

# FCC SAR

## Measurement and Test Report

For

**PCSmart S.A.**

**Carrera 116 no. 15 - 25 Bogota - Colombia**

**FCC ID: 2ABFV-S3GI**

<b>FCC Rules:</b>	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003 KDB 865664 D01 v01r03 KDB 865664 D02 v01r01
<b>Product Description:</b>	<u>Entertainment Tablet</u>
<b>Tested Model:</b>	<u>Touch Smart Slim 3Gi</u>
<b>Report No.:</b>	<u>STR14068118H</u>
<b>Max. SAR Values:</b>	Head: <b>0.2255 W/kg(1g)</b> Body: <b>1.1654 W/kg(1g)</b>
<b>Tested Date:</b>	<u>2014-06-09 to 2014-06-23</u>
<b>Issued Date:</b>	<u>2014-06-13</u>
<b>Tested By:</b>	<u>Silin Chen / Engineer</u> <i>Silin chen</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM. Test Technology Co., Ltd.

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## 1. General Information

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: PCSmart S.A.  
Address of applicant: Carrera 116 no. 25 - 25 Bogota - Colombia

Manufacturer: Shenzhen Wisky Technology Co., LTD  
Address of manufacturer: 5th Floor, W2-A Building, Hi-Tech Park South 1st Road, Nanshan District, Shenzhen

General Description of EUT	
Product Name:	Entertainment Tablet
Brand Name:	PCSMART
Model No.:	Touch Smart Slim 3Gi
Adding Mode:	Touch Smart Slim 3Gi Black Touch Smart Slim 3Gi white
Software Version:	V1.00_20140411
Hardware Version:	TV1.0_140107
IMEI:	863059020047561
Rated Voltage:	DC 3.7V
Battery:	4000mAh
Power Adaptor:	FY0502000/SAPA05010US
	Input 100-240V, 50/60Hz, Output DC 5V
Device Category:	Portable Device
<p><i>The EUT is GSM850/900/DCS1800/PCS1900, WCDMA Band I, Band II, Band V, Band VIII, Entertainment Tablet. the Entertainment Tablet is intended for speech and Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850 and GSM1900 and Bluetooth, Wi-Fi, and camera functions. For more information see the following datasheet</i></p> <p><i>The test data is gathered from a production sample, provided by the manufacturer. The other model listed in the report has different appearance only of Touch Smart Slim 3Gi without circuit and electronic construction changed, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
<b>2G</b>	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz
	GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz

	GSM/GPRS/EDGE 1900: 1930~1990MHz
RF Output Power:	GSM850: 32.66dBm, GSM1900: 29.39dBm
Type of Modulation:	GMSK, 8PSK
Antenna Type:	Internal Antenna
Antenna Gain:	GSM850: 2.0dBi GSM1900: 2.0dBi
GPRS/EDGE Class:	Class 12
<b>3G</b>	
Support Networks:	WCDMA
Support Band:	WCDMA Band II, WCDMA Band V
Uplink Frequency:	WCDMA Band II: 1850~1980MHz WCDMA Band V: 824~849MHz
Downlink Frequency:	WCDMA Band II: 1930~1990MHz WCDMA Band V: 869~894MHz
RF Output Power:	WCDMA850: 22.916dBm, WCDMA1900: 21.52dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	2.0dBi
<b>Bluetooth</b>	
Bluetooth Version:	V3.0
Frequency Range:	2402-2480MHz
RF Output Power:	5.50dBm (Conducted)
Modulation Type:	1Mbps, 2Mbps, 3Mbps
Data Rate:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels	79
Channel Separation:	1MHz
Antenna Type:	Integral
Antenna Gain:	2.63dBi
<b>Wi-Fi</b>	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2472MHz
RF Output Power:	16.80dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels	13
Channel Separation:	5MHz
Type of Antenna:	Integral
Antenna Gain:	2.63dBi

## 1.2 Test Standards

The following report is prepared on behalf of the PCSmart S.A in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-1992, IEEE 1528-2003 and KDB 865664 D01 v01r03 and KDB 865664 D02 v01r01

The objective is to determine compliance with FCC Part 2.1093 of the Federal Communication Commissions rules.

*Maintenance of compliance* is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with KDB 865664 D01 v01r03 and KDB 865664 D02 v01r01. The public notice KDB 447498 D01 V05 for Mobile and Portable Devices RF Exposure Procedure also.

## 1.4 Test Facility

- **FCC – Registration No.: 934118**

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

## 2. Summary of Test Results

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency Band	Position	SAR <sub>1g</sub> (W/kg)	Scaled SAR <sub>1g</sub> (W/kg)
GSM850	Head	0.1291	0.1396
GSM1900	Head	0.0943	0.0971
WCDMA Band V	Head	0.0562	0.0573
WCDMA Band II	Head	0.1627	0.1822
WLAN 2.4GHz	Head	0.0820	0.0859
GSM850	Body (0mm Gap)	0.8961	1.0216
GSM1900	Body (0mm Gap)	0.4868	0.5014
WCDMA Band V	Body (0mm Gap)	0.5389	0.5497
WCDMA Band II	Body (0mm Gap)	0.4324	0.4843
WLAN 2.4GHz	Body (0mm Gap)	0.1373	0.1438
GSM850 & WLAN 2.4GHz	Head	--	<b>0.2255</b>
GSM1900 & WLAN 2.4GHz	Head	--	0.1830
WCDMA Band V & WLAN 2.4GHz	Head	--	0.1432
WCDMA Band II & WLAN 2.4GHz	Head	--	0.2216
GSM850 & WLAN 2.4GHz	Body (0mm Gap)	--	<b>1.1654</b>
GSM1900 & WLAN 2.4GHz	Body (0mm Gap)	--	0.5694
WCDMA Band V & WLAN 2.4GHz	Body (0mm Gap)	--	0.5713
WCDMA Band II & WLAN 2.4GHz	Body (0mm Gap)	--	0.4323

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2.1093 and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2003 and KDB 865664 D01 v01r03 and KDB 865664 D02 v01r01

### 3. Specific Absorption Rate (SAR)

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#### 3.1 Introduction

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.

#### 3.2 SAR Definition

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 ( $\rho$ ). The equation description is as below:

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

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

SAR measurement can be either related to the temperature elevation in tissue by

$$\text{SAR} = C \left( \frac{\delta T}{\delta t} \right)$$

Where: C is the specific heat capacity,  $\delta T$  is the temperature rise and  $\delta t$  is the exposure duration, or related to the electrical field in the tissue by

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

## 4. SAR Measurement System

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### 4.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

### 4.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Probe Length: 330 mm
- Length of Individual Dipoles: 4.5 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter : 5 mm
- Distance between dipoles / probe extremity: 2.7mm



- Probe linearity: <0.25 dB
  - Axial Isotropy: <0.25 dB
  - Spherical Isotropy: <0.50 dB
  - Calibration range: 700 to 3000MHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antenna proprietary calibration system. The calibration is performed with the EN 62209-1 annexe technique using reference guide at the five frequencies.



$$SAR = \frac{4(P_{fw} - P_{bw})}{ab\delta} \cos^2\left(\pi \frac{y}{a}\right) e^{-2z/\delta}$$

Where :

$P_{fw}$  = Forward Power

$P_{bw}$  = Backward Power

a and b = Waveguide dimensions

$\delta$  = Skin depth

Keithley configuration:

Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

$$CF(N)=SAR(N)/V_{lin}(N) \quad (N=1,2,3)$$

The linearised output voltage  $V_{lin}(N)$  is obtained from the displayed output voltage  $V(N)$  using

$$V_{lin}(N)=V(N)*(1+V(N)/DCP(N)) \quad (N=1,2,3)$$

where DCP is the diode compression point in mV.

### 4.3 Probe Calibration Process

#### Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm<sup>2</sup>) using an with CALISAR, Antenna proprietary calibration system.

#### Free Space Assessment Procedure

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm<sup>2</sup>.

#### Temperature Assessment Procedure

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

Where:

$$SAR = C \frac{\Delta T}{\Delta t}$$

$\Delta t$  = exposure time (30 seconds),

$C$  = heat capacity of tissue (brain or muscle),

$\Delta T$  = temperature increase due to RF exposure.

SAR is proportional to  $\Delta T/\Delta t$ , the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

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

Where:

$\sigma$  = simulated tissue conductivity,

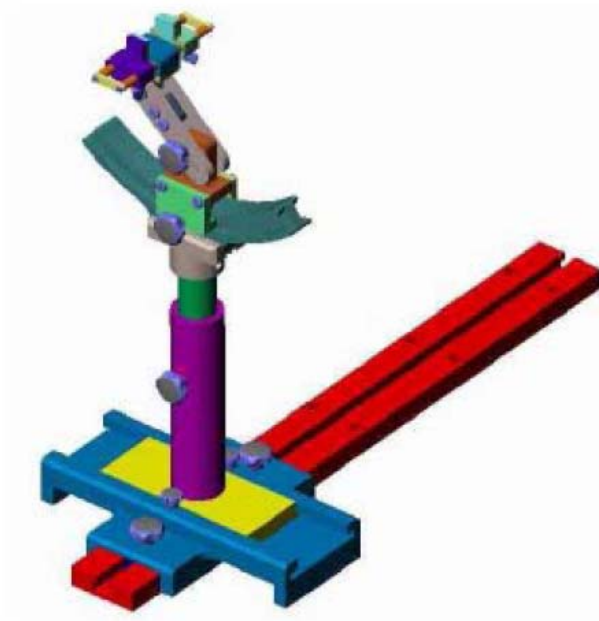
$\rho$  = Tissue density (1.25 g/cm<sup>3</sup> for brain tissue)

#### 4.4 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

#### 4.5 Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

#### 4.6 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
E-Field Probe	SATIMO	SSE5	SN 09/13 EP168	2014-03-21	2015-03-20
835MHz Dipole	SATIMO	SID835	SN 47/12 DIP 0G835-204	2014-11-26	2015-11-25
1900MHz Dipole	SATIMO	SID1900	SN 47/12 DIP 1G900-207	2014-11-26	2015-11-25
2450MHz Dipole	SATIMO	SID2450	SN 47/12 DIP 2G450-209	2014-11-26	2015-11-25
Dielectric Probe	SATIMO	SCLMP	SN 47/12 OCPG49	2014-11-26	2015-11-25
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
Multi Meter	Keithley	Keithley 2000	4006367	2014-05-07	2015-05-06
Signal Generator	Rohde & Schwarz	SMR20	100047	2014-05-07	2015-05-06
Universal Tester	Rohde & Schwarz	CMU200	112012	2014-05-07	2015-05-06
Network Analyzer	HP	8753C	2901A00831	2014-05-07	2015-05-06

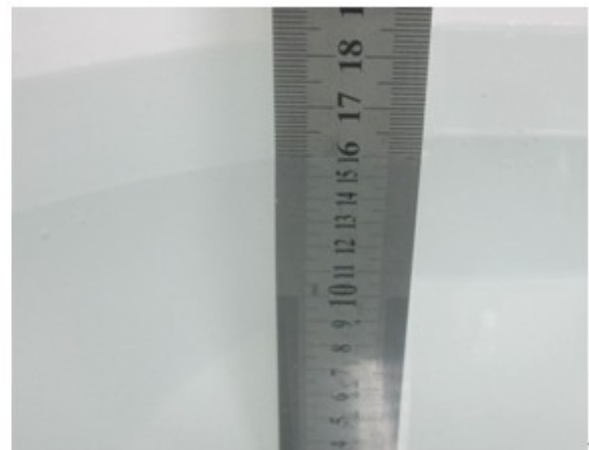
## 5. Tissue Simulating Liquids

### 5.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. 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. Please see the following photos for the liquid height.



**Liquid Height for Head SAR**



**Liquid Height for Body SAR**

#### The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Triton (%)	HEC (%)	Preventol (%)	DGBE (%)
<b>Head</b>						
835	35.34	0.98	0.00	0.00	63.68	0.00
1900	55.26	0.52	30.40	0.00	0.00	13.82
2450	55.44	0.32	30.50	0.00	0.00	13.74
<b>Body</b>						
835	52.87	1.07	0.00	0.00	46.10	0.00
1900	69.99	0.41	20.66	0.00	0.00	8.93
2450	55.44	0.32	30.50	0.00	0.00	13.74

## 5.2 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Target Frequency (MHz)	Head		Body	
	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
150	0.76	52.3	0.80	61.9
300	0.87	45.3	0.92	58.2
450	0.87	43.5	0.94	56.7
<b>835</b>	<b>0.90</b>	<b>41.5</b>	<b>0.97</b>	<b>55.2</b>
900	0.97	41.5	1.05	55.0
915	0.98	41.5	1.06	55.0
1450	1.20	40.5	1.30	54.0
1610	1.29	40.3	1.40	53.8
<b>1800-2000</b>	<b>1.40</b>	<b>40.0</b>	<b>1.52</b>	<b>53.3</b>
<b>2450</b>	<b>1.80</b>	<b>39.2</b>	<b>1.95</b>	<b>52.7</b>
3000	2.40	38.5	2.73	52.0
5800	5.27	35.3	6.00	48.2

### 5.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and an Agilent Network Analyzer.

#### Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Head Tissue Simulating Liquid									
Freq. MHz.	Temp. (°C)	Conductivity			Permittivity			Limit (%)	Date
		Reading ( $\sigma$ )	Target ( $\sigma$ )	Delta (%)	Reading ( $\epsilon_r$ )	Target ( $\epsilon_r$ )	Delta (%)		
835	21.2	0.91	0.90	1.11	40.02	41.5	-3.57	±5	2014-06-03
1900	21.3	1.41	1.40	0.71	38.91	40.0	-2.73	±5	2014-06-03
2450	21.3	1.78	1.80	-1.11	38.76	39.2	-1.12	±5	2014-06-03

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (°C)	Conductivity			Permittivity			Limit (%)	Date
		Reading ( $\sigma$ )	Target ( $\sigma$ )	Delta (%)	Reading ( $\epsilon_r$ )	Target ( $\epsilon_r$ )	Delta (%)		
835	21.2	0.96	0.97	-1.03	54.49	55.2	-1.29	±5	2014-06-03
1900	21.3	1.49	1.52	-1.97	52.39	53.3	-1.71	±5	2014-06-03
2450	21.3	1.92	1.95	-1.54	52.43	52.7	-0.51	±5	2014-06-03

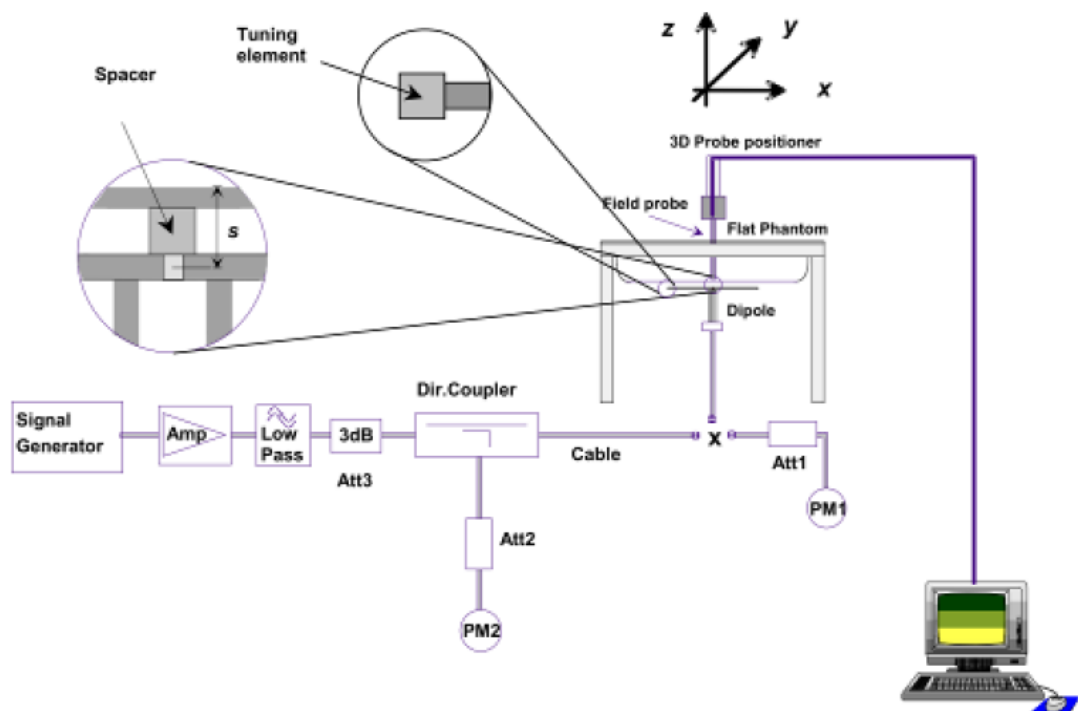
## 6. SAR Measurement Evaluation

### 6.1 Purpose of System Performance Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

### 6.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 835 MHz and 1900 MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom.



System Verification Setup Block Diagram





**Setup Photo of Dipole Antenna**

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected.

### 6.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. Table 6.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency	Targeted SAR <sub>1g</sub>	Measured SAR <sub>1g</sub>	Normalized SAR <sub>1g</sub>	Tolerance
MHz	(W/kg)	(W/kg)	(W/kg)	(%)
Head				
835	9.82	2.46	9.83	-2.24
1900	40.79	10.20	40.80	-2.92
2450	52.50	13.10	52.40	-0.93
Body				
835	10.19	2.52	10.09	-0.98
1900	40.41	10.09	40.34	-0.17
2450	51.80	12.86	51.42	-0.73

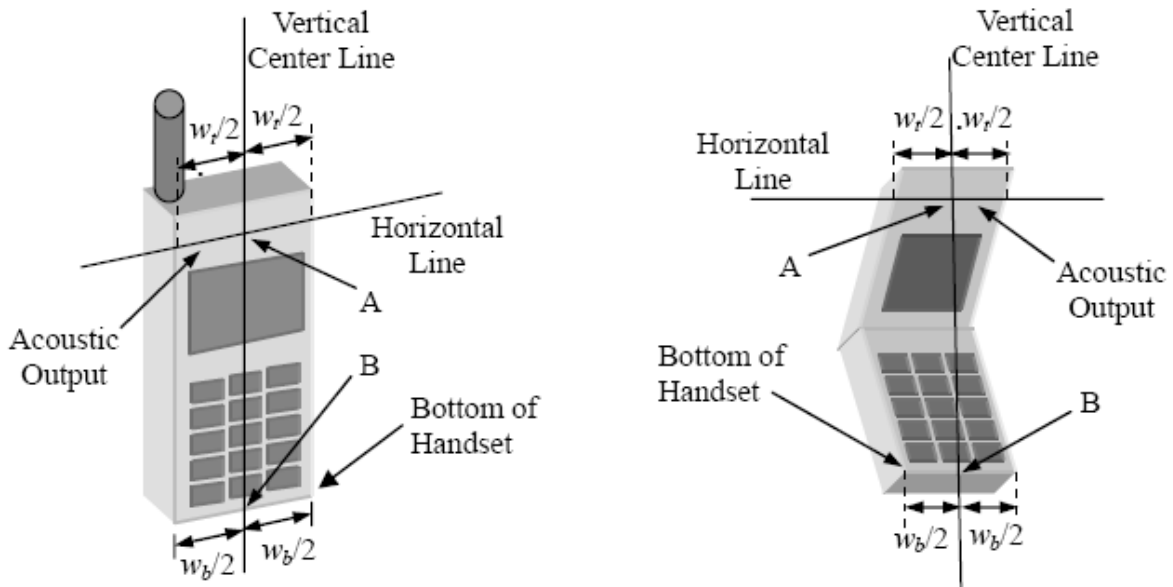
**Targeted and Measurement SAR**

*Please refer to Annex A for the plots of system performance check.*

## 7. EUT Testing Position

### 7.1 Define Two Imaginary Lines on The Handset

- (a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width  $w_t$  of the handset at the level of the acoustic output, and the midpoint of the width  $w_b$  of the bottom of the handset.
- (b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



**Illustration for Handset Vertical and Horizontal Reference Lines**

## 7.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 7.2).

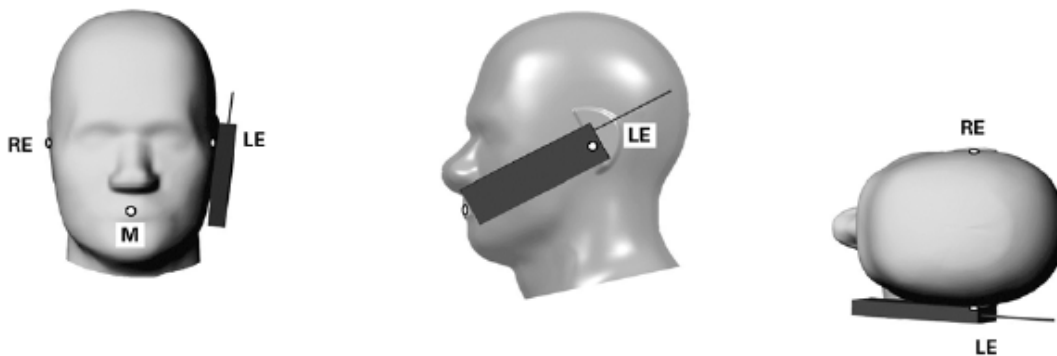


Illustration for Cheek Position

## 7.3 Tilted Position

(a) To position the device in the “cheek” position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 7.3).

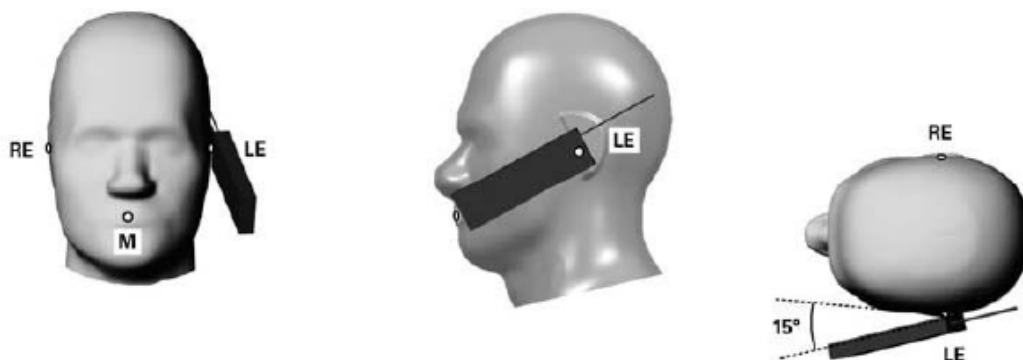


Illustration for Tilted Position

## 7.2 Body Worn Position

- To position the device parallel to the phantom surface with either keypad up or down.
- To adjust the device parallel to the flat phantom.
- To adjust the distance between the device surface and the flat phantom to 0mm.

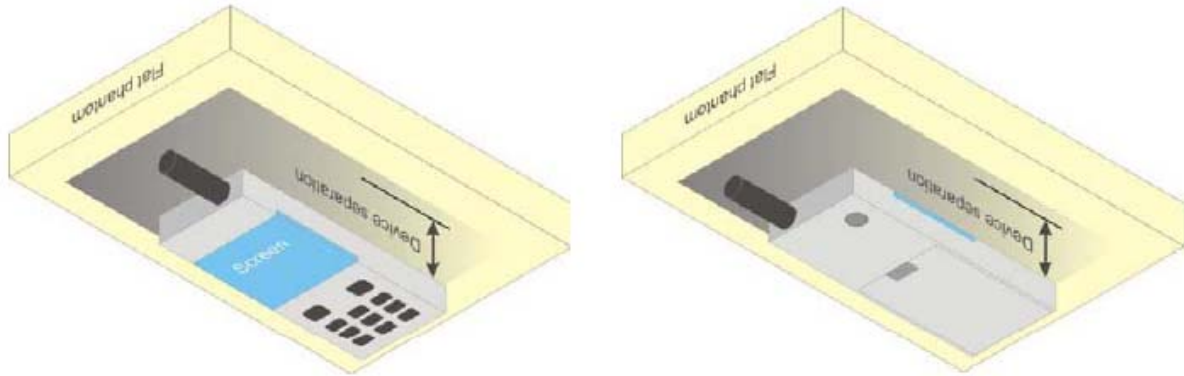
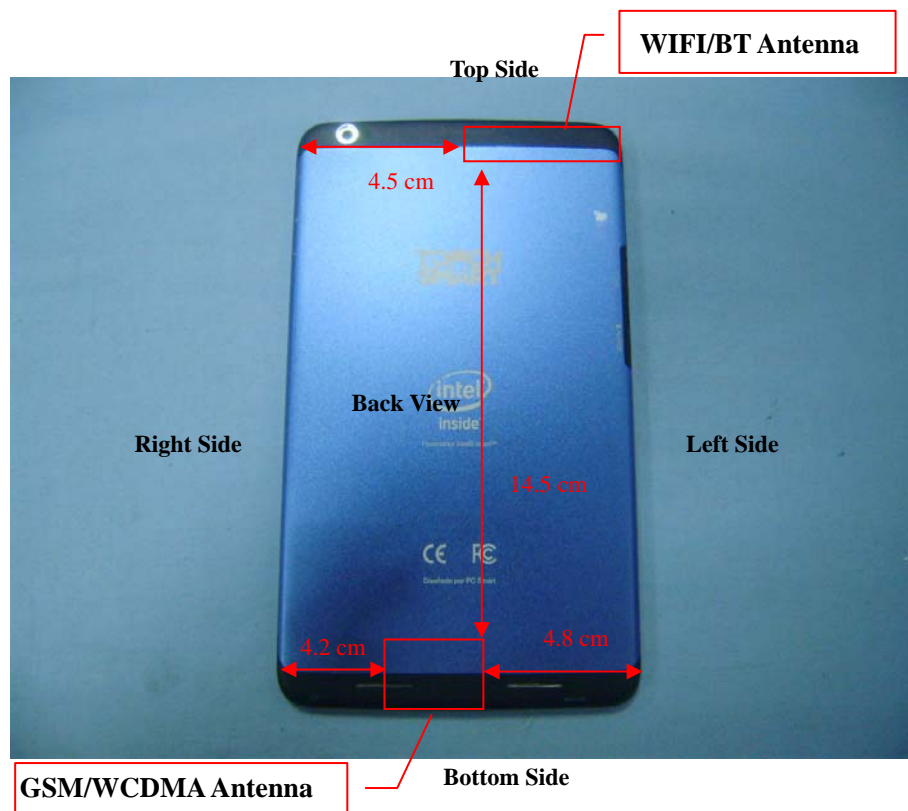


Illustration for Body Worn Position

## 7.3 EUT Antenna Position



Block Diagram for EUT Antenna Position

## 7.4 EUT Testing Position

Exclusion Distance Calculation				
Frequency Bands	Service	Maximum Tune-up Power	Average Power	Exclusion Distance
GSM850	GSM	33.0dBm	24.0dBm	70mm
GPRS850	GPRS(4slots)	29.0dBm	26.0dBm	100mm
GSM1900	GSM	29.5dBm	20.5dBm	60mm
GPRS1900	GPRS(4slots)	26.0dBm	23.0dBm	60mm
WCDMA Band V	RMC 12.2k	23.0dBm	23.0dBm	60mm
WCDMA Band II	RMC 12.2k	22.0dBm	22.0dBm	60mm
WLAN	802.11b	17.0dBm	17.0dBm	30mm

Note: Refer to Chapter 9.1 Conducted RF Output Power

### Remark:

- Referring to KDB 447498 D01v05 and KDB616217 D04 v01r01, the distance of the antennas to all adjacent edges SAR test exclusion for adjacent edges.

Head/Body-worn/Hotspot mode SAR assessments are required for this device. This EUT was tested in different positions for different SAR test modes, more information as below:

Head SAR tests				
Antennas	Right Cheek	Left Cheek	Right Tilted	Left Tilted
WWAN	Yes	Yes	Yes	Yes
WLAN	Yes	Yes	Yes	Yes

Hotspot SAR tests, Test distance: 0mm						
Antennas	Front	Back	Right Side	Left Side	Top Side	Bottom Side
WWAN	No	Yes	Yes	Yes	No	Yes
WLAN	No	Yes	Yes	Yes	Yes	No

Body-worn SAR tests, Test distance: 0mm		
Antennas	Front	Back
WWAN	Yes	Yes
WLAN	Yes	Yes

### Remark:

- Referring to KDB 616217 D04 v01r01, KDB 248227 D04 and KDB 447498 D01 v05r02, this device is a overall diagonal dimension(>20cm) tablet, tested in direct contact (no gap) with flat phantom.

*Please refer to Annex D for the EUT test setup photos.*

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## 8. SAR Measurement Procedures

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### 8.1 Measurement Procedures

The measurement procedures are as follows:

- (a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
- (b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
- (c) Measure output power through RF cable and power meter.
- (d) Place the EUT in the positions as Annex E demonstrates.
- (e) Set scan area, grid size and other setting on the SATIMO software.
- (f) Measure SAR results for the highest power channel on each testing position.
- (g) Find out the largest SAR result on these testing positions of each band
- (h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the 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

### 8.2 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 SATIMO 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. 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
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3D 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

### 8.3 Area & Zoom Scan Procedures

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 measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

### 8.4 Volume Scan Procedures

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 (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

### 8.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

### 8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In SATIMO 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.

## 9. SAR Test Result

### 9.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880	1909.8
GSM	32.66	32.63	32.54	29.39	29.30	28.69
GPRS (1 slot)	32.48	32.53	32.44	29.39	29.27	28.67
GPRS (2 slots)	31.05	31.15	31.43	28.21	28.01	28.32
GPRS (3 slots)	29.12	29.44	29.59	26.35	26.51	26.75
GPRS (4 slots)	28.24	28.62	28.43	25.64	25.43	25.71
EDGE (1 slots)	26.65	26.35	26.42	25.89	25.69	25.87
EDGE (2 slots)	25.32	25.14	25.20	24.25	24.02	24.21
EDGE (3 slots)	24.02	23.93	23.98	22.01	21.96	22.00
EDGE (4 slots)	22.35	22.12	22.26	20.65	20.52	20.24

GSM - Source-Based Time-Average Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880	1909.8
GSM	23.66	23.63	23.54	20.39	20.30	19.69
GPRS (1 slot)	23.48	23.53	23.44	20.39	20.27	19.67
GPRS (2 slots)	25.05	25.15	25.43	22.21	22.01	22.32
GPRS (3 slots)	24.87	25.19	25.34	22.10	22.26	22.50
GPRS (4 slots)	25.24	25.62	25.43	22.64	22.43	22.71
EDGE (1 slots)	17.65	17.35	17.42	16.89	16.69	16.87
EDGE (2 slots)	19.32	19.14	19.20	18.25	18.02	18.21
EDGE (3 slots)	19.77	19.68	19.73	17.76	17.71	17.75
EDGE (4 slots)	19.35	19.12	19.26	17.65	17.52	17.24

Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below:

Source based time-average power = Burst averaged power - Duty cycle factor in dB

Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots

#### Remark:

1. For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM for GSM850 and GSM1900 due to its highest source-based time-average power.
2. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4 Tx slots) for GSM850 and GSM1900 due to its highest source-based time-average power.
3. Per KDB 447498, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. The DUT do not support DTM function.



WCDMA - Average Power (dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4183	4233	9262	9400	9538
Frequency (MHz)	826.4	836.6	846.6	1852.4	1880.0	1907.6
RMC 12.2k	22.81	22.61	22.91	21.52	21.50	21.23
RMC 64k	22.44	22.45	22.49	21.15	21.29	21.12
RMC 144k	22.43	22.46	22.49	21.17	21.18	21.13
RMC 384k	22.45	22.47	22.51	20.26	20.63	20.11
HSDPA Subtest-1	22.11	22.01	22.23	21.12	21.28	21.03
HSDPA Subtest-2	21.48	21.59	21.12	20.42	20.38	20.46
HSDPA Subtest-3	21.17	21.28	21.12	20.92	20.96	20.86
HSDPA Subtest-4	20.97	20.42	20.69	20.06	20.99	20.81
HSUPA Subtest-1	21.51	21.66	21.67	20.58	20.61	20.52
HSUPA Subtest-2	20.76	20.99	21.03	20.41	20.26	20.42
HSUPA Subtest-3	21.21	21.36	21.27	20.81	20.31	20.22
HSUPA Subtest-4	20.57	21.04	21.07	20.42	20.57	20.36
HSUPA Subtest-5	20.53	20.68	20.69	20.68	20.69	20.63

**Remark:**

1. For Head SAR, per KDB 941225 D01 v02, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 1/4 dB higher than RMC, SAR tests with AMR 12.2kbps can be excluded.
2. For Body SAR, per KDB 941225 D01 v02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA subset-1 and HSUPA subset-1 output power is < 1/4 dB higher than RMC, and SAR with RMC 12.2kbps setting is  $\leq 1.2W/kg$ , HSDPA and HSUPA SAR evaluation can be excluded.

WLAN - Maximum Average Power				
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power (dBm)
802.11b	1Mbps	CH 01	2412	15.39
		CH 07	2442	15.70
		CH 13	2472	16.47
802.11g	54Mbps	CH 01	2412	15.38
		CH 07	2442	15.79
		CH 13	2472	16.60
802.11n (20MHz)	MCS7	CH 01	2412	15.64
		CH 07	2442	15.94
		CH 13	2472	16.80
802.11n (40MHz)	MCS7	CH 03	2422	15.13
		CH 07	2442	15.55
		CH 11	2462	15.88

**Remark:**

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Per KDB 248227, if 11g and 11n average output power is higher than 1/4 dB higher than 11b mode, SAR will be verified.
3. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4 dB higher than those measured at the lowest data rate. For 802.11n mode, SAR test according to the highest power channel with correspondence data rates.

Bluetooth - Maximum Average Power				
Test Mode	Data Rate	Channel	Frequency (MHz)	Average Power (dBm)
GFSK	1Mbps	CH 00	2402	4.62
		CH 39	2441	4.63
		CH 78	2480	4.48
8DPSK	3Mbps	CH 00	2402	5.46
		CH 39	2441	5.50
		CH 78	2480	5.46

**Remark:**

Bluetooth maximum output power (including tune-up tolerance) is 6.0dBm. Per KDB 648474 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, 16 where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>
- The result is rounded to one decimal place for comparison

Max. Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
5.50	3.50	5	2.441	1.10	3

The exclusion thresholds is  $1.10 < 3$ , therefore, the RF exposure evaluation is not required.

## 9.2 Test Results for Standalone SAR Test

### Head SAR

GSM850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1	GSM	Right Cheek	128	824.2	32.66	33.0	1.08	0.0910	0.0984
2	GSM	Right Tilted	128	824.2	32.66	33.0	1.08	0.0336	0.0363
3	GSM	Left Cheek	128	824.2	32.66	33.0	1.08	0.1291	0.1396
4	GSM	Left Tilted	128	824.2	32.66	33.0	1.08	0.0332	0.0359

GSM1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
13	GSM	Right Cheek	512	1850.2	29.39	29.5	1.03	0.0855	0.0881
14	GSM	Right Tilted	512	1850.2	29.39	29.5	1.03	0.0289	0.0298
15	GSM	Left Cheek	512	1850.2	29.39	29.5	1.03	0.0943	0.0971
16	GSM	Left Tilted	512	1850.2	29.39	29.5	1.03	0.0258	0.0266

WCDMA Band V – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
23	RMC	Right Cheek	4233	846.6	22.91	23.0	1.02	0.0509	0.0519
24	RMC	Right Tilted	4233	846.6	22.91	23.0	1.02	0.0556	0.0567
25	RMC	Left Cheek	4233	846.6	22.91	23.0	1.02	0.0562	0.0573
26	RMC	Left Tilted	4233	846.6	22.91	23.0	1.02	0.0493	0.0503

WCDMA Band II – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
33	RMC	Right Cheek	9262	1852.4	21.52	22.0	1.12	0.1627	0.1822
34	RMC	Right Tilted	9262	1852.4	21.52	22.0	1.12	0.0382	0.0428
35	RMC	Left Cheek	9262	1852.4	21.52	22.0	1.12	0.1212	0.1357
36	RMC	Left Tilted	9262	1852.4	21.52	22.0	1.12	0.0366	0.0410

WLAN 2.4GHz – Head SAR Test									
Plot No.	Mode	Test Postion Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
43	802.11b	Right Cheek	13	2472	16.47	17.0	1.13	0.0336	0.0380
44	802.11b	Right Tilted	13	2472	16.47	17.0	1.13	0.0289	0.0327
45	802.11b	Left Cheek	13	2472	16.47	17.0	1.13	0.0730	0.0825
46	802.11b	Left Tilted	13	2472	16.47	17.0	1.13	0.0727	0.0821
53	802.11n-HT20	Right Cheek	13	2472	16.80	17.0	1.05	0.0186	0.0195
54	802.11n-HT20	Right Tilted	13	2472	16.80	17.0	1.05	0.0258	0.0270
55	802.11n-HT20	Left Cheek	13	2472	16.80	17.0	1.05	0.0820	0.0859
56	802.11n-HT20	Left Tilted	13	2472	16.80	17.0	1.05	0.0741	0.0776

**Remark:** Per KDB 447498, if the highest output channel SAR for each exposure position  $\leq 0.8$  W/kg other channels SAR tests are not necessary.

## Hotspot SAR

GSM850 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
7	GPRS_4TX	Back	190	836.4	28.62	29.0	1.09	0.9347	1.0188
8	GPRS_4TX	Back	128	824.2	28.24	29.0	1.19	0.7176	0.8539
9	GPRS_4TX	Back	251	848.8	28.43	29.0	1.14	0.8961	1.0216
10	GPRS_4TX	Bottom side	190	836.4	28.62	29.0	1.09	0.1680	0.1831
11	GPRS_4TX	Right side	190	836.4	28.62	29.0	1.09	0.1180	0.1286
12	GPRS_4TX	Left side	190	836.4	28.62	29.0	1.09	0.0435	0.0474

GSM1900 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
19	GPRS_4TX	Back	810	1909.8	25.71	26.0	1.07	0.3978	0.4256
20	GPRS_4TX	Bottom side	810	1909.8	25.71	26.0	1.07	0.0951	0.1018
21	GPRS_4TX	Right side	810	1909.8	25.71	26.0	1.07	0.0702	0.0751
22	GPRS_4TX	Left side	810	1909.8	25.71	26.0	1.07	0.0258	0.0276

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
27	RMC 12.2k	Back	4233	846.6	22.91	23.0	1.02	0.4191	0.4275
28	RMC 12.2k	Bottom side	4233	846.6	22.91	23.0	1.02	0.2983	0.3043
29	RMC 12.2k	Right side	4233	846.6	22.91	23.0	1.02	0.0973	0.0992
30	RMC 12.2k	Left side	4233	846.6	22.91	23.0	1.02	0.0815	0.0831

WCDMA Band II – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
37	RMC 12.2k	Back	9262	1852.4	21.52	22.0	1.12	0.2576	0.2885
38	RMC 12.2k	Bottom side	9262	1852.4	21.52	22.0	1.12	0.1014	0.1136
39	RMC 12.2k	Right side	9262	1852.4	21.52	22.0	1.12	0.0815	0.0913
40	RMC 12.2k	Left side	9262	1852.4	21.52	22.0	1.12	0.0814	0.0912

WLAN 2.4GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
47	802.11b	Back	13	2472	16.47	17.0	1.13	0.0806	0.0911
48	802.11b	Top Side	13	2472	16.47	17.0	1.13	0.0713	0.0806
49	802.11b	Right side	13	2472	16.47	17.0	1.13	0.0213	0.0241
50	802.11b	Left side	13	2472	16.47	17.0	1.13	0.0171	0.0193
57	802.11n-HT20	Back	13	2472	16.80	17.0	1.05	0.1373	0.1438
58	802.11n-HT20	Top Side	13	2472	16.80	17.0	1.05	0.0157	0.0164
59	802.11n-HT20	Right side	13	2472	16.80	17.0	1.05	0.0255	0.0267
60	802.11n-HT20	Left side	13	2472	16.80	17.0	1.05	0.0250	0.0262

**Remark:** Per KDB 447498 D01 v05r02, if the highest output channel SAR for each exposure position  $\leq 0.8$  W/kg other channels SAR tests are not necessary.

**Body-worn SAR**

<b>GSM850 – Body SAR Test (Gap: 0mm)</b>									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
5	GSM	(Back)Body with headset	128	824.2	32.66	33.0	1.08	0.4159	0.4492
6	GSM	(Front)Body with headset	128	824.2	32.66	33.0	1.08	0.2391	0.2582

<b>GSM1900 – Body SAR Test (Gap: 0mm)</b>									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
17	GSM	(Back)Body with headset	512	1850.2	29.39	29.5	1.03	0.4868	0.5014
18	GSM	(Front)Body with headset	512	1850.2	29.39	29.5	1.03	0.1464	0.1508

<b>WCDMA Band V – Body SAR Test (Gap: 0mm)</b>									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
31	RMC 12.2k	(Back)Body with headset	4233	846.6	22.91	23.0	1.02	0.5389	0.5497
32	RMC 12.2k	(Front)Body with headset	4233	846.6	22.91	23.0	1.02	0.1083	0.1105

<b>WCDMA Band II – Body SAR Test (Gap: 0mm)</b>									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
41	RMC 12.2k	(Back)Body with headset	9262	1852.4	21.52	22.0	1.12	0.4324	0.4843
42	RMC 12.2k	(Front)Body with headset	9262	1852.4	21.52	22.0	1.12	0.0928	0.1039

WLAN 2.4GHz –Body SAR Test(Gap: 0mm)									
Plot No.	Mode	Test Postion Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
51	802.11b	(Back)Body with headset	13	2472	16.47	17.0	1.13	0.1181	0.1334
52	802.11b	(Front)Body with headset	13	2472	16.47	17.0	1.13	0.0605	0.0684
61	802.11n-HT20	(Back)Body with headset	13	2472	16.80	17.0	1.05	0.1363	0.1427
62	802.11n-HT20	(Front)Body with headset	13	2472	16.80	17.0	1.05	0.0313	0.0328

**Remark:**

1. Per KDB 447498, if the highest output channel SAR for each exposure position  $\leq 0.8$  W/kg other channels SAR tests are not necessary.
2. The Body-worn SAR for the back device with headset position is worst case and was reported.



### 9.3 Simultaneous Multi-band Transmission SAR Analysis

#### List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Head SAR	Body-worn SAR	Hotspot SAR
1	GSM + WLAN	Yes	Yes	-
2	GPRS + WLAN	-	-	Yes
3	WCDMA + WLAN	Yes	Yes	-
4	HSUPA + WLAN	-	-	Yes
5	HSDPA + WLAN	-	-	Yes
6	GSM + Bluetooth	Yes	Yes	-
7	GPRS + Bluetooth	-	-	Yes
8	WCDMA + Bluetooth	Yes	Yes	-
9	HSUPA + Bluetooth	-	-	Yes
10	HSDPA + Bluetooth	-	-	Yes

#### Remark:

1. GSM and WCDMA share the same antenna, and cannot transmit simultaneously.
2. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the KDB 447498 D01v05r01, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)<sup>-1</sup>·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

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

For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r01 as below:

4. The maximum SAR summation is calculated based on the same configuration and test position. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement is not necessary.

**Head SAR****WWAN and WLAN**

Position	WWAN		WLAN	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.0984	0.0195	0.1179
Right Tilted	GSM850	0.0363	0.0270	0.0633
Left Cheek	GSM850	0.1396	0.0859	<b>0.2255</b>
Left Tilted	GSM850	0.0359	0.0776	0.1135
Right Cheek	GSM1900	0.0881	0.0195	0.1076
Right Tilted	GSM1900	0.0298	0.0270	0.0568
Left Cheek	GSM1900	0.0971	0.0859	0.183
Left Tilted	GSM1900	0.0266	0.0776	0.1042
Right Cheek	WCDMA Band V	0.0519	0.0195	0.0714
Right Tilted	WCDMA Band V	0.0567	0.0270	0.0837
Left Cheek	WCDMA Band V	0.0573	0.0859	0.1432
Left Tilted	WCDMA Band V	0.0503	0.0776	0.1279
Right Cheek	WCDMA Band II	0.1822	0.0195	0.2017
Right Tilted	WCDMA Band II	0.0428	0.0270	0.0698
Left Cheek	WCDMA Band II	0.1357	0.0859	0.2216
Left Tilted	WCDMA Band II	0.0410	0.0776	0.1186

**WWAN and Bluetooth**

Position	WWAN		Bluetooth	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.0984	0.1467	0.2451
Right Tilted	GSM850	0.0363	0.1467	0.183
Left Cheek	GSM850	0.1396	0.1467	<b>0.2863</b>
Left Tilted	GSM850	0.0359	0.1467	0.1826
Right Cheek	GSM1900	0.0881	0.1467	0.2348
Right Tilted	GSM1900	0.0298	0.1467	0.1765
Left Cheek	GSM1900	0.0971	0.1467	0.2438
Left Tilted	GSM1900	0.0266	0.1467	0.1733
Right Cheek	WCDMA Band V	0.0519	0.1467	0.1986
Right Tilted	WCDMA Band V	0.0567	0.1467	0.2034
Left Cheek	WCDMA Band V	0.0573	0.1467	0.204
Left Tilted	WCDMA Band V	0.0503	0.1467	0.197
Right Cheek	WCDMA Band II	0.1822	0.1467	0.3289
Right Tilted	WCDMA Band II	0.0428	0.1467	0.1895
Left Cheek	WCDMA Band II	0.1357	0.1467	0.2824
Left Tilted	WCDMA Band II	0.0410	0.1467	0.1877

**Hotspot SAR****WWAN and WLAN**

Position	WWAN		WLAN	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	1.0216	0.1438	<b>1.1654</b>
Front	GSM850	-	-	-
Top side	GSM850	-	0.0164	0.0164
Bottom side	GSM850	0.1831	-	0.1831
Right side	GSM850	0.1286	0.0267	0.1553
Left side	GSM850	0.0474	0.0262	0.0736
Back	GSM1900	0.4256	0.1438	0.5694
Front	GSM1900	-	-	-
Top side	GSM1900	-	0.0164	0.0164
Bottom side	GSM1900	0.1018	-	0.1018
Right side	GSM1900	0.0751	0.0267	0.1018
Left side	GSM1900	0.0276	0.0262	0.0538
Back	WCDMA Band V	0.4275	0.1438	0.5713
Front	WCDMA Band V	-	-	-
Top side	WCDMA Band V	-	0.0164	0.0164
Bottom side	WCDMA Band V	0.3043	-	0.3043
Right side	WCDMA Band V	0.0992	0.0267	0.1259
Left side	WCDMA Band V	0.0831	0.0262	0.1093
Back	WCDMA Band II	0.2885	0.1438	0.4323
Front	WCDMA Band II	-	-	-
Top side	WCDMA Band II	-	0.0164	0.0164
Bottom side	WCDMA Band II	0.1136	-	0.1136
Right side	WCDMA Band II	0.0913	0.0267	0.1180
Left side	WCDMA Band II	0.0912	0.0262	0.1174

**WWAN and Bluetooth**

Position	WWAN		Bluetooth	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	1.0216	0.1467	<b>1.1683</b>
Front	GSM850	-	0.1467	0.1467
Top side	GSM850	-	0.1467	0.1467
Bottom side	GSM850	0.1831	0.1467	0.3298
Right side	GSM850	0.1286	0.1467	0.2753
Left side	GSM850	0.0474	0.1467	0.1941
Back	GSM1900	0.4256	0.1467	0.5723
Front	GSM1900	-	0.1467	0.1467
Top side	GSM1900	-	0.1467	0.1467
Bottom side	GSM1900	0.1018	0.1467	0.2485
Right side	GSM1900	0.0751	0.1467	0.2218
Left side	GSM1900	0.0276	0.1467	0.1743
Back	WCDMA Band V	0.4275	0.1467	0.5742
Front	WCDMA Band V	-	0.1467	0.1467
Top side	WCDMA Band V	-	0.1467	0.1467
Bottom side	WCDMA Band V	0.3043	0.1467	0.4510
Right side	WCDMA Band V	0.0992	0.1467	0.2459
Left side	WCDMA Band V	0.0831	0.1467	0.2298
Back	WCDMA Band II	0.2885	0.1467	0.4352
Front	WCDMA Band II	-	0.1467	0.1467
Top side	WCDMA Band II	-	0.1467	0.1467
Bottom side	WCDMA Band II	0.1136	0.1467	0.2603
Right side	WCDMA Band II	0.0913	0.1467	0.2380
Left side	WCDMA Band II	0.0912	0.1467	0.2379

**Body-worn SAR****WWAN and WLAN**

Position	WWAN		WLAN	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.4492	0.1427	0.5919
Front	GSM850	0.2582	0.0328	0.291
Back	GSM1900	0.5014	0.1427	0.6441
Front	GSM1900	0.1508	0.0328	0.1836
Back	WCDMA Band V	0.5497	0.1427	<b>0.6924</b>
Front	WCDMA Band V	0.1105	0.0328	0.1433
Back	WCDMA Band II	0.4843	0.1427	0.627
Front	WCDMA Band II	0.1039	0.0328	0.1367

**WWAN and Bluetooth**

Position	WWAN		Bluetooth	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.4492	0.1467	0.5959
Front	GSM850	0.2582	0.1467	0.4049
Back	GSM1900	0.5014	0.1467	0.6481
Front	GSM1900	0.1508	0.1467	0.2975
Back	WCDMA Band V	0.5497	0.1467	<b>0.6964</b>
Front	WCDMA Band V	0.1105	0.1467	0.2572
Back	WCDMA Band II	0.4843	0.1467	0.631
Front	WCDMA Band II	0.1039	0.1467	0.2506

## 10. Measurement Uncertainty

### 10.1 Uncertainty for EUT SAR Test

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
<b>Measurement System</b>									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1_{Cp})^{1/2}$	$(1_{Cp})^{1/2}$	1.02	1.02	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$(Cp)^{1/2}$	$(Cp)^{1/2}$	1.63	1.63	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	$\infty$
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
<b>Test Sample Related</b>									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.03	0.03	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	5.00	5.00	
Output power Variation - SAR drift measurement	6.6.2	12.02	R	$\sqrt{3}$	1	1	6.94	6.94	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Liquid conductivity - deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	
Liquid permittivity - deviation from target value	E.3.2	0.37	R	$\sqrt{3}$	0.6	0.49	0.13	0.10	
Liquid permittivity -	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M

measurement uncertainty									
Combined Standard Uncertainty			RSS				12.98	12.53	
Expanded Uncertainty (95% Confidence interval)			K=2				25.32	24.43	

## 10.2 Uncertainty for System Performance Check

a	b	c	d	e= f(d,k)	f	g	h= c*f/e	i= c*g/e	k
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	Vi
<b>Measurement System</b>									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	$\infty$
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	$(1_{Cp})^{1/2}$	$(1_{Cp})^{1/2}$	1.02	1.02	$\infty$
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	$(Cp)^{1/2}$	$(Cp)^{1/2}$	1.63	1.63	$\infty$
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	$\infty$
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	$\infty$
Reponse Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	$\infty$
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	$\infty$
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	$\infty$
<b>Dipole</b>									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.58	0.58	N-1
Input power and SAR drift measurement	8,6.6.2	12.02	R	$\sqrt{3}$	1	1	6.94	6.94	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	$\infty$
Liquid conductivity - deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.85	1.24	

Liquid conductivity measurement uncertainty	-	E.3.3	5.00	N	1	0.64	0.43	3.20	2.15	
Liquid permittivity - deviation from target value		E.3.2	0.37	R	$\sqrt{3}$	0.6	0.49	0.13	0.10	
Liquid permittivity measurement uncertainty	-	E.3.3	10.00	N	1	0.6	0.49	6.00	4.90	M
Combined Standard Uncertainty				RSS				12.00	11.50	
Expanded Uncertainty (95% Confidence interval)				K=2				23.39	22.43	



## Annex A. Plots of System Performance Check

# MEASUREMENT 1

### For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 7 minutes 21 seconds

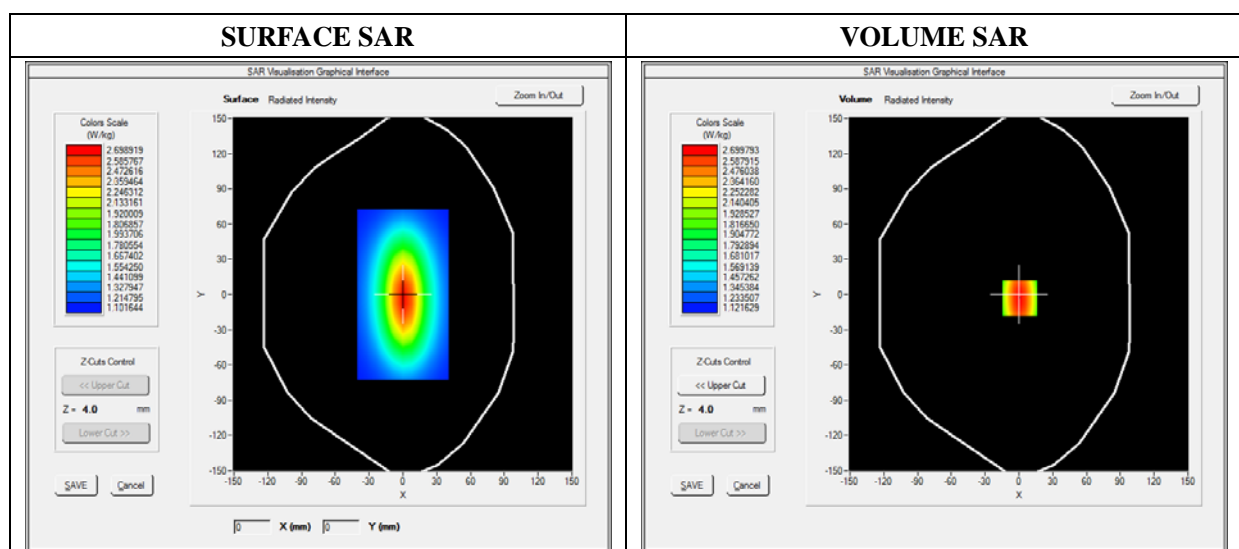
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW835
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	835.000000
<b>Relative Permittivity (real part)</b>	40.0200000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

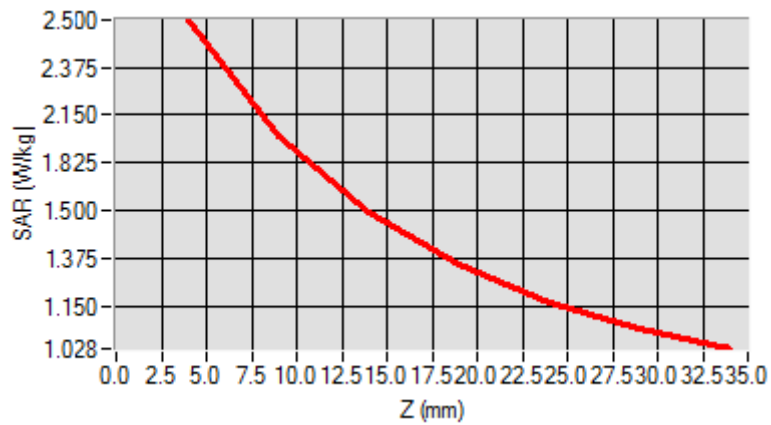


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.545500
SAR 1g (W/Kg)	2.460145

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.5411	1.8756	1.4012	1.20124	1.1514	1.0698



3D screen shot	Hot spot position

# MEASUREMENT 2

**For Head Liquid**

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 21 seconds

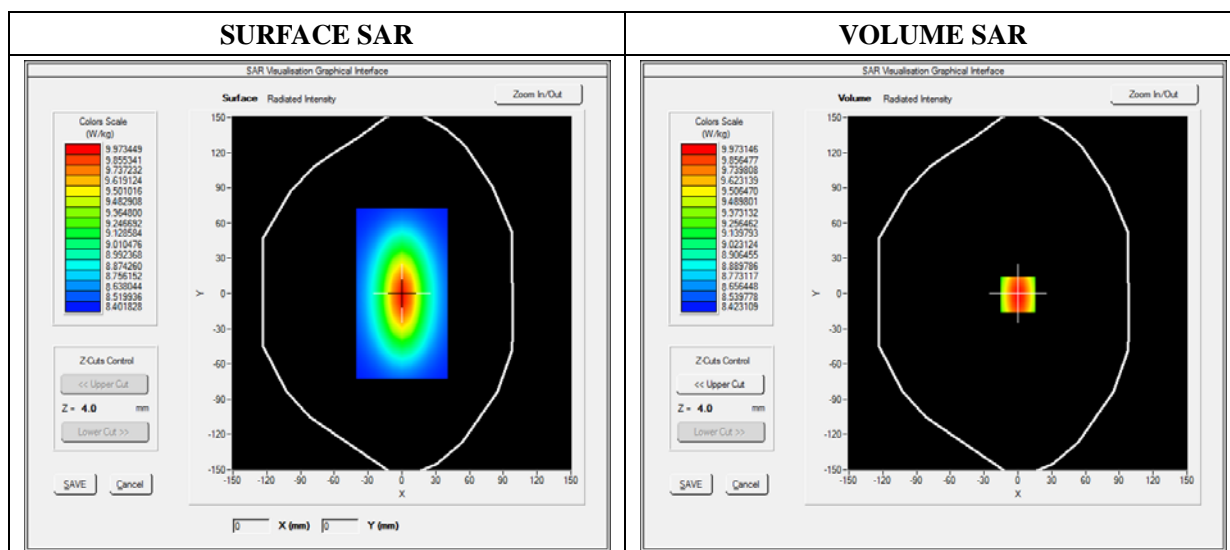
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.16; Calibrated: 03/21/2014

**A. Experimental conditions**

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW1900
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

**B. SAR Measurement Results**

<b>Frequency (MHz)</b>	1900.000000
<b>Relative Permittivity (real part)</b>	38.912360
<b>Conductivity (S/m)</b>	1.410000
<b>Power Variation (%)</b>	-0.523000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

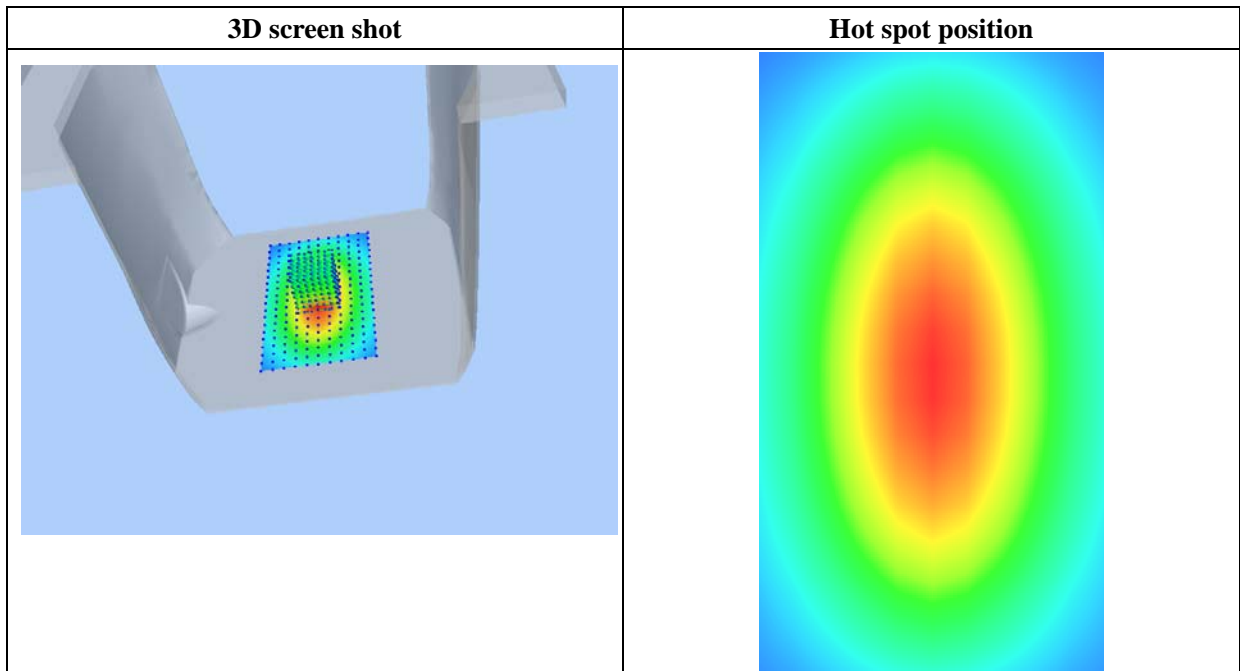
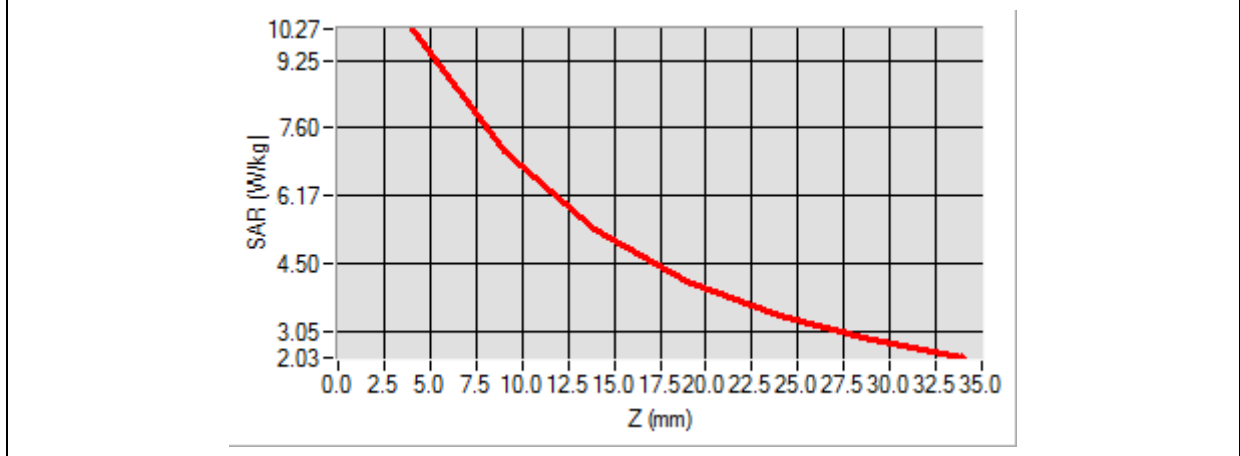


**Maximum location: X=0.00, Y=0.00**

<b>SAR 10g (W/Kg)</b>	7.003210
<b>SAR 1g (W/Kg)</b>	10.203214

**Z Axis Scan**

<b>Z (mm)</b>	<b>0.00</b>	<b>4.00</b>	<b>9.00</b>	<b>14.00</b>	<b>19.00</b>	<b>24.00</b>	<b>29.00</b>
<b>SAR (W/Kg)</b>	<b>0.0000</b>	<b>10.1019</b>	<b>7.1125</b>	<b>5.2120</b>	<b>4.0112</b>	<b>3.2104</b>	<b>2.2442</b>



# MEASUREMENT 3

**For Head Liquid**

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 21 seconds

E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.51; Calibrated: 2013/03/21

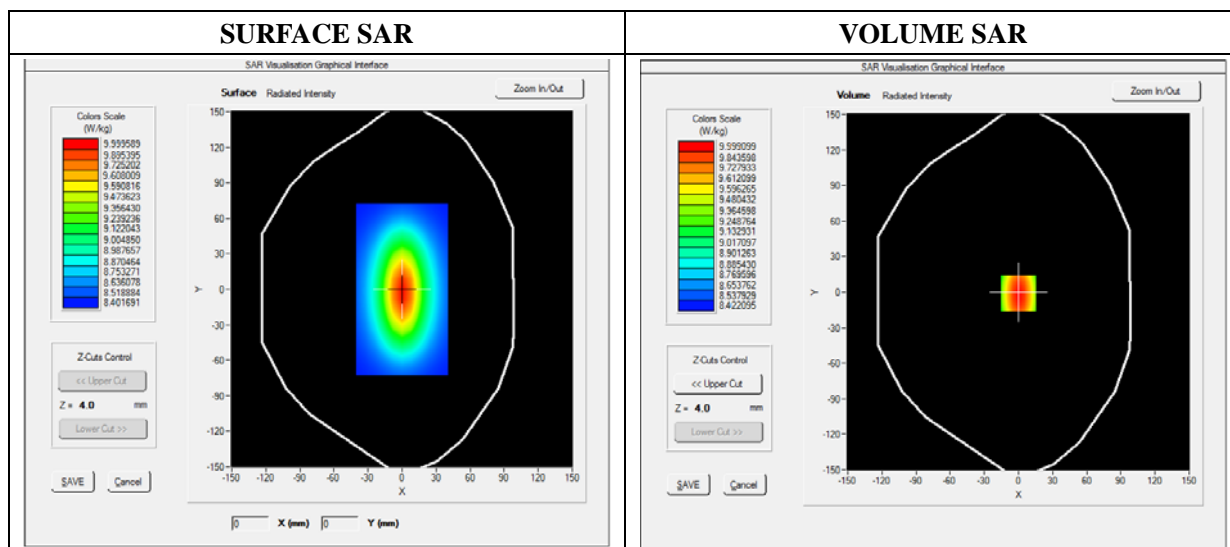
**A. Experimental conditions**

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW2450
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

**B. SAR Measurement Results**

**Middle Band SAR**

<b>Frequency (MHz)</b>	2450.000000
<b>Relative Permittivity (real part)</b>	38.762140
<b>Conductivity (S/m)</b>	1.781240
<b>Power Variation (%)</b>	1.144120
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.2

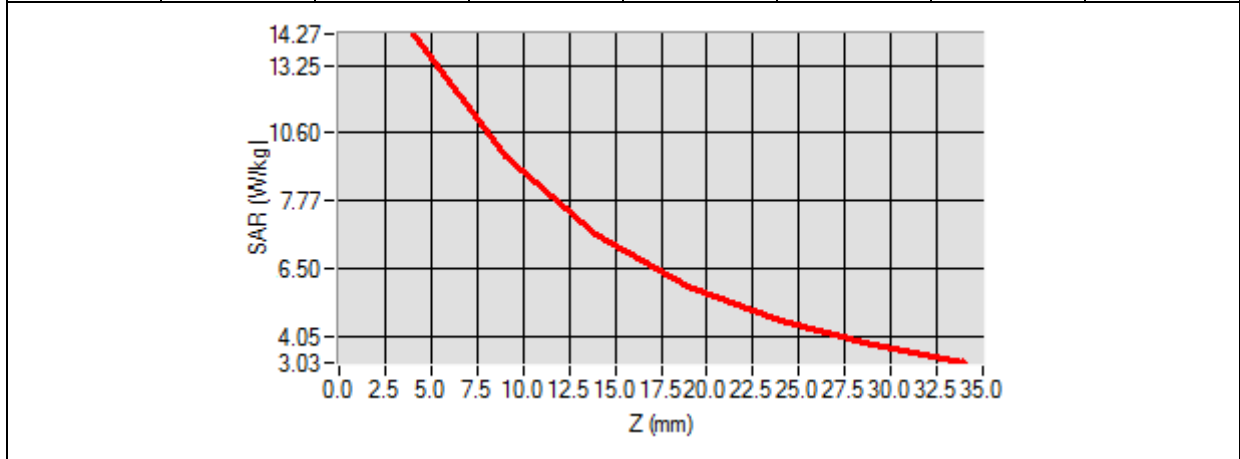


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.021554
SAR 1g (W/Kg)	13.102505

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.1355	12.0120	10.2601	7.4845	5.9123	4.5212



3D screen shot	Hot spot position

# MEASUREMENT 4

**For Body Liquid**

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 21 seconds

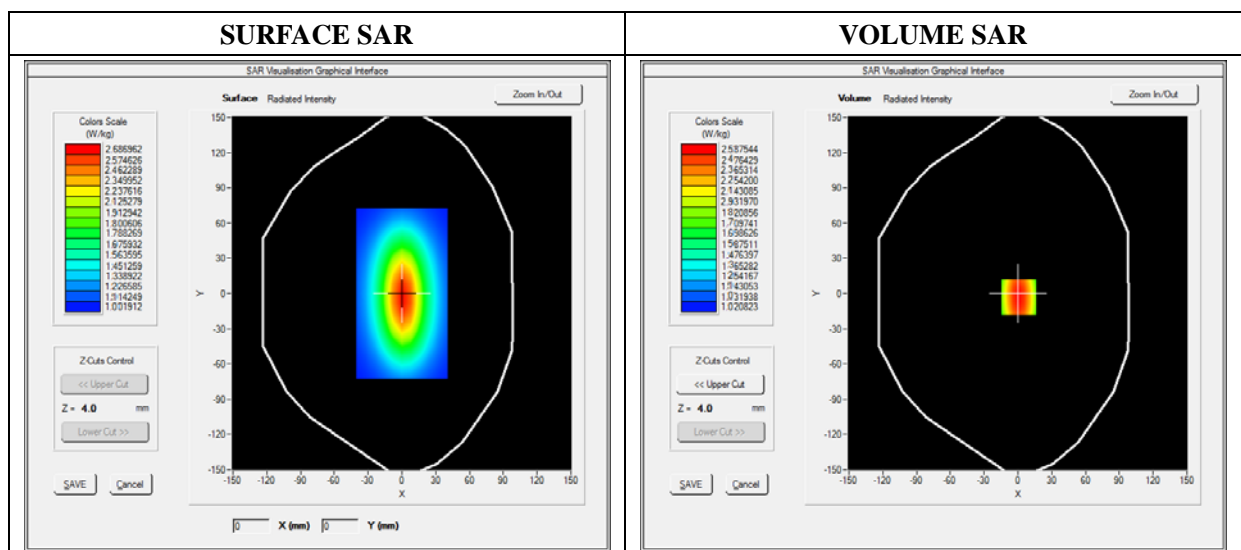
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.50; Calibrated: 03/21/2014

**A. Experimental conditions**

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW835
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

**B. SAR Measurement Results**

<b>Frequency (MHz)</b>	835.000000
<b>Relative Permittivity (real part)</b>	54.492364
<b>Conductivity (S/m)</b>	0.963236
<b>Power Variation (%)</b>	0.926400
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

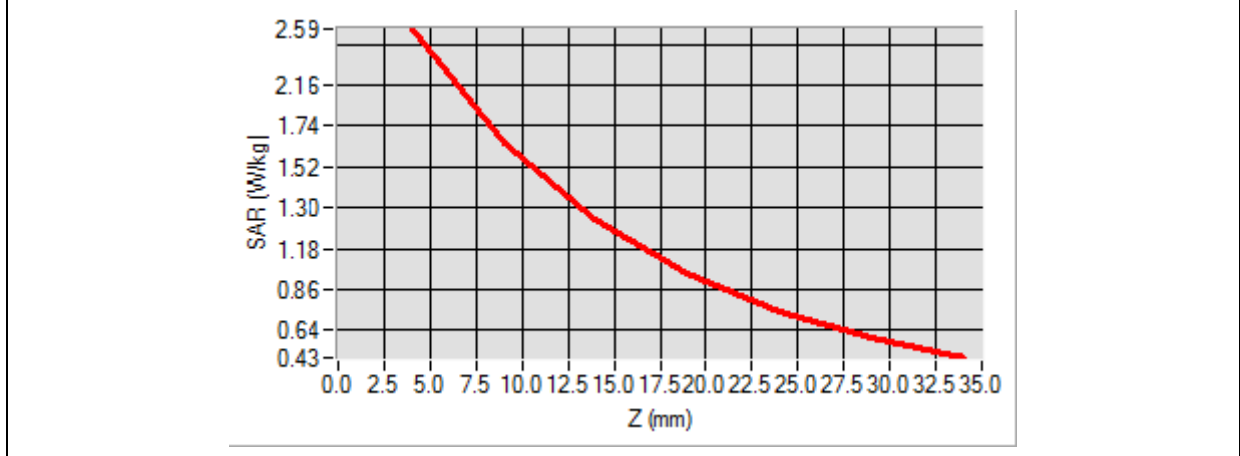


**Maximum location: X=0.00, Y=0.00**

<b>SAR 10g (W/Kg)</b>	1.502100
<b>SAR 1g (W/Kg)</b>	2.521346

**Z Axis Scan**

<b>Z (mm)</b>	<b>0.00</b>	<b>4.00</b>	<b>9.00</b>	<b>14.00</b>	<b>19.00</b>	<b>24.00</b>	<b>29.00</b>
<b>SAR (W/Kg)</b>	<b>0.0000</b>	<b>2.5989</b>	<b>1.6985</b>	<b>1.1642</b>	<b>0.8322</b>	<b>0.5521</b>	<b>0.4025</b>



<b>3D screen shot</b>	<b>Hot spot position</b>



## MEASUREMENT 5

### For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 21 seconds

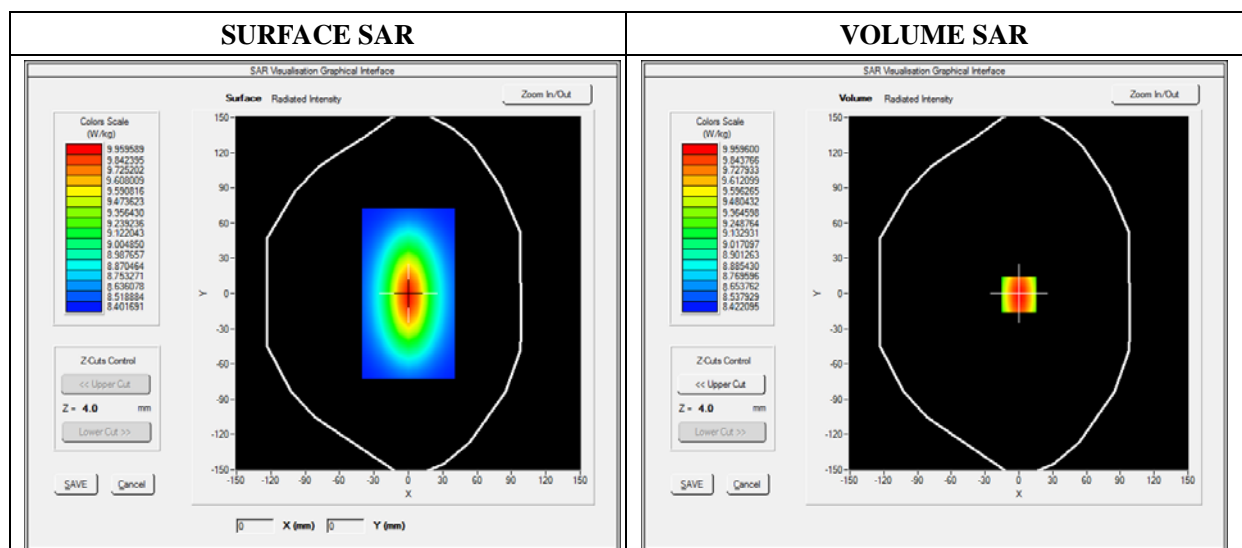
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW1900
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	1900.000000
<b>Relative Permittivity (real part)</b>	52.394440
<b>Conductivity (S/m)</b>	1.491240
<b>Power Variation (%)</b>	0.768521
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

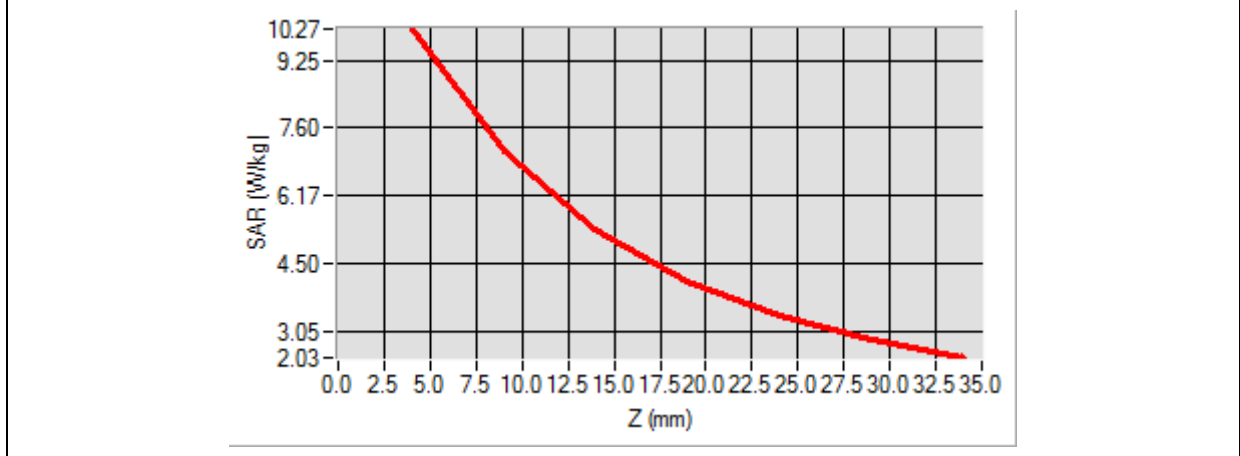


**Maximum location: X=0.00, Y=0.00**

<b>SAR 10g (W/Kg)</b>	5.102232
<b>SAR 1g (W/Kg)</b>	10.092420

**Z Axis Scan**

<b>Z (mm)</b>	<b>0.00</b>	<b>4.00</b>	<b>9.00</b>	<b>14.00</b>	<b>19.00</b>	<b>24.00</b>	<b>29.00</b>
<b>SAR (W/Kg)</b>	<b>0.0000</b>	<b>10.1564</b>	<b>6.4363</b>	<b>5.1336</b>	<b>3.9541</b>	<b>3.1262</b>	<b>2.7601</b>



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 6

**For Body Liquid**

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 21 seconds

E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.70; Calibrated: 03/21/2014

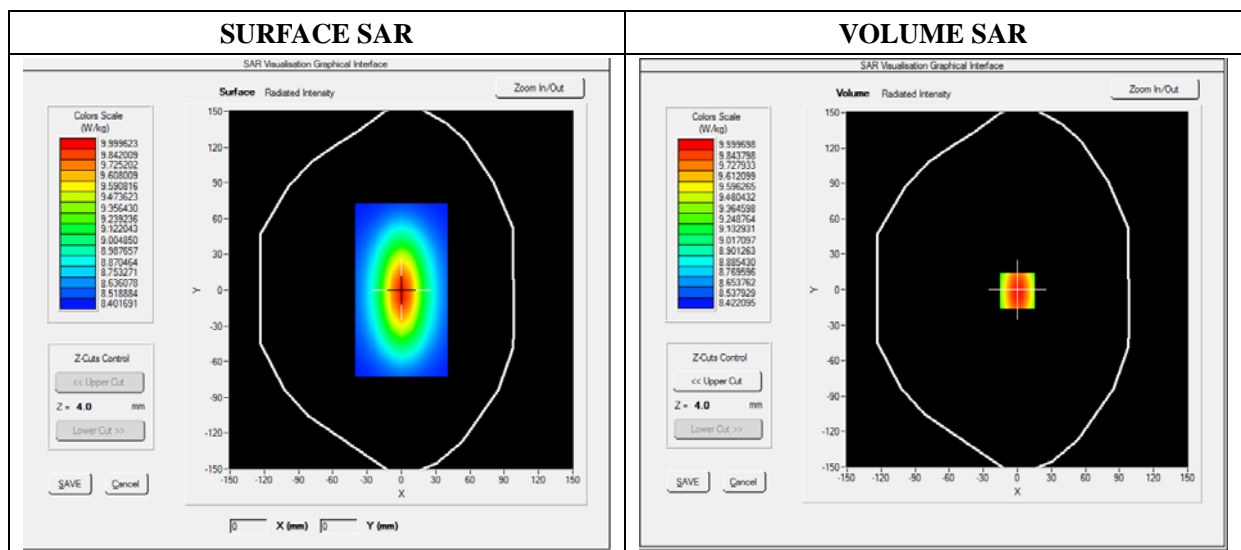
**A. Experimental conditions**

<b>Area Scan</b>	dx=8mm dy=8mm
<b>Phantom</b>	Validation plane
<b>Device Position</b>	Dipole
<b>Band</b>	CW2450
<b>Channels</b>	Middle
<b>Signal</b>	CW (Crest factor: 1.0)

**B. SAR Measurement Results**

**Middle Band SAR**

<b>Frequency (MHz)</b>	2450.000000
<b>Relative Permittivity (real part)</b>	52.431240
<b>Conductivity (S/m)</b>	1.921230
<b>Power Variation (%)</b>	0.551121
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.2

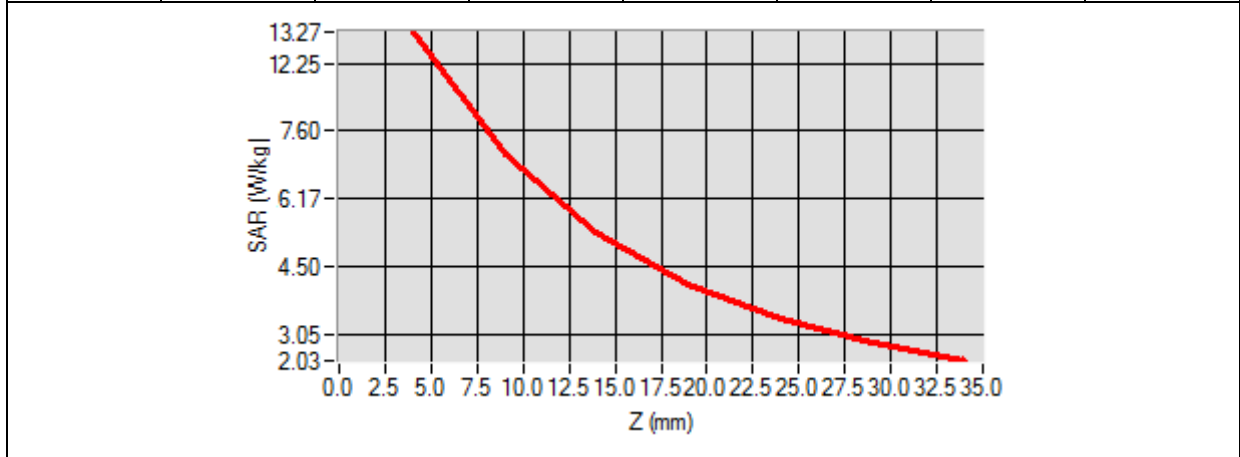


Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	7.128414
SAR 1g (W/Kg)	12.863122

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	13.3942	11.8625	9.3022	8.5761	6.3612	4.5695



3D screen shot	Hot spot position

## Annex B. Plots of SAR Measurement

<b><u>TYPE</u></b>	<b><u>BAND</u></b>	<b><u>PARAMETERS</u></b>
Tablet	GSM850	<u>Measurement 1:</u> Right Head with Cheek device position on Low Channel in GSM mode
Tablet	GSM850	<u>Measurement 2:</u> Right Head with Tilt device position on Low Channel in GSM mode
Tablet	GSM850	<u>Measurement 3:</u> Left Head with Cheek device position on Low Channel in GSM mode
Tablet	GSM850	<u>Measurement 4:</u> Left Head with Tilt device position on Low Channel in GSM mode
Tablet	GSM850	<u>Measurement 5:</u> Flat Plane with Back device position Body with headset on Low Channel in GSM mode
Tablet	GSM850	<u>Measurement 6:</u> Flat Plane with Front device position Body with headset on Low Channel in GSM mode
Tablet	GPR850_4TX	<u>Measurement 7:</u> Flat Plane with Back device position on Middle Channel in GPRS mode
Tablet	GPR850_4TX	<u>Measurement 8:</u> Flat Plane with Back device position on Low Channel in GPRS mode
Tablet	GPR850_4TX	<u>Measurement 9:</u> Flat Plane with Back device position on High Channel in GPRS mode
Tablet	GPRS850_4TX	<u>Measurement 10:</u> Flat Plane with Bottom side device position on Middle Channel in GPRS mode
Tablet	GPRS850_4TX	<u>Measurement 11:</u> Flat Plane with Right side device position on Middle Channel in GPRS mode
Tablet	GPRS850_4TX	<u>Measurement 12:</u> Flat Plane with Left side device position on Middle Channel in GPRS mode
Tablet	GSM1900	<u>Measurement 13:</u> Right Head with Cheek device position on Low Channel in GSM mode
Tablet	GSM1900	<u>Measurement 14:</u> Right Head with Tilt device position on Low Channel in GSM mode
Tablet	GSM1900	<u>Measurement 15:</u> Left Head with Cheek device position on Low Channel in GSM mode
Tablet	GSM1900	<u>Measurement 16:</u> Left Head with Tilt device position on Low Channel in GSM mode
Tablet	GSM1900	Measurement 17: Flat Plane with Back device position Body with headset on Low Channel in GSM mode
Tablet	GSM1900	Measurement 18: Flat Plane with Front device position Body with headset on Low Channel in GSM mode
Tablet	GPRS1900_4TX	<u>Measurement 19:</u> Flat Plane with Back device position on High Channel in GPRS mode

<b>Tablet</b>	<b>GPRS1900_4TX</b>	<u>Measurement 20:</u> Flat Plane with Bottom side device position on High Channel in GPRS mode
<b>Tablet</b>	<b>GPRS1900_4TX</b>	<u>Measurement 21:</u> Flat Plane with Right side device position on High Channel in GPRS mode
<b>Tablet</b>	<b>GPRS1900_4TX</b>	<u>Measurement 22:</u> Flat Plane with Left side device position on High Channel in GPRS mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 23:</u> Right Head with Cheek device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 24:</u> Right Head with Tilt device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 25:</u> Left Head with Cheek device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 26:</u> Left Head with Tilt device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 27:</u> Flat Plane with Back device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 28:</u> Flat Plane with Bottom side device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 29:</u> Flat Plane with Right side device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 30:</u> Flat Plane with Left side device position on High Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 31:</u> Flat Plane with Back device position Body with headset on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA850_RMC</b>	<u>Measurement 32:</u> Flat Plane with Front device position Body with headset on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 33:</u> Right Head with Cheek device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 34:</u> Right Head with Tilt device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 35:</u> Left Head with Cheek device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 36:</u> Left Head with Tilt device position on Middle Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 37:</u> Flat Plane with Back device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 38:</u> Flat Plane with Bottom side device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 39:</u> Flat Plane with Right side device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 40:</u> Flat Plane with Left side device position on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 41:</u> Flat Plane with Back device position Body with headset on Low Channel in WCDMA mode

<b>Tablet</b>	<b>WCDMA1900_RMC</b>	<u>Measurement 42:</u> Flat Plane with Front device position Body with headset on Low Channel in WCDMA mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 43:</u> Right Head with Cheek device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 44:</u> Right Head with Tilt device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 45:</u> Left Head with Cheek device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 46:</u> Left Head with Tilt device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 47:</u> Flat Plane with Back side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 48:</u> Flat Plane with Top side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 49:</u> Flat Plane with Right side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 50:</u> Flat Plane with Left side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 51:</u> Flat Plane with Back device position Body with headset on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11b</b>	<u>Measurement 52:</u> Flat Plane with Front device position Body with headset on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 53:</u> Right Head with Cheek device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 54:</u> Right Head with Tilt device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 55:</u> Left Head with Cheek device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 56:</u> Left Head with Tilt device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 57:</u> Flat Plane with Back side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 58:</u> Flat Plane with Top side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 59:</u> Flat Plane with Right side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 60:</u> Flat Plane with Left side device position on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 61:</u> Flat Plane with Back device position Body with headset on High Channel in WIFI mode
<b>Tablet</b>	<b>WiFi_802.11n-HT20</b>	<u>Measurement 62:</u> Flat Plane with Front device position Body with headset on High Channel in WIFI mode

# MEASUREMENT 1

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

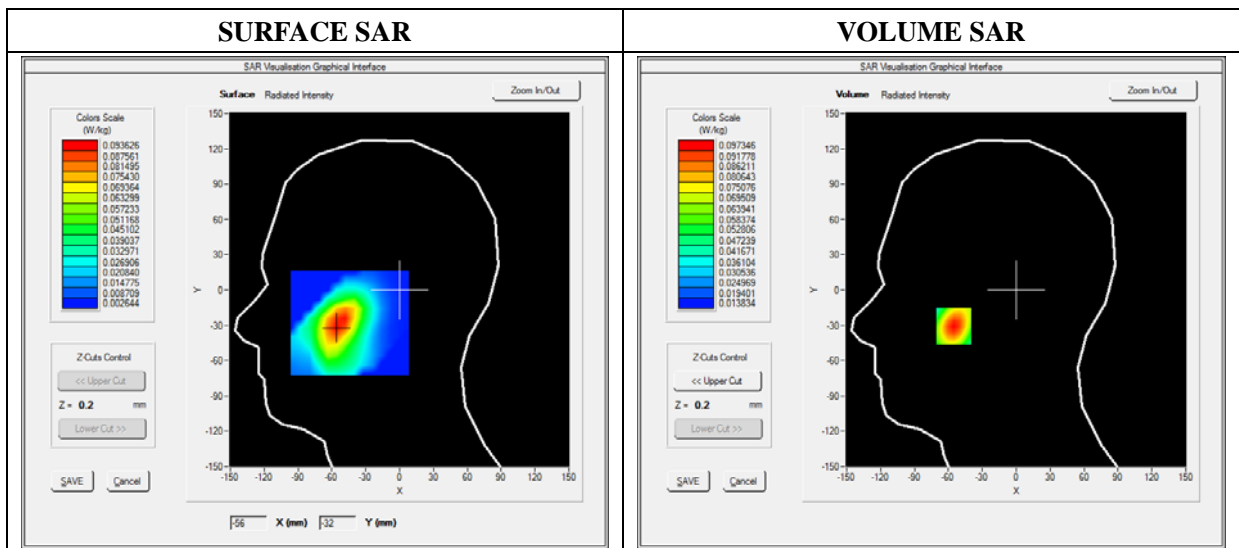
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Right head
<b>Device Position</b>	Cheek
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	40.0200000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

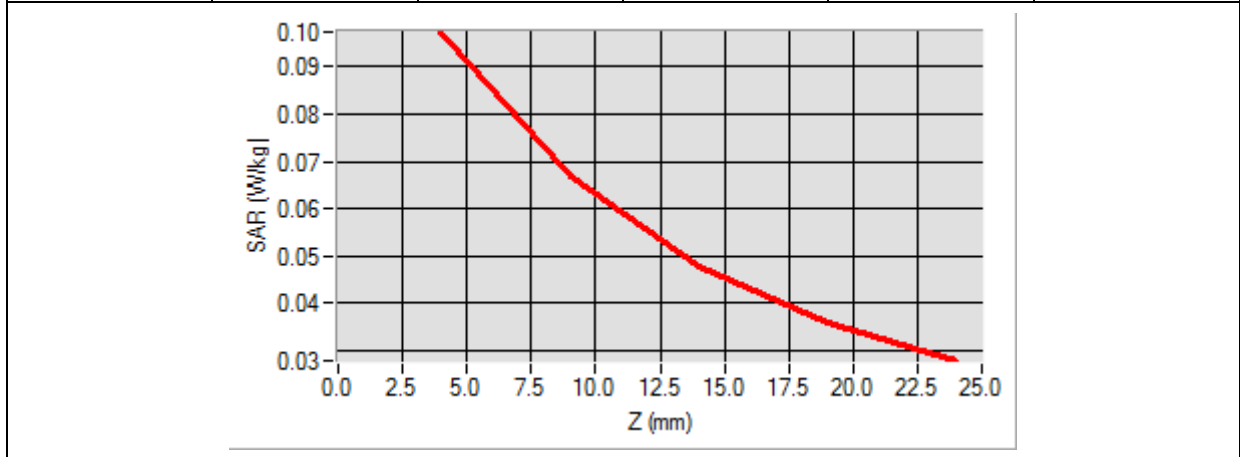




Maximum location: X=-55.00, Y=-31.00

SAR 10g (W/Kg)	0.060204
SAR 1g (W/Kg)	0.091029

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0973	0.0670	0.0479	0.0361



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 2

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

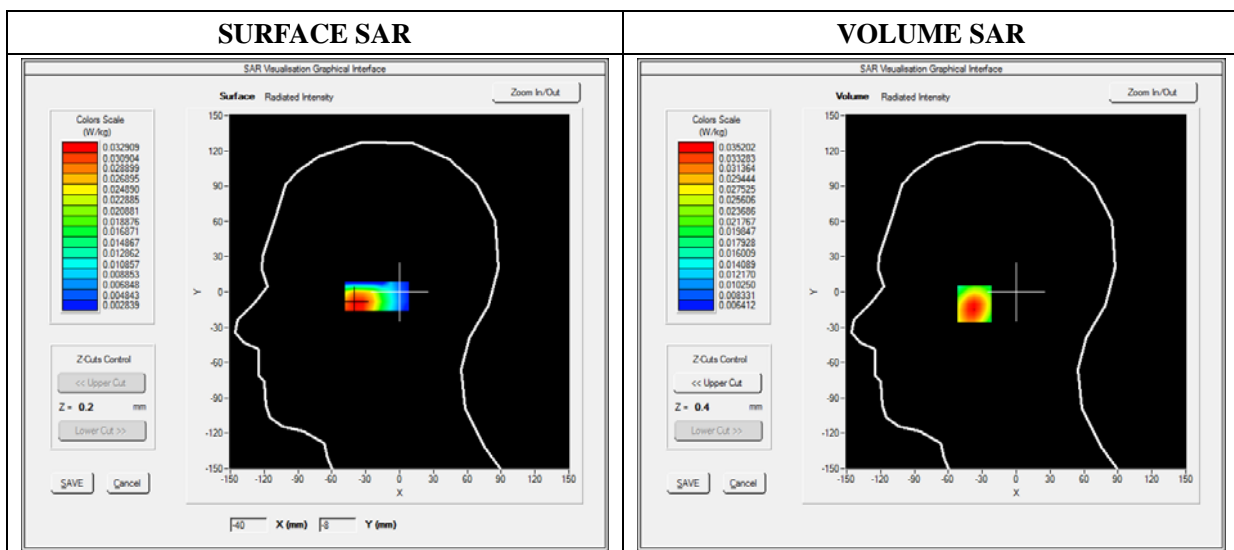
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Right head
<b>Device Position</b>	Tilt
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

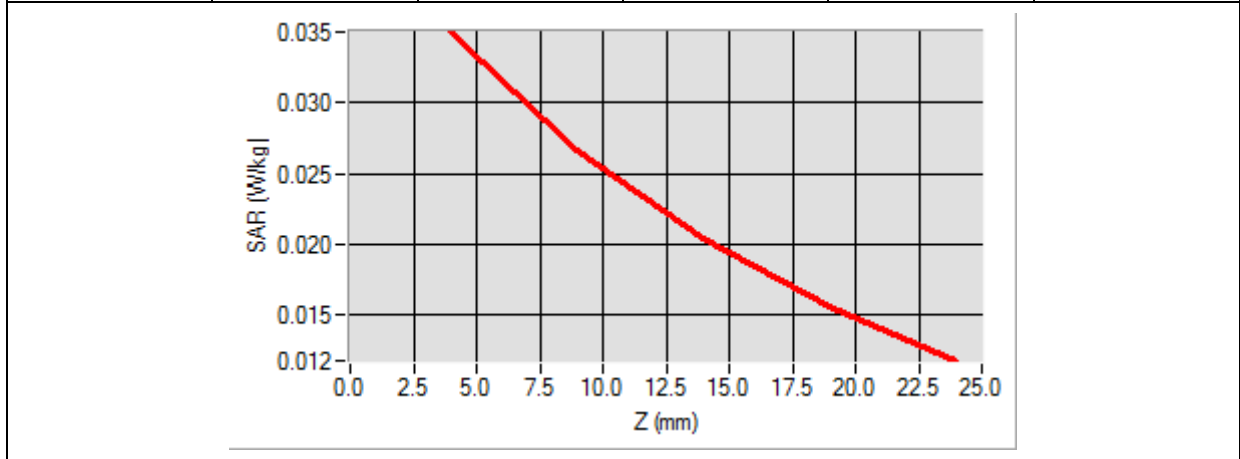
<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	40.020000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-37.00, Y=-10.00

SAR 10g (W/Kg)	0.023521
SAR 1g (W/Kg)	0.033561

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0350	0.0267	0.0204	0.0156



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 3

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 11 minutes 48 seconds

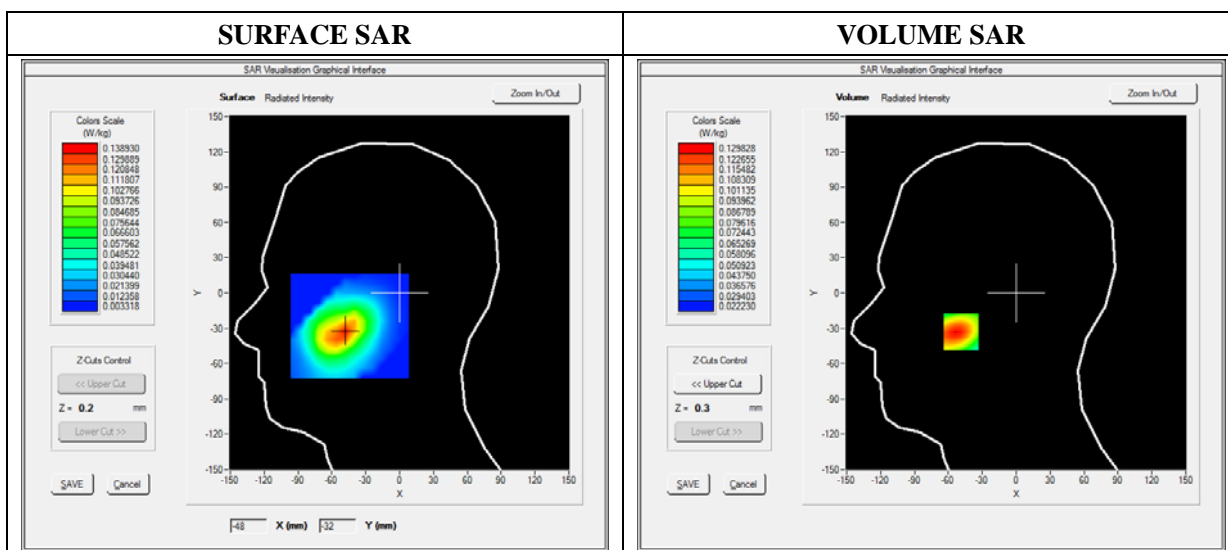
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Left head
<b>Device Position</b>	Cheek
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

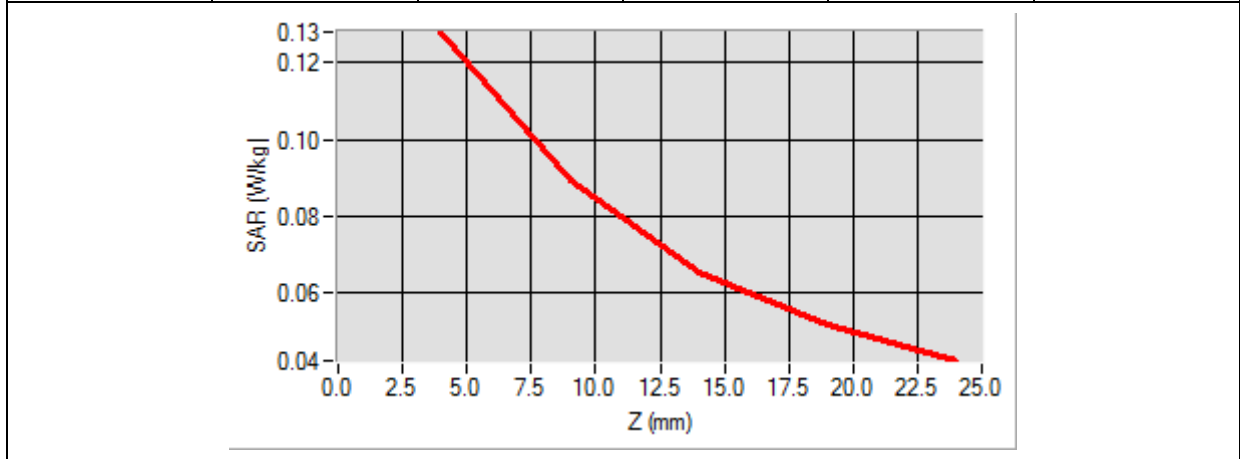
<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	40.0200000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-49.00, Y=-33.00

SAR 10g (W/Kg)	0.084095
SAR 1g (W/Kg)	0.129135

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1280	0.0893	0.0657	0.0518



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 4

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

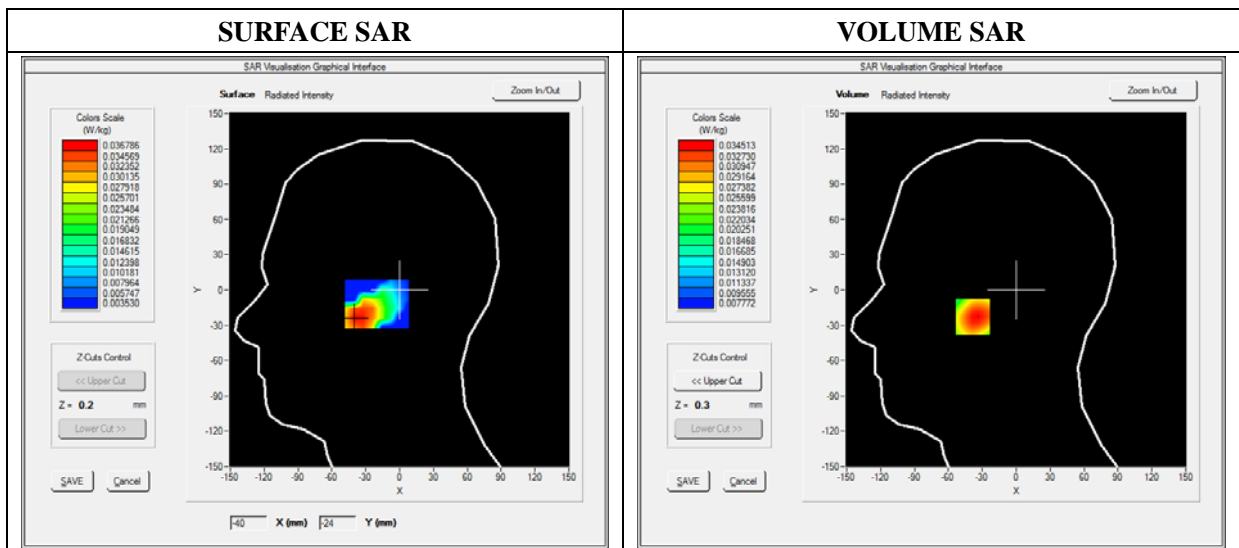
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Left head
<b>Device Position</b>	Tilt
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

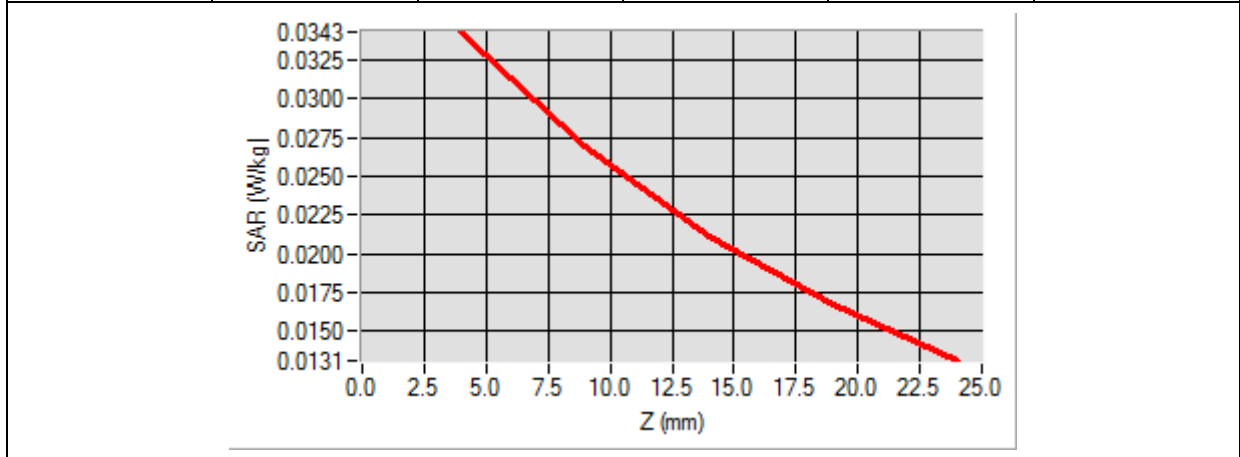
<b>Frequency (MHz)</b>	824.200012
<b>Relative Permittivity (real part)</b>	40.020000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-38.00, Y=-23.00

SAR 10g (W/Kg)	0.024441
SAR 1g (W/Kg)	0.033167

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0343	0.0269	0.0212	0.0167



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 5

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

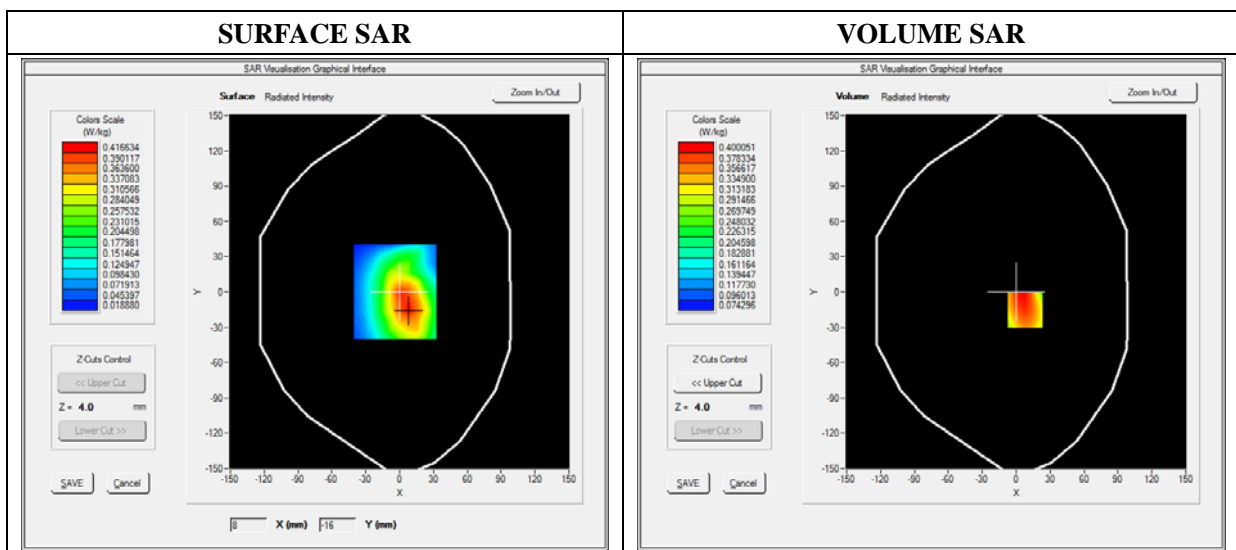
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.5; Calibrated: 2012/11/26

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat Plane
<b>Device Position</b>	Back(Body with headset)
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

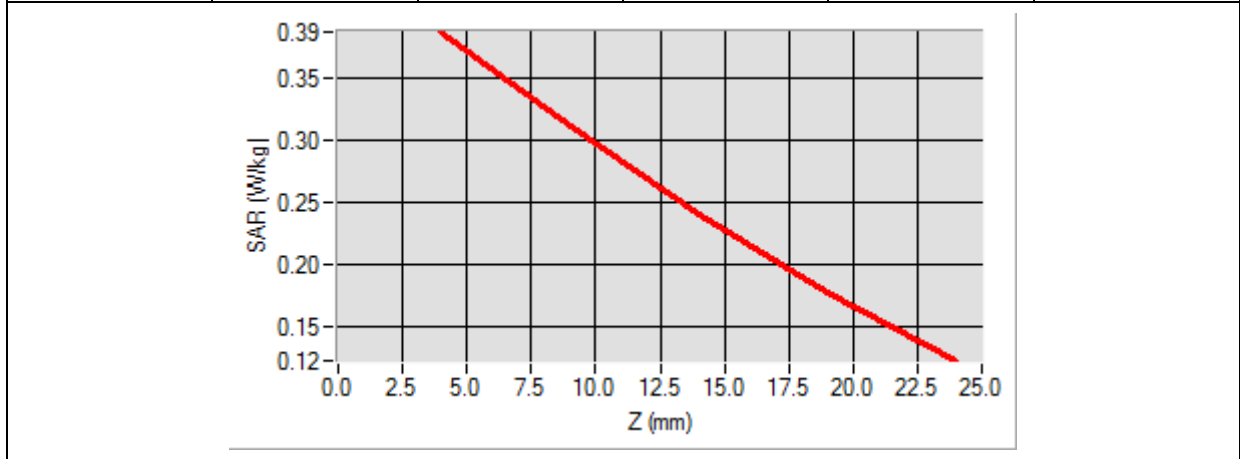




Maximum location: X=8.00, Y=-15.00

SAR 10g (W/Kg)	0.299197
SAR 1g (W/Kg)	0.415938

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3863	0.3102	0.2401	0.1772



<b>3D screen shot</b>	<b>Hot spot position</b>

## MEASUREMENT 6

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

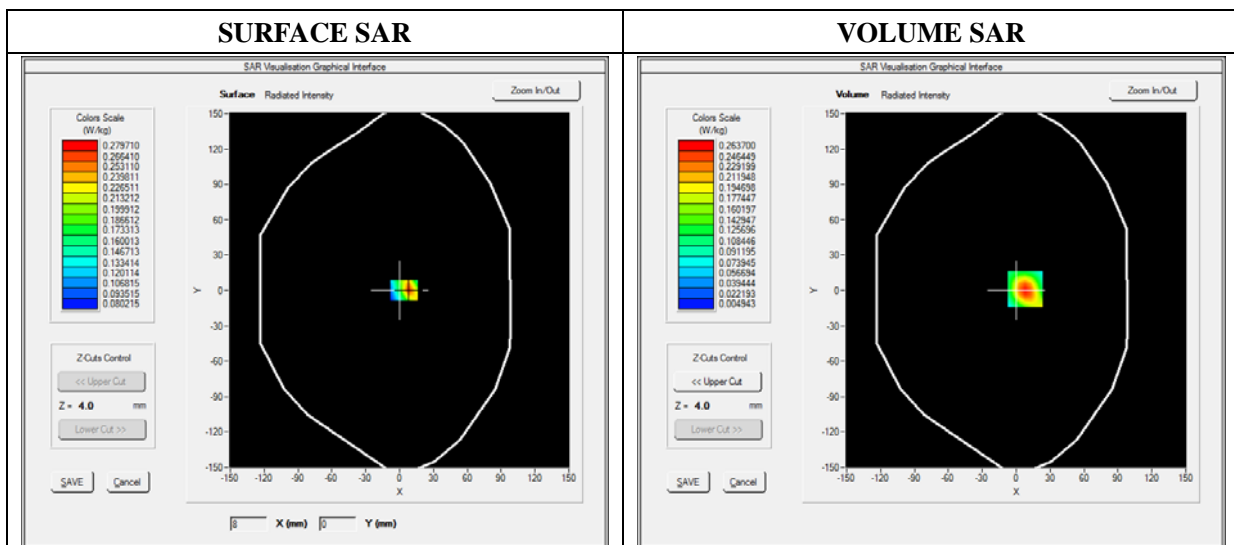
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.5; Calibrated: 2012/11/26

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat Plane
<b>Device Position</b>	Front(Body with headset)
<b>Band</b>	GSM850
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

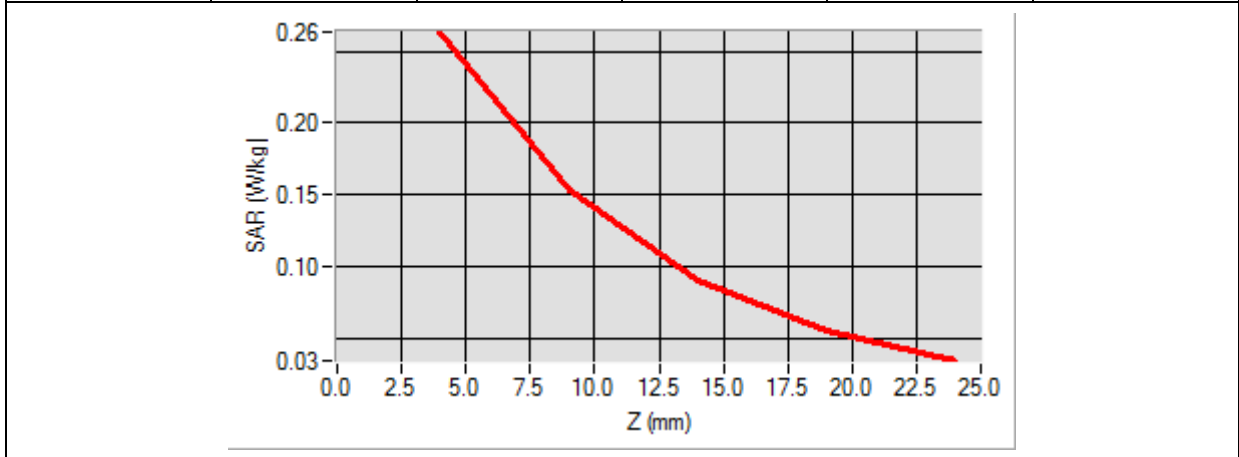
<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=8.00, Y=1.00

SAR 10g (W/Kg)	0.127857
SAR 1g (W/Kg)	0.239113

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2637	0.1524	0.0895	0.0552



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 7

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

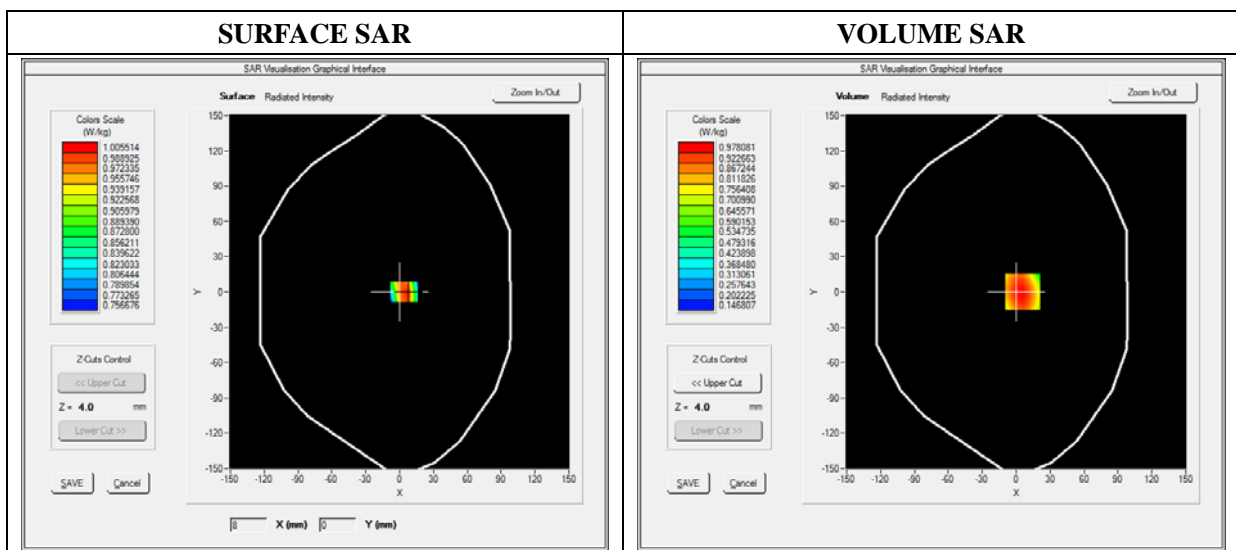
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.5; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Back
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	Middle
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

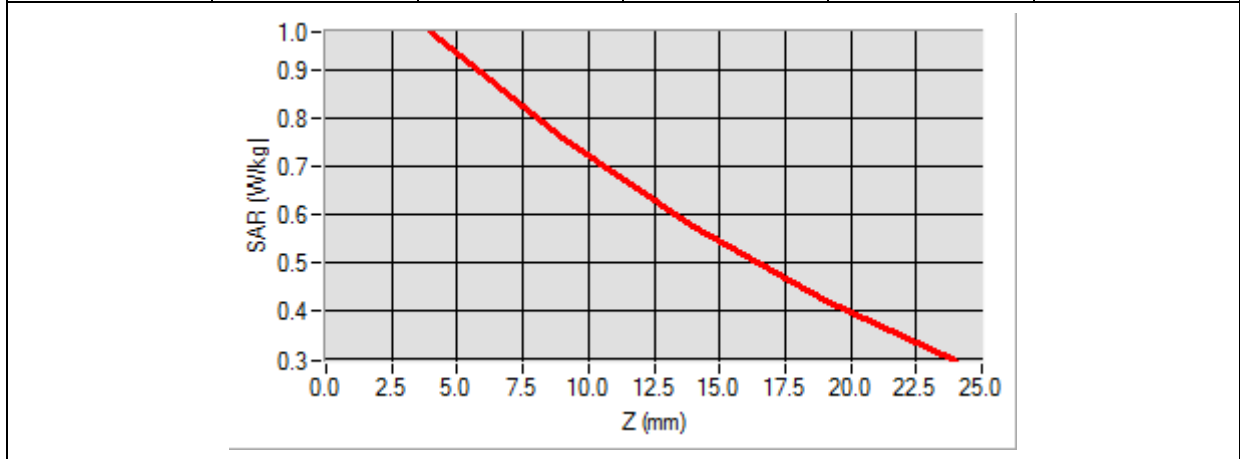
<b>Frequency (MHz)</b>	836.400000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.960000
<b>Power Variation (%)</b>	0.800000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=6.00, Y=0.00

SAR 10g (W/Kg)	0.664809
SAR 1g (W/Kg)	0.934658

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.9781	0.7561	0.5717	0.4196



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 8

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

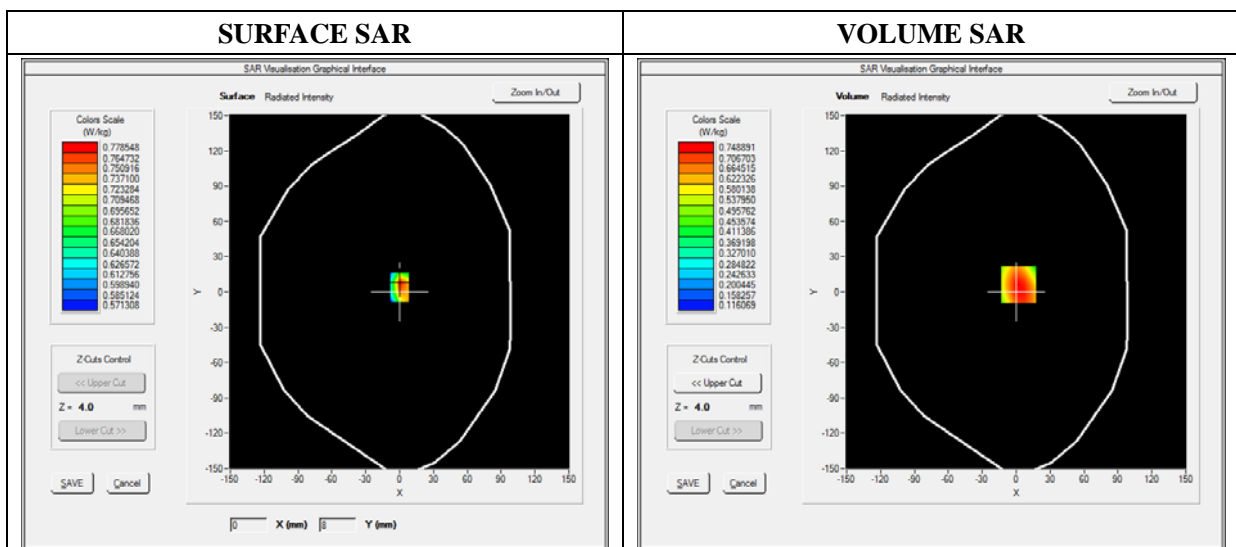
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.5; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Back
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	Low
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

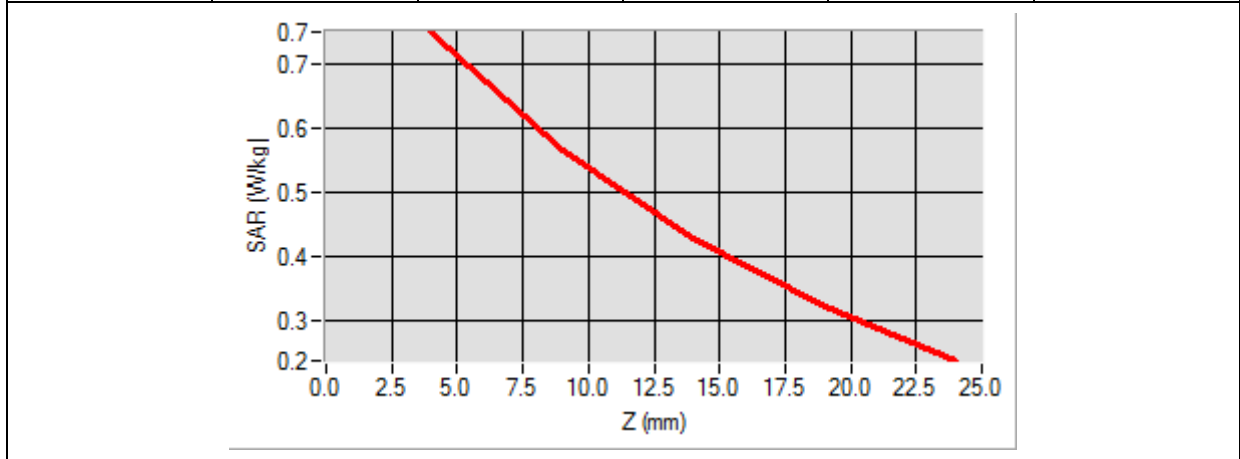
<b>Frequency (MHz)</b>	824.200000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=2.00, Y=6.00

SAR 10g (W/Kg)	0.509429
SAR 1g (W/Kg)	0.717582

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.7489	0.5653	0.4265	0.3215



3D screen shot	Hot spot position

## MEASUREMENT 9

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

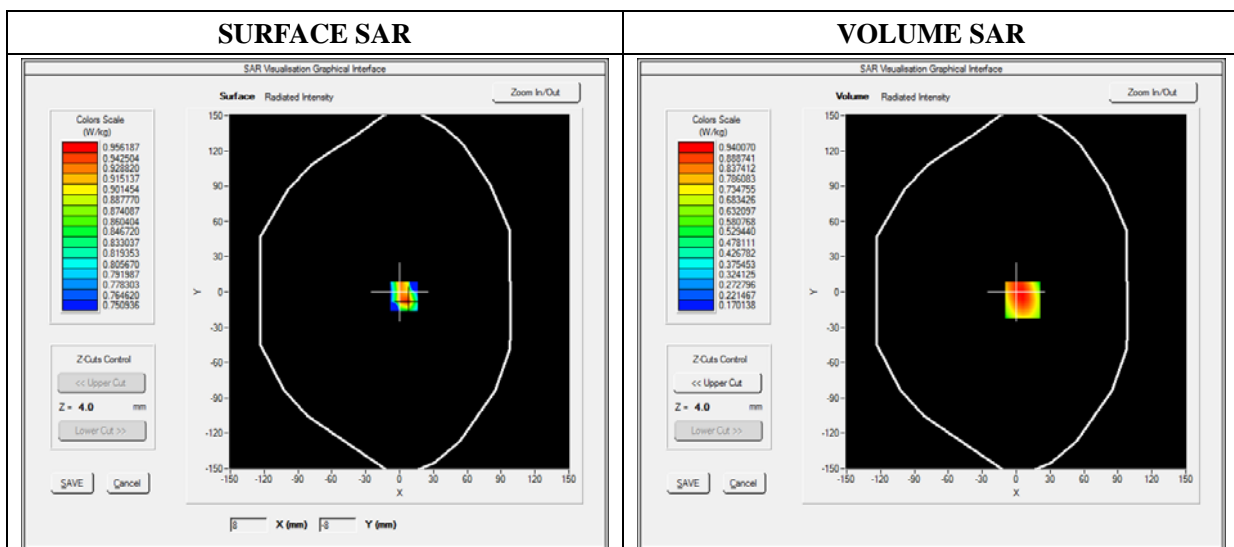
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.5; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Back
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	848.800000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.960000
<b>Power Variation (%)</b>	0.800000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

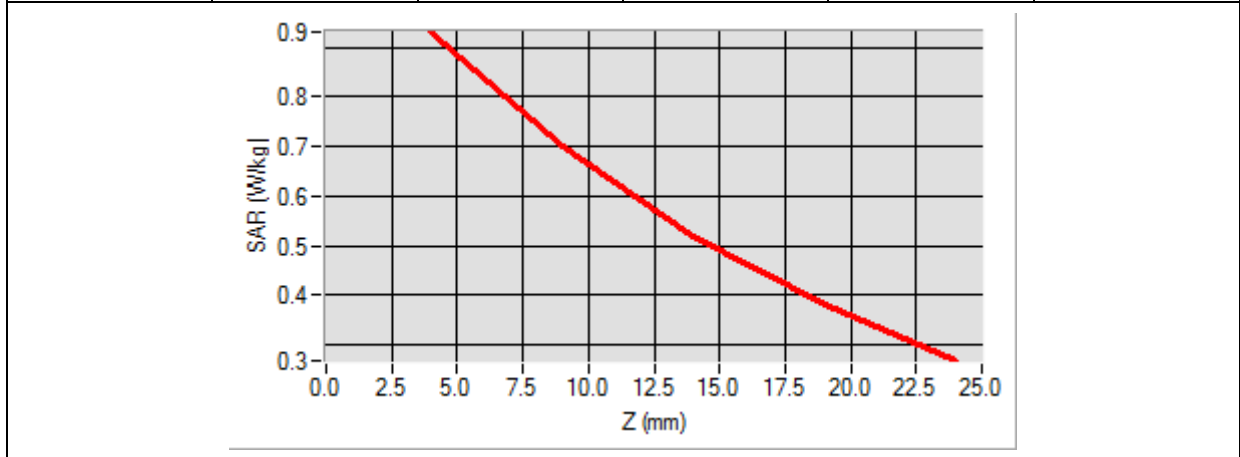




Maximum location: X=6.00, Y=-7.00

SAR 10g (W/Kg)	0.623484
SAR 1g (W/Kg)	0.896087

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.9305	0.6986	0.5190	0.3802



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

## MEASUREMENT 10

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

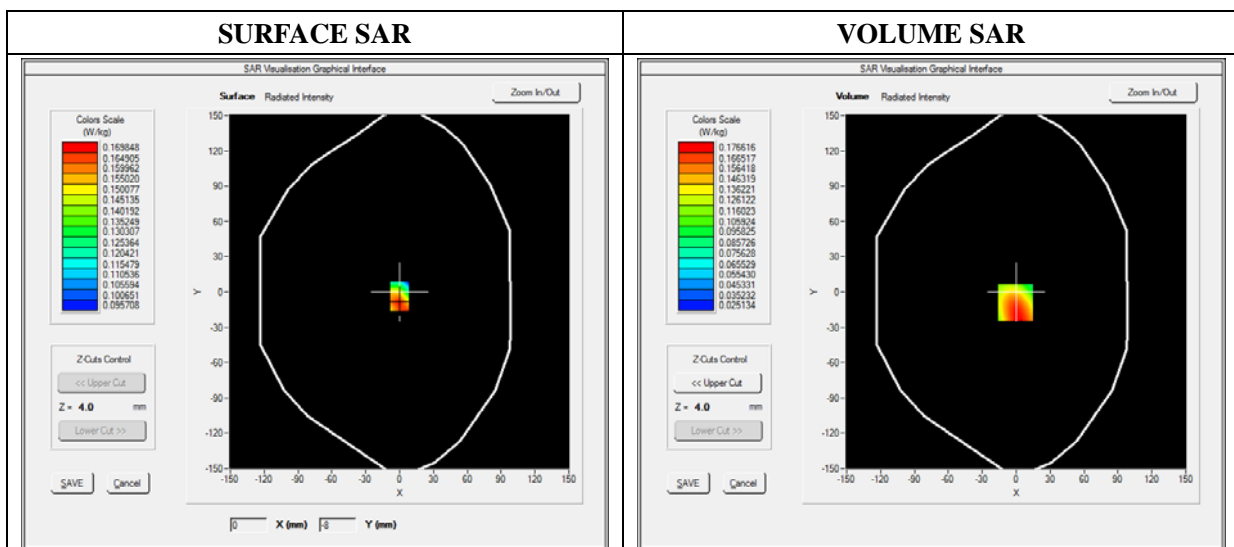
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.50; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Bottom
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	Middle
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

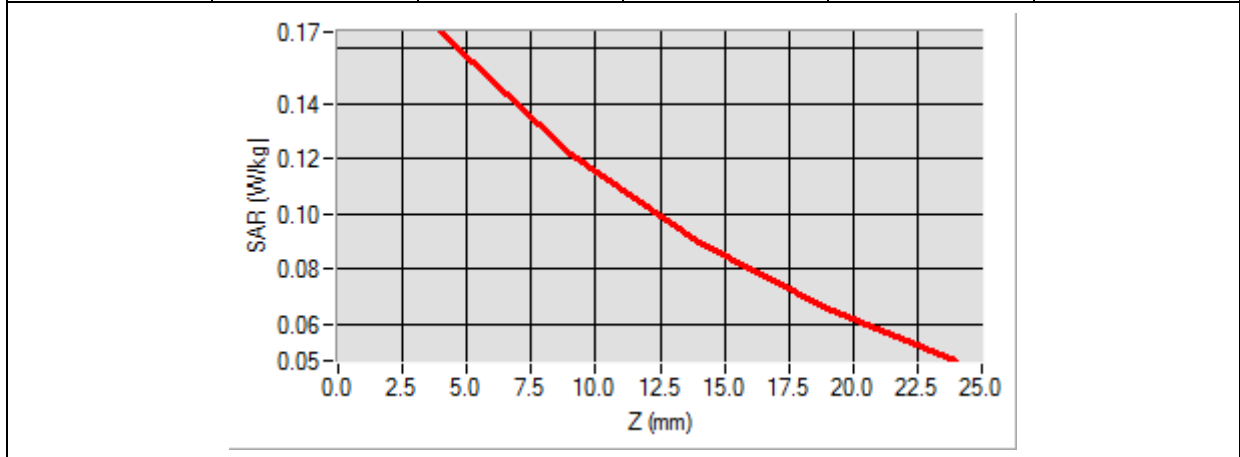
<b>Frequency (MHz)</b>	836.400000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-1.00, Y=-9.00

SAR 10g (W/Kg)	0.114345
SAR 1g (W/Kg)	0.167978

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1659	0.1218	0.0893	0.0653



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 11

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

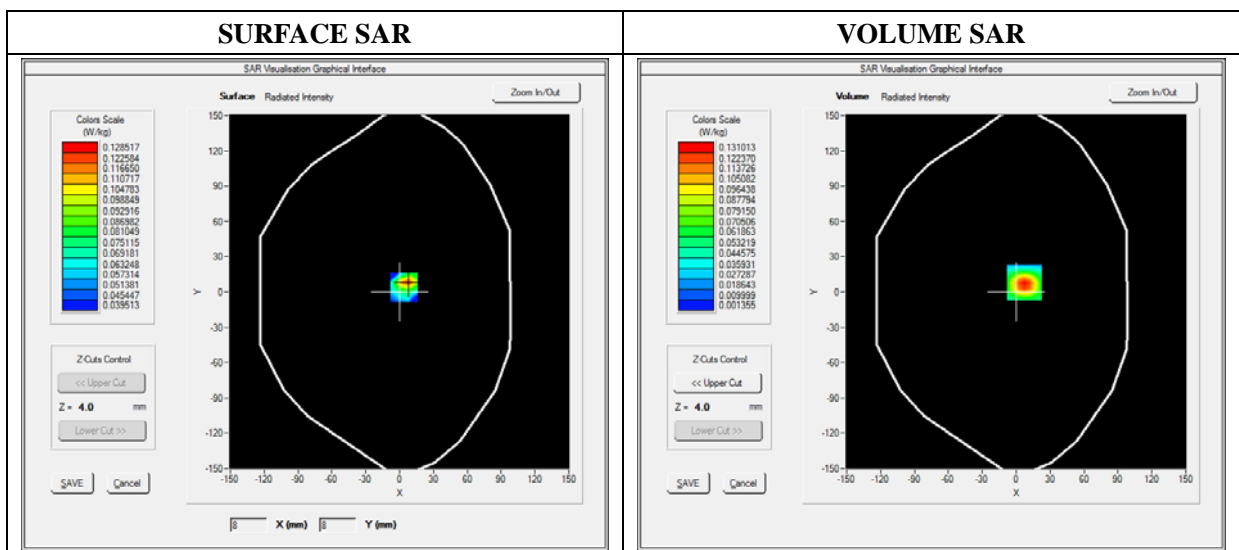
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.50; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Right side
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	Middle
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

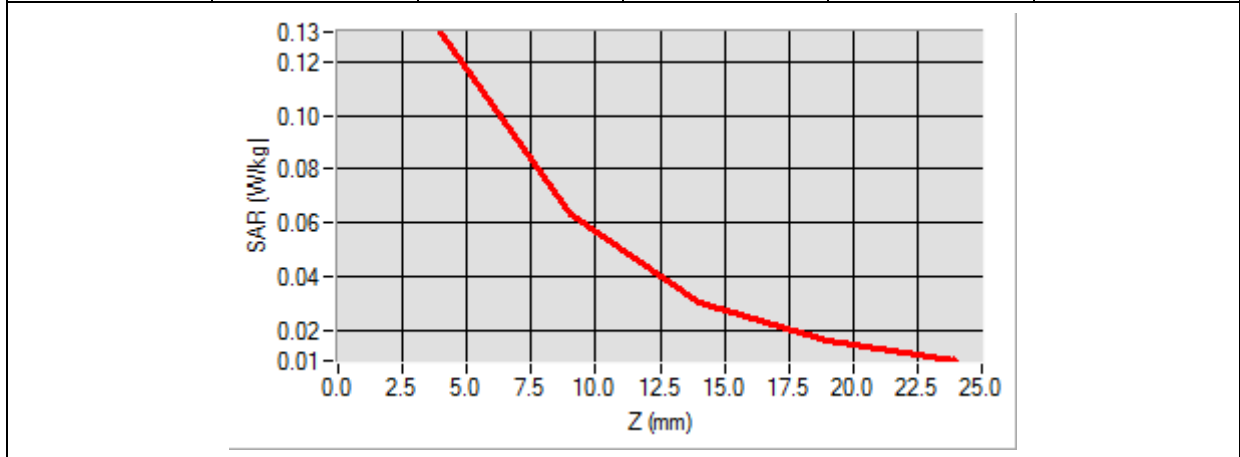
<b>Frequency (MHz)</b>	836.400000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=7.00, Y=8.00

SAR 10g (W/Kg)	0.054967
SAR 1g (W/Kg)	0.118002

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1310	0.0629	0.0302	0.0158



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 12

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

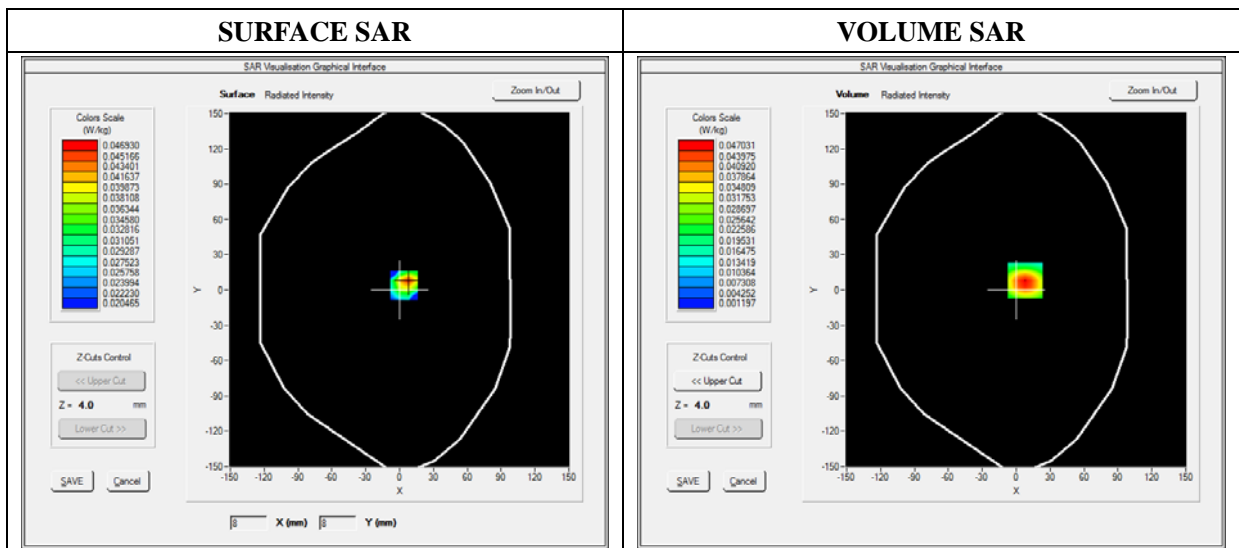
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.50; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Left side
<b>Band</b>	GPRS850_4TX
<b>Channels</b>	Middle
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

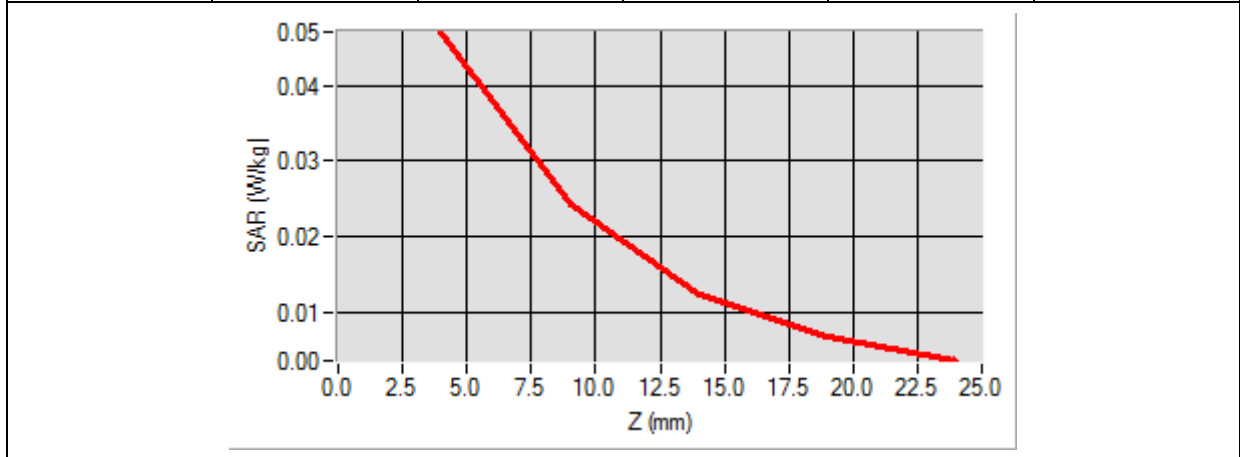
<b>Frequency (MHz)</b>	836.400000
<b>Relative Permittivity (real part)</b>	52.124510
<b>Conductivity (S/m)</b>	0.96000
<b>Power Variation (%)</b>	0.80000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=8.00, Y=8.00

SAR 10g (W/Kg)	0.022347
SAR 1g (W/Kg)	0.043496

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0470	0.0242	0.0125	0.0068



<b>3D screen shot</b>	<b>Hot spot position</b>

## MEASUREMENT 13

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

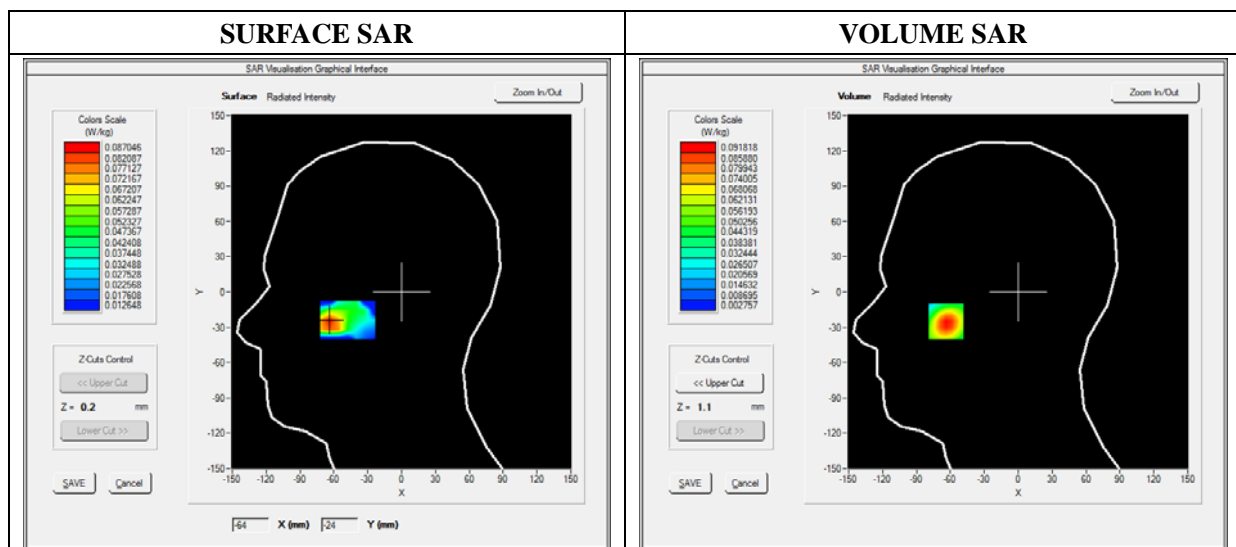
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.16; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Right head
<b>Device Position</b>	Cheek
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	38.912360
<b>Conductivity (S/m)</b>	1.410000
<b>Power Variation (%)</b>	-0.523000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

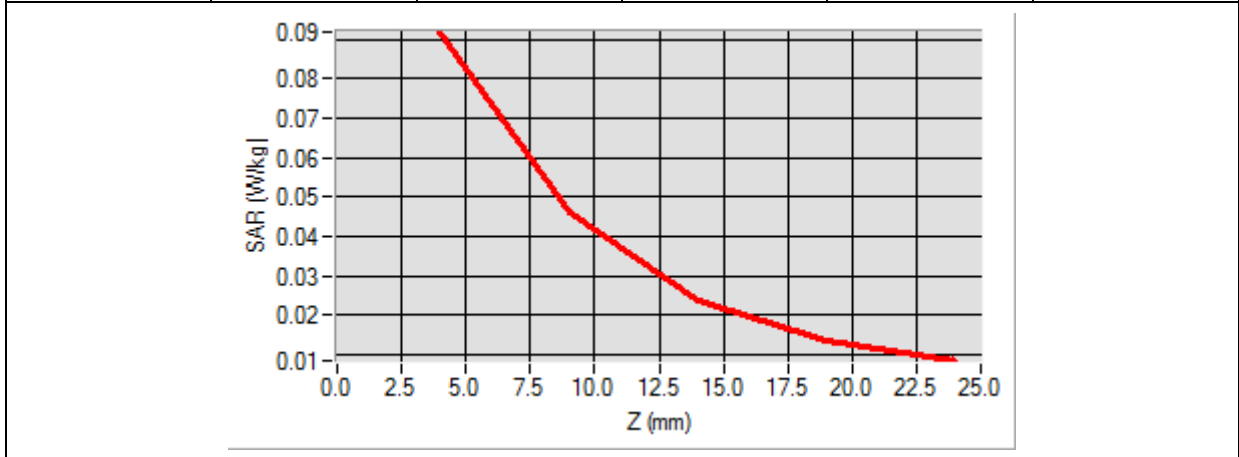


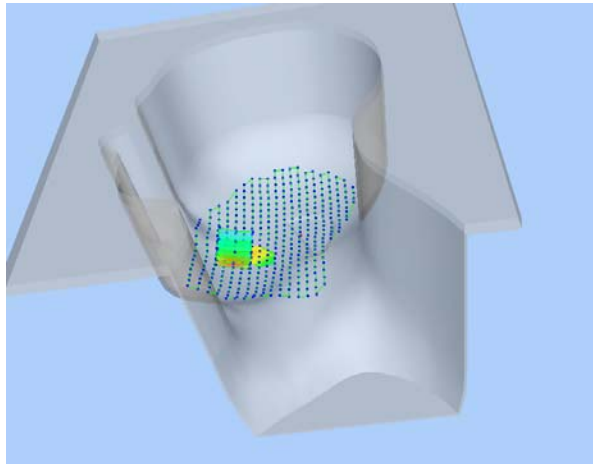
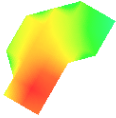


Maximum location: X=-64.00, Y=-25.00

SAR 10g (W/Kg)	0.044371
SAR 1g (W/Kg)	0.085540

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0918	0.0460	0.0237	0.0137



<b>3D screen shot</b>	<b>Hot spot position</b>
	

## MEASUREMENT 14

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

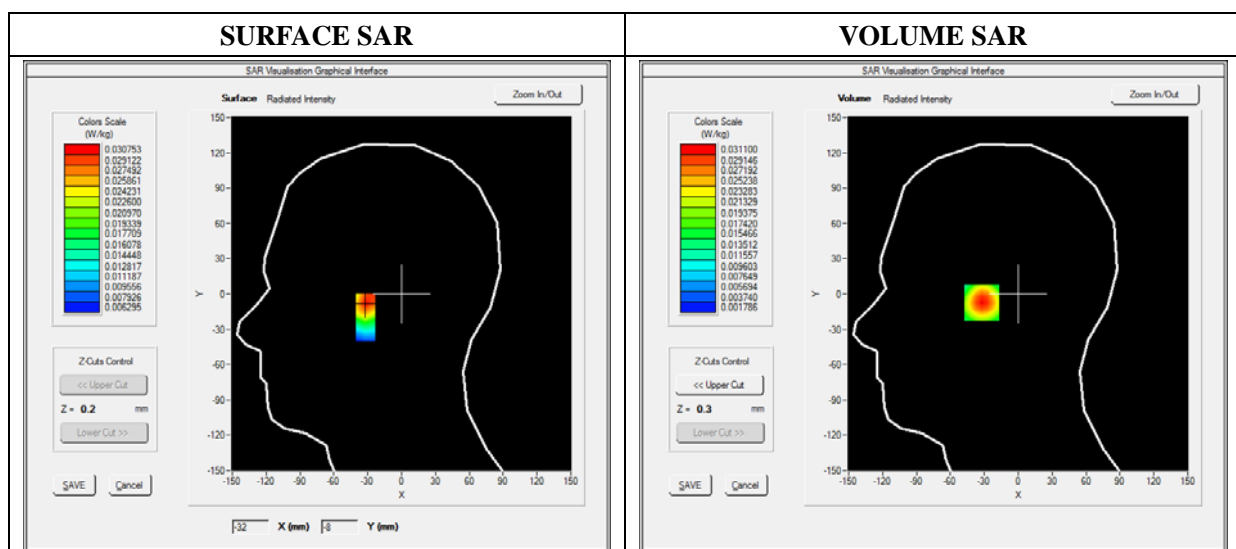
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.16; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Right head
<b>Device Position</b>	Tilt
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

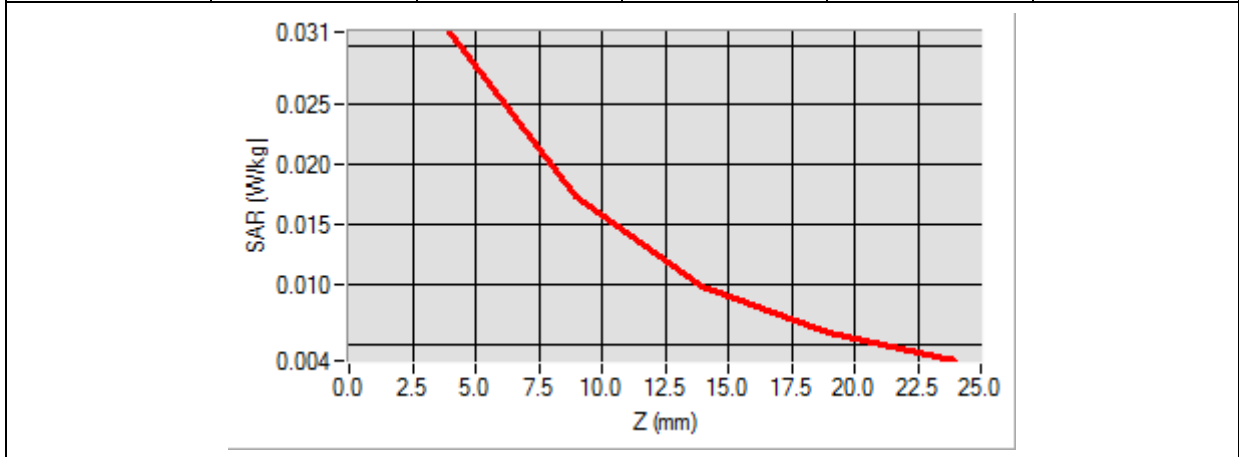
<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	38.912360
<b>Conductivity (S/m)</b>	1.410000
<b>Power Variation (%)</b>	-0.523000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-31.00, Y=-7.00

SAR 10g (W/Kg)	0.016004
SAR 1g (W/Kg)	0.028947

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0311	0.0174	0.0099	0.0060



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 15

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 11 minutes 48 seconds

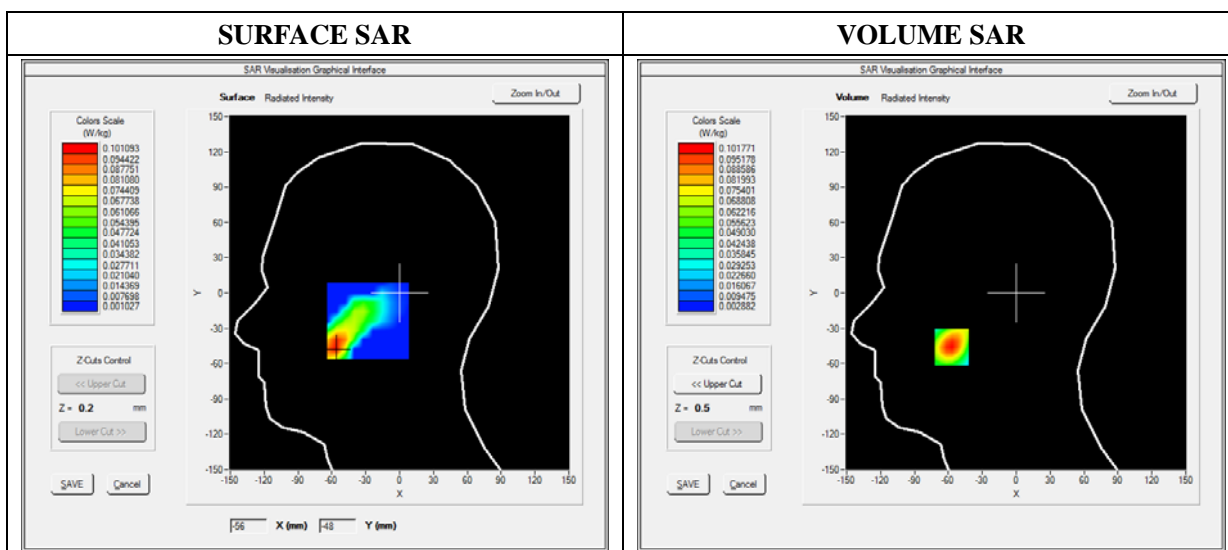
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.16; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Left head
<b>Device Position</b>	Cheek
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

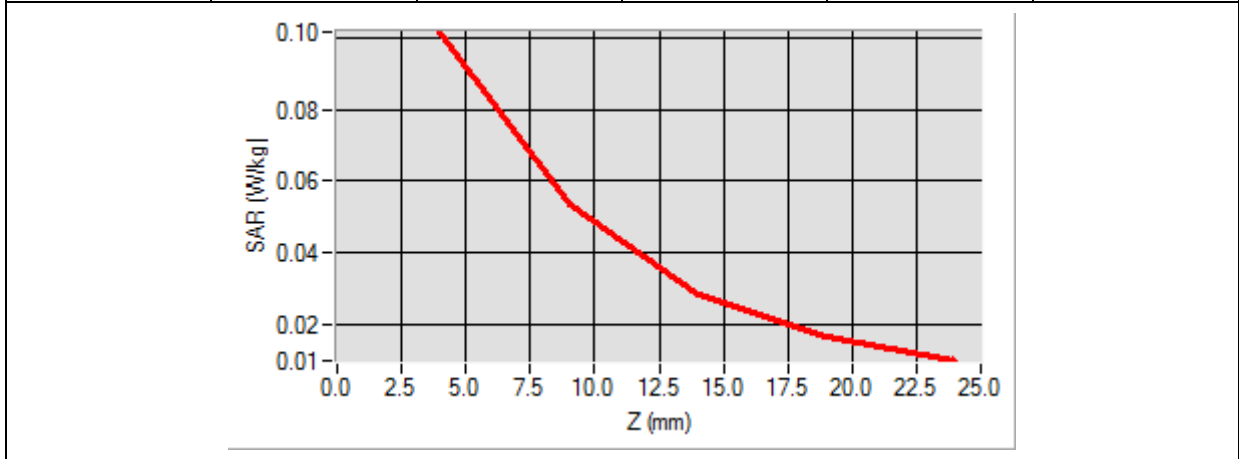
<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	38.912360
<b>Conductivity (S/m)</b>	1.410000
<b>Power Variation (%)</b>	-0.523000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-57.00, Y=-46.00

SAR 10g (W/Kg)	0.049713
SAR 1g (W/Kg)	0.094320

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1018	0.0535	0.0286	0.0165



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 16

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

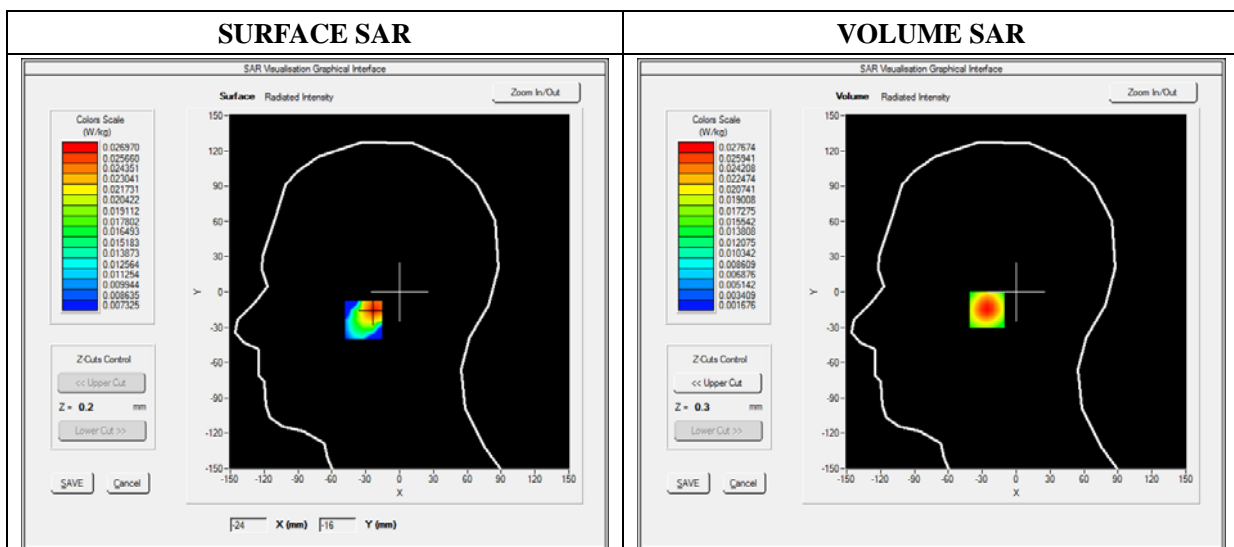
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.16; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Left head
<b>Device Position</b>	Tilt
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

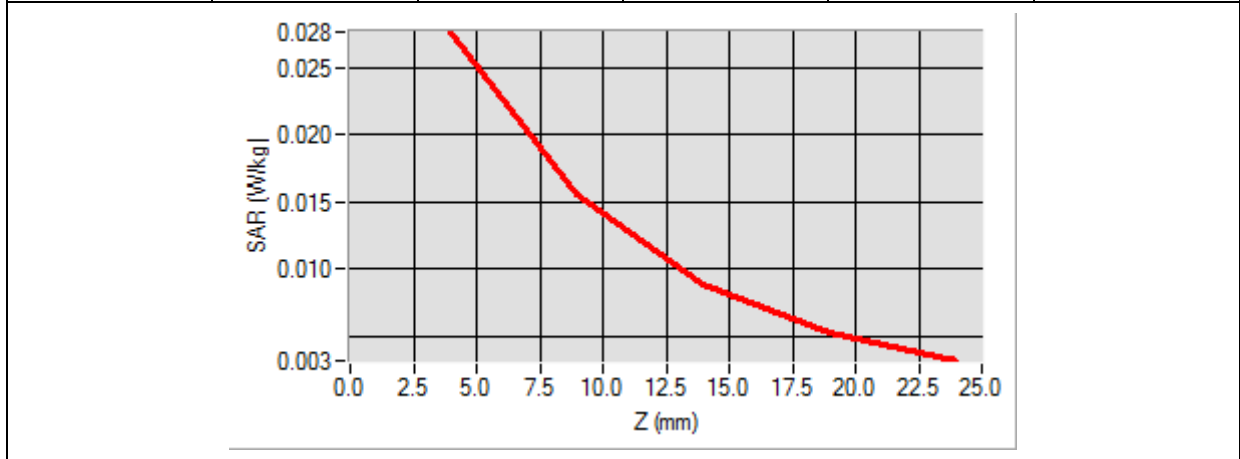
<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	38.912360
<b>Conductivity (S/m)</b>	1.410000
<b>Power Variation (%)</b>	-0.523000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-23.00, Y=-15.00

SAR 10g (W/Kg)	0.014502
SAR 1g (W/Kg)	0.025838

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0277	0.0155	0.0088	0.0053



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 17

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

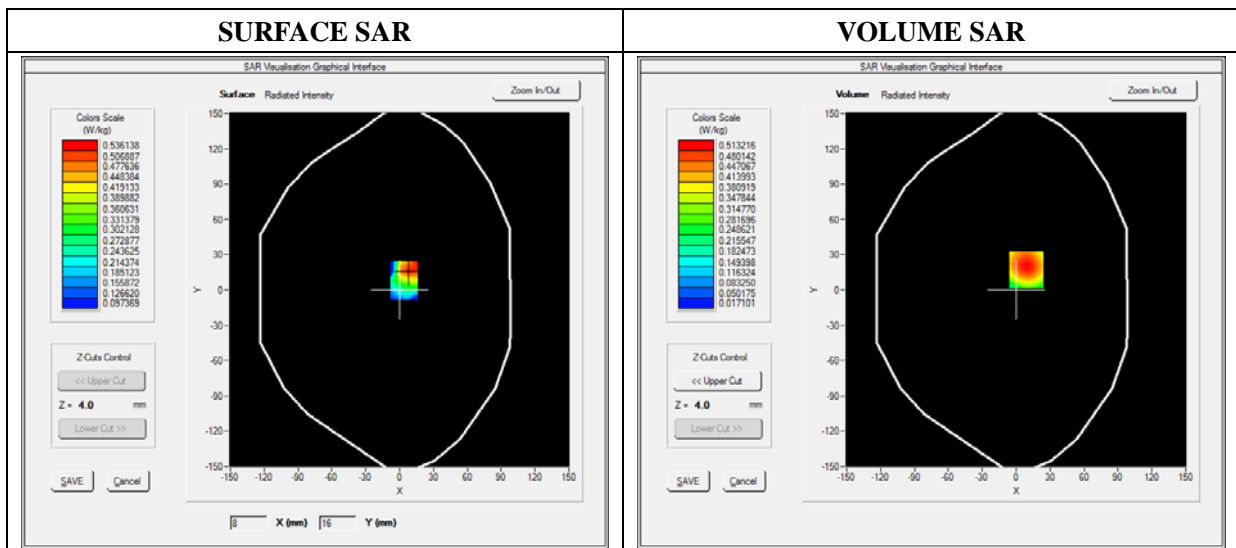
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat Plane
<b>Device Position</b>	Back(Body with headset)
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

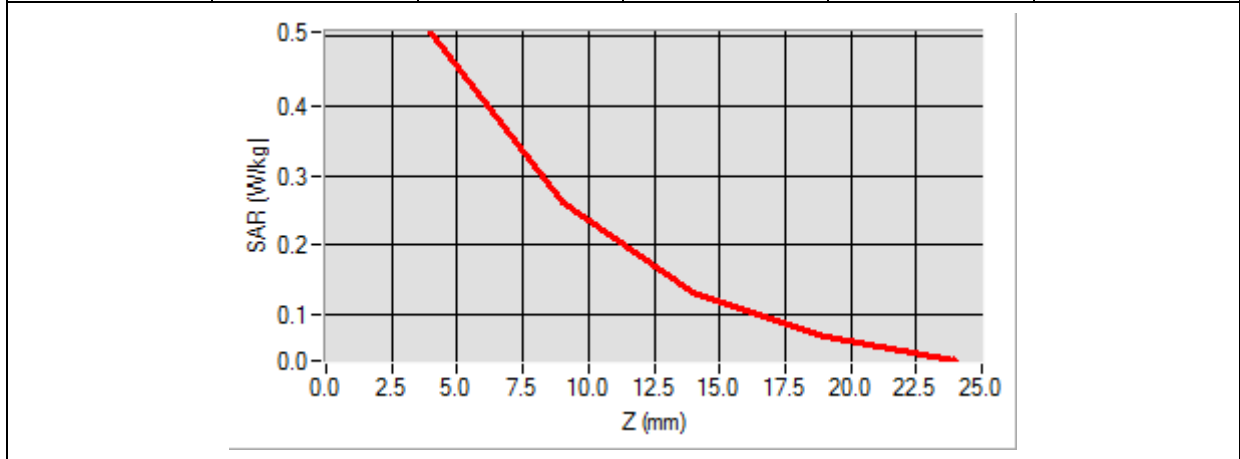




Maximum location: X=9.00, Y=17.00

SAR 10g (W/Kg)	0.263293
SAR 1g (W/Kg)	0.486839

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5070	0.2599	0.1305	0.0670



<b>3D screen shot</b>	<b>Hot spot position</b>

## MEASUREMENT 18

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

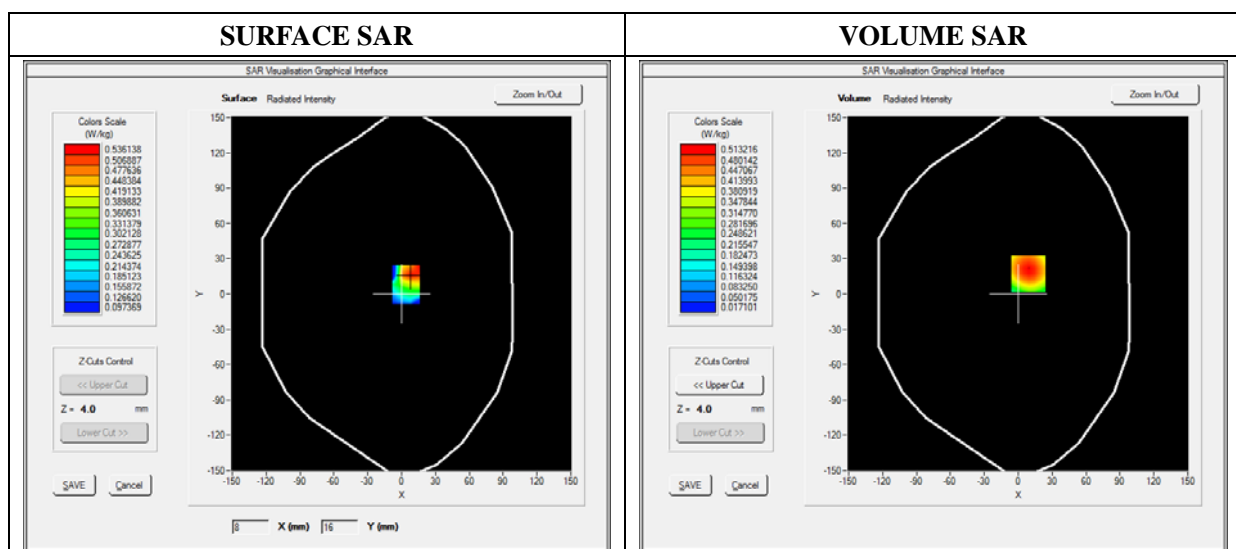
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat Plane
<b>Device Position</b>	Front(Body with headset)
<b>Band</b>	GSM1900
<b>Channels</b>	Low
<b>Signal</b>	TDMA (Crest factor: 8.0)

### B. SAR Measurement Results

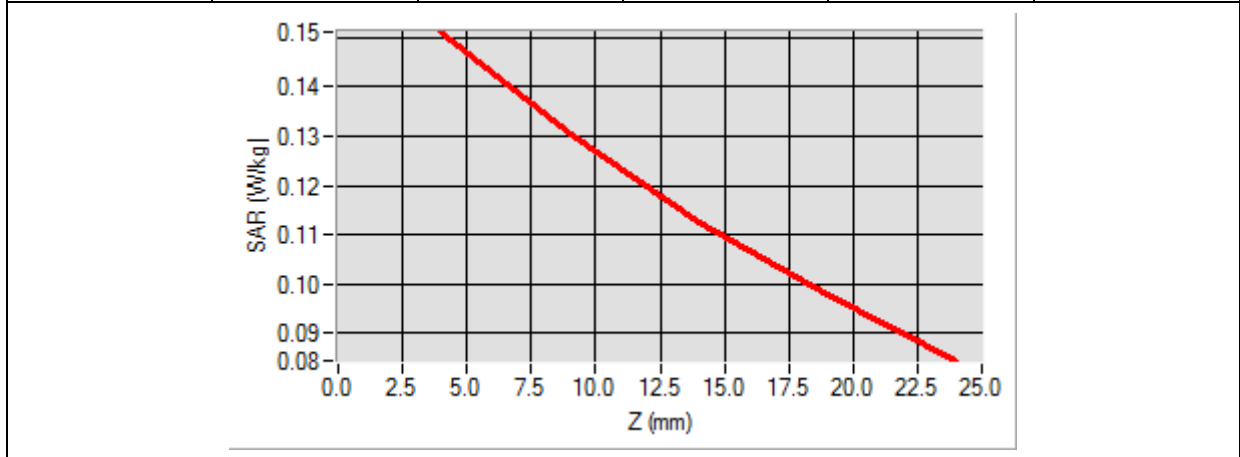
<b>Frequency (MHz)</b>	1850.200000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=9.00, Y=17.00

SAR 10g (W/Kg)	0.118539
SAR 1g (W/Kg)	0.146410

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1512	0.1303	0.1126	0.0977



<p><b>3D screen shot</b></p>	<p><b>Hot spot position</b></p>

# MEASUREMENT 19

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

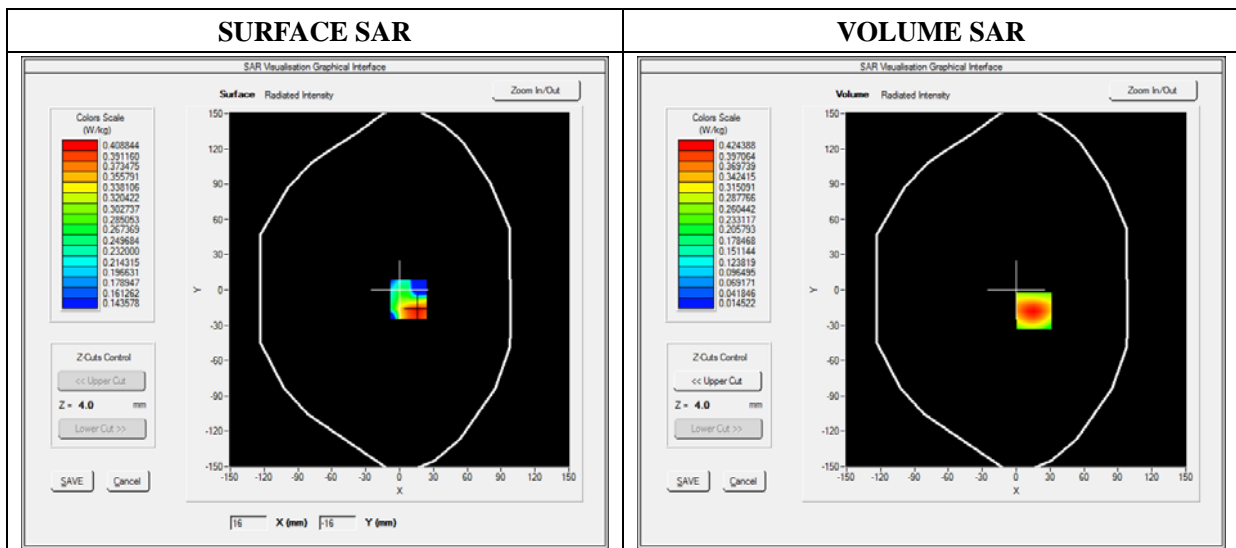
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Back
<b>Band</b>	GPRS1900_4TX
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

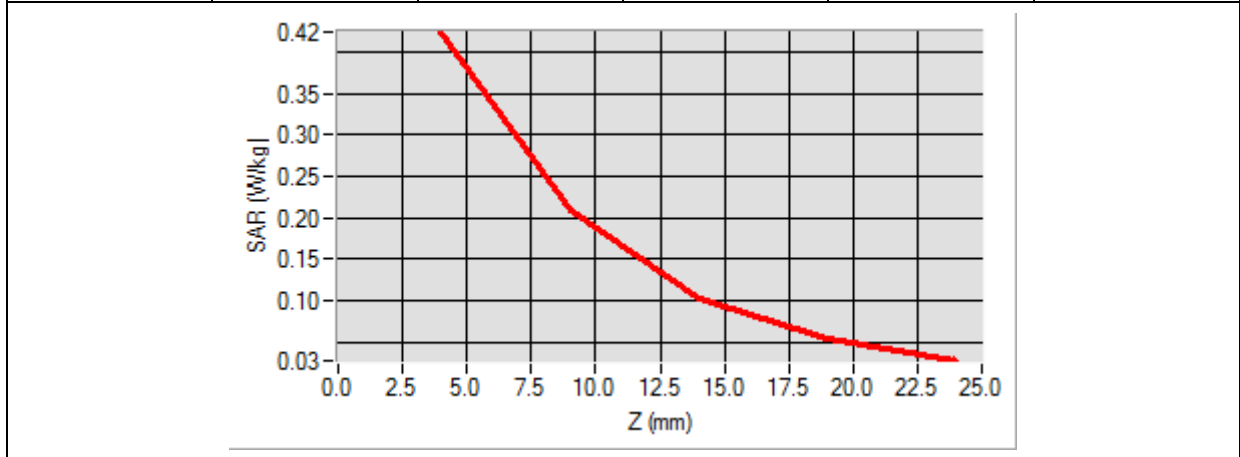
<b>Frequency (MHz)</b>	1909.800000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=16.00, Y=-18.00

SAR 10g (W/Kg)	0.212614
SAR 1g (W/Kg)	0.397806

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.4244	0.2100	0.1028	0.0533



<b>3D screen shot</b>	<b>Hot spot position</b>

# MEASUREMENT 20

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

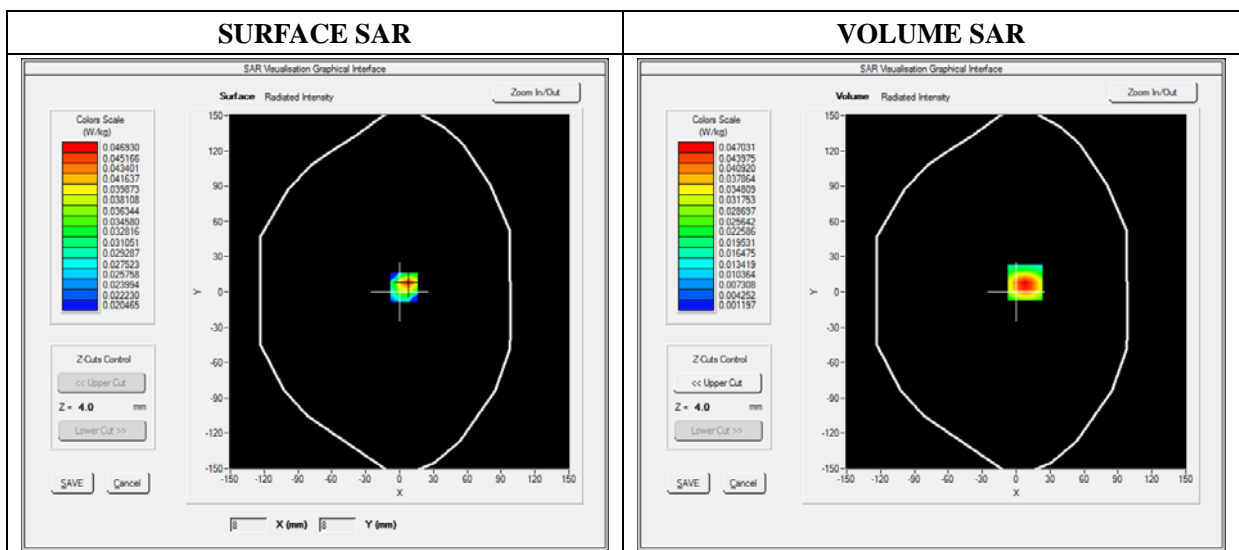
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Bottom
<b>Band</b>	GPRS1900_4TX
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

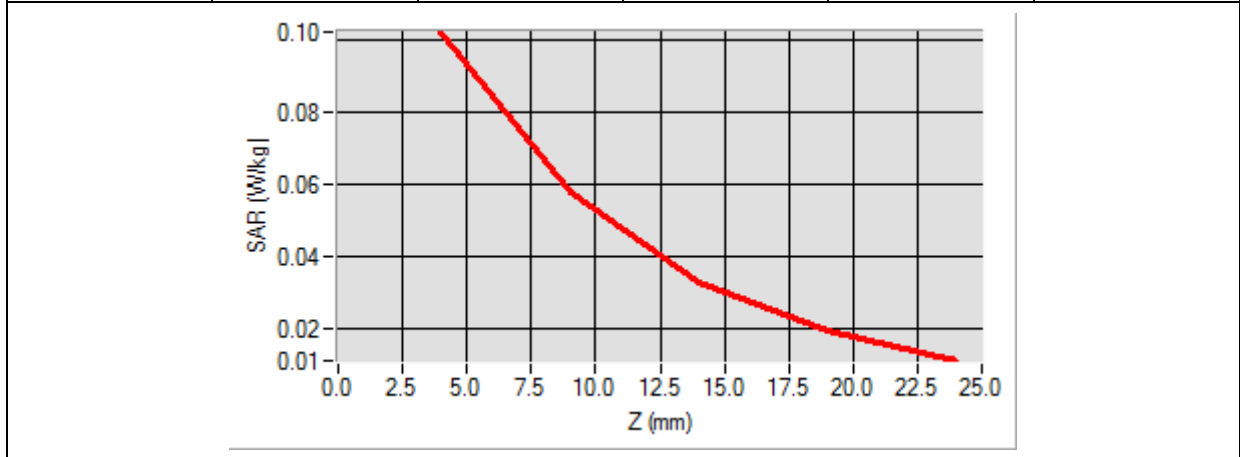
<b>Frequency (MHz)</b>	1909.800000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-30.00, Y=0.00

SAR 10g (W/Kg)	0.052522
SAR 1g (W/Kg)	0.095137

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1022	0.0577	0.0326	0.0191



3D screen shot	Hot spot position

## MEASUREMENT 21

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

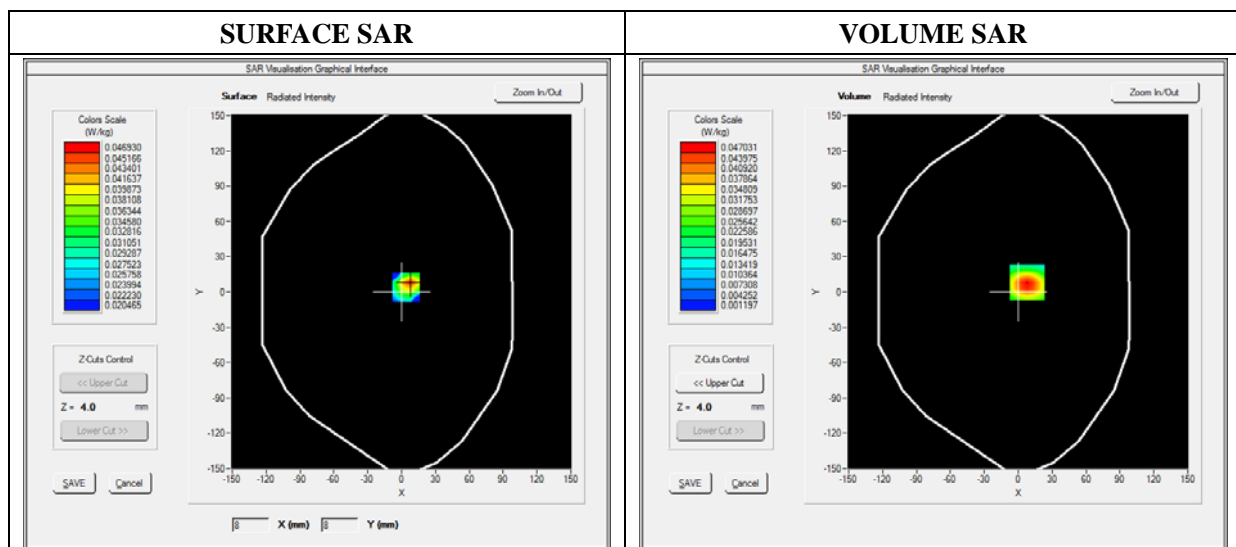
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Right side
<b>Band</b>	GPRS1900_4TX
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	1909.800000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

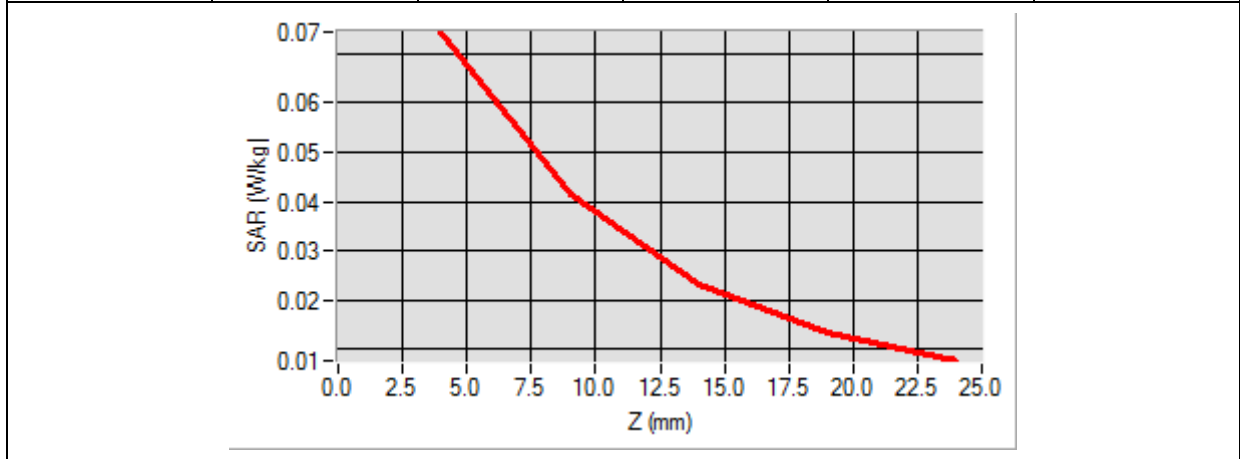




Maximum location: X=-25.00, Y=-18.00

SAR 10g (W/Kg)	0.039300
SAR 1g (W/Kg)	0.070213

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0744	0.0413	0.0230	0.0134



<b>3D screen shot</b>	<b>Hot spot position</b>

## MEASUREMENT 22

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

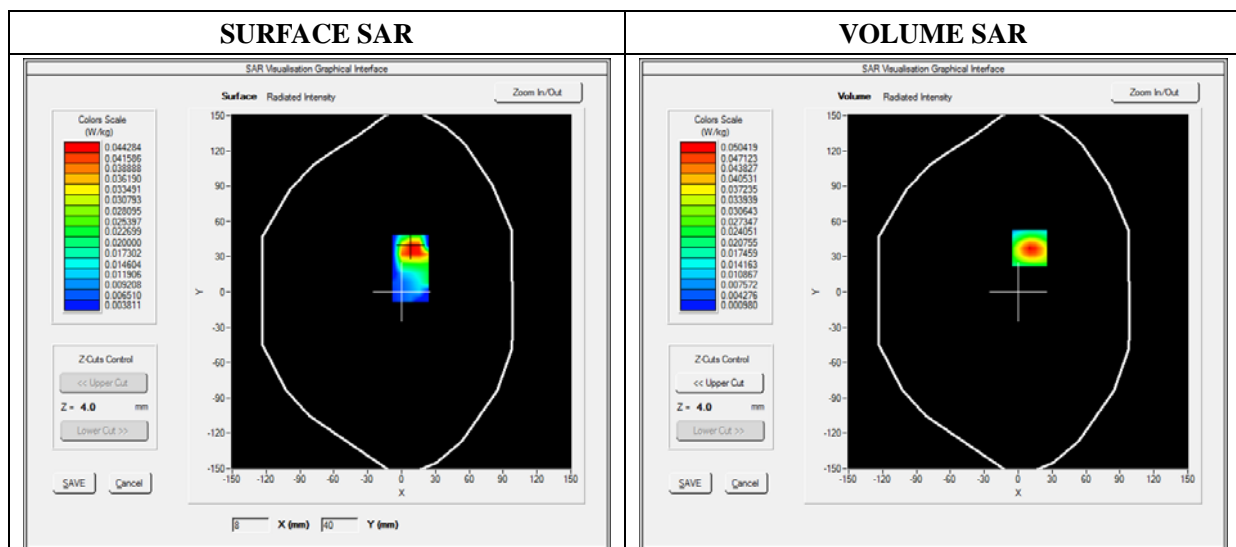
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.30; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Flat plane
<b>Device Position</b>	Left side
<b>Band</b>	GPRS1900_4TX
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 3.00 (Crest factor: 3.00)

### B. SAR Measurement Results

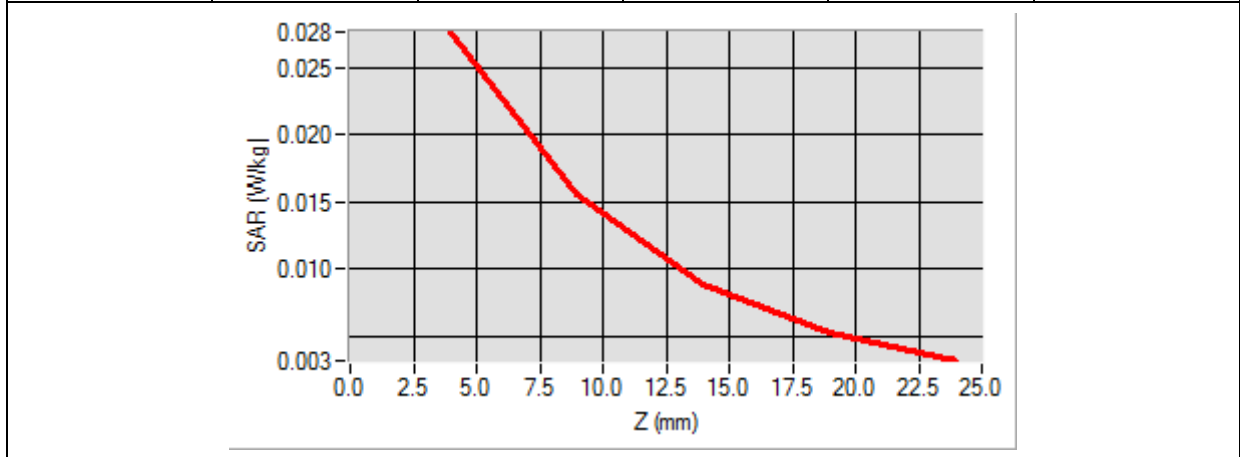
<b>Frequency (MHz)</b>	1909.80000
<b>Relative Permittivity (real part)</b>	51.361240
<b>Conductivity (S/m)</b>	1.510000
<b>Power Variation (%)</b>	0.752100
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3



Maximum location: X=-23.00, Y=-15.00

SAR 10g (W/Kg)	0.014502
SAR 1g (W/Kg)	0.025838

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0277	0.0155	0.0088	0.0053



<b>3D screen shot</b>	<b>Hot spot position</b>

## MEASUREMENT 23

Type: Phone measurement (Complete)

Date of measurement: 06/03/2014

Measurement duration: 12 minutes 3 seconds

E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.25; Calibrated: 03/21/2014

### A. Experimental conditions

<b>Area Scan</b>	sam_direct_droit2_surf8mm.txt
<b>Phantom</b>	Right head
<b>Device Position</b>	Cheek
<b>Band</b>	WCDMA850_RMC
<b>Channels</b>	High
<b>Signal</b>	Duty Cycle: 1.00 (Crest factor: 1.0)

### B. SAR Measurement Results

<b>Frequency (MHz)</b>	846.600000
<b>Relative Permittivity (real part)</b>	40.0200000
<b>Conductivity (S/m)</b>	0.910000
<b>Power Variation (%)</b>	1.810000
<b>Ambient Temperature</b>	21.1
<b>Liquid Temperature</b>	21.3

