D-PL-12111-01-01

CNAS L0447

Registration No.910917

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

Report No.: SRTC2012-H024-E0047

Product Name: GSM/GPRS Digital Mobile Phone

Product Model: ZTE-G S518G

Applicant: ZTE Corporation

Manufacturer: ZTE Corporation

Specification: FCC OET Bulletin 65 (Edition 97-01)

Supplement C (Edition 01-01)

47CFR 2.1093

FCC ID: Q78-GS518G

The State Radio_monitoring_center Testing Center (SRTC)

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Executive summary

Test report no.:	**SRTC2012-H024-E0047**
Product Model:	**ZTE-G S518G**
Date of test:	**2012.8.17**
Date of report:	**2012.8.20**
Laboratory:	**The State Radio_monitoring_center Testing Center (SRTC)**
Test has been Carried out in accordance with:	**47CFR §2.1093** Radiofrequency Radiation Exposure Evaluation: Portable Devices **FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields **IEEE 1528 - 2003** IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique
Documentation:	**The documentation of the testing performed on the tested devices is archived for 5 years at SRTC**

Result summary:

Mode	CH/*f*(MHz)	Power (dBm)	Position	Sar Limit (1g avg) (mW/g)	Measured value (1g avg)(mW/g)	Result
GSM850	251/848.8	26.93	Towards ground/GPRS	1.6	**1.370**	PASS

This Test Report Is Issued by: Mr. Song Qizhu Director of the test lab	Checked by: Mr. Wang Junfeng Deputy director of the test lab
Tested by: Mr. Mei Haowen Test engineer	Issued date: **2012.08.26**

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1. General information

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

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1.5 Test details

Period of test	2012.8.17
Batteries used in testing	Li-Lon/Li3707T42P3h463548/ZTE CORPORATION
State of sample	production unit
Headsets used in testing	NLD-EM127E-035S/ZTE CORPORATION
Device class/ Multislot class DTM	B/12 N/A
H/W Version S/W Version	GMAVb ZTE-EN-8S-P120A70V1.0.0
IMEI	355473026000000
Notes	---

1.6 Maximum Results

The maximum measured SAR values for Head configuration and Body Worn configuration are given in section 1.6.1 and 1.6.2 respectively. The device conforms to the requirements of the standard(s) when the maximum measured SAR value is less than or equal to the limit.

The multi-slot mode configuration level in GPRS is the class 12. The configurations including four slot modes below:
1Txslot: 4 downlink and 1 uplink
2Txslots: 3 downlink and 2 uplink
3Txslots: 2 downlink and 3 uplink
4Txslots: 1 downlink and 4 uplink
The DUT's output power was test through the conducted spurious emissions with the four slot modes,and the maximum averaged power was under 1 downlink and 4 uplink mode. Therefore, during GPRS test will choose 1 downlink and 4 uplink mode as the basic test mode.

1.6.1 Head Configuration

Mode	CH/*f*(MHz)	Power (dBm)	Position	Sar Limit (1g avg) (mW/g)	Measured value (1g avg)(mW/g)	Result
GSM850	251/848.8	32.58	Left Cheek	1.6	**0.887**	PASS
PCS1900	661/1880	29.30	Left Cheek	1.6	**0.753**	PASS

1.6.2 Body Worn Configuration

Mode	CH/*f*(MHz)	Power	Position	Sar Limit (1g avg) (mW/g)	Measured value (1g avg)(mW/g)	Result
GSM850	251/848.8	26.93	Towards ground/GPRS	1.6	**1.370**	PASS
PCS1900	661/1880	26.04	Towards ground/GPRS	1.6	**0.428**	PASS

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	production unit
Exposure enviroment	General population/uncontrolled

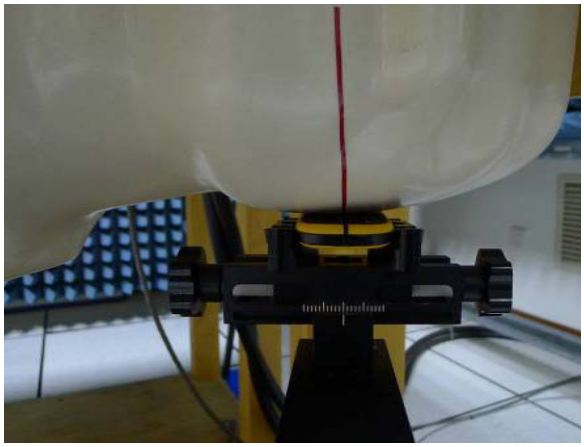
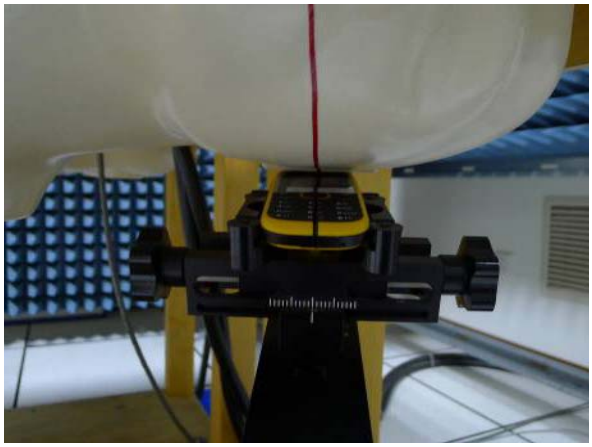
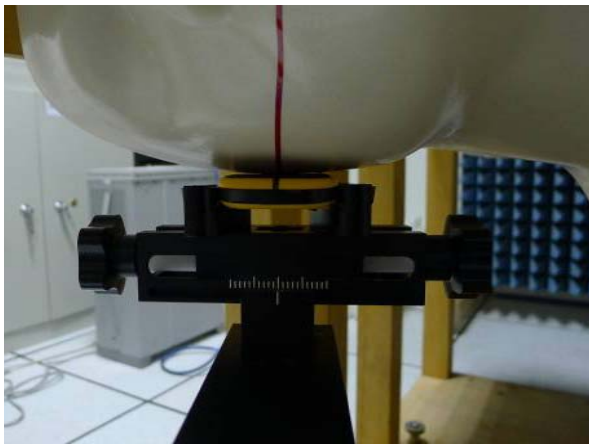
Modes and Bands of operation	GSM 850	PCS 1900	GPRS 850 GPRS 1900
Modulation Mode	GMSK	GMSK	GMSK
Duty Cycle	1/8	1/8	1/2
Transmitter Frequency Range(MHz)	824-849	1850-1910	824-849 1850-1910

2.1 Description of the Antenna

The device has an internal antenna.

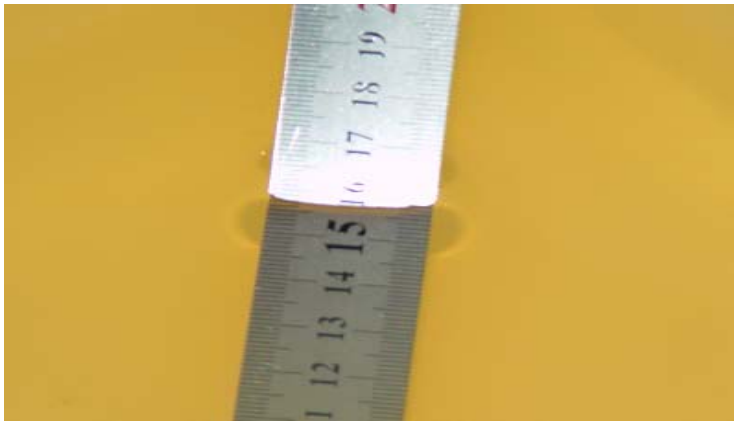
2.2 Picture of the EUT

2.3 Test Positions for the Device under test

	
Cheek position, left side	**Tilt position, left side**
	
Cheek position, Right side	**Tilt position, Right side**
	
FLAT position (towards phantom)	**SPACER 15 mm**

2.4 Picture to demonstrate the required liquid depth

the liquid depth in the used SAM phantoms



Liquid depth for SAR Measurement

3 TEST CONDITIONS

3.1 Temperature and Humidity

Ambient temperature (°C)	21.0 to 23.0
Ambient humidity (RH %)	30 to 45

3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.
The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.
In all operating bands the measurements were performed on lowest, middle and highest channels.

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated near-field scanning system, DASY4,manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the ‘advanced extrapolation’ algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration interval	Calibration expiry
DAE4	720	1year	2013.02.07
Dosimetric E-field Probe ES3DV3	3128	1year	2013.02.03
Dipole Validation Kit, D835V2	4d023	2 years	2013.10.17
Dipole Validation Kit, D1900V2	5d113	2 years	2013.10.20
DASY4 software Version	4.7	N/A	N/A

Note: the Dipole Calibration interval is 24 months

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration interval	Calibration expiry
Signal Generator	E4428C	MY45280865	1year	2012.08.20
Amplifier	5S1G4	0323472	N/A	N/A
Power meter	E4417A	MY45101182	1year	2012.08.19
Power Sensor	E4412A	MY41502214	1year	2012.08.19
Power Sensor	E4412A	MY41502130	1year	2012.08.19
Call Tester	8960	GB43194054	1year	2012.08.19
Network Analyzer	8714ET	US40372083	1year	2012.08.19
Dielectric Probe Kit	85070D	US33030365	N/A	N/A

Isotropic E-field Probe Type ES3DV3

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	Calibration certificate in Appendix C
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
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
Dynamic Range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

4.2 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twinheaded "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2003.
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.
The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.
The depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements.

4.3.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue stimulant(s):

850MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Water	40.29	50.75
Sugar	57.90	48.21
Nacl	1.38	0.94
Cellulose	0.24	0
Preventol	0.18	0.10

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Water	44,45	70.17
DGBE	55.24	29.44
Nacl	0.31	0.39

4.3.2 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below. Test Date is 2012.8.17

System checking,head tissue simulant

		SAR_{1g} [w/kg]	ε_r	σ[S/m]	Temperature	
					Ambient[℃]	Liquid[℃]
900MHz	Target Value	10.8	41.5±2.1	0.97±0.05	15-30	-
	Measured Value	10.9	41.6	0.98	24.1	22.4

All SAR values are normalized to 1W forward power

		SAR_{1g} [w/kg]	ε_r	σ[S/m]	Temperature	
					Ambient[℃]	Liquid[℃]
1800MHz	Target Value	38.1	40±1.9	1.40±0.07	15-30	-
	Measured Value	39.0	39.7	1.39	24.1	22.4

All SAR values are normalized to 1W forward power

Plots of the system checking scans are given in Appendix A.

4.3.3 Tissue Simulants used in the Measurements

For the measurement of the following parameters the HP 85070D dielectric probe kit is used, representing the open-ended coaxial probe measurement procedure. Liquid temperature during the test: 22.3° C。Tested date is 2012.8.17

Head		εr	σ[S/m]	Temperature	
				Ambient [℃]	Liquid [℃]
850MHz	Recommended Value	41.5±2.1	0.97±0.05	15-30	-
	Measured Value	41.7	0.99	24.1	22.3
1900MHz	Recommended Value	40±1.9	1.40±0.07	15-30	-
	Measured Value	39.4	1.41	24.1	22.3

Body		εr	σ[S/m]	Temperature	
				Ambient [℃]	Liquid [℃]
850MHz	Recommended Value	55.0±2.8	1.05±0.05	15-30	-
	Measured Value	55.8	1.02	24.1	22.3
1900MHz	Recommended Value	53.3±2.7	1.52±0.08	15-30	-
	Measured Value	54.7	1.50	24.1	22.3

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.

Device holder supplied by SPEAG

5.2 Test positions

5.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.
The positions used in the measurements were according to IEEE 1528 - 2003

"IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance using a separate flat spacer that was removed before the start of the measurements. The device was oriented with its antenna facing the phantom since this orientation gives higher results.

5.3 scan procedure

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 7 x 7x 7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.
The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).
The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.
In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

DASY4 Uncertainty Budget								
Error description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std.Unc (1g).	Std.Unc. (10g)	$(v_i)\ V_{eff}$
Measurement system								
Probe calibration	±5.9%	N	1	1	1	±5.9%	±5.9%	∞
Axial isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System detection limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF ambient noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF ambient reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max.SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid conductivity(target)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid conductivity(meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid conductivity(target)	±5.0%	R	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
Liquid onductivity(means.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined std. Uncertainty						±10.9%	±10.7%	387
Expanded STD Uncertainty						**±21.9%**	**±21.4%**	

Table 6.1 – Measurement uncertainty evaluation

7. Test Results

7.1 Test result

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations, and operational modes should be tested for each frequency band according to Steps 1 to 3 below.
Step 1: The tests should be performed at the channel that is closest to the center of the transmit frequency band.
Step 2: For the condition providing the highest peak spatial-average SAR determined in Step 1 for each frequency, perform all tests at all other test frequency channels, e.g., lowest and highest frequencies. In addition, for all other conditions (device position, configuration, and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies should be tested as well.
Step 3: Examine all data to determine the largest value of the peak.

The measured Head SAR values for the test device are tabulated below:

Mode: GSM 850

f_L(MHz)=824.2MHz f_M(MHz)=836.4 MHz f_H(MHz)= 848.8MHz

SAR Values（Head，850MHz Band）

Limit of SAR (W/kg)	1 g Average
	1.6
Test Case	Measurement Result (mW/g)
	1g Average
Left hand, Touch cheek, f_M	0.792
Left hand, Touch cheek, f_L	0.730
Left hand, Touch cheek, f_H	**0.887**
Left hand, Tilt 15 Degree, f_M	0.514
Right hand, Touch cheek, f_M	0.767
Right hand, Tilt 15 Degree, f_M	0.428

So, the maximum SAR is

Phantom Configuration	Device Test Position	SAR(mW/g)/ (1g)		
		f_L(MHz)	f_M(MHz)	f_H(MHz)
Left Side	Cheek	---	---	**0.887**

Mode: GSM850 (GSM/GPRS)

f_L(MHz)=824.2MHz f_M(MHz)=836.4 MHz f_H(MHz)= 848.8MHz

SAR Values（body，850MHz Band）

Limit of SAR (W/kg)	1 g Average
	1.6
Test Case	Measurement Result(mW/g)
	1g Average
Towards ground/GSM, with headset 15mm spacer f_M	0.724
Towards phantom/GSM, with headset 15mm spacer f_M	0.363
Towards ground/GPRS, 15mm spacer f_M	1.090
Towards ground/GPRS, 15mm spacer f_L	0.885
Towards ground/GPRS, 15mm spacer f_H	**1.370**
Towards phantom/GPRS, 15mm spacer f_M	0.468

During the body testing GPRS work at the “1 downlink and 4 uplink”,at this Tx slot RF averaged power is larger than other Tx slots.

So, the maximum SAR is

Phantom Configuration	Device Test Position	SAR(mW/g)		
		f_L(MHz)	f_M(MHz)	f_H(MHz)
Towards Ground/GPRS	15mm spacer	---	---	**1.370**

Mode: GSM1900

f_L(MHz)=1850.2MHz f_M(MHz)=1880.0MHz f_H(MHz)= 1909.8MHz

SAR Values（Head，1900MHz head）

Limit of SAR (W/kg)	1 g Average
	1.6
Test Case	Measurement Result(mW/g)
	1g Average
Left hand, Touch cheek, f_M	**0.753**
Left hand, Tilt 15 Degree, f_M	0.133
Right hand, Touch cheek, f_M	0.572
Right hand, Tilt 15 Degree, f_M	0.124

So, the maximum SAR is

Phantom Configuration	Device Test Position	SAR(mW/g)		
		f_L(MHz)	f_M(MHz)	f_H(MHz)
Left Side	Cheek	---	**0.753**	---

Mode:GSM1900(GSM/GPRS)

f_L(MHz)=1850.2MHz f_M(MHz)=1880.0MHz f_H(MHz)=1909.8MHz

SAR Values（Body, 1900MHz Band）

Limit of SAR (W/kg)	**1 g Average**
	1.6
Test Case	**Measurement Result(mW/g)**
	1g Average
Towards ground/GSM, with headset 15mm spacer f_M	0.306
Towards phantom/GSM,with headset 15mm spacer f_M	0.192
Towards ground/GPRS, 15mm spacer f_M	**0.428**
Towards phantom/GPRS, 15mm spacer f_M	0.247

So, the maximum SAR is

Phantom Configuration	Device Test Position	SAR(mW/g)		
		f_L(MHz)	f_M(MHz)	f_H(MHz)
Towards Ground/GPRS	15mm spacer	---	**0.428**	---

7.2 Conducted power

Mode	**GSM850(Head) Duty cycle: 1:8(12.5%)**			**GSM1900(Head) Duty cycle: 1:8(12.5%)**		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
Measured Power(dBm)	32.68	32.64	32.58	29.23	29.30	29.36

Division Factors(for Measured Power and Averaged Power):

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

1TX-slot (4Downlink1uplink)= 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots(3Downlink2uplink) = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots (2Downlink3uplink)= 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots (1Downlink4uplink)= 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 4Txslots(1Downlink4uplink) for GPRS.

GPRS Measured Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	251	189	251
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplink Power(dBm)	31.42	31.40	31.30	29.12	29.22	29.27
3Downlink2uplink Power(dBm)	29.94	29.95	29.79	28.31	28.42	28.46
2Downlink3uplink Power(dBm)	28.17	28.15	28.02	26.67	26.77	26.82
1Downlink4uplink Power(dBm)	27.08	27.04	26.93	25.89	25.98	26.04

GPRS Averaged Power

Mode	GPRS850			GPRS1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
4Downlink1uplink Power(dBm)	22.39	22.37	22.27	20.09	20.19	20.24
3Downlink2uplink Power(dBm)	23.92	23.93	23.77	22.29	22.40	22.44
2Downlink3uplink Power(dBm)	23.91	23.89	23.76	22.41	22.51	22.56
1Downlink4uplink Power(dBm)	24.07	24.03	23.92	22.88	22.97	23.03

APPENDIX A: SYSTEM CHECKING SCANS

SYSTEM CHECKING SCANS	900MHz

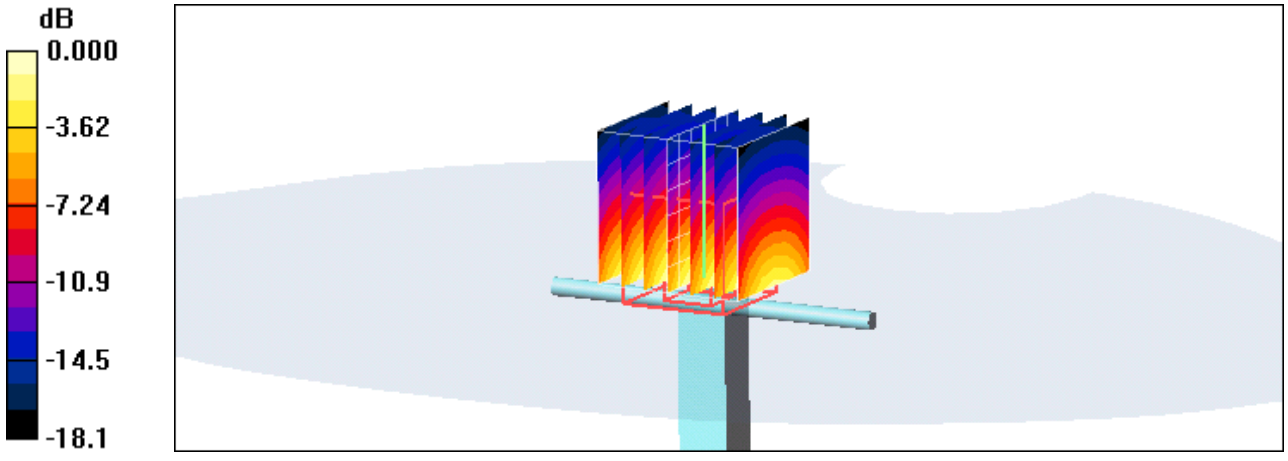
DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:171

Medium parameters used (interpolated): f = 900 MHz; σ = 0.98 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.7V/m; Power Drift = -0.013 dB
Peak SAR (extrapolated) = 4.07 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.70 mW/g
Maximum value of SAR (measured) = 2.90 mW/g



0 dB =2.90 mW/g

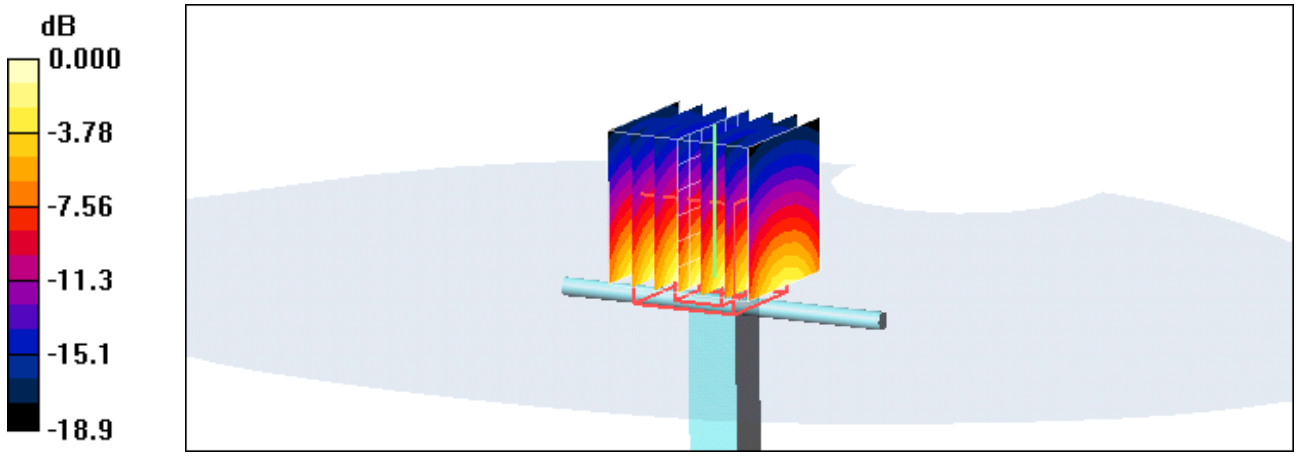
SYSTEM CHECKING SCANS	1800 MHz

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d084
Program Name: System Performance Check at 1800 MHz

Communication System: CW; Frequency: 1800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1800 MHz; σ = 1.39 mho/m; εr = 39.7; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.767, 6.013, 5.888); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.5 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 9.7 mW/g; SAR(10 g) = 5.32 mW/g
Maximum value of SAR (measured) = 11.3 mW/g



0 dB =11.3 mW/g

APPENDIX B: MEASUREMENT SCANS

GSM (850MHz/Head)

Left Side	Cheek	836.4 MHz

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.894 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section

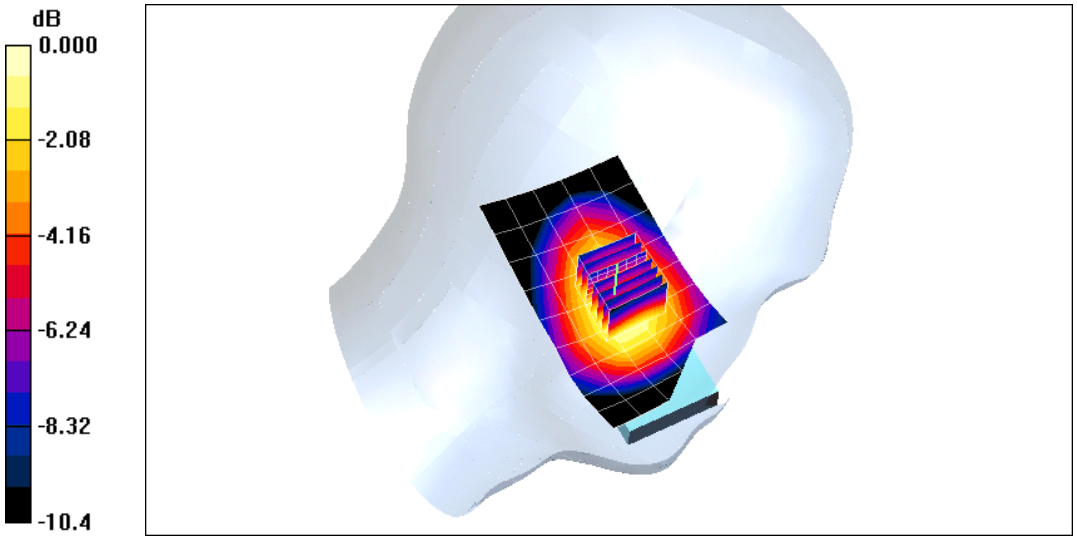
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.813 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.1 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.792 mW/g; SAR(10 g) = 0.560 mW/g
Maximum value of SAR (measured) = 0.847 mW/g



0 dB = 0.847 mW/g

Left Side	Cheek	**824.2 MHz**

Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.892 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section

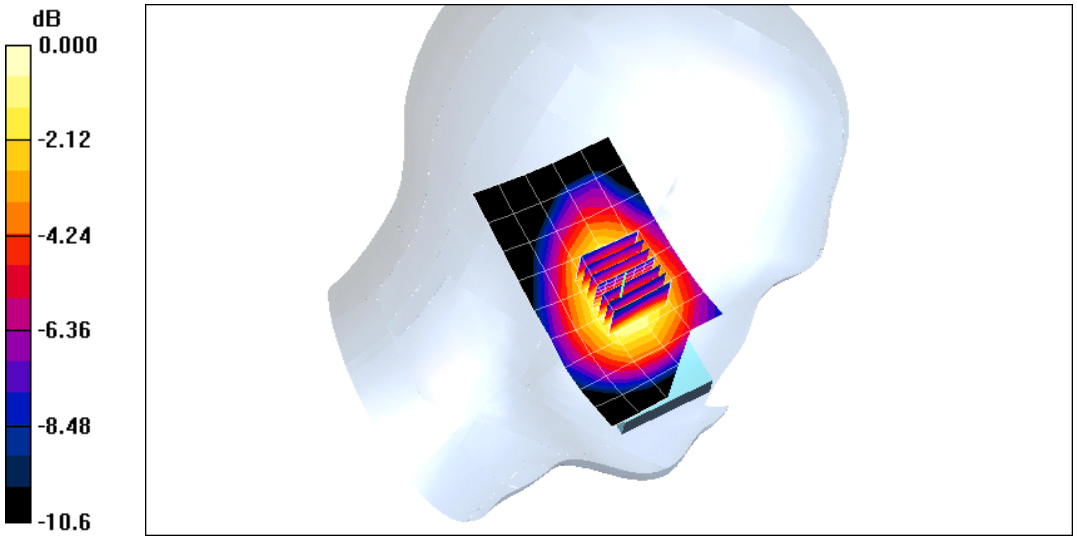
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Low/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.765 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.4 V/m; Power Drift = 0.071 dB
Peak SAR (extrapolated) = 0.954 W/kg
SAR(1 g) = 0.730 mW/g; SAR(10 g) = 0.512 mW/g
Maximum value of SAR (measured) = 0.780 mW/g



0 dB = 0.780 mW/g

Left Side	Cheek	848.8 MHz

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.907 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Left Section

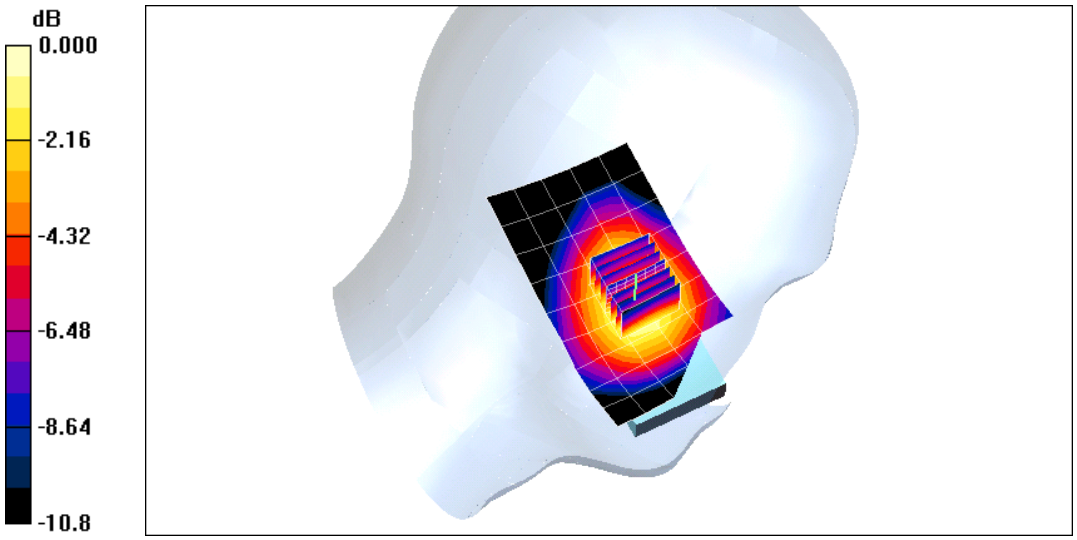
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - High/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

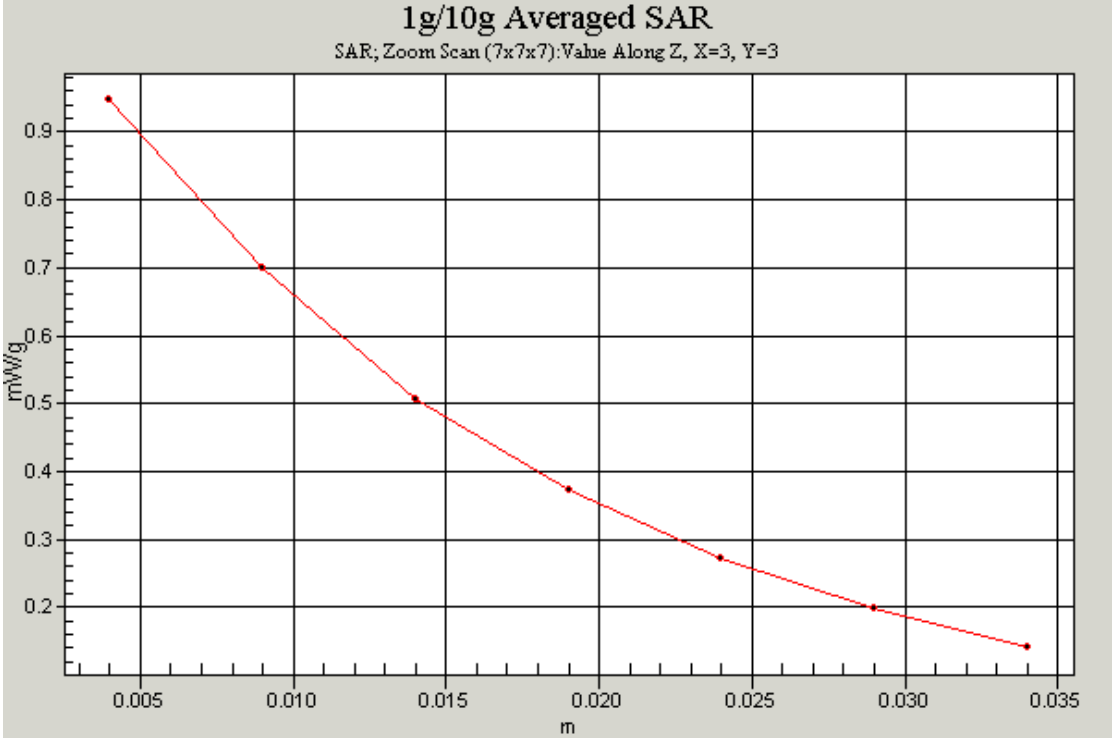
Maximum value of SAR (measured) = 0.928 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.887 mW/g; SAR(10 g) = 0.611 mW/g
Maximum value of SAR (measured) = 0.947 mW/g



0 dB = 0.947 mW/g



Z-Scan at power reference point (GSM850 CH251)

Left Side	Tilt	**836.4 MHz**

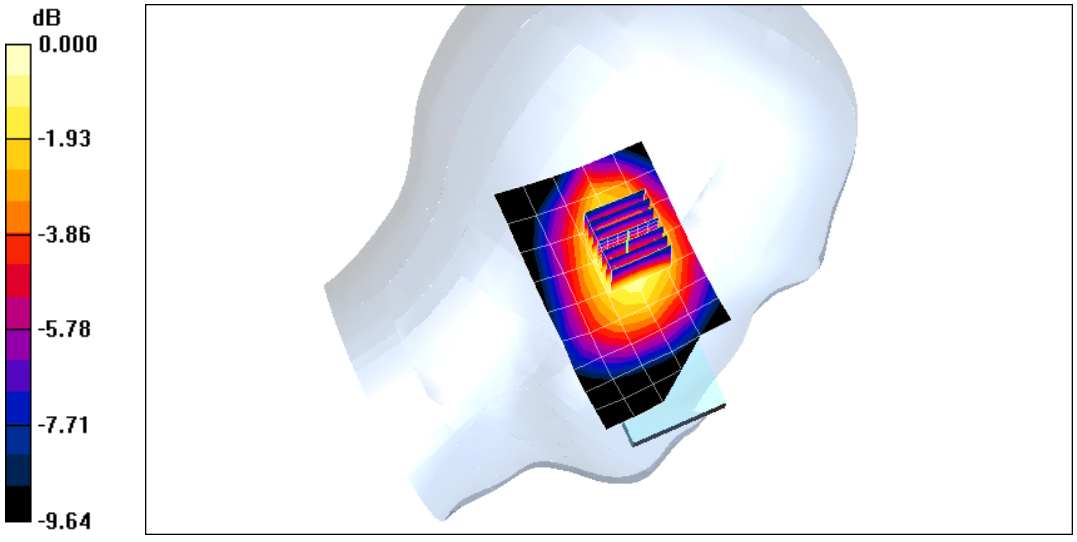
Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.894 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.544 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.5 V/m; Power Drift = 0.091 dB
Peak SAR (extrapolated) = 0.698 W/kg
SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.552 mW/g



0 dB = 0.552 mW/g

Right Side	Cheek	**836.4 MHz**

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.894 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section

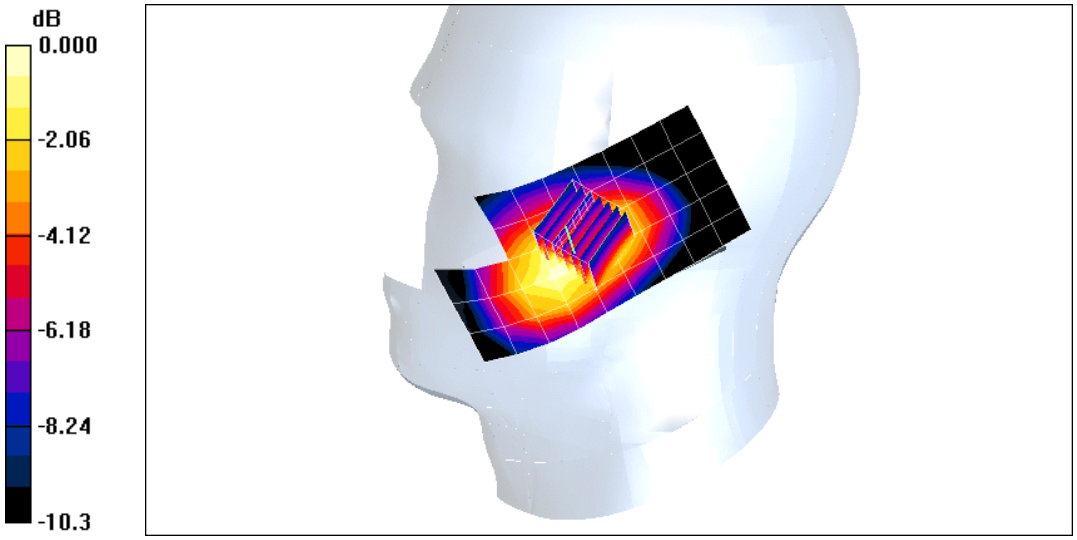
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.777 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.767 mW/g; SAR(10 g) = 0.539 mW/g
Maximum value of SAR (measured) = 0.816 mW/g



0 dB = 0.816 mW/g

Right Side	Tilt	**836.4 MHz**

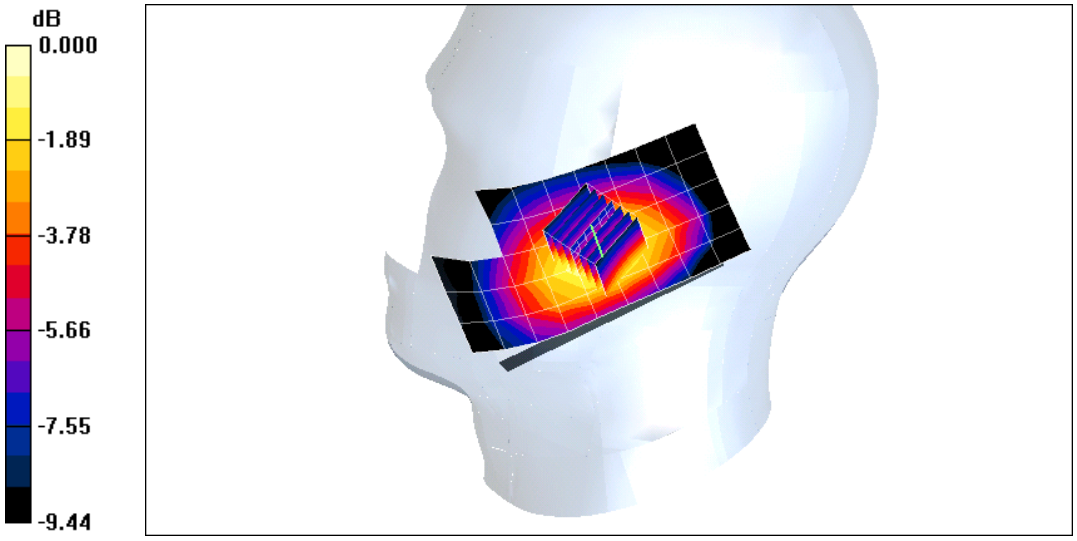
Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.894 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.375, 7.783, 7.54); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.459 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = 0.042 dB
Peak SAR (extrapolated) = 0.583 W/kg
SAR(1 g) = 0.428 mW/g; SAR(10 g) = 0.297 mW/g
Maximum value of SAR (measured) = 0.464 mW/g



0 dB = 0.464 mW/g

GSM (850MHz/Body)

FLAT	Towards ground	**836.4 MHz**

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.41 MHz; σ = 0.96 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

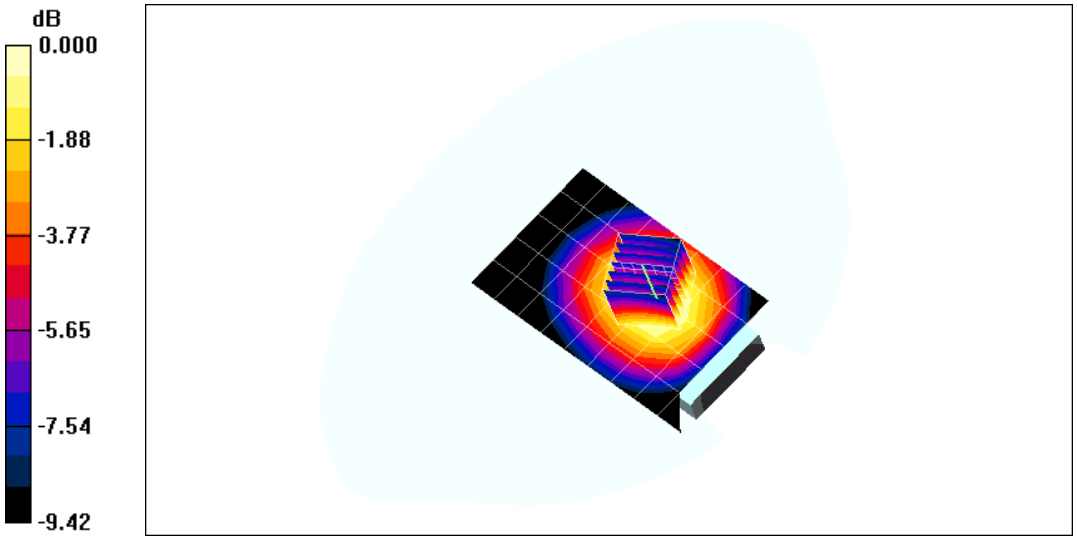
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards ground- Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.772 mW/g

Towards ground- Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.3 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 0.943 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.525 mW/g
Maximum value of SAR (measured) = 0.762 mW/g



0 dB = 0.762 mW/g

FLAT	Towards phantom	**836.4 MHz**

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.41 MHz; σ = 0.96 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

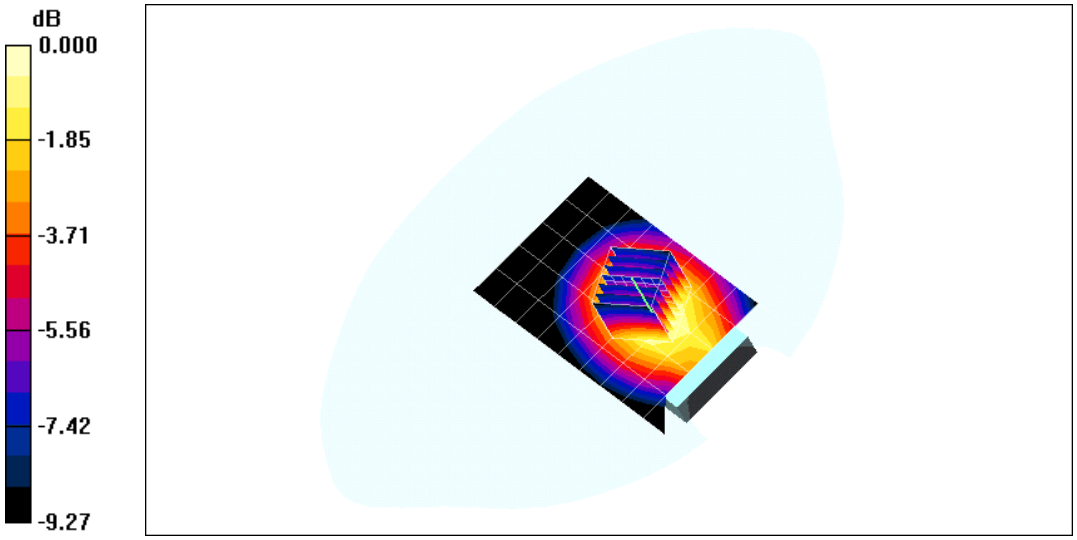
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards plantom - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.378 mW/g

Towards plantom - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.066 dB
Peak SAR (extrapolated) = 0.474 W/kg
SAR(1 g) = 0.363 mW/g; SAR(10 g) = 0.260 mW/g
Maximum value of SAR (measured) = 0.388 mW/g



0 dB = 0.388 mW/g

GPRS (850MHz/Body)

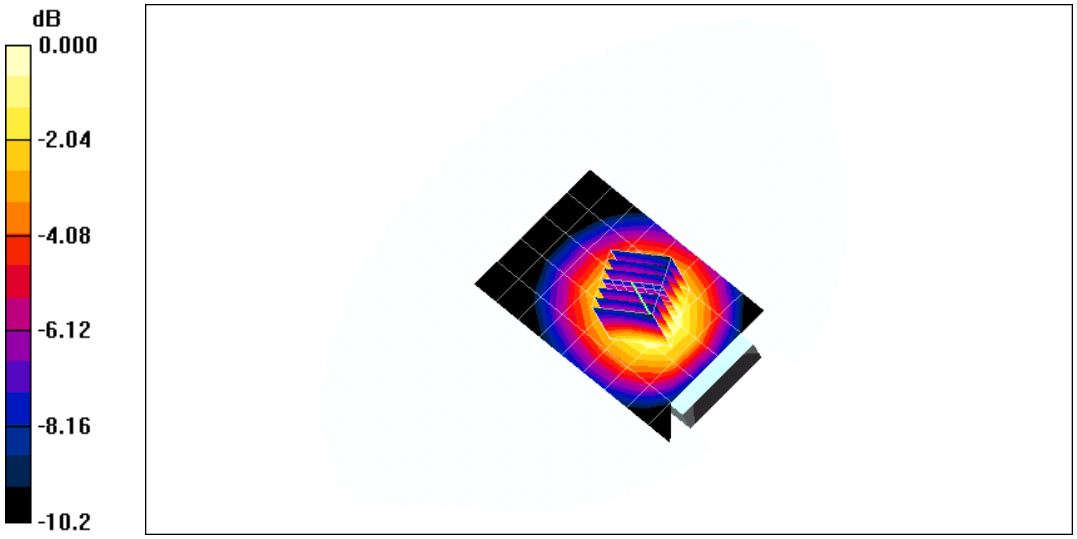
FLAT	Towards ground	**836.4 MHz**

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.41 MHz; σ = 0.96 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build

186**Towards ground - Middle GPRS/Area Scan (6x10x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.14 mW/g

Towards ground - Middle GPRS/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.9 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.766 mW/g
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17 mW/g

FLAT	Towards ground	**824.2 MHz**

Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 56; ρ = 1000 kg/m^3
Phantom section: Flat Section

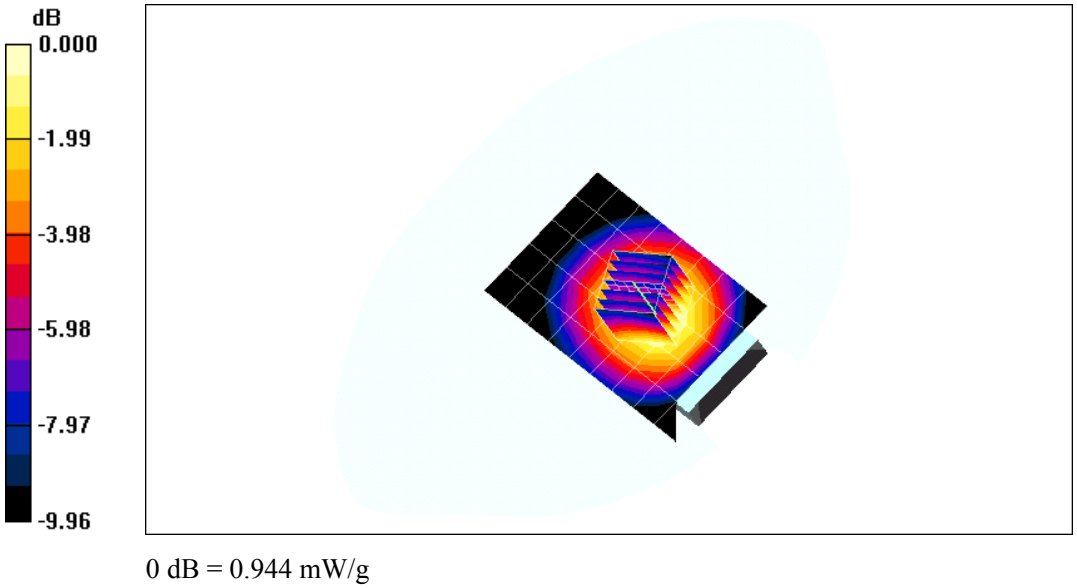
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards ground - Low GPRS/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.923 mW/g

Towards ground - Low GPRS/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.2 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.885 mW/g; SAR(10 g) = 0.622 mW/g
Maximum value of SAR (measured) = 0.944 mW/g



0 dB = 0.944 mW/g

FLAT	Towards ground	**848.8 MHz**

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.969 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

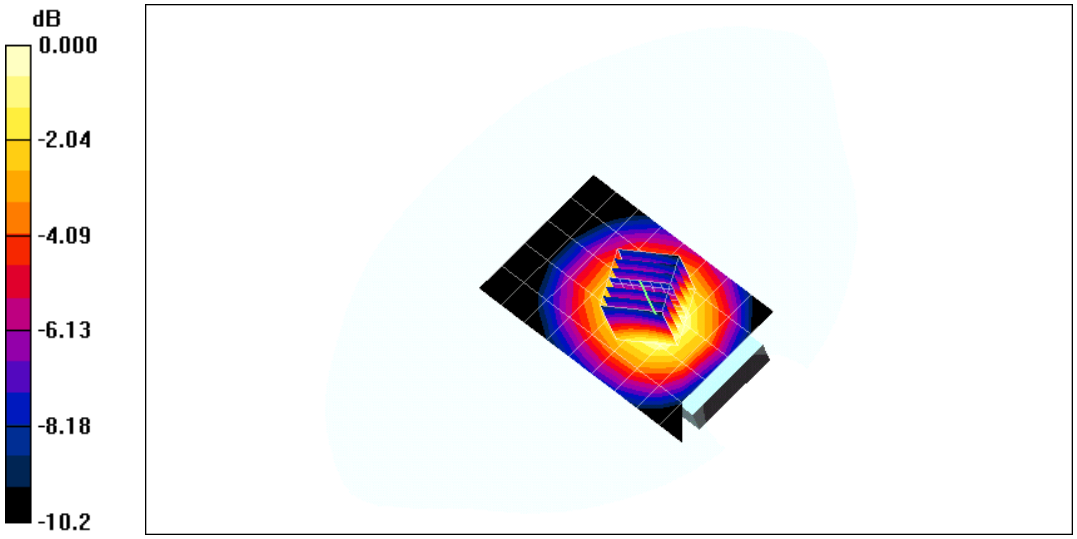
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards ground - High GPRS #new DUT/Area Scan (6x10x1): Measurement grid:

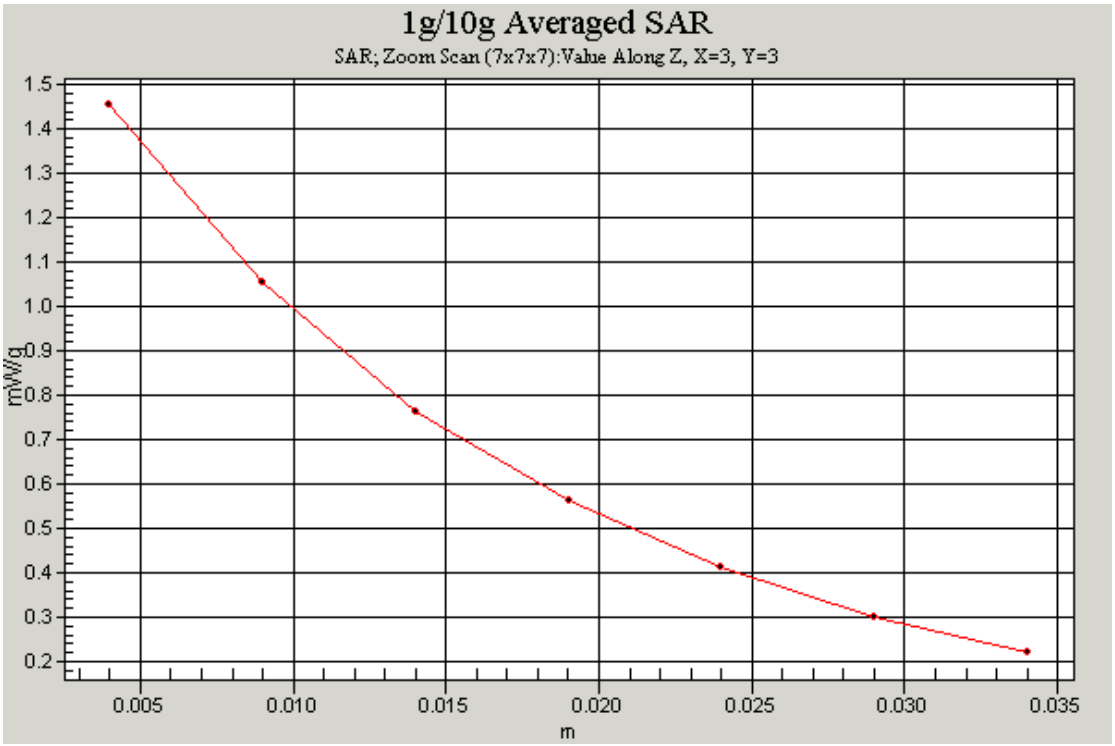
dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.44 mW/g

Towards ground - High GPRS #new DUT/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.2 V/m; Power Drift = -0.094 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.954 mW/g
Maximum value of SAR (measured) = 1.45 mW/g



0 dB = 1.45 mW/g



Z-Scan at power reference point (GPRS 850MHz CH251)

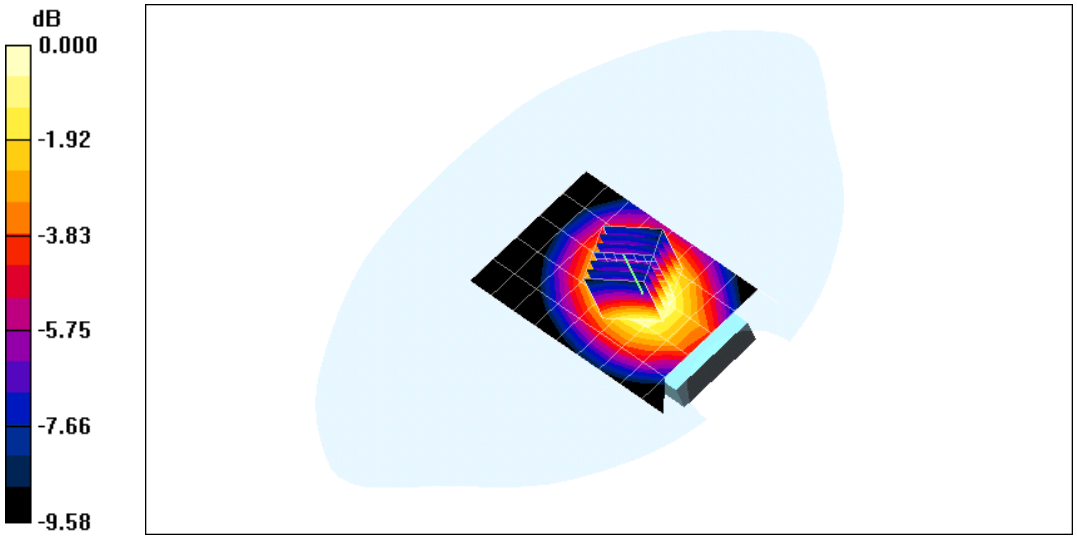
FLAT	Towards phantom	**836.4 MHz**

Communication System: GSM 850; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.41 MHz; σ = 0.96 mho/m; ε_r = 55.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(7.149, 7.54, 7.336); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1560; Type: SAM; Serial: 1560
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards plantom - Middle GPRS/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.496 mW/g

Towards plantom - Middle GPRS/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.8 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.468 mW/g; SAR(10 g) = 0.332 mW/g
Maximum value of SAR (measured) = 0.497 mW/g



0 dB = 0.497 mW/g

GSM (1900MHz/Head)

Left Side	Cheek	1880 MHz

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.44 mho/m; ε_r = 38.5; ρ = 1500 kg/m^3
Phantom section: Left Section

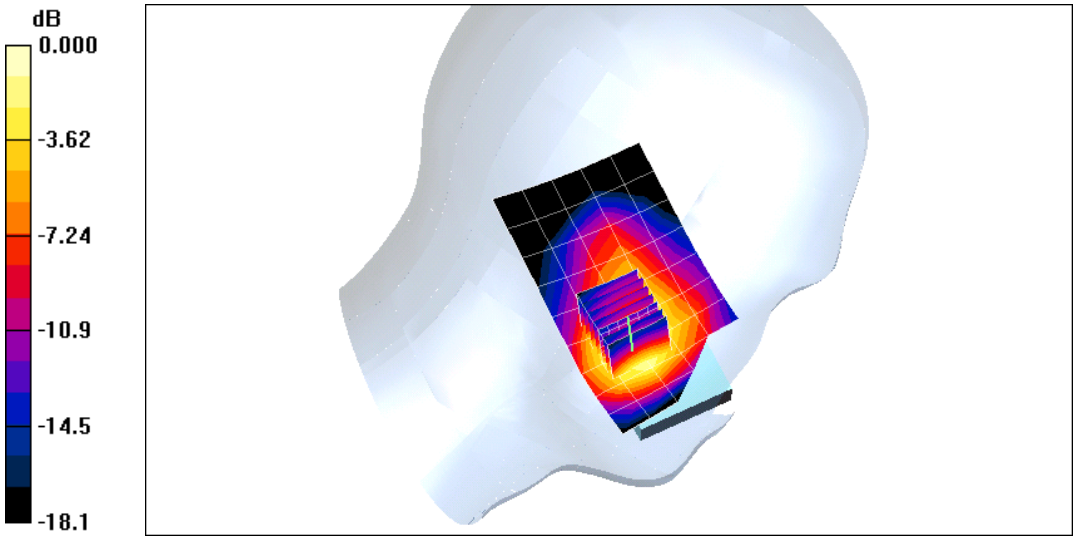
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.438, 5.759, 5.595); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.728 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.69 V/m; Power Drift = 0.106 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.753 mW/g; SAR(10 g) = 0.471 mW/g
Maximum value of SAR (measured) = 0.782 mW/g



0 dB = 0.782 mW/g

Left Side	Tilt	**1880 MHz**

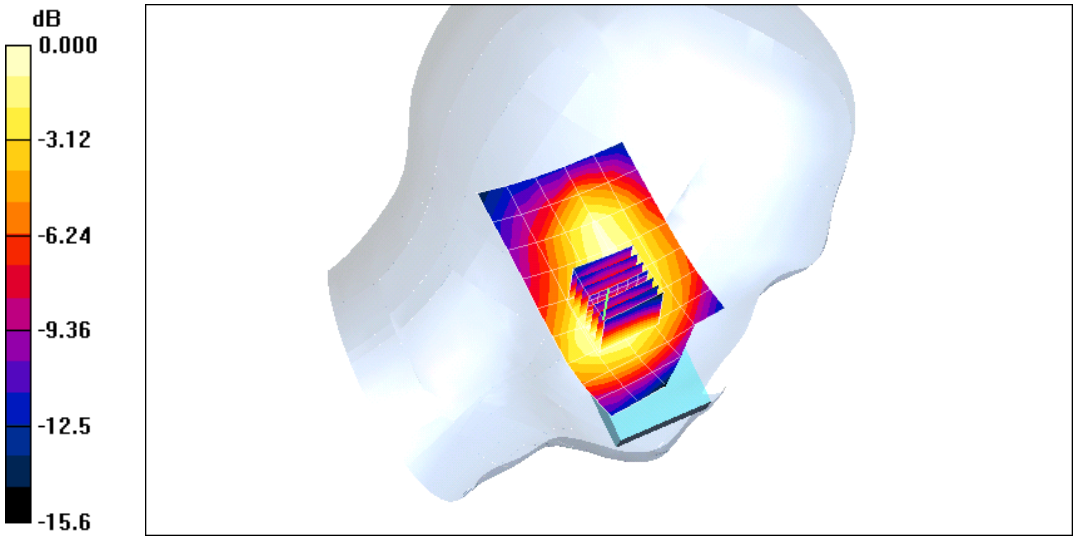
Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.44 mho/m; ε_r = 38.5; ρ = 1500 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.438, 5.759, 5.595); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.135 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.79 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.189 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.089 mW/g
Maximum value of SAR (measured) = 0.136 mW/g



0 dB = 0.136 mW/g

Right Side	Cheek	**1880 MHz**

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.44 mho/m; ε_r = 38.5; ρ = 1500 kg/m^3
Phantom section: Right Section

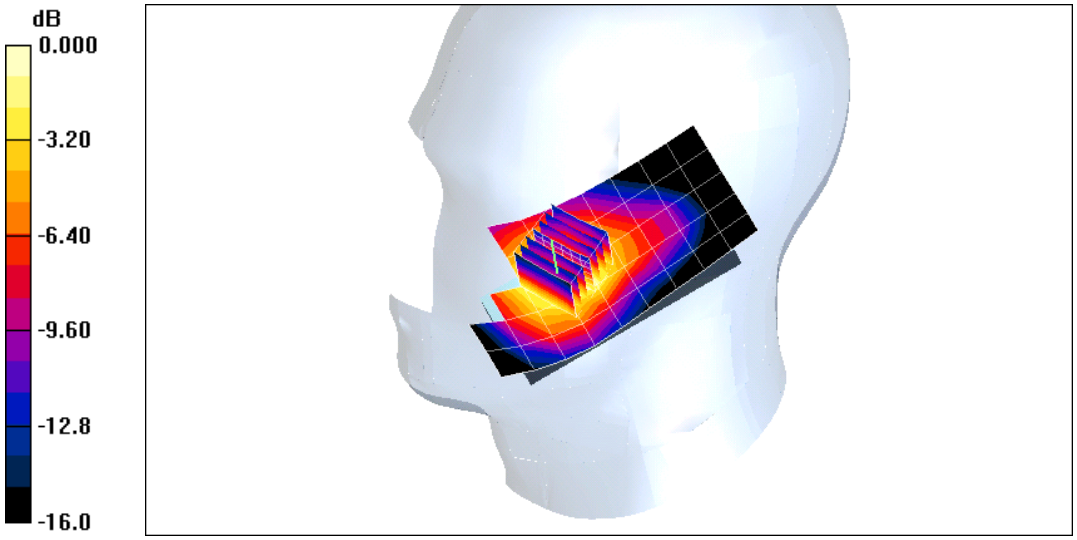
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.438, 5.759, 5.595); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.586 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.01 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 0.815 W/kg
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.376 mW/g
Maximum value of SAR (measured) = 0.591 mW/g



0 dB = 0.591 mW/g

Right Side	Cheek	1880 MHz

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.44 mho/m; ε_r = 38.5; ρ = 1500 kg/m^3
Phantom section: Right Section

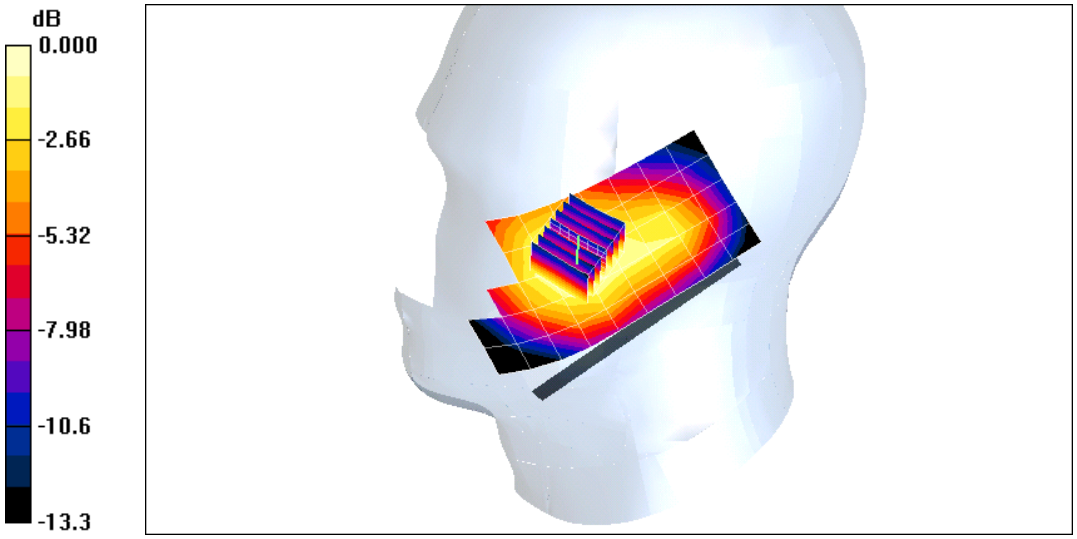
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.438, 5.759, 5.595); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.126 mW/g

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.72 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 0.171 W/kg
SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.086 mW/g
Maximum value of SAR (measured) = 0.128 mW/g



0 dB = 0.128 mW/g

GSM (1900MHz/Body)

FLAT	Towards ground	1880 MHz

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

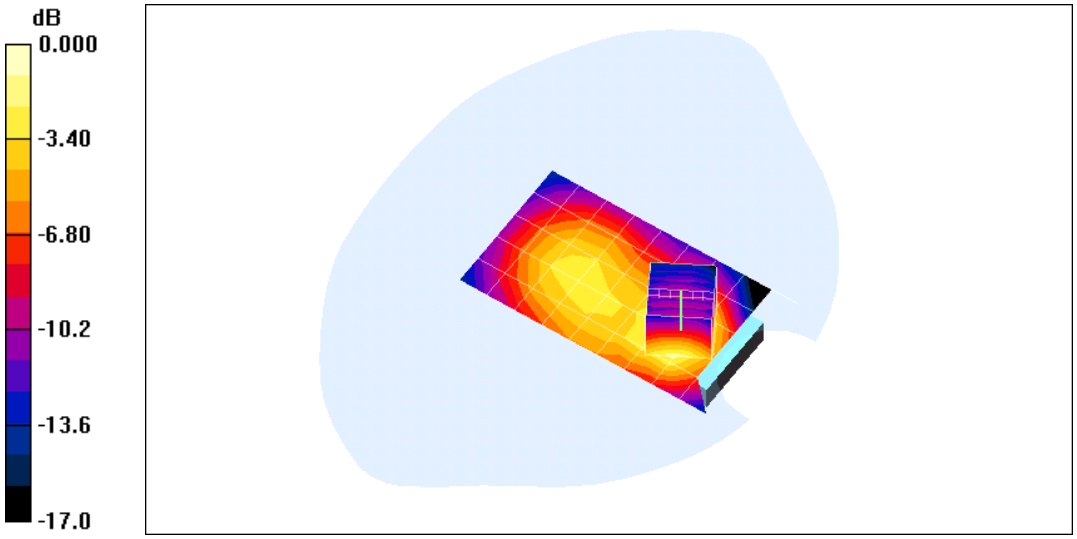
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.271, 5.584, 5.501); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards ground - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.298 mW/g

Towards ground - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.183 mW/g
Maximum value of SAR (measured) = 0.332 mW/g



0 dB = 0.332 mW/g

FLAT	Towards phantom	**1880 MHz**

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

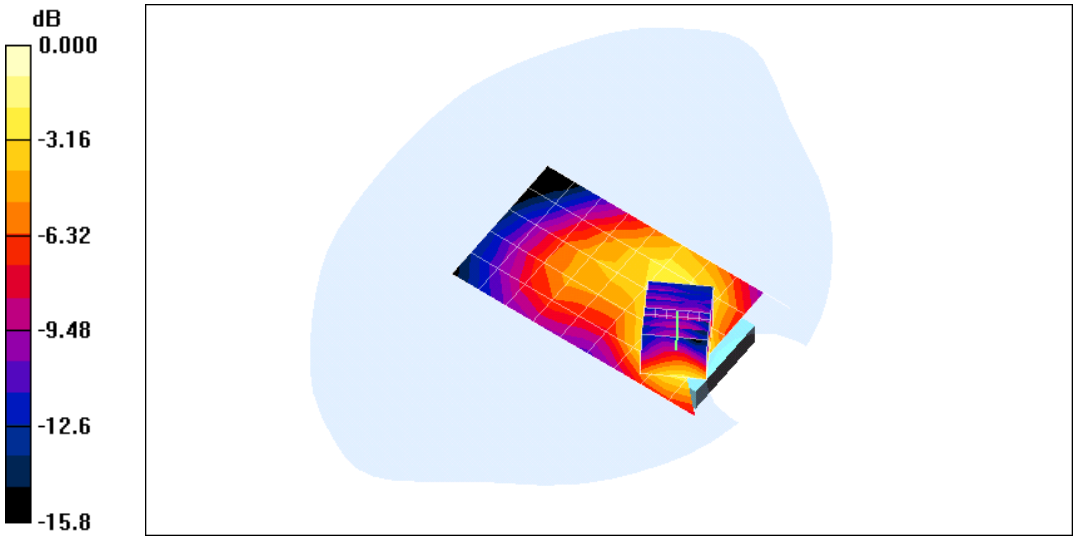
DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.271, 5.584, 5.501); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards phantom - Middle/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.205 mW/g

Towards phantom - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.32 V/m; Power Drift = 0.070 dB
Peak SAR (extrapolated) = 0.304 W/kg
SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.217 mW/g



0 dB = 0.217 mW/g

GPRS (1900MHz/Body)

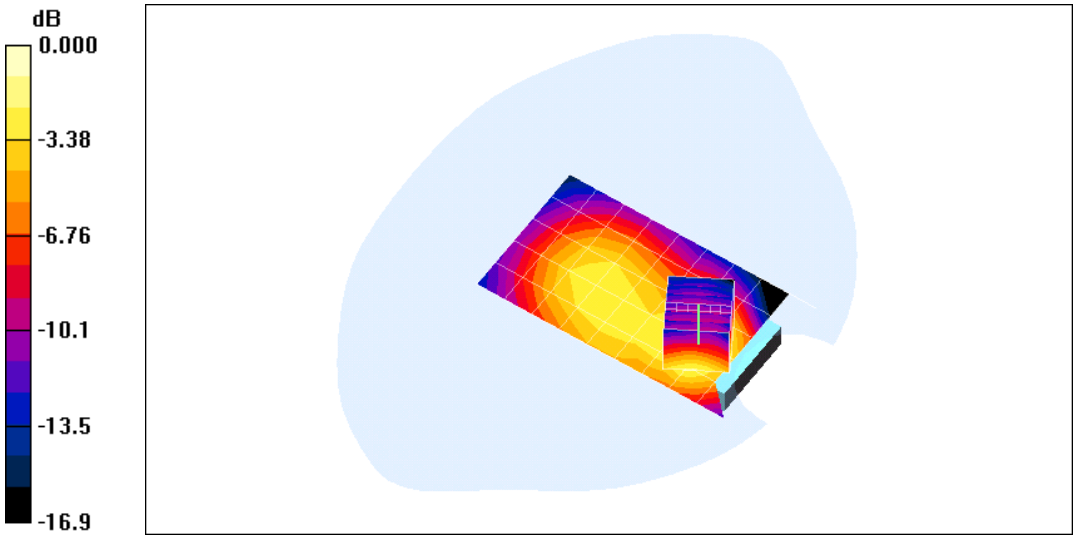
FLAT	Towards ground	1880 MHz

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.271, 5.584, 5.501); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards ground - Middle GPRS/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.446 mW/g

Towards ground - Middle GPRS/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 0.662 W/kg
SAR(1 g) = 0.428 mW/g; SAR(10 g) = 0.256 mW/g
Maximum value of SAR (measured) = 0.468 mW/g



0 dB = 0.468 mW/g

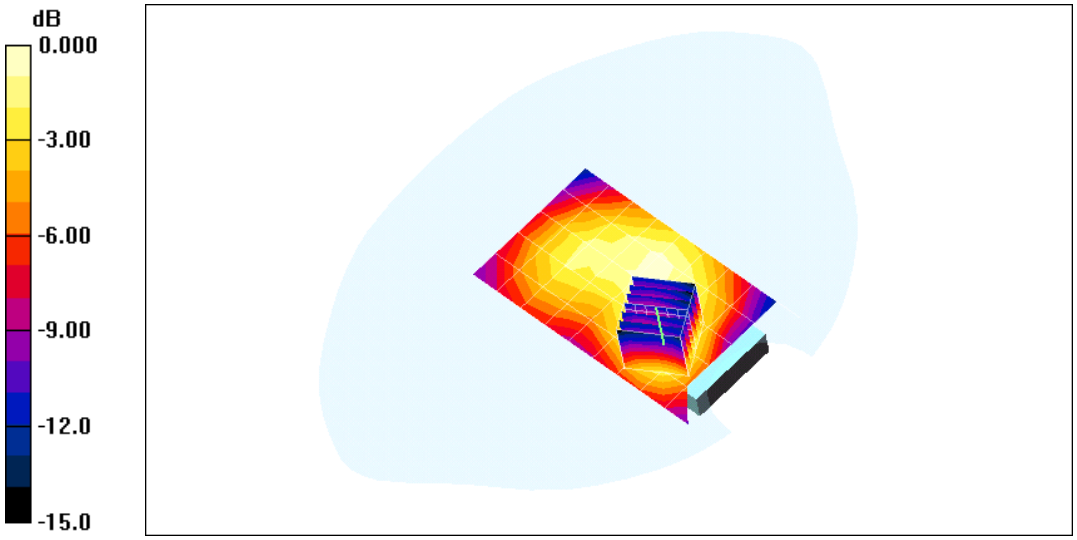
FLAT	Towards phantom	**1880 MHz**

Communication System: PCS1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3128; ConvF(5.271, 5.584, 5.501); Calibrated: 2/3/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn720; Calibrated: 2/7/2012
- Phantom: SAM 1559; Type: SAM; Serial: 1559
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards phantom - Middle GPRS/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.257 mW/g

Towards phantom - Middle GPRS/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 0.388 W/kg
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.150 mW/g
Maximum value of SAR (measured) = 0.269 mW/g



0 dB = 0.269 mW/g

APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

The State Radio_monitoring_center Testing Center

Calibration Certificate

CALIBRATION
CNAS L0447

Instrument	Dosimetric E-field Probe
Type/Model	ES3DV3
Manufacturer	Schmid & Partner Engineering AG
Serial No	SN:3128
Name of Client	The State Radio_monitoring_center Testing Center
Address of Client	No.80 Bei Lishi Road XiCheng District
Calibration Date	2012.2.3

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3) ℃ and humidity<70%.

Approved by

国家无线电监测中心检测中心 校准报告专用章

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

Page 1 of 6 Certificate No.SRTC2012-CAL002-001

The State Radio_monitoring_center Testing Center

Reference documents of the measurement(Code, Name)
SRTC3003-V1.0.0 Working procedure for calibration——SAR testing system
Place and environmental condition of the measurement
Temperature 23.8℃ Humidity 38.2% Location SRTC226 room

Primary Calibration Equipment used	Model/Type	ID#	Cal Date	Scheduled Calibration
Power meter	E4417A	SN: MY45101004	2011.8	2012.8
Power sensor	E9300B	SN: MY41496001	2011.8	2012.8
Power sensor	E9300B	SN: MY41496003	2011.8	2012.8
Reference DAE	DAE4	SN: 725	2011.10	2012.10
Signal generator	SML03	SN:103514	2010.8	2012.8
Network analyzer	8714ET	SN:US40372083	2011.8	2012.8
Secondary Calibration Equipment used	**Model/Type**	**ID#**		
Waveguide	WGLS R9	SN:1006		
Waveguide	WGLS R14	SN:1003		
Waveguide	WGLS R22	SN:1006		

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

The State Radio_monitoring_center Testing Center

Note:

1. This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

   The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

2. This calibration certificate is not permitted to be reproduced except in full without written the approval of the only laboratory.

3. SRTC is responsible for the whole of certificate only with stamp of SRTC.

4. The calibration results would be valid only for the items calibration.

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

The State Radio_monitoring_center Testing Center

Glossary

TSL	Tissue Simulating Liquid
NORMx, y, z	The sensitivity in free space
ConvF	The sensitivity of the TSL/The sensitivity in free space
DCP	Diode Compression Point
Angle φ	φ rotation around probe axis
Angle θ	θ rotation around an axis that is in the plane normal to probe axis i.e. θ=0，means that is normal to probe axis

Calibration is preformed according to the Following Standards

IEEE Std 1528-2003
IEC 62209-1-2005
Federal Communication Commission Office of Engineering & Technology (FCC OET)

Methods Applied and Interpretation of Parameters

- NORMx, y, z：Assessed for E-field polarization θ=0 for XY sensors and θ=90 for Z sensor
- NORM(f)x, y, z= NORMx, y, z * frequency_response. And this linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the states uncertainty of ConvF.
- DCPx,y,z：DCP are numerical linearization parameters assessed based on the data of power sweep(no uncertainty required). DCP does not depend on frequency and medium.
- ConvF and boundary effect：Assessed in flat phantom using E-field and inside waveguide using analytical field distributions based on power measurements for f > 800MHz.The same setups are used for assessment of the parameters applied for boundary compensation(alpha,depth)of which typical uncertainty values are given. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ±50MHz to ±100MHz.
- Spherical isotropy：in a locally homogeneous field realized using an open waveguide setup.

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The State Radio_monitoring_center Testing Center

Measurement Conditions

DASY versions	DSAY 5	V52.8.0.692
Model	Flat phantom	———

Probe Sensitivity Parameters

	Value	Unit
Axis X	1.00	$\mu V/(V/m)^2$
Axis Y	1.00	$\mu V/(V/m)^2$
Axis Z	1.00	$\mu V/(V/m)^2$

1. Diode Compression Point

	Value	Unit	Uncertainty (k=2)
Axis X	100.0	mV	10.82%
Axis Y	100.6	mV	10.82%
Axis Z	100.7	mV	10.82%

2. Probe Conversion Factors: Head Tissue Liquid

Frequency (MHz)	Validity (MHz)	Permittivity	Conductivity (mho/m)	Alpha	Depth (mm)	ConvFx/ ConvFy / ConvFz $\mu V/(V/m)^2$			Uncertainty ($k=2$)
900	±100	42.72	0.968	0.411	1.582	7.375	7.783	7.540	13.02%
1800	±100	39.61	1.354	0.386	1.760	5.767	6.013	5.888	13.02%
1900	±100	39.11	1.463	0.313	2.161	5.438	5.759	5.595	13.02%
2450	±100	38.30	1.890	0.406	1.755	3.770	3.979	3.882	13.02%

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The State Radio_monitoring_center Testing Center

3. **Probe Conversion Factors: Body Tissue Liquid**

Frequency (MHz)	Validity (MHz)	Permittivity	Conductivity (mho/m)	Alpha	Depth (mm)	ConvFx/ ConvFy/ConvFz $\mu V/(V/m)^2$			Uncertainty ($k=2$)
900	±100	54.48	1.055	0.405	1.643	7.149	7.540	7.336	13.02%
1800	±100	53.74	1.567	0.370	2.095	6.056	6.383	6.220	13.02%
1900	±100	53.40	1.679	0.301	2.577	5.271	5.584	5.501	13.02%
2450	±100	52.70	1.950	0.494	1.585	3.783	4.000	3.888	13.02%

4. **Probe Isotropy**

	Value	Unit	Uncertainty(k=2)
Axial Isotropy	-0.18	dB	10.18%
Spherical Isotropy	-0.20	dB	10.18%

Calibrated by 张琳依 Checked by 刘佳

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

APPENDIX D: RELEVANT PAGES FROM DAE REPORT(S)

The State Radio_monitoring_center Testing Center

Calibration Certificate

CNAS CALIBRATION CNAS L0447

Instrument	DAE
Type/Model	DAE4
Manufacturer	Schmid & Partner Engineering AG
Serial No	SN:720
Name of Client	The State Radio_monitoring_center Testing Center
Address of Client	No.98 Bei Lishi Road XiCheng District
Calibration Date	2012.2.7

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3) ℃ and humidity<70%

Approved by

国家无线电监测中心检测中心 校准报告专用章

Tel: +86-10-68009202 68009203 Fax: +86-10-68009205 68009195
Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

Page 1 of 7 Certificate No.SRTC2012-CAL001-001

The State Radio_monitoring_center Testing Center

Reference documents of the measurement(Code, Name)
SRTC3003-V1.0.0 Working procedure for calibration——SAR testing system
Place and environmental condition of the measurement
Temperature 21.9℃ Humidity 27.8% Location SRTC226 room

Primary Calibration Equipment used	Model/Type	ID#	Cal Date	Scheduled Calibration
Process Calibrator	Fluke 525B	1090118	2011.8	2012.8
Protractor		1001	2011.8	2012.8
Secondary Calibration Equipment used	Model/Type	ID#	Cal Date	Scheduled Calibration
Calibrator Box	V1.1	1003	---	---

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

The State Radio_monitoring_center Testing Center

Note:

1. This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).

   The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

2. This calibration certificate is not permitted to be reproduced except in full without written the approval of the only laboratory

3. SRTC is responsible for the whole of certificate only with stamp of SRTC.

4. The calibration results would be valid only for the items calibration.

5. The certification is written by Chinese and English. Exact meaning should be explained only on Chinese version.

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

The State Radio_monitoring_center Testing Center

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is preformed according to the Following Standards

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in Human Head from Wireless Communication Devices: Measurement Techniques", December 2003

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz) ", February 2005

c) Federal Communication Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Methods Applied and Interpretation of Parameters

- **DC Voltage Measurement**: Calibration Factor assessed for use in DASY system by comparison with a calibrates instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- **Connector angle**: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters contain technical information as a result from the performance test and require no uncertainty.

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Add: No.80 Bei Lishi Road, Xi Cheng District Beijing 100037, P .R .China

DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage.

Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement.

Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage.

AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage.

Input Offset Measurement: Output voltage and statistical results over a large number of zero voltage measurement.

DC Voltage Measurement

A/D-Converter Resolution nominal

High Range: 1LSB=6.1 μ V full range = -100…+300mV

Low Range: 1LSB=61nV full range = -1...+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Facto	X	Y	Z
High Range	403.358±0.12%(k =2)	404.816±0.12%(k =2)	403.239±0.12%(k =2)
Low Range	3.948±1.3%(k =2)	3.965±1.3%(k =2)	3.950±1.3%(k =2)

Connector Angle

Connector Angle to be used in DASY system	174° ±1°

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1. DC Voltage Linearity

DC Voltage Linearity

High Range		Input (μ V)	Reading(μ V)	Error(%)
Channel X	+Input	+200000	200001.6	0.001
Channel X	+Input	+20000	20008.9	0.045
Channel X	-Input	-20000	-19997.9	0.011
Channel Y	+Input	+200000	200001.1	0.000
Channel Y	+Input	+20000	20009.2	0.046
Channel Y	-Input	-20000	-19996.7	0.017
Channel Z	+Input	+200000	200002.5	0.001
Channel Z	+Input	+20000	20006.1	0.031
Channel Z	-Input	-20000	-20004.4	0.022

Low Range		Input (μ V)	Reading(μ V)	Error(%)
Channel X	+Input	+2000	2000.5	0.03
Channel X	+Input	+200	201.6	0.80
Channel X	-Input	-200	-201.9	0.95
Channel Y	+Input	+2000	2000.3	0.02
Channel Y	+Input	+200	201.6	0.80
Channel Y	-Input	-200	-201.9	0.95
Channel Z	+Input	+2000	1999.0	0.05
Channel Z	+Input	+200	200.2	0.10
Channel Z	-Input	-200	-201.5	0.75

2 .Common mode sensitivity

Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3sec

	Common mode Input Voltage(mV)	High Range Average Reading(μ V)	Low Range Average Reading(μ V)
Channel X	200	-5.6	-7.0
	-200	9.1	8.1
Channel Y	200	15.7	15.1
	-200	-15.8	-15.6
Channel Z	200	-17.2	-17.4
	-200	15.6	15.7

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3 .Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3sec

	Input Voltage(mV)	Channel X(μV)	Channel Y(μV)	Channel Z(μV)
Channel X	200	——	9.6	4.0
Channel Y	200	7.4	——	9.7
Channel Z	200	6.8	6.7	——

4 .AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3sec

	High Range(LSB)	Low Range (LSB)
Channel X	16150.2	16332.3
Channel Y	16218.4	17543.7
Channel Z	16450.4	15098.6

5 .Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3sec
Input 10MΩ

	Average(μV)	Min. Offset(μV)	Max. Offset(μV)	Std.Deviation(μV)
Channel X	0.2	1.5	-1.3	0.5
Channel Y	-0.6	1.7	-1.7	0.4
Channel Z	-0.8	1.5	-2.4	0.7

Calibrated by 张林伟 Checked by 刘佳

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