

TEST REPORT FOR SAR TESTING

Report No.: SRTC2019-9004(F)-19122601(H)

Product Name: Smartphone

Product Model: HLTE230E

Applicant: Hisense International Co., Ltd.

Manufacturer: Hisense Communications Co., Ltd.

Specification: Part 2.1093

IEEE Std 1528

KDB Procedures

FCC ID: 2ADOBHLTE230E

The State Radio_monitoring_center Testing Center (SRTC)

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1. GENERAL INFORMATION

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC).

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

The certification and accreditation identifiers used in this report shall not be applicable to the tested or calibrated samples thereof. The manufacturer shall not mark the tested samples or items (or a separate part of the item) with the identifiers of certification and accreditation to mislead relevant parties about the tested samples or items.

1.2 Information about the testing laboratory

| | |
|--------------------|---|
| Company: | The State Radio monitoring center Testing Center (SRTC) |
| Address: | 15th Building, No.30 Shixing Street, Shijingshan District, Beijing P.R. China |
| City: | Beijing |
| Country or Region: | P.R. China |
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1.3 Applicant's details

| | |
|--------------------|---|
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| Address: | Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China |
| City: | Qingdao |
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| Fax: | --- |
| Email: | gengruifeng@hisense.com |

1.4 Manufacturer's details

| | |
|--------------------|--|
| Company: | Hisense Communications Co., Ltd. |
| Address: | No.218 Qianwangang Road, Economic & Technological Development Zone, Qingdao, China |
| City: | Qingdao |
| Country or Region: | P.R. China |
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| Fax: | --- |
| Email: | dengtingting@hisense.com |

1.5 Test Environment

| | | |
|---|------------|--|
| Date of Receipt of test sample at SRTC: | 2019.12.26 | |
| Testing Start Date: | 2019.12.26 | |
| Testing End Date: | 2020.01.19 | |

| Environmental Data: | Temperature (°C) | Humidity (%) |
|---------------------|------------------|--------------|
| Ambient | 25 | 40 |

| | |
|-------------------------------|-----|
| Normal Supply Voltage (Vdc.): | 3.8 |
|-------------------------------|-----|

2. DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

| | |
|---|--|
| Wireless Technology and Frequency Bands | <input checked="" type="checkbox"/> GSM Band: GSM850/GSM1900 <input checked="" type="checkbox"/> WCDMA Band: FDD II/IV/V <input checked="" type="checkbox"/> LTE Band: 2/4/5/7/12 <input checked="" type="checkbox"/> Wi-Fi Band: 2.4GHz <input checked="" type="checkbox"/> BT/BLE |
| Mode | GSM <input checked="" type="checkbox"/> GPRS (GMSK) <input checked="" type="checkbox"/> EGPRS (GMSK/8PSK) WCDMA <input checked="" type="checkbox"/> UMTS Rel. 99 <input checked="" type="checkbox"/> HSDPA (Rel. 5) <input checked="" type="checkbox"/> HSUPA (Rel. 6) <input checked="" type="checkbox"/> HSPA+ (Rel.7) <input checked="" type="checkbox"/> DC-HSDPA (Rel.8) Wi-Fi 2.4GHz <input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n HT20 <input checked="" type="checkbox"/> 802.11n HT40 LTE <input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input checked="" type="checkbox"/> 64QAM |
| Duty Cycle* | GPRS: 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) EDGE(GMSK/8PSK) 12.5% (1 Slot), 25% (2 Slots), 37.5% (3 Slots), 50% (4 Slots) WCDMA: 100% LTE(FDD): 100% LTE(TDD): 63.3% maximum |

| | unlicensed network | Data Rate (Mbps) | Test Result (%) |
|--------------------------------|---|------------------|-----------------|
| 802.11b | 1 | 99.5 | |
| 802.11g | 6 | 97.2 | |
| 802.11n (HT20) | MCS0 | 97.0 | |
| BT-BR | 1 | 46.4 | |
| BT-EDR | 2 | 46.2 | |
| BT-EDR | 3 | 46.2 | |
| BT-LE | 1 | 87.4 | |
| Multi-Slot Class for GPRS/EDGE | <input type="checkbox"/> Class 8 - One Up <input type="checkbox"/> Class 10 - Two Up <input checked="" type="checkbox"/> Class 12 - Four Up <input type="checkbox"/> Class 33- 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. <input type="checkbox"/> Class C - Mobile phones are attached to either GPRS or GSM voice service. You need to switch manually between services | | |
| DTM | Not Supported | | |
| Note | For licensed cellular network duty cycle is inherent. For unlicensed network WLAN Duty cycle is depends on the data traffic, and the traffic allocation in operating mode could be the most conservative condition which with 100% duty cycle. SAR measurement also use non signalling mode, so the duty factor shall be taken into consideration. | | |

2.2 Support Equipment

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

| | |
|-----------------|---|
| State of sample | Normal |
| H/W Version | V0.1 |
| S/W Version | Hisense_HLTE230E_11_S02_03 |
| IMEI | Main supply: 867400020316612 Secondary supply: 867400020316612 |
| Notes | For all the test samples provided by applicant, IMEI are the same. That's weird but distinguishable. As the information described above, we use test sample offered by the customer. The relevant tests have been performed in order to verify in which combination case the EUT would have the worst features. |

Main Supply

| Part Name | Model | Supplier(Brand) | Description |
|-------------|-------------------------|------------------|--|
| Memory | UNMEN06GC2C31AS | UNIC2 | eMMC5.1 Module,64GB,FBGA-153Ball |
| Memory | MT53E768M32D2NP-05 3 RS | Micron | LPDDR4X,24Gb(768 Meg x 32 (2 channels x 16 I/O)),WFBGA-200Ball |
| Camera | H8B13-KS230FF | Kingcome | HI1336,COB,S1326A |
| Camera | H7B8-KS230BF | Kingcome | HI-846,COB,S0883A |
| Camera | H9B13-KS230BA | Kingcome | HI1336,COB,3933C-400 |
| Camera | BC12903V0 | CXT | GC2385,CSP,HX-M0207H-H306 |
| Camera | BC12904V0 | CXT | GC02M1B,CSP,HX-M0207B-H20 1 |
| LCD+TP | HTF065H029 | HOLITECH | ICNL9911S,MLAF065WE51 |
| fingerprint | TW-SW331B-KS230-V1 | TOWO | SW331B |

Secondary Supply

| Part Name | Model Name | supplier | Remark |
|-------------|-----------------------|---------------------|--|
| Memory | NCEMASLD-64G | FORESEE | eMMC5.1 Module,64GB,FBGA-153Ball |
| Memory | RS768M32LB4D2BDS-53BT | RAYSON | LPDDR4X,24Gb(768Mb x 16I/O x 2 channels),WFBGA-200Ball |
| Camera | TW-13OV53-KS230F-V1 | TOWO | OV13853,COB,S1326 |
| Camera | TW-08GC34-KS230B-V1 | TOWO | GC8034,COB,1368XX |
| Camera | TW-13OV53-KS230B-V1 | TOWO | OV13853,COB,50064B17 |
| Camera | ST-CFKS230-WJBF-V1 | Union Image co.,ltd | GC2375H,CSP,HX-M0207H-H306 |
| Camera | ST-CFKS230-JSBF-V1 | Union Image co.,ltd | GC2375H,CSP,DL2002B10-BP |
| LCD+TP | EQT651WKF003G | easyquick | FT8006, MLAF065WE51X |
| fingerprint | FS22483BJN | HOLITECH | ICNF7332-A2 |

3. REFERENCE SPECIFICATION

| Specification | Version | Title |
|----------------|---------|--|
| Part 2.1093 | 2019 | 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 |
| KDB 447498 D01 | v06 | General RF Exposure Guidance |
| KDB 447498 D02 | v02r01 | SAR MEASUREMENT PROCEDURES FOR USB DONGLE TRANSMITTERS |
| KDB 648474 D04 | v01r03 | Handset SAR |
| KDB 941225 D01 | v03r01 | 3G SAR Procedures |
| KDB 248227 D01 | v02r02 | SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS |
| KDB 865664 D01 | v01r04 | SAR Measurement from 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 is large than 15cm in the used SAM phantoms in flat section, and the depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements.



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 middle channel, and few of them were also performed on lowest 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 ± 0.02 mm. Special E-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 16bit 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.

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 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. All tests were carried out using simulants whose dielectric parameters were within $\pm 10\%$ below 3GHz and $\pm 5\%$ above 3GHz of the recommended values when use DASY system according to KDB865664D01. All tests were carried out within 24 hours of measuring the dielectric parameters.

| Tissue Stimulant Recipes | |
|---------------------------------|------------------------------------|
| Name | Broadband tissue-equivalent liquid |
| Type | HBBL600-6000V6 Simulating Liquid |

Note: The stimulant could be the same for head and body.

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 Exposure Conditions

4.6.2.1 Head Configuration

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 "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 normally determined according to the actual scene which might be the worst use condition for general exposure. The device's front and rear were oriented facing the phantom since these orientations give higher results for most regular portable devices.

4.6.2.3 Hotspot Configuration

Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode.

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. There are 15 mm × 15 mm (equal or less than 2GHz), 12 mm × 12 mm (from 2GHz~4GHz) and 10mm x 10mm (from 4GHz~6GHz) measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location.

When the reported 1g-SAR estimated by area scan is less than 1.40 w/kg.

Zoom scan was performed by using the configuration mentioned below or more conservative scan area and step 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.

Below 3GHz: 32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

2GHz-3GHz: 32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

3GHz-4GHz: 28mmX28mmX28mm scan area with 7 mm X7 mm X4 mm steps

4GHz-5GHz: 25mmX25mmX24mm scan area with 5 mm X5 mm X3 mm steps

5GHz-6GHz: 25mmX25mmX22mm scan area with 5 mm X5 mm X2 mm steps

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 triradiate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighboring 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.

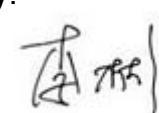
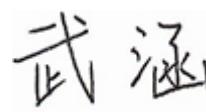
5 RESULT SUMMARY

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 | Main supply 1g-SAR Result(W/kg) | Secondary Supply 1g-SAR Result(W/kg) | Highest 1g-SAR Result(W/kg) | Limit(W/kg)/1g | Result |
|----------------------|----------------|---------------------------------|--------------------------------------|-----------------------------|----------------|--------|
| Head | GSM 850 | 0.22 | --- | 1.00 | | |
| | GSM 1900 | 0.03 | --- | | | |
| | WCDMA Band II | 0.02 | --- | | | |
| | WCDMA Band IV | 0.20 | --- | | | |
| | WCDMA Band V | 0.15 | --- | | | |
| | LTE Band 2 | 0.02 | --- | | | |
| | LTE Band 4 | 0.17 | --- | | | |
| | LTE Band 5 | 0.13 | --- | | | |
| | LTE Band 7 | 1.00 | 0.92 | | | |
| | LTE Band 12 | 0.10 | --- | | | |
| | WLAN 2.4GHz | 0.33 | --- | | | |
| | BT/BLE | 0.07 | --- | | | |
| Body-Worn (10mm Gap) | GSM 850 | 0.34 | --- | 0.42 | 1.00 | 1.6 |
| | GSM 1900 | 0.20 | --- | | | |
| | WCDMA Band II | 0.22 | --- | | | |
| | WCDMA Band IV | 0.42 | 0.40 | | | |
| | WCDMA Band V | 0.27 | --- | | | |
| | LTE Band 2 | 0.20 | --- | | | |
| | LTE Band 4 | 0.42 | --- | | | |
| | LTE Band 5 | 0.22 | --- | | | |
| | LTE Band 7 | 0.40 | --- | | | |
| | LTE Band 12 | 0.12 | --- | | | |
| | WLAN 2.4GHz | 0.08 | --- | | | |
| | BT/BLE | 0.03 | --- | | | |
| Hotspot (10mm Gap) | GSM 850 | 0.34 | --- | 0.42 | | |
| | GSM 1900 | 0.20 | --- | | | |
| | WCDMA Band II | 0.22 | --- | | | |
| | WCDMA Band IV | 0.42 | 0.40 | | | |
| | WCDMA Band V | 0.27 | --- | | | |
| | LTE Band 2 | 0.20 | --- | | | |
| | LTE Band 4 | 0.42 | --- | | | |
| | LTE Band 5 | 0.22 | --- | | | |
| | LTE Band 7 | 0.40 | --- | | | |
| | LTE Band 12 | 0.19 | --- | | | |
| | WLAN 2.4GHz | 0.08 | --- | | | |

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 | 0.51 | 1.11 | 1.6 | Pass |
| | WCDMA & Wi-Fi | 0.53 | | | |
| | LTE & Wi-Fi | 1.11 | | | |
| | GSM & BT/BLE | 0.28 | | | |
| | WCDMA & BT/BLE | 0.26 | | | |
| | LTE & BT/BLE | 1.07 | | | |
| Body-Worn (10mm Gap) | GSM & Wi-Fi | 0.42 | 0.50 | 1.6 | Pass |
| | WCDMA & Wi-Fi | 0.50 | | | |
| | LTE & Wi-Fi | 0.50 | | | |
| | GSM & BT/BLE | 0.38 | | | |
| | WCDMA & BT/BLE | 0.45 | | | |
| | LTE & BT/BLE | 0.45 | | | |
| Hotspot (10mm Gap) | GSM & Wi-Fi | 0.42 | 0.50 | 1.6 | Pass |
| | WCDMA & Wi-Fi | 0.50 | | | |
| | LTE & Wi-Fi | 0.50 | | | |

| | |
|--|--|
| This Test Report Is Approved by: Mr. Peng Zhen  | Review by: Mr. Li Bin  |
| Tested and issued by: Miss Wu Han  | Approved date: 20200122 |

6 TEST RESULT

6.1 Manufacturing Tolerance

GSM

GSM850

| Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|-------------------------|-------------|-----------------|
| 824.2 | 128 | 29.5~33.5 |
| 836.4 | 189 | |
| 848.8 | 251 | |

GPRS/EGPRS (GMSK):

| Carrier frequency (MHz) | Channel No. | TX Mode | Tolerance (dBm) |
|-------------------------|-------------|------------------|-----------------|
| 824.2 | 128 | 4Downlink1uplink | 29.5~33.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 3Downlink2uplink | 27.5~31.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 2Downlink3uplink | 25.5~29.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 1Downlink4uplink | 23.5~27.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |

EGPRS (8PSK):

| Carrier frequency (MHz) | Channel No. | TX Mode | Tolerance (dBm) |
|-------------------------|-------------|--------------------------|-----------------|
| 824.2 | 128 | 8PSK 4Downlink1uplink | 22.5~26.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 8PSK 3Downlink2uplink | 21.5~25.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 8PSK 2Downlink3uplink | 19.0~23.0 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |
| 824.2 | 128 | 8PSK 1Downlink4uplink | 16.5~20.5 |
| 836.4 | 189 | | |
| 848.8 | 251 | | |

PCS1900:

| Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|-------------------------|-------------|-----------------|
| 1850.2 | 512 | 26.5~30.5 |
| 1880.0 | 661 | |
| 1909.8 | 810 | |

GPRS/EGPRS (GMSK):

| Carrier frequency (MHz) | Channel No. | TX Mode | Tolerance (dBm) |
|-------------------------|-------------|------------------|-----------------|
| 1850.2 | 512 | 4Downlink1uplink | 26.5~30.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 3Downlink2uplink | 24.5~28.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 2Downlink3uplink | 23.0~27.0 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 1Downlink4uplink | 20.5~24.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |

EGPRS (8PSK):

| Carrier frequency (MHz) | Channel No. | TX Mode | Tolerance (dBm) |
|-------------------------|-------------|--------------------------|-----------------|
| 1850.2 | 512 | 8PSK 4Downlink1uplink | 23.0~27.0 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 8PSK 3Downlink2uplink | 21.5~25.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 8PSK 2Downlink3uplink | 19.5~23.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |
| 1850.2 | 512 | 8PSK 1Downlink4uplink | 16.5~20.5 |
| 1880.0 | 661 | | |
| 1909.8 | 810 | | |

WCDMA

WCDMA band II

| Mode | | Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|------------|--------------|-------------------------|-------------|-----------------|
| Release 99 | RMC,12.2kbps | 1852.4 | 9262 | 19.5~23.5 |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | RMC,64kbps | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | RMC,144kbps | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | RMC,384kbps | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | AMR,12.2kbps | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| HSDPA | Subtest 1 | 1852.4 | 9262 | 18.5~22.5 |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 2 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 3 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 4 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| HSUPA | Subtest 1 | 1852.4 | 9262 | 18.5~22.5 |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 2 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 3 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 4 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 5 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |

| Mode | | Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|----------|-----------|-------------------------|-------------|-----------------|
| HSPA+ | QPSK | 1852.4 | 9262 | 18.5~22.5 |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | 16QAM | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| DC-HSDPA | Subtest 1 | 1852.4 | 9262 | 18.5~22.5 |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 2 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 3 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |
| | Subtest 4 | 1852.4 | 9262 | |
| | | 1880.0 | 9400 | |
| | | 1907.6 | 9538 | |

WCDMA band IV

| Mode | | Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|------------|--------------|-------------------------|-------------|-----------------|
| Release 99 | RMC,12.2kbps | 1712.4 | 1312 | 19.0~23.0 |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | RMC,64kbps | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | RMC,144kbps | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | RMC,384kbps | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | AMR,12.2kbps | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| HSDPA | Subtest 1 | 1712.4 | 1312 | 18.0~22.0 |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 2 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 3 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 4 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| HSUPA | Subtest 1 | 1712.4 | 1312 | 18.0~22.0 |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 2 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 3 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 4 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 5 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |

| Mode | | Carrier frequency (MHz) | Channel No. | Tolerance (dBm) |
|----------|-----------|-------------------------|-------------|-----------------|
| HSPA+ | QPSK | 1712.4 | 1312 | 18.0~22.0 |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | 16QAM | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| DC-HSDPA | Subtest 1 | 1712.4 | 1312 | 18.0~22.0 |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 2 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 3 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |
| | Subtest 4 | 1712.4 | 1312 | |
| | | 1732.4 | 1412 | |
| | | 1752.6 | 1513 | |

WCDMA band V

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|------------|--------------|-------------------------|-------------|-----------------------|
| Release 99 | RMC,12.2kbps | 826.4 | 4132 | 19.0~23.0 |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | RMC,64kbps | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | RMC,144kbps | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | RMC,384kbps | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | AMR,12.2kbps | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| HSDPA | Subtest 1 | 826.4 | 4132 | 18.0~22.0 |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 2 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 3 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 4 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| HSUPA | Subtest 1 | 826.4 | 4132 | 18.0~22.0 |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 2 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 3 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 4 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |
| | Subtest 5 | 826.4 | 4132 | |
| | | 836.6 | 4183 | |
| | | 846.6 | 4233 | |

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|----------|-----------|-------------------------|-------------|-----------------------|
| HSPA+ | QPSK | 826.4 | 9262 | 18.0~22.0 |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |
| | 16QAM | 826.4 | 9262 | |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |
| DC-HSDPA | Subtest 1 | 826.4 | 9262 | 18.0~22.0 |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |
| | Subtest 2 | 826.4 | 9262 | |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |
| | Subtest 3 | 826.4 | 9262 | |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |
| | Subtest 4 | 826.4 | 9262 | |
| | | 836.6 | 9400 | |
| | | 846.6 | 9538 | |

LTE

Note: RB allocation mentioned below is for all Bandwidths, and the Frequency Range are divided to 3 ranges (Low, Mid, High)

Band 2

| BW | Modulation | RB allocation with different offset | Frequency range | Tolerance (dBm) |
|---------------|------------|-------------------------------------|-----------------|-----------------|
| All Bandwidth | QPSK | 1 | Low | 20.0~24.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | 16QAM | 1 | Low | 19.5~23.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 64QAM | 1 | Low | 19.5~23.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |

Band 4

| BW | Modulation | RB allocation with different offset | Frequency range | Tolerance (dBm) |
|---------------|------------|-------------------------------------|-----------------|-----------------|
| All Bandwidth | QPSK | 1 | Low | 20.0~24.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 16QAM | 1 | Low | 19.5~23.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.0~22.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.0~22.0 |
| | | | Mid | |
| | | | High | |
| | 64QAM | 1 | Low | 19.5~23.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.0~22.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.0~22.0 |
| | | | Mid | |
| | | | High | |

Band 5

| BW | Modulation | RB allocation with different offset | Frequency range | Tolerance (dBm) |
|---------------|------------|-------------------------------------|-----------------|-----------------|
| All Bandwidth | QPSK | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 16QAM | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 64QAM | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |

Band 7

| BW | Modulation | RB allocation with different offset | Frequency range | Tolerance (dBm) |
|---------------|------------|-------------------------------------|-----------------|-----------------|
| All Bandwidth | QPSK | 1 | Low | 11.5~15.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |
| | 16QAM | 1 | Low | 11.5~15.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |
| | 64QAM | 1 | Low | 11.5~15.5 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 11.0~15.0 |
| | | | Mid | |
| | | | High | |

Band 12

| BW | Modulation | RB allocation with different offset | Frequency range | Tolerance (dBm) |
|---------------|------------|-------------------------------------|-----------------|-----------------|
| All Bandwidth | QPSK | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 16QAM | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | 64QAM | 1 | Low | 19.0~23.0 |
| | | | Mid | |
| | | | High | |
| | | 50% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |
| | | 100% | Low | 18.5~22.5 |
| | | | Mid | |
| | | | High | |

Bluetooth

| Modulation type | Tolerance (dBm) | | |
|-----------------|-----------------|---------------|---------------|
| | 2402MHz(Ch0) | 2441MHz(Ch39) | 2480MHz(Ch78) |
| GFSK | -2.0~2.0 | | |
| $\pi/4$ DQPSK | -2.0~2.0 | | |
| 8DPSK | -2.0~2.0 | | |

Bluetooth (BLE)

| Modulation type | Average Power Output (dBm) | | |
|-----------------|----------------------------|-------------------|-------------------|
| | 2402MHz (Ch0) | 2440MHz (Ch19) | 2480MHz (Ch39) |
| GFSK (LE 1Mbps) | -4.0~0.0 | | |

WLAN 2.4GHz

| Modulation type | Tolerance (dBm) | | |
|-----------------|-----------------|---------|---------|
| | 2412MHz | 2437MHz | 2462MHz |
| 11b | 13.5~17.5 | | |
| 11g | 14.0~18.0 | | |
| 11n HT20 | 13.0~17.0 | | |

6.2 GSM Measurement result

GSM850

GSM Measured Power:

| Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|-----------------------|--------------------------|
| 824.2 | 128 | 33.26 | 24.23 |
| 836.4 | 189 | 33.15 | 24.12 |
| 848.8 | 251 | 33.14 | 24.11 |

GPRS/EGPRS (GMSK) Measured Power:

| Carrier frequency (MHz) | Channel No. | TX Mode | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|------------------|-----------------------|--------------------------|
| 824.2 | 128 | 4Downlink1uplink | 33.26 | 24.23 |
| 836.4 | 189 | | 33.15 | 24.12 |
| 848.8 | 251 | | 33.14 | 24.11 |
| 824.2 | 128 | 3Downlink2uplink | 31.18 | 25.16 |
| 836.4 | 189 | | 31.05 | 25.03 |
| 848.8 | 251 | | 30.93 | 24.91 |
| 824.2 | 128 | 2Downlink3uplink | 29.27 | 25.01 |
| 836.4 | 189 | | 29.14 | 24.88 |
| 848.8 | 251 | | 29.04 | 24.78 |
| 824.2 | 128 | 1Downlink4uplink | 27.14 | 24.13 |
| 836.4 | 189 | | 27.06 | 24.05 |
| 848.8 | 251 | | 26.98 | 23.97 |

EGPRS (8PSK) Measured Power:

| Carrier frequency (MHz) | Channel No. | TX Mode | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|--------------------------|-----------------------|--------------------------|
| 824.2 | 128 | 8PSK 4Downlink1uplink | 26.31 | 17.28 |
| 836.4 | 189 | | 26.56 | 17.53 |
| 848.8 | 251 | | 26.41 | 17.38 |
| 824.2 | 128 | 8PSK 3Downlink2uplink | 25.25 | 19.23 |
| 836.4 | 189 | | 25.32 | 19.30 |
| 848.8 | 251 | | 25.14 | 19.12 |
| 824.2 | 128 | 8PSK 2Downlink3uplink | 22.75 | 18.49 |
| 836.4 | 189 | | 22.84 | 18.58 |
| 848.8 | 251 | | 22.68 | 18.42 |
| 824.2 | 128 | 8PSK 1Downlink4uplink | 20.43 | 17.42 |
| 836.4 | 189 | | 20.48 | 17.47 |
| 848.8 | 251 | | 20.16 | 17.15 |

PCS1900

GSM Measured Power:

| Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|-----------------------|--------------------------|
| 1850.2 | 512 | 30.47 | 21.44 |
| 1880.0 | 661 | 30.38 | 21.35 |
| 1909.8 | 810 | 30.23 | 21.20 |

GPRS/EGPRS (GMSK) Measured Power:

| Carrier frequency (MHz) | Channel No. | TX Mode | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|------------------|-----------------------|--------------------------|
| 1850.2 | 512 | 4Downlink1uplink | 30.47 | 21.44 |
| 1880.0 | 661 | | 30.38 | 21.35 |
| 1909.8 | 810 | | 30.23 | 21.20 |
| 1850.2 | 512 | 3Downlink2uplink | 28.22 | 22.20 |
| 1880.0 | 661 | | 28.13 | 22.11 |
| 1909.8 | 810 | | 27.97 | 21.95 |
| 1850.2 | 512 | 2Downlink3uplink | 26.57 | 22.31 |
| 1880.0 | 661 | | 26.47 | 22.21 |
| 1909.8 | 810 | | 26.30 | 22.04 |
| 1850.2 | 512 | 1Downlink4uplink | 24.37 | 21.36 |
| 1880.0 | 661 | | 24.28 | 21.27 |
| 1909.8 | 810 | | 24.14 | 21.13 |

EGPRS (8PSK) Measured Power:

| Carrier frequency (MHz) | Channel No. | TX Mode | RF Power Output (dBm) | Frame average power(dBm) |
|-------------------------|-------------|--------------------------|-----------------------|--------------------------|
| 1850.2 | 512 | 8PSK 4Downlink1uplink | 26.15 | 21.44 |
| 1880.0 | 661 | | 26.76 | 21.35 |
| 1909.8 | 810 | | 26.40 | 21.20 |
| 1850.2 | 512 | 8PSK 3Downlink2uplink | 24.57 | 22.20 |
| 1880.0 | 661 | | 25.43 | 22.11 |
| 1909.8 | 810 | | 24.82 | 21.95 |
| 1850.2 | 512 | 8PSK 2Downlink3uplink | 22.23 | 22.31 |
| 1880.0 | 661 | | 23.10 | 22.21 |
| 1909.8 | 810 | | 22.50 | 22.04 |
| 1850.2 | 512 | 8PSK 1Downlink4uplink | 19.16 | 21.36 |
| 1880.0 | 661 | | 20.02 | 21.27 |
| 1909.8 | 810 | | 19.34 | 21.13 |

Division Factors (for Measured Power and Frame Average Power):

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

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

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

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

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

According to the frame average conducted power, the SAR measurements are performed with **2Txslots (2uplink)** of GPRS850 (GMSK) and **3Txslots (3uplink)** of GPRS1900 (GMSK).

6.3 WCDMA Measurement result

Release 99

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

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 |
| | RMC mode | 12.2kbps RMC |
| | AMR mode | 12.2kbps RMC in 3.4 kbps SRB |
| | Power Control Algorithm | Algorithm2 |
| | β_c/β_d | 8/15 |

Release 5

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

| Sub-test | β_c | β_d | β_d (SF) | β_c/β_d | $\beta_{hs}^{(1)}$ | CM(dB) ⁽²⁾ |
|----------|----------------------|----------------------|-------------------|----------------------|--------------------|-----------------------|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 |
| 2 | 12/15 ⁽³⁾ | 15/15 ⁽³⁾ | 64 | 12/15 ⁽³⁾ | 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 β_c/β_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 $\beta_d = 15/15$.

Release 6

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

| Sub-test | β_c | β_d | β_d (S F) | β_c/β_d | $\beta_{hs}^{(1)}$ | β_{ec} | β_{ed} | β_{ed} (S F) | β_{ed} (code s) | CM (²) (dB) | MP R (d B) | AG(⁴) Inde x | E-TF CI |
|----------|---------------------------|---------------------------|-----------------------|---------------------------|--------------------|--------------|--|--------------------------|-----------------------------|------------------------------------|---------------------|------------------------------------|------------|
| 1 | 11/15 ^(3) | 15/15 (³) | 64 | 11/15 ^(3) | 22/1 5 | 209/2 25 | 1039/2 25 | 4 | 1 | 1.0 | 2.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/1 5 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/1 5 | 30/15 | $\beta_{ed1}:47/15$ $\beta_{ed2}:47/15$ | 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 (⁴) | 15/15 (⁴) | 64 | 15/15 (⁴) | 30/1 5 | 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 β_c/β_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 β_c/β_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: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Release 7

The following 1 Sub-test was completed according to Release 7 procedures in section 5.2 of 3GPP TS34.121.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

| Sub-test | β_c (Note 3) | β_d | β_{HS} (Note 1) | β_{ec} | β_{ed} (2xSF2) (Note 4) | β_{ed} (2xSF4) (Note 4) | CM (dB) (Note 2) | MPR (dB) (Note 2) | AG Index (Note 4) | E-TFCI (Note 5) | E-TFCI (boost) |
|----------|-----------------------|-----------|--------------------------|--------------|--|--|------------------------|-------------------------|-------------------------|--------------------|-------------------|
| 1 | 1 | 0 | 30/15 | 30/15 | β_{eq1} : 30/15 β_{eq2} : 30/15 | β_{eq3} : 24/15 β_{eq4} : 24/15 | 3.5 | 2.5 | 14 | 105 | 105 |

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

Release 8

Table E.5.0: Levels for HSDPA connection setup

| Parameter During Connection setup | Unit | Value |
|--------------------------------------|------|-------|
| P-CPICH_Ec/Ior | dB | -10 |
| P-CCPCH and SCH_Ec/Ior | dB | -12 |
| PICH_Ec/Ior | dB | -15 |
| HS-PDSCH | dB | off |
| HS-SCCH_1 | dB | off |
| DPCH_Ec/Ior | dB | -5 |
| OCNS_Ec/Ior | dB | -3.1 |

Table C.8.1.12: Fixed Reference Channel H-Set 12

| Parameter | Unit | Value |
|---------------------------------------|-----------|-------|
| Nominal Avg. Inf. Bit Rate | kbps | 60 |
| Inter-TTI Distance | TTI's | 1 |
| Number of HARQ Processes | Processes | 6 |
| Information Bit Payload (N_{INF}) | Bits | 120 |
| Number Code Blocks | Blocks | 1 |
| Binary Channel Bits Per TTI | Bits | 960 |
| Total Available SML's in UE | SML's | 19200 |
| Number of SML's per HARQ Proc. | SML's | 3200 |
| Coding Rate | | 0.15 |
| Number of Physical Channel Codes | Codes | 1 |
| Modulation | | QPSK |

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.

Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

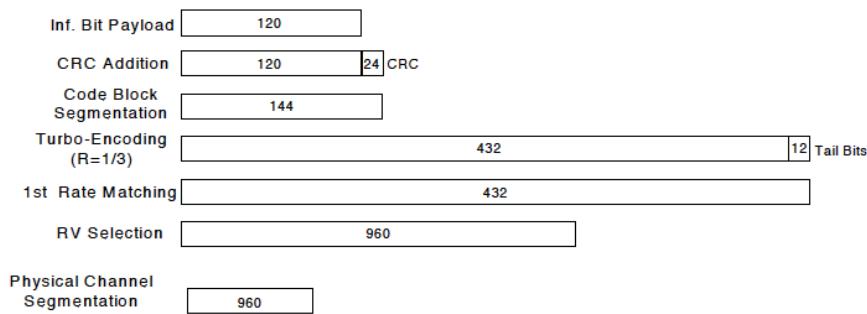


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121.

| Sub-test | β_c | β_d | β_d (SF) | β_c/β_d | $\beta_{hs}^{(1)}$ | CM(dB) ⁽²⁾ |
|----------|----------------------|----------------------|-------------------|----------------------|--------------------|-----------------------|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 |
| 2 | 12/15 ⁽³⁾ | 15/15 ⁽³⁾ | 64 | 12/15 ⁽³⁾ | 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 β_c/β_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 $\beta_d=15/15$.

WCDMA band II

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|------------|--------------|-------------------------|-------------|-----------------------|
| Release 99 | RMC,12.2kbps | 1852.4 | 9262 | 23.25 |
| | | 1880.0 | 9400 | 23.21 |
| | | 1907.6 | 9538 | 23.13 |
| | RMC,64kbps | 1852.4 | 9262 | 23.25 |
| | | 1880.0 | 9400 | 23.18 |
| | | 1907.6 | 9538 | 23.08 |
| | RMC,144kbps | 1852.4 | 9262 | 23.23 |
| | | 1880.0 | 9400 | 23.14 |
| | | 1907.6 | 9538 | 23.12 |
| | RMC,384kbps | 1852.4 | 9262 | 23.19 |
| | | 1880.0 | 9400 | 23.15 |
| | | 1907.6 | 9538 | 23.05 |
| | AMR,12.2kbps | 1852.4 | 9262 | 23.20 |
| | | 1880.0 | 9400 | 23.16 |
| | | 1907.6 | 9538 | 23.11 |
| HSDPA | Subtest 1 | 1852.4 | 9262 | 22.23 |
| | | 1880.0 | 9400 | 22.45 |
| | | 1907.6 | 9538 | 22.25 |
| | Subtest 2 | 1852.4 | 9262 | 22.10 |
| | | 1880.0 | 9400 | 22.11 |
| | | 1907.6 | 9538 | 22.27 |
| | Subtest 3 | 1852.4 | 9262 | 22.18 |
| | | 1880.0 | 9400 | 22.26 |
| | | 1907.6 | 9538 | 22.41 |
| | Subtest 4 | 1852.4 | 9262 | 22.14 |
| | | 1880.0 | 9400 | 22.30 |
| | | 1907.6 | 9538 | 22.15 |
| HSUPA | Subtest 1 | 1852.4 | 9262 | 22.30 |
| | | 1880.0 | 9400 | 22.30 |
| | | 1907.6 | 9538 | 22.38 |

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|----------|-----------|-------------------------|-------------|-----------------------|
| HSPA+ | Subtest 2 | 1852.4 | 9262 | 22.33 |
| | | 1880.0 | 9400 | 22.36 |
| | | 1907.6 | 9538 | 22.42 |
| | Subtest 3 | 1852.4 | 9262 | 22.22 |
| | | 1880.0 | 9400 | 22.10 |
| | | 1907.6 | 9538 | 22.17 |
| | Subtest 4 | 1852.4 | 9262 | 22.45 |
| | | 1880.0 | 9400 | 22.15 |
| | | 1907.6 | 9538 | 22.20 |
| | Subtest 5 | 1852.4 | 9262 | 22.10 |
| | | 1880.0 | 9400 | 22.13 |
| | | 1907.6 | 9538 | 22.14 |
| | QPSK | 1852.4 | 9262 | 22.38 |
| | | 1880.0 | 9400 | 22.09 |
| | | 1907.6 | 9538 | 22.40 |
| | 16QAM | 1852.4 | 9262 | 22.15 |
| | | 1880.0 | 9400 | 22.32 |
| | | 1907.6 | 9538 | 22.20 |
| DC-HSDPA | Subtest 1 | 1852.4 | 9262 | 22.43 |
| | | 1880.0 | 9400 | 22.45 |
| | | 1907.6 | 9538 | 22.09 |
| | Subtest 2 | 1852.4 | 9262 | 22.25 |
| | | 1880.0 | 9400 | 22.24 |
| | | 1907.6 | 9538 | 22.36 |
| | Subtest 3 | 1852.4 | 9262 | 22.33 |
| | | 1880.0 | 9400 | 22.31 |
| | | 1907.6 | 9538 | 22.28 |
| | Subtest 4 | 1852.4 | 9262 | 22.08 |
| | | 1880.0 | 9400 | 22.42 |
| | | 1907.6 | 9538 | 22.22 |

WCDMA band IV

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|------------|--------------|-------------------------|-------------|-----------------------|
| Release 99 | RMC,12.2kbps | 1712.4 | 1312 | 22.85 |
| | | 1732.4 | 1412 | 22.90 |
| | | 1752.6 | 1513 | 22.95 |
| | RMC,64kbps | 1712.4 | 1312 | 22.81 |
| | | 1732.4 | 1412 | 22.84 |
| | | 1752.6 | 1513 | 22.90 |
| | RMC,144kbps | 1712.4 | 1312 | 22.81 |
| | | 1732.4 | 1412 | 22.82 |
| | | 1752.6 | 1513 | 22.86 |
| | RMC,384kbps | 1712.4 | 1312 | 22.84 |
| | | 1732.4 | 1412 | 22.82 |
| | | 1752.6 | 1513 | 22.94 |
| | AMR,12.2kbps | 1712.4 | 1312 | 22.80 |
| | | 1732.4 | 1412 | 22.87 |
| | | 1752.6 | 1513 | 22.88 |
| HSDPA | Subtest 1 | 1712.4 | 1312 | 21.63 |
| | | 1732.4 | 1412 | 21.74 |
| | | 1752.6 | 1513 | 21.69 |
| | Subtest 2 | 1712.4 | 1312 | 21.64 |
| | | 1732.4 | 1412 | 21.59 |
| | | 1752.6 | 1513 | 21.69 |
| | Subtest 3 | 1712.4 | 1312 | 21.69 |
| | | 1732.4 | 1412 | 21.74 |
| | | 1752.6 | 1513 | 21.73 |
| | Subtest 4 | 1712.4 | 1312 | 21.69 |
| | | 1732.4 | 1412 | 21.58 |
| | | 1752.6 | 1513 | 21.60 |
| HSUPA | Subtest 1 | 1712.4 | 1312 | 21.62 |
| | | 1732.4 | 1412 | 21.70 |
| | | 1752.6 | 1513 | 21.60 |
| | Subtest 2 | 1712.4 | 1312 | 21.71 |
| | | 1732.4 | 1412 | 21.66 |
| | | 1752.6 | 1513 | 21.64 |
| | Subtest 3 | 1712.4 | 1312 | 21.63 |
| | | 1732.4 | 1412 | 21.64 |
| | | 1752.6 | 1513 | 21.63 |
| | Subtest 4 | 1712.4 | 1312 | 21.63 |
| | | 1732.4 | 1412 | 21.62 |
| | | 1752.6 | 1513 | 21.75 |
| | Subtest 5 | 1712.4 | 1312 | 21.73 |
| | | 1732.4 | 1412 | 21.73 |
| | | 1752.6 | 1513 | 21.64 |
| HSPA+ | QPSK | 1712.4 | 1312 | 21.75 |

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|----------|-----------|-------------------------|-------------|-----------------------|
| DC-HSDPA | 16QAM | 1732.4 | 1412 | 21.69 |
| | | 1752.6 | 1513 | 21.73 |
| | | 1712.4 | 1312 | 21.59 |
| | | 1732.4 | 1412 | 21.75 |
| | | 1752.6 | 1513 | 21.66 |
| | Subtest 1 | 1712.4 | 1312 | 21.69 |
| | Subtest 1 | 1732.4 | 1412 | 21.60 |
| | Subtest 1 | 1752.6 | 1513 | 21.61 |
| | Subtest 2 | 1712.4 | 1312 | 21.64 |
| | Subtest 2 | 1732.4 | 1412 | 21.68 |
| | Subtest 2 | 1752.6 | 1513 | 21.65 |
| | Subtest 3 | 1712.4 | 1312 | 21.68 |
| | Subtest 3 | 1732.4 | 1412 | 21.73 |
| | Subtest 3 | 1752.6 | 1513 | 21.63 |
| | Subtest 4 | 1712.4 | 1312 | 21.59 |
| | Subtest 4 | 1732.4 | 1412 | 21.69 |
| | Subtest 4 | 1752.6 | 1513 | 21.74 |

WCDMA band V

| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|------------|--------------|-------------------------|-------------|-----------------------|
| Release 99 | RMC,12.2kbps | 826.4 | 4132 | 22.66 |
| | | 836.6 | 4183 | 22.59 |
| | | 846.6 | 4233 | 22.70 |
| | RMC,64kbps | 826.4 | 4132 | 22.60 |
| | | 836.6 | 4183 | 22.53 |
| | | 846.6 | 4233 | 22.68 |
| | RMC,144kbps | 826.4 | 4132 | 22.57 |
| | | 836.6 | 4183 | 22.55 |
| | | 846.6 | 4233 | 22.64 |
| | RMC,384kbps | 826.4 | 4132 | 22.59 |
| | | 836.6 | 4183 | 22.56 |
| | | 846.6 | 4233 | 22.63 |
| | AMR,12.2kbps | 826.4 | 4132 | 22.62 |
| | | 836.6 | 4183 | 22.50 |
| | | 846.6 | 4233 | 22.62 |
| HSDPA | Subtest 1 | 826.4 | 4132 | 21.72 |
| | | 836.6 | 4183 | 21.66 |
| | | 846.6 | 4233 | 21.65 |
| | Subtest 2 | 826.4 | 4132 | 21.63 |
| | | 836.6 | 4183 | 21.68 |
| | | 846.6 | 4233 | 21.60 |
| | Subtest 3 | 826.4 | 4132 | 21.70 |
| | | 836.6 | 4183 | 21.60 |
| | | 846.6 | 4233 | 21.72 |

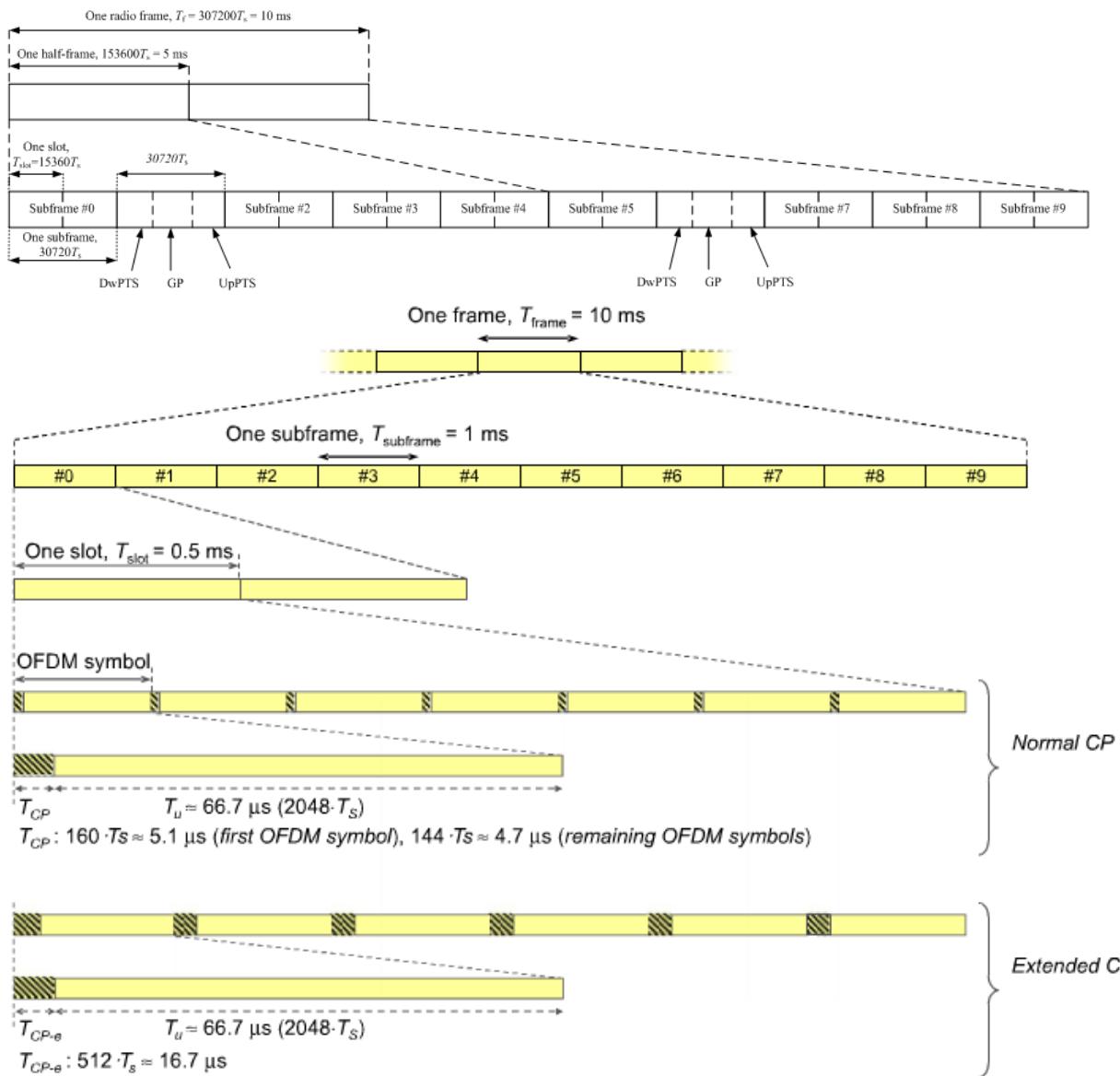
| Mode | | Carrier frequency (MHz) | Channel No. | RF Power Output (dBm) |
|----------|-----------|-------------------------|-------------|-----------------------|
| | Subtest 4 | 826.4 | 4132 | 21.65 |
| | | 836.6 | 4183 | 21.59 |
| | | 846.6 | 4233 | 21.60 |
| HSUPA | Subtest 1 | 826.4 | 4132 | 21.66 |
| | | 836.6 | 4183 | 21.68 |
| | | 846.6 | 4233 | 21.58 |
| | Subtest 2 | 826.4 | 4132 | 21.74 |
| | | 836.6 | 4183 | 21.70 |
| | | 846.6 | 4233 | 21.62 |
| | Subtest 3 | 826.4 | 4132 | 21.60 |
| | | 836.6 | 4183 | 21.68 |
| | | 846.6 | 4233 | 21.75 |
| | Subtest 4 | 826.4 | 4132 | 21.64 |
| | | 836.6 | 4183 | 21.69 |
| | | 846.6 | 4233 | 21.59 |
| | Subtest 5 | 826.4 | 4132 | 21.74 |
| | | 836.6 | 4183 | 21.64 |
| | | 846.6 | 4233 | 21.65 |
| HSPA+ | QPSK | 826.4 | 9262 | 21.71 |
| | | 836.6 | 9400 | 21.72 |
| | | 846.6 | 9538 | 21.70 |
| | 16QAM | 826.4 | 9262 | 21.63 |
| | | 836.6 | 9400 | 21.61 |
| | | 846.6 | 9538 | 21.62 |
| DC-HSDPA | Subtest 1 | 826.4 | 9262 | 21.71 |
| | | 836.6 | 9400 | 21.74 |
| | | 846.6 | 9538 | 21.69 |
| | Subtest 2 | 826.4 | 9262 | 21.73 |
| | | 836.6 | 9400 | 21.60 |
| | | 846.6 | 9538 | 21.65 |
| | Subtest 3 | 826.4 | 9262 | 21.66 |
| | | 836.6 | 9400 | 21.60 |
| | | 846.6 | 9538 | 21.67 |
| | Subtest 4 | 826.4 | 9262 | 21.63 |
| | | 836.6 | 9400 | 21.59 |
| | | 846.6 | 9538 | 21.73 |

Note: UMTS SAR was tested under Rel.99 RMC 12.2kbps mode per KDB Publication 941225 D01. for other higher release configuration, SAR was not required since any average output power was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg with RMC mode.

6.4 LTE Measurement result

General description:

TDD-LTE frame structure



Uplink-downlink configuration

| Uplink-downlink configuration | Downlink-to-Uplink Switch-point periodicity | Subframe number | | | | | | | | | |
|-------------------------------|---|-----------------|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0 | 5 ms | D | S | U | U | U | D | S | U | U | U |
| 1 | 5 ms | D | S | U | U | D | D | S | U | U | D |
| 2 | 5 ms | D | S | U | D | D | D | S | U | D | D |
| 3 | 10 ms | D | S | U | U | U | D | D | D | D | D |
| 4 | 10 ms | D | S | U | U | D | D | D | D | D | D |
| 5 | 10 ms | D | S | U | D | D | D | D | D | D | D |
| 6 | 5 ms | D | S | U | U | U | D | S | U | U | D |

Special sub-frame configuration

| Special subframe configuration | DwPTS | Normal cyclic prefix in downlink | | DwPTS | Extended cyclic prefix in downlink | |
|--------------------------------|--------------|----------------------------------|-------------|--------------|------------------------------------|-------------|
| | | Normal cyclic prefix in uplink | UpPTS | | Normal cyclic prefix in uplink | UpPTS |
| 0 | 6592· T_s | 2192· T_s | 2560· T_s | 7680· T_s | 2192· T_s | 2560· T_s |
| 1 | 19760· T_s | | | 20480· T_s | | |
| 2 | 21952· T_s | | | 23040· T_s | | |
| 3 | 24144· T_s | | | 25600· T_s | | |
| 4 | 26336· T_s | | | 7680· T_s | | |
| 5 | 6592· T_s | 4384· T_s | 5120· T_s | 20480· T_s | 4384· T_s | 5120· T_s |
| 6 | 19760· T_s | | | 23040· T_s | | |
| 7 | 21952· T_s | | | - | - | - |
| 8 | 24144· T_s | | | - | - | - |

Special sub-frame with cyclic prefix uplink

| Special sub-frame configuration | | Duty factor with normal cyclic prefix in uplink | Duty factor with extended cyclic prefix in uplink |
|------------------------------------|-----|---|---|
| Normal cyclic prefix in downlink | 0~4 | 7.13% | 8.33% |
| | 5~9 | 14.3% | 16.7% |
| Extended cyclic prefix in downlink | 0~3 | 7.13% | 8.33% |
| | 4~7 | 14.3% | 16.7% |

So we perform SAR test with maximum duty factor equal to 63.3% by using uplink-downlink configuration 0.

Note: One sub-frame is $30720T_s=1ms$, when UpPTS(uplink) in special sub-frame with extended cyclic prefix, duty factor = $5120/30720=0.167$. There are 5 sub-frames in half frame(3up link), so the final duty factor is $(30720*3+5120)/(30720*5)=63.3\%$ which we used to evaluate the SAR compliance (worst case)

LTE Band 2

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|-----|---------|-----------|-----------------------|--|
| QPSK | 1850.7 | 18607 | 1.4 | 1 | 0 | 23.44 | |
| | | | | 1 | 5 | 23.29 | |
| | | | | 3 | 2 | 22.85 | |
| | | | | 6 | 0 | 22.68 | |
| | | | | 1 | 0 | 23.46 | |
| | | | | 1 | 5 | 23.50 | |
| | 1880 | 18900 | | 3 | 2 | 22.76 | |
| | | | | 6 | 0 | 22.75 | |
| | | | | 1 | 0 | 23.43 | |
| | | | | 1 | 5 | 23.50 | |
| | | | | 3 | 2 | 22.66 | |
| | | | | 6 | 0 | 22.39 | |
| 16QAM | 1850.7 | 18607 | 1.4 | 1 | 0 | 23.24 | |
| | | | | 1 | 5 | 23.31 | |
| | | | | 3 | 2 | 22.02 | |
| | | | | 6 | 0 | 21.89 | |
| | | | | 1 | 0 | 22.83 | |
| | | | | 1 | 5 | 22.83 | |
| | 1880 | 18900 | | 3 | 2 | 21.95 | |
| | | | | 6 | 0 | 21.87 | |
| | | | | 1 | 0 | 23.24 | |
| | | | | 1 | 5 | 23.30 | |
| | | | | 3 | 2 | 21.83 | |
| | | | | 6 | 0 | 21.79 | |
| 64QAM | 1850.7 | 18607 | 1.4 | 1 | 0 | 23.17 | |
| | | | | 1 | 5 | 23.22 | |
| | | | | 3 | 2 | 22.10 | |
| | | | | 6 | 0 | 21.84 | |
| | | | | 1 | 0 | 22.65 | |
| | | | | 1 | 5 | 22.66 | |
| | 1880 | 18900 | | 3 | 2 | 21.90 | |
| | | | | 6 | 0 | 21.88 | |
| | | | | 1 | 0 | 23.10 | |
| | | | | 1 | 5 | 23.11 | |
| | | | | 3 | 2 | 21.83 | |
| | | | | 6 | 0 | 21.79 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1851.5 | 18615 | 3 | 1 | 0 | 23.36 | |
| | | | | 1 | 14 | 23.34 | |
| | | | | 8 | 4 | 22.73 | |
| | | | | 15 | 0 | 22.73 | |
| | 1880 | 18900 | | 1 | 0 | 23.57 | |
| | | | | 1 | 14 | 23.55 | |
| | | | | 8 | 4 | 22.83 | |
| | | | | 15 | 0 | 22.80 | |
| | 1908.5 | 19185 | | 1 | 0 | 23.42 | |
| | | | | 1 | 14 | 23.45 | |
| | | | | 8 | 4 | 22.65 | |
| | | | | 15 | 0 | 22.46 | |
| 16QAM | 1851.5 | 18615 | 3 | 1 | 0 | 23.22 | |
| | | | | 1 | 14 | 23.23 | |
| | | | | 8 | 4 | 21.91 | |
| | | | | 15 | 0 | 21.88 | |
| | 1880 | 18900 | | 1 | 0 | 22.79 | |
| | | | | 1 | 14 | 22.77 | |
| | | | | 8 | 4 | 21.85 | |
| | | | | 15 | 0 | 21.94 | |
| | 1908.5 | 19185 | | 1 | 0 | 23.37 | |
| | | | | 1 | 14 | 23.23 | |
| | | | | 8 | 4 | 21.90 | |
| | | | | 15 | 0 | 21.86 | |
| 64QAM | 1851.5 | 18615 | 3 | 1 | 0 | 23.22 | |
| | | | | 1 | 14 | 23.19 | |
| | | | | 8 | 4 | 22.09 | |
| | | | | 15 | 0 | 21.88 | |
| | 1880 | 18900 | | 1 | 0 | 22.67 | |
| | | | | 1 | 14 | 22.74 | |
| | | | | 8 | 4 | 21.86 | |
| | | | | 15 | 0 | 21.82 | |
| | 1908.5 | 19185 | | 1 | 0 | 23.03 | |
| | | | | 1 | 14 | 23.03 | |
| | | | | 8 | 4 | 21.84 | |
| | | | | 15 | 0 | 21.85 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1852.5 | 18625 | 5 | 1 | 0 | 23.35 | |
| | | | | 1 | 24 | 23.38 | |
| | | | | 12 | 6 | 22.78 | |
| | | | | 25 | 0 | 22.69 | |
| | | | | 1 | 0 | 23.49 | |
| | 1880 | 18900 | | 1 | 24 | 23.54 | |
| | | | | 12 | 6 | 22.83 | |
| | | | | 25 | 0 | 22.77 | |
| | | | | 1 | 0 | 23.40 | |
| | | | | 1 | 24 | 23.46 | |
| 16QAM | 1907.5 | 19175 | 5 | 12 | 6 | 22.57 | |
| | | | | 25 | 0 | 22.52 | |
| | | | | 1 | 0 | 23.22 | |
| | | | | 1 | 24 | 23.29 | |
| | | | | 12 | 6 | 21.95 | |
| | 1852.5 | 18625 | | 25 | 0 | 21.87 | |
| | | | | 1 | 0 | 22.80 | |
| | | | | 1 | 24 | 22.78 | |
| | | | | 12 | 6 | 21.95 | |
| | | | | 25 | 0 | 21.91 | |
| 64QAM | 1880 | 18900 | 5 | 1 | 0 | 23.31 | |
| | | | | 1 | 24 | 23.26 | |
| | | | | 12 | 6 | 21.82 | |
| | | | | 25 | 0 | 21.78 | |
| | | | | 1 | 0 | 23.16 | |
| | 1907.5 | 19175 | | 1 | 24 | 23.14 | |
| | | | | 12 | 6 | 21.99 | |
| | | | | 25 | 0 | 21.84 | |
| | | | | 1 | 0 | 22.72 | |
| | | | | 1 | 24 | 22.67 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1855 | 18650 | 10 | 1 | 0 | 23.29 | |
| | | | | 1 | 49 | 23.42 | |
| | | | | 24 | 12 | 22.82 | |
| | | | | 50 | 0 | 22.73 | |
| | | | | 1 | 0 | 23.49 | |
| | 1880 | 18900 | | 1 | 49 | 23.61 | |
| | | | | 24 | 12 | 22.77 | |
| | | | | 50 | 0 | 22.77 | |
| | | | | 1 | 0 | 23.50 | |
| | | | | 1 | 49 | 23.50 | |
| 16QAM | 1905 | 19150 | 10 | 24 | 12 | 22.67 | |
| | | | | 50 | 0 | 22.42 | |
| | | | | 1 | 0 | 23.25 | |
| | | | | 1 | 49 | 23.26 | |
| | | | | 24 | 12 | 21.94 | |
| | 1855 | 18650 | | 50 | 0 | 21.87 | |
| | | | | 1 | 0 | 22.81 | |
| | | | | 1 | 49 | 22.83 | |
| | | | | 24 | 12 | 21.88 | |
| | | | | 50 | 0 | 21.87 | |
| 64QAM | 1880 | 18900 | 10 | 1 | 0 | 23.27 | |
| | | | | 1 | 49 | 23.28 | |
| | | | | 24 | 12 | 21.79 | |
| | | | | 50 | 0 | 21.77 | |
| | | | | 1 | 0 | 23.18 | |
| | 1905 | 19150 | | 1 | 49 | 23.13 | |
| | | | | 24 | 12 | 22.09 | |
| | | | | 50 | 0 | 21.83 | |
| | | | | 1 | 0 | 22.70 | |
| | | | | 1 | 49 | 22.67 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1857.5 | 18675 | 15 | 1 | 0 | 23.36 | |
| | | | | 1 | 74 | 23.35 | |
| | | | | 40 | 18 | 22.71 | |
| | | | | 75 | 0 | 22.79 | |
| | | | | 1 | 0 | 23.55 | |
| | 1880 | 18900 | | 1 | 74 | 23.60 | |
| | | | | 40 | 18 | 22.82 | |
| | | | | 75 | 0 | 22.75 | |
| | | | | 1 | 0 | 23.48 | |
| | | | | 1 | 74 | 23.42 | |
| 16QAM | 1902.5 | 19125 | | 40 | 18 | 22.62 | |
| | | | | 75 | 0 | 22.45 | |
| | | | | 1 | 0 | 23.22 | |
| | | | | 1 | 74 | 23.32 | |
| | | | | 40 | 18 | 21.93 | |
| | 1857.5 | 18675 | | 75 | 0 | 21.91 | |
| | | | | 1 | 0 | 22.82 | |
| | | | | 1 | 74 | 22.73 | |
| | | | | 40 | 18 | 21.85 | |
| | | | | 75 | 0 | 21.97 | |
| 64QAM | 1880 | 18900 | | 1 | 0 | 23.26 | |
| | | | | 1 | 74 | 23.31 | |
| | | | | 40 | 18 | 21.76 | |
| | | | | 75 | 0 | 21.88 | |
| | | | | 1 | 0 | 23.22 | |
| | 1902.5 | 19125 | | 1 | 74 | 23.22 | |
| | | | | 40 | 18 | 22.00 | |
| | | | | 75 | 0 | 21.84 | |
| | | | | 1 | 0 | 22.78 | |
| | | | | 1 | 74 | 22.73 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1860 | 18700 | 20 | 1 | 0 | 23.44 | |
| | | | | 1 | 99 | 23.44 | |
| | | | | 50 | 25 | 22.86 | |
| | | | | 100 | 0 | 22.83 | |
| | | | | 1 | 0 | 23.61 | |
| | 1880 | 18900 | | 1 | 99 | 23.61 | |
| | | | | 50 | 25 | 22.90 | |
| | | | | 100 | 0 | 22.89 | |
| | | | | 1 | 0 | 23.55 | |
| | | | | 1 | 99 | 23.55 | |
| 16QAM | 1860 | 18700 | 20 | 50 | 25 | 22.69 | |
| | | | | 100 | 0 | 22.53 | |
| | | | | 1 | 0 | 23.34 | |
| | | | | 1 | 99 | 23.34 | |
| | | | | 50 | 25 | 22.02 | |
| | 1880 | 18900 | | 100 | 0 | 21.95 | |
| | | | | 1 | 0 | 22.85 | |
| | | | | 1 | 99 | 22.85 | |
| | | | | 50 | 25 | 21.99 | |
| | | | | 100 | 0 | 21.97 | |
| 64QAM | 1860 | 18700 | 20 | 1 | 0 | 23.37 | |
| | | | | 1 | 99 | 23.37 | |
| | | | | 50 | 25 | 21.90 | |
| | | | | 100 | 0 | 21.89 | |
| | | | | 1 | 0 | 23.24 | |
| | 1880 | 18900 | | 1 | 99 | 23.24 | |
| | | | | 50 | 25 | 22.12 | |
| | | | | 100 | 0 | 21.94 | |
| | | | | 1 | 0 | 22.79 | |
| | | | | 1 | 99 | 22.79 | |
| | 1900 | 19100 | | 50 | 25 | 21.93 | |
| | | | | 100 | 0 | 21.92 | |
| | | | | 1 | 0 | 23.17 | |
| | | | | 1 | 99 | 23.17 | |
| | | | | 50 | 25 | 21.87 | |
| | | | | 100 | 0 | 21.86 | |

LTE Band 4

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|-----|---------|-----------|-----------------------|--|
| QPSK | 1710.7 | 19957 | 1.4 | 1 | 0 | 23.44 | |
| | | | | 1 | 5 | 23.48 | |
| | | | | 3 | 2 | 22.59 | |
| | | | | 6 | 0 | 22.51 | |
| | 1732.5 | 20175 | | 1 | 0 | 23.40 | |
| | | | | 1 | 5 | 23.49 | |
| | | | | 3 | 2 | 22.43 | |
| | | | | 6 | 0 | 22.35 | |
| | 1754.3 | 20393 | | 1 | 0 | 23.14 | |
| | | | | 1 | 5 | 23.14 | |
| | | | | 3 | 2 | 22.47 | |
| | | | | 6 | 0 | 22.34 | |
| 16QAM | 1710.7 | 19957 | 1.4 | 1 | 0 | 23.01 | |
| | | | | 1 | 5 | 22.98 | |
| | | | | 3 | 2 | 21.61 | |
| | | | | 6 | 0 | 21.62 | |
| | 1732.5 | 20175 | | 1 | 0 | 23.13 | |
| | | | | 1 | 5 | 23.18 | |
| | | | | 3 | 2 | 21.59 | |
| | | | | 6 | 0 | 21.59 | |
| | 1754.3 | 20393 | | 1 | 0 | 22.98 | |
| | | | | 1 | 5 | 22.98 | |
| | | | | 3 | 2 | 21.71 | |
| | | | | 6 | 0 | 21.55 | |
| 64QAM | 1710.7 | 19957 | 1.4 | 1 | 0 | 22.95 | |
| | | | | 1 | 5 | 22.97 | |
| | | | | 3 | 2 | 21.38 | |
| | | | | 6 | 0 | 21.45 | |
| | 1732.5 | 20175 | | 1 | 0 | 22.97 | |
| | | | | 1 | 5 | 22.96 | |
| | | | | 3 | 2 | 21.59 | |
| | | | | 6 | 0 | 21.58 | |
| | 1754.3 | 20393 | | 1 | 0 | 23.03 | |
| | | | | 1 | 5 | 23.04 | |
| | | | | 3 | 2 | 21.57 | |
| | | | | 6 | 0 | 21.59 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1711.5 | 19965 | 3 | 1 | 0 | 23.54 | |
| | | | | 1 | 14 | 23.51 | |
| | | | | 8 | 4 | 22.66 | |
| | | | | 15 | 0 | 22.51 | |
| | | | | 1 | 0 | 23.50 | |
| | | | | 1 | 14 | 23.49 | |
| | 1732.5 | 20175 | | 8 | 4 | 22.46 | |
| | | | | 15 | 0 | 22.36 | |
| | | | | 1 | 0 | 23.14 | |
| | | | | 1 | 14 | 23.13 | |
| | | | | 8 | 4 | 22.43 | |
| | | | | 15 | 0 | 22.38 | |
| 16QAM | 1711.5 | 19965 | 3 | 1 | 0 | 22.91 | |
| | | | | 1 | 14 | 23.02 | |
| | | | | 8 | 4 | 21.50 | |
| | | | | 15 | 0 | 21.58 | |
| | | | | 1 | 0 | 23.07 | |
| | | | | 1 | 14 | 23.14 | |
| | 1732.5 | 20175 | | 8 | 4 | 21.60 | |
| | | | | 15 | 0 | 21.48 | |
| | | | | 1 | 0 | 22.99 | |
| | | | | 1 | 14 | 23.03 | |
| | | | | 8 | 4 | 21.66 | |
| | | | | 15 | 0 | 21.59 | |
| 64QAM | 1711.5 | 19965 | 3 | 1 | 0 | 22.85 | |
| | | | | 1 | 14 | 22.85 | |
| | | | | 8 | 4 | 21.46 | |
| | | | | 15 | 0 | 21.39 | |
| | | | | 1 | 0 | 22.96 | |
| | | | | 1 | 14 | 22.99 | |
| | 1732.5 | 20175 | | 8 | 4 | 21.59 | |
| | | | | 15 | 0 | 21.50 | |
| | | | | 1 | 0 | 23.02 | |
| | | | | 1 | 14 | 22.99 | |
| | | | | 8 | 4 | 21.66 | |
| | | | | 15 | 0 | 21.54 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1712.5 | 19975 | 5 | 1 | 0 | 23.43 | |
| | | | | 1 | 24 | 23.46 | |
| | | | | 12 | 6 | 22.59 | |
| | | | | 25 | 0 | 22.47 | |
| | | | | 1 | 0 | 23.47 | |
| | | | | 1 | 24 | 23.51 | |
| | 1732.5 | 20175 | | 12 | 6 | 22.38 | |
| | | | | 25 | 0 | 22.31 | |
| | | | | 1 | 0 | 23.12 | |
| | | | | 1 | 24 | 23.13 | |
| | | | | 12 | 6 | 22.34 | |
| | | | | 25 | 0 | 22.40 | |
| 16QAM | 1712.5 | 19975 | 5 | 1 | 0 | 22.95 | |
| | | | | 1 | 24 | 22.92 | |
| | | | | 12 | 6 | 21.62 | |
| | | | | 25 | 0 | 21.59 | |
| | | | | 1 | 0 | 23.14 | |
| | | | | 1 | 24 | 23.10 | |
| | 1732.5 | 20175 | | 12 | 6 | 21.54 | |
| | | | | 25 | 0 | 21.58 | |
| | | | | 1 | 0 | 22.95 | |
| | | | | 1 | 24 | 23.06 | |
| | | | | 12 | 6 | 21.65 | |
| | | | | 25 | 0 | 21.63 | |
| 64QAM | 1712.5 | 19975 | 5 | 1 | 0 | 22.92 | |
| | | | | 1 | 24 | 22.86 | |
| | | | | 12 | 6 | 21.37 | |
| | | | | 25 | 0 | 21.33 | |
| | | | | 1 | 0 | 23.02 | |
| | | | | 1 | 24 | 23.02 | |
| | 1732.5 | 20175 | | 12 | 6 | 21.51 | |
| | | | | 25 | 0 | 21.50 | |
| | | | | 1 | 0 | 22.95 | |
| | | | | 1 | 24 | 23.04 | |
| | | | | 12 | 6 | 21.59 | |
| | | | | 25 | 0 | 21.58 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1715 | 20000 | 10 | 1 | 0 | 23.49 | |
| | | | | 1 | 49 | 23.56 | |
| | | | | 24 | 12 | 22.59 | |
| | | | | 50 | 0 | 22.53 | |
| | | | | 1 | 0 | 23.47 | |
| | 1732.5 | 20175 | | 1 | 49 | 23.47 | |
| | | | | 24 | 12 | 22.42 | |
| | | | | 50 | 0 | 22.40 | |
| | | | | 1 | 0 | 23.08 | |
| | | | | 1 | 49 | 23.07 | |
| 16QAM | 1715 | 20000 | 10 | 24 | 12 | 22.46 | |
| | | | | 50 | 0 | 22.40 | |
| | | | | 1 | 0 | 22.93 | |
| | | | | 1 | 49 | 22.96 | |
| | | | | 24 | 12 | 21.53 | |
| | 1732.5 | 20175 | | 50 | 0 | 21.51 | |
| | | | | 1 | 0 | 23.17 | |
| | | | | 1 | 49 | 23.06 | |
| | | | | 24 | 12 | 21.54 | |
| | | | | 50 | 0 | 21.52 | |
| 64QAM | 1715 | 20000 | 10 | 1 | 0 | 23.04 | |
| | | | | 1 | 49 | 23.08 | |
| | | | | 24 | 12 | 21.63 | |
| | | | | 50 | 0 | 21.56 | |
| | 1732.5 | 20175 | | 1 | 0 | 22.96 | |
| | | | | 1 | 49 | 22.83 | |
| | | | | 24 | 12 | 21.46 | |
| | | | | 50 | 0 | 21.41 | |
| | | | | 1 | 0 | 22.99 | |
| | 1750 | 20350 | | 1 | 49 | 23.08 | |
| | | | | 24 | 12 | 21.53 | |
| | | | | 50 | 0 | 21.61 | |
| | | | | 1 | 0 | 23.01 | |
| | | | | 1 | 49 | 23.02 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1717.5 | 20025 | 15 | 1 | 0 | 23.48 | |
| | | | | 1 | 74 | 23.49 | |
| | | | | 40 | 18 | 22.64 | |
| | | | | 75 | 0 | 22.47 | |
| | | | | 1 | 0 | 23.44 | |
| | | | | 1 | 74 | 23.45 | |
| | 1732.5 | 20175 | | 40 | 18 | 22.44 | |
| | | | | 75 | 0 | 22.40 | |
| | | | | 1 | 0 | 23.11 | |
| | | | | 1 | 74 | 23.10 | |
| | | | | 40 | 18 | 22.41 | |
| | | | | 75 | 0 | 22.47 | |
| 16QAM | 1717.5 | 20025 | 15 | 1 | 0 | 22.92 | |
| | | | | 1 | 74 | 22.91 | |
| | | | | 40 | 18 | 21.50 | |
| | | | | 75 | 0 | 21.53 | |
| | | | | 1 | 0 | 23.07 | |
| | | | | 1 | 74 | 23.17 | |
| | 1732.5 | 20175 | | 40 | 18 | 21.56 | |
| | | | | 75 | 0 | 21.48 | |
| | | | | 1 | 0 | 23.05 | |
| | | | | 1 | 74 | 22.97 | |
| | | | | 40 | 18 | 21.62 | |
| | | | | 75 | 0 | 21.56 | |
| 64QAM | 1717.5 | 20025 | 15 | 1 | 0 | 22.94 | |
| | | | | 1 | 74 | 22.98 | |
| | | | | 40 | 18 | 21.36 | |
| | | | | 75 | 0 | 21.45 | |
| | | | | 1 | 0 | 23.02 | |
| | | | | 1 | 74 | 23.06 | |
| | 1732.5 | 20175 | | 40 | 18 | 21.63 | |
| | | | | 75 | 0 | 21.50 | |
| | | | | 1 | 0 | 23.00 | |
| | | | | 1 | 74 | 23.01 | |
| | | | | 40 | 18 | 21.57 | |
| | | | | 75 | 0 | 21.51 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 1720 | 20050 | 20 | 1 | 0 | 23.56 | |
| | | | | 1 | 99 | 23.56 | |
| | | | | 50 | 25 | 22.66 | |
| | | | | 100 | 0 | 22.59 | |
| | | | | 1 | 0 | 23.54 | |
| | | | | 1 | 99 | 23.54 | |
| | 1732.5 | 20175 | | 50 | 25 | 22.52 | |
| | | | | 100 | 0 | 22.43 | |
| | | | | 1 | 0 | 23.14 | |
| | | | | 1 | 99 | 23.14 | |
| | | | | 50 | 25 | 22.49 | |
| | | | | 100 | 0 | 22.48 | |
| 16QAM | 1720 | 20050 | 20 | 1 | 0 | 23.05 | |
| | | | | 1 | 99 | 23.05 | |
| | | | | 50 | 25 | 21.65 | |
| | | | | 100 | 0 | 21.63 | |
| | | | | 1 | 0 | 23.18 | |
| | | | | 1 | 99 | 23.18 | |
| | 1732.5 | 20175 | | 50 | 25 | 21.62 | |
| | | | | 100 | 0 | 21.61 | |
| | | | | 1 | 0 | 23.09 | |
| | | | | 1 | 99 | 23.09 | |
| | | | | 50 | 25 | 21.71 | |
| | | | | 100 | 0 | 21.69 | |
| 64QAM | 1720 | 20050 | 20 | 1 | 0 | 22.98 | |
| | | | | 1 | 99 | 22.98 | |
| | | | | 50 | 25 | 21.47 | |
| | | | | 100 | 0 | 21.46 | |
| | | | | 1 | 0 | 23.08 | |
| | | | | 1 | 99 | 23.08 | |
| | 1732.5 | 20175 | | 50 | 25 | 21.63 | |
| | | | | 100 | 0 | 21.62 | |
| | | | | 1 | 0 | 23.08 | |
| | | | | 1 | 99 | 23.08 | |
| | | | | 50 | 25 | 21.67 | |
| | | | | 100 | 0 | 21.64 | |

LTE Band 5

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|-----|---------|-----------|-----------------------|--|
| QPSK | 824.7 | 20407 | 1.4 | 1 | 0 | 22.92 | |
| | | | | 1 | 5 | 22.85 | |
| | | | | 3 | 2 | 22.19 | |
| | | | | 6 | 0 | 22.18 | |
| | | | | 1 | 0 | 22.57 | |
| | | | | 1 | 5 | 22.58 | |
| | 836.5 | 20525 | | 3 | 2 | 22.22 | |
| | | | | 6 | 0 | 22.07 | |
| | | | | 1 | 0 | 22.76 | |
| | | | | 1 | 5 | 22.75 | |
| | | | | 3 | 2 | 22.22 | |
| | | | | 6 | 0 | 22.14 | |
| 16QAM | 824.7 | 20407 | 1.4 | 1 | 0 | 22.51 | |
| | | | | 1 | 5 | 22.48 | |
| | | | | 3 | 2 | 21.20 | |
| | | | | 6 | 0 | 21.20 | |
| | | | | 1 | 0 | 22.51 | |
| | | | | 1 | 5 | 22.49 | |
| | 836.5 | 20525 | | 3 | 2 | 21.35 | |
| | | | | 6 | 0 | 21.20 | |
| | | | | 1 | 0 | 22.46 | |
| | | | | 1 | 5 | 22.42 | |
| | | | | 3 | 2 | 21.43 | |
| | | | | 6 | 0 | 21.35 | |
| 64QAM | 824.7 | 20407 | 1.4 | 1 | 0 | 22.48 | |
| | | | | 1 | 5 | 22.52 | |
| | | | | 3 | 2 | 21.13 | |
| | | | | 6 | 0 | 21.04 | |
| | | | | 1 | 0 | 22.48 | |
| | | | | 1 | 5 | 22.48 | |
| | 836.5 | 20525 | | 3 | 2 | 21.34 | |
| | | | | 6 | 0 | 21.28 | |
| | | | | 1 | 0 | 22.24 | |
| | | | | 1 | 5 | 22.24 | |
| | | | | 3 | 2 | 21.42 | |
| | | | | 6 | 0 | 21.36 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 825.5 | 20415 | 3 | 1 | 0 | 22.86 | |
| | | | | 1 | 14 | 22.88 | |
| | | | | 8 | 4 | 22.17 | |
| | | | | 15 | 0 | 22.06 | |
| | | | | 1 | 0 | 22.52 | |
| | | | | 1 | 14 | 22.55 | |
| | 836.5 | 20525 | | 8 | 4 | 22.18 | |
| | | | | 15 | 0 | 21.98 | |
| | | | | 1 | 0 | 22.75 | |
| | | | | 1 | 14 | 22.70 | |
| | | | | 8 | 4 | 22.13 | |
| | | | | 15 | 0 | 22.04 | |
| 16QAM | 825.5 | 20415 | 3 | 1 | 0 | 22.46 | |
| | | | | 1 | 14 | 22.50 | |
| | | | | 8 | 4 | 21.21 | |
| | | | | 15 | 0 | 21.23 | |
| | | | | 1 | 0 | 22.48 | |
| | | | | 1 | 14 | 22.52 | |
| | 836.5 | 20525 | | 8 | 4 | 21.30 | |
| | | | | 15 | 0 | 21.16 | |
| | | | | 1 | 0 | 22.40 | |
| | | | | 1 | 14 | 22.43 | |
| | | | | 8 | 4 | 21.40 | |
| | | | | 15 | 0 | 21.26 | |
| 64QAM | 825.5 | 20415 | 3 | 1 | 0 | 22.49 | |
| | | | | 1 | 14 | 22.51 | |
| | | | | 8 | 4 | 21.17 | |
| | | | | 15 | 0 | 21.07 | |
| | | | | 1 | 0 | 22.34 | |
| | | | | 1 | 14 | 22.36 | |
| | 836.5 | 20525 | | 8 | 4 | 21.34 | |
| | | | | 15 | 0 | 21.37 | |
| | | | | 1 | 0 | 22.25 | |
| | | | | 1 | 14 | 22.28 | |
| | | | | 8 | 4 | 21.37 | |
| | | | | 15 | 0 | 21.30 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 826.5 | 20425 | 5 | 1 | 0 | 22.97 | |
| | | | | 1 | 24 | 22.96 | |
| | | | | 12 | 6 | 22.21 | |
| | | | | 25 | 0 | 22.13 | |
| | | | | 1 | 0 | 22.64 | |
| | 836.5 | 20525 | | 1 | 24 | 22.59 | |
| | | | | 12 | 6 | 22.17 | |
| | | | | 25 | 0 | 22.13 | |
| | | | | 1 | 0 | 22.74 | |
| | | | | 1 | 24 | 22.84 | |
| | | | | 12 | 6 | 22.23 | |
| | | | | 25 | 0 | 22.12 | |
| 16QAM | 826.5 | 20425 | 5 | 1 | 0 | 22.42 | |
| | | | | 1 | 24 | 22.46 | |
| | | | | 12 | 6 | 21.22 | |
| | | | | 25 | 0 | 21.17 | |
| | 836.5 | 20525 | | 1 | 0 | 22.55 | |
| | | | | 1 | 24 | 22.47 | |
| | | | | 12 | 6 | 21.43 | |
| | | | | 25 | 0 | 21.15 | |
| | | | | 1 | 0 | 22.38 | |
| | | | | 1 | 24 | 22.34 | |
| | | | | 12 | 6 | 21.49 | |
| | | | | 25 | 0 | 21.36 | |
| 64QAM | 826.5 | 20425 | 5 | 1 | 0 | 22.41 | |
| | | | | 1 | 24 | 22.49 | |
| | | | | 12 | 6 | 21.14 | |
| | | | | 25 | 0 | 21.17 | |
| | 836.5 | 20525 | | 1 | 0 | 22.44 | |
| | | | | 1 | 24 | 22.42 | |
| | | | | 12 | 6 | 21.27 | |
| | | | | 25 | 0 | 21.33 | |
| | | | | 1 | 0 | 22.37 | |
| | | | | 1 | 24 | 22.30 | |
| | | | | 12 | 6 | 21.39 | |
| | | | | 25 | 0 | 21.22 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 829 | 20450 | 10 | 1 | 0 | 22.98 | |
| | | | | 1 | 49 | 22.98 | |
| | | | | 24 | 12 | 22.24 | |
| | | | | 50 | 0 | 22.21 | |
| | | | | 1 | 0 | 22.65 | |
| | 836.5 | 20525 | | 1 | 49 | 22.65 | |
| | | | | 24 | 12 | 22.29 | |
| | | | | 50 | 0 | 22.13 | |
| | | | | 1 | 0 | 22.84 | |
| | | | | 1 | 49 | 22.84 | |
| 16QAM | 829 | 20450 | 10 | 24 | 12 | 22.26 | |
| | | | | 50 | 0 | 22.18 | |
| | | | | 1 | 0 | 22.56 | |
| | | | | 1 | 49 | 22.56 | |
| | | | | 24 | 12 | 21.32 | |
| | 836.5 | 20525 | | 50 | 0 | 21.23 | |
| | | | | 1 | 0 | 22.57 | |
| | | | | 1 | 49 | 22.57 | |
| | | | | 24 | 12 | 21.45 | |
| | | | | 50 | 0 | 21.24 | |
| | 844 | 20600 | | 1 | 0 | 22.47 | |
| | | | | 1 | 49 | 22.47 | |
| | | | | 24 | 12 | 21.55 | |
| | | | | 50 | 0 | 21.38 | |
| | | | | 1 | 0 | 22.54 | |
| 64QAM | 829 | 20450 | 10 | 1 | 49 | 22.54 | |
| | | | | 24 | 12 | 21.27 | |
| | | | | 50 | 0 | 21.18 | |
| | | | | 1 | 0 | 22.49 | |
| | | | | 1 | 49 | 22.49 | |
| | 836.5 | 20525 | | 24 | 12 | 21.42 | |
| | | | | 50 | 0 | 21.38 | |
| | | | | 1 | 0 | 22.38 | |
| | | | | 1 | 49 | 22.38 | |
| | | | | 24 | 12 | 21.47 | |
| | 844 | 20600 | | 50 | 0 | 21.36 | |

LTE Band 7

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 2502.5 | 20775 | 5 | 1 | 0 | 15.22 | |
| | | | | 1 | 24 | 15.12 | |
| | | | | 12 | 6 | 14.64 | |
| | | | | 25 | 0 | 14.63 | |
| | 2535 | 21100 | | 1 | 0 | 15.23 | |
| | | | | 1 | 24 | 15.13 | |
| | | | | 12 | 6 | 14.59 | |
| | | | | 25 | 0 | 14.74 | |
| | 2567.5 | 21425 | | 1 | 0 | 15.12 | |
| | | | | 1 | 24 | 15.17 | |
| | | | | 12 | 6 | 14.76 | |
| | | | | 25 | 0 | 14.61 | |
| 16QAM | 2502.5 | 20775 | 5 | 1 | 0 | 14.88 | |
| | | | | 1 | 24 | 14.99 | |
| | | | | 12 | 6 | 13.62 | |
| | | | | 25 | 0 | 13.42 | |
| | 2535 | 21100 | | 1 | 0 | 14.85 | |
| | | | | 1 | 24 | 14.87 | |
| | | | | 12 | 6 | 13.71 | |
| | | | | 25 | 0 | 13.67 | |
| | 2567.5 | 21425 | | 1 | 0 | 14.87 | |
| | | | | 1 | 24 | 14.87 | |
| | | | | 12 | 6 | 13.75 | |
| | | | | 25 | 0 | 13.40 | |
| 64QAM | 2502.5 | 20775 | 5 | 1 | 0 | 14.59 | |
| | | | | 1 | 24 | 14.85 | |
| | | | | 12 | 6 | 13.07 | |
| | | | | 25 | 0 | 13.34 | |
| | 2535 | 21100 | | 1 | 0 | 14.64 | |
| | | | | 1 | 24 | 14.89 | |
| | | | | 12 | 6 | 13.33 | |
| | | | | 25 | 0 | 13.54 | |
| | 2567.5 | 21425 | | 1 | 0 | 14.79 | |
| | | | | 1 | 24 | 14.89 | |
| | | | | 12 | 6 | 13.04 | |
| | | | | 25 | 0 | 13.49 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 2505 | 20800 | 10 | 1 | 0 | 15.02 | |
| | | | | 1 | 49 | 14.96 | |
| | | | | 24 | 12 | 14.71 | |
| | | | | 50 | 0 | 14.62 | |
| | | | | 1 | 0 | 15.20 | |
| | 2535 | 21100 | | 1 | 49 | 15.27 | |
| | | | | 24 | 12 | 14.72 | |
| | | | | 50 | 0 | 14.75 | |
| | | | | 1 | 0 | 15.18 | |
| | | | | 1 | 49 | 15.17 | |
| 16QAM | 2505 | 20800 | 10 | 24 | 12 | 14.62 | |
| | | | | 50 | 0 | 14.63 | |
| | | | | 1 | 0 | 15.04 | |
| | | | | 1 | 49 | 14.77 | |
| | | | | 24 | 12 | 13.56 | |
| | 2535 | 21100 | | 50 | 0 | 13.57 | |
| | | | | 1 | 0 | 15.05 | |
| | | | | 1 | 49 | 14.89 | |
| | | | | 24 | 12 | 13.83 | |
| | | | | 50 | 0 | 13.51 | |
| 64QAM | 2505 | 20800 | 10 | 1 | 0 | 14.84 | |
| | | | | 1 | 49 | 14.90 | |
| | | | | 24 | 12 | 13.56 | |
| | | | | 50 | 0 | 13.66 | |
| | 2535 | 21100 | | 1 | 0 | 14.58 | |
| | | | | 1 | 49 | 14.90 | |
| | | | | 24 | 12 | 13.08 | |
| | | | | 50 | 0 | 13.58 | |
| | | | | 1 | 0 | 14.86 | |
| | 2565 | 21400 | | 1 | 49 | 14.93 | |
| | | | | 24 | 12 | 13.36 | |
| | | | | 50 | 0 | 13.39 | |
| | | | | 1 | 0 | 14.76 | |
| | | | | 1 | 49 | 14.78 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 2507.5 | 20825 | 15 | 1 | 0 | 15.04 | |
| | | | | 1 | 74 | 14.97 | |
| | | | | 40 | 18 | 14.49 | |
| | | | | 75 | 0 | 14.51 | |
| | | | | 1 | 0 | 15.17 | |
| | | | | 1 | 74 | 15.19 | |
| | 2535 | 21100 | | 40 | 18 | 14.80 | |
| | | | | 75 | 0 | 14.58 | |
| | | | | 1 | 0 | 15.19 | |
| | | | | 1 | 74 | 15.02 | |
| | | | | 40 | 18 | 14.65 | |
| | | | | 75 | 0 | 14.66 | |
| 16QAM | 2507.5 | 20825 | 15 | 1 | 0 | 14.92 | |
| | | | | 1 | 74 | 15.01 | |
| | | | | 40 | 18 | 13.57 | |
| | | | | 75 | 0 | 13.57 | |
| | | | | 1 | 0 | 15.08 | |
| | | | | 1 | 74 | 14.91 | |
| | 2535 | 21100 | | 40 | 18 | 13.74 | |
| | | | | 75 | 0 | 13.45 | |
| | | | | 1 | 0 | 14.93 | |
| | | | | 1 | 74 | 15.01 | |
| | | | | 40 | 18 | 13.68 | |
| | | | | 75 | 0 | 13.63 | |
| 64QAM | 2507.5 | 20825 | 15 | 1 | 0 | 14.61 | |
| | | | | 1 | 74 | 14.97 | |
| | | | | 40 | 18 | 13.24 | |
| | | | | 75 | 0 | 13.65 | |
| | | | | 1 | 0 | 14.73 | |
| | | | | 1 | 74 | 14.86 | |
| | 2535 | 21100 | | 40 | 18 | 13.32 | |
| | | | | 75 | 0 | 13.71 | |
| | | | | 1 | 0 | 14.81 | |
| | | | | 1 | 74 | 15.04 | |
| | | | | 40 | 18 | 13.07 | |
| | | | | 75 | 0 | 13.59 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 2510 | 20850 | 20 | 1 | 0 | 15.24 | |
| | | | | 1 | 99 | 15.22 | |
| | | | | 50 | 25 | 14.74 | |
| | | | | 100 | 0 | 14.64 | |
| | | | | 1 | 0 | 15.09 | |
| | 2535 | 21100 | | 1 | 99 | 15.06 | |
| | | | | 50 | 25 | 14.66 | |
| | | | | 100 | 0 | 14.68 | |
| | | | | 1 | 0 | 15.13 | |
| | | | | 1 | 99 | 14.95 | |
| 16QAM | 2510 | 20850 | 20 | 50 | 25 | 14.66 | |
| | | | | 100 | 0 | 14.58 | |
| | | | | 1 | 0 | 14.88 | |
| | | | | 1 | 99 | 15.00 | |
| | | | | 50 | 25 | 13.55 | |
| | 2535 | 21100 | | 100 | 0 | 13.62 | |
| | | | | 1 | 0 | 14.97 | |
| | | | | 1 | 99 | 14.83 | |
| | | | | 50 | 25 | 13.65 | |
| | | | | 100 | 0 | 13.70 | |
| 64QAM | 2510 | 20850 | 20 | 1 | 0 | 14.98 | |
| | | | | 1 | 99 | 14.87 | |
| | | | | 50 | 25 | 13.64 | |
| | | | | 100 | 0 | 13.44 | |
| | | | | 1 | 0 | 14.62 | |
| | 2535 | 21100 | | 1 | 99 | 15.00 | |
| | | | | 50 | 25 | 13.27 | |
| | | | | 100 | 0 | 13.52 | |
| | | | | 1 | 0 | 14.69 | |
| | | | | 1 | 99 | 15.05 | |
| 2560 | 2510 | 20850 | | 50 | 25 | 13.26 | |
| | | | | 100 | 0 | 13.60 | |
| | | | | 1 | 0 | 14.92 | |
| | | | | 1 | 99 | 14.83 | |
| | | | | 50 | 25 | 13.08 | |
| | 2535 | 21100 | | 100 | 0 | 13.30 | |
| | | | | 1 | 0 | 14.62 | |
| | | | | 1 | 99 | 15.00 | |
| | | | | 50 | 25 | 13.27 | |
| | | | | 100 | 0 | 13.52 | |
| 2560 | 2535 | 21100 | | 1 | 0 | 14.69 | |
| | | | | 1 | 99 | 15.05 | |
| | | | | 50 | 25 | 13.26 | |
| | | | | 100 | 0 | 13.60 | |
| | | | | 1 | 0 | 14.92 | |
| | 2560 | 21350 | | 1 | 99 | 14.83 | |
| | | | | 50 | 25 | 13.08 | |
| | | | | 100 | 0 | 13.30 | |
| | | | | 1 | 0 | 14.62 | |
| | | | | 1 | 99 | 15.00 | |

LTE Band 12

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|-----|---------|-----------|-----------------------|--|
| QPSK | 699.7 | 23017 | 1.4 | 1 | 0 | 22.93 | |
| | | | | 1 | 5 | 22.95 | |
| | | | | 3 | 2 | 22.35 | |
| | | | | 6 | 0 | 22.10 | |
| | | | | 1 | 0 | 22.76 | |
| | | | | 1 | 5 | 22.74 | |
| | 707.5 | 23095 | | 3 | 2 | 22.35 | |
| | | | | 6 | 0 | 22.24 | |
| | | | | 1 | 0 | 22.72 | |
| | | | | 1 | 5 | 22.70 | |
| | | | | 3 | 2 | 22.14 | |
| | | | | 6 | 0 | 22.02 | |
| 16QAM | 699.7 | 23017 | 1.4 | 1 | 0 | 22.76 | |
| | | | | 1 | 5 | 22.73 | |
| | | | | 3 | 2 | 21.65 | |
| | | | | 6 | 0 | 21.38 | |
| | | | | 1 | 0 | 22.56 | |
| | | | | 1 | 5 | 22.48 | |
| | 707.5 | 23095 | | 3 | 2 | 21.53 | |
| | | | | 6 | 0 | 21.35 | |
| | | | | 1 | 0 | 22.47 | |
| | | | | 1 | 5 | 22.53 | |
| | | | | 3 | 2 | 21.44 | |
| | | | | 6 | 0 | 21.42 | |
| 64QAM | 699.7 | 23017 | 1.4 | 1 | 0 | 22.65 | |
| | | | | 1 | 5 | 22.67 | |
| | | | | 3 | 2 | 21.63 | |
| | | | | 6 | 0 | 21.45 | |
| | | | | 1 | 0 | 22.39 | |
| | | | | 1 | 5 | 22.45 | |
| | 707.5 | 23095 | | 3 | 2 | 21.50 | |
| | | | | 6 | 0 | 21.45 | |
| | | | | 1 | 0 | 22.56 | |
| | | | | 1 | 5 | 22.52 | |
| | | | | 3 | 2 | 21.23 | |
| | | | | 6 | 0 | 21.25 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 700.5 | 23025 | 3 | 1 | 0 | 22.90 | |
| | | | | 1 | 14 | 22.98 | |
| | | | | 8 | 4 | 22.35 | |
| | | | | 15 | 0 | 22.09 | |
| | | | | 1 | 0 | 22.71 | |
| | | | | 1 | 14 | 22.68 | |
| | 707.5 | 23095 | | 8 | 4 | 22.37 | |
| | | | | 15 | 0 | 22.09 | |
| | | | | 1 | 0 | 22.78 | |
| | | | | 1 | 14 | 22.68 | |
| | | | | 8 | 4 | 22.05 | |
| | | | | 15 | 0 | 22.11 | |
| 16QAM | 700.5 | 23025 | 3 | 1 | 0 | 22.74 | |
| | | | | 1 | 14 | 22.79 | |
| | | | | 8 | 4 | 21.52 | |
| | | | | 15 | 0 | 21.41 | |
| | | | | 1 | 0 | 22.57 | |
| | | | | 1 | 14 | 22.50 | |
| | 707.5 | 23095 | | 8 | 4 | 21.52 | |
| | | | | 15 | 0 | 21.42 | |
| | | | | 1 | 0 | 22.53 | |
| | | | | 1 | 14 | 22.52 | |
| | | | | 8 | 4 | 21.39 | |
| | | | | 15 | 0 | 21.42 | |
| 64QAM | 700.5 | 23025 | 3 | 1 | 0 | 22.70 | |
| | | | | 1 | 14 | 22.64 | |
| | | | | 8 | 4 | 21.58 | |
| | | | | 15 | 0 | 21.50 | |
| | | | | 1 | 0 | 22.42 | |
| | | | | 1 | 14 | 22.37 | |
| | 707.5 | 23095 | | 8 | 4 | 21.44 | |
| | | | | 15 | 0 | 21.37 | |
| | | | | 1 | 0 | 22.55 | |
| | | | | 1 | 14 | 22.45 | |
| | | | | 8 | 4 | 21.37 | |
| | | | | 15 | 0 | 21.27 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 701.5 | 23035 | 5 | 1 | 0 | 22.84 | |
| | | | | 1 | 24 | 22.98 | |
| | | | | 12 | 6 | 22.22 | |
| | | | | 25 | 0 | 22.09 | |
| | | | | 1 | 0 | 22.70 | |
| | | | | 1 | 24 | 22.67 | |
| | 707.5 | 23095 | | 12 | 6 | 22.24 | |
| | | | | 25 | 0 | 22.19 | |
| | | | | 1 | 0 | 22.70 | |
| | | | | 1 | 24 | 22.70 | |
| | | | | 12 | 6 | 22.15 | |
| | | | | 25 | 0 | 22.05 | |
| 16QAM | 701.5 | 23035 | 5 | 1 | 0 | 22.66 | |
| | | | | 1 | 24 | 22.74 | |
| | | | | 12 | 6 | 21.65 | |
| | | | | 25 | 0 | 21.38 | |
| | | | | 1 | 0 | 22.49 | |
| | | | | 1 | 24 | 22.43 | |
| | 707.5 | 23095 | | 12 | 6 | 21.52 | |
| | | | | 25 | 0 | 21.37 | |
| | | | | 1 | 0 | 22.47 | |
| | | | | 1 | 24 | 22.60 | |
| | | | | 12 | 6 | 21.39 | |
| | | | | 25 | 0 | 21.33 | |
| 64QAM | 701.5 | 23035 | 5 | 1 | 0 | 22.64 | |
| | | | | 1 | 24 | 22.71 | |
| | | | | 12 | 6 | 21.56 | |
| | | | | 25 | 0 | 21.43 | |
| | | | | 1 | 0 | 22.41 | |
| | | | | 1 | 24 | 22.46 | |
| | 707.5 | 23095 | | 12 | 6 | 21.40 | |
| | | | | 25 | 0 | 21.36 | |
| | | | | 1 | 0 | 22.52 | |
| | | | | 1 | 24 | 22.50 | |
| | | | | 12 | 6 | 21.28 | |
| | | | | 25 | 0 | 21.32 | |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) | |
|------------|-------------------------|------------|----|---------|-----------|-----------------------|--|
| QPSK | 704 | 23060 | 10 | 1 | 0 | 22.98 | |
| | | | | 1 | 49 | 22.98 | |
| | | | | 24 | 12 | 22.36 | |
| | | | | 50 | 0 | 22.24 | |
| | | | | 1 | 0 | 22.79 | |
| | 707.5 | 23095 | | 1 | 49 | 22.79 | |
| | | | | 24 | 12 | 22.38 | |
| | | | | 50 | 0 | 22.24 | |
| | | | | 1 | 0 | 22.82 | |
| | | | | 1 | 49 | 22.82 | |
| 16QAM | 704 | 23060 | 10 | 24 | 12 | 22.17 | |
| | | | | 50 | 0 | 22.16 | |
| | | | | 1 | 0 | 22.81 | |
| | | | | 1 | 49 | 22.81 | |
| | | | | 24 | 12 | 21.67 | |
| | 707.5 | 23095 | | 50 | 0 | 21.50 | |
| | | | | 1 | 0 | 22.58 | |
| | | | | 1 | 49 | 22.58 | |
| | | | | 24 | 12 | 21.61 | |
| | | | | 50 | 0 | 21.45 | |
| | 711 | 23130 | | 1 | 0 | 22.61 | |
| | | | | 1 | 49 | 22.61 | |
| | | | | 24 | 12 | 21.46 | |
| | | | | 50 | 0 | 21.43 | |
| | | | | 1 | 0 | 22.78 | |
| 64QAM | 704 | 23060 | 10 | 1 | 49 | 22.78 | |
| | | | | 24 | 12 | 21.64 | |
| | | | | 50 | 0 | 21.56 | |
| | | | | 1 | 0 | 22.49 | |
| | | | | 1 | 49 | 22.49 | |
| | 707.5 | 23095 | | 24 | 12 | 21.53 | |
| | | | | 50 | 0 | 21.47 | |
| | | | | 1 | 0 | 22.58 | |
| | | | | 1 | 49 | 22.58 | |
| | | | | 24 | 12 | 21.37 | |
| | 711 | 23130 | | 50 | 0 | 21.34 | |

6.5 Bluetooth Measurement result

BT

| Modulation type | Average Power Output (dBm) | | |
|-----------------|----------------------------|---------------|---------------|
| | 2402MHz(Ch0) | 2441MHz(Ch39) | 2480MHz(Ch78) |
| GFSK | 1.36 | 1.91 | 1.16 |
| $\pi/4$ DQPSK | 1.14 | 1.09 | 1.15 |
| 8DPSK | 1.22 | 1.23 | 1.24 |

BLE

| Modulation type | Average Power Output (dBm) | | |
|-----------------|----------------------------|-------------------|-------------------|
| | 2402MHz (Ch0) | 2440MHz (Ch19) | 2480MHz (Ch39) |
| GFSK (LE 1Mbps) | -3.29 | -0.93 | -0.37 |

6.6 Wi-Fi Measurement result

WIFI 2.4GHz

| Modulation type | Average power output (dBm) | | |
|-----------------|----------------------------|---------|---------|
| | 2412MHz | 2437MHz | 2462MHz |
| 11b | 16.81 | 17.37 | 16.29 |
| 11g | 16.32 | 17.75 | 17.02 |
| 11n HT20 | 15.35 | 16.98 | 16.43 |

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

Method1:

According to the KDB447498 4.3.1 (1)

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

$f(\text{GHz})$ 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 is applied to determine SAR test exclusion.

This is equivalent to $[(\text{max. power of channel, including tune-up tolerance, mW}) / (60/\sqrt{f(\text{GHz})} \text{ mW})] \cdot [20 \text{ mm} / (\text{min. test separation distance, mm})] \leq 1.0$ for 1-g SAR; also see Appendix A for approximate exclusion threshold values at selected frequencies and distances.

Method2:

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.

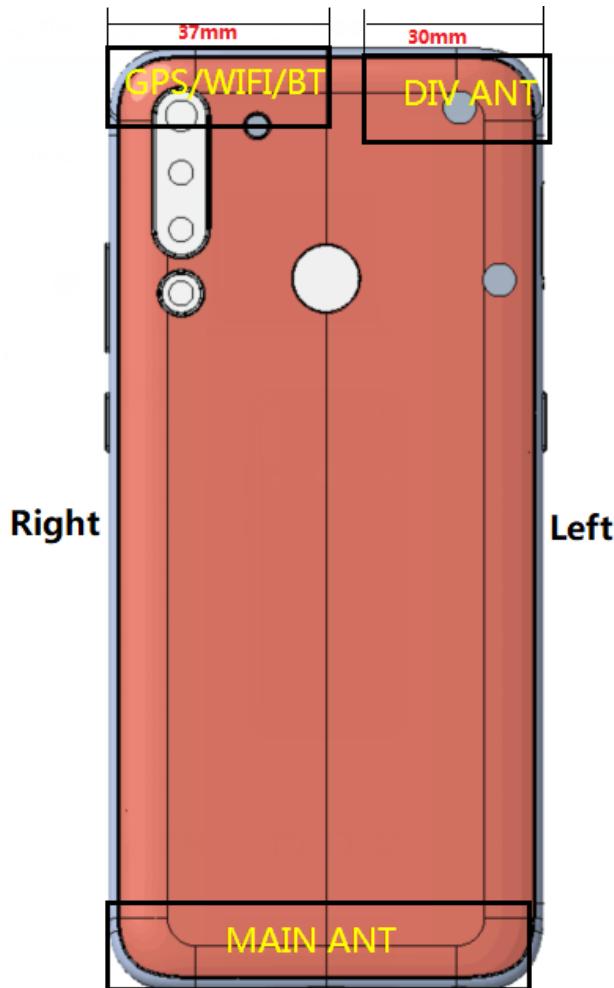
| MHz | 5 | 10 | 15 | 20 | 25 | mm |
|------|----|----|-----|-----|-----|--|
| 150 | 39 | 77 | 116 | 155 | 194 | <i>SAR Test Exclusion Threshold (mW)</i> |
| 300 | 27 | 55 | 82 | 110 | 137 | |
| 450 | 22 | 45 | 67 | 89 | 112 | |
| 835 | 16 | 33 | 49 | 66 | 82 | |
| 900 | 16 | 32 | 47 | 63 | 79 | |
| 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

| Band/Mode | Max conducted power adjusted for tune-up tolerance(mW) | Position | SAR test exclusion threshold (mW) | Standalone SAR Required |
|---------------|--|----------|-----------------------------------|-------------------------|
| 2.4GHz BT/BLE | 1.6 | Head | 10 | No |
| | | Body | 19 | No |
| 2.4GHz Wi-Fi | 63.1 | Head | 10 | Yes |
| | | Body | 19 | Yes |

6.8 RF exposure conditions

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



Main antenna (Antenna Label:A):

LTE FDD B2/4/5/12 RX&TX ,B7 RX

WCDMA B 2/4/5 RX&TXa

GSM 850/1900 RX&TX

DIV antenna(Antenna Label:B):

LTE FDD 7 RX&TX, B2/4/5/12 RX

WCDMA B2/4/5 RX

WiFi/BT 2.4G 2412MHz~2472MHz & GPS: 1570 MHz~1620 MHz

Note: we defined these position when we face the screen of EUT, the reason why we perform SAR test for these edges is that the structures of antennas is close to our body, and for the other edges do not necessary cause we already consider the worst case.

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 | / |

For WLAN

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

For BT/BLE

| Test Configurations | Estimated SAR | Note |
|---------------------|---------------|------------------------|
| Left Touch | Yes | Excluded from SAR test |
| Left Tilt (15°) | Yes | |
| Right Touch | Yes | |
| Right Tilt (15°) | Yes | |

6.8.2 Body Exposure conditions

For WWAN

| Test Configurations | SAR Required | Note |
|---------------------|--------------|------|
| Back | Yes | / |
| Front | Yes | / |

For WLAN

| Test Configurations | SAR Required | Note |
|---------------------|--------------|------|
| Back | Yes | / |
| Front | Yes | / |

For BT/BLE

| Test Configurations | Estimated SAR | Note |
|---------------------|---------------|------------------------|
| Back | Yes | Excluded from SAR test |
| Front | Yes | |

6.8.3 Hotspot Exposure conditions

For WWAN (except LTE B7)

| Test Configurations | SAR Required | Antenna-to-edge(s) distances |
|---------------------|--------------|------------------------------|
| Back | Yes* | <25mm |
| Front | Yes* | <25mm |
| Top | No | >25mm |
| Bottom | Yes | <25mm |
| Left | Yes | <25mm |
| Right | Yes | <25mm |

For WWAN (only for LTE B7)

| Test Configurations | SAR Required | Antenna-to-edge(s) distances |
|---------------------|--------------|------------------------------|
| Back | Yes* | <25mm |
| Front | Yes* | <25mm |
| Top | Yes | <25mm |
| Bottom | No | >25mm |
| Left | Yes | <25mm |
| Right | No | >25mm |

For WLAN

| Test Configurations | SAR Required | Antenna-to-edge(s) distances |
|---------------------|--------------|------------------------------|
| Back | Yes* | <25mm |
| Front | Yes* | <25mm |
| Top | Yes | <25mm |
| Bottom | No | >25mm |
| Left | No | >25mm |
| Right | Yes | <25mm |

For BT/BLE

| Test Configurations | SAR evaluation | Note |
|---------------------|----------------|------|
| Back | | |
| Front | | |
| Top | | |
| Bottom | | |
| Left | | |
| Right | | |

Note*: For hotspot mode, it's not necessary test Rear and Front position cause we already test the these position without hotspot mode in Body Exposure conditions, Normally if the hotspot mode opened, the technology "power reduction" used for mobile, so we consider the worst condition, and remain the data of body worn as hotspots mode.

6.9 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser.

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 (%) |
|-------------|-------------|----------------------|----------|--------|-----------|---------------|
| 2020.01.03 | 750 | ϵ_r | 41.352 | 41.90 | -1.3 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 0.923 | 0.89 | 3.7 | ± 10 |
| 2019.12.26 | 835 | ϵ_r | 40.266 | 41.50 | -3.0 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 0.911 | 0.90 | 1.2 | ± 10 |
| 2019.12.31 | 1800 | ϵ_r | 40.688 | 40.00 | 1.7 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 1.418 | 1.40 | 1.3 | ± 10 |
| 2020.01.08 | 2000 | ϵ_r | 39.844 | 40.00 | -0.4 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 1.427 | 1.40 | 1.9 | ± 10 |
| 2020.01.15 | 2450 | ϵ_r | 38.343 | 39.20 | -2.2 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 1.866 | 1.80 | 3.7 | ± 10 |
| 2020.01.19 | 2600 | ϵ_r | 39.672 | 39.00 | 1.7 | ± 10 |
| | | $\sigma[\text{S/m}]$ | 1.951 | 1.96 | -0.5 | ± 10 |

Note: For DASY system, the conservative tolerance 5% could expand to 10% when the frequency under 3GHz

A system check measurement was made following once the determination of the dielectric parameters of the simulant, using the dipole validation kit. 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 (%) |
|-------------|---------------|-------------|---------------------------------|---------------------|-----------|---------------|
| 2020.01.03 | D750V3 | Head | 1g | 8.24 | -0.2 | ± 10 |
| 2019.12.26 | D835V2 | Head | 1g | 9.56 | 2.0 | ± 10 |
| 2019.12.31 | D1800V2 | Head | 1g | 37.96 | -2.4 | ± 10 |
| 2020.01.08 | D2000V2 | Head | 1g | 39.28 | -2.5 | ± 10 |
| 2020.01.15 | D2450V2 | Head | 1g | 54.0 | 3.1 | ± 10 |
| 2020.01.19 | D2600V2 | Head | 1g | 56.4 | -0.4 | ± 10 |

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 D01v06, 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.

Duty Factor = 1 / Duty Cycle(%)

For cellular network:

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

For WLAN

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

2. Per KDB 447498 D01v06, for each exposure position, if the highest output channel reported SAR $\leq 0.8\text{W/kg}$, other channels SAR testing are not necessary.

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

| Mode | Duty cycle | Duty factor | Note | |
|----------------------|---------------------|---------------------|---|--|
| Licensed Frequency | GSM Band | Depends on UP slots | According to the theory, we configured duty cycle with relevant value on the communication tester, so correction factor do not need such as "duty factor" | |
| | WCDMA Band | 100% | | |
| | FDD-LTE Band | 100% | | |
| | TDD-LTE Band | 63.3% | | |
| Unlicensed Frequency | WIFI 2.4GHz 802.11g | 97.2% | 1.03 | SRTC perform SAR test with non-signaling mode, and duty factor shall be considered because of the uncertainty of data traffic. |

There are two supplies are different on the supplier of Memory/Camera/LCD. So there's no influence on radio exposure. And we check the worst case of each exposure condition among all the frequency bands of secondary supply based on main supply.

| Exposure condition | Worst case of Main supply | Secondary supply |
|--------------------|---------------------------|------------------|
| Head | LTE B7 | Check LTE B7 |
| Body-worn& Hotspot | WCDMA B4 | Check WCDMA B4 |

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

Mode: GSM 850
 $f_L(\text{MHz})=824.2\text{MHz}$ $f_M(\text{MHz})=836.5\text{MHz}$ $f_H(\text{MHz})= 848.8\text{MHz}$
Limit of SAR (W/kg): <1.6W/kg (1g Average)

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|-------------------------|------------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| GPRS/EDGE GMSK 2slot | Head | Left touch | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.162 | 0.180 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Left tilt | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.103 | 0.114 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Right touch | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.195 | 0.216 |
| | | Right tilt | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | Body worn & Hotspot | Back | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.310 | 0.344 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Front | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.236 | 0.262 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Top | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | --- | --- |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | Hotspot | Bottom | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.240 | 0.266 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Left | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.096 | 0.107 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |
| | | Right | L | 31.18 | 31.50 | 1.08 | --- | --- |
| | | | M | 31.05 | 31.50 | 1.11 | 0.207 | 0.230 |
| | | | H | 30.93 | 31.50 | 1.14 | --- | --- |

Mode: GSM1900

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

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|----------------------------------|------------------------|-------------|----------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channe I | | | | First | First |
| GMSK 3slot (GPRS/ EDGE) | Head | Left touch | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.025 | 0.029 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Left tilt | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.004 | 0.004 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Right touch | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.019 | 0.022 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Right tilt | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.010 | 0.012 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | Body worn & Hotspot | Back | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.176 | 0.199 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Front | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.054 | 0.061 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | Hotspot | Top | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | --- | --- |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Bottom | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.119 | 0.134 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Left | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.001 | 0.001 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |
| | | Right | L | 26.57 | 27.00 | 1.10 | --- | --- |
| | | | M | 26.47 | 27.00 | 1.13 | 0.001 | 0.001 |
| | | | H | 26.30 | 27.00 | 1.17 | --- | --- |

Mode: WCDMA BAND II

fL (MHz)= 1852.4MHz fM (MHz)= 1880.0MHz fH (MHz)= 1907.6MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|-----------|---------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| Rel.99 | Head | Left touch | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.023 | 0.025 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Left tilt | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.007 | 0.008 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Right touch | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.013 | 0.014 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Right tilt | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.007 | 0.007 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | Body worn & Hotspot | Back | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.210 | 0.225 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Front | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.071 | 0.076 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | Hotspot | Top | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | --- | --- |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Bottom | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.150 | 0.161 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Left | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.044 | 0.047 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |
| | | Right | L | 23.25 | 23.50 | 1.06 | --- | --- |
| | | | M | 23.21 | 23.50 | 1.07 | 0.001 | 0.001 |
| | | | H | 23.13 | 23.50 | 1.09 | --- | --- |

Mode: WCDMA BAND IV

fL (MHz)=1712.4MHz fM (MHz)=1732.4MHz fH (MHz)= 1752.6MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|-----------|---------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| Rel.99 | Body worn & Hotspot | Left touch | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.196 | 0.200 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Left tilt | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.113 | 0.115 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Right touch | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.122 | 0.124 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Right tilt | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.106 | 0.108 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Back | L | 22.85 | 23.00 | 1.04 | 0.402 | 0.418 |
| | | | M | 22.90 | 23.00 | 1.02 | 0.413 | 0.421 |
| | | | H | 22.95 | 23.00 | 1.01 | 0.412 | 0.416 |
| | | | L2 | 22.85 | 23.00 | 1.04 | 0.378 | 0.393 |
| | | | M2 | 22.90 | 23.00 | 1.02 | 0.392 | 0.400 |
| | | | H2 | 22.95 | 23.00 | 1.01 | 0.385 | 0.389 |
| | | Front | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.265 | 0.270 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Hotspot | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | --- | --- |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.345 | 0.352 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Left | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.212 | 0.216 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |
| | | Right | L | 22.85 | 23.00 | 1.04 | --- | --- |
| | | | M | 22.90 | 23.00 | 1.02 | 0.001 | 0.001 |
| | | | H | 22.95 | 23.00 | 1.01 | --- | --- |

Note: L2/M2/H2 means secondary supply.

Mode: WCDMA BAND V

fL (MHz)=826.4MHz

fM (MHz)=836.4MHz

fH (MHz)= 846.6MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|-----------|---------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| Rel.99 | Head | Left touch | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.100 | 0.110 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Left tilt | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.070 | 0.077 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Right touch | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.132 | 0.145 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Right tilt | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.073 | 0.080 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | Body worn & Hotspot | Back | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.244 | 0.268 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Front | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.193 | 0.212 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | Hotspot | Top | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | --- | --- |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Bottom | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.216 | 0.238 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Left | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.077 | 0.085 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |
| | | Right | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.59 | 23.00 | 1.10 | 0.168 | 0.185 |
| | | | H | 22.70 | 23.00 | 1.07 | --- | --- |

Mode: LTE Band 2

fL (MHz)= 1860MHz

fM (MHz)= 1880MHz

fH (MHz)= 1900MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|----------------------|---------------------|-------------|----------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Chann el | | | | First | First |
| BW=20 MHz QPSK 1RB | Head | Left touch | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.021 | 0.022 |
| | | | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | Left tilt | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.009 | 0.010 |
| | | | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | Right touch | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.019 | 0.021 |
| | Body worn & Hotspot | Right tilt | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.013 | 0.014 |
| | | Back | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.182 | 0.198 |
| | | Front | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.059 | 0.064 |
| BW=20 MHz QPSK 50%RB | Hotspot | Top | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | --- | --- |
| | | Bottom | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | | M | 23.61 | 24.00 | 1.09 | 0.121 | 0.132 |
| | | Left | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | Head | Right | M | 23.61 | 24.00 | 1.09 | 0.001 | 0.001 |
| | | | H | 23.55 | 24.00 | 1.11 | --- | --- |
| | | | L | 23.44 | 24.00 | 1.14 | --- | --- |
| | | Left touch | M | 22.86 | 23.00 | 1.03 | --- | --- |
| | | | H | 22.90 | 23.00 | 1.02 | 0.017 | 0.017 |
| | | | L | 22.86 | 23.00 | 1.03 | --- | --- |
| | | Left tilt | M | 22.90 | 23.00 | 1.02 | 0.008 | 0.008 |
| | | | H | 22.69 | 23.00 | 1.07 | --- | --- |
| | | | L | 22.86 | 23.00 | 1.03 | --- | --- |

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|---------------------|--------------------|----------|----------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Chann el | | | | First | First |
| Body worn & Hotspot | Right tilt | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.009 | 0.009 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Back | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.168 | 0.171 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Front | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.055 | 0.056 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Top | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | --- | --- | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Bottom | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.115 | 0.117 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Left | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.046 | 0.047 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |
| | Right | L | 22.86 | 23.00 | 1.03 | --- | --- | --- |
| | | M | 22.90 | 23.00 | 1.02 | 0.001 | 0.001 | --- |
| | | H | 22.69 | 23.00 | 1.07 | --- | --- | --- |

Mode: LTE Band 4

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

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|------------------------|------------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| BW=20MHz QPSK 1RB | Head | Left touch | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.151 | 0.168 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Left tilt | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.094 | 0.104 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Right touch | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.095 | 0.106 |
| | | Right tilt | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | Body worn & Hotspot | Back | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.374 | 0.415 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Front | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.229 | 0.254 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Top | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | --- | --- |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| BW=20MHz QPSK 50%RB | Head | Bottom | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.291 | 0.323 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Left | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.173 | 0.192 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Right | L | 23.56 | 24.00 | 1.11 | --- | --- |
| | | | M | 23.54 | 24.00 | 1.11 | 0.050 | 0.056 |
| | | | H | 23.14 | 24.00 | 1.22 | --- | --- |
| | | Left touch | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.52 | 23.00 | 1.12 | 0.135 | 0.151 |
| | | | H | 22.49 | 23.00 | 1.12 | --- | --- |
| | | Left tilt | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.52 | 23.00 | 1.12 | 0.083 | 0.093 |
| | | | H | 22.49 | 23.00 | 1.12 | --- | --- |
| | | Right touch | L | 22.66 | 23.00 | 1.08 | --- | --- |
| | | | M | 22.52 | 23.00 | 1.12 | 0.089 | 0.099 |
| | | | H | 22.49 | 23.00 | 1.12 | --- | --- |

| Mode | Exposure condition | Test case | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|---------------------|--------------------|-----------|---------|------------|---------|----------------|----------|------------|
| | | Position | Channel | | | | First | First |
| Body worn & Hotspot | Right tilt | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.091 | 0.102 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Back | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.334 | 0.374 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Front | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.201 | 0.225 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Top | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | --- | --- | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Bottom | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.262 | 0.293 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Left | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.155 | 0.174 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |
| | Right | L | 22.66 | 23.00 | 1.08 | --- | --- | --- |
| | | M | 22.52 | 23.00 | 1.12 | 0.041 | 0.046 | --- |
| | | H | 22.49 | 23.00 | 1.12 | --- | --- | --- |

Mode: LTE Band 5

fL (MHz)=829 MHz fM (MHz)=836.5MHz fH (MHz)= 844MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|----------------------|---------------------|-------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| BW=10M Hz QPSK 1RB | Head | Left touch | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.091 | 0.098 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Left tilt | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.052 | 0.056 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Right touch | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.121 | 0.131 |
| | | Right tilt | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | Body worn & Hotspot | Back | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.206 | 0.222 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Front | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.156 | 0.168 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Top | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | --- | --- |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | Hotspot | Bottom | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.169 | 0.183 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Left | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.067 | 0.072 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| | | Right | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.65 | 23.00 | 1.08 | 0.144 | 0.156 |
| | | | H | 22.84 | 23.00 | 1.04 | --- | --- |
| BW=10M Hz QPSK 50%RB | Head | Left touch | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.078 | 0.082 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | | Left tilt | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.048 | 0.050 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | | Right touch | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.105 | 0.110 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|-----------|---------------------|------------|---------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| Hotspot | Body worn & Hotspot | Right tilt | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.097 | 0.102 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Body worn & Hotspot | Back | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.195 | 0.205 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Body worn & Hotspot | Front | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.144 | 0.151 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Hotspot | Top | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | --- | --- |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Hotspot | Bottom | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.156 | 0.164 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Hotspot | Left | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.062 | 0.065 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |
| | Hotspot | Right | L | 22.24 | 22.50 | 1.06 | --- | --- |
| | | | M | 22.29 | 22.50 | 1.05 | 0.129 | 0.135 |
| | | | H | 22.26 | 22.50 | 1.06 | --- | --- |

Mode: LTE Band 7

fL (MHz)=2510 MHz

fM (MHz)=2535MHz

fH (MHz)= 2560MHz

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

| Mode | Test case | | | Meas power | Tune-up | Scaling factor | Meas SAR | | Report SAR | |
|-------------------|---------------------|-------------|---------|------------|---------|----------------|----------|--------|------------|--------|
| | Exposure condition | Position | Channel | | | | First | Second | First | Second |
| BW=20MHz QPSK 1RB | Head | Left touch | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.510 | --- | 0.561 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Left tilt | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.320 | --- | 0.352 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Right touch | L | 15.24 | 15.50 | 1.06 | 0.918 | 0.915 | 0.973 | 0.970 |
| | | | M | 15.09 | 15.50 | 1.10 | 0.911 | 0.910 | 1.002 | 1.001 |
| | | | H | 15.13 | 15.50 | 1.09 | 0.912 | 0.909 | 0.994 | 0.991 |
| | | | L2 | 15.24 | 15.50 | 1.06 | 0.852 | 0.850 | 0.903 | 0.901 |
| | | | M2 | 15.09 | 15.50 | 1.10 | 0.821 | 0.817 | 0.903 | 0.899 |
| | | | H2 | 15.13 | 15.50 | 1.09 | 0.842 | 0.835 | 0.918 | 0.910 |
| | Body worn & Hotspot | Back | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.362 | --- | 0.398 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Front | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.254 | --- | 0.279 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | Hotspot | Top | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.097 | --- | 0.107 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Bottom | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | --- | --- | 0.000 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Left | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | 0.126 | --- | 0.139 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |
| | | Right | L | 15.24 | 15.50 | 1.06 | --- | --- | --- | --- |
| | | | M | 15.09 | 15.50 | 1.10 | --- | --- | 0.000 | --- |
| | | | H | 15.13 | 15.50 | 1.09 | --- | --- | --- | --- |

| Mode | Exposure condition | Test case | | Meas power | Tune-up | Scaling factor | Meas SAR | | Report SAR | |
|-------------------------|---------------------|-------------|---------|------------|---------|----------------|----------|--------|------------|--------|
| | | Position | Channel | | | | First | Second | First | Second |
| BW=20MHz QPSK 50%RB | Head | Left touch | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.493 | --- | 0.532 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Left tilt | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.306 | --- | 0.330 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Right touch | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.740 | --- | 0.799 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Right tilt | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.606 | --- | 0.654 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| BW=20MHz QPSK 50%RB | Body worn & Hotspot | Back | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.241 | --- | 0.260 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Front | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.208 | --- | 0.225 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Top | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.066 | --- | 0.071 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Bottom | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | --- | --- | 0.000 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| BW=20MHz QPSK 100%RB | Hotspot | Left | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | 0.112 | --- | 0.121 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Right | L | 14.74 | 15.00 | 1.06 | --- | --- | --- | --- |
| | | | M | 14.66 | 15.00 | 1.08 | --- | --- | 0.000 | --- |
| | | | H | 14.66 | 15.00 | 1.08 | --- | --- | --- | --- |
| | | Head | L | 14.64 | 15.00 | 1.09 | --- | --- | --- | --- |
| | | | M | 14.68 | 15.00 | 1.08 | 0.706 | --- | 0.762 | --- |
| | | | H | 14.58 | 15.00 | 1.10 | --- | --- | --- | --- |

Note: For the main supply, we check 100%RB allocation for the worst position which reported 1g-SAR>0.8w/kg,L2/M2/H2 means secondary supply.

Mode: LTE Band 12

fL (MHz)=704 MHz fM (MHz)=707.5MHz fH (MHz)= 711MHz

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

| Test case | | | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|---------------------|---------------------|-------------|------------|------------|---------|----------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | First | First |
| BW=10MHz QPSK 1RB | Body worn & Hotspot | Head | Left touch | L | 22.98 | 23.00 | 1.00 | --- |
| | | | | M | 22.79 | 23.00 | 1.05 | 0.062 |
| | | | | H | 22.82 | 23.00 | 1.04 | --- |
| | | | Left tilt | L | 22.98 | 23.00 | 1.00 | --- |
| | | | | M | 22.79 | 23.00 | 1.05 | 0.030 |
| | | | | H | 22.82 | 23.00 | 1.04 | --- |
| | | Right touch | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.097 | 0.102 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Right tilt | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.046 | 0.049 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| BW=10MHz QPSK 50%RB | Hotspot | Back | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.119 | 0.125 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Front | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.104 | 0.109 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Top | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | --- | --- |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Bottom | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.073 | 0.077 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Left | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.080 | 0.084 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| | | Right | L | 22.98 | 23.00 | 1.00 | --- | --- |
| | | | M | 22.79 | 23.00 | 1.05 | 0.185 | 0.194 |
| | | | H | 22.82 | 23.00 | 1.04 | --- | --- |
| Head | | Left touch | L | 22.36 | 22.50 | 1.03 | --- | --- |
| | | | M | 22.38 | 22.50 | 1.03 | 0.059 | 0.061 |
| | | | H | 22.17 | 22.50 | 1.08 | --- | --- |
| | | Left tilt | L | 22.36 | 22.50 | 1.03 | --- | --- |
| | | | M | 22.38 | 22.50 | 1.03 | 0.027 | 0.028 |
| | | | H | 22.17 | 22.50 | 1.08 | --- | --- |
| | | Right touch | L | 22.36 | 22.50 | 1.03 | --- | --- |
| | | | M | 22.38 | 22.50 | 1.03 | 0.087 | 0.090 |
| | | | H | 22.17 | 22.50 | 1.08 | --- | --- |

| Mode | Exposure condition | Test case | | Meas power | Tune-up | Scaling factor | Meas SAR | Report SAR |
|---------------------|--------------------|-----------|---------|------------|---------|----------------|----------|------------|
| | | Position | Channel | | | | First | First |
| Body worn & Hotspot | Right tilt | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.036 | 0.037 | 0.037 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Back | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.117 | 0.121 | 0.121 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Front | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.101 | 0.104 | 0.104 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Top | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | --- | --- | --- |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Bottom | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.075 | 0.077 | 0.077 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Left | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.083 | 0.085 | 0.085 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |
| | Right | L | 22.36 | 22.50 | 1.03 | --- | --- | --- |
| | | M | 22.38 | 22.50 | 1.03 | 0.164 | 0.169 | 0.169 |
| | | H | 22.17 | 22.50 | 1.08 | --- | --- | --- |

Mode: BT

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

| Estimated SAR | | | | | |
|---------------|------|---------------|--------------------|----------|---------------|
| MAX power | | Head distance | Body-worn distance | Head SAR | Body-worn SAR |
| dBm | mw | mm | mm | w/kg | w/kg |
| 2.00 | 1.58 | 5 | 10 | 0.067 | 0.033 |

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f_{(\text{GHz})}} / x] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$;
where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.

Mode: Wi-Fi 2.4GHz

fL (MHz)=2412MHz fM (MHz)=2437MHz
Limit of SAR (W/kg): <1.6W/kg (1g Average)

fH (MHz)= 2462MHz

| Test case | | | | Meas power | Tune -up | Scaling factor | Duty factor | Meas SAR | Report SAR |
|-----------|---------------------|-------------|---------|------------|----------|----------------|-------------|----------|------------|
| Mode | Exposure condition | Position | Channel | | | | | First | First |
| 802.11g | Head | Left touch | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.317 | 0.346 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Left tilt | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.289 | 0.315 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Right touch | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.101 | 0.110 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | Body worn & Hotspot | Right tilt | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.093 | 0.102 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Back | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.078 | 0.085 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Front | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.056 | 0.061 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | Hotspot | Top | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.080 | 0.087 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Bottom | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | --- | --- |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Left | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | --- | --- |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |
| | | Right | L | 16.32 | 18.00 | 1.47 | 1.03 | --- | --- |
| | | | M | 17.75 | 18.00 | 1.06 | 1.03 | 0.067 | 0.073 |
| | | | H | 17.02 | 18.00 | 1.25 | 1.03 | --- | --- |

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 ≥ 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 ≥ 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 ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The Highest Reported/Estimated SAR configuration in Each Frequency Band

| Frequency band | Air interface | Head SAR(w/kg) | Body-worn SAR(w/kg) | Hotspot SAR(w/kg) |
|----------------|---|----------------|---------------------|-------------------|
| Below 1GHz | GSM850 WCDMA BANDV LTE BAND5 LTE BAND12 | <0.8 | <0.8 | <0.8 |
| 1GHz-2GHz | GSM1900 WCDMA BANDII WCDMA BANDIV LTE BAND2 LTE BAND4 | <0.8 | <0.8 | <0.8 |
| 2GHz-3GHz | BT WIFI 2.4GHz LTE BAND7 | <0.8 | >0.8 | >0.8 |

6.12 Simultaneous Transmission SAR Analysis

| Antenna numbers of Simultaneous Transmission | Antennas of Simultaneous Transmission | Simultaneous Transmission Modes |
|--|---------------------------------------|--|
| 2 | DIV ANT+ WLAN/BT ANT | LTE B7 +WIFI 2.4GHz LTE B7 + BT |
| | MAIN ANT+ WLAN/BT ANT | Celluar2/3/4G(expect LTE B7)+ WIFI 2.4GHz Celluar2/3/4G(expect LTE B7)+BT |

Head exposure

| Position of worst case | Licensed band | Unlicensed band | Simultaneous SAR(w/kg) |
|------------------------|---------------|-----------------|------------------------|
| Right cheek | LTE Band7 | WIFI 2.4G | 1.112 |

Body-worn exposure

| Position of worst case | Licensed band | Unlicensed band | Simultaneous SAR(w/kg) |
|------------------------|---------------|-----------------|------------------------|
| Back | WCDMA Band IV | WIFI 2.4G | 0.506 |

Hotspot exposure

| Position of worst case | Licensed band | Unlicensed band | Simultaneous SAR(w/kg) |
|------------------------|---------------|-----------------|------------------------|
| Back | WCDMA Band IV | WIFI 2.4G | 0.506 |

According to the above tables, all the exposure condition of SAR values < 1.6W/kg.

7 MEASUREMENT UNCERTAINTY

| (0.3 - 3 GHz range) | | | | | | | | | |
|---|---------------|-------------|------------|-----------------|------------------|-------------------|--------------------|------------------------|--|
| Error Description | Uncert. value | Prob. Dist. | Div. | (c_i) 1g | (c_i) 10g | Std. Unc. (1g) | Std. Unc. (10g) | (v_i) v_{eff} | |
| Measurement System | | | | | | | | | |
| 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 % | ∞ | |
| Modulation Response ^m | ±2.4 % | R | $\sqrt{3}$ | 1 | 1 | ±1.4 % | ±1.4 % | ∞ | |
| 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. | ±2.0 % | R | $\sqrt{3}$ | 1 | 1 | ±1.2 % | ±1.2 % | ∞ | |
| Test Sample Related | | | | | | | | | |
| Device Positioning | ±2.9 % | N | 1 | 1 | 1 | ±2.9 % | ±2.9 % | 145 | |
| Device Holder | ±3.6 % | N | 1 | 1 | 1 | ±3.6 % | ±3.6 % | 5 | |
| Power Drift | ±5.0 % | R | $\sqrt{3}$ | 1 | 1 | ±2.9 % | ±2.9 % | ∞ | |
| Power Scaling ^p | ±0 % | R | $\sqrt{3}$ | 1 | 1 | ±0.0 % | ±0.0 % | ∞ | |
| Phantom and Setup | | | | | | | | | |
| Phantom Uncertainty | ±6.1 % | R | $\sqrt{3}$ | 1 | 1 | ±3.5 % | ±3.5 % | ∞ | |
| SAR correction | ±1.9 % | R | $\sqrt{3}$ | 1 | 0.84 | ±1.1 % | ±0.9 % | ∞ | |
| Liquid Conductivity (mea.) ^{DAK} | ±2.5 % | R | $\sqrt{3}$ | 0.78 | 0.71 | ±1.1 % | ±1.0 % | ∞ | |
| Liquid Permittivity (mea.) ^{DAK} | ±2.5 % | R | $\sqrt{3}$ | 0.26 | 0.26 | ±0.3 % | ±0.4 % | ∞ | |
| Temp. unc. - Conductivity ^{BB} | ±3.4 % | R | $\sqrt{3}$ | 0.78 | 0.71 | ±1.5 % | ±1.4 % | ∞ | |
| Temp. unc. - Permittivity ^{BB} | ±0.4 % | R | $\sqrt{3}$ | 0.23 | 0.26 | ±0.1 % | ±0.1 % | ∞ | |
| Combined Std. Uncertainty | | | | | | ±11.2 % | ±11.1 % | 361 | |
| Expanded STD Uncertainty | | | | | | ±22.3 % | ±22.2 % | | |

| (3 - 6 GHz range) | | | | | | | | |
|---|---------------|-------------|------------|-----------------|------------------|-------------------|--------------------|------------------------|
| Error Description | Uncert. value | Prob. Dist. | Div. | (c_i) 1g | (c_i) 10g | Std. Unc. (1g) | Std. Unc. (10g) | (v_i) v_{eff} |
| Measurement System | | | | | | | | |
| Probe Calibration | ±6.55 % | N | 1 | 1 | 1 | ±6.55 % | ±6.55 % | ∞ |
| 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 | ±2.0 % | R | $\sqrt{3}$ | 1 | 1 | ±1.2 % | ±1.2 % | ∞ |
| 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 % | ∞ |
| Modulation Response ^m | ±2.4 % | R | $\sqrt{3}$ | 1 | 1 | ±1.4 % | ±1.4 % | ∞ |
| 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 | ±0.8 % | R | $\sqrt{3}$ | 1 | 1 | ±0.5 % | ±0.5 % | ∞ |
| Probe Positioning | ±6.7 % | R | $\sqrt{3}$ | 1 | 1 | ±3.9 % | ±3.9 % | ∞ |
| Max. SAR Eval. | ±4.0 % | R | $\sqrt{3}$ | 1 | 1 | ±2.3 % | ±2.3 % | ∞ |
| Test Sample Related | | | | | | | | |
| Device Positioning | ±2.9 % | N | 1 | 1 | 1 | ±2.9 % | ±2.9 % | 145 |
| Device Holder | ±3.6 % | N | 1 | 1 | 1 | ±3.6 % | ±3.6 % | 5 |
| Power Drift | ±5.0 % | R | $\sqrt{3}$ | 1 | 1 | ±2.9 % | ±2.9 % | ∞ |
| Power Scaling ^p | ±0 % | R | $\sqrt{3}$ | 1 | 1 | ±0.0 % | ±0.0 % | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | ±6.6 % | R | $\sqrt{3}$ | 1 | 1 | ±3.8 % | ±3.8 % | ∞ |
| SAR correction | ±1.9 % | R | $\sqrt{3}$ | 1 | 0.84 | ±1.1 % | ±0.9 % | ∞ |
| Liquid Conductivity (mea.) ^{DAK} | ±2.5 % | R | $\sqrt{3}$ | 0.78 | 0.71 | ±1.1 % | ±1.0 % | ∞ |
| Liquid Permittivity (mea.) ^{DAK} | ±2.5 % | R | $\sqrt{3}$ | 0.26 | 0.26 | ±0.3 % | ±0.4 % | ∞ |
| Temp. unc. - Conductivity ^{BB} | ±3.4 % | R | $\sqrt{3}$ | 0.78 | 0.71 | ±1.5 % | ±1.4 % | ∞ |
| Temp. unc. - Permittivity ^{BB} | ±0.4 % | R | $\sqrt{3}$ | 0.23 | 0.26 | ±0.1 % | ±0.1 % | ∞ |
| Combined Std. Uncertainty | | | | | | ±12.3 % | ±12.2 % | 748 |
| Expanded STD Uncertainty | | | | | | ±24.6 % | ±24.5 % | |

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 | Model | Serial Number | Calibration date | Calibration Due data |
|--------------------------|---------|---------------|------------------|----------------------|
| DAE | DAE4 | 546 | 2019.08.28 | 2020.08.27 |
| Dosimetric E-field Probe | ES3DV3 | 3127 | 2019.08.27 | 2020.08.26 |
| Dipole Validation Kit | D750V3 | 4d023 | 2017.09.13 | 2020.09.12 |
| Dipole Validation Kit | D835V2 | 4d023 | 2017.09.13 | 2020.09.12 |
| Dipole Validation Kit | D1800V2 | 2d084 | 2017.09.15 | 2020.09.14 |
| Dipole Validation Kit | D2000V2 | 1009 | 2018.02.01 | 2021.01.31 |
| Dipole Validation Kit | D2450V2 | 738 | 2017.09.18 | 2020.09.17 |
| Dipole Validation Kit | D2600V2 | 1166 | 2019.11.08 | 2022.11.08 |

Additional test equipment used in testing:

| Test Equipment | Model | Serial Number | Calibration date | Calibration Due data |
|----------------------------|----------|---------------|------------------|----------------------|
| Signal Generator | E4428C | MY45280865 | 2019.08.20 | 2020.08.19 |
| Signal Generator | SML 03 | 103514 | 2019.08.20 | 2020.08.19 |
| Power meter | E4417A | MY45101182 | 2019.08.20 | 2020.08.19 |
| Power Sensor | E4412A | MY41502214 | 2019.08.20 | 2020.08.19 |
| Power Sensor | E4412A | MY41502130 | 2019.08.20 | 2020.08.19 |
| Power meter | E4417A | MY45101004 | 2019.08.20 | 2020.08.19 |
| Power Sensor | E9300B | MY41496001 | 2019.08.20 | 2020.08.19 |
| Power Sensor | E9300B | MY41496003 | 2019.08.20 | 2020.08.19 |
| Communication Tester | E5515C | MY48367401 | 2019.08.20 | 2020.08.19 |
| Communication Tester | CMU500 | 114666 | 2019.08.20 | 2020.08.19 |
| Communication Tester | MT8820C | 6201300660 | 2019.08.20 | 2020.08.19 |
| Communication Tester | MT8821C | 6201547819 | 2019.08.20 | 2020.08.19 |
| Vector Network Analyzer | VNA R140 | 0011213 | 2019.09.18 | 2020.09.17 |
| Dielectric Parameter Probe | DAKS-3.5 | 1042 | 2019.09.17 | 2020.09.16 |

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; Linearity: ± 0.2 dB (30 MHz to 4 GHz) |
| Optical Surface Detection | ± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces |
| Dimensions | Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm |
| Dynamic Range | 5 μ W/g to > 100 W/kg; Linearity: ± 0.2 dB |
| Application | General dosimetry up to 4 GHz Dosimetry in strong gradient fields 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 Linearity: ± 0.2 dB (30 MHz to 6 GHz) |
| Optical Surface Detection | ± 0.3 mm repeatability in air and clear liquids over diffuse reflecting surfaces |
| Dimensions | Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm |
| Dynamic Range | 10 μ W/g to > 100 W/kg Linearity: ± 0.2 dB (noise: typically < 1 μ 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%. |

According to KDB 865664 D01 section 3.2.2, instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the **SAR target, impedance and return loss** of a dipole have remain stable according to the following requirements.

- 1) The test laboratory must ensure that the required supporting information and documentation are included in the SAR report to qualify for the three-year extended calibration interval; otherwise, the IEEE Std 1528-2013 recommended annual calibration applies.
- 2) Immediate re-calibration is required for the following conditions.
 - a) After a dipole is damaged and properly repaired to meet required specifications.
 - b) When the measured SAR deviates from the calibrated SAR value by more than 10% due to changes in physical, mechanical, electrical or other relevant dipole conditions; i.e., the error is not introduced by incorrect measurement procedures or other issues relating to the SAR measurement system.
 - c) When the most recent return-loss result, measured at least annually, deviates by more than 20% from the previous measurement (i.e. value in $\text{dB} \times 0.2$) or not meeting the required 20 dB minimum return-loss requirement.
 - d) When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5Ω from the previous measurement.

Dipole 750

SAR target

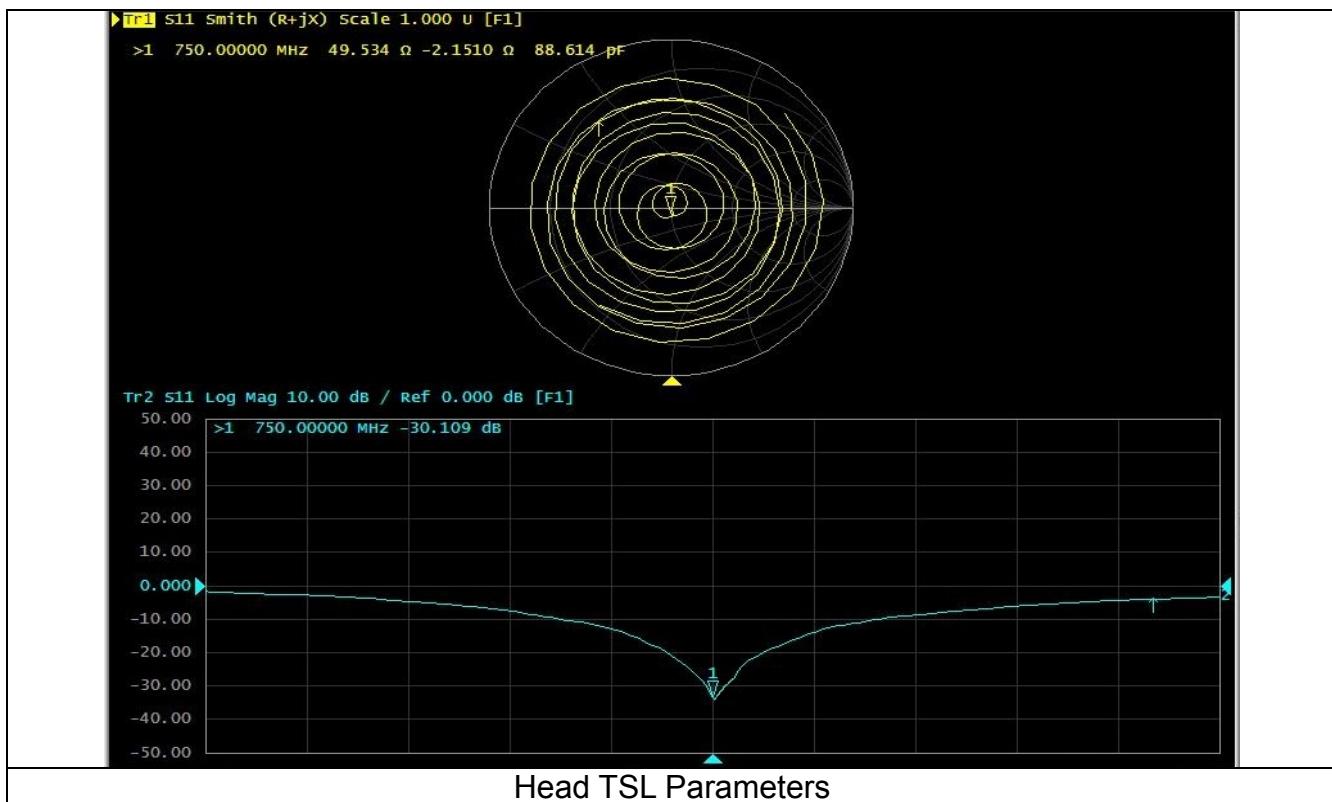
Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance, deviates within 5Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result deviates within 20% from the previous measurement. (Data from the last calibration report)

| Head TSL Parameters | | | |
|---------------------|--------------------------|--------------------------|-----------|
| Parameters | Target (Ref. Value) | Measured data | Deviation |
| Impedance | $53.9\Omega+0.24j\Omega$ | $49.5\Omega-2.15j\Omega$ | <5Ω |
| Return loss | -28.4dB | -29.8dB | <20% |



Dipole 835

SAR target

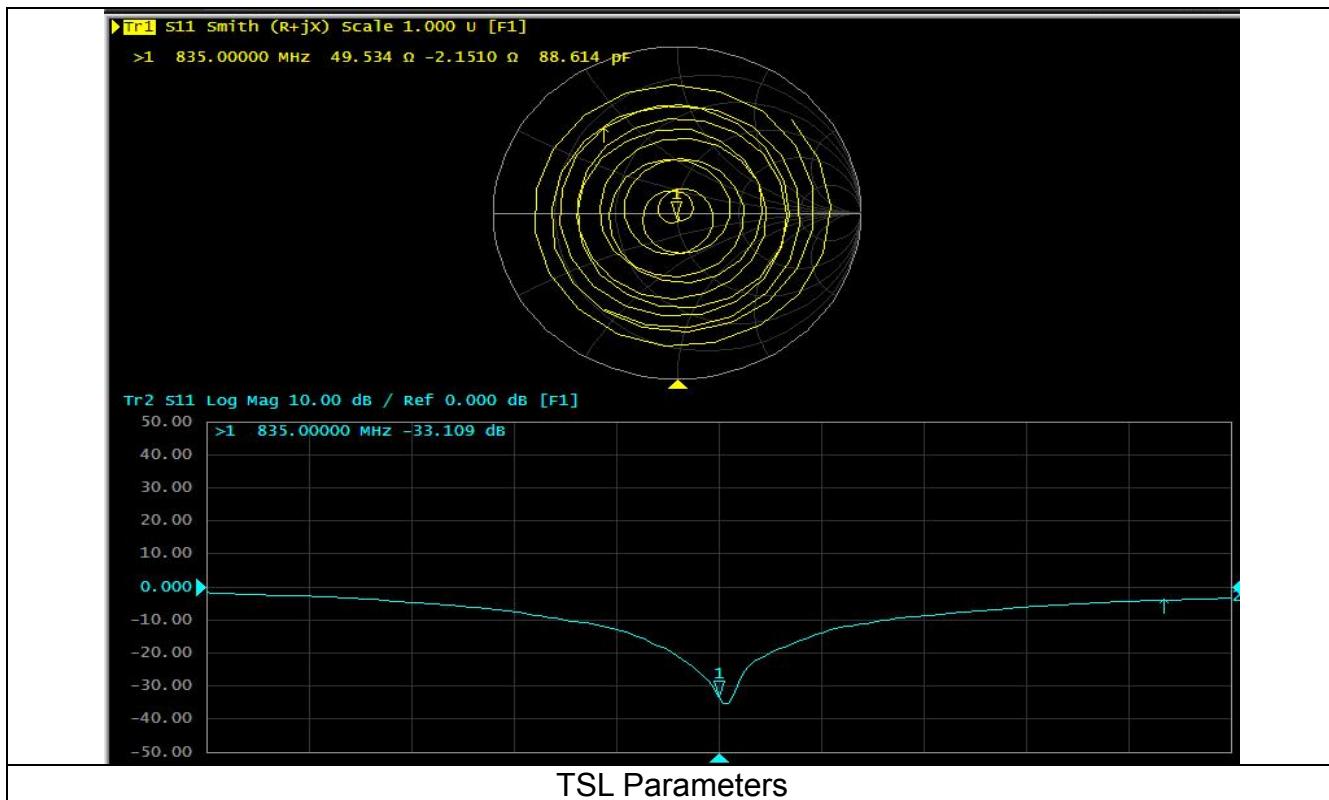
Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance, deviates within 5Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result deviates within 20% from the previous measurement. (Data from the last calibration report)

| TSL Parameters | | | |
|----------------|--------------------------|--------------------------|-----------|
| Parameters | Target (Ref. Value) | Measured data | Deviation |
| Impedance | $51.0\Omega-2.79j\Omega$ | $49.5\Omega-2.15j\Omega$ | <5Ω |
| Return loss | -30.7 dB | -33.1 dB | <20% |



Dipole1800

SAR target

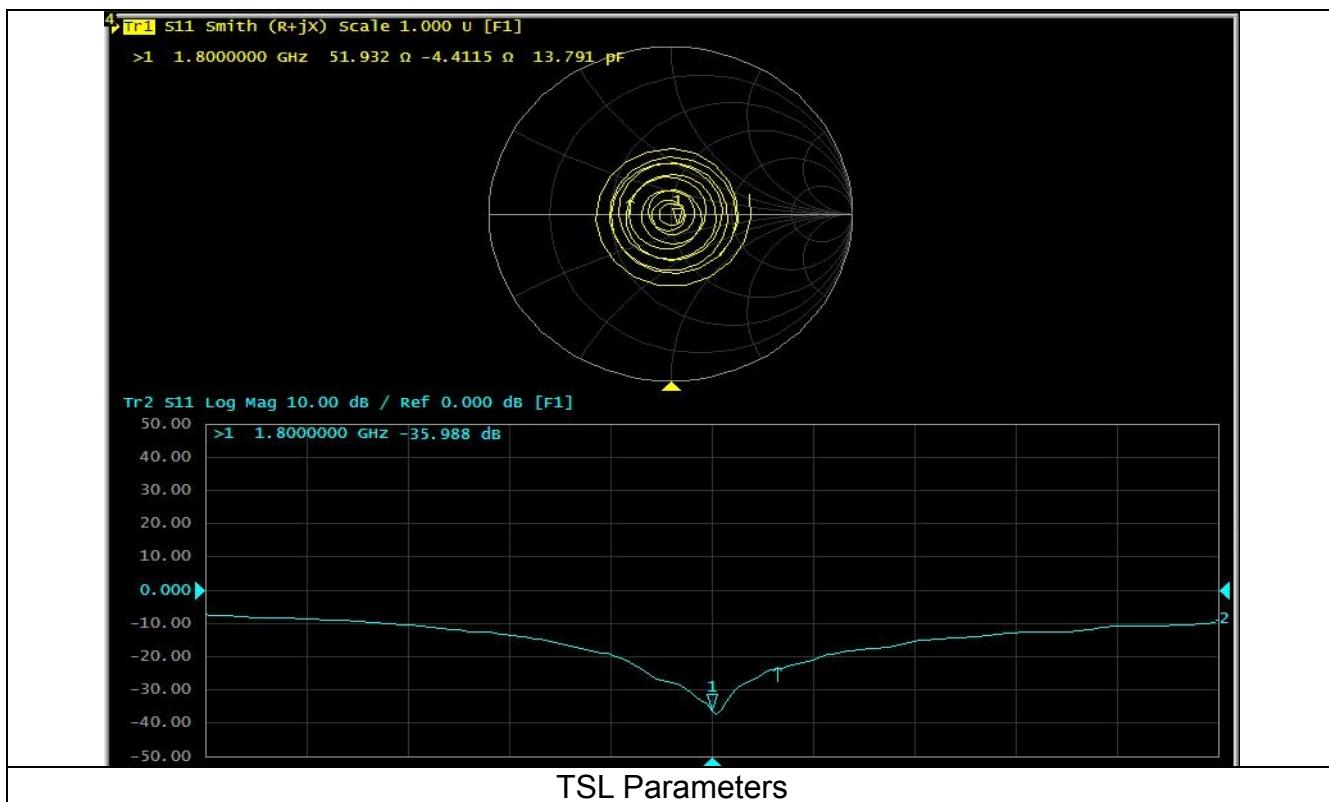
Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance, deviates within 5Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result deviates within 20% from the previous measurement. (Data from the last calibration report)

| TSL Parameters | | | |
|----------------|--------------------------|--------------------------|-----------|
| Parameters | Target (Ref. Value) | Measured data | Deviation |
| Impedance | $49.3\Omega-1.55j\Omega$ | $51.9\Omega-4.41j\Omega$ | <5Ω |
| Return loss | -35.4 dB | -36.0dB | <20% |



Dipole2000

SAR target

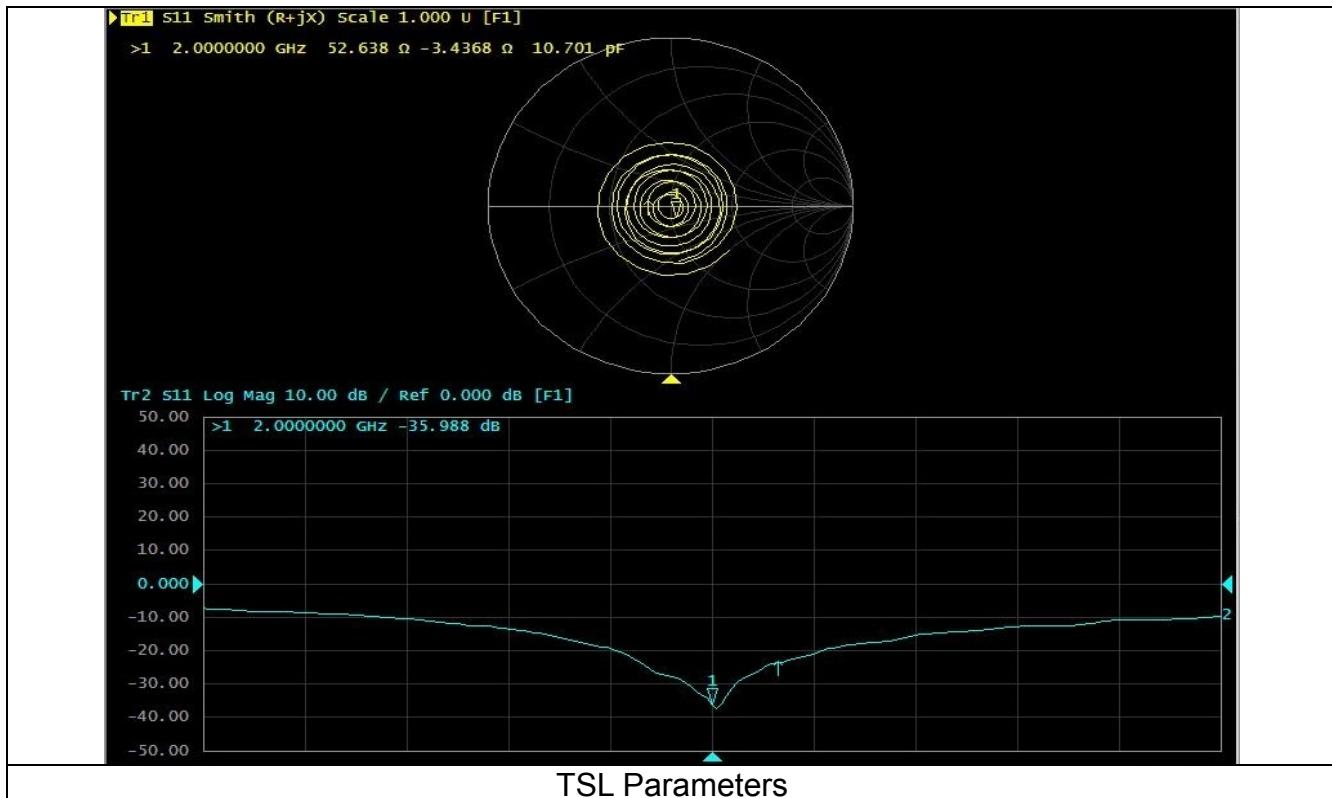
Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance, deviates within 5Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result deviates within 20% from the previous measurement. (Data from the last calibration report)

| TSL Parameters | | | |
|----------------|--------------------------|--------------------------|-----------|
| Parameters | Target (Ref. Value) | Measured data | Deviation |
| Impedance | $49.8\Omega-2.08j\Omega$ | $52.6\Omega-3.44j\Omega$ | <5Ω |
| Return loss | -33.6dB | -36.0dB | <20% |



Dipole2450

SAR target

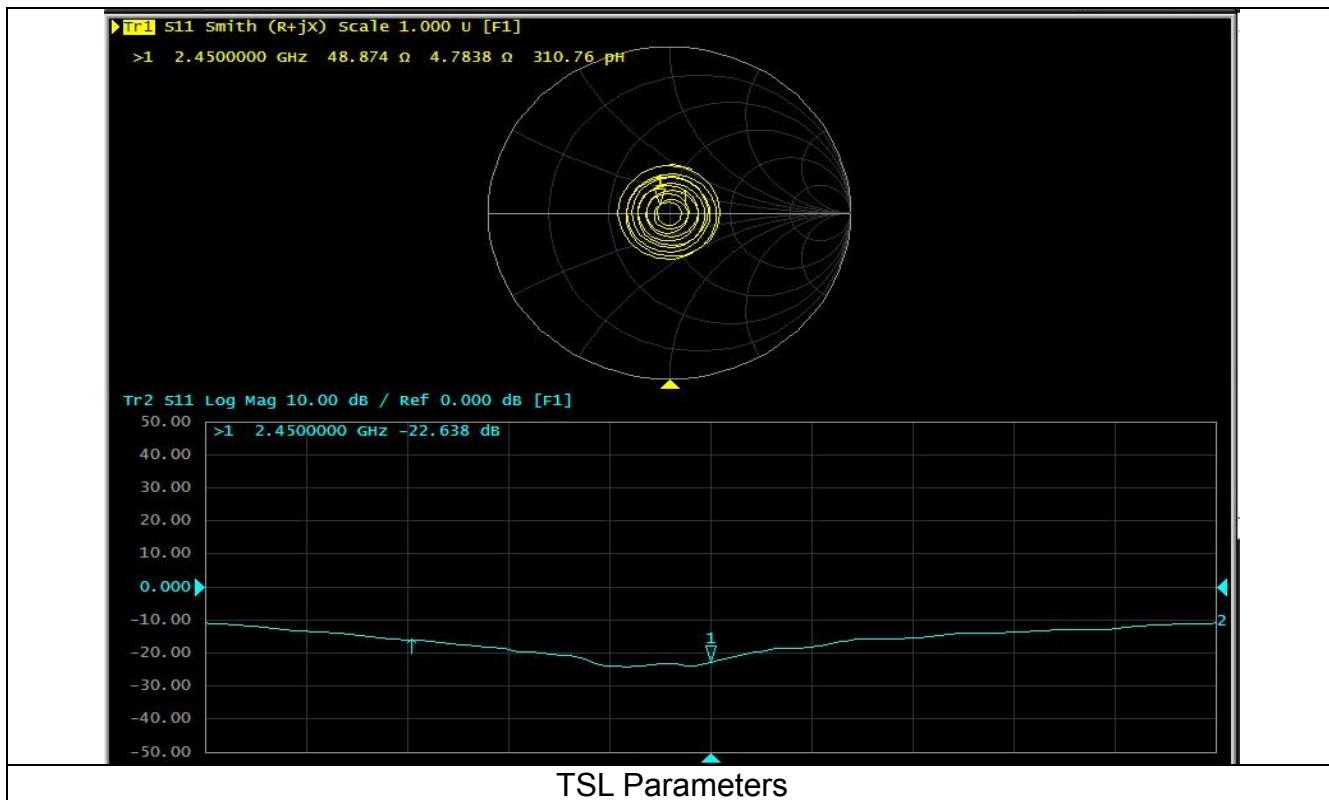
Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer

The most recent measurement of the real or imaginary parts of the impedance deviates within 5Ω from the previous measurement. (Data from the last calibration report)

The most recent return-loss result deviates within 20% from the previous measurement. (Data from the last calibration report)

| TSL Parameters | | | |
|----------------|--------------------------|--------------------------|-----------|
| Parameters | Target (Ref. Value) | Measured data | Deviation |
| Impedance | $51.3\Omega+5.92j\Omega$ | $48.9\Omega+4.78j\Omega$ | <5Ω |
| Return loss | -24.5 dB | -22.6dB | <20% |



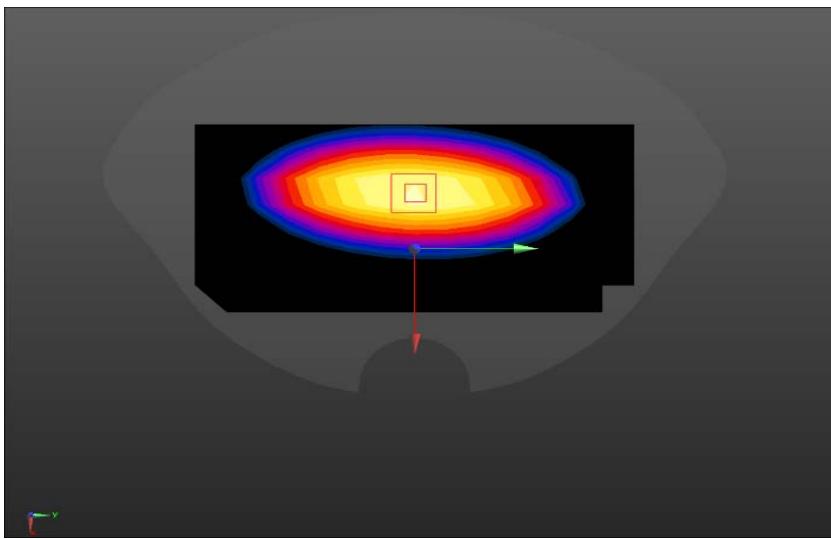
ANNEX A – TEST PLOTS

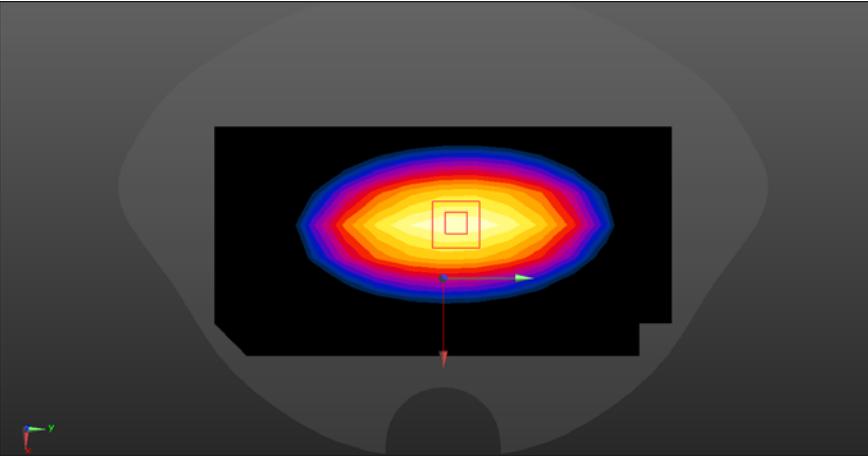
Please refer to the attachment.

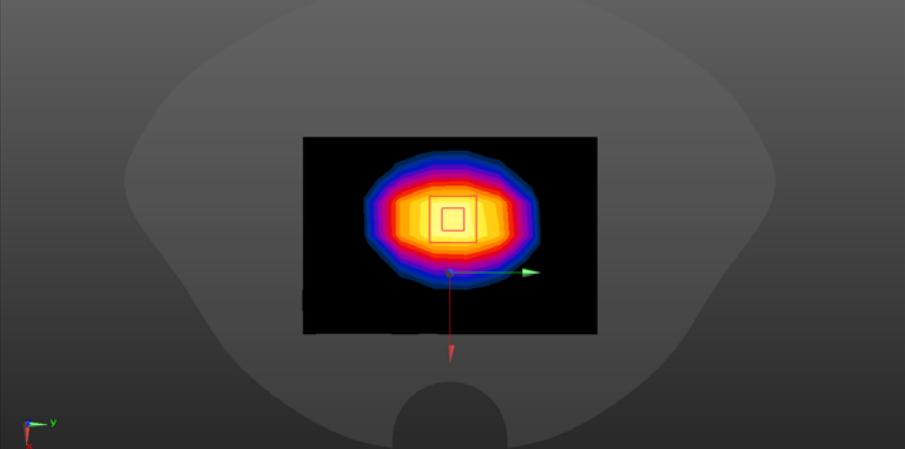
ANNEX B – RELEVANT PAGES FROM CALIBRATION REPORTS

Please refer to the attachment.

ANNEX A – TEST PLOTS

| System check | 750MHz |
|--|--------|
| <p>Communication System: UID 0, CW (0) Frequency: 750 MHz; Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.923 \text{ S/m}$; $\epsilon_r = 41.352$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section</p> <p>DASY Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34) @ 707.5 MHz; Calibrated: 8/27/2019 • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>System Performance Check at Frequencies 750MHz/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (8x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$</p> <p>Maximum value of SAR (measured) = 2.16 W/kg</p> <p>System Performance Check at Frequencies 750MHz/d=15mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$</p> <p>Reference Value = 41.00 V/m; Power Drift = 0.13 dB</p> <p>Peak SAR (extrapolated) = 3.26 W/kg</p> <p>SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.37 W/kg</p> <p>Maximum value of SAR (measured) = 2.49 W/kg</p>  | |

| System check | 835MHz |
|--|--------|
| Communication System: UID 0, CW (0); Frequency: 835 MHz | |
| Medium parameters used (interpolated): $f = 835 \text{ MHz}$; $\sigma = 0.911 \text{ S/m}$; $\epsilon_r = 40.266$ $\rho = 1000 \text{ kg/m}^3$ | |
| Phantom section: Flat Section | |
| DASY5 Configuration: | |
| <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.20, 6.20, 6.20); Calibrated: 8/27/2019; • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) | |
| Configuration 835/835/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm | |
| Maximum value of SAR (measured) = 2.72 W/kg | |
| Configuration 835/835/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm | |
| Reference Value = 51.67 V/m; Power Drift = 0.08 dB | |
| Peak SAR (extrapolated) = 3.58 W/kg | |
| SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.51 W/kg | |
| Maximum value of SAR (measured) = 2.75 W/kg | |
|  | |

| System check | 1800MHz |
|--|----------------|
| <p>Communication System: UID 0, CW (0); Frequency: 1800 MHz Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.418 \text{ S/m}$; $\epsilon_r = 40.688$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.10, 5.10, 5.10); Calibrated: 8/27/2019; • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>Configuration 1800/1800/Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$ Maximum value of SAR (measured) = 8.31 W/kg</p> <p>Configuration 1800/1800/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ Reference Value = 76.60 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 17.5 W/kg SAR(1 g) = 9.49 W/kg; SAR(10 g) = 4.97 W/kg Maximum value of SAR (measured) = 12.1 W/kg</p>  | |

| System check | 2000MHz |
|--|----------------|
| Communication System: UID 0, CW (0); Frequency: 2000 MHz Medium parameters used: $f = 2000$ MHz; $\sigma = 1.427$ S/m; $\epsilon_r = 39.844$; $\rho = 1000$ kg/m ³ Phantom section: Flat Section | |

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.02, 5.02, 5.02); Calibrated: 8/27/2019;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 8/28/2019
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

Configuration 2000/2000/Area Scan (7x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 8.40 W/kg

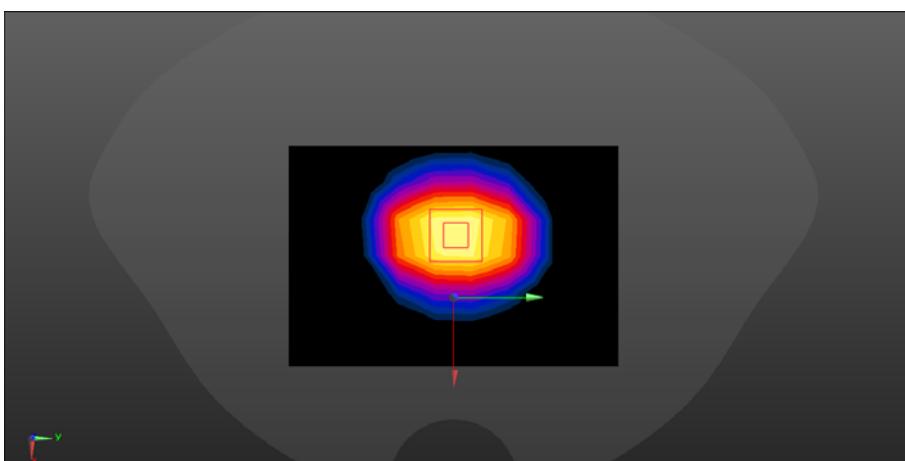
Configuration 2000/2000/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

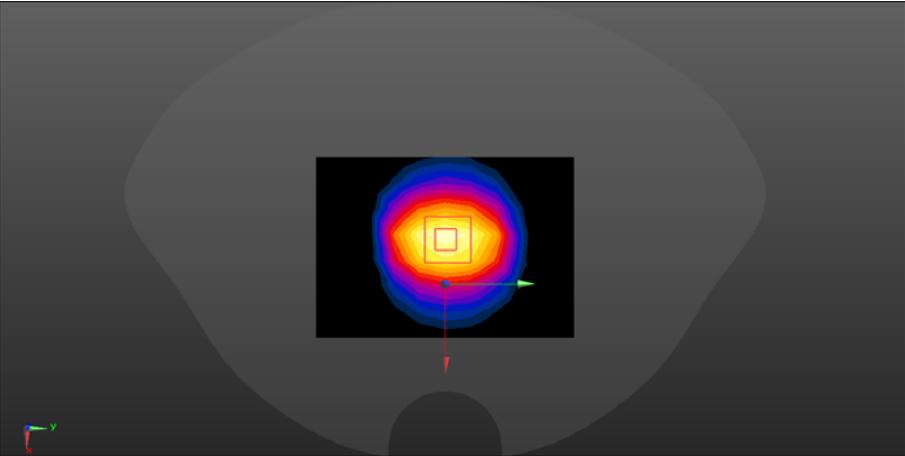
Reference Value = 76.22 V/m; Power Drift = 0.07 dB

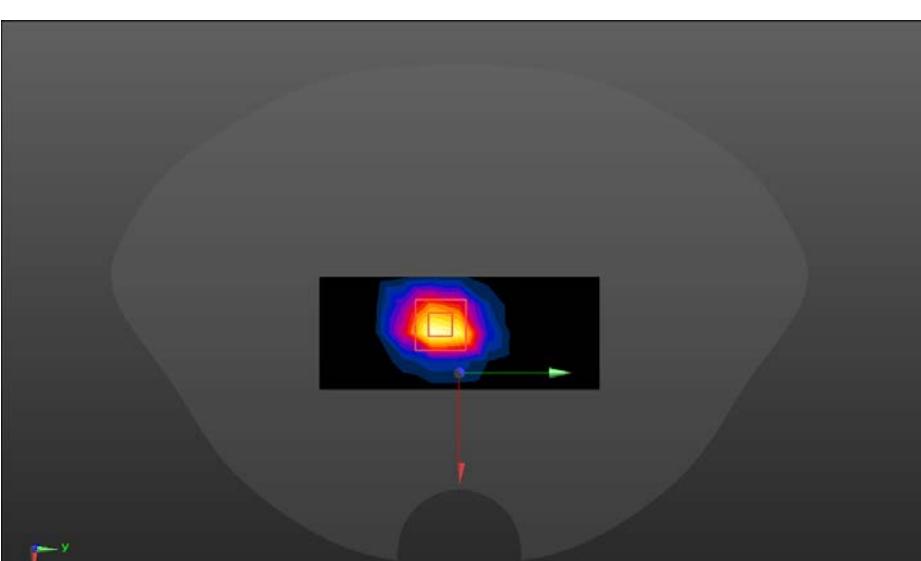
Peak SAR (extrapolated) = 18.7 W/kg

SAR(1 g) = 9.82 W/kg; SAR(10 g) = 4.96 W/kg

Maximum value of SAR (measured) = 12.9 W/kg



| System check | 2450MHz |
|---|---------|
| Communication System: UID 0, CW (0); Frequency: 2450 MHz | |
| Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.866 \text{ S/m}$; $\epsilon_r = 38.343$; $\rho = 1000 \text{ kg/m}^3$ | |
| Phantom section: Flat Section | |
| DASY5 Configuration: | |
| <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(4.50, 4.50, 4.50); Calibrated: 8/27/2019; • Sensor-Surface: 3mm (Mechanical Surface Detection), $z = -3.0, 32.0$ • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373) | |
| System Performance Check at Frequencies 2450 MHz/2450/Area Scan (8x11x1): | |
| Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$ | |
| Maximum value of SAR (measured) = 21.2 W/kg | |
| System Performance Check at Frequencies 2450 MHz/2450/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ | |
| Reference Value = 108.3 V/m; Power Drift = 0.19 dB | |
| Peak SAR (extrapolated) = 28.2 W/kg | |
| SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.14 W/kg | |
| Maximum value of SAR (measured) = 22.6 W/kg | |
|  | |

| System check | 2600MHz |
|---|---------|
| <p>Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: $f = 2600 \text{ MHz}$; $\sigma = 1.951 \text{ S/m}$; $\epsilon_r = 39.672$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2600 MHz; Calibrated: 8/27/2019 • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450) <p>SYSTEM CHECK 2600/Area Scan (5x11x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$ Maximum value of SAR (measured) = 22.7 W/kg</p> <p>SYSTEM CHECK 2600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ Reference Value = 102.2 V/m; Power Drift = 0.11 dB Peak SAR (extrapolated) = 33.7 W/kg SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.52 W/kg Maximum value of SAR (measured) = 26.6 W/kg</p>  | |

Main supply

GSM850

Head

Right cheek

Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz; Duty Cycle: 2:8.30042

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.905$ S/m; $\epsilon_r = 41.528$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

RC/GSM850/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.198 W/kg

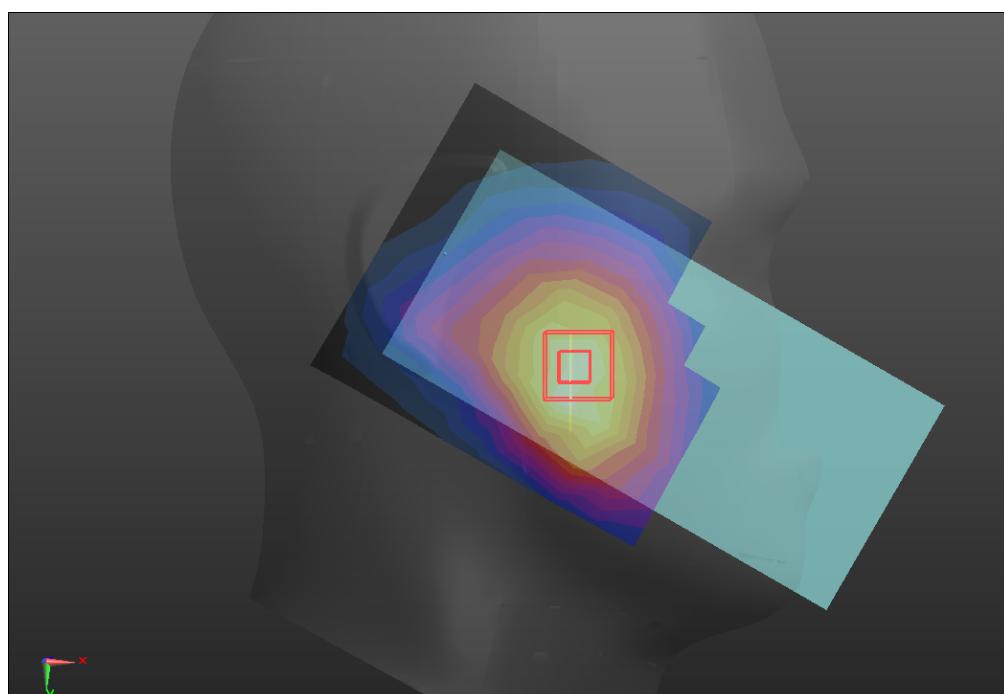
RC/GSM850/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.024 V/m; Power Drift = 0.19 dB

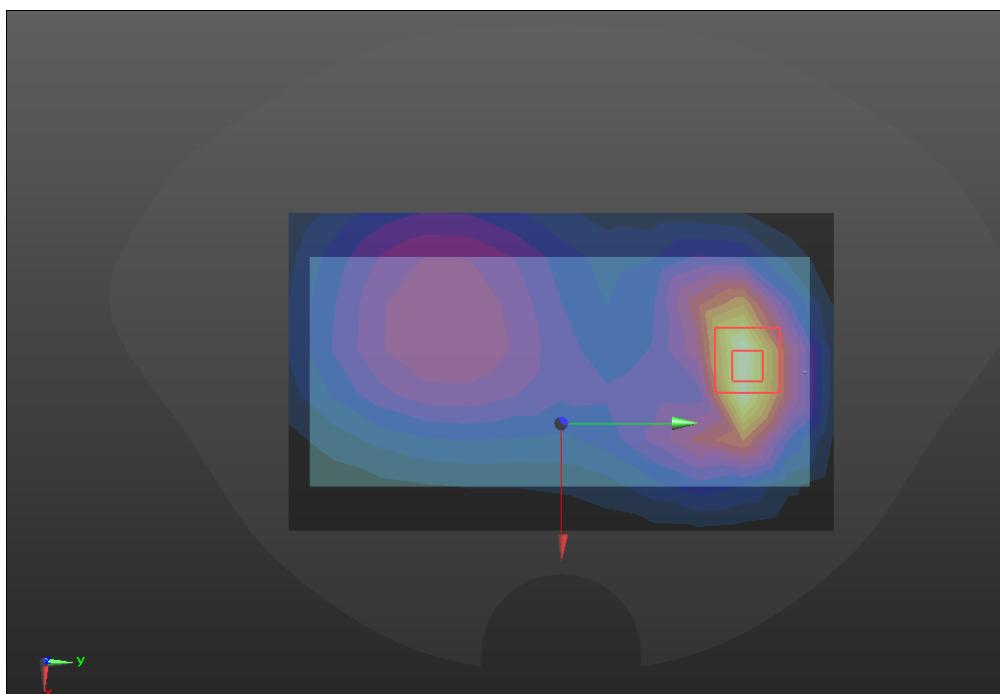
Peak SAR (extrapolated) = 0.226 W/kg

SAR(1 g) = 0.195 W/kg; SAR(10 g) = 0.128 W/kg

Maximum value of SAR (measured) = 0.192 W/kg



| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 836.6 MHz; Duty Cycle: 2:8.30042</p> <p>Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.905$ S/m; $\epsilon_r = 41.528$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/GSM 850/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.384 W/kg</p> <p>BACK/GSM 850/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 13.25 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 0.545 W/kg SAR(1 g) = 0.310 W/kg; SAR(10 g) = 0.227 W/kg Maximum value of SAR (measured) = 0.406 W/kg</p> | |



GSM1900

Head

Left cheek

Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz; Duty Cycle: 3:8.30042

Medium parameters used (interpolated): $f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ S/m}$; $\epsilon_r = 40$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

LC/GSM1900/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.032 W/kg

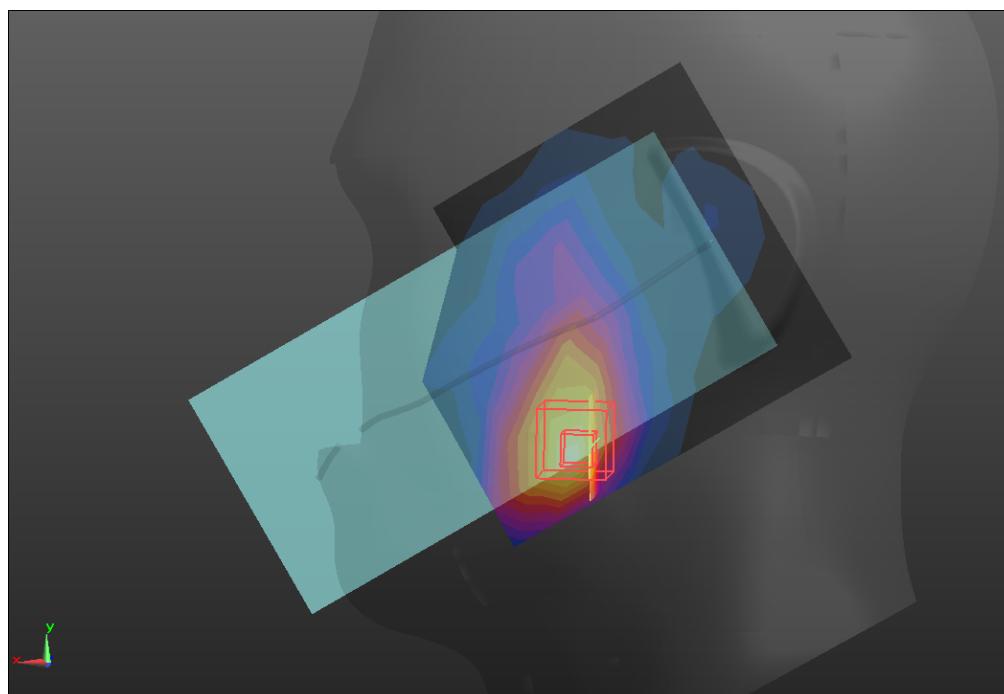
LC/GSM1900/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$,
 $dy=8\text{mm}$, $dz=5\text{mm}$

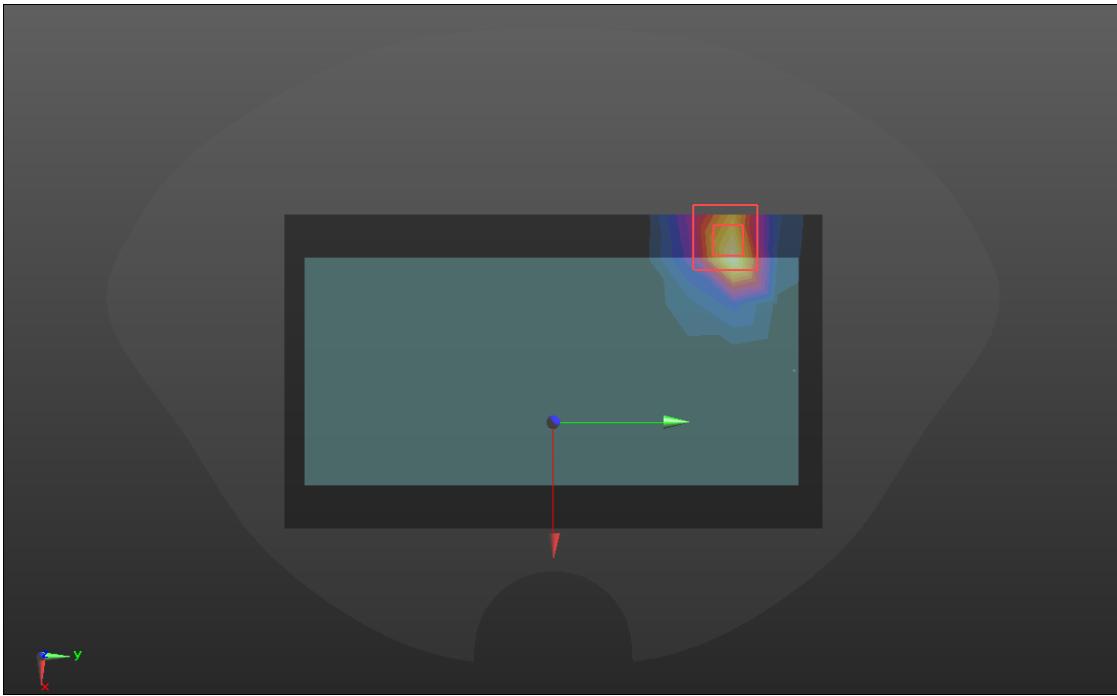
Reference Value = 1.421 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0270 W/kg

SAR(1 g) = 0.025 W/kg; SAR(10 g) = 0.011 W/kg

Maximum value of SAR (measured) = 0.028 W/kg



| Body-worn& Hotspot | Back |
|---|--------------------|
| <p>Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz; Duty Cycle: 3:8.30042</p> <p>Medium parameters used (interpolated): $f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ S/m}$; $\epsilon_r = 40$; $\rho = 1000 \text{ kg/m}^3$</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/GSM 1900/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm</p> <p>Maximum value of SAR (measured) = 0.193 W/kg</p> <p>BACK/GSM 1900/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm</p> <p>Reference Value = 1.266 V/m; Power Drift = 0.01 dB</p> <p>Peak SAR (extrapolated) = 0.334 W/kg</p> <p>SAR(1 g) = 0.176 W/kg; SAR(10 g) = 0.078 W/kg</p> <p>Maximum value of SAR (measured) = 0.220 W/kg</p>  | <p>Back</p> |

WCDMA Band II

| | |
|------|------------|
| Head | Left cheek |
|------|------------|

Communication System: UID 0, WCDMA BAND2 (0); Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³
Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

LC/WCDMA 2/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.0238 W/kg

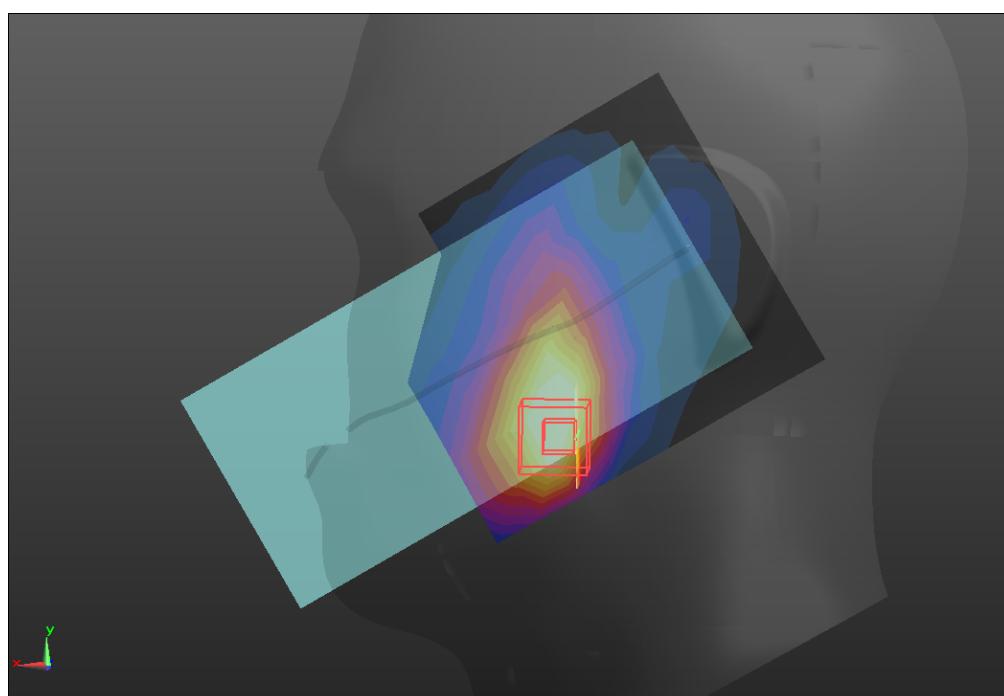
LC/WCDMA 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,
dy=8mm, dz=5mm

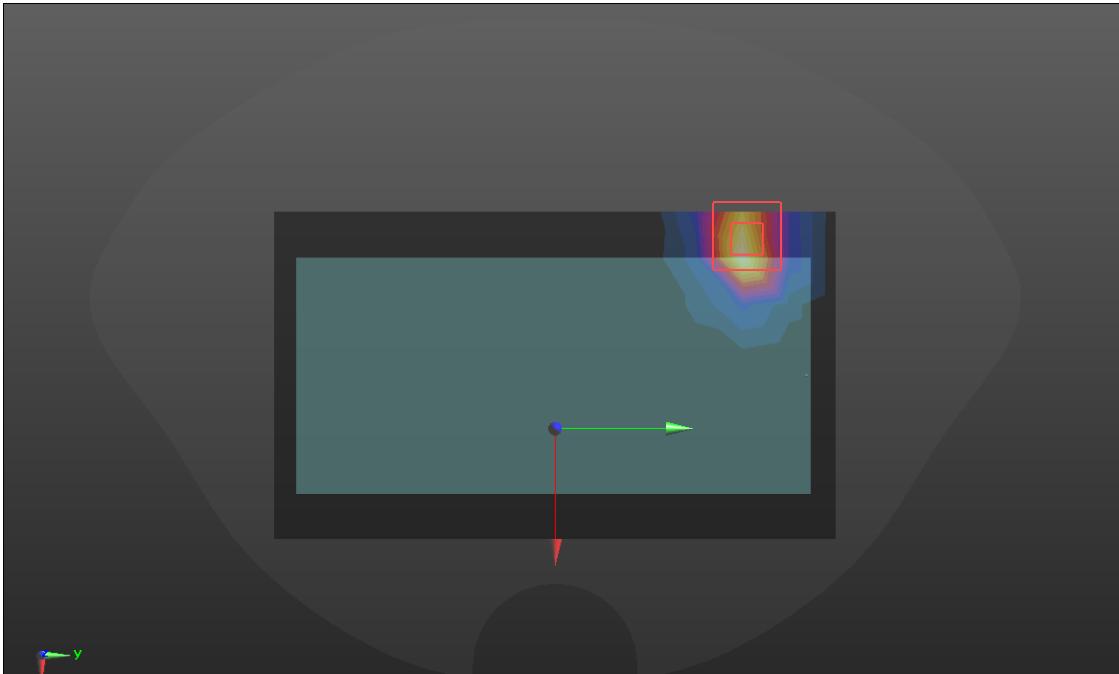
Reference Value = 1.620 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.0380 W/kg

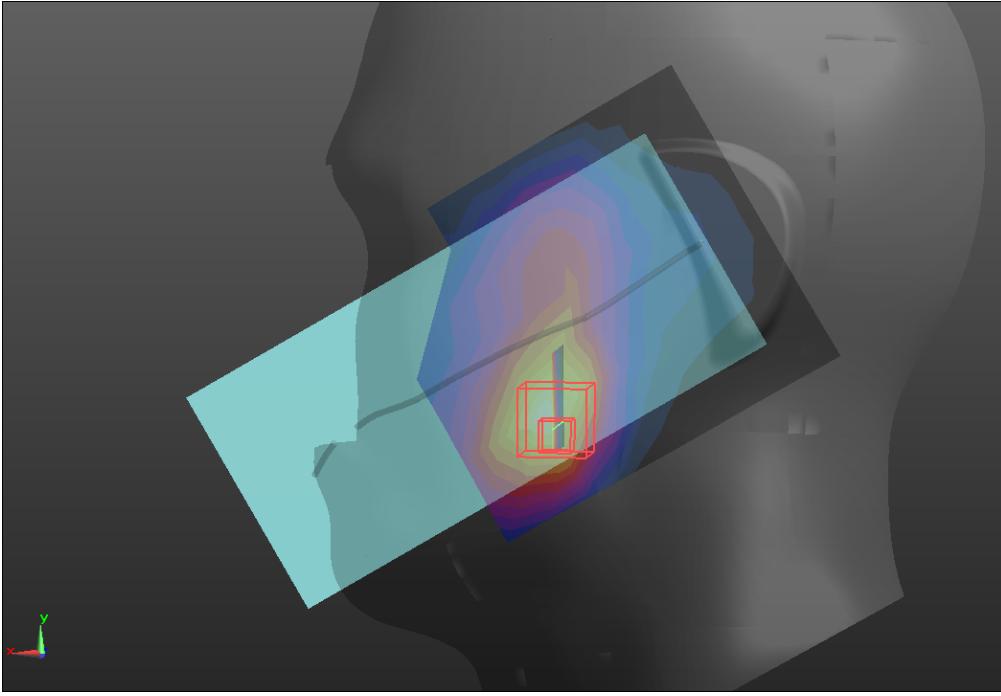
SAR(1 g) = 0.023 W/kg; SAR(10 g) = 0.014 W/kg

Maximum value of SAR (measured) = 0.0264 W/kg

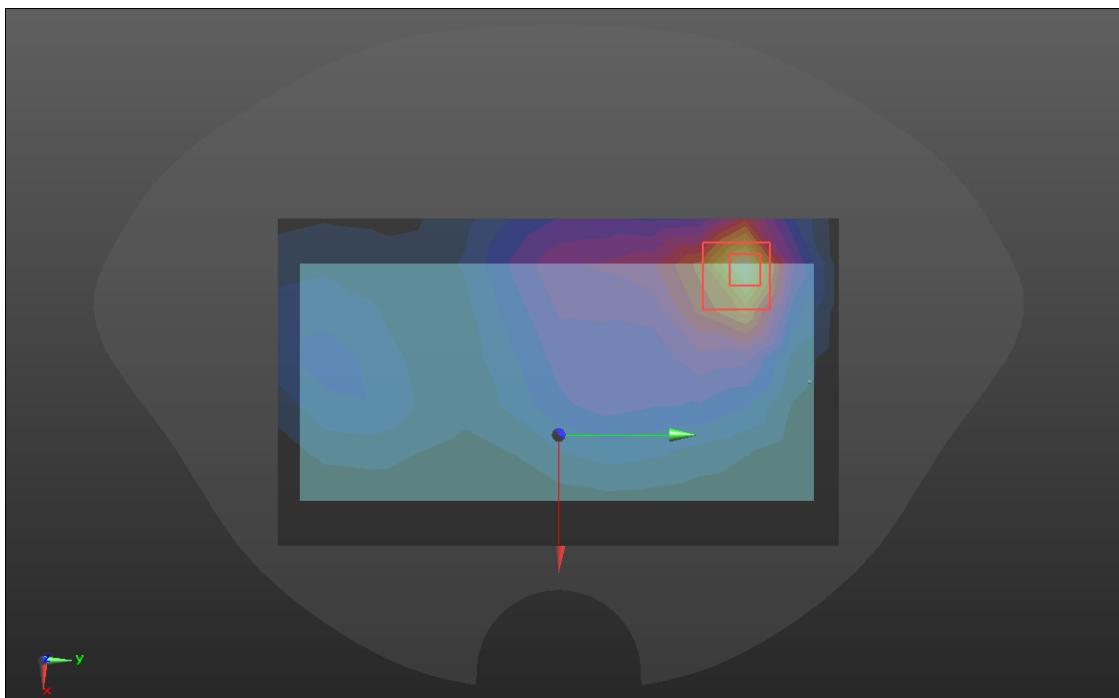


| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, WCDMA BAND2 (0); Frequency: 1880 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/WCDMA 2/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm</p> <p>Maximum value of SAR (measured) = 0.242 W/kg</p> <p>BACK/WCDMA 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm</p> <p>Reference Value = 1.580 V/m; Power Drift = 0.15 dB</p> <p>Peak SAR (extrapolated) = 0.414 W/kg</p> <p>SAR(1 g) = 0.210 W/kg; SAR(10 g) = 0.099 W/kg</p> <p>Maximum value of SAR (measured) = 0.274 W/kg</p>  | |

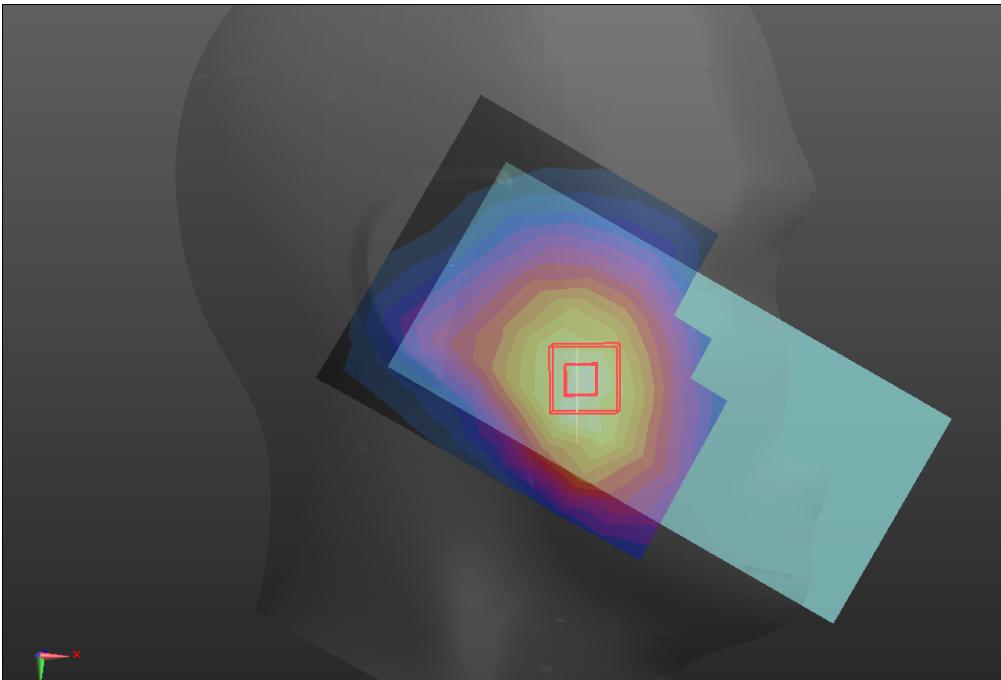
WCDMA Band IV

| Head | Left cheek |
|---|------------|
| <p>Communication System: UID 0, WCDMA BAND4 (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.375$ S/m; $\epsilon_r = 40.07$; $\rho = 1000$ kg/m³ Phantom section: Left Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>LC/WCDMA 4/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.236 W/kg</p> <p>LC/WCDMA 4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 5.335 V/m; Power Drift = 0.20 dB Peak SAR (extrapolated) = 0.312 W/kg SAR(1 g) = 0.196 W/kg; SAR(10 g) = 0.133 W/kg Maximum value of SAR (measured) = 0.245 W/kg</p>  | |

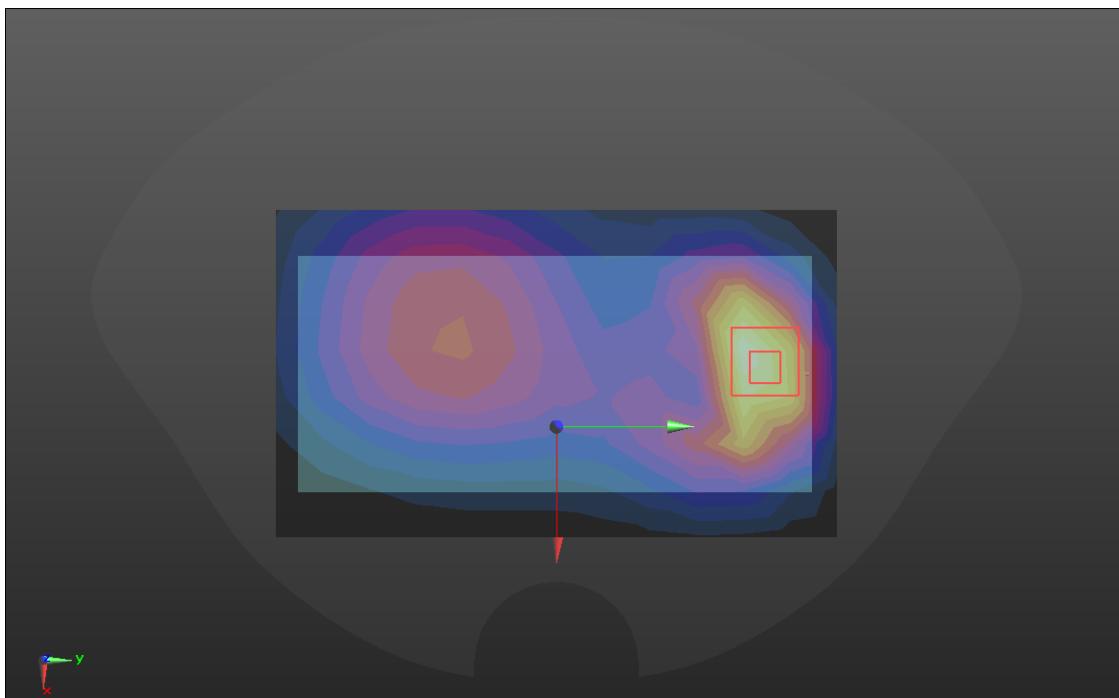
| Body-worn& Hotspot | Back |
|--|------|
| <p>Communication System: UID 0, WCDMA BAND4 (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.375$ S/m; $\epsilon_r = 40.07$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/WCDMA 4/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm</p> <p>Maximum value of SAR (measured) = 0.522 W/kg</p> <p>BACK/WCDMA 4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm</p> <p>Reference Value = 10.61 V/m; Power Drift = -0.02 dB</p> <p>Peak SAR (extrapolated) = 0.772 W/kg</p> <p>SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.225 W/kg</p> <p>Maximum value of SAR (measured) = 0.514 W/kg</p> | |



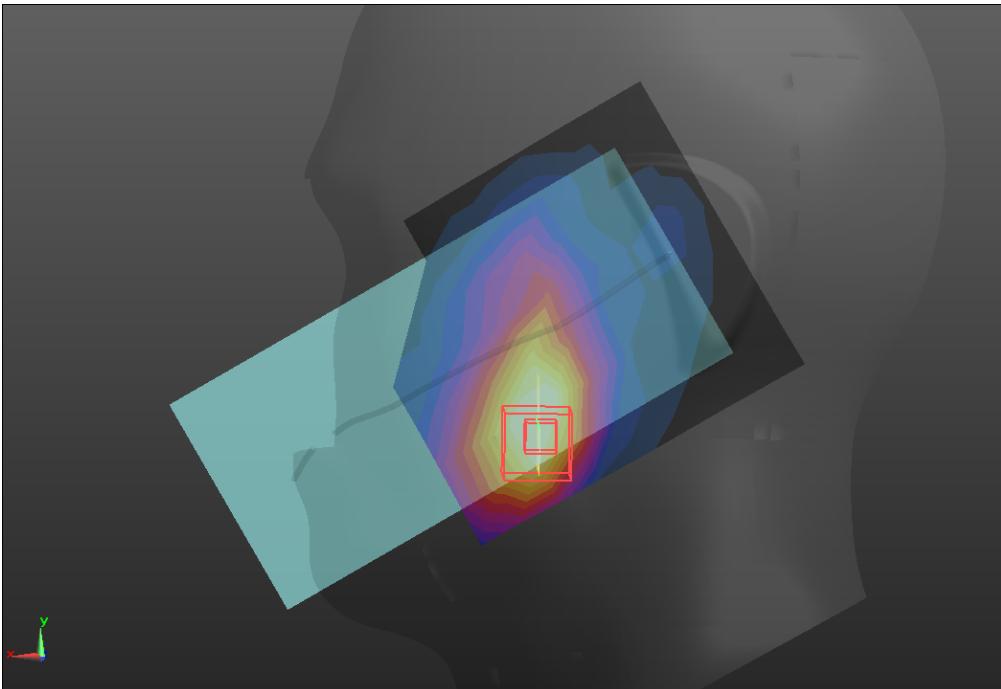
WCDMA Band V

| Head | Right cheek |
|---|-------------|
| <p>Communication System: UID 0, WCDMA BAND 5 (0); Frequency: 836.6 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.905$ S/m; $\epsilon_r = 41.528$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Right Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>RC/WCMDA 5/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.187 W/kg</p> <p>RC/WCMDA 5/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 7.032 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.215 W/kg SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.084 W/kg Maximum value of SAR (measured) = 0.185 W/kg</p>  | |

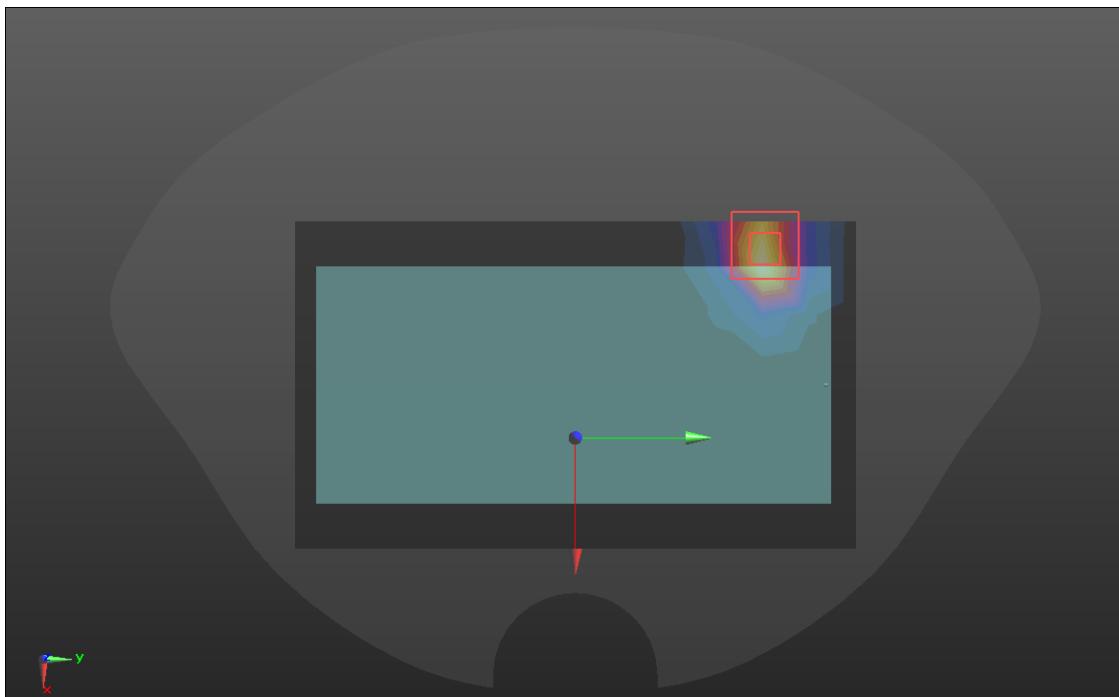
| Body-worn& Hotspot | Back |
|--|------|
| <p>Communication System: UID 0, WCDMA BAND 5 (0); Frequency: 836.6 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.905$ S/m; $\epsilon_r = 41.528$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/WCDMA 5/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm</p> <p>Maximum value of SAR (measured) = 0.251 W/kg</p> <p>BACK/WCDMA 5/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm</p> <p>Reference Value = 10.75 V/m; Power Drift = -0.02 dB</p> <p>Peak SAR (extrapolated) = 0.417 W/kg</p> <p>SAR(1 g) = 0.244 W/kg; SAR(10 g) = 0.135 W/kg</p> <p>Maximum value of SAR (measured) = 0.295 W/kg</p> | |



LTE Band 2

| Head | Left cheek |
|---|------------|
| <p>Communication System: UID 0, LTE band 02 (0); Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 1880 \text{ MHz}$; $\sigma = 1.4 \text{ S/m}$; $\epsilon_r = 40$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Left Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 2019/8/28 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>LC/LTE 2/Area Scan (8x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$ Maximum value of SAR (measured) = 0.0207 W/kg</p> <p>LC/LTE 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$ Reference Value = 1.497 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.0290 W/kg SAR(1 g) = 0.021 W/kg; SAR(10 g) = 0.011 W/kg Maximum value of SAR (measured) = 0.0220 W/kg</p>  | |

| Body-worn& Hotspot | Back |
|--|------|
| <p>Communication System: UID 0, LTE band 02 (0); Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³ Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/LTE2/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.218 W/kg</p> <p>BACK/LTE2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 1.285 V/m; Power Drift = 0.40 dB Peak SAR (extrapolated) = 0.370 W/kg SAR(1 g) = 0.182 W/kg; SAR(10 g) = 0.088 W/kg Maximum value of SAR (measured) = 0.242 W/kg</p> | |



LTE Band 4

| Head | Left cheek |
|------|------------|
|------|------------|

Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.375$ S/m; $\epsilon_r = 40.07$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

LC/LTE 4/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.204 W/kg

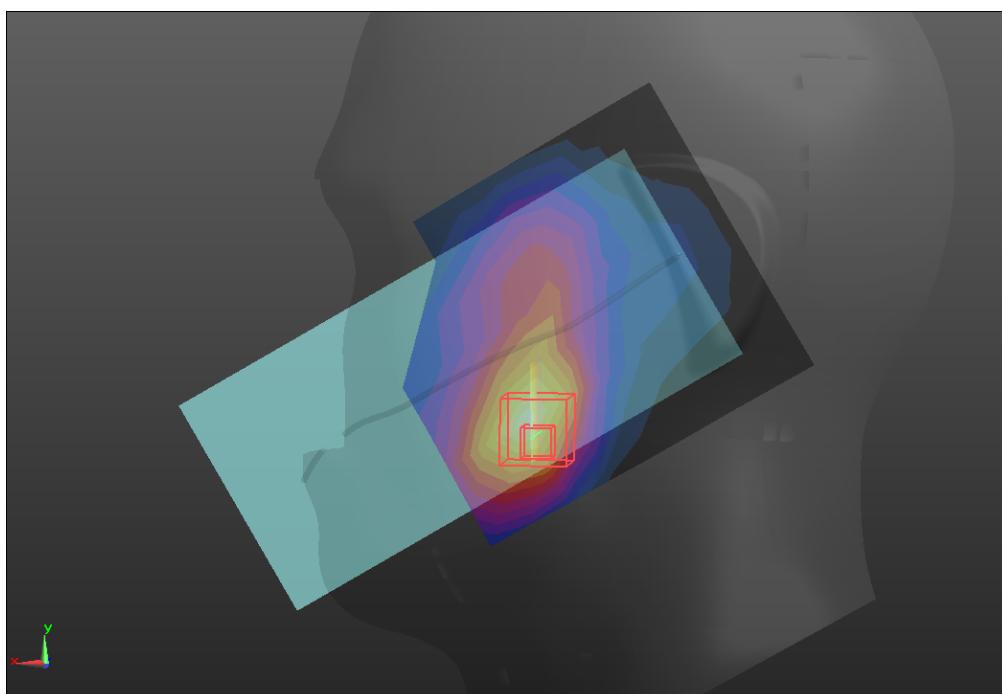
LC/LTE 4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

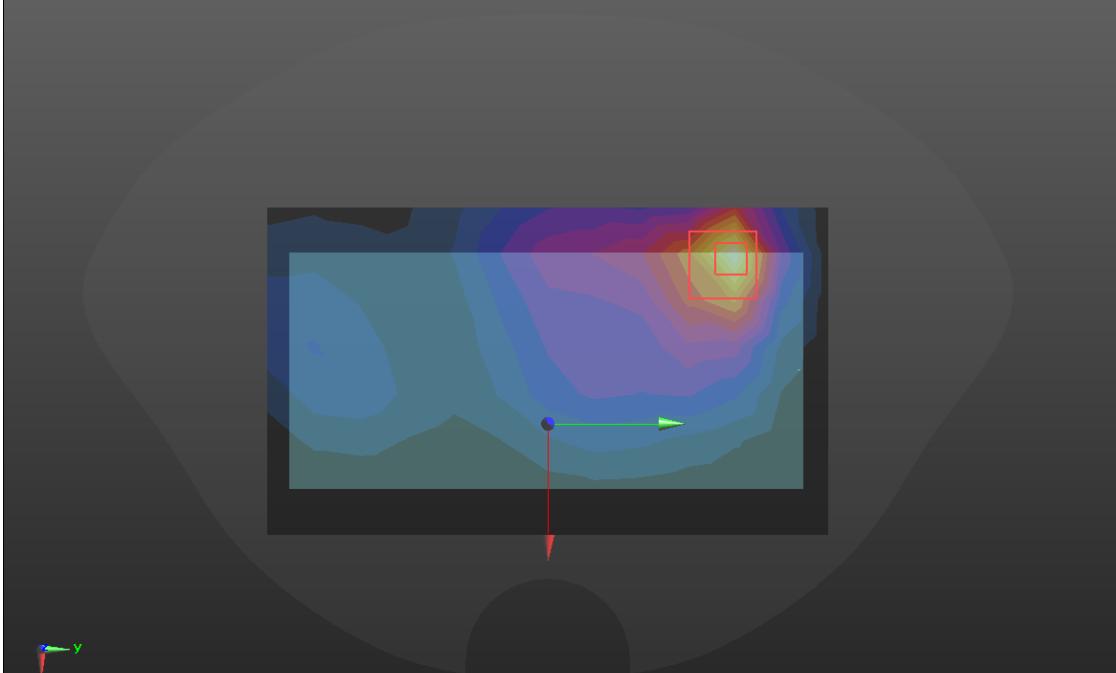
Reference Value = 5.580 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.218 W/kg

SAR(1 g) = 0.151 W/kg; SAR(10 g) = 0.086 W/kg

Maximum value of SAR (measured) = 0.209 W/kg



| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, LTE band 4 (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.375$ S/m; $\epsilon_r = 40.07$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/LTE4/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.574 W/kg</p> <p>BACK/LTE4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 10.74 V/m; Power Drift = 0.18 dB Peak SAR (extrapolated) = 0.846 W/kg SAR(1 g) = 0.374 W/kg; SAR(10 g) = 0.248 W/kg Maximum value of SAR (measured) = 0.570 W/kg</p>  | |

LTE Band 5

Head

Right cheek

Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.905$ S/m; $\epsilon_r = 41.528$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn546; Calibrated: 2019/8/28
- Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

RC/LTE 5/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm

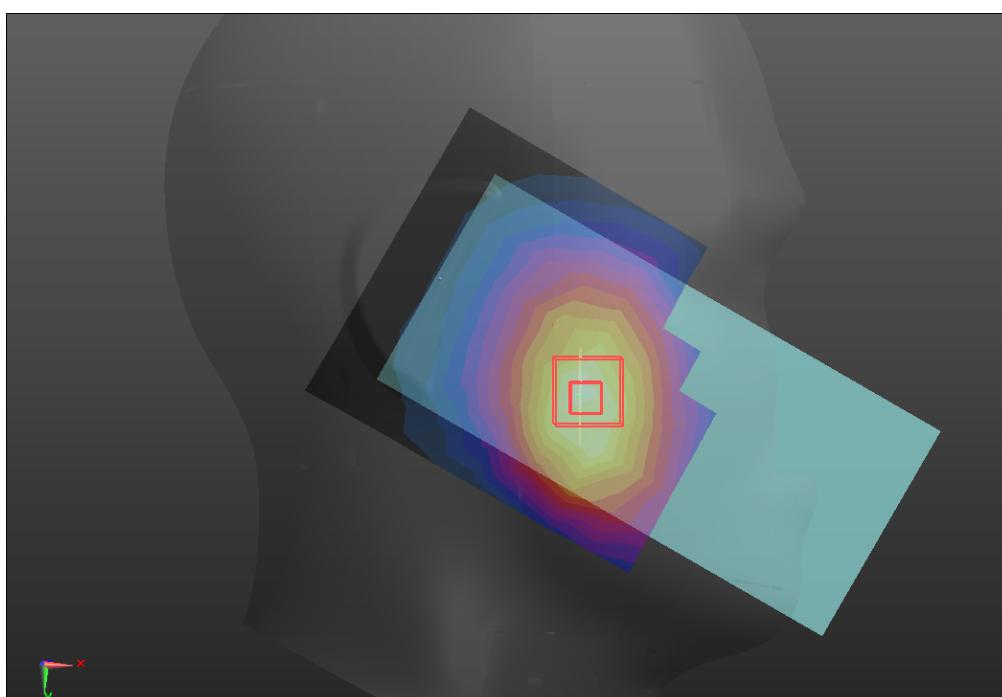
Maximum value of SAR (measured) = 0.143 W/kg

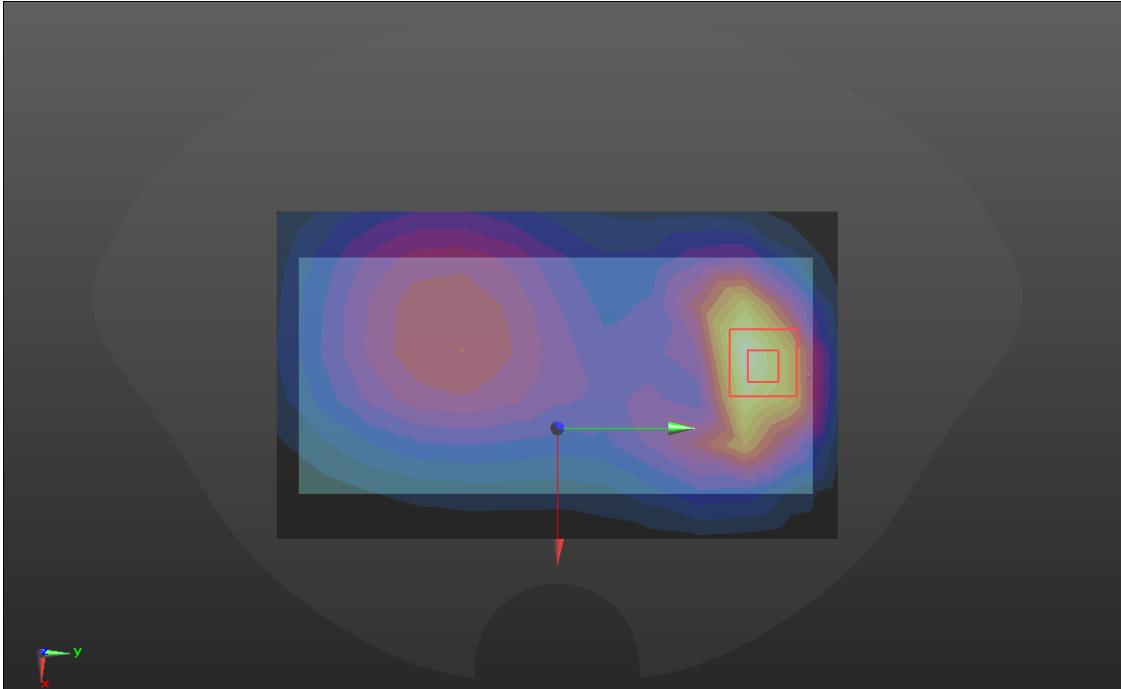
RC/LTE 5/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.768 V/m; Power Drift = 0.10 dB

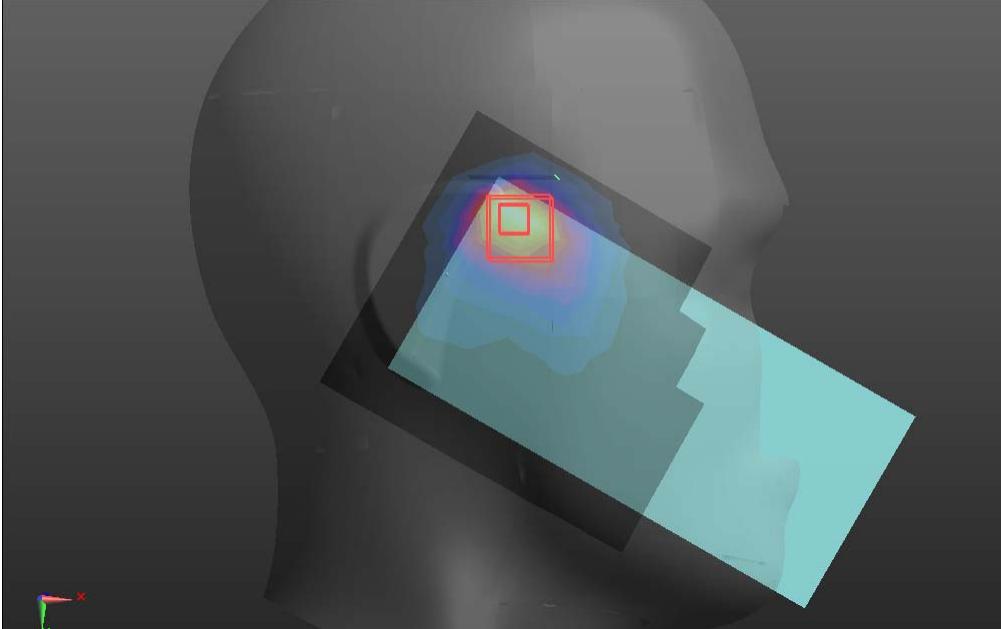
Peak SAR (extrapolated) = 0.164 W/kg

SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.097 W/kg

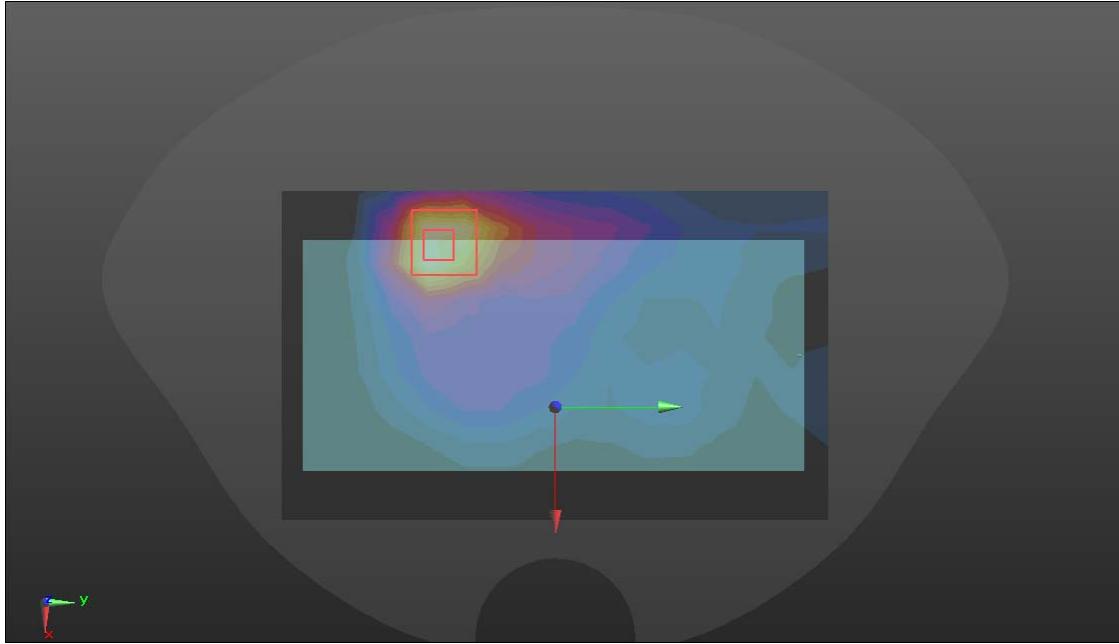


| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 836.5 \text{ MHz}$; $\sigma = 0.905 \text{ S/m}$; $\epsilon_r = 41.528$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.2, 6.2, 6.2); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/LTE5/Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$ Maximum value of SAR (measured) = 0.267 W/kg</p> <p>BACK/LTE5/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$ Reference Value = 10.86 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.428 W/kg SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.138 W/kg Maximum value of SAR (measured) = 0.302 W/kg</p>  | |

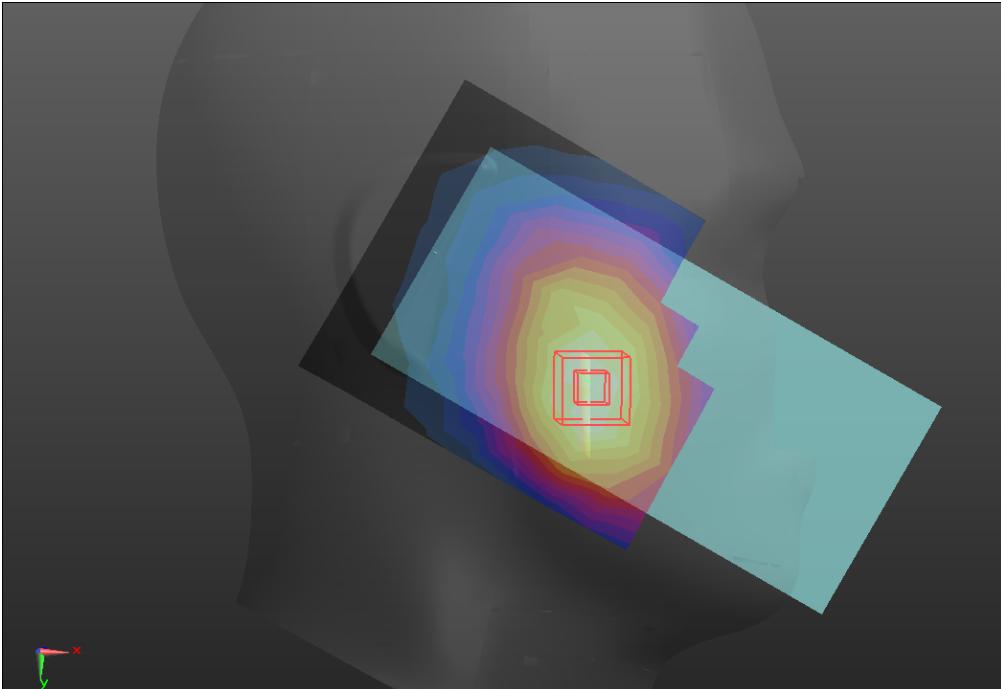
LTE Band 7

| Head | Right cheek |
|--|-------------|
| <p>Communication System: UID 0, LTE Band 7 (0); Frequency: 2535 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 2535 \text{ MHz}$; $\sigma = 1.888 \text{ S/m}$; $\epsilon_r = 39.084$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Right Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2535 MHz; Calibrated: 8/27/2019 Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 8/28/2019 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450) <p>Configuration/LTE7 2 2/Area Scan (10x11x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$ Maximum value of SAR (measured) = 1.01 W/kg</p> <p>Configuration/LTE7 2 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$ Reference Value = 9.041 V/m; Power Drift = 0.13 dB Peak SAR (extrapolated) = 1.89 W/kg SAR(1 g) = 0.911 W/kg; SAR(10 g) = 0.421 W/kg Maximum value of SAR (measured) = 1.14 W/kg</p>  | |

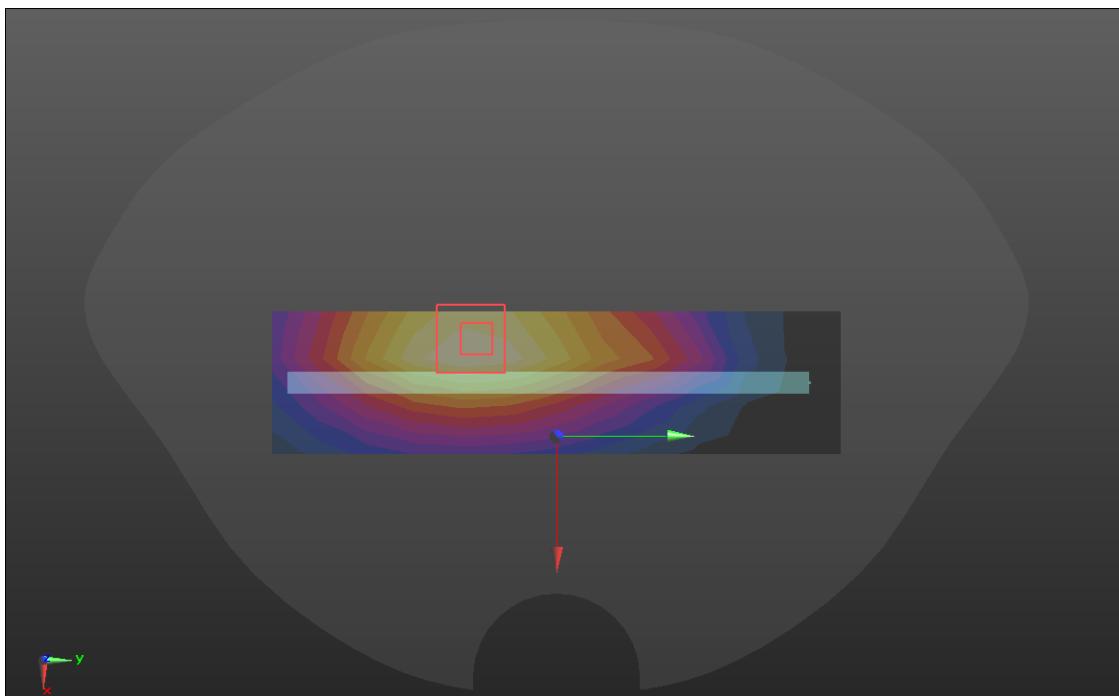
| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, LTE Band 7 (0); Frequency: 2535 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 2535 \text{ MHz}$; $\sigma = 1.888 \text{ S/m}$; $\epsilon_r = 39.084$; $\rho = 1000 \text{ kg/m}^3$</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2535 MHz; Calibrated: 8/27/2019 Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 8/28/2019 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450) <p>Configuration/LTE7/Area Scan (10x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$</p> <p>Maximum value of SAR (measured) = 0.433 W/kg</p> <p>Configuration/LTE7/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$</p> <p>Reference Value = 6.087 V/m; Power Drift = 0.11 dB</p> <p>Peak SAR (extrapolated) = 0.445 W/kg</p> <p>SAR(1 g) = 0.362 W/kg; SAR(10 g) = 0.106 W/kg</p> <p>Maximum value of SAR (measured) = 0.476 W/kg</p> | |



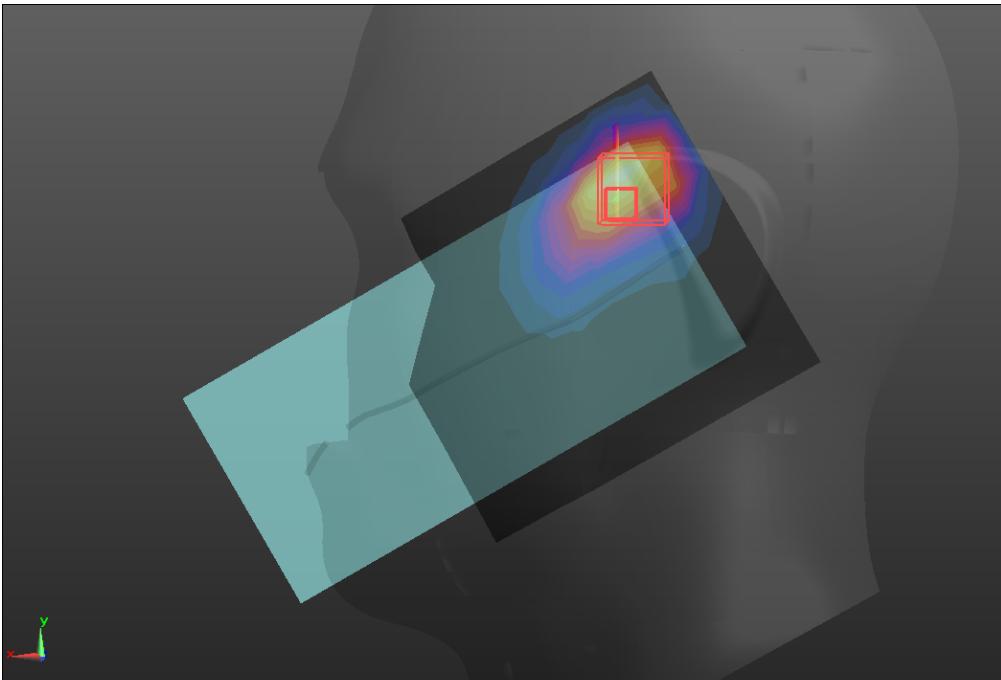
LTE Band 12

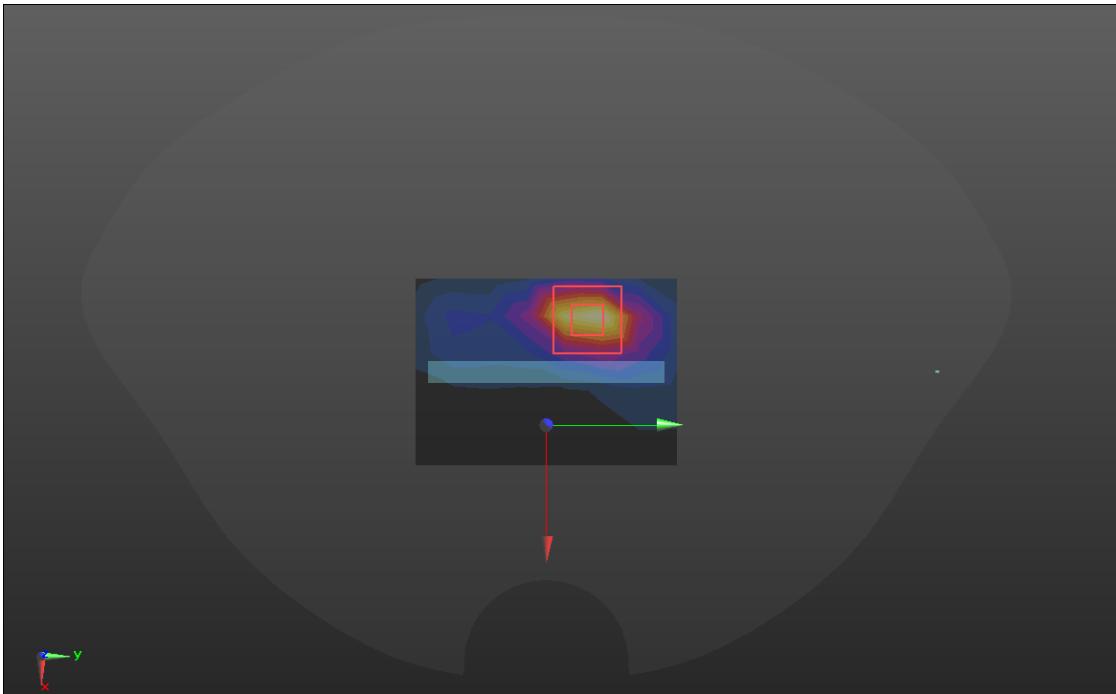
| Head | Right cheek |
|--|-------------|
| <p>Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.887$ S/m; $\epsilon_r = 42.115$; $\rho = 1000$ kg/m³ Phantom section: Right Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); Calibrated: 2019/8/27; Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 2019/8/28 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>RC/LTE 12/Area Scan (8x9x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.105 W/kg</p> <p>RC/LTE 12/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 3.314 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.129 W/kg SAR(1 g) = 0.097 W/kg; SAR(10 g) = 0.079 W/kg Maximum value of SAR (measured) = 0.112 W/kg</p>  | |

| Body-worn& Hotspot | Back |
|---|------|
| <p>Communication System: UID 0, LTE Band 12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.887$ S/m; $\epsilon_r = 42.115$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(6.34, 6.34, 6.34); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>RIGHT/LTE 12/Area Scan (4x13x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (measured) = 0.276 W/kg</p> <p>RIGHT/LTE 12/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 12.43 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.228 W/kg SAR(1 g) = 0.185 W/kg; SAR(10 g) = 0.124 W/kg Maximum value of SAR (measured) = 0.287 W/kg</p> | |

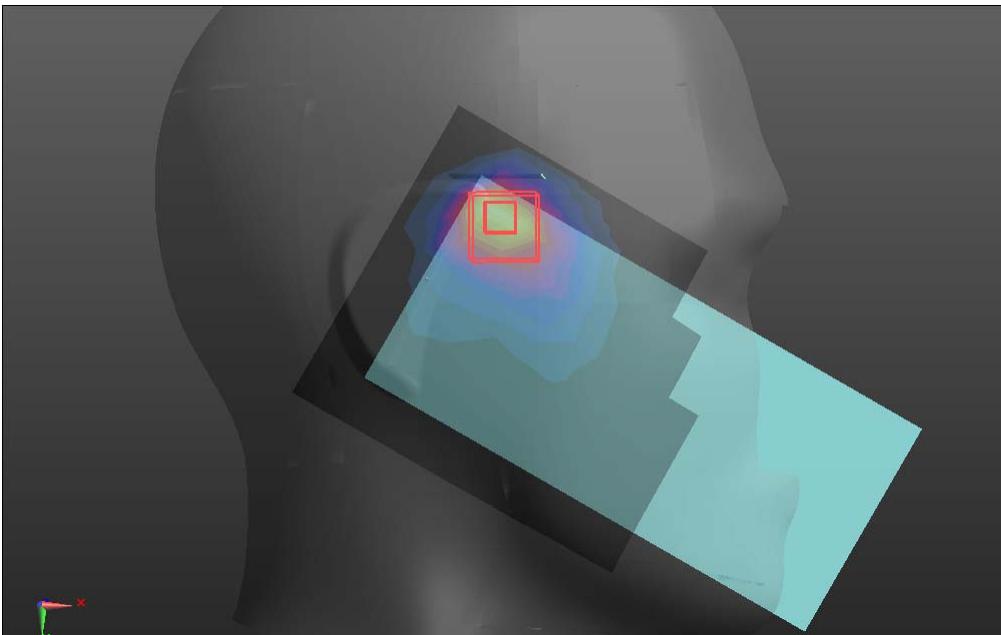


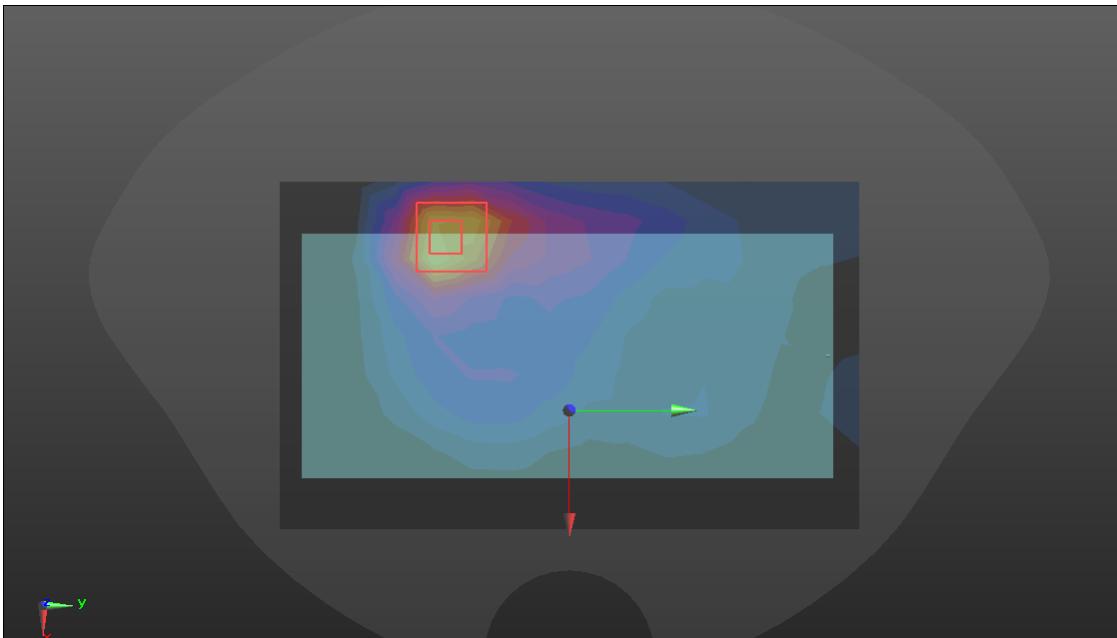
WIFI 2.4GHz

| Head | Left cheek |
|---|------------|
| <p>Communication System: UID 0, WIFI 2.4GHz (0); Frequency: 2437 MHz; Duty Cycle: 0.972:1 Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.788$ S/m; $\epsilon_r = 39.219$; $\rho = 1000$ kg/m³ Phantom section: Left Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(4.5, 4.5, 4.5); Calibrated: 2019/8/27; Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 2019/8/28 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>LC/WIFI 2.4/Area Scan (10x11x1): Measurement grid: dx=12mm, dy=12mm Maximum value of SAR (measured) = 0.472 W/kg</p> <p>LC/WIFI 2.4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 8.429 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.783 W/kg SAR(1 g) = 0.317 W/kg; SAR(10 g) = 0.182 W/kg Maximum value of SAR (measured) = 0.486 W/kg</p>  | |

| Hotspot | Top |
|---|-----|
| <p>Communication System: UID 0, WIFI 2.4GHz (0); Frequency: 2437 MHz; Duty Cycle: 0.972:1 Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.788$ S/m; $\epsilon_r = 39.219$; $\rho = 1000$ kg/m³ Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> Probe: ES3DV3 - SN3127; ConvF(4.5, 4.5, 4.5); Calibrated: 2019/8/27; Sensor-Surface: 3mm (Mechanical Surface Detection) Electronics: DAE4 Sn546; Calibrated: 2019/8/28 Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>top/WIFI 2.4/Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm Maximum value of SAR (measured) = 0.0994 W/kg</p> <p>top/WIFI 2.4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 2.856 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 0.179 W/kg SAR(1 g) = 0.080 W/kg; SAR(10 g) = 0.035 W/kg Maximum value of SAR (measured) = 0.112 W/kg</p>  | |

Secondary supply (worst case among all the frequency bands)

| Head | Right cheek |
|--|-------------|
| <p>Communication System: UID 0, LTE Band 7 (0); Frequency: 2560 MHz; Duty Cycle: 1:1 Medium parameters used (interpolated): $f = 2560$ MHz; $\sigma = 1.926$ S/m; $\epsilon_r = 39.024$; $\rho = 1000$ kg/m³ Phantom section: Right Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(4.32, 4.32, 4.32) @ 2560 MHz; Calibrated: 8/27/2019 • Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 8/28/2019 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.12 (7450) <p>Configuration/LTE7 2 2 2/Area Scan (10x11x1): Measurement grid: $dx=12$ mm, $dy=12$ mm Maximum value of SAR (measured) = 1.05 W/kg</p> <p>Configuration/LTE7 2 2 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm Reference Value = 10.50 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 1.71 W/kg SAR(1 g) = 0.842 W/kg; SAR(10 g) = 0.413 W/kg Maximum value of SAR (measured) = 1.12 W/kg</p>  | |

| Body-worn& Hotspot | Back |
|--|---|
| <p>Communication System: UID 0, WCDMA BAND4 (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1</p> <p>Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.375$ S/m; $\epsilon_r = 40.07$; $\rho = 1000$ kg/m³</p> <p>Phantom section: Flat Section</p> <p>DASY5 Configuration:</p> <ul style="list-style-type: none"> • Probe: ES3DV3 - SN3127; ConvF(5.1, 5.1, 5.1); Calibrated: 2019/8/27; • Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection) • Electronics: DAE4 Sn546; Calibrated: 2019/8/28 • Phantom: 1660; Type: QD 000 P40 CD; Serial: xxxx • Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373) <p>BACK/WCDMA 4/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm</p> <p>Maximum value of SAR (measured) = 0.479 W/kg</p> <p>BACK/WCDMA 4/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm</p> <p>Reference Value = 11.06 V/m; Power Drift = -0.14 dB</p> <p>Peak SAR (extrapolated) = 0.688 W/kg</p> <p>SAR(1 g) = 0.392 W/kg; SAR(10 g) = 0.195 W/kg</p> <p>Maximum value of SAR (measured) = 0.464 W/kg</p> | <p>Back</p>  |

ANNEX B – RELEVANT PAGES FROM CALIBRATION REPORTS

DAE4 Sn:546

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SRTC (Auden)

Certificate No: DAE4-546_Aug19

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BM - SN: 546

Calibration procedure(s) QA CAL-06.v29
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: August 28, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility; environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TF critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|--|--|---|--|
| Keithley Multimeter Type 2001 | SN: 0810276 | 03-Sep-16 (No:23488) | Sep-19 |
| Secondary Standards | ID # | Check Date (In house) | Scheduled Check |
| Auto DAE Calibration Unit Calibrator Box V2.1 | SE UWS 053 AA 1001 SF UMS 006 AA 1002 | 07-Jan-19 (in house check); 07-Jan-19 (in house check) | In house check: Jan-20 In house check: Jan-20 |

Calibrated by:

Name

Eric Haintfeld

Function

Laboratory Technician

Signature

Approved by:

Name

Sven Kuhn

Function

Deputy Manager

Issued: August 28, 2019

Certificate No: DAE4-546_Aug19

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Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary

| | |
|-----------------|---|
| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
 - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
 - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
 - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
 - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
 - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = $6.1\mu V$, full range = -100...+300 mVLow Range: 1LSB = $61nV$, full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---------------------|----------------------------|----------------------------|----------------------------|
| High Range | $405.352 \pm 0.02\% (k=2)$ | $404.098 \pm 0.02\% (k=2)$ | $404.222 \pm 0.02\% (k=2)$ |
| Low Range | $3.98830 \pm 1.50\% (k=2)$ | $3.95641 \pm 1.50\% (k=2)$ | $3.97981 \pm 1.50\% (k=2)$ |

Connector Angle

| | |
|---|---------------------------|
| Connector Angle to be used in DASY system | $237.0^\circ \pm 1^\circ$ |
|---|---------------------------|

Appendix (Additional assessments outside the scope of SCS0108)
1. DC Voltage Linearity

| High Range | | Reading (μ V) | Difference (μ V) | Error (%) |
|------------|---------|--------------------|-----------------------|-----------|
| Channel X | + Input | 199995.19 | -1.38 | -0.00 |
| Channel X | + Input | 20000.83 | -0.80 | -0.00 |
| Channel X | - Input | -19997.26 | 4.75 | -0.02 |
| Channel Y | + Input | 199969.47 | -7.29 | -0.00 |
| Channel Y | + Input | 20002.52 | 0.88 | 0.00 |
| Channel Y | - Input | -20001.62 | 0.45 | -0.00 |
| Channel Z | + Input | 199996.94 | 0.28 | 0.00 |
| Channel Z | + Input | 19998.55 | -3.07 | -0.02 |
| Channel Z | - Input | -20002.95 | -0.90 | 0.00 |

| Low Range | | Reading (μ V) | Difference (μ V) | Error (%) |
|-----------|---------|--------------------|-----------------------|-----------|
| Channel X | + Input | 2001.48 | 0.50 | 0.03 |
| Channel X | + Input | 201.14 | -0.15 | -0.07 |
| Channel X | - Input | -198.97 | -0.38 | 0.19 |
| Channel Y | + Input | 2000.52 | -0.41 | -0.02 |
| Channel Y | + Input | 200.95 | -0.13 | -0.07 |
| Channel Y | - Input | -199.00 | -0.30 | 0.15 |
| Channel Z | + Input | 2000.96 | -0.05 | -0.00 |
| Channel Z | + Input | 200.01 | -1.11 | -0.55 |
| Channel Z | - Input | -199.97 | -1.27 | 0.64 |

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (μ V) | Low Range Average Reading (μ V) |
|-----------|-----------------------------------|--|---|
| Channel X | 200 | 2.12 | -0.11 |
| | -200 | 0.79 | -0.91 |
| Channel Y | 200 | 1.95 | 0.12 |
| | -200 | -0.90 | -1.27 |
| Channel Z | 200 | 1.15 | 1.74 |
| | -200 | -4.83 | -4.14 |

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (μ V) | Channel Y (μ V) | Channel Z (μ V) |
|-----------|--------------------|----------------------|----------------------|----------------------|
| Channel X | 200 | - | -2.05 | -3.29 |
| Channel Y | 200 | 9.27 | - | -0.65 |
| Channel Z | 200 | 4.64 | 6.99 | - |

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|-----------|------------------|-----------------|
| Channel X | 15840 | 15900 |
| Channel Y | 16134 | 12789 |
| Channel Z | 15911 | 16844 |

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

| | Average (μ V) | min. Offset (μ V) | max. Offset (μ V) | Std. Deviation (μ V) |
|-----------|--------------------|------------------------|------------------------|---------------------------|
| Channel X | 1.15 | 0.11 | 3.01 | 0.45 |
| Channel Y | 0.12 | -0.83 | 1.50 | 0.46 |
| Channel Z | -0.42 | -1.81 | 0.61 | 0.42 |

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MΩ) |
|-----------|----------------|----------------|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|----------------|-------------------|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.8 |

9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|----------------|-------------------|---------------|-------------------|
| Supply (+ Vcc) | +0.01 | +8 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |

ES3DV3 Sn:3127

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Accreditation No.: SCS 0108

Client

SRTC (Auden)

Certificate No: ES3-3127_Aug19

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3127

Calibration procedure(s): QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes

Calibration date: August 27, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility, environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (N/A/E critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|---------------------------------|-----------------------|
| Power meter NRP | SN: 104778 | 03-Apr-19 (No. 217-02892/02893) | Apr-20 |
| Power sensor NRP-Z91 | SN: 103244 | 03-Apr-19 (No. 217-02892) | Apr-20 |
| Power sensor NRP-Z91 | SN: 103245 | 03-Apr-19 (No. 217-02893) | Apr-20 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 04-Apr-19 (No. 217-02894) | Apr-20 |
| DAF4 | SN: 980 | 18-Oct-18 (No. DAE4_888_Dec18) | Dec-18 |
| Reference Probe ES3DV2 | SN: 3013 | 31-Dec-18 (No. ES3-3013_Dec18) | Dec-18 |

| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
|-------------------------|------------------|-----------------------------------|------------------------|
| Power meter E4419B | SN: GD41293B/4 | 06-Apr-18 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A | SN: MY41498087 | 06-Apr-18 (in house check Jun-18) | In house check: Jun-20 |
| Power sensor E4412A | SN: 000110210 | 06-Apr-18 (in house check Jun-18) | In house check: Jun-20 |
| RF generator HP 8648C | SN: US3942U01700 | 04-Aug-99 (in house check Jun-18) | In house check: Jun-20 |
| Network Analyzer E8368A | SN: US41080477 | 31-Mar-14 (in house check Oct-18) | In house check: Oct-19 |

| | | | |
|---------------|------------------|---------------------------------|------------|
| Calibrated by | Name: Manu Soitz | Function: Laboratory Technician | Signature: |
| Approved by | Karla Pakovic | Technical Manager | Signature: |

Issued: August 29, 2019

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Certificate No: ES3-3127_Aug19

Page: 1 of 9

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

| | |
|-----------------------|--|
| TSL | tissue simulating liquid |
| NORM _{x,y,z} | sensitivity in free space |
| ConvF | sensitivity in TSL / NORM _{x,y,z} |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C, D | modulation dependent linearization parameters |
| Polarization ϕ | ϕ rotation around probe axis |
| Polarization β | β rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\beta = 0$ is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- $NORM_{x,y,z}$: Assessed for E-field polarization $\beta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). $NORM_{x,y,z}$ are only intermediate values, i.e., the uncertainties of $NORM_{x,y,z}$ does not affect the E²-field uncertainty inside TSL (see below ConvF).
- $NORM(f)x,y,z = NORM_{x,y,z} * frequency_response$ (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- $DCPx,y,z$: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR : PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- $Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z; A, B, C, D$ are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- $ConvF$ and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to $NORM_{x,y,z} * ConvF$ whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical Isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

ES3DV3 - SN:3127

August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|----------|----------|----------|--------------|
| Norm ($\mu\text{V}/(\text{Vm})^2$) ^a | 1.26 | 1.23 | 1.19 | $\pm 10.1\%$ |
| DCP (mV) ^b | 103.2 | 103.9 | 103.8 | |

Calibration Results for Modulation Response

| UID | Communication System Name | A dB | B dB $\sqrt{\mu\text{V}}$ | C | D dB | VR mV | Max dev. | Unc (k=2) |
|-----|---------------------------|---------|------------------------------|-----|---------|----------|-------------|--------------|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 216.9 | +3.5 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 214.8 | |
| | | Y | 0.0 | 0.0 | 1.0 | | 213.3 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^a The uncertainties of Norm X,Y,Z do not affect the E²*old uncertainty inside TSL (see Page 5)

^b Numerical linearization parameter uncertainty not required

^c Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

ES3DV3- SN:3127

August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127**Other Probe Parameters**

| | |
|---|------------|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | -19 |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 10 mm |
| Tip Diameter | 4 mm |
| Probe Tip to Sensor X Calibration Point | 2 mm |
| Probe Tip to Sensor Y Calibration Point | 2 mm |
| Probe Tip to Sensor Z Calibration Point | 2 mm |
| Recommended Measurement Distance from Surface | 3 mm |

ES3DV3-SN:3127

August 27, 2019

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3127

Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] ^C | Relative Permittivity ^F | Conductivity [S/m] ^F | ConvF X | ConvF Y | ConvF Z | Alpha ^G | Depth ^H [mm] | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750 | 41.9 | 0.89 | 6.34 | 6.34 | 6.34 | 0.80 | 1.25 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 6.20 | 6.20 | 6.20 | 0.42 | 1.61 | ± 12.0 % |
| 1810 | 40.0 | 1.40 | 5.10 | 5.10 | 5.10 | 0.70 | 1.20 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 5.02 | 5.02 | 5.02 | 0.69 | 1.27 | ± 12.0 % |
| 2300 | 39.5 | 1.87 | 4.68 | 4.68 | 4.68 | 0.63 | 1.38 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 4.50 | 4.50 | 4.50 | 0.67 | 1.37 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 4.32 | 4.32 | 4.32 | 0.70 | 1.35 | ± 12.0 % |

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 84, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 8 MHz is 4.9 MHz, and ConvF assessed at 13 MHz is 9.19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

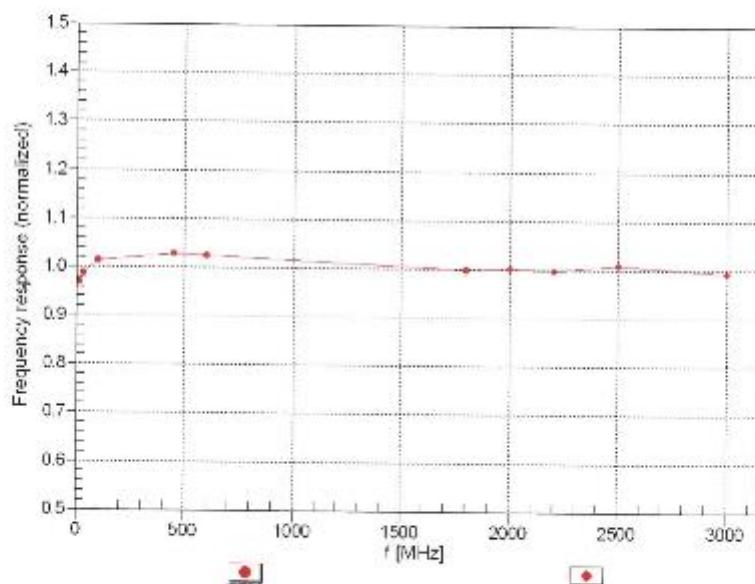
^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

ES3DV3-SN:3127

August 27, 2019

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



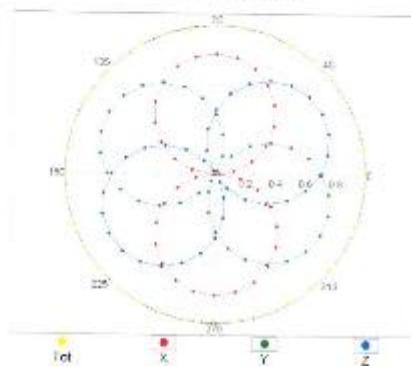
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

ES3DV3- SN:3127

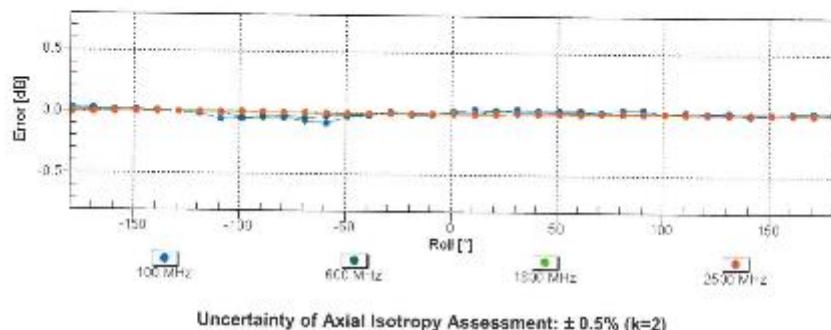
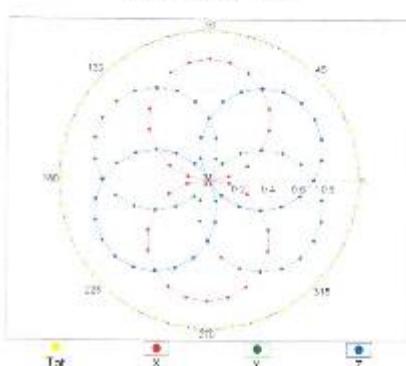
August 27, 2019

Receiving Pattern (ϕ), $\theta = 0^\circ$

f=600 MHz, TEM



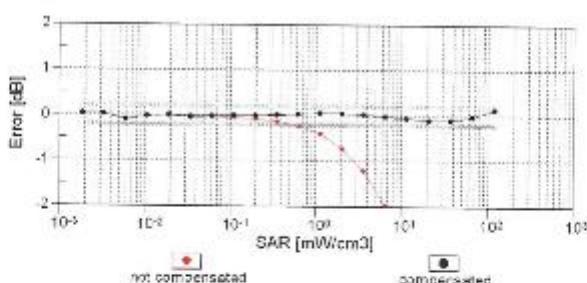
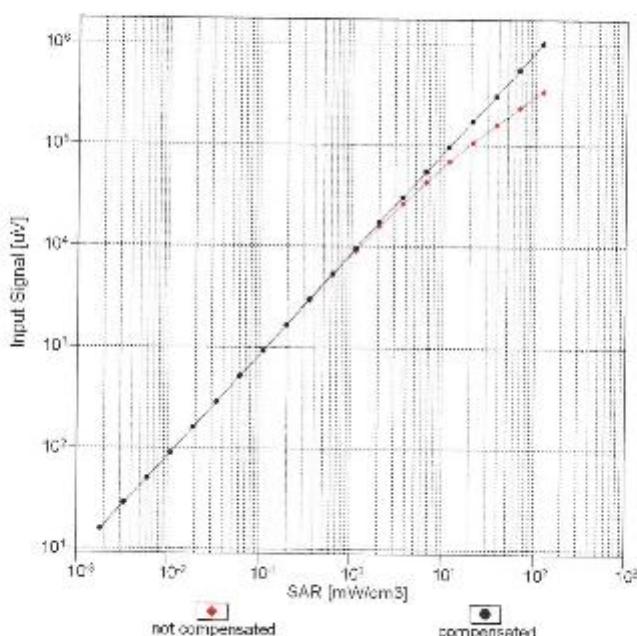
f=1800 MHz, R22



ES3DV3- SN:3127

August 27, 2019

Dynamic Range f(SAR_{head})
(TEM cell , f_{eval}= 1900 MHz)

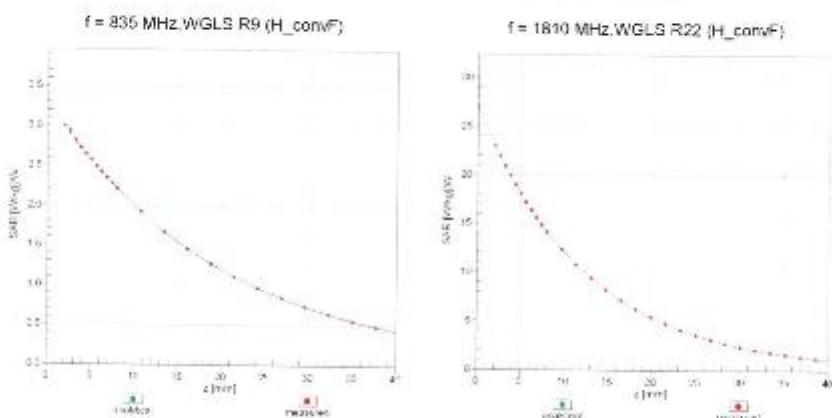


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ES3DV3 SN:3127

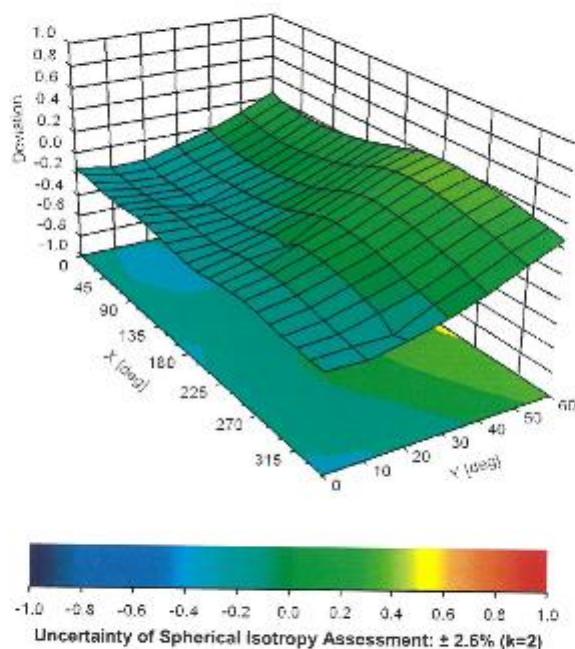
August 27, 2019

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900$ MHz



Certificate No: ES3-3127_Aug19

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D750V3 Sn:1101


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Client

SRTC

Certificate No: Z17-97134

CALIBRATION CERTIFICATE

Object D750V3 - SN: 1101

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22 ± 3)°C and humidity<70%.

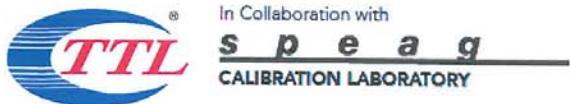
Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|--|-----------------------|
| Power Meter NRVD | 102196 | 02-Mar-17 (CTTL, No.J17X01254) | Mar-18 |
| Power sensor NRV-Z5 | 100596 | 02-Mar-17 (CTTL, No.J17X01254) | Mar-18 |
| Reference Probe EX3DV4 | SN 7433 | 26-Sep-16(SPEAG, No.EX3-7433_Sep16) | Sep-17 |
| DAE4 | SN 1331 | 19-Jan-17(CTTL-SPEAG, No.Z17-97015) | Jan-18 |
| Secondary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
| Signal Generator E4438C | MY49071430 | 13-Jan-17 (CTTL, No.J17X00286) | Jan-18 |
| Network Analyzer E5071C | MY46111013 | 13-Jan-17 (CTTL, No.J17X00285) | Jan-18 |

| Calibrated by: | Name | Function | Signature |
|----------------|-------------|--------------------|-----------|
| Calibrated by: | Zhao Jing | SAR Test Engineer | |
| Reviewed by: | Yu Zongying | SAR Test Engineer | |
| Approved by: | Qi Dianyuan | SAR Project Leader | |

Issued: September 16, 2017

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Glossary:

| | |
|-------|--------------------------------|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORMx,y,z |
| N/A | not applicable or not measured |

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|------------------------------|--------------------------|--------------|
| DASY Version | DASY52 | 52.10.0.1446 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Triple Flat Phantom 5.1C | |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 750 MHz ± 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 41.9 | 0.89 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 41.5 ± 6 % | 0.88 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C | --- | --- |

SAR result with Head TSL

| | | |
|---|--------------------|---------------------------|
| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
| SAR measured | 250 mW input power | 2.05 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 8.26 mW /g ± 18.8 % (k=2) |
| SAR averaged over 10 cm ³ (10 g) of Head TSL | Condition | |
| SAR measured | 250 mW input power | 1.34 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 5.39 mW /g ± 18.7 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 55.5 | 0.96 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 55.4 ± 6 % | 0.95 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C | --- | --- |

SAR result with Body TSL

| | | |
|---|--------------------|---------------------------|
| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
| SAR measured | 250 mW input power | 2.15 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 8.69 mW /g ± 18.8 % (k=2) |
| SAR averaged over 10 cm ³ (10 g) of Body TSL | Condition | |
| SAR measured | 250 mW input power | 1.42 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 5.73 mW /g ± 18.7 % (k=2) |



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

| | |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 53.9Ω+ 0.24jΩ |
| Return Loss | - 28.4dB |

Antenna Parameters with Body TSL

| | |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 52.0Ω- 2.22jΩ |
| Return Loss | - 30.6dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.136 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| | |
|-----------------|-------|
| Manufactured by | SPEAG |
|-----------------|-------|



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DASY5 Validation Report for Head TSL

Date: 09.13.2017

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1101

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.879 \text{ S/m}$; $\epsilon_r = 41.54$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(10.01, 10.01, 10.01); Calibrated: 9/26/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 1/19/2017
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

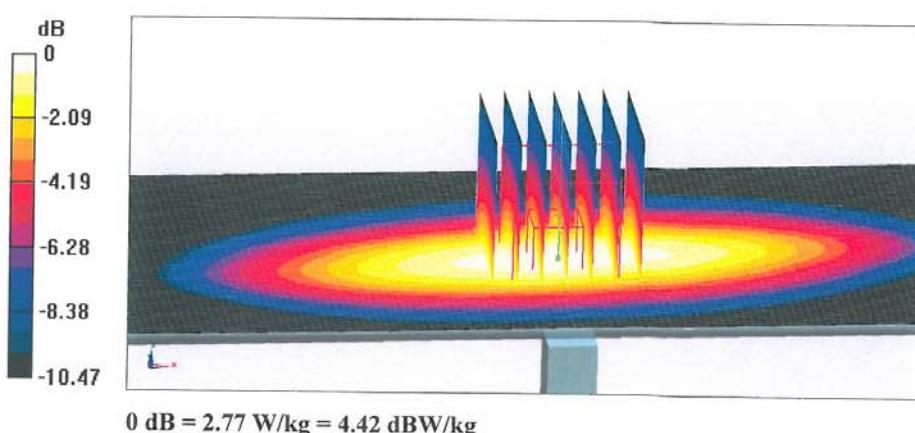
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 53.10 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 3.17 W/kg

SAR(1 g) = 2.05 W/kg; SAR(10 g) = 1.34 W/kg

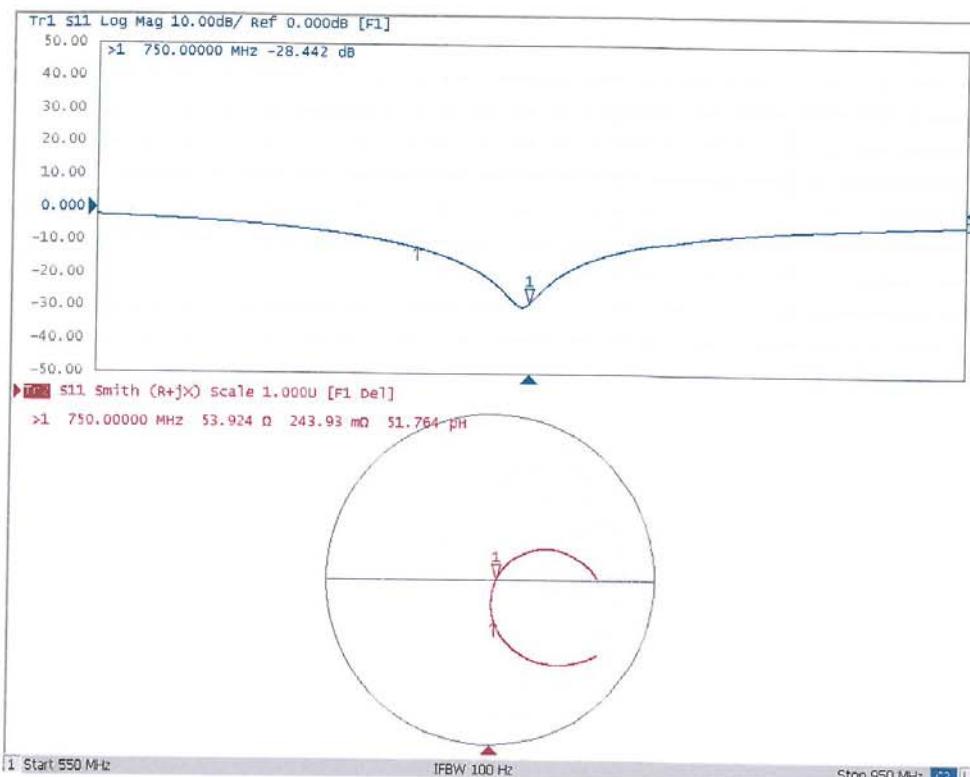
Maximum value of SAR (measured) = 2.77 W/kg





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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 09.13.2017

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1101

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.946 \text{ S/m}$; $\epsilon_r = 55.41$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(9.83, 9.83, 9.83); Calibrated: 9/26/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1331; Calibrated: 1/19/2017
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

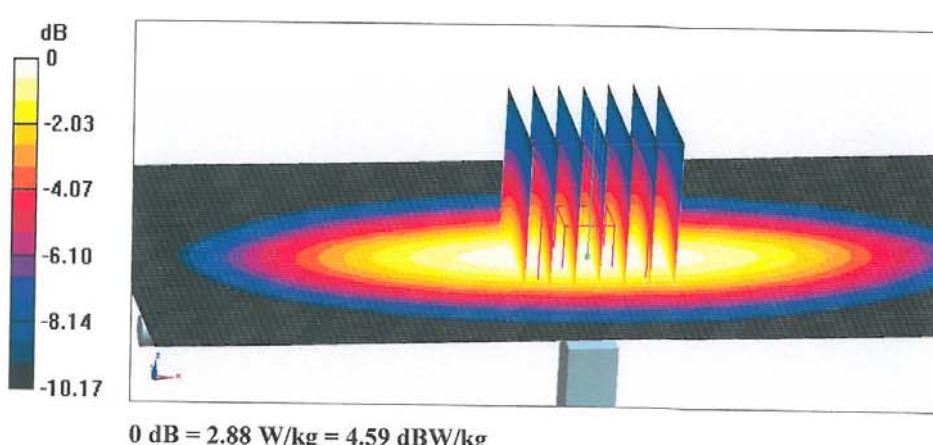
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 53.35 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.42 W/kg

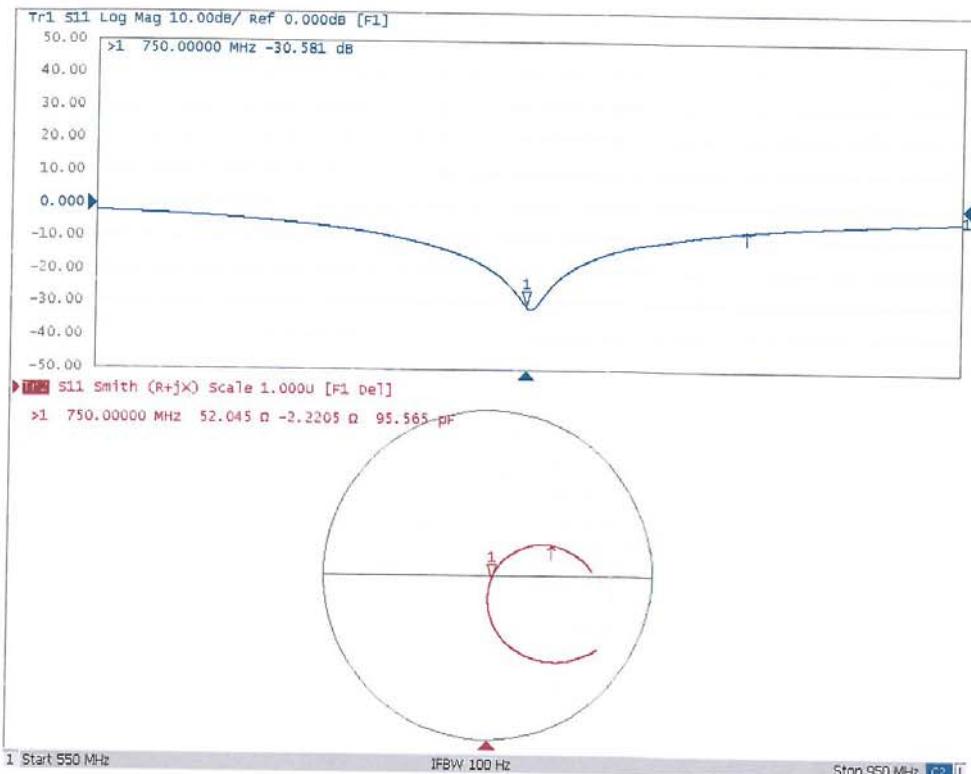
Maximum value of SAR (measured) = 2.88 W/kg





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Impedance Measurement Plot for Body TSL





In Collaboration with
s p e a g
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Client

SRTC

Certificate No: Z17-97135

CALIBRATION CERTIFICATE

Object D835V2 - SN: 4d023

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: September 13, 2017

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|--|-----------------------|
| Power Meter NRVD | 102196 | 02-Mar-17 (CTTL, No.J17X01254) | Mar-18 |
| Power sensor NRV-Z5 | 100596 | 02-Mar-17 (CTTL, No.J17X01254) | Mar-18 |
| Reference Probe EX3DV4 | SN 7433 | 26-Sep-16(SPEAG, No.EX3-7433_Sep16) | Sep-17 |
| DAL4 | SN 1331 | 19-Jan-17(CTTL-SPEAG, No.Z17-97015) | Jan-18 |
| Secondary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
| Signal Generator E4438C | MY49071430 | 13-Jan-17 (CTTL, No.J17X00286) | Jan-18 |
| Network Analyzer E5071C | MY46110673 | 13-Jan-17 (CTTL, No.J17X00285) | Jan-18 |

| Calibrated by: | Name | Function | Signature |
|----------------|-------------|--------------------|-----------|
| | Zhao Jing | SAR Test Engineer | |
| Reviewed by: | Yu Zongying | SAR Test Engineer | |
| Approved by: | Qi Dianyuan | SAR Project Leader | |

Issued: September 16, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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Glossary:

| | |
|-------|--------------------------------|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORMx,y,z |
| N/A | not applicable or not measured |

Calibration Is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- d) KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- **Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- **Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- **Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- **Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- **SAR measured:** SAR measured at the stated antenna input power.
- **SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- **SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.