

**TEST REPORT**  
of the accredited test laboratory

TÜV Nr.:INE-AT/FG-18/173

TÜV AUSTRIA  
SERVICES GMBHOffice:  
Deutschstrasse 10  
1230 Vienna/Austria  
T: +43 5 0454-0  
F: +43 5 0454-6505  
E: pzw@tuv.at  
W: www.tuv.atBusiness Area  
Industry & Energy  
Austria

Technik

**Applicant:** AKG Acoustics GmbH  
Salzgasse 2  
5400 Hallein, Austria

**Tested Product:** Digital wireless microphone receiver,  
Model: DMS100-SR100

**FCC-ID:** API-SR100

**IC-ID:** 6132A-SR100

**Manufacturer:** VTech Communications Ltd.  
Xia Ling Bei Management Zone, Liaobu, Dongguan,  
Guangdong Province  
523411 China

**Output power / field strength:** 4,47 mW cond. **power supply:** 100 - 240 V AC

**Frequency range:** 2402 - 2480 MHz **Channel separation:** 1 MHz

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

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Certification Body,  
Calibration Laboratory,  
VerifizierungsstelleNotified Body 0408  
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BIC RZBAATWWVAT ATU63240488  
DVR 3002476**TUV Austria Services GmbH**  
**Test laboratory for EMC**

Supervisor of EMC-laboratory:

  
Ing. Wilhelm Seier

16.11.2018

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checked by:

  
Ing. Michael Emminger

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

## Contents

|          | Designation                                             | PAGE  |
|----------|---------------------------------------------------------|-------|
| 1.       | Applicant                                               | 3     |
| 2.       | Description of EUT                                      | 4     |
| 3.       | Standards / Final result                                | 5     |
| 4.       | Test results                                            |       |
|          | List of measurements according to 47 CFR 15 and RSS-247 |       |
| 4.1      | Test object data                                        | 6     |
| 4.2      | Number of channels and channel spacing                  | 7     |
| 4.3      | 6 dB Bandwidth                                          | 8-10  |
| 4.4      | Maximum Peak RF Power Output (eirp)                     | 11    |
| 4.5      | Power Spectral Density                                  | 12-14 |
| 4.6      | Out-of-band Emissions                                   | 15    |
| 4.7      | Emissions in restricted bands                           | 16-20 |
| 4.8      | Maximum permissible exposure                            | 21    |
| Appendix | Designation                                             | PAGES |
| 1        | Test equipment used                                     | 4     |
| 2        | Photodocumentation                                      | 16    |

## 1. Applicant

**Company:** AKG Acoustics GmbH

**Department:** R&D

**Address:** Salzgasse 2  
5400 Hallein, Austria

**Contact person:** Mr. Gabor Mikovics

**EUT received on:** 16.10.2018

**Tests were performed on:** 09.11. till 14.11.2018

## 2. Description of EUT

|                                                   |                                                                                                                                 |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT:</b>                                       | Digital wireless microphone receiver,<br>Model: DMS100-SR100                                                                    |
| <b>Serial Number:</b>                             | Prototype                                                                                                                       |
| <b>Manufacturer:</b>                              | AKG Acoustics GmbH<br>Salzgasse 2<br>5400 Hallein, Austria                                                                      |
| <b>Description:</b>                               | AKG Acoustics GmbH provided the following configuration for the measurements:<br><br>Prototype                                  |
| <b>Operating mode:</b>                            | The measurements were carried out at the following running states:<br><br>test-firmware running, transmitting continuously      |
| <b>Technical data EUT:</b>                        | Rated voltage: 100 – 240 VAC<br>Rated current: 36mA<br>Rated frequency: 50-60Hz<br><br>Mains voltage during the tests: 110 V AC |
| <b>Climatic conditions in the emc laboratory:</b> | Relative humidity: 54%<br>Temperature: 23°C                                                                                     |

### 3. Standards / Final result

| Name                                                                                                    | Title                                                                                                                        | Deviation | Result |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------|--------|
| Title 47 CFR Part 15<br>October 1 <sup>st</sup> 2017 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 wireless microphone receiver is working together with wireless microphone hand-held and body-worn transceivers. In fact this receiver is a transceiver, because the communication link on the 2.4 GHz frequency band is bidirectional.

2.1033 (c) Technical description

2.1033 (4) Type of emission: 653KF1D – Channel spacing 1 MHz

2.1033 (5) Frequency range: 2402 to 2480 MHz (channel center frequencies).

2.1033 (6) Power range and Controls: The maximum peak output power is 4,47 mW and there is no power regulation.

2.1033 (7) Maximum output power rating: 4,47 mW.

2.1033 (8) AC Voltage and Current: 3V AC from internal battery  
maximum current consumption: 36 mA

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

Worst case Spurious Emissions: 31,5 dBµV/m Quasipeak.

Tests were performed November 9<sup>th</sup> till November 13<sup>th</sup> 2018.

#### **4.2. Number of channels and channel spacing**

**§ 2.1033**

Conducted Measurement

Rated output power: 4,47 mW

There are 79 Channels used, starting at 2402 till 2480 MHz each separated by 1 MHz channel spacing.

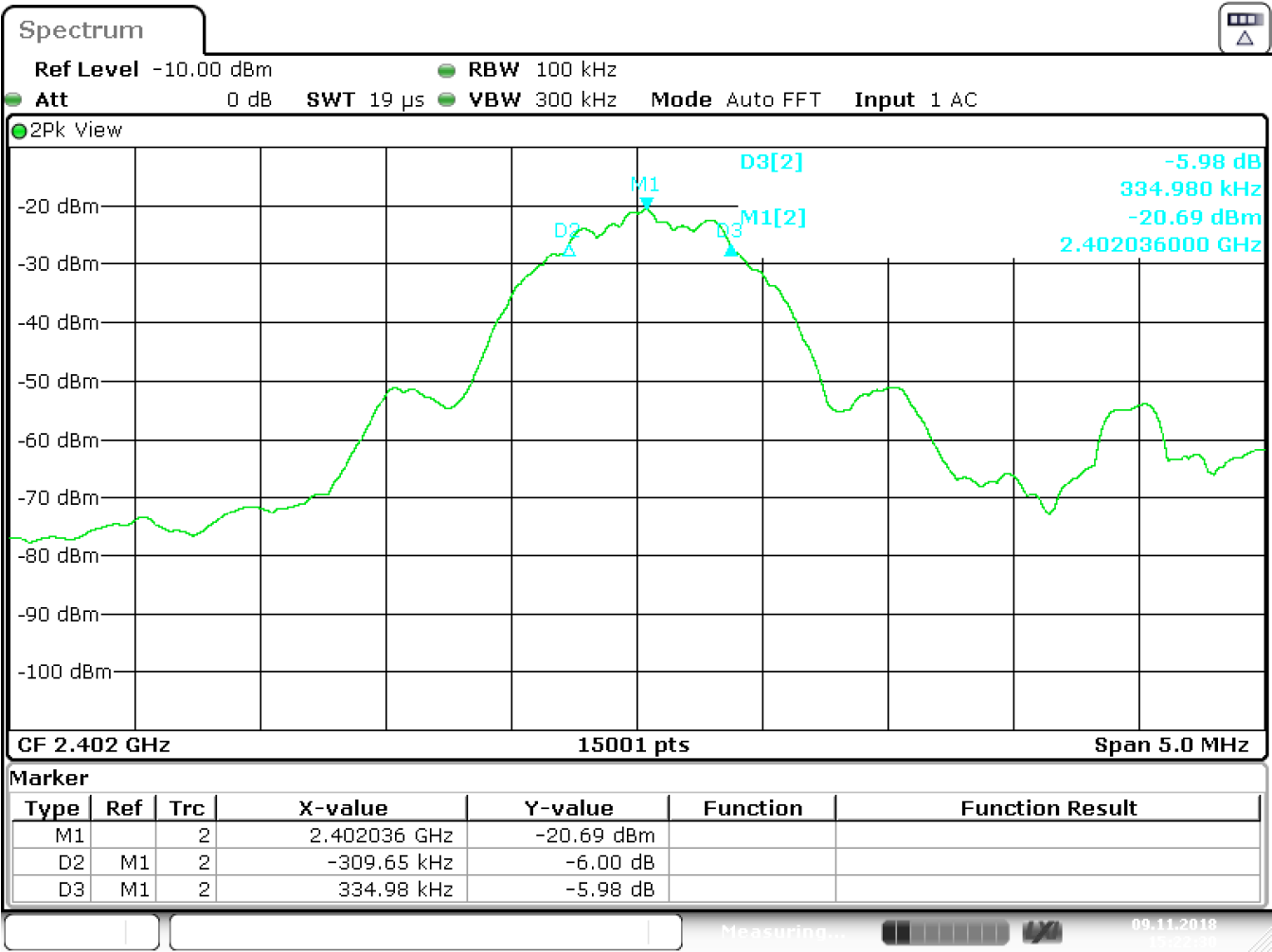
Test Equipment used: N/A

4.3. 6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 4,47 mW 2402 MHz center frequency



Date: 9.NOV.2018 15:22:31

6dB Bandwidth: 645 kHz

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

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

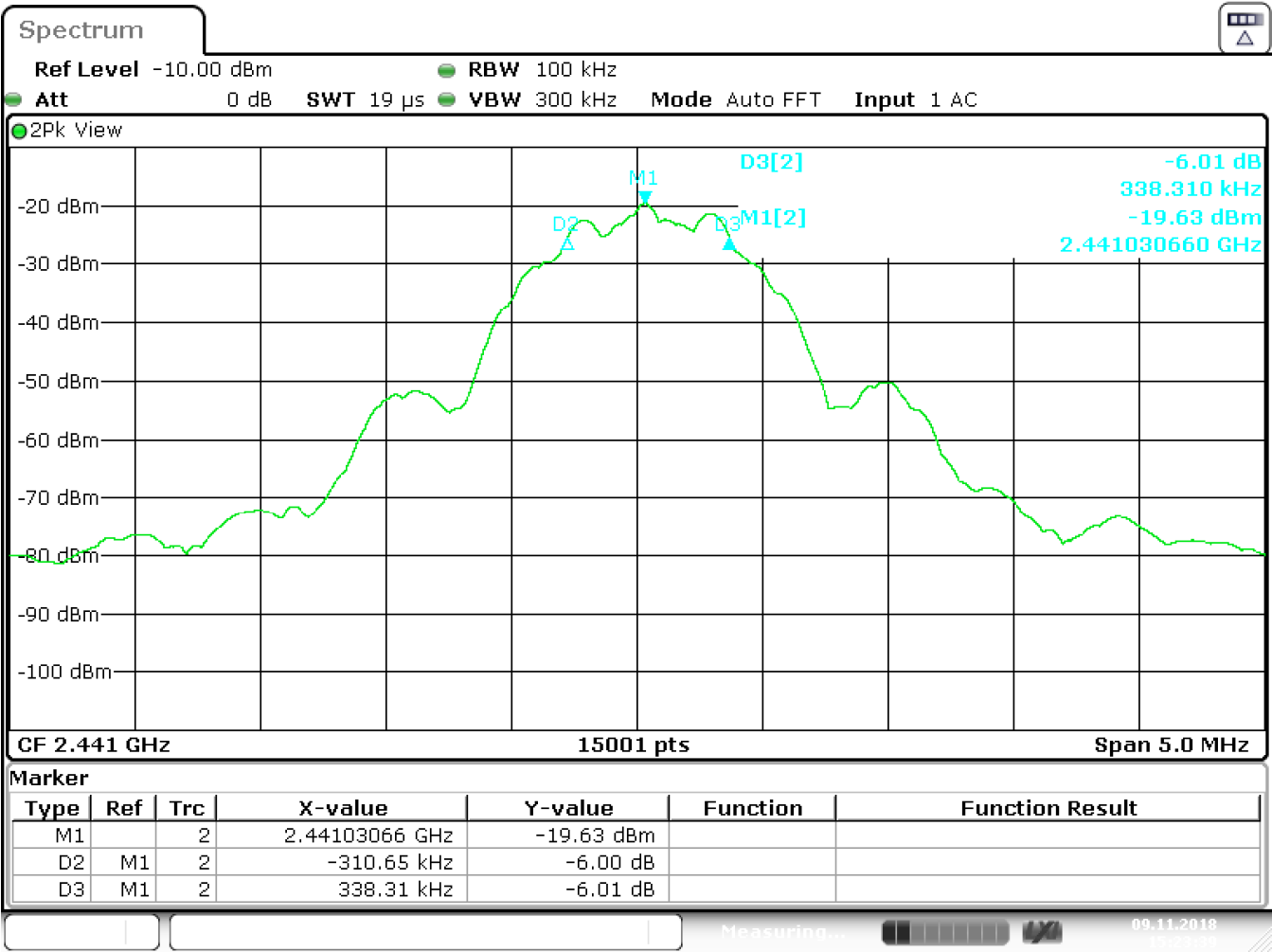
Test Equipment used: EMV-200

6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 4,47 mW 2441 MHz center frequency



Date: 9.NOV.2018 15:23:40

6dB Bandwidth: 649 kHz

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

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

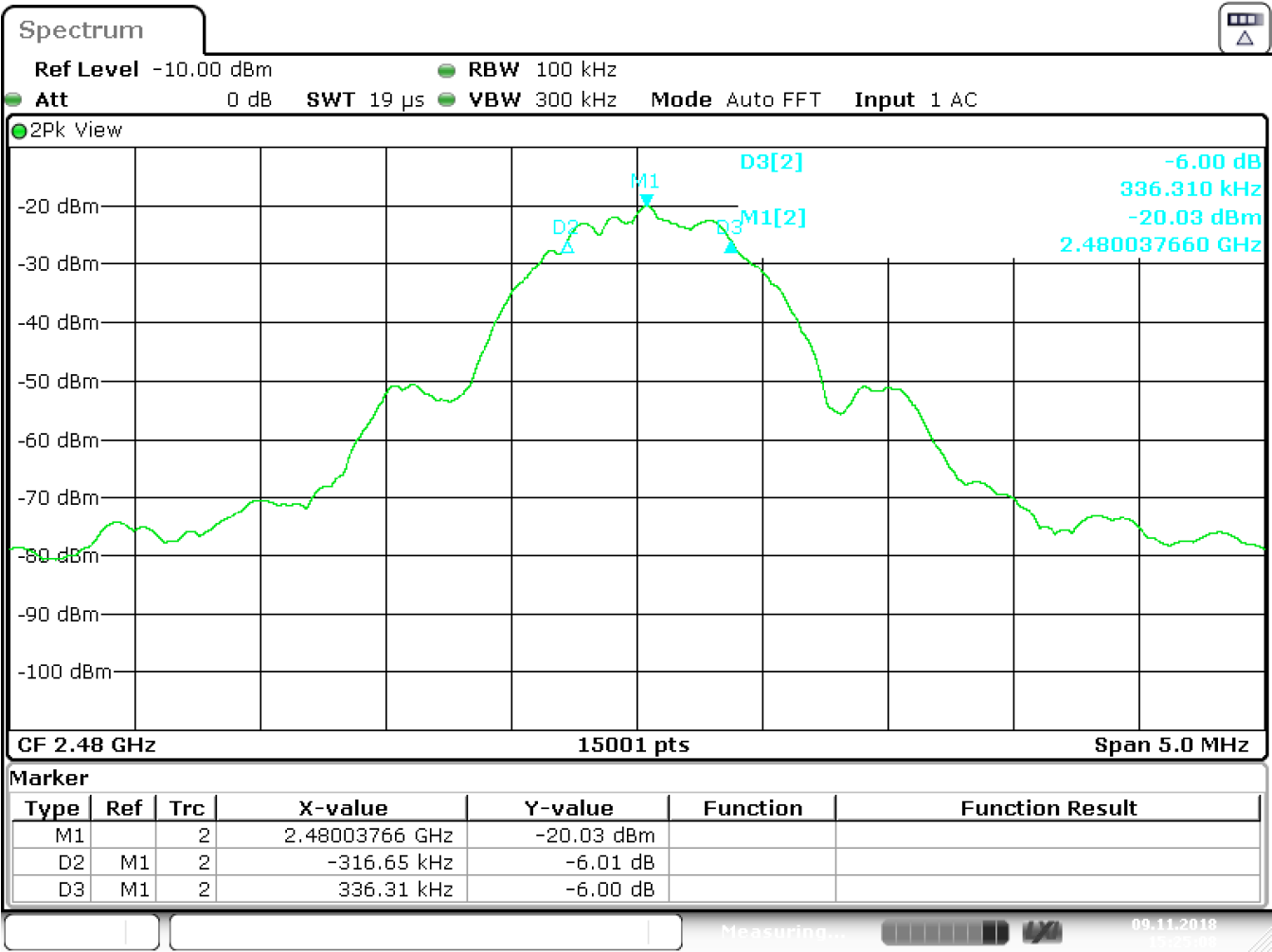
Test Equipment used: EMV-200

6dB Bandwidth

§ 15.247(a)(2)  
5.2(1)

Radiated Measurement

Rated output power: 4,47 mW 2480 MHz center frequency



Date: 9.NOV.2018 15:25:08

6dB Bandwidth: 653 kHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

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

Test Equipment used: EMV-200

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

§ 15.247(b)(3)  
5.4(4)

e.i.r.p. Measurement

Rated output power: 4,47 mW

| Test conditions                                                             |                          | Transmitter power (mW) |          |          |
|-----------------------------------------------------------------------------|--------------------------|------------------------|----------|----------|
|                                                                             |                          | 2402 MHz               | 2440 MHz | 2480 MHz |
| T <sub>nom</sub> ( 23 ) °C                                                  | V <sub>nom</sub> ( 3 ) V | 4,47                   | 3,72     | 3,63     |
| Maximum deviation from rated output power under normal test conditions (dB) |                          | 0                      | -0,8     | -0,9     |
| Measurement uncertainty                                                     |                          | ± 0,75 dB              |          |          |

#### LIMIT SUBCLAUSE 15.247(b)(3) – 5.4(4)

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

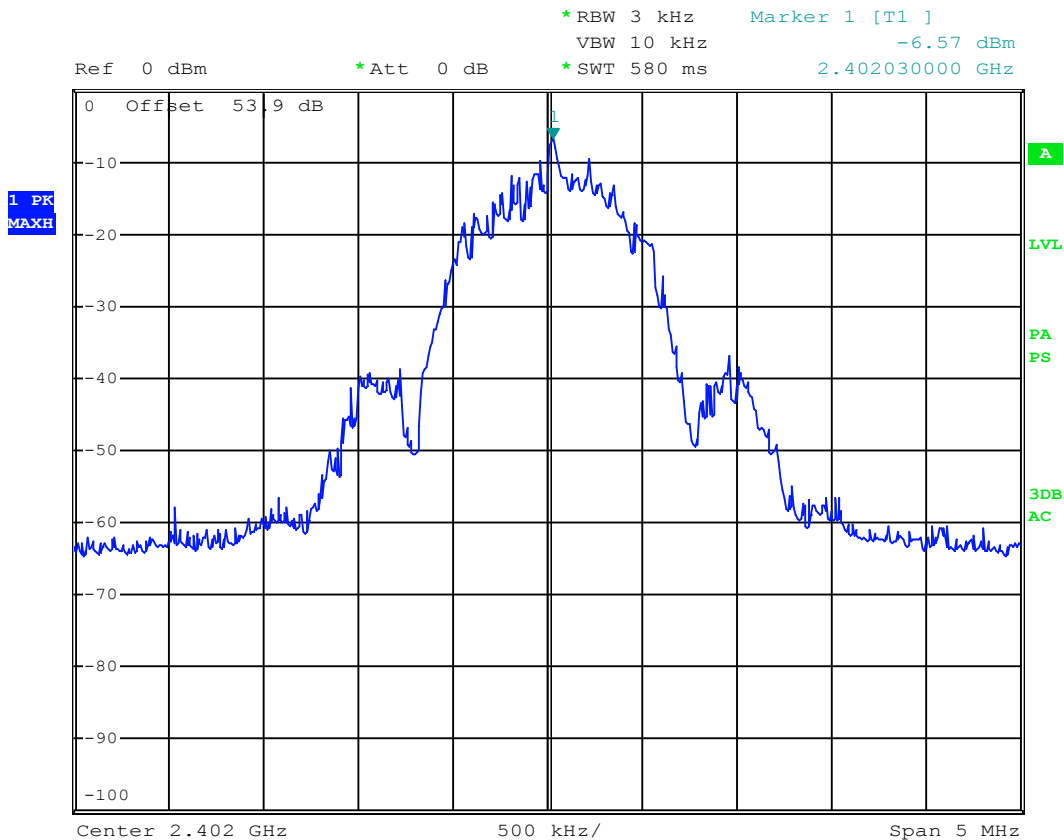
Test Equipment used: NT-100; NT-110; NT-129; NT-207

#### 4.5. Power spectral density (radiated)

§ 15.247(e)  
5.2(2)

e.i.r.p. Measurement

Rated output power: 4,47 mW 2402 MHz center frequency



Date: 13.NOV.2018 10:28:51

Power Spectral density: -6,57 dBm @ 2402,03 MHz

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

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

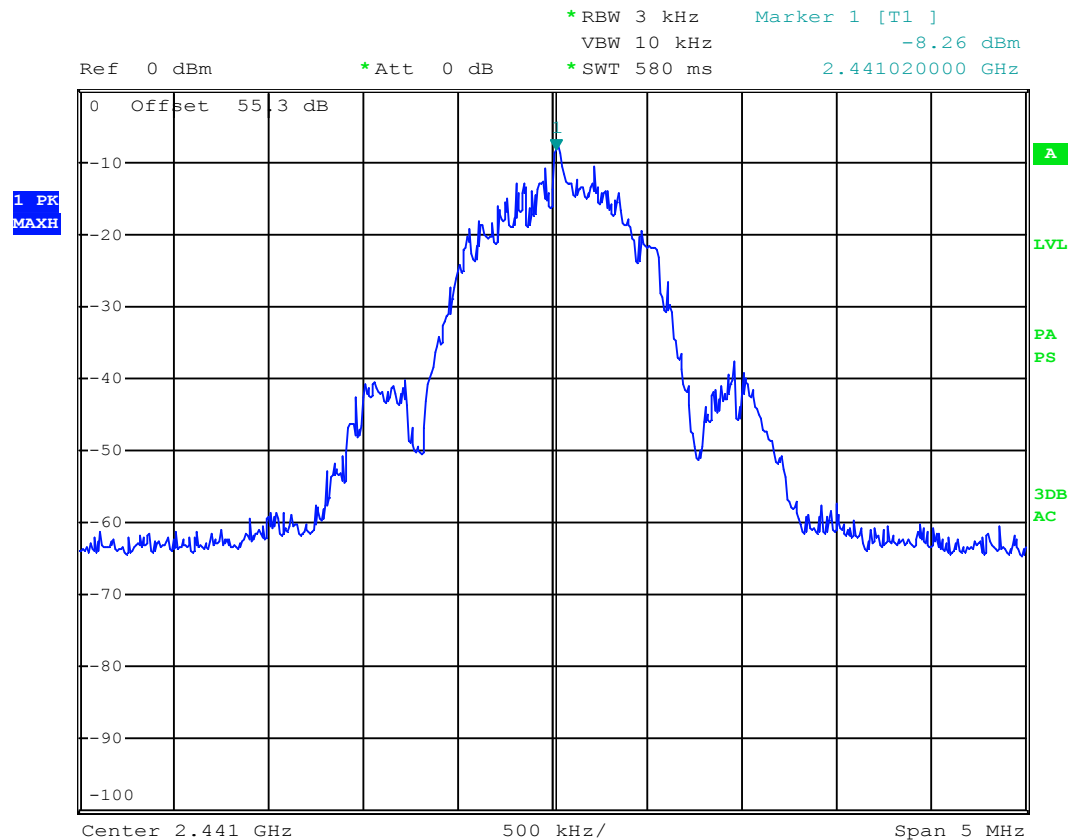
Test Equipment used: NT-203/1

# Power spectral density (radiated)

§ 15.247(e)  
5.2(2)

e.i.r.p. Measurement

Rated output power: 4,47 mW 2441 MHz center frequency



Date: 13.NOV.2018 10:30:39

Power Spectral density: -8,26 dBm @ 2441,02 MHz

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

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

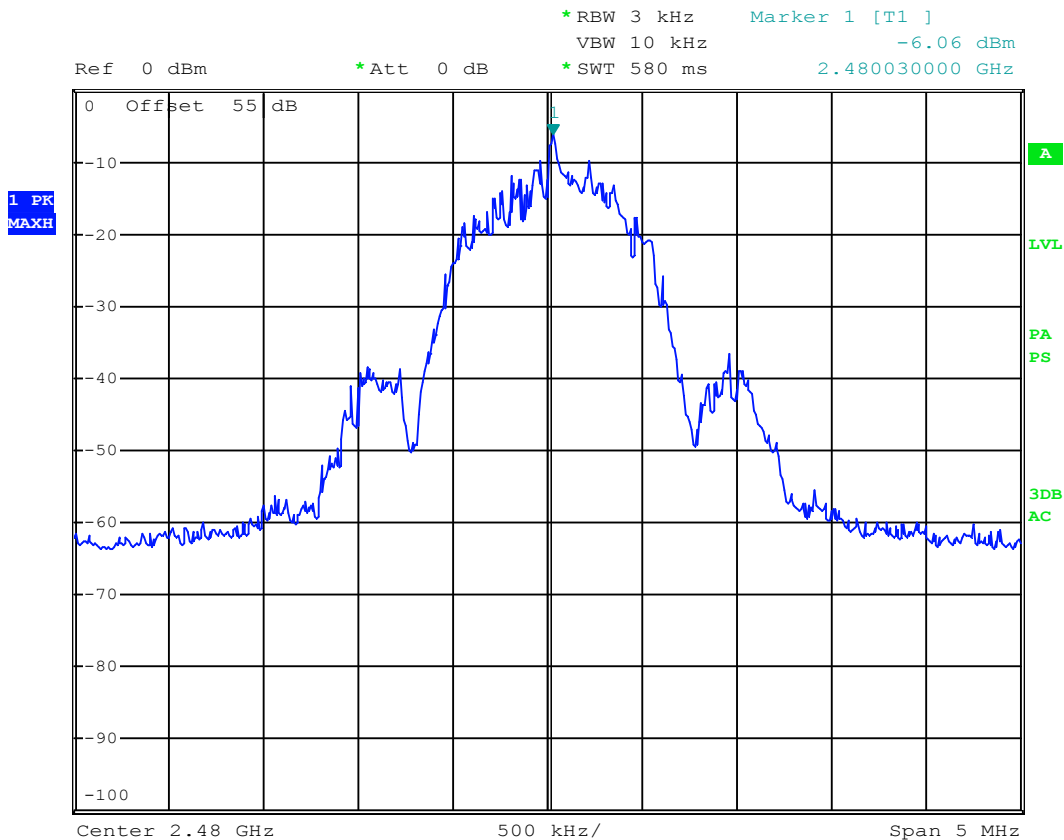
Test Equipment used: NT-203/1

# Power spectral density (radiated)

§ 15.247(e)  
5.2(2)

e.i.r.p. Measurement

Rated output power: 4,47 mW 2480 MHz center frequency



Date: 13.NOV.2018 10:34:22

Power Spectral density: -6,06 dBm @ 2480,03 MHz

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

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

Test Equipment used: NT-203/1

#### 4.6. Out-of-band Emission Unwanted Emissions

§ 15.247(d)  
5.5

Radiated Measurement

See 15.209 measurements in chapter 4.7 of this report.

#### LIMIT

#### SUBCLAUSE 15.247(d) – 5.5

|                                                                                             |                                                                                                                              |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| In any 100 kHz bandwidth outside the frequency band in which the radio device is operating. | At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power. |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|

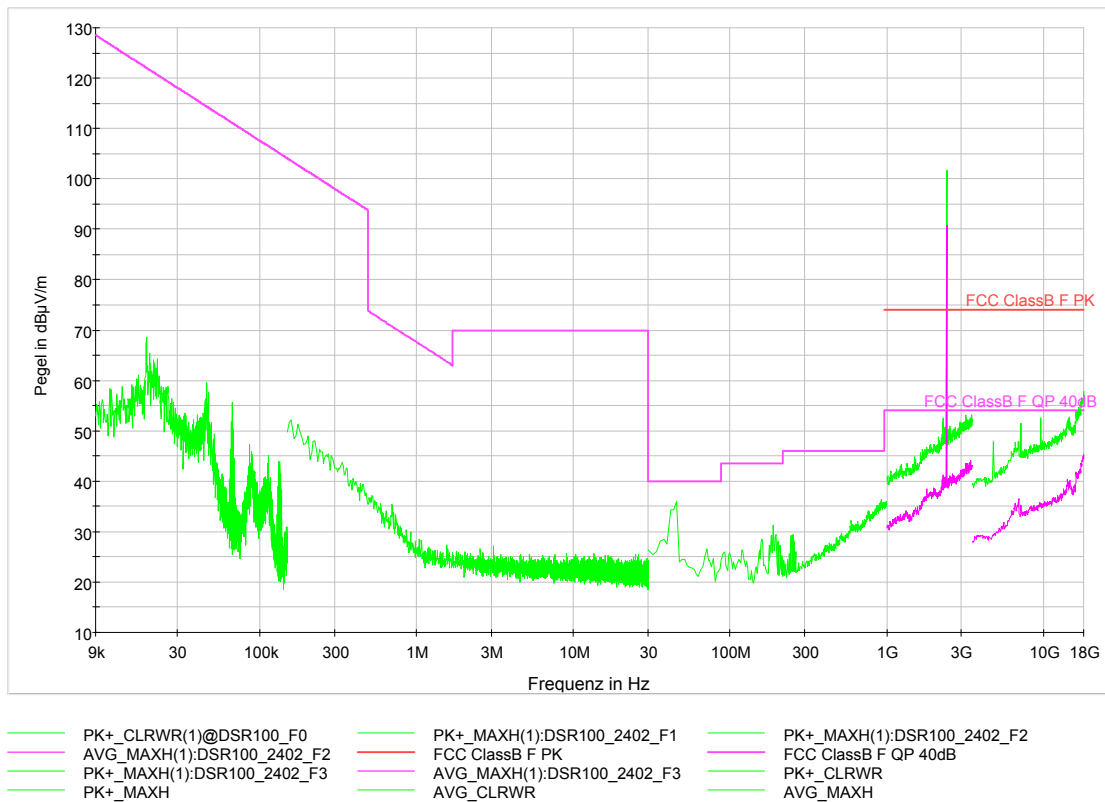
Test Equipment used: N/A

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

#### § 15.209(a) RSS-Gen

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

Setup: 2402 MHz



Worst case emission: Quasipeak @ 43,0 MHz 31,2 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

#### 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                             |

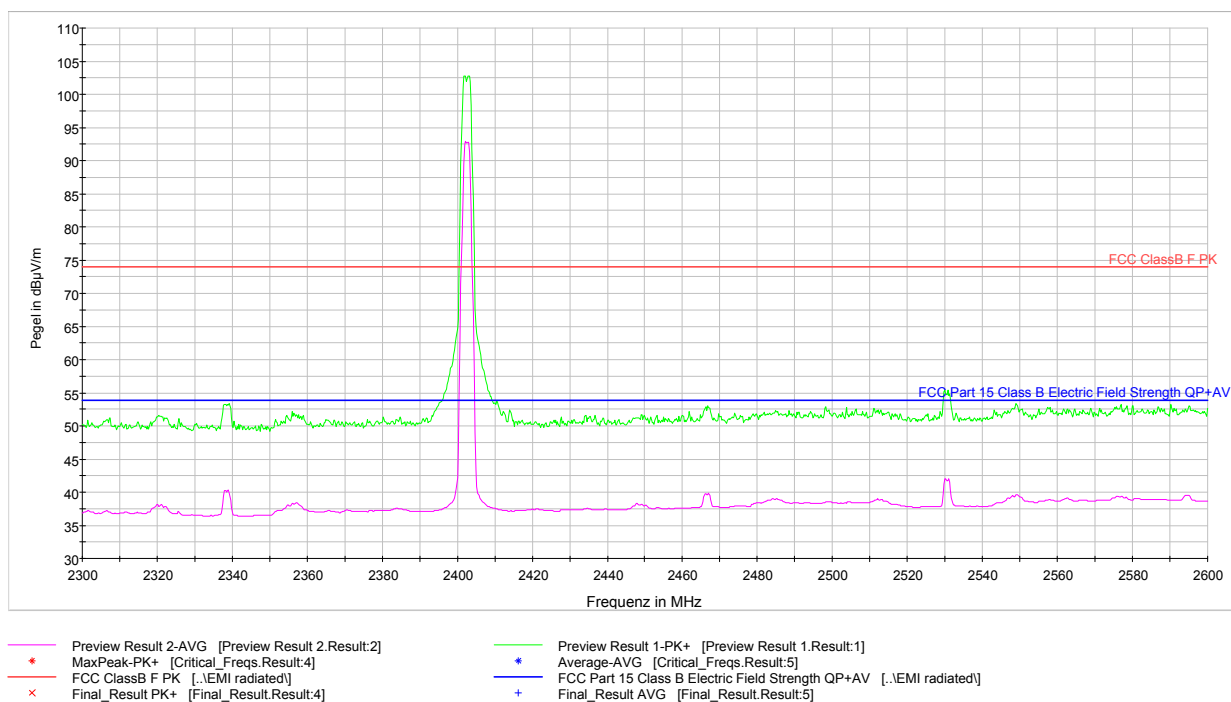
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

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

## § 15.209(a) RSS-Gen

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

Setup: 2402 MHz



In normal operation the EUT always operates on two RF channels alternately, switching at a rate of 20 milliseconds. As worst case scenario the two lowest channels were used.

### 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.

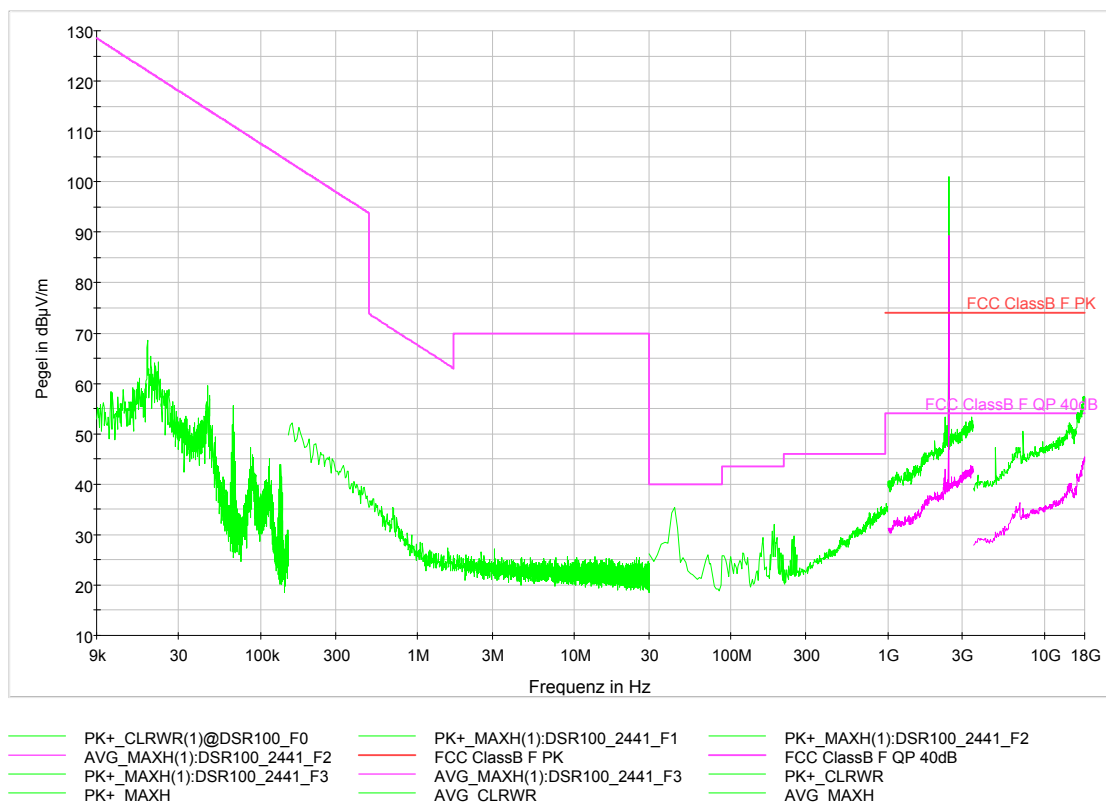
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

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

## **§ 15.209(a)** **RSS-Gen**

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

Setup: 2441 MHz



Worst case emission: Quasipeak @ 43,0 MHz 31,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

### **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                             |

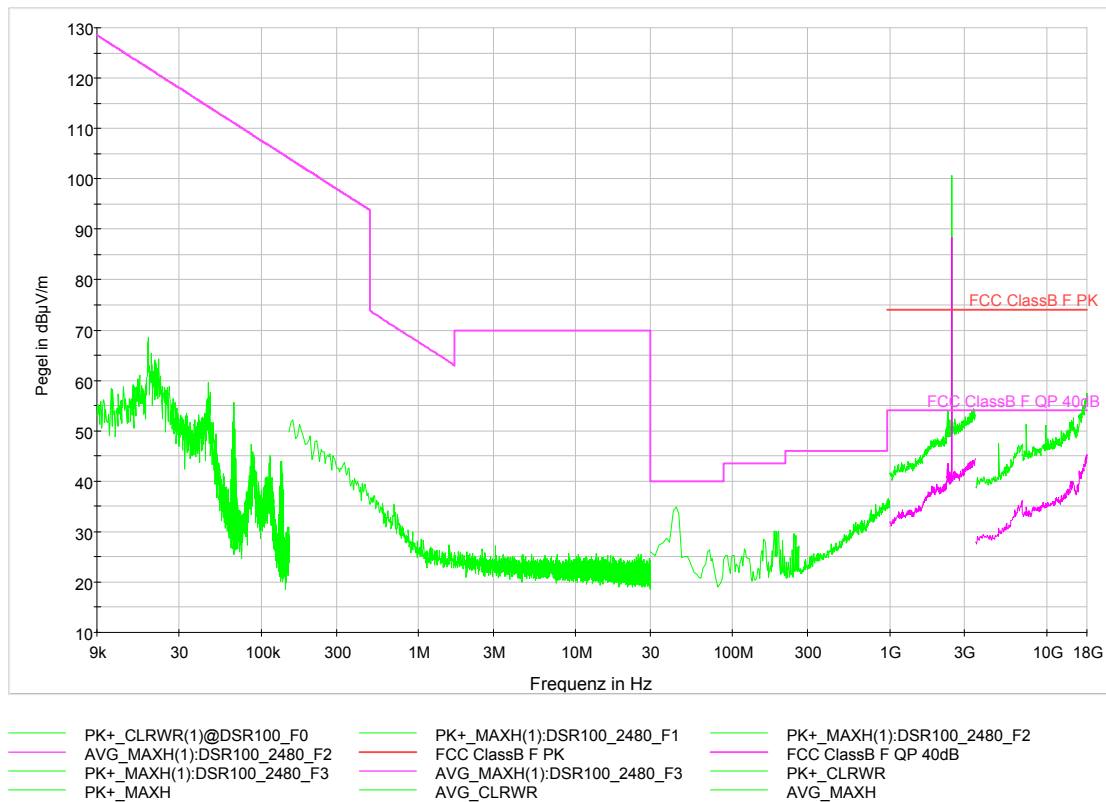
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

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

## **§ 15.209(a)** **RSS-Gen**

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

Setup: 2480 MHz



Worst case emission: Quasipeak @ 43,0 MHz 31,4 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

### **LIMIT**

### **SUBCLAUSE 15.209(a) – RSS-Gen**

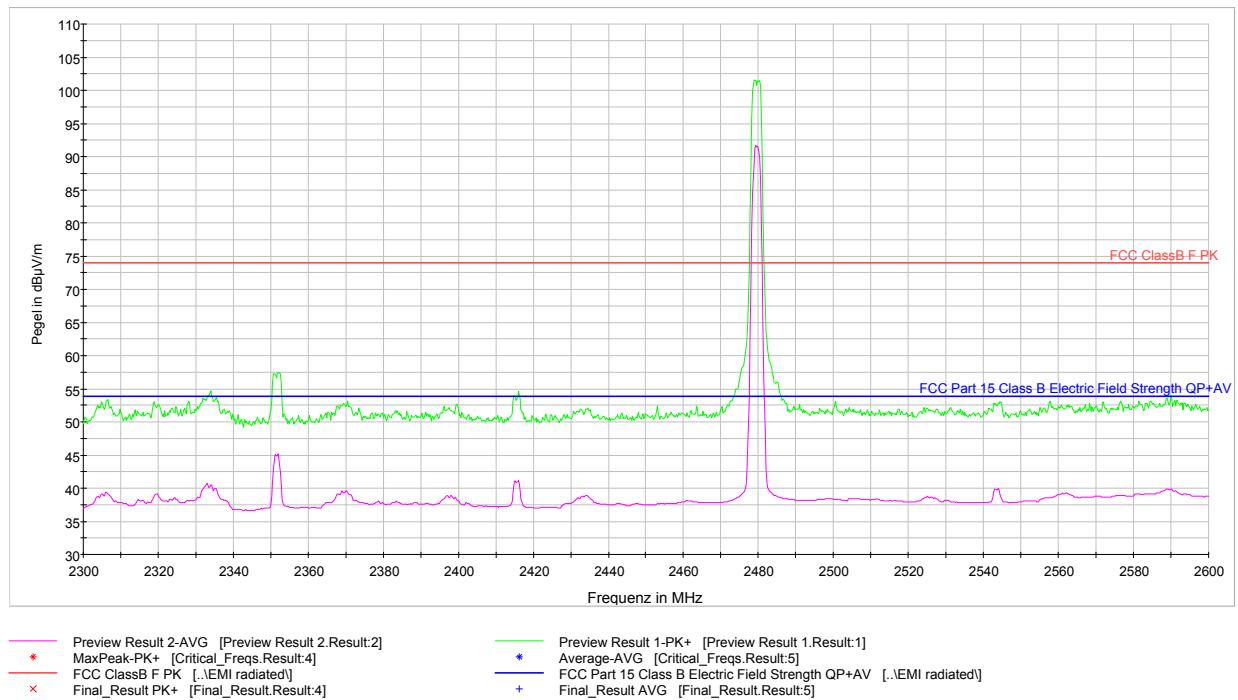
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 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: 2480 MHz



In normal operation the EUT always operates on two RF channels alternately, switching at a rate of 20 milliseconds. As worst case scenario the two highest channels were used.

### 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

#### **4.8. Maximum permissible Exposure**

#### **§ 15.247(i)**

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

# Appendix 1

## Test equipment used

|                          |                                                     |                    |                          |                                                        |           |
|--------------------------|-----------------------------------------------------|--------------------|--------------------------|--------------------------------------------------------|-----------|
| <input type="checkbox"/> | Anechoic Chamber with 3m measurement distance       | NT-100             | <input type="checkbox"/> | Spectrum analyzer – FSP7<br>9 kHz – 7 GHz              | NT-200    |
| <input type="checkbox"/> | Stripline according to ISO 11452-5                  | NT-108             | <input type="checkbox"/> | ESCI - Test receiver<br>9 kHz – 7 GHz                  | NT-203/1  |
| <input type="checkbox"/> | MA4000 - Antenna mast<br>1 - 4 m height             | NT-110/1           | <input type="checkbox"/> | ESI26 – Test receiver<br>20 Hz – 26,5 GHz              | NT-207    |
| <input type="checkbox"/> | DS - Turntable<br>0 - 400 ° Azimuth                 | NT-111/1           | <input type="checkbox"/> | Digital Radio Tester<br>CTS55                          | NT-208    |
| <input type="checkbox"/> | CO3000 Controller<br>Mast+Turntable                 | NT-112/1           | <input type="checkbox"/> | Noise-gen., ITU-R 559-2<br>20 Hz – 20 kHz              | NT-209    |
| <input type="checkbox"/> | HUF-Z3 - Log. Per. Antenna<br>200 - 1000 MHz        | NT-121             | <input type="checkbox"/> | CMTA - Radiocommunication<br>analyzer ; 0,1 - 1000 MHz | NT-210    |
| <input type="checkbox"/> | FMZB1513 - Loop Antenna<br>9 kHz - 30 MHz           | NT-122/1           | <input type="checkbox"/> | 3271 - Spectrum analyzer<br>100 Hz - 26,5 GHz          | NT-211    |
| <input type="checkbox"/> | HFH-Z6 - Rod Antenna<br>9 kHz - 30 MHz              | NT-123             | <input type="checkbox"/> | Digital Radio Tester<br>Aeroflex 3920                  | NT-212/1  |
| <input type="checkbox"/> | 3121C - Dipole Antenna<br>28 - 1000 MHz             | NT-124             | <input type="checkbox"/> | Mixer M28HW<br>26,5 GHz - 40 GHz                       | NT-214    |
| <input type="checkbox"/> | 3115 - Horn Antenna<br>1 - 18 GHz (immunity)        | NT-125             | <input type="checkbox"/> | RubiSource T&M<br>Timing reference                     | NT-216    |
| <input type="checkbox"/> | 3116 - Horn Antenna<br>18 - 40 GHz                  | NT-126             | <input type="checkbox"/> | Radiocommunication analyzer<br>SWR 1180 MD             | NT-217    |
| <input type="checkbox"/> | SAS-200/543 - Bicon. Antenna<br>20 MHz - 300 MHz    | NT-127             | <input type="checkbox"/> | Mixer M19HWD<br>40 GHz – 60 GHz                        | NT-218    |
| <input type="checkbox"/> | AT-1080 - Log. Per. Antenna<br>80 - 1000 MHz        | NT-128             | <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-129             | <input type="checkbox"/> | DSO9104<br>Digital scope                               | NT-220/1  |
| <input type="checkbox"/> | HK-116 - bicon. Antenna<br>20 MHz - 300 MHz         | NT-130             | <input type="checkbox"/> | TPS 2014<br>Digital scope                              | NT-222    |
| <input type="checkbox"/> | 3146 - Log. Per. Antenna<br>200 – 1000 MHz          | NT-131             | <input type="checkbox"/> | Artificial Ear<br>according to IEC 60318               | NT-224    |
| <input type="checkbox"/> | VULB 9163 Trilog Antenna<br>30 – 3000 MHz           | NT-131/1           | <input type="checkbox"/> | 1 kHz Sound calibrator                                 | NT-225    |
| <input type="checkbox"/> | Loop Antenna<br>H-Field                             | NT-132             | <input type="checkbox"/> | B10 - Harmonics and<br>flicker analyzer                | NT-232    |
| <input type="checkbox"/> | Horn Antenna<br>500 MHz - 2900 MHz                  | NT-133             | <input type="checkbox"/> | SRM-3006<br>Spectrum analyzer                          | NT-233/1a |
| <input type="checkbox"/> | Horn Antenna<br>500 MHz - 6000 MHz                  | NT-133/1           | <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-134             | <input type="checkbox"/> | Field Meter NBM-500<br>incl. E- and H-Field probes     | NT-240a-e |
| <input type="checkbox"/> | Log. per. Antenna<br>800 MHz - 2500 MHz             | NT-135             | <input type="checkbox"/> | Hall-Teslameter<br>ETM-1                               | NT-241    |
| <input type="checkbox"/> | BiConiLog Antenna<br>26 MHz – 2000 MHz              | NT-137             | <input type="checkbox"/> | EFA-3<br>H-field- / E-field probe                      | NT-243    |
| <input type="checkbox"/> | Conical Dipol Antenna<br>PCD8250                    | NT-138             | <input type="checkbox"/> | EHP-50F<br>H-field- / E-field probe                    | NT-243/1  |
| <input type="checkbox"/> | HF 906 - Horn Antenna<br>1 - 18 GHz (emission)      | NT-139             | <input type="checkbox"/> | Field Meter EMR-200<br>100 kHz – 3 GHz                 | NT-244    |
| <input type="checkbox"/> | HZ-1<br>Antenna tripod                              | NT-150             | <input type="checkbox"/> | E-field probe<br>100 kHz – 3 GHz                       | NT-245    |
| <input type="checkbox"/> | BN 1500<br>Antenna tripod                           | NT-151             | <input type="checkbox"/> | H-field probe<br>300 kHz – 30 MHz                      | NT-246    |
| <input type="checkbox"/> | Ant. tripod for EN61000-4-3<br>Model TP1000A        | NT-156             |                          |                                                        |           |
| <input type="checkbox"/> | Power quality analyzer<br>Fluke 1760 (complete set) | NT-160 -<br>NT-173 |                          |                                                        |           |

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-18/173

Page: 1 of 4

Date: 16.11.2018

Checked by: \_\_\_\_\_

# 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>100 MHz – 23 GHz                   | NT-337   |
| <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"/> | ESD 30 System<br>up to 25 kV                          | NT-321      | <input type="checkbox"/> | Highpass-Filter<br>1250 MHz – 4 GHz                | NT-414   |
| <input type="checkbox"/> | PSURGE 4.1<br>Surge generator                         | NT-324      | <input type="checkbox"/> | Highpass-Filter<br>1800 MHz – 16 GHz               | NT-415   |
| <input type="checkbox"/> | IMU4000<br>Immunity test system                       | NT-325/1    |                          |                                                    |          |
| <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      |                          |                                                    |          |

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-18/173

Page: 2 of 4

Date: 16.11.2018

Checked by: \_\_\_\_\_

# Appendix 1 (continued)

## Test equipment used

|                          |                                                |        |                          |                                                       |                    |
|--------------------------|------------------------------------------------|--------|--------------------------|-------------------------------------------------------|--------------------|
| <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 | <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 10.40.00<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 |                          |                                                       |                    |

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-18/173

Page: 3 of 4

Date: 16.11.2018

Checked by: \_\_\_\_\_

## Appendix 1 (continued)

### Test equipment used

|                          |                                                     |             |
|--------------------------|-----------------------------------------------------|-------------|
| <input type="checkbox"/> | Anechoic Chamber<br>3 m / 5 m measuring distance    | EMV-100     |
| <input type="checkbox"/> | Turntabel<br>6 m diameter                           | EMV-101     |
| <input type="checkbox"/> | Antenna mast<br>1 – 4 m                             | EMV-102     |
| <input type="checkbox"/> | Mast and Turntable controller<br>FC-06              | EMV-103     |
| <input type="checkbox"/> | EMC Video/Audiosystem                               | EMV-104     |
| <input type="checkbox"/> | EMC Software<br>EMC32 Version 10.40.00              | EMV-105     |
| <input type="checkbox"/> | Hornantenna 1 – 18 GHz<br>HF 907                    | EMV-110     |
| <input type="checkbox"/> | Antennapre.amp. 1 – 18 GHz<br>ERZ-LNA0200-1800-30-2 | EMV-111     |
| <input type="checkbox"/> | Trilog Antenna 30-3000 MHz<br>VULB9163              | EMV-112     |
| <input type="checkbox"/> | Monopol 9 kHz – 30 MHz<br>VAMP 9243                 | EMV-113     |
| <input type="checkbox"/> | Antennapre.amp 18 – 40 GHz<br>BBV 9721              | EMV-114     |
| <input type="checkbox"/> | Hornantenna 200 – 2000 MHz<br>AH-220                | EMV-115     |
| <input type="checkbox"/> | DC Artificial Network<br>PVDC 8300                  | EMV-150     |
| <input type="checkbox"/> | AC Artificial Network<br>NNLK 8121 RC               | EMV-151     |
| <input type="checkbox"/> | EMI Receiver<br>ESR26                               | EMV-200     |
| <input type="checkbox"/> | Signalgenerator 9 kHz – 40 GHz<br>N5173B            | EMV-201     |
| <input type="checkbox"/> | GPS Frequency normal<br>B-88                        | EMV-202     |
| <input type="checkbox"/> | DC Power supply<br>N5745A                           | EMV-203     |
| <input type="checkbox"/> | Spektrum Analyzator<br>FSV40                        | EMV-205     |
| <input type="checkbox"/> | Thd Multimeter<br>Model 2015                        | EMV-206     |
| <input type="checkbox"/> | Poweramplifier<br>PAS15000                          | EMV-207/abc |
| <input type="checkbox"/> | Inrush Current Source                               | EMV-208/abc |
| <input type="checkbox"/> | Arb.-generator<br>Sycore                            | EMV-209     |
| <input type="checkbox"/> | Harmonics/Flicker analyzer<br>ARS 16/3              | EMV-210     |
| <input type="checkbox"/> | HF- Amplifier 9 kHz-250 MHz<br>BBA150               | EMV-300     |
| <input type="checkbox"/> | HF- Amplifier 80 -1000 MHz<br>BBA150                | EMV-301     |
| <input type="checkbox"/> | HF- Amplifier 0,8 - 6 GHz<br>BBA150                 | EMV-302     |
| <input type="checkbox"/> | High Power Ant. 20-200 MHz<br>VHBD 9134             | EMV-303     |
| <input type="checkbox"/> | Log.per Antenna 80-2700 MHz<br>STLP 9128 E special  | EMV-304     |

|                          |                                                   |             |
|--------------------------|---------------------------------------------------|-------------|
| <input type="checkbox"/> | Log.per Antenna 0,7 – 9 GHz<br>STLP9149           | EMV-305     |
| <input type="checkbox"/> | HF- Amplifier 9 kHz-250 MHz<br>BBA150 (low noise) | EMV-306     |
| <input type="checkbox"/> | Load Dump Generator<br>LD 200N                    | EMV-350     |
| <input type="checkbox"/> | Ultra Compact Symulator<br>UCS 200N100            | EMV-351     |
| <input type="checkbox"/> | Automotive Power fail module<br>PFM 200N100.1     | EMV-352     |
| <input type="checkbox"/> | Voltage Drop Symulator<br>VDS 200Q100             | EMV-353     |
| <input type="checkbox"/> | Arb. Generator<br>AutoWave                        | EMV-354     |
| <input type="checkbox"/> | Ultra Compact Symulator<br>UCS 500N7              | EMV-355     |
| <input type="checkbox"/> | Coupling decoupling network<br>CNI 503B7 / 32 A   | EMV-356     |
| <input type="checkbox"/> | Coupling decoupling network<br>CNI 503B7 / 63 A   | EMV-357     |
| <input type="checkbox"/> | Telecom Surge Generator<br>TSurge 7               | EMV-358     |
| <input type="checkbox"/> | Coupling decoupling network<br>CNI 508N2          | EMV-359     |
| <input type="checkbox"/> | Coupling decoupling network<br>CNV 504N2.2        | EMV-360     |
| <input type="checkbox"/> | Immunity generator<br>NSG4060/NSG4060-1           | EMV-361     |
| <input type="checkbox"/> | Coupling network<br>CDND M316-2                   | EMV-362     |
| <input type="checkbox"/> | Coupling network<br>CT419-5                       | EMV-363     |
| <input type="checkbox"/> | ESD Generator<br>NSG 437                          | EMV-364     |
| <input type="checkbox"/> | Pulse Limiter<br>VTSD 9561-F BNC                  | EMV-405     |
| <input type="checkbox"/> | Transient emission<br>BSM200N40+BS200N100         | EMV-450+451 |
| <input type="checkbox"/> | Cap. Coupling Clamp<br>HFK                        | EMV-455     |
| <input type="checkbox"/> | Mag. Field System<br>MS100N+MC26100+MC2630        | EMV-456-458 |
| <input type="checkbox"/> | Coupling network<br>CDN M2-100A                   | EMV-459     |
| <input type="checkbox"/> | Coupling network<br>CDN M3-32A                    | EMV-460     |
| <input type="checkbox"/> | Coupling network<br>CDN M5-100A                   | EMV-461     |
| <input type="checkbox"/> | Current Clamp<br>CIP 9136A                        | EMV-462     |
| <input type="checkbox"/> | DC Artificial Network<br>HV-AN 150                | EMV-464+465 |
| <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   |

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-18/173

Page: 4 of 4

Date: 16.11.2018

Checked by: \_\_\_\_\_