

## PARTIAL TEST REPORT

### No.: 2-20795417c/11

According to:  
**FCC Regulations**  
 Part 15.107 & 15.109  
 Part 15.207 & 15.209  
 Part 15.247  
**IC Regulations:**  
 RSS-Gen., Issue 3  
 RSS-210, Issue 8

for  
 Option NV

GSM/(E)GPRS/W-CDMA/WLAN Wireless Router Globesurfer III+  
 (GS0361)

| Laboratory Accreditation and Listings                                                                                                                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                                                                   |                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Deutsche<br>Akkreditierungsstelle<br>D-PL-12047-01-01                                                                                                                                                                                                                           | <br>Reg. No.: 736496<br>MRA US-EU 0003 | <br>Industry Canada<br>Reg. No.: 3462D-1<br>Reg. No.: 3462D-2 | <br>Voluntary Controls for<br>Electromagnetic Emissions<br>Reg. No.: R-2665, R-2666<br>C-2914, T-1967, G-301 |
|  AUTHORIZED<br>RF LABORATORY                                                                                                                                                                                                                                                        | <br>LAB CODE 20011130-00              |                                                                                                                                                   |                                                                                                                                                                                                   |
| accredited according to DIN EN ISO/IEC 17025                                                                                                                                                                                                                                                                                                                           |                                                                                                                           |                                                                                                                                                   |                                                                                                                                                                                                   |
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## 1. Summary of test results

The presented GSM 850/900/1800/1900 device incorporates an already FCC CFR47 Part 22H and Part 24E approved GSM/W-CDMA Module Type GTM661W with FCC ID No. NCMOMO6612.

The equipment is considered also a class B digital device (peripheral) which is subject to declaration of conformity or certification.

WLAN IEEE802.11 b/g/n functionality and antennas are same design according applicants declaration as reported in test report no. 1-345-07-03/08, so only partial tests have been performed. Pls. compare therefore also applicants declaration and technical documents.

Following tests have been performed to show compliance with applicable FCC Part 2 and Part 15 rules of the FCC CFR 47 (10-1-09 Edition) and Industry Canada RSS-210, Issue 8 and RSS-Gen, Issue 3 regulations.

The test results apply exclusively to the test samples as presented in chapter 3.1. The CETECOM GmbH does not assume responsibility for any conclusions and generalizations taken in conjunction with other specimens or samples of the type of the item presented to tests.

### 1.1. TESTS OVERVIEW FCC Part 15 and Canada IC Standards (RSS-210, RSS-Gen.)

| TEST CASES                                           | PORT                                        | REFERENCES & LIMITS               |                                                                        |                                                                                    | EUT set-up | EUT operating mode | Result               |
|------------------------------------------------------|---------------------------------------------|-----------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------|--------------------|----------------------|
|                                                      |                                             | FCC Standard                      | RSS Section                                                            | TEST LIMIT                                                                         |            |                    |                      |
| TX-Mode                                              |                                             |                                   |                                                                        |                                                                                    |            |                    |                      |
| 6dB bandwidth                                        | Antenna terminal (conducted)                | §15.247(a)(2)                     | RSS-210 Issue 8: A8.2 (a)                                              | ≥ 500 kHz for DTS systems                                                          | --         | --                 | Not tested, remark 1 |
| 99% occupied bandwidth & Emission Bandwidth (26dBc)  | Antenna terminal (conducted)                | --                                | RSS-210 Issue 8: Chapter 4.6.1                                         | 99% Power bandwidth                                                                | --         | --                 | Not tested, remark 1 |
| Transmitter Peak output power                        | Antenna terminal (conducted)                | §15.247(b)(1)                     | RSS-210 Issue 8: A8.4 (4)                                              | 1 Watt Peak                                                                        | --         | --                 | Not tested, remark 1 |
| Transmitter Peak output power radiated               | Cabinet (radiated)                          | §15.247(b)(4)                     | RSS-210 Issue 8:A8.4 (4)                                               | < 4 Watt (EIRP) for antenna with directional gain less 6dBi                        | --         | --                 | Not tested, remark 1 |
| Out-Of-Band RF- emissions<br><br>Band-Edge emissions | Antenna terminal (conducted)                | §15.247 (d)                       | RSS-210 Issue 8: A8.5                                                  | 20 dBc                                                                             | --         | --                 | Not tested, remark 1 |
| Power spectral density                               | Antenna terminal (conducted)                | §15.247(e)                        | RSS-210 Issue 8: A8.2 (b)                                              | 8dBm in any 3kHz band                                                              | --         | --                 | Not tested, remark 1 |
| General field strength emissions + restricted bands  | Cabinet + Interconnecting cables (radiated) | §15.247 (d)<br>§15.205<br>§15.209 | RSS-210 Issue 8, Chapter 2.5<br><br>RSS-Gen: Issue 3: §7.2.5 Table 5+6 | Emissions in restricted bands must meet the general field-strength radiated limits | 1+5        | 1+2+5+6+7          | Passed               |

|                     |                |         |                                          |                                           |       |               |        |
|---------------------|----------------|---------|------------------------------------------|-------------------------------------------|-------|---------------|--------|
| AC-Power Lines      | AC-Power lines | §15.207 | RSS-Gen, Issue 3: Chapter 7.2.4, Table 4 | FCC §15.107 class B limits §15.207 limits | 1+2+4 | 1+2+5+6+11+12 | Passed |
| Conducted Emissions |                |         |                                          | IC: Table 4, Chapter 7.2.4                |       |               |        |

Remarks: see test report 1-0345-07-03/08, tests performed at CETECOM ICT Services GmbH, Saarbrücken, Germany

| RX Mode             |                                             |                             |                                 |                                           |       |                |        |
|---------------------|---------------------------------------------|-----------------------------|---------------------------------|-------------------------------------------|-------|----------------|--------|
| AC-Power Lines      | AC-Power lines                              | §15.107<br>§15.207          | RSS-Gen, Issue 3: Chapter 7.2.4 | FCC §15.107 class B limits §15.207 limits | 1+2+4 | 3+4+6+8+9      | Passed |
| Conducted Emissions |                                             |                             |                                 | IC: Table 2, Chapter 7.2.2                |       |                |        |
| RECEIVER            | Cabinet + Interconnecting cables (radiated) | §15.109<br>§15.33<br>§15.35 | RSS-Gen, Issue 3: Chapter 6.1   | FCC 15.109 class B limits                 | 3+5   | 3+4+6+7+8+9+10 | Passed |
| Radiated emissions  |                                             |                             |                                 | IC-limits: Table 1, Chapter 6             |       |                |        |

Remarks: --

#### ATTESTATION:

I declare that all measurements were performed by me or under my supervision and that all measurements have been performed and are correct to my best knowledge and belief to Industry Canada standards. All requirements as shown in above table are met in accordance with enumerated standards.

  
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Responsible for test report

## 2. Administrative Data

### 2.1. Identification of the testing laboratory

|                                     |                                                                                                                                                                                            |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Company name:                       | CETECOM GmbH                                                                                                                                                                               |
| Address:                            | Im Teelbruch 116<br>45219 Essen - Kettwig<br>Germany                                                                                                                                       |
| Responsible for testing laboratory: | Dipl.-Ing. W. Richter                                                                                                                                                                      |
| Deputy:                             | Dipl.-Ing. J. Schmitt                                                                                                                                                                      |
| Laboratory accreditations/Listings: | DAkkS-Registration No. D-PL-12047-01-01<br>FCC-Registration No.: 736496, MRA US-EU 0003<br>IC-Registration No. 3462D-1, 3462D-2<br>VCCI Registration No. R-2665,R-2666,C-2914,T-1967,G-301 |

### 2.2. Test location

#### 2.2.1. TEST LABORATORY "CTC"

|               |                                                           |
|---------------|-----------------------------------------------------------|
| Company name: | see chapter 2.1. Identification of the testing laboratory |
|---------------|-----------------------------------------------------------|

### 2.3. Organizational items

|                                                 |                          |
|-------------------------------------------------|--------------------------|
| Order No.:                                      | 20795417                 |
| Responsible for test report and project leader: | Dipl.-Ing. C. Lorenz     |
| Receipt of EUT:                                 | 2011-05-02               |
| Date(s) of test:                                | 2011-05-03 to 2011-05-21 |
| Date of report:                                 | 2011-05-31               |
| -----                                           |                          |
| Version of template:                            | 11.05 _All.Dotm          |

### 2.4. Applicant's details

|                   |                                               |
|-------------------|-----------------------------------------------|
| Applicant's name: | Option NV                                     |
| Address:          | Gaston Geenslaan 14<br>3001 Leuven<br>Belgium |
| Contact person:   | Mr. Paul Vandeneede                           |

### 2.5. Manufacturer's details

|                      |                                |
|----------------------|--------------------------------|
| Manufacturer's name: | please see Applicant's details |
| Address:             | please see Applicant's details |

### 3. Equipment under test (EUT)

#### 3.1. Additional declaration and description of main EUT

|                                        |                                                                                                                                                                                                                                                    |                                                                                       |                                                 |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------|
| Main function                          | GSM/(E)GPRS/W-CDMA/WLAN Wireless Router                                                                                                                                                                                                            |                                                                                       |                                                 |
| Type                                   | GS0361 with integrated GSM/W-CDMA module GTM661W (MO6612)                                                                                                                                                                                          |                                                                                       |                                                 |
| GSM Frequency range (US/Canada -bands) | GSM 850: 824 – 849MHz (Uplink), 869-894MHz (Downlink)<br>GSM1900: 1850-1910MHz (Uplink), 1930-1990MHz (Downlink)<br>FDD Band 2: 1852.4–1907.6 MHz (Uplink), 1930-1990MHz (Downlink)<br>FDD Band 5: 826.4-846.6 MHz (Uplink), 869-894MHz (Downlink) |                                                                                       |                                                 |
| Type of modulation                     | GSM-mode: GMSK<br>GPRS-Mode: 8-PSK<br>FDD-Mode Release99: QPSK<br>FDD Mode Release 5+6: 16QAM additionally                                                                                                                                         |                                                                                       |                                                 |
| Number of channels (USA/Canada -bands) | GSM 850: 128 – 251, 125 channels<br>GSM1900: 512 – 810, 300 channels<br>FDD Band 2: UARFCN range 9262 – 9400 – 9538<br>FDD Band 5: UARFCN range 4132 – 4183 – 4233                                                                                 |                                                                                       |                                                 |
| EMISSION DESIGNATOR(S)                 | 248KGXW(GMSK)<br>244KG7W (8-PSK)4M16F9W (W-CDMA/ FDD Mode)<br>Remark: bandwidth was not tested, here information only for reference                                                                                                                |                                                                                       |                                                 |
| Antenna Type                           | <input checked="" type="checkbox"/> Integrated<br><input type="checkbox"/> External, no RF- connector<br><input checked="" type="checkbox"/> External, separate RF-connector: max. 2dBi gain of external antenna                                   |                                                                                       |                                                 |
| MAX PEAK Output Power: Radiated        | GSM 850                                                                                                                                                                                                                                            | 32.85 dBm                                                                             |                                                 |
|                                        | GSM1900                                                                                                                                                                                                                                            | 30.74 dBm                                                                             |                                                 |
|                                        | W-CDMA Band II                                                                                                                                                                                                                                     | 29.62 dBm                                                                             |                                                 |
|                                        | W-CDMA Band IV                                                                                                                                                                                                                                     | 25.77 dBm                                                                             |                                                 |
| MAX PEAK Output Power: Conducted       | GSM1900                                                                                                                                                                                                                                            | Not tested, see initial certification reports of internal GSM/W-CDMA module, remark 1 |                                                 |
| FCC-ID                                 | NCMOGS0361                                                                                                                                                                                                                                         |                                                                                       |                                                 |
| IC                                     | 2734A-GS0361                                                                                                                                                                                                                                       |                                                                                       |                                                 |
| Installed option                       | <input checked="" type="checkbox"/> GSM and W-CDMA transmitters<br><input checked="" type="checkbox"/> WLAN transmitter<br><input checked="" type="checkbox"/> File server and router for PC-equipment                                             |                                                                                       |                                                 |
| Power supply                           | 5V DC – supplied over separate AC/DC adapter                                                                                                                                                                                                       |                                                                                       |                                                 |
| Special EMI components                 | --                                                                                                                                                                                                                                                 |                                                                                       |                                                 |
| EUT sample type                        | <input type="checkbox"/> Production                                                                                                                                                                                                                | <input type="checkbox"/> Pre-Production                                               | <input checked="" type="checkbox"/> Engineering |

Remark: 1.) see initial certification/results for GSM/WCDMA Wireless Module, test report FG0N2627, Rev. 01, dated April 20.2011 by Sporton International Inc and test report FG140819 dated April 29, 2011.

### 3.2. Configuration of cables used for testing

| Cable number | Item                               | Type     | S/N serial number | HW hardware status | Cable length |
|--------------|------------------------------------|----------|-------------------|--------------------|--------------|
| 1            | RJ25 POTS analogue telephone cable | --       | --                | --                 | 2m           |
| 2            | USB cable                          | shielded | --                | --                 | 1.5m         |
| 3            | RJ45 LAN cable1 <sup>1.)</sup>     | shielded | --                | --                 | 2m           |
| 4            | RJ45 LAN cable 2 <sup>1.)</sup>    | shielded | --                | --                 | 1m           |

Remark1: attempts have been made to maximize the emissions, by connecting one or more cables

### 3.3. EUT: Type, S/N etc. and short descriptions used in this test report

| Short description*) | EUT                                                      | Type                 | S/N serial number            | HW hardware status                               | SW software status                  |
|---------------------|----------------------------------------------------------|----------------------|------------------------------|--------------------------------------------------|-------------------------------------|
| EUT A               | GSM/(E)GPRS/W-CDMA/WLAN Wireless Router Globesurfer III+ | (GS0361)             | IMEI:<br>004401441414<br>485 | 2.2                                              | R1N79<br>Modem-firmware:<br>1.8.4.0 |
| EUT B               | GSM/(E)GPRS/W-CDMA/WLAN Wireless Router Globesurfer III+ | (GS0361)             | IMEI:<br>004401441414<br>469 | 2.2                                              | R1N79<br>Modem-firmware:<br>1.8.4.0 |
| EUT C               | Phihong AC/DC adapter for GlobesurferIII+                | PSA15R-050P          | CTC#1                        | Input: AC100-240V AC<br>Output: DC 5.0 V DC 2.0A |                                     |
| EUT D               | External antenna                                         | Joymaxx CAF-6540FMXX | #1                           | 2.0dB Gain                                       | --                                  |
| EUT E               | Phihong AC/DC adapter for GlobesurferIII+                | PSA15R-050P          | CTC#2                        | Input: AC100-240V AC<br>Output: DC 5.0 V DC 2.0A |                                     |

\*) EUT short description is used to simplify the identification of the EUT in this test report.

### 3.4. Auxiliary Equipment (AE): Type, S/N etc. and short descriptions

| AE short description *) | Auxiliary Equipment                               | Type                  | S/N serial number | HW hardware status                                          | SW software status |
|-------------------------|---------------------------------------------------|-----------------------|-------------------|-------------------------------------------------------------|--------------------|
| AE 1                    | Notebook                                          | Dell D610             | CTC #4            | --                                                          | Windows XP         |
| AE 2                    | IOMEGA External HD                                | GDH DU2               | XRAA41B565        | 1TByte                                                      | --                 |
| AE 3                    | AC/DC adapter                                     | For AE2               | G100902058517     | Input: 100-240 V AC/<br>1.0A/50-60Hz<br>Output: 12V DC 1.5A | --                 |
| AE 4                    | All-in-1 USB Card Reader + 2GB Compact Flash card | --                    | 060929            | --                                                          | --                 |
| AE 5                    | Notebook                                          | HP 2133               | CNU8520NKS        | --                                                          | Windows XP         |
| AE 6                    | Telephone/Facsimile machine (POTS)                | Samsung SF-3100       | B6BKC01068L       | --                                                          | --                 |
| AE 7                    | Analogue (POTS) handset                           | Belgacom Maestro 2005 | 11056062          | --                                                          | --                 |

\*) AE short description is used to simplify the identification of the auxiliary equipment in this test report.

### 3.5.EUT set-ups

| EUT set-up no. *) | Combination of EUT and AE                | Remarks                            |
|-------------------|------------------------------------------|------------------------------------|
| Set. 1            | EUT A + EUT C + AE1 + AE 6               | Set-up with internal antenna       |
| Set. 2            | EUT A + EUT C+ AE 1 + AE 7               | Set-up with internal antenna       |
| Set. 3            | EUT B + EUT E + AE 2+ AE 3 + AE 5 + AE 6 | 2'nd set-up with internal antenna. |
| Set. 4            | EUT A + EUT C+ EUT D + AE 1 + AE 7       | Set-up with external antenna       |
| Set. 5            | EUT A + EUT C + AE1 + AE4 + AE 7         | Set-up with internal antenna       |

\*) EUT set-up no. is used to simplify the identification of the EUT set-up in this test report.



### 3.6. EUT operating modes

| EUT operating mode no. *) | Description of operating modes                  | Additional information                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| op. 1                     | GSM 850<br>TCH mode<br>TCH=128/192/251          | A communication link is established between the mobile station and the test simulator. The transmitter is operated at its maximum rated output power: 33 dBm (power class 4; power control level 5).<br>The input signal to the receiver is modulated with normal test modulation.<br>The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link.                                                      |
| op. 2                     | GSM 1900<br>TCH mode<br>TCH=512/661/810         | A communication link is established between the mobile station and the test simulator. The transmitter is operated at its maximum rated output power: 30 dBm (power class 1; power control level 0).<br>The input signal to the receiver is modulated with normal test modulation.<br>The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link                                                       |
| op. 3                     | GSM 850<br>Idle mode<br>BCCH 50                 | The mobile station is synchronized to the Broadcast Control Channel (BCCH) and listening to the Common Control Channel (CCCH). Periodic location update is disabled.                                                                                                                                                                                                                                                                                                        |
| op. 4                     | GSM 1900<br>Idle mode<br>BCCH 651               | The mobile station is synchronized to the Broadcast Control Channel (BCCH) and listening to the Common Control Channel (CCCH).                                                                                                                                                                                                                                                                                                                                              |
| op. 5                     | WLAN transmitter<br>On                          | WLAN transmitter is switched-on during normal GSM/FDD call. WLAN Transmitter is set on channel 1, b-Mode, 2Mbit as maximum power mode. Continuous bearer mode with minimum time TX-time of 20ms is set. Nominal EIRP power 22.3 dBm measured in a separate step.                                                                                                                                                                                                            |
| op. 6                     | Router mode<br>(IT-equipment peripheral)        | Continuous PING command from PC to router over LAN(RJ45) cable                                                                                                                                                                                                                                                                                                                                                                                                              |
| op. 7                     | File server mode<br>(IT-equipment - peripheral) | Router is acting like File Server, exchanging continuously data to the notebook over LAN control/signal line. Continuous PING command from PC to the router additionally over LAN(RJ45) cable.                                                                                                                                                                                                                                                                              |
| op. 8                     | FDD Band 2<br>IDLE Mode                         | The mobile station is synchronized to the Broadcast Control Channel (BCCH) and listening to the Common Control Channel (CCCH).                                                                                                                                                                                                                                                                                                                                              |
| op. 9                     | FDD Band 5<br>IDLE Mode                         | The mobile station is synchronized to the Broadcast Control Channel (BCCH) and listening to the Common Control Channel (CCCH).                                                                                                                                                                                                                                                                                                                                              |
| op. 10                    | WLAN RX-mode                                    | WLAN transmitter is switched off                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| op. 11                    | FDD-Mode 2<br>12.2 kbps RMC                     | A communication link is established between the mobile station (UE) and the test simulator. The transmitter is operated on its maximum rated output power class: 21 dBm or 24dBm.<br>The input signal to the receiver is modulated with normal test modulation.<br>The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link according Table E5.1/Table E5.1A as described in 3GPP TS34.121, Annex E. |
| op. 12                    | FDD-Mode 5<br>12.2 kbps RMC                     | A communication link is established between the mobile station (UE) and the test simulator. The transmitter is operated on its maximum rated output power class: 21 dBm or 24dBm.<br>The input signal to the receiver is modulated with normal test modulation.<br>The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link according Table E5.1/Table E5.1A as described in 3GPP TS34.121, Annex E. |

\*) EUT operating mode no. is used to simplify the test report.

### 3.7. Parameter Settings on mobile phone and base station CMU200

Following settings apply to the MS during the measurements in **GSM/(E)GPRS-Mode** only:

| Parameter                                                  | Traffic Mode                                                                              | Idle Mode         |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------|
| Traffic Channels mobile station (EUT)                      | GSM 850 TCH <sub>MS</sub> = 128/ 192 /251<br>GSM 1900 TCH <sub>MS</sub> = 512 / 681 / 810 | --                |
| maximum power level (PCL)                                  | GSM 850: PCL = 5 (2 Watt)<br>GSM 1900: PCL = 0 (1 Watt)                                   | --                |
| Modulation                                                 | GSM: GMSK-Modulation Scheme<br>EDGE: 8-PSK Modulation Scheme                              | --                |
| DTX                                                        | off                                                                                       | --                |
| Bitstream                                                  | PRBS 2E9-1 (pseudo-random-sequence) – CCITT 0.153                                         |                   |
| Timeslot                                                   | 3                                                                                         |                   |
| Hopping                                                    | off                                                                                       |                   |
| Timeslot (slot mode)                                       | GSM-Mode: single<br>GPRS-Mode: maximum allowed<br>uplink slots no. according MS class     |                   |
| Maximum data transmission rate, single<br>time slot        | GSM: 17,6 kBit/s Slot<br>EDGE: 59,2 kBit/s Slot                                           |                   |
| Speech transcoding (Traffic Mode)                          | Full rate Version 1                                                                       |                   |
| Mode                                                       | BCCH and TCH                                                                              |                   |
| BCCH – base station (CMU,CMD)                              | GSM 850: 180<br>GSM 1900: 651                                                             |                   |
| TCH – base station (CMD, CMU)                              | auto                                                                                      |                   |
| Power level TCH – base station (used<br>timeslot level)    | - 70 dBm                                                                                  |                   |
| Power level BCCH – base station<br>(control channel level) | - 80 dBm                                                                                  |                   |
| External attenuation RF/AF-<br>Input/Output                | Accord. calibration prior to<br>measurements                                              |                   |
| Mobile Country Code                                        | 310                                                                                       | 310               |
| BS_AG_BLKs_RES                                             | Not applicable                                                                            | 0                 |
| Paging reorganisation                                      |                                                                                           | Off (0)           |
| Signalling channel                                         |                                                                                           | SDCCH             |
| Location Update                                            |                                                                                           | Auto              |
| Cell access                                                |                                                                                           | Disabled (barred) |

Following settings apply to the UE (EUT) during the measurements in **FDD-Mode** only:

| Parameter                                        | Traffic Mode                                         | Idle Mode |
|--------------------------------------------------|------------------------------------------------------|-----------|
| UARFCN UE Uplink (EUT)<br>(according TS34.108)   | FDD 2 = 9262/ 9400/ 9538<br>FDD 5 = 4132/ 4183/ 4233 | --        |
| UARFCN Node B (downlink)<br>(according TS34.108) | FDD 2 = 9663/ 9800/ 9937<br>FDD 5 = 4358/ 4040/ 4457 |           |
| UE power class                                   | Class 3 (+24dBm), Class 4 (+21dBm) nominal           |           |
| HSDPA UE category/ HSUPA category                | No information                                       |           |
| Maximum power                                    | FDD 2/5 12.2kbps RMC -> all TPC bits up ("1")        | --        |
| Modulation                                       | 12.2kbps RMC-mode: QPSK-Modulation Scheme            | --        |
| Compression mode                                 | Off                                                  | --        |
| Node B Downlink physical channels<br>settings    | According Table E.5.1/E.5.1A in 3GPP TS34.121        |           |
| External attenuation RF/AF-<br>Input/Output      | Accord. Set-up calibration prior to measurements     |           |

## 4. Measurements

### 4.1. Conducted emissions on AC-Power lines

**Test location and equipment** (FOR REFERENCE NUMBERS PLEASE SEE CHAPTER 'LIST OF TEST EQUIPMENT')

|               |                                                                   |                                                                  |                                                                                                                                                        |
|---------------|-------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| test location | <input checked="" type="checkbox"/> CETECOM Essen (Chapter 2.2.1) | <input type="checkbox"/> Please see Chapter 2.2.2                | <input type="checkbox"/> Please see Chapter 2.2.3                                                                                                      |
| test site     | <input type="checkbox"/> 333 EMI field                            | <input checked="" type="checkbox"/> 348 EMI cond.                | <input type="checkbox"/> 334 EMS-field <input type="checkbox"/> 335 EMS cond <input type="checkbox"/> 347 Radio.lab. <input type="checkbox"/> 337 OATS |
| receiver      | <input checked="" type="checkbox"/> 001 ESS                       | <input type="checkbox"/> 377 ESCS 30                             | <input type="checkbox"/>                                                                                                                               |
| LISN          | <input checked="" type="checkbox"/> 005 ESH2-Z5                   | <input type="checkbox"/> 007 ESH3-Z6                             | <input type="checkbox"/> 300 ESH3-Z5 & 50Ω used for AE <input checked="" type="checkbox"/> no LISN for AE <input type="checkbox"/>                     |
| signaling     | <input type="checkbox"/> 017 CMD 65                               | <input type="checkbox"/> 323 CMD 55                              | <input type="checkbox"/> 340 CMD 55                                                                                                                    |
| signaling     | <input type="checkbox"/> 298 CMU                                  | <input type="checkbox"/> 460 CMU                                 | <input type="checkbox"/> 295 RACAL <input checked="" type="checkbox"/> 392 MT8820A                                                                     |
| line voltage  | <input type="checkbox"/> 230 V 50 Hz via public mains             | <input checked="" type="checkbox"/> 060 110 V 60 Hz via PAS 5000 |                                                                                                                                                        |

### Standards and Limits: Part 15, Subpart B, §15.107, RSS-GEN, ANSI C63.4:2009

| Frequency [MHz] | Conducted limit [dBμV] Class B |           | Conducted limit [dBμV] Class A |         |
|-----------------|--------------------------------|-----------|--------------------------------|---------|
|                 | QUASI-Peak                     | AVERAGE   | QUASI-Peak                     | AVERAGE |
| 0.15 – 0.5      | 66 to 56*                      | 56 to 46* | 79                             | 66      |
| 0.5 – 5         | 56                             | 46        | 73                             | 60      |
| 5 – 30          | 60                             | 50        | 73                             | 60      |

Remark: \* decreases with the logarithm of the frequency

### Test condition and measurement procedures test set-up

|                                  |                                                                                                                                                                                                                      |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| link to test system (if used):   | <input checked="" type="checkbox"/> air link <input type="checkbox"/> cable connection <input type="checkbox"/>                                                                                                      |
| EUT-grounding                    | <input checked="" type="checkbox"/> none <input type="checkbox"/> with power supply <input type="checkbox"/> additional connection                                                                                   |
| Equipment set up                 | <input checked="" type="checkbox"/> table top<br>(40 cm distance to reference ground plane (wall)) <input type="checkbox"/> floor standing<br>EUT stands isolated on reference ground plane (floor)                  |
| Climatic conditions              | Temperature: (21.9°C) Rel. humidity: (34)%                                                                                                                                                                           |
| EMI-Receiver (Analyzer) Settings | Span/Range: 150 kHz to 30 MHz<br>RBW: 9 kHz<br>Detector/Mode: Max PEAK-hold, repetitive scan for preliminary testing<br>Quasi-Peak Detector and Average-Detector for final measurement according ANSI 63.4, CISPR 16 |

Devices which can be connected to the public AC-power network, should be tested against the radio frequency voltage conducted back into the AC-power line in the frequency range 150kHz to 30 MHz. Compliance should be tested by measuring the radio frequency voltage between each power line and ground at the power terminals in the stated frequency range.

A 50Ω/50μH line impedance stabilization network (LISN) is used therefore. The EUT power input leads are connected through the LISN to the AC-power source. The LISN enclosure is electrically connected to the GND-plane. The measuring instrument is connected to the coaxial output of the LISN.

Tabletop devices were set-up on a 80 cm height over reference ground plane, floor standing equipment 10 cm raised above ground plane.

Measurements have been performed on each phase line and neutral line of the devices AC-power lines. The EUT was power supplied with 110 V/60Hz.

The EUT was tested in the defined operating mode and installed (connected) to accessory equipment according the general description of use given by the applicant.

**Preliminary testing** as a first step, determines the worst-case phase line (neutral or phase) as well as the most critical amplitude by changing the operating mode. A complete frequency-sweep is performed with PK-Detector.

**Final testing** for power phases and critical frequencies (Margin to AV- or QP limit lower than 3dB) as a second step includes measurements either on discrete frequency components with receivers detector set to Quasi-Peak and Average per frequency component or a complete sweep with corresponding detector.

**Measurement results**

| EUT Type and S/N or EUT set-up no. |                                                     | EUT set-up 1                        |                            |                                                                                                                                                                         |                                                       |
|------------------------------------|-----------------------------------------------------|-------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Diagram No.                        | Command or EUT operating mode or operating mode no. | Detector (Peak, CISPR AV, CISPR QP) | Power line (L1, L2, L3, N) | Additional (scan-) information (e.g. Pre-test Fast scan, Maxhold, Final measurement)                                                                                    | Result (passed / failed /final measurement necessary) |
| 1.1                                | EUT operating mode:<br><br>1+5+6                    | Peak, AV, QP                        | L1, N                      | The diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.3                                | EUT operating mode:<br><br>2+5+6                    | Peak, AV, QP                        | L1, N                      | The diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.4                                | EUT operating mode:<br><br>3+5+6                    | Peak, AV, QP                        | L1, N                      | The diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.8                                | EUT operating mode:<br><br>4+5+6                    | Peak, AV, QP                        | L1, N                      | The diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |

Remarks: The diagram contains the maximum values from L 1 + N

| EUT Type and S/N or EUT set-up no. |                                                     | EUT set-up 2                        |                            |                                                                                                                                                                         |                                                       |
|------------------------------------|-----------------------------------------------------|-------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Diagram No.                        | Command or EUT operating mode or operating mode no. | Detector (Peak, CISPR AV, CISPR QP) | Power line (L1, L2, L3, N) | Additional (scan-) information (e.g. Pre-test Fast scan, Maxhold, Final measurement)                                                                                    | Result (passed / failed /final measurement necessary) |
| 1.5                                | EUT operating mode:<br><br>5+6+12                   | Peak, AV, QP                        | L1, N                      | The Diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.6                                | EUT operating mode:<br><br>5+6+9                    | Peak, AV, QP                        | L1, N                      | The Diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |

Remarks: The diagram contains the maximum values from L 1 + N

| EUT Type and S/N or EUT set-up no. |                                                     | EUT set-up 4                        |                            |                                                                                                                                                                         |                                                       |
|------------------------------------|-----------------------------------------------------|-------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Diagram No.                        | Command or EUT operating mode or operating mode no. | Detector (Peak, CISPR AV, CISPR QP) | Power line (L1, L2, L3, N) | Additional (scan-) information (e.g. Pre-test Fast scan, Maxhold, Final measurement)                                                                                    | Result (passed / failed /final measurement necessary) |
| 1.9                                | EUT operating mode:<br><br>2+5+6                    | Peak, AV,QP                         | L1, N                      | The Diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.10                               | EUT operating mode:<br><br>5+6+11                   | Peak, AV,QP                         | L1, N                      | The Diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |
| 1.11                               | EUT operating mode:<br><br>5+6+8                    | Peak, AV,QP                         | L1, N                      | The Diagram shows PK/AV detector measurements on L1 and N with maxhold mode. Final measurement QP and AV was carried out on at least one frequency (please see diagram) | passed                                                |

Remarks: The diagram contains the maximum values from L 1 + N

Margin to Limit for verdict:  $M = L_T - R_R + C_{Loss}$

Abbreviations used:

- $R_R$  : Receiver readings in dB $\mu$ V
- $C_{Loss}$ : cable loss
- $L_T$  : Limit in dB $\mu$ V

## Verdict

Summary of measurement results for conducted emissions on AC-Power lines: Passed

## 4.2. Radiated field strength emissions below 30 MHz

**Test location and equipment** (FOR REFERENCE NUMBERS PLEASE SEE CHAPTER 'LIST OF TEST EQUIPMENT')

|                 |                                                                    |                                             |                                                                  |                                                 |                                                    |                                      |
|-----------------|--------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|--------------------------------------|
| test location   | <input checked="" type="checkbox"/> CETECOM Essen (Chapter. 2.2.1) |                                             | <input type="checkbox"/> Please see Chapter. 2.2.2               |                                                 | <input type="checkbox"/> Please see Chapter. 2.2.3 |                                      |
| test site       | <input checked="" type="checkbox"/> 441 EMI SAR                    | <input type="checkbox"/> 487 SAR NSA        | <input type="checkbox"/> 337 OATS                                | <input type="checkbox"/> 347 Radio.lab.         | <input type="checkbox"/>                           | <input type="checkbox"/>             |
| receiver        | <input type="checkbox"/> 377 ESCS30                                | <input checked="" type="checkbox"/> 001 ESS | <input type="checkbox"/>                                         | <input type="checkbox"/>                        | <input type="checkbox"/>                           | <input type="checkbox"/>             |
| spectr. analys. | <input type="checkbox"/> 584 FSU                                   | <input type="checkbox"/> 120 FSEM           | <input type="checkbox"/> 264 FSEK                                | <input type="checkbox"/>                        | <input type="checkbox"/>                           | <input type="checkbox"/>             |
| antenna         | <input type="checkbox"/> 574 BTA-L                                 | <input type="checkbox"/> 133 EMCO3115       | <input type="checkbox"/> 302 BBHA9170                            | <input type="checkbox"/> 289 CBL 6141           | <input checked="" type="checkbox"/> 030 HFH-Z2     | <input type="checkbox"/> 477 GPS     |
| signaling       | <input type="checkbox"/> 298 CMU                                   | <input type="checkbox"/> 460 CMU            | <input type="checkbox"/> 295 RACAL                               | <input checked="" type="checkbox"/> 392 MT8820A |                                                    |                                      |
| power supply    | <input type="checkbox"/> 456 EA 3013A                              | <input type="checkbox"/> 457 EA 3013A       | <input type="checkbox"/> 459 EA 2032-50                          | <input type="checkbox"/> 268 EA- 3050           | <input type="checkbox"/> 494 AG6632A               | <input type="checkbox"/> 498 NGPE 40 |
| otherwise       | <input type="checkbox"/> 400 FTC40x15E                             | <input type="checkbox"/> 401 FTC40x15E      | <input type="checkbox"/> 110 USB LWL                             | <input type="checkbox"/> 482 Filter Matrix      |                                                    |                                      |
| line voltage    | <input type="checkbox"/> 230 V 50 Hz via public mains              |                                             | <input checked="" type="checkbox"/> 060 110 V 60 Hz via PAS 5000 |                                                 |                                                    |                                      |

### Standards and Limits: CFR 47, §15.205, §15.209, RSS-GEN, ANSI C63.10:2009,

| Frequency<br>[MHz] | Field strength |                        | Measurement<br>distance<br>[meters] | Remarks                                                  |
|--------------------|----------------|------------------------|-------------------------------------|----------------------------------------------------------|
|                    | [μV/m]         | [dBuV/m]               |                                     |                                                          |
| 0.009 – 0.490      | 2400/f (kHz)   | 67.6 – 20Log(f) (kHz)  | 300                                 | Correction factor used due to measurement distance of 3m |
| 0.490 – 1.705      | 24000/f (kHz)  | 87.6 – 20 Log(f) (kHz) | 30                                  | Correction factor used due to measurement distance of 3m |
| 1.705 – 30         | 30             | 29.54                  | 30                                  | Correction factor used due to measurement distance of 3m |

Remark: \* decreases with the logarithm of the frequency

### Test condition and measurement test set-up

|                                  |                                                                                                                                                                                                                                                                          |                                            |                                                |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------|
| link to test system (if used):   | <input checked="" type="checkbox"/> air link                                                                                                                                                                                                                             | <input type="checkbox"/> cable connection  | <input type="checkbox"/>                       |
| EUT-grounding                    | <input checked="" type="checkbox"/> none                                                                                                                                                                                                                                 | <input type="checkbox"/> with power supply | <input type="checkbox"/> additional connection |
| Equipment set up                 | <input checked="" type="checkbox"/> table top                                                                                                                                                                                                                            | <input type="checkbox"/> floor standing    |                                                |
| Climatic conditions              | Temperature: (25.4)                                                                                                                                                                                                                                                      |                                            | Rel. humidity: (41)%                           |
| EMI-Receiver (Analyzer) Settings | Span/Range: 9kHz to 150kHz; 150 kHz to 30 MHz<br>RBW/VBW: 200Hz/auto; 10 kHz/ auto (ANSI63.10/CISPR#16)<br>Detector/ Mode: PEAK, TRACE max-hold mode, repetitive scan for exploratory measurements<br>Quasi-Peak, for final measurement on critical frequencies (f<1GHz) |                                            |                                                |

### General measurement procedures:

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.10: 2009

The **Equipment under Test (EUT)** was set-up to defined operating mode and installed (connected) to accessory equipment according the general description of use given by the applicant.

The measurement loop antenna was situated in 3m distance to the EUT. Between EUT and measurement antenna absorbers are covering the GND-Plane. With these absorbers the chamber fulfills CIPR16-1-4 site VSWR-criteria. Radiated magnetic emission measurements were made with the antenna situated in 1 meter height. The loop antenna was moved at least to 2-perpendicular axes (antenna vector in direction of EUT and parallel to EUT) in order to maximize the emissions, the EUT itself either over 3-orthogonal axes (no defined usage position) or 2-orthogonal axis (defined usage position) by the position manipulator.

According the standard the compliance should be checked in 30m and 300m measurement distance. Therefore a additional extrapolation factor was used in order to normalize the measurement data. The frequency dependent extrapolation factor used for this reduced measurement distance, can be found in the chapter annexes.

## Measurement Results

| Set-up No.     |                 | 5                |                 |                 |                     |          |                          |                                 |                    |                                     |
|----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Operating Mode |                 | 2+5+6+7          |                 |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.    | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBμV/m)<br>(L <sub>T</sub> ) |
| 2.63           | 0.58            | -9.1             | 1000            | 10.0            | 100                 | --       | 129.0                    | -36.1                           | 41.44              | 32.34                               |
|                | 1.175           | -13.4            | 1000            | 10.0            |                     | --       | 133.0                    | -34.6                           | 39.62              | 26.22                               |
|                | 2.64            | -16.0            | 1000            | 10.0            |                     | --       | 252.0                    | -29.7                           | 45.54              | 29.54                               |

Remark: see also plots enclosed in chapter 6

2.) emission peaks in region up to 100kHz, are external environmental emissions (not from EUT)

|                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Margin to Limit:</b></p> $M = L_T - R_R + C_F + D_F$ $= L_T - R_R + AF_{ANTENNA} + Cable_{LOSS} + D_F$ <p>Remark: positive margin means passed result</p> | <p><b>Abbreviations used:</b></p> <ul style="list-style-type: none"> <li>• R<sub>R</sub> : Receiver readings in dBμV/m</li> <li>• C<sub>F</sub>: Transducer in dB = AF (antenna factor) + CL (cable loss)</li> <li>• D<sub>F</sub> : distance correction factor (if different measurement distance used than specified in the standard)</li> <li>• L<sub>T</sub> : Limit in dBμV/m</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Verdict:** Summary of measurement results for radiated frequencies below 30 MHz - passed



### 4.3. Radiated field strength emissions, 30 MHz - 1 GHz

**Test location and equipment** (FOR REFERENCE NUMBERS PLEASE SEE CHAPTER 'LIST OF TEST EQUIPMENT')

|                 |                                                                    |                                             |                                                                  |                                                       |                                                    |                                                    |
|-----------------|--------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| test location   | <input checked="" type="checkbox"/> CETECOM Essen (Chapter. 2.2.1) |                                             | <input type="checkbox"/> Please see Chapter. 2.2.2               |                                                       | <input type="checkbox"/> Please see Chapter. 2.2.3 |                                                    |
| test site       | <input checked="" type="checkbox"/> 441 EMI SAR                    | <input type="checkbox"/> 487 SAR NSA        | <input type="checkbox"/> 337 OATS                                | <input type="checkbox"/> 347 Radio.lab.               | <input type="checkbox"/>                           | <input type="checkbox"/>                           |
| receiver        | <input checked="" type="checkbox"/> 377 ESCS30                     | <input checked="" type="checkbox"/> 001 ESS | <input type="checkbox"/>                                         | <input type="checkbox"/>                              | <input type="checkbox"/>                           | <input type="checkbox"/>                           |
| spectr. analys. | <input type="checkbox"/> 584 FSU                                   | <input type="checkbox"/> 120 FSEM           | <input type="checkbox"/> 264 FSEK                                | <input type="checkbox"/>                              | <input type="checkbox"/>                           | <input type="checkbox"/>                           |
| antenna         | <input type="checkbox"/> 574 BTA-L                                 | <input type="checkbox"/> 133 EMCO3115       | <input type="checkbox"/> 302 BBHA9170                            | <input type="checkbox"/> 289 CBL 6141                 | <input type="checkbox"/> 030 HFH-Z2                | <input type="checkbox"/> 477 GPS                   |
| signaling       | <input type="checkbox"/> 298 CMU                                   | <input type="checkbox"/> 460 CMU            | <input type="checkbox"/> 295 RACAL                               | <input checked="" type="checkbox"/> 392 MT8820A       |                                                    |                                                    |
| power supply    | <input type="checkbox"/> 456 EA 3013A                              | <input type="checkbox"/> 457 EA 3013A       | <input type="checkbox"/> 459 EA 2032-50                          | <input type="checkbox"/> 268 EA- 3050                 | <input type="checkbox"/> 494 AG6632A               | <input type="checkbox"/> 498 <sup>NGPE</sup><br>40 |
| otherwise       | <input type="checkbox"/> 400 FTC40x15E                             | <input type="checkbox"/> 401 FTC40x15E      | <input type="checkbox"/> 110 USB LWL                             | <input checked="" type="checkbox"/> 482 Filter Matrix |                                                    |                                                    |
| line voltage    | <input type="checkbox"/> 230 V 50 Hz via public mains              |                                             | <input checked="" type="checkbox"/> 060 110 V 60 Hz via PAS 5000 |                                                       |                                                    |                                                    |

### Standards and Limits: CFR 47, Part 15B, §15.209, RSS-GEN, ANSI 63.4:2009

| Frequency [MHz] | Radiated emission limits 3 meters |                     | Radiated emission limits, Class A, 10 meters |                     |
|-----------------|-----------------------------------|---------------------|----------------------------------------------|---------------------|
|                 | QUASI-Peak [microvolts/meter]     | QUASI-Peak [dBμV/m] | QUASI-Peak [microvolts/meter]                | QUASI-Peak [dBμV/m] |
| 30-88           | 100                               | 40                  | 90                                           | 39,0                |
| 88-216          | 150                               | 43,5                | 150                                          | 43,5                |
| 216-960         | 200                               | 46,0                | 210                                          | 46,4                |
| above 960       | 500                               | 54,0                | 300                                          | 59,5                |

### Test condition and measurement test set-up

|                                  |                                                                                                                                                                                       |                                            |                                                |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------|
| link to test system (if used):   | <input checked="" type="checkbox"/> air link                                                                                                                                          | <input type="checkbox"/> cable connection  | <input type="checkbox"/>                       |
| EUT-grounding                    | <input checked="" type="checkbox"/> none                                                                                                                                              | <input type="checkbox"/> with power supply | <input type="checkbox"/> additional connection |
| Equipment set up                 | <input checked="" type="checkbox"/> table top 0.8m height                                                                                                                             | <input type="checkbox"/> floor standing    |                                                |
| Climatic conditions              | Temperature: (22±3°C)                                                                                                                                                                 |                                            | Rel. humidity: (40±20)%                        |
| EMI-Receiver (Analyzer) Settings | Span/Range: 30 MHz to 1 GHz<br>RBW/VBW: 120 kHz / (auto)<br>Detector/ Mode: PEAK, TRACE max-hold mode, repetitive scan<br>Quasi-Peak, for final measurement for critical measurements |                                            |                                                |

### Restricted bands of operation, §15.205

| MHz               | MHz                 | MHz           | GHz         |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.15    |
| 0.495-0.505       | 16.69475-16.69525   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.215-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675   | 156.7-156.9         | 2690-2900     | 22.01-23.12 |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725 | 322-335.4           | 3600-4400     | --          |
| 13.36-13.41       | --                  | --            | --          |

Remark: only spurious emissions are allowed within these frequency bands not exceeding the limits per §15.209

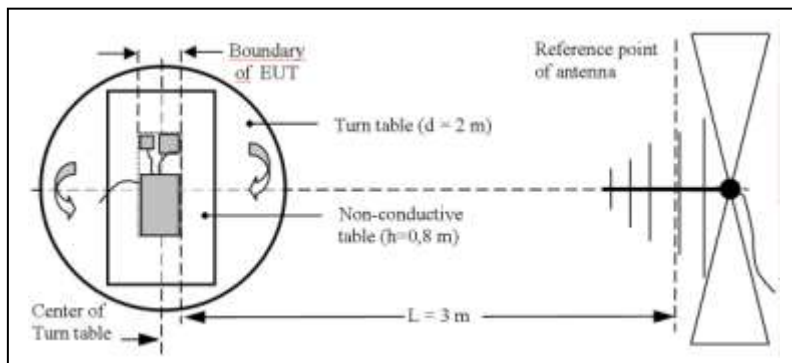
### General measurement procedures:

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.4: 2009

The **Equipment under Test (EUT)** set-up to defined operating mode and installed (connected) to accessory equipment according the general description of use given by the applicant.

### MEASUREMENT METHOD (30 MHz < f < 1 GHz):

An EMI analyzer together with a broadband antenna was used in order to identify the emissions from the EUT by positioning the antenna close to the EUT surfaces.



The interconnecting cables and equipment position were varied in order to maximize the emissions. Then most critical frequencies are recorded for further investigations. Based on the exploratory measurements, the most critical frequencies are re-measured by maintaining the EUT's operating mode, cable position, etc. The EUT was placed on a non-conductive support of 0.8 m height. By rotating the turntable angle in the range 0 to 360 degree, the EUT itself either over

3-orthogonal axis (not defined usage position) or 2-orthogonal axis (defined usage position) and the measurement antenna height from 1 meter to 4 meters, the maximized emissions are recorded. The measurements are performed for both polarizations of the measuring antenna: horizontal and vertical.

### Measurement Results Op. Mode TX according FCC 15.205&15.109 and Canada RSS-210/RSS-Gen.

All emissions fulfill the general emission limits (also restricted bands)

| Set-up No.     |                 | 5                |                 |                 |                     |          |                          |                                 |                    |                                     |
|----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Operating Mode |                 | 2+5+7            |                 |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.    | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBμV/m)<br>(L <sub>T</sub> ) |
| 2.58           | 67.97           | 35.2             | 1000            | 120.000         | 169.0               | V        | 70.0                     | 6.9                             | 4.80               | 40.00                               |

Remark: \*.) see also plots enclosed in chapter 6. Measurement diagrams

**Measurement Results Op. Mode RX according FCC §15.109 and RSS-Gen.**

| Set-up No.     |                 | 5                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode |                 | 4+7+10                 |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.    | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.56           | 66.30           | 36.2                   | 1000.0          | 120.000         | 117.0               | V        | 144.0                    | 7.1                             | 3.8                | 40.0                                      |
|                | 150.00          | 37.6                   | 1000.0          | 120.000         | 128.0               | H        | 216.0                    | 8.7                             | 5.9                | 43.5                                      |
|                | 224.760         | 42.2                   | 1000.0          | 120.000         | 100.0               | V        | 94.0                     | 12.5                            | 3.8                | 46.0                                      |
|                | 952.480         | 30.1                   | 1000.0          | 120.000         | 174.0               | V        | 52.0                     | 27.0                            | 15.9               | 46.0                                      |

Remark: \*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.     |                 | 5                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode |                 | 4+7+10                 |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.    | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.57           | 36.060000       | 32.8                   | 1000.0          | 120.000         | 224.0               | H        | 312.0                    | 19.1                            | 7.2                | 40.0                                      |
|                | 66.970000       | 11.9                   | 1000.0          | 120.000         | 100.0               | V        | 181.0                    | 7.0                             | 28.1               | 40.0                                      |
|                | 229.400000      | 36.9                   | 1000.0          | 120.000         | 100.0               | H        | 270.0                    | 12.6                            | 9.1                | 46.0                                      |
|                | 360.030000      | 41.0                   | 1000.0          | 120.000         | 100.0               | H        | 183.0                    | 16.4                            | 5.0                | 46.0                                      |
|                | 675.230000      | 42.7                   | 1000.0          | 120.000         | 100.0               | V        | 29.0                     | 23.2                            | 3.3                | 46.0                                      |

Remark: \*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.     |                 | 5                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode |                 | 3+7+10                 |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.    | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.60           | 36.070000       | 34.4                   | 1000.0          | 120.000         | 237.0               | H        | 122.0                    | 19.1                            | 5.6                | 40.0                                      |
|                | 65.470000       | 21.4                   | 1000.0          | 120.000         | 127.0               | V        | 200.0                    | 7.2                             | 18.6               | 40.0                                      |
|                | 71.990000       | 25.2                   | 1000.0          | 120.000         | 153.0               | V        | 230.0                    | 6.7                             | 14.8               | 40.0                                      |
|                | 90.010000       | 39.9                   | 1000.0          | 120.000         | 116.0               | V        | 220.0                    | 8.2                             | 3.6                | 43.5                                      |
|                | 120.010000      | 37.0                   | 1000.0          | 120.000         | 187.0               | H        | 135.0                    | 8.0                             | 6.5                | 43.5                                      |
|                | 204.010000      | 41.4                   | 1000.0          | 120.000         | 163.0               | H        | 61.0                     | 11.6                            | 2.1                | 43.5                                      |
|                | 216.040000      | 41.6                   | 1000.0          | 120.000         | 202.0               | H        | 48.0                     | 11.9                            | 4.4                | 46.0                                      |
|                | 644.770000      | 45.4                   | 1000.0          | 120.000         | 188.0               | H        | 353.0                    | 23.4                            | 0.6                | 46.0                                      |
|                | 764.790000      | 27.4                   | 1000.0          | 120.000         | 187.0               | V        | 0.0                      | 24.4                            | 18.6               | 46.0                                      |
|                | 879.930000      | 38.4                   | 1000.0          | 120.000         | 165.0               | V        | 13.0                     | 26.4                            | 7.6                | 46.0                                      |

Remark: \*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.     |                 | 5                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode |                 | 7+9+10                 |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.    | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.61           | 30.610000       | 38.3                   | 1000.0          | 120.000         | 154.0               | H        | 133.0                    | 21.6                            | 1.7                | 40.0                                      |
|                | 35.270000       | 35.5                   | 1000.0          | 120.000         | 309.0               | H        | 198.0                    | 19.4                            | 4.5                | 40.0                                      |
|                | 62.790000       | 34.6                   | 1000.0          | 120.000         | 100.0               | V        | 82.0                     | 8.0                             | 5.4                | 40.0                                      |
|                | 75.390000       | 34.0                   | 1000.0          | 120.000         | 115.0               | V        | 256.0                    | 6.8                             | 6.0                | 40.0                                      |
|                | 90.000000       | 43.6                   | 1000.0          | 120.000         | 363.0               | H        | 83.0                     | 8.2                             | -0.1               | 43.5                                      |
|                | 180.020000      | 38.4                   | 1000.0          | 120.000         | 201.0               | H        | 66.0                     | 10.8                            | 5.1                | 43.5                                      |
|                | 204.040000      | 41.8                   | 1000.0          | 120.000         | 176.0               | H        | 57.0                     | 11.6                            | 1.7                | 43.5                                      |
|                | 360.000000      | 38.5                   | 1000.0          | 120.000         | 100.0               | H        | 270.0                    | 16.4                            | 7.5                | 46.0                                      |
|                | 646.620000      | 38.3                   | 1000.0          | 120.000         | 100.0               | V        | 231.0                    | 23.4                            | 7.7                | 46.0                                      |
|                | 734.280000      | 42.2                   | 1000.0          | 120.000         | 100.0               | V        | 150.0                    | 24.0                            | 3.8                | 46.0                                      |

Remark: \*) see also plots enclosed in chapter 6. Measurement diagrams

Re-Tests with Notebooks without it's own AC/DC Adapter -> Diagram 2.61a.

| Set-up No.     |                 | 5 (without notebook charger) |                 |                 |                     |          |                          |                                 |                    |                                           |
|----------------|-----------------|------------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode |                 | 7+9+10                       |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.    | Frequency (MHz) | MaxPeak (dB $\mu$ V/m)       | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.61a          | 35.070000       | 33.2                         | 1000.0          | 120.000         | 223.0               | H        | 168.0                    | 19.5                            | 6.8                | 40.0                                      |
|                | 64.990000       | 38.4                         | 1000.0          | 120.000         | 322.0               | H        | 40.0                     | 7.3                             | 1.6                | 40.0                                      |
|                | 90.000000       | 35.1                         | 1000.0          | 120.000         | 100.0               | V        | 172.0                    | 8.2                             | 8.4                | 43.5                                      |

Remark: \*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.     |                 | 5                |                 |                 |                     |          |                          |                                 |                    |                                     |
|----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Operating Mode |                 | 7+8+10           |                 |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.    | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBμV/m)<br>(L <sub>T</sub> ) |
| 2.62           | 30.340000       | 35.9             | 1000.0          | 120.000         | 114.0               | H        | 237.0                    | 21.7                            | 4.1                | 40.0                                |
|                | 35.090000       | 35.9             | 1000.0          | 120.000         | 259.0               | H        | 88.0                     | 19.4                            | 4.1                | 40.0                                |
|                | 43.490000       | 30.0             | 1000.0          | 120.000         | 224.0               | H        | 151.0                    | 15.8                            | 10.0               | 40.0                                |
|                | 63.000000       | 31.9             | 1000.0          | 120.000         | 100.0               | V        | 208.0                    | 7.9                             | 8.1                | 40.0                                |
|                | 84.010000       | 38.3             | 1000.0          | 120.000         | 368.0               | H        | 196.0                    | 7.7                             | 1.7                | 40.0                                |
|                | 90.010000       | 39.5             | 1000.0          | 120.000         | 368.0               | H        | 196.0                    | 8.2                             | 4.0                | 43.5                                |
|                | 216.010000      | 43.8             | 1000.0          | 120.000         | 100.0               | H        | 300.0                    | 11.9                            | 2.2                | 46.0                                |
|                | 224.780000      | 42.6             | 1000.0          | 120.000         | 100.0               | H        | 295.0                    | 12.5                            | 3.4                | 46.0                                |
|                | 239.990000      | 34.0             | 1000.0          | 120.000         | 100.0               | H        | 304.0                    | 13.0                            | 12.0               | 46.0                                |
|                | 675.240000      | 40.6             | 1000.0          | 120.000         | 100.0               | V        | 45.0                     | 23.2                            | 5.4                | 46.0                                |

Remark: \*,) see also plots enclosed in chapter 6. Measurement diagrams

|                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Margin to Limit:</b></p> $M = L_T - R_R + C_F + D_F$ $= L_T - R_R + AF_{ANTENNA} + Cable_{LOSS} + D_F$ <p>Remark: positive margin means passed result</p> | <p><b>Abbreviations used:</b></p> <ul style="list-style-type: none"> <li>• R<sub>R</sub> : Receiver readings in dBμV/m</li> <li>• CF: Transducer in dB = AF (antenna factor) + CL (cable loss)</li> <li>• D<sub>F</sub> : distance correction factor (if different measurement distance used than specified in the standard)</li> <li>• L<sub>T</sub> : Limit in dBμV/m</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Verdict

Summary of measurement results for radiated emissions above 30 MHz and below 1 GHz : Passed

#### 4.4. Radiated emissions, above 1GHz

**Test location and equipment** (FOR REFERENCE NUMBERS PLEASE SEE CHAPTER 'LIST OF TEST EQUIPMENT')

|                 |                                                       |                                             |                                                                  |                                               |                                          |                                  |
|-----------------|-------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|-----------------------------------------------|------------------------------------------|----------------------------------|
| test site       | <input type="checkbox"/> 441 EMI SAR                  | <input type="checkbox"/> 348 EMI cond.      | <input checked="" type="checkbox"/> 443 EMI FAR                  | <input type="checkbox"/> 347 Radio.lab.       | <input type="checkbox"/> 337 OATS        | <input type="checkbox"/>         |
| equipment       | <input type="checkbox"/> 331 HC 4055                  | <input type="checkbox"/>                    | <input type="checkbox"/>                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| spectr. analys. | <input type="checkbox"/> 584 FSU                      | <input type="checkbox"/> 120 FSEM           | <input type="checkbox"/> 264 FSEK                                | <input checked="" type="checkbox"/> 489 ESU   | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| antenna meas    | <input type="checkbox"/> 574 BTA-L                    | <input type="checkbox"/> 289 CBL 6141       | <input checked="" type="checkbox"/> 439 HL 562                   | <input checked="" type="checkbox"/> 549 HL025 | <input type="checkbox"/> 302 BBHA9170    | <input type="checkbox"/> 477 GPS |
| antenna meas    | <input type="checkbox"/> 123 HUF-Z2                   | <input type="checkbox"/> 132 HUF-Z3         | <input type="checkbox"/> 030 HFH-Z2                              | <input type="checkbox"/>                      | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| antenna subst   | <input type="checkbox"/> 071 HUF-Z2                   | <input type="checkbox"/> 020 EMCO3115       | <input type="checkbox"/> 063 LP 3146                             | <input type="checkbox"/> 303 BBHA9170         | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| power meter     | <input type="checkbox"/> 009 NRV                      | <input type="checkbox"/> 010 URV5-Z2        | <input type="checkbox"/> 011 URV5-Z2                             | <input type="checkbox"/>                      | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| signalgener.    | <input type="checkbox"/> 008 SMG                      | <input type="checkbox"/> 140 SMHU           | <input type="checkbox"/> 263 SMP04                               | <input type="checkbox"/>                      | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| power meter     | <input type="checkbox"/> 262 NRV-S                    | <input type="checkbox"/> 266 NRV-Z31        | <input type="checkbox"/> 265 NRV-Z33                             | <input type="checkbox"/> 261 NRV-Z55          | <input type="checkbox"/> 356 NRV-Z1      | <input type="checkbox"/>         |
| multimeter      | <input type="checkbox"/> 341 Fluke 112                | <input type="checkbox"/>                    | <input type="checkbox"/>                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                 | <input type="checkbox"/>         |
| signaling       | <input type="checkbox"/> 298 CMU                      | <input checked="" type="checkbox"/> 465 CMU | <input type="checkbox"/> 295 RACAL                               | <input type="checkbox"/> 392 MT8820A          |                                          |                                  |
| DCpower         | <input type="checkbox"/> 086 LNG50-10                 | <input type="checkbox"/> 087 EA3013         | <input type="checkbox"/> 354 NGPE 40                             | <input type="checkbox"/> 349 car battery      | <input type="checkbox"/> 350 Car battery | <input type="checkbox"/>         |
| line voltage    | <input type="checkbox"/> 230 V 50 Hz via public mains |                                             | <input checked="" type="checkbox"/> 060 110 V 60 Hz via PAS 5000 |                                               |                                          |                                  |

**Standards and Limits: CFR 47, §15.109 (class B), §15.209, RSS-GEN, RSS-210, ANSI C63.4:**

| Frequency [MHz] | Radiated emission limits, 3 meters measurement distance |                |                            |                  |
|-----------------|---------------------------------------------------------|----------------|----------------------------|------------------|
|                 | AV<br>[microvolts/meter]                                | AV<br>[dBμV/m] | Peak<br>[microvolts/meter] | Peak<br>[dBμV/m] |
| above 1GHz      | 500                                                     | 54.0           | 5000                       | 74.0             |

#### Test condition and measurement test set-up

|                                |                                                                                                                                                                                                                                                                                                      |                                            |                                                |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------|
| link to test system (if used): | <input checked="" type="checkbox"/> air link                                                                                                                                                                                                                                                         | <input type="checkbox"/> cable connection  | <input type="checkbox"/>                       |
| EUT-grounding                  | <input checked="" type="checkbox"/> none                                                                                                                                                                                                                                                             | <input type="checkbox"/> with power supply | <input type="checkbox"/> additional connection |
| Equipment set up               | <input checked="" type="checkbox"/> table top 1.5m height                                                                                                                                                                                                                                            | <input type="checkbox"/> floor standing    |                                                |
| Climatic conditions            | Temperature: (22±3°C)                                                                                                                                                                                                                                                                                |                                            | Rel. humidity: (40±20)%                        |
| Spectrum-Analyzer settings     | Span/Frequency range : 1..12.75 GHz +single frequencies determined in step 1<br>RBW/VBW: 1 MHz / 3 MHz<br>Detector/ Mode: Peak, MAX-hold, repetitive scan for exploratory measurement<br>PEAK/ AVERAGE, for final measurement for critical frequencies<br>Antenna Polarisation Horizontal / Vertical |                                            |                                                |

#### General measurement procedures:

The measurement test set-up and test procedure are in accordance with the provisions described in ANSI 63.4: 2009.

The **Equipment under Test** (EUT) was placed on a non-conductive positioning table of 0.8 or 1.5 meter height depending from the frequency range. The measuring distance was set to 3 meter for frequencies up to 18GHz and 1 meter above 18GHz.

The EUT was set-up to defined operating mode and installed (connected) to accessory equipment according the general description of use given by the applicant.

For RX measurements (IDLE GSM850/1900) the upper frequency to investigate was choosen 5'times the associated TX frequency for example in GSM1900 band as high as 10GHz.

For TX measurements (WLAN mode) the spectrum was investigated up to 12.75 GHz due to noise level for higher frequencies.

**1. Step exploratory measurement:** see above description as in the frequency range lower 1GHz.

**2. Step Final Measurement(1 GHz<f <18 GHz):** On the Worst-Case EUT configuration, frequency components with a margin lower than 6 dB to the limits, will be re-measured by maintaining the EUT's operating mode, cable position, etc.. For find the worst-case emission, the turntable was changed in the range 0 to 360 degree and the EUT itself either over 3-orthogonal axis (not defined usage position) or 2-orthogonal axis (defined usage position). The measurements are performed for both polarizations of the measuring antenna: horizontal and vertical.

#### Results RX1900 Mode:

|                 |          |
|-----------------|----------|
| Set-up No.:     | 3        |
| Operating Mode: | 3+6+7+10 |

| Diagram no. | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas . Time (ms) | Bandwidth (kHz) | Antenn a height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
|-------------|-----------------|------------------------|------------------|-----------------|----------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| 2.70        | PK-detector     |                        |                  |                 |                      |          |                          |                                 |                    |                                           |
|             | 1199.80         | 39.9                   | 100.0            | 1000.000        | 155.0                | H        | -6.0                     | 0.3                             | 34.1               | 74.0                                      |
|             | 1329.80         | 45.1                   | 100.0            | 1000.000        | 155.0                | H        | 220.0                    | 1.5                             | 28.9               | 74.0                                      |
|             | 1599.80         | 50.8                   | 100.0            | 1000.000        | 155.0                | H        | 123.0                    | 3.6                             | 23.2               | 74.0                                      |
|             | AV-detector     |                        |                  |                 |                      |          |                          |                                 |                    |                                           |
|             | 1200.20         | 32.8                   | 100.0            | 1000.000        | 155.0                | H        | 216.0                    | 0.3                             | 21.2               | 54.0                                      |
|             | 1400.20         | 34.9                   | 100.0            | 1000.000        | 155.0                | H        | 35.0                     | 2.2                             | 19.1               | 54.0                                      |
|             | 1500.20         | 51.1                   | 100.0            | 1000.000        | 155.0                | H        | 45.0                     | 2.9                             | 2.9                | 54.0                                      |
|             | 1600.20         | 42.9                   | 100.0            | 1000.000        | 155.0                | H        | 122.0                    | 3.6                             | 11.1               | 54.0                                      |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.:     |                 | 3                      |                  |                 |                      |          |                          |                                 |                    |                                           |
|-----------------|-----------------|------------------------|------------------|-----------------|----------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode: |                 | 3+6+7+10               |                  |                 |                      |          |                          |                                 |                    |                                           |
| Diagram no.     | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas . Time (ms) | Bandwidth (kHz) | Antenn a height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.71            | PK-detector     |                        |                  |                 |                      |          |                          |                                 |                    |                                           |
|                 | 3000.00         | 46.3                   | 100.0            | 1000.000        | 155.0                | V        | 45.0                     | -1.7                            | 27.7               | 74.0                                      |
|                 | 4500.10         | 50.4                   | 100.0            | 1000.000        | 155.0                | H        | 2.0                      | 1.9                             | 23.6               | 74.0                                      |
|                 | 6000.60         | 52.2                   | 100.0            | 1000.000        | 155.0                | V        | 131.0                    | 5.9                             | 21.8               | 74.0                                      |
|                 | AV-detector     |                        |                  |                 |                      |          |                          |                                 |                    |                                           |
|                 | 3000.10         | 45.4                   | 100.0            | 1000.000        | 155.0                | H        | 57.0                     | -1.7                            | 8.6                | 54.0                                      |
|                 | 4500.40         | 43.8                   | 100.0            | 1000.000        | 155.0                | H        | 2.0                      | 1.9                             | 10.2               | 54.0                                      |
|                 | 6000.50         | 46.9                   | 100.0            | 1000.000        | 155.0                | V        | 130.0                    | 5.9                             | 7.1                | 54.0                                      |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

**RESULTS RX850 MODE:**

| Set-up No.:     |                 | 3                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|-----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode: |                 | 4+6+7+10               |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.     | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.72            | PK-detector     |                        |                 |                 |                     |          |                          |                                 |                    |                                           |
|                 | 1500.20         | 54.1                   | 100.0           | 1000.000        | 155.0               | H        | 45.0                     | 2.9                             | 19.9               | 74.0                                      |
|                 | 1600.60         | 50.9                   | 100.0           | 1000.000        | 155.0               | H        | 136.0                    | 3.6                             | 23.1               | 74.0                                      |
|                 | AV-detector     |                        |                 |                 |                     |          |                          |                                 |                    |                                           |
|                 | 1500.20         | 51.4                   | 100.0           | 1000.000        | 155.0               | H        | 45.0                     | 2.9                             | 2.6                | 54.0                                      |
|                 | 1599.80         | 44.0                   | 100.0           | 1000.000        | 155.0               | H        | 137.0                    | 3.6                             | 10.0               | 54.0                                      |

Remark: 1.) diagrams shows PK/AV detector measurements

\*).) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.:     |                 | 3                      |                 |                 |                     |          |                          |                                 |                    |                                           |
|-----------------|-----------------|------------------------|-----------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------------|
| Operating Mode: |                 | 4+6+7+10               |                 |                 |                     |          |                          |                                 |                    |                                           |
| Diagram no.     | Frequency (MHz) | MaxPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dB $\mu$ V/m)<br>(L <sub>T</sub> ) |
| 2.73            | PK-detector     |                        |                 |                 |                     |          |                          |                                 |                    |                                           |
|                 | 3000.00         | 51.9                   | 100.0           | 1000.000        | 155.0               | V        | -2.0                     | -1.7                            | 22.1               | 74.0                                      |
|                 | 3193.60         | 44.6                   | 100.0           | 1000.000        | 155.0               | V        | 216.0                    | -1.5                            | 29.4               | 74.0                                      |
|                 | 3442.50         | 40.6                   | 100.0           | 1000.000        | 155.0               | V        | -21.0                    | -0.9                            | 33.4               | 74.0                                      |
|                 | 3695.50         | 46.3                   | 100.0           | 1000.000        | 155.0               | V        | 313.0                    | -0.2                            | 27.7               | 74.0                                      |
|                 | 3993.00         | 46.6                   | 100.0           | 1000.000        | 155.0               | V        | 306.0                    | 0.3                             | 27.4               | 74.0                                      |
|                 | 4500.40         | 49.6                   | 100.0           | 1000.000        | 155.0               | H        | -9.0                     | 1.9                             | 24.4               | 74.0                                      |
|                 | AV-detector     |                        |                 |                 |                     |          |                          |                                 |                    |                                           |
|                 | 3000.40         | 44.7                   | 100.0           | 1000.000        | 155.0               | H        | 48.0                     | -1.7                            | 9.3                | 54.0                                      |
|                 | 3696.00         | 38.3                   | 100.0           | 1000.000        | 155.0               | V        | 322.0                    | -0.2                            | 15.7               | 54.0                                      |
|                 | 4500.50         | 43.2                   | 100.0           | 1000.000        | 155.0               | H        | -6.0                     | 1.9                             | 10.8               | 54.0                                      |

Remark: 1.) diagrams shows PK/AV detector measurements

\*).) see also plots enclosed in chapter 6. Measurement diagrams



**RESULTS RX W-CDMA BAND 5 MODE:**

| Set-up No.:     |                 | 3                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                 | 6+7+9+10         |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.74            | PK-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1500.20         | 51.5             | 100.0           | 1000.000        | 155.0               | H        | 45.0                     | 2.9                          | 22.5            | 74.0                             |
|                 | 1600.20         | 50.8             | 100.0           | 1000.000        | 155.0               | H        | 133.0                    | 3.6                          | 23.2            | 74.0                             |
|                 | AV-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1500.20         | 51.2             | 100.0           | 1000.000        | 155.0               | H        | 18.0                     | 2.9                          | 2.8             | 54.0                             |
|                 | 1599.80         | 44.3             | 100.0           | 1000.000        | 155.0               | H        | 136.0                    | 3.6                          | 9.7             | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*..) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.:     |                 | 3                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                 | 6+7+9+10         |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.75            | PK-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 3000.00         | 50.4             | 100.0           | 1000.000        | 155.0               | V        | -4.0                     | -1.7                         | 23.6            | 74.0                             |
|                 | AV-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 2999.60         | 44.8             | 100.0           | 1000.000        | 155.0               | V        | -13.0                    | -1.7                         | 9.2             | 54.0                             |
|                 | 3696.00         | 38.3             | 100.0           | 1000.000        | 155.0               | V        | 313.0                    | -0.2                         | 15.7            | 54.0                             |
|                 | 4500.50         | 42.1             | 100.0           | 1000.000        | 155.0               | H        | 2.0                      | 1.9                          | 11.9            | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*..) see also plots enclosed in chapter 6. Measurement diagrams

**Results RX W-CDMA Band 2 Mode:**

| Set-up No.:     |                 | 3                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                 | 6+7+8+10         |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.76            | PK-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1500.20         | 54.9             | 100.0           | 1000.000        | 155.0               | H        | 46.0                     | 2.9                          | 19.1            | 74.0                             |
|                 | 1600.20         | 50.9             | 100.0           | 1000.000        | 155.0               | H        | 47.0                     | 3.6                          | 23.1            | 74.0                             |
|                 | 1961.00         | 59.0             | 100.0           | 1000.000        | 155.0               | V        | 307.0                    | 6.9                          | 15.0            | 74.0                             |
|                 | 2605.40         | 55.3             | 100.0           | 1000.000        | 155.0               | H        | -13.0                    | 10.1                         | 18.7            | 74.0                             |
|                 | 2735.00         | 52.9             | 100.0           | 1000.000        | 155.0               | H        | 313.0                    | 10.9                         | 21.1            | 74.0                             |
|                 | AV-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1500.20         | 52.2             | 100.0           | 1000.000        | 155.0               | H        | 42.0                     | 2.9                          | 1.8             | 54.0                             |
|                 | 1600.20         | 42.6             | 100.0           | 1000.000        | 155.0               | H        | 42.0                     | 3.6                          | 11.4            | 54.0                             |
|                 | 1961.40         | 44.5             | 100.0           | 1000.000        | 155.0               | V        | 309.0                    | 6.9                          | 9.5             | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

| Set-up No.:     |                 | 3                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                 | 6+7+8+10         |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.77            | PK-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 3000.00         | 52.6             | 100.0           | 1000.000        | 155.0               | V        | -2.0                     | -1.7                         | 21.4            | 74.0                             |
|                 | 6000.40         | 45.3             | 100.0           | 1000.000        | 155.0               | H        | 47.0                     | 5.9                          | 28.7            | 74.0                             |
|                 | AV-detector     |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 2999.60         | 45.4             | 100.0           | 1000.000        | 155.0               | V        | -2.0                     | -1.7                         | 8.6             | 54.0                             |
|                 | 3696.00         | 38.0             | 100.0           | 1000.000        | 155.0               | V        | 313.0                    | -0.2                         | 16.0            | 54.0                             |
|                 | 4500.50         | 41.8             | 100.0           | 1000.000        | 155.0               | V        | 85.0                     | 1.9                          | 12.2            | 54.0                             |
|                 | 5250.50         | 38.6             | 100.0           | 1000.000        | 155.0               | V        | 88.0                     | 4.3                          | 15.4            | 54.0                             |
|                 | 6000.50         | 43.6             | 100.0           | 1000.000        | 155.0               | H        | 48.0                     | 5.9                          | 10.4            | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

**Results TX (WLAN on and GSM 850 on)**

| Set-up No.:     |                       | 1                |                  |                 |                     |          |                          |                                 |                    |                                     |
|-----------------|-----------------------|------------------|------------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Operating Mode: |                       | 1+5+6            |                  |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.     | Frequency (MHz)       | MaxPeak (dBμV/m) | Meas . Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBμV/m)<br>(L <sub>T</sub> ) |
| 2.50            | PK-detector           |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 1674.0 <sup>2.)</sup> | 61.20            | 10.0             | 1000            | 100                 | H/V      | 0°..360°                 | --                              | 12.8               | 74.0                                |
|                 | 1000-2000             | <57.5            | 10.0             | 1000            | 100                 | H/V      | 0°..360°                 | --                              | >16.5              |                                     |
|                 | AV-detector           |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 1674.0 <sup>2.)</sup> | 45.16            | 10.0             | 1000            | 100                 | H/V      | 0°..360°                 | --                              | 8.84               | 54.0                                |
|                 | 1000-2000             | < 44.0           | 10.0             | 1000            | 100                 | H/V      | 0°..360°                 | --                              | >10.0              |                                     |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

2.) Harmonic of GSM Carrier on diagramm

| Set-up No.:     |                      | 1                |                  |                 |                     |          |                          |                                 |                    |                                     |
|-----------------|----------------------|------------------|------------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Operating Mode: |                      | 1+5+6            |                  |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.     | Frequency (MHz)      | MaxPeak (dBµV/m) | Meas . Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBµV/m)<br>(L <sub>T</sub> ) |
| 2.51            | PK-detector          |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 2412.0 <sup>2)</sup> | 102.02           | 10               | 1000            | 100                 | H/V      | 0°..360°                 | --                              | --                 | 74.0                                |
|                 | 2511.0 <sup>3)</sup> | 79.16            | 10               | 1000            | 100                 | H/V      | 0°..360°                 | --                              | --                 |                                     |
|                 | AV-detector          |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 2511.0 <sup>3)</sup> | 60.0             | 10               | 1000            | 100                 | H/V      | 0°..360°                 | --                              | --                 | 54.0                                |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

2.) WLAN Carrier at 2412MHz (channel 1)

3.) 3<sup>rd</sup> harmonic of 837MHz = channel 192 GSM850 -> Limit of -13dBm according FCC Part 22/RSS-132 is valid and not §15.209/RSS-210

|                 |                 |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|-----------------|-----------------|------------------|------------------|-----------------|---------------------|----------|--------------------------|---------------------------------|--------------------|-------------------------------------|
| Set-up No.:     |                 | 1                |                  |                 |                     |          |                          |                                 |                    |                                     |
| Operating Mode: |                 | 1+5+6            |                  |                 |                     |          |                          |                                 |                    |                                     |
| Diagram no.     | Frequency (MHz) | MaxPeak (dBμV/m) | Meas . Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB)<br>(C <sub>F</sub> ) | Margin (dB)<br>(M) | Limit (dBμV/m)<br>(L <sub>T</sub> ) |
| 2.52            | PK-detector     |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 4083.08         | 44.6             | 100.0            | 1000.000        | 155.0               | V        | 264.0                    | 0.6                             | 29.4               | 74.0                                |
|                 | 4185.34         | 58.4             | 100.0            | 1000.000        | 155.0               | V        | 293.0                    | 0.9                             | 15.6               |                                     |
|                 | AV-detector     |                  |                  |                 |                     |          |                          |                                 |                    |                                     |
|                 | 4087.88         | 28.3             | 100.0            | 1000.000        | 155.0               | H        | 279.0                    | 0.6                             | 25.7               | 54.0                                |
|                 | 4185.04         | 37.0             | 100.0            | 1000.000        | 155.0               | V        | 292.0                    | 0.9                             | 17.0               |                                     |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

**Results TX (WLAN on and GSM 1900 on)**

Both independent transmitters have been switched-on, to check for intermodulation emissions.

| Set-up No.:     |                    | 1                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|--------------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                    | 2+5+6            |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz)    | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.53            | <b>PK-detector</b> |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1351.90            | 55.8             | 100.0           | 1000.000        | 155.0               | V        | 264.0                    | 32.0                         | 18.2            | 74.0                             |
|                 | <b>AV-detector</b> |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 1366.10            | 43.8             | 100.0           | 1000.000        | 155.0               | H        | 210.0                    | 32.2                         | 10.2            | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

2.) GSM1900 Carrier (Ch. 661) on diagram

| Set-up No.:     |                    | 1                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|--------------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                    | 2+5+6            |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz)    | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.54            | <b>PK-detector</b> |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 2000-2800          | < 62.5           | 100.0           | 1000.000        | 155.0               | H/V      | 0°..360°                 | --                           | 11.5            | 74.0                             |
|                 | <b>AV-detector</b> |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 2000-2800          | < 48.0           | 100.0           | 1000.000        | 155.0               | H/V      | 0°..360°                 | --                           | 6.0             | 54.0                             |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

2.) WLAN Carrier (Ch.1) on diagram

| Set-up No.:     |                    | 1                |                 |                 |                     |          |                          |                              |                 |                                  |
|-----------------|--------------------|------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------------------------|-----------------|----------------------------------|
| Operating Mode: |                    | 2+5+6            |                 |                 |                     |          |                          |                              |                 |                                  |
| Diagram no.     | Frequency (MHz)    | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) (C <sub>F</sub> ) | Margin (dB) (M) | Limit (dBμV/m) (L <sub>T</sub> ) |
| 2.55            | <b>PK-detector</b> |                  |                 |                 |                     |          |                          |                              |                 |                                  |
|                 | 3759.90            | 46.8             | 100.0           | 1000.000        | 155.0               | V        | 172.0                    | -0.1                         | 27.2            | 74.0                             |
|                 | 3987.50            | 40.7             | 100.0           | 1000.000        | 155.0               | V        | 116.0                    | 0.2                          | 33.3            |                                  |
|                 | 5640.10            | 53.3             | 100.0           | 1000.000        | 155.0               | H        | 226.0                    | 4.6                          | 66.7            |                                  |
|                 | 9648.00            | 52.3             | 100.0           | 1000.000        | 155.0               | V        | 22.0                     | 13.6                         | 67.7            |                                  |

| 2.55 | AV-detector |      |       |          |       |   |       |      |      |      |
|------|-------------|------|-------|----------|-------|---|-------|------|------|------|
|      | 3215.96     | 33.9 | 100.0 | 1000.000 | 155.0 | V | 136.0 | -1.4 | 66.1 | 54.0 |
|      | 3308.08     | 27.1 | 100.0 | 1000.000 | 155.0 | V | 174.0 | -1.1 | 72.9 |      |
|      | 3759.940    | 31.7 | 100.0 | 1000.000 | 155.0 | V | 178.0 | -0.1 | 22.3 |      |
|      | 3988.980    | 29.1 | 100.0 | 1000.000 | 155.0 | V | 223.0 | 0.2  | 24.9 |      |
|      | 5639.960    | 37.0 | 100.0 | 1000.000 | 155.0 | H | 227.0 | 4.6  | 63.0 |      |
|      | 9647.80     | 39.3 | 100.0 | 1000.000 | 155.0 | V | 9.0   | 13.6 | 60.8 |      |

Remark: 1.) diagrams shows PK/AV detector measurements

\*) see also plots enclosed in chapter 6. Measurement diagrams

#### Margin to Limit:

$$M = L_T - R_R + C_F + D_F$$

$$= L_T - R_R + AF_{ANTENNA} + Cable_{LOSS} + D_F$$

Remark: positive margin means passed result

#### Abbreviations used:

- $R_R$  : Receiver readings in dB $\mu$ V/m
- CF: Transducer in dB = AF (antenna factor) + CL (cable loss)
- $D_F$  : distance correction factor (if different measurement distance used than specified in the standard)
- $L_T$  : Limit in dB $\mu$ V/m

#### Verdict

Summary of measurement results for radiated emissions above 1 GHz : Passed

#### 4.5. Measurement uncertainties

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor **k**, such that a confidence level of approximately 95% is achieved.

For uncertainty determination, each component used in the concrete measurement set-up was taken in account and it's contribution to the overall uncertainty according it's statistical distribution calculated.

Following table shows expectable uncertainties for each measurement type performed.

| Measurement                                                | Frequency range   | Calculated uncertainty based on a confidence level of 95% | Remarks:            |
|------------------------------------------------------------|-------------------|-----------------------------------------------------------|---------------------|
| RF-Power Output conducted                                  | 9 kHz .. 20 GHz   | 1.0 dB                                                    | --                  |
| RF-Power Output radiated                                   | 30 MHz .. 4 GHz   | 3.17 dB                                                   | Substitution method |
| Conducted RF-emissions on antenna ports                    | 9 kHz .. 20 GHz   | 1.0 dB                                                    | --                  |
| Radiated RF-emissions enclosure                            | 150 kHz .. 30 MHz | 5.0 dB                                                    | Magnetic field      |
|                                                            | 30 MHz .. 1 GHz   | 4.2 dB                                                    | E-Field             |
|                                                            | 1 GHz .. 18GHz    | 4.8 dB                                                    | E-Field             |
|                                                            | 1 GHz .. 20 GHz   | 3.17 dB                                                   | Substitution method |
| Occupied bandwidth                                         | 9 kHz .. 4 GHz    | 0.1272 ppm<br>(Delta Marker method)                       | Frequency error     |
|                                                            |                   | 1 dB                                                      | Power               |
| Emission bandwidth                                         | 9 kHz .. 4 GHz    | 0.1272 ppm<br>(Delta Marker method)                       | Frequency error     |
|                                                            |                   | 1 dB                                                      | Power               |
| Frequency stability                                        | 9 kHz .. 20 GHz   | 0.0636 ppm                                                | --                  |
| Conducted emissions on AC-mains port (U <sub>CISPR</sub> ) | 9 kHz .. 150 kHz  | 4.0 dB                                                    | --                  |
|                                                            | 150 kHz .. 30 MHz | 3.6 dB                                                    |                     |

**Table : measurement uncertainties, valid for conducted/radiated measurements**

## 5. Instruments and Ancillary

### 5.1. Used equipment “CTC”

The “Ref.-No” in the left column of the following tables allows the clear identification of the laboratory equipment.

#### 5.1.1. TEST SOFTWARE AND FIRMWARE OF EQUIPMENT

| Ref.-No. | Equipment                               | Type                   | Serial-No.     | Version of Firmware or Software during the test      |
|----------|-----------------------------------------|------------------------|----------------|------------------------------------------------------|
| 001      | emi test receiver                       | ESS                    | 825132/017     | Firm.= 1.21 , OTP=2.0, GRA=2.0                       |
| 012      | signal generator (EMS-cond.)            | SMY 01                 | 839069/027     | Firm.= V 2.02                                        |
| 013      | power meter (EMS cond.)                 | NRVD                   | 839111/003     | Firm.= V 1.51                                        |
| 017      | Communication Tester                    | CMD 60 M               | 844365/014     | Firmware = V 3.52 .22.01.99, DECT Firmware D2.87     |
| 053      | audio analyzer                          | UPA3                   | 860612/022     | Firm. V 4.3                                          |
| 119      | RT harmonics analyser/dig. flickermeter | B10                    | G60547         | Firm.= V 3.1DHG                                      |
| 140      | signal generator                        | SMHU                   | 831314/006     | Firm.= 3.21                                          |
| 261      | thermal power sensor                    | NRV-Z55                | 825083/0008    | EPROM-Datum 02.12.04, SE EE 1 B                      |
| 262      | power meter                             | NRV-S                  | 825770/0010    | Firm.= 2.6                                           |
| 263      | signal generator                        | SMP 04                 | 826190/0007    | Firm.=3.21                                           |
| 264      | spectrum analyzer                       | FSEK 30                | 826939/005     | Bios=2.1, Analyzer= 3.20                             |
| 295      | Racal Digital Radio Test Set            | 6103                   | 1572           | UNIT Firmware= 4.04, SW-Main=4.04, SW-BBP=1.04,      |
| 298      | Univ. Radio Communication Tester        | CMU 200                | 832221/091     | R&S Test Firmware =3.53 /3.54 (current Testsoftw. f. |
| 323      | Communication Tester                    | CMD 055                | 825878/0034    | Firm.= 3.52 .22.01.99                                |
| 331      | climatic test chamber -40/+80 Grad      | HC 4055                | 43146          | TSI 1.53                                             |
| 335      | System-CTC-EMS-Conducted                | System EMS Conducted   | -              | EMS-K1 Immunity Test-Software 1.20SR10               |
| 340      | Univ. Communication Tester              | CMD 55                 | 849709/037     | Firm.= 3.52 .22.01.99                                |
| 355      | power meter                             | URV 5                  | 891310/027     | Firm.= 1.31                                          |
| 365      | 10V Insertion Unit 50 Ohm               | URV5-Z2                | 100880         | Eprom Data = 31.03.08                                |
| 366      | Ultra Compact Simulator                 | UCS 500 M4             | V0531100594    | Firm. UCS 500=001925/3.06a02, rc=ISMIEC 4.10         |
| 371      | Bluetooth Tester                        | CBT32                  | 100153         | CBT V5.30+ SW-Option K55                             |
| 377      | emi test receiver                       | ESCS 30                | 100160         | Firm.= 2.30, OTP= 02.01, GRA= 02.36                  |
| 378      | broadband RF field monitor              | RadiSense III          | 03D00013SNO-08 | Firm.= V.03D13                                       |
| 383      | signal generator                        | SME 03                 | 842 828 /034   | Firm.= 4.61                                          |
| 389      | digital multimeter                      | Keithley 2000          | 0583926        | Firm. = A13 (Mainboard) A02 (Display)                |
| 392      | Radio Communication Tester              | MT8820A                | 6K00000788     | Firm.= 4.50 #005, IPL=4.01#001,OS=4.02#001,          |
| 441      | System CTC-SAR-EMI Cable Loss           | System EMI field (SAR) | -              | EMC 32 Version 8.40                                  |
| 442      | System CTC-SAR-EMS                      | System EMS field (SAR) | -              | EMC 32 Version 8.40                                  |
| 443      | System CTC-FAR-EMI-Spuri                | System CTC-FAR-EMI-    | -              | Spuri 7.2.5                                          |
| 444      | System CTC FAR-EMS                      | System EMS-Field (FAR) | -              | EMS-K1 Immunity-Software 1.20SR10                    |
| 460      | Univ. Radio Communication Tester        | CMU 200                | 108901         | R&S Test Firmware Base=5.14/Messsoftware=            |
| 489      | emi test receiver                       | ESU40                  | 1000-30        | Firmware=4.43 SP3, Bios=V5.1-16-3,                   |
| 491      | ESD Simulator dito                      | ESD dito               | dito307022     | V 2.30                                               |
| 524      | Voltage Drop Simulator                  | VDS 200                | 0196-16        | Software Nr: 000037 Version V4.20a01                 |
| 526      | Burst Generator                         | EFT 200 A              | 0496-06        | Software Nr. 000034 Version V2.32                    |
| 527      | Micro Pulse Generator                   | MPG 200 B              | 0496-05        | Software-Nr. 000030 Version V2.43                    |
| 528      | Load Dump Simulator                     | LD 200B                | 0496-06        | Software-Nr. 000031 Version V2.35a01                 |
| 547      | Univ. Radio Kommunikation Tester        | CMU 200                | 835390/014     | R&S Test Firmware Base=V5.1403 (current Testsoftw.   |
| 584      | Spectrum Analyzer                       | FSU 8                  | 100248         | 2.82 SP3                                             |
| 594      | Communication Tester                    | CMW500                 | 101757         | Firmware Base=2.0.20.9, LTE=2.0.20.8, CDMA= 2.0.10   |
| 597      | Univ. Radio Communication Tester        | CMU 200                | 100347         | R&S Test Firmware Base=5.01/Messsoftware=            |
| 598      | Spectrum Analyser                       | FSEM 30 (Reserve)      | 831259/013     | Firmware Bios 3.40 , Analyzer 3.40 Sp 2              |
|          |                                         |                        |                |                                                      |

## 5.1.2. SINGLE INSTRUMENTS AND TEST SYSTEMS

| Ref.-No. | Equipment                               | Type                   | Serial-No.      | Manufacturer           | Interval of calibration | Remark | Cal due    |
|----------|-----------------------------------------|------------------------|-----------------|------------------------|-------------------------|--------|------------|
| 001      | emi test receiver                       | ESS                    | 825132/017      | Rohde & Schwarz        | 12 M                    | -      | 31.03.2012 |
| 005      | AC - LISN (50 Ohm/50µH, test site 1)    | ESH2-Z5                | 861741/005      | Rohde & Schwarz        | 24/12 M                 | -      | 31.03.2012 |
| 007      | DC - LISN (50 Ohm/5µH)                  | ESH3-Z6                | 892563/002      | Rohde & Schwarz        | 24/12 M                 | -      | 31.03.2012 |
| 009      | power meter (EMS-radiated)              | NRV                    | 863056/017      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2013 |
| 016      | line impedance simulating network       | Op. 24-D               | B6366           | Spitzenberger+Spies    | 36 M                    | -      | 31.03.2013 |
| 020      | horn antenna 18 GHz (Subst 1)           | 3115                   | 9107-3699       | EMCO                   | 36/12 M                 | -      | 31.03.2013 |
| 021      | loop antenna (H-Field)                  | 6502                   | 9206-2770       | EMCO                   | 36 M                    | -      | 31.03.2013 |
| 030      | loop antenna (H-field)                  | HFH-Z2                 | 879604/026      | Rohde & Schwarz        | 36 M                    | -      | 31.03.2012 |
| 033      | RF-current probe (100kHz-30MHz)         | ESH2-Z1                | 879581/18       | Rohde & Schwarz        | 24 M                    | -      | 31.03.2013 |
| 060      | power amplifier (DC-2kHz)               | PAS 5000               | B6363           | Spitzenberger+Spies    | -                       | 3      |            |
| 066      | notch filter (WCDMA; FDD1)              | WRCT 1900/2200-5/40-   | 5               | Wainwright GmbH        | 12 M                    | -      | 30.06.2011 |
| 086      | DC - power supply, 0 -10 A              | LNG 50-10              | -               | Heinzinger Electronic  | pre-m                   | 2      |            |
| 087      | DC - power supply, 0 -5 A               | EA-3013 S              | -               | Elektro Automatik      | pre-m                   | 2      |            |
| 090      | Helmholtz coil: 2x10 coils in series    | -                      | -               | RWTÜV                  | pre-m                   | 4      |            |
| 091      | USB-LWL-Converter                       | OLS-1                  | 007/2006        | Ing. Büro Scheiba      | -                       | 4      |            |
| 099      | passive voltage probe                   | ESH2-Z3                | 299.7810.52     | Rohde & Schwarz        | 36 M                    | -      | 31.03.2012 |
| 100      | passive voltage probe                   | Probe TK 9416          | without         | Schwarzbeck            | 36 M                    | -      | 31.03.2012 |
| 110      | USB-LWL-Converter                       | OLS-1                  | -               | Extreme USB            | -                       | 4      |            |
| 119      | RT harmonics analyser/dig. flickermeter | B10                    | G60547          | BOCONSULT              | 36 M                    | -      | 31.03.2013 |
| 134      | horn antenna 18 GHz (Subst 2)           | 3115                   | 9005-3414       | EMCO                   | 12 M                    | -      | 31.03.2012 |
| 136      | adjustable dipole antenna (Dipole 1)    | 3121C-DB4              | 9105-0697       | EMCO                   | 12 M                    | -      | 31.03.2012 |
| 140      | signal generator                        | SMHU                   | 831314/006      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2012 |
| 248      | attenuator                              | SMA 6dB 2W             | -               | Radiall                | pre-m                   | 2      |            |
| 249      | attenuator                              | SMA 10dB 10W           | -               | Radiall                | pre-m                   | 2      |            |
| 252      | attenuator                              | N 6dB 12W              | -               | Radiall                | pre-m                   | 2      |            |
| 256      | attenuator                              | SMA 3dB 2W             | -               | Radiall                | pre-m                   | 2      |            |
| 257      | hybrid                                  | 4031C                  | 04491           | Narda                  | pre-m                   | 2      |            |
| 260      | hybrid coupler                          | 4032C                  | 11342           | Narda                  | pre-m                   | 2      |            |
| 261      | thermal power sensor                    | NRV-Z55                | 825083/0008     | Rohde & Schwarz        | 24/12 M                 | -      | 31.03.2012 |
| 262      | power meter                             | NRV-S                  | 825770/0010     | Rohde & Schwarz        | 24 M                    | -      | 31.03.2012 |
| 263      | signal generator                        | SMP 04                 | 826190/0007     | Rohde & Schwarz        | 36 M                    | -      | 31.03.2013 |
| 264      | spectrum analyzer                       | FSEK 30                | 826939/005      | Rohde & Schwarz        | 12 M                    | -      | 31.03.2014 |
| 265      | peak power sensor                       | NRV-Z33, Model 04      | 840414/009      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2012 |
| 266      | peak power sensor                       | NRV-Z31, Model 04      | 843383/016      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2012 |
| 268      | AC/DC power supply                      | EA 3050-A              | 9823636         | -                      | pre-m                   | 2      |            |
| 270      | termination                             | 1418 N                 | BB6935          | Weinschel              | pre-m                   | 2      |            |
| 271      | termination                             | 1418 N                 | BE6384          | Weinschel              | pre-m                   | 2      |            |
| 272      | attenuator (20 dB) 50 W                 | Model 47               | BF6239          | Weinschel              | pre-m                   | 2      |            |
| 273      | attenuator, (10 dB) 100 W               | Model 48               | BF9229          | Weinschel              | pre-m                   | 2      |            |
| 274      | attenuator (10 dB) 50 W                 | Model 47 (10 dB) 50 W  | BG0321          | Weinschel              | pre-m                   | 2      |            |
| 275      | DC-Block                                | Model 7003 (N)         | C5129           | Weinschel              | pre-m                   | 2      |            |
| 276      | DC-Block                                | Model 7006 (SMA)       | C7061           | Weinschel              | pre-m                   | 2      |            |
| 279      | power divider                           | 1515 (SMA)             | LH855           | Weinschel              | pre-m                   | 2      |            |
| 287      | pre-amplifier 25MHz - 4GHz              | AMF-2D-100M4G-35-10P   | 379418          | Miteq                  | 12 M                    | -      | 30.06.2011 |
| 291      | high pass filter GSM 850/900            | WHJ 2200-4EE           | 14              | Wainwright GmbH        | 12 M                    | -      | 30.06.2011 |
| 298      | Univ. Radio Communication Tester        | CMU 200                | 832221/091      | Rohde & Schwarz        | pre-m                   | -      |            |
| 300      | AC LISN (50 Ohm/50µH, 1-phase)          | ESH3-Z5                | 892 239/020     | Rohde & Schwarz        | 24/12 M                 | -      | 31.03.2012 |
| 301      | attenuator (20 dB) 50W, 18GHz           | 47-20-33               | AW0272          | Lucas Weinschel        | pre-m                   | 2      |            |
| 302      | horn antenna 40 GHz (Meas 1)            | BBHA9170               | 155             | Schwarzbeck            | 36 M                    | -      | 31.03.2014 |
| 303      | horn antenna 40 GHz (Subst 1)           | BBHA9170               | 156             | Schwarzbeck            | 36 M                    | -      | 31.03.2014 |
| 331      | climatic test chamber -40/+80 Grad      | HC 4055                | 43146           | Heraeus Vötsch         | 24 M                    | -      | 30.11.2012 |
| 341      | digital multimeter                      | Fluke 112              | 81650455        | Fluke                  | 24 M                    | -      | 31.03.2012 |
| 342      | digital multimeter                      | Voltcraft M-4660A      | 1B 255466       | Voltcraft              | 24 M                    | -      | 31.03.2013 |
| 347      | laboratory site                         | radio lab.             | -               | -                      | -                       | 3      |            |
| 348      | laboratory site                         | EMI conducted          | -               | -                      | -                       | 3      |            |
| 354      | DC - power supply 40A                   | NGPE 40/40             | 448             | Rohde & Schwarz        | pre-m                   | -      |            |
| 355      | power meter                             | URV 5                  | 891310/027      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2012 |
| 356      | power sensor                            | NRV-Z1                 | 882322/014      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2013 |
| 357      | power sensor                            | NRV-Z1                 | 861761/002      | Rohde & Schwarz        | 24 M                    | -      | 31.03.2013 |
| 373      | V-Network 5µH/50 Ohm                    | ESH3-Z6                | 100535          | Rohde & Schwarz        | 24/12 M                 | -      | 31.03.2012 |
| 376      | horn antenna 6 GHz                      | BBHA9120 E             | BBHA 9120 E 179 | Schwarzbeck            | 12 M                    | -      | 31.03.2012 |
| 377      | emi test receiver                       | ESCS 30                | 100160          | Rohde & Schwarz        | 12 M                    | -      | 31.03.2012 |
| 389      | digital multimeter                      | Keithley 2000          | 0583926         | Keithley               | 24 M                    | -      | 31.03.2013 |
| 392      | Radio Communication Tester              | MT8820A                | GK00000788      | Anritsu                | 12 M                    | -      | 31.03.2012 |
| 431      | Model 7405                              | Near-Field Probe Set   | 9305-2457       | EMCO                   | -                       | 4      |            |
| 439      | UltraLog-Antenna                        | HL 562                 | 100248          | Rohde & Schwarz        | 12 M                    | -      | 30.06.2011 |
| 441      | System CTC-SAR-EMI Cable Loss           | System EMI field (SAR) | -               | ETS                    | 12 M                    | 5      | 31.08.2011 |
| 443      | System CTC-FAR-EMI-Spuri                | System CTC-FAR-EMI-    | -               | ETS-Lindgren/Cetecom   | 12 M                    | 5      | 30.06.2011 |
| 448      | notch filter WCDMA FDD II               | WRCT 1850.0/2170.0-    | 5               | Wainwright Instruments | 12 M                    | 1c     | 30.06.2011 |
| 449      | notch filter WCDMA FDD V                | WRCT 824.0/894.0-5/40- | 1               | Wainwright Instruments | 12 M                    | 1c     | 30.06.2011 |
| 454      | Oscilloscope                            | HM 205-3               | 9210 P 29661    | Hameg                  | -                       | 4      |            |
| 456      | DC-Power supply 0-5A                    | EA 3013 S              | 207810          | Elektro Automatik      | pre-m                   | 2      |            |
| 459      | DC -power supply 0-5 A , 0-32 V         | EA-PS 2032-50          | 910722          | Elektro Automatik      | pre-m                   | 2      |            |
| 460      | Univ. Radio Communication Tester        | CMU 200                | 108901          | Rohde & Schwarz        | 12 M                    | -      | 31.03.2012 |
| 463      | Universal source                        | HP3245A                | 2831A03472      | Agilent                | -                       | 4      |            |
| 466      | digital multimeter                      | Fluke 112              | 89210157        | Fluke USA              | 24 M                    | -      | 31.03.2012 |
| 467      | digital multimeter                      | Fluke 112              | 89680306        | Fluke USA              | 24 M                    | -      | 31.03.2012 |
| 468      | digital multimeter                      | Fluke 112              | 90090455        | Fluke USA              | 24 M                    | -      | 31.03.2012 |
| 477      | ReRadiating GPS-System                  | AS-47                  | -               | Automotive Cons. Fink  | -                       | 3      |            |



| Ref.-No. | Equipment                               | Type                   | Serial-No.  | Manufacturer    | Interval of calibration | Remark | Cal due    |
|----------|-----------------------------------------|------------------------|-------------|-----------------|-------------------------|--------|------------|
| 480      | power meter (Fula)                      | NRVS                   | 838392/031  | Rohde & Schwarz | 24 M                    | -      | 31.03.2013 |
| 482      | filtermatrix                            | FilterMatrix SAR 1     | -           | CETECOM (Brl)   | -                       | 1d     |            |
| 484      | pre-amplifier 2,5 - 18 GHz              | AMF-5D-02501800-25-    | 1244554     | Miteq           | 12 M                    | -      | 30.06.2011 |
| 487      | System CTC NSA-Verification SAR-EMI     | System EMI field (SAR) | -           | ETS             | 12 M                    | -      | 30.09.2011 |
| 489      | emi test receiver                       | ESU40                  | 1000-30     | Rohde & Schwarz | 12 M                    | -      | 31.03.2012 |
| 502      | band reject filter                      | WRCG 1709/1786-        | SN 9        | Wainwright      | -                       | 2      |            |
| 503      | band reject filter                      | WRCG 824/849-814/859-  | SN 5        | Wainwright      | -                       | 2      |            |
| 517      | relais switc matrix                     | HF Relais Box Keithley | SE 04       | Keithley        | -                       | 2      |            |
| 523      | Digitalmultimeter                       | L4411A                 | MY46000154  | Agilent         | 24 M                    | -      | 31.03.2013 |
| 529      | 6 dB Broadband resistive power divider  | Model 1515             | LH 855      | Weinschel       | pre-m                   | 2      |            |
| 530      | 10 dB Broadband resistive power divider | R 416110000            | LOT 9828    | -               | pre-m                   | 2      |            |
| 547      | Univ. Radio Kommunikation Tester        | CMU 200                | 835390/014  | Rohde & Schwarz | 12 M                    | -      | 31.03.2012 |
| 548      | Digital-Barometer                       | GBP 2300               | without     | Greisinger GmbH | 36/12 M                 | -      | 31.03.2012 |
| 549      | Log.Per-Antenna                         | HL025                  | 1000060     | Rohde & Schwarz | 36/12 M                 | -      | 31.03.2012 |
| 552      | high pass filter 2,8-18GHz              | WHKX 2.8/18G-10SS      | 4           | Wainwright      | 12 M                    | -      | 30.06.2011 |
| 558      | System CTC FAR S-VSWR                   | System CTC FAR S-      | -           | CTC             | 24 M                    | -      | 31.08.2011 |
| 574      | Biconilog Hybrid Antenna                | BTA-L                  | 980026L     | Frankonia       | 36/12 M                 | -      | 30.03.2013 |
| 584      | Spectrum Analyzer                       | FSU 8                  | 100248      | Rohde & Schwarz | 12 M                    | -      | 31.03.2012 |
| 594      | Kommunikation Tester                    | CMW500                 | 101757      | Rohde & Schwarz | 24 M                    | -      | 31.03.2012 |
| 597      | Univ. Radio Communication Tester        | CMU 200                | 100347      | Rohde & Schwarz | 12 M                    | -      | 31.03.2012 |
| 598      | Spectrum Analyser                       | FSEM 30 (Reserve)      | 831259/013  | Rohde & Schwarz | 24 M                    | -      | 13.01.2013 |
| 600      | power meter                             | NRVD (Reserve)         | 834501/018  | Rohde & Schwarz | 24 M                    | -      | 31.03.2013 |
| 601      | medium-sensitivity diode sensor         | NRV-Z5 (Reserve)       | 8435323/003 | Rohde & Schwarz | 24 M                    | -      | 12.01.2013 |
| 602      | peak power sensor                       | NRV-Z32 (Reserve)      | 835080      | Rohde & Schwarz | 24 M                    | -      | 12.01.2013 |
| 608      | UltraLog-Antenna                        | HL 562                 | 830547/009  | Rohde & Schwarz | 36/12 M                 | -      | 31.03.2014 |
| 611      | DC power supply                         | E3632A                 | KR 75305854 | Agilent         | pre-m                   | 2      |            |
| 612      | DC power supply                         | E3632A                 | MY 40001321 | Agilent         | pre-m                   | 2      |            |
| 613      | Attenuator                              | R416120000 20dB 10W    | Lot. 9828   | Radiall         | pre-m                   | 2      |            |

### 5.1.3. LEGEND

| Note / remarks |     | Calibrated during system calibration:                                                     |
|----------------|-----|-------------------------------------------------------------------------------------------|
|                | 1a  | System CTC-SAR-EMS (Ref.-No. 442)                                                         |
|                | 1b  | System-CTC-EMS-Conducted (Ref.-No. 335)                                                   |
|                | 1c  | System CTC-FAR-EMI-spurious emission (Ref.-No. 443)                                       |
|                | 1d  | System CTC-SAR-EMI (Ref.-No. 441)                                                         |
|                | 1e  | System CTC-OATS (EMI radiated) (Ref.-No. 337)                                             |
|                | 1 f | System CTC-CTIA-OTA (Ref.-No. 420)                                                        |
|                | 1 g | System CTC-FAR-EMS (Ref.-No. 444)                                                         |
|                | 2   | Calibration or equipment check immediately before measurement                             |
|                | 3   | Regulatory maintained equipment for functional check or support purpose,                  |
|                | 4   | Ancillary equipment without calibration e.g. mechanical equipment or monitoring equipment |
|                | 5   | Test System                                                                               |

| Interval of calibration | 12 M    | 12 month                                                                      |
|-------------------------|---------|-------------------------------------------------------------------------------|
|                         | 24 M    | 24 month                                                                      |
|                         | 36 M    | 36 month                                                                      |
|                         | 24/12 M | Calibration every 24 months, between this every 12 months internal validation |
|                         | 36/12 M | Calibration every 36 months, between this every 12 months internal validation |
|                         | Pre-m   | Check before starting the measurement                                         |
|                         | -       | Without calibration                                                           |

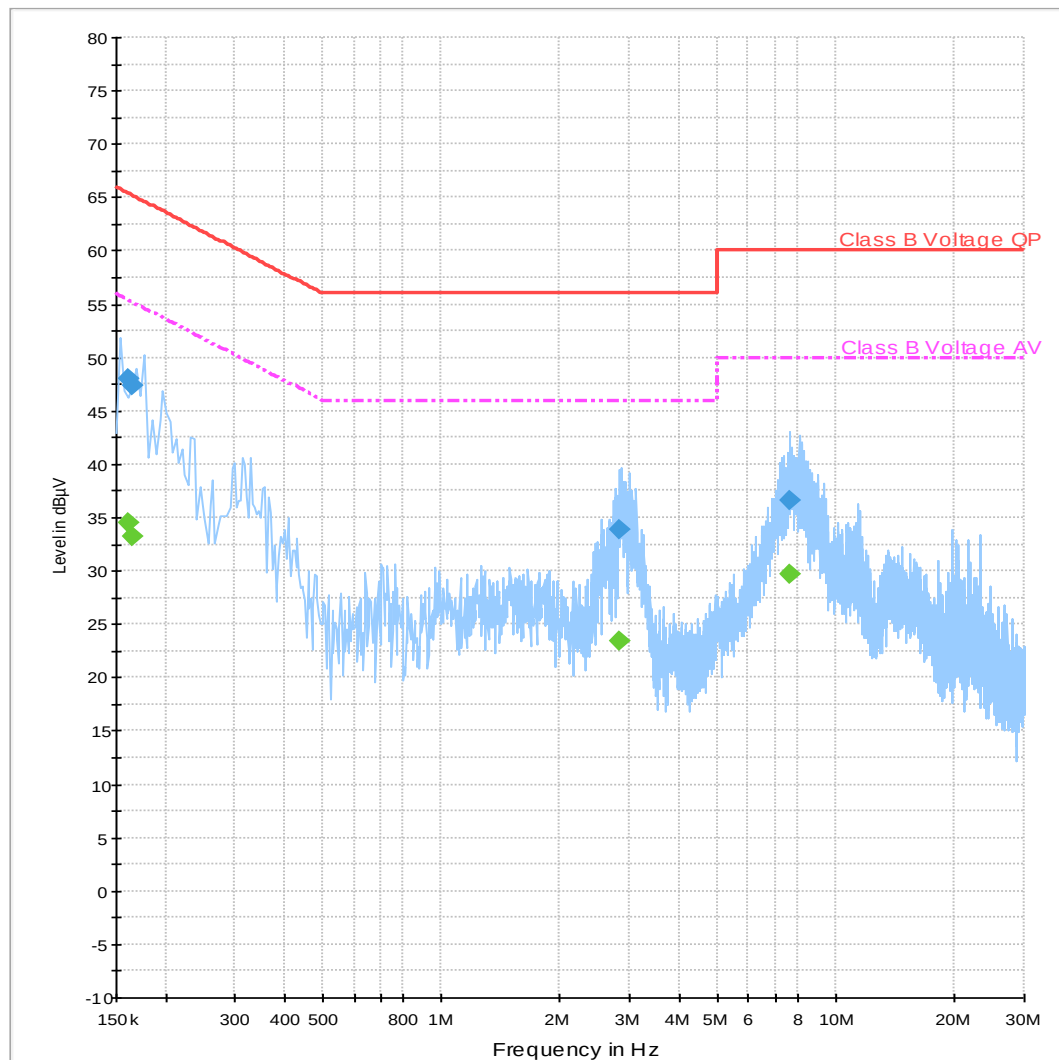
## 6. Measurement diagrams

### 6.1. Conducted emissions on AC-mains

#### Diagram No. 1.1

|                     |                                                                         |
|---------------------|-------------------------------------------------------------------------|
| Test Description:   | Date: 05.05.2011    Page 1 of 2                                         |
| Test specification: | Conducted Voltage Measurement                                           |
| Technical Data:     | FCC 15.207                                                              |
| Diagram:            | Please see next page for detailed information                           |
| Operator name:      | Shows the peak values as a sum of measured ports (N+L1) in maxhold mode |
| Report - Nr.        | Lor                                                                     |
|                     | 2-20795417c/11                                                          |
| Operating mode:     | GSM850 Voice + Ping on LAN+WLAN TX-on 2MBit Ch1                         |
| Measured on line:   | Mains AC L1 and N                                                       |
| Power during test:  | 110 V AC 60 Hz                                                          |
| Comment 1:          | one LAN cable connected on Port 1                                       |
| Comment 2:          |                                                                         |

01\_Class B\_Voltage\_PK\_QPAV\_N\_L1



**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.160000        | 48.0             | 15000.0         | 9.000           | GND | N    | 0.0        | 17.5        | 65.5         |
| 0.164844        | 47.4             | 15000.0         | 9.000           | GND | N    | 0.0        | 17.8        | 65.2         |
| 2.828281        | 33.9             | 15000.0         | 9.000           | GND | L1   | 0.1        | 22.1        | 56.0         |
| 7.654688        | 36.6             | 15000.0         | 9.000           | GND | N    | 0.1        | 23.4        | 60.0         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.160000        | 34.5            | 15000.0         | 9.000           | GND | N    | 0.0        | 21.0        | 55.5         |
| 0.164844        | 33.3            | 15000.0         | 9.000           | GND | N    | 0.0        | 21.9        | 55.2         |
| 2.828281        | 23.4            | 15000.0         | 9.000           | GND | L1   | 0.1        | 22.6        | 46.0         |
| 7.654688        | 29.6            | 15000.0         | 9.000           | GND | N    | 0.1        | 20.4        | 50.0         |

Date: 05.05.2011 Page 2 of 2

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

## Diagram No. 1.3

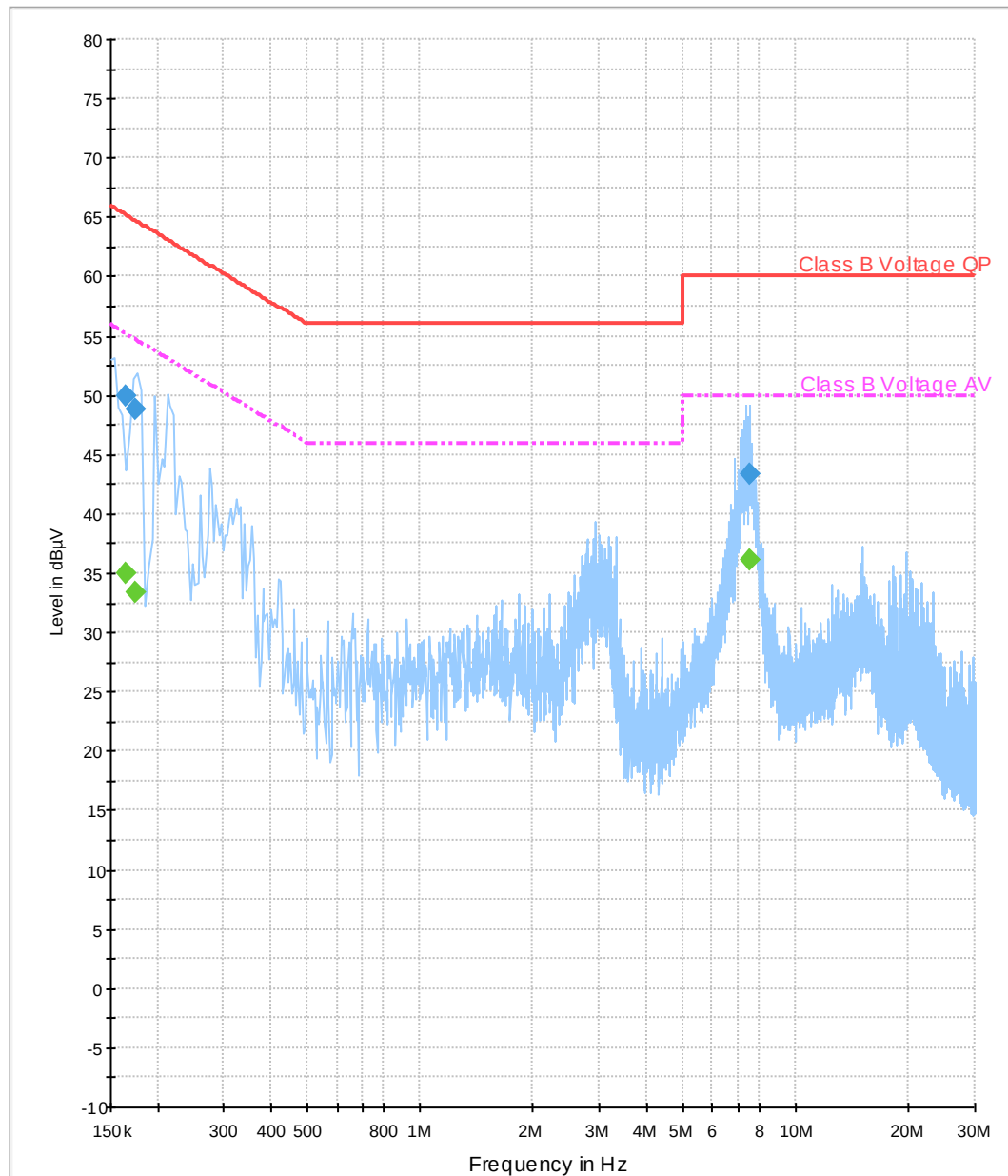
Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement  
FCC 15.207  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

GSM1900 + Ping on LAN+WLAN TX-on 2MBit Ch1  
Mains AC L1 and N  
110 V AC 60 Hz  
one LAN cable connected on Port 1  
GSM Ch661

### 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1



**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.164844        | 50.0             | 15000.0         | 9.000           | GND | N    | 0.0        | 15.2        | 65.2         |
| 0.175000        | 48.8             | 15000.0         | 9.000           | GND | L1   | 0.0        | 15.9        | 64.7         |
| 7.502500        | 43.3             | 15000.0         | 9.000           | GND | N    | 0.1        | 16.7        | 60.0         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.164844        | 35.0            | 15000.0         | 9.000           | GND | N    | 0.0        | 20.3        | 55.2         |
| 0.175000        | 33.4            | 15000.0         | 9.000           | GND | L1   | 0.0        | 21.4        | 54.7         |
| 7.502500        | 36.2            | 15000.0         | 9.000           | GND | N    | 0.1        | 13.8        | 50.0         |

Date: 05.05.2011 Page 2 of 2

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

## Diagram No. 1.4

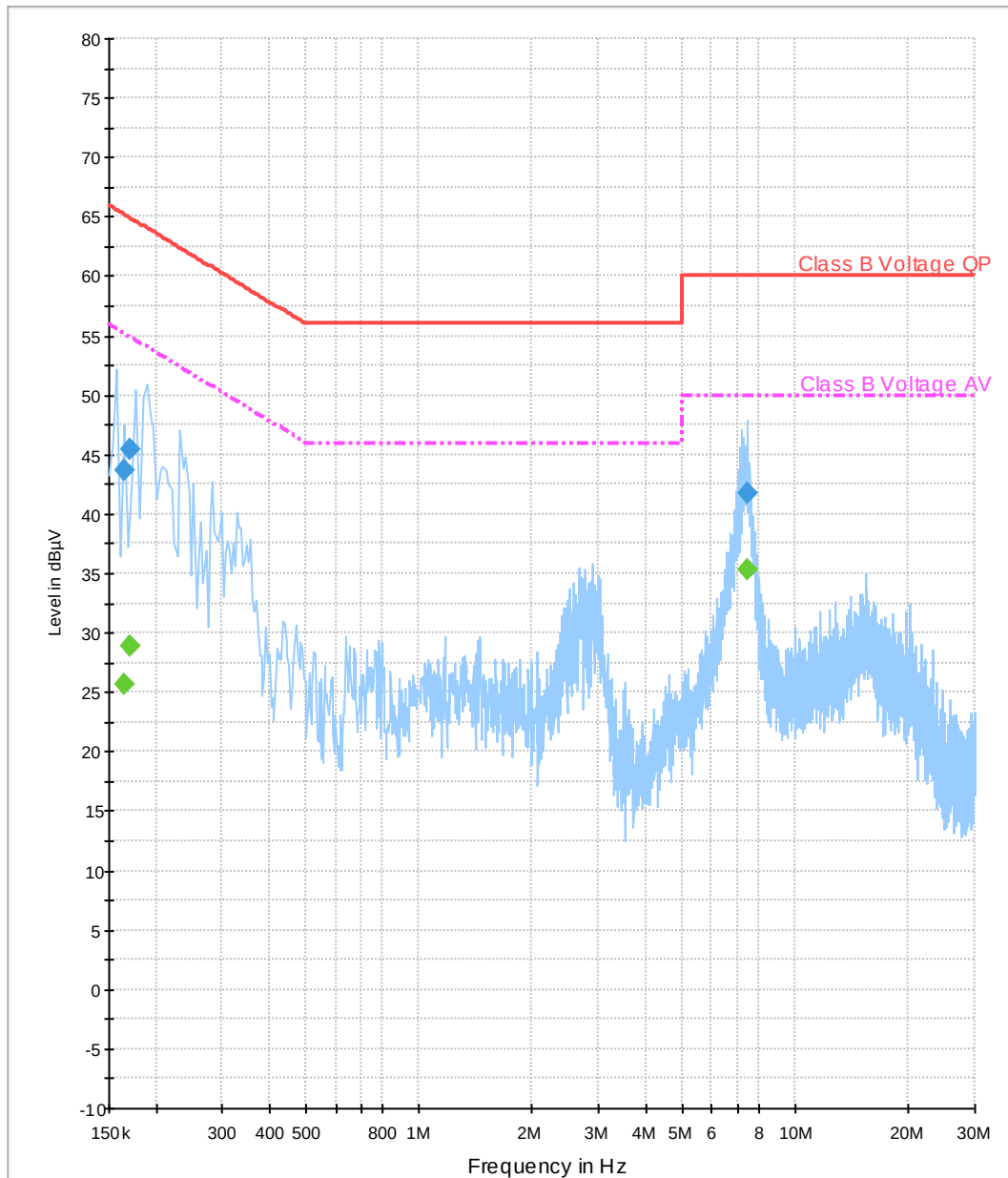
Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement Class B  
FCC 15.107, Class B  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

IDLE850 + Ping on LAN+WLAN TX-on 2MBit Ch1  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN1 cable connected on Notebook, LAN2 open  
GSM Ch192

### 01\_Class B Voltage\_PK\_QPAV\_N\_L1



**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.165000        | 43.7             | 15000.0         | 9.000           | GND | N    | 0.0        | 21.5        | 65.2         |
| 0.171562        | 45.4             | 15000.0         | 9.000           | GND | N    | 0.0        | 19.5        | 64.9         |
| 7.430938        | 41.8             | 15000.0         | 9.000           | GND | N    | 0.1        | 18.2        | 60.0         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.165000        | 25.7            | 15000.0         | 9.000           | GND | N    | 0.0        | 29.5        | 55.2         |
| 0.171562        | 28.9            | 15000.0         | 9.000           | GND | N    | 0.0        | 26.0        | 54.9         |
| 7.430938        | 35.4            | 15000.0         | 9.000           | GND | N    | 0.1        | 14.6        | 50.0         |

Date: 05.05.2011 Page 2 of 2

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

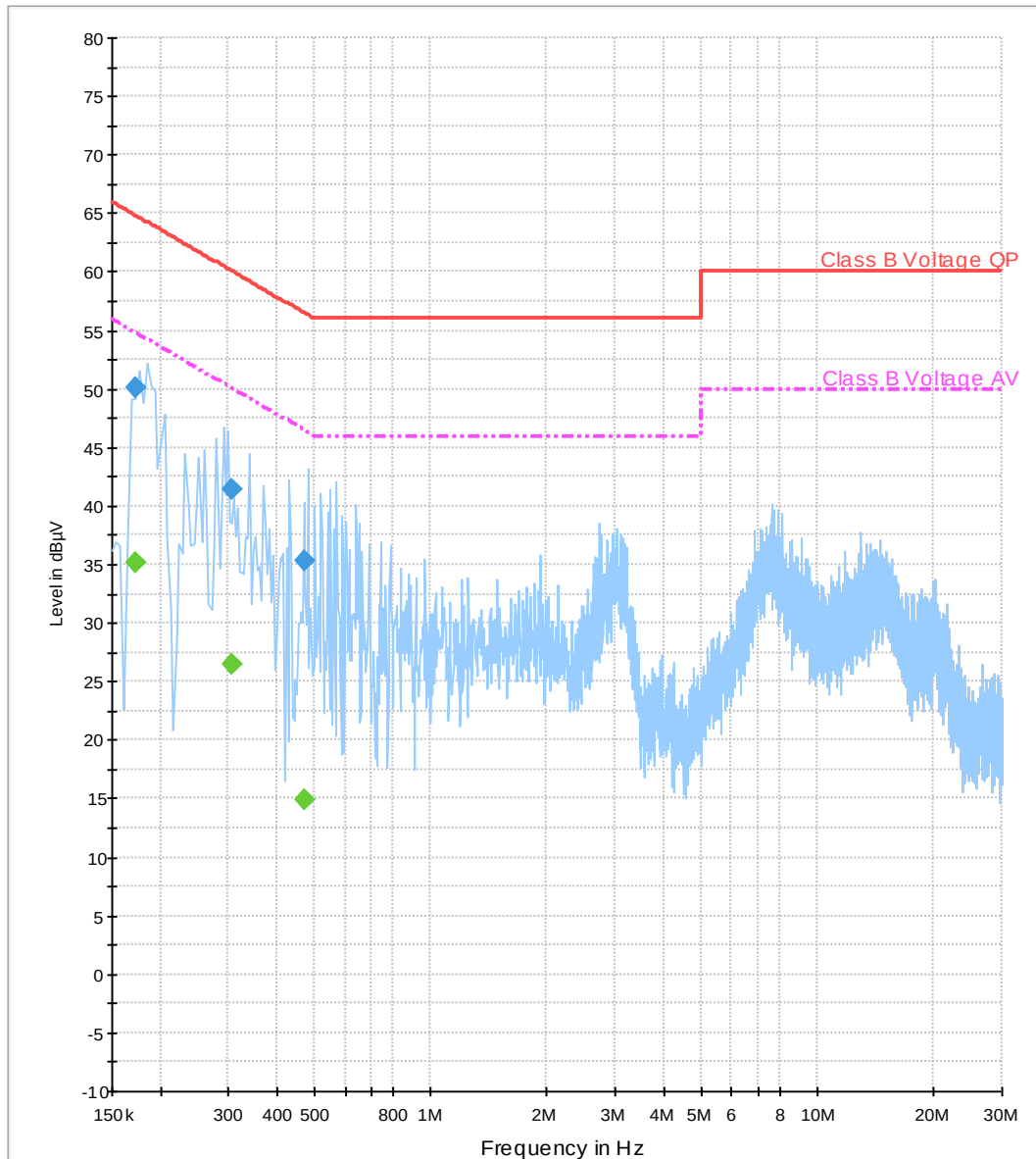
**Diagram No. 1.5**

Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement  
FCC 15.207  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

TX FDD5+WLAN TX-on+Ping on LAN1  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN1 cable connected on Notebook, LAN2 open  
Telephone Belgacom#2, Internal Antenna

**01\_Class B\_Voltage\_PK\_QPAV\_N\_L1**



**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.172656        | 50.1             | 15000.0         | 9.000           | GND | N    | 0.0        | 14.7        | 64.8         |
| ...             | ...              | ...             | ...             | ... | ...  | ...        | ...         | ...          |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.172656        | 35.2            | 15000.0         | 9.000           | GND | N    | 0.0        | 19.6        | 54.8         |
| ...             | ...             | ...             | ...             | ... | ...  | ...        | ...         | ...          |

Technical Data of Measurements with R&S EMC32 V8.50.0

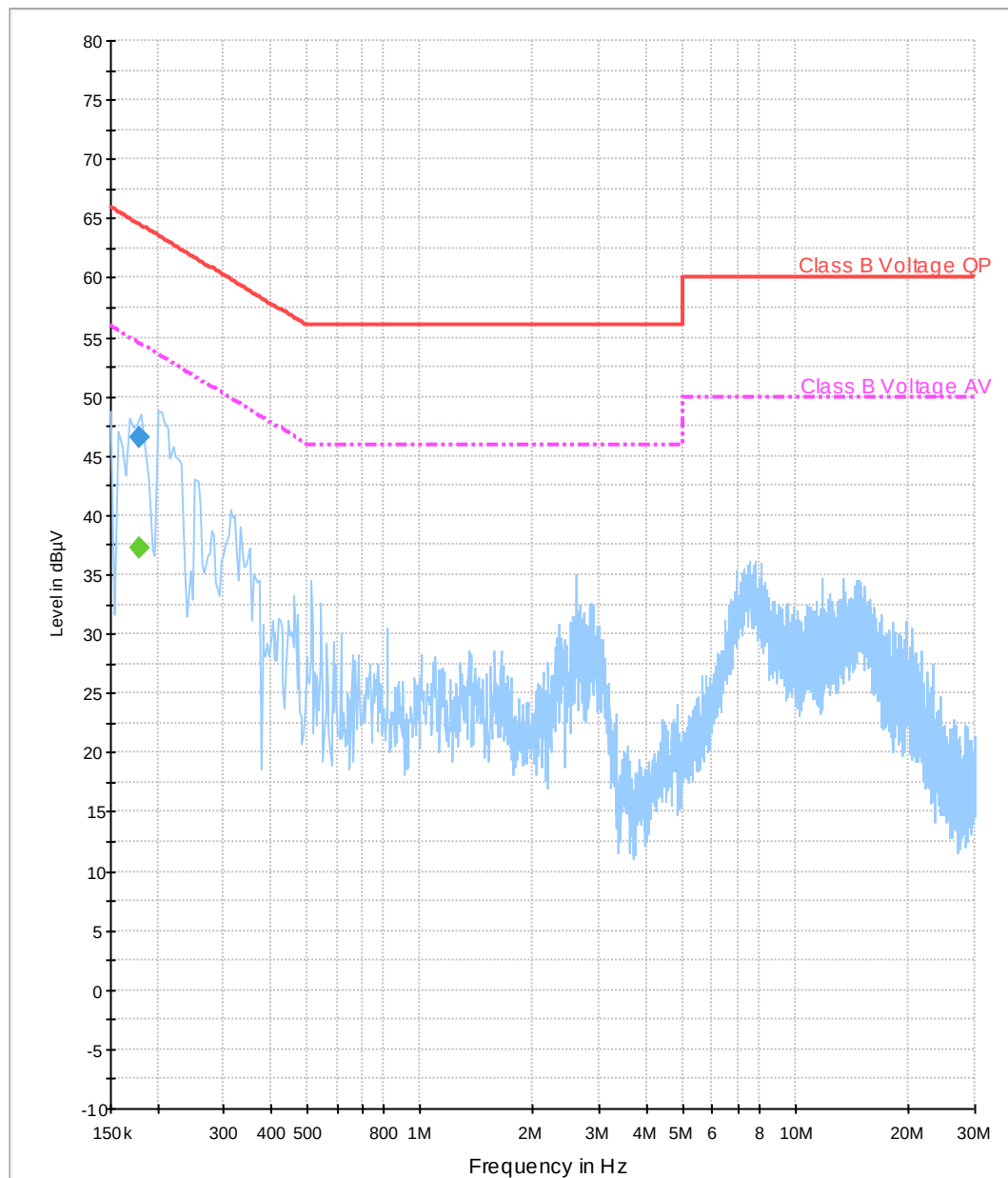
EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

**Diagram No. 1.6**

Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report - Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement Class B  
FCC 15.107 Class B  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode: RX FDD5+WLAN TX-on+Ping on LAN1  
Measured on line: Mains AC L1 and N  
Power during test: 110 V AC 60 Hz  
Comment 1: LAN1 cable connected on Notebook, LAN2 open  
Comment 2: Telephone Belgacom#2, Internal Antenna

**01\_Class B\_Voltage\_PK\_QPAV\_N\_L1**

Date: 05.05.2011 Page 2 of 2

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.178281        | 46.6             | 15000.0         | 9.000           | GND | L1   | 0.0        | 18.0        | 64.6         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.178281        | 37.2            | 15000.0         | 9.000           | GND | L1   | 0.0        | 17.4        | 54.6         |

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

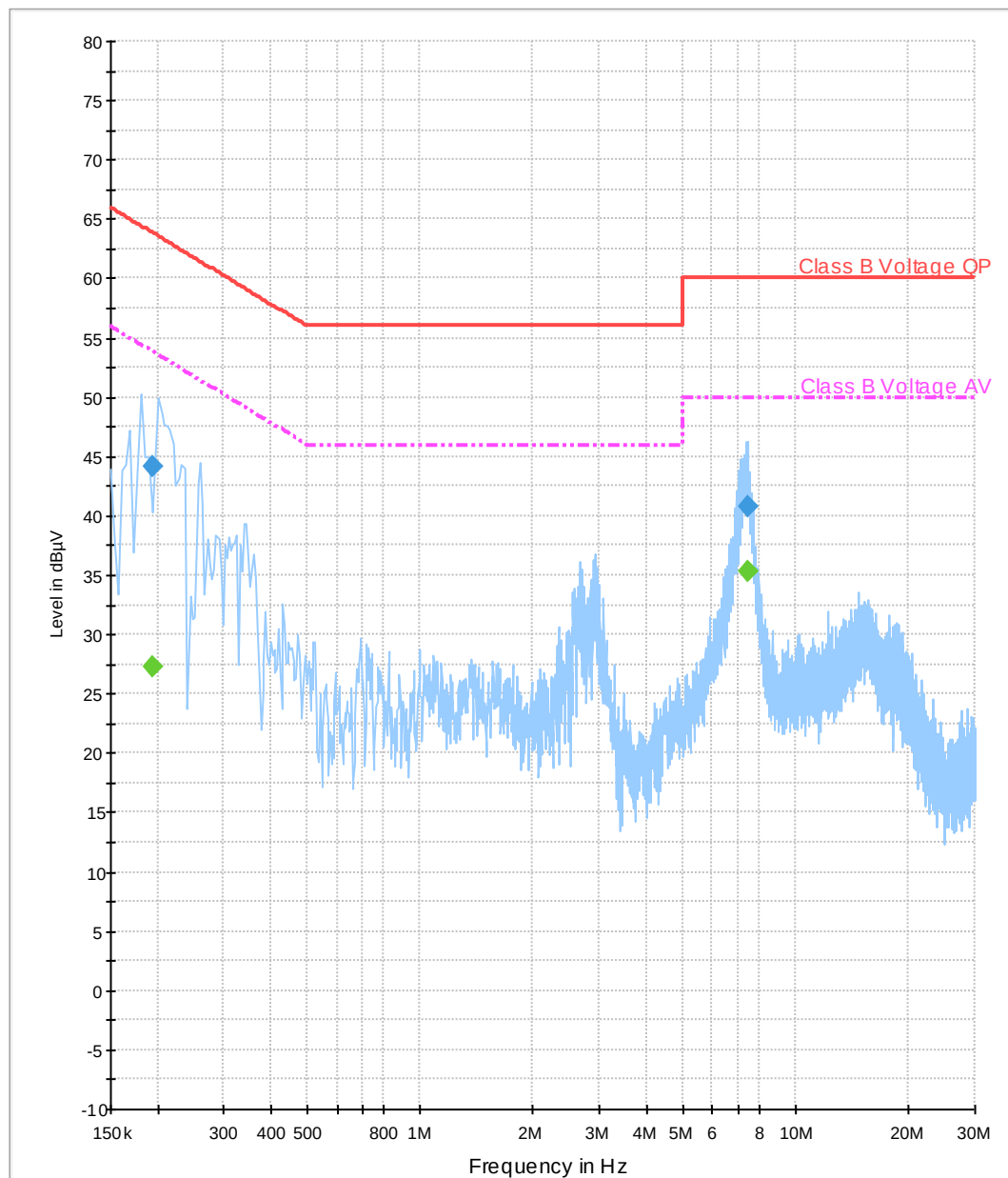
**Diagram No. 1.8**

Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement Class B  
FCC 15.107 Class B  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

IDLE 1900+WLAN TXon+Ping on LAN2  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN2 cable connected on Notebook, LAN1 open  
GSM Ch192

**01\_Class B\_Voltage\_PK\_QPAV\_N\_L1**

Date: 05.05.2011 Page 2 of 2

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.193281        | 44.2             | 15000.0         | 9.000           | GND | N    | 0.0        | 19.7        | 63.9         |
| 7.488906        | 40.8             | 15000.0         | 9.000           | GND | N    | 0.1        | 19.2        | 60.0         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.193281        | 27.2            | 15000.0         | 9.000           | GND | N    | 0.0        | 26.7        | 53.9         |
| 7.488906        | 35.3            | 15000.0         | 9.000           | GND | N    | 0.1        | 14.7        | 50.0         |

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

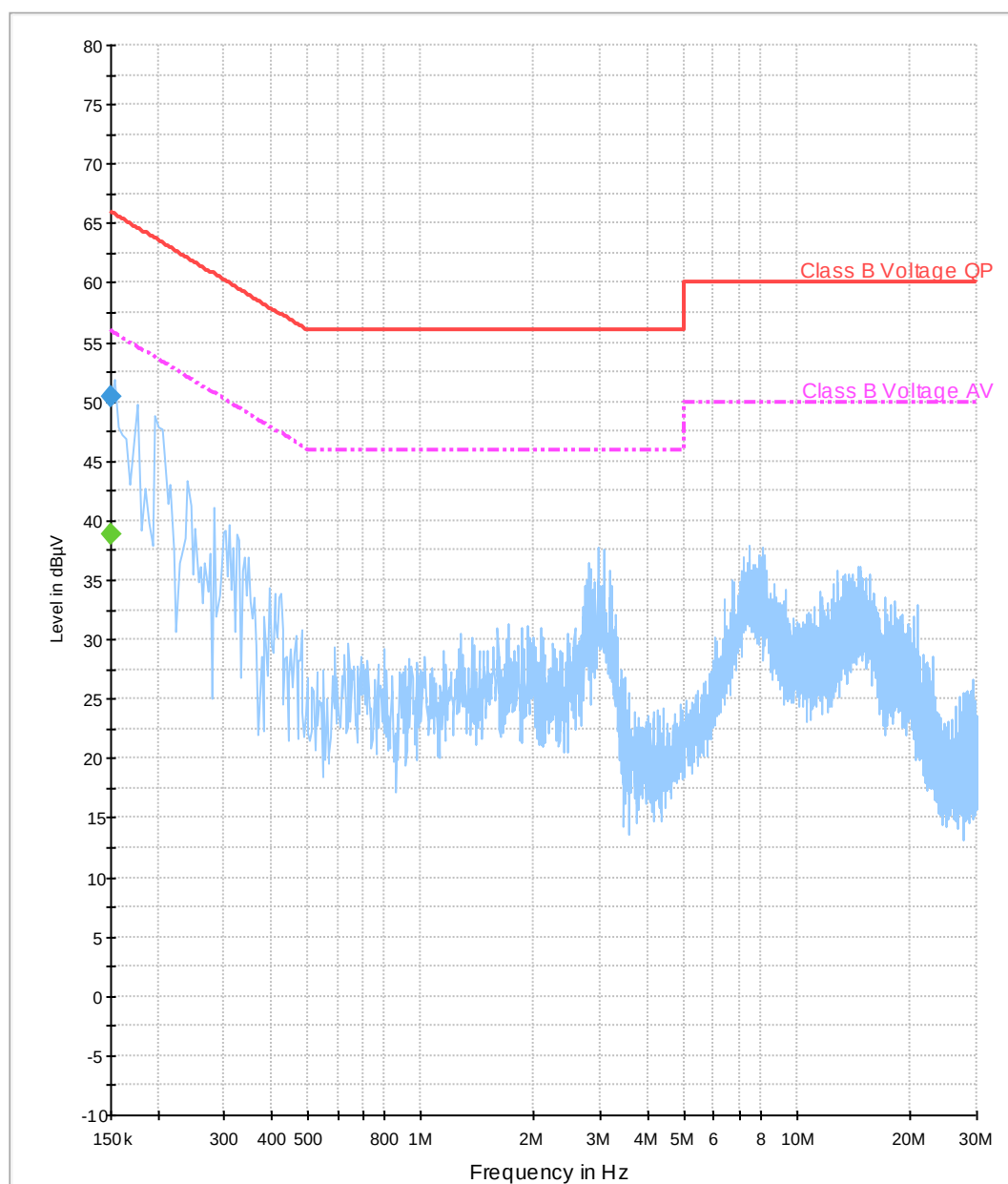
**Diagram No. 1.9**

Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement  
FCC 15.207  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

TX GSM1900+WLAN TXon+Ping on LAN2  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN2 cable connected on Notebook, LAN1 open  
GSM Ch192, Telephone Belgacom#2, External antenna#2

**01\_Class B\_Voltage\_PK\_QPAV\_N\_L1**

Date: 05.05.2011 Page 2 of 2

### Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.150000        | 50.4             | 15000.0         | 9.000           | GND | L1   | 0.0        | 15.6        | 66.0         |

### Final Result 2

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.150000        | 38.9            | 15000.0         | 9.000           | GND | L1   | 0.0        | 17.1        | 56.0         |

Technical Data of Measurements with R&S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

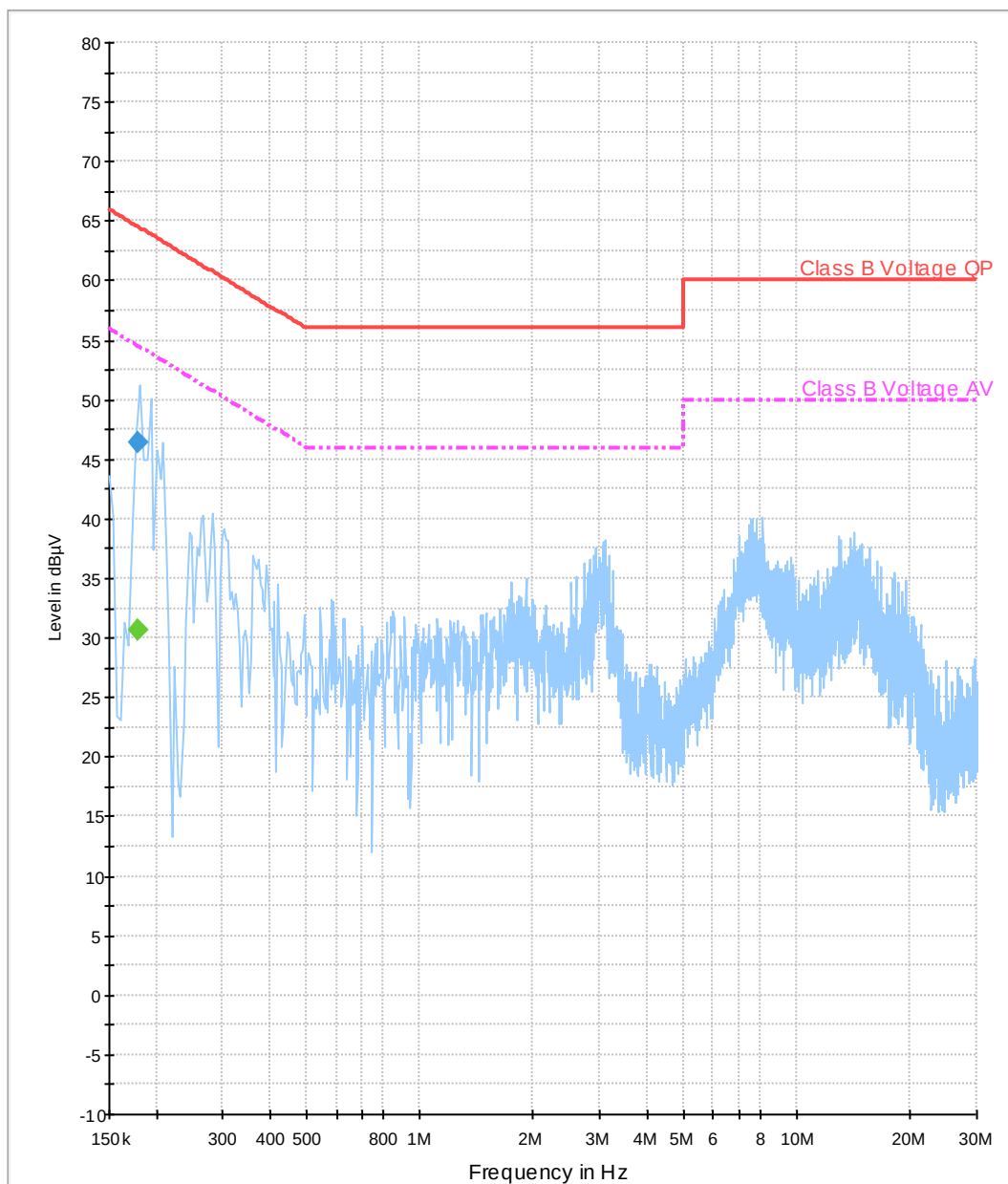
**Diagram No. 1.10**

Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement  
FCC 15.207  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

TX FDD2+WLAN TX-on+Ping on LAN2  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN2 cable connected on Notebook, LAN1 open  
Telephone Belgacom#2, External antenna#2

**01\_Class B\_Voltage\_PK\_QPAV\_N\_L1**



Date: 05.05.2011 Page 2 of 2

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.178750        | 46.4             | 15000.0         | 9.000           | GND | L1   | 0.0        | 18.1        | 64.5         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.178750        | 30.7            | 15000.0         | 9.000           | GND | L1   | 0.0        | 23.9        | 54.5         |

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

## Diagram No. 1.11

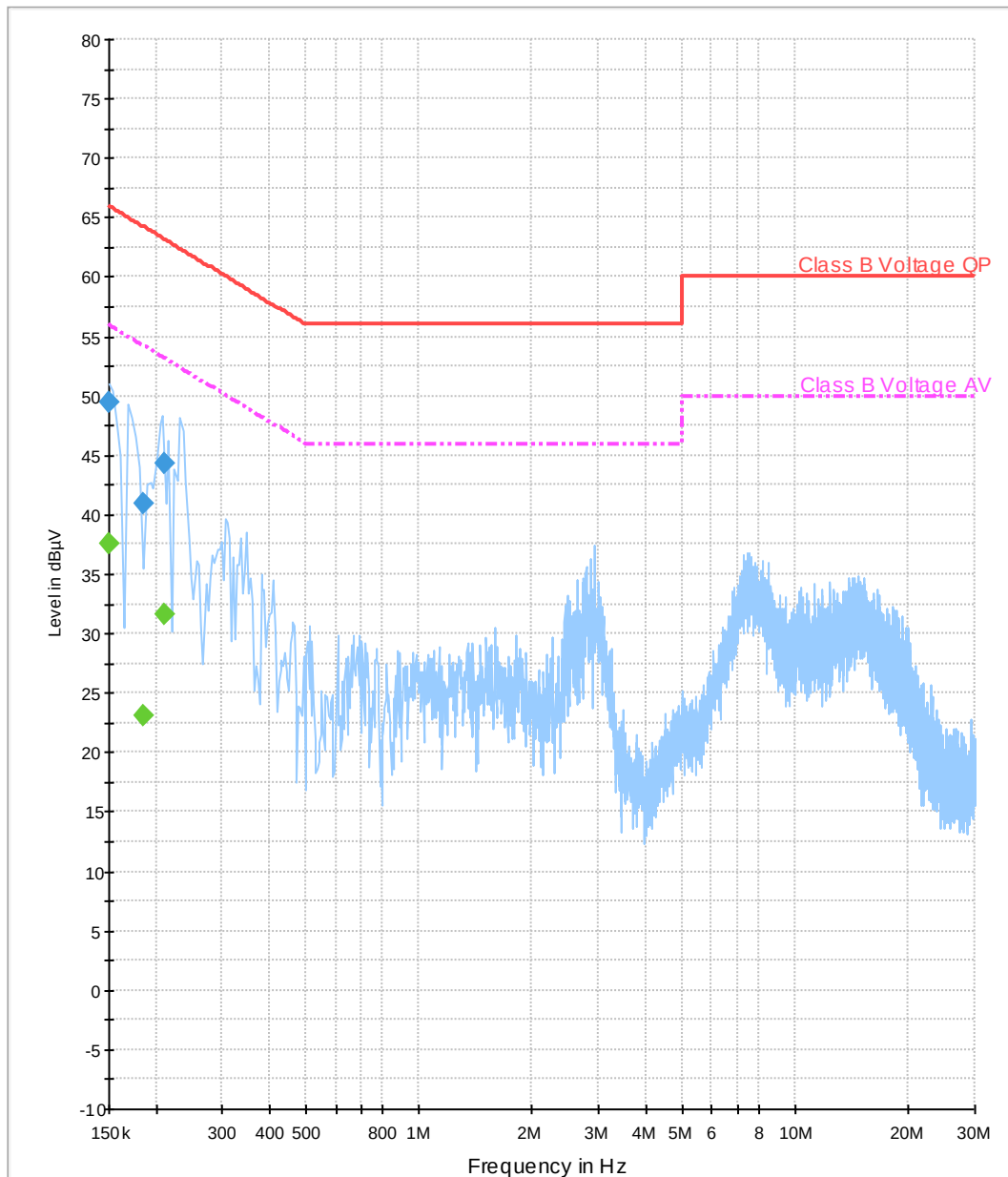
Test Description:  
Testspezifikation:  
Technical Data:  
Diagram:  
Operator name:  
Report.- Nr.

Date: 05.05.2011 Page 1 of 2  
Conducted Voltage Measurement  
FCC 15.107 Class B  
Please see next page for detailed information  
Shows the peak values as a sum of measured ports (N+L1) in maxhold mode  
Lor  
2-20795417c/11

Operating mode:  
Measured on line:  
Power during test:  
Comment 1:  
Comment 2:

RX FDD2+WLAN TX-on+Ping on LAN2  
Mains AC L1 and N  
110 V AC 60 Hz  
LAN2 cable connected on Notebook, LAN1 open  
Telephone Belgacom#2, External antenna#2

### 01\_Class B Voltage\_PK\_QPAV\_N\_L1



Date: 05.05.2011 Page 2 of 2

**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.150000        | 49.5             | 15000.0         | 9.000           | GND | N    | 0.0        | 16.5        | 66.0         |
| ...             | ...              | ...             | ...             | ... | ...  | ...        | ...         | ...          |

**Final Result 2**

| Frequency (MHz) | CAverage (dBμV) | Meas. Time (ms) | Bandwidth (kHz) | PE  | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|-----------------|-----|------|------------|-------------|--------------|
| 0.150000        | 37.7            | 15000.0         | 9.000           | GND | N    | 0.0        | 18.4        | 56.0         |
| ...             | ...             | ...             | ...             | ... | ...  | ...        | ...         | ...          |

Technical Data of Measurements with R&amp;S EMC32 V8.50.0

EMI Auto Test Template: 01\_Class B\_Voltage\_PK\_QPAV\_N\_L1

## 6.2. Radiated magnetic field strength measurements ( $f < 30\text{MHz}$ )

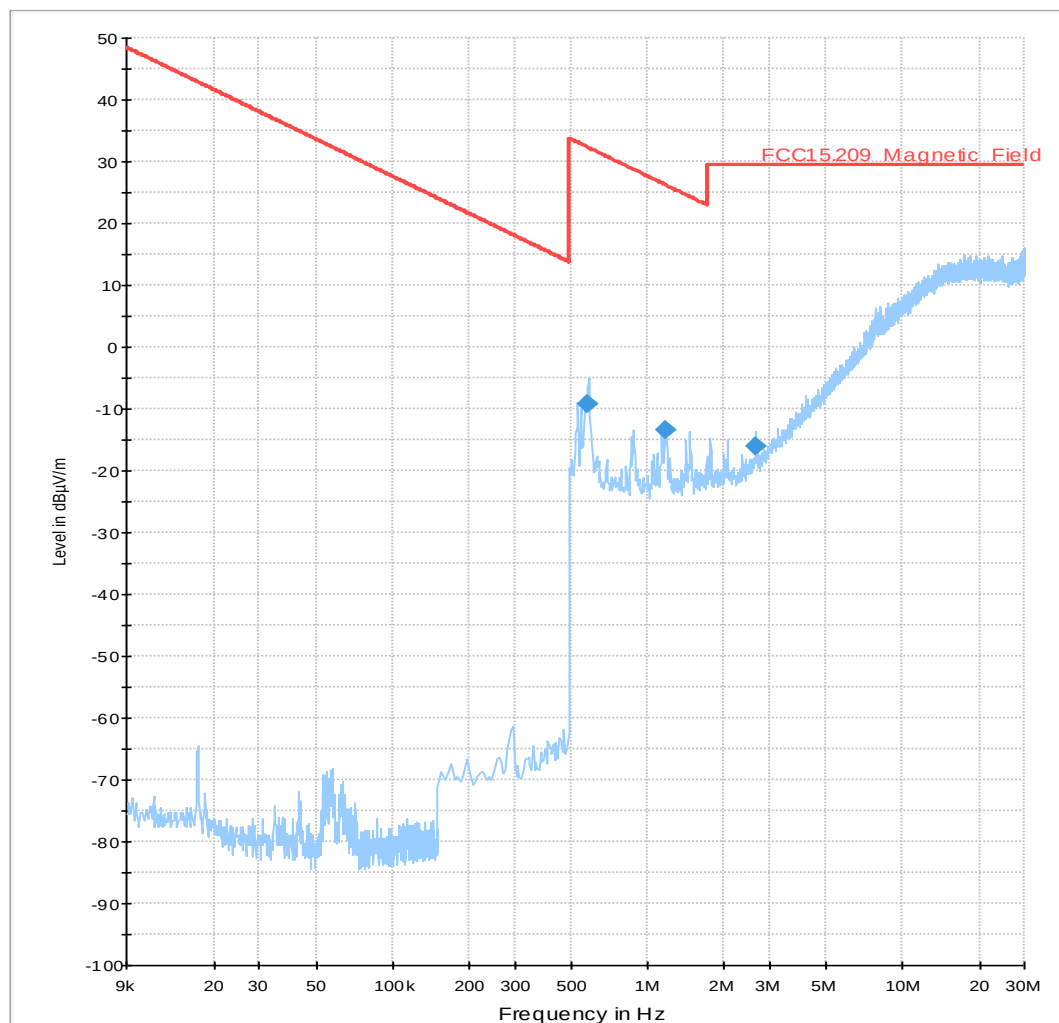
### Diagram No. 2.63

#### Common Information

Test description: Magnetic Fieldstrength Measurement related to 3 m distance  
 Test site and distance: Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance  
 Measured sides of EUT: front, right, rear, left  
 Rec. antenna (pre-scan): height 1.00 m, parallel and 90° to EUT polarisation  
 Turntable step: 90° during pre-scan  
 Used filter: bypass  
 Test specification.: FCC 15.205 § 15.209; RSS-Gen: Issue 3

Operator: Lor  
 Operating conditions: GSM1900 on (Ch. 661) + WLAN-on (b-Mode, 2Mbit, Ch.1)  
 Power during tests: 110V/60Hz  
 Comment 1: USB Data transfer additionally

FCC15.209\_magn hor+vert



#### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|--------------|---------------|------------|-------------|----------------|---------|
| 0.580000        | -9.1               | 1000.0          | 10.000          | V            | 129.0         | -36.1      | 41.44       | 32.34          |         |
| 1.175000        | -13.4              | 1000.0          | 10.000          | V            | 133.0         | -34.6      | 39.62       | 26.22          |         |
| 2.640000        | -16.0              | 1000.0          | 10.000          | V            | 252.0         | -29.7      | 45.54       | 29.54          |         |

EMI Auto Test Template: FCC15.209\_magn hor+vert

## 6.3. Radiated field strength (30MHz < f < 1GHz) RX-Mode/Digital device

### 6.3.1. IDLE GSM 850 (30MHZ < F < 1GHz)

## Diagram No. 2.60

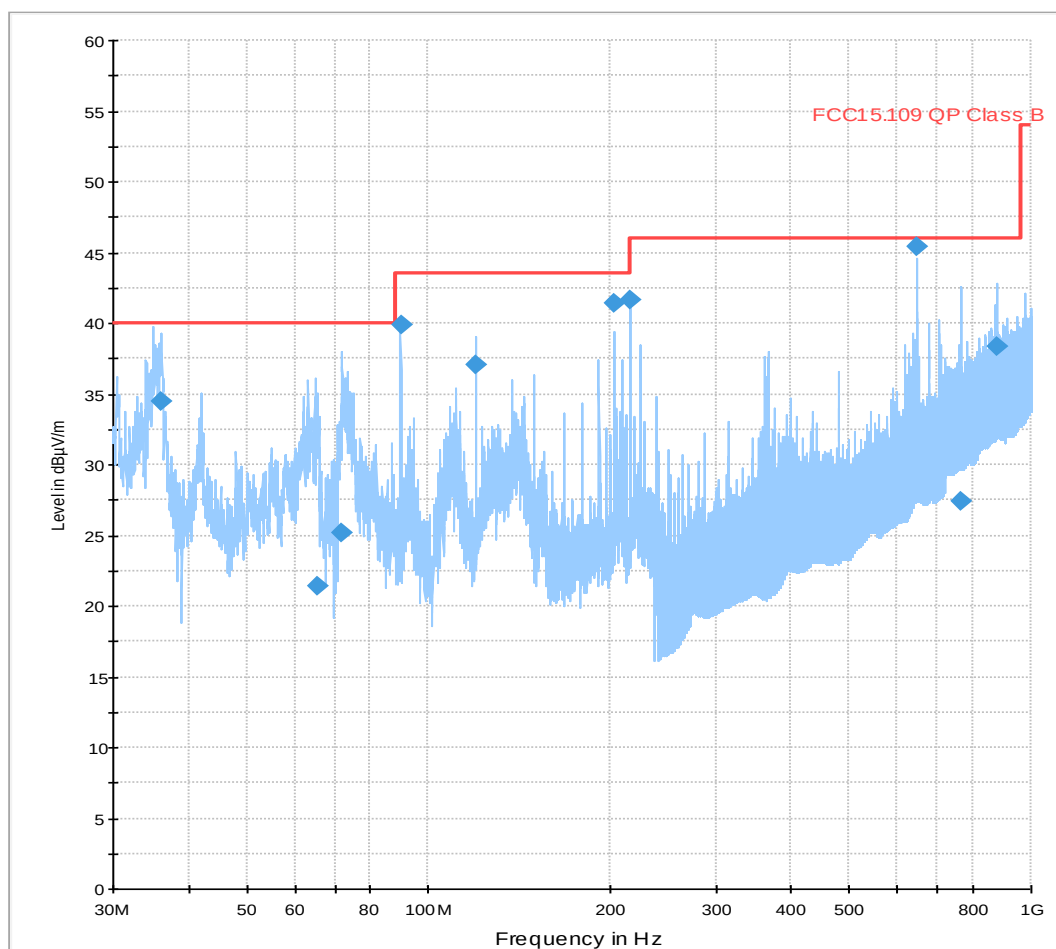
### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification:      | FCC 15.109 ClassB; RSS-Gen: Issue 3                                           |
| Operator:                | Lor                                                                           |
| Operating conditions:    | IDLE GSM850 (RX) + Wifi (RX) + USB Data Transfer                              |
| Power during tests:      | 110V/60Hz; full loaded batteries                                              |
| Comment 1:               | Channel middle                                                                |

### EUT Information

|               |                            |
|---------------|----------------------------|
| EUT Name:     | Globesurfer3.5+Accessories |
| Manufacturer: | Option                     |

FCC15.109\_hor+vert



## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 36.070000       | 34.4               | 1000.           | 120.000         | 237.0       | H            | 122.0         | 19.1       | 5.6         | 40.0           |
| 65.470000       | 21.4               | 1000.           | 120.000         | 127.0       | V            | 200.0         | 7.2        | 18.6        | 40.0           |
| 71.990000       | 25.2               | 1000.           | 120.000         | 153.0       | V            | 230.0         | 6.7        | 14.8        | 40.0           |
| 90.010000       | 39.9               | 1000.           | 120.000         | 116.0       | V            | 220.0         | 8.2        | 3.6         | 43.5           |
| 120.01000       | 37.0               | 1000.           | 120.000         | 187.0       | H            | 135.0         | 8.0        | 6.5         | 43.5           |
| 204.01000       | 41.4               | 1000.           | 120.000         | 163.0       | H            | 61.0          | 11.6       | 2.1         | 43.5           |
| 216.04000       | 41.6               | 1000.           | 120.000         | 202.0       | H            | 48.0          | 11.9       | 4.4         | 46.0           |
| 644.77000       | 45.4               | 1000.           | 120.000         | 188.0       | H            | 353.0         | 23.4       | 0.6         | 46.0           |
| 764.79000       | 27.4               | 1000.           | 120.000         | 187.0       | V            | 0.0           | 24.4       | 18.6        | 46.0           |
| 879.93000       | 38.4               | 1000.           | 120.000         | 165.0       | V            | 13.0          | 26.4       | 7.6         | 46.0           |

EMI Auto Test Template: FCC15.109\_hor+vert

### 6.3.2. IDLE GSM 1900 (30MHz < f < 1GHz)

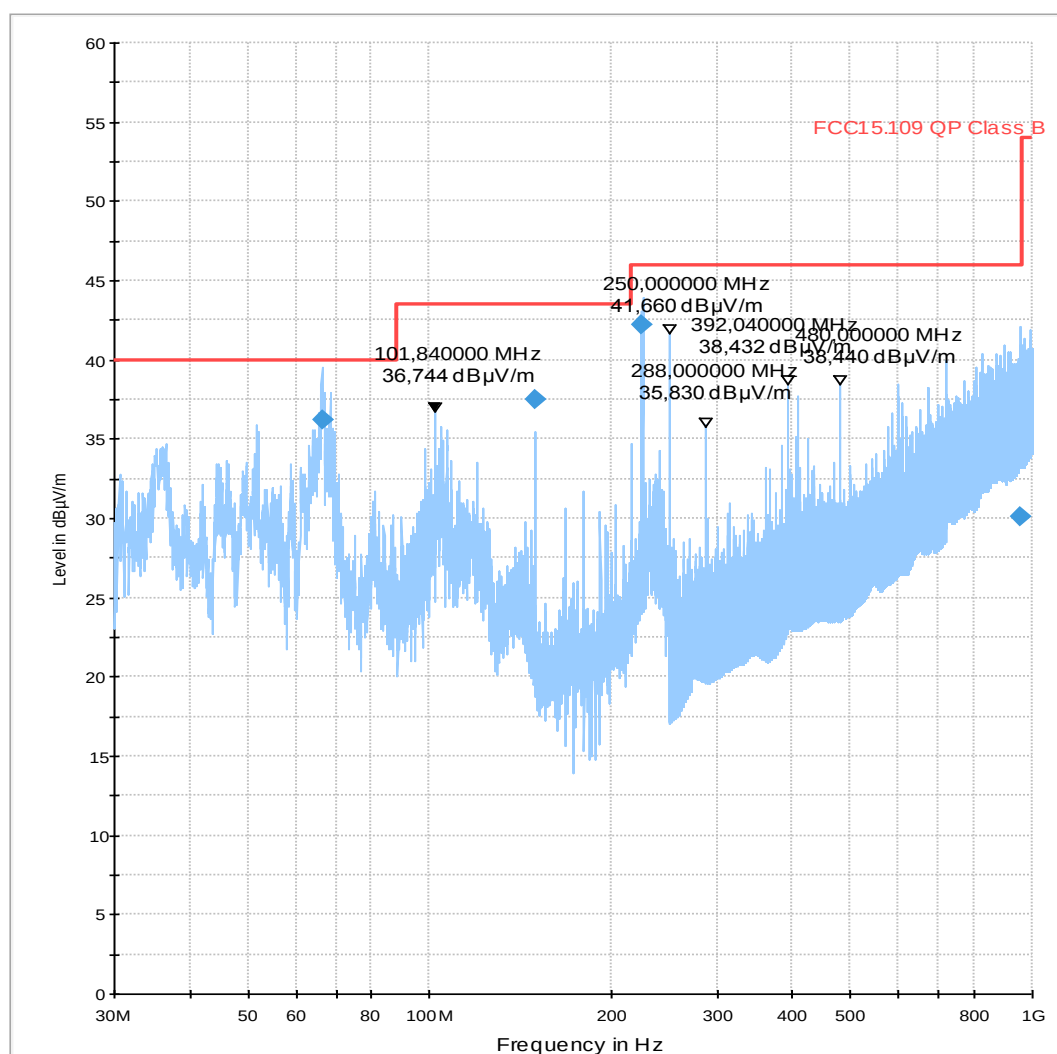
## Diagram No. 2.56

#### Common Information

Test description: Electric Fieldstrength Measurement related to 3 m distance  
 Test site and distance: Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance  
 Measured sides of EUT: front, right, rear, left  
 Rec. antenna (pre-scan): height 1.00 m and 1.82 m, horizontal and vertical polarisation  
 Rec. antenna (final): height between 1 m to 4 m, polarisation according to pre-scan results  
 Turntable step: 90° during pre-scan, continuously turning during final measurement  
 Used filter: lowpass 1200 MHz  
 Test specification: FCC 15.205 § 15.209; RSS-Gen: Issue 3

Operator: Lor  
 Operating conditions: RX Mode GSM1900 + WLAN RX-mode, Ping on LAN  
 Power during tests: 110V/60Hz  
 Comment 1: Channel middle = 661

FCC15.109\_hor+vert



#### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 66.30           | 36.2               | 1000.           | 120.000         | 117.0       | V            | 144.0         | 7.1        | 3.8         | 40.0           |         |
| 150.00          | 37.6               | 1000.           | 120.000         | 128.0       | H            | 216.0         | 8.7        | 5.9         | 43.5           |         |
| 224.760         | 42.2               | 1000.           | 120.000         | 100.0       | V            | 94.0          | 12.5       | 3.8         | 46.0           |         |
| 952.480         | 30.1               | 1000.           | 120.000         | 174.0       | V            | 52.0          | 27.0       | 15.9        | 46.0           |         |

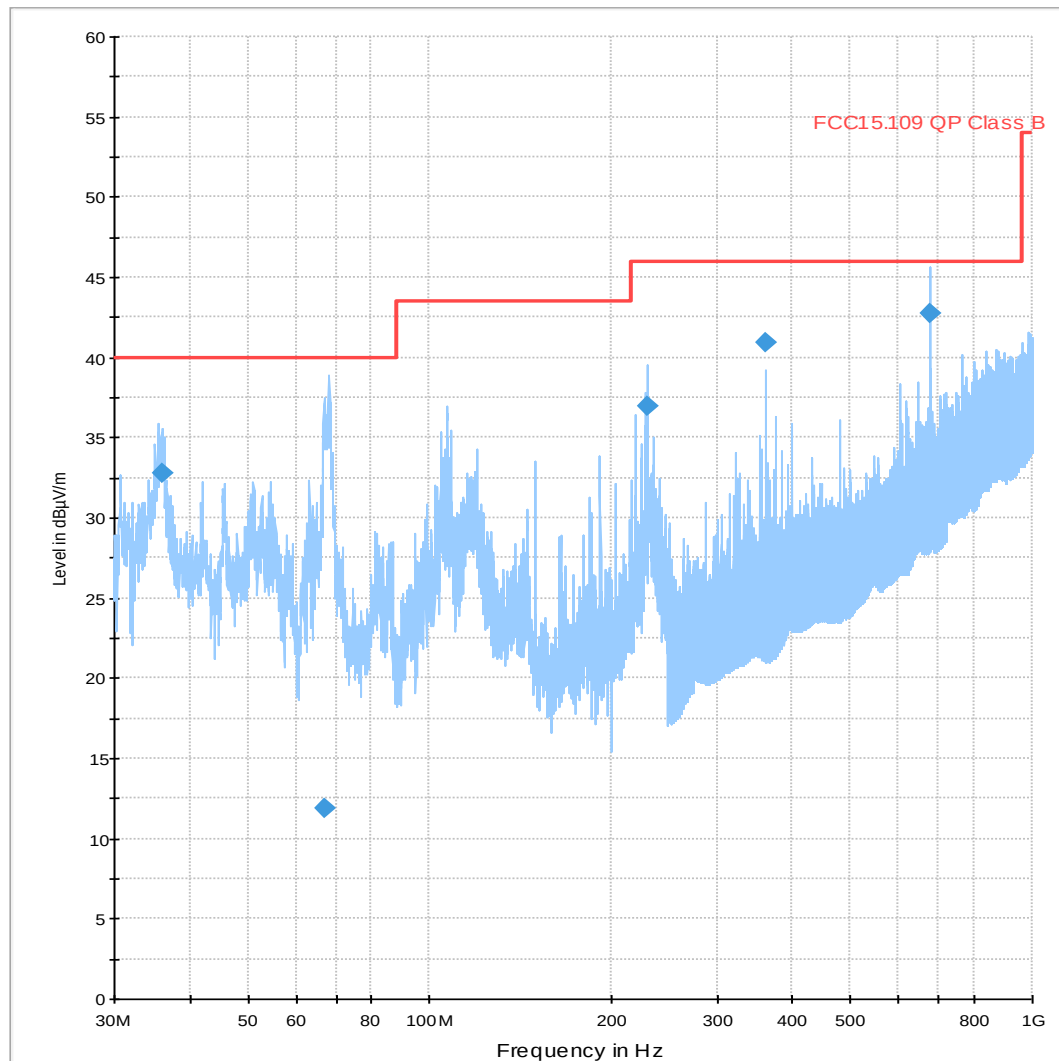
EMI Auto Test Template: FCC15.109\_hor+vert

## Diagram No. 2.57

### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification:      | FCC 15.205 § 15.209; RSS-Gen: Issue 3                                         |
| Operator:                | Lor                                                                           |
| Operating conditions:    | RX Mode GSM1900 + WLAN RX-mode, Ping on LAN                                   |
| Power during tests:      | 110V/60Hz                                                                     |
| Comment 1:               | Channel middle = 661                                                          |

FCC15.109\_hor+vert



### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 36.060000       | 32.8               | 1000.0          | 120.000         | 224.0       | H            | 312.0         | 19.1       | 7.2         | 40.0           |         |
| 66.970000       | 11.9               | 1000.0          | 120.000         | 100.0       | V            | 181.0         | 7.0        | 28.1        | 40.0           |         |
| 229.400000      | 36.9               | 1000.0          | 120.000         | 100.0       | H            | 270.0         | 12.6       | 9.1         | 46.0           |         |
| 360.030000      | 41.0               | 1000.0          | 120.000         | 100.0       | H            | 183.0         | 16.4       | 5.0         | 46.0           |         |
| 675.230000      | 42.7               | 1000.0          | 120.000         | 100.0       | V            | 29.0          | 23.2       | 3.3         | 46.0           |         |

EMI Auto Test Template: FCC15.109\_hor+vert



### 6.3.3. IDLE W-CDMA BAND 5 (30MHz < f < 1GHz)

## Diagram No. 2.61

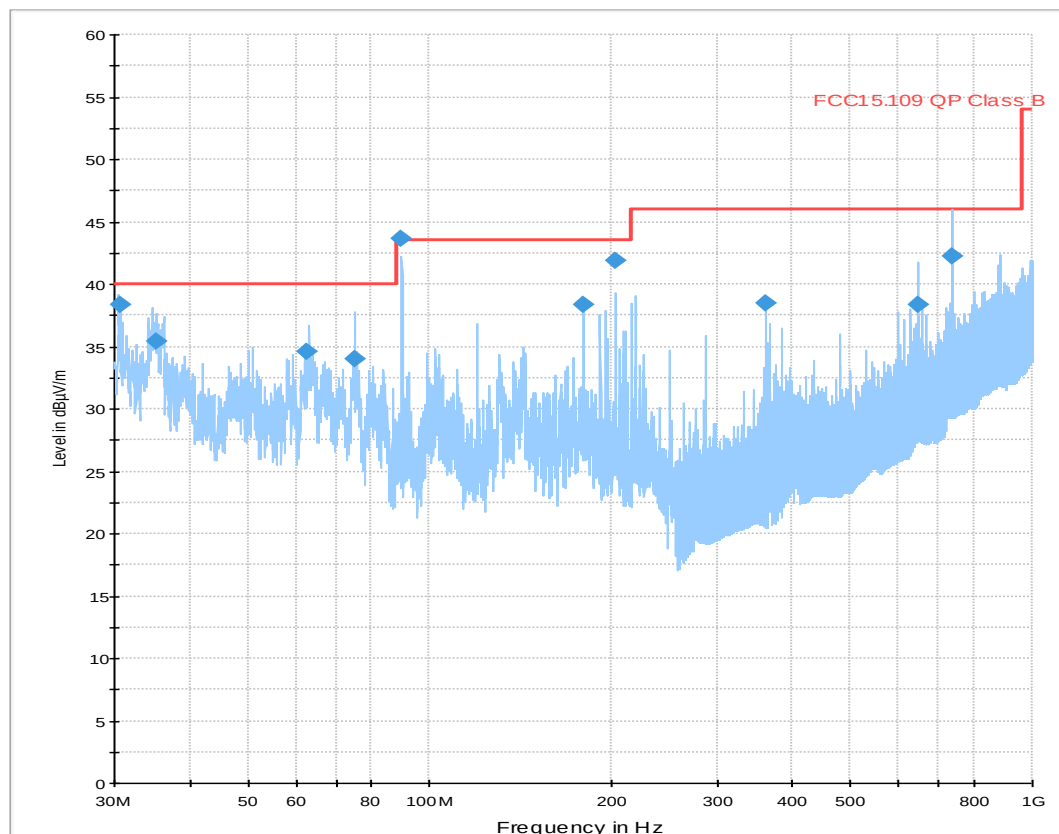
### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification:      | FCC 15.109 ClassB; RSS-Gen: Issue 3                                           |
| Operator:                | Lor                                                                           |
| Operating conditions:    | IDLE WCDMA FDD V (RX) + WLAN (RX) + USB Data Transfer                         |
| Power during tests:      | 110V/60Hz                                                                     |
| Comment 1:               | Channel middle                                                                |

### EUT Information

|               |                            |
|---------------|----------------------------|
| EUT Name:     | Globesurfer3.5+Accessories |
| Manufacturer: | Option                     |

FCC15.109\_hor+vert



### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 30.610000       | 38.3               | 1000.           | 120.000         | 154.0       | H            | 133.0         | 21.6       | 1.7         | 40.0           |         |
| 35.270000       | 35.5               | 1000.           | 120.000         | 309.0       | H            | 198.0         | 19.4       | 4.5         | 40.0           |         |
| 62.790000       | 34.6               | 1000.           | 120.000         | 100.0       | V            | 82.0          | 8.0        | 5.4         | 40.0           |         |
| 75.390000       | 34.0               | 1000.           | 120.000         | 115.0       | V            | 256.0         | 6.8        | 6.0         | 40.0           |         |
| 90.000000       | 43.6               | 1000.           | 120.000         | 363.0       | H            | 83.0          | 8.2        | -0.1        | 43.5           |         |
| 180.020000      | 38.4               | 1000.           | 120.000         | 201.0       | H            | 66.0          | 10.8       | 5.1         | 43.5           |         |
| 204.040000      | 41.8               | 1000.           | 120.000         | 176.0       | H            | 57.0          | 11.6       | 1.7         | 43.5           |         |
| 360.000000      | 38.5               | 1000.           | 120.000         | 100.0       | H            | 270.0         | 16.4       | 7.5         | 46.0           |         |
| 646.620000      | 38.3               | 1000.           | 120.000         | 100.0       | V            | 231.0         | 23.4       | 7.7         | 46.0           |         |
| 734.280000      | 42.2               | 1000.           | 120.000         | 100.0       | V            | 150.0         | 24.0       | 3.8         | 46.0           |         |

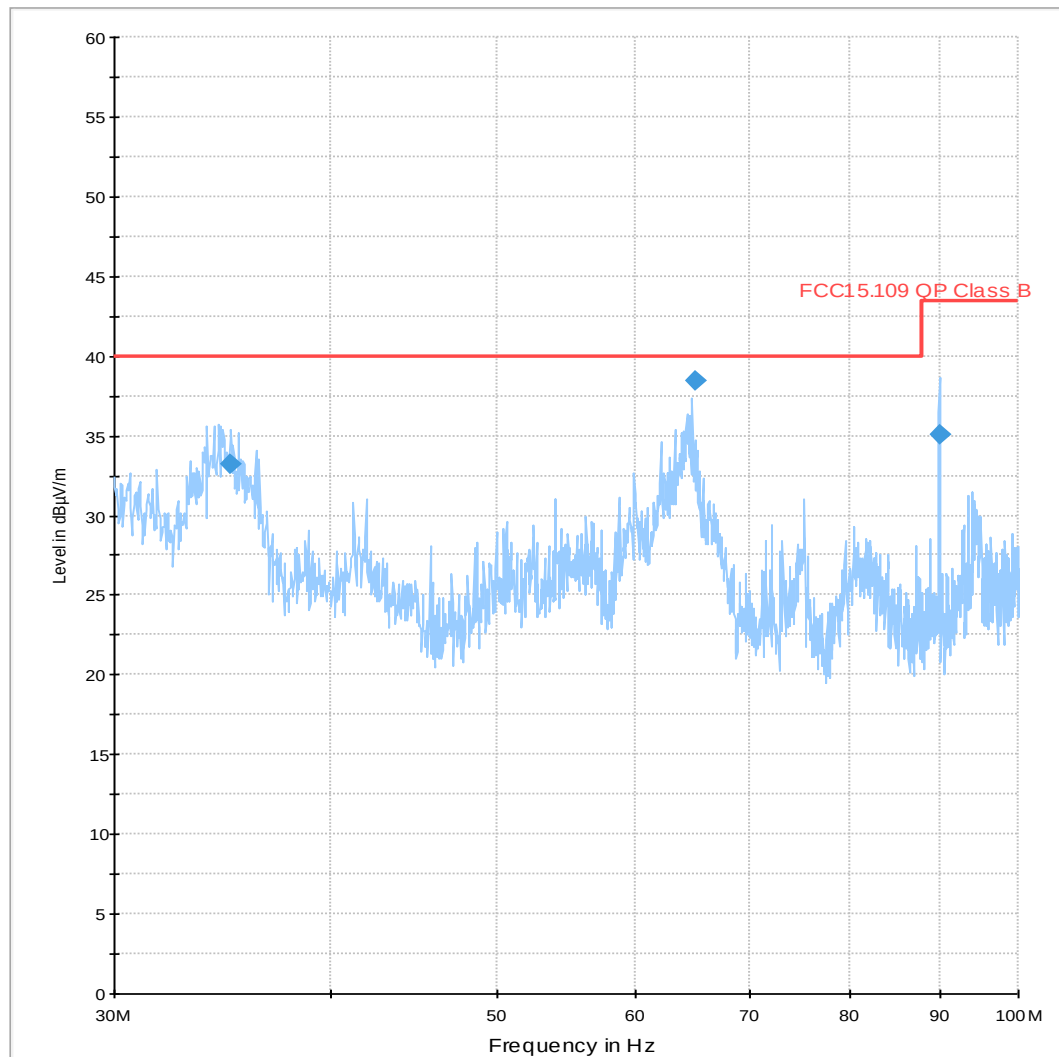
EMI Auto Test Template: FCC15.109\_hor+vert

## Diagram No. 2.61a

### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification.:     | FCC 15.109 Class B + RSS-Gen.                                                 |
| Operator:                | Lor                                                                           |
| Operating conditions:    | IDLE WCDMA FDD V (RX) + WLAN (RX) + USB Data Transfer                         |
| Power during tests:      | 110V/60Hz                                                                     |
| Comment 1:               | Channel middle                                                                |
| Comment 2:               | <b>Notebook battery powered</b>                                               |

FCC15.109\_hor+vert



### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 35.070000       | 33.2               | 1000.           | 120.000         | 223.0       | H            | 168.0         | 19.5       | 6.8         | 40.0           |         |
| 64.990000       | 38.4               | 1000.           | 120.000         | 322.0       | H            | 40.0          | 7.3        | 1.6         | 40.0           |         |
| 90.000000       | 35.1               | 1000.           | 120.000         | 100.0       | V            | 172.0         | 8.2        | 8.4         | 43.5           |         |

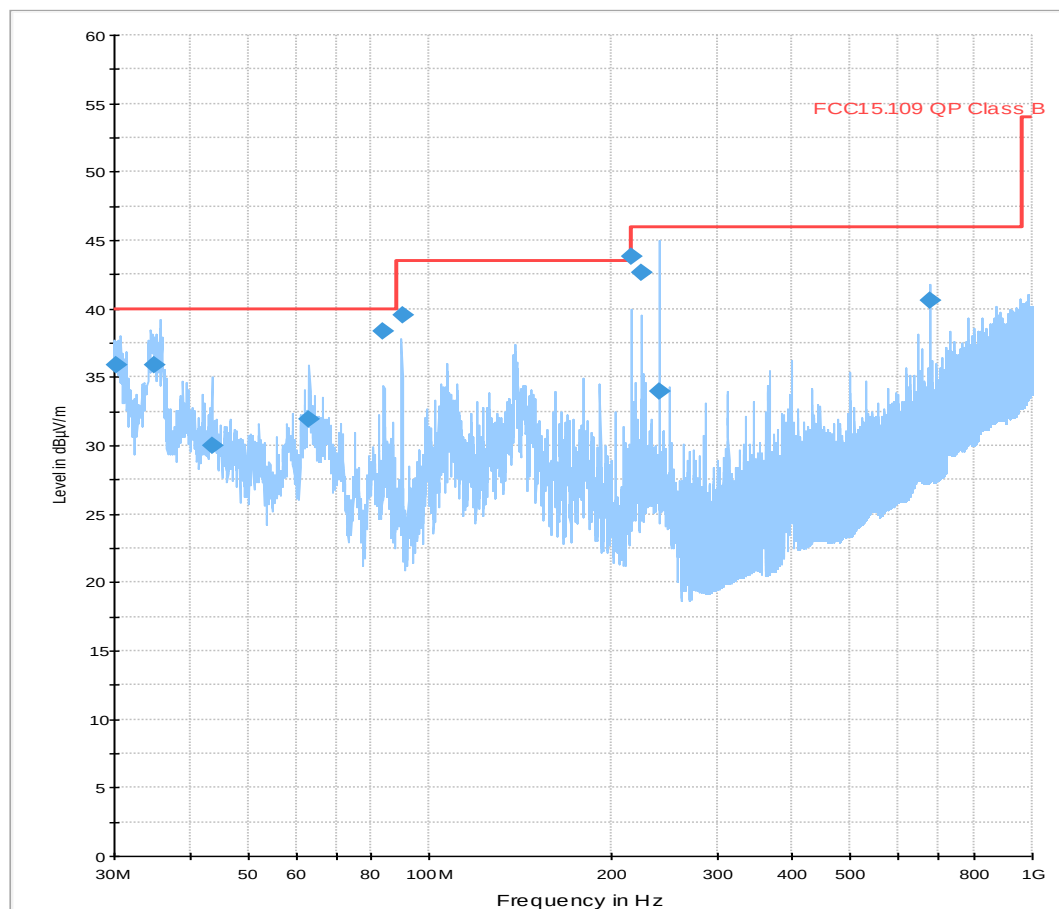
### 6.3.4. IDLE W-CDMA BAND 2 (30MHz < f < 1GHz)

#### Diagram No. 2.62

##### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification:      | FCC 15.109 ClassB; RSS-Gen: Issue 3                                           |
| Operator:                | Lor                                                                           |
| Operating conditions:    | IDLE WCDMA FDD II (RX) + WLAN (RX) + USB Data Transfer                        |
| Power during tests:      | 110V/60Hz                                                                     |
| Comment 1:               | Channel middle                                                                |

FCC15.109\_hor+vert



##### Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|---------|
| 30.340000       | 35.9               | 1000.           | 120.000         | 114.0       | H            | 237.0         | 21.7       | 4.1         | 40.0           |         |
| 35.090000       | 35.9               | 1000.           | 120.000         | 259.0       | H            | 88.0          | 19.4       | 4.1         | 40.0           |         |
| 43.490000       | 30.0               | 1000.           | 120.000         | 224.0       | H            | 151.0         | 15.8       | 10.0        | 40.0           |         |
| 63.000000       | 31.9               | 1000.           | 120.000         | 100.0       | V            | 208.0         | 7.9        | 8.1         | 40.0           |         |
| 84.010000       | 38.3               | 1000.           | 120.000         | 368.0       | H            | 196.0         | 7.7        | 1.7         | 40.0           |         |
| 90.010000       | 39.5               | 1000.           | 120.000         | 368.0       | H            | 196.0         | 8.2        | 4.0         | 43.5           |         |
| 216.01000       | 43.8               | 1000.           | 120.000         | 100.0       | H            | 300.0         | 11.9       | 2.2         | 46.0           |         |
| 224.78000       | 42.6               | 1000.           | 120.000         | 100.0       | H            | 295.0         | 12.5       | 3.4         | 46.0           |         |
| 239.99000       | 34.0               | 1000.           | 120.000         | 100.0       | H            | 304.0         | 13.0       | 12.0        | 46.0           |         |
| 675.24000       | 40.6               | 1000.           | 120.000         | 100.0       | V            | 45.0          | 23.2       | 5.4         | 46.0           |         |

EMI Auto Test Template: FCC15.109\_hor+vert

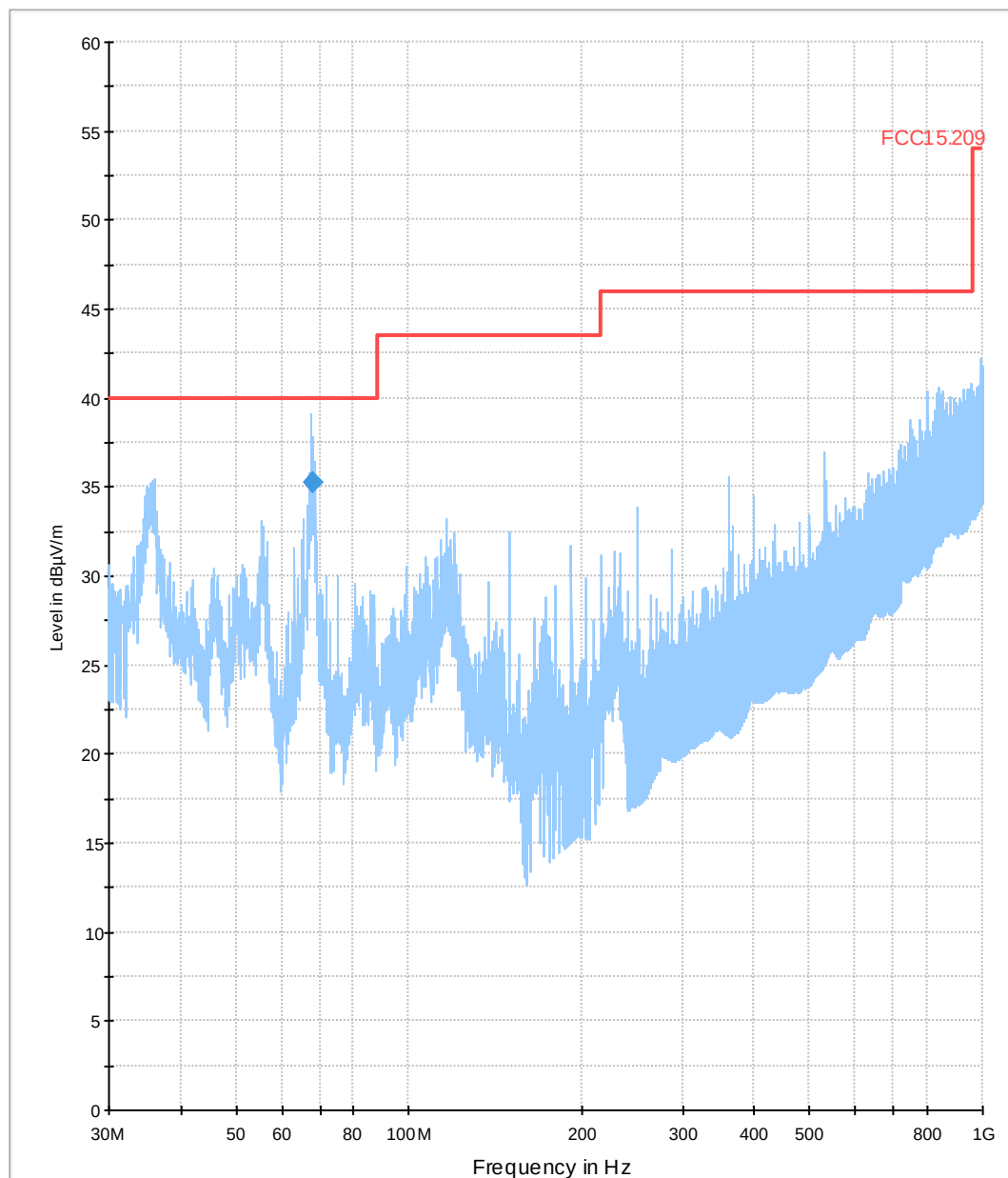
## 6.4. Radiated field strength (30MHz < f < 1GHz) TX-Mode

### Diagram No. 2.58

#### Common Information

|                          |                                                                               |
|--------------------------|-------------------------------------------------------------------------------|
| Test description:        | Electric Fieldstrength Measurement related to 3 m distance                    |
| Test site and distance:  | Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance |
| Measured sides of EUT:   | front, right, rear, left                                                      |
| Rec. antenna (pre-scan): | height 1.00 m and 1.82 m, horizontal and vertical polarisation                |
| Rec. antenna (final):    | height between 1 m to 4 m, polarisation according to pre-scan results         |
| Turntable step:          | 90° during pre-scan, continuously turning during final measurement            |
| Used filter:             | lowpass 1200 MHz                                                              |
| Test specification.:     | FCC 15.205 § 15.209; RSS-Gen: Issue 3                                         |
| Operator:                | Lor                                                                           |
| Operating conditions:    | GSM1900 TX-on +WLAN on, Channel 661                                           |
| Power during tests:      | 110V/60Hz; full loaded batteries                                              |
| Comment 1:               | WLAN Channel 1, bMode, 2MBit, Ping on LAN1, Data transfer USB                 |

01\_FCC15.209\_hor+vert\_KP0



## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 67.970000       | 35.2               | 1000.0          | 120.000         | 169.0       | V            | 70.0          | 6.9        | 4.80        | 40.00          |

(continuation of the "Final Result 1" table from column 10 ...)

| Frequency (MHz) | Comment |
|-----------------|---------|
| 67.970000       |         |

## EMI Auto Test Template: 01\_FCC15.209\_hor+vert\_KP0

Hardware Setup: HW11\_FCC\_ESCS30\_TP1200\_EUTkipp  
 Measurement Type: Open-Area-Test-Site  
 Frequency Range: 30 MHz - 1 GHz  
 Graphics Level Range: 0 dBµV/m - 60 dBµV/m

Preview Measurements:  
 Antenna height: 100 - 182 cm , Step Size = 82 cm , Positioning Speed = 8  
 Polarization: H + V  
 Turntable position: 0 - 270 deg , Step Size = 90 deg , Positioning Speed = 8  
 Scan Test Template: EMI Scan 01\_fast\_FCC\_15\_209 B

|                 |                  |                  |              |                   |               |
|-----------------|------------------|------------------|--------------|-------------------|---------------|
| <b>Subrange</b> | <b>Step Size</b> | <b>Detectors</b> | <b>IF BW</b> | <b>Meas. Time</b> | <b>Preamp</b> |
| 30 MHz - 1 GHz  | 40 kHz           | PK+              | 120 kHz      | 0,00005 s         | 0 dB          |

Receiver: [ESS]

Data Reduction:  
 Limit Line #1: FCC15.209  
 Peak Search: 6 dB , Maximum Results: 10  
 Subrange Maxima: 25 Subranges , Maxima per Subrange: 1  
 Acceptance Offset: -6 dB  
 Maximum Number of Results: 20  
 After Data Reduction: Interactive data reduction

Frequency Zoom:  
 Zoom Scan Template: EMI Scan 02\_20ms\_zoom\_15\_209 B

|                 |                  |                  |              |                   |               |
|-----------------|------------------|------------------|--------------|-------------------|---------------|
| <b>Subrange</b> | <b>Step Size</b> | <b>Detectors</b> | <b>IF BW</b> | <b>Meas. Time</b> | <b>Preamp</b> |
| 30 MHz - 1 GHz  | 10 kHz           | PK+              | 120 kHz      | 0,02 s            | 0 dB          |

Receiver: [ESS]

Adjustment:  
 Antenna height: Adjustment with full Range , Measuring Speed = 8  
 Turntable position: Adjustment with full Range , Measuring Speed = 3  
 Template for Single Meas.: EMI Scan 02\_20ms\_FCC\_15\_209B

|                 |                  |                  |              |                   |               |
|-----------------|------------------|------------------|--------------|-------------------|---------------|
| <b>Subrange</b> | <b>Step Size</b> | <b>Detectors</b> | <b>IF BW</b> | <b>Meas. Time</b> | <b>Preamp</b> |
| 30 MHz - 1 GHz  | 100 kHz          | PK+              | 120 kHz      | 0,02 s            | 0 dB          |

Receiver: [ESS]

Final Measurements:  
 Template for Single Meas.: EMI Scan 03\_1s\_FCC\_15\_209 B

|                 |                  |                  |              |                   |               |
|-----------------|------------------|------------------|--------------|-------------------|---------------|
| <b>Subrange</b> | <b>Step Size</b> | <b>Detectors</b> | <b>IF BW</b> | <b>Meas. Time</b> | <b>Preamp</b> |
| 30 MHz - 1 GHz  | 100 kHz          | QPK              | 120 kHz      | 1 s               | 0 dB          |

Receiver: [ESS]

Report Settings:  
 Report Template: FCC15\_209\_vert\_hor  
 Create Electronic Report: RTF PDF  
 Document Name: EMI Report

Actions:  
 Data Reduction: Before  
 Notify: Sound (WAV file) 'tada.wav'  
 Final Measurements: After  
 Notify: Sound (WAV file) 'tada.wav'

## 6.5. Radiated field strength (f > 1GHz) RX-Mode/Digital device

### 6.5.1. IDLE GSM 1900 (f > 1GHz)

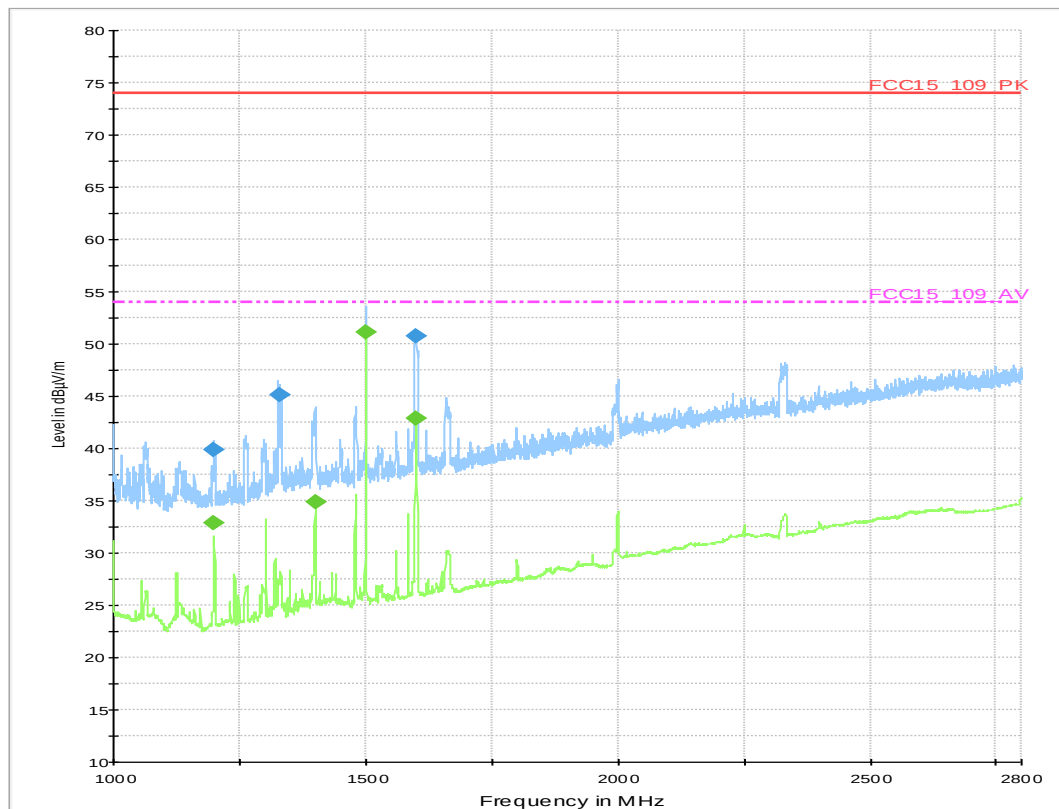
Diagram No.: 2.70

#### Common Information

Test Description: Radiated field strength emission in 3m distance  
 Test Site: CETECOM GmbH Essen  
 Test Standard: FCC 15.109 Unintentional Radiator  
 Antenna polarisation: horizontal/vertical

Operation mode: IDLE Mode 1900 + IDLE WLAN + USB Traffic (File-Sharing)  
 Operator Name: Lor  
 Comment: Uplink channel middle: 661

Sweep1\_SM1\_K0



#### Final Result 1

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1199.800000     | 39.9             | 100.0           | 1000.000        | 155.0       | H            | -6.0          | 0.3        | 34.1        | 74.0           |
| 1329.800000     | 45.1             | 100.0           | 1000.000        | 155.0       | H            | 220.0         | 1.5        | 28.9        | 74.0           |
| 1599.800000     | 50.8             | 100.0           | 1000.000        | 155.0       | H            | 123.0         | 3.6        | 23.2        | 74.0           |

#### Final Result 2

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1200.200000     | 32.8             | 100.0           | 1000.000        | 155.0       | H            | 216.0         | 0.3        | 21.2        | 54.0           |
| 1400.200000     | 34.9             | 100.0           | 1000.000        | 155.0       | H            | 35.0          | 2.2        | 19.1        | 54.0           |
| 1500.200000     | 51.1             | 100.0           | 1000.000        | 155.0       | H            | 45.0          | 2.9        | 2.9         | 54.0           |
| 1600.200000     | 42.9             | 100.0           | 1000.000        | 155.0       | H            | 122.0         | 3.6        | 11.1        | 54.0           |

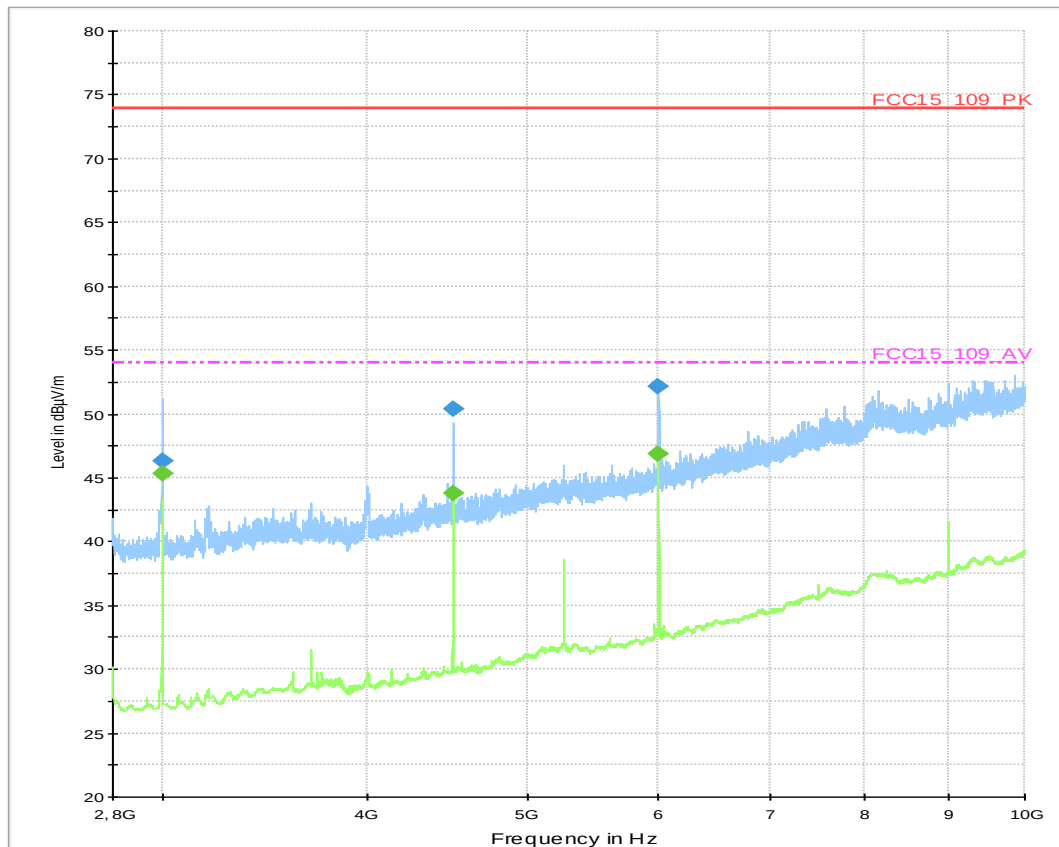
EMI Auto Test Template: Sweep1\_SM1\_K0

## Diagram No.: 2.71

### Common Information

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance         |
| Test Site:            | CETECOM GmbH Essen                                      |
| Test Standard:        | FCC 15.109 Unintentional Radiator                       |
| Antenna polarisation: | horizontal/vertical                                     |
| Operation mode:       | IDLE Mode 1900 + IDLE WLAN + USB Traffic (File-Sharing) |
| Operator Name:        | Lor                                                     |
| Comment:              | Uplink channel middle: 661<br>External antenna used     |

Sweep2\_SM1\_K0



### Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.000000     | 46.3             | 100.0           | 1000.000        | 155.0       | V            | 45.0          | -1.7       | 27.7        | 74.0           |
| 4500.100000     | 50.4             | 100.0           | 1000.000        | 155.0       | H            | 2.0           | 1.9        | 23.6        | 74.0           |
| 6000.600000     | 52.2             | 100.0           | 1000.000        | 155.0       | V            | 131.0         | 5.9        | 21.8        | 74.0           |

### Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.100000     | 45.4             | 100.0           | 1000.000        | 155.0       | H            | 57.0          | -1.7       | 8.6         | 54.0           |
| 4500.400000     | 43.8             | 100.0           | 1000.000        | 155.0       | H            | 2.0           | 1.9        | 10.2        | 54.0           |
| 6000.500000     | 46.9             | 100.0           | 1000.000        | 155.0       | V            | 130.0         | 5.9        | 7.1         | 54.0           |

EMI Auto Test Template: Sweep2\_SM1\_K0

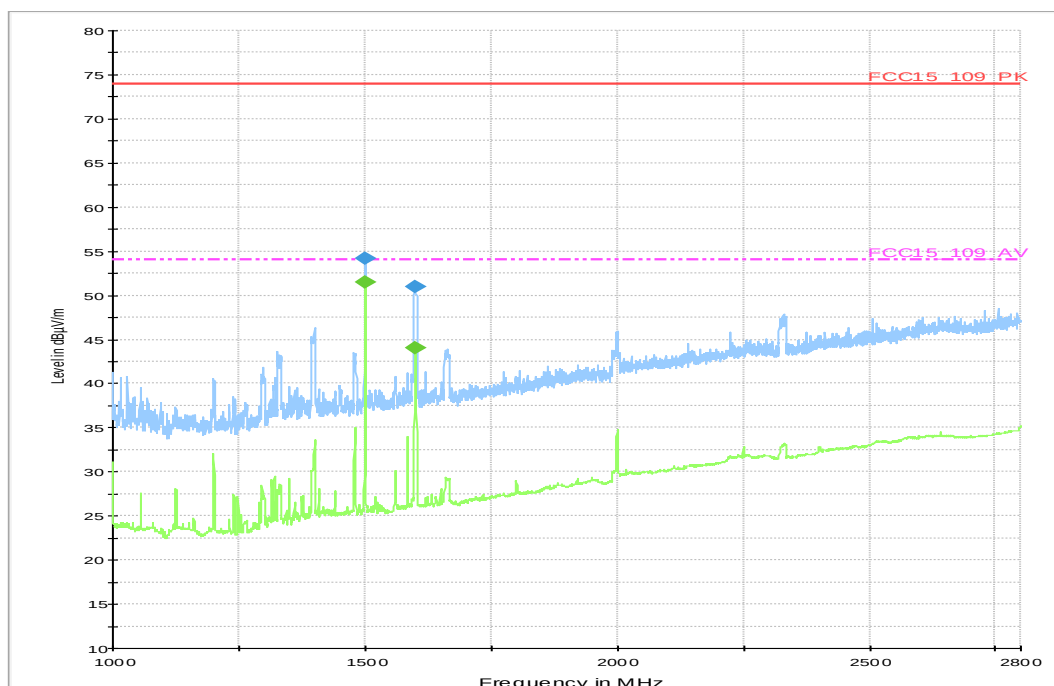
## 6.5.2. IDLE GSM 850 (f > 1GHz)

Diagram No.: 2.72

### Common Information

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance         |
| Test Site:            | CETECOM GmbH Essen                                      |
| Test Standard:        | FCC 15.109 Unintentional Radiator                       |
| Antenna polarisation: | horizontal/vertical                                     |
| Operation mode:       | IDLE Mode 8500 + IDLE WLAN + USB Traffic (File-Sharing) |
| Operator Name:        | Lor                                                     |
| Comment:              | Uplink channel middle: 182                              |
|                       | Internal antenna used                                   |

Sweep1\_SM1\_K0



### Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 54.1             | 100.0           | 1000.000        | 155.0       | H            | 45.0          | 2.9        | 19.9        | 74.0           |
| 1600.600000     | 50.9             | 100.0           | 1000.000        | 155.0       | H            | 136.0         | 3.6        | 23.1        | 74.0           |

### Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 51.4             | 100.0           | 1000.000        | 155.0       | H            | 45.0          | 2.9        | 2.6         | 54.0           |
| 1599.800000     | 44.0             | 100.0           | 1000.000        | 155.0       | H            | 137.0         | 3.6        | 10.0        | 54.0           |

EMI Auto Test Template: Sweep1\_SM1\_K0

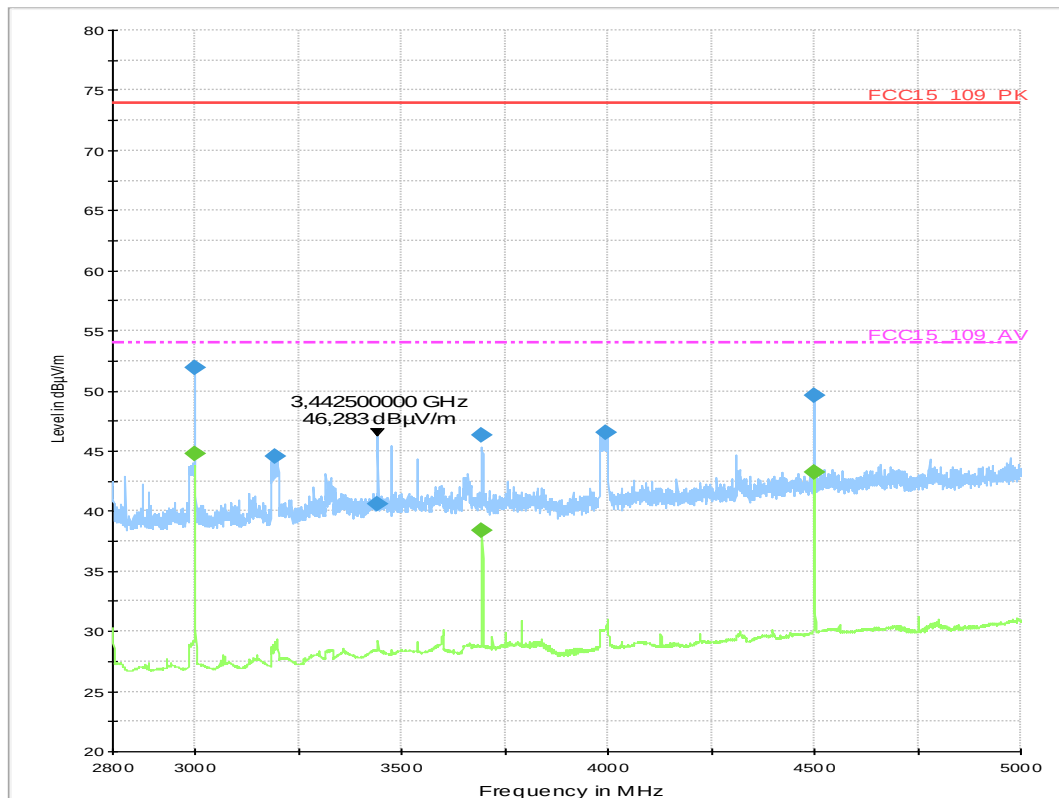


## Diagram No.: 2.73

## Common Information

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance        |
| Test Site:            | CETECOM GmbH Essen                                     |
| Test Standard:        | FCC 15.109 Unintentional Radiator                      |
| Antenna polarisation: | horizontal/vertical                                    |
| Operation mode:       | IDLE Mode 850 + IDLE WLAN + USB Traffic (File-Sharing) |
| Operator Name:        | Lor                                                    |
| Comment:              | Uplink channel middle: 182                             |
|                       | Internal antenna used                                  |

Sweep2\_SM1\_K0



## Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.000000     | 51.9             | 100.0           | 1000.000        | 155.0       | V            | -2.0          | -1.7       | 22.1        | 74.0           |
| 3193.600000     | 44.6             | 100.0           | 1000.000        | 155.0       | V            | 216.0         | -1.5       | 29.4        | 74.0           |
| 3442.500000     | 40.6             | 100.0           | 1000.000        | 155.0       | V            | -21.0         | -0.9       | 33.4        | 74.0           |
| 3695.500000     | 46.3             | 100.0           | 1000.000        | 155.0       | V            | 313.0         | -0.2       | 27.7        | 74.0           |
| 3993.000000     | 46.6             | 100.0           | 1000.000        | 155.0       | V            | 306.0         | 0.3        | 27.4        | 74.0           |
| 4500.400000     | 49.6             | 100.0           | 1000.000        | 155.0       | H            | -9.0          | 1.9        | 24.4        | 74.0           |

## Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.400000     | 44.7             | 100.0           | 1000.000        | 155.0       | H            | 48.0          | -1.7       | 9.3         | 54.0           |
| 3696.000000     | 38.3             | 100.0           | 1000.000        | 155.0       | V            | 322.0         | -0.2       | 15.7        | 54.0           |
| 4500.500000     | 43.2             | 100.0           | 1000.000        | 155.0       | H            | -6.0          | 1.9        | 10.8        | 54.0           |

EMI Auto Test Template: Sweep2\_SM1\_K0

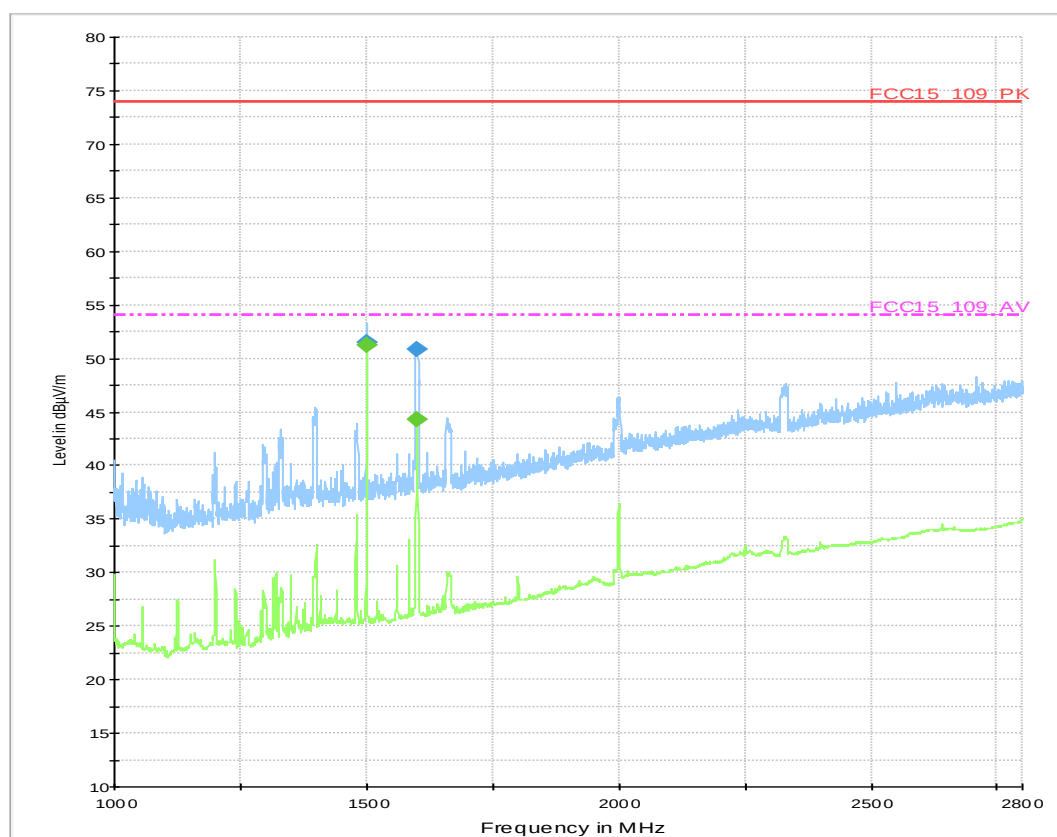
### 6.5.3. IDLE W-CDMA BAND 5 (f > 1GHz)

Diagram No.: 2.74

#### Common Information

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance            |
| Test Site:            | CETECOM GmbH Essen                                         |
| Test Standard:        | FCC 15.109 Unintentional Radiator                          |
| Antenna polarisation: | horizontal/vertical                                        |
| Operation mode:       | IDLE Mode WCDMA V + IDLE WLAN + USB Traffic (File-Sharing) |
| Operator Name:        | Lor                                                        |
| Comment:              | Uplink channel middle: 4132                                |
|                       | External antenna used                                      |

Sweep1\_SM1\_K0



#### Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 51.5             | 100.0           | 1000.000        | 155.0       | H            | 45.0          | 2.9        | 22.5        | 74.0           |
| 1600.200000     | 50.8             | 100.0           | 1000.000        | 155.0       | H            | 133.0         | 3.6        | 23.2        | 74.0           |

#### Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 51.2             | 100.0           | 1000.000        | 155.0       | H            | 18.0          | 2.9        | 2.8         | 54.0           |
| 1599.800000     | 44.3             | 100.0           | 1000.000        | 155.0       | H            | 136.0         | 3.6        | 9.7         | 54.0           |

EMI Auto Test Template: Sweep1\_SM1\_K0

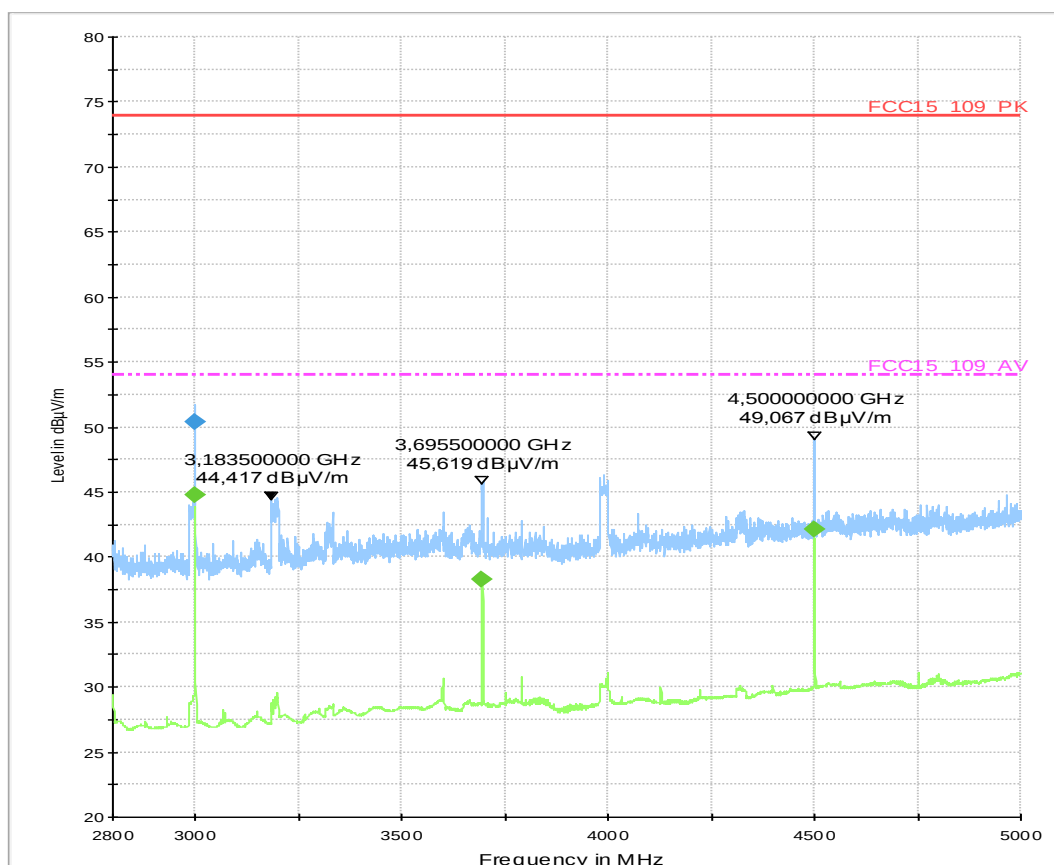
## Diagram No.: 2.75

## Common Information

Test Description: Radiated field strength emission in 3m distance  
 Test Site: CETECOM GmbH Essen  
 Test Standard: FCC 15.109 Unintentional Radiator  
 Antenna polarisation: horizontal/vertical

Operation mode: IDLE Mode WCDMA V + IDLE WLAN + USB Traffic (File-Sharing)  
 Operator Name: Lor  
 Comment: Uplink channel middle: 4132  
 External antenna used

Sweep2\_SM1\_K0



## Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.000000     | 50.4             | 100.0           | 1000.000        | 155.0       | V            | -4.0          | -1.7       | 23.6        | 74.0           |

## Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 2999.600000     | 44.8             | 100.0           | 1000.000        | 155.0       | V            | -13.0         | -1.7       | 9.2         | 54.0           |
| 3696.000000     | 38.3             | 100.0           | 1000.000        | 155.0       | V            | 313.0         | -0.2       | 15.7        | 54.0           |
| 4500.500000     | 42.1             | 100.0           | 1000.000        | 155.0       | H            | 2.0           | 1.9        | 11.9        | 54.0           |

EMI Auto Test Template: Sweep2\_SM1\_K0

#### 6.5.4. IDLE W-CDMA BAND 2 (f > 1GHz)

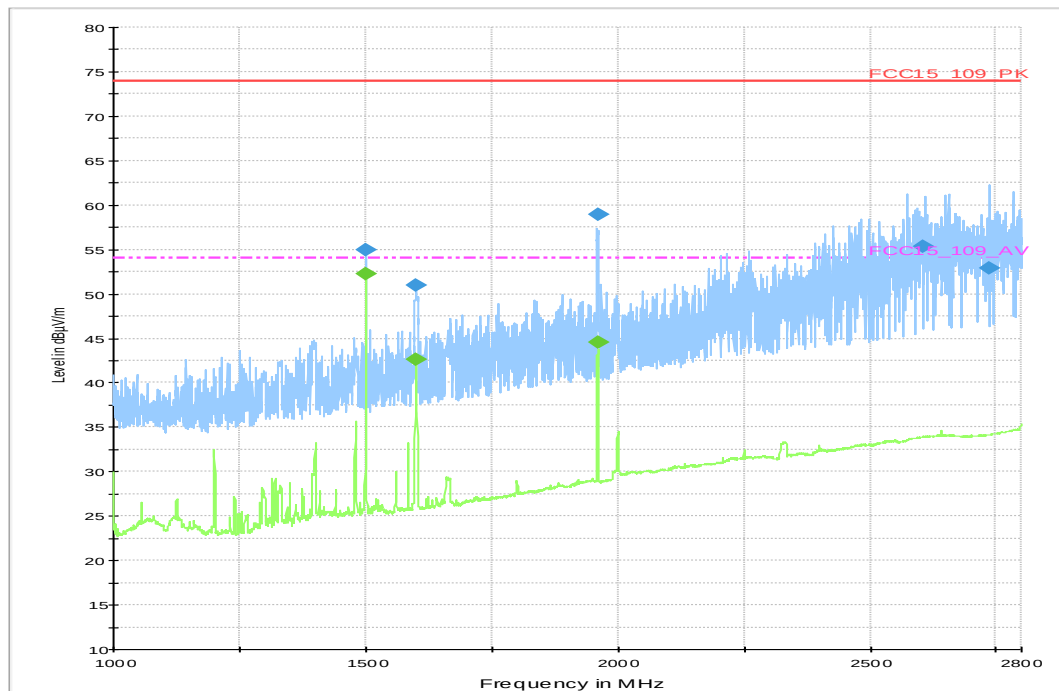
#### Diagram No.: 2.76

##### Common Information

Test Description: Radiated field strength emission in 3m distance  
 Test Site: CETECOM GmbH Essen  
 Test Standard: FCC 15.109 Unintentional Radiator  
 Antenna polarisation: horizontal/vertical

Operation mode: IDLE Mode FDD Band 2 + IDLE WLAN  
 Operator Name: Lor  
 Comment: Uplink channel middle: 9400  
 Internal Antenna of EUT

Sweep1\_SM1\_K0



##### Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 54.9             | 100.0      | 1000.000        | 155.0       | H            | 46.0          | 2.9        | 19.1        | 74.0           |
| 1600.200000     | 50.9             | 100.0      | 1000.000        | 155.0       | H            | 47.0          | 3.6        | 23.1        | 74.0           |
| 1961.000000     | 59.0             | 100.0      | 1000.000        | 155.0       | V            | 307.0         | 6.9        | 15.0        | 74.0           |
| 2605.400000     | 55.3             | 100.0      | 1000.000        | 155.0       | H            | -13.0         | 10.1       | 18.7        | 74.0           |
| 2735.000000     | 52.9             | 100.0      | 1000.000        | 155.0       | H            | 313.0         | 10.9       | 21.1        | 74.0           |

##### Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1500.200000     | 52.2             | 100.0      | 1000.000        | 155.0       | H            | 42.0          | 2.9        | 1.8         | 54.0           |
| 1600.200000     | 42.6             | 100.0      | 1000.000        | 155.0       | H            | 42.0          | 3.6        | 11.4        | 54.0           |
| 1961.400000     | 44.5             | 100.0      | 1000.000        | 155.0       | V            | 309.0         | 6.9        | 9.5         | 54.0           |

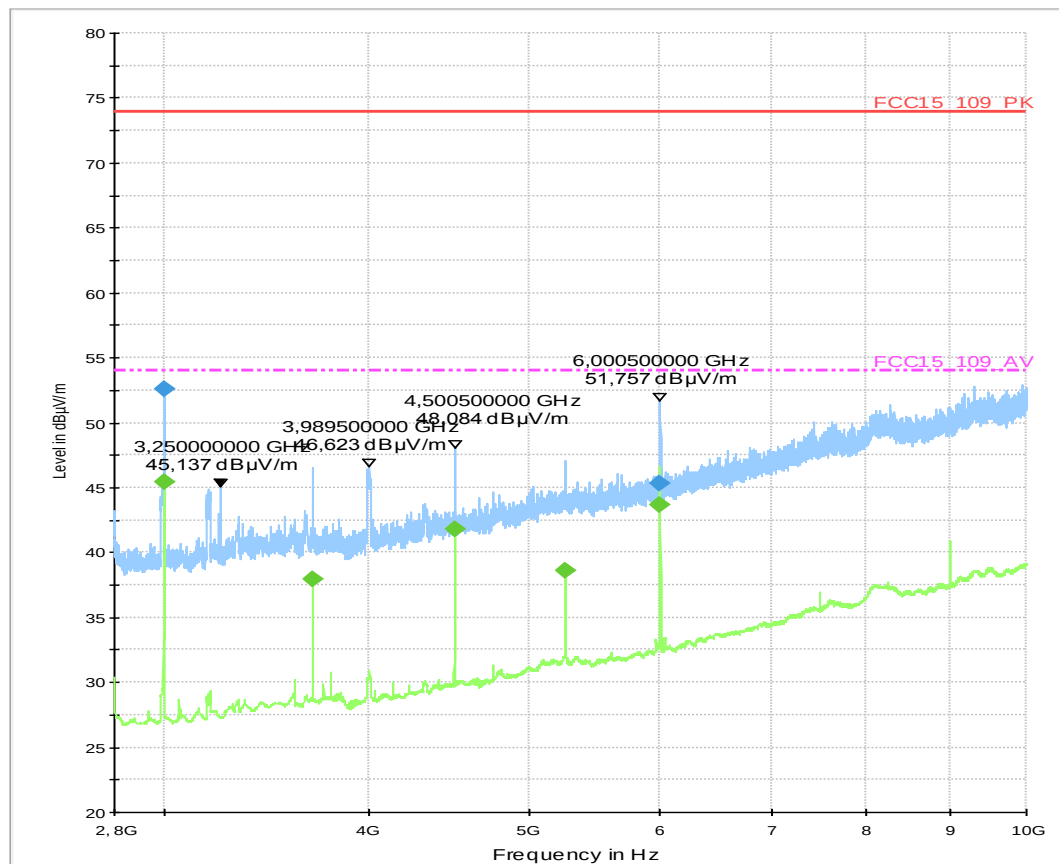
EMI Auto Test Template: Sweep1\_SM1\_K0

## Diagram No.: 2.77

## Common Information

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Test Description:     | Radiated field strength emission in 3m distance        |
| Test Site:            | CETECOM GmbH Essen                                     |
| Test Standard:        | FCC 15.109 Class B Unintentional Radiator              |
| Antenna polarisation: | horizontal/vertical                                    |
| Operation mode:       | IDLE Mode FDD Band 2 + IDLE WLAN                       |
| Operator Name:        | Lor                                                    |
| Comment:              | Uplink channel middle: 9400<br>Internal Antenna of EUT |

Sweep2\_SM1\_K0



## Final Result 1

| Frequency (MHz) | MaxPeak (dBµV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 3000.000000     | 52.6             | 100.0      | 1000.000        | 155.0       | V            | -2.0          | -1.7       | 21.4        | 74.0           |
| 6000.400000     | 45.3             | 100.0      | 1000.000        | 155.0       | H            | 47.0          | 5.9        | 28.7        | 74.0           |

## Final Result 2

| Frequency (MHz) | Average (dBµV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 2999.600000     | 45.4             | 100.0      | 1000.000        | 155.0       | V            | -2.0          | -1.7       | 8.6         | 54.0           |
| 3696.000000     | 38.0             | 100.0      | 1000.000        | 155.0       | V            | 313.0         | -0.2       | 16.0        | 54.0           |
| 4500.500000     | 41.8             | 100.0      | 1000.000        | 155.0       | V            | 85.0          | 1.9        | 12.2        | 54.0           |
| 5250.500000     | 38.6             | 100.0      | 1000.000        | 155.0       | V            | 88.0          | 4.3        | 15.4        | 54.0           |
| 6000.500000     | 43.6             | 100.0      | 1000.000        | 155.0       | H            | 48.0          | 5.9        | 10.4        | 54.0           |

EMI Auto Test Template: Sweep2\_SM1\_K0

## 6.6. Radiated field strength (f > 1GHz) TX mode

### Diagram No.: 2.50

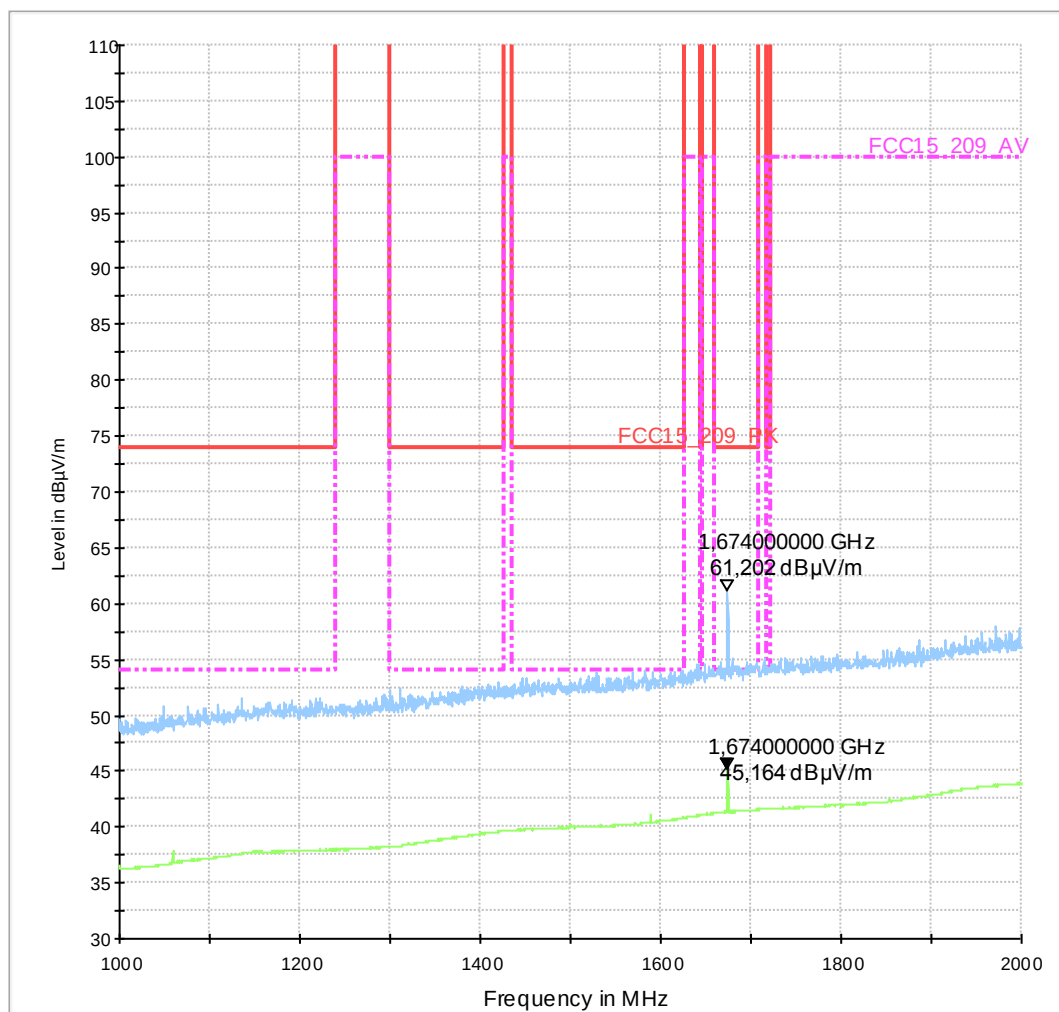
#### Common Information

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 & §15.209 Intentional Radiator                          |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | Channel no. low=1                                               |
| Op. Mode:             | WLAN b-Mode; 2MBit/s + GSM850 Channel 192                       |

#### EUT Information

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep1\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM850



EMI Auto Test Template: Sweep1\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM850

Hardware Setup: 549\_dBuVm\_PA0\_TH3\_KP1\_ESU\_mod\_Intermod\_GSM850

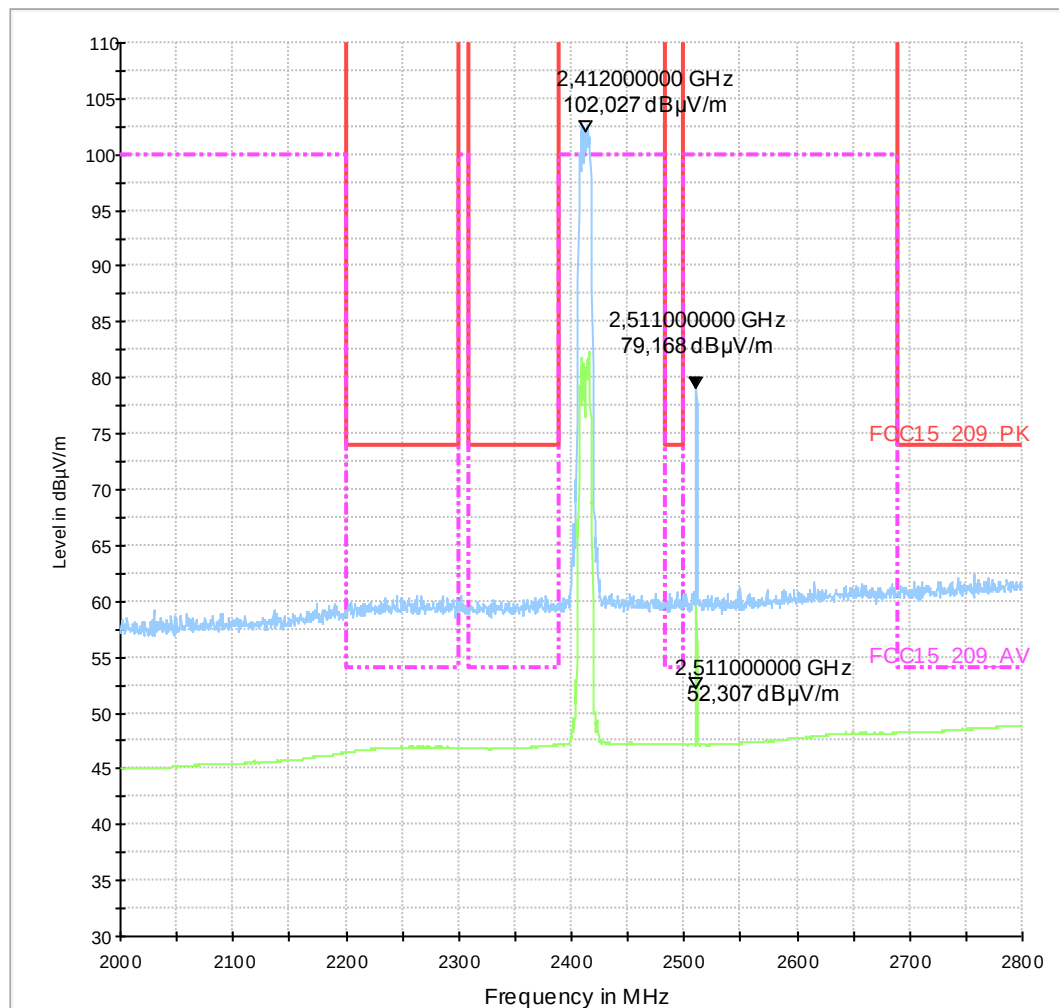
**Diagram No.: 2.51****Common Information**

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 &15.209 Intentional Radiator                            |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | Channel no. WLAN low=1                                          |
| Op. Mode:             | WLAN b-Mode; 2MBit/s + GSM850 Channel 192                       |

**EUT Information**

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep2\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM850

**EMI Auto Test Template: Sweep2\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM850**

|                 |                                               |
|-----------------|-----------------------------------------------|
| Hardware Setup: | 549_dBuVm_PA0_TH3_KP1_ESU_mod_Intermod_GSM850 |
|-----------------|-----------------------------------------------|

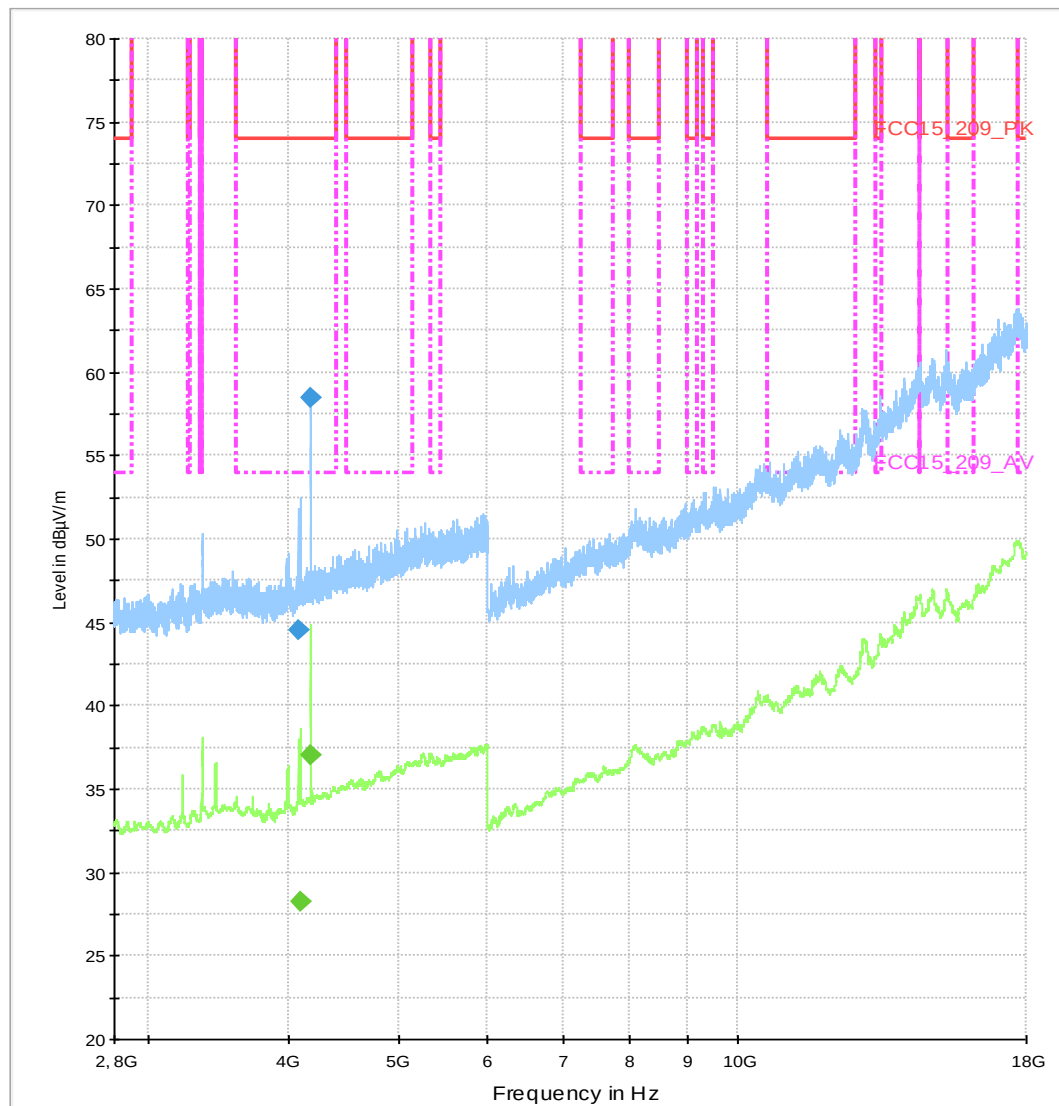
**Diagram No.: 2.52****Common Information**

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 &15.209 Intentional Radiator                            |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | --                                                              |
| Op. Mode:             | TX GSM850 Ch. 192 + WLAN Ch. 1/2MBit                            |

**EUT Information**

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep3\_SM1\_KP1\_BT\_RBW\_3\_10MHz





## Final Result 1

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Correction (dB) | Margin (dB) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|-----------------|-----------------|-------------|
| 4083.080000     | 44.6             | 100.0      | 1000.000        | 155.0       | V            | 264.0         | 90.0            | 0.6             | 29.4        |
| 4185.340000     | 58.4             | 100.0      | 1000.000        | 155.0       | V            | 293.0         | 90.0            | 0.9             | 15.6        |

(continuation of the "Final Result 1" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 4083.080000     | 74.0           |         |
| 4185.340000     | 74.0           |         |

## Final Result 2

| Frequency (MHz) | Average (dBμV/m) | Meas. Time | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Correction (dB) | Margin (dB) |
|-----------------|------------------|------------|-----------------|-------------|--------------|---------------|-----------------|-----------------|-------------|
| 4087.880000     | 28.3             | 100.0      | 1000.000        | 155.0       | H            | 279.0         | 0.0             | 0.6             | 25.7        |
| 4185.040000     | 37.0             | 100.0      | 1000.000        | 155.0       | V            | 292.0         | 90.0            | 0.9             | 17.0        |

(continuation of the "Final Result 2" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 4087.880000     | 54.0           |         |
| 4185.040000     | 54.0           |         |

EMI Auto Test Template: Sweep3\_SM1\_KP1\_BT\_RBW\_3\_10MHz

Hardware Setup:

549\_dBuVm\_PA484\_TH3\_KP1\_ESU

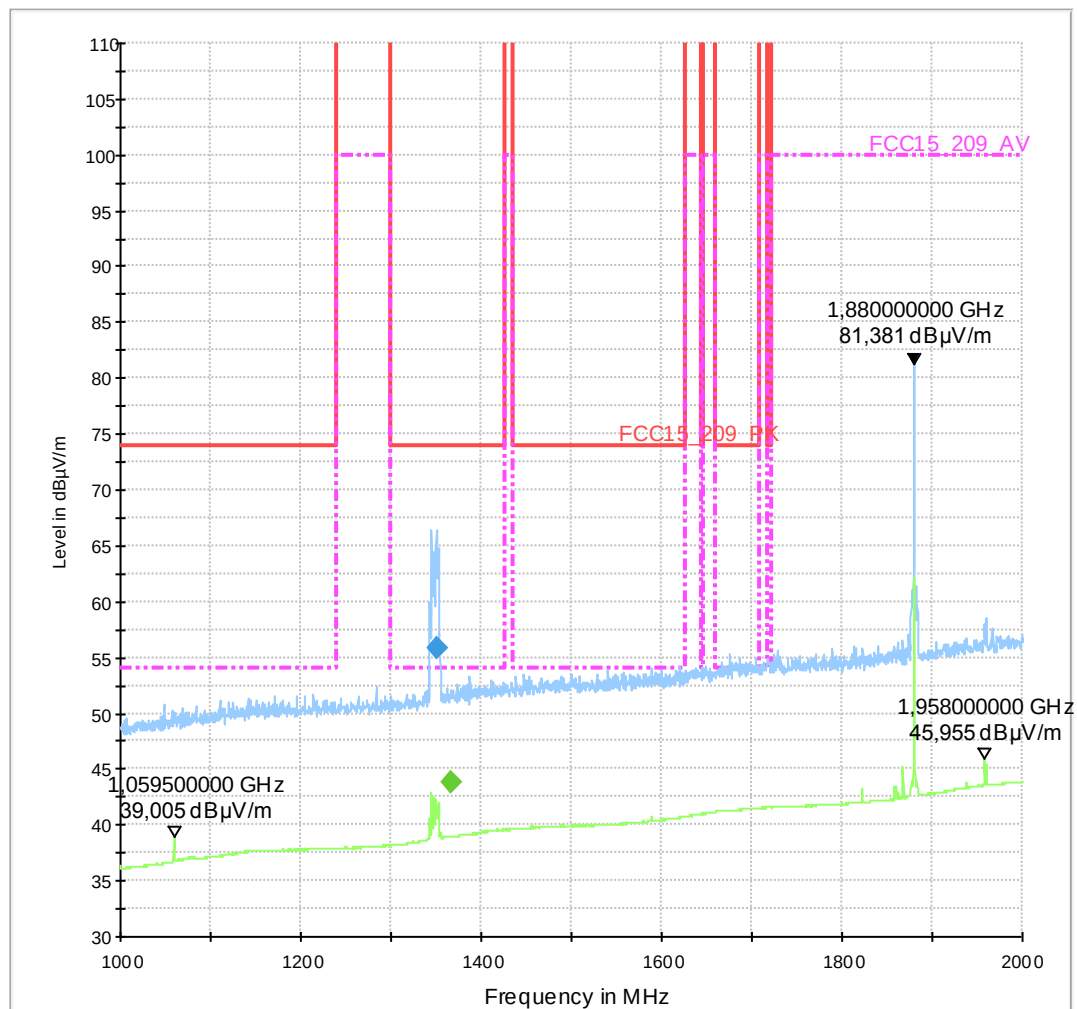
**Diagram No.: 2.53****Common Information**

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 &15.209 Intentional Radiator                            |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | Channel no. WLAN low=1                                          |
| Op. Mode:             | WLAN b-Mode; 2MBit/s + GSM1900 Channel 661                      |

**EUT Information**

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep1\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM1900



**Final Result 1**

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Corr. (dB) | Margin (dB) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|-----------------|------------|-------------|
| 1351.90000      | 55.8             | 100.0           | 1000.000        | 155.0       | V            | 264.0         | 0.0             | 32.0       | 18.2        |

(continuation of the "Final Result 1" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 1351.900000     | 74.0           |         |

**Final Result 2**

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Corr. (dB) | Margin (dB) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|-----------------|------------|-------------|
| 1366.100000     | 43.8             | 100.0           | 1000.000        | 155.0       | H            | 210.0         | 0.0             | 32.2       | 10.2        |

(continuation of the "Final Result 2" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 1366.100000     | 54.0           |         |

EMI Auto Test Template: Sweep1\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM1900

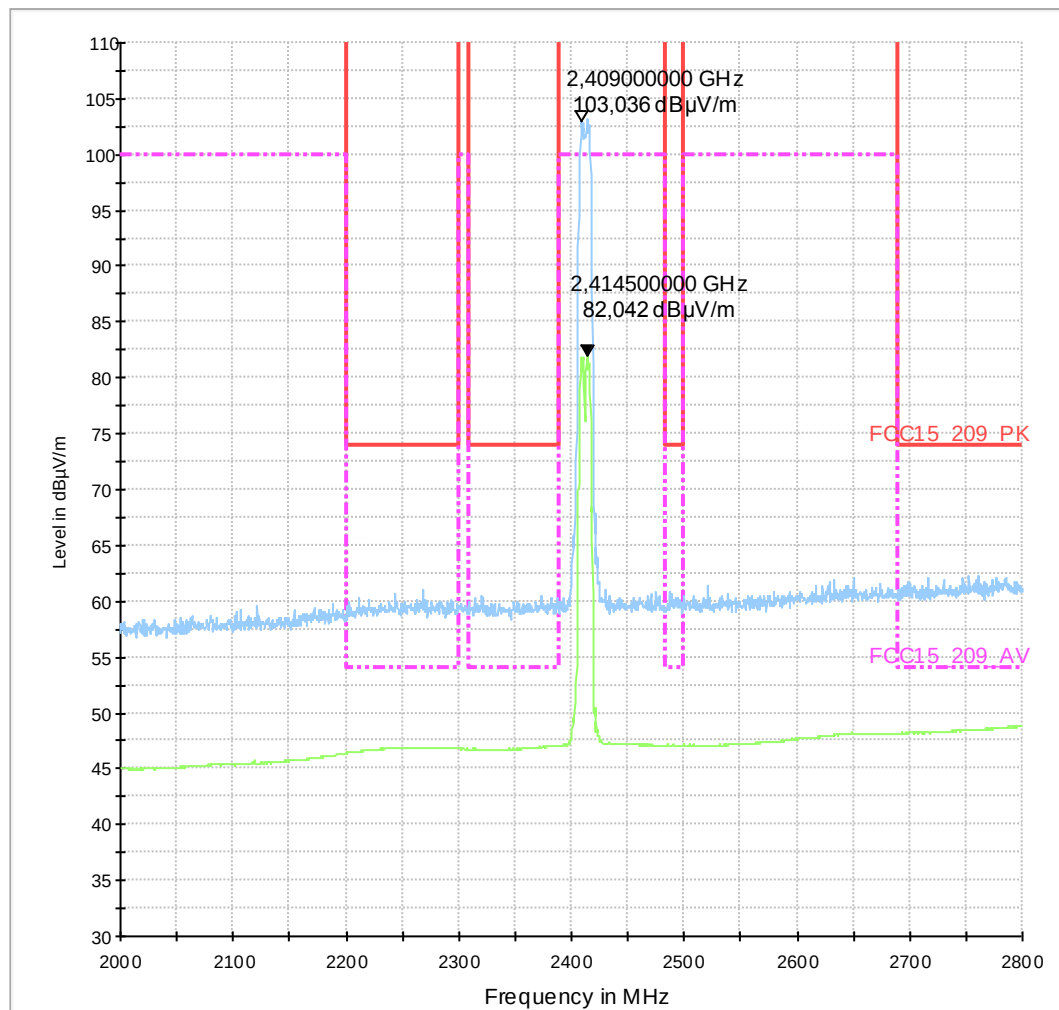
**Diagram No.: 2.54****Common Information**

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 & 15.209 Intentional Radiator                           |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | Channel no. low=1                                               |
| Op. Mode:             | WLAN b-Mode; 2MBit/s + GSM1900 Channel 661                      |

**EUT Information**

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep2\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM1900



EMI Auto Test Template: Sweep2\_SM1\_KP1\_WLAN\_1\_5ms\_Intermod\_GSM1900

Hardware Setup: 549\_dBuVm\_PA0\_TH3\_KP1\_ESU\_mod\_Intermod\_GSM850

## Diagram No.: 2.55

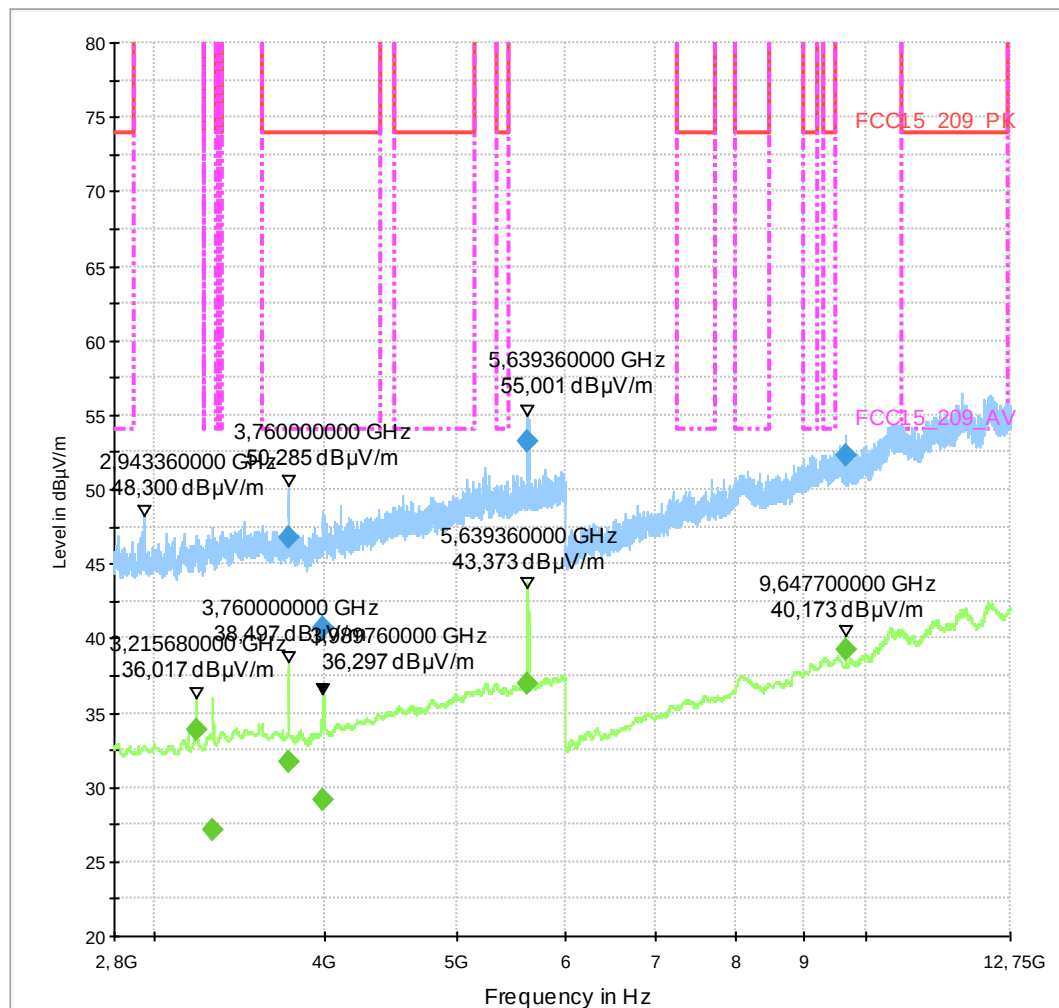
### Common Information

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Test Description:     | Radiated field strength emission accord. §15.247 in 3m distance |
| Test Site:            | CETECOM GmbH Essen                                              |
| Test Standard:        | §15.205 & 15.209 Intentional Radiator                           |
| Antenna polarisation: | horizontal/vertical                                             |
| Operator Name:        | Lor                                                             |
| Comment:              | Channel no. low=1                                               |
| Op. Mode:             | WLAN b-Mode; 2MBit/s + GSM1900 Channel 661                      |

### EUT Information

|                |                      |
|----------------|----------------------|
| EUT Name:      | GS3.5                |
| Manufacturer:  | Option               |
| Serial Number: | IMEI 004401441414485 |
| Hardware Rev:  | --                   |
| Software Rev:  | --                   |

Sweep3\_SM1\_KP1\_WLAN\_RBW\_3\_10MHz\_Intermod\_GSM1900



**Final Result 1**

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth h (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Corr. (dB) | Margin (dB) |
|-----------------|------------------|-----------------|-------------------|-------------|--------------|---------------|-----------------|------------|-------------|
| 3759.900000     | 46.8             | 100.0           | 1000.000          | 155.0       | V            | 172.0         | 0.0             | -0.1       | 27.2        |
| 3987.540000     | 40.7             | 100.0           | 1000.000          | 155.0       | V            | 116.0         | 90.0            | 0.2        | 33.3        |
| 5640.100000     | 53.3             | 100.0           | 1000.000          | 155.0       | H            | 226.0         | 90.0            | 4.6        | 66.7        |
| 9648.000000     | 52.3             | 100.0           | 1000.000          | 155.0       | V            | 22.0          | 0.0             | 13.6       | 67.7        |

(continuation of the "Final Result 1" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 3759.900000     | 74.0           |         |
| 3987.540000     | 74.0           |         |
| 5640.100000     | 120.0          |         |
| 9648.000000     | 120.0          |         |

**Final Result 2**

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth h (kHz) | Height (cm) | Polarization | Azimuth (deg) | Elevation (deg) | Corr. (dB) | Margin (dB) |
|-----------------|------------------|-----------------|-------------------|-------------|--------------|---------------|-----------------|------------|-------------|
| 3215.960000     | 33.9             | 100.0           | 1000.000          | 155.0       | V            | 136.0         | 90.0            | -1.4       | 66.1        |
| 3308.080000     | 27.1             | 100.0           | 1000.000          | 155.0       | V            | 174.0         | 0.0             | -1.1       | 72.9        |
| 3759.940000     | 31.7             | 100.0           | 1000.000          | 155.0       | V            | 178.0         | 0.0             | -0.1       | 22.3        |
| 3988.980000     | 29.1             | 100.0           | 1000.000          | 155.0       | V            | 223.0         | 0.0             | 0.2        | 24.9        |
| 5639.960000     | 37.0             | 100.0           | 1000.000          | 155.0       | H            | 227.0         | 90.0            | 4.6        | 63.0        |
| 9647.800000     | 39.3             | 100.0           | 1000.000          | 155.0       | V            | 9.0           | 90.0            | 13.6       | 60.8        |

(continuation of the "Final Result 2" table from column 10 ...)

| Frequency (MHz) | Limit (dBμV/m) | Comment |
|-----------------|----------------|---------|
| 3215.960000     | 100.0          |         |
| 3308.080000     | 100.0          |         |
| 3759.940000     | 54.0           |         |
| 3988.980000     | 54.0           |         |
| 5639.960000     | 100.0          |         |
| 9647.800000     | 100.0          |         |

**EMI Auto Test Template: Sweep3\_SM1\_KP1\_WLAN\_RBW\_3\_10MHz\_Intermod\_GSM1900**

Hardware Setup: 549\_dBuVm\_PA484\_TH3\_KP1\_ESU

The used correction factors when the measurement distance is reduced, are taken from IEEC Transaction EMC, Vol 47, No.3, Aug. 2005, Journal Paper “*EXTRAPOLATING NEAR-FIELD EMISSIONS OF LOW-FREQUENCY LOOP TRANSMITTERS*”.

[illegible]