
SAR Test Report

Report No.: STS1502008H01

FCC ID : BRCPC7088

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : tablet PC

BRAND NAME : Kinwei, Titan

MODEL NAME : PC7088, PC7088ME, PC7088B, PC70XX(XX represents00~99)
PC70XXME(XX represents00~99), PC70XXB(XX represents00~99)
KW-PC7088J, KW-PC7088, KW-PC70XXJ(XX represents00~99)
KW-PC70XX(XX represents00~99)

CLIENT : Kintech Co., Ltd.

DATE OF ISSUE : Mar. 03,2015

STANDARD(S) : IEEE Std. 1528:2003
47CFR § 2.1093
IEEE/ANSI C95.1

REPORT VERSION : V1.0



Shenzhen STS Test Services Co., Ltd.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 03,2015	Valid	Original Report

The test plans were performed in accordance with IEEE Std. 1528:2003; 47CFR § 2.1093; IEEE/ANSI C95.1 and the following specific FCC Test Procedures:

- KDB 447498 D01 General RF Exposure Guidance v05r02
- KDB 648474 D04 Handset SAR v01r02
- KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03
- KDB 941225 D01 3G SAR Procedures v03
- KDB 941225 D06 Hot Spot SAR v02
- KDB 248227 D01 SAR meas for 802 11 a b g v01r02
- KDB 616217 D04 SAR for laptop and tablets v01r01



Test Report Certification

Applicant Name	Kintech Co., Ltd.
Applicant Address	1F-5F, Bldg 22, Chen Tian Industrial Zone, Xi Xiang Bao An District, Shenzhen Guang Dong, China
Manufacturer Name	Kintech Co., Ltd.
Manufacturer Address	1F-5F, Bldg 22, Chen Tian Industrial Zone, Xi Xiang Bao An District, Shenzhen Guang Dong, China
Product Designation	tablet PC
Brand Name	Kinwei, Titan
Model Name	PC7088, PC7088ME, PC7088B, PC70XX(XX represents00~99), PC70XXME(XX represents00~99), PC70XXB(XX represents00~99), KW-PC7088J,KW-PC7088 KW-PC70XXJ(XX represents00~99), KW-PC70XX(XX represents00~99)
Different Description	All the same, except for the model name and brand name. The test model is PC7088.
EUT Voltage	DC3.7V by battery
Applicable Standard	IEEE Std. 1528:2003 47CFR § 2.1093 IEEE/ANSI C95.1
Test Date	Dec. 20,2014 to Mar. 03,2015
Performed Location	Shenzhen STS Test Services Co., Ltd. 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China
Report Template	STSRT-US-3G3/SAR (2014-12-01)

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1. SUMMARY OF MAXIMUM SAR VALUE

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

Highest tested and scaled SAR Summary

Exposure Position	Frequency Band	Highest Tested 1g-SAR(W/Kg)	Highest Reported Maximum SAR(W/Kg)
Head	GSM 850	0.155	0.202
	PCS 1900	0.206	0.267
	WCDMA Band II	0.460	0.501
	WCDMA Band V	0.289	0.311
Body- worn	GSM 850	0.483	0.628
	PCS 1900	0.558	0.732
	WCDMA Band II	1.070	1.181
	WCDMA Band V	0.951	1.024

Exposure Position	Test Mode	Highest Tested 1g-SAR(W/Kg)	Highest Reported Maximum SAR(W/Kg)
Head	802.11b	0.295	0.296
Body	802.11b	0.176	0.177

Highest Simultaneous transmission SAR Summary

Exposure Position	Frequency Band	Highest Simultaneous Reported SAR(W/Kg)
Head	GSM 850+WLAN	0.475
	PCS 1900+WLAN	0.434
	WCDMA Band II+WLAN	0.708
	WCDMA Band V+WLAN	0.478
Body- worn	GSM 850+WLAN	0.795
	PCS 1900+WLAN	0.899
	WCDMA Band II+WLAN	1.348
	WCDMA Band V+WLAN	1.191

This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/Kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1, and had been tested in accordance with measurement methods and procedures specified in IEEE 1528-2003-2013 and the relevant KDB files like KDB 941225 D01 ,KDB 865664 D02.....etc.

2. GENERAL INFORMATION

2.1. EUT Description

General Information	
Product Designation	tablet PC
Test Model	PC7088
Hardware Version	ELINK-MZ706-D3_V2
Software Version	MT83x2_MZ706_MZ7061H1C2W1.2015011317
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
GSM and GPRS&EGPRS	
Support Band	☒ GSM 850 ☒ PCS 1900 (U.S. Bands) ☒ GSM 900 ☒ DCS 1800 (Non-U.S. Bands)
GPRS & EGPRS Type	Class B
GPRS & EGPRS Class	Class 12(1Tx+4Rx, 2Tx+3Rx, 3Tx+2Rx, 4Tx+1Rx)
TX Frequency Range	GSM 850 : 824.2~848.8MHz; PCS 1900: 1850.2~1909.8MHz;
RX Frequency Range	GSM 850 : 869~894MHz PCS 1900: 1930~1990MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS, GMSK & 8-PSK for EGPRS
Antenna Gain	-1.0dBi(GSM 850), -0.8dBi (PCS 1900)
Max. Average Power (Max. Peak Power)	GSM850: 31.96dBm(32.63dBm-Peak Power) PCS1900: 28.95dBm(29.62dBm-Peak Power)
Bluetooth	
Bluetooth Version	☐ V2.0 ☐ V2.1 ☐ V2.1+EDR ☒ V3.0 ☐ V3.0+HS ☒ V4.0
Operation Frequency	2402~2480MHz
Type of modulation	☒ GFSK ☒ II/4-DQPSK ☒ 8-DPSK
Avg. Burst Power	5.09dBm
Antenna Gain	0.8dBi

EUT Description(Continue)

WCDMA	
Support Band	U.S. Bands: ☒ UMTS FDD Band II ☒ UMTS FDD Band V Non-U.S. Bands: ☒ UMTS FDD Band I ☐ UMTS FDD Band VIII
HS Type	HSPA(HSUPA/HSDPA)
TX Frequency Range	WCDMA FDD Band II: 1852.4 -1907.6MHz WCDMA FDD Band V: 826.4-846.6MHz
RX Frequency Range	WCDMA FDD Band II: 1930-1990MHz WCDMA FDD Band V: 869-894MHz
Release Version	Rel-6
Type of modulation	QPSK
Antenna Gain	-1.0dBi(WCDMA 850), -0.8dBi (WCDMA 1900)
Max. Average Power (Max. Peak Power)	Band II: 22.66dBm (23.28dBm- Peak Power) Band V: 22.71dBm (23.33dBm- Peak Power)
WIFI	
WIFI Specification	☐ 802.11a ☒ 802.11b ☒ 802.11g ☒ 802.11n(20) ☒ 802.11n(40)
Operation Frequency	2412~2462MHz
Avg. Burst Power	11b:9.95dBm,11g:7.77dBm,11n(20):7.66dBm,11n(40):4.51dBm
Antenna Gain	0.8dBi
Accessories	
Battery	Brand name: N/A Model No. : N/A Voltage and Capacitance: 3.7 V & 2500mAh
Adapter	Brand name: N/A Model No. : JKY0212-0502000UL Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5V, 2A
Earphone	Brand name: N/A Model No. : N/A
Note: CMU200 can measure the average power and Peak power at the same time	
Product	Type ☒ Production unit ☐ Identical Prototype

2.2. Test Procedure

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with 8960, and test them respectively at U.S. bands

2.3. Test Environment

Ambient conditions in the laboratory:

Items	Required	Actual
Temperature (°C)	18-25	21± 2
Humidity (%RH)	30-70	55±2



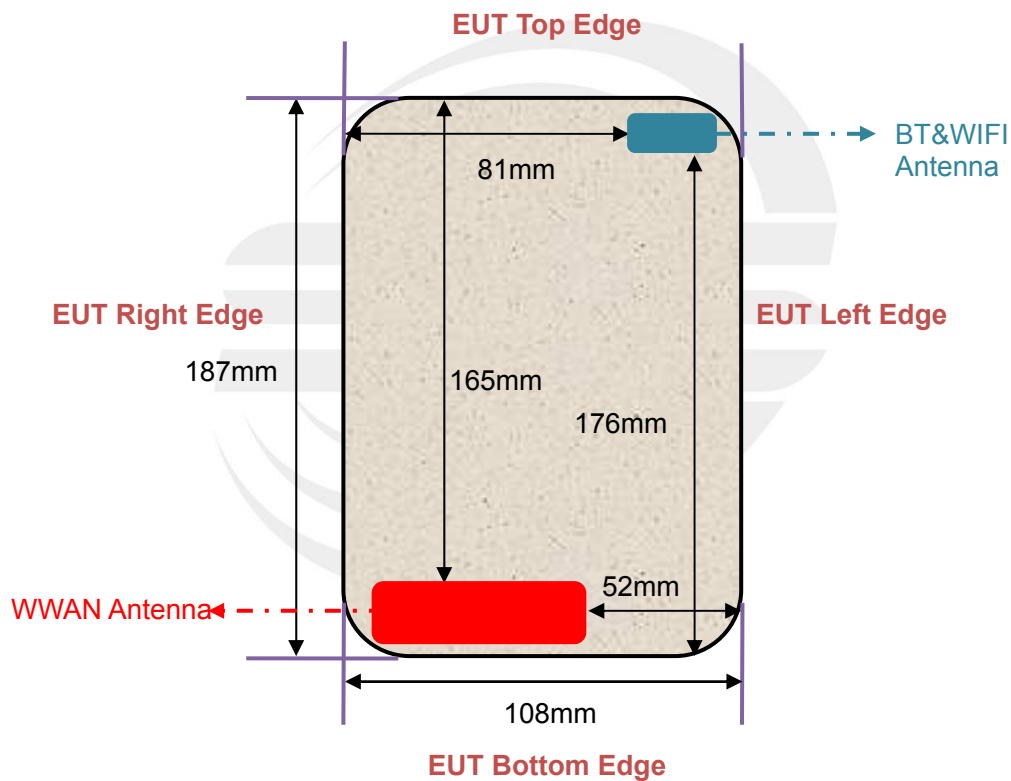
2.4. Test Configuration and setting

The EUT is a model of GSM Portable Mobile Station (MS). It supports GSM/GPRS/EGPRS, WCDMA/HSPA, BT, WIFI, and support hot spot mode.

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator were established by air link. The distance between the EUT and the antenna is larger than 50cm, and the output power radiated from the emulator antenna is at least 30db smaller than the output power of EUT.

For WLAN testing, the EUT is configured with the WLAN continuous TX tool through engineering command.

Antenna Location:



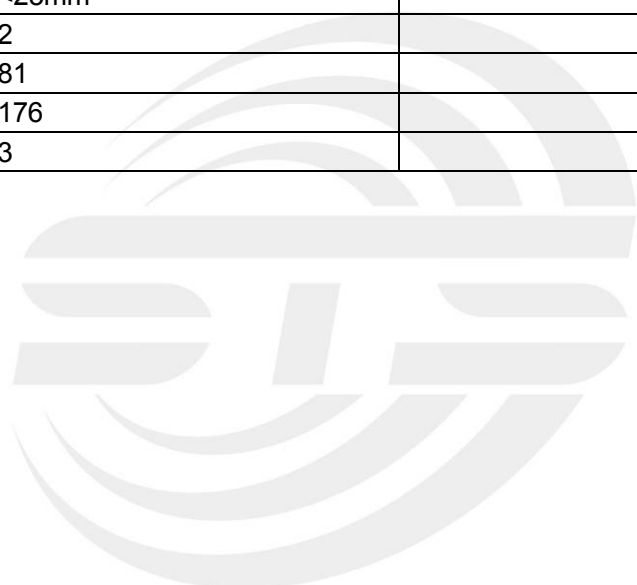
For WWAN mode:

Test Configurations	Antenna to edges/surface	SAR required
Back	<25mm	Yes
Front	<25mm	Yes
Edge 1 (Top)	165	No
Edge 2 (Right)	2	Yes
Edge 3 (Bottom)	2	Yes
Edge 4 (Left)	52	No

Note: SAR is not required for the distance between the antenna and the edge is <25mm as per KDB 941225D06 Hotspot SAR

For WLAN mode:

Test Configurations	Antenna to edges/surface	SAR required
Back	<25mm	Yes
Front	<25mm	Yes
Edge 1 (Top)	2	Yes
Edge 2 (Right)	81	No
Edge 3 (Bottom)	176	No
Edge 4 (Left)	3	Yes



3. SAR MEASUREMENT SYSTEM

3.1. Specific Absorption Rate (SAR)

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

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

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

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

SAR can be obtained using either of the following equations:

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

$$SAR = c_h \left. \frac{dT}{dt} \right|_{t=0}$$

Where

SAR	is the specific absorption rate in watts per kilogram;
E	is the r.m.s. value of the electric field strength in the tissue in volts per meter;
σ	is the conductivity of the tissue in siemens per metre;
ρ	is the density of the tissue in kilograms per cubic metre;
c_h	is the heat capacity of the tissue in joules per kilogram and Kelvin;

$\left. \frac{dT}{dt} \right|_{t=0}$ is the initial time derivative of temperature in the tissue in kelvins per second

3.2. SAR Measurement Procedure

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

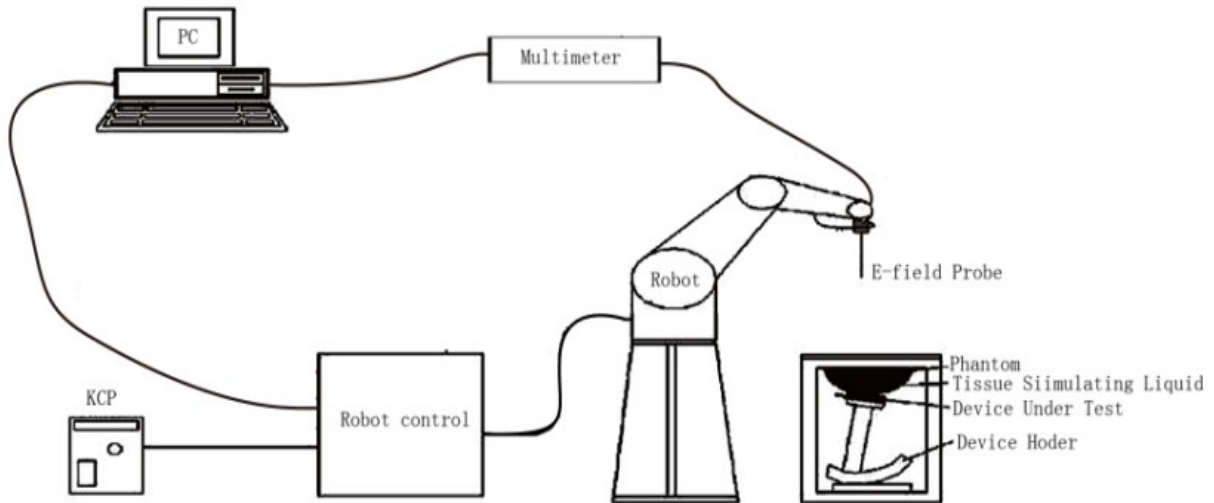
The EUT is placed against the SAM twin phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at 1mm^2) which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at 1mm^3).

When multiple peak SAR location were found during the same configuration or test mode, Zoom scan shall performed on each peak SAR location, only the peak point with maximum SAR value will be reported for the configuration or test mode.



3.3. COMOSAR System Description



The COMOSAR system for performing compliance tests consists of the following items:

- The PC. It controls most of the bench devices and stores measurement data. A computer running WinXP and the Opensar software
- The E-Field probe. The probe is a 3-axis system made of 3 distinct dipoles. Each dipole returns a voltage in function of the ambient electric field.
- The Keithley multimeter measures each probe dipole voltages.
- The SAM phantom simulates a human head. The measurement of the electric field is made inside the phantom.
- The liquids simulate the dielectric properties of the human head tissues.
- The network emulator controls the mobile phone under test.
- The validation dipoles are used to measure a reference SAR. They are used to periodically check the bench to make sure that there is no drift of the system characteristics over time.
- The phantom, the device holder and other accessories according to the targeted measurement.

3.3.1. Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g. IEEE 1528-2003, ANSI C95.1, relevant KDB files and TCB files.

3.3.2. Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003 and relevant KDB files, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

3.3.3. Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 7x7x7 (5mmx5mmx5mm) providing a volume of 30mm in the X & Y axis, and 30mm in the Z axis.

3.3.4. Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Post processor, COMOSAR allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528-2003. The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x, y, z) = Ae^{-\frac{z}{2a}} \cos^2 \left(\frac{\pi}{2} \frac{\sqrt{x'^2 + y'^2}}{5a} \right)$$

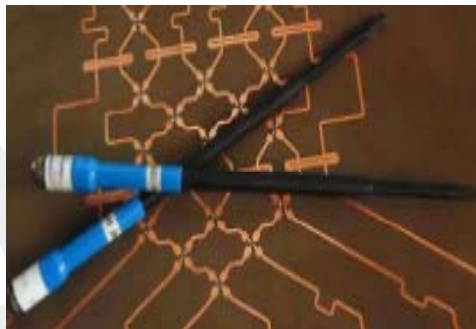
$$f_2(x, y, z) = Ae^{-\frac{z}{a}} \frac{a^2}{a^2 + x'^2} \left(3 - e^{-\frac{2z}{a}} \right) \cos^2 \left(\frac{\pi}{2} \frac{y'}{3a} \right)$$

$$f_3(x, y, z) = A \frac{a^2}{\frac{a^2}{4} + x'^2 + y'^2} \left(e^{-\frac{2z}{a}} + \frac{a^2}{2(a + 2z)^2} \right)$$

3.4. COMOSAR E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SATIMO. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. SATIMO conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528-2003 and relevant KDB files.) The calibration data are in Appendix D.

3.5. Isotropic E-Field Probe Specification

Model	SSE5	
Manufacture	SATIMO	
Frequency	0.4GHz-6GHz Linearity:±0.05dB(0.4GHz-6GHz)	
Dynamic Range	0.01W/Kg-100W/Kg Linearity:±0.05dB	
Dimensions	Overall length:330mm Length of individual dipoles:4.5mm Maximum external diameter:8mm Probe Tip external diameter:5mm Distance between dipoles/ probe extremity:2.7mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 3 GHz with precision of better 30%.	

3.6. Robot

The COMOSAR system uses the KUKA robot from SATIMO SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from SATIMO is used.

The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

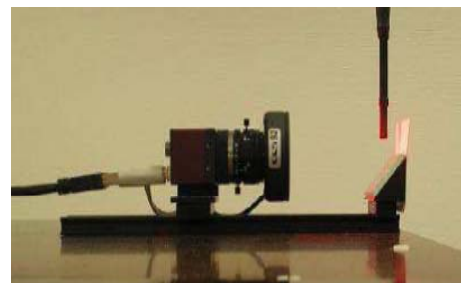


3.7. Video Positioning System

The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts. The camera is piloted by the main computer with firewire link.

During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

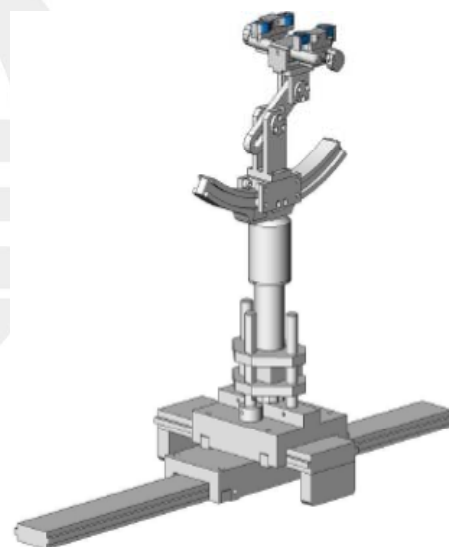


3.8. Device Holder

The COMOSAR device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The COMOSAR device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon_r = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



3.9. SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

4. TISSUE SIMULATING LIQUID

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm. For head SAR testing the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in 4.2

4.1. The composition of the tissue simulating liquid

Ingredient	835MHz	835MHz	1900MHz	1900MHz	2450MHz	2450MHz
(% Weight)	Head	Body	Head	Body	Head	Body
Water	40.45	52.4	54.90	40.5	46.7	73.2
Salt	1.42	1.40	0.18	0.50	0.00	0.04
Sugar	57.6	45.0	0.00	58.0	0.00	0.00
HEC	0.40	1.00	0.00	0.50	0.00	0.00
Preventol	0.10	0.20	0.00	0.50	0.00	0.00
DGBE	0.00	0.00	44.92	0.00	53.3	26.7
TWEEN	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and R&S Network Analyzer ZVL6.

Tissue Stimulant Measurement at 835MHz for Head						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 41.5 39.425-43.575	δ [s/m] 0.90 0.855-0.945				
824.2	42.85	0.87	21.5	22.8	53	Mar. 02,2015
826.4	42.16	0.88	21.5	22.8	53	Mar. 02,2015
835	41.70	0.89	21.5	22.8	53	Mar. 02,2015
836.6	41.65	0.89	21.5	22.8	53	Mar. 02,2015
846.6	41.26	0.91	21.5	22.8	53	Mar. 02,2015
848.8	41.00	0.93	21.5	22.8	53	Mar. 02,2015

Tissue Stimulant Measurement at 835MHz for body						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 55.20 52.44-57.96	δ [s/m] 0.97 0.9215-1.0185				
824.2	57.01	0.93	21.3	21.3	52	Dec. 20,2014
826.4	56.88	0.94	21.3	21.3	52	Dec. 20,2014
835	56.75	0.95	21.3	21.3	52	Dec. 20,2014
836.6	55.78	0.96	21.3	21.3	52	Dec. 20,2014
846.6	55.42	0.98	21.3	21.3	52	Dec. 20,2014
848.8	54.97	0.99	21.3	21.3	52	Dec. 20,2014

Tissue Stimulant Measurement at 1900MHz for Head						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 40.00 38.00-42.00	δ [s/m] 1.40 1.33-1.47				
1850.2	41.24	1.35	22.9	23.1	58	Mar. 03,2015
1852.4	41.13	1.37	22.9	23.1	58	Mar. 03,2015
1880	41.06	1.38	22.9	23.1	58	Mar. 03,2015
1900	40.89	1.40	22.9	23.1	58	Mar. 03,2015
1907.6	40.66	1.43	22.9	23.1	58	Mar. 03,2015
1909.8	40.08	1.45	22.9	23.1	58	Mar. 03,2015

Tissue Stimulant Measurement at 1900MHz for body						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 53.30 50.635-55.965	δ [s/m] 1.52 1.444-1.596				
1850.2	54.61	1.48	20	20.1	50.1	Dec. 23,2014
1852.4	54.59	1.49	20	20.1	50.1	Dec. 23,2014
1880	54.08	1.52	20	20.1	50.1	Dec. 23,2014
1900	53.44	1.54	20	20.1	50.1	Dec. 23,2014
1907.6	53.30	1.56	20	20.1	50.1	Dec. 23,2014
1909.8	53.00	1.57	20	20.1	50.1	Dec. 23,2014

Tissue Stimulant Measurement at 2450MHz for Head						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 39.2 37.24-41.16	δ [s/m] 1.80 1.71-1.89				
2412	40.16	1.75	21.5	22.8	53	Mar. 02,2015
2437	39.77	1.82	21.5	22.8	53	Mar. 02,2015
2462	39.13	1.87	21.5	22.8	53	Mar. 02,2015

Tissue Stimulant Measurement at 2450MHz for body						
Fr. (MHz)	Dielectric Parameters ($\pm 5\%$)		Tissue Temp [°C]	Ambient Temp [°C]	Relative Humidity (%)	Test time
	ϵ_r 52.7 50.065-55.335	δ [s/m] 1.95 1.8525-2.0475				
2412	53.11	1.90	21	21	55	Feb. 12,2015
2437	52.47	1.92	21	21	55	Feb. 12,2015
2462	52.08	1.96	21	21	55	Feb. 12,2015

4.3. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528-2003 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 IEEE 1528-2003 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 IEEE 1528-2003.

Target Frequency (MHz)	head		body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	1.01	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

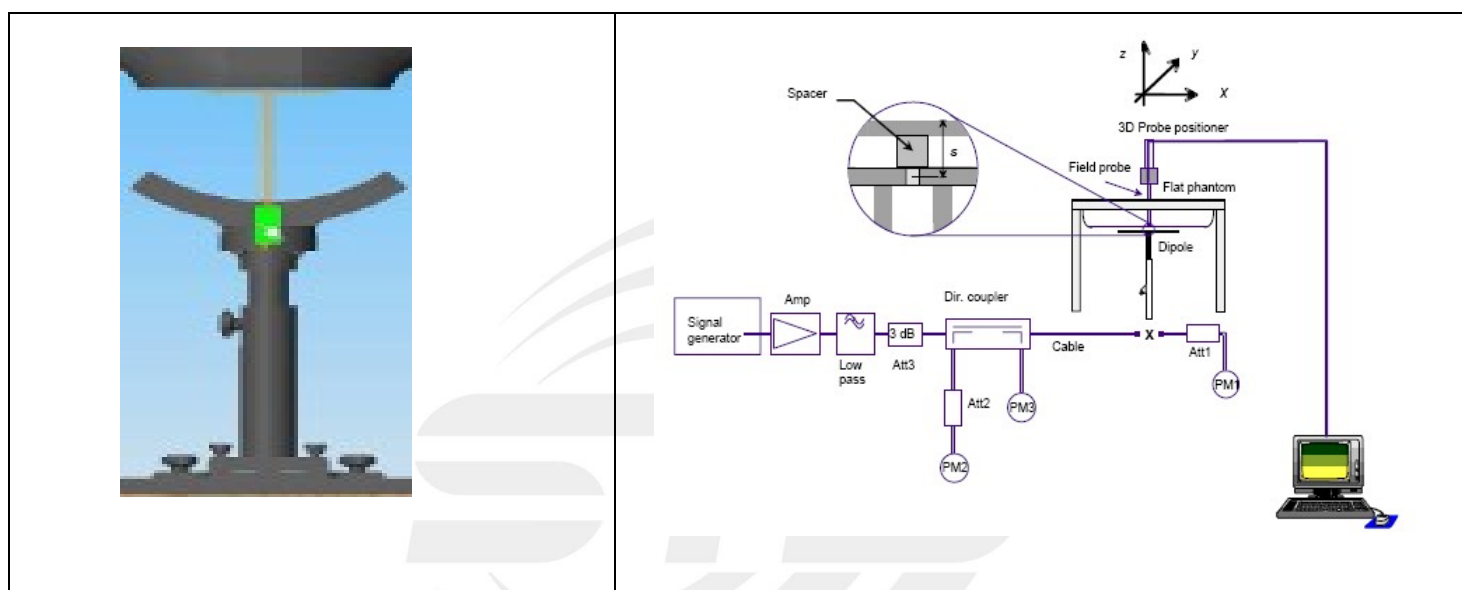
(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)

5. SAR MEASUREMENT PROCEDURE

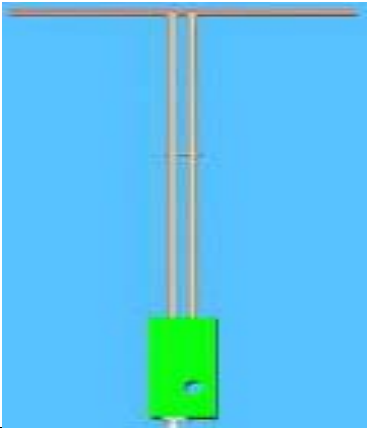
5.1. SAR System Validation Procedures

Each SATIMO system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

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

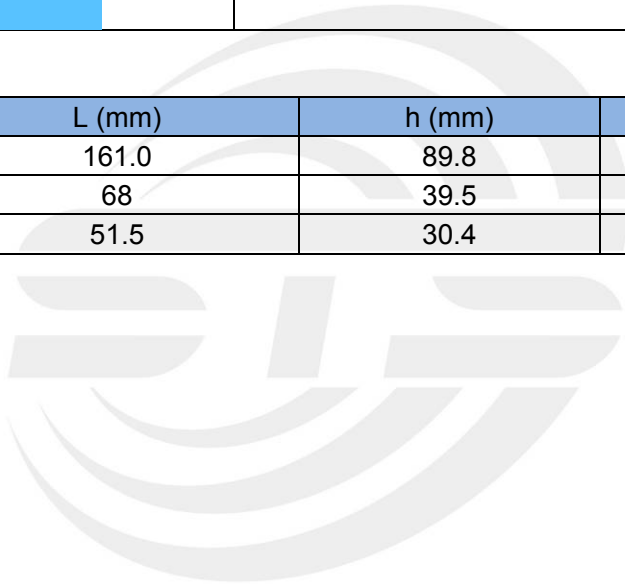


5.2. SAR System Validation
5.2.1. Validation Dipoles



The dipoles used is based on the IEEE1528-2003 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical Specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
835MHz	161.0	89.8	3.6
1900MHz	68	39.5	3.6
2450MHz	51.5	30.4	3.6



5.2.2. Validation Result

System Performance Check at 835MHz&1900MHz & 2450MHz for Head								
Validation Kit: SN 30/14DIP 0G835-332& SN 30/14DIP 1G900-333 &SN 46/11DIP 2G450-189								
Frequency [MHz]	Target Value(W/Kg)		Reference Result ($\pm 10\%$)		Tested Value(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
835	9.63	6.15	8.667-10.593	5.535-6.765	10.100	6.400	22.8	Mar. 02,2015
1900	39.84	20.20	35.856-43.824	18.18-22.22	39.168	19.284	22.9	Mar. 03,2015
2450	54.40	23.75	48.96-59.84	21.375-26.125	51.283	23.536	22.8	Mar. 02,2015
System Performance Check at 835 MHz &1900MHz & 2450MHz for Body								
Validation Kit: SN 30/14DIP 0G835-332& SN 30/14DIP 1G900-333 &SN 46/11DIP 2G450-189								
Frequency [MHz]	Target Value(W/Kg)		Reference Result ($\pm 10\%$)		Tested Value(W/Kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
835	9.93	6.35	8.937-10.923	5.715-6.985	9.310	6.211	21.3	Dec. 20,2014
1900	43.33	21.59	38.997-47.663	19.431-23.749	39.139	19.503	20	Dec. 23,2014
2450	54.19	24.96	48.771-59.609	22.464-27.456	50.53	23.18	21	Feb. 12,2015

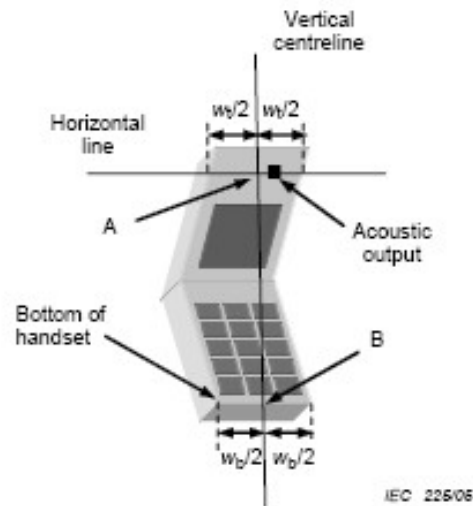
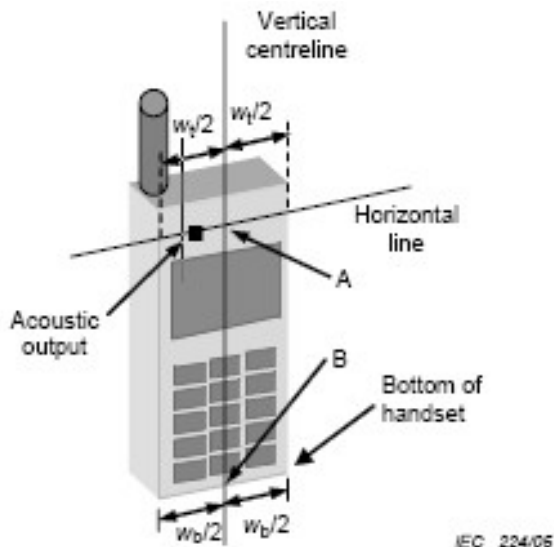


6. EUT TEST POSITION

This EUT was tested in **Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face and 4 edges.**

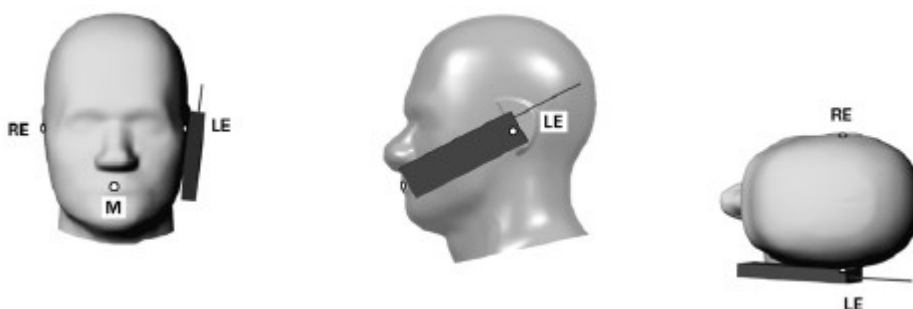
6.1. Define Two Imaginary Lines on the Handset

- (1) 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 handset.
- (2) 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.
- (3) 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 to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



6.2. Cheek Position

- (1) 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 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.
- (2) To move the device towards the phantom with the ear piece aligned with the the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with 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



6.3. Title Position

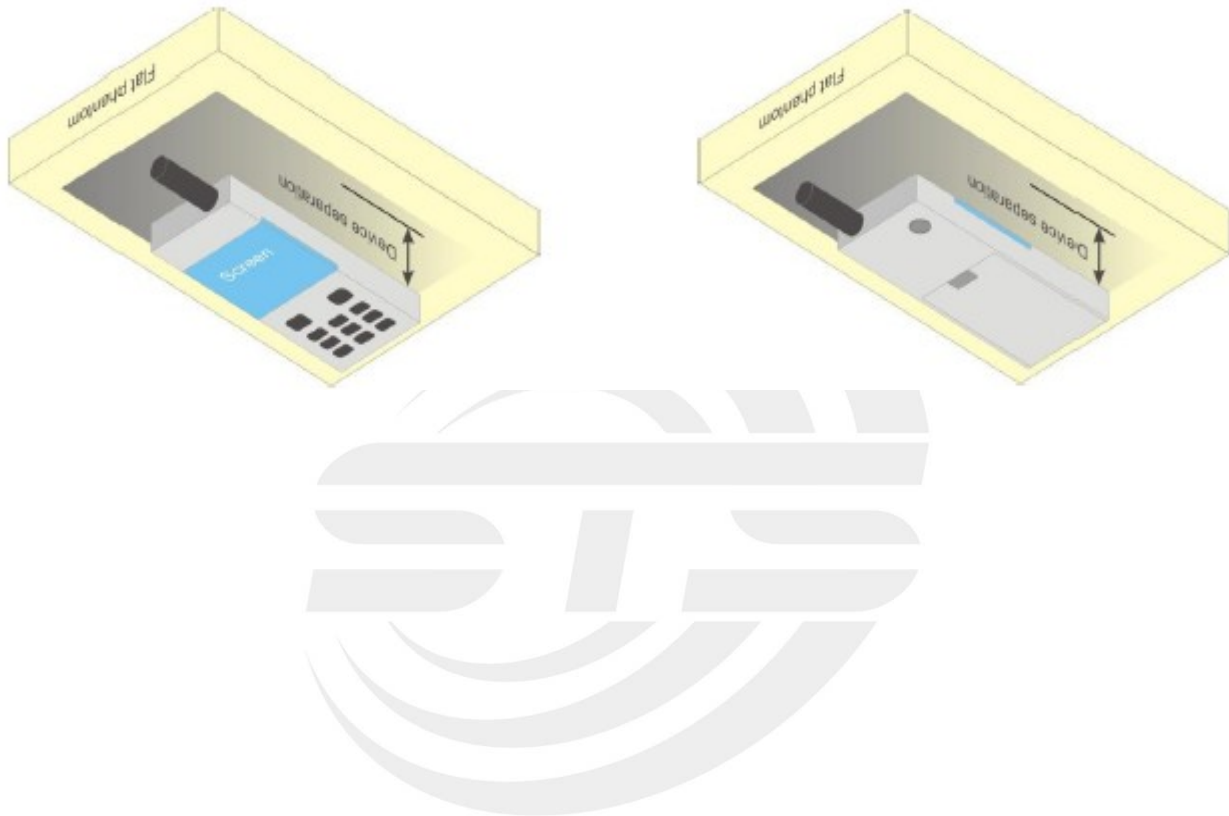
- (1) To position the device in the “cheek” position described above.
- (2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.



6.4. Body Worn Position

- (1) To position the EUT parallel to the phantom surface.
- (2) To adjust the EUT parallel to the flat phantom.
- (3) To adjust the distance between the EUT surface and the flat phantom to **0mm**.

General Note: Referring KDB941225 D06 v02, SAR must be measured for all sides and surfaces with a transmitting antenna within 25mm from that surface or edge.



7. SAR EXPOSURE LIMITS

SAR assessments have been made in line with the requirements of IEEE-1528:2003, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit (W/kg)
Spatial Peak SAR (1g cube tissue for brain or body)	1.60
Spatial Average SAR (Whole body)	0.08
Spatial Peak SAR (Limbs)	4.0



8. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Current calibration date	Next calibration date
835MHz Dipole	SATIMO	SN 30/14 DIP0G835-332	2014.09.01	2015.08.31
1900MHz Dipole	SATIMO	SN 30/14 DIP1G900-333	2014.09.01	2015.08.31
E-Field Probe	SATIMO	SN 17/14 EP221	2014.09.01	2015.08.31
Antenna	SATIMO	SN 07/13 ZNTA52	2014.09.01	2015.08.31
Waveguide	SATIMO	SN 13/14 WGA32	2014.09.01	2015.08.31
Phantom1	SATIMO	SN 32/14 SAM115	2014.09.01	2015.08.31
Phantom2	SATIMO	SN 32/14 SAM116	2014.09.01	2015.08.31
SAR TEST BENCH	SATIMO	SN 32/14 MSH97	2014.09.01	2015.08.31
SAR TEST BENCH	SATIMO	SN 32/14 LSH29	2014.09.01	2015.08.31
Dielectric Probe Kit	SATIMO	SN 32/14 OCPG52	2014.09.01	2015.08.31
Multi Meter	Keithley	4050073	2014.11.20	2015.11.19
Signal Generator	R&S	104260	2014.10.27	2015.10.26
Power Meter	R&S	100510	2014.10.25	2015.10.24
Power Sensor	R&S	101919	2014.10.25	2015.10.24
Network Analyzer	R&S	EMY46103472	2014.12.12	2015.12.11
Attenuator	Warison /WATT-6SR1211	N/A	N/A	N/A
Attenuator	Mini-circuits / VAT-10+	N/A	N/A	N/A
Amplifier	EM30180	SN060552	2014.03.04	2015.03.03
Directional Couple	Werlatone/ C5571-10	N/A	N/A	N/A
Directional Couple	Werlatone/ C6026-10	N/A	N/A	N/A
Power Viewer	R&S/V2.3.1.0	N/A	N/A	N/A

Note: Per KDB 865664 Dipole SAR Validation Verification, STS Lab has adopted 1 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

9. MEASUREMENT UNCERTAINTY

SATIMO Uncertainty									
Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.									
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	6.98	6.98	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.16	1.16	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.33	2.33	∞
Boundary effect	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.87	2.87	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.03	0.03	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.70	1.70	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.16	1.16	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.71	1.71	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.91	2.91	∞
Test sample Related									
Test sample positioning	E.4.2.1	0.03	N	1	1	1	0.05	0.05	N-1
Device Holder Uncertainty	E.4.1.1	5.00	N	1	1	1	4.95	4.95	∞
Output power Variation - SAR drift measurement	6.6.2	0.65	R	$\sqrt{3}$	1	1	0.36	0.36	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.02	0.02	∞
Liquid conductivity deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.83	1.23	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.18	2.14	∞
Liquid permittivity - deviation from target value	E.3.2	0.03	R	$\sqrt{3}$	0.6	0.49	0.01	0.01	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.06	4.95	M
Combined Standard Uncertainty			RSS				11.17	10.63	∞
Expanded Uncertainty (95% Confidence interval)			k				22.34	21.26	

SATIMO Uncertainty									
System uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.									
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	6.98	6.98	∞
Axial Isotropy	E.2.2	2.5	R	$\sqrt{3}$	1	1	1.16	1.16	∞
Hemispherical Isotropy	E.2.2	4.0	R	$\sqrt{3}$	1	1	2.33	2.33	∞
Boundary Effects	E.2.3	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	E.2.4	5.0	R	$\sqrt{3}$	1	1	2.87	2.87	∞
System detection limits	E.2.5	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Readout Electronics	E.2.6	0.02	N	1	1	1	0.03	0.03	∞
Response Time	E.2.7	3.0	R	$\sqrt{3}$	1	1	1.70	1.70	∞
Integration Time	E.2.8	2.0	R	$\sqrt{3}$	1	1	1.16	1.16	∞
RF ambient Conditions	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.71	1.71	∞
Probe positioner Mechanical Tolerance	E.6.2	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Probe positioning with respect to Phantom Shell	E.6.3	0.05	R	$\sqrt{3}$	1	1	0.03	0.03	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	E.5.2	5.0	R	$\sqrt{3}$	1	1	2.91	2.91	∞
Dipole									
Dipole axis to liquid Distance	8,E.4.2	1.00	N	$\sqrt{3}$	1	1	0.55	0.55	N-1
Input power and SAR drift measurement	8,6.6.2	0.65	R	$\sqrt{3}$	1	1	0.36	0.36	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (Shape and thickness tolerances)	E.3.1	0.05	R	$\sqrt{3}$	1	1	0.02	0.02	∞
Liquid conductivity - deviation from target value	E.3.2	5.00	R	$\sqrt{3}$	0.64	0.43	1.83	1.23	∞
Liquid conductivity - measurement uncertainty	E.3.3	5.00	N	1	0.64	0.43	3.18	2.14	∞
Liquid permittivity - deviation from target value	E.3.2	0.03	R	$\sqrt{3}$	0.6	0.49	0.01	0.01	∞
Liquid permittivity - measurement uncertainty	E.3.3	10.00	N	1	0.6	0.49	6.06	4.95	M
Combined Standard Uncertainty			RSS				10.03	9.42	
Expanded Uncertainty (95% Confidence interval)			k				20.05	18.85	

10. CONDUCTED POWER MEASUREMENT

GSM BAND

Mode	Frequency(MHz)	Peak power (dBm)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>					
GSM 850	824.2	32.63	31.96	-9	22.96
	836.6	32.56	31.86	-9	22.86
	848.8	32.54	31.82	-9	22.82
GPRS 850 (1 Slot)	824.2	32.35	31.58	-9	22.58
	836.6	32.31	31.51	-9	22.51
	848.8	32.25	31.45	-9	22.45
GPRS 850 (2 Slot)	824.2	29.46	28.79	-6	22.79
	836.6	29.43	28.75	-6	22.75
	848.8	29.39	28.63	-6	22.63
GPRS850 (3 Slot)	824.2	27.55	26.86	-4.26	22.6
	836.6	27.52	26.78	-4.26	22.52
	848.8	27.48	26.73	-4.26	22.47
GPRS 850 (4 Slot)	824.2	26.59	25.84	-3	22.84
	836.6	26.53	25.77	-3	22.77
	848.8	26.44	25.73	-3	22.73
EGPRS 850 (1 Slot)	824.2	26.56	26.02	-9	17.02
	836.6	26.51	25.98	-9	16.98
	848.8	26.39	25.83	-9	16.83
EGPRS 850 (2 Slot)	824.2	25.35	24.81	-6	18.81
	836.6	25.29	24.75	-6	18.75
	848.8	25.26	24.72	-6	18.72
EGPRS 850 (3 Slot)	824.2	23.75	23.23	-4.26	18.97
	836.6	23.68	23.16	-4.26	18.9
	848.8	23.63	23.12	-4.26	18.86
EGPRS 850 (4 Slot)	824.2	22.72	22.24	-3	19.24
	836.6	22.71	22.21	-3	19.21
	848.8	22.67	22.16	-3	19.16

GSM BAND CONTINUE

Mode	Frequency(MHz)	Peak power (dBm)	Avg. Burst Power(dBm)	Duty cycle Factor(dBm)	Frame Power(dBm)
Maximum Power <1>					
PCS1900	1850.2	29.62	28.95	-9	19.95
	1880	29.56	28.88	-9	19.88
	1909.8	29.53	28.84	-9	19.84
GPRS1900 (1 Slot)	1850.2	29.51	28.75	-9	19.75
	1880	29.48	28.72	-9	19.72
	1909.8	29.45	28.69	-9	19.69
GPRS1900 (2 Slot)	1850.2	26.62	25.83	-6	19.83
	1880	26.61	25.82	-6	19.82
	1909.8	26.58	25.79	-6	19.79
GPRS1900 (3 Slot)	1850.2	24.54	23.83	-4.26	19.57
	1880	24.48	23.77	-4.26	19.51
	1909.8	24.45	23.66	-4.26	19.4
GPRS1900 (4 Slot)	1850.2	23.68	22.83	-3	19.83
	1880	23.63	22.81	-3	19.81
	1909.8	23.55	22.74	-3	19.74
EGPRS1900 (1 Slot)	1850.2	25.73	25.19	-9	16.19
	1880	25.68	25.15	-9	16.15
	1909.8	25.66	25.12	-9	16.12
EGPRS1900 (2 Slot)	1850.2	25.71	25.12	-6	19.12
	1880	25.42	25.11	-6	19.11
	1909.8	25.44	25.05	-6	19.05
EGPRS1900 (3 Slot)	1850.2	23.69	23.17	-4.26	18.91
	1880	23.65	23.13	-4.26	18.87
	1909.8	23.62	23.11	-4.26	18.85
EGPRS1900 (4 Slot)	1850.2	22.74	22.24	-3	19.24
	1880	22.72	22.21	-3	19.21
	1909.8	22.69	22.18	-3	19.18

Note 1:

The Frame Power (Source-based time-averaged Power) is scaled the maximum burst average power based on time slots. The calculated methods are show as following:

Frame Power = Max burst power (1 Up Slot) – 9 dB

Frame Power = Max burst power (2 Up Slot) – 6 dB

Frame Power = Max burst power (3 Up Slot) – 4.26 dB

Frame Power = Max burst power (4 Up Slot) – 3 dB

UMTS BAND

HSDPA Setup Configuration:

- The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Based Station with following setting:
 - (1) Set Gain Factors(β_c and β_d) parameters set according to each
 - (2) Set RMC 12.2Kbps+HSDPA mode.
 - (3) Set Cell Power=-86dBm
 - (4) Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - (5) Select HSDPA Uplink Parameters
 - (6) Set Delta ACK, Delta NACK and Delta CQI=8
 - (7) Set Ack - Nack Repetition Factor to 3
 - (8) Set CQI Feedback Cycle (k) to 4ms
 - (9) Set CQI Repetition Factor to 2
 - (10) Power Ctrl Mode=All Up bits
- The transmitted maximum output power was recorded.

Table C.10.2.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c (Note5)	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15(Note 4)	15/15(Note 4)	64	12/15(Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, ΔACK and $\Delta NACK = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta CQI = 24/15$ with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $hs/c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the c/d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $c = 11/15$ and $d = 15/15$.

HSUPA Setup Configuration:

- The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- The RF path losses were compensated into the measurements.
- A call was established between EUT and Base Station with following setting *
 - (1) Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - (2) Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - (3) Set Cell Power = -86 dBm
 - (4) Set Channel Type = 12.2k + HSPA
 - (5) Set UE Target Power
 - (6) Power Ctrl Mode= Alternating bits
 - (7) Set and observe the E-TFCI
 - (8) Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, ΔACK , $\Delta NACK$ and $\Delta CQI = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, ΔACK , $\Delta NACK$ and $\Delta CQI = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

UMTS BAND II

Mode	Frequency (MHz)	Peak power (dBm)	Avg. Burst Power (dBm)
WCDMA 1900 RMC	1852.4	23.28	22.66
	1880	23.24	22.63
	1907.6	23.21	22.57
WCDMA 1900 AMR	1852.4	22.69	22.23
	1880	22.66	22.19
	1907.6	22.61	22.14
HSDPA Subtest 1	1852.4	22.72	22.25
	1880	22.68	22.23
	1907.6	22.64	22.18
HSDPA Subtest 2	1852.4	22.76	22.27
	1880	22.74	22.26
	1907.6	22.67	22.23
HSDPA Subtest 3	1852.4	22.66	22.19
	1880	22.63	22.15
	1907.6	22.59	22.14
HSDPA Subtest 4	1852.4	22.72	22.24
	1880	22.69	22.22
	1907.6	22.67	22.17
HSUPA Subtest 1	1852.4	22.76	22.27
	1880	22.74	22.32
	1907.6	22.72	22.25
HSUPA Subtest 2	1852.4	22.68	22.24
	1880	22.65	22.18
	1907.6	22.63	22.16
HSUPA Subtest 3	1852.4	22.72	22.27
	1880	22.67	22.24
	1907.6	22.65	22.18
HSUPA Subtest 4	1852.4	22.64	22.16
	1880	22.63	22.14
	1907.6	22.69	22.16
HSUPA Subtest 5	1852.4	22.74	22.27
	1880	22.72	22.23
	1907.6	22.68	22.19

UMTS BAND V

Mode	Frequency (MHz)	Peak power (dBm)	Avg. Burst Power (dBm)
WCDMA 850 RMC	826.4	23.33	22.71
	836.6	23.31	22.68
	846.6	23.28	22.64
WCDMA 850 AMR	826.4	22.79	22.35
	836.6	22.75	22.33
	846.6	22.68	22.27
HSDPA Subtest 1	826.4	22.71	22.21
	836.6	22.68	22.18
	846.6	22.67	22.16
HSDPA Subtest 2	826.4	22.65	22.13
	836.6	22.62	22.11
	846.6	22.59	22.08
HSDPA Subtest 3	826.4	22.67	22.15
	836.6	22.65	22.12
	846.6	22.62	22.07
HSDPA Subtest 4	826.4	22.69	22.18
	836.6	22.67	22.16
	846.6	22.62	22.12
HSUPA Subtest 1	826.4	22.74	22.33
	836.6	22.65	22.26
	846.6	22.63	22.23
HSUPA Subtest 2	826.4	22.68	22.19
	836.6	22.66	22.14
	846.6	22.65	22.13
HSUPA Subtest 3	826.4	22.74	22.22
	836.6	22.69	22.16
	846.6	22.65	22.12
HSUPA Subtest 4	826.4	22.73	22.25
	836.6	22.72	22.22
	846.6	22.69	22.18
HSUPA Subtest 5	826.4	22.71	22.24
	836.6	22.65	22.21
	846.6	22.63	22.18

WIFI

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11b	1	01	2412	9.95
		06	2437	9.89
		11	2462	9.77
802.11g	6	01	2412	7.77
		06	2437	7.68
		11	2462	7.6
802.11n(20)	6.5	01	2412	7.66
		06	2437	7.57
		11	2462	7.51
802.11n(40)	13.5	03	2422	4.51
		06	2437	4.44
		09	2452	4.39

Bluetooth_V3.0

Modulation	Channel	Frequency(MHz)	Avg. Burst Power (dBm)
GFSK	0	2402	4.04
	39	2441	4.79
	78	2480	5.09
π /4-DQPSK	0	2402	3.42
	39	2441	4.16
	78	2480	4.33
8-DPSK	0	2402	3.42
	39	2441	4.16
	78	2480	4.3

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

Table 6.1aA: UE maximum output power with HS-DPCCH and E-DCH

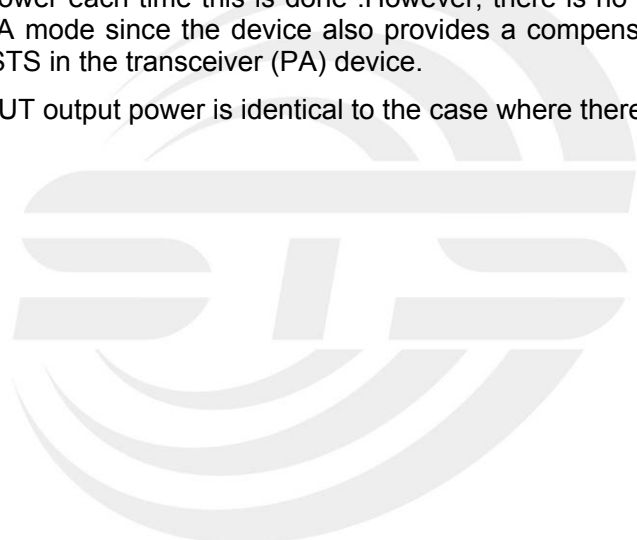
UE Transmit Channel Configuration	CM(db)	MPR(db)
For all combinations of ,DPDCH,DPCCH HS-DPDCH,E-DPDCH and E-DPCCH	$0 \leq CM \leq 3.5$	MAX(CM-1,0)
Note: CM=1 for $\beta_d/\beta_d=12/15$, $\beta_{hs}/\beta_c=24/15$.For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX_STS in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.



11. TEST RESULTS

11.1. SAR Test Results Summary

11.1.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to IEEE 1528-2003, and Body SAR was performed with the device 0mm from the phantom.

11.1.2. Operation Mode

- According to KDB 447498 D01 v05r02 ,for each exposure position, if the highest 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional.
- Per KDB 865664 D01 v01r03,for each frequency band, if the measured SAR is ≥ 0.8 W/Kg, testing for repeated SAR measurement is required , that the highest measured SAR is only to be tested. When the SAR results are near the limit, the following procedures are required for each device to verify these types of SAR measurement related variation concerns by repeating the highest measured SAR configuration in each frequency band.
 - (1) When the original highest measured SAR is ≥ 0.8 W/Kg, repeat that measurement once.
 - (2) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/Kg.
 - (3) Perform a third repeated measurement only if the original, first and second repeated measurement is ≥ 1.5 W/Kg and ratio of largest to smallest SAR for the original, first and second measurement is ≥ 1.20 .
- Body-worn exposure conditions are intended to voice call operations, therefore GSM voice call mode is selected to be test.
- According to KDB 648474 D04 v01r02,when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/Kg, SAR testing with a headset connected is not required.
- According to 941225 D06 v02, when the overall device length and width are $> 9\text{cm} \times 5\text{cm}$, Hotspot mode with a test separation distance of 10mm. For device with form factors smaller than $9\text{cm} \times 5\text{cm}$, Hotspot mode with a test separation distance of 5mm. Body SAR was also performed with the headset attached and without.
- According to 248227 D01 v01r02, SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than measured on the corresponding 802.11b channels.
- Maximum Scaling SAR in order to calculate the Maximum SAR values to test under the standard Peak Power, Calculation method is as follows:
Maximum Scaling SAR =tested SAR (Max.) $\times$ [maximum turn-up power (mw)/ maximum measurement output power(mw)]

11.1.3. Test Result

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: tablet PC									
Test Mode: GSM850 with GMSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	voice	190	836.6	-0.25	0.155	33	31.86	0.202	1.6
Left Tilt	voice	190	836.6	-0.31	0.120	33	31.86	0.156	1.6
Right Cheek	voice	190	836.6	1.58	0.123	33	31.86	0.160	1.6
Right Tilt	voice	190	836.6	-0.89	0.138	33	31.86	0.179	1.6
Body back	voice	190	836.6	-0.87	0.483	33	31.86	0.628	1.6
Body front	voice	190	836.6	0.44	0.382	33	31.86	0.497	1.6
Edge 2(Right)	voice	190	836.6	-0.84	0.178	33	31.86	0.231	1.6
Edge 4(Left)	voice	190	836.6	0.16	0.083	33	31.86	0.108	1.6
Edge 3(Bottom)	voice	190	836.6	0.26	0.329	33	31.86	0.428	1.6
Edge 1 (Top)	voice	190	836.6	0.23	0.110	33	31.86	0.143	1.6
SIM 2 Card									
Left Cheek	GPRS-4 slot	190	836.6	-0.85	0.116	27	25.77	0.154	1.6
Left Tilt	GPRS-4 slot	190	836.6	-0.96	0.085	27	25.77	0.113	1.6
Right Cheek	GPRS-4 slot	190	836.6	1.58	0.080	27	25.77	0.106	1.6
Right Tilt	GPRS-4 slot	190	836.6	-0.63	0.054	27	25.77	0.072	1.6
Body back	GPRS-4 slot	190	836.6	0.49	0.290	27	25.77	0.385	1.6
Body front	GPRS-4 slot	190	836.6	0.64	0.126	27	25.77	0.167	1.6
Edge 1 (Top)	GPRS-4 slot	190	836.6	-0.59	0.040	27	25.77	0.053	1.6
Edge 2(Right)	GPRS-4 slot	190	836.6	0.48	0.299	27	25.77	0.397	1.6
Edge 3(Bottom)	GPRS-4 slot	190	836.6	-0.32	0.300	27	25.77	0.398	1.6
Edge 4(Left)	GPRS-4 slot	190	836.6	0.16	0.073	27	25.77	0.097	1.6
SIM 2 Card									
Left Cheek	voice	190	836.6	0.39	0.137	33	31.86	0.178	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation for body is 0mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: tablet PC									
Test Mode: PCS1900 with GMSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift ($\leq \pm 5\%$)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	voice	661	1880.0	0.25	0.206	30	28.88	0.267	1.6
Left Tilt	voice	661	1880.0	-1.96	0.046	30	28.88	0.060	1.6
Right Cheek	voice	661	1880.0	-0.35	0.136	30	28.88	0.176	1.6
Right Tilt	voice	661	1880.0	-0.24	0.061	30	28.88	0.079	1.6
Body back	voice	661	1880.0	0.26	0.500	30	28.88	0.647	1.6
Body front	voice	661	1880.0	-0.75	0.345	30	28.88	0.446	1.6
Edge 2(Right)	voice	661	1880.0	0.44	0.174	30	28.88	0.225	1.6
Edge 4(Left)	voice	661	1880.0	-0.94	0.019	30	28.88	0.025	1.6
Edge 3(Bottom)	voice	661	1880.0	0.26	0.362	30	28.88	0.468	1.6
Edge 1 (Top)	voice	661	1880.0	0.35	0.028	30	28.88	0.036	1.6
Left Cheek	GPRS-2 slot	661	1880.0	-0.58	0.137	27	25.82	0.180	1.6
Left Tilt	GPRS-2 slot	661	1880.0	1.23	0.024	27	25.82	0.031	1.6
Right Cheek	GPRS-2 slot	661	1880.0	-0.96	0.115	27	25.82	0.151	1.6
Right Tilt	GPRS-2 slot	661	1880.0	-0.54	0.052	27	25.82	0.068	1.6
Body back	GPRS-2 slot	661	1880.0	0.46	0.307	27	25.82	0.403	1.6
Body front	GPRS-2 slot	661	1880.0	0.33	0.137	27	25.82	0.180	1.6
Edge 1 (Top)	GPRS-2 slot	661	1880.0	-0.39	0.016	27	25.82	0.021	1.6
Edge 2(Right)	GPRS-2 slot	661	1880.0	0.65	0.019	27	25.82	0.025	1.6
Edge 3(Bottom)	GPRS-2 slot	661	1880.0	0.14	0.558	27	25.82	0.732	1.6
Edge 4(Left)	GPRS-2 slot	661	1880.0	0.16	0.250	27	25.82	0.328	1.6
SIM 2 Card									
Left Cheek	voice	661	1880.0	-0.87	0.203	30	28.88	0.263	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation for body is 0mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: tablet PC									
Test Mode: WCDMA Band II with QPSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift ($\pm 5\%$)	SAR (1g) (W/kg)	Max. Turn-u p Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	RMC 12.2kbps	9400	1880	0.85	0.177	23	22.63	0.193	1.6
Left Tilt	RMC 12.2kbps	9400	1880	-0.96	0.027	23	22.63	0.029	1.6
Right Cheek	RMC 12.2kbps	9400	1880	-0.12	0.460	23	22.63	0.501	1.6
Right Tilt	RMC 12.2kbps	9400	1880	0.59	0.084	23	22.63	0.091	1.6
Body back	RMC 12.2kbps	9262	1852.4	0.66	1.066	23	22.66	1.153	1.6
Body back	RMC 12.2kbps	9400	1880	0.48	1.059	23	22.63	1.153	1.6
Body back	RMC 12.2kbps	9538	1907.6	-0.31	1.070	23	22.57	1.181	1.6
Body front	RMC 12.2kbps	9400	1880	0.26	0.599	23	22.63	0.652	1.6
Edge 1 (Top)	RMC 12.2kbps	9400	1880	-0.38	0.066	23	22.63	0.072	1.6
Edge 2(Right)	RMC 12.2kbps	9400	1880	0.14	0.480	23	22.63	0.523	1.6
Edge 3(Bottom)	RMC 12.2kbps	9400	1880	0.31	0.653	23	22.63	0.711	1.6
Edge 4(Left)	RMC 12.2kbps	9400	1880	0.22	0.236	23	22.63	0.257	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation for body is 0mm of all above table.

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: tablet PC									
Test Mode: WCDMA Band V with QPSK modulation									
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	RMC 12.2kbps	4183	836.6	-0.85	0.289	23	22.68	0.311	1.6
Left Tilt	RMC 12.2kbps	4183	836.6	1.26	0.066	23	22.68	0.071	1.6
Right Cheek	RMC 12.2kbps	4183	836.6	-0.96	0.128	23	22.68	0.138	1.6
Right Tilt	RMC 12.2kbps	4183	836.6	-0.23	0.052	23	22.68	0.056	1.6
Body back	RMC 12.2kbps	4132	826.4	0.56	0.922	23	22.71	0.986	1.6
Body back	RMC 12.2kbps	4183	836.6	0.11	0.951	23	22.68	1.024	1.6
Body back	RMC 12.2kbps	4233	846.6	-0.87	0.913	23	22.64	0.992	1.6
Body front	RMC 12.2kbps	4183	836.6	0.14	0.462	23	22.68	0.497	1.6
Edge 1 (Top)	RMC 12.2kbps	4183	836.6	-0.63	0.020	23	22.68	0.022	1.6
Edge 2(Right)	RMC 12.2kbps	4183	836.6	0.91	0.341	23	22.68	0.367	1.6
Edge 3(Bottom)	RMC 12.2kbps	4132	826.4	0.49	0.761	23	22.68	0.819	1.6
Edge 3(Bottom)	RMC 12.2kbps	4183	836.6	0.49	0.767	23	22.68	0.826	1.6
Edge 3(Bottom)	RMC 12.2kbps	4233	846.6	0.49	0.762	23	22.68	0.820	1.6
Edge 4(Left)	RMC 12.2kbps	4183	836.6	0.92	0.133	23	22.68	0.143	1.6

Note:

- When the 1-g Reported SAR is ≤ 0.8 W/kg, testing for low and high channel is optional. Refer to KDB 447498.
- The test separation for body is 0mm of all above table.

Repeated SAR								
Product: tablet PC								
Test Mode: WCDMA Band II & WCDMA Band V with QPSK modulation								
Position	Mode	Ch.	Fr. (MHz)	Power Drift (<±5%)	Once SAR (1g) (W/kg)	Twice SAR (1g) (W/kg)	Third SAR (1g) (W/kg)	Limit W/kg
Body back	RMC 12.2kbps	9538	1907.6	0.68	0.997	--	--	1.6
Body back	RMC 12.2kbps	4183	836.6	-0.52	0.862	--	--	1.6

SAR MEASUREMENT									
Depth of Liquid (cm):>15									
Product: tablet PC									
Test Mode:802.11b									
Position	Mode	Ch.	Fr. (MHz)	Power Drift ($\leq \pm 5\%$)	SAR (1g) (W/kg)	Max. Turn-up Power (dBm)	Meas. output Power (dBm)	Scaled SAR (W/Kg)	Limit W/kg
SIM 1 Card									
Left Cheek	DTS	6	2437	-0.25	0.165	10	9.89	0.166	1.6
Left Tilt	DTS	6	2437	1.39	0.286	10	9.89	0.287	1.6
Right Cheek	DTS	6	2437	-1.23	0.206	10	9.89	0.207	1.6
Right Tilt	DTS	6	2437	0.64	0.295	10	9.89	0.296	1.6
Body back	DTS	6	2437	0.28	0.117	10	9.89	0.118	1.6
Body front	DTS	6	2437	1.69	0.105	10	9.89	0.106	1.6
Edge 1 (Top)	DTS	6	2437	-0.23	0.176	10	9.89	0.177	1.6
Edge 2(Right)	DTS	6	2437	0.32	0.050	10	9.89	0.050	1.6
Edge 3(Bottom)	DTS	6	2437	-0.85	0.116	10	9.89	0.117	1.6
Edge 4(Left)	DTS	6	2437	-0.21	0.093	10	9.89	0.093	1.6

Note:

- According to KDB248227, SAR is not required for 802.11n HT20/HT40 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels.
- All of above "DTS" means data transmitters.
- The test separation of all above table for body part is 0mm.

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

NO	Simultaneous state	Portable Handset			Note
		Head	Body-worn	Hotspot	
1	GSM(voice)+WLAN 2.4GHz (data)	Yes	Yes	-	-
2	WCDMA(voice)+WLAN 2.4GHz (data)	Yes	Yes	-	-
3	GSM(voice)+Bluetooth(data)	Yes	Yes	-	-
4	WCDMA(voice)+Bluetooth(data)	Yes	Yes	-	-
5	GPRS/EGDE(Data)+Bluetooth(data)	-	Yes	Yes	2.4GHz Hotspot
6	GPRS/EGDE(Data)+WLAN 2.4GHz (data)	-	Yes	Yes	2.4GHz Hotspot
7	WCDMA (Data)+Bluetooth(data)	-	Yes	Yes	2.4GHz Hotspot
8	WCDMA (Data)+WLAN 2.4GHz (data)	-	Yes	Yes	2.4GHz Hotspot

NOTE:

1. WLAN and BT share the same antenna, and cannot transmit simultaneously.
2. Simultaneous with every transmitter must be the same test position.
3. KDB 447498 D01, BT SAR is excluded as below table.
4. KDB 447498 D01, for handsets the test separation distance is determined by the smallest distance between the outer surface of the device and the user; which is 0mm for head SAR and 10mm for body-worn SAR.
5. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
6. According to KDB447497 D01 4.3.2, simultaneous transmission SAR test exclusion is as follow:
 - (1) Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.
 - (2) Any transmitters and antennas should be considered when calculating simultaneous mode.
 - (3) For mobile phone and PC, it's the sum of all transmitters and antennas at the same mode with same position in each applicable exposure condition
 - (4) When the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:

$$(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})}/x] \text{ W/kg for test separation distances } \leq 50 \text{ mm};$$

where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
7. When the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion. The ratio is determined by $(\text{SAR}_1 + \text{SAR}_2)^{1.5}/R_i$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

Estimated SAR		Maximum Average Power		Antenna to user (mm)	SAR exclusion threshold (mW)	SAR testing required (Yes/No)	Head (0mm gap)	Body (0mm gap)
		dBm	mW					
BT	Head	6	3.981	0	10	NO	0.167 W/kg	0.167 W/kg
	Body			0	10	NO		

Maximum test results (WWAN) with BT and WIFI SAR:

BT: Head (0 cm gap): 0.167 W/kg and Body (0cm gap): 0.167 W/kg



Sum of the SAR for GSM 850 & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		GSM 850 Band	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.202	0.166		0.368	No
	Left Tilt	0.156	0.287		0.443	No
	Right Touch	0.160	0.207		0.367	No
	Right Tilt	0.179	0.296		0.475	No
	Left Touch	0.202		0.167	0.369	No
	Left Tilt	0.156		0.167	0.323	No
	Right Touch	0.160		0.167	0.327	No
	Right Tilt	0.179		0.167	0.346	No
Body-worn	Rear	0.628	0.118		0.746	No
		0.628		0.167	0.795	No
	Front	0.497	0.106		0.603	No
		0.497		0.167	0.664	No
	Edge 2(Right)	0.231	0.050		0.281	No
		0.231		0.167	0.398	No
	Edge 4(Left)	0.108	0.093		0.201	No
		0.108		0.167	0.275	No
	Edge 3(Bottom)	0.428	0.177		0.605	No
		0.428		0.167	0.595	No
	Edge 1 (Top)	0.143	0.117		0.26	No
		0.143		0.167	0.31	No
Hotspot	Rear	0.385	0.118		0.503	No
		0.385		0.167	0.552	No
	Front	0.167	0.106		0.273	No
		0.167		0.167	0.334	No
	Edge 1	0.053	0.177		0.23	No
	Edge 2	0.397	0.050		0.447	No
	Edge 3	0.398	0.117		0.515	No
	Edge 4	0.097	0.093		0.19	No
	Edge 1	0.053		0.167	0.22	No
	Edge 2	0.397		0.167	0.564	No
	Edge 3	0.398		0.167	0.565	No
	Edge 4	0.097		0.167	0.264	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for PCS 1900 & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		PCS1900 Band	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.267	0.166		0.433	No
	Left Tilt	0.060	0.287		0.347	No
	Right Touch	0.176	0.207		0.383	No
	Right Tilt	0.079	0.296		0.375	No
	Left Touch	0.267		0.167	0.434	No
	Left Tilt	0.060		0.167	0.227	No
	Right Touch	0.176		0.167	0.343	No
	Right Tilt	0.079		0.167	0.246	No
Body-worn	Rear	0.647	0.118		0.765	No
		0.647		0.167	0.814	No
	Front	0.446	0.106		0.552	No
		0.446		0.167	0.613	No
	Edge 2(Right)	0.225	0.050		0.275	No
		0.225		0.167	0.392	No
	Edge 4(Left)	0.025	0.093		0.118	No
		0.025		0.167	0.192	No
	Edge 3(Bottom)	0.468	0.177		0.645	No
		0.468		0.167	0.635	No
	Edge 1 (Top)	0.036	0.117		0.153	No
		0.036		0.167	0.203	No
Hotspot	Rear	0.403	0.118		0.521	No
		0.403		0.167	0.57	No
	Front	0.180	0.106		0.286	No
		0.180		0.167	0.347	No
	Edge 1	0.021	0.177		0.198	No
	Edge 2	0.025	0.050		0.075	No
	Edge 3	0.732	0.117		0.849	No
	Edge 4	0.328	0.093		0.421	No
	Edge 1	0.021		0.167	0.188	No
	Edge 2	0.025		0.167	0.192	No
	Edge 3	0.732		0.167	0.899	No
	Edge 4	0.328		0.167	0.495	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio"

Sum of the SAR for WCDMA Band II & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		WCDMA Band II	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.193	0.166		0.359	No
	Left Tilt	0.029	0.287		0.316	No
	Right Touch	0.501	0.207		0.708	No
	Right Tilt	0.091	0.296		0.387	No
	Left Touch	0.193		0.167	0.360	No
	Left Tilt	0.029		0.167	0.196	No
	Right Touch	0.501		0.167	0.668	No
	Right Tilt	0.091		0.167	0.258	No
Body-worn	Rear	1.181	0.118		1.299	No
		1.181		0.167	1.348	No
	Front	0.652	0.106		0.758	No
		0.652		0.167	0.819	No
	Edge 1	0.072	0.177		0.249	No
	Edge 2	0.523	0.050		0.573	No
	Edge 3	0.711	0.117		0.828	No
	Edge 4	0.257	0.093		0.35	No
	Edge 1	0.072		0.167	0.239	No
	Edge 2	0.523		0.167	0.69	No
	Edge 3	0.711		0.167	0.878	No
	Edge 4	0.257		0.167	0.424	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

Sum of the SAR for WCDMA Band V & Wi-Fi & BT:

RF Exposure Conditions	Test Position	Simultaneous Transmission Scenario			Σ 1-g SAR (W/Kg)	SPLSR (Yes/No)
		WCDMA Band V	Wi-Fi DTS Band	Bluetooth		
Head	Left Touch	0.311	0.166		0.477	No
	Left Tilt	0.071	0.287		0.358	No
	Right Touch	0.138	0.207		0.345	No
	Right Tilt	0.056	0.296		0.352	No
	Left Touch	0.311		0.167	0.478	No
	Left Tilt	0.071		0.167	0.238	No
	Right Touch	0.138		0.167	0.305	No
	Right Tilt	0.056		0.167	0.223	No
Body-worn	Rear	1.024	0.118		1.142	No
		1.024		0.167	1.191	No
	Front	0.497	0.106		0.603	No
		0.497		0.167	0.664	No
	Edge 1	0.022	0.177		0.199	No
	Edge 2	0.367	0.050		0.417	No
	Edge 3	0.826	0.117		0.943	No
	Edge 4	0.143	0.093		0.236	No
	Edge 1	0.022		0.167	0.189	No
	Edge 2	0.367		0.167	0.534	No
	Edge 3	0.826		0.167	0.993	No
	Edge 4	0.143		0.167	0.31	No

Note:

- According to KDB 447498 D01 General RF Exposure Guidance, when the simultaneous transmission SAR is less than 1.6 W/Kg, SPLSR assessment is not required.
- SPLSR mean is "The SAR to Peak Location Separation Ratio "

APPENDIX A. SAR SYSTEM VALIDATION DATA

System Check Head 835 MHz

Date: Mar. 02,2015

DUT: Dipole 835 MHz Type: SID 835

Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=4.83

Frequency: 835 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ ho/m; $\epsilon_r = 41.70$ 1000 kg/m³ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):21.5, Liquid temperature (°C): 22.8

SATIMO Configuration

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

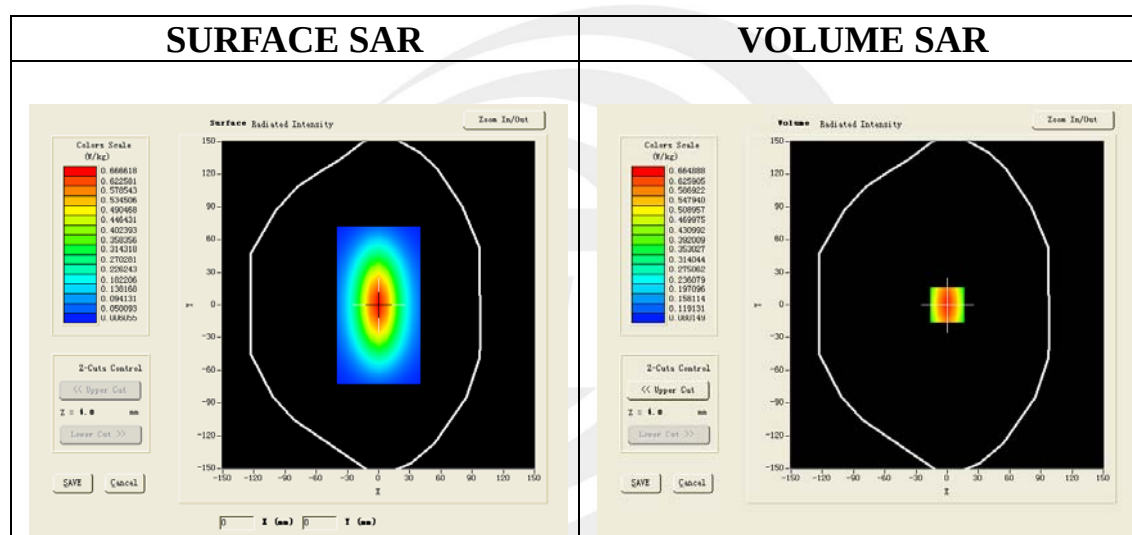
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

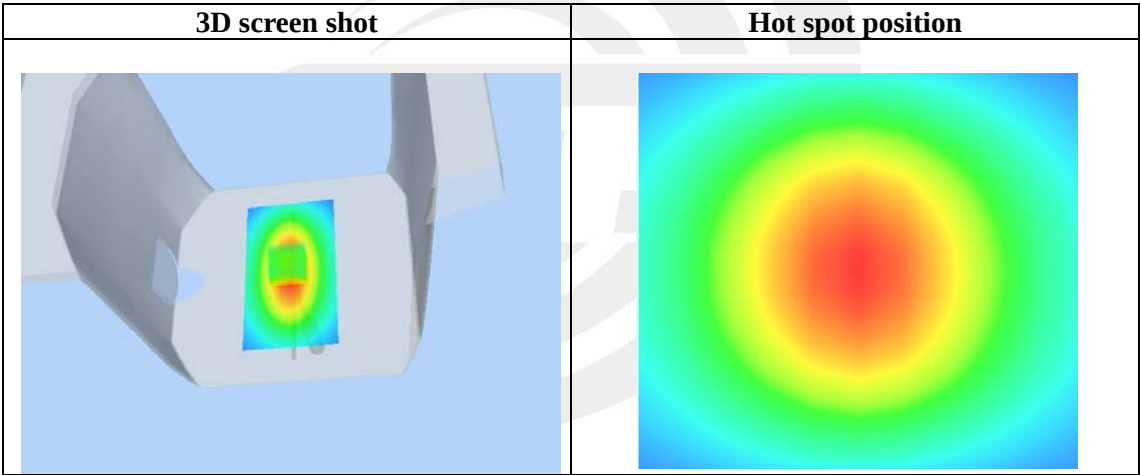
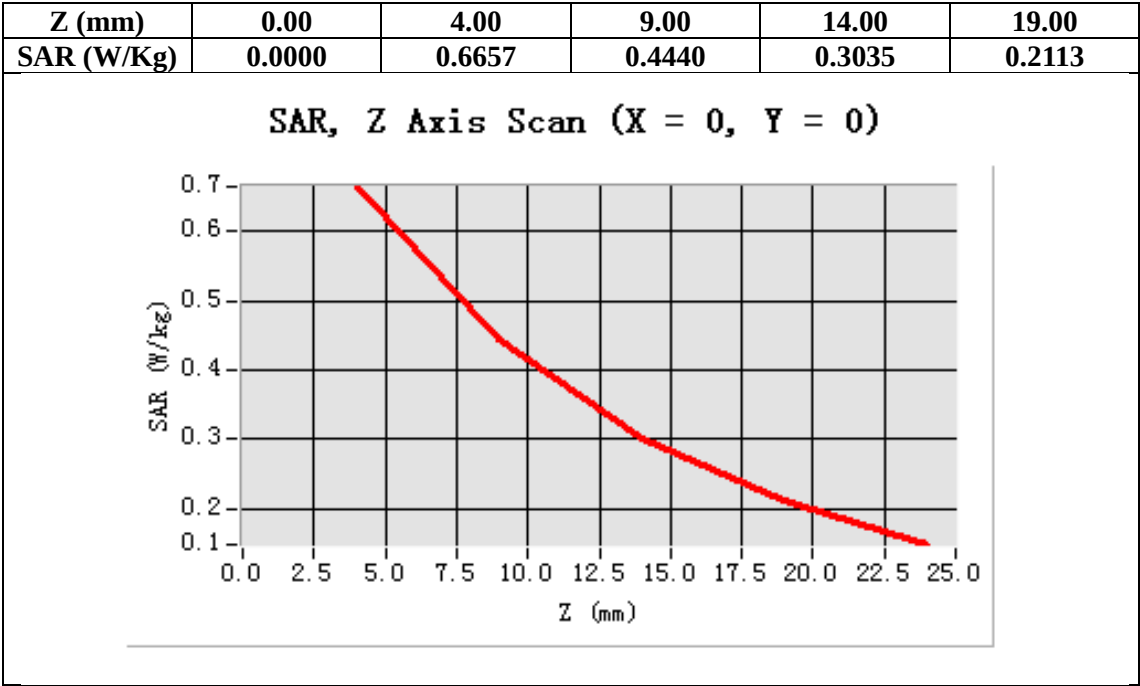
Configuration/System Check 835 Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/System Check 835 Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	0.400013
SAR 1g (W/Kg)	0.631256



System Check Body 835 MHz

Date: Dec. 20,2014

DUT: Dipole 835 MHz Type: SID 835

Communication System CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1; Conv.F=5.02

Frequency: 835 MHz; Medium parameters used: $f = 835 \text{ MHz}$; $\sigma=0.95 \text{ mho/m}$; $\epsilon_r=56.751000 \text{ kg/m}^3$;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature ($^{\circ}\text{C}$):21.3, Liquid temperature ($^{\circ}\text{C}$): 21.3

SATIMO Configuration

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

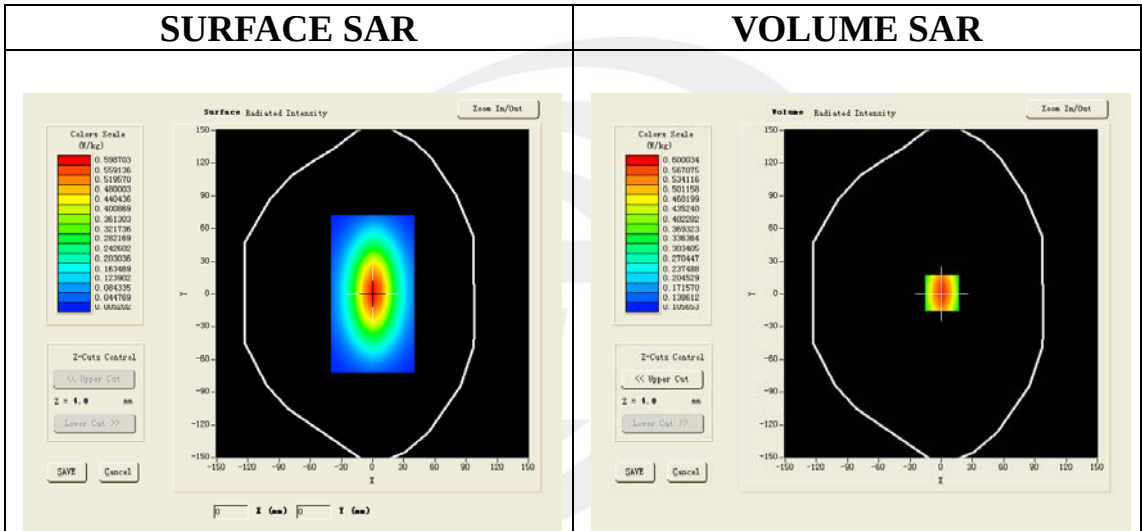
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

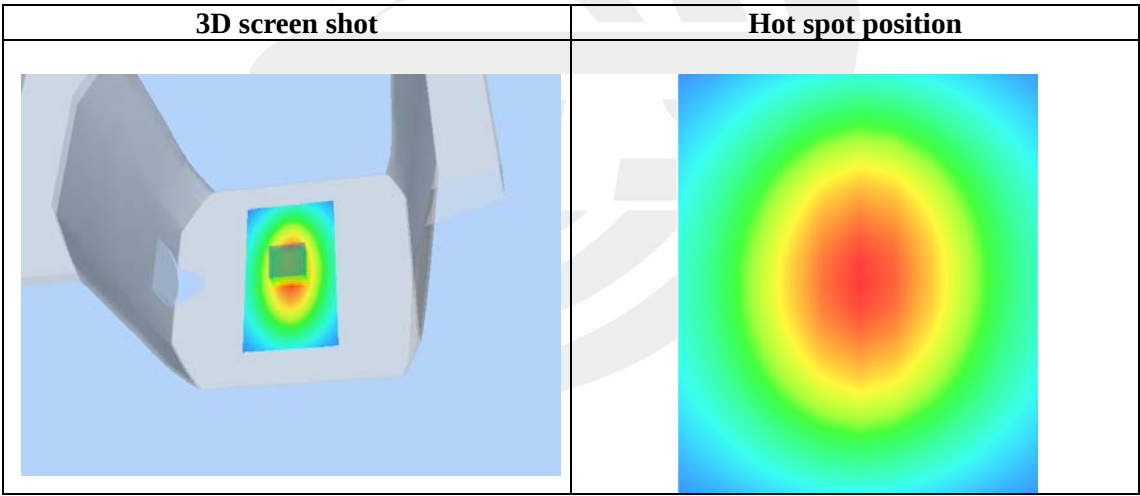
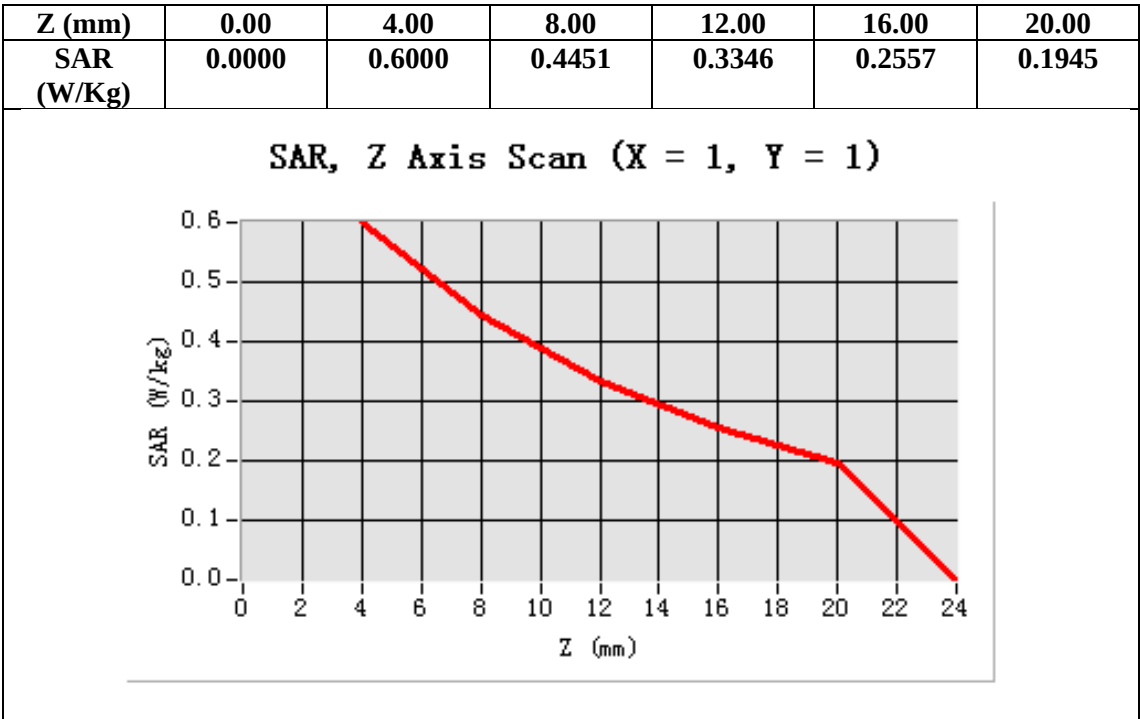
Configuration/System Check 835 Body/Area Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$

Configuration/System Check 835 Body/Zoom Scan: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$



Maximum location: X=1.00, Y=1.00

SAR 10g (W/Kg)	0.388198
SAR 1g (W/Kg)	0.581861



System Check Head 1900MHz

Date: Mar. 03,2015

DUT: Dipole 1900 MHz; Type: SID 1900

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=4.71

Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.40$ mho/m; $\epsilon_r = 40.891000$ kg/m³ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):22.9, Liquid temperature (°C): 23.1

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

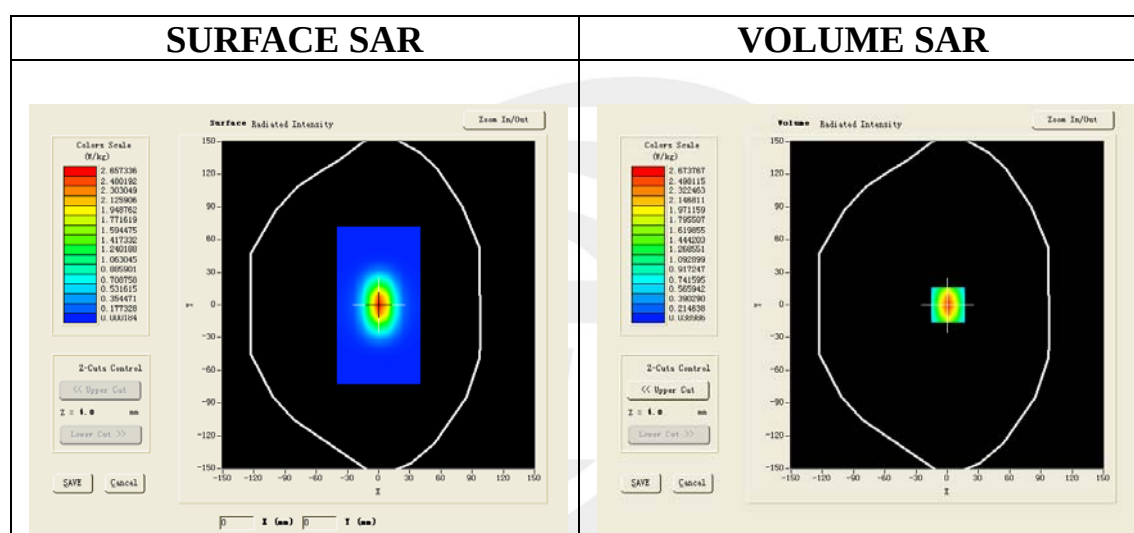
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

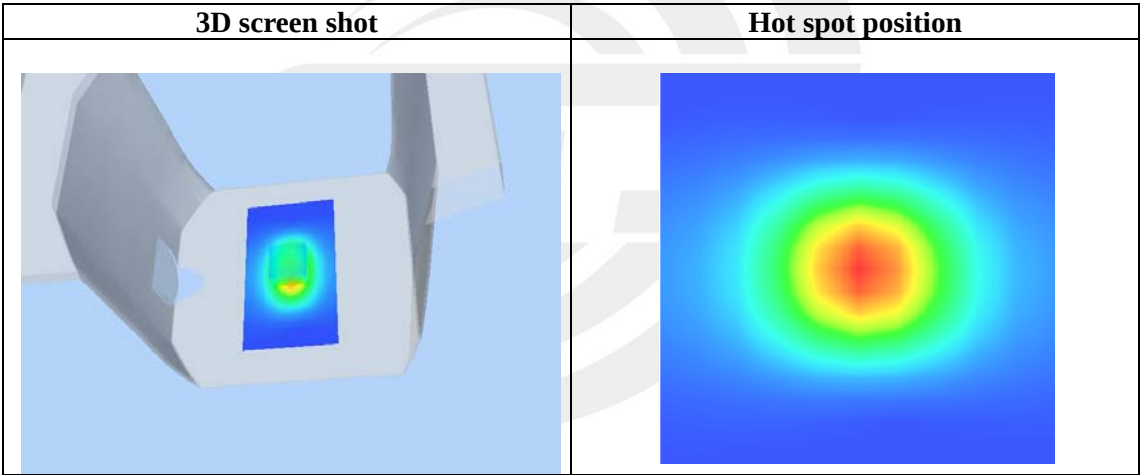
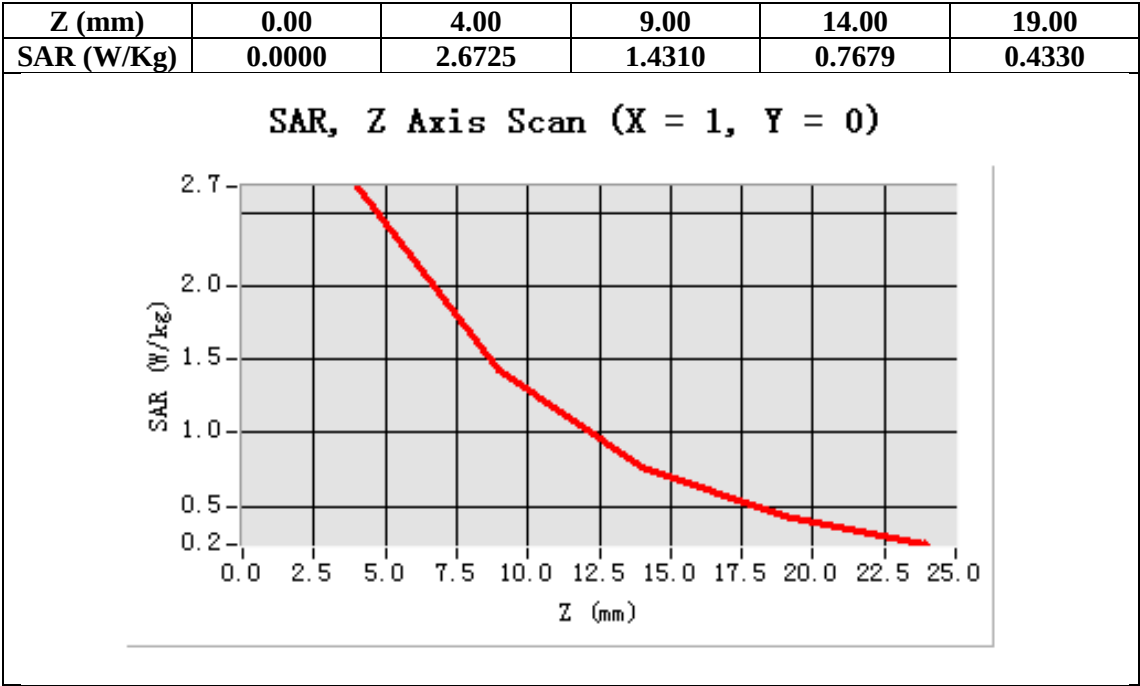
Configuration/System Check 1900 Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/System Check 1900 Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	1.205237
SAR 1g (W/Kg)	2.448014



System Check Body 1900MHz

Date: Dec. 23,2014

DUT: Dipole 1900 MHz; Type: SID 1900

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle:1:1; Conv.F=4.85

Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma=1.54\text{ho/m}$; $\epsilon_r=53.44$ 1000 kg/m³ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C):20.1, Liquid temperature (°C): 20

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

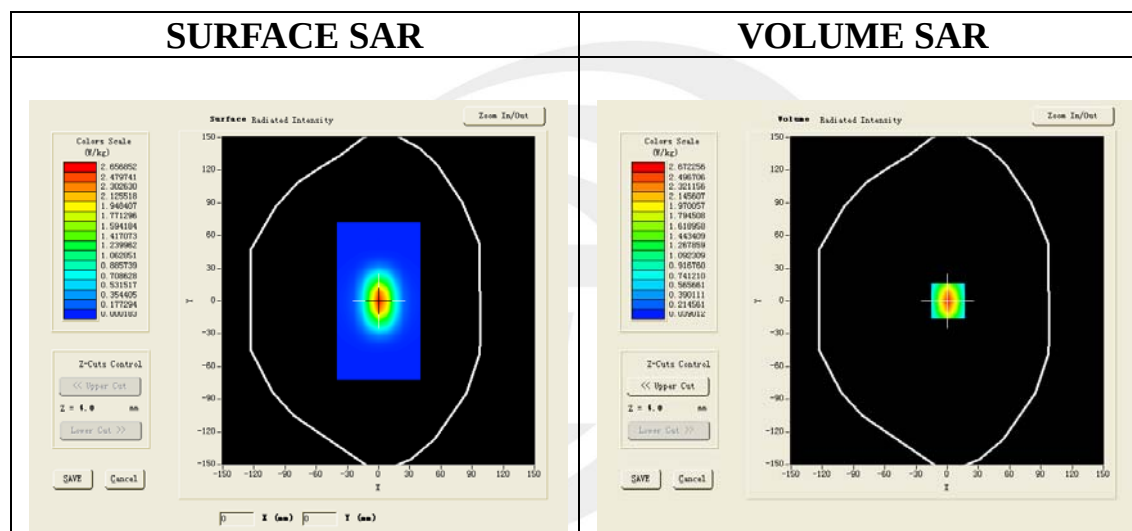
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

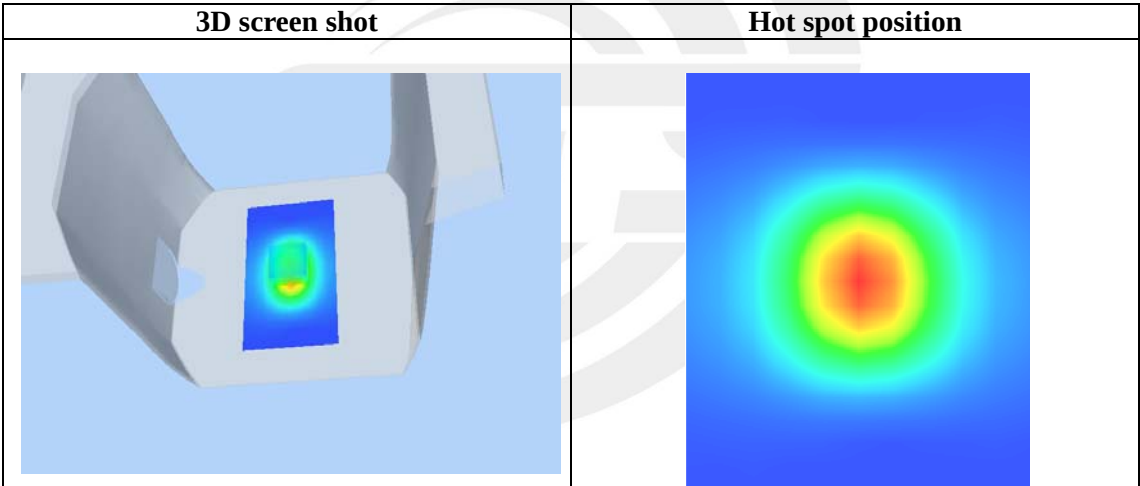
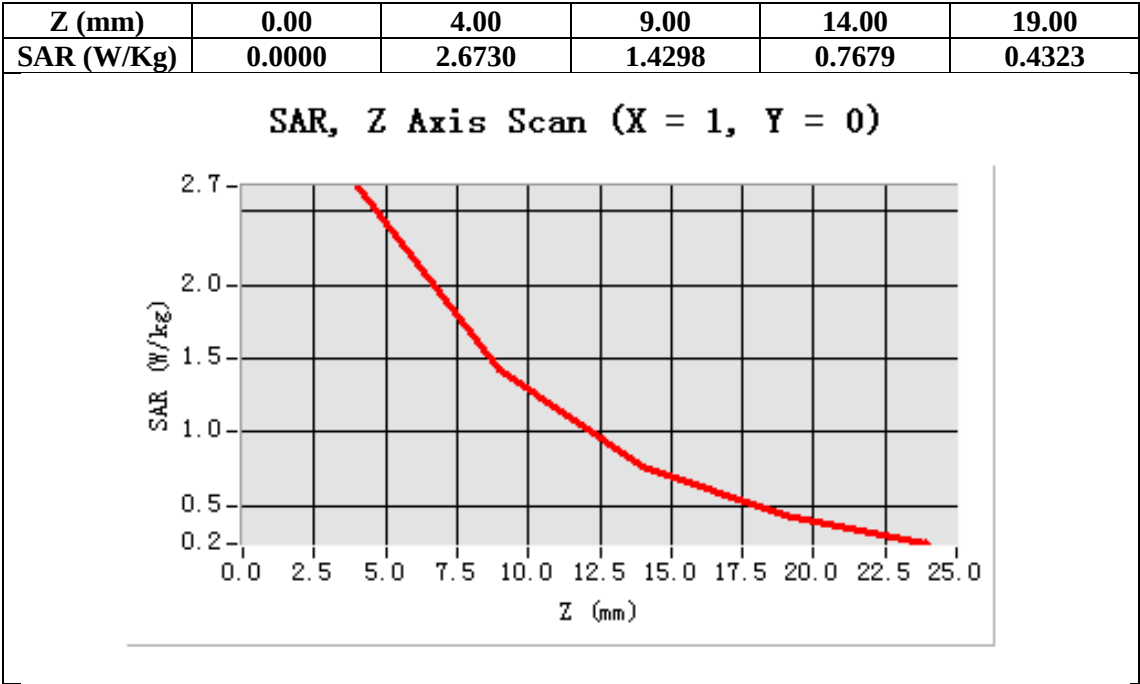
Configuration/System Check 1900 Body/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/System Check 1900 Body/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	1.218963
SAR 1g (W/Kg)	2.446211



System Check Head 2450 MHz

Date: Mar. 02,2015

DUT: Dipole 2450 MHz Type: SID 2450

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=4.16

Frequency: 2450 MHz; Medium parameters used: $f = 2450$ MHz; $\sigma = 1.82$ mho/m; $\epsilon_r = 39.77$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section; Input Power=18dBm

Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/03/2014; Serial No.:SN22/12 EP159

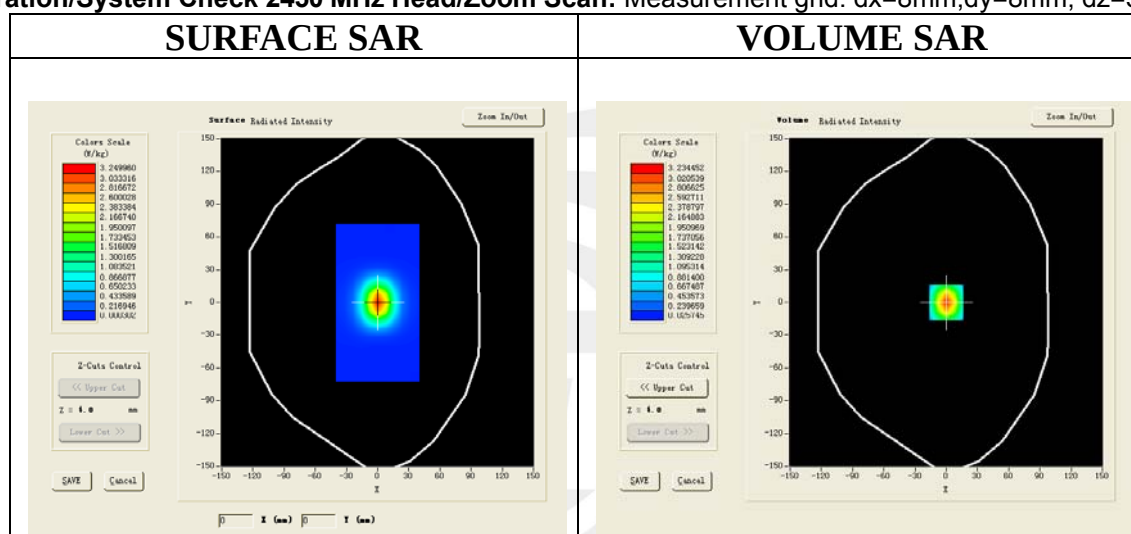
Sensor-Surface: 4mm (Mechanical Surface Detection)

Phantom: Flat Phantom; Type: Elliptical Phantom

Measurement SW: OpenSAR V4_02_01

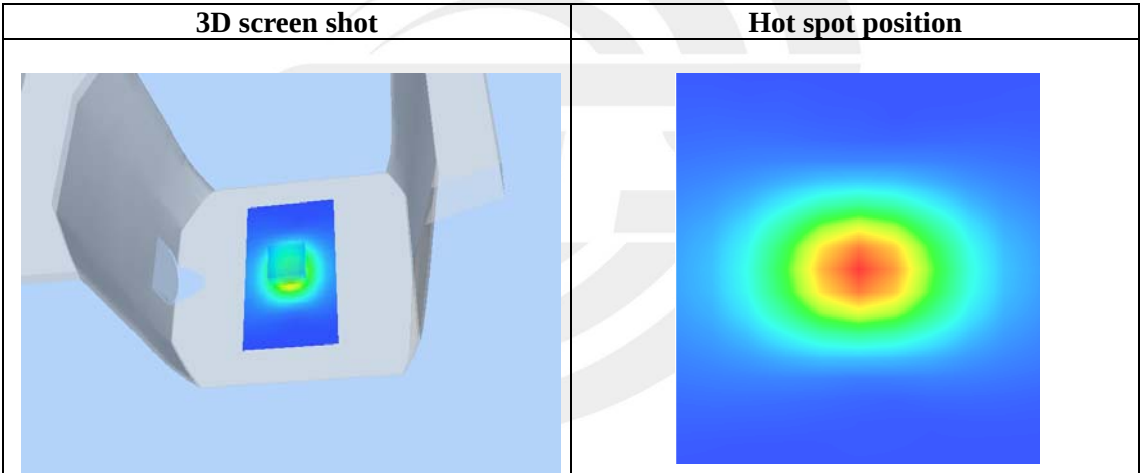
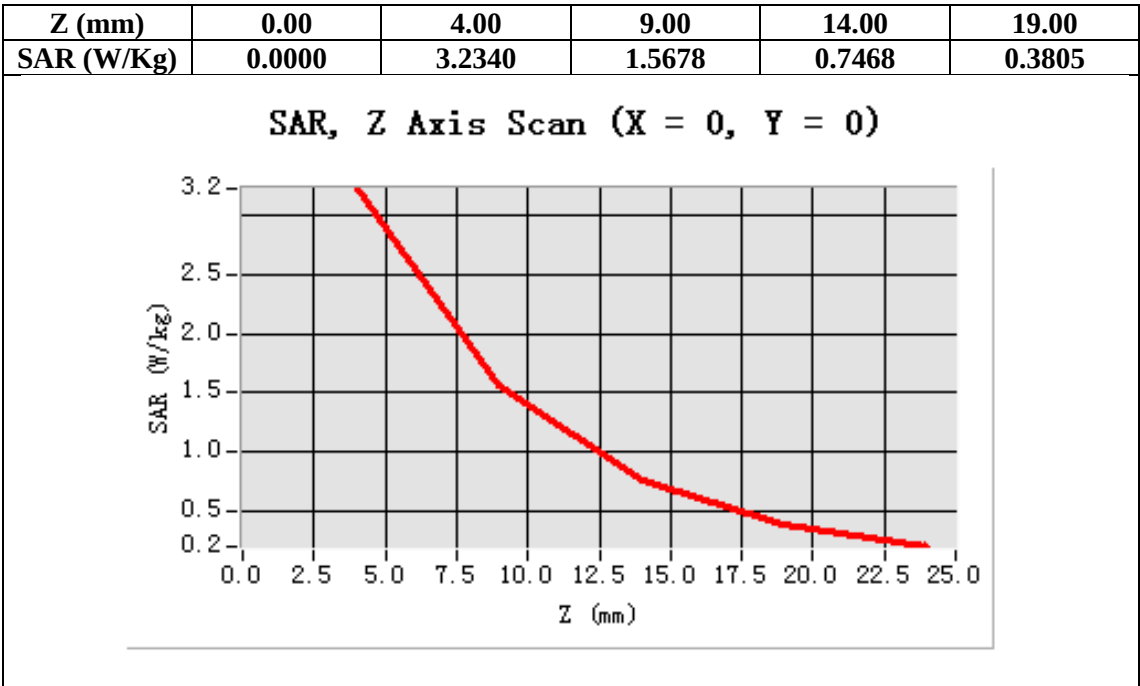
Configuration/System Check 2450 MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/System Check 2450 MHz Head/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.471019
SAR 1g (W/Kg)	3.205167



System Check Head 2450 MHz

Date: Feb. 12,2015

DUT: Dipole 2450 MHz Type: SID 2450

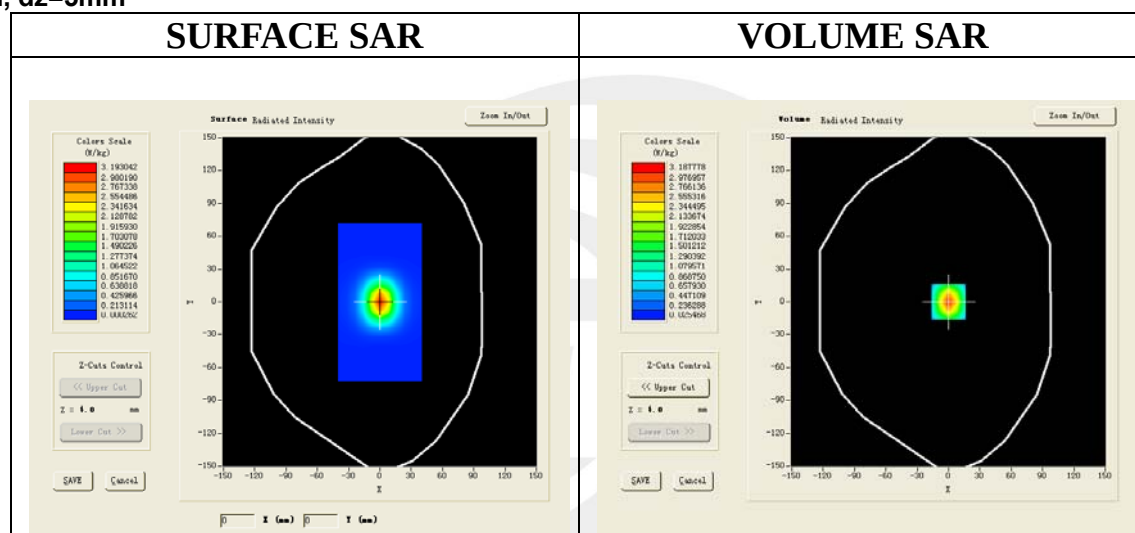
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=4.07
Frequency: 2450 MHz; Medium parameters used: $f = 2450$ MHz; $\sigma=1.92$ mho/m; $\epsilon_r=52.47$; $\rho= 1000$ kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (°C): 21, Liquid temperature (°C): 21

SATIMO Configuration:

Probe: SSE5; Calibrated: 12/03/2014; Serial No.:SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: Flat Phantom; Type: Elliptical Phantom
Measurement SW: OpenSAR V4_02_01

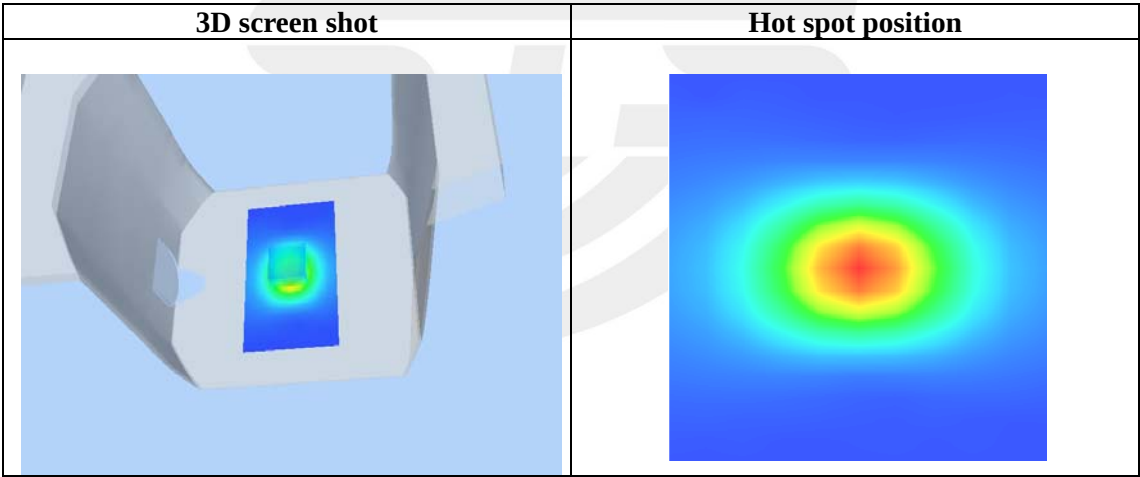
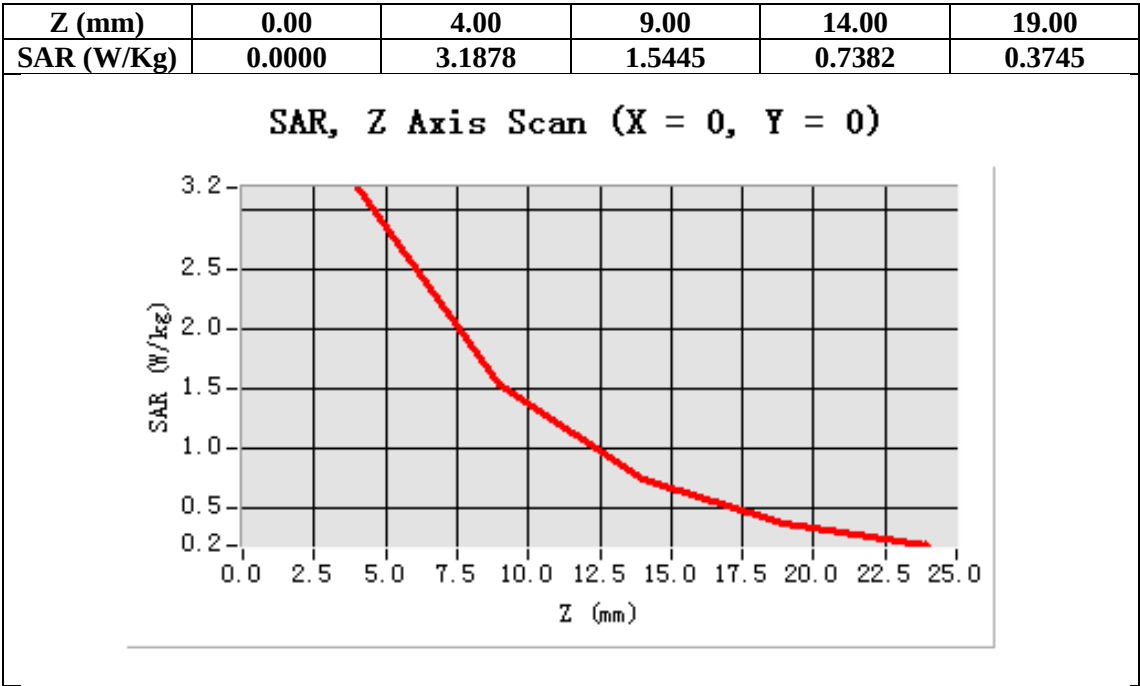
Configuration/System Check 2450 MHz Body/Area Scan: Measurement grid: dx=8mm,dy=8mm

Configuration/System Check 2450 MHz Body/Zoom Scan: Measurement grid: dx=8mm,
dy=8mm, dz=5mm



Maximum location: X=0.00, Y=0.00

SAR 10g (W/Kg)	1.448999
SAR 1g (W/Kg)	3.158301



APPENDIX B. SAR MEASUREMENT DATA

GSM 850 Mid-Touch-Left <SIM 1>

Date: Mar. 02,2015

DUT: tablet PC; Type: PC7088

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Left Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

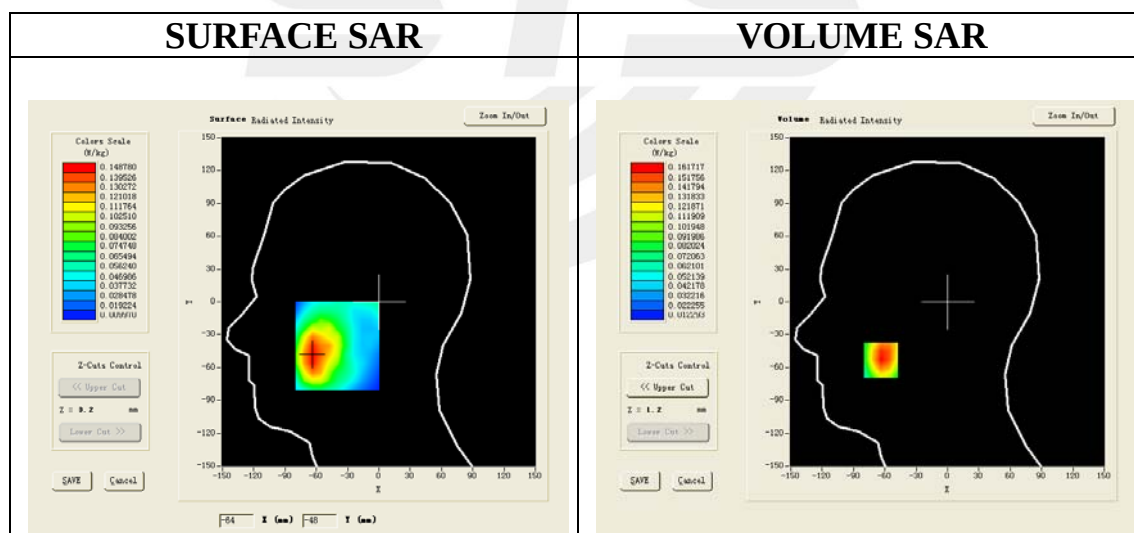
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Touch-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm

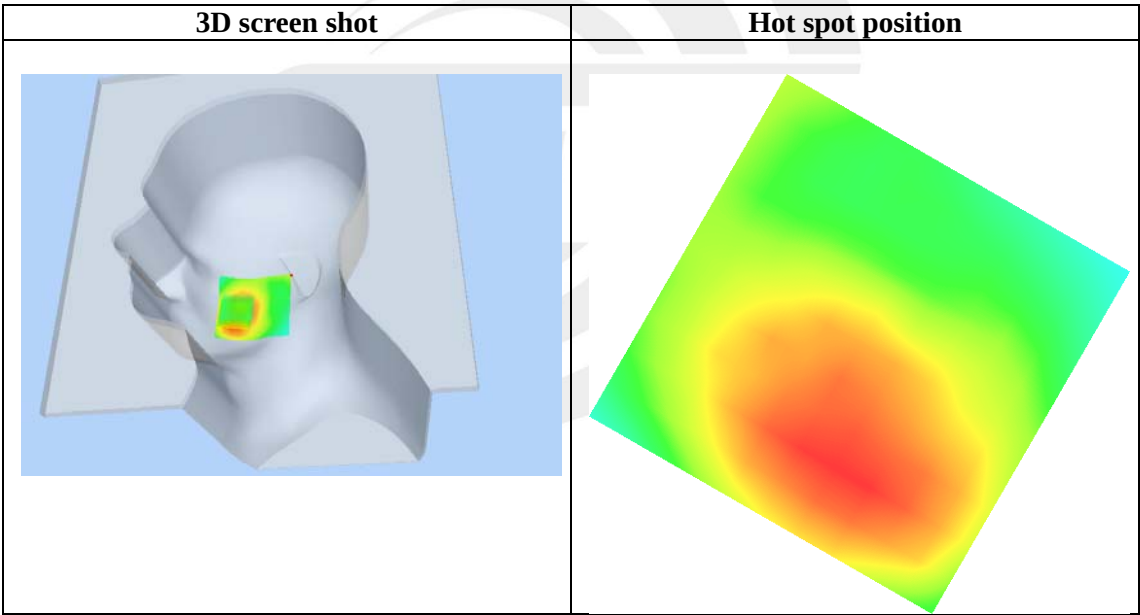
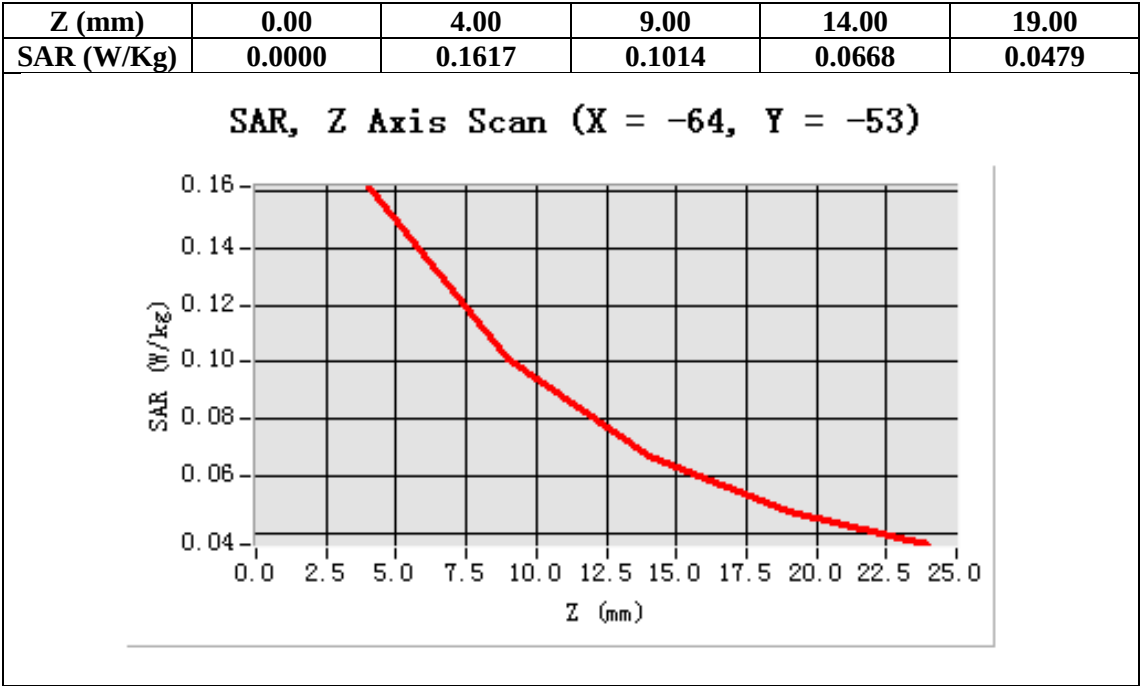
Configuration/GSM 850 Mid-Touch-Left/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=-64.00, Y=-53.00

SAR 10g (W/Kg)	0.096836
SAR 1g (W/Kg)	0.155107



GSM 850 Mid-Tilt-Left <SIM 1>
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=4.83 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³ ;
Phantom section: Left Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

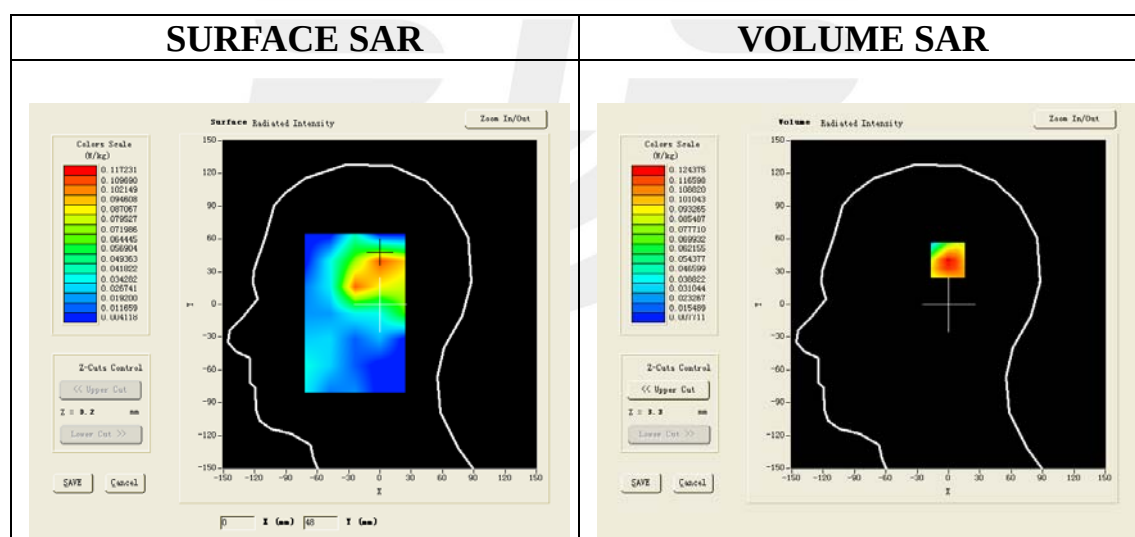
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Tilt-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm

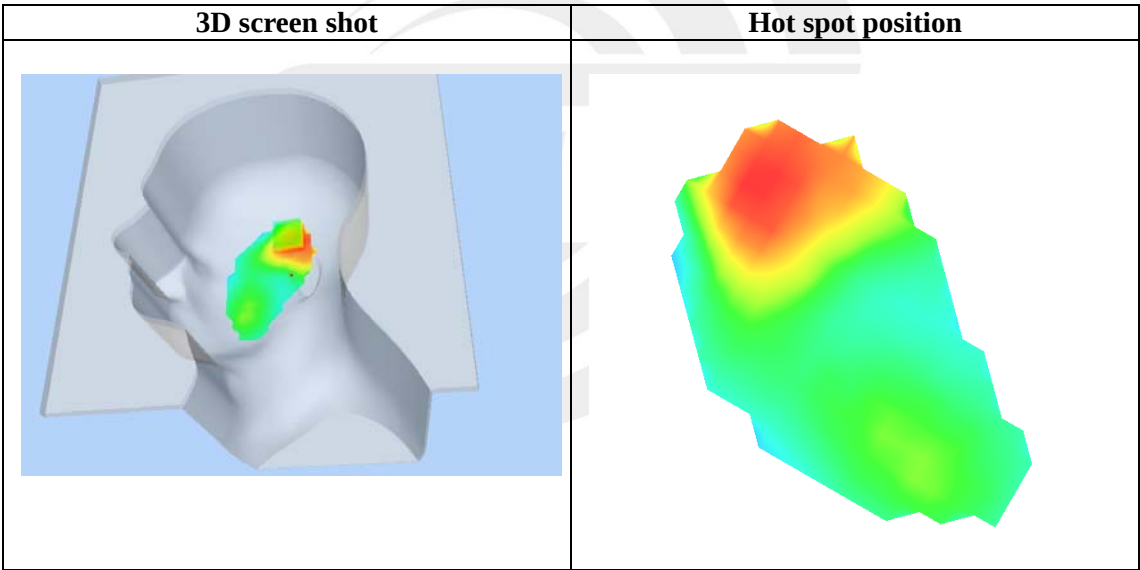
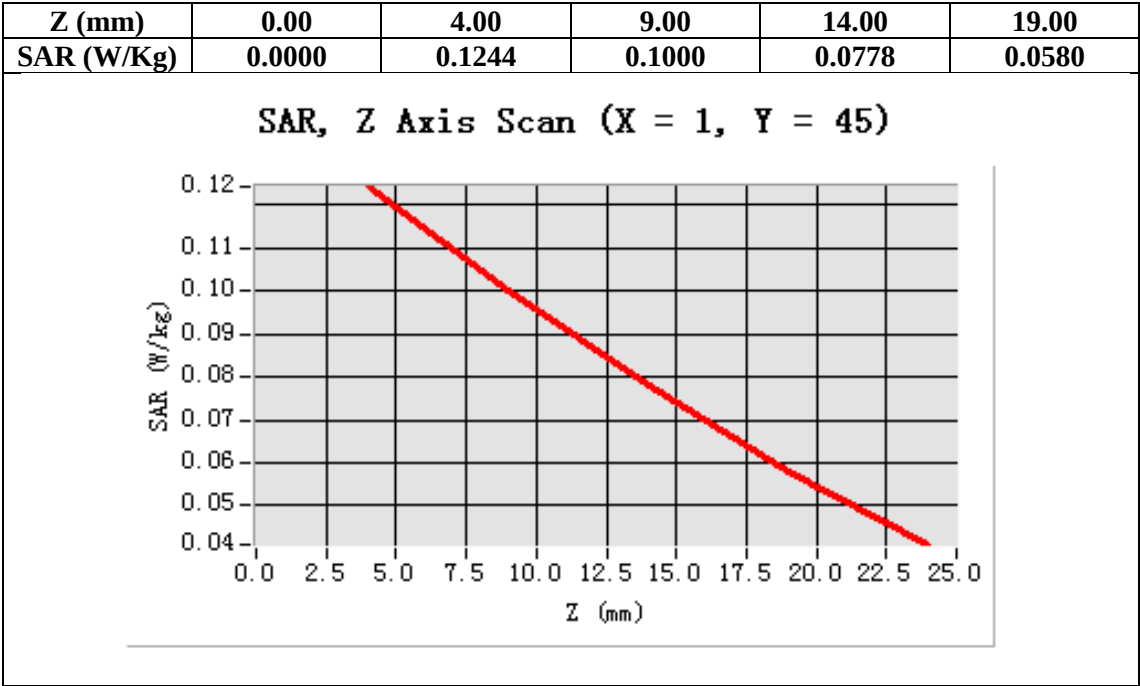
Configuration/GSM 850 Mid-Tilt-Left/Zoom Scan: Measurement grid: dx=8mm, dy=8mm,dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Tilt
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=1.00, Y=45.00

SAR 10g (W/Kg)	0.085299
SAR 1g (W/Kg)	0.119909



GSM 850 Mid- Touch-Right <SIM 1>
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

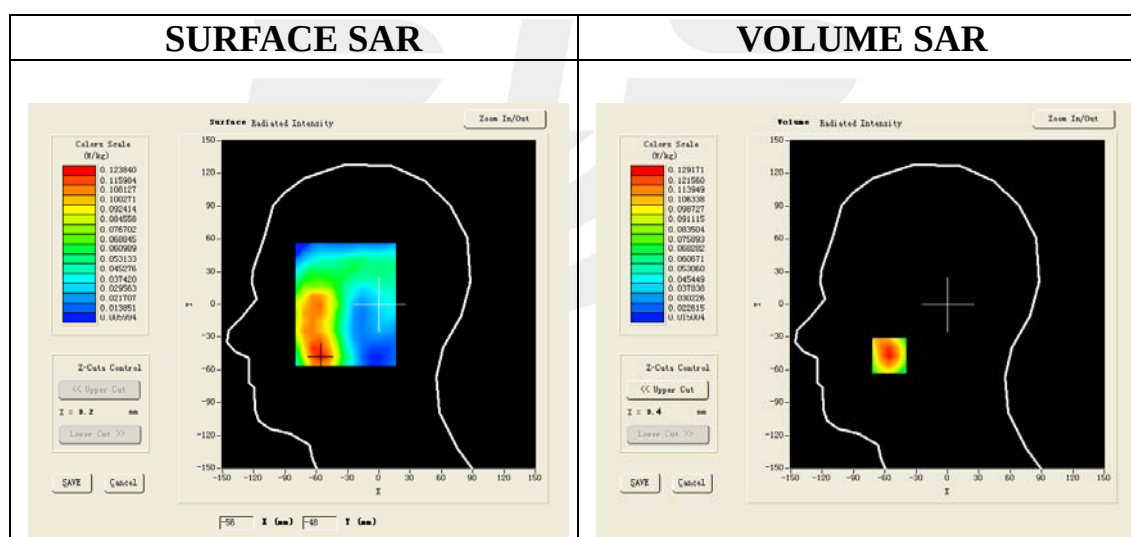
Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=4.83 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 41.35$; $\rho = 1000$ kg/m³ ;
Phantom section: Right Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM Twin Phantom
Measurement SW: OpenSAR V4_02_01

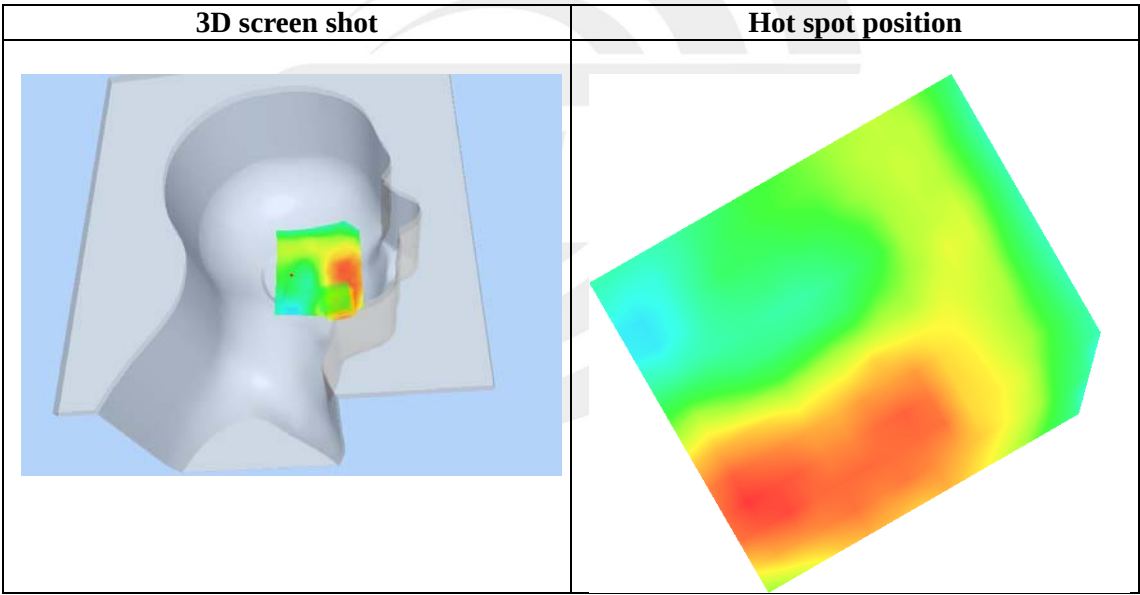
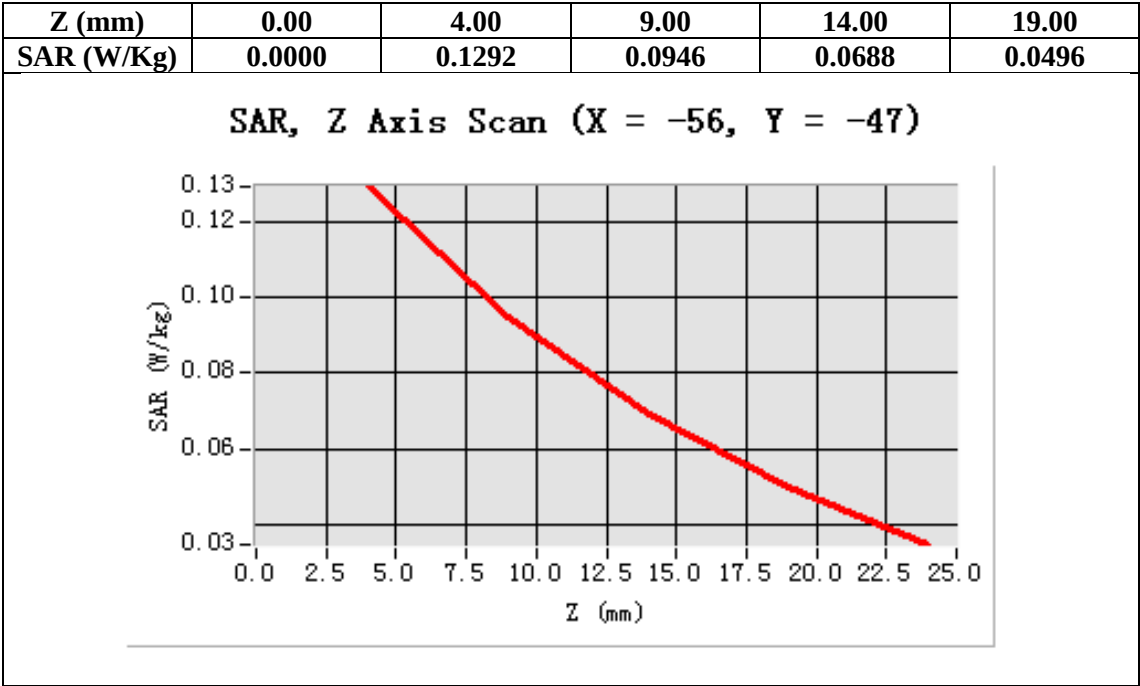
Configuration/GSM 850 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=-56.00, Y=-47.00

SAR 10g (W/Kg)	0.082410
SAR 1g (W/Kg)	0.122710



GSM 850 Mid-Tilt-Right <SIM 1>
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=4.83 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³ ;
Phantom section: Right Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

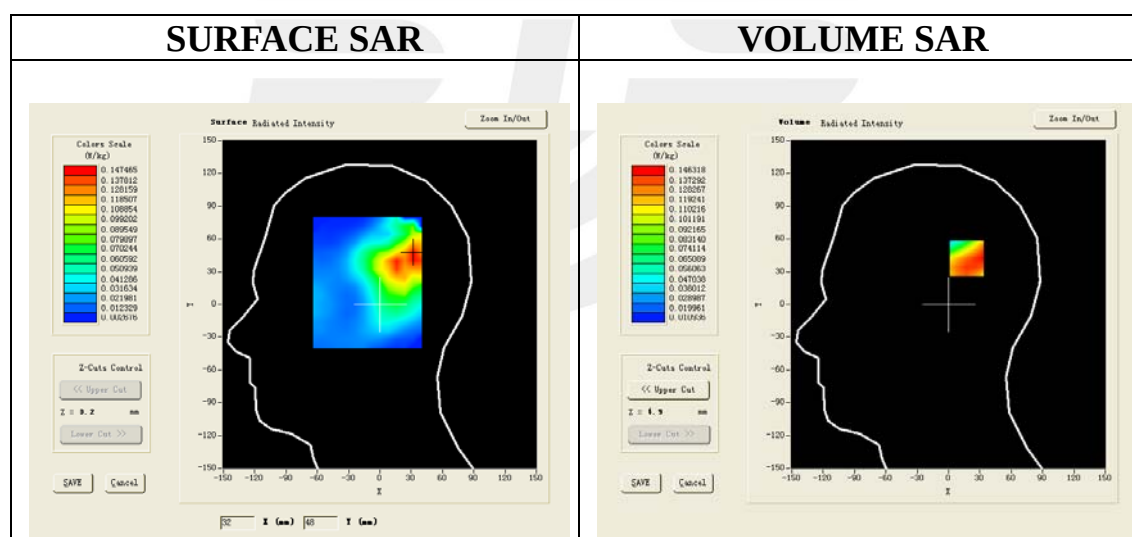
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Tilt-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm

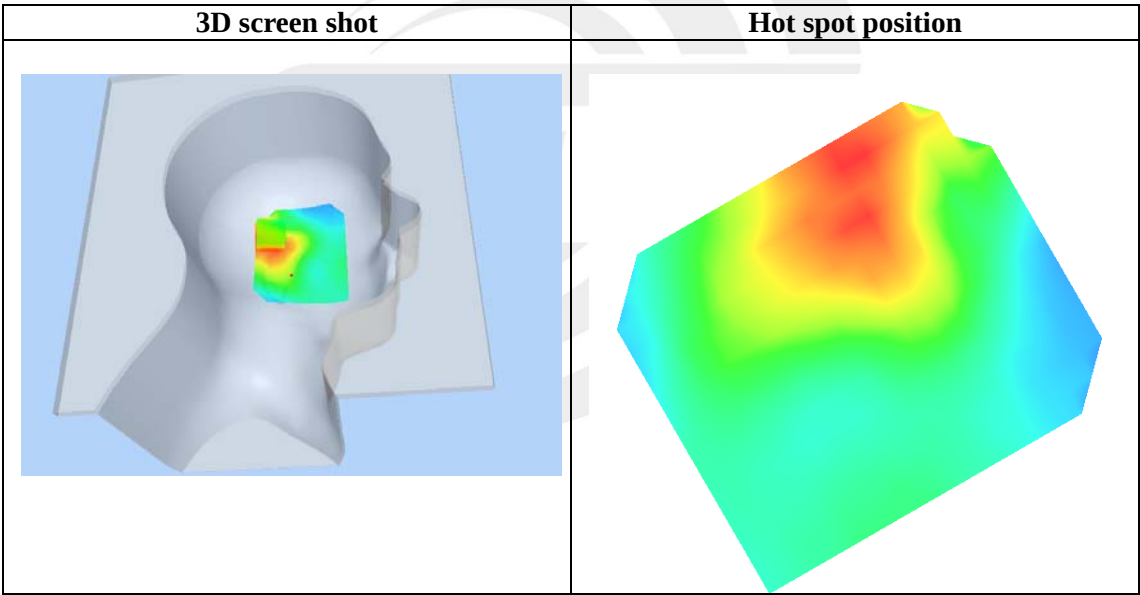
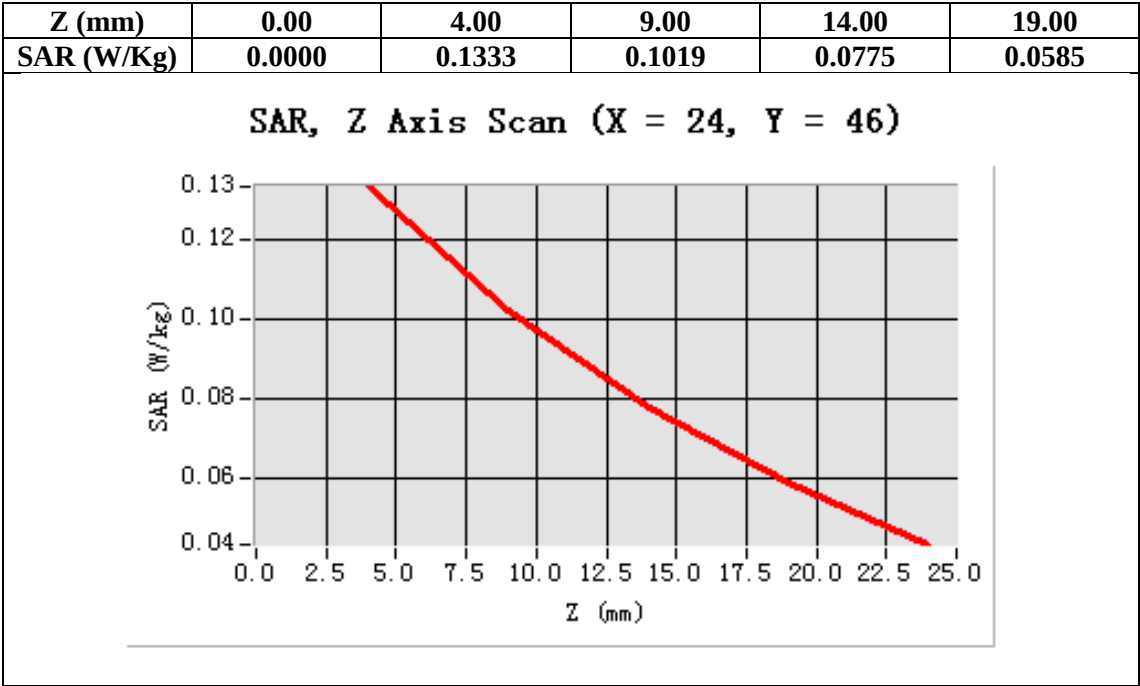
Configuration/GSM 850 Mid-Tilt-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Tilt
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=24.00, Y=46.00

SAR 10g (W/Kg)	0.096724
SAR 1g (W/Kg)	0.138108



GSM 850 Mid-Touch-Left <SIM 2>
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Left Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

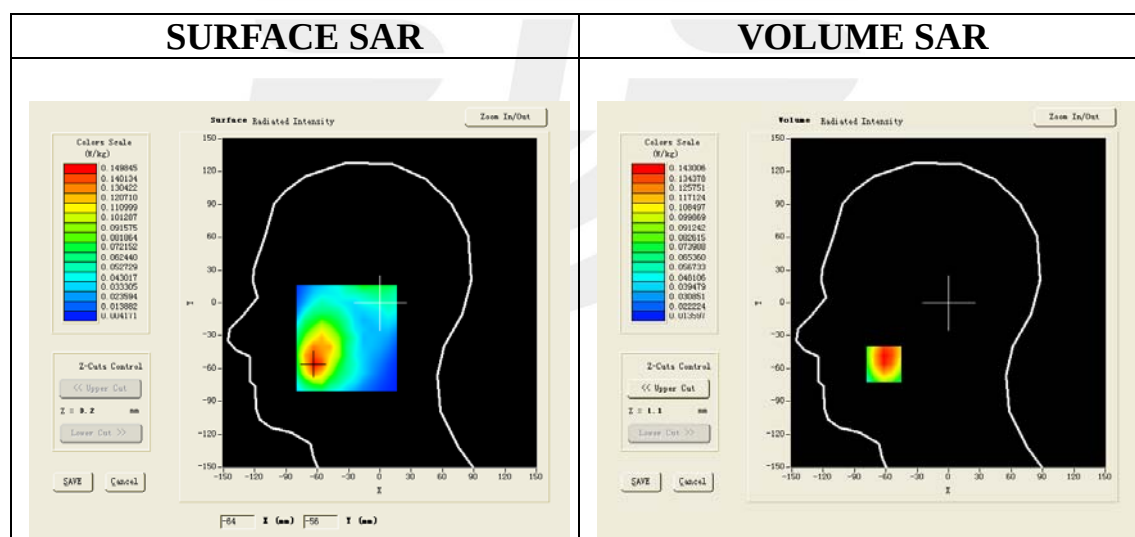
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Touch-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm

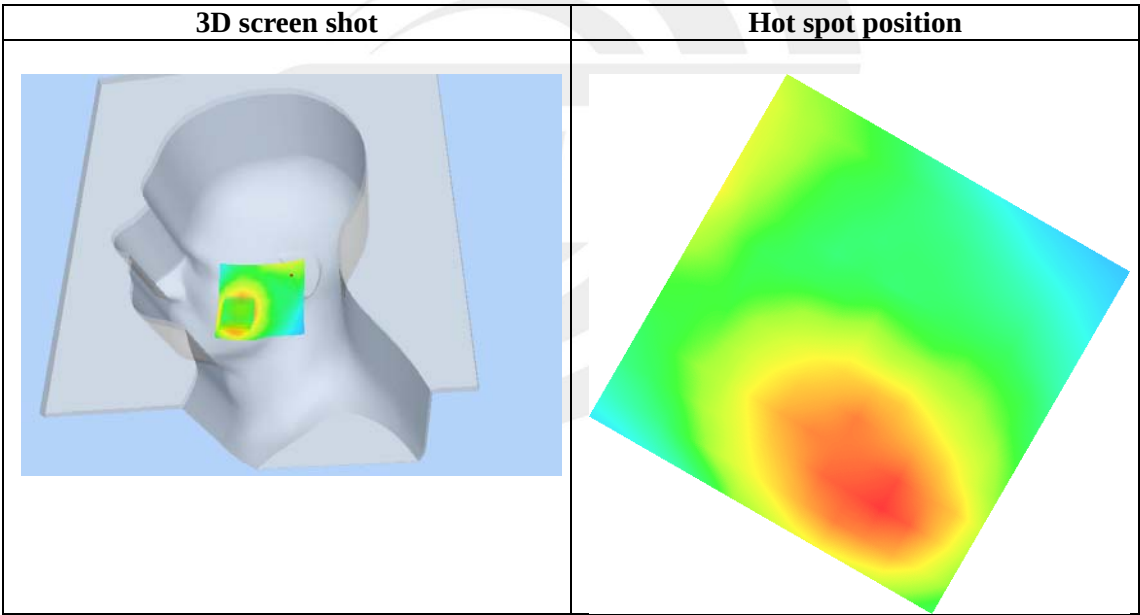
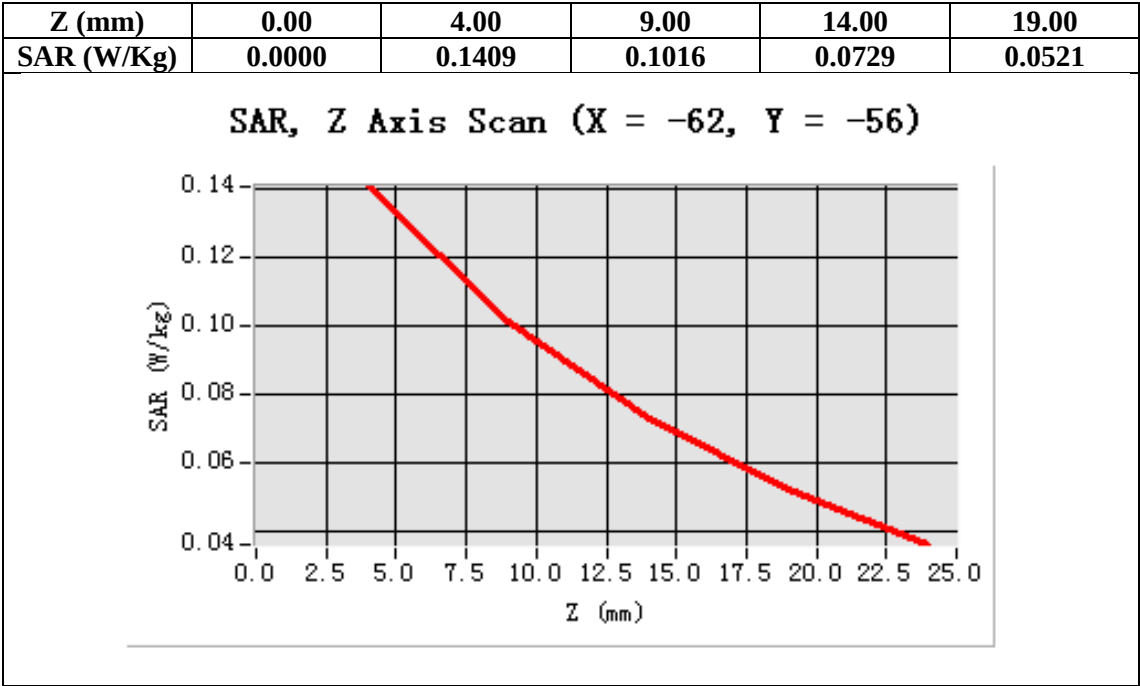
Configuration/GSM 850 Mid-Touch-Left/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=-62.00, Y=-56.00

SAR 10g (W/Kg)	0.092183
SAR 1g (W/Kg)	0.137361



GSM 850 Mid- Body- Back <SIM 1>
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

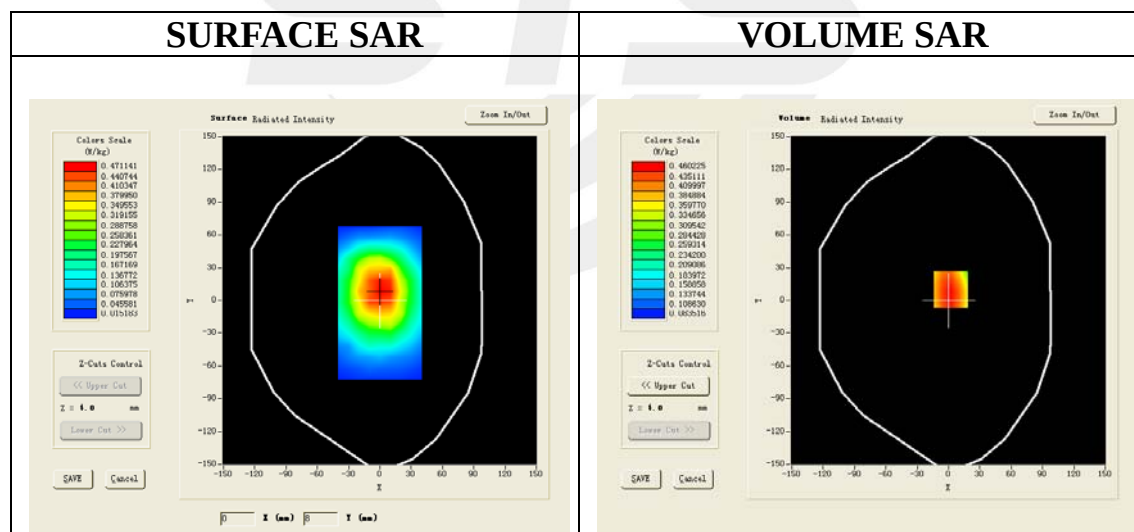
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm

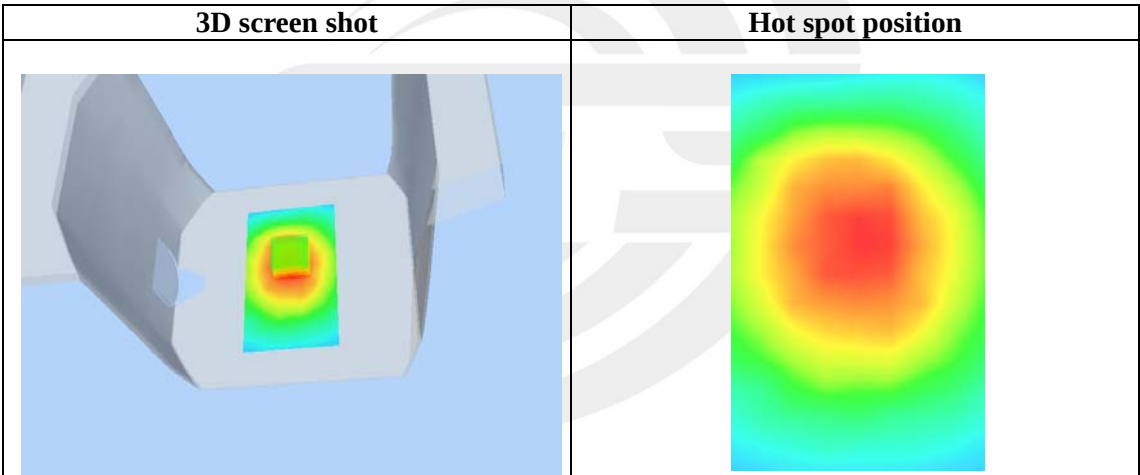
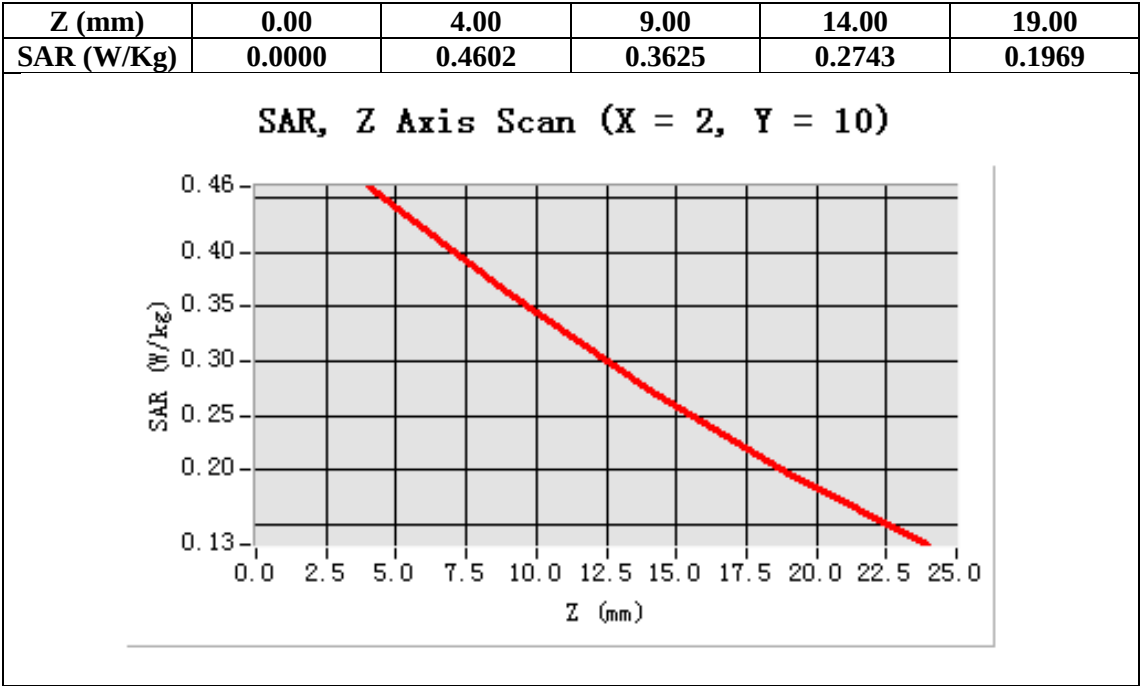
Configuration/GSM 850 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=2.00, Y=10.00

SAR 10g (W/Kg)	0.344150
SAR 1g (W/Kg)	0.482731



GSM 850 Mid- Body- Front (MS) <SIM 1>
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

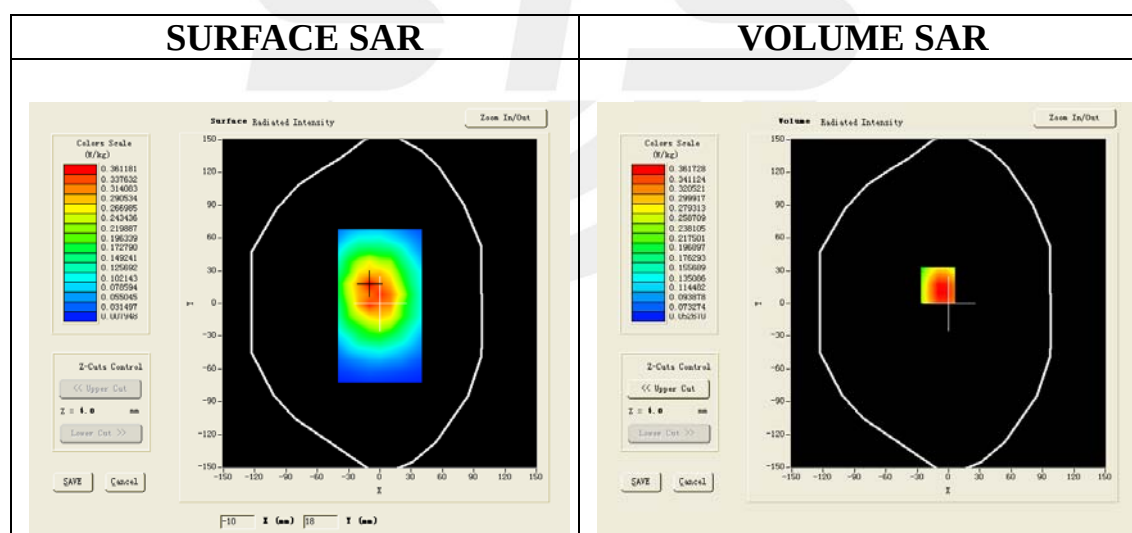
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm

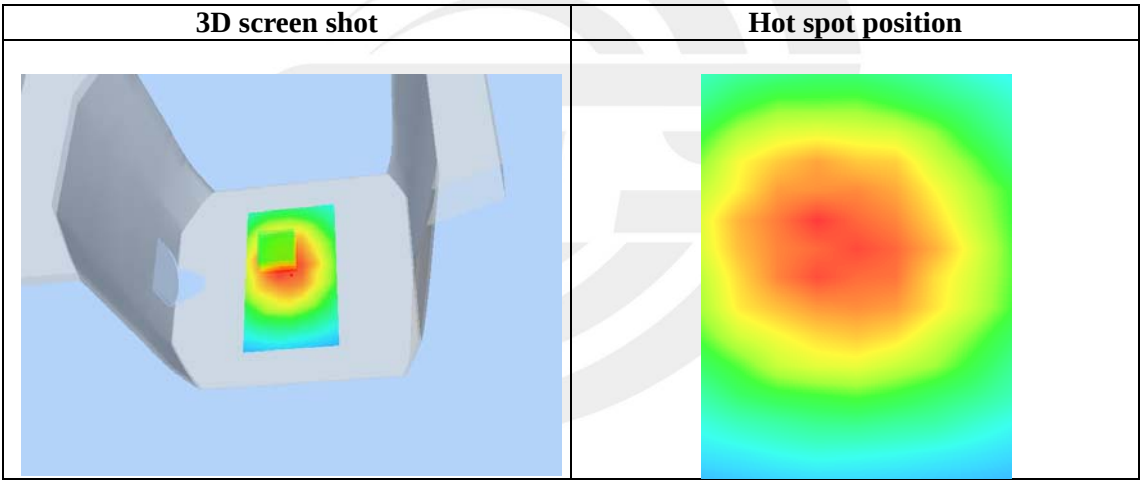
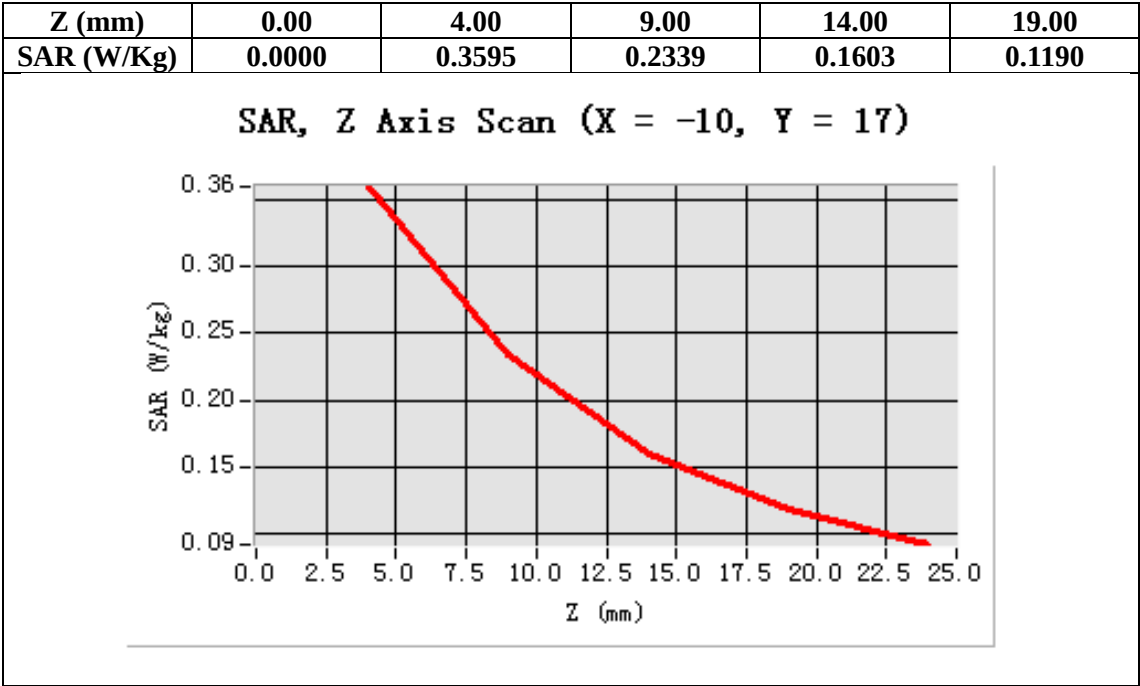
Configuration/GSM 850 Mid-Body- Front Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=-10.00, Y=17.00

SAR 10g (W/Kg)	0.251516
SAR 1g (W/Kg)	0.382037



GSM 850 Mid-Edge 2(Right)(MS)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

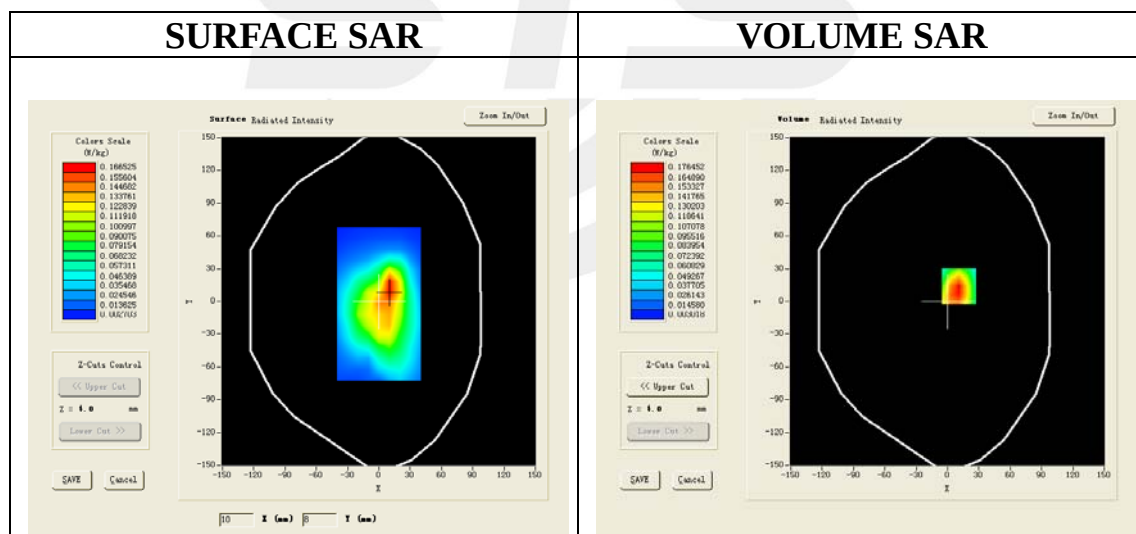
Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C):21.3, Liquid temperature (°C):21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 01/12/2014; Serial No.:SN 22/12 EP159
Sensor-Surface: 4mm (Mechanical Surface Detection)
Phantom: SAM Twin Phantom
Measurement SW: OpenSAR V4_02_01

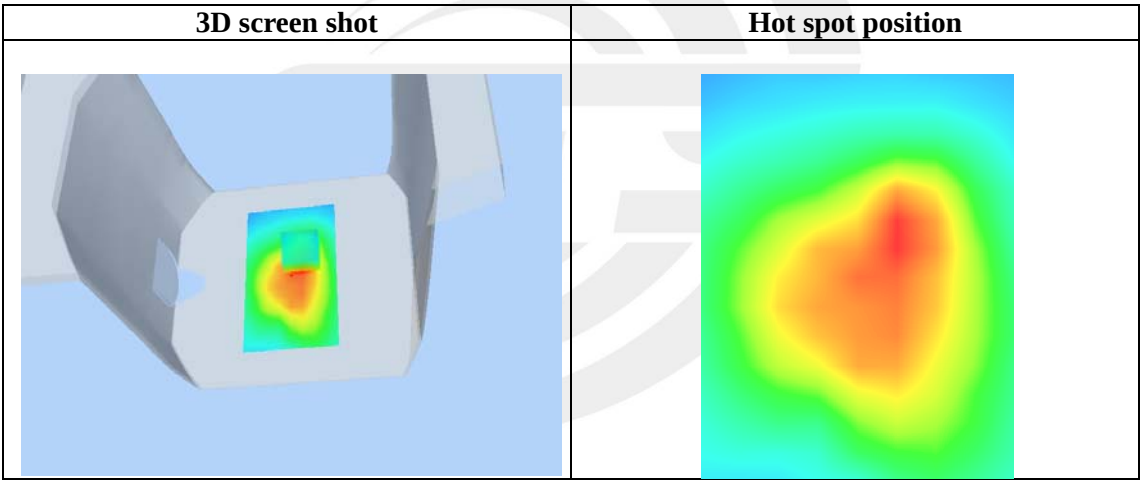
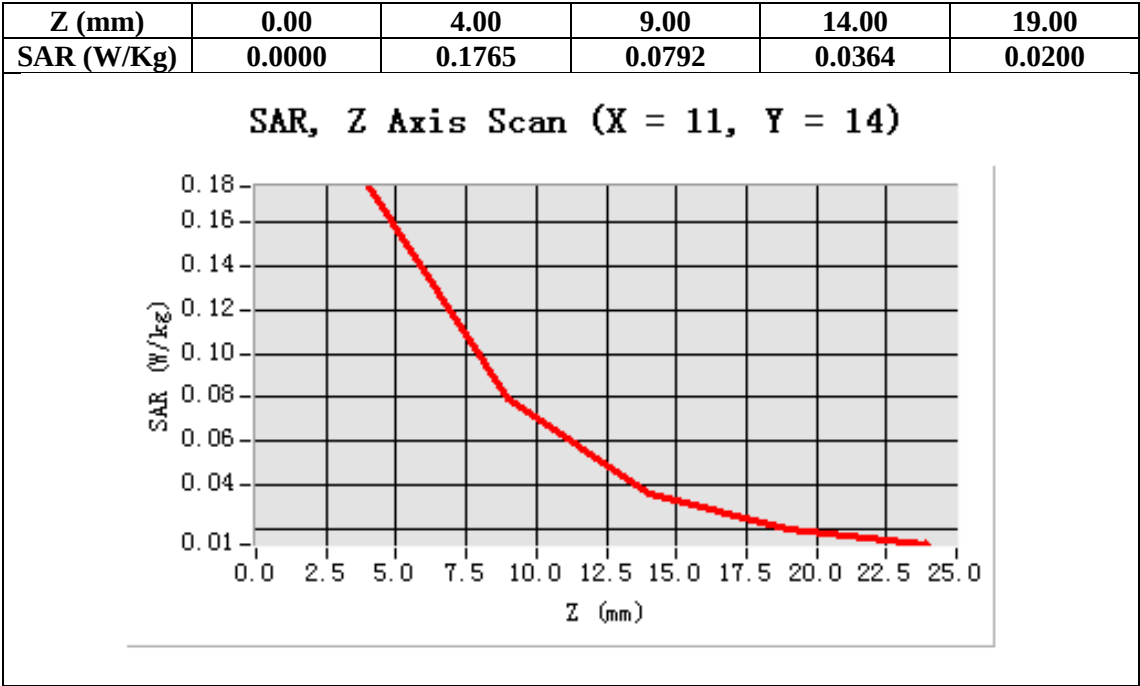
Configuration/GSM 850 Mid-Edge 2(Right)/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/GSM 850 Mid-Edge 2(Right)/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=11.00, Y=14.00

SAR 10g (W/Kg)	0.089356
SAR 1g (W/Kg)	0.177602



GSM 850 Mid-Edge 4(Left) (MS)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C):21.3, Liquid temperature (°C):21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 01/12/2014; Serial No.:SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

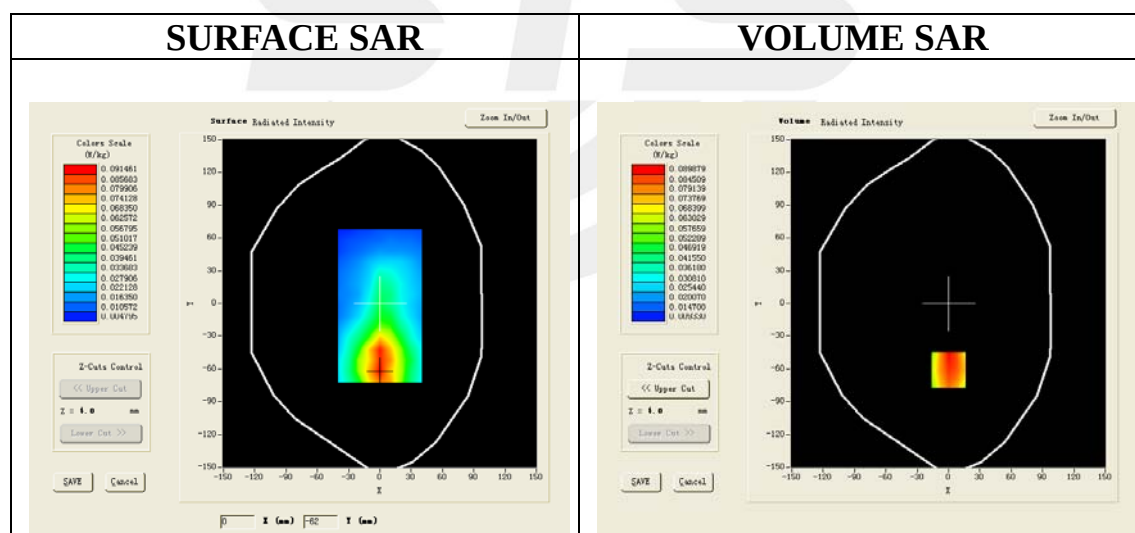
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Edge 4(Left) /Area Scan: Measurement grid: dx=8mm, dy=8mm

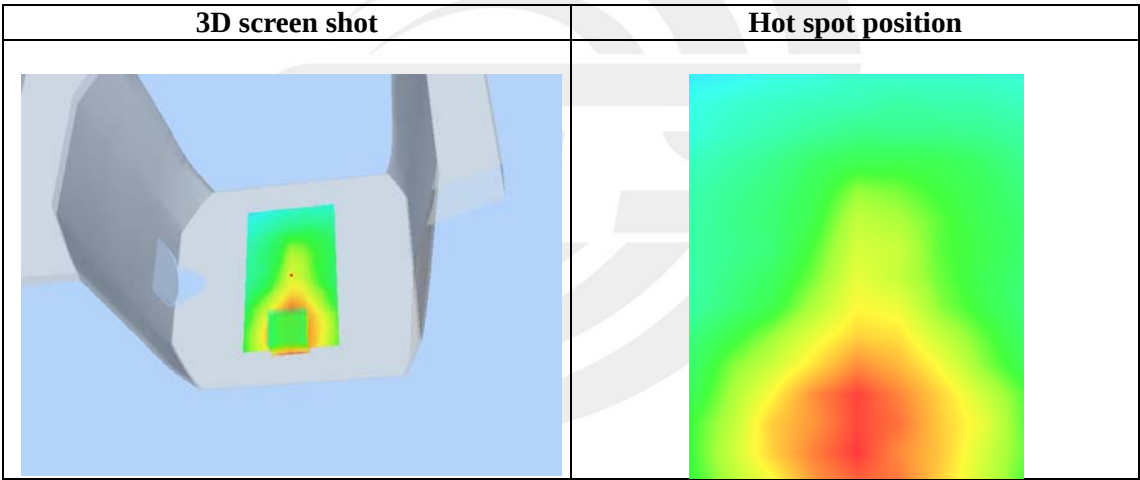
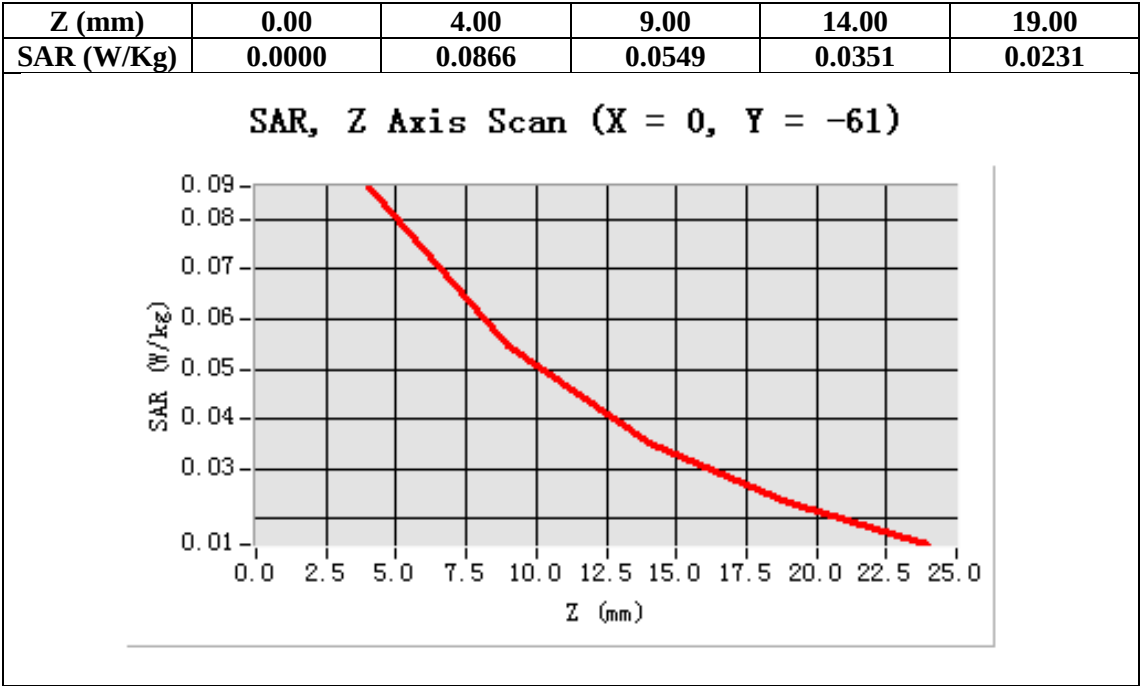
Configuration/GSM 850 Mid -Edge 4(Left) /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Horizontal
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=0.00, Y=-61.00

SAR 10g (W/Kg)	0.051738
SAR 1g (W/Kg)	0.083453



GSM 850 Mid-Edge 3(Bottom (MS)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C):21.3, Liquid temperature (°C):21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 01/12/2014; Serial No.:SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

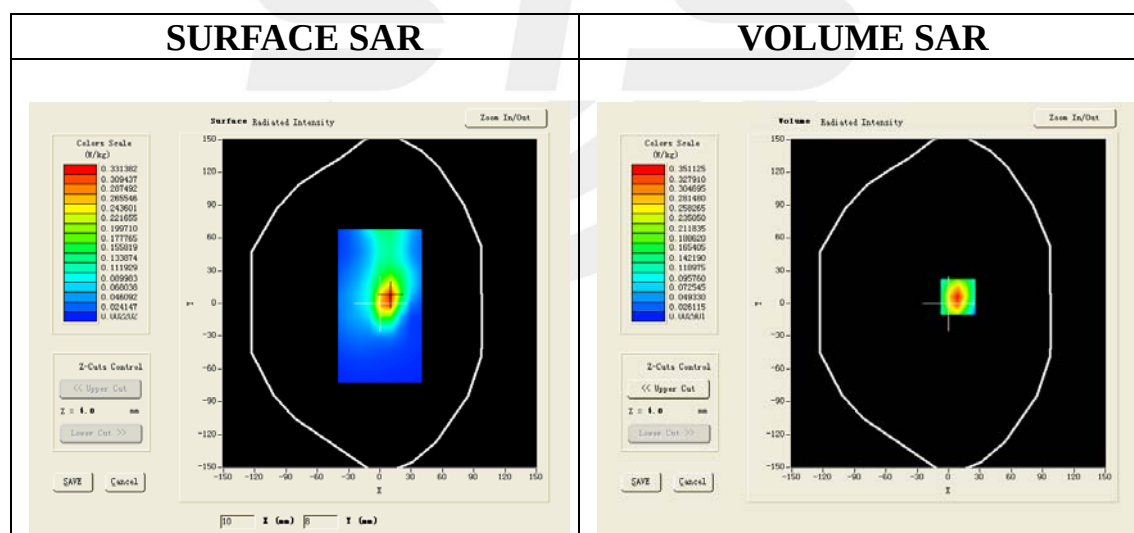
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Edge 3(Bottom /Area Scan: Measurement grid: dx=8mm, dy=8mm

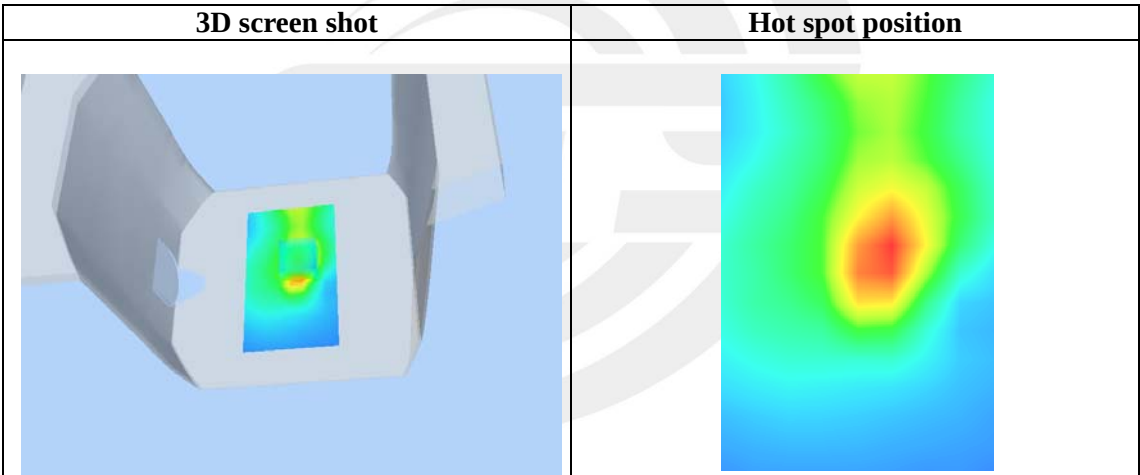
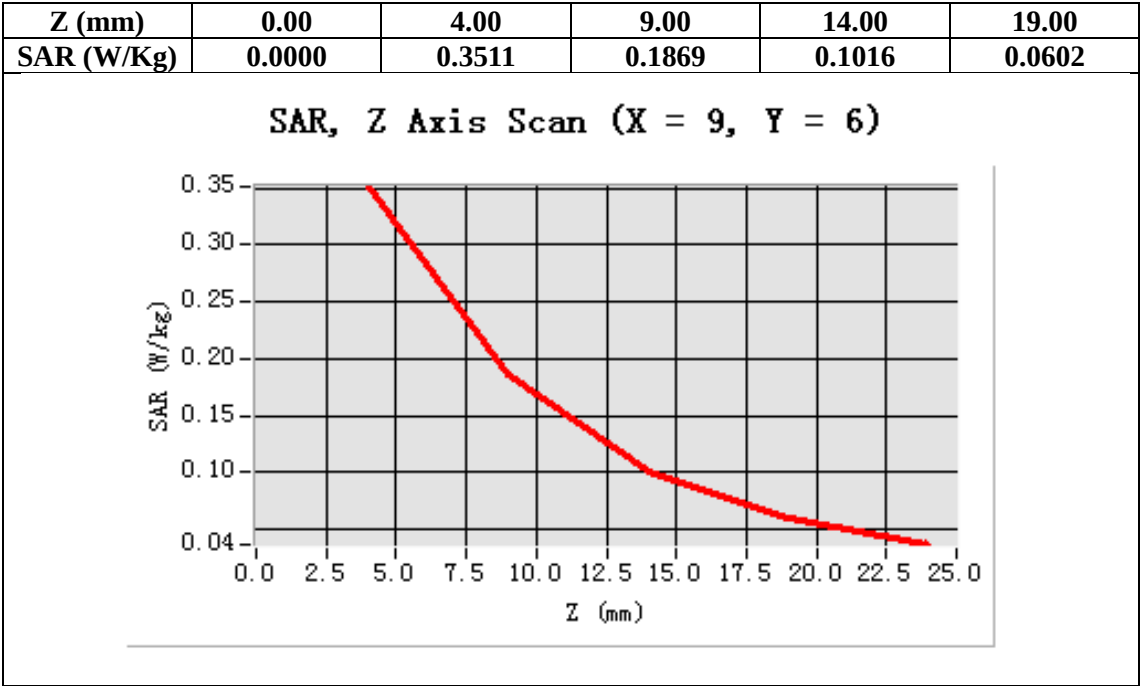
Configuration/GSM 850 Mid -Edge 3(Bottom /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Vertical
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=9.00, Y=6.00

SAR 10g (W/Kg)	0.162932
SAR 1g (W/Kg)	0.329347



GSM 850 Mid-Edge 1 (Top) (MS)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: Generic GSM; Communication System Band: GSM 850; Duty Cycle: 1:8.3; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C):21.3, Liquid temperature (°C):21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 01/12/2014; Serial No.:SN 22/12 EP159

Sensor-Surface: 4mm (Mechanical Surface Detection)

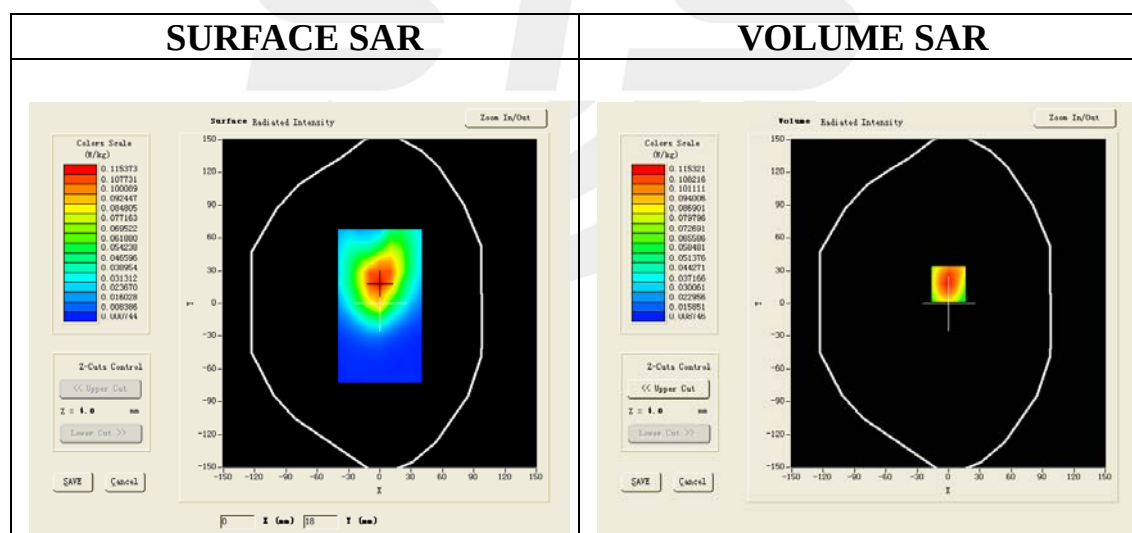
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GSM 850 Mid-Edge 1 (Top) /Area Scan: Measurement grid: dx=8mm, dy=8mm

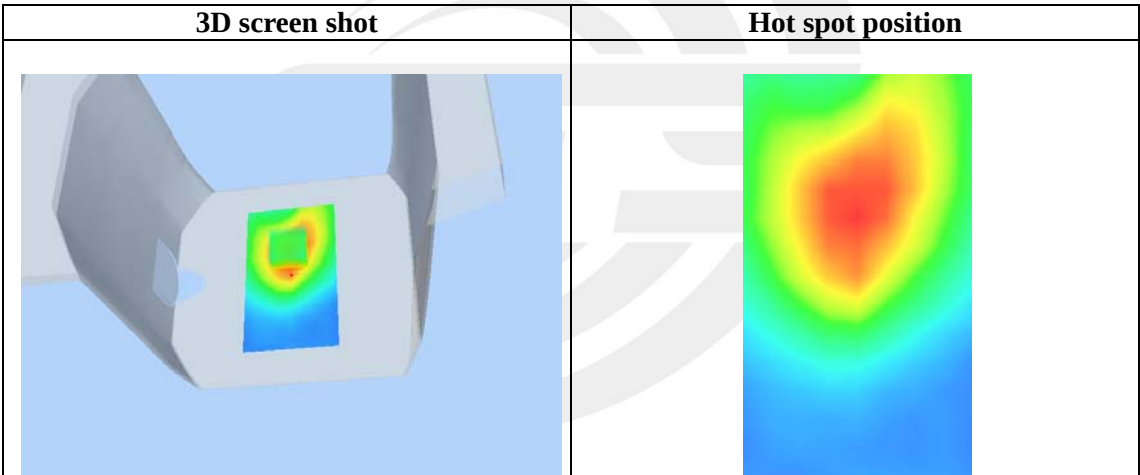
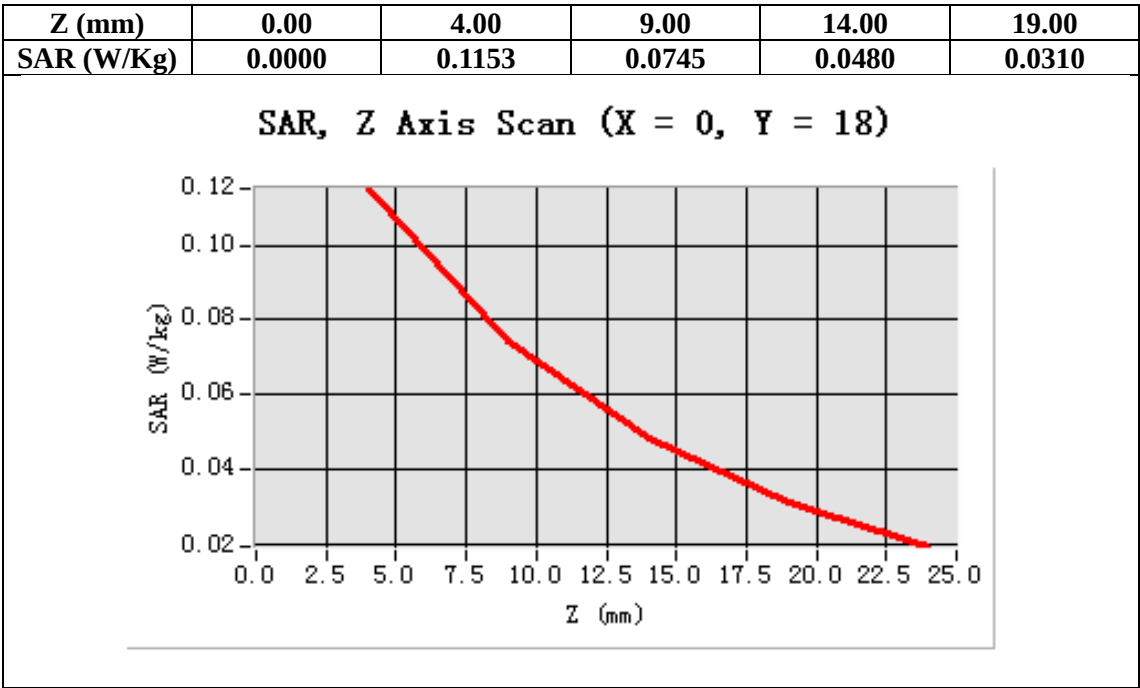
Configuration/GSM 850 Mid-Edge 1 (Top) /Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Vertical
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 8.0)



Maximum location: X=0.00, Y=18.00

SAR 10g (W/Kg)	0.066274
SAR 1g (W/Kg)	0.109902



GPRS 850 Mid-Touch-Left (4up)
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Left Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

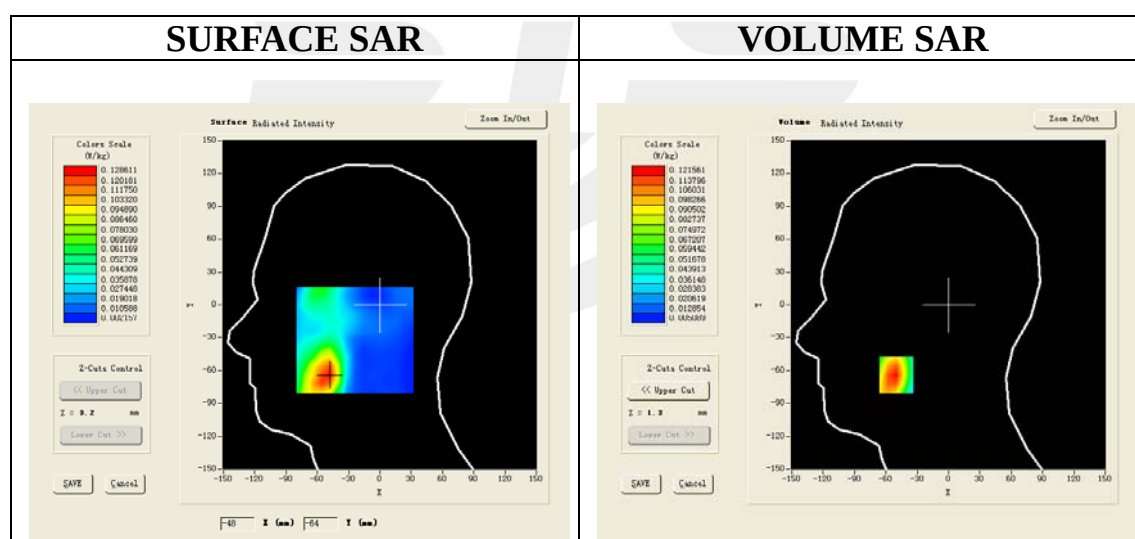
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Touch-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm

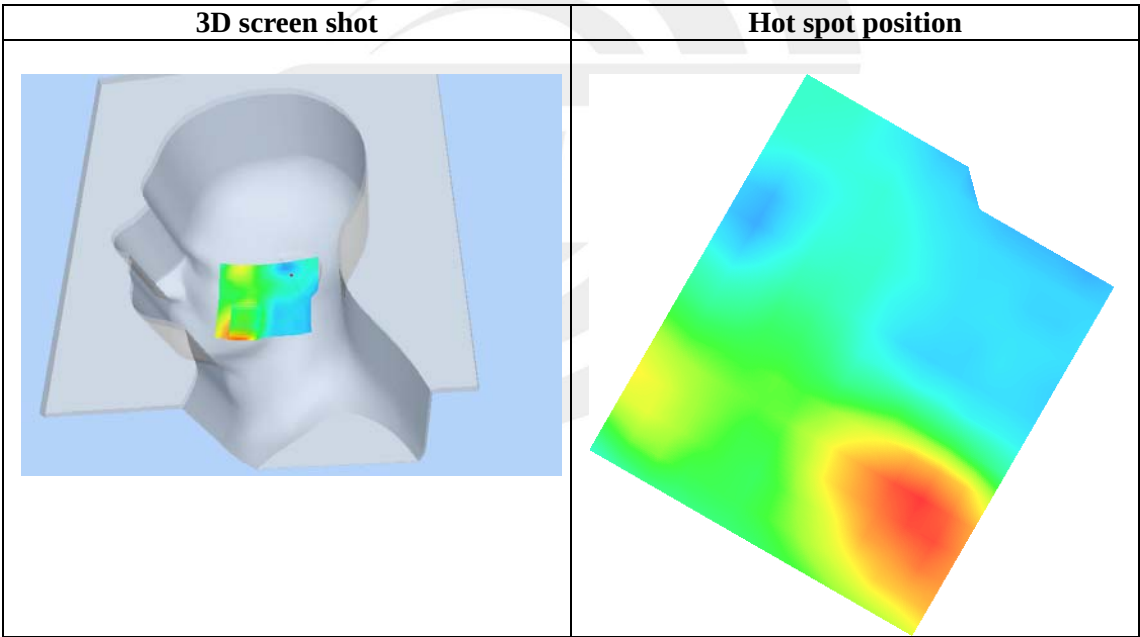
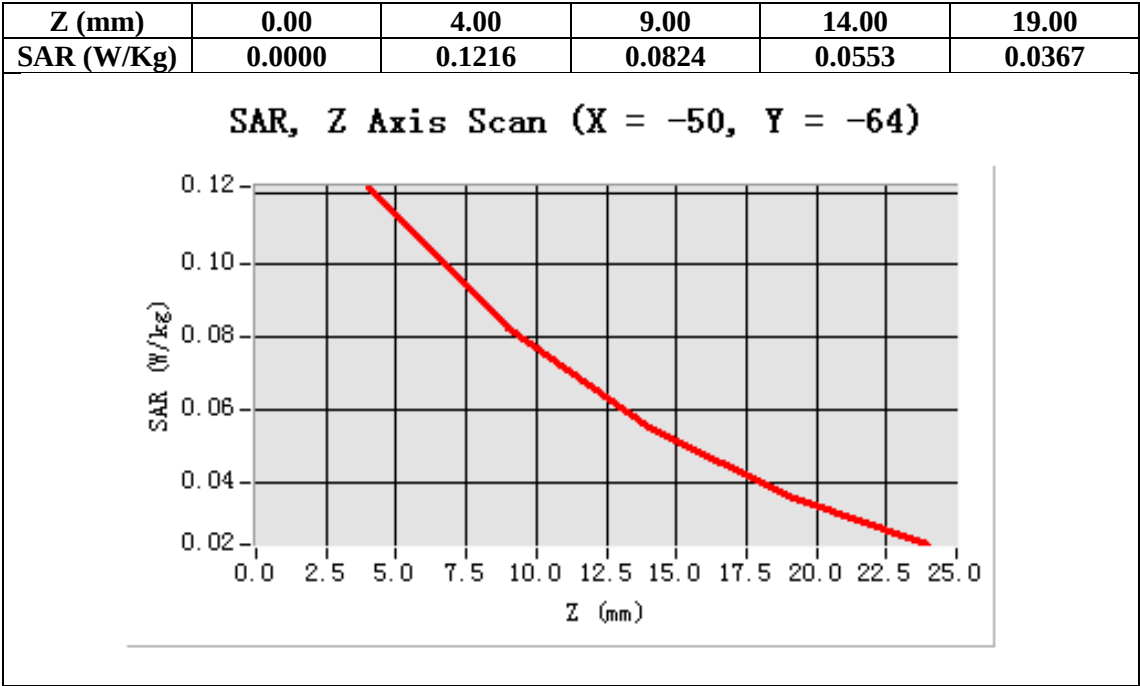
Configuration/GPRS 850 Mid-Touch-Left/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=-50.00, Y=-64.00

SAR 10g (W/Kg)	0.071060
SAR 1g (W/Kg)	0.115947



GPRS 850 Mid-Tilt-Left (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Left Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

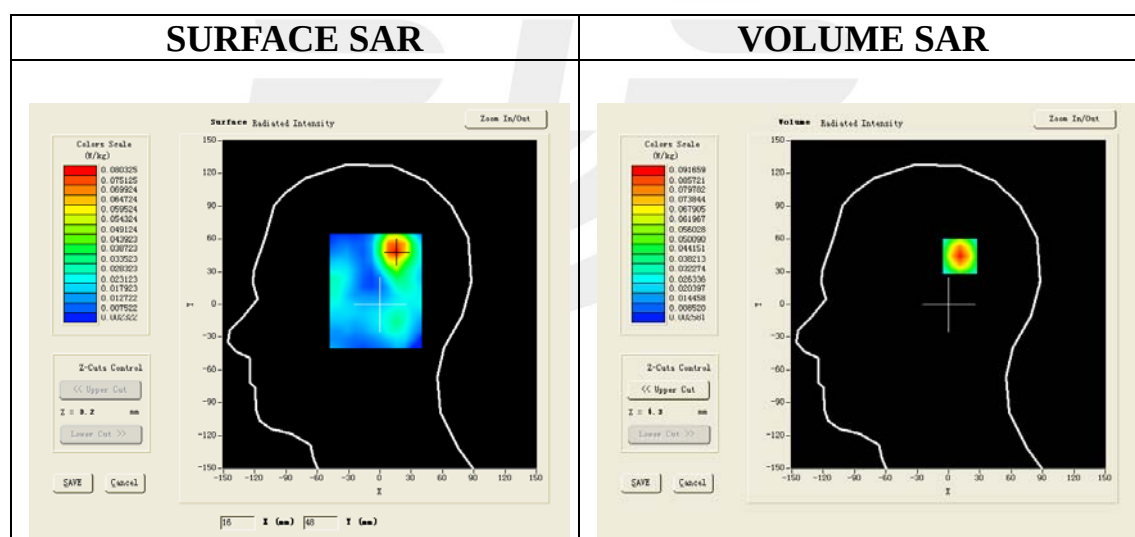
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Tilt-Left/Area Scan: Measurement grid: dx=8mm, dy=8mm

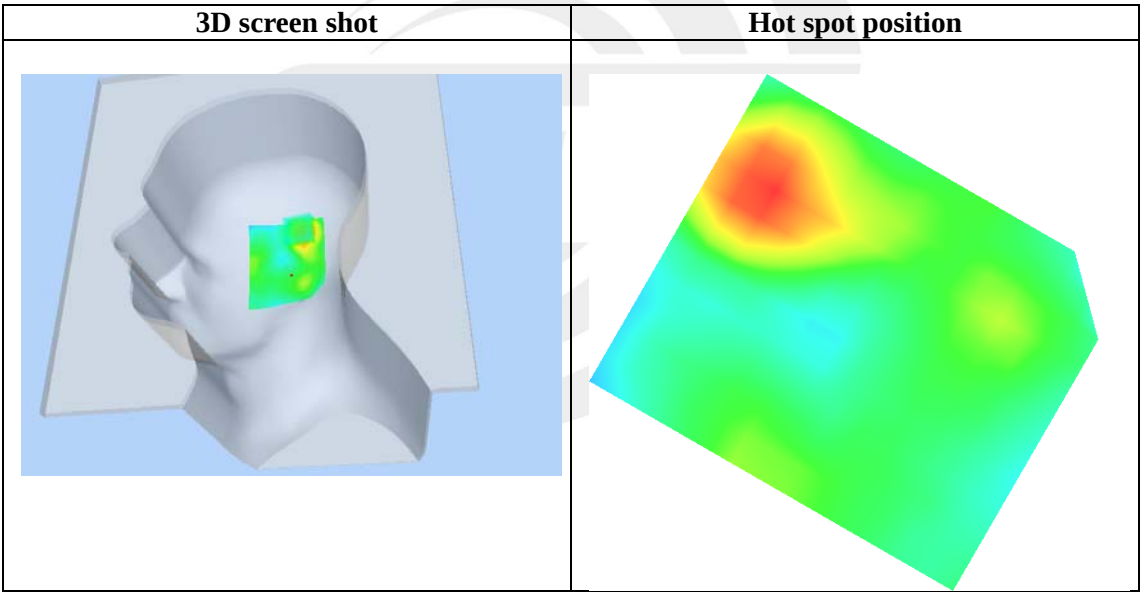
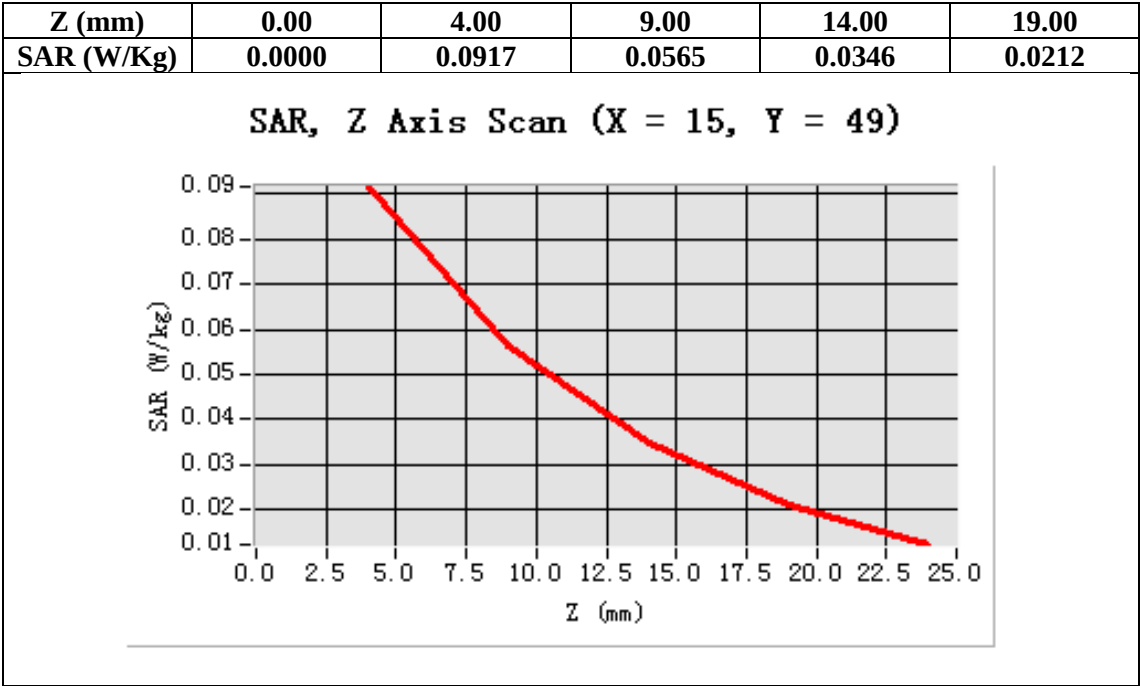
Configuration/GPRS 850 Mid-Tilt-Left/Zoom Scan: Measurement grid: dx=8mm, dy=8mm,dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Tilt
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=15.00, Y=49.00

SAR 10g (W/Kg)	0.046930
SAR 1g (W/Kg)	0.085083



GPRS 850 Mid- Touch-Right (4up)
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Right Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

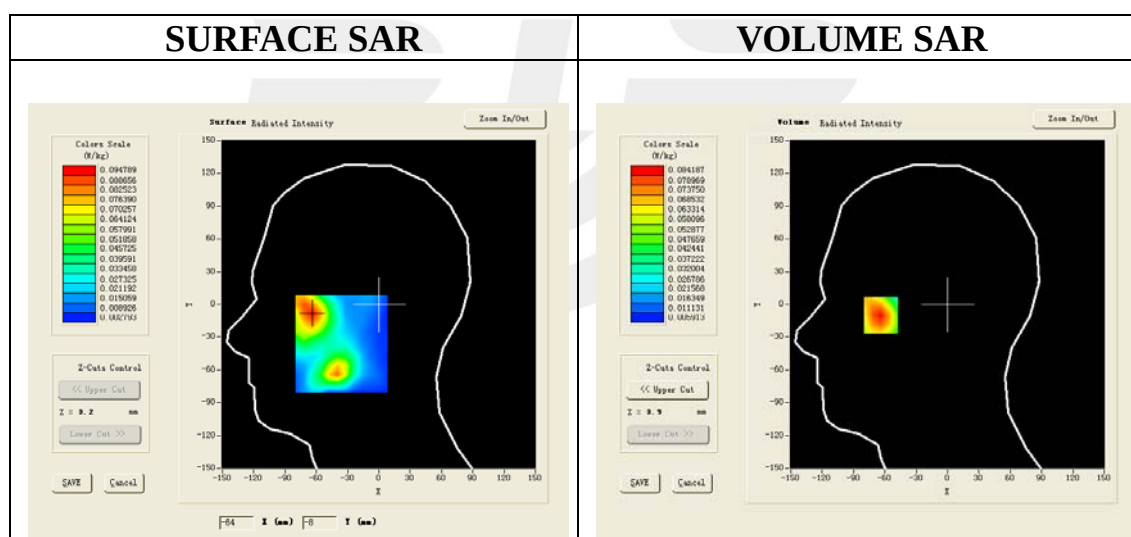
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Touch-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm

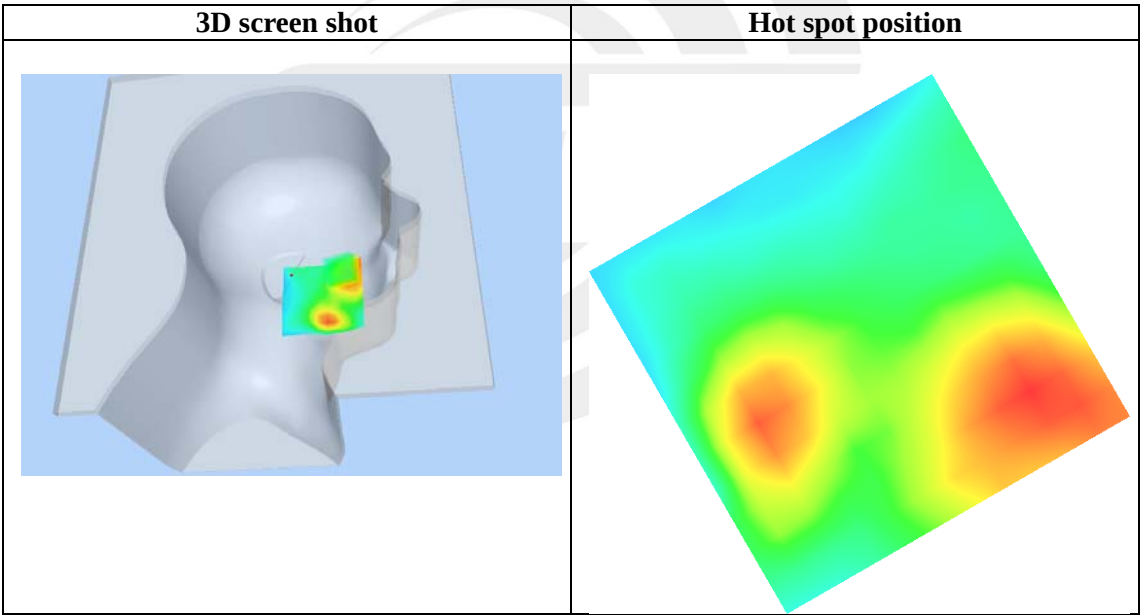
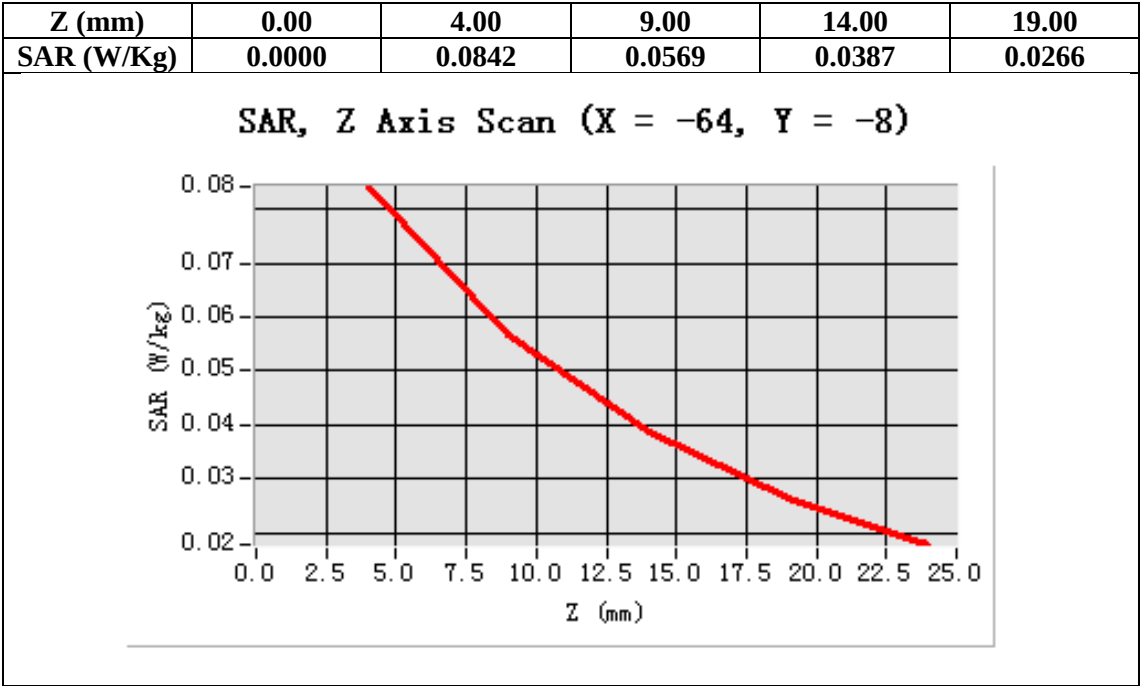
Configuration/GPRS 850 Mid-Touch-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=-64.00, Y=-8.00

SAR 10g (W/Kg)	0.050718
SAR 1g (W/Kg)	0.079930



GPRS 850 Mid-Tilt-Right (4up)
DUT: tablet PC; Type: PC7088

Date: Mar. 02,2015

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=4.83
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.65$; $\rho = 1000$ kg/m³;
Phantom section: Right Section
Ambient temperature (°C): 22.8, Liquid temperature (°C): 21.5

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

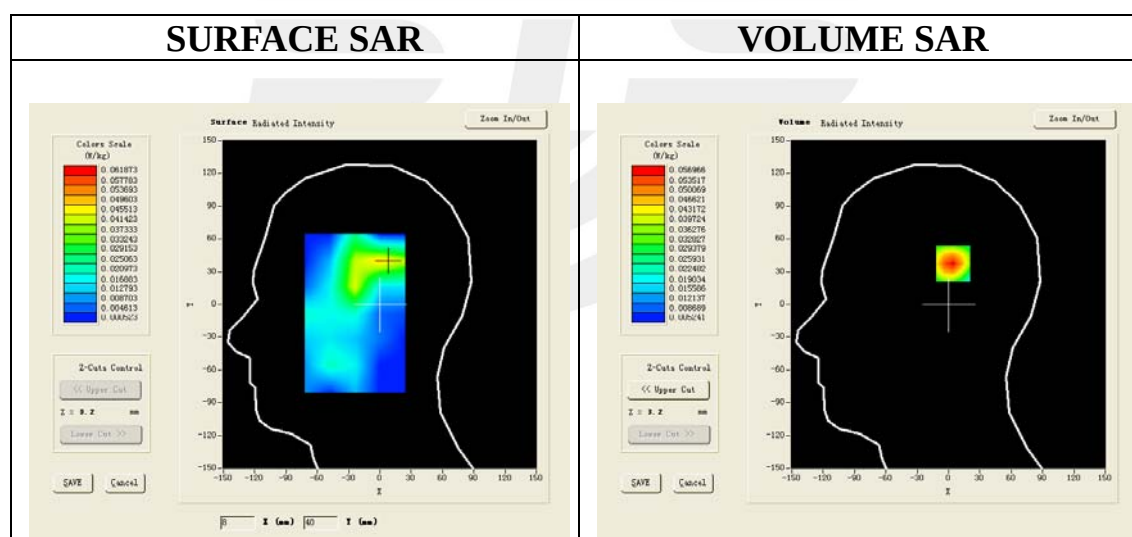
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Tilt-Right/Area Scan: Measurement grid: dx=8mm, dy=8mm

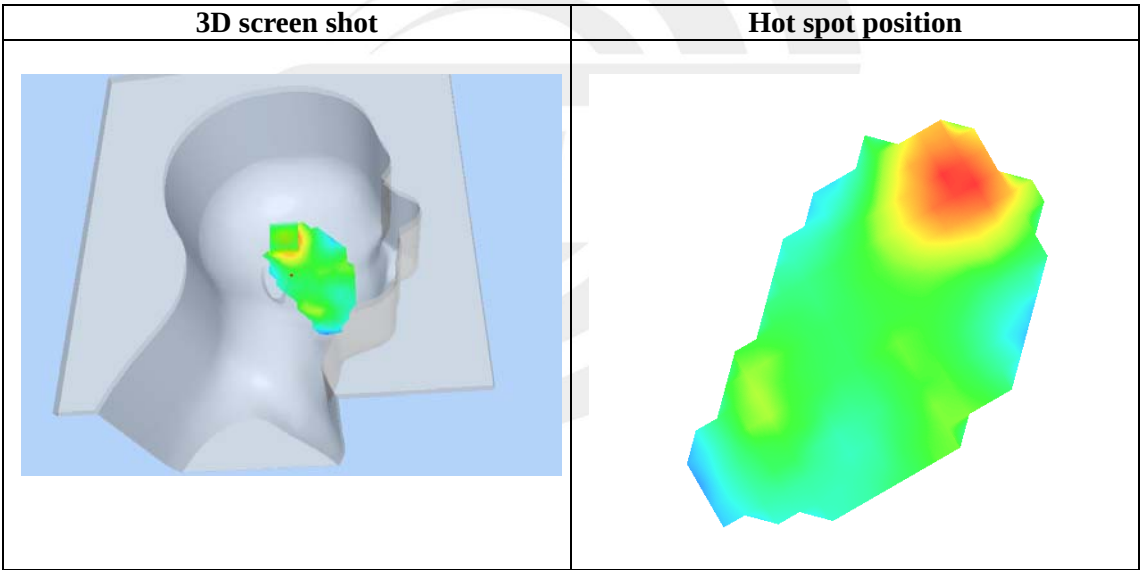
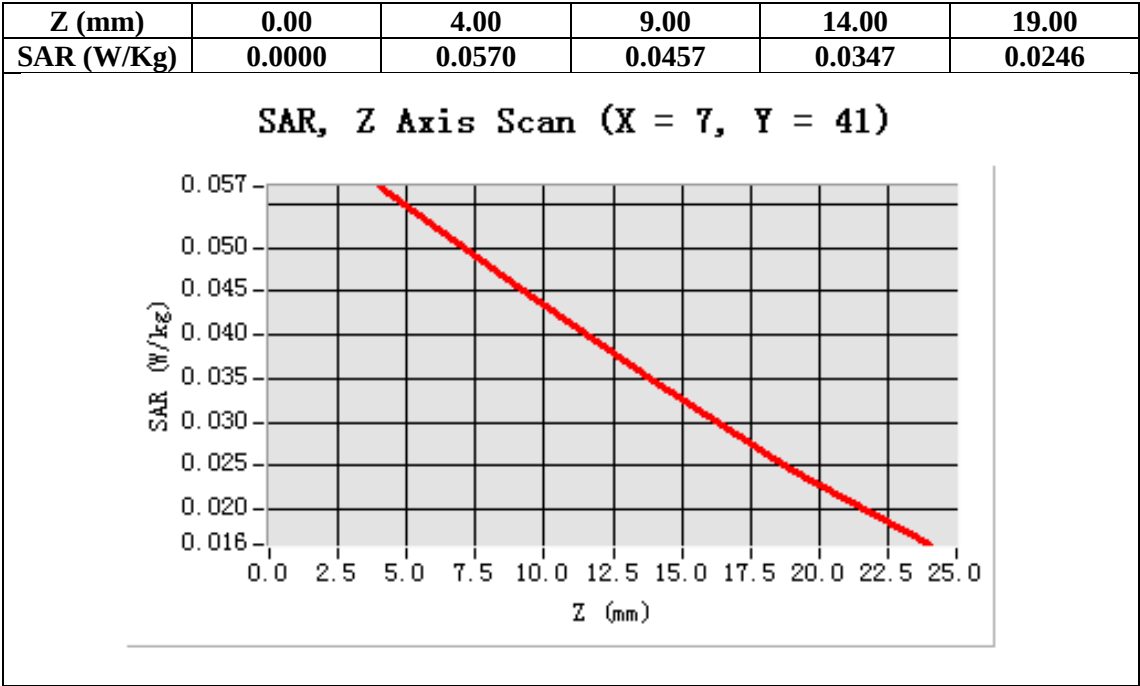
Configuration/GPRS 850 Mid-Tilt-Right/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	sam_direct_droit2_surf8mm.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Right head
Device Position	Tilt
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=7.00, Y=41.00

SAR 10g (W/Kg)	0.036651
SAR 1g (W/Kg)	0.053982



GPRS 850 Mid- Body- Back (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

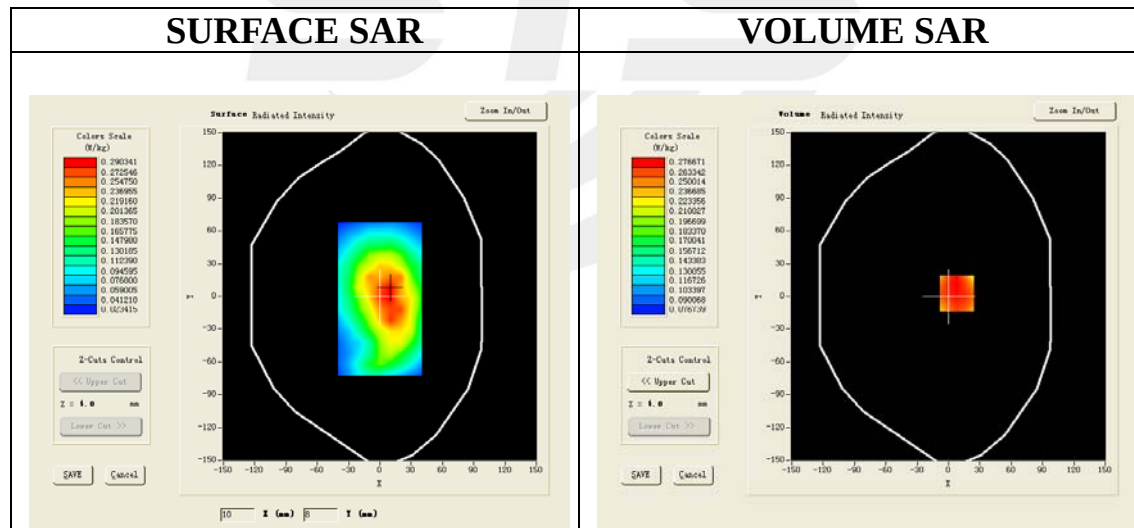
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Body-Back/Area Scan: Measurement grid: dx=8mm, dy=8mm

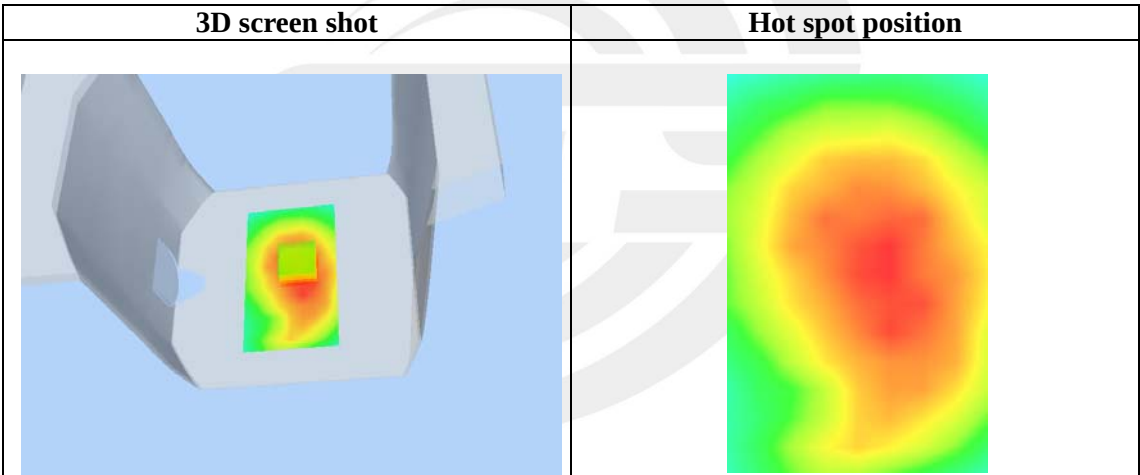
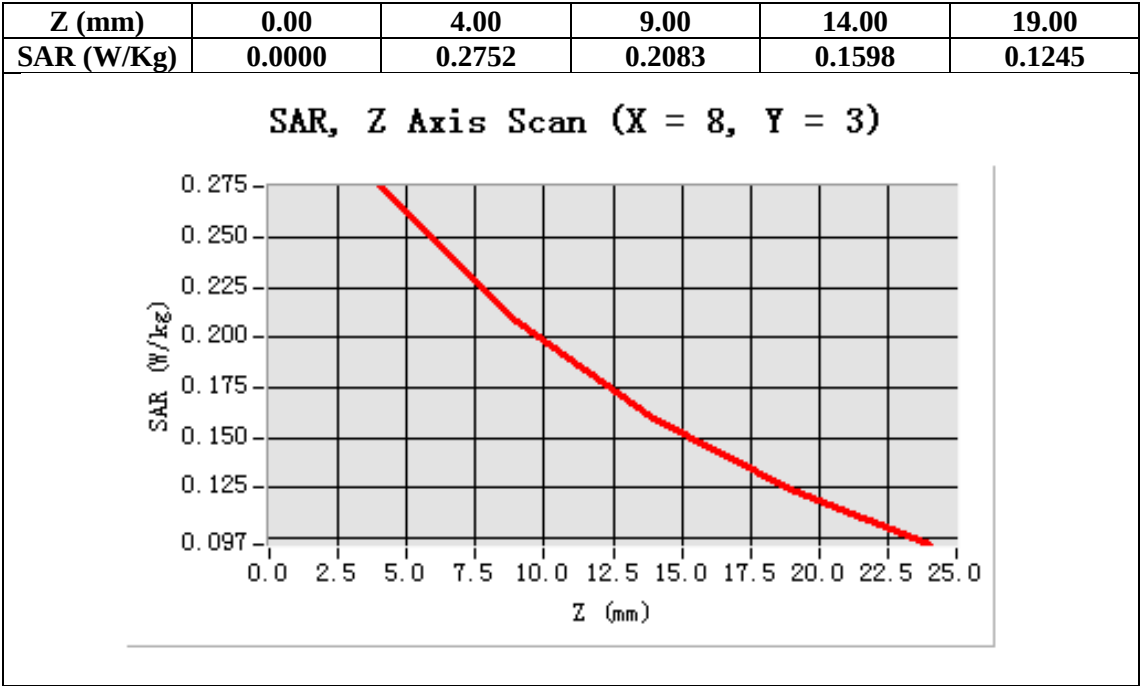
Configuration/GPRS 850 Mid-Body-Back/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Back
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=8.00, Y=3.00

SAR 10g (W/Kg)	0.211562
SAR 1g (W/Kg)	0.289584



GPRS 850 Mid- Body- Front (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

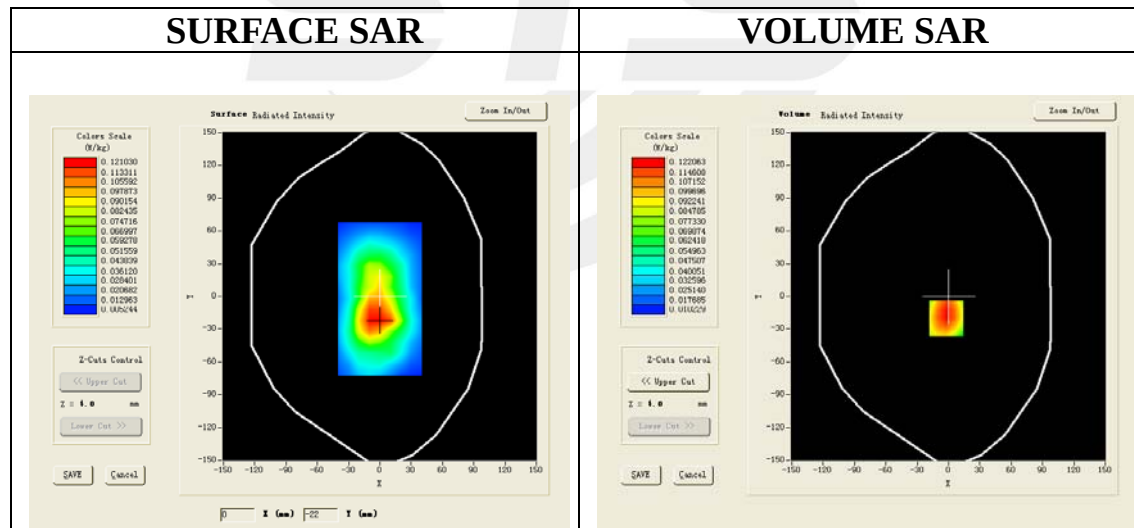
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Body-Front/Area Scan: Measurement grid: dx=8mm, dy=8mm

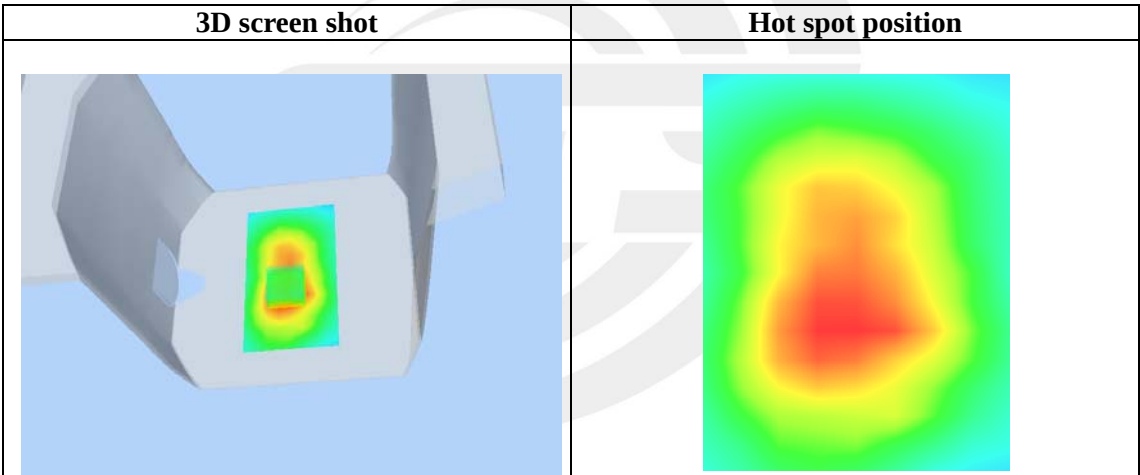
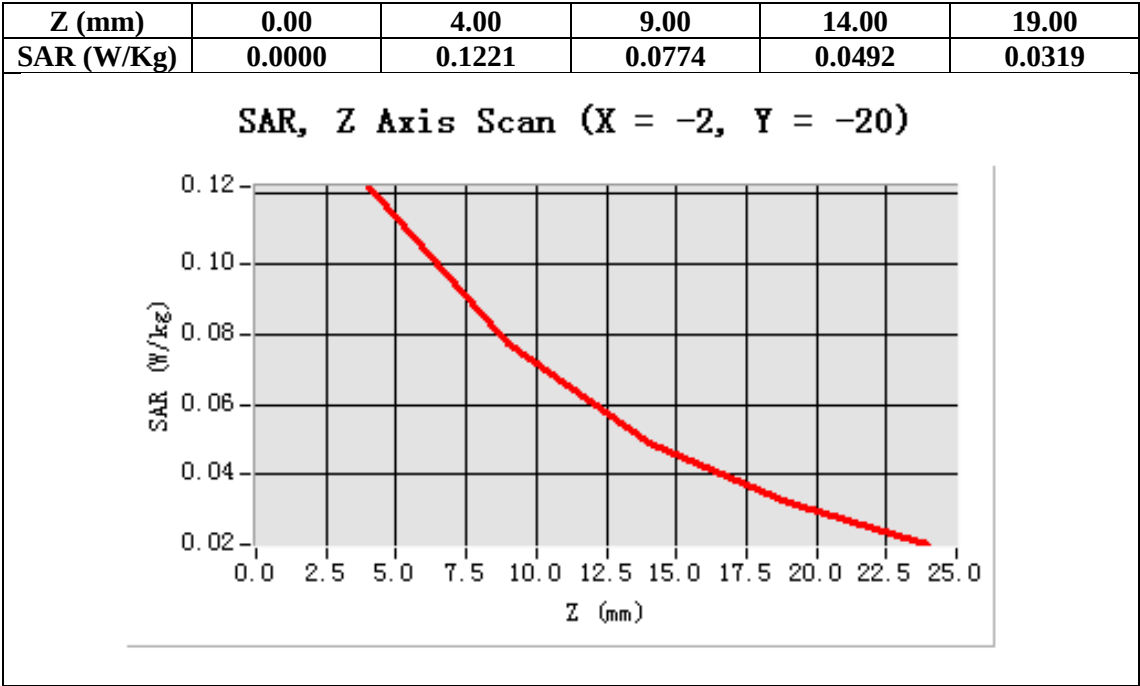
Configuration/GPRS 850 Mid-Body-Front/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=-2.00, Y=-20.00

SAR 10g (W/Kg)	0.079836
SAR 1g (W/Kg)	0.125549



GPRS 850 Mid-Edge 1 (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

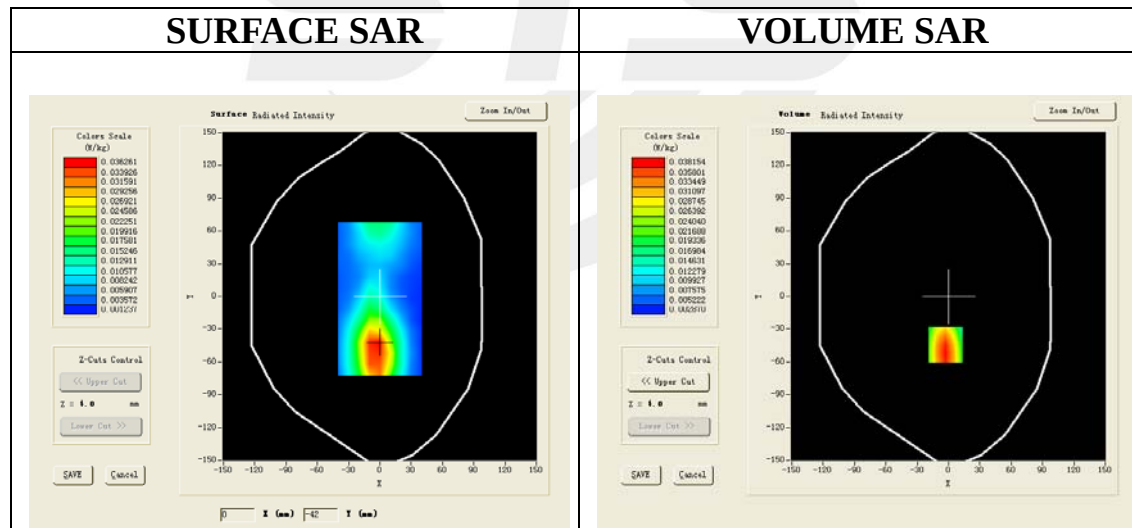
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Edge 1/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/GPRS 850 Mid-Edge 1/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

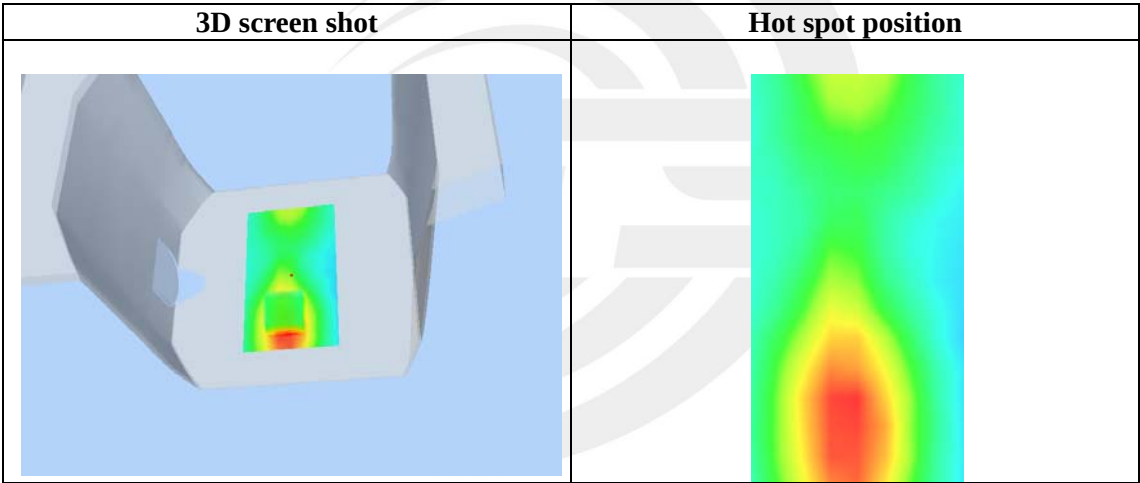
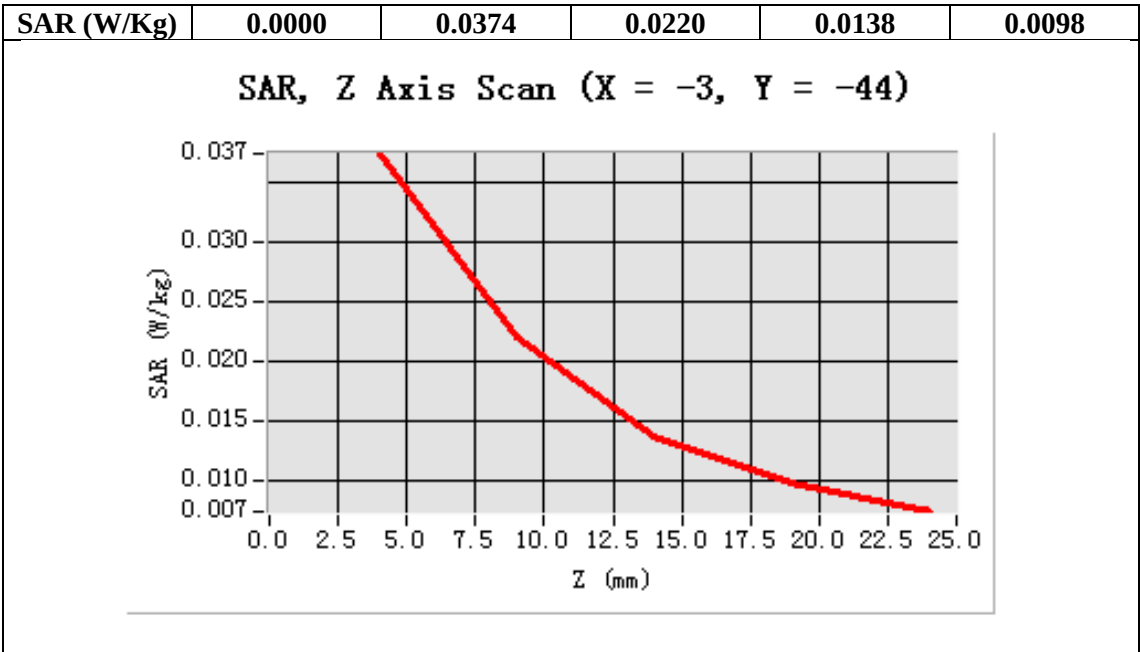
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Edge 1
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=-3.00, Y=-44.00

SAR 10g (W/Kg)	0.024538
SAR 1g (W/Kg)	0.039515

Z (mm)	0.00	4.00	9.00	14.00	19.00
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GPRS 850 Mid-Edge 2 (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

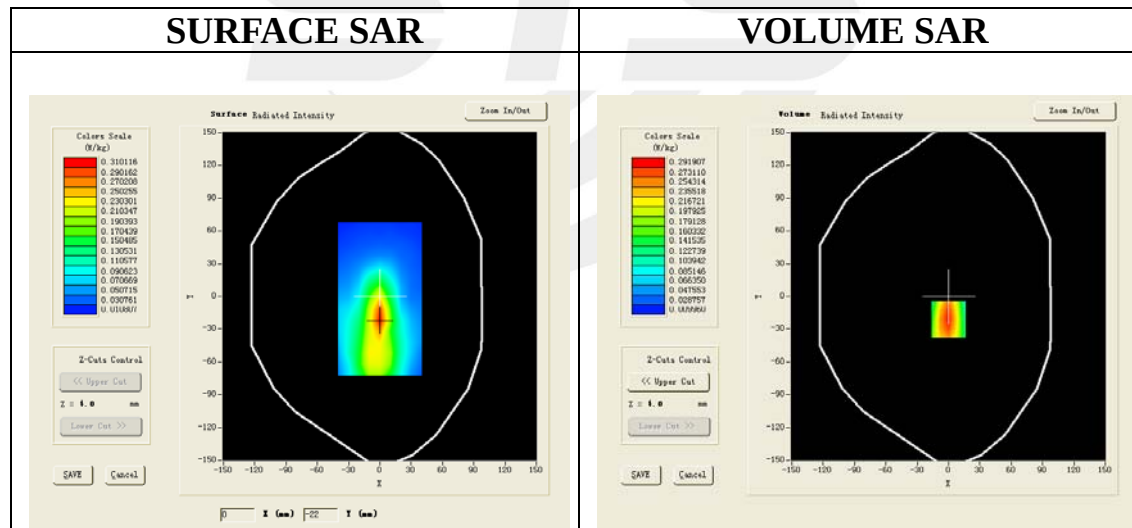
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Edge 2/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/GPRS 850 Mid-Edge 2/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

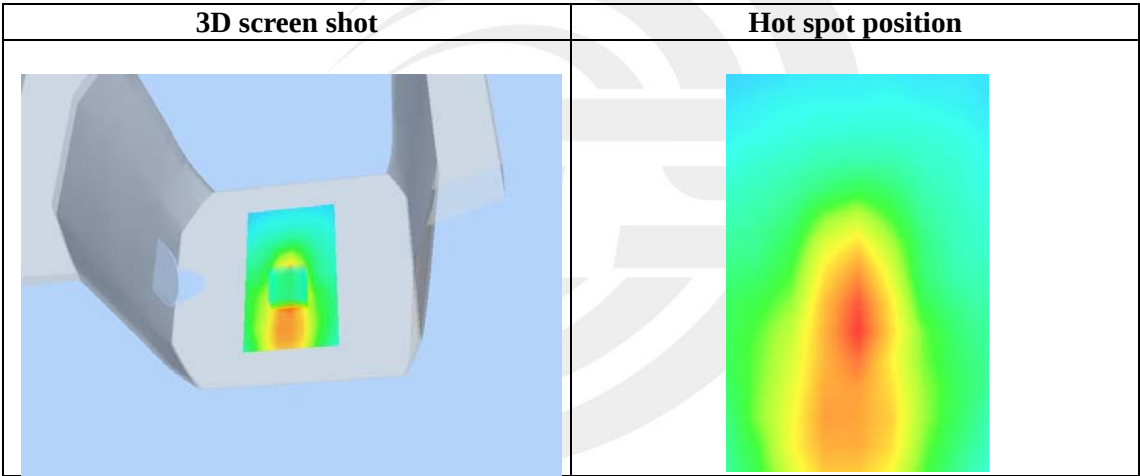
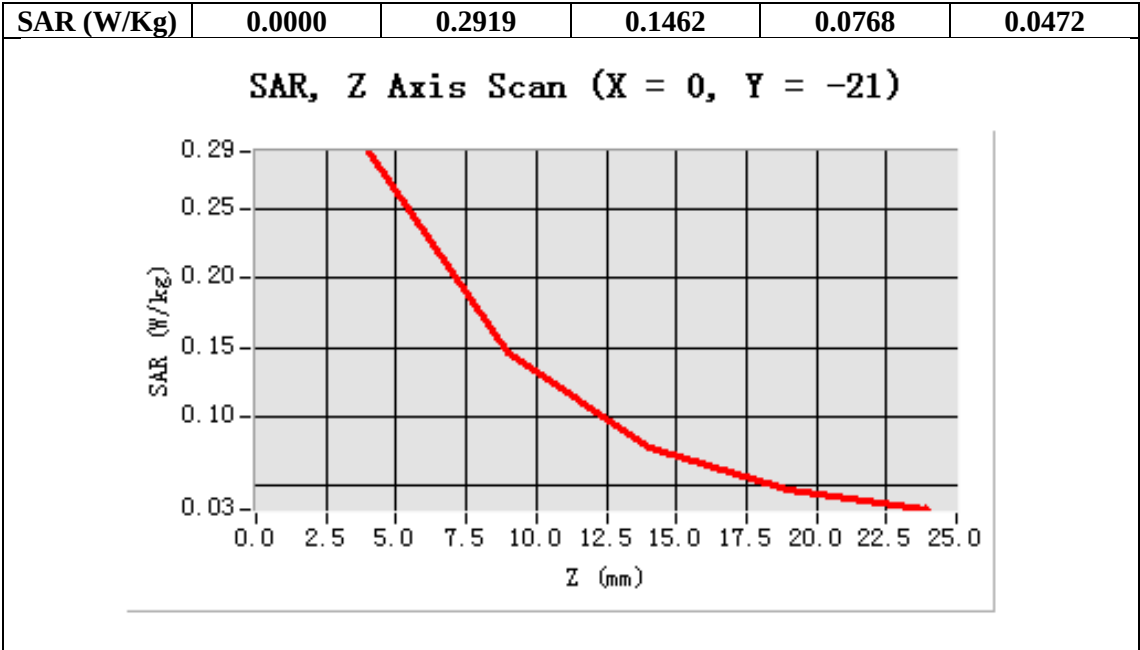
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Edge 2
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=0.00, Y=-21.00

SAR 10g (W/Kg)	0.154195
SAR 1g (W/Kg)	0.299230

Z (mm)	0.00	4.00	9.00	14.00	19.00
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GPRS 850 Mid-Edge 3 (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

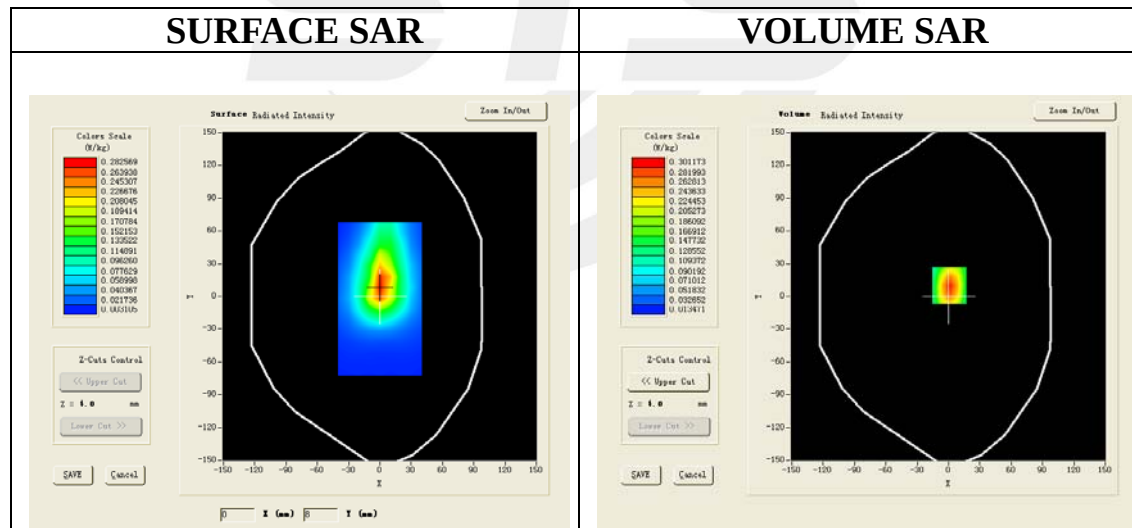
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Edge 3/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/GPRS 850 Mid-Edge 3/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

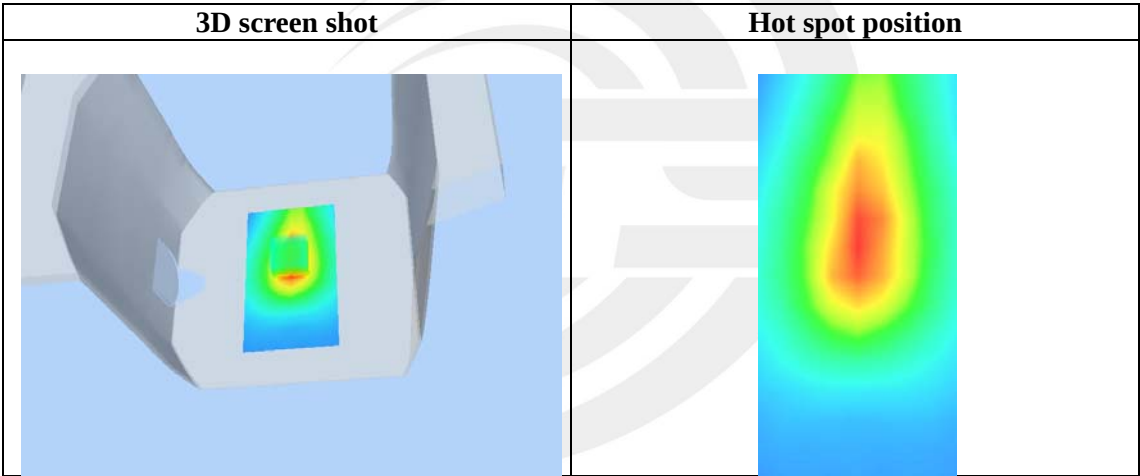
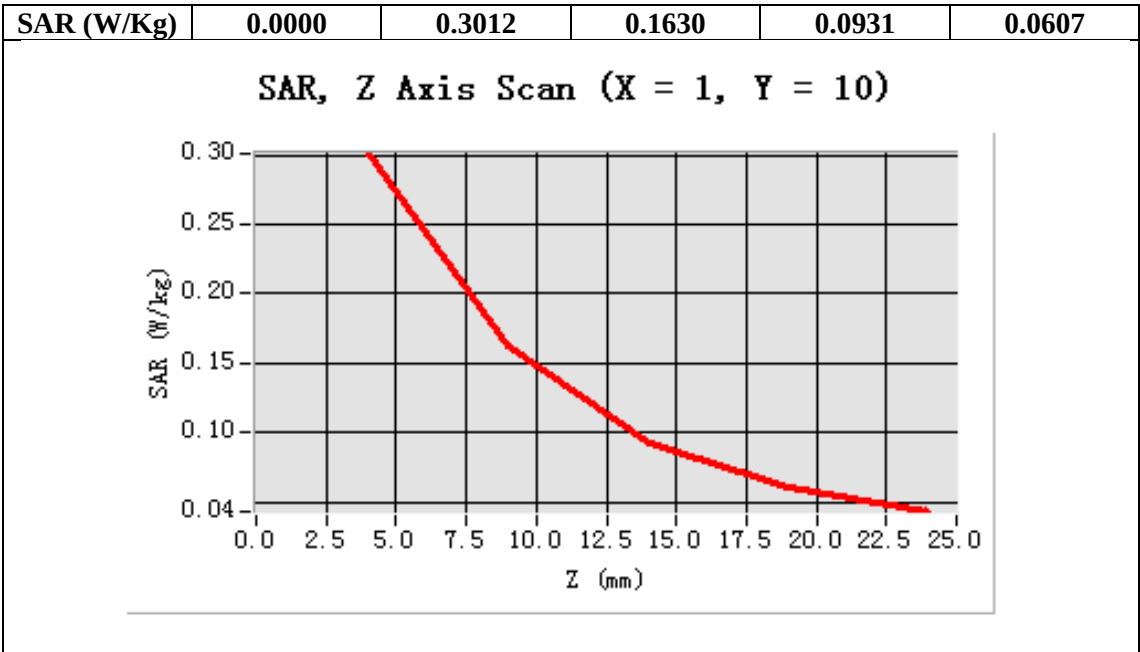
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Edge 3
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=1.00, Y=10.00

SAR 10g (W/Kg)	0.166308
SAR 1g (W/Kg)	0.300353

Z (mm)	0.00	4.00	9.00	14.00	19.00
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GPRS 850 Mid-Edge 4 (4up)
DUT: tablet PC; Type: PC7088

Date: Dec. 20,2014

Communication System: GPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1; Conv.F=5.02 ;
Frequency: 836.6 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.78$; $\rho = 1000$ kg/m³ ;
Phantom section: Flat Section
Ambient temperature (°C): 21.3, Liquid temperature (°C): 21.3

SATIMO Configuration:

Probe: SSE5; Calibrated: 09/01/2014; Serial No.: SN 17/14 EP221

Sensor-Surface: 4mm (Mechanical Surface Detection)

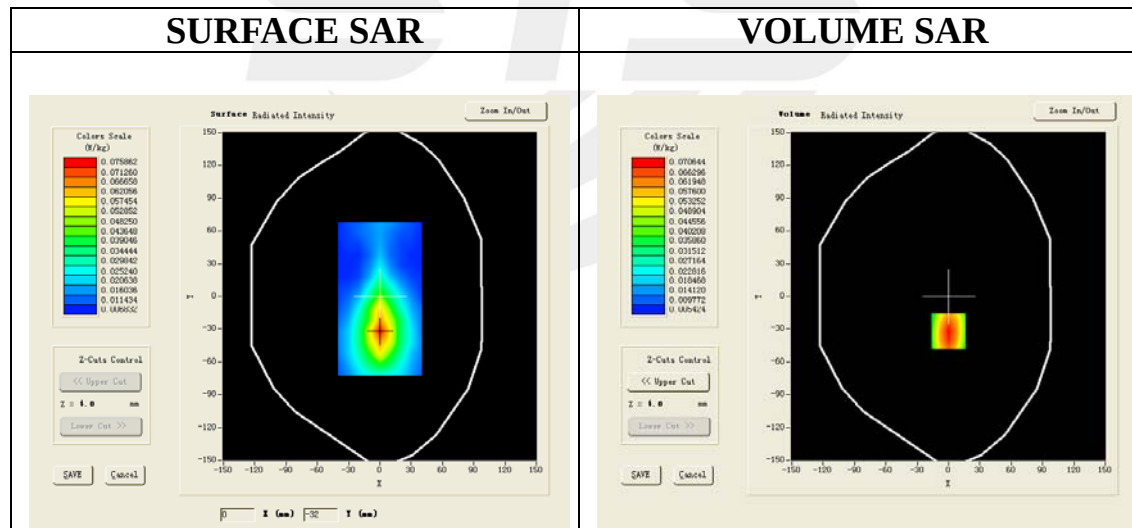
Phantom: SAM Twin Phantom

Measurement SW: OpenSAR V4_02_01

Configuration/GPRS 850 Mid-Edge 4/Area Scan: Measurement grid: dx=8mm, dy=8mm

Configuration/GPRS 850 Mid-Edge 4/Zoom Scan: Measurement grid: dx=8mm,dy=8mm, dz=5mm;

Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Edge 4
Band	GSM 850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)



Maximum location: X=0.00, Y=-32.00

SAR 10g (W/Kg)	0.043902
SAR 1g (W/Kg)	0.073364

