SAR TEST REPORT

No. 2011SAR00051

For

TCT Mobile Limited

HSDPA/UMTS dual band / GSM four bands mobile phone

BrandyS

one touch 990S

With

Hardware Version: PIO

Software Version: V520

FCCID: RAD159

Issued Date: 2011-05-24

Deutscher Akkreditierungs Rat

***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:

TMC Beijing, Telecommunication Metrology Center of MIIT
No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191.
Tel:+86(0)10-62304633-2079, Fax:+86(0)10-62304793 Email:welcome@emcite.com. www.emcite.com

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No 52, Huayuan beilu, Haidian District, Beijing,P.R.China
Postal Code:	100191
Telephone:	+86-10-62304633
Fax:	+86-10-62304793

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.

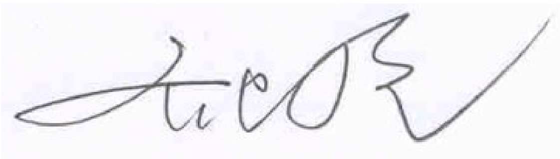
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Lin Xiaojun
Testing Start Date:	May 14, 2011
Testing End Date:	May 17, 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
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2 Manufacturer 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
City:	Shanghai
Postal Code:	201203
Country:	P. R. China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

EUT Description:	HSDPA/UMTS dual band / GSM four bands mobile phone
Model Name:	BrandyS
Marketing Name:	one touch 990S
Frequency Band:	GSM850 / PCS1900 / WCDMA1700 / WiFi
GPRS Multislot Class:	12
GPRS capability Class:	B
EGPRS Multislot Class:	12
Hotspot mode:	Be supported
Form factor:	11.5cm×6.2cm

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012579000000348	PIO	V520

*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	CCB3160A10C0	/	Juwei
AE3	Headset	CCB3160A10C2	/	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

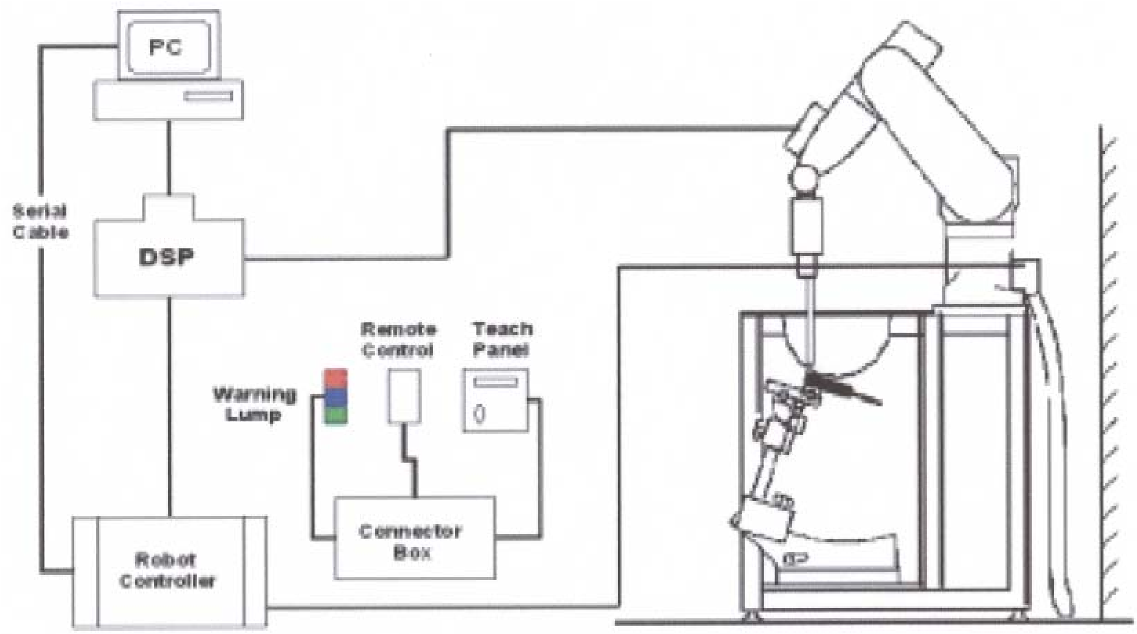
During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of 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

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)

Picture 3: ES3DV3 E-field

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,
ρ = Tissue density (kg/m^3).

Picture 5: Device Holder

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 Agilent Spectrum Analyzer E4440A. 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)**
	33.21	33.26	33.34
GSM 1900MHZ	**Conducted Power (dBm)**		
	Channel 810(1909.8MHz)	**Channel 661(1880MHz)**	**Channel 512(1850.2MHz)**
	30.96	30.95	30.97

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	31.81	31.95	32.09	-9.03dB	22.78	22.92	23.06
2 Txslots	29.32	29.47	29.62	-6.02dB	23.30	23.45	23.60
3Txslots	27.76	27.90	28.04	-4.26dB	23.50	23.64	23.78
4 Txslots	26.77	26.91	27.05	-3.01dB	**23.76**	**23.90**	**24.04**
GSM 850 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	**190**	**128**		**251**	**190**	**128**
1 Txslot	31.79	31.92	32.07	-9.03dB	22.76	22.89	23.04
2 Txslots	29.30	29.45	29.59	-6.02dB	23.28	23.43	23.57
3Txslots	27.74	27.89	28.03	-4.26dB	23.48	23.63	23.77
4 Txslots	26.79	26.91	27.05	-3.01dB	**23.78**	**23.90**	**24.04**
PCS1900 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	28.95	28.98	28.89	-9.03dB	19.92	19.95	19.86
2 Txslots	27.46	27.47	27.41	-6.02dB	21.44	21.45	21.39
3Txslots	25.94	25.97	25.90	-4.26dB	21.68	21.71	21.64
4 Txslots	24.93	24.96	24.88	-3.01dB	**21.92**	**21.95**	**21.87**

PCS1900 EGPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	**661**	**512**		**810**	**661**	**512**
1 Txslot	28.97	28.99	28.91	-9.03dB	19.94	19.96	19.88
2 Txslots	27.43	27.47	27.42	-6.02dB	21.41	21.45	21.40
3Txslots	25.96	25.98	25.91	-4.26dB	21.70	21.72	21.65
4 Txslots	24.94	24.96	24.88	-3.01dB	**21.93**	**21.95**	**21.87**

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 4 Txslots for GPRS and EGPRS.

Table 5: The conducted Power for WCDMA1700

Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	\	22.01	21.91	22.18
HSDPA	**1**	21.56	21.47	21.54
	2	21.60	21.35	21.51
	3	21.27	21.12	21.19
	4	21.24	21.10	21.18

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 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 15, 2011** 1900 MHz **May 16, 2011** 1800 MHz **May 17, 2011** 2450 MHz **May 14, 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	41.7	0.91
	1900 MHz	40.4	1.41
	1800 MHz	40.4	1.40
	2450 MHz	39.5	1.82

Table 7: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 15, 2011** 1900 MHz **May 16, 2011** 1800 MHz **May 17, 2011** 2450 MHz **May 14, 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	54.8	0.95
	1900 MHz	52.9	1.53
	1800 MHz	52.1	1.49
	2450 MHz	52.5	1.97

7.2 System Validation

Table 8: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 15, 2011** 1900 MHz **May 16, 2011** 1800 MHz **May 17, 2011** 2450 MHz **May 14, 2011**

		Frequency	Permittivity ε	Conductivity σ (S/m)
Liquid parameters	Dipole calibration Target value	835 MHz	41.6	0.92
		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	40.4	1.41
		1800 MHz	40.4	1.40
		2450 MHz	39.5	1.82

		Target value (W/kg)		Measured value (W/kg)		Deviation	
Verification results	**Frequency**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	6.12	9.41	5.92	9.12	-3.27%	-3.08%
	1900 MHz	20.1	39.4	19.8	38.52	-1.49%	-2.23%
	1800 MHz	20.0	38.5	19.6	38.08	-2.00%	-1.09%
	2450 MHz	24.6	52.4	23.8	51.6	-3.25%	-1.53%

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 38%.
Liquid temperature during the test: 22.5°C
Measurement Date : 850 MHz **May 15, 2011** 1900 MHz **May 16, 2011** 1800 MHz **May 17, 2011** 2450 MHz **May 14, 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	55.0	0.94
		1900 MHz	52.9	1.53
		1800 MHz	52.1	1.49
		2450 MHz	52.5	1.97

		Target value (W/kg)		Measured value (W/kg)		Deviation	
Verification results	**Frequency**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	6.24	9.57	6.12	9.52	-1.92%	-0.52%
	1900 MHz	20.9	41.4	20.52	40.8	-1.82%	-1.45%
	1800 MHz	21.0	40.6	21.36	41.6	1.71%	2.46%
	2450 MHz	23.9	51.6	23.72	51.6	-0.75%	0.00%

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)	0.458	0.614	-0.157
Left hand, Touch cheek, Middle frequency (See Fig.2)	0.507	0.674	-0.150
Left hand, Touch cheek, Low frequency (See Fig.3)	0.541	0.720	0.014
Left hand, Tilt 15 Degree, High frequency (See Fig.4)	0.290	0.381	-0.023
Left hand, Tilt 15 Degree, Middle frequency (See Fig.5)	0.311	0.407	0.00118
Left hand, Tilt 15 Degree, Low frequency (See Fig.6)	0.320	0.418	0.00747
Right hand, Touch cheek, High frequency (See Fig.7)	0.499	0.668	-0.126
Right hand, Touch cheek, Middle frequency (See Fig.8)	0.550	0.733	-0.040
Right hand, Touch cheek, Low frequency (See Fig.9)	0.595	0.793	-0.039
Right hand, Tilt 15 Degree, High frequency (See Fig.10)	0.281	0.371	-0.00162
Right hand, Tilt 15 Degree, Middle frequency (See Fig.11)	0.308	0.406	-0.011
Right hand, Tilt 15 Degree, Low frequency (See Fig.12)	0.323	0.425	0.021

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)	0.224	0.385	-0.095
Left hand, Touch cheek, Middle frequency (See Fig.14)	0.210	0.359	0.104
Left hand, Touch cheek, Low frequency (See Fig.15)	0.194	0.326	0.128
Left hand, Tilt 15 Degree, High frequency (See Fig.16)	0.110	0.178	-0.014
Left hand, Tilt 15 Degree, Middle frequency (See Fig.17)	0.110	0.175	-0.026
Left hand, Tilt 15 Degree, Low frequency (See Fig.18)	0.095	0.149	0.014
Right hand, Touch cheek, High frequency (See Fig.19)	0.260	0.436	-0.111
Right hand, Touch cheek, Middle frequency (See Fig.20)	0.228	0.379	0.066
Right hand, Touch cheek, Low frequency (See Fig.21)	0.212	0.351	0.076
Right hand, Tilt 15 Degree, High frequency (See Fig.22)	0.116	0.192	0.018
Right hand, Tilt 15 Degree, Middle frequency (See Fig.23)	0.111	0.184	-0.019
Right hand, Tilt 15 Degree, Low frequency(See Fig.24)	0.097	0.158	0.071

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)	0.512	0.880	-0.078
Left hand, Touch cheek, Middle frequency (See Fig.26)	0.556	0.948	0.164
Left hand, Touch cheek, Low frequency (See Fig.27)	0.463	0.788	0.111
Left hand, Tilt 15 Degree, High frequency (See Fig.28)	0.277	0.428	0.077
Left hand, Tilt 15 Degree, Middle frequency (See Fig.29)	0.273	0.422	-0.163
Left hand, Tilt 15 Degree, Low frequency (See Fig.30)	0.232	0.352	0.018
Right hand, Touch cheek, High frequency (See Fig.31)	0.740	1.24	-0.148
Right hand, Touch cheek, Middle frequency (See Fig.32)	0.776	1.29	0.123
Right hand, Touch cheek, Low frequency (See Fig.33)	0.606	1.01	0.133
Right hand, Tilt 15 Degree, High frequency (See Fig.34)	0.260	0.418	-0.003
Right hand, Tilt 15 Degree, Middle frequency (See Fig.35)	0.275	0.438	-0.036
Right hand, Tilt 15 Degree, Low frequency(See Fig.36)	0.228	0.361	0.151

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)	0.778	1.05	-0.041
Towards Phantom, Middle frequency with GPRS (See Fig.38)	0.779	1.07	-0.142
Towards Phantom, Low frequency with GPRS (See Fig.39)	0.848	1.14	0.017
Towards Ground, High frequency with GPRS (See Fig.40)	0.869	1.2	-0.136
Towards Ground, Middle frequency with GPRS (See Fig.41)	0.911	1.26	-0.101
Towards Ground, Low frequency with GPRS (See Fig.42)	0.946	1.30	-0.154
Left Side, High frequency with GPRS (See Fig.43)	0.569	0.832	-0.189
Left Side, Middle frequency with GPRS (See Fig.44)	0.591	0.874	0.017
Left Side, Low frequency with GPRS (See Fig.45)	0.593	0.874	-0.048
Right Side, High frequency with GPRS (See Fig.46)	0.590	0.865	0.052
Right Side, Middle frequency with GPRS (See Fig.47)	0.596	0.865	0.049
Right Side, Low frequency with GPRS (See Fig.48)	0.589	0.868	-0.109

Bottom Side, Low frequency with GPRS (See Fig.49)	0.059	0.100	0.010
Towards Ground, Low frequency with EGPRS (See Fig.50)	0.904	1.24	-0.118
Towards Ground, Low frequency with Headset_CCB3160A10C0 (See Fig.51)	0.730	1.02	-0.007
Towards Ground, Low frequency with Headset_CCB3160A10C2 (See Fig.52)	0.626	0.893	-0.051

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, Middle frequency with GPRS (See Fig.53)	0.410	0.689	0.00376
Towards Ground, Middle frequency with GPRS (See Fig.54)	0.503	0.855	-0.053
Left Side, Middle frequency with GPRS (See Fig.55)	0.092	0.160	0.057
Right Side, Middle frequency with GPRS (See Fig.56)	0.165	0.277	0.132
Bottom Side, High frequency with GPRS (See Fig.57)	0.544	1.03	0.141
Bottom Side, Middle frequency with GPRS (See Fig.58)	0.521	0.982	-0.170
Bottom Side, Low frequency with GPRS (See Fig.59)	0.475	0.874	-0.115
Bottom Side, High frequency with EGPRS (See Fig.60)	0.450	0.823	0.116
Bottom Side, High frequency with Headset_CCB3160A10C0 (See Fig.61)	0.314	0.581	-0.027
Bottom Side, High frequency with Headset_CCB3160A10C2 (See Fig.62)	0.361	0.673	-0.173

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.63)	0.692	1.32	-0.063
Towards Phantom, Middle frequency (See Fig.64)	0.745	1.39	0.125
Towards Phantom, Low frequency (See Fig.65)	0.642	1.19	0.035
Towards Ground, High frequency (See Fig.66)	0.687	1.22	0.014
Towards Ground, Middle frequency (See Fig.67)	0.699	1.24	0.016
Towards Ground, Low frequency (See Fig.68)	0.585	1.03	-0.109

Left Side, Low frequency (See Fig.69)	0.172	0.284	-0.192
Right Side, Low frequency (See Fig.70)	0.250	0.411	-0.139
Bottom Side, High frequency (See Fig.71)	0.557	1.09	-0.101
Bottom Side, Middle frequency (See Fig.72)	0.615	1.2	-0.127
Bottom Side, Low frequency (See Fig.73)	0.514	0.992	-0.090
Towards Phantom, Middle frequency with Headset_CCB3160A10C0 (See Fig.74)	0.692	1.26	0.026
Towards Phantom, Middle frequency with Headset_CCB3160A10C2 (See Fig.75)	0.721	1.3	-0.00366
Towards Phantom, Middle frequency with HSDPA (See Fig.76)	0.669	1.25	-0.141

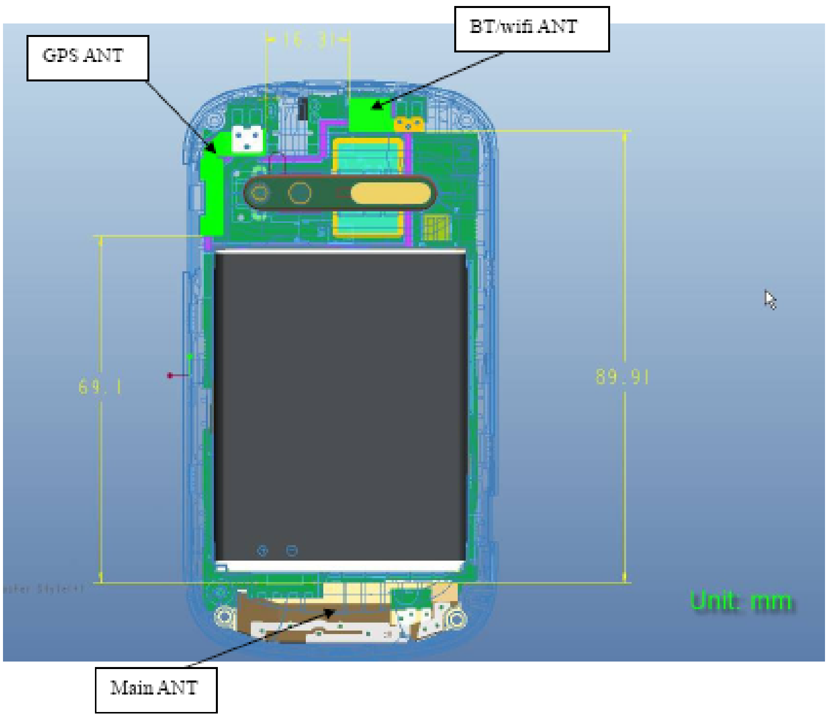
7.4 Simultaneous TX SAR Considerations

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)	-1.26	-0.28	0.79

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 ≤2P_{Ref} and its antenna is ＞5cm from other antenna

Note: Power thresholds (P_{Ref}) is derived from multiples of 0.5×60/$f_{(GHz)}$, 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	17.10	17.07	16.53	16.13
6	17.08	17.05	16.69	16.28
11	17.28	17.33	17.06	16.65

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	14.15	13.90	13.63	13.19	12.74	12.05	11.44	11.27
6	14.26	14.04	13.72	13.30	12.90	12.26	11.68	11.41
11	14.43	14.26	13.86	13.42	12.97	12.22	11.81	11.51

802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	14.89	14.31	13.92	13.50	12.83	12.35	12.11	11.98
6	15.12	14.55	14.16	13.72	13.05	12.45	12.30	12.16
11	15.26	14.66	14.26	13.83	13.13	12.50	12.36	12.21

The peak conducted power for WiFi is as following:

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	20.83	21.00	22.18	23.60
6	/	/	/	23.96
11	/	/	/	24.10

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	23.32	23.27	22.95	22.90	23.37	23.23	23.44	23.48
6	/	/	/	/	/	/	/	23.59
11	/	/	/	/	/	/	/	23.68

802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	22.51	22.08	21.95	22.32	22.22	22.30	22.20	22.35
6	/	/	/	/	/	/	/	22.54
11	/	/	/	/	/	/	/	22.53

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 11”.

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

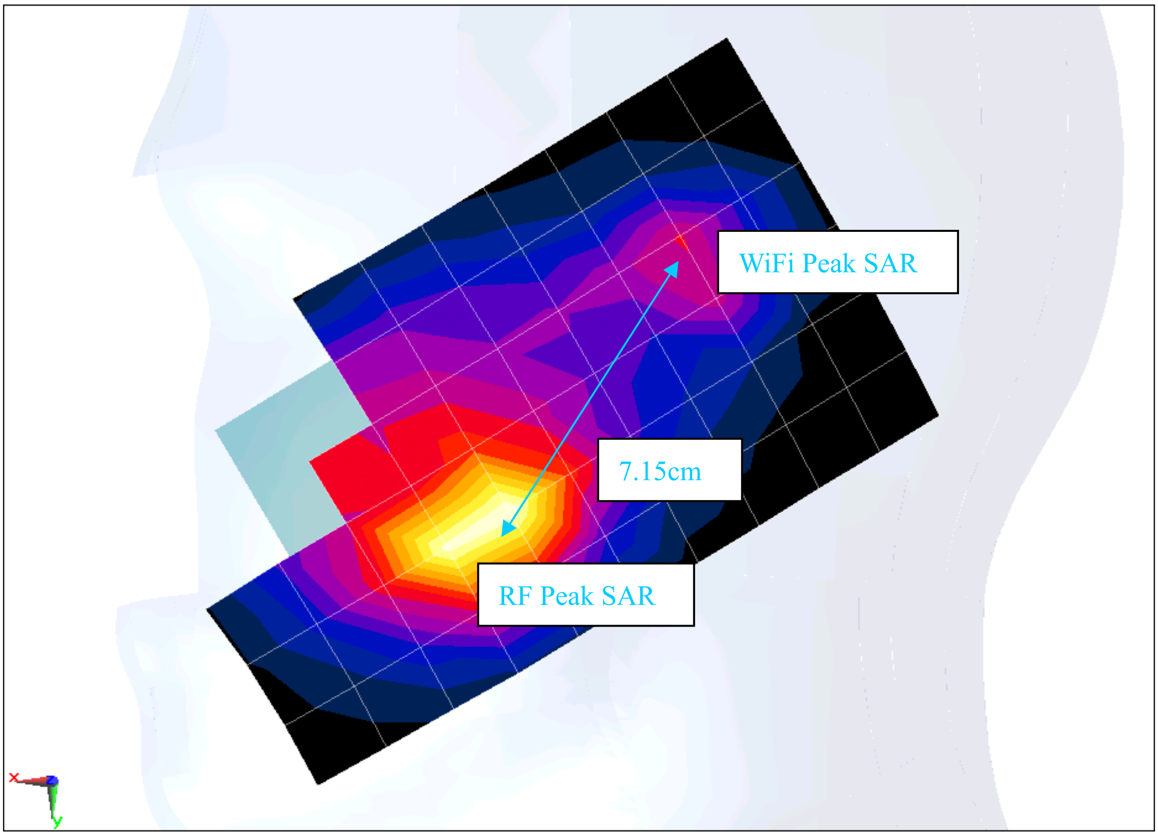
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, 1Mbps,channel 11 (See Fig.77)	0.122	0.249	-0.104
Left hand, Tilt 15 Degree, 1Mbps,channel 11 (See Fig.78)	0.105	0.213	0.090
Right hand, Touch cheek, 1Mbps,channel 11 (See Fig.79)	0.227	0.460	-0.021
Right hand, Tilt 15 Degree, 1Mbps,channel 11 (See Fig.80)	0.160	0.331	0.153

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 11 (See Fig.81)	0.078	0.140	0.106
Toward Ground, 1Mbps,channel 11 (See Fig.82)	0.156	0.293	-0.110
Left Side, 1Mbps,channel 11 (See Fig.83)	0.074	0.129	0.150
Right Side, 1Mbps,channel 11 (See Fig.84)	0.034	0.061	-0.099
Top Side, 1Mbps,channel 11 (See Fig.85)	0.076	0.148	0.044

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

	Position	GSM/WCDMA	WiFi	Sum
Maximum SAR value for Head	Right hand, Touch cheek	1.29	0.460	**1.750**
Maximum SAR value for Body	Toward Ground (data)	1.30	0.293	**1.593**
	Toward Phantom (data)	1.39	0.140	**1.530**
	Toward Phantom with Headset (voice)	1.30	0.140	**1.440**



According to the above table and picture, the sum of SAR values for GSM/WCDMA and WiFi is 1.75W/kg and peak location separation is 7.15cm. So antenna pair SAR to peak SAR location separation ratio is 1.75/7.15=0.24＜0.3, 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 Phantom, Middle frequency (Table 15)**, and the value are: **1.39(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 4,2010	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 9, 2010	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.

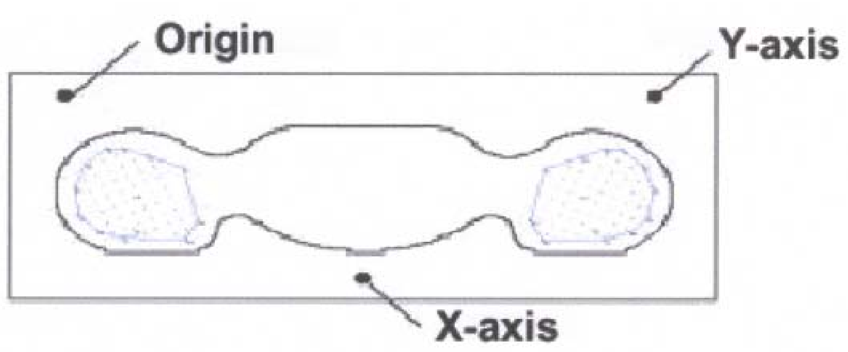
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

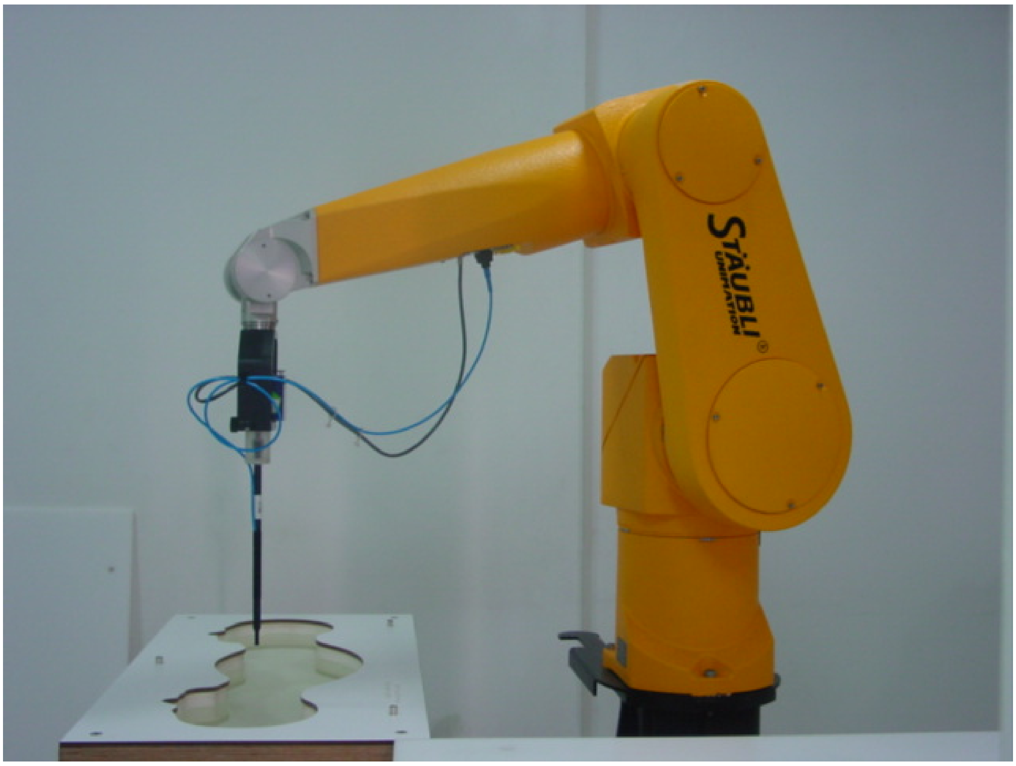
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

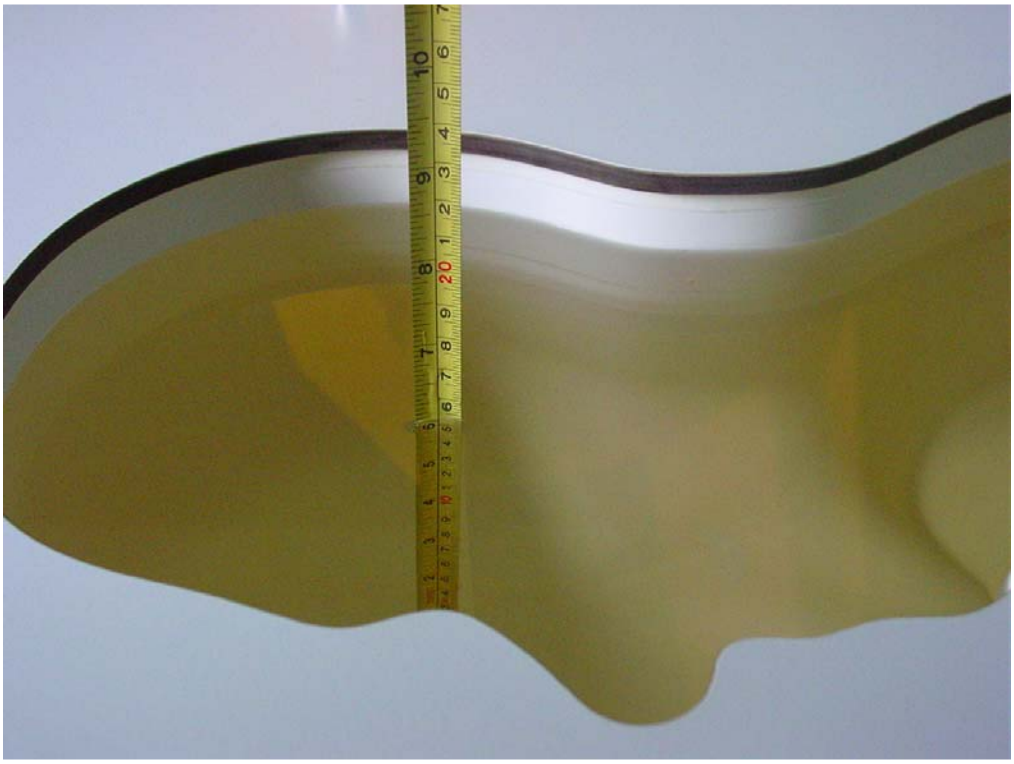


Picture A: SAR Measurement Points in Area Scan

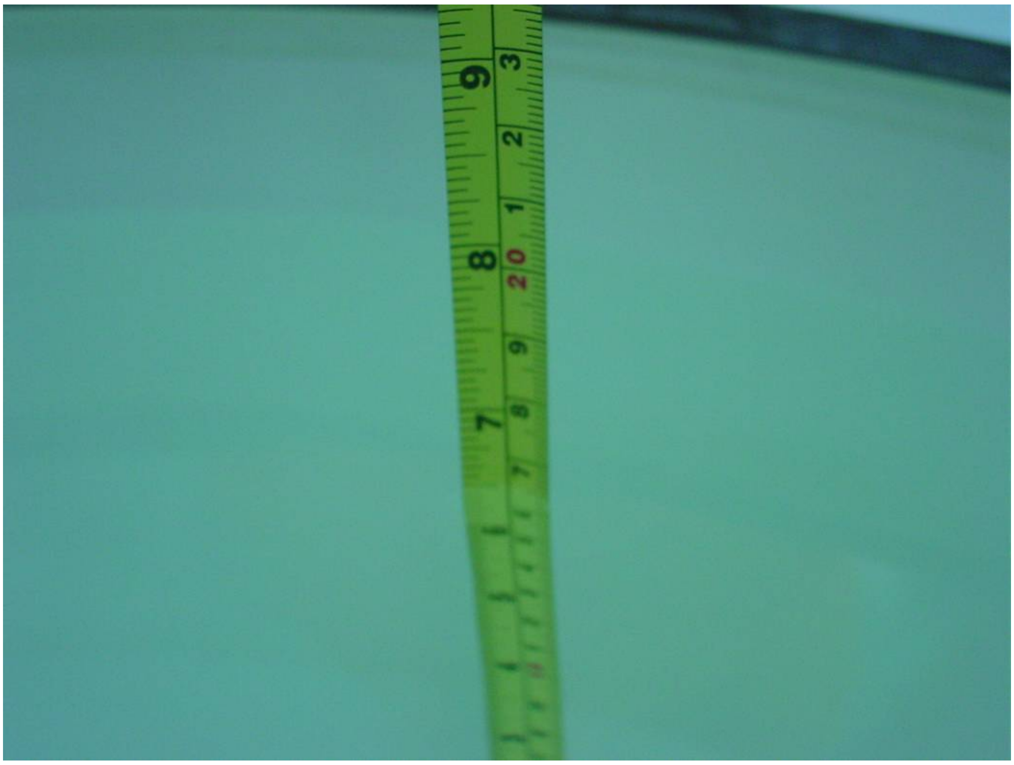
ANNEX B TEST LAYOUT



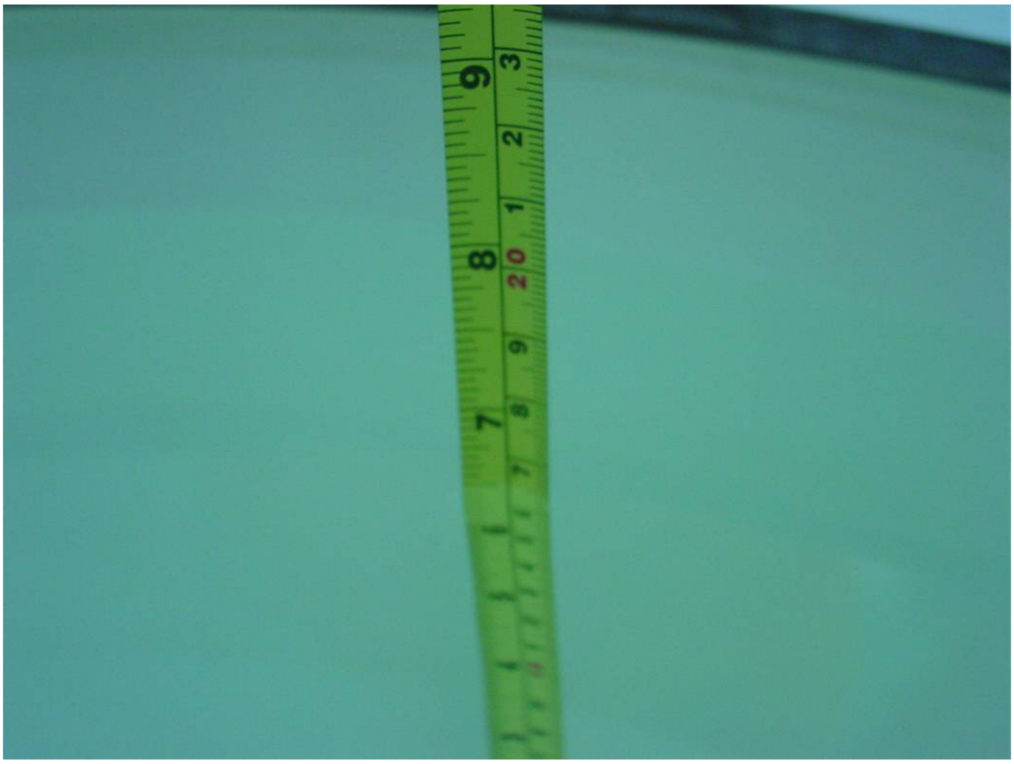
Picture B1: Specific Absorption Rate Test Layout



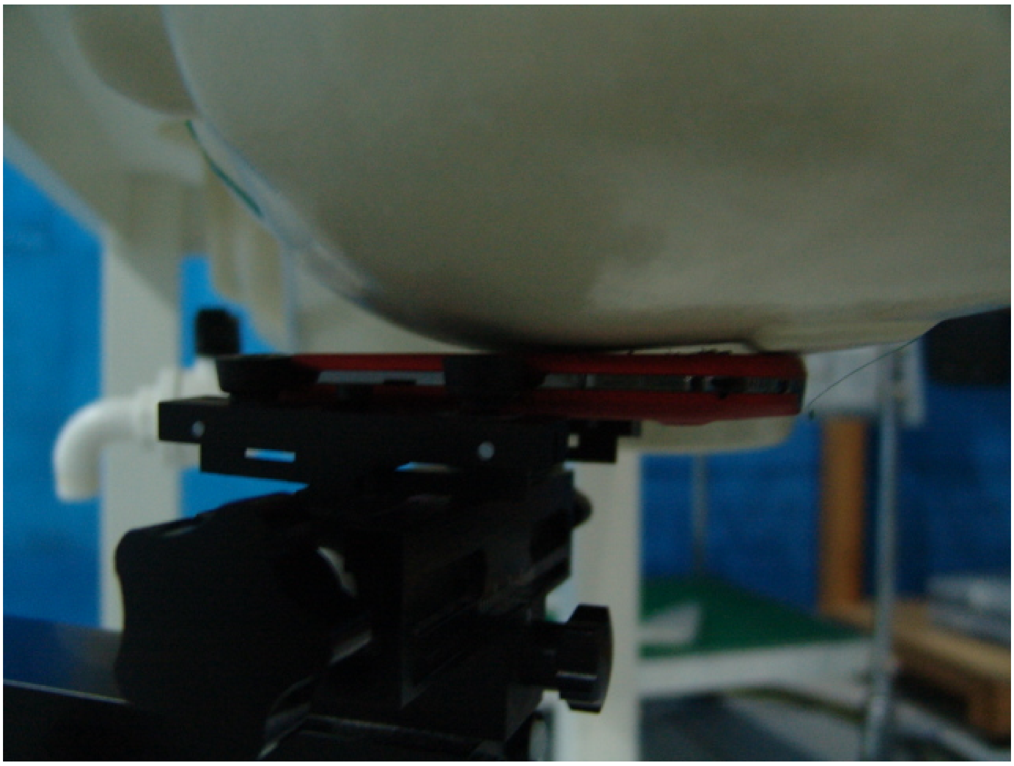
Picture B2: Liquid depth in the Head Phantom (850 MHz)



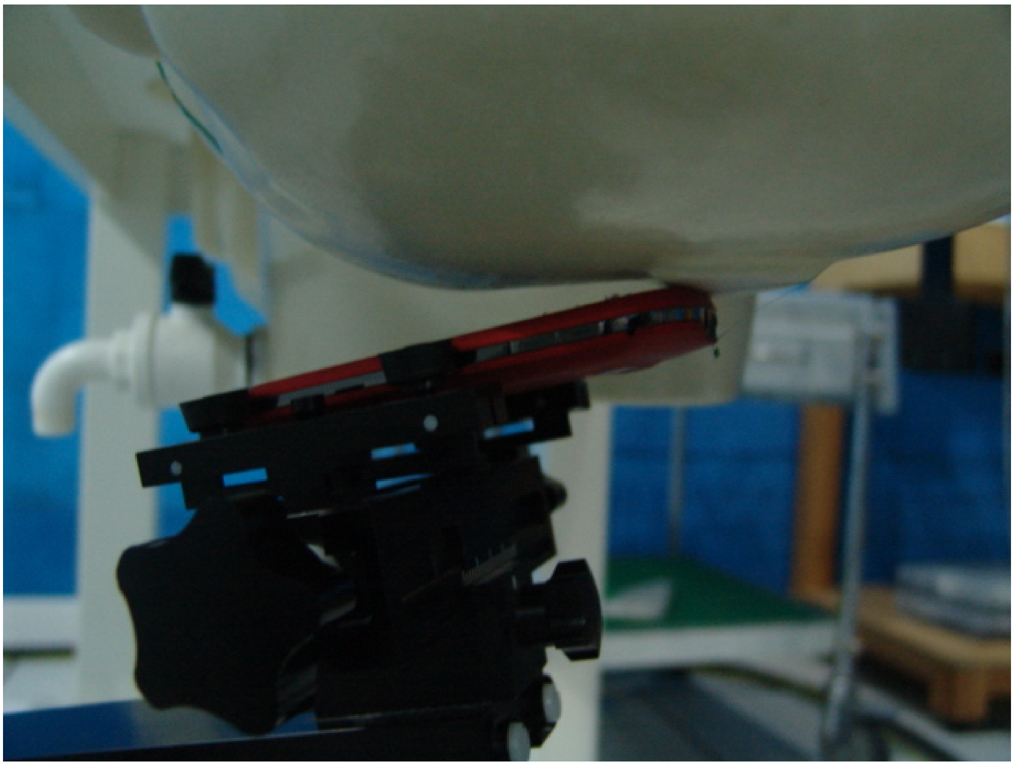
Picture B3 Liquid depth in the Flat Phantom (1900MHz)



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

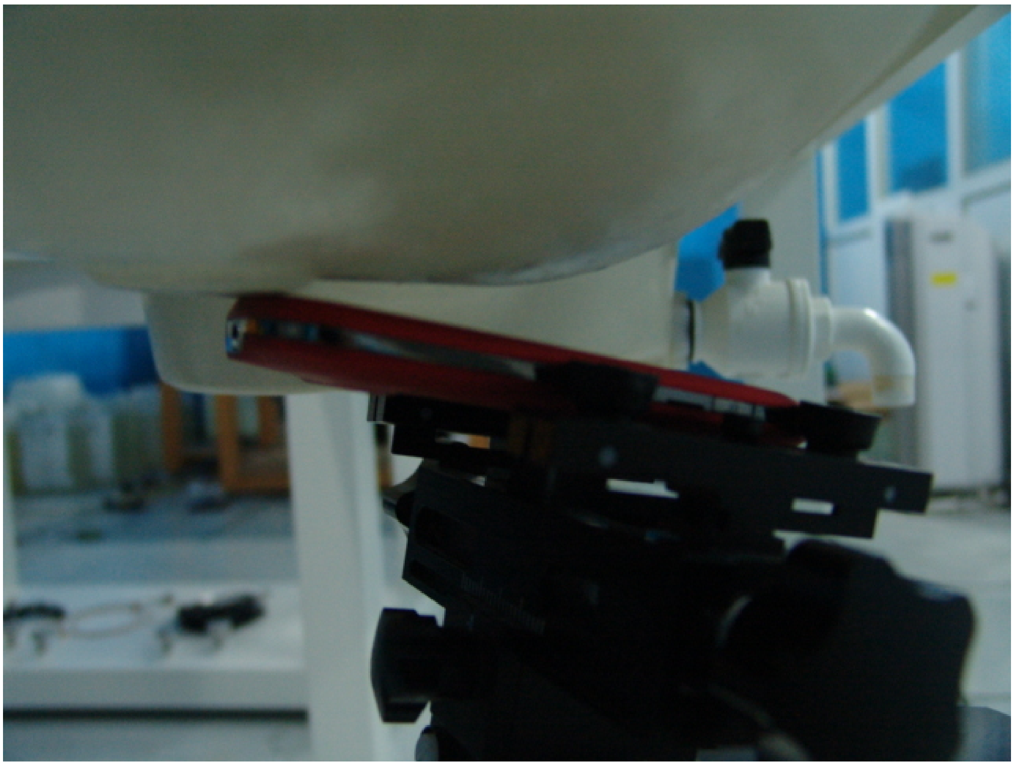


Picture B5: Left Hand Touch Cheek Position



Picture B6: Left Hand Tilt 15° Position

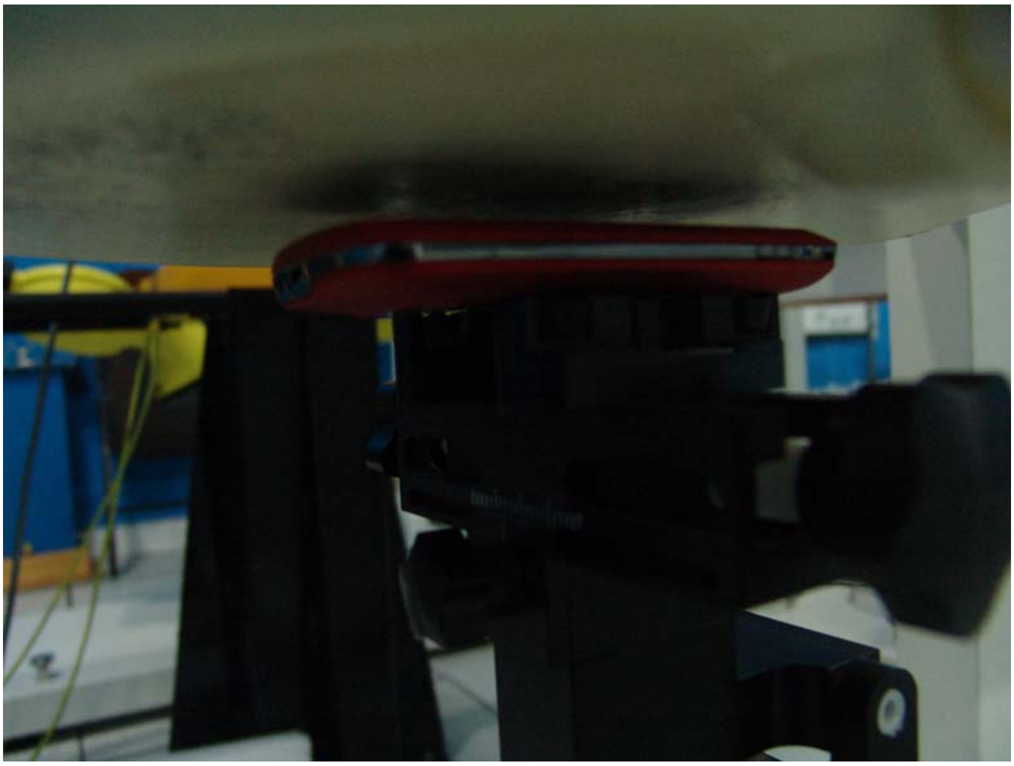
Picture B7: Right Hand Touch Cheek Position



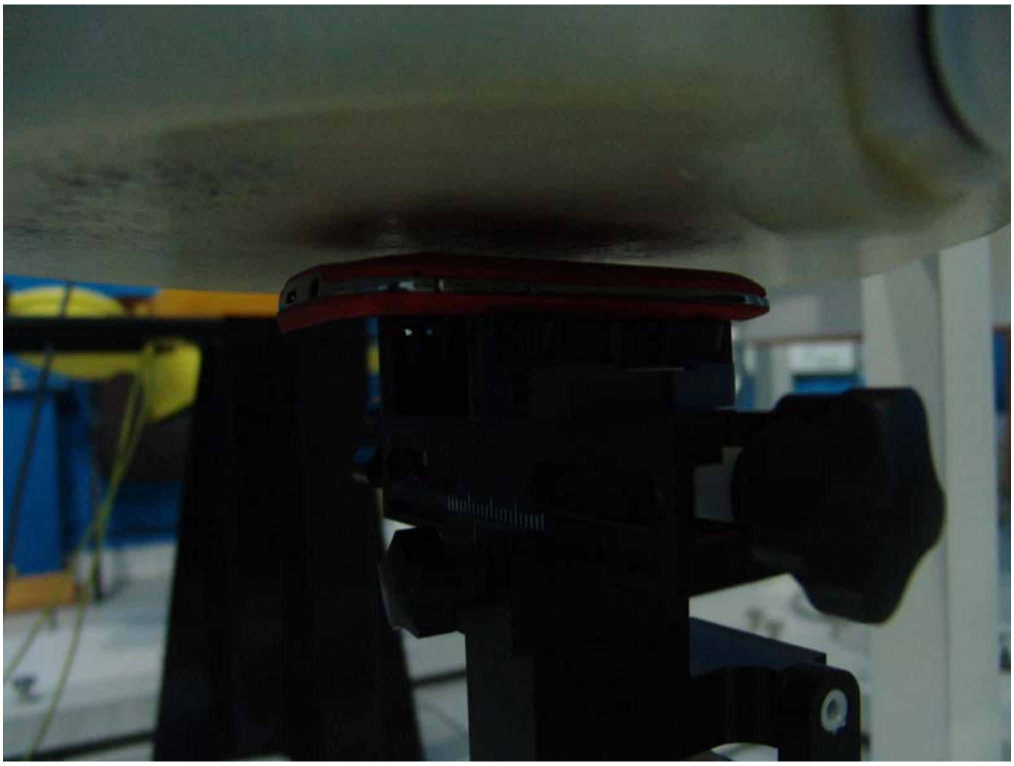
Picture B8: Right Hand Tilt 15° Position

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 :



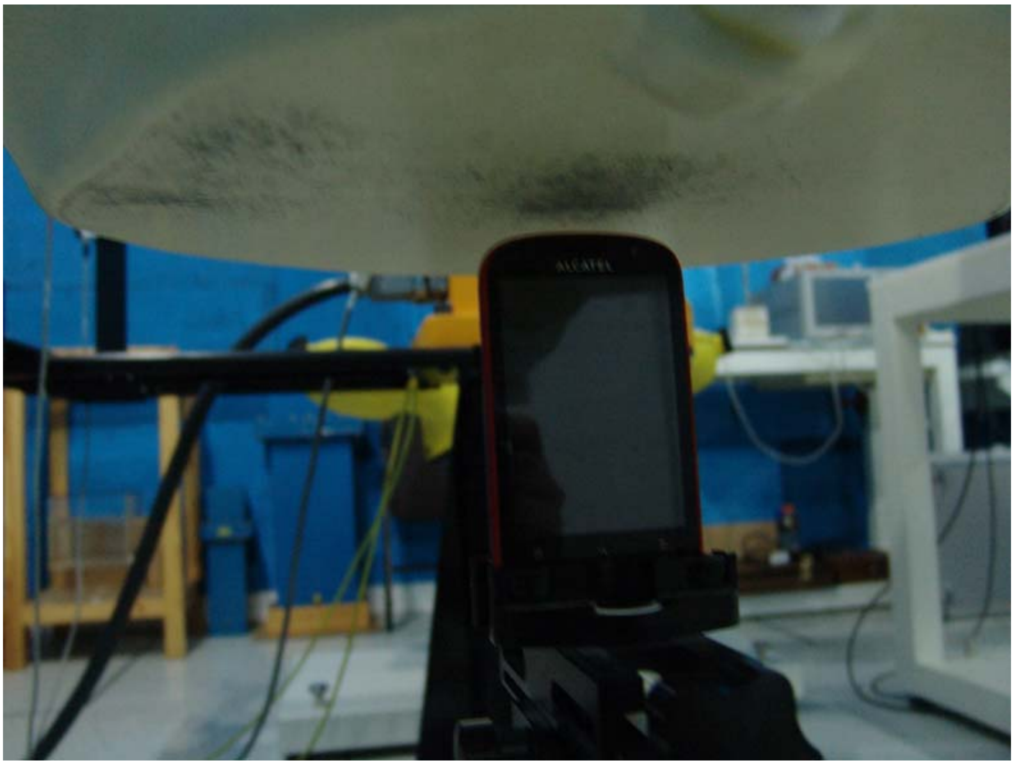
Picture B9: Forward Surface



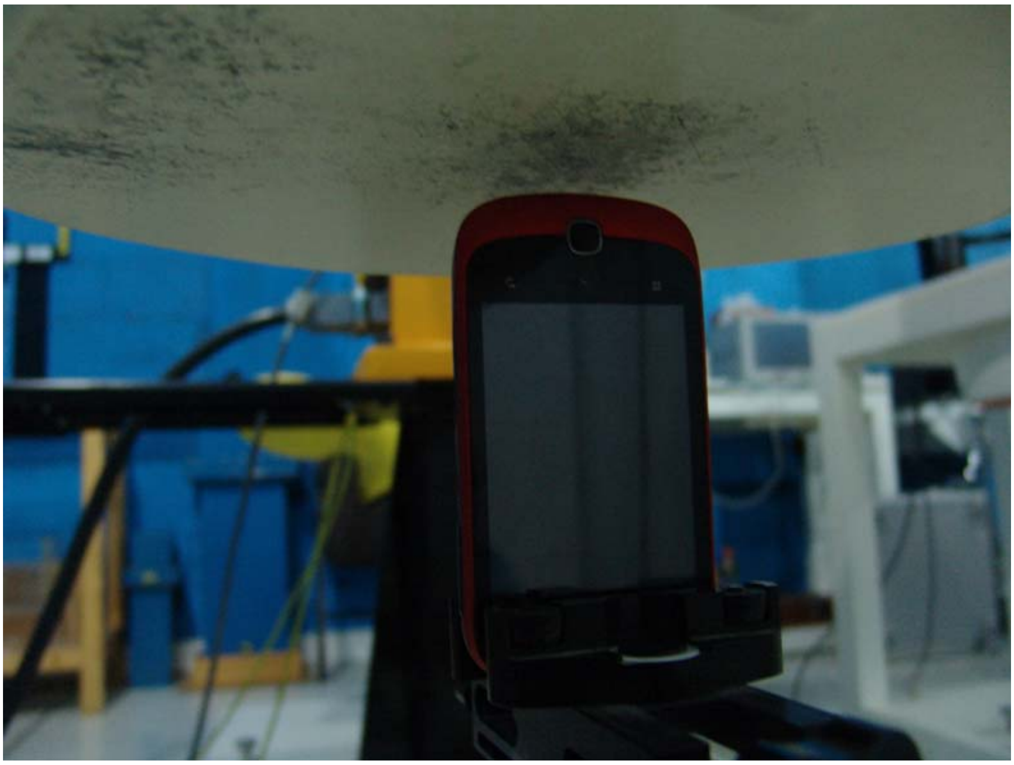
Picture B10: Back Surface

Picture B11: Left Side

Picture B12: Right Side



Picture B13: Top Side



Picture B14: Bottom Side

ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2011-5-15 8:10:34
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 41.8; 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 (61x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.638 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.44 V/m; Power Drift = -0.157 dB
Peak SAR (extrapolated) = 0.760 W/kg
SAR(1 g) = 0.614 mW/g; SAR(10 g) = 0.458 mW/g
Maximum value of SAR (measured) = 0.636 mW/g

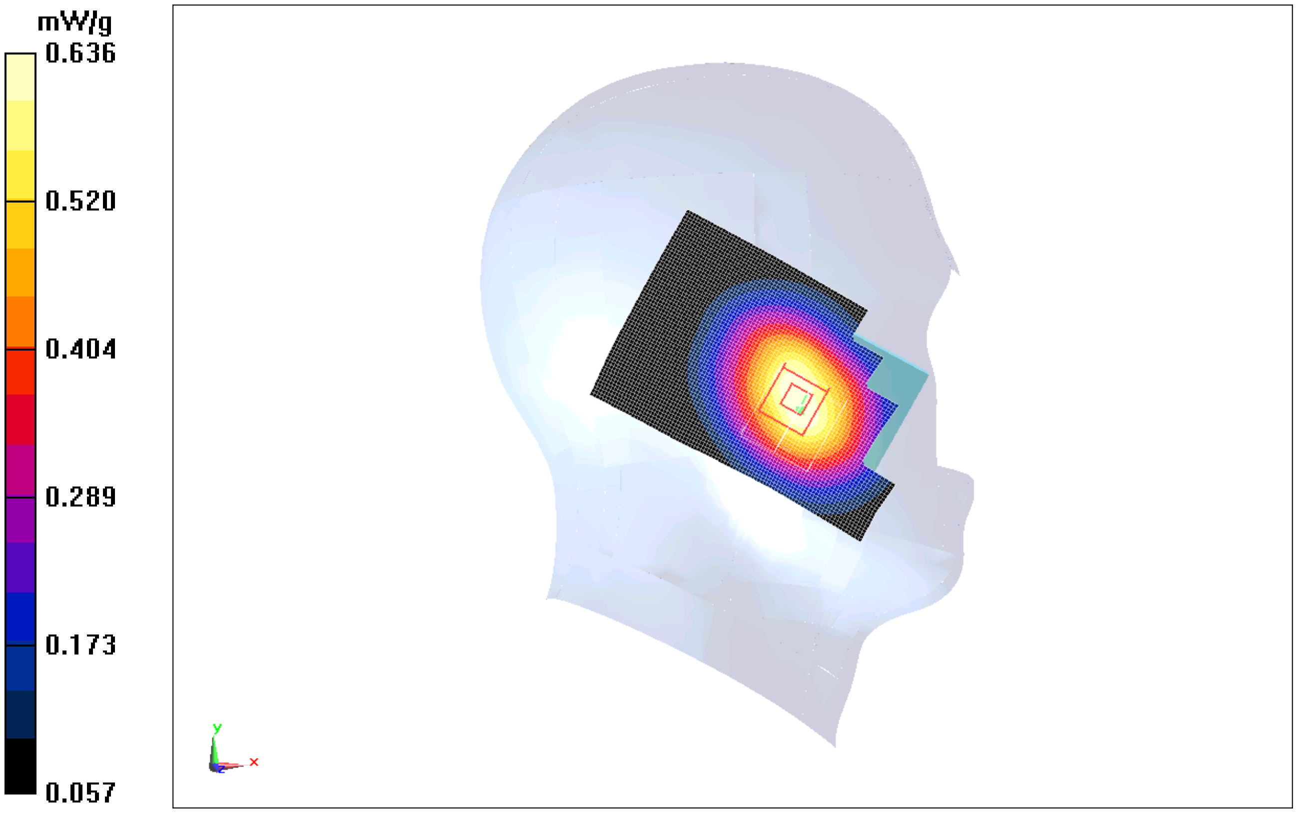


Fig. 1 850MHz CH251

850 Left Cheek Middle
Date/Time: 2011-5-15 8:24:50
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.90 mho/m; εr = 41.9; 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.709 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.96 V/m; Power Drift = -0.150 dB
Peak SAR (extrapolated) = 0.837 W/kg
SAR(1 g) = 0.674 mW/g; SAR(10 g) = 0.507 mW/g
Maximum value of SAR (measured) = 0.709 mW/g

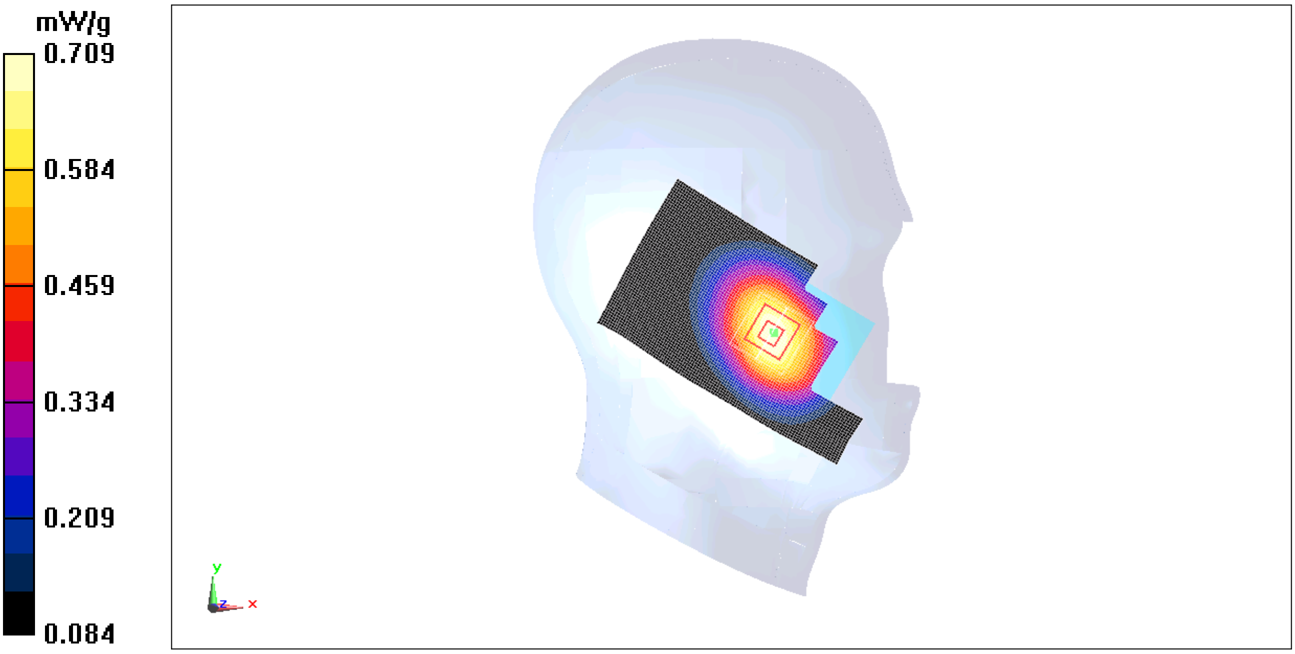


Fig. 2 850 MHz CH190

850 Left Cheek Low

Date/Time: 2011-5-15 8:39:11
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.88 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: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Cheek Middle Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.756 mW/g

Cheek Middle Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.31 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 0.892 W/kg
SAR(1 g) = 0.720 mW/g; SAR(10 g) = 0.541 mW/g
Maximum value of SAR (measured) = 0.760 mW/g

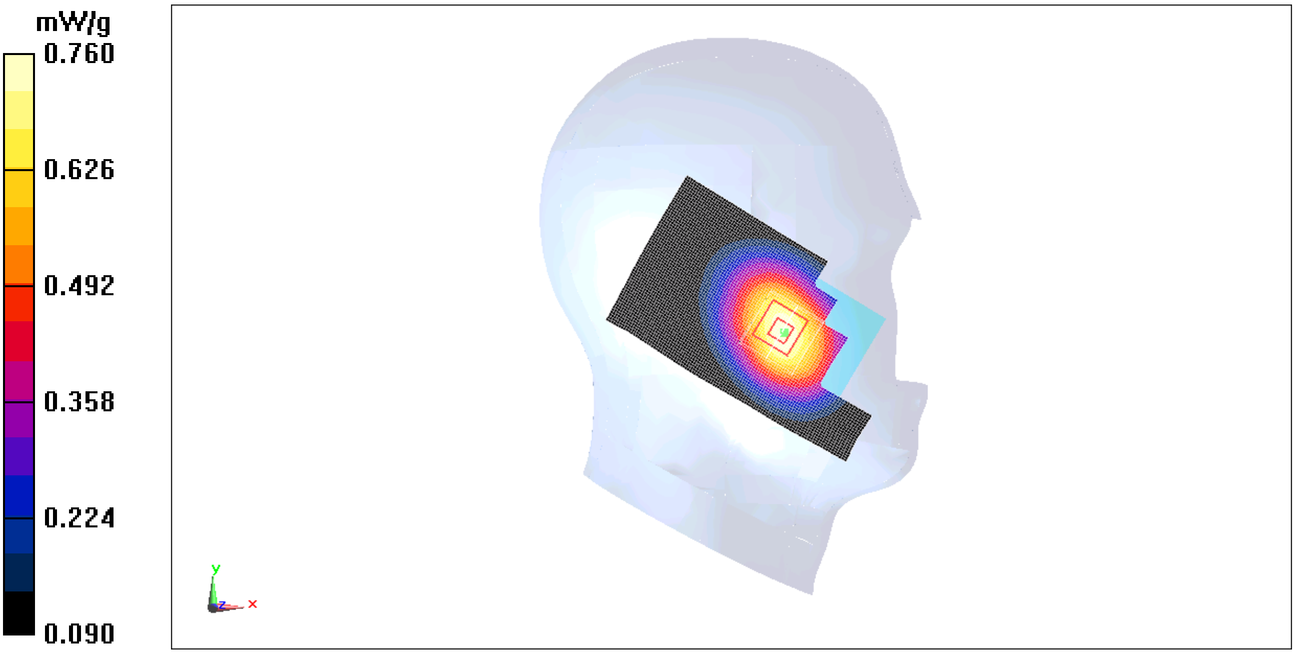


Fig. 3 850 MHz CH128

850 Left Tilt High

Date/Time: 2011-5-15 8:53:45

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.90 mho/m; εr = 41.8; 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.403 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.5 V/m; Power Drift = -0.023 dB

Peak SAR (extrapolated) = 0.470 W/kg

SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.290 mW/g

Maximum value of SAR (measured) = 0.402 mW/g

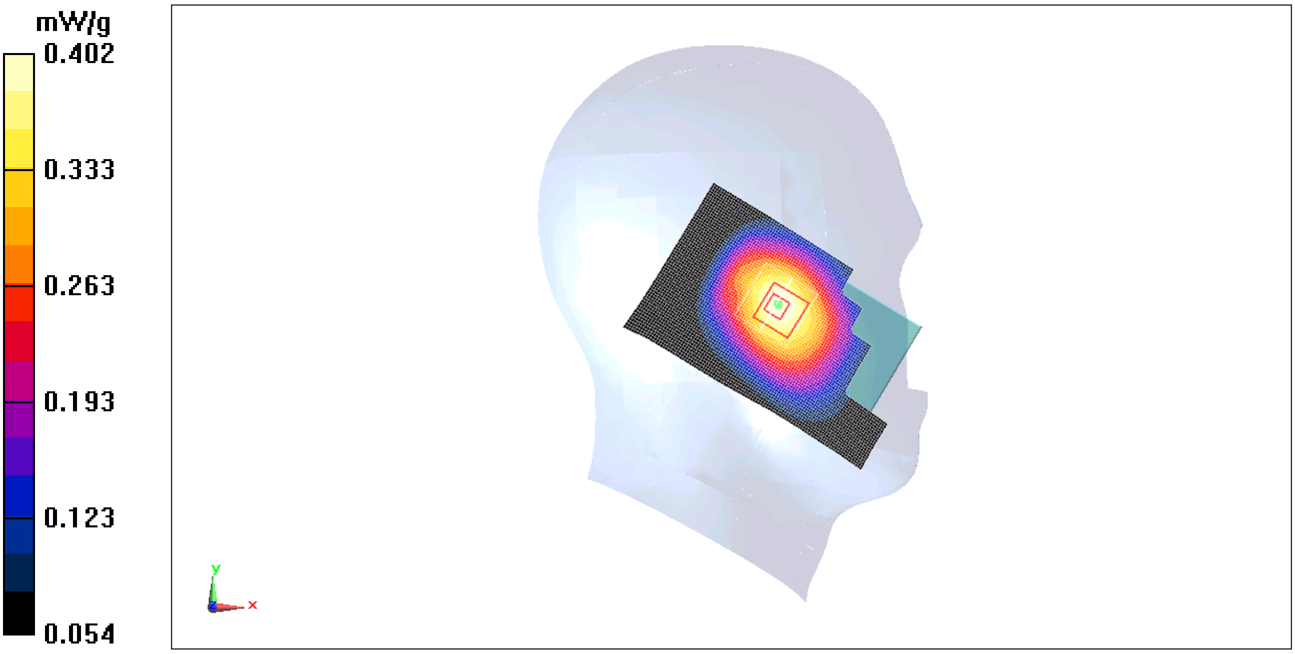


Fig.4 850 MHz CH251

850 Left Tilt Middle

Date/Time: 2011-5-15 9:08:05
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.90 mho/m; εr = 41.9; 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 (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.434 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = 0.00118 dB
Peak SAR (extrapolated) = 0.501 W/kg
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.311 mW/g
Maximum value of SAR (measured) = 0.428 mW/g

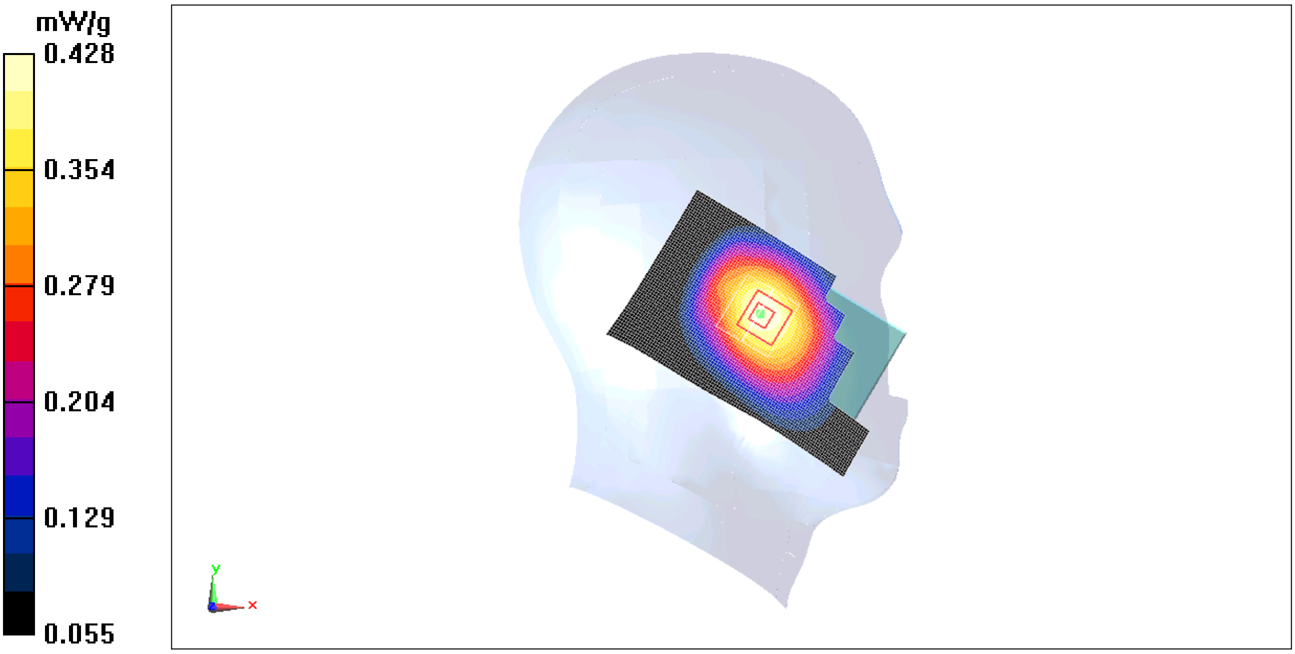


Fig.5 850 MHz CH190

850 Left Tilt Low
Date/Time: 2011-5-15 9:22:23
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.88 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: 824.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

Tilt Low/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.444 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = 0.00747 dB
Peak SAR (extrapolated) = 0.516 W/kg
SAR(1 g) = 0.418 mW/g; SAR(10 g) = 0.320 mW/g
Maximum value of SAR (measured) = 0.441 mW/g

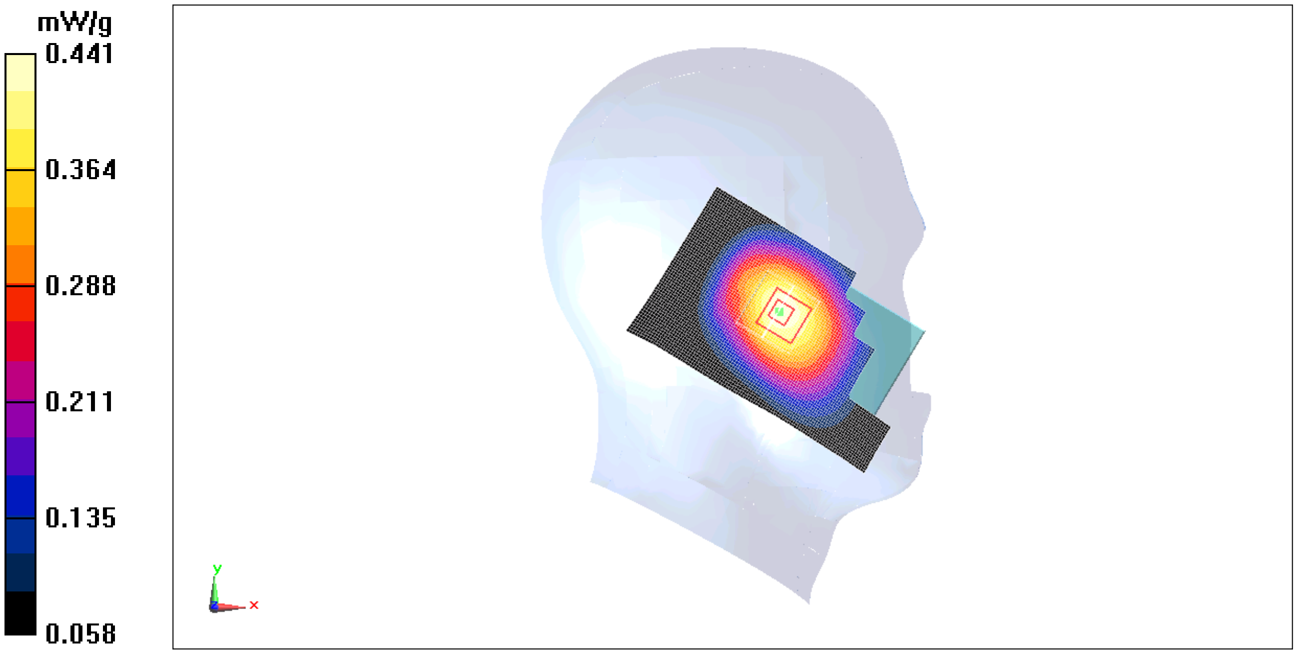


Fig. 6 850 MHz CH128