

## FCC Part 22/24 Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                            |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | FCC_Cellular_RM-1091_04                                                                                                                                                                                                                                                                                             | <b>Date of Report:</b>            | 17-Oct-2014                                                                                                                                                                |
| <b>Number of pages:</b>                                 | 29                                                                                                                                                                                                                                                                                                                  | <b>Customer's Contact person:</b> | Li Craig                                                                                                                                                                   |
| <b>Testing laboratory:</b>                              | TCC Microsoft Beijing Laboratory<br>Beijing Economic and Technological Development Area<br>No.5 Donghuan Zhonglu<br>Beijing<br>PRC China 100176<br>Tel. +86 10 8711 8888<br>Fax. +86 10 8711 4550                                                                                                                   | <b>Customer:</b>                  | Microsoft<br>Beijing Economic and Technological Development Area<br>No.5 Donghuan Zhonglu<br>Beijing<br>PRC China 100176<br>Tel. +86 10 8711 8888<br>Fax. +86 10 8711 4550 |
| <b>FCC listing no.:</b>                                 | 975940                                                                                                                                                                                                                                                                                                              |                                   |                                                                                                                                                                            |
| <b>IC recognition no.:</b>                              | 661AH-1                                                                                                                                                                                                                                                                                                             |                                   |                                                                                                                                                                            |
| <b>Tested devices/ accessories:</b>                     | <b>Phone RM-1091 / Battery BL-L4A / AC-Charger AC-18E / Headset WH-108 /Dummy Battery</b>                                                                                                                                                                                                                           |                                   |                                                                                                                                                                            |
| <b>FCC ID:</b>                                          | PYARM-1091                                                                                                                                                                                                                                                                                                          | <b>IC:</b>                        |                                                                                                                                                                            |
| <b>Supplement reports:</b>                              | -                                                                                                                                                                                                                                                                                                                   |                                   |                                                                                                                                                                            |
| <b>Testing has been carried out in accordance with:</b> | CFR 47, FCC rules Parts 22/24, TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-133 (Issue 5, February 2009), RSS-132 (Issue 2, September 2005). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit". |                                   |                                                                                                                                                                            |
| <b>Documentation:</b>                                   | The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Microsoft.                                                            |                                   |                                                                                                                                                                            |
| <b>Test Results:</b>                                    | <b>The EUT complies with the requirements in respect of all parameters subject to the test.</b><br>The test results relate only to devices specified in this document                                                                                                                                               |                                   |                                                                                                                                                                            |
| <b>Date and signature for the contents:</b>             |                                                                                                                                                                                                                                                                                                                     |                                   |                                                                                                                                                                            |

Gao Sherina, Engineer, EMC

## 1. Summary for FCC Part 22/24 Compliance Test Report

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Date of receipt               | 25-Sep-2014                                           |
| Testing completed             | 10-Oct-2014                                           |
| The customer's contact person | Li Craig                                              |
| Test Plan referred to         | T:\Projects\RM-1091\TestPlan\RS_testplan_RM-1091.xlsm |
| Notes                         | -                                                     |
| Document name                 | FCC_Cellular_RM-1091_04.docx                          |

### 1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/WCDMA/WLAN/Bluetooth

The EUT is tested with maximum rated TX power.

Devices under tests

| Product       | Type    | SN                          | HW    | MV | SW                      | DUT   |
|---------------|---------|-----------------------------|-------|----|-------------------------|-------|
| Phone         | RM-1091 | 004402740006923             | 2000a | -  | 02041.00000.14354.38000 | 54614 |
| Battery       | BL-L4A  | 4175354312P10200559;0670762 | -     | -  | -                       | 54593 |
| AC-Charger    | AC-18E  | 4868673455310302287;0675695 | -     | -  | -                       | 54218 |
| Headset       | WH-108  | 3022D71                     | -     | -  | -                       | 54458 |
| Dummy Battery | -       | -                           | -     | -  | -                       | 54611 |
| Phone         | RM-1091 | 004402740004282             | 2000a | -  | 02041.00000.14354.38000 | 54612 |
| Battery       | BL-L4A  | 4181574341S10300002;0670762 | -     | -  | -                       | 54595 |
| AC Charger    | AC-18E  | 4868674226410700997;0675695 | -     | -  | -                       | 54598 |
| Headset       | WH-108  | 3323471                     | -     | -  | -                       | 54603 |

### 1.2. Summary of Test Results

#### GSM 1900:

| Section in CFR 47   | Section in RSS-GEN or RSS-133 | Name of the test                           | Result |
|---------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a)          | 6.4                           | Conducted RF output power                  | NP     |
| §24.232(b)          | 6.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)          | 4.6.1                         | 99 % occupied bandwidth                    | PASSED |
| §24.238(a)          | 6.5                           | Band edge compliance                       | PASSED |
| §24.238(a), §2.1051 | 6.5                           | Spurious emissions at antenna terminals    | NP     |
| §24.238(a), §2.1053 | 6.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)          | 6.3                           | Frequency stability, temperature variation | PASSED |
| §2.1055(d)          | 6.3                           | Frequency stability, voltage variation     | PASSED |

#### GSM 850:

| Section in CFR 47     | Section in RSS-GEN or RSS-132 | Name of the test                           | Result |
|-----------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a), 22.913(a) | 4.4                           | Conducted RF output power                  | NP     |
| §22.913(a)            | 4.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)            | 4.6.1                         | 99 % occupied bandwidth                    | PASSED |
| §22.917(a)            | 4.5                           | Band edge compliance                       | PASSED |
| §22.917(a), §2.1051   | 4.5                           | Spurious emissions at antenna terminals    | NP     |
| §22.917(a), §2.1053   | 4.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)            | 4.3                           | Frequency stability, temperature variation | PASSED |
| §2.1055(d)            | 4.3                           | Frequency stability, voltage variation     | PASSED |

#### WCDMA2:

| Section in CFR 47   | Section in RSS-GEN or RSS-133 | Name of the test                           | Result |
|---------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a)          | 6.4                           | Conducted RF output power                  | NP     |
| §24.232(b)          | 6.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)          | 4.6.1                         | 99 % occupied bandwidth                    | PASSED |
| §24.238(a)          | 6.5                           | Band edge compliance                       | PASSED |
| §24.238(a), §2.1051 | 6.5                           | Spurious emissions at antenna terminals    | NP     |
| §24.238(a), §2.1053 | 6.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)          | 6.3                           | Frequency stability, temperature variation | NP     |
| §2.1055(d)          | 6.3                           | Frequency stability, voltage variation     | NP     |

#### WCDMA5:

| Section in CFR 47     | Section in RSS-GEN or RSS-132 | Name of the test                           | Result |
|-----------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a), 22.913(a) | 4.4                           | Conducted RF output power                  | NP     |
| §22.913(a)            | 4.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)            | 4.6.1                         | 99 % occupied bandwidth                    | PASSED |
| §22.917(a)            | 4.5                           | Band edge compliance                       | PASSED |
| §22.917(a), §2.1051   | 4.5                           | Spurious emissions at antenna terminals    | NP     |
| §22.917(a), §2.1053   | 4.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)            | 4.3                           | Frequency stability, temperature variation | NP     |
| §2.1055(d)            | 4.3                           | Frequency stability, voltage variation     | NP     |

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

The EUT does not comply with the essential requirements in the standard.

The test was not performed by the TCC Microsoft Laboratory.

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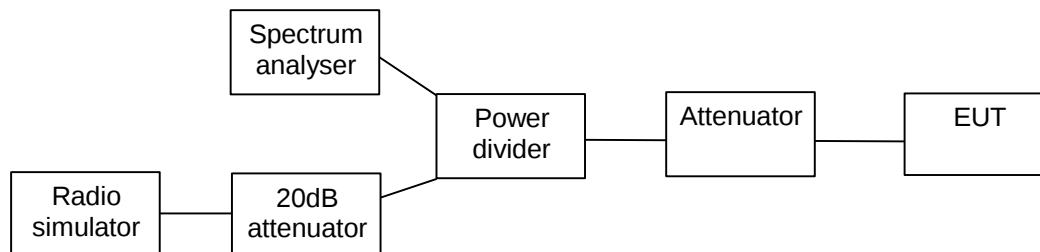
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|           |                              |           |
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## 2. 99 % occupied bandwidth (FCC §2.1049(h), RSS-133 4.6.1, RSS-132 4.6.1)

|                                                        |                                                           |
|--------------------------------------------------------|-----------------------------------------------------------|
| <b>EUT with DUT number</b>                             | RM-1091, DUT 54614                                        |
| <b>Accessories with DUT numbers</b>                    | BL-L4A, DUT 54593 ; AC-18E, DUT 54218 ; WH-108, DUT 54458 |
| <b>Operation Voltage [V] / [Hz]</b>                    | Nominal                                                   |
| <b>Results</b>                                         | PASSED                                                    |
| <b>Remarks</b>                                         | -                                                         |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 22/50/101.4                                               |
| <b>Date of measurements</b>                            | 08-Oct-2014                                               |
| <b>Measured by</b>                                     | Dou Rubo                                                  |

### 2.1. Test Setup



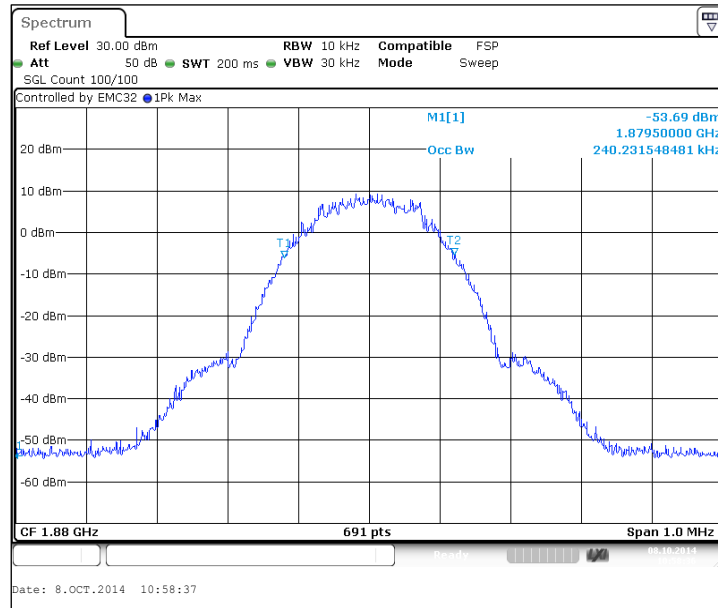
### 2.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards.

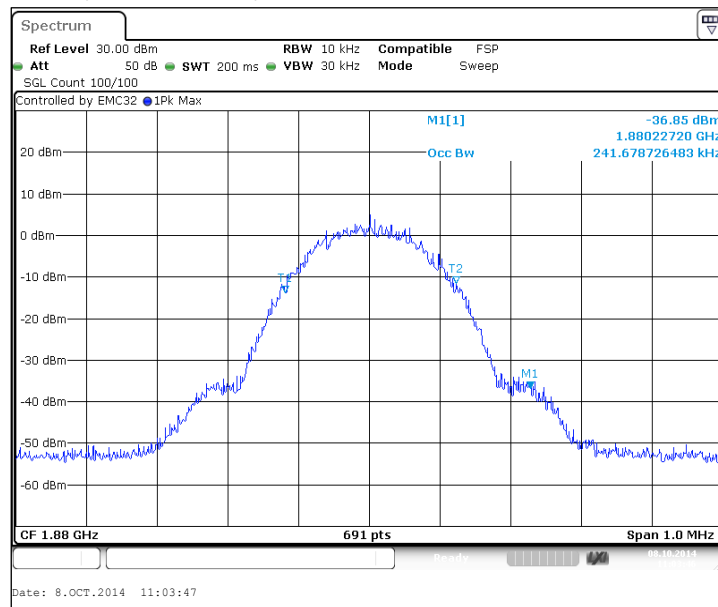
## 2.3. GSM 1900 Test results

| Operation mode (TX on) | 99% Occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 240.2                        |
| EGPRS                  | 241.7                        |

### GSM, Channel 661 / 1880.0 MHz



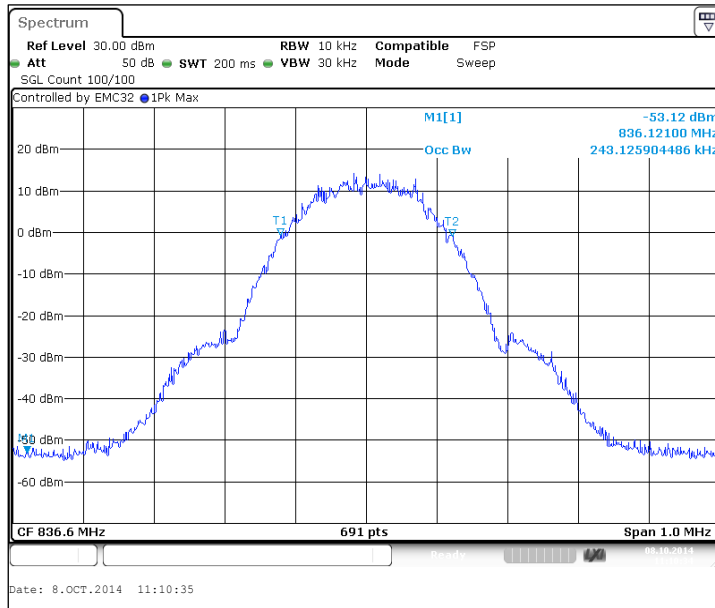
### EGPRS, Channel 661 / 1880.0 MHz



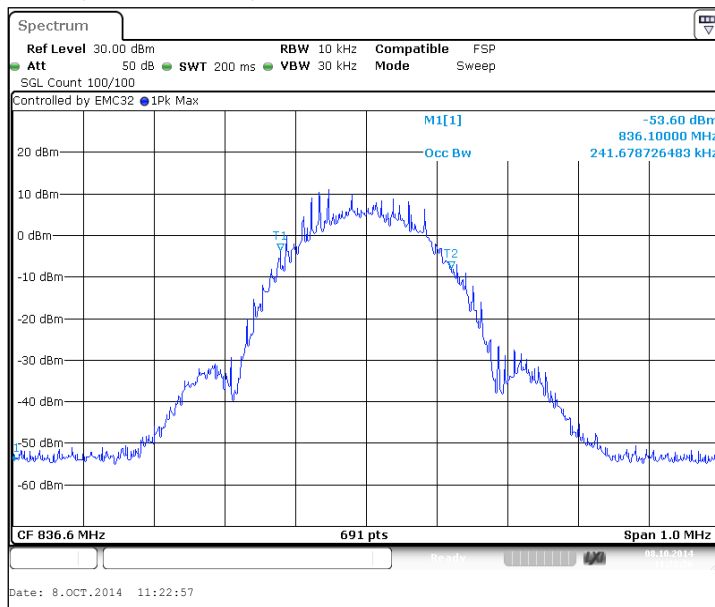
## 2.4. GSM 850 Test results

| Operation mode (TX on) | 99% Occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 243.1                        |
| EGPRS                  | 241.7                        |

### GSM, Channel 190 / 836.6 MHz



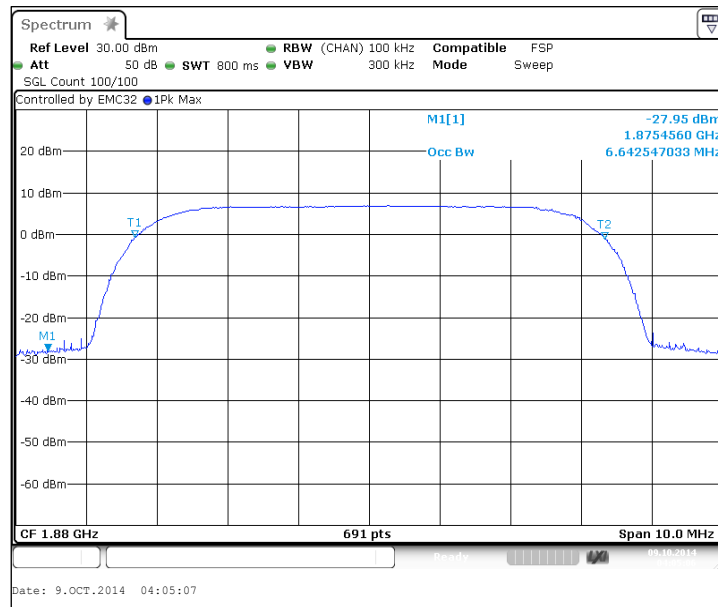
### EGPRS, Channel 190 / 836.6 MHz



## 2.5. WCDMA2 Test results

| Operation mode (TX on) | 99% Occupied bandwidth [kHz] |
|------------------------|------------------------------|
| FDD                    | 6642.5                       |

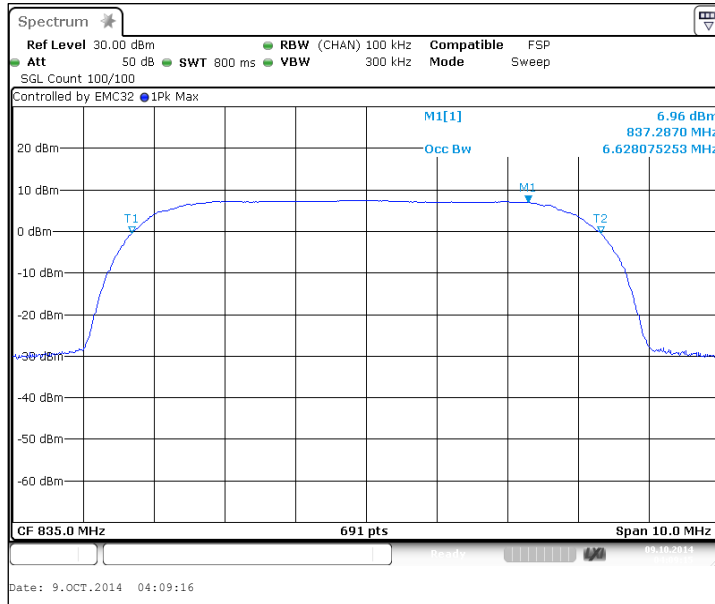
FDD, Channel 9400 / 1880.0 MHz



## 2.6. WCDMA5 Test results

| Operation mode (TX on) | 99% Occupied bandwidth [kHz] |
|------------------------|------------------------------|
| FDD                    | 6628.1                       |

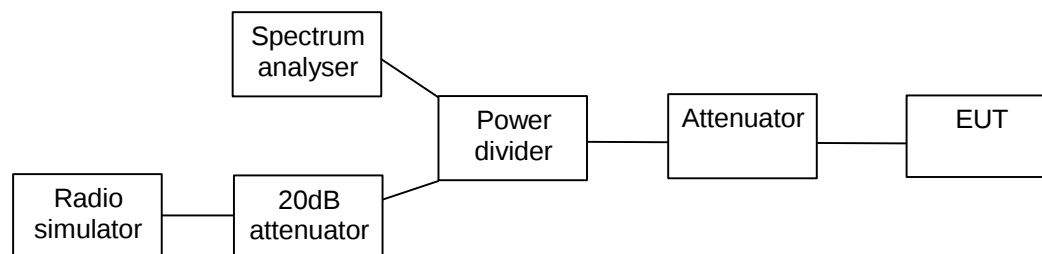
FDD, Channel 4175 / 835.0 MHz



### 3. Band edge compliance (FCC §24.238(a), §22.917(a), RSS-133 6.5, RSS-132 4.5)

|                                                        |                                                           |
|--------------------------------------------------------|-----------------------------------------------------------|
| <b>EUT with DUT number</b>                             | RM-1091, DUT 54614                                        |
| <b>Accessories with DUT numbers</b>                    | BL-L4A, DUT 54593 ; AC-18E, DUT 54218 ; WH-108, DUT 54458 |
| <b>Operation Voltage [V] / [Hz]</b>                    | Nominal                                                   |
| <b>Results</b>                                         | PASSED                                                    |
| <b>Remarks</b>                                         | -                                                         |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 22/50/101.4                                               |
| <b>Date of measurements</b>                            | 08-Oct-2014                                               |
| <b>Measured by</b>                                     | Dou Rubo                                                  |

#### 3.1. Test Setup



#### 3.2. Test method and limit

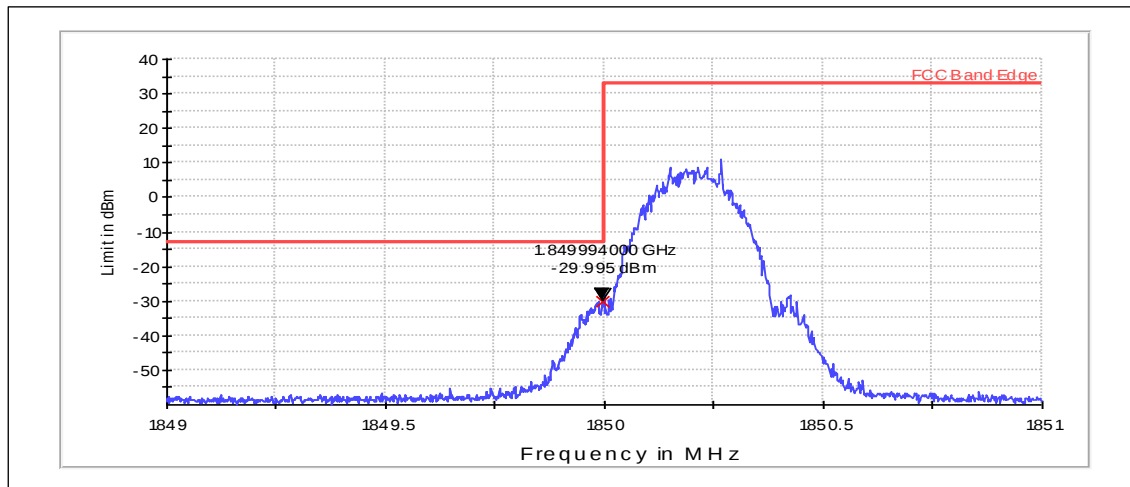
The measurement is made according to applicable FCC rule parts and IC standards.

Limits for band edge compliance measurements

| Operation band | Frequency range [MHz]     | Limit [dBm] |
|----------------|---------------------------|-------------|
| GSM 1900       | Below 1850 and above 1910 | -13         |
| GSM 850        | Below 824 and above 849   | -13         |
| WCDMA2         | Below 1850 and above 1910 | -13         |
| WCDMA5         | Below 824 and above 849   | -13         |

### 3.3. GSM 1900 Test results

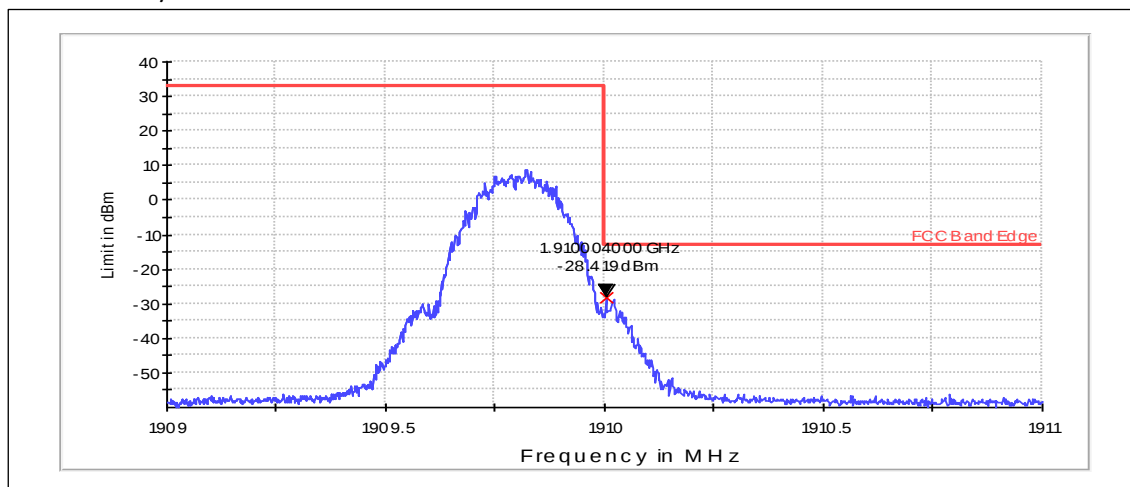
Channel 512 / 1850.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| GSM                    | 1849.994        | -29.99      | PASSED |

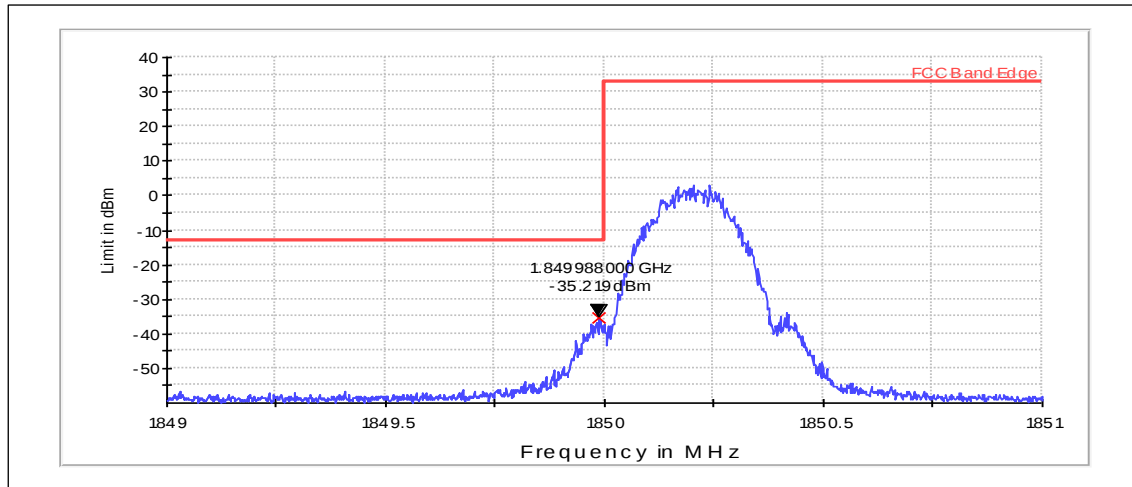
Channel 810 / 1909.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| GSM                    | 1910.004        | -28.42      | PASSED |

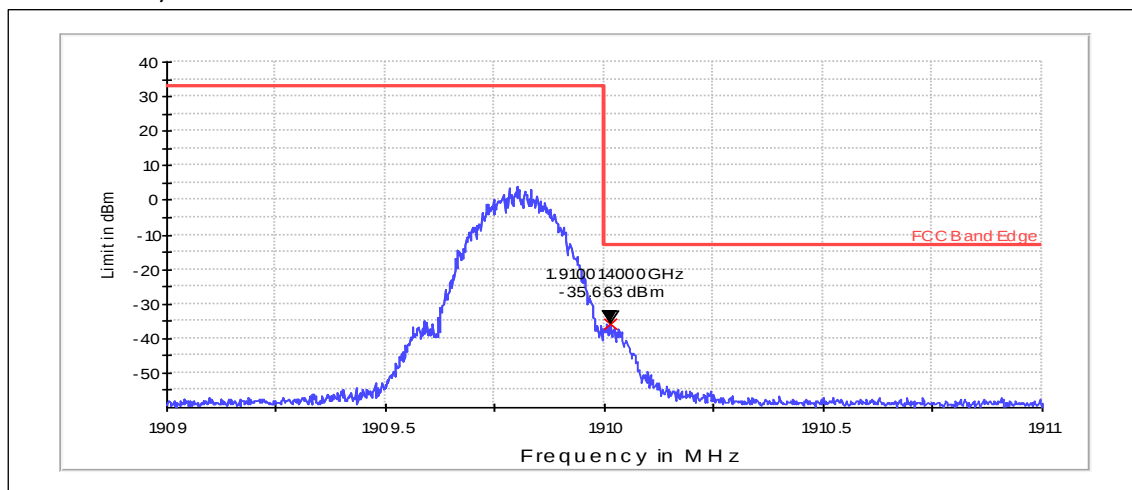
Channel 512 / 1850.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| EGPRS                  | 1849.988        | -35.22      | PASSED |

Channel 810 / 1909.8 MHz

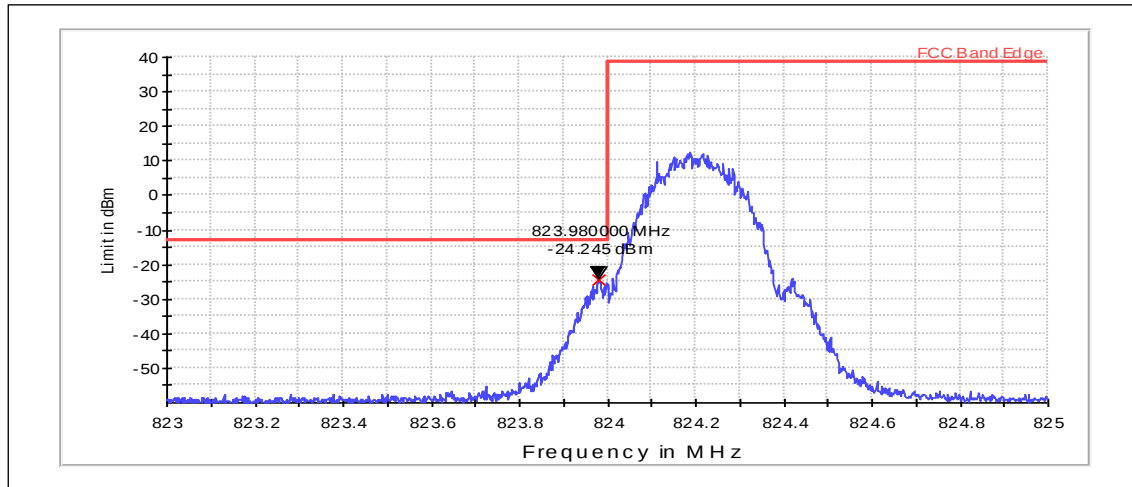


RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| EGPRS                  | 1910.014        | -35.66      | PASSED |

### 3.4. GSM 850 Test results

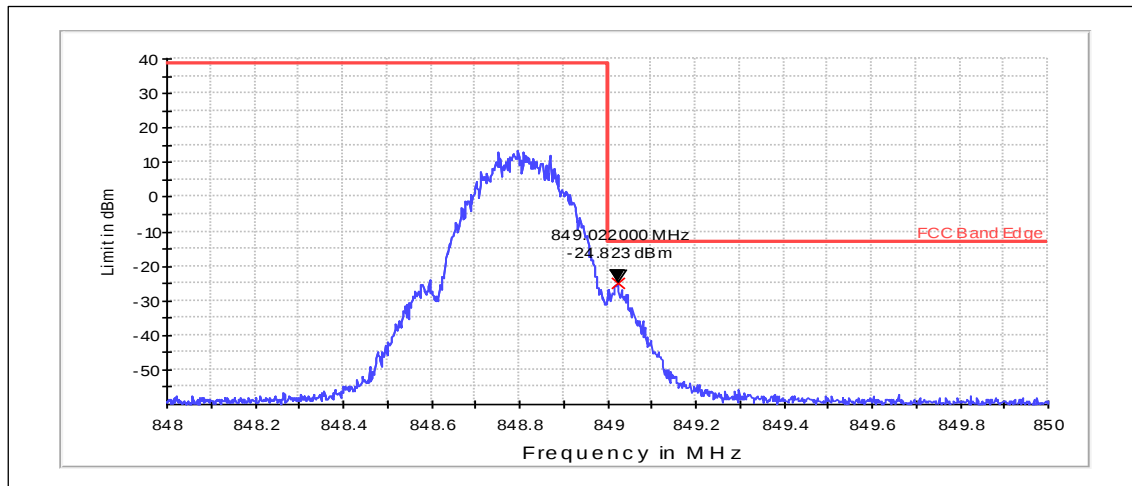
Channel 128 / 824.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| GSM                    | 823.980         | -24.24      | PASSED |

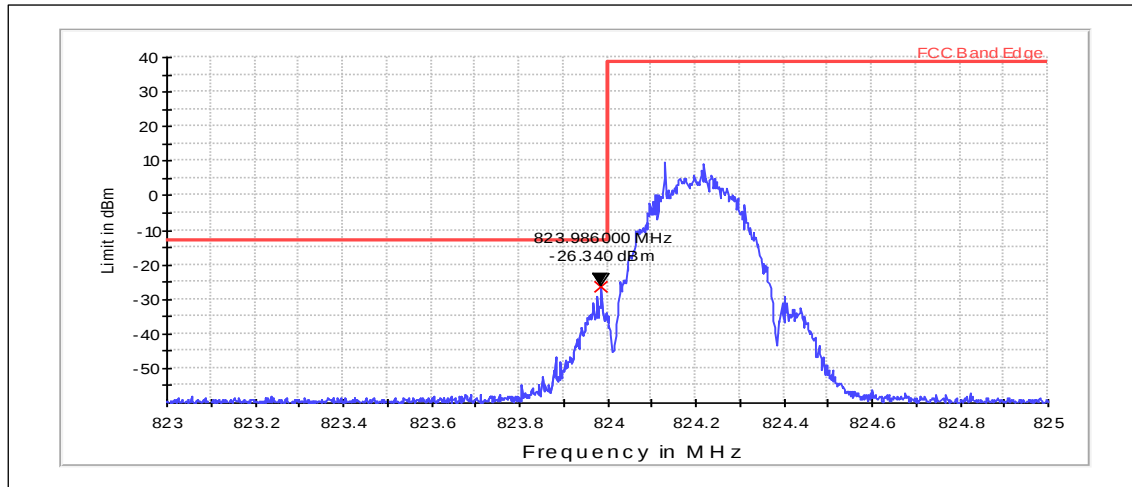
Channel 251 / 848.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| GSM                    | 849.022         | -24.82      | PASSED |

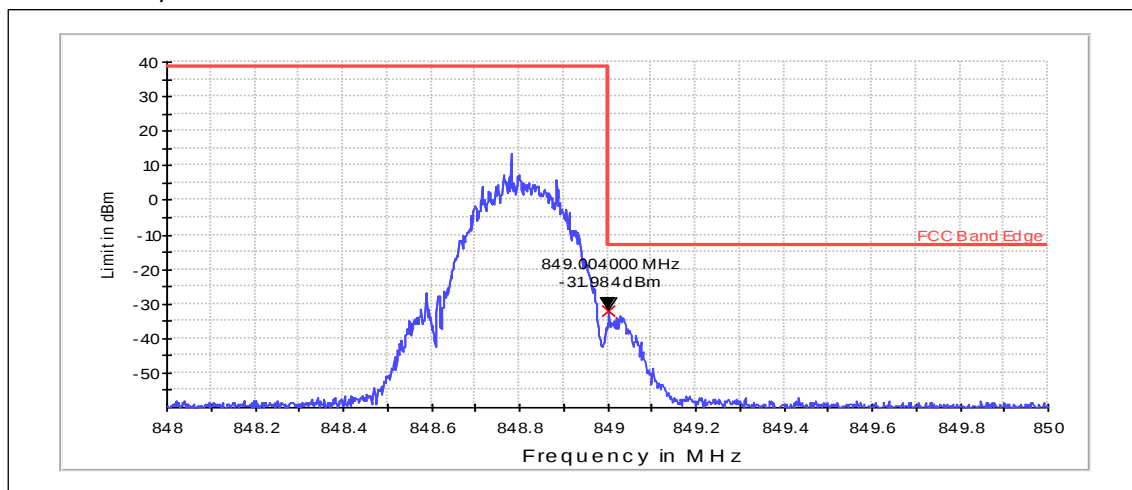
Channel 128 / 824.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| EGPRS                  | 823.986         | -26.34      | PASSED |

Channel 251 / 848.8 MHz

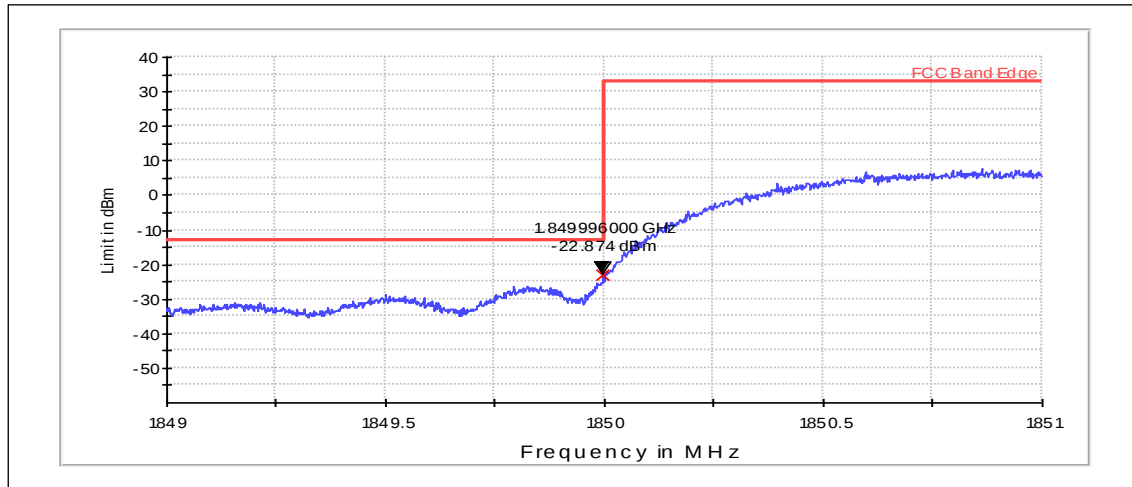


RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| EGPRS                  | 849.004         | -31.98      | PASSED |

### 3.5. WCDMA2 Test results

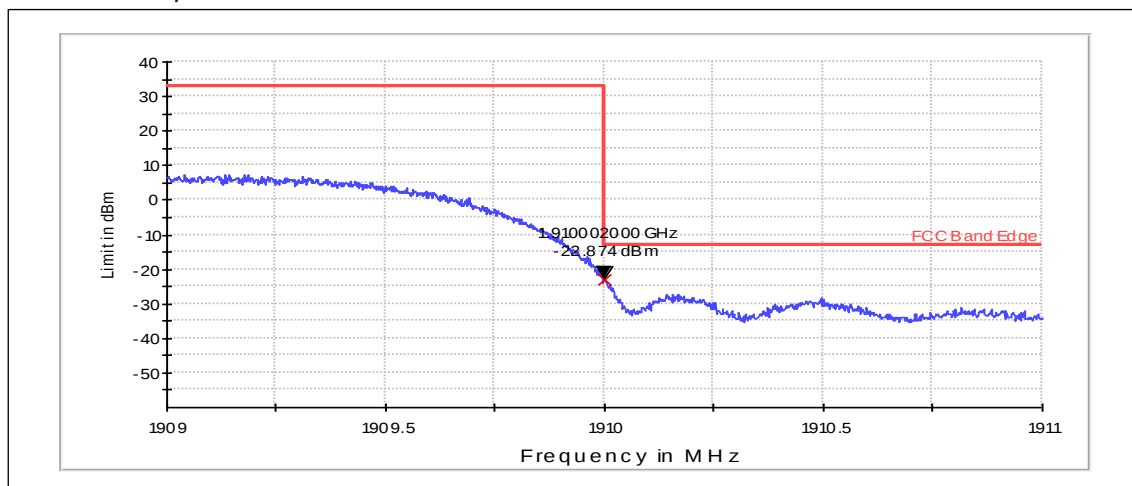
Channel 9262 / 1852.4 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| FDD                    | 1849.996        | -22.87      | PASSED |

Channel 9538 / 1907.6 MHz

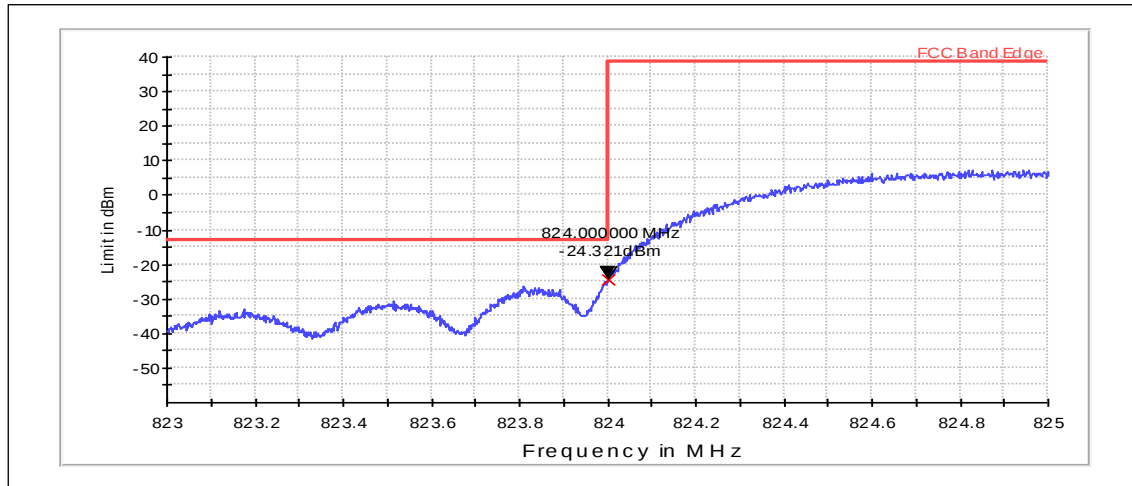


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| FDD                    | 1910.002        | -22.87      | PASSED |

### 3.6. WCDMA5 Test results

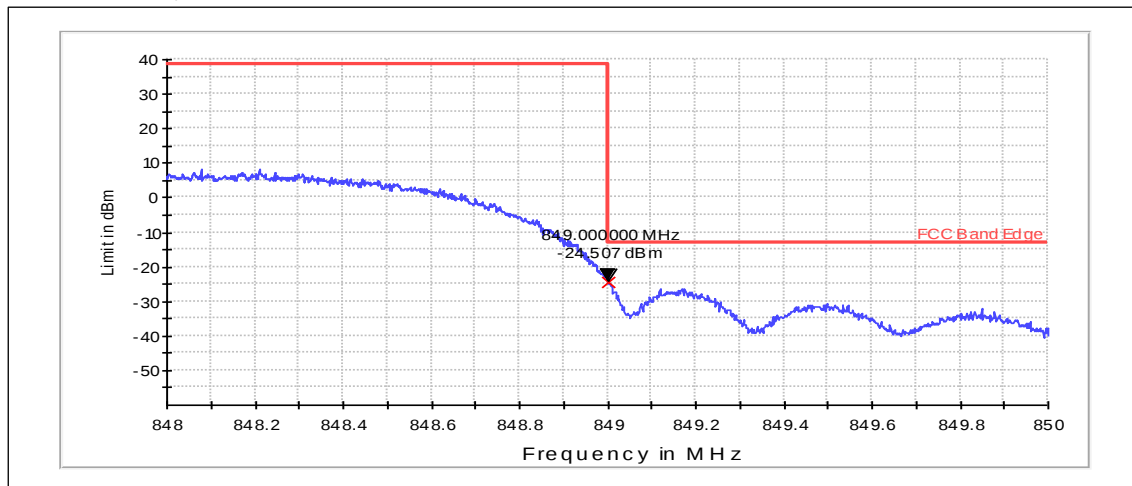
Channel 4132 / 826.4 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| FDD                    | 824.000         | -24.32      | PASSED |

Channel 4233 / 846.6 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

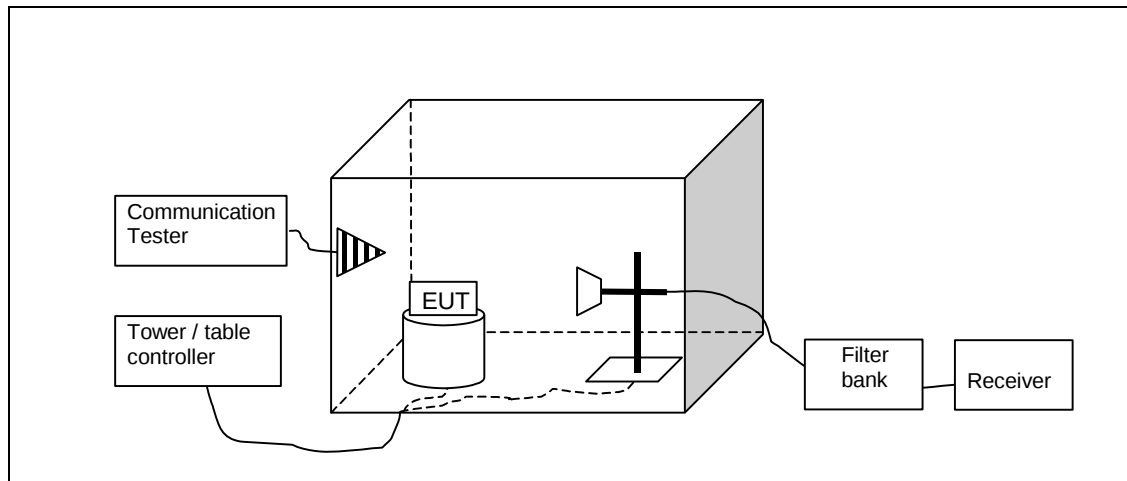
| Operation mode (TX on) | Frequency [MHz] | Level [dBm] | Result |
|------------------------|-----------------|-------------|--------|
| FDD                    | 849.000         | -24.51      | PASSED |

#### 4. Spurious radiated emissions

(FCC §22.917(a), §22.917(a), §2.1053, §24.238(a), §2.1053, §2.1053, RSS-132 4.5, RSS-133 6.5)

|                                                 |                                                           |
|-------------------------------------------------|-----------------------------------------------------------|
| EUT with DUT number                             | RM-1091, DUT 54612                                        |
| Accessories with DUT numbers                    | BL-L4A, DUT 54595 ; AC-18E, DUT 54598 ; WH-108, DUT 54603 |
| Operation Voltage [V] / [Hz]                    | Nominal                                                   |
| Results                                         | PASSED                                                    |
| Remarks                                         | -                                                         |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 23/54/101.8                                               |
| Date of measurements                            | 09-Oct-2014                                               |
| Measured by                                     | Dou Rubo                                                  |

##### 4.1.1 Test setup



##### 4.2. Test method and limit

The measurement is made according to TIA-603-C-2004 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The substitution method is used. Substitution values at each frequencies are measured beforehand and saved to the test software. The substitution corrections are obtained as described below:

$$ASUBST = PSUBST\ TX - PSUBST\ RX - LSUBST\ CABLES + GSUBST\ TX\ ANT$$

Where ASUBST is the final substitution correction including receive antenna gain. PSUBST TX is

signal generator level, PSUBST RX is receiver level, LSUBST CABLES is cable losses including both TX and RX cables and GSUBST TX ANT is substitution antenna gain.

The measurement results are obtained as described below:

$$P[\text{dBm}] = \text{PMEAS} + \text{ATOT}$$

Where PMEAS is receiver reading in dBm and ATOT is total correction factor including cable loss and substitution correction ( $\text{ATOT} = \text{LCABLES} - \text{GPREAMP} + \text{ASUBST}$ ).

Limits for spurious radiated emissions measurements

| Operation band | Frequency range [MHz] | Limit [dBm] |
|----------------|-----------------------|-------------|
| GSM 850        | 30 - 8500             | -13         |
| GSM 1900       | 30 - 19100            | -13         |
| WCDMA2         | 30 - 19100            | -13         |
| WCDMA5         | 30 - 8500             | -13         |

#### 4.3. GSM 1900 E-GPRS (MSC9) test results

Channel 661 / 1880.0 MHz

Peak detector

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 3760.14         | -48.69  | 0.01352      | -59.39                  | 10.7                  | HORIZONTAL   | PASSED  |
| 5640.1          | -44.76  | 0.03342      | -59.16                  | 14.4                  | HORIZONTAL   | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

#### 4.4. GSM 850 E-GPRS (MSC9) test results

Channel 190 / 836.6 MHz

Peak detector

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 1673.34         | -56.93  | 0.00203      | -61.13                  | 4.2                   | HORIZONTAL   | PASSED  |
| 2501.203        | -52.7   | 0.00537      | -63.3                   | 10.6                  | VERTICAL     | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

#### 4.5. GSM 850 test results

Channel 190 / 836.6 MHz

Peak detector

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 854.119         | -69.57  | 0.00011      | -66.27                  | -3.3                  | HORIZONTAL   | PASSED  |
| 1673.186        | -40.49  | 0.08933      | -44.69                  | 4.2                   | HORIZONTAL   | PASSED  |
| 1673.387        | -40.36  | 0.09204      | -44.56                  | 4.2                   | HORIZONTAL   | PASSED  |
| 2525.01         | -52.11  | 0.00615      | -63.21                  | 11.1                  | HORIZONTAL   | PASSED  |
| 2531.944        | -52.31  | 0.00587      | -63.31                  | 11                    | HORIZONTAL   | PASSED  |
| 3379.84         | -56.63  | 0.00217      | -64.43                  | 7.8                   | VERTICAL     | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

#### 4.6. GSM 1900 test results

Channel 661 / 1880.0 MHz

Peak detector

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 9218.236        | -41.89  | 0.06471      | -66.39                  | 24.5                  | VERTICAL     | PASSED  |
| 9257.996        | -42.28  | 0.05916      | -66.98                  | 24.7                  | VERTICAL     | PASSED  |
| 9793.707        | -40.75  | 0.08414      | -66.45                  | 25.7                  | VERTICAL     | PASSED  |
| 9805.772        | -41.64  | 0.06855      | -67.04                  | 25.4                  | HORIZONTAL   | PASSED  |
| 9950.621        | -40.45  | 0.09016      | -66.45                  | 26                    | VERTICAL     | PASSED  |
| 10601.082       | -37.6   | 0.17378      | -65.3                   | 27.7                  | VERTICAL     | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

#### 4.7. WCDMA2 test results

Channel 9400 / 1880.0 MHz

FDD mode, Peak detector

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 3757.615        | -37.06  | 0.19679      | -47.76                  | 10.7                  | VERTICAL     | PASSED  |
| 3758.617        | -37.62  | 0.17298      | -48.42                  | 10.8                  | VERTICAL     | PASSED  |
| 5636.653        | -45.12  | 0.03076      | -59.62                  | 14.5                  | VERTICAL     | PASSED  |
| 7519.82         | -40.98  | 0.0798       | -63.38                  | 22.4                  | HORIZONTAL   | PASSED  |
| 8912.044        | -42.27  | 0.05929      | -66.17                  | 23.9                  | VERTICAL     | PASSED  |
| 9401.663        | -39.82  | 0.10423      | -64.32                  | 24.5                  | HORIZONTAL   | PASSED  |
| 9631.202        | -41.22  | 0.07551      | -66.72                  | 25.5                  | VERTICAL     | PASSED  |
| 9881.022        | -41.02  | 0.07907      | -66.82                  | 25.8                  | HORIZONTAL   | PASSED  |
| 9950.281        | -40.22  | 0.09506      | -66.22                  | 26                    | VERTICAL     | PASSED  |
| 11288.236       | -38.58  | 0.13868      | -66.88                  | 28.3                  | VERTICAL     | PASSED  |
| 13155.411       | -49.72  | 0.01067      | -71.42                  | 21.7                  | VERTICAL     | PASSED  |
| 15043.988       | -48.77  | 0.01327      | -72.77                  | 24                    | VERTICAL     | PASSED  |
| 16913.527       | -49.7   | 0.01072      | -72.6                   | 22.9                  | VERTICAL     | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

#### 4.8. WCDMA5 test results

Channel 4175 / 835.0 MHz

FDD mode, Peak detector

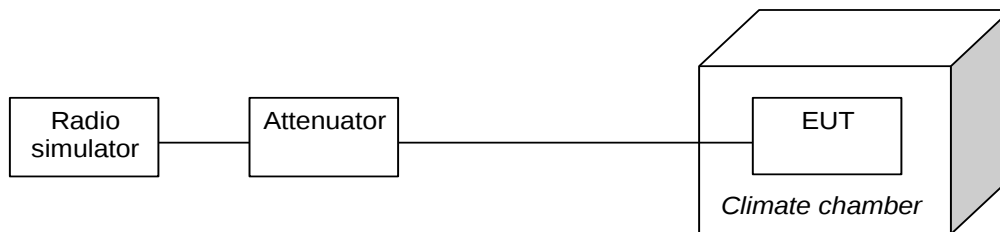
| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Results |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|---------|
| 853.021         | -46.19  | 0.02404      | -80.09                  | 33.9                  | HORIZONTAL   | PASSED  |
| 857.159         | -46.84  | 0.0207       | -80.54                  | 33.7                  | HORIZONTAL   | PASSED  |
| 948.126         | -43.25  | 0.04732      | -80.65                  | 37.4                  | HORIZONTAL   | PASSED  |
| 995.862         | -40.48  | 0.08954      | -77.98                  | 37.5                  | HORIZONTAL   | PASSED  |
| 995.993         | -41.1   | 0.07762      | -78.6                   | 37.5                  | HORIZONTAL   | PASSED  |
| 998.613         | -41.67  | 0.06808      | -79.07                  | 37.4                  | HORIZONTAL   | PASSED  |
| 1671.142        | -56.92  | 0.00203      | -61.12                  | 4.2                   | HORIZONTAL   | PASSED  |
| 2511.393        | -51.94  | 0.0064       | -62.64                  | 10.7                  | VERTICAL     | PASSED  |
| 3340.621        | -55.29  | 0.00296      | -62.89                  | 7.6                   | HORIZONTAL   | PASSED  |
| 4181.072        | -54.73  | 0.00337      | -64.53                  | 9.8                   | HORIZONTAL   | PASSED  |
| 5011.263        | -50.91  | 0.00811      | -62.21                  | 11.3                  | VERTICAL     | PASSED  |
| 5847.545        | -49.13  | 0.01222      | -61.83                  | 12.7                  | HORIZONTAL   | PASSED  |
| 6680.1          | -41.8   | 0.06607      | -58.9                   | 17.1                  | VERTICAL     | PASSED  |
| 7511.253        | -45.18  | 0.03034      | -65.28                  | 20.1                  | VERTICAL     | PASSED  |
| 8343.888        | -46.02  | 0.025        | -66.12                  | 20.1                  | VERTICAL     | PASSED  |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

## 5. Frequency stability, temperature variation (FCC §2.1055(a), RSS-133 6.3, RSS-132 4.3)

|                                                        |                                                           |
|--------------------------------------------------------|-----------------------------------------------------------|
| <b>EUT with DUT number</b>                             | RM-1091, DUT 54614                                        |
| <b>Accessories with DUT numbers</b>                    | BL-L4A, DUT 54593 ; AC-18E, DUT 54218 ; WH-108, DUT 54458 |
| <b>Operation Voltage [V] / [Hz]</b>                    | Nominal                                                   |
| <b>Results</b>                                         | PASSED                                                    |
| <b>Remarks</b>                                         | -                                                         |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 22/50/101.4 to 22/54/101.8                                |
| <b>Date of measurements</b>                            | 08-Oct-2014 to 09-Oct-2014                                |
| <b>Measured by</b>                                     | Dou Rubo                                                  |

### 5.1. Test Setup



### 5.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards as follows:

The climate chamber temperature is set to the maximum value and the temperature is allowed to stabilize.  
The EUT is placed in the chamber.

The EUT is set in idle mode for 15 minutes.

The EUT is set to transmit.

The transmit frequency error was measured immediately.

The steps c - e were repeated for each temperature. Limits for frequency stability, temperature variation measurements

| Frequency deviation [ppm] |
|---------------------------|
| +/- 2.5                   |

### 5.3. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

| Temperature [°C] | Frequency [MHz] | Deviation [Hz] | Deviation [ppm] | Result |
|------------------|-----------------|----------------|-----------------|--------|
| 50               | 1880.00         | -1.81000       | -0.001          | PASSED |
| 40               | 1880.00         | -13.62000      | -0.0072         | PASSED |
| 30               | 1880.00         | -21.05000      | -0.0112         | PASSED |
| 20               | 1880.00         | -25.44000      | -0.0135         | PASSED |
| 10               | 1880.00         | -19.89000      | -0.0106         | PASSED |
| 0                | 1880.00         | -11.88000      | -0.0063         | PASSED |
| -10              | 1880.00         | -8.85000       | -0.0047         | PASSED |
| -20              | 1880.00         | 0.26000        | 0.0001          | PASSED |
| -30              | 1880.00         | 7.49000        | 0.004           | PASSED |

### 5.4. GSM 850 Test results

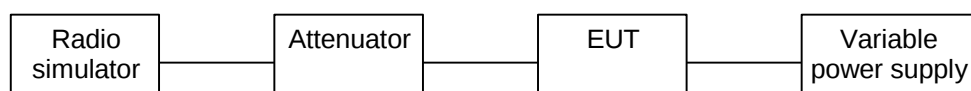
GSM, Channel 190 / 836.6 MHz

| Temperature [°C] | Frequency [MHz] | Deviation [Hz] | Deviation [ppm] | Result |
|------------------|-----------------|----------------|-----------------|--------|
| 50               | 836.60          | -7.36000       | -0.0088         | PASSED |
| 40               | 836.60          | -11.04000      | -0.0132         | PASSED |
| 30               | 836.60          | -11.88000      | -0.0142         | PASSED |
| 20               | 836.60          | -13.43000      | -0.0161         | PASSED |
| 10               | 836.60          | -12.07000      | -0.0144         | PASSED |
| 0                | 836.60          | -8.07000       | -0.0096         | PASSED |
| -10              | 836.60          | -7.94000       | -0.0095         | PASSED |
| -20              | 836.60          | -1.49000       | -0.0018         | PASSED |
| -22              | 836.60          | -4.65000       | -0.0056         | PASSED |
| -24              | 836.60          | -6.20000       | -0.0074         | PASSED |
| -26              | 836.60          | -4.52000       | -0.0054         | PASSED |
| -28              | 836.60          | -1.10000       | -0.0013         | PASSED |
| -30              | 836.60          | -1.55000       | -0.0019         | PASSED |

## 6. Frequency stability, voltage variation (FCC §2.1055(d), RSS-133 6.3, RSS-132 4.3)

|                                                 |                          |
|-------------------------------------------------|--------------------------|
| EUT with DUT number                             | RM-1091, DUT 54614       |
| Accessories with DUT numbers                    | Dummy Battery, DUT 54611 |
| Operation Voltage [V] / [Hz]                    | Nominal                  |
| Results                                         | PASSED                   |
| Remarks                                         | -                        |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 22/50/101.4              |
| Date of measurements                            | 08-Oct-2014              |
| Measured by                                     | Dou Rubo                 |

### 6.1. Test Setup



### 6.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards as follows:

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.

Limits for frequency stability, voltage variation measurements

| Frequency deviation [ppm] |
|---------------------------|
| +/- 2.5                   |

### 6.3. GSM 1900 Test results

GSM,

| Voltage level [V]           | Frequency [MHz] | Deviation [Hz] | Deviation [ppm] | Result |
|-----------------------------|-----------------|----------------|-----------------|--------|
| Max / 4.2                   | 1880.00         | -14.33000      | -0.0076         | PASSED |
| Battery cut-off point / 3.4 | 1880.00         | -11.17000      | -0.0059         | PASSED |
| Nominal / 4.2               | 1880.00         | -20.53000      | -0.0109         | PASSED |

### 6.4. GSM 850 Test results

GSM,

| Voltage level [V]           | Frequency [MHz] | Deviation [Hz] | Deviation [ppm] | Result |
|-----------------------------|-----------------|----------------|-----------------|--------|
| Max / 4.2                   | 836.60          | -9.43000       | -0.0113         | PASSED |
| Battery cut-off point / 3.4 | 836.60          | -9.10000       | -0.0109         | PASSED |
| Nominal / 4.2               | 836.60          | -10.53000      | -0.0126         | PASSED |

## 7. Test Equipment

### 7.1. Conducted measurements

| Eq. No      | Equipment                              | Type                | Manufacturer            | Used in            |
|-------------|----------------------------------------|---------------------|-------------------------|--------------------|
| -           | BT / WLAN Antenna                      | SPA 2400/75/9/0/V   | Huber-Suhner            | 15C, 15B           |
| -           | BT / WLAN Antenna                      | SPA 2400/75/9/0/V   | Huber-Suhner            | 15C, 15B           |
| -           | RF Emission Software                   | EMC32 Test Software | R&S                     | 22/24/27, 15C, 15B |
| BJPCHW0020  | DC Power supply                        | Hp6632B             | HP                      | 22/24/27, 15C      |
| BJPCPT0040  | Receiver                               | ESCS30              | R&S                     | 15C, 15B           |
| BJPCPT0069  | LISN 50 $\mu$ H                        | ESH3-Z5             | R&S                     | 15C, 15B           |
| BJPCTC0323  | Signal Generator                       | SMR 27              | R&S                     | 22/24/27, 15C, 15B |
| BJPCPT0073  | Signal Generator                       | SMR 20              | R&S                     | 22/24/27, 15C, 15B |
| BJPCPT0191  | Pulse Limiter                          | ESH3-Z2             | R&S                     | 15C, 15B           |
| BJPCPT0208  | UPS                                    | PULSAR RX10         | Merlin gerin            | 15C, 15B           |
| BJPCTC0001  | DIGITAL CAMERA                         | PC1015              | CANON                   | 15C, 15R           |
| BJPCTC0017  | Communication Tester                   | CMU200              | R&S                     | 22/24/27, 15C, 15B |
| BJPCTC0062  | AC Power source                        | 6812B               | Hp                      | 15C, 15B           |
| BJPCTC0067  | Bluetooth Tester                       | CBT                 | R&S                     | 22/24/27, 15C      |
| BJPCTC0082  | Humidity and Temperature Sensor        | 175-H2              | Testo                   | 15B, 15C           |
| BJPCTC0088  | Absolut pressure meter                 | testo 511           | Testo                   | 22/24/27, 15B, 15C |
| BJPCTC0089  | Tempreture Test chamber                | VT4002              | Votsch industrietechnik | 22/24/27, 15C      |
| BJPCTC0090  | FSP spectrum analyzer                  | FSP30               | R&S                     | 22/24/27, 15C      |
| BJPCTC0094  | GPIO-RS232 convertor                   | GPIO-RS232          | NI                      | 22/24/27, 15C      |
| BJPCTC0112  | Power Splitter                         | 11667B              | Agilent                 | 22/24/27, 15C      |
| BJPCTC0115  | Communication Tester                   | CMU200              | R&S                     | 22/24/27, 15B, 15C |
| BJPCTC0127  | AC Power source                        | SOYI-500VA          | SOYI                    | 15B 15C            |
| BJPCTC0128  | Communication antenna                  | JXTXLB-10180        | A-INFOMW                | 22/24/27 15B 15C   |
| BJPCTC0129  | Communication antenna                  | JXTXLB-10180        | A-INFOMW                | 22/24/27 15B 15C   |
| BJPCTC0131  | Communication tester                   | CMW500              | R&S                     | 22/24/27 15B 15C   |
| BJPCTC0136  | Communication antenna                  | JXTXLB-880-NF       | A-INFOMW                | 15B 15C            |
| BJPCTC0306  | Power Splitter                         | 11667B              | Agilent                 | 22/24/27, 15C      |
| BJPCTC0305  | GPIO converter                         | GPIO-RS232          | NI                      | 22/24/27, 15C      |
| BJPCTC0304  | Spectrum Analyser                      | FSV30               | R&S                     | 22/24/27, 15C      |
| BJPCTC0309  | GPIO-RS232 convertor                   | RS232               | NI                      | 22/24/27, 15C      |
| BJPCTC0307  | Dual channel battery/charger simulator | 2306                | KEITHLEY                | 22/24/27, 15C      |
| BJPCTC0308  | Dual channel battery/charger simulator | 2306                | KEITHLEY                | 22/24/27, 15C      |
| BJPCTC0352  | Signal Generator 20GHz                 | MG3692B             | Anritsu                 | 22/24/27, 15C      |
| BJBDATC0169 | Tempreture Test chamber                | VT4002              | Votsch                  | 22/24/27, 15C      |
| BJPCTC0334  | Communication Tester                   | CMU200              | R&S                     | 22/24/27, 15C, 15B |
| BJPCTC0342  | Communication Tester                   | CMU200              | R&S                     | 15B, 15C           |
| BJPCTC0343  | Power Splitter                         | 1167A               | Agilent                 | EN300328           |
| BJPCTC0344  | Power Splitter                         | 1167A               | Agilent                 | EN300328           |
| BJPCTC0345  | Power Splitter                         | 1167A               | Agilent                 | EN300328           |
| BJPCTC0346  | Attenuator                             | 8496A               | Agilent                 | EN300328           |
| BJPCTC0347  | Directional Coupler                    | 4226-20             | Narda                   | EN300328           |
| BJPCTC0348  | Signal generator                       | E4438C              | Agilent                 | EN300328           |
| BJPCTC0336  | Signal Generator                       | SMP22               | R&S                     | 22/24/27, 15C      |

### 7.2. Radiated measurements

| Eq. No     | Equipment            | Type                | Manufacturer | Used in            |
|------------|----------------------|---------------------|--------------|--------------------|
| -          | BT / WLAN Antenna    | SPA 2400/75/9/0/V   | Huber-Suhner | 15C, 15B           |
| -          | BT / WLAN Antenna    | SPA 2400/75/9/0/V   | Huber-Suhner | 15C, 15B           |
| -          | RF Emission Software | EMC32 Test Software | R&S          | 22/24/27, 15C, 15B |
| BJPCPT0072 | Receiver             | ESI B26             | R&S          | 22/24/27, 15C, 15B |

| Eq. No     | Equipment                       | Type                              | Manufacturer                        | Used in            |
|------------|---------------------------------|-----------------------------------|-------------------------------------|--------------------|
| BJPCPT0150 | High Pass Filter                | WHKS1200-10SS                     | Wainwright                          | 22/24/27, 15C, 15B |
| BJPCPT0151 | Band Reject Filter              | WRCD1880/2000-0.2/40-5SSK         | Wainwright                          | 24, 15B            |
| BJPCPT0154 | Band Reject Filter              | WRCT2402/2480-2400/2483.5-30-20SS | Wainwright                          | 15C, 15B           |
| BJPCPT0166 | Antenna                         | VUBA 9117                         | Swarzbeck                           | 22/24/27           |
| BJPCPT0208 | UPS                             | PULSAR RX10                       | Merlin gerin                        | 15C, 15B           |
| BJPCTC0001 | DIGITAL CAMERA                  | PC1015                            | CANON                               | 15C, 15R           |
| BJPCTC0007 | Antenna                         | HL562                             | R&S                                 | 22/24/27, 15C, 15B |
| BJPCTC0029 | Antenna                         | HF906                             | R&S                                 | 22/24/27, 15C, 15B |
| BJPCTC0034 | Band Reject Filter              | WRCT 800/880-0.2/40-5SSK          | Wainwright                          | 22, 15B            |
| BJPCTC0049 | Preamplifier                    | Blma 0118-1A-Bt                   | Bonn                                | 22/24/27, 15C, 15B |
| BJPCTC0055 | Communication Tester            | CMU200                            | R&S                                 | 22/24/27, 15C, 15B |
| BJPCTC0058 | Bluetooth Tester                | CBT                               | R&S                                 | 15C, 15B           |
| BJPCTC0062 | AC Power source                 | 6812B                             | Hp                                  | 15C, 15B           |
| BJPCTC0064 | Band Reject Filter              | WRCG1877/1883-1870/1890-40/6SS    | Wainwright                          | 24, 15B            |
| BJPCTC0071 | Multi-Device Controller         | 2090                              | EMCO                                | 22/24/27, 15C, 15B |
| BJPCTC0072 | Anechoic Chamber                | 3 m Semi / Full Anechoic Chamber  | ETS                                 | 22/24/27, 15C, 15B |
| BJPCTC0073 | MAST                            | Model-TR/POL                      | ETS                                 | 22/24/27, 15C, 15B |
| BJPCTC0074 | MAST                            | Model 2070-2                      | ETS                                 | 22/24/27, 15C, 15B |
| BJPCTC0075 | Turntable                       | Model 2188                        | ETS-EMCO                            | 22/24/27, 15C, 15B |
| BJPCTC0081 | Humidity and Temperature Sensor | 175-H2                            | Testo                               | 15B, 15C           |
| BJPCTC0088 | Absolut pressure meter          | testo 511                         | Testo                               | 22/24/27, 15B, 15C |
| BJPCTC0115 | Communication Tester            | CMU200                            | R&S                                 | 22/24/27, 15B, 15C |
| BJPCTC0124 | Attenuator                      | SA18N200W-40                      | Fairview Microwave                  | -                  |
| BJPCTC0125 | Loop Antenna                    | HFH2-Z2                           | R&S                                 | 15C                |
| BJPCTC0126 | Tripod                          | FHU-Z                             | R&S                                 | 15C                |
| BJPCTC0128 | Communication antenna           | JXTXLB-10180                      | A-INFOMW                            | 22/24/27 15B 15C   |
| BJPCTC0129 | Communication antenna           | JXTXLB-10180                      | A-INFOMW                            | 22/24/27 15B 15C   |
| BJPCTC0131 | Communication tester            | CMW500                            | R&S                                 | 22/24/27 15B 15C   |
| BJPCTC0133 | Open Swith and contril unit     | OSP 150                           | R&S                                 | 15B, 15C           |
| BJPCTC0134 | Open Swith and contril unit     | OSP 150                           | R&S                                 | 15B, 15C           |
| BJPCTC0135 | Open Swith and contril unit     | OSP 130                           | R&S                                 | 15B, 15C           |
| BJPCTC0136 | Communication antenna           | JXTXLB-880-NF                     | A-INFOMW                            | 15B 15C            |
| BJPCTC0171 | Broad-band Horn Antenna         | BBHA9120 D                        | SCHWARZBECK<br>MESS -<br>ELEKTRONIK | 22/24/27, 15C, 15B |
| BJPCTC0310 | Horn Antenna                    | QSH20SMA                          | Q-par                               | 22/24/27, 15C, 15B |
| BJPCTC0311 | Horn Antenna                    | QSH18SMA                          | Q-par                               | 22/24/27, 15C, 15B |
| BJPCTC0312 | Relay Switch Unit               | -                                 | -                                   | 22/24/27, 15C, 15B |
| BJPCTC0313 | High Pass Filter                | WHKX1.0/15G-12SS                  | Wainwright                          | 22/24/27, 15C, 15B |
| BJPCTC0314 | High Pass Filter                | WHKX8.0/18G-88SS                  | Wainwright                          | 22/24/27, 15C, 15B |
| BJPCTC0315 | High Pass Filter                | WHKX3.0/18G-12SS                  | Wainwright                          | 22/24/27, 15C, 15B |
| BJPCTC0316 | Preamplifier                    | AMT-5F-18002550-25-108            | -                                   | 22/24/27, 15C, 15B |
| BJPCTC0317 | Preamplifier                    | AMF-6D-02001800-29-20P            | -                                   | 22/24/27, 15C, 15B |
| BJPCTC0350 | Preamplifier                    | AMF-4D-01000800-30-29P            | Miteq                               | 22/24/27, 15C, 15B |
| BJPCTC0324 | Preamplifier                    | AFS4-00100300-20-23P-6            | Miteq                               | 22/24/27, 15C, 15B |
| BJPCTC0329 | Relay Switch Unit               | -                                 | -                                   | 22/24/27, 15C, 15B |
| BJPCTC0334 | Communication Tester            | CMU200                            | R&S                                 | 22/24/27, 15C, 15B |
| BJPCTC0342 | Communication Tester            | CMU200                            | R&S                                 | 15B, 15C           |
| BJPCTC0349 | Preamplifier                    | AMF-4D-01000800-30-79P            | Miteq                               | 22/24/27, 15C, 15B |

| Eq. No     | Equipment    | Type                   | Manufacturer | Used in            |
|------------|--------------|------------------------|--------------|--------------------|
| BJPCTC0350 | Preamplifier | AMF-4D-01000800-30-29P | Miteg        | 22/24/27, 15C, 15B |
| BJPCTC0351 | Preamplifier | AFS4-00101800          | -            | 22/24/27, 15C, 15B |