



Registration  
No.910917

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# TEST REPORT FOR SAR TESTING

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Report No.: SRTC2016-9004(F)-0004

Product Name: GSM/GPRS/EGPRS/UMTS/LTE Digital Mobile Phone

with Bluetooth and WiFi

Product Model: Philips Xenium V787

Applicant: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Manufacturer: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Specification: FCC Part 2.1093

IEEE Std 1528-2013

FCC RF Exposure KDB Procedures

FCC ID: VQRCTV787

The State Radio\_monitoring\_center Testing Center (SRTC)

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## Contents

|   |     |
|---|-----|
| 1. GENERAL INFORMATION .....  | 2   |
| 1.1 Notes of the test report .....                                    | 2   |
| 1.2 Information about the testing laboratory .....                    | 2   |
| 1.3 Applicant's details .....   | 2   |
| 1.4 Manufacturer's details.....                                       | 2   |
| 1.5 Test Environment.....   | 3   |
| 2. DESCRIPTION OF THE DEVICE UNDER TEST .....                         | 4   |
| 2.1 Final Equipment Build Status .....                                | 4   |
| 2.2 Support Equipment.....  | 5   |
| 3. REFERENCE SPECIFICATION .....                                      | 6   |
| 4. TEST CONDITIONS.....   | 7   |
| 4.1 Picture to demonstrate the required liquid depth.....             | 7   |
| 4.2 Test Signal, Frequencies and Output Power.....                    | 7   |
| 4.3 SAR Measurement Set-up.....                                       | 7   |
| 4.4 Phantoms.....   | 8   |
| 4.5 Tissue Simulants .....  | 8   |
| 4.6 DESCRIPTION OF THE TEST PROCEDURE .....                           | 9   |
| 5 RESULT SUMMAR.....  | 11  |
| 6 TEST RESULT .....   | 12  |
| 6.1 Manufacturing Tolerance.....                                      | 12  |
| 6.2 GSM Measurement result.....                                       | 19  |
| 6.3 WCDMA Measurement result.....                                     | 21  |
| 6.4 LTE Measurement result .....                                      | 23  |
| 6.5 Bluetooth Measurement result.....                                 | 47  |
| 6.6 Wi-Fi Measurement result .....                                    | 48  |
| 6.7 Standalone SAR Test Exclusion Considerations .....                | 54  |
| 6.8 RF exposure conditions.....                                       | 56  |
| 6.9 System Checking.....  | 58  |
| 6.10 SAR TEST RESULT .....  | 59  |
| 6.11 SAR Measurement Variability.....                                 | 75  |
| 6.12 Simultaneous Transmission SAR Analysis .....                     | 76  |
| 7 MEASUREMENT UNCERTAINTY .....                                       | 78  |
| 8 TEST EQUIPMENTS.....  | 79  |
| APPENDIX A: SYSTEM CHECKING SCANS.....                                | 81  |
| APPENDIX B: MEASUREMENT SCANS.....                                    | 94  |
| APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S).....      | 198 |
| APPENDIX D: RELEVANT PAGES FROM DAE REPORT(S) .....                   | 220 |
| APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S) ..... | 231 |
| APPENDIX F: TEST SETUP .....  | 271 |

## 1. GENERAL INFORMATION

### 1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

### 1.2 Information about the testing laboratory

|                    |   |
|--------------------|---|
| Company:           | The State Radio_monitoring_center Testing Center (SRTC) |
| Address:           | No.80 Beilishi Road, Xicheng District                   |
| City:              | Beijing   |
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### 1.3 Applicant's details

|                    |   |
|--------------------|---|
| Company:           | Shenzhen Sang Fei Consumer Communications Co.,Ltd.  |
| Address:           | 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District, Shenzhen |
| City:              | Shenzhen  |
| Country or Region: | China   |
| Grantee Code:      | VQR   |
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### 1.4 Manufacturer's details

|                    |   |
|--------------------|---|
| Company:           | Shenzhen Sang Fei Consumer Communications Co.,Ltd.                              |
| Address:           | 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District |
| City:              | Shenzhen  |
| Country or Region: | China   |
| Contacted person:  | linda zhang   |
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| Fax:               | 010-68300097  |
| Email:             | linda.zhang@sangfei.com   |

### 1.5 Test Environment

|   |            |
|---|------------|
| Date of Receipt of test sample at SRTC: | 2016.01.18 |
| Testing Start Date:                     | 2016.01.21 |
| Testing End Date:                       | 2016.04.06 |

| Environmental Data: | Temperature (°C) | Humidity (%) |
|---------------------|------------------|--------------|
| Ambient             | 25.0             | 38.0         |

|                                 |      |
|---------------------------------|------|
| Normal Supply Voltage (V d.c.): | 3.80 |
|---------------------------------|------|

## 2. DESCRIPTION OF THE DEVICE UNDER TEST

### 2.1 Final Equipment Build Status

|   |   |
|---|---|
| Wireless Technology and Frequency Bands | GSM Band : GSM850/PCS1900<br>WCDMA Band: FDD2/FDD5<br>LTE Band: FDD2/FDD4/FDD7<br>Wi-Fi Band: 2400MHz~2483.5MHz<br>5150MHz~5250MHz<br>5250MHz~5350MHz<br>5725MHz~5850MHz<br>Bluetooth Band: 2400MHz~2483.5MHz   |
| Mode                                    | GSM<br><input checked="" type="checkbox"/> Voice (GMSK)<br><input checked="" type="checkbox"/> GPRS (GMSK)<br><input checked="" type="checkbox"/> EGPRS (GMSK/8PSK)<br>WCDMA<br><input checked="" type="checkbox"/> UMTS Rel. 99 (Voice & Data)<br><input checked="" type="checkbox"/> HSDPA (Rel. 5)<br><input checked="" type="checkbox"/> HSUPA (Rel. 6)<br><input type="checkbox"/> HSPA+ (Rel. )<br><input type="checkbox"/> DC-HSDPA (Rel. )<br>LTE<br><input checked="" type="checkbox"/> QPSK<br><input checked="" type="checkbox"/> 16QAM<br>Wi-Fi 2.4GHz (802.11a/b/g/n)<br><input checked="" type="checkbox"/> 802.11a<br><input checked="" type="checkbox"/> 802.11b<br><input checked="" type="checkbox"/> 802.11g<br><input checked="" type="checkbox"/> 802.11n (20MHz)<br><input checked="" type="checkbox"/> 802.11n (40MHz)<br>Bluetooth<br><input checked="" type="checkbox"/> BR(GFSK)<br><input checked="" type="checkbox"/> EDR( $\pi/4$ DQPSK , 8-DPSK)<br><input checked="" type="checkbox"/> BLE(GFSK) |
| Duty Cycle                              | GSM Voice: 12.5%;<br>GPRS: 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots)<br>WCDMA: 100%<br>Wi-Fi 802.11b/g/n: 100%<br>Bluetooth: 32.25% (DH1), 66.68% (DH3), 77.52% (DH5)   |
| GPRS Multi-Slot Class                   | <input type="checkbox"/> Class 8 - One Up<br><input type="checkbox"/> Class 10 - Two Up<br><input checked="" type="checkbox"/> Class 12 - Four Up   |
| Mobile Phone Capability                 | <input type="checkbox"/> Class A - Mobile phones can be connected to both GPRS and GSM services simultaneously.   |

|                          |  |
|--------------------------|--|
|                          | <input checked="" type="checkbox"/> Class B - Mobile phones can be attached to both GPRS and GSM services, using one service at a time.<br><input type="checkbox"/> Class C - Mobile phones are attached to either GPRS or GSM voice service. You need to switch manually between services |
| DTM (Dual Transfer Mode) | Not Supported  |

## **2.2 Support Equipment**

The following support equipment was used to exercise the DUT during testing:

|                 |   |
|-----------------|---|
| State of sample | Production unit                                   |
| Headset         | TJ-101158 /Dongguan Tian Zhi Industrial Co., Ltd. |
| Batteries       | AB5000AWML/Zhongshan Tianmao Battery Co.          |
| H/W Version     | WMCVc   |
| S/W Version     | Philips_V787_1553_V01_AG_FCC                      |
| IMEI            | 866636024833471/866636024833398                   |
| Notes           | ---   |

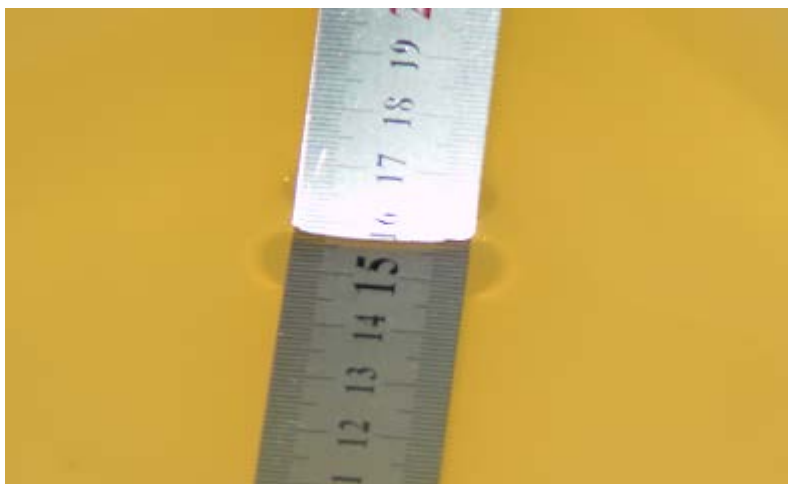
### **3. REFERENCE SPECIFICATION**

| Specification  | Version       | Title   |
|----------------|---------------|---|
| Part 2.1093    | June 23, 2015 | Radiofrequency radiation exposure evaluation: portable devices.   |
| IEEE Std 1528  | 2013          | IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques  |
| IEEE Std 1528a | 2005          | IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Amendment 1: CAD File for Human Head Model (SAM Phantom) |
| KDB 447498 D01 | v06           | General RF Exposure Guidance  |
| KDB 648474 D04 | v01r03        | Handset SAR   |
| KDB 941225 D01 | v03r01        | 3G SAR Procedures   |
| KDB 941225 D06 | v02r01        | Hotspot Mode  |
| KDB 248227 D01 | v02r02        | SAR meas for 802 11 a b g   |
| KDB 865664 D01 | v01r04        | SAR Measurement 100 MHz to 6 GHz  |
| KDB 865664 D02 | v01r02        | RF Exposure Reporting   |
| KDB 941225 D05 | v02r05        | SAR for LTE Devices   |

## **4. TEST CONDITIONS**

### **4.1 Picture to demonstrate the required liquid depth**

The liquid depth in the used SAM phantoms



Liquid depth for SAR Measurement

### **4.2 Test Signal, Frequencies and Output Power**

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.

The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.

In all operating bands the measurements were performed on lowest, middle and highest channels.

### **4.3 SAR Measurement Set-up**

The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than  $\pm 0.02\text{mm}$ . Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit. A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors.

The PC consists of the Micron Pentium IV computer with Win7 system and SAR Measurement Software DASY5 Professional, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software



manipulation of the robot.

A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines.

The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection

The robot uses its own controller with a built in VME-bus computer.

#### **4.4 Phantoms**

The phantom used for all tests i.e. for both system checks and device testing, was the twin headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2013.

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

#### **4.5 Tissue Simulants**

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2013 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within  $\pm 5\%$  of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was  $15.0 \pm 0.5$  cm measured from the ear reference point during system checking and device measurements.

#### 4.5.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue stimulant(s):

##### 835MHz band

| Ingredient | Head (% by weight) | Body (% by weight) |
|------------|--------------------|--------------------|
| Water      | 41.45              | 52.50              |
| Sugar      | 56.00              | 45.0               |
| Nacl       | 1.45               | 1.40               |
| Cellulose  | 1.00               | 1.00               |
| Preventol  | 0.10               | 0.10               |

##### 1900MHz band

| Ingredient | Head (% by weight) | Body (% by weight) |
|------------|--------------------|--------------------|
| Water      | 44.45              | 70.17              |
| DGBE       | 55.24              | 29.44              |
| Nacl       | 0.31               | 0.39               |

##### 2450MHz band

| Ingredient | Head (% by weight) | Body (% by weight) |
|------------|--------------------|--------------------|
| Water      | 55.00              | 68.64              |
| DGBE       | 45.00              | 31.37              |
| Nacl       | 0.00               | 0.00               |

##### 5GHz band

| Ingredient                     | Head (% by weight) | Body (% by weight) |
|--------------------------------|--------------------|--------------------|
| Water                          | 65.52              | ---                |
| Triton X-100                   | 17.24              | ---                |
| Diethylenglycol monohexylether | 17.24              | ---                |

#### 4.6 DESCRIPTION OF THE TEST PROCEDURE

##### 4.6.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.



Device holder supplied by SPEAG

## 4.6.2 Test positions

### 4.6.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2013 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

### 4.6.2.2 Body Worn Configuration

The device was placed in the SPEAG holder below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance using a separate flat spacer that was removed before the start of the measurements. And the distance is 10mm. The device was oriented with its antenna facing the phantom since this orientation gives higher results.

## 4.6.3 Scan Procedure

First, area scans were used for determination of the field distribution and the approximate location of the local peak SAR values. The SAR distribution is scanned along the inside surface, at least for an area larger than the projection of the handset and antenna. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30°. The SAR distribution is first measured on a 2-D coarse grid. The scan region should cover all areas that are exposed and encompassed by the projection of the handset. It is a 15 mm × 15 mm measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location. Next, a zoom scan, a minimum of 7 × 7 × 7 points covering a volume of at least 30×30×30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

## 4.6.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within DASY5 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation of Large Sets of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics. In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.


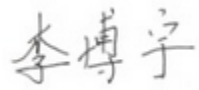

## 5 RESULT SUMMAR

The maximum reported SAR values for Head configuration and Body Worn configuration are given as follows. The device conforms to the requirements of the standard(s) when the maximum reported SAR value is less than or equal to the limit.

| Exposure Position | Frequency Band   | 1g-SAR Reported Result (W/kg) | Highest 1g-SAR Reported Result (W/kg) | Limit (W/kg)/1g | Result |
|-------------------|------------------|-------------------------------|---------------------------------------|-----------------|--------|
| Head              | GSM 850          | 0.205                         | <b>1.155</b>                          | 1.6             | PASS   |
|                   | GSM 1900         | 0.367                         |                                       |                 |        |
|                   | WCDMA Band 2     | 0.302                         |                                       |                 |        |
|                   | WCDMA Band 5     | 0.211                         |                                       |                 |        |
|                   | WLAN 2.4GHz Band | <b>0.637</b>                  |                                       |                 |        |
|                   | WLAN 5.8GHz Band | 0.566                         |                                       |                 |        |
|                   | LTE Band 2       | 0.443                         |                                       |                 |        |
|                   | LTE Band 4       | 0.389                         |                                       |                 |        |
| Body (10mm Gap)   | LTE Band 7       | 0.473                         |                                       |                 |        |
|                   | GSM 850          | 0.850                         |                                       |                 |        |
|                   | GSM 1900         | <b>1.155</b>                  |                                       |                 |        |
|                   | WCDMA Band 2     | 1.078                         |                                       |                 |        |
|                   | WCDMA Band 5     | 0.348                         |                                       |                 |        |
|                   | WLAN 2.4GHz Band | 0.637                         |                                       |                 |        |
|                   | LTE Band 2       | 0.861                         |                                       |                 |        |
|                   | LTE Band 4       | 0.779                         |                                       |                 |        |
| LTE Band 7        | 0.161            |                               |                                       |                 |        |

### Simultaneous Transmission Summary

| Exposure Position | Frequency Band    | 1g-SAR Result(W/kg) | Highest 1g-SAR Result(W/kg) | Limit (W/kg)/1g | Result |
|-------------------|-------------------|---------------------|-----------------------------|-----------------|--------|
| Head              | GSM & Wi-Fi       | 0.940               | <b>1.487</b>                | 1.6             | PASS   |
|                   | WCDMA & Wi-Fi     | 0.875               |                             |                 |        |
|                   | LTE & Wi-Fi       | <b>1.046</b>        |                             |                 |        |
|                   | GSM & Bluetooth   | 0.449               |                             |                 |        |
|                   | WCDMA & Bluetooth | 0.384               |                             |                 |        |
|                   | LTE & Bluetooth   | 0.555               |                             |                 |        |
| Body (Gap 10mm)   | GSM & Wi-Fi       | <b>1.487</b>        |                             |                 |        |
|                   | WCDMA & Wi-Fi     | 1.104               |                             |                 |        |
|                   | LTE & Wi-Fi       | 1.465               |                             |                 |        |
|                   | GSM & Bluetooth   | 1.237               |                             |                 |        |
|                   | WCDMA & Bluetooth | 1.160               |                             |                 |        |
| LTE & Bluetooth   | 0.943             |                     |                             |                 |        |

|   |   |
|---|---|
| This Test Report Is Issued by:<br>Mr. Tao Hongbo<br> | Checked by:<br>Mr. Li Boyu<br> |
| Tested by:<br>Mr. Chang Taosha<br>                   | Issued date:<br><br>2016/4/7  |

## 6 TEST RESULT

### 6.1 Manufacturing Tolerance

#### GSM

| GSM 850         |             |             |             |
|-----------------|-------------|-------------|-------------|
| Channel         | Channel 128 | Channel 189 | Channel 251 |
| Tolerance (dBm) | 30.0~34.5   | 30.0~34.5   | 30.0~34.5   |
| GSM 1900        |             |             |             |
| Channel         | Channel 512 | Channel 661 | Channel 810 |
| Tolerance (dBm) | 27.0~31.5   | 27.0~31.5   | 27.0~31.5   |

| GSM 850 GPRS         |                 |           |           |           |
|----------------------|-----------------|-----------|-----------|-----------|
| Channel              |                 | 128       | 189       | 251       |
| 1 Txslot             | Tolerance (dBm) | 30.0~34.5 | 30.0~34.5 | 30.0~34.5 |
| 2 Txslot             | Tolerance (dBm) | 28.0~32.5 | 28.0~32.5 | 28.0~32.5 |
| 3 Txslot             | Tolerance (dBm) | 26.0~31.5 | 26.0~31.5 | 26.0~31.5 |
| 4 Txslot             | Tolerance (dBm) | 24.0~30.5 | 24.0~30.5 | 24.0~30.5 |
| GSM 850 EGPRS (GMSK) |                 |           |           |           |
| Channel              |                 | 128       | 189       | 251       |
| 1 Txslot             | Tolerance (dBm) | 30.0~34.5 | 30.0~34.5 | 30.0~34.5 |
| 2 Txslot             | Tolerance (dBm) | 28.0~32.5 | 28.0~32.5 | 28.0~32.5 |
| 3 Txslot             | Tolerance (dBm) | 26.0~31.5 | 26.0~31.5 | 26.0~31.5 |
| 4 Txslot             | Tolerance (dBm) | 24.0~30.5 | 24.0~30.5 | 24.0~30.5 |

| GSM 1900 GPRS         |                 |           |           |           |
|-----------------------|-----------------|-----------|-----------|-----------|
| Channel               |                 | 512       | 661       | 810       |
| 1 Txslot              | Tolerance (dBm) | 27.0~31.5 | 27.0~31.5 | 27.0~31.5 |
| 2 Txslot              | Tolerance (dBm) | 26.0~30.0 | 26.0~30.0 | 26.0~30.0 |
| 3 Txslot              | Tolerance (dBm) | 25.0~29.0 | 25.0~29.0 | 25.0~29.0 |
| 4 Txslot              | Tolerance (dBm) | 24.0~28.5 | 24.0~28.5 | 24.0~28.5 |
| GSM 1900 EGPRS (GMSK) |                 |           |           |           |
| Channel               |                 | 512       | 661       | 810       |
| 1 Txslot              | Tolerance (dBm) | 27.0~31.5 | 27.0~31.5 | 27.0~31.5 |
| 2 Txslot              | Tolerance (dBm) | 26.0~30.0 | 26.0~30.0 | 26.0~30.0 |
| 3 Txslot              | Tolerance (dBm) | 25.0~29.0 | 25.0~29.0 | 25.0~29.0 |
| 4 Txslot              | Tolerance (dBm) | 24.0~28.5 | 24.0~28.5 | 24.0~28.5 |

### WCDMA

| WCDMA Band2     |           |           |           |
|-----------------|-----------|-----------|-----------|
| Channel         | 9662      | 9800      | 9938      |
| Tolerance (dBm) | 20.0~23.0 | 20.0~23.0 | 20.0~23.0 |
| WCDMA Band5     |           |           |           |
| Channel         | 4357      | 4408      | 4458      |
| Tolerance (dBm) | 20.0~23.5 | 20.0~23.5 | 20.0~23.5 |

| HSDPA Band2 |                 |           |           |           |
|-------------|-----------------|-----------|-----------|-----------|
| Channel     |                 | 9662      | 9800      | 9938      |
| Sub test 1  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 2  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 3  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 4  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| HSDPA Band5 |                 |           |           |           |
| Channel     |                 | 4357      | 4408      | 4458      |
| Sub test 1  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 2  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 3  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 4  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |

| HSUPA Band2 |                 |           |           |           |
|-------------|-----------------|-----------|-----------|-----------|
| Channel     |                 | 9662      | 9800      | 9938      |
| Sub test 1  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 2  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 3  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 4  | Tolerance (dBm) | 17.0~21.0 | 17.0~21.0 | 17.0~21.0 |
| Sub test 5  | Tolerance (dBm) | 19.0~23.5 | 19.0~23.5 | 19.0~23.5 |

| HSUPA Band5 |                 |           |           |           |
|-------------|-----------------|-----------|-----------|-----------|
| Channel     |                 | 4357      | 4408      | 4458      |
| Sub test 1  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 2  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 3  | Tolerance (dBm) | 18.0~22.0 | 18.0~22.0 | 18.0~22.0 |
| Sub test 4  | Tolerance (dBm) | 17.0~21.0 | 17.0~21.0 | 17.0~21.0 |
| Sub test 5  | Tolerance (dBm) | 19.0~23.5 | 19.0~23.5 | 19.0~23.5 |

**Bluetooth**

| GFSK            |         |         |         |
|-----------------|---------|---------|---------|
| Channel         | 0       | 39      | 78      |
| Tolerance (dBm) | 3.0~8.0 | 3.0~8.0 | 3.0~8.0 |
| π/4DQPSK        |         |         |         |
| Channel         | 0       | 39      | 78      |
| Tolerance (dBm) | 2.0~7.0 | 2.0~7.0 | 2.0~7.0 |
| 8DPSK           |         |         |         |
| Channel         | 0       | 39      | 78      |
| Tolerance (dBm) | 3.0~7.0 | 3.0~7.0 | 3.0~7.0 |

**Bluetooth (BLE)**

| GFSK            |          |          |          |
|-----------------|----------|----------|----------|
| Channel         | 0        | 39       | 78       |
| Tolerance (dBm) | -4.0~1.0 | -4.0~1.0 | -4.0~1.0 |

**Wi-Fi(2.4GHz)**

| 802.11b         |           |           |           |
|-----------------|-----------|-----------|-----------|
| Channel         | 1         | 6         | 11        |
| Tolerance (dBm) | 13.0~17.0 | 13.0~17.0 | 13.0~17.0 |
| 802.11g         |           |           |           |
| Channel         | 1         | 6         | 11        |
| Tolerance (dBm) | 7.0~13.5  | 7.0~13.5  | 7.0~13.5  |
| 802.11n HT20    |           |           |           |
| Channel         | 1         | 6         | 11        |
| Tolerance (dBm) | 7.0~13.5  | 7.0~13.5  | 7.0~13.5  |
| 802.11n HT40    |           |           |           |
| Channel         | 3         | 6         | 11        |
| Tolerance (dBm) | 5.0~13.0  | 5.0~13.0  | 5.0~13.0  |

**Wi-Fi(5150MHz~5250MHz)**

| 802.11a         |          |          |          |
|-----------------|----------|----------|----------|
| Channel         | 36       | 40       | 48       |
| Tolerance (dBm) | 0.0~6.0  | 0.0~6.0  | 0.0~6.0  |
| 802.11n HT20    |          |          |          |
| Channel         | 36       | 40       | 48       |
| Tolerance (dBm) | -2.0~5.0 | -2.0~5.0 | -2.0~5.0 |
| 802.11n HT40    |          |          |          |
| Channel         | 38       | ---      | 46       |
| Tolerance (dBm) | -5.0~5.0 | ---      | -5.0~5.0 |

**Wi-Fi(5250MHz~5350MHz)**

| 802.11a         |          |          |          |
|-----------------|----------|----------|----------|
| Channel         | 52       | 56       | 64       |
| Tolerance (dBm) | 0.0~6.0  | 0.0~6.0  | 0.0~6.0  |
| 802.11n HT20    |          |          |          |
| Channel         | 52       | 56       | 64       |
| Tolerance (dBm) | -2.0~5.0 | -2.0~5.0 | -2.0~5.0 |
| 802.11n HT40    |          |          |          |
| Channel         | 54       | ---      | 62       |
| Tolerance (dBm) | -5.0~5.0 | ---      | -5.0~5.0 |

**Wi-Fi(5725MHz~5850MHz)**

| 802.11a         |          |          |          |
|-----------------|----------|----------|----------|
| Channel         | 149      | 157      | 165      |
| Tolerance (dBm) | 7.0~11.0 | 7.0~11.0 | 7.0~11.0 |
| 802.11n HT20    |          |          |          |
| Channel         | 149      | 157      | 165      |
| Tolerance (dBm) | 6.0~11.0 | 6.0~11.0 | 6.0~11.0 |
| 802.11n HT40    |          |          |          |
| Channel         | 151      | ---      | 159      |
| Tolerance (dBm) | 4.0~11.0 | ---      | 4.0~11.0 |



## LTE

### Band 2

| 20BW 100%RB     |               |               |               |
|-----------------|---------------|---------------|---------------|
| Channel         | Channel 18700 | Channel 18900 | Channel 19100 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 20BW 50%RB      |               |               |               |
| Channel         | Channel 18700 | Channel 18900 | Channel 19100 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 20BW 1RB        |               |               |               |
| Channel         | Channel 18700 | Channel 18900 | Channel 19100 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 100%RB     |               |               |               |
| Channel         | Channel 18675 | Channel 18900 | Channel 19125 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 50%RB      |               |               |               |
| Channel         | Channel 18675 | Channel 18900 | Channel 19125 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 1RB        |               |               |               |
| Channel         | Channel 18675 | Channel 18900 | Channel 19125 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 100%RB     |               |               |               |
| Channel         | Channel 18650 | Channel 18900 | Channel 19150 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 50%RB      |               |               |               |
| Channel         | Channel 18650 | Channel 18900 | Channel 19150 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 1RB        |               |               |               |
| Channel         | Channel 18650 | Channel 18900 | Channel 19150 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 100%RB      |               |               |               |
| Channel         | Channel 18625 | Channel 18900 | Channel 19175 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 50%RB       |               |               |               |
| Channel         | Channel 18625 | Channel 18900 | Channel 19175 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 1RB         |               |               |               |
| Channel         | Channel 18625 | Channel 18900 | Channel 19175 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 3BW 100%RB      |               |               |               |
| Channel         | Channel 18615 | Channel 18900 | Channel 19185 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 3BW 50%RB       |               |               |               |
| Channel         | Channel 18615 | Channel 18900 | Channel 19185 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 3BW 1RB         |               |               |               |
| Channel         | Channel 18615 | Channel 18900 | Channel 19185 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 1.4BW 100%RB    |               |               |               |
| Channel         | Channel 18607 | Channel 18900 | Channel 19193 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 1.4BW 50%RB     |               |               |               |
| Channel         | Channel 18607 | Channel 18900 | Channel 19193 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 1.4BW 1RB       |               |               |               |
| Channel         | Channel 18607 | Channel 18900 | Channel 19193 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |

Band 4

| 20BW 100%RB     |               |               |               |
|-----------------|---------------|---------------|---------------|
| Channel         | Channel 20050 | Channel 20175 | Channel 20300 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 20BW 50%RB      |               |               |               |
| Channel         | Channel 20050 | Channel 20175 | Channel 20300 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 20BW 1RB        |               |               |               |
| Channel         | Channel 20050 | Channel 20175 | Channel 20300 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 15BW 100%RB     |               |               |               |
| Channel         | Channel 20250 | Channel 20175 | Channel 20325 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 15BW 50%RB      |               |               |               |
| Channel         | Channel 20250 | Channel 20175 | Channel 20325 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 15BW 1RB        |               |               |               |
| Channel         | Channel 20250 | Channel 20175 | Channel 20325 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 10BW 100%RB     |               |               |               |
| Channel         | Channel 20000 | Channel 20175 | Channel 20350 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 10BW 50%RB      |               |               |               |
| Channel         | Channel 20000 | Channel 20175 | Channel 20350 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 10BW 1RB        |               |               |               |
| Channel         | Channel 20000 | Channel 20175 | Channel 20350 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 5BW 100%RB      |               |               |               |
| Channel         | Channel 19975 | Channel 20175 | Channel 20375 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 5BW 50%RB       |               |               |               |
| Channel         | Channel 19975 | Channel 20175 | Channel 20375 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 5BW 1RB         |               |               |               |
| Channel         | Channel 19975 | Channel 20175 | Channel 20375 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 3BW 100%RB      |               |               |               |
| Channel         | Channel 19965 | Channel 20175 | Channel 20385 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 3BW 50%RB       |               |               |               |
| Channel         | Channel 19965 | Channel 20175 | Channel 20385 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 3BW 1RB         |               |               |               |
| Channel         | Channel 19965 | Channel 20175 | Channel 20385 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 1.4BW 100%RB    |               |               |               |
| Channel         | Channel 19957 | Channel 20175 | Channel 20393 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 1.4BW 50%RB     |               |               |               |
| Channel         | Channel 19957 | Channel 20175 | Channel 20393 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |
| 1.4BW 1RB       |               |               |               |
| Channel         | Channel 19957 | Channel 20175 | Channel 20393 |
| Tolerance (dBm) | 20.0~24.0     | 20.0~24.0     | 20.0~24.0     |

Band7

| 20BW 100%RB     |               |               |               |
|-----------------|---------------|---------------|---------------|
| Channel         | Channel 20850 | Channel 21100 | Channel 21350 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 20BW 50%RB      |               |               |               |
| Channel         | Channel 20850 | Channel 21100 | Channel 21350 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 20BW 1RB        |               |               |               |
| Channel         | Channel 20850 | Channel 21100 | Channel 21350 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 100%RB     |               |               |               |
| Channel         | Channel 20825 | Channel 21100 | Channel 21375 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 50%RB      |               |               |               |
| Channel         | Channel 20825 | Channel 21100 | Channel 21375 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 15BW 1RB        |               |               |               |
| Channel         | Channel 20825 | Channel 21100 | Channel 21375 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 100%RB     |               |               |               |
| Channel         | Channel 20800 | Channel 21100 | Channel 21400 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 50%RB      |               |               |               |
| Channel         | Channel 20800 | Channel 21100 | Channel 21400 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 10BW 1RB        |               |               |               |
| Channel         | Channel 20800 | Channel 21100 | Channel 21400 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 100%RB      |               |               |               |
| Channel         | Channel 20775 | Channel 21100 | Channel 21425 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 50%RB       |               |               |               |
| Channel         | Channel 20775 | Channel 21100 | Channel 21425 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |
| 5BW 1RB         |               |               |               |
| Channel         | Channel 20775 | Channel 21100 | Channel 21425 |
| Tolerance (dBm) | 20.0~24.5     | 20.0~24.5     | 20.0~24.5     |

## 6.2 GSM Measurement result

### GSM Measured Power

| Mode                | GSM850 |       |       | GSM1900 |        |        |
|---------------------|--------|-------|-------|---------|--------|--------|
| Channel             | 128    | 189   | 251   | 512     | 661    | 810    |
| Frequency(MHz)      | 824.2  | 836.4 | 848.8 | 1850.2  | 1880.0 | 1909.8 |
| Measured Power(dBm) | 32.77  | 32.75 | 32.71 | 30.13   | 29.97  | 29.91  |

### GPRS Measured Power

| Mode                       | GPRS850 |       |       | GPRS1900 |        |        |
|----------------------------|---------|-------|-------|----------|--------|--------|
| Channel                    | 128     | 189   | 251   | 512      | 661    | 810    |
| Frequency(MHz)             | 824.2   | 836.4 | 848.8 | 1850.2   | 1880.0 | 1909.8 |
| 4Downlink1uplinkPower(dBm) | 32.76   | 32.74 | 32.68 | 30.09    | 29.97  | 29.88  |
| 3Downlink2uplinkPower(dBm) | 32.05   | 32.08 | 32.01 | 29.49    | 29.34  | 29.31  |
| 2Downlink3uplinkPower(dBm) | 30.36   | 30.31 | 30.28 | 27.85    | 27.68  | 27.7   |
| 1Downlink4uplinkPower(dBm) | 29.28   | 29.25 | 29.15 | 26.75    | 26.61  | 26.61  |

### GPRS Averaged Power

| Mode                       | GPRS850 |       |       | GPRS1900 |        |        |
|----------------------------|---------|-------|-------|----------|--------|--------|
| Channel                    | 128     | 189   | 251   | 512      | 661    | 810    |
| Frequency(MHz)             | 824.2   | 836.4 | 848.8 | 1850.2   | 1880.0 | 1909.8 |
| 4Downlink1uplinkPower(dBm) | 23.75   | 23.73 | 23.67 | 21.08    | 20.96  | 20.87  |
| 3Downlink2uplinkPower(dBm) | 26.03   | 26.06 | 25.99 | 23.47    | 23.32  | 23.29  |
| 2Downlink3uplinkPower(dBm) | 26.10   | 26.05 | 26.02 | 23.59    | 23.42  | 23.44  |
| 1Downlink4uplinkPower(dBm) | 26.27   | 26.24 | 26.14 | 23.74    | 23.6   | 23.6   |

### Division Factors (for Measured Power and Averaged Power):

To average the power, the division factor is as follows:

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink)= 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink)= 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots (1Downlink4uplink) for GPRS.

### EGPRS Measured Power

| Mode                       | EGPRS850 (GMSK) |       |       | EGPRS1900 (GMSK) |        |        |
|----------------------------|-----------------|-------|-------|------------------|--------|--------|
|                            | EGPRS850 (8PSK) |       |       | EGPRS1900 (8PSK) |        |        |
| Channel                    | 128             | 189   | 251   | 512              | 661    | 810    |
| Frequency(MHz)             | 824.2           | 836.4 | 848.8 | 1850.2           | 1880.0 | 1909.8 |
| 4Downlink1uplinkPower(dBm) | 32.7            | 32.72 | 32.71 | 30.03            | 29.93  | 29.91  |
|                            | 32.72           | 32.73 | 32.67 | 30.06            | 29.91  | 29.9   |
| 3Downlink2uplinkPower(dBm) | 32.06           | 32.05 | 32.02 | 29.47            | 29.31  | 29.35  |
|                            | 32.03           | 32.06 | 32.01 | 29.45            | 29.32  | 29.29  |
| 2Downlink3uplinkPower(dBm) | 30.31           | 30.27 | 30.27 | 27.83            | 27.67  | 27.71  |
|                            | 30.32           | 30.32 | 30.28 | 27.81            | 27.66  | 27.7   |
| 1Downlink4uplinkPower(dBm) | 29.3            | 29.2  | 29.15 | 26.74            | 26.58  | 26.6   |
|                            | 29.29           | 29.25 | 29.12 | 26.72            | 26.59  | 26.59  |

### EGPRS Averaged Power

| Mode                       | EGPRS850 (GMSK) |              |              | EGPRS1900 (GMSK) |              |              |
|----------------------------|-----------------|--------------|--------------|------------------|--------------|--------------|
|                            | EGPRS850 (8PSK) |              |              | EGPRS1900 (8PSK) |              |              |
| Channel                    | 128             | 189          | 251          | 512              | 661          | 810          |
| Frequency(MHz)             | 824.2           | 836.4        | 848.8        | 1850.2           | 1880.0       | 1909.8       |
| 4Downlink1uplinkPower(dBm) | 23.69           | 23.71        | 23.7         | 21.02            | 20.92        | 20.90        |
|                            | 23.71           | 23.72        | 23.66        | 21.05            | 20.90        | 20.89        |
| 3Downlink2uplinkPower(dBm) | 26.04           | 26.03        | 26.00        | 23.45            | 23.29        | 23.33        |
|                            | 26.01           | 26.04        | 25.99        | 23.43            | 23.30        | 23.27        |
| 2Downlink3uplinkPower(dBm) | 26.05           | 26.01        | 26.01        | 23.57            | 23.41        | 23.45        |
|                            | 26.06           | 26.06        | 26.02        | 23.55            | 23.40        | 23.44        |
| 1Downlink4uplinkPower(dBm) | <b>26.29</b>    | <b>26.19</b> | <b>26.14</b> | <b>23.73</b>     | <b>23.57</b> | <b>23.59</b> |
|                            | 26.28           | 26.24        | 26.11        | 23.71            | 23.58        | 23.58        |

### Division Factors (for Measured Power and Averaged Power):

To average the power, the division factor is as follows:

1TX-slot (4Downlink1uplink) = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink) = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink) = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots (1Downlink4uplink) for EGPRS (GMSK).

### 6.3 WCDMA Measurement result

The following procedures are according to FCC KDB Publication 941225 D01.  
Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

| Mode                   | Subtest                 | Rel99        |
|------------------------|-------------------------|--------------|
| WCDMA General Settings | Loopback Mode           | Test Mode 1  |
|                        | Rel99 RMC               | 12.2kbps RMC |
|                        | Power Control Algorithm | Algorithm2   |
|                        | $\beta_c/\beta_d$       | 8/15         |

#### Measured Results

| Mode                              | Band2        |              |              | Band5        |              |              |
|-----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Channel                           | 9262         | 9400         | 9538         | 4132         | 4183         | 4233         |
| Frequency(MHz)                    | 1852.4       | 1880         | 1907.6       | 826.4        | 836.4        | 846.6        |
| RB test mode1+64kRMC(dBm)         | 22.46        | 22.47        | 22.48        | 21.93        | 21.86        | 21.90        |
| RB test mode1+12.2kRMC(dBm)       | <b>22.51</b> | <b>22.50</b> | <b>22.22</b> | <b>22.06</b> | <b>21.97</b> | <b>22.00</b> |
| RB test mode1+144kRMC(dBm)        | 22.54        | 22.53        | 22.29        | 22.07        | 21.99        | 22.06        |
| RB test mode1+384kRMC(dBm)        | 22.56        | 22.53        | 22.25        | 22.06        | 21.98        | 22.03        |
| AMR Voice test mode+12.2kRMC(dBm) | 22.50        | 22.48        | 22.27        | 22.06        | 21.98        | 22.01        |

#### HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121.

| Sub-test | $\beta_c$            | $\beta_d$            | $\beta_d$ (SF) | $\beta_c/\beta_d$    | $\beta_{hs}^{(1)}$ | CM(dB) <sup>(2)</sup> |
|----------|----------------------|----------------------|----------------|----------------------|--------------------|-----------------------|
| 1        | 2/15                 | 15/15                | 64             | 2/15                 | 4/15               | 0.0                   |
| 2        | 12/15 <sup>(3)</sup> | 15/15 <sup>(3)</sup> | 64             | 12/15 <sup>(3)</sup> | 24/15              | 1.0                   |
| 3        | 15/15                | 8/15                 | 64             | 15/18                | 30/15              | 1.5                   |
| 4        | 15/15                | 4/15                 | 64             | 15/4                 | 30/15              | 1.5                   |

Note1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ .

Note2: CM=1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ .

Note3: For subtest 2 the  $\beta_c/\beta_d$  ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC(TF1,TF1) to  $\beta_c = 11/15$  and  $\beta_d = 15/15$ .

#### Measured Results

| Mode           | HSDPA Band 2 |       |        | HSDPA Band 5 |       |       |
|----------------|--------------|-------|--------|--------------|-------|-------|
| Channel        | 9262         | 9400  | 9538   | 4132         | 4183  | 4233  |
| Frequency(MHz) | 1852.4       | 1880  | 1907.6 | 826.4        | 836.4 | 846.6 |
| sub-test1(dBm) | 21.55        | 21.52 | 21.55  | 21.18        | 21.19 | 21.17 |
| sub-test2(dBm) | 21.48        | 21.56 | 21.45  | 21.20        | 21.20 | 21.18 |
| sub-test3(dBm) | 21.07        | 20.99 | 20.99  | 20.65        | 20.71 | 20.66 |
| sub-test4(dBm) | 20.99        | 21.01 | 21.00  | 20.73        | 20.73 | 20.76 |

## HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121.

| Sub-test | $\beta_c$            | $\beta_d$            | $\beta_d$ (SF) | $\beta_c/\beta_d$    | $\beta_{hs}^{(1)}$ | $\beta_{ec}$ | $\beta_{ed}$                               | $\beta_{ed}$ (SF) | $\beta_{ed}$ (codes) | CM <sup>(2)</sup> (dB) | MPR (dB) | AG <sup>(4)</sup> Index | E-TFCI |
|----------|----------------------|----------------------|----------------|----------------------|--------------------|--------------|--|-------------------|----------------------|------------------------|----------|-------------------------|--------|
| 1        | 11/15 <sup>(3)</sup> | 15/15 <sup>(3)</sup> | 64             | 11/15 <sup>(3)</sup> | 22/15              | 209/225      | 1039/225                                   | 4                 | 1                    | 1.0                    | 2.0      | 20                      | 75     |
| 2        | 6/15                 | 15/15                | 64             | 6/15                 | 12/15              | 12/15        | 94/75                                      | 4                 | 1                    | 3.0                    | 2.0      | 12                      | 67     |
| 3        | 15/15                | 9/15                 | 64             | 15/9                 | 30/15              | 30/15        | $\beta_{ed1}:47/15$<br>$\beta_{ed2}:47/15$ | 4                 | 2                    | 2.0                    | 2.0      | 15                      | 92     |
| 4        | 2/15                 | 15/15                | 64             | 2/15                 | 4/15               | 2/15         | 56/75                                      | 4                 | 1                    | 3.0                    | 2.0      | 17                      | 71     |
| 5        | 15/15 <sup>(4)</sup> | 15/15 <sup>(4)</sup> | 64             | 15/15 <sup>(4)</sup> | 30/15              | 24/15        | 134/15                                     | 4                 | 1                    | 1.0                    | 2.0      | 21                      | 81     |

Note1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ .

Note2: CM=1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{hs}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note3: For subtest 1 the  $\beta_c/\beta_d$  ratio of 11/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC(TF1,TF1) to  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

Note4: For subtest 5 the  $\beta_c/\beta_d$  ratio of 15/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC(TF1,TF1) to  $\beta_c = 14/15$  and  $\beta_d = 15/15$ .

NOTE5: Testing UE using E-DPDCH Physical layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

NOTE6:  $\beta_{ed}$  can not be set directly; it is set by Absolute Grant Value.

## Measured Results

| Mode           | HSUPA Band 2 |       |        | HSUPA Band 5 |       |       |
|----------------|--------------|-------|--------|--------------|-------|-------|
|                | Channel      | 9262  | 9400   | 9538         | 4132  | 4183  |
| Frequency(MHz) | 1852.4       | 1880  | 1907.6 | 826.4        | 836.4 | 846.6 |
| sub-test1(dBm) | 19.58        | 19.30 | 19.55  | 18.81        | 18.81 | 19.13 |
| sub-test2(dBm) | 19.50        | 19.28 | 19.50  | 18.76        | 18.80 | 19.09 |
| sub-test3(dBm) | 20.53        | 20.32 | 20.52  | 19.83        | 19.85 | 20.10 |
| sub-test4(dBm) | 19.02        | 18.76 | 18.99  | 18.31        | 18.24 | 18.58 |
| sub-test5(dBm) | 21.49        | 21.26 | 21.54  | 20.75        | 20.80 | 21.08 |

UMTS SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01.

HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

## 6.4 LTE Measurement result

### Band 2

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Low Range         | 1.4             | 18607           | 1850.7                   | QPSK       | 1       | Low       | 23.37              |
|                   |                 |                 |                          |            |         | Mid       | 23.49              |
|                   |                 |                 |                          |            |         | High      | 23.32              |
|                   |                 |                 |                          |            | 50%     | Low       | 23.31              |
|                   |                 |                 |                          |            |         | Mid       | 23.02              |
|                   |                 |                 |                          |            |         | High      | 23.22              |
|                   |                 |                 |                          | 100%       | ---     | 22.31     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 22.21              |
|                   |                 |                 |                          |            |         | Mid       | 22.64              |
|                   |                 |                 |                          |            |         | High      | 22.19              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.17              |
|                   |                 |                 |                          |            |         | Mid       | 21.90              |
|                   | High            | 22.07           |                          |            |         |           |                    |
|                   | 100%            | ---             | 21.31                    |            |         |           |                    |
|                   | 3               | 18615           | 1851.5                   | QPSK       | 1       | Low       | 23.09              |
|                   |                 |                 |                          |            |         | Mid       | 23.74              |
|                   |                 |                 |                          |            |         | High      | 23.10              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.03              |
|                   |                 |                 |                          |            |         | Mid       | 22.10              |
|                   |                 |                 |                          |            |         | High      | 22.08              |
|                   |                 |                 |                          | 100%       | ---     | 22.04     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.95              |
|                   |                 |                 |                          |            |         | Mid       | 22.73              |
|                   |                 |                 |                          |            |         | High      | 21.92              |
| 50%               |                 |                 |                          |            | Low     | 21.06     |                    |
|                   |                 |                 |                          |            | Mid     | 21.12     |                    |
|                   | High            | 21.08           |                          |            |         |           |                    |
| 100%              | ---             | 21.11           |                          |            |         |           |                    |



| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |       |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|-------|
| Low Range         | 5               | 18625           | 1852.5                   | QPSK       | 1       | Low       | 23.14              |       |
|                   |                 |                 |                          |            |         | Mid       | 23.75              |       |
|                   |                 |                 |                          |            |         | High      | 23.04              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 22.07              |       |
|                   |                 |                 |                          |            |         | Mid       | 22.03              |       |
|                   |                 |                 |                          |            |         | High      | 22.09              |       |
|                   |                 |                 |                          | 100%       | ---     | 21.99     |                    |       |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.99              |       |
|                   |                 |                 |                          |            |         | Mid       | 22.75              |       |
|                   | High            | 21.84           |                          |            |         |           |                    |       |
|                   | 50%             | Low             | 21.05                    |            |         |           |                    |       |
|                   |                 | Mid             | 21.00                    |            |         |           |                    |       |
|                   |                 | High            | 21.03                    |            |         |           |                    |       |
|                   | 100%            | ---             | 21.01                    |            |         |           |                    |       |
|                   | 10              | 18650           | 1855                     | QPSK       | 1       | Low       | 23.24              |       |
|                   |                 |                 |                          |            |         | Mid       | 23.25              |       |
|                   |                 |                 |                          |            |         | High      | 23.16              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 22.06              |       |
|                   |                 |                 |                          |            |         | Mid       | 21.97              |       |
|                   |                 |                 |                          |            |         | High      | 22.03              |       |
|                   |                 |                 |                          |            | 100%    | ---       | 21.99              |       |
|                   |                 |                 |                          |            | 16QAM   | 1         | Low                | 22.06 |
|                   |                 |                 |                          |            |         |           | Mid                | 22.31 |
|                   |                 |                 |                          | High       |         |           | 21.93              |       |
| 50%               |                 |                 |                          | Low        |         | 21.09     |                    |       |
|                   |                 |                 |                          | Mid        |         | 21.00     |                    |       |
|                   |                 |                 |                          | High       |         | 21.03     |                    |       |
| 100%              |                 |                 |                          | ---        | 20.96   |           |                    |       |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |       |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|-------|
| Low Range         | 15              | 18675           | 1857.5                   | QPSK       | 1       | Low       | 23.30              |       |
|                   |                 |                 |                          |            |         | Mid       | 22.95              |       |
|                   |                 |                 |                          |            |         | High      | 23.18              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 22.02              |       |
|                   |                 |                 |                          |            |         | Mid       | 21.98              |       |
|                   |                 |                 |                          |            |         | High      | 21.96              |       |
|                   |                 |                 |                          | 100%       | ---     | 22.04     |                    |       |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 22.10              |       |
|                   |                 |                 |                          |            |         | Mid       | 22.05              |       |
|                   |                 |                 |                          |            |         | High      | 21.98              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 21.01              |       |
|                   |                 |                 |                          |            |         | Mid       | 20.97              |       |
|                   | High            | 20.96           |                          |            |         |           |                    |       |
|                   | 100%            | ---             | 21.00                    |            |         |           |                    |       |
|                   | 20              | 18700           | 1860                     |            | QPSK    | 1         | Low                | 23.31 |
|                   |                 |                 |                          |            |         |           | Mid                | 23.21 |
|                   |                 |                 |                          |            |         |           | High               | 23.17 |
|                   |                 |                 |                          |            |         | 50%       | Low                | 22.01 |
|                   |                 |                 |                          |            |         |           | Mid                | 21.96 |
|                   |                 |                 |                          |            |         |           | High               | 21.98 |
|                   |                 |                 |                          |            | 100%    | ---       | 21.99              |       |
|                   |                 |                 |                          |            | 16QAM   | 1         | Low                | 22.12 |
|                   |                 |                 |                          |            |         |           | Mid                | 22.32 |
|                   |                 |                 |                          |            |         |           | High               | 21.94 |
| 50%               |                 |                 |                          |            |         | Low       | 20.97              |       |
|                   |                 |                 |                          |            |         | Mid       | 20.95              |       |
|                   | High            | 20.93           |                          |            |         |           |                    |       |
| 100%              | ---             | 21.01           |                          |            |         |           |                    |       |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 1.4             | 18900           | 1880                     | QPSK       | 1       | Low       | 23.02              |
|                   |                 |                 |                          |            |         | Mid       | 23.11              |
|                   |                 |                 |                          |            |         | High      | 23.03              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.99              |
|                   |                 |                 |                          |            |         | Mid       | 22.70              |
|                   |                 |                 |                          |            |         | High      | 22.88              |
|                   |                 |                 |                          | 100%       | ---     | 21.92     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.89              |
|                   |                 |                 |                          |            |         | Mid       | 22.28              |
|                   |                 |                 |                          |            |         | High      | 21.91              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.89              |
|                   |                 |                 |                          |            |         | Mid       | 21.54              |
|                   | High            | 21.78           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.97                    |            |         |           |                    |
|                   | 3               | 18900           | 1880                     | QPSK       | 1       | Low       | 23.06              |
|                   |                 |                 |                          |            |         | Mid       | 23.50              |
|                   |                 |                 |                          |            |         | High      | 22.97              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.93              |
|                   |                 |                 |                          |            |         | Mid       | 21.87              |
|                   |                 |                 |                          |            |         | High      | 21.88              |
|                   |                 |                 |                          | 100%       | ---     | 21.88     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.90              |
|                   |                 |                 |                          |            |         | Mid       | 22.76              |
|                   |                 |                 |                          |            |         | High      | 21.87              |
| 50%               |                 |                 |                          |            | Low     | 20.98     |                    |
|                   |                 |                 |                          |            | Mid     | 21.02     |                    |
|                   | High            | 21.03           |                          |            |         |           |                    |
| 100%              | ---             | 20.96           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 5               | 18900           | 1880                     | QPSK       | 1       | Low       | 23.06              |
|                   |                 |                 |                          |            |         | Mid       | 23.60              |
|                   |                 |                 |                          |            |         | High      | 22.97              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.93              |
|                   |                 |                 |                          |            |         | Mid       | 21.87              |
|                   |                 |                 |                          |            |         | High      | 21.88              |
|                   |                 |                 |                          | 100%       | ---     | 21.80     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.94              |
|                   |                 |                 |                          |            |         | Mid       | 22.73              |
|                   |                 |                 |                          |            |         | High      | 21.85              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.91              |
|                   |                 |                 |                          |            |         | Mid       | 20.87              |
|                   | High            | 20.89           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.92                    |            |         |           |                    |
|                   | 10              | 18900           | 1880                     | QPSK       | 1       | Low       | 23.15              |
|                   |                 |                 |                          |            |         | Mid       | 23.18              |
|                   |                 |                 |                          |            |         | High      | 23.07              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.88              |
|                   |                 |                 |                          |            |         | Mid       | 21.86              |
|                   |                 |                 |                          |            |         | High      | 21.89              |
|                   |                 |                 |                          | 100%       | ---     | 21.92     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.97              |
|                   |                 |                 |                          |            |         | Mid       | 22.34              |
|                   |                 |                 |                          |            |         | High      | 21.91              |
| 50%               |                 |                 |                          |            | Low     | 21.00     |                    |
|                   |                 |                 |                          |            | Mid     | 20.95     |                    |
|                   | High            | 20.97           |                          |            |         |           |                    |
| 100%              | ---             | 20.95           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 15              | 18900           | 1880                     | QPSK       | 1       | Low       | 23.17              |
|                   |                 |                 |                          |            |         | Mid       | 22.85              |
|                   |                 |                 |                          |            |         | High      | 23.06              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.97              |
|                   |                 |                 |                          |            |         | Mid       | 21.93              |
|                   |                 |                 |                          |            |         | High      | 21.92              |
|                   |                 |                 |                          | 100%       | ---     | 21.92     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.99              |
|                   |                 |                 |                          |            |         | Mid       | 22.01              |
|                   |                 |                 |                          |            |         | High      | 21.89              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.97              |
|                   |                 |                 |                          |            |         | Mid       | 20.95              |
|                   | High            | 20.96           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.96                    |            |         |           |                    |
|                   | 20              | 18900           | 1880                     | QPSK       | 1       | Low       | 23.35              |
|                   |                 |                 |                          |            |         | Mid       | 23.07              |
|                   |                 |                 |                          |            |         | High      | 23.04              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.05              |
|                   |                 |                 |                          |            |         | Mid       | 21.87              |
|                   |                 |                 |                          |            |         | High      | 21.88              |
|                   |                 |                 |                          | 100%       | ---     | 21.88     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.99              |
|                   |                 |                 |                          |            |         | Mid       | 22.28              |
|                   |                 |                 |                          |            |         | High      | 21.84              |
| 50%               |                 |                 |                          |            | Low     | 20.92     |                    |
|                   |                 |                 |                          |            | Mid     | 20.91     |                    |
|                   | High            | 20.88           |                          |            |         |           |                    |
| 100%              | ---             | 20.95           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 1.4             | 19193           | 1909.3                   | QPSK       | 1       | Low       | 22.83              |
|                   |                 |                 |                          |            |         | Mid       | 22.93              |
|                   |                 |                 |                          |            |         | High      | 22.83              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.76              |
|                   |                 |                 |                          |            |         | Mid       | 22.50              |
|                   |                 |                 |                          |            |         | High      | 22.69              |
|                   |                 |                 |                          | 100%       | ---     | 21.81     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.67              |
|                   |                 |                 |                          |            |         | Mid       | 22.09              |
|                   |                 |                 |                          |            |         | High      | 21.69              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.63              |
|                   |                 |                 |                          |            |         | Mid       | 21.37              |
|                   | High            | 21.53           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.82                    |            |         |           |                    |
|                   | 3               | 19185           | 1908.5                   | QPSK       | 1       | Low       | 22.72              |
|                   |                 |                 |                          |            |         | Mid       | 23.47              |
|                   |                 |                 |                          |            |         | High      | 22.78              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.72              |
|                   |                 |                 |                          |            |         | Mid       | 21.79              |
|                   |                 |                 |                          |            |         | High      | 21.68              |
|                   |                 |                 |                          | 100%       | ---     | 21.71     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.59              |
|                   |                 |                 |                          |            |         | Mid       | 22.48              |
|                   |                 |                 |                          |            |         | High      | 21.62              |
| 50%               |                 |                 |                          |            | Low     | 20.71     |                    |
|                   |                 |                 |                          |            | Mid     | 20.83     |                    |
|                   | High            | 20.75           |                          |            |         |           |                    |
| 100%              | ---             | 20.78           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |       |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|-------|
| High Range        | 5               | 19175           | 1907.5                   | QPSK       | 1       | Low       | 22.87              |       |
|                   |                 |                 |                          |            |         | Mid       | 23.49              |       |
|                   |                 |                 |                          |            |         | High      | 22.79              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 21.81              |       |
|                   |                 |                 |                          |            |         | Mid       | 21.73              |       |
|                   |                 |                 |                          |            |         | High      | 21.79              |       |
|                   |                 |                 |                          | 100%       | ---     | 21.70     |                    |       |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.64              |       |
|                   |                 |                 |                          |            |         | Mid       | 22.50              |       |
|                   |                 |                 |                          |            |         | High      | 21.63              |       |
|                   |                 |                 |                          |            | 50%     | Low       | 20.77              |       |
|                   |                 |                 |                          |            |         | Mid       | 20.70              |       |
|                   | High            | 20.76           |                          |            |         |           |                    |       |
|                   | 100%            | ---             | 20.73                    |            |         |           |                    |       |
|                   | 10              | 19150           | 1905                     |            | QPSK    | 1         | Low                | 22.93 |
|                   |                 |                 |                          |            |         |           | Mid                | 22.97 |
|                   |                 |                 |                          |            |         |           | High               | 22.86 |
|                   |                 |                 |                          |            |         | 50%       | Low                | 21.85 |
|                   |                 |                 |                          |            |         |           | Mid                | 21.78 |
|                   |                 |                 |                          |            |         |           | High               | 21.79 |
|                   |                 |                 |                          |            | 100%    | ---       | 21.71              |       |
|                   |                 |                 |                          |            | 16QAM   | 1         | Low                | 21.65 |
|                   |                 |                 |                          |            |         |           | Mid                | 22.03 |
|                   |                 |                 |                          |            |         |           | High               | 21.68 |
| 50%               |                 |                 |                          |            |         | Low       | 20.82              |       |
|                   |                 |                 |                          |            |         | Mid       | 20.76              |       |
|                   | High            | 20.77           |                          |            |         |           |                    |       |
| 100%              | ---             | 20.68           |                          |            |         |           |                    |       |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 15              | 19125           | 1902.5                   | QPSK       | 1       | Low       | 22.99              |
|                   |                 |                 |                          |            |         | Mid       | 22.78              |
|                   |                 |                 |                          |            |         | High      | 22.90              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.73              |
|                   |                 |                 |                          |            |         | Mid       | 21.66              |
|                   |                 |                 |                          |            |         | High      | 21.71              |
|                   |                 |                 |                          | 100%       | ---     | 21.80     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.78              |
|                   |                 |                 |                          |            |         | Mid       | 21.79              |
|                   |                 |                 |                          |            |         | High      | 21.73              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.70              |
|                   |                 |                 |                          |            |         | Mid       | 20.63              |
|                   | High            | 20.71           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.73                    |            |         |           |                    |
|                   | 20              | 19100           | 1900                     | QPSK       | 1       | Low       | 23.07              |
|                   |                 |                 |                          |            |         | Mid       | 22.99              |
|                   |                 |                 |                          |            |         | High      | 22.90              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.79              |
|                   |                 |                 |                          |            |         | Mid       | 21.74              |
|                   |                 |                 |                          |            |         | High      | 21.70              |
|                   |                 |                 |                          | 100%       | ---     | 21.71     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.88              |
|                   |                 |                 |                          |            |         | Mid       | 22.02              |
|                   |                 |                 |                          |            |         | High      | 21.66              |
| 50%               |                 |                 |                          |            | Low     | 20.74     |                    |
|                   |                 |                 |                          |            | Mid     | 20.68     |                    |
|                   | High            | 20.69           |                          |            |         |           |                    |
| 100%              | ---             | 20.73           |                          |            |         |           |                    |



Band 4

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Low Range         | 1.4             | 19957           | 1710.7                   | QPSK       | 1       | Low       | 22.47              |
|                   |                 |                 |                          |            |         | Mid       | 22.58              |
|                   |                 |                 |                          |            |         | High      | 22.45              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.41              |
|                   |                 |                 |                          |            |         | Mid       | 22.10              |
|                   |                 |                 |                          |            |         | High      | 22.25              |
|                   |                 |                 |                          | 100%       | ---     | 21.47     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.31              |
|                   |                 |                 |                          |            |         | Mid       | 21.73              |
|                   |                 |                 |                          |            |         | High      | 21.31              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.27              |
|                   |                 |                 |                          |            |         | Mid       | 20.99              |
|                   | High            | 21.19           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.43                    |            |         |           |                    |
|                   | 3               | 19965           | 1711.5                   | QPSK       | 1       | Low       | 22.36              |
|                   |                 |                 |                          |            |         | Mid       | 23.03              |
|                   |                 |                 |                          |            |         | High      | 22.41              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.36              |
|                   |                 |                 |                          |            |         | Mid       | 21.43              |
|                   |                 |                 |                          |            |         | High      | 21.37              |
|                   |                 |                 |                          | 100%       | ---     | 21.38     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.26              |
|                   |                 |                 |                          |            |         | Mid       | 22.13              |
|                   |                 |                 |                          |            |         | High      | 21.26              |
| 50%               |                 |                 |                          |            | Low     | 20.31     |                    |
|                   |                 |                 |                          |            | Mid     | 20.39     |                    |
|                   | High            | 20.40           |                          |            |         |           |                    |
| 100%              | ---             | 20.42           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Low Range         | 5               | 19975           | 1712.5                   | QPSK       | 1       | Low       | 22.47              |
|                   |                 |                 |                          |            |         | Mid       | 23.10              |
|                   |                 |                 |                          |            |         | High      | 22.39              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.39              |
|                   |                 |                 |                          |            |         | Mid       | 21.33              |
|                   |                 |                 |                          |            |         | High      | 21.38              |
|                   |                 |                 |                          | 100%       | ---     | 21.27     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.32              |
|                   |                 |                 |                          |            |         | Mid       | 22.18              |
|                   |                 |                 |                          |            |         | High      | 21.31              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.32              |
|                   |                 |                 |                          |            |         | Mid       | 20.26              |
|                   | High            | 20.30           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.28                    |            |         |           |                    |
|                   | 10              | 20000           | 1715                     | QPSK       | 1       | Low       | 22.45              |
|                   |                 |                 |                          |            |         | Mid       | 22.51              |
|                   |                 |                 |                          |            |         | High      | 22.45              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.32              |
|                   |                 |                 |                          |            |         | Mid       | 21.26              |
|                   |                 |                 |                          |            |         | High      | 21.31              |
|                   |                 |                 |                          | 100%       | ---     | 21.29     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.30              |
|                   |                 |                 |                          |            |         | Mid       | 21.68              |
|                   |                 |                 |                          |            |         | High      | 21.33              |
| 50%               |                 |                 |                          |            | Low     | 20.32     |                    |
|                   |                 |                 |                          |            | Mid     | 20.28     |                    |
|                   | High            | 20.26           |                          |            |         |           |                    |
| 100%              | ---             | 20.25           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Low Range         | 15              | 20025           | 1717.5                   | QPSK       | 1       | Low       | 22.51              |
|                   |                 |                 |                          |            |         | Mid       | 22.23              |
|                   |                 |                 |                          |            |         | High      | 22.49              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.35              |
|                   |                 |                 |                          |            |         | Mid       | 21.31              |
|                   |                 |                 |                          |            |         | High      | 21.29              |
|                   |                 |                 |                          | 100%       | ---     | 21.32     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.33              |
|                   |                 |                 |                          |            |         | Mid       | 21.41              |
|                   |                 |                 |                          |            |         | High      | 21.36              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.35              |
|                   |                 |                 |                          |            |         | Mid       | 20.36              |
|                   | High            | 20.31           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.30                    |            |         |           |                    |
|                   | 20              | 20050           | 1720                     | QPSK       | 1       | Low       | 22.53              |
|                   |                 |                 |                          |            |         | Mid       | 22.45              |
|                   |                 |                 |                          |            |         | High      | 22.46              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.28              |
|                   |                 |                 |                          |            |         | Mid       | 21.31              |
|                   |                 |                 |                          |            |         | High      | 21.29              |
|                   |                 |                 |                          | 100%       | ---     | 21.26     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.35              |
|                   |                 |                 |                          |            |         | Mid       | 21.70              |
|                   |                 |                 |                          |            |         | High      | 21.31              |
| 50%               |                 |                 |                          |            | Low     | 20.27     |                    |
|                   |                 |                 |                          |            | Mid     | 20.26     |                    |
|                   | High            | 20.28           |                          |            |         |           |                    |
| 100%              | ---             | 20.28           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 1.4             | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.27              |
|                   |                 |                 |                          |            |         | Mid       | 22.39              |
|                   |                 |                 |                          |            |         | High      | 22.20              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.21              |
|                   |                 |                 |                          |            |         | Mid       | 21.94              |
|                   |                 |                 |                          |            |         | High      | 22.10              |
|                   |                 |                 |                          | 100%       | ---     | 21.23     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.13              |
|                   |                 |                 |                          |            |         | Mid       | 21.54              |
|                   |                 |                 |                          |            |         | High      | 21.12              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.08              |
|                   |                 |                 |                          |            |         | Mid       | 20.80              |
|                   | High            | 20.99           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.21                    |            |         |           |                    |
|                   | 3               | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.25              |
|                   |                 |                 |                          |            |         | Mid       | 22.85              |
|                   |                 |                 |                          |            |         | High      | 22.24              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.20              |
|                   |                 |                 |                          |            |         | Mid       | 21.27              |
|                   |                 |                 |                          |            |         | High      | 21.25              |
|                   |                 |                 |                          | 100%       | ---     | 21.20     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.14              |
|                   |                 |                 |                          |            |         | Mid       | 21.96              |
|                   |                 |                 |                          |            |         | High      | 21.10              |
| 50%               |                 |                 |                          |            | Low     | 20.21     |                    |
|                   |                 |                 |                          |            | Mid     | 20.31     |                    |
|                   | High            | 20.25           |                          |            |         |           |                    |
| 100%              | ---             | 20.26           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 5               | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.31              |
|                   |                 |                 |                          |            |         | Mid       | 23.12              |
|                   |                 |                 |                          |            |         | High      | 22.23              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.25              |
|                   |                 |                 |                          |            |         | Mid       | 21.14              |
|                   |                 |                 |                          |            |         | High      | 21.23              |
|                   |                 |                 |                          | 100%       | ---     | 21.14     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.19              |
|                   |                 |                 |                          |            |         | Mid       | 21.95              |
|                   |                 |                 |                          |            |         | High      | 21.07              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.17              |
|                   |                 |                 |                          |            |         | Mid       | 20.10              |
|                   | High            | 20.14           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.16                    |            |         |           |                    |
|                   | 10              | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.40              |
|                   |                 |                 |                          |            |         | Mid       | 22.37              |
|                   |                 |                 |                          |            |         | High      | 22.31              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.18              |
|                   |                 |                 |                          |            |         | Mid       | 21.11              |
|                   |                 |                 |                          |            |         | High      | 21.19              |
|                   |                 |                 |                          | 100%       | ---     | 21.16     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.26              |
|                   |                 |                 |                          |            |         | Mid       | 21.54              |
|                   |                 |                 |                          |            |         | High      | 21.12              |
| 50%               |                 |                 |                          |            | Low     | 20.21     |                    |
|                   |                 |                 |                          |            | Mid     | 20.14     |                    |
|                   | High            | 20.18           |                          |            |         |           |                    |
| 100%              | ---             | 20.12           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 15              | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.41              |
|                   |                 |                 |                          |            |         | Mid       | 22.06              |
|                   |                 |                 |                          |            |         | High      | 22.32              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.18              |
|                   |                 |                 |                          |            |         | Mid       | 21.13              |
|                   |                 |                 |                          |            |         | High      | 21.14              |
|                   |                 |                 |                          | 100%       | ---     | 21.16     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.23              |
|                   |                 |                 |                          |            |         | Mid       | 21.22              |
|                   |                 |                 |                          |            |         | High      | 21.11              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.14              |
|                   |                 |                 |                          |            |         | Mid       | 20.12              |
|                   | High            | 20.09           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.14                    |            |         |           |                    |
|                   | 20              | 20175           | 1732.5                   | QPSK       | 1       | Low       | 22.58              |
|                   |                 |                 |                          |            |         | Mid       | 22.36              |
|                   |                 |                 |                          |            |         | High      | 22.39              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.32              |
|                   |                 |                 |                          |            |         | Mid       | 21.17              |
|                   |                 |                 |                          |            |         | High      | 21.18              |
|                   |                 |                 |                          | 100%       | ---     | 21.14     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.30              |
|                   |                 |                 |                          |            |         | Mid       | 21.52              |
|                   |                 |                 |                          |            |         | High      | 21.13              |
| 50%               |                 |                 |                          |            | Low     | 20.18     |                    |
|                   |                 |                 |                          |            | Mid     | 20.13     |                    |
|                   | High            | 20.09           |                          |            |         |           |                    |
| 100%              | ---             | 20.19           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 1.4             | 20393           | 1754.3                   | QPSK       | 1       | Low       | 22.38              |
|                   |                 |                 |                          |            |         | Mid       | 22.45              |
|                   |                 |                 |                          |            |         | High      | 22.37              |
|                   |                 |                 |                          |            | 50%     | Low       | 22.30              |
|                   |                 |                 |                          |            |         | Mid       | 22.02              |
|                   |                 |                 |                          |            |         | High      | 22.21              |
|                   |                 |                 |                          | 100%       | ---     | 21.33     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.25              |
|                   |                 |                 |                          |            |         | Mid       | 21.63              |
|                   |                 |                 |                          |            |         | High      | 21.23              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.20              |
|                   |                 |                 |                          |            |         | Mid       | 20.88              |
|                   | High            | 21.08           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.34                    |            |         |           |                    |
|                   | 3               | 20385           | 1753.5                   | QPSK       | 1       | Low       | 22.37              |
|                   |                 |                 |                          |            |         | Mid       | 23.00              |
|                   |                 |                 |                          |            |         | High      | 22.40              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.30              |
|                   |                 |                 |                          |            |         | Mid       | 21.34              |
|                   |                 |                 |                          |            |         | High      | 21.30              |
|                   |                 |                 |                          | 100%       | ---     | 21.34     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.27              |
|                   |                 |                 |                          |            |         | Mid       | 22.09              |
|                   |                 |                 |                          |            |         | High      | 21.26              |
| 50%               |                 |                 |                          |            | Low     | 20.32     |                    |
|                   |                 |                 |                          |            | Mid     | 20.39     |                    |
|                   | High            | 20.36           |                          |            |         |           |                    |
| 100%              | ---             | 20.38           |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 5               | 20375           | 1752.5                   | QPSK       | 1       | Low       | 22.40              |
|                   |                 |                 |                          |            |         | Mid       | 22.99              |
|                   |                 |                 |                          |            |         | High      | 22.36              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.38              |
|                   |                 |                 |                          |            |         | Mid       | 21.30              |
|                   |                 |                 |                          |            |         | High      | 21.29              |
|                   |                 |                 |                          | 100%       | ---     | 21.20     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.22              |
|                   |                 |                 |                          |            |         | Mid       | 22.09              |
|                   |                 |                 |                          |            |         | High      | 21.20              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.27              |
|                   |                 |                 |                          |            |         | Mid       | 20.23              |
|                   | High            | 20.25           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.26                    |            |         |           |                    |
|                   | 10              | 20350           | 1750                     | QPSK       | 1       | Low       | 22.38              |
|                   |                 |                 |                          |            |         | Mid       | 22.46              |
|                   |                 |                 |                          |            |         | High      | 22.51              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.23              |
|                   |                 |                 |                          |            |         | Mid       | 21.24              |
|                   |                 |                 |                          |            |         | High      | 21.23              |
|                   |                 |                 |                          | 100%       | ---     | 21.25     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.27              |
|                   |                 |                 |                          |            |         | Mid       | 21.62              |
|                   |                 |                 |                          |            |         | High      | 21.30              |
| 50%               |                 |                 |                          |            | Low     | 20.29     |                    |
|                   |                 |                 |                          |            | Mid     | 20.27     |                    |
|                   | High            | 20.33           |                          |            |         |           |                    |
| 100%              | ---             | 20.26           |                          |            |         |           |                    |



| Test Frequency ID | Bandwidth (MHz) | N <sub>UL</sub> | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-----------------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 15              | 20325           | 1747.5                   | QPSK       | 1       | Low       | 22.42              |
|                   |                 |                 |                          |            |         | Mid       | 22.21              |
|                   |                 |                 |                          |            |         | High      | 22.53              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.27              |
|                   |                 |                 |                          |            |         | Mid       | 21.25              |
|                   |                 |                 |                          |            |         | High      | 21.31              |
|                   |                 |                 |                          | 100%       | ---     | 21.30     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.21              |
|                   |                 |                 |                          |            |         | Mid       | 21.36              |
|                   |                 |                 |                          |            |         | High      | 21.37              |
|                   |                 |                 |                          |            | 50%     | Low       | 20.21              |
|                   |                 |                 |                          |            |         | Mid       | 20.23              |
|                   | High            | 20.32           |                          |            |         |           |                    |
|                   | 100%            | ---             | 20.29                    |            |         |           |                    |
|                   | 20              | 20300           | 1745                     | QPSK       | 1       | Low       | 22.45              |
|                   |                 |                 |                          |            |         | Mid       | 22.47              |
|                   |                 |                 |                          |            |         | High      | 22.50              |
|                   |                 |                 |                          |            | 50%     | Low       | 21.25              |
|                   |                 |                 |                          |            |         | Mid       | 21.29              |
|                   |                 |                 |                          |            |         | High      | 21.34              |
|                   |                 |                 |                          | 100%       | ---     | 21.29     |                    |
|                   |                 |                 |                          | 16QAM      | 1       | Low       | 21.25              |
|                   |                 |                 |                          |            |         | Mid       | 21.63              |
|                   |                 |                 |                          |            |         | High      | 21.34              |
| 50%               |                 |                 |                          |            | Low     | 20.21     |                    |
|                   |                 |                 |                          |            | Mid     | 20.23     |                    |
|                   | High            | 20.27           |                          |            |         |           |                    |
| 100%              | ---             | 20.25           |                          |            |         |           |                    |

Band 7

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |       |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|-------|
| Low Range         | 5               | 20775 | 2502.5                   | QPSK       | 1       | Low       | 23.00              |       |
|                   |                 |       |                          |            |         | Mid       | 23.67              |       |
|                   |                 |       |                          |            |         | High      | 23.01              |       |
|                   |                 |       |                          |            | 50%     | Low       | 21.89              |       |
|                   |                 |       |                          |            |         | Mid       | 21.85              |       |
|                   |                 |       |                          |            |         | High      | 21.91              |       |
|                   |                 |       |                          | 100%       | ---     | 21.81     |                    |       |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.73              |       |
|                   |                 |       |                          |            |         | Mid       | 22.66              |       |
|                   | High            | 21.79 |                          |            |         |           |                    |       |
|                   | 50%             | Low   | 20.81                    |            |         |           |                    |       |
|                   |                 | Mid   | 20.78                    |            |         |           |                    |       |
|                   |                 | High  | 20.88                    |            |         |           |                    |       |
|                   | 100%            | ---   | 20.86                    |            |         |           |                    |       |
|                   | 10              | 20800 | 2505                     | QPSK       | 1       | Low       | 23.10              |       |
|                   |                 |       |                          |            |         | Mid       | 23.22              |       |
|                   |                 |       |                          |            |         | High      | 23.29              |       |
|                   |                 |       |                          |            | 50%     | Low       | 21.92              |       |
|                   |                 |       |                          |            |         | Mid       | 21.97              |       |
|                   |                 |       |                          |            |         | High      | 22.09              |       |
|                   |                 |       |                          |            | 100%    | ---       | 21.94              |       |
|                   |                 |       |                          |            | 16QAM   | 1         | Low                | 21.89 |
|                   |                 |       |                          |            |         |           | Mid                | 22.28 |
|                   |                 |       |                          | High       |         |           | 21.91              |       |
| 50%               |                 |       |                          | Low        |         | 20.96     |                    |       |
|                   |                 |       |                          | Mid        |         | 21.02     |                    |       |
|                   |                 |       |                          | High       |         | 21.04     |                    |       |
| 100%              |                 |       |                          | ---        | 20.86   |           |                    |       |

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|
| Low Range         | 15              | 20825 | 2507.5                   | QPSK       | 1       | Low       | 22.97              |
|                   |                 |       |                          |            |         | Mid       | 22.78              |
|                   |                 |       |                          |            |         | High      | 23.17              |
|                   |                 |       |                          |            | 50%     | Low       | 21.74              |
|                   |                 |       |                          |            |         | Mid       | 21.80              |
|                   |                 |       |                          |            |         | High      | 21.84              |
|                   |                 |       |                          | 100%       | ---     | 21.84     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.70              |
|                   |                 |       |                          |            |         | Mid       | 21.92              |
|                   | High            | 21.92 |                          |            |         |           |                    |
|                   | 50%             | Low   | 20.74                    |            |         |           |                    |
|                   |                 | Mid   | 20.79                    |            |         |           |                    |
|                   |                 | High  | 20.85                    |            |         |           |                    |
|                   | 100%            | ---   | 20.82                    |            |         |           |                    |
|                   | 20              | 20850 | 2510                     | QPSK       | 1       | Low       | 22.98              |
|                   |                 |       |                          |            |         | Mid       | 23.17              |
|                   |                 |       |                          |            |         | High      | 23.19              |
|                   |                 |       |                          |            | 50%     | Low       | 21.81              |
| Mid               |                 |       |                          |            |         | 21.91     |                    |
| High              |                 |       |                          |            |         | 21.92     |                    |
| 100%              |                 |       |                          | ---        | 21.83   |           |                    |
| 16QAM             |                 |       |                          | 1          | Low     | 21.73     |                    |
|                   |                 |       |                          |            | Mid     | 22.23     |                    |
|                   | High            | 21.93 |                          |            |         |           |                    |
|                   | 50%             | Low   | 20.78                    |            |         |           |                    |
|                   |                 | Mid   | 20.86                    |            |         |           |                    |
|                   |                 | High  | 20.88                    |            |         |           |                    |
| 100%              | ---             | 20.86 |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 5               | 21100 | 2535                     | QPSK       | 1       | Low       | 23.12              |
|                   |                 |       |                          |            |         | Mid       | 23.57              |
|                   |                 |       |                          |            |         | High      | 22.92              |
|                   |                 |       |                          |            | 50%     | Low       | 21.94              |
|                   |                 |       |                          |            |         | Mid       | 21.85              |
|                   |                 |       |                          |            |         | High      | 21.83              |
|                   |                 |       |                          | 100%       | ---     | 21.80     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.92              |
|                   |                 |       |                          |            |         | Mid       | 22.67              |
|                   |                 |       |                          |            |         | High      | 21.73              |
|                   |                 |       |                          |            | 50%     | Low       | 20.92              |
|                   |                 |       |                          |            |         | Mid       | 20.80              |
|                   | High            | 20.81 |                          |            |         |           |                    |
|                   | 100%            | ---   | 20.85                    |            |         |           |                    |
|                   | 10              | 21100 | 2535                     | QPSK       | 1       | Low       | 23.20              |
|                   |                 |       |                          |            |         | Mid       | 23.10              |
|                   |                 |       |                          |            |         | High      | 22.92              |
|                   |                 |       |                          |            | 50%     | Low       | 21.94              |
|                   |                 |       |                          |            |         | Mid       | 21.84              |
|                   |                 |       |                          |            |         | High      | 21.78              |
|                   |                 |       |                          | 100%       | ---     | 21.84     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.89              |
|                   |                 |       |                          |            |         | Mid       | 22.28              |
|                   |                 |       |                          |            |         | High      | 21.76              |
| 50%               |                 |       |                          |            | Low     | 21.02     |                    |
|                   |                 |       |                          |            | Mid     | 20.90     |                    |
|                   | High            | 20.87 |                          |            |         |           |                    |
| 100%              | ---             | 20.92 |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|
| Mid Range         | 15              | 21100 | 2535                     | QPSK       | 1       | Low       | 23.28              |
|                   |                 |       |                          |            |         | Mid       | 22.86              |
|                   |                 |       |                          |            |         | High      | 22.98              |
|                   |                 |       |                          |            | 50%     | Low       | 22.02              |
|                   |                 |       |                          |            |         | Mid       | 21.88              |
|                   |                 |       |                          |            |         | High      | 21.76              |
|                   |                 |       |                          | 100%       | ---     | 21.90     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 22.05              |
|                   |                 |       |                          |            |         | Mid       | 21.98              |
|                   |                 |       |                          |            |         | High      | 21.60              |
|                   |                 |       |                          |            | 50%     | Low       | 20.97              |
|                   |                 |       |                          |            |         | Mid       | 20.90              |
|                   | High            | 20.78 |                          |            |         |           |                    |
|                   | 100%            | ---   | 20.87                    |            |         |           |                    |
|                   | 20              | 21100 | 2535                     | QPSK       | 1       | Low       | 23.34              |
|                   |                 |       |                          |            |         | Mid       | 23.11              |
|                   |                 |       |                          |            |         | High      | 22.70              |
|                   |                 |       |                          |            | 50%     | Low       | 21.97              |
|                   |                 |       |                          |            |         | Mid       | 21.87              |
|                   |                 |       |                          |            |         | High      | 21.65              |
|                   |                 |       |                          | 100%       | ---     | 21.81     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 22.12              |
|                   |                 |       |                          |            |         | Mid       | 22.28              |
|                   |                 |       |                          |            |         | High      | 21.53              |
| 50%               |                 |       |                          |            | Low     | 20.97     |                    |
|                   |                 |       |                          |            | Mid     | 20.88     |                    |
|                   | High            | 20.67 |                          |            |         |           |                    |
| 100%              | ---             | 20.87 |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 5               | 21425 | 2567.5                   | QPSK       | 1       | Low       | 22.83              |
|                   |                 |       |                          |            |         | Mid       | 23.36              |
|                   |                 |       |                          |            |         | High      | 22.75              |
|                   |                 |       |                          |            | 50%     | Low       | 21.63              |
|                   |                 |       |                          |            |         | Mid       | 21.58              |
|                   |                 |       |                          |            |         | High      | 21.59              |
|                   |                 |       |                          | 100%       | ---     | 21.54     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.60              |
|                   |                 |       |                          |            |         | Mid       | 22.41              |
|                   |                 |       |                          |            |         | High      | 21.53              |
|                   |                 |       |                          |            | 50%     | Low       | 20.61              |
|                   |                 |       |                          |            |         | Mid       | 20.52              |
|                   | High            | 20.54 |                          |            |         |           |                    |
|                   | 100%            | ---   | 20.62                    |            |         |           |                    |
|                   | 10              | 21400 | 2565                     | QPSK       | 1       | Low       | 22.88              |
|                   |                 |       |                          |            |         | Mid       | 22.59              |
|                   |                 |       |                          |            |         | High      | 22.92              |
|                   |                 |       |                          |            | 50%     | Low       | 22.81              |
|                   |                 |       |                          |            |         | Mid       | 22.69              |
|                   |                 |       |                          |            |         | High      | 22.81              |
|                   |                 |       |                          | 100%       | ---     | 21.64     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.64              |
|                   |                 |       |                          |            |         | Mid       | 21.98              |
|                   |                 |       |                          |            |         | High      | 21.57              |
| 50%               |                 |       |                          |            | Low     | 20.66     |                    |
|                   |                 |       |                          |            | Mid     | 20.61     |                    |
|                   | High            | 20.67 |                          |            |         |           |                    |
| 100%              | ---             | 20.61 |                          |            |         |           |                    |

| Test Frequency ID | Bandwidth (MHz) | NUL   | Frequency of Uplink(MHz) | Modulation | RB Size | RB Offset | Test results (dBm) |
|-------------------|-----------------|-------|--------------------------|------------|---------|-----------|--------------------|
| High Range        | 15              | 21375 | 2562.5                   | QPSK       | 1       | Low       | 23.04              |
|                   |                 |       |                          |            |         | Mid       | 22.72              |
|                   |                 |       |                          |            |         | High      | 22.95              |
|                   |                 |       |                          |            | 50%     | Low       | 21.75              |
|                   |                 |       |                          |            |         | Mid       | 21.71              |
|                   |                 |       |                          |            |         | High      | 21.66              |
|                   |                 |       |                          | 100%       | ---     | 21.75     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.78              |
|                   |                 |       |                          |            |         | Mid       | 21.79              |
|                   |                 |       |                          |            |         | High      | 21.71              |
|                   |                 |       |                          |            | 50%     | Low       | 20.74              |
|                   |                 |       |                          |            |         | Mid       | 20.73              |
|                   | High            | 20.70 |                          |            |         |           |                    |
|                   | 100%            | ---   | 20.76                    |            |         |           |                    |
|                   | 20              | 21350 | 2560                     | QPSK       | 1       | Low       | 23.13              |
|                   |                 |       |                          |            |         | Mid       | 22.92              |
|                   |                 |       |                          |            |         | High      | 22.85              |
|                   |                 |       |                          |            | 50%     | Low       | 21.81              |
|                   |                 |       |                          |            |         | Mid       | 21.62              |
|                   |                 |       |                          |            |         | High      | 21.59              |
|                   |                 |       |                          | 100%       | ---     | 21.63     |                    |
|                   |                 |       |                          | 16QAM      | 1       | Low       | 21.86              |
|                   |                 |       |                          |            |         | Mid       | 21.96              |
|                   |                 |       |                          |            |         | High      | 21.67              |
| 50%               |                 |       |                          |            | Low     | 20.70     |                    |
|                   |                 |       |                          |            | Mid     | 20.64     |                    |
|                   | High            | 20.58 |                          |            |         |           |                    |
| 100%              | ---             | 20.67 |                          |            |         |           |                    |

## 6.5 Bluetooth Measurement result

| Modulation type | Test Result (mW) |               |               |
|-----------------|------------------|---------------|---------------|
|                 | 2402MHz(Ch0)     | 2441MHz(Ch39) | 2480MHz(Ch78) |
| GFSK            | 2.09             | 3.10          | <b>3.21</b>   |
| $\pi/4$ DQPSK   | 1.71             | 2.65          | 2.62          |
| 8DPSK           | 2.10             | 2.70          | 2.81          |
| GFSK(BLE)       | 2402MHz(Ch0)     | 2440MHz(Ch19) | 2480MHz(Ch39) |
|                 | 0.49             | 0.75          | 0.80          |

| Modulation type | Test Result (dBm) |               |               |
|-----------------|-------------------|---------------|---------------|
|                 | 2402MHz(Ch0)      | 2441MHz(Ch39) | 2480MHz(Ch78) |
| GFSK            | 3.21              | 4.92          | <b>5.07</b>   |
| $\pi/4$ DQPSK   | 2.34              | 4.24          | 4.19          |
| 8DPSK           | 3.23              | 4.31          | 4.48          |
| GFSK(BLE)       | 2402MHz(Ch0)      | 2440MHz(Ch19) | 2480MHz(Ch39) |
|                 | -3.11             | -1.27         | -0.98         |



## 6.6 Wi-Fi Measurement result

5150MHz~5250MHz

| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |          |          |
|----------------|------------------|-------------------|----------|----------|
|                |                  | 5180 MHz          | 5200 MHz | 5240MHz  |
| 802.11a        | 6                | 4.12              | 4.60     | 5.34     |
|                | 9                | 4.09              | 4.15     | 5.21     |
|                | 12               | 4.05              | 4.08     | 5.16     |
|                | 18               | 3.62              | 3.77     | 4.71     |
|                | 24               | 2.46              | 2.62     | 3.84     |
|                | 36               | 1.98              | 2.05     | 3.24     |
|                | 48               | 1.45              | 1.78     | 2.62     |
|                | 54               | 0.89              | 1.03     | 1.36     |
| 802.11n (HT20) | 6.5              | 4.65              | 4.24     | 4.99     |
|                | 13               | 4.53              | 4.11     | 4.81     |
|                | 19.5             | 4.34              | 3.98     | 4.54     |
|                | 26               | 3.38              | 3.51     | 3.62     |
|                | 39               | 2.14              | 3.22     | 2.48     |
|                | 52               | 1.54              | 2.67     | 1.72     |
|                | 58.5             | 0.34              | 2.13     | 0.67     |
|                | 65               | -1.62             | 1.02     | -0.13    |
| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |          |          |
|                |                  | 5190 MHz          | ---      | 5230 MHz |
| 802.11n (HT40) | 13.5             | 3.89              | ---      | 4.04     |
|                | 27               | 3.11              | ---      | 3.15     |
|                | 40.5             | 2.67              | ---      | 2.71     |
|                | 54               | 2.04              | ---      | 2.11     |
|                | 81               | 0.13              | ---      | 0.32     |
|                | 108              | -1.02             | ---      | -0.89    |
|                | 121.5            | -2.45             | ---      | -2.28    |
|                | 135              | -3.90             | ---      | -4.87    |

5150MHz~5250MHz

| Test Mode      | Data Rate (Mbps) | Test Result (mW) |          |          |
|----------------|------------------|------------------|----------|----------|
|                |                  | 5180 MHz         | 5200 MHz | 5240MHz  |
| 802.11a        | 6                | 2.58             | 2.88     | 3.42     |
|                | 9                | 2.56             | 2.60     | 3.32     |
|                | 12               | 2.54             | 2.56     | 3.28     |
|                | 18               | 2.30             | 2.38     | 2.96     |
|                | 24               | 1.76             | 1.83     | 2.42     |
|                | 36               | 1.58             | 1.60     | 2.11     |
|                | 48               | 1.40             | 1.51     | 1.83     |
|                | 54               | 1.23             | 1.27     | 1.37     |
| 802.11n (HT20) | 6.5              | 2.92             | 2.65     | 3.16     |
|                | 13               | 2.84             | 2.58     | 3.03     |
|                | 19.5             | 2.72             | 2.50     | 2.84     |
|                | 26               | 2.18             | 2.24     | 2.30     |
|                | 39               | 1.64             | 2.10     | 1.77     |
|                | 52               | 1.43             | 1.85     | 1.49     |
|                | 58.5             | 1.08             | 1.63     | 1.17     |
|                | 65               | 0.69             | 1.26     | 0.97     |
| Test Mode      | Data Rate (Mbps) | Test Result (mW) |          |          |
|                |                  | 5190 MHz         | ---      | 5230 MHz |
| 802.11n (HT40) | 13.5             | 2.45             | ---      | 2.54     |
|                | 27               | 2.05             | ---      | 2.07     |
|                | 40.5             | 1.85             | ---      | 1.87     |
|                | 54               | 1.60             | ---      | 1.63     |
|                | 81               | 1.03             | ---      | 1.08     |
|                | 108              | 0.79             | ---      | 0.81     |
|                | 121.5            | 0.57             | ---      | 0.59     |
|                | 135              | 0.41             | ---      | 0.33     |

5250MHz~5350MHz

| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |          |          |
|----------------|------------------|-------------------|----------|----------|
|                |                  | 5260 MHz          | 5280 MHz | 5320 MHz |
| 802.11a        | 6                | 4.40              | 4.89     | 5.29     |
|                | 9                | 4.14              | 4.44     | 5.14     |
|                | 12               | 4.26              | 4.34     | 5.01     |
|                | 18               | 3.98              | 4.08     | 4.56     |
|                | 24               | 3.33              | 3.76     | 3.70     |
|                | 36               | 3.08              | 3.39     | 3.05     |
|                | 48               | 2.76              | 2.82     | 2.41     |
|                | 54               | 2.57              | 2.38     | 1.22     |
| 802.11n (HT20) | 6.5              | 4.24              | 4.38     | 4.95     |
|                | 13               | 4.00              | 4.04     | 4.77     |
|                | 19.5             | 3.87              | 3.92     | 4.47     |
|                | 26               | 3.34              | 3.56     | 3.56     |
|                | 39               | 3.00              | 3.07     | 2.37     |
|                | 52               | 2.89              | 2.96     | 1.66     |
|                | 58.5             | 2.43              | 2.57     | 0.59     |
|                | 65               | 1.18              | 1.35     | -0.19    |
| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |          |          |
|                |                  | 5270 MHz          | ---      | 5310 MHz |
| 802.11n (HT40) | 13.5             | 4.26              | ---      | 4.89     |
|                | 27               | 3.34              | ---      | 3.67     |
|                | 40.5             | 3.00              | ---      | 3.11     |
|                | 54               | 2.52              | ---      | 2.67     |
|                | 81               | 0.67              | ---      | 0.98     |
|                | 108              | -0.32             | ---      | -0.13    |
|                | 121.5            | -1.90             | ---      | -1.78    |
|                | 135              | -2.88             | ---      | -2.75    |

5250MHz~5350MHz

| Test Mode      | Data Rate (Mbps) | Test Result (mW) |          |          |
|----------------|------------------|------------------|----------|----------|
|                |                  | 5260 MHz         | 5280 MHz | 5320 MHz |
| 802.11a        | 6                | 2.75             | 3.08     | 3.38     |
|                | 9                | 2.59             | 2.78     | 3.27     |
|                | 12               | 2.67             | 2.72     | 3.17     |
|                | 18               | 2.50             | 2.56     | 2.86     |
|                | 24               | 2.15             | 2.38     | 2.34     |
|                | 36               | 2.03             | 2.18     | 2.02     |
|                | 48               | 1.89             | 1.91     | 1.74     |
|                | 54               | 1.81             | 1.73     | 1.32     |
| 802.11n (HT20) | 6.5              | 2.65             | 2.74     | 3.13     |
|                | 13               | 2.51             | 2.54     | 3.00     |
|                | 19.5             | 2.44             | 2.47     | 2.80     |
|                | 26               | 2.16             | 2.27     | 2.27     |
|                | 39               | 2.00             | 2.03     | 1.73     |
|                | 52               | 1.95             | 1.98     | 1.47     |
|                | 58.5             | 1.75             | 1.81     | 1.15     |
|                | 65               | 1.31             | 1.36     | 0.96     |
| Test Mode      | Data Rate (Mbps) | Test Result (mW) |          |          |
|                |                  | 5270 MHz         | ---      | 5310 MHz |
| 802.11n (HT40) | 13.5             | 2.67             | ---      | 3.08     |
|                | 27               | 2.16             | ---      | 2.33     |
|                | 40.5             | 2.00             | ---      | 2.05     |
|                | 54               | 1.79             | ---      | 1.85     |
|                | 81               | 1.17             | ---      | 1.25     |
|                | 108              | 0.93             | ---      | 0.97     |
|                | 121.5            | 0.65             | ---      | 0.66     |
|                | 135              | 0.52             | ---      | 0.53     |

5725MHz~5850MHz

| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |         |          |
|----------------|------------------|-------------------|---------|----------|
|                |                  | 5745 MHz          | 5785MHz | 5825 MHz |
| 802.11a        | 6                | 10.50             | 10.38   | 9.28     |
|                | 9                | 10.16             | 9.92    | 8.99     |
|                | 12               | 9.67              | 9.55    | 8.56     |
|                | 18               | 9.44              | 9.27    | 8.30     |
|                | 24               | 9.03              | 8.80    | 7.88     |
|                | 36               | 8.36              | 7.88    | 7.49     |
|                | 48               | 10.52             | 10.40   | 9.85     |
|                | 54               | 10.39             | 10.26   | 10.00    |
| 802.11n (HT20) | 6.5              | 10.14             | 10.03   | 9.58     |
|                | 13               | 9.67              | 9.54    | 9.30     |
|                | 19.5             | 9.18              | 8.90    | 8.66     |
|                | 26               | 8.43              | 8.15    | 7.91     |
|                | 39               | 8.03              | 7.63    | 7.26     |
|                | 52               | 6.61              | 6.41    | 6.22     |
|                | 58.5             | 10.50             | 10.38   | 9.28     |
|                | 65               | 10.16             | 9.92    | 8.99     |
| Test Mode      | Data Rate (Mbps) | Test Result (dBm) |         |          |
|                |                  | 5755 MHz          | ---     | 5795 MHz |
| 802.11n (HT40) | 13.5             | 10.46             | ---     | 9.89     |
|                | 27               | 10.04             | ---     | 9.79     |
|                | 40.5             | 9.57              | ---     | 9.40     |
|                | 54               | 9.03              | ---     | 8.90     |
|                | 81               | 8.41              | ---     | 8.19     |
|                | 108              | 7.52              | ---     | 7.12     |
|                | 121.5            | 6.44              | ---     | 6.21     |
|                | 135              | 4.98              | ---     | 4.80     |

5725MHz~5850MHz

| Average power output (mW) |                  |                   |         |          |
|---------------------------|------------------|-------------------|---------|----------|
| Test Mode                 | Data Rate (Mbps) | Test Result (mW)  |         |          |
|                           |                  | 5745 MHz          | 5785MHz | 5825 MHz |
| 802.11a                   | 6                | 11.68             | 11.53   | 9.33     |
|                           | 9                | 11.59             | 11.33   | 9.12     |
|                           | 12               | 11.22             | 10.91   | 8.48     |
|                           | 18               | 10.38             | 9.81    | 7.93     |
|                           | 24               | 9.26              | 9.02    | 7.17     |
|                           | 36               | 8.79              | 8.46    | 6.76     |
|                           | 48               | 7.99              | 7.59    | 6.14     |
|                           | 54               | 6.85              | 6.14    | 5.61     |
| 802.11n (HT20)            | 6.5              | 11.27             | 10.97   | 9.67     |
|                           | 13               | 10.94             | 10.61   | 9.99     |
|                           | 19.5             | 10.32             | 10.07   | 9.07     |
|                           | 26               | 9.26              | 9.00    | 8.51     |
|                           | 39               | 8.27              | 7.77    | 7.34     |
|                           | 52               | 6.96              | 6.53    | 6.18     |
|                           | 58.5             | 6.35              | 5.79    | 5.32     |
|                           | 65               | 4.58              | 4.38    | 4.19     |
| Test Mode                 | Data Rate (Mbps) | Test Result (dBm) |         |          |
|                           |                  | 5755 MHz          | ---     | 5795 MHz |
| 802.11n (HT40)            | 13.5             | 11.11             | ---     | 9.74     |
|                           | 27               | 10.09             | ---     | 9.52     |
|                           | 40.5             | 9.05              | ---     | 8.71     |
|                           | 54               | 7.99              | ---     | 7.77     |
|                           | 81               | 6.93              | ---     | 6.59     |
|                           | 108              | 5.65              | ---     | 5.15     |
|                           | 121.5            | 4.41              | ---     | 4.18     |
|                           | 135              | 3.15              | ---     | 3.02     |

## 6.7 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

According to the KDB447498 4.3.1(a)

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

Summary of Transmitters for Head

| Band/Mode                 | Max. power of channel, including tune-up tolerance, (dBm) | Max. power of channel, including tune-up tolerance, (mW) | Min. test separation distance, (mm) | The calculation results (1g) | SAR test exclusion Threshold (1g) | SAR Required |
|---------------------------|---|--|-------------------------------------|------------------------------|-----------------------------------|--------------|
| (2.4~2.4835)GHz Bluetooth | 8.0   | 6.31   | 5                                   | 2.0                          | ≤3.0                              | No           |
| (2.4~2.4835)GHz WLAN      | 17.0  | 50.12  | 5                                   | 15.7                         | ≤3.0                              | Yes          |
| (5150~5250)MHz WLAN       | 6.0   | 3.98   | 5                                   | 1.8                          | ≤3.0                              | No           |
| (5250~5350)MHz WLAN       | 6.0   | 3.98   | 5                                   | 1.8                          | ≤3.0                              | No           |
| (5725~5850)MHz WLAN       | 11.0  | 12.59  | 5                                   | 6.1                          | ≤3.0                              | Yes          |

According to the KDB447498 appendix A

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

| MHz  | 5  | 10 | 15  | 20  | 25  | mm                                       |
|------|----|----|-----|-----|-----|--|
| 150  | 39 | 77 | 116 | 155 | 194 | <i>SAR Test Exclusion Threshold (mW)</i> |
| 300  | 27 | 55 | 82  | 110 | 137 |  |
| 450  | 22 | 45 | 67  | 89  | 112 |  |
| 835  | 16 | 33 | 49  | 66  | 82  |  |
| 900  | 16 | 32 | 47  | 63  | 79  |  |
| 1500 | 12 | 24 | 37  | 49  | 61  |  |
| 1900 | 11 | 22 | 33  | 44  | 54  |  |
| 2450 | 10 | 19 | 29  | 38  | 48  |  |
| 3600 | 8  | 16 | 24  | 32  | 40  |  |
| 5200 | 7  | 13 | 20  | 26  | 33  |  |
| 5400 | 6  | 13 | 19  | 26  | 32  |  |
| 5800 | 6  | 12 | 19  | 25  | 31  |  |

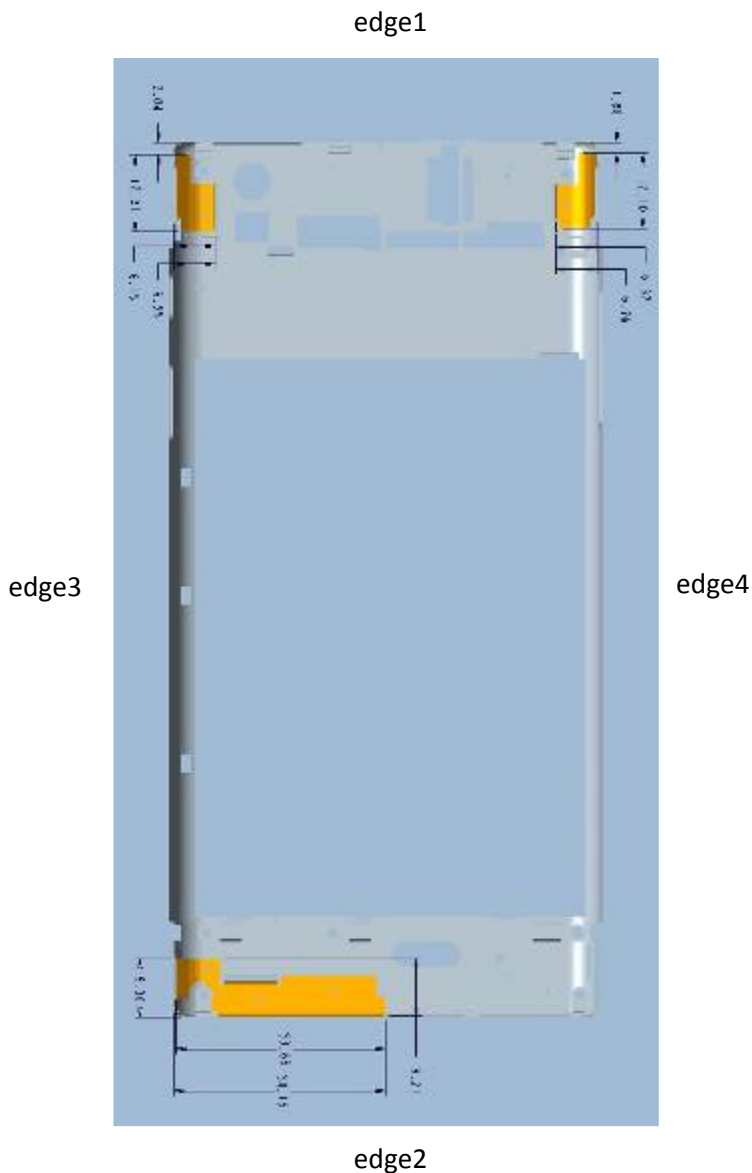
Summary of Transmitters for Body

| Band/Mode                 | Max.RF output power (mW) | SAR test exclusion Threshold (mW) | SAR Required |
|---------------------------|--------------------------|-----------------------------------|--------------|
| (2.4~2.4835)GHz Bluetooth | 3.21                     | ≤19                               | No           |
| (2.4~2.4835)GHz WLAN      | 34.83                    | ≤19                               | Yes          |
| (5150~5250)MHz WLAN       | 3.42                     | ≤13                               | No           |
| (5250~5350)MHz WLAN       | 3.38                     | ≤13                               | No           |
| (5725~5850)MHz WLAN       | 11.68                    | ≤12                               | No           |



## 6.8 RF exposure conditions

Refer to the follow picture“Antenna Locations & Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.



### 6.8.1 Head Exposure Conditions

For WWAN,

| Test Configurations | SAR Required | Note |
|---------------------|--------------|------|
| Left Touch          | yes          | /    |
| Left Tilt (15°)     | yes          | /    |
| Right Touch         | yes          | /    |
| Right Tilt (15°)    | yes          | /    |

### 6.8.2 Body-worn Accessory Exposure conditions

For WWAN

| Test Configurations | SAR Required | Note |
|---------------------|--------------|------|
| Rear                | yes          | /    |
| Front               | yes          | /    |

For Wi-Fi

| Test Configurations | SAR Required | Note |
|---------------------|--------------|------|
| Rear                | yes          | /    |
| Front               | yes          | /    |

### 6.8.3 Hotspot Exposure Conditions

For WWAN

| Test Configurations | Antenna-to-edge/surface | SAR Required |
|---------------------|-------------------------|--------------|
| Rear                | <25 mm                  | Yes          |
| Front               | <25 mm                  | Yes          |
| Edge 1 (top)        | 130 mm                  | No           |
| Edge 2 (Bottom)     | 0 mm                    | Yes          |
| Edge 3(Right)       | 0 mm                    | Yes          |
| Edge 4(Left )       | 39 mm                   | No           |

For Wi-Fi

| Test Configurations | Antenna-to-edge/surface | SAR Required |
|---------------------|-------------------------|--------------|
| Rear                | <25 mm                  | Yes          |
| Front               | <25 mm                  | Yes          |
| Edge 1 (top)        | 2 mm                    | Yes          |
| Edge 2 (Bottom)     | 130 mm                  | No           |
| Edge 3(Right)       | 65 mm                   | No           |
| Edge 4(Left )       | 0 mm                    | Yes          |

## 6.9 System Checking

The manufacturer calibrates the probes annully. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

| Date Tested | System dipole | T.S. Liquid | SAR measured (normalized to 1W) |       | Target (Ref.Value) | Delta (%) | Tolerance (%) |
|-------------|---------------|-------------|---------------------------------|-------|--------------------|-----------|---------------|
|             |               |             | 1g                              | 9.36  |                    |           |               |
| 2016.01.21  | D835V2        | Head        | 1g                              | 9.36  | 9.24               | 1.30      | ±10           |
| 2016.01.24  | D835V2        | Head        | 1g                              | 9.32  | 9.24               | 0.87      | ±10           |
| 2016.01.29  | D835V2        | Body        | 1g                              | 9.32  | 9.38               | 0.64      | ±10           |
| 2016.02.01  | D835V2        | Body        | 1g                              | 9.36  | 9.38               | 0.21      | ±10           |
| 2016.02.06  | D1900V2       | Head        | 1g                              | 39.28 | 39.40              | 0.30      | ±10           |
| 2016.02.15  | D1900V2       | Head        | 1g                              | 39.36 | 39.40              | 0.10      | ±10           |
| 2016.02.18  | D1900V2       | Body        | 1g                              | 39.36 | 39.50              | 0.35      | ±10           |
| 2016.02.21  | D1900V2       | Body        | 1g                              | 39.32 | 39.50              | 0.46      | ±10           |
| 2016.02.22  | D2450V2       | Head        | 1g                              | 52.48 | 52.70              | 0.42      | ±10           |
| 2016.02.24  | D2450V2       | Head        | 1g                              | 52.64 | 52.70              | 0.11      | ±10           |
| 2016.02.27  | D2450V2       | Body        | 1g                              | 51.72 | 51.90              | 0.35      | ±10           |
| 2016.03.01  | D2450V2       | Body        | 1g                              | 51.44 | 51.90              | 0.89      | ±10           |
| 2016.04.06  | D5GHzV2       | Head        | 1g                              | 81.89 | 82.20              | 0.38      | ±10           |

Plots of the system checking scans are given in Appendix A.

Tissue Simulants used in the Measurements

For the measurement of the following parameters the SPEAG DAKS-3.5 dielectric parameter probe is used, representing the open-ended coaxial probe measurement procedure.

| Date Tested | Freq.(MHz) | Liquid parameters | measured | Target | Delta(%) | Tolerance(%) |
|-------------|------------|-------------------|----------|--------|----------|--------------|
| 2016.01.21  | Head 835   | $\epsilon_r$      | 42.11    | 41.50  | 1.47     | ±5           |
|             |            | $\sigma$ [S/m]    | 0.91     | 0.90   | 1.11     | ±5           |
| 2016.01.29  | Body 835   | $\epsilon_r$      | 53.85    | 55.20  | 2.45     | ±5           |
|             |            | $\sigma$ [S/m]    | 0.98     | 0.97   | 1.03     | ±5           |
| 2016.02.06  | Head 1900  | $\epsilon_r$      | 40.84    | 40.00  | 2.10     | ±5           |
|             |            | $\sigma$ [S/m]    | 1.41     | 1.40   | 0.71     | ±5           |
| 2016.02.21  | Body 1900  | $\epsilon_r$      | 52.18    | 53.30  | 2.10     | ±5           |
|             |            | $\sigma$ [S/m]    | 1.53     | 1.52   | 0.66     | ±5           |
| 2016.02.22  | Head 2450  | $\epsilon_r$      | 39.21    | 39.20  | 0.03     | ±5           |
|             |            | $\sigma$ [S/m]    | 1.79     | 1.80   | 0.56     | ±5           |
| 2016.02.27  | Body 2450  | $\epsilon_r$      | 52.04    | 52.70  | 1.25     | ±5           |
|             |            | $\sigma$ [S/m]    | 1.97     | 1.95   | 1.03     | ±5           |
| 2016.04.06  | Head 5800  | $\epsilon_r$      | 35.70    | 35.30  | 1.13     | ±5           |
|             |            | $\sigma$ [S/m]    | 5.26     | 5.27   | 0.19     | ±5           |

## 6.10 SAR TEST RESULT

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations, and operational modes should be tested for each frequency band according to Steps 1 to 3 below.

Step 1: The tests should be performed at the channel that is closest to the center of the transmit frequency band.

a) All device positions (cheek and tilt, for both left and right sides of the SAM phantom),  
b) All configurations for each device position in a), e.g., antenna extended and retracted, and  
c) All operational modes for each device position in item a) and configuration in item b) in each frequency band, e.g., analog and digital, If more than three frequencies need to be tested (i.e.,  $N_c > 3$ ), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

Step 2: For the condition providing the highest peak spatial-average SAR determined in Step 1 for each frequency, perform all tests at all other test frequency channels, e.g., lowest and highest frequencies. In addition, for all other conditions (device position, configuration, and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies should be tested as well.

Step 3: Examine all data to determine the largest value of the peak.

Note:

1. Per KDB 447498 D01v05, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

Reported SAR (W/kg) = Measured SAR (W/kg)\* Scaling Factor

2. Per KDB 447498 D01v05, for each exposure position, if the highest output channel reported SAR  $\leq 0.8$ W/kg, other channels SAR testing are not necessary.

3. In the report the test position "Mobile phone screen Towards Ground" abbreviated as "TG", and "Mobile phone screen Towards Phantom" abbreviated as "TP".

The measured and reported Head/body SAR values for the test device are tabulated below:

**Mode: GSM 850**

fL(MHz)=824.2MHz

fM(MHz)=836.5MHz

fH(MHz)= 848.8MHz

SAR Values ( Head , 850MHz Band )

**Limit of SAR (W/kg) : <1.6W/kg (1g Average)**

| Test Case    |      | Ch    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|--------------|------|-------|-------------------------------|---------------------|----------------|-------------------------|--------------------------|
| position     | mode |       |                               |                     |                | 1g Average              | 1g Average               |
| Left cheek   | GSM  | L     | 32.77                         | 34.5                | ----           | ----                    | ----                     |
|              |      | M     | 32.75                         | 34.5                | 1.50           | 0.130                   | 0.195                    |
|              |      | H     | 32.71                         | 34.5                | ----           | ----                    | ----                     |
| Left Tilted  |      | L     | 32.77                         | 34.5                | ----           | ----                    | ----                     |
|              |      | M     | 32.75                         | 34.5                | 1.50           | 0.100                   | 0.150                    |
|              |      | H     | 32.71                         | 34.5                | ----           | ----                    | ----                     |
| Right cheek  |      | L     | 32.77                         | 34.5                | ----           | ----                    | ----                     |
|              |      | M     | 32.75                         | 34.5                | 1.50           | 0.137                   | 0.205                    |
|              |      | H     | 32.71                         | 34.5                | ----           | ----                    | ----                     |
| Right Tilted | L    | 32.77 | 34.5                          | ----                | ----           | ----                    |                          |
|              | M    | 32.75 | 34.5                          | 1.50                | 0.118          | 0.177                   |                          |
|              | H    | 32.71 | 34.5                          | ----                | ----           | ----                    |                          |

**Mode: GSM850 (GSM/GPRS)**

fL(MHz)=824.2MHz      fM(MHz)=836.5MHz      fH(MHz)= 848.8MHz

SAR Values ( body , 850MHz Band

**Limit of SAR (W/kg) : <1.6W/kg (1g Average)**

| Test Case |                  | Ch | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|-----------|------------------|----|-------------------------------|---------------------|----------------|-------------------------|--------------------------|
| position  | mode             |    |                               |                     |                | 1 g Average             | 1g Average               |
| TG        | GSM With headset | L  | 32.77                         | 34.5                | ----           | ----                    | ----                     |
|           |                  | M  | 32.75                         | 34.5                | 1.50           | 0.171                   | 0.256                    |
|           |                  | H  | 32.71                         | 34.5                | ----           | ----                    | ----                     |
|           | GPRS             | L  | 29.28                         | 30.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.25                         | 30.5                | 1.33           | 0.474                   | 0.632                    |
|           |                  | H  | 29.15                         | 30.5                | ----           | ----                    | ----                     |
|           | EGPRS            | L  | 29.30                         | 30.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.20                         | 30.5                | 1.35           | 0.630                   | 0.850                    |
|           |                  | H  | 29.15                         | 30.5                | ----           | ----                    | ----                     |
| TP        | GSM With headset | L  | 32.77                         | 34.5                | ----           | ----                    | ----                     |
|           |                  | M  | 32.75                         | 34.5                | 1.50           | 0.149                   | 0.223                    |
|           |                  | H  | 32.71                         | 34.5                | ----           | ----                    | ----                     |
|           | GPRS             | L  | 29.28                         | 30.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.25                         | 30.5                | 1.33           | 0.438                   | 0.584                    |
|           |                  | H  | 29.15                         | 30.5                | ----           | ----                    | ----                     |
|           | EGPRS            | L  | 29.30                         | 30.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.20                         | 30.5                | 1.35           | 0.437                   | 0.589                    |
|           |                  | H  | 29.15                         | 30.5                | ----           | ----                    | ----                     |
| EDGE 2    | EGPRS            | M  | 29.20                         | 30.5                | 1.35           | 0.326                   | 0.440                    |
| EDGE 3    |                  | M  | 29.20                         | 30.5                | 1.35           | 0.588                   | 0.793                    |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: GSM1900**

fL(MHz)=1850.2MHz      fM(MHz)=1880.0MHz      fH(MHz)=1909.8MHz

SAR Values ( Head , 1900MHz Band )

**Limit of SAR (W/kg) : <1.6W/kg(1g Average)**

| Test Case    |      | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|--------------|------|-------|-------------------------------|---------------------|----------------|-------------------------|--------------------------|
| position     | mode |       |                               |                     |                | 1g Average              | 1g Average               |
| Left cheek   | GSM  | L     | 30.13                         | 31.5                | ----           | ----                    | ----                     |
|              |      | M     | 29.97                         | 31.5                | 1.42           | 0.176                   | 0.250                    |
|              |      | H     | 29.91                         | 31.5                | ----           | ----                    | ----                     |
| Left Tilted  |      | L     | 30.13                         | 31.5                | ----           | ----                    | ----                     |
|              |      | M     | 29.97                         | 31.5                | 1.42           | 0.058                   | 0.082                    |
|              |      | H     | 29.91                         | 31.5                | ----           | ----                    | ----                     |
| Right cheek  |      | L     | 30.13                         | 31.5                | ----           | ----                    | ----                     |
|              |      | M     | 29.97                         | 31.5                | 1.42           | 0.258                   | 0.367                    |
|              |      | H     | 29.91                         | 31.5                | ----           | ----                    | ----                     |
| Right Tilted | L    | 30.13 | 31.5                          | ----                | ----           | ----                    |                          |
|              | M    | 29.97 | 31.5                          | 1.42                | 0.079          | 0.112                   |                          |
|              | H    | 29.91 | 31.5                          | ----                | ----           | ----                    |                          |

**Mode: GSM1900 (GSM/GPRS)**

fL(MHz)=1850.2MHz      fM(MHz)=1880.0MHz      fH(MHz)=1909.8MHz

SAR Values ( body , 1900MHz Band )

**Limit of SAR (W/kg) :<1.6W/kg(1g Average)**

| Test Case |                  | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|-----------|------------------|----|-------------------------------|---------------------|----------------|-------------------------|--------------------------|
| position  | mode             |    |                               |                     |                | 1 g Average             | 1g Average               |
| TG        | GSM With headset | L  | 30.13                         | 31.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.97                         | 31.5                | 1.42           | 0.274                   | 0.390                    |
|           |                  | H  | 29.91                         | 31.5                | ----           | ----                    | ----                     |
|           | GPRS             | L  | 26.75                         | 28.5                | ----           | ----                    | ----                     |
|           |                  | M  | 26.61                         | 28.5                | 1.55           | 0.508                   | 0.785                    |
|           |                  | H  | 26.61                         | 28.5                | ----           | ----                    | ----                     |
|           | EGPRS            | L  | 26.74                         | 28.5                | ----           | ----                    | ----                     |
|           |                  | M  | 26.58                         | 28.5                | 1.56           | 0.508                   | 0.790                    |
|           |                  | H  | 26.60                         | 28.5                | ----           | ----                    | ----                     |
| TP        | GSM With headset | L  | 29.56                         | 31.5                | ----           | ----                    | ----                     |
|           |                  | M  | 29.53                         | 31.5                | 1.57           | 0.377                   | 0.593                    |
|           |                  | H  | 29.51                         | 31.5                | ----           | ----                    | ----                     |
|           | GPRS             | L  | 26.75                         | 28.5                | ----           | ----                    | ----                     |
|           |                  | M  | 26.61                         | 28.5                | 1.55           | 0.648                   | 1.001                    |
|           |                  | H  | 26.61                         | 28.5                | ----           | ----                    | ----                     |
|           | EGPRS            | L  | 26.74                         | 28.5                | ----           | ----                    | ----                     |
|           |                  | M  | 26.58                         | 28.5                | 1.56           | 0.689                   | 1.072                    |
|           |                  | H  | 26.60                         | 28.5                | ----           | ----                    | ----                     |
| EDGE 2    | EGPRS            | L  | 26.74                         | 28.5                | 1.50           | 0.749                   | 1.123                    |
|           |                  | M  | 26.58                         | 28.5                | 1.56           | 0.742                   | 1.155                    |
|           |                  | H  | 26.60                         | 28.5                | 1.55           | 0.725                   | 1.123                    |
| EDGE 3    |                  | M  | 26.58                         | 28.5                | 1.56           | 0.241                   | 0.375                    |

Note: The distance between the EUT and the phantom bottom is 10mm.



**Mode: WCDMA BAND2**

fL(MHz)=1852.4MHz      fM(MHz)=1880MHz      fH(MHz)= 1907.6MHz

SAR Values (Head, WCDMA BAND2)

**Limit of SAR (W/kg):<1.6W/kg(1g Average)**

| Test Case    |                         | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|--------------|-------------------------|-------|-------------------------------|---------------------|----------------|-------------------------|--------------------------|
| position     | mode                    |       |                               |                     |                | 1 g Average             | 1g Average               |
| Left cheek   | RB test mode1+ 12.2kRMC | L     | 22.51                         | 23.0                | ---            | ---                     | ---                      |
|              |                         | M     | 22.50                         | 23.0                | 1.12           | 0.197                   | 0.221                    |
|              |                         | H     | 22.22                         | 23.0                | ---            | ---                     | ---                      |
| Left Tilted  |                         | L     | 22.51                         | 23.0                | ---            | ---                     | ---                      |
|              |                         | M     | 22.50                         | 23.0                | 1.12           | 0.092                   | 0.104                    |
|              |                         | H     | 22.22                         | 23.0                | ---            | ---                     | ---                      |
| Right cheek  |                         | L     | 22.51                         | 23.0                | ---            | ---                     | ---                      |
|              |                         | M     | 22.50                         | 23.0                | 1.12           | 0.269                   | 0.302                    |
|              |                         | H     | 22.22                         | 23.0                | ---            | ---                     | ---                      |
| Right Tilted | L                       | 22.51 | 23.0                          | ---                 | ---            | ---                     |                          |
|              | M                       | 22.50 | 23.0                          | 1.12                | 0.110          | 0.123                   |                          |
|              | H                       | 22.22 | 23.0                          | ---                 | ---            | ---                     |                          |

**Mode: WCDMA BAND2**

fL(MHz)=1852.4MHz      fM(MHz)=1880MHz      fH(MHz)= 1907.6MHz

SAR Values (body, WCDMA BAND2)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |                                     | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-------------------------------------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode                                |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | RB test mode1+12.2kRMC with headset | L  | 22.51                         | 23.0                | ---            | ---                    | ---                     |
|           |                                     | M  | 22.50                         | 23.0                | 1.12           | 0.416                  | 0.467                   |
|           |                                     | H  | 22.22                         | 23.0                | ---            | ---                    | ---                     |
| TP        | RB test mode1+12.2kRMC with headset | L  | 22.51                         | 23.0                | ---            | ---                    | ---                     |
|           |                                     | M  | 22.50                         | 23.0                | 1.12           | 0.579                  | 0.650                   |
|           |                                     | H  | 22.22                         | 23.0                | ---            | ---                    | ---                     |
| EDGE2     | RB test mode1+12.2kRMC              | L  | 22.51                         | 23.0                | 1.12           | 0.963                  | 1.078                   |
|           |                                     | M  | 22.50                         | 23.0                | 1.12           | 0.936                  | 1.050                   |
|           |                                     | H  | 22.22                         | 23.0                | 1.12           | 0.869                  | 1.040                   |
| EDGE3     | RB test mode1+12.2kRMC              | M  | 22.50                         | 23.0                | 1.12           | 0.182                  | 0.204                   |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: WCDMA BAND5**

fL(MHz)=826.4MHz fM(MHz)=836.4MHz fH(MHz)= 846.6MHz

SAR Values (Head, WCDMA BAND5)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |                        | CH    | Measure Conducted Power (dBm) | Tune-uplimit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|--------------|------------------------|-------|-------------------------------|--------------------|----------------|-------------------------|--------------------------|
| Position     | mode                   |       |                               |                    |                | 1 g Average             | 1g Average               |
| Left cheek   | RB test mode1+12.2kRMC | L     | 22.06                         | 23.5               | ---            | ---                     | ---                      |
|              |                        | M     | 21.97                         | 23.5               | 1.42           | 0.145                   | 0.206                    |
|              |                        | H     | 22.00                         | 23.5               | ---            | ---                     | ---                      |
| Left Tilted  |                        | L     | 22.06                         | 23.5               | ---            | ---                     | ---                      |
|              |                        | M     | 21.97                         | 23.5               | 1.42           | 0.095                   | 0.135                    |
|              |                        | H     | 22.00                         | 23.5               | ---            | ---                     | ---                      |
| Right cheek  |                        | L     | 22.06                         | 23.5               | ---            | ---                     | ---                      |
|              |                        | M     | 21.97                         | 23.5               | 1.42           | 0.148                   | 0.211                    |
|              |                        | H     | 22.00                         | 23.5               | ---            | ---                     | ---                      |
| Right Tilted | L                      | 22.06 | 23.5                          | ---                | ---            | ---                     |                          |
|              | M                      | 21.97 | 23.5                          | 1.42               | 0.113          | 0.161                   |                          |
|              | H                      | 22.00 | 23.5                          | ---                | ---            | ---                     |                          |

**Mode: WCDMA BAND5**

fL(MHz)=826.4MHz fM(MHz)=836.5MHz fH(MHz)= 846.6MHz

SAR Values (body, WCDMA BAND5)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |                                     | CH                                  | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |       |
|-----------|-------------------------------------|-------------------------------------|-------------------------------|---------------------|----------------|------------------------|-------------------------|-------|
| Position  | mode                                |                                     |                               |                     |                | 1 g Average            | 1g Average              |       |
| TG        | RB test mode1+12.2kRMC with headset | L                                   | 22.06                         | 23.5                | ---            | ---                    | ---                     |       |
|           |                                     | M                                   | 21.97                         | 23.5                | 1.42           | 0.214                  | 0.304                   |       |
|           |                                     | H                                   | 22.00                         | 23.5                | ---            | ---                    | ---                     |       |
| TP        |                                     | RB test mode1+12.2kRMC with headset | L                             | 22.06               | 23.5           | ---                    | ---                     | ---   |
|           |                                     |                                     | M                             | 21.97               | 23.5           | 1.42                   | 0.198                   | 0.282 |
|           |                                     |                                     | H                             | 22.00               | 23.5           | ---                    | ---                     | ---   |
| EDGE 2    |                                     | RB test mode1+12.2kRMC              | M                             | 21.97               | 23.5           | 1.42                   | 0.089                   | 0.127 |
| EDGE 3    |                                     |                                     | M                             | 21.97               | 23.5           | 1.42                   | 0.245                   | 0.348 |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: Wi-Fi(2.4GHz)**  
**SAR Values (WIFI 802.11b - Head)**  
**Limit of SAR (W/kg):<1.6W/kg(1g Average)**

| Test Case   |       | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Result (W/kg) | Reported Result (W/kg) |
|-------------|-------|----|-------------------------------|---------------------|----------------|-----------------------|------------------------|
| Position    | mode  |    |                               |                     |                | 1 g Average           | 1g Average             |
| Left Cheek  | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 11 | 15.42                         | 16.5                | 1.28           | 0.386                 | 0.495                  |
| Left Tilt   | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 11 | 15.42                         | 16.5                | 1.28           | 0.497                 | 0.637                  |
| Right Cheek | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 11 | 15.42                         | 16.5                | 1.28           | 0.447                 | 0.573                  |
| Right tilt  | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                    |
|             |       | 11 | 15.42                         | 16.5                | 1.28           | 0.491                 | 0.630                  |

**SAR Values (WIFI 802.11b - Body)**  
**Limit of SAR (W/kg):<1.6W/kg(1g Average)**

| Test Case |       | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Result (W/kg) | Reported Result ( W/kg) |
|-----------|-------|----|-------------------------------|---------------------|----------------|-----------------------|-------------------------|
| Position  | mode  |    |                               |                     |                | 1 g Average           | 1g Average              |
| TG        | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 11 | 15.42                         | 16.5                | 1.28           | 0.497                 | 0.637                   |
| TP        | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 11 | 15.42                         | 16.5                | 1.28           | 0.131                 | 0.168                   |
| Edge 1    | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 11 | 15.42                         | 16.5                | 1.28           | 0.174                 | 0.223                   |
| Edge 4    | 1Mbps | 1  | 15.04                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 6  | 15.25                         | 16.5                | ---            | ---                   | ---                     |
|           |       | 11 | 15.42                         | 16.5                | 1.28           | 0.395                 | 0.507                   |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: Wi-Fi(5.8GHz)**  
**SAR Values (WIFI 802.11a - Head)**  
**Limit of SAR (W/kg):<1.6W/kg(1g Average)**

| Test Case   |       | CH  | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Result (W/kg) | Reported Result (W/kg) |
|-------------|-------|-----|-------------------------------|---------------------|----------------|-----------------------|------------------------|
| Position    | mode  |     |                               |                     |                | 1 g Average           | 1g Average             |
| Left Cheek  | 6Mbps | 149 | 10.50                         | 11.0                | 1.12           | 0.358                 | 0.401                  |
|             |       | 157 | 10.38                         | 11.0                | ---            | ---                   | ---                    |
|             |       | 165 | 9.28                          | 11.0                | ---            | ---                   | ---                    |
| Left Tilt   | 6Mbps | 149 | 10.50                         | 11.0                | 1.12           | 0.355                 | 0.398                  |
|             |       | 157 | 10.38                         | 11.0                | ---            | ---                   | ---                    |
|             |       | 165 | 9.28                          | 11.0                | ---            | ---                   | ---                    |
| Right Cheek | 6Mbps | 149 | 10.50                         | 11.0                | 1.12           | 0.476                 | 0.533                  |
|             |       | 157 | 10.38                         | 11.0                | ---            | ---                   | ---                    |
|             |       | 165 | 9.28                          | 11.0                | ---            | ---                   | ---                    |
| Right tilt  | 6Mbps | 149 | 10.50                         | 11.0                | 1.12           | 0.505                 | 0.566                  |
|             |       | 157 | 10.38                         | 11.0                | ---            | ---                   | ---                    |
|             |       | 165 | 9.28                          | 11.0                | ---            | ---                   | ---                    |

**Mode: LTE BAND2- 20BW-1RB (1880MHz/Head)**

fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz

SAR Values (Head, LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |           | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-----------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode      |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 20 BW 1RB | L     | 23.31                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.35                         | 24.5                | 1.30           | 0.298                  | 0.388                   |
|              |           | H     | 23.07                         | 24.5                | ---            | ---                    | ---                     |
| Left Tilted  |           | L     | 23.31                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.35                         | 24.5                | 1.30           | 0.056                  | 0.073                   |
|              |           | H     | 23.07                         | 24.5                | ---            | ---                    | ---                     |
| Right cheek  |           | L     | 23.31                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.35                         | 24.5                | 1.30           | 0.340                  | 0.443                   |
|              |           | H     | 23.07                         | 24.5                | ---            | ---                    | ---                     |
| Right Tilted | L         | 23.31 | 24.5                          | ---                 | ---            | ---                    |                         |
|              | M         | 23.35 | 24.5                          | 1.30                | 0.109          | 0.142                  |                         |
|              | H         | 23.07 | 24.5                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND2- 20BW-1RB (1880MHz/Flat)**

fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz

SAR Values (body, LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |           | CH        | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |       |
|-----------|-----------|-----------|-------------------------------|---------------------|----------------|------------------------|-------------------------|-------|
| Position  | mode      |           |                               |                     |                | 1 g Average            | 1g Average              |       |
| TG        | 20 BW 1RB | L         | 23.31                         | 24.5                | ---            | ---                    | ---                     |       |
|           |           | M         | 23.35                         | 24.5                | 1.30           | 0.618                  | 0.805                   |       |
|           |           | H         | 23.07                         | 24.5                | ---            | ---                    | ---                     |       |
| TP        |           | L         | 23.31                         | 24.5                | ---            | ---                    | ---                     |       |
|           |           | M         | 23.35                         | 24.5                | 1.30           | 0.616                  | 0.803                   |       |
|           |           | H         | 23.07                         | 24.5                | ---            | ---                    | ---                     |       |
| EDGE 2    |           | 20 BW 1RB | M                             | 23.35               | 24.5           | 1.30                   | 0.661                   | 0.861 |
| EDGE 3    |           |           | M                             | 23.35               | 24.5           | 1.30                   | 0.330                   | 0.430 |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: LTE BAND2- 20BW-50%RB (1880MHz/Head)**

fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz

SAR Values (Head, LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |             | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-------------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode        |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 20 BW 50%RB | L     | 22.01                         | 23.5                | ---            | ---                    | ---                     |
|              |             | M     | 22.05                         | 23.5                | 1.40           | 0.127                  | 0.177                   |
|              |             | H     | 21.79                         | 23.5                | ---            | ---                    | ---                     |
| Left Tilted  |             | L     | 22.01                         | 23.5                | ---            | ---                    | ---                     |
|              |             | M     | 22.05                         | 23.5                | 1.40           | 0.095                  | 0.133                   |
|              |             | H     | 21.79                         | 23.5                | ---            | ---                    | ---                     |
| Right cheek  |             | L     | 22.01                         | 23.5                | ---            | ---                    | ---                     |
|              |             | M     | 22.05                         | 23.5                | 1.40           | 0.251                  | 0.350                   |
|              |             | H     | 21.79                         | 23.5                | ---            | ---                    | ---                     |
| Right Tilted | L           | 22.01 | 23.5                          | ---                 | ---            | ---                    |                         |
|              | M           | 22.05 | 23.5                          | 1.40                | 0.080          | 0.112                  |                         |
|              | H           | 21.79 | 23.5                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND2- 20BW-50%RB (1880MHz/Flat)**

fL(MHz)=1860MHz fM(MHz)=1880MHz fH(MHz)= 1900MHz

SAR Values (body, LTE BAND2)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |             | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-------------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode        |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | 20 BW 50%RB | L  | 22.01                         | 23.5                | ---            | ---                    | ---                     |
|           |             | M  | 22.05                         | 23.5                | 1.40           | 0.442                  | 0.617                   |
|           |             | H  | 21.79                         | 23.5                | ---            | ---                    | ---                     |
| TP        |             | L  | 22.01                         | 23.5                | ---            | ---                    | ---                     |
|           |             | M  | 22.05                         | 23.5                | 1.40           | 0.469                  | 0.655                   |
|           |             | H  | 21.79                         | 23.5                | ---            | ---                    | ---                     |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: LTE BAND4- 5BW-1RB (1732.5MHz/Head)**

fL(MHz)=1712.5MHz      fM(MHz)=1732.5MHz      fH(MHz)= 1752.5MHz

SAR Values (Head, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |           | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-----------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode      |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 5 BW 1 RB | L     | 23.10                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.12                         | 24.5                | 1.37           | 0.157                  | 0.216                   |
|              |           | H     | 22.99                         | 24.5                | ---            | ---                    | ---                     |
| Left Tilted  |           | L     | 23.10                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.12                         | 24.5                | 1.37           | 0.078                  | 0.107                   |
|              |           | H     | 22.99                         | 24.5                | ---            | ---                    | ---                     |
| Right cheek  |           | L     | 23.10                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.12                         | 24.5                | 1.37           | 0.283                  | 0.389                   |
|              |           | H     | 22.99                         | 24.5                | ---            | ---                    | ---                     |
| Right Tilted | L         | 23.10 | 24.5                          | ---                 | ---            | ---                    |                         |
|              | M         | 23.12 | 24.5                          | 1.37                | 0.079          | 0.108                  |                         |
|              | H         | 22.99 | 24.5                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND4- 5BW-1RB (1732.5MHz/ Flat)**

fL(MHz)=1712.5MHz      fM(MHz)=1732.5MHz      fH(MHz)= 1752.5MHz

SAR Values (body, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |           | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-----------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode      |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | 5 BW 1 RB | L  | 23.10                         | 24.5                | ---            | ---                    | ---                     |
|           |           | M  | 23.12                         | 24.5                | 1.37           | 0.526                  | 0.723                   |
|           |           | H  | 22.99                         | 24.5                | ---            | ---                    | ---                     |
| TP        |           | L  | 23.10                         | 24.5                | ---            | ---                    | ---                     |
|           |           | M  | 23.12                         | 24.5                | 1.37           | 0.567                  | 0.779                   |
|           |           | H  | 22.99                         | 24.5                | ---            | ---                    | ---                     |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: LTE BAND4- 20BW-1RB (1732.5MHz/Head)**

fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz

SAR Values (Head, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |           | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-----------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode      |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 20 BW 1RB | L     | 22.53                         | 24.0                | ---            | ---                    | ---                     |
|              |           | M     | 22.58                         | 24.0                | 1.39           | 0.144                  | 0.200                   |
|              |           | H     | 22.45                         | 24.0                | ---            | ---                    | ---                     |
| Left Tilted  |           | L     | 22.53                         | 24.0                | ---            | ---                    | ---                     |
|              |           | M     | 22.58                         | 24.0                | 1.39           | 0.043                  | 0.059                   |
|              |           | H     | 22.45                         | 24.0                | ---            | ---                    | ---                     |
| Right cheek  |           | L     | 22.53                         | 24.0                | ---            | ---                    | ---                     |
|              |           | M     | 22.58                         | 24.0                | 1.39           | 0.211                  | 0.293                   |
|              |           | H     | 22.45                         | 24.0                | ---            | ---                    | ---                     |
| Right Tilted | L         | 22.53 | 24.0                          | ---                 | ---            | ---                    |                         |
|              | M         | 22.58 | 24.0                          | 1.39                | 0.053          | 0.073                  |                         |
|              | H         | 22.45 | 24.0                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND4- 20BW-1RB (1732.5MHz/ Flat)**

fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz

SAR Values (body, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |           | CH        | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |       |
|-----------|-----------|-----------|-------------------------------|---------------------|----------------|------------------------|-------------------------|-------|
| Position  | mode      |           |                               |                     |                | 1 g Average            | 1g Average              |       |
| TG        | 20 BW 1RB | L         | 22.53                         | 24.0                | ---            | ---                    | ---                     |       |
|           |           | M         | 22.58                         | 24.0                | 1.39           | 0.597                  | 0.828                   |       |
|           |           | H         | 22.45                         | 24.0                | ---            | ---                    | ---                     |       |
| TP        |           | L         | 22.53                         | 24.0                | ---            | ---                    | ---                     |       |
|           |           | M         | 22.58                         | 24.0                | 1.39           | 0.455                  | 0.631                   |       |
|           |           | H         | 22.45                         | 24.0                | ---            | ---                    | ---                     |       |
| EDGE 2    |           | 20 BW 1RB | M                             | 22.58               | 24.0           | 1.39                   | 0.381                   | 0.528 |
| EDGE 3    |           |           | M                             | 22.58               | 24.0           | 1.39                   | 0.147                   | 0.204 |

Note: The distance between the EUT and the phantom bottom is 10mm.



**Mode: LTE BAND4- 20BW-50%RB (1732.5MHz/Head)**

fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz

SAR Values (Head, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |             | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-------------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode        |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 20 BW 50%RB | L     | 21.28                         | 23.0                | ---            | ---                    | ---                     |
|              |             | M     | 21.32                         | 23.0                | 1.47           | 0.138                  | 0.203                   |
|              |             | H     | 21.25                         | 23.0                | ---            | ---                    | ---                     |
| Left Tilted  |             | L     | 21.28                         | 23.0                | ---            | ---                    | ---                     |
|              |             | M     | 21.32                         | 23.0                | 1.47           | 0.070                  | 0.104                   |
|              |             | H     | 21.25                         | 23.0                | ---            | ---                    | ---                     |
| Right cheek  |             | L     | 21.28                         | 23.0                | ---            | ---                    | ---                     |
|              |             | M     | 21.32                         | 23.0                | 1.47           | 0.215                  | 0.317                   |
|              |             | H     | 21.25                         | 23.0                | ---            | ---                    | ---                     |
| Right Tilted | L           | 21.28 | 23.0                          | ---                 | ---            | ---                    |                         |
|              | M           | 21.32 | 23.0                          | 1.47                | 0.049          | 0.071                  |                         |
|              | H           | 21.25 | 23.0                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND4- 20BW-50%RB (1732.5MHz/ Flat)**

fL(MHz)=1720 MHz fM(MHz)=1732.5MHz fH(MHz)= 1745MHz

SAR Values (body, LTE BAND4)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |             | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-------------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode        |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | 20 BW 50%RB | L  | 21.28                         | 23.0                | ---            | ---                    | ---                     |
|           |             | M  | 21.32                         | 23.0                | 1.47           | 0.408                  | 0.601                   |
|           |             | H  | 21.25                         | 23.0                | ---            | ---                    | ---                     |
| TP        |             | L  | 21.28                         | 23.0                | ---            | ---                    | ---                     |
|           |             | M  | 21.32                         | 23.0                | 1.47           | 0.472                  | 0.695                   |
|           |             | H  | 21.25                         | 23.0                | ---            | ---                    | ---                     |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: LTE BAND7- 20BW-1RB (2535MHz/Head)**

fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz

SAR Values (Head, LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |           | CH    | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|--------------|-----------|-------|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position     | mode      |       |                               |                     |                | 1 g Average            | 1g Average              |
| Left cheek   | 20 BW 1RB | L     | 22.98                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.34                         | 24.5                | 1.31           | 0.134                  | 0.175                   |
|              |           | H     | 23.13                         | 24.5                | ---            | ---                    | ---                     |
| Left Tilted  |           | L     | 22.98                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.34                         | 24.5                | 1.31           | 0.127                  | 0.166                   |
|              |           | H     | 23.13                         | 24.5                | ---            | ---                    | ---                     |
| Right cheek  |           | L     | 22.98                         | 24.5                | ---            | ---                    | ---                     |
|              |           | M     | 23.34                         | 24.5                | 1.31           | 0.362                  | 0.473                   |
|              |           | H     | 23.13                         | 24.5                | ---            | ---                    | ---                     |
| Right Tilted | L         | 22.98 | 24.5                          | ---                 | ---            | ---                    |                         |
|              | M         | 23.34 | 24.5                          | 1.31                | 0.084          | 0.110                  |                         |
|              | H         | 23.13 | 24.5                          | ---                 | ---            | ---                    |                         |

**Mode: LTE BAND4- 20BW-1RB (2535MHz/Head)**

fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz

SAR Values (body, LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |             | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-------------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode        |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | 20 BW 50%RB | L  | 22.98                         | 24.5                | ---            | ---                    | ---                     |
|           |             | M  | 23.34                         | 24.5                | 1.31           | 0.048                  | 0.063                   |
|           |             | H  | 23.13                         | 24.5                | ---            | ---                    | ---                     |
| TP        |             | L  | 22.98                         | 24.5                | ---            | ---                    | ---                     |
|           |             | M  | 23.34                         | 24.5                | 1.31           | 0.001                  | 0.001                   |
|           |             | H  | 23.13                         | 24.5                | ---            | ---                    | ---                     |

Note: The distance between the EUT and the phantom bottom is 10mm.

**Mode: LTE BAND7- 20BW-50%RB (2535MHz/Head)**

fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz

SAR Values (Head, LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case    |             | CH    | Measure Conducted Power (dBm) | Tune-uplimit (dBm) | Scaling Factor | Measure Results ( W/kg) | Reported Results ( W/kg) |
|--------------|-------------|-------|-------------------------------|--------------------|----------------|-------------------------|--------------------------|
| Position     | mode        |       |                               |                    |                | 1 g Average             | 1g Average               |
| Left cheek   | 20 BW 50%RB | L     | 21.81                         | 23.5               | ---            | ---                     | ---                      |
|              |             | M     | 21.97                         | 23.5               | 1.42           | 0.128                   | 0.182                    |
|              |             | H     | 21.86                         | 23.5               | ---            | ---                     | ---                      |
| Left Tilted  |             | L     | 21.81                         | 23.5               | ---            | ---                     | ---                      |
|              |             | M     | 21.97                         | 23.5               | 1.42           | 0.129                   | 0.183                    |
|              |             | H     | 21.86                         | 23.5               | ---            | ---                     | ---                      |
| Right cheek  |             | L     | 21.81                         | 23.5               | ---            | ---                     | ---                      |
|              |             | M     | 21.97                         | 23.5               | 1.42           | 0.327                   | 0.465                    |
|              |             | H     | 21.86                         | 23.5               | ---            | ---                     | ---                      |
| Right Tilted | L           | 21.81 | 23.5                          | ---                | ---            | ---                     |                          |
|              | M           | 21.97 | 23.5                          | 1.42               | 0.087          | 0.124                   |                          |
|              | H           | 21.86 | 23.5                          | ---                | ---            | ---                     |                          |

**Mode: LTE BAND7- 20BW-50%RB (2535MHz/Head)**

fL(MHz)=2510 MHz fM(MHz)=2535MHz fH(MHz)= 2560MHz

SAR Values (body, LTE BAND7)

**Limit of SAR (W/kg): <1.6W/kg(1g Average)**

| Test Case |             | CH | Measure Conducted Power (dBm) | Tune-up limit (dBm) | Scaling Factor | Measure Results (W/kg) | Reported Results (W/kg) |
|-----------|-------------|----|-------------------------------|---------------------|----------------|------------------------|-------------------------|
| Position  | mode        |    |                               |                     |                | 1 g Average            | 1g Average              |
| TG        | 20 BW 50%RB | L  | 21.81                         | 23.5                | ---            | ---                    | ---                     |
|           |             | M  | 21.97                         | 23.5                | 1.42           | 0.086                  | 0.123                   |
|           |             | H  | 21.86                         | 23.5                | ---            | ---                    | ---                     |
| TP        |             | L  | 21.81                         | 23.5                | ---            | ---                    | ---                     |
|           |             | M  | 21.97                         | 23.5                | 1.42           | 0.011                  | 0.016                   |
|           |             | H  | 21.86                         | 23.5                | ---            | ---                    | ---                     |
| EDGE 2    | 20 BW 50%RB | M  | 21.97                         | 23.5                | 1.42           | 0.113                  | 0.161                   |
| EDGE 3    |             | M  | 21.97                         | 23.5                | 1.42           | 0.011                  | 0.015                   |

Note: The distance between the EUT and the phantom bottom is 10mm.

## 6.11 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is  $\geq 0.80$  W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is  $\geq 1.45$  W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

### 6.11.1 The Highest Measured SAR configuration in Each Frequency Band

| Frequency band(MHz) | Air interface                            | Head(w/kg) | Body(w/kg) |
|---------------------|--|------------|------------|
| 750                 | LTE Band 28                              | <0.8       | <0.8       |
| 850                 | GSM 850<br>WCDMA Band 5                  | <0.8       | <0.8       |
| 1900                | WCDMA Band 2<br>LTE Band 4<br>LTE Band 7 | <0.8       | >0.8       |
| 1950                | LTE Band 2                               | <0.8       | <0.8       |
| 2450                | Wi-Fi<br>802.11a/b/g/n                   | <0.8       | <0.8       |

### 6.11.2 Repeated Measurement Results

#### SAR Measurement Variability

| Frequency |      | Test Position          | Original SAR (W/kg) | First Repeated SAR (W/kg) | The Ratio | Second Repeated SAR(W/kg) |
|-----------|------|------------------------|---------------------|---------------------------|-----------|---------------------------|
| MHz       | Ch.  |                        |                     |                           |           |                           |
| 1852.4    | 9800 | WCDMA Band2<br>EDGE2 L | 0.963               | 0.954                     | 1.009     | /                         |
| 1880.0    | 9800 | WCDMA Band2<br>EDGE2 M | 0.936               | 0.928                     | 1.009     | /                         |
| 1907.6    | 9800 | WCDMA Band2<br>EDGE2 H | 0.869               | 0.858                     | 1.013     | /                         |

### 6.12 Simultaneous Transmission SAR Analysis

#### The sum of SAR values for GSM & Wi-Fi (Hotspot)

|              | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|--------------|----------------------------|----------------------------|
| <b>GSM</b>   | 0.367                      | 0.850                      |
| <b>Wi-Fi</b> | 0.573                      | 0.637                      |
| <b>Sum</b>   | <b>0.940</b>               | <b>1.487</b>               |

According to the above tables, the sum of SAR values for GSM and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

#### The sum of SAR values for WCDMA & Wi-Fi (Hotspot)

|              | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|--------------|----------------------------|----------------------------|
| <b>WCDMA</b> | 0.302                      | 0.467                      |
| <b>Wi-Fi</b> | 0.573                      | 0.637                      |
| <b>Sum</b>   | <b>0.875</b>               | <b>1.104</b>               |

According to the above tables, the sum of SAR values for WCDMA and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

#### The sum of SAR values for LTE & Wi-Fi (Hotspot)

|              | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|--------------|----------------------------|----------------------------|
| <b>LTE</b>   | 0.473                      | 0.805                      |
| <b>Wi-Fi</b> | 0.573                      | 0.637                      |
| <b>Sum</b>   | <b>1.046</b>               | <b>1.465</b>               |

According to the above tables, the sum of SAR values for LTE and Wi-Fi < 1.6W/kg. So simultaneous transmission SAR are not required for Wi-Fi transmitter.

According to the formula (KDB447498 4.3.2) the Bluetooth SAR as follow:  

$$\left[ \frac{\text{max.power of channel, including tune-up tolerance,mw}}{(\text{min.test separation distance,mm})} \right] \sqrt{f(\text{GHz})/x} \text{ W/kg for test separation distances} \leq 50\text{mm.}$$

Head:

min. test separation distance = 5mm

Body:

min. test separation distance = 10mm

Where  $x=7.5$  for 1-g SAR, and  $x=18.75$  for 10-g SAR.

#### The sum of SAR values for GSM & Bluetooth

|                  | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|------------------|----------------------------|----------------------------|
| <b>GSM</b>       | 0.367                      | 1.155                      |
| <b>Bluetooth</b> | 0.082                      | 0.082                      |
| <b>Sum</b>       | <b>0.449</b>               | <b>1.237</b>               |

According to the above tables, the sum of SAR values for GSM and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

#### The sum of SAR values for WCDMA & Bluetooth

|                  | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|------------------|----------------------------|----------------------------|
| <b>WCDMA</b>     | 0.302                      | 1.078                      |
| <b>Bluetooth</b> | 0.082                      | 0.082                      |
| <b>Sum</b>       | <b>0.384</b>               | <b>1.160</b>               |

According to the above tables, the sum of SAR values for WCDMA and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

#### The sum of SAR values for LTE & Bluetooth

|                  | MAXIMUM SAR VALUE FOR HEAD | MAXIMUM SAR VALUE FOR BODY |
|------------------|----------------------------|----------------------------|
| <b>LTE</b>       | 0.473                      | 0.914                      |
| <b>Bluetooth</b> | 0.082                      | 0.082                      |
| <b>Sum</b>       | <b>0.555</b>               | <b>0.996</b>               |

According to the above tables, the sum of SAR values for LTE and Bluetooth < 1.6W/kg. So simultaneous transmission SAR are not required for Bluetooth transmitter.

## 7 MEASUREMENT UNCERTAINTY

| DASY5 Uncertainty Budget        |                   |             |            |                 |                  |                  |                   |                            |
|---------------------------------|-------------------|-------------|------------|-----------------|------------------|------------------|-------------------|----------------------------|
| Error description               | Uncertainty value | Prob. Dist. | Div.       | ( $c_i$ )<br>1g | ( $c_i$ )<br>10g | Std.Unc<br>(1g). | Std.Unc.<br>(10g) | ( $\nu_i$ )<br>$\nu_{eff}$ |
| <b>Measurement system</b>       |                   |             |            |                 |                  |                  |                   |                            |
| Probe calibration               | ±6.0%             | N           | 1          | 1               | 1                | ±6.0%            | ±6.0%             | ∞                          |
| Axial isotropy                  | ±4.7%             | R           | $\sqrt{3}$ | 0.7             | 0.7              | ±1.9%            | ±1.9%             | ∞                          |
| Hemispherical isotropy          | ±9.6%             | R           | $\sqrt{3}$ | 0.7             | 0.7              | ±3.9%            | ±3.9%             | ∞                          |
| Boundary Effects                | ±1.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±0.6%            | ±0.6%             | ∞                          |
| Linearity                       | ±4.7%             | R           | $\sqrt{3}$ | 1               | 1                | ±2.7%            | ±2.7%             | ∞                          |
| System detection limits         | ±1.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±0.6%            | ±0.6%             | ∞                          |
| Readout electronics             | ±0.3%             | N           | 1          | 1               | 1                | ±0.3%            | ±0.3%             | ∞                          |
| Response time                   | ±0.8%             | R           | $\sqrt{3}$ | 1               | 1                | ±0.5%            | ±0.5%             | ∞                          |
| Integration time                | ±2.6%             | R           | $\sqrt{3}$ | 1               | 1                | ±1.5%            | ±1.5%             | ∞                          |
| RF ambient noise                | ±3.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±1.7%            | ±1.7%             | ∞                          |
| RF ambient reflections          | ±3.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±1.7%            | ±1.7%             | ∞                          |
| Probe positioner                | ±0.4%             | R           | $\sqrt{3}$ | 1               | 1                | ±0.2%            | ±0.2%             | ∞                          |
| Probe positioning               | ±2.9%             | R           | $\sqrt{3}$ | 1               | 1                | ±1.7%            | ±1.7%             | ∞                          |
| Max.SAR Eval.                   | ±1.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±0.6%            | ±0.6%             | ∞                          |
| <b>Test Sample Related</b>      |                   |             |            |                 |                  |                  |                   |                            |
| Device holder                   | ±3.6%             | N           | 1          | 1               | 1                | ±3.6%            | ±3.6%             | 5                          |
| Device Positioning              | ±2.9%             | N           | 1          | 1               | 1                | ±2.9%            | ±2.9%             | 145                        |
| Power drift                     | ±5.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±2.9%            | ±2.9%             | ∞                          |
| <b>Phantom and Setup</b>        |                   |             |            |                 |                  |                  |                   |                            |
| Phantom uncertainty             | ±4.0%             | R           | $\sqrt{3}$ | 1               | 1                | ±2.3%            | ±2.3%             | ∞                          |
| Liquid conductivity (target.)   | ±5.0%             | R           | $\sqrt{3}$ | 0.64            | 0.43             | ±1.8%            | ±1.2%             | ∞                          |
| Liquid conductivity (mea.)      | ±2.5%             | R           | $\sqrt{3}$ | 0.64            | 0.43             | ±0.9%            | ±0.6%             | ∞                          |
| Liquid Permittivity (target.)   | ±5.0%             | R           | $\sqrt{3}$ | 0.60            | 0.49             | ±1.7%            | ±1.4%             | ∞                          |
| Liquid Permittivity (mea.)      | ±2.5%             | R           | $\sqrt{3}$ | 0.60            | 0.49             | ±0.9%            | ±0.7%             | ∞                          |
| Combined std. Uncertainty       |                   |             |            |                 |                  | ±10.9%           | ±10.7%            | 387                        |
| <b>Expanded STD Uncertainty</b> |                   |             |            |                 |                  | <b>±21.7%</b>    | <b>±21.4%</b>     |                            |

## **8 TEST EQUIPMENTS**

The measurements were performed using an automated near-field scanning system, DASY5, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

| Test Equipment                  | Serial Number | Calibration interval | Calibration expiry |
|---------------------------------|---------------|----------------------|--------------------|
| DAE4                            | 546           | 1 year               | 2016.08.19         |
| DAE4                            | 720           | 1 year               | 2016.10.29         |
| Dosimetric E-field Probe ES3DV3 | 3127          | 1 year               | 2016.08.21         |
| Dosimetric E-field Probe EX3DV4 | 3708          | 1 year               | 2016.10.26         |
| Dipole Validation Kit D835V2    | 4d023         | 1 year               | 2016.10.20         |
| Dipole Validation Kit D1900V2   | 5d113         | 1 year               | 2016.10.19         |
| Dipole Validation Kit D2450V2   | 738           | 1 year               | 2016.10.21         |
| Dipole Validation Kit D5GHzV2   | 1079          | 1 year               | 2016.10.23         |

Additional test equipment used in testing:

| Test Equipment             | Model    | Serial Number | Calibration interval | Calibration expiry |
|----------------------------|----------|---------------|----------------------|--------------------|
| Signal Generator           | E4428C   | MY45280865    | 1 year               | 2016.08.20         |
| Signal Generator           | SML 03   | 103514        | 1 year               | 2016.08.20         |
| Amplifier                  | 5S1G4    | 0323472       | N/A                  | 2016.08.20         |
| Amplifier                  | 5S1G4    | 301305        | N/A                  | 2016.08.20         |
| Power meter                | E4417A   | MY45101182    | 1 year               | 2016.08.20         |
| Power Sensor               | E4412A   | MY41502214    | 1 year               | 2016.08.20         |
| Power Sensor               | E4412A   | MY41502130    | 1 year               | 2016.08.20         |
| Power meter                | E4417A   | MY45101004    | 1 year               | 2016.08.20         |
| Power Sensor               | E9300B   | MY41496001    | 1 year               | 2016.08.20         |
| Power Sensor               | E9300B   | MY41496003    | 1 year               | 2016.08.20         |
| Communications Test Set    | 8960     | GB43194054    | 1 year               | 2016.08.20         |
| Communication Tester       | CMU200   | 114666        | 1 year               | 2016.08.20         |
| Vector Network Analyzer    | VNAR140  | 0011213       | 1 year               | 2016.07.31         |
| Dielectric Parameter Probe | DAKS-3.5 | 1042          | 1 year               | 2016.08.26         |



Detailed information of Isotropic E-field Probe Type ES3DV3

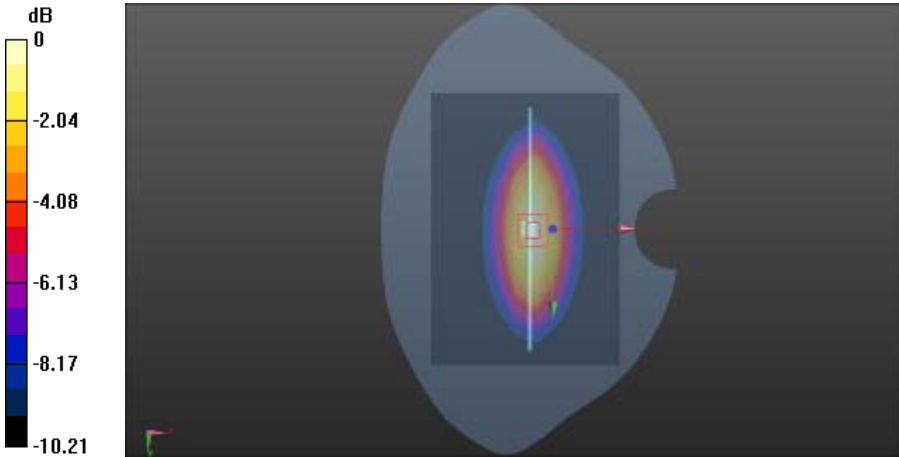
|                           |   |
|---------------------------|---|
| Construction              | Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration               | Calibration certificate in Appendix C   |
| Frequency                 | 10 MHz to 4 GHz;<br>Linearity: $\pm 0.2$ dB (30 MHz to 4 GHz)   |
| Optical Surface Detection | $\pm 0.2$ mm repeatability in air and clear liquids over diffuse reflecting surfaces  |
| Dimensions                | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 3.9 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.0 mm  |
| Dynamic Range             | 5 $\mu$ W/g to > 100 W/kg; Linearity: $\pm 0.2$ dB  |
| Application               | General dosimetry up to 4 GHz<br>Dosimetry in strong gradient fields<br>Compliance tests of mobile phones   |

Detailed information of Isotropic E-field Probe Type EX3DV4

|                           |   |
|---------------------------|---|
| Construction              | Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)   |
| Calibration               | Calibration certificate in Appendix C   |
| Frequency                 | 10 MHz to > 6 GHz<br>Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)  |
| Optical Surface Detection | $\pm 0.3$ mm repeatability in air and clear liquids over diffuse reflecting surfaces  |
| Dimensions                | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm  |
| Dynamic Range             | 10 $\mu$ W/g to > 100 W/kg<br>Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)  |
| Application               | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%. |

**APPENDIX A: SYSTEM CHECKING SCANS**

| SYSTEM CHECKING SCANS   | 835MHz Head |
|---|-------------|
| <p>Communication System: UID 0, CW (0); Frequency: 835 MHz<br/>           Medium parameters used (extrapolated): <math>f = 835 \text{ MHz}</math>; <math>\sigma = 0.909 \text{ S/m}</math>; <math>\epsilon_r = 42.108</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>           Phantom section: Flat Section<br/>           Measurement Standard:DASY5 (IEEE 1528-2013)</p> <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> <p><b>System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (10x13x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math><br/>           Maximum value of SAR (measured) = 2.98 W/kg</p> <p><b>System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/>           Reference Value = 54.113 V/m; Power Drift = -0.05 dB<br/>           Peak SAR (extrapolated) = 3.55 W/kg<br/> <b>SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.53 W/kg</b><br/>           Maximum value of SAR (measured) = 2.98 W/kg</p> <div data-bbox="343 1422 1244 1870"> </div> |             |

| SYSTEM CHECKING SCANS   | 835MHz Head |
|---|-------------|
| Communication System: UID 0, CW (0); Frequency: 835 MHz<br>Medium parameters used (extrapolated): $f = 835 \text{ MHz}$ ; $\sigma = 0.909 \text{ S/m}$ ; $\epsilon_r = 42.108$ ; $\rho = 1000 \text{ kg/m}^3$<br>Phantom section: Flat Section<br>Measurement Standard:DASY5 (IEEE 1528-2013)   |             |
| DASY Configuration:   |             |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>  |             |
| <p><b>System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (10x13x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math></p>   |             |
| <p>Maximum value of SAR (measured) = 2.95 W/kg</p>  |             |
| <p><b>System Performance Check at Frequencies 835MHz Head/d=15mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p>  |             |
| <p>Reference Value = 54.092V/m; Power Drift = -0.08 dB</p>  |             |
| <p>Peak SAR (extrapolated) = 3.53 W/kg</p>  |             |
| <p><b>SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.55 W/kg</b></p>   |             |
| <p>Maximum value of SAR (measured) = 2.95 W/kg</p>  |             |
|  <p>The figure displays a color-coded SAR field distribution plot. On the left, a vertical color scale ranges from 0 dB (yellow) at the top to -10.21 dB (black) at the bottom, with intermediate markers at -2.04, -4.08, -6.13, and -8.17 dB. To the right, a 3D visualization shows a central region of high SAR (yellow/red) with concentric contours of decreasing SAR (orange, green, blue, purple) extending outwards. A small red dot and a thin red line indicate the probe's position and orientation within the field.</p> |             |

|                              |                    |
|------------------------------|--------------------|
| <b>SYSTEM CHECKING SCANS</b> | <b>835MHz Flat</b> |
|------------------------------|--------------------|

Communication System: UID 0, CW (0); Frequency: 835 MHz  
 Medium parameters used (extrapolated):  $f = 835 \text{ MHz}$ ;  $\sigma = 0.978 \text{ S/m}$ ;  $\epsilon_r = 53.846$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section  
 Measurement Standard: DASYS (IEEE 1528-2013)

**DASY Configuration:**

- Probe: ES3DV3 - SN3127; ConvF(5.88, 5.88, 5.88); Calibrated: 8/21/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection),  $z = -18.0, 32.0$
- Electronics: DAE4 Sn546; Calibrated: 8/19/2015
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- DASYS 52.8.7(1137); SEMCAD X 14.6.10(7164)

**System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (7x12x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 2.55 W/kg

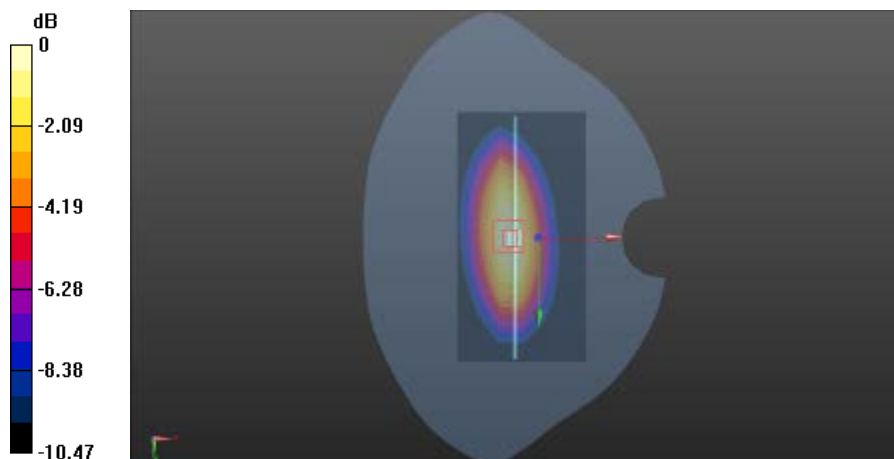
**System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

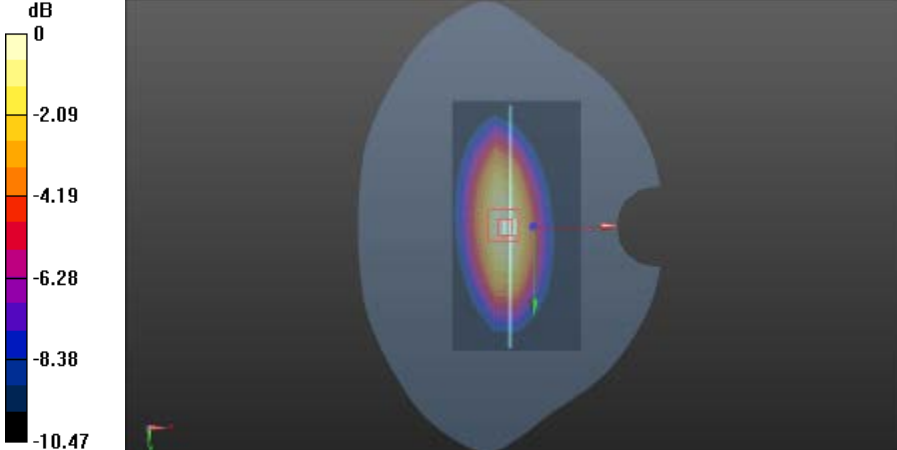
Reference Value = 53.044 V/m; Power Drift = -0.01 dB

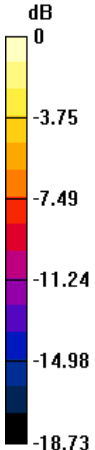
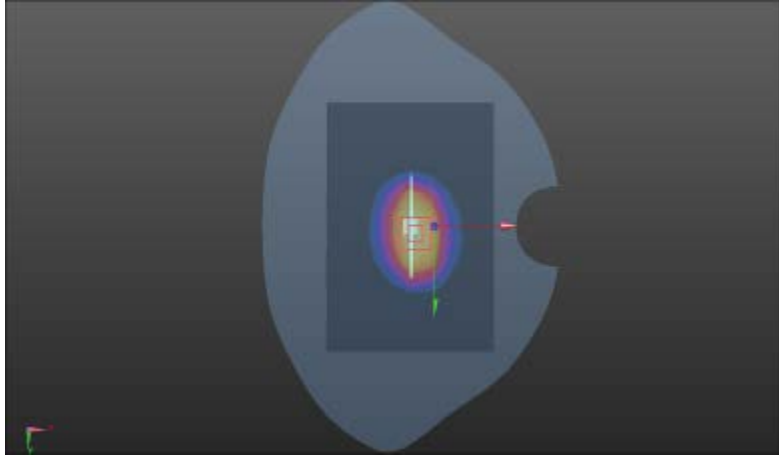
Peak SAR (extrapolated) = 3.54 W/kg

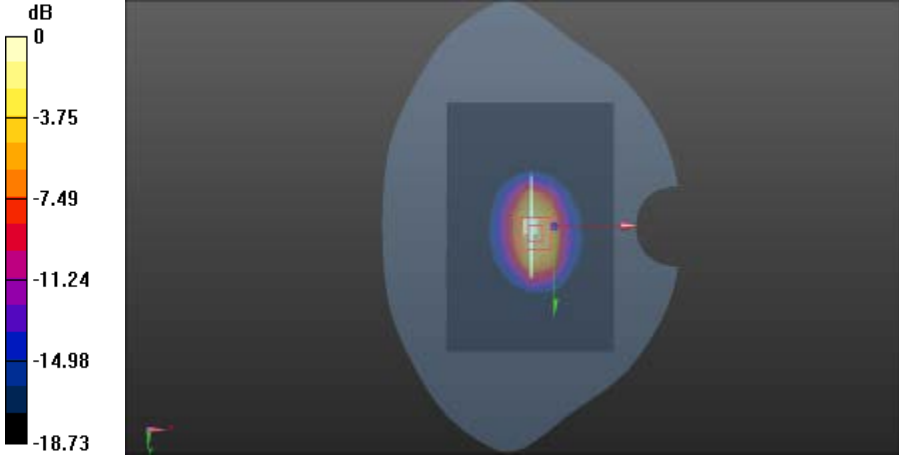
**SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.53 W/kg**

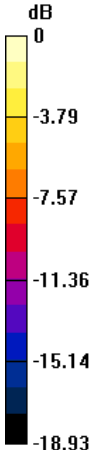
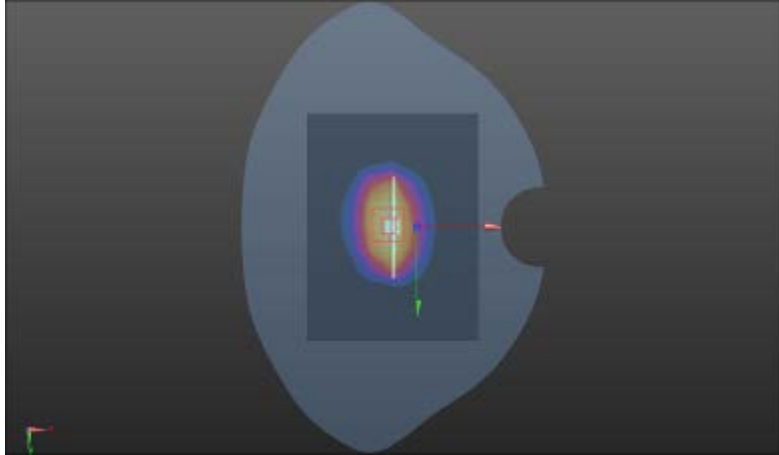
Maximum value of SAR (measured) = 2.87 W/kg



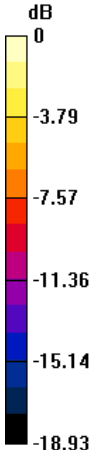
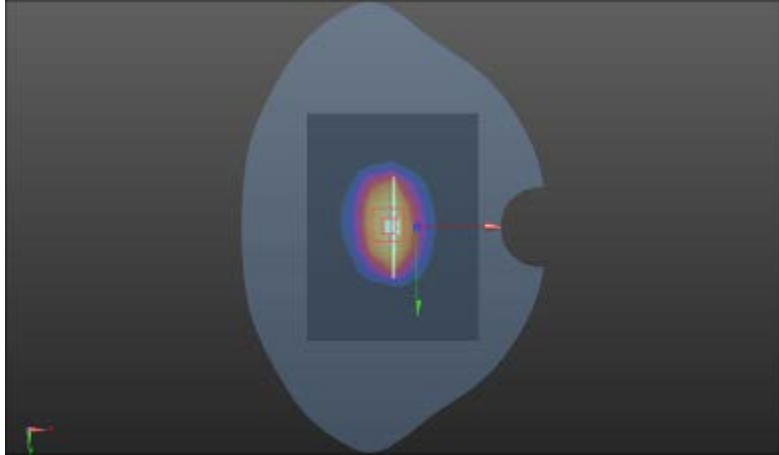
| SYSTEM CHECKING SCANS  | 835MHz Flat |
|--|-------------|
| <p>Communication System: UID 0, CW (0); Frequency: 835 MHz<br/>           Medium parameters used (extrapolated): <math>f = 835 \text{ MHz}</math>; <math>\sigma = 0.978 \text{ S/m}</math>; <math>\epsilon_r = 53.846</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>           Phantom section: Flat Section<br/>           Measurement Standard: DASY5 (IEEE 1528-2013)</p>   |             |
| <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3127; ConvF(5.88, 5.88, 5.88); Calibrated: 8/21/2015;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = -18.0, 32.0</math></li> <li>Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> <p><b>System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (7x12x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math><br/>           Maximum value of SAR (measured) = 2.51 W/kg</p> <p><b>System Performance Check at Frequencies 835MHz Flat/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/>           Reference Value = 52.991 V/m; Power Drift = -0.01 dB<br/>           Peak SAR (extrapolated) = 3.52 W/kg<br/> <b>SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.52 W/kg</b><br/>           Maximum value of SAR (measured) = 2.84 W/kg</p> |             |
|  <p>The figure displays a color scale for SAR field distribution on the left, ranging from 0 dB (yellow) to -10.47 dB (black). To the right is a 2D visualization of the field distribution, showing a central high-intensity region (yellow/red) that tapers off towards the edges (blue/black). A small red box highlights the central area of interest.</p>   |             |

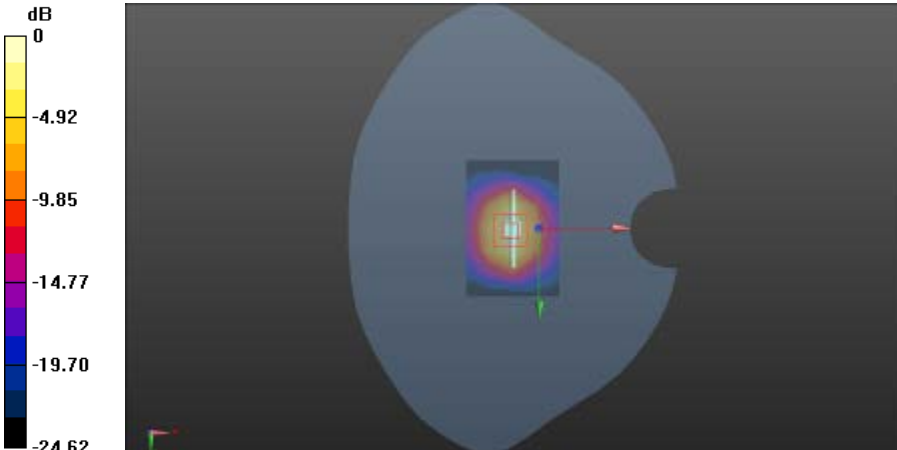
| SYSTEM CHECKING SCANS  | 1900MHz Head   |
|--|--|
| <p>Communication System: UID 0, CW (0); Frequency: 1900 MHz<br/>           Medium parameters used: <math>f = 1900 \text{ MHz}</math>; <math>\sigma = 1.41 \text{ S/m}</math>; <math>\epsilon_r = 40.84</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>           Phantom section: Flat Section<br/>           Measurement Standard:DASY5 (IEEE 1528-2013)</p>                 |  |
| <p>DASY Configuration:</p>   |  |
| <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>Phantom: SAM 1560; Type: SAM; Serial: 1560</li> <li>DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> |  |
| <p><b>System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Area Scan (9x12x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math></p>   |  |
| <p>Maximum value of SAR (measured) = 14.0 W/kg</p>   |  |
| <p><b>System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p>   |  |
| <p>Reference Value = 95.996 V/m; Power Drift = 0.05 dB</p>   |  |
| <p>Peak SAR (extrapolated) = 20.8 W/kg</p>   |  |
| <p><b>SAR(1 g) = 9.82 W/kg; SAR(10 g) = 5.47 W/kg</b></p>  |  |
| <p>Maximum value of SAR (measured) = 15.9 W/kg</p>   |  |
|   |  |

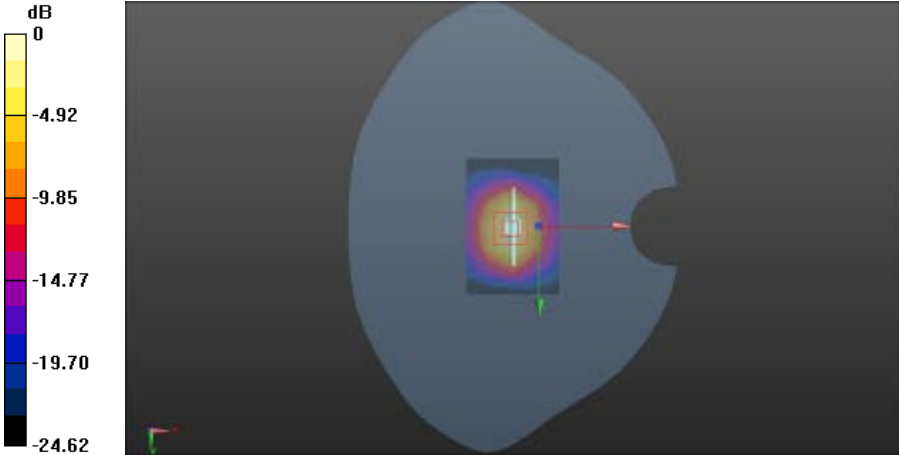
| SYSTEM CHECKING SCANS   | 1900MHz Head |
|---|--------------|
| <p>Communication System: UID 0, CW (0); Frequency: 1900 MHz<br/>           Medium parameters used: <math>f = 1900 \text{ MHz}</math>; <math>\sigma = 1.41 \text{ S/m}</math>; <math>\epsilon_r = 40.84</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>           Phantom section: Flat Section<br/>           Measurement Standard:DASY5 (IEEE 1528-2013)</p>  |              |
| <p>DASY Configuration:</p>  |              |
| <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3127; ConvF(4.94, 4.94, 4.94); Calibrated: 8/21/2015;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>Phantom: SAM 1560; Type: SAM; Serial: 1560</li> <li>DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>  |              |
| <p><b>System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Area Scan (9x12x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math></p>  |              |
| <p>Maximum value of SAR (measured) = 14.1 W/kg</p>  |              |
| <p><b>System Performance Check at Frequencies 1900MHz Head/d=10mm, Pin=250mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p>  |              |
| <p>Reference Value = 96.020 V/m; Power Drift = -0.02dB</p>  |              |
| <p>Peak SAR (extrapolated) = 20.9 W/kg</p>  |              |
| <p><b>SAR(1 g) = 9.84W/kg; SAR(10 g) = 5.46 W/kg</b></p>  |              |
| <p>Maximum value of SAR (measured) = 15.7 W/kg</p>  |              |
|  <p>The figure displays a color scale for SAR values in dB, ranging from 0 (yellow) to -18.73 (black). The scale includes intermediate values: -3.75, -7.49, -11.24, and -14.98. To the right of the scale is a 3D visualization of a head phantom. A central rectangular area is highlighted in red and yellow, indicating the highest SAR values. A probe is shown entering the phantom from the right side, with a red line indicating the measurement path.</p> |              |

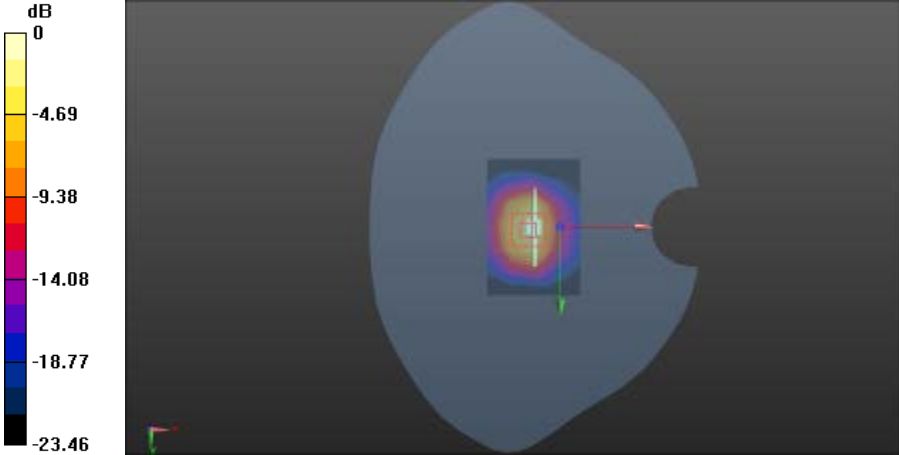
| SYSTEM CHECKING SCANS  | 1900MHz Flat   |
|--|--|
| <p>Communication System: UID 0, CW (0); Frequency: 1900 MHz<br/>           Medium parameters used: <math>f = 1900 \text{ MHz}</math>; <math>\sigma = 1.53 \text{ S/m}</math>; <math>\epsilon_r = 52.184</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>           Phantom section: Flat Section<br/>           Measurement Standard:DASY5 (IEEE 1528-2013)</p>                          |  |
| <p>DASY Configuration:</p>   |  |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(4.67, 4.67, 4.67); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1560; Type: SAM; Serial: 1560</li> <li>• DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> |  |
| <p><b>System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (9x11x1):</b> Measurement grid: <math>dx=15\text{mm}</math>, <math>dy=15\text{mm}</math></p>  |  |
| <p>Maximum value of SAR (measured) = 14.7 W/kg</p>   |  |
| <p><b>System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p>  |  |
| <p>Reference Value = 91.541 V/m; Power Drift = 0.01 dB</p>   |  |
| <p>Peak SAR (extrapolated) = 19.2 W/kg</p>   |  |
| <p><b>SAR(1 g) = 9.84 W/kg; SAR(10 g) = 5.64 W/kg</b></p>  |  |
| <p>Maximum value of SAR (measured) = 14.5 W/kg</p>   |  |
|   |  |



| SYSTEM CHECKING SCANS  | 1900MHz Flat   |
|--|--|
| <p>Communication System: UID 0, CW (0); Frequency: 1900 MHz<br/>           Medium parameters used: <math>f = 1900</math> MHz; <math>\sigma = 1.53</math> S/m; <math>\epsilon_r = 52.184</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Flat Section<br/>           Measurement Standard:DASY5 (IEEE 1528-2013)</p>                              |  |
| <p>DASY Configuration:</p>   |  |
| <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3127; ConvF(4.67, 4.67, 4.67); Calibrated: 8/21/2015;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>Phantom: SAM 1560; Type: SAM; Serial: 1560</li> <li>DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> |  |
| <p><b>System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (9x11x1):</b> Measurement grid: <math>dx=15</math>mm, <math>dy=15</math>mm</p>  |  |
| <p>Maximum value of SAR (measured) = 14.6 W/kg</p>   |  |
| <p><b>System Performance Check at Frequencies 1900MHz Flat/d=10mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm</p>   |  |
| <p>Reference Value = 91.122 V/m; Power Drift = 0.02 dB</p>   |  |
| <p>Peak SAR (extrapolated) = 19.1 W/kg</p>   |  |
| <p><b>SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.63 W/kg</b></p>  |  |
| <p>Maximum value of SAR (measured) = 14.3 W/kg</p>   |  |
|   |  |

| SYSTEM CHECKING SCANS   | 2450 MHz Head |
|---|---------------|
| <p>Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1<br/>Medium parameters used: <math>f = 2450</math> MHz; <math>\sigma = 1.79</math> S/m; <math>\epsilon_r = 39.208</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section</p>  |               |
| <p>DASY5 Configuration:</p>   |               |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection)</li> <li>• Electronics: DAE4 Sn546; Calibrated: 2015/8/19</li> <li>• Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659</li> <li>• Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)</li> </ul>  |               |
| <p><b>System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1):</b> Measurement grid: dx=15mm, dy=15mm</p>  |               |
| <p>Maximum value of SAR (measured) = 17.1 W/kg</p>  |               |
| <p><b>System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p>   |               |
| <p>Reference Value = 102.2 V/m; Power Drift = -0.02 dB</p>  |               |
| <p>Peak SAR (extrapolated) = 28.8 W/kg</p>  |               |
| <p><b>SAR(1 g) = 13.12 W/kg; SAR(10 g) = 5.92 W/kg</b></p>  |               |
| <p>Maximum value of SAR (measured) = 17.0 W/kg</p>  |               |
|  <p>The figure displays a 2D heatmap of the SAR distribution. The color scale on the left ranges from 0 dB (yellow) to -24.62 dB (black). The central region shows the highest SAR values, indicated by yellow and red colors, while the surrounding area shows lower values, indicated by blue and purple colors. A small red arrow points to the center of the high-intensity region.</p> |               |

| SYSTEM CHECKING SCANS  | 2450 MHz Head |
|--|---------------|
| <p>Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1<br/>Medium parameters used: <math>f = 2450</math> MHz; <math>\sigma = 1.79</math> S/m; <math>\epsilon_r = 39.208</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section</p>   |               |
| <p>DASY5 Configuration:</p>  |               |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(4.35, 4.35, 4.35); Calibrated: 2015/8/21;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection)</li> <li>• Electronics: DAE4 Sn546; Calibrated: 2015/8/19</li> <li>• Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659</li> <li>• Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)</li> </ul> |               |
| <p><b>System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1):</b> Measurement grid: dx=15mm, dy=15mm</p>   |               |
| <p>Maximum value of SAR (measured) = 17.0 W/kg</p>   |               |
| <p><b>System Performance Check at Frequencies 2450MHz Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p>  |               |
| <p>Reference Value = 102.121 V/m; Power Drift = -0.02 dB</p>   |               |
| <p>Peak SAR (extrapolated) = 28.8 W/kg</p>   |               |
| <p><b>SAR(1 g) = 13.16 W/kg; SAR(10 g) = 5.94 W/kg</b></p>   |               |
| <p>Maximum value of SAR (measured) = 17.1 W/kg</p>   |               |
|    |               |

| SYSTEM CHECKING SCANS  | 2450MHz Flat |
|--|--------------|
| <p>Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1<br/>           Medium parameters used: <math>f = 2450</math> MHz; <math>\sigma = 1.965</math> S/m; <math>\epsilon_r = 52.042</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Flat Section</p>  |              |
| <p>DASY5 Configuration:</p>  |              |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection)</li> <li>• Electronics: DAE4 Sn546; Calibrated: 2015/8/19</li> <li>• Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659</li> <li>• Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)</li> </ul>   |              |
| <p><b>System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1):</b> Measurement grid: dx=15mm, dy=15mm</p>   |              |
| <p>Maximum value of SAR (measured) = 17.1 W/kg</p>   |              |
| <p><b>System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p>  |              |
| <p>Reference Value = 104.3 V/m; Power Drift = -0.01 dB</p>   |              |
| <p>Peak SAR (extrapolated) = 28.0 W/kg</p>   |              |
| <p><b>SAR(1 g) = 12.93 W/kg; SAR(10 g) = 5.78 W/kg</b></p>   |              |
| <p>Maximum value of SAR (measured) = 17.4 W/kg</p>   |              |
|  <p>The figure displays a color scale for SAR field strength in dB, ranging from 0 dB (yellow) to -23.46 dB (black). The scale includes intermediate values: -4.69 dB (orange), -9.38 dB (red), -14.08 dB (purple), and -18.77 dB (blue). To the right of the scale is a 3D visualization of a human head phantom. A central region, representing the probe's measurement area, is highlighted with a color gradient corresponding to the scale, showing the highest SAR values (yellow/orange) at the center, which decreases as it moves away from the probe (towards blue and black).</p> |              |

**SYSTEM CHECKING SCANS**

**2450MHz Flat**

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1  
Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.965$  S/m;  $\epsilon_r = 52.042$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(4.19, 4.19, 4.19); Calibrated: 2015/8/21;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2015/8/19
- Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

**System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (5x7x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 16.8 W/kg

**System Performance Check at Frequencies 2450MHz Flat/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube**

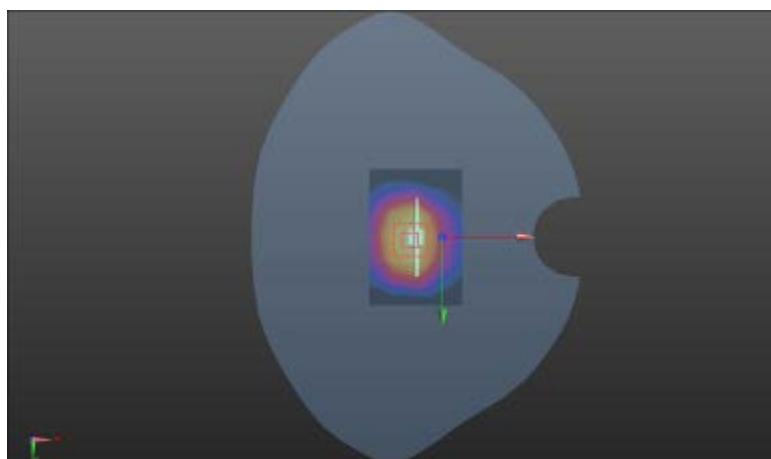
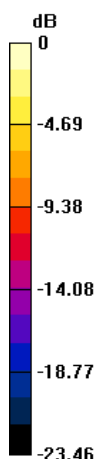
**0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

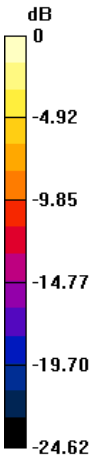
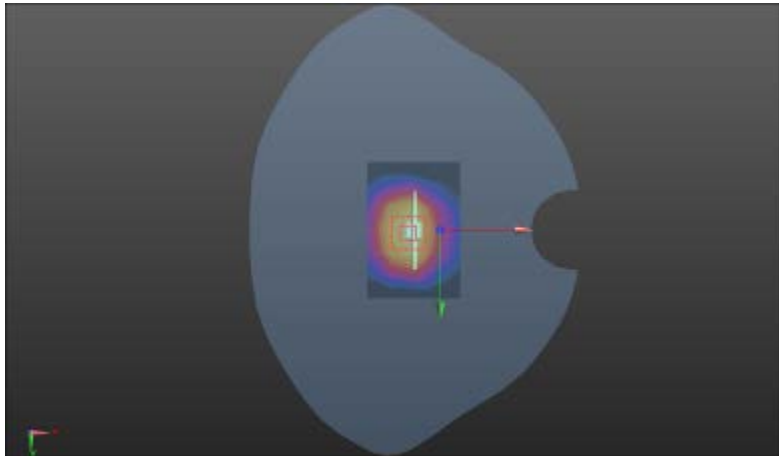
Reference Value = 104.002 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 27.8 W/kg

**SAR(1 g) = 12.86 W/kg; SAR(10 g) = 5.74 W/kg**

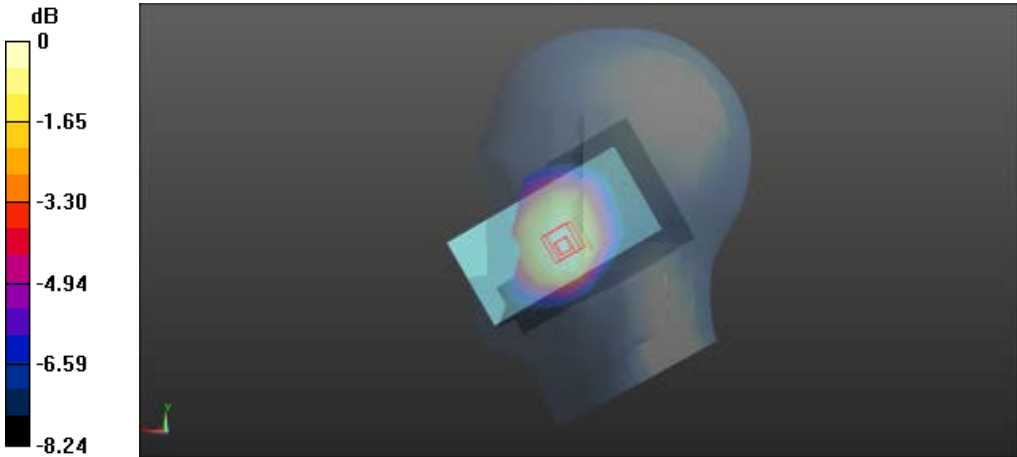
Maximum value of SAR (measured) = 17.1 W/kg



| SYSTEM CHECKING SCANS  | 5800MHz Head   |
|--|--|
| <p>Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1<br/>Medium parameters used: <math>f = 5800</math> MHz; <math>\sigma = 5.263</math> S/m; <math>\epsilon_r = 35.702</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section</p>  |  |
| <p>DASY5 Configuration:</p>  |  |
| <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3708; ConvF(4.57, 4.57, 4.57); Calibrated: 2015/10/26;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn720; Calibrated: 2015/10/29</li> <li>Phantom: SAM 1659; Type: QD000P40CD; Serial: TP:1659</li> <li>Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)</li> </ul> |  |
| <p><b>System Performance Check at Frequencies 5GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe) 5800/Area Scan (9x11x1):</b> Measurement grid: dx=15mm, dy=15mm</p>   |  |
| <p>Maximum value of SAR (measured) = 24.7 W/kg</p>   |  |
| <p><b>System Performance Check at Frequencies 5GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe) 5800/Zoom Scan (7x7x7) (7x7x7)/Cube 0:</b></p>  |  |
| <p>Measurement grid: dx=5mm, dy=5mm, dz=5mm</p>  |  |
| <p>Reference Value = 210.122 V/m; Power Drift = 0.01 dB</p>  |  |
| <p>Peak SAR (extrapolated) = 31.04 W/kg</p>  |  |
| <p><b>SAR(1 g) = 20.47 W/kg; SAR(10 g) =9.84 W/kg</b></p>  |  |
| <p>Maximum value of SAR (measured) = 22.46 W/kg</p>  |  |
|   |  <p>0 dB = 22.46 W/kg = 13.51 dBW/kg</p> |

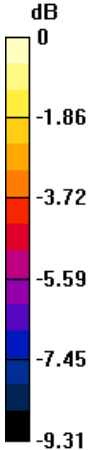

**APPENDIX B: MEASUREMENT SCANS**

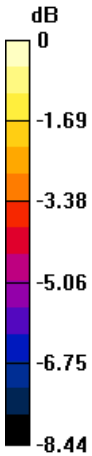
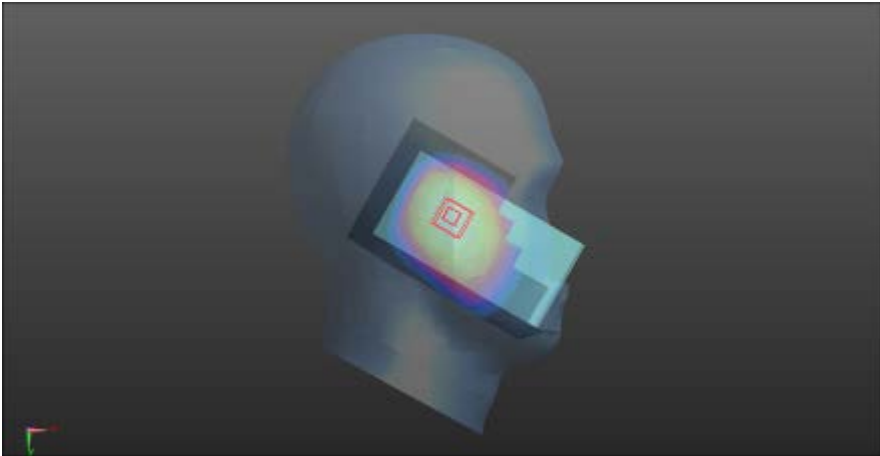
**GSM (850MHz/Head)**

| Left Side   | Cheek | 836.6 MHz |
|---|-------|-----------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br/>           Medium parameters used (interpolated): f = 836.6 MHz; <math>\sigma = 0.89</math> S/m; <math>\epsilon_r = 41.478</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Left Section<br/>           Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)</p>  |       |           |
| <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>Sensor-Surface: 4mm (Mechanical Surface Detection), z = 2.0, 32.0</li> <li>Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> <p><b>Head-Section Left HSL 850/850GSM Hsl touch M/Area Scan (8x13x1):</b> Measurement grid: dx=15mm, dy=15mm<br/>           Maximum value of SAR (measured) = 0.137 W/kg<br/> <b>Head-Section Left HSL 850/850GSM Hsl touch M/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>           Reference Value = 4.414 V/m; Power Drift = -0.18 dB<br/>           Peak SAR (extrapolated) = 0.160 W/kg<br/> <b>SAR(1 g) = 0.130 W/kg; SAR(10 g) = 0.100 W/kg</b></p> |       |           |
|  <p>0 dB = 0.137 W/kg = -8.63 dBW/kg</p>  |       |           |

| Left Side   | Tilt | 836.6 MHz |
|---|------|-----------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br/>           Medium parameters used (interpolated): <math>f = 836.6</math> MHz; <math>\sigma = 0.89</math> S/m; <math>\epsilon_r = 41.478</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Left Section<br/>           Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)</p>   |      |           |
| <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASYS 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>  |      |           |
| <p><b>Head-Section Left HSL 850/850GSM Hsl tilt M/Area Scan (8x13x1):</b> Measurement grid: <math>dx=15</math>mm, <math>dy=15</math>mm<br/>           Maximum value of SAR (measured) = 0.106 W/kg<br/> <b>Head-Section Left HSL 850/850GSM Hsl tilt M/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm<br/>           Reference Value = 7.814 V/m; Power Drift = -0.10 dB<br/>           Peak SAR (extrapolated) = 0.121 W/kg<br/> <b>SAR(1 g) = 0.100 W/kg; SAR(10 g) = 0.079 W/kg</b><br/>           Maximum value of SAR (measured) = 0.105 W/kg</p> |      |           |
| <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>dB</p> <p>0<br/>-1.69<br/>-3.38<br/>-5.08<br/>-6.77<br/>-8.46</p> </div> <div> </div> </div> <p style="text-align: center;">0 dB = 0.105 W/kg = -9.79 dBW/kg</p>   |      |           |

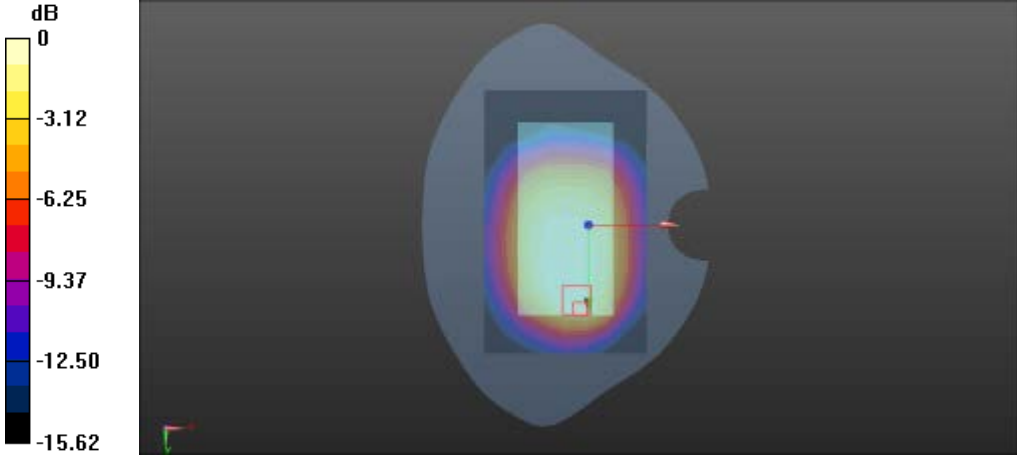


| Right Side  | Cheek | 836.6 MHz |
|---|-------|-----------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br/>           Medium parameters used (interpolated): <math>f = 836.6</math> MHz; <math>\sigma = 0.89</math> S/m; <math>\epsilon_r = 41.478</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Right Section<br/>           Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)</p>  |       |           |
| <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASYS 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>  |       |           |
| <p><b>Head-Section Right HSL 850/850GSM HSL touch M/Area Scan (8x13x1):</b> Measurement grid: <math>dx=15</math>mm, <math>dy=15</math>mm<br/>           Maximum value of SAR (measured) = 0.139 W/kg<br/> <b>Head-Section Right HSL 850/850GSM HSL touch M/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm<br/>           Reference Value = 4.034 V/m; Power Drift = -0.20 dB<br/>           Peak SAR (extrapolated) = 0.170 W/kg<br/> <b>SAR(1 g) = 0.137 W/kg; SAR(10 g) = 0.106 W/kg</b><br/>           Maximum value of SAR (measured) = 0.144 W/kg</p> |       |           |
| <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>dB</p>  </div> <div style="flex-grow: 1;">  </div> </div> <p style="text-align: center;">0 dB = 0.144 W/kg = -8.42 dBW/kg</p>   |       |           |

| Right Side  | Tilt | 836.6 MHz |
|---|------|-----------|
| Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br>Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.89$ S/m; $\epsilon_r = 41.478$ ; $\rho = 1000$ kg/m <sup>3</sup><br>Phantom section: Right Section<br>Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)   |      |           |
| DASYS Configuration:  |      |           |
| <ul style="list-style-type: none"> <li>• Probe: ES3DV3 - SN3127; ConvF(5.97, 5.97, 5.97); Calibrated: 8/21/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = 2.0, 32.0</math></li> <li>• Electronics: DAE4 Sn546; Calibrated: 8/19/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASYS52 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>                           |      |           |
| <p><b>Head-Section Right HSL 850/850GSM HSL tilt M/Area Scan</b></p>  |      |           |
| <p><b>(8x13x1):</b> Measurement grid: <math>dx=15</math>mm, <math>dy=15</math>mm<br/>                     Maximum value of SAR (measured) = 0.124 W/kg</p>  |      |           |
| <p><b>Head-Section Right HSL 850/850GSM HSL tilt M/Zoom Scan (7x7x7)/Cube</b></p>   |      |           |
| <p><b>0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm<br/>                     Reference Value = 7.626 V/m; Power Drift = -0.14 dB</p>   |      |           |
| <p>Peak SAR (extrapolated) = 0.142 W/kg<br/> <b>SAR(1 g) = 0.118 W/kg; SAR(10 g) = 0.092 W/kg</b></p>   |      |           |
| <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p style="text-align: center;">dB</p>  </div> <div style="flex-grow: 1;">  </div> </div> <p style="text-align: center;">0 dB = 0.124 W/kg = -9.07 dBW/kg</p> |      |           |

**GSM with headset (850MHz/Flat)**

| FLAT   | TP | 836.6 MHz |
|--|----|-----------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br/>           Medium parameters used (extrapolated): <math>f = 836.6</math> MHz; <math>\sigma = 0.979</math> S/m; <math>\epsilon_r = 53.843</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Flat Section<br/>           Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)</p> <p>DASY Configuration:</p> <ul style="list-style-type: none"> <li>• Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = -19.0, 31.0</math></li> <li>• Electronics: DAE4 Sn720; Calibrated: 10/29/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASYS 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul> <p><b>Flat-Section MSL 850 TP/850GSM TP M/Area Scan (9x14x1):</b> Measurement grid: <math>dx=15</math>mm, <math>dy=15</math>mm<br/>           Maximum value of SAR (measured) = 0.160 W/kg</p> <p><b>Flat-Section MSL 850 TP/850GSM TP M/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm<br/>           Reference Value = 12.204 V/m; Power Drift = -0.12 dB<br/>           Peak SAR (extrapolated) = 0.220 W/kg<br/> <b>SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.102 W/kg</b><br/>           Maximum value of SAR (measured) = 0.159 W/kg</p> <div data-bbox="284 1308 1305 1765"> </div> |    |           |

| FLAT  | TG | 836.6 MHz |
|---|----|-----------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz<br/>           Medium parameters used (extrapolated): <math>f = 836.6</math> MHz; <math>\sigma = 0.979</math> S/m; <math>\epsilon_r = 53.843</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>           Phantom section: Flat Section<br/>           Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)</p>             |    |           |
| <p>DASY Configuration:</p>  |    |           |
| <ul style="list-style-type: none"> <li>• Probe: EX3DV4 - SN3708; ConvF(8.91, 8.91, 8.91); Calibrated: 10/26/2015;</li> <li>• Sensor-Surface: 4mm (Mechanical Surface Detection), <math>z = -9.0, 31.0</math></li> <li>• Electronics: DAE4 Sn720; Calibrated: 10/29/2015</li> <li>• Phantom: SAM 1559; Type: SAM; Serial: 1559</li> <li>• DASYS5 52.8.7(1137); SEMCAD X 14.6.10(7164)</li> </ul>           |    |           |
| <p><b>Flat-Section MSL 850 TG/850GSM TG M/Area Scan (9x14x1):</b> Measurement grid:<br/> <math>dx=15</math>mm, <math>dy=15</math>mm<br/>           Maximum value of SAR (measured) = 0.189 W/kg</p>   |    |           |
| <p><b>Flat-Section MSL 850 TG/850GSM TG M/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm<br/>           Reference Value = 12.877 V/m; Power Drift = -0.12 dB<br/>           Peak SAR (extrapolated) = 0.292 W/kg<br/> <b>SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.108 W/kg</b><br/>           Maximum value of SAR (measured) = 0.186 W/kg</p> |    |           |
|  <p>0 dB = 0.186 W/kg = -7.30 dBW/kg</p>  |    |           |