# FCC SAR Test Report

| | | |
|---|---|---|
| **Report No.** | : | **SA121112C19** |
| **Applicant** | : | **Panasonic Corporation of North America** |
| **Address** | : | **One Panasonic way, 4B-8, Secaucus, New Jersey, United states 07094** |
| **Product** | : | **Tablet Computer** |
| **FCC ID** | : | **ACJ-JT-B1APAAZAMA** |
| **Brand** | : | **Panasonic** |
| **Model No.** | : | **JT-B1APAAAAM** |
| **Standards** | : | **FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1991 / IEEE 1528:2003**<br>**FCC OET Bulletin 65 Supplement C (Edition 01-01)**<br>**KDB 248227 D01 v01r02 / KDB 447498 D01 v05 / KDB 616217 D04 v01**<br>**KDB 941225 D01 v02 / KDB 941225 D02 v02r01 / KDB 941225 D03 v01**<br>**KDB 941225 D05 v02r01** |
| **Date of Testing** | : | **Dec. 20, 2012 ~ Jan. 03, 2013** |

**CERTIFICATION:** The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch - Taiwan HwaYa Lab**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

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# Release Control Record

| Issue No. | Reason for Change | Date Issued |
|---|---|---|
| R01 | Initial release | Feb. 07, 2013 |
| | | |
| | | |

# 1. Summary of Maximum SAR Value

| Equipment Class | Mode | Highest Reported Body $SAR_{1g}$ (W/kg) |
|---|---|---|
| PCB | GSM850 | 1.30 |
| | GSM1900 | 1.22 |
| | WCDMA II | 1.00 |
| | WCDMA V | 0.79 |
| | LTE 4 | 1.29 |
| | LTE 17 | 0.63 |
| DTS | 2.4G WLAN | 0.49 |
| | 5.8G WLAN | 0.25 |
| NII | 5.2G WLAN | 0.53 |
| | 5.3G WLAN | 0.74 |
| | 5.5G WLAN | 0.39 |
| DSS | Bluetooth | N/A |
| DXX | NFC | N/A |
| Highest Simultaneous Transmission SAR | | Body (W/kg) |
| PCB + DTS | | 1.30 |
| PCB + NII | | 1.53 |
| PCB + DSS | | 1.40 |

**Note:**

1. The SAR limit **(Head & Body: $SAR_{1g}$ 1.6 W/kg, Extremity: $SAR_{10g}$ 4.0 W/kg)** for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1991.

## 2. Description of Equipment Under Test

| | |
|---|---|
| **EUT Type** | Tablet Computer |
| **FCC ID** | ACJ-JT-B1APAAZAMA |
| **Brand Name** | Panasonic |
| **Model Name** | JT-B1APAAAAM |
| **HW Version** | 1 |
| **SW Version** | 1 |
| **Tx Frequency Bands (Unit: MHz)** | GSM850 : 824.2 ~ 848.8<br>GSM1900 : 1850.2 ~ 1909.8<br>WCDMA Band II : 1852.4 ~ 1907.6<br>WCDMA Band V : 826.4 ~ 846.6<br>LTE Band 4 : 1712.5 ~ 1752.5<br>LTE Band 17 : 706.5 ~ 713.5<br>WLAN : 2412 ~ 2462, 5180 ~ 5320, 5500 ~ 5700, 5745 ~ 5825<br>Bluetooth : 2402 ~ 2480<br>NFC : 13.56 |
| **Uplink Modulations** | GPRS : GMSK<br>EDGE : 8PSK<br>WCDMA : QPSK<br>LTE : QPSK, 16QAM<br>802.11b : DSSS<br>802.11a/g/n : OFDM<br>Bluetooth : GFSK<br>NFC : ASK |
| **Maximum Tune-up Conducted Power (Unit: dBm)** | GSM850 : 32.2<br>GSM1900 : 29.5<br>WCDMA Band II : 23.0<br>WCDMA Band V : 23.2<br>LTE Band 4 : 23.0<br>LTE Band 17 : 23.0<br>802.11b : 16.0<br>802.11g : 13.7<br>802.11n HT20 (2.4GHz) : 13.6<br>802.11a : 11.5<br>802.11n HT20 (5GHz) : 11.0<br>Bluetooth : 8.0 |
| **Antenna Type** | Fixed Internal Antenna |
| **EUT Stage** | Identical Prototype |

**Note:**

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

**List of Accessory:**

| | | |
|---|---|---|
| **Battery** | **Brand Name** | Panasonic |
| | **Model Name** | JT-B1-BT000U |
| | **Power Rating** | 3.7Vdc, 5720mAh |
| | **Type** | Li-ion |

# 3. SAR Measurement System

## 3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be related to the electrical field in the tissue by

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

## 3.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY4/5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

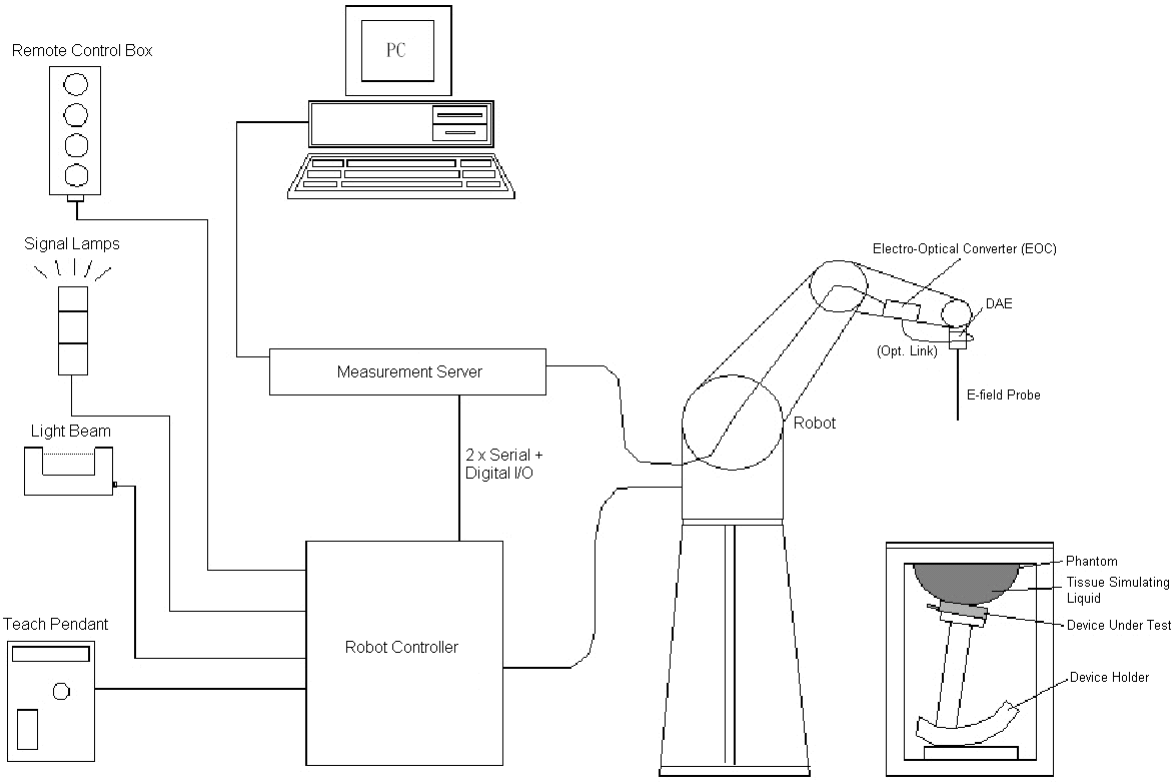



**Fig-3.1 DASY System Setup**

### 3.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

**Fig-3.2 DASY4**

**Fig-3.3 DASY5**

### 3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

| | | |
|---|---|---|
| **Model** | EX3DV4 | |
| **Construction** | Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE). | |
| **Frequency** | 10 MHz to 6 GHz<br>Linearity: ± 0.2 dB | |
| **Directivity** | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotation normal to probe axis) | |
| **Dynamic Range** | 10 µW/g to 100 mW/g<br>Linearity: ± 0.2 dB (noise: typically < 1 µW/g) | |
| **Dimensions** | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm | |

| | | |
|---|---|---|
| **Model** | 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). | |
| **Frequency** | 10 MHz to 4 GHz<br>Linearity: ± 0.2 dB | |
| **Directivity** | ± 0.2 dB in HSL (rotation around probe axis)<br>± 0.3 dB in tissue material (rotation normal to probe axis) | |
| **Dynamic Range** | 5 µW/g to 100 mW/g<br>Linearity: ± 0.2 dB | |
| **Dimensions** | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 3.9 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.0 mm | |

### 3.2.3 Data Acquisition Electronics (DAE)

| | | |
|---|---|---|
| **Model** | DAE3, DAE4 | |
| **Construction** | Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop. | |
| **Measurement Range** | -100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV) | |
| **Input Offset Voltage** | < 5µV (with auto zero) | |
| **Input Bias Current** | < 50 fA | |
| **Dimensions** | 60 x 60 x 68 mm | |

### 3.2.4 Phantoms

| | | |
|---|---|---|
| **Model** | Twin SAM | |
| **Construction** | The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot. | |
| **Material** | Vinylester, glass fiber reinforced (VE-GF) | |
| **Shell Thickness** | 2 ± 0.2 mm (6 ± 0.2 mm at ear point) | |
| **Dimensions** | Length: 1000 mm<br>Width: 500 mm<br>Height: adjustable feet | |
| **Filling Volume** | approx. 25 liters | |

| | | |
|---|---|---|
| **Model** | ELI | |
| **Construction** | Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. | |
| **Material** | Vinylester, glass fiber reinforced (VE-GF) | |
| **Shell Thickness** | 2.0 ± 0.2 mm (bottom plate) | |
| **Dimensions** | Major axis: 600 mm<br>Minor axis: 400 mm | |
| **Filling Volume** | approx. 30 liters | |

### 3.2.5 Device Holder

| | | |
|---|---|---|
| **Model** | Mounting Device | |
| **Construction** | In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). | |
| **Material** | POM | |

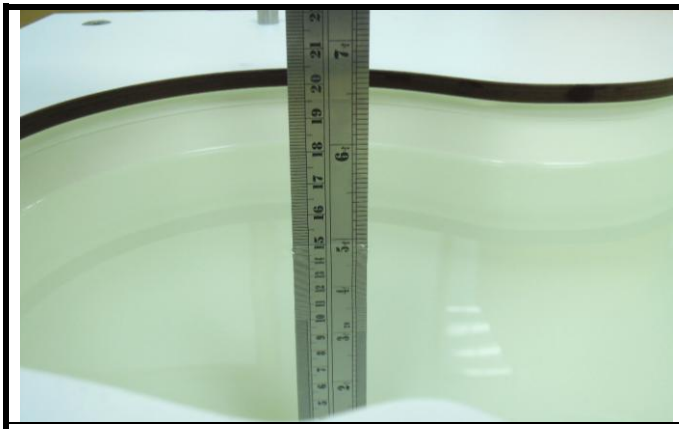
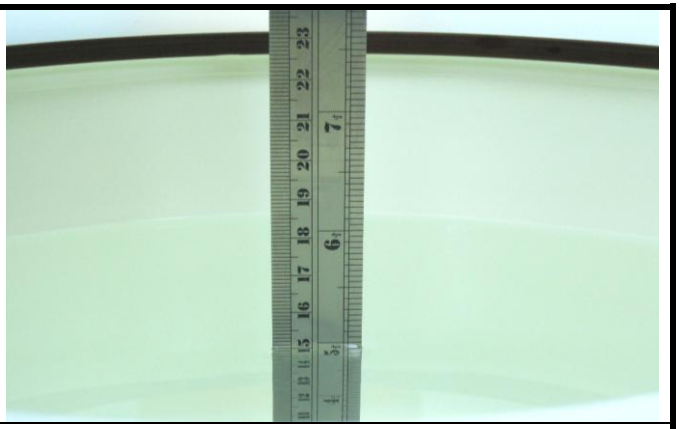
| | | |
|---|---|---|
| **Model** | Laptop Extensions Kit | |
| **Construction** | Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. | |
| **Material** | POM, Acrylic glass, Foam | |

### 3.2.6 System Validation Dipoles

| | | |
|---|---|---|
| **Model** | D-Serial | |
| **Construction** | Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions. | |
| **Frequency** | 750 MHz to 5800 MHz | |
| **Return Loss** | > 20 dB | |
| **Power Capability** | > 100 W (f < 1GHz), > 40 W (f > 1GHz) | |

### 3.2.7 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.

|  |  |
|---|---|
| **Photo of Liquid Height for Head Position** | **Photo of Liquid Height for Body Position** |

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 and FCC OET 65 Supplement C Appendix C. For the body tissue simulating liquids, the dielectric properties are defined in FCC OET 65 Supplement C Appendix C. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

**Table-3.1 Targets of Tissue Simulating Liquid**

| Frequency (MHz) | Target Permittivity | Range of ±5% | Target Conductivity | Range of ±5% |
|---|---|---|---|---|
| **For Head** | | | | |
| 750 | 41.9 | 39.8 ~ 44.0 | 0.89 | 0.85 ~ 0.93 |
| 835 | 41.5 | 39.4 ~ 43.6 | 0.90 | 0.86 ~ 0.95 |
| 1750 | 40.1 | 38.1 ~ 42.1 | 1.37 | 1.30 ~ 1.44 |
| 1900 | 40.0 | 38.0 ~ 42.0 | 1.40 | 1.33 ~ 1.47 |
| 2450 | 39.2 | 37.2 ~ 41.2 | 1.80 | 1.71 ~ 1.89 |
| 5200 | 36.0 | 34.2 ~ 37.8 | 4.66 | 4.43 ~ 4.89 |
| 5300 | 35.9 | 34.1 ~ 37.7 | 4.76 | 4.52 ~ 5.00 |
| 5600 | 35.5 | 33.7 ~ 37.3 | 5.07 | 4.82 ~ 5.32 |
| 5800 | 35.3 | 33.5 ~ 37.1 | 5.27 | 5.01 ~ 5.53 |
| **For Body** | | | | |
| 750 | 55.5 | 52.7 ~ 58.3 | 0.96 | 0.91 ~ 1.01 |
| 835 | 55.2 | 52.4 ~ 58.0 | 0.97 | 0.92 ~ 1.02 |
| 1750 | 53.4 | 50.7 ~ 56.1 | 1.49 | 1.42 ~ 1.56 |
| 1900 | 53.3 | 50.6 ~ 56.0 | 1.52 | 1.44 ~ 1.60 |
| 2450 | 52.7 | 50.1 ~ 55.3 | 1.95 | 1.85 ~ 2.05 |
| 5200 | 49.0 | 46.6 ~ 51.5 | 5.30 | 5.04 ~ 5.57 |
| 5300 | 48.9 | 46.5 ~ 51.3 | 5.42 | 5.15 ~ 5.69 |
| 5600 | 48.5 | 46.1 ~ 50.9 | 5.77 | 5.48 ~ 6.06 |
| 5800 | 48.2 | 45.8 ~ 50.6 | 6.00 | 5.70 ~ 6.30 |

The following table gives the recipes for tissue simulating liquids.

**Table-3.2 Recipes of Tissue Simulating Liquid**

| Tissue Type | Bactericide | DGBE | HEC | NaCl | Sucrose | Triton X-100 | Water | Diethylene Glycol Mono-hexylether |
|---|---|---|---|---|---|---|---|---|
| H750 | 0.2 | - | 0.2 | 1.5 | 56.0 | - | 42.1 | - |
| H835 | 0.2 | - | 0.2 | 1.5 | 57.0 | - | 41.1 | - |
| H1750 | - | 47.0 | - | 0.4 | - | - | 52.6 | - |
| H1900 | - | 44.5 | - | 0.2 | - | - | 55.3 | - |
| H2450 | - | 45.0 | - | 0.1 | - | - | 54.9 | - |
| H5G | - | - | - | - | - | 17.2 | 65.5 | 17.3 |
| B750 | 0.2 | - | 0.2 | 0.8 | 48.8 | - | 50.0 | - |
| B835 | 0.2 | - | 0.2 | 0.9 | 48.5 | - | 50.2 | - |
| B1750 | - | 31.0 | - | 0.2 | - | - | 68.8 | - |
| B1900 | - | 29.5 | - | 0.3 | - | - | 70.2 | - |
| B2450 | - | 31.4 | - | 0.1 | - | - | 68.5 | - |
| B5G | - | - | - | - | - | 10.7 | 78.6 | 10.7 |

## 3.3 SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

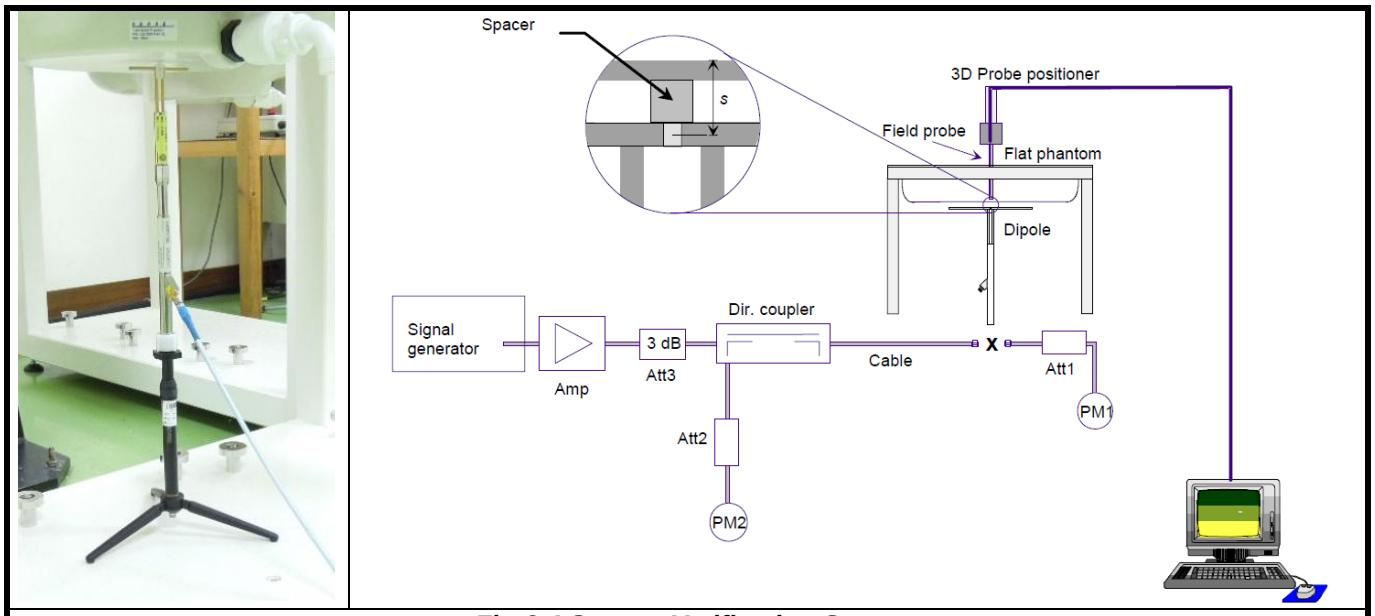



**Fig-3.4 System Verification Setup**

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

## 3.4 SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

### 3.4.1 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. According to KDB 865664D01v01, the resolution for Area and Zoom scan is specified in the table below.

| Items | <= 2 GHz | 2-3 GHz | 3-4 GHz | 4-5 GHz | 5-6 GHz |
|---|---|---|---|---|---|
| Area Scan (Δx, Δy) | <= 15 mm | <= 12 mm | <= 12 mm | <= 10 mm | <= 10 mm |
| Zoom Scan (Δx, Δy) | <= 8 mm | <= 5 mm | <= 5 mm | <= 4 mm | <= 4 mm |
| Zoom Scan (Δz) | <= 5 mm | <= 5 mm | <= 4 mm | <= 3 mm | <= 2 mm |
| Zoom Scan Volume | >= 30 mm | >= 30 mm | >= 28 mm | >= 25 mm | >= 22 mm |

**Note:**

When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 5 mm) may be applied.

### 3.4.2 Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

### 3.4.3 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

### 3.4.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

### 3.4.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard’s method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

# 4. SAR Measurement Evaluation

## 4.1 EUT Configuration and Setting

The EUT is a data transmitter device that contains one WWAN transmitter. The GSM/WCDMA and LTE cannot transmit simultaneously. Confirming the LTE transmitter follows 3GPP standards, is category 3, BW 5/10 MHz, band 4/17, and supports QPSK / 16QAM modulations. Tested per 3GPP 36.521 maximum transmit procedures for both QPSK / 16QAM.

**LTE Maximum Power Reduction in accordance with 3GPP 36.101:** Power Reduction in accordance to 3GPP is active all times during LTE operation.

| Modulation | Channel bandwidth / Transmission bandwidth configuration (RB) | | 3GPP Requirement (dB) | LTE MPR Setting (dB) |
|---|---|---|---|---|
| | BW 5 MHz | BW 10 MHz | | |
| **QPSK** | > 8 | > 12 | <= 1 | 1 |
| **16QAM** | <= 8 | <= 12 | <= 1 | 1 |
| **16QAM** | > 8 | > 12 | <= 2 | 2 |

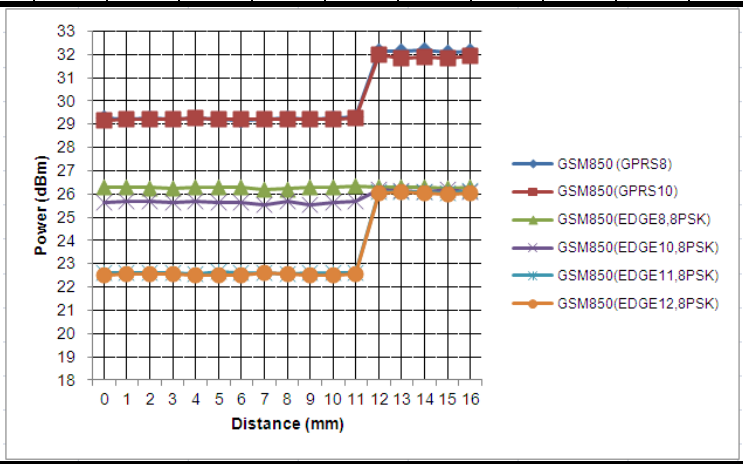
**Note:** MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with A-MPR requirements defined in 36.101 section 6.2.4 that may be required to meet 3GPP Adjacent Channel Leakage Ratio ("ACLR") requirements. A-MPR was disabled for all FCC compliance testing.

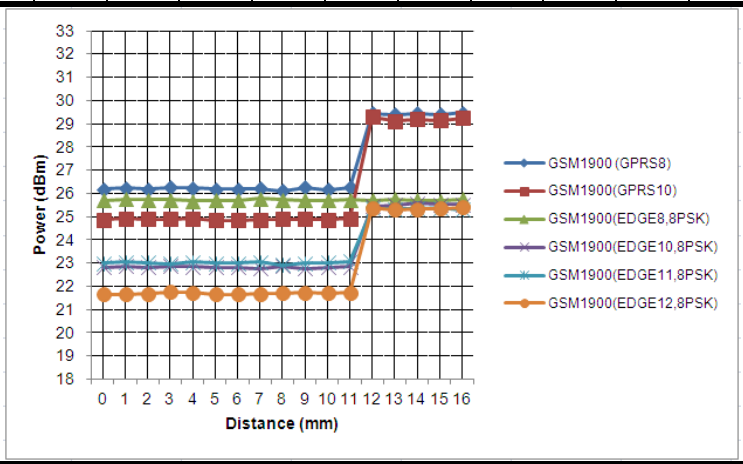
The device is tablet PC which supports WWAN, WLAN, Bluetooth and wireless hotspot capabilities. Because of the SAR issue, this device has designed with a proximity sensor which can trigger/not trigger power reduction for GPRS/EDGE, WCDMA and LTE on EUT Rear Face and EDGE1 orientations for SAR compliance. The proximity sensor is combined with the WWAN Tx antenna in a single FPC (Flexible Printed Circuit), and the P-sensor occupies the same area as the WWAN antenna. Others RF capabilities (WLAN and BT) have no power reduction. The power levels for all wireless technologies and the power reduction please refer to section 4.6.1 of this report.

The power vs distance plots for EUT Rear Face and EDGE1 and power chart for tilt angle influence are shown as below.

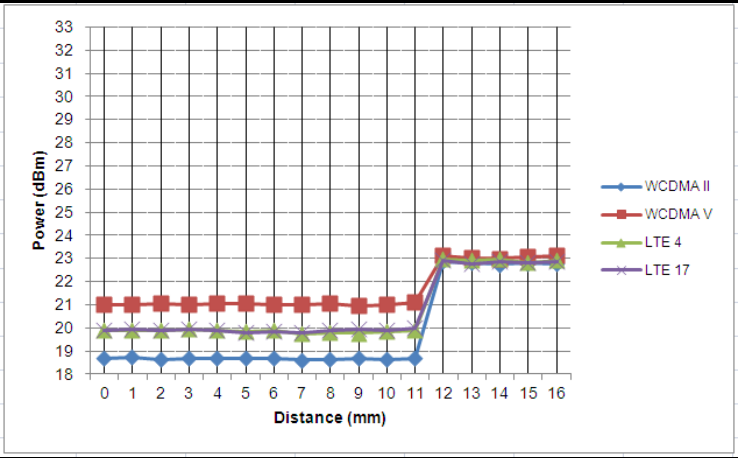
| Power (dBm) vs Distance (mm) for EUT Rear Face | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| GSM850 GPRS8 | 29.25 | 29.21 | 29.25 | 29.22 | 29.29 | 29.22 | 29.19 | 29.21 | 29.25 | 29.20 | 29.27 | 29.30 | 32.15 | 32.14 | 32.18 | 32.11 | 32.14 |
| GSM850 GPRS10 | 29.19 | 29.23 | 29.22 | 29.21 | 29.25 | 29.21 | 29.23 | 29.20 | 29.21 | 29.21 | 29.23 | 29.25 | 31.99 | 31.86 | 31.90 | 31.82 | 31.94 |
| GSM850 EDGE8 | 26.29 | 26.30 | 26.27 | 26.25 | 26.28 | 26.29 | 26.29 | 26.18 | 26.22 | 26.30 | 26.29 | 26.33 | 26.30 | 26.29 | 26.30 | 26.24 | 26.28 |
| GSM850 EDGE10 | 25.66 | 25.69 | 25.69 | 25.65 | 25.68 | 25.63 | 25.62 | 25.53 | 25.68 | 25.55 | 25.66 | 25.69 | 26.17 | 26.16 | 26.11 | 26.18 | 26.09 |
| GSM850 EDGE11 | 22.59 | 22.63 | 22.62 | 22.60 | 22.58 | 22.65 | 22.62 | 22.59 | 22.58 | 22.60 | 22.60 | 22.63 | 26.10 | 26.10 | 26.09 | 26.05 | 26.12 |
| GSM850 EDGE12 | 22.50 | 22.54 | 22.58 | 22.57 | 22.53 | 22.50 | 22.50 | 22.59 | 22.55 | 22.49 | 22.50 | 22.57 | 26.05 | 26.09 | 26.06 | 25.99 | 26.04 |



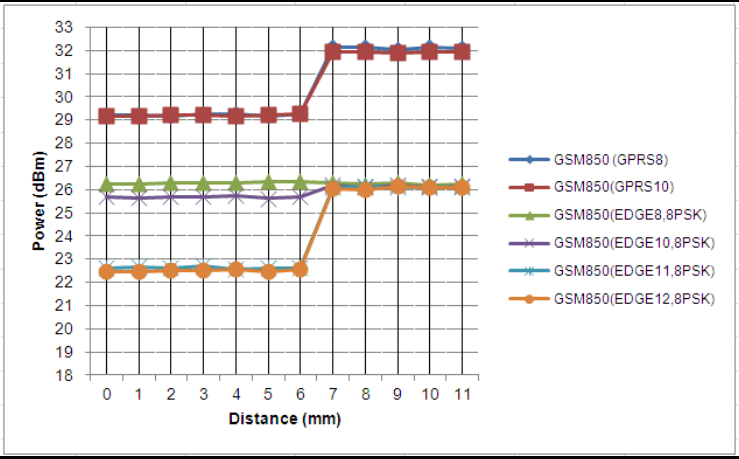

| Power (dBm) vs Distance (mm) for EUT Rear Face | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| GSM1900 GPRS8 | 26.18 | 26.24 | 26.19 | 26.25 | 26.23 | 26.18 | 26.18 | 26.22 | 26.10 | 26.25 | 26.17 | 26.27 | 29.46 | 29.40 | 29.44 | 29.39 | 29.47 |
| GSM1900 GPRS10 | 24.88 | 24.93 | 24.89 | 24.90 | 24.91 | 24.84 | 24.84 | 24.88 | 24.89 | 24.90 | 24.88 | 24.92 | 29.29 | 29.12 | 29.20 | 29.14 | 29.25 |
| GSM1900 EDGE8 | 25.71 | 25.75 | 25.72 | 25.73 | 25.69 | 25.71 | 25.71 | 25.77 | 25.72 | 25.70 | 25.71 | 25.74 | 25.70 | 25.76 | 25.71 | 25.68 | 25.75 |
| GSM1900 EDGE10 | 22.81 | 22.86 | 22.81 | 22.87 | 22.85 | 22.81 | 22.81 | 22.76 | 22.88 | 22.77 | 22.82 | 22.84 | 25.46 | 25.50 | 25.59 | 25.53 | 25.52 |
| GSM1900 EDGE11 | 22.99 | 23.05 | 23.01 | 22.98 | 23.05 | 22.99 | 22.99 | 23.05 | 22.92 | 23.00 | 23.01 | 23.06 | 25.35 | 25.32 | 25.35 | 25.38 | 25.30 |
| GSM1900 EDGE12 | 21.66 | 21.66 | 21.69 | 21.75 | 21.72 | 21.66 | 21.66 | 21.69 | 21.70 | 21.72 | 21.70 | 21.74 | 25.38 | 25.30 | 25.33 | 25.35 | 25.39 |



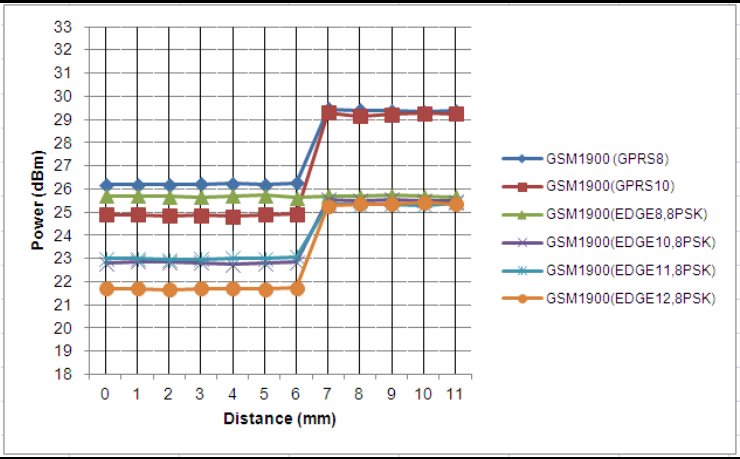
| Power (dBm) vs Distance (mm) for EUT Rear Face | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
| **WCDMA II** | 18.66 | 18.71 | 18.65 | 18.67 | 18.70 | 18.69 | 18.66 | 18.60 | 18.65 | 18.70 | 18.63 | 18.68 | 22.85 | 22.80 | 22.74 | 22.79 | 22.77 |
| **WCDMA V** | 21.00 | 20.98 | 21.03 | 21.01 | 21.04 | 21.05 | 21.00 | 20.99 | 21.06 | 20.96 | 21.00 | 21.08 | 23.12 | 23.03 | 22.99 | 23.08 | 23.12 |
| **LTE 4** | 19.88 | 19.87 | 19.89 | 19.92 | 19.88 | 19.85 | 19.88 | 19.75 | 19.80 | 19.76 | 19.84 | 19.89 | 22.98 | 22.90 | 22.96 | 22.81 | 22.90 |
| **LTE 17** | 19.88 | 19.95 | 19.90 | 19.92 | 19.89 | 19.81 | 19.85 | 19.77 | 19.88 | 19.95 | 19.90 | 19.98 | 22.90 | 22.75 | 22.88 | 22.80 | 22.86 |



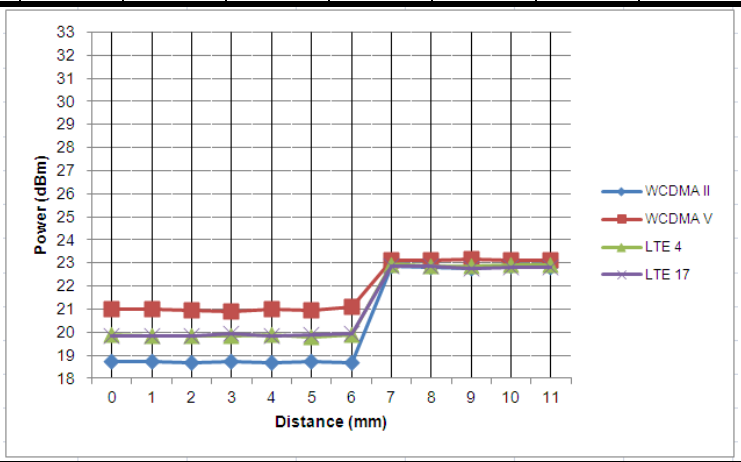

| Power (dBm) vs Distance (mm) for EUT EDGE1 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **GSM850 GPRS8** | 29.22 | 29.22 | 29.16 | 29.27 | 29.25 | 29.15 | 29.29 | 32.15 | 32.15 | 32.06 | 32.13 | 32.10 |
| **GSM850 GPRS10** | 29.17 | 29.17 | 29.20 | 29.22 | 29.19 | 29.24 | 29.25 | 31.96 | 31.95 | 31.88 | 31.92 | 31.96 |
| **GSM850 EDGE8** | 26.24 | 26.24 | 26.29 | 26.30 | 26.28 | 26.35 | 26.33 | 26.30 | 26.22 | 26.31 | 26.20 | 26.26 |
| **GSM850 EDGE10** | 25.69 | 25.65 | 25.70 | 25.71 | 25.74 | 25.61 | 25.69 | 26.17 | 26.09 | 26.17 | 26.11 | 26.12 |
| **GSM850 EDGE11** | 22.59 | 22.65 | 22.60 | 22.69 | 22.54 | 22.59 | 22.63 | 26.10 | 26.12 | 26.08 | 26.13 | 26.08 |
| **GSM850 EDGE12** | 22.48 | 22.48 | 22.50 | 22.51 | 22.54 | 22.48 | 22.57 | 26.04 | 26.00 | 26.15 | 26.11 | 26.09 |



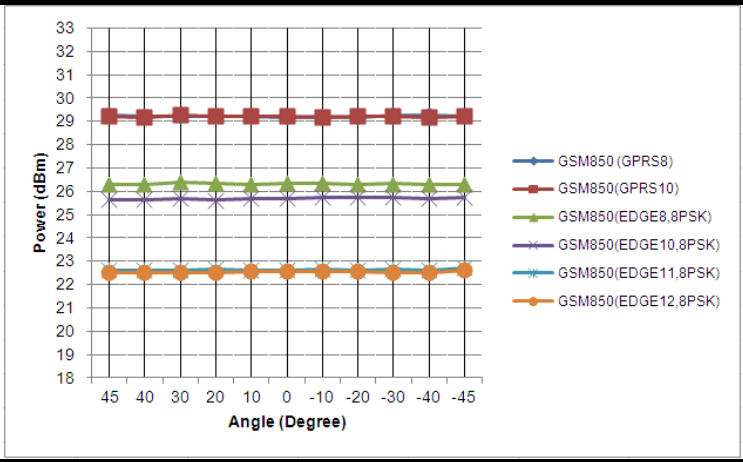
| Power (dBm) vs Distance (mm) for EUT EDGE1 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **GSM1900 GPRS8** | 26.19 | 26.19 | 26.18 | 26.22 | 26.24 | 26.19 | 26.27 | 29.46 | 29.40 | 29.38 | 29.33 | 29.38 |
| **GSM1900 GPRS10** | 24.90 | 24.90 | 24.85 | 24.88 | 24.81 | 24.90 | 24.92 | 29.29 | 29.14 | 29.22 | 29.28 | 29.25 |
| **GSM1900 EDGE8** | 25.70 | 25.70 | 25.69 | 25.66 | 25.70 | 25.73 | 25.64 | 25.70 | 25.68 | 25.72 | 25.69 | 25.66 |
| **GSM1900 EDGE10** | 22.79 | 22.87 | 22.85 | 22.81 | 22.75 | 22.80 | 22.84 | 25.56 | 25.49 | 25.54 | 25.51 | 25.48 |
| **GSM1900 EDGE11** | 23.00 | 23.00 | 22.95 | 22.97 | 23.01 | 22.99 | 23.06 | 25.35 | 25.32 | 25.36 | 25.30 | 25.39 |
| **GSM1900 EDGE12** | 21.70 | 21.70 | 21.66 | 21.71 | 21.71 | 21.69 | 21.74 | 25.28 | 25.34 | 25.36 | 25.42 | 25.34 |



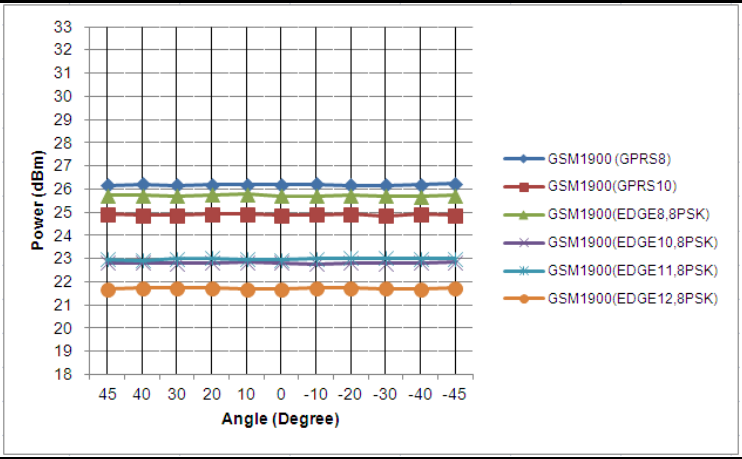

| Power (dBm) vs Distance (mm) for EUT EDGE1 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **WCDMA II** | 18.72 | 18.72 | 18.70 | 18.73 | 18.67 | 18.71 | 18.68 | 22.85 | 22.80 | 22.77 | 22.85 | 22.81 |
| **WCDMA V** | 21.00 | 21.00 | 20.95 | 20.91 | 21.00 | 20.95 | 21.08 | 23.12 | 23.10 | 23.15 | 23.10 | 23.11 |
| **LTE 4** | 19.88 | 19.82 | 19.85 | 19.83 | 19.88 | 19.80 | 19.89 | 22.94 | 22.85 | 22.88 | 22.90 | 22.93 |
| **LTE 17** | 19.85 | 19.85 | 19.85 | 19.92 | 19.86 | 19.89 | 19.94 | 22.88 | 22.86 | 22.78 | 22.82 | 22.80 |



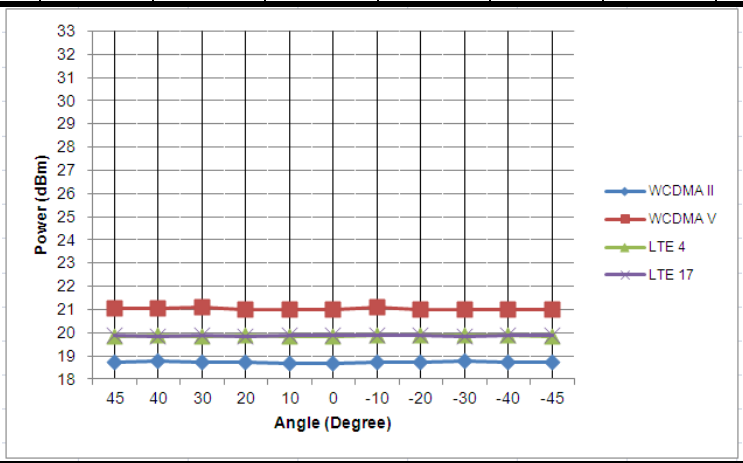
| Power (dBm) vs Angle (Degree) for EUT EDGE1 at 6 mm | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Angle** | **45** | **40** | **30** | **20** | **10** | **0** | **-10** | **-20** | **-30** | **-40** | **-45** |
| **GSM850 GPRS8** | 29.25 | 29.23 | 29.21 | 29.20 | 29.22 | 29.19 | 29.22 | 29.19 | 29.25 | 29.28 | 29.23 |
| **GSM850 GPRS10** | 29.21 | 29.19 | 29.25 | 29.21 | 29.21 | 29.22 | 29.19 | 29.21 | 29.23 | 29.18 | 29.23 |
| **GSM850 EDGE8** | 26.29 | 26.31 | 26.39 | 26.34 | 26.30 | 26.33 | 26.35 | 26.31 | 26.32 | 26.28 | 26.29 |
| **GSM850 EDGE10** | 25.62 | 25.63 | 25.67 | 25.61 | 25.68 | 25.67 | 25.72 | 25.72 | 25.74 | 25.71 | 25.72 |
| **GSM850 EDGE11** | 22.61 | 22.63 | 22.61 | 22.65 | 22.59 | 22.62 | 22.66 | 22.61 | 22.65 | 22.61 | 22.69 |
| **GSM850 EDGE12** | 22.51 | 22.49 | 22.53 | 22.50 | 22.57 | 22.58 | 22.56 | 22.58 | 22.53 | 22.51 | 22.61 |




| Power (dBm) vs Angle (Degree) for EUT EDGE1 at 6 mm | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Angle** | **45** | **40** | **30** | **20** | **10** | **0** | **-10** | **-20** | **-30** | **-40** | **-45** |
| **GSM1900 GPRS8** | 26.17 | 26.21 | 26.16 | 26.18 | 26.19 | 26.19 | 26.22 | 26.16 | 26.15 | 26.18 | 26.23 |
| **GSM1900 GPRS10** | 24.91 | 24.88 | 24.87 | 24.92 | 24.91 | 24.87 | 24.89 | 24.91 | 24.84 | 24.91 | 24.88 |
| **GSM1900 EDGE8** | 25.73 | 25.72 | 25.70 | 25.75 | 25.78 | 25.71 | 25.71 | 25.73 | 25.71 | 25.69 | 25.72 |
| **GSM1900 EDGE10** | 22.82 | 22.81 | 22.79 | 22.83 | 22.85 | 22.82 | 22.78 | 22.82 | 22.79 | 22.82 | 22.85 |
| **GSM1900 EDGE11** | 22.97 | 22.93 | 22.99 | 23.01 | 22.97 | 22.94 | 22.99 | 23.02 | 23.01 | 23.00 | 22.99 |
| **GSM1900 EDGE12** | 21.69 | 21.72 | 21.73 | 21.72 | 21.68 | 21.68 | 21.72 | 21.74 | 21.71 | 21.69 | 21.73 |



| Power (dBm) vs Angle (Degree) for EUT EDGE1 at 6 mm | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Angle** | **45** | **40** | **30** | **20** | **10** | **0** | **-10** | **-20** | **-30** | **-40** | **-45** |
| **WCDMA II** | 18.75 | 18.78 | 18.72 | 18.75 | 18.69 | 18.68 | 18.73 | 18.75 | 18.77 | 18.75 | 18.75 |
| **WCDMA V** | 21.04 | 21.03 | 21.09 | 21.01 | 21.01 | 21.02 | 21.08 | 21.01 | 21.02 | 20.98 | 21.01 |
| **LTE 4** | 19.85 | 19.89 | 19.82 | 19.91 | 19.82 | 19.83 | 19.87 | 19.89 | 19.88 | 19.91 | 19.83 |
| **LTE 17** | 19.89 | 19.83 | 19.88 | 19.85 | 19.91 | 19.89 | 19.91 | 19.87 | 19.85 | 19.89 | 19.90 |




According to the procedures noticed in KDB 616217 D04, the proximity sensor triggering distance is 11 mm for EUT Rear Face, and 6 mm for EDGE1. The separation distance of 6 mm determined by the smallest triggering distance on EDGE1 is used to assess the tilt angle influence and the sensor does not release during ±45 degree. Therefore, the smallest separation distance for tilt angle influence on EDGE1 is 6 mm. Considering the production units may have 1 mm tolerance for proximity sensor triggering, we have discussed with applicant and decided to use the more conservative triggering distance based on the separation distance for the sensor triggered / not triggered to test SAR as EUT with power reduction at 0 mm, EUT without power reduction at 9 mm for EUT Rear Face, and EUT without power reduction at 4 mm for EDGE1.

The simultaneous transmission possibilities are listed as below.

| Simultaneous Tx Combination | RF Configuration | Hotspot Mode | Body SAR |
|---|---|---|---|
| 1 | GSM850 (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 2 | GSM1900 (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 3 | WCDMA II (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 4 | WCDMA V (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 5 | LTE Band 4 (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 6 | LTE Band 17 (Data) + WLAN 2.4G (Data) | Yes | Yes |
| 7 | GSM850 (Data) + WLAN 5G (Data) | No | Yes |
| 8 | GSM1900 (Data) + WLAN 5G (Data) | No | Yes |
| 9 | WCDMA II (Data) + WLAN 5G (Data) | No | Yes |
| 10 | WCDMA V (Data) + WLAN 5G (Data) | No | Yes |
| 11 | LTE Band 4 (Data) + WLAN 5G (Data) | No | Yes |
| 12 | LTE Band 17 (Data) + WLAN 5G (Data) | No | Yes |
| 13 | GSM850 (Data) + BT (Data) | No | Yes |
| 14 | GSM1900 (Data) + BT (Data) | No | Yes |
| 15 | WCDMA II (Data) + BT (Data) | No | Yes |
| 16 | WCDMA V (Data) + BT (Data) | No | Yes |
| 17 | LTE Band 4 (Data) + BT (Data) | No | Yes |
| 18 | LTE Band 17 (Data) + BT (Data) | No | Yes |

**Note :**

1. This device does not support voice transmission capability.
2. The 2.4G WLAN and 5G WLAN cannot transmit simultaneously.
3. WLAN and BT cannot transmit at the same time.
4. The proximity sensor and power reduction do not affect the simultaneous transmission modes.
5. The power reduction due to P-sensor is also active for hotspot mode.
6. Since the body SAR test requirement for tablet is more conservative than the hotspot mode, hotspot SAR is not required.

The power reduction is depends on the proximity sensor input. For a steady SAR test, the power reduction can be enabled/disabled manually by engineering software during SAR testing. The power reduction can be enabled by below steps.

<Enable Power Reduction>

Execute “FaCTA” program

Select the “Operation”, “Scenario”, “Open File” to open “P-sensorDetect.sig” file

Select the “u_Fixed_Detect” command

Click “Send” button

<Disable Power Reduction>

Execute “FaCTA” program

Select the “Operation”, “Scenario”, “Open File” to open “P-sensorDetect.sig” file

Select the “u_Fixed_No_Detect” command

Click “Send” button

For WWAN SAR testing, the EUT was linked and controlled by base station emulator (Agilent E5515C is used for GSM/WCDMA, and Anritsu MT8820C is used for LTE). Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

For GSM850, the power control level is set to 5. For GPRS850 (GMSK, CS1), the power control level is set to 5. For EDGE850 (8PSK:MCS9), the power control level is set to 8. For GSM1900, the power control level is set to 0. For GPRS1900 (GMSK, CS1), the power control level is set to 0. For EDGE1900 (8PSK:MCS9), the power control level is set to 2.

For WCDMA, head and body SAR is tested under 12.2k RMC mode with power control set all up bits. SAR for AMR is not required since its power is less than 1/4 dB higher than RMC. SAR for HSDPA/HSUPA is not required since its power is less than 1/4 dB higher than RMC without HSDPA/HSUPA and SAR for 12.2 kbps RMC is less than 75% of the SAR limit (1.2 W/kg).

For LTE, set the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB in base station simulator. When the EUT has registered and communicated to base station simulator, set the simulator to make EUT transmitting the maximum radiated power. The steps for system simulator (Anritsu MT8820C) setup are as below.

1. Press the “Std” button to select “LTE 22.20S” function
2. Choose the “Screen Select” item to “Fundamental Measurement”
3. Enter the “Common” item
4. Set the Operating Band
5. Set the Channel Bandwidth
6. Set the UL Channel & Frequency
7. Set the Modulation
8. Set the RB number and RB shift
9. Press “Start Call” button when EUT register to the system simulator
10. Set the TX-1 Max. Power to make the EUT transmit maximum output power

For WLAN SAR testing, the EUT has installed WLAN engineering testing software which can provide continuous transmitting RF signal. According to KDB 248227 D01, WLAN SAR should tested at the lowest data rate, and testing at higher data rate is not required when the maximum average output power is less than 1/4 dB higher than those measured at the lowest data rate. Since the WLAN power at lowest data rate has highest output power, WLAN SAR for this device was performed at the lowest data rate as set in 1 Mbps for 802.11b, 6 Mbps for 802.11a, and MCS0 for 802.11n. This RF signal utilized in SAR measurement has almost 100% duty cycle and the duty factor is 1 for WLAN SAR testing.

## 4.2 EUT Testing Position

According to KDB 616217 D04v01, SAR evaluation is required for back surface and edges of the devices. The back surface and edges of the tablet are tested with the tablet touching the phantom. Exposures from antennas through the front surface of the display section of a tablet are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary. When voice mode is supported on a tablet and it is limited to speaker mode or headset operations only, additional SAR testing for this type of voice use is not required.

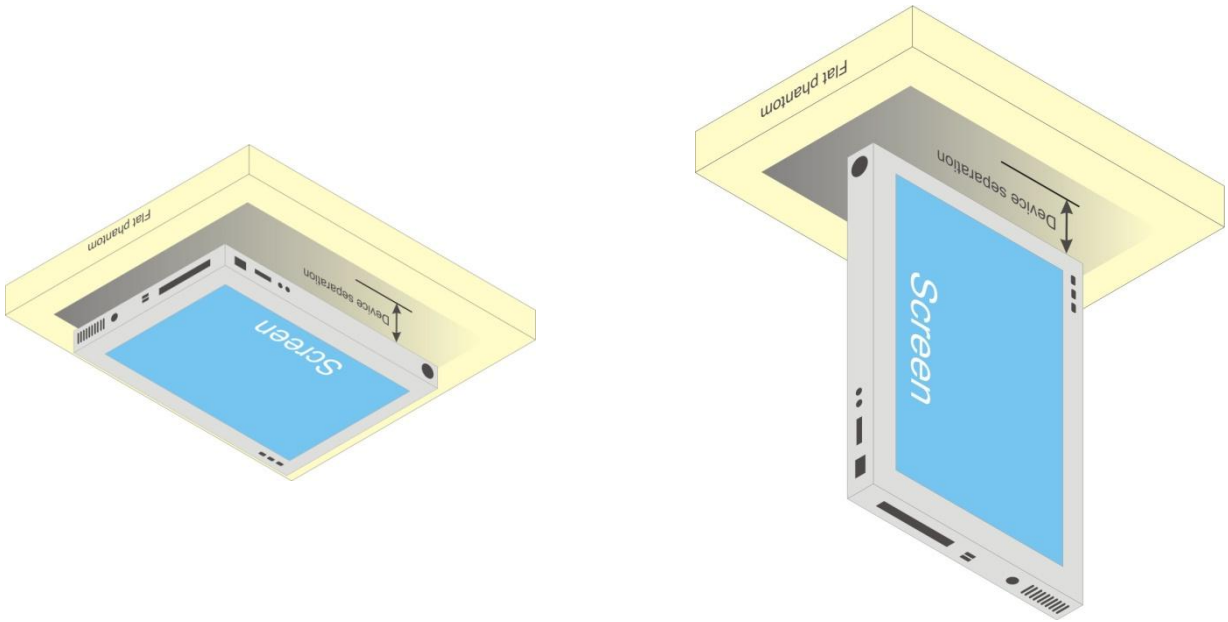



**Fig-4.1 Illustration for Tablet Setup**

For rear face SAR testing, since the rear face of this EUT is completely flat, the rear face of the EUT is parallel and touches the flat phantom. For edge SAR testing, this EUT was positioned the outer corner of both sides of this device to touch the flat phantom. The line between these two corners is the reference surface to determine P-sensor trigger distance and separation distance for SAR testing. Since this EUT has curved edge, the separation distance between the outer surface most close to antenna and the reference surface noted above is 1 mm. The illustration please refers to appendix D of this report.

According to KDB 447498 D01v05, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. For the test separation distance <= 50 mm

$$\frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \sqrt{f_{(\text{GHz})}} \leq 3.0$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2. For the test separation distance > 50 mm, and the frequency at 100 MHz to 1500 MHz

$$\left[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50\text{ mm}) \times \left(\frac{f_{(\text{MHz})}}{150}\right)\right]_{(\text{mW})}$$

3. For the test separation distance > 50 mm, and the frequency at > 1500 MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50\text{ mm}) \times 10]_{(\text{mW})}$$

| Mode | Max. Tune-up Power (dBm) | Max. Tune-up Power (mW) | Rear Face | | | EDGE1 | | | EDGE2 | | | EDGE3 | | | EDGE4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ant. to Surface (mm) | Exclusion Threshold (mW) | Require SAR Testing? | Ant. to Surface (mm) | Exclusion Threshold (mW) | Require SAR Testing? | Ant. to Surface (mm) | Exclusion Threshold (mW) | Require SAR Testing? | Ant. to Surface (mm) | Exclusion Threshold (mW) | Require SAR Testing? | Ant. to Surface (mm) | Exclusion Threshold (mW) | Require SAR Testing? |
| GSM 850 | 26.0 | 398 | 5 | 16 | **Yes** | 8.1 | 26 | **Yes** | 74.4 | 301 | **Yes** | 196.3 | 990 | No | 7.9 | 26 | **Yes** |
| GSM 1900 | 23.3 | 214 | 5 | 11 | **Yes** | 8.1 | 18 | **Yes** | 74.4 | 353 | No | 196.3 | 1572 | No | 7.9 | 17 | **Yes** |
| WCDMA II | 23.0 | 200 | 5 | 11 | **Yes** | 8.1 | 18 | **Yes** | 74.4 | 353 | No | 196.3 | 1572 | No | 7.9 | 17 | **Yes** |
| WCDMA V | 23.2 | 209 | 5 | 16 | **Yes** | 8.1 | 26 | **Yes** | 74.4 | 301 | No | 196.3 | 988 | No | 7.9 | 26 | **Yes** |
| LTE 4 | 23.0 | 200 | 5 | 11 | **Yes** | 8.1 | 18 | **Yes** | 74.4 | 357 | No | 196.3 | 1576 | No | 7.9 | 18 | **Yes** |
| LTE 17 | 23.0 | 200 | 5 | 18 | **Yes** | 8.1 | 29 | **Yes** | 74.4 | 294 | No | 196.3 | 873 | No | 7.9 | 28 | **Yes** |
| WLAN 2.4G | 16.0 | 40 | 5 | 10 | **Yes** | 22.0 | 42 | No | 7.0 | 13 | **Yes** | 175.5 | 1351 | No | 112.4 | 720 | No |
| BT | 8.0 | 6 | 5 | 10 | No | 22.0 | 42 | No | 7.0 | 13 | No | 175.5 | 1350 | No | 112.4 | 719 | No |
| WLAN 5.2G | 11.3 | 13 | 5 | 7 | **Yes** | 40.0 | 53 | No | 15.6 | 20 | No | 172.5 | 1291 | No | 108.1 | 647 | No |
| WLAN 5.3G | 11.0 | 13 | 5 | 7 | **Yes** | 40.0 | 52 | No | 15.6 | 20 | No | 172.5 | 1290 | No | 108.1 | 646 | No |
| WLAN 5.5G | 11.5 | 14 | 5 | 6 | **Yes** | 40.0 | 51 | No | 15.6 | 20 | No | 172.5 | 1288 | No | 108.1 | 644 | No |
| WLAN 5.8G | 11.0 | 13 | 5 | 6 | **Yes** | 40.0 | 50 | No | 15.6 | 19 | No | 172.5 | 1287 | No | 108.1 | 643 | No |

## 4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

| Test Date | Tissue Type | Frequency (MHz) | Liquid Temp. (℃) | Measured Conductivity (σ) | Measured Permittivity ($\varepsilon_r$) | Target Conductivity (σ) | Target Permittivity ($\varepsilon_r$) | Conductivity Deviation (%) | Permittivity Deviation (%) |
|---|---|---|---|---|---|---|---|---|---|
| Dec. 22, 2012 | Body | 750 | 20.1 | 0.966 | 55.259 | 0.96 | 55.5 | 0.63 | -0.43 |
| Dec. 22, 2012 | Body | 835 | 20.7 | 0.993 | 56.738 | 0.97 | 55.2 | 2.37 | 2.79 |
| Dec. 27, 2012 | Body | 835 | 20.6 | 0.968 | 55.273 | 0.97 | 55.2 | -0.21 | 0.13 |
| Jan. 03, 2013 | Body | 1750 | 20.2 | 1.447 | 53.388 | 1.49 | 53.4 | -2.89 | -0.02 |
| Dec. 20, 2012 | Body | 1900 | 20.5 | 1.535 | 51.016 | 1.52 | 53.3 | 0.99 | -4.29 |
| Dec. 27, 2012 | Body | 1900 | 20.8 | 1.544 | 53.431 | 1.52 | 53.3 | 1.58 | 0.25 |
| Jan. 10, 2013 | Body | 2450 | 21.4 | 1.958 | 50.929 | 1.95 | 52.7 | 0.41 | -3.36 |
| Dec. 25, 2012 | Body | 5200 | 20.5 | 5.278 | 48.936 | 5.30 | 49.0 | -0.42 | -0.13 |
| Dec. 25, 2012 | Body | 5300 | 20.5 | 5.413 | 48.764 | 5.42 | 48.9 | -0.13 | -0.28 |
| Dec. 26, 2012 | Body | 5600 | 20.8 | 5.868 | 48.274 | 5.77 | 48.5 | 1.70 | -0.47 |
| Jan. 08, 2013 | Body | 5800 | 20.8 | 6.148 | 47.973 | 6.00 | 48.2 | 2.47 | -0.47 |

**Note:**

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

## 4.4 System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01v01. The validation status in tabulated summary is as below.

| Test Date | Probe S/N | Calibration Point | | Measured Conductivity (σ) | Measured Permittivity ($\varepsilon_r$) | Validation for CW | | | Validation for Modulation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sensitivity Range | Probe Linearity | Probe Isotropy | Modulation Type | Duty Factor | PAR |
| Dec. 22, 2012 | 3801 | Body | 750 | 0.966 | 55.259 | Pass | Pass | Pass | N/A | N/A | N/A |
| Dec. 22, 2012 | 3801 | Body | 835 | 0.993 | 56.738 | Pass | Pass | Pass | N/A | N/A | N/A |
| Dec. 27, 2012 | 3801 | Body | 835 | 0.968 | 55.273 | Pass | Pass | Pass | GMSK | Pass | N/A |
| Jan. 03, 2013 | 3650 | Body | 1750 | 1.447 | 53.388 | Pass | Pass | Pass | N/A | N/A | N/A |
| Dec. 20, 2012 | 3590 | Body | 1900 | 1.535 | 51.016 | Pass | Pass | Pass | N/A | N/A | N/A |
| Dec. 27, 2012 | 3801 | Body | 1900 | 1.544 | 53.431 | Pass | Pass | Pass | GMSK | Pass | N/A |
| Jan. 10, 2013 | 3590 | Body | 2450 | 1.958 | 50.929 | Pass | Pass | Pass | OFDM | N/A | Pass |
| Dec. 25, 2012 | 3590 | Body | 5200 | 5.278 | 48.936 | Pass | Pass | Pass | OFDM | N/A | Pass |
| Dec. 25, 2012 | 3590 | Body | 5300 | 5.413 | 48.764 | Pass | Pass | Pass | OFDM | N/A | Pass |
| Dec. 26, 2012 | 3590 | Body | 5600 | 5.868 | 48.274 | Pass | Pass | Pass | OFDM | N/A | Pass |
| Jan. 08, 2013 | 3590 | Body | 5800 | 6.148 | 47.973 | Pass | Pass | Pass | OFDM | N/A | Pass |

## 4.5 System Verification

The measuring results for system check are shown as below.

| Test Date | Mode | Frequency (MHz) | 1W Target SAR-1g (W/kg) | Measured SAR-1g (W/kg) | Normalized to 1W SAR-1g (W/kg) | Deviation (%) | Dipole S/N | Probe S/N | DAE S/N |
|---|---|---|---|---|---|---|---|---|---|
| Dec. 22, 2012 | Body | 750 | 8.76 | 2.21 | 8.84 | 0.91 | 1013 | 3801 | 861 |
| Dec. 22, 2012 | Body | 835 | 9.60 | 2.26 | 9.04 | -5.83 | 4d021 | 3801 | 861 |
| Dec. 27, 2012 | Body | 835 | 9.60 | 2.49 | 9.96 | 3.75 | 4d021 | 3801 | 861 |
| Jan. 03, 2013 | Body | 1750 | 37.20 | 9.09 | 36.36 | -2.26 | 1055 | 3650 | 1277 |
| Dec. 20, 2012 | Body | 1900 | 38.90 | 9.81 | 39.24 | 0.87 | 5d036 | 3590 | 915 |
| Dec. 27, 2012 | Body | 1900 | 38.90 | 9.49 | 37.96 | -2.42 | 5d036 | 3801 | 861 |
| Jan. 10, 2013 | Body | 2450 | 50.00 | 12.5 | 50.00 | 0.00 | 737 | 3590 | 687 |
| Dec. 25, 2012 | Body | 5200 | 73.00 | 7.04 | 70.40 | -3.56 | 1019 | 3590 | 915 |
| Dec. 25, 2012 | Body | 5300 | 74.60 | 7.48 | 74.80 | 0.27 | 1019 | 3590 | 915 |
| Dec. 26, 2012 | Body | 5600 | 79.90 | 7.61 | 76.10 | -4.76 | 1019 | 3590 | 915 |
| Jan. 08, 2013 | Body | 5800 | 73.40 | 6.97 | 69.70 | -5.04 | 1019 | 3590 | 687 |

**Note:**

1. Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.
2. The probe calibrated frequency intervals are properly matched with the device test frequency intervals, and the SAR measurement does not exceeding 50% (±50MHz) of the intervals. Therefore, SAR measurement in this report has satisfied the probe calibration requirements in KDB 450824.
3. SAR system verification has been performed for all SAR probes used in the measurements for the specific frequency bands and tissue-equivalent liquids used for SAR testing.

## 4.6 Conducted Power Results

### 4.6.1 Nominal Conducted Power

The nominal conducted power (Unit: dBm) including tune-up tolerance is shown as below.

| Mode | | GSM850 (without Power Reduction) | GSM850 (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| GPRS 8 (GMSK, 1 Uplink) | Maximum | 32.2 | 29.3 | 2.9 |
| | Nominal | 31.2 | 28.3 | |
| GPRS 10 (GMSK, 2 Uplink) | Maximum | 32.0 | 29.3 | 2.7 |
| | Nominal | 31.0 | 28.3 | |
| EDGE 8 (8PSK, 1 Uplink) | Maximum | 27.0 | 27.0 | 0.0 |
| | Nominal | 26.0 | 26.0 | |
| EDGE 10 (8PSK, 2 Uplink) | Maximum | 27.0 | 26.0 | 1.0 |
| | Nominal | 26.0 | 25.0 | |
| EDGE 11 (8PSK, 3 Uplink) | Maximum | 27.0 | 23.0 | 4.0 |
| | Nominal | 26.0 | 22.0 | |
| EDGE 12 (8PSK, 4 Uplink) | Maximum | 27.0 | 23.0 | 4.0 |
| | Nominal | 26.0 | 22.0 | |

| Mode | | GSM1900 (without Power Reduction) | GSM1900 (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| GPRS 8 (GMSK, 1 Uplink) | Maximum | 29.5 | 26.3 | 3.2 |
| | Nominal | 28.5 | 25.3 | |
| GPRS 10 (GMSK, 2 Uplink) | Maximum | 29.3 | 25.0 | 4.3 |
| | Nominal | 28.3 | 24.0 | |
| EDGE 8 (8PSK, 1 Uplink) | Maximum | 26.0 | 26.0 | 0.0 |
| | Nominal | 25.0 | 25.0 | |
| EDGE 10 (8PSK, 2 Uplink) | Maximum | 26.0 | 23.0 | 3.0 |
| | Nominal | 25.0 | 22.0 | |
| EDGE 11 (8PSK, 3 Uplink) | Maximum | 26.0 | 23.1 | 2.9 |
| | Nominal | 25.0 | 22.1 | |
| EDGE 12 (8PSK, 4 Uplink) | Maximum | 26.0 | 21.8 | 4.2 |
| | Nominal | 25.0 | 20.8 | |

| Mode | | WCDMA Band II (without Power Reduction) | WCDMA Band II (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| RMC 12.2K | Maximum | 23.0 | 19.0 | 4.0 |
| | Nominal | 22.0 | 18.0 | |

| Mode | | WCDMA Band V (without Power Reduction) | WCDMA Band V (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| RMC 12.2K | Maximum | 23.2 | 21.1 | 2.1 |
| | Nominal | 22.2 | 20.1 | |

| BW / Modulation / RB# | | LTE 4 (without Power Reduction) | LTE 4 (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| BW 5MHz / QPSK / RB < 8 | Maximum | 23.0 | 20.0 | 3.0 |
| | Nominal | 22.0 | 19.0 | |
| BW 5MHz / QPSK / RB > 8 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 5MHz / 16QAM / RB <= 8 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 5MHz / 16QAM / RB > 8 | Maximum | 21.0 | 20.0 | 1.0 |
| | Nominal | 20.0 | 19.0 | |
| BW 10MHz / QPSK / RB < 12 | Maximum | 23.0 | 20.0 | 3.0 |
| | Nominal | 22.0 | 19.0 | |
| BW 10MHz / QPSK / RB > 12 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 10MHz / 16QAM / RB <= 12 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 10MHz / 16QAM / RB > 12 | Maximum | 21.0 | 20.0 | 1.0 |
| | Nominal | 20.0 | 19.0 | |

| BW / Modulation / RB# | | LTE 17 (without Power Reduction) | LTE 17 (with Power Reduction) | Power Reduction |
|---|---|---|---|---|
| BW 5MHz / QPSK / RB < 8 | Maximum | 23.0 | 20.0 | 3.0 |
| | Nominal | 22.0 | 19.0 | |
| BW 5MHz / QPSK / RB > 8 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 5MHz / 16QAM / RB <= 8 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 5MHz / 16QAM / RB > 8 | Maximum | 21.0 | 20.0 | 1.0 |
| | Nominal | 20.0 | 19.0 | |
| BW 10MHz / QPSK / RB < 12 | Maximum | 23.0 | 20.0 | 3.0 |
| | Nominal | 22.0 | 19.0 | |
| BW 10MHz / QPSK / RB > 12 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 10MHz / 16QAM / RB <= 12 | Maximum | 22.0 | 20.0 | 2.0 |
| | Nominal | 21.0 | 19.0 | |
| BW 10MHz / 16QAM / RB > 12 | Maximum | 21.0 | 20.0 | 1.0 |
| | Nominal | 20.0 | 19.0 | |

| Mode | | 2.4G WLAN | 5.2G WLAN | 5.3G WLAN | 5.5G WLAN | 5.8G WLAN |
|---|---|---|---|---|---|---|
| 802.11b | Maximum | 16.0 | N/A | N/A | N/A | N/A |
| | Nominal | 14.0 | N/A | N/A | N/A | N/A |
| 802.11g | Maximum | 13.7 | N/A | N/A | N/A | N/A |
| | Nominal | 11.7 | N/A | N/A | N/A | N/A |
| 802.11a | Maximum | N/A | 11.3 | 11.0 | 11.5 | 10.6 |
| | Nominal | N/A | 9.3 | 9.0 | 9.5 | 8.6 |
| 802.11n HT20 | Maximum | 13.6 | 10.3 | 10.0 | 10.8 | 11.0 |
| | Nominal | 11.6 | 8.3 | 8.0 | 8.8 | 9.0 |

| Mode | Bluetooth |
|---|---|
| All | 8.0 |

### 4.6.2 Measured Conducted Power Result

The measuring conducted power (Unit: dBm) are shown as below.

| Band | GSM850 | | | GSM1900 | | |
|---|---|---|---|---|---|---|
| Channel | 128 | 189 | 251 | 512 | 661 | 810 |
| Frequency (MHz) | 824.2 | 836.4 | 848.8 | 1850.2 | 1880.0 | 1909.8 |
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | |
| **Maximum Burst-Averaged Output Power** | | | | | | |
| GPRS 8 (GMSK, 1 Uplink) | 32.10 | 32.06 | 32.15 | 29.27 | 29.46 | 29.39 |
| GPRS 10 (GMSK, 2 Uplink) | 31.99 | 31.90 | 32.00 | 29.17 | 29.29 | 29.21 |
| EDGE 8 (8PSK, 1 Uplink) | 26.20 | 26.21 | 26.30 | 25.66 | 25.54 | 25.72 |
| EDGE 10 (8PSK, 2 Uplink) | 26.07 | 26.08 | 26.17 | 25.42 | 25.46 | 25.54 |
| EDGE 11 (8PSK, 3 Uplink) | 26.00 | 26.01 | 26.10 | 25.33 | 25.25 | 25.38 |
| EDGE 12 (8PSK, 4 Uplink) | 25.94 | 25.95 | 26.04 | 25.36 | 25.18 | 25.29 |
| **Maximum Frame-Averaged Output Power** | | | | | | |
| GPRS 8 (GMSK, 1 Uplink) | 23.10 | 23.06 | 23.15 | 20.27 | 20.46 | 20.39 |
| GPRS 10 (GMSK, 2 Uplink) | 25.99 | 25.90 | 26.00 | 23.17 | 23.29 | 23.21 |
| EDGE 8 (8PSK, 1 Uplink) | 17.20 | 17.21 | 17.30 | 16.66 | 16.54 | 16.72 |
| EDGE 10 (8PSK, 2 Uplink) | 20.07 | 20.08 | 20.17 | 19.42 | 19.46 | 19.54 |
| EDGE 11 (8PSK, 3 Uplink) | 21.74 | 21.75 | 21.84 | 21.07 | 20.99 | 21.12 |
| EDGE 12 (8PSK, 4 Uplink) | 22.94 | 22.95 | 23.04 | 22.36 | 22.18 | 22.29 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | |
| **Maximum Burst-Averaged Output Power** | | | | | | |
| GPRS 8 (GMSK, 1 Uplink) | 29.30 | 29.23 | 29.19 | 25.85 | 26.27 | 26.20 |
| GPRS 10 (GMSK, 2 Uplink) | 29.25 | 29.18 | 29.16 | 24.54 | 24.92 | 24.82 |
| EDGE 8 (8PSK, 1 Uplink) | 26.33 | 26.23 | 26.21 | 25.66 | 25.72 | 25.54 |
| EDGE 10 (8PSK, 2 Uplink) | 25.69 | 25.57 | 25.58 | 22.79 | 22.84 | 22.73 |
| EDGE 11 (8PSK, 3 Uplink) | 22.63 | 22.47 | 22.45 | 23.00 | 23.06 | 22.63 |
| EDGE 12 (8PSK, 4 Uplink) | 22.57 | 22.40 | 22.35 | 21.66 | 21.74 | 21.61 |
| **Maximum Frame-Averaged Output Power** | | | | | | |
| GPRS 8 (GMSK, 1 Uplink) | 20.30 | 20.23 | 20.19 | 16.85 | 17.27 | 17.20 |
| GPRS 10 (GMSK, 2 Uplink) | 23.25 | 23.18 | 23.16 | 18.54 | 18.92 | 18.82 |
| EDGE 8 (8PSK, 1 Uplink) | 17.33 | 17.23 | 17.21 | 16.66 | 16.72 | 16.54 |
| EDGE 10 (8PSK, 2 Uplink) | 19.69 | 19.57 | 19.58 | 16.79 | 16.84 | 16.73 |
| EDGE 11 (8PSK, 3 Uplink) | 18.37 | 18.21 | 18.19 | 18.74 | 18.80 | 18.37 |
| EDGE 12 (8PSK, 4 Uplink) | 19.57 | 19.40 | 19.35 | 18.66 | 18.74 | 18.61 |
| **Actual Reduced Power (dB)** | | | | | | |
| GPRS 8 (GMSK, 1 Uplink) | 2.80 | 2.83 | 2.96 | 3.42 | 3.19 | 3.19 |
| GPRS 10 (GMSK, 2 Uplink) | 2.74 | 2.72 | 2.84 | 4.63 | 4.37 | 4.39 |
| EDGE 8 (8PSK, 1 Uplink) | -0.13 | -0.02 | 0.09 | 0.00 | -0.18 | 0.18 |
| EDGE 10 (8PSK, 2 Uplink) | 0.38 | 0.51 | 0.59 | 2.63 | 2.62 | 2.81 |
| EDGE 11 (8PSK, 3 Uplink) | 3.37 | 3.54 | 3.65 | 2.33 | 2.19 | 2.75 |
| EDGE 12 (8PSK, 4 Uplink) | 3.37 | 3.55 | 3.69 | 3.70 | 3.44 | 3.68 |

**Note:**

1. SAR testing was performed on the maximum frame-averaged power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
   Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8)

| Band | WCDMA Band II | | | WCDMA Band V | | | 3PGG MPR (dB) |
|---|---|---|---|---|---|---|---|
| Channel | 9262 | 9400 | 9538 | 4132 | 4182 | 4233 | |
| Frequency (MHz) | 1852.4 | 1880.0 | 1907.6 | 826.4 | 836.4 | 846.6 | |
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | | |
| RMC 12.2K | 22.68 | **22.85** | 22.49 | **23.12** | 22.74 | 22.94 | - |
| HSDPA Subtest-1 | 22.11 | 22.28 | 21.92 | 22.57 | 22.19 | 22.39 | 0 |
| HSDPA Subtest-2 | 22.21 | 22.38 | 22.02 | 22.58 | 22.20 | 22.40 | 0 |
| HSDPA Subtest-3 | 21.69 | 21.86 | 21.50 | 22.08 | 21.70 | 21.90 | 0.5 |
| HSDPA Subtest-4 | 21.71 | 21.88 | 21.52 | 22.05 | 21.67 | 21.87 | 0.5 |
| HSUPA Subtest-1 | 21.95 | 22.16 | 21.85 | 21.96 | 21.88 | 21.58 | 0 |
| HSUPA Subtest-2 | 20.60 | 20.77 | 20.41 | 20.45 | 20.07 | 20.27 | 2 |
| HSUPA Subtest-3 | 21.34 | 21.28 | 20.75 | 20.96 | 20.58 | 20.78 | 1 |
| HSUPA Subtest-4 | 20.77 | 20.88 | 20.72 | 20.87 | 20.81 | 20.12 | 2 |
| HSUPA Subtest-5 | 22.14 | 22.31 | 21.95 | 22.38 | 22.00 | 22.20 | 0 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | | |
| RMC 12.2K | 18.46 | **18.68** | 18.50 | **21.09** | 20.81 | 21.04 | - |
| HSDPA Subtest-1 | 16.74 | 17.03 | 16.98 | 20.62 | 20.34 | 20.57 | - |
| HSDPA Subtest-2 | 16.82 | 17.11 | 17.06 | 20.57 | 20.29 | 20.52 | - |
| HSDPA Subtest-3 | 16.25 | 16.54 | 16.49 | 20.11 | 19.83 | 20.06 | - |
| HSDPA Subtest-4 | 16.28 | 16.57 | 16.52 | 20.16 | 19.88 | 20.11 | - |
| HSUPA Subtest-1 | 16.29 | 16.58 | 16.53 | 20.26 | 20.78 | 20.21 | - |
| HSUPA Subtest-2 | 15.02 | 15.31 | 15.26 | 19.07 | 18.79 | 19.02 | - |
| HSUPA Subtest-3 | 15.34 | 15.63 | 15.58 | 19.15 | 19.57 | 19.10 | - |
| HSUPA Subtest-4 | 15.16 | 15.35 | 15.50 | 19.09 | 19.41 | 19.14 | - |
| HSUPA Subtest-5 | 16.79 | 17.08 | 17.03 | 20.45 | 20.17 | 20.40 | - |
| **Actual Reduced Power (dB)** | | | | | | | |
| RMC 12.2K | 4.22 | 4.17 | 3.99 | 2.03 | 1.93 | 1.90 | - |
| HSDPA Subtest-1 | 5.37 | 5.25 | 4.94 | 1.95 | 1.85 | 1.82 | - |
| HSDPA Subtest-2 | 5.39 | 5.27 | 4.96 | 2.01 | 1.91 | 1.88 | - |
| HSDPA Subtest-3 | 5.44 | 5.32 | 5.01 | 1.97 | 1.87 | 1.84 | - |
| HSDPA Subtest-4 | 5.43 | 5.31 | 5.00 | 1.89 | 1.79 | 1.76 | - |
| HSUPA Subtest-1 | 5.66 | 5.58 | 5.32 | 1.70 | 1.10 | 1.37 | - |
| HSUPA Subtest-2 | 5.58 | 5.46 | 5.15 | 1.38 | 1.28 | 1.25 | - |
| HSUPA Subtest-3 | 6.00 | 5.65 | 5.17 | 1.81 | 1.01 | 1.68 | - |
| HSUPA Subtest-4 | 5.61 | 5.53 | 5.22 | 1.78 | 1.40 | 0.98 | - |
| HSUPA Subtest-5 | 5.35 | 5.23 | 4.92 | 1.93 | 1.83 | 1.80 | - |

| Band / BW | Modulation | RB Size | RB Offset | Low CH 19975 Frequency 1712.5 MHz | Mid CH 20175 Frequency 1732.5 MHz | High CH 20375 Frequency 1752.5 MHz | 3PGG MPR (dB) |
|---|---|---|---|---|---|---|---|
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | | |
| 4 / 5M | QPSK | 1 | 0 | 22.85 | 22.79 | 22.97 | 0 |
| | | 1 | 12 | 22.90 | 22.84 | **22.99** | 0 |
| | | 1 | 24 | 22.61 | 22.55 | 22.73 | 0 |
| | | 12 | 0 | 21.87 | 21.81 | 21.99 | 1 |
| | | 12 | 6 | 21.84 | 21.78 | 21.96 | 1 |
| | | 12 | 13 | 21.75 | 21.69 | 21.87 | 1 |
| | | 25 | 0 | 21.83 | 21.77 | 21.95 | 1 |
| | 16QAM | 1 | 0 | 21.73 | 21.67 | 21.85 | 1 |
| | | 1 | 12 | 21.86 | 21.80 | **21.98** | 1 |
| | | 1 | 24 | 21.51 | 21.45 | 21.63 | 1 |
| | | 12 | 0 | 20.84 | 20.78 | 20.96 | 2 |
| | | 12 | 6 | 20.84 | 20.78 | 20.96 | 2 |
| | | 12 | 13 | 20.74 | 20.68 | 20.86 | 2 |
| | | 25 | 0 | 20.84 | 20.78 | 20.96 | 2 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | | |
| 4 / 5M | QPSK | 1 | 0 | 19.29 | **19.55** | 19.03 | N/A |
| | | 1 | 12 | 19.47 | 19.49 | 19.07 | N/A |
| | | 1 | 24 | 19.39 | 19.49 | 19.08 | N/A |
| | | 12 | 0 | 19.52 | 19.49 | 19.15 | N/A |
| | | 12 | 6 | 19.46 | 19.49 | 19.19 | N/A |
| | | 12 | 13 | 19.50 | 19.54 | 19.10 | N/A |
| | | 25 | 0 | 19.26 | 19.20 | 19.14 | N/A |
| | 16QAM | 1 | 0 | 18.92 | 19.56 | 19.81 | N/A |
| | | 1 | 12 | 19.61 | 19.56 | **19.85** | N/A |
| | | 1 | 24 | 19.63 | 19.50 | 19.68 | N/A |
| | | 12 | 0 | 19.16 | 19.15 | 19.44 | N/A |
| | | 12 | 6 | 19.20 | 19.20 | 19.45 | N/A |
| | | 12 | 13 | 19.17 | 19.08 | 19.42 | N/A |
| | | 25 | 0 | 19.65 | 19.62 | 19.56 | N/A |
| **Actual Reduced Power (dB)** | | | | | | | |
| 4 / 5M | QPSK | 1 | 0 | 3.56 | 3.24 | 3.94 | |
| | | 1 | 12 | 3.43 | 3.35 | 3.92 | |
| | | 1 | 24 | 3.22 | 3.06 | 3.65 | |
| | | 12 | 0 | 2.35 | 2.32 | 2.84 | |
| | | 12 | 6 | 2.38 | 2.29 | 2.77 | |
| | | 12 | 13 | 2.25 | 2.15 | 2.77 | |
| | | 25 | 0 | 2.57 | 2.57 | 2.81 | |
| | 16QAM | 1 | 0 | 2.81 | 2.11 | 2.04 | |
| | | 1 | 12 | 2.25 | 2.24 | 2.13 | |
| | | 1 | 24 | 1.88 | 1.95 | 1.95 | |
| | | 12 | 0 | 1.68 | 1.63 | 1.52 | |
| | | 12 | 6 | 1.64 | 1.58 | 1.51 | |
| | | 12 | 13 | 1.57 | 1.60 | 1.44 | |
| | | 25 | 0 | 1.19 | 1.16 | 1.40 | |

**Note:** The 3GPP MPR for LTE will be disabled when the P-sensor is triggered and the power reduction is active.

| Band / BW | Modulation | RB Size | RB Offset | Low CH 20000 Frequency 1715.0 MHz | Mid CH 20175 Frequency 1732.5 MHz | High CH 20350 Frequency 1750.0 MHz | 3PGG MPR (dB) |
|---|---|---|---|---|---|---|---|
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | | |
| 4 / 10M | QPSK | 1 | 0 | 22.97 | 22.68 | 22.96 | 0 |
| | | 1 | 24 | 22.98 | 22.71 | **23.00** | 0 |
| | | 1 | 49 | 22.96 | 22.60 | 22.71 | 0 |
| | | 25 | 0 | 21.95 | 21.83 | **22.00** | 1 |
| | | 25 | 12 | 21.82 | 21.80 | 21.92 | 1 |
| | | 25 | 25 | 21.79 | 21.71 | 21.86 | 1 |
| | | 50 | 0 | 21.80 | 21.68 | 21.87 | 1 |
| | 16QAM | 1 | 0 | 21.73 | 21.83 | 21.78 | 1 |
| | | 1 | 24 | 21.89 | 21.79 | **21.99** | 1 |
| | | 1 | 49 | 21.79 | 21.68 | 21.66 | 1 |
| | | 25 | 0 | 20.94 | 20.89 | 20.98 | 2 |
| | | 25 | 12 | 20.81 | 20.78 | 20.95 | 2 |
| | | 25 | 25 | 20.84 | 20.79 | 20.93 | 2 |
| | | 50 | 0 | 20.82 | 20.73 | 20.84 | 2 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | | |
| 4 / 10M | QPSK | 1 | 0 | 19.52 | 19.61 | 19.45 | N/A |
| | | 1 | 24 | 19.75 | **19.89** | 19.70 | N/A |
| | | 1 | 49 | 19.28 | 19.25 | 19.57 | N/A |
| | | 25 | 0 | 19.68 | **19.81** | 19.77 | N/A |
| | | 25 | 12 | 19.41 | 19.10 | 19.17 | N/A |
| | | 25 | 25 | 19.07 | 19.01 | 19.11 | N/A |
| | | 50 | 0 | 19.21 | 19.27 | 19.30 | N/A |
| | 16QAM | 1 | 0 | 18.89 | 19.03 | 19.11 | N/A |
| | | 1 | 24 | 18.96 | 18.95 | 19.01 | N/A |
| | | 1 | 49 | 18.97 | 18.96 | 18.87 | N/A |
| | | 25 | 0 | 19.18 | **19.19** | 19.16 | N/A |
| | | 25 | 12 | 19.11 | 19.15 | 19.18 | N/A |
| | | 25 | 25 | 19.08 | 19.05 | 19.09 | N/A |
| | | 50 | 0 | 19.13 | 19.10 | 19.14 | N/A |
| **Actual Reduced Power (dB)** | | | | | | | |
| 4 / 10M | QPSK | 1 | 0 | 3.45 | 3.07 | 3.51 | |
| | | 1 | 24 | 3.23 | 2.82 | 3.30 | |
| | | 1 | 49 | 3.68 | 3.35 | 3.14 | |
| | | 25 | 0 | 2.27 | 2.02 | 2.23 | |
| | | 25 | 12 | 2.41 | 2.70 | 2.75 | |
| | | 25 | 25 | 2.72 | 2.70 | 2.75 | |
| | | 50 | 0 | 2.59 | 2.41 | 2.57 | |
| | 16QAM | 1 | 0 | 2.84 | 2.80 | 2.67 | |
| | | 1 | 24 | 2.93 | 2.84 | 2.98 | |
| | | 1 | 49 | 2.82 | 2.72 | 2.79 | |
| | | 25 | 0 | 1.76 | 1.70 | 1.82 | |
| | | 25 | 12 | 1.70 | 1.63 | 1.77 | |
| | | 25 | 25 | 1.76 | 1.74 | 1.84 | |
| | | 50 | 0 | 1.69 | 1.63 | 1.70 | |

**Note:** The 3GPP MPR for LTE will be disabled when the P-sensor is triggered and the power reduction is active.

| Band / BW | Modulation | RB Size | RB Offset | Low CH 23755 Frequency 706.5 MHz | Mid CH 23790 Frequency 710.0 MHz | High CH 23825 Frequency 713.5 MHz | 3PGG MPR (dB) |
|---|---|---|---|---|---|---|---|
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | | |
| 17 / 5M | QPSK | 1 | 0 | 22.39 | 22.43 | 22.37 | 0 |
| | | 1 | 12 | 22.44 | **22.48** | 22.42 | 0 |
| | | 1 | 24 | 22.38 | 22.42 | 22.36 | 0 |
| | | 12 | 0 | 21.66 | 21.70 | 21.64 | 1 |
| | | 12 | 6 | 21.55 | 21.59 | 21.53 | 1 |
| | | 12 | 13 | 21.64 | 21.68 | 21.62 | 1 |
| | | 25 | 0 | 21.44 | 21.48 | 21.42 | 1 |
| | 16QAM | 1 | 0 | 21.62 | 21.66 | 21.60 | 1 |
| | | 1 | 12 | 21.78 | **21.82** | 21.76 | 1 |
| | | 1 | 24 | 21.68 | 21.72 | 21.66 | 1 |
| | | 12 | 0 | 20.55 | 20.59 | 20.53 | 2 |
| | | 12 | 6 | 20.50 | 20.54 | 20.48 | 2 |
| | | 12 | 13 | 20.56 | 20.60 | 20.54 | 2 |
| | | 25 | 0 | 20.74 | 20.78 | 20.72 | 2 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | | |
| 17 / 5M | QPSK | 1 | 0 | 19.48 | 19.54 | 19.43 | N/A |
| | | 1 | 12 | 19.52 | 19.58 | 19.47 | N/A |
| | | 1 | 24 | 19.51 | 19.57 | 19.46 | N/A |
| | | 12 | 0 | 19.59 | 19.65 | 19.54 | N/A |
| | | 12 | 6 | 19.56 | 19.62 | 19.51 | N/A |
| | | 12 | 13 | 19.66 | **19.72** | 19.61 | N/A |
| | | 25 | 0 | 19.47 | 19.53 | 19.42 | N/A |
| | 16QAM | 1 | 0 | 19.75 | 19.71 | 19.87 | N/A |
| | | 1 | 12 | **19.95** | 19.83 | 19.88 | N/A |
| | | 1 | 24 | 19.92 | 19.91 | 19.78 | N/A |
| | | 12 | 0 | 19.77 | 19.85 | 19.84 | N/A |
| | | 12 | 6 | 19.88 | 19.75 | 19.75 | N/A |
| | | 12 | 13 | 19.83 | 19.86 | 19.94 | N/A |
| | | 25 | 0 | 19.67 | 19.47 | 19.48 | N/A |
| **Actual Reduced Power (dB)** | | | | | | | |
| 17 / 5M | QPSK | 1 | 0 | 2.91 | 2.89 | 2.94 | |
| | | 1 | 12 | 2.92 | 2.90 | 2.95 | |
| | | 1 | 24 | 2.87 | 2.85 | 2.90 | |
| | | 12 | 0 | 2.07 | 2.05 | 2.10 | |
| | | 12 | 6 | 1.99 | 1.97 | 2.02 | |
| | | 12 | 13 | 1.98 | 1.96 | 2.01 | |
| | | 25 | 0 | 1.97 | 1.95 | 2.00 | |
| | 16QAM | 1 | 0 | 1.87 | 1.95 | 1.73 | |
| | | 1 | 12 | 1.83 | 1.99 | 1.88 | |
| | | 1 | 24 | 1.76 | 1.81 | 1.88 | |
| | | 12 | 0 | 0.78 | 0.74 | 0.69 | |
| | | 12 | 6 | 0.62 | 0.79 | 0.73 | |
| | | 12 | 13 | 0.73 | 0.74 | 0.60 | |
| | | 25 | 0 | 1.07 | 1.31 | 1.24 | |

**Note:** The 3GPP MPR for LTE will be disabled when the P-sensor is triggered and the power reduction is active.

| Band / BW | Modulation | RB Size | RB Offset | Low CH 23780 Frequency 709.0 MHz | Mid CH 23790 Frequency 710.0 MHz | High CH 23800 Frequency 711.0 MHz | 3PGG MPR (dB) |
|---|---|---|---|---|---|---|---|
| **EUT without Power Reduction (P-Sensor NOT Triggered)** | | | | | | | |
| 17 / 10M | QPSK | 1 | 0 | 22.63 | 22.41 | 22.30 | 0 |
| | | 1 | 24 | **22.80** | 22.58 | 22.41 | 0 |
| | | 1 | 49 | 22.74 | 22.56 | 22.20 | 0 |
| | | 25 | 0 | 21.51 | 21.58 | 21.53 | 1 |
| | | 25 | 12 | 21.59 | 21.54 | 21.47 | 1 |
| | | 25 | 25 | **21.65** | 21.60 | 21.61 | 1 |
| | | 50 | 0 | 21.62 | 21.52 | 21.52 | 1 |
| | 16QAM | 1 | 0 | 21.54 | 21.54 | 21.62 | 1 |
| | | 1 | 24 | **21.83** | 21.73 | 21.75 | 1 |
| | | 1 | 49 | 21.80 | 21.81 | 21.67 | 1 |
| | | 25 | 0 | 20.70 | 20.76 | 20.68 | 2 |
| | | 25 | 12 | 20.74 | 20.64 | 20.61 | 2 |
| | | 25 | 25 | 20.75 | 20.80 | 20.85 | 2 |
| | | 50 | 0 | 20.55 | 20.50 | 20.44 | 2 |
| **EUT with Power Reduction (P-Sensor Triggered)** | | | | | | | |
| 17 / 10M | QPSK | 1 | 0 | 19.71 | 19.77 | 19.66 | N/A |
| | | 1 | 24 | 19.92 | **19.98** | 19.87 | N/A |
| | | 1 | 49 | 19.81 | 19.87 | 19.76 | N/A |
| | | 25 | 0 | 19.60 | **19.66** | 19.55 | N/A |
| | | 25 | 12 | 19.51 | 19.57 | 19.46 | N/A |
| | | 25 | 25 | 19.56 | 19.62 | 19.51 | N/A |
| | | 50 | 0 | 19.74 | 19.80 | 19.69 | N/A |
| | 16QAM | 1 | 0 | 19.47 | 19.54 | 19.31 | N/A |
| | | 1 | 24 | 19.68 | 19.80 | 19.45 | N/A |
| | | 1 | 49 | 19.60 | **19.82** | 19.36 | N/A |
| | | 25 | 0 | 19.55 | 19.62 | 19.60 | N/A |
| | | 25 | 12 | 19.67 | 19.63 | 19.63 | N/A |
| | | 25 | 25 | 19.69 | 19.60 | 19.68 | N/A |
| | | 50 | 0 | 19.69 | 19.49 | 19.50 | N/A |
| **Actual Reduced Power (dB)** | | | | | | | |
| 17 / 10M | QPSK | 1 | 0 | 2.92 | 2.64 | 2.64 | |
| | | 1 | 24 | 2.88 | 2.60 | 2.54 | |
| | | 1 | 49 | 2.93 | 2.69 | 2.44 | |
| | | 25 | 0 | 1.91 | 1.92 | 1.98 | |
| | | 25 | 12 | 2.08 | 1.97 | 2.01 | |
| | | 25 | 25 | 2.09 | 1.98 | 2.10 | |
| | | 50 | 0 | 1.88 | 1.72 | 1.83 | |
| | 16QAM | 1 | 0 | 2.07 | 2.00 | 2.31 | |
| | | 1 | 24 | 2.15 | 1.93 | 2.30 | |
| | | 1 | 49 | 2.20 | 1.99 | 2.31 | |
| | | 25 | 0 | 1.15 | 1.14 | 1.08 | |
| | | 25 | 12 | 1.07 | 1.01 | 0.98 | |
| | | 25 | 25 | 1.06 | 1.20 | 1.17 | |
| | | 50 | 0 | 0.86 | 1.01 | 0.94 | |

**Note:** The 3GPP MPR for LTE will be disabled when the P-sensor is triggered and the power reduction is active.

**<WLAN 2.4G>**

| Mode | 802.11b | | |
|---|---|---|---|
| Channel / Frequency (MHz) | 1 (2412) | 6 (2437) | 11 (2462) |
| Average Power | 15.91 | 15.74 | 15.79 |
| Mode | 802.11g | | |
| Channel / Frequency (MHz) | 1 (2412) | 6 (2437) | 11 (2462) |
| Average Power | 13.61 | 13.58 | 13.40 |
| Mode | 802.11n (HT20) | | |
| Channel / Frequency (MHz) | 1 (2412) | 6 (2437) | 11 (2462) |
| Average Power | 13.31 | 13.44 | 13.52 |

**<WLAN 5.2G>**

| Mode | 802.11a | | | |
|---|---|---|---|---|
| Channel / Frequency (MHz) | 36 (5180) | 40 (5200) | 44 (5220) | 48 (5240) |
| Average Power | 11.25 | 11.12 | 11.08 | 10.92 |
| Mode | 802.11n (HT20) | | | |
| Channel / Frequency (MHz) | 36 (5180) | 40 (5200) | 44 (5220) | 48 (5240) |
| Average Power | 10.25 | 10.02 | 10.20 | 9.84 |

**<WLAN 5.3G>**

| Mode | 802.11a | | | |
|---|---|---|---|---|
| Channel / Frequency (MHz) | 52 (5260) | 56 (5280) | 60 (5300) | 64 (5320) |
| Average Power | 10.95 | 10.68 | 10.63 | 10.71 |
| Mode | 802.11n (HT20) | | | |
| Channel / Frequency (MHz) | 52 (5260) | 56 (5280) | 60 (5300) | 64 (5320) |
| Average Power | 9.81 | 9.86 | 9.64 | 9.84 |

**<WLAN 5.6G>**

| Mode | 802.11a | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Channel / Frequency (MHz) | 100 (5500) | 104 (5520) | 108 (5540) | 112 (5560) | 116 (5580) | 132 (5660) | 136 (5680) | 140 (5700) |
| Average Power | 11.48 | 11.33 | 11.42 | 11.28 | 11.30 | 11.41 | 11.48 | 11.36 |
| Mode | 802.11n (HT20) | | | | | | | |
| Channel / Frequency (MHz) | 100 (5500) | 104 (5520) | 108 (5540) | 112 (5560) | 116 (5580) | 132 (5660) | 136 (5680) | 140 (5700) |
| Average Power | 10.45 | 10.39 | 10.42 | 10.51 | 10.35 | 10.54 | 10.62 | 10.72 |

**<WLAN 5.8G>**

| Mode | 802.11a | | | | |
|---|---|---|---|---|---|
| Channel / Frequency (MHz) | 149 (5745) | 153 (5765) | 157 (5785) | 161 (5805) | 165 (5825) |
| Average Power | 10.52 | 10.49 | 10.28 | 10.51 | 10.13 |
| Mode | 802.11n (HT20) | | | | |
| Channel / Frequency (MHz) | 149 (5745) | 153 (5765) | 157 (5785) | 161 (5805) | 165 (5825) |
| Average Power | 10.92 | 10.91 | 10.90 | 10.88 | 10.64 |

## 4.7 SAR Testing Results

### 4.7.1 SAR Results for Body

| Plot No. | Band | Mode | Test Position | Separation Distance (mm) | Ch. | Power Reduction | Max. Tune-up Power (dBm) | Measured Conducted Power (dBm) | Scaling Factor | Power Drift (dB) | Measured SAR-1g (W/kg) | Scaled SAR-1g (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | GSM850 | GPRS10 | Rear Face | 0 | 128 | w/ | 29.3 | 29.25 | 1.01 | 0.08 | 1.29 | **1.30** |
| | GSM850 | GPRS10 | Rear Face | 9 | 251 | w/o | 32.0 | 32.00 | 1.00 | -0.14 | 0.648 | 0.65 |
| | GSM850 | GPRS10 | EDGE1 | 0 | 128 | w/ | 29.3 | 29.25 | 1.01 | -0.08 | 0.397 | 0.40 |
| | GSM850 | GPRS10 | EDGE1 | 4 | 251 | w/o | 32.0 | 32.00 | 1.00 | 0.01 | 0.540 | 0.54 |
| | GSM850 | GPRS10 | EDGE4 | 0 | 251 | w/o | 32.0 | 32.00 | 1.00 | 0.01 | 0.681 | 0.68 |
| | GSM850 | GPRS10 | EDGE2 | 0 | 251 | w/o | 32.0 | 32.00 | 1.00 | -0.08 | 0.091 | 0.09 |
| | GSM850 | GPRS10 | Rear Face | 0 | 189 | w/ | 29.3 | 29.18 | 1.03 | 0.01 | 1.14 | 1.17 |
| | GSM850 | GPRS10 | Rear Face | 0 | 251 | w/ | 29.3 | 29.16 | 1.03 | 0.04 | 1.05 | 1.08 |
| | GSM850 | GPRS10 | Rear Face | 0 | 128 | w/ | 29.3 | 29.25 | 1.01 | -0.10 | 1.29 | 1.30 |
| | GSM1900 | GPRS10 | Rear Face | 0 | 661 | w/ | 25.0 | 24.92 | 1.02 | -0.11 | 1.18 | 1.20 |
| | GSM1900 | GPRS10 | Rear Face | 9 | 661 | w/o | 29.3 | 29.29 | 1.00 | 0.17 | 0.671 | 0.67 |
| | GSM1900 | GPRS10 | EDGE1 | 0 | 661 | w/ | 25.0 | 24.92 | 1.02 | -0.12 | 0.164 | 0.17 |
| | GSM1900 | GPRS10 | EDGE1 | 4 | 661 | w/o | 29.3 | 29.29 | 1.00 | -0.14 | 0.323 | 0.32 |
| | GSM1900 | GPRS10 | EDGE4 | 0 | 661 | w/o | 29.3 | 29.29 | 1.00 | -0.03 | 0.782 | 0.78 |
| | GSM1900 | GPRS10 | EDGE2 | 0 | 661 | w/o | 29.3 | 29.29 | 1.00 | 0.12 | 0.0082 | 0.01 |
| | GSM1900 | GPRS10 | Rear Face | 0 | 512 | w/ | 25.0 | 24.54 | 1.11 | 0.19 | 1 | 1.11 |
| 02 | GSM1900 | GPRS10 | Rear Face | 0 | 810 | w/ | 25.0 | 24.82 | 1.04 | -0.08 | 1.17 | **1.22** |
| | GSM1900 | GPRS10 | Rear Face | 0 | 661 | w/ | 25.0 | 24.92 | 1.02 | 0.13 | 1.18 | 1.20 |

**Note:**

1. SAR is performed on the highest power channel. When the reported SAR value of highest power channel is <= 0.8 W/kg, SAR testing for optional channel is not required.

| Plot No. | Band | Mode | Test Position | Separation Distance (mm) | Ch. | Power Reduction | Max. Tune-up Power (dBm) | Measured Conducted Power (dBm) | Scaling Factor | Power Drift (dB) | Measured SAR-1g (W/kg) | Scaled SAR-1g (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WCMDA II | RMC12.2K | Rear Face | 0 | 9400 | w/ | 19.0 | 18.68 | 1.08 | -0.12 | 0.683 | 0.74 |
| | WCMDA II | RMC12.2K | Rear Face | 9 | 9400 | w/o | 23.0 | 22.85 | 1.04 | -0.07 | 0.735 | 0.76 |
| | WCMDA II | RMC12.2K | EDGE1 | 0 | 9400 | w/ | 19.0 | 18.68 | 1.08 | -0.12 | 0.124 | 0.13 |
| | WCMDA II | RMC12.2K | EDGE1 | 4 | 9400 | w/o | 23.0 | 22.85 | 1.04 | 0.01 | 0.285 | 0.30 |
| | WCMDA II | RMC12.2K | EDGE4 | 0 | 9400 | w/o | 23.0 | 22.85 | 1.04 | -0.03 | 0.828 | 0.86 |
| | WCMDA II | RMC12.2K | EDGE2 | 0 | 9400 | w/o | 23.0 | 22.85 | 1.04 | 0.15 | 0.011 | 0.01 |
| 03 | WCMDA II | RMC12.2K | EDGE4 | 0 | 9262 | w/o | 23.0 | 22.68 | 1.08 | 0.04 | 0.929 | **1.00** |
| | WCMDA II | RMC12.2K | EDGE4 | 0 | 9538 | w/o | 23.0 | 22.49 | 1.12 | -0.07 | 0.715 | 0.80 |
| | WCMDA II | RMC12.2K | EDGE4 | 0 | 9262 | w/o | 23.0 | 22.68 | 1.08 | -0.14 | 0.875 | 0.95 |
| | WCDMA V | RMC12.2K | Rear Face | 0 | 4132 | w/ | 21.1 | 21.09 | 1.00 | -0.15 | 0.739 | 0.74 |
| | WCDMA V | RMC12.2K | Rear Face | 9 | 4132 | w/o | 23.2 | 23.12 | 1.02 | 0.04 | 0.486 | 0.50 |
| | WCDMA V | RMC12.2K | EDGE1 | 0 | 4132 | w/ | 21.1 | 21.09 | 1.00 | -0.06 | 0.242 | 0.24 |
| | WCDMA V | RMC12.2K | EDGE1 | 4 | 4132 | w/o | 23.2 | 23.12 | 1.02 | -0.04 | 0.325 | 0.33 |
| | WCDMA V | RMC12.2K | EDGE4 | 0 | 4132 | w/o | 23.2 | 23.12 | 1.02 | 0.04 | 0.479 | 0.49 |
| | WCDMA V | RMC12.2K | EDGE2 | 0 | 4132 | w/o | 23.2 | 23.12 | 1.02 | 0.1 | 0.065 | 0.07 |
| | WCDMA V | RMC12.2K | Rear Face | 0 | 4182 | w/ | 21.1 | 20.81 | 1.07 | -0.07 | 0.676 | 0.72 |
| 04 | WCDMA V | RMC12.2K | Rear Face | 0 | 4233 | w/ | 21.1 | 21.04 | 1.01 | -0.06 | 0.781 | **0.79** |

**Note:**

1. SAR is performed on the highest power channel. When the reported SAR value of highest power channel is <= 0.8 W/kg, SAR testing for optional channel is not required.

| Plot No. | Band | Mode | Test Position | Separation Distance (mm) | Ch. | RB# | RB Offset | Power Reduction | Max. Tune-up Power (dBm) | Measured Conducted Power (dBm) | Scaling Factor | Power Drift (dB) | Measured SAR-1g (W/kg) | Scaled SAR-1g (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20175 | 1 | 24 | w/ | 20.0 | 19.89 | 1.03 | 0.09 | 1.15 | 1.18 |
| | LTE 4 | QPSK_10 | Rear Face | 9 | 20350 | 1 | 24 | w/o | 23.0 | 23.00 | 1.00 | -0.01 | 0.660 | 0.66 |
| | LTE 4 | QPSK_10 | EDGE1 | 0 | 20175 | 1 | 24 | w/ | 20.0 | 19.89 | 1.03 | -0.07 | 0.364 | 0.37 |
| | LTE 4 | QPSK_10 | EDGE1 | 4 | 20350 | 1 | 24 | w/o | 23.0 | 23.00 | 1.00 | 0.07 | 0.355 | 0.36 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20350 | 1 | 24 | w/o | 23.0 | 23.00 | 1.00 | -0.01 | 1.02 | 1.02 |
| | LTE 4 | QPSK_10 | EDGE2 | 0 | 20350 | 1 | 24 | w/o | 23.0 | 23.00 | 1.00 | 0.01 | 0.026 | 0.03 |
| 05 | LTE 4 | QPSK_10 | Rear Face | 0 | 20000 | 1 | 24 | w/ | 20.0 | 19.75 | 1.06 | 0.02 | 1.22 | **1.29** |
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20350 | 1 | 24 | w/ | 20.0 | 19.70 | 1.07 | -0.07 | 0.961 | 1.03 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20000 | 1 | 24 | w/o | 23.0 | 22.98 | 1.00 | -0.11 | 1.02 | 1.02 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20175 | 1 | 24 | w/o | 23.0 | 22.71 | 1.07 | -0.04 | 1.05 | 1.12 |
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20175 | 25 | 0 | w/ | 20.0 | 19.81 | 1.04 | 0.11 | 1.14 | 1.19 |
| | LTE 4 | QPSK_10 | Rear Face | 9 | 20350 | 25 | 0 | w/o | 22.0 | 22.00 | 1.00 | 0.04 | 0.672 | 0.67 |
| | LTE 4 | QPSK_10 | EDGE1 | 0 | 20175 | 25 | 0 | w/ | 20.0 | 19.81 | 1.04 | -0.16 | 0.156 | 0.16 |
| | LTE 4 | QPSK_10 | EDGE1 | 4 | 20350 | 25 | 0 | w/o | 22.0 | 22.00 | 1.00 | 0.04 | 0.306 | 0.31 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20350 | 25 | 0 | w/o | 22.0 | 22.00 | 1.00 | 0.07 | 0.926 | 0.93 |
| | LTE 4 | QPSK_10 | EDGE2 | 0 | 20350 | 25 | 0 | w/o | 22.0 | 22.00 | 1.00 | 0.13 | 0.014 | 0.01 |
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20000 | 25 | 0 | w/ | 20.0 | 19.68 | 1.08 | 0.05 | 1.1 | 1.19 |
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20350 | 25 | 0 | w/ | 20.0 | 19.77 | 1.05 | 0.04 | 1.1 | 1.16 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20000 | 25 | 0 | w/o | 22.0 | 21.95 | 1.01 | -0.06 | 0.923 | 0.93 |
| | LTE 4 | QPSK_10 | EDGE4 | 0 | 20175 | 25 | 0 | w/o | 22.0 | 21.83 | 1.04 | 0.04 | 0.955 | 0.99 |
| | LTE 4 | QPSK_10 | Rear Face | 0 | 20000 | 1 | 24 | w/ | 20.0 | 19.75 | 1.06 | 0.12 | 1.15 | 1.22 |
| | LTE 17 | QPSK_10 | Rear Face | 0 | 23790 | 1 | 24 | w/ | 20.0 | 19.98 | 1.00 | | 0.564 | 0.56 |
| | LTE 17 | QPSK_10 | Rear Face | 9 | 23780 | 1 | 24 | w/o | 23.0 | 22.80 | 1.05 | -0.14 | 0.32 | 0.34 |
| | LTE 17 | QPSK_10 | EDGE1 | 0 | 23790 | 1 | 24 | w/ | 20.0 | 19.98 | 1.00 | -0.08 | 0.203 | 0.20 |
| | LTE 17 | QPSK_10 | EDGE1 | 4 | 23780 | 1 | 24 | w/o | 23.0 | 22.80 | 1.05 | -0.09 | 0.285 | 0.30 |
| | LTE 17 | QPSK_10 | EDGE4 | 0 | 23780 | 1 | 24 | w/o | 23.0 | 22.80 | 1.05 | -0.05 | 0.315 | 0.33 |
| | LTE 17 | QPSK_10 | EDGE2 | 0 | 23780 | 1 | 24 | w/o | 23.0 | 22.80 | 1.05 | 0.15 | 0.094 | 0.10 |
| 06 | LTE 17 | QPSK_10 | Rear Face | 0 | 23790 | 25 | 0 | w/ | 20.0 | 19.66 | 1.08 | -0.12 | 0.586 | **0.63** |
| | LTE 17 | QPSK_10 | Rear Face | 9 | 23780 | 25 | 25 | w/o | 22.0 | 21.65 | 1.08 | 0 | 0.232 | 0.25 |
| | LTE 17 | QPSK_10 | EDGE1 | 0 | 23790 | 25 | 0 | w/ | 20.0 | 19.66 | 1.08 | -0.16 | 0.231 | 0.25 |
| | LTE 17 | QPSK_10 | EDGE1 | 4 | 23780 | 25 | 25 | w/o | 22.0 | 21.65 | 1.08 | -0.07 | 0.199 | 0.21 |
| | LTE 17 | QPSK_10 | EDGE4 | 0 | 23780 | 25 | 25 | w/o | 22.0 | 21.65 | 1.08 | 0.13 | 0.221 | 0.24 |
| | LTE 17 | QPSK_10 | EDGE2 | 0 | 23780 | 25 | 25 | w/o | 22.0 | 21.65 | 1.08 | 0.09 | 0.064 | 0.07 |

**Note:**

1. SAR is performed on the highest power channel. When the reported SAR value of highest power channel is <= 0.8 W/kg, SAR testing for optional channel is not required.
2. According to KDB 941225, LTE SAR testing for remaining configurations for 1RB allocation is not required when the reported SAR is <= 0.8 W/kg.
3. According to KDB 941225, LTE SAR testing for remaining configurations for 50%RB allocation is not required when the reported SAR is <= 0.8 W/kg.
4. According to KDB 941225, LTE SAR testing for 16QAM is not required when the maximum power of 16QAM is less 1/2 dB higher than QPSK and the highest reported SAR of QPSK is less than 1.45 W/kg.
5. According to KDB 941225, the LTE SAR testing for other channel bandwidths is not required when the maximum power of smaller channel bandwidth is less 1/2 dB higher than largest channel bandwidth, and maximum SAR of largest channel bandwidth is less than 1.45 W/kg.

| Plot No. | Band | Mode | Test Position | Separation Distance (cm) | Ch. | Max. Tune-up Power (dBm) | Measured Conducted Power (dBm) | Scaling Factor | Power Drift (dB) | Measured SAR-1g (W/kg) | Scaled SAR-1g (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07 | 802.11b | - | Rear Face | 0 | 1 | 16.0 | 15.91 | 1.02 | 0.13 | 0.477 | **0.49** |
| | 802.11b | - | EDGE1 | 0 | 1 | 16.0 | 15.91 | 1.02 | -0.13 | 0.039 | 0.04 |
| | 802.11b | - | EDGE4 | 0 | 1 | 16.0 | 15.91 | 1.02 | 0.08 | 0.00025 | 0.01 |
| | 802.11b | - | EDGE2 | 0 | 1 | 16.0 | 15.91 | 1.02 | -0.18 | 0.126 | 0.13 |
| | 802.11a | - | Rear Face | 0 | 149 | 10.6 | 10.52 | 1.02 | 0.01 | 0.212 | 0.22 |
| | 802.11a | - | EDGE1 | 0 | 149 | 10.6 | 10.52 | 1.02 | 0.17 | 0.011 | 0.01 |
| | 802.11a | - | EDGE4 | 0 | 149 | 10.6 | 10.52 | 1.02 | -0.11 | 0.000168 | 0.01 |
| 08 | 802.11n | HT20 | Rear Face | 0 | 149 | 11.0 | 10.92 | 1.02 | -0.18 | 0.242 | **0.25** |
| 09 | 802.11a | - | Rear Face | 0 | 36 | 11.3 | 11.25 | 1.01 | 0.02 | 0.52 | **0.53** |
| | 802.11a | - | EDGE4 | 0 | 36 | 11.3 | 11.25 | 1.01 | 0.13 | 0.0000431 | 0.01 |
| 10 | 802.11a | - | Rear Face | 0 | 52 | 11.0 | 10.95 | 1.01 | 0.14 | 0.736 | **0.74** |
| | 802.11a | - | EDGE4 | 0 | 52 | 11.0 | 10.95 | 1.01 | 0.14 | 0.00179 | 0.01 |
| 11 | 802.11a | - | Rear Face | 0 | 136 | 11.5 | 11.48 | 1.00 | 0.02 | 0.394 | **0.39** |
| | 802.11a | - | EDGE4 | 0 | 136 | 11.5 | 11.48 | 1.00 | -0.01 | 0.00248 | 0.01 |
| | Bluetooth | - | EDGE4 | 0 | 78 | 8.0 | 8.00 | 1.00 | N/A | N/A | N/A |

**Note:**

1. According to KDB 248227 D01, when the extrapolated maximum peak SAR for the maximum output power channel is <= 1.6 W/kg and the 1g averaged SAR is <= 0.8 W/kg, WLAN SAR testing for other channels is not required.
2. SAR testing for 802.11g/n is not required when its maximum power is less than 1/4 dB higher than 802.11b.
3. SAR testing for 802.11n is not required when its maximum power is less than 1/4 dB higher than 802.11a.
4. The “N/A” means there is not SAR value or the SAR is too low to be measured.

### 4.7.2 SAR Measurement Variability

According to KDB 865664 D01v01, SAR measurement variability was 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. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

| Band | Mode | Test Position | Separation Distance (cm) | Ch. | Original Measured SAR-1g (W/kg) | 1st Repeated SAR-1g (W/kg) | L/S Ratio | 2nd Repeated SAR-1g (W/kg) | L/S Ratio | 3rd Repeated SAR-1g (W/kg) | L/S Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GSM850 | GPRS10 | Rear Face | 0 | 128 | 1.29 | 1.29 | 1.00 | N/A | N/A | N/A | N/A |
| GSM1900 | GPRS10 | Rear Face | 0 | 661 | 1.18 | 1.18 | 1.00 | N/A | N/A | N/A | N/A |
| WCMDA II | RMC12.2K | EDGE4 | 0 | 9262 | 0.929 | 0.875 | 1.06 | N/A | N/A | N/A | N/A |
| LTE 4 | QPSK_10 RB1 / OS24 | Rear Face | 0 | 20000 | 1.22 | 1.15 | 1.06 | N/A | N/A | N/A | N/A |

### 4.7.3 Simultaneous Multi-band Transmission Evaluation

**<Estimated SAR Calculation>**

According to KDB 447498 D01v05, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR was estimated according to following formula to result in substantially conservative SAR values of <= 0.4 W/kg to determine simultaneous transmission SAR test exclusion.

$$\text{Estimated SAR} = \frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \frac{\sqrt{f_{(\text{GHz})}}}{7.5}$$

If the minimum test separation distance is < 5 mm, a distance of 5 mm is used for estimated SAR calculation. When the test separation distance is > 50 mm, the 0.4 W/kg is used for SAR-1g.

| Mode / Band | Frequency (GHz) | Max. Tune-up Power (dBm) | Test Position | Separation Distance (mm) | Estimated SAR (W/kg) |
|---|---|---|---|---|---|
| GSM850 | 0.835 | 26.0 (Max Frame-Averaged Power) | EDGE3 | 0 | 0.4 |
| GSM1900 | 1.909 | 23.3 (Max Frame-Averaged Power) | EDGE3 | 0 | 0.4 |
| WCDMA II | 1.907 | 23.0 | EDGE3 | 0 | 0.4 |
| WCDMA V | 0.846 | 23.2 | EDGE3 | 0 | 0.4 |
| LTE 4 | 1.752 | 23.0 | EDGE3 | 0 | 0.4 |
| LTE 17 | 0.713 | 23.0 | EDGE3 | 0 | 0.4 |
| WLAN (DTS) | 2.462 | 16.0 | EDGE3 | 0 | 0.4 |
| WLAN (NII) | 5.7 | 11.5 | EDGE1 | 0 | 0.4 |
| WLAN (NII) | 5.7 | 11.5 | EDGE1 | 4 | 0.4 |
| WLAN (NII) | 5.7 | 11.5 | EDGE2 | 0 | 0.4 |
| WLAN (NII) | 5.7 | 11.5 | EDGE3 | 0 | 0.4 |
| BT (DSS) | 2.48 | 8.0 | Rear Face | 0 | 0.3 |
| BT (DSS) | 2.48 | 8.0 | Rear Face | 9 | 0.1 |
| BT (DSS) | 2.48 | 8.0 | EDGE1 | 0 | 0.3 |
| BT (DSS) | 2.48 | 8.0 | EDGE1 | 4 | 0.3 |
| BT (DSS) | 2.48 | 8.0 | EDGE2 | 0 | 0.3 |
| BT (DSS) | 2.48 | 8.0 | EDGE3 | 0 | 0.3 |

**Note:**

1. The separation distance is determined from the outer housing of the tablet to the user.
2. When standalone SAR testing is not required, an estimated SAR can be applied to determine simultaneous transmission SAR test exclusion.

**<SAR Summation Analysis>**

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of $SAR_{1g}$ of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit ($SAR_{1g}$ 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of $SAR_{1g}$ is greater than the SAR limit ($SAR_{1g}$ 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 1 | GSM850 + WLAN (DTS) | Body | Rear Face | 0 | 1.30 | 0.49 | **1.79** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.65 | 0.49 | 1.14 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.40 | 0.04 | 0.44 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.54 | 0.04 | 0.58 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.68 | 0.01 | 0.69 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.09 | 0.13 | 0.22 | Σ SAR < 1.6, Not required |
| 2 | GSM850 + WLAN (NII) | Body | Rear Face | 0 | 1.30 | 0.74 | **2.04** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.65 | 0.74 | 1.39 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.40 | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.54 | 0.4 (Estimated SAR) | 0.94 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.68 | 0.01 | 0.69 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.09 | 0.4 (Estimated SAR) | 0.49 | Σ SAR < 1.6, Not required |
| 3 | GSM850 + BT (DSS) | Body | Rear Face | 0 | 1.30 | 0.3 (Estimated SAR) | 1.60 | Σ SAR ≦ 1.6, Not required |
| | | | Rear Face | 9 | 0.65 | 0.1 (Estimated SAR) | 0.75 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.40 | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.54 | 0.3 (Estimated SAR) | 0.84 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.68 | 0.00 | 0.68 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.09 | 0.3 (Estimated SAR) | 0.39 | Σ SAR < 1.6, Not required |

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 4 | GSM1900 + WLAN (DTS) | Body | Rear Face | 0 | 1.22 | 0.49 | **1.71** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.67 | 0.49 | 1.16 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.17 | 0.04 | 0.21 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.32 | 0.04 | 0.36 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.78 | 0.01 | 0.79 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.13 | 0.14 | Σ SAR < 1.6, Not required |
| 5 | GSM1900 + WLAN (NII) | Body | Rear Face | 0 | 1.22 | 0.74 | **1.96** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.67 | 0.74 | 1.41 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.17 | 0.4 (Estimated SAR) | 0.57 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.32 | 0.4 (Estimated SAR) | 0.72 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.78 | 0.01 | 0.79 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.4 (Estimated SAR) | 0.41 | Σ SAR < 1.6, Not required |
| 6 | GSM1900 + BT (DSS) | Body | Rear Face | 0 | 1.22 | 0.3 (Estimated SAR) | 1.52 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.67 | 0.1 (Estimated SAR) | 0.77 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.17 | 0.3 (Estimated SAR) | 0.47 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.32 | 0.3 (Estimated SAR) | 0.62 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.78 | 0.00 | 0.78 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.3 (Estimated SAR) | 0.31 | Σ SAR < 1.6, Not required |

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 7 | WCDMA II + WLAN (DTS) | Body | Rear Face | 0 | 0.74 | 0.49 | 1.23 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.76 | 0.49 | 1.25 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.13 | 0.04 | 0.17 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.04 | 0.34 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.00 | 0.01 | 1.01 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.13 | 0.14 | Σ SAR < 1.6, Not required |
| 8 | WCDMA II + WLAN (NII) | Body | Rear Face | 0 | 0.74 | 0.74 | 1.48 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.76 | 0.74 | 1.50 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.13 | 0.4 (Estimated SAR) | 0.53 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.4 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.00 | 0.01 | 1.01 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.4 (Estimated SAR) | 0.41 | Σ SAR < 1.6, Not required |
| 9 | WCDMA II + BT (DSS) | Body | Rear Face | 0 | 0.74 | 0.3 (Estimated SAR) | 1.04 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.76 | 0.1 (Estimated SAR) | 0.86 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.13 | 0.3 (Estimated SAR) | 0.43 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.3 (Estimated SAR) | 0.60 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.00 | 0.00 | 1.00 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.01 | 0.3 (Estimated SAR) | 0.31 | Σ SAR < 1.6, Not required |

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 10 | WCDMA V + WLAN (DTS) | Body | Rear Face | 0 | 0.79 | 0.49 | 1.28 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.50 | 0.49 | 0.99 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.24 | 0.04 | 0.28 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.33 | 0.04 | 0.37 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.49 | 0.01 | 0.50 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.07 | 0.13 | 0.20 | Σ SAR < 1.6, Not required |
| 11 | WCDMA V + WLAN (NII) | Body | Rear Face | 0 | 0.79 | 0.74 | 1.53 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.50 | 0.74 | 1.24 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.24 | 0.4 (Estimated SAR) | 0.64 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.33 | 0.4 (Estimated SAR) | 0.73 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.49 | 0.01 | 0.50 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.07 | 0.4 (Estimated SAR) | 0.47 | Σ SAR < 1.6, Not required |
| 12 | WCDMA V + BT (DSS) | Body | Rear Face | 0 | 0.79 | 0.3 (Estimated SAR) | 1.09 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.50 | 0.1 (Estimated SAR) | 0.60 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.24 | 0.3 (Estimated SAR) | 0.54 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.33 | 0.3 (Estimated SAR) | 0.63 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.49 | 0.00 | 0.49 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.07 | 0.3 (Estimated SAR) | 0.37 | Σ SAR < 1.6, Not required |

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 13 | LTE 4 + WLAN (DTS) | Body | Rear Face | 0 | 1.29 | 0.49 | **1.78** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.67 | 0.49 | 1.16 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.37 | 0.04 | 0.41 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.36 | 0.04 | 0.40 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.12 | 0.01 | 1.13 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.03 | 0.13 | 0.16 | Σ SAR < 1.6, Not required |
| 14 | LTE 4 + WLAN (NII) | Body | Rear Face | 0 | 1.29 | 0.74 | **2.03** | **Analyzed as below** |
| | | | Rear Face | 9 | 0.67 | 0.74 | 1.41 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.37 | 0.4 (Estimated SAR) | 0.77 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.36 | 0.4 (Estimated SAR) | 0.76 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.12 | 0.01 | 1.13 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.03 | 0.4 (Estimated SAR) | 0.43 | Σ SAR < 1.6, Not required |
| 15 | LTE 4 + BT (DSS) | Body | Rear Face | 0 | 1.29 | 0.3 (Estimated SAR) | 1.59 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.67 | 0.1 (Estimated SAR) | 0.77 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.37 | 0.3 (Estimated SAR) | 0.67 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.36 | 0.3 (Estimated SAR) | 0.66 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 1.12 | 0.00 | 1.12 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.03 | 0.3 (Estimated SAR) | 0.33 | Σ SAR < 1.6, Not required |

| No. | Conditions (SAR1 + SAR2) | Exposure Condition | Test Position | Separation (mm) | Max. SAR1 | Max. SAR2 | SAR Summation | SPLSR Analysis |
|---|---|---|---|---|---|---|---|---|
| 16 | LTE 17 + WLAN (DTS) | Body | Rear Face | 0 | 0.63 | 0.49 | 1.12 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.34 | 0.49 | 0.83 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.25 | 0.04 | 0.29 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.04 | 0.34 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.33 | 0.01 | 0.34 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.10 | 0.13 | 0.23 | Σ SAR < 1.6, Not required |
| 17 | LTE 17 + WLAN (NII) | Body | Rear Face | 0 | 0.63 | 0.74 | 1.37 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.34 | 0.74 | 1.08 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.25 | 0.4 (Estimated SAR) | 0.65 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.4 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.4 (Estimated SAR) | 0.80 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.33 | 0.01 | 0.34 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.10 | 0.4 (Estimated SAR) | 0.50 | Σ SAR < 1.6, Not required |
| 18 | LTE 17 + BT (DSS) | Body | Rear Face | 0 | 0.63 | 0.3 (Estimated SAR) | 0.93 | Σ SAR < 1.6, Not required |
| | | | Rear Face | 9 | 0.34 | 0.1 (Estimated SAR) | 0.44 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 0 | 0.25 | 0.3 (Estimated SAR) | 0.55 | Σ SAR < 1.6, Not required |
| | | | EDGE1 | 4 | 0.30 | 0.3 (Estimated SAR) | 0.60 | Σ SAR < 1.6, Not required |
| | | | EDGE3 | 0 | 0.4 (Estimated SAR) | 0.3 (Estimated SAR) | 0.70 | Σ SAR < 1.6, Not required |
| | | | EDGE4 | 0 | 0.33 | 0.00 | 0.33 | Σ SAR < 1.6, Not required |
| | | | EDGE2 | 0 | 0.10 | 0.3 (Estimated SAR) | 0.40 | Σ SAR < 1.6, Not required |

**<SAR to Peak Location Separation Ratio Analysis>**

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following formula.

$$\text{Peak Location Separation Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

Where ($x_1$, $y_1$, $z_1$) and ($x_2$, $y_2$, $z_2$) are the coordinates of the extrapolated peak SAR locations in the area or zoom scans.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna. Due to curvatures on the SAM phantom, when SAR is estimated for one of the antennas in an antenna pair, the measured peak SAR location will be translated onto the test device to determine the peak location separation for the antenna pair.

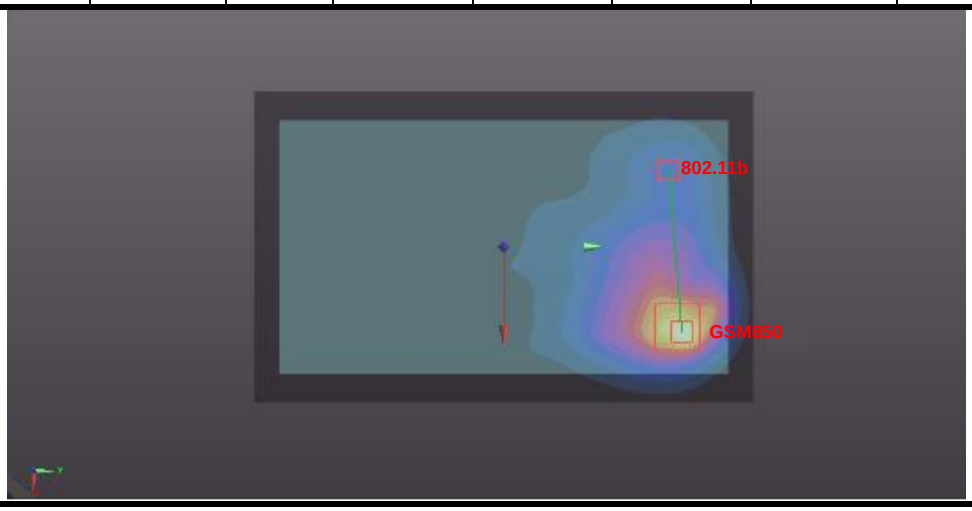
The SPLSR is determined by the following formula.

$$\text{SPLSR} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{R_i}$$

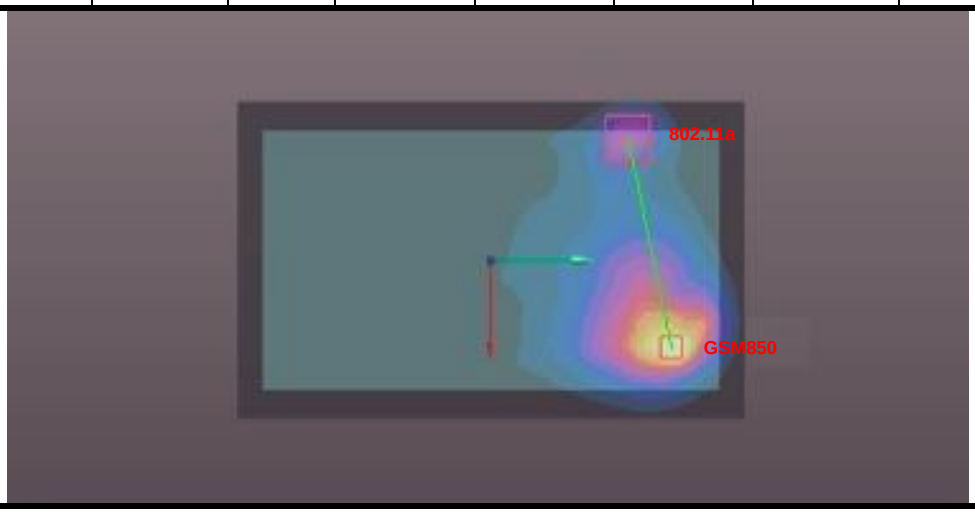
Where $SAR_1$ and $SAR_2$ are the highest reported or estimated SAR for each antenna in the pair, and $R_i$ is the separation distance between the peak SAR locations for the antenna pair in mm.

When the SPLSR is <= 0.04, the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

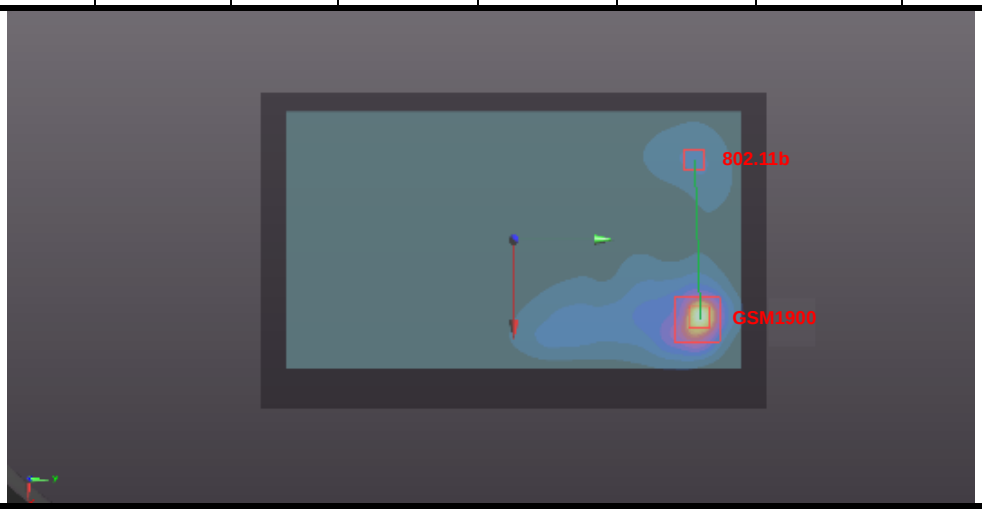
| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| GSM850 Ch128 | Body | Rear Face | 1.30 | 4.21 | 9.34 | -17.95 | 93 | 0.026 | SPLSR < 0.04, Not required |
| 802.11b Ch1 | | | 0.49 | -4.80 | 7.04 | -18.00 | | | |



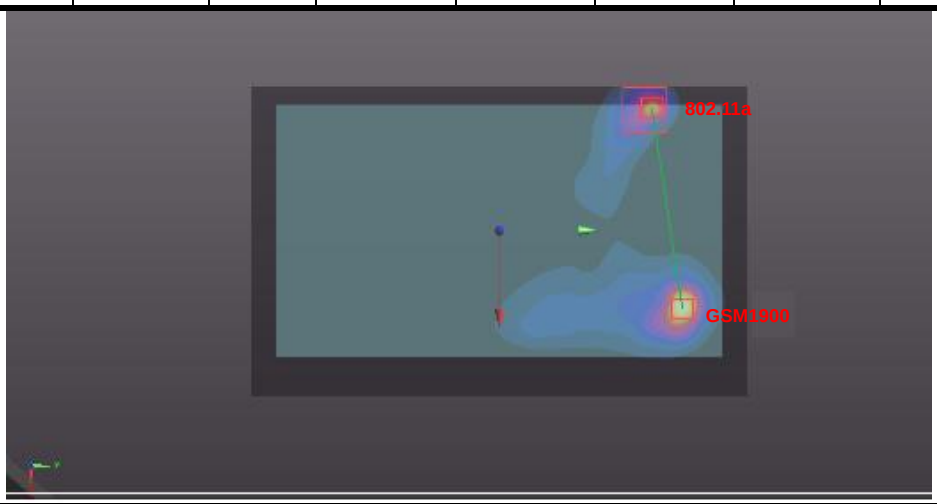
| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| GSM850 Ch128 | Body | Rear Face | 1.30 | 4.21 | 9.34 | -17.95 | 101.1 | 0.029 | SPLSR < 0.04, Not required |
| 802.11a Ch52 | | | 0.74 | -5.76 | 7.64 | -17.92 | | | |



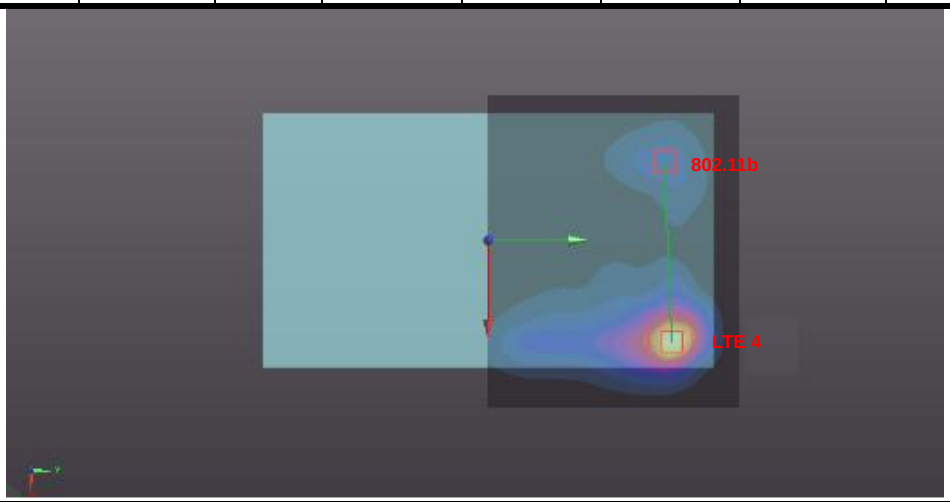

| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| GSM1900 Ch810 | Body | Rear Face | 1.22 | 3.65 | 9.01 | -17.88 | 86.8 | 0.026 | SPLSR < 0.04, Not required |
| 802.11b Ch1 | | | 0.49 | -4.80 | 7.04 | -18.00 | | | |



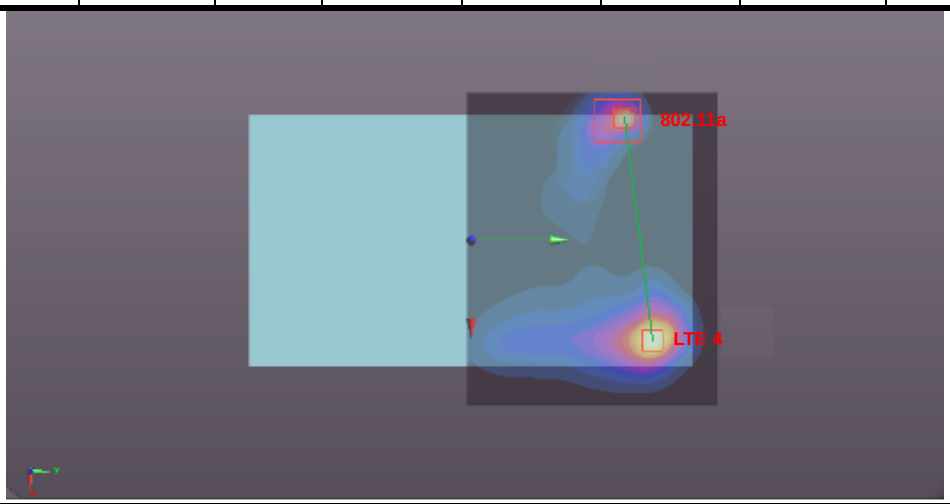
| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| GSM1900 Ch810 | Body | Rear Face | 1.22 | 3.65 | 9.01 | -17.88 | 95.1 | 0.029 | SPLSR < 0.04, Not required |
| 802.11a Ch52 | | | 0.74 | -5.76 | 7.64 | -17.92 | | | |




| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| LTE 4 Ch20000 | Body | Rear Face | 1.29 | 4.37 | 9.34 | -17.77 | 94.6 | 0.025 | SPLSR < 0.04, Not required |
| 802.11b Ch1 | | | 0.49 | -4.80 | 7.04 | -18.00 | | | |



| Conditions | Exposure Condition | Test Position | SAR Value (W/kg) | Coordinates | | | Peak Location Separation Distance ($R_i$, mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | | x | y | z | | | |
| LTE 4 Ch20000 | Body | Rear Face | 1.29 | 4.37 | 9.34 | -17.77 | 102.7 | 0.028 | SPLSR < 0.04, Not required |
| 802.11a Ch52 | | | 0.74 | -5.76 | 7.64 | -17.92 | | | |




**Test Engineer**：Morrison Huang, and Mars Chang

# 5. Calibration of Test Equipment

| Equipment | Manufacturer | Model | SN | Cal. Date | Cal. Interval |
|---|---|---|---|---|---|
| System Validation Kit | SPEAG | D750V3 | 1013 | Apr. 23, 2012 | Annual |
| System Validation Kit | SPEAG | D835V2 | 4d021 | Apr. 20, 2012 | Annual |
| System Validation Kit | SPEAG | D1750V2 | 1055 | Aug. 23, 2012 | Annual |
| System Validation Kit | SPEAG | D1900V2 | 5d036 | Jan. 26, 2012 | Annual |
| System Validation Kit | SPEAG | D2450V2 | 737 | Jan. 24, 2012 | Annual |
| System Validation Kit | SPEAG | D5GHzV2 | 1019 | Nov. 16, 2012 | Annual |
| Dosimetric E-Field Probe | SPEAG | EX3DV4 | 3590 | Feb. 23, 2012 | Annual |
| Dosimetric E-Field Probe | SPEAG | EX3DV4 | 3650 | Oct. 26, 2012 | Annual |
| Dosimetric E-Field Probe | SPEAG | EX3DV4 | 3801 | Jun. 22, 2012 | Annual |
| Data Acquisition Electronics | SPEAG | DAE3 | 579 | Apr. 27, 2012 | Annual |
| Data Acquisition Electronics | SPEAG | DAE4 | 687 | Aug. 23, 2012 | Annual |
| Data Acquisition Electronics | SPEAG | DAE4 | 861 | Aug. 23, 2012 | Annual |
| Data Acquisition Electronics | SPEAG | DAE4 | 915 | Jun. 21, 2012 | Annual |
| Data Acquisition Electronics | SPEAG | DAE4 | 1277 | Jul. 19, 2012 | Annual |
| SAM Phantom | SPEAG | QD000P40CD | TP-1127 | N/A | N/A |
| ELI Phantom | SPEAG | QDOVA001B | TP-1043 | N/A | N/A |
| Radio Communication Tester | Agilent | E5515C | MY50266628 | Nov. 22, 2012 | Biennial |
| Radio Communication Analyzer | Anritsu | MT8820C | 6201010284 | Aug. 18, 2012 | Biennial |
| ENA Series Network Analyzer | Agilent | E5071C | MY46214281 | May 14, 2012 | Annual |
| MXG Analog Signal Generator | Agilent | N5181A | MY50143868 | May 06, 2012 | Annual |
| Power Meter | Anritsu | ML2495A | 1218009 | May 07, 2012 | Annual |
| Power Sensor | Anritsu | MA2411B | 1207252 | May 07, 2012 | Annual |
| EXA Spectrum Analyzer | Agilent | N9010A | MY52100136 | Apr. 23, 2012 | Annual |
| Dielectric Probe Kit | Agilent | 85070D | E2-020018 | May 14, 2012 | Annual |
| Thermometer | YFE | YF-160A | 110600361 | Feb. 21, 2012 | Annual |
| Directional Coupler | Woken | 0110A05602O-10 | 11122702 | Apr. 19, 2012 | Annual |
| Power Amplifier | AR | 5S1G4 | 0339656 | Apr. 23, 2012 | Annual |
| Power Amplifier | Mini-Circuit | ZVE-8G | 001000422 | Apr. 23, 2012 | Annual |
| Attenuator | Woken | 00800A1G01L-03 | N/A | Apr. 19, 2012 | Annual |

# 6. Measurement Uncertainty

| Error Description | Uncertainty Value (±%) | Probability Distribution | Divisor | Ci (1g) | Standard Uncertainty (1g) | Vi |
|---|---|---|---|---|---|---|
| **Measurement System** | | | | | | |
| Probe Calibration | 6.0 | Normal | 1 | 1 | ± 6.0 % | ∞ |
| Axial Isotropy | 4.7 | Rectangular | √3 | 0.7 | ± 1.9 % | ∞ |
| Hemispherical Isotropy | 9.6 | Rectangular | √3 | 0.7 | ± 3.9 % | ∞ |
| Boundary Effects | 1.0 | Rectangular | √3 | 1 | ± 0.6 % | ∞ |
| Linearity | 4.7 | Rectangular | √3 | 1 | ± 2.7 % | ∞ |
| System Detection Limits | 1.0 | Rectangular | √3 | 1 | ± 0.6 % | ∞ |
| Readout Electronics | 0.6 | Normal | 1 | 1 | ± 0.6 % | ∞ |
| Response Time | 0.0 | Rectangular | √3 | 1 | ± 0.0 % | ∞ |
| Integration Time | 1.7 | Rectangular | √3 | 1 | ± 1.0 % | ∞ |
| RF Ambient Noise | 3.0 | Rectangular | √3 | 1 | ± 1.7 % | ∞ |
| RF Ambient Reflections | 3.0 | Rectangular | √3 | 1 | ± 1.7 % | ∞ |
| Probe Positioner | 0.5 | Rectangular | √3 | 1 | ± 0.3 % | ∞ |
| Probe Positioning | 2.9 | Rectangular | √3 | 1 | ± 1.7 % | ∞ |
| Max. SAR Eval. | 2.3 | Rectangular | √3 | 1 | ± 1.3 % | ∞ |
| **Test Sample Related** | | | | | | |
| Device Positioning | 3.9 | Normal | 1 | 1 | ± 3.9 % | 31 |
| Device Holder | 2.7 | Normal | 1 | 1 | ± 2.7 % | 19 |
| Power Drift | 5.0 | Rectangular | √3 | 1 | ± 2.9 % | ∞ |
| **Phantom and Setup** | | | | | | |
| Phantom Uncertainty | 4.0 | Rectangular | √3 | 1 | ± 2.3 % | ∞ |
| Liquid Conductivity (Target) | 5.0 | Rectangular | √3 | 0.64 | ± 1.8 % | ∞ |
| Liquid Conductivity (Meas.) | 5.0 | Normal | 1 | 0.64 | ± 3.2 % | 29 |
| Liquid Permittivity (Target) | 5.0 | Rectangular | √3 | 0.6 | ± 1.7 % | ∞ |
| Liquid Permittivity (Meas.) | 5.0 | Normal | 1 | 0.6 | ± 3.0 % | 29 |
| **Combined Standard Uncertainty** | | | | | ± 11.7 % | |
| **Expanded Uncertainty (K=2)** | | | | | **± 23.4 %** | |

**Uncertainty budget for frequency range 300 MHz to 3 GHz**

| Error Description | Uncertainty Value (±%) | Probability Distribution | Divisor | Ci (1g) | Standard Uncertainty (1g) | Vi |
|---|---|---|---|---|---|---|
| **Measurement System** | | | | | | |
| Probe Calibration | 6.55 | Normal | 1 | 1 | ± 6.55 % | ∞ |
| Axial Isotropy | 4.7 | Rectangular | √3 | 0.7 | ± 1.9 % | ∞ |
| Hemispherical Isotropy | 9.6 | Rectangular | √3 | 0.7 | ± 3.9 % | ∞ |
| Boundary Effects | 2.0 | Rectangular | √3 | 1 | ± 1.2 % | ∞ |
| Linearity | 4.7 | Rectangular | √3 | 1 | ± 2.7 % | ∞ |
| System Detection Limits | 1.0 | Rectangular | √3 | 1 | ± 0.6 % | ∞ |
| Readout Electronics | 0.3 | Normal | 1 | 1 | ± 0.3 % | ∞ |
| Response Time | 0.8 | Rectangular | √3 | 1 | ± 0.5 % | ∞ |
| Integration Time | 2.6 | Rectangular | √3 | 1 | ± 1.5 % | ∞ |
| RF Ambient Noise | 3.0 | Rectangular | √3 | 1 | ± 1.7 % | ∞ |
| RF Ambient Reflections | 3.0 | Rectangular | √3 | 1 | ± 1.7 % | ∞ |
| Probe Positioner | 0.8 | Rectangular | √3 | 1 | ± 0.5 % | ∞ |
| Probe Positioning | 9.9 | Rectangular | √3 | 1 | ± 5.7 % | ∞ |
| Max. SAR Eval. | 4.0 | Rectangular | √3 | 1 | ± 2.3 % | ∞ |
| **Test Sample Related** | | | | | | |
| Device Positioning | 3.9 | Normal | 1 | 1 | ± 3.9 % | 31 |
| Device Holder | 2.7 | Normal | 1 | 1 | ± 2.7 % | 19 |
| Power Drift | 5.0 | Rectangular | √3 | 1 | ± 2.9 % | ∞ |
| **Phantom and Setup** | | | | | | |
| Phantom Uncertainty | 4.0 | Rectangular | √3 | 1 | ± 2.3 % | ∞ |
| Liquid Conductivity (Target) | 5.0 | Rectangular | √3 | 0.64 | ± 1.8 % | ∞ |
| Liquid Conductivity (Meas.) | 5.0 | Normal | 1 | 0.64 | ± 3.2 % | 30 |
| Liquid Permittivity (Target) | 5.0 | Rectangular | √3 | 0.6 | ± 1.7 % | ∞ |
| Liquid Permittivity (Meas.) | 5.0 | Normal | 1 | 0.6 | ± 3.0 % | 30 |
| **Combined Standard Uncertainty** | | | | | ± 13.4 % | |
| **Expanded Uncertainty (K=2)** | | | | | **± 26.8 %** | |

**Uncertainty budget for frequency range 3 GHz to 6 GHz**

# 7. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Taiwan HwaYa EMC/RF/Safety/Telecom Lab:**
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**Taiwan HsinChu EMC/RF Lab:**
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**Web Site:** www.adt.com.tw

The road map of all our labs can be found in our web site also.

**---END---**

# Appendix A. SAR Plots of System Verification

The plots for system verification are shown as follows.

## System Check_B750_121222

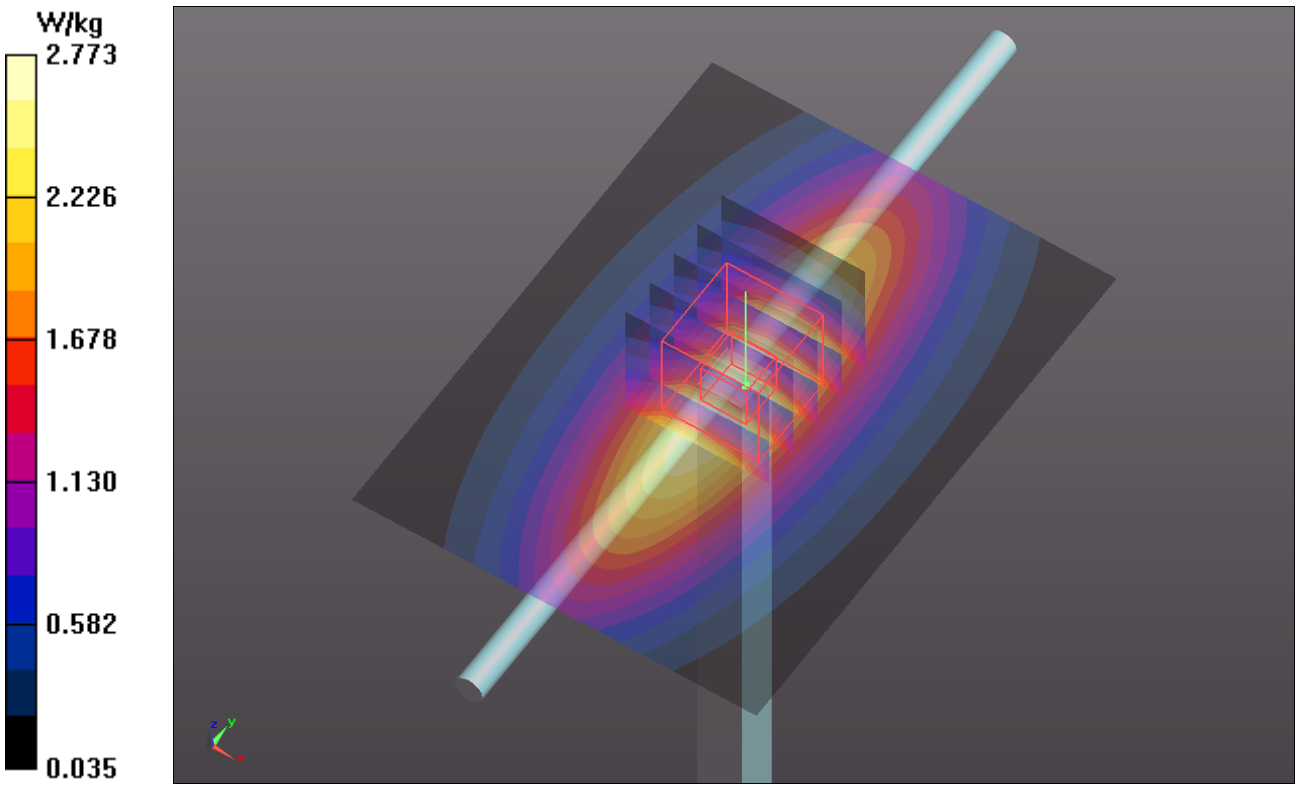
**DUT: Dipole 750 MHz; Type: D750V3; SN: 1013**

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: B750_1222 Medium parameters used: f = 750 MHz; $\sigma$ = 0.966 mho/m; $\varepsilon_r$ = 55.259; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.1℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(9, 9, 9); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.77 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.377 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.21 W/kg
**SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.49 W/kg**
Maximum value of SAR (measured) = 2.76 W/kg



## System Check_B835_121222

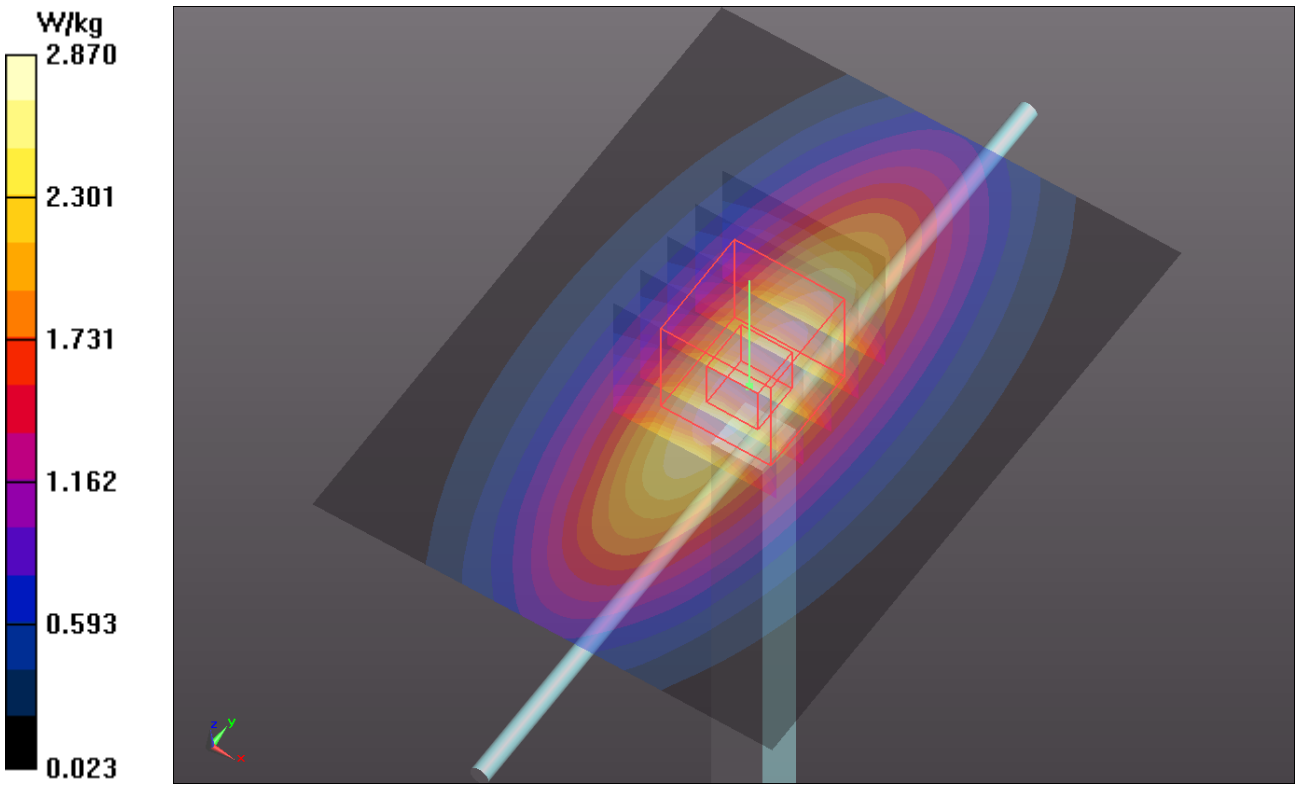
**DUT: Dipole 835 MHz; Type: D835V2; SN: 4d021**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: B835_1222 Medium parameters used: f = 835 MHz; $\sigma$ = 0.993 mho/m; $\varepsilon_r$ = 56.738; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.7℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(8.82, 8.82, 8.82); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.87 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.437 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.40 W/kg
**SAR(1 g) = 2.26 W/kg; SAR(10 g) = 1.49 W/kg**
Maximum value of SAR (measured) = 2.88 W/kg



## System Check_B835_121227

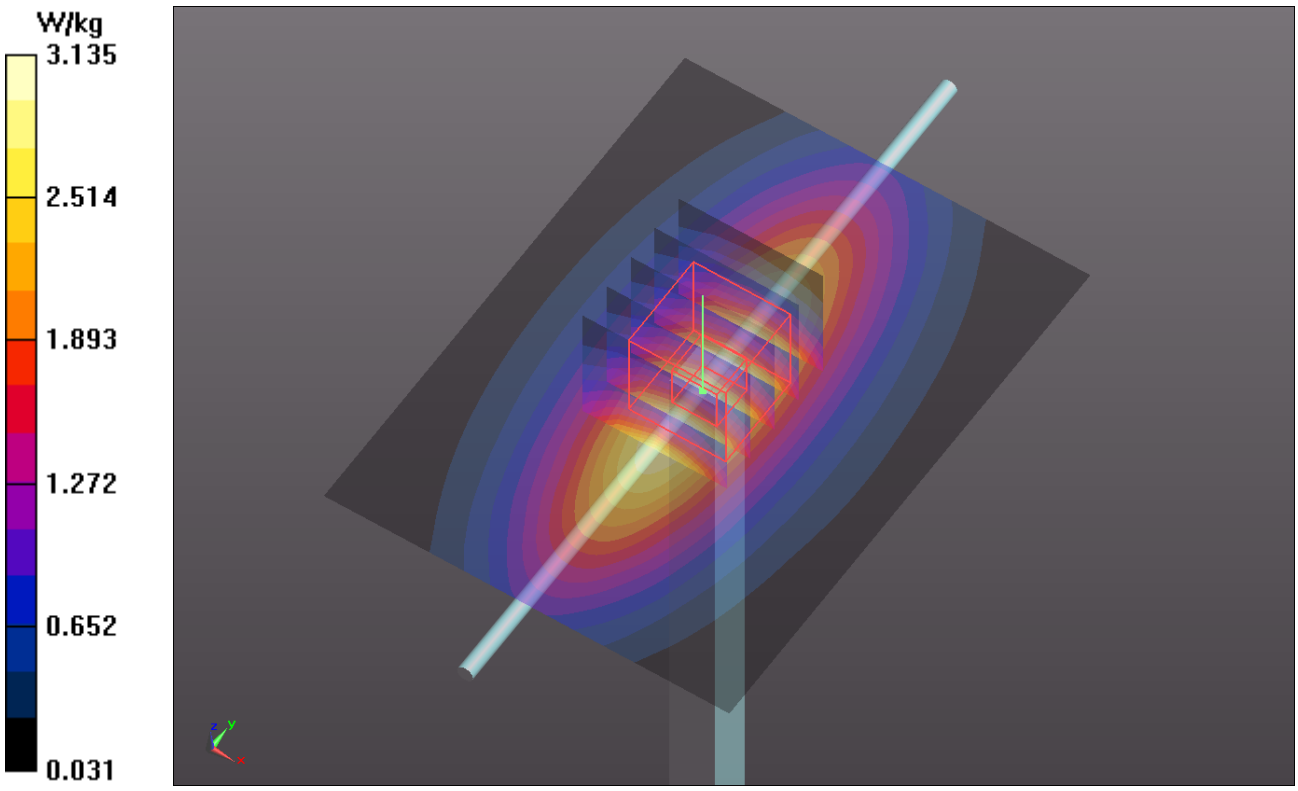
**DUT: Dipole 835 MHz; Type: D835V2; SN: 4d021**

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: B835_1227 Medium parameters used: f = 835 MHz; $\sigma$ = 0.968 mho/m; $\varepsilon_r$ = 55.273; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.6℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(8.82, 8.82, 8.82); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.13 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.164 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.68 W/kg
**SAR(1 g) = 2.49 W/kg; SAR(10 g) = 1.65 W/kg**
Maximum value of SAR (measured) = 3.14 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2013/01/03

## System Check_B1750_130103

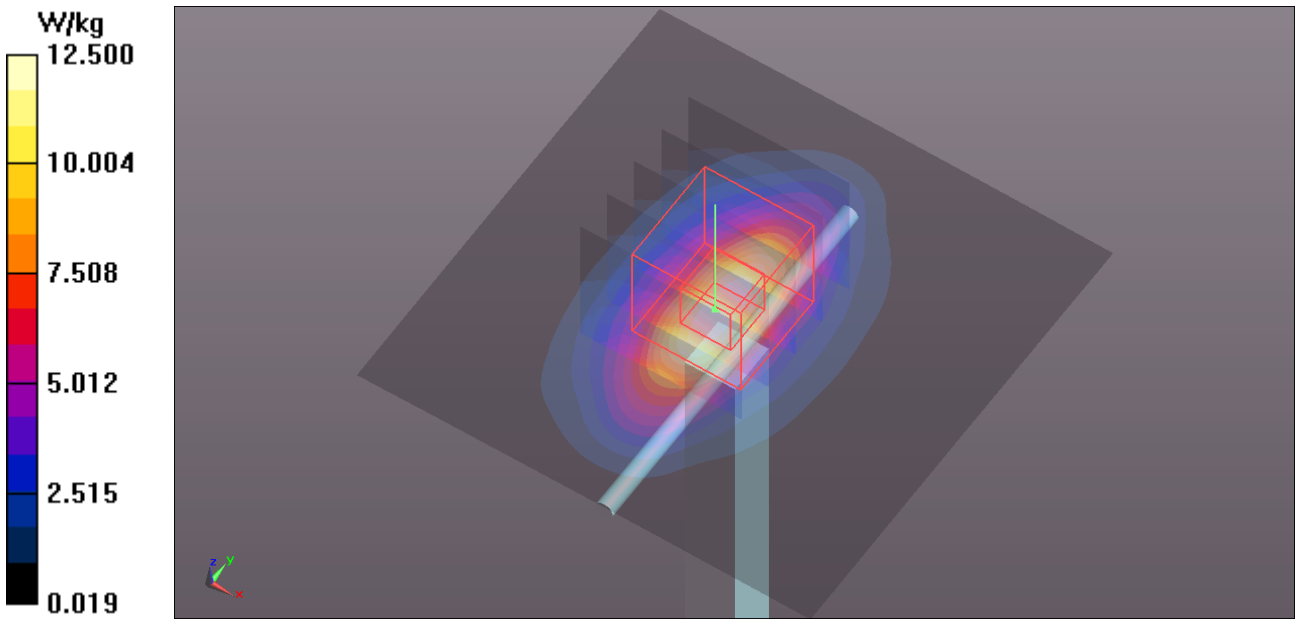
### DUT: Dipole 1750 MHz; Type: D1750V2; SN: 1055

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: B1750_0103 Medium parameters used: f = 1750 MHz; $\sigma$ = 1.447 mho/m; $\varepsilon_r$ = 53.388; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.2℃； Liquid Temperature：20.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.31, 7.31, 7.31); Calibrated: 2012/10/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2012/07/19
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1039
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.5 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 93.059 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.0 W/kg
**SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.84 W/kg**
Maximum value of SAR (measured) = 12.8 W/kg



## System Check_B1900_121220

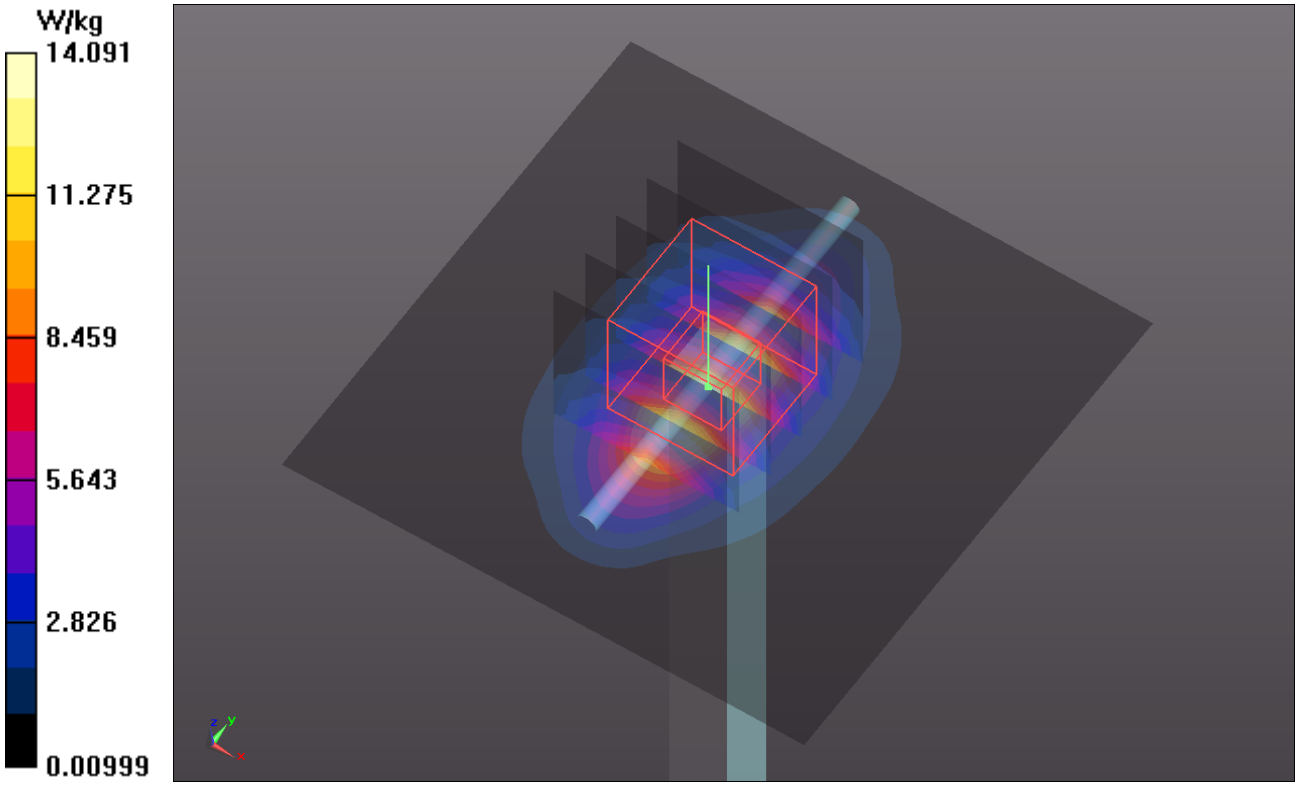
**DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: B1900_1220 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.535 mho/m; $\varepsilon_r$ = 51.016; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.6℃； Liquid Temperature：20.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(8.07, 8.07, 8.07); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.1 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 97.316 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.7 W/kg
**SAR(1 g) = 9.81 W/kg; SAR(10 g) = 5.07 W/kg**
Maximum value of SAR (measured) = 14.1 W/kg



## System Check_B1900_121227

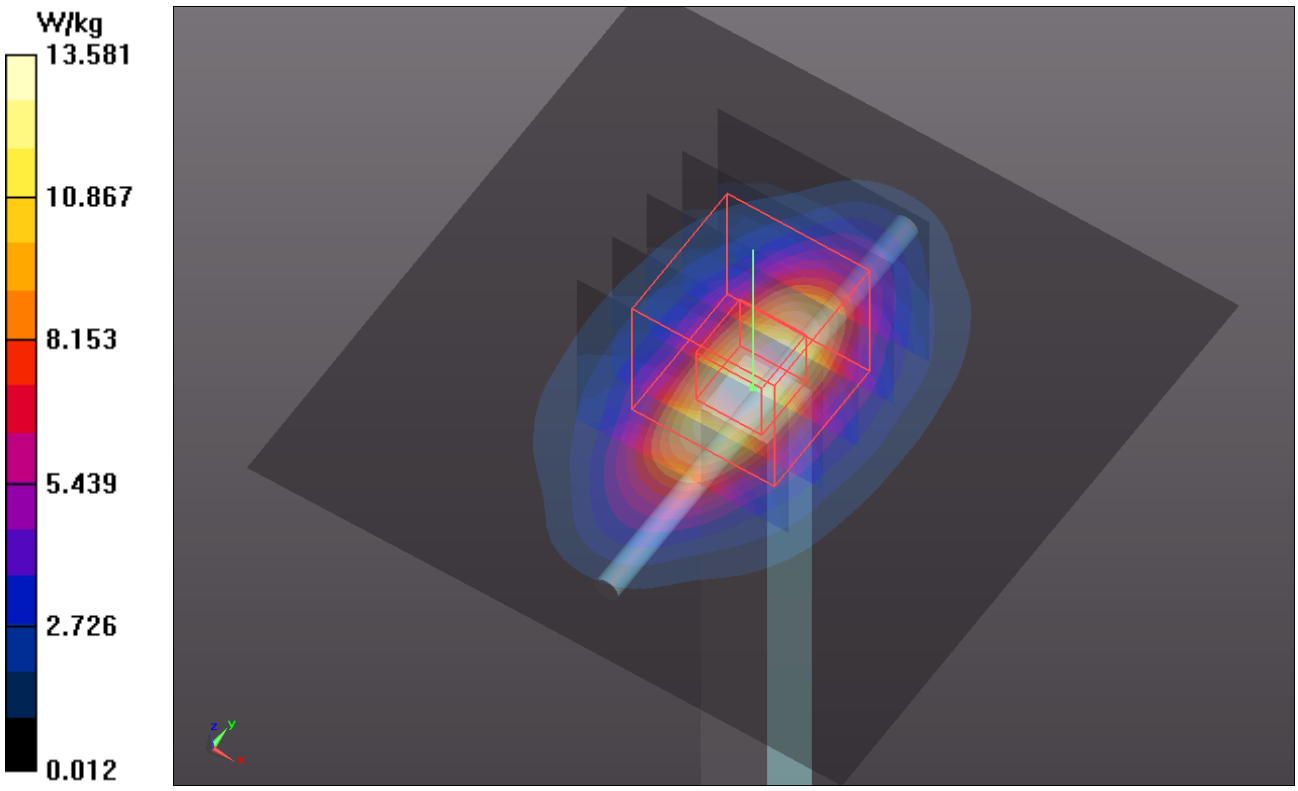
**DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036**

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: B1900_1227 Medium parameters used: f = 1900 MHz; $\sigma$ = 1.544 mho/m; $\varepsilon_r$ = 53.431; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7℃； Liquid Temperature：20.8℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.6 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 95.465 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 17.1 W/kg
**SAR(1 g) = 9.49 W/kg; SAR(10 g) = 4.92 W/kg**
Maximum value of SAR (measured) = 13.6 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2013/01/10

## System Check_B2450_130110

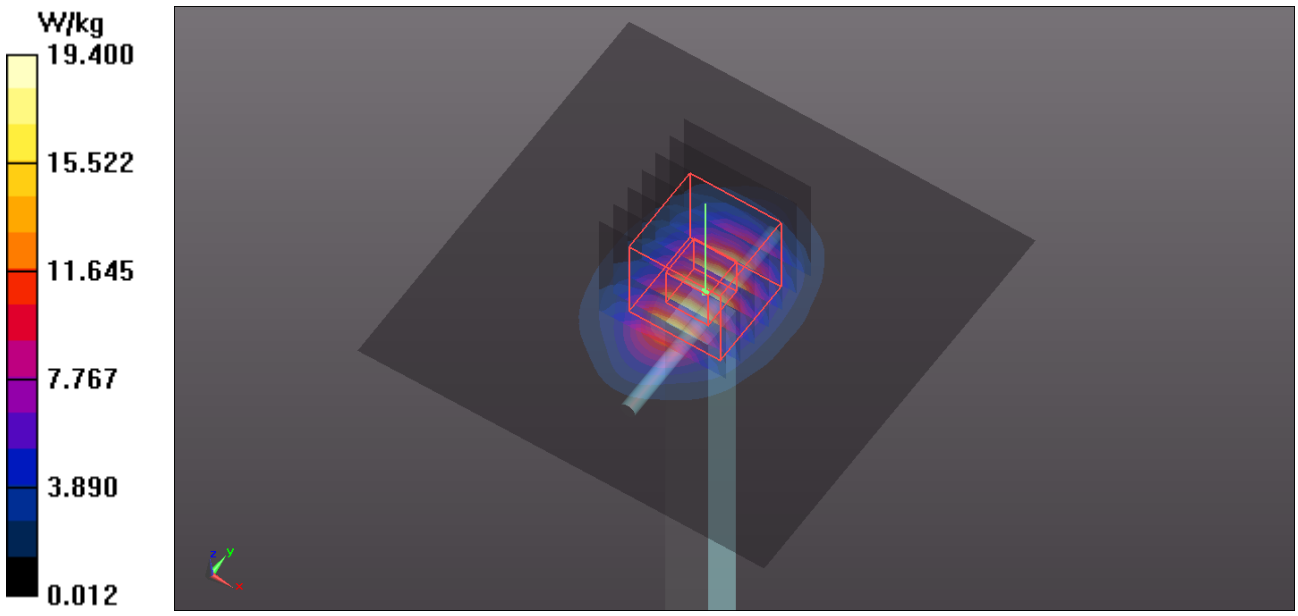
**DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737**

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: B2450_0110 Medium parameters used: f = 2450 MHz; $\sigma$ = 1.958 mho/m; $\varepsilon_r$ = 50.929; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：22.3℃； Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(7.8, 7.8, 7.8); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn687; Calibrated: 2012/08/23
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1039
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.4 W/kg

**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.5 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 26.7 W/kg
**SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.71 W/kg**
Maximum value of SAR (measured) = 19.5 W/kg



## System Check_B5200_121225

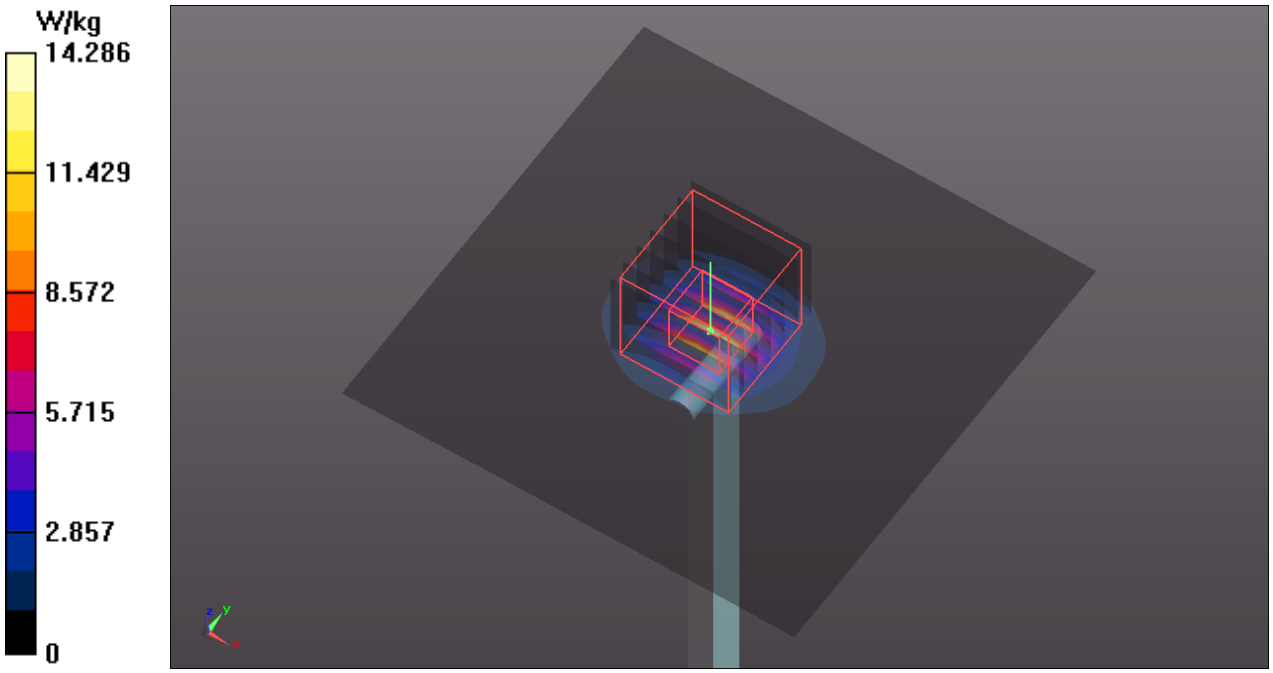
**DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019**

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: B5G_1225 Medium parameters used: f = 5200 MHz; $\sigma$ = 5.278 mho/m; $\varepsilon_r$ = 48.936; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.89, 4.89, 4.89); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.3 W/kg

**Pin=100mW/Zoom Scan (7x7x9)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 58.501 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 26.3 W/kg
**SAR(1 g) = 7.04 W/kg; SAR(10 g) = 1.98 W/kg**
Maximum value of SAR (measured) = 14.9 W/kg



## System Check_B5300_121225

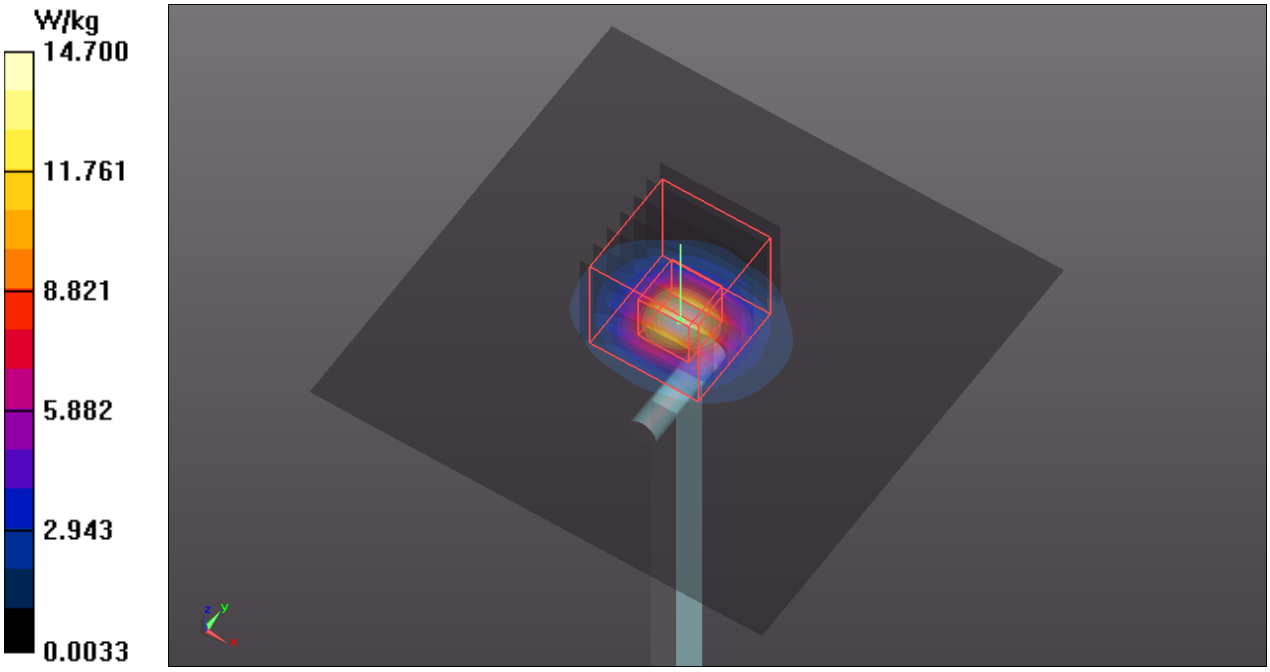
## DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: B5G_1225 Medium parameters used: f = 5300 MHz; $\sigma$ = 5.413 mho/m; $\varepsilon_r$ = 48.764; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5 ℃； Liquid Temperature：20.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.81, 4.81, 4.81); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 57.395 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 29.2 W/kg
**SAR(1 g) = 7.48 W/kg; SAR(10 g) = 2.1 W/kg**
Maximum value of SAR (measured) = 15.7 W/kg



## System Check_B5600_121226

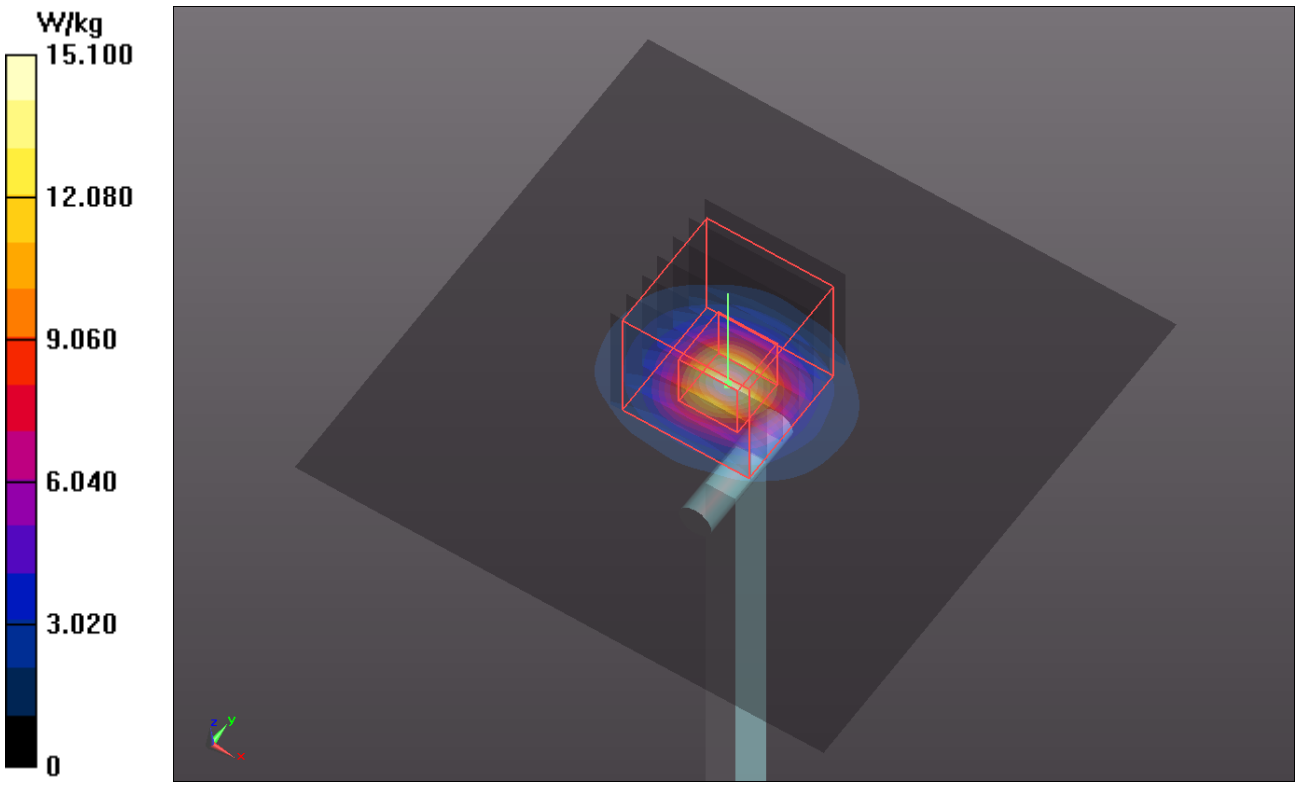
**DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019**

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: B5G_1226 Medium parameters used: f = 5600 MHz; $\sigma$ = 5.868 mho/m; $\varepsilon_r$ = 48.274; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7 ℃； Liquid Temperature：20.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(3.92, 3.92, 3.92); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.243 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 28.4 W/kg
**SAR(1 g) = 7.61 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 16.2 W/kg



## System Check_B5800_130108

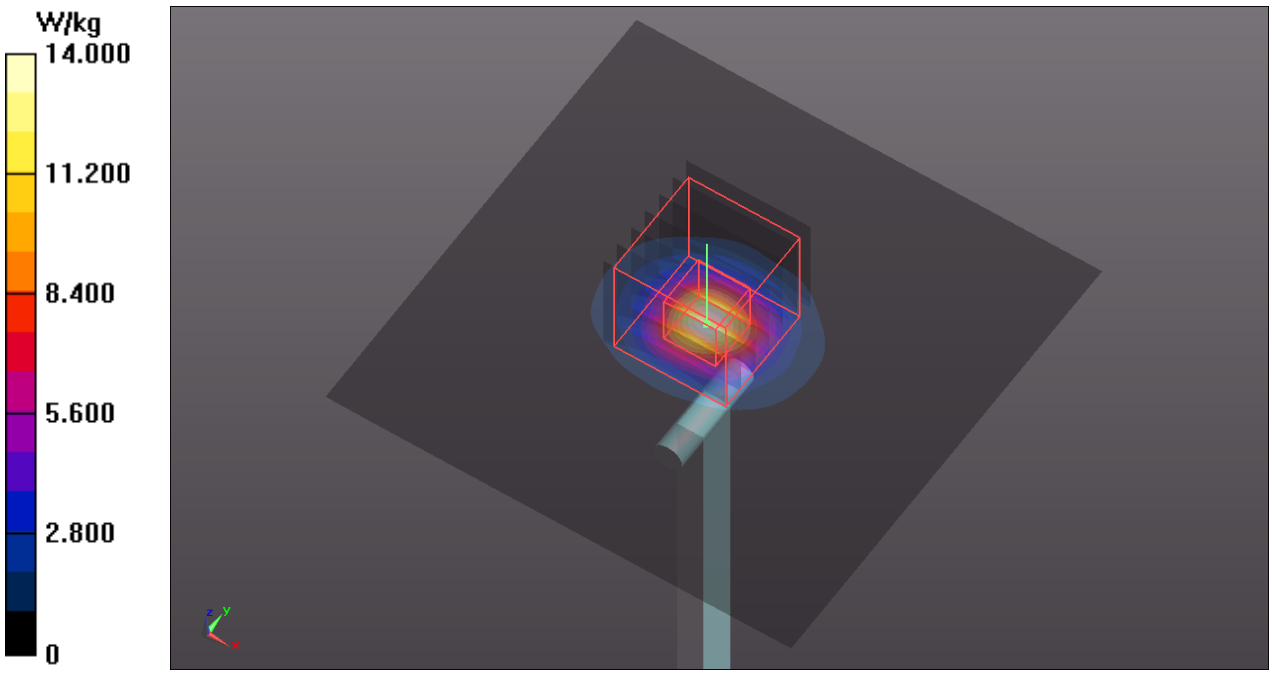
### DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: B5G_0108 Medium parameters used: f = 5800 MHz; $\sigma$ = 6.148 mho/m; $\varepsilon_r$ = 47.973; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7 ℃； Liquid Temperature：20.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.54, 4.54, 4.54); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn687; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Pin=100mW/Area Scan (91x91x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.0 W/kg

**Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 52.806 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.0 W/kg
**SAR(1 g) = 6.97 W/kg; SAR(10 g) = 1.95 W/kg**
Maximum value of SAR (measured) = 15.0 W/kg



# Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR and measured SAR > 1.5 W/kg are shown as follows.

## P01 GSM850_GPRS10_Rear Face_0cm_Ch128_w/ Pw Reduction

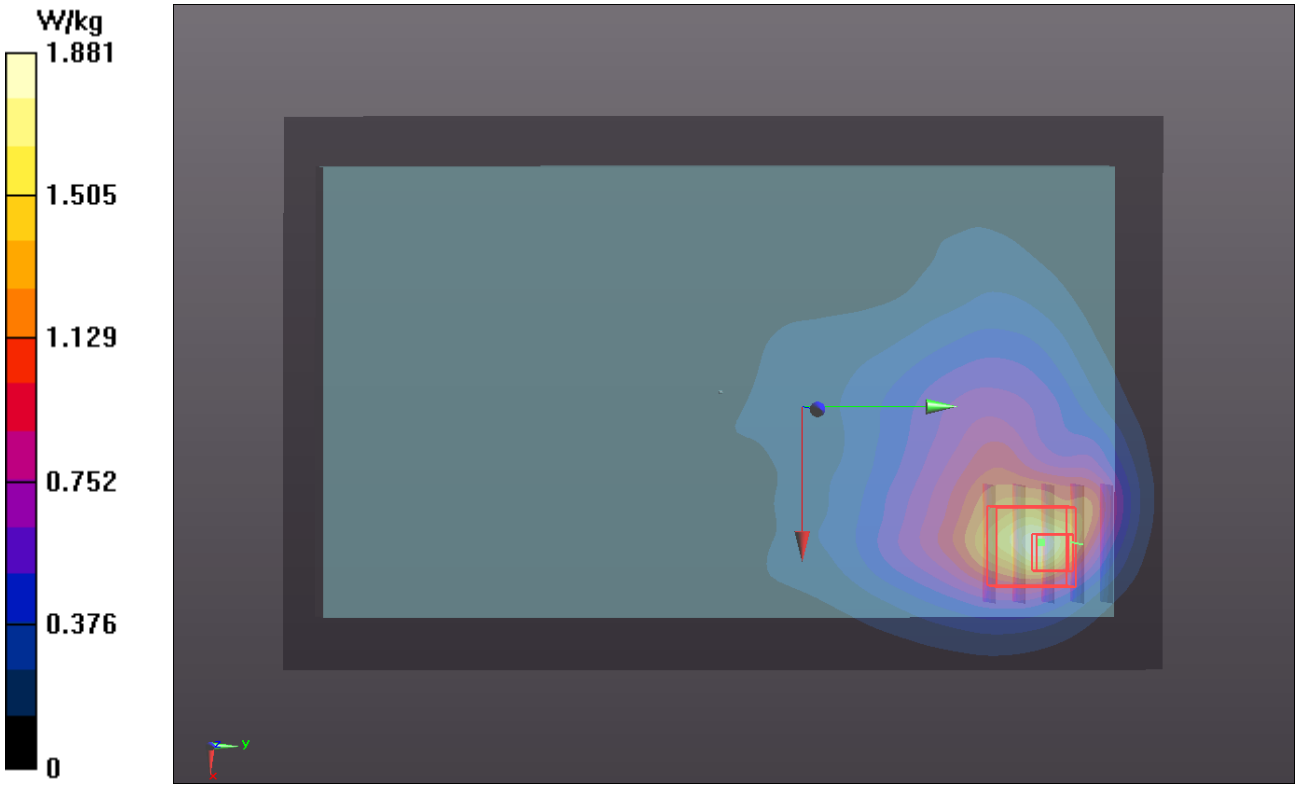
**DUT: 121112C19**

Communication System: GPRS10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: B835_1227 Medium parameters used: f = 824.2 MHz; $\sigma$ = 0.958 mho/m; $\varepsilon_r$ = 55.378; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(8.82, 8.82, 8.82); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch128/Area Scan (101x161x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.88 W/kg

**Ch128/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.522 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.50 W/kg
**SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.774 W/kg**
Maximum value of SAR (measured) = 1.84 W/kg



## P02 GSM1900_GPRS10_Rear Face_0cm_Ch810_w/ Pw Reduction

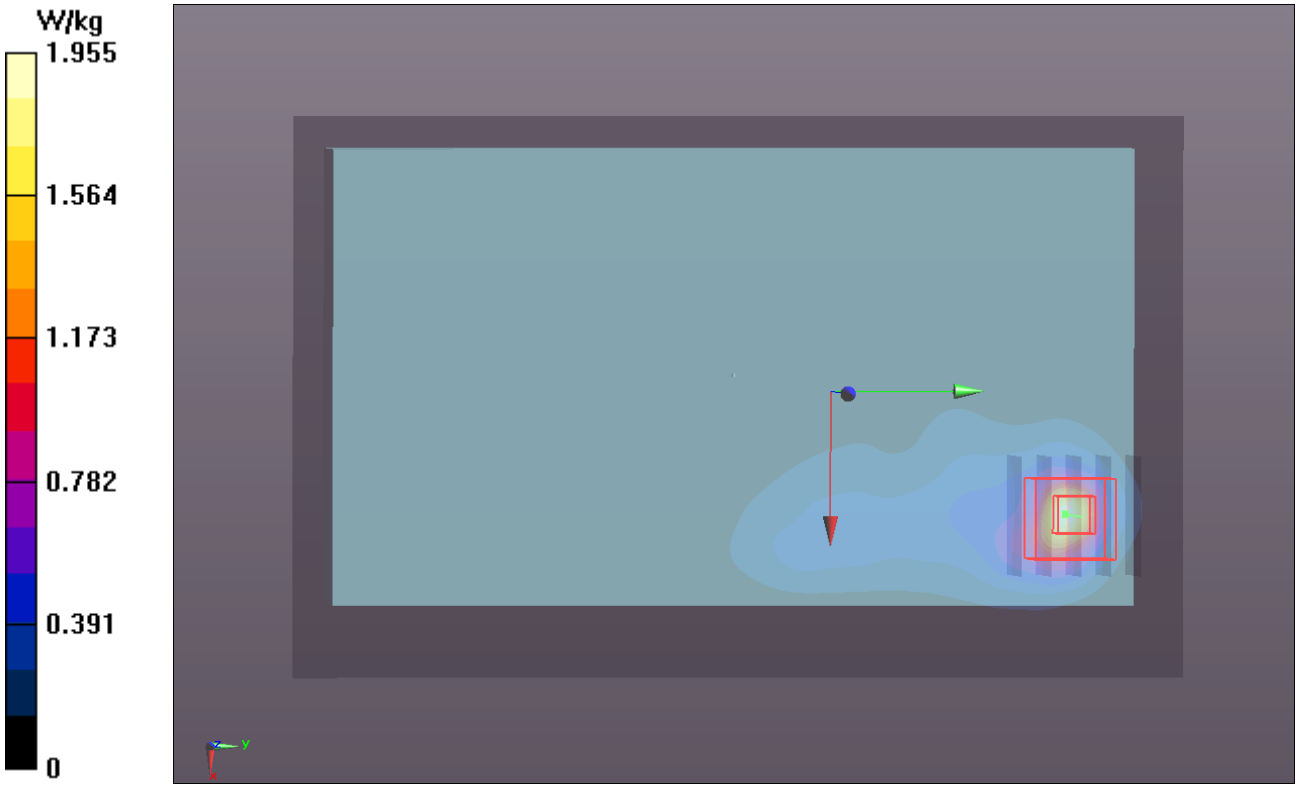
**DUT: 121112C19**

Communication System: GPRS10; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: B1900_1227 Medium parameters used: f = 1910 MHz; $\sigma$ = 1.555 mho/m; $\varepsilon_r$ = 53.414; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7℃； Liquid Temperature：20.8℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch810/Area Scan (101x161x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.96 W/kg

**Ch810/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.051 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.47 W/kg
**SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.513 W/kg**
Maximum value of SAR (measured) = 1.82 W/kg



## P03 WCDMA II_RMC12.2K_EDGE4_0cm_ch9262_w/o Pw Reduction

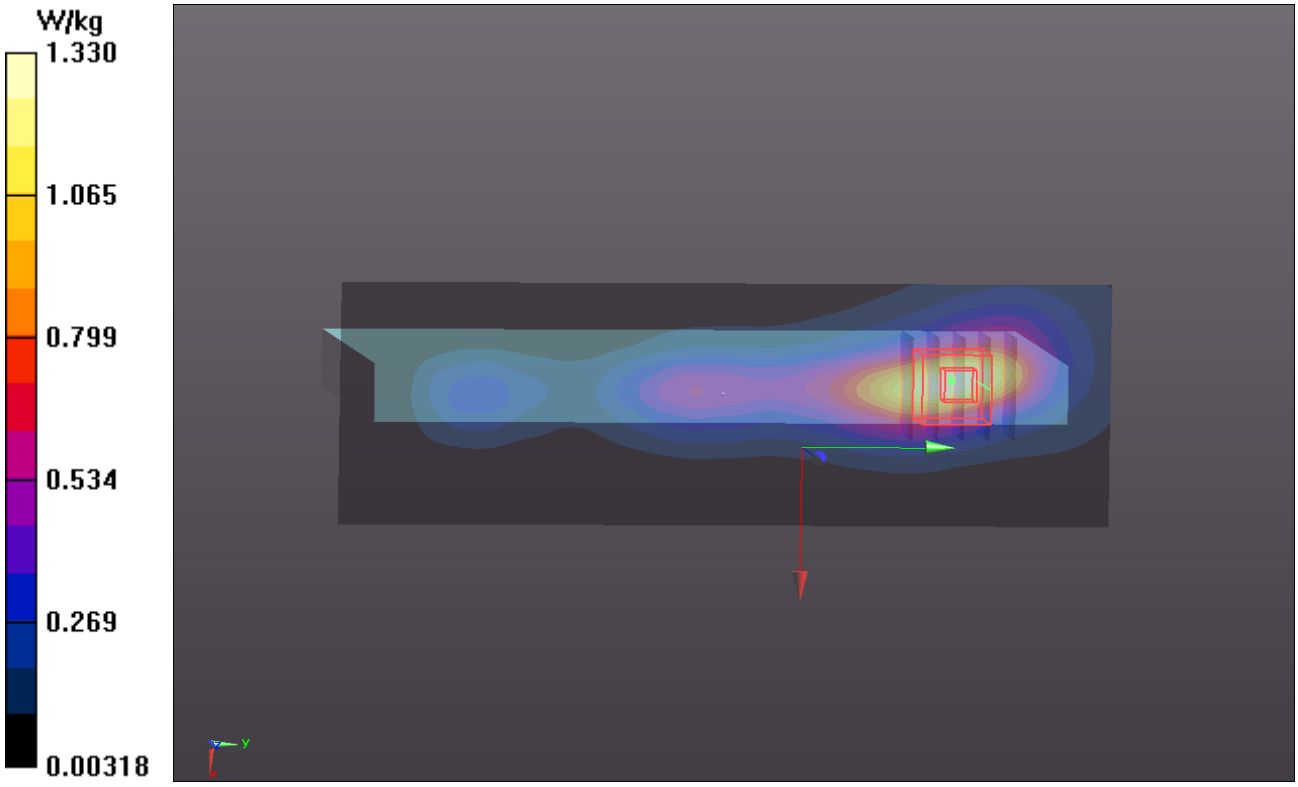
**DUT: 121108C17**

Communication System: WCDMA; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: B1900_1220 Medium parameters used: f = 1852.4 MHz; $\sigma$ = 1.477 mho/m; $\varepsilon_r$ = 51.194; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.6℃； Liquid Temperature：20.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(8.07, 8.07, 8.07); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch9262/Area Scan (51x161x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.33 W/kg

**Ch9262/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.931 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.61 W/kg
**SAR(1 g) = 0.929 W/kg; SAR(10 g) = 0.519 W/kg**
Maximum value of SAR (measured) = 1.28 W/kg



## P04 WCDMA V_RMC12.2K_Rear Face_0cm_ch4233_w/ Pw Reduction

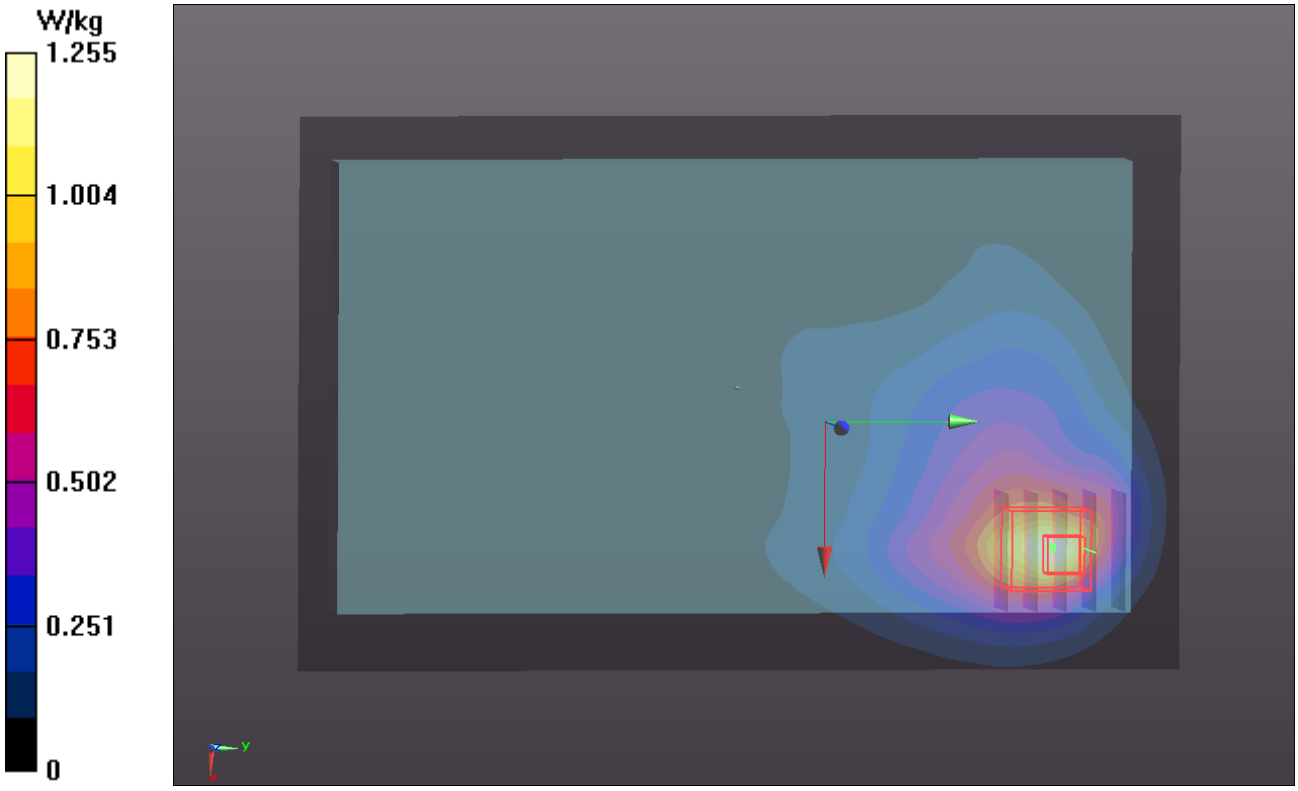
**DUT: 121112C19**

Communication System: WCDMA; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: B835_1222 Medium parameters used: f = 847 MHz; $\sigma$ = 1.002 mho/m; $\varepsilon_r$ = 56.632; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.7℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(8.82, 8.82, 8.82); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch4233/Area Scan (101x161x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.25 W/kg

**Ch4233/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.470 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.57 W/kg
**SAR(1 g) = 0.781 W/kg; SAR(10 g) = 0.465 W/kg**
Maximum value of SAR (measured) = 1.14 W/kg



## P05 LTE 4_QPSK_10_Rear Face_0cm_Ch20000_w/ Pw Reduction_1RB_Offset 24

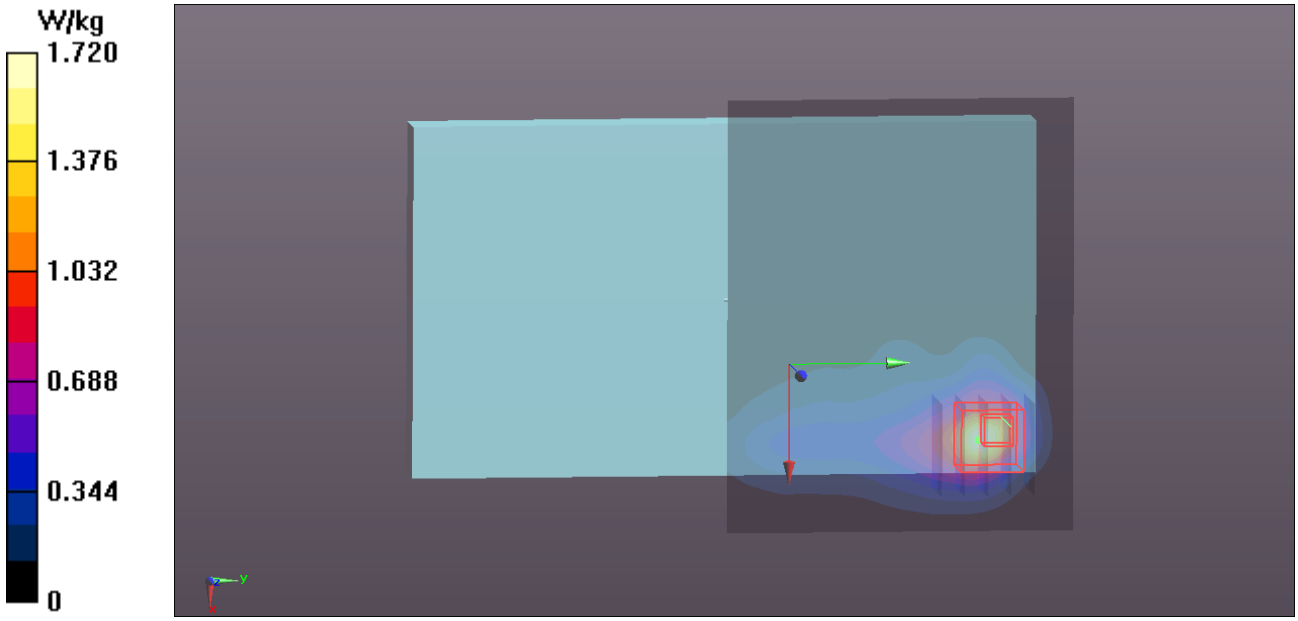
**DUT: 121112C19**

Communication System: LTE; Frequency: 1715 MHz;Duty Cycle: 1:1
Medium: B1750_0103 Medium parameters used: f = 1715 MHz; $\sigma$ = 1.407 mho/m; $\varepsilon_r$ = 53.539; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.2℃； Liquid Temperature：20.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.31, 7.31, 7.31); Calibrated: 2012/10/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2012/07/19
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1039
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch20000/Area Scan (101x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.72 W/kg

**Ch20000/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.361 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.61 W/kg
**SAR(1 g) = 1.22 W/kg; SAR(10 g) = 0.601 W/kg**
Maximum value of SAR (measured) = 1.84 W/kg



## P06 LTE 17_QPSK_10_Rear Face_0cm_ch23790_w/ Pw Reduction_25RB_Offset 0

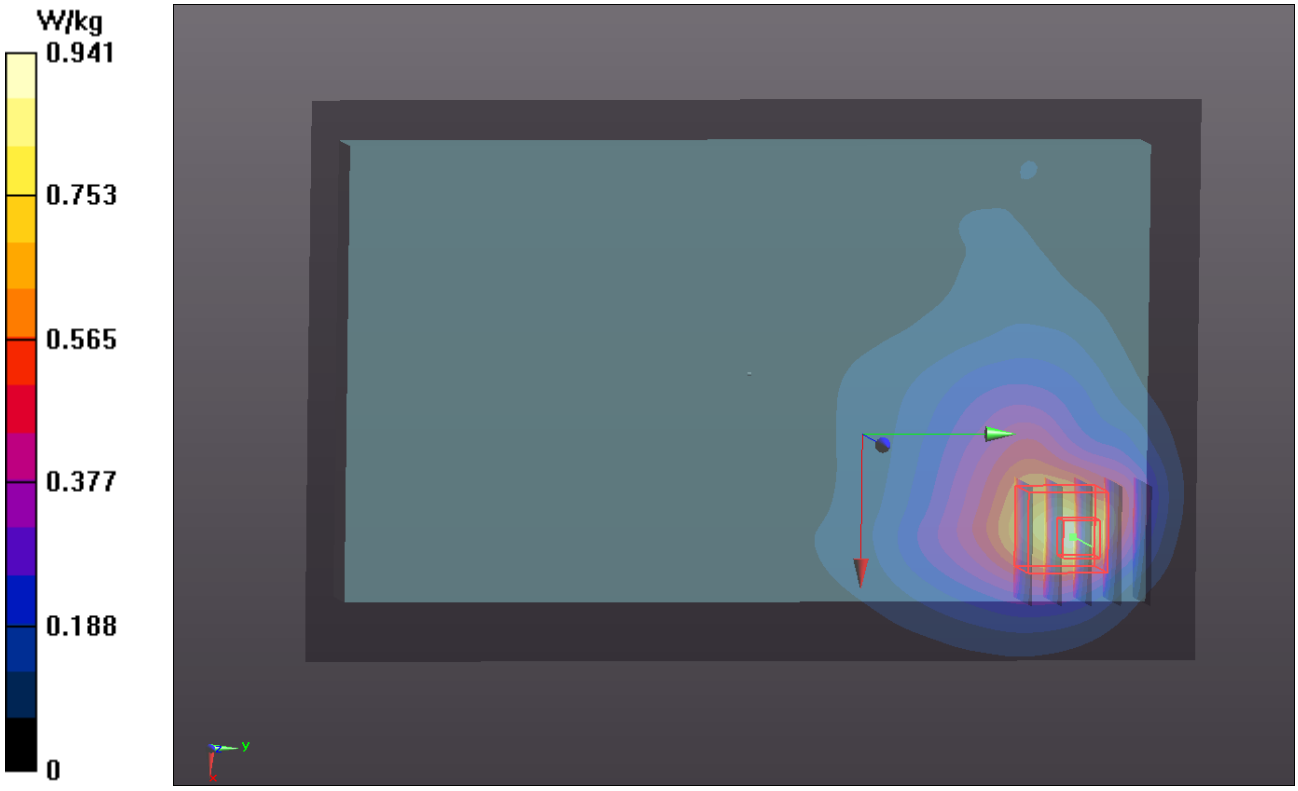
**DUT: 121112C19**

Communication System: LTE; Frequency: 710 MHz;Duty Cycle: 1:1
Medium: B750_1222 Medium parameters used: f = 710 MHz; $\sigma$ = 0.933 mho/m; $\varepsilon_r$ = 55.586; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.1℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(9, 9, 9); Calibrated: 2012/06/22;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch23790/Area Scan (101x161x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.941 W/kg

**Ch23790/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.091 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.14 W/kg
**SAR(1 g) = 0.586 W/kg; SAR(10 g) = 0.358 W/kg**
Maximum value of SAR (measured) = 0.787 W/kg



## P07 802.11b_Rear Face_0cm_Ch1

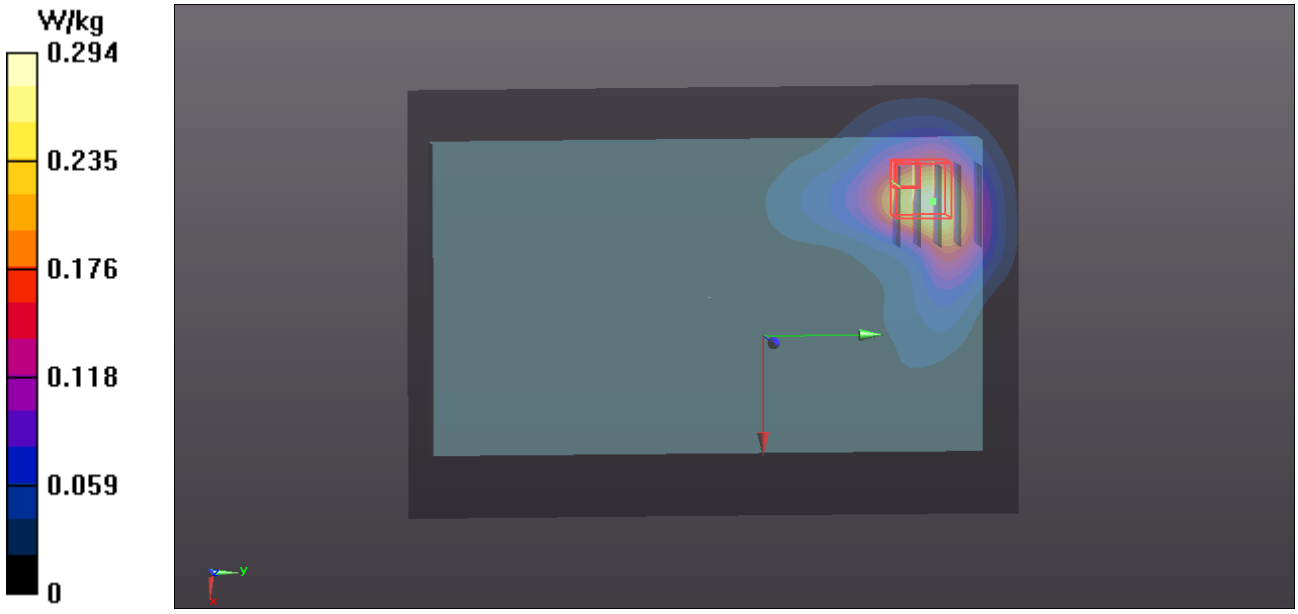
**DUT: 121108C17**

Communication System: WLAN_2.4G; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: B2450_0110 Medium parameters used: f = 2412 MHz; $\sigma$ = 1.892 mho/m; $\varepsilon_r$ = 51.116; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：22.3℃； Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(7.8, 7.8, 7.8); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn687; Calibrated: 2012/08/23
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BA; Serial: SN:1039
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch1/Area Scan (141x201x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.294 W/kg

**Ch1/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.274 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.24 W/kg
**SAR(1 g) = 0.477 W/kg; SAR(10 g) = 0.164 W/kg**
Maximum value of SAR (measured) = 0.831 W/kg



## P08 802.11n_HT20_Rear Face_0cm_Ch149

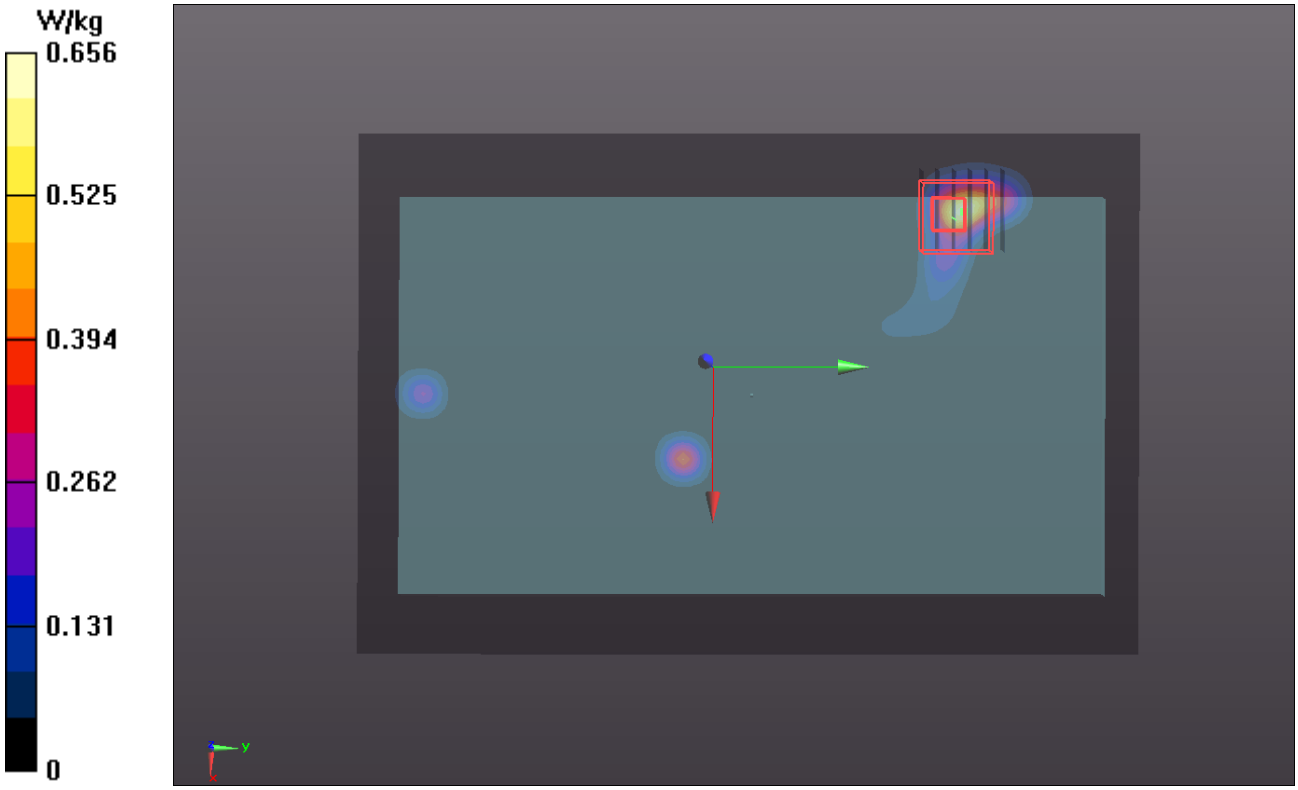
### DUT: 121112C19

Communication System: WLAN_5G; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: B5G_0108 Medium parameters used: f = 5745 MHz; $\sigma$ = 6.026 mho/m; $\varepsilon_r$ = 48.398; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7 ℃； Liquid Temperature：20.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.54, 4.54, 4.54); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn687; Calibrated: 2012/08/23
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch149/Area Scan (161x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.656 W/kg

**Ch149/Zoom Scan (6x6x12)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=2mm
Reference Value = 0.862 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.23 W/kg
**SAR(1 g) = 0.242 W/kg; SAR(10 g) = 0.062 W/kg**
Maximum value of SAR (measured) = 0.594 W/kg



## P09 802.11a_Rear Face_0cm_Ch36

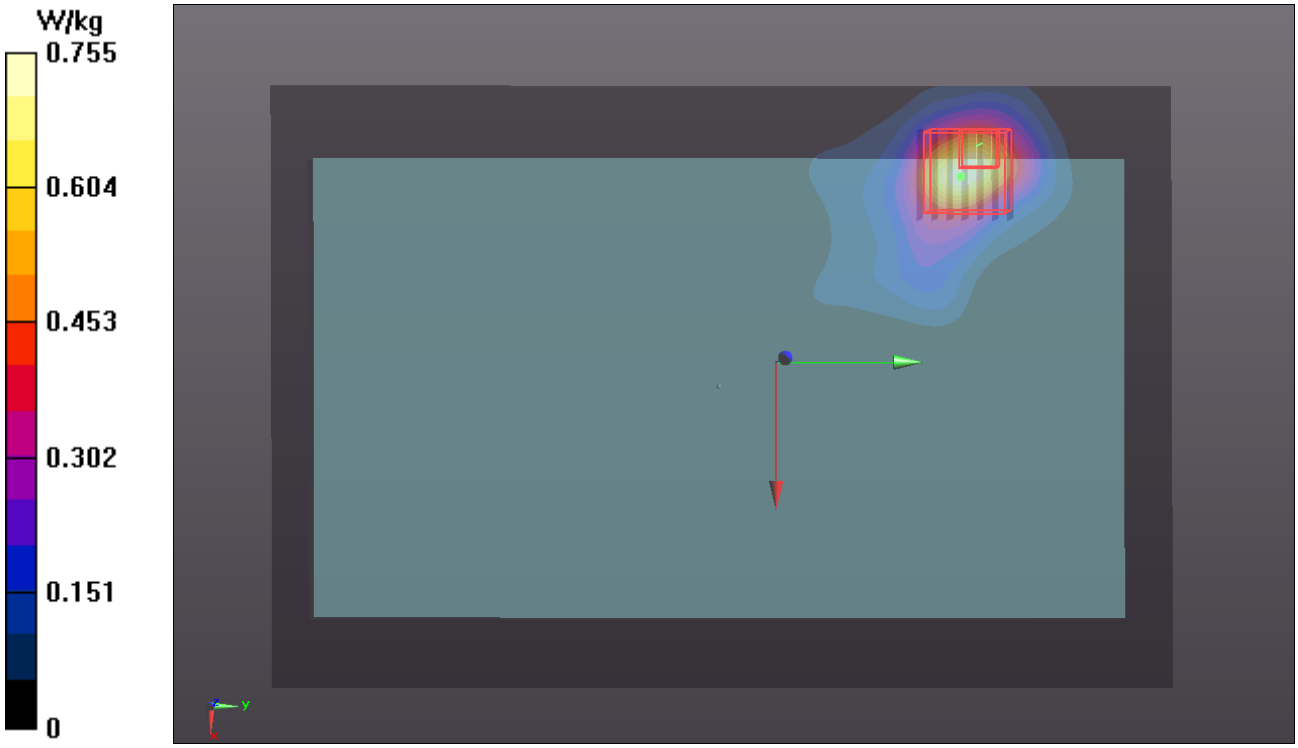
**DUT: 121112C19**

Communication System: WLAN_5G; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: B5G_1225 Medium parameters used: f = 5180 MHz; $\sigma$ = 5.261 mho/m; $\varepsilon_r$ = 49.042; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.89, 4.89, 4.89); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch36/Area Scan (161x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.755 W/kg

**Ch36/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.00 W/kg
**SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.141 W/kg**
Maximum value of SAR (measured) = 1.32 W/kg



## P10 802.11a_Rear Face_0cm_Ch52

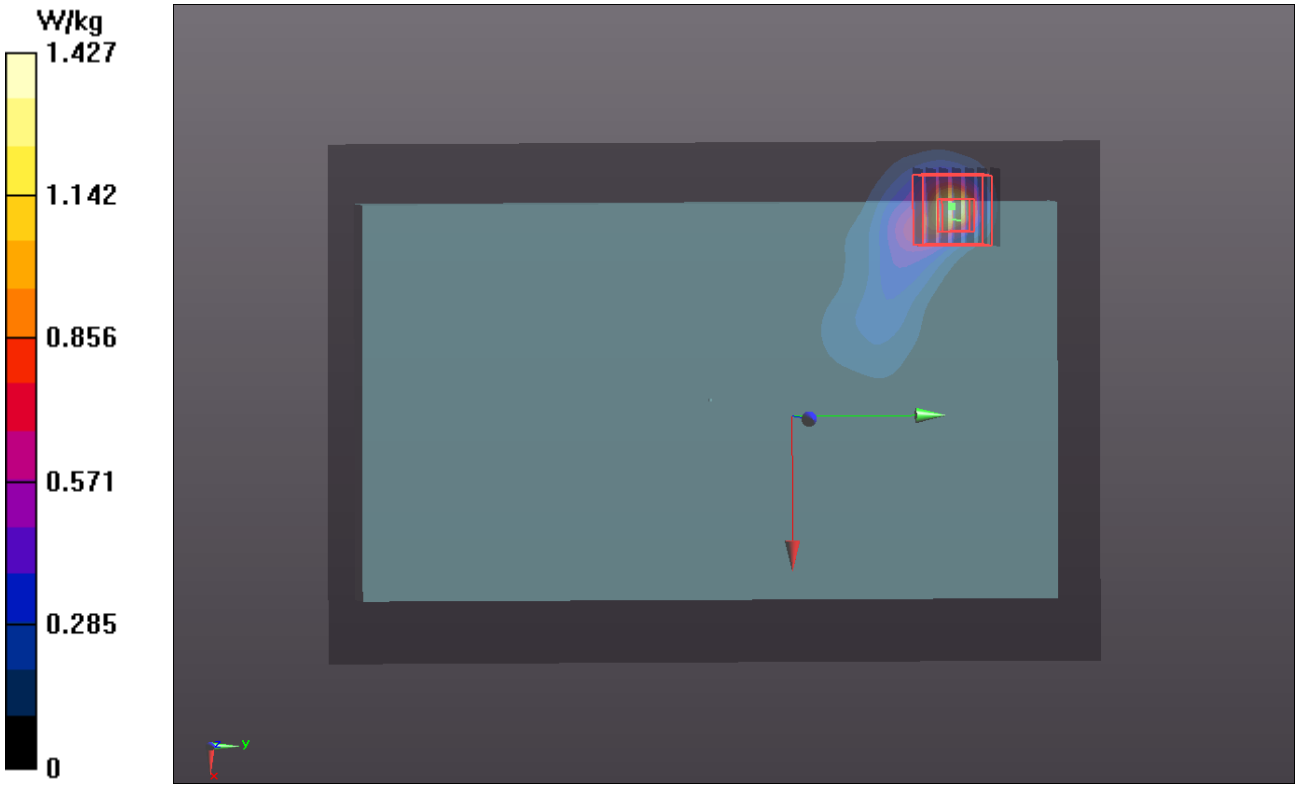
**DUT: 121112C19**

Communication System: WLAN_5G; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: B5G_1225 Medium parameters used: f = 5260 MHz; $\sigma$ = 5.396 mho/m; $\varepsilon_r$ = 48.862; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.5℃； Liquid Temperature：20.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(4.81, 4.81, 4.81); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch52/Area Scan (161x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.43 W/kg

**Ch52/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.191 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.59 W/kg
**SAR(1 g) = 0.736 W/kg; SAR(10 g) = 0.184 W/kg**
Maximum value of SAR (measured) = 1.62 W/kg

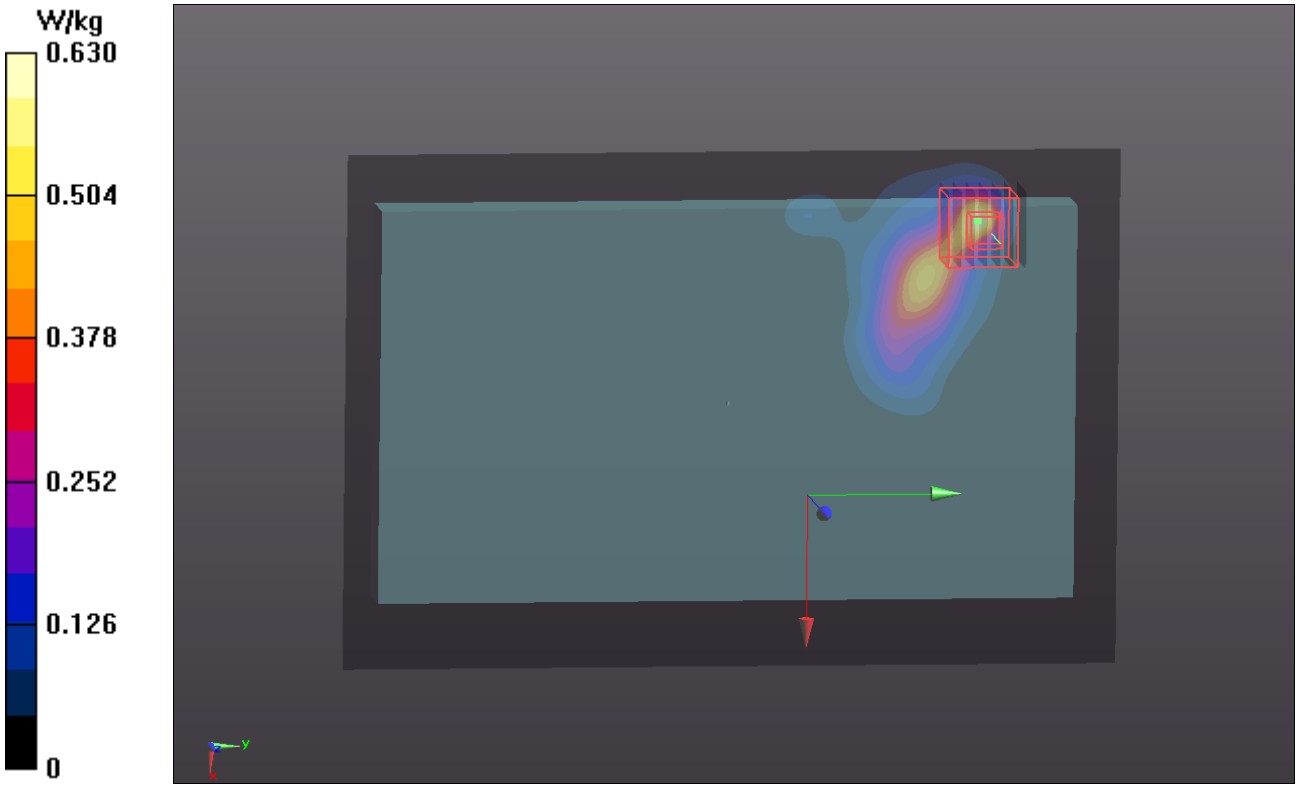


## P11 802.11a_Rear Face_0cm_Ch136

**DUT: 121112C19**

Communication System: WLAN_5G; Frequency: 5680 MHz;Duty Cycle: 1:1
Medium: B5G_1226 Medium parameters used: f = 5680 MHz; $\sigma$ = 5.942 mho/m; $\varepsilon_r$ = 48.032; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：21.7℃； Liquid Temperature：20.8℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3590; ConvF(3.92, 3.92, 3.92); Calibrated: 2012/02/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn915; Calibrated: 2012/06/21
- Phantom: ELI v4.0; Type: QDOVA001BA; Serial: TP:1043
- Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

**Ch136/Area Scan (161x241x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.630 W/kg

**Ch136/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.27 W/kg
**SAR(1 g) = 0.394 W/kg; SAR(10 g) = 0.092 W/kg**
Maximum value of SAR (measured) = 0.941 W/kg