



SAR TEST REPORT

No. 2011SAR00036

For

TCT Mobile Limited

GSM/GPRS 850/1900 dual band mobile phone

Mini+ lifestyle

TCL-7110

With

Hardware Version: PIO

Software Version: SW47i

FCCID: RAD190

Issued Date: 2011-04-25



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

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1 Test Laboratory

1.1 Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
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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.

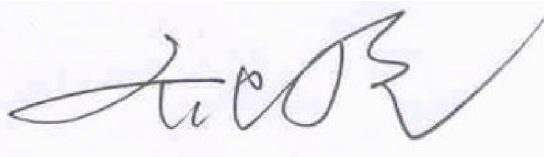
1.3 Project Data

Project Leader: Qi Dianyuan
Test Engineer: Lin Xiaojun
Testing Start Date: April 15, 2011
Testing End Date: April 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
 City: Shanghai
 Postal Code: 201203
 Country: P. R. China
 Telephone: 0086-21-61460890
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2.2 Manufacturer Information

Company Name: TCT Mobile Limited
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 City: Shanghai
 Postal Code: 201203
 Country: P. R. China
 Telephone: 0086-21-61460890
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3 Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

EUT Description: GSM/GPRS 850/1900 dual band mobile phone
 Model Name: Mini+ lifestyle
 Marketing Name: TCL-7110
 Frequency Band: GSM 850 / PCS 1900
 GPRS Multislot Class: 12

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	012734000000059	PIO	SW47i

*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	CAB31DD000C1	/	BYD
AE2	Headset	CCB31C0A10C0	/	Juwei

*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: 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 Xmitter and Ant, v01r05: SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

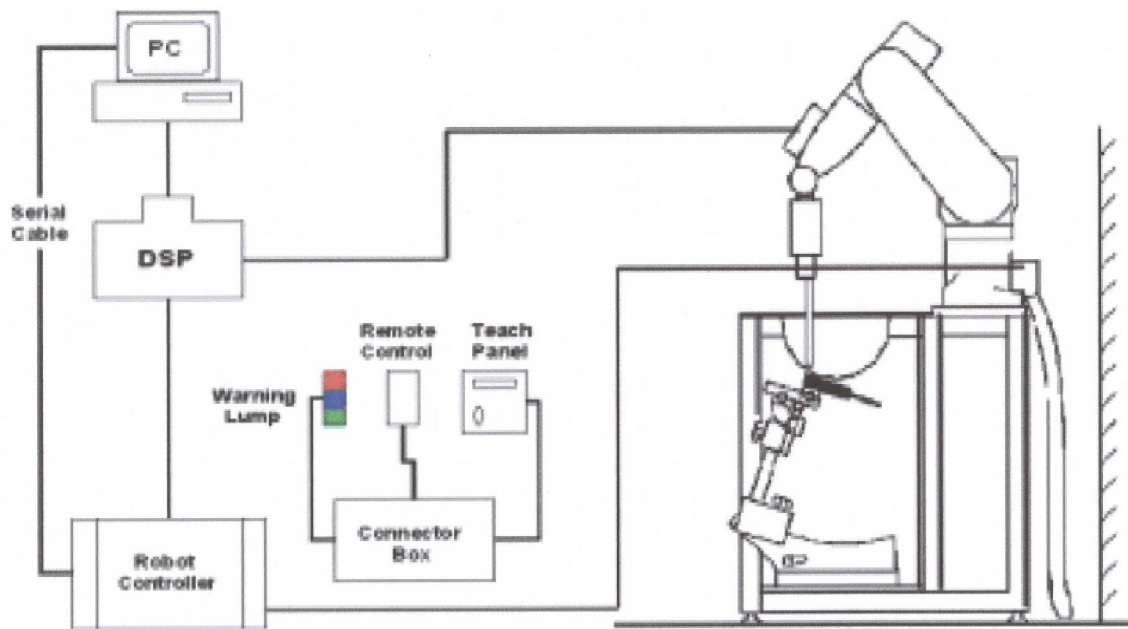
During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 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 $\pm 0.02\text{mm}$. 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 $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$.

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: $\pm 0.2 \text{ dB}$ (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 below 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: t = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
T = Temperature increase due to RF exposure.

Or

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

Where:
= Simulated tissue conductivity,



Picture 5: Device Holder

= 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 repeatably 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±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x 1000 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	=41.5 =0.90
MIXTURE %	FREQUENCY 1900MHz	
Water	55.242	
Glycol monobutyl	44.452	

Salt	0.306		
Dielectric Parameters Target Value	f=1900MHz	=40.0	=1.40

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	=55.2	=0.97
MIXTURE %	FREQUENCY 1900MHz		
Water	69.91		
Glycol monobutyl	29.96		
Salt	0.13		
Dielectric Parameters Target Value	f=1900MHz	=53.3	=1.52

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: DAS4 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

The conducted power for GSM 850/1900 is as following:

GSM 850MHZ	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	32.19	32.34	32.21
GSM 1900MHZ	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	29.03	29.18	29.49

The conducted power for GPRS 850/1900 is as following:

GSM 850 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	32.04	32.16	32.05	-9.03dB	23.01	23.13	23.02
2 Txslots	30.21	30.33	30.20	-6.02dB	24.19	24.31	24.18
3Txslots	29.06	29.31	29.38	-4.26dB	24.80	25.05	25.12
4 Txslots	28.06	28.28	28.36	-3.01dB	25.05	25.27	25.35
PCS1900 GPRS	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	28.88	29.03	29.36	-9.03dB	19.85	20.00	20.33
2 Txslots	27.57	27.73	28.06	-6.02dB	21.55	21.71	22.04
3Txslots	26.61	26.73	27.11	-4.26dB	22.35	22.47	22.85
4 Txslots	25.40	25.61	26.07	-3.01dB	22.39	22.60	23.06

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 GSM850 and PCS1900.

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 7 to Table 10 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 3: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 39%.			
Liquid temperature during the test: 22.5°C			
Measurement Date : 850 MHz <u>April 15, 2011</u> 1900 MHz <u>April 16, 2011</u>			
/	Frequency	Permittivity	Conductivity (S/m)
Target value	835 MHz	41.5	0.90
	1900 MHz	40.0	1.40
Measurement value (Average of 10 tests)	835 MHz	40.9	0.89
	1900 MHz	39.5	1.38

Table 4: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 23.0 °C and relative humidity 39%.			
Liquid temperature during the test: 22.5°C			
Measurement Date : 850 MHz <u>April 15, 2011</u> 1900 MHz <u>April 16, 2011</u>			
/	Frequency	Permittivity	Conductivity (S/m)
Target value	835 MHz	55.2	0.97
	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	835 MHz	54.4	0.96
	1900 MHz	52.1	1.51

7.2 System Validation

Table 5: System Validation of Head

Measurement is made at temperature 23.0 °C and relative humidity 39%.							
Liquid temperature during the test: 22.5°C							
Measurement Date : 850 MHz <u>April 15, 2011</u> 1900 MHz <u>April 16, 2011</u>							
Liquid parameters	Dipole calibration Target value	Frequency		Permittivity		Conductivity (S/m)	
		835 MHz	1900 MHz	41.6	39.6	0.92	1.40
	Actual Measurement value	Frequency		Permittivity		Conductivity (S/m)	
		835 MHz	1900 MHz	40.9	39.5	0.89	1.38
Verification results	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
	835 MHz	6.12	9.41	6.04	9.72	-1.31%	3.29%
1900 MHz	20.1	39.4	19.76	39.24	-1.69%	-0.41%	

Note : The forward power is 250mW. Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration Certificate.

Table 6: System Validation of Body

Measurement is made at temperature 23.0 °C and relative humidity 39%.							
Liquid temperature during the test: 22.5°C							
Measurement Date : 850 MHz <u>April 15, 2011</u> 1900 MHz <u>April 16, 2011</u>							
Liquid parameters	Dipole calibration	Frequency		Permittivity		Conductivity (S/m)	
		835 MHz		54.5		0.97	
	Target value	1900 MHz		52.5		1.51	
		Actural Measurement value	835 MHz		54.4		0.96
	1900 MHz		52.1		1.51		
	Verification results	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
835 MHz		6.24	9.57	6.08	9.44	-2.56%	-1.36%
1900 MHz		20.9	41.4	20.72	40.8	-0.86%	-1.45%

Note : The forward power is 250mW. 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 7: SAR Values (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, Top frequency (See Fig.1)	0.712	1	-0.019
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.718	1.01	0.026
Left hand, Touch cheek, Bottom frequency (See Fig.3)	0.718	1	-0.067
Left hand, Tilt 15 Degree, Top frequency (See Fig.4)	0.303	0.404	-0.178
Left hand, Tilt 15 Degree, Mid frequency (See Fig.5)	0.298	0.395	-0.045
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.6)	0.285	0.376	-0.116
Right hand, Touch cheek, Top frequency (See Fig.7)	0.623	0.838	-0.189
Right hand, Touch cheek, Mid frequency (See Fig.8)	0.625	0.842	0.026
Right hand, Touch cheek, Bottom frequency (See Fig.9)	0.606	0.814	-0.072
Right hand, Tilt 15 Degree, Top frequency (See Fig.10)	0.293	0.390	-0.022
Right hand, Tilt 15 Degree, Mid frequency (See Fig.11)	0.294	0.388	-0.066
Right hand, Tilt 15 Degree, Bottom frequency (See Fig.12)	0.280	0.370	-0.037

Table 8: SAR Values (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, Top frequency (See Fig.13)	0.538	0.904	-0.102
Left hand, Touch cheek, Mid frequency (See Fig.14)	0.528	0.885	-0.031
Left hand, Touch cheek, Bottom frequency (See Fig.15)	0.515	0.859	0.023
Left hand, Tilt 15 Degree, Top frequency (See Fig.16)	0.169	0.269	-0.074
Left hand, Tilt 15 Degree, Mid frequency (See Fig.17)	0.175	0.273	-0.078
Left hand, Tilt 15 Degree, Bottom frequency (See Fig.18)	0.178	0.280	0.043
Right hand, Touch cheek, Top frequency (See Fig.19)	0.506	0.948	-0.198
Right hand, Touch cheek, Mid frequency (See Fig.20)	0.558	1.06	-0.039
Right hand, Touch cheek, Bottom frequency (See Fig.21)	0.617	1.18	0.098
Right hand, Tilt 15 Degree, Top frequency (See Fig.22)	0.206	0.337	0.024
Right hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.202	0.331	0.046
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.24)	0.205	0.331	0.042

Table 9: SAR Values (850MHz-Body)

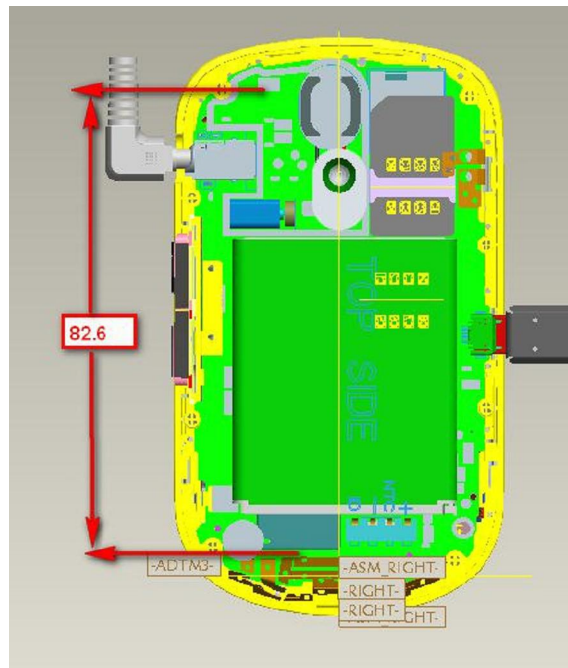
Limit of SAR (W/kg)	10 g Average	1g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency with GPRS (See Fig.25)	0.617	0.866	0.000
Body, Towards Ground, Mid frequency with GPRS (See Fig.26)	0.610	0.856	0.001
Body, Towards Ground, Bottom frequency with GPRS (See Fig.27)	0.633	0.887	-0.008
Body, Towards Phantom, Top frequency with GPRS (See Fig.28)	0.494	0.676	-0.135
Body, Towards Phantom, Mid frequency with GPRS (See Fig.29)	0.487	0.669	-0.023
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.30)	0.508	0.693	0.001
Body, Towards Ground, Bottom frequency with Headset_CCB31C0A10C0 (See Fig.31)	0.448	0.628	0.017

Table 10: SAR Values (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)		Power Drift (dB)
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency with GPRS (See Fig.32)	0.334	0.567	-0.006
Body, Towards Ground, Mid frequency with GPRS (See Fig.33)	0.362	0.619	-0.004
Body, Towards Ground, Bottom frequency with GPRS (See Fig.34)	0.371	0.638	0.077
Body, Towards Phantom, Top frequency with GPRS (See Fig.35)	0.317	0.541	-0.096
Body, Towards Phantom, Mid frequency with GPRS (See Fig.36)	0.283	0.489	0.012
Body, Towards Phantom, Bottom frequency with GPRS (See Fig.37)	0.285	0.496	0.059
Body, Towards Ground, Bottom frequency with Headset_CCB3160A10C0 (See Fig.38)	0.177	0.300	-0.042

7.4 Summary of Measurement Results (Bluetooth function)

The distance between BT antenna and GSM 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)	-1.79	-2.96	-2.91

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 $> 5\text{cm}$ 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.

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 **GSM 1900 Head, Right hand, Touch cheek**, Bottom frequency (**Table21**), and the value are: **1.18(10g), 0.617(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	A	3.3	N	1	1	1	3.3	3.3	71

	positioning									
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 11: 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	E4438C	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	DAE	SPEAG DAE4	771	November 21, 2010	One year
09	Dipole Validation Kit	SPEAG D835V2	443	February 26, 2010	Two years
10	Dipole Validation Kit	SPEAG D1900V2	541	February 26, 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.

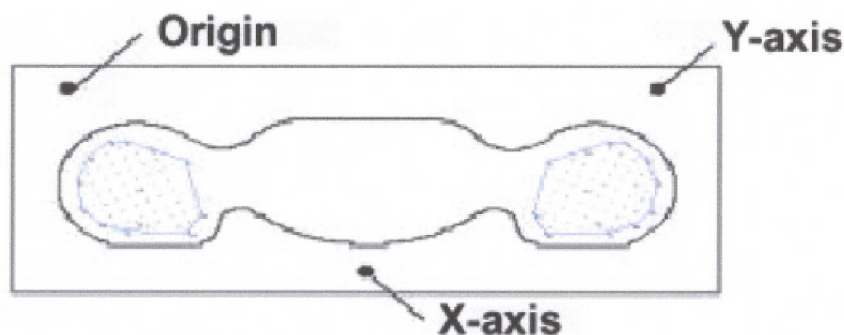
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

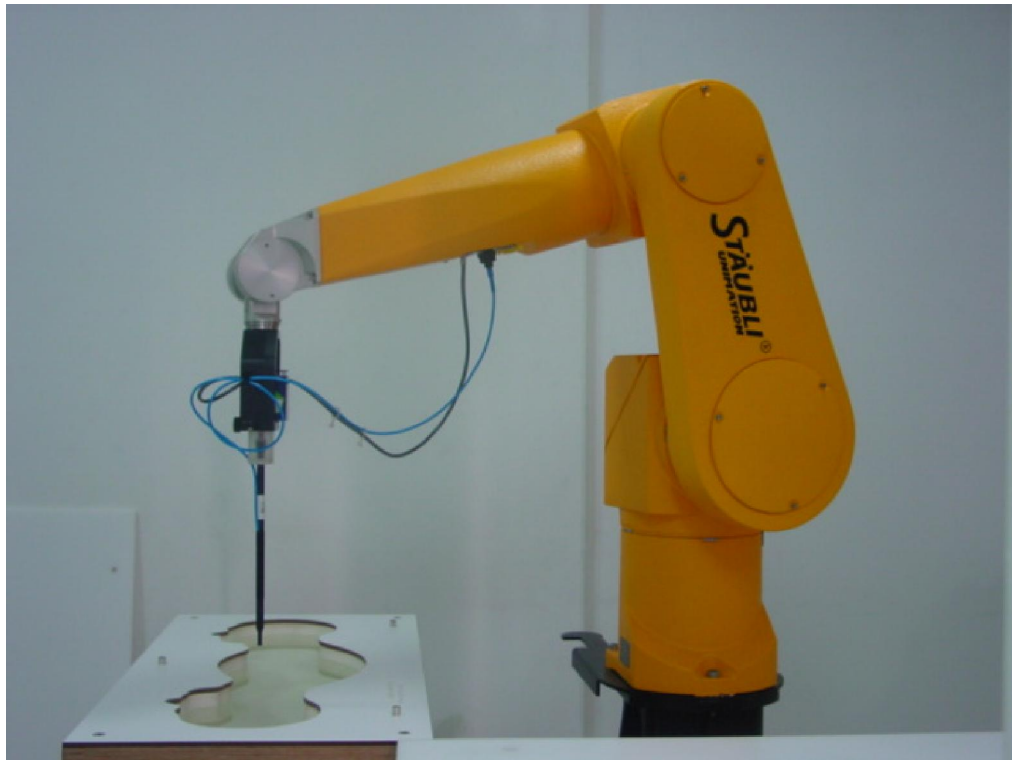
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

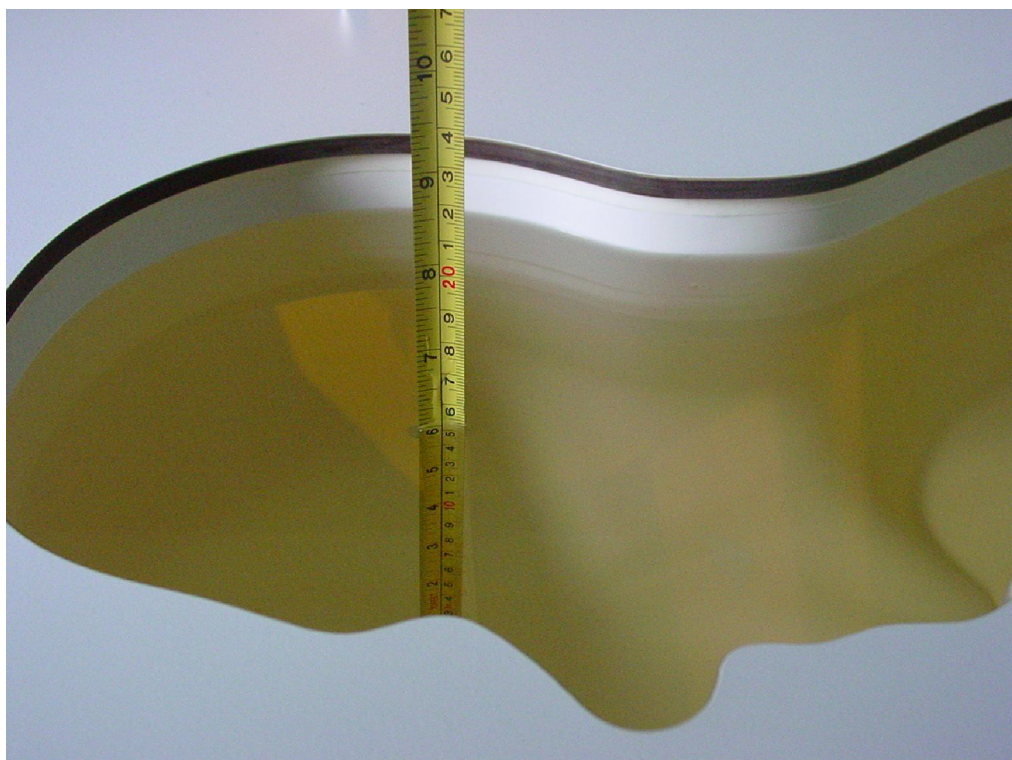


Picture A: SAR Measurement Points in Area Scan

ANNEX B TEST LAYOUT



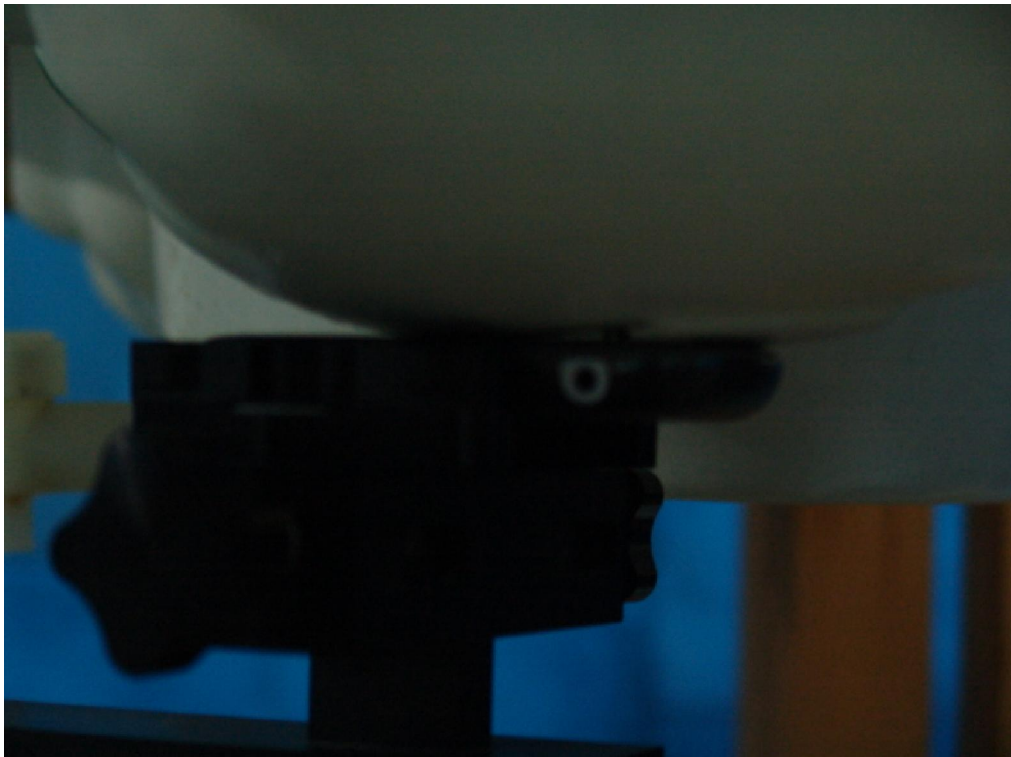
Picture B1: Specific Absorption Rate Test Layout



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



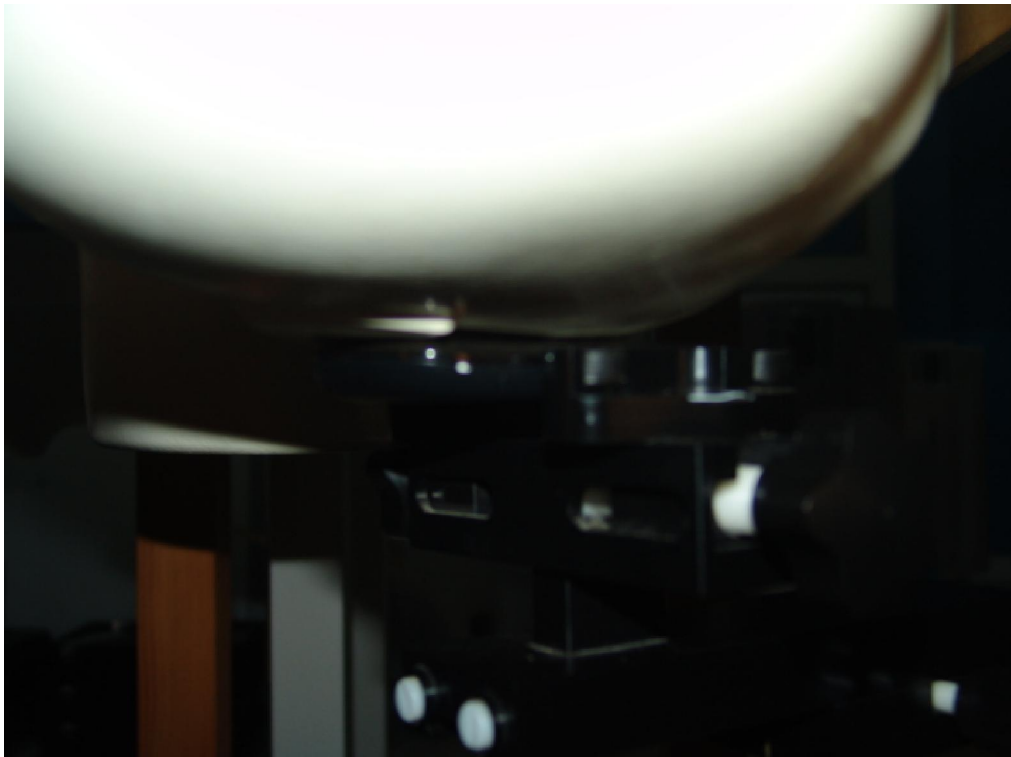
Picture B3 Liquid depth in the Flat Phantom (1900MHz)



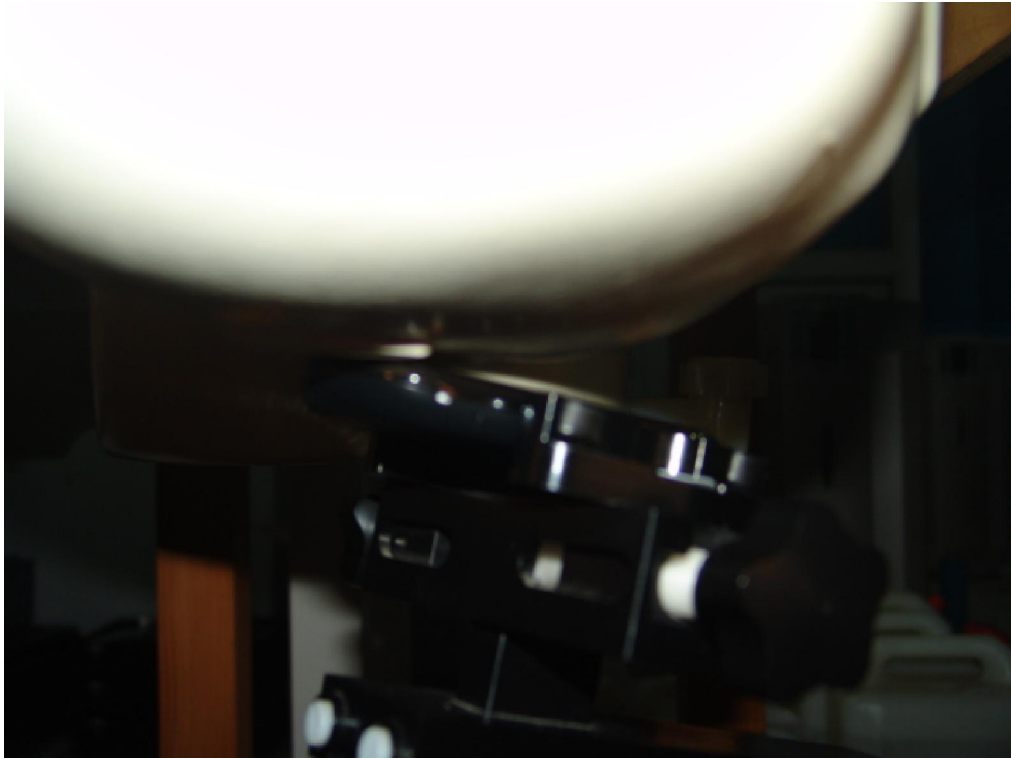
Picture B4: Left Hand Touch Cheek Position



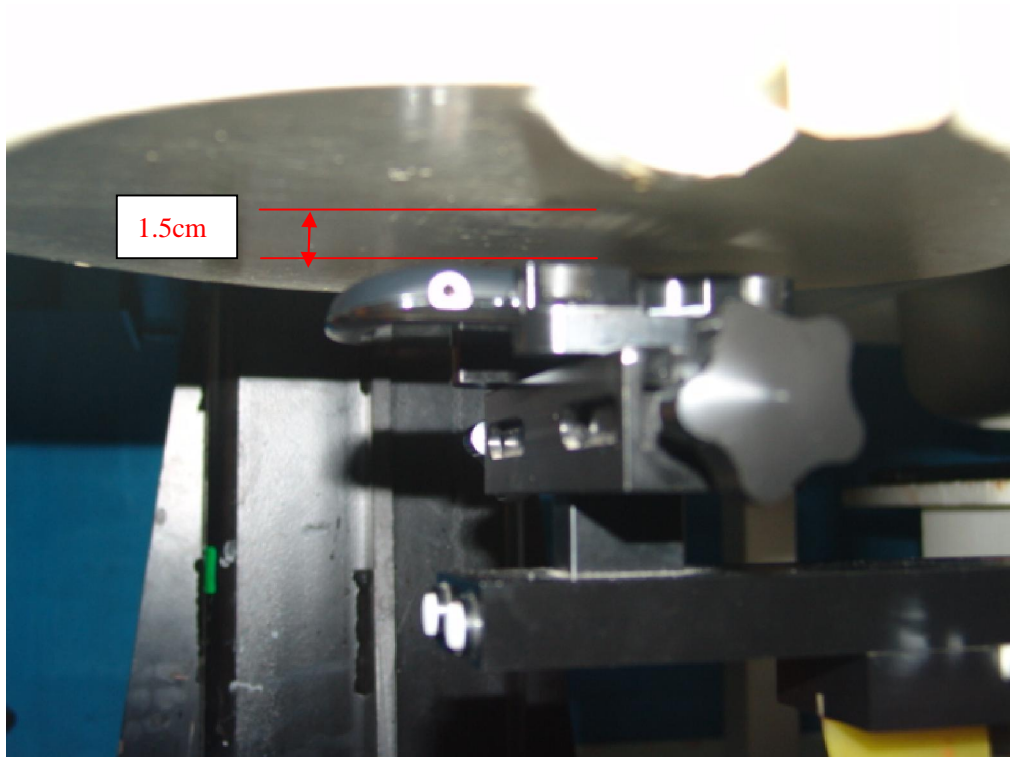
Picture B5: Left Hand Tilt 15° Position



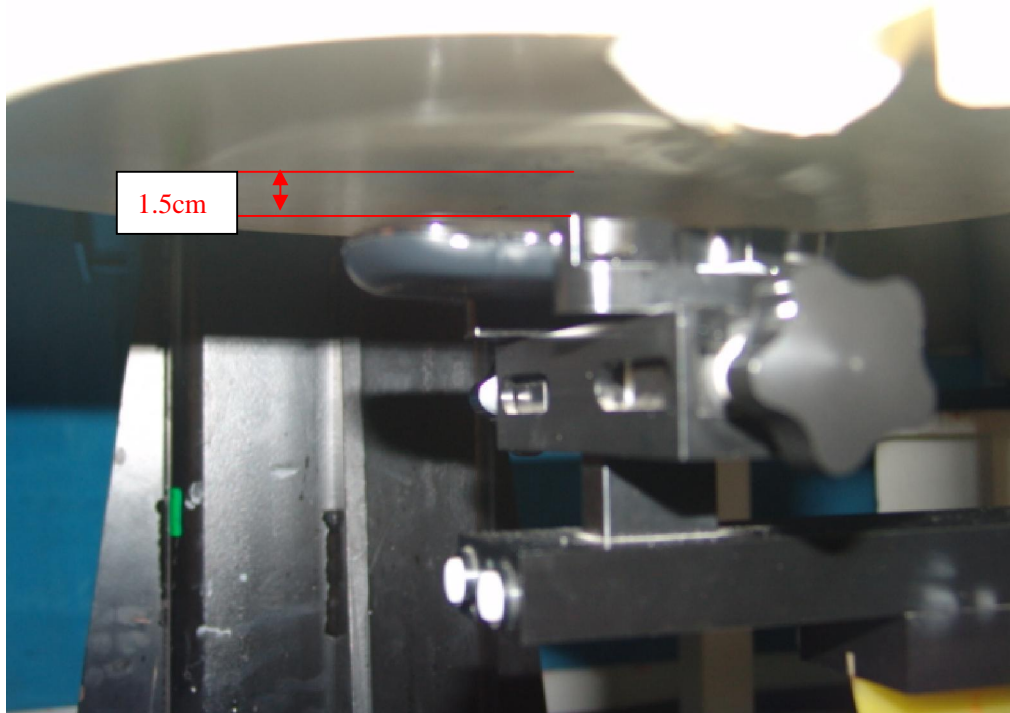
Picture B6: Right Hand Touch Cheek Position



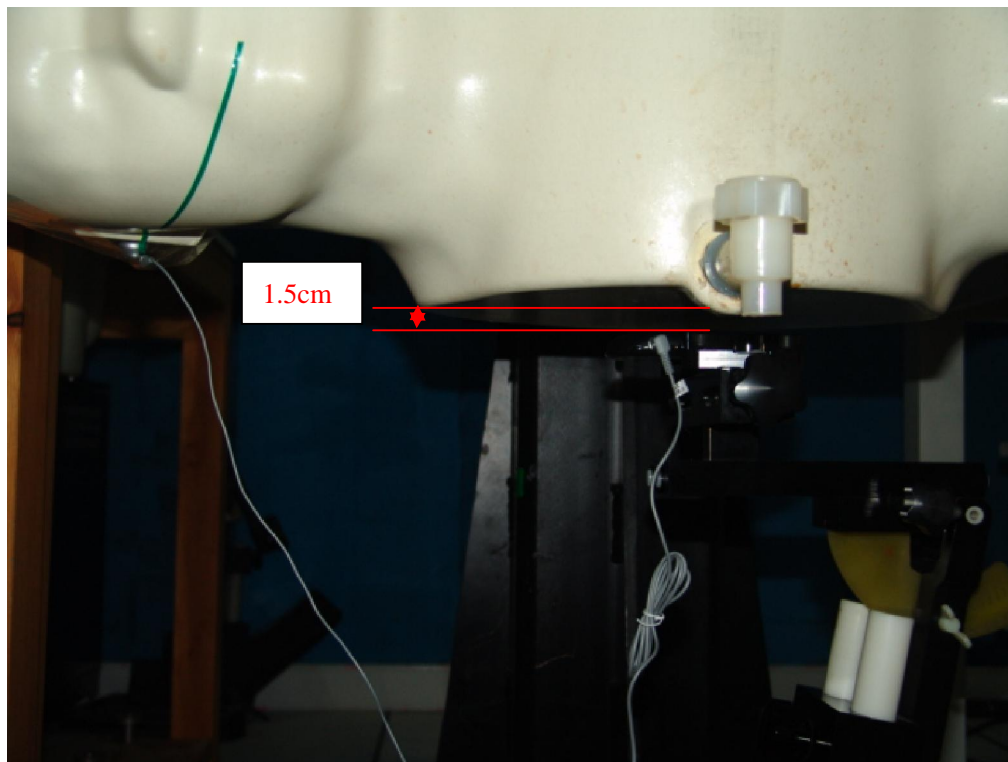
Picture B7: Right Hand Tilt 15° Position



Picture B8: Body-worn Position (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture B9: Body-worn Position (towards phantom, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture B10: Body-worn Position with Headset (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)

ANNEX C GRAPH RESULTS

850 Left Cheek High

Date/Time: 2011-4-15 8:11:34

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.91$ mho/m; $r = 40.8$; $\rho = 1000$ kg/m³

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) = 1.12 mW/g

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

Reference Value = 9.31 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 1 mW/g; SAR(10 g) = 0.712 mW/g

Maximum value of SAR (measured) = 1.07 mW/g



Fig. 1 850MHz CH251

850 Left Cheek Middle

Date/Time: 2011-4-15 8:28:57

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.898$ mho/m; $r = 40.9$; $\rho = 1000$ kg/m³

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) = 1.13 mW/g

CheekMiddle/ZoomScan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.3 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.718 mW/g

Maximum value of SAR (measured) = 1.07 mW/g

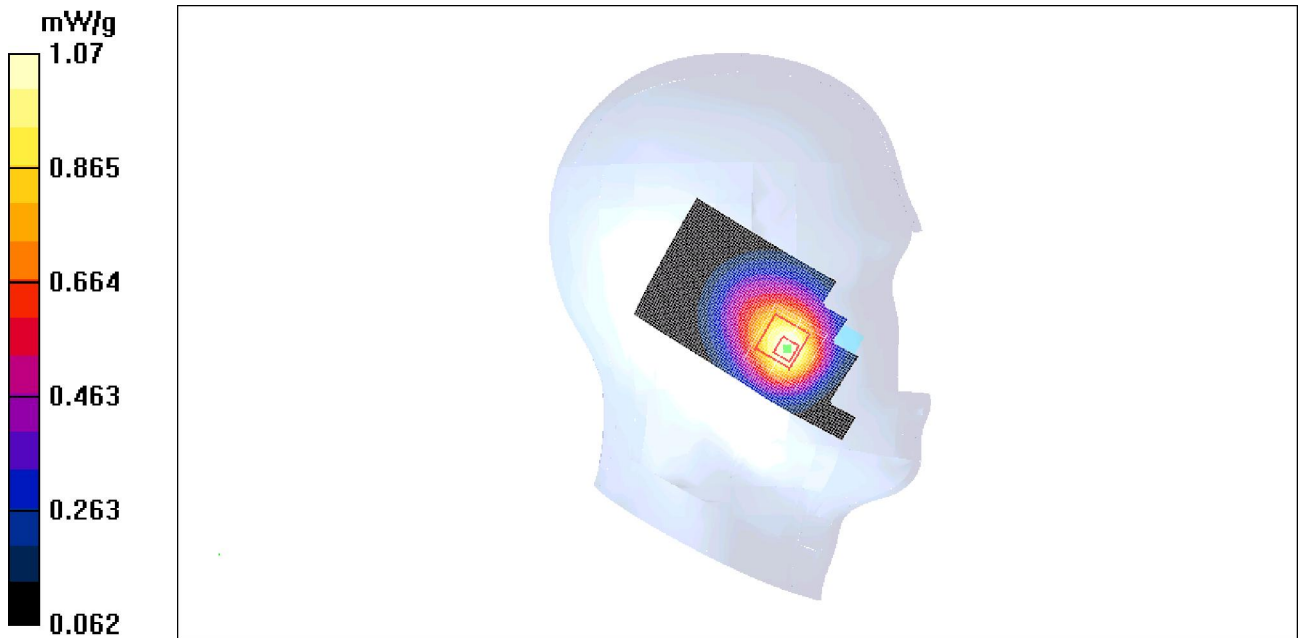


Fig. 2 850 MHz CH190

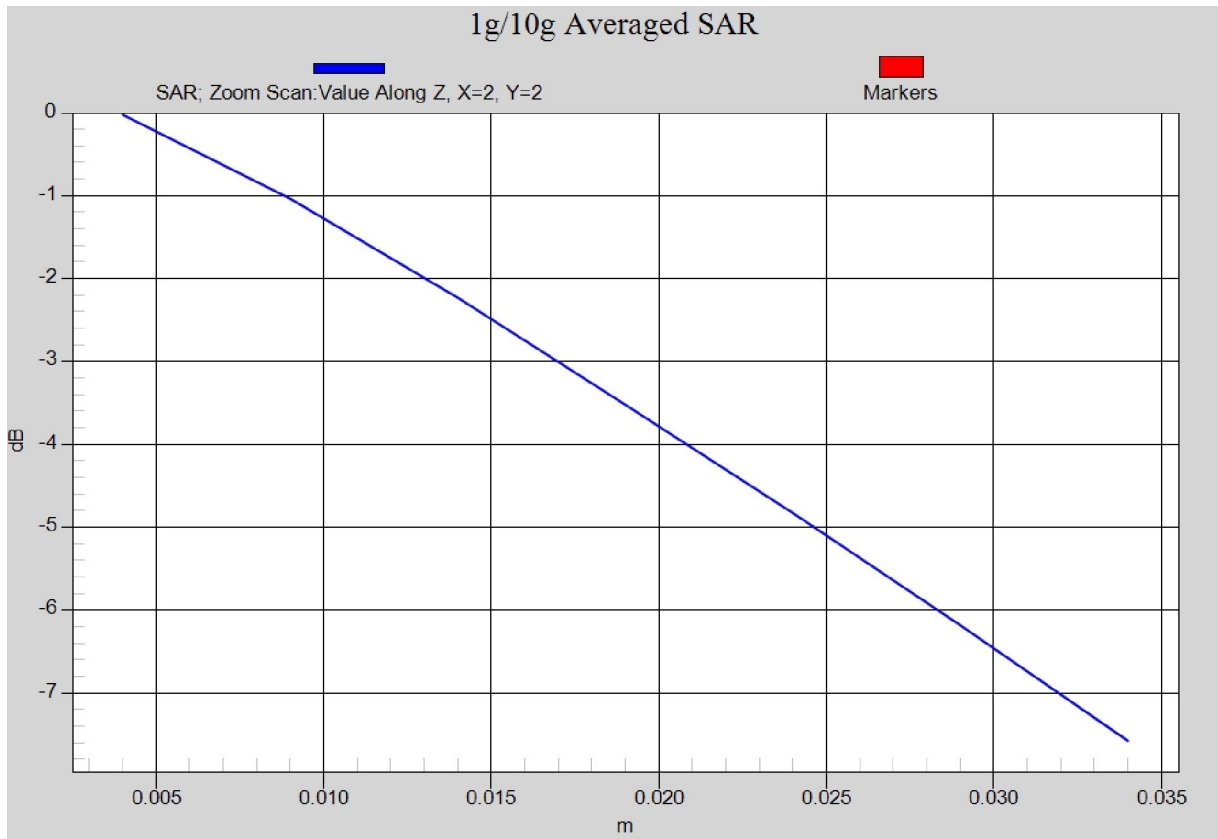


Fig. 2-1 Z-Scan at power reference point (850 MHz CH190)

850 Left Cheek Low

Date/Time: 2011-4-15 8:45:01

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.886 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 1.13 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.65 V/m ; Power Drift = -0.067 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 1 mW/g ; SAR(10 g) = 0.718 mW/g

Maximum value of SAR (measured) = 1.06 mW/g

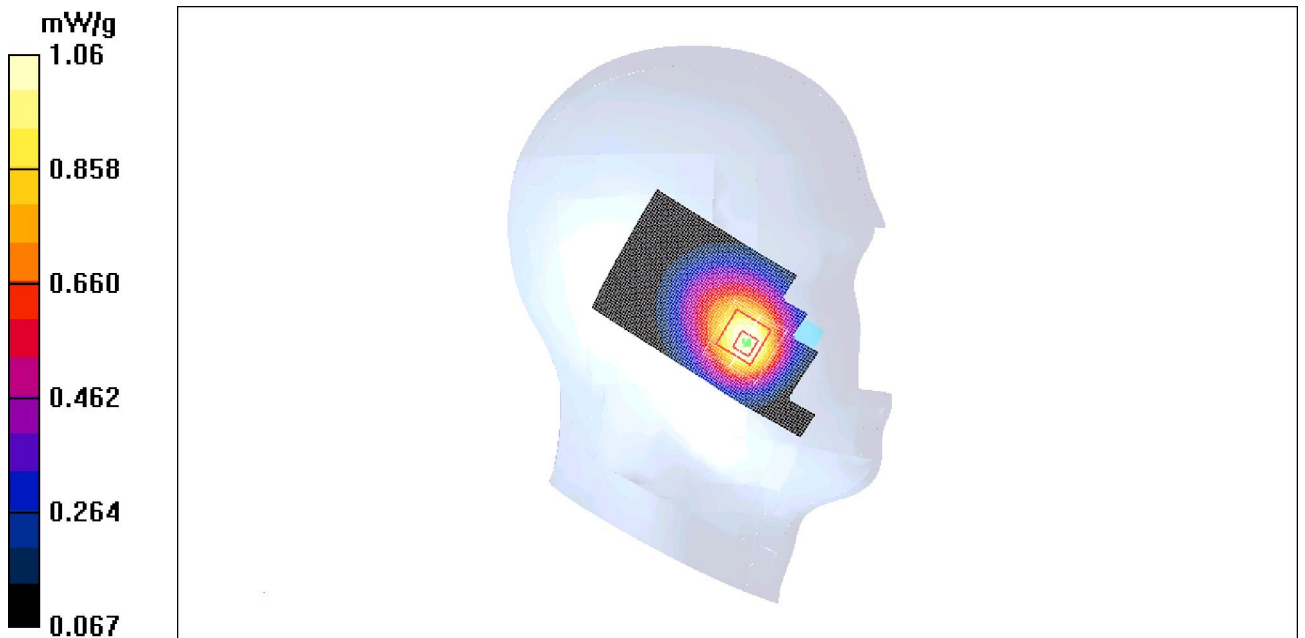


Fig. 3 850 MHz CH128

850 Left Tilt High

Date/Time: 2011-4-15 9:04:27

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.91$ mho/m; $r = 40.8$; $\rho = 1000$ kg/m³

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) = 0.429 mW/g

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

Reference Value = 14.7 V/m; Power Drift = -0.178 dB

Peak SAR (extrapolated) = 0.504 W/kg

SAR(1 g) = 0.404 mW/g; SAR(10 g) = 0.303 mW/g

Maximum value of SAR (measured) = 0.429 mW/g

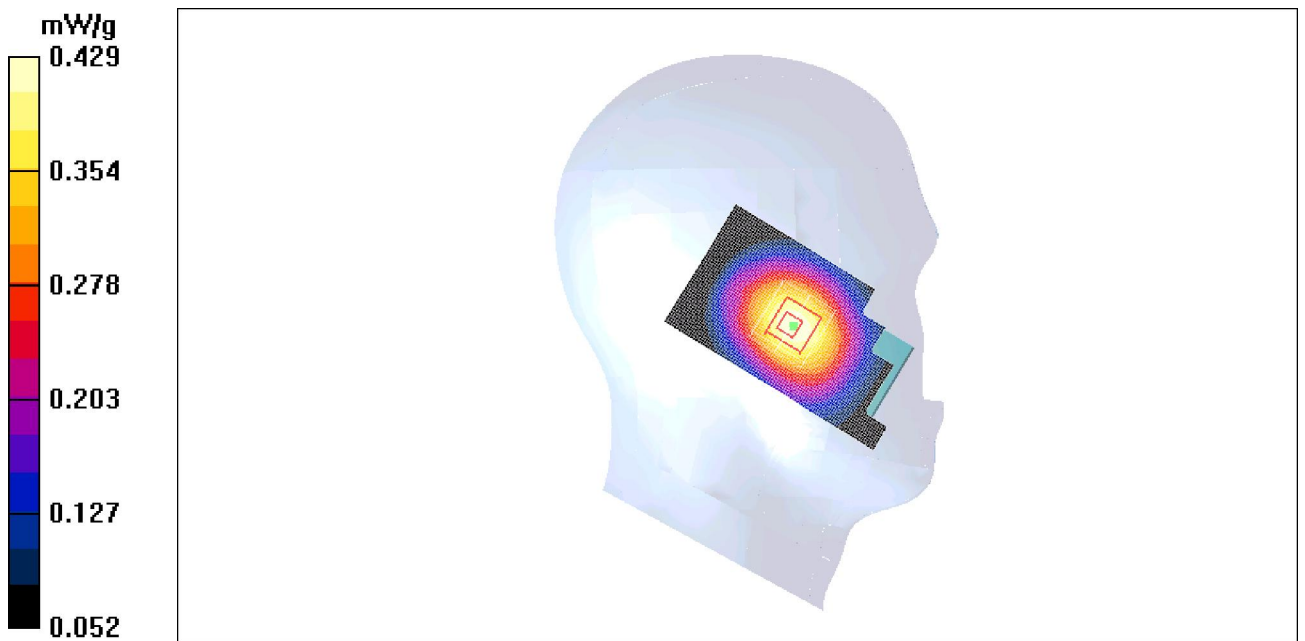


Fig.4 850 MHz CH251

850 Left Tilt Middle

Date/Time: 2011-4-15 9:24:41

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.898 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.422 mW/g

Tilt Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.9 V/m ; Power Drift = -0.045 dB

Peak SAR (extrapolated) = 0.488 W/kg

SAR(1 g) = 0.395 mW/g ; SAR(10 g) = 0.298 mW/g

Maximum value of SAR (measured) = 0.416 mW/g

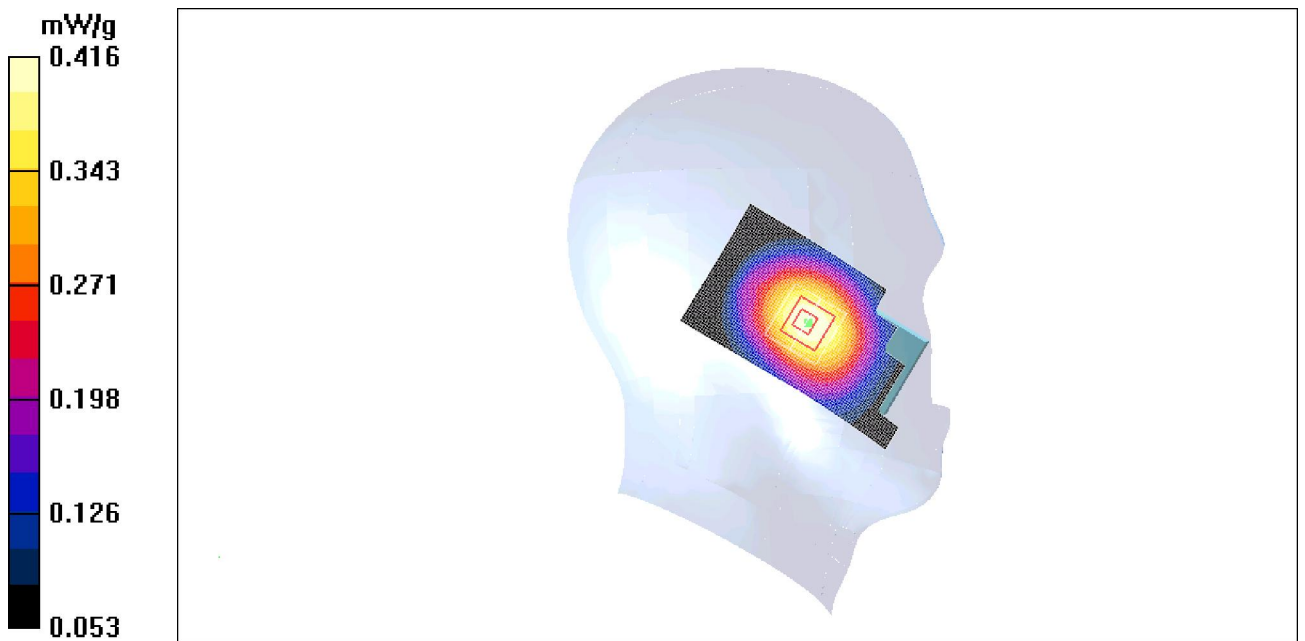


Fig.5 850 MHz CH190

850 Left Tilt Low

Date/Time: 2011-4-15 9:42:27

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.886 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

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

Tilt Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.8 V/m ; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 0.465 W/kg

SAR(1 g) = 0.376 mW/g ; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.392 mW/g

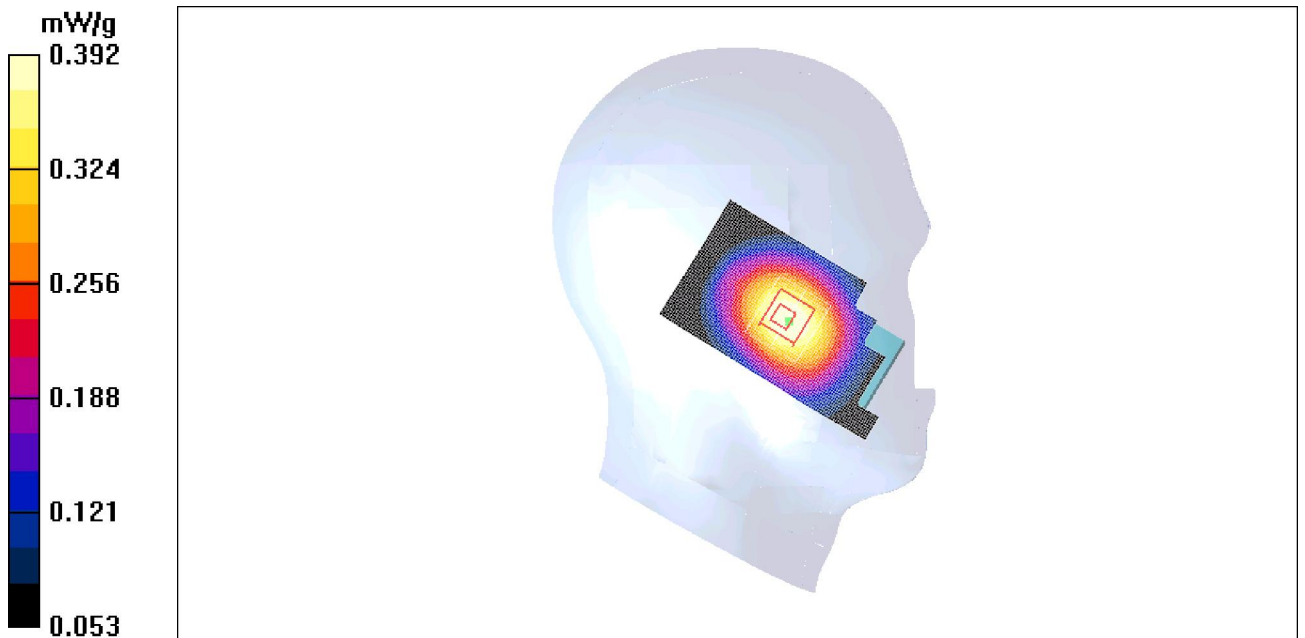


Fig. 6 850 MHz CH128

850 Right Cheek High

Date/Time: 2011-4-15 9:59:55

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.91$ mho/m; $r = 40.8$; $\rho = 1000$ kg/m³

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) = 0.899 mW/g

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

Reference Value = 7.15 V/m; Power Drift = -0.189 dB

Peak SAR (extrapolated) = 1.1 W/kg

SAR(1 g) = 0.838 mW/g; SAR(10 g) = 0.623 mW/g

Maximum value of SAR (measured) = 0.877 mW/g



Fig. 7 850 MHz CH251

850 Right Cheek Middle

Date/Time: 2011-4-15 10:15:22

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.898 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.904 mW/g

CheekMiddle/ZoomScan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.03 V/m ; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.842 mW/g ; SAR(10 g) = 0.625 mW/g

Maximum value of SAR (measured) = 0.880 mW/g

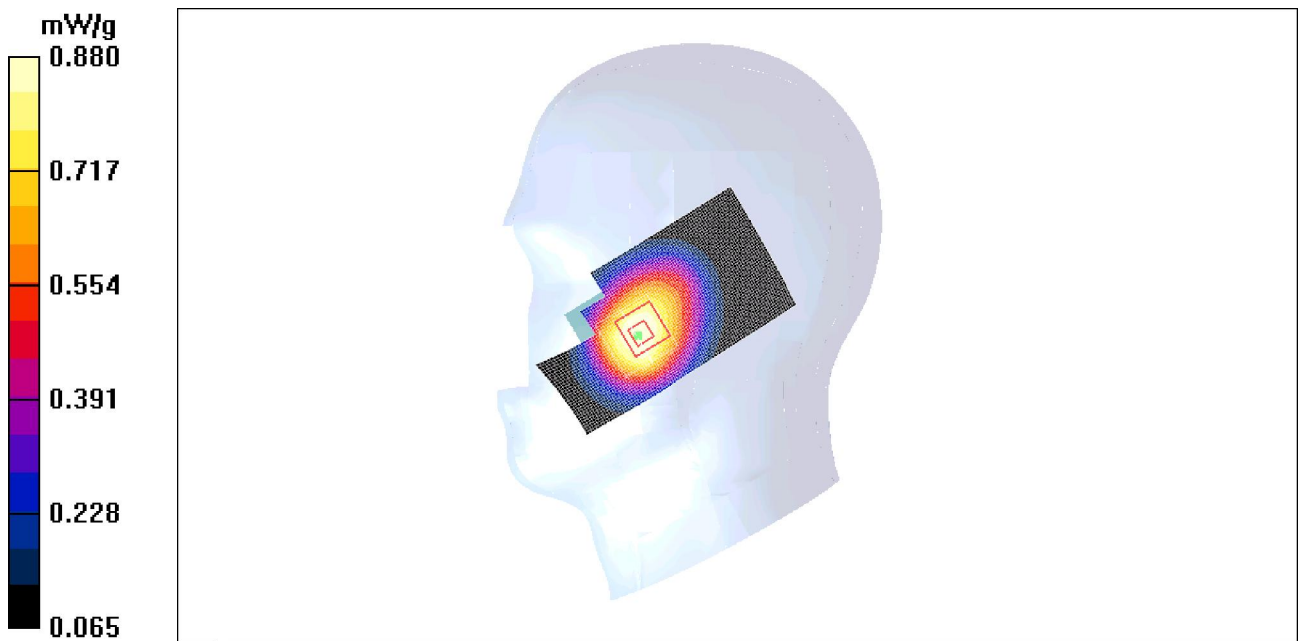


Fig. 8 850 MHz CH190

850 Right Cheek Low

Date/Time: 2011-4-15 10:32:15

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.886 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.880 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.15 V/m ; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 1.04 W/kg

SAR(1 g) = 0.814 mW/g ; SAR(10 g) = 0.606 mW/g

Maximum value of SAR (measured) = 0.851 mW/g

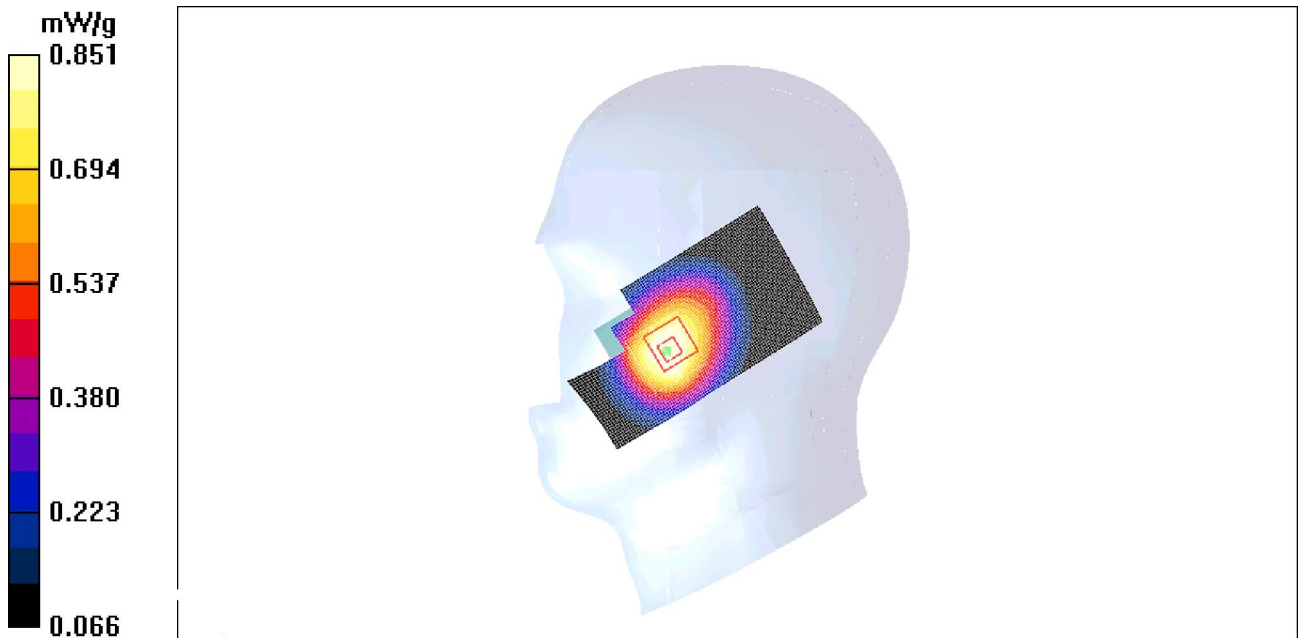


Fig. 9 850 MHz CH128

850 Right Tilt High

Date/Time: 2011-4-15 10:47:21

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.91$ mho/m; $r = 40.8$; $\rho = 1000$ kg/m³

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) = 0.413 mW/g

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

Reference Value = 11.9 V/m; Power Drift = -0.022 dB

Peak SAR (extrapolated) = 0.479 W/kg

SAR(1 g) = 0.390 mW/g; SAR(10 g) = 0.293 mW/g

Maximum value of SAR (measured) = 0.404 mW/g

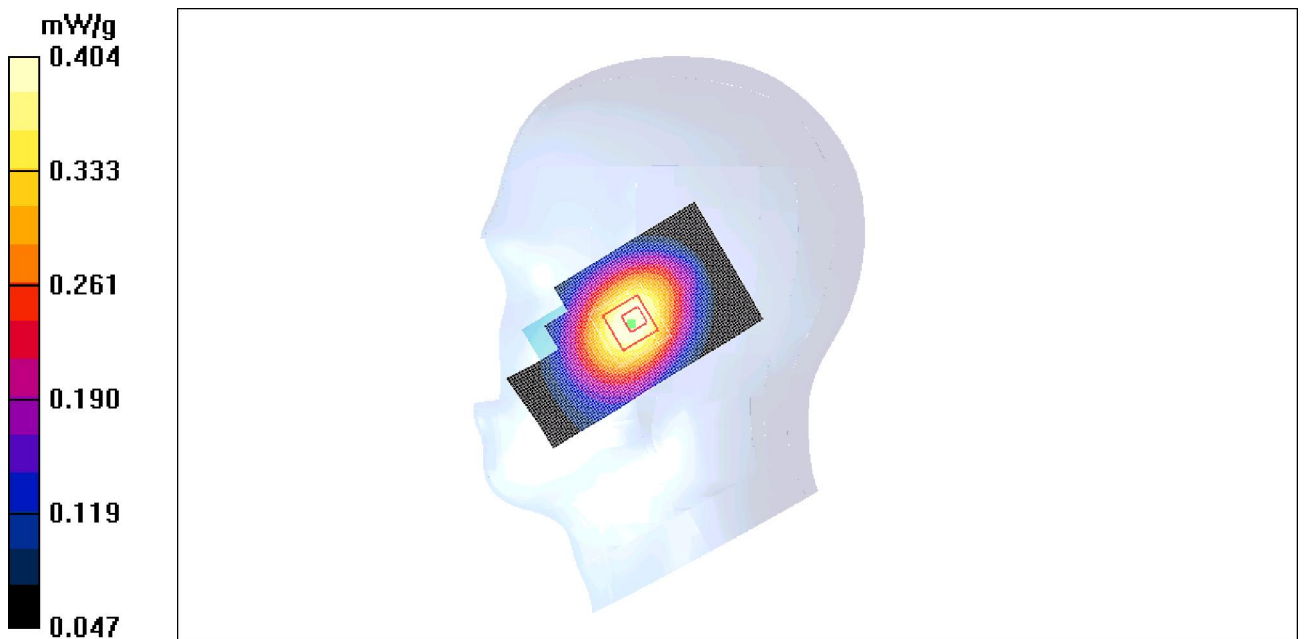


Fig.10 850 MHz CH251

850 Right Tilt Middle

Date/Time: 2011-4-15 11:04:42

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.898 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.411 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 12 V/m ; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.475 W/kg

SAR(1 g) = 0.388 mW/g ; SAR(10 g) = 0.294 mW/g

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

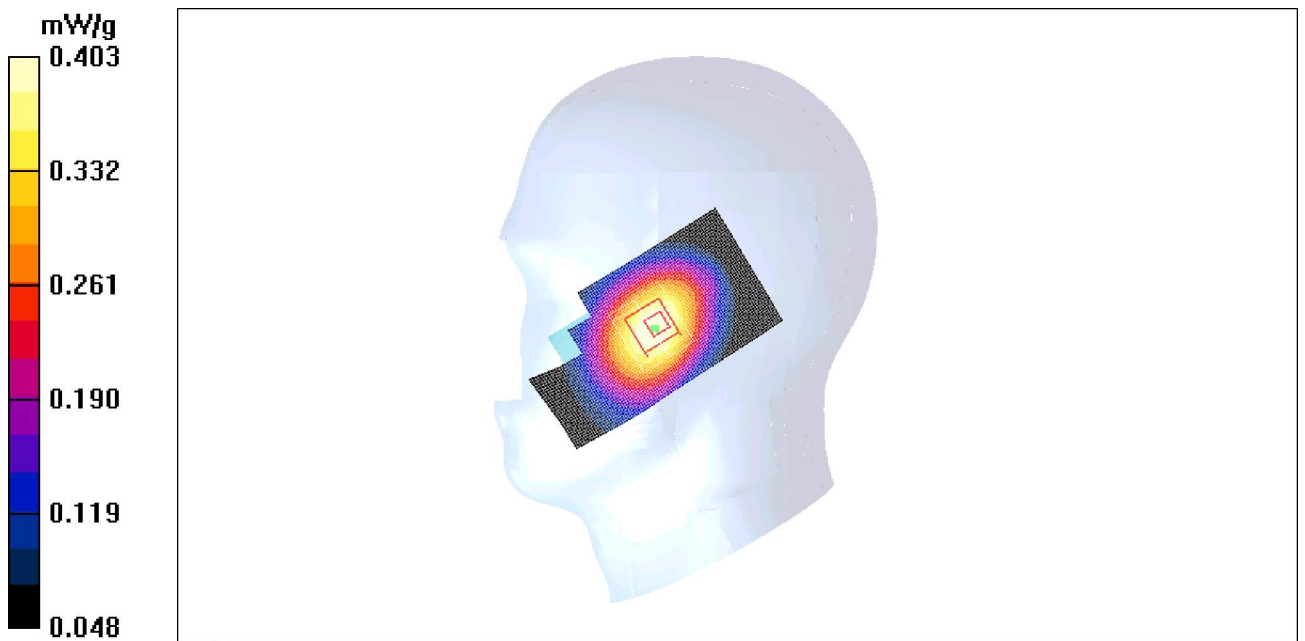


Fig.11 850 MHz CH190

850 Right Tilt Low

Date/Time: 2011-4-15 11:21:26

Electronics: DAE4 Sn771

Medium: Head 850 MHz

Medium parameters used: $f = 825 \text{ MHz}$; $\sigma = 0.886 \text{ mho/m}$; $r = 40.9$; $\rho = 1000 \text{ kg/m}^3$

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: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.390 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.8 V/m ; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 0.456 W/kg

SAR(1 g) = 0.370 mW/g ; SAR(10 g) = 0.280 mW/g

Maximum value of SAR (measured) = 0.387 mW/g

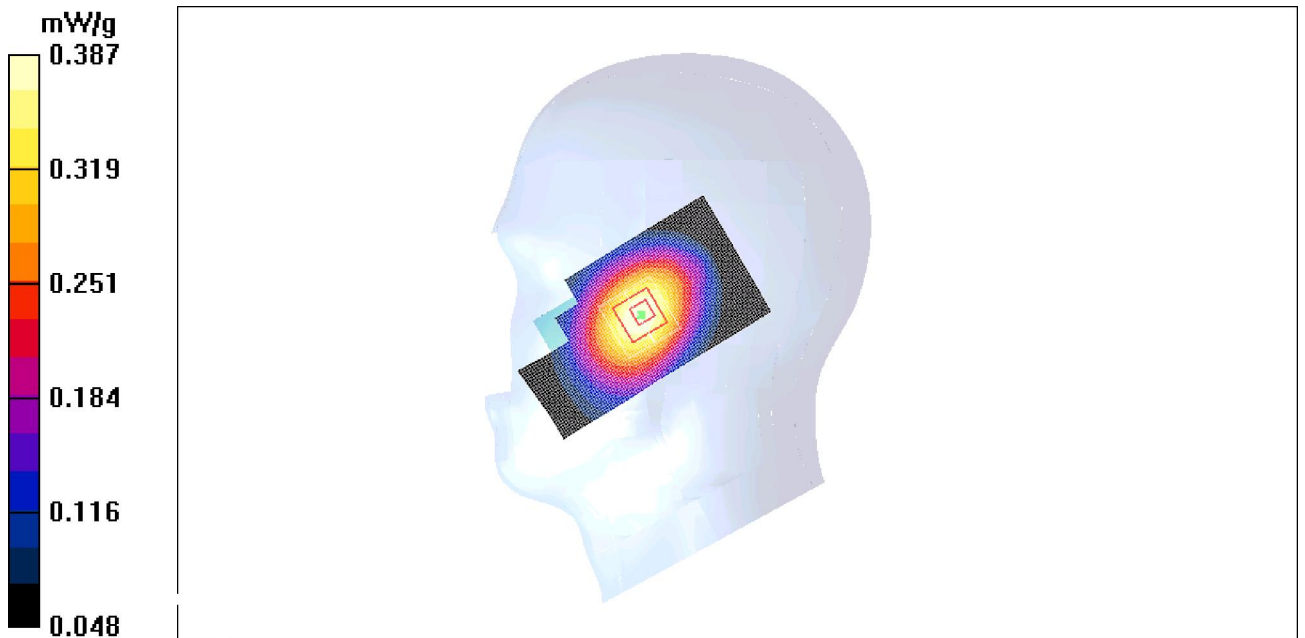


Fig. 12 850 MHz CH128

1900 Left Cheek High

Date/Time: 2011-4-16 8:27:13

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used: $f = 1910 \text{ MHz}$; $\sigma = 1.40 \text{ mho/m}$; $r = 39.4$; $\rho = 1000 \text{ kg/m}^3$

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 (61x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.986 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.60 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.538 mW/g

Maximum value of SAR (measured) = 1.000 mW/g

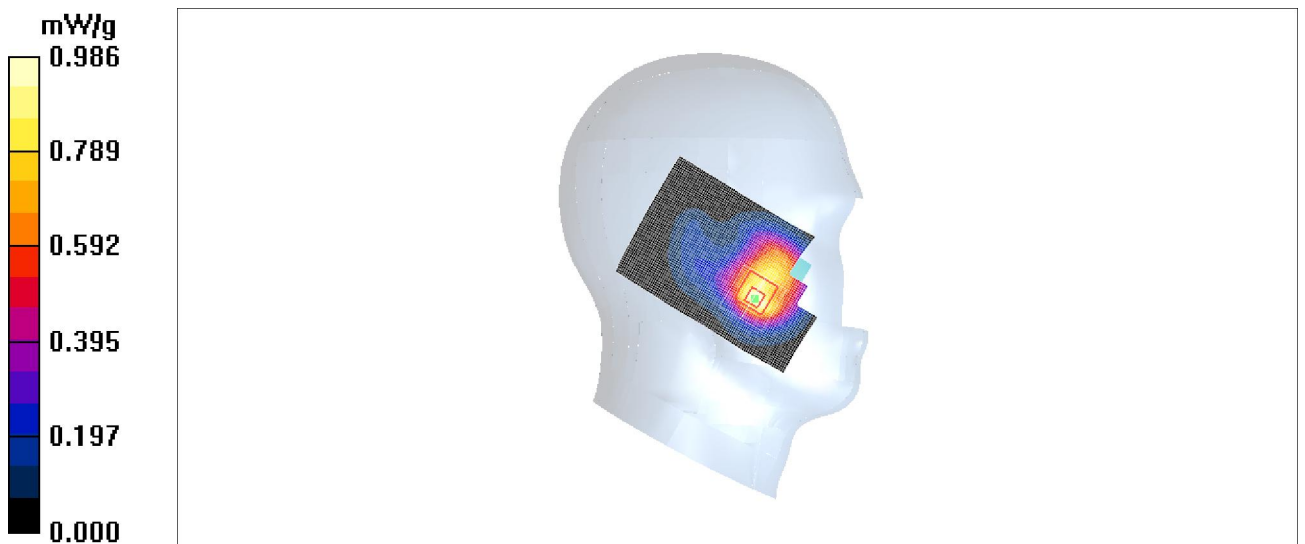


Fig. 13 1900 MHz CH810

1900 Left Cheek Middle

Date/Time: 2011-4-16 8:43: 34

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $r = 39.5$; $\rho = 1000$ 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 (61x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.980 mW/g

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

Reference Value = 8.46 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.885 mW/g; SAR(10 g) = 0.528 mW/g

Maximum value of SAR (measured) = 0.977 mW/g

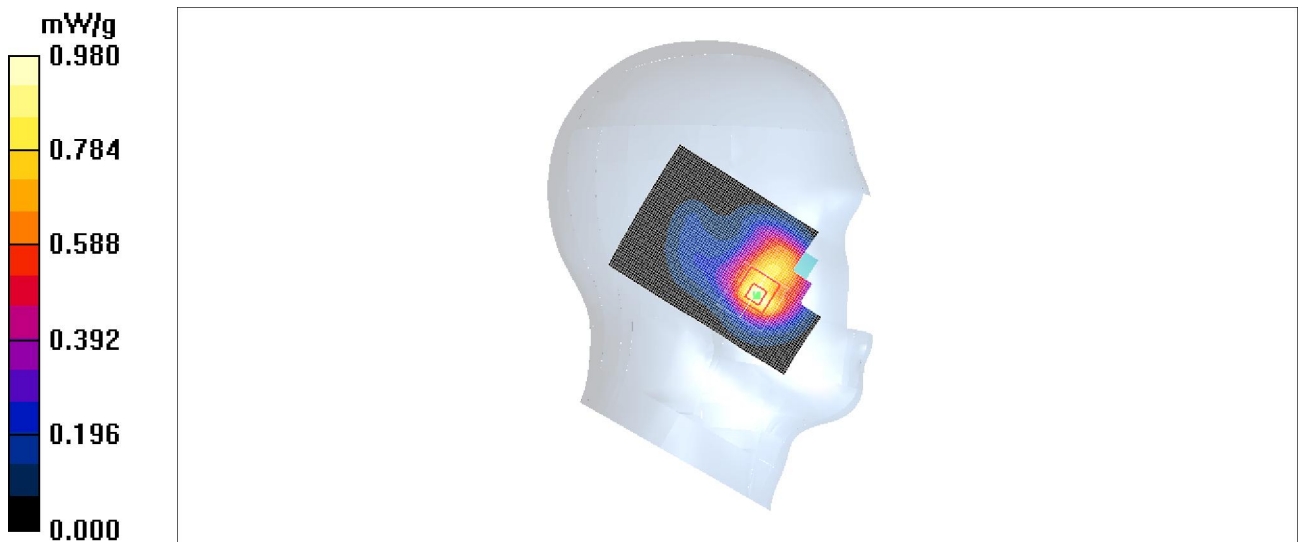


Fig. 14 1900 MHz CH661

1900 Left Cheek Low

Date/Time: 2011-4-16 8:59:55

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used (interpolated): $f = 1850.2 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $r = 39.6$; $\rho = 1000 \text{ kg/m}^3$

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 (61x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.936 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.21 V/m ; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.859 mW/g ; SAR(10 g) = 0.515 mW/g

Maximum value of SAR (measured) = 0.952 mW/g

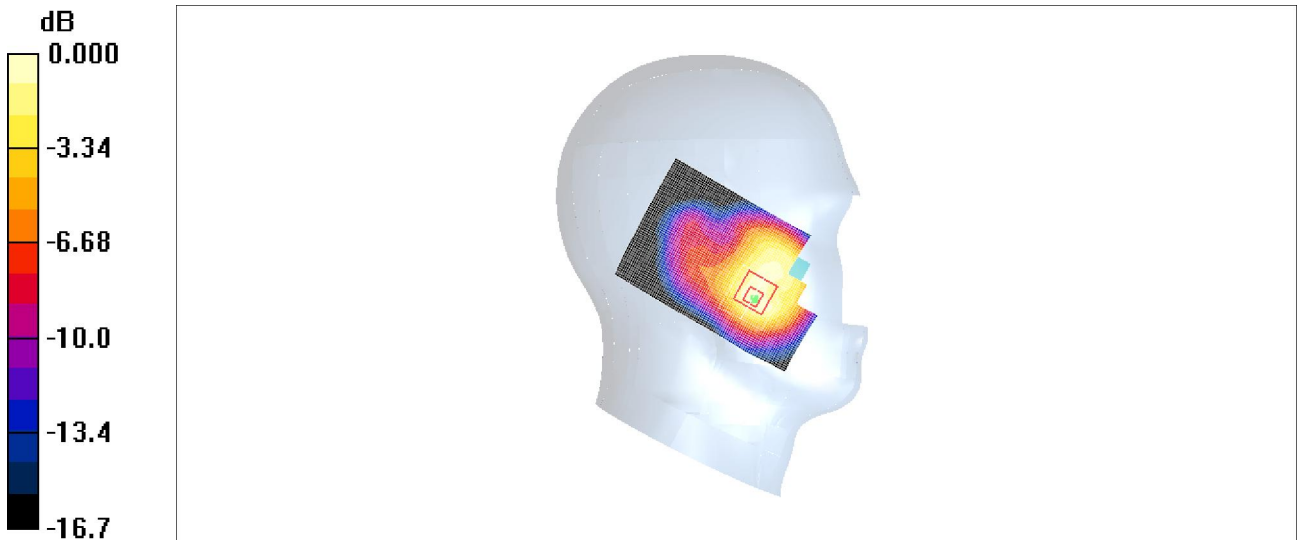


Fig. 15 1900 MHz CH512

1900 Left Tilt High

Date/Time: 2011-4-16 9:16:09

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used: $f = 1910 \text{ MHz}$; $\sigma = 1.40 \text{ mho/m}$; $r = 39.4$; $\rho = 1000 \text{ kg/m}^3$

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)

Tilt High/Area Scan (61x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.303 mW/g

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

Reference Value = 12.8 V/m; Power Drift = -0.074 dB

Peak SAR (extrapolated) = 0.401 W/kg

SAR(1 g) = 0.269 mW/g; SAR(10 g) = 0.169 mW/g

Maximum value of SAR (measured) = 0.290 mW/g

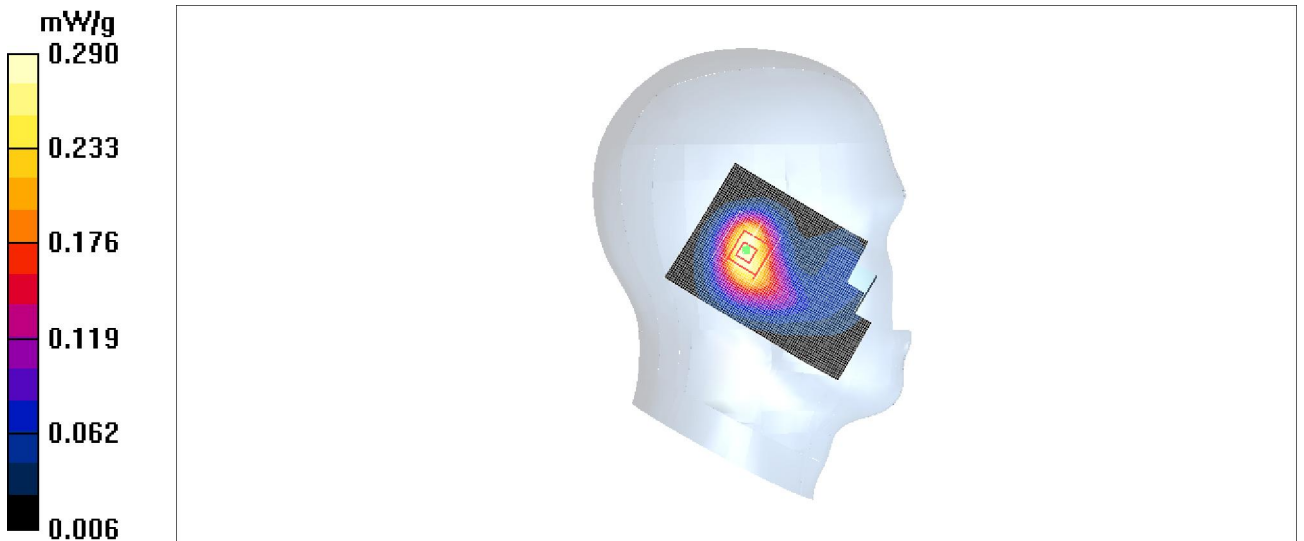


Fig.16 1900 MHz CH810