



# SAR TEST REPORT

No. 2011SAR00111

For

**TCT Mobile Limited**

**CDMA2000 dual band mobile phone**

**Venus**

**one touch 909B**

With

**Hardware Version: PIO**

**Software Version: vF23**

**FCCID: RAD210**

**Issued Date: 2011-09-16**



**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.

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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: August 25, 2011  
Testing End Date: August 31, 2011

### 1.4 Signature



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Lin Xiaojun  
(Prepared this test report)



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Qi Dianyuan  
(Reviewed this test report)



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Xiao Li  
Deputy Director of the laboratory  
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## 2 Client Information

### 2.1 Applicant Information

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Country: P. R. China  
Telephone: 0086-21-61460890  
Fax: 0086-21-61460602

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

#### 3.1 About EUT

EUT Description:	CDMA2000 dual band mobile phone
Model Name:	Venus
Marketing Name:	one touch 909B
Frequency Band:	CDMA 835 / CDMA 1900
Hotspot mode:	Support simultaneous transmission of hotspot and voice(or data)
Form factor:	11.8cm × 5.7cm

#### 3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	A100000862d93b	PIO	vF23

\*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	CCB3001A10C1	/	Lianyun

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

**KDB248227:** SAR measurement procedures for 802.112abg transmitters.

**KDB941225 D01:** SAR test for 3G devices.

**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 CDMA 835 MHz, or to 512, 661 and 810 respectively in the case of CDMA 1900 MHz. The EUT is commanded to operate at maximum transmitting power.

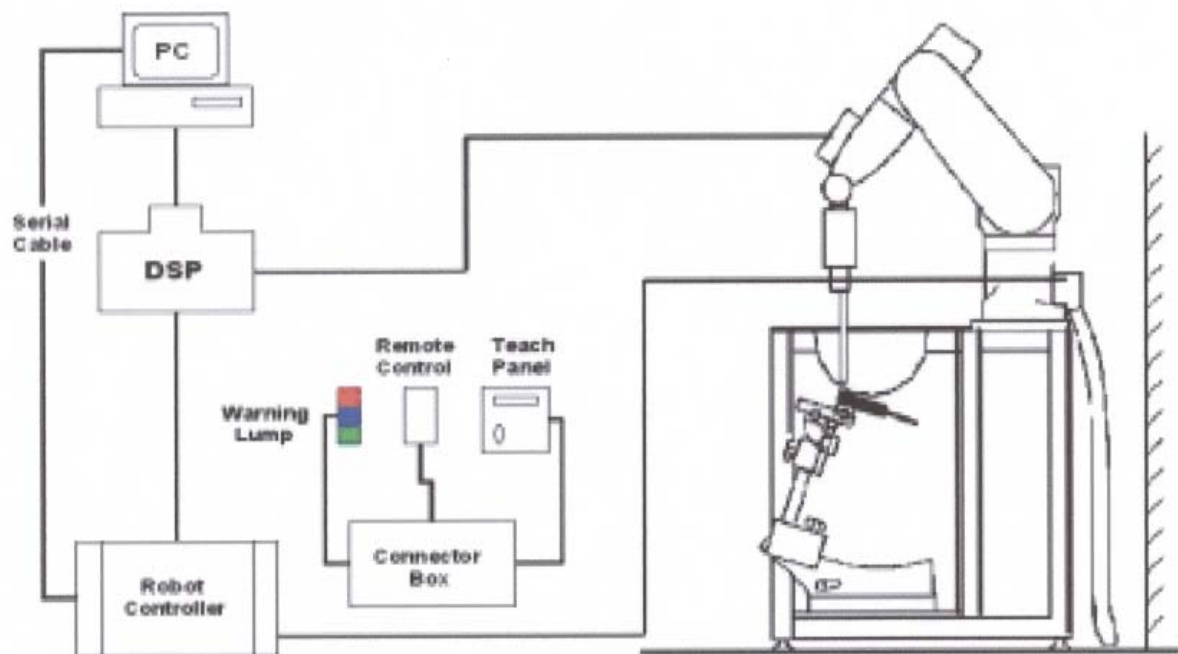
The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the 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 1: 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: $\pm 0.2$ dB (30 MHz to 4 GHz)
Directivity	$\pm 0.2$ dB in HSL (rotation around probe axis) $\pm 0.3$ dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 $\mu\text{W/g}$ to $> 100$ $\text{mW/g}$ ; Linearity: $\pm 0.2$ 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



**Picture 2: ES3DV3 E-field**



**Picture3:ES3DV3 E-field probe**

### 5.4 E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than  $\pm 10\%$ . The spherical isotropy was evaluated and found to be better than  $\pm 0.25\text{dB}$ . 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:  $\Delta t$  = Exposure time (30 seconds),  
 $C$  = Heat capacity of tissue (brain or muscle),  
 $\Delta T$  = Temperature increase due to RF exposure.

Or

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

Where:

$\sigma$  = Simulated tissue conductivity,  
 $\rho$  = Tissue density ( $\text{kg/m}^3$ ).



**Picture 4: 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 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 5: 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 835MHz
Water	41.45
Sugar	56.0
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz $\epsilon=41.5$ $\sigma=0.90$
MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz $\epsilon=40.0$ $\sigma=1.40$
MIXTURE %	FREQUENCY 2450MHz
Water	58.79
Glycol monobutyl	41.15
Salt	0.06
Dielectric Parameters Target Value	f=2450MHz $\epsilon=39.2$ $\sigma=1.80$

**Table 2. Composition of the Body Tissue Equivalent Matter**

MIXTURE %	FREQUENCY 835MHz
Water	52.5
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz $\epsilon=55.2$ $\sigma=0.97$
MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz $\epsilon=53.3$ $\sigma=1.52$
MIXTURE %	FREQUENCY 2450MHz
Water	72.60
Glycol monobutyl	27.22
Salt	0.18
Dielectric Parameters Target Value	f=2450MHz $\epsilon=52.7$ $\sigma=1.95$

## 5.7 System Specifications

### Specifications

**Positioner:** Stäubli Unimation Corp. Robot Model: RX90L

**Repeatability:**  $\pm 0.02$  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 CMU-200. These measurements were done at low, middle and high channels.

#### 6.2.2 Measurement result

**Table 3: The conducted power for CDMA 835/1900**

	Conducted Power (dBm)		
CDMA(RC3) 835MHz	Channel 777(848.31MHz)	Channel 384(836.52MHz)	Channel 1013(824.7MHz)
	24.5	24.88	24.75
CDMA(RC1) 835MHz	Channel 777(848.31MHz)	Channel 384(836.52MHz)	Channel 1013(824.7MHz)
	24.4	24.81	24.63
EVDO 835 Rev0	Channel 777(848.31MHz)	Channel 384(836.52MHz)	Channel 1013(824.7MHz)
	24.45	24.81	24.65
EVDO 835 RevA	Channel 777(848.31MHz)	Channel 384(836.52MHz)	Channel 1013(824.7MHz)
	24.48	24.82	24.68
	Conducted Power (dBm)		
CDMA(RC3) 1900MHz	Channel 1175(1908.75MHz)	Channel 600(1880MHz)	Channel 25(1851.25MHz)
	24.24	24.20	24.22

<b>CDMA(RC1) 1900MHz</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	24.18	24.17	24.19
<b>EVDO 1900 Rev0</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	24.07	24.05	24.06
<b>EVDO 1900 RevA</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	24.22	24.18	24.19

**Hotspot:**

In Hotspot section, all the text will be change by the following:

There is Power Limit Backoff for this model CDMA and EVDO Rev0&RevA.

When Wi-Fi Hotspot mode is activated, whatever the cellular data connection (1xRTT/EVDO) is active or not, the Max Output Power Limit is redefined, please refer to below table for detailed information.

The Max Output Power Limit is the maximum power allowed by the mobile phone to transmit. There is no way for the mobile phone to transmit higher power than this one. The Max Output Power Limit applies for both voice and data modes.

Only the Max Output Power Limit is affected by the modification. The real-time TX Power is not affected in any other situation.

When Wi-Fi Hotspot mode is activated, and cellular data connection (1xRTT/EVDO) is active, if there are incoming or outgoing voice calls, the data connection (1xRTT/EVDO) will stop, but Wi-Fi Hotspot mode will still be on, and the Power Limit Backoff will still be activated.

When Wi-Fi Hotspot mode is deactivated, the Power Limit Backoff is also deactivated.

**Table 4: The conducted power for CDMA 835/1900(hotspot on)**

	<b>Conducted Power (dBm)</b>		
<b>CDMA(RC3) 835MHz</b>	<b>Channel 777(848.31MHz)</b>	<b>Channel 384(836.52MHz)</b>	<b>Channel 1013(824.7MHz)</b>
	22.93	23.36	23.13
<b>CDMA(RC1) 835MHz</b>	<b>Channel 777(848.31MHz)</b>	<b>Channel 384(836.52MHz)</b>	<b>Channel 1013(824.7MHz)</b>
	22.87	23.24	23.08
<b>EVDO 835 Rev0</b>	<b>Channel 777(848.31MHz)</b>	<b>Channel 384(836.52MHz)</b>	<b>Channel 1013(824.7MHz)</b>
	22.86	23.19	23.05
<b>EVDO 835 RevA</b>	<b>Channel 777(848.31MHz)</b>	<b>Channel 384(836.52MHz)</b>	<b>Channel 1013(824.7MHz)</b>
	22.89	23.21	23.09
	<b>Conducted Power (dBm)</b>		
<b>CDMA(RC3) 1900MHz</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	21.14	21.03	21.10
<b>CDMA(RC3) 1900MHz</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	21.06	21.05	21.07
<b>EVDO 1900 Rev0</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	21.03	20.94	20.95
<b>EVDO 1900 RevA</b>	<b>Channel 1175(1908.75MHz)</b>	<b>Channel 600(1880MHz)</b>	<b>Channel 25(1851.25MHz)</b>
	21.09	20.98	21.01

According to the KDB 941225 D01, the SAR for RC1 and EVDO are not required. Because the maximum average output of each channel in RC1 and EVDO is less than 0.25dB higher than that measured in RC3.

### 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 9 to Table 16 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 5: Dielectric Performance of Head Tissue Simulating Liquid**

Measurement is made at temperature 23.0 °C and relative humidity 40%.			
Liquid temperature during the test: 22.5°C			
Measurement Date : 835 MHz <u>Aug 25, 2011</u> 1900 MHz <u>Aug 26, 2011</u> 2450 MHz <u>Aug 31, 2011</u>			
/	<b>Frequency</b>	<b>Permittivity <math>\epsilon</math></b>	<b>Conductivity <math>\sigma</math> (S/m)</b>
<b>Target value</b>	835 MHz	41.5	0.90
	1900 MHz	40.0	1.40
	2450 MHz	39.2	1.80
<b>Measurement value (Average of 10 tests)</b>	835 MHz	41.2	0.88
	1900 MHz	39.8	1.39
	2450 MHz	39.7	1.82

**Table 6: Dielectric Performance of Body Tissue Simulating Liquid**

Measurement is made at temperature 23.0 °C and relative humidity 40%.			
Liquid temperature during the test: 22.5°C			
Measurement Date : 835 MHz <u>Aug 25, 2011</u> 1900 MHz <u>Aug 26, 2011</u> 2450 MHz <u>Aug 31, 2011</u>			
/	<b>Frequency</b>	<b>Permittivity <math>\epsilon</math></b>	<b>Conductivity <math>\sigma</math> (S/m)</b>
<b>Target value</b>	835 MHz	55.2	0.97
	1900 MHz	53.3	1.52
	2450 MHz	52.7	1.95
<b>Measurement value (Average of 10 tests)</b>	835 MHz	54.4	0.95
	1900 MHz	54.0	1.54
	2450 MHz	52.4	1.94

### 7.2 System Validation

**Table 7: System Validation of Head**

Measurement is made at temperature 23.0 °C and relative humidity 40%.				
Liquid temperature during the test: 22.5°C				
Measurement Date : 835 MHz <u>Aug 25, 2011</u> 1900 MHz <u>Aug 26, 2011</u> 2450 MHz <u>Aug 31, 2011</u>				
<b>Liquid parameters</b>	Dipole calibration Target value	<b>Frequency</b>	<b>Permittivity <math>\epsilon</math></b>	<b>Conductivity <math>\sigma</math> (S/m)</b>
		835 MHz	41.6	0.92
		1900 MHz	39.6	1.40

	Actural Measurement value	2450 MHz		39.0		1.74	
		835 MHz		41.2		0.88	
		1900 MHz		39.8		1.39	
		2450 MHz		39.7		1.82	
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	5.8	9.16	-5.23%	-2.66%
	1900 MHz	20.1	39.4	19.56	38.6	-2.69%	-2.03%
	2450 MHz	24.6	52.4	23.68	51.44	-3.74%	-1.83%

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 8: System Validation of Body**

Measurement is made at temperature 23.0 °C and relative humidity 40%.							
Liquid temperature during the test: 22.5°C							
Measurement Date : 835 MHz <u>Aug 25, 2011</u> 1900 MHz <u>Aug 26, 2011</u> 2450 MHz <u>Aug 31, 2011</u>							
Liquid parameters	Dipole calibration Target value	Frequency		Permittivity $\epsilon$		Conductivity $\sigma$ (S/m)	
		835 MHz		54.5		0.97	
		1900 MHz		52.5		1.51	
	Actural Measurement value	2450 MHz		52.5		1.95	
		835 MHz		54.4		0.95	
		1900 MHz		54.0		1.54	
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	9.6	-2.56%	0.31%
	1900 MHz	20.9	41.4	20.72	41.04	-0.86%	-0.87%
	2450 MHz	23.9	51.6	23.64	51.44	-1.09%	-0.31%

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 9: SAR Values (835MHz-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)		Power Drift (dB)
	10 g Average	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.1)	0.643	0.856	-0.147
Left hand, Touch cheek, Mid frequency (See Fig.2)	0.608	0.804	-0.030
Left hand, Touch cheek, Low frequency (See Fig.3)	0.442	0.583	0.179
Left hand, Tilt 15 Degree, High frequency (See Fig.4)	0.377	0.503	0.078
Left hand, Tilt 15 Degree, Mid frequency (See Fig.5)	0.394	0.520	-0.00469
Left hand, Tilt 15 Degree, Low frequency (See Fig.6)	0.280	0.368	0.025
Right hand, Touch cheek, High frequency (See Fig.7)	0.660	0.876	0.098
Right hand, Touch cheek, Mid frequency (See Fig.8)	0.634	0.837	0.158
Right hand, Touch cheek, Low frequency (See Fig.9)	0.489	0.645	-0.166
Right hand, Tilt 15 Degree, High frequency (See Fig.10)	0.412	0.549	0.026
Right hand, Tilt 15 Degree, Mid frequency (See Fig.11)	0.431	0.569	-0.070
Right hand, Tilt 15 Degree, Low frequency (See Fig.12)	0.329	0.433	-0.013

**Table 10: 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)		Power Drift (dB)
	10 g Average	1 g Average	
Left hand, Touch cheek, High frequency (See Fig.13)	0.604	1.03	-0.119
Left hand, Touch cheek, Mid frequency (See Fig.14)	0.626	1.07	-0.169
Left hand, Touch cheek, Low frequency (See Fig.15)	0.683	1.15	-0.004
Left hand, Tilt 15 Degree, High frequency (See Fig.16)	0.375	0.593	-0.085
Left hand, Tilt 15 Degree, Mid frequency (See Fig.17)	0.389	0.609	-0.028
Left hand, Tilt 15 Degree, Low frequency (See Fig.18)	0.418	0.647	0.039
Right hand, Touch cheek, High frequency (See Fig.19)	0.677	1.16	-0.012
Right hand, Touch cheek, Mid frequency (See Fig.20)	0.672	1.14	0.021

Right hand, Touch cheek, Low frequency (See Fig.21)	0.734	1.24	-0.102
Right hand, Tilt 15 Degree, High frequency (See Fig.22)	0.328	0.551	-0.005
Right hand, Tilt 15 Degree, Mid frequency (See Fig.23)	0.312	0.516	0.045
Right hand, Tilt 15 Degree, Low frequency(See Fig.24)	0.316	0.512	-0.053

**Table 11: SAR Values (835MHz-Body) – AP off 15mm**

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, High frequency with AP OFF (See Fig.25)	0.790	1.08	-0.003
Body, Towards Ground, Mid frequency with AP OFF (See Fig.26)	0.728	0.988	-0.063
Body, Towards Ground, Low frequency with AP OFF (See Fig.27)	0.708	0.960	-0.010
Body, Towards Phantom, High frequency with AP OFF (See Fig.28)	0.700	0.945	0.027
Body, Towards Phantom, Mid frequency with AP OFF (See Fig.29)	0.611	0.823	-0.184
Body, Towards Phantom, Low frequency with AP OFF (See Fig.30)	0.571	0.766	-0.021
Body, Left Side, Mid frequency with AP OFF(See Fig.31)	0.477	0.675	-0.170
Body, Right Side, Mid frequency with AP OFF(See Fig.32)	0.505	0.713	-0.077
Body, Bottom Side, Mid frequency with AP OFF(See Fig.33)	0.035	0.053	0.073
Body, Towards Ground, High frequency with Headset CCB3001A10C1 and AP OFF (See Fig.34)	0.759	1.04	-0.023

**Table 12: SAR Values (835MHz-Body) – AP on 10mm**

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, High frequency with AP ON (See Fig.35)	0.724	0.986	-0.035
Body, Towards Ground, Mid frequency with AP ON (See Fig.36)	0.672	0.916	-0.006
Body, Towards Ground, Low frequency with AP ON (See Fig.37)	0.681	0.922	0.025
Body, Towards Phantom, Mid frequency with AP ON (See Fig.38)	0.544	0.732	0.083
Body, Left Side, Mid frequency with AP ON(See Fig.39)	0.452	0.658	-0.072
Body, Right Side, Mid frequency with AP ON(See Fig.40)	0.466	0.675	-0.118



Body, Bottom Side, Mid frequency with AP ON(See Fig.41)	0.039	0.066	-0.079
Body, Towards Ground, High frequency with Headset CCB3001A10C1 and AP ON (See Fig.42)	0.711	0.969	-0.135

**Table 13: SAR Values (1900MHz-Body) – AP off 15mm**

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, High frequency with AP OFF (See Fig.43)	0.676	1.09	0.049
Body, Towards Ground, Mid frequency with AP OFF (See Fig.44)	0.702	1.13	-0.012
Body, Towards Ground, Low frequency with AP OFF (See Fig.45)	0.753	1.22	-0.133
Body, Towards Phantom, High frequency with AP OFF (See Fig.46)	0.442	0.717	0.078
Body, Left Side, Mid frequency with AP OFF(See Fig.47)	0.127	0.210	0.063
Body, Right Side, Mid frequency with AP OFF(See Fig.48)	0.171	0.278	0.030
Body, Bottom Side, Mid frequency with AP OFF(See Fig.49)	0.400	0.677	-0.068
Body, Towards Ground, Low frequency with Headset CCB3001A10C1 and AP OFF (See Fig.50)	0.703	1.14	-0.113

**Table 14: SAR Values (1900MHz-Body) – AP on 10mm**

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, High frequency with AP ON (See Fig.51)	0.482	0.795	-0.054
Body, Towards Ground, Mid frequency with AP ON (See Fig.52)	0.502	0.833	-0.070
Body, Towards Ground, Low frequency with AP ON (See Fig.53)	0.651	1.07	0.081
Body, Towards Phantom, High frequency with AP ON (See Fig.54)	0.324	0.543	0.101
Body, Left Side, Mid frequency with AP ON(See Fig.55)	0.120	0.120	0.010
Body, Right Side, Mid frequency with AP ON(See Fig.56)	0.126	0.126	-0.137
Body, Bottom Side, Mid frequency with AP ON(See Fig.57)	0.295	0.295	0.021

Body, Towards Ground, Low frequency with Headset CCB3001A10C1 and AP ON (See Fig.58)	0.614	1.01	0.101
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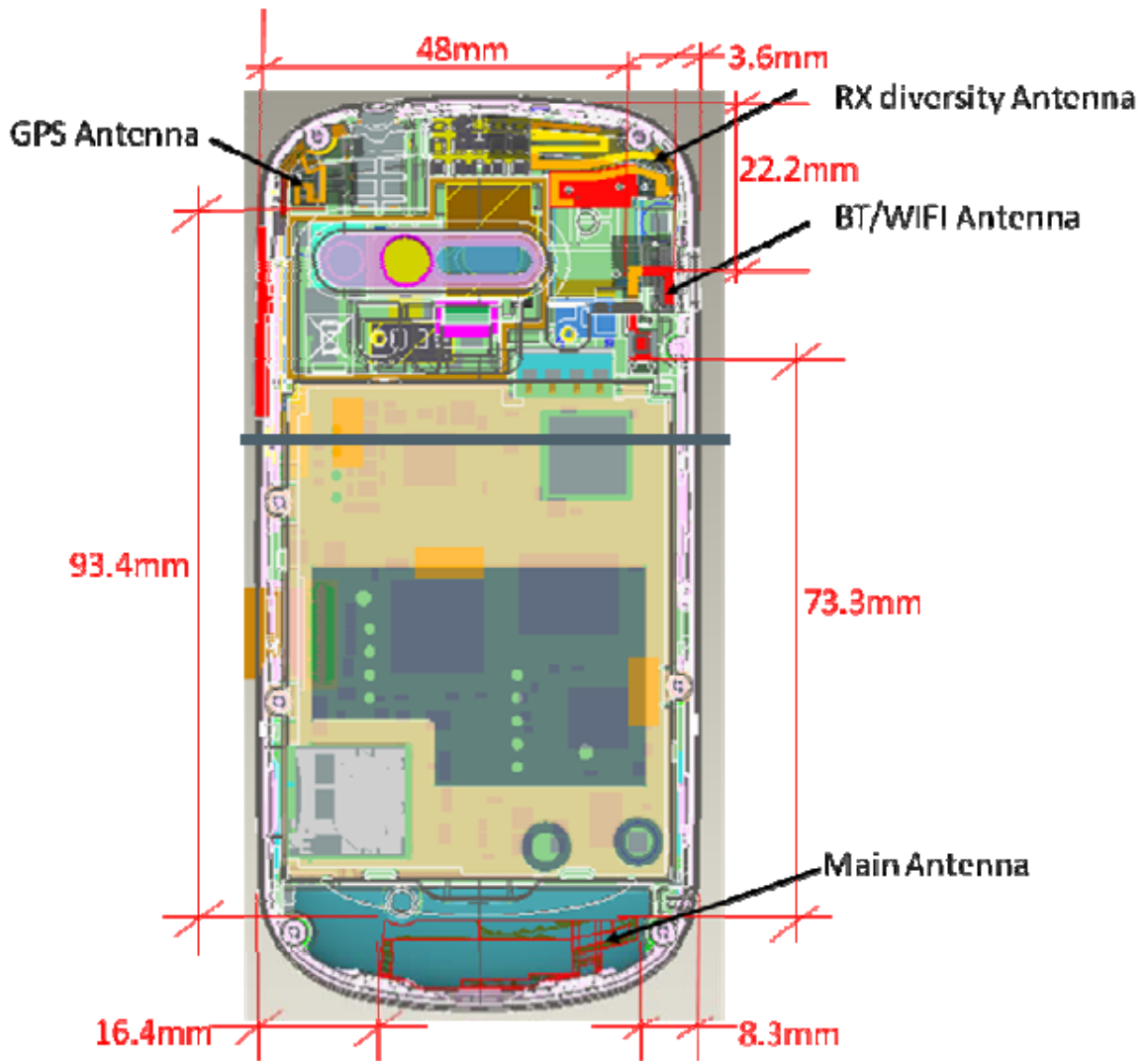
#### 7.4 Simultaneous TX SAR Considerations

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

/	<b>CDMA</b>	<b>WiFi</b>	<b>BT</b>
<b>CDMA</b>	/	Yes	Yes
<b>WiFi</b>	Yes	/	/
<b>BT</b>	Yes	/	/

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

The distance between BT/WiFi antenna and main antenna is  $>5\text{cm}$ . 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)	3.14	4.52	4.79

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  $\leq 2P_{Ref}$  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.

The average conducted power for WiFi is as following:

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	13.53	13.68	13.73	13.31
6	13.60	13.84	13.80	13.40
11	13.52	13.73	13.77	13.41

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	12.52	12.39	12.30	11.97	11.69	11.34	11.01	11.01
6	12.62	12.46	12.35	12.06	12.12	11.61	11.03	10.91
11	12.83	12.75	12.65	12.45	12.23	11.86	11.54	11.33

802.11n (dBm)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	11.03	11.00	10.72	11.00	10.88	10.73	10.66	10.68
6	11.24	10.94	10.92	10.95	10.90	10.95	10.74	10.73
11	11.21	11.18	11.13	11.14	11.49	11.12	11.21	11.14

The peak conducted power for WiFi is as following:

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	16.93	17.02	18.51	20.02
6	/	/	/	20.58
11	/	/	/	20.63

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	21.01	21.07	20.73	20.85	21.27	21.18	21.19	21.19
6	/	/	/	/	21.37	/	/	/
11	/	/	/	/	21.76	/	/	/

802.11n (dBm)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	21.40	21.34	21.42	21.36	21.34	21.35	21.33	21.33
6	/	/	21.49	/	/	/	/	/

11	/	/	21.93	/	/	/	/	/
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According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for WiFi should be performed. Then, simultaneous transmission SAR for WiFi is considered with measurement results of RF and WiFi.

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

**Table 15: SAR Values (WiFi 802.b -Head)**

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Left hand, Touch cheek, 1Mbps,channel 6 (See Fig.59)	0.024	0.046	-0.042
Left hand, Tilt 15 Degree, 1Mbps,channel 6 (See Fig.60)	0.018	0.034	0.186
Right hand, Touch cheek, 1Mbps,channel 6 (See Fig.61)	0.043	0.087	0.061
Right hand, Tilt 15 Degree, 1Mbps,channel 6 (See Fig.62)	0.023	0.039	0.112

**Table 16: SAR Values (WiFi 802.b -Body)**

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Toward Phantom, 1Mbps,channel 6 (See Fig.63)	0.016	0.028	0.199
Toward Ground, 1Mbps,channel 6 (See Fig.64)	0.083	0.159	0.107
Left Side, 1Mbps,channel 6 (See Fig.65)	0.050	0.098	-0.042
Top Side, 1Mbps,channel 6 (See Fig.66)	0.019	0.033	-0.110

**Table 17: The sum of SAR values for CDMA and WiFi**

	Position	CDMA	WiFi	Sum
<b>Maximum SAR value for Head</b>	Right hand, Touch cheek	1.24	0.087	<b>1.327</b>
<b>Maximum SAR value for Body</b>	Toward Ground	1.22	0.159	<b>1.379</b>

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

## 7.5 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in

all cases requested by the relevant standards cited in Clause 4.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 4.1 of this test report.

The maximum SAR values are obtained at the case of **CDMA 1900 Head**, Right hand, Touch cheek, Low frequency (**Table 10**), and the value are: **0.734(10g)**, **1.24(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
<b>Measurement system</b>										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	$\infty$
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	$\infty$
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	$\infty$
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	$\infty$
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	$\infty$
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	$\infty$
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	$\infty$
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	$\infty$
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	$\infty$
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	$\infty$
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	$\infty$
<b>Test sample related</b>										
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	$\infty$
<b>Phantom and set-up</b>										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	$\infty$
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	$\infty$
19	Liquid conductivity	A	2.06	N	1	0.64	0.43	1.32	0.89	43

	(meas.)									
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	$\infty$
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 17: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 3,2011	One year
02	Power meter	NRVD	102083	September 10, 2011	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	E-field Probe	SPEAG EX3DV4	3617	July 8, 2011	One year
09	DAE	SPEAG DAE4	771	November 21, 2010	One year
10	Dipole Validation Kit	SPEAG D835V2	443	February 26, 2010	Two years
11	Dipole Validation Kit	SPEAG D1900V2	541	February 26, 2010	Two years

\*\*\*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

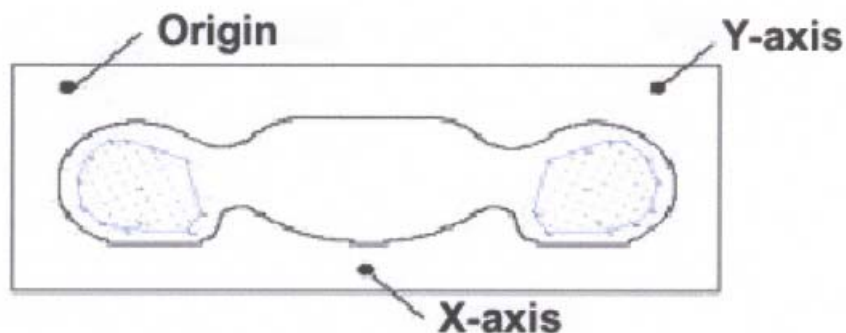
7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

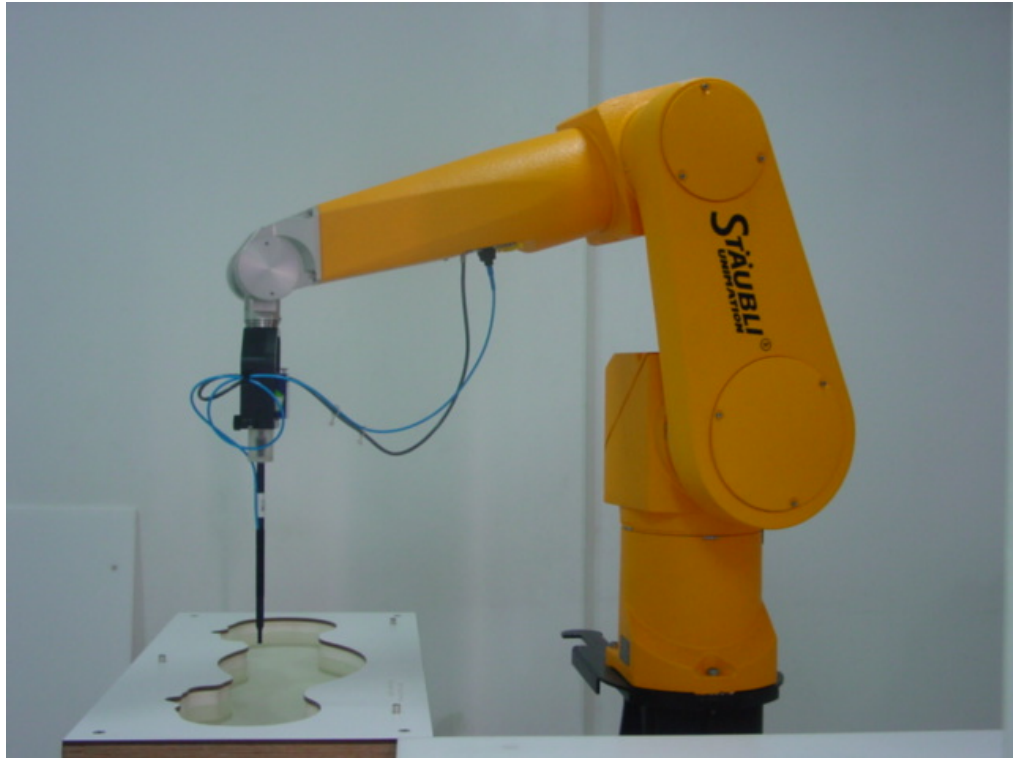
Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation is repeated.



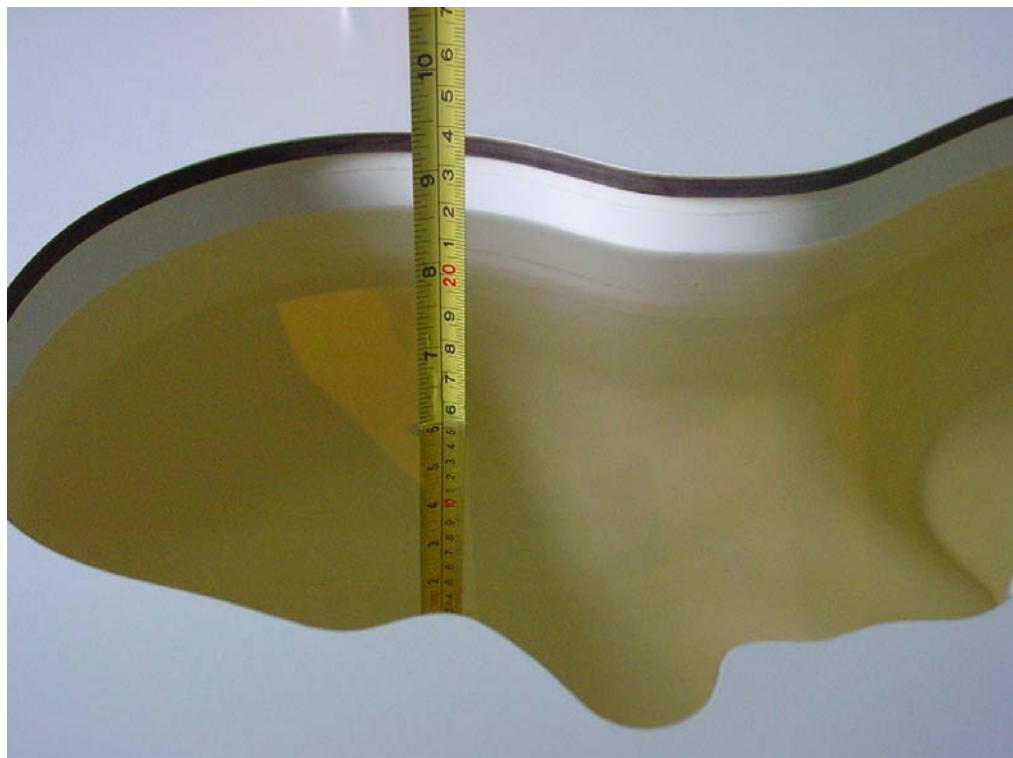
**Picture A: SAR Measurement Points in Area Scan**



**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**



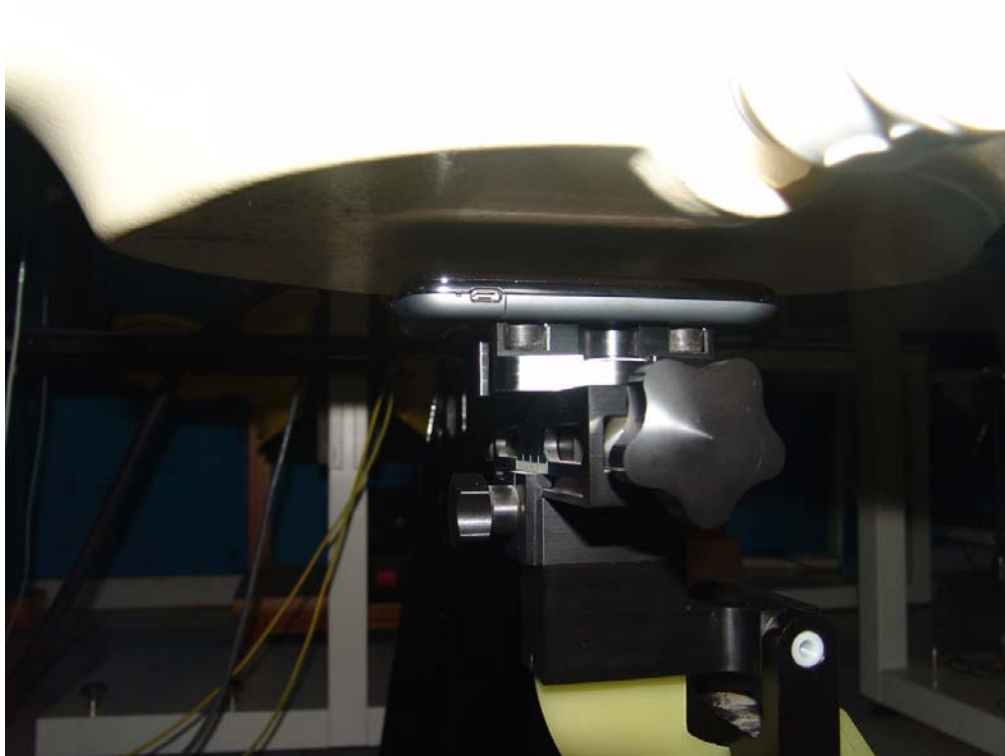
**Picture B6: Right Hand Touch Cheek Position**



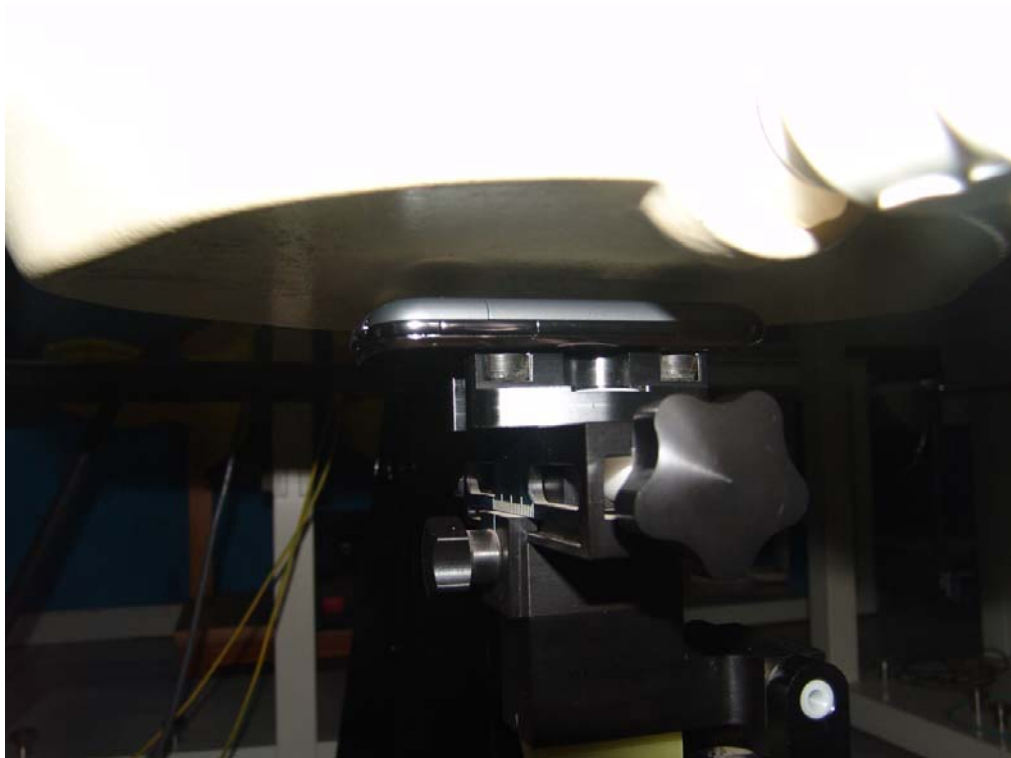
**Picture B7: Right Hand Tilt 15° Position**

**Test positions for body:**

The Body SAR is tested at the following 6 test positions with the distance =15mm (or 10mm) between the EUT and the phantom bottom :



**Picture B8: Forward Surface**



**Picture B9: Back Surface**



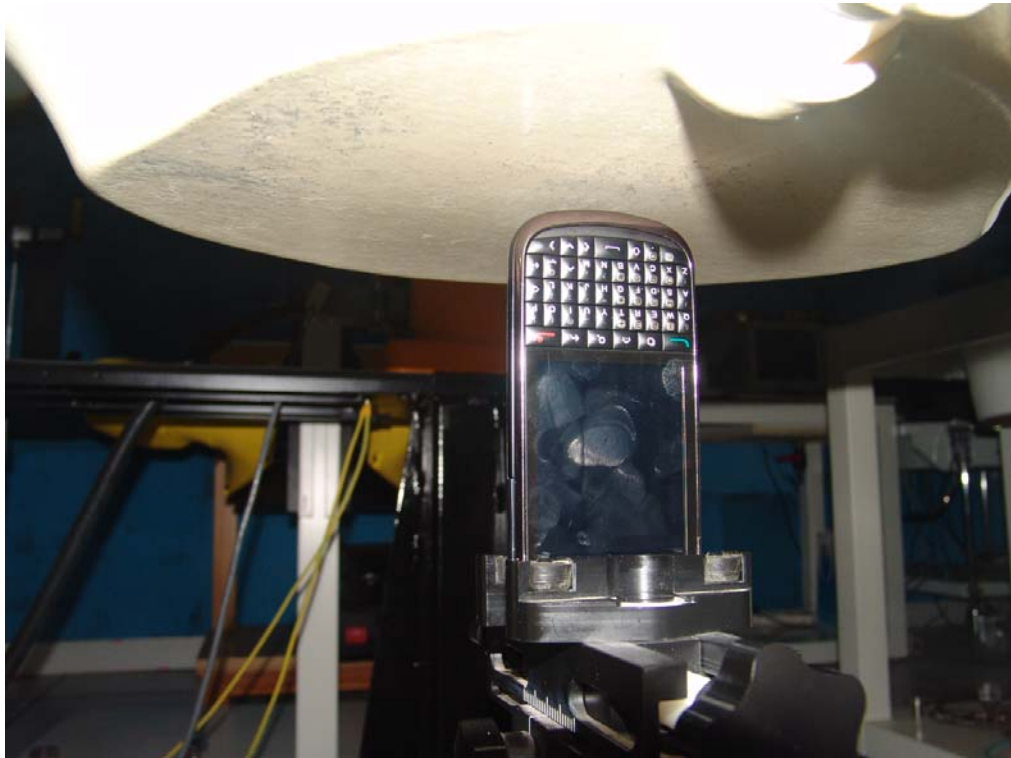
**Picture B9-1: Back Surface with Headset**



**Picture B10: Left Side**



**Picture B11: Right Side**



**Picture B12: Bottom Side**



**Picture B13: Top Side**

## ANNEX C GRAPH RESULTS

### 835 Left Cheek High

Date/Time: 2011-8-25 7:59:13

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated):  $f = 848.31$  MHz;  $\sigma = 0.91$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 848.31 MHz Duty Cycle: 1:1

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) = 0.908 mW/g

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

Reference Value = 8.65 V/m; Power Drift = -0.147 dB

Peak SAR (extrapolated) = 1.05 W/kg

**SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.643 mW/g**

Maximum value of SAR (measured) = 0.902 mW/g

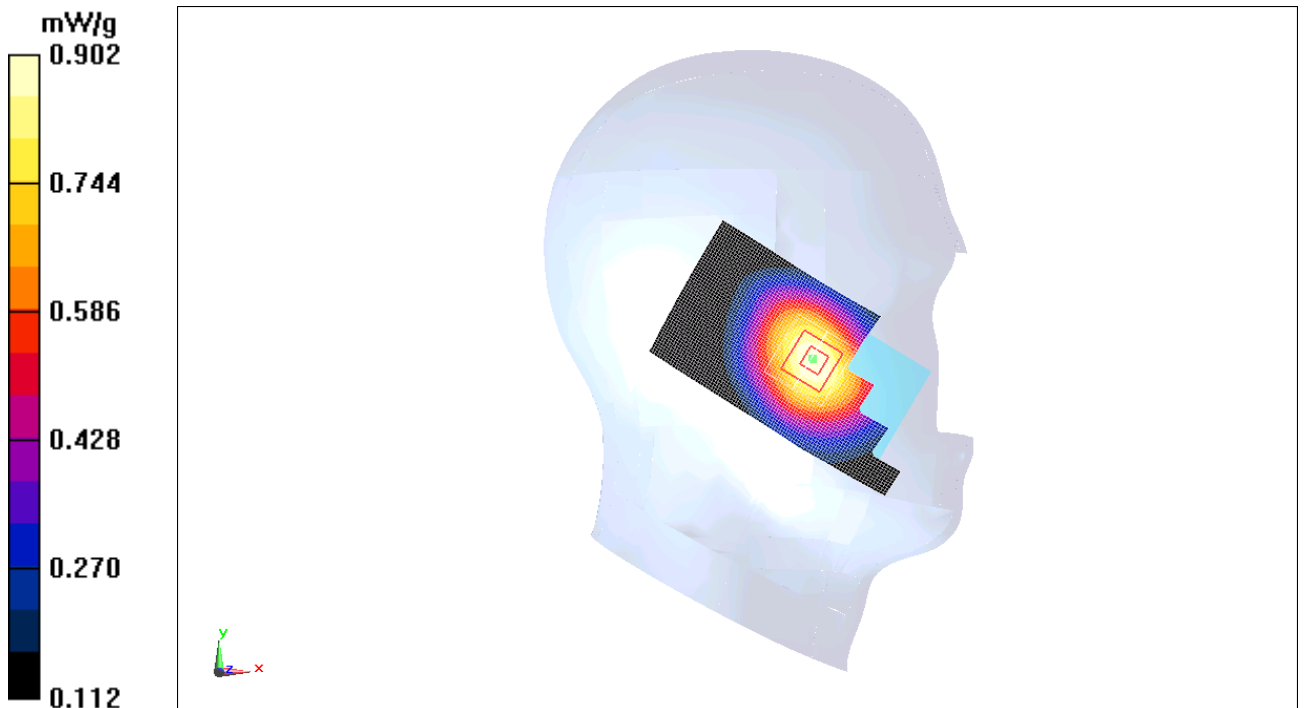


Fig. 1 835MHz CH777



### 835 Left Cheek Middle

Date/Time: 2011-8-25 8:14:52

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 836.52 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

**Cheek Middle/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.861 mW/g

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

Reference Value = 8.36 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.982 W/kg

**SAR(1 g) = 0.804 mW/g; SAR(10 g) = 0.608 mW/g**

Maximum value of SAR (measured) = 0.847 mW/g

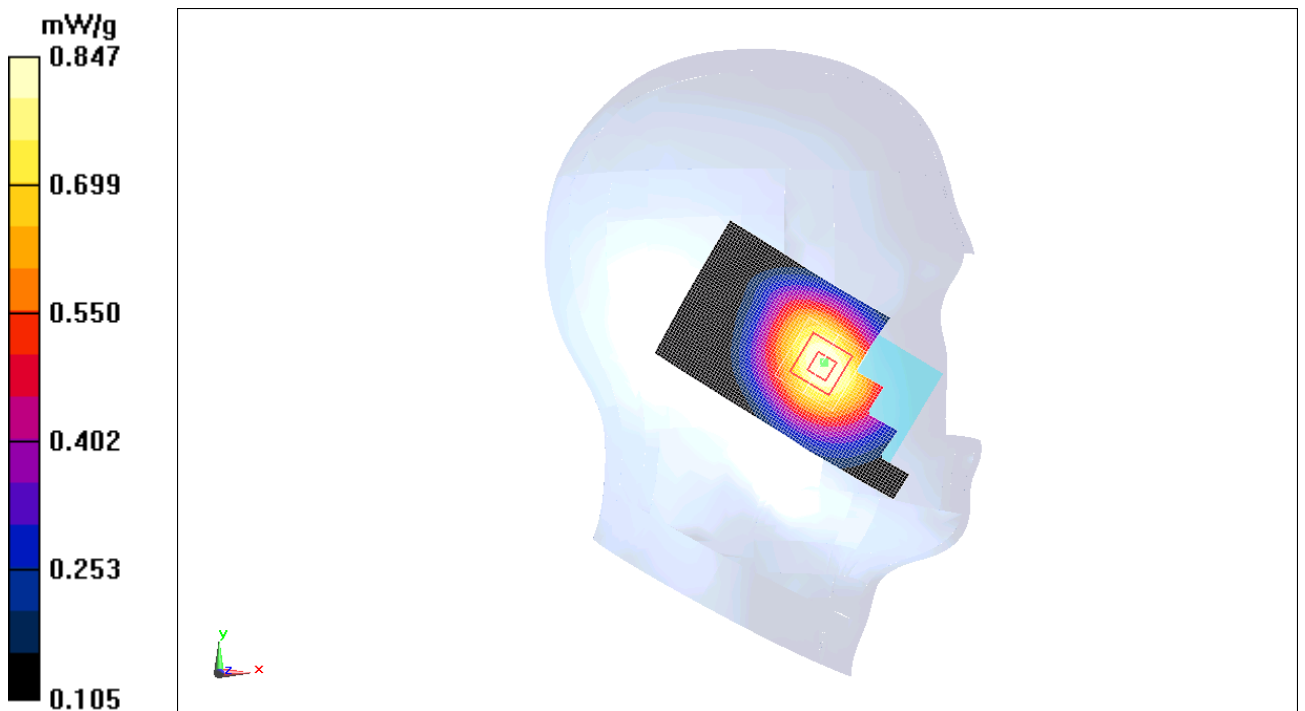


Fig. 2 835 MHz CH384

**835 Left Cheek Low**

Date/Time: 2011-8-25 8:29:07

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used:  $f = 824.7$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 824.7 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

**Cheek Low/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.615 mW/g

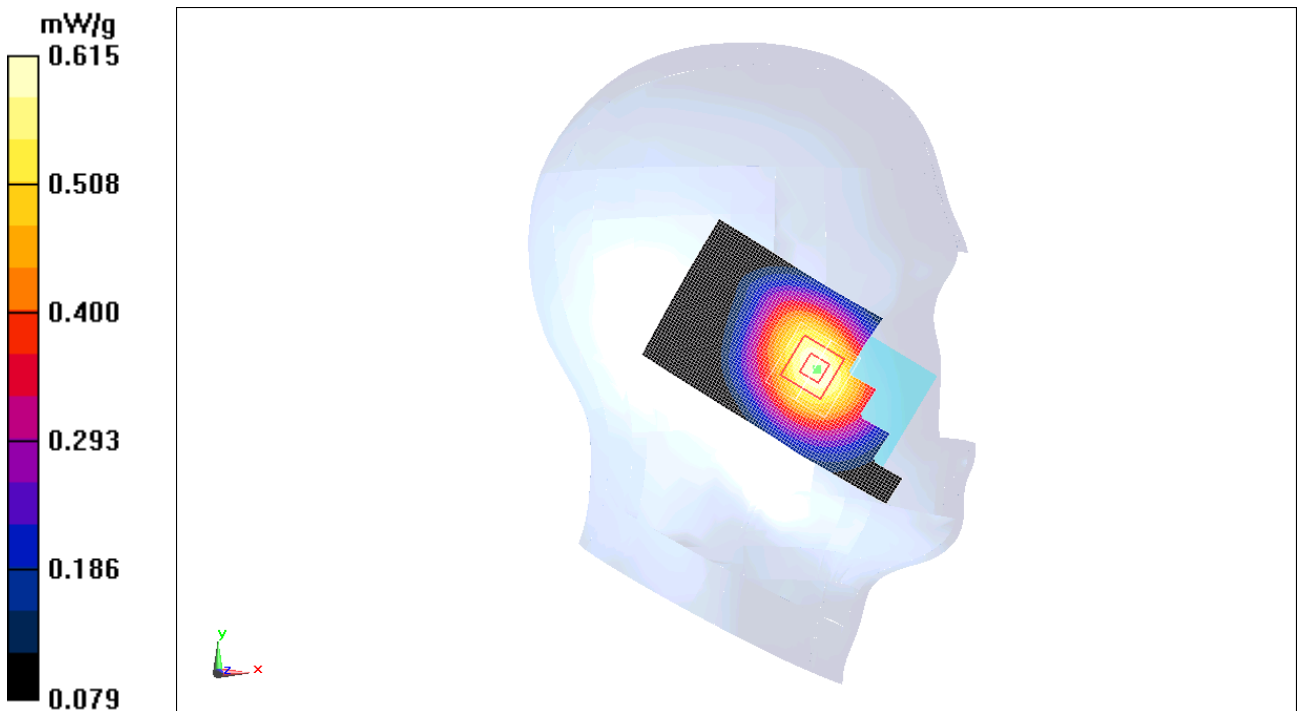
**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.16 V/m; Power Drift = 0.179 dB

Peak SAR (extrapolated) = 0.714 W/kg

**SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.442 mW/g**

Maximum value of SAR (measured) = 0.615 mW/g



**Fig. 3 835 MHz CH1013**

### 835 Left Tilt High

Date/Time: 2011-8-25 8:46:32

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated):  $f = 848.31$  MHz;  $\sigma = 0.91$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 848.31 MHz Duty Cycle: 1:1

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) = 0.522 mW/g

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

Reference Value = 13.8 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 0.635 W/kg

**SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.377 mW/g**

Maximum value of SAR (measured) = 0.528 mW/g

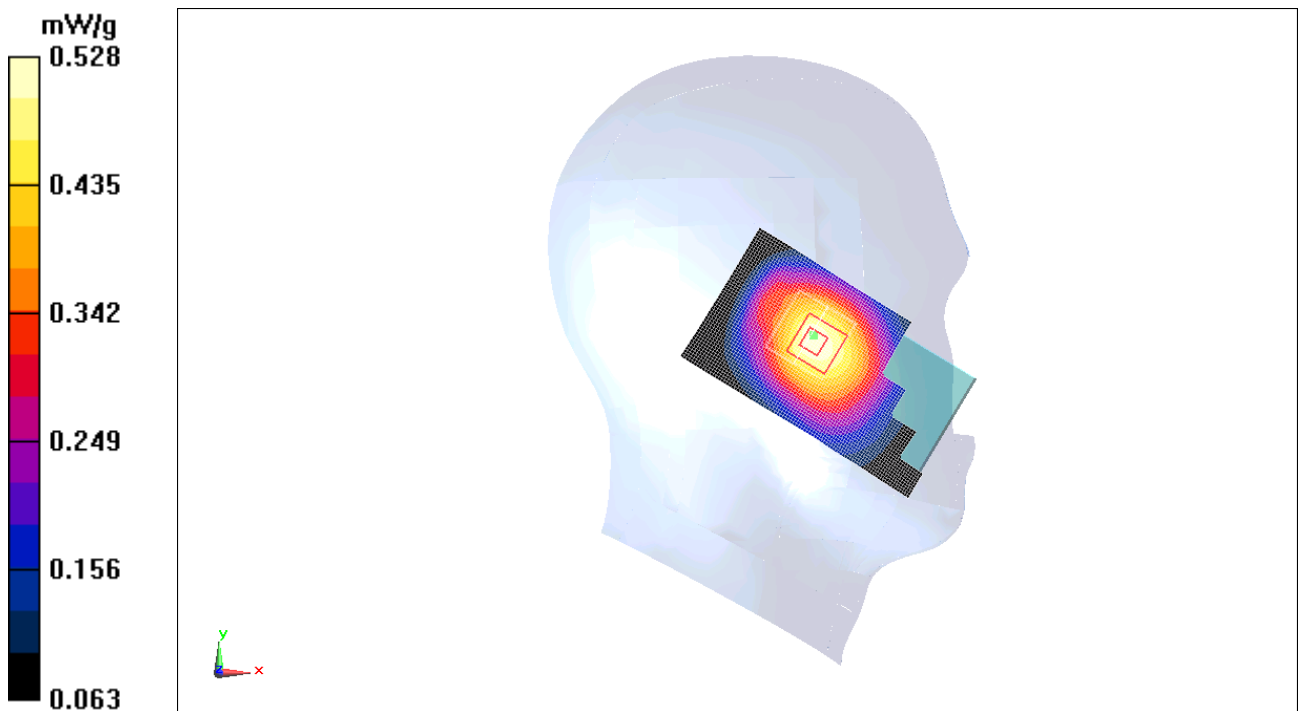


Fig.4 835MHz CH777

**835 Left Tilt Middle**

Date/Time: 2011-8-25 9:01:45

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 836.52 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

**Tilt Middle/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.545 mW/g

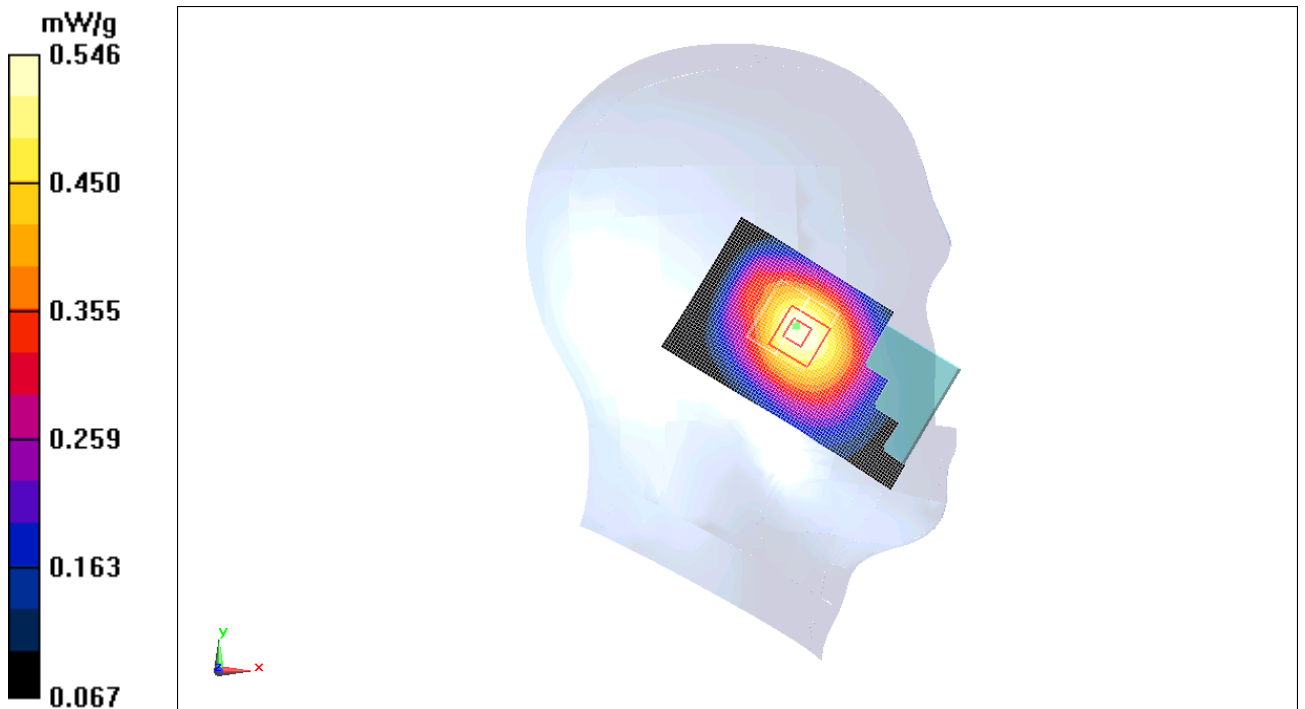
**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.5 V/m; Power Drift = -0.00469 dB

Peak SAR (extrapolated) = 0.652 W/kg

**SAR(1 g) = 0.520 mW/g; SAR(10 g) = 0.394 mW/g**

Maximum value of SAR (measured) = 0.546 mW/g



**Fig.5 835 MHz CH384**

**835 Left Tilt Low**

Date/Time: 2011-8-25 9:15:33

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used:  $f = 824.7$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 23.0°C      Liquid Temperature: 22.5°C

Communication System: CDMA 835 Frequency: 824.7 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

**Tilt Low/Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.382 mW/g

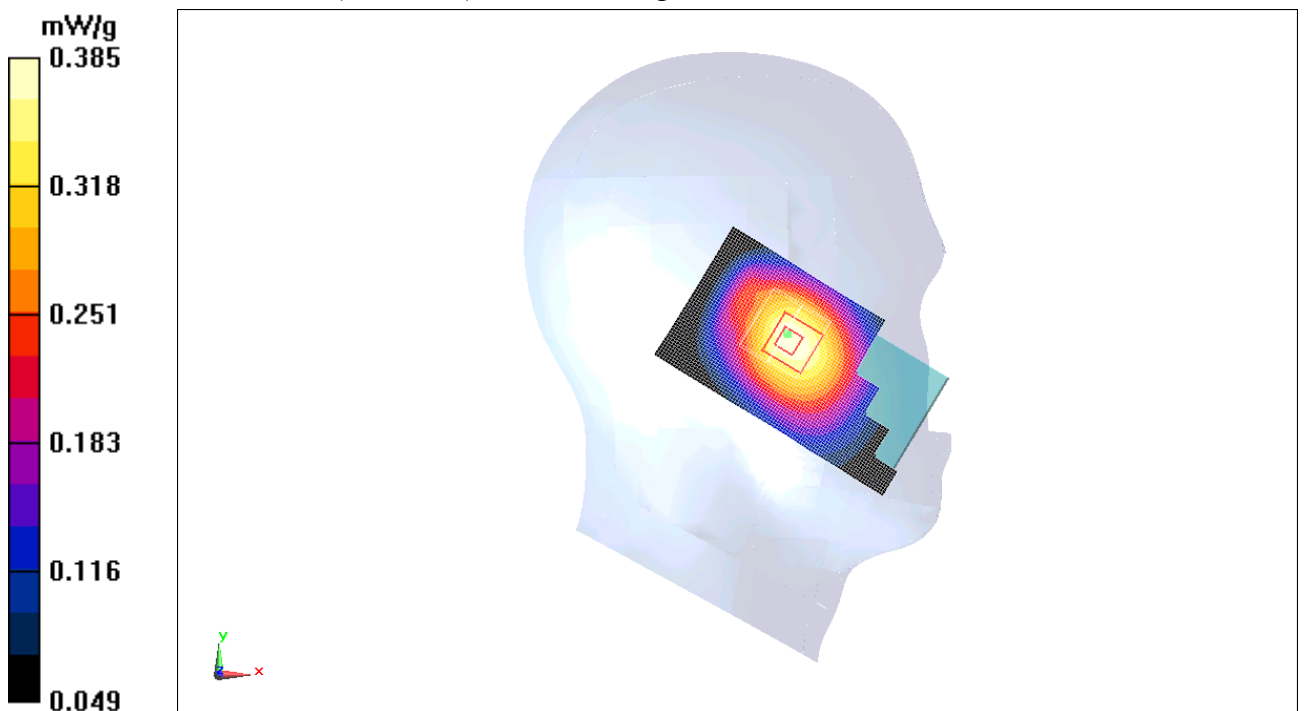
**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.4 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 0.463 W/kg

**SAR(1 g) = 0.368 mW/g; SAR(10 g) = 0.280 mW/g**

Maximum value of SAR (measured) = 0.385 mW/g



**Fig. 6 835 MHz CH1013**