

**CETECOM**™

**CETECOM ICT Services**  
consulting - testing - certification >>>

## TEST REPORT

Test report no.: 1-3988/11-01-03-A



**DAkkS**  
Deutsche  
Akkreditierungsstelle  
D-PL-12076-01-01

### Testing laboratory

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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

**Alfred Kärcher GmbH & Co.**  
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### Manufacturer

**Alfred Kärcher GmbH & Co**  
Alfred-Kärcher-Str. 28-40  
71364 Winnenden / GERMANY

### Test standard/s

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

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

### Test Item

|                    |                                      |
|--------------------|--------------------------------------|
| Kind of test item: | <b>RF-ID Module</b>                  |
| Model name:        | <b>RFID B80W</b>                     |
| FCC ID:            | ZP940353910999                       |
| IC:                | 9752A-40353910999                    |
| Frequency:         | 13.56 MHz                            |
| Technology tested: | RFID                                 |
| Antenna:           | Integrated print antenna             |
| Power Supply:      | 5.0 V DC by external DC power supply |
| Temperature Range: | -10°C to +45 °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:

p.o.

Marco Bertolino  
Testing Manager

### Test performed:

Tobias Wittenmeier

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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:          | 2011-11-03 |
| Date of receipt of test item:      | 2012-07-17 |
| Start of test:                     | 2012-07-19 |
| End of test:                       | 2012-07-20 |
| 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<br>Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment |

## 4 Test environment

|                            |                  |                                       |
|----------------------------|------------------|---------------------------------------|
| Temperature:               | $T_{\text{nom}}$ | +22 °C during room temperature tests  |
|                            | $T_{\text{max}}$ | +45 °C during high temperature tests  |
|                            | $T_{\text{min}}$ | -10 °C during low temperature tests   |
| Relative humidity content: |                  | 55 %                                  |
| Barometric pressure:       |                  | not relevant for this kind of testing |
| Power supply:              | $V_{\text{nom}}$ | 5.0 V DC by external DC power supply  |
|                            | $V_{\text{max}}$ | 5.25 V                                |
|                            | $V_{\text{min}}$ | 4.75 V                                |

## 5 Test item

|                              |                                       |
|------------------------------|---------------------------------------|
| Kind of test item :          | RF-ID Module                          |
| Type identification :        | RFID B80W                             |
| S/N serial number :          | 082                                   |
| HW hardware status :         | Rev. 01                               |
| SW software status :         | Test software continuous reading mode |
| Frequency band [MHz] :       | 13.56 MHz                             |
| Type of radio transmission : |                                       |
| Use of frequency spectrum :  | Single carrier                        |
| Type of modulation :         | ASK                                   |
| Number of channels :         | 1                                     |
| Antenna :                    | Integrated print antenna              |
| Power supply :               | 5.0 V DC by external DC power supply  |
| Temperature range :          | -10°C to +45 °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  | 2012-08-14 | -/-    |

| Test Specification Clause                      | Test Case  | Temperature Conditions | Power Source Voltages | Pass                                | Fail                     | NA                       | NP                       | Remark   |
|--|--|------------------------|-----------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| § 15.35 (c)/<br>RSS-GEN Issue 2<br>Section 4.5 | Timing of the transmitter<br>(Duty cycle correction factor ) | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.225 (a)/<br>RSS-210 Issue 8<br>Annex 2.6  | Fieldstrength of Fundamental                                 | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.209/<br>RSS-210 Issue 8<br>Annex 2.6      | Fieldstrength of harmonics and spurious                      | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
| § 15.225 (e)/<br>RSS-210 Issue 8<br>Annex 2.6  | Frequency tolerance  | Nominal                | Extreme               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |
|  |  | Extreme                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |

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

## 8 RF measurements

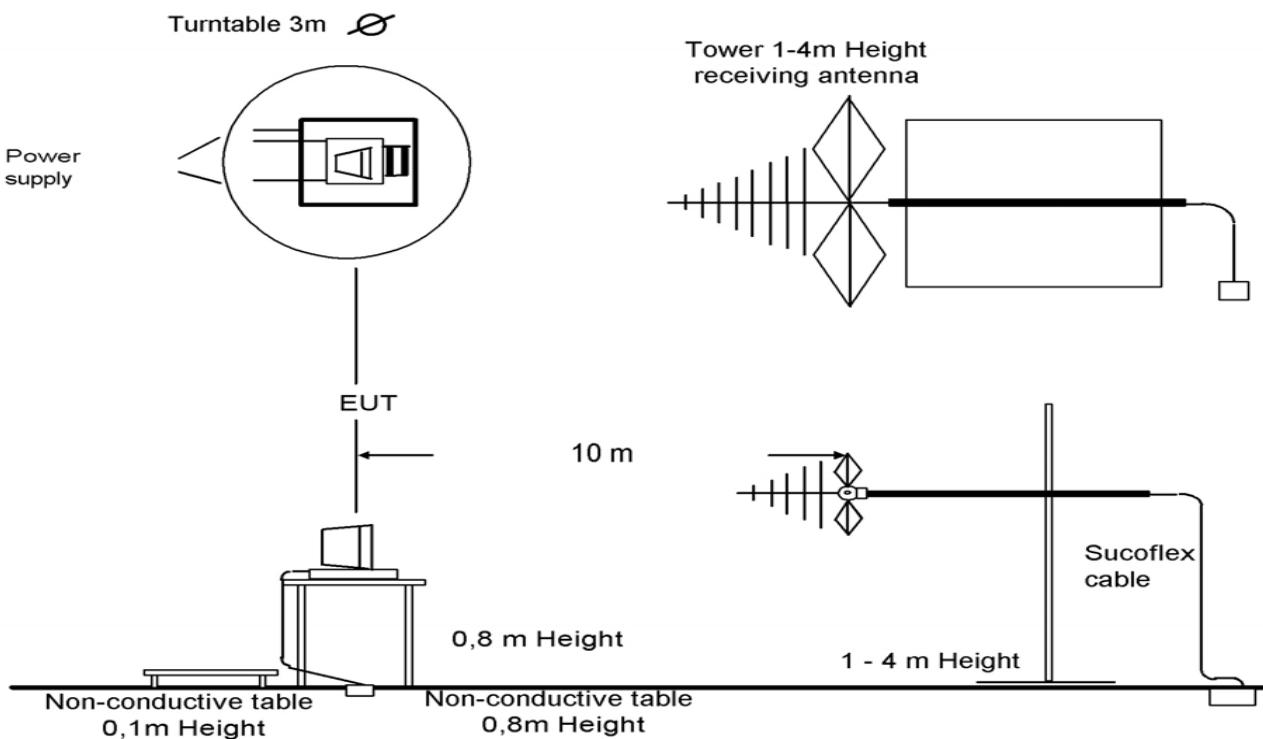
### 8.1 Description of test setup

#### 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 C63.4-2003 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 C63.4-2003 clause 4.2.

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

Semi anechoic chamber



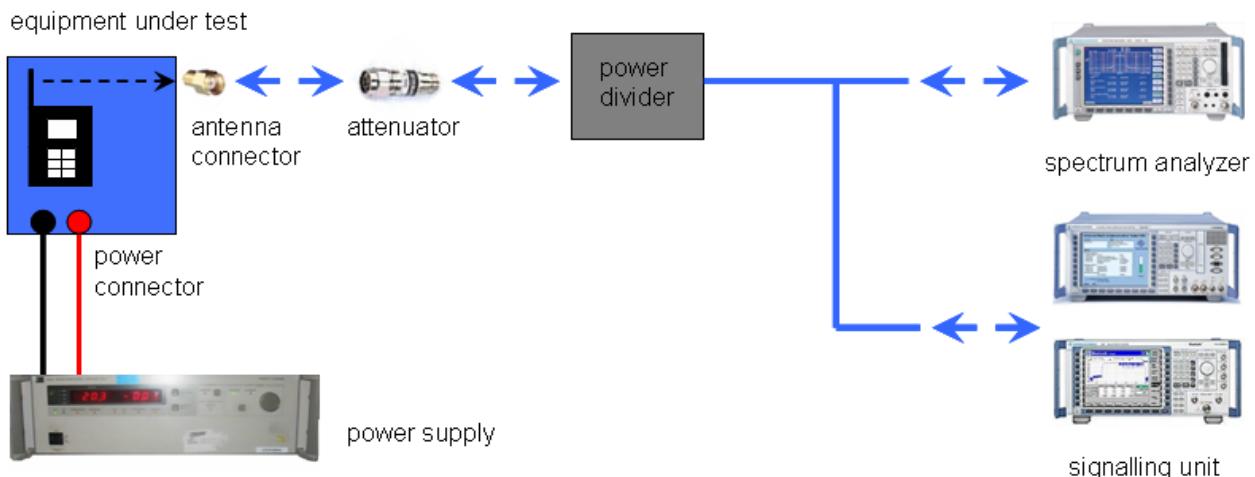
Picture 1: Diagram radiated measurements

|                 |                     |
|-----------------|---------------------|
| 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

The EUT is intended to be used in a battery powered device; therefore the AC-conducted measurements are not applicable.

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

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

|  |   |  |
|--|---|--|
| Test Report Number                                       | : | 1-3988/11-01-03-A  |
| Equipment Model Number                                   | : | RFID B80W  |
| Certification Number                                     | : | 9752A-40353910999  |
| Manufacturer (complete Address)                          | : | Alfred Kärcher GmbH & Co<br>Alfred-Kärcher-Str. 28-40<br>71364 Winnenden / GERMANY |
| Tested to radio standards specification no.              | : | RSS 210, Issue 8   |
| Open Area Test Site IC No.                               | : | IC 3462C-1   |
| Frequency Range or fixed frequency                       | : | 13.56 MHz  |
| Field Strength [dB $\mu$ V/m] (at which distance)        | : | 52.5 dB $\mu$ V/m @ 10m  |
| Occupied bandwidth (99%-BW) [MHz]                        | : | 22 Hz  |
| Type of modulation                                       | : | ASK  |
| Emission Designator (TRC-43)                             | : | 22H0N0N  |
| Antenna Information                                      | : | Integrated print antenna   |
| Transmitter Spurious (worst case)<br>[dB $\mu$ V/m @ 3m] | : | 29.10 dB $\mu$ V/m @ 49.5 MHz  |
| Receiver Spurious (worst case)<br>[dB $\mu$ V/m @ 3m]    | : | Not applicable, only transmit mode available                                       |

**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:**

|            |                    |           |
|------------|--------------------|-----------|
| 2012-08-14 | Tobias Wittenmeier |           |
| Date       | Name               | Signature |

## 9 Measurement results

### 9.1 Timing of the transmitter

#### Measurement:

| Measurement parameter |     |
|-----------------------|-----|
| Detector:             | -/- |
| Sweep time:           | -/- |
| Resolution bandwidth: | -/- |
| Video bandwidth:      | -/- |
| Span:                 | -/- |
| Trace-Mode:           | -/- |

#### 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> |                             |

Duty-Cycle: 100%

#### Result: **passed**

## 9.2 Field strength of the fundamental

### Measurement:

| Measurement parameter |   |
|-----------------------|---|
| Detector:             | Quai Peak   |
| Sweep time:           | Auto  |
| Resolution bandwidth: | 200 Hz up to 150 kHz,<br>9 kHz up to 30 MHz,<br>120 kHz up to 1 GHz |
| Video bandwidth:      | $\geq$ RBW  |
| Span:                 | Auto  |
| Trace-Mode:           | Max Hold  |

### Limits:

| FCC                             | IC   |   |
|---------------------------------|--|---|
| CFR Part SUBCLAUSE § 15.225 (b) | RSS-210 Issue 8 Section A1.1.2 / 2.7 Table 4 |   |
| Fundamental Frequency (MHz)     | Field strength of Fundamental ( $\mu$ V/m)   | Measurement distance (m)                        |
| 13.553 to 13.567                | 15848 $\mu$ V/m (84 dB $\mu$ V/m)            | 30  |
|                                 | 158489 $\mu$ V/m<br>(104 dB $\mu$ V/m)       | 10<br>(Recalculated acc. to FCC part15.31 (f2)) |

### Result:

| TEST CONDITIONS         |                  | MAXIMUM POWER (dB $\mu$ V/m) |                  |
|-------------------------|------------------|------------------------------|------------------|
| Frequency               |                  | 13.56 MHz                    | 13.56 MHz        |
| Mode                    |                  | at 10 m distance             | at 30 m distance |
| T <sub>nom</sub>        | V <sub>nom</sub> | 52.5                         | 32.5             |
| Measurement uncertainty |                  | $\pm$ 3dB                    |                  |

\* Limits recalculated from 10m to 30m with 40 dB/decade according to FCC 15.31 (f2).

**Result: passed**

### 9.3 Field strength of the harmonics and spurious

#### Measurement:

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

#### Limits:

| FCC   | IC                          |                          |
|---|-----------------------------|--------------------------|
| <b>SUBCLAUSE § 15.209</b>                     |                             |                          |
| Field strength of the harmonics and spurious. |                             |                          |
| Frequency (MHz)                               | Field strength ( $\mu$ V/m) | Measurement distance (m) |
| 0.0009 – 0.490                                | 2400/F(kHz)                 | 300                      |
| 0.490 – 1.705                                 | 24000/F(kHz)                | 30                       |
| 1.705 – 30                                    | 30 (29.5 dB $\mu$ V/m)      | 30                       |
| 30 – 88                                       | 100 (40 dB $\mu$ V/m)       | 3                        |
| 88 – 216                                      | 150 (43.5 dB $\mu$ V/m)     | 3                        |
| 216 – 960                                     | 200 (46 dB $\mu$ V/m)       | 3                        |

#### Result:

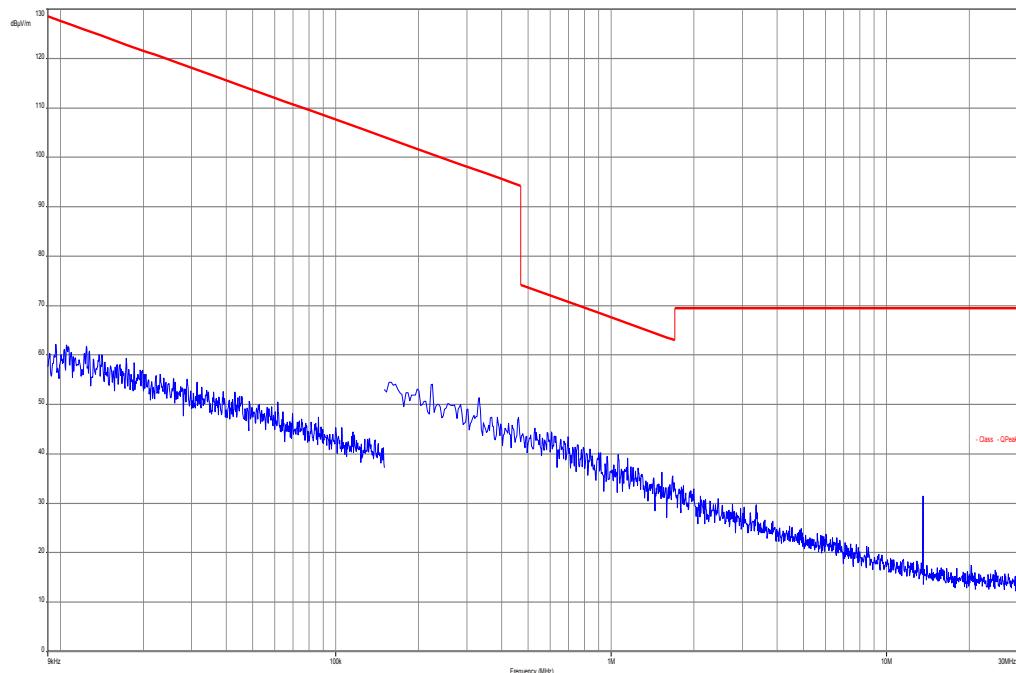
| EMISSION LIMITATIONS |          |   |   |         |
|----------------------|----------|---|---|---------|
| f<br>[MHz]           | Detector | Limit<br>max. allowed<br>[dB $\mu$ V/m] | Amplitude of emission<br>[dB $\mu$ V/m] | Results |
| No peaks detected    |          |   |   |         |
|                      |          |   |   |         |

Result: **passed**

### Plots of the measurements

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

Transmit frequency 13.56 MHz



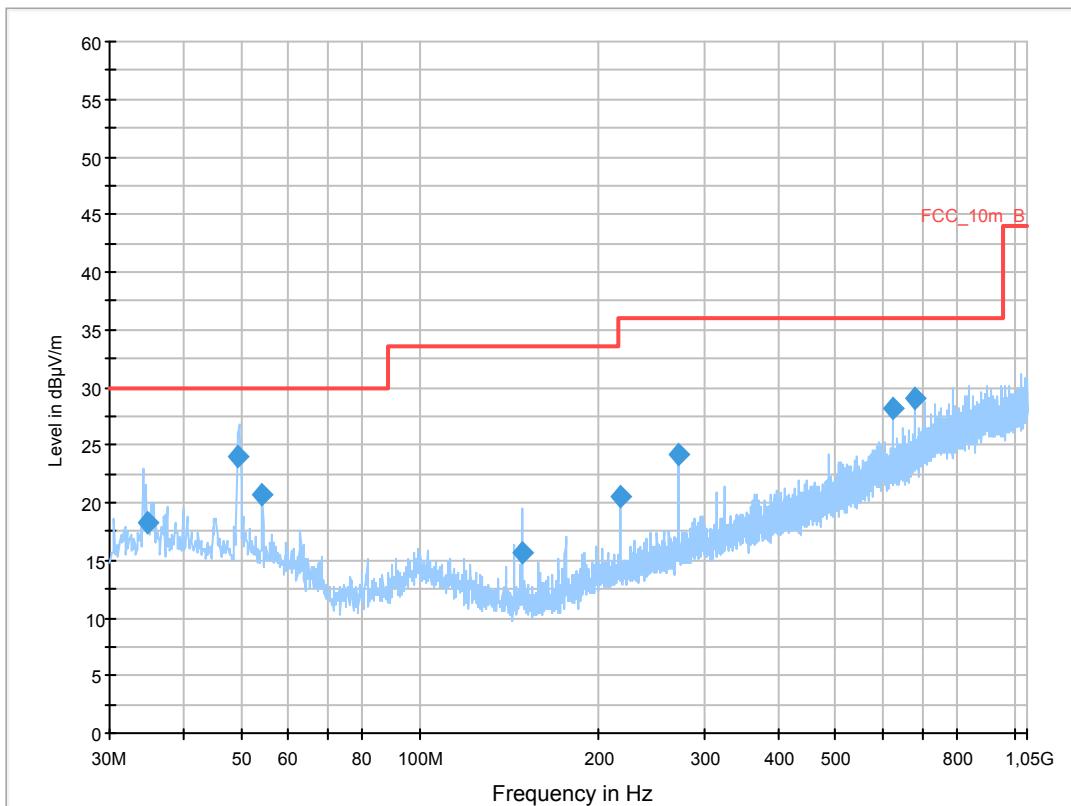
**Plot 2: 30 MHz – 1000 MHz**

## Common Information

EUT: B80  
 Serial Number: 082 SW: 1.00  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: continuous reading (without TAG)  
 Operator Name: Hennemann  
 Comment: DC: 5 V

## Scan Setup: STAN\_Fin [EMI radiated]

| Hardware Setup: | Electric Field (NOS) |           |         |            |        |
|-----------------|----------------------|-----------|---------|------------|--------|
| Receiver:       | [ESCI 3]             |           |         |            |        |
| Level Unit:     | dB $\mu$ V/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 (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|---------|
| 34.652100       | 18.3                     | 1000.0          | 120.000         | 187.0       | V            | 131.0         | 13.0       | 11.7        | 30.0                 |         |
| 49.455000       | 24.1                     | 1000.0          | 120.000         | 100.0       | V            | 91.0          | 13.4       | 5.9         | 30.0                 |         |
| 54.245100       | 20.6                     | 1000.0          | 120.000         | 212.0       | V            | 75.0          | 13.0       | 9.4         | 30.0                 |         |
| 148.575750      | 15.6                     | 1000.0          | 120.000         | 100.0       | V            | 121.0         | 8.9        | 17.9        | 33.5                 |         |
| 217.015650      | 20.5                     | 1000.0          | 120.000         | 292.0       | H            | -22.0         | 12.3       | 15.5        | 36.0                 |         |
| 271.248450      | 24.2                     | 1000.0          | 120.000         | 265.0       | H            | -19.0         | 13.8       | 11.8        | 36.0                 |         |
| 623.902050      | 28.2                     | 1000.0          | 120.000         | 112.0       | H            | 0.0           | 20.9       | 7.8         | 36.0                 |         |
| 678.156750      | 29.1                     | 1000.0          | 120.000         | 100.0       | H            | 26.0          | 21.9       | 6.9         | 36.0                 |         |

## 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 8.52

The transmitter holds the requirements of FCC 15.225 (a, b, c and d)

## 9.4 Frequency tolerance

### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Peak     |
| Sweep time:           | Auto     |
| Resolution bandwidth: | 10 Hz    |
| Video bandwidth:      | 30 Hz    |
| Span:                 |          |
| Trace-Mode:           | Max hold |

### Limits:

| FCC                       | IC                        |
|---------------------------|---------------------------|
| <b>SUBCLAUSE § 15.225</b> | RSS-210 Issue 8 Annex 2.6 |

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

### Result: **passed**

| Frequency tolerance        |                 |         |                        |                 |        |
|----------------------------|-----------------|---------|------------------------|-----------------|--------|
| Over temperature variation |                 |         | Over voltage variation |                 |        |
| Limit is +/- 1.356 kHz     |                 |         | Limit is +/- 1.356 kHz |                 |        |
| T [°C]                     | Frequency [MHz] | result  | Power voltage          | Frequency [MHz] | result |
| -10°                       | 13.562890       | Pass    | 4.75 V                 | 13.562834       | Pass   |
| 0°                         | 13.562894       | Pass    | 4.85 V                 | 13.562834       | Pass   |
| 10°                        | 13.562875       | Pass    | 4.95 V                 | 13.562834       | Pass   |
| 20°                        | 13.562849       | Pass    | 5.05 V                 | 13.562833       | Pass   |
| 30°                        | 13.562814       | Pass    | 5.15 V                 | 13.562832       | Pass   |
| 40°                        | 13.562783       | Pass    | 5.25 V                 | 13.562833       | Pass   |
| 50°                        | 13.562764       | Pass    |                        |                 |        |
| Measurement uncertainty    |                 | ±100 Hz |                        |                 |        |

## 9.5 AC line conducted

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   | n. a.        | Temperature Test Chamber                     | VT 4002                          | Heraeus Voetsch        | 521/83761  | 300002326       | Ve                  | 20.09.2011       | 20.09.2013       |
| 2   | n. a.        | MXA Signal Analyzer 20 Hz - 26.5 GHz         | N9020A<br>MXA Signal Analyzer    | Agilent Vertr. Bad Hom | US46220229 | 300003805       | vlKI!               | 08.09.2010       | 08.09.2012       |
| 3   | n. a.        | DC power supply, 60Vdc, 50A, 1200 W          | 6032A                            | HP Meßtechnik          | 2818A03450 | 300001040       | Ve                  | 12.01.2012       | 12.01.2015       |
| 4   | n. a.        | Active Loop Antenna                          | 6502                             | EMCO                   | 2210       | 300001015       | ne                  |                  |                  |
| 5   | n. a.        | Anechoic chamber                             | FAC 3/5m                         | MWB / TDK              | 87400/02   | 300000996       | ev                  |                  |                  |
| 6   | Spec.A. 2_2e | System rack for EMI measurement solution     | 85900                            | HP I.V.                | *          | 300000222       | ne                  |                  |                  |
| 7   | 9            | Artificial Mains 9 kHz to 30 MHz             | ESH3-Z5                          | R&S                    | 828576/020 | 300001210       | Ve                  | 06.01.2012       | 06.01.2014       |
| 8   | n. a.        | Relais Matrix                                | 3488A                            | HP Meßtechnik          | 2719A15013 | 300001156       | ne                  |                  |                  |
| 9   | n. a.        | Relais Matrix                                | PSU                              | R&S                    | 890167/024 | 300001168       | ne                  |                  |                  |
| 10  | n. a.        | Three-Way Power Splitter, 50 Ohm             | 11850C                           | HP Meßtechnik          |            | 300000997       | ne                  |                  |                  |
| 11  | n. a.        | Switch / Control Unit                        | 3488A                            | HP                     | 2605e08770 | 300001443       | ne                  |                  |                  |
| 12  | n. a.        | Amplifier                                    | js42-00502650-28-5a              | Parzich GMBH           | 928979     | 300003143       | ne                  |                  |                  |
| 13  | n. a.        | Band Reject filter                           | WRCG185 5/1910-1835/1925-40/8SS  | Wainwright             | 7          | 300003350       | ev                  |                  |                  |
| 14  | n. a.        | Band Reject filter                           | WRCG240 0/2483-2375/2505-50/10SS | Wainwright             | 11         | 300003351       | ev                  |                  |                  |
| 15  | n. a.        | Highpass Filter                              | WHKX2.9/1 8G-12SS                | Wainwright             | 1          | 300003492       | ev                  |                  |                  |
| 16  | n. a.        | Highpass Filter                              | WHK1.1/15 G-10SS                 | Wainwright             | 3          | 300003255       | ev                  |                  |                  |
| 17  | n. a.        | Highpass Filter                              | WHKX7.0/1 8G-8SS                 | Wainwright             | 18         | 300003789       | ne                  |                  |                  |
| 18  | n. a.        | RF Filter Section 9kHz - 1GHz                | N9039A                           | Agilent Technologies   | MY48260003 | 300003825       | vk                  | 08.09.2010       |                  |
| 19  | n. a.        | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163                         | Schwarzbeck            | 371        | 300003854       | vlKI!               | 14.10.2011       | 14.10.2014       |
| 20  | n. a.        | MXE EMI Receiver 20 Hz bis 26,5 GHz          | N9038A                           | Agilent Technologies   | MY51210197 | 300004405       | k                   | 19.12.2011       | 19.12.2012       |

**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                       |
| vlkl! | 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:

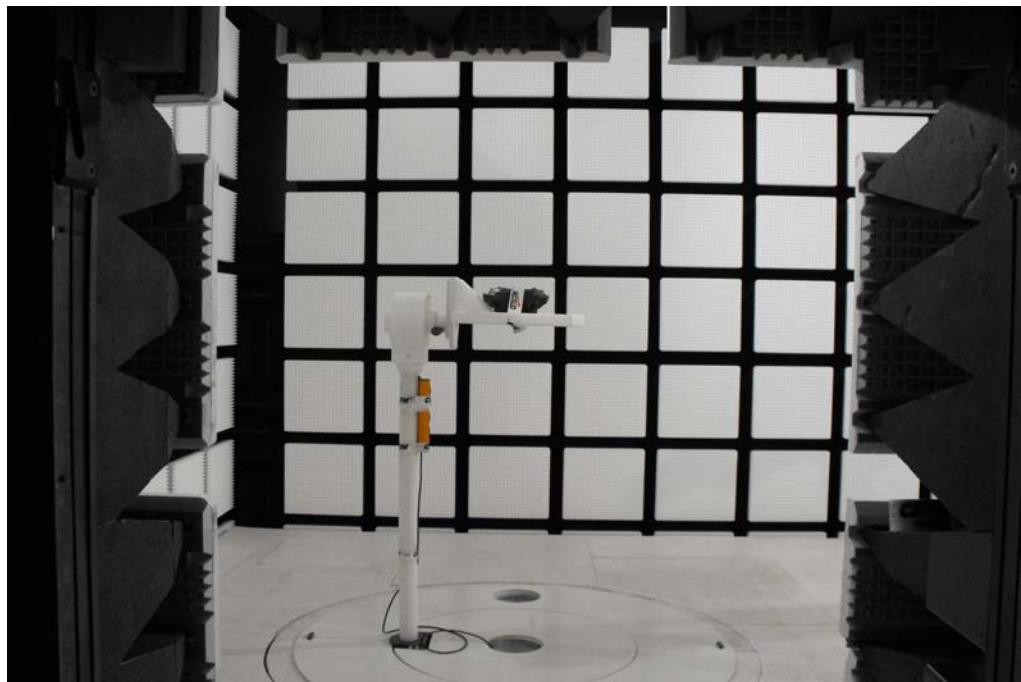


Photo 2:



Photo 3:



Photo 4:

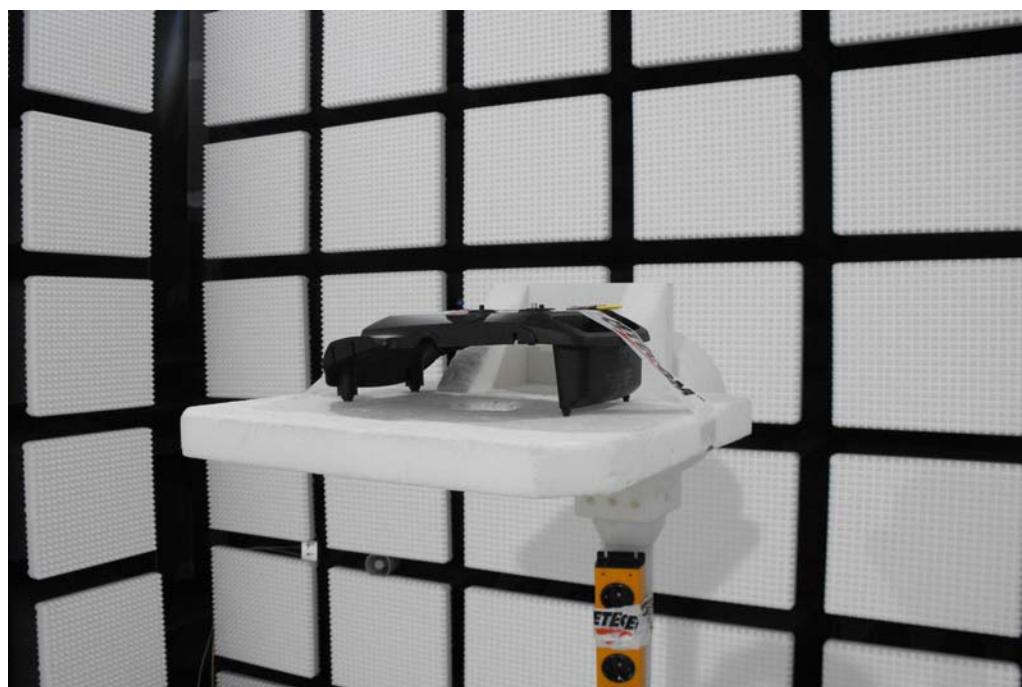
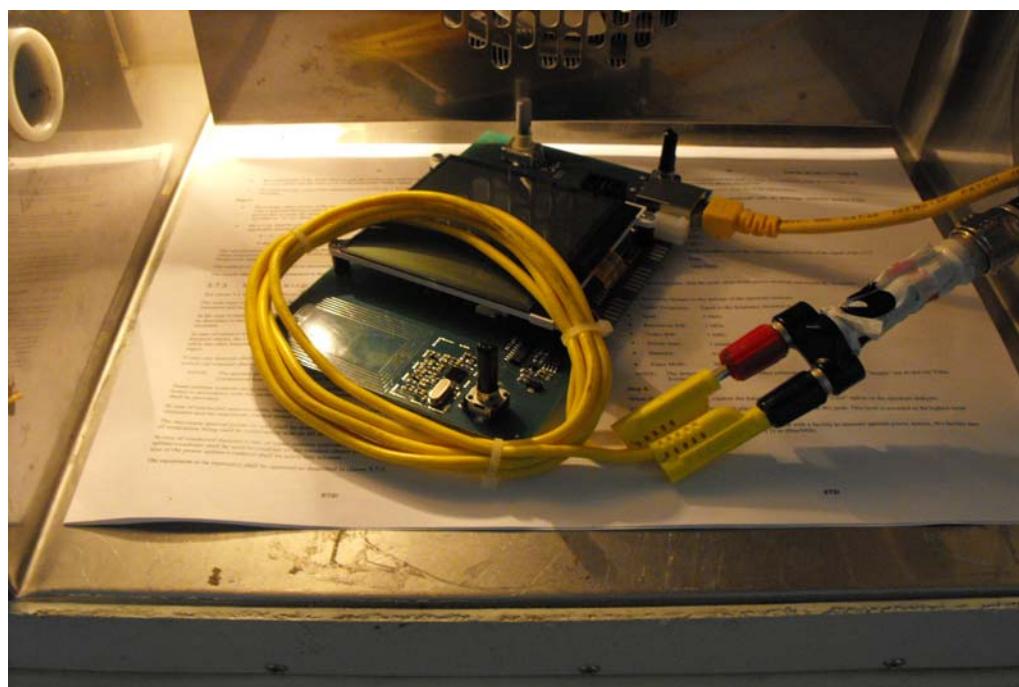


Photo 5:



Photo 6:



## 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:



## Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:

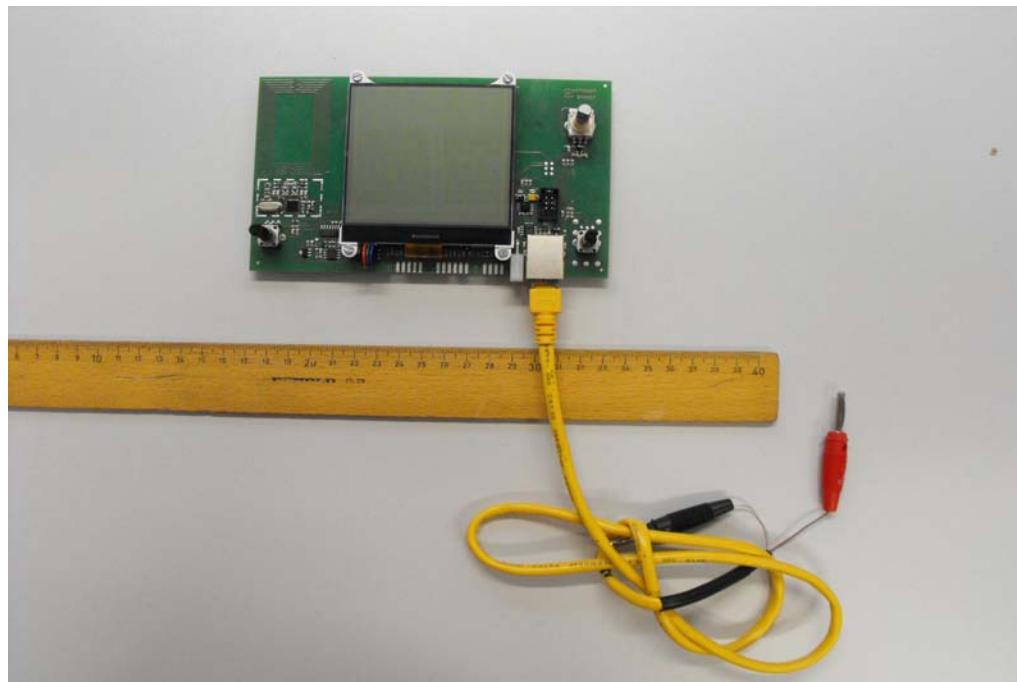


Photo 2:

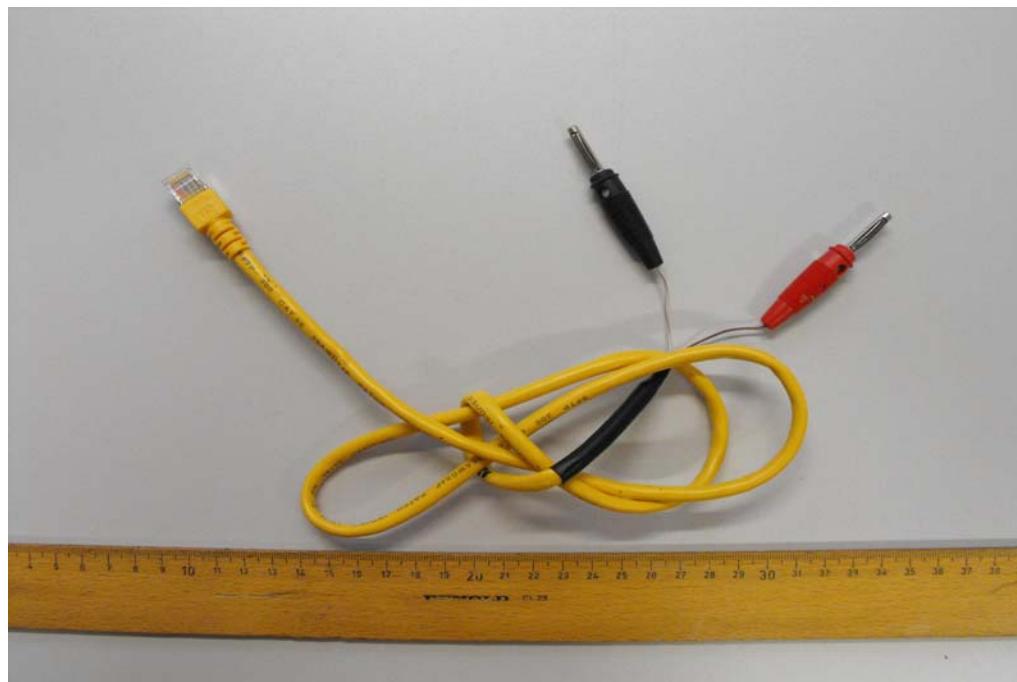


Photo 3:



Photo 4:

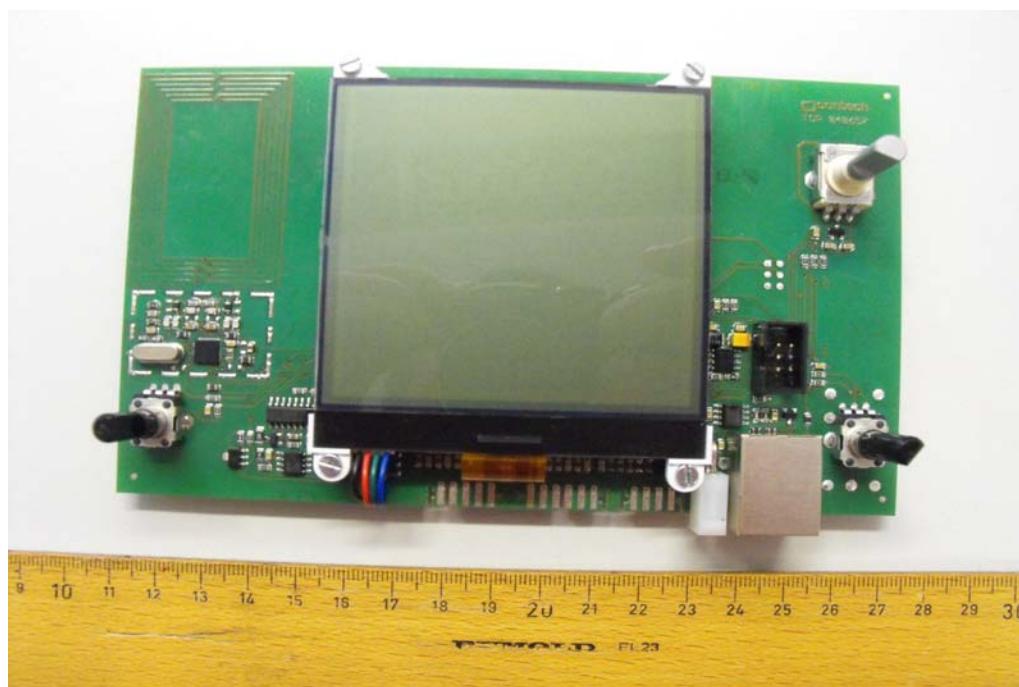


Photo 5:

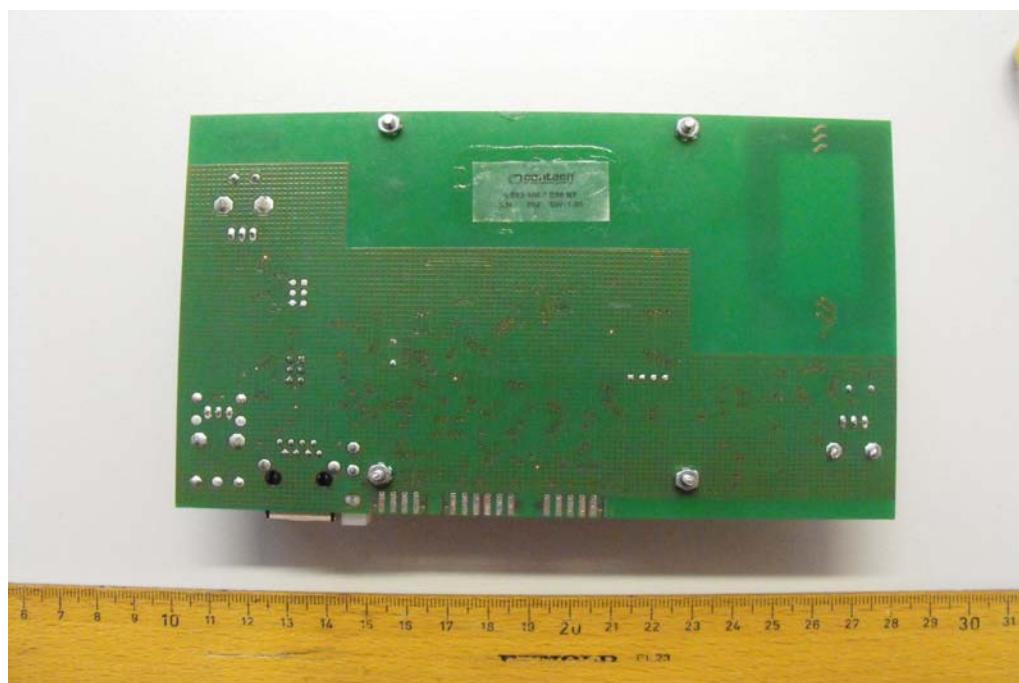


Photo 6:



Photo 7:

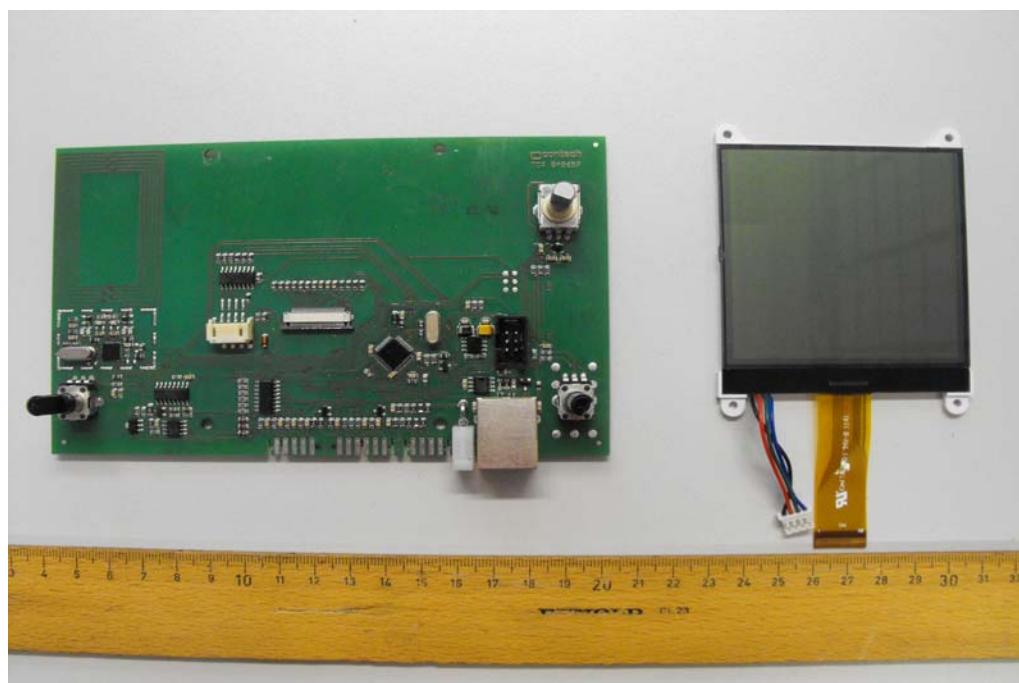


Photo 8:

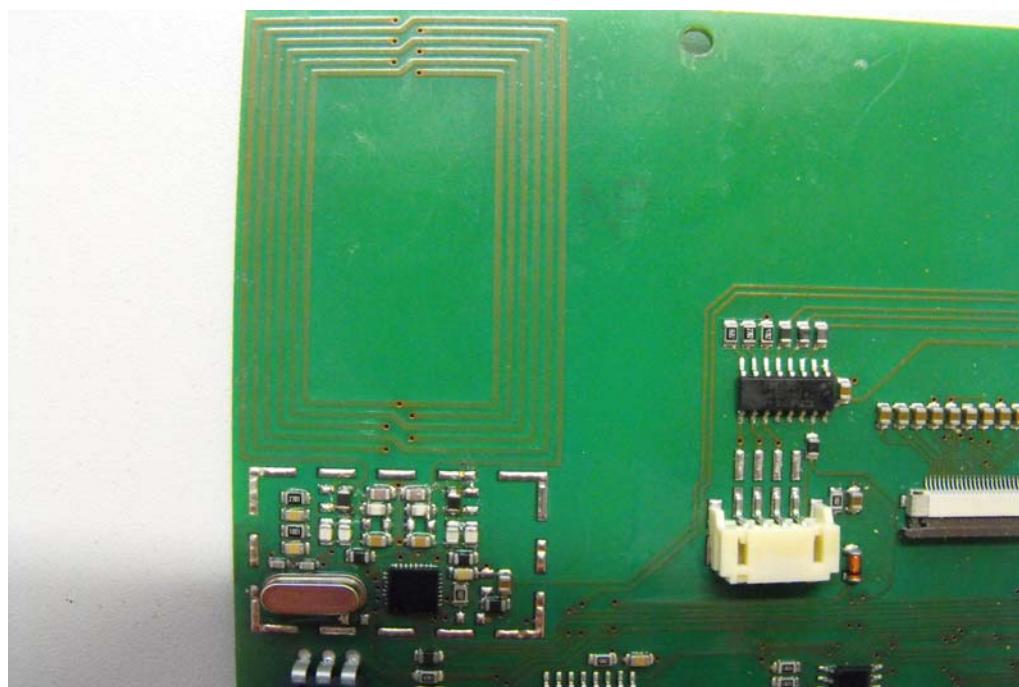


Photo 9:

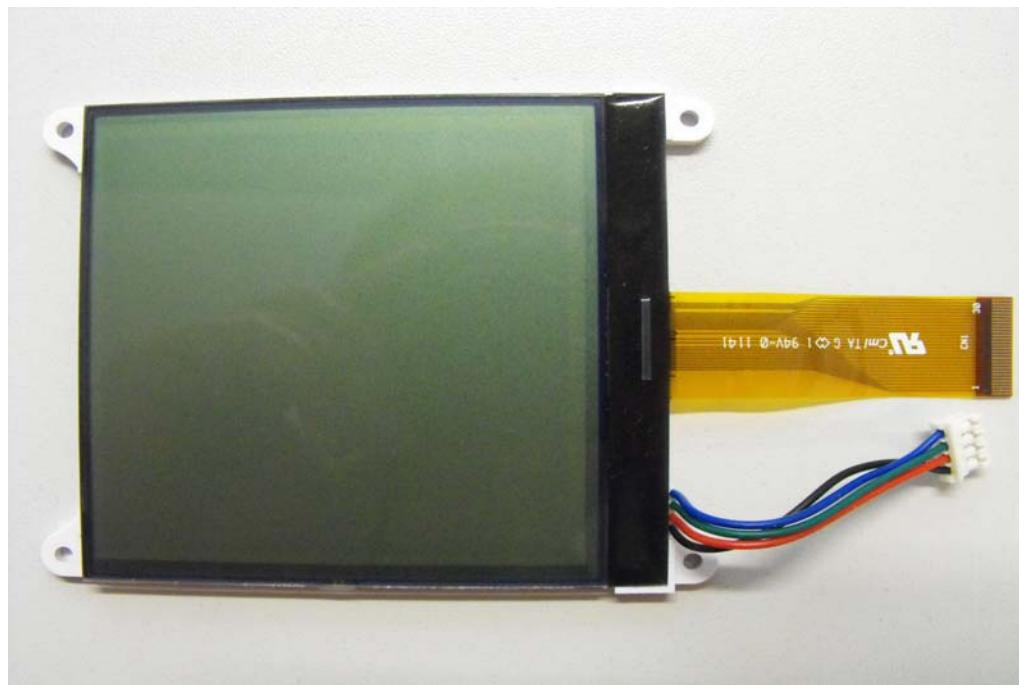


Photo 10:



## Annex D Document history

| Version | Applied changes   | Date of release |
|---------|---|-----------------|
| 1.0     | Initial release   | 2012-07-25      |
| -A      | Correction of applicant, model name, and spurious worst case. | 2012-08-14      |

## 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



Deutsche Akkreditierungsstelle GmbH  
German Accreditation Body

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1  
subsection 1 AkkStelleGBV  
Signatory to the Multilateral Agreements of  
EA, IAC and IAF for Mutual Recognition

### Accreditation



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the  
TESTECOM ICT Services GmbH

Untertürkheimer Straße 6-10  
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the  
following fields:

Wired communications and DECT  
Acoustic  
Radio  
Short Range Devices (SRD)  
RFID  
WiMax and Richtfunk  
Mobile radio (GSM / DCS), Over the Air (OTA) Performance  
Electromagnetic Compatibility (EMC) incl. Automotive  
Product safety  
SAR and Hearing Aid Compatibility (HAC)  
Environmental simulation  
Smart Card Terminals  
Bluetooth  
Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011  
with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet,  
the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: D-PL-12076-01-01

Frankfurt am Main, 13.04.2011

Dipl.-Ing. Michael Eger  
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.

See notes overleaf.

Deutsche Akkreditierungsstelle GmbH

Office Berlin  
Spiritedmarkt 10  
10117 Berlin

Office Frankfurt am Main  
Gartenstraße 6  
60594 Frankfurt am Main

Office Braunschweig  
Bundesallee 100  
38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by  
Deutsche Akkreditierungsstelle GmbH (DAKKS). Exempted is the unchanged form of separate  
dissemination of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of  
accreditation attested by DAKKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009  
(Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of  
the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating  
to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAKKS is  
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Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation  
Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:  
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ILAC: [www.ilac.org](http://www.ilac.org)  
IAF: [www.iaf.nu](http://www.iaf.nu)

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\\_Akkreditierung\\_URK\\_EN17025-En\\_incl\\_Annex.pdf](http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkreditierung_URK_EN17025-En_incl_Annex.pdf)