



# TEST REPORT

of the accredited test laboratory

TÜV Nr.:M/FG-15/172

**Applicant:** imago tag GmbH  
St. Peter Gürtel 10b  
A – 8042 Graz

**Tested Product:** Networking transceiver Model: R42

**FCC-ID:** 2ACQM-E00008

**IC-ID:** 12154A-E00008

**Manufacturer:** imago tag GmbH  
St. Peter Gürtel 10b  
A – 8042 Graz

**Output power / field strength:** 3,51 mV/m average @ 3m distance  
**power supply:** 3 VDC via internal bat.

**Frequency range:** 2404 - 2479,25 MHz  
**Channel separation:** 0,35 MHz

**Standard:** FCC: 47 CFR Part 15 (October 1, 2014 edition)  
RSS-210 Issue 8, December 2010

TÜV AUSTRIA SERVICES GMBH  
Test laboratory for EMC

Supervisor of EMC-laboratory:

  
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04.11.2015

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Ing. Michael Emminger

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

## LIST OF MEASUREMENTS

The complete list of measurements called for in 47 CFR 15 and RSS-210 is given below.

| SUBCLAUSE               | PARAMETER TO BE MEASURED                     | PAGE |
|-------------------------|----------------------------------------------|------|
|                         | Intentional Radiators                        |      |
|                         | Test object data                             | 3    |
| 2.1033                  | Number of channels and channel spacing       | 4    |
| 15.249 (e)<br>A 2.9     | Duty Cycle for averaging                     | 5    |
| 15.249 (a) (c)<br>A 2.9 | Field strength at 2400 – 2483,5 MHz          | 6-8  |
| 15.249 (d) (e)<br>A 2.9 | Emissions outside 2400 – 2483,5 MHz (15.209) | 9-14 |

## TEST OBJECT DATA

### General EUT Description

This transceiver is working in a network consisting of a controller station, so called Accesspoint, and various displays. The Accesspoint transmits information to the displays and receives acknowledgements.

This device is a display operating in the network system. The device can be equipped with a passive RFID TAG. As this tag will be placed far away from the transceiver electronics, no additional measurements were performed.

#### 2.1033 (c) Technical description

2.1033 (4) Type of emission: Phase shift keying – declared channel bandwidth 542 kHz –  
'virtual' channel spacing 0,35 MHz. Only 11 channels from the channel plan are used, therefore the channel spacing in reality is much higher and varies from 2,45 MHz minimum up to 17,15 MHz.

2.1033 (5) Frequency range: 2404 – 2479,25 MHz (channel center frequencies of channel 0 up to ch. 10)

2.1033 (6) Power range and Controls: The maximum field strength measured is 3,51 mV/m average @ 3m distance. There is no power control or regulation.

2.1033 (7) Maximum output power rating: 3,51 mV/m average @ 3m distance.

2.1033 (8) DC Voltage and Current: 3V internal battery  
maximum current consumption: 28,0 mA during continuous transmission

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

**Number of channels and channel spacing**

**§ 2.1033**

Channel plan:

| Channel Number | Center frequency (MHz) | Channel spacing (MHz) |
|----------------|------------------------|-----------------------|
| 0              | 2404                   |                       |
|                |                        | 5,95                  |
| 1              | 2409,95                |                       |
|                |                        | 11,9                  |
| 2              | 2421,85                |                       |
|                |                        | 2,8                   |
| 3              | 2424,65                |                       |
|                |                        | 17,15                 |
| 4              | 2441,8                 |                       |
|                |                        | 7,35                  |
| 5              | 2449,15                |                       |
|                |                        | 12,6                  |
| 6              | 2461,75                |                       |
|                |                        | 7,7                   |
| 7              | 2469,45                |                       |
|                |                        | 4,9                   |
| 8              | 2474,35                |                       |
|                |                        | 2,45                  |
| 9              | 2476,8                 |                       |
|                |                        | 2,45                  |
| 10             | 2479,25                |                       |

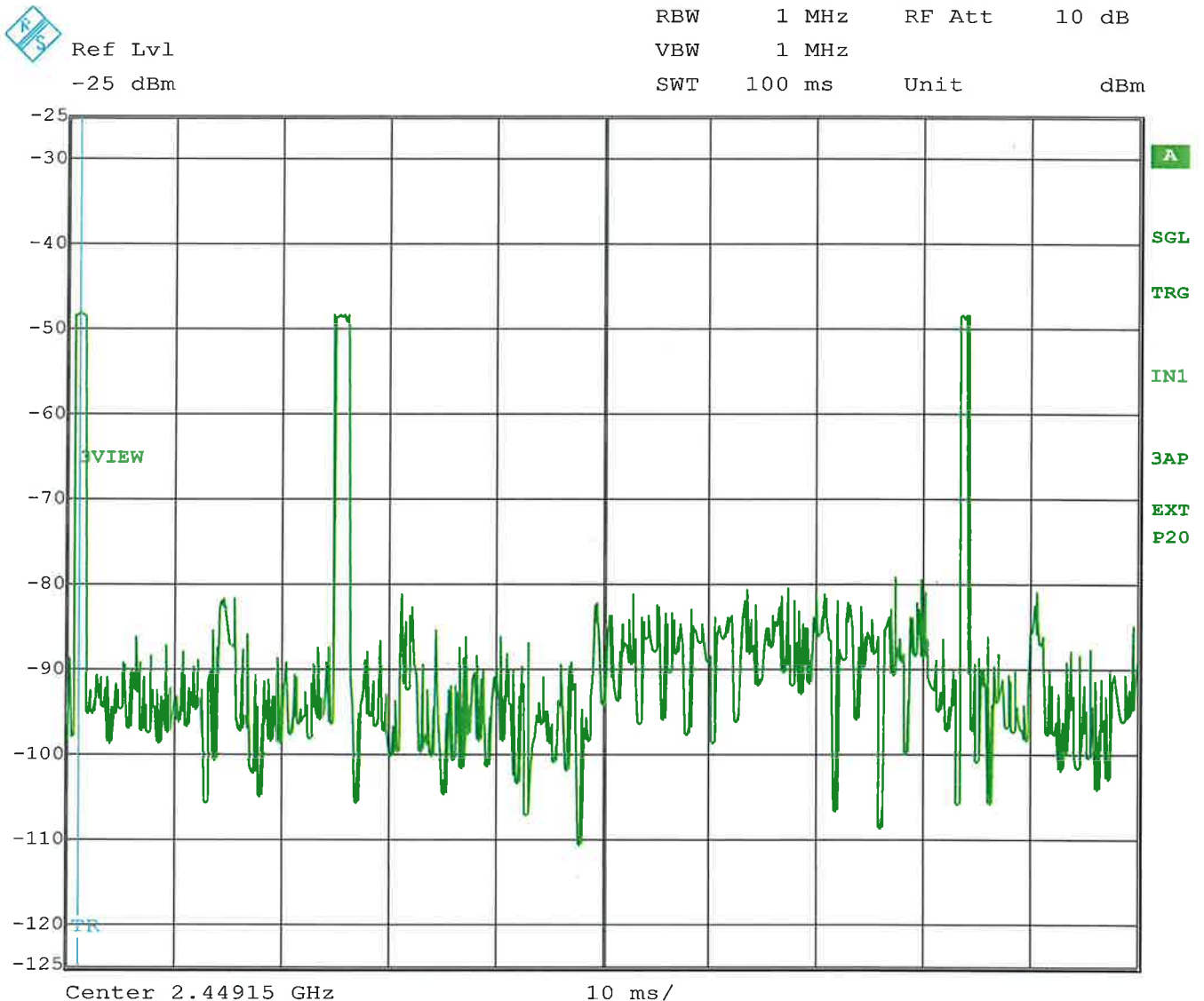
Tests were performed on channels 0, 4 and 10.

Test Equipment used: N/A

## Duty Cycle measurements for averaging

§ 15.249 (e)

Mode: start of data reception (handshaking gives worst case in 100ms)



Date: 28.OCT.2015 13:18:06

According to the timing protocol description provided by the manufacturer and attached as technical description to the application for certification, the transmission burst time was checked to not exceed the declared value. The declared value was taken for calculation, as that gives the worst case. Transmission bursts of 1,48ms length occurring twice in 100ms with another handshaking burst of 1,97ms length give a duty cycle of 4,93% or an average factor of -26,1 dB.

### LIMIT SUBCLAUSE 15.249(e)

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-151; NT-207; NT-337

**Field strength of emissions at 2400 – 2483,5 MHz**

**§ 15.249 (a) (c)**

**Operating on CH 0 (2404 MHz)**

The maximum peak value measured was 97,0 dB $\mu$ V/m = 70,8 mV/m at 3m distance.

With the averaging factor calculated on page 5 of this test report of -26,1 dB the maximum average value is then 70,9 dB $\mu$ V/m = 3,51 mV/m at 3m distance.

**LIMIT SUBCLAUSE 15.249(a) (c)**

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902–928 MHz           | 50                                               | 500                                            |
| 2400–2483.5 MHz       | 50                                               | 500                                            |
| 5725–5875 MHz         | 50                                               | 500                                            |
| 24.0–24.25 GHz        | 250                                              | 2500                                           |

(c) Field strength limits are specified at a distance of 3 meters.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-151; NT-207; NT-337

**Field strength of emissions at 2400 – 2483,5 MHz**

**§ 15.249 (a) (c)**

**Operating on CH 4 (2441,8 MHz)**

The maximum peak value measured was 96,5 dB $\mu$ V/m = 66,8 mV/m at 3m distance.

With the averaging factor calculated on page 5 of this test report of -26,1 dB the maximum average value is then 70,4 dB $\mu$ V/m = 3,31 mV/m at 3m distance.

**LIMIT**

**SUBCLAUSE 15.249(a) (c)**

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902–928 MHz           | 50                                               | 500                                            |
| 2400–2483.5 MHz       | 50                                               | 500                                            |
| 5725–5875 MHz         | 50                                               | 500                                            |
| 24.0–24.25 GHz        | 250                                              | 2500                                           |

(c) Field strength limits are specified at a distance of 3 meters.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-151; NT-207; NT-337

**Field strength of emissions at 2400 – 2483,5 MHz**

**§ 15.249 (a) (c)**

**Operating on CH 10 (2479,25 MHz)**

The maximum peak value measured was 95,9 dBµV/m = 62,4 mV/m at 3m distance.

With the averaging factor calculated on page 5 of this test report of -26,1 dB the maximum average value is then 69,8 dBµV/m = 3,09 mV/m at 3m distance.

**LIMIT SUBCLAUSE 15.249(a) (c)**

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

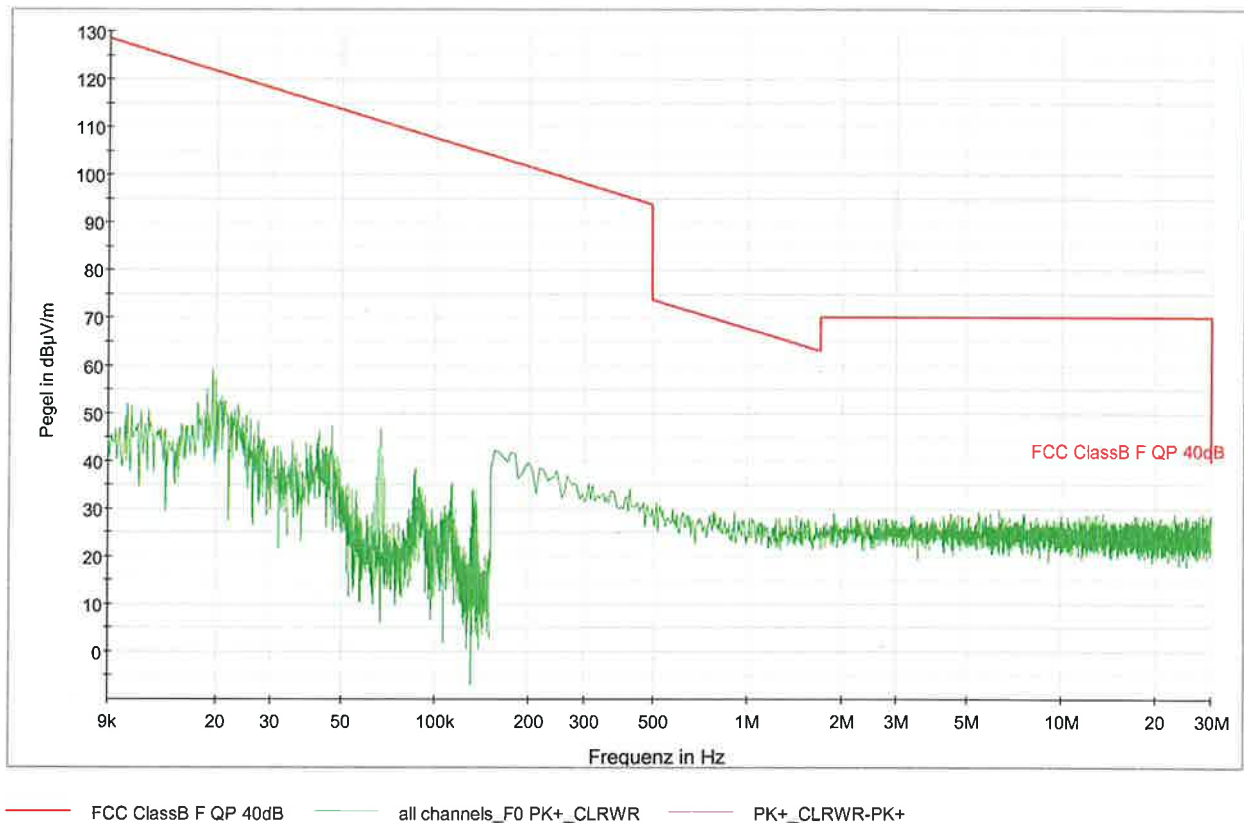
| <b>Fundamental frequency</b> | <b>Field strength of fundamental (millivolts/meter)</b> | <b>Field strength of harmonics (microvolts/meter)</b> |
|------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| 902–928 MHz                  | 50                                                      | 500                                                   |
| 2400–2483.5 MHz              | 50                                                      | 500                                                   |
| 5725–5875 MHz                | 50                                                      | 500                                                   |
| 24.0–24.25 GHz               | 250                                                     | 2500                                                  |

(c) Field strength limits are specified at a distance of 3 meters.

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-125; NT-151; NT-207; NT-337

**Emissions outside 2400 – 2483,5 MHz**  
**Channel 0 (2404 MHz)**

§ 15.249 (d) (e)



**LIMIT**

**SUBCLAUSE 15.249(d) (e) (15.209)**

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

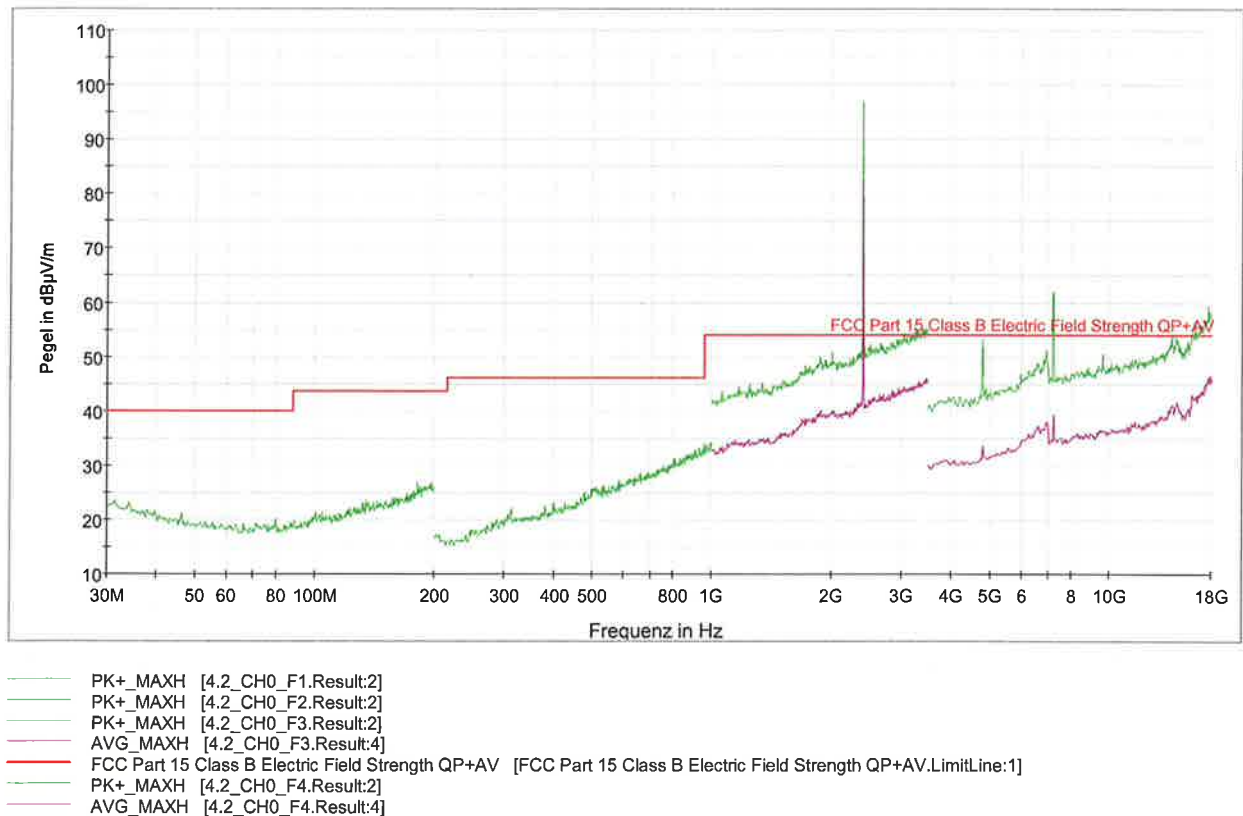
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009–0.490     | 2400/F(kHz)                       | 300                           |
| 0.490–1.705     | 24000/F(kHz)                      | 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: NT-100; NT-110; NT-111; NT-112; NT-122; NT-151; NT-207

**Emissions outside 2400 – 2483,5 MHz**

**§ 15.249 (d) (e)**

**Channel 0 (2404 MHz) – average values above 1 GHz are shown in magenta – green = peak**



**LIMIT**

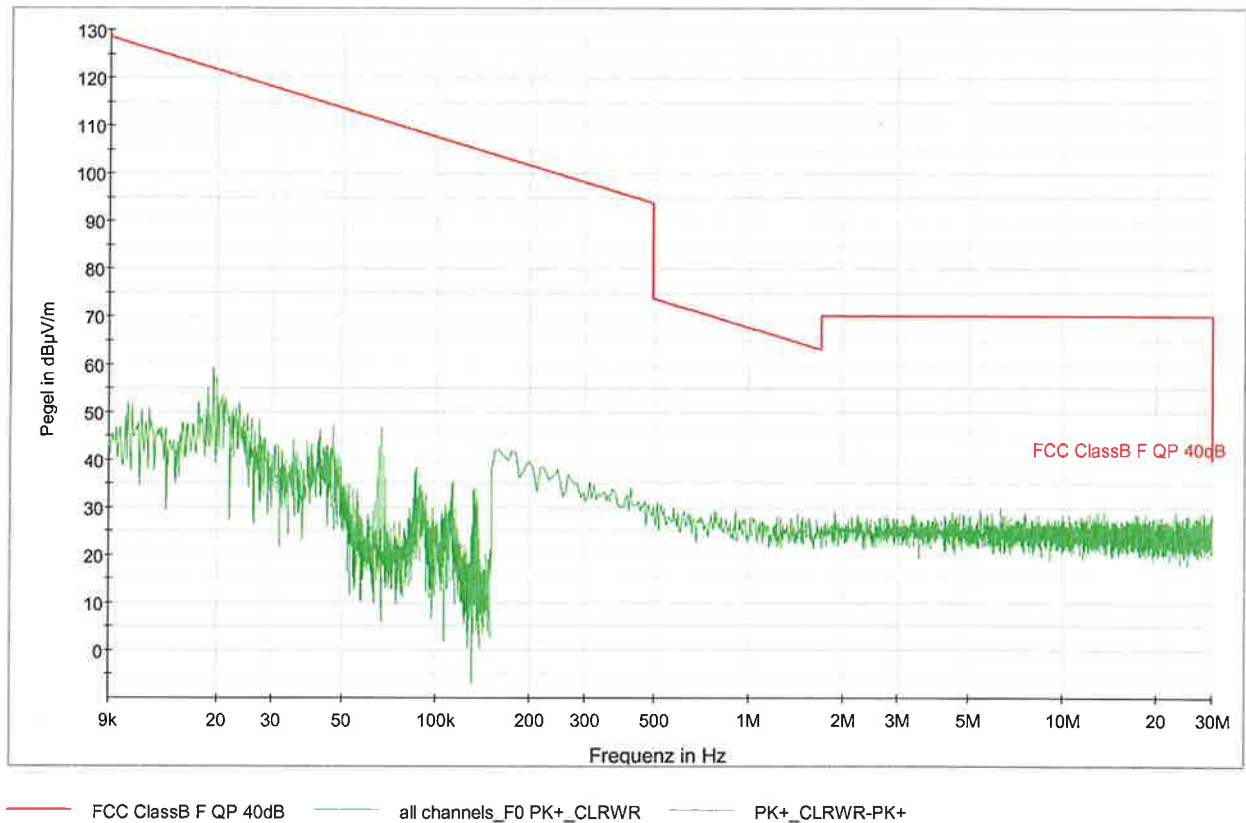
**see page 9**

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-129; NT-131; NT-207

Remark: Although the measurements were made up to the 10<sup>th</sup> harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless no emissions above noise level were found in the frequency range above 18 GHz.

**Emissions outside 2400 – 2483,5 MHz**  
**Channel 4 (2441,8 MHz)**

**§ 15.249 (d) (e)**



**LIMIT**

**SUBCLAUSE 15.249(d) (e) (15.209)**

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

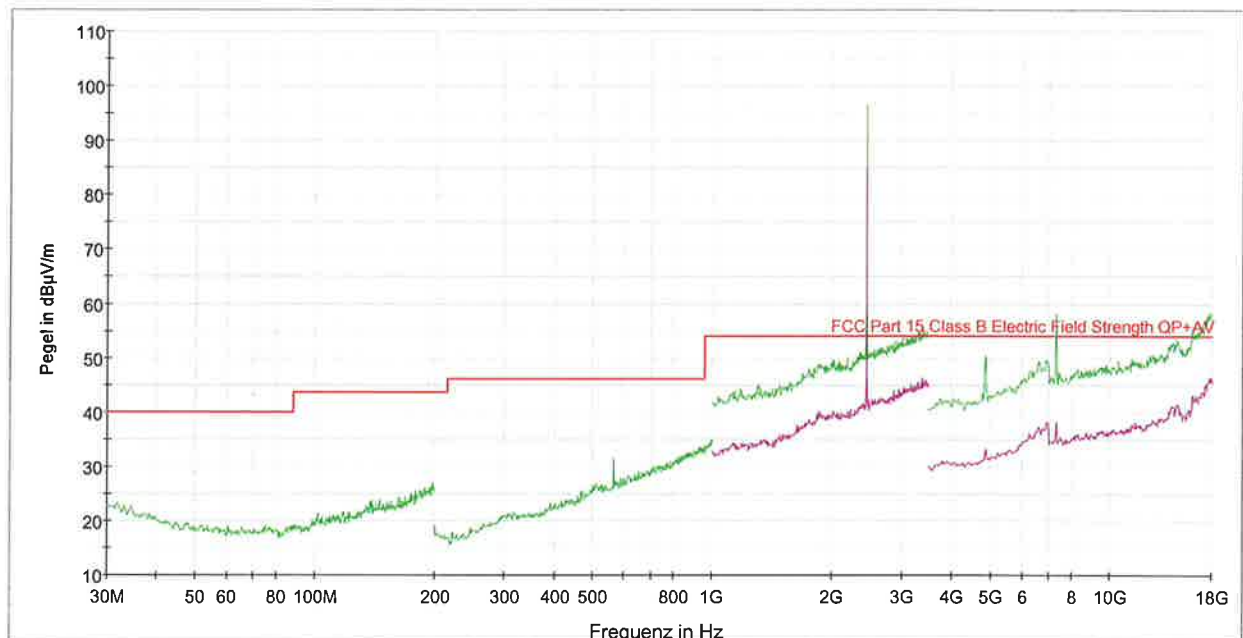
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009–0.490     | 2400/F(kHz)                       | 300                           |
| 0.490–1.705     | 24000/F(kHz)                      | 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: NT-100; NT-110; NT-111; NT-112; NT-122; NT-151; NT-207

**Emissions outside 2400 – 2483,5 MHz**

**§ 15.249 (d) (e)**

**Channel 4 (2441,8 MHz) – average values above 1 GHz are shown in magenta – green = peak**



PK+\_MAXH [4.2\_CH4\_F1.Result:2]  
PK+\_MAXH [4.2\_CH4\_F2.Result:2]  
PK+\_MAXH [4.2\_CH4\_F3.Result:2]  
AVG\_MAXH [4.2\_CH4\_F3.Result:4]  
FCC Part 15 Class B Electric Field Strength QP+AV [FCC Part 15 Class B Electric Field Strength QP+AV.LimitLine:1]  
PK+\_MAXH [4.2\_CH4\_F4.Result:2]  
AVG\_MAXH [4.2\_CH4\_F4.Result:4]

**LIMIT**

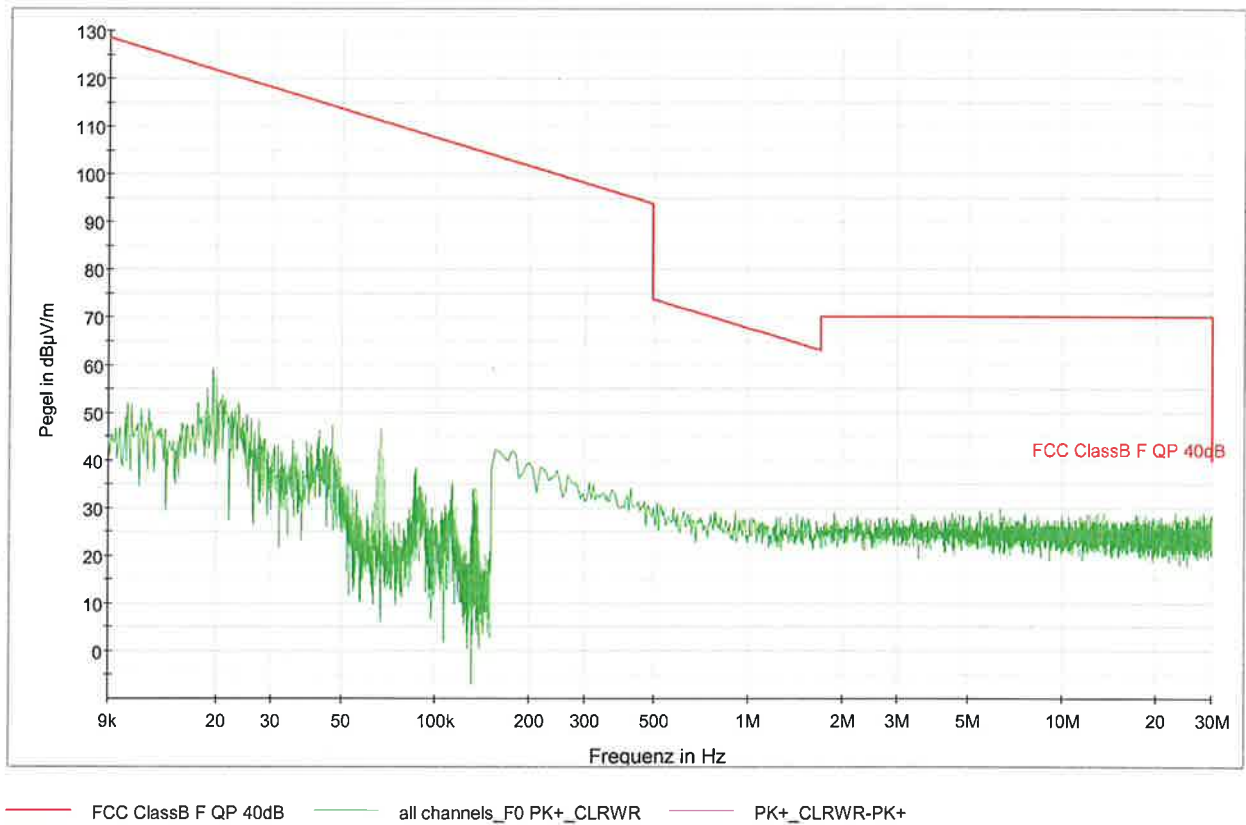
**see page 11**

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-129; NT-131; NT-207

Remark: Although the measurements were made up to the 10<sup>th</sup> harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless no emissions above noise level were found in the frequency range above 18 GHz.

**Emissions outside 2400 – 2483,5 MHz**  
Channel 10 (2470-25 MHz)

**§ 15.249 (d) (e)**



**LIMIT**

**SUBCLAUSE 15.249(d) (e) (15.209)**

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

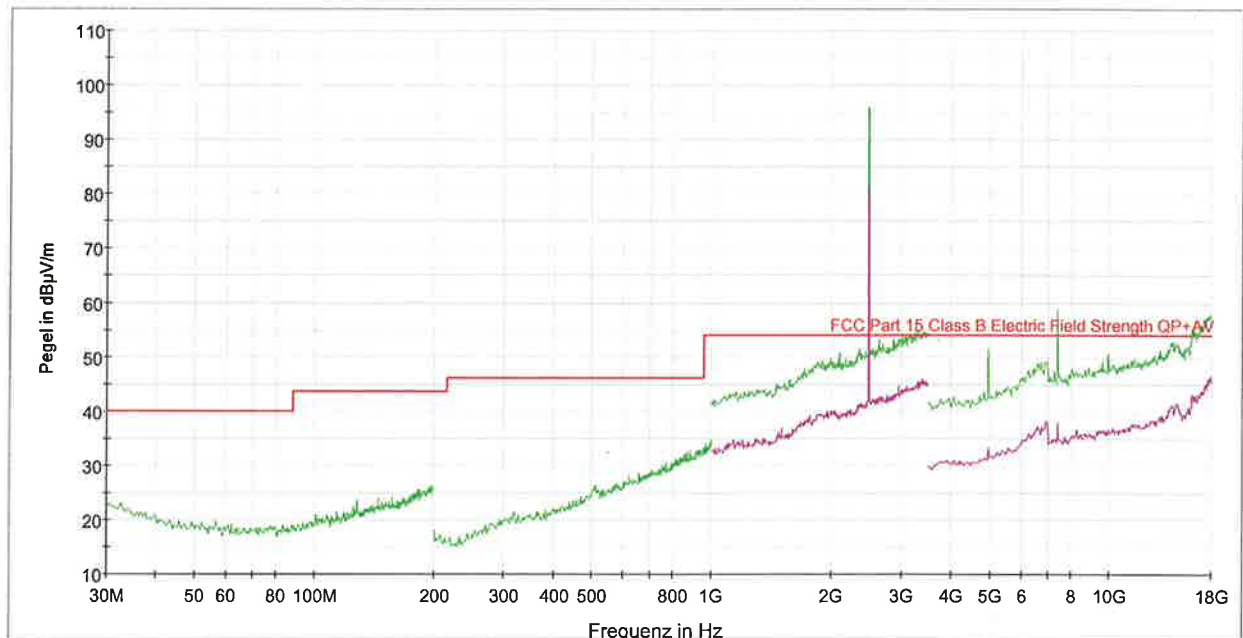
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009–0.490     | 2400/F(kHz)                       | 300                           |
| 0.490–1.705     | 24000/F(kHz)                      | 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: NT-100; NT-110; NT-111; NT-112; NT-122; NT-151; NT-207

**Emissions outside 2400 – 2483,5 MHz**

**§ 15.249 (d) (e)**

**Channel 10 (2479,25 MHz) – average values above 1 GHz are shown in magenta – green = peak**



PK+\_MAXH [4.2\_CH10\_F1.Result:2]  
PK+\_MAXH [4.2\_CH10\_F2.Result:2]  
PK+\_MAXH [4.2\_CH10\_F3.Result:2]  
AVG\_MAXH [4.2\_CH10\_F3.Result:4]  
FCC Part 15 Class B Electric Field Strength QP+AV [FCC Part 15 Class B Electric Field Strength QP+AV.LimitLine:1]  
PK+\_MAXH [4.2\_CH10\_F4.Result:2]  
AVG\_MAXH [4.2\_CH10\_F4.Result:4]

**LIMIT**

**see page 13**

Test Equipment used: NT-100; NT-110; NT-111; NT-112; NT-129; NT-131; NT-207

Remark: Although the measurements were made up to the 10<sup>th</sup> harmonic (25 GHz) the frequency range above 18 GHz is not automatized, so no graphs are available. Nevertheless no emissions above noise level were found in the frequency range above 18 GHz.

# 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"/> | HFH-Z2 - Loop Antenna<br>9 kHz - 30 MHz             | NT-122             | <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"/> | 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"/> | ARS 16/3 – Harmonics- flicker<br>analyzer              | NT-232/1  |
| <input type="checkbox"/> | Log. per. Antenna<br>800 MHz - 2500 MHz             | NT-134             | <input type="checkbox"/> | SRM-3000<br>Spectrum analyzer                          | NT-233    |
| <input type="checkbox"/> | Log. per. Antenna<br>800 MHz - 2500 MHz             | NT-135             | <input type="checkbox"/> | SRM-3006<br>Spectrum analyzer                          | NT-233/1a |
| <input type="checkbox"/> | BiConiLog Antenna<br>26 MHz – 2000 MHz              | NT-137             | <input type="checkbox"/> | E-field probe SRM<br>75 MHz – 3 GHz                    | NT-234    |
| <input type="checkbox"/> | Conical Dipol Antenna<br>PCD8250                    | NT-138             | <input type="checkbox"/> | Field Meter NBM-500<br>incl. E- and H-Field probes     | NT-240a-d |
| <input type="checkbox"/> | HF 906 - Horn Antenna<br>1 - 18 GHz (emission)      | NT-139             | <input type="checkbox"/> | Hall-Teslameter<br>ETM-1                               | NT-241    |
| <input type="checkbox"/> | HZ-1<br>Antenna tripod                              | NT-150             | <input type="checkbox"/> | EFA-3<br>H-field- / E-field probe                      | NT-243    |
| <input type="checkbox"/> | BN 1500<br>Antenna tripod                           | NT-151             | <input type="checkbox"/> | Field Meter EMR-200<br>100 kHz – 3 GHz                 | NT-244    |
| <input type="checkbox"/> | Ant. tripod for EN61000-4-3<br>Model TP1000A        | NT-156             | <input type="checkbox"/> | E-field probe<br>100 kHz – 3 GHz                       | NT-245    |
| <input type="checkbox"/> | Power quality analyzer<br>Fluke 1760 (complete set) | NT-160 -<br>NT-173 | <input type="checkbox"/> | H-field probe<br>300 kHz – 30 MHz                      | NT-246    |

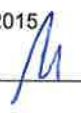
Division Medical  
Technology/  
Communication  
Technology/ EMC

Department: FG

Test report number:  
M/FG-15/172

Page: 1 of 3

Date: 04.11.2015

Checked by: 

# Appendix 1 (continued)

## Test equipment used

|                          |                                               |           |                          |                                                       |             |
|--------------------------|-----------------------------------------------|-----------|--------------------------|-------------------------------------------------------|-------------|
| <input type="checkbox"/> | E-field probe<br>3 MHz – 18 GHz               | NT-247    | <input type="checkbox"/> | VCS 500-M6<br>Surge-Generator                         | NT-326      |
| <input type="checkbox"/> | H-field probe<br>27 MHz – 1 GHz               | NT-248    | <input type="checkbox"/> | Oscillatory Wave Simulator incl.<br>Coupling networks | NT-328a+b+c |
| <input type="checkbox"/> | ELT-400<br>1 Hz – 400 kHz                     | NT-249    | <input type="checkbox"/> | BTA-250 - RF-Amplifier<br>9 kHz - 220 MHz / 250 W     | NT-330      |
| <input type="checkbox"/> | MDS 21 - Absorbing clamp<br>30 - 1000 MHz     | NT-250    | <input type="checkbox"/> | T82-50 RF-Amplifier<br>2 GHz – 8 GHz                  | NT-331      |
| <input type="checkbox"/> | FCC-203I<br>EM Injection clamp                | NT-251    | <input type="checkbox"/> | 500W1000M7 - RF-Amplifier<br>80 - 1000 MHz / 500 W    | NT-332      |
| <input type="checkbox"/> | FCC-203I-DCN<br>Ferrite decoupling network    | NT-252    | <input type="checkbox"/> | AS0102-65R - RF-Amplifier<br>1 GHz - 2 GHz            | NT-333      |
| <input type="checkbox"/> | PR50<br>Current Probe                         | NT-253    | <input type="checkbox"/> | APA01 – RF-Amplifier<br>0,5 GHz – 2,5 GHz             | NT-334      |
| <input type="checkbox"/> | i310s<br>Current Probe                        | NT-254/1  | <input type="checkbox"/> | Preamplifier<br>1 GHz - 4 GHz                         | NT-335      |
| <input type="checkbox"/> | Fluke 87 V<br>True RMS Multimeter             | NT-260    | <input type="checkbox"/> | Preamplifier for GPS<br>MKU 152 A                     | NT-336      |
| <input type="checkbox"/> | Model 2000<br>Digital Multimeter              | NT-261    | <input type="checkbox"/> | Preamplifier<br>100 MHz – 23 GHz                      | NT-337      |
| <input type="checkbox"/> | Fluke 87 V<br>Digital Multimeter              | NT-262/1  | <input type="checkbox"/> | DC Block 10 MHz – 18 GHz<br>Model 8048                | NT-338      |
| <input type="checkbox"/> | ESH2-Z5-U1 Artificial mains<br>network 4x25A  | NT-300    | <input type="checkbox"/> | 2-97201<br>Electronic load                            | NT-341      |
| <input type="checkbox"/> | ESH3-Z5-U1 Artificial mains<br>network 2x10A  | NT-301    | <input type="checkbox"/> | TSX3510P - Power supply<br>0-30 V / 0 - 10 A          | NT-344      |
| <input type="checkbox"/> | ESH3-Z6-U1 Artificial mains<br>network 1x100A | NT-302    | <input type="checkbox"/> | TSX3510P - Power supply<br>0-30 V / 0 - 10 A          | NT-345      |
| <input type="checkbox"/> | ESH3-Z6-U1 Artificial mains<br>network 1x100A | NT-302a   | <input type="checkbox"/> | VDS 200<br>Mobil-impuls-generator                     | NT-350      |
| <input type="checkbox"/> | PHE 4500/B<br>Power amplifier                 | NT-304    | <input type="checkbox"/> | LD 200<br>Mobil-impuls-generator                      | NT-351      |
| <input type="checkbox"/> | PAS 5000<br>Power amplifier                   | NT-304/1a | <input type="checkbox"/> | MPG 200<br>Mobil-Impuls-Generators                    | NT-352      |
| <input type="checkbox"/> | EZ10<br>T-Artificial Network                  | NT-305    | <input type="checkbox"/> | EFT 200<br>Mobil-impuls-generator                     | NT-353      |
| <input type="checkbox"/> | SMG - Signal generator<br>0,1 - 1000 MHz      | NT-310    | <input type="checkbox"/> | AN 200 S1<br>Artificial Network                       | NT-354      |
| <input type="checkbox"/> | SMA100A - Signal generator<br>9 kHz - 6 GHz   | NT-310/1  | <input type="checkbox"/> | FP-EFT 32M<br>3 ph. Coupling filter (Burst)           | NT-400/1    |
| <input type="checkbox"/> | RefRad<br>Reference generator                 | NT-312    | <input type="checkbox"/> | PHE 4500 - Mains impedance<br>network                 | NT-401      |
| <input type="checkbox"/> | SMP 02 - Signal generator<br>10 MHz - 20 GHz  | NT-313    | <input type="checkbox"/> | IP 6.2 Coupling filter for<br>data lines (Surge)      | NT-403      |
| <input type="checkbox"/> | 40 MHz Arbitrary Generator<br>TGA1241         | NT-315    | <input type="checkbox"/> | TK 9421 High Power Volt. Probe<br>150 kHz - 30 MHz    | NT-409      |
| <input type="checkbox"/> | Artificial mains network<br>NSLK 8127-PLC     | NT-316    | <input type="checkbox"/> | ESH2-Z3 - Probe<br>9 kHz - 30 MHz                     | NT-410      |
| <input type="checkbox"/> | Inrush Current Source for<br>PAS 5000         | NT-317a   | <input type="checkbox"/> | IP 4 - Capacitive clamp<br>(Burst)                    | NT-411      |
| <input type="checkbox"/> | Control and measurement device<br>Sycore      | NT-318    | <input type="checkbox"/> | Highpass-Filter<br>100 MHz – 3 GHz                    | NT-412      |
| <input type="checkbox"/> | PEFT - Burst generator<br>up to 4 kV          | NT-320    | <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  |                          |                                                       |             |

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# Appendix 1 (continued) Test equipment used

|                                                                         |        |                                                                                |                    |
|-------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------------------|
| <input type="checkbox"/> Highpass-Filter<br>3500 MHz – 18 GHz           | NT-416 | <input type="checkbox"/> FCC-801-S25<br>Coupling decoupling network            | NT-462             |
| <input type="checkbox"/> RF-Attenuator 10 dB<br>DC – 18 GHz / 50 W      | NT-417 | <input type="checkbox"/> FCC-801-T4<br>Coupling decoupling network             | NT-463             |
| <input type="checkbox"/> RF-Attenuator 6 dB<br>DC – 18 GHz / 50 W       | NT-418 | <input type="checkbox"/> FCC-801-C1<br>Coupling decoupling network             | NT-464             |
| <input type="checkbox"/> RF-Attenuator 3 dB<br>DC – 18 GHz / 50 W       | NT-419 | <input type="checkbox"/> SW 9605 - Current probe<br>150 kHz – 30 MHz           | NT-465/1           |
| <input type="checkbox"/> RF-Attenuator 20 dB<br>DC - 1000 MHz / 25 W    | NT-421 | <input type="checkbox"/> 95242-1 – Current probe<br>1 MHz – 400 MHz            | NT-468             |
| <input type="checkbox"/> RF-Attenuator 30 dB<br>DC - 1000 MHz / 1 W     | NT-423 | <input type="checkbox"/> 94106-1L-1 – Current probe<br>100 kHz – 450 MHz       | NT-471             |
| <input type="checkbox"/> RF-Attenuator<br>30 dB                         | NT-424 | <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-425 | <input type="checkbox"/> Coupling networks<br>according to EN 61000-4-16       | NT-481 -<br>NT-483 |
| <input type="checkbox"/> RF-Attenuator 6 dB<br>DC - 1000 MHz / 1 W      | NT-426 | <input type="checkbox"/> Van der Hoofden Test Head                             | NT-484             |
| <input type="checkbox"/> RF-Attenuator<br>6 dB                          | NT-428 | <input type="checkbox"/> PC P4 3 GHz<br>Test computer                          | NT-500             |
| <input type="checkbox"/> RF-Attenuator<br>0 dB - 81 dB                  | NT-429 | <input type="checkbox"/> PC P4 1700 MHz<br>Notebook                            | NT-505             |
| <input type="checkbox"/> WRU 27 - Band blocking<br>27 MHz               | NT-430 | <input type="checkbox"/> Monitoring camera<br>with Monitor                     | NT-511             |
| <input type="checkbox"/> WHJ450C9 AA - High pass<br>450 MHz             | NT-431 | <input type="checkbox"/> ES-K1 Version 1.71 SP2<br>Test software               | NT-520             |
| <input type="checkbox"/> WHJ250C9 AA - High pass<br>250 MHz             | NT-432 | <input type="checkbox"/> EMC32 Version 9.25<br>Test software                   | NT-520/1           |
| <input type="checkbox"/> RF-Load<br>150 W                               | NT-433 | <input type="checkbox"/> SRM-TS Version 1.3<br>software for SRM-3000           | NT-522             |
| <input type="checkbox"/> Impedance transducer<br>1:4 ; 1:9 ; 1:16       | NT-435 | <input type="checkbox"/> SRM-TS Version 1.3.1<br>software for SRM-3006         | NT-522/1           |
| <input type="checkbox"/> RF-Attenuator DC – 18 GHz<br>6 dB              | NT-436 | <input type="checkbox"/> Spitzenberger und Spies<br>Test software V3.4         | NT-525             |
| <input type="checkbox"/> RF-Attenuator DC – 18 GHz<br>6 dB              | NT-437 | <input type="checkbox"/> Noise power test apparatus<br>according to EN 55014   | NT-530             |
| <input type="checkbox"/> RF-Attenuator DC – 18 GHz<br>10 dB             | NT-438 | <input type="checkbox"/> Vertical coupling plane<br>(ESD)                      | NT-531             |
| <input type="checkbox"/> RF-Attenuator DC – 18 GHz<br>20 dB             | NT-439 | <input type="checkbox"/> Test cable #4<br>for EN 61000-4-6                     | NT-553             |
| <input type="checkbox"/> I+P 7780 Directional coupler<br>100 - 2000 MHz | NT-440 | <input type="checkbox"/> Test cable #3<br>for conducted emission               | NT-554             |
| <input type="checkbox"/> ESH3-Z2 - Pulse limiter<br>9 kHz - 30 MHz      | NT-441 | <input type="checkbox"/> Test cable #5+#6<br>ESD-cable (2x470k)                | NT-555 +<br>NT-556 |
| <input type="checkbox"/> Power Divider<br>6 dB/1 W/50 Ohm               | NT-443 | <input type="checkbox"/> Test cable #8<br>Sucoflex 104EA                       | NT-559             |
| <input type="checkbox"/> Directional coupler<br>0,1 MHz – 70 MHz        | NT-444 | <input type="checkbox"/> Test cable #9<br>(for outdoor measurements)           | NT-580             |
| <input type="checkbox"/> Directional coupler<br>0,1 MHz – 70 MHz        | NT-445 | <input type="checkbox"/> Test cable #10<br>(for outdoor measurements)          | NT-581             |
| <input type="checkbox"/> Tube imitations<br>according to EN 55015       | NT-450 | <input type="checkbox"/> Test cable #13<br>Sucoflex 104PE                      | NT-584             |
| <input type="checkbox"/> FCC-801-M3-16A<br>Coupling decoupling network  | NT-458 | <input type="checkbox"/> Test cable #21<br>for SRM-3000                        | NT-592             |
| <input type="checkbox"/> FCC-801-M2-50A<br>Coupling decoupling network  | NT-459 | <input type="checkbox"/> Shield chamber                                        | NT-600             |
| <input type="checkbox"/> FCC-801-M5-25<br>Coupling decoupling network   | NT-460 | <input type="checkbox"/> Climatic chamber                                      | M-1200             |
| <input type="checkbox"/> FCC-801-AF10<br>Coupling decoupling network    | NT-461 |                                                                                |                    |

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## Appendix 2 Photodocumentation

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## Appendix 2 Photodocumentation

Description: Backside view including Label

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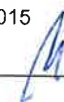
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## Appendix 2 Photodocumentation

Description: Battery compartment opened

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## Appendix 2 Photodocumentation

Description: Case opened view #1

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Description: Case opened view #2

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Description: Case opened view #3

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Description: Case opened view #4

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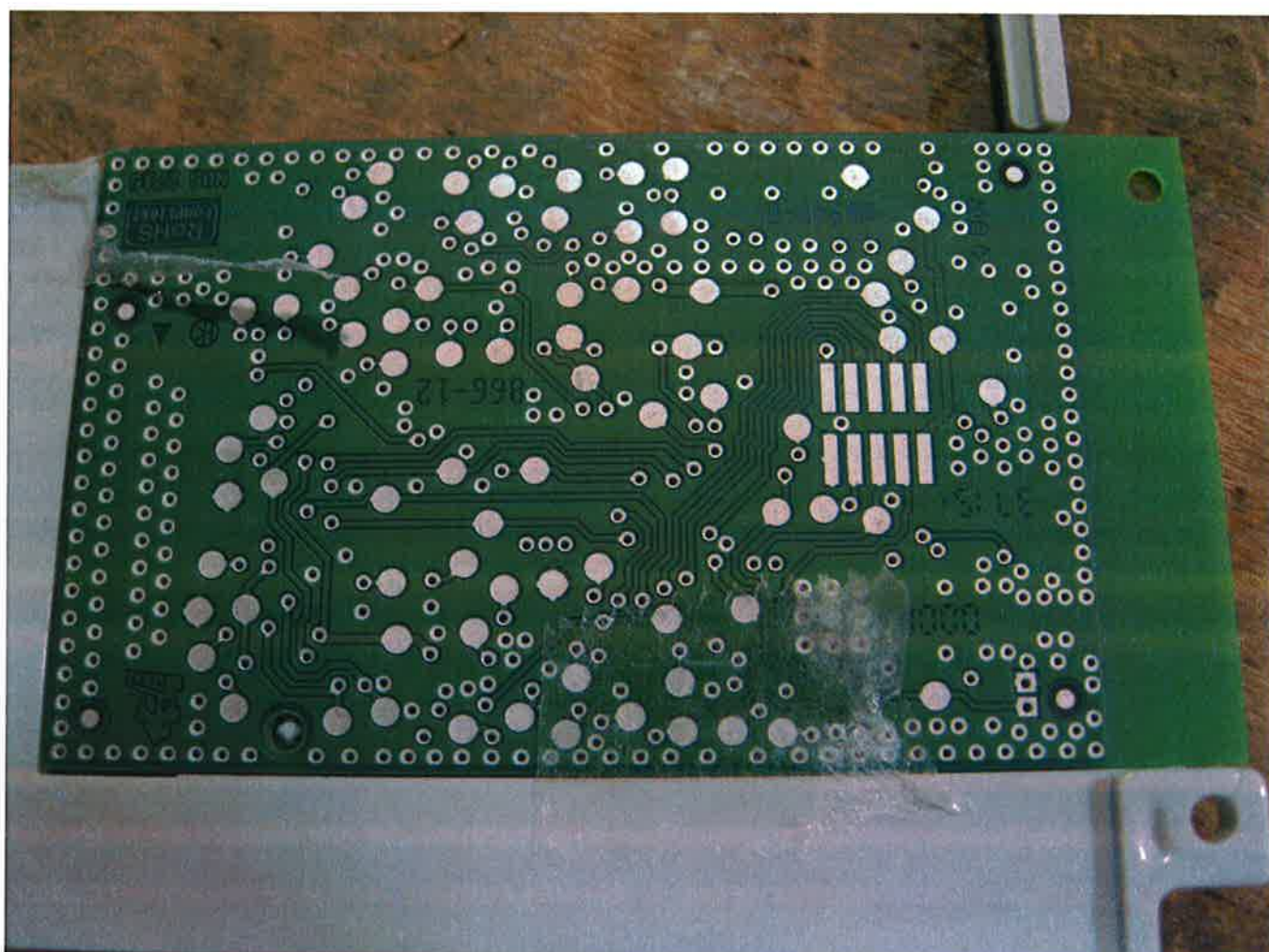
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## Appendix 2 Photodocumentation

Description: Case opened view #5

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## Appendix 2 Photodocumentation

Description: Test setup radiated emissions below 1 GHz

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## Appendix 2 Photodocumentation

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