MORLAB

FCC SAR

TEST REPORT

of

Portable GNSS receiver

Model Name: MobileMapper 10
Trade Name: ASHTECH
Brand Name: ASHTECH
Report No.: SH11070015S02
FCC ID: NZI802140
IC.: 9288A-80214

prepared for

ASHTECH S.A.S
ZAC LA FLEURIAYE BP 60433 RUE THOMAS EDISON
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prepared by

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OFTA 電訊管理局 GCF Official Observer of Global Certification Forum TAF ilac-MRA CNAS

Bluetooth® CTIA Authorized Test Lab
LAB CODE 20081223-00

GENERAL SUMMARY

Product Name	Portable GNSS receiver	Model	MobileMapper 10
Trade Name	ASHTECH	Carrier	GERARD JUTON
Quantity of EUT	One	Manufacturer	Beijing UniStrong Science & Technology Co., Ltd
Standard(s)	**ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fieldst. **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. **KDB648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05:** SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas. **KDB Publication 447498:**Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Polices **RSS-102 Issue 4–2010:** Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)		
Conclusion	Localized Specific Absorption Rate (SAR) of this portable wireless equipment has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report. General Judgment: Pass Date of issue: Aug. 8. 2011		
Comment	GSM850 TX Freq. Band: 824.2MHz–848.8 MHz GSM1900 TX Freq. Band: 1850.2MHz–1909.8 MHz Bluetooth: 2402MHz–2480 MHz WLAN 802.11b/g: 2412MHz–2462 MHz Antenna Character : build inside The test result only responds to the measured sample.		

Tested by: Shi Feng, Date: 2011. 8.10

Checked by: Zhang Jun, Date: 2011. 8. 10

Approved by: Wei Bei, Date: 2011. 8. 10.

TABLE OF CONTENT

1 GENERAL CONDITIONS

This report only refers to the item that has undergone the test.This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.

This document is only valid if complete; no partial reproduction can be made without written approval of Shenzhen Morlab Communications Technology Co., Ltd.

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2 Administrative Date

2.1 Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co.,Ltd.
Department:	Testing Department
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Telephone:	+86 755 86130268
Fax:	+86 755 86130218
Responsible Test Lab Managers:	Mr. Shu Luan

2.2 Identification of the Responsible Testing Location(s)

Company Name:	Shenzhen Electronic Product Quality Testing Center Morlab Laboratory
Address:	3Fl, Electronic Testing Building, ShaHe Road, NanShan District, Shenzhen, P. R. China

2.3 Organization Item

Morlab Report No.:	SH11070015S02
Morlab Project Leader:	Mr. Zhang Jun
Morlab Responsible for Accreditation scope:	Mrs.Wei Bei
Start of Testing:	2011-8-8
End of Testing:	2011-8-8

2.4 Identification of Applicant

Company Name:	ASHTECH S.A.S
Address:	ZAC LA FLEURIAYE BP 60433 RUE THOMAS EDISON 44474 CARQUEFU CEDEX FRANCE
Contact person:	GERARD JUTON
Telephone:	+33228093800
Fax:	+33228093939

2.5.Identification of Manufacture

Company Name:	Beijing UniStrong Science & Technology Co., Ltd
Address:	6F East, A2 Building, #9 Jiuxianqiao East Road, Chaoyang District, Beijing 100015, China

Notes: This data is based on the information offered by the applicant.

3 Equipment Under Test (EUT)

3.1.Identification of the Equipment under Test

Product Name:	Portable GNSS receiver	
Brand name:	ASHTECH	
Model No:	MobileMapper 10	
General description:	Test frequency	GSM850/1900;WIFI 802.11b/g;
	Accessories	Battery, Charger
	Battery Model	MG-4LH
	Battery specification	3.7V 3000mAh
	Battery Manufacture	SHENZHEN DBK ELECTRONICS CO., LTD DBK Ind. Park, the north of longguan Rd. Hualian community, Longhua Town, Baoan District, Shenzhen
	Antenna type	GSM/GPRS/EGPRS :Integrated; WIFI 802.11b/g;Bluetooth2.1+EDR
	Modulation mode	GMSK,8PSK; DSSS,OFDM; GFSK, π/4-DQPSK, 8-DPSK

3.2.Identification of all used Test Sample of the Equipment under Test

EUT Code	Serial Number	Hardware Version	Software Version	IMEI
#1	N.A	V2.0	01.001.1chs	/

NOTE:

1. The EUT is identical prototype.
2. The EUT consists of Hand-Held Terminal Set and normal options: Charger, Lithium Battery as listed above.
3. Please refer to Appendix C for the photographs of the EUT. For a more detailed features description of the EUT, please refer to its User’s Manual.
4. Testing for General Population/Uncontrolled limits.

4 OPERATIONAL CONDITIONS DURING TEST

4.1 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 TCH is allocated to is allocated to 125, 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 35 dB.

4.2 SAR Measurement System

ALSAS-10-U is fully compliant with the technical and scientific requirements of IEEE 1528, IEC 62209, CENELEC, ARIB, ACA, and the Federal Communications Commission. The system comprises of a six axes articulated robot which utilizes a dedicated controller.ALSAS-10U uses the latest methodologies and FDTD order to provide a platform which is repeatable with minimum uncertainty.

Applications Predefined measurement procedures compliant with the guidelines of CENELEC, IEEE, IEC, FCC, etc are utilized during the assessment for the device. Automatic detection for all SAR maxima are embedded within the core architecture for the system, ensuring that peak locations used for centering the zoom scan are within a 1mm resolution and a 0.05mm repeatable position. System operation range currently is available up to 6 GHz in simulated tissue.

4.2.1 Robot system specification

ALSAS-10U utilizes a six articulated robot, which is controlled using a Pentium based real-time movement controller. The movement kinematics engine utilizes proprietary (Thermo CRS) interpolation and extrapolation algorithms, which allow full freedom of movement for each of the six joints within the working envelop. Utilization of joint 6 allows for full probe rotation with a tolerance better than 0.05mm around the central axis.

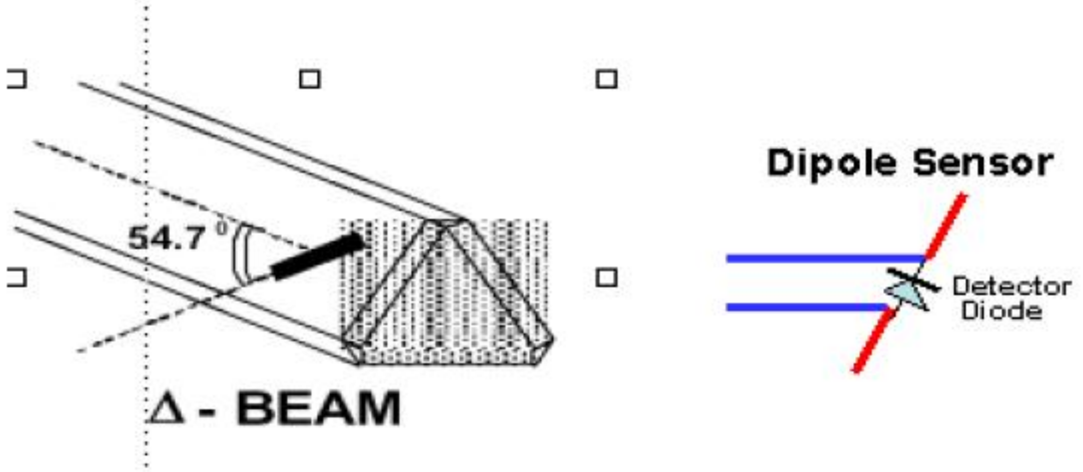
Robot/Controller Manufacturer	Thermo CRS
Number of Axis	Six independently controlled axis
Positioning Repeatability	0.05mm
Controller Type	Single phase Pentium based C500C
Robot Reach	710mm
Communication	RS232 and LAN compatible

4.2.2 Probe Specification

The isotropic E-Field probe has been fully calibrated and assessed for isotropic, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change. A number of methods is used for calibrating probes, and these are outlined in the table below:

Calibration Frequency	Air Calibration	Tissue Calibration
850MHZ	TEM Cell	Temperature
1900MHZ	TEM Cell	Temperature
2450 MHZ	Waveguide	Waveguide

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



SAR is assessed with a calibrated probe which moves at a default height of 5mm from the center of the diode, which is mounted to the sensor, to the phantom surface (in the Z Axis). The 5mm offset height has been selected so as to minimize any resultant boundary effect due to the probe being in close proximity to the phantom surface.

The following algorithm is an example of the function used by the system for linearization of the output from the probe when measuring complex modulation schemes.

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

Isotropic E-Field Probe Specification

Calibration in Air	Frequency Dependent Below 2GHz Calibration in air performed in a TEM Cell Above 2GHz Calibration in air performed in waveguide
Sensitivity	0.70 $\mu V/(V/m)^2$ to 0.85 $\mu V/(V/m)^2$
Dynamic Range	0.0005 W/kg to 100W/kg
Isotropic Response	Better than 0.2dB
Diode Compression point (DCP)	Calibration for Specific Frequency
Probe Tip Radius	< 5mm
Sensor Offset	1.56 (+/- 0.02mm)
Probe Length	290mm
Video Bandwidth	@ 500 Hz: 1dB @1.02 KHz: 3dB
Boundary Effect	Less than 2% for distance greater than 2.4mm
Spatial Resolution	Diameter less than 5mm Compliant with Standards

Boundary detection Unit and Probe Mounting Device

ALSAS-10U incorporates a boundary detection unit with a sensitivity of 0.05mm for detecting all types of surfaces. The robust design allows for detecting during probe tilt (probe normalize) exercises, and utilizes a second stage emergency stop. The signal electronics are directly into the robot controller for high accuracy surface detection in lateral and axial detection modes (X, Y, &Z). The probe is mounted directly onto the Boundary Detection unit for accurate tooling and displacement calculations controlled by the robot kinematics. The probe is connected to an isolated probe interconnect where the output stage of the probe is fed directly into the amplifier stage of the Daq-Paq.

Daq-Paq (Analog to Digital Electronics)

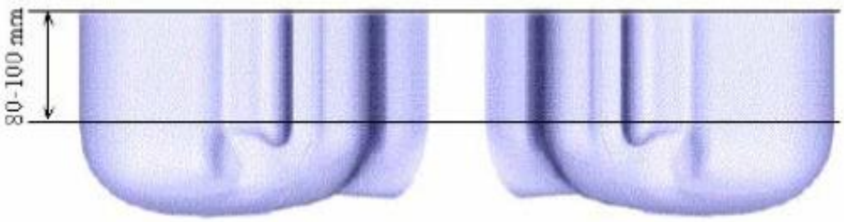
ALSAS-10U incorporates a fully calibrated Daq-Paq (analog to digital conversion system) which has a 4 channel input stage, sent via a 2 stage auto-set amplifier module. The input signal is amplified accordingly so as to offer a dynamic range from 5μ V to 800mV. Integration of the fields measured is carried out at board level utilizing a Co-Processor which then sends the measured fields down into the main computational module in digitized form via a RS232 communications port. Probe linearity and duty cycle compensation is carried out within the main Daq-Paq module.

ADC	12 Bit
Amplifier Range	20mV to 200mV and 150mV to 800mV
Field Integration	Local Co-Processor utilizing proprietary integration algorithms
Number of Input Channels	4 in total 3 dedicated and 1 spare
Communication	Packet data via RS232

4.2.3 Phantoms, Device Holder and Simulant Liquid

4.2.3.1 Sam Phantom

The SAM phantoms developed using the IEEE SAM CAD file. They are fully compliant with the requirements for both IEEE 1528 and FCC Supplement C. Both the left and right SAM phantoms are interchangeable, transparent and include the IEEE 1528 grid with visible NF and MB lines.



APREL Laboratories Universal Phantom

The Universal Phantom is used on the ALSAS-10U as a system validation phantom. The Universal Phantom has been fully validated both experimentally from 800MHz to 6GHz and numerically using XFDTD numerical software. The shell thickness is 2mm overall, with a 4mm spacer located at the NF/MB intersection providing an overall thickness of 6mm in line with the requirements of IEEE-1528.

The design allows for fast and accurate measurements, of handsets , by allowing the conservative SAR to be evaluated at on frequency for both left and right head experiments in one measurement.

Device and Dipole Holder

ALSAS Universal Workstation

ALSAS Universal workstation allows for repeatability and fast adaptability. It allows users to do calibration, testing and measurement using different types of phantoms with one set up, which significantly speeds up the measurement process.

Universal Device Positioner

The universal device positioner allows complete freedom of movement of the EUT. Developed to hold a EUT in a free-space scenario any additional loading attributable to the material used in the construction of the positioner has been eliminated. Repeatability has been enhanced through the linear scales which form the design used to indicate positioning for any given test scenario in all major axes. A 15° tilt movements for head SAR analysis. Overall uncertainty for measurements has been reduced due to the design of the Universal device positioner, which allows positioning of a device in as near to a free-space scenario as possible, and by providing the means for complete repeatability.

4.2.3.2 Tissue Simulating Liquids

There is no simulating liquids that can cover all frequency bands. Therefore, our system is using different liquids for the measured band as explained bellows.

The parameters of the simulating solution strongly influence the SAR values. The different normalization organizations have defined adapted solutions for the each mobile system.

GSM liquid: is made of Sugar, de-ionized water and NaCl, reconstituting the electric properties of human tissues at 850MHz.

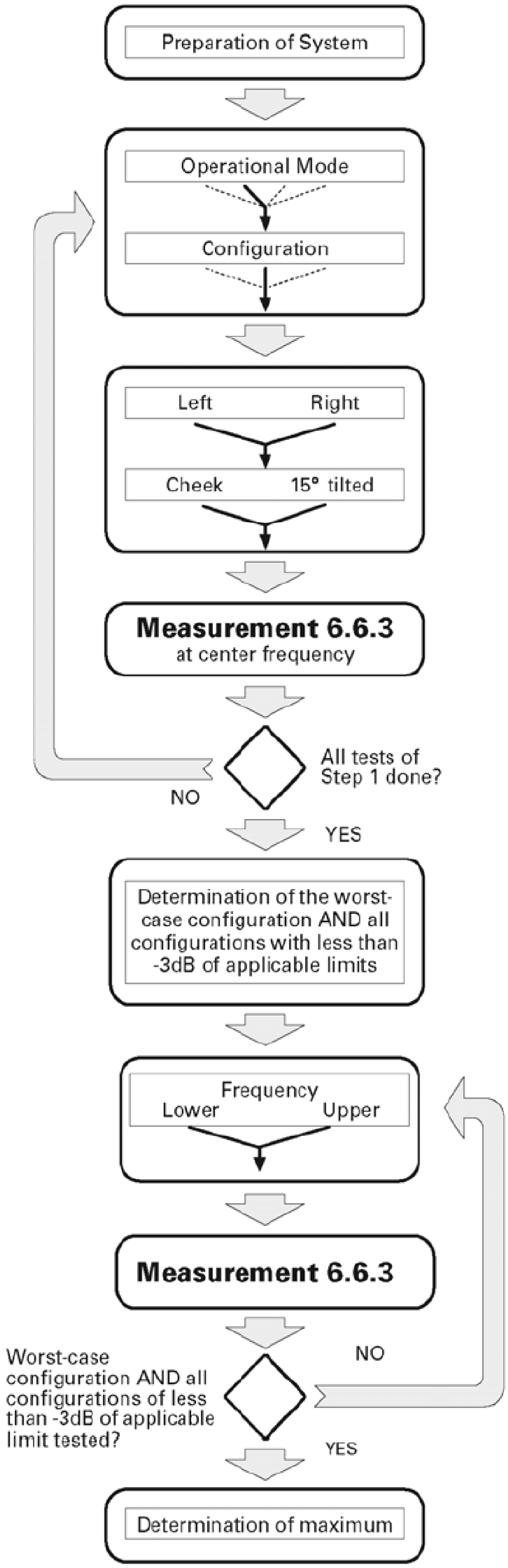
PCS Liquid: is made of de-ionized water, Glycol monobutyl and NaCl, reconstituting the electric properties of human tissues at 1900MHz.

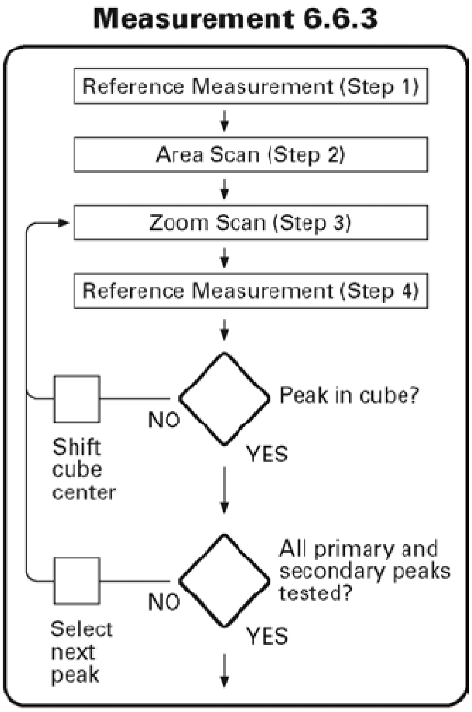
2450MHz Liquid: is made of de-ionized water, Glycol monobutyl and NaCl, reconstituting the electric properties of human tissues at 2450MHz.

Several measurement systems are available for measuring the dielectric parameters.

Antennessa has developed its own software, based on a coaxial probe. This method allows measurement of liquid permittivity between 300 MHz and 6GHz.

4.2.4 SAR measurement procedure





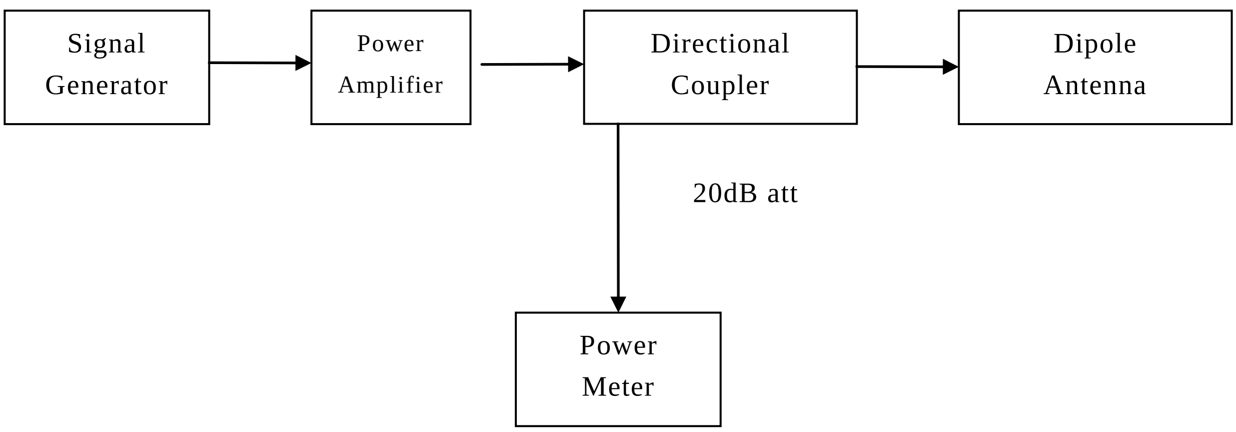
Channel	Left				Right			
	Cheek		Tilt		Cheek		Tilt	
	Retracted	Extended	Retracted	Extended	Retracted	Extended	Retracted	Extended
Mode 1:								
High			S2(-1.4dB)	S2(-0.4dB)			S2(-2.2dB)	S2(-1.4dB)
Middle	S1(-4dB)	S1(-4dB)	S1(-1.5dB)	S1(-0.5dB)	S1(-5dB)	S1(-5dB)	S1(-2.5dB)	S1(-1.5dB)
Low			S2(-1.3dB)	S2(-0.7dB)			S2(-2.7dB)	S2(-0.6dB)
Mode 2:								
High			S2(-2.7dB)	S2(-1.1dB)				
Middle	S1(-5dB)	S1(-5dB)	S1(-2.5dB)	S1(-1dB)	S1(-6dB)	S1(-6dB)	S1(-5dB)	S1(-5dB)
Low			S2(-2.2dB)	S2(-0.8dB)				

After an area scan has been done at a fixed distance of 8mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEE P1528 standard. This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

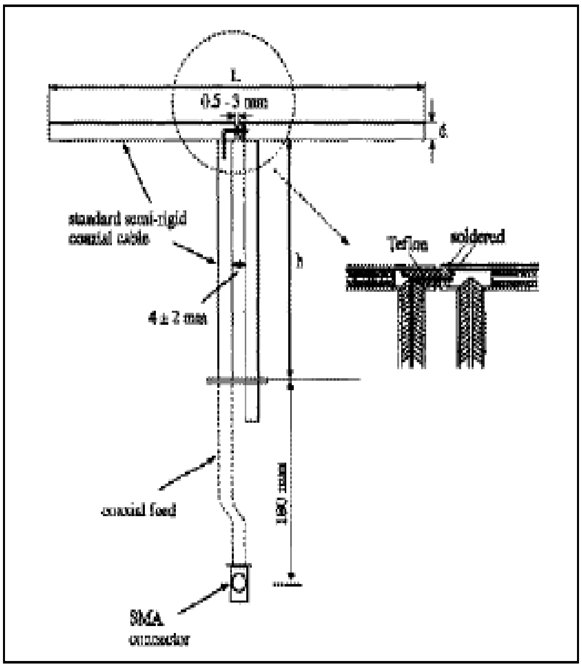
4.2.5 Validation Test Using Flat Phantom

The following procedure, recommended for performing validation tests using flat phantom is based on the procedures described in the IEEE standard P1528. Setup according to the setup diagram below:



4.2.5.1 Setting up the Box Phantom for Validation Testing

Validation Dipoles



The dipoles used are based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. The table below provides details for the mechanical and electrical specifications for the dipoles.

Frequency	L(mm)	h(mm)	d(mm)
850 MHz	161	89.8	3.6
1900 MHz	67.1	38.9	3.6
2450 MHz	51.5	30.4	3.6

Validation Result

System Performance Check at 850MHz & 1900MHz

Validation Kit: ASL-D-850-S-2

Frequency(MHz)	Description	SAR(W/Kg) 1g	SAR(W/Kg) 10g	Tissue Temp.(℃)
835MHz Head	Reference result	9.590	6.003	N/A
	Value(1W) 2011-8-8	9.472	6.108	20.7
	Value(0.25W) 2011-8-8	2.368	1.527	20.7

Validation Kit: ASL-D-1900-S-2

Frequency(MHz)	Description	SAR(W/Kg) 1g	SAR(W/Kg) 10g	Tissue Temp.(℃)
1900MHz Head	Reference result	39.378	19.668	N/A
	Value(1W) 2011-8-8	39.100	19.452	20.7
	Value(0.25W) 2011-8-8	9.775	4.863	20.7

Validation Kit: ASL-D-850-S-2

Frequency(MHz)	Description	SAR(W/Kg) 1g	SAR(W/Kg) 10g	Tissue Temp.(℃)
835MHz body	Reference result	9.981	6.006	N/A
	Value(1W) 2011-8-8	10.092	6.204	20.7
	Value(0.25W) 2011-8-8	2.523	1.551	20.7

Validation Kit: ASL-D-1900-S-2

Frequency(MHz)	Description	SAR(W/Kg) 1g	SAR(W/Kg) 10g	Tissue Temp.(℃)
1900MHz body	Reference result	39.654	19.668	N/A
	Value(1W) 2011-8-8	39.712	20.096	20.7
	Value(0.25W) 2011-8-8	9.928	5.024	20.7

Note: Validation SAR values are normalized to 1W forward power

4.2.6 Measurement Procedure

The following steps are used for each test position

Establish a call with the maximum output power with a base station simulator. The connection between the mobile phone and the base station simulator is established via air interface.

Measurement of the local E-field distribution is done with a grid of 8 to 16mm*8 to 16mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolating scheme.

Around this point, a cube of 30*30*30mm or 32*32*32mm is assessed by measuring 5 or 8*5 or 8*4 or 5mm. With these data, the peak spatial-average SAR value can be calculated.

4.2.7 Description of Interpolation/Extrapolation Scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is base on a fourth-order least square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8mm. to obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1gram requires a very fine resolution in the three-dimensional scanned data array.

5 CHARACTERISTICS OF THE TEST

5.1 Applicable Limit Regulations

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.

RSS-102 Issue 4–2010: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

5.2 Applicable Measurement Standards

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.

KDB648474 D01 SAR Handsets Multi Xmiter and Ant, v01r05: SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas.

KDB Publication 447498: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Polices

6 LABORATORY ENVIRONMENT

Table: The Ambient Conditions during SAR Test

Temperature	Min. =15 ℃, Max. =30 ℃
Relative humidity	Min. =30%, Max. =70%
Ground system resistance	<0.5Ω
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.	

7 TEST RESULTS

7.1 Explain

The EUT has been tested under the operating conditions.

7.2 Dielectric Performance

For head measurement, the device was tested at the lowest, middle and highest frequencies in the transmit band.

Table 1: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.0~23.8 ℃, humidity: 54~60%.			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835 MHZ	41.5	0.90
Validation value (Aug 8)	835 MHZ	41.725	0.933
Target value	1900 MHZ	40	1.40
Validation value (Aug 8)	1900 MHZ	40.365	1.428

For body-worn measurements, the device was tested against flat phantom representing the user body. Under measurement phone was put on in the belt holder.

Table 2: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.0~23.8 ℃, humidity: 54~60%.			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	835 MHz	55.2	0.97
Validation value (Aug 8)	835 MHz	55.419	0.988
Target value	1900 MHz	53.30	1.52
Validation value (Aug 8)	1900 MHz	53.463	1.543

7.3 Conducted Power

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

GSM 850MHz	Conducted Power (dBm)

	128	190	251
	31.90	32.18	32.50
GSM 1900MHz	Conducted Power (dBm)		
	512	661	810
	29.45	30.10	30.81

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

GSM 850 GPRS	Conducted Power (dBm)				Average Power (dBm)		
	128	190	251		128	190	251
1 Txslot	31.85	32.27	32.53	-9.03 dBm	22.82	23.24	23.50
2 Txslots	31.80	32.23	32.49	-6.02 dBm	25.78	26.21	26.47
GSM 1900 GPRS	Conducted Power (dBm)				Average Power (dBm)		
	512	661	810		512	661	810
1 Txslot	29.44	30.16	30.82	-9.03 dBm	20.41	21.13	21.79
2 Txslots	29.41	30.11	30.77	-6.02 dBm	23.39	24.09	24.75

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

GSM 850 EDGE	Conducted Power (dBm)				Average Power (dBm)		
	128	190	251		128	190	251
1 Txslot	29.61	30.03	30.13	-9.03 dBm	20.58	21.00	21.10
2 Txslots	29.54	29.98	30.07	-6.02 dBm	23.52	23.96	24.05
GSM 1900 EDGE	Conducted Power (dBm)				Average Power (dBm)		
	512	661	810		512	661	810
1 Txslot	27.90	27.90	28.02	-9.03 dBm	18.87	18.87	18.99
2 Txslots	27.84	27.88	27.96	-6.02 dBm	21.82	21.86	21.94

NOTES:
1) Division Factors
To average the power, the division factor is as follows:
1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB
2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB
3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB
4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB
According to the conducted power as above, the body measurements are performed with 2 Tx slots for GPRS and EDGE.

7.4 Summary of Measurement Results(GSM/GPRS/EGPRS 850/1900)

Table 1: SAR Values (GSM850 Head)

Temperature: 21.0~23.5 ℃, Relative Humidity: 60~65%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Configuration	Measurement Result (W/kg)	
	1 g Average(W/kg)	Power Drift(%)
Left head ,Touch cheek, Low Channel	0.251	2.017
Left head ,Touch cheek, Middle Channel	0.188	2.222
Left head ,Touch cheek, High Channel	0.149	-2.332
Left head ,Tilt 15 Degree, Middle Channel	0.139	1.432
Right head ,Touch cheek, Middle Channel	0.185	-1.926
Right head ,Tilt 15 Degree, Middle Channel	0.110	-1.310

Table 2: SAR Values (GSM1900 Head)

Temperature: 21.0~23.5 ℃, Relative Humidity: 60~65%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Configuration	Measurement Result (W/kg)	
	1 g Average(W/kg)	Power Drift(%)
Left head ,Touch cheek, Low Channel	0.349	-0.466
Left head ,Touch cheek, Middle Channel	0.306	0.584
Left head ,Touch cheek, High Channel	0.272	-1.247
Left head ,Tilt 15 Degree, Middle Channel	0.209	1.134
Right head ,Touch cheek, Middle Channel	0.269	2.596
Right head ,Tilt 15 Degree, Middle Channel	0.165	3.097

Table 3: SAR Values (GSM850 Body)

Temperature: 21.0~23.5 ℃, Relative Humidity: 60~65%.		
Limit of SAR (W/kg)	1 g Average	
	1.6	
Test Configuration	Measurement Result (W/kg)	
	1 g Average(W/kg)	Power Drift(%)
Frontside Towards Phantom Middle Channel	0.219	-1.721
Backside Towards Phantom Low Channel	1.068	-1.721

Backside Towards Phantom Middle Channel	1.185	3.190
Backside Towards Phantom High Channel	0.995	-0.912
Backside Towards Phantom Middle Channel GPRS	0.911	2.420
Backside Towards Phantom Middle Channel EDGE	0.644	-0.682

Table 4: SAR Values (GSM1900 Body)

Temperature: 21.0~23.5 ℃, Relative Humidity: 60~65%.		
Limit of SAR (W/kg)	**1 g Average**	
	1.6	
Test Configuration	**Measurement Result (W/kg)**	
	1 g Average(W/kg)	**Power Drift(%)**
Frontside Towards Phantom Middle Channel	0.303	2.618
Backside Towards Phantom Low Channel	0.988	3.760
Backside Towards Phantom Middle Channel	1.101	1.669
Backside Towards Phantom High Channel	0.702	0.881
Backside Towards Phantom Middle Channel GPRS	0.938	-3.061
Backside Towards Phantom Middle Channel EDGE	0.320	0.083

7.5 Summary of Measurement Results (WIFI and Bluetooth Function)

The distance between BT antenna and GSM antenna is 101.35mm>5cm.

The distance between WiFi antenna and GSM antenna is 92.7mm＞5cm. The location of the antennas inside mobile phone is shown below:

The conducted power for BT antenna is as following:

Frequency (MHz)	Conducted Power (dBm)		
	Data Rate/Modulation		
	GFSK 1Mbps	π/4-DQPSK 2Mbps	8-DPSK 3Mbps
2402	-1.20	-1.15	-1.11
2441	0.15	0.18	0.26
2480	1.18	1.20	**1.26**

The conducted power for WiFi is as following:

802.11b/data rate	Conducted Power (dBm)		
	2412MHz	2437MHz	2462MHz
1M	11.52	11.37	11.48
2M	11.54	11.39	11.51
5.5M	11.57	11.42	11.54
11M	**11.61**	11.46	11.57
802.11g/data rate	**Conducted Power (dBm)**		
	2412MHz	**2437MHz**	**2462MHz**
6M	9.45	8.25	8.74
9M	9.48	8.28	8.77
12M	9.51	8.31	8.80
18M	9.56	8.36	8.83
24M	9.53	8.38	8.86
36M	9.55	8.41	8.88
48M	9.59	8.44	8.90
54M	**9.64**	8.49	8.93

The BT conduct Power is 1.34mW < 24mW(2PRef) and its antenna is ＞ 5 cm from other antenna. we can draw the conclusion that: When the output of an unlicensed transmitter is ≤ 2PRef and its antenna(s) is ≥ 5.0 cm from other antennas, stand-alone SAR evaluation is also not required for that unlicensed transmitter. So SAR for BT is not required.

The conducted power for WiFi transmitter is 14mW < 24mW(2PRef) and its antenna is ＞ 5 cm from other antenna. we can draw the conclusion that: When the output of an unlicensed transmitter is ≤ 2PRef and its antenna(s) is ≥ 5.0 cm from other antennas, stand-alone SAR evaluation is also not required for that unlicensed transmitter. So SAR for wifi is not required.

7.6 Conclusion

Peak Spatial-Average Specific Absorption Rate (SAR) of this portable wireless device has been measured in all configurations requested by the relevant standards cited in Clause 5.2 of this report. SAR values are below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

8 Measurement Uncertainties

The following table includes the uncertainty table of the IEEE 1528. The values are determined by Antennessa.

UNCERTAINTY EVALUATION FOR HANDSET SAR TEST

Source of Uncertainty	Tolerance Value	Probability Distribution	Divisor	ci1 (1-g)	ci1 (10-g)	Standard Uncertainty (1-g) %	Standard Uncertainty (10-g) %
Measurement System							
Probe Calibration	3.5	normal	1	1	1	3.5	3.5
Axial Isotropy	3.7	rectangular	√3	(1-cp)1/2	(1-cp)1/2	1.5	1.5
Hemispherical Isotropy	10.9	rectangular	√3	√cp	√cp	4.4	4.4
Boundary Effect	1.0	rectangular	√3	1	1	0.6	0.6
Linearity	4.7	rectangular	√3	1	1	2.7	2.7
Detection Limit	1.0	rectangular	√3	1	1	0.6	0.6
Readout Electronics	1.0	normal	1	1	1	1.0	1.0
Response Time	0.8	rectangular	√3	1	1	0.5	0.5
Integration Time	1.7	rectangular	√3	1	1	1.0	1.0
RF Ambient Condition	3.0	rectangular	√3	1	1	1.7	1.7
Probe Positioner Mech.	0.4	rectangular	√3	1	1	0.2	0.2
Restriction							
Probe Positioning with respect to Phantom Shell	2.9	rectangular	√3	1	1	1.7	1.7
Extrapolation and Integration	3.7	rectangular	√3	1	1	2.1	2.1

Test Sample Positioning	4.0	normal	1	1	1	4.0	4.0
Device Holder Uncertainty	2.0	normal	1	1	1	2.0	2.0
Drift of Output Power	0.6	rectangular	√3	1	1	0.3	0.3
Phantom and Setup							
Phantom Uncertainty(shape & thickness tolerance)	3.4	rectangular	√3	1	1	2.0	2.0
Liquid Conductivity(target)	5.0	rectangular	√3	0.7	0.5	2.0	1.4
Liquid Conductivity(meas.)	0.0	normal	1	0.7	0.5	0.0	0.0
Liquid Permittivity(target)	5.0	rectangular	√3	0.6	0.5	1.7	1.4
Liquid Permittivity(meas.)	2.4	normal	1	0.6	0.5	1.4	1.2
Combined Uncertainty		RSS				9.3	9.2
Combined Uncertainty (coverage factor=2)		Normal(k=2)				18.7	18.3

9 MAIN TEST INSTRUMENTS

Instrument	Manufacture	Model No.	Serial No.	Last Calibration
Universal Work Station	Aprel	ALS-UWS	100-00154	Jun.2011
Data Acquisition Package	Aprel	ALS-DAQ-PAQ-3	110-00215	Jun.2011
Probe Mounting Device and Boundary Detection Sensor System	Aprel	ALS-PMDPS-3	120-00265	Jun.2011
Miniature E-Field Probe	Aprel	E-020	273-B	Sep.2010
Left ear SAM Phontom	Aprel	ALS-P-SAM-L	130-00312	N/A
Right ear SAM Phontom	Aprel	ALS-P-SAM-R	140-00362	N/A
Universal SAM Phontom	Aprel	ALS-P-SU-1	150-00410	N/A
Reference Validation Dipole 835MHz	Aprel	ALS-D-835-S-2	180-00556	May.2011
Reference Validation Dipole 1900MHz	Aprel	ALS-D-1900-S-2	210-00707	May.2011
Dielectric Probe Kit	Aprel	ALS-PR-DIEL	260-00955	N/A
Device Holder 2.0	Aprel	ALS-H-E-SET-2	170-00506	N/A
SAR software	Aprel	ALS-SAR-AL-10	Ver.2.3.6	N/A
CRS C500C Controller	Thermo	ALS-C500	RCF0504291	N/A
CRS F3 Robot	Aprel	ALS-F3-SW	N/A	N/A
Power Amplifier	Mini-Circuit	SN0974	040306	N/A
Directional Coupler	Agilent	778D-012	N/A	N/A
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	104845	Jan.2011
Vector Network	Anritsu	MS4623B	N/A	Nov.2010
Signal Generator	Agilent	E8257D	N/A	Jan.2011
Power Meter	Rohde&Schwarz	NRP	N/A	Jan.2011

ANNEX A- Accreditation Certificate

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L1659)

China National Accreditation Service for Conformity Assessment has accredited

Shenzhen Electronic Product Quality Testing Center

Electronic Testing Building, Shahe Road, Xili, Nanshan District,

Shenzhen, Guangdong, China

to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing and calibration.

The scope of accreditation is detailed in the attached schedule bearing the same accreditation number as above. The schedule forms an integral part of this certificate.

Date of Issue：2009-09-29

Date of Expiry：2012-09-28

Date of Initial Accreditation：1999-08-03

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation systems for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA), and the signatory to Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

ANNEX B- Test Layout

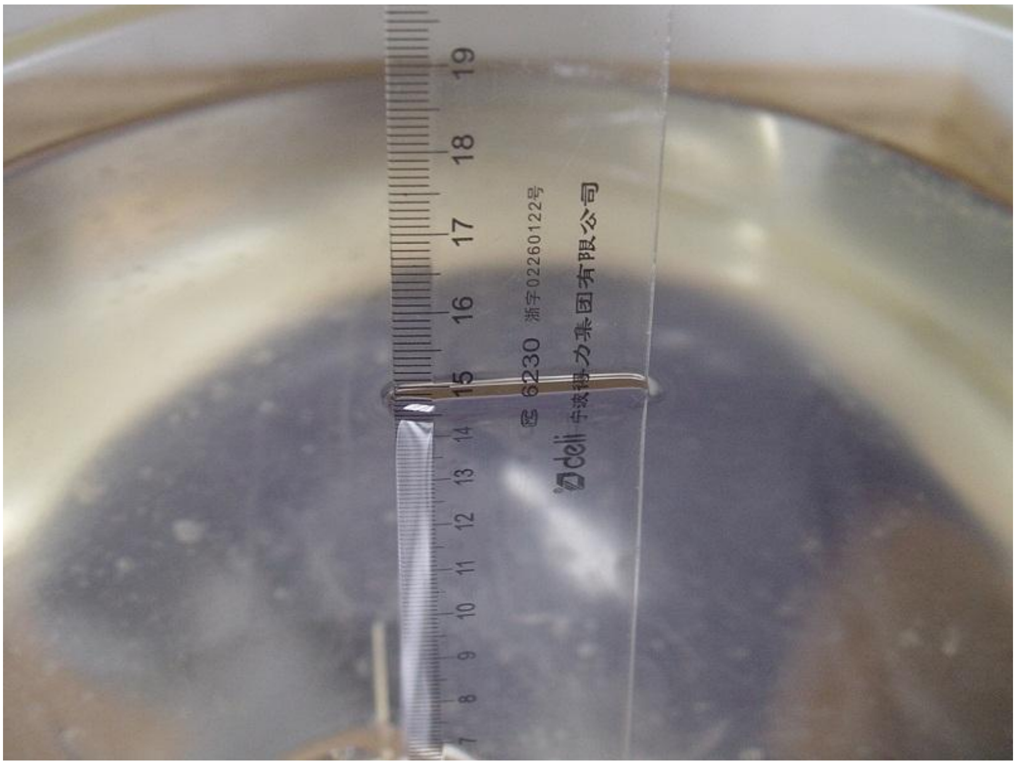


Figure B.1 Depth of Simulating Liquid in SAM Head Phantom

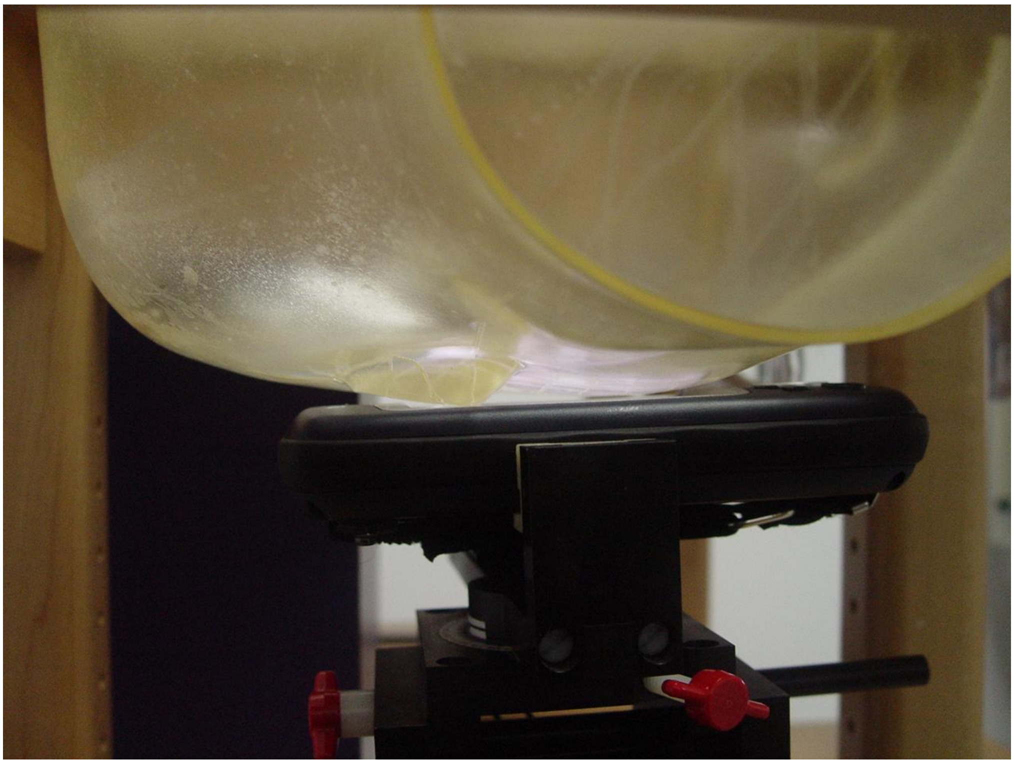


Figure B.2 EUT Left Cheek Position

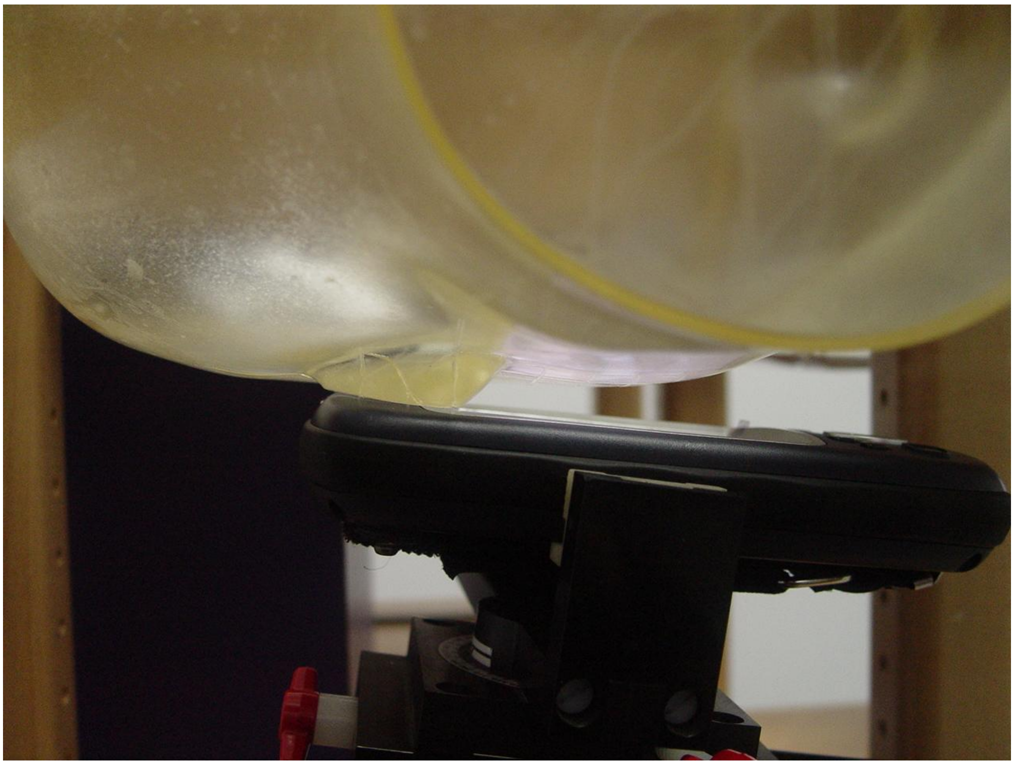


Figure B.3 EUT Left Tilt Position

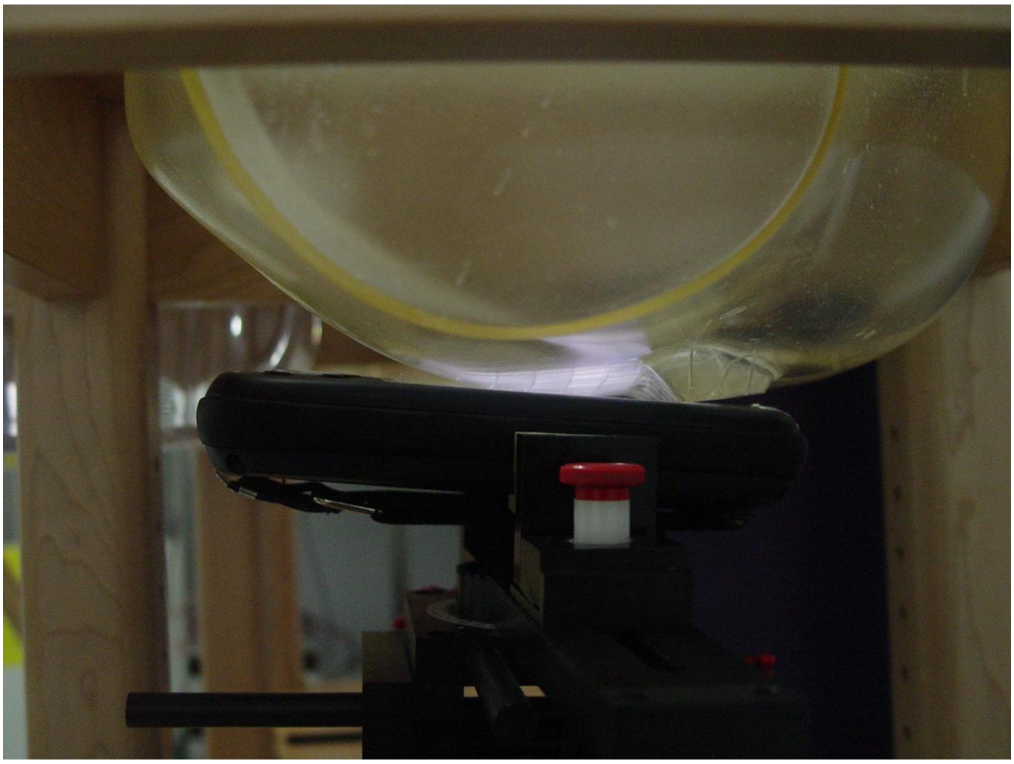


Figure B.4 EUT Right Cheek Position

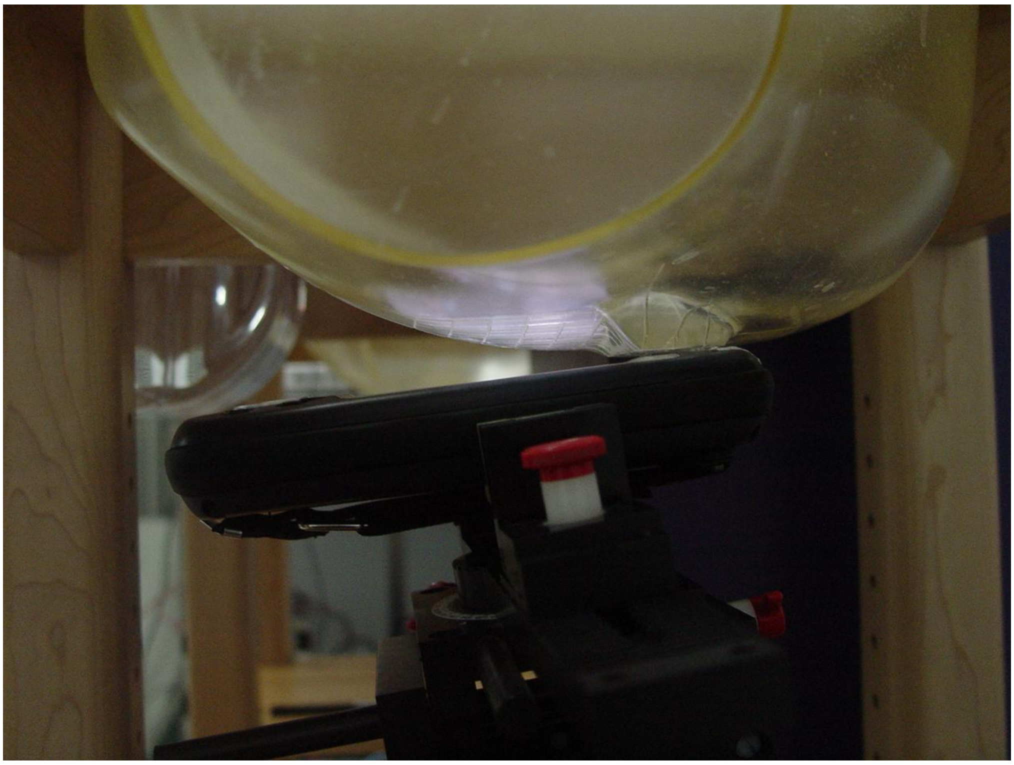


Figure B.5 EUT Right Tilt Position

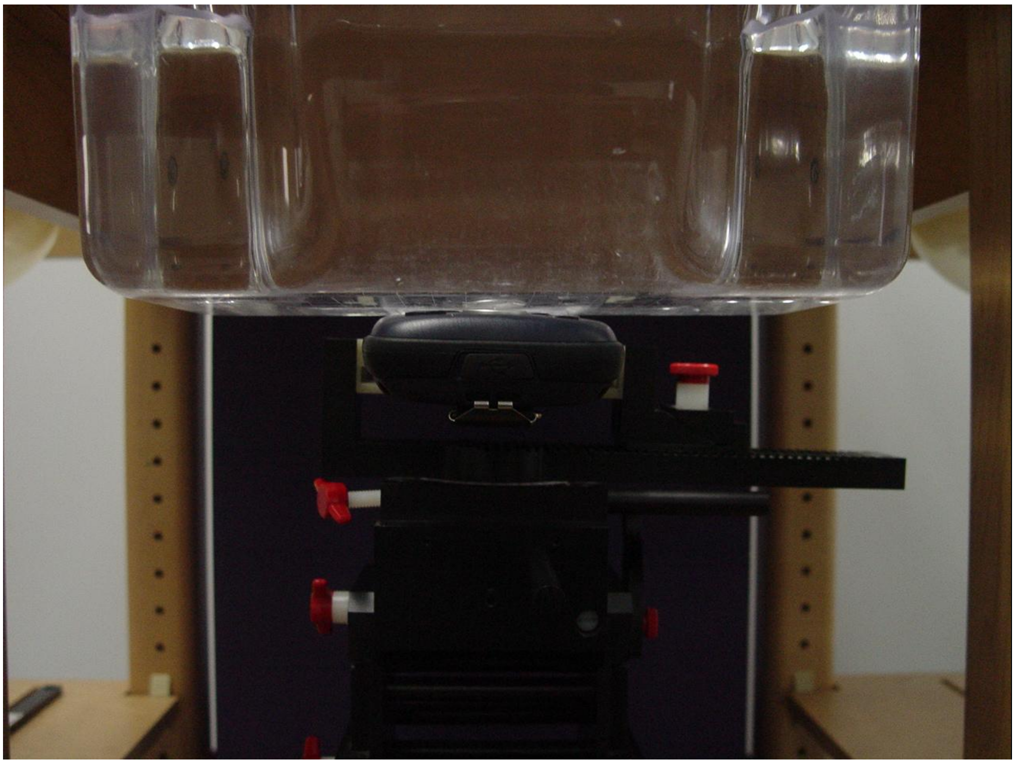


Figure B.6 EUT Body Frontside Position

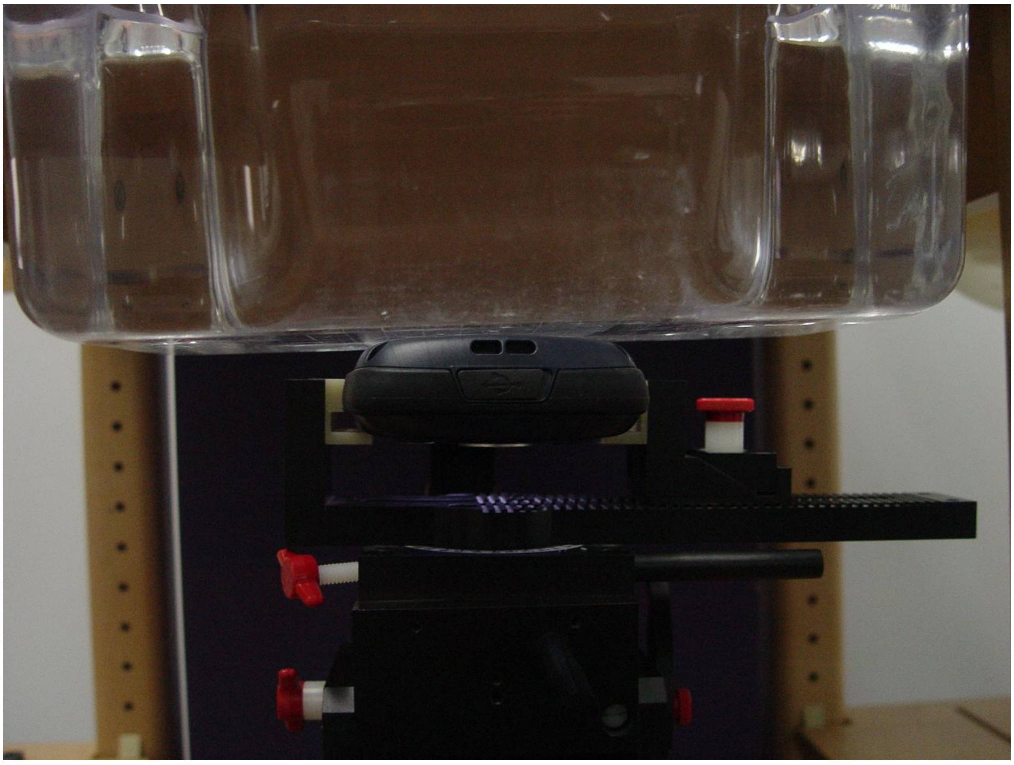


Figure B.7 EUT Body Backside Position

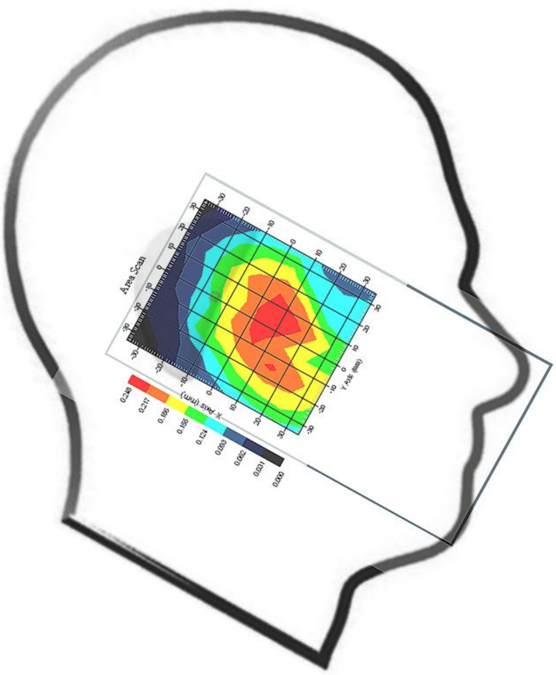
ANNEX C- Sample Photographs

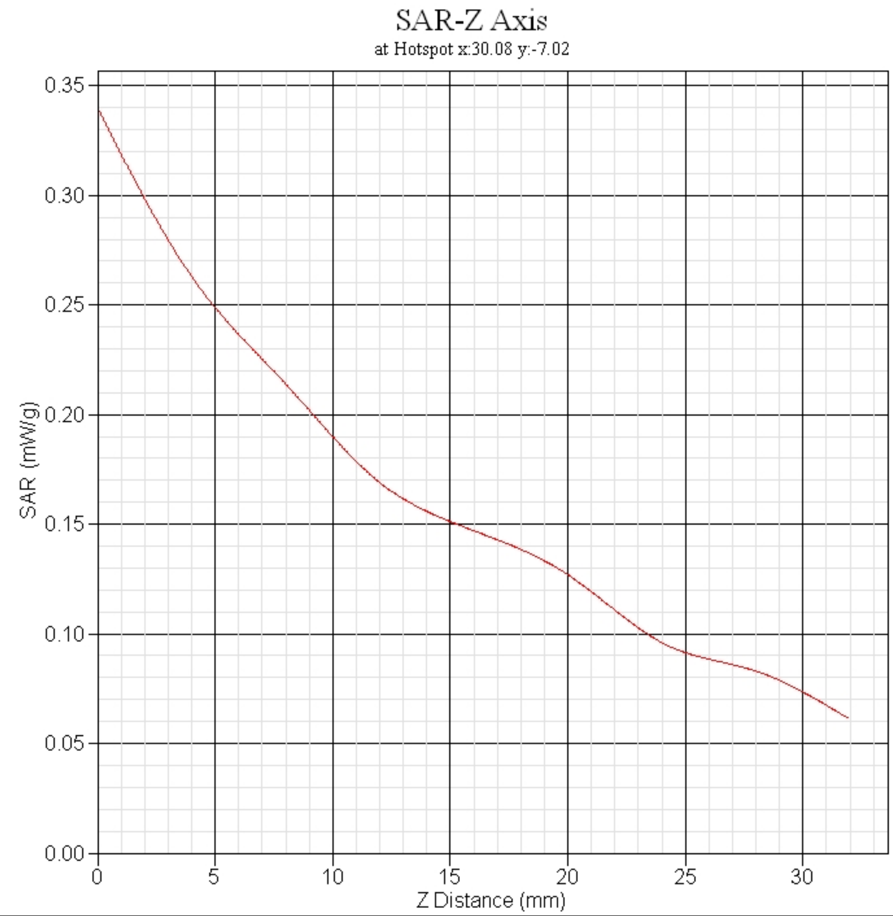
Photograph of the Equipment under Test

ANNEX D- Graph Test Results

GSM850 Left Cheek Low (128ch)

Frequency (MHz)	**824.2**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**2.017**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 μV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

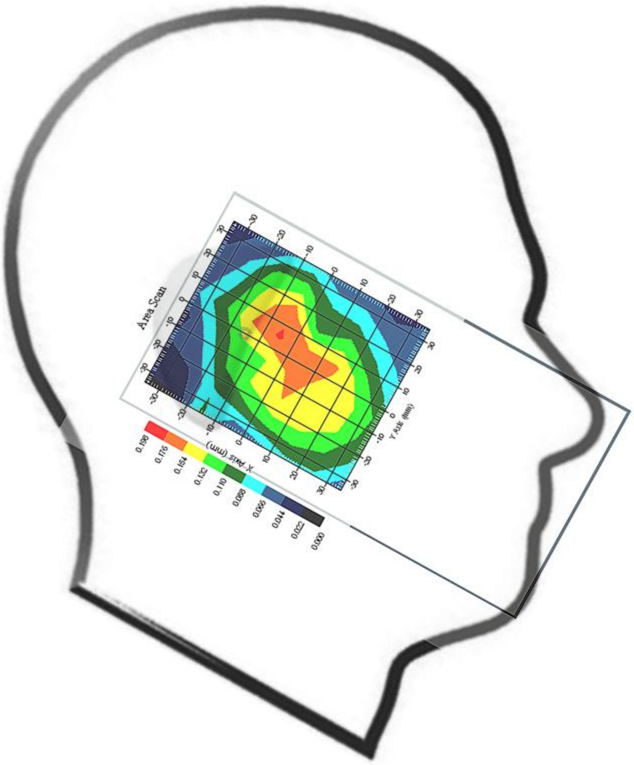


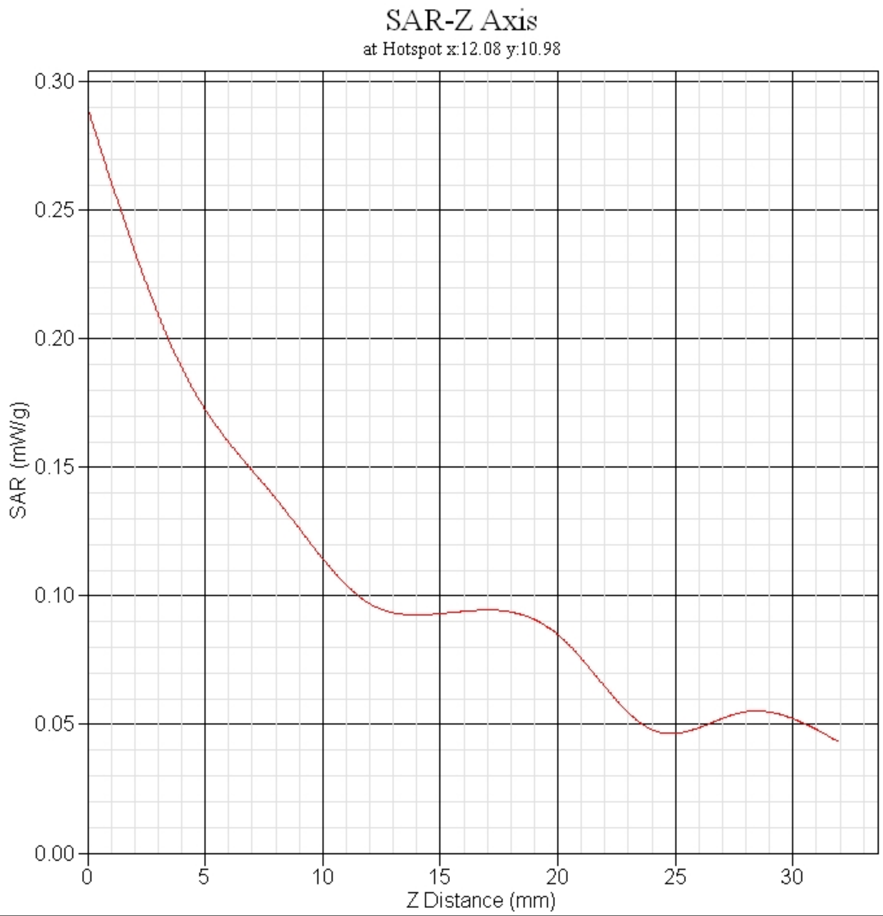


SAR 10g (W/Kg)	0.205
SAR 1g (W/Kg)	0.251

GSM850 Left Cheek Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**2.222**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 μV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

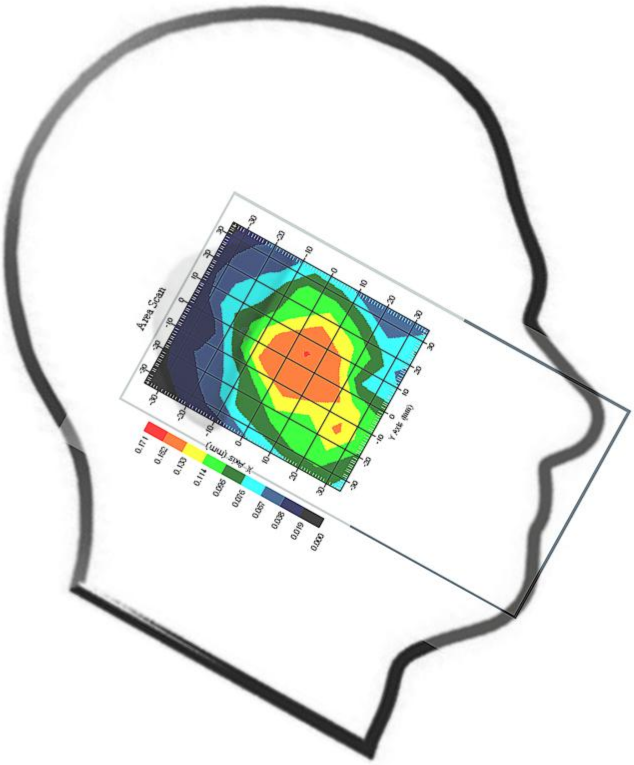


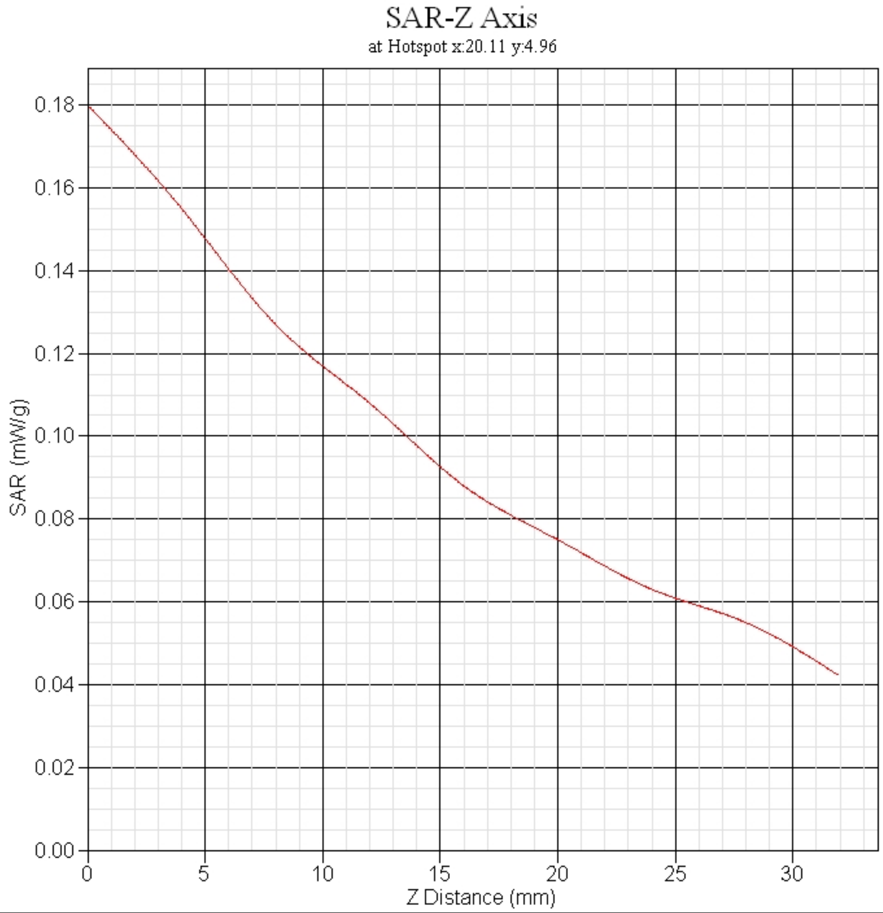


SAR 10g (W/Kg)	**0.147**
SAR 1g (W/Kg)	**0.188**

GSM850 Left Cheek High (128ch)

Frequency (MHz)	**848.8**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**-2.332**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

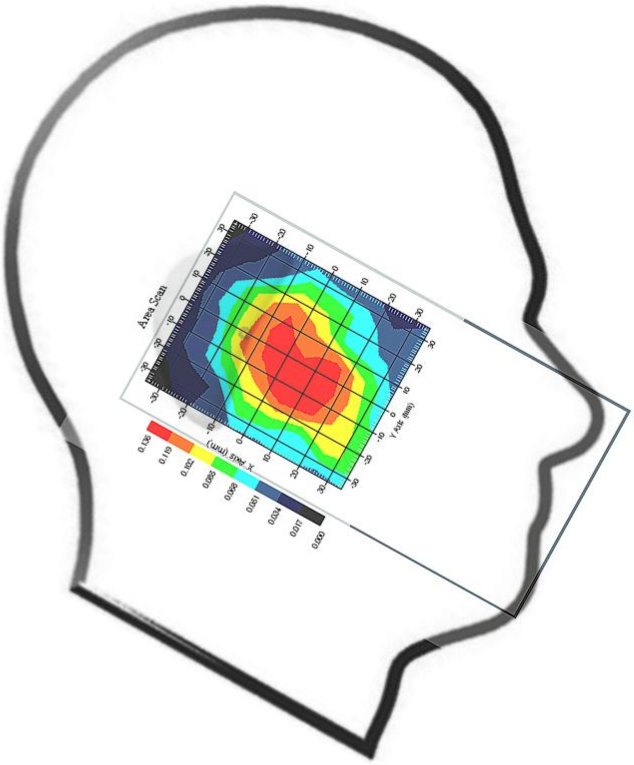


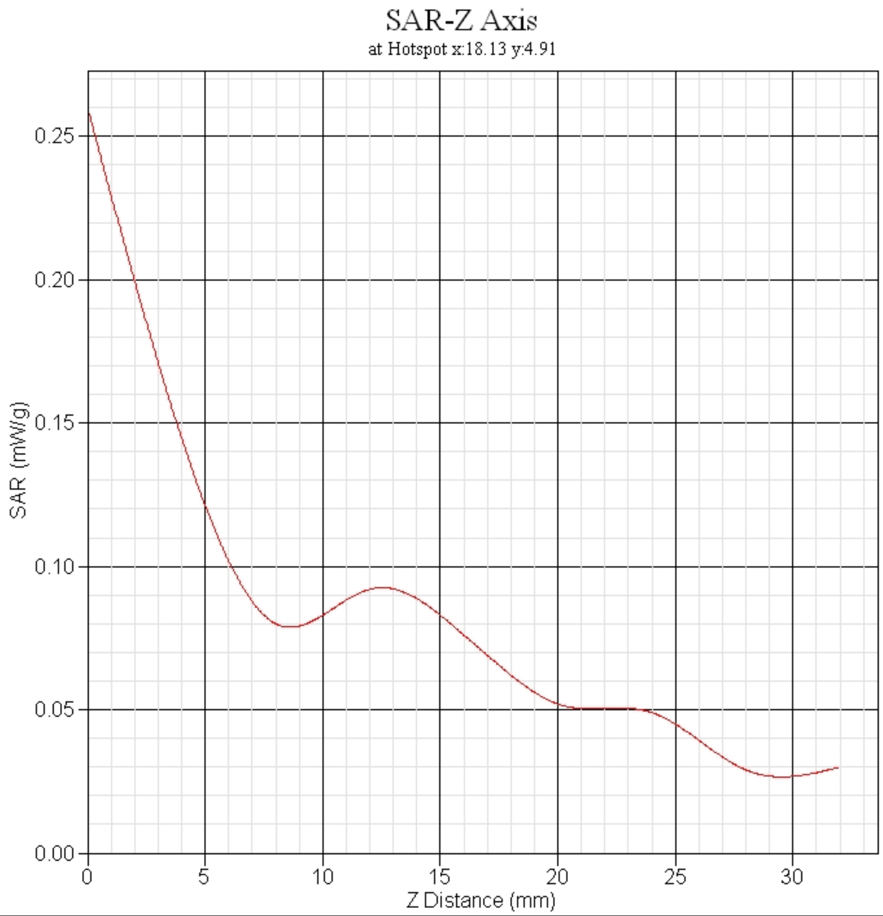


SAR 10g (W/Kg)	**0.101**
SAR 1g (W/Kg)	**0.149**

GSM850 Left Tilt Middle(190ch)

Frequency (MHz)	836.6
Relative permitivity (real part)	41.725
Conductivity (S/m)	0.933
Variation (%)	1.432
Duty Cycle Factor	1
Crest Factor	8.3
Conversion Factor	6.2
Probe Sensitivity	1.20 1.20 1.20 µV/(V/m)2
Temperature	Ambient:22.1℃ Liqiud:20.7℃
Data	2011-8-8

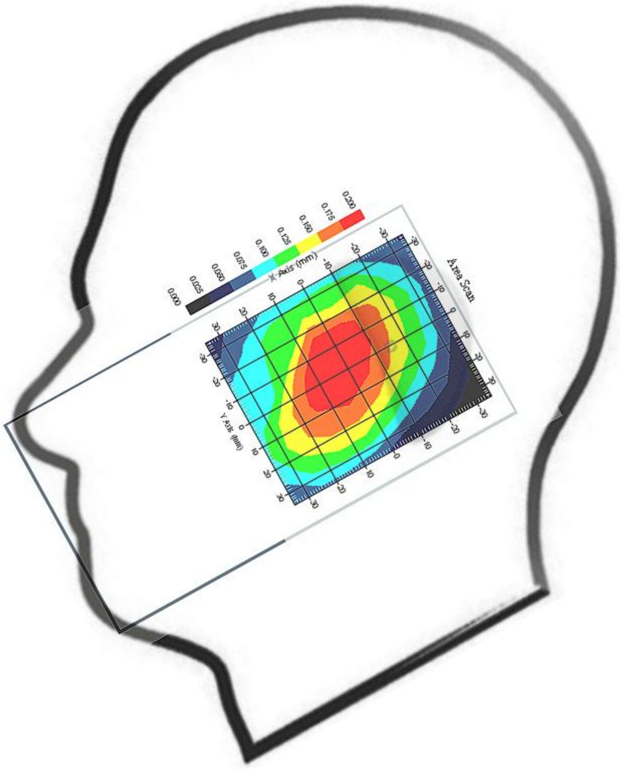


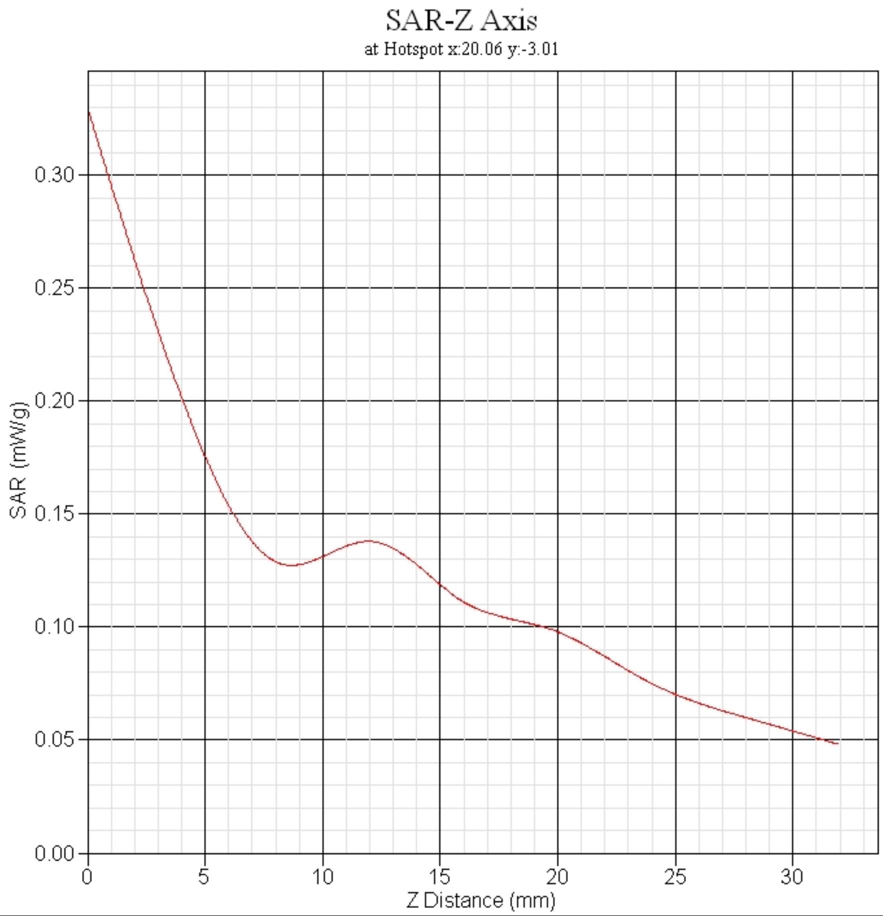


SAR 10g (W/Kg)	**0.094**
SAR 1g (W/Kg)	**0.139**

GSM850 Right Cheek Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**-1.926**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

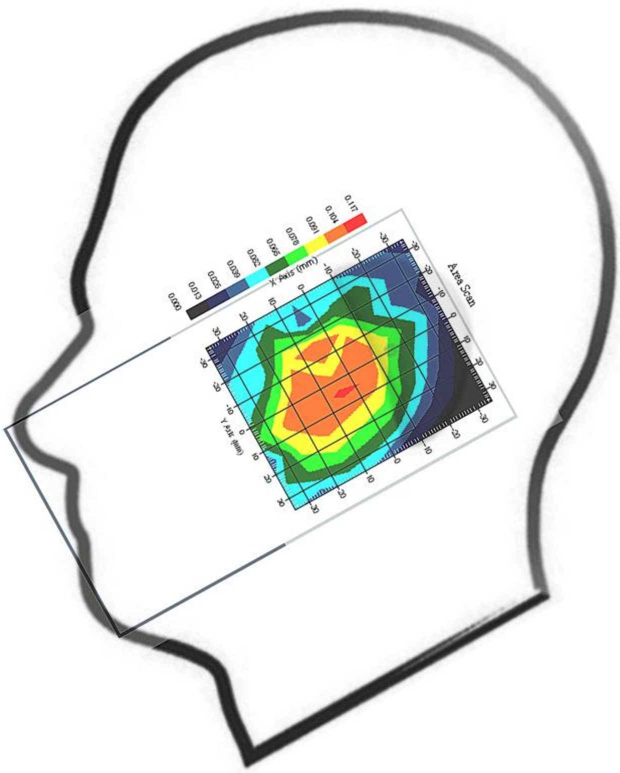


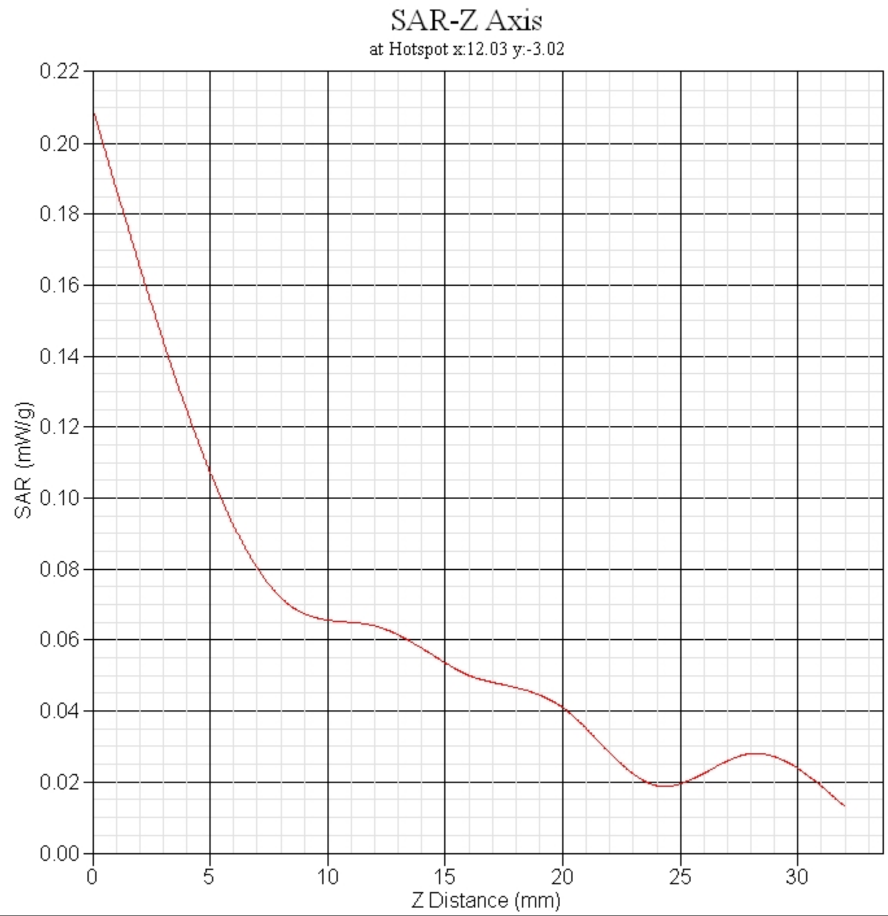


SAR 10g (W/Kg)	**0.137**
SAR 1g (W/Kg)	**0.185**

GSM850 Right Tilt Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**-1.310**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

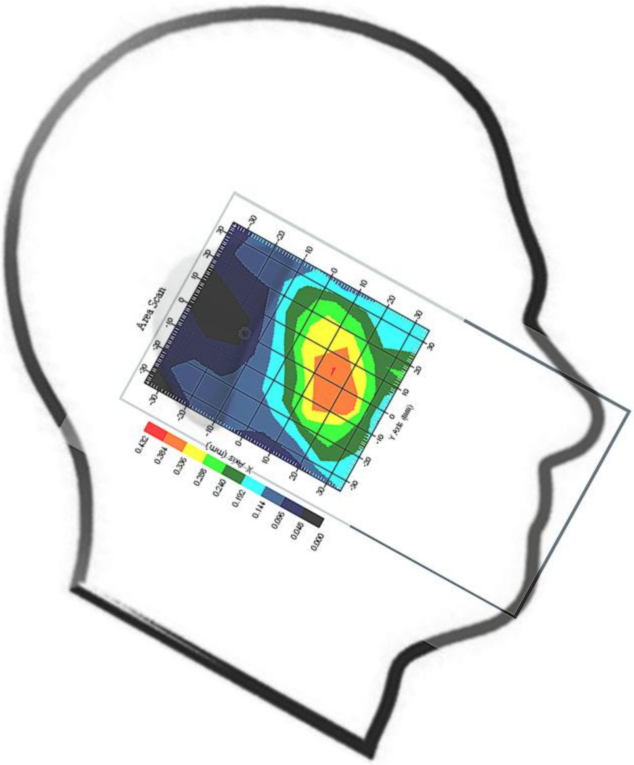


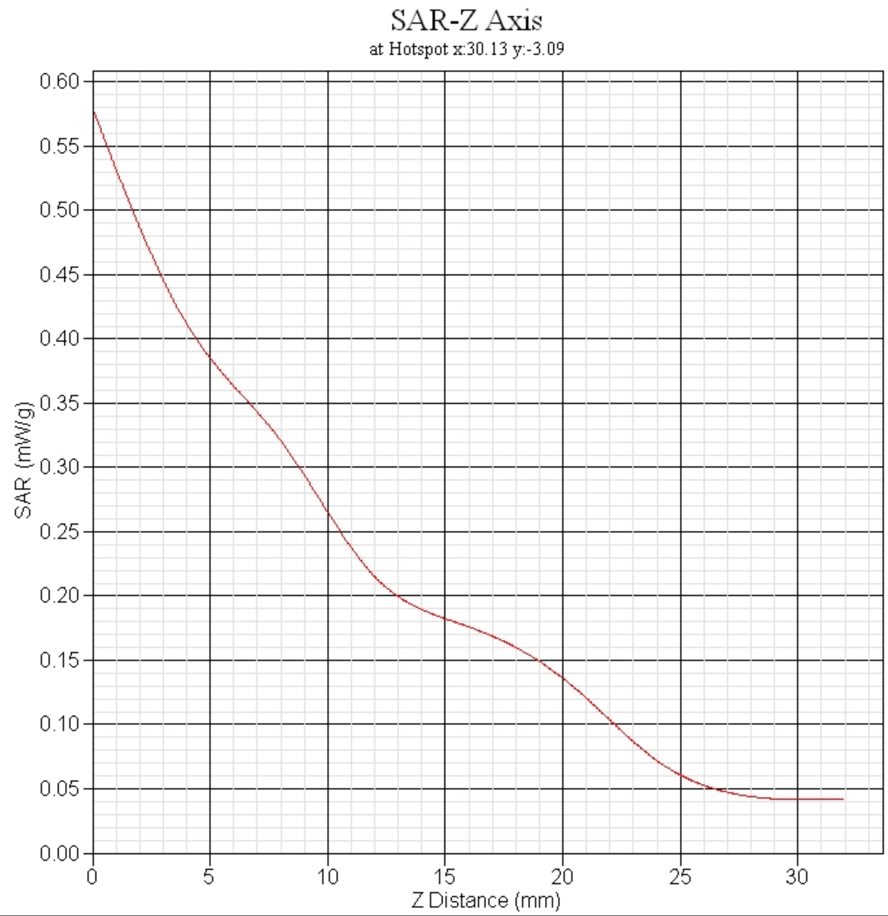


SAR 10g (W/Kg)	**0.069**
SAR 1g (W/Kg)	**0.110**

GSM1900 Left Cheek Low (512ch)

Frequency (MHz)	1850.2
Relative permitivity (real part)	40.365
Conductivity (S/m)	1.428
Variation (%)	-0.466
Duty Cycle Factor	1
Crest Factor	8.3
Conversion Factor	4.9
Probe Sensitivity	1.20 1.20 1.20 µV/(V/m)2
Temperature	Ambient:22.1℃ Liqiud:20.7℃
Data	2011-8-8

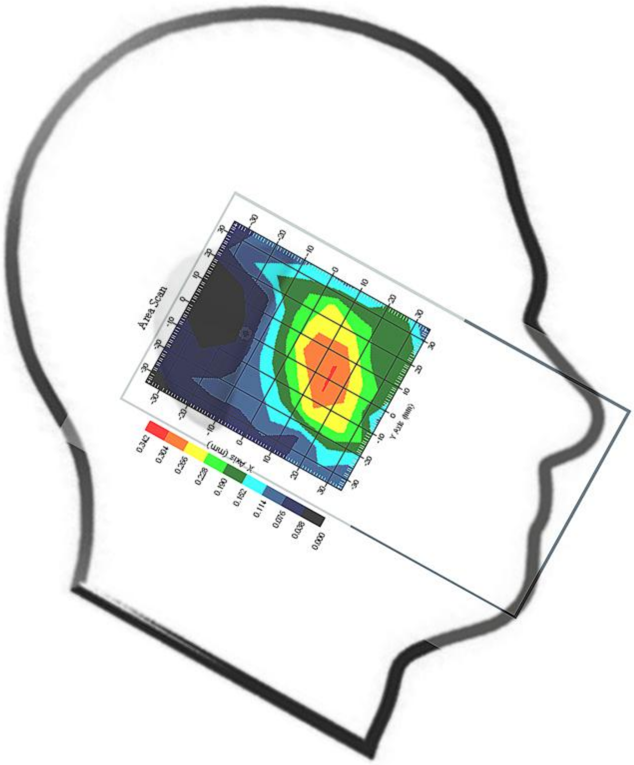


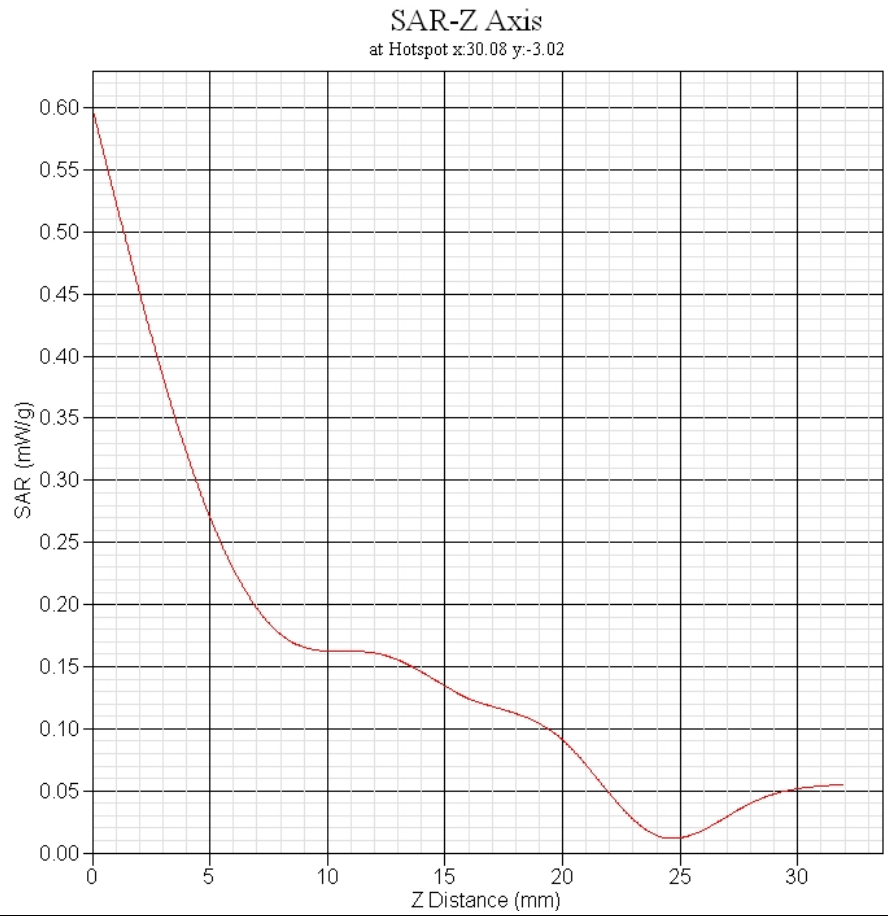


SAR 10g (W/Kg)	**0.204**
SAR 1g (W/Kg)	**0.349**

GSM1900 Left Cheek Middle (661ch)

Frequency (MHz)	1880
Relative permitivity (real part)	40.365
Conductivity (S/m)	1.428
Variation (%)	0.584
Duty Cycle Factor	1
Crest Factor	8.3
Conversion Factor	4.9
Probe Sensitivity	1.20 1.20 1.20 µV/(V/m)2
Temperature	Ambient:22.1℃ Liqiud:20.7℃
Data	2011-8-8

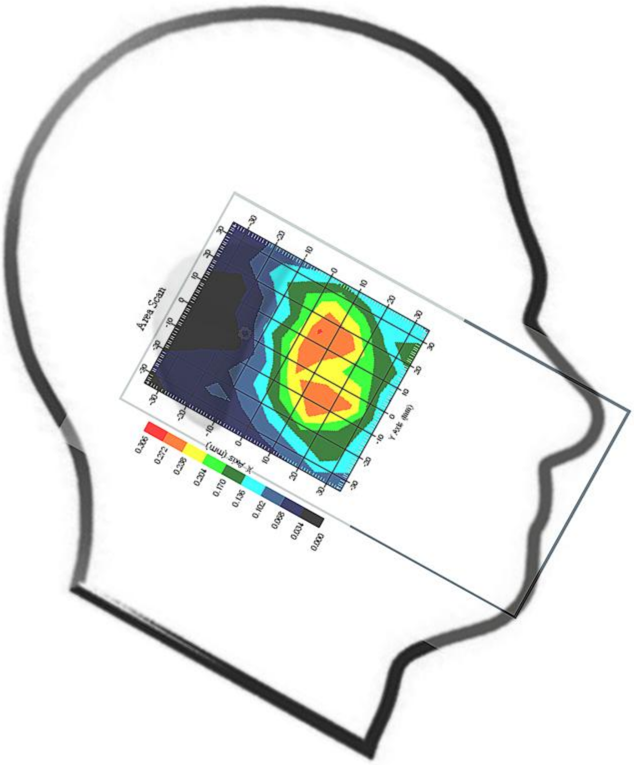


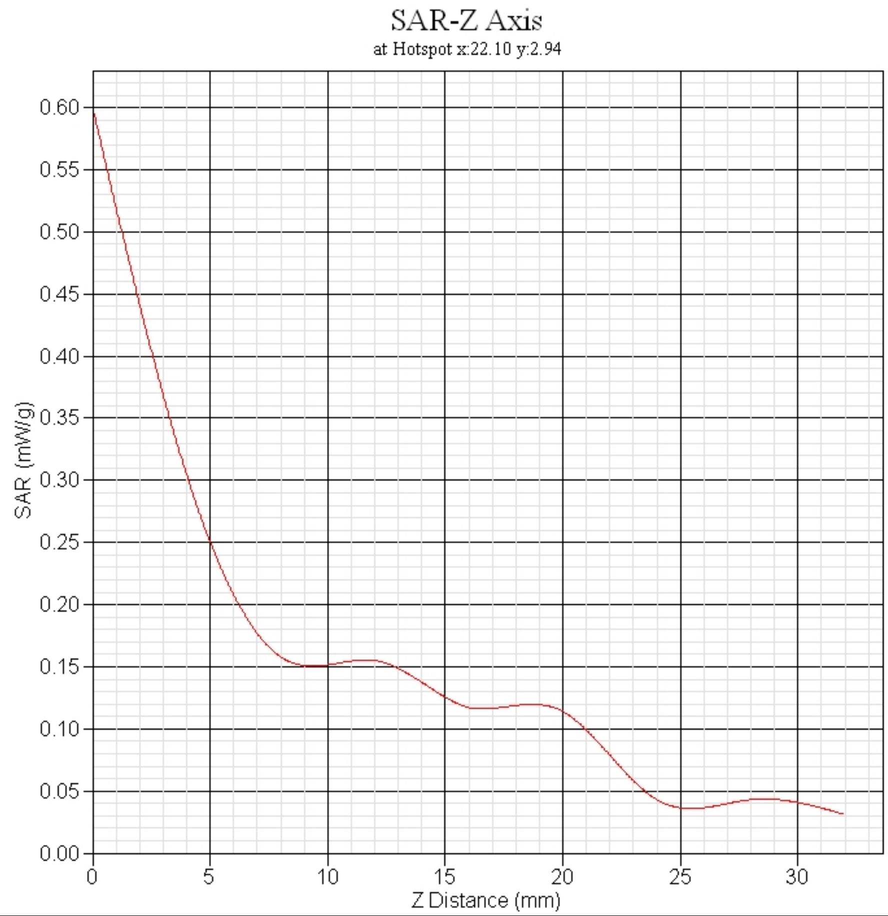


SAR 10g (W/Kg)	**0.177**
SAR 1g (W/Kg)	**0.306**

GSM1900 Right Cheek High (810ch)

Frequency (MHz)	**1909.8**
Relative permitivity (real part)	**40.365**
Conductivity (S/m)	**1.428**
Variation (%)	**-1.247**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.9**
Probe Sensitivity	**1.20 1.20 1.20 μV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

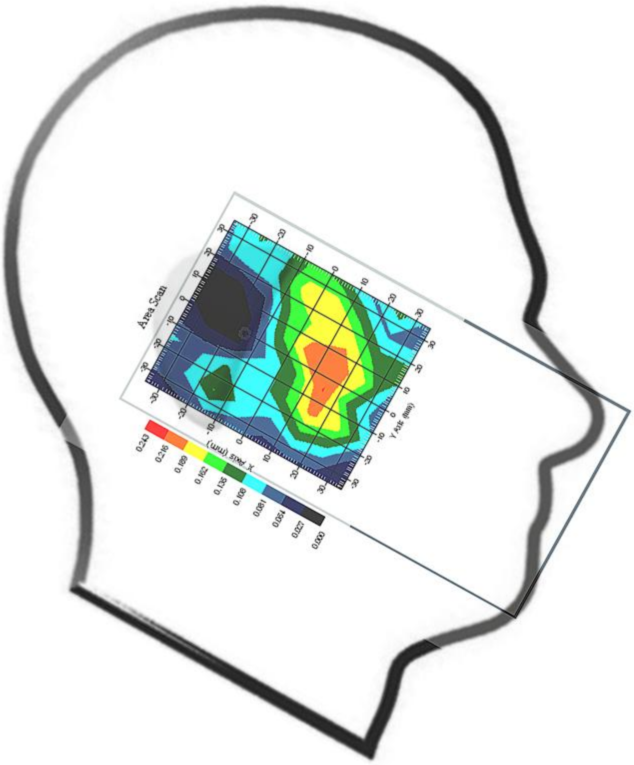


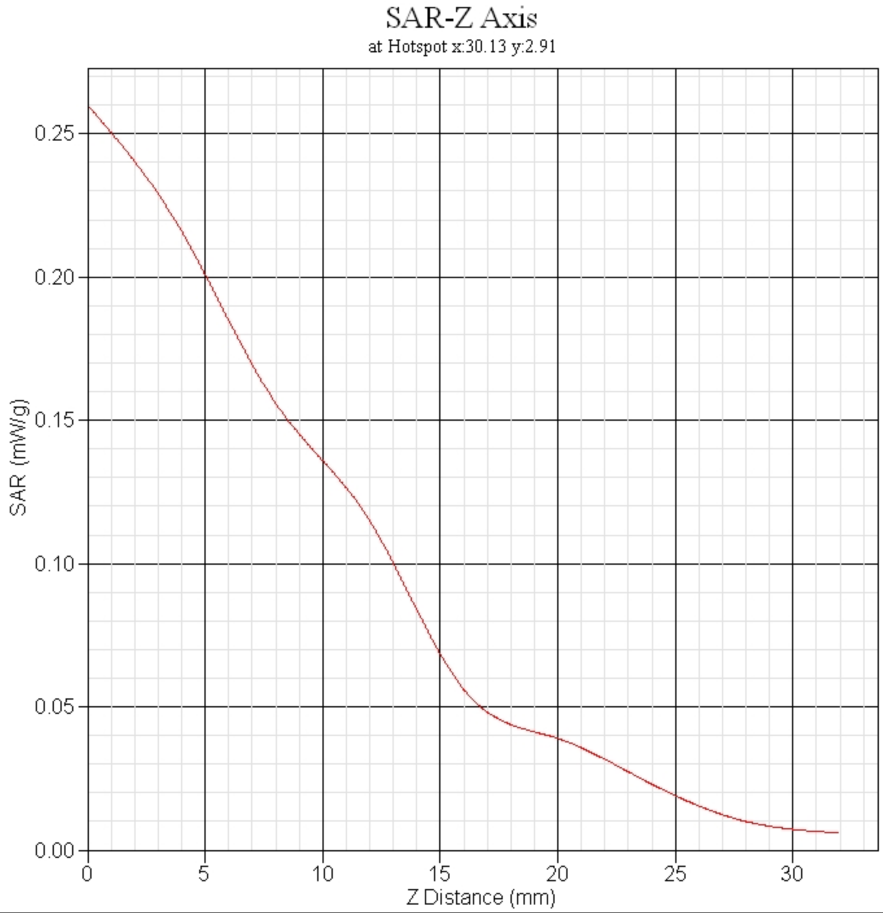


SAR 10g (W/Kg)	**0.161**
SAR 1g (W/Kg)	**0.272**

GSM1900 Left Tilt Middle(661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**40.365**
Conductivity (S/m)	**1.428**
Variation (%)	**1.134**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.9**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

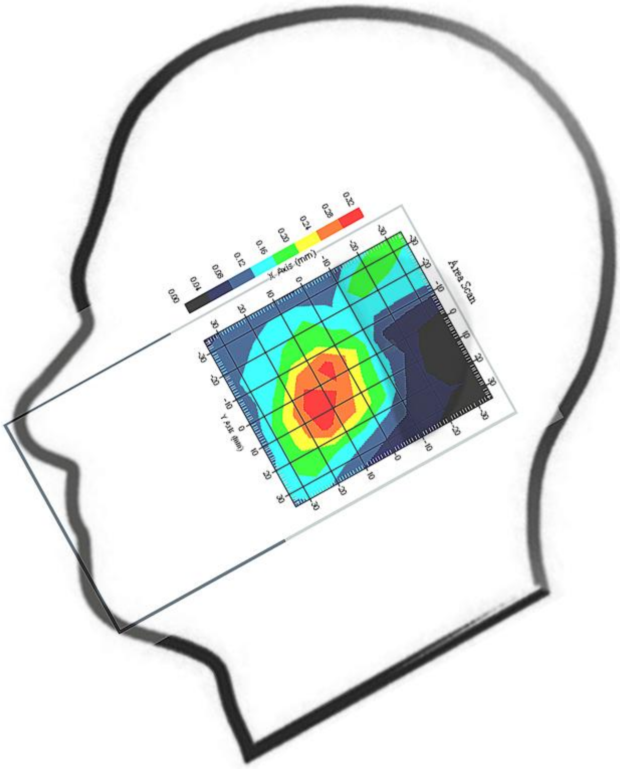


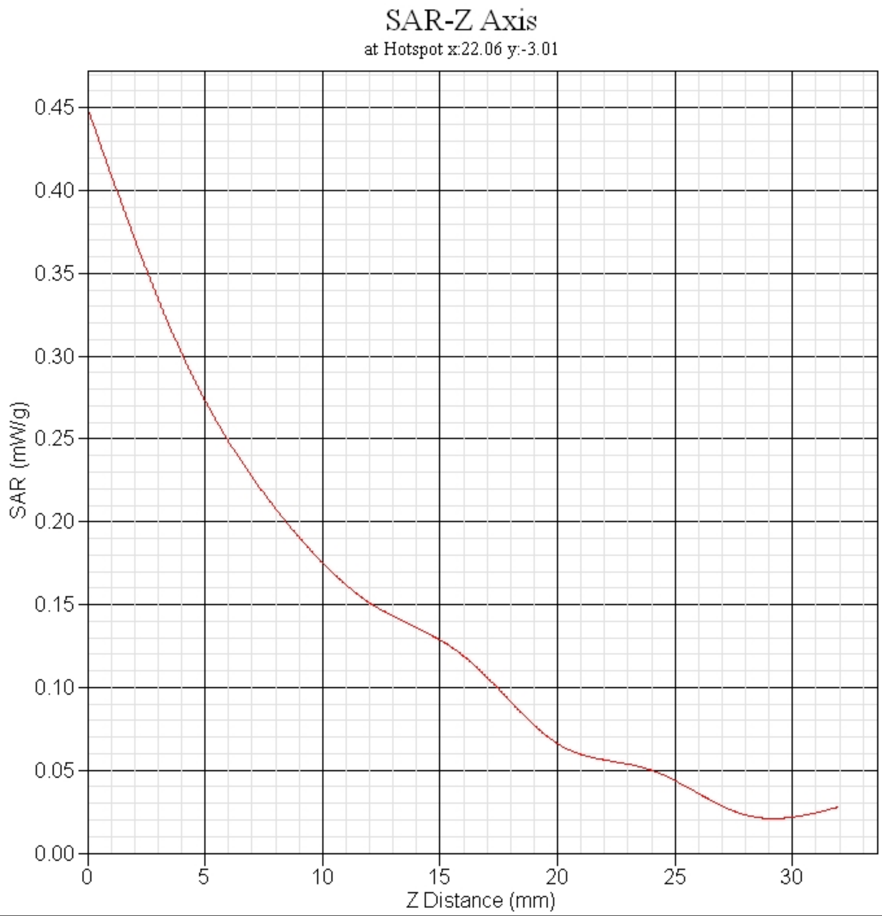


SAR 10g (W/Kg)	**0.131**
SAR 1g (W/Kg)	**0.209**

GSM1900 Right Cheek Middle(661ch)

Frequency (MHz)	1880
Relative permitivity (real part)	40.365
Conductivity (S/m)	1.428
Variation (%)	2.596
Duty Cycle Factor	1
Crest Factor	8.3
Conversion Factor	4.9
Probe Sensitivity	1.20 1.20 1.20 µV/(V/m)2
Temperature	Ambient:22.1℃ Liqiud:20.7℃
Data	2011-8-8

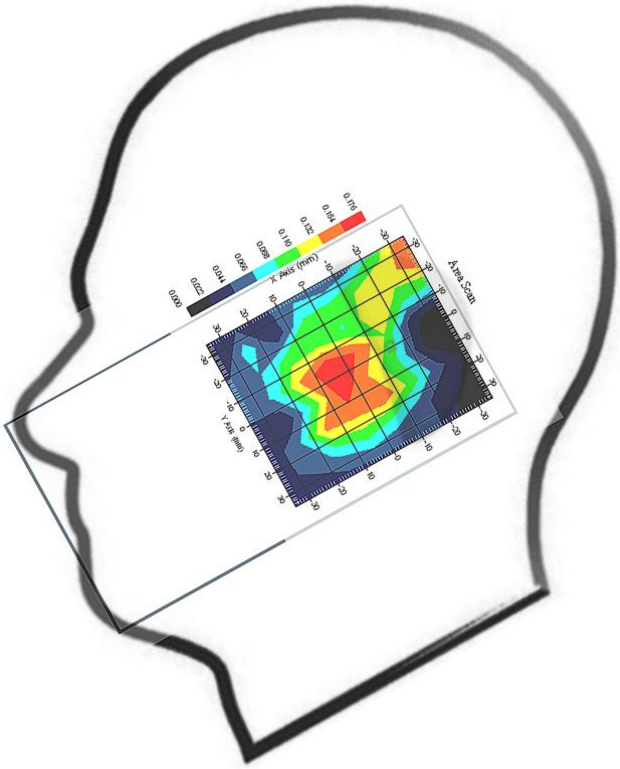


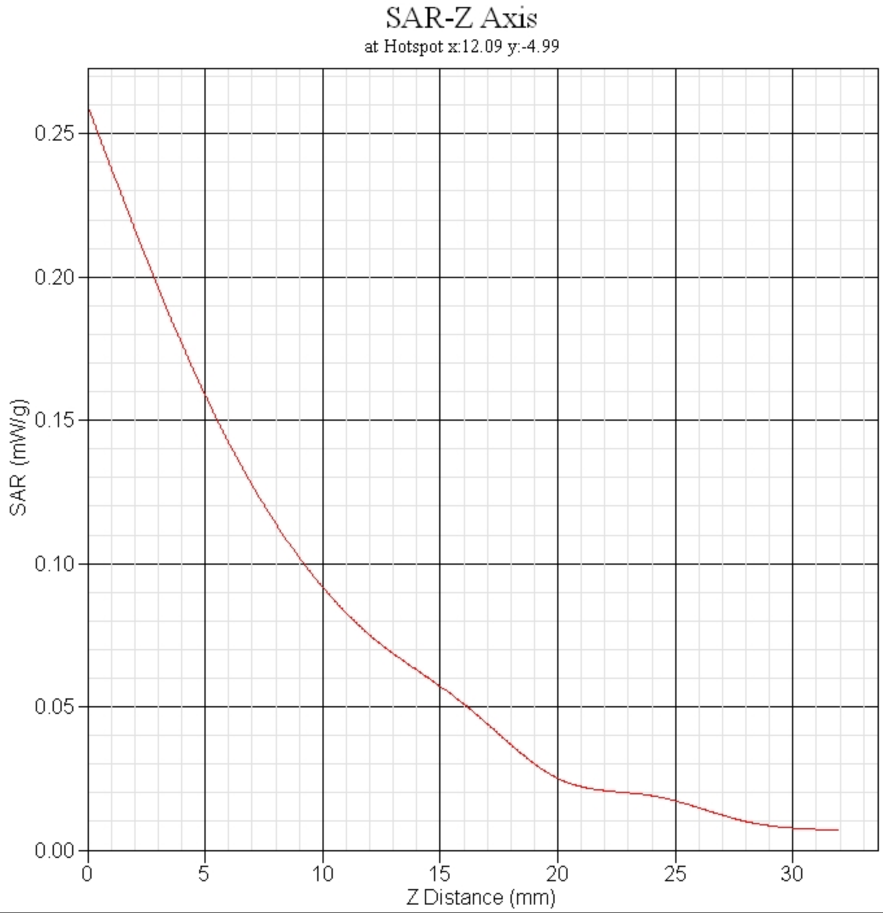


SAR 10g (W/Kg)	**0.161**
SAR 1g (W/Kg)	**0.269**

GSM1900 Right Tilt Middle(661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**40.365**
Conductivity (S/m)	**1.428**
Variation (%)	**3.097**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.9**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

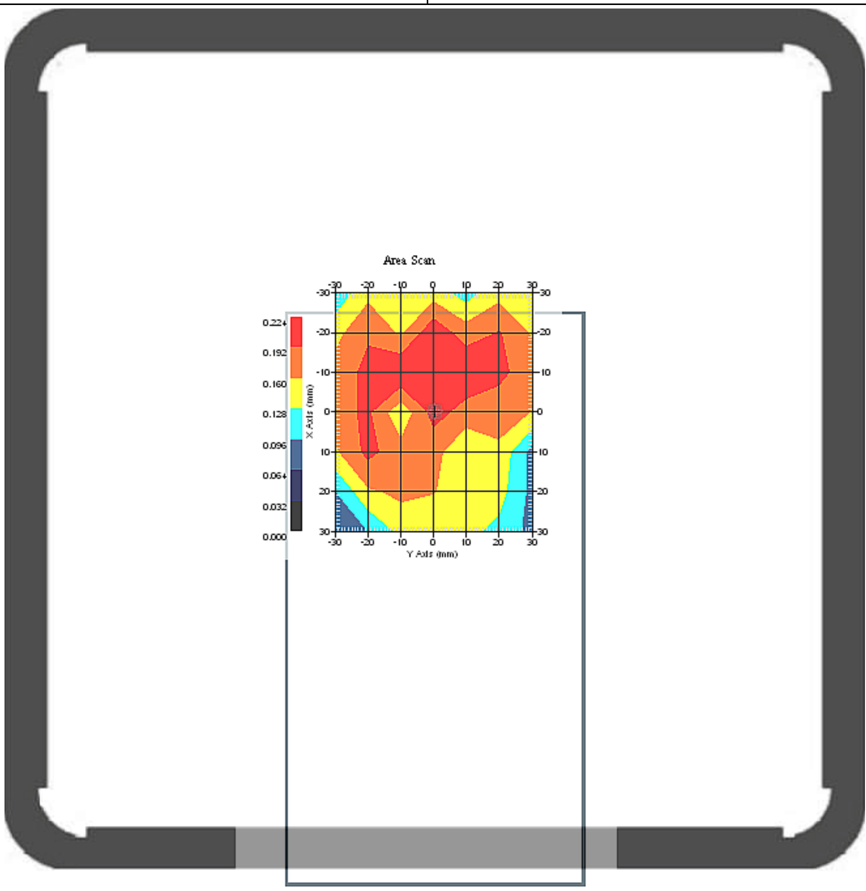


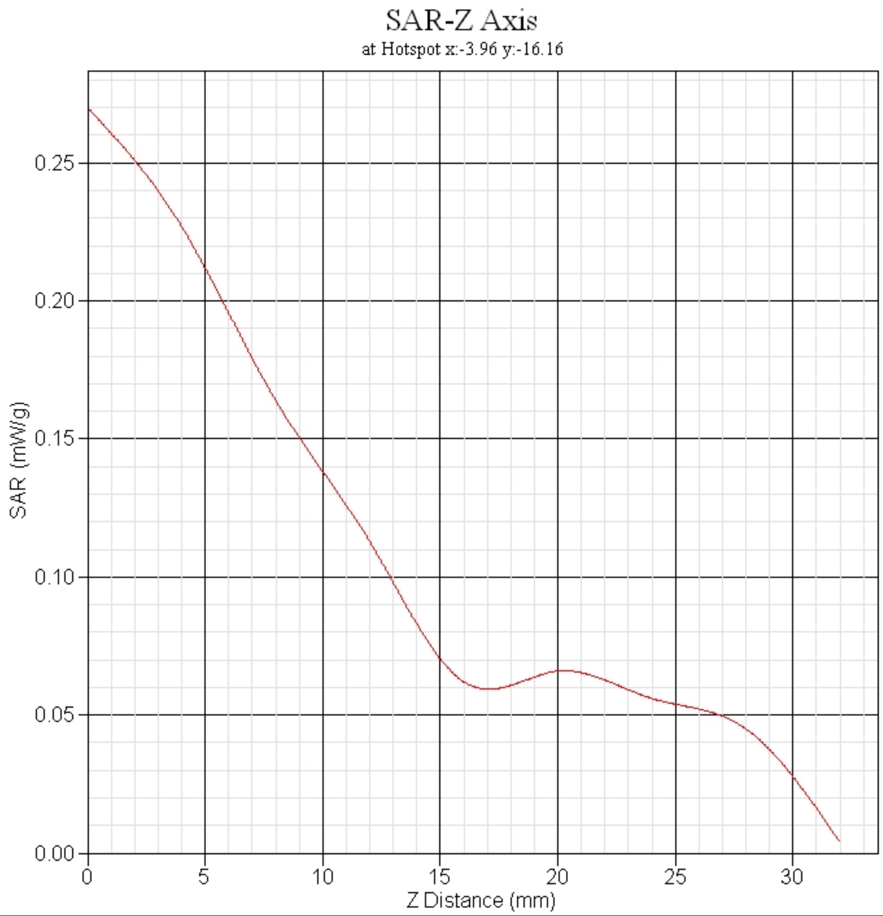


SAR 10g (W/Kg)	**0.091**
SAR 1g (W/Kg)	**0.165**

GSM850 Frontside Towards Phantom Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**-1.721**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 μV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

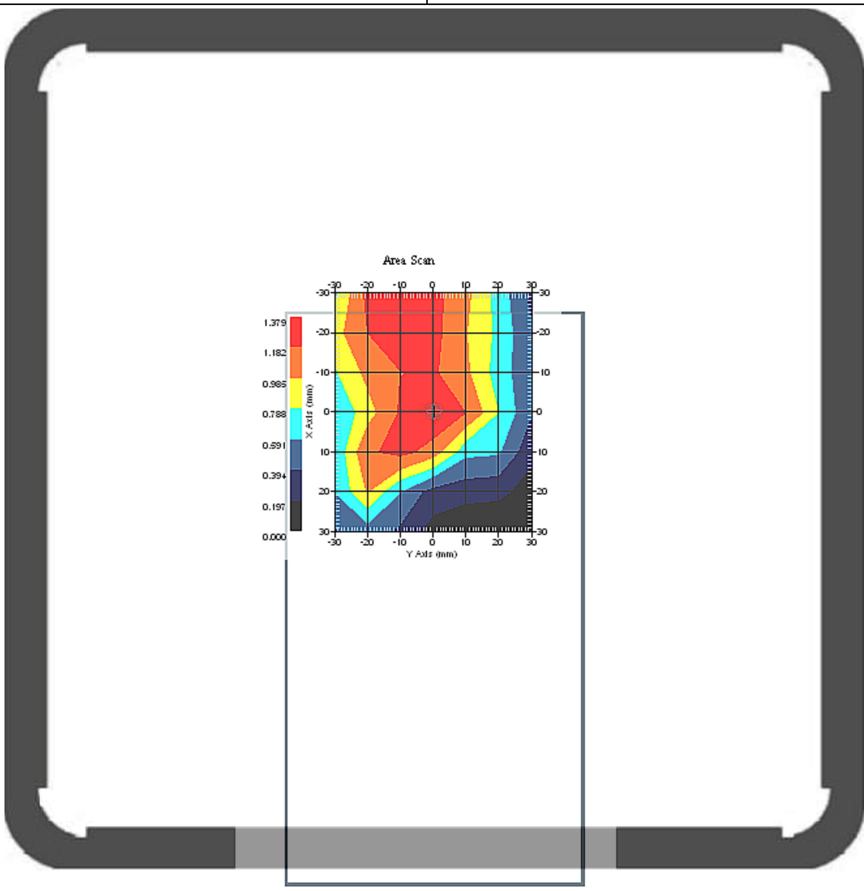


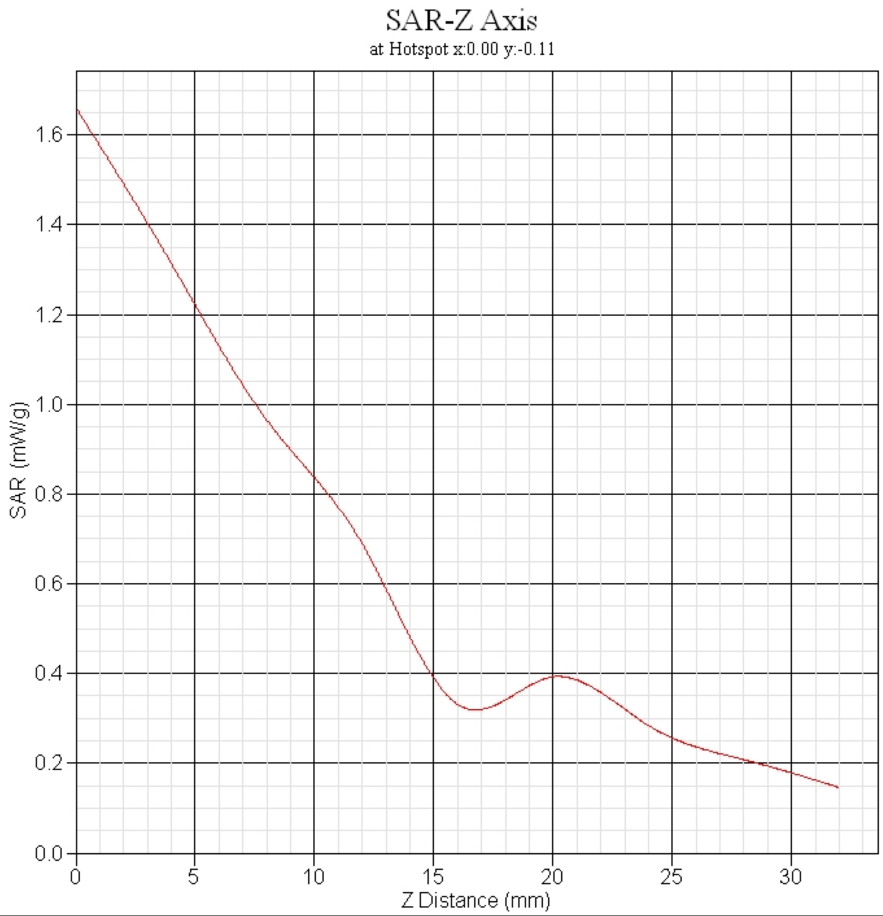


SAR 10g (W/Kg)	**0.167**
SAR 1g (W/Kg)	**0.219**

GSM850 Backside Towards Phantom Low (128ch)

Frequency (MHz)	**824.2**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**-1.721**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

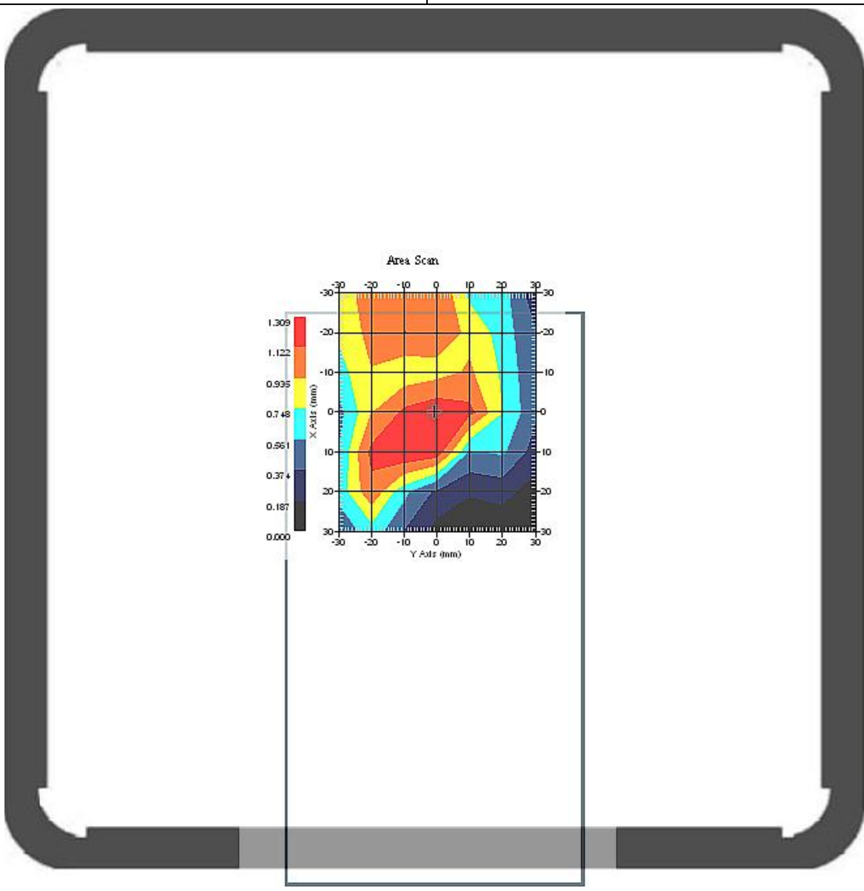


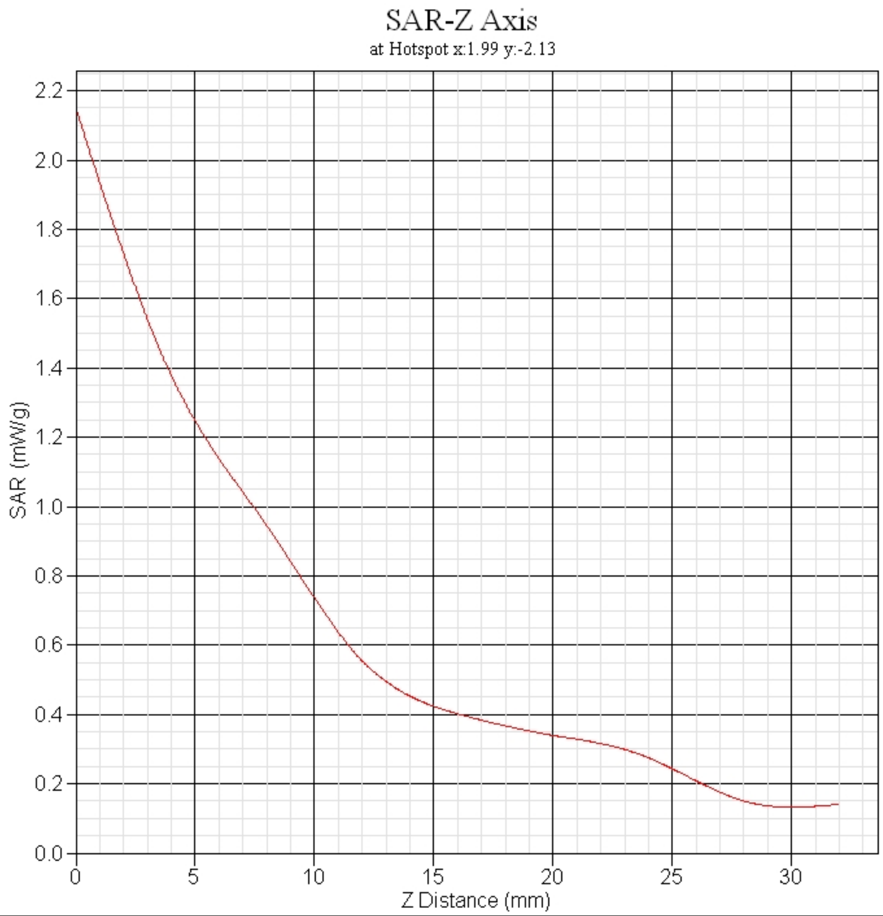


SAR 10g (W/Kg)	**0.825**
SAR 1g (W/Kg)	**1.068**

GSM850 Backside Towards Phantom Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**3.190**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 μV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

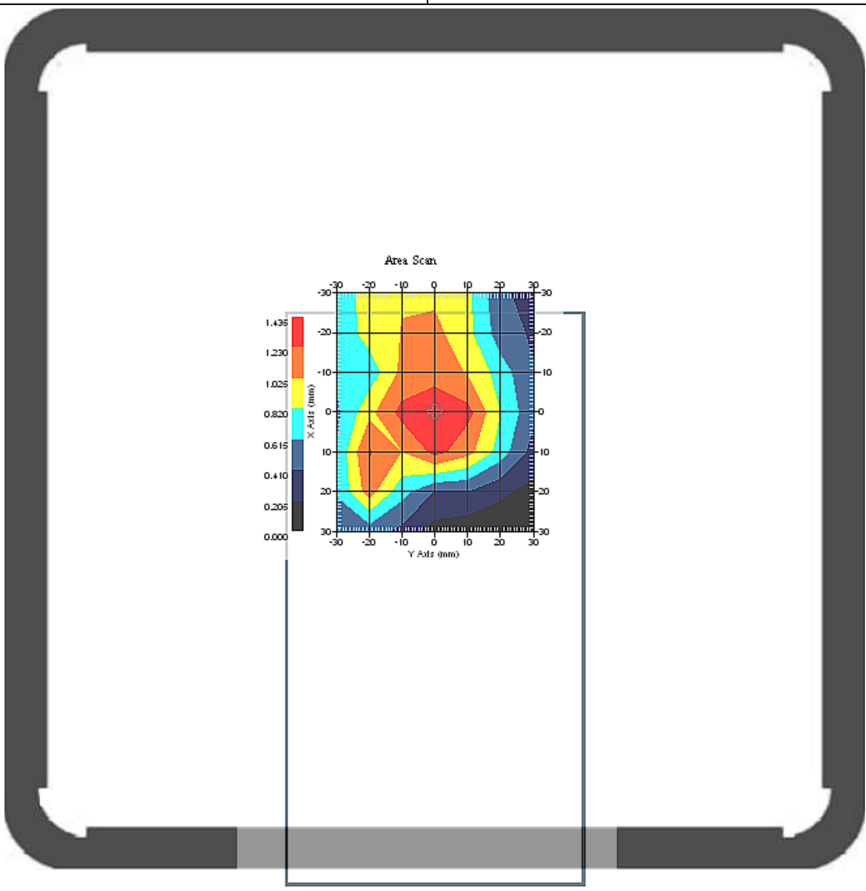


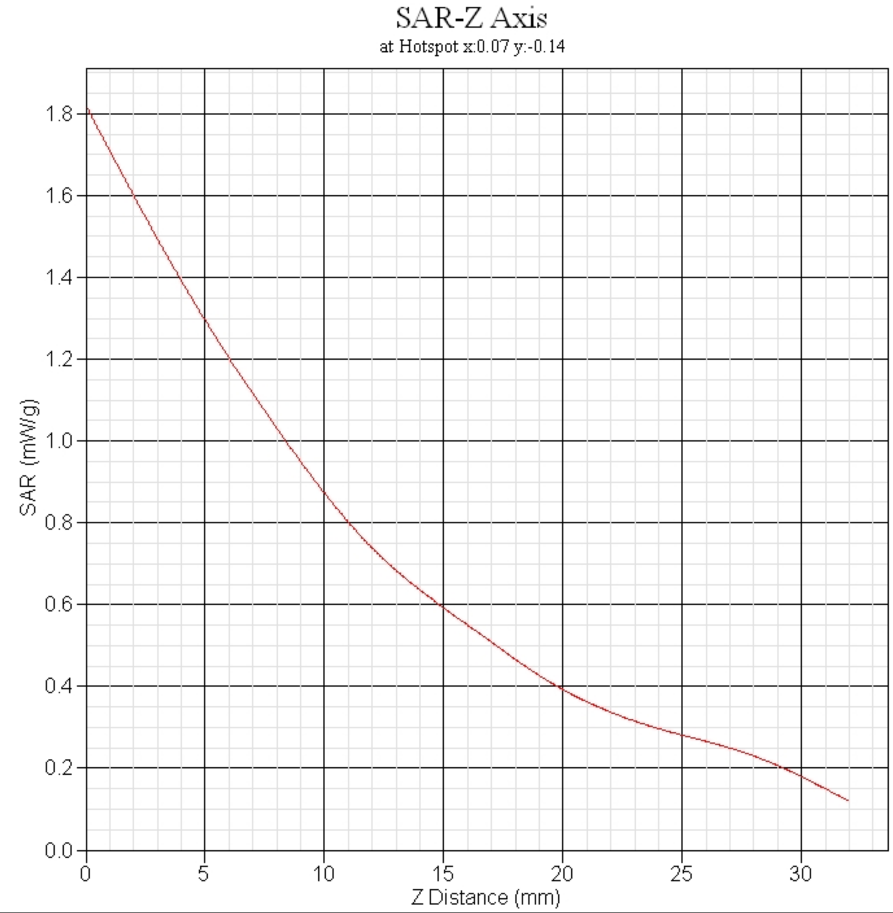


SAR 10g (W/Kg)	**0.745**
SAR 1g (W/Kg)	**1.185**

GSM850 Backside Towards Phantom High (251ch)

Frequency (MHz)	**848.8**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**-0.912**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃** **Liqiud:20.7℃**
Data	**2011-8-8**

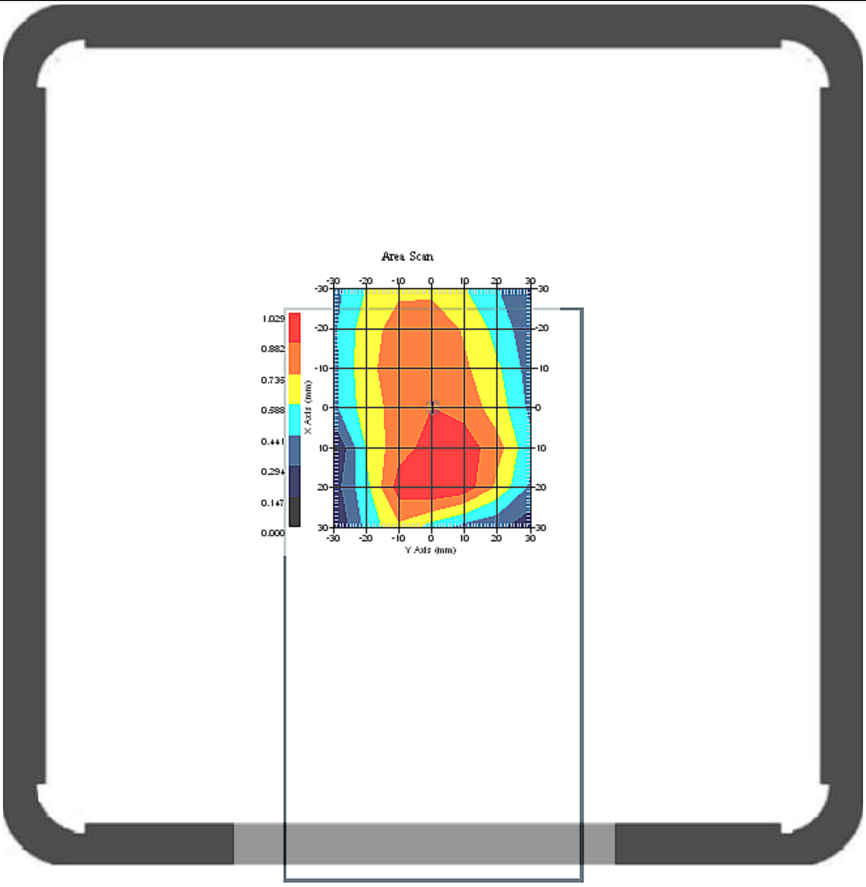


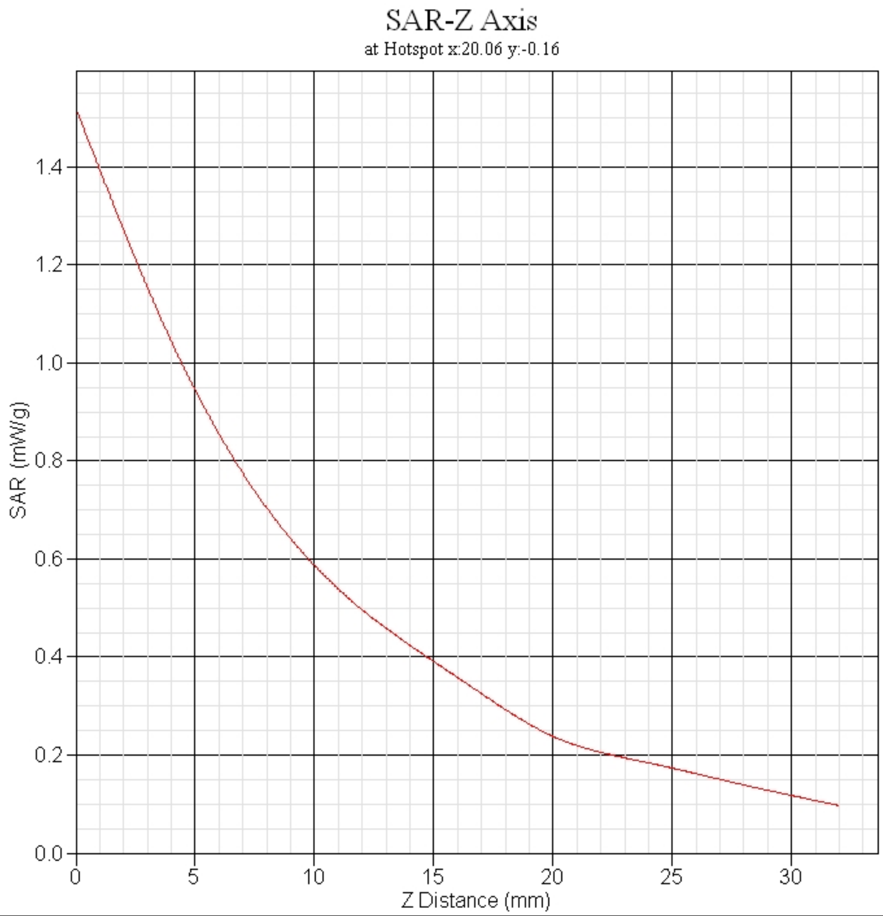


SAR 10g (W/Kg)	**0.523**
SAR 1g (W/Kg)	**0.995**

GPRS850 Backside Towards Phantom Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**2.420**
Duty Cycle Factor	**1**
Crest Factor	**4**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

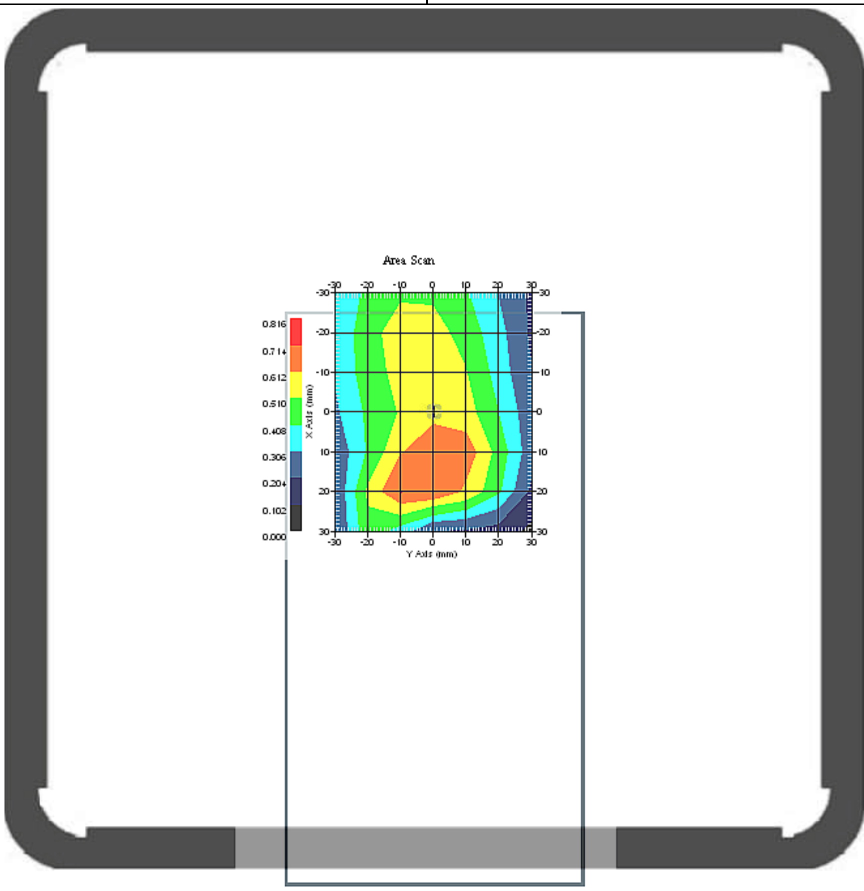


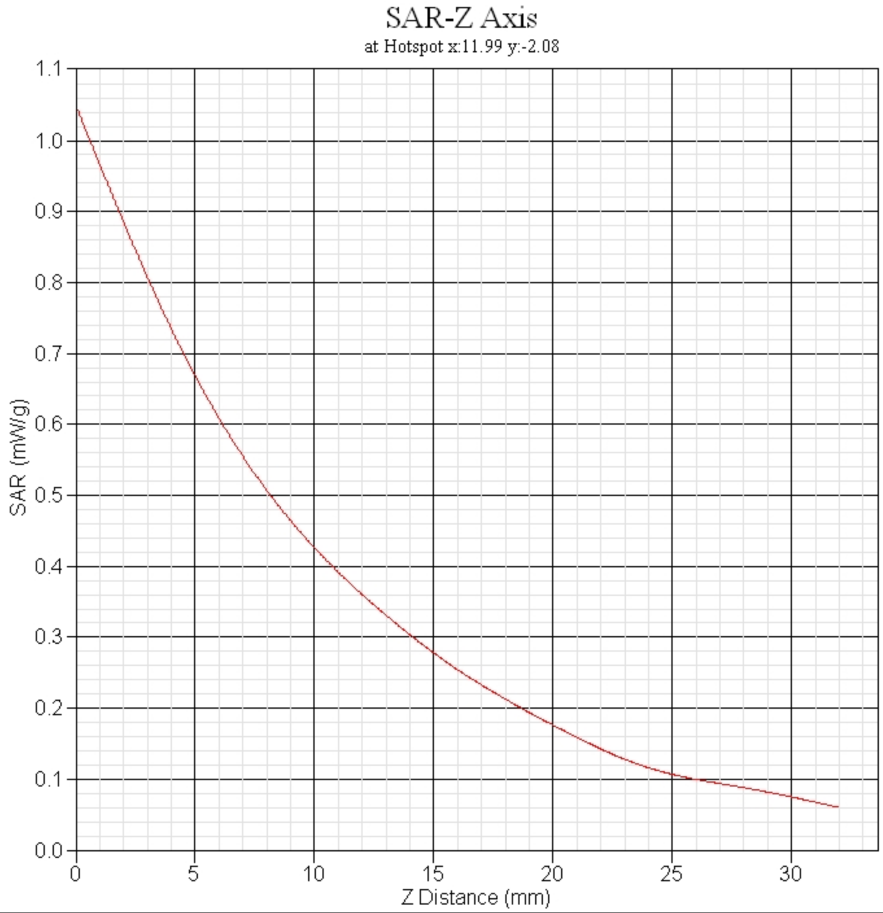


SAR 10g (W/Kg)	**0.540**
SAR 1g (W/Kg)	**0.911**

EDGE850 Backside Towards Phantom Middle (190ch)

Frequency (MHz)	**836.6**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**-0.682**
Duty Cycle Factor	**1**
Crest Factor	**4**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

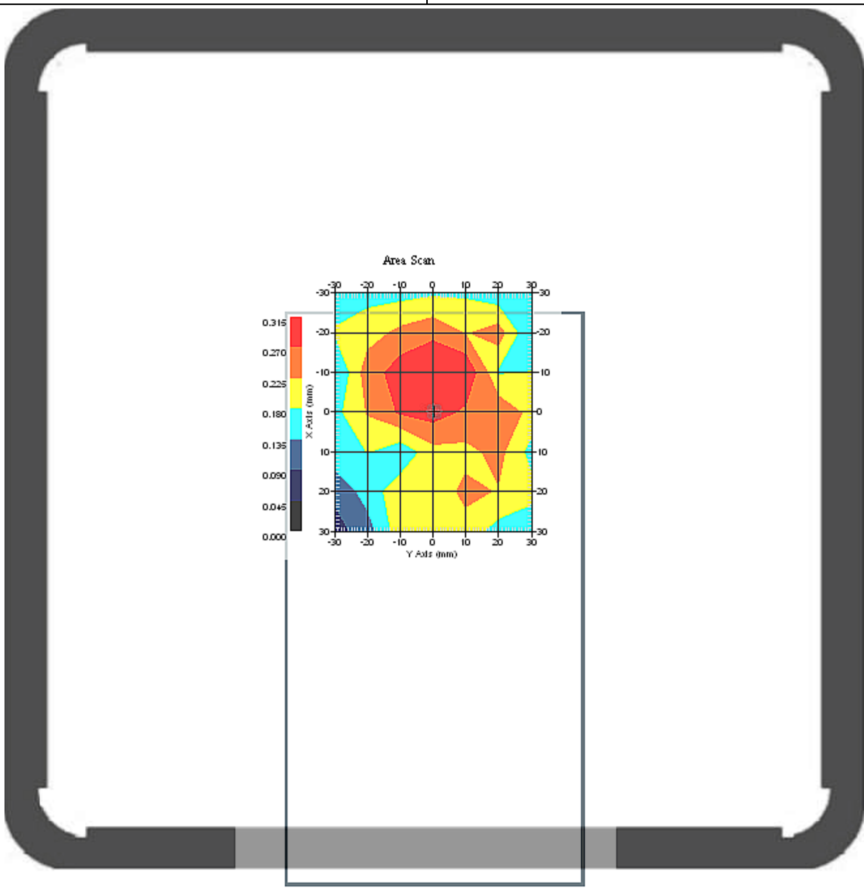


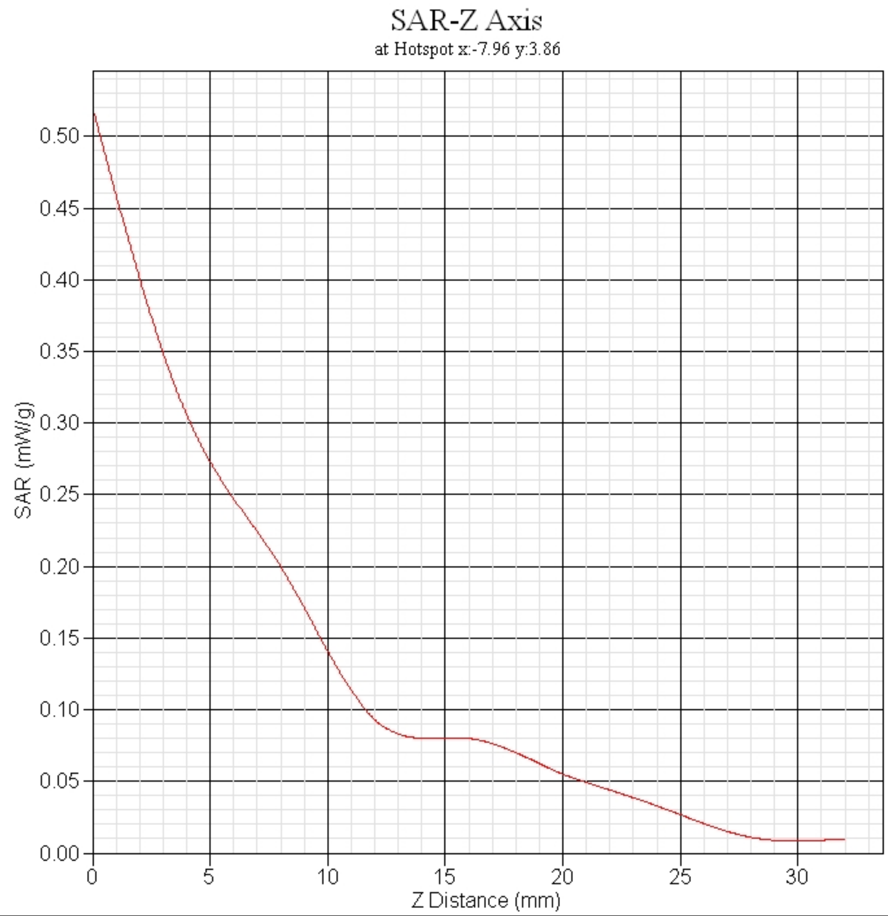


SAR 10g (W/Kg)	**0.360**
SAR 1g (W/Kg)	**0.644**

GSM1900 Frontside Towards Phantom Middle (661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**2.618**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

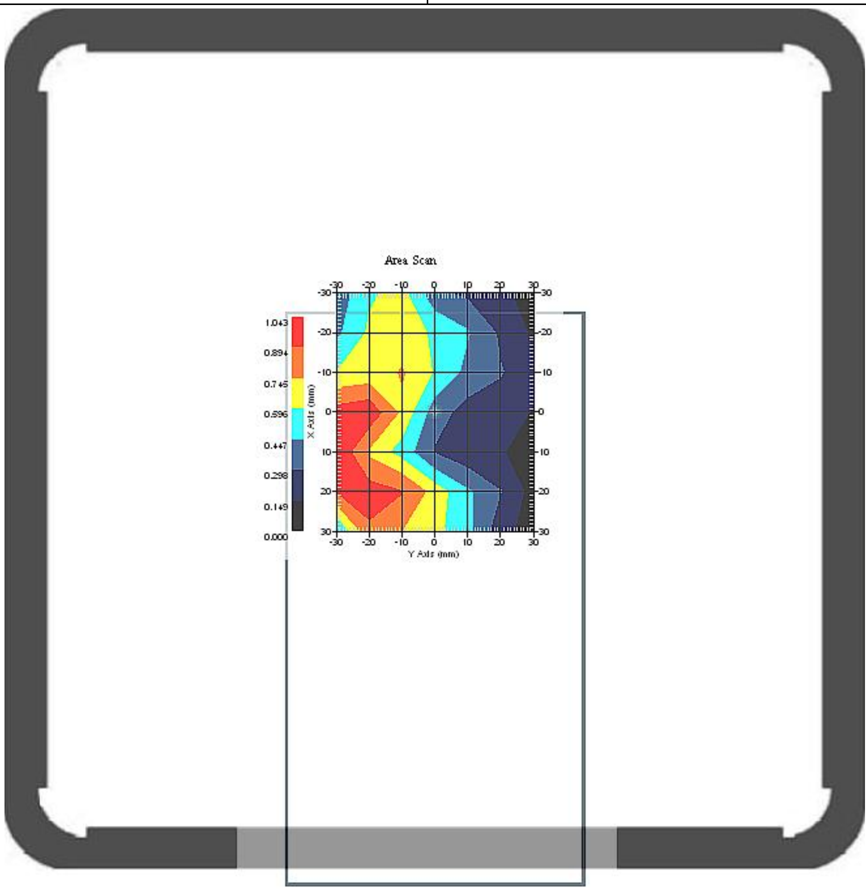


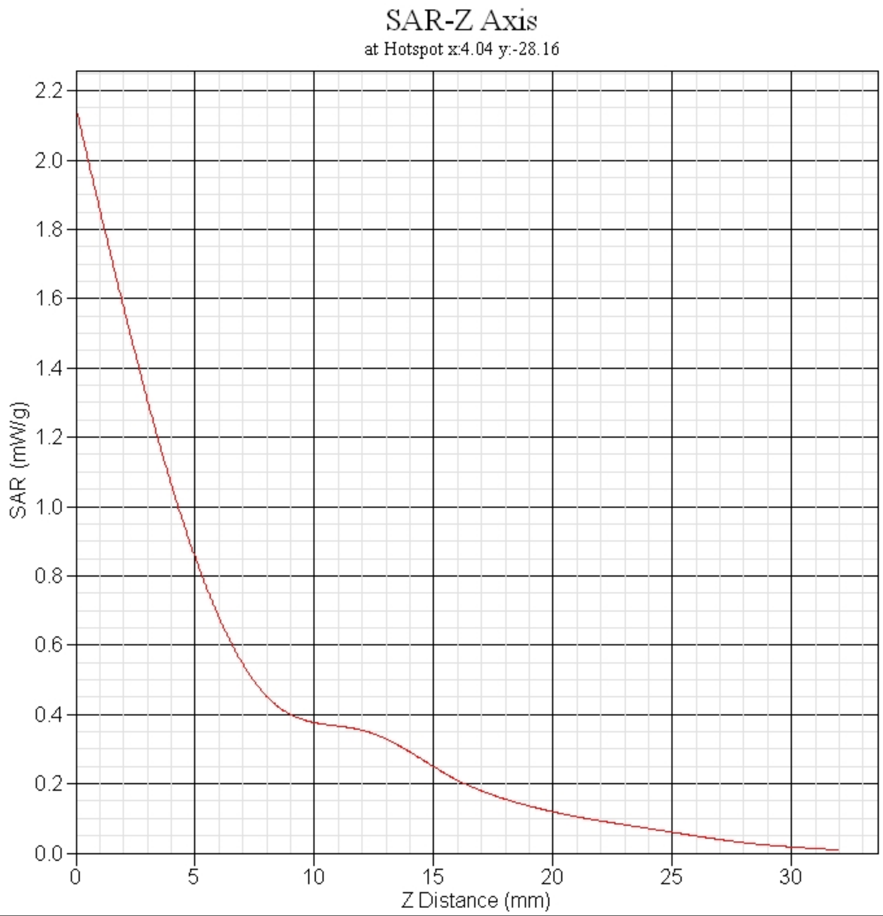


SAR 10g (W/Kg)	**0.173**
SAR 1g (W/Kg)	**0.303**

GSM1900 Backside Towards Phantom Low (512ch)

Frequency (MHz)	**1850.2**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**3.760**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

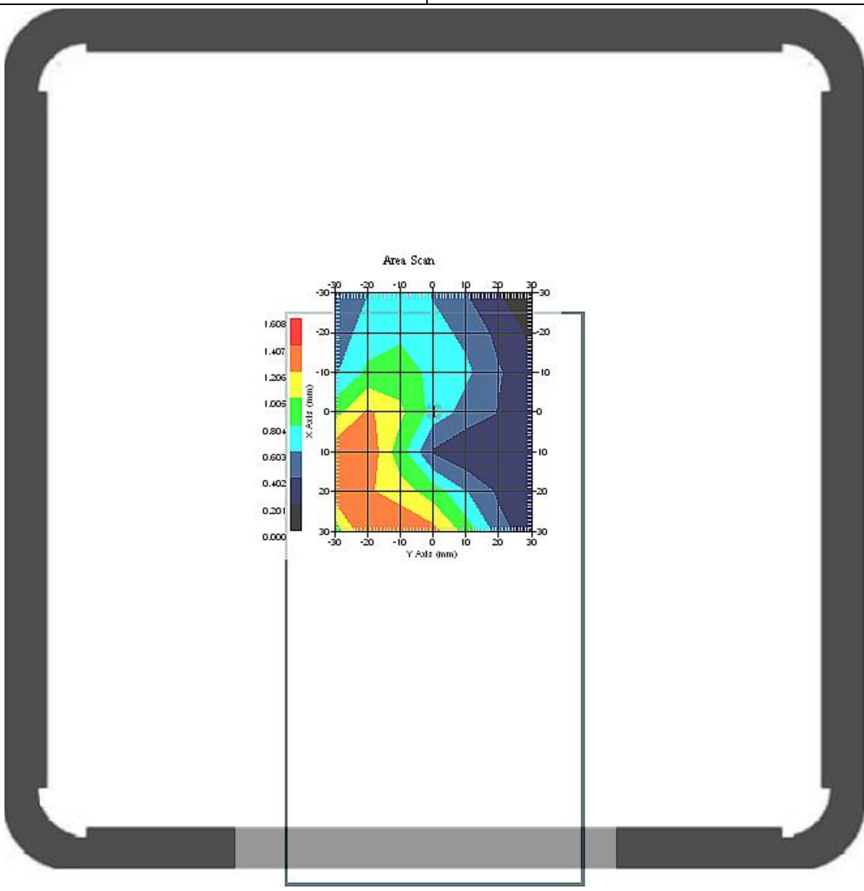


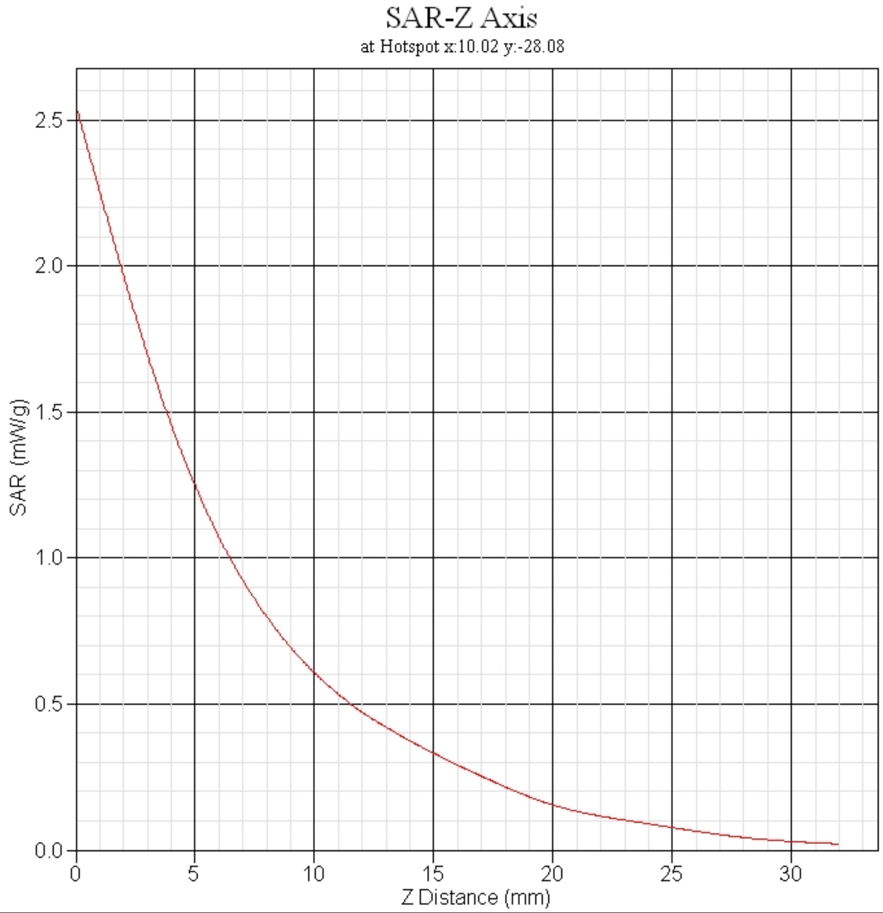


SAR 10g (W/Kg)	0.530
SAR 1g (W/Kg)	0.988

GSM1900 Backside Towards Phantom Middle (661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**1.669**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

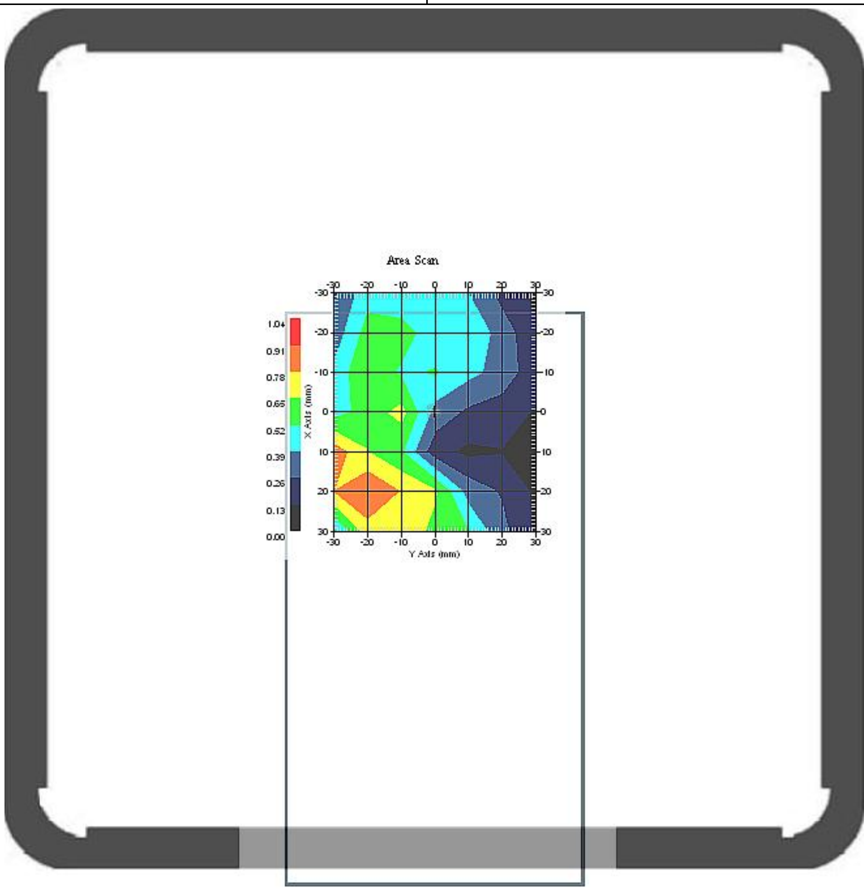


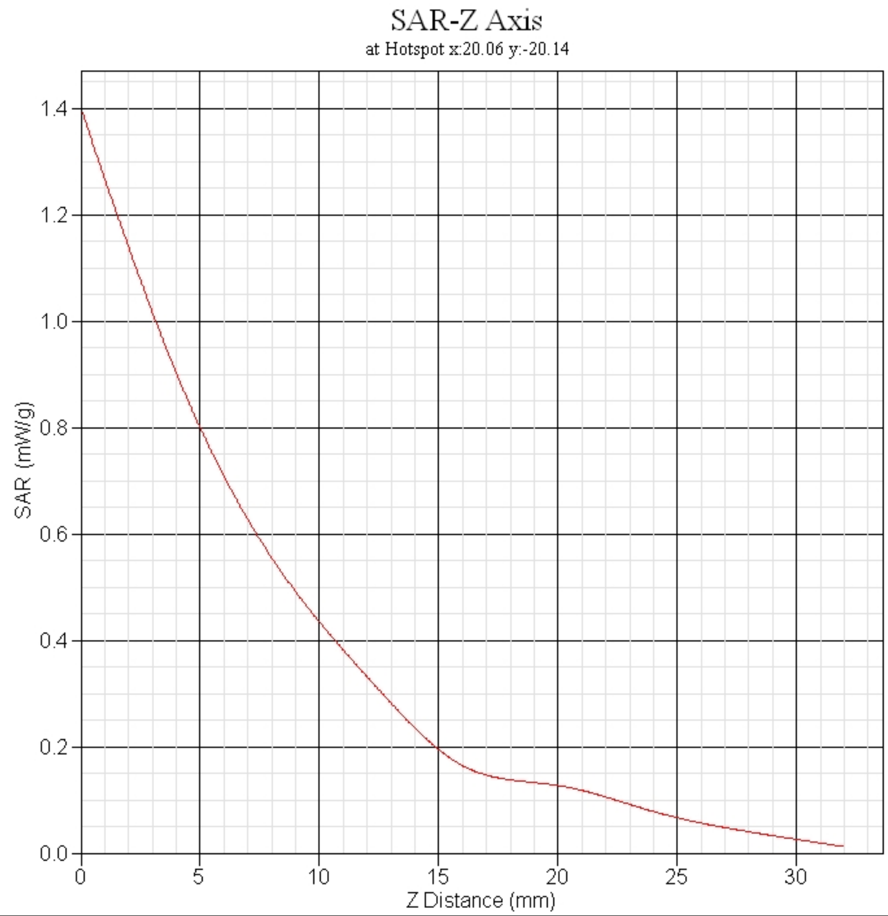


SAR 10g (W/Kg)	**0.660**
SAR 1g (W/Kg)	**1.101**

GSM1900 Backside Towards Phantom High (810ch)

Frequency (MHz)	**1909.8**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**0.881**
Duty Cycle Factor	**1**
Crest Factor	**8.3**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

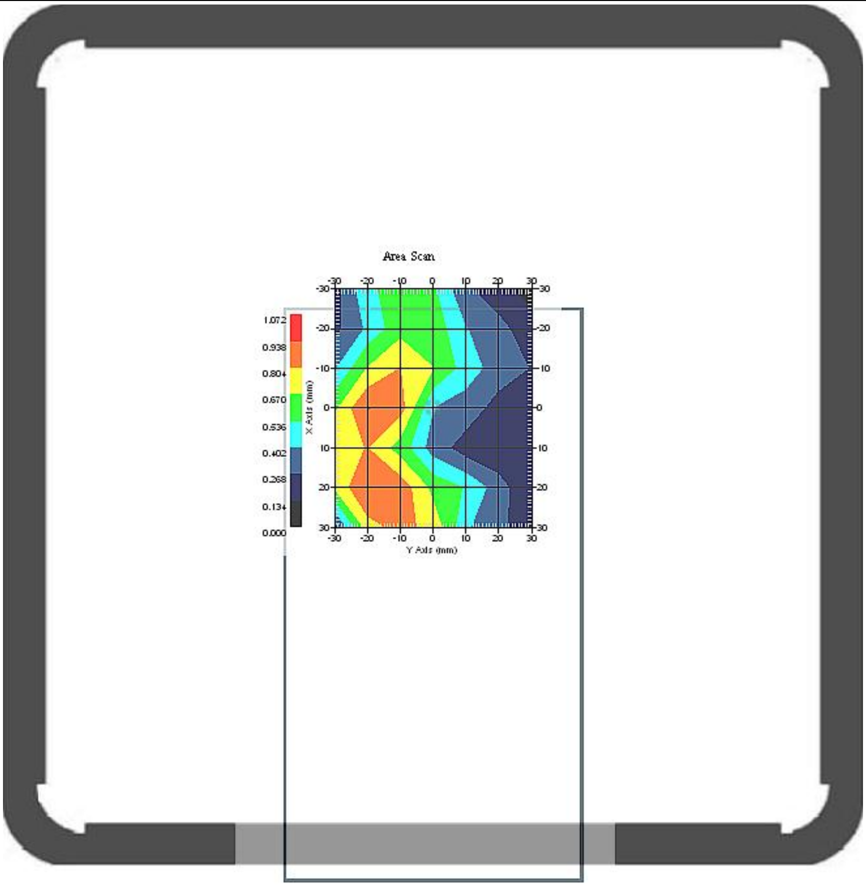


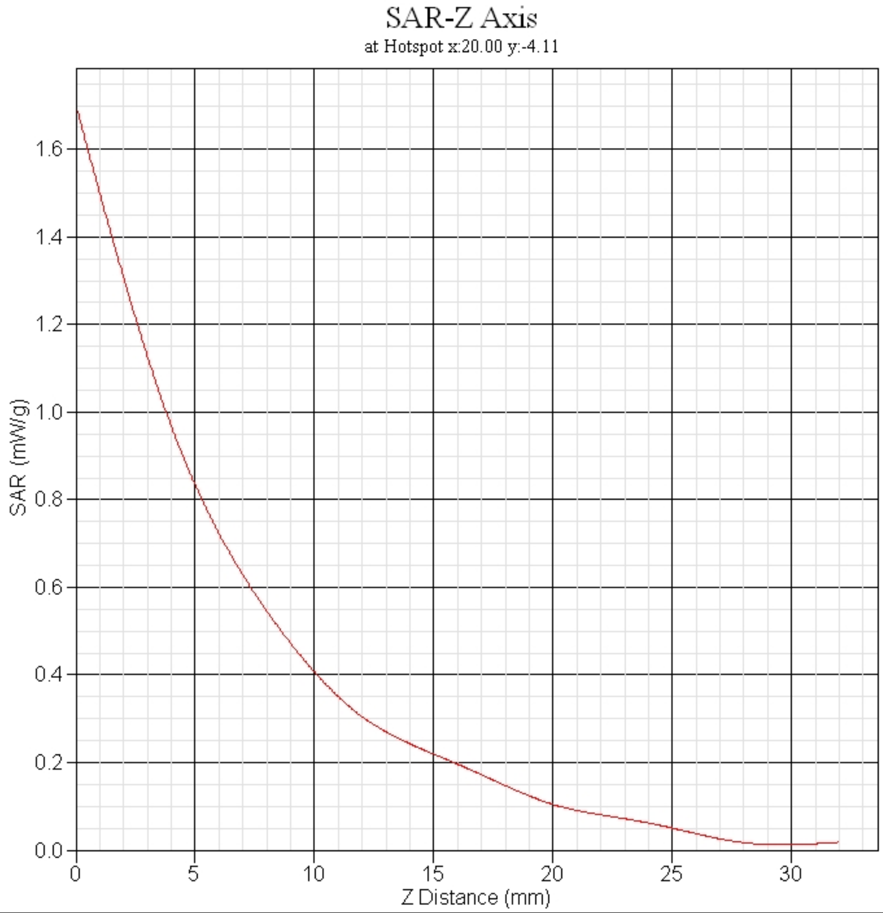


SAR 10g (W/Kg)	0.346
SAR 1g (W/Kg)	0.702

GPRS1900 Backside Towards Phantom Middle (661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**-3.061**
Duty Cycle Factor	**1**
Crest Factor	**4**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

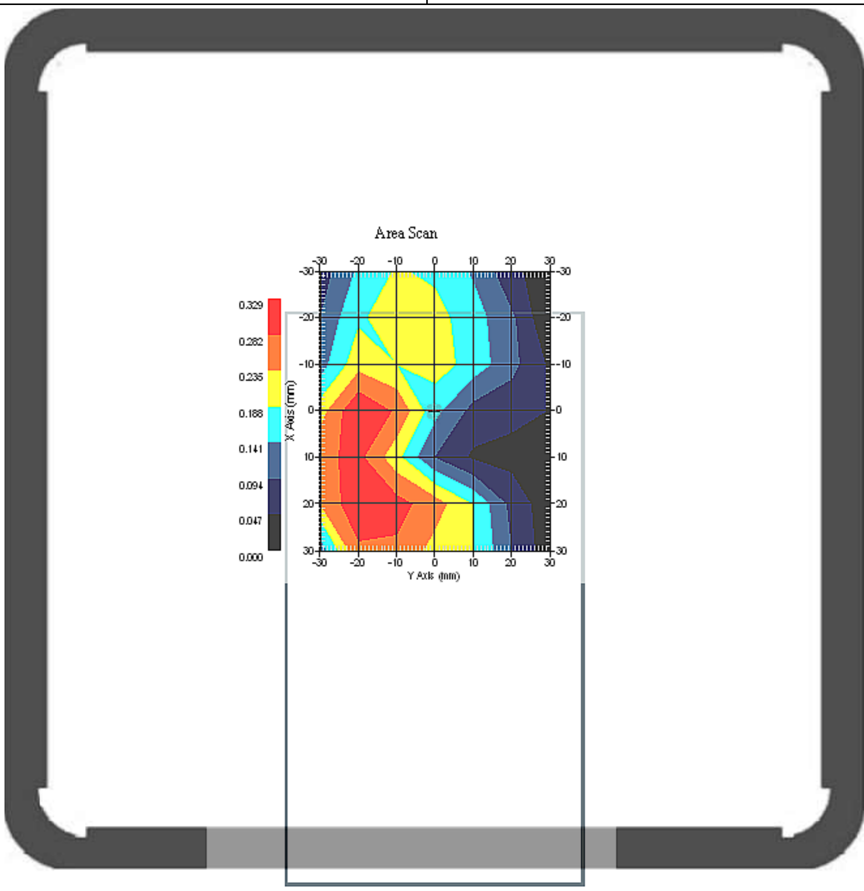


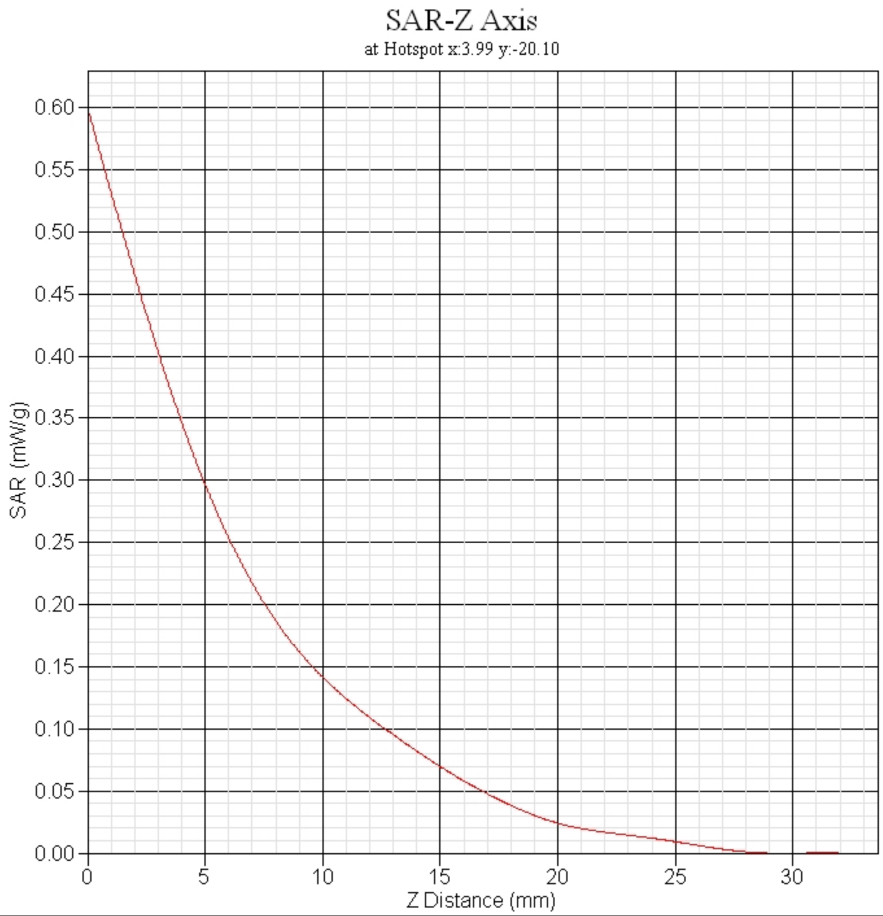


SAR 10g (W/Kg)	**0.500**
SAR 1g (W/Kg)	**0.938**

EDGE1900 Backside Towards Phantom Middle (661ch)

Frequency (MHz)	**1880**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**0.083**
Duty Cycle Factor	**1**
Crest Factor	**4**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

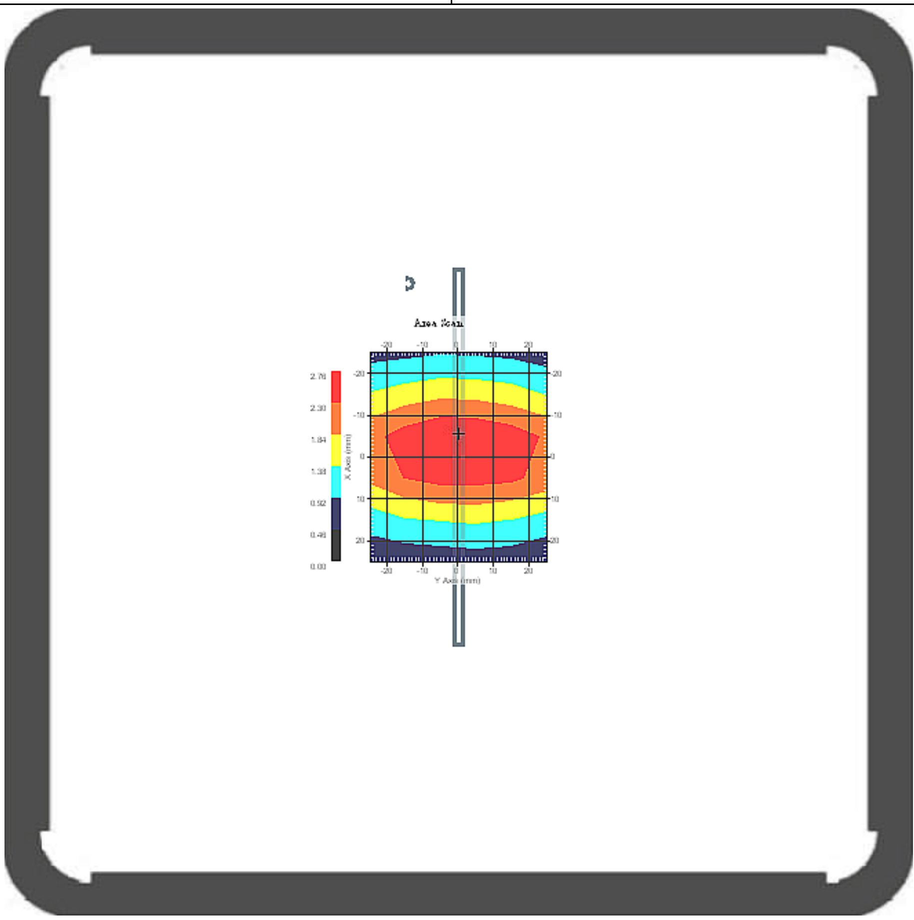


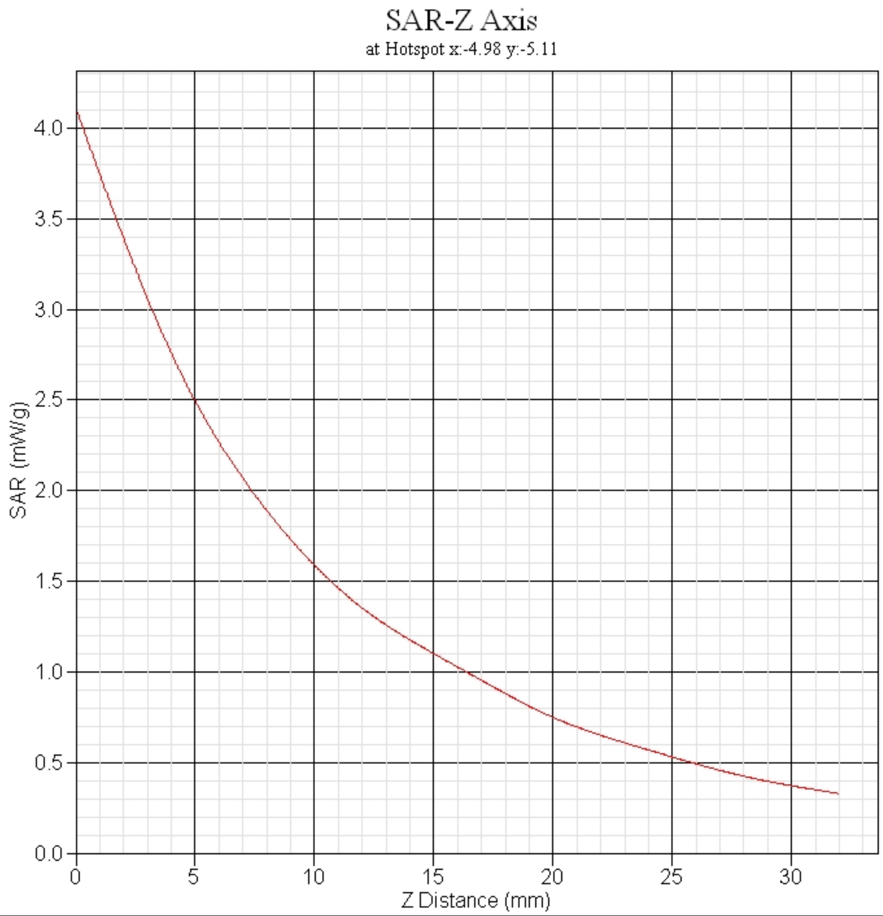


SAR 10g (W/Kg)	**0.165**
SAR 1g (W/Kg)	**0.320**

System Performance Check at 835MHz Head

Frequency (MHz)	**835**
Relative permitivity (real part)	**41.725**
Conductivity (S/m)	**0.933**
Variation (%)	**-1.325**
Duty Cycle Factor	**1**
Crest Factor	**1**
Conversion Factor	**6.2**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

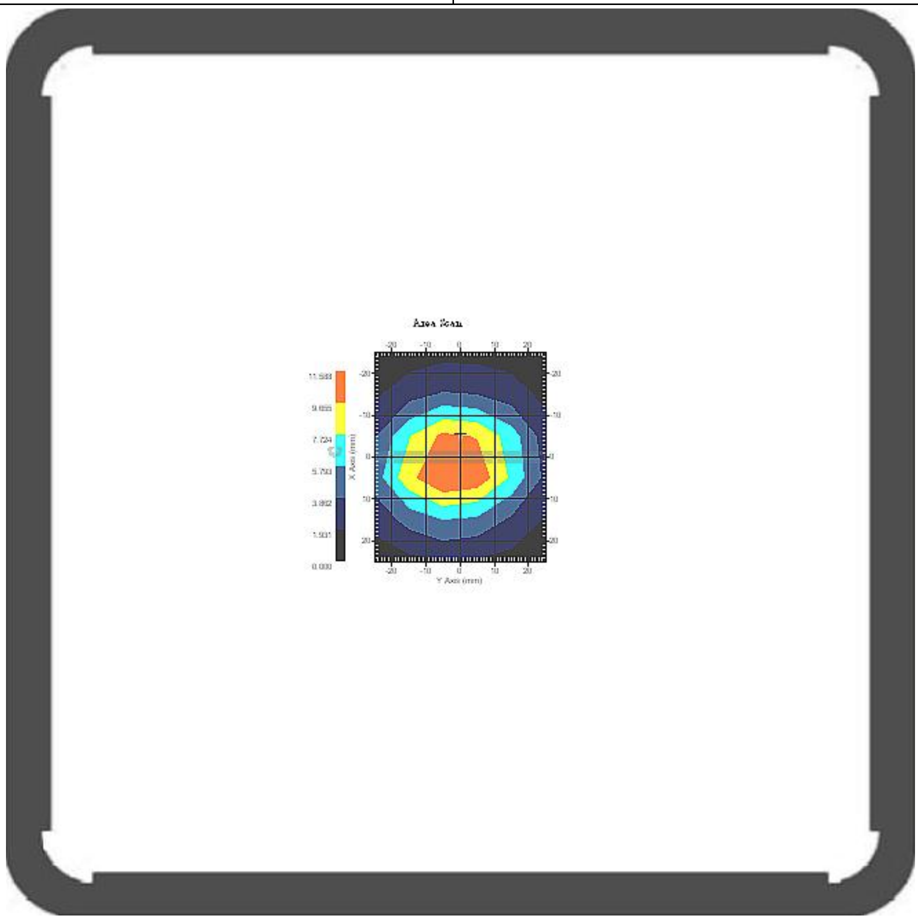


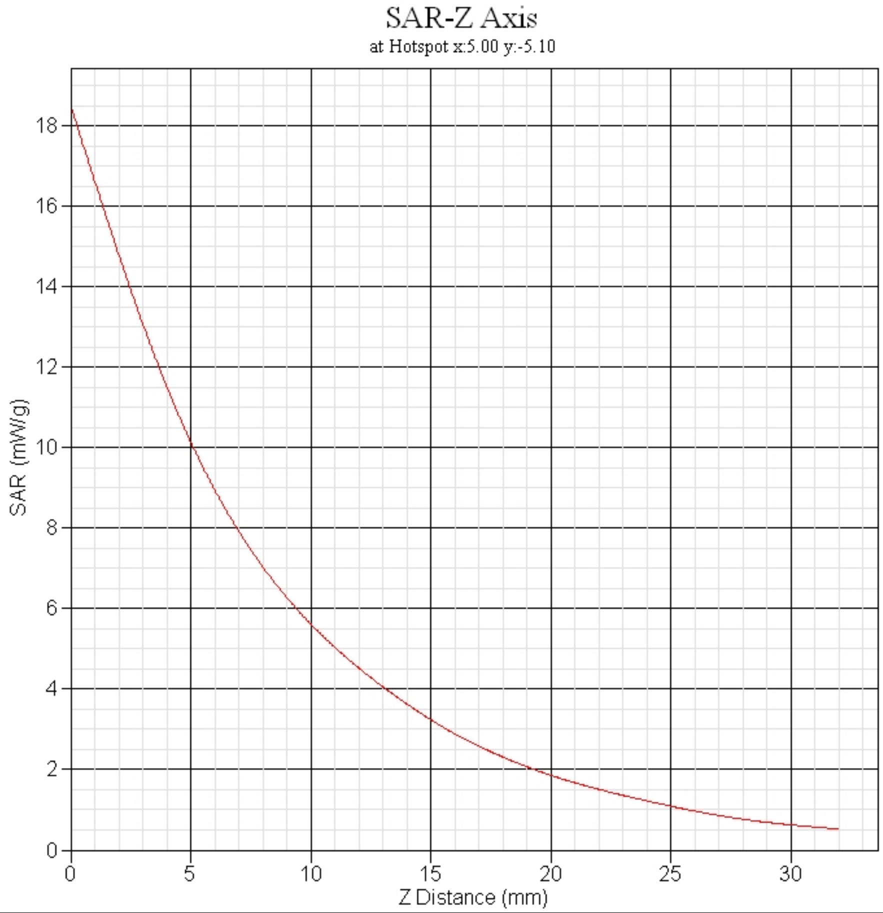


SAR 10g (W/Kg)	1.527
SAR 1g (W/Kg)	2.368

System Performance Check at 1900MHz Head

Frequency (MHz)	**1900**
Relative permitivity (real part)	**40.365**
Conductivity (S/m)	**1.428**
Variation (%)	**-0.825**
Duty Cycle Factor	**1**
Crest Factor	**1**
Conversion Factor	**4.9**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃** **Liqiud:20.7℃**
Data	**2011-8-8**

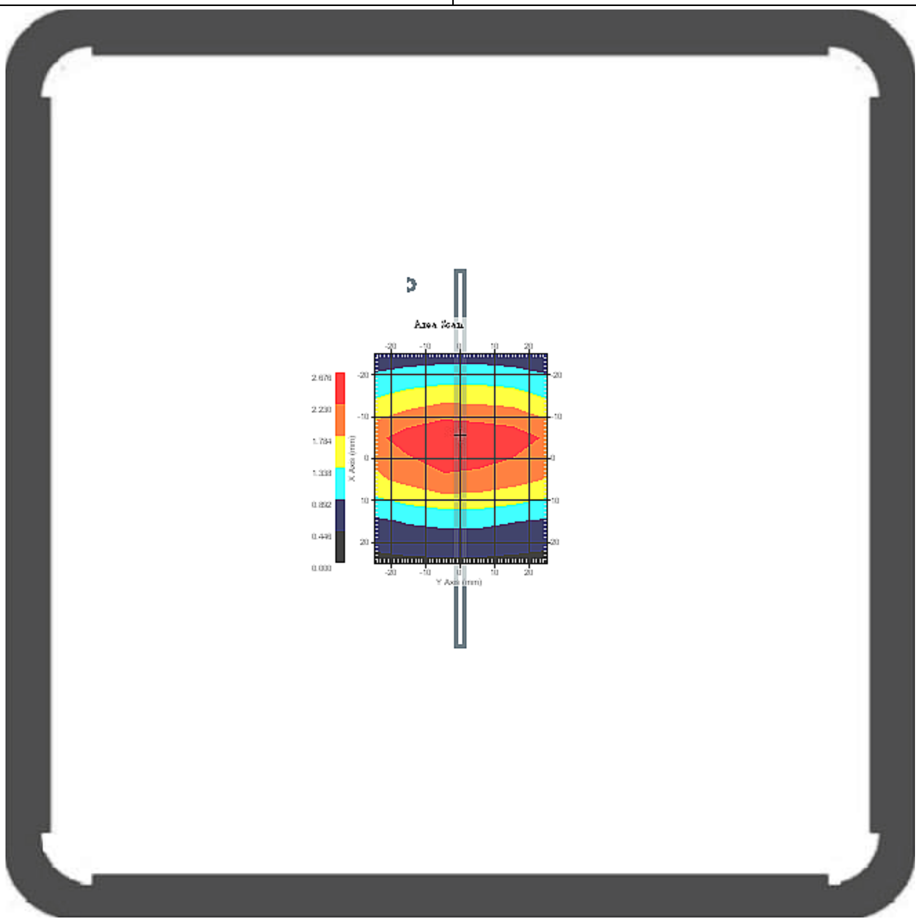


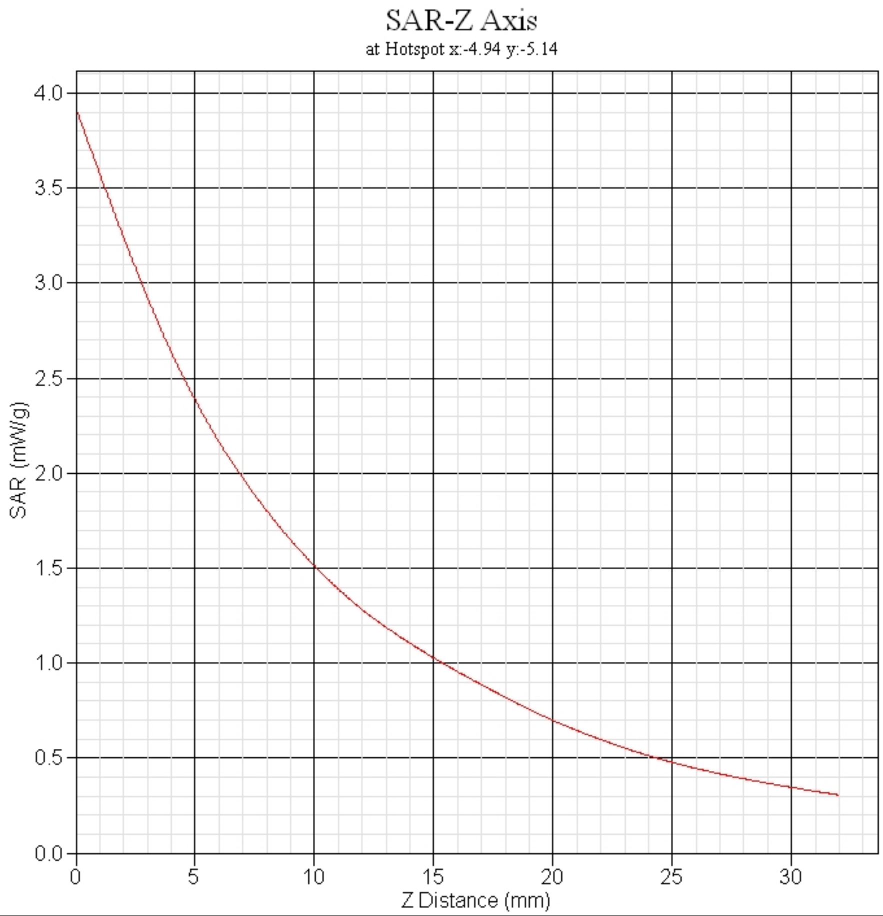


SAR 10g (W/Kg)	**4.863**
SAR 1g (W/Kg)	**9.775**

System Performance Check at 835MHz Body

Frequency (MHz)	**835**
Relative permitivity (real part)	**55.419**
Conductivity (S/m)	**0.988**
Variation (%)	**1.223**
Duty Cycle Factor	**1**
Crest Factor	**1**
Conversion Factor	**6**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**

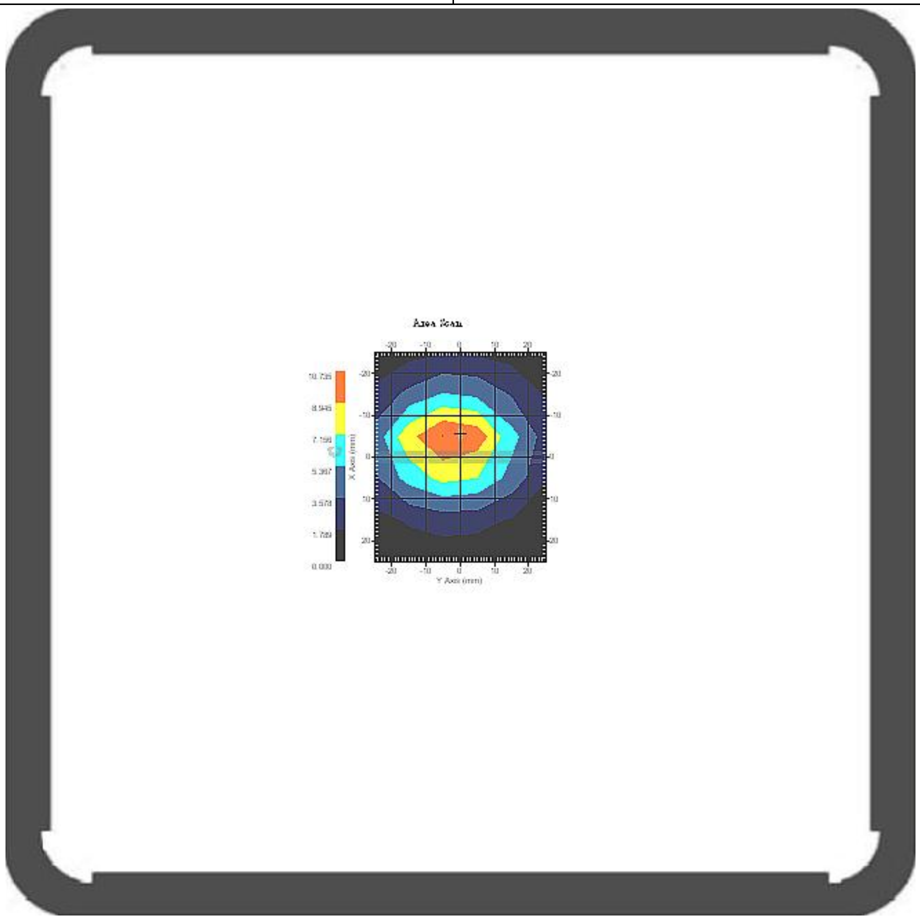


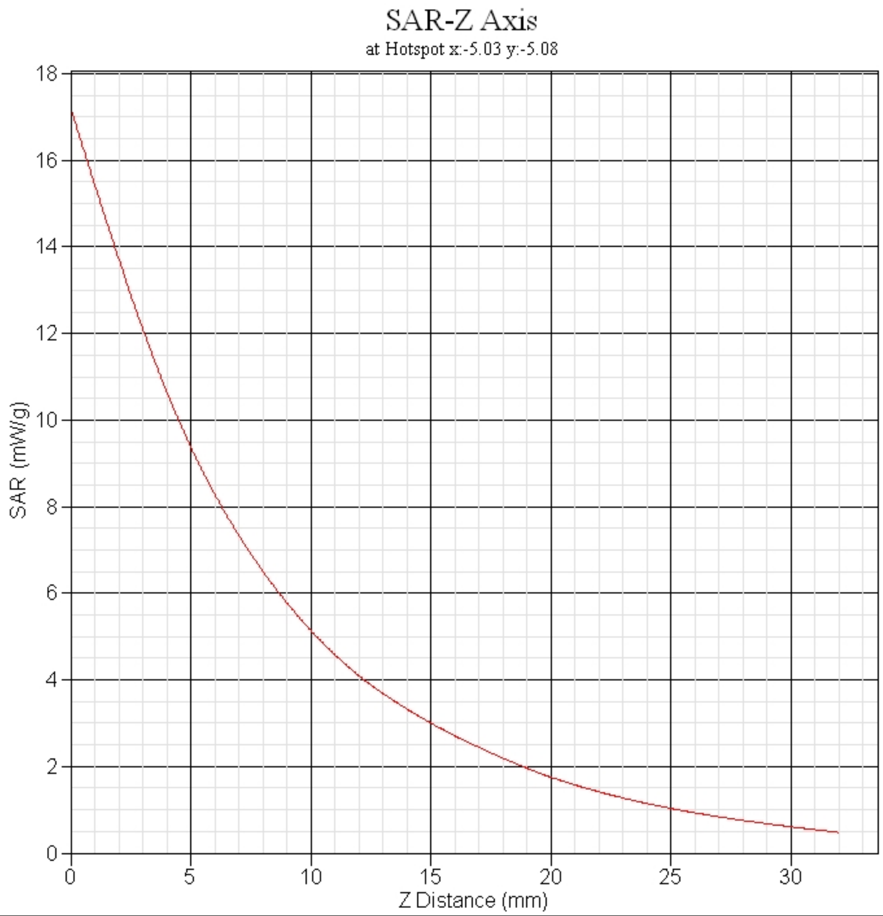


SAR 10g (W/Kg)	**1.551**
SAR 1g (W/Kg)	**2.523**

System Performance Check at 1900MHz Body

Frequency (MHz)	**1900**
Relative permitivity (real part)	**53.463**
Conductivity (S/m)	**1.543**
Variation (%)	**-1.965**
Duty Cycle Factor	**1**
Crest Factor	**1**
Conversion Factor	**4.7**
Probe Sensitivity	**1.20 1.20 1.20 µV/(V/m)2**
Temperature	**Ambient:22.1℃ Liqiud:20.7℃**
Data	**2011-8-8**





SAR 10g (W/Kg)	**5.024**
SAR 1g (W/Kg)	**9.928**

** END OF REPORT **