FCC SAR
Measurement and Test Report

For

FACTORYTECH S.A.

Km 16 Via Daule, Guayaquil- Ecuador

FCC ID: 2AFWX-Z45

Test Standards:	FCC Part 2.1093 ANSI / IEEE C95.1 :2005 ANSI / IEEE C95.3 :2002 IEEE 1528 :2013
Product Description:	Mobile phone
Tested Model:	Infineum Z45
Report No.:	STR15118297H
Tested Date:	2015-12-07 to 2015-12-17
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Tested By:	Silin Chen / EMC Manager
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1. General Information

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: FACTORYTECH S.A.
Address of applicant: Km 16 Via Daule, Guayaquil- Ecuador

Manufacturer: FACTORYTECH S.A.
Address of manufacturer: Km 16 Via Daule, Guayaquil- Ecuador

General Description of EUT:	
Product Name:	Mobile phone
Brand Name:	PIXELA
Model No.:	Infineum Z45
Rated Voltage:	DC 3.8V Li-ion Battery
Battery Capacity:	1800mAh
Device Category:	Portable Device
The EUT Main board support GSM850/PCS1900, WCDMA Band 2/5, LTE Band 2/4/7 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850//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: 32.13dBm, GSM1900: 29.01dBm EDGE850: 25.87dBm, EDGE1900: 24.93dBm
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: 0.63dBi, GSM1900: 1.11dBi
GPRS/EDGE 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
RF Output Power:	WCDMA Band 2: 21.78dBm, WCDMA Band 5: 22.02dBm
Type of Modulation:	BPSK
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 0.15dBi,WCDMA Band 5: -0.08dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4,7
Uplink Frequency:	FDD-LTE Band 2: Tx: 1850-1910MHz, FDD-LTE Band 4: Tx: 1710-1755MHz, FDD-LTE Band 7: Tx: 2500-2570MHz
Downlink Frequency:	FDD-LTE Band 2: Rx: 1930-1990MHz, FDD-LTE Band 4: Rx: 2110-2155MHz, FDD-LTE Band 7: Rx: 2620-2690MHz,
RF Output Power:	FDD-LTE Band 2: 24.21dBm, FDD-LTE Band 4: 23.49dBm FDD-LTE Band 7: 24.28dBm
Type of Modulation:	QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	FDD-LTE Band 2: 1.35dBi, FDD-LTE Band 4: 1.08dBi,

	FDD-LTE Band 7: 1.35dBi,
WIFI	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
RF Output Power:	16.78dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11/7
Channel Separation:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.19dBi
Bluetooth	
Bluetooth Version:	V4.0
Frequency Range:	2402-2480MHz
RF Output Power:	2.84dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Antenna Type:	Integral Antenna
Antenna Gain:	1.19dBi

1.2 Test Standards

The following report is prepared on behalf of the FACTORYTECH S.A. in accordance with FCC 47 CFR Part 2.1093, ANSI/IEEE C95.1-2005, ANSI / IEEE C95.3 :2002, 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	Head SAR	Body-worn (10mm Gap)	Hotspot (10mm Gap)	SAR_{1g} Limit (W/kg)
	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	Maximum SAR_{1g} (W/kg)	
GSM850	0.228	0.367	0.744	1.6
GSM1900	0.131	0.432	0.799	1.6
WCDMA Band 2	0.303	0.677	0.759	1.6
WCDMA Band 5	0.212	0.334	0.334	1.6
FDD-LTE Band 2	0.208	0.712	0.712	1.6
FDD-LTE Band 4	**0.347**	**0.876**	**0.876**	1.6
FDD-LTE Band 7	0.052	0.131	0.131	1.6
WLAN 2.4G	0.310	0.100	0.100	1.6
Simultaneous Transmission	0.657	0.976	**0.918**	1.6

Remark:

*The highest reported SAR values for head, body-worn accessory, wireless router(hotspot), and simultaneous transmission conditions are **0.347W/kg, 0.876W/kg , 0.876W/kg, and 0.918W/kg** respectively.*

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

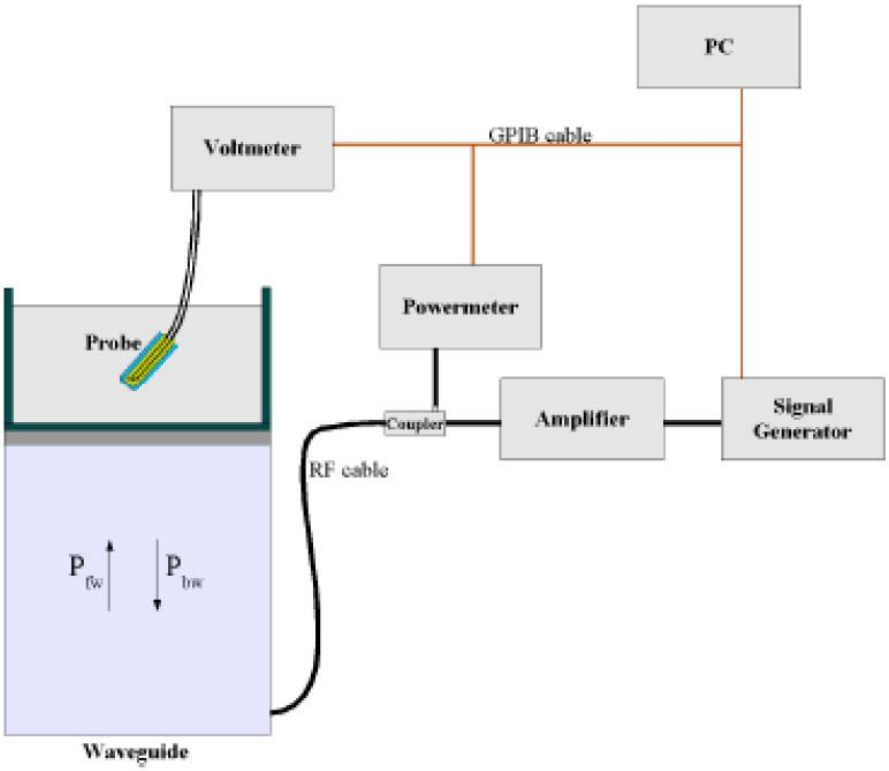
For the measurements the Specific Dosimetric E-Field Probe SSE5 SN 09/13 EP168 with following specifications is used

- 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.



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

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:

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

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

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

where DCP is the diode compression point in mV.

4.3 Probe Calibration Process

Dosimetric Assessment Procedure

Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/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.

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

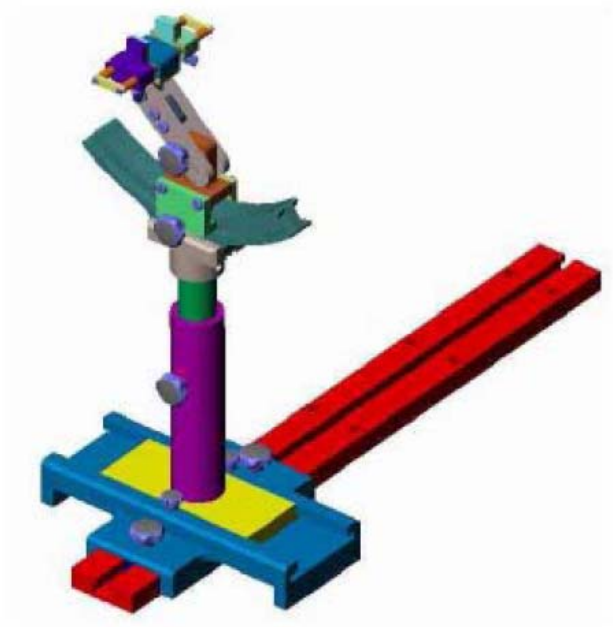
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

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

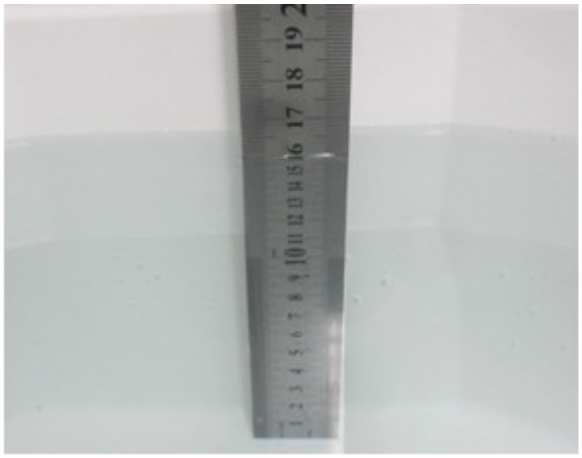
4.6 Test Equipment List

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 Head SAR

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	Triton (%)	HEC (%)	Preventol (%)	DGBE (%)
Head						
835	35.34	0.98	0.00	0.00	63.68	0.00
1800	55.19	0.66	30.35	0.00	0.00	13.80
1900	55.26	0.52	30.40	0.00	0.00	13.82
2450	55.44	0.32	30.50	0.00	0.00	13.74
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

Head 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	0.87	0.90	-3.33	41.11	41.50	-0.94	±5	2015-12-07
1800	21.3	1.37	1.40	-2.14	39.02	40.0	-2.50	±5	2015-12-07
1900	21.3	1.38	1.40	-1.43	38.56	40.00	-3.60	±5	2015-12-07
2450	21.3	1.74	1.80	-3.33	38.15	39.20	-2.68	±5	2015-12-07

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	2015-12-07
1800	21.3	1.46	1.52	-3.95	51.22	53.30	-3.94	±5	2015-12-07
1900	21.3	1.50	1.52	-1.32	52.42	53.30	-1.65	±5	2015-12-07
2450	21.3	1.91	1.95	-2.05	52.01	52.70	-1.31	±5	2015-12-07

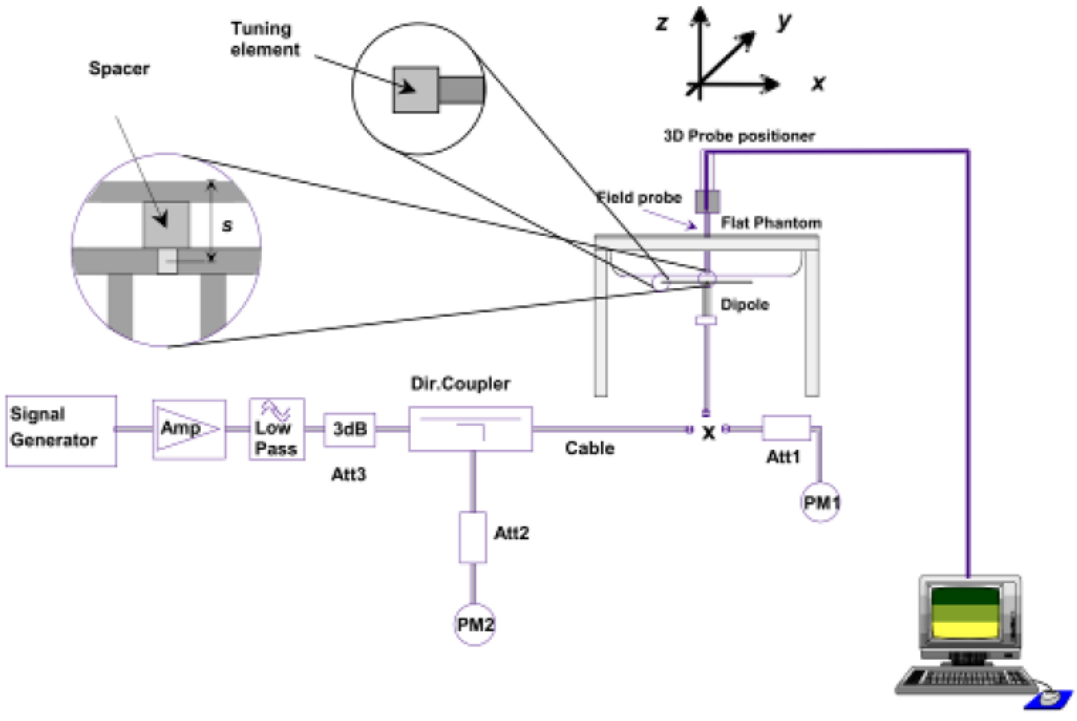
6. SAR Measurement Evaluation

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)	(%)
Head				
835	9.56	2.41	9.64	0.84
1800	38.4	9.61	38.44	0.10
1900	39.7	9.91	39.64	-0.15
2450	52.4	13.45	53.80	2.67
Body				
835	9.36	2.35	9.40	0.43
1800	38.29	9.58	38.32	0.08
1900	39.01	9.78	39.12	0.28
2450	50.33	12.59	50.36	0.06

Targeted and Measurement SAR

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

7. EUT Testing Position

7.1 Define Two Imaginary Lines on The Handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

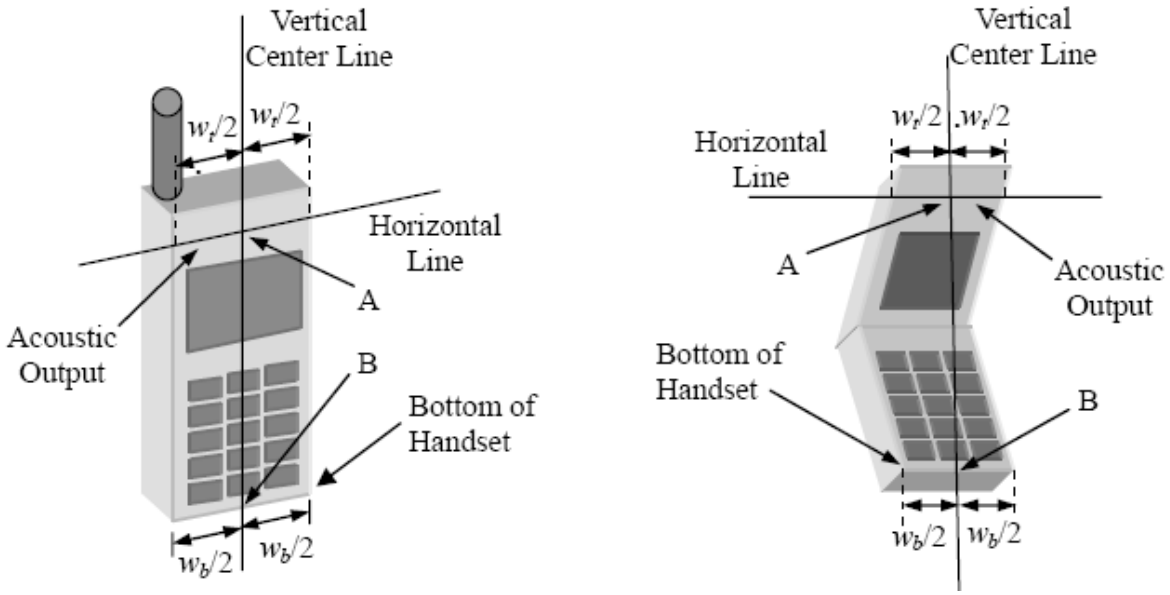


Illustration for Handset Vertical and Horizontal Reference Lines

7.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 7.2).

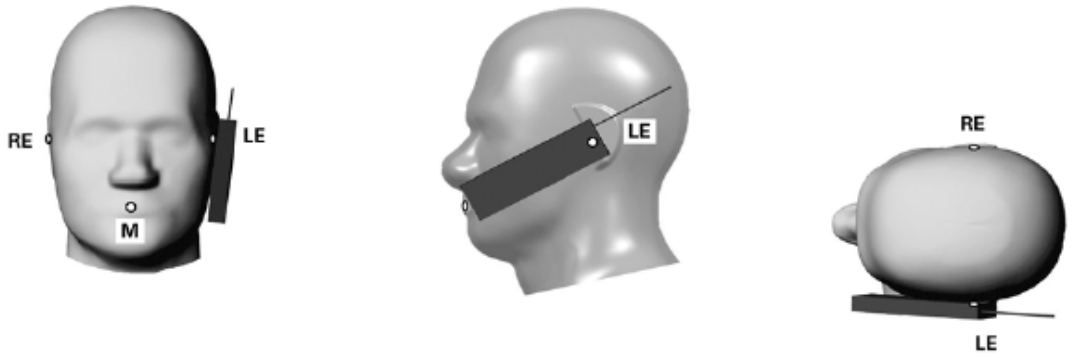


Illustration for Cheek Position

7.3 Tilted Position

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

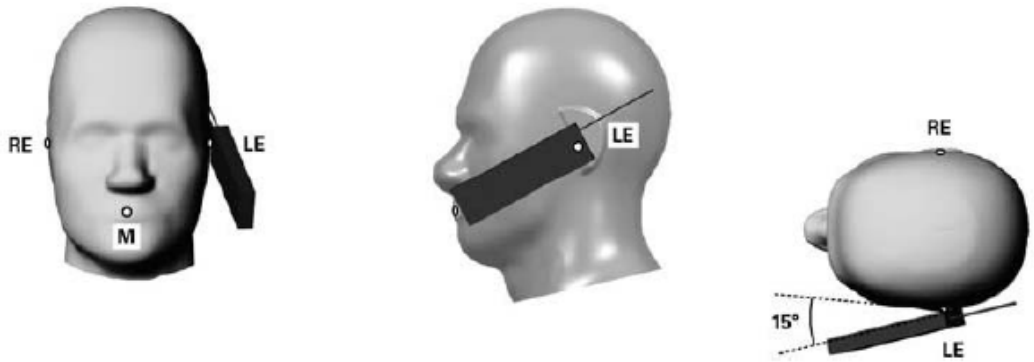


Illustration for Tilted Position

7.4 Body 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 10mm.

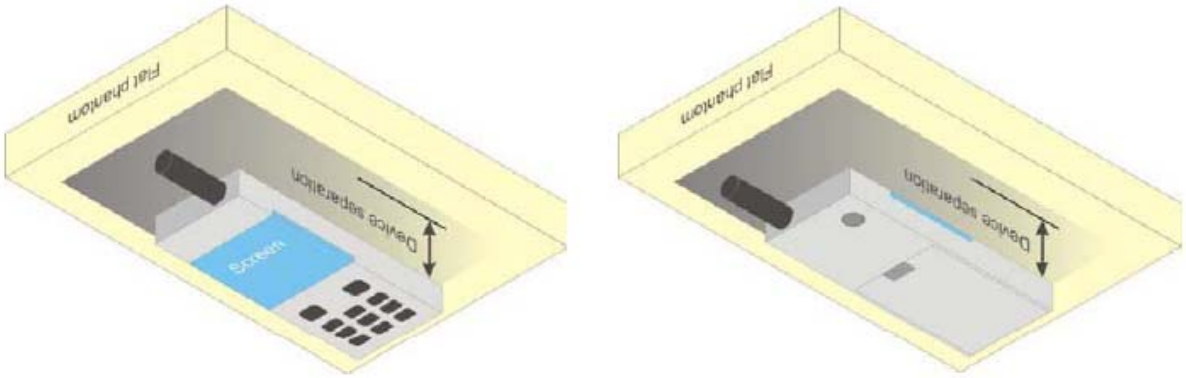
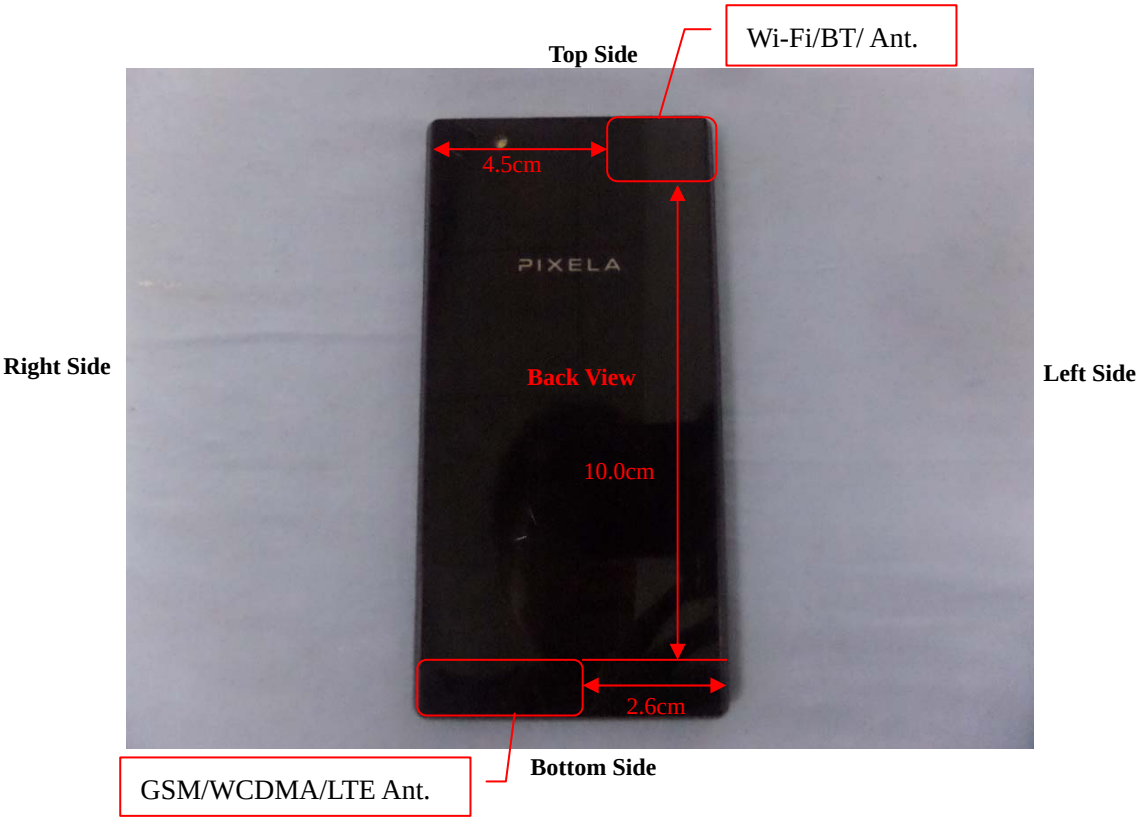


Illustration for Body Position

7.5 EUT Antenna Position



Block Diagram for EUT Antenna Position

7.6 EUT Testing Position

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

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

Hotspot SAR tests, Test distance: 10mm						
Antennas	**Front**	**Back**	**Right Side**	**Left Side**	**Top Side**	**Bottom Side**
WWAN	Yes	Yes	Yes	No	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

Body-worn SAR tests, Test distance: 10mm		
Antennas	**Front**	**Back**
WWAN	Yes	Yes
WLAN	Yes	Yes

Remark:

1. Referring to KDB 941225 D06, when the overall device length and width are >= 9cm*5cm, the test separation is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

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**	**836.6**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	32.01	32.13	31.59	29.01	28.45	28.61
GPRS (1 slot)	31.59	31.31	31.65	28.88	28.62	28.50
GPRS (2 slots)	30.23	30.19	30.34	27.68	27.37	27.29
GPRS (3 slots)	29.01	28.94	29.15	26.53	26.19	26.03
GPRS (4 slots)	27.85	27.73	28.01	25.43	25.12	24.97
EDGE (1 slot)	25.87	25.62	25.72	24.93	24.84	24.55
EDGE (2 slots)	24.52	24.43	24.44	23.69	23.59	23.38
EDGE (3 slots)	23.23	23.12	23.21	22.43	22.39	22.17
EDGE (4 slots)	22.10	22.05	22.09	21.21	21.19	20.86

GSM - Source-Based Time-Average Power (dBm)						
Band	**GSM850**			**PCS1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.6**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	23.01	23.13	22.59	20.01	19.45	19.61
GPRS (1 slot)	22.59	22.31	22.65	19.88	19.62	19.50
GPRS (2 slots)	24.23	24.19	24.34	21.68	21.37	21.29
GPRS (3 slots)	24.76	24.69	24.90	22.28	21.94	21.78
GPRS (4 slots)	24.85	24.73	25.01	22.43	22.12	21.97
EDGE (1 slot)	16.87	16.62	16.72	15.93	15.84	15.55
EDGE (2 slots)	18.52	18.43	18.44	17.69	17.59	17.38
EDGE (3 slots)	18.98	18.87	18.96	18.18	18.14	17.92
EDGE (4 slots)	19.10	19.05	19.09	18.21	18.19	17.86
Note: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below: Source based time-average power = Burst averaged power - Duty cycle factor in dB Duty cycle factor = 9 dB for 1 Tx slot, 6 dB for 2 Tx slots, 4.25 dB for 3 Tx slots, 3 dB for 4 Tx slots						

Remark:

1. For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM for GSM850 and GSM1900 due to its highest source-based time-average power.
2. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS (4TX slots) for GSM850 and GSM1900 due to its highest source-based time-average power.
3. Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. The DUT do not support DTM function.

WCDMA - Average Power (dBm)						
Band	**WCDMA Band 2**			**WCDMA Band 5**		
Channel	**9262**	**9400**	**9538**	**4132**	**4182**	**4233**
Frequency (MHz)	**1852.4**	**1880.0**	**1907.6**	**826.4**	**836.6**	**846.6**
RMC 12.2k	21.78	21.53	21.63	22.02	21.86	21.89
HSDPA Subtest-1	21.66	21.24	21.29	21.34	21.63	21.42
HSDPA Subtest-2	21.60	21.21	21.19	21.23	21.45	21.31
HSDPA Subtest-3	21.55	21.09	21.00	21.11	21.38	21.29
HSDPA Subtest-4	21.49	21.00	20.73	21.02	21.25	21.21
HSUPA Subtest-1	21.32	20.93	20.94	21.57	21.33	21.46
HSUPA Subtest-2	21.29	21.12	20.41	21.52	21.11	21.42
HSUPA Subtest-3	21.22	21.10	20.38	21.48	21.03	21.31
HSUPA Subtest-4	21.12	21.02	20.10	21.29	20.94	21.29
HSUPA Subtest-5	21.08	20.69	20.03	21.01	20.78	21.01

Remark:

1. Per 941225 D01 v03r01, In the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

FDD-LTE Band 2:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	22.43	
		1	3	22.21	
		1	5	22.52	
		3	0	22.12	
		3	2	22.34	
		3	3	22.51	
		6	0	22.01	
	MCH	1	0	22.52	
		1	3	22.83	
		1	5	22.32	
		3	0	22.81	
		3	2	22.74	
		3	3	22.68	
		6	0	22.52	
	HCH	1	0	22.51	
		1	3	22.31	
		1	5	22.32	
		3	0	22.11	
		3	2	22.74	
		3	3	22.42	
		6	0	21.21	
16QAM	LCH	1	0	21.88	
		1	3	21.94	
		1	5	21.45	
		3	0	21.65	
		3	2	21.87	
		3	3	21.55	
		6	0	20.88	
	MCH	1	0	22.68	
		1	3	22.63	
		1	5	22.19	
		3	0	21.94	
		3	2	22.31	
		3	3	22.23	
		6	0	21.91	
	HCH	1	0	21.79	
		1	3	21.94	

		1	5	21.82	
		3	0	21.71	
		3	2	21.31	
		3	3	21.34	
		6	0	20.88	

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	22.92	
		1	7	23.02	
		1	14	22.89	
		8	0	22.02	
		8	4	21.99	
		8	7	21.99	
		15	0	21.99	
	MCH	1	0	23.73	
		1	7	23.71	
		1	14	23.78	
		8	0	22.86	
		8	4	22.85	
		8	7	22.87	
		15	0	22.84	
	HCH	1	0	23.09	
		1	7	22.93	
		1	14	22.90	
		8	0	22.21	
		8	4	22.22	
		8	7	22.22	
		15	0	22.19	
16QAM	LCH	1	0	22.11	
		1	7	22.21	
		1	14	22.07	
		8	0	21.04	
		8	4	21.04	
		8	7	21.01	
		15	0	20.97	
	MCH	1	0	22.97	
		1	7	23.04	
		1	14	23.03	
		8	0	21.95	
		8	4	21.96	
		8	7	21.94	

		15	0	21.89	
	HCH	1	0	22.43	
		1	7	22.39	
		1	14	22.30	
		8	0	21.20	
		8	4	21.18	
		8	7	21.16	
		15	0	21.19	

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.21	
		1	12	23.28	
		1	24	23.19	
		12	0	22.23	
		12	6	22.26	
		12	13	22.28	
		25	0	22.20	
	MCH	1	0	23.48	
		1	12	23.12	
		1	24	23.48	
		12	0	22.29	
		12	6	22.20	
		12	13	22.32	
		25	0	22.28	
	HCH	1	0	23.21	
		1	12	22.52	
		1	24	22.82	
		12	0	21.85	
		12	6	21.63	
		12	13	21.70	
		25	0	21.78	
16QAM	LCH	1	0	22.51	
		1	12	22.64	
		1	24	22.52	
		12	0	21.39	
		12	6	21.42	
		12	13	21.43	
		25	0	21.28	
	MCH	1	0	22.81	
		1	12	22.58	
		1	24	22.81	

		12	0	21.49	
		12	6	21.42	
		12	13	21.57	
		25	0	21.40	
	HCH	1	0	22.29	
		1	12	21.58	
		1	24	21.90	
		12	0	21.01	
		12	6	20.78	
		12	13	20.86	
		25	0	20.89	

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.21	
		1	24	23.21	
		1	49	23.22	
		25	0	22.21	
		25	12	22.22	
		25	25	22.24	
		50	0	22.24	
	MCH	1	0	22.92	
		1	24	23.02	
		1	49	23.00	
		25	0	22.11	
		25	12	22.15	
		25	25	22.19	
		50	0	22.18	
	HCH	1	0	22.72	
		1	24	22.63	
		1	49	22.26	
		25	0	21.96	
		25	12	21.76	
		25	25	21.60	
		50	0	21.79	
16QAM	LCH	1	0	22.40	
		1	24	22.46	
		1	49	22.50	
		25	0	21.27	
		25	12	21.27	
		25	25	21.33	
		50	0	21.30	

	MCH	1	0	22.25	
		1	24	22.39	
		1	49	22.37	
		25	0	21.21	
		25	12	21.26	
		25	25	21.30	
		50	0	21.26	
	HCH	1	0	22.17	
		1	24	22.12	
		1	49	21.78	
		25	0	21.06	
		25	12	20.92	
		25	25	20.74	
		50	0	20.91	

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.19	
		1	37	23.30	
		1	74	23.19	
		37	0	22.31	
		37	18	22.34	
		37	38	22.35	
		75	0	22.34	
	MCH	1	0	23.02	
		1	37	22.97	
		1	74	23.23	
		37	0	22.05	
		37	18	22.09	
		37	38	22.24	
		75	0	22.16	
	HCH	1	0	23.23	
		1	37	22.71	
		1	74	22.54	
		37	0	21.99	
		37	18	21.85	
		37	38	21.69	
		75	0	21.86	
16QAM	LCH	1	0	22.40	
		1	37	22.56	
		1	74	22.54	
		37	0	21.28	

		37	18	21.31	
		37	38	21.33	
		75	0	21.34	
	MCH	1	0	22.33	
		1	37	22.33	
		1	74	22.61	
		37	0	21.12	
		37	18	21.20	
		37	38	21.35	
		75	0	21.27	
	HCH	1	0	22.56	
		1	37	22.10	
		1	74	21.91	
		37	0	21.10	
		37	18	20.96	
		37	38	20.86	
		75	0	20.97	

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.34	
		1	49	23.36	
		1	99	23.01	
		50	0	22.28	
		50	25	22.28	
		50	50	22.23	
		100	0	22.32	
	MCH	1	0	23.13	
		1	49	23.05	
		1	99	23.24	
		50	0	22.02	
		50	25	22.09	
		50	50	22.24	
		100	0	22.17	
	HCH	1	0	23.40	
		1	49	22.73	
		1	99	22.54	
		50	0	22.14	
		50	25	21.87	
		50	50	21.72	
		100	0	21.97	
16QAM	LCH	1	0	22.48	

		1	49	22.53	
		1	99	22.26	
		50	0	21.34	
		50	25	21.34	
		50	50	21.33	
		100	0	21.38	
	MCH	1	0	22.34	
		1	49	22.28	
		1	99	22.50	
		50	0	21.09	
		50	25	21.17	
		50	50	21.32	
		100	0	21.23	
	HCH	1	0	22.80	
		1	49	22.14	
		1	99	21.95	
		50	0	21.29	
		50	25	21.03	
		50	50	20.89	
		100	0	21.08	

FDD-LTE Band 4:

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.23	
		1	3	23.33	
		1	5	23.29	
		3	0	23.41	
		3	2	23.40	
		3	3	23.41	
		6	0	22.33	
	MCH	1	0	23.34	
		1	3	23.46	
		1	5	23.34	
		3	0	23.42	
		3	2	23.35	
		3	3	23.41	
		6	0	22.12	
	HCH	1	0	23.06	
		1	3	23.14	

		1	5	23.05	
		3	0	23.18	
		3	2	23.19	
		3	3	23.19	
		6	0	22.11	
16QAM	LCH	1	0	22.60	
		1	3	22.73	
		1	5	22.62	
		3	0	22.60	
		3	2	22.55	
		3	3	22.56	
		6	0	21.39	
	MCH	1	0	22.73	
		1	3	22.83	
		1	5	22.70	
		3	0	22.42	
		3	2	22.41	
		3	3	22.45	
		6	0	21.33	
	HCH	1	0	22.25	
		1	3	22.38	
		1	5	22.24	
		3	0	22.18	
		3	2	22.17	
		3	3	22.20	
		6	0	21.24	

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.22	
		1	7	23.37	
		1	14	23.22	
		8	0	22.35	
		8	4	22.38	
		8	7	22.39	
		15	0	22.38	
	MCH	1	0	23.23	
		1	7	23.36	
		1	14	23.23	
		8	0	22.40	
		8	4	22.40	
		8	7	22.38	

		15	0	22.37	
	HCH	1	0	23.08	
		1	7	23.17	
		1	14	23.05	
		8	0	22.18	
		8	4	22.16	
		8	7	22.16	
		15	0	22.13	
16QAM	LCH	1	0	22.54	
		1	7	22.69	
		1	14	22.53	
		8	0	21.46	
		8	4	21.51	
		8	7	21.48	
		15	0	21.40	
	MCH	1	0	22.54	
		1	7	22.65	
		1	14	22.54	
		8	0	21.45	
		8	4	21.49	
		8	7	21.45	
		15	0	21.38	
	HCH	1	0	22.39	
		1	7	22.47	
		1	14	22.35	
		8	0	21.19	
		8	4	21.13	
		8	7	21.14	
		15	0	21.12	

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.37	
		1	12	23.44	
		1	24	23.39	
		12	0	22.45	
		12	6	22.46	
		12	13	22.47	
		25	0	22.40	
	MCH	1	0	23.38	
		1	12	23.42	
		1	24	23.35	

		12	0	22.45	
		12	6	22.42	
		12	13	22.43	
		25	0	22.37	
	HCH	1	0	23.24	
		1	12	23.28	
		1	24	23.22	
		12	0	22.24	
		12	6	22.19	
		12	13	22.20	
		25	0	22.18	
16QAM	LCH	1	0	22.78	
		1	12	22.86	
		1	24	22.78	
		12	0	21.64	
		12	6	21.64	
		12	13	21.65	
		25	0	21.47	
	MCH	1	0	22.75	
		1	12	22.84	
		1	24	22.74	
		12	0	21.60	
		12	6	21.58	
		12	13	21.61	
		25	0	21.43	
	HCH	1	0	22.18	
		1	12	22.19	
		1	24	22.11	
		12	0	21.28	
		12	6	21.25	
		12	13	21.23	
		25	0	21.22	

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.32	
		1	24	23.37	
		1	49	23.38	
		25	0	22.44	
		25	12	22.45	
		25	25	22.44	
		50	0	22.45	

	MCH	1	0	23.34	
		1	24	23.32	
		1	49	23.30	
		25	0	22.39	
		25	12	22.37	
		25	25	22.40	
		50	0	22.42	
	HCH	1	0	23.21	
		1	24	23.15	
		1	49	23.14	
		25	0	22.23	
		25	12	22.19	
		25	25	22.14	
		50	0	22.22	
16QAM	LCH	1	0	22.62	
		1	24	22.68	
		1	49	22.67	
		25	0	21.47	
		25	12	21.47	
		25	25	21.48	
		50	0	21.45	
	MCH	1	0	22.60	
		1	24	22.64	
		1	49	22.62	
		25	0	21.45	
		25	12	21.41	
		25	25	21.45	
		50	0	21.43	
	HCH	1	0	22.60	
		1	24	22.52	
		1	49	22.45	
		25	0	21.31	
		25	12	21.24	
		25	25	21.22	
		50	0	21.29	

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	23.34	
		1	37	23.40	
		1	74	23.39	
		37	0	22.42	

		37	18	22.45	
		37	38	22.52	
		75	0	22.46	
	MCH	1	0	23.38	
		1	37	23.40	
		1	74	23.28	
		37	0	22.46	
		37	18	22.43	
		37	38	22.39	
		75	0	22.44	
	HCH	1	0	23.25	
		1	37	23.28	
		1	74	23.21	
		37	0	22.26	
		37	18	22.27	
		37	38	22.25	
		75	0	22.30	
16QAM	LCH	1	0	22.65	
		1	37	22.72	
		1	74	22.66	
		37	0	21.42	
		37	18	21.45	
		37	38	21.47	
		75	0	21.45	
	MCH	1	0	22.64	
		1	37	22.70	
		1	74	22.55	
		37	0	21.44	
		37	18	21.44	
		37	38	21.40	
		75	0	21.42	
	HCH	1	0	22.56	
		1	37	22.56	
		1	74	22.37	
		37	0	21.33	
		37	18	21.31	
		37	38	21.26	
		75	0	21.29	

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	Verdict
		Size	Offset		
QPSK	LCH	1	0	23.46	PASS

		1	49	23.50	PASS
		1	99	23.56	PASS
		50	0	22.45	PASS
		50	25	22.44	PASS
		50	50	22.47	PASS
		100	0	22.44	PASS
	MCH	1	0	23.51	PASS
		1	49	23.46	PASS
		1	99	23.43	PASS
		50	0	22.45	PASS
		50	25	22.42	PASS
		50	50	22.41	PASS
		100	0	22.42	PASS
	HCH	1	0	23.45	PASS
		1	49	23.33	PASS
		1	99	23.36	PASS
		50	0	22.37	PASS
		50	25	22.30	PASS
		50	50	22.24	PASS
		100	0	22.27	PASS
16QAM	LCH	1	0	22.66	PASS
		1	49	22.67	PASS
		1	99	22.72	PASS
		50	0	21.44	PASS
		50	25	21.43	PASS
		50	50	21.44	PASS
		100	0	21.44	PASS
	MCH	1	0	22.68	PASS
		1	49	22.65	PASS
		1	99	22.61	PASS
		50	0	21.40	PASS
		50	25	21.42	PASS
		50	50	21.41	PASS
		100	0	21.42	PASS
	HCH	1	0	22.75	PASS
		1	49	22.61	PASS
		1	99	22.49	PASS
		50	0	21.45	PASS
		50	25	21.36	PASS
		50	50	21.30	PASS
		100	0	21.32	PASS

FDD-LTE Band 7:

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	22.42	
		1	12	22.03	
		1	24	21.93	
		12	0	21.84	
		12	6	21.89	
		12	13	21.84	
		25	0	21.92	
	MCH	1	0	21.64	
		1	12	21.66	
		1	24	21.74	
		12	0	21.74	
		12	6	21.23	
		12	13	21.66	
		25	0	22.13	
	HCH	1	0	21.93	
		1	12	21.91	
		1	24	21.97	
		12	0	21.93	
		12	6	21.92	
		12	13	22.32	
		25	0	21.93	
16QAM	LCH	1	0	21.46	
		1	12	21.69	
		1	24	21.77	
		12	0	21.99	
		12	6	21.98	
		12	13	22.10	
		25	0	21.85	
	MCH	1	0	21.78	
		1	12	22.25	
		1	24	21.76	
		12	0	21.56	
		12	6	22.18	
		12	13	22.15	
		25	0	22.17	
	HCH	1	0	21.94	
		1	12	21.99	

		1	24	21.93	
		12	0	21.85	
		12	6	21.90	
		12	13	21.96	
		25	0	21.93	

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	21.83	
		1	24	22.07	
		1	49	22.33	
		25	0	22.54	
		25	12	22.62	
		25	25	22.63	
		50	0	21.96	
	MCH	1	0	22.13	
		1	24	22.31	
		1	49	22.48	
		25	0	21.89	
		25	12	21.94	
		25	25	22.04	
		50	0	21.93	
	HCH	1	0	22.20	
		1	24	22.33	
		1	49	22.51	
		25	0	21.86	
		25	12	21.94	
		25	25	21.89	
		50	0	21.89	
16QAM	LCH	1	0	22.03	
		1	24	22.08	
		1	49	22.16	
		25	0	21.89	
		25	12	21.88	
		25	25	21.96	
		50	0	22.43	
	MCH	1	0	21.98	
		1	24	21.87	
		1	49	21.70	
		25	0	21.69	
		25	12	21.60	
		25	25	21.51	

		50	0	21.57	
	HCH	1	0	21.41	
		1	24	21.54	
		1	49	21.74	
		25	0	21.60	
		25	12	21.51	
		25	25	21.57	
		50	0	21.61	

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	22.11	
		1	37	22.13	
		1	74	21.62	
		37	0	21.52	
		37	18	21.61	
		37	38	21.66	
		75	0	21.56	
	MCH	1	0	22.21	
		1	37	22.21	
		1	74	22.34	
		37	0	21.24	
		37	18	21.73	
		37	38	21.60	
		75	0	21.75	
	HCH	1	0	22.05	
		1	37	21.92	
		1	74	21.90	
		37	0	21.98	
		37	18	21.96	
		37	38	21.92	
		75	0	21.96	
16QAM	LCH	1	0	21.58	
		1	37	21.83	
		1	74	21.82	
		37	0	21.46	
		37	18	21.51	
		37	38	21.61	
		75	0	21.61	
	MCH	1	0	22.00	
		1	37	21.98	
		1	74	21.61	

		37	0	21.79	
		37	18	21.60	
		37	38	21.60	
		75	0	21.63	
	HCH	1	0	21.24	
		1	37	21.03	
		1	74	21.01	
		37	0	21.24	
		37	18	21.03	
		37	38	21.24	
		75	0	21.03	

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Average Power [dBm]	
		Size	Offset		
QPSK	LCH	1	0	22.21	
		1	49	22.12	
		1	99	21.85	
		50	0	21.52	
		50	25	21.65	
		50	50	21.73	
		100	0	21.60	
	MCH	1	0	21.82	
		1	49	21.78	
		1	99	21.68	
		50	0	21.70	
		50	25	21.70	
		50	50	22.50	
		100	0	21.68	
	HCH	1	0	21.39	
		1	49	21.96	
		1	99	21.98	
		50	0	21.07	
		50	25	21.89	
		50	50	21.80	
		100	0	21.96	
16QAM	LCH	1	0	21.49	
		1	49	21.84	
		1	99	21.88	
		50	0	21.50	
		50	25	21.63	
		50	50	21.68	
		100	0	21.51	

	MCH	1	0	21.85	
		1	49	21.94	
		1	99	21.77	
		50	0	21.62	
		50	25	21.64	
		50	50	21.71	
		100	0	22.42	
	HCH	1	0	21.60	
		1	49	21.06	
		1	99	22.50	
		50	0	22.21	
		50	25	22.19	
		50	50	22.52	
		100	0	22.53	

Remark:

1. Per KDB941225 D05 v02r03, Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.8 When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2. Per KDB941225 D05 v02r03, the procedures required for 1 RB allocation in section 4.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
3. Per KDB941225 D05 v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in sections 4.2.1 and 4.2.2 are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB941225 D05 v02r03, For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 4.2.1, 5.2.2 and 4.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

WLAN - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
802.11b	1Mbps	CH 01	2412	16.64
		CH 06	2437	16.78
		CH 11	2462	16.00
802.11g	54Mbps	CH 01	2412	14.02
		CH 06	2437	14.69
		CH 11	2462	14.72
802.11n (20MHz)	MCS7	CH 01	2412	13.20
		CH 06	2437	12.68
		CH 11	2462	13.18
802.11n (40MHz)	MCS7	CH 03	2422	12.64
		CH 06	2437	12.13
		CH 09	2452	11.20

Remark:

1. Per KDB 248227 D01 v02r01, choose the highest output power channel to test SAR and determine further SAR exclusion

2. Per KDB 248227 D01 v02r01, 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**	**Average Power(dBm)**
GFSK	1Mbps	2.84
Pi/4 QDPSK	2Mbps	2.38
8DPSK	3Mbps	2.01

Bluetooth - Maximum Average Power				
Test Mode	**Data Rate**	**Channel**	**Frequency (MHz)**	**Average Power (dBm)**
BLE	1Mbps	CH 00	2402	-1.37
		CH 19	2440	-1.53
		CH 39	2480	-2.04

Remark:

Bluetooth maximum output power is 2.84dBm, and Maximum Tune-Up output power is 3.0dBm. Per KDB 648474 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(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
3.0	2.0	5	2.402	0.62	3

The exclusion thresholds is 0.62< 3, therefore, the RF exposure evaluation is not required.

9.2 Test Results for Standalone SAR Test

Head SAR

GSM850 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
1	GSM	Right Cheek	190	836.6	32.13	32.5	1.0889	0.1804	0.1964
2	GSM	Right Tilted	190	836.6	32.13	32.5	1.0889	0.1307	0.1423
3	GSM	Left Cheek	190	836.6	32.13	32.5	1.0889	0.2097	0.2283
4	GSM	Left Tilted	190	836.6	32.13	32.5	1.0889	0.1053	0.1147

GSM1900 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	M Hz					
11	GSM	Right Cheek	512	1850.2	29.01	29.5	1.1194	0.1145	0.1282
12	GSM	Right Tilted	512	1850.2	29.01	29.5	1.1194	0.0181	0.0203
13	GSM	Left Cheek	512	1850.2	29.01	29.5	1.1194	0.1168	0.1308
14	GSM	Left Tilted	512	1850.2	29.01	29.5	1.1194	0.0208	0.0233

WCDMA Band 2 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
21	RMC	Right Cheek	9262	1852.4	21.78	22.0	1.0520	0.2881	0.3031
22	RMC	Right Tilted	9262	1852.4	21.78	22.0	1.0520	0.0482	0.0507
23	RMC	Left Cheek	9262	1852.4	21.78	22.0	1.0520	0.2315	0.2435
24	RMC	Left Tilted	9262	1852.4	21.78	22.0	1.0520	0.0448	0.0471

WCDMA Band 5 – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
29	RMC	Right Cheek	4132	826.4	22.02	22.5	1.1169	0.1899	0.2121
30	RMC	Right Tilted	4132	826.4	22.02	22.5	1.1169	0.1560	0.1742
31	RMC	Left Cheek	4132	826.4	22.02	22.5	1.1169	0.1794	0.2004
32	RMC	Left Tilted	4132	826.4	22.02	22.5	1.1169	0.1260	0.1407

LTE Band 2– Head SAR Test								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Head	MHz	(dBm)	(dBm)			
37	RMC QPSK 20MHz 1RB	Right Cheek	1860.0	23.40	23.5	1.0233	0.2040	0.2088
38	RMC QPSK 20MHz 1RB	Right Tilted	1860.0	23.40	23.5	1.0233	0.0407	0.0416
39	RMC QPSK 20MHz 1RB	Left Cheek	1860.0	23.40	23.5	1.0233	0.1763	0.1804
40	RMC QPSK 20MHz 1RB	Left Tilted	1860.0	23.40	23.5	1.0233	0.0318	0.0325
41	RMC QPSK 20MHz 50%RB	Right Cheek	1860.0	22.28	23.5	1.3243	0.1422	0.1883
42	RMC QPSK 20MHz 50%RB	Right Tilted	1860.0	22.28	23.5	1.3243	0.0412	0.0546
43	RMC QPSK 20MHz 50%RB	Left Cheek	1860.0	22.28	23.5	1.3243	0.1329	0.1760
44	RMC QPSK 20MHz 50%RB	Left Tilted	1860.0	22.28	23.5	1.3243	0.0311	0.0412

LTE Band 4– Head SAR Test								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Head	MHz	(dBm)	(dBm)			
53	RMC QPSK 20MHz 1RB	Right Cheek	1720.0	23.56	24.0	1.1066	0.3137	0.3471
54	RMC QPSK 20MHz 1RB	Right Tilted	1720.0	23.56	24.0	1.1066	0.0300	0.0332
55	RMC QPSK 20MHz 1RB	Left Cheek	1720.0	23.56	24.0	1.1066	0.1892	0.2094
56	RMC QPSK 20MHz 1RB	Left Tilted	1720.0	23.56	24.0	1.1066	0.0243	0.0269
57	RMC QPSK 20MHz 50%RB	Right Cheek	1720.0	22.47	24.0	1.4223	0.2412	0.3431
58	RMC QPSK 20MHz 50%RB	Right Tilted	1720.0	22.47	24.0	1.4223	0.0301	0.0428
59	RMC QPSK 20MHz 50%RB	Left Cheek	1720.0	22.47	24.0	1.4223	0.1498	0.2131
60	RMC QPSK 20MHz 50%RB	Left Tilted	1720.0	22.47	24.0	1.4223	0.0286	0.0407

LTE Band 7– Head SAR Test								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth	Head	MHz	(dBm)	(dBm)			
69	RMC QPSK 20MHz 1RB	Right Cheek	2535.0	22.21	23.0	1.1995	0.0505	0.0606
70	RMC QPSK 20MHz 1RB	Right Tilted	2535.0	22.21	23.0	1.1995	0.0045	0.0054
71	RMC QPSK 20MHz 1RB	Left Cheek	2535.0	22.21	23.0	1.1995	0.0322	0.0386
72	RMC QPSK 20MHz 1RB	Left Tilted	2535.0	22.21	23.0	1.1995	0.0047	0.0056
73	RMC QPSK 20MHz 50%RB	Right Cheek	2510.0	22.50	23.0	1.1220	0.0422	0.0473
74	RMC QPSK 20MHz 50%RB	Right Tilted	2510.0	22.50	23.0	1.1220	0.0023	0.0026
75	RMC QPSK 20MHz 50%RB	Left Cheek	2510.0	22.50	23.0	1.1220	0.0311	0.0349
76	RMC QPSK 20MHz 50%RB	Left Tilted	2510.0	22.50	23.0	1.1220	0.0039	0.0044

WLAN 2.4GHz – Head SAR Test									
Plot No.	Mode	Test Position Head	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
85	802.11b	Right Cheek	06	2437	16.78	17.0	1.0520	0.2945	0.3098
86	802.11b	Right Tilted	06	2437	16.78	17.0	1.0520	0.1711	0.1800
87	802.11b	Left Cheek	06	2437	16.78	17.0	1.0520	0.1054	0.1109
88	802.11b	Left Tilted	06	2437	16.78	17.0	1.0520	0.0545	0.0573

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.

Body-worn SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
5	GSM	Back	190	836.6	32.13	32.5	1.0889	0.3370	0.3670
6	GSM	Front	190	836.6	32.13	32.5	1.0889	0.2689	0.2928

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
15	GSM	Back	512	1850.2	29.01	29.5	1.1194	0.3859	0.4320
16	GSM	Front	512	1850.2	29.01	29.5	1.1194	0.2738	0.3065

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
25	RMC 12.2k	Back Side	9262	1852.4	21.78	22.0	1.0520	0.4701	0.4945
26	RMC 12.2k	Front Side	9262	1852.4	21.78	22.0	1.0520	0.6438	0.6773

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
33	RMC 12.2k	Back Side	4132	826.4	22.02	22.5	1.1169	0.2991	0.3341
34	RMC 12.2k	Front Side	4132	826.4	22.02	22.5	1.1169	0.2441	0.2726

LTE Band 2–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
45	RMC QPSK 20MHz 1RB	Back Side	1860.0	23.40	23.5	1.0233	0.6953	0.7115
46	RMC QPSK 20MHz 1RB	Front Side	1860.0	23.40	23.5	1.0233	0.3974	0.4067

LTE Band 4–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
61	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.56	24.0	1.1066	0.7918	0.8762
62	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.56	24.0	1.1066	0.5768	0.6383

LTE Band 7–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position Head	Frequency	Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB		MHz					
77	RMC QPSK 20MHz 1RB	Back Side	2510	22.21	23.0	1.1995	0.1273	0.1527
78	RMC QPSK 20MHz 1RB	Front Side	2510	22.21	23.0	1.1995	0.0806	0.0967

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					
89	802.11b	Back Side	01	2437	16.78	17.0	1.0520	0.0948	0.0997
90	802.11b	Front Side	01	2437	16.78	17.0	1.0520	0.0852	0.0896

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.

Hotspot SAR

GSM850 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
7	GPRS_4TX	Back Side	251	848.8	28.01	28.5	1.1194	0.6644	0.7438
8	GPRS_4TX	Front Side	251	848.8	28.01	28.5	1.1194	0.3784	0.4236
9	GPRS_4TX	Bottom side	251	848.8	28.01	28.5	1.1194	0.2486	0.2783
10	GPRS_4TX	Right side	251	848.8	28.01	28.5	1.1194	0.4363	0.4884

GSM1900 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
17	GPRS_4TX	Back Side	512	1850.2	25.43	25.5	1.0162	0.5105	0.5188
18	GPRS_4TX	Front Side	512	1850.2	25.43	25.5	1.0162	0.7311	0.7430
19	GPRS_4TX	Bottom side	512	1850.2	25.43	25.5	1.0162	0.7860	0.7987
20	GPRS_4TX	Right side	512	1850.2	25.43	25.5	1.0162	0.3187	0.3239

WCDMA Band 2 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
25	RMC 12.2k	Back Side	9262	1852.4	21.78	22.0	1.0520	0.4701	0.4945
26	RMC 12.2k	Front Side	9262	1852.4	21.78	22.0	1.0520	0.6438	0.6773
27	RMC 12.2k	Bottom side	9262	1852.4	21.78	22.0	1.0520	0.7216	0.7591
28	RMC 12.2k	Right side	9262	1852.4	21.78	22.0	1.0520	0.3072	0.3232

WCDMA Band 5 – Body SAR Test (Gap: 10mm)									
Plot No.	Mode	Test Position Body	Frequency		Output Power (dBm)	Rated Limit (dBm)	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
			CH.	MHz					
33	RMC 12.2k	Back Side	4132	826.4	22.02	22.5	1.1169	0.2991	0.3341
34	RMC 12.2k	Front Side	4132	826.4	22.02	22.5	1.1169	0.2441	0.2726
35	RMC 12.2k	Bottom side	4132	826.4	22.02	22.5	1.1169	0.1572	0.1756
36	RMC 12.2k	Right side	4132	826.4	22.02	22.5	1.1169	0.2745	0.3066

LTE Band 2–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Head	MHz	(dBm)	(dBm)			
45	RMC QPSK 20MHz 1RB	Back Side	1860.0	23.40	23.5	1.0233	0.6953	0.7115
46	RMC QPSK 20MHz 1RB	Front Side	1860.0	23.40	23.5	1.0233	0.3974	0.4067
47	RMC QPSK 20MHz 1RB	Bottom side	1860.0	23.40	23.5	1.0233	0.6547	0.6699
48	RMC QPSK 20MHz 1RB	Right side	1860.0	23.40	23.5	1.0233	0.1783	0.1825
49	RMC QPSK 20MHz 50%RB	Back Side	1860.0	22.28	23.5	1.3243	0.5045	0.6681
50	RMC QPSK 20MHz 50%RB	Front Side	1860.0	22.28	23.5	1.3243	0.3349	0.4435
51	RMC QPSK 20MHz 50%RB	Bottom side	1860.0	22.28	23.5	1.3243	0.4123	0.5460
52	RMC QPSK 20MHz 50%RB	Right side	1860.0	22.28	23.5	1.3243	0.1222	0.1618

LTE Band 4–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Head	MHz	(dBm)	(dBm)			
61	RMC QPSK 20MHz 1RB	Back Side	1720.0	23.56	24.0	1.1066	0.7918	0.8762
62	RMC QPSK 20MHz 1RB	Front Side	1720.0	23.56	24.0	1.1066	0.5768	0.6383
63	RMC QPSK 20MHz 1RB	Bottom side	1720.0	23.56	24.0	1.1066	0.5321	0.5888
64	RMC QPSK 20MHz 1RB	Right side	1720.0	23.56	24.0	1.1066	0.1813	0.2006
65	RMC QPSK 20MHz 50%RB	Back Side	1720.0	22.47	24.0	1.4223	0.6032	0.8579
66	RMC QPSK 20MHz 50%RB	Front Side	1720.0	22.47	24.0	1.4223	0.3453	0.4911
67	RMC QPSK 20MHz 50%RB	Bottom side	1720.0	22.47	24.0	1.4223	0.2124	0.3021
68	RMC QPSK 20MHz 50%RB	Right side	1720.0	22.47	24.0	1.4223	0.1055	0.1501

LTE Band 7–Body SAR Test (Gap: 10mm)								
Plot No.	Mode	Test Position	Frequency	Output Power	Rated Limit	Scaling Factor	SAR1g (W/kg)	Scaled SAR1g (W/kg)
	Modulation, Bandwidth, RB	Head	MHz	(dBm)	(dBm)			
77	RMC QPSK 20MHz 1RB	Back Side	2510	22.21	23.0	1.1995	0.1273	0.1527
78	RMC QPSK 20MHz 1RB	Front Side	2510	22.21	23.0	1.1995	0.0806	0.0967
79	RMC QPSK 20MHz 1RB	Bottom side	2510	22.21	23.0	1.1995	0.0208	0.0249
80	RMC QPSK 20MHz 1RB	Right side	2510	22.21	23.0	1.1995	0.0026	0.0031
81	RMC QPSK 20MHz 50%RB	Back Side	2535	22.50	23.0	1.1220	0.1004	0.1127
82	RMC QPSK 20MHz 50%RB	Front Side	2535	22.50	23.0	1.1220	0.0446	0.0500
83	RMC QPSK 20MHz 50%RB	Bottom side	2535	22.50	23.0	1.1220	0.0211	0.0237
84	RMC QPSK 20MHz 50%RB	Right side	2535	22.50	23.0	1.1220	0.0021	0.0024

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					
89	802.11b	Back Side	01	2437	16.78	17.0	1.0520	0.0948	0.0997
90	802.11b	Front Side	01	2437	16.78	17.0	1.0520	0.0852	0.0896
91	802.11b	Left side	01	2437	16.78	17.0	1.0520	0.0585	0.0615
92	802.11b	Top Side	01	2437	16.78	17.0	1.0520	0.0515	0.0542

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 Simultaneous Multi-band Transmission

No.	Configurations	Head SAR	Body-worn SAR	Hotspot SAR
1	GSM(Voice) + WLAN(Data)	Yes	Yes	-
2	GPRS/ EDGE(Data) + WLAN(Data)	-	-	Yes
3	WCDMA (Voice)+ WLAN(Data)	Yes	Yes	-
4	HSDPA(Data) + WLAN(Data)	-	-	Yes
5	HSUPA(Data) + WLAN(Data)	-	-	Yes
6	LTE(Data) + WLAN(Data)	-	-	Yes
7	GSM(Voice) + Bluetooth(Data)	Yes	Yes	-
8	GPRS/ EDGE(Data) + Bluetooth(Data)	-	-	Yes
9	WCDMA(Voice) + Bluetooth(Data)	Yes	Yes	-
10	HSDPA(Data)+ Bluetooth(Data)	-	-	Yes
11	HSUPA(Data) + Bluetooth(Data)	-	-	Yes
12	LTE(Data) + Bluetooth(Data)	-	-	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 D01 v06, 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 D01 v06 as below:

Bluetooth:

Tune-Up Power (dBm)	Max. Power (mW)	Distance (mm)	Frequency (GHz)	X	SAR(1g) 5mm	SAR(1g) 10mm
3.0	2.0	5/10	2.402	7.5	0.0827	0.0413

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

Head SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.1964	0.3098	0.5062
Right Tilted	GSM850	0.1423	0.1800	0.3223
Left Cheek	GSM850	0.2283	0.1109	0.3392
Left Tilted	GSM850	0.1147	0.0573	0.172
Right Cheek	GSM1900	0.1282	0.3098	0.4380
Right Tilted	GSM1900	0.0203	0.1800	0.2003
Left Cheek	GSM1900	0.1308	0.1109	0.2417
Left Tilted	GSM1900	0.0233	0.0573	0.0806
Right Cheek	WCDMA Band 2	0.3031	0.3098	0.6129
Right Tilted	WCDMA Band 2	0.0507	0.1800	0.2307
Left Cheek	WCDMA Band 2	0.2435	0.1109	0.3544
Left Tilted	WCDMA Band 2	0.0471	0.0573	0.1044
Right Cheek	WCDMA Band 5	0.2121	0.3098	0.5219
Right Tilted	WCDMA Band 5	0.1742	0.1800	0.3542
Left Cheek	WCDMA Band 5	0.2004	0.1109	0.3113
Left Tilted	WCDMA Band 5	0.1407	0.0573	0.198
Right Cheek	LTE Band 2	0.2088	0.3098	0.5186
Right Tilted	LTE Band 2	0.0416	0.1800	0.2216
Left Cheek	LTE Band 2	0.1804	0.1109	0.2913
Left Tilted	LTE Band 2	0.0325	0.0573	0.0898
Right Cheek	LTE Band 4	0.3471	0.3098	0.6569
Right Tilted	LTE Band 4	0.0332	0.1800	0.2132
Left Cheek	LTE Band 4	0.2094	0.1109	0.3203
Left Tilted	LTE Band 4	0.0269	0.0573	0.0842
Right Cheek	LTE Band 7	0.0606	0.3098	0.3704
Right Tilted	LTE Band 7	0.0054	0.1800	0.1854
Left Cheek	LTE Band 7	0.0386	0.1109	0.1495
Left Tilted	LTE Band 7	0.0056	0.0573	0.0629

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Right Cheek	GSM850	0.1964	0.0827	0.2791
Right Tilted	GSM850	0.1423	0.0827	0.225
Left Cheek	GSM850	0.2283	0.0827	0.311
Left Tilted	GSM850	0.1147	0.0827	0.1974
Right Cheek	GSM1900	0.1282	0.0827	0.2109
Right Tilted	GSM1900	0.0203	0.0827	0.103
Left Cheek	GSM1900	0.1308	0.0827	0.2135
Left Tilted	GSM1900	0.0233	0.0827	0.106
Right Cheek	WCDMA Band 2	0.3031	0.0827	0.3858
Right Tilted	WCDMA Band 2	0.0507	0.0827	0.1334
Left Cheek	WCDMA Band 2	0.2435	0.0827	0.3262
Left Tilted	WCDMA Band 2	0.0471	0.0827	0.1298
Right Cheek	WCDMA Band 5	0.2121	0.0827	0.2948
Right Tilted	WCDMA Band 5	0.1742	0.0827	0.2569
Left Cheek	WCDMA Band 5	0.2004	0.0827	0.2831
Left Tilted	WCDMA Band 5	0.1407	0.0827	0.2234
Right Cheek	LTE Band 2	0.2088	0.0827	0.2915
Right Tilted	LTE Band 2	0.0416	0.0827	0.1243
Left Cheek	LTE Band 2	0.1804	0.0827	0.2631
Left Tilted	LTE Band 2	0.0325	0.0827	0.1152
Right Cheek	LTE Band 4	0.3471	0.0827	0.4298
Right Tilted	LTE Band 4	0.0332	0.0827	0.1159
Left Cheek	LTE Band 4	0.2094	0.0827	0.2921
Left Tilted	LTE Band 4	0.0269	0.0827	0.1096
Right Cheek	LTE Band 7	0.0606	0.0827	0.1433
Right Tilted	LTE Band 7	0.0054	0.0827	0.0881
Left Cheek	LTE Band 7	0.0386	0.0827	0.1213
Left Tilted	LTE Band 7	0.0056	0.0827	0.0883

Body-worn SAR

WWAN and WLAN

	WWAN		WLAN	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3670	0.0997	0.4667
Front	GSM850	0.2928	0.0896	0.3824
Back	GSM1900	0.3670	0.0997	0.4667
Front	GSM1900	0.2928	0.0896	0.3824
Back	WCDMA Band 2	0.4945	0.0997	0.5942
Front	WCDMA Band 2	0.6773	0.0896	0.7669
Back	WCDMA Band 5	0.3341	0.0997	0.4338
Front	WCDMA Band 5	0.2726	0.0896	0.3622
Back	LTE Band 2	0.4067	0.0997	0.5064
Front	LTE Band 2	0.7115	0.0896	0.8011
Back	LTE Band 4	0.8762	0.0997	0.9759
Front	LTE Band 4	0.6383	0.0896	0.7279
Back	LTE Band 7	0.1527	0.0997	0.2524
Front	LTE Band 7	0.0967	0.0896	0.1863

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.3670	0.0413	0.4083
Front	GSM850	0.2928	0.0413	0.3341
Back	GSM1900	0.3670	0.0413	0.4083
Front	GSM1900	0.2928	0.0413	0.3341
Back	WCDMA Band 2	0.4945	0.0413	0.5358
Front	WCDMA Band 2	0.6773	0.0413	0.7186
Back	WCDMA Band 5	0.3341	0.0413	0.3754
Front	WCDMA Band 5	0.2726	0.0413	0.3139
Back	LTE Band 2	0.4067	0.0413	0.448
Front	LTE Band 2	0.7115	0.0413	0.7528
Back	LTE Band 4	0.8762	0.0413	0.9175
Front	LTE Band 4	0.6383	0.0413	0.6796
Back	LTE Band 7	0.1527	0.0413	0.1940
Front	LTE Band 7	0.0967	0.0413	0.1380

Hotspot SAR

WWAN and WLAN

Position	WWAN		WLAN	Summed SAR (W/kg)
	Band	Scaled SAR (W/kg)	Scaled SAR (W/kg)	
Back	GSM850	0.7438	0.0997	0.8435
Front	GSM850	0.4236	0.0896	0.5132
Top side	GSM850	--	0.0542	0.0542
Bottom side	GSM850	0.2783	--	0.2783
Right side	GSM850	0.4884	--	0.4884
Left side	GSM850	--	0.0615	0.0615
Back	GSM1900	0.5188	0.0997	0.6185
Front	GSM1900	0.7430	0.0896	0.8326
Top side	GSM1900	--	0.0542	0.0542
Bottom side	GSM1900	0.7987	--	0.7987
Right side	GSM1900	0.3239	--	0.3239
Left side	GSM1900	--	0.0615	0.0615
Back	WCDMA Band 2	0.4945	0.0997	0.5942
Front	WCDMA Band 2	0.6773	0.0896	0.7669
Top side	WCDMA Band 2	--	0.0542	0.0542
Bottom side	WCDMA Band 2	0.7591	--	0.7591
Right side	WCDMA Band 2	0.3232	--	0.3232
Left side	WCDMA Band 2	--	0.0615	0.0615
Back	WCDMA Band 5	0.3341	0.0997	0.4338
Front	WCDMA Band 5	0.2726	0.0896	0.3622
Top side	WCDMA Band 5	--	0.0542	0.0542
Bottom side	WCDMA Band 5	0.1756	--	0.1756
Right side	WCDMA Band 5	0.3066	--	0.3066
Left side	WCDMA Band 5	--	0.0615	0.0615
Back	LTE Band 2	0.4067	0.0997	0.5064
Front	LTE Band 2	0.7115	0.0896	0.8011
Top side	LTE Band 2	--	0.0542	0.0542
Bottom side	LTE Band 2	0.6699	--	0.6699
Right side	LTE Band 2	0.1825	--	0.1825
Left side	LTE Band 2	--	0.0615	0.0615
Back	LTE Band 4	0.8762	0.0997	0.9759
Front	LTE Band 4	0.6383	0.0896	0.7279
Top side	LTE Band 4	--	0.0542	0.0542
Bottom side	LTE Band 4	0.5888	--	0.5888
Right side	LTE Band 4	0.2006	--	0.2006
Left side	LTE Band 4	--	0.0615	0.0615
Back	LTE Band 7	0.1527	0.0997	0.2524

Front	LTE Band 7	0.0967	0.0896	0.1863
Top side	LTE Band 7	--	0.0542	0.0542
Bottom side	LTE Band 7	0.0249	--	0.0249
Right side	LTE Band 7	0.0031	--	0.0031
Left side	LTE Band 7	--	0.0615	0.0615

WWAN and Bluetooth

	WWAN		Bluetooth	Summed SAR (W/kg)
Position	**Band**	**Scaled SAR (W/kg)**	**Scaled SAR (W/kg)**	
Back	GSM850	0.7438	0.0413	0.7851
Front	GSM850	0.4236	0.0413	0.4649
Top side	GSM850	--	0.0413	0.0413
Bottom side	GSM850	0.2783	0.0413	0.3196
Right side	GSM850	0.4884	0.0413	0.5297
Left side	GSM850	--	0.0413	0.0413
Back	GSM1900	0.5188	0.0413	0.5601
Front	GSM1900	0.7430	0.0413	0.7843
Top side	GSM1900	--	0.0413	0.0413
Bottom side	GSM1900	0.7987	0.0413	0.8400
Right side	GSM1900	0.3239	0.0413	0.3652
Left side	GSM1900	--	0.0413	0.0413
Back	WCDMA Band 2	0.4945	0.0413	0.5358
Front	WCDMA Band 2	0.6773	0.0413	0.7186
Top side	WCDMA Band 2	--	0.0413	0.0413
Bottom side	WCDMA Band 2	0.7591	0.0413	0.8004
Right side	WCDMA Band 2	0.3232	0.0413	0.3645
Left side	WCDMA Band 2	--	0.0413	0.0413
Back	WCDMA Band 5	0.3341	0.0413	0.3754
Front	WCDMA Band 5	0.2726	0.0413	0.3139
Top side	WCDMA Band 5	--	0.0413	0.0413
Bottom side	WCDMA Band 5	0.1756	0.0413	0.2169
Right side	WCDMA Band 5	0.3066	0.0413	0.3479
Left side	WCDMA Band 5	--	0.0413	0.0413
Back	LTE Band 2	0.4067	0.0413	0.448
Front	LTE Band 2	0.7115	0.0413	0.7528
Top side	LTE Band 2	--	0.0413	0.0413
Bottom side	LTE Band 2	0.6699	0.0413	0.7112
Right side	LTE Band 2	0.1825	0.0413	0.2238
Left side	LTE Band 2	--	0.0413	0.0413
Back	LTE Band 4	0.8762	0.0413	0.9175
Front	LTE Band 4	0.6383	0.0413	0.6796
Top side	LTE Band 4	--	0.0413	0.0413

Bottom side	LTE Band 4	0.5888	0.0413	0.6301
Right side	LTE Band 4	0.2006	0.0413	0.2419
Left side	LTE Band 4	--	0.0413	0.0413
Back	LTE Band 7	0.1527	0.0413	0.1940
Front	LTE Band 7	0.0967	0.0413	0.1380
Top side	LTE Band 7	--	0.0413	0.0413
Bottom side	LTE Band 7	0.0249	0.0413	0.0662
Right side	LTE Band 7	0.0031	0.0413	0.0444
Left side	LTE Band 7	--	0.0413	0.0413

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 Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 7 minutes 21 seconds

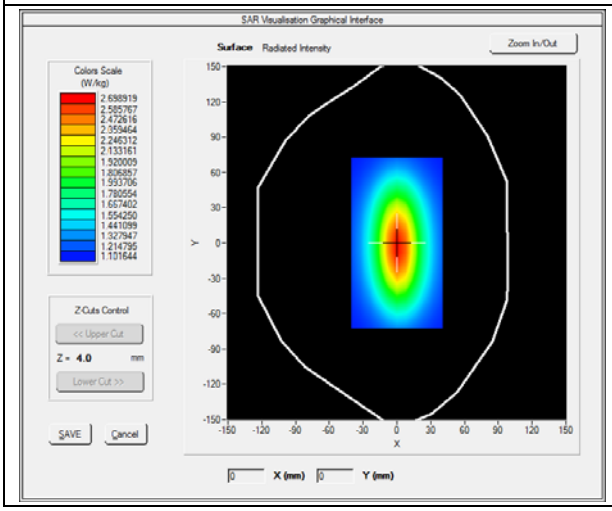
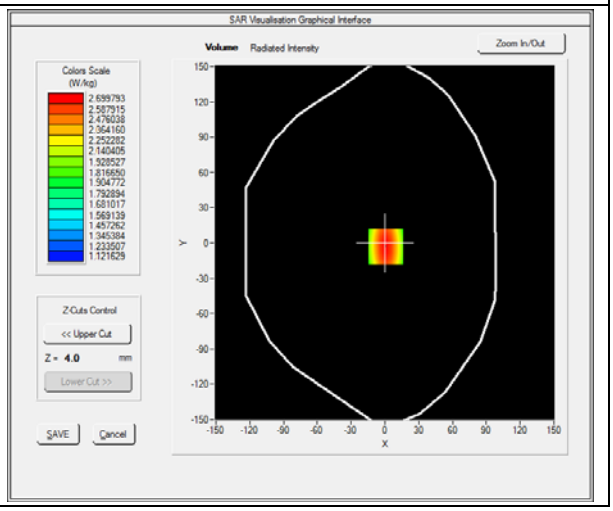
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.93; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	Duty Cycle 1:1

B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	0.038437
Ambient Temperature	21.1
Liquid Temperature	21.3

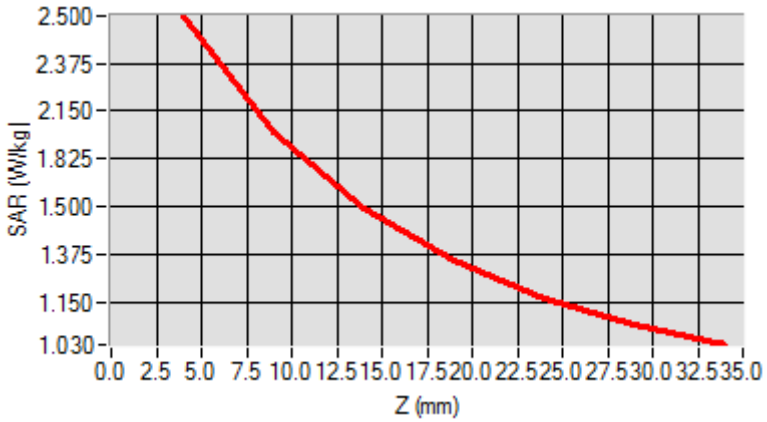
SURFACE SAR	VOLUME SAR
	

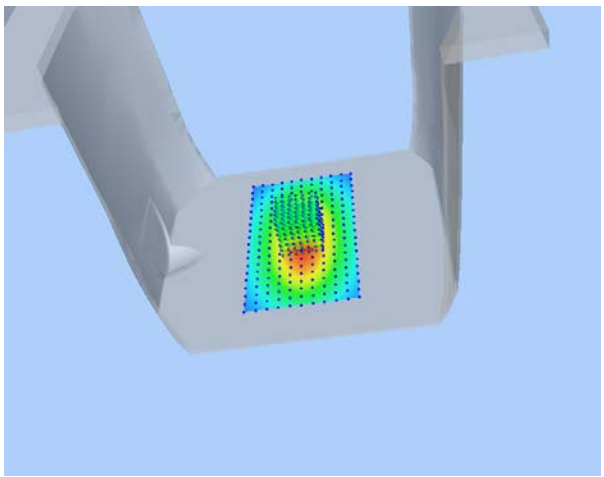
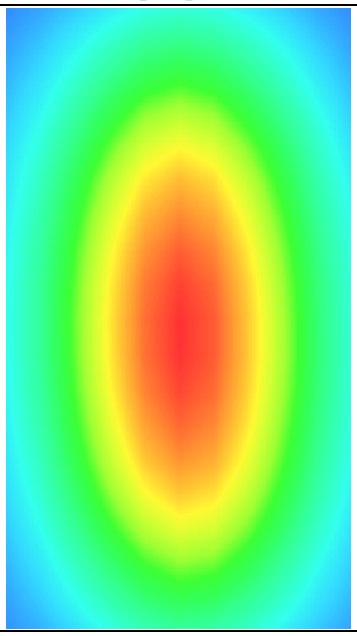
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.129489
SAR 1g (W/Kg)	2.411253

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	2.4900	1.8942	1.4811	1.3541	1.1123	1.0539



3D screen shot	Hot spot position
	

MEASUREMENT 2

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/09/2015

Measurement duration: 12 minutes 21 seconds

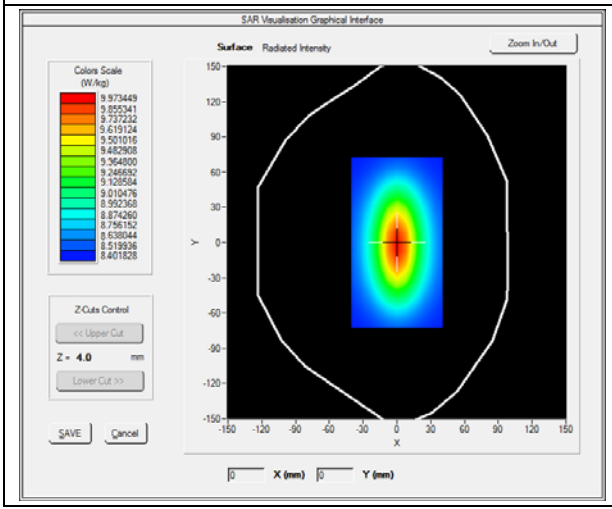
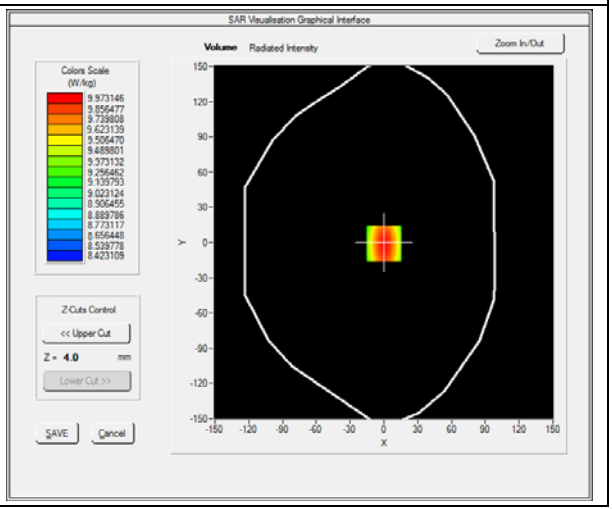
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.84; Calibrated: 06/03/2015

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)	39.024890
Conductivity (S/m)	1.371250
Power Variation (%)	1.401232
Ambient Temperature	21.1
Liquid Temperature	21.2

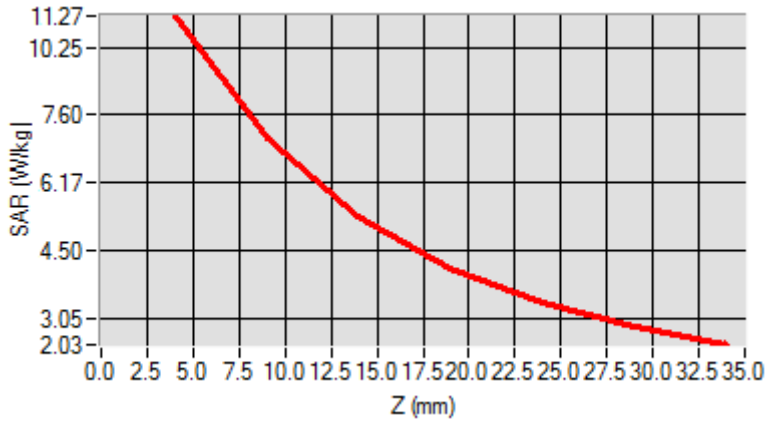
SURFACE SAR	VOLUME SAR
	

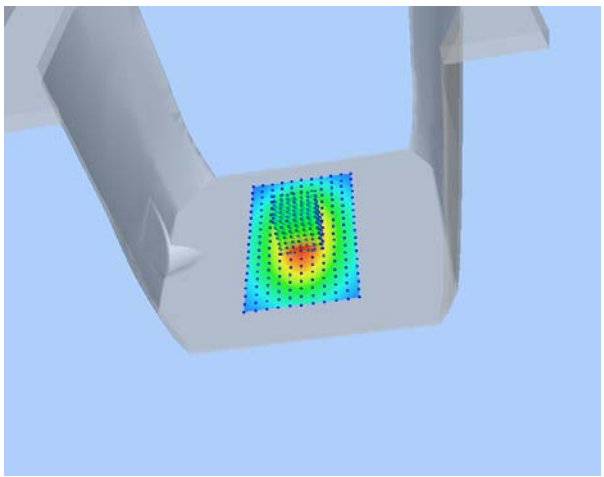
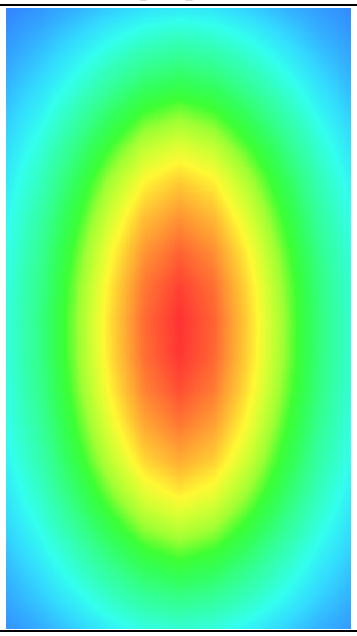
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	5.171252
SAR 1g (W/Kg)	9.611250

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.3455	7.1125	5.1026	3.425	3.0242	2.1125



3D screen shot	Hot spot position
	

MEASUREMENT 3

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

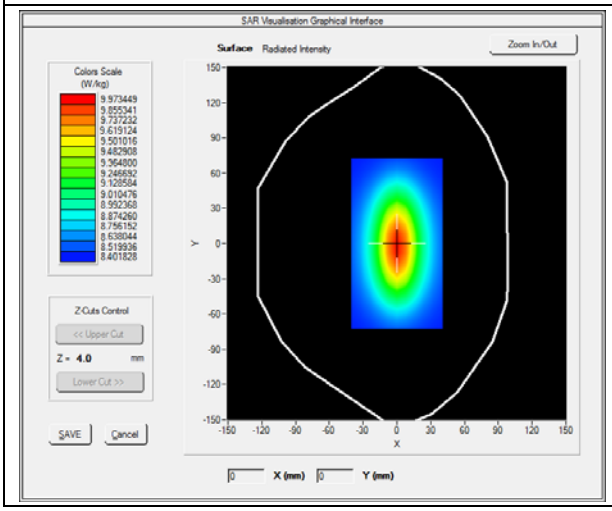
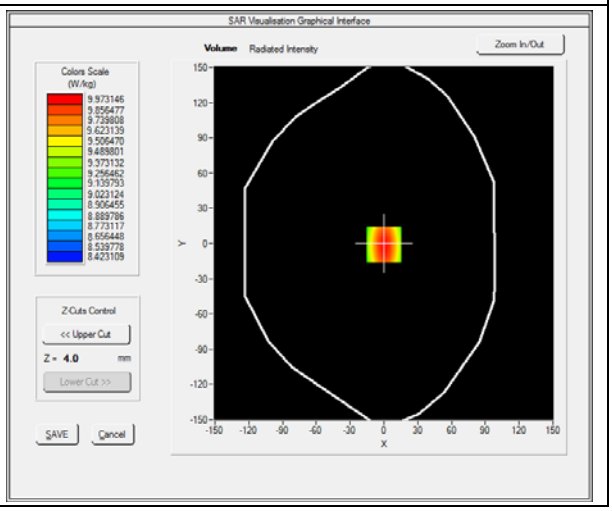
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.35; Calibrated: 06/03/2015

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)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.022540
Ambient Temperature	21.1
Liquid Temperature	21.3

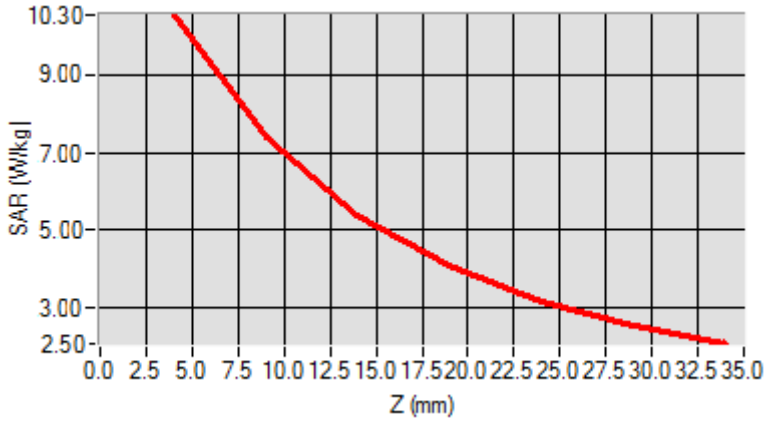
SURFACE SAR	VOLUME SAR
	

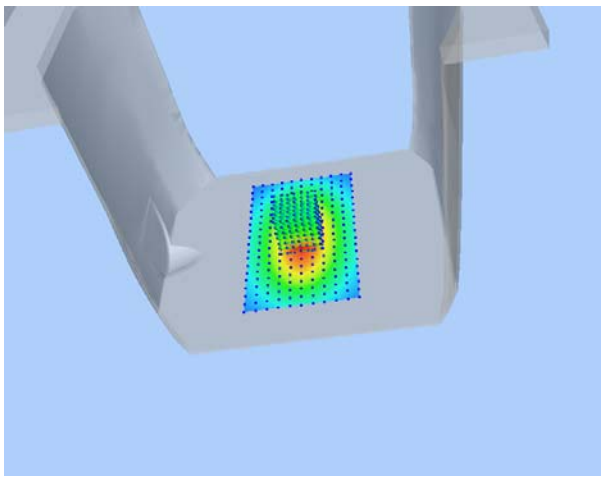
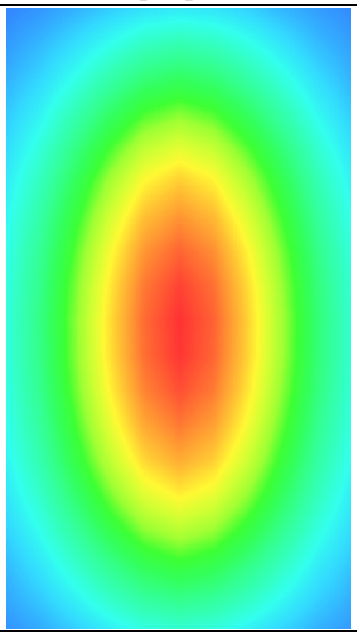
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	7.174526
SAR 1g (W/Kg)	9.913214

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	10.2354	6.8400	5.0121	4.1189	3.0522	2.8424



3D screen shot	Hot spot position
	

MEASUREMENT 4

For Head Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

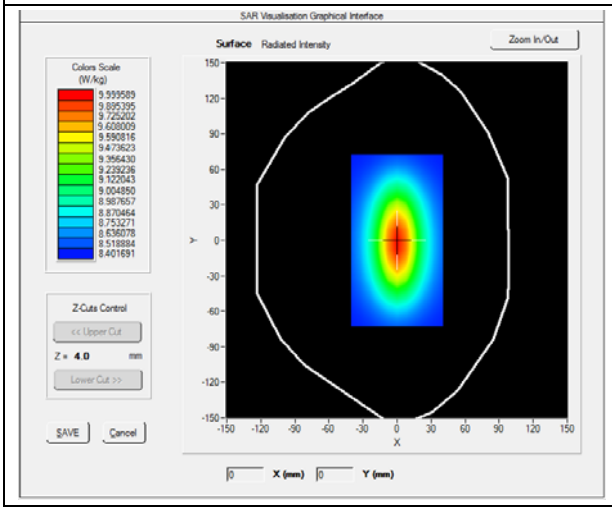
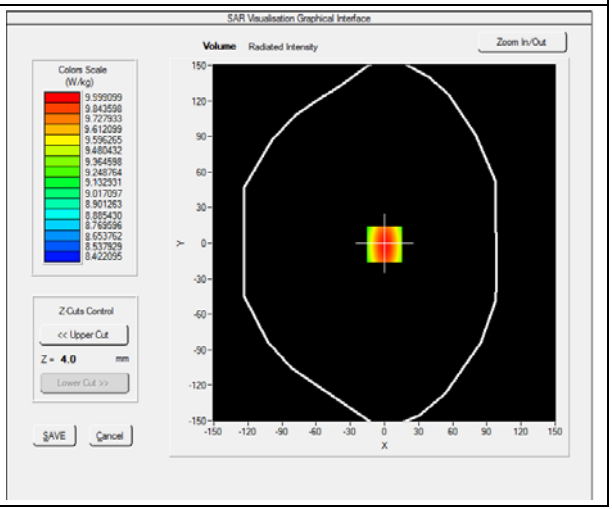
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.64; Calibrated: 06/03/2015

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)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	1.141452
Ambient Temperature	21.1
Liquid Temperature	21.2

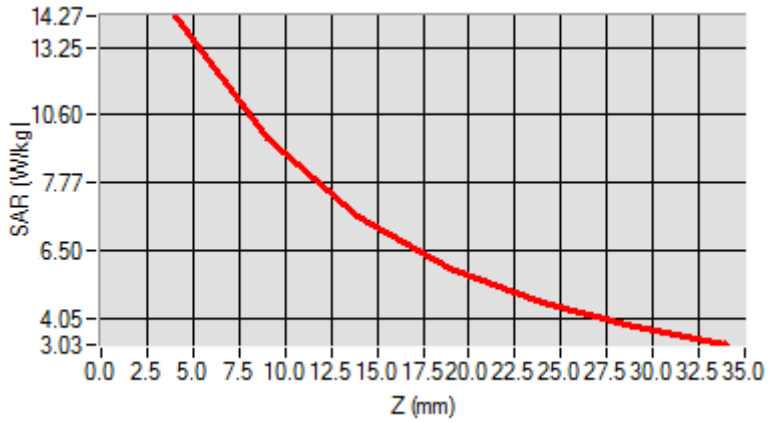
SURFACE SAR	VOLUME SAR
	

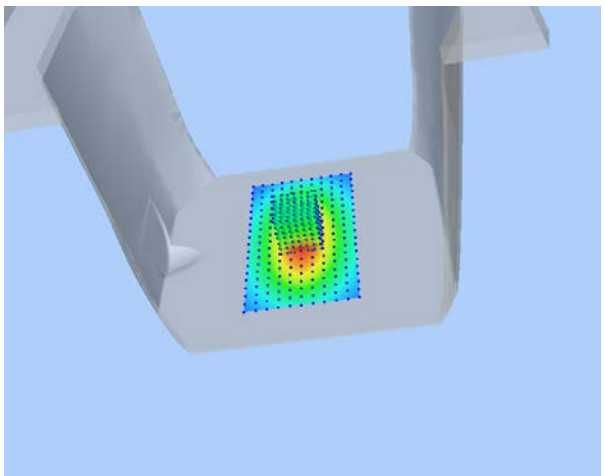
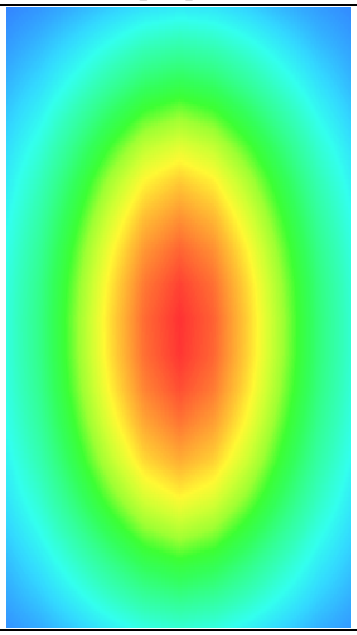
Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	8.020427
SAR 1g (W/Kg)	13.452457

Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0000	14.1034	12.0012	10.2624	7.4715	5.9022	4.5114



3D screen shot	Hot spot position
	

MEASUREMENT 5

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

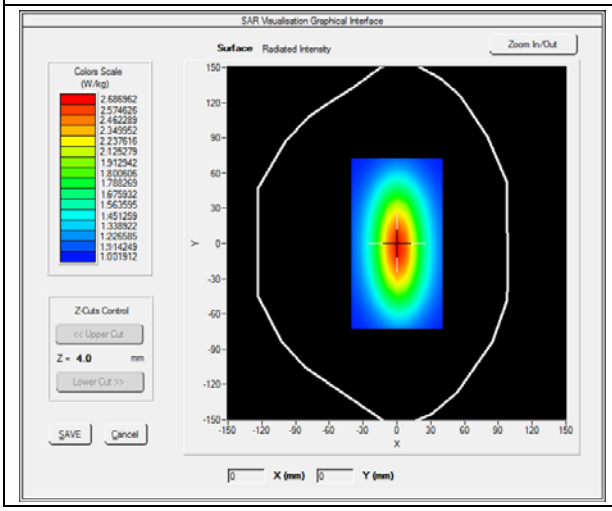
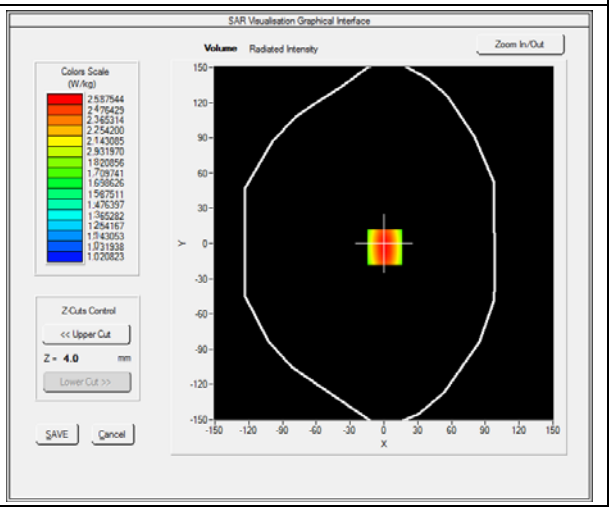
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	dx=8mm dy=8mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	Duty Cycle 1:1

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

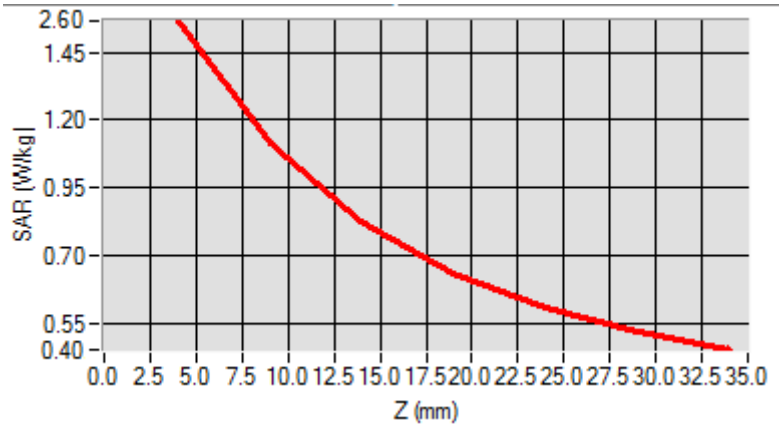
SURFACE SAR	VOLUME SAR
	

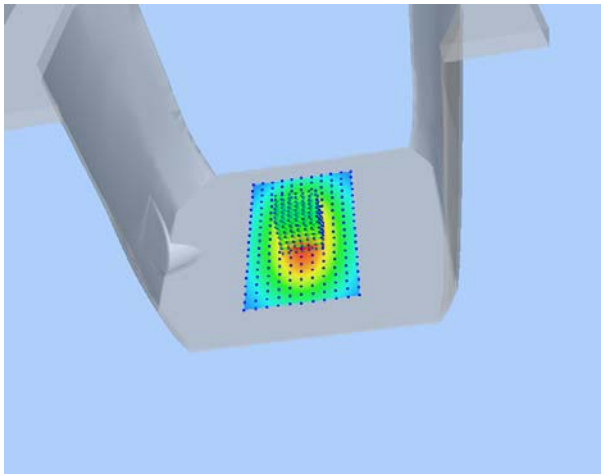
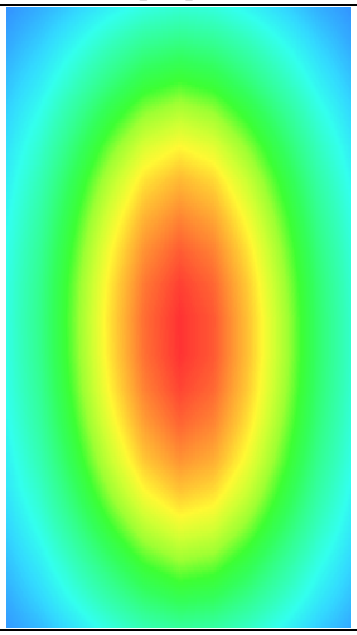
Maximum location: X=0.00, Y=0.00

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 6

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

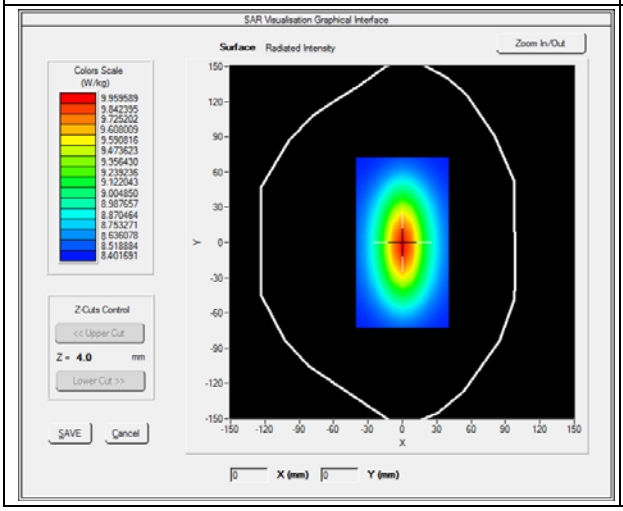
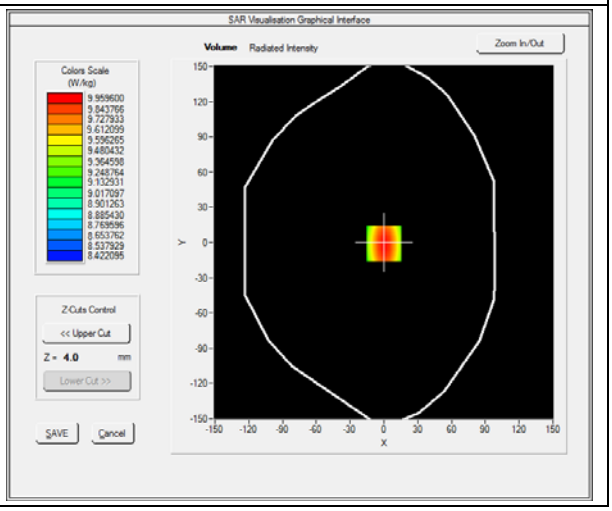
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

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

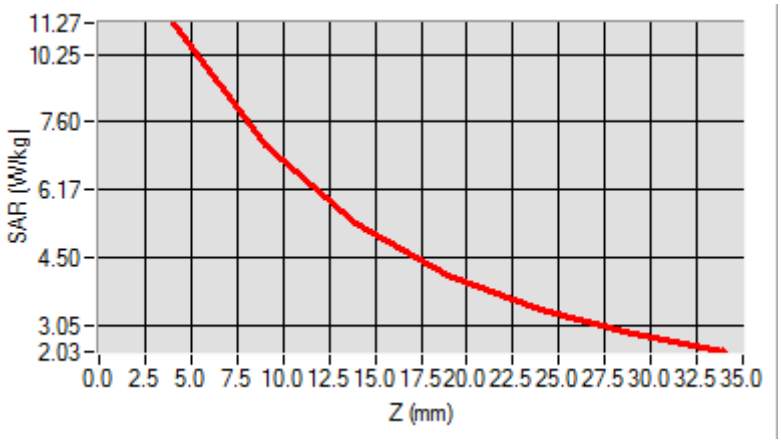
SURFACE SAR	VOLUME SAR
	

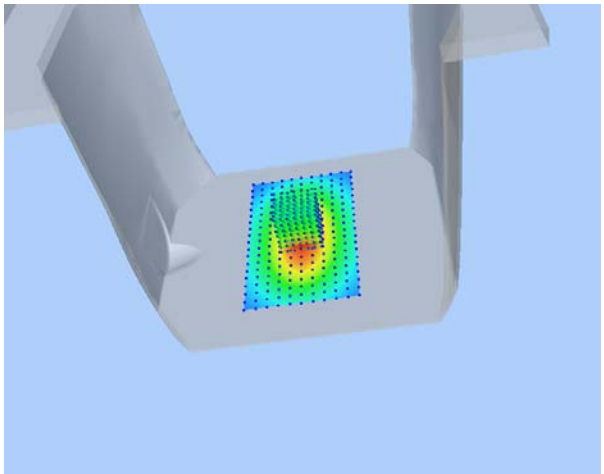
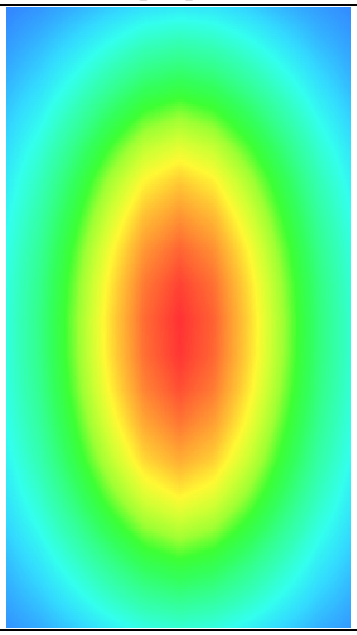
Maximum location: X=0.00, Y=0.00

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 7

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

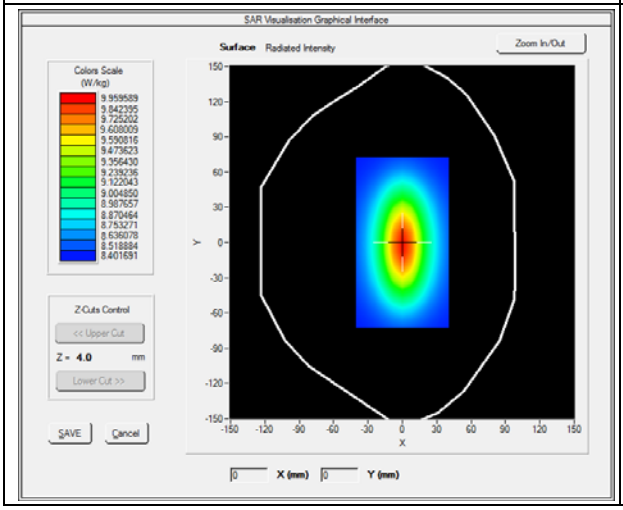
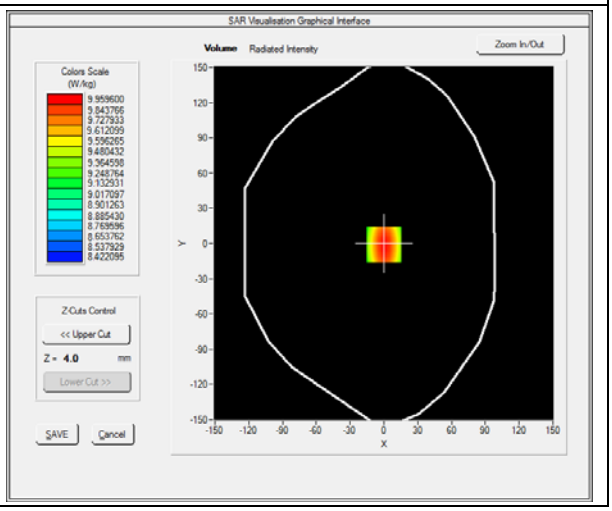
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

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

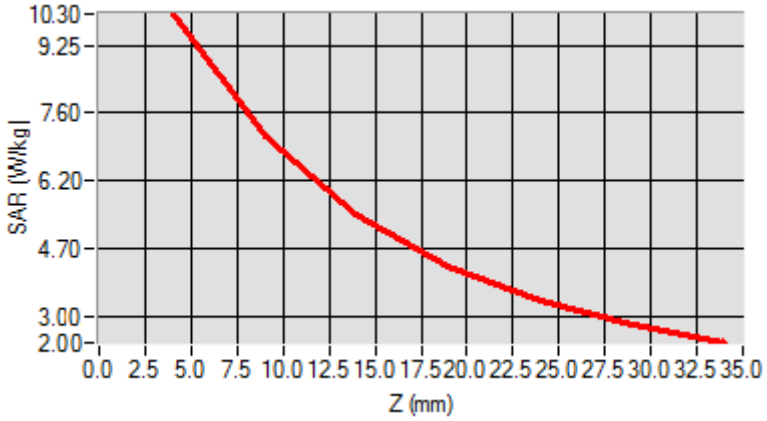
SURFACE SAR	VOLUME SAR
	

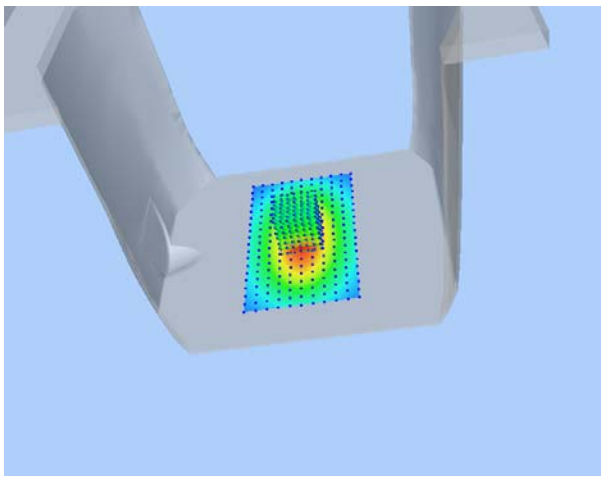
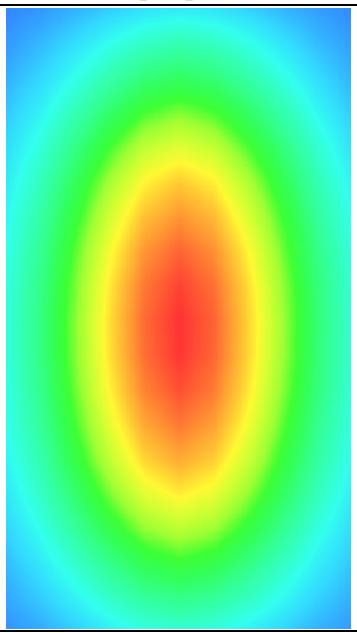
Maximum location: X=0.00, Y=0.00

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 8

For Body Liquid

Type: Validation measurement (Fast, 75.00 %)

Date of measurement: 12/07/2015

Measurement duration: 12 minutes 21 seconds

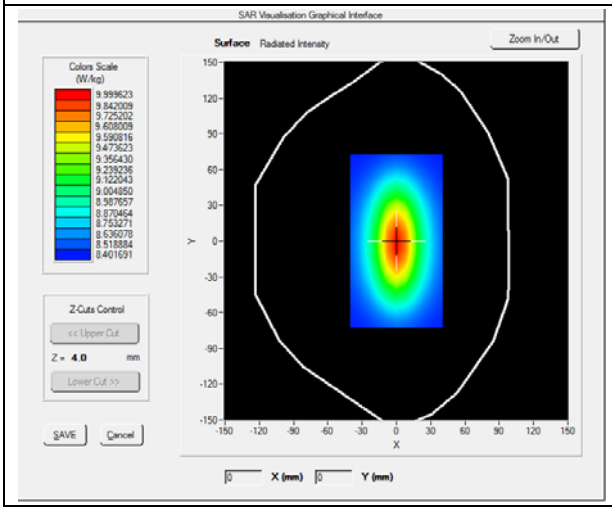
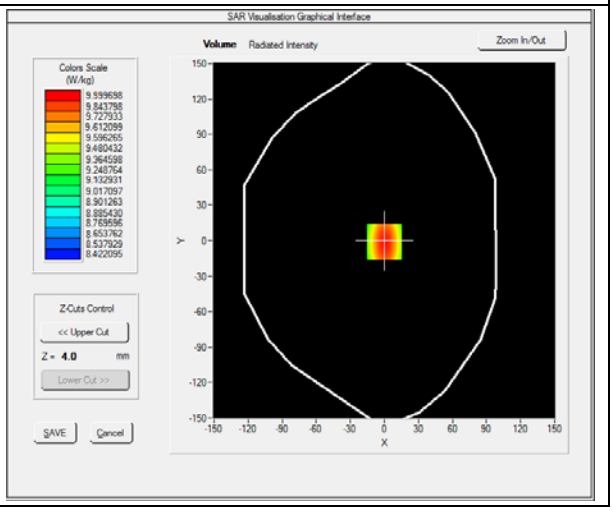
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

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

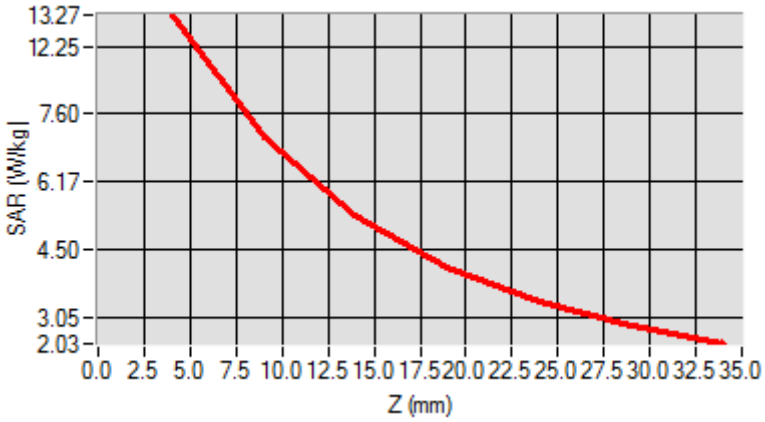
SURFACE SAR	VOLUME SAR
	

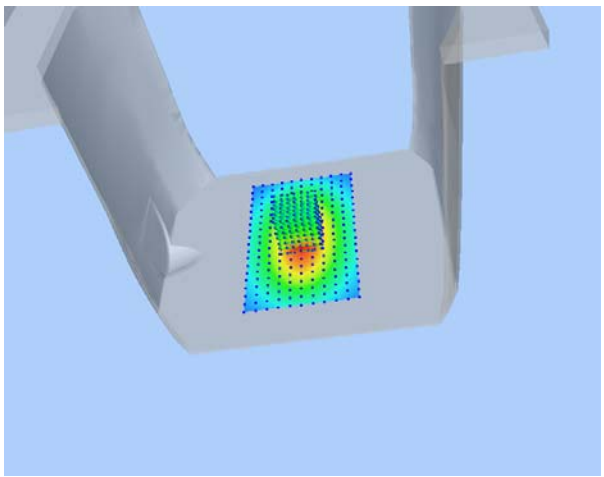
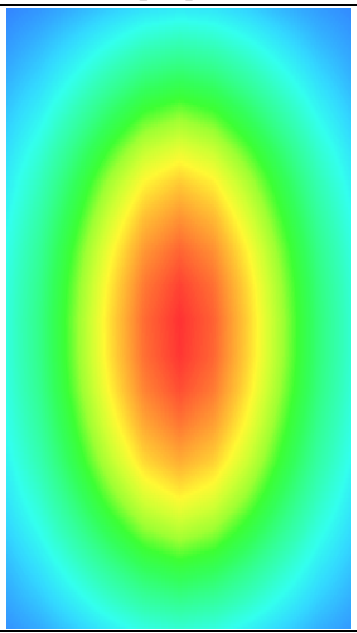
Maximum location: X=0.00, Y=0.00

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
Phone	**GSM850**	Measurement 3: Left Head with Cheek device position on Middle Channel in GSM mode
Phone	**GSM850**	Measurement 5: Flat Plane with Back(Body-worn) device position on Middle Channel in GSM mode
Phone	**GPRS850_4TX**	Measurement 7: Flat Plane with Back device position on Low Channel in GPRS mode
Phone	**GSM1900**	Measurement 13: Left Head with Cheek device position on Middle Channel in GSM mode
Phone	**GSM1900**	Measurement 15: Flat Plane with Back(Body-worn) device position on Middle Channel in GSM mode
Phone	**GPRS1900_4TX**	Measurement 19: Flat Plane with Back device position on Low Channel in GPRS mode
Phone	**WCDMA1900_RMC**	Measurement 21: Right Head with Cheek device position on Middle Channel in WCDMA mode
Phone	**WCDMA1900_RMC**	Measurement 25: Flat Plane with Back side device position on Low Channel in WCDMA mode
Phone	**WCDMA850_RMC**	Measurement 29: Left Head with Cheek device position on Middle Channel in WCDMA mode
Phone	**WCDMA850_RMC**	Measurement 33: Flat Plane with Back device position on Middle Channel in WCDMA mode
Phone	**LTE Band 2_RMC**	Measurement 37: Right Head with Cheek device position on Middle Channel in LTE QPSK 20MHz 1RB mode
Phone	**LTE Band 2_RMC**	Measurement 45: Flat Plane with Back device position on Middle Channel in LTE QPSK 20MHz 1RB mode
Phone	**LTE Band 4_RMC**	Measurement 53: Right Head with Cheek device position on Low Channel in LTE QPSK 20MHz 1RB mode
Phone	**LTE Band 4_RMC**	Measurement 61: Flat Plane with Back device position on Low Channel in LTE QPSK 20MHz 1RB mode
Phone	**LTE Band 7_RMC**	Measurement 69: Right Head with Cheek device position on High Channel in LTE QPSK 20MHz 1RB mode
Phone	**LTE Band 7_RMC**	Measurement 77: Flat Plane with Back device position on High Channel in LTE QPSK 20MHz 1RB mode
Phone	**WiFi_802.11b**	Measurement 85: Right Head with Cheek device position on Low Channel in 802.11b mode
Phone	**WiFi_802.11b**	Measurement 89: Flat Plane with Back side device position on Low Channel in 802.11b mode

MEASUREMENT 3

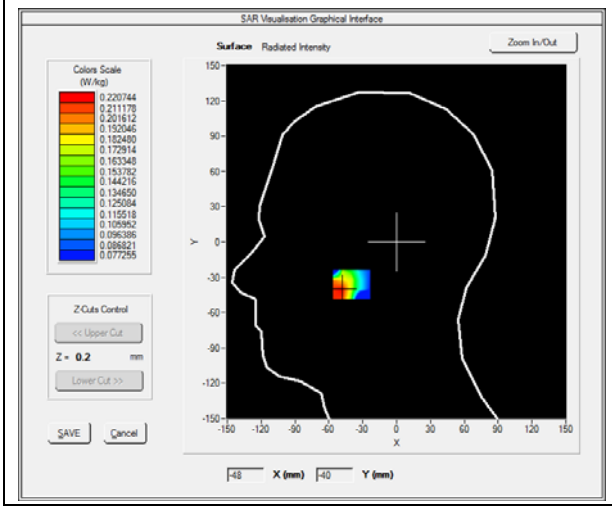
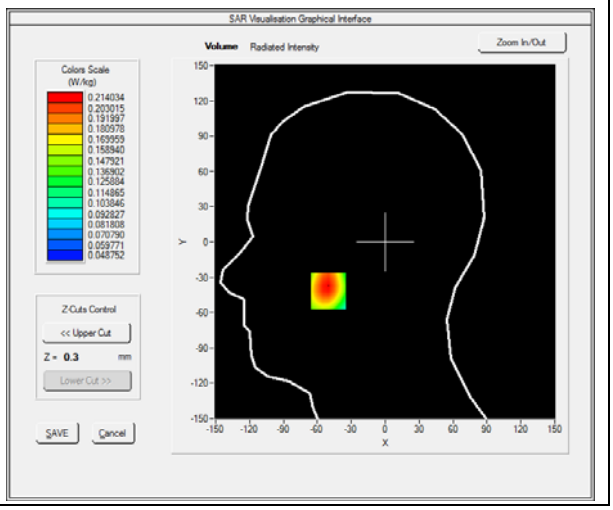
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.93; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

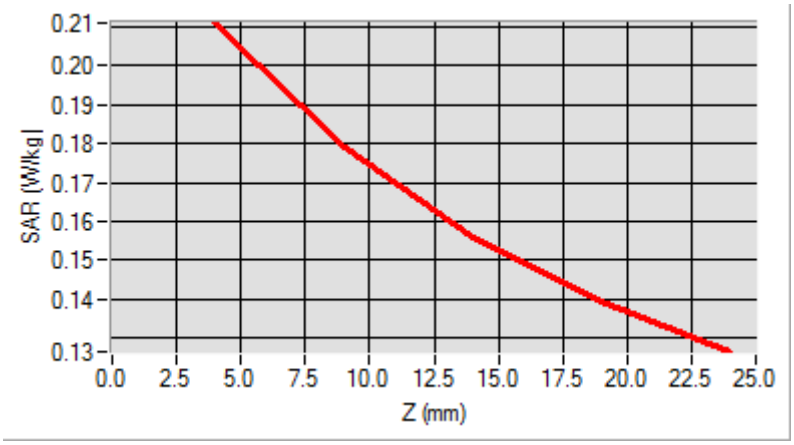
Frequency (MHz)	848.800000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.144536
Ambient Temperature	21.1
Liquid Temperature	21.3

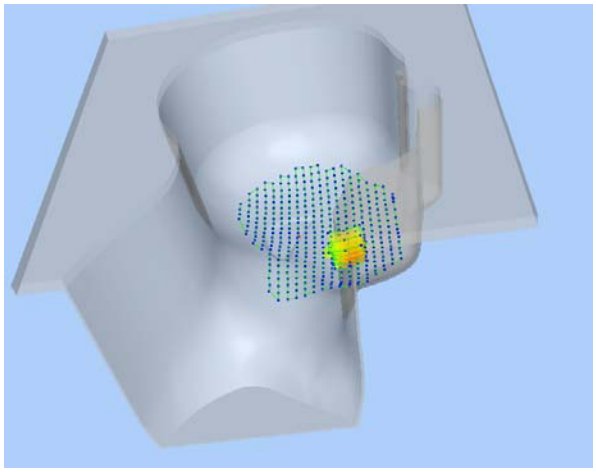
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-50.00, Y=-42.00

SAR 10g (W/Kg)	0.165350
SAR 1g (W/Kg)	0.209672

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2110	0.1791	0.1560	0.1395



3D screen shot	Hot spot position
	

MEASUREMENT 5

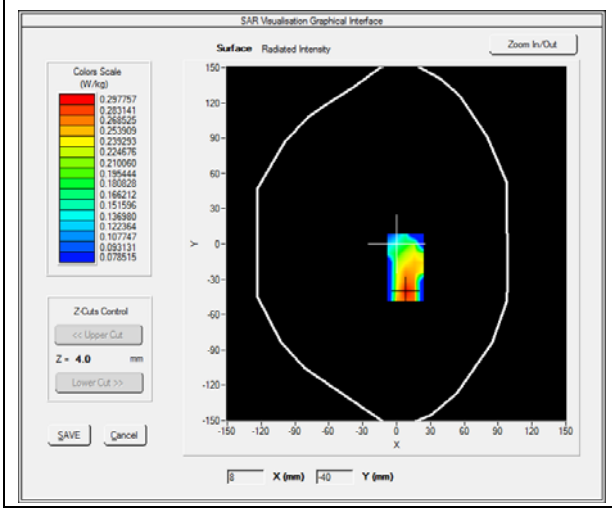
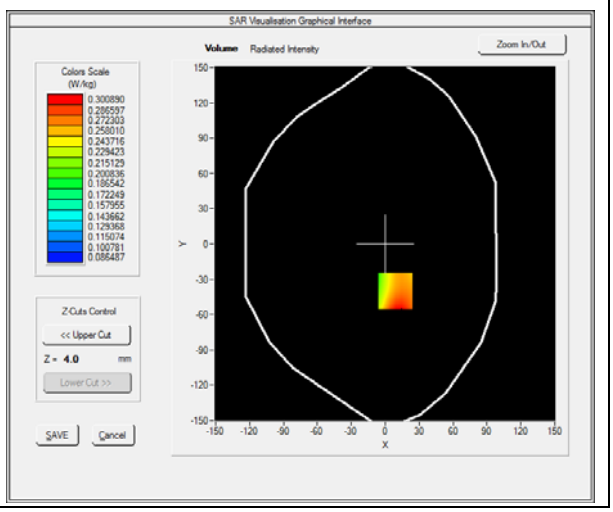
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back(Body-worn)
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

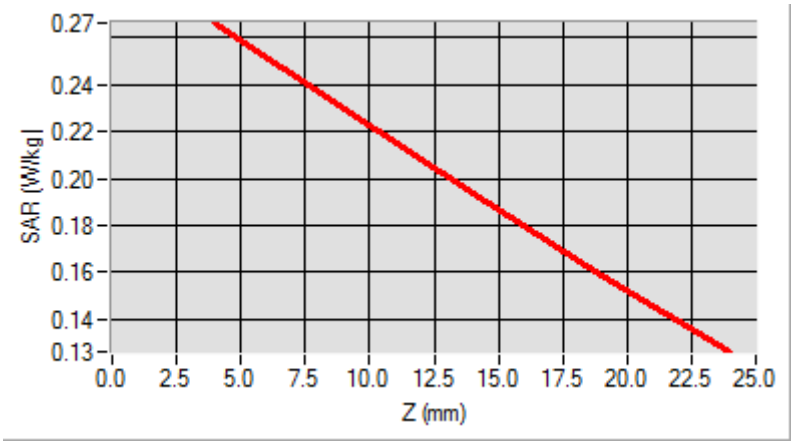
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

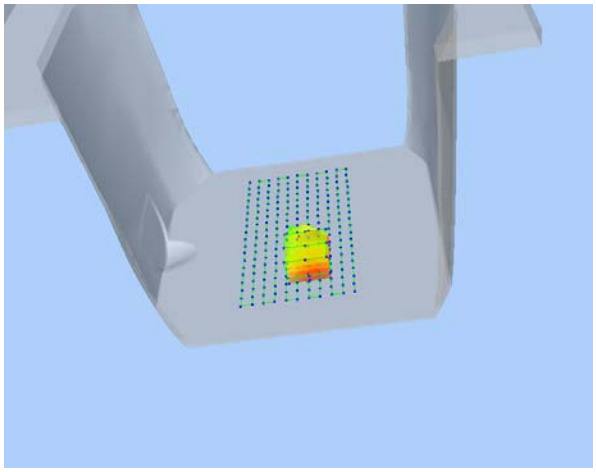
SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=-40.00

SAR 10g (W/Kg)	**0.261545**
SAR 1g (W/Kg)	**0.336994**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.2664**	**0.2297**	**0.1934**	**0.1585**



3D screen shot	**Hot spot position**
	

MEASUREMENT 7

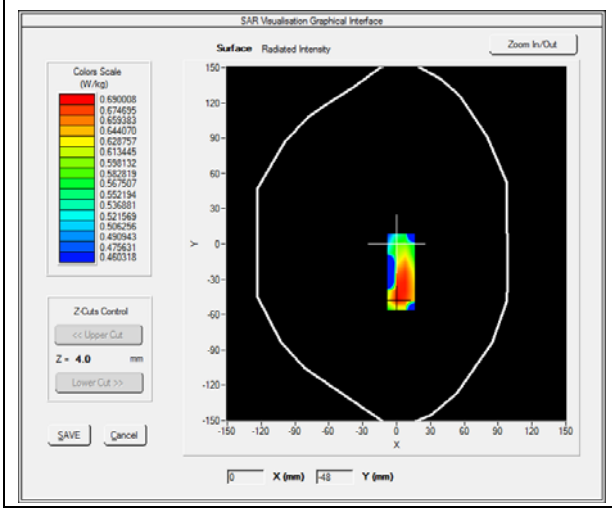
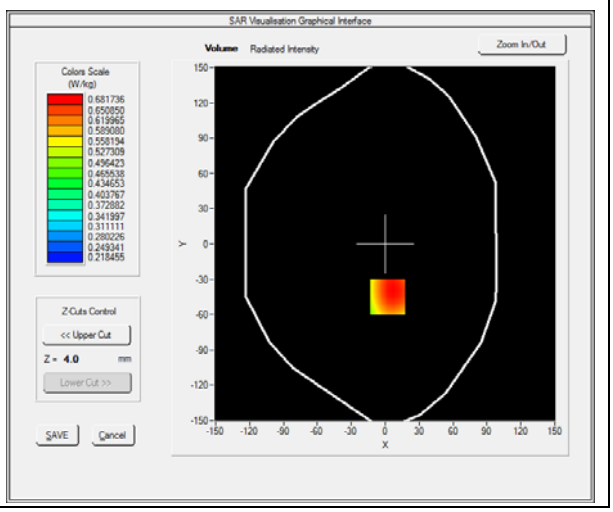
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Back
Band	GPRS850_4TX
Channels	High
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

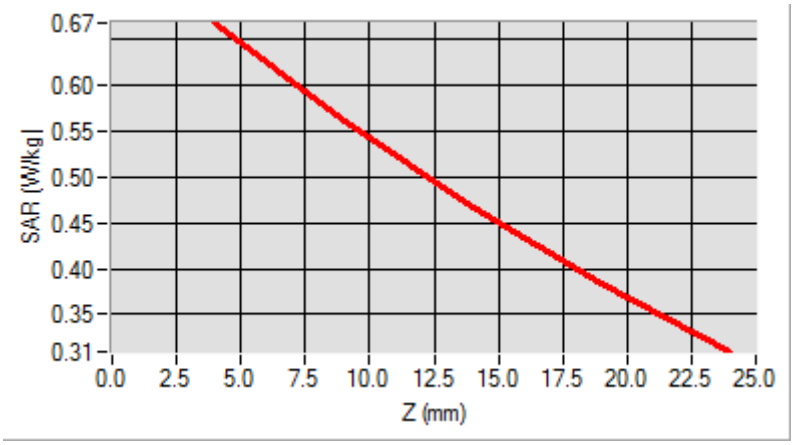
Frequency (MHz)	848.800000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	0.901472
Ambient Temperature	21.1
Liquid Temperature	21.3

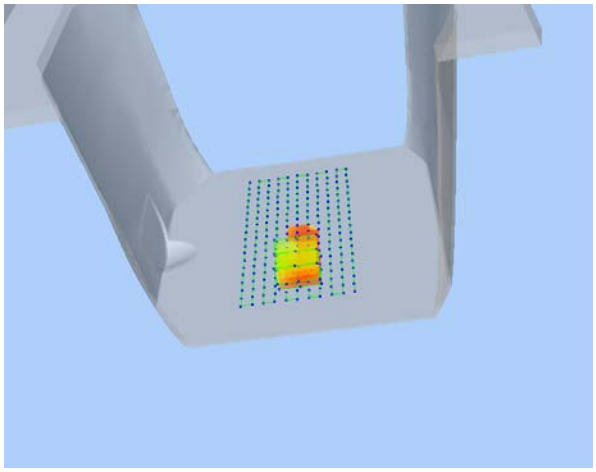
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=-45.00

SAR 10g (W/Kg)	**0.527778**
SAR 1g (W/Kg)	**0.664421**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.6684**	**0.5617**	**0.4672**	**0.3836**



3D screen shot	**Hot spot position**
	

MEASUREMENT 13

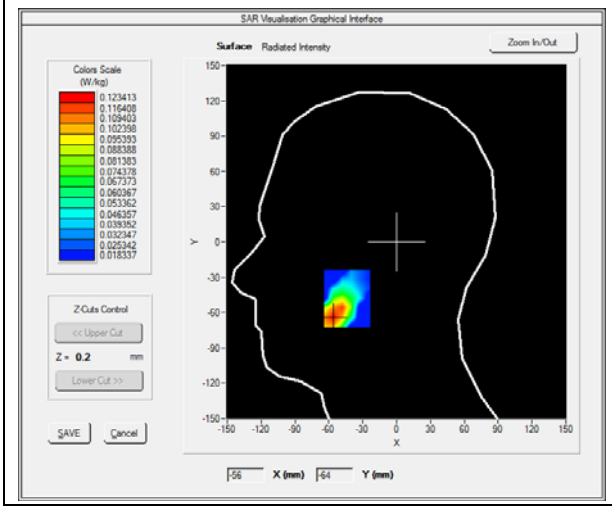
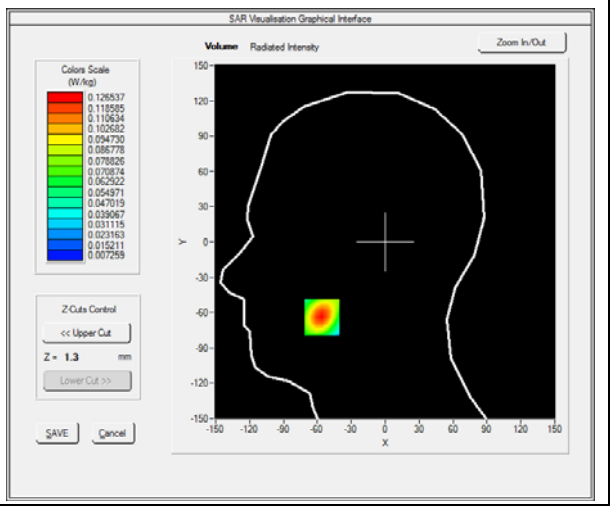
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 11 minutes 48 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.35; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

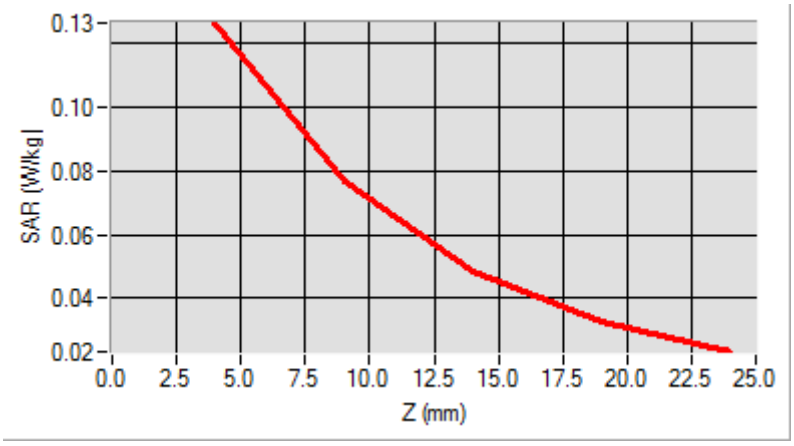
Frequency (MHz)	1850.200000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.442440
Ambient Temperature	21.1
Liquid Temperature	21.3

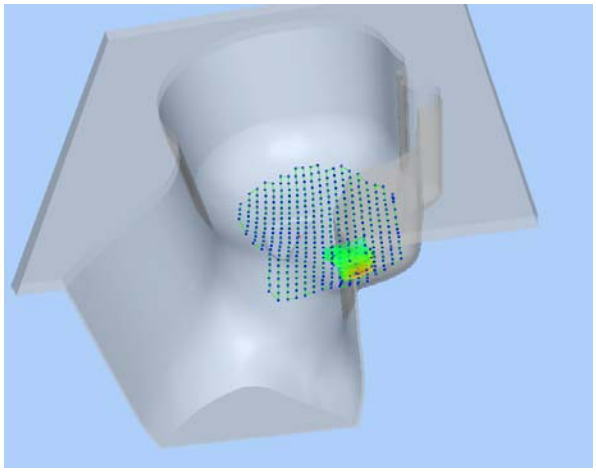
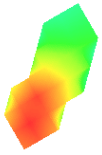
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-56.00, Y=-64.00

SAR 10g (W/Kg)	**0.067759**
SAR 1g (W/Kg)	**0.116830**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.1265**	**0.0768**	**0.0484**	**0.0330**



3D screen shot	**Hot spot position**
	

MEASUREMENT 15

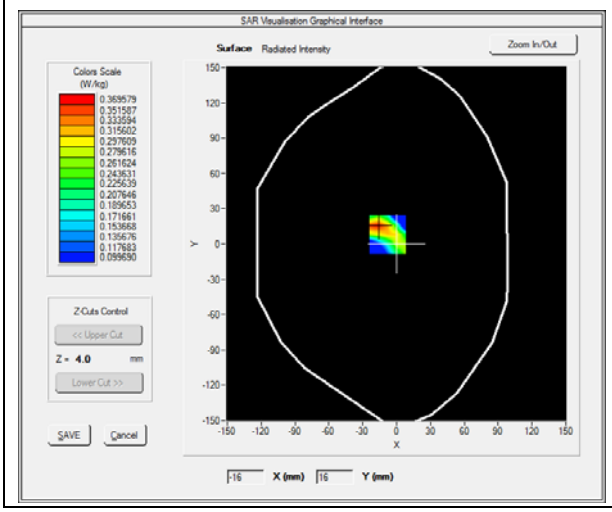
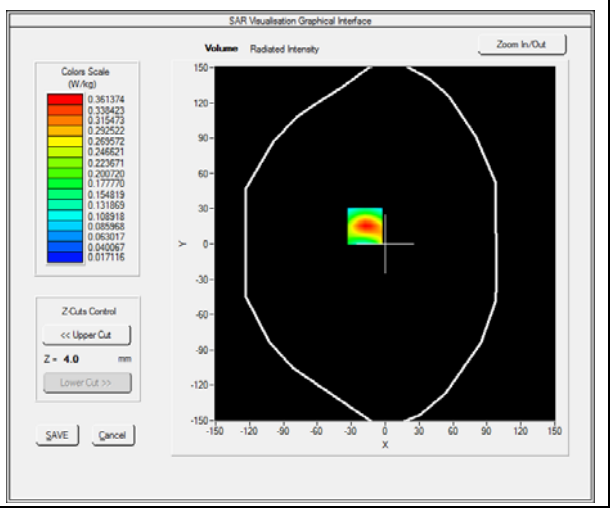
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back(Body-worn)
Band	GSM1900
Channels	Low
Signal	TDMA (Crest factor: 8.0)

B. SAR Measurement Results

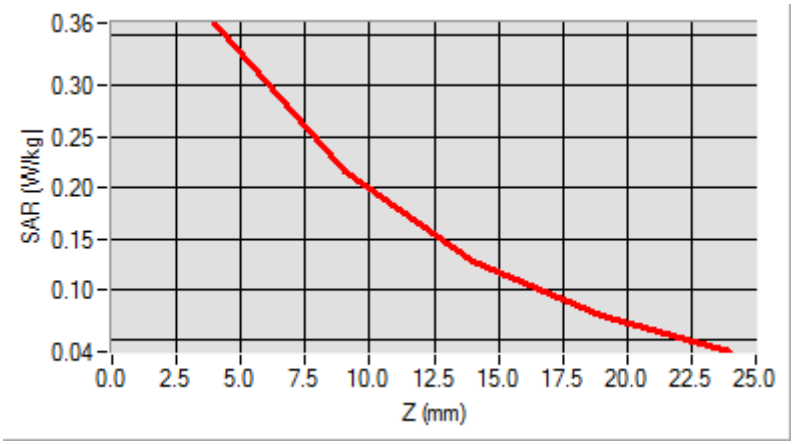
Frequency (MHz)	1850.200000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.474622
Ambient Temperature	21.1
Liquid Temperature	21.3

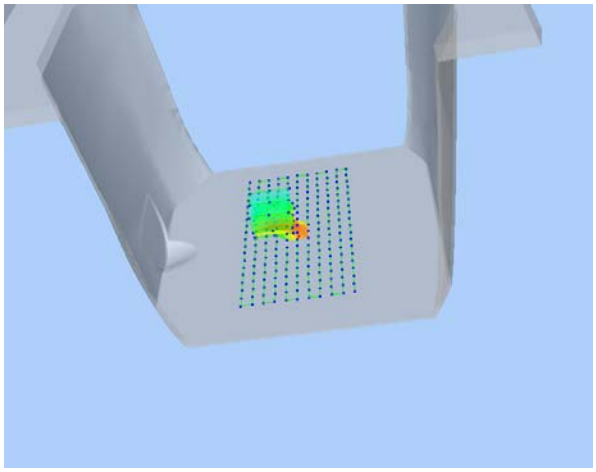
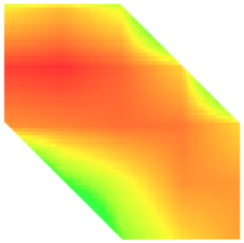
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-18.00, Y=15.00

SAR 10g (W/Kg)	0.208361
SAR 1g (W/Kg)	0.385862

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3614	0.2166	0.1272	0.0735



3D screen shot	Hot spot position
	

MEASUREMENT 19

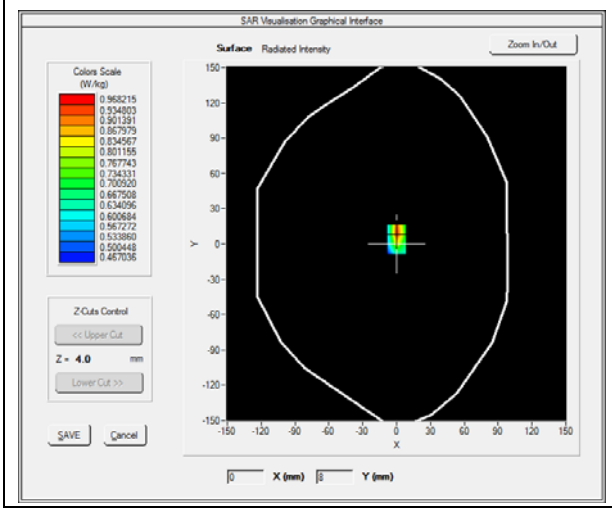
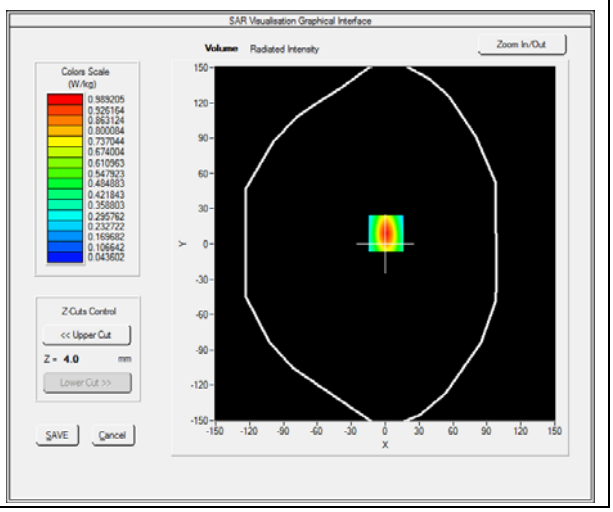
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat plane
Device Position	Bottom
Band	GPRS1900_4TX
Channels	Low
Signal	Duty Cycle: 1:2

B. SAR Measurement Results

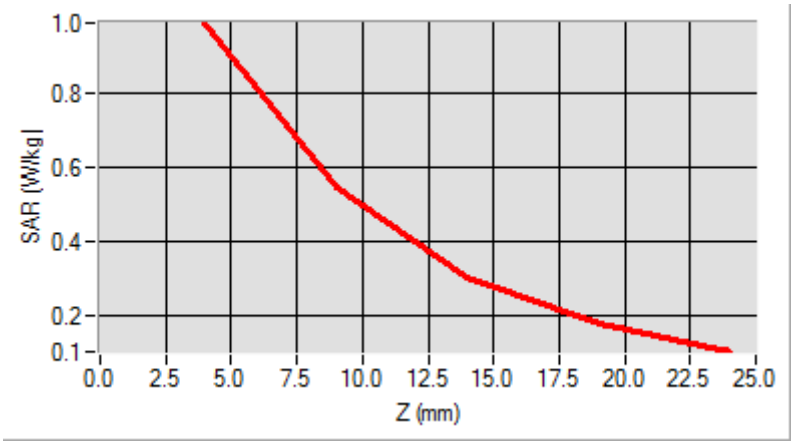
Frequency (MHz)	1850.200000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	2.483762
Ambient Temperature	21.1
Liquid Temperature	21.3

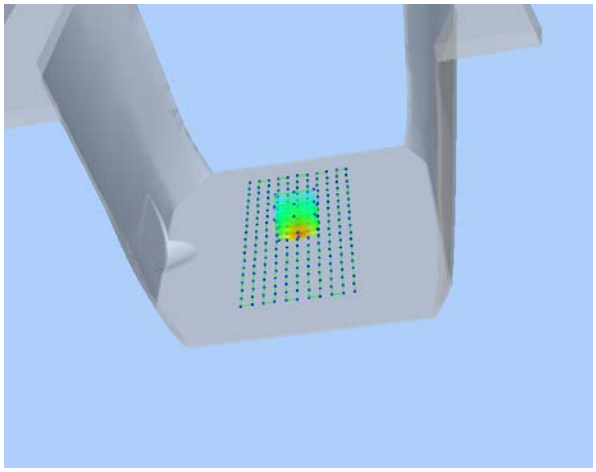
SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=9.00

SAR 10g (W/Kg)	**0.467687**
SAR 1g (W/Kg)	**0.785997**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.9892**	**0.5461**	**0.3045**	**0.1791**



3D screen shot	**Hot spot position**
	

MEASUREMENT 21

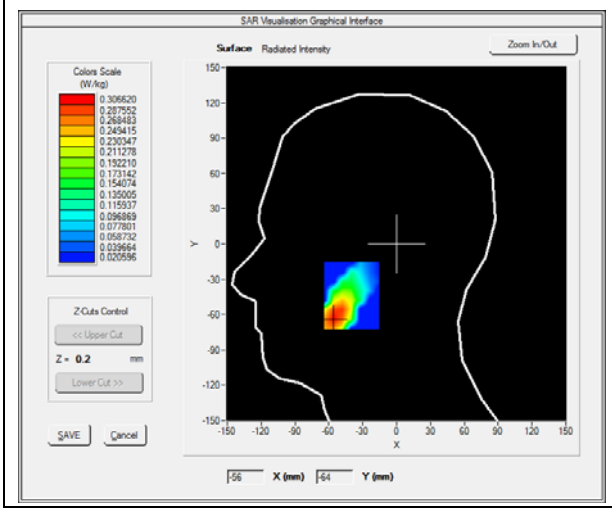
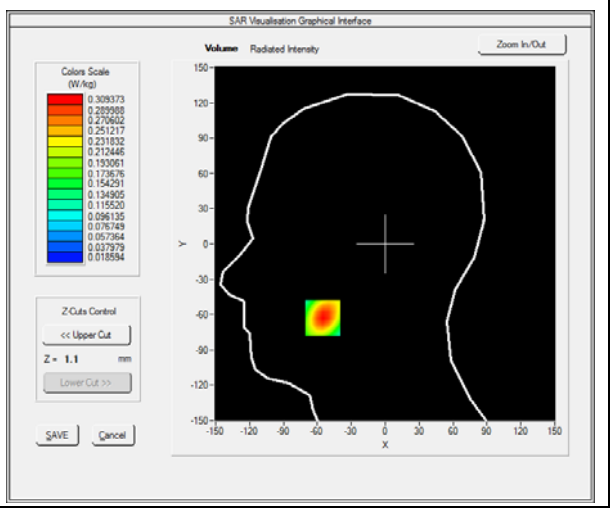
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.35; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA1900_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

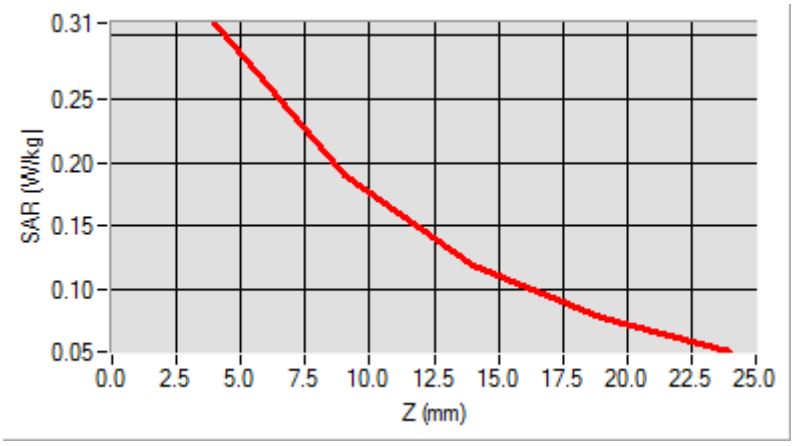
Frequency (MHz)	1852.400000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.524540
Ambient Temperature	21.1
Liquid Temperature	21.3

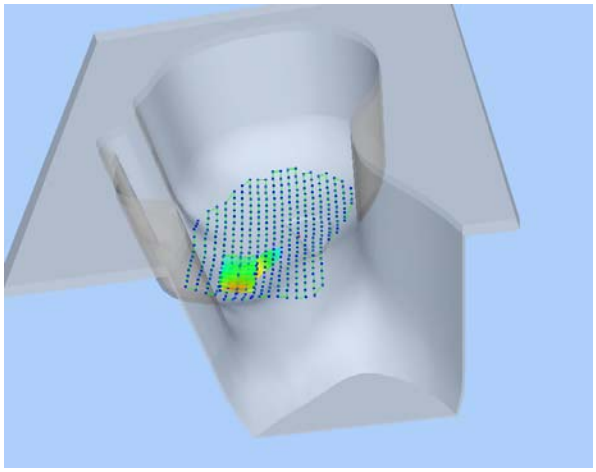
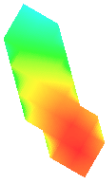
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-55.00, Y=-63.00

SAR 10g (W/Kg)	**0.169889**
SAR 1g (W/Kg)	**0.288052**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.3094**	**0.1901**	**0.1193**	**0.0785**



3D screen shot	**Hot spot position**
	

MEASUREMENT 27

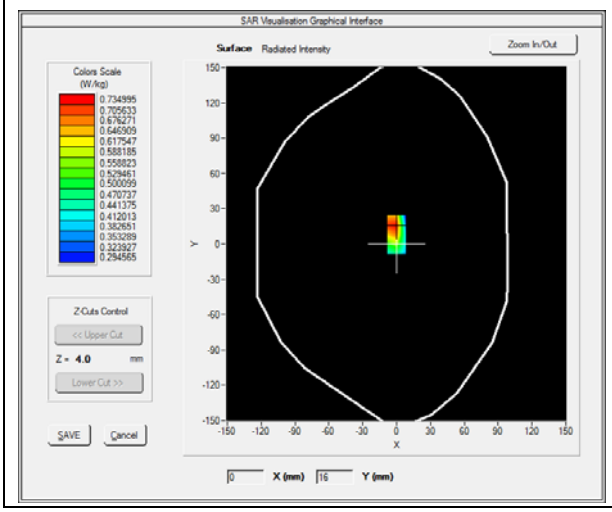
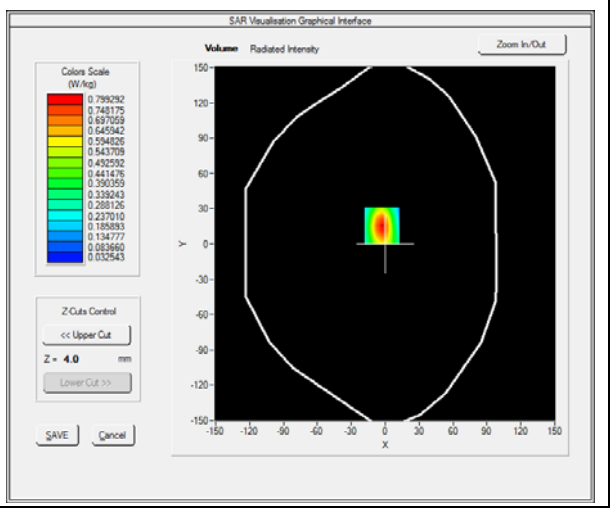
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Bottom
Band	WCDMA1900_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

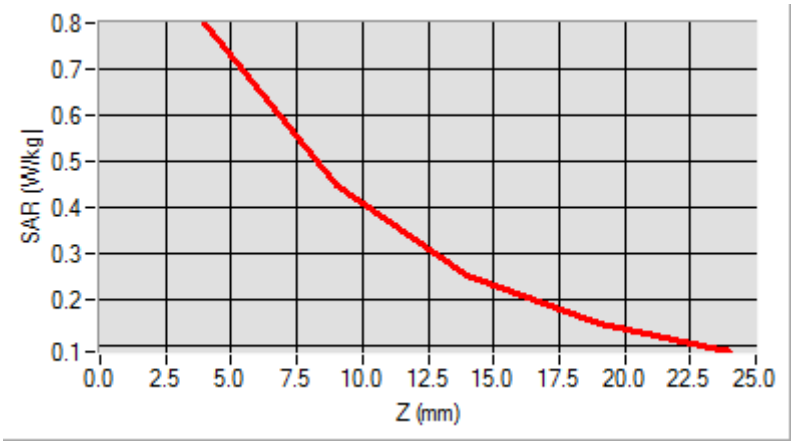
Frequency (MHz)	1852.400000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.847552
Ambient Temperature	21.1
Liquid Temperature	21.3

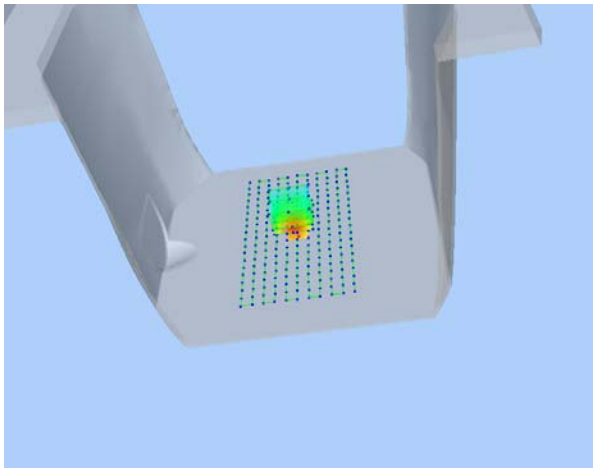
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-3.00, Y=16.00

SAR 10g (W/Kg)	0.378820
SAR 1g (W/Kg)	0.721592

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.7993	0.4453	0.2501	0.1474



3D screen shot	Hot spot position
	

MEASUREMENT 29

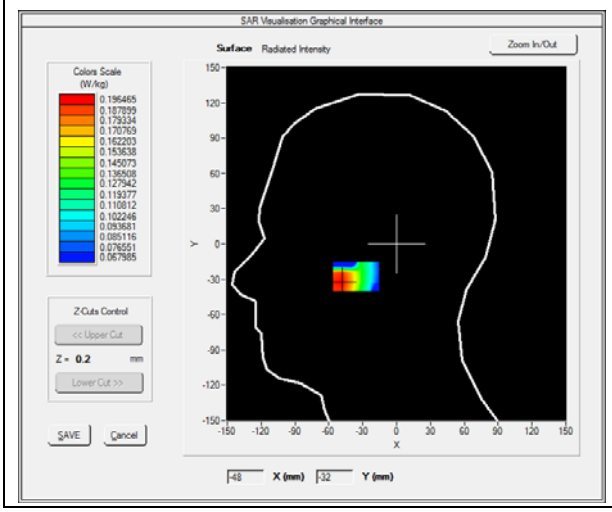
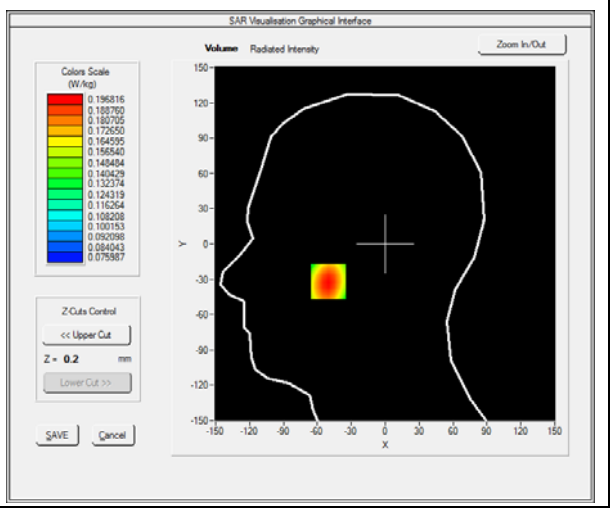
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.93; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	WCDMA850_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

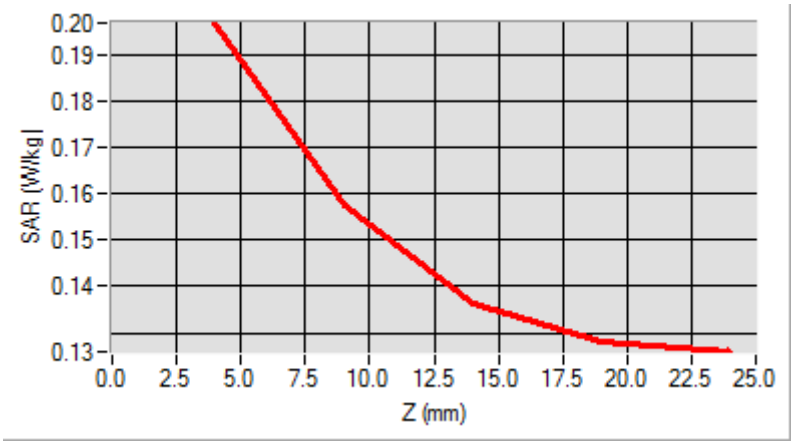
Frequency (MHz)	826.400000
Relative Permittivity (real part)	41.110245
Conductivity (S/m)	0.871245
Power Variation (%)	1.342427
Ambient Temperature	21.1
Liquid Temperature	21.3

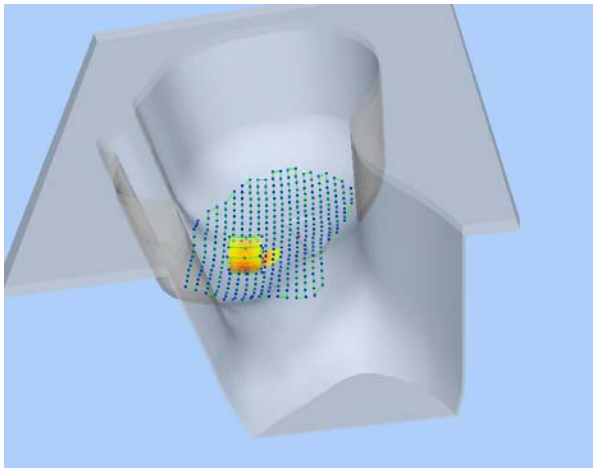
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-50.00, Y=-32.00

SAR 10g (W/Kg)	0.150928
SAR 1g (W/Kg)	0.189902

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1968	0.1575	0.1363	0.1281



3D screen shot	Hot spot position
	

MEASUREMENT 33

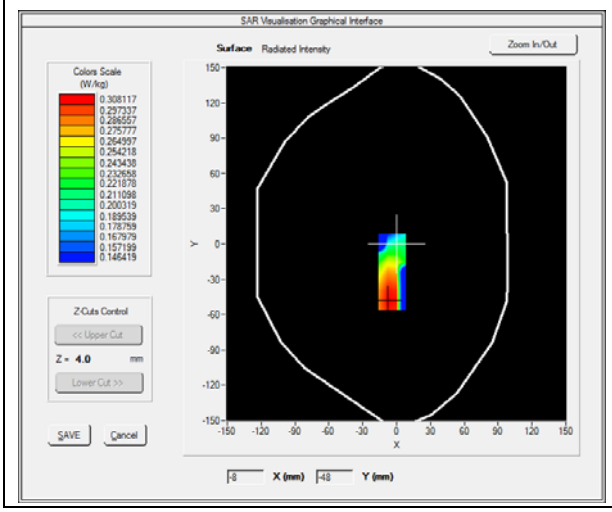
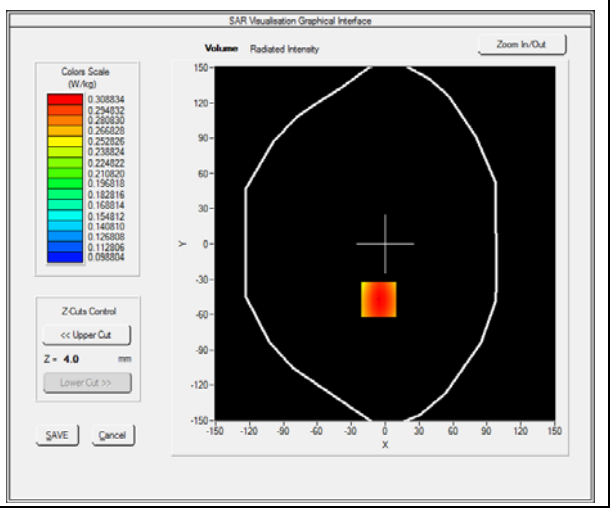
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 7.13; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	WCDMA850_RMC
Channels	Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

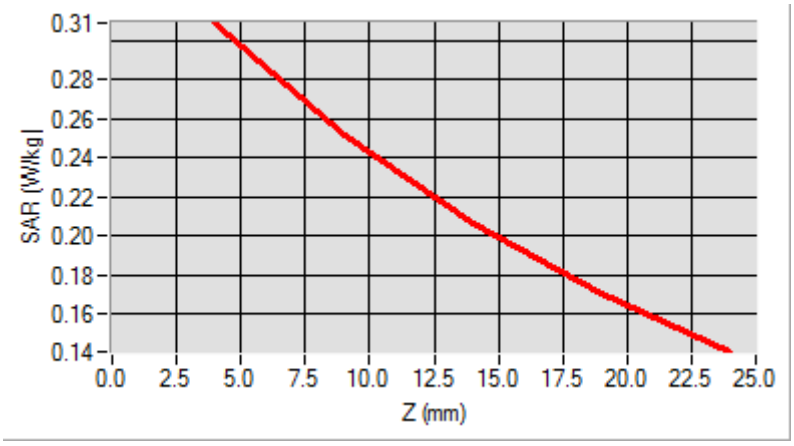
Frequency (MHz)	826.400000
Relative Permittivity (real part)	54.851214
Conductivity (S/m)	0.951454
Power Variation (%)	2.341234
Ambient Temperature	21.1
Liquid Temperature	21.3

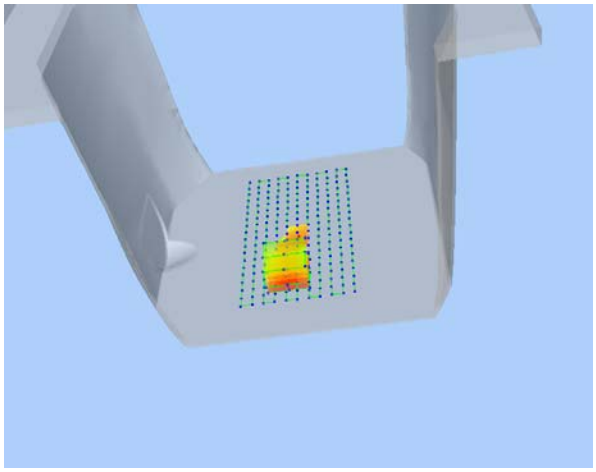
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-6.00, Y=-47.00

SAR 10g (W/Kg)	**0.234700**
SAR 1g (W/Kg)	**0.299091**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.3088**	**0.2518**	**0.2067**	**0.1709**



3D screen shot	**Hot spot position**
	

MEASUREMENT 37

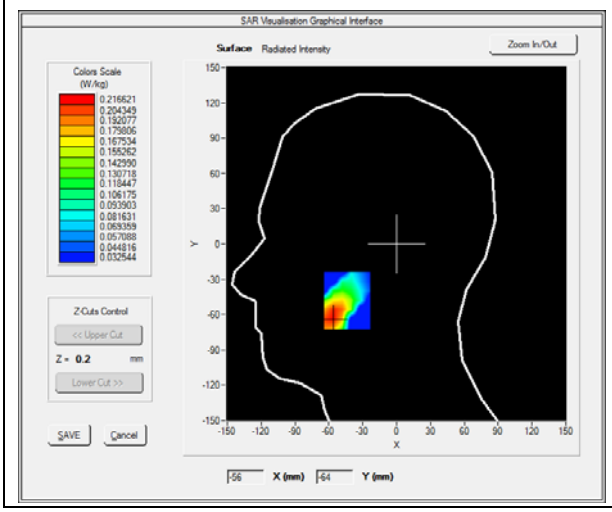
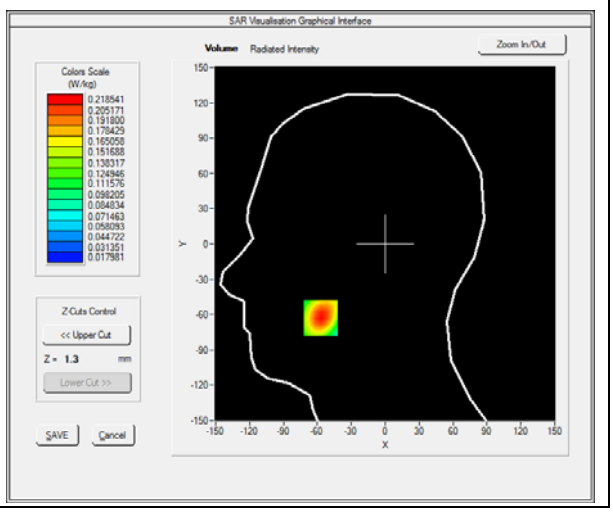
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.35; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 2_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

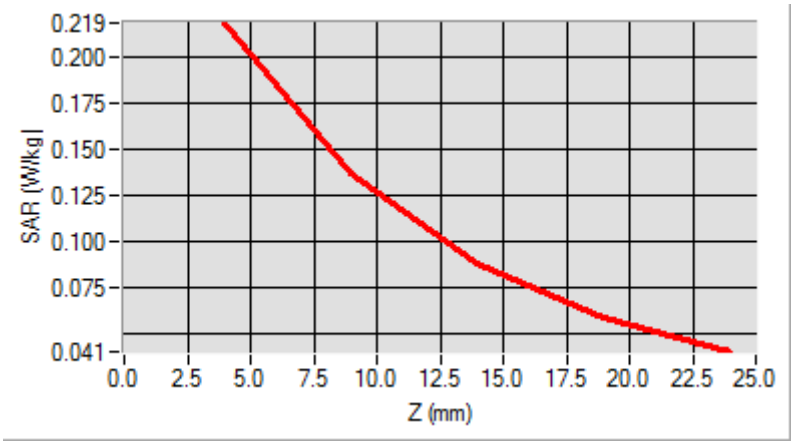
Frequency (MHz)	1860.000000
Relative Permittivity (real part)	38.560124
Conductivity (S/m)	1.380369
Power Variation (%)	1.743564
Ambient Temperature	21.1
Liquid Temperature	21.3

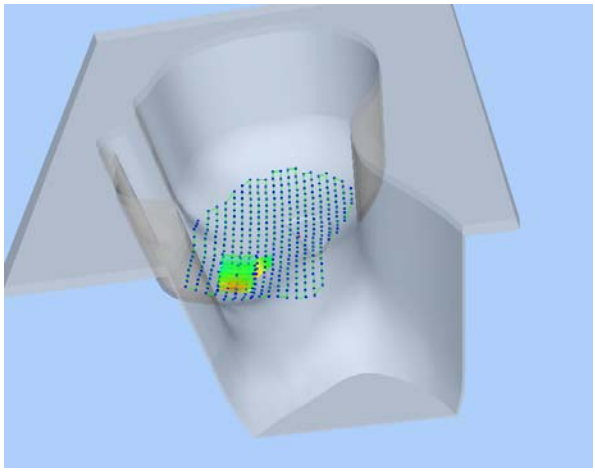
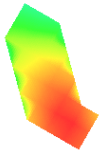
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-57.00, Y=-63.00

SAR 10g (W/Kg)	0.123178
SAR 1g (W/Kg)	0.204044

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2185	0.1367	0.0878	0.0594



3D screen shot	Hot spot position
	

MEASUREMENT 45

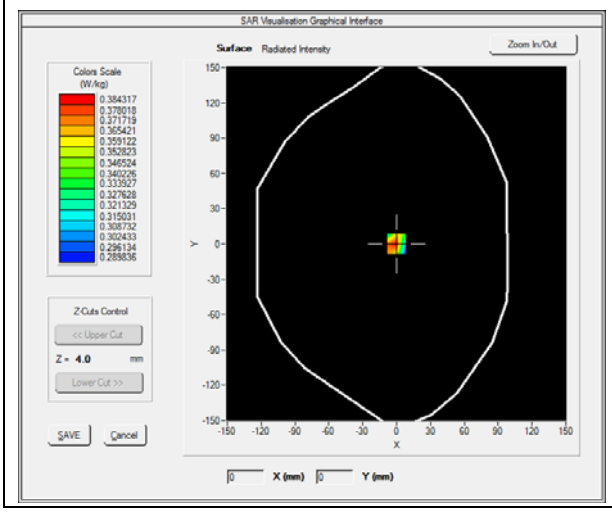
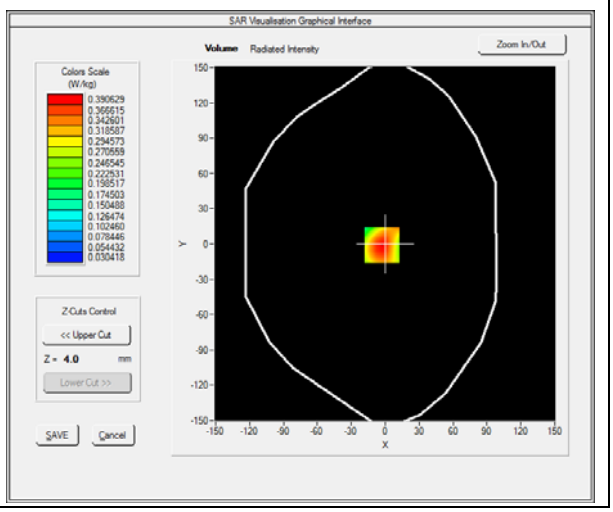
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.55; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 2_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

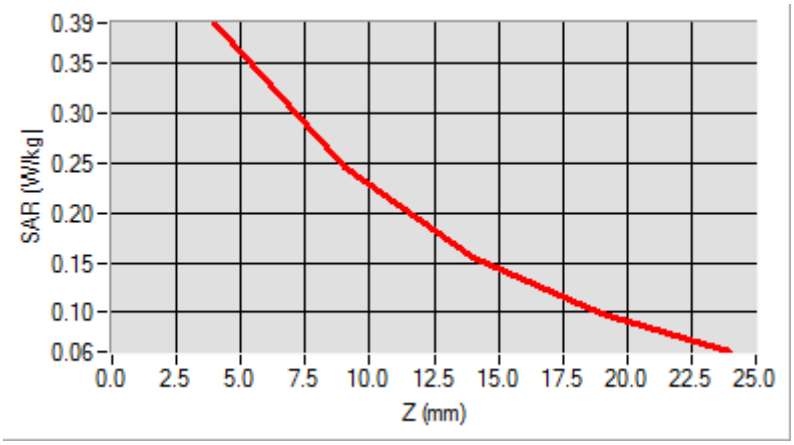
Frequency (MHz)	1860.00000
Relative Permittivity (real part)	52.420415
Conductivity (S/m)	1.501966
Power Variation (%)	1.523573
Ambient Temperature	21.1
Liquid Temperature	21.3

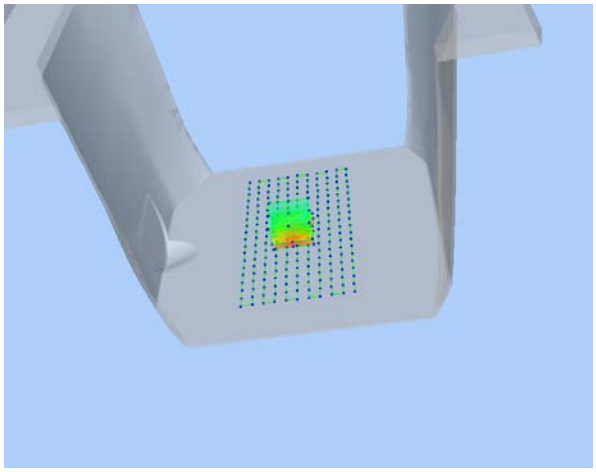
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-3.00, Y=-1.00

SAR 10g (W/Kg)	0.241351
SAR 1g (W/Kg)	0.397368

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3906	0.2458	0.1547	0.0985



3D screen shot	Hot spot position
	

MEASUREMENT 53

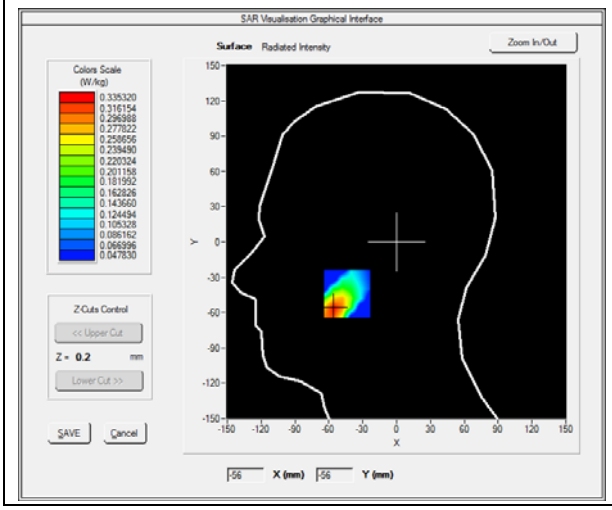
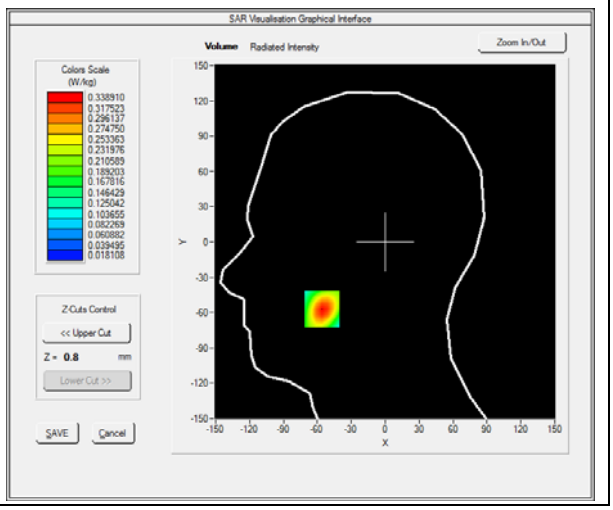
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.84; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 4_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

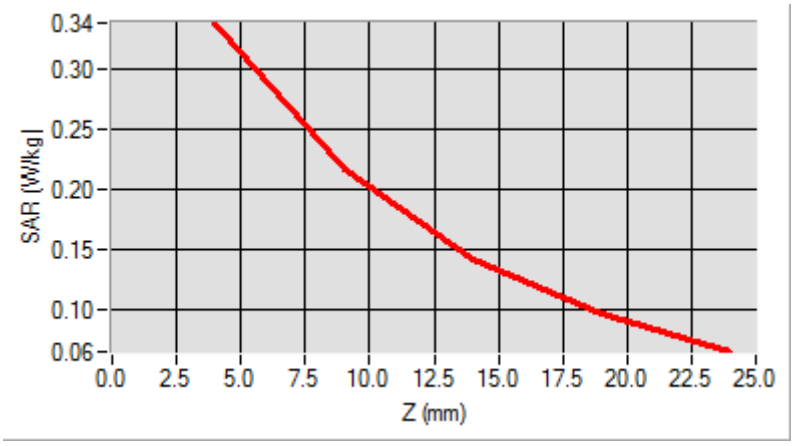
Frequency (MHz)	1720.000000
Relative Permittivity (real part)	39.024890
Conductivity (S/m)	1.371250
Power Variation (%)	1.374628
Ambient Temperature	21.1
Liquid Temperature	21.2

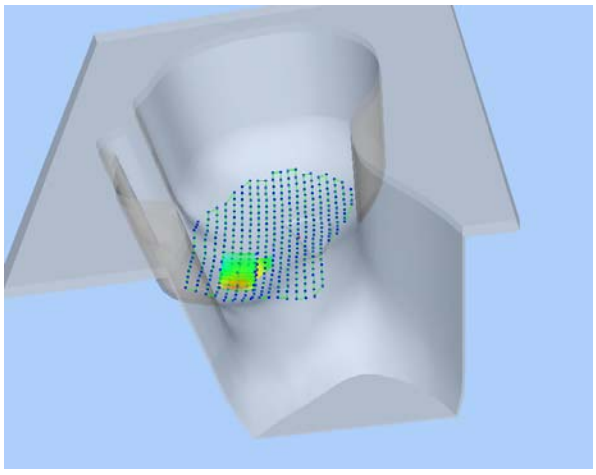
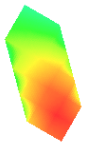
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-56.00, Y=-57.00

SAR 10g (W/Kg)	0.185738
SAR 1g (W/Kg)	0.313734

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3389	0.2166	0.1410	0.0952



3D screen shot	Hot spot position
	

MEASUREMENT 61

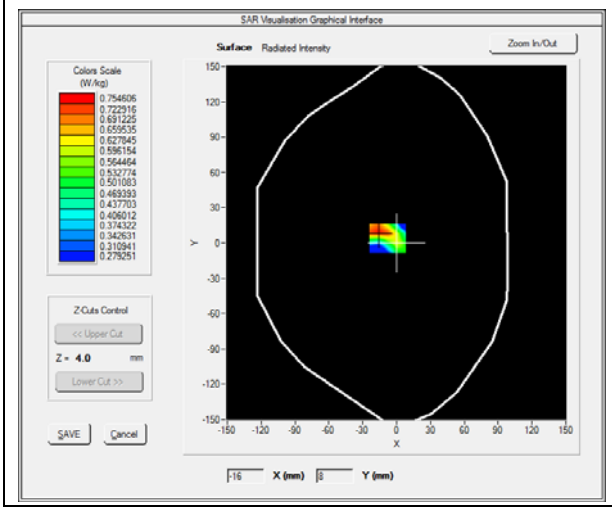
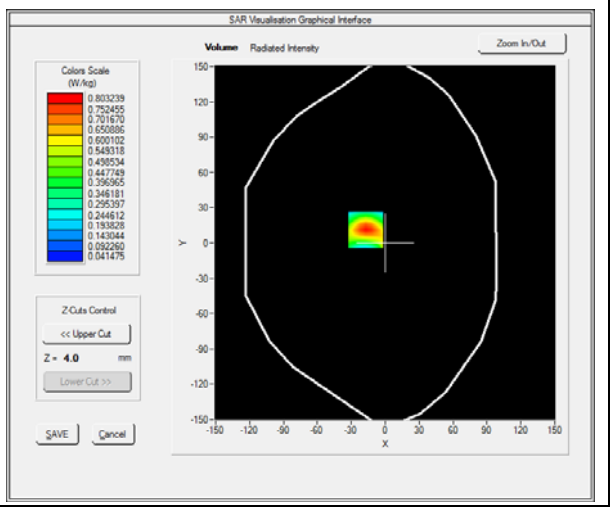
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 6.06; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 4_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

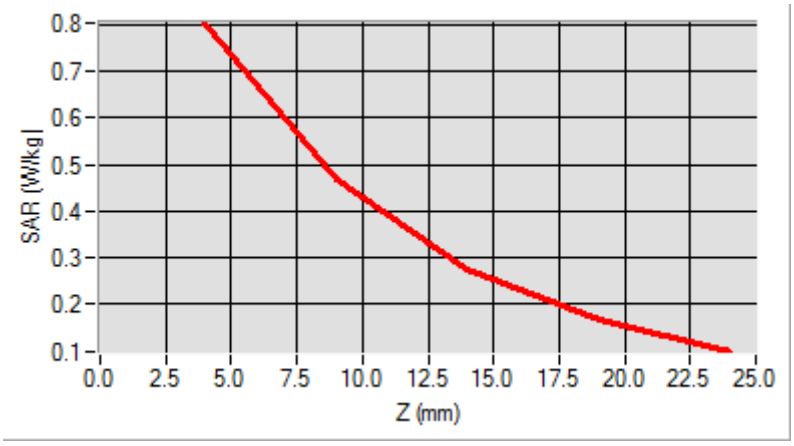
Frequency (MHz)	1720.000000
Relative Permittivity (real part)	51.224510
Conductivity (S/m)	1.461261
Power Variation (%)	0.858383
Ambient Temperature	21.1
Liquid Temperature	21.2

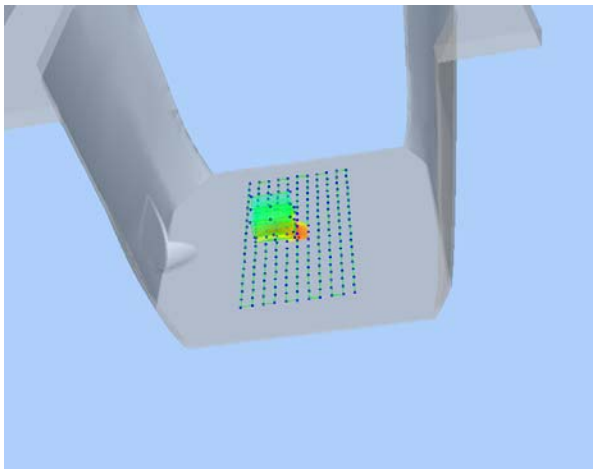
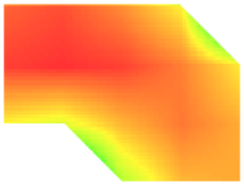
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-17.00, Y=11.00

SAR 10g (W/Kg)	0.428562
SAR 1g (W/Kg)	0.791782

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.8032	0.4676	0.2740	0.1662



3D screen shot	Hot spot position
	

MEASUREMENT 69

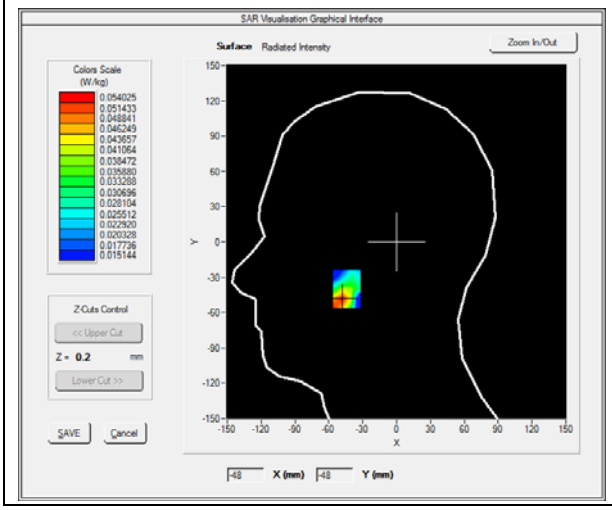
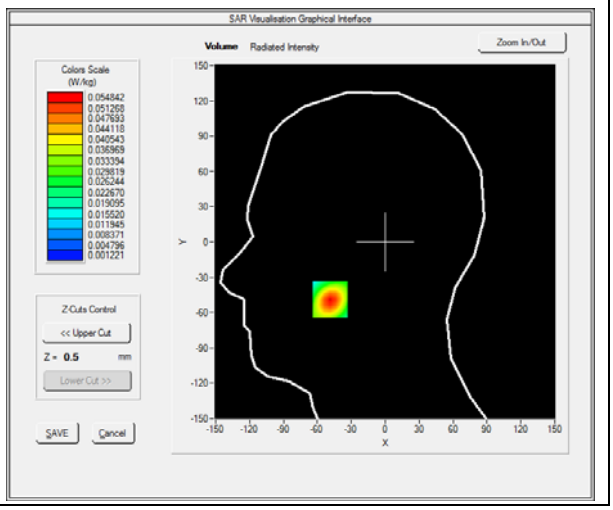
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.64; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Right head
Device Position	Cheek
Band	LTE Band 7_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

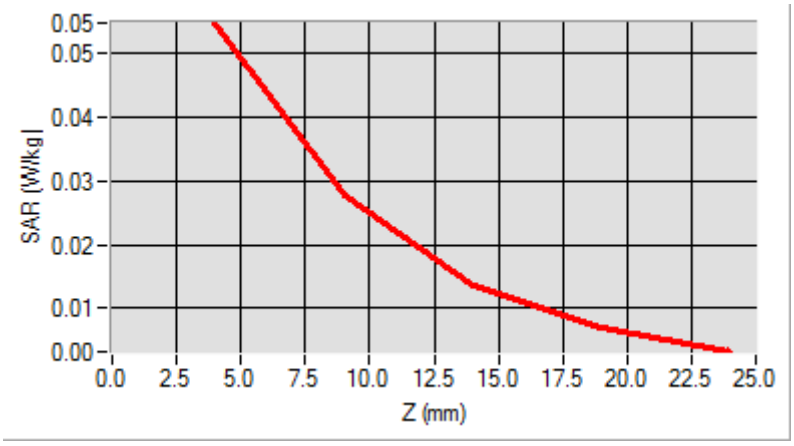
Frequency (MHz)	2510.000000
Relative Permittivity (real part)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	0.924535
Ambient Temperature	21.1
Liquid Temperature	21.2

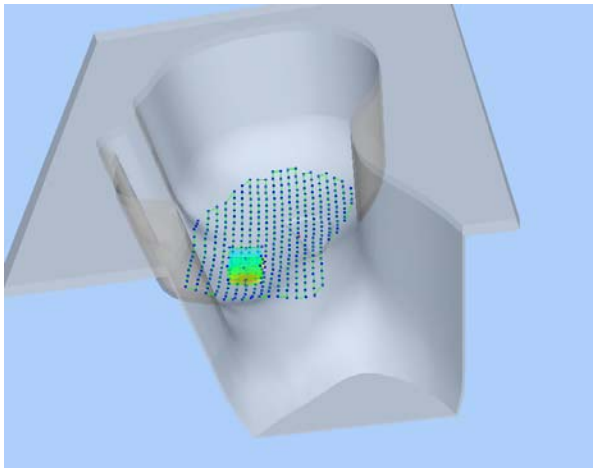
SURFACE SAR	VOLUME SAR
	

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

SAR 10g (W/Kg)	**0.025687**
SAR 1g (W/Kg)	**0.050451**

Z (mm)	**0.00**	**4.00**	**9.00**	**14.00**	**19.00**
SAR (W/Kg)	**0.0000**	**0.0548**	**0.0277**	**0.0136**	**0.0068**



3D screen shot	**Hot spot position**
	

MEASUREMENT 77

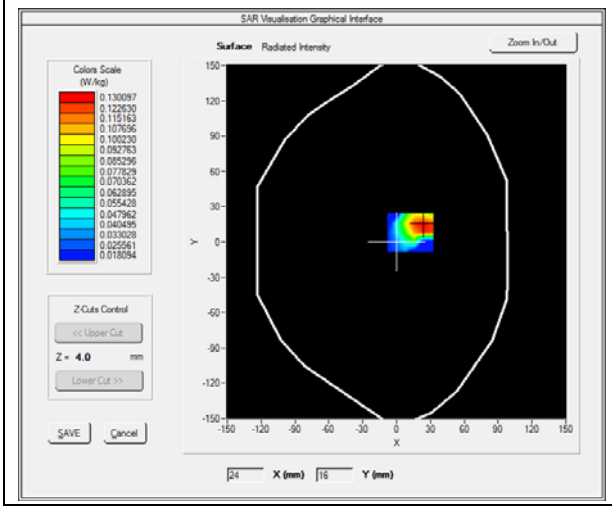
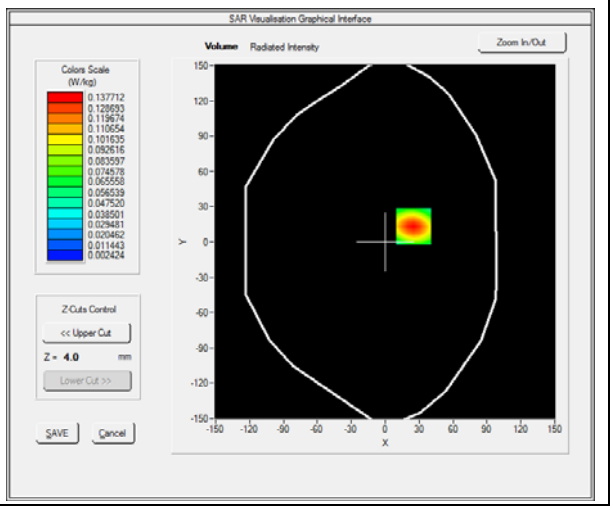
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

Area Scan	sam_direct_droit2_surf8mm.txt
Phantom	Flat Plane
Device Position	Back
Band	LTE Band 7_RMC
Channels	QPSK, 20MHz, 1RB, Low
Signal	Duty Cycle 1:1

B. SAR Measurement Results

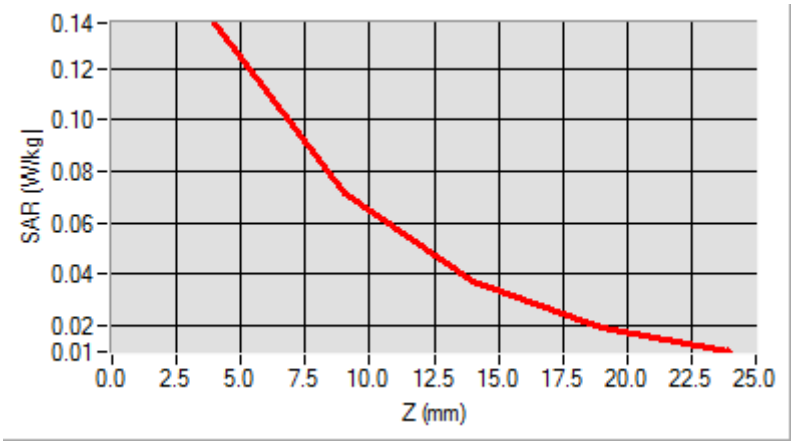
Frequency (MHz)	2510.000000
Relative Permittivity (real part)	52.0102121
Conductivity (S/m)	1.910255
Power Variation (%)	3.672346
Ambient Temperature	21.1
Liquid Temperature	21.2

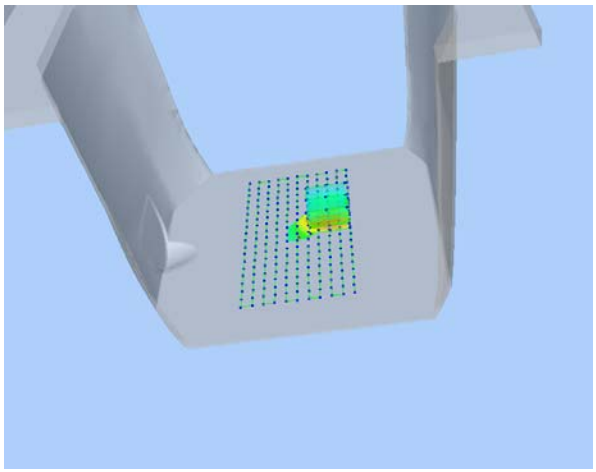
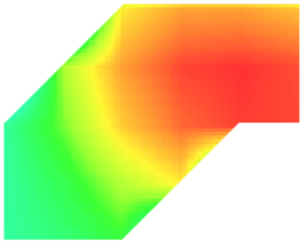
SURFACE SAR	VOLUME SAR
	

Maximum location: X=25.00, Y=13.00

SAR 10g (W/Kg)	0.066534
SAR 1g (W/Kg)	0.127264

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.1377	0.0717	0.0369	0.0196



3D screen shot	Hot spot position
	

MEASUREMENT 85

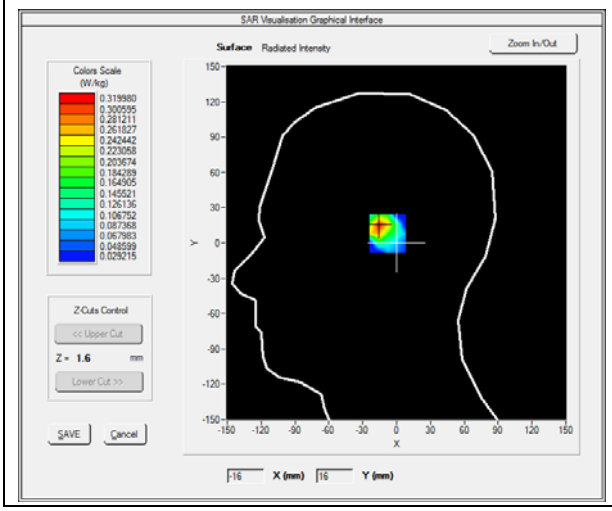
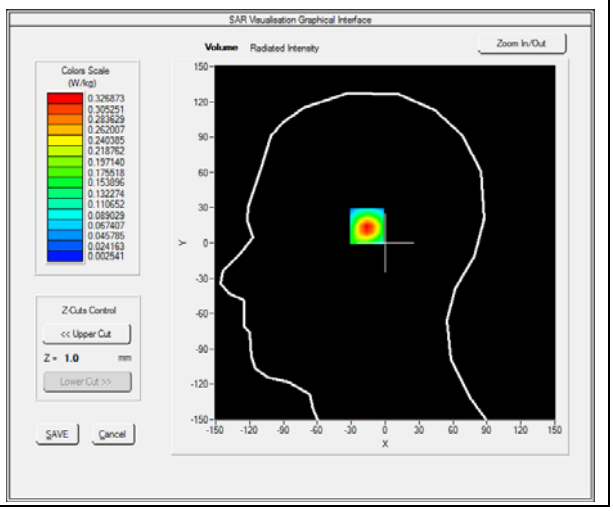
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.64; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

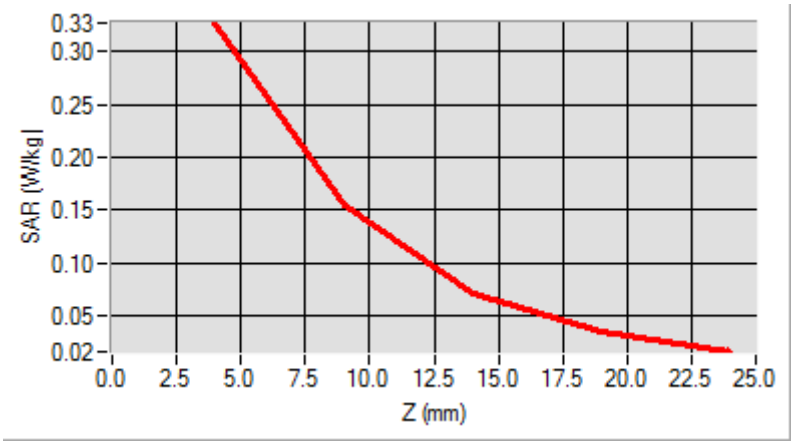
Frequency (MHz)	2412.000000
Relative Permittivity (real part)	38.153660
Conductivity (S/m)	1.740236
Power Variation (%)	3.234772
Ambient Temperature	21.1
Liquid Temperature	21.2

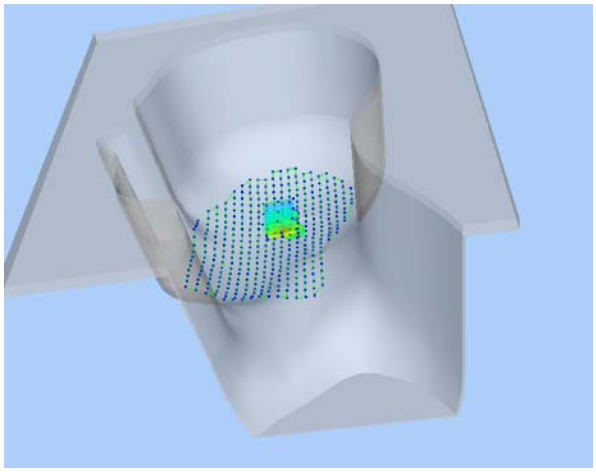
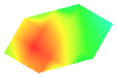
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-15.00, Y=15.00

SAR 10g (W/Kg)	0.136582
SAR 1g (W/Kg)	0.294496

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.3269	0.1551	0.0718	0.0348



3D screen shot	Hot spot position
	

MEASUREMENT 89

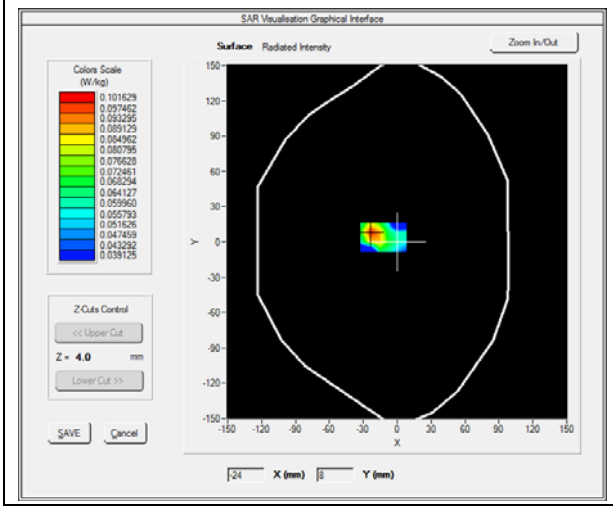
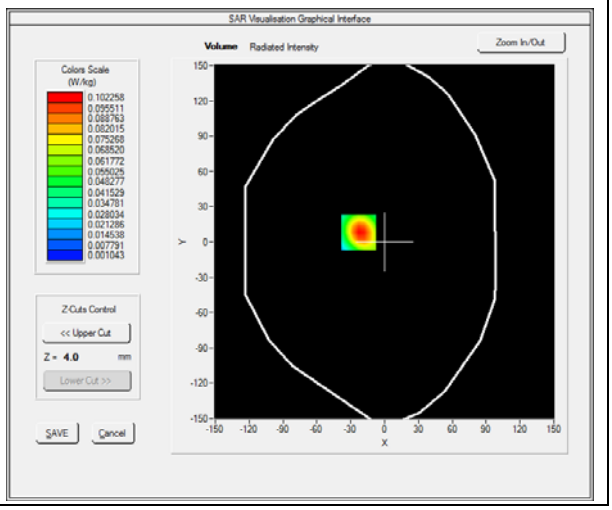
Type: Phone measurement (Complete)
Date of measurement: 12/09/2015
Measurement duration: 12 minutes 3 seconds
E-field Probe: SSE5 - SN 09/13 EP168; ConvF: 5.80; Calibrated: 06/03/2015

A. Experimental conditions

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

B. SAR Measurement Results

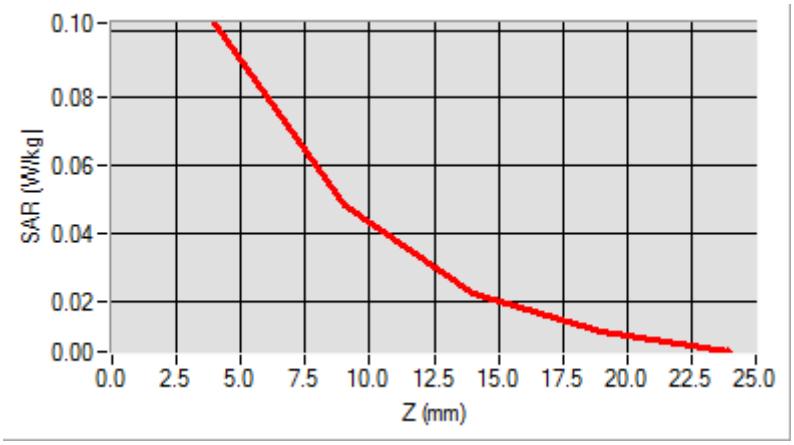
Frequency (MHz)	2437.000000
Relative Permittivity (real part)	52.0102121
Conductivity (S/m)	1.910255
Power Variation (%)	2.492743
Ambient Temperature	21.1
Liquid Temperature	21.2

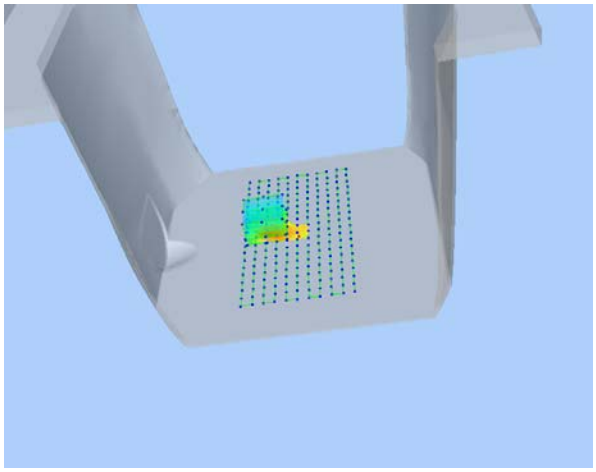
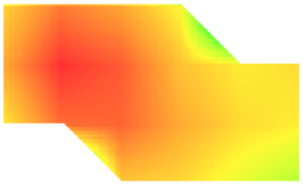
SURFACE SAR	VOLUME SAR
	

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**



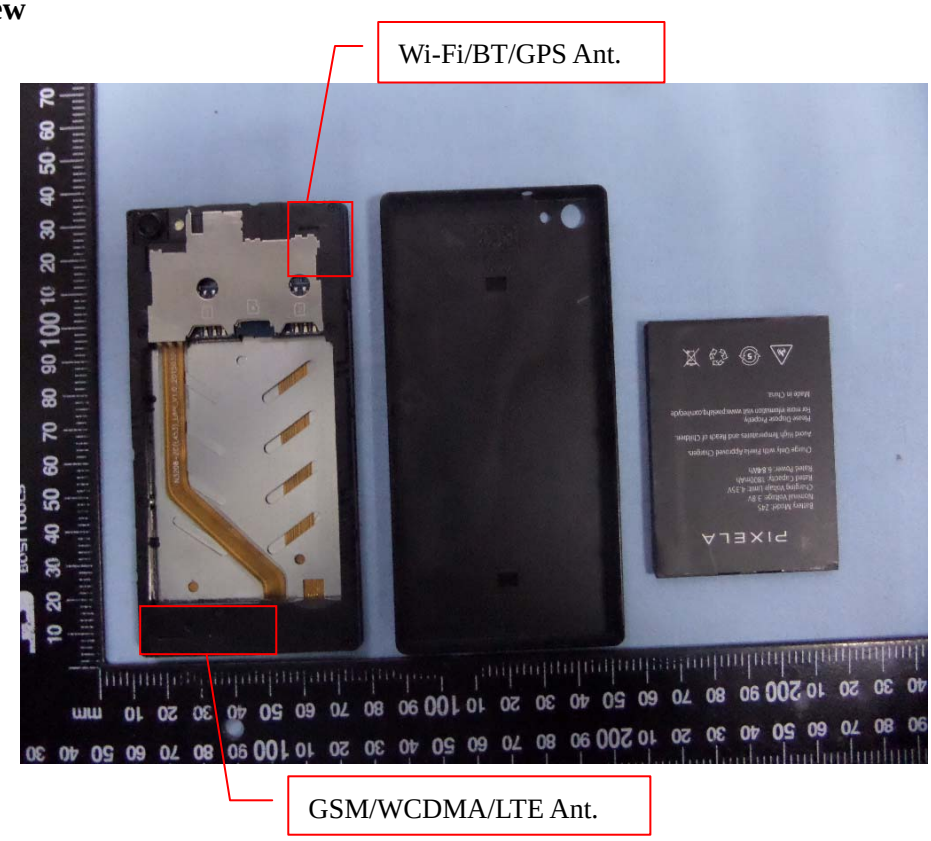
3D screen shot	**Hot spot position**
	

Annex C. EUT Photos

EUT View Front

EUT View Back

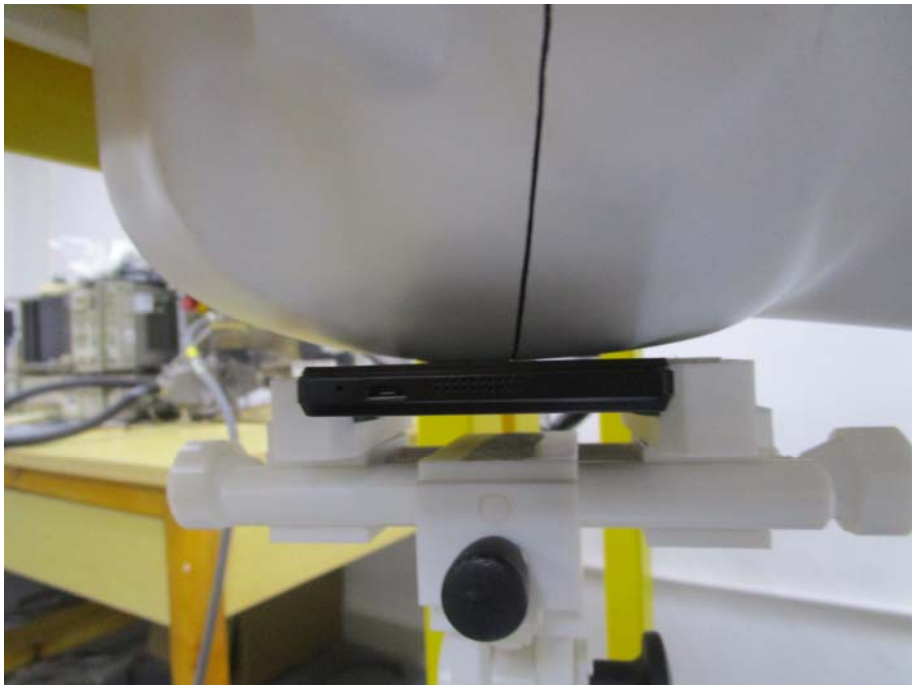
Antenna View



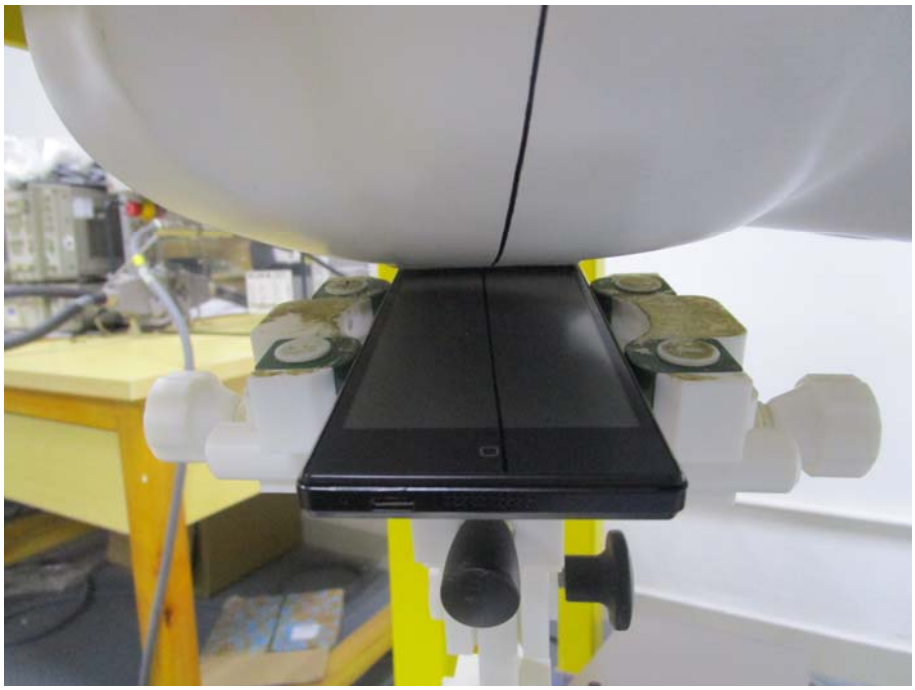
Annex D. Test Setup Photos

Test View 1 (Right Head)

Cheek

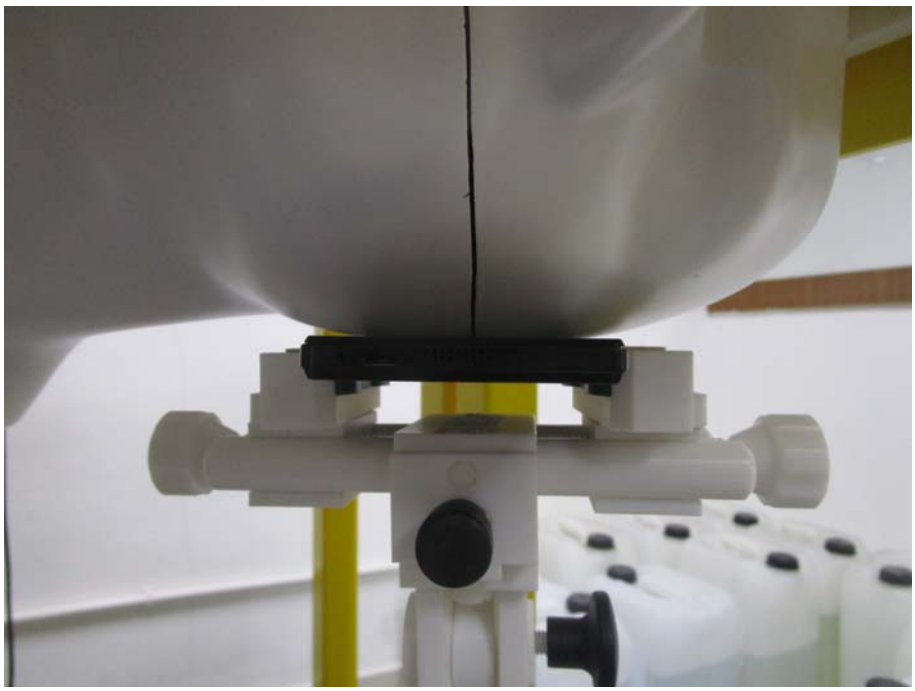


Tilt

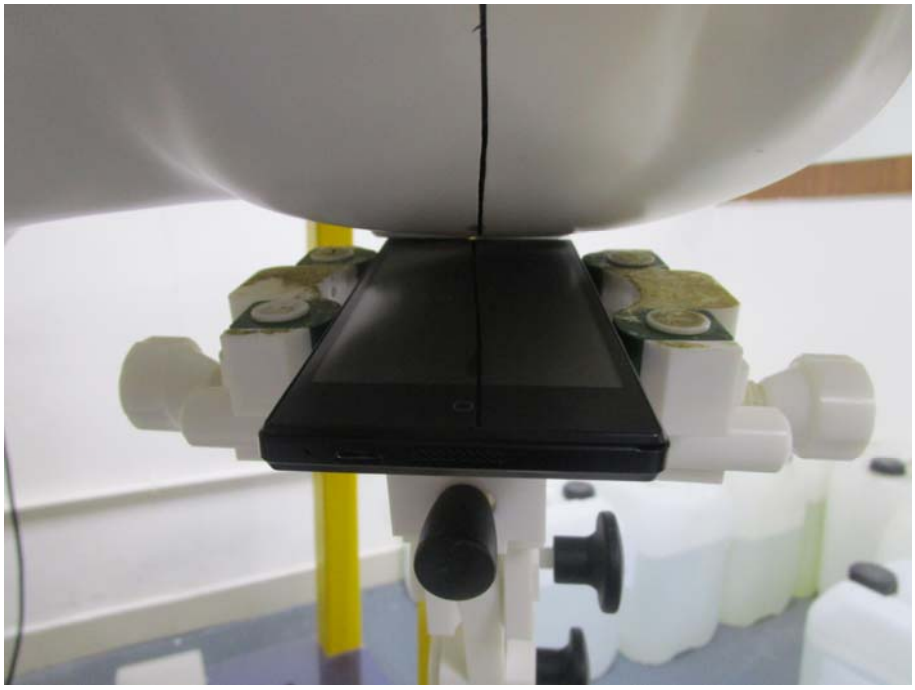


Test View 2 (Left Head)

Cheek

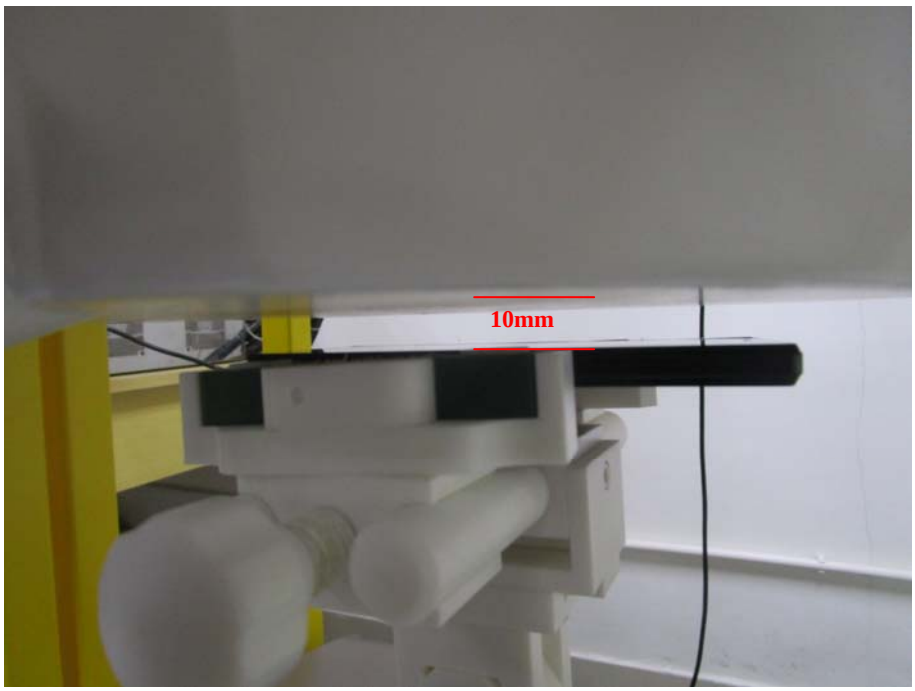


Tilt

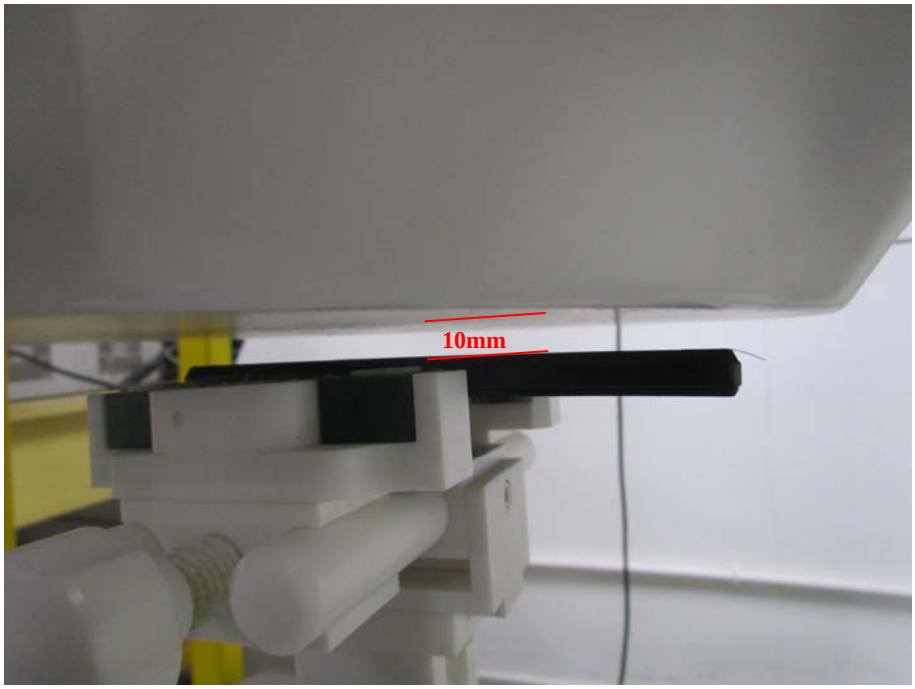


Test View 3

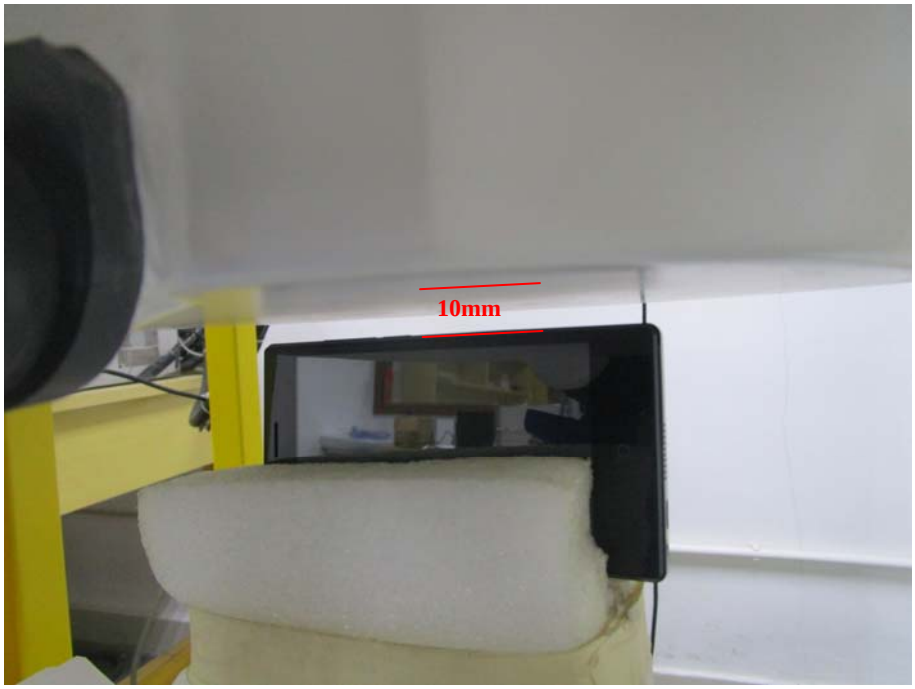
Front Side



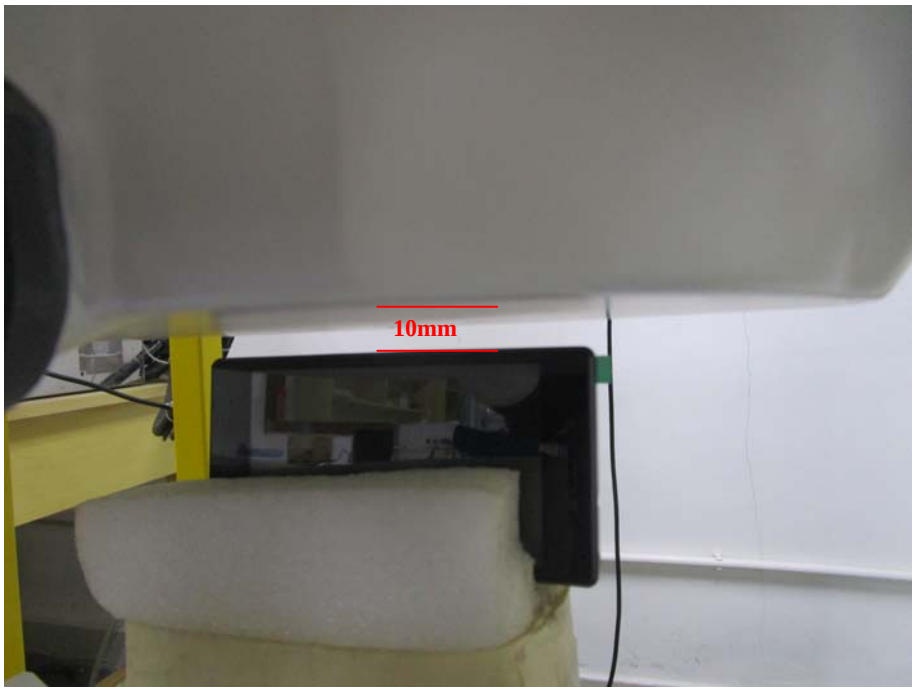
Back Side



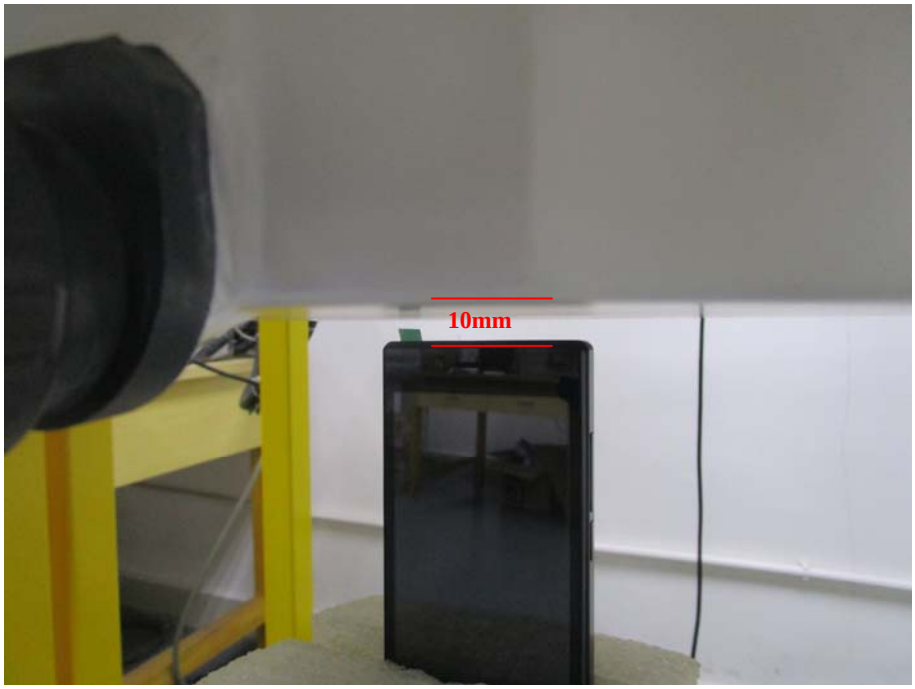
Right side



Left side



Top Side



Bottom Side

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