

# TEST REPORT

of the accredited test laboratory

**TÜV Nr.:INE-AT/FG-21/155**

**Applicant:** Speech Processing Solutions GmbH  
Gutheil-Schoder-Gasse 8-12  
A – 1100 Vienna

**Tested Product:** wireless dictation system USB-Dongle

**FCC-ID:** 2AD4M-A4100

**IC-ID:** 26381-A4100

**Manufacturer:** Speech Processing Solutions GmbH  
Gutheil-Schoder-Gasse 8-12  
A – 1100 Vienna

**Output power:** 8,51 mW eirp max. **power supply:** 5 VDC via USB

**Frequency range:** 2406,1 - 2474,1 MHz **Channel separation:** 4MHz

**Standard:** FCC: 47 CFR Part 15 (October 1, 2019 edition)  
RSS-247 Issue 2, February 2017

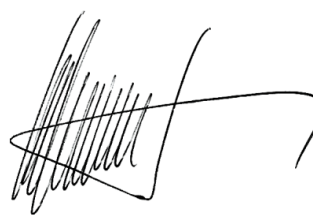
**TÜV AUSTRIA SERVICES GMBH****Test laboratory for EMC**

Ing. Michael Emminger

**examined by / Testing  
Laboratory**  
**TÜV AUSTRIA SERVICES  
GMBH**



06.07.2021



Ing. Wilhelm Seier

**approved by / Testing  
Laboratory**  
**TÜV AUSTRIA SERVICES  
GMBH**



Testing Laboratory,  
Inspection Body,  
Certification Body,  
Calibration Laboratory,  
Verifizierungsstelle

**Notified Body 0408**

**Non-executive  
Board of Directors:**  
KR DI Johann  
Marihart

**Management:**  
DI Dr. Stefan Haas  
Mag. Christoph  
Wenninger

**Registered Office:**  
Deutschstrasse 10  
1230 Vienna/Austria

**Branch Offices:**  
www.tuv.at/standorte

**Company Register  
Court / - Number:**  
Vienna / FN 288476 f

**Bank Details:**  
IBAN  
AT131200052949001066  
BIC BKAUATWW  
VAT ATU63240488  
DVR 3002476

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The results of this test report only refer to the provided equipment.

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## 1. Applicant

**Company:** Speech Processing Solutions GmbH

**Department:** ---

**Address:** Austria; 1100 Wien; Gutheil-Schoder-Gasse 8-12

**Contact person:** Gerhard PODHRADSKY

**EUT received on:** 07.05.2020

**Tests were performed on:** 07. – 08.05.2020

## 2. Description of EUT

**EUT:** USB Dongle ACC4100

**Serial Number:** ---

**Manufacturer:** Speech Processing Solutions GmbH

**Description:** Speech Processing Solutions GmbH provided the following configuration for the measurements:

ACC4100 attached via Radio link to SMP4000

**Operating mode:** The measurements were carried out at the following running states:  
normal operation

**Technical data EUT:** Rated voltage: 5VDC  
Rated current: max. 20mA  
Rated frequency: DC  
  
Mains voltage during the tests: 5VDC via USB

**Climatic conditions in the emc laboratory:** Relative humidity: 39%  
Temperature: 23°C

### 3. Standards / Final result

| Name                                                                                                    | Title                                                                                                                        | Deviation | Result |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------|--------|
| Title 47 CFR Part 15<br>October 1 <sup>st</sup> 2019 edition                                            | RADIO FREQUENCY DEVICES                                                                                                      | none      | OK     |
| RSS-247 Issue 2,<br>February 2017                                                                       | Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices | none      | OK     |
| <p>Result: Opinions and interpretation of testing laboratory<br/>OK: EUT passed<br/>NOK: EUT failed</p> |                                                                                                                              |           |        |

## 4. Test results

### 4.1. Test Object Data

#### General EUT Description

This device is a USB Dongle used in wireless dictation systems.

#### 2.1033 (c) Technical description

2.1033 (4) Type of emission: 2M06F1D – Channel spacing 4 MHz

2.1033 (5) Frequency range: 2404,1 to 2474,1 MHz (channel center frequencies).

2.1033 (6) Power range and Controls: The maximum peak output power is 8,51 mW and there is no power regulation.

2.1033 (7) Maximum output power rating: 8,51 mW.

2.1033 (8) DC Voltage and Current: 5 V DC  
maximum current consumption: 20mA

RSS-135 This standard does not apply to:

- 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

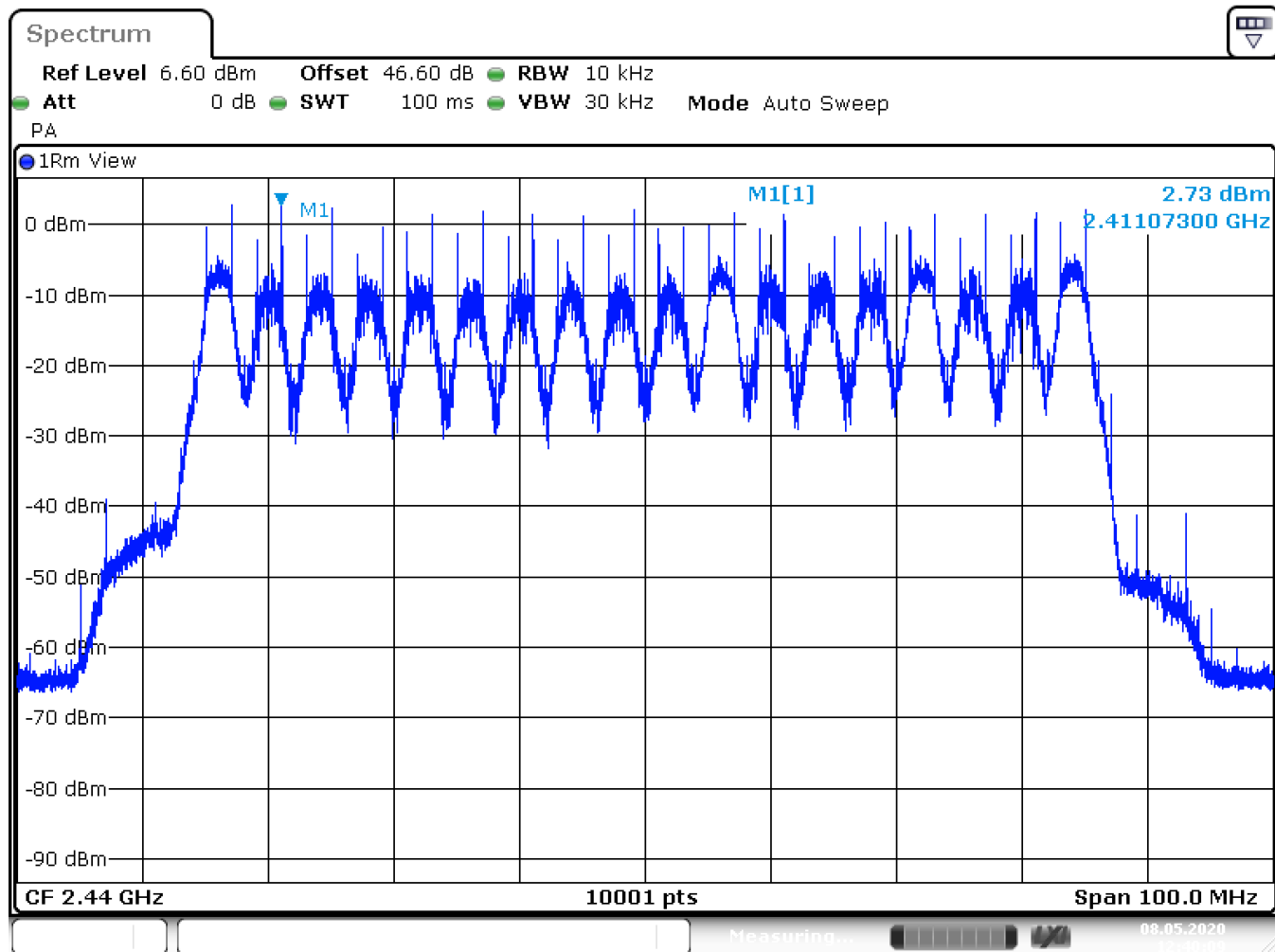
Tests were performed May 7<sup>th</sup> and 8<sup>th</sup> 2020.

## 4.2. Number of channels and channel spacing

§ 2.1033

Radiated Measurement

Rated output power: 8,51 mW



Date: 8.MAY.2020 12:40:10

There are 18 Channels used, starting at 2406,1 till 2474,1 MHz each separated by 4 MHz channel spacing with a maximum bandwidth of 4 MHz.

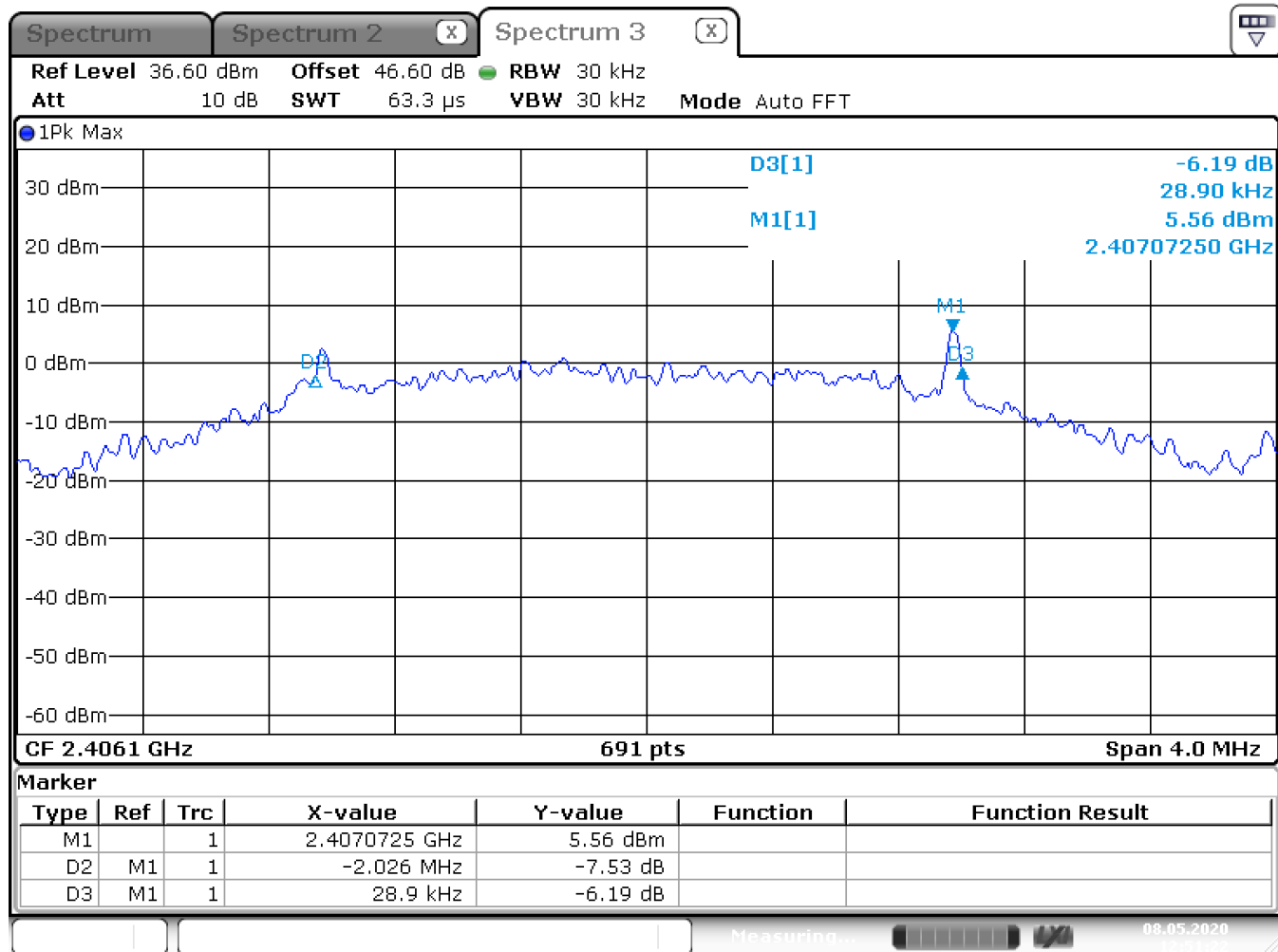
Test Equipment used: EMV-205

#### 4.3. 6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 8,51 mW Channel 1 (2406,1 MHz center frequency)



Date: 8.MAY.2020 12:51:22

6dB Bandwidth: 2055 kHz

**LIMIT** SUBCLAUSE 15.247(e) – 5.2(1)

|                             |                                 |
|-----------------------------|---------------------------------|
| Under normal test conditons | 6 dB Bandwidth at least 500 kHz |
|-----------------------------|---------------------------------|

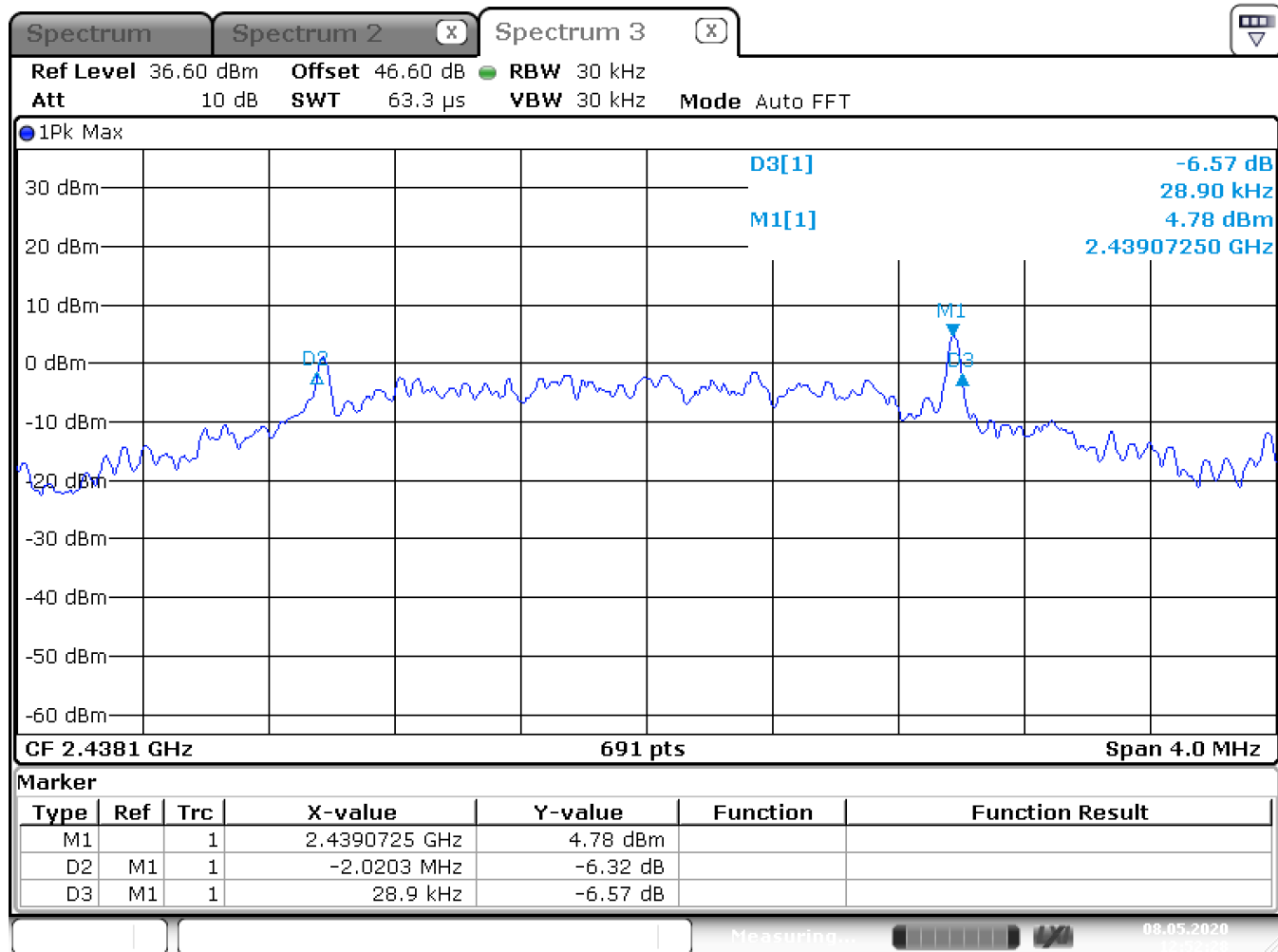
Test Equipment used: EMV-205

## 6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 8,51 mW Channel 9 (2438,1 MHz center frequency)



Date: 8.MAY.2020 12:52:29

6dB Bandwidth: 2049 kHz

**LIMIT** SUBCLAUSE 15.247(e) – 5.2(1)

|                             |                                 |
|-----------------------------|---------------------------------|
| Under normal test conditons | 6 dB Bandwidth at least 500 kHz |
|-----------------------------|---------------------------------|

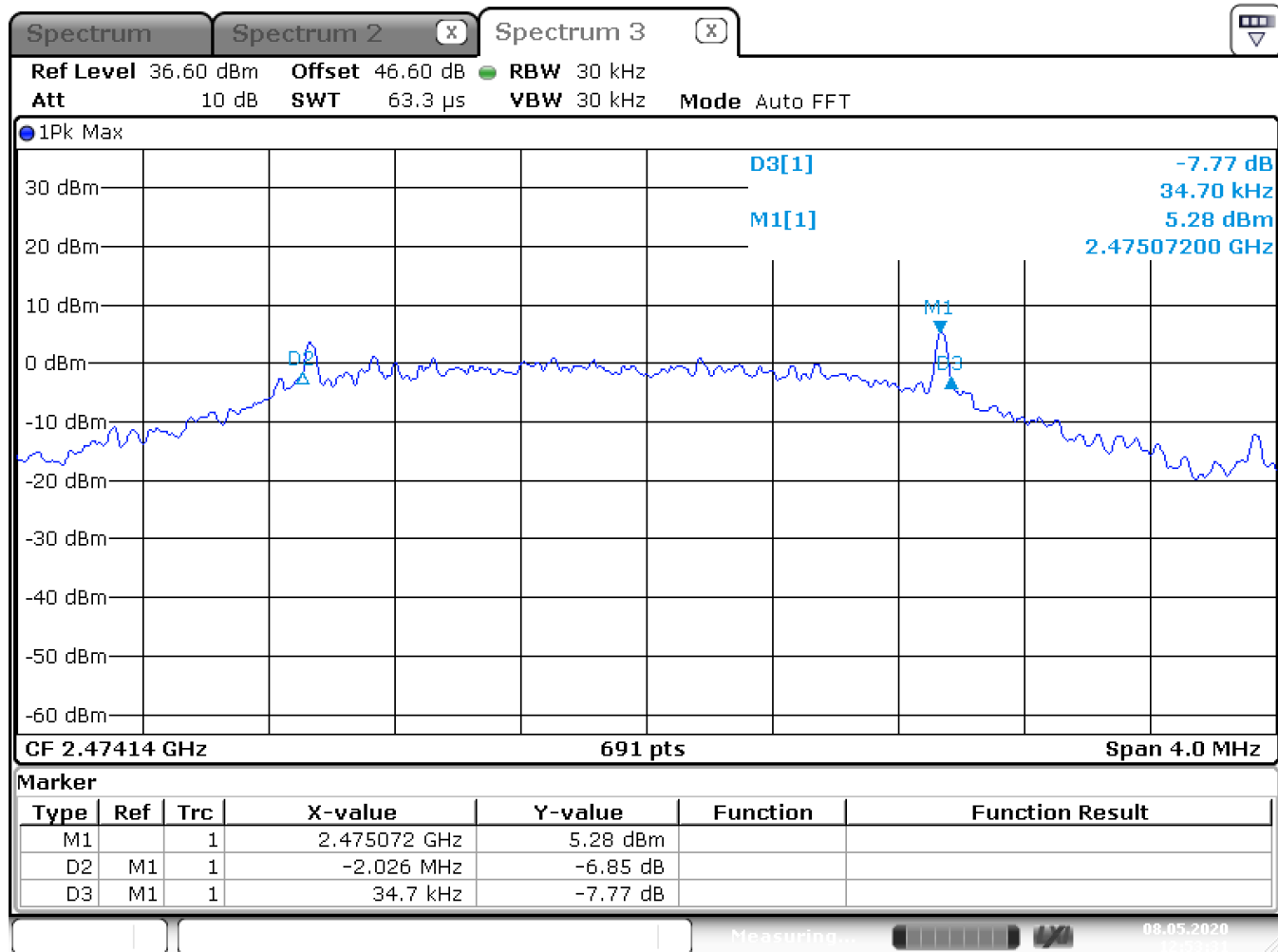
Test Equipment used: EMV-205

## 6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 8,51 mW Channel 18 (2474,1 MHz center frequency)



Date: 8.MAY.2020 12:53:32

6dB Bandwidth: 2061 kHz

**LIMIT** SUBCLAUSE 15.247(e) – 5.2(1)

|                             |                                 |
|-----------------------------|---------------------------------|
| Under normal test conditons | 6 dB Bandwidth at least 500 kHz |
|-----------------------------|---------------------------------|

Test Equipment used: EMV-205

#### 4.4. Maximum Peak RF Power Output (Radiated)

§ 15.247(b)(3)  
5.4(4)

Radiated Measurement

Rated output power: 8,51 mW

| Test conditions                                                             |                          | Transmitter power eirp (mW) |            |            |
|-----------------------------------------------------------------------------|--------------------------|-----------------------------|------------|------------|
|                                                                             |                          | 2406,1 MHz                  | 2438,1 MHz | 2474,1 MHz |
| T <sub>nom</sub> ( 23 )°C                                                   | V <sub>nom</sub> ( 5 ) V | 8,51                        | 6,92       | 7,94       |
| Maximum deviation from rated output power under normal test conditions (dB) |                          | 0                           | -0,9       | -0,3       |
| Measurement uncertainty                                                     |                          | ± 0,75 dB                   |            |            |

#### LIMIT

#### SUBCLAUSE 15.247(b)(3) – 5.4(4)

|                             |                        |
|-----------------------------|------------------------|
| Under normal test conditons | 1W conducted (4W eirp) |
|-----------------------------|------------------------|

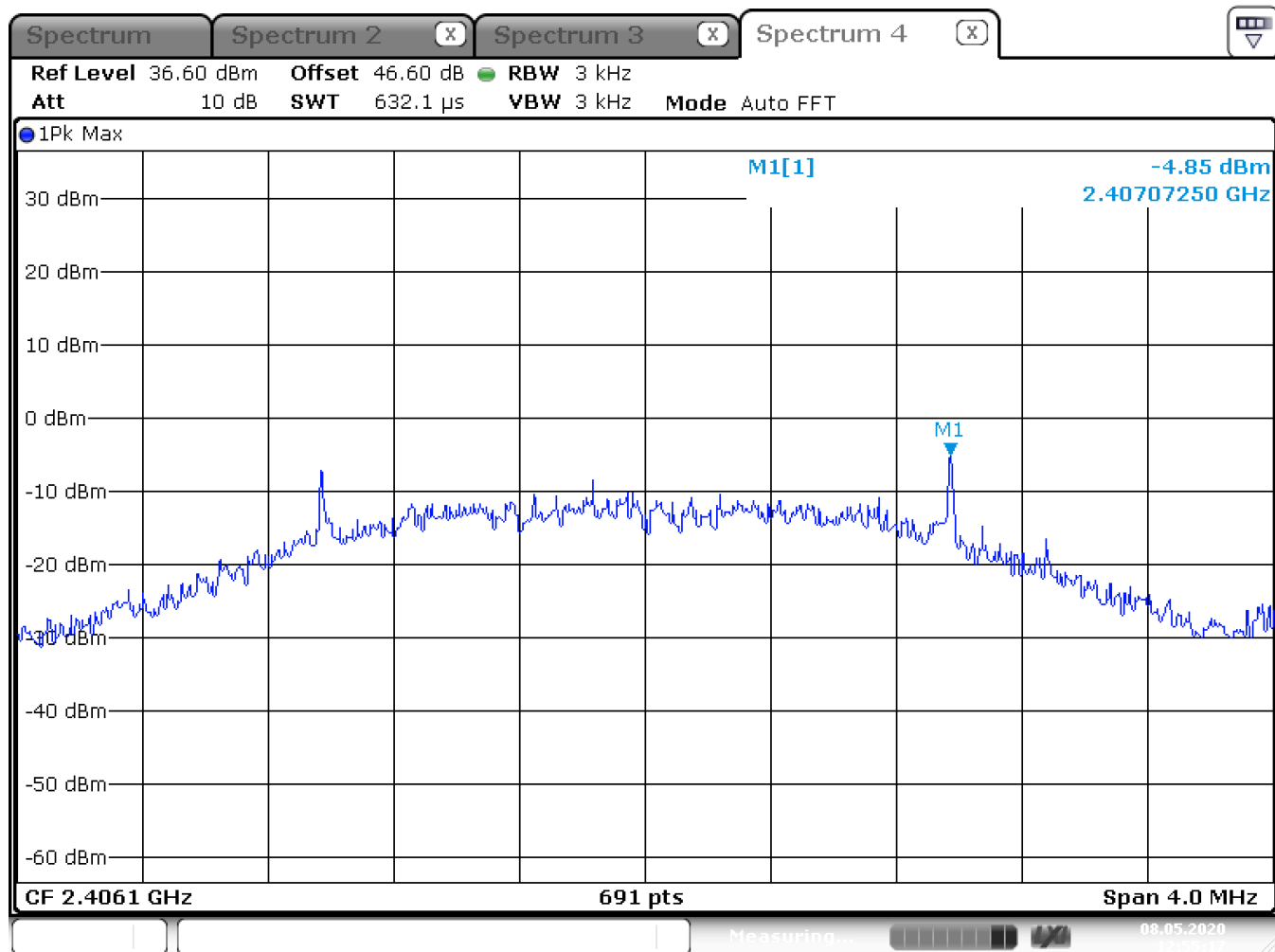
Test Equipment used: EMV-205

#### 4.5. Power spectral density

§ 15.247(e)  
5.2(2)

Radiated Measurement

Rated output power: 8,51 mW Channel 1 (2406,1 MHz center frequency)



Date: 8.MAY.2020 12:55:17

Power Spectral density: -4,51 dBm @ 2407,073 MHz

**LIMIT SUBCLAUSE 15.247(e) – 5.2(2)**

|                             |                         |
|-----------------------------|-------------------------|
| Under normal test conditons | +8dBm in any 3 kHz band |
|-----------------------------|-------------------------|

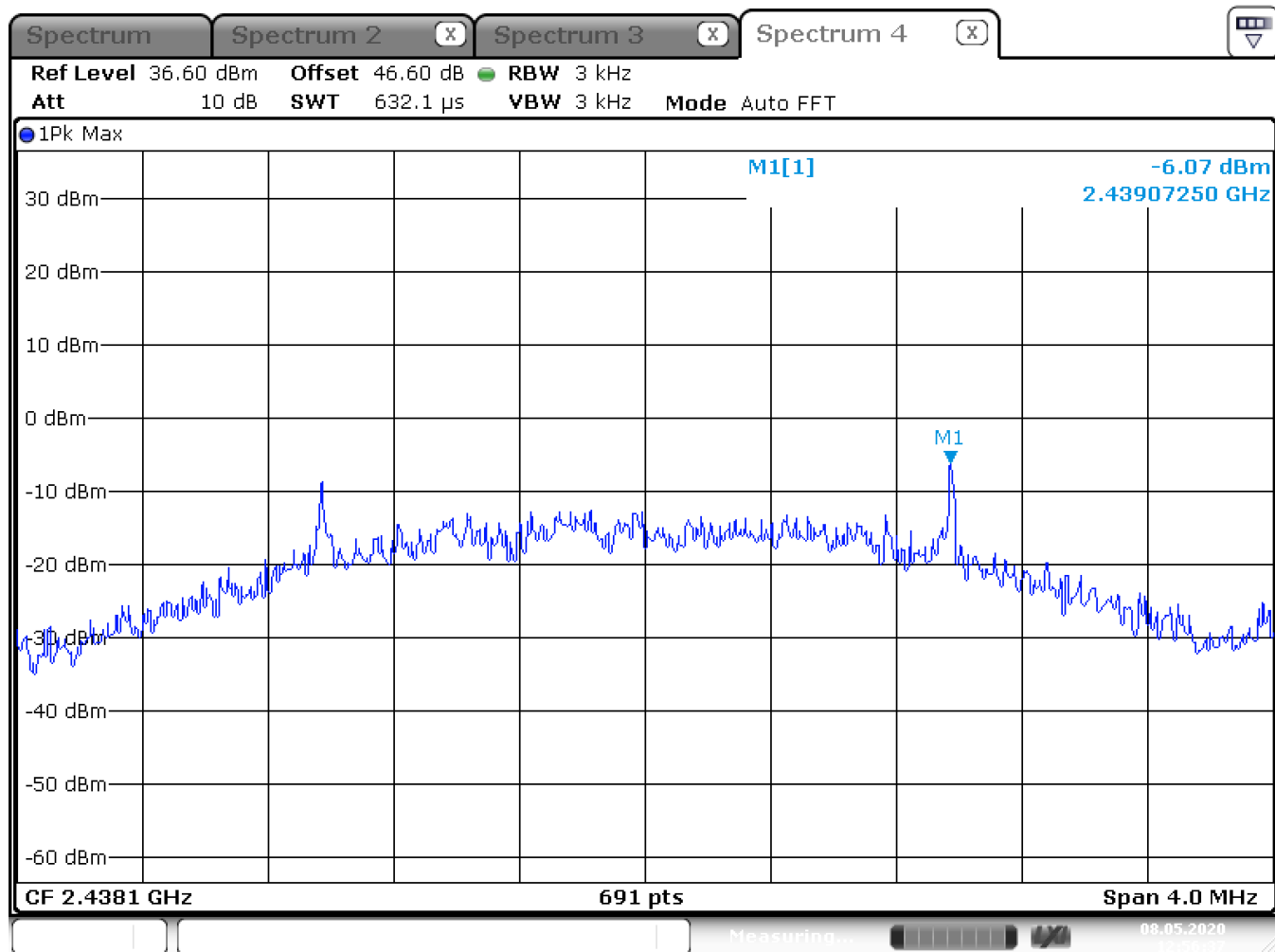
Test Equipment used: EMV-205

## Power spectral density

§ 15.247(e)  
5.2(2)

## Radiated Measurement

Rated output power: 8,51 mW Channel 9 (2438,1 MHz center frequency)



Date: 8.MAY.2020 12:56:37

Power Spectral density: -5,77 dBm @ 2439,073 MHz

**LIMIT SUBCLAUSE 15.247(e) – 5.2(2)**

|                             |                         |
|-----------------------------|-------------------------|
| Under normal test conditons | +8dBm in any 3 kHz band |
|-----------------------------|-------------------------|

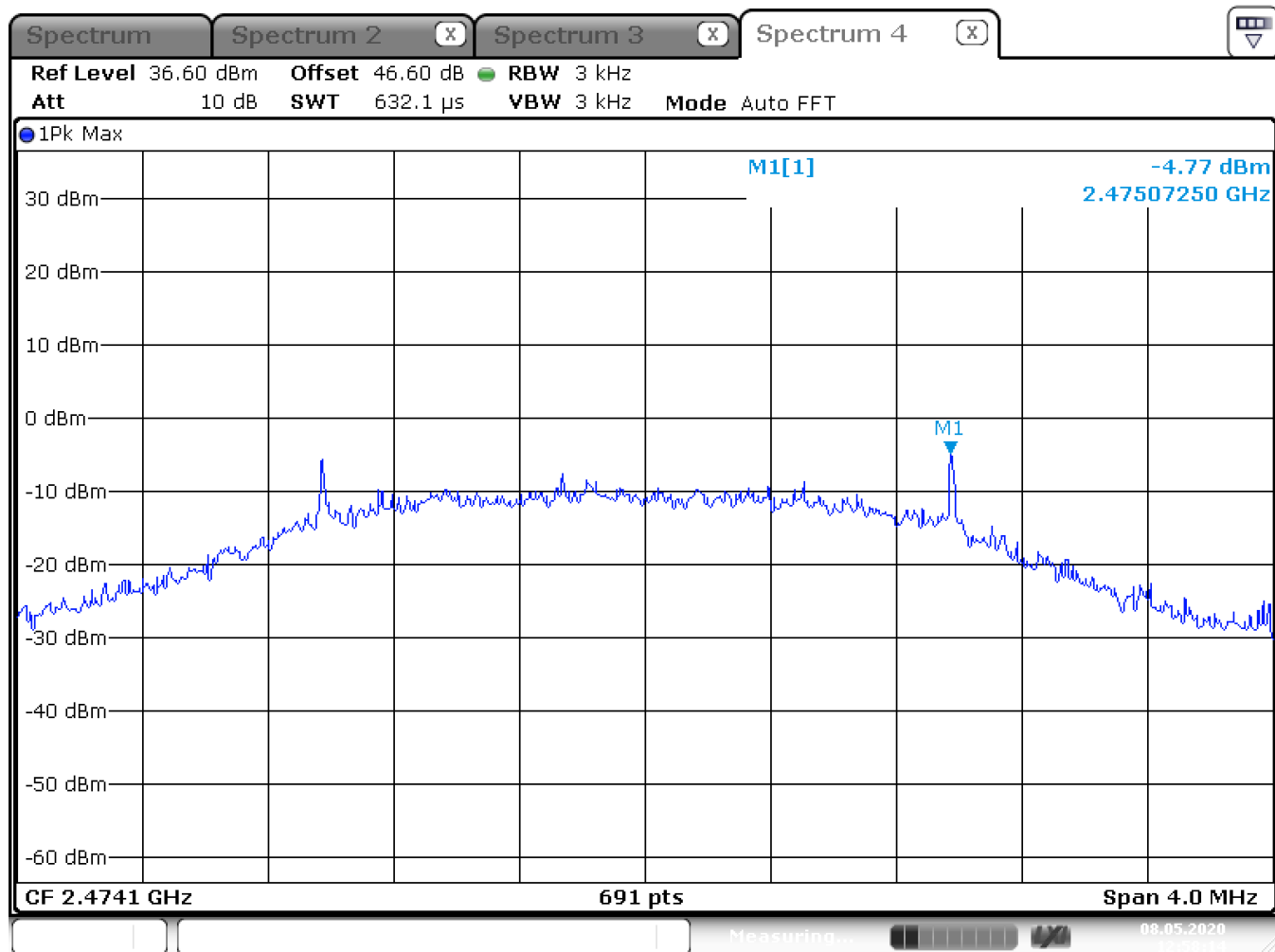
Test Equipment used: EMV-205

## Power spectral density

§ 15.247(e)  
5.2(2)

### Radiated Measurement

Rated output power: 8,51 mW Channel 18 (2474,1 MHz center frequency)



Date: 8.MAY.2020 12:58:15

Power Spectral density: -4,77 dBm @ 2475,073 MHz

**LIMIT** **SUBCLAUSE 15.247(e) – 5.2(2)**

|                             |                         |
|-----------------------------|-------------------------|
| Under normal test conditons | +8dBm in any 3 kHz band |
|-----------------------------|-------------------------|

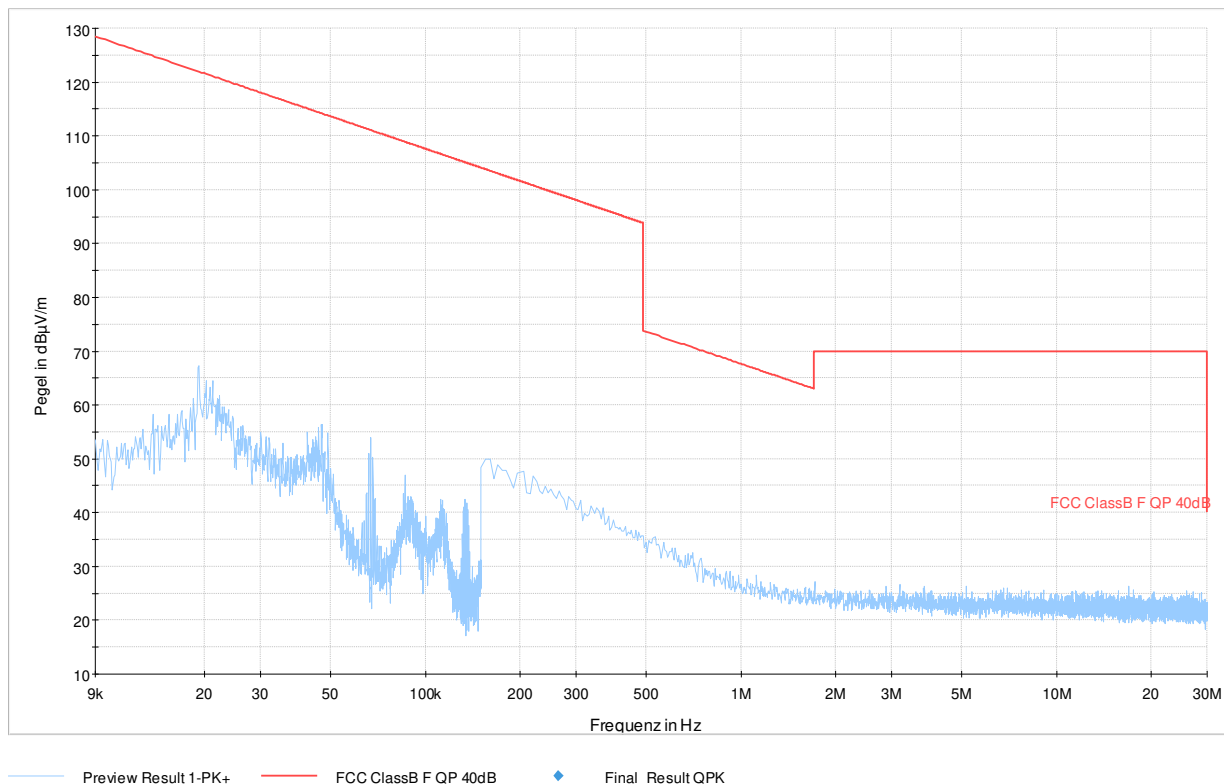
Test Equipment used: EMV-205

#### 4.6. Emissions in restricted bands Emissions falling within restricted frequency bands

§ 15.209(a)  
RSS-Gen

Measurement with Peak-Detector:

Setup: Transmitting, adaptive frequency selection active



Worst case emission: 66,9 dBµV/m @ 19,2 kHz

#### LIMIT

#### SUBCLAUSE 15.209(a) – RSS-Gen

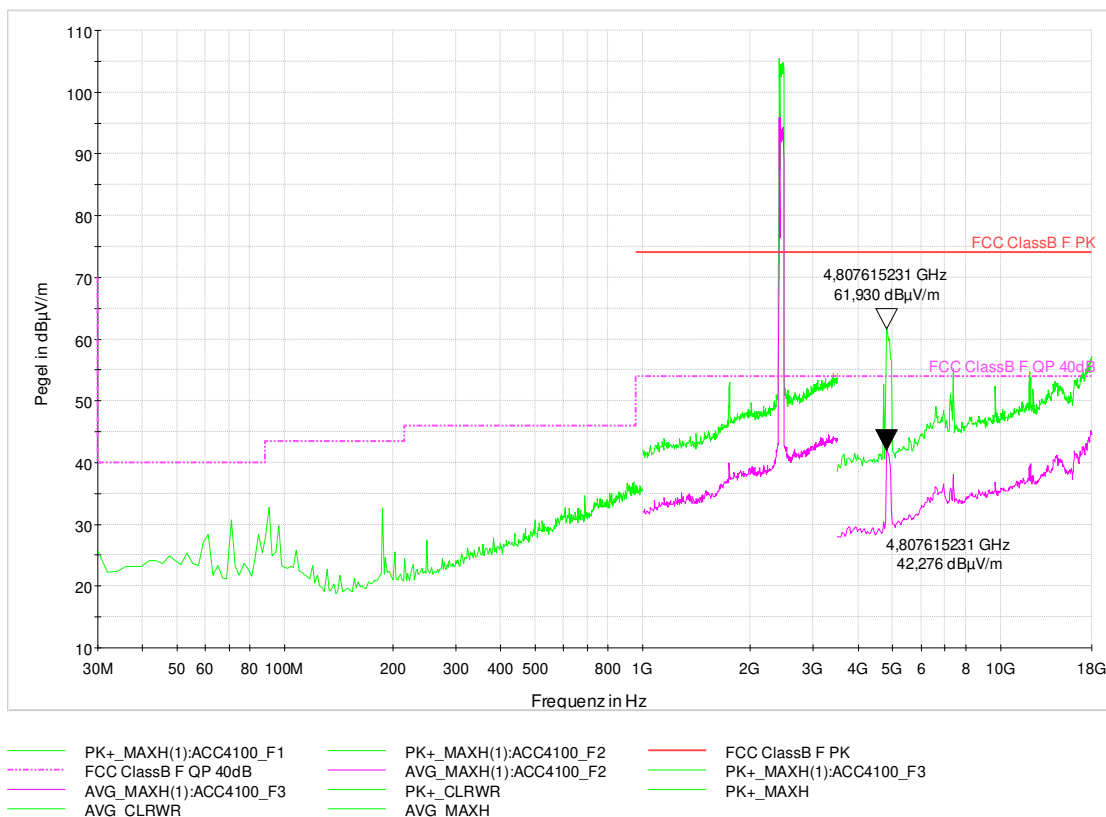
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            |
| 1.705-30.0      | 30                                | 30                            |
| 30-88           | 100**                             | 3                             |
| 88-216          | 150**                             | 3                             |
| 216-960         | 200**                             | 3                             |
| Above 960       | 500                               | 3                             |

Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112;  
EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Setup: Adaptive frequency selection enabled



Worst case emission: 42,28 dBµV/m average @ 4807,6 MHz

**LIMIT** **SUBCLAUSE 15.209(a) – RSS-Gen**

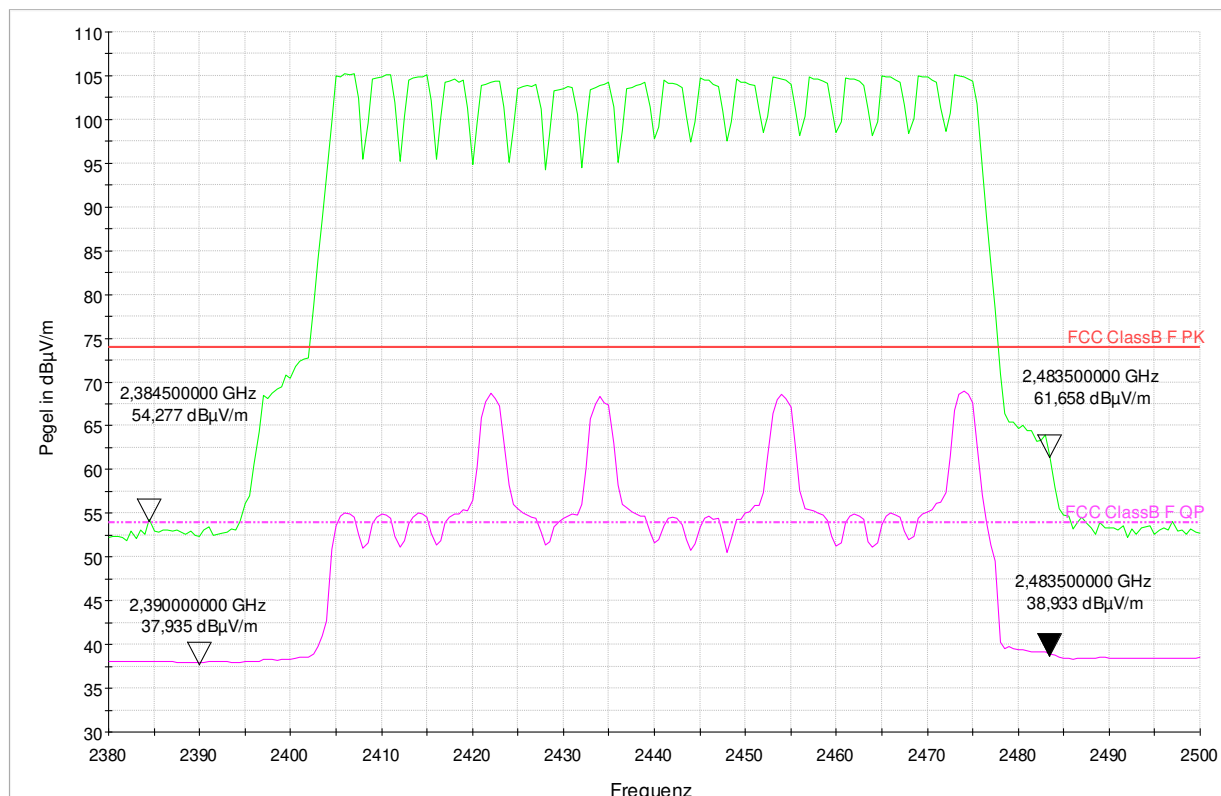
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            |
| 1.705-30.0      | 30                                | 30                            |
| 30-88           | 100**                             | 3                             |
| 88-216          | 150**                             | 3                             |
| 216-960         | 200**                             | 3                             |
| Above 960       | 500                               | 3                             |

Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112;  
EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**Emissions in restricted bands § 15.209(a)**  
**Emissions falling within restricted frequency bands RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: Adaptive frequency selection enabled



PK+\_MAXH(1):ACC4100\_Bandedge  
FCC ClassB F QP  
AVG\_CLRWR  
AVG\_MAXH(1):ACC4100\_Bandedge  
PK+\_CLRWR  
AVG\_MAXH  
FCC ClassB F PK  
PK+\_MAXH

**LIMIT SUBCLAUSE 15.209(a) – RSS-Gen**

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            |
| 1.705-30.0      | 30                                | 30                            |
| 30-88           | 100**                             | 3                             |
| 88-216          | 150**                             | 3                             |
| 216-960         | 200**                             | 3                             |
| Above 960       | 500                               | 3                             |

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

#### **4.7. Maximum permissible Exposure § 15.247(i)**

This kind of radio equipment is categorically excluded from routine environmental evaluation.

# Appendix 1

## Test equipment used

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-21/155

Page: 1 of 4

Date: 06.07.2021

|                          |                                                  |          |                          |                                                        |                    |
|--------------------------|--------------------------------------------------|----------|--------------------------|--------------------------------------------------------|--------------------|
| <input type="checkbox"/> | Anechoic Chamber with 3m measurement distance    | NT-100   | <input type="checkbox"/> | Power quality analyzer<br>Fluke 1760 (complete set)    | NT-160 -<br>NT-173 |
| <input type="checkbox"/> | Stripline<br>according to ISO 11452-5            | NT-108   | <input type="checkbox"/> | Spectrum analyzer – FSP7<br>9 kHz – 7 GHz              | NT-200             |
| <input type="checkbox"/> | MA4000 - Antenna mast<br>1 - 4 m height          | NT-110/1 | <input type="checkbox"/> | ESCI - Test receiver<br>9 kHz - 7 GHz                  | NT-203/1           |
| <input type="checkbox"/> | DS - Turntable<br>0 - 400 ° Azimuth              | NT-111/1 | <input type="checkbox"/> | ESR – Test receiver<br>20 Hz – 26,5 GHz                | NT-207/1           |
| <input type="checkbox"/> | CO3000 Controller<br>Mast+Turntable              | NT-112/1 | <input type="checkbox"/> | Digital Radio Tester<br>CMW500                         | NT-208/1           |
| <input type="checkbox"/> | HUF-Z3 - Log. Per. Antenna<br>200 - 1000 MHz     | NT-121   | <input type="checkbox"/> | Noise-gen., ITU-R 559-2<br>20 Hz – 20 kHz              | NT-209             |
| <input type="checkbox"/> | FMZB1513 - Loop Antenna<br>9 kHz - 30 MHz        | NT-122/1 | <input type="checkbox"/> | CMTA - Radiocommunication<br>analyzer ; 0,1 - 1000 MHz | NT-210             |
| <input type="checkbox"/> | HFH-Z6 - Rod Antenna<br>9 kHz - 30 MHz           | NT-123   | <input type="checkbox"/> | 3271 - Spectrum analyzer<br>100 Hz - 26,5 GHz          | NT-211             |
| <input type="checkbox"/> | 3121C - Dipole Antenna<br>28 - 1000 MHz          | NT-124   | <input type="checkbox"/> | Digital Radio Tester<br>Aeroflex 3920                  | NT-212/1           |
| <input type="checkbox"/> | 3115 - Horn Antenna<br>1 - 18 GHz (immunity)     | NT-125   | <input type="checkbox"/> | Mixer M28HW<br>26,5 GHz - 40 GHz                       | NT-214             |
| <input type="checkbox"/> | 3116 - Horn Antenna<br>18 - 40 GHz               | NT-126   | <input type="checkbox"/> | RubiSource T&M<br>Timing reference                     | NT-216             |
| <input type="checkbox"/> | SAS-200/543 - Bicon. Antenna<br>20 MHz - 300 MHz | NT-127   | <input type="checkbox"/> | Radiocommunication analyzer<br>SWR 1180 MD             | NT-217             |
| <input type="checkbox"/> | AT-1080 - Log. Per. Antenna<br>80 - 1000 MHz     | NT-128   | <input type="checkbox"/> | Mixer M19HWD<br>40 GHz – 60 GHz                        | NT-218             |
| <input type="checkbox"/> | HK-116 - bicon. Antenna<br>20 MHz - 300 MHz      | NT-129   | <input type="checkbox"/> | Mixer M12HWD<br>60 GHz – 90 GHz                        | NT-219             |
| <input type="checkbox"/> | HK-116 - bicon. Antenna<br>20 MHz - 300 MHz      | NT-130   | <input type="checkbox"/> | DSO9104<br>Digital scope                               | NT-220/1           |
| <input type="checkbox"/> | 3146 - Log. Per. Antenna<br>200 – 1000 MHz       | NT-131   | <input type="checkbox"/> | TPS 2014<br>Digital scope                              | NT-222             |
| <input type="checkbox"/> | VULB 9163 Trilog Antenna<br>30 – 3000 MHz        | NT-131/1 | <input type="checkbox"/> | Artificial Ear<br>according to IEC 60318               | NT-224             |
| <input type="checkbox"/> | Loop Antenna<br>H-Field                          | NT-132   | <input type="checkbox"/> | 1 kHz Sound calibrator                                 | NT-225             |
| <input type="checkbox"/> | Horn Antenna<br>500 MHz - 2900 MHz               | NT-133   | <input type="checkbox"/> | B10 - Harmonics and<br>flicker analyzer                | NT-232             |
| <input type="checkbox"/> | Horn Antenna<br>500 MHz - 6000 MHz               | NT-133/1 | <input type="checkbox"/> | SRM-3006<br>Spectrum analyzer                          | NT-233/1a          |
| <input type="checkbox"/> | Log. per. Antenna<br>800 MHz - 2500 MHz          | NT-134   | <input type="checkbox"/> | E-field probe SRM<br>75 MHz – 3 GHz                    | NT-234             |
| <input type="checkbox"/> | Log. per. Antenna<br>800 MHz - 2500 MHz          | NT-135   | <input type="checkbox"/> | Field Meter NBM-500<br>incl. E- and H-Field probes     | NT-240a-e          |
| <input type="checkbox"/> | BiConiLog Antenna<br>26 MHz – 2000 MHz           | NT-137   | <input type="checkbox"/> | Magnetometer<br>HP-01                                  | NT-241/1           |
| <input type="checkbox"/> | Conical Dipol Antenna<br>PCD8250                 | NT-138   | <input type="checkbox"/> | EFA-3<br>H-field- / E-field probe                      | NT-243             |
| <input type="checkbox"/> | HF 906 - Horn Antenna<br>1 - 18 GHz (emission)   | NT-139   | <input type="checkbox"/> | EHP-50F<br>H-field- / E-field probe                    | NT-243/1           |
| <input type="checkbox"/> | HZ-1<br>Antenna tripod                           | NT-150   | <input type="checkbox"/> | Field Meter EMR-200<br>100 kHz – 3 GHz                 | NT-244             |
| <input type="checkbox"/> | BN 1500<br>Antenna tripod                        | NT-151   | <input type="checkbox"/> | E-field probe<br>100 kHz – 3 GHz                       | NT-245             |
| <input type="checkbox"/> | Ant. tripod for EN61000-4-3<br>Model TP1000A     | NT-156   | <input type="checkbox"/> | H-field probe<br>300 kHz – 30 MHz                      | NT-246             |

# Appendix 1 (continued)

## Test equipment used

|                          |                                                       |             |                          |                                                    |          |
|--------------------------|-------------------------------------------------------|-------------|--------------------------|----------------------------------------------------|----------|
| <input type="checkbox"/> | E-field probe<br>3 MHz – 18 GHz                       | NT-247      | <input type="checkbox"/> | 500W1000M7 - RF-Amplifier<br>80 - 1000 MHz / 500 W | NT-332   |
| <input type="checkbox"/> | H-field probe<br>27 MHz – 1 GHz                       | NT-248      | <input type="checkbox"/> | AS0102-65R - RF-Amplifier<br>1 GHz - 2 GHz         | NT-333   |
| <input type="checkbox"/> | ELT-400<br>1 Hz – 400 kHz                             | NT-249      | <input type="checkbox"/> | APA01 – RF-Amplifier<br>0,5 GHz – 2,5 GHz          | NT-334   |
| <input type="checkbox"/> | MDS 21 - Absorbing clamp<br>30 - 1000 MHz             | NT-250      | <input type="checkbox"/> | Preamplifier<br>1 GHz - 4 GHz                      | NT-335   |
| <input type="checkbox"/> | FCC-203I<br>EM Injection clamp                        | NT-251      | <input type="checkbox"/> | Preamplifier for GPS<br>MKU 152 A                  | NT-336   |
| <input type="checkbox"/> | FCC-203I-DCN<br>Ferrite decoupling network            | NT-252      | <input type="checkbox"/> | Preamplifier<br>1 GHz – 18 GHz                     | NT-337/1 |
| <input type="checkbox"/> | PR50<br>Current Probe                                 | NT-253      | <input type="checkbox"/> | DC Block 10 MHz – 18 GHz<br>Model 8048             | NT-338   |
| <input type="checkbox"/> | i310s<br>Current Probe                                | NT-254/1    | <input type="checkbox"/> | 2-97201<br>Electronic load                         | NT-341   |
| <input type="checkbox"/> | Fluke 87 V<br>True RMS Multimeter                     | NT-260      | <input type="checkbox"/> | TSX3510P - Power supply<br>0-30 V / 0 - 10 A       | NT-344   |
| <input type="checkbox"/> | Model 2000<br>Digital Multimeter                      | NT-261      | <input type="checkbox"/> | TSX3510P - Power supply<br>0-30 V / 0 - 10 A       | NT-345   |
| <input type="checkbox"/> | Fluke 87 V<br>Digital Multimeter                      | NT-262/1    | <input type="checkbox"/> | VDS 200<br>Mobil-impuls-generator                  | NT-350   |
| <input type="checkbox"/> | ESH2-Z5-U1 Artificial mains<br>network 4x25A          | NT-300      | <input type="checkbox"/> | LD 200<br>Mobil-impuls-generator                   | NT-351   |
| <input type="checkbox"/> | ESH3-Z5-U1 Artificial mains<br>network 2x10A          | NT-301      | <input type="checkbox"/> | MPG 200<br>Mobil-Impuls-Generators                 | NT-352   |
| <input type="checkbox"/> | ESH3-Z6-U1 Artificial mains<br>network 1x100A         | NT-302      | <input type="checkbox"/> | EFT 200<br>Mobil-impuls-generator                  | NT-353   |
| <input type="checkbox"/> | ESH3-Z6-U1 Artificial mains<br>network 1x100A         | NT-302a     | <input type="checkbox"/> | AN 200 S1<br>Artificial Network                    | NT-354   |
| <input type="checkbox"/> | PHE 4500/B<br>Power amplifier                         | NT-304      | <input type="checkbox"/> | FP-EFT 32M<br>3 ph. Coupling filter (Burst)        | NT-400/1 |
| <input type="checkbox"/> | EZ10<br>T-Artificial Network                          | NT-305      | <input type="checkbox"/> | PHE 4500 - Mains impedance<br>network              | NT-401   |
| <input type="checkbox"/> | SMG - Signal generator<br>0,1 - 1000 MHz              | NT-310      | <input type="checkbox"/> | IP 6.2 Coupling filter for<br>data lines (Surge)   | NT-403   |
| <input type="checkbox"/> | SMA100A - Signal generator<br>9 kHz - 6 GHz           | NT-310/1    | <input type="checkbox"/> | TK 9421 High Power Volt. Probe<br>150 kHz - 30 MHz | NT-409   |
| <input type="checkbox"/> | RefRad<br>Reference generator                         | NT-312      | <input type="checkbox"/> | ESH2-Z3 - Probe<br>9 kHz - 30 MHz                  | NT-410   |
| <input type="checkbox"/> | SMP 02 Signal generator<br>10 MHz - 20 GHz            | NT-313      | <input type="checkbox"/> | IP 4 - Capacitive clamp<br>(Burst)                 | NT-411   |
| <input type="checkbox"/> | 40 MHz Arbitrary Generator<br>TGA1241                 | NT-315      | <input type="checkbox"/> | Highpass-Filter<br>100 MHz – 3 GHz                 | NT-412   |
| <input type="checkbox"/> | Artificial mains network<br>NSLK 8127-PLC             | NT-316      | <input type="checkbox"/> | Highpass-Filter<br>600 MHz – 4 GHz                 | NT-413   |
| <input type="checkbox"/> | PSURGE 4.1<br>Surge generator                         | NT-324      | <input type="checkbox"/> | Highpass-Filter<br>1250 MHz – 4 GHz                | NT-414   |
| <input type="checkbox"/> | IMU4000<br>Immunity test system                       | NT-325/1    | <input type="checkbox"/> | Highpass-Filter<br>1800 MHz – 16 GHz               | NT-415   |
| <input type="checkbox"/> | VCS 500-M6<br>Surge-Generator                         | NT-326      |                          |                                                    |          |
| <input type="checkbox"/> | Oscillatory Wave Simulator incl.<br>Coupling networks | NT-328a+b+c |                          |                                                    |          |
| <input type="checkbox"/> | BTA-250 - RF-Amplifier<br>9 kHz - 220 MHz / 250 W     | NT-330      |                          |                                                    |          |
| <input type="checkbox"/> | T82-50 RF-Amplifier<br>2 GHz – 8 GHz                  | NT-331      |                          |                                                    |          |

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## Appendix 1 (continued)

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|                          |                                                |          |                                       |                                                       |                    |
|--------------------------|------------------------------------------------|----------|---------------------------------------|-------------------------------------------------------|--------------------|
|                          |                                                |          | <b>Division:</b><br>Industry & Energy |                                                       |                    |
| <input type="checkbox"/> | Highpass-Filter<br>3500 MHz – 18 GHz           | NT-416   | <input type="checkbox"/>              | FCC-801-AF10<br>Coupling decoupling network           | NT-461             |
| <input type="checkbox"/> | RF-Attenuator 10 dB<br>DC – 18 GHz / 50 W      | NT-417/1 | <input type="checkbox"/>              | FCC-801-S25<br>Coupling decoupling network            | NT-462             |
| <input type="checkbox"/> | RF-Attenuator 6 dB<br>DC – 18 GHz / 50 W       | NT-418   | <input type="checkbox"/>              | FCC-801-T4<br>Coupling decoupling network             | NT-463             |
| <input type="checkbox"/> | RF-Attenuator 3 dB<br>DC – 18 GHz / 50 W       | NT-419   | <input type="checkbox"/>              | FCC-801-C1<br>Coupling decoupling network             | NT-464             |
| <input type="checkbox"/> | RF-Attenuator 20 dB<br>DC - 1000 MHz / 25 W    | NT-421   | <input type="checkbox"/>              | SW 9605 - Current probe<br>150 kHz – 30 MHz           | NT-465/1           |
| <input type="checkbox"/> | RF-Attenuator 30 dB<br>DC - 1000 MHz / 1 W     | NT-423   | <input type="checkbox"/>              | 95242-1 – Current probe<br>1 MHz – 400 MHz            | NT-468             |
| <input type="checkbox"/> | RF-Attenuator<br>30 dB                         | NT-424   | <input type="checkbox"/>              | 94106-1L-1 – Current probe<br>100 kHz – 450 MHz       | NT-471             |
| <input type="checkbox"/> | RF-Attenuator 6 dB<br>DC - 1000 MHz / 1 W      | NT-425   | <input type="checkbox"/>              | GA 1240 Power amplifier<br>according to EN 61000-4-16 | NT-480             |
| <input type="checkbox"/> | RF-Attenuator 6 dB<br>DC - 1000 MHz / 1 W      | NT-426   | <input type="checkbox"/>              | Coupling networks<br>according to EN 61000-4-16       | NT-481 -<br>NT-483 |
| <input type="checkbox"/> | RF-Attenuator<br>6 dB                          | NT-428   | <input type="checkbox"/>              | Van der Hoofden Test Head                             | NT-484             |
| <input type="checkbox"/> | RF-Attenuator<br>0 dB - 81 dB                  | NT-429   | <input type="checkbox"/>              | EMC Video/Audiosystem                                 | NT-511/1           |
| <input type="checkbox"/> | WRU 27 - Band blocking<br>27 MHz               | NT-430   | <input type="checkbox"/>              | ES-K1 Version 1.71 SP2<br>Test software               | NT-520             |
| <input type="checkbox"/> | WHJ450C9 AA - High pass<br>450 MHz             | NT-431   | <input type="checkbox"/>              | EMC32 Version 10.60.20<br>Test software               | NT-520/1           |
| <input type="checkbox"/> | WHJ250C9 AA - High pass<br>250 MHz             | NT-432   | <input type="checkbox"/>              | SRM-TS Version 1.3<br>software for SRM-3000           | NT-522             |
| <input type="checkbox"/> | RF-Load<br>150 W                               | NT-433   | <input type="checkbox"/>              | SRM-TS Version 1.3.1<br>software for SRM-3006         | NT-522/1           |
| <input type="checkbox"/> | Impedance transducer<br>1:4 ; 1:9 ; 1:16       | NT-435   | <input type="checkbox"/>              | Spitzenberger und Spies<br>Test software V4.1         | NT-525             |
| <input type="checkbox"/> | RF-Attenuator DC – 18 GHz<br>6 dB              | NT-436   | <input type="checkbox"/>              | Noise power test apparatus<br>according to EN 55014   | NT-530             |
| <input type="checkbox"/> | RF-Attenuator DC – 18 GHz<br>6 dB              | NT-437   | <input type="checkbox"/>              | Vertical coupling plane<br>(ESD)                      | NT-531             |
| <input type="checkbox"/> | RF-Attenuator DC – 18 GHz<br>10 dB             | NT-438   | <input type="checkbox"/>              | Test cable #4<br>for EN 61000-4-6                     | NT-553             |
| <input type="checkbox"/> | RF-Attenuator DC – 18 GHz<br>20 dB             | NT-439   | <input type="checkbox"/>              | Test cable #3<br>for conducted emission               | NT-554             |
| <input type="checkbox"/> | I+P 7780 Directional coupler<br>100 - 2000 MHz | NT-440   | <input type="checkbox"/>              | Test cable #5+#6<br>ESD-cable (2x470k)                | NT-555 +<br>NT-556 |
| <input type="checkbox"/> | ESH3-Z2 - Pulse limiter<br>9 kHz - 30 MHz      | NT-441   | <input type="checkbox"/>              | Test cable #8<br>Sucoflex 104EA                       | NT-559             |
| <input type="checkbox"/> | Power Divider<br>6 dB/1 W/50 Ohm               | NT-443   | <input type="checkbox"/>              | Test cable #9<br>(for outdoor measurements)           | NT-580             |
| <input type="checkbox"/> | Directional coupler<br>0,1 MHz – 70 MHz        | NT-444   | <input type="checkbox"/>              | Test cable #10<br>(for outdoor measurements)          | NT-581             |
| <input type="checkbox"/> | Directional coupler<br>0,1 MHz – 70 MHz        | NT-445   | <input type="checkbox"/>              | Test cable #13<br>Sucoflex 104PE                      | NT-584             |
| <input type="checkbox"/> | Tube imitations<br>according to EN 55015       | NT-450   | <input type="checkbox"/>              | Test cable #21<br>for SRM-3000                        | NT-592             |
| <input type="checkbox"/> | FCC-801-M3-16A<br>Coupling decoupling network  | NT-458   | <input type="checkbox"/>              | Shield chamber                                        | NT-600             |
| <input type="checkbox"/> | FCC-801-M2-50A<br>Coupling decoupling network  | NT-459   | <input type="checkbox"/>              | Climatic chamber                                      | M-1200             |
| <input type="checkbox"/> | FCC-801-M5-25<br>Coupling decoupling network   | NT-460   |                                       |                                                       |                    |

## Appendix 1 (continued)

### Test equipment used

|                          |                                                     |                     |                          |                                                   |                 |
|--------------------------|-----------------------------------------------------|---------------------|--------------------------|---------------------------------------------------|-----------------|
| <input type="checkbox"/> | Anechoic Chamber<br>3 m / 5 m measuring distance    | EMV-100             | <input type="checkbox"/> | Log.per Antenna 0,7 – 9 GHz<br>STLP9149           | EMV-305         |
| <input type="checkbox"/> | Turntabel<br>6 m diameter                           | EMV-101             | <input type="checkbox"/> | HF- Amplifier 9 kHz-250 MHz<br>BBA150 (low noise) | EMV-306         |
| <input type="checkbox"/> | Antenna mast + controller                           | EMV-102+<br>EMV-103 | <input type="checkbox"/> | ISO11451-2 TLS<br>10 kHz – 30 MHz                 | EMV-307         |
| <input type="checkbox"/> | EMC Video/Audiosystem                               | EMV-104             | <input type="checkbox"/> | Load Dump Generator<br>LD 200N                    | EMV-350         |
| <input type="checkbox"/> | EMC Software<br>EMC32 Version 10.60.20              | EMV-105             | <input type="checkbox"/> | Ultra Compact Symulator<br>UCS 200N100            | EMV-351         |
| <input type="checkbox"/> | Hornantenna 1 – 18 GHz<br>HF 907                    | EMV-110             | <input type="checkbox"/> | Automotive Power fail module<br>PFM 200N100.1     | EMV-352         |
| <input type="checkbox"/> | Antennapre.amp. 1 – 18 GHz<br>ERZ-LNA0200-1800-30-2 | EMV-111             | <input type="checkbox"/> | Voltage Drop Symulator<br>VDS 200Q100             | EMV-353         |
| <input type="checkbox"/> | Trilog Antenna 30-3000 MHz<br>VULB9163              | EMV-112             | <input type="checkbox"/> | Arb. Generator<br>AutoWave                        | EMV-354         |
| <input type="checkbox"/> | Monopol 9 kHz – 30 MHz<br>VAMP 9243                 | EMV-113             | <input type="checkbox"/> | Ultra Compact Symulator<br>UCS 500N7              | EMV-355         |
| <input type="checkbox"/> | Antennapre.amp 18 – 40 GHz<br>BBV 9721              | EMV-114             | <input type="checkbox"/> | Coupling decoupling network<br>CNI 503B7 / 32 A   | EMV-356         |
| <input type="checkbox"/> | Hornantenna 200 – 2000 MHz<br>AH-220                | EMV-115             | <input type="checkbox"/> | Coupling decoupling network<br>CNI 503B7 / 63 A   | EMV-357         |
| <input type="checkbox"/> | DC Artificial Network<br>PVDC 8300                  | EMV-150             | <input type="checkbox"/> | Telecom Surge Generator<br>TSurge 7               | EMV-358         |
| <input type="checkbox"/> | AC Artificial Network<br>NNLK 8121 RC               | EMV-151             | <input type="checkbox"/> | Coupling decoupling network<br>CNI 508N2          | EMV-359         |
| <input type="checkbox"/> | EMI Receiver<br>ESW44                               | EMV-200/1           | <input type="checkbox"/> | Coupling decoupling network<br>CNV 504N2.2        | EMV-360         |
| <input type="checkbox"/> | Signalgenerator 9 kHz – 40 GHz<br>N5173B            | EMV-201             | <input type="checkbox"/> | Immunity generator<br>NSG4060/NSG4060-1           | EMV-361         |
| <input type="checkbox"/> | GPS Frequency normal<br>B-88                        | EMV-202             | <input type="checkbox"/> | Coupling network<br>CDND M316-2                   | EMV-362         |
| <input type="checkbox"/> | DC Power supply<br>N5745A                           | EMV-203             | <input type="checkbox"/> | Coupling network<br>CT419-5                       | EMV-363         |
| <input type="checkbox"/> | Spektrum Analyzator<br>FSV40                        | EMV-205             | <input type="checkbox"/> | ESD Generator<br>NSG 437                          | EMV-364         |
| <input type="checkbox"/> | Thd Multimeter<br>Model 2015                        | EMV-206             | <input type="checkbox"/> | Pulse Limiter<br>VTSD 9561-F BNC                  | EMV-405         |
| <input type="checkbox"/> | Poweramplifier<br>PAS15000                          | EMV-<br>207/abc     | <input type="checkbox"/> | Transient emission<br>BSM200N40+BS200N100         | EMV-<br>450+451 |
| <input type="checkbox"/> | Inrush Current Source                               | EMV-<br>208/abc     | <input type="checkbox"/> | Cap. Coupling Clamp<br>HFK                        | EMV-455         |
| <input type="checkbox"/> | Arb.-generator<br>Sycore                            | EMV-209             | <input type="checkbox"/> | Mag. Field System<br>MS100N+MC26100+MC2630        | EMV-<br>456-458 |
| <input type="checkbox"/> | Harmonics/Flicker analyzer<br>ARS 16/3              | EMV-210             | <input type="checkbox"/> | Coupling network<br>CDN M2-100A                   | EMV-459         |
| <input type="checkbox"/> | HF- Amplifier 9 kHz-225 MHz<br>BBL200               | EMV-300/1           | <input type="checkbox"/> | Coupling network<br>CDN M3-32A                    | EMV-460         |
| <input type="checkbox"/> | HF- Amplifier 80 -1000 MHz<br>BBA150                | EMV-301             | <input type="checkbox"/> | Coupling network<br>CDN M5-100A                   | EMV-461         |
| <input type="checkbox"/> | HF- Amplifier 0,8 - 6 GHz<br>BBA150                 | EMV-302             | <input type="checkbox"/> | Current Clamp<br>CIP 9136A                        | EMV-462         |
| <input type="checkbox"/> | High Power Ant. 20-200 MHz<br>HPBA-2510             | EMV-303/1           | <input type="checkbox"/> | DC Artificial Network<br>HV-AN 150                | EMV-<br>464+465 |
| <input type="checkbox"/> | Log.per Antenna 80-2700 MHz<br>STLP 9128 E special  | EMV-304             | <input type="checkbox"/> | Coupling Clamp<br>EM 101                          | EMV-466         |
|                          |                                                     |                     | <input type="checkbox"/> | Decoupling Clamp<br>FTC 101                       | EMV-467         |
|                          |                                                     |                     | <input type="checkbox"/> | Power attenuator<br>10 dB / 250 Watt              | EMV-469/2       |

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## Appendix 2 Photodocumentation

Description: Total view #2

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## Appendix 2 Photodocumentation

Description: Total view #3

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## Appendix 2 Photodocumentation

Description: Case opened

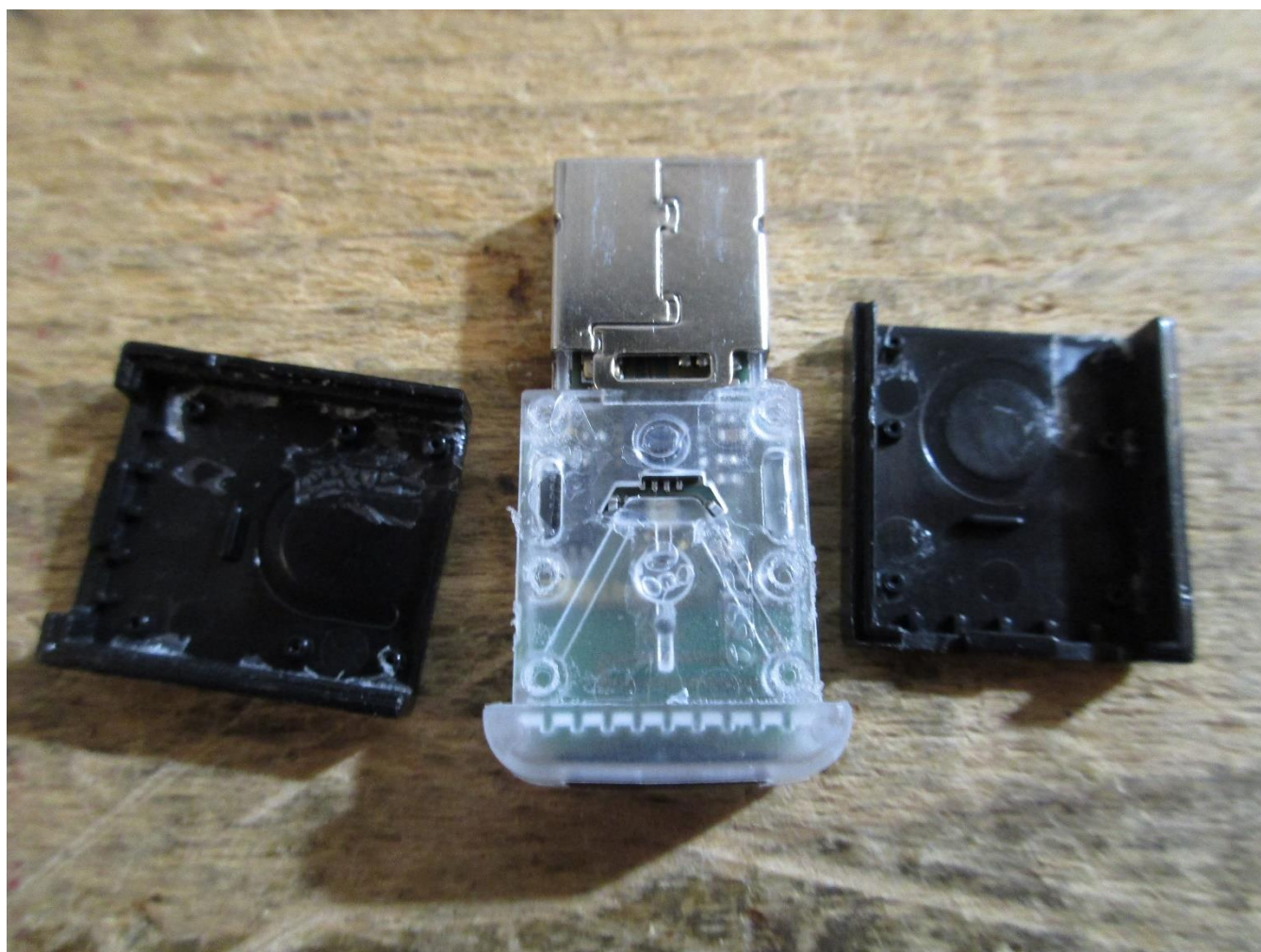
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## Appendix 2 Photodocumentation

Description: PCB view #1

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## Appendix 2 Photodocumentation

Description: PCB view #2

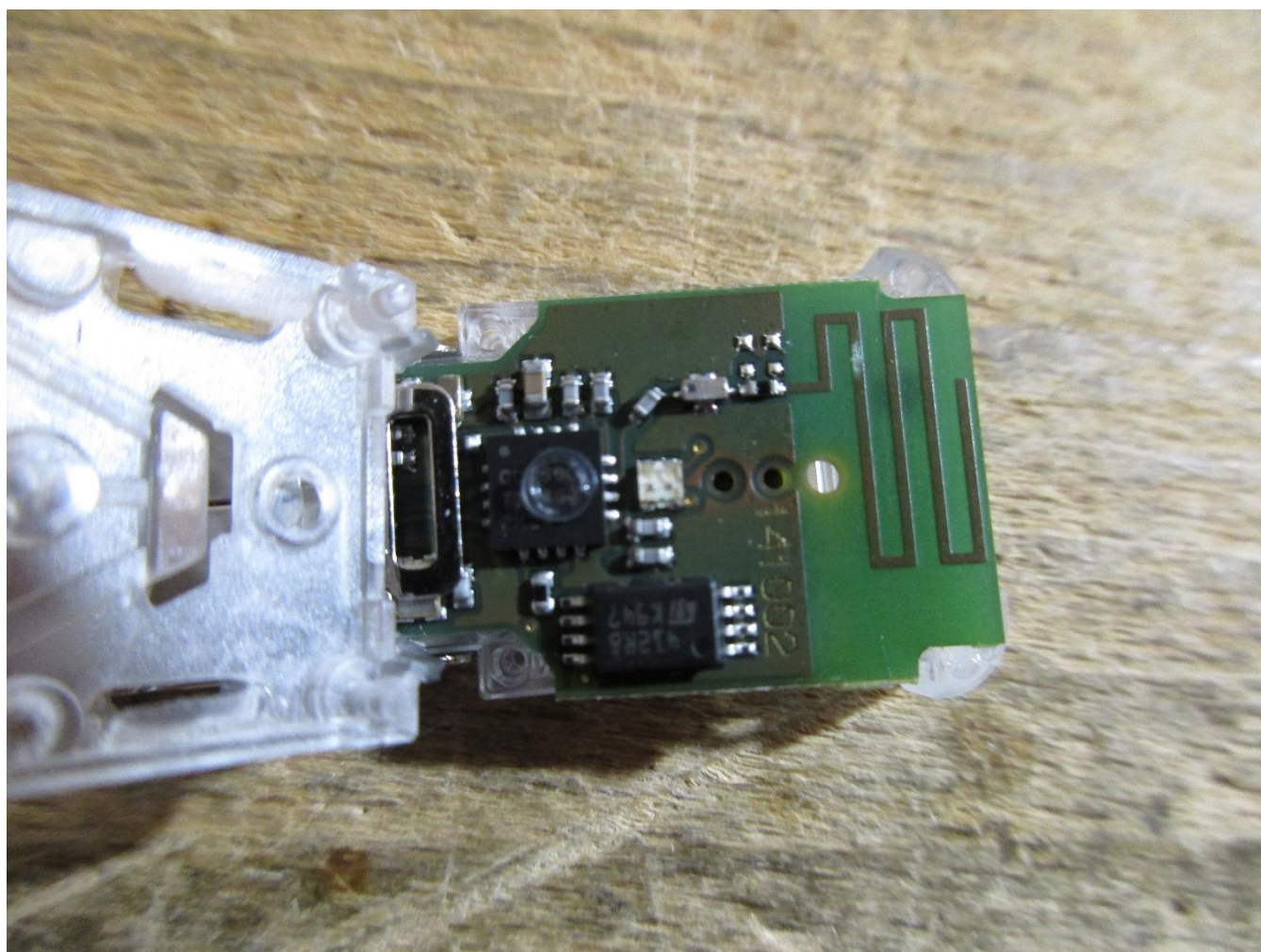
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## Appendix 2

### Photodocumentation

Description: Test setup in the anechoic chamber

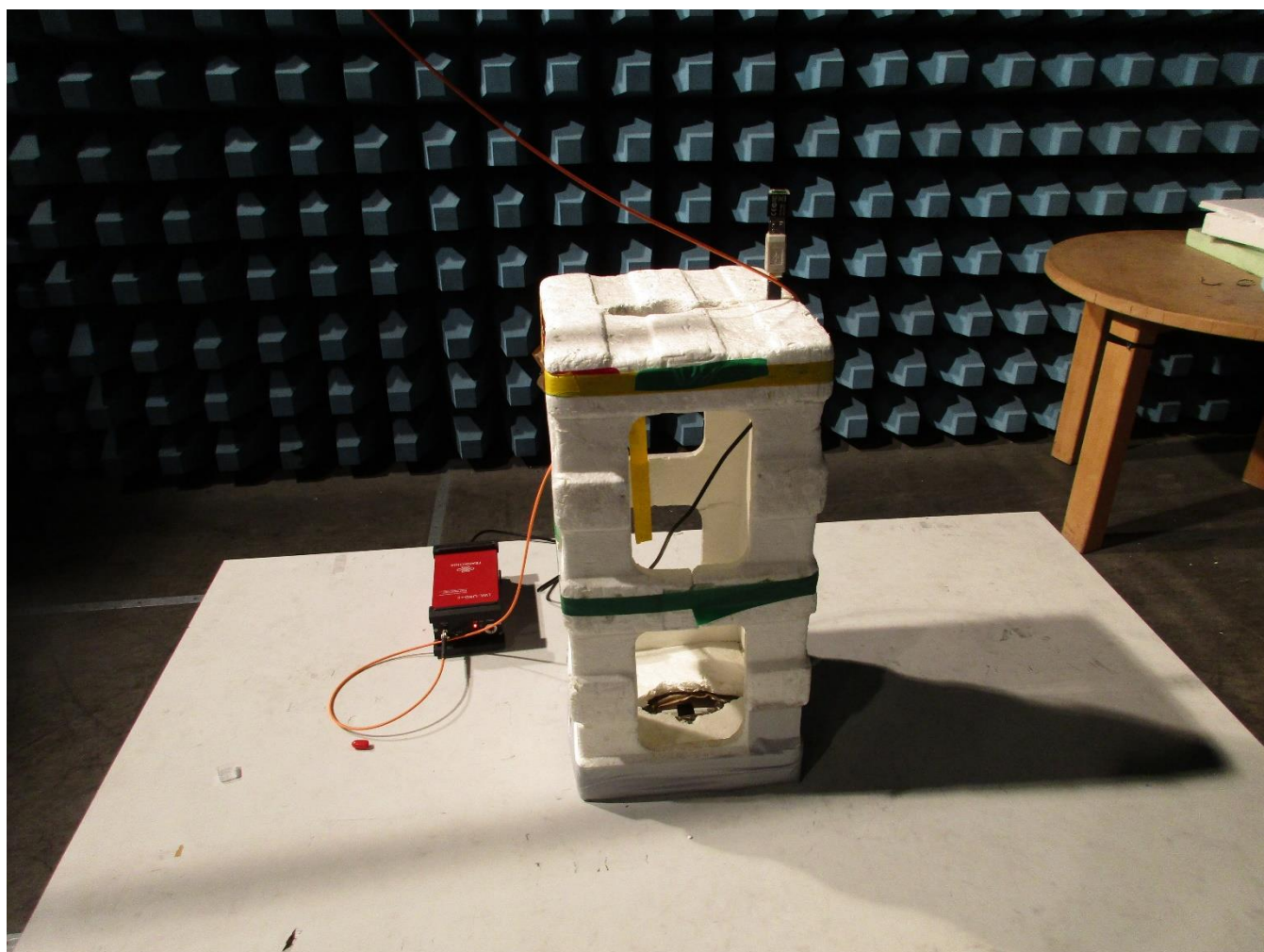
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## Appendix 2

### Photodocumentation

Description: Test setup below 30 MHz

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## Appendix 2

### Photodocumentation

Description: Test setup 30 MHz – 1 GHz

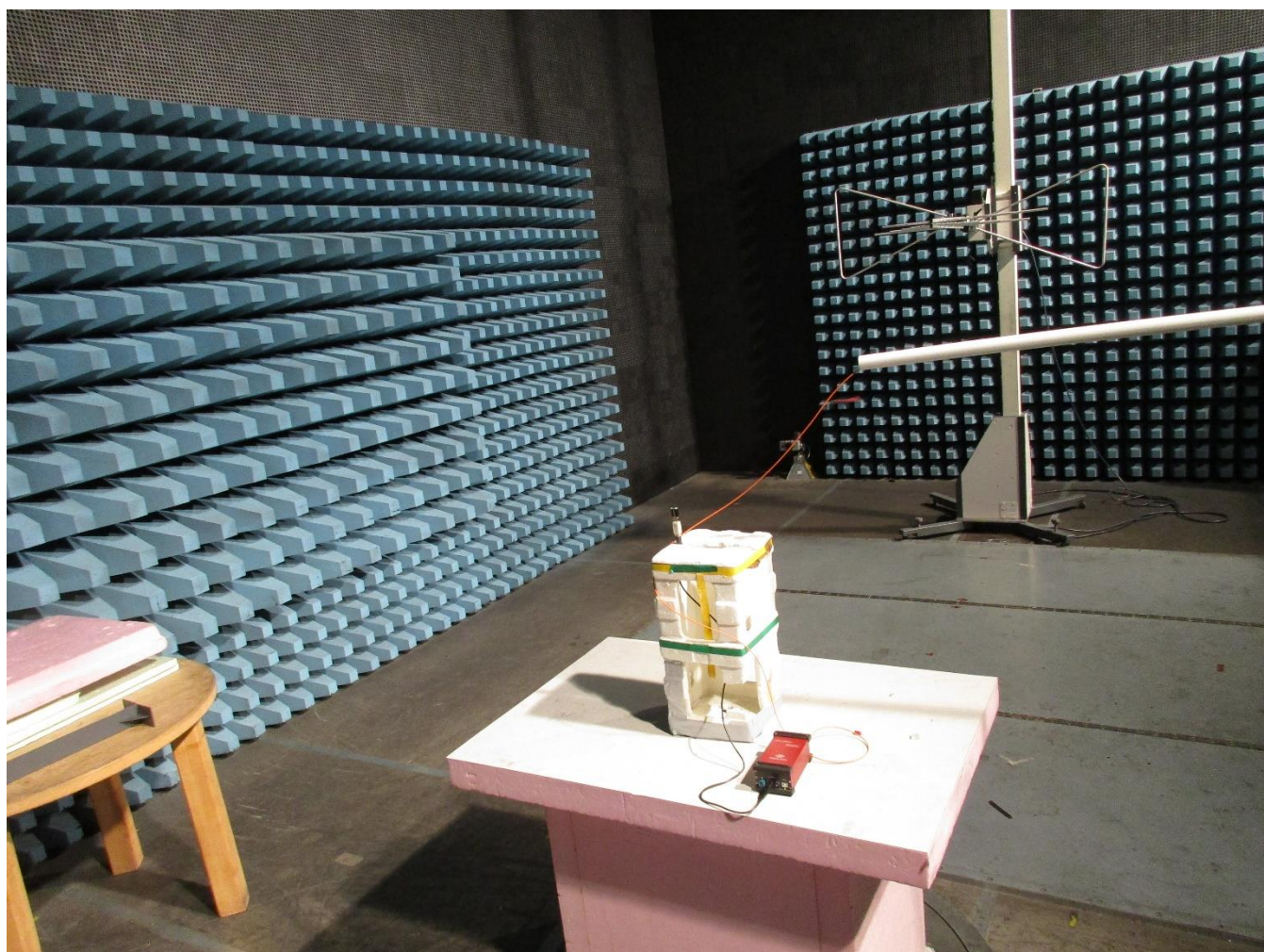
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## Appendix 2

### Photodocumentation

Description: Test setup above 1 GHz

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