

**CETECOM™**

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

## TEST REPORT

Test report no.: 1-8637/14-01-10-A



Deutsche  
Akkreditierungsstelle  
D-PL-12076-01-00

### 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-12076-01-00

### Applicant

**Sanitär Services GmbH**

Ischlerbahnstrasse 15  
5020 Salzburg / AUSTRIA  
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Fax: +43 662 455 171  
Contact: Josef Hofer  
e-mail: [hofer.aquis@gmx.com](mailto:hofer.aquis@gmx.com)  
Phone: +43 664 24 20 818

### Manufacturer

**Sanitär Services GmbH**

Ischlerbahnstrasse 15  
5020 Salzburg / AUSTRIA

### 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:** RF-ID 13.56 MHz  
**Model name:** RFID BOX 1JU  
**FCC ID:** 2ADLV60900138  
**IC:** 12507A-60900138  
**Frequency:** 13.56 MHz  
**Technology tested:** RFID  
**Antenna:** Loop antenna  
**Power supply:** 5.00 V DC  
**Temperature range:** 0°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:

Marco Bertolino  
Radio Communications & EMC

### Test performed:

Stefan Bös  
Radio Communications & EMC

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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:          | 2014-09-15 |
| Date of receipt of test item:      | 2014-10-16 |
| Start of test:                     | 2014-11-07 |
| End of test:                       | 2014-11-15 |
| Person(s) present during the test: | -/-        |

## 3 Test standard/s

| Test standard     | Date       | Test standard description   |
|-------------------|------------|---|
| 47 CFR Part 15    | -/-        | 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<br>Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment |

#### 4 Test environment

|                            |           |                                       |
|----------------------------|-----------|---------------------------------------|
| Temperature:               | $T_{nom}$ | +22 °C during room temperature tests  |
|                            | $T_{max}$ | +85 °C during high temperature tests  |
|                            | $T_{min}$ | 0 °C during low temperature tests     |
| Relative humidity content: |           | 53 %                                  |
| Barometric pressure:       |           | not relevant for this kind of testing |
| Power supply:              | $V_{nom}$ | 5.00 V DC                             |
|                            | $V_{max}$ | 5.25 V                                |
|                            | $V_{min}$ | 4.75 V                                |

#### 5 Test item

|                            |   |   |
|----------------------------|---|---|
| Kind of test item          | : | RF-ID 13.56 MHz   |
| Type identification        | : | RFID BOX 1JU  |
| S/N serial number          | : | -/-   |
| HW hardware status         | : | 5.0   |
| SW software status         | : | 5.0   |
| Frequency band [MHz]       | : | 13.56 MHz   |
| Type of radio transmission | : | Modulated carrier   |
| Use of frequency spectrum  | : |   |
| Type of modulation         | : | Air protocol according to ISO 15693 Standard with data transmission speed of 26kbps |
| Number of channels         | : | 1   |
| Antenna                    | : | Loop antenna  |
| Power supply               | : | 5.00 V DC   |
| Temperature range          | : | 0°C to +85 °C   |

#### 5.1 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report:

|                  |                        |
|------------------|------------------------|
| External Photos: | 1-8637/14-01-01_AnnexA |
| Internal Photos: | 1-8637/14-01-01_AnnexB |
| Test setup:      | 1-8637/14-01-01_AnnexD |

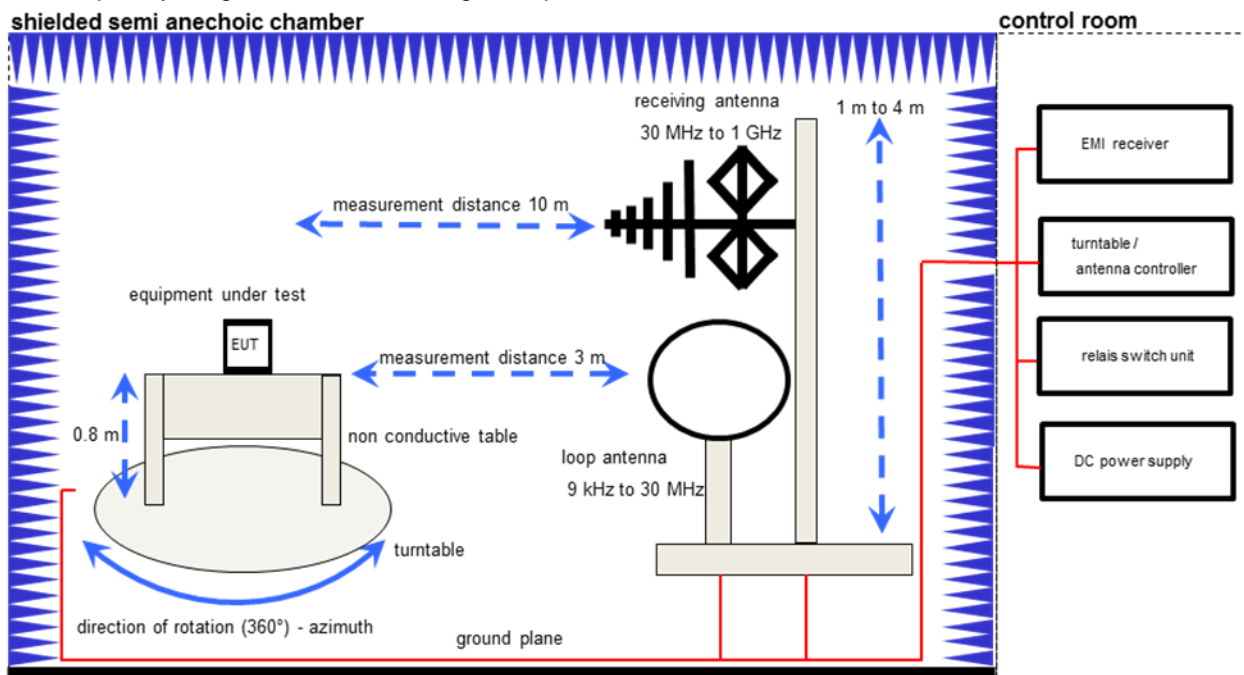
#### 6 Test laboratories sub-contracted

None

## 7 Description of the test setup

### 7.1 Radiated measurements

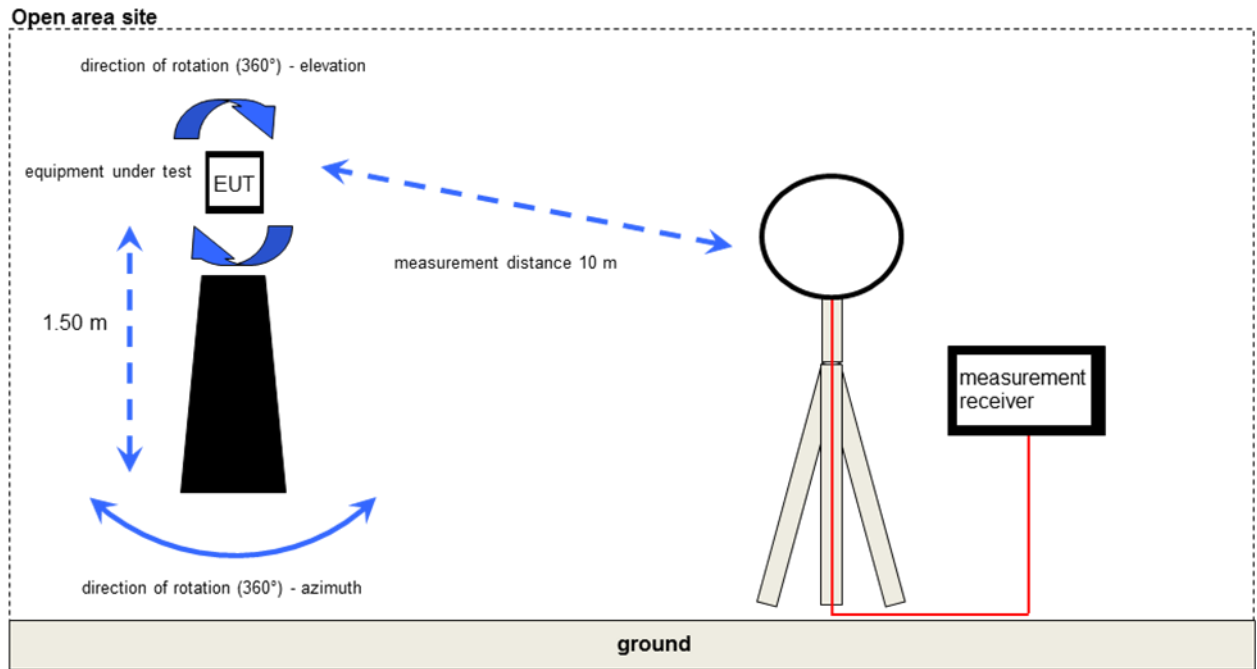
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. 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.



#### Equipment table:

| Equipment  | Type                  | Manufacturer  | Serial No. | INV. No Cetecom |
|--|-----------------------|---------------|------------|-----------------|
| Software   | EMC32<br>V.   9.12.05 | R&S           | -/-        | -/-             |
| Switch-Unit  | 3488A                 | HP Meßtechnik | 2719A14505 | 300000368       |
| DC power supply, 60Vdc,<br>50A, 1200 W               | 6032A                 | HP Meßtechnik | 2920A04466 | 300000580       |
| EMI Test Receiver                                    | ESCI 3                | R&S           | 100083     | 300003312       |
| Amplifier  | JS42-00502650-28-5A   | MITEQ         | 1084532    | 300003379       |
| Antenna Tower  | Model 2175            | ETS-LINDGREN  | 64762      | 300003745       |
| Positioning Controller                               | Model 2090            | ETS-LINDGREN  | 64672      | 300003746       |
| Turntable Interface-Box                              | Model 105637          | ETS-LINDGREN  | 44583      | 300003747       |
| TRILOG Broadband Test-<br>Antenna 30 MHz - 3 GHz     | VULB9163              | Schwarzbeck   | 295        | 300003787       |
| Test Receiver  | ESH2                  | R&S           | 871921/095 | 300002505       |
| Loop Antenna 9 KHz - 30<br>MHz                       | HFH2-Z2               | R&S           | 872096/61  | 300001824       |
| EMI Test Receiver 9 kHz - 3<br>GHz incl. Preselector | ESPI3                 | R&S           | 101713     | 300004059       |

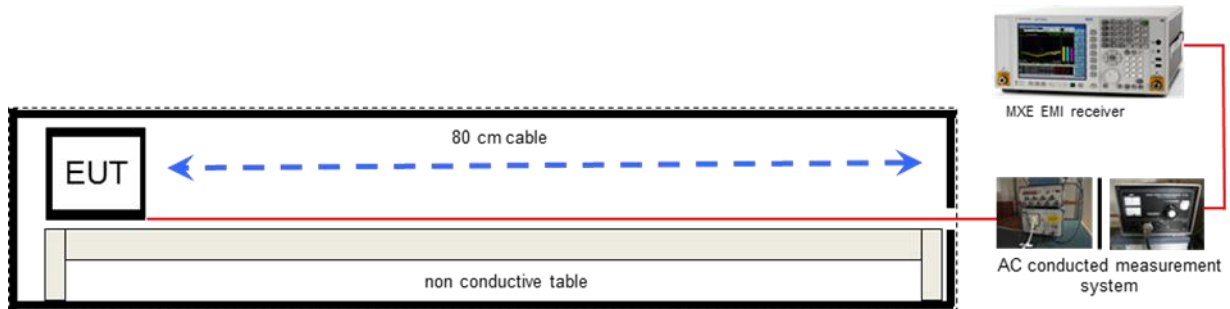
## 7.2 Open area site



### Equipment table:

| Equipment                   | Type    | Manufacturer | Serial No. | INV. No Cetecom |
|-----------------------------|---------|--------------|------------|-----------------|
| Test Receiver               | ESH2    | R&S          | 871921/095 | 300002505       |
| Loop Antenna 9 KHz - 30 MHz | HFH2-Z2 | R&S          | 872096/61  | 300001824       |

### 7.3 AC conducted



#### Equipment table:

| Equipment                           | Type                           | Manufacturer         | Serial No. | INV. No Cetecom |
|-------------------------------------|--------------------------------|----------------------|------------|-----------------|
| MXE EMI Receiver 20 Hz bis 26,5 GHz | N9038A                         | Agilent Technologies | MY51210197 | 300004405       |
| Isolating Transformer               | MPL IEC625 Bus Regeltrenntravo | Erfi                 | 91350      | 300001155       |
| Switch / Control Unit               | 3488A                          | HP Meßtechnik        | *          | 300000199       |
| Switch / Control Unit               | 3488A                          | HP Meßtechnik        | 2719A15013 | 300001168       |
| Artificial Mains 9 kHz to 30 MHz    | ESH3-Z5                        | R&S                  | 828576/020 | 300001210       |

## 8 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, Annex 2.6 | Passed  | 2015-03-05 | -/-    |

| Test Specification Clause                     | Test Case   | Temperature Conditions | Power Source Voltages | Pass                                | Fail                     | NA                       | NP                       | Remark   |
|---|---|------------------------|-----------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|----------|
| § 15.35 (c)/<br>RSS-GEN Issue 3               | 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 |
| RSS-GEN Issue 3                               | 99 % emission bandwidth                                     | 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"/> |          |
| §15.107<br>§15.207                            | Conducted emissions < 30 MHz                                | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | complies |

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



## 9 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

## 10 Measurement results

### 10.1 Timing of the transmitter

#### Measurement:

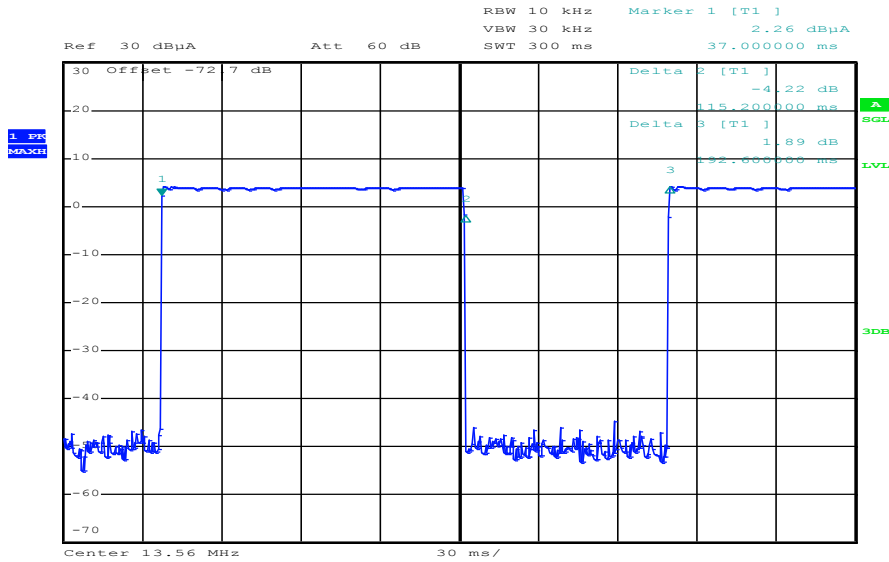
| Measurement parameter |               |
|-----------------------|---------------|
| Detector:             | Positive peak |
| Sweep time:           | 100 ms        |
| Resolution bandwidth: | 100 kHz       |
| Video bandwidth:      | 300 kHz       |
| Span:                 | Zero span     |
| Trace-Mode:           | Single sweep  |

#### Limits:

| FCC   | IC |
|---|----|
| 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: Transmit burst



Date: 20.OCT.2014 15:34:57

Transmit time (Tx on) = 115.3 ms (Plot 1)  
 Tx on + Tx off = 192.6 ms (Plot 1)

For TX-time < 100 ms: The peak-to-average correction factor is calculated with  $20\text{Log} [\text{Tx on}/(\text{Tx on} + \text{Tx off})]$ .  
 Hereby the peak-to-average correction factor is.

**For TX-time > 100 ms: The peak-to-average correction factor is 0 dB.**

**Result: passed**

## 10.2 Field strength of the fundamental

### Measurement:

| Measurement parameter |   |
|-----------------------|---|
| Detector:             | Quasi Peak  |
| Resolution bandwidth: | 200 Hz up to 150 kHz,<br>9 kHz up to 30 MHz,<br>120 kHz up to 1 GHz |
| Video bandwidth:      | ≥ RBW   |
| Trace-Mode:           | Max Hold  |

### Limits:

| FCC                         |   | IC  |  |
|-----------------------------|---|---|--|
| Fundamental Frequency (MHz) | Field strength of Fundamental (μV/m / dBμV/m) | Measurement distance (m)                        |  |
| 13.553 to 13.567            | 15848 μV/m (84 dBμV/m)                        | 30  |  |
|                             | 158489 μV/m (104 dBμV/m)                      | 10<br>(Recalculated acc. to FCC part15.31 (f2)) |  |

### Result:

| TEST CONDITIONS         |                  | MAXIMUM POWER (dBμV/m) |                 |
|-------------------------|------------------|------------------------|-----------------|
| Frequency               |                  | 13.56 MHz              | 13.56 MHz       |
| Mode                    |                  | @ 10 m distance        | @ 30 m distance |
| T <sub>nom</sub>        | V <sub>nom</sub> | 57                     | 37*             |
| Measurement uncertainty |                  | ±3dB                   |                 |

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

**Result:** passed

### 10.3 99 % emission bandwidth

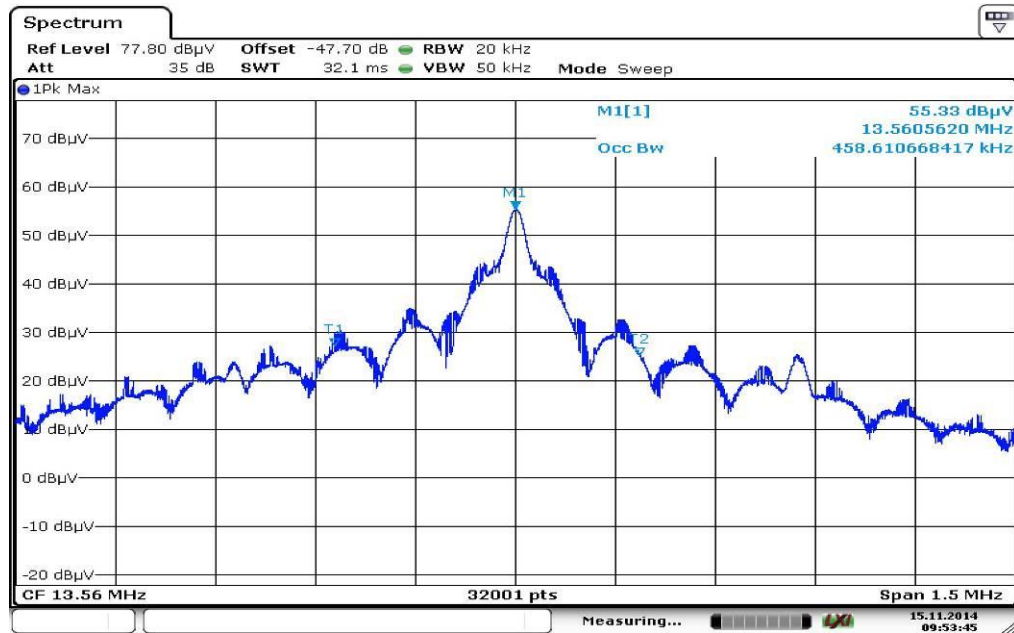
**Measurement:**

| Measurement parameter |            |
|-----------------------|------------|
| Detector:             | Peak       |
| Resolution bandwidth: | > 1 % span |
| Video bandwidth:      | ≥ RBW      |
| Trace-Mode:           | Max Hold   |

**Results:**

| TEST CONDITIONS         |           | 99 % emission bandwidth (kHz) |
|-------------------------|-----------|-------------------------------|
| Frequency               |           | 13.56 MHz                     |
| $T_{nom}$               | $V_{nom}$ | 459                           |
| Measurement uncertainty |           | ± RBW                         |

**Plot:**



Date: 15.NOV.2014 09:53:45

### 10.4 Field strength of the harmonics and spurious

**Measurement:**

| Measurement parameter |  |
|-----------------------|--|
| Detector:             | Quasi Peak / Average   |
| Sweep time:           | Auto   |
| Resolution bandwidth: | F < 150 kHz: 200 Hz<br>150 kHz > F > 30 MHz: 9 kHz<br>F > 30 MHz: 120 kHz  |
| Video bandwidth:      | F < 150 kHz: 1 kHz<br>150 kHz > F > 30 MHz: 100 kHz<br>F > 30 MHz: 300 kHz |
| 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:**

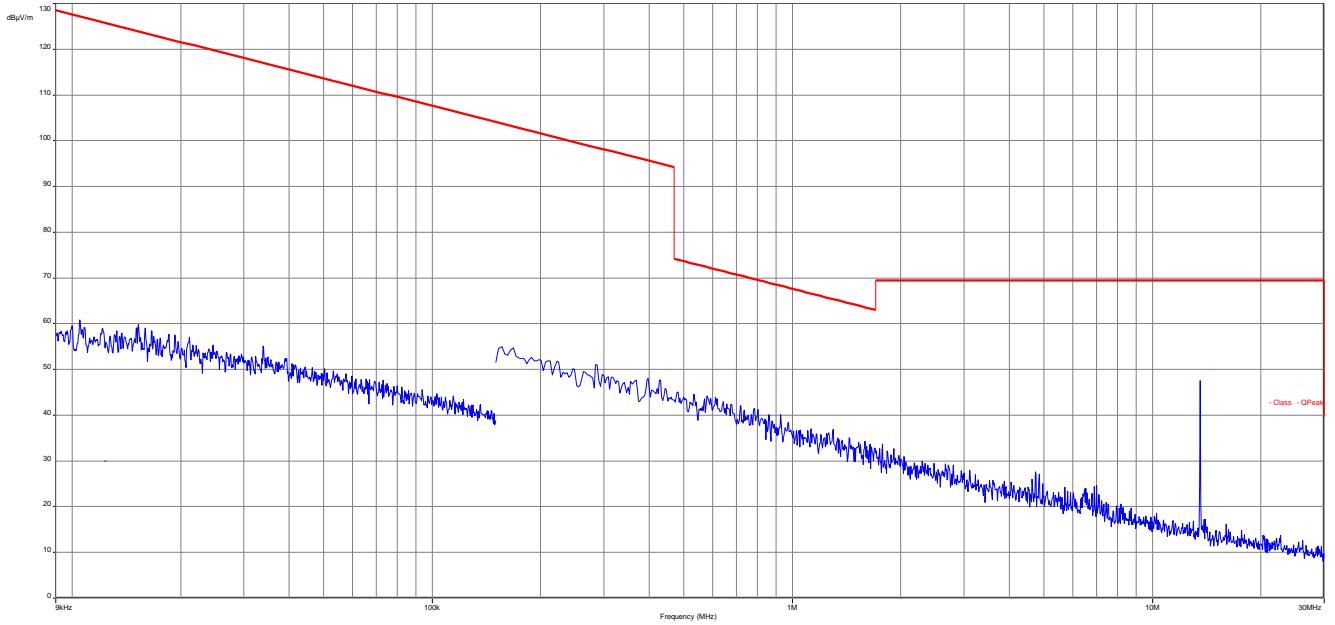
| EMISSION LIMITATIONS                                  |          |                             |                                |         |
|---|----------|-----------------------------|--------------------------------|---------|
| f [MHz]   | Detector | Limit max. allowed [dBµV/m] | Amplitude of emission [dBµV/m] | Results |
| Please take a look at the table below the 1 GHz plot. |          |                             |                                |         |
|   |          |                             |                                |         |
|   |          |                             |                                |         |

**Result:** passed

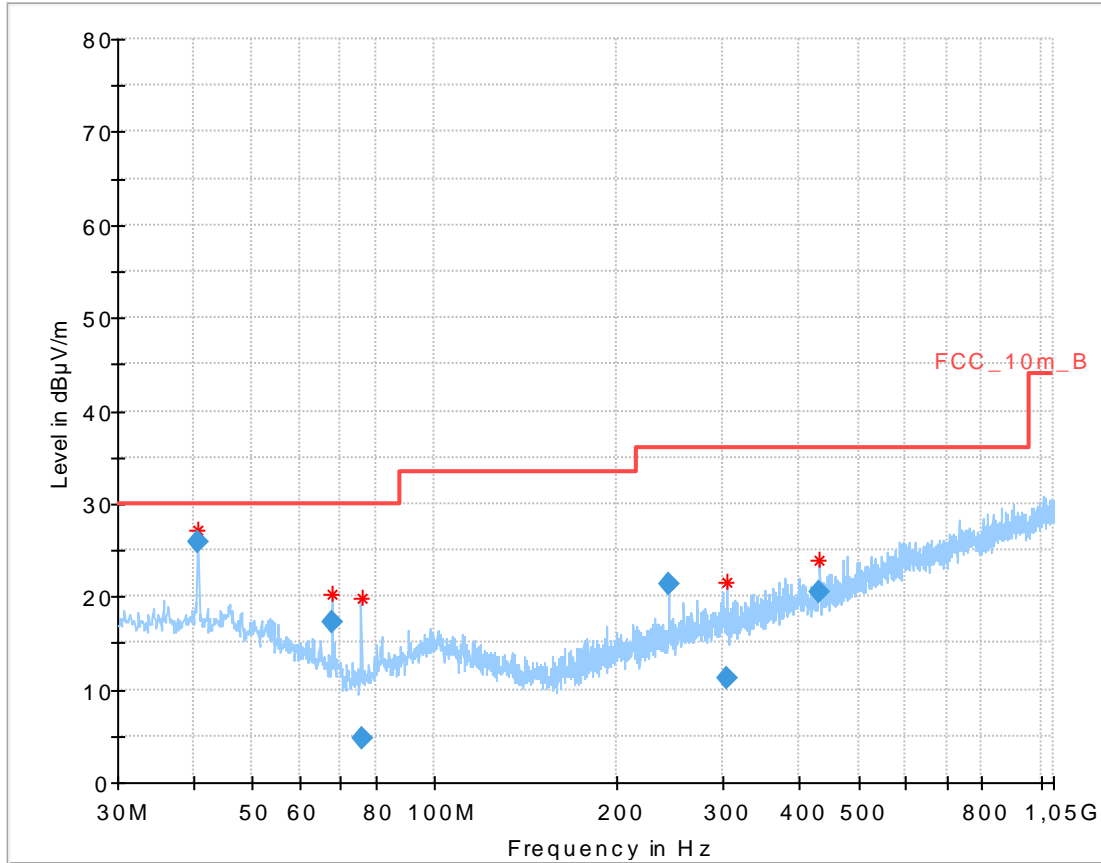
**Note:** The limit was recalculated with 20 dB / decade (Part 15.31) for all radiated spurious emissions 30 MHz to 1 GHz from 3 meter limit to a 10 meter distance. (40dB/decade for emissions < 30MHz)

**Plots of the measurements:**

**Plot 1: 9 kHz – 30 MHz**



Plot 2: 30 MHz – 1000 MHz, vertical & horizontal polarization



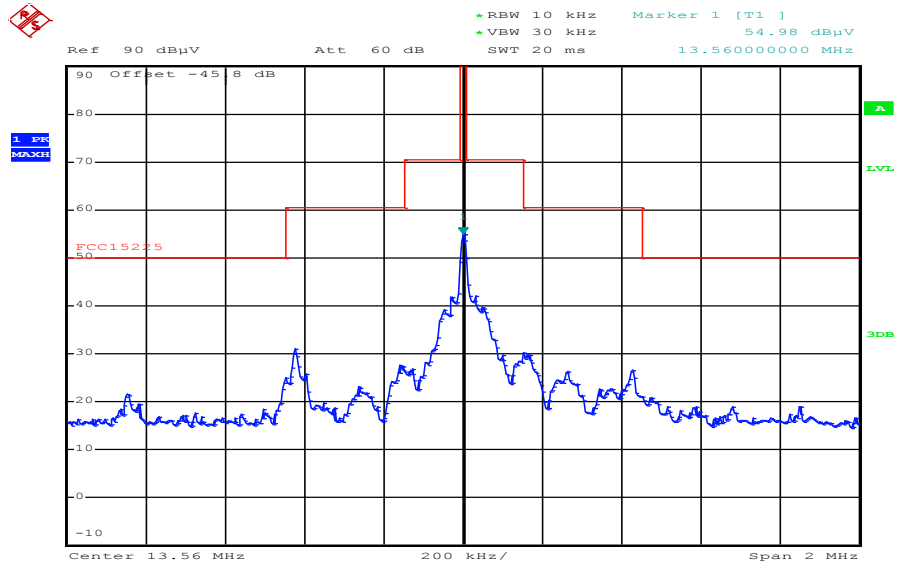
Final\_Result:

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 40.691250       | 25.84              | 30.00          | 4.16        | 1000.0          | 120.000         | 98.0        | V   | 155           | 14.0       |
| 67.821150       | 17.20              | 30.00          | 12.80       | 1000.0          | 120.000         | 101.0       | V   | 270           | 8.9        |
| 76.012650       | 4.79               | 30.00          | 25.21       | 1000.0          | 120.000         | 98.0        | H   | 180           | 8.2        |
| 244.084050      | 21.40              | 36.00          | 14.60       | 1000.0          | 120.000         | 101.0       | V   | -25           | 13.2       |
| 303.543150      | 11.29              | 36.00          | 24.71       | 1000.0          | 120.000         | 170.0       | H   | 179           | 14.6       |
| 432.031950      | 20.52              | 36.00          | 15.48       | 1000.0          | 120.000         | 98.0        | V   | 65            | 17.3       |



**Plot 3: Spectrum mask**

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



Date: 7.NOV.2014 08:24:49

### 10.5 Frequency tolerance

**Measurement:**

| Measurement parameter |               |
|-----------------------|---------------|
| Detector:             | Positive peak |
| Sweep time:           | Auto          |
| Resolution bandwidth: | 10 Hz         |
| Video bandwidth:      | 1 MHz         |
| Span:                 | 1 kHz         |
| Trace-Mode:           | Clear – write |

**Limits:**

| FCC   | IC |
|---|----|
| 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 | result | Power voltage          | Frequency | result | F [MHz] | Detector | Level [µV/m] |
| 0°                         | 13.553    | Pass   | 4.75 V                 | 13.564    | Pass   | -/-     |          |              |
| 10°                        | 13.558    | Pass   | 4.80 V                 | 13.564    | Pass   |         |          |              |
| 20°                        | 13.564    | Pass   | 4.90 V                 | 13.564    | Pass   |         |          |              |
| 30°                        | 13.566    | Pass   | 5.00 V                 | 13.564    | Pass   |         |          |              |
| 40°                        | 13.568    | Pass   | 5.10 V                 | 13.564    | Pass   |         |          |              |
| 50°                        | 13.570    | Pass   | 5.20 V                 | 13.564    | Pass   |         |          |              |
| 60°                        | 13.569    | Pass   | 5.25 V                 | 13.564    | Pass   |         |          |              |
| 70°                        | 13.567    | Pass   |                        |           |        |         |          |              |
| 80°                        | 13.565    | Pass   |                        |           |        |         |          |              |
|                            |           |        |                        |           |        |         |          |              |
| Measurement uncertainty    |           |        | ±100 Hz                |           |        |         |          |              |

**10.6 AC line conducted**

**Measurement:**

| Measurement parameter |  |
|-----------------------|--|
| Detector:             | Peak / Quasi peak / Average                |
| Sweep time:           | Auto                                       |
| Resolution bandwidth: | F < 150 kHz: 200 Hz<br>F > 150 kHz: 9 kHz  |
| Video bandwidth:      | F < 150 kHz: 1 kHz<br>F > 150 kHz: 100 kHz |
| Span:                 | 9 kHz to 30 MHz                            |
| Trace-Mode:           | Max hold                                   |

**Limits:**

| FCC                         | IC                     |            |
|-----------------------------|------------------------|------------|
| Frequency of Emission (MHz) | Conducted Limit (dBµV) |            |
|                             | Quasi-peak             | Average    |
| 0.15 – 0.5                  | 66 to 56 *             | 56 to 46 * |
| 0.5 – 5                     | 56                     | 46         |
| 5 - 30                      | 60                     | 50         |

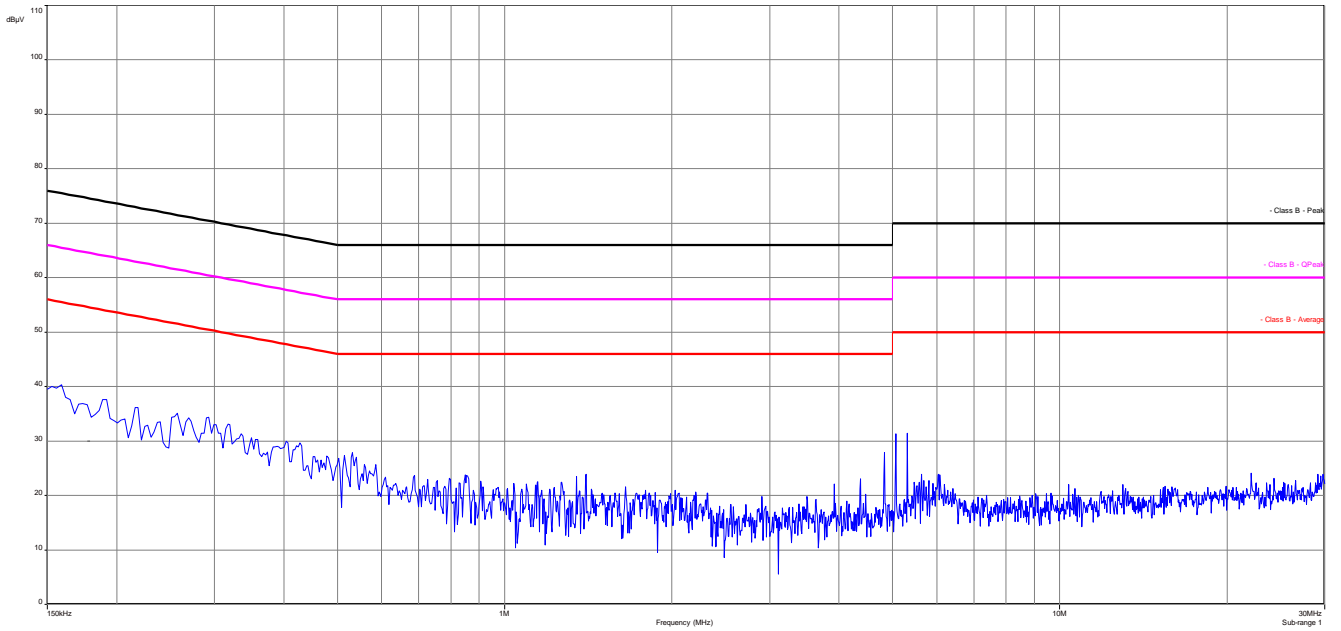
**Results:**

See plots

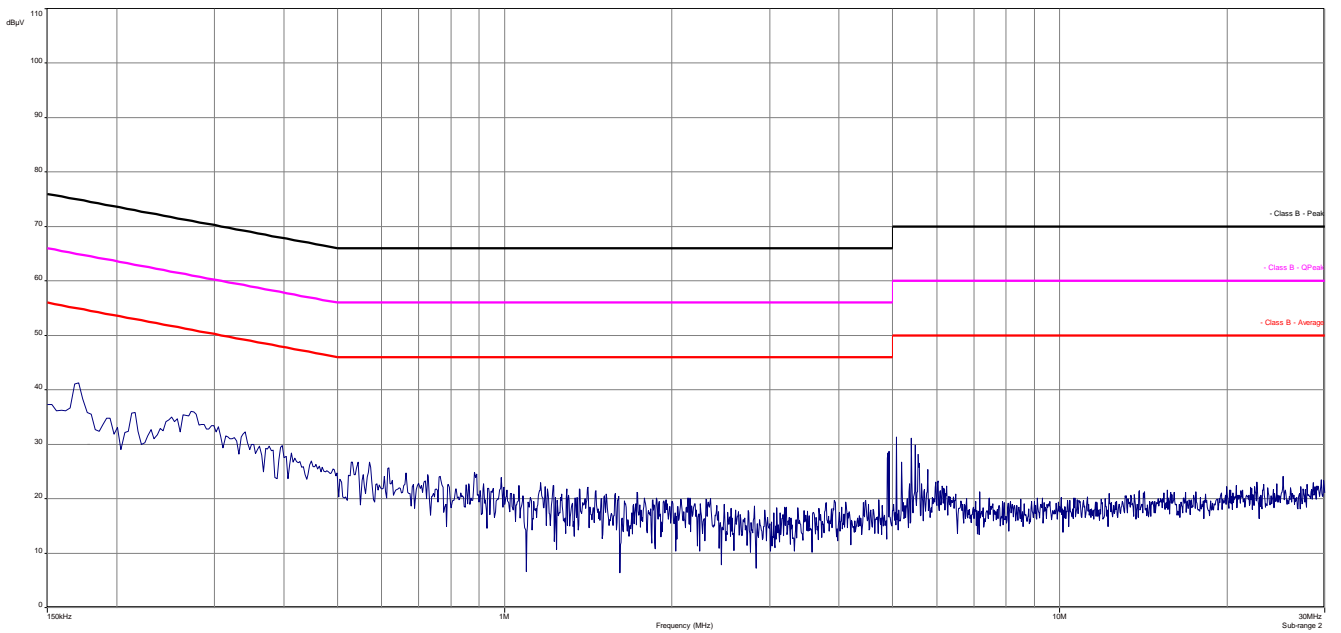
**Result:** [passed](#)

**Plots:**

**Plot 1: phase line**



**Plot 2: neutral line**



## 11 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 (Lab/Item).

| No. | Lab / Item | Equipment                                      | Type                                  | Manufact.            | Serial No.      | INV. No Cetecom | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|--|---------------------------------------|----------------------|-----------------|-----------------|---------------------|------------------|------------------|
| 1   | n. a.      | Netzgerät 0-20V                                | 6632A                                 | HP Meßtechnik        | 2851A01814      | 300000924       | ne                  | 09.11.2005       |                  |
| 2   | n. a.      | Double-Ridged Waveguide Horn Antenna 1-18.0GHz | 3115                                  | EMCO Elektronik      | 9709-5290       | 300000212       | k                   | 23.07.2013       | 23.07.2015       |
| 3   | n. a.      | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz   | VULB9163                              | Schwarzbeck          | 318             | 300003696       | k                   | 22.04.2014       | 22.04.2017       |
| 4   | n. a.      | Spectrum-Analyzer                              | FSU26                                 | R&S                  | 200809          | 300003874       | k                   | 22.01.2014       | 22.01.2015       |
| 5   | n. a.      | Broadband Amplifier 0,5-18 GHz                 | CBLU5184540                           | CERNEX               | 22050           | 300004482       | ev                  |                  |                  |
| 6   | n. a.      | Broadband Amplifier                            | CBLU5135235                           | CERNEX               | 22011           | 300004492       | ev                  |                  |                  |
| 7   | n. a.      | 4U RF Switch Platform                          | L4491A                                | Agilent Technologies | MY50000032      | 300004510       | ne                  |                  |                  |
| 8   | n. a.      | Messrechner und Monitor                        | Intel Core i3 3220/3,3 GHz, Prozessor |                      | 2V2403033A54 21 | 300004591       | ne                  |                  |                  |
| 9   | n. a.      | NEXIO EMV-Software                             | BAT EMC                               | EMCO                 |                 | 300004682       | ne                  |                  |                  |
| 10  | n. a.      | Spectrum Analyzer 9kHz to 30GHz - 140..+30dBm  | FSP30                                 | R&S                  | 100886          | 300003575       | k                   | 26.08.2014       | 26.08.2016       |

### 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                       |
| vk!! | Attention: extended calibration interval   | *   | next calibration ordered / currently in progress     |
| NK!  | Attention: not calibrated                  |     |  |

## 12 Observations

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

**Annex A Document history**

| Version | Applied changes    | Date of release |
|---------|--------------------|-----------------|
|         | Initial release    | 2014-11-21      |
| A       | Model name changed | 2015-03-05      |

**Annex B 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 C Accreditation Certificate

Front side of certificate

Back side of certificate



Deutsche Akkreditierungsstelle GmbH

Bellehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV  
 Unterzeichnerin der Multilateralen Abkommen  
 von EA, ILAC und IAF zur gegenseitigen Anerkennung

**Akkreditierung**



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

**CETECOM ICT Services GmbH**  
 Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

- Drahtgebundene Kommunikation einschließlich xDSL
- Voice and DECT
- Akustik
- Funk einschließlich WLAN
- Short Range Devices (SRD)
- RFID
- WiFiMax und Richtfunk
- Mobilfunk (GSM / GPRS, Over the Air (OTA) Performance)
- Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
- Produktsicherheit
- SAR and Hearing Aid Compatibility (HAC)
- Umweltsimulation
- Smart Card Terminals
- Bluetooth
- Wi-Fi Services

Die Akkreditierungskunde gilt nur in Verbindung mit dem Beschluss vom 07.03.2014 mit der Akkreditierungsnummer D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 77 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-00

Frankfurt am Main, 07.03.2014  
 Deutsche Akkreditierungsstelle

Im Auftrag D-PL-12076-01-00, Wolfgang  
 Akkreditierungsstelle

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**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/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html>