

TEST REPORT

Test report no.: 1-4473/12-01-03-A



Testing laboratory

CETECOM ICT Services GmbH
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Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01. Area of Testing: Radio/Satellite Communications

Applicant

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Manufacturer

Valeo Automotive Security System(Wuxi)co.Ltd.
Building B11,Meiqing Road,Wuxi Hi-Tech Development Zone
214028 Wuxi City,Jiangsu Province / CHINA

Test standard/s

| | |
|-------------------|--|
| 47 CFR Part 15 | Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices |
| RSS - 210 Issue 8 | Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment |

For further applied test standards please refer to section 3 of this test report.

Test Item

| | |
|---------------------------|-----------------------------|
| Kind of test item: | 315 MHz Flapkey |
| Model name: | B01T1AC |
| FCC ID: | AVL-B01T1AC |
| IC: | 3248D-B01T1AC |
| Frequency: | 314.9 MHz |
| Technology tested: | Modulated carrier |
| Antenna: | Integrated antenna |
| Power Supply: | 3.0 V DC by battery CR 2032 |
| Temperature Range: | -20 °C to +55 °C |



This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

Stefan BöS
Senior Testing Manager

Test performed:

Marco Bertolino
Testing Manager

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2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

| | |
|------------------------------------|------------|
| Date of receipt of order: | 2012-02-22 |
| Date of receipt of test item: | 2012-02-22 |
| Start of test: | 2012-02-22 |
| End of test: | 2012-02-23 |
| Person(s) present during the test: | -/- |

3 Test standard/s

| Test standard | Date | Test standard description |
|-------------------|---------|---|
| 47 CFR Part 15 | 2010-10 | Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices |
| RSS - 210 Issue 8 | 2010-12 | Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment |

4 Test environment

| | | |
|----------------------------|-----------|---------------------------------------|
| Temperature: | T_{nom} | +22 °C during room temperature tests |
| | T_{max} | +55 °C during high temperature tests |
| | T_{min} | -20 °C during low temperature tests |
| Relative humidity content: | | 40 % |
| Barometric pressure: | | not relevant for this kind of testing |
| Power supply: | V_{nom} | 3.0 V DC by battery CR 2032 |
| | V_{max} | -/- |
| | V_{min} | -/- |

5 Test item

| | | |
|----------------------------|---|-----------------------------|
| Kind of test item | : | 315 MHz Flapkey |
| Type identification | : | B01T1AC |
| S/N serial number | : | 13574863 |
| HW hardware status | : | 7.00 |
| SW software status | : | 3.40 A |
| Frequency band [MHz] | : | 314.9 MHz! |
| Type of radio transmission | : | Modulated carrier |
| Use of frequency spectrum | : | |
| Channel access method | : | -/- |
| Type of modulation | : | OOK |
| Number of channels | : | 1 |
| Antenna | : | Integrated antenna |
| Power supply | : | 3.0 V DC by battery CR 2032 |
| Temperature range | : | -20 °C to +55 °C |

6 Test laboratories sub-contracted

None

7 Summary of measurement results



No deviations from the technical specifications were ascertained



There were deviations from the technical specifications ascertained

| TC Identifier | Description | Verdict | Date | Remark |
|---------------|--|---------|------------|--------|
| RF-Testing | CFR Part 15 RSS 210, Issue 8, Annex 1 | Passed | 2012-03-09 | -/- |

| Test Specification Clause | Test Case | Temperature Conditions | Power Source Voltages | Pass | Fail | NA | NP | Remark |
|---|--|------------------------|-----------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|----------|
| § 15.35 (c)/ RSS-GEN Issue 2 | Timing of the transmitter (Duty cycle correction factor) | Nominal | Nominal | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.231 (a) (1)/ RSS-210 Issue 8 | Switch off time | Nominal | Nominal | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.231 (3) (c)/ RSS-210 Issue 8 | Emission Bandwidth | Nominal | Nominal | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.231 (b)/ RSS-210 Issue 8 | Fieldstrength of Fundamental | Nominal | Nominal | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.209/ RSS-210 Issue 8 | Fieldstrength of harmonics and spurious | Nominal | Nominal | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.209/ RSS-GEN Issue Section 6 | Receiver spurious emissions (radiated) | Nominal | Nominal | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | -/- |

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

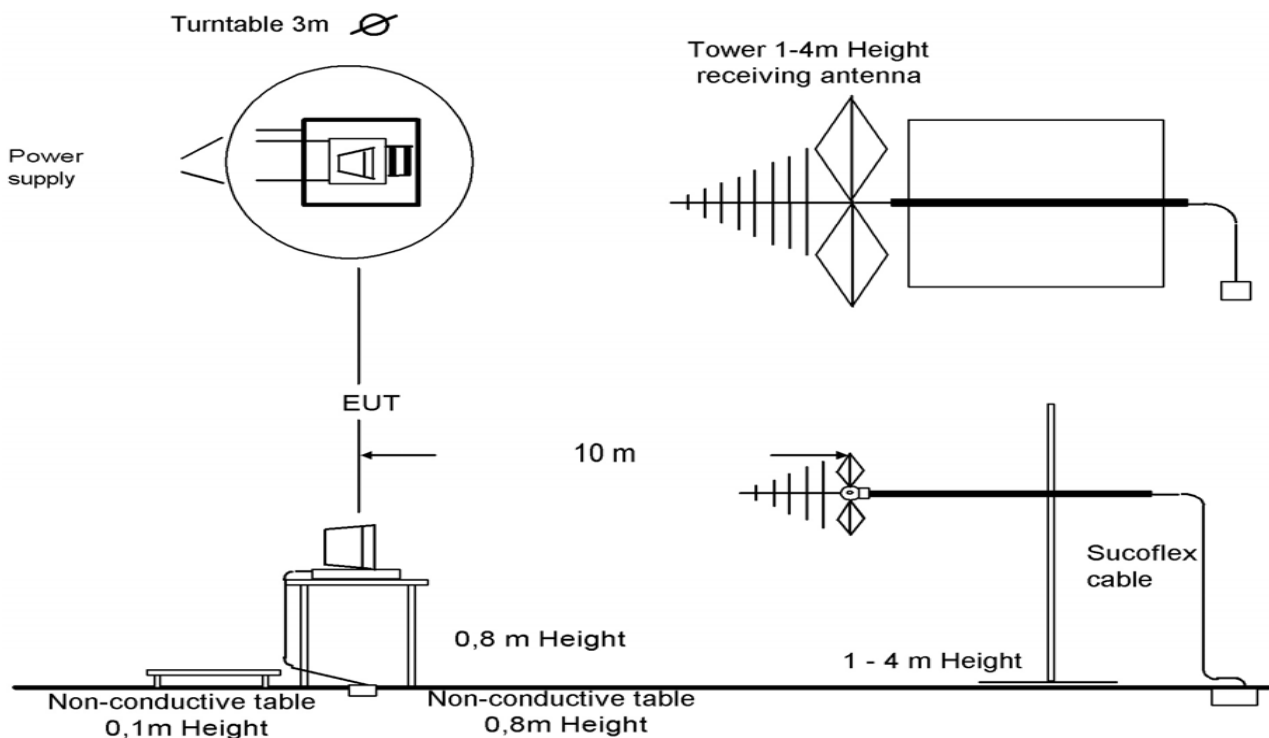
8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.

Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



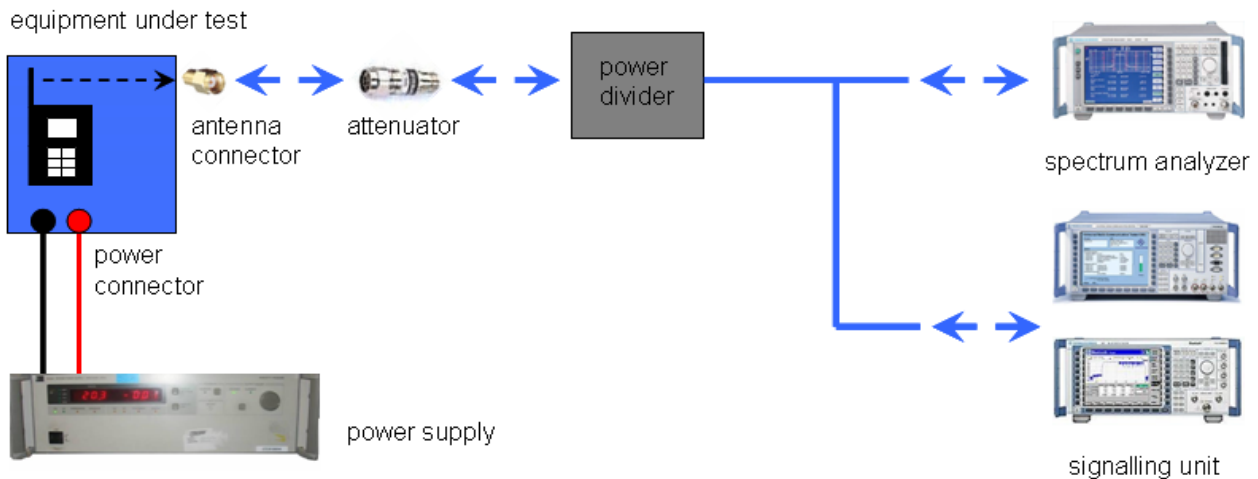
Picture 1: Diagram radiated measurements

| | |
|-----------------|---------------------|
| 9 kHz - 30 MHz: | active loop antenna |
| 30 MHz – 1 GHz: | tri-log antenna |
| > 1 GHz: | horn antenna |

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

8.3 RSP100 test report cover sheet / performance test data

| | | |
|--|---|--|
| Test Report Number | : | 1-4473/12-01-03-A |
| Equipment Model Number | : | B01T1AC |
| Certification Number | : | 3248D-B01T1AC |
| Manufacturer (complete Address) | : | Valeo Automotive Security System(Wuxi)co.Ltd. Building B11,Meiqing Road,Wuxi Hi-Tech Development Zone 214028 Wuxi City,Jiangsu Province / CHINA |
| Tested to radio standards specification no. | : | RSS 210, Issue 8, Annex 1 |
| Open Area Test Site IC No. | : | IC 3462C-1 |
| Frequency Range or fixed frequency | : | 314.9 MHz |
| Field Strength [dBµV/m] (at which distance) | : | 57.73 AVG @ 3 m |
| Occupied bandwidth (99%-BW) [kHz] | : | 41.67 |
| Type of modulation | : | OOK |
| Emission Designator (TRC-43) | : | 41K7A1D |
| Antenna Information | : | Integrated antenna |
| Transmitter Spurious (worst case) [dBµV/m @ 3m]: | | 52.63 dBµV/m AVG @ 1574.2 MHz |
| Receiver Spurious (worst case) [dBµV/m @ 3m]: | | No receiver integrated! |

ATTESTATION:

DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager:

2012-03-09

Date

Marco Bertolino

Name



Signature

9 Measurement results

9.1 Timing of the transmitter

Measurement:

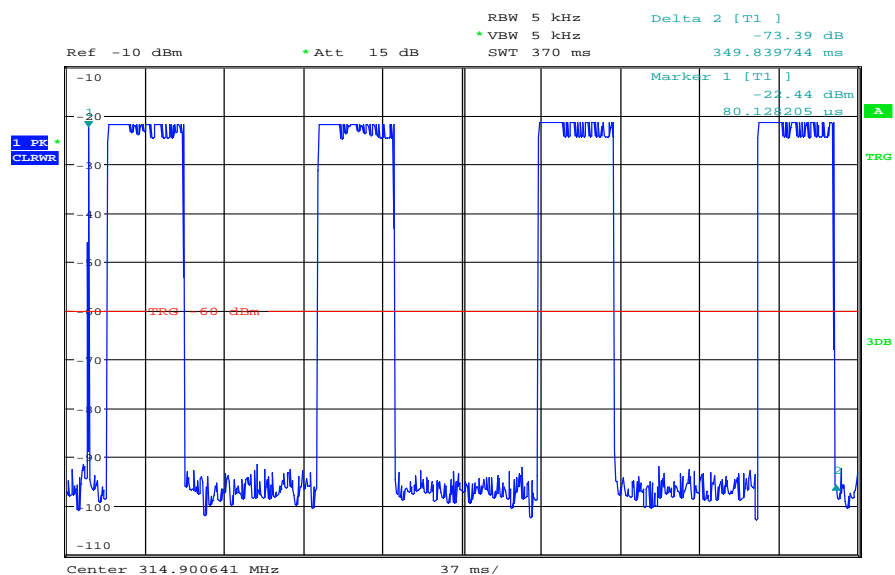
| Measurement parameter | |
|-----------------------|--|
| Detector: | Peak |
| Sweep time: | 370 ms / 50 ms |
| Resolution bandwidth: | 5 kHz |
| Video bandwidth: | 5 kHz |
| Span: | Zero span |
| Trace-Mode: | Clear write / Trigger video / single sweep |

Limits:

| FCC | IC |
|---|-----------------------------|
| CFR Part SUBCLAUSE § 15.35 (c) | RSS-GEN Issue 2 Section 4.5 |
| Timing of the transmitter | |
| <p>(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.</p> | |

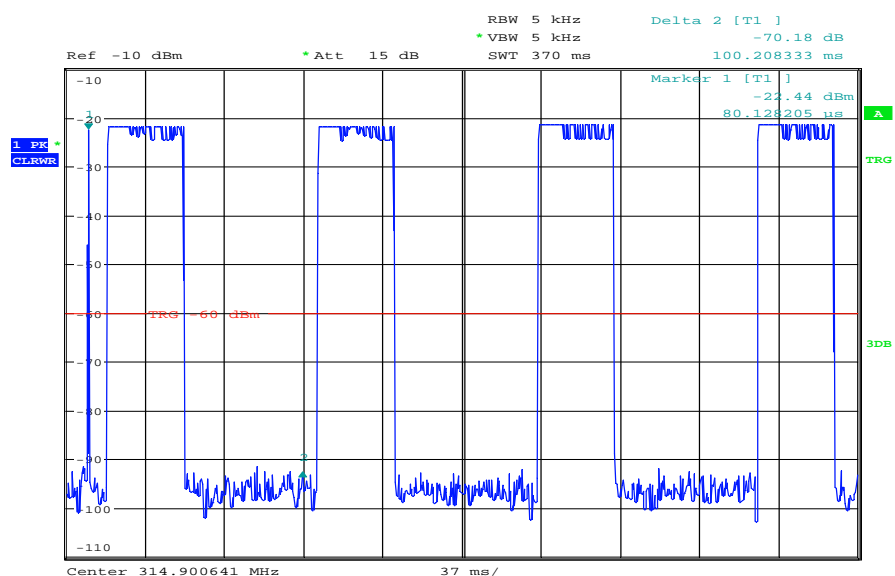
Result:

Plot 1: Pulse train



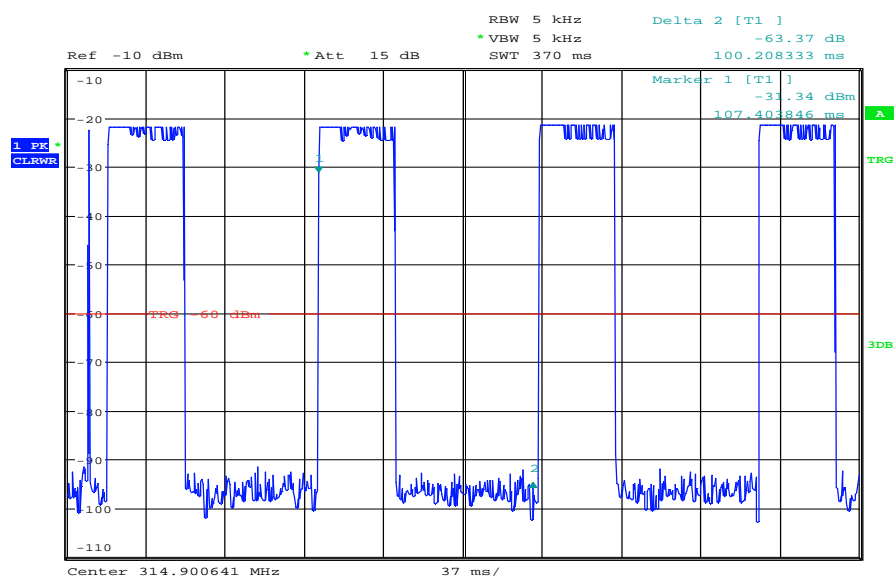
Date: 23.FEB.2012 07:54:48

Plot 2: 1 pulse / 100 ms (pulse No. 1)



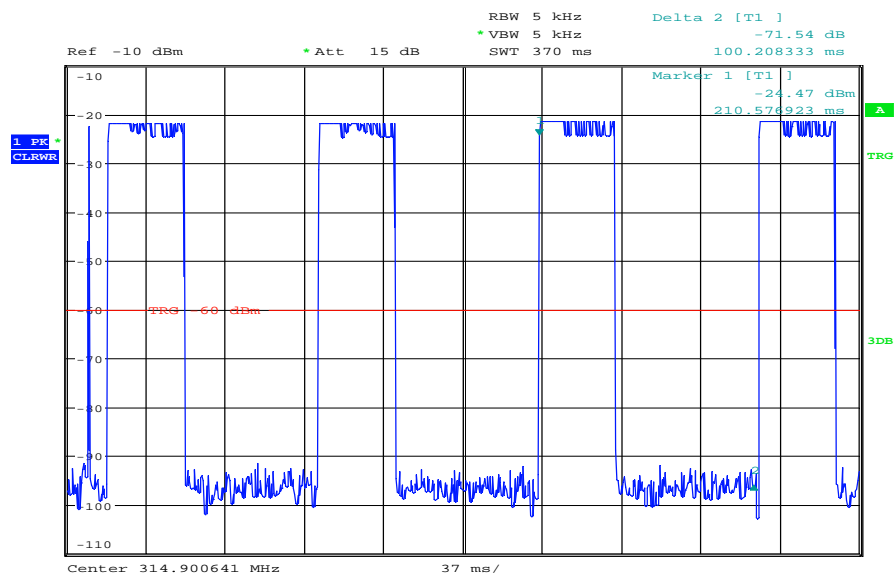
Date: 23.FEB.2012 07:52:47

Plot 3: 1 pulse / 100 ms (pulse No. 2)



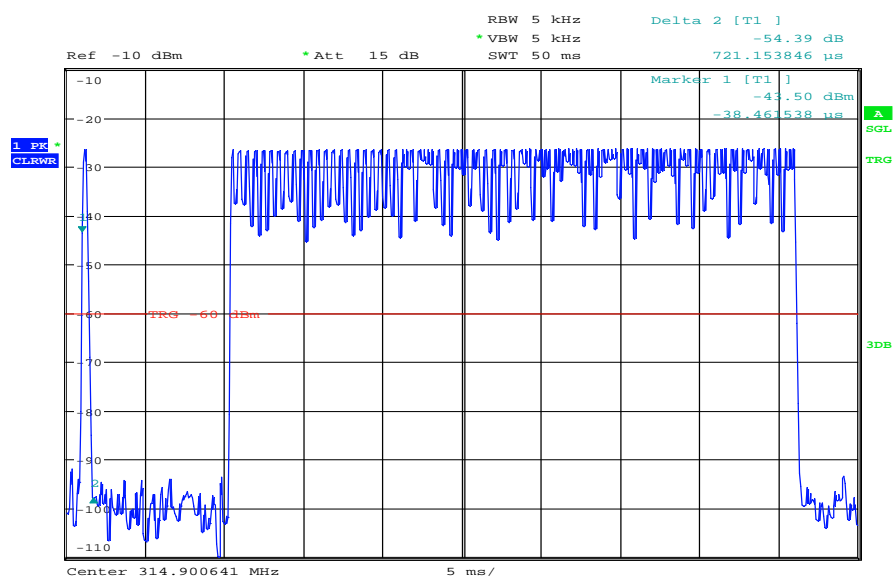
Date: 23.FEB.2012 07:53:33

Plot 4: 1 pulse / 100 ms (pulse No. 3)



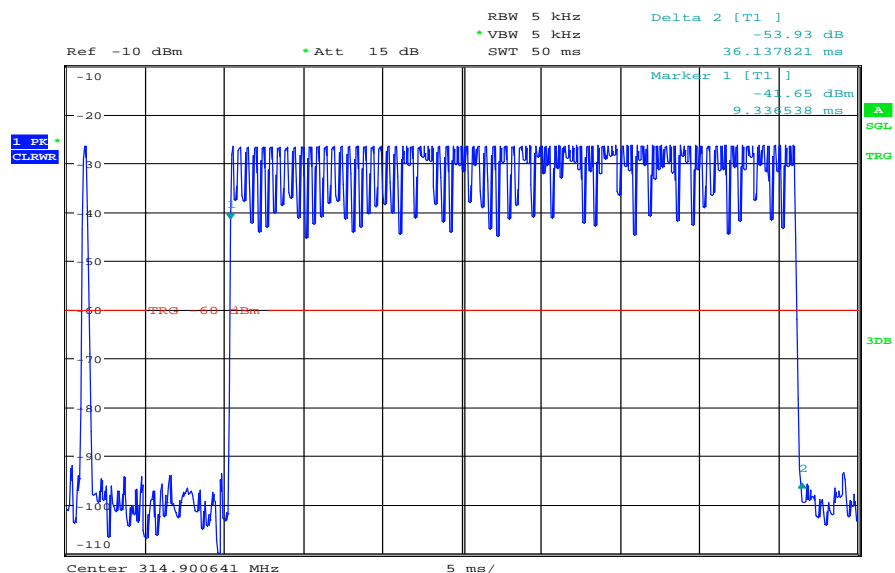
Date: 23.FEB.2012 07:53:57

Plot 5: zoomed pulse (pulse No.1)



Date: 23.FEB.2012 08:03:33

Plot 6: zoomed pulse (pulse No.1)



Date: 23.FEB.2012 08:04:12

Transmit time (Tx on 1) = 721.15 μ s (Plot 5)

Transmit time (Tx on 2) = 36.14 ms (Plot 6)

TX on time gesamt = 36.86 ms

Duty cycle = 36.86 % (100 ms range)

The peak-to-average correction factor is calculated with $20 \log [Tx \text{ on} / (Tx \text{ on} + Tx \text{ off})]$.
Hereby the peak-to-average correction factor is.

peak-to-average correction factor: 8.67 dB

Result: The measurement is passed.

9.2 Switch off time

Measurement:

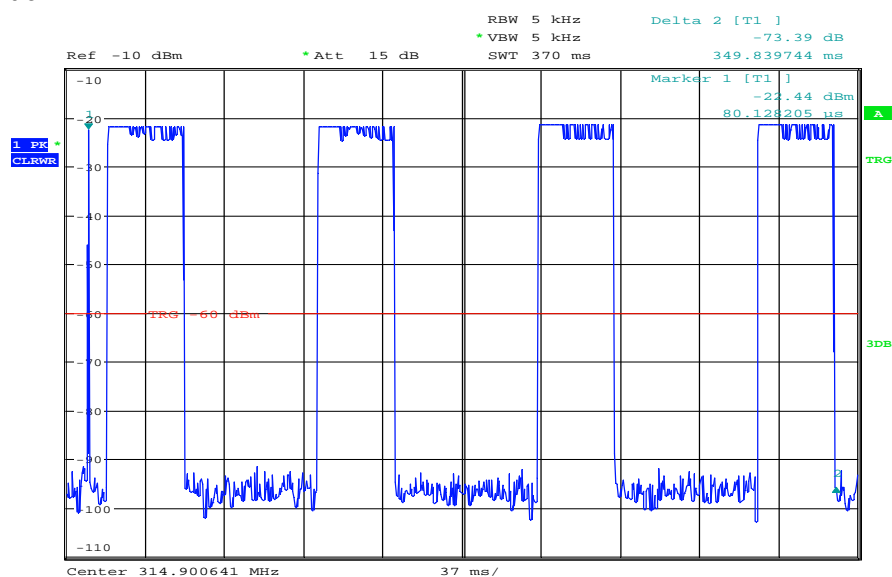
| Measurement parameter | |
|-----------------------|--|
| Detector: | Peak |
| Sweep time: | 370 ms |
| Resolution bandwidth: | 5 kHz |
| Video bandwidth: | 5 kHz |
| Span: | Zero span |
| Trace-Mode: | Clear write / Trigger video / single sweep |

Limits:

| FCC | IC |
|--|-----------------------------|
| CFR Part SUBCLAUSE § 15.231 (a) (1) | RSS-GEN Issue 2 Section 4.5 |
| Switch off time | |
| A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. | |

Results:

Plot 1: Pulse train



Date: 23.FEB.2012 07:54:48

The EUT automatically ceases transmission within not more than 350 ms after releasing the switch.

Result: The measurement is passed.

9.3 Emission bandwidth

Measurement:

Measurement of the 20 dB bandwidth of the modulated signal

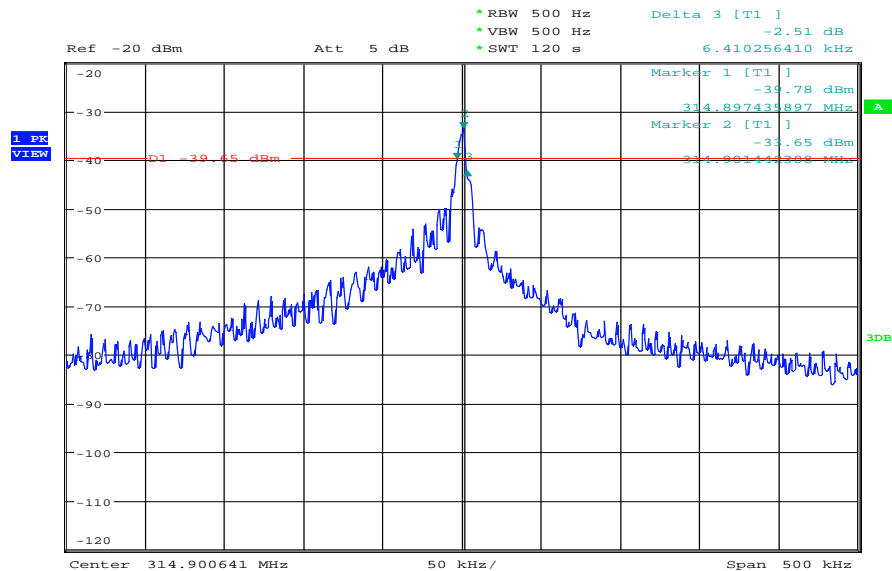
| Measurement parameter | |
|-----------------------|-----------|
| Detector: | Peak |
| Sweep time: | 120 s |
| Resolution bandwidth: | 500 Hz |
| Video bandwidth: | 500 Hz |
| Span: | 500 kHz |
| Trace-Mode: | Max. hold |

Limits:

| FCC | IC |
|--|--------------------------------|
| CFR Part SUBCLAUSE § 15.231 (c) | RSS-210 Issue 8 Section A1.1.3 |
| Emission bandwidth | |
| The OBW shall not be wider than 0.25% of the centre frequency, here maximum 787.5 kHz. | |

Result:

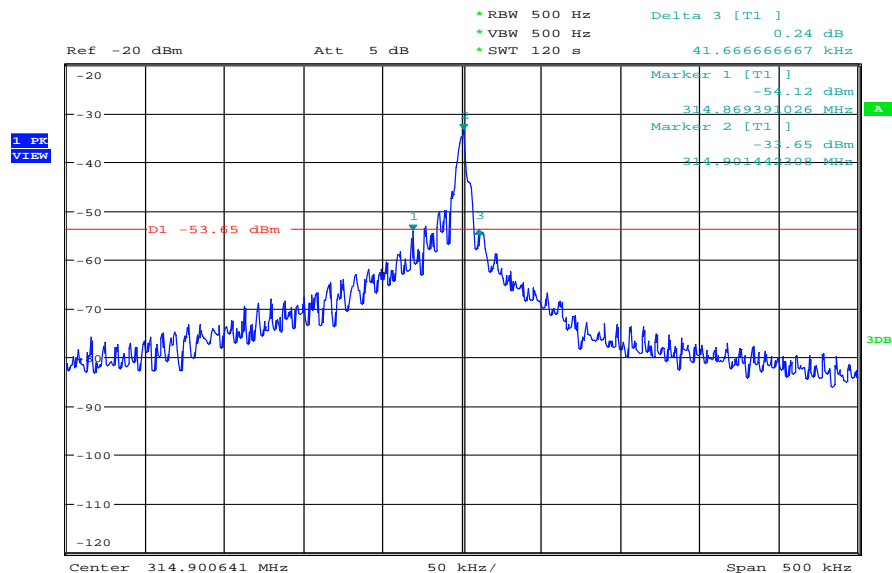
Plot 1: 6 dB bandwidth



Date: 23.FEB.2012 07:44:57

The emission bandwidth at 6 dB is 6.41 kHz

Plot 2: 20 dB bandwidth



Date: 23.FEB.2012 07:46:08

The emission bandwidth at 20 dB is 41.67 kHz

Result: The measurement is passed.

9.4 Field strength of the fundamental

Measurement:

| Measurement parameter | |
|-----------------------|-----------|
| Detector: | Peak |
| Sweep time: | Auto |
| Video bandwidth: | ≤ 3x RBW |
| Resolution bandwidth: | 120 kHz |
| Trace-Mode: | Max. hold |

Limits:

| FCC | | IC |
|---|--------------------------------------|--|
| CFR Part SUBCLAUSE § 15.231 (b) | | RSS-210 Issue 8 Section A1.1.2 / 2.7 Table 4 |
| Field strength of the fundamental. In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following: | | |
| Fundamental Frequency (MHz) | Field strength of Fundamental (μV/m) | Measurement distance (m) |
| 40.66 – 40.70 | 2,250 | 3 |
| 70-130 | 1,250 | 3 |
| 130-174 | 1,250 to 3,750 | 3 |
| 174-260 | 3,750 | 3 |
| 260-470 | 3,750 to 12,500 | 3 |
| Above 470 | 12,500 | 3 |

Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

- for the band 130-174 MHz, $\mu\text{V/m}$ at 3 meters = $56.81818(F) - 6136.3636$;
- for the band 260-470 MHz, $\mu\text{V/m}$ at 3 meters = $41.6667(F) - 7083.3333$.

Note: $41.6667 * 314.9 \text{ MHz} - 7083.3333 = 6037.51 \Rightarrow 75.62 \text{ dB}\mu\text{V/m @ 3 m}$

Result:

| TEST CONDITIONS | | MAXIMUM POWER (dBμV/m at 3 m distance) | |
|-------------------------|------------------|--|-------------------------|
| Frequency | | MHz | MHz |
| Mode | | Peak | Average (DC correction) |
| T _{nom} | V _{nom} | 66.4 | 57.73 |
| Measurement uncertainty | | ±3dB | |

*Value recalculated from Peak-to-Average correction factor described in 6.1

Result: The measurement is passed.

9.5 Field strength of the harmonics and spurious

Measurement:

| Measurement parameter | |
|-----------------------|-----------|
| Detector: | Peak |
| Sweep time: | Auto |
| Resolution bandwidth: | 120 kHz |
| Video bandwidth: | ≤ 3x RBW |
| Trace-Mode: | Max. hold |

Limits:

| FCC | | IC |
|---|-----------------------------------|--|
| CFR Part SUBCLAUSE § 15.231 (b) | | RSS-210 Issue 8 Section A1.1.2 / 2.7 Table 4 |
| Field strength of the fundamental. In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following: | | |
| Fundamental Frequency (MHz) | Field strength of spurious (µV/m) | Measurement distance (m) |
| 40.66 – 40.70 | 225 | 3 |
| 70-130 | 125 | 3 |
| 130-174 | 125 to 375 | 3 |
| 174-260 | 375 | 3 |
| 260-470 | 375 to 1,250 | 3 |
| Above 470 | 1,250 | 3 |

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

| FCC | | IC |
|---|-----------------------|--------------------------|
| SUBCLAUSE § 15.209 | | |
| Field strength of the harmonics and spurious. | | |
| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 – 960 | 200 | 3 |
| above 960 | 500 | 3 |

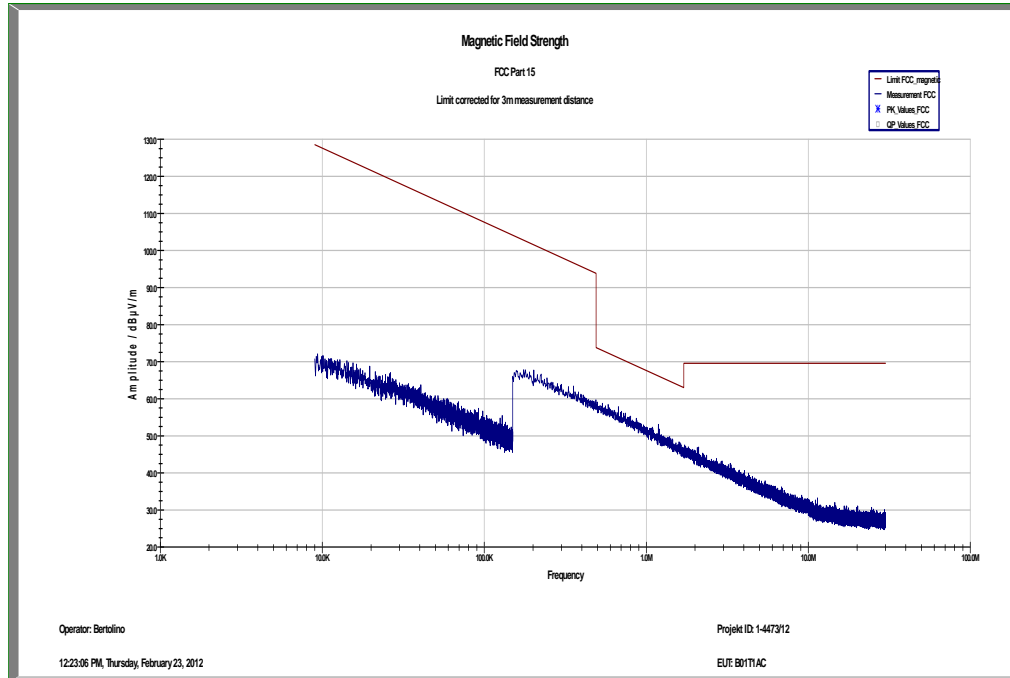
Results:

| EMISSION LIMITATIONS | | | | |
|----------------------|---------------------|---|--|---------|
| f [MHz] | Detector | Amplitude of emission [dB μ V/m] Peak @ 3 m | Amplitude of emission [dB μ V/m] AVG @ 3 m | Results |
| 629.799 | Peak / pulse AVG | 42.6 @ 120 kHz RBW | 33.93@ 120 kHz RBW | passed |
| 944.706 | Peak / pulse AVG | 38.2@ 120 kHz RBW | 29.53@ 120 kHz RBW | passed |
| 1258.300 | Peak / pulse AVG | 48.2 @ 1 MHz RBW/VBW | 39.53@ 1 MHz RBW/VBW | passed |
| 1259.200 | Peak / pulse AVG | 54.4@ 1 MHz RBW/VBW | 45.73@ 1 MHz RBW/VBW | passed |
| 1574.200 | Peak / pulse AVG | 61.3@ 1 MHz RBW/VBW | 52.63@ 1 MHz RBW/VBW | passed |
| 1889.200 | Peak / pulse AVG | 48.0@ 1 MHz RBW/VBW | 39.33@ 1 MHz RBW/VBW | passed |
| 2204.200 | Peak / pulse AVG | 50.4@ 1 MHz RBW/VBW | 41.73@ 1 MHz RBW/VBW | passed |
| 2519.200 | Peak / pulse AVG | 55.9@ 1 MHz RBW/VBW | 47.23@ 1 MHz RBW/VBW | passed |
| 2834.200 | Peak / pulse AVG | 51.0@ 1 MHz RBW/VBW | 42.33@ 1 MHz RBW/VBW | passed |
| 3463.300 | Peak / pulse AVG | 51.1@ 1 MHz RBW/VBW | 42.43@ 1 MHz RBW/VBW | passed |
| 4408.300 | Peak / pulse AVG | 50.1@ 1 MHz RBW/VBW | 41.43@ 1 MHz RBW/VBW | passed |
| 4723.300 | Peak / pulse AVG | 53.9@ 1 MHz RBW/VBW | 45.23@ 1 MHz RBW/VBW | passed |
| 6298.300 | Peak / pulse AVG | 47.1@ 1 MHz RBW/VBW | 38.43@ 1 MHz RBW/VBW | passed |
| 7318.900 | Peak / pulse AVG | 41.8@ 1 MHz RBW/VBW | 33.13@ 1 MHz RBW/VBW | passed |
| 8237.800 | Peak / pulse AVG | 43.5@ 1 MHz RBW/VBW | 34.83@ 1 MHz RBW/VBW | passed |

Result: The measurement is passed.

Plots of the measurements:

Plot 1: 9 kHz – 30 MHz, Part 15.209 Magnetics, Measurement distance 3m

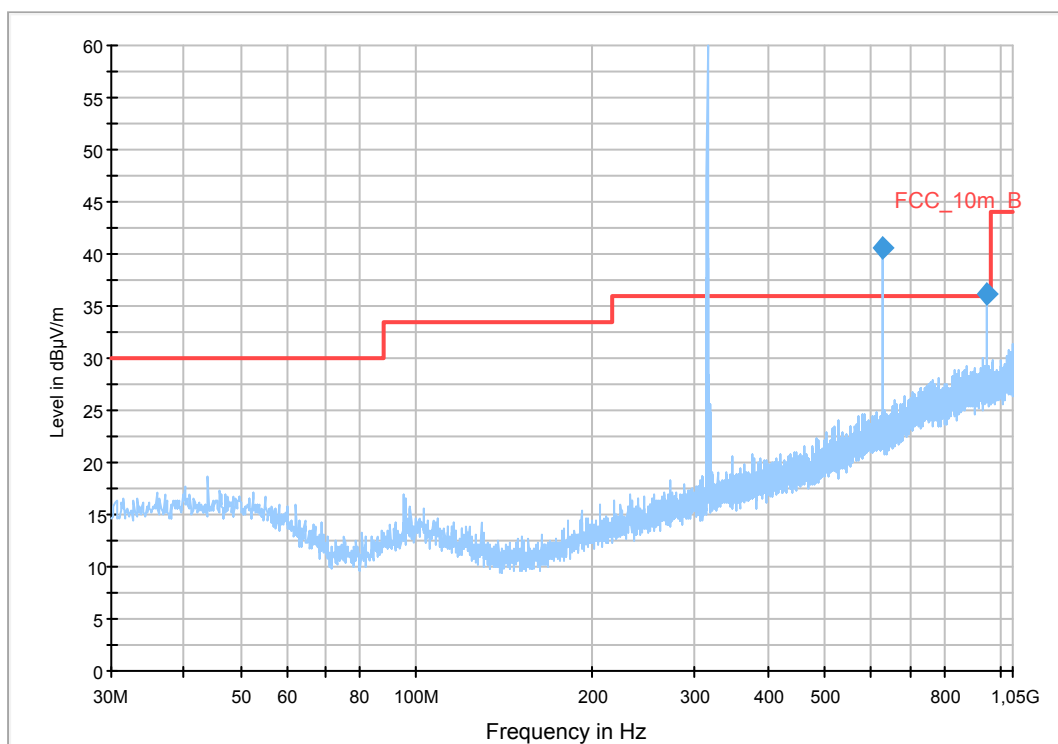


Plot 2: 30 MHz – 1000 MHz

Common Information

| | |
|-----------------------|-----------------|
| EUT: | B01T1AC |
| Serial Number: | |
| Test Description: | FCC part 15 B |
| Operating Conditions: | cont. TX mode |
| Operator Name: | Kraus |
| Comment: | battery powered |

FCC_10m(B)



Final Result 1

| Frequency (MHz) | Peak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | | | Comment |
|-----------------|---------------|-----------------|-----------------|-------------|--------------|---------------|------------|--|--|---------|
| 314.900000 | 66.4 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 15.0 | | | |
| 629.799000 | 42.6 | 1000.0 | 120.000 | 98.0 | V | 165.0 | 21.0 | | | |
| 944.706000 | 38.2 | 1000.0 | 120.000 | 288.0 | H | 329.0 | 25.3 | | | |

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

| Subrange 1 | |
|------------------|--|
| Frequency Range: | 30 MHz - 2 GHz |
| Receiver: | Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42 |
| Signal Path: | without Notch FW 1.0 |
| Antenna: | VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table (vertical): Cable_EN_1GHz (1005) Correction Table (horizontal): Cable_EN_1GHz (1005) |
| Antenna Tower: | Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12 |
| Turntable: | Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12 |

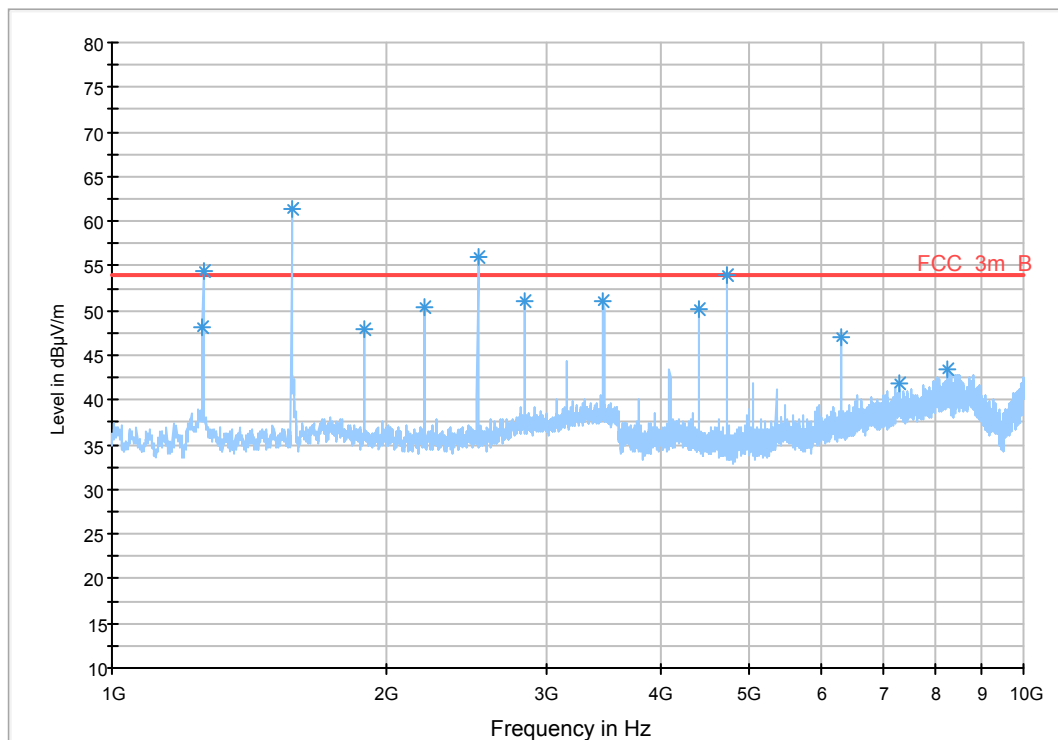
EMC 32 Version 8.10.00

Plot 2: 1000 MHz – 10000 MHz

Common Information

EUT: B01T1AC
 Serial Number:
 Test Description: FCC part 15 B
 Operating Conditions: cont. TX mode
 Operator Name: Kraus
 Comment: battery powered

FCC_1_10_B_5m



Data Reduction Result 1 [1]

| Frequency (MHz) | MaxPeak-MaxHold (dBµV/m) | Height (cm) | Polarization | Azimuth | Corr. (dB) | Comment |
|-----------------|--------------------------|-------------|--------------|---------|------------|---------|
| 1258.300000 | 48.2 | 100.0 | V | 153.0 | -2.7 | |
| 1259.200000 | 54.4 | 100.0 | V | 153.0 | -2.7 | |
| 1574.200000 | 61.3 | 100.0 | V | 354.0 | -4.5 | |
| 1889.200000 | 48.0 | 100.0 | V | 227.0 | -4.2 | |
| 2204.200000 | 50.4 | 100.0 | V | 2.0 | -3.9 | |
| 2519.200000 | 55.9 | 100.0 | V | -1.0 | -4.1 | |
| 2834.200000 | 51.0 | 100.0 | V | 211.0 | -2.7 | |
| 3463.300000 | 51.1 | 100.0 | V | 237.0 | -2.0 | |
| 4408.300000 | 50.1 | 100.0 | H | 19.0 | -1.6 | |
| 4723.300000 | 53.9 | 100.0 | H | 311.0 | -1.7 | |
| 6298.300000 | 47.1 | 100.0 | V | 118.0 | 1.2 | |
| 7318.900000 | 41.8 | 100.0 | V | 4.0 | 3.3 | |
| 8237.800000 | 43.5 | 100.0 | H | 211.0 | 4.4 | |

Hardware Setup: EMI radiated\BBHA_5m - [EMI radiated]

| Subrange 1 | |
|------------------|---|
| Frequency Range: | 1 GHz - 10 GHz |
| Receiver: | ESU [ESU 26] @ GPIB0 (ADR 17), SN 100037/026, FW 4.43 |
| Signal Path: | 1_6_EN FW 1.0 Correction Table: 3_5m Correction Table: LNA_EN (matix) |
| Antenna: | BBHA 9120 B Correction Table (vertical): BBHA9120 Correction Table (horizontal): BBHA9120 Correction Table (vertical): Cable_Horn_EN (1103) Correction Table (horizontal): Cable_Horn_EN (1103) |
| Antenna Tower: | Generic Tripod [Generic Tripod] @ GPIB0 (ADR 19), SN ? |
| Turntable: | Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12 |

9.6 Receiver spurious emission (radiated)

No receiver integrated!

Measurement not applicable!

10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

| No. | Lab / Item | Equipment | Type | Manufact. | Serial No. | INV. No Cetecom | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|---|---|-----------------------------|----------------------------|--------------------|------------------------|---------------------|---------------------|
| 1 | 45 | Switch-Unit | 3488A | HP Meßtechnik | 2719A1450 5 | 30000036 8 | g | | |
| 2 | 50 | DC power supply, 60Vdc, 50A, 1200 W | 6032A | HP Meßtechnik | 2920A0446 6 | 30000058 0 | ne | | |
| 3 | n. a. | software | SPS_PHE 1.4f | Spitzberger & Spieß | B5981; 5D1081;B5 979 | 30000021 0 | ne | | |
| 4 | n. a. | EMI Test Receiver | ESCI 1166.5950. 03 | R&S | 100083 | 30000331 2 | k | 05.01.2011 | 05.01.2013 |
| 5 | n. a. | Analyzer- Reference- System (Harmonics and Flicker) | ARS 16/1 | SPS | A3509 07/0 0205 | 30000331 4 | k | 14.07.2011 | 14.07.2013 |
| 6 | n. a. | Amplifier | JS42- 00502650- 28-5A | MITEQ | 1084532 | 30000337 9 | ev | | |
| 7 | n. a. | Antenna Tower | Model 2175 | ETS- LINDGREN | 64762 | 30000374 5 | izw | | |
| 8 | n. a. | Positioning Controller | Model 2090 | ETS- LINDGREN | 64672 | 30000374 6 | izw | | |
| 9 | n. a. | Turntable Interface-Box | Model 105637 | ETS- LINDGREN | 44583 | 30000374 7 | izw | | |
| 10 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163 | Schwarzbe ck | 295 | 30000378 7 | k | 01.04.2010 | 01.04.2012 |
| 11 | n. a. | Spectrum- Analyzer | FSU26 | R&S | 200809 | 30000387 4 | k | 10.01.2011 | 10.01.2013 |
| 12 | n. a. | Active Loop Antenna | 6502 | EMCO | 2210 | 30000101 5 | ne | | |
| 13 | n. a. | Anechoic chamber | FAC 3/5m | MWB / TDK | 87400/02 | 30000099 6 | | 23.03.2009 | |
| 14 | n. a. | Relais Matrix | 3488A | HP Meßtechnik | 2719A1501 3 | 30000115 6 | ne | | |
| 15 | n. a. | Relais Matrix | PSU | R&S | 890167/024 | 30000116 8 | ne | | |
| 16 | n. a. | TILE-Software Emission | Quantum Change, Modell TILE- ICS/FULL | EMCO | none | 30000345 1 | ne | | |
| 17 | n. a. | PSA Spectrum Analyzer 3 Hz - 26.5 GHz | E4440A | Agilent Technologi es | MY482500 80 | 30000381 2 | k | 08.09.2010 | 08.09.2012 |
| 18 | n. a. | RF Filter Section 9kHz - 1GHz | N9039A | Agilent Technologi es | MY482600 03 | 30000382 5 | vIKI! | 08.09.2010 | 08.09.2012 |
| 19 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163 | Schwarzbe ck | 371 | 30000385 4 | vIKI! | 14.10.2011 | 14.10.2014 |
| 20 | n. a. | Spectrum Analyzer 20 Hz - 50 GHz | FSU50 | R&S | 200012 | 30000344 3 | ve | 01.07.2010 | 01.07.2012 |

Agenda: Kind of Calibration

| | | | |
|------|--|-----|--|
| k | calibration / calibrated | EK | limited calibration |
| ne | not required (k, ev, izw, zw not required) | zw | cyclical maintenance (external cyclical maintenance) |
| ev | periodic self verification | izw | internal cyclical maintenance |
| Ve | long-term stability recognized | g | blocked for accredited testing |
| vkI! | Attention: extended calibration interval | | |
| NK! | Attention: not calibrated | *) | next calibration ordered / currently in progress |

11 Observations

No observations exceeding those reported with the single test cases have been made.

Annex A Photographs of the test setup

Photo documentation:

Photo 1: chamber F



Photo 2: chamber F

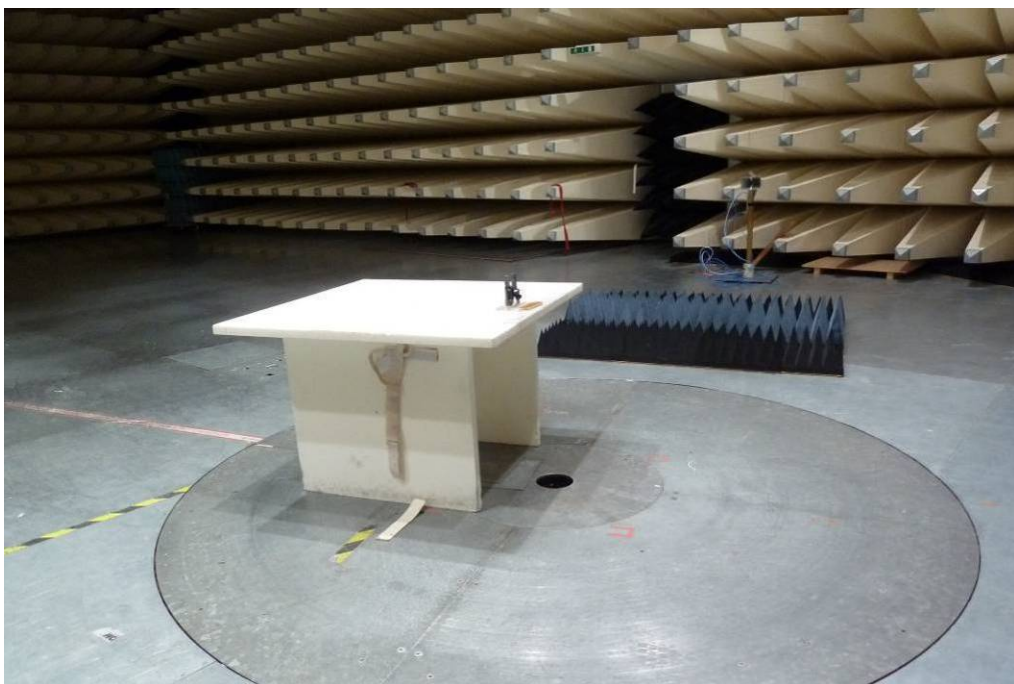


Photo 3: chamber F



Photo 4: chamber C

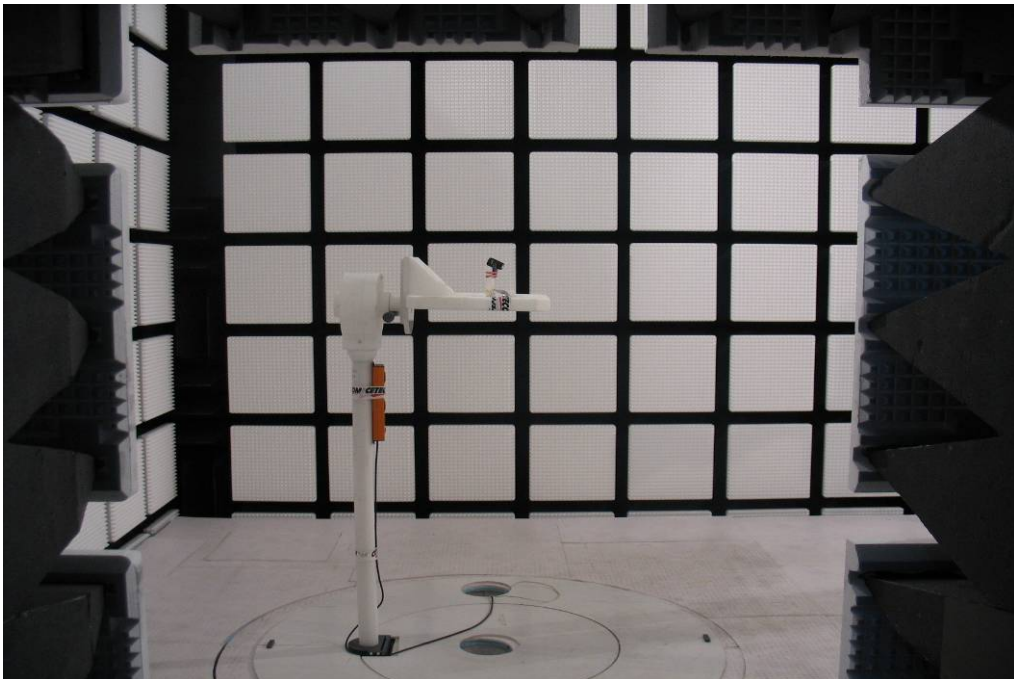


Photo 5: chamber C

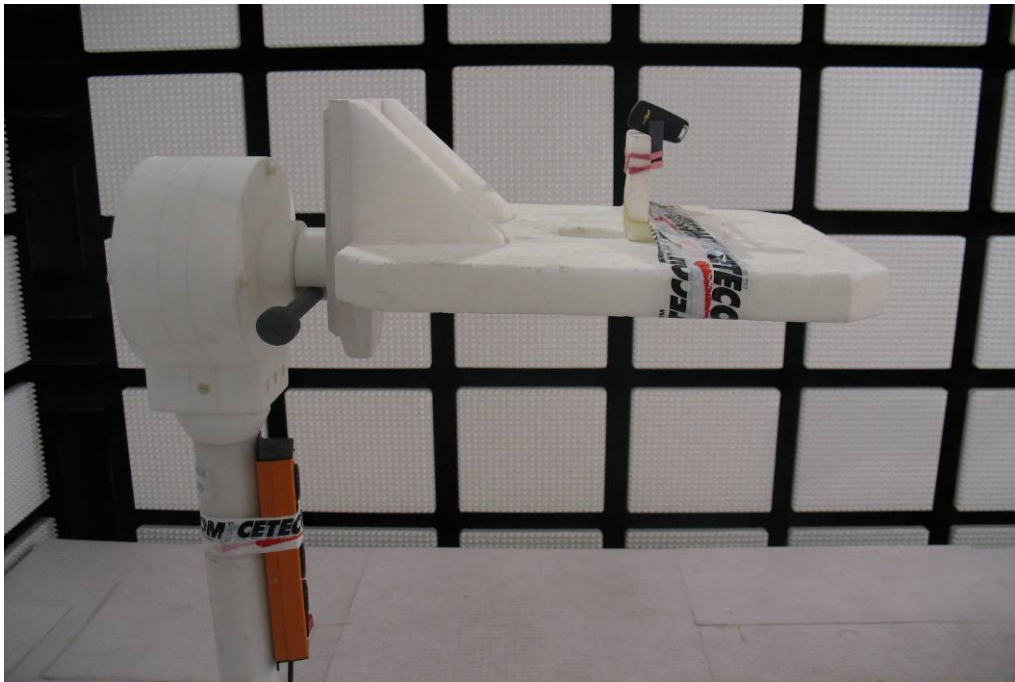


Photo 6: chamber C



Photo 7: chamber C

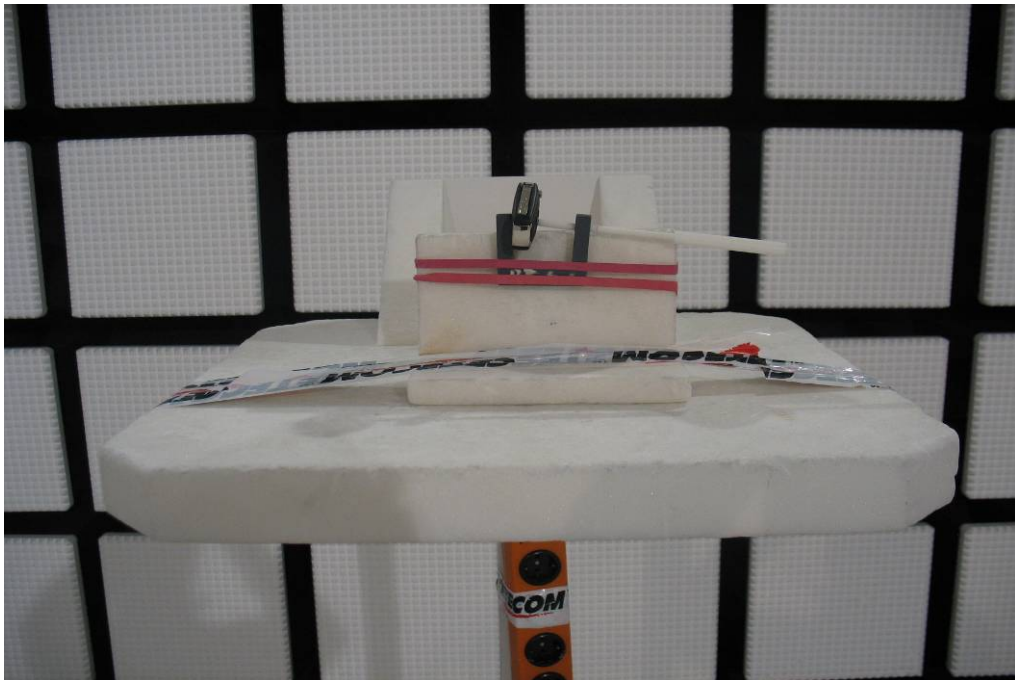
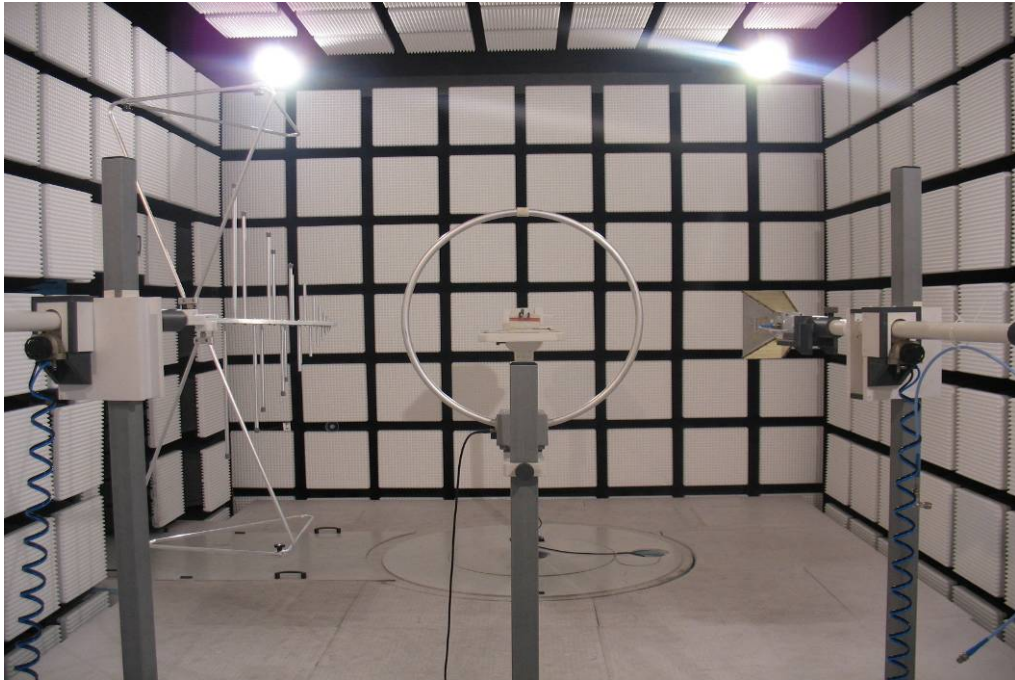


Photo 8: chamber C



Photo 9: chamber C



Annex B External photographs of the EUT

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



Photo 7:



Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:

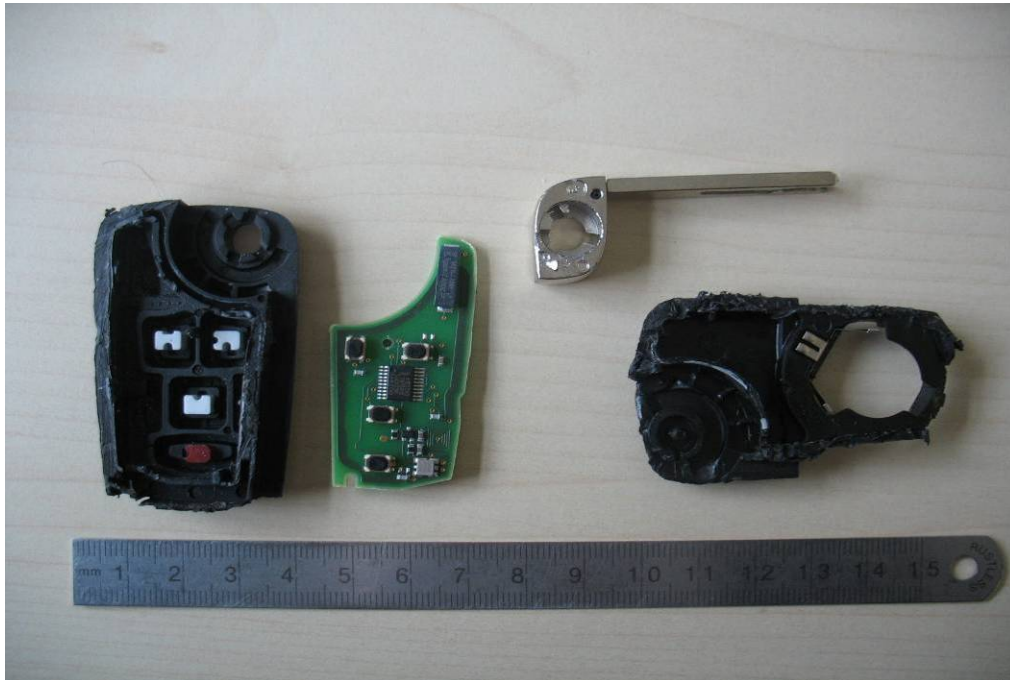


Photo 2:

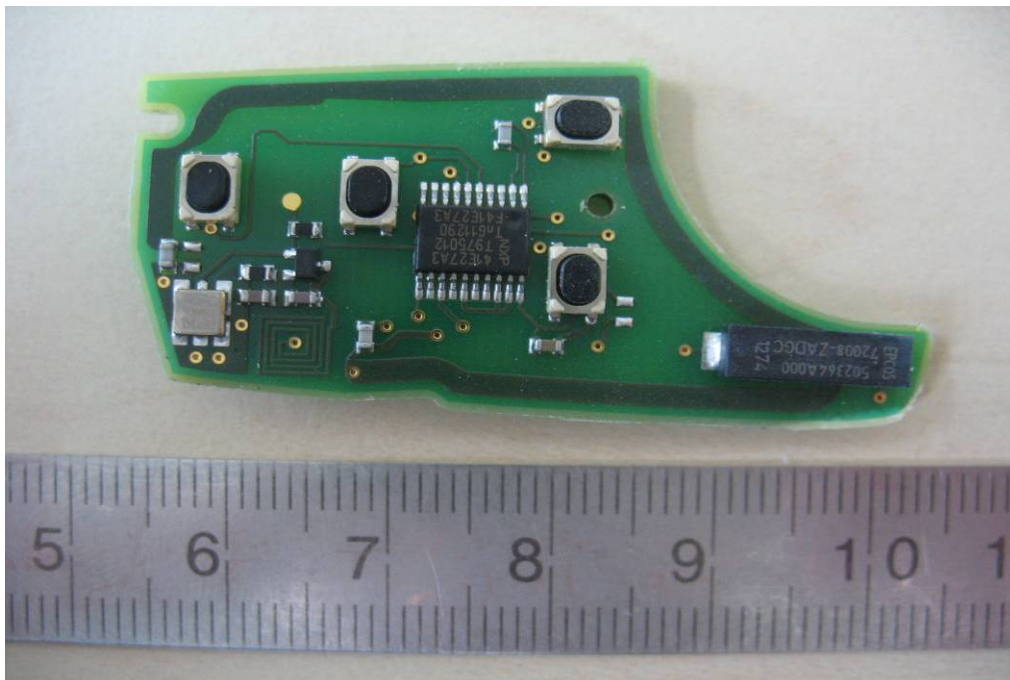
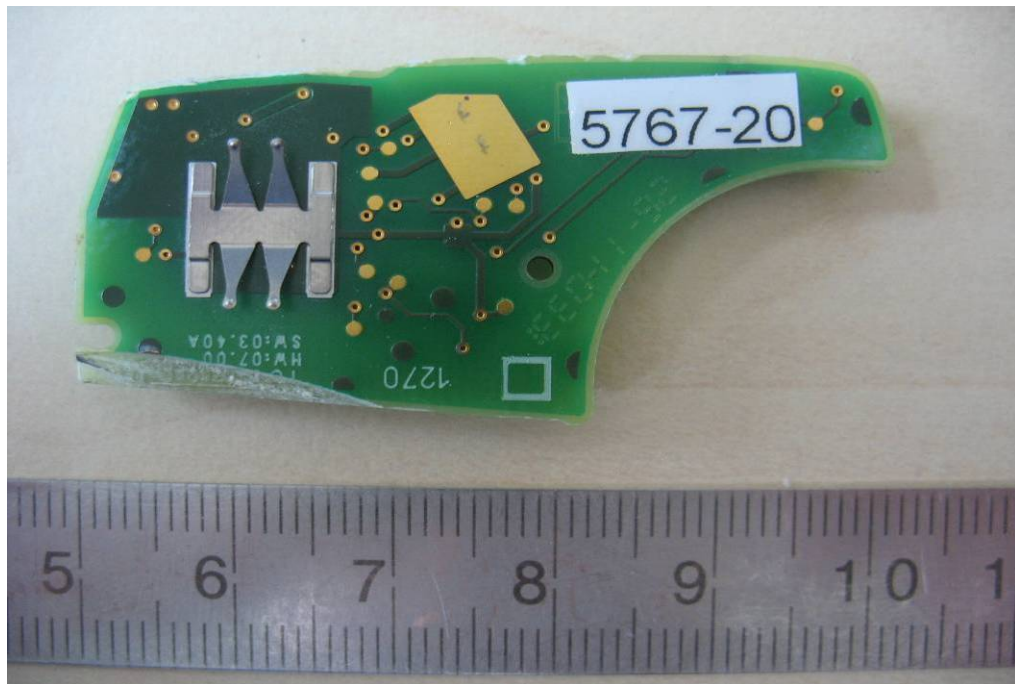


Photo 3:



Annex D Document history

| Version | Applied changes | Date of release |
|---------|-----------------|-----------------|
| 1.0 | Initial release | 2012-02-23 |
| -A | | 2012-03-09 |

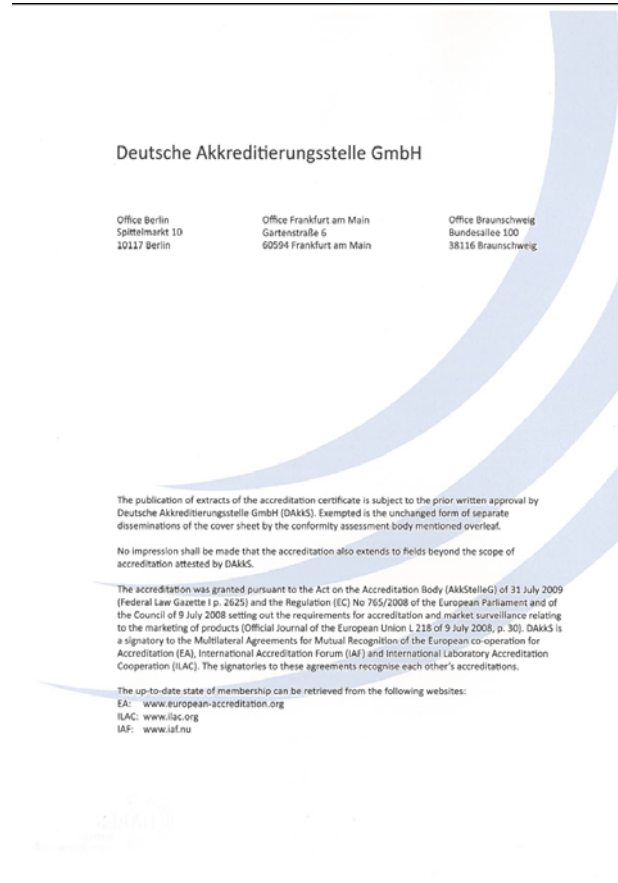
Annex E Further information**Glossary**

| | | |
|----------|---|--|
| AVG | - | Average |
| DUT | - | Device under test |
| EMC | - | Electromagnetic Compatibility |
| EN | - | European Standard |
| EUT | - | Equipment under test |
| ETSI | - | European Telecommunications Standard Institute |
| FCC | - | Federal Communication Commission |
| FCC ID | - | Company Identifier at FCC |
| HW | - | Hardware |
| IC | - | Industry Canada |
| Inv. No. | - | Inventory number |
| N/A | - | Not applicable |
| PP | - | Positive peak |
| QP | - | Quasi peak |
| S/N | - | Serial number |
| SW | - | Software |

Annex F Accreditation Certificate



Front side of certificate



Back side of certificate

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf