FCC SAR
Measurement and Test Report

For

JALA ASIA LTD.

SUITE 1004, 10TH FLOOR, BANK OF AMERICA TOWER, 12

HARCOURT ROAD, CENTRAL, HONGKONG

FCC ID: 2AFYR-ENTELET6

FCC Rules:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005 ANSI / IEEE C95.3 :2002
Product Description:	Tablet PC
Tested Model:	ENTEL eT6
Report No.:	STR15118054H
Tested Date:	2015-11-16 to 2015-11-17
Issued Date:	2015-11-18
Max. SAR Values:	Body: **1.397 W/kg(1g)**
Tested By:	Vigoss Liang / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager
Prepared By:	

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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:	JALA ASIA LTD.
Address of applicant:	SUITE 1004, 10TH FLOOR, BANK OF AMERICA TOWER, 12 HARCOURT ROAD, CENTRAL, HONGKONG
Manufacturer:	Guangzhou Shangke Information Technology Limited.
Address of manufacturer:	R&F To-Win Building, 12th Floor, No.30 Huaxia Road, Tianhe District, Guangzhou, Guangdong Province, China

General Description of EUT	
Product Name:	Tablet PC
Brand Name:	entel
Model No.:	ENTEL eT6
Hardware Version:	4G008-3M-V1.0-20141219
Software Version:	V1.00_20150822
Rated Voltage:	DC 3.8V Li-ion Battery
Battery:	8500mAh
Device Category:	Portable Device
The EUT Main board support GSM850/900/DCS1800/PCS1900, WCDMA Band 1/2/5/8, LTE Band 4 function. It is intended for speech, Multimedia Message Service (MMS) transmission and ENTEL eT6. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900, GPS, Bluetooth and Wi-Fi functions. For more information see the following datasheet	
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
2G	
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
Max RF Output Power:	GSM850: 32.63dBm, GSM1900: 29.64dBm EDGE850: 27.42dBm, EDGE1900: 25.16dBm
Type of Modulation:	GMSK, 8PSK
Antenna Type:	Integral Antenna
Antenna Gain:	GSM850: 0dBi GSM1900: 0dBi
GPRS Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 5: 869~894MHz
Max RF Output Power:	WCDMA Band 2: 22.02dBm, WCDMA Band 5: 23.29dBm
Type of Modulation:	BPSK
Type of Antenna:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 0dBi, WCDMA Band 5: 0dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 4
Uplink Frequency:	Tx: 1710-1755MHz,
Downlink Frequency:	Rx: 2110-2155MHz,
Max RF Output Power:	23.19dBm,
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi,
WIFI	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
Max RF Output Power:	15.03dBm (Conducted)

Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	0dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
RF Output Power:	3.258dBm (Conducted)
Modulation Type:	GFSK, Pi/4 QDPSK, 8DPSK
Data Rate:	1Mbps, 2Mbps, 3Mbps
Quantity of Channels	40/79
Channel Separation:	1/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi

1.2 Test Standards

The following report is prepared on behalf of the JALA ASIA LTD. in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, IEEE 1528-2013 and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02

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 v01r04 and KDB 865664 D02 v01r02. The public notice KDB 447498 D01 v06 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	Body (0mm Gap) Maximum SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
GSM850	0.369	1.6
GSM1900	1.170	1.6
WCDMA Band V	0.313	1.6
WCDMA Band II	**1.397**	1.6
FDD-LTE Band 4	1.125	1.6
WLAN 2.4GHz	0.119	1.6

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 C95.1-2005, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013 and KDB 865664 D01 v01r04 and KDB 865664 D02 v01r02

3. Specific Absorption Rate (SAR)

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 techiques 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 (ρ). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

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

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

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

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

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

4. SAR Measurement System

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.

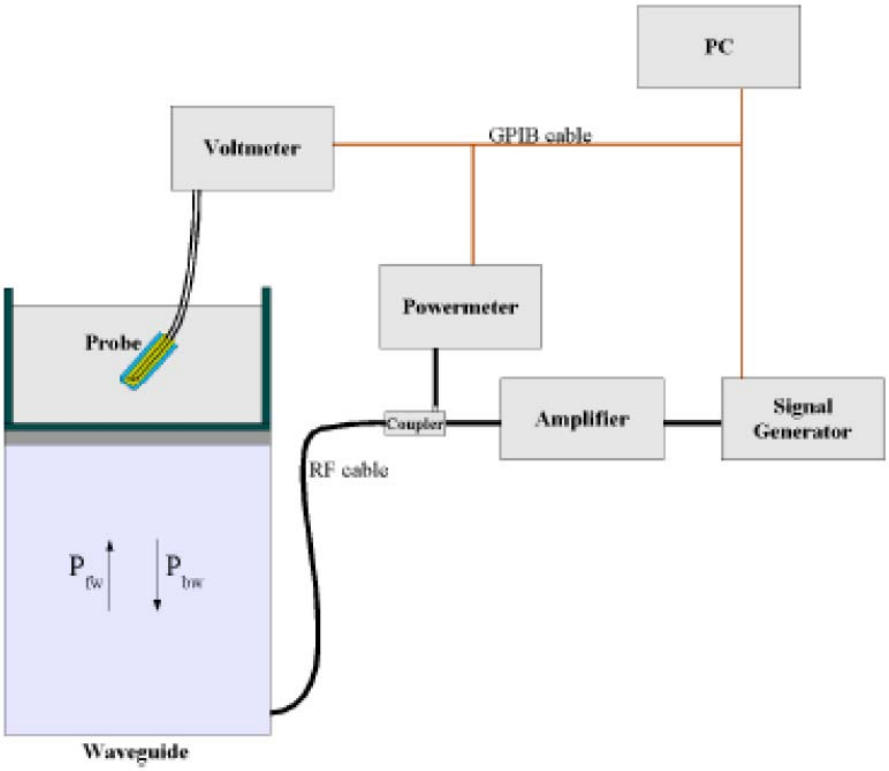
4.2 Probe

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 suface normal line:1ess than 30°

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



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

Where :

Pfw = Forward Power

Pbw = Backward Power

a and b =Waveguide dimensions

I = 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:

$$CF(N)=SAR(N)/Vlin(N)\ (N=1,2,3)$$

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

$$Vlin(N)=V(N)*(1+V(N)/DCP(N))\ (N=1,2,3)$$

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/cm2) 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/cm2.

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.

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

Where:

Δt = exposure time (30 seconds),

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

ΔT = 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.

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

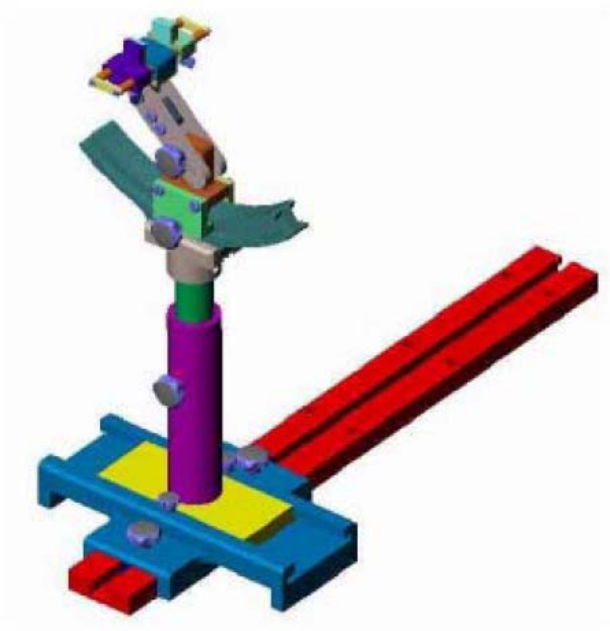
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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	2015-06-03	2016-06-02
835MHz Dipole	SATIMO	SID835	SN 47/12 DIP 0G835-204	2015-03-16	2016-03-15
1800MHz Dipole	SATIMO	SID1800	SN 47/12 DIP 1G800-206	2015-03-16	2016-03-15
1900MHz Dipole	SATIMO	SID1900	SN 47/12 DIP 1G900-207	2015-03-16	2016-03-15
2450MHz Dipole	SATIMO	SID2450	SN 13/15 DIP 2G450-364	2015-04-13	2016-04-12
Dielectric Probe Kit	SATIMO	SCLMP	SN 47/12 OCPG49	2015-03-16	2016-03-15
SAM Phantom	SATIMO	SAM	SN/ 47/12 SAM95	N/A	N/A
MULTIMETER	KEITHLEY	Keithley 2000	4006367	2015-06-17	2016-06-16
Signal Generator	Rohde & Schwarz	SMR20	100047	2015-06-17	2016-06-16
Universal Tester	Rohde & Schwarz	CMU200	112012	2015-06-17	2016-06-16
Network Analyzer	HP	8753C	2901A00831	2015-06-17	2016-06-16
Data Acquisition Electronics	SATIMO	DAE4	915	2015-06-17	2016-06-16
Directional Couplers	Agilent	778D	20160	2015-06-17	2016-06-16

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 Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Triton (%)	HEC (%)	Preventol (%)	DGBE (%)
Body						
835	52.87	1.07	0.00	0.00	46.10	0.00
1800	70.81	0.52	20.01	0.00	0.00	8.65
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 (σ)	**Permittivity** (ε_r)	**Conductivity** (σ)	**Permittivity** (ε_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
750	0.89	41.9	0.96	55.5
835	0.90	41.5	**0.97**	**55.2**
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
1800-2000	1.40	40.0	**1.52**	**53.3**
2450	1.80	39.2	**1.95**	**52.7**
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

Body Tissue Simulating Liquid									
Freq. MHz.	Temp. (℃)	Conductivity			Permittivity			Limit (%)	Date
		Reading (σ)	Target (σ)	Delta (%)	Reading (ε r)	Target (ε r)	Delta (%)		
835	21.2	0.95	0.97	-2.06	54.85	55.20	-0.63	±5	2015-11-16
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.94	±5	2015-11-16
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2015-11-16
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2015-11-16

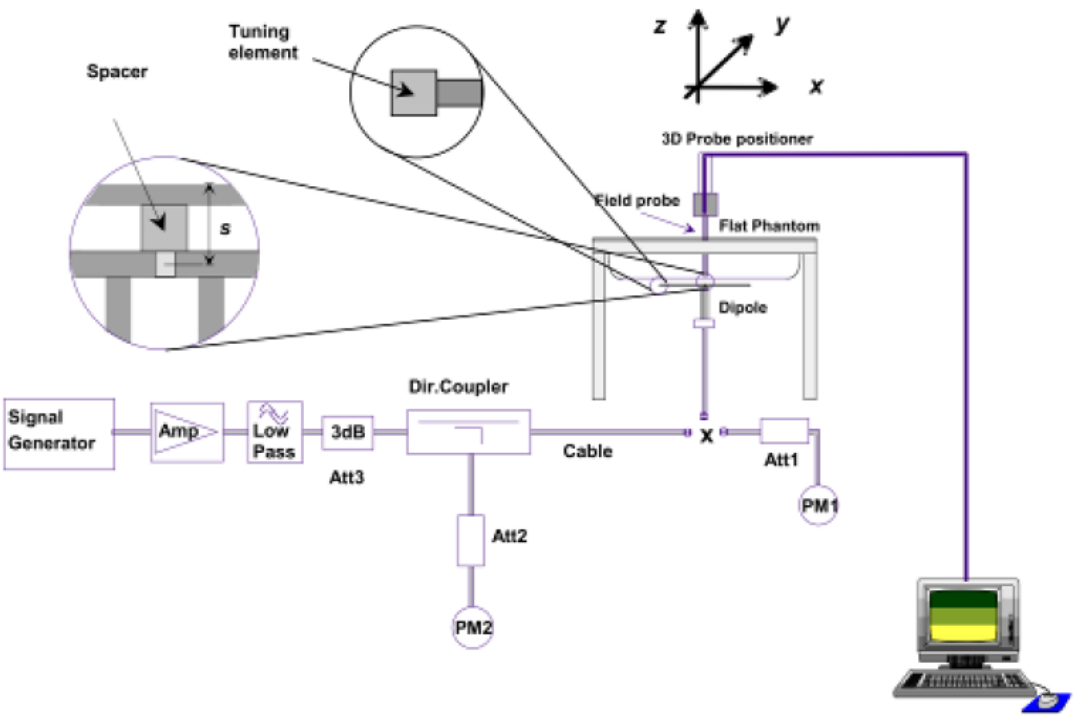
6. SAR Measurement Evaluation

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_{1g}	Measured SAR_{1g}	Normalized SAR_{1g}	Tolerance
MHz	(W/kg)	(W/kg)	(W/kg)	(%)
Body				
835	9.36	2.35	9.40	0.21
1800	38.29	9.58	38.32	0.08
1900	39.01	9.78	39.12	0.23
2450	50.33	12.59	50.36	0.04

Targeted and Measurement SAR

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

7. EUT Testing Position

7.1 Body Worn Position

(a) To position the device parallel to the phantom surface with either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 0mm.

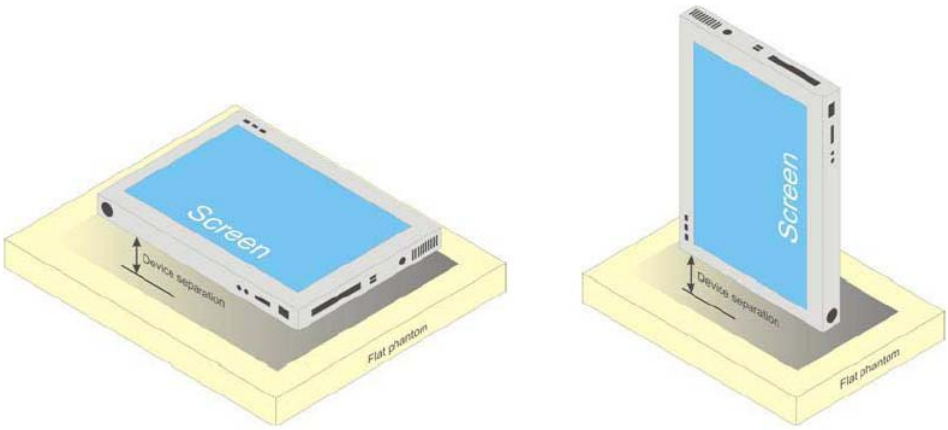
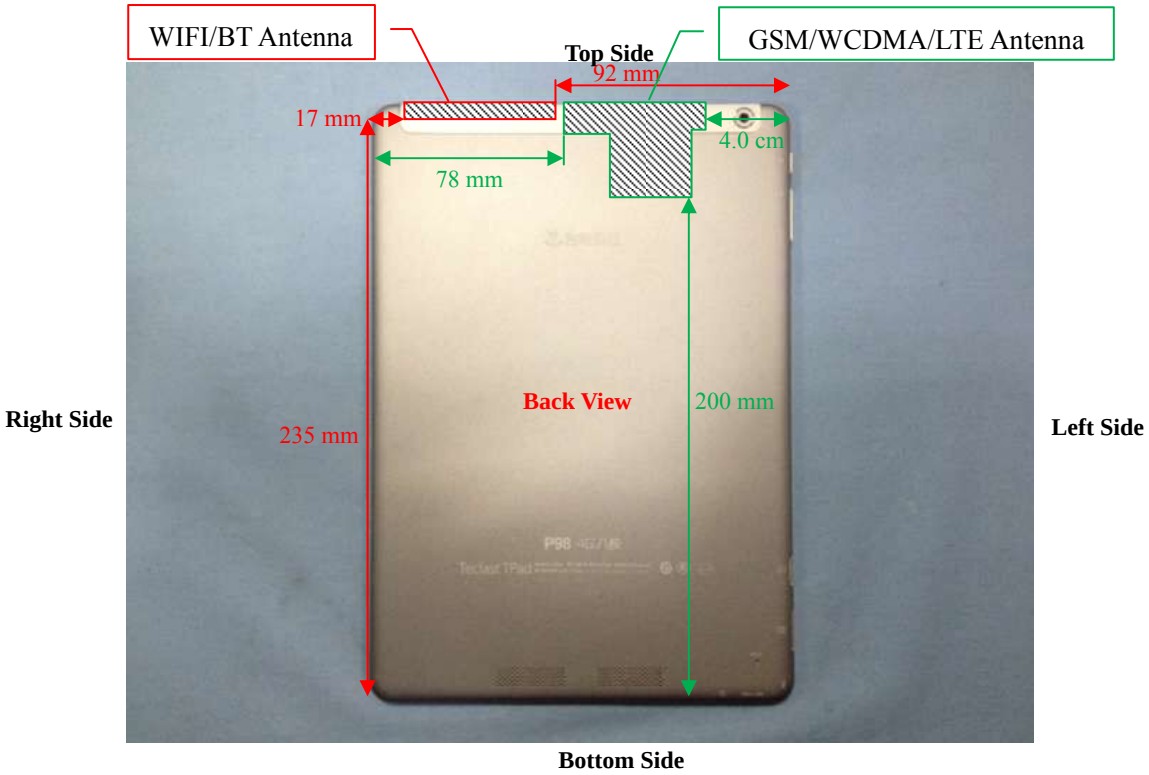


Illustration for Body Worn Position

7.2 EUT Antenna Position



Block Diagram for EUT Antenna Position

7.3 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)	29.5dBm	26.5dBm	110mm
GSM1900	GSM	30.0dBm	21.0dBm	60mm
GPRS1900	GPRS(2slots)	29.0dBm	23.0dBm	60mm
WCDMA Band V	RMC 12.2k	23.5dBm	23.5dBm	70mm
WCDMA Band II	RMC 12.2k	22.5dBm	22.5dBm	60mm
LTE_ Band 4	QPSK(20M)	23.5dBm	23.5dBm	70mm
WLAN	802.11b	16dBm	16dBm	25mm
Note: Refer to Chapter 9.1 Conducted RF Output Power				

Remark:

1. Referring to KDB 447498 D01v06 and KDB616217 D04 v01r02, the distance of the antennas to all adjacent edges SAR test exclusion for adjacent edges.

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

Body SAR tests, Test distance: 0mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN_GPRS850	No	Yes	Yes	Yes	Yes	No
WWAN_GPRS1900	No	Yes	No	Yes	Yes	No
WWAN_WCDMA Band V	No	Yes	No	Yes	Yes	No
WWAN_WCDMA Band II	No	Yes	No	Yes	Yes	No
WWAN_LTE_ Band 4	No	Yes	No	Yes	Yes	No
WLAN	No	Yes	Yes	No	Yes	No

Remark:

1. Referring to KDB 616217 D04 v01r02, KDB 248227 D04 and KDB 447498 D01 v06, 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.

8. SAR Measurement Procedures

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 form 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	32.53	32.56	32.57	29.25	29.35	29.58
GPRS (1 slot)	32.58	32.58	32.63	29.31	29.47	29.64
GPRS (2 slots)	31.68	31.68	31.74	28.43	28.58	28.82
GPRS (3 slots)	30.13	30.05	30.16	26.49	26.73	26.89
GPRS (4 slots)	29.33	29.28	29.33	25.43	25.68	25.75
EDGE (1 slot)	27.42	27.41	27.39	25.13	25.16	25
EDGE (2 slots)	26.33	26.28	26.27	24.04	24.05	23.94
EDGE (3 slots)	24.34	24.39	24.27	21.95	21.96	21.87
EDGE (4 slots)	23.2	23.2	23.21	20.71	20.71	20.66

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	23.53	23.56	23.57	20.25	20.35	20.58
GPRS (1 slot)	23.58	23.58	23.63	20.31	20.47	20.64
GPRS (2 slots)	25.68	25.68	25.74	22.43	22.58	22.82
GPRS (3 slots)	25.88	25.8	25.91	22.24	22.48	22.64
GPRS (4 slots)	26.33	26.28	26.33	22.43	22.68	22.75
EDGE (1 slot)	18.42	18.41	18.39	16.13	16.16	16
EDGE (2 slots)	20.33	20.28	20.27	18.04	18.05	17.94
EDGE (3 slots)	20.09	20.14	20.02	17.7	17.71	17.62
EDGE (4 slots)	20.2	20.2	20.21	17.71	17.71	17.66
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 1Tx slot, 6 dB for 2Tx slots, 4.25 dB for 3Tx slots, 3 dB for 4Tx slots						

Remark:

1. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4Tx slots) for GSM850 and GPRS (2Tx slots)GSM1900 due to its highest source-based time-average power.
2. Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
3. 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	23.2	23.29	22.94	22	21.98	22.02
HSDPA Subtest-1	22.21	22.29	21.83	21.5	20.98	20.08
HSDPA Subtest-2	22.12	22.23	21.78	21.45	20.95	20.04
HSDPA Subtest-3	22.18	22.27	21.71	21.38	20.89	19.96
HSDPA Subtest-4	22.16	22.22	21.74	21.41	20.88	20.02
HSUPA Subtest-1	22.28	22.31	21.83	21.13	20.99	21.03
HSUPA Subtest-2	22.19	22.25	21.78	21.08	20.96	20.99
HSUPA Subtest-3	22.25	22.29	21.71	21.01	20.9	20.91
HSUPA Subtest-4	22.23	22.24	21.74	21.04	20.89	20.97
HSUPA Subtest-5	22.22	22.27	21.75	21.05	20.94	20.93

Remark:

1. For Body SAR, per KDB 941225 D01 v03r01, 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 ≦1.2W/kg, HSDPA and HSUPA SAR evaluation can be excluded.

FDD-LTE Band 4				/			
Modulation	**Bandwidth (MHz)**	**Channel**	**Average Power (dBm)**	/	/	/	/
QPSK	1.4	LCH	22.59	/	/	/	/
		MCH	22.66			/	/
		HCH	22.74			/	/
	3	LCH	22.51		/	/	/
		MCH	22.62			/	/
		HCH	22.77			/	/
	5	LCH	22.66		/	/	/
		MCH	22.79			/	/
		HCH	23.05			/	/
	10	LCH	22.68		/	/	/
		MCH	22.91			/	/
		HCH	23.01			/	/
	15	LCH	22.72		/	/	/
		MCH	22.97			/	/
		HCH	23.09			/	/
	20	LCH	22.93		/	/	/
		MCH	23.19			/	/
		HCH	23.10			/	/
16QAM	1.4	LCH	21.92	/	/	/	/
		MCH	21.87			/	/
		HCH	22.02			/	/
	3	LCH	21.80		/	/	/
		MCH	21.87			/	/
		HCH	22.08			/	/
	5	LCH	22.04		/	/	/
		MCH	22.10			/	/
		HCH	21.96			/	/
	10	LCH	21.98		/	/	/
		MCH	22.03			/	/
		HCH	22.29			/	/
	15	LCH	22.00		/	/	/
		MCH	22.19			/	/
		HCH	22.29			/	/
	20	LCH	22.05		/	/	/
		MCH	22.31			/	/
		HCH	22.34			/	/

WLAN - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11b	1Mbps	CH 01	2412	15.03
		CH 06	2437	14.51
		CH 11	2462	14.78
802.11g	54Mbps	CH 01	2412	11.92
		CH 06	2437	12.14
		CH 11	2462	12.51
802.11n (20MHz)	MCS7	CH 01	2412	11.41
		CH 06	2437	11.46
		CH 11	2462	12.04
802.11n (40MHz)	MCS7	CH 03	2422	10.71
		CH 06	2437	10.25
		CH 09	2452	11.49

Remark:

1. Per KDB 248227 D01 v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Per KDB 248227 D01 v02r02, 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	1.936
		CH 39	2441	3.258
		CH 78	2480	3.014
4*π4DQPSK	2Mbps	CH 00	2402	1.076
		CH 39	2441	2.423
		CH 78	2480	2.045
8DPSK	3Mbps	CH 00	2402	1.292
		CH 39	2441	2.710
		CH 78	2480	2.285
BLE	1Mbps	CH 00	2402	-5.021
		CH 19	2440	-3.729
		CH 39	2480	-4.311

Remark:

Bluetooth maximum output power is 3.258dBm, and Tune-Up output power is 4.0dBm. Per KDB447498 D01 v06, 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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 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 calculation17
- The result is rounded to one decimal place for comparison

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	Result	Limit
4.0	2.51	5	2.441	0.78	3

The exclusion thresholds is 0.78< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Body SAR

GSM850 – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1	GPRS_4TX	Back side	251	848.8	29.33	29.5	1.0399	0.3544	0.3685
2	GPRS_4TX	Top side	251	848.8	29.33	29.5	1.0399	0.1680	0.1747
3	GPRS_4TX	Right side	251	848.8	29.33	29.5	1.0399	0.0040	0.0042
4	GPRS_4TX	Left side	251	848.8	29.33	29.5	1.0399	0.2745	0.2854

GSM1900 – Body SAR Test (Gap: 0mm)									
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	GPRS_2TX	Back side	810	1909.8	28.82	29.00	1.0423	1.0455	1.0898
6	GPRS_2TX	Back side	512	1850.2	28.43	29.00	1.1402	1.0261	1.1700
7	GPRS_2TX	Back side	661	1880.0	28.58	29.00	1.1015	0.9034	0.9952
8	GPRS_2TX	Top side	810	1909.8	28.82	29.00	1.0423	0.0951	0.0992
9	GPRS_2TX	Left side	810	1909.8	28.82	29.00	1.0423	0.0303	0.0316

WCDMA Band V – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
10	RMC	Back side	4183	836.6	23.29	23.50	1.0495	0.2214	0.2324
11	RMC	Top side	4183	836.6	23.29	23.50	1.0495	0.2983	0.3130
12	RMC	Left side	4183	836.6	23.29	23.50	1.0495	0.0110	0.0115

WCDMA Band II – Body SAR Test (Gap: 0mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
13	RMC	Back side	9538	1907.6	22.02	22.50	1.1169	0.8645	0.9655
14	RMC	Back side	9262	1852.4	22.00	22.50	1.1220	1.0658	1.1958
15	RMC	Back side	9400	1880.0	21.98	22.50	1.1272	1.2397	1.3974
16	RMC	Top side	9538	1907.6	22.02	22.50	1.1169	0.1014	0.1132
17	RMC	Left side	9538	1907.6	22.02	22.50	1.1169	0.1216	0.1358

LTE Band 4–Body SAR Test								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth		MHz					
18	RMC,QPSK 20MHz	Back side	1732.5	23.09	23.50	1.0990	0.9673	1.0630
19	RMC,QPSK 20MHz	Back side	1720.0	22.93	23.50	1.1402	0.9865	1.1249
20	RMC,QPSK 20MHz	Back side	1745.0	23.10	23.50	1.0965	0.9686	1.0621
21	RMC,QPSK 20MHz	Top side	1732.5	23.09	23.50	1.0990	0.7624	0.8379
22	RMC,QPSK 20MHz	Left side	1732.5	23.09	23.50	1.0990	0.2688	0.2954

WLAN 2.4GHz –Body SAR Test									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
23	802.11b	Back Side	01	2412	15.03	16.00	1.2503	0.0948	0.1185
24	802.11b	Top side	01	2412	15.03	16.00	1.2503	0.0515	0.0644
25	802.11b	Right side	01	2412	15.03	16.00	1.2503	0.0543	0.0678

Remark: Per KDB 447498 D01 v06, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

9.3 Simultaneous Multi-band Transmission SAR Analysis

List of Mode for Simultanous Multi-band Transmission

No.	Configurations	Head SAR	Body-worn SAR	Body SAR
1	GSM + WLAN	-	-	-
2	GPRS + WLAN	-	-	Yes
3	WCDMA + WLAN	-	-	-
4	HSDPA + WLAN	-	-	Yes
5	HSUPA + WLAN	-	-	Yes
6	LTE + WLAN	-	-	Yes
7	GSM + Bluetooth	-	-	-
8	GPRS + Bluetooth	-	-	Yes
9	WCDMA + Bluetooth	-	-	-
10	HSDPA + Bluetooth	-	-	Yes
11	HSUPA + Bluetooth	-	-	Yes
12	LTE + 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 D01v06, 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)]·[√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 D01v06 as below:

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g)
4	2.5118864	5	2.441	7.5	0.1047

4. The maximum SAR summation is calculated based on the same configuration and test position.

Body SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3685	0.1185	0.4870
Front	GSM850	-	-	-
Top side	GSM850	0.1747	0.0644	0.2391
Right side	GSM850	0.0042	0.0678	0.0720
Left side	GSM850	0.2854	-	0.2854
Bottom side	GSM850	-	-	-
Back	GSM1900	1.1700	0.1185	1.2885
Front	GSM1900	-	-	-
Top side	GSM1900	0.0992	0.0644	0.1636
Right side	GSM1900	-	0.0678	0.0678
Left side	GSM1900	0.0316	-	0.0316
Bottom side	GSM1900	-	-	-
Back	WCDMA Band V	0.2324	0.1185	0.3509
Front	WCDMA Band V	-	-	-
Top side	WCDMA Band V	0.3130	0.0644	0.3774
Right side	WCDMA Band V	-	0.0678	0.0678
Left side	WCDMA Band V	0.0115	-	0.0115
Bottom side	WCDMA Band V	-	-	-
Back	WCDMA Band II	1.3974	0.1185	1.5159
Front	WCDMA Band II	-	-	-
Top side	WCDMA Band II	0.1132	0.0644	0.1776
Right side	WCDMA Band II	-	0.0678	0.0678
Left side	WCDMA Band II	0.1358	-	0.1358
Bottom side	WCDMA Band II	-	-	-
Back	LTE Band 4	1.1249	0.1185	1.2434
Front	LTE Band 4	-	-	-
Top side	LTE Band 4	0.8379	0.0644	0.9023
Right side	LTE Band 4	-	0.0678	0.0678
Left side	LTE Band 4	0.2954	-	0.2954
Bottom side	LTE Band 4	-	-	-

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3685	0.1047	0.4732
Front	GSM850	-	0.1047	0.1047
Top side	GSM850	0.1747	0.1047	0.2794
Right side	GSM850	0.0042	0.1047	0.1089
Left side	GSM850	0.2854	0.1047	0.3901
Bottom side	GSM850	-	0.1047	0.1047
Back	GSM1900	1.1700	0.1047	1.2747
Front	GSM1900	-	0.1047	0.1047
Top side	GSM1900	0.0992	0.1047	0.2039
Right side	GSM1900	-	0.1047	0.1047
Left side	GSM1900	0.0316	0.1047	0.1363
Bottom side	GSM1900	-	0.1047	0.1047
Back	WCDMA Band V	0.2324	0.1047	0.3371
Front	WCDMA Band V	-	0.1047	0.1047
Top side	WCDMA Band V	0.3130	0.1047	0.4177
Right side	WCDMA Band V	-	0.1047	0.1047
Left side	WCDMA Band V	0.0115	0.1047	0.1162
Bottom side	WCDMA Band V	-	0.1047	0.1047
Back	WCDMA Band II	1.3974	0.1047	1.5021
Front	WCDMA Band II	-	0.1047	0.1047
Top side	WCDMA Band II	0.1132	0.1047	0.2179
Right side	WCDMA Band II	-	0.1047	0.1047
Left side	WCDMA Band II	0.1358	0.1047	0.2405
Bottom side	WCDMA Band II	-	0.1047	0.1047
Back	LTE Band 4	1.1249	0.1047	1.2296
Front	LTE Band 4	-	0.1047	0.1047
Top side	LTE Band 4	0.8379	0.1047	0.9426
Right side	LTE Band 4	-	0.1047	0.1047
Left side	LTE Band 4	0.2954	0.1047	0.4001
Bottom side	LTE Band 4	-	0.1047	0.1047

Remark: For BT the 1g SAR value is not being captured by the measurement system, the 1g-SAR value is conservatively used for simultaneous transmission analysis.

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**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.89	2.89	∝
Test Sample Related									
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	√3	1	1	6.94	6.94	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Liquid conductivity - deviation from target value	E.3.2	5.00	R	√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	√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**
Measurement System									
Probe calibration	E.2.1	7.0	N	1	1	1	7.00	7.00	∝
Axial Isotropy	E.2.2	2.5	R	√3	(1_Cp)^1/2	(1_Cp)^1/2	1.02	1.02	∝
Hemispherical Isotropy	E.2.2	4.0	R	√3	(Cp)^1/2	(Cp)^1/2	1.63	1.63	∝
Boundary effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∝
Linearity	E.2.4	5.0	R	√3	1	1	2.89	2.89	∝
System detection limits	E.2.5	1.0	R	√3	1	1	0.58	0.58	∝
Readout Electronics	E.2.6	0.02	N	1	1	1	0.02	0.02	∝
Reponse Time	E.2.7	3.0	R	√3	1	1	1.73	1.73	∝
Integration Time	E.2.8	2.0	R	√3	1	1	1.15	1.15	∝
RF ambient Conditions	E.6.1	3.0	R	√3	1	1	1.73	1.73	∝
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	√3	1	1	1.15	1.15	∝
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	√3	1	1	0.03	0.03	∝
Extrapolation, interpolation and integration Algoritms for Max. SAR Evaluation	E.5.2	5.0	R	√3	1	1	2.89	2.89	∝
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	√3	1	1	0.58	0.58	N−1
Input power and SAR drift measurement	8,6.6.2	12.02	R	√3	1	1	6.94	6.94	∝
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	√3	1	1	0.03	0.03	∝
Liquid conductivity - deviation from target value	E.3.2	5.00	R	√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	√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 Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 11/16/2015

Measurement duration: 12 minutes 21 seconds

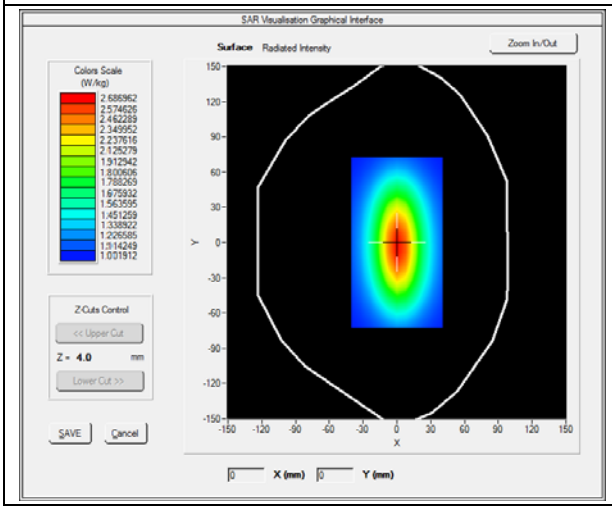
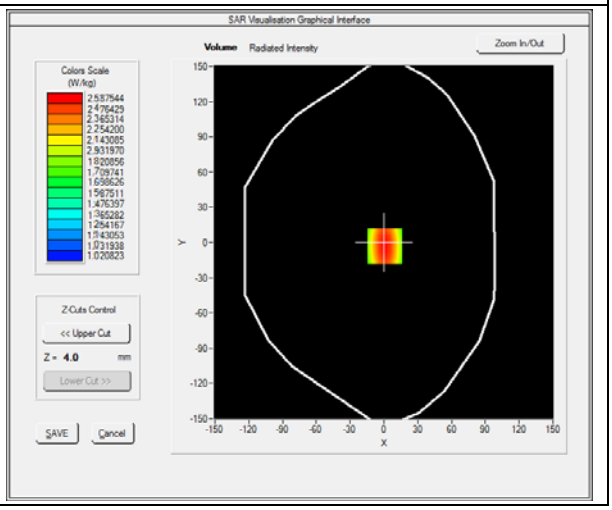
E-field Probe: SSE5 - SN 09/13 EP168; ConvF:7.13; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

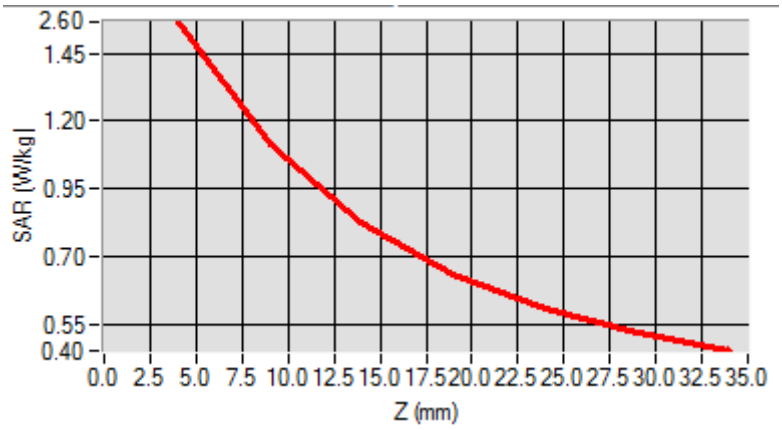
SURFACE SAR	VOLUME SAR
	

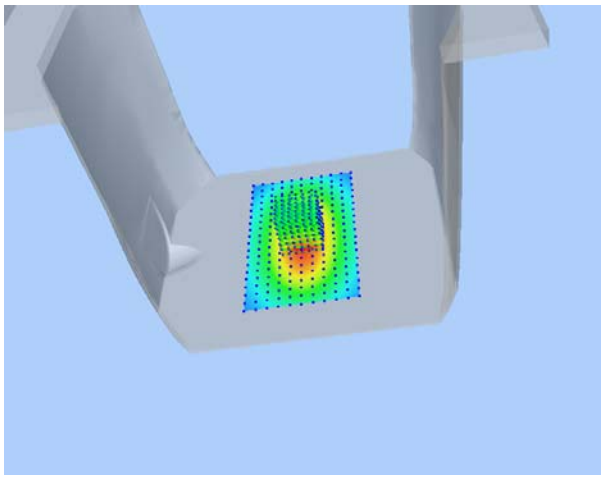
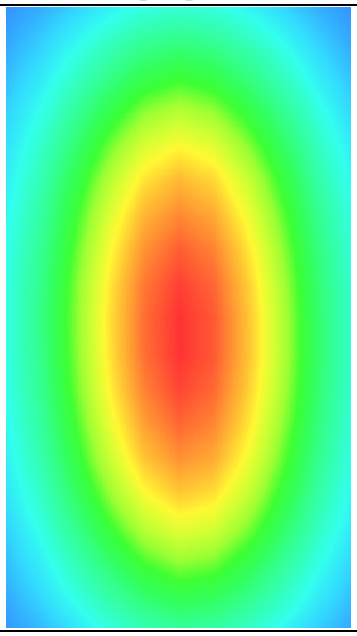
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**1.028956**
SAR 1g (W/Kg)	**2.354211**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**2.5789**	**1.1300**	**0.8795**	**0.5940**	**0.5011**	**0.5100**



3D screen shot	**Hot spot position**
	

MEASUREMENT 2

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 11/16/2015

Measurement duration: 12 minutes 21 seconds

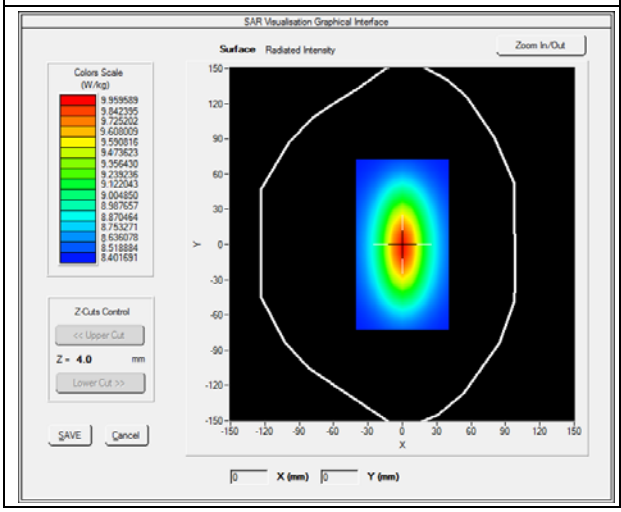
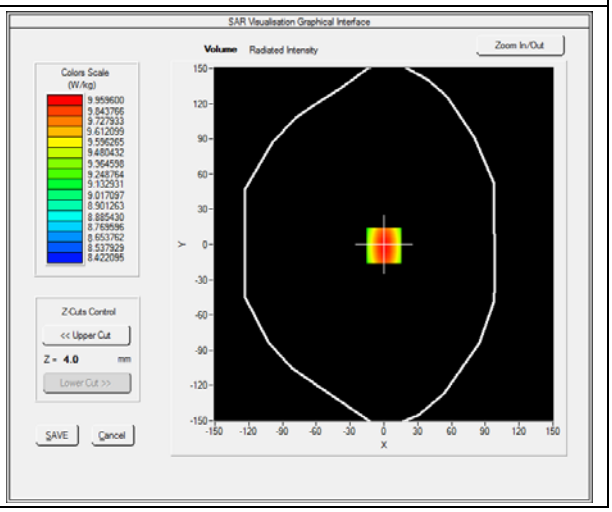
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Signal	CW (Crest factor: 1.0)

B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.845690
Ambient Temperature	21.1
Liquid Temperature	21.2

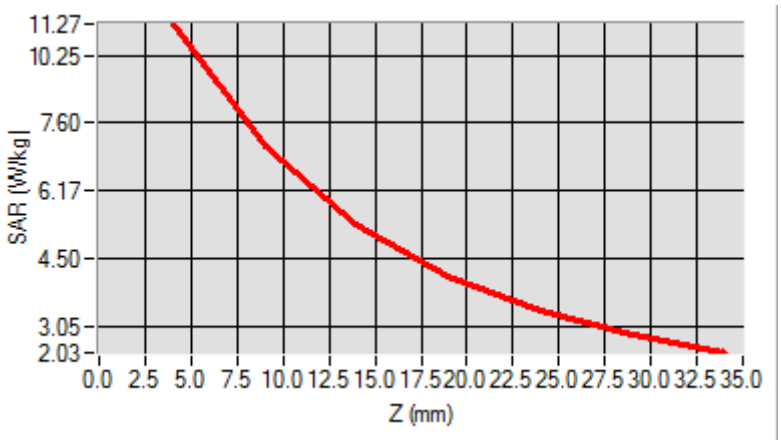
SURFACE SAR	VOLUME SAR
	

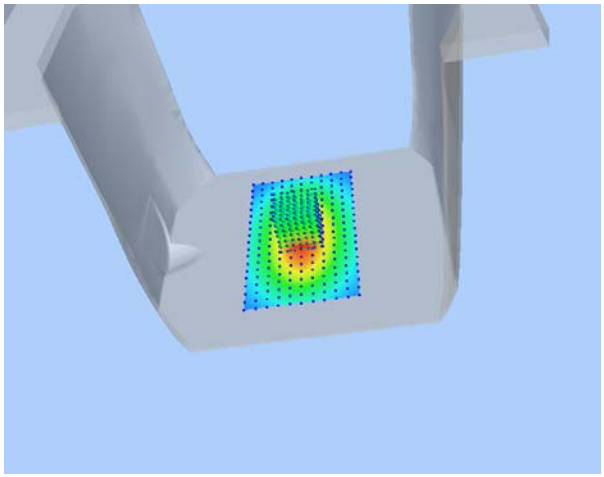
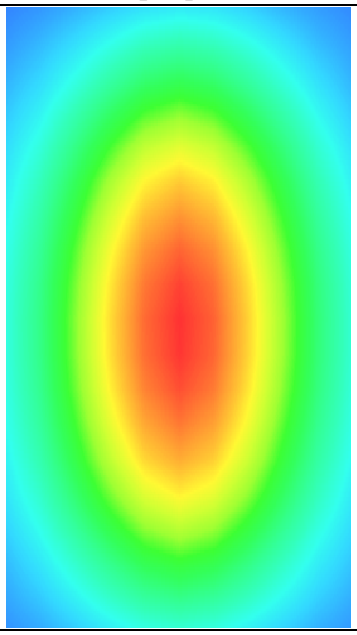
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.221202**
SAR 1g (W/Kg)	**9.582560**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**11.2425**	**9.4123**	**8.0345**	**6.9125**	**6.3092**	**3.9460**



3D screen shot	**Hot spot position**
	

MEASUREMENT 3

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 11/16/2015

Measurement duration: 12 minutes 21 seconds

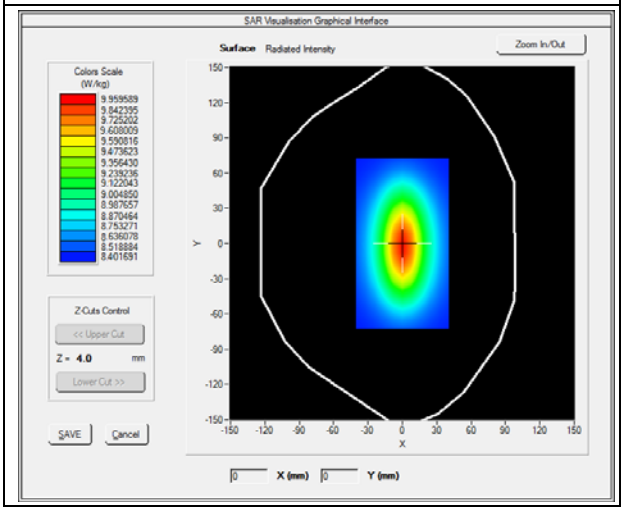
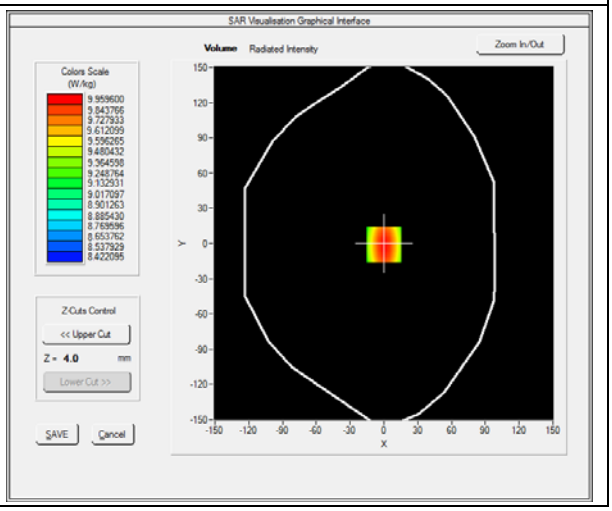
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.541872
Ambient Temperature	21.1
Liquid Temperature	21.3

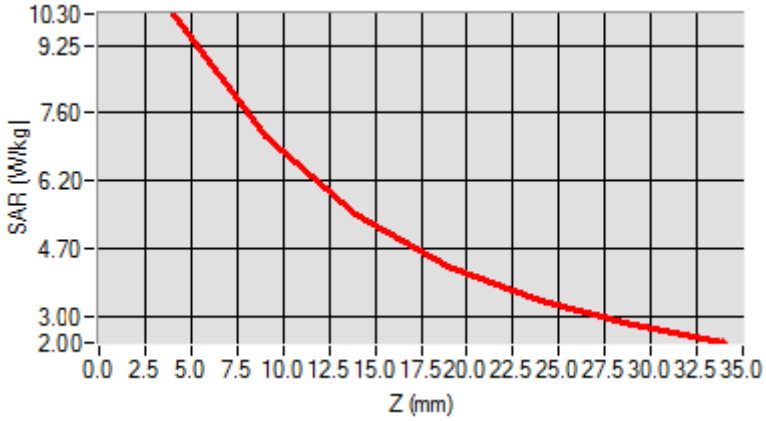
SURFACE SAR	VOLUME SAR
	

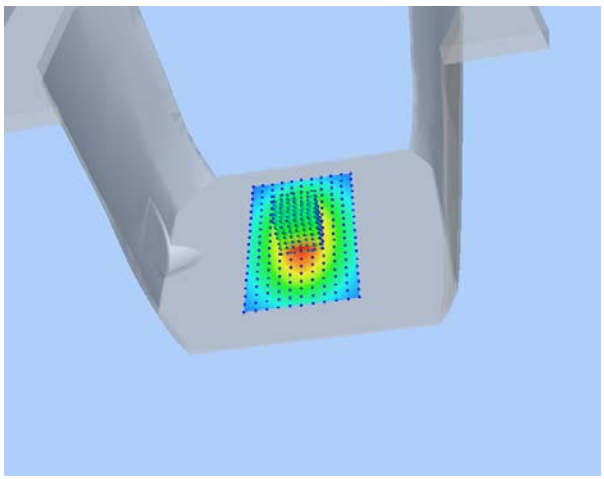
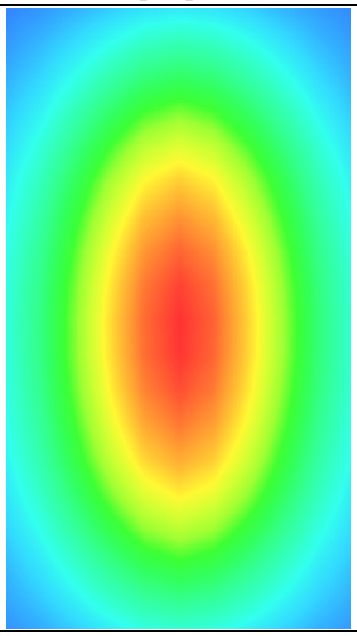
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**5.134651**
SAR 1g (W/Kg)	**9.781550**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**10.2031**	**6.43001**	**4.9011**	**4.5325**	**3.1201**	**2.5024**



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 11/16/2015

Measurement duration: 12 minutes 21 seconds

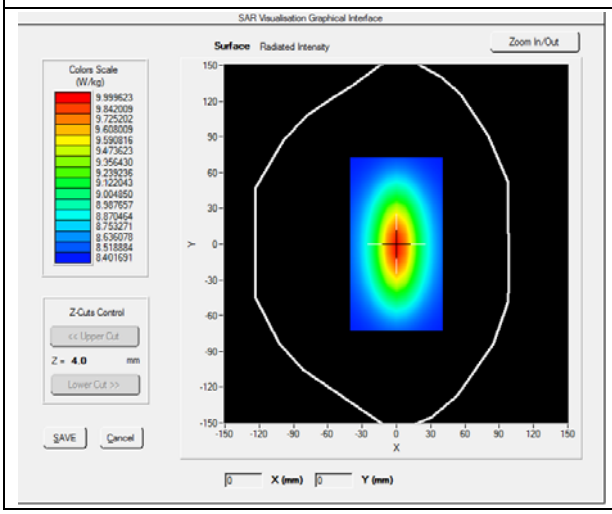
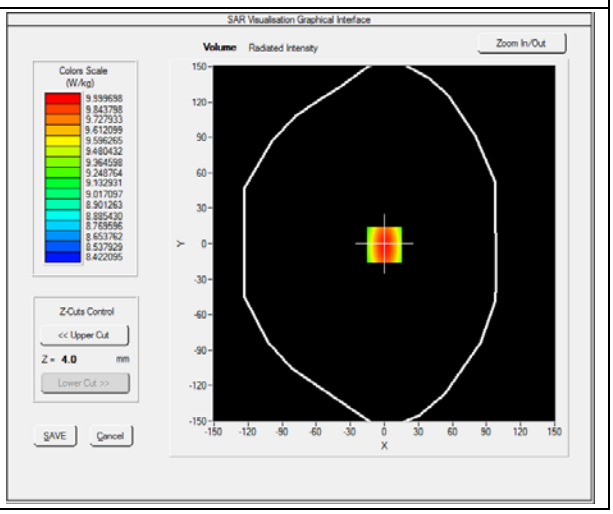
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative Permittivity (real part)	52.0102121
Conductivity (S/m)	1.910255
Power Variation (%)	1.369745
Ambient Temperature	21.1
Liquid Temperature	21.2

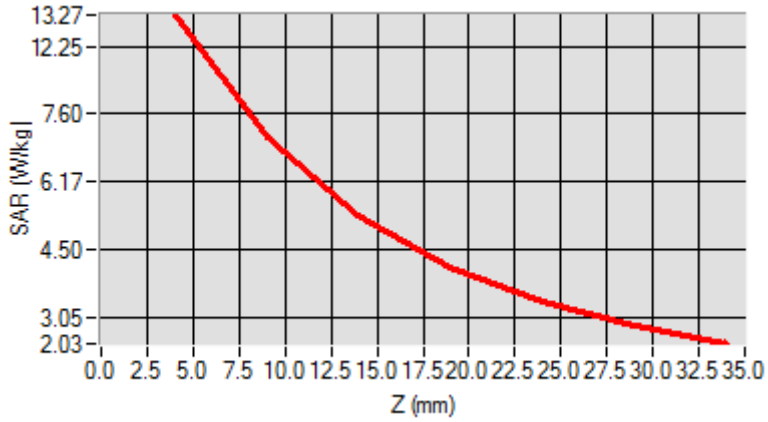
SURFACE SAR	VOLUME SAR
	

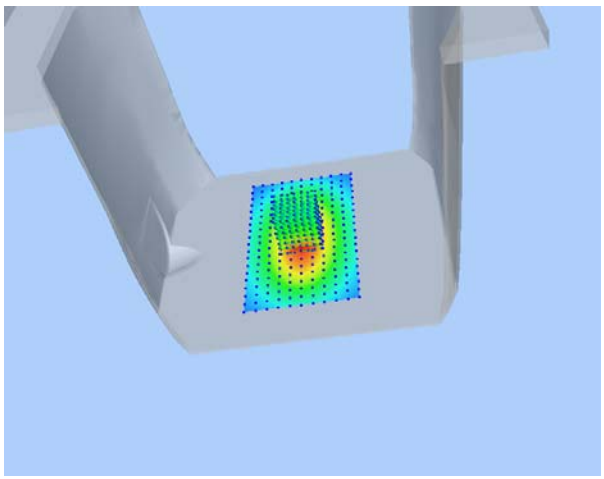
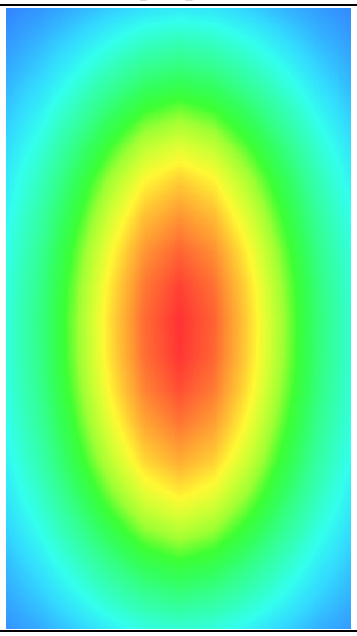
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	**7.119522**
SAR 1g (W/Kg)	**12.592360**

Z Axis Scan

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**	**24.00**	**29.00**
SAR (W/Kg)	**0.0000**	**13.3911**	**11.7951**	**9.2945**	**8.5400**	**6.3712**	**4.6225**



3D screen shot	**Hot spot position**
	

Annex B. Plots of SAR Measurement

TYPE	BAND	PARAMETERS
Tablet	GPR850_4TX	Measurement 1: Flat Plane with Back device position on High Channel in GPRS mode
Tablet	GPRS850_4TX	Measurement 2: Flat Plane with Top side device position on High Channel in GPRS mode
Tablet	GPRS850_4TX	Measurement 3: Flat Plane with Right side device position on High Channel in GPRS mode
Tablet	GPRS850_4TX	Measurement 4: Flat Plane with Left side device position on High Channel in GPRS mode
Tablet	GPRS1900_2TX	Measurement 5: Flat Plane with Back device position on High Channel in GPRS mode
Tablet	GPRS1900_2TX	Measurement 6: Flat Plane with Back device position on Low Channel in GPRS mode
Tablet	GPRS1900_2TX	Measurement 7: Flat Plane with Back device position on Middle Channel in GPRS mode
Tablet	GPRS1900_2TX	Measurement 8: Flat Plane with Top side device position on High Channel in GPRS mode
Tablet	GPRS1900_2TX	Measurement 9: Flat Plane with Left side device position on High Channel in GPRS mode
Tablet	WCDMA850_RMC	Measurement 10 Flat Plane with Back device position on Middle Channel in WCDMA mode
Tablet	WCDMA850_RMC	Measurement 11: Flat Plane with Top side device position on Middle Channel in WCDMA mode
Tablet	WCDMA850_RMC	Measurement 12: Flat Plane with Left side device position on Middle Channel in WCDMA mode
Tablet	WCDMA1900_RMC	Measurement 13: Flat Plane with Back device position on High Channel in WCDMA mode
Tablet	WCDMA1900_RMC	Measurement 14: Flat Plane with Back device position on Low Channel in WCDMA mode
Tablet	WCDMA1900_RMC	Measurement 15: Flat Plane with Back device position on Middle Channel in WCDMA mode
Tablet	WCDMA1900_RMC	Measurement 16: Flat Plane with Top side device position on High Channel in WCDMA mode
Tablet	WCDMA1900_RMC	Measurement 17: Flat Plane with Left side device position on High Channel in WCDMA mode
Tablet	LTE Band 4_RMC	Measurement 18: Flat Plane with Back device position on Middle Channel in LTE mode
Tablet	LTE Band 4_RMC	Measurement 19: Flat Plane with Back device position on Low Channel in LTE mode

Tablet	**LTE Band 4_RMC**	Measurement 20: Flat Plane with Back device position on High Channel in LTE mode
Tablet	**LTE Band 4_RMC**	Measurement 21: Flat Plane with Top device position on Middle Channel in LTE mode
Tablet	**LTE Band 4_RMC**	Measurement 22: Flat Plane with Left device position on Middle Channel in LTE mode
Tablet	**WiFi_802.11b**	Measurement 23: Flat Plane with Back side device position on Low Channel in 802.11b mode
Tablet	**WiFi_802.11b**	Measurement 24: Flat Plane with Top side device position on Low Channel in 802.11b mode
Tablet	**WiFi_802.11b**	Measurement 25 Flat Plane with Right side device position on Low Channel in 802.11b mode

MEASUREMENT 1

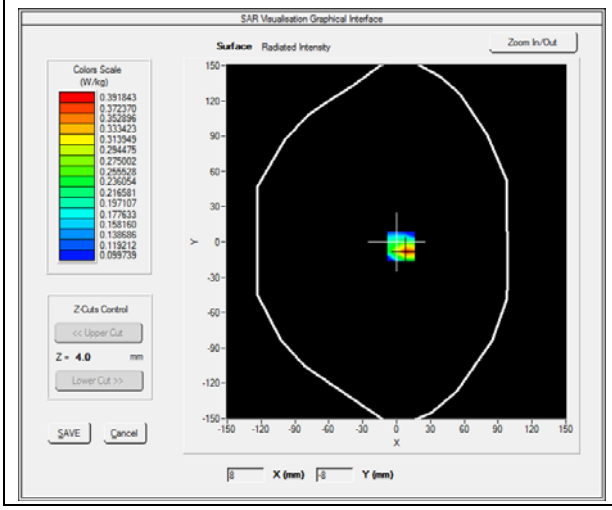
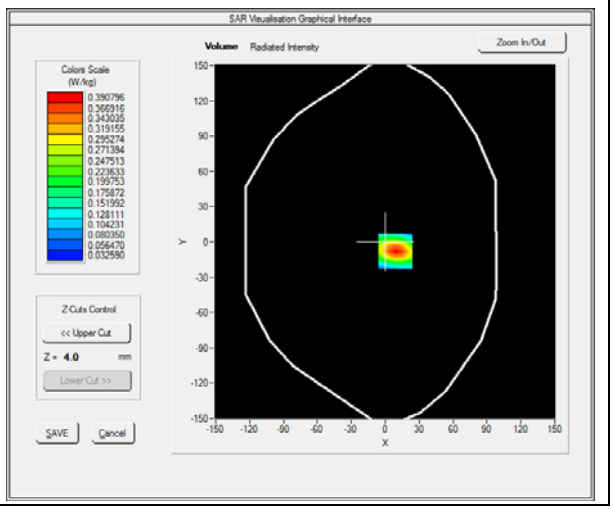
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

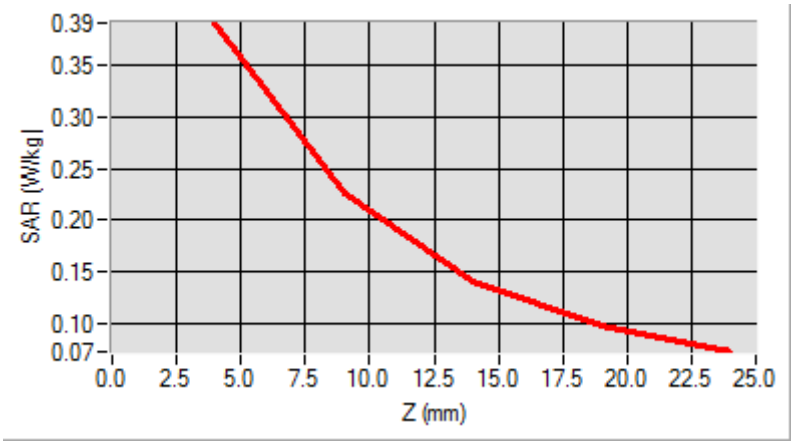
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.894569
Ambient Temperature	21.1
Liquid Temperature	21.3

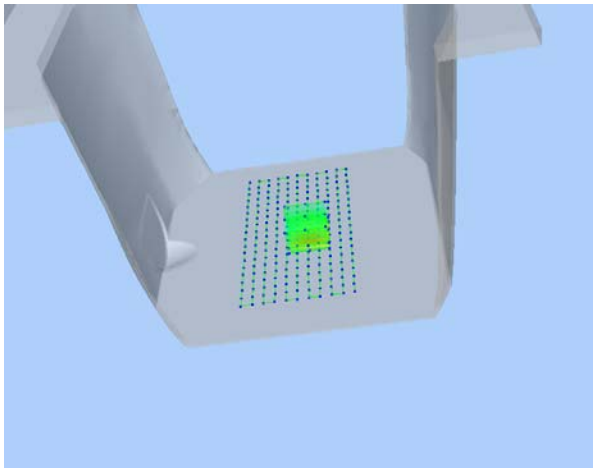
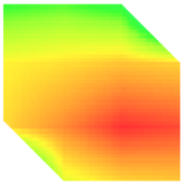
SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=-8.00

SAR 10g (W/Kg)	**0.196302**
SAR 1g (W/Kg)	**0.354394**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.3908**	**0.2270**	**0.1402**	**0.0976**



3D screen shot	**Hot spot position**
	

MEASUREMENT 2

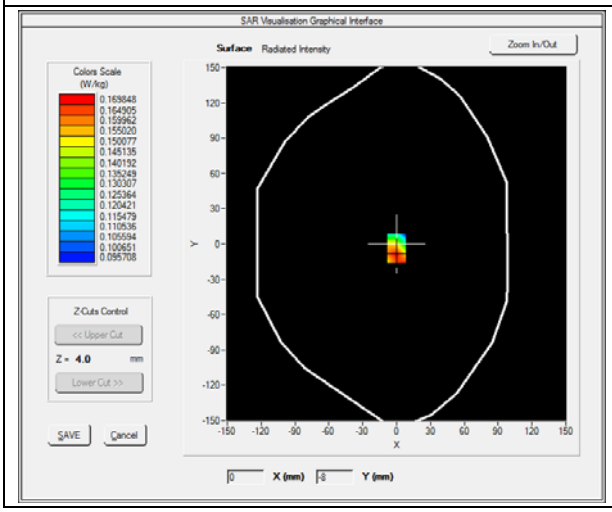
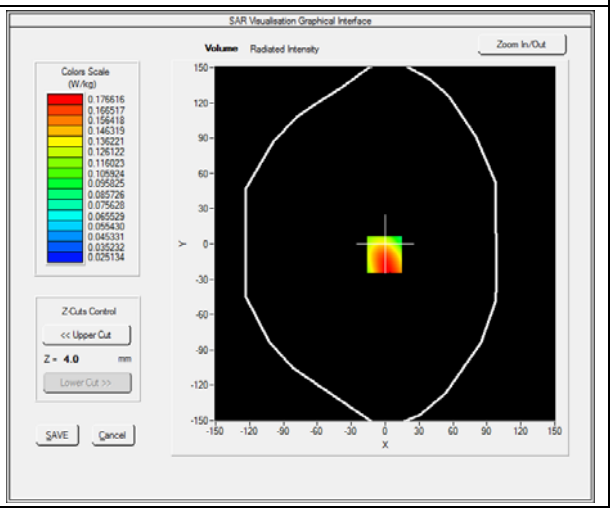
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Top
Band	GPRS850_4TX
Channels	High
Signal	Duty Cycle: 3.00 (Crest factor: 3.00)

B. SAR Measurement Results

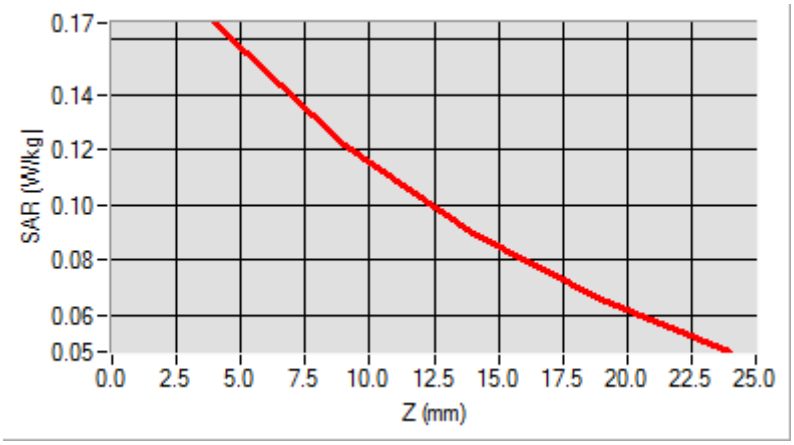
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	2.800000
Ambient Temperature	21.1
Liquid Temperature	21.3

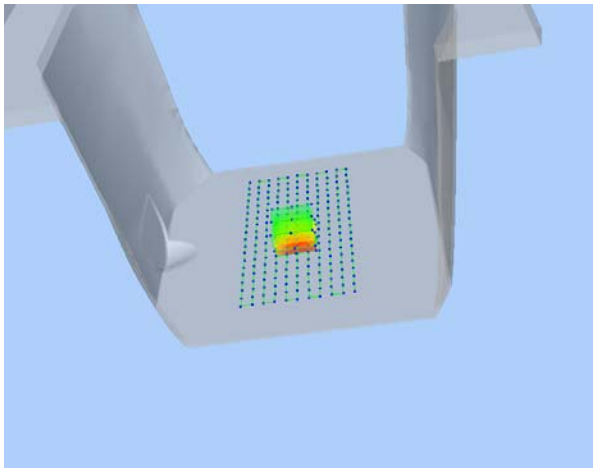
SURFACE SAR	VOLUME SAR
	

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**



3D screen shot	**Hot spot position**
	

MEASUREMENT 3

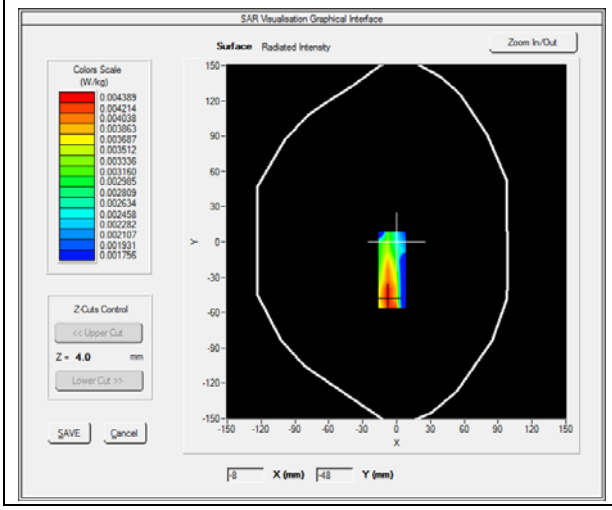
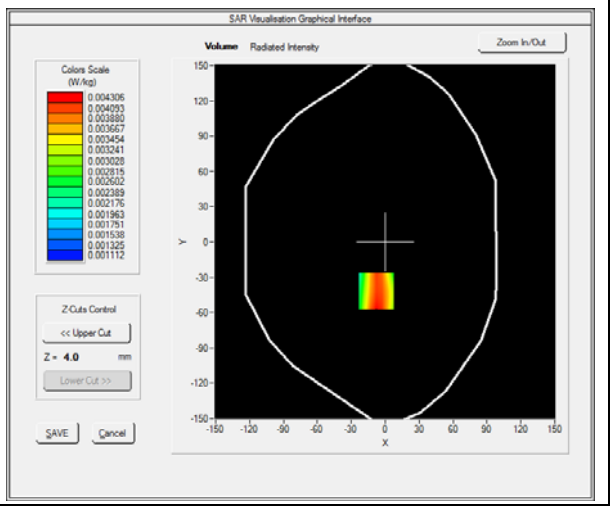
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

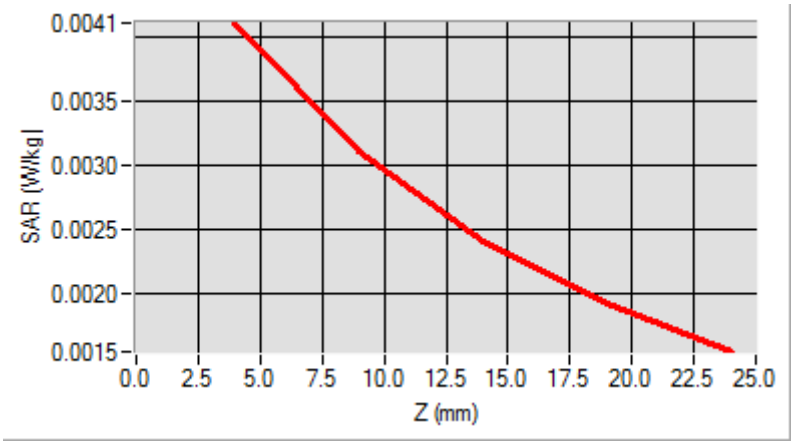
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.820000
Ambient Temperature	21.1
Liquid Temperature	21.3

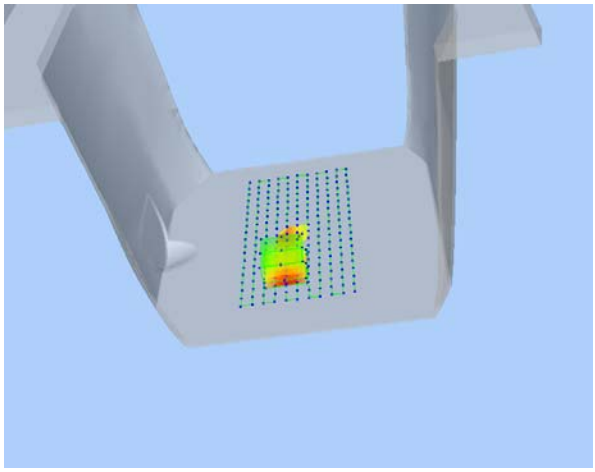
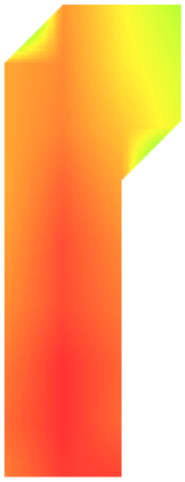
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-42.00

SAR 10g (W/Kg)	**0.002929**
SAR 1g (W/Kg)	**0.004048**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0041**	**0.0031**	**0.0024**	**0.0019**



3D screen shot	**Hot spot position**
	

MEASUREMENT 4

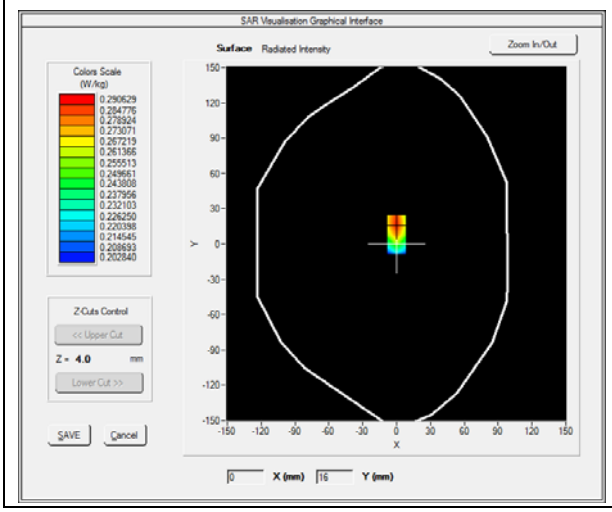
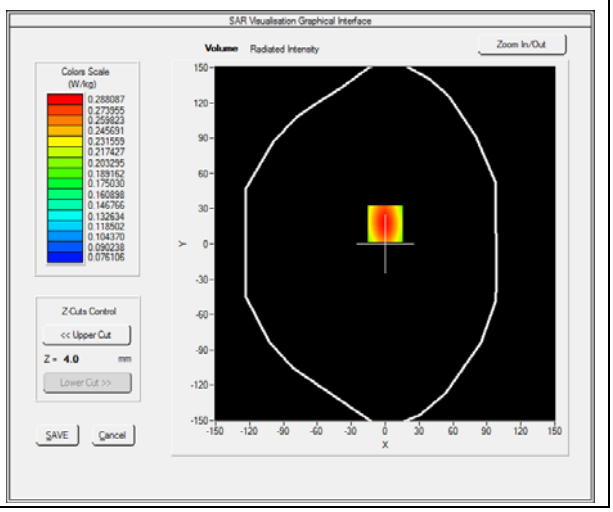
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

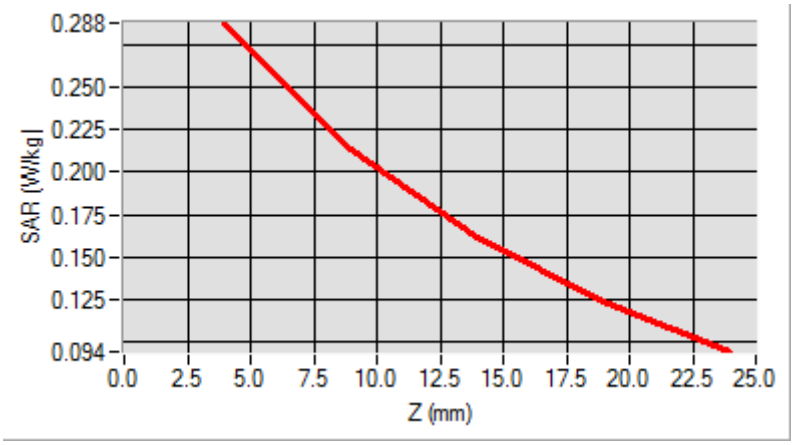
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	1.634634
Ambient Temperature	21.1
Liquid Temperature	21.3

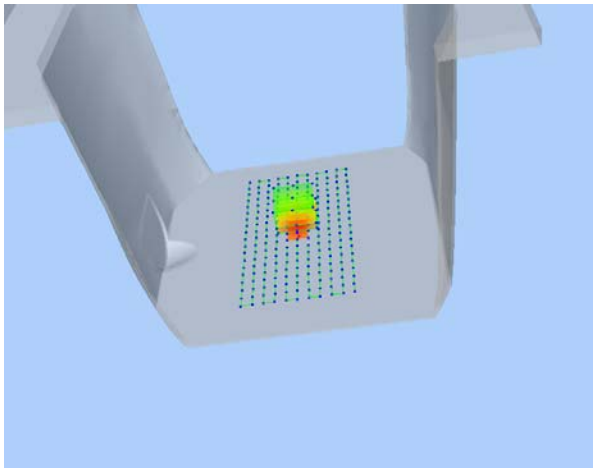
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=17.00

SAR 10g (W/Kg)	**0.196634**
SAR 1g (W/Kg)	**0.274469**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2881**	**0.2141**	**0.1611**	**0.1233**



3D screen shot	**Hot spot position**
	

MEASUREMENT 5

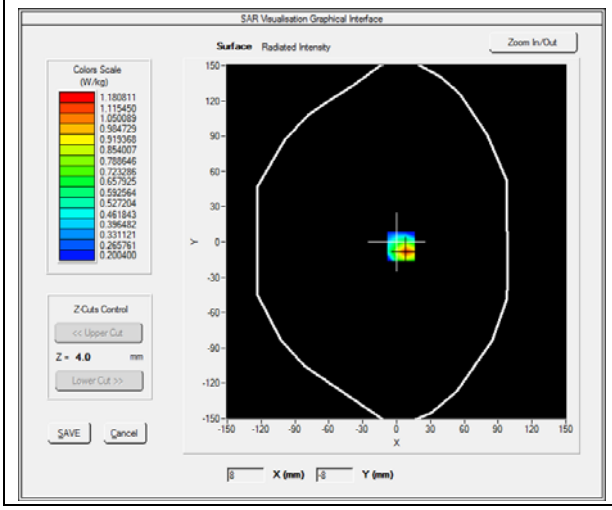
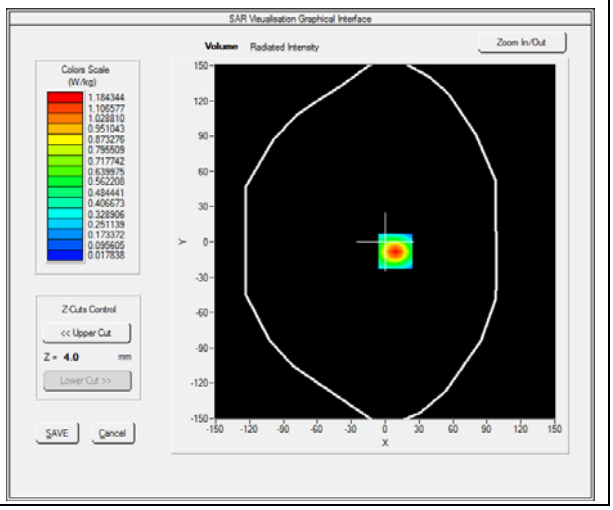
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_2TX
Channels	High
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

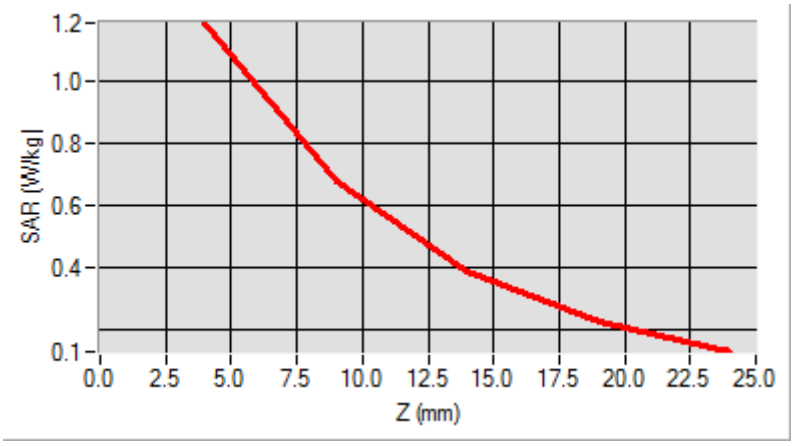
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-0.520000
Ambient Temperature	21.1
Liquid Temperature	21.3

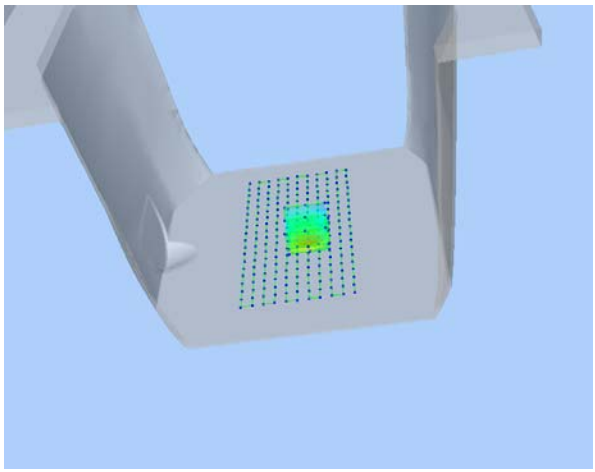
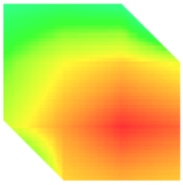
SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=-8.00

SAR 10g (W/Kg)	**0.521157**
SAR 1g (W/Kg)	**1.045525**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.1843**	**0.6747**	**0.3838**	**0.2241**



3D screen shot	**Hot spot position**
	

MEASUREMENT 6

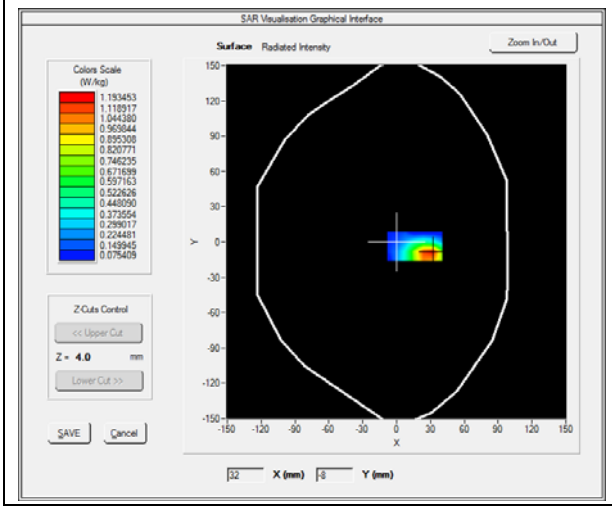
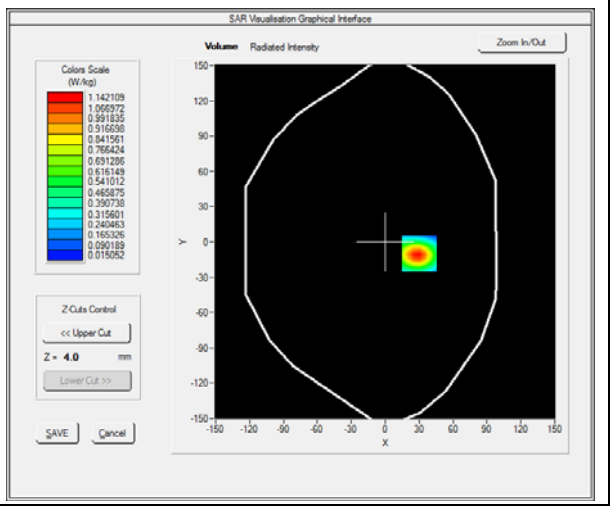
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_2TX
Channels	Low
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

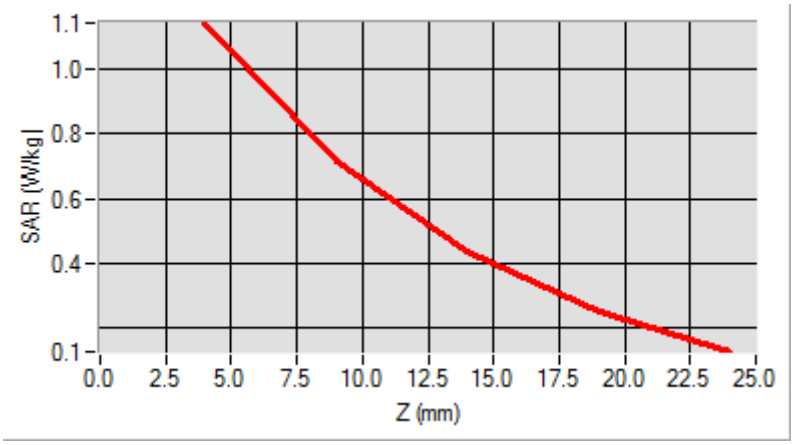
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-3.050000
Ambient Temperature	21.1
Liquid Temperature	21.3

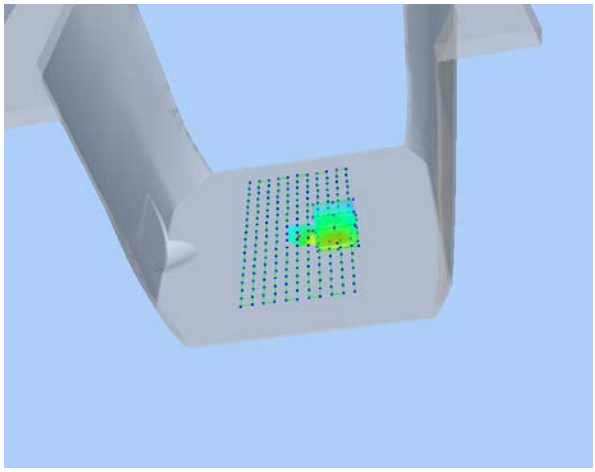
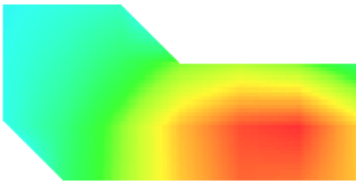
SURFACE SAR	VOLUME SAR
	

Maximum location: X=30.00, Y=-10.00

SAR 10g (W/Kg)	**0.535842**
SAR 1g (W/Kg)	**1.026109**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.1421**	**0.7161**	**0.4333**	**0.2497**



3D screen shot	**Hot spot position**
	

MEASUREMENT 7

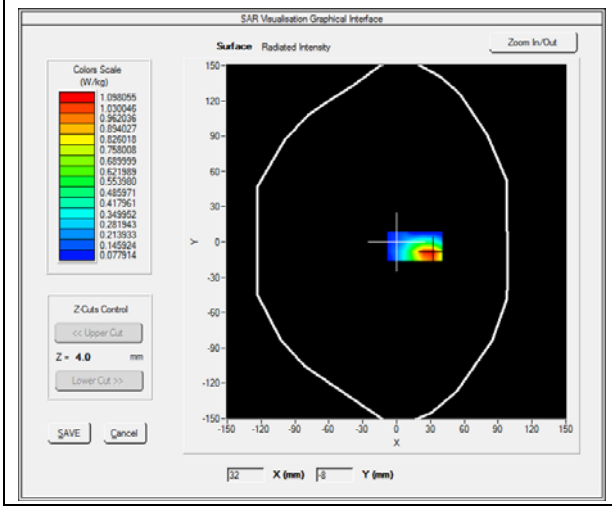
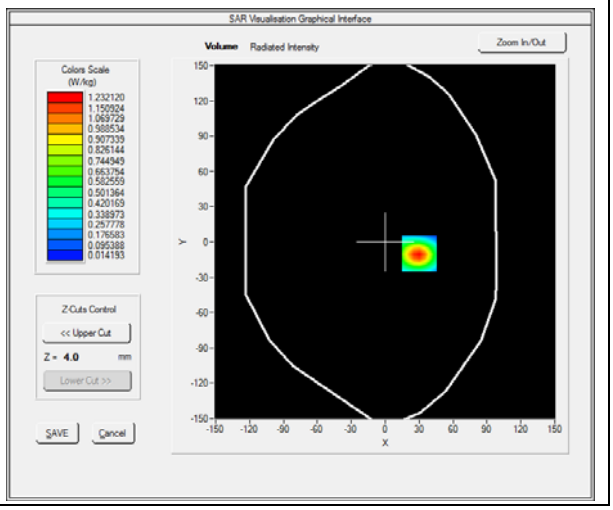
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS1900_2TX
Channels	Middle
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

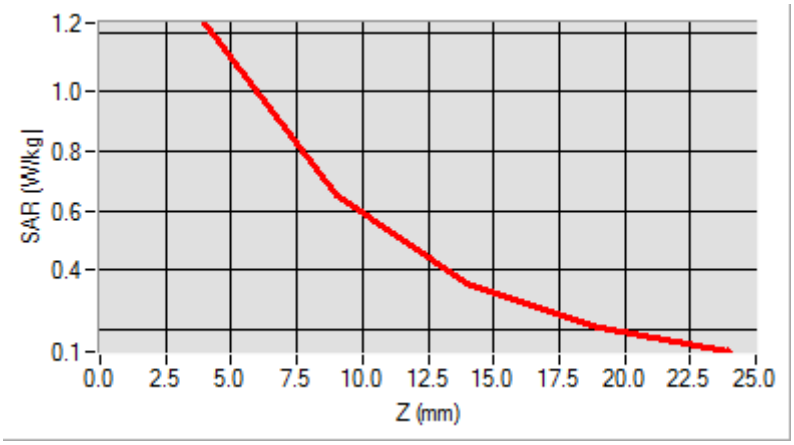
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-2.220000
Ambient Temperature	21.1
Liquid Temperature	21.3

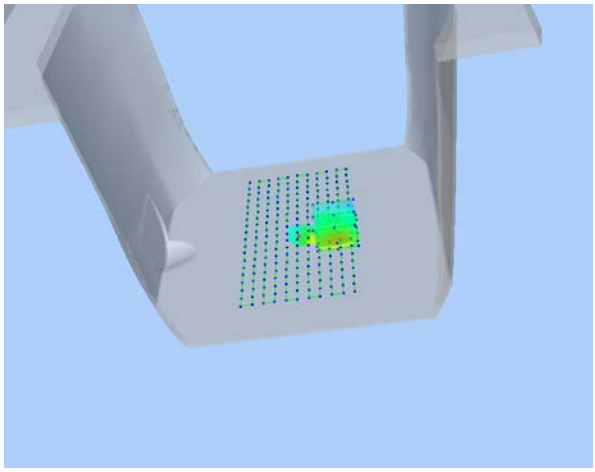
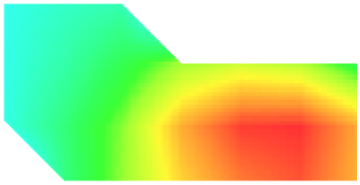
SURFACE SAR	VOLUME SAR
	

Maximum location: X=30.00, Y=-10.00

SAR 10g (W/Kg)	**0.535933**
SAR 1g (W/Kg)	**0.903435**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.2321**	**0.6516**	**0.3516**	**0.2066**



3D screen shot	**Hot spot position**
	

MEASUREMENT 8

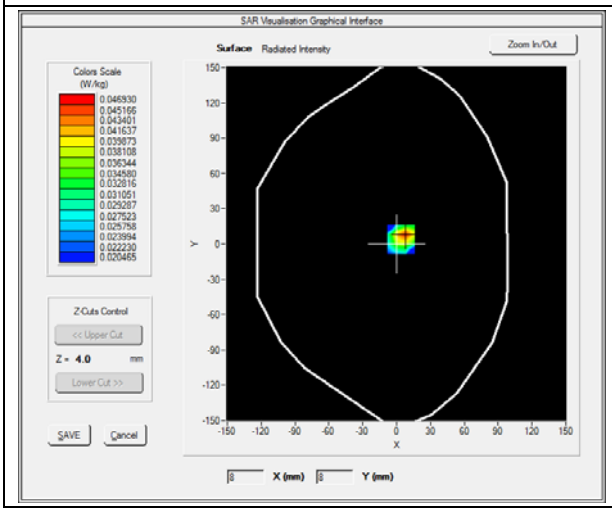
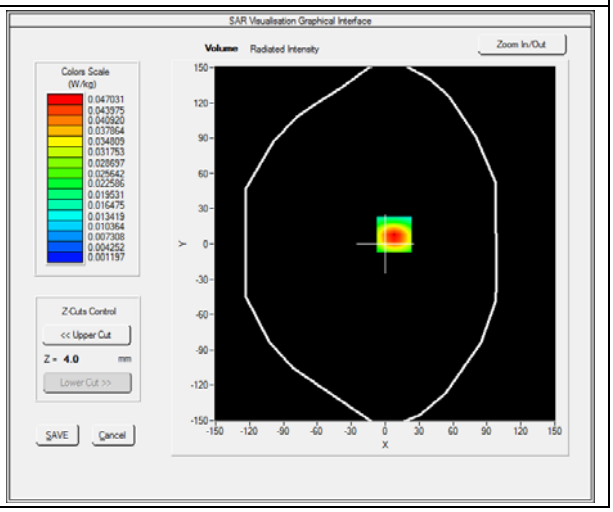
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Top
Band	GPRS1900_2TX
Channels	High
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

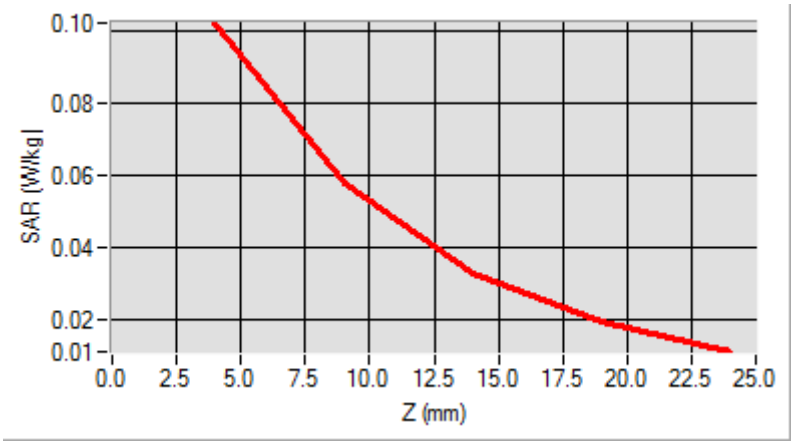
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	0.740000
Ambient Temperature	21.1
Liquid Temperature	21.3

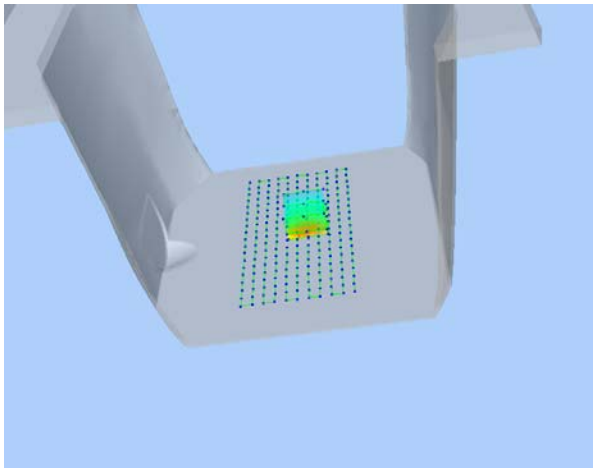
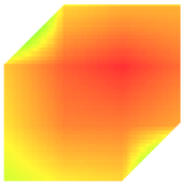
SURFACE SAR	VOLUME SAR
	

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 9

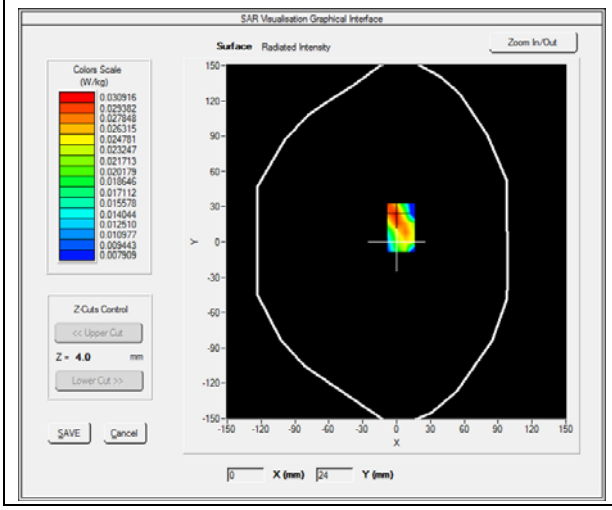
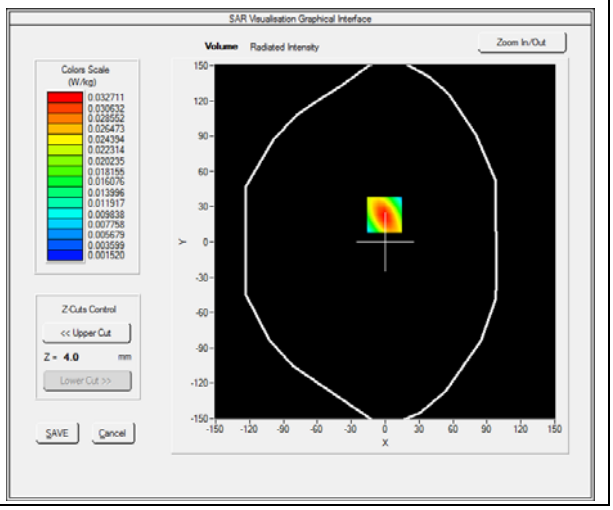
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Left side
Band	GPRS1900_2TX
Channels	High
Signal	Duty Cycle: 1:4

B. SAR Measurement Results

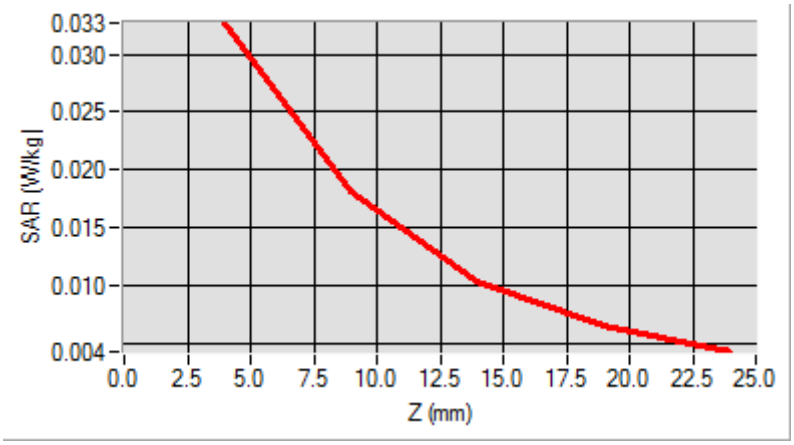
Frequency (MHz)	1909.800000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-0.680000
Ambient Temperature	21.1
Liquid Temperature	21.3

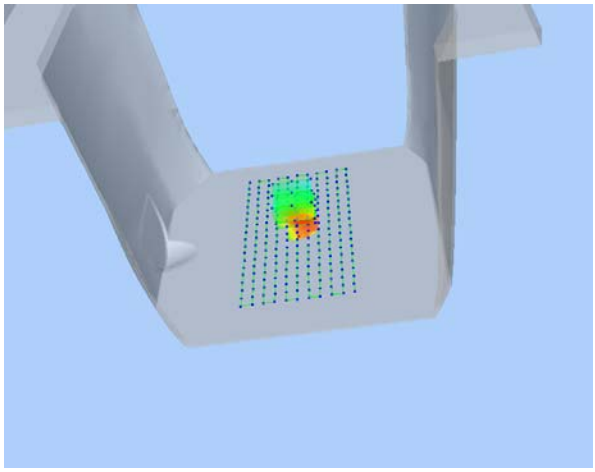
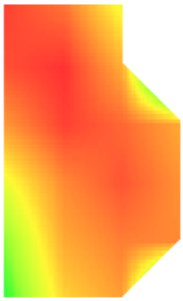
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=23.00

SAR 10g (W/Kg)	**0.017011**
SAR 1g (W/Kg)	**0.030292**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0327**	**0.0181**	**0.0104**	**0.0065**



3D screen shot	**Hot spot position**
	

MEASUREMENT 10

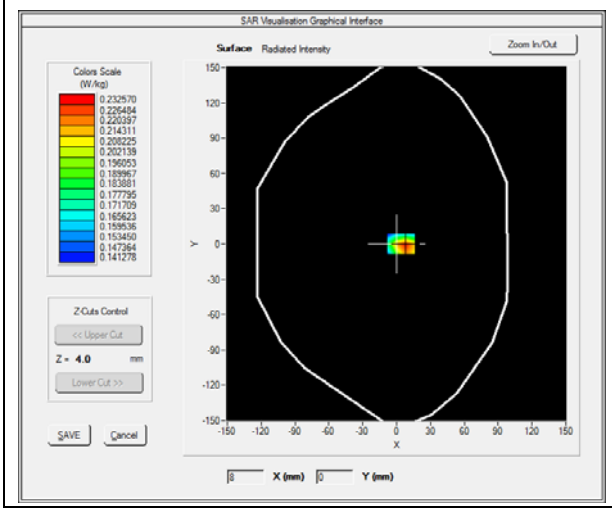
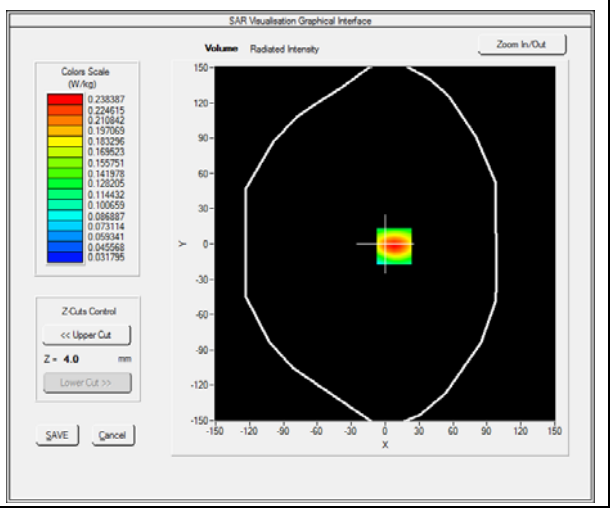
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA850_RMC
Channels	Middle
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

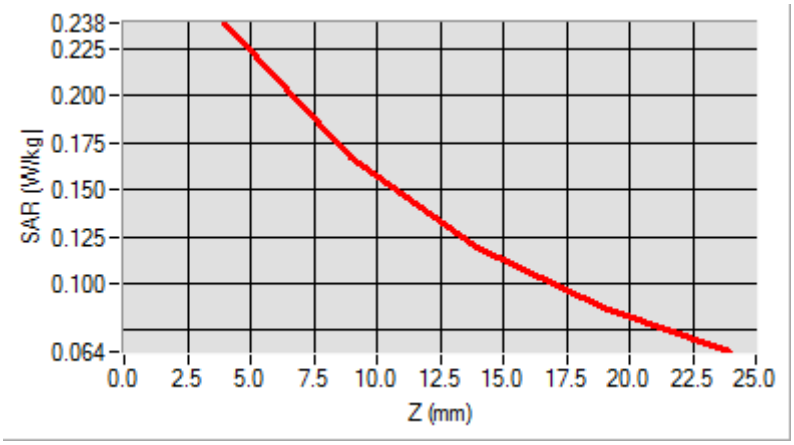
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	-0.640000
Ambient Temperature	21.1
Liquid Temperature	21.3

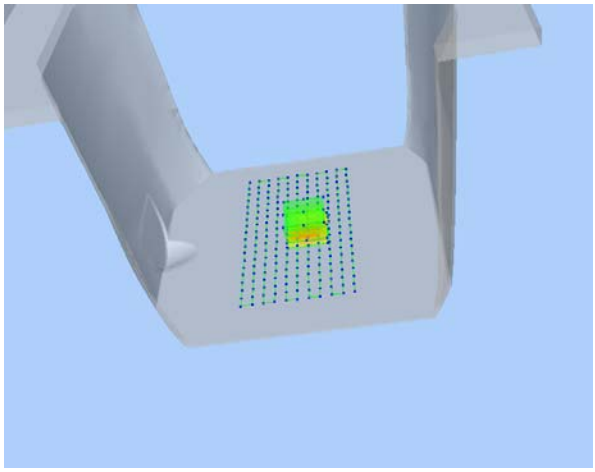
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-2.00

SAR 10g (W/Kg)	**0.144533**
SAR 1g (W/Kg)	**0.221426**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2384**	**0.1670**	**0.1191**	**0.0873**



3D screen shot	**Hot spot position**
	

MEASUREMENT 11

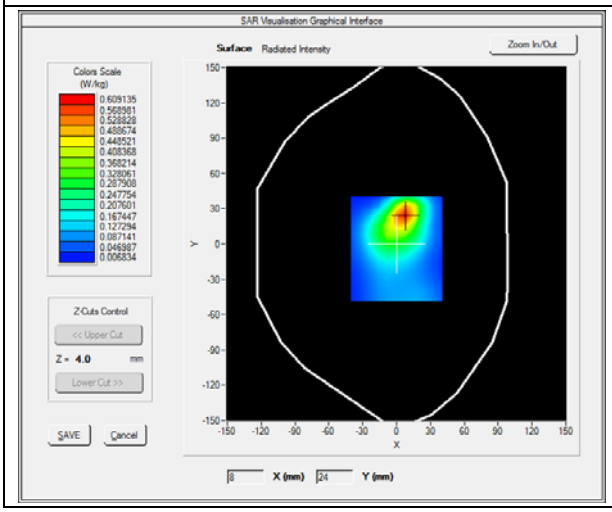
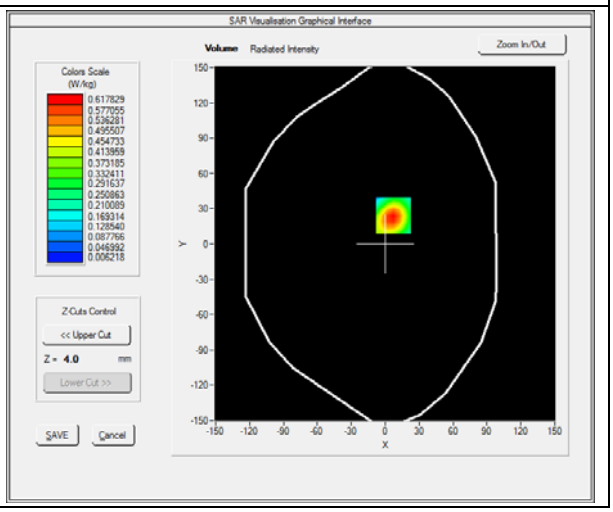
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Top
Band	WCDMA850_RMC
Channels	Middle
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

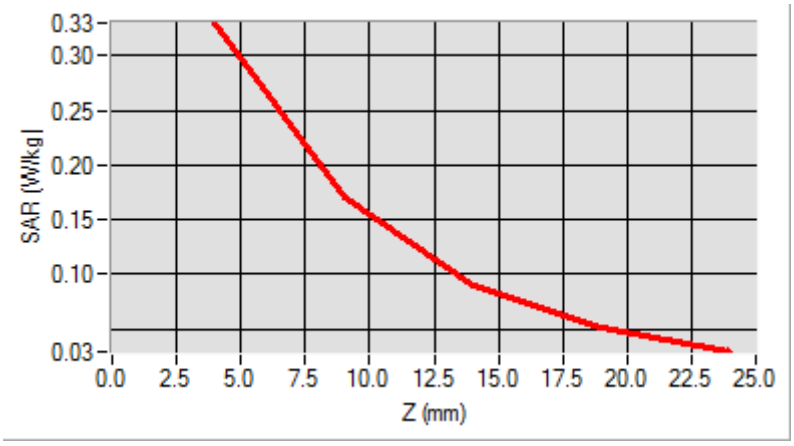
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	-0.320000
Ambient Temperature	21.1
Liquid Temperature	21.3

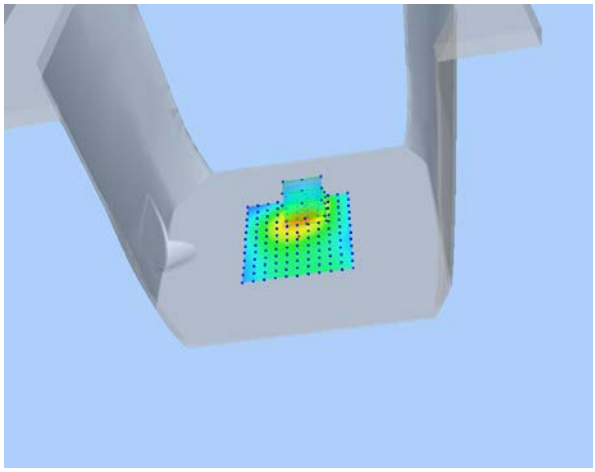
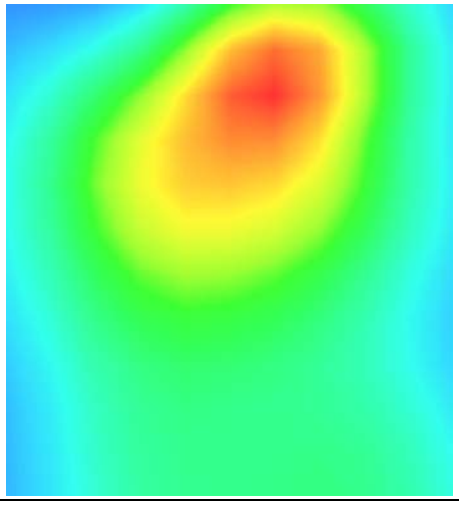
SURFACE SAR	VOLUME SAR
	

Maximum location: X=10.00, Y=-1.00

SAR 10g (W/Kg)	**0.149500**
SAR 1g (W/Kg)	**0.298271**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.3303**	**0.1709**	**0.0894**	**0.0506**



3D screen shot	**Hot spot position**
	

MEASUREMENT 12

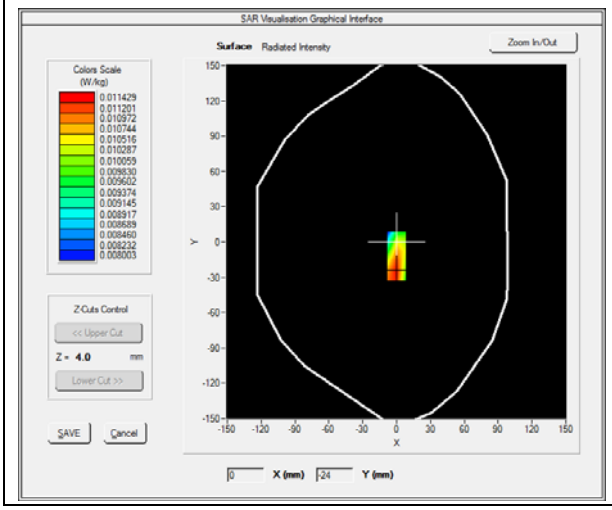
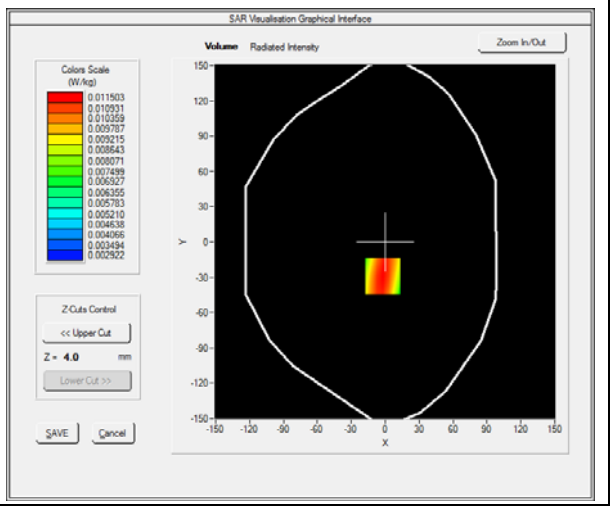
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Left side
Band	WCDMA850_RMC
Channels	Middle
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

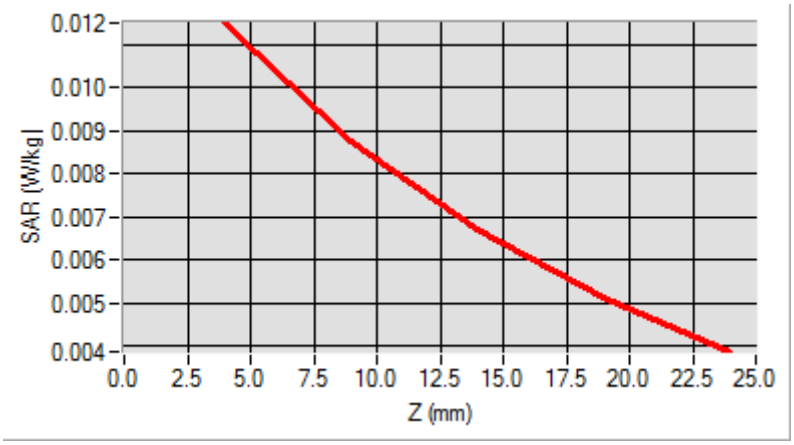
Frequency (MHz)	836.600000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	-0.430000
Ambient Temperature	21.1
Liquid Temperature	21.3

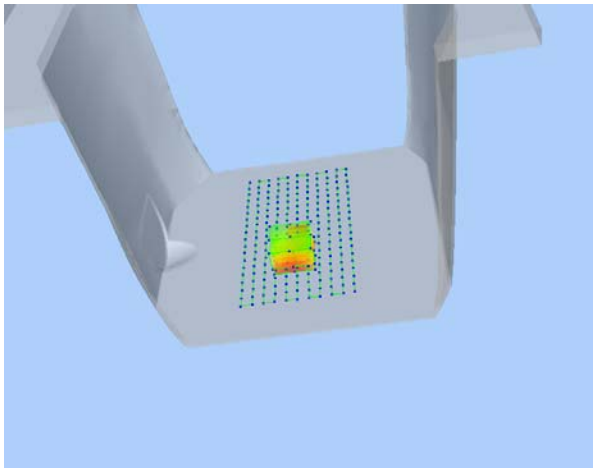
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-2.00, Y=-29.00

SAR 10g (W/Kg)	**0.008032**
SAR 1g (W/Kg)	**0.010981**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0115**	**0.0088**	**0.0067**	**0.0051**



3D screen shot	**Hot spot position**
	

MEASUREMENT 13

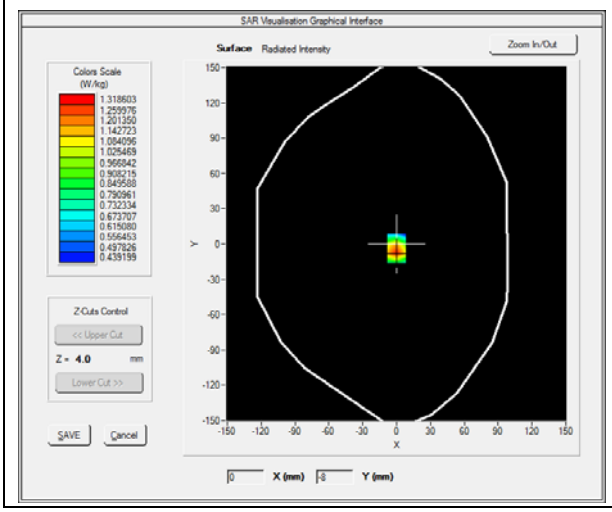
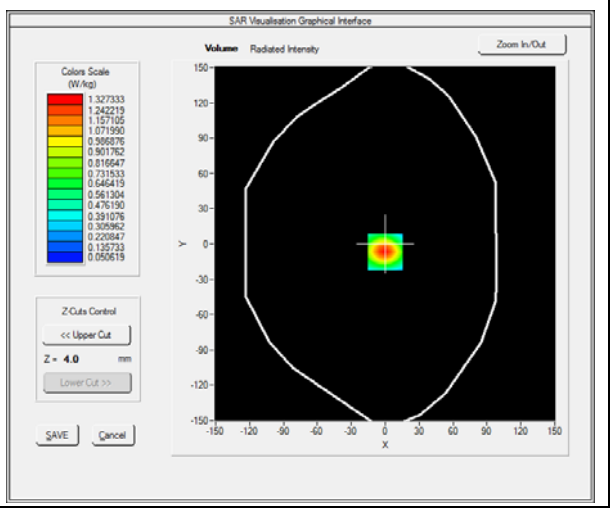
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	High
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

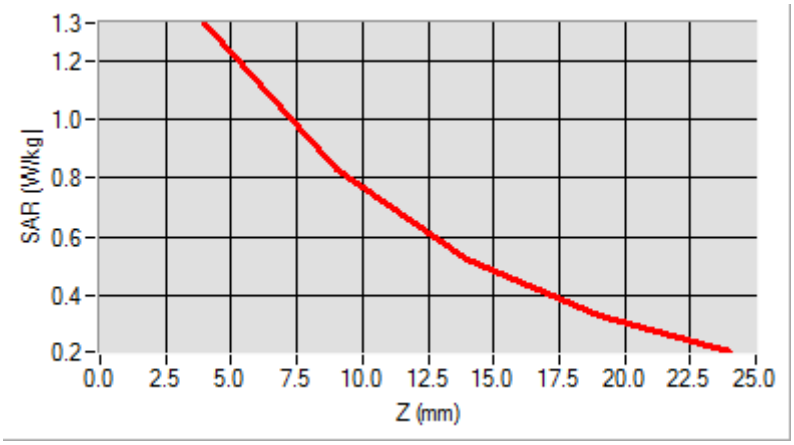
Frequency (MHz)	1907.600000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-1.000000
Ambient Temperature	21.1
Liquid Temperature	21.3

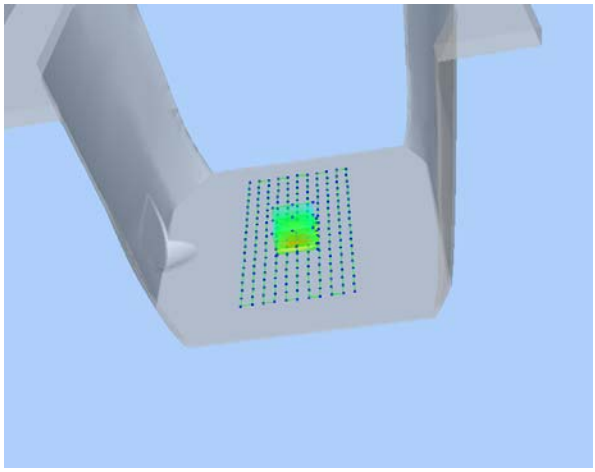
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-7.00

SAR 10g (W/Kg)	**0.668616**
SAR 1g (W/Kg)	**0.864483**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.3273**	**0.8278**	**0.5194**	**0.3330**



3D screen shot	**Hot spot position**
	

MEASUREMENT 14

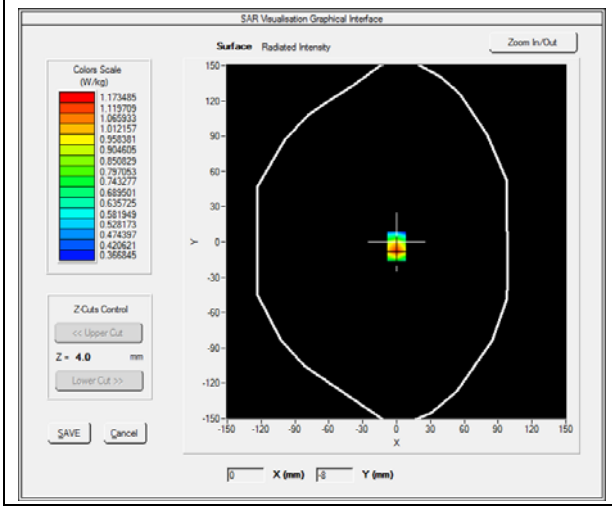
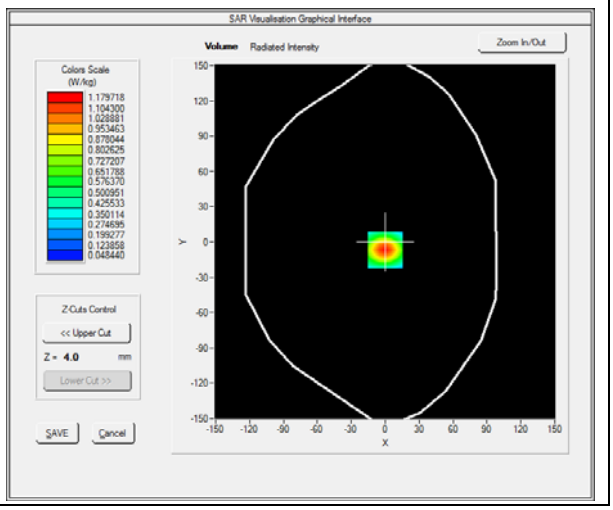
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	Low
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

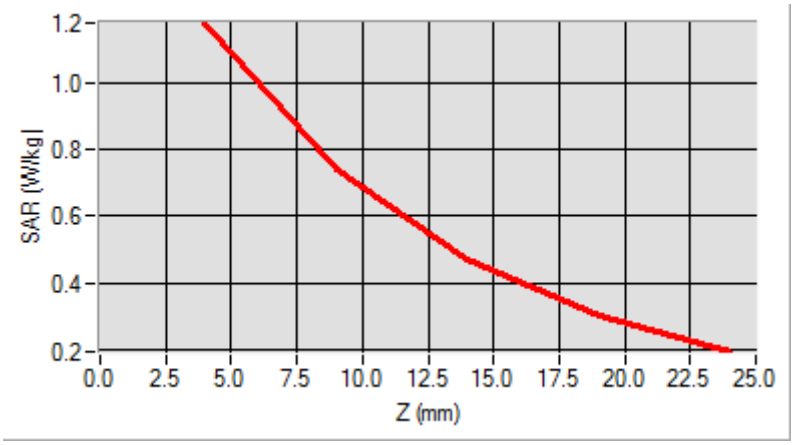
Frequency (MHz)	1852.400000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-0.360000
Ambient Temperature	21.1
Liquid Temperature	21.3

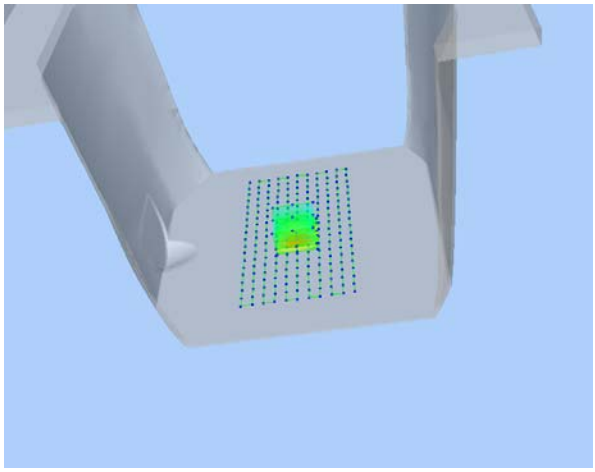
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-7.00

SAR 10g (W/Kg)	**0.593529**
SAR 1g (W/Kg)	**1.065760**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.1797**	**0.7396**	**0.4677**	**0.3033**



3D screen shot	**Hot spot position**
	

MEASUREMENT 15

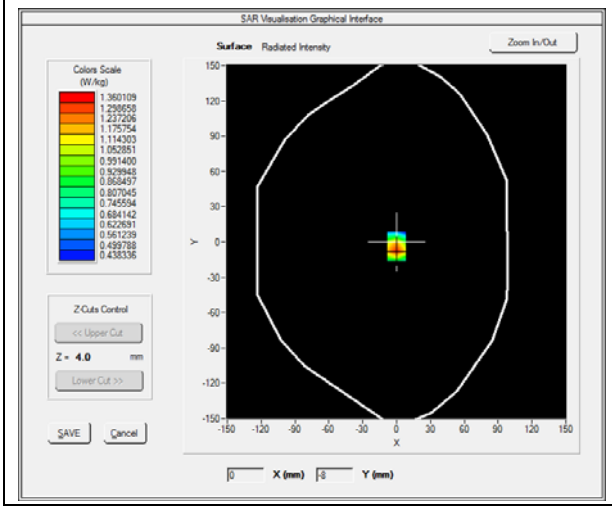
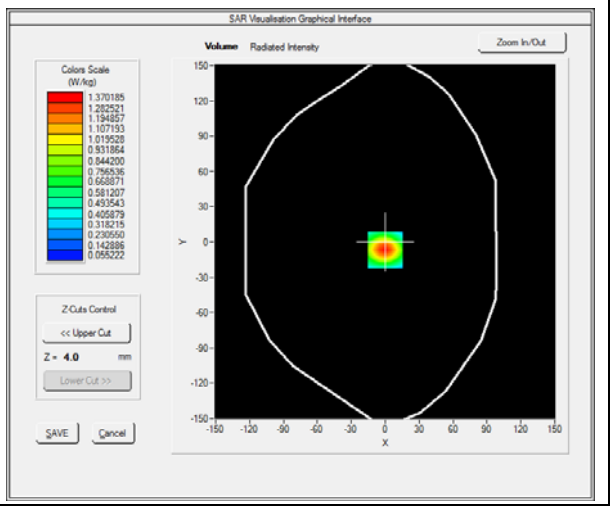
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA1900_RMC
Channels	Middle
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

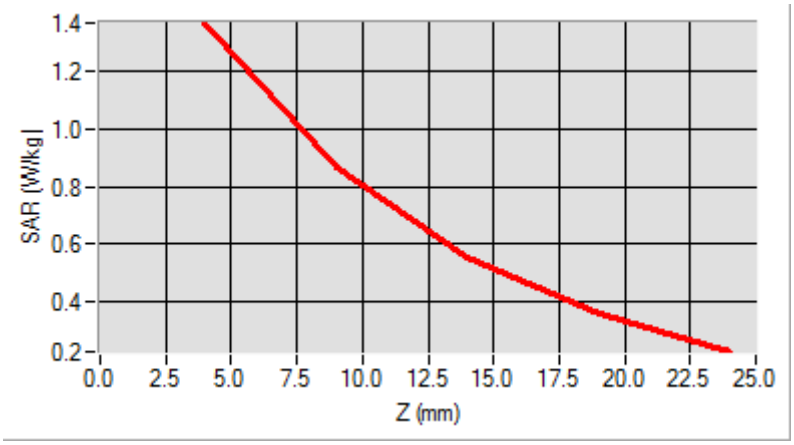
Frequency (MHz)	1880.000000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-0.600000
Ambient Temperature	21.1
Liquid Temperature	21.3

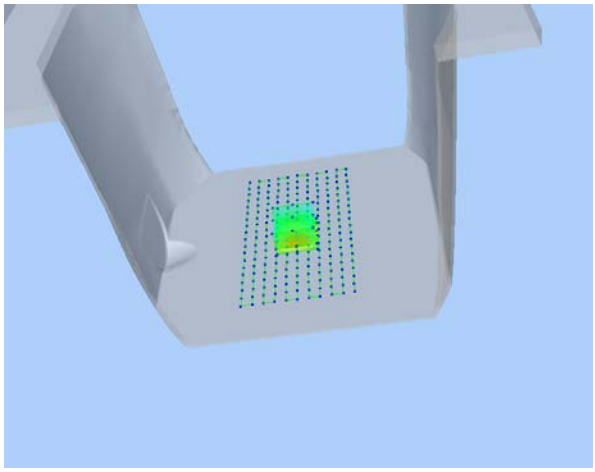
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-7.00

SAR 10g (W/Kg)	**0.693495**
SAR 1g (W/Kg)	**1.239712**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**1.3702**	**0.8678**	**0.5517**	**0.3564**



3D screen shot	**Hot spot position**
	

MEASUREMENT 16

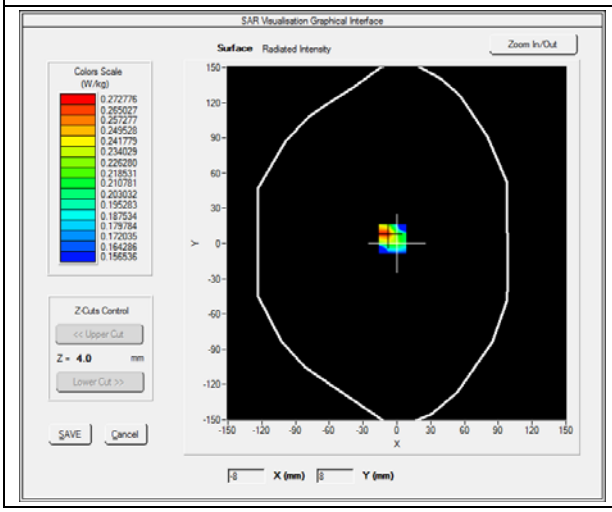
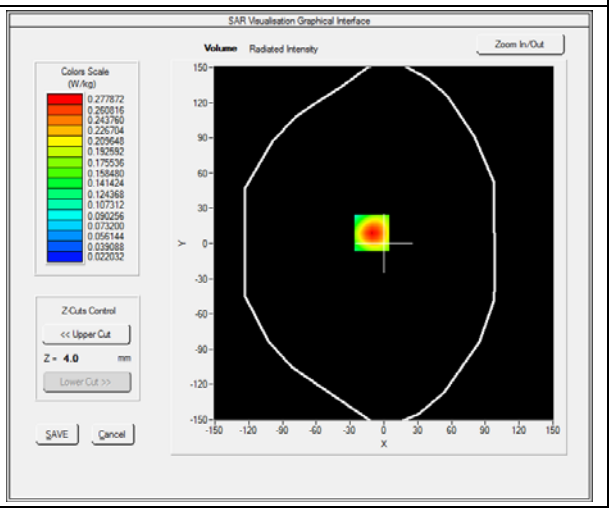
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Top
Band	WCDMA1900_RMC
Channels	High
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

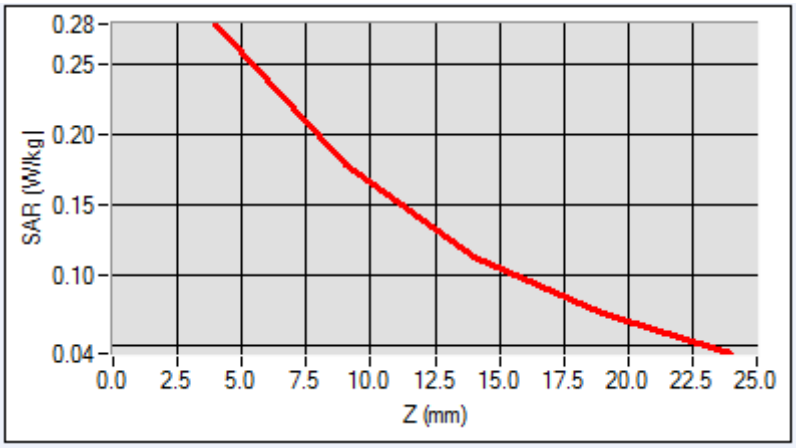
Frequency (MHz)	1907.600000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-1.430000
Ambient Temperature	21.1
Liquid Temperature	21.3

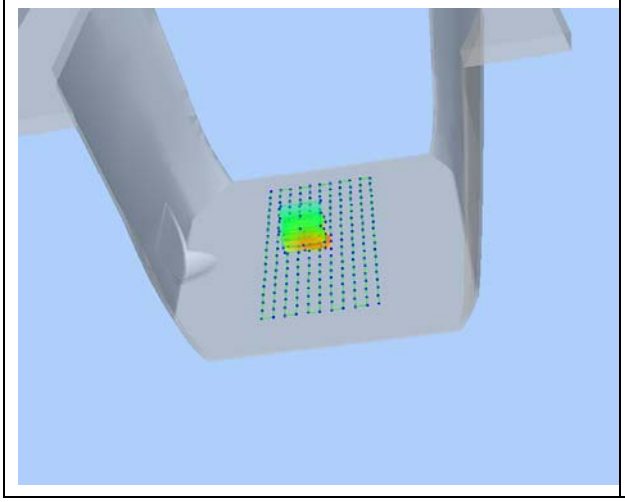
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=-34.00

SAR 10g (W/Kg)	**0.079120**
SAR 1g (W/Kg)	**0.101359**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2523**	**0.1123**	**0.0859**	**0.0759**



3D screen shot	**Hot spot position**
	

MEASUREMENT 17

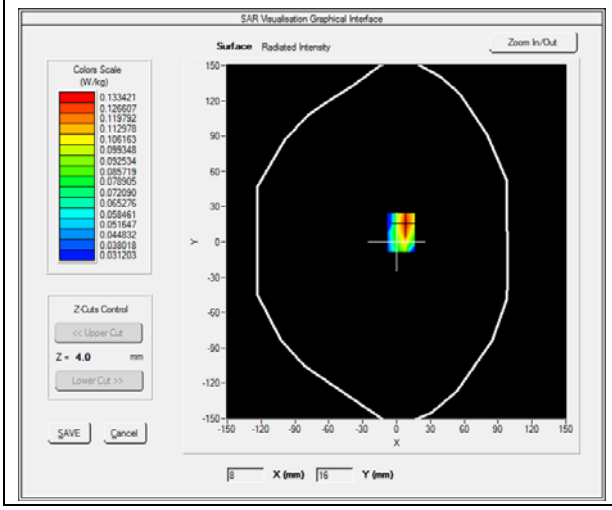
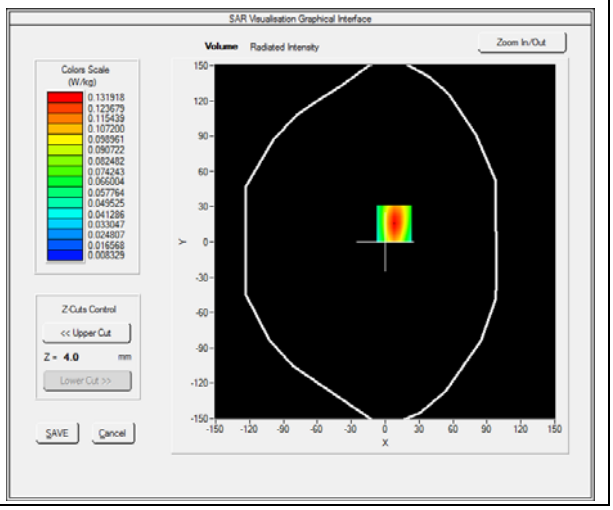
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Left side
Band	WCDMA1900_RMC
Channels	High
Signal	Duty Cycle: 1.00 (Crest factor: 1.00)

B. SAR Measurement Results

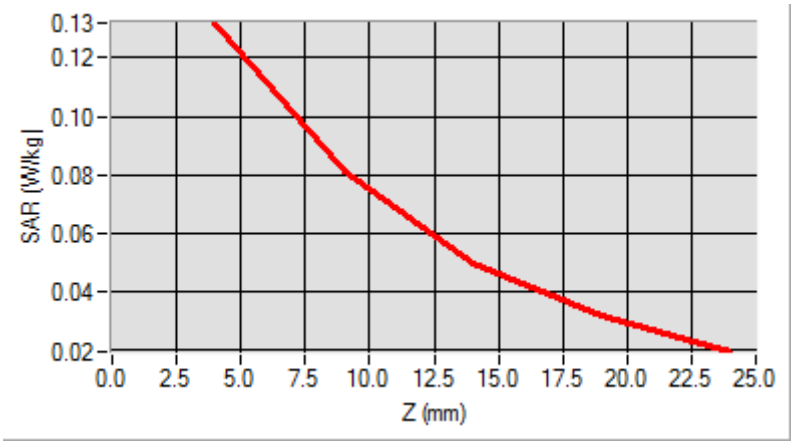
Frequency (MHz)	1907.600000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	-1.240000
Ambient Temperature	21.1
Liquid Temperature	21.3

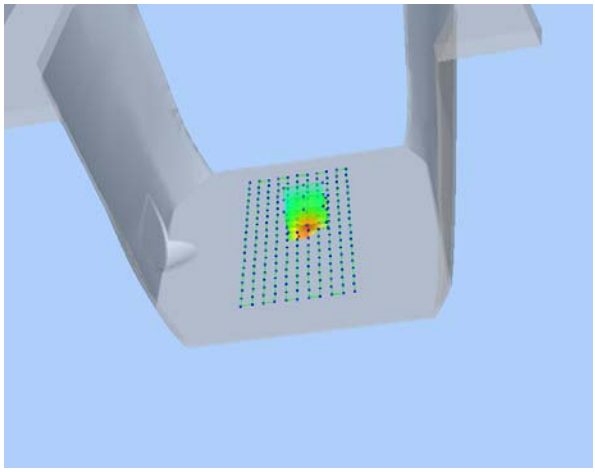
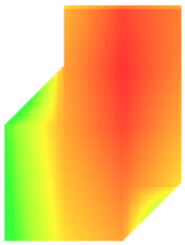
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=16.00

SAR 10g (W/Kg)	**0.070196**
SAR 1g (W/Kg)	**0.121615**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.1319**	**0.0808**	**0.0498**	**0.0315**



3D screen shot	**Hot spot position**
	

MEASUREMENT 18

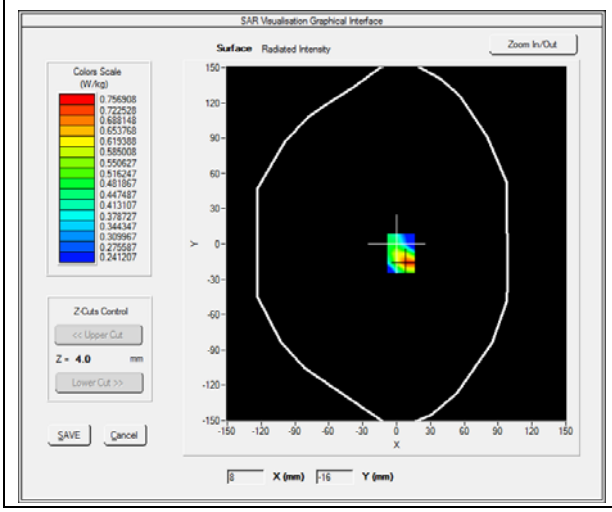
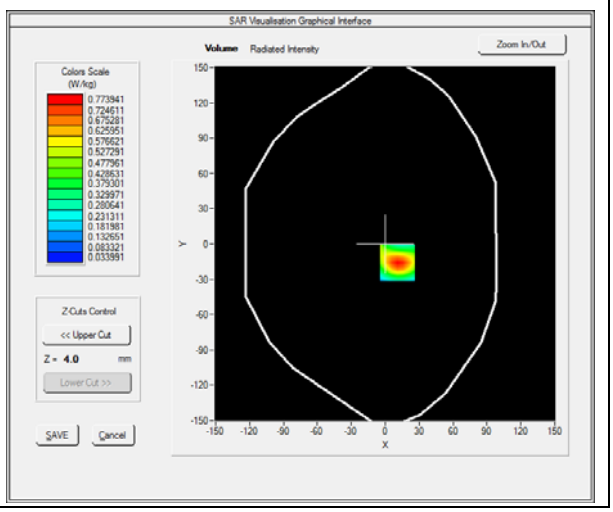
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Front
Band	WCDMA1700_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

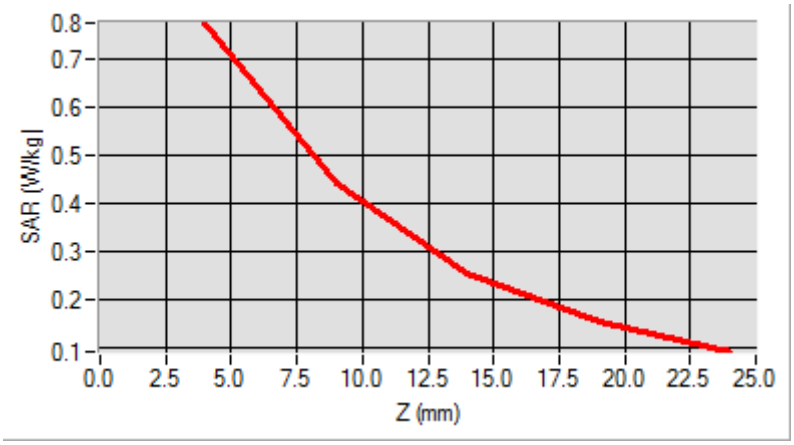
Frequency (MHz)	1732.600000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.312173
Ambient Temperature	21.1
Liquid Temperature	21.3

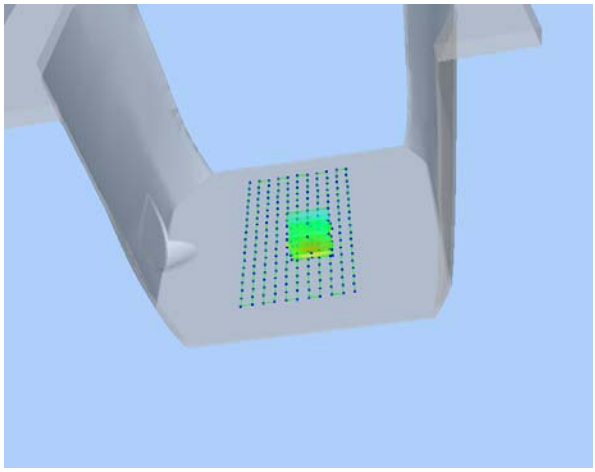
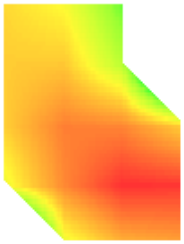
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=-16.00

SAR 10g (W/Kg)	**0.518638**
SAR 1g (W/Kg)	**0.967257**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.7739**	**0.4413**	**0.2549**	**0.1549**



3D screen shot	**Hot spot position**
	

MEASUREMENT 19

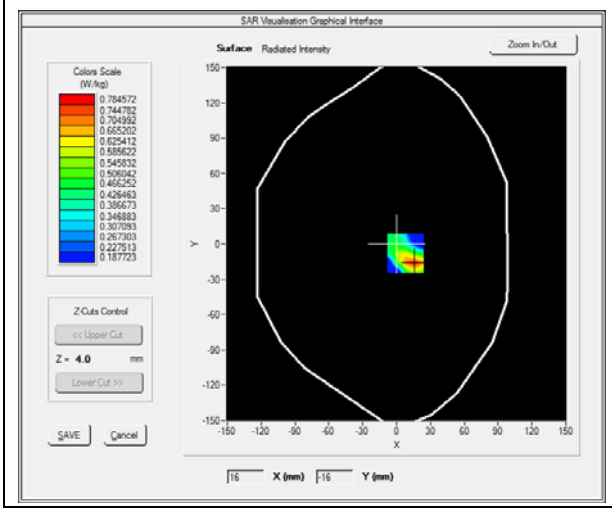
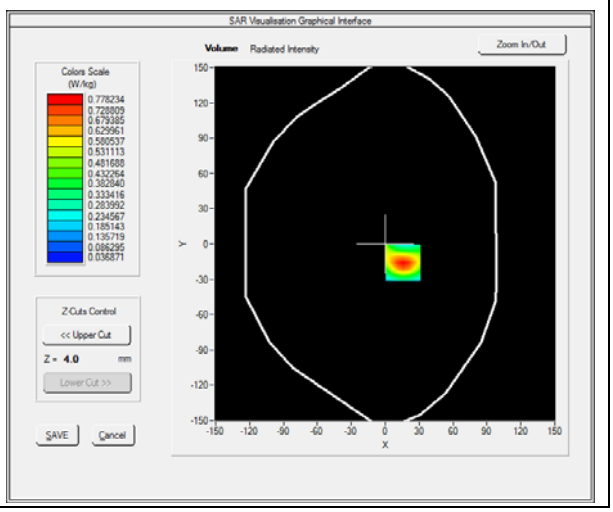
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Front
Band	WCDMA1700_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

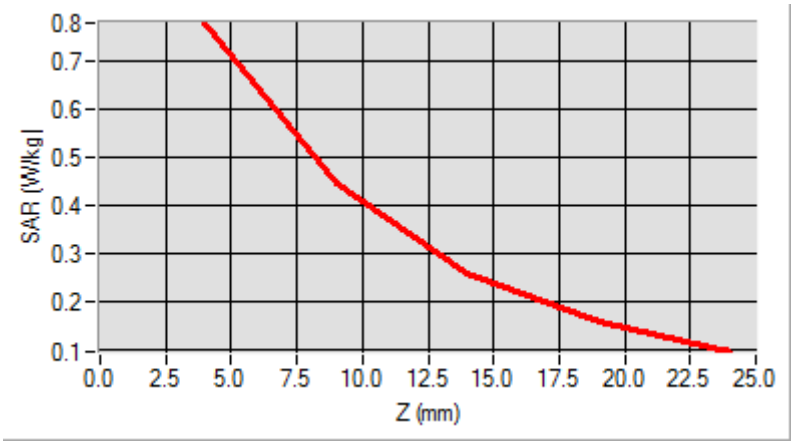
Frequency (MHz)	1720.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.341221
Ambient Temperature	21.1
Liquid Temperature	21.3

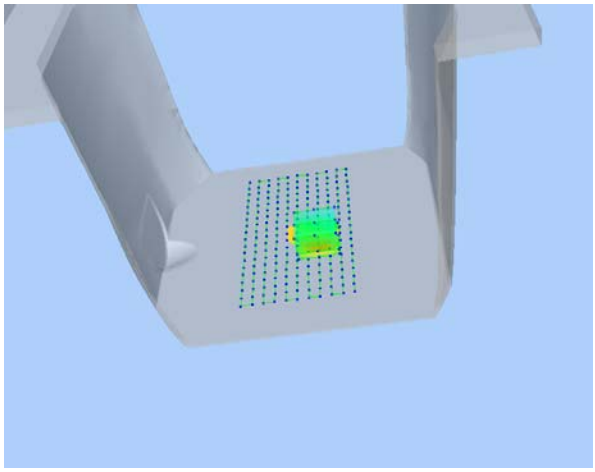
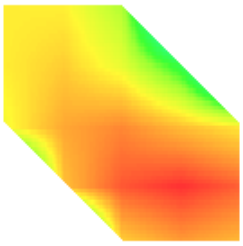
SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=-16.00

SAR 10g (W/Kg)	**0.532716**
SAR 1g (W/Kg)	**0.986538**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.7782**	**0.4462**	**0.2593**	**0.1582**



3D screen shot	**Hot spot position**
	

MEASUREMENT 20

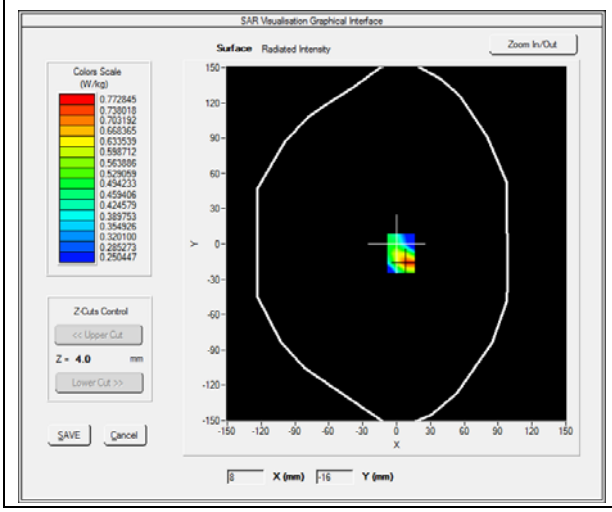
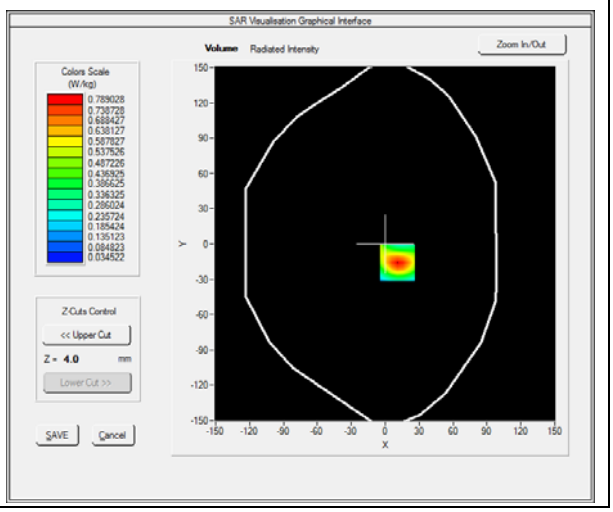
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Front
Band	WCDMA1700_RMC
Channels	High
Signal	Duty Cycle 1:1

B. SAR Measurement Results

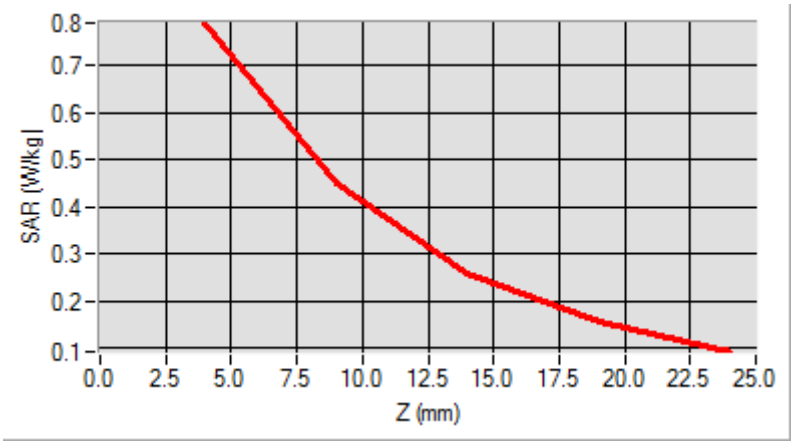
Frequency (MHz)	1745.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.034215
Ambient Temperature	21.1
Liquid Temperature	21.3

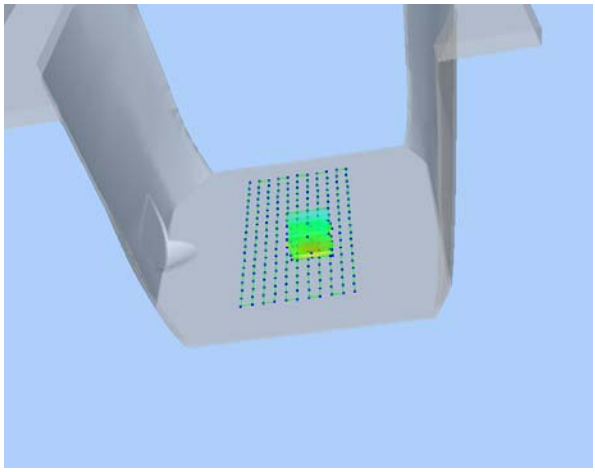
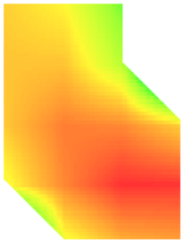
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=-16.00

SAR 10g (W/Kg)	**0.518859**
SAR 1g (W/Kg)	**0.968640**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.7890**	**0.4490**	**0.2583**	**0.1559**



3D screen shot	**Hot spot position**
	

MEASUREMENT 21

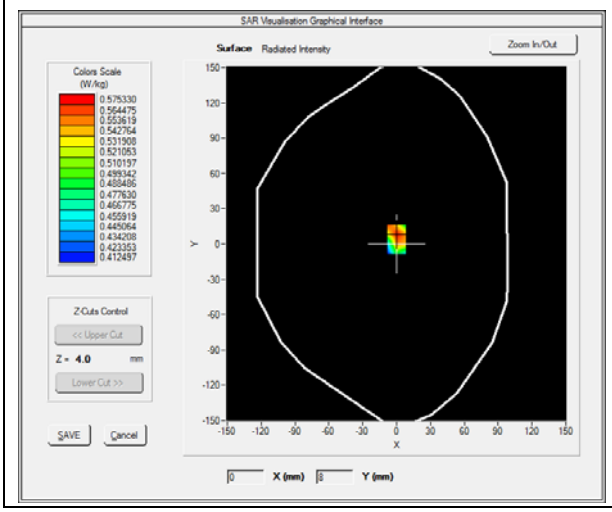
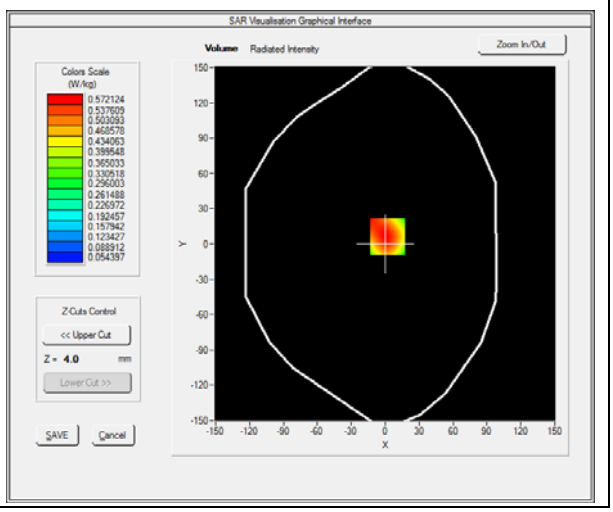
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Top
Band	WCDMA1700_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

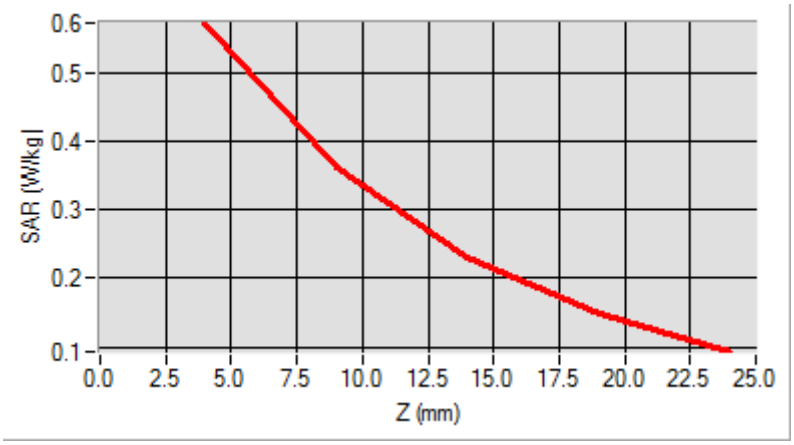
Frequency (MHz)	1732.600000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	2.341234
Ambient Temperature	21.1
Liquid Temperature	21.3

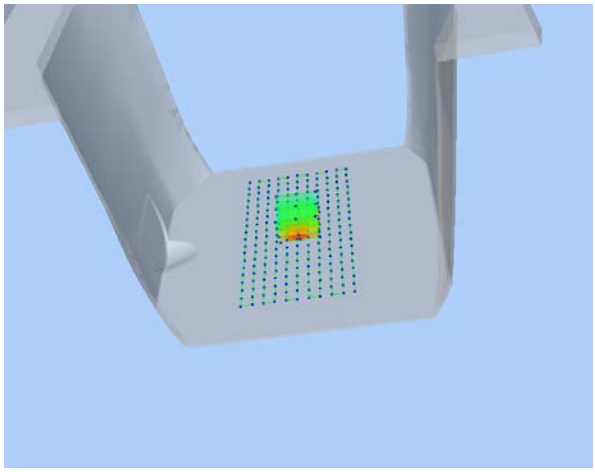
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=6.00

SAR 10g (W/Kg)	**0.475570**
SAR 1g (W/Kg)	**0.762409**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.5721**	**0.3620**	**0.2299**	**0.1484**



3D screen shot	**Hot spot position**
	

MEASUREMENT 22

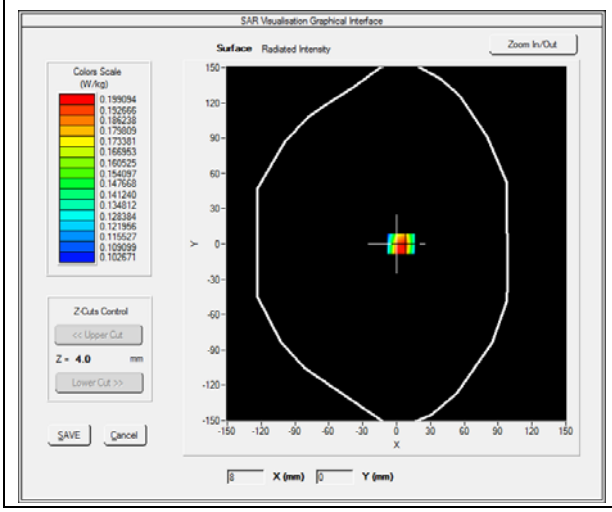
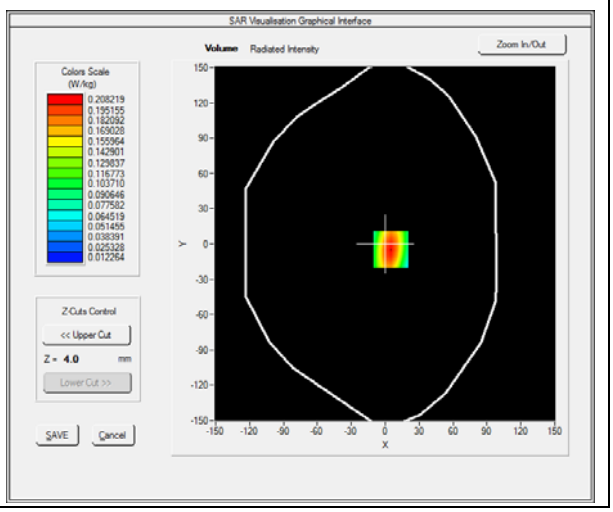
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Left side
Band	WCDMA1700_RMC
Channels	Middle
Signal	Duty Cycle 1:1

B. SAR Measurement Results

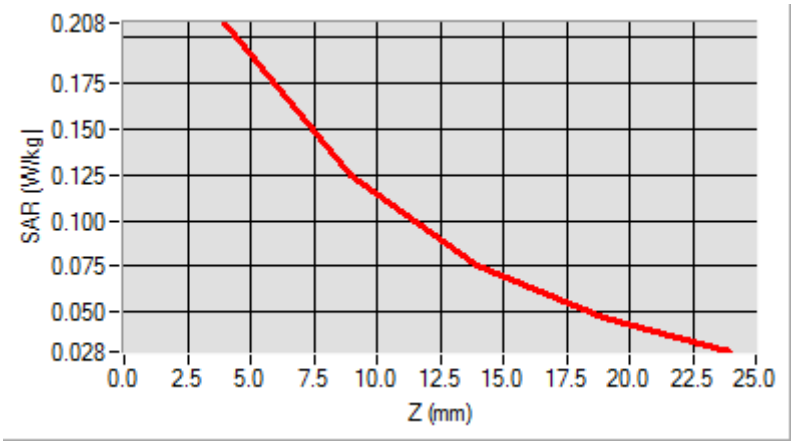
Frequency (MHz)	1732.600000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	1.634634
Ambient Temperature	21.1
Liquid Temperature	21.3

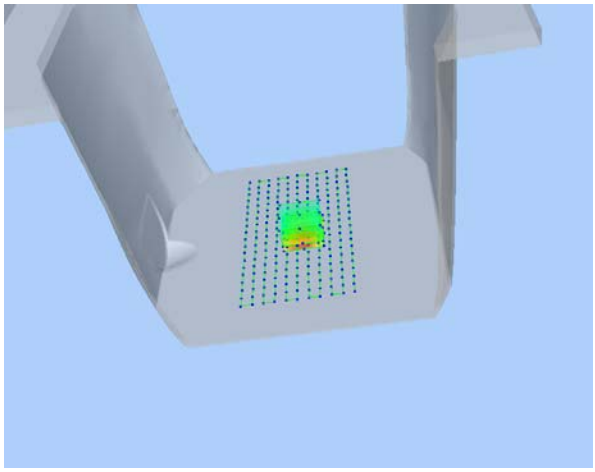
SURFACE SAR	VOLUME SAR
	

Maximum location: X=5.00, Y=-5.00

SAR 10g (W/Kg)	**0.154281**
SAR 1g (W/Kg)	**0.268789**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2082**	**0.1253**	**0.0757**	**0.0469**



3D screen shot	**Hot spot position**
	

MEASUREMENT 23

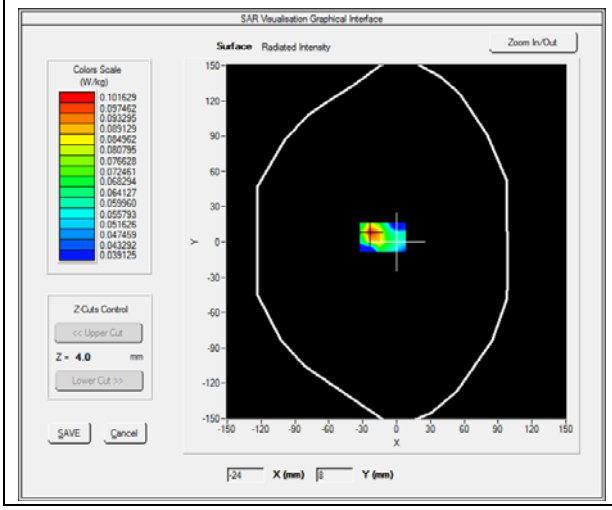
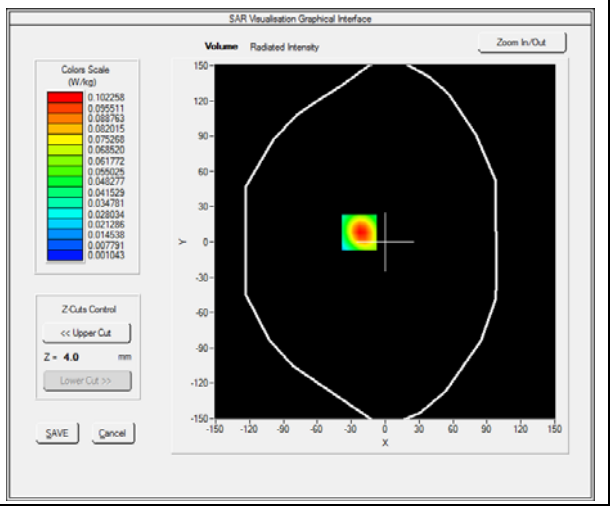
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WiFi_802.11b
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

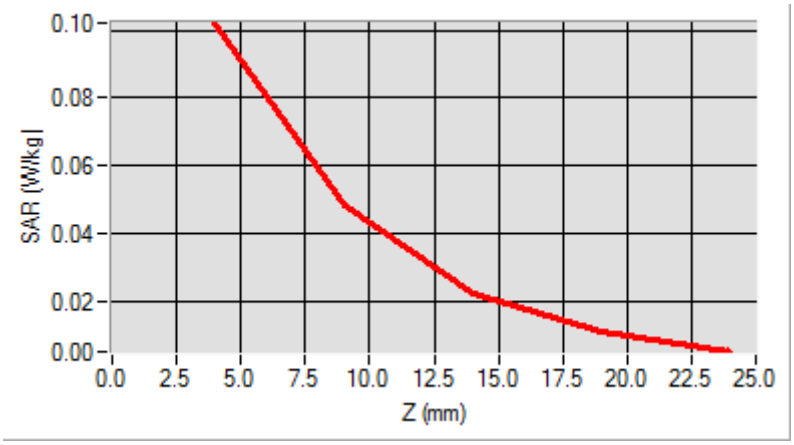
Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.0102121
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

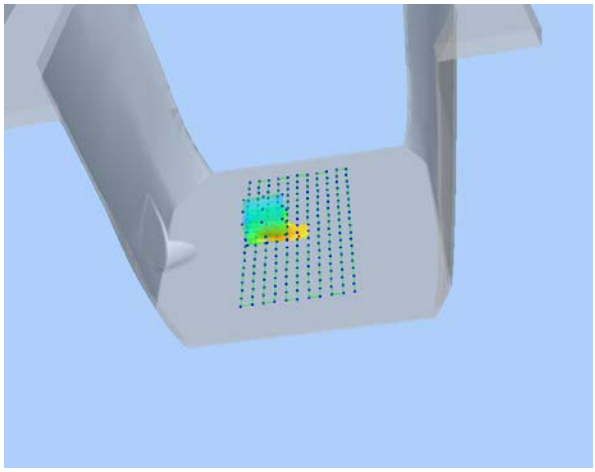
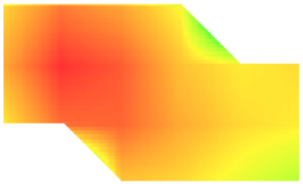
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-23.00, Y=8.00

SAR 10g (W/Kg)	**0.046339**
SAR 1g (W/Kg)	**0.094780**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.1023**	**0.0482**	**0.0221**	**0.0106**



3D screen shot	**Hot spot position**
	

MEASUREMENT 24

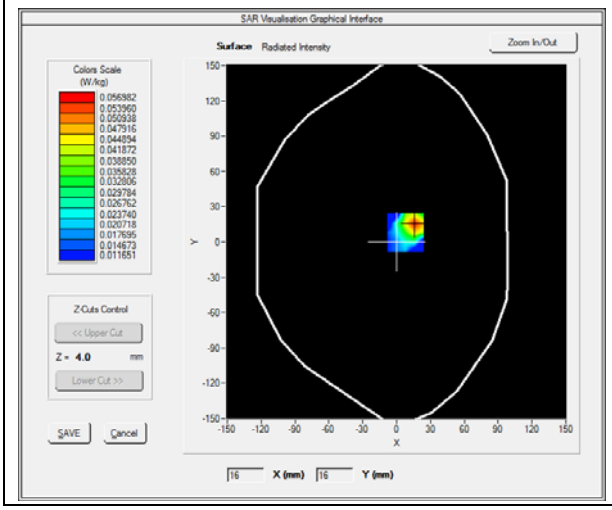
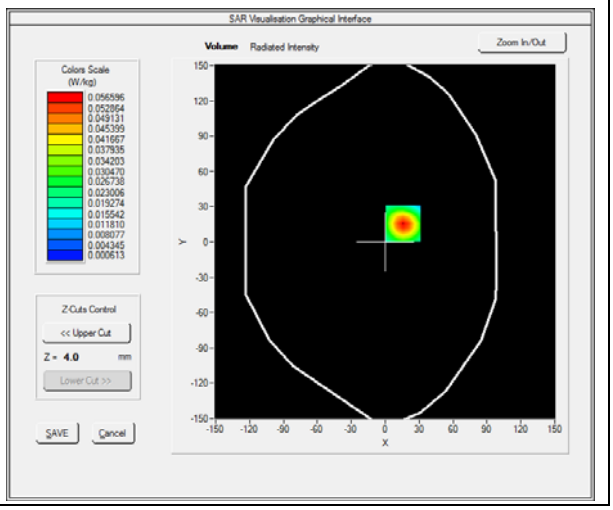
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Top Side
Band	WiFi_802.11b
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

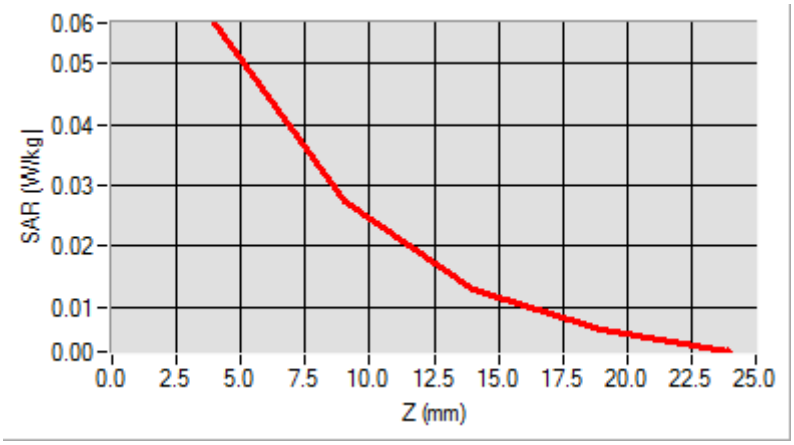
Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	3.244224
Ambient Temperature	21.1
Liquid Temperature	21.2

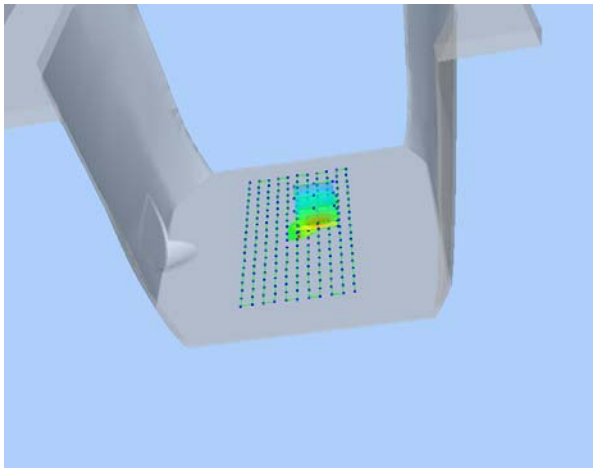
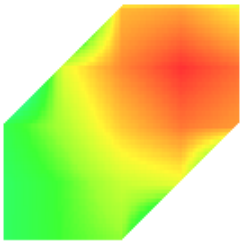
SURFACE SAR	VOLUME SAR
	

Maximum location: X=16.00, Y=16.00

SAR 10g (W/Kg)	**0.024713**
SAR 1g (W/Kg)	**0.051512**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0566**	**0.0275**	**0.0129**	**0.0062**



3D screen shot	**Hot spot position**
	

MEASUREMENT 25

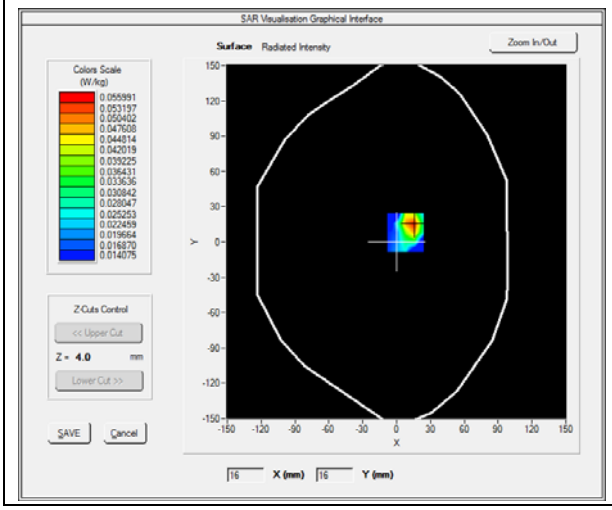
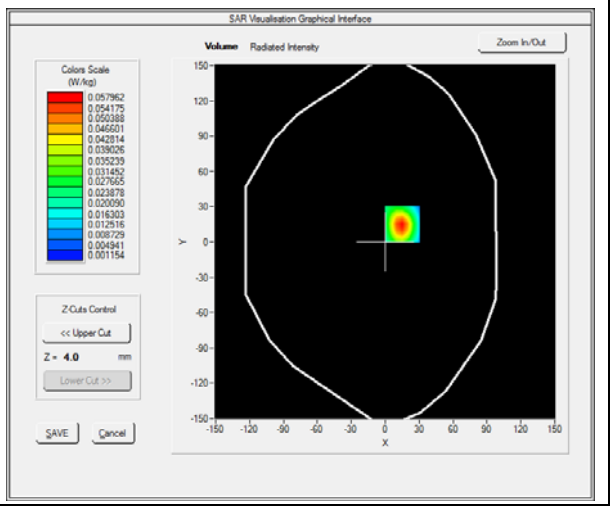
Type: Phone measurement (Complete)
Date of measurement: 11/16/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Right Side
Band	WiFi_802.11b
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

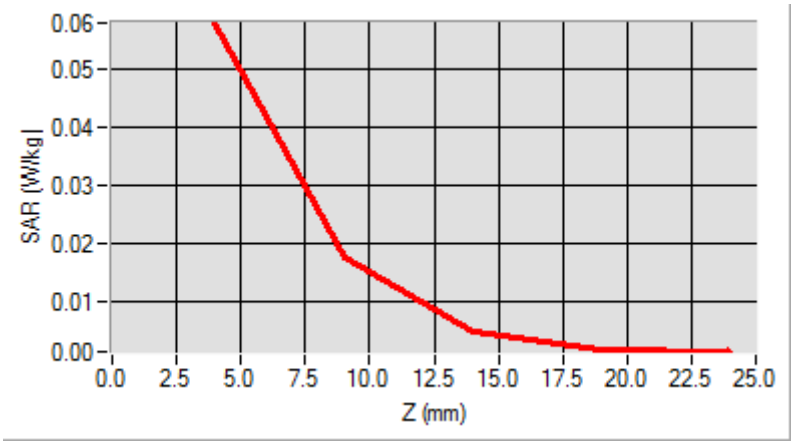
Frequency (MHz)	2412.000000
Relative Permittivity (real part)	52.010212
Conductivity (S/m)	1.910255
Power Variation (%)	3.053461
Ambient Temperature	21.1
Liquid Temperature	21.2

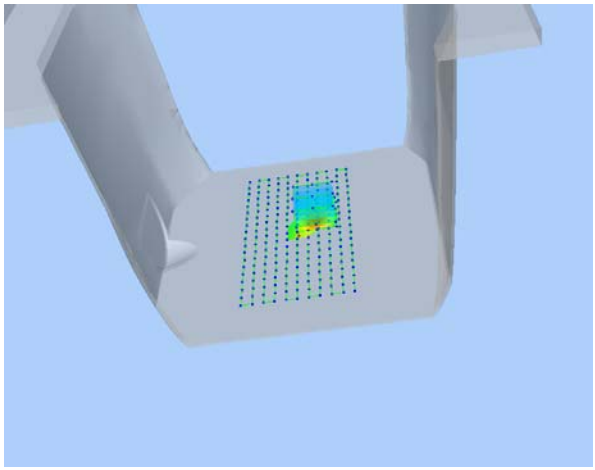
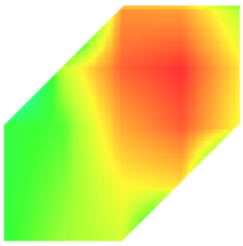
SURFACE SAR	VOLUME SAR
	

Maximum location: X=15.00, Y=15.00

SAR 10g (W/Kg)	**0.022241**
SAR 1g (W/Kg)	**0.054266**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0580**	**0.0176**	**0.0048**	**0.0019**



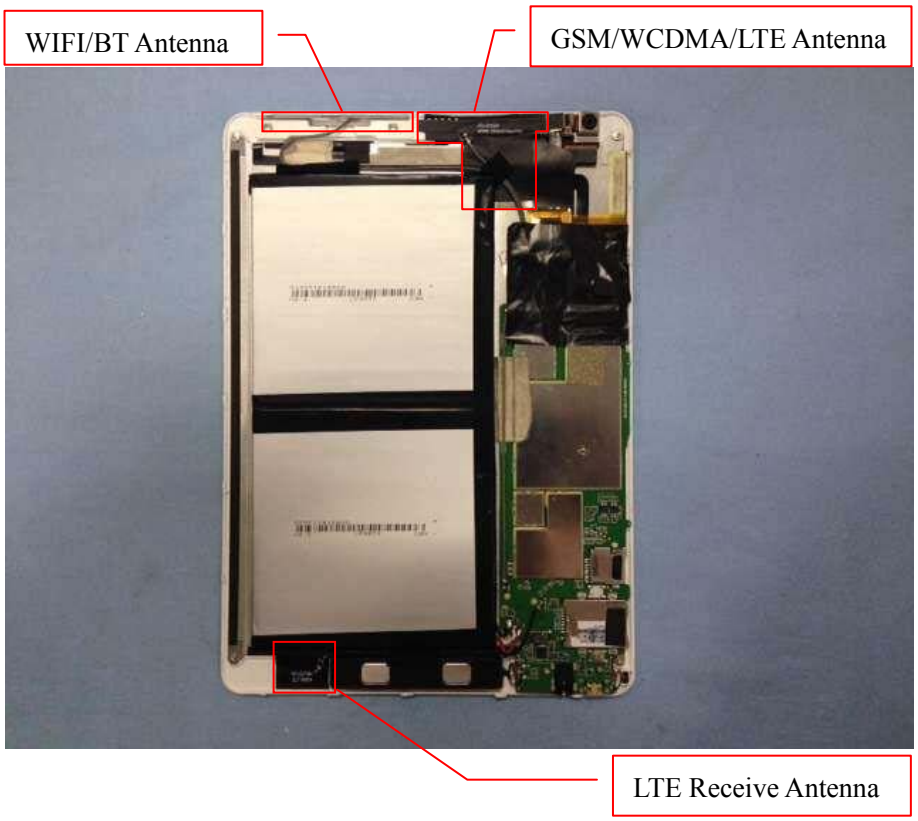
3D screen shot	**Hot spot position**
	

Annex C. EUT Photos

EUT View_Front

EUT View_Back

Antenna View



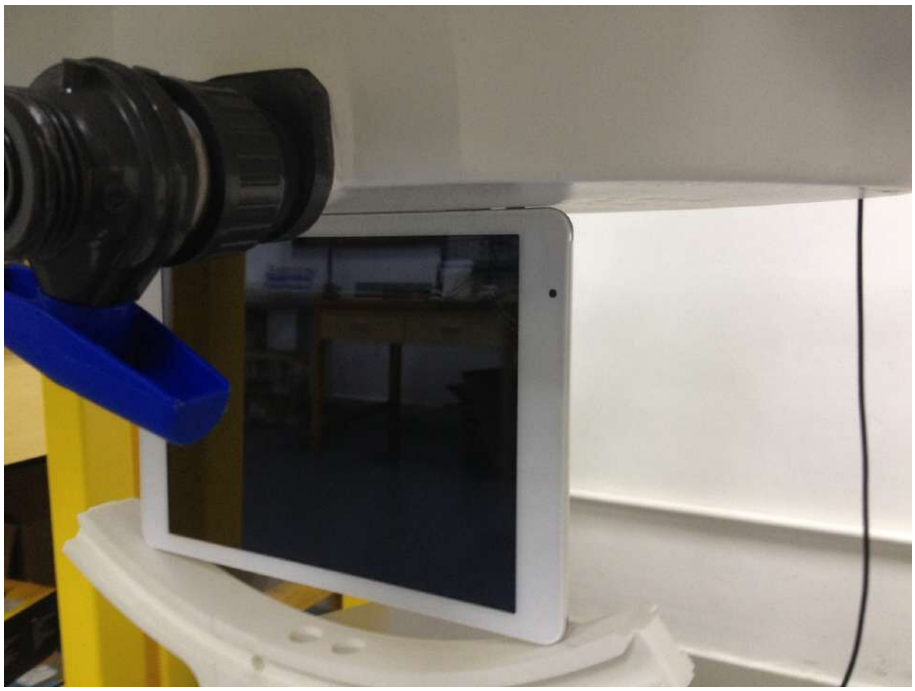
Annex D. Test Setup Photos

Body:

Back side

Right side

Left side



Top side

******* END OF REPORT *******