
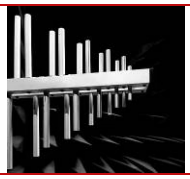
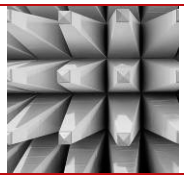

CETECOM™
CETECOM ICT Services
consulting - testing - certification

# TEST REPORT

**Test report no.: 1-4333/12-01-10-C**

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

## Testing laboratory


**CETECOM ICT Services GmbH**
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: http://www.cetecom.com
e-mail: ict@cetecom.com


**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


**VALEO Security Systems - DAS**
Europarc - 76 rue Auguste Perret
F-94046 CRETEIL / FRANCE
Contact: Jerome Hugot
e-mail: jerome.hugot@valeo.com
Phone: +33 1 48 84 57 14


## Manufacturer

**Valeo Interior Electronic**
North Junyi Ind. Park, Huaide Vil. Fuyong Town, baoan Dist
518128 SHENZHEN / 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 - Licence-exempt Radio Apparatus (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:** | **Automotive control unit** |
| **Model name:** | **A09SA-A1 , A09SA-M1** |
| **FCC ID:** | **2AAS2-A09SAM1** |
| **IC:** | **11313A-A09SAM1** |
| Frequency: | 125 kHz |
| Technology tested: | RFID |
| Antenna: | External antenna |
| Power supply: | 12.0V DC by Car Battery |
| Temperature range: | -40°C to +85°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:

cn=Christoph Schneider, o=CETECOM ICT Services GmbH, ou=SND-120402, email=christoph.schneider@cetecom.com, c=DE
2013.12.05 15:03:04 +01'00'

Christoph Schneider
Expert

## Test performed:

cn=Tobias Wittenmeier, o=CETECOM ICT Services GmbH, ou=WIT-111222, email=tobias.wittenmeier@cetecom.com, c=DE
2013.12.05 13:21:48 +01'00'

Tobias Wittenmeier
Expert

# 1 Table of contents

# 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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In no case this test report can be considered as a Letter of Approval.

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: | 2012-03-06 |
| Date of receipt of test item: | 2013-08-26 |
| Start of test: | 2013-09-10 |
| End of test: | 2013-09-13 |
| Person(s) present during the test: | -/- |

# 3 Test standard/s

| Test standard | Date | Test standard description |
|---|---|---|
| 47 CFR Part 15 | 01.10.2012 | Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices |
| RSS - 210 Issue 8 | 01.12.2010 | Spectrum Management and Telecommunications Radio Standards Specification - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment |

## 4 Test environment

| | | |
|---|---|---|
| Temperature: | $T_{nom}$ | +22 °C during room temperature tests |
| | $T_{max}$ | +85 °C during high temperature tests |
| | $T_{min}$ | -40 °C during low temperature tests |
| Relative humidity content: | | 55 % |
| Barometric pressure: | | not relevant for this kind of testing |
| Power supply: | $V_{nom}$ | 12.0 V DC by Car Battery |
| | $V_{max}$ | 13.2 V |
| | $V_{min}$ | 10.8 V |

## 5 Test item

| | | |
|---|---|---|
| **Kind of test item** | **:** | **Automotive control unit** |
| **Type identification** | **:** | **A09SA-A1 , A09SA-M1** |
| | | |
| **S/N serial number** | **:** | **Unknown** |
| **HW hardware status** | **:** | **v.3c** |
| **SW software status** | **:** | **V7.3** |
| **Frequency band [MHz]** | **:** | **125 kHz** |
| **Type of radio transmission**<br>**Use of frequency spectrum** | **:**<br>**:** | **single carrier** |
| **Type of modulation** | **:** | **OOK** |
| **Number of channels** | **:** | **1** |
| **Antenna** | **:** | **External antenna** |
| **Power supply** | **:** | **12.0 V DC by Car Battery** |
| **Temperature range** | **:** | **-40°C to +85 °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<br>RSS 210, Issue 8 | Passed | 2013-12-05 | -/- |

| Test Specification Clause | Test Case | Temperature Conditions | Power Source Voltages | Pass | Fail | NA | NP | Results |
|---|---|---|---|---|---|---|---|---|
| § 15.35 (c) / RSS-GEN Issue 3 Section 4.5 | Timing of the transmitter (Duty cycle correction factor ) | Nominal | Nominal | ☒ | ☐ | ☐ | ☐ | complies |
| § 15.223 / RSS-210 Issue 8 | Bandwidth of the modulated carrier | Nominal | Nominal | ☒ | ☐ | ☐ | ☐ | complies |
| § 15.223 / RSS-210 Issue 8 | Fieldstrength of fundamental | Nominal | Nominal | ☒ | ☐ | ☐ | ☐ | complies |
| § 15.209 (a) / RSS-210 Issue 8 | Fieldstrength of harmonics and spurious | Nominal | Nominal | ☒ | ☐ | ☐ | ☐ | complies |
| § 15.109 / RSS-210 Issue 8 | Receiver spurious emissions | Nominal | Nominal | ☐ | ☐ | ☒ | ☐ | complies |
| § 15.107 / § 15.207 | Conducted limits | Nominal | Nominal | ☐ | ☐ | ☒ | ☐ | - |

**Note:** NA = Not Applicable; NP = Not Performed

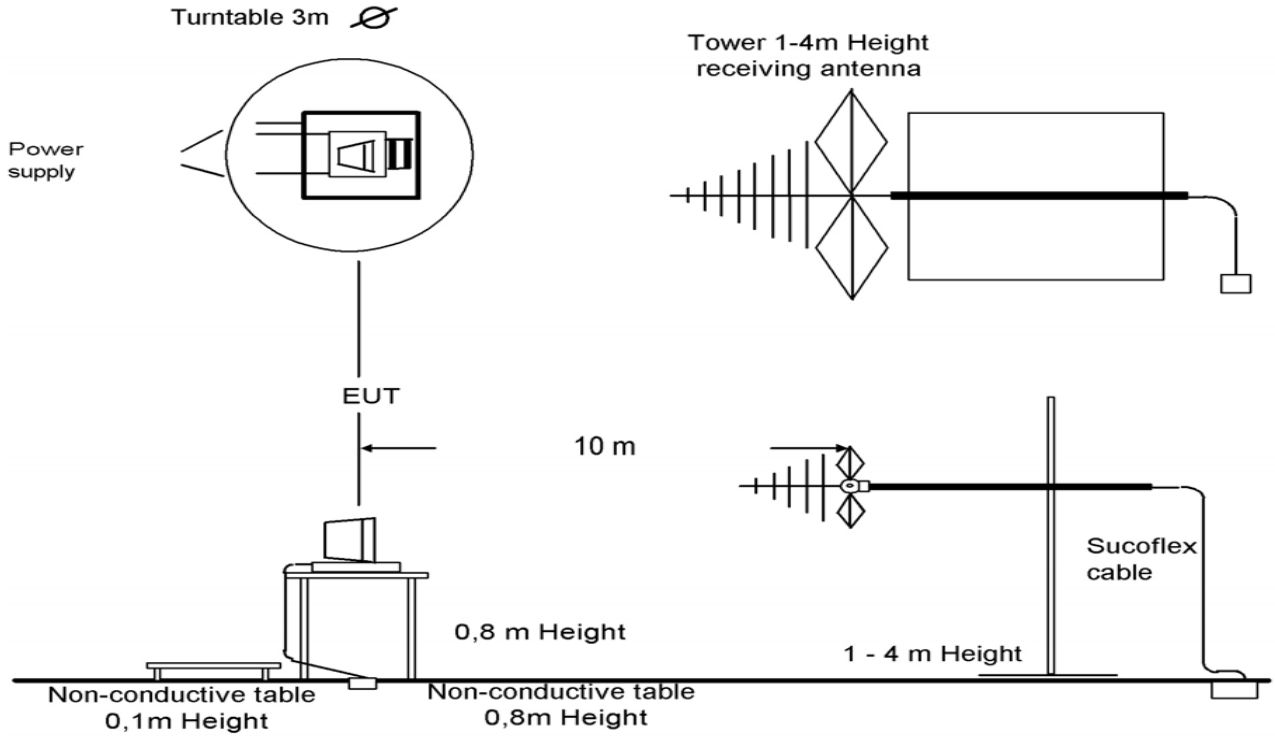
# 8 RF measurement testing

## 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 and ANSI C63.4-2009. 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 C63-4-2003.
Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



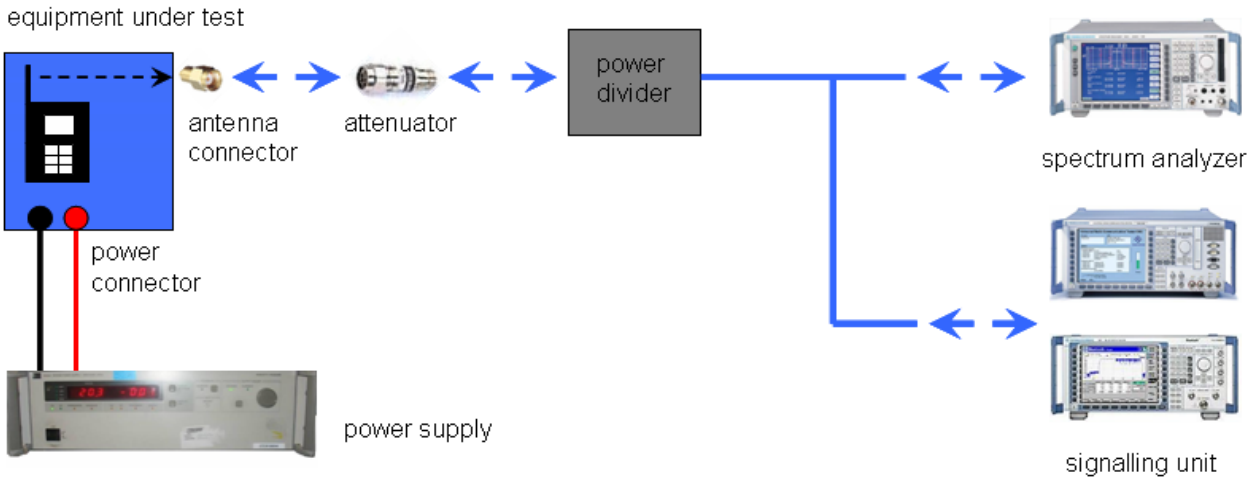

**Picture 1: Diagram radiated measurements**

| | |
|---|---|
| 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 (if needed) is performed from outside the chamber with a signalling unit 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 The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, 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: | The EUT has several antennas using a time multiplex technology. In normal use it is not possible that two antennas are transmitting simultaneously in the same time slot. For this RF test we used the antenna which is normally mounted at the driver door. This antenna produces the highest field strength. |

## 8.3 RSP100 test report cover sheet / performance test data

| | | |
|---|---|---|
| **Test Report Number** | : | **1-4333/12-01-10-C** |
| **Equipment Model Number** | : | **A09SA-A1 , A09SA-M1** |
| **Certification Number** | : | **11313A-A09SAM1** |
| **Manufacturer (complete Address)** | : | **Valeo Interior Electronic**<br>**North Junyi Ind. Park, Huaide** Vil. Fuyong Town, baoan Dist<br>**518128 SHENZHEN / CHINA** |
| **Tested to radio standards specification no.** | : | **RSS 210, Issue 8, Annex 8** |
| **Open Area Test Site IC No.** | : | **IC 3462C-1** |
| **Frequency Range or fixed frequency** | : | **125 kHz** |
| **Field Strength [dBµV/m] (at 10m)** | : | **60** |
| **Occupied bandwidth (99%-BW) [kHz]** | : | **32.2 kHz** |
| **Type of modulation** | : | **OOK** |
| **Emission Designator (TRC-43)** | : | **32K2NON** |
| **Antenna Information** | : | **External coil antenna** |
| **Transmitter Spurious (worst case) [dBµV/m @ 3m]:** | | **75 @ 68 kHz (Quasi-Peak)** |

**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:**

cn=Tobias Wittenmeier, o=CETECOM ICT Services GmbH, ou=WIT-111222, email=tobias.wittenmeier@cetecom.com, c=DE
2013.12.05 13:21:25 +01'00'

| 2013-12-05 | Tobias Wittenmeier | |
|---|---|---|
| Date | Name | Signature |

# 9 Measurement results

## 9.1 Timing of the transmitter

**Measurement:**

| Measurement parameter | |
|---|---|
| Detector: | Peak |
| Sweep time: | 100ms |
| Resolution bandwidth: | 10 kHz |
| Video bandwidth: | 30 kHz |
| Trace-Mode: | Single sweep |

**Limits:**

| FCC | IC |
|---|---|
| Timing of the transmitter | |
| (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. | |

Duty cycle of the sample with test mode: 49.2%

**In normal use the duty cycle is approximately 50% (declared by the manufacturer).**

**Result:** **Passed.**

## 9.2 Bandwidth of the modulated carrier

**Limits:**

| FCC | IC |
|---|---|
| Bandwidth of the modulated carrier | |

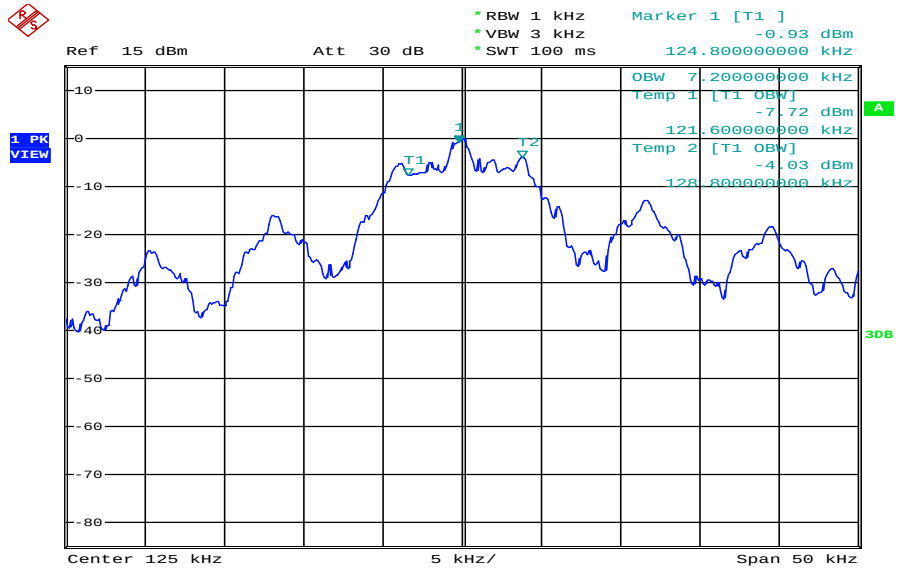
Measured with the integrated OBW-function of the spectrum analyser Rohde&Schwarz ESPI (measurement criteria is the integrated power in %)

**Result:**

| | Occupied Bandwidth (kHz) |
|---|---|
| 6 dB (75%) | 7.2 |
| 20 dB (99%) | 32.2 |

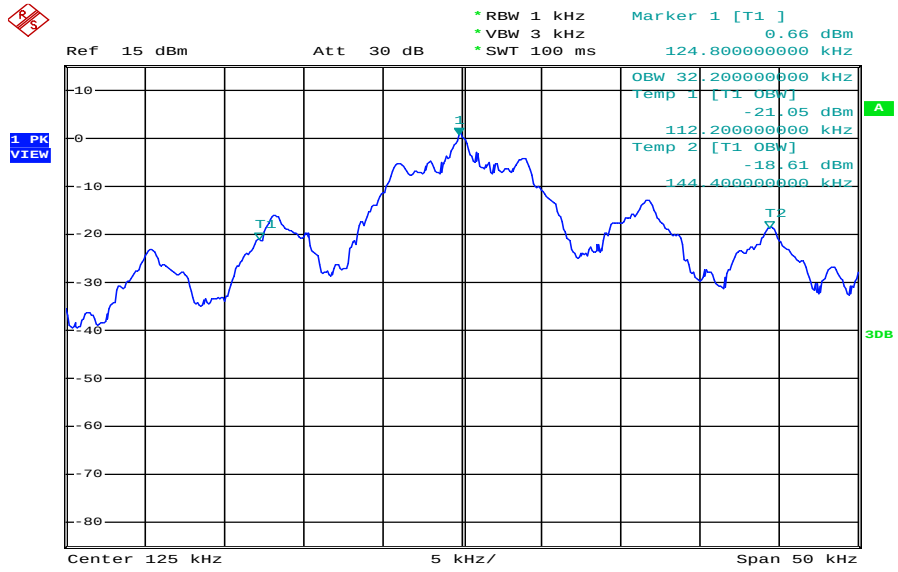
## Plots of the measurement

Plot 1: 6dB (75%) – bandwidth




Date: 17.SEP.2013 10:55:31

Plot 2: 20dB (99%) - bandwidth




Date: 17.SEP.2013 10:56:40

## 9.3 Field strength of the fundamental

**Measurement:**

| Measurement parameter | |
|---|---|
| Detector: | Quasi Peak (CISPR) |
| Resolution bandwidth: | 10kHz |
| Trace-Mode: | Max Hold |

**Limits:**

| FCC | | IC |
|---|---|---|
| **Fundamental Frequency (kHz)** | **Field strength of Fundamental (µV/m)** | **Measurement distance (m)** |
| 125 | 2400 / F (kHz) | 300 |

**Result:**

| TEST CONDITIONS | | MAXIMUM POWER (dBµV/m) | |
|---|---|---|---|
| Frequency | | 125 kHz | 125 kHz |
| Mode | | at 10 m distance | at 300 m distance |
| $T_{nom}$ | $V_{nom}$ | 60 | 0 |
| Measurement uncertainty | | ±3dB | |

Recalculation to a measurement distance of 300m with a correction of 40 dB/decade.

**Result:** **Passed.**

## 9.4 Fieldstrength of the harmonics and spurious

**Measurement:**

| Measurement parameter | |
|---|---|
| Detector: | Average / Quasi Peak |
| Sweep time: | Auto |
| Resolution bandwidth: | 100 kHz / 1 MHz |
| Video bandwidth: | ≥RBW |
| Span: | See Plots |
| Trace-Mode: | Max Hold |

**Limits:**

| FCC | | IC |
|---|---|---|
| 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 (29.5 dBµV/m) | 30 |
| 30 – 88 | 100 (40 dBµv/m) | 3 |
| 88 – 216 | 150 (43.5 dBµV/m) | 3 |
| 216 – 960 | 200 (46 dBµV/m) | 3 |

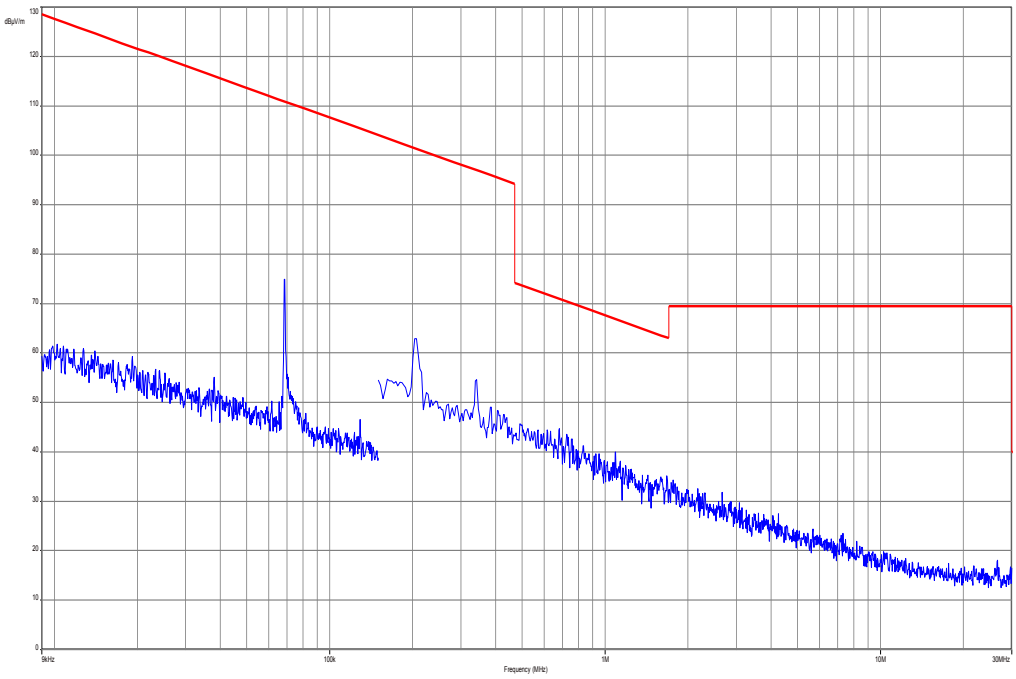
**Result:**

| EMISSION LIMITATIONS | | | | |
|---|---|---|---|---|
| f [MHz] | Detector | Limit max. allowed [dBµV/m] | Amplitude of emission [dBµV/m] | Results |
| No traceable emissions detected; the emissions above the limit are not caused by the EUT but by the USB-CAN-Bus-Converter (see plots 2 & 3). | | | | |
| | | | | |

**Result:** **Passed.**

**Plots of the measurements**

Plot 1: 9 kHz – 30 MHz



Plot 2: 30 MHz – 1000 MHz, EUT active

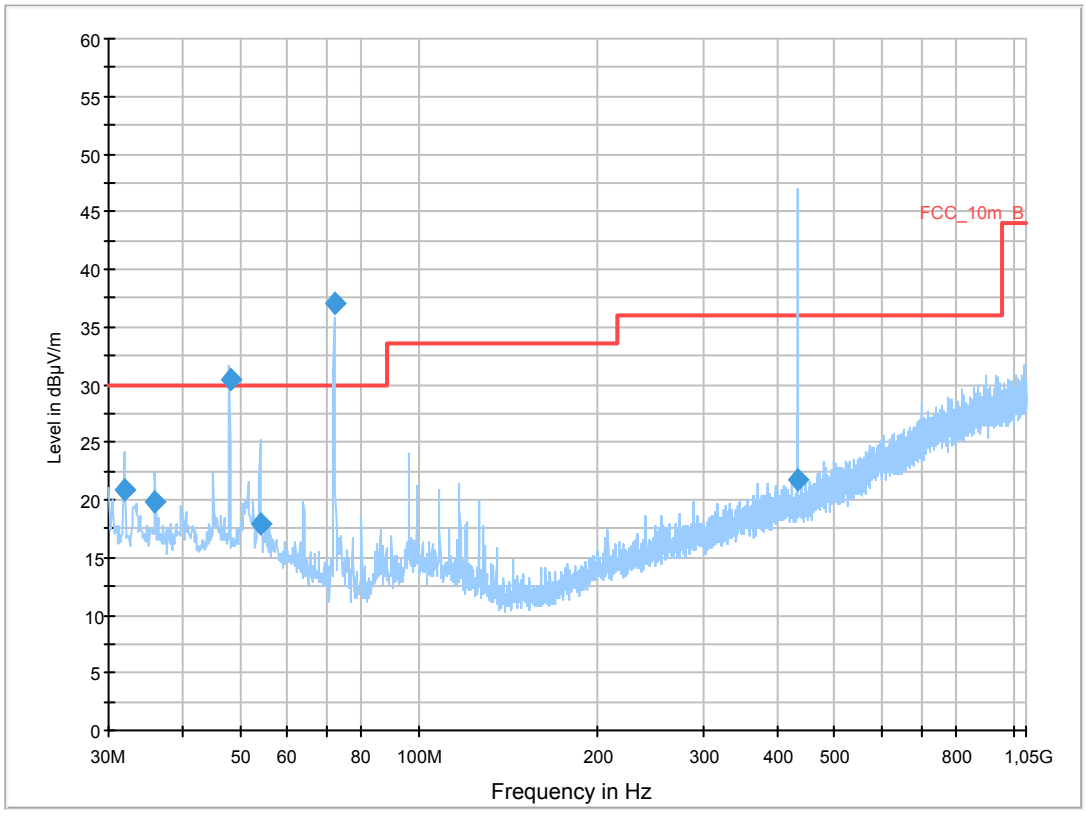
## Common Information

| | |
|---|---|
| EUT: | PEPS ECU A09SA-M1 & A09SA-A1 |
| Serial Number: | |
| Test Description: | FCC part 15 class B @ 10 m |
| Operating Conditions: | active |
| Operator Name: | Kraus |
| Comment: | DC powered (12V) |

## Scan Setup: STAN_Fin [EMI radiated]

| | |
|---|---|
| Hardware Setup: | Electric Field (NOS) |
| Receiver: | [ESCI 3] |
| Level Unit: | dBµV/m |

| Subrange | Step Size | Detectors | IF BW | Meas. Time | Preamp |
|---|---|---|---|---|---|
| 30 MHz - 2 GHz | 60 kHz | QPK | 120 kHz | 1 s | 20 dB |




## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| 32.008050 | 20.9 | 1000.0 | 120.000 | 100.0 | V | 131.0 | 12.7 | 9.1 | 30.0 | |
| 35.994600 | 19.9 | 1000.0 | 120.000 | 200.0 | V | 41.0 | 13.1 | 10.1 | 30.0 | |
| 47.996550 | 30.4 | 1000.0 | 120.000 | 100.0 | V | -18.0 | 13.3 | -0.4 | 30.0 | |
| 53.926050 | 18.0 | 1000.0 | 120.000 | 200.0 | V | 230.0 | 13.0 | 12.0 | 30.0 | |
| 71.990250 | 37.1 | 1000.0 | 120.000 | 281.0 | V | 188.0 | 9.2 | -7.1 | 30.0 | |
| 434.800650 | 21.7 | 1000.0 | 120.000 | 400.0 | H | 3.0 | 17.4 | 14.3 | 36.0 | |

Plot 3: 30 MHz – 1000 MHz, EUT deactivated by unplugging the power line; only USB-CAN-Bus-converter active

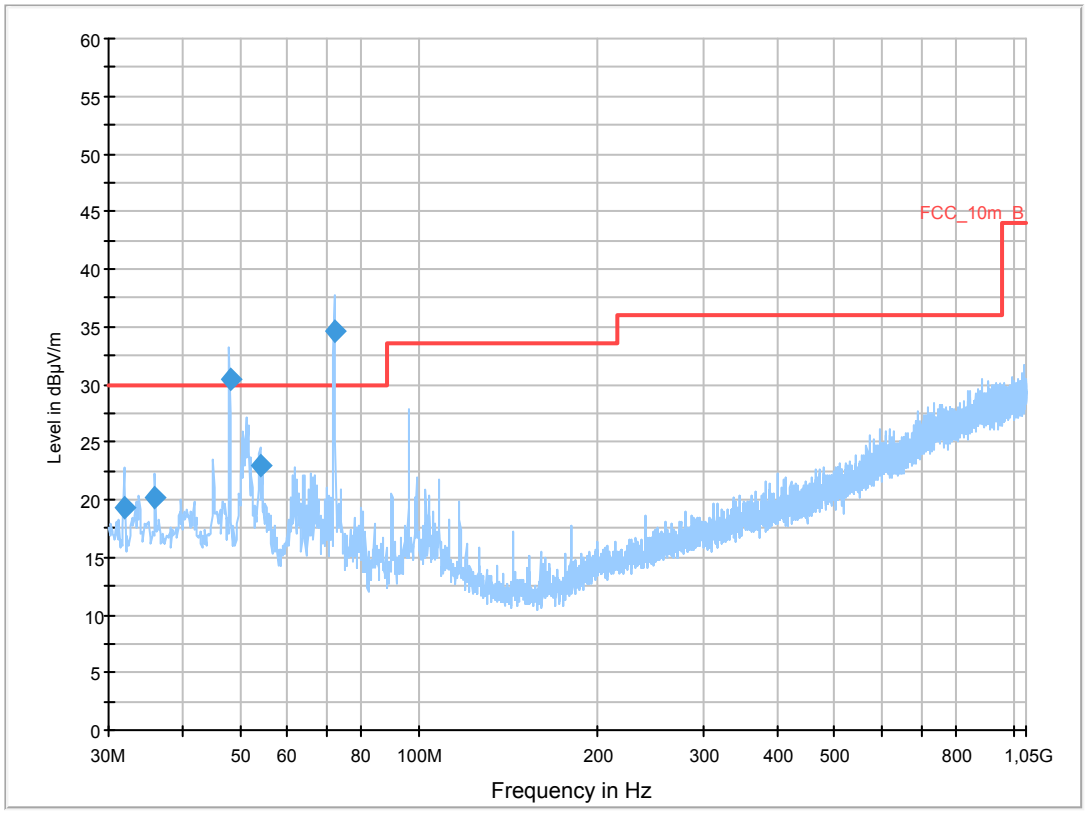
## Common Information

| | |
|---|---|
| EUT: | PEPS ECU A09SA-M1 & A09SA-A1 |
| Serial Number: | |
| Test Description: | FCC part 15 class B @ 10 m |
| Operating Conditions: | no DC |
| Operator Name: | Kraus |
| Comment: | DC powered (12V) |

## Scan Setup: STAN_Fin [EMI radiated]

| | |
|---|---|
| Hardware Setup: | Electric Field (NOS) |
| Receiver: | [ESCI 3] |
| Level Unit: | dBµV/m |

| Subrange | Step Size | Detectors | IF BW | Meas. Time | Preamp |
|---|---|---|---|---|---|
| 30 MHz - 2 GHz | 60 kHz | QPK | 120 kHz | 1 s | 20 dB |




## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| 32.003700 | 19.2 | 1000.0 | 120.000 | 108.0 | V | 165.0 | 12.7 | 10.8 | 30.0 | |
| 36.003600 | 20.1 | 1000.0 | 120.000 | 155.0 | V | 46.0 | 13.1 | 9.9 | 30.0 | |
| 48.012000 | 30.4 | 1000.0 | 120.000 | 100.0 | V | 242.0 | 13.3 | -0.4 | 30.0 | |
| 53.992050 | 23.0 | 1000.0 | 120.000 | 246.0 | V | 185.0 | 13.0 | 7.0 | 30.0 | |
| 71.995350 | 34.5 | 1000.0 | 120.000 | 283.0 | V | 5.0 | 9.2 | -4.5 | 30.0 | |

## 9.5 Receiver spurious emissions

**Not applicable**

## 9.6 Conducted limits

**Not applicable; EUT is powered by car battery**

## 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 | n. a. | DC power supply, 60Vdc, 50A, 1200 W | 6032A | HP Meßtechnik | 2818A03450 | 300001040 | Ve | 12.01.2012 | 12.01.2015 |
| 2 | n. a. | Double-Ridged Waveguide Horn Antenna 1-18.0GHz | 3115 | EMCO | 8812-3088 | 300001032 | vIKI! | 08.05.2013 | 08.05.2015 |
| 3 | n. a. | Anechoic chamber | FAC 3/5m | MWB / TDK | 87400/02 | 300000996 | ev | | |
| 4 | n. a. | Switch / Control Unit | 3488A | HP Meßtechnik | * | 300000199 | ne | | |
| 5 | 9 | Artificial Mains 9 kHz to 30 MHz | ESH3-Z5 | R&S | 828576/020 | 300001210 | Ve | 06.01.2012 | 06.01.2014 |
| 6 | n. a. | Switch / Control Unit | 3488A | HP Meßtechnik | 2719A15013 | 300001156 | ne | | |
| 7 | 9 | Isolating Transformer | MPL IEC625 Bus Regeltrennt ravo | Erfi | 91350 | 300001155 | ne | | |
| 8 | n. a. | Three-Way Power Splitter, 50 Ohm | 11850C | HP Meßtechnik | | 300000997 | ne | | |
| 9 | 90 | Active Loop Antenna 10 kHz to 30 MHz | 6502 | Kontron Psychotech | 8905-2342 | 300000256 | k | 13.06.2013 | 13.06.2015 |
| 10 | n. a. | Amplifier | js42-00502650-28-5a | Parzich GMBH | 928979 | 300003143 | ne | | |
| 11 | n. a. | Band Reject filter | WRCG1855/1910-1835/1925-40/8SS | Wainwright | 7 | 300003350 | ev | | |
| 12 | n. a. | Band Reject filter | WRCG2400/2483-2375/2505-50/10SS | Wainwright | 11 | 300003351 | ev | | |
| 13 | n. a. | Highpass Filter | WHKX7.0/18G-8SS | Wainwright | 18 | 300003789 | ne | | |
| 14 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163 | Schwarzbeck | 371 | 300003854 | vIKI! | 14.10.2011 | 14.10.2014 |
| 15 | n. a. | MXE EMI Receiver 20 Hz bis 26,5 GHz | N9038A | Agilent Technologies | MY51210197 | 300004405 | k | 21.02.2013 | 21.02.2014 |
| 16 | 45 | Switch-Unit | 3488A | HP Meßtechnik | 2719A14505 | 300000368 | g | | |
| 17 | 50 | DC power supply, 60Vdc, 50A, 1200 W | 6032A | HP Meßtechnik | 2920A04466 | 300000580 | ne | | |
| 18 | n. a. | software | SPS_PHE 1.4f | Spitzberger & Spieß | B5981; 5D1081;B5979 | 300000210 | ne | | |
| 19 | n. a. | EMI Test Receiver | ESCI 3 | R&S | 100083 | 300003312 | k | 09.01.2013 | 09.01.2014 |
| 20 | n. a. | Analyzer-Reference-System (Harmonics and | ARS 16/1 | SPS | A3509 07/00205 | 300003314 | Ve | 14.07.2011 | 14.01.2014 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Flicker) | | | | | | | |
| 21 | n. a. | Amplifier | JS42-00502650-28-5A | MITEQ | 1084532 | 300003379 | ev | | |
| 22 | n. a. | Antenna Tower | Model 2175 | ETS-LINDGREN | 64762 | 300003745 | izw | | |
| 23 | n. a. | Positioning Controller | Model 2090 | ETS-LINDGREN | 64672 | 300003746 | izw | | |
| 24 | n. a. | Turntable Interface-Box | Model 105637 | ETS-LINDGREN | 44583 | 300003747 | izw | | |
| 25 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163 | Schwarzbeck | 295 | 300003787 | k | 12.04.2012 | 12.04.2014 |
| 26 | n. a. | Spectrum-Analyzer | FSU26 | R&S | 200809 | 300003874 | k | 16.01.2013 | 16.01.2014 |
| 27 | ECT-0002 | Temperature and Climatic Test Chamber | VUK04/1500 | Heraeus Voetsch | 31098 | 300001507 | g | 20.09.2011 | |
| 28 | n. a. | Spectrum Analyzer 9kHz to 30GHz - 140..+30dBm | FSP30 | R&S | 100886 | 300003575 | k | 22.08.2012 | 22.08.2014 |

**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 |
| vlkI! | 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:

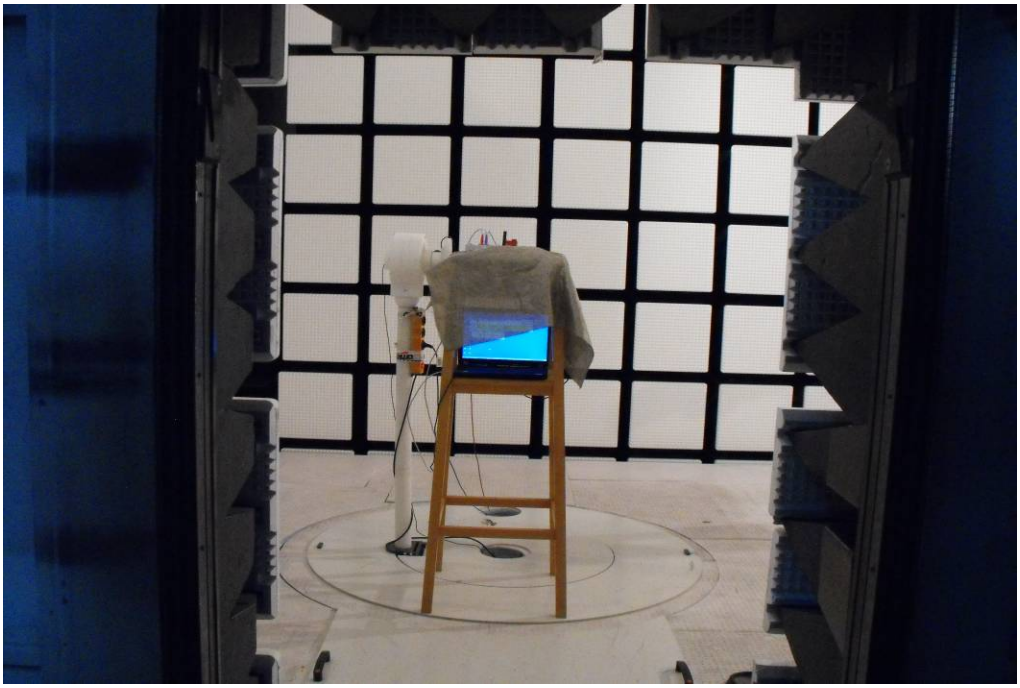


Photo 2:

Photo 3:

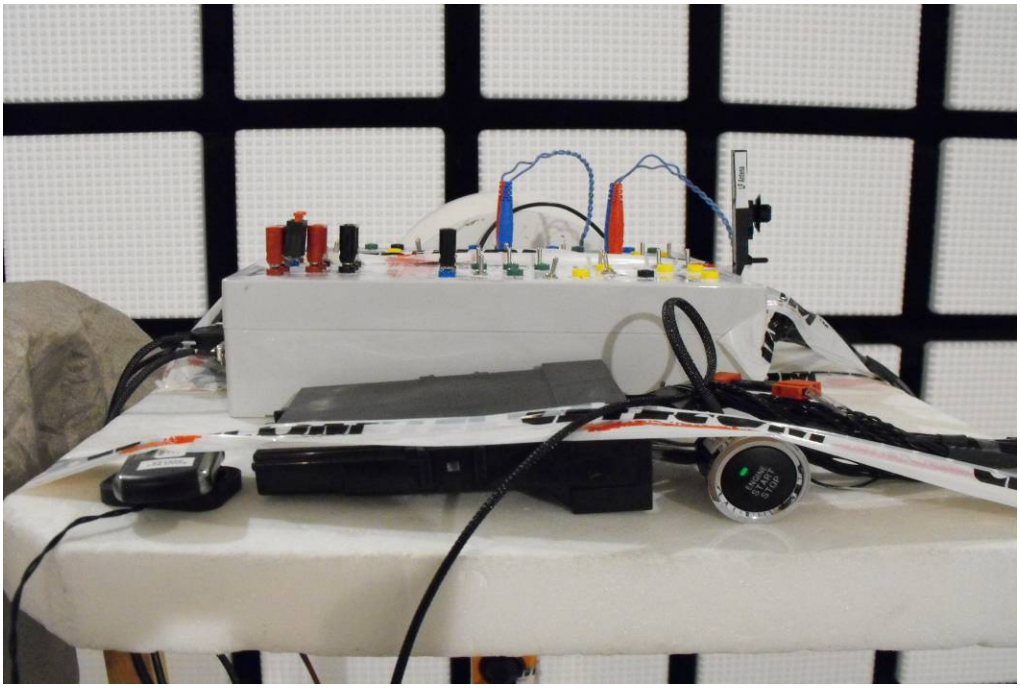


Photo 4:

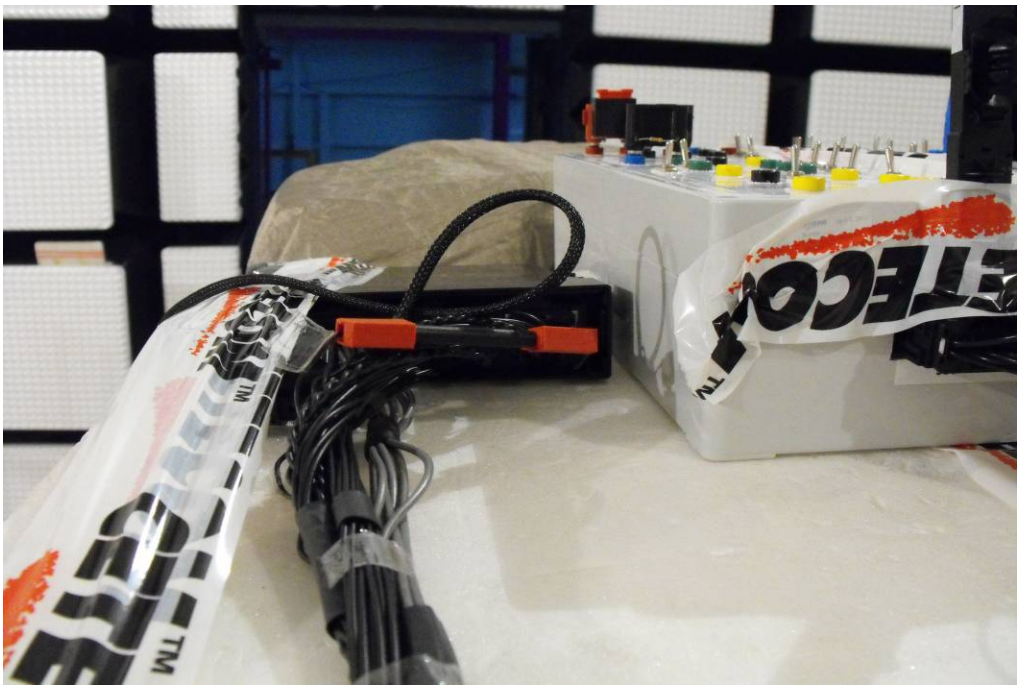


Photo 5:

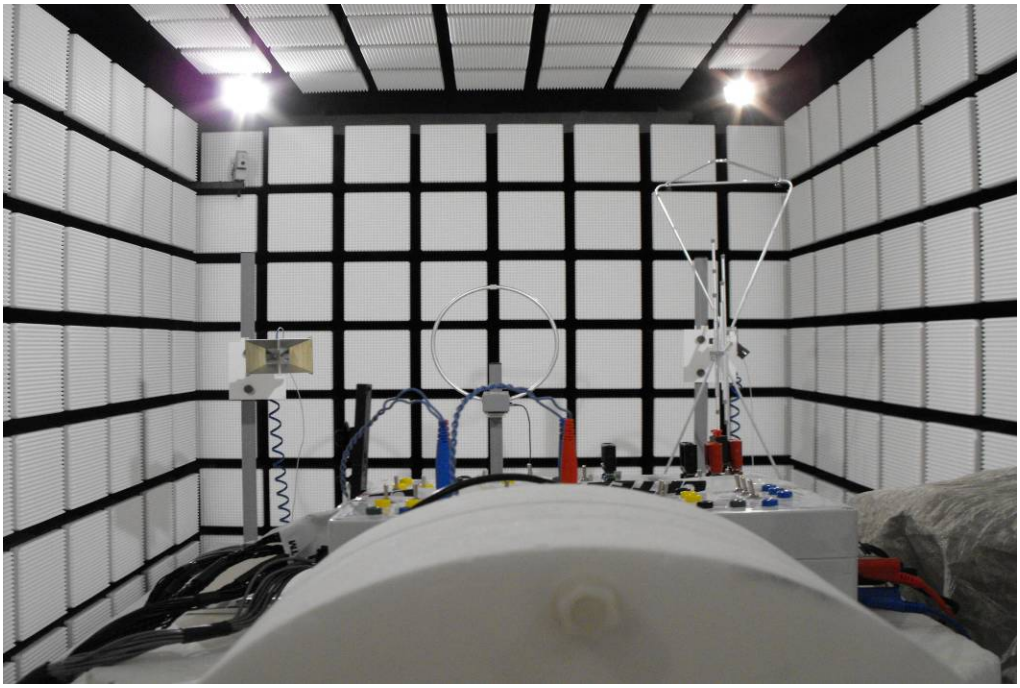


Photo 6:

Photo 7:

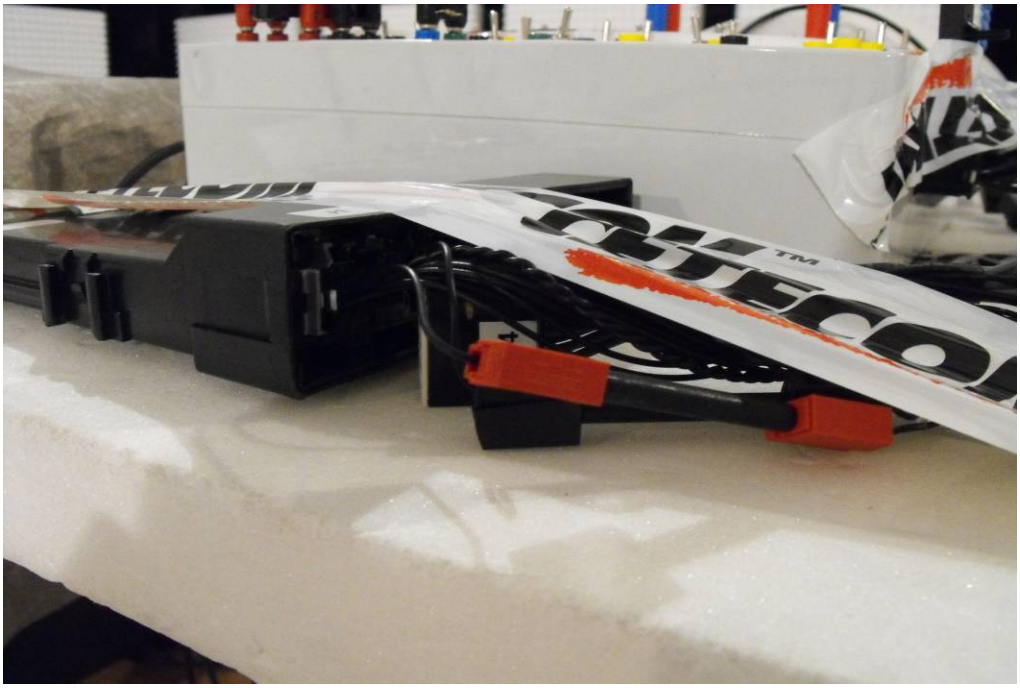
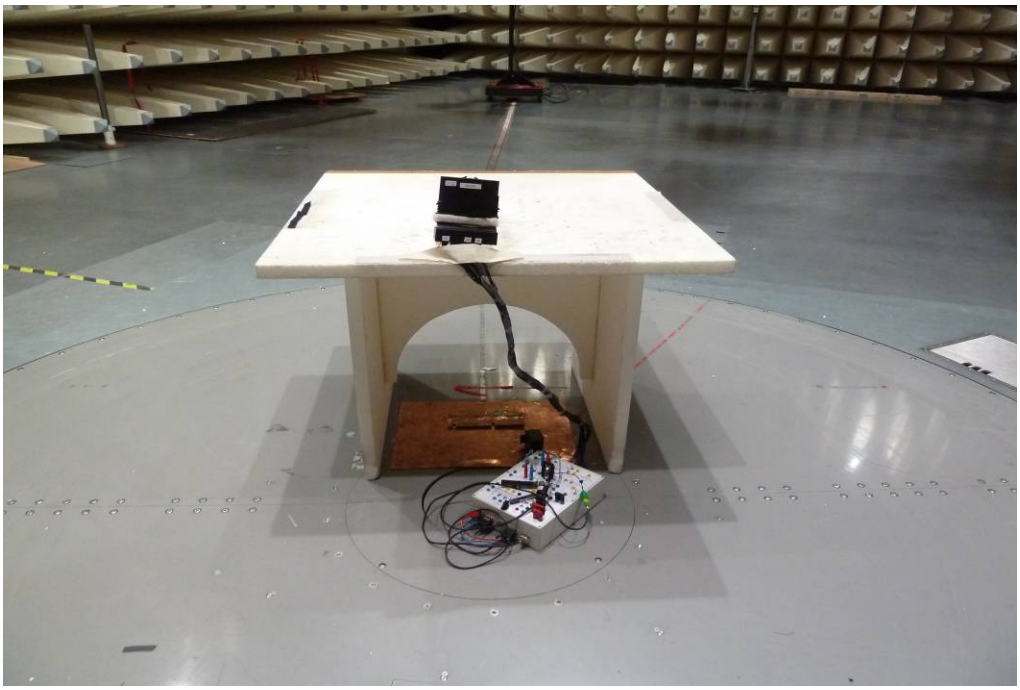


Photo 8:



## Annex B External photographs of the EUT

Photo documentation:

Photo 1:


Photo 2:

Photo 3:

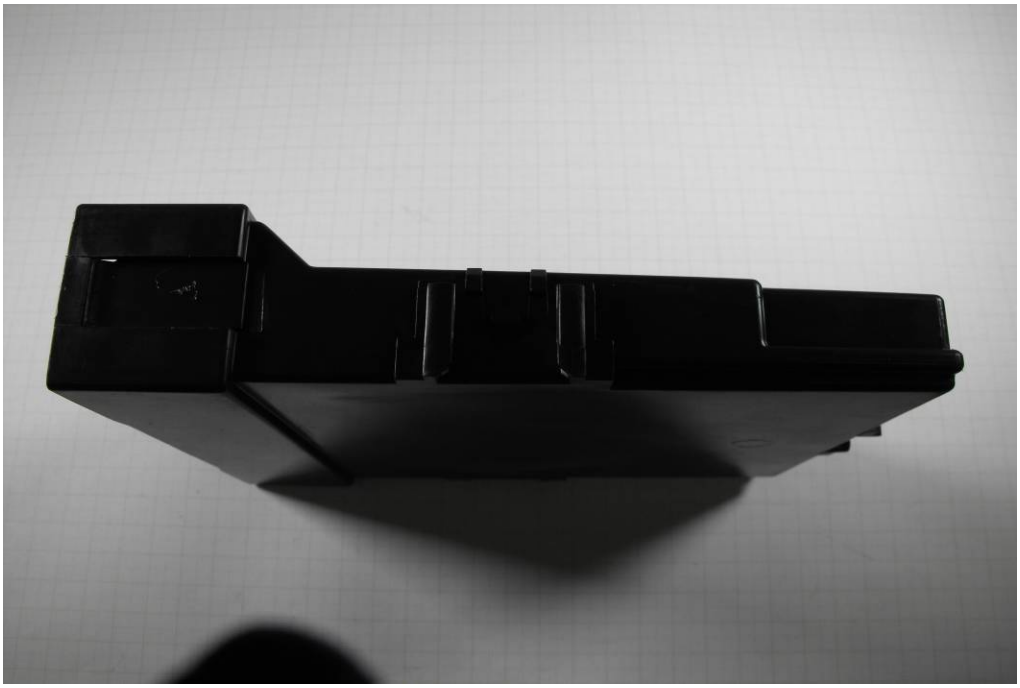


Photo 4:

Photo 5:

Photo 6:

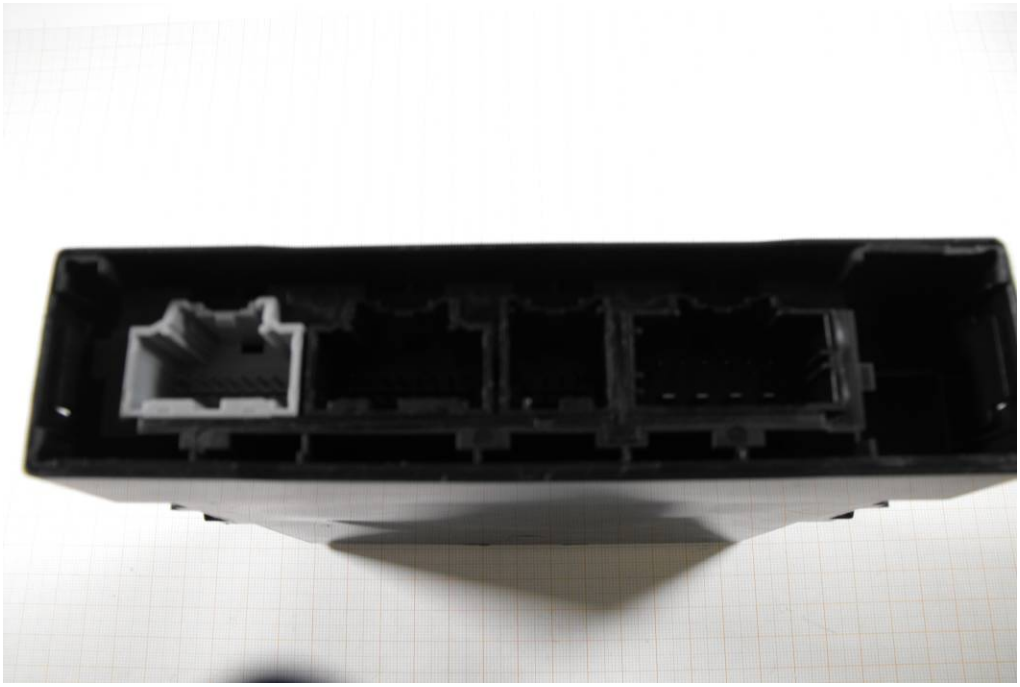


Photo 7:

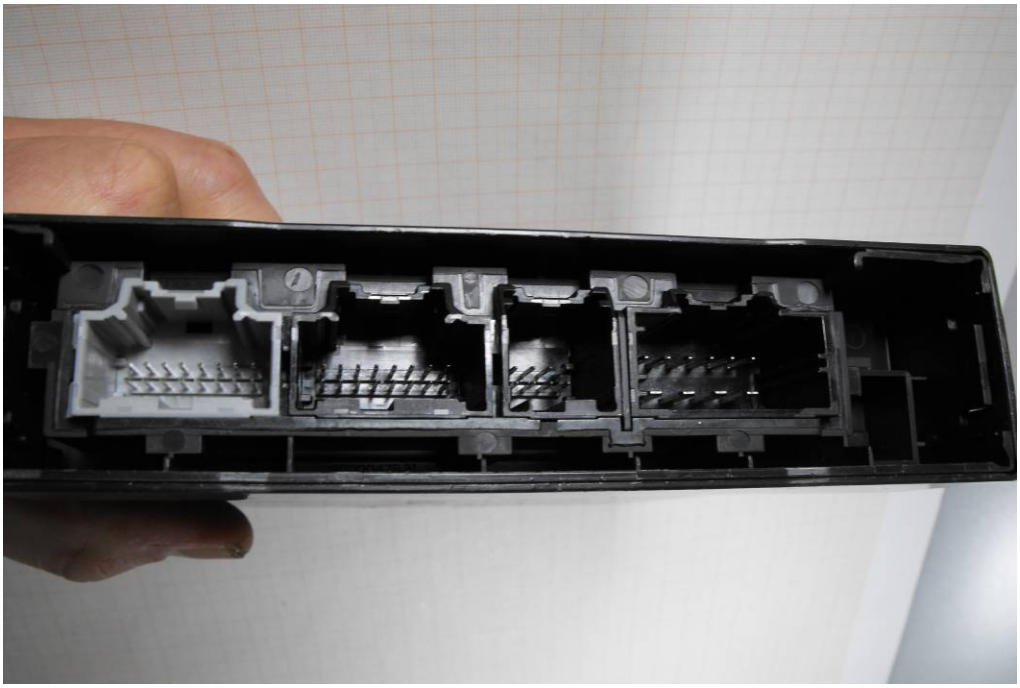


Photo 8:

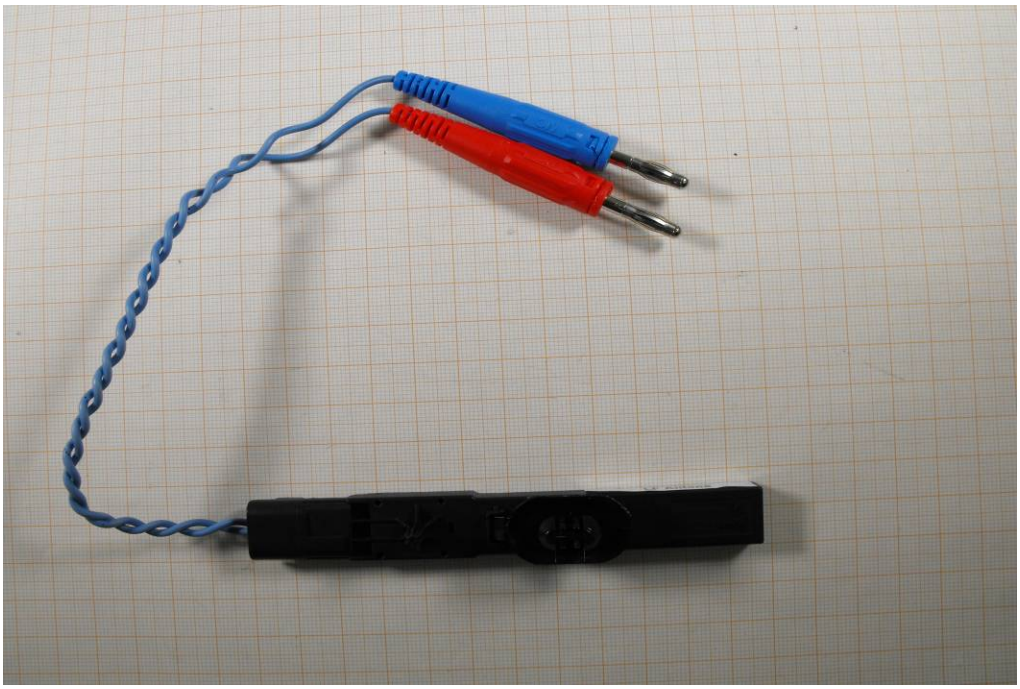


Photo 9:

Photo 10:

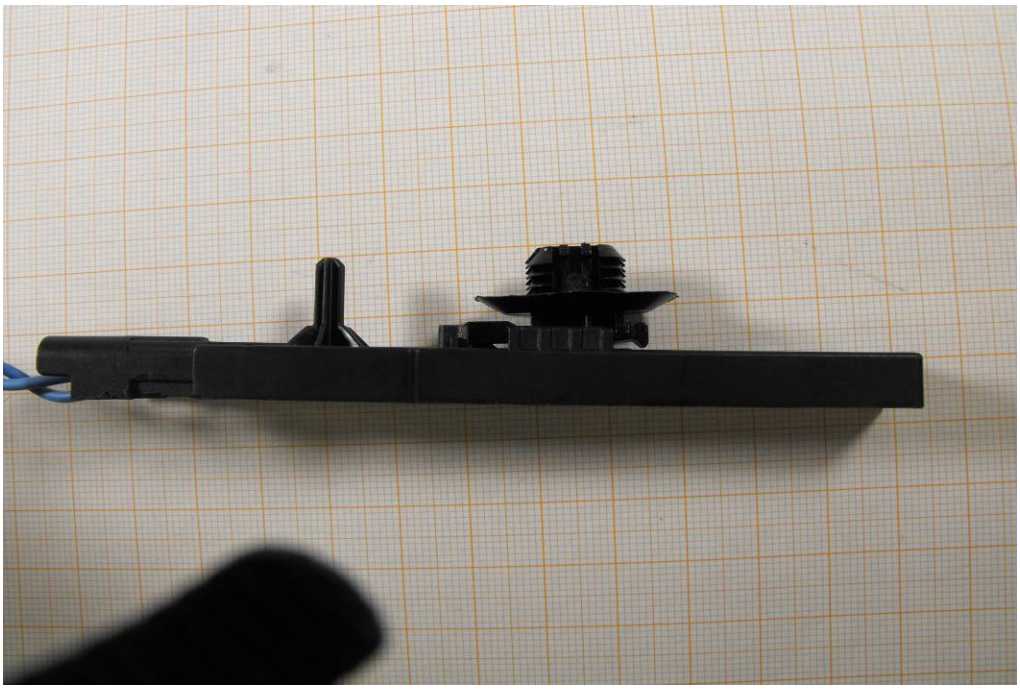
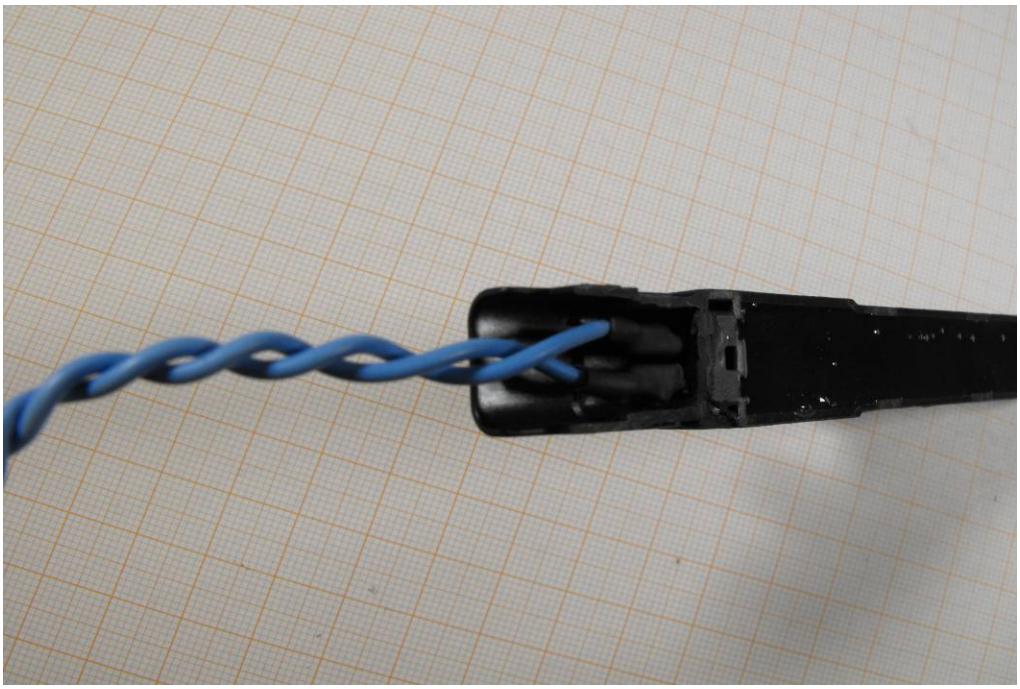


Photo 11:


Photo 12:



## Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:

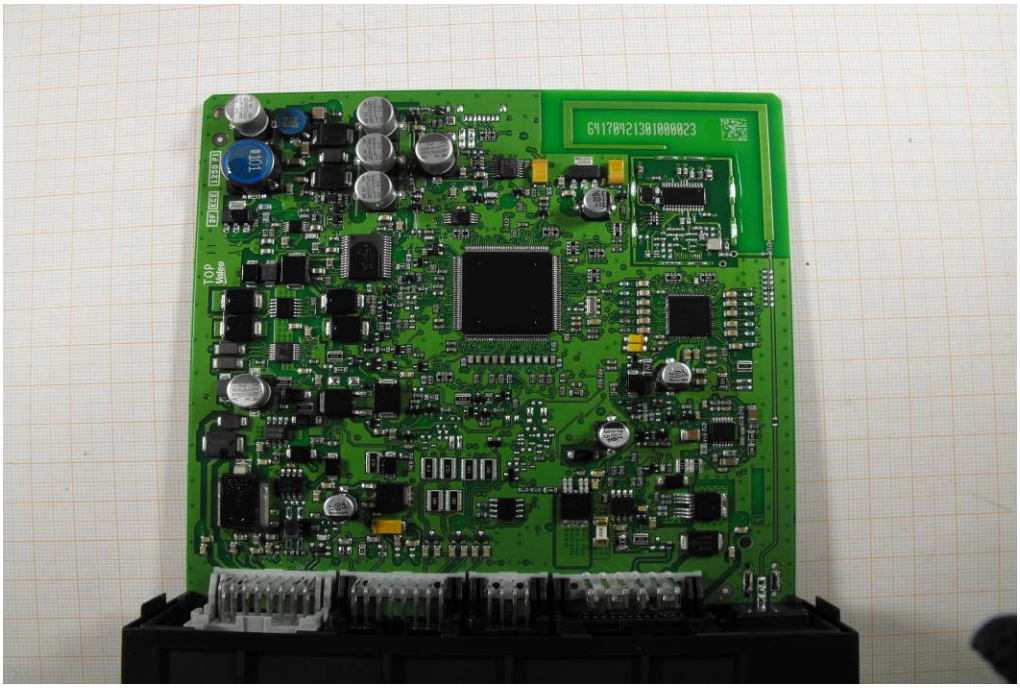


Photo 2:

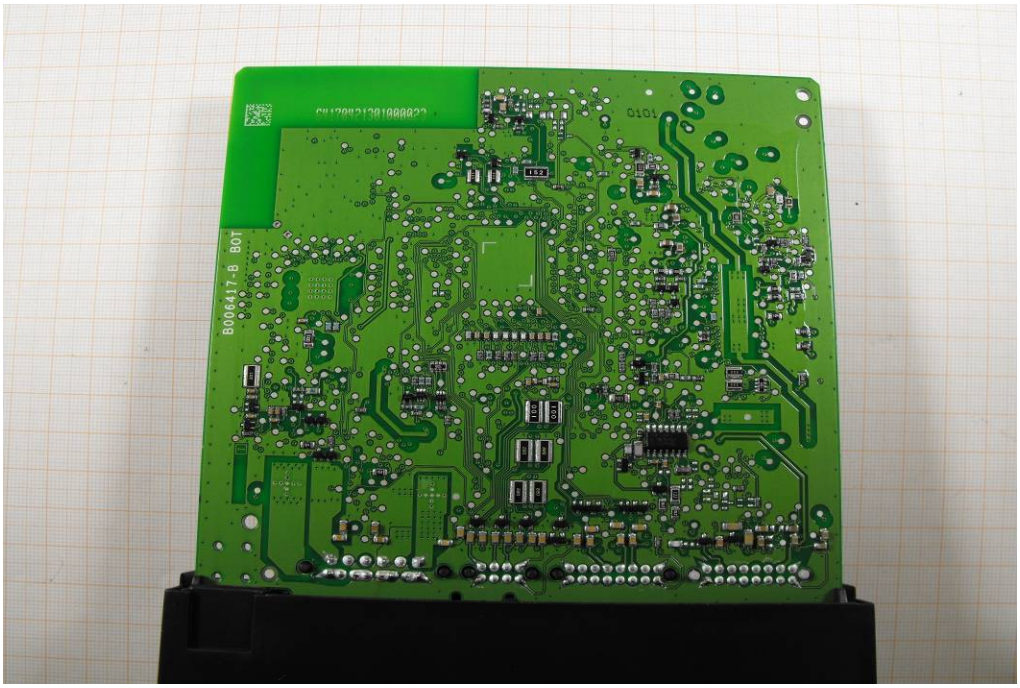
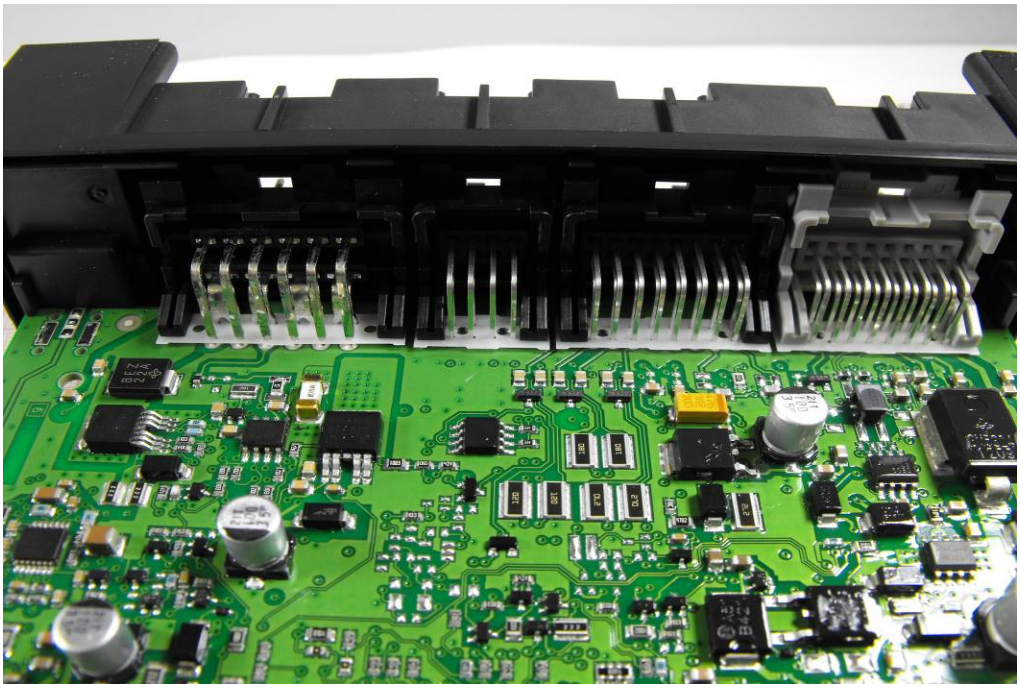


Photo 3:



## Annex D Document history

| Version | Applied changes | Date of release |
|---|---|---|
| 1.0 | Initial release | 2013-10-02 |
| -A | Editorial changings | 2013-10-04 |
| -B | Correction of cover sheet | 2013-11-21 |
| -C | Addition of comment about the antenna configuration | 2013-12-05 |

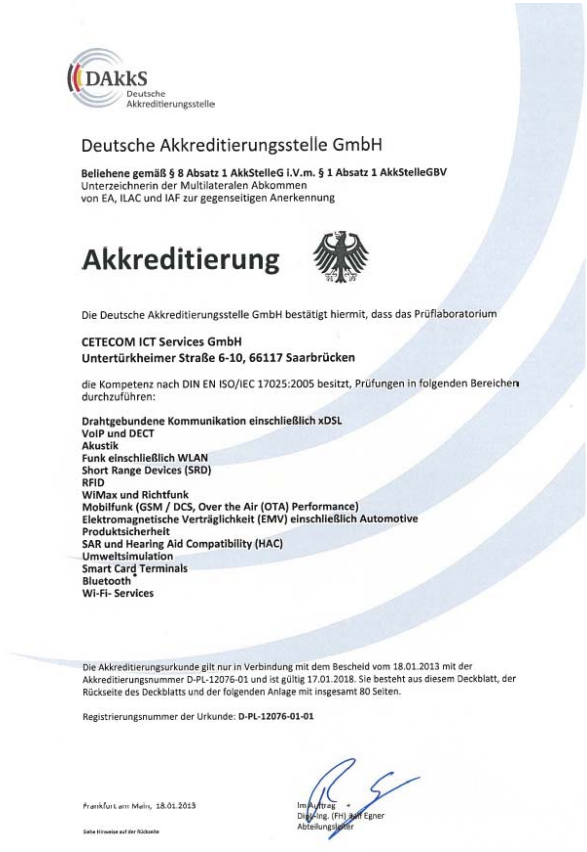
## Annex E Further information

**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



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**CETECOM ICT Services GmbH**
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**WiMax und Richtfunk**
**Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)**
**Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive**
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**Umweltsimulation**
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Im Auftrag
Dipl.-Ing. (FH) Karl Egner
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