SAR TEST REPORT

No. 2011SAR00104

For

TCT Mobile Limited

HSDPA/UMTS dual band / GSM quad bands mobile phone

Tequila AWS

one touch 909S

With

Hardware Version: PIO

Software Version: V942

FCCID: RAD183

Issued Date: 2011-09-02

***No.* DGA-PL-114/01-02**

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

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TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

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1.2 Testing Environment

Temperature:	18°C~25 °C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω

Ambient noise is checked and found very low and in compliance with requirement of standards.
Reflection of surrounding objects is minimized and in compliance with requirement of standards.

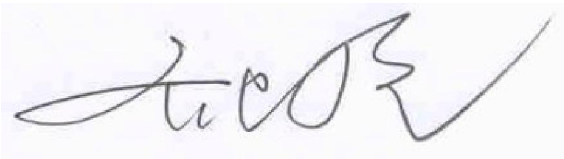
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	August 3, 2011
Testing End Date:	August 16, 2011

1.4 Signature

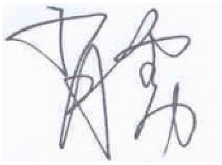
Lin Xiaojun

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Xiao Li

Deputy Director of the laboratory

(Approved this test report)

2 Client Information

2.1 Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
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2.2 Manufacturer Information

Company Name:	TCT Mobile Limited
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3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

EUT Description:	HSDPA/UMTS dual band / GSM quad bands mobile phone
Model Name:	Tequila AWS
Marketing Name:	one touch 909S
Frequency Band:	GSM850 / PCS1900 / WCDMA1700 / WiFi
GPRS Multislot Class:	12
GPRS capability Class:	B
EGPRS Multislot Class:	12
Hotspot mode:	Support simultaneous transmission of hotspot and voice(or data)
Form factor:	11.8cm×5.7cm

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012718000003239 / 012718000004419	PIO	V942

*EUT ID: is used to identify the test sample in the lab internally.

3.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	CAB31P0000C1	/	BYD
AE2	Headset	CCB3160A11C1	/	Juwei
AE3	Headset	CCB3160A11C2	/	Shunda

*AE ID: is used to identify the test sample in the lab internally.

4 CHARACTERISTICS OF THE TEST

4.1 Applicable Limit Regulations

EN 50360–2001: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
It specifies the maximum exposure limit of **2.0 W/kg** as averaged over any 10 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.
ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

4.2 Applicable Measurement Standards

EN 62209-1–2006: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz).
IEEE 1528–2003: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.
OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01): Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.
IEC 62209-1-2005: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1:Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
KDB648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05: SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas.
KDB248227: SAR measurement procedures for 802.112abg transmitters.
KDB941225 D06 Hot Spot SAR v01: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

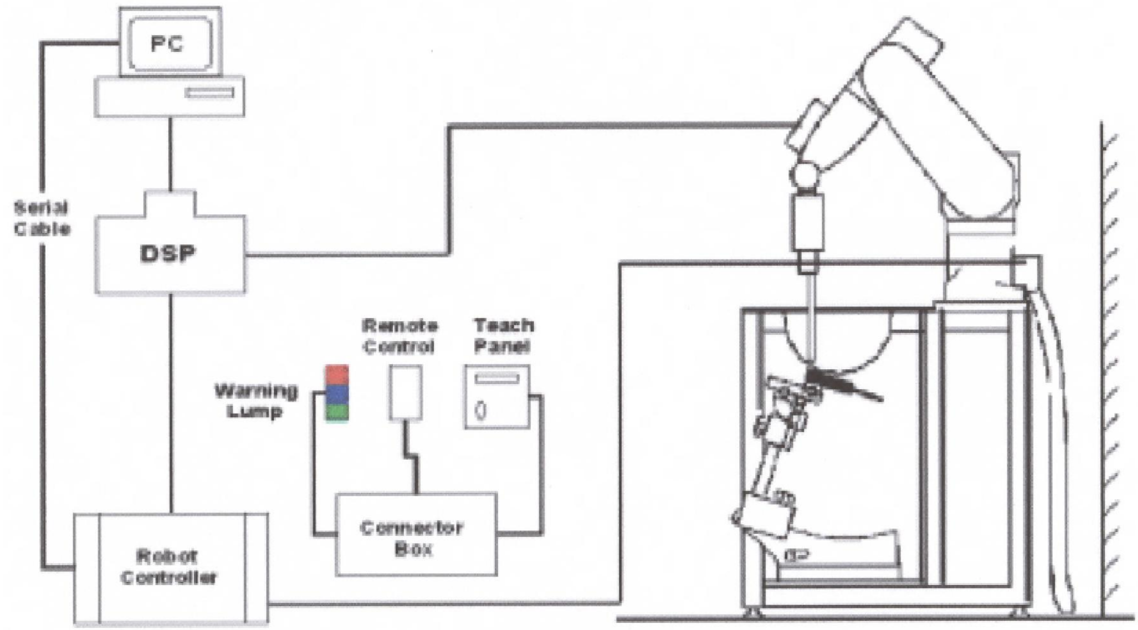
During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850 MHz; 512, 661 and 810 respectively in the case of PCS 1900 MHz; 1312, 1412 and 1513 respectively in the case of WCDMA 1700 MHz. The EUT is commanded to operate at maximum transmitting power.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 30 dB.

5.2 SAR Measurement Set-up

These measurements were performed with the automated near-field scanning system DASY4 Professional from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than ± 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY4 Professional, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.



Picture 2: SAR Lab Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

5.3 Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

ES3DV3 Probe Specification

Picture 3: ES3DV3 E-field

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 900 and HSL 1810 Additional CF for other liquids and frequencies upon request
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)

Directivity ± 0.2 dB in HSL (rotation around probe axis)
± 0.3 dB in tissue material (rotation normal to probe axis)

Dynamic Range 5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB

Dimensions Overall length: 330 mm (Tip: 20 mm)
Tip diameter: 3.9 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 2.0 mm

Application General dosimetry up to 4 GHz
Dosimetry in strong gradient fields
Compliance tests of mobile phones

Picture4:ES3DV3 E-field probe

5.4 E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

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

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

Where: Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
ΔT = Temperature increase due to RF exposure.

Or

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

Where:
σ = Simulated tissue conductivity,

Picture 5: Device Holder

ρ = Tissue density (kg/m^3).

5.5 Other Test Equipment

5.5.1 Device Holder for Transmitters

In combination with the Generic Twin Phantom V3.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatable positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

5.5.2 Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness 2±0. l mm

Filling Volume Approx. 20 liters

Dimensions 810 x l000 x 500 mm (H x L x W)

Available Special

Picture 6: Generic Twin Phantom

5.6 Equivalent Tissues

The liquid used for the frequency range of 800-2000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 1 and 2 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528.

Table 1. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	41.45
Sugar	56.0
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=41.5 σ=0.90
MIXTURE %	FREQUENCY 1800/1900MHz
Water	55.242
Glycol monobutyl	44.452

Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40
MIXTURE %	FREQUENCY 2450MHz
Water	58.79
Glycol monobutyl	41.15
Salt	0.06
Dielectric Parameters Target Value	f=2450MHz ε=39.2 σ=1.80

Table 2. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	52.5
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97
MIXTURE %	FREQUENCY 1800/1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52
MIXTURE %	FREQUENCY 2450MHz
Water	72.60
Glycol monobutyl	27.22
Salt	0.18
Dielectric Parameters Target Value	f=2450MHz ε=52.7 σ=1.95

5.7 System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: RX90L

Repeatability: ±0.02 mm

No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: Pentium III

Clock Speed: 800 MHz

Operating System: Windows 2000

Data Converter

Features: Signal Amplifier, multiplexer, A/D converter, and control logic

Software: DASY4 software

Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

6 CONDUCTED OUTPUT POWER MEASUREMENT

6.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured output power should be greater and within 5% than EMI measurement.

6.2 Conducted Power

6.2.1 Measurement Methods

The EUT was set up for the maximum output power. The channel power was measured with CMU200. These measurements were done at low, middle and high channels.

6.2.2 Measurement result

Table 3: The conducted power for GSM 850/1900

GSM 850MHZ	**Conducted Power (dBm)**		
	Channel 251(848.8MHz)	**Channel 190(836.6MHz)**	**Channel 128(824.2MHz)**
	32.79	32.87	32.97
GSM 1900MHZ	**Conducted Power (dBm)**		
	Channel 810(1909.8MHz)	**Channel 661(1880MHz)**	**Channel 512(1850.2MHz)**
	29.62	29.72	29.80

Table 4: The conducted power for GPRS 850/1900 and EGPRS 850/1900

GSM 850 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	32.79	32.87	32.96	-9.03dB	23.76	23.84	23.93
2 Txslots	30.37	30.46	30.58	-6.02dB	**24.35**	**24.44**	**24.56**
3Txslots	28.45	28.53	28.63	-4.26dB	24.19	24.27	24.37
4 Txslots	27.33	27.40	27.53	-3.01dB	24.32	24.39	24.52
GSM 850 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	32.78	32.86	32.95	-9.03dB	23.75	23.83	23.92
2 Txslots	30.35	30.45	30.57	-6.02dB	**24.33**	**24.43**	**24.55**
3Txslots	28.45	28.53	28.63	-4.26dB	24.19	24.27	24.37
4 Txslots	27.31	27.40	27.52	-3.01dB	24.30	24.39	24.51
PCS1900 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	30.04	30.00	29.87	-9.03dB	21.01	20.97	20.84
2 Txslots	27.60	27.54	27.45	-6.02dB	21.58	21.52	21.43
3Txslots	25.75	25.68	25.58	-4.26dB	21.49	21.42	21.32

4 Txslots	24.60	24.55	24.45	-3.01dB	**21.59**	**21.54**	**21.44**
PCS1900 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	30.03	30.00	29.88	-9.03dB	21.00	20.97	20.85
2 Txslots	27.62	27.57	27.46	-6.02dB	21.60	21.55	21.44
3Txslots	25.77	25.71	25.60	-4.26dB	21.51	21.45	21.34
4 Txslots	24.62	24.58	24.47	-3.01dB	**21.61**	**21.57**	**21.46**

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 2 Txslots for 850MHz and 4 Txslots for 1900MHz.

Table 5: The conducted Power for WCDMA1700

Item	**band**	**FDDIV result**		
	ARFCN	**1513 (1752.6MHz)**	**1412 (1732.4MHz)**	**1312 (1712.4MHz)**
WCDMA	\	22.24	22.10	22.26
HSDPA	**1**	21.87	21.67	21.97
	2	21.87	21.73	21.92
	3	21.53	21.32	21.59
	4	21.58	21.40	21.57

Note: Body SAR for HSDPA of WCDMA1700 is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps TMC without HSDPA. Because the maximum SAR for WCDMA1700 is above 75% of the SAR limit (see table 15 for the SAR measurement results).

6.2.3 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Table 10 to Table 17 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

7 TEST RESULTS

7.1 Dielectric Performance

Table 6: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **Aug 3, 2011** 1900 MHz **Aug 4, 2011** 1800 MHz **Aug 5, 2011** 2450 MHz **Aug 16, 2011**

/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835 MHz	41.5	0.90
	1900 MHz	40.0	1.40
	1800 MHz	40.0	1.40
	2450 MHz	39.2	1.80
Measurement value (Average of 10 tests)	835 MHz	41.9	0.90
	1900 MHz	40.5	1.40
	1800 MHz	39.9	1.44
	2450 MHz	39.6	1.82

Table 7: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **Aug 3, 2011** 1900 MHz **Aug 4, 2011** 1800 MHz **Aug 5, 2011** 2450 MHz **Aug 16, 2011**

/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835 MHz	55.2	0.97
	1900 MHz	53.3	1.52
	1800 MHz	53.3	1.52
	2450 MHz	52.7	1.95
Measurement value (Average of 10 tests)	835 MHz	54.2	0.95
	1900 MHz	52.1	1.54
	1800 MHz	52.3	1.50
	2450 MHz	52.4	1.93

7.2 System Validation

Table 8: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **Aug 3, 2011** 1900 MHz **Aug 4, 2011** 1800 MHz **Aug 5, 2011** 2450 MHz **Aug 16, 2011**

Liquid parameters	Dipole calibration	Frequency	Permittivity ε	Conductivity σ (S/m)
		835 MHz	41.6	0.92

	Target value	1900 MHz	39.6	1.40
		1800 MHz	40.0	1.42
		2450 MHz	39.0	1.74
	Actural Measurement value	835 MHz	41.9	0.90
		1900 MHz	40.5	1.40
		1800 MHz	39.9	1.44
		2450 MHz	39.6	1.82

	Frequency	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
Verification results	835 MHz	6.12	9.41	6.04	9.36	-1.31%	-0.53%
	1900 MHz	20.1	39.4	19.92	39.84	-0.90%	1.12%
	1800 MHz	20.0	38.5	19.52	37.88	-2.40%	-1.61%
	2450 MHz	24.6	52.4	23.78	51.4	-3.33%	-1.91%

Note：Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration Certificate.

Table 9: System Validation of Body

Measurement is made at temperature 23.0 °C and relative humidity 40%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **Aug 3, 2011** 1900 MHz **Aug 4, 2011** 1800 MHz **Aug 5, 2011** 2450 MHz **Aug 16, 2011**

		Frequency	**Permittivity ε**	**Conductivity σ (S/m)**
Liquid parameters	Dipole calibration Target value	835 MHz	54.5	0.97
		1900 MHz	52.5	1.51
		1800 MHz	52.6	1.54
		2450 MHz	52.5	1.95
	Actural Measurement value	835 MHz	54.2	0.95
		1900 MHz	52.1	1.54
		1800 MHz	52.3	1.50
		2450 MHz	52.4	1.93

	Frequency	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
Verification results	835 MHz	6.24	9.57	6.24	9.76	0.00%	1.99%
	1900 MHz	20.9	41.4	20.8	41.2	-0.48%	-0.48%
	1800 MHz	21.0	40.6	21.56	42.0	2.67%	3.45%
	2450 MHz	23.9	51.6	23.66	51.48	-1.00%	-0.23%

Note：Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration

Certificate.

7.3 Summary of Measurement Results

Table 10: SAR Values (GSM 850MHz-Head)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, High frequency (See Fig.1)	0.473	0.630	0.091
Left hand, Touch cheek, Middle frequency (See Fig.2)	0.456	0.605	-0.075
Left hand, Touch cheek, Low frequency (See Fig.3)	0.453	0.601	-0.041
Left hand, Tilt 15 Degree, High frequency (See Fig.4)	0.313	0.412	-0.033
Left hand, Tilt 15 Degree, Middle frequency (See Fig.5)	0.312	0.409	0.036
Left hand, Tilt 15 Degree, Low frequency (See Fig.6)	0.307	0.400	0.055
Right hand, Touch cheek, High frequency (See Fig.7)	0.488	0.656	-0.022
Right hand, Touch cheek, Middle frequency (See Fig.8)	0.490	0.655	0.036
Right hand, Touch cheek, Low frequency (See Fig.9)	0.497	0.660	0.103
Right hand, Tilt 15 Degree, High frequency (See Fig.10)	0.337	0.444	-0.036
Right hand, Tilt 15 Degree, Middle frequency (See Fig.11)	0.339	0.444	-0.080
Right hand, Tilt 15 Degree, Low frequency (See Fig.12)	0.333	0.435	0.00266

Table 11: SAR Values (PCS 1900MHz-Head)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, High frequency (See Fig.13)	0.213	0.332	-0.036
Left hand, Touch cheek, Middle frequency (See Fig.14)	0.221	0.385	0.061
Left hand, Touch cheek, Low frequency (See Fig.15)	0.248	0.383	0.067
Left hand, Tilt 15 Degree, High frequency (See Fig.16)	0.132	0.210	-0.004
Left hand, Tilt 15 Degree, Middle frequency (See Fig.17)	0.147	0.232	0.026
Left hand, Tilt 15 Degree, Low frequency (See Fig.18)	0.134	0.209	-0.047
Right hand, Touch cheek, High frequency (See Fig.19)	0.273	0.465	0.086
Right hand, Touch cheek, Middle frequency (See Fig.20)	0.338	0.576	0.163
Right hand, Touch cheek, Low frequency (See Fig.21)	0.377	0.637	0.164
Right hand, Tilt 15 Degree, High frequency (See Fig.22)	0.097	0.156	0.049

Right hand, Tilt 15 Degree, Middle frequency (See Fig.23)	0.127	0.202	-0.003
Right hand, Tilt 15 Degree, Low frequency(See Fig.24)	0.128	0.201	0.014

Table 12: SAR Values (WCDMA 1700MHz-Head)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.25)	0.366	0.615	0.127
Left hand, Touch cheek, Middle frequency (See Fig.26)	0.378	0.633	0.191
Left hand, Touch cheek, Low frequency (See Fig.27)	0.414	0.688	0.140
Left hand, Tilt 15 Degree, High frequency (See Fig.28)	0.141	0.214	0.001
Left hand, Tilt 15 Degree, Middle frequency (See Fig.29)	0.124	0.187	-0.108
Left hand, Tilt 15 Degree, Low frequency (See Fig.30)	0.123	0.184	0.069
Right hand, Touch cheek, High frequency (See Fig.31)	0.576	0.949	0.132
Right hand, Touch cheek, Middle frequency (See Fig.32)	0.625	1.02	0.145
Right hand, Touch cheek, Low frequency (See Fig.33)	0.652	1.06	-0.009
Right hand, Tilt 15 Degree, High frequency (See Fig.34)	0.123	0.190	-0.135
Right hand, Tilt 15 Degree, Middle frequency (See Fig.35)	0.132	0.203	0.196
Right hand, Tilt 15 Degree, Low frequency(See Fig.36)	0.136	0.209	0.007

Table 13: SAR Values (GSM 850MHz-Body)

Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Towards Phantom, High frequency with GPRS (See Fig.37)	0.664	0.898	-0.019
Towards Phantom, Middle frequency with GPRS (See Fig.38)	0.638	0.857	0.057
Towards Phantom, Low frequency with GPRS (See Fig.39)	0.641	0.865	0.062
Towards Ground, High frequency with GPRS (See Fig.40)	0.851	1.17	-0.012
Towards Ground, Middle frequency with GPRS (See Fig.41)	0.837	1.14	0.070
Towards Ground, Low frequency with GPRS (See Fig.42)	0.827	1.15	-0.054
Left Side, Low frequency with GPRS (See Fig.43)	0.503	0.738	-0.101
Right Side, High frequency with GPRS (See Fig.44)	0.656	0.943	0.021
Right Side, Middle frequency with GPRS (See Fig.45)	0.605	0.882	-0.015
Right Side, Low frequency with GPRS (See Fig.46)	0.586	0.841	-0.016

Bottom Side, Low frequency with GPRS (See Fig.47)	0.065	0.107	-0.077
Towards Ground, High frequency with EGPRS (See Fig.48)	0.819	1.12	0.001
Towards Ground, High frequency with Headset_CCB3160A11C1 (See Fig.49)	0.559	0.766	0.001
Towards Ground, High frequency with Headset_CCB3160A11C2 (See Fig.50)	0.724	0.988	-0.164

Table 14: SAR Values (PCS 1900MHz-Body)

Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Towards Phantom, High frequency with GPRS (See Fig.51)	0.327	0.529	-0.101
Towards Ground, High frequency with GPRS (See Fig.52)	0.332	0.599	0.109
Left Side, High frequency with GPRS (See Fig.53)	0.069	0.118	-0.108
Right Side, High frequency with GPRS (See Fig.54)	0.124	0.209	-0.138
Bottom Side, High frequency with GPRS (See Fig.55)	0.346	0.630	0.022
Bottom Side, Middle frequency with GPRS (See Fig.56)	0.409	0.726	0.057
Bottom Side, Low frequency with GPRS (See Fig.57)	0.386	0.689	0.013
Bottom Side, Middle frequency with EGPRS (See Fig.58)	0.400	0.722	-0.026
Bottom Side, Middle frequency with Headset_CCB3160A11C1 (See Fig.59)	0.347	0.620	0.035
Bottom Side, Middle frequency with Headset_CCB3160A11C2 (See Fig.60)	0.329	0.589	-0.009

Table 15: SAR Values (WCDMA 1700MHz-Body)

Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Towards Phantom, High frequency (See Fig.61)	0.665	1.07	0.048
Towards Phantom, Middle frequency (See Fig.62)	0.647	1.05	-0.013
Towards Phantom, Low frequency (See Fig.63)	0.637	1.04	0.062
Towards Ground, High frequency (See Fig.64)	0.730	1.19	-0.118
Towards Ground, Middle frequency (See Fig.65)	0.763	1.25	0.050
Towards Ground, Low frequency (See Fig.66)	0.758	1.24	0.106

Left Side, Low frequency (See Fig.67)	0.132	0.218	0.100
Right Side, Low frequency (See Fig.68)	0.213	0.341	-0.049
Bottom Side, High frequency (See Fig.69)	0.503	0.892	0.085
Bottom Side, Middle frequency (See Fig.70)	0.559	1	0.007
Bottom Side, Low frequency (See Fig.71)	0.557	0.997	-0.045
Towards Ground, Middle frequency with Headset_CCB3160A11C1 (See Fig.72)	0.716	1.14	-0.008
Towards Ground, Middle frequency with Headset_CCB3160A11C2 (See Fig.73)	0.708	1.13	-0.007
Towards Ground, Middle frequency with HSDPA (See Fig.74)	0.746	1.23	-0.092

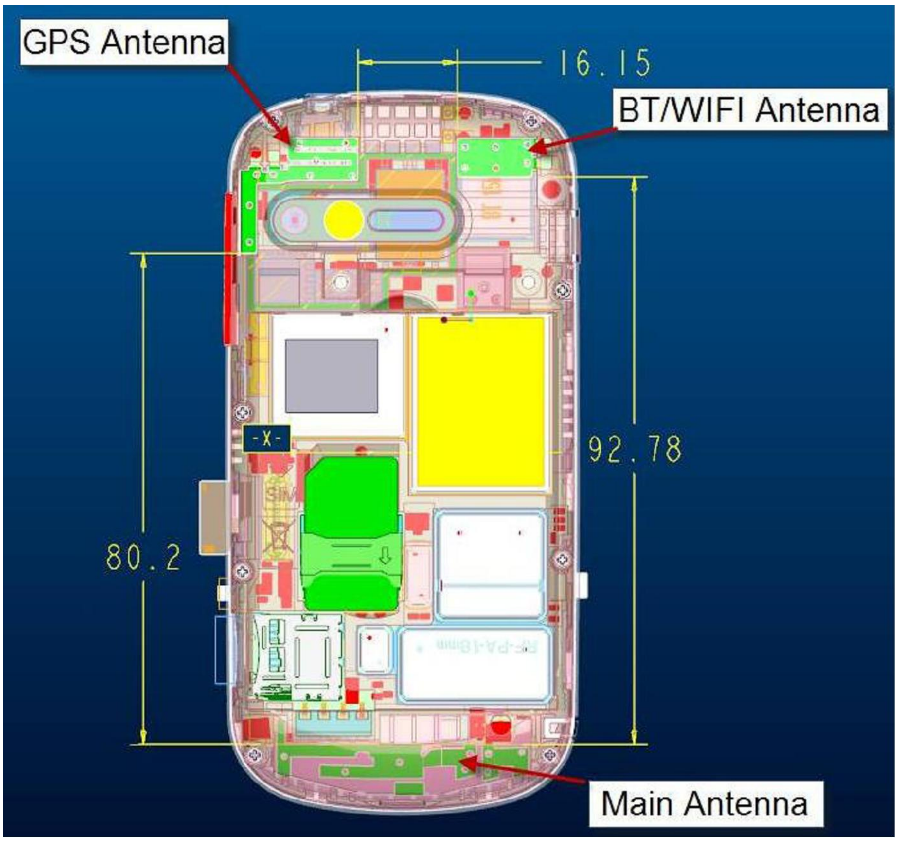
7.4 Simultaneous TX SAR Considerations

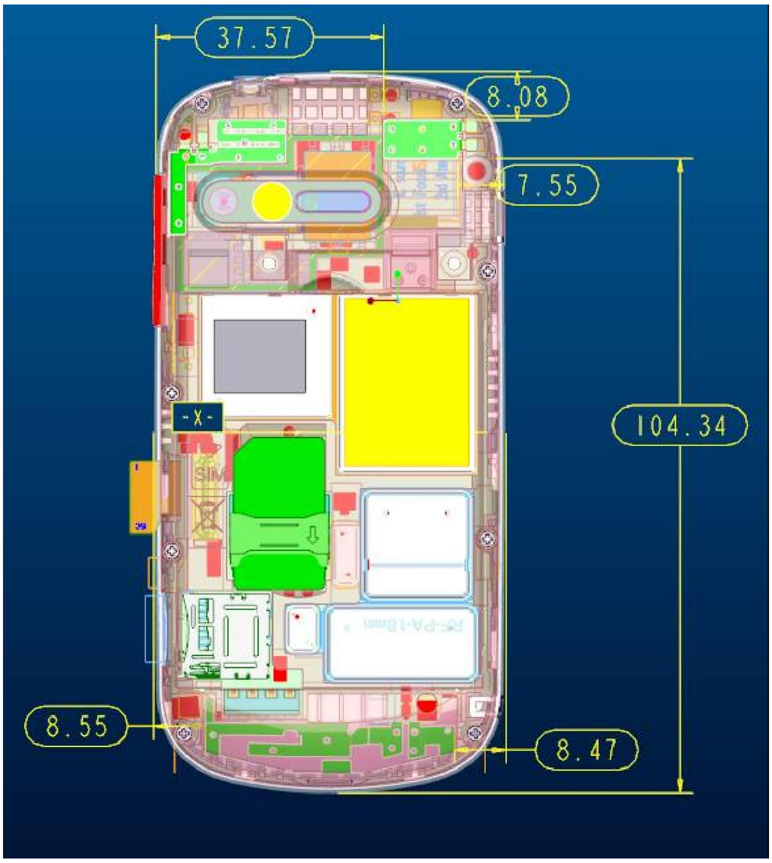
For this device, BT/WiFi transmitter can transmit simultaneously with the main transmitter (data and voice). See below for simultaneous transmission logic table:

/	**GSM**	**WCDMA**	**WiFi**	**BT**
GSM	/	/	Yes	Yes
WCDMA	/	/	Yes	Yes
WiFi	Yes	Yes	/	/
BT	Yes	Yes	/	/

The BT and WiFi will be evaluated separately to determine simultaneous transmission SAR test exclusion with GSM/WCDMA results according to the procedures in KDB 648474.

The distance between BT/WiFi antenna and main antenna is ＞5cm. The location of the antennas inside mobile phone is shown below:





The output power of BT antenna is as following:

Channel	Ch 0 (2402 MHz)	Ch 39 (2441 MHz)	Ch 78 (2480 MHz)
Peak Conducted Output Power(dBm)	8.22	8.67	8.85

According to the output power measurement result and the distance between the two antennas, we can draw the conclusion that: stand-alone SAR and simultaneous transmission SAR are not required for BT transmitter, because the output power of BT transmitter is $\leqslant 2P_{Ref}$ and its antenna is ＞5cm from other antenna

Note: Power thresholds (P_{Ref}) is derived from multiples of $0.5 \times 60/f_{(GHz)}$, that is 12mW (10.79dBm) for BT frequency.

The average conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	15.11	15.10	15.04	14.81
6	15.16	15.15	15.13	14.88
11	14.84	14.81	14.79	14.60

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	13.45	13.32	13.21	12.92	12.68	12.16	11.86	11.75
6	13.55	13.46	13.32	13.07	12.86	12.38	12.05	11.97
11	13.41	13.23	13.09	12.94	12.67	12.23	11.93	11.73

802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	13.27	12.89	12.77	12.58	12.12	11.75	11.68	11.50
6	13.21	12.86	12.76	12.47	12.13	11.78	11.69	11.57
11	13.43	13.03	12.85	12.58	12.25	11.79	11.70	11.51

The peak conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	18.22	18.50	19.93	21.12
6	/	/	/	21.30
11	/	/	/	21.16

802.11g（dBm）

Channel\data	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps

rate								
1	21.52	21.81	21.10	21.15	21.55	21.58	21.62	22.02
6	/	/	/	/	/	/	/	22.15
11	/	/	/	/	/	/	/	22.13

802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	21.55	21.10	21.01	21.50	21.62	21.59	21.80	21.65
6	/	/	/	/	/	/	21.96	/
11	/	/	/	/	/	/	21.81	/

According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi is considered with measurement results of RF and WiFi.

SAR is not required for 802.11g/n channels if the output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels, and for each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 0.25dB higher than those measured at the lowest data rate. According to the above conducted power, the EUT should be tested for “802.11b, 1Mbps, channel 6”.

Table 16: SAR Values (WIFI 802.b -Head)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, 1Mbps,channel 6 (See Fig.75)	0.027	0.055	0.146
Left hand, Tilt 15 Degree, 1Mbps,channel 6 (See Fig.76)	0.00764	0.016	0.170
Right hand, Touch cheek, 1Mbps,channel 6 (See Fig.77)	0.019	0.042	0.120
Right hand, Tilt 15 Degree, 1Mbps,channel 6 (See Fig.78)	0.00543	0.010	0.107

Table 17: SAR Values (WIFI 802.b -Body)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Toward Phantom, 1Mbps,channel 6 (See Fig.79)	0.0039	0.00896	0.154
Toward Ground, 1Mbps,channel 6 (See Fig.80)	0.00764	0.016	0.110
Left Side, 1Mbps,channel 6 (See Fig.81)	0.00498	0.012	0.119
Top Side, 1Mbps,channel 6 (See Fig.82)	0.000354	0.00201	0.140

Table 18: The sum of SAR values for GSM/WCDMA and WiFi

	Position	GSM/WCDMA	WiFi	Sum
Maximum SAR value for Head	Left hand, Touch cheek	0.688	0.055	**0.743**
	Right hand, Touch cheek	1.06	0.042	**1.102**
Maximum SAR value for Body	Toward Ground	1.25	0.016	**1.266**

According to the above tables, the sum of SAR values for GSM/WCDMA and WiFi ＜1.6W/kg. So simultaneous transmission SAR are not required for WiFi transmitter.

7.5 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 4.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 4.1 of this test report.

The maximum SAR values are obtained at the case of **WCDMA 1700 MHz Band, Body Towards Ground, Middle frequency (Table 15)**, and the value are: **1.25(1g).**

8 Measurement Uncertainty

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.25	9.12	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					18.5	18.2	

9 MAIN TEST INSTRUMENTS

Table 19: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 3,2011	One year
02	Power meter	NRVD	102083	September 11, 2010	One year
03	Power sensor	NRV-Z5	100542		
04	Signal Generator	E4433C	MY49070393	November 13, 2010	One Year
05	Amplifier	VTL5400	0505	No Calibration Requested	
06	BTS	8960	MY48365192	November 18, 2010	One year
07	E-field Probe	SPEAG ES3DV3	3149	September 25, 2010	One year
08	E-field Probe	SPEAG EX3DV4	3617	July 8, 2011	One year
09	DAE	SPEAG DAE4	771	November 21, 2010	One year
10	Dipole Validation Kit	SPEAG D835V2	443	February 26, 2010	Two years
11	Dipole Validation Kit	SPEAG D1900V2	541	February 26, 2010	Two years
12	Dipole Validation Kit	SPEAG D1800V2	2d145	February 25, 2010	Two years
13	Dipole Validation Kit	SPEAG D2450V2	853	September 27, 2010	Two years

END OF REPORT BODY

ANNEX A MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the reference point was measured and was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of the phantom was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the flat phantom and the horizontal grid spacing was 10 mm x 10 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

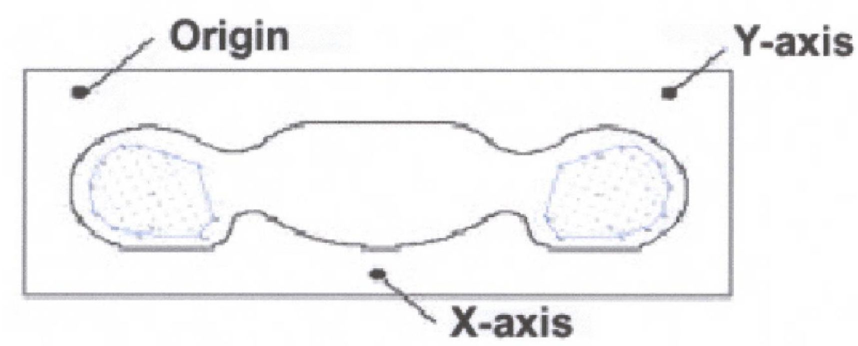
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

b. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x ~ y and z-directions). The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

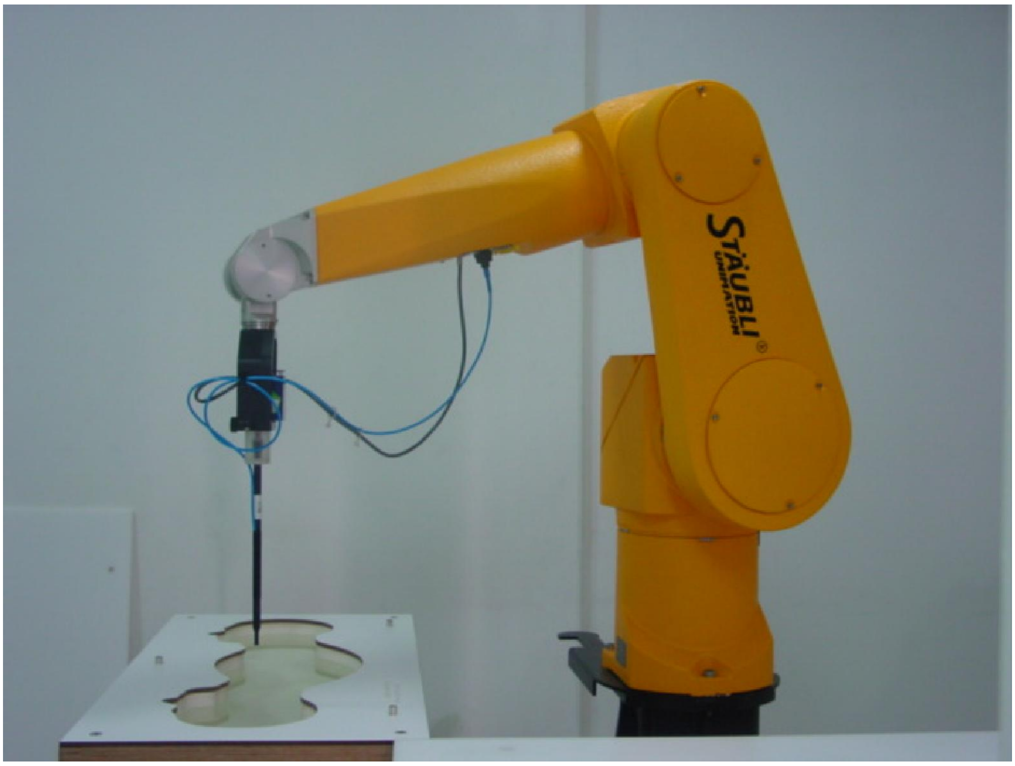
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation is repeated.

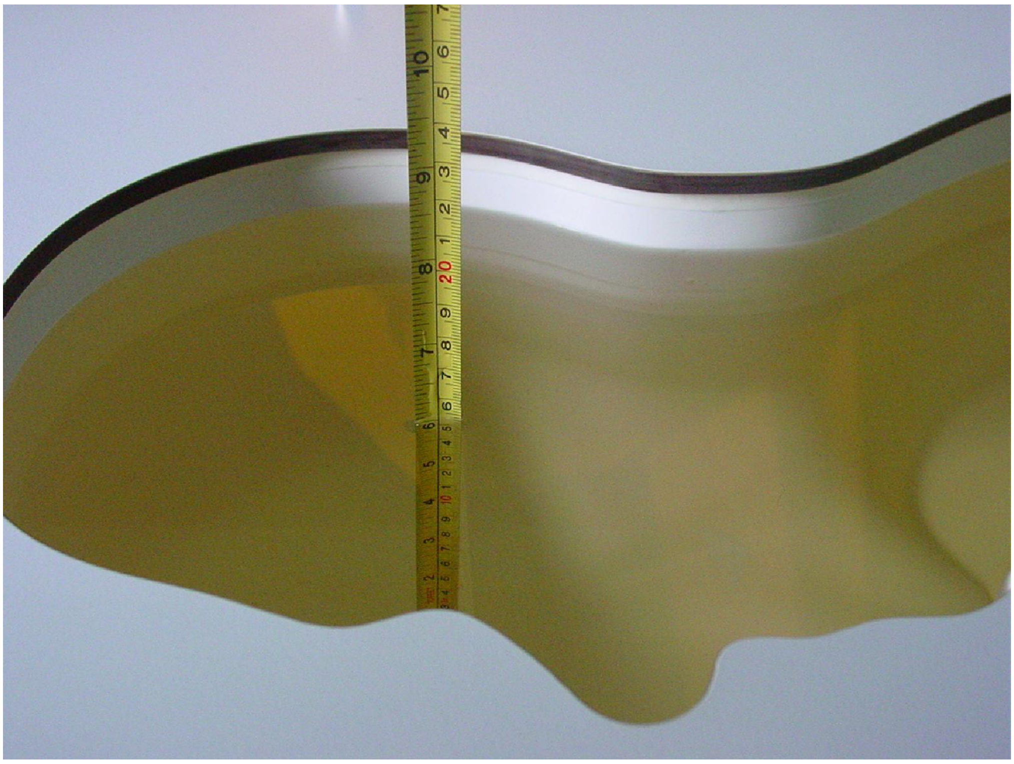


Picture A: SAR Measurement Points in Area Scan

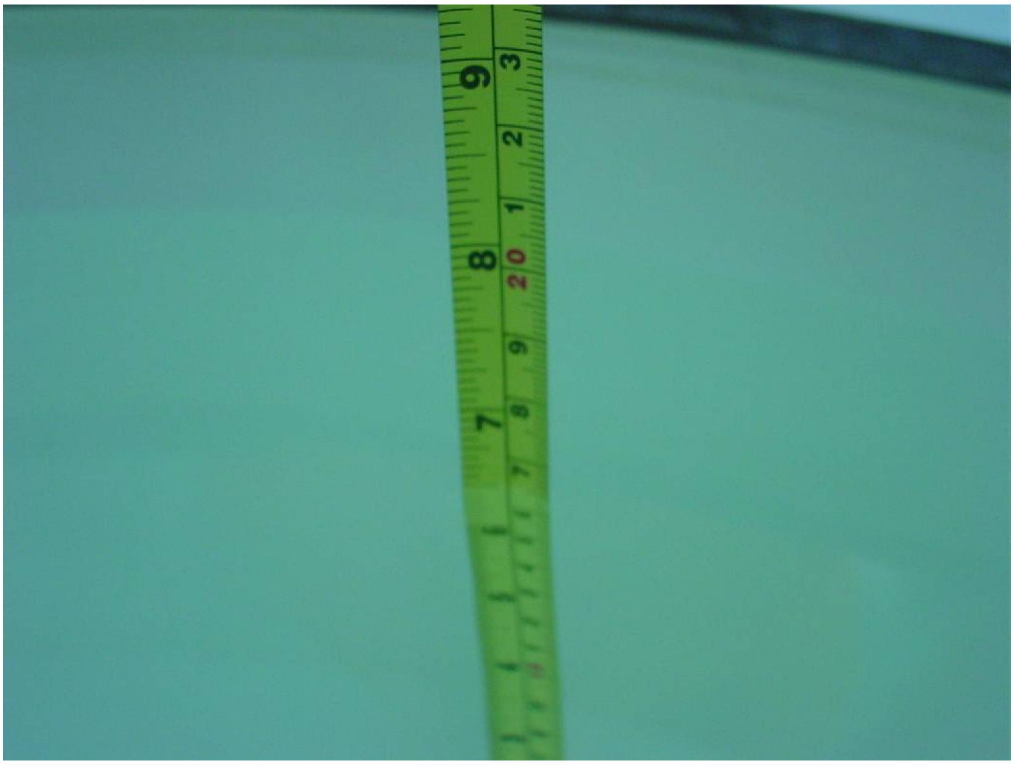
ANNEX B TEST LAYOUT



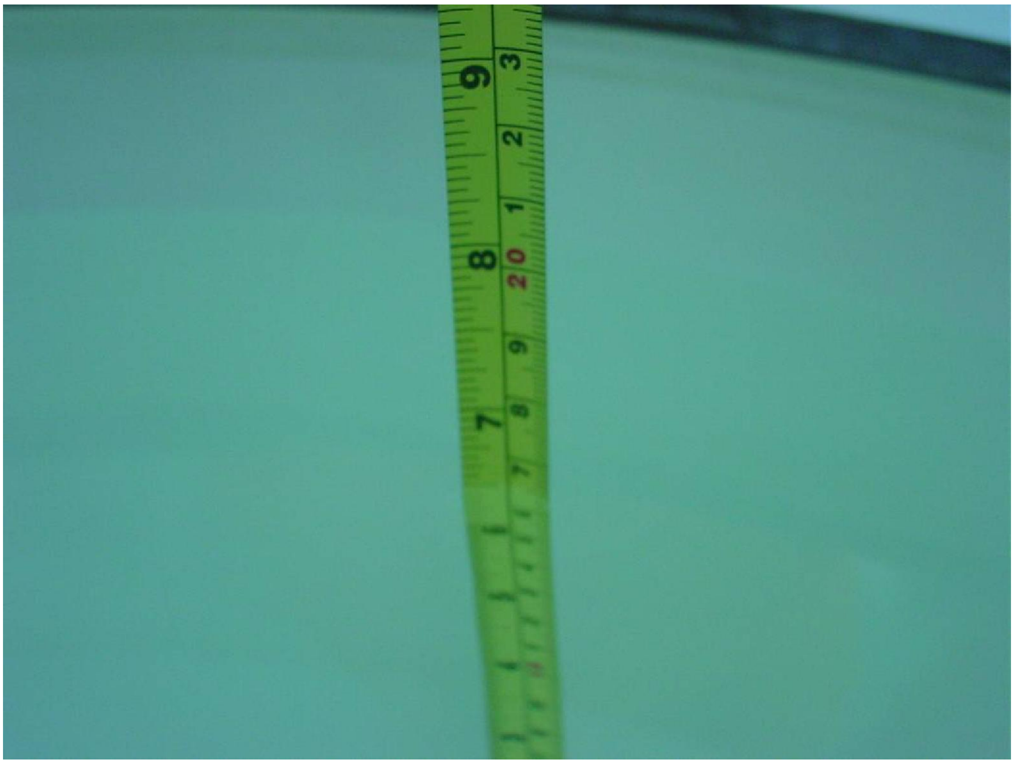
Picture B1: Specific Absorption Rate Test Layout



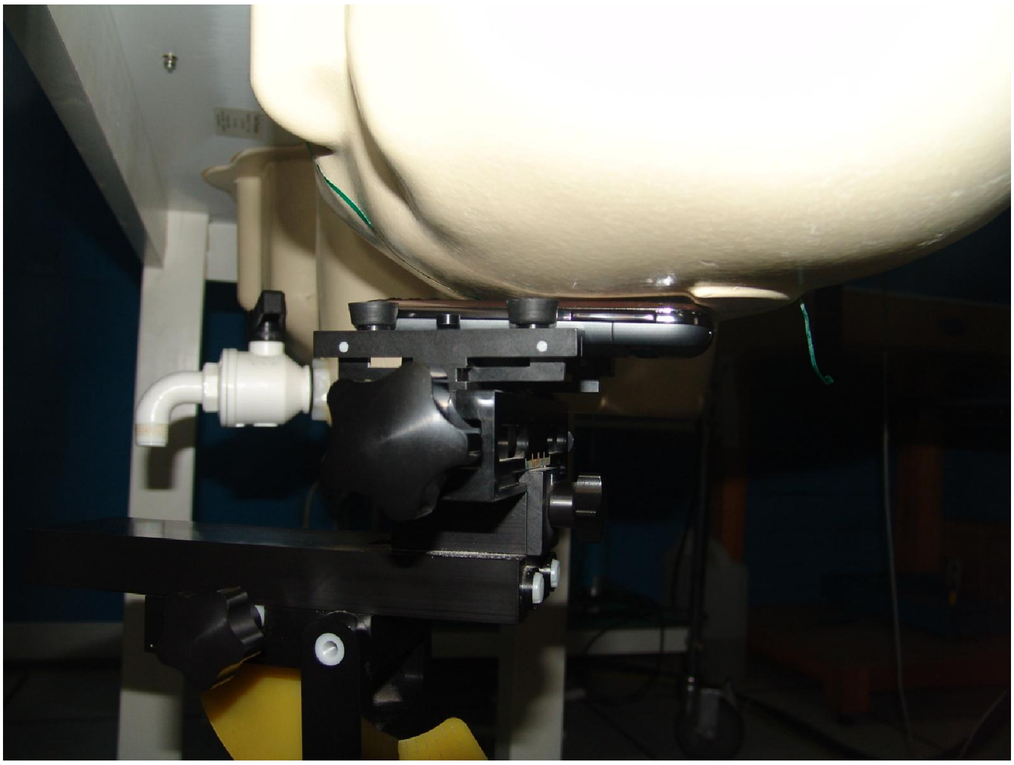
Picture B2: Liquid depth in the Head Phantom (850 MHz)



Picture B3 Liquid depth in the Flat Phantom (1900MHz)

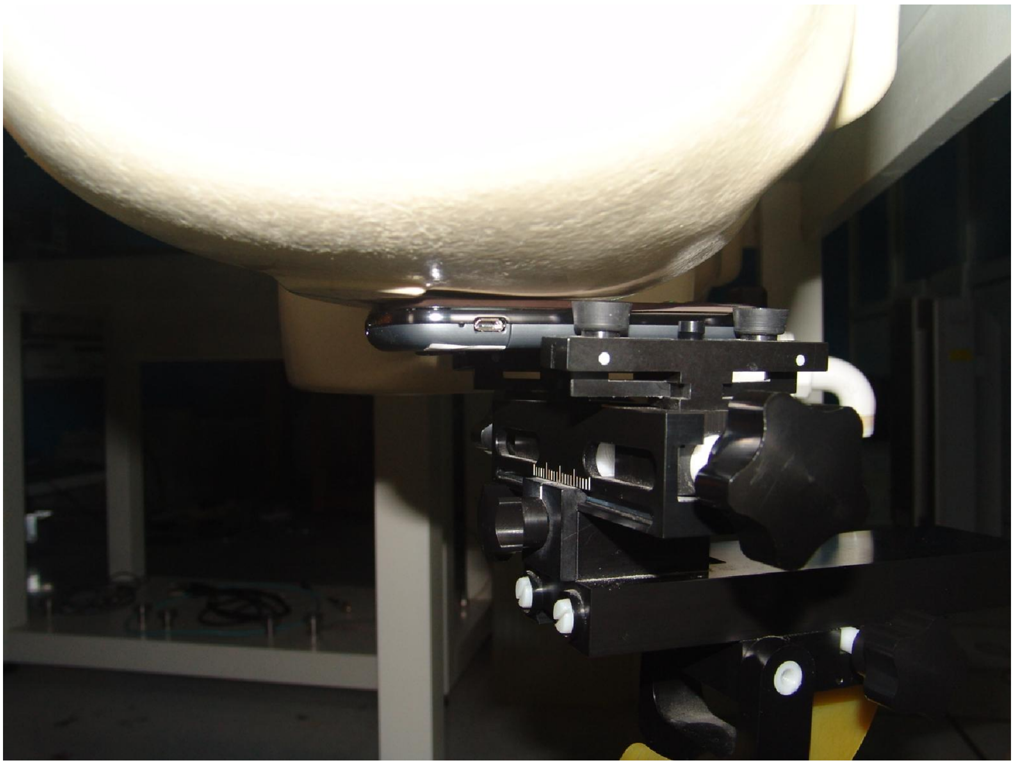


Picture B4 Liquid depth in the Flat Phantom (2450MHz)

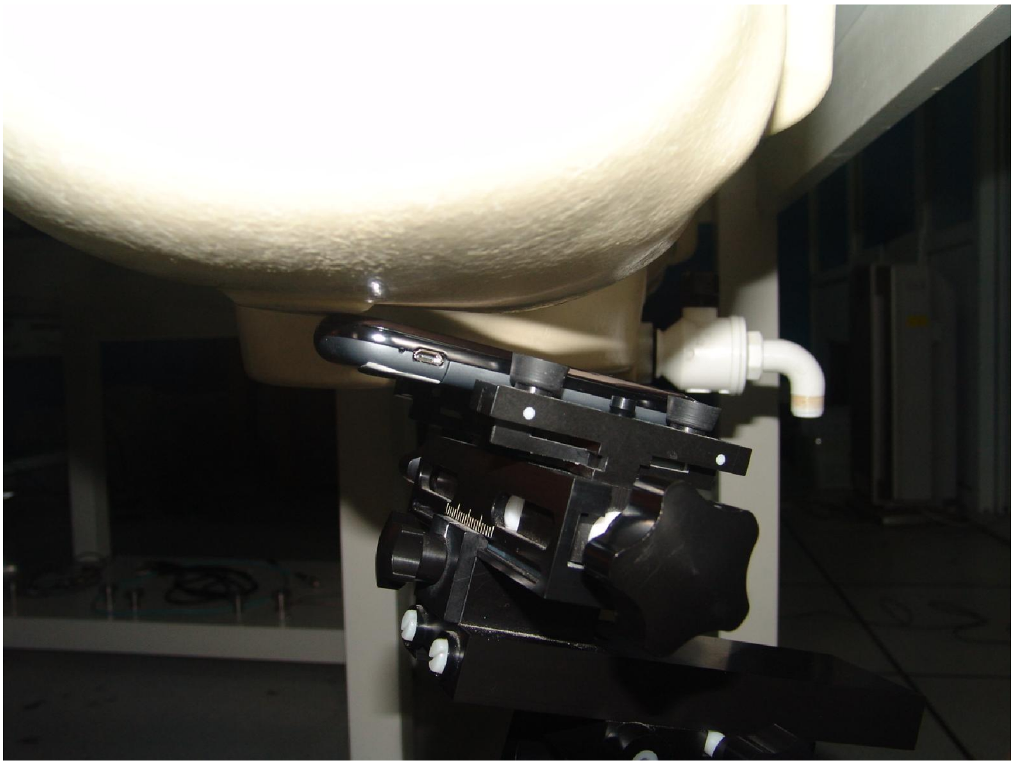


Picture B5: Left Hand Touch Cheek Position

Picture B6: Left Hand Tilt 15° Position



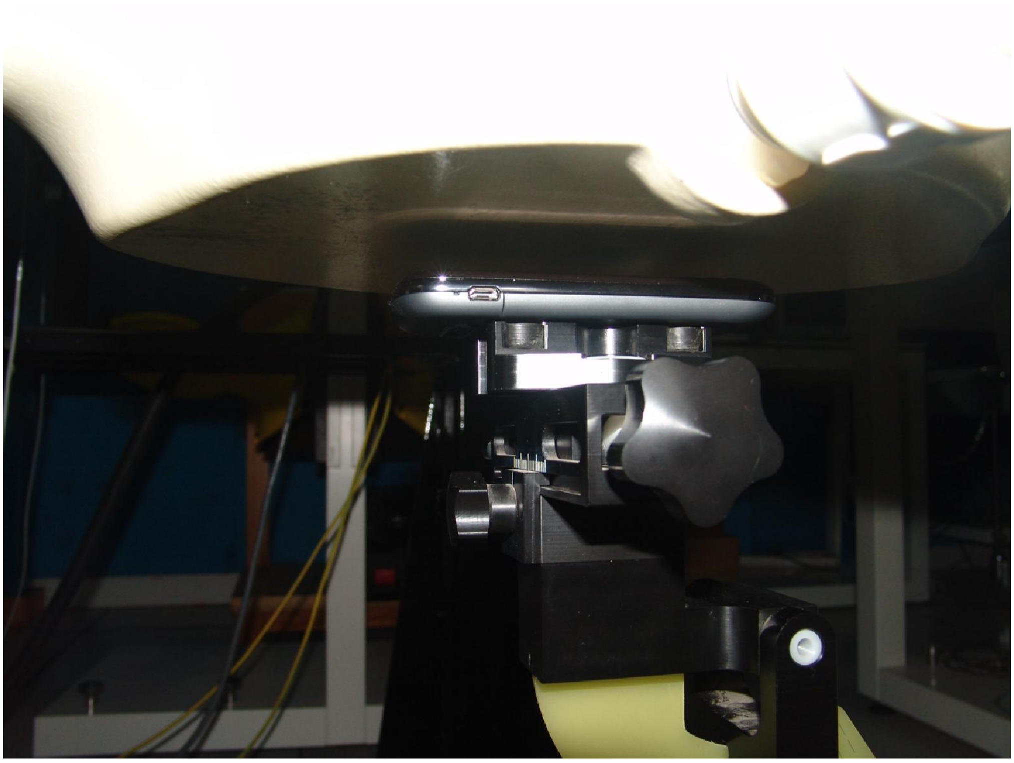
Picture B7: Right Hand Touch Cheek Position



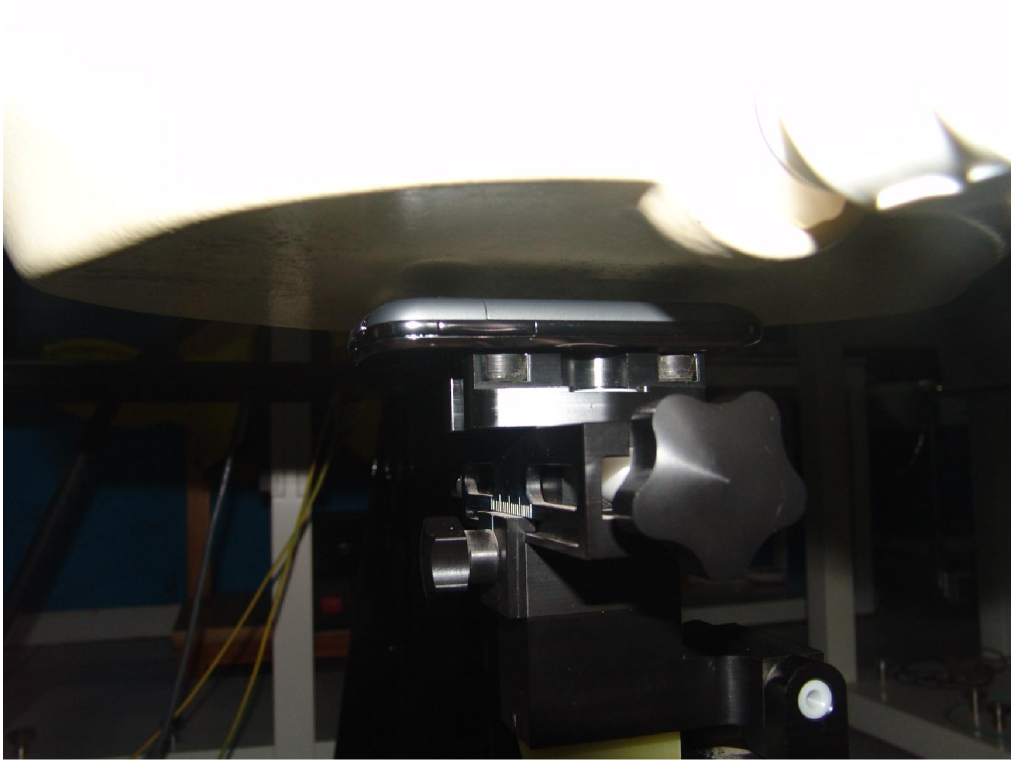
Picture B8: Right Hand Tilt 15° Position

Test positions for body:

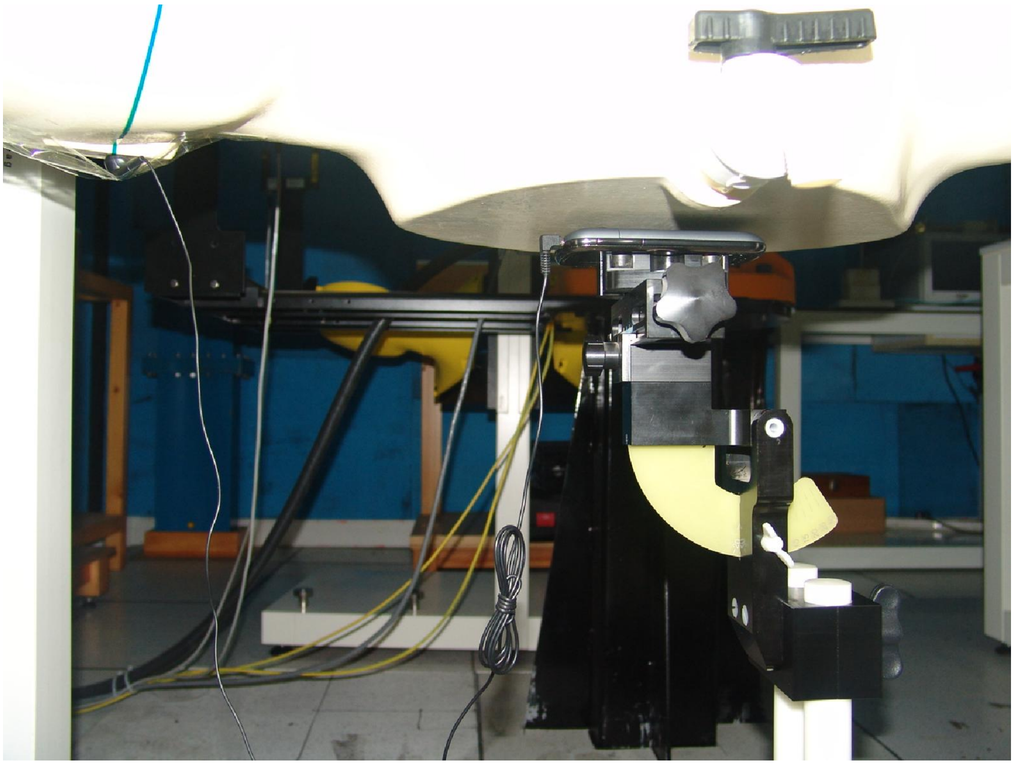
The Body SAR is tested at the following 6 test positions all with the distance =10mm between the EUT and the phantom bottom :



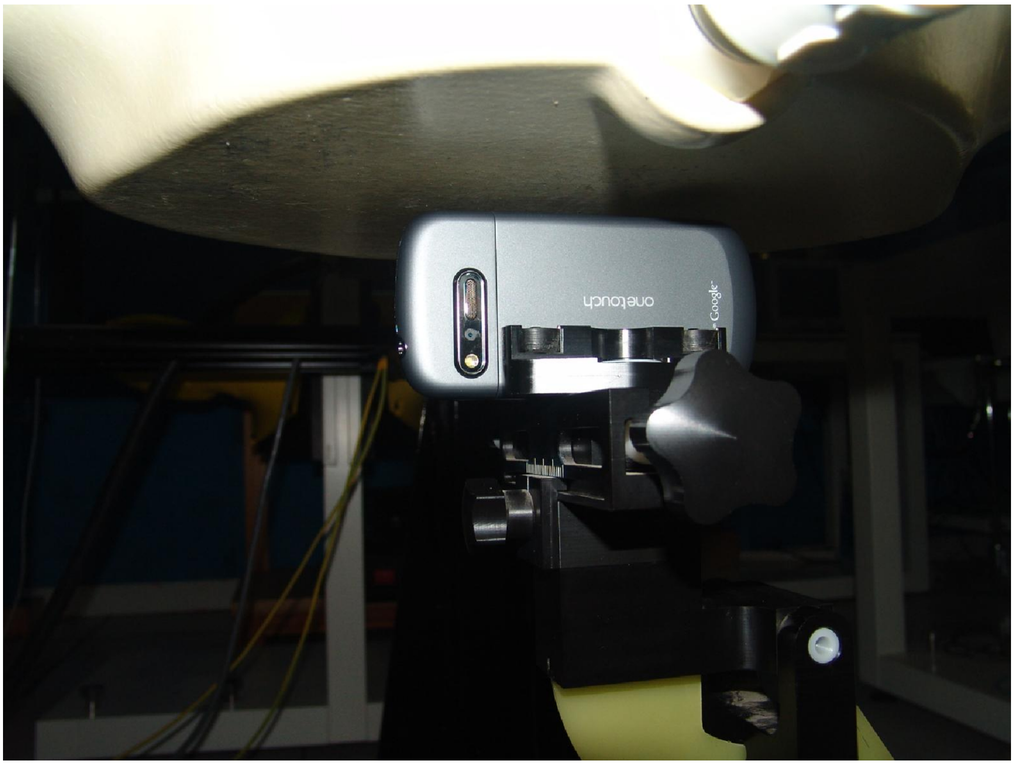
Picture B9: Forward Surface



Picture B10: Back Surface



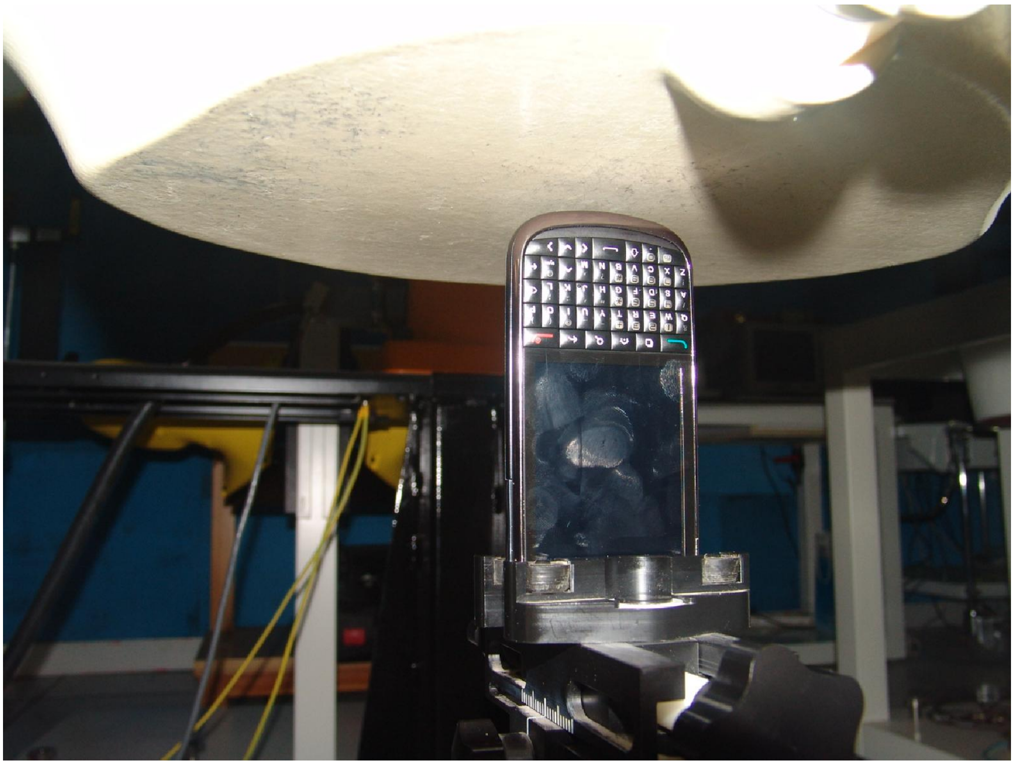
Picture B10-1: Back Surface with Headset



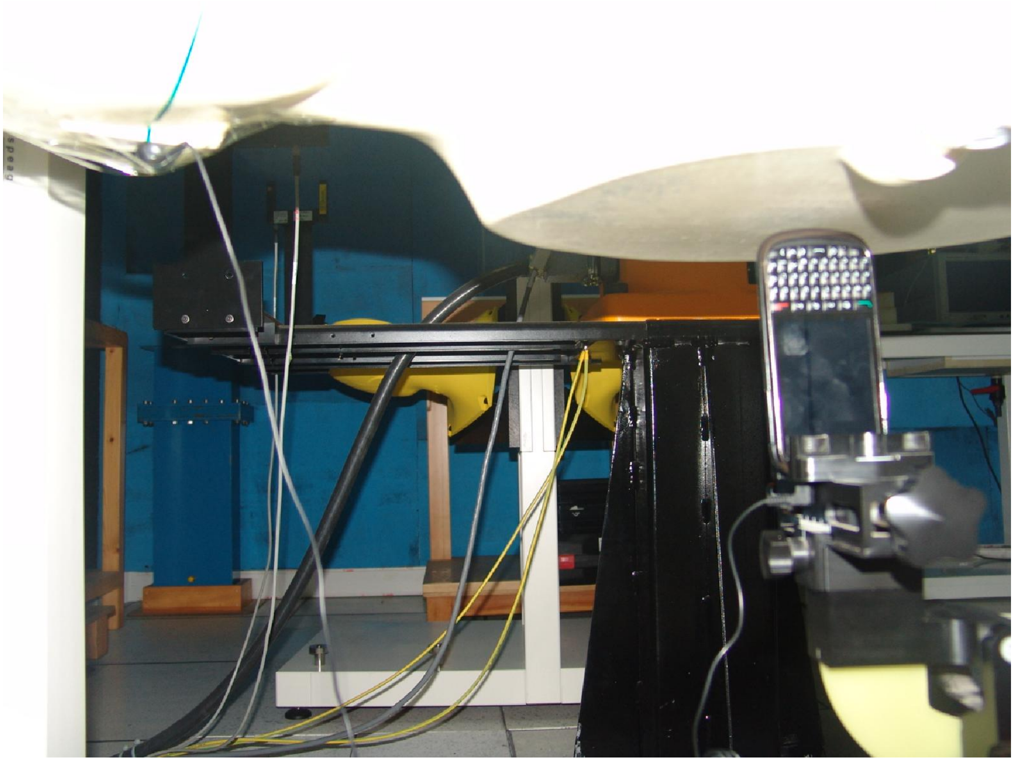
Picture B11: Left Side

Picture B12: Right Side

Picture B13: Top Side



Picture B14: Bottom Side



Picture B14-1: Bottom Side with Headset

ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2011-8-3 7:49:54
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 42.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.666 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.99 V/m; Power Drift = 0.091 dB
Peak SAR (extrapolated) = 0.782 W/kg
SAR(1 g) = 0.630 mW/g; SAR(10 g) = 0.473 mW/g
Maximum value of SAR (measured) = 0.662 mW/g

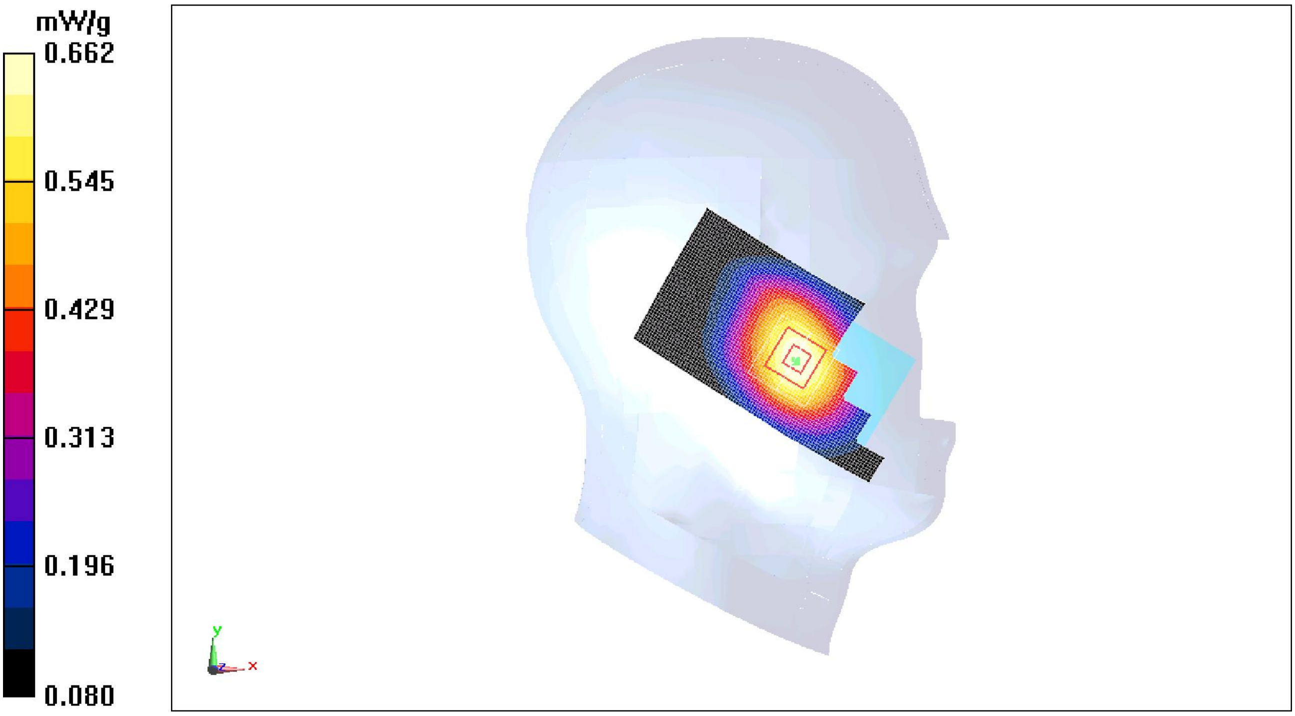


Fig. 1 850MHz CH251

850 Left Cheek Middle

Date/Time: 2011-8-3 8:05:03
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 mho/m; εr = 42.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C   Liquid Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.636 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.02 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 0.746 W/kg
SAR(1 g) = 0.605 mW/g; SAR(10 g) = 0.456 mW/g
Maximum value of SAR (measured) = 0.636 mW/g

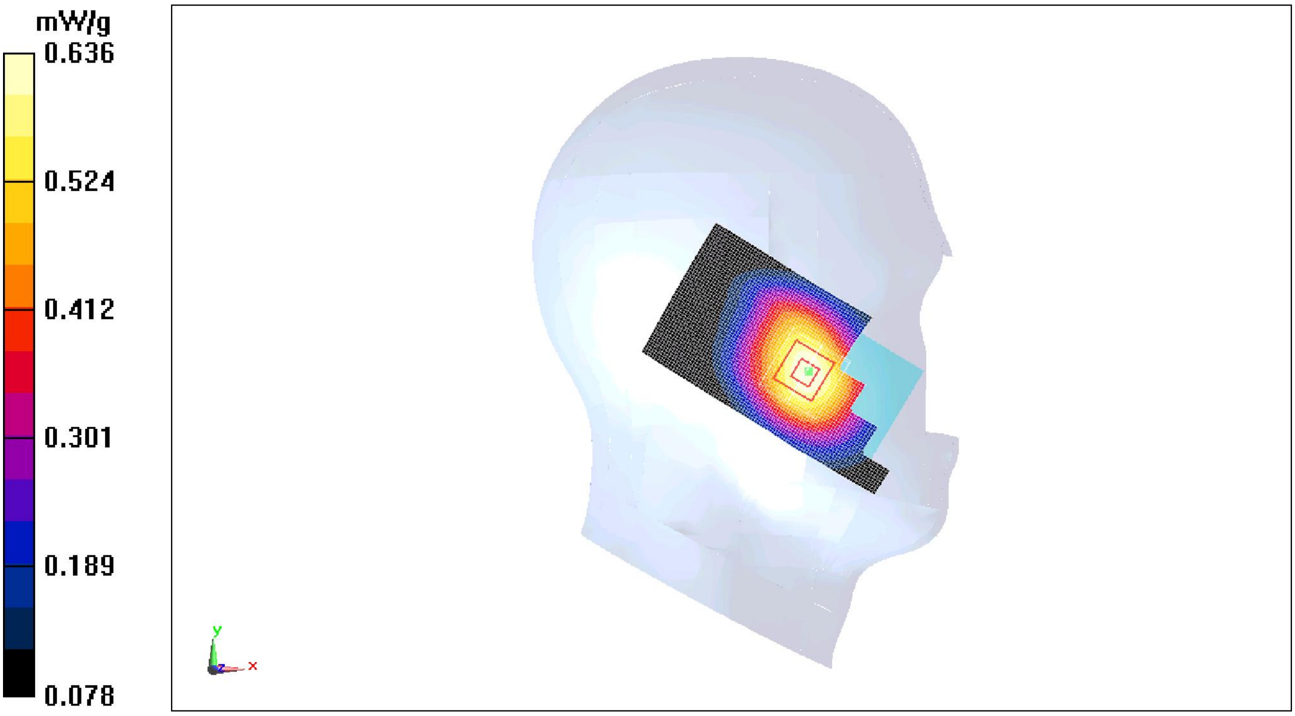


Fig. 2 850 MHz CH190

850 Left Cheek Low
Date/Time: 2011-8-3 8:21:24
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.87 mho/m; εr = 42.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.637 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.19 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 0.745 W/kg
SAR(1 g) = 0.601 mW/g; SAR(10 g) = 0.453 mW/g
Maximum value of SAR (measured) = 0.630 mW/g

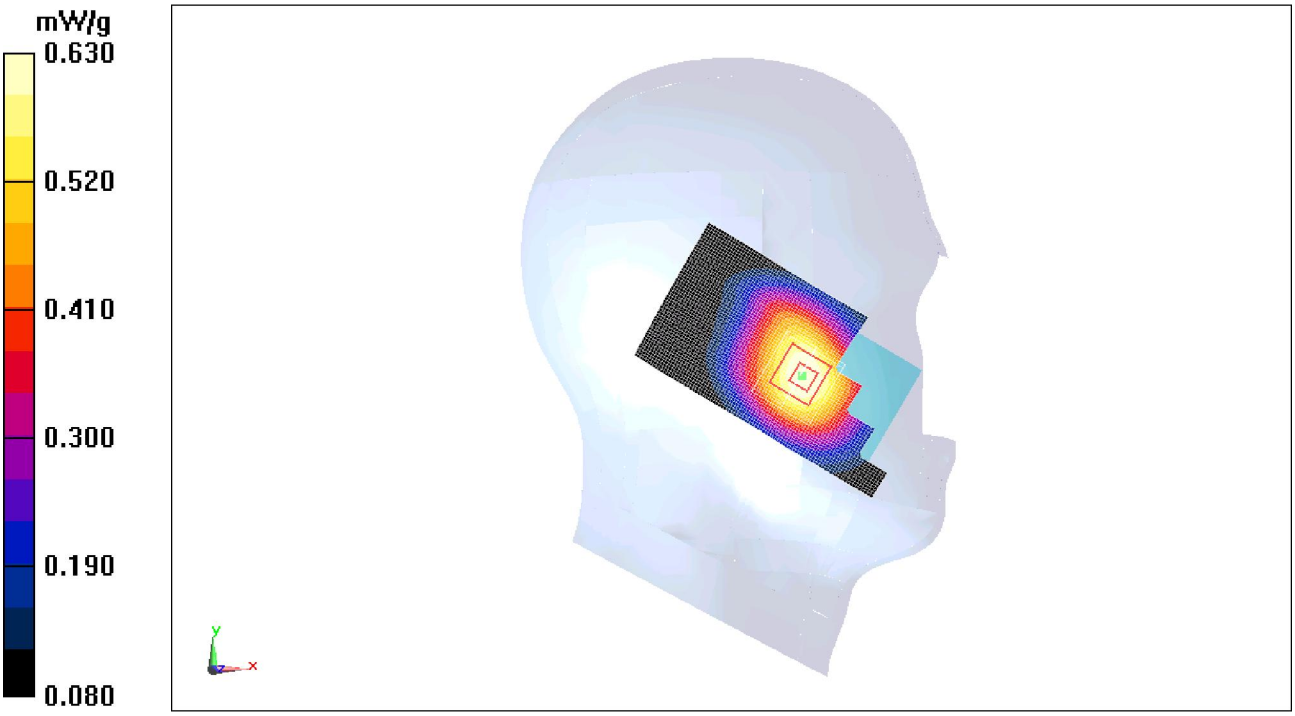


Fig. 3 850 MHz CH128

850 Left Tilt High

Date/Time: 2011-8-3 8:35:57
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 42.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.428 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 0.518 W/kg
SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.313 mW/g
Maximum value of SAR (measured) = 0.432 mW/g

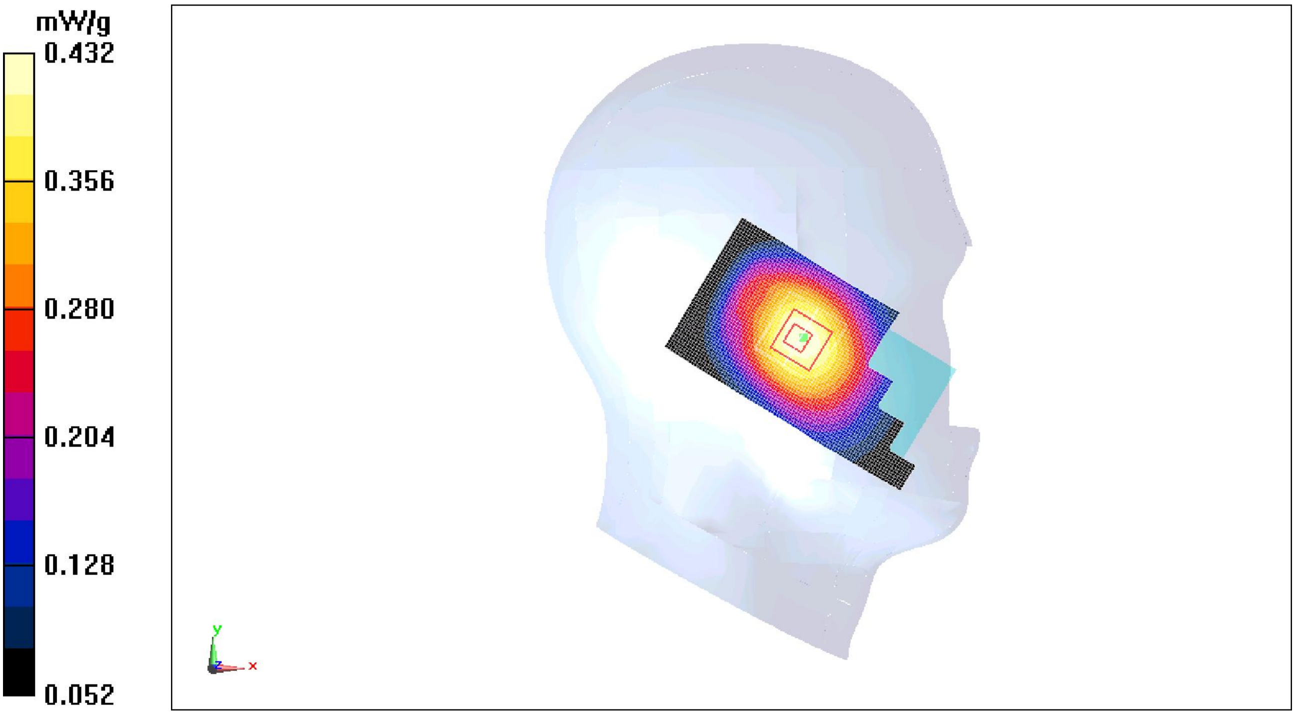


Fig.4 850 MHz CH251

850 Left Tilt Middle
Date/Time: 2011-8-3 8:52:10
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 mho/m; εr = 42.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.426 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 0.518 W/kg
SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.312 mW/g
Maximum value of SAR (measured) = 0.428 mW/g

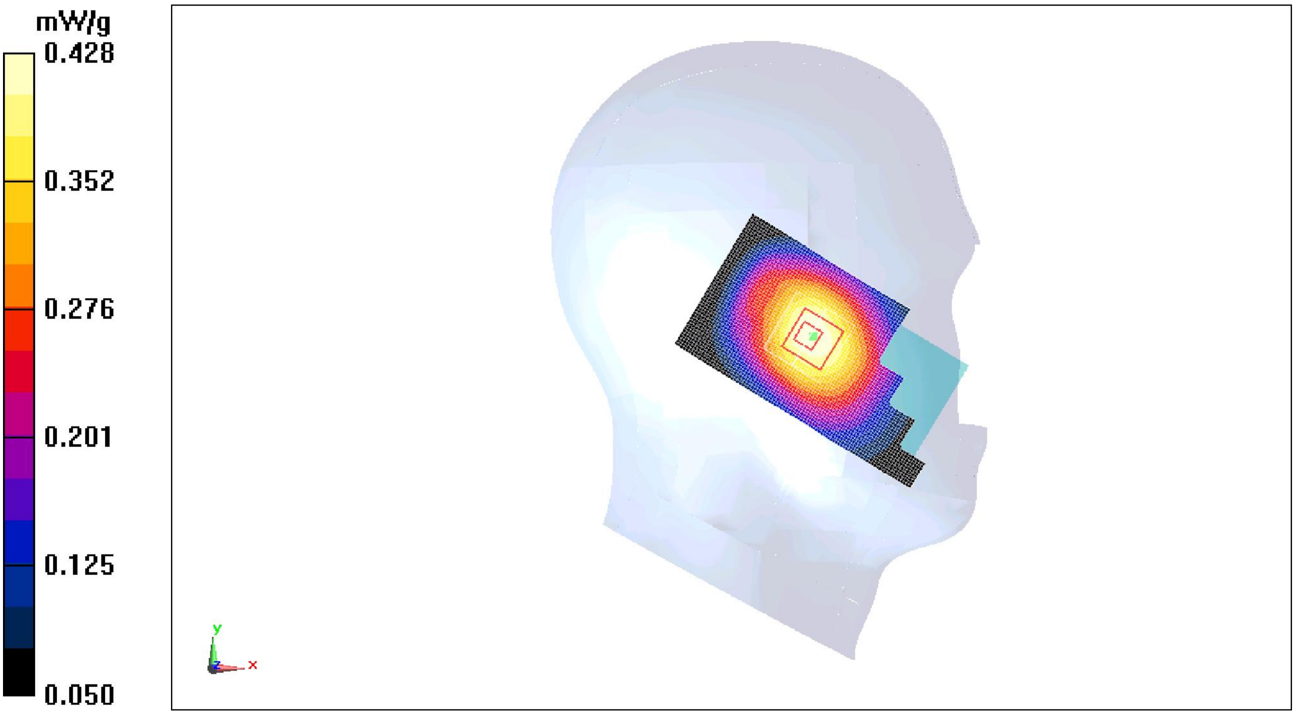


Fig.5 850 MHz CH190

850 Left Tilt Low
Date/Time: 2011-8-3 9:11:42
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.87 mho/m; εr = 42.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.415 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.4 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.505 W/kg
SAR(1 g) = 0.400 mW/g; SAR(10 g) = 0.307 mW/g
Maximum value of SAR (measured) = 0.419 mW/g

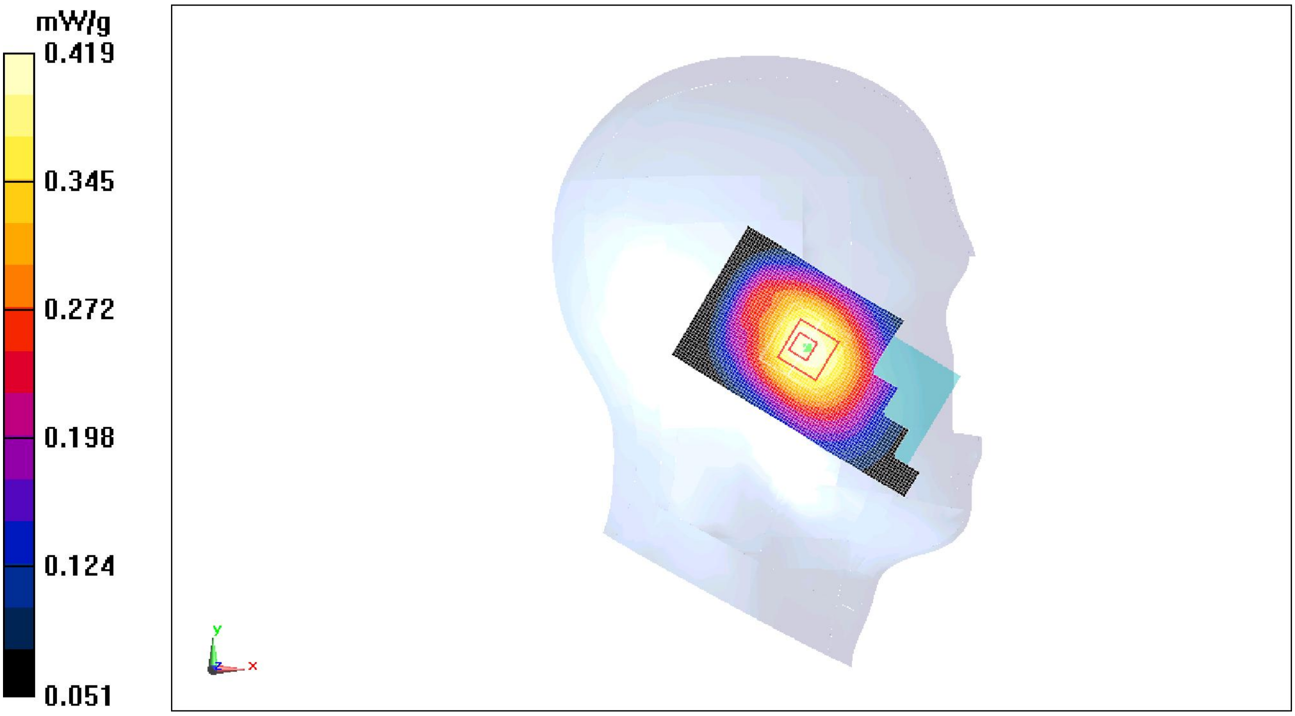


Fig. 6 850 MHz CH128

850 Right Cheek High

Date/Time: 2011-8-3 9:27:09
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 42.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C   Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.680 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 0.828 W/kg
SAR(1 g) = 0.656 mW/g; SAR(10 g) = 0.488 mW/g
Maximum value of SAR (measured) = 0.689 mW/g

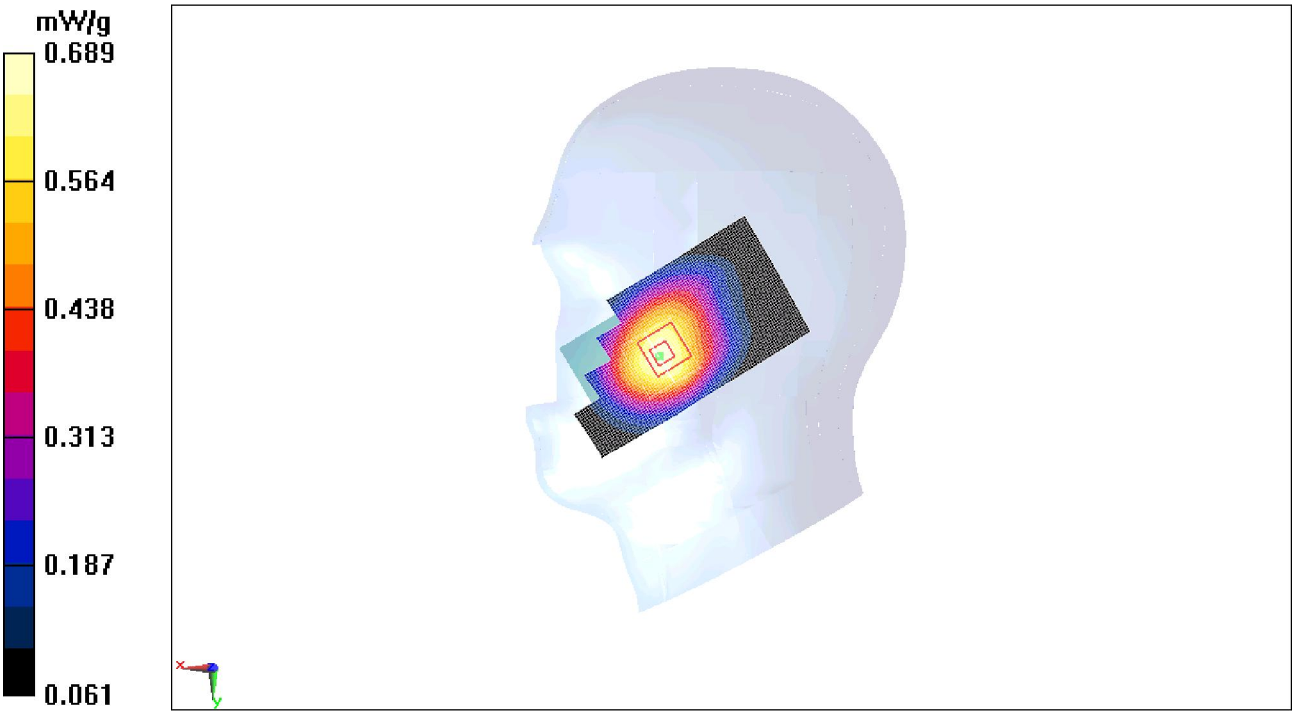


Fig. 7   850 MHz CH251

850 Right Cheek Middle
Date/Time: 2011-8-3 9:43:50
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 mho/m; εr = 42.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.686 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.19 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 0.823 W/kg
SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.490 mW/g
Maximum value of SAR (measured) = 0.689 mW/g

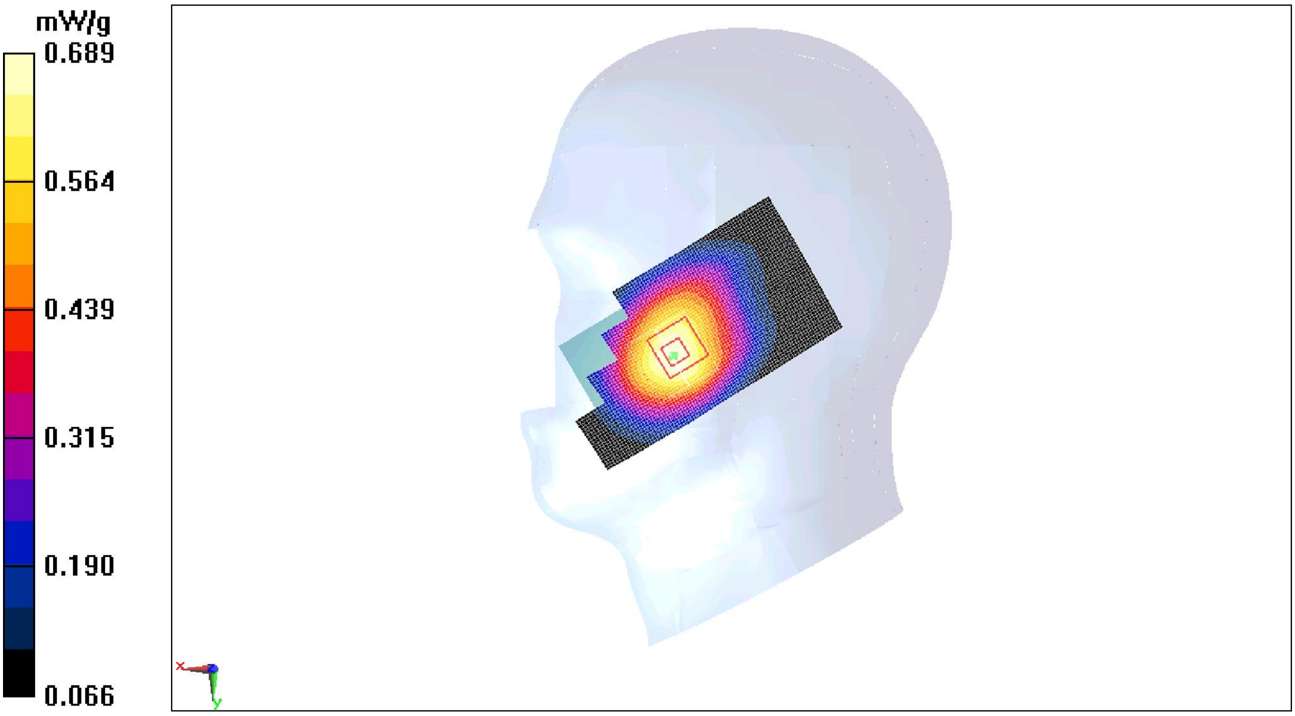


Fig. 8 850 MHz CH190

850 Right Cheek Low

Date/Time: 2011-8-3 9:59:07
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.87 mho/m; εr = 42.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liquid Temperature: 22.5^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.691 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.53 V/m; Power Drift = 0.103 dB
Peak SAR (extrapolated) = 0.827 W/kg
SAR(1 g) = 0.660 mW/g; SAR(10 g) = 0.497 mW/g
Maximum value of SAR (measured) = 0.688 mW/g

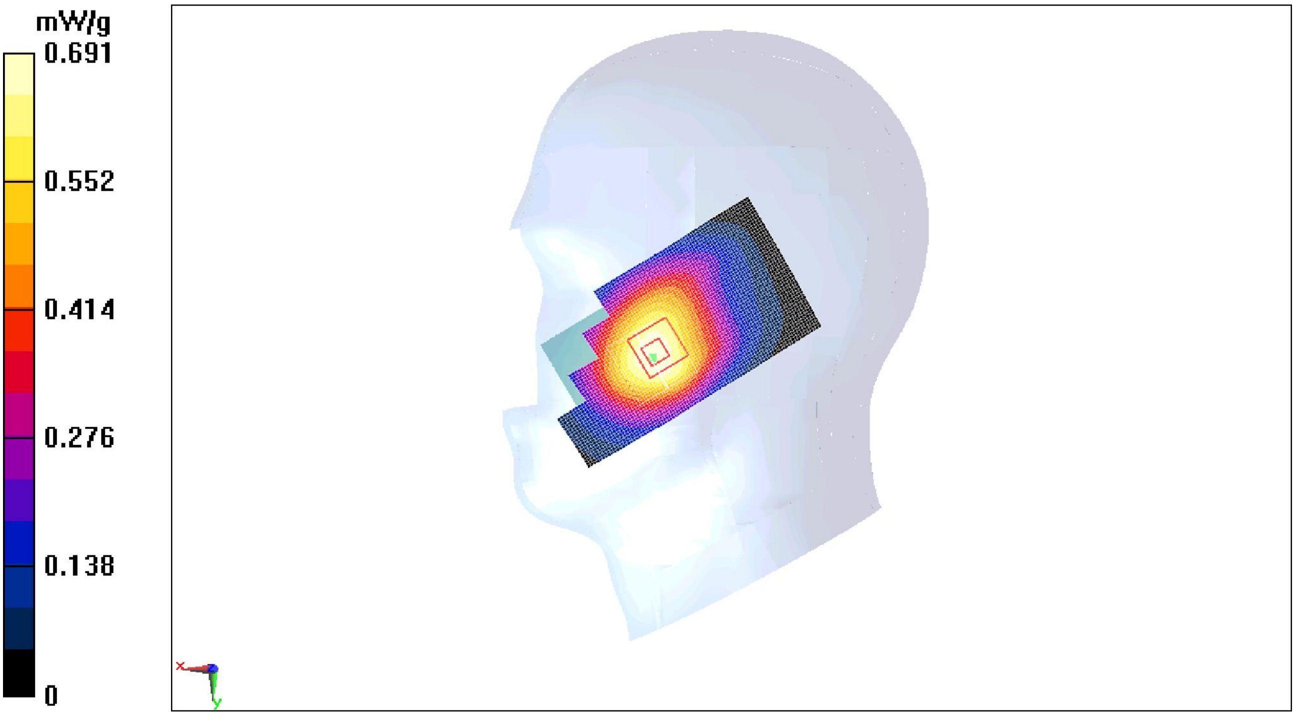


Fig. 9 850 MHz CH128

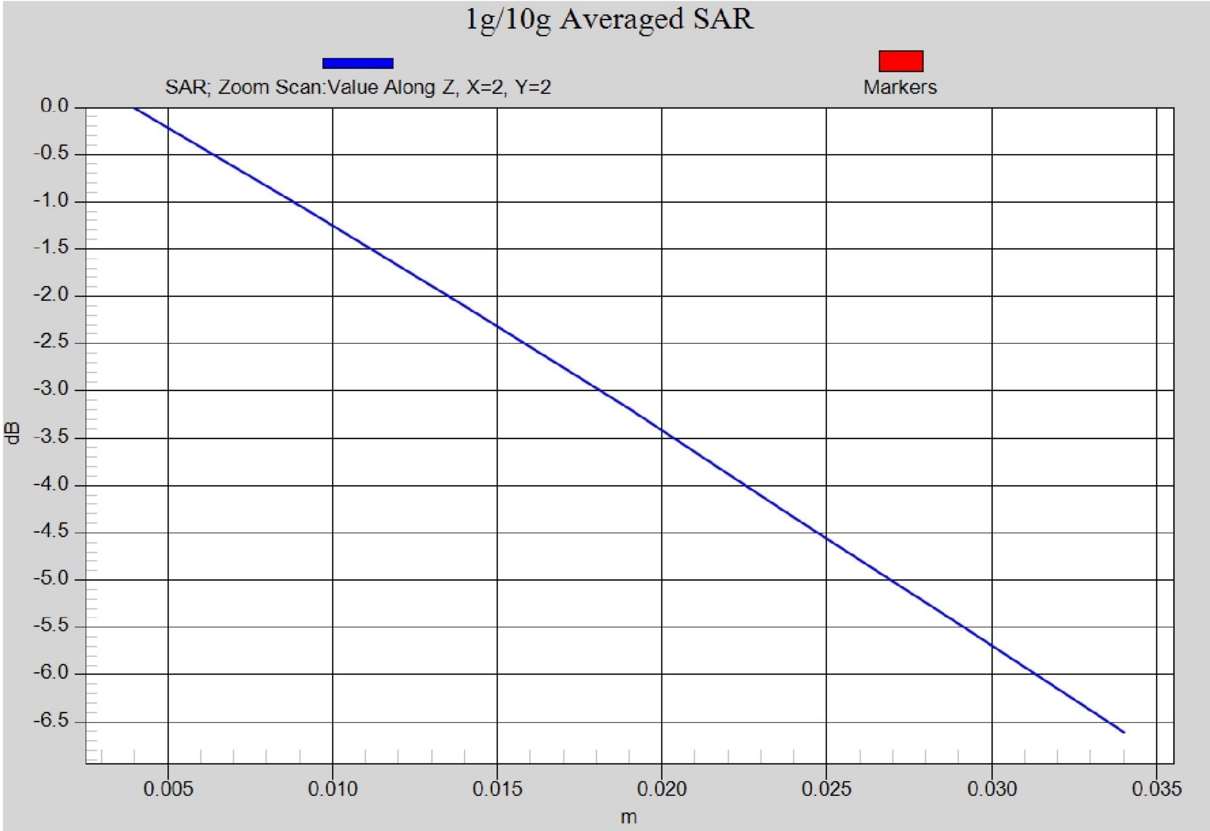


Fig. 9-1 Z-Scan at power reference point (850 MHz CH128)

850 Right Tilt High

Date/Time: 2011-8-3 10:18:33
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.89 mho/m; εr = 42.0; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.462 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.4 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.550 W/kg
SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.337 mW/g
Maximum value of SAR (measured) = 0.462 mW/g

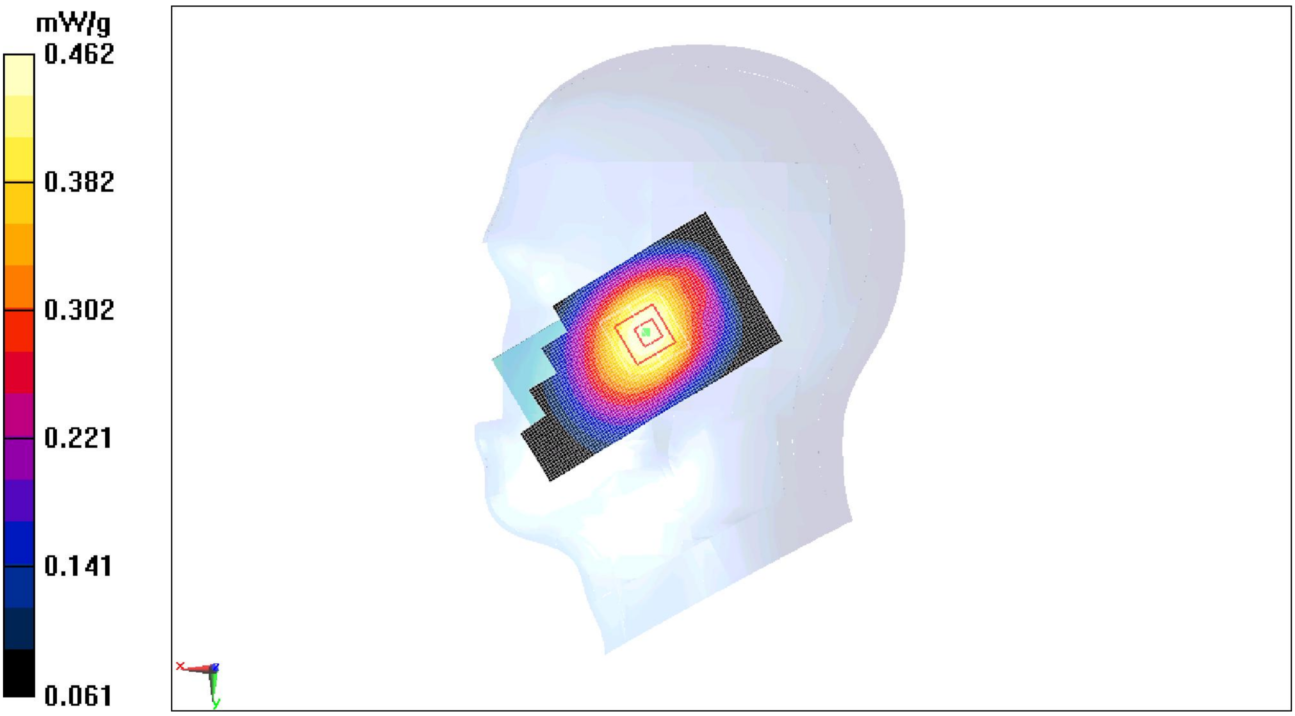


Fig.10 850 MHz CH251

850 Right Tilt Middle
Date/Time: 2011-8-3 10:35:41
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.89 mho/m; εr = 42.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.458 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.552 W/kg
SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.339 mW/g
Maximum value of SAR (measured) = 0.463 mW/g

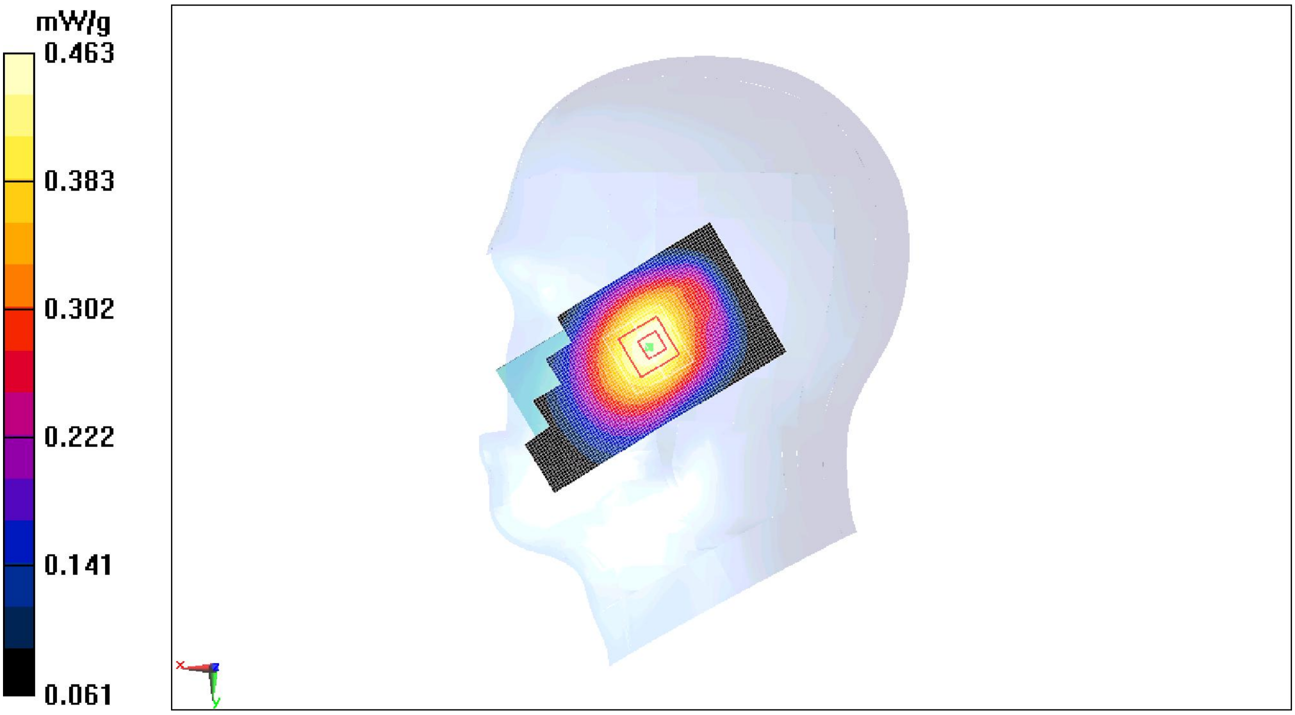


Fig.11 850 MHz CH190

850 Right Tilt Low
Date/Time: 2011-8-3 10:53:07
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.87 mho/m; εr = 42.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.451 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.9 V/m; Power Drift = 0.00266 dB
Peak SAR (extrapolated) = 0.541 W/kg
SAR(1 g) = 0.435 mW/g; SAR(10 g) = 0.333 mW/g
Maximum value of SAR (measured) = 0.451 mW/g

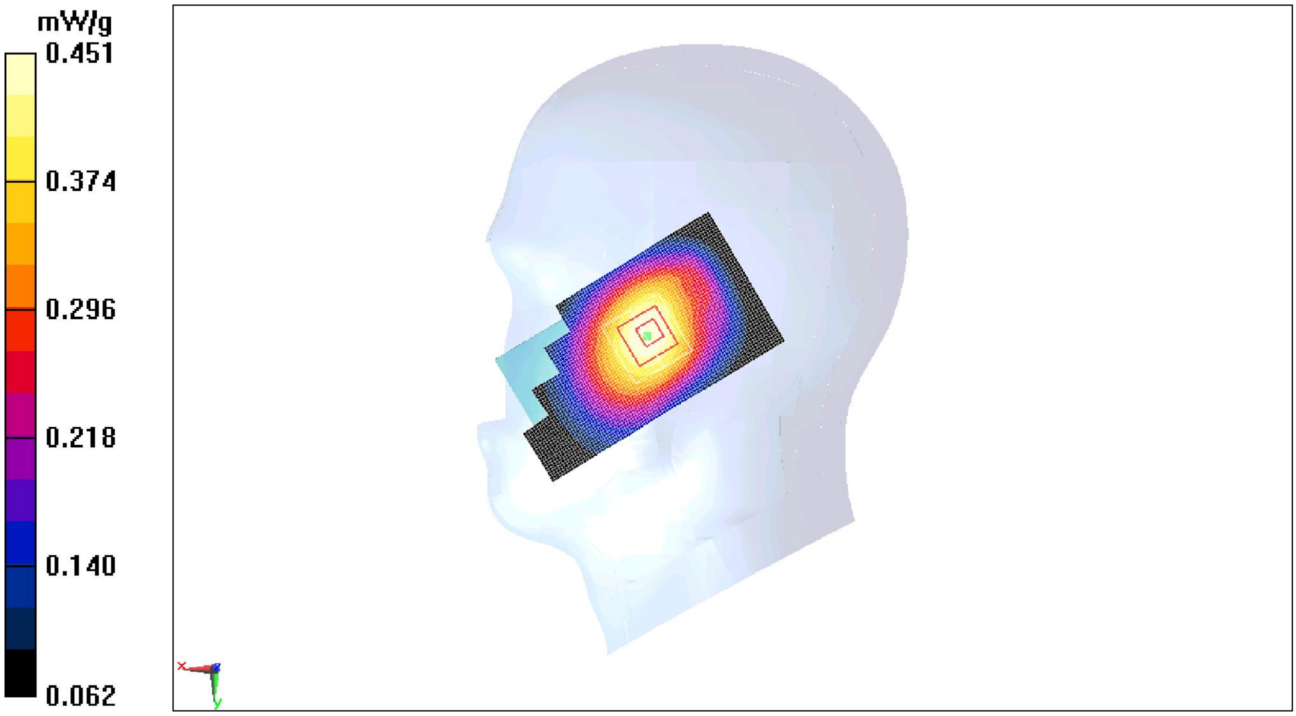


Fig. 12 850 MHz CH128

1900 Left Cheek High
Date/Time: 2011-8-4 8:11:34
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.365 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.29 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.484 W/kg
SAR(1 g) = 0.332 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.355 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.29 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.547 W/kg
SAR(1 g) = 0.328 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.362 mW/g

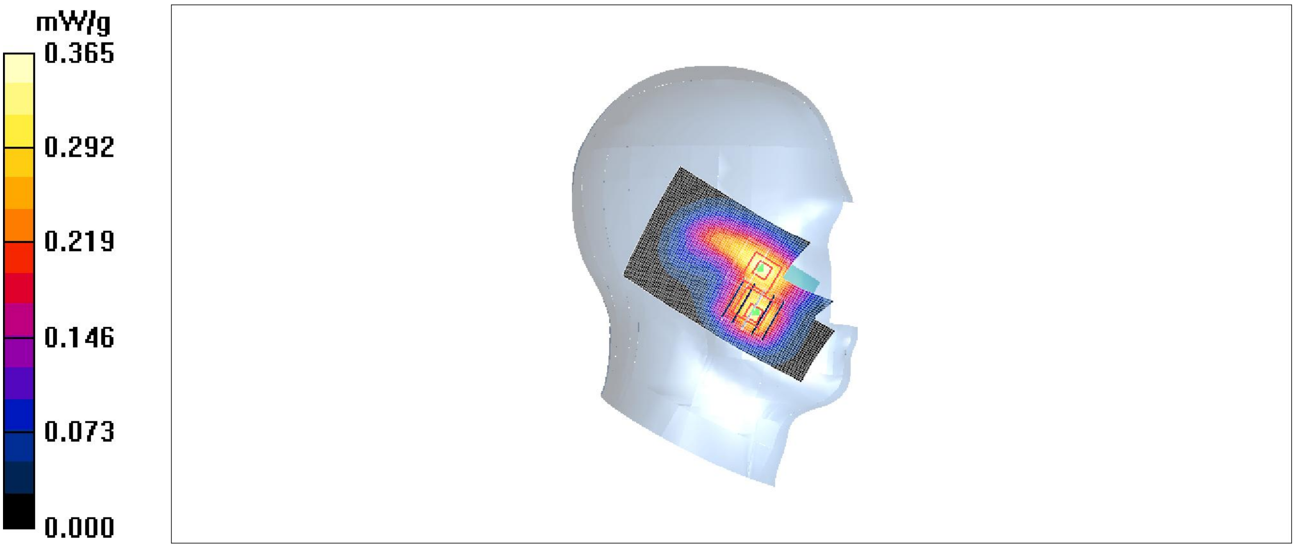


Fig. 13 1900 MHz CH810

1900 Left Cheek Middle
Date/Time: 2011-8-4 8:31:27
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 40.7; ρ = 1000 kg/m³
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.413 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = 0.061 dB
Peak SAR (extrapolated) = 0.552 W/kg
SAR(1 g) = 0.382 mW/g; SAR(10 g) = 0.246 mW/g
Maximum value of SAR (measured) = 0.407 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = 0.061 dB
Peak SAR (extrapolated) = 0.636 W/kg
SAR(1 g) = 0.385 mW/g; SAR(10 g) = 0.221 mW/g
Maximum value of SAR (measured) = 0.424 mW/g

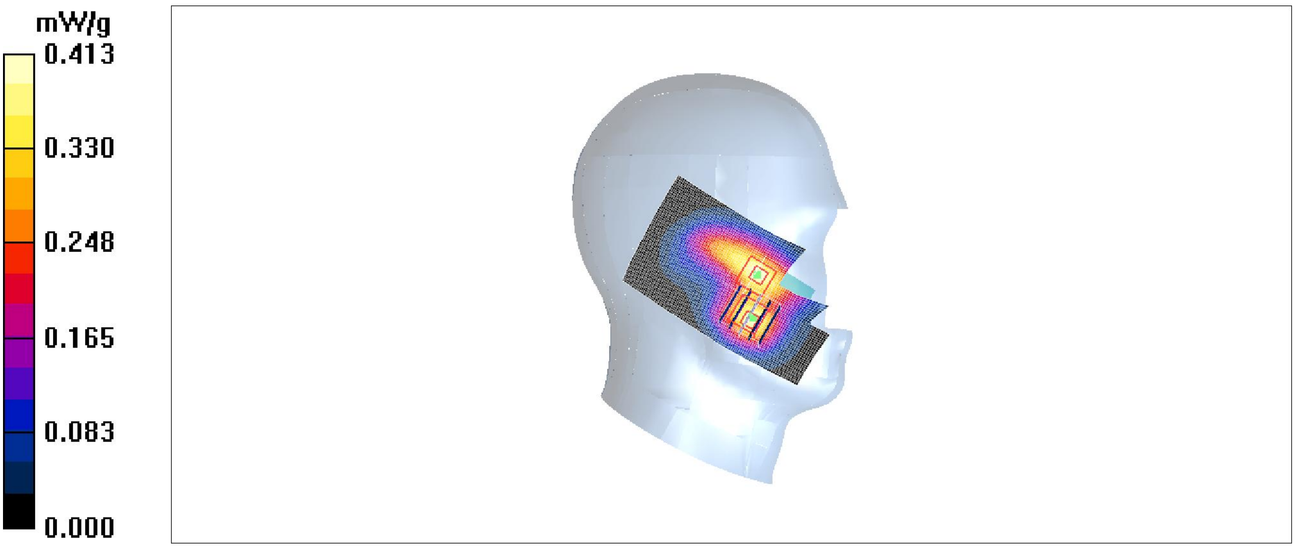


Fig. 14 1900 MHz CH661

1900 Left Cheek Low

Date/Time: 2011-8-4 8:52:16
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.35 mho/m; εr = 39.6; ρ = 1000 kg/m^3
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.416 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.48 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 0.549 W/kg
SAR(1 g) = 0.383 mW/g; SAR(10 g) = 0.248 mW/g
Maximum value of SAR (measured) = 0.412 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.48 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 0.613 W/kg
SAR(1 g) = 0.376 mW/g; SAR(10 g) = 0.216 mW/g
Maximum value of SAR (measured) = 0.413 mW/g

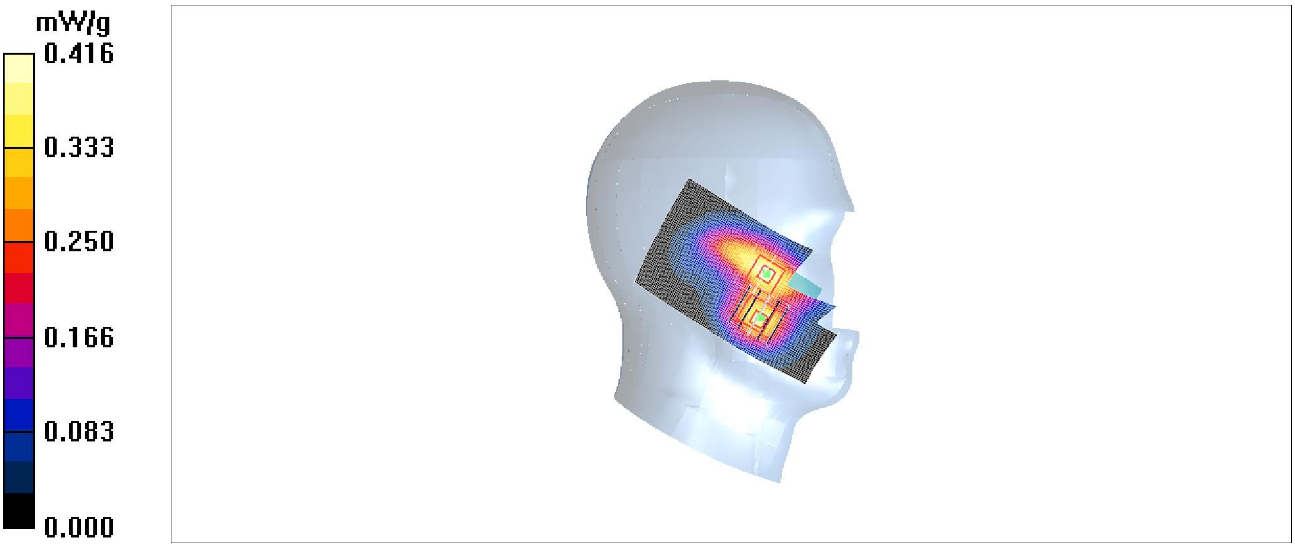


Fig. 15 1900 MHz CH512

1900 Left Tilt High
Date/Time: 2011-8-4 9:08:22
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; σ = 1.42 mho/m; εr = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0^{o}C Liquid Temperature: 22.5^{o}C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

Tilt High/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.248 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.73 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 0.316 W/kg
SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 0.219 mW/g

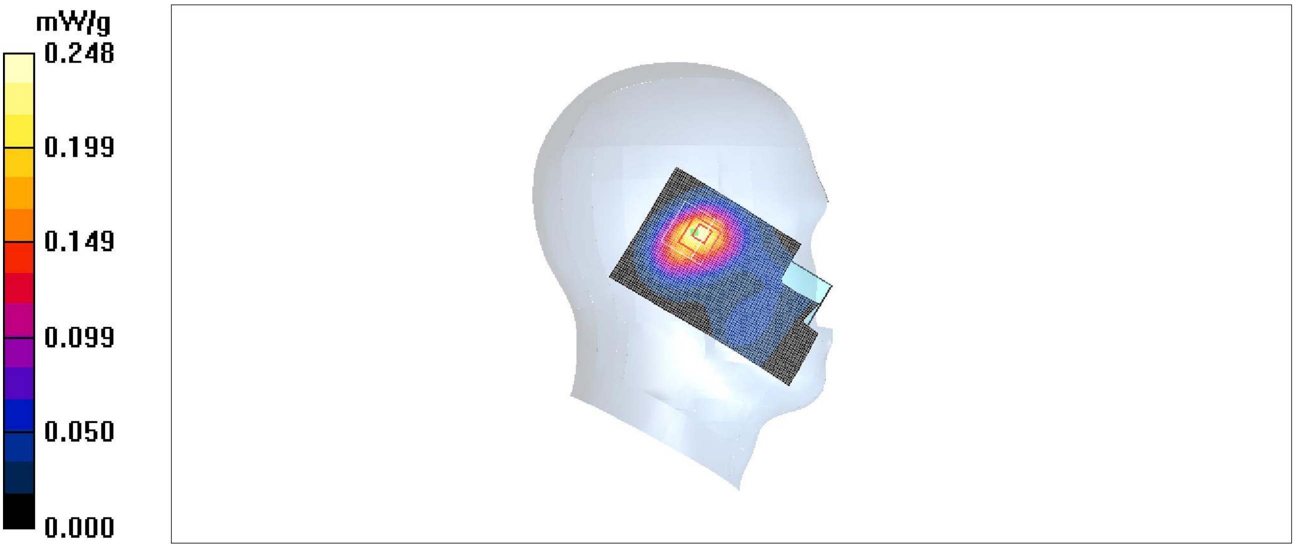


Fig.16 1900 MHz CH810