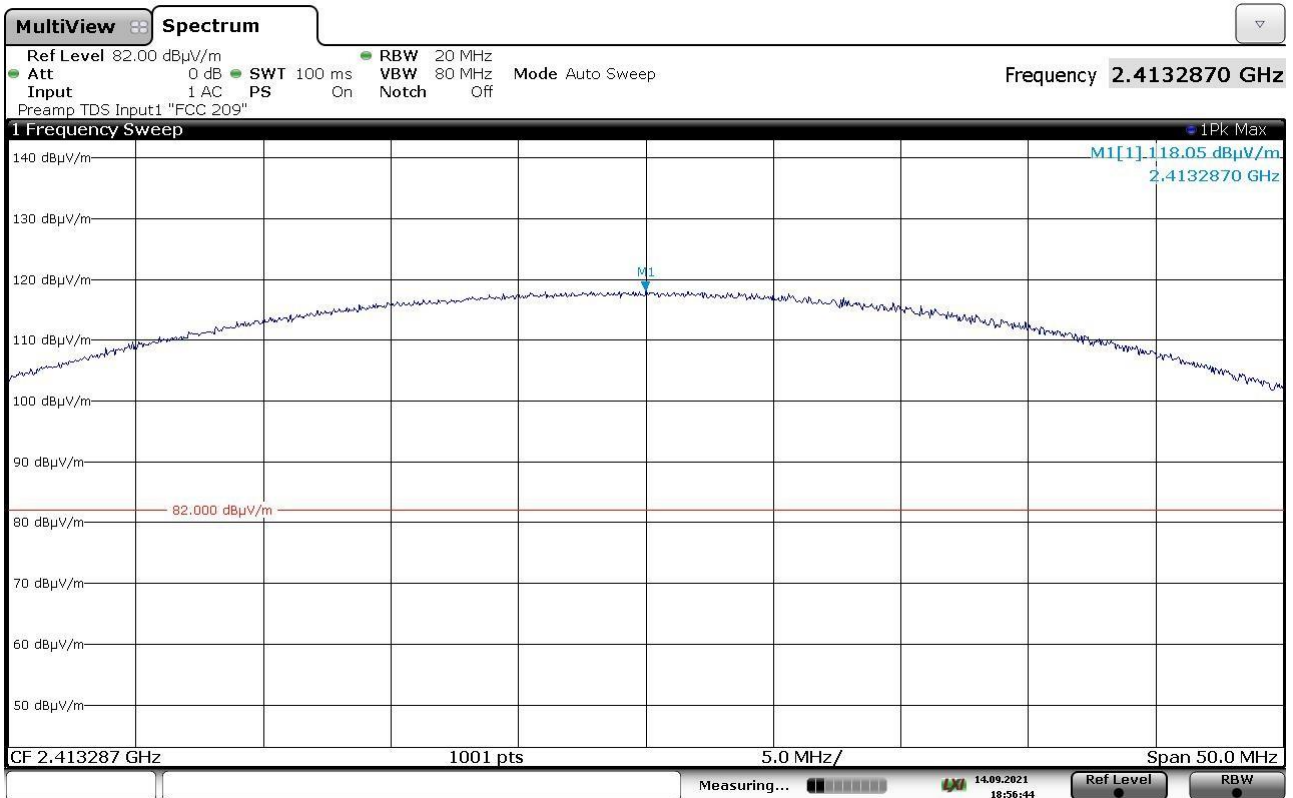
De Rosso 21184038B ch7 mod B



De Rosso 21184045B ch11 mod B



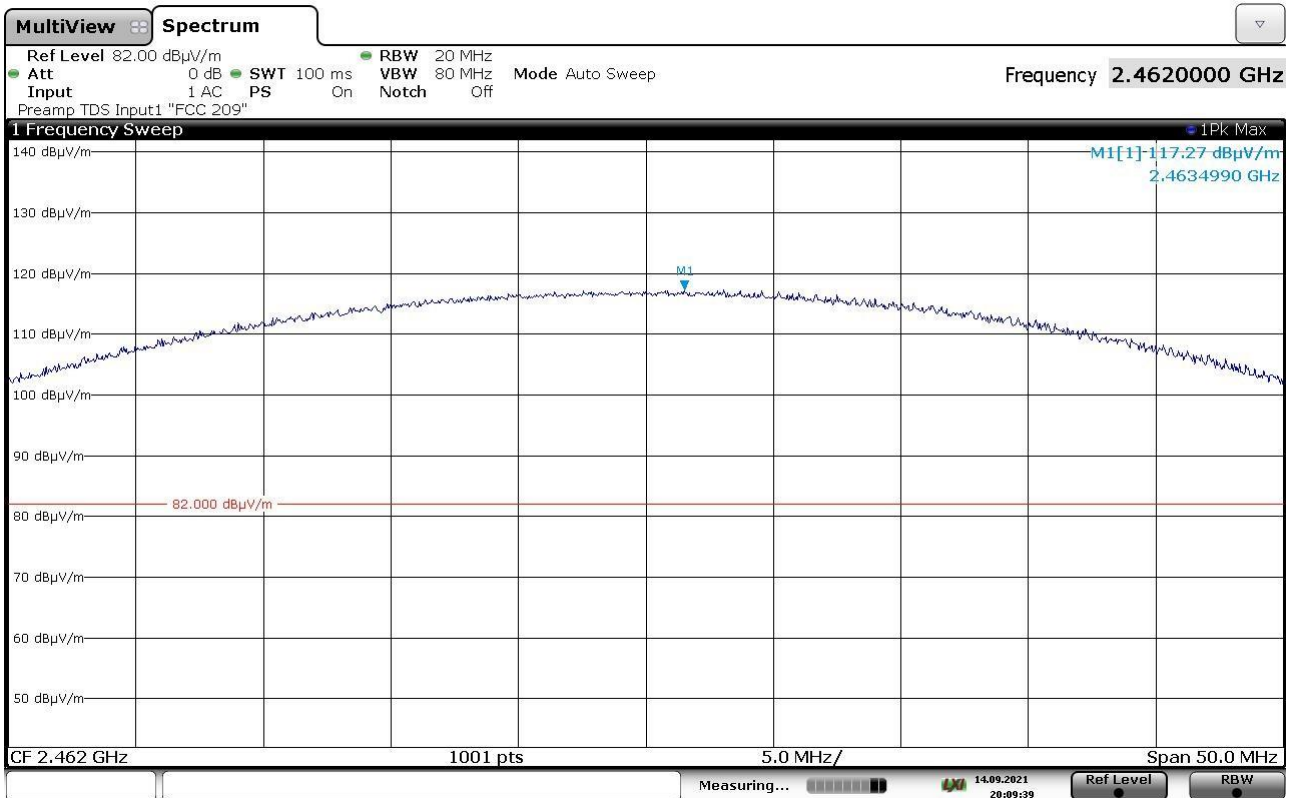
De Rosso 211840336 ch1 mod G



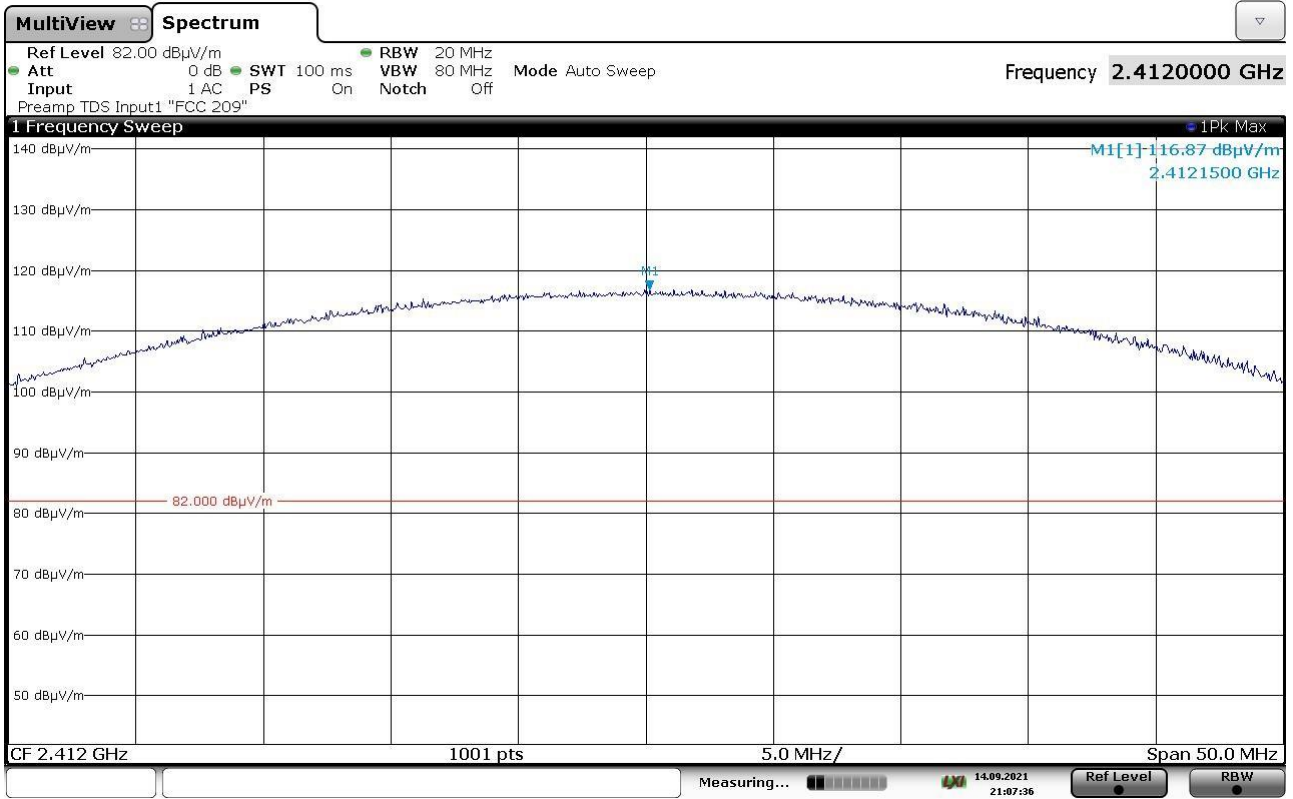
De Rosso 211840386 ch7 mod 6



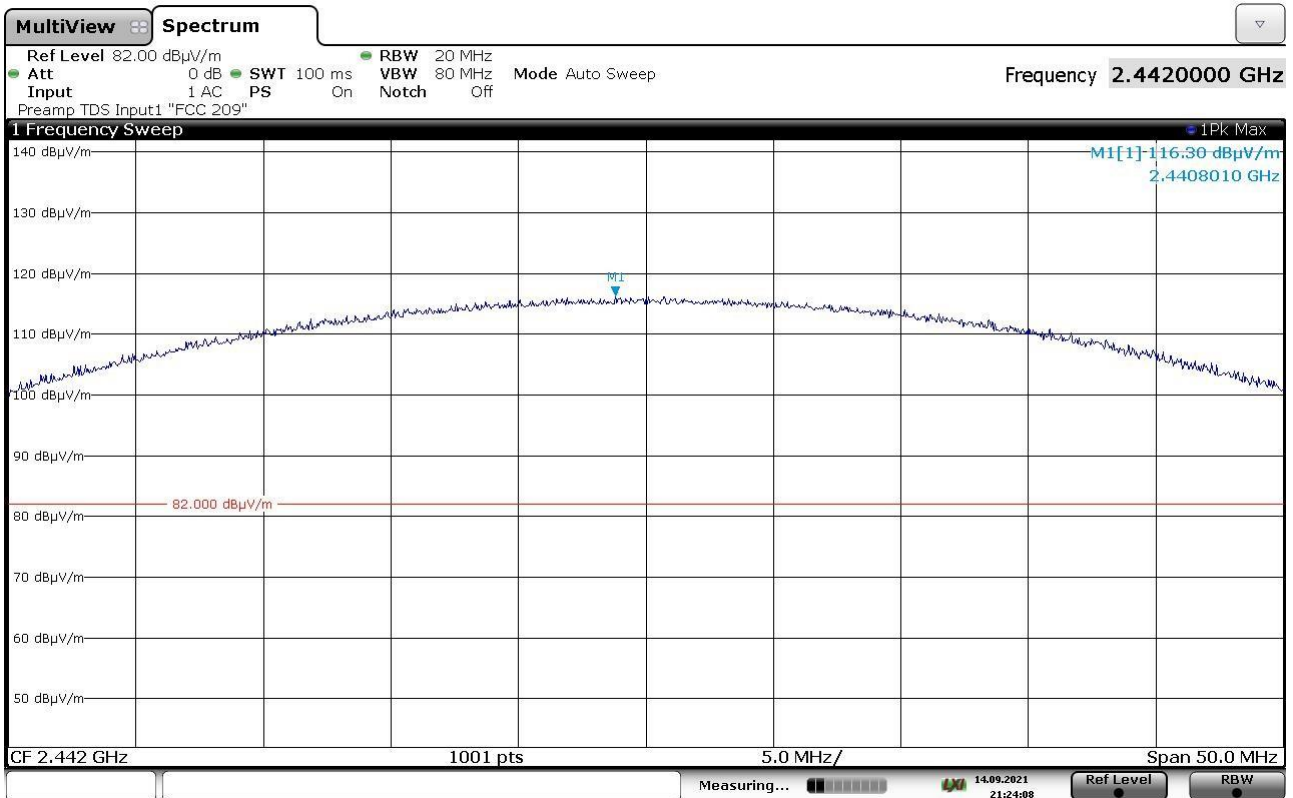
De Rosso 211840456 ch11 mod 6



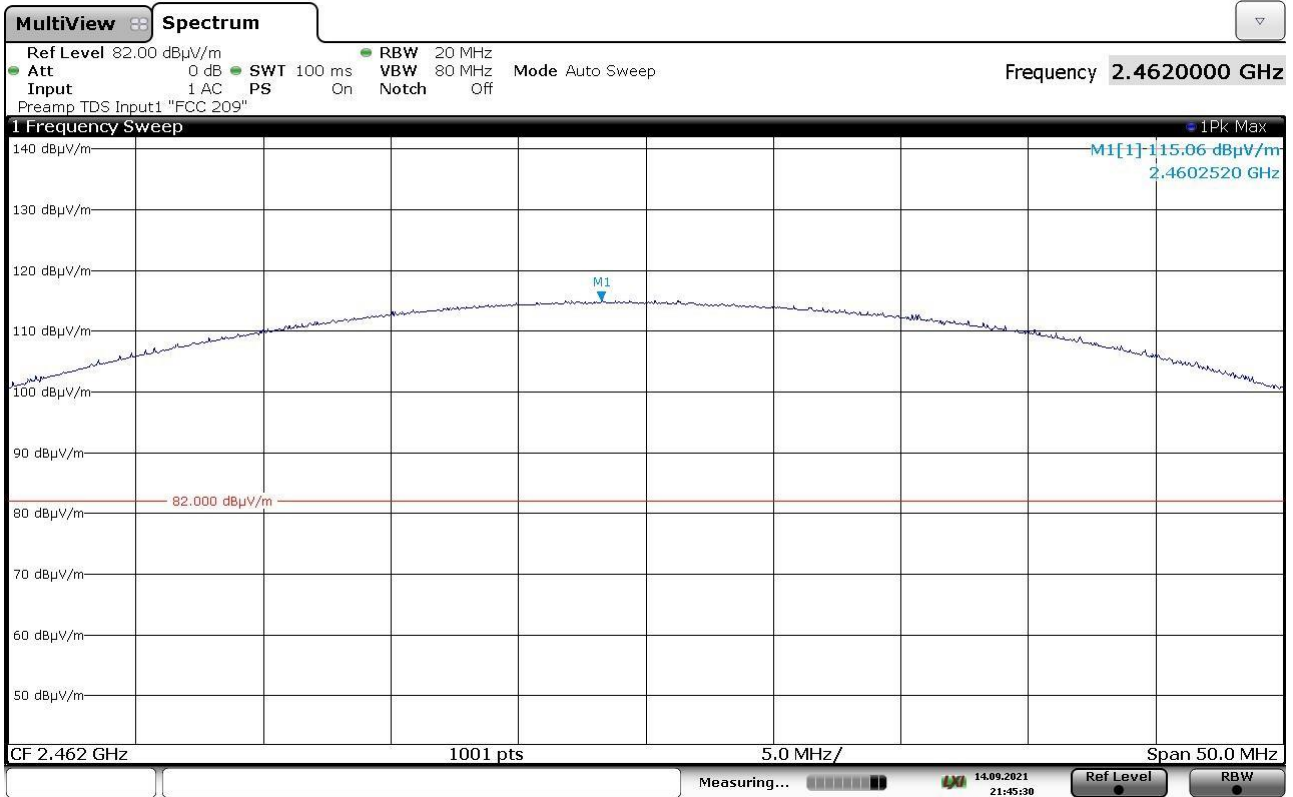
De Rosso 21184033N ch1 mod N



De Rosso 21184038N ch7 mod N



De Rosso 21184045N ch11 mod H



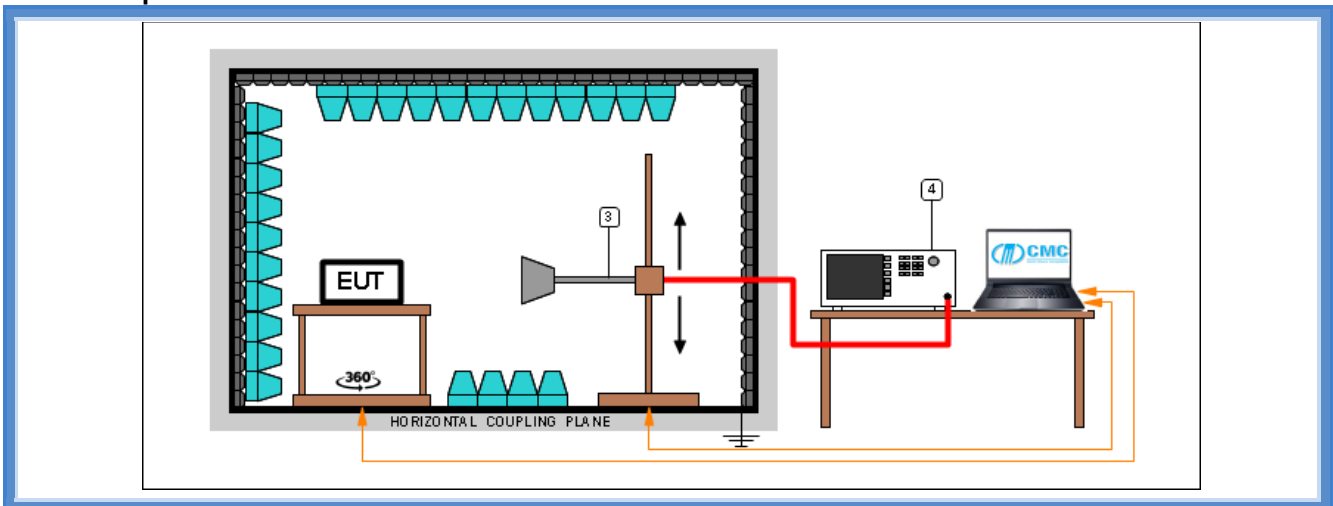
### 9.8 Maximum power spectral density level in the fundamental emission

|   |   |
|---|---|
| Tested by .....                             | F. De Rosso   |
| Test date .....                             | 07.09.2021  |
| Test location (stand) .....                 | Semi-anechoic chamber (CMC A070)  |
| Reference standards .....                   | FCC Rules and Regulation; Titles 47 Part 15.247 (e)<br>ANSI C63.10 cl. 11.10.2<br>KDB 558074 D01 DTS Meas Guidance v05r02 cl. 8.4 |
| Supplementary test set-up description ..... | EUT – antenna distance: 3 m   |

#### Acceptance limits

| Frequency Range   | Power Spectral Density       |
|-------------------|------------------------------|
| 2400 – 2483,5 MHz | 8 dBm/3 kHz<br>6,31 mW/3 kHz |

#### Test setup



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                 |

### Result – WiFi mode B

| Frequency (MHz) | Polarization | Graphs     | Measured level (dBμV/m/3 kHz) | Measured level (dBm/3 kHz) | Limits (dBm/3 kHz) |
|-----------------|--------------|------------|-------------------------------|----------------------------|--------------------|
| 2412            | Worst case   | G21184034B | 88,23                         | -9,999                     | 8,00               |
| 2442            | Worst case   | G21184039B | 85,10                         | -13,129                    | 8,00               |
| 2462            | Worst case   | G21184046B | 84,50                         | -13,729                    | 8,00               |

### Remarks

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

Where:

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

G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

### Result – WiFi mode G

| Frequency (MHz) | Polarization | Graphs     | Measured level (dBm/3 kHz) | Measured level (dBm/3 kHz) | Limits (dBm/3 kHz) |
|-----------------|--------------|------------|----------------------------|----------------------------|--------------------|
| 2412            | Worst case   | G21184034G | 84,30                      | -13,929                    | 8,00               |
| 2442            | Worst case   | G21184039G | 82,53                      | -15,699                    | 8,00               |
| 2462            | Worst case   | G21184046G | 81,00                      | -17,229                    | 8,00               |

### Remarks

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

Where:

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

G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

### Result – WiFi mode N

| Frequency (MHz) | Polarization | Graphs     | Measured level (dBm/3 kHz) | Measured level (dBm/3 kHz) | Limits (dBm/3 kHz) |
|-----------------|--------------|------------|----------------------------|----------------------------|--------------------|
| 2412            | Worst case   | G21184034N | 81,47                      | -16,759                    | 8,00               |
| 2442            | Worst case   | G21184039N | 81,07                      | -17,159                    | 8,00               |
| 2462            | Worst case   | G21184046N | 79,96                      | -18,269                    | 8,00               |

### Remarks

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

Where:

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

G = the numeric gain of the transmitting antenna: 1,995 (3 dBi)

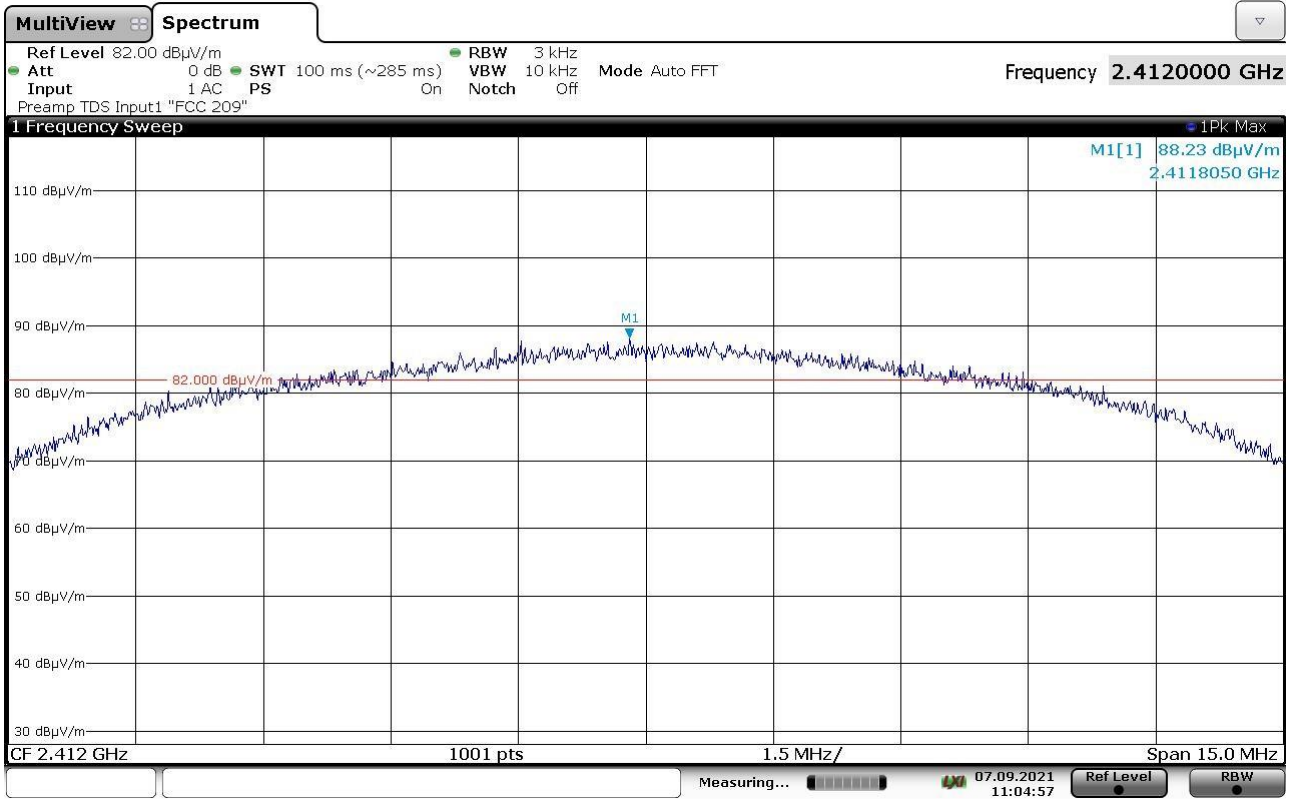
d = the distance in meters from which the field strength was measured (3 m)

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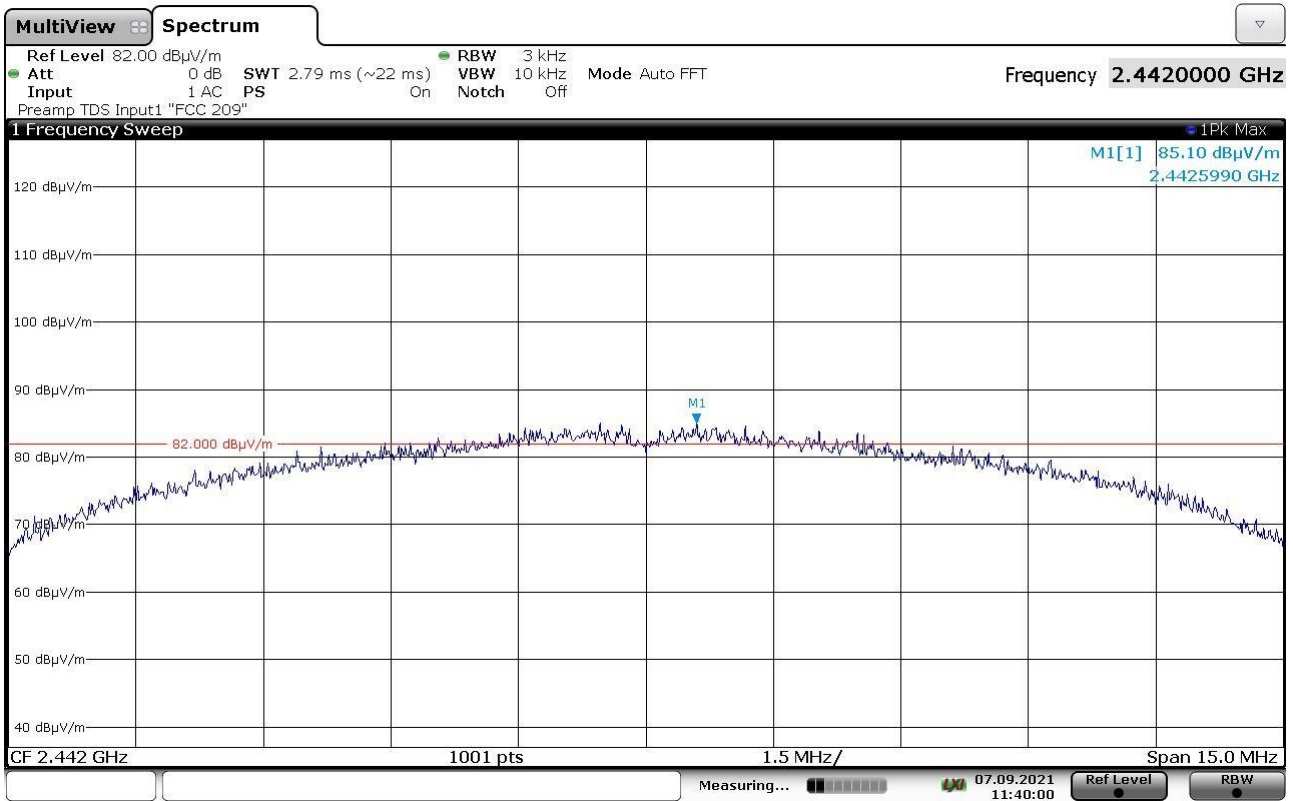
**Graphs**



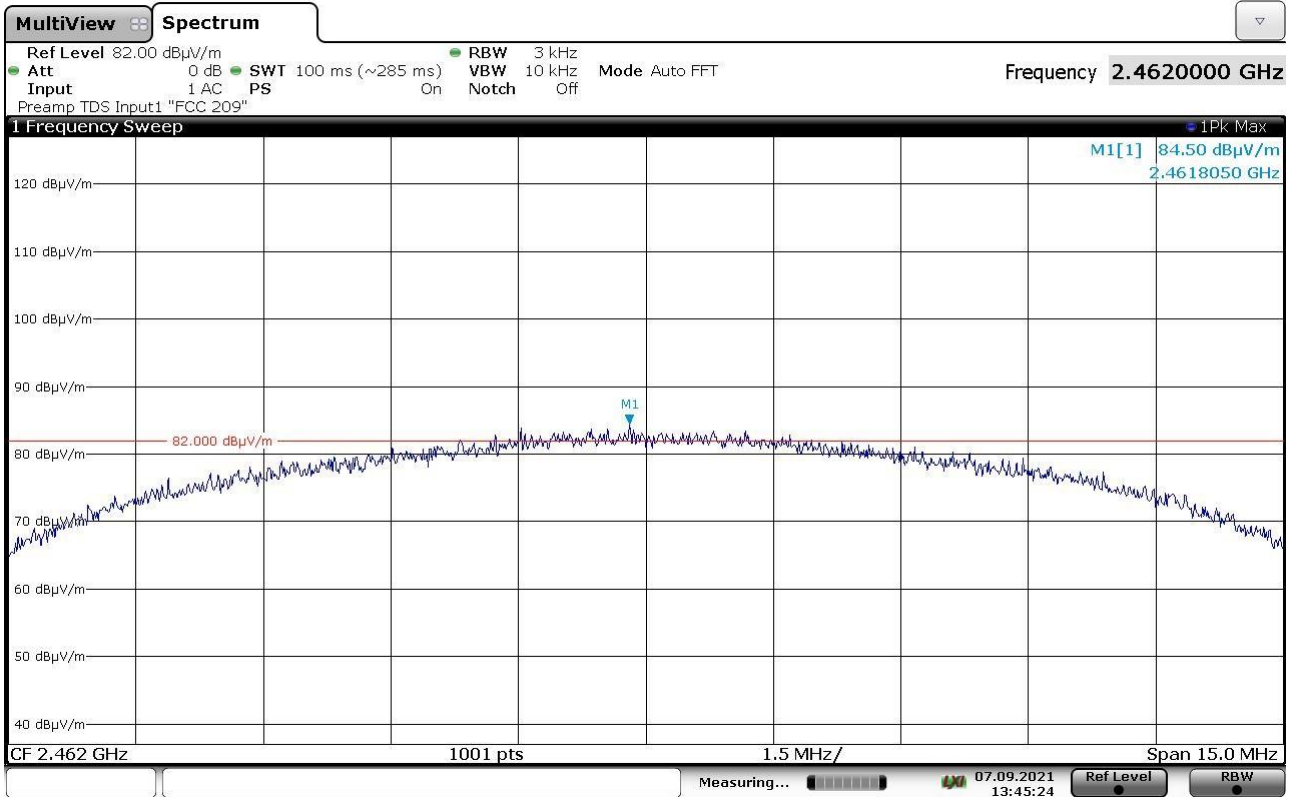
De Rosso 21184034B ch1 mod B



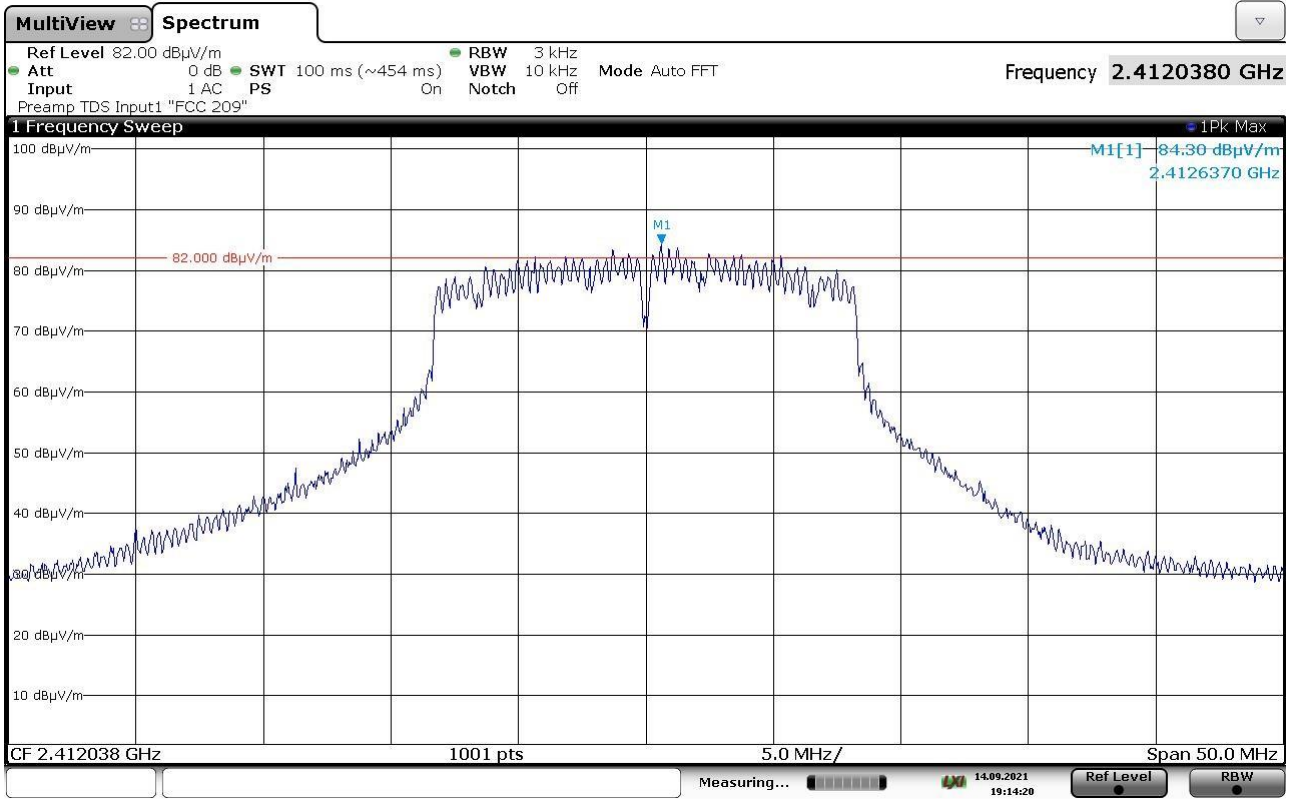
De Rosso 21184039B ch7 mod B



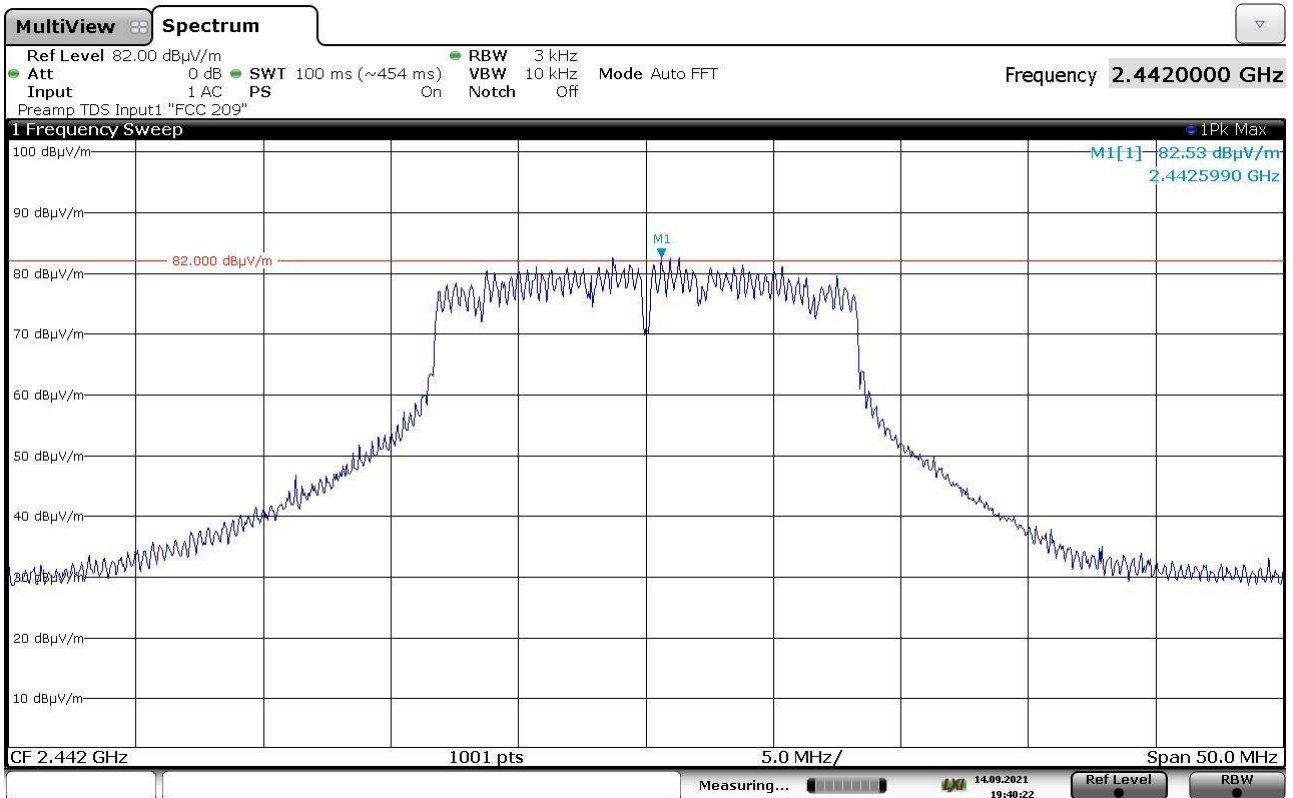
De Rosso 21184046B ch11 mod B



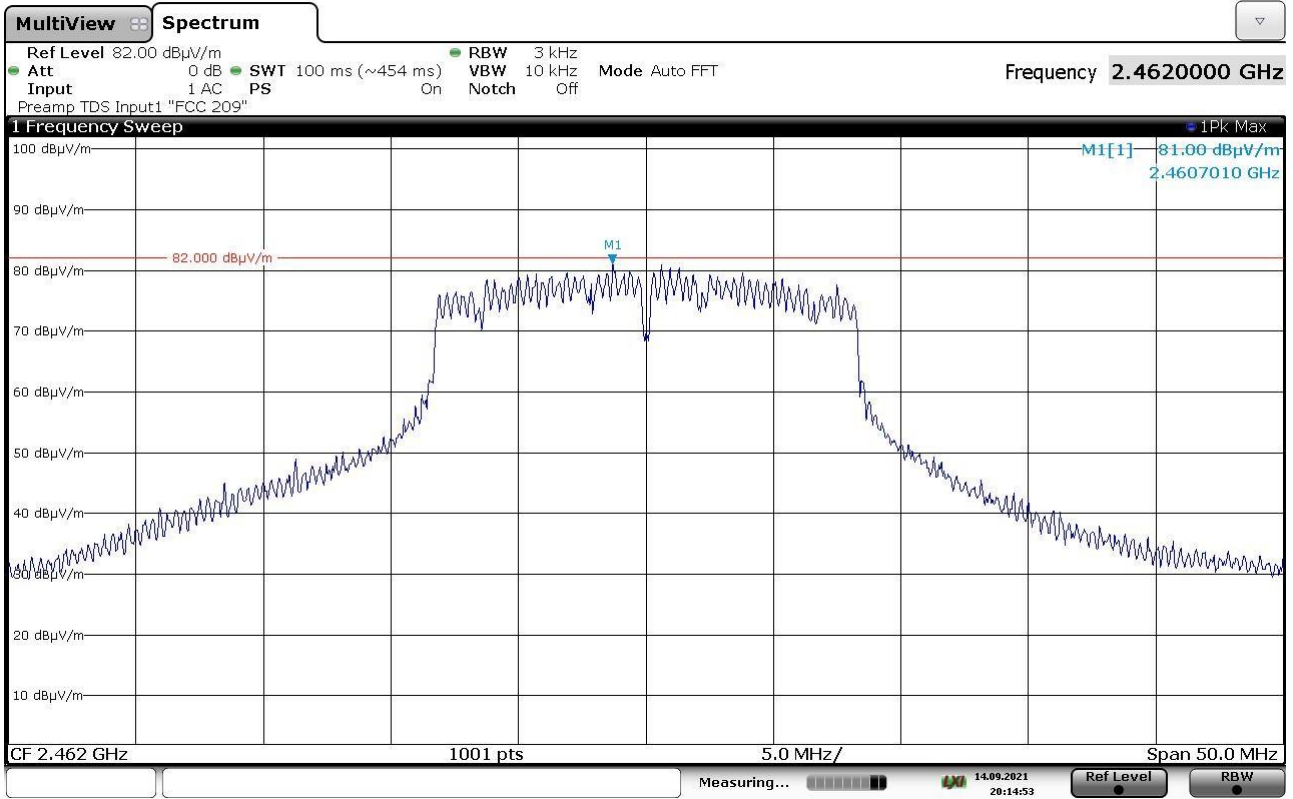
De Rosso 211840346 ch1 mod 6



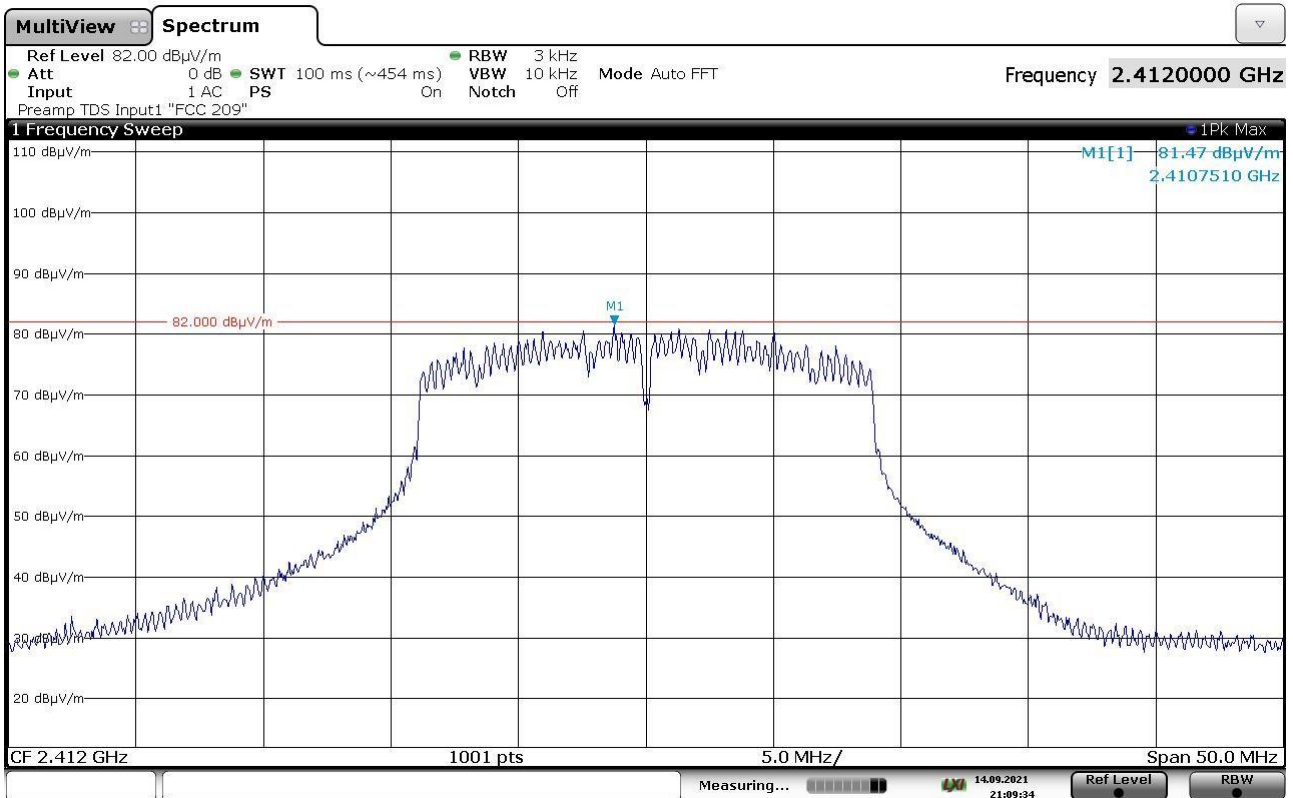
De Rosso 211840396 ch7 mod 6



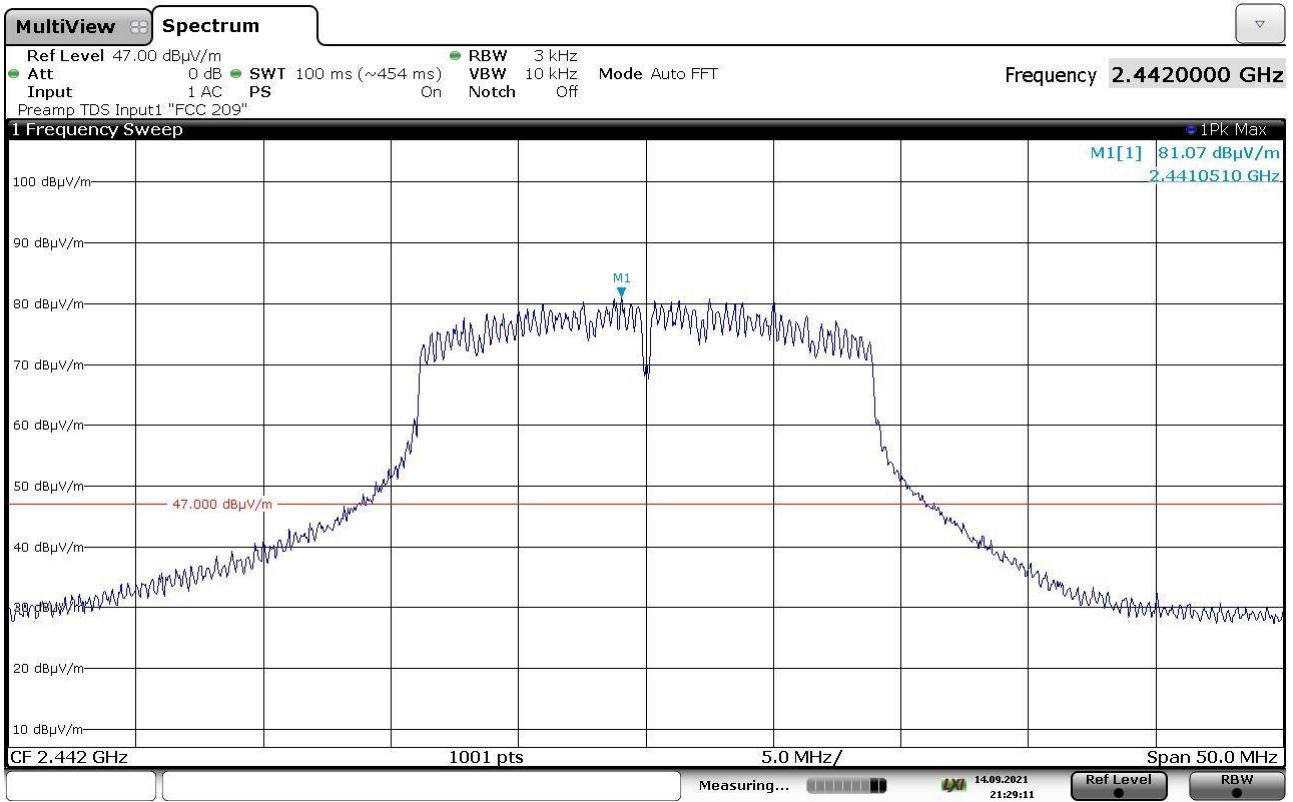
De Rosso 21184046G ch11 mod 9



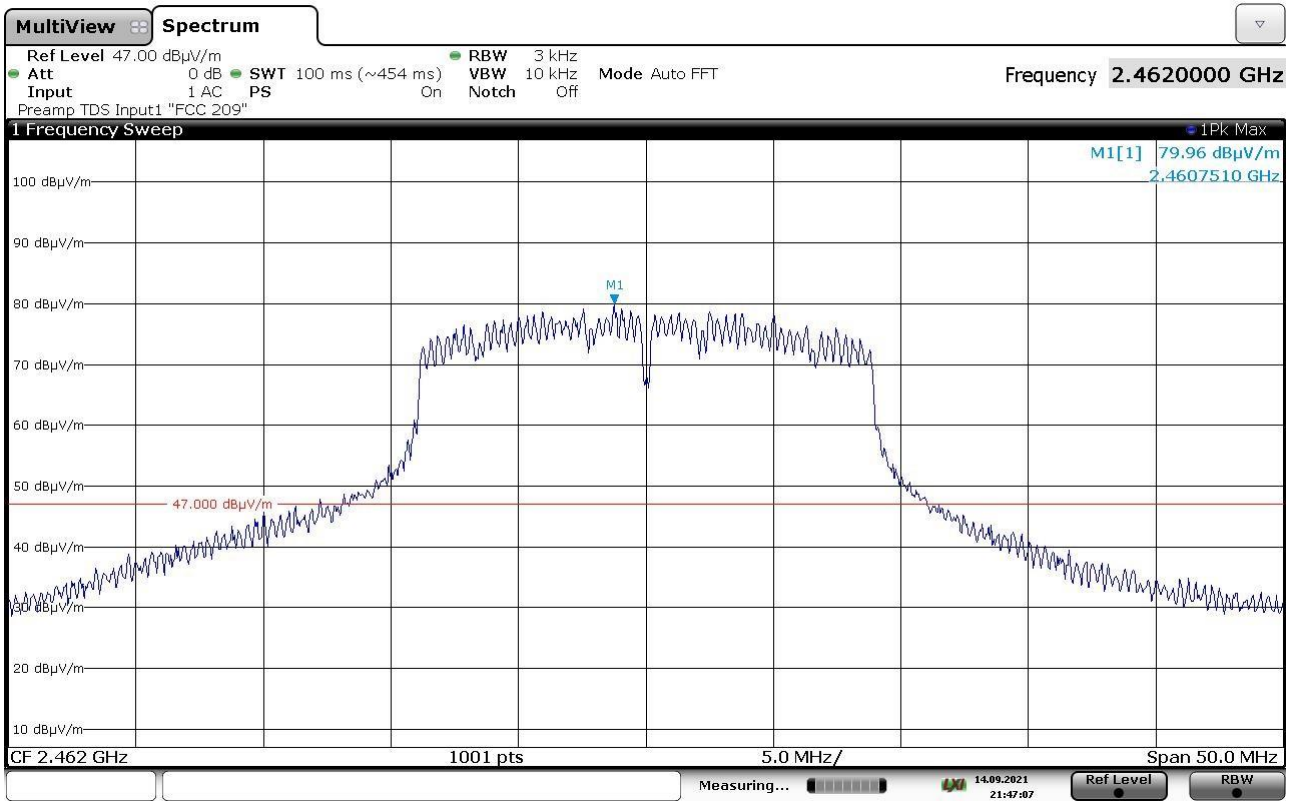
De Rosso 21184034N ch1 mod N



De Rosso 21184039N ch7 mod N



De Rosso 21184046N ch11 mod N



**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 '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 '20                   | November '21                       |
| CMC S261                 | CMC                        | Wfr_N                | Shielded Cable                      | Wfr_ant20-1                 | November '20                   | November '21                       |
| CMC S262                 | CMC                        | Wfr_N_fix            | Shielded Cable                      | Wfr_fix32-1                 | November '20                   | November '21                       |
| CMC S263                 | CMC                        | Wfr_N_fix            | Shielded Cable                      | Wfr_fix31-1                 | November '20                   | November '21                       |
| CMC S264                 | CMC                        | Wfr_N                | Shielded Cable                      | Wfr_ext03-1                 | November '20                   | November '21                       |
| 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 '20                   | November '21                       |
| 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**

| <i>Test</i>   | <i>Test Setup</i> | <i>Expanded uncertainty</i> | <i>Note</i> |
|---|-------------------|-----------------------------|-------------|
| 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          | 4,2 dB                      | 1           |
| Radiated Emission CISPR 16<br>Bicon. Ant. 30-300 MHz      | PE004_02          | 4,1 dB                      | 1           |
| Radiated Emission CISPR 16<br>LogP. Ant. 300-1000 MHz     | PE004_03          | 3,9 dB                      | 1           |
| Radiated Emission CISPR 16<br>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<br>80 MHz - 6 GHz                       | PE102_XX          | 2,20 dB 0,87 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    | 4,2 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_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  $p = 95\%$

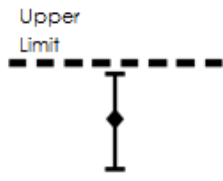
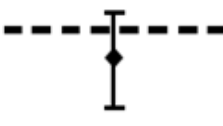

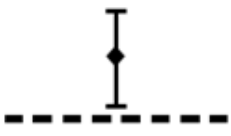
**Note 2:**

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