

**TEST REPORT**  
of the accredited test laboratory**TÜV Nr.:INE-AT/FG-20/132****TÜV AUSTRIA  
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Industry & Energy Austria

Technik

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

**Tested Product:** wireless microphone handheld transmitter

**Type:** CSCHTX RF Band VII

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

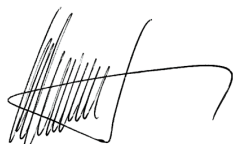
**Output power:** 25 mW                      **power supply:** 1,5V DC  
internal battery

**Frequency range:** 500,1 – 530,5 MHz      **Channel separation:** 200kHz

**Standard:** EN 300 422-1 V2.1.2 ; 47 CFR Part 74 (Oct. 2018 Edition);  
RSS-210 Issue 9

TÜV AUSTRIA SERVICES GMBH  
Test laboratory for EMC

Supervisor of EMC-laboratory:



Ing. Wilhelm Seier



09.04.2020

checked by:



Ing. Michael Emminger

Testing Laboratory,  
Inspection Body,  
Certification Body,  
Calibration Laboratory,  
Verifizierungsstelle**Notified Body 0408  
IC 2932K-1****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 BKAUATWWIBAN  
AT153100000104093282  
BIC RZBAATWWVAT 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:** 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:** 16.01. till 29.01.2019

## 2. Description of EUT

**EUT:** Wireless microphone handheld transmitter 'CSCHTX RF Band VIII'

**Serial Number:** Prototype

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

**Description:** AKG Acoustics GmbH provided the following configuration for the measurements:

Prototype

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

Tranmitting

**Technical data EUT:** Rated voltage: 1,5VDC  
Rated current: 500mA  
Rated frequency: DC

Mains voltage during the tests: 1,5VDC via internal battery

**Climatic conditions in the emc laboratory:** Relative humidity: 19%  
Temperature: 23°C

### 3. Standards / Final result

| Name  | Title  | Deviation | Result |
|---|--|-----------|--------|
| EN 300422-1 V2.1.2  | Wireless Microphones;<br>Audio PMSE up to 3 GHz;<br>Part 1: Class A Receivers;<br>Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU | none      | OK     |
| 47 CFR Part 74<br>(Oct. 2018 Edition)   | EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES;<br>Subpart H—Low Power Auxiliary Stations  | none      | OK     |
| RSS-210 Issue 9   | Licence-Exempt Radio Apparatus:<br>Category I Equipment;<br>Annex G—Low-Power Radio Apparatus Operating in the Television Bands  | none      | OK     |
| <p>Result: Opinions and interpretation of testing laboratory<br/>OK: EUT passed<br/>NOK: EUT failed</p> |  |           |        |

#### 4. TEST RESULT

##### 4.1. Frequency stability

##### SUBCLAUSE 8.1

ETSI requirements

Rated output power: 25 mW

| Operating condition     |                  | Frequency Error kHz |           |           | Frequency Error ppm |           |           |
|-------------------------|------------------|---------------------|-----------|-----------|---------------------|-----------|-----------|
|                         |                  | 500,1 MHz           | 515,3 MHz | 530,5 MHz | 500,1 MHz           | 515,3 MHz | 530,5 MHz |
| $T_{nom}$ ( 23 )°C      | $V_{nom}$ (1,5)V | 1,335               | 1,368     | 1,400     | 2,67                | 2,65      | 2,64      |
| $T_{min}$ ( -20 )°C     | $V_{min}$ (1)V   | -0,376              | -0,393    | -0,409    | -0,75               | -0,76     | -0,77     |
|                         | $V_{nom}$ (1,5)V | -0,481              | -0,511    | -0,515    | -0,96               | -0,99     | -0,97     |
| $T_{max}$ ( 55 )°C      | $V_{min}$ (1)V   | -0,036              | -0,015    | -0,027    | -0,07               | -0,03     | -0,05     |
|                         | $V_{nom}$ (1,5)V | -0,046              | -0,038    | -0,043    | -0,09               | -0,07     | -0,08     |
| Measurement uncertainty |                  |                     |           |           | ± 0,1 ppm           |           |           |

##### LIMIT

##### SUBCLAUSE 8.1.3

The frequency error shall not exceed 20 parts per million for frequencies below 1 GHz, 15 parts per million between 1 GHz and 2 GHz and 10 ppm above 2 GHz.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; EMV-205; M-1200

**Frequency stability**

**SUBCLAUSE 74.861 / G3.3**

FCC/ISED requirements

Rated output power: 25 mW

| Operating condition                           | Frequency Error kHz |           |           | Frequency Error ppm |           |           |
|---|---------------------|-----------|-----------|---------------------|-----------|-----------|
|   | 500,1 MHz           | 515,3 MHz | 530,5 MHz | 500,1 MHz           | 515,3 MHz | 530,5 MHz |
| Operating voltage at 20°C ambient temperature |                     |           |           |                     |           |           |
| 1,5 V   | 1,310               | 1,344     | 1,384     | 2,62                | 2,61      | 2,61      |
| 1 V   | 1,300               | 1,333     | 1,368     | 2,60                | 2,59      | 2,58      |
| Measurement uncertainty                       |                     |           |           | ± 0,1 ppm           |           |           |

| Operating condition                           | Frequency Error kHz |           |           | Frequency Error ppm |           |           |
|---|---------------------|-----------|-----------|---------------------|-----------|-----------|
|   | 500,1 MHz           | 515,3 MHz | 530,5 MHz | 500,1 MHz           | 515,3 MHz | 530,5 MHz |
| ambient temperature at 1,5V operating voltage |                     |           |           |                     |           |           |
| -30°C   | -4,402              | -4,565    | -4,728    | -8,80               | -8,86     | -8,91     |
| -20°C   | -0,531              | -0,511    | -0,552    | -1,06               | -0,99     | -1,04     |
| -10°C   | 1,044               | 1,061     | 1,081     | 2,09                | 2,06      | 2,04      |
| 0°C   | 1,745               | 1,805     | 1,867     | 3,49                | 3,50      | 3,52      |
| 10°C  | 1,710               | 1,735     | 1,824     | 3,42                | 3,37      | 3,44      |
| 20°C  | 1,310               | 1,344     | 1,373     | 2,62                | 2,61      | 2,59      |
| 30°C  | 1,375               | 1,404     | 1,442     | 2,75                | 2,72      | 2,72      |
| 40°C  | 0,414               | 0,470     | 0,450     | 0,83                | 0,91      | 0,85      |
| 50°C  | -0,021              | -0,015    | -0,038    | -0,04               | -0,03     | -0,07     |
| Measurement uncertainty                       |                     |           |           | ± 0,1 ppm           |           |           |

**LIMIT SUBCLAUSE 74.861(e)(4) / Table G.1**

The frequency tolerance of the transmitter shall be 0,005 percent (50ppm).

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207; EMV-205; M-1200

#### 4.2 Rated output power

#### SUBCLAUSE 8.2

Radiated Measurement

Rated output power: 25 mW

| Test conditions  |                  | Transmitter power (mW) (erp) |           |           |
|--|------------------|------------------------------|-----------|-----------|
|  |                  | 500,1 MHz                    | 515,3 MHz | 530,5 MHz |
| $T_{nom}$ ( 23 )°C   | $V_{nom}$ (1,5)V | 23,99                        | 23,99     | 19,50     |
| Maximum deviation from rated output power under normal test conditions (%) |                  | -4,0                         | -4,0      | -22,0     |
| Measurement uncertainty  |                  | ± 0,75 dB                    |           |           |

#### LIMIT

#### SUBCLAUSE 8.2.3

The measured value shall be within +20 % and -50 % of the manufacturers declared rated output power.

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-207



### 4.3 NECESSARY BANDWIDTH

### SUBCLAUSE 8.3

#### LIMIT

#### SUBCLAUSE 8.3.2.2

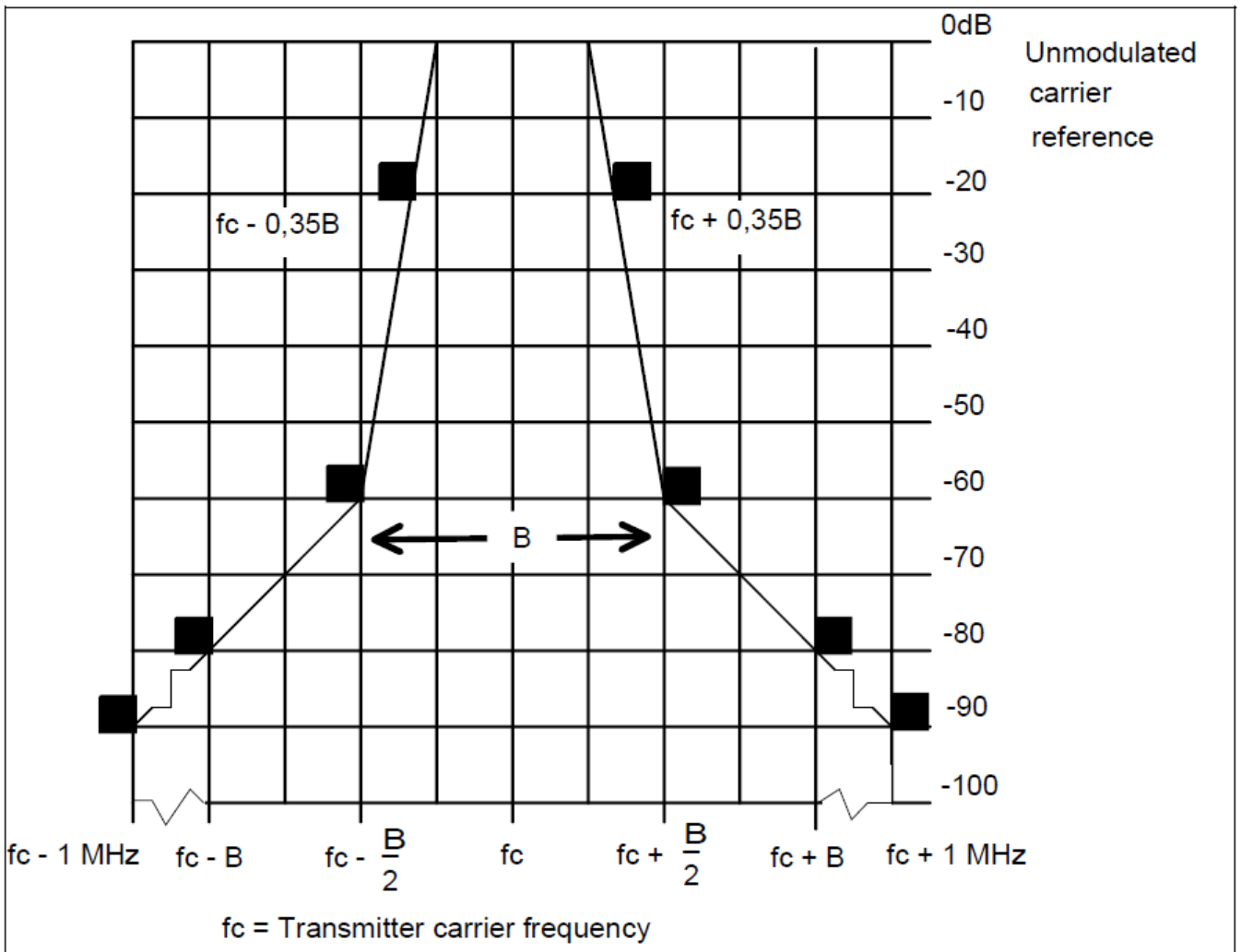


Figure 3 shows the spectrum mask for all analogue systems in the band. The -90 dBc point shall be  $\pm 1$  MHz from  $fc$  measured with an average detector. To comply, a measured value shall fall below the mask limit as shown in figure 3.

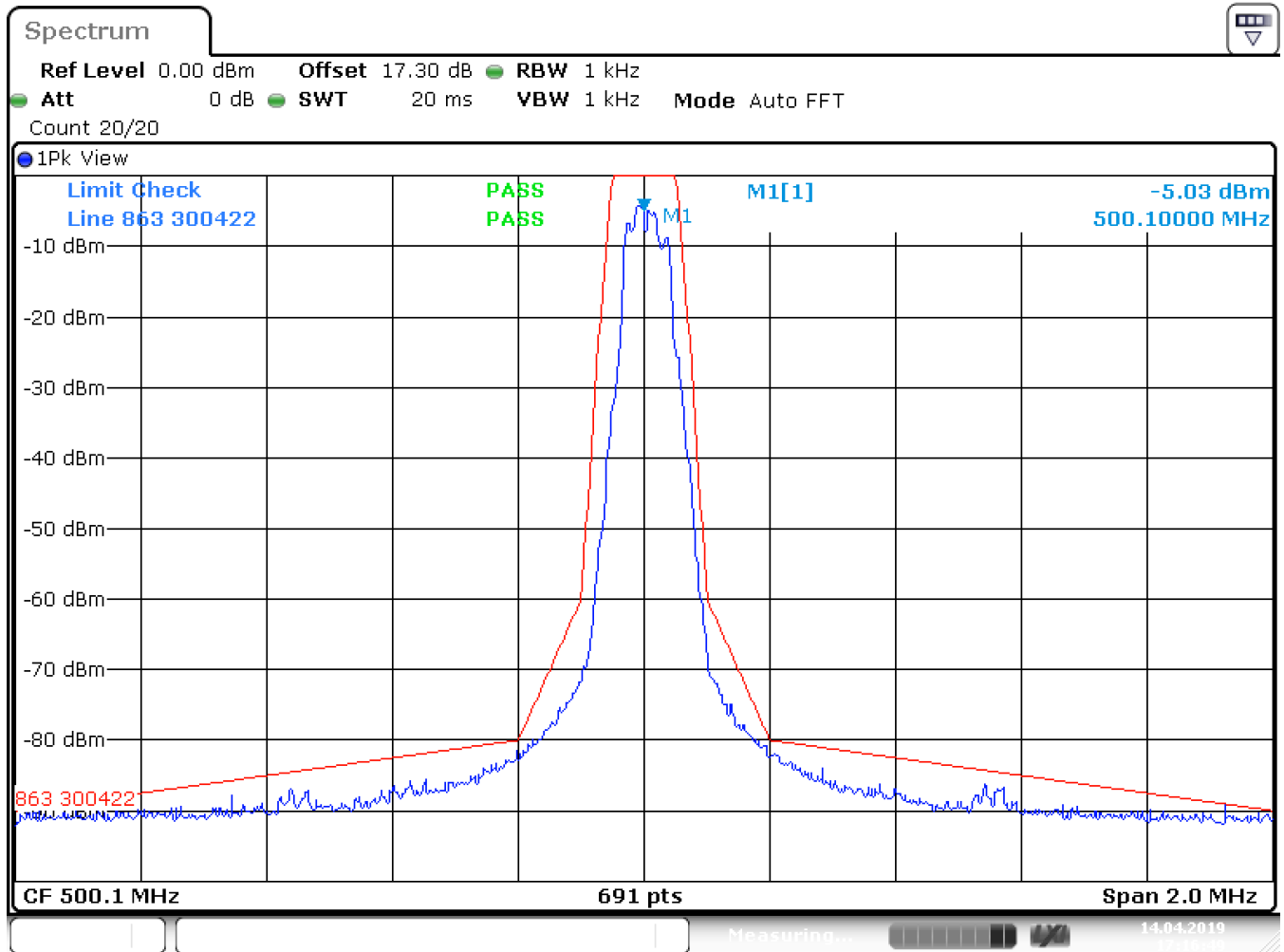
### NECESSARY BANDWIDTH

### SUBCLAUSE 8.3

The operating Bandwidth was measured at an acoustic input level 12 dB higher than the limiting threshold, determined with 500 Hz signal.

Rated output power: 25 mW

Measurement with weighted noise source signal @ 500,1 MHz centered.



Date: 14.APR.2019 17:16:50

TEST EQUIPMENT USED: EMV-205

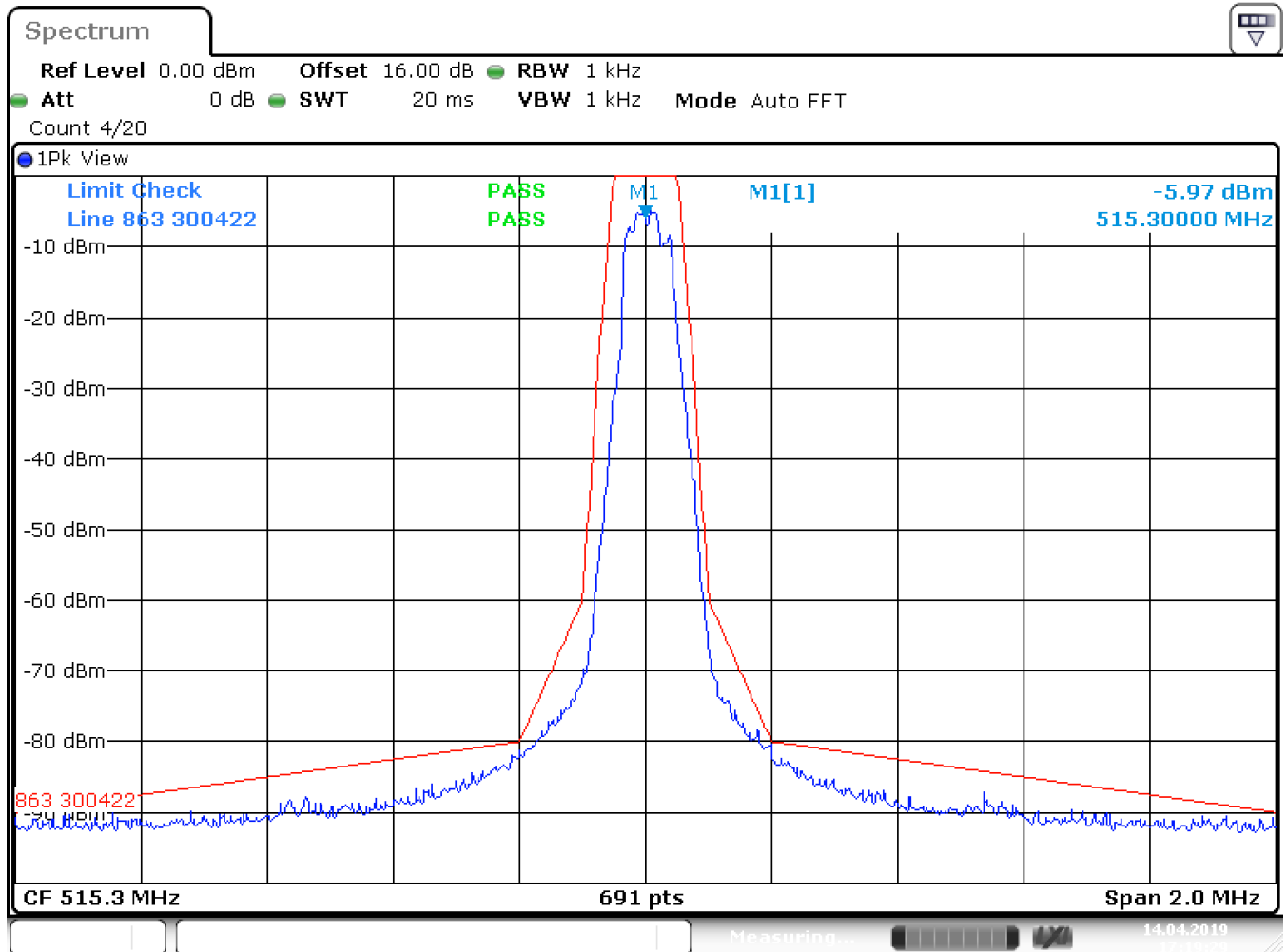
### NECESSARY BANDWIDTH

### SUBCLAUSE 8.3

The operating Bandwidth was measured at an acoustic input level 12 dB higher than the limiting threshold, determined with 500 Hz signal.

Rated output power: 25 mW

Measurement with weighted noise source signal @ 515,3 MHz centered.



Date: 14.APR.2019 17:19:29

TEST EQUIPMENT USED: EMV-205

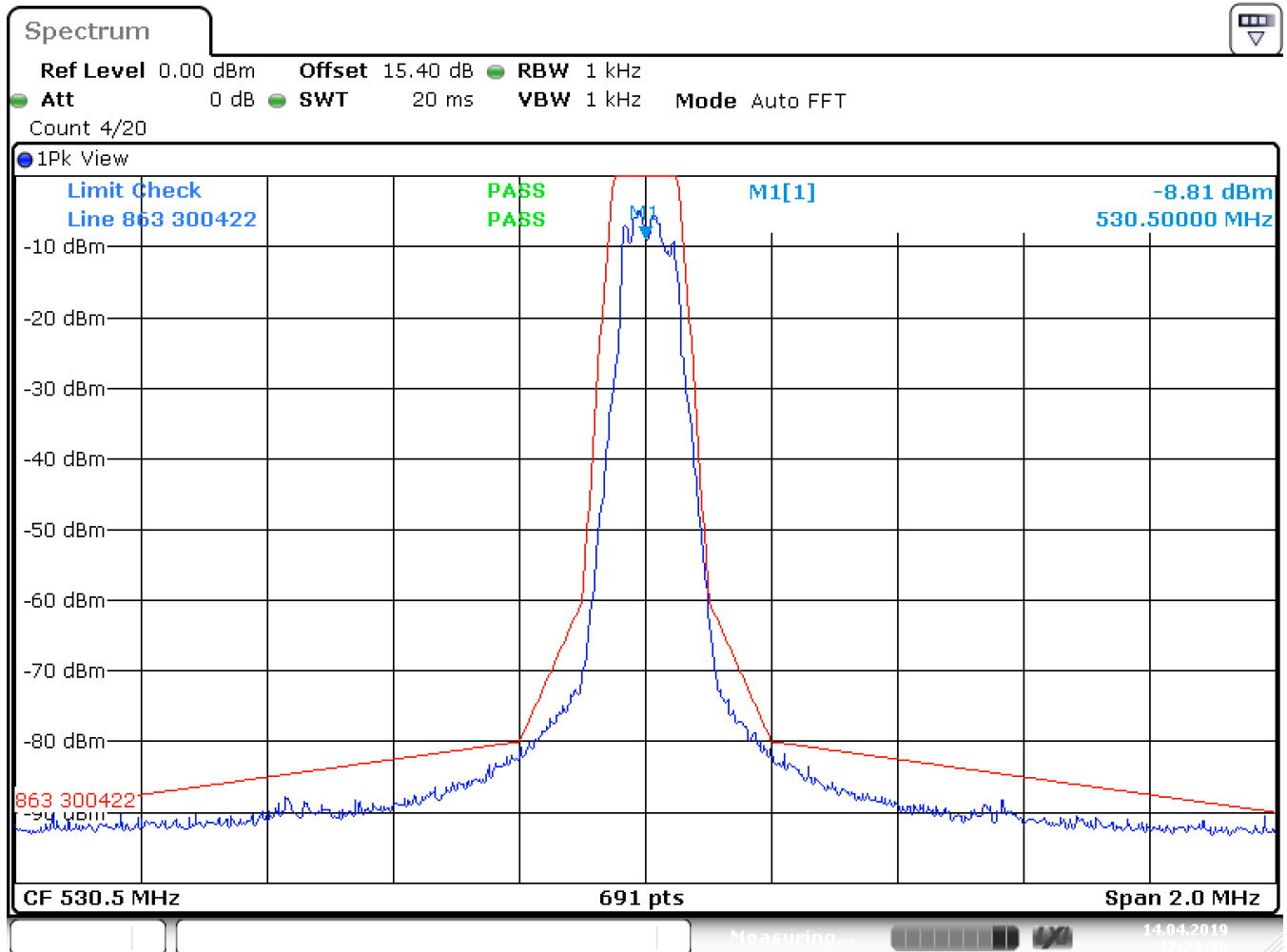
### NECESSARY BANDWIDTH

### SUBCLAUSE 8.3

The operating Bandwidth was measured at an acoustic input level 12 dB higher than the limiting threshold, determined with 500 Hz signal.

Rated output power: 25 mW

Measurement with weighted noise source signal @ 530,5 MHz centered.



Date: 14.APR.2019 17:21:36

TEST EQUIPMENT USED: EMV-205

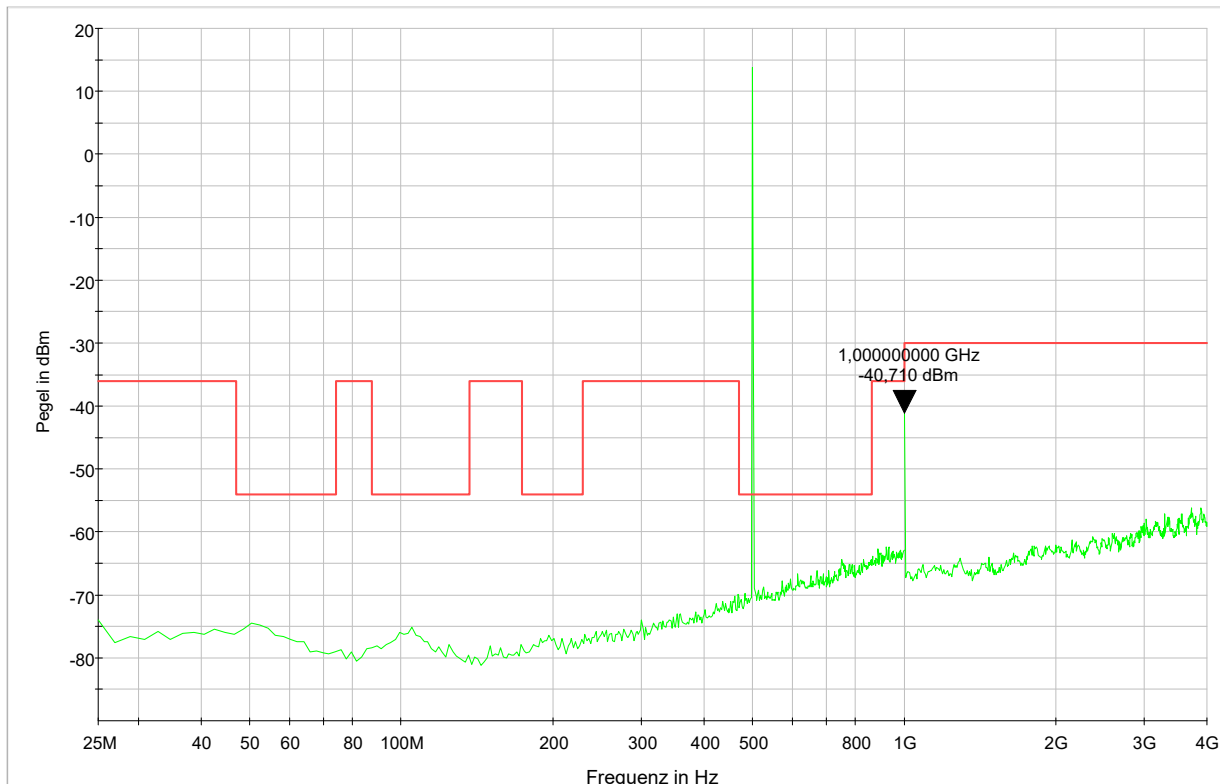
**4.4 TRANSMITTER SPURIOUS EMISSIONS radiated**

**SUBCLAUSE 8.4**

Operating mode: transmitter operating at 500,1 MHz

Rated output power: 25 mW

Modulation: unmodulated carrier



- PK+ \_MAXH(1):HT470\_VII\_CH1\_F1
- PK+ \_MAXH(1):HT470\_VII\_CH1\_F2
- PK+ \_CLRWR
- MaxPeak-PK+ (Einzel)
- PK+ \_MAXH
- EN300422-1 dBm

**LIMIT SUBCLAUSE 8.4.3**

| 47 MHz to 74 MHz<br>87,5 MHz to 137 MHz<br>174 MHz to 230 MHz<br>470 MHz to 862 MHz | Other frequencies ≤ 1000 MHz | Frequencies > 1000 MHz |
|---|------------------------------|------------------------|
| 4,0 nW (-54 dBm)  | 250 nW (-36 dBm)             | 1,00 µW (-30 dBm)      |

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-139; NT-337; NT-207

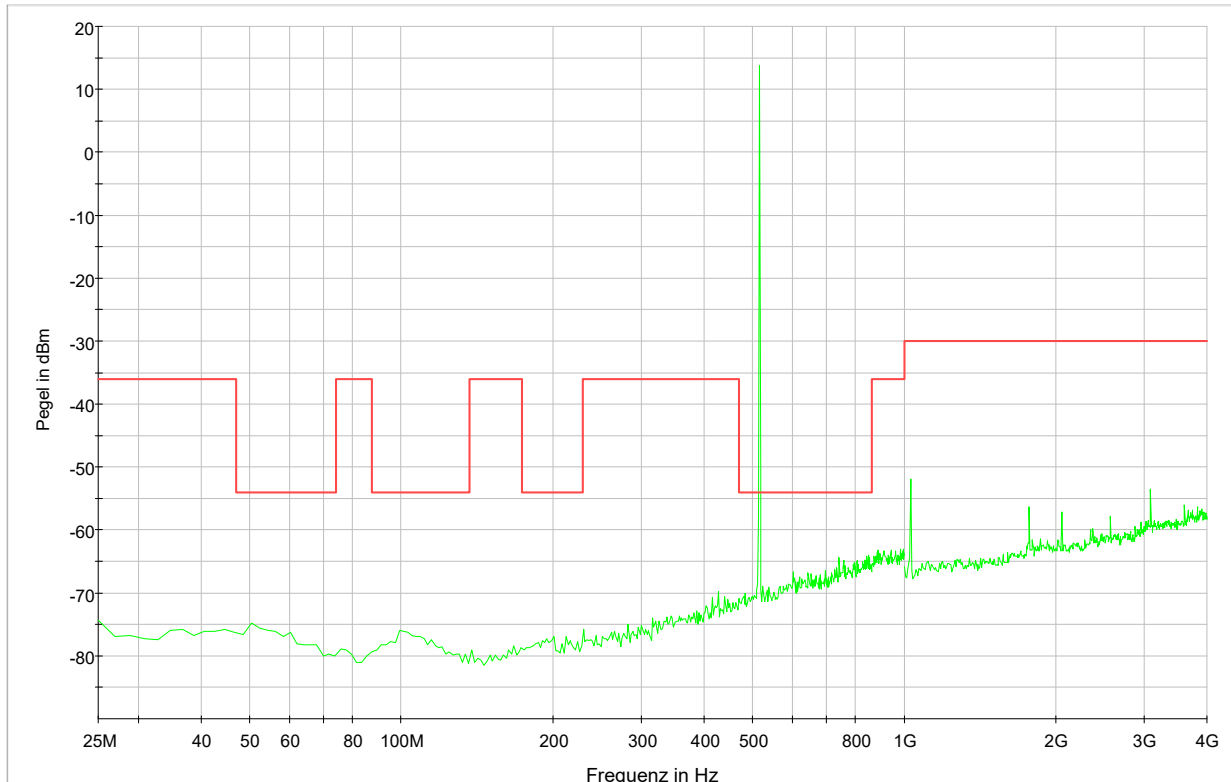
**TRANSMITTER SPURIOUS EMISSIONS radiated**

**SUBCLAUSE 8.4**

Operating mode: transmitter operating at 515,3 MHz

Rated output power: 25 mW

Modulation: unmodulated carrier



— PK+ \_MAXH(1):HT470\_VII\_CH2\_F1   
 — PK+ \_MAXH(1):HT470\_VII\_CH2\_F2   
 — PK+ \_CLRWR  
x MaxPeak-PK+ (Einzel)   
 — PK+ \_MAXH   
 — EN300422-1 dBm

**LIMIT SUBCLAUSE 8.4.3**

| 47 MHz to 74 MHz<br>87,5 MHz to 137 MHz<br>174 MHz to 230 MHz<br>470 MHz to 862 MHz | Other frequencies ≤ 1000 MHz | Frequencies > 1000 MHz |
|---|------------------------------|------------------------|
| 4,0 nW (-54 dBm)  | 250 nW (-36 dBm)             | 1,00 µW (-30 dBm)      |

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-139; NT-337; NT-207

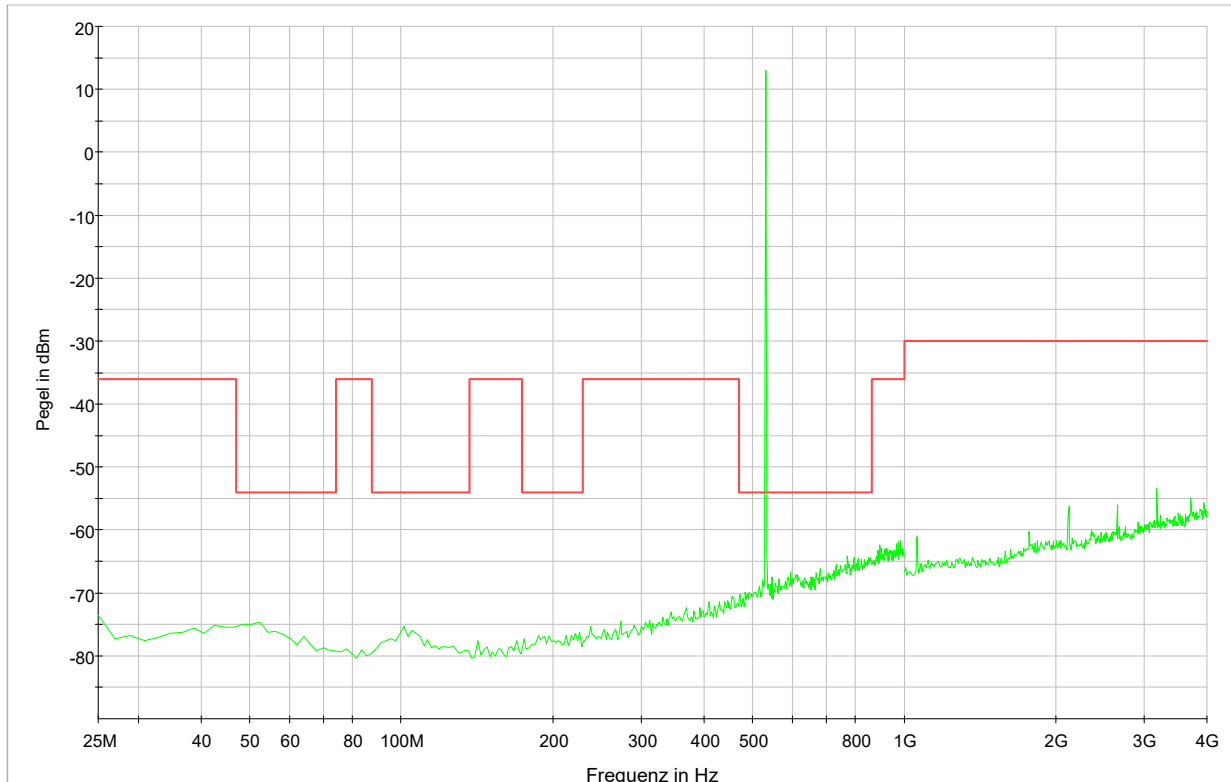
**TRANSMITTER SPURIOUS EMISSIONS radiated**

**SUBCLAUSE 8.4**

Operating mode: transmitter operating at 530,5 MHz

Rated output power: 25 mW

Modulation: unmodulated carrier



— PK+ \_MAXH(1):HT470\_VII\_CH3\_F1   
 — PK+ \_MAXH(1):HT470\_VII\_CH3\_F2   
 — PK+ \_CLRWR  
x MaxPeak-PK+ (Einzel)   
 — PK+ \_MAXH   
 — EN300422-1 dBm

**LIMIT SUBCLAUSE 8.4.3**

| 47 MHz to 74 MHz<br>87,5 MHz to 137 MHz<br>174 MHz to 230 MHz<br>470 MHz to 862 MHz | Other frequencies ≤ 1000 MHz | Frequencies > 1000 MHz |
|---|------------------------------|------------------------|
| 4,0 nW (-54 dBm)  | 250 nW (-36 dBm)             | 1,00 µW (-30 dBm)      |

Test Equipment used: NT-100; NT-110/1; NT-111/1; NT-112/1; NT-131/1; NT-139; NT-337; NT-207

**TRANSMITTER SPURIOUS EMISSIONS radiated**

**SUBCLAUSE 8.4**

Operating mode: transmitter standby

Because the transmitter is operating after switching on, there is no standby mode available and no measurement was performed.



#### 4.5 Transmitter intermodulation distortion

#### SUBCLAUSE 8.5

Radiated measurement

| Unwanted Signal         | TX-IMD (dBc) |           |           |
|-------------------------|--------------|-----------|-----------|
|                         | 500,1 MHz    | 515,3 MHz | 530,5 MHz |
| fw + 5 MHz              | -44,7        | -45,6     | -48,9     |
| fw – 5 MHz              | -44,6        | -46,7     | -50,8     |
| Measurement uncertainty | ± 3dB        |           |           |

#### LIMIT

#### SUBCLAUSE 8.5.3

The maximum resulting IMD product shall be at least 40 dB below the output power of the DUT.

Measuring equipment used:

NT-100; NT-111/1; NT-112/1; NT-113/1; NT-131/1; NT-210; NT-310; NT-310/1; EMV-205

# Appendix 1

## Test equipment used

|                          |  |          |                          |  |                    |
|--------------------------|--|----------|--------------------------|--|--------------------|
| <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 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"/> | ESI26 – Test receiver<br>20 Hz – 26,5 GHz              | NT-207             |
| <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"/> | Hall-Teslameter<br>ETM-1                               | NT-241             |
| <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             |

**Division:**  
Industry & Energy

Department: FG

Test report number:  
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Date: 09.04.2020

## Appendix 1 (continued)

### Test equipment used

**Division:**  
Industry & Energy

Department: FG

Test report number:  
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Date: 09.04.2020

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

## 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 10.60.10<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 |                          |   |                    |

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### 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 10.60.10              | 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>ESR26                               | EMV-200             | <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-250 MHz<br>BBA150               | EMV-300             | <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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Description: General view #1

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Description: Battery compartment opened

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Description: Microphone detached

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Description: Case opened view #1

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## Appendix 2 Photodocumentation

Description: Case opened view #2

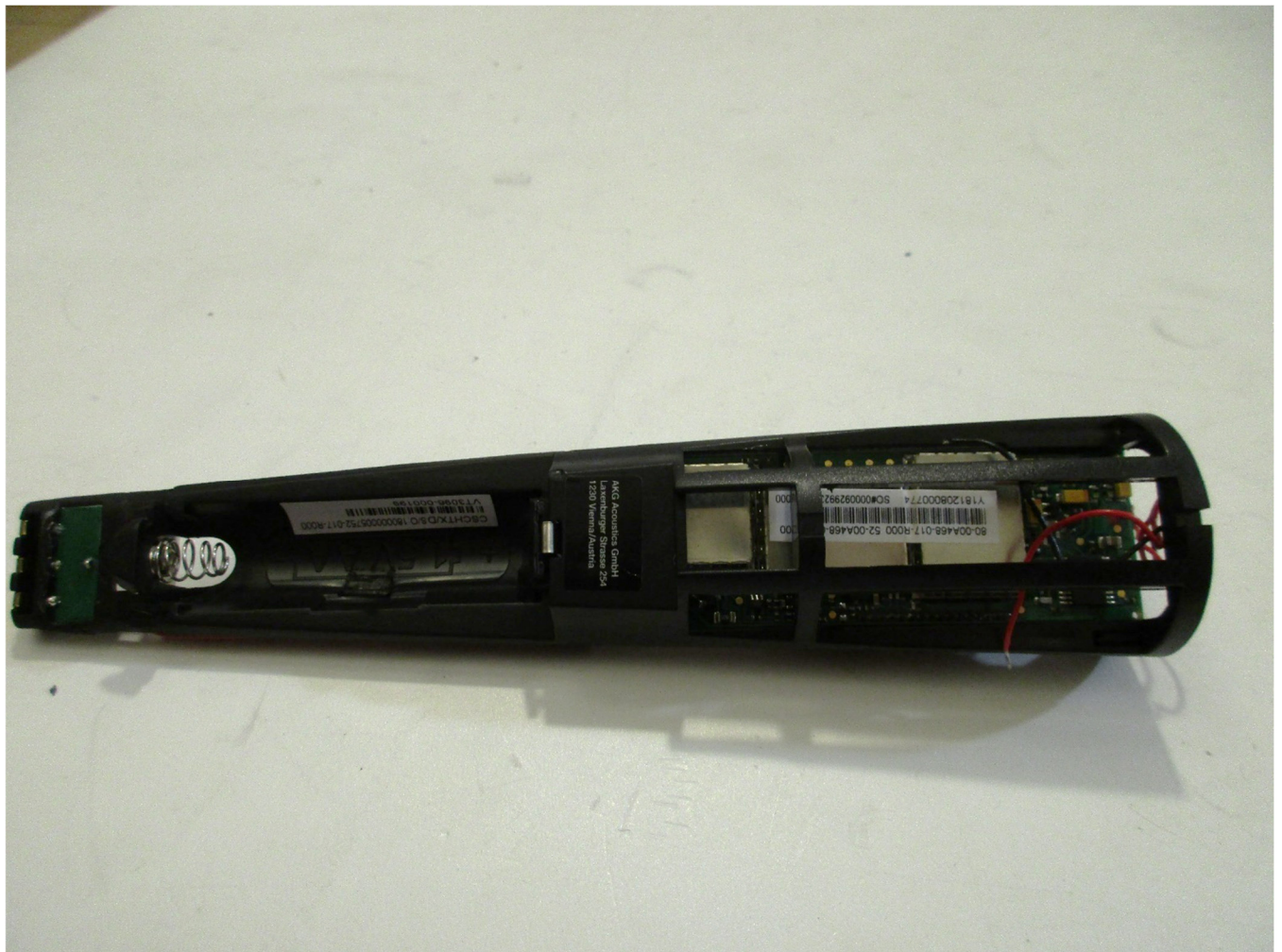
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## Appendix 2 Photodocumentation

Description: Case opened view #3

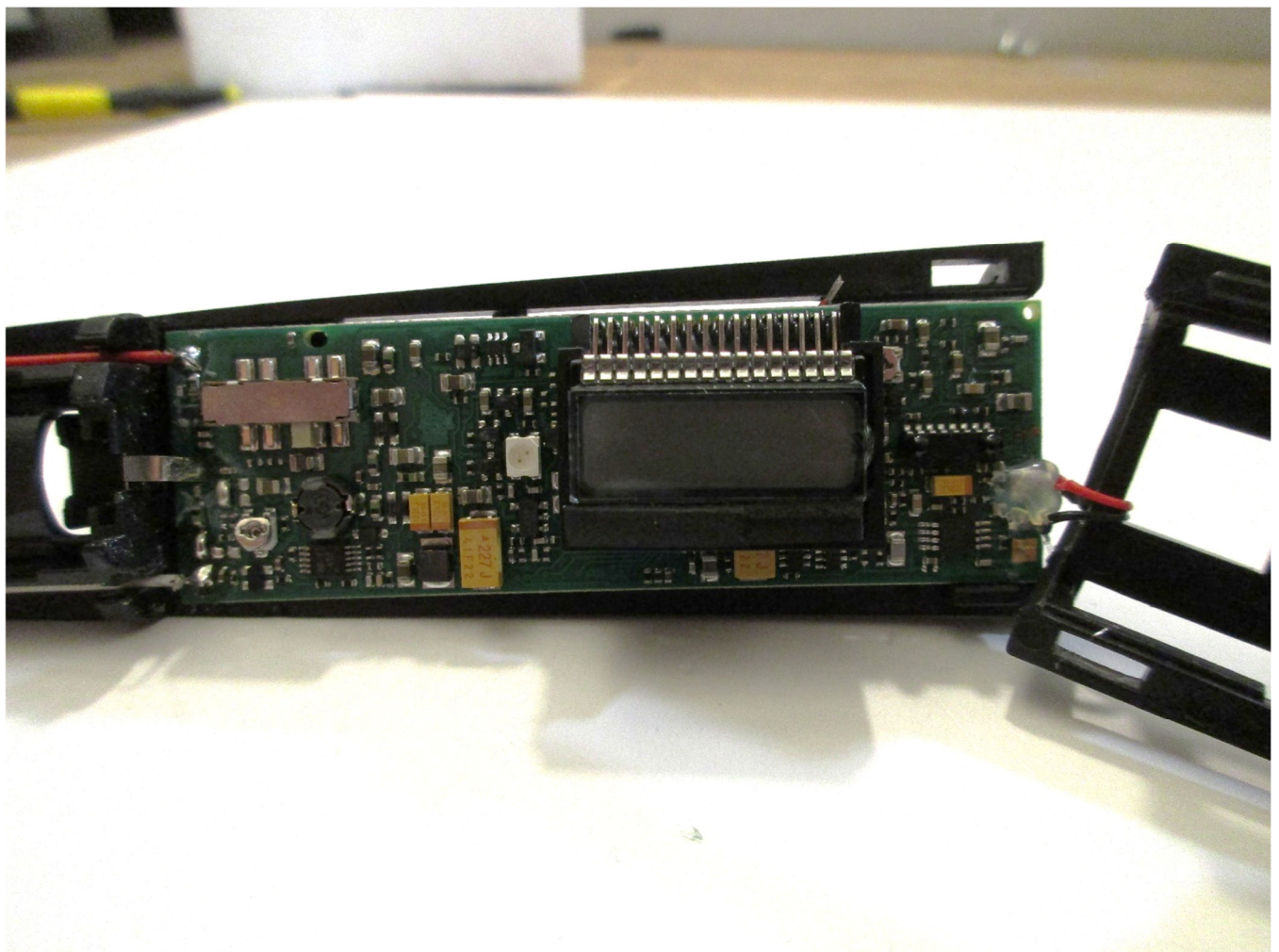
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Description: Case opened view #4

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Description: Shielding detached

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