



OET 65

TEST REPORT

Product Name	HUAWEI IDEOS X1; HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; IDEOS X1;GAGA;Gaga
Model	HUAWEI U8180-5/U8180-5
FCC ID	QISU8180-5
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

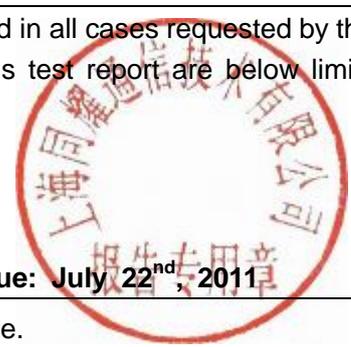
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GENERAL SUMMARY

Product Name	HUAWEI IDEOS X1; HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; IDEOS X1;GAGA;Gaga	Model	HUAWEI U8180-5/U8180-5
FCC ID	QISU8180-5		
Report No.	RZA1107-1205SAR		
Client	Huawei Technologies Co., Ltd.		
Manufacturer	Huawei Technologies Co., Ltd.		
Reference Standard(s)	<p>IEEE Std C95.1, 1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 kHz to 300 GHz.</p> <p>IEEE Std 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.</p> <p>SUPPLEMENT C Edition 01-01 to OET BULLETIN 65 Edition 97-01 June 2001 including DA 02-1438, published June 2002: Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions.</p> <p>RSS-102 Issue 4 March 2010: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)</p> <p>KDB 941225 D06 Hot Spot SAR v01 SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities</p>		
Conclusion	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 7 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: Pass</p> <p style="text-align: right;">(Stamp) Date of issue: July 22nd, 2011</p>		
Comment	The test result only responds to the measured sample.		



Approved by Derek. Yang
Director

Revised by Jeff. Long
SAR Manager

Performed by Jason. Du
SAR Engineer

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1. General Information

1.1. Notes of the Test Report

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

1.2. Testing Laboratory

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1.3. Applicant Information

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City: Shenzhen
Postal Code: 518129
Country: P.R. China
Contact: Zhao Guiying
Telephone: 0755-28780808
Fax: 0755-28780808

1.4. Manufacturer Information

Company: Huawei Technologies Co., Ltd.
Address: Bantian, Longgang District
City: Shenzhen
Postal Code: 518129
Country: P.R. China
Telephone: 0755-28780808
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1.5. Information of EUT

General Information

Device Type:	Portable Device		
Exposure Category:	Uncontrolled Environment / General Population		
Product Name:	HUAWEI IDEOS X1; HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; IDEOS X1;GAGA;Gaga		
IMEI:	868751000004308		
Hardware Version:	HD1U813M		
Software Version:	U8180-5V100R001C212B630		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Supporting Mode(s):	GSM 850/GSM 1900/WCDMA Band II/ WCDMA Band V; (tested) WiFi (802.11b/g/n HT20); (tested) GSM 900/GSM 1800; (untested) Bluetooth; (untested)		
Test Modulation:	(GSM)GMSK; (WCDMA)QPSK		
Device Class:	B		
HSDPA UE Category:	8		
GPRS Multislot Class(10):	Max Number of Timeslots in Uplink	2	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
EGPRS Multislot Class(10):	Max Number of Timeslots in Uplink	2	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
Operating Frequency Range(s):	Mode	Tx (MHz)	Rx (MHz)
	GSM 850	824.2 ~ 848.8	869.2 ~ 893.8
	GSM 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8
	WCDMA Band II	1852.4 ~ 1907.6	1932.4 ~ 1987.6
	WCDMA Band V	826.4 ~ 846.6	871.4 ~ 891.6
Power Class:	GSM 850: 4, tested with power level 5		
	GSM 1900: 1, tested with power level 0		
	WCDMA Band II: 3, tested with power control all up bits		
	WCDMA Band V: 3, tested with power control all up bits		
Test Channel: (Low - Middle - High)	128 - 192 - 251	(GSM 850)	(tested)
	512 - 661 - 810	(GSM 1900)	(tested)
	9262 - 9400 - 9538	(WCDMA Band II)	(tested)
	4132 - 4183 - 4233	(WCDMA Band V)	(tested)
	1 - 6 - 11	(802.11b)	(tested)

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Auxiliary Equipment Details

AE1:Battery

Model: HB4J1
Manufacturer: Huawei Technologies Co., Ltd.
S/N: GAGB421XC15P6394

AE2:Battery

Model: HB4J1
Manufacturer: Huawei Technologies Co., Ltd.
S/N: BAAAC09XJ4931366

Equipment Under Test (EUT) is a model of HUAWEI IDEOS X1; HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; IDEOS X1;GAGA;Gaga. The device has an internal antenna for GSM/WCDMA Tx/Rx, and the other is BT/WiFi antenna that can be used for Tx/Rx. It has Personal Wireless Routers (hot spots) function. The detail about Mobile phone and Lithium Battery is in chapter 1.5 in this report. SAR is tested for GSM 850, GSM 1900, WCDMA Band II, WCDMA Band V and WiFi.

The EUT has Proximity Sensor function. The proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. It can transmit a kind of light pulse, and measure the time from launching and responding, then calculate the distance through the time. It only shut off the LCD and will not reduce the transmit power. Software update need special software tool in a computer, and it is not available to the user.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum SAR_{1g} Values

Head Configuration

Mode	Channel	Position	SAR _{1g} (W/kg)
GSM 850	Middle/192	Right, Cheek	0.863
GSM 1900	Low/512	Left, Cheek	0.656
WCDMA Band II	Low/9262	Right, Cheek	1.270
WCDMA Band V	High/4233	Right, Cheek	0.929
WiFi(802.11b)	High/11	Right, Tilt	0.124

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Body Worn Configuration

Mode	Channel	Separation distance	SAR _{1g} (W/kg)
2Txslots GPRS 850	Middle/192	10mm	1.190
2Txslots GPRS 1900	High/810	10mm	0.716
WCDMA Band II	Low/9262	10mm	0.931
WCDMA Band V	High/4233	10mm	1.260
WiFi(802.11b)	High/11	10mm	0.110

Extrapolated SAR Values of the highest measured SAR

Mode	Test Position	Channel	Measurement Result		Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
			Conducted Power(dBm)	1g Average (W/kg)		Extrapolated Result (W/kg)
GSM850	Right, Cheek	Middle/192	32.72	0.863	33.20	0.964
GSM850	Back Side	Middle/192	32.72	1.100	33.20	1.229
2Txslots GPRS850	Back Side	Middle/192	30.17	1.190	30.70	1.344
2Txslots EGPRS850	Back Side	Middle/192	30.15	1.170	30.70	1.328
GSM1900	Left, Cheek	Low/512	29.83	0.656	30.20	0.714
GSM1900	Back Side	High/810	29.92	0.450	30.20	0.480
2Txslots GPRS1900	Back Side	High/810	28.82	0.716	29.20	0.781
2Txslots EGPRS1900	Back Side	High/810	28.82	0.710	29.20	0.775
WCDMA Band II	Right, Cheek	Low/9262	22.25	1.270	23.00	1.509
WCDMA Band II	Back Side	Low/9262	22.25	0.923	23.00	1.097
WCDMA Band II+HSDPA	Back Side	Low/9262	22.31	0.931	23.00	1.091
WCDMA Band V	Right, Cheek	High/4233	23.32	0.929	23.70	1.014
WCDMA Band V	Back Side	High/4233	23.32	1.260	23.70	1.375
WCDMA Band V +HSDPA	Back Side	High/4233	23.09	1.250	23.70	1.439

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1.7. Maximum Conducted Power of each tested Mode

GSM Maximum Power

Mode		Max Burst Conducted Power (dBm)	Max Average Power (dBm)
GSM 850	GSM	32.76	23.73
	GPRS, 2Txslots	30.17	24.15
	EGPRS, 2Txslots	30.15	24.13
GSM 1900	GSM	30.07	21.04
	GPRS, 2Txslots	28.98	22.96
	EGPRS, 2Txslots	28.95	22.93

WCDMA/WiFi Maximum Power

Mode	Maximum Conducted Power (dBm)
WCDMA Band II	22.49
WCDMA Band V	23.34
WiFi(802.11b)	14.79

Note: The detail Power refer to Table 9 (Power Measurement Results).

1.8. Test Date

The test is performed from July 19, 2011 to July 21, 2011.

2. Operational Conditions during Test

2.1. General Description of Test Procedures

A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radiofrequency Channel Number (ARFCN) is allocated to 128, 192 and 251 in the case of GSM 850, to 512, 661 and 810 in the case of GSM 1900, to 9262, 9400 and 9538 in the case of WCDMA Band II, to 4132, 4183 and 4233 in the case of WCDMA Band V. The EUT is commanded to operate at maximum transmitting power.

Connection to the EUT is established via air interface with E5515C, and the EUT is set to maximum output power by E5515C. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. The antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the EUT. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the EUT by at least 30 dB.

2.2. GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. Using E5515C the power lever is set to "5" in SAR of GSM 850, set to "0" in SAR of GSM 1900. Since the GPRS class is 10 for this EUT, it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5; the EGPRS class is 10 for this EUT, it has at most 2 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5.

measur When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR ement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:

Output power of reductions:

GSM 850

GPRS (GMSK) :

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5

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EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5

GSM 1900

GPRS (GMSK) :

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1

EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1

2.3. WCDMA Test Configuration

2.3.1. Output Power Verification

Maximum output power is verified on the High, Middle and Low channel according to the procedures described in section 5.2 of 3GPP TS 34. 121, using the appropriate RMC or AMR with TPC(transmit power control) set to all "1's" for WCDMA/HSDPA. Results for all applicable physical channel configuration (DPCCH, DPDCH_n and spreading codes, HSDPA) should be tabulated in the SAR report. All configuration that are not supported by the DUT or can not be measured due to technical or equipment limitations should be clearly identified.

2.3.2. Head SAR Measurements

According to KDB 941225 D01 V02, SAR for head exposure configurations in voice mode is measured using a 12.2kbps RMC with TPC bits configured to all "1's". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2kbps AMR is less than 1/4 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2kbps AMR with a 3.4 kbps SRB(Signaling radio bearer) using the exposure configuration that results in the highest SAR in 12.2kbps RMC for that RF channel.

2.3.3. Body SAR Measurements

According to KDB 941225 D01 V02, SAR for body exposure configurations in voice and data modes is measured using 12.2kbps RMC with TPC bits configured to all "1's". SAR for other spreading codes and multiple DPDCH_n, when supported by the DUT, are not required when the maximum average output of each RF channel, for each spreading code and DPDCH_n configuration, are less than 1/4 dB higher than those measured in 12.2kbps RMC. Otherwise, SAR is measured on the maximum output channel with an applicable RMC configuration for the corresponding spreading code or DPDCH_n using the exposure configuration that results in the highest SAR with 12.2 kbps RMC. When more than 2 DPDCH_n are supported by the DUT, it may be necessary to configure additional DPDCH_n for a DUT using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

2.4. HSDPA Test Configuration

According to KDB 941225 D01 V02, SAR for body exposure configurations is measured according to the "Body SAR Measurements" procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average output of each RF channel with HSDPA active is at least 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.

HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(β_c, β_d), and HS-DPCCH power offset

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parameters(Δ_{ACK} , Δ_{NACK} , Δ_{CQI}) should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 1: Subtests for UMTS Release 5 HSDPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 8$ ($A_{hs} = 30/15$) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 7$ ($A_{hs} = 24/15$) with $\beta_{hs} = 24/15 * \beta_c$.

Note3: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Table 2: Settings of required H-Set 1 QPSK in HSDPA mode

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	534
Inter-TTI Distance	TTI's	3
Number of HARQ Processes	Processes	2
Information Bit Payload (N_{INF})	Bits	3202
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	4800
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	9600
Coding Rate	/	0.67
Number of Physical Channel Codes	Codes	5
Modulation	/	QPSK

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Table 3: HSDPA UE category

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum Transport Bits/HS-DSCH	Total Channel
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

Table 4: UE maximum output powers with HS-DPCCH (Release 5 Only)

Ratio of β_c to β_d for all values of β_{hs}	Power Class 3		Power Class 4	
	Power (dBm)	Tolerance (dB)	Power (dBm)	Tolerance (dB)
$1/15 \leq \beta_c/\beta_d \leq 12/15$	+24	+1/-3	+21	+2/-2
$13/15 \leq \beta_c/\beta_d \leq 15/8$	+23	+2/-3	+20	+3/-2
$15/7 \leq \beta_c/\beta_d \leq 15/0$	+22	+3/-3	+19	+4/-2

2.5. WIFI Test Configuration

For the 802.11b/g SAR tests, a communication link is set up with the test mode software for WIFI mode test. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 1, 6 and 11 respectively in the case of 2450 MHz. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest data rate. Testing at higher data rates is not required when the maximum average output power is less than 0.25dB higher than those measured at the lowest data rate.

802.11b/g operating modes are tested independently according to the service requirements in each frequency band. 802.11b/g modes are tested on channels 1, 6, 11; however, if output power reduction is necessary for channels 1 and /or 11 to meet restricted band requirements the highest output channels closest to each of these channels must be tested instead.

SAR is not required for 802.11g channels when the maximum average output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels. When the maximum average output channel in each frequency band is not included in the “default test channels”, the maximum channel should be tested instead of an adjacent “default test channels”, these are referred to as the “required test channels” and are illustrated in table 5.

Table 5: “Default Test Channels”

Mode	GHz	Channel	Turbo Channel	“Default Test Channels”			
				15.247		UNII	
				802.11b	802.11g		
802.11b/g	2.412	1 [#]		√	*		
	2.437	6	6	√	*		
	2.462	11 [#]		√	*		

Note: [#]=when output power is reduced for channel 1 and /or 11 to meet restricted band requirements the highest out put channels closet to each of these channels should be tested.

√= “default test channels”

* =possible 802.11g channels with maximum average output 0.25dB>=the “default test channels”

2.6. Test Positions

2.6.1. 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".

2.6.2. Body Worn Configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device.

Based upon KDB941225 D06 V01, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. The distance between the device and the phantom was kept 10mm of wireless routers.

3. SAR Measurements System Configuration

3.1. SAR Measurement Set-up

The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
- The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003
- DASY5 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles allowing to validate the proper functioning of the system.

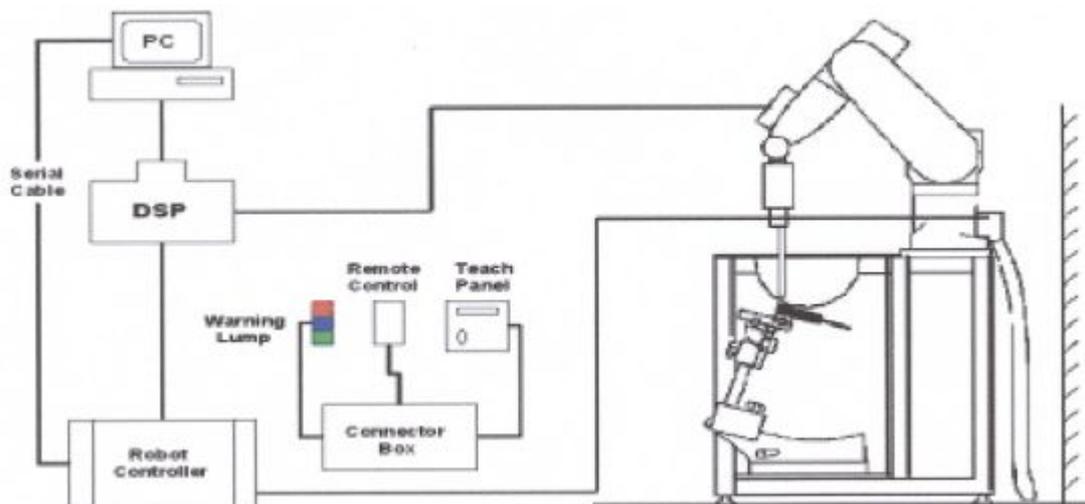


Figure 1 SAR Lab Test Measurement Set-up

3.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

3.2.1. EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.



Figure 2. EX3DV4 E-field Probe



Figure 3. EX3DV4 E-field probe

3.2.2. E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$\text{SAR} = C \frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
 ΔT = Temperature increase due to RF exposure.
Or

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

Where:
 σ = Simulated tissue conductivity,
 ρ = Tissue density (kg/m³).

3.3. Other Test Equipment

3.3.1. Device Holder for Transmitters

The DASY device holder is designed to cope with the different positions given in the standard.

It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the inference of the clamp on the test results could thus be lowered.



Figure 4 Device Holder

3.3.2. Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden Figure. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness	2±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x 1000 x 500 mm (H x L x W)
	Available Special



Figure 5 Generic Twin Phantom

3.4. Scanning Procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.
- The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)
- Area Scan
The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot. Before starting the area scan a grid

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spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged.

After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

- Zoom Scan

Zoom Scans are used to estimate the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan is done by 7x7x7 points within a cube whose base is centered around the maxima found in the preceding area scan.

- Spatial Peak Detection

The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses. The DASY5 system allows evaluations that combine measured data and robot positions, such as:

- maximum search
- extrapolation
- boundary correction
- peak search for averaged SAR

During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space. They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 7x7x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10g cubes.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube 7x7x7 scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

3.5. Data Storage and Evaluation

3.5.1. Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension “.DA4”. The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.5.2. Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Norm _i , a _{i0} , a _{i1} , a _{i2}
	- Conversion factor	ConvF _i
	- Diode compression point	Dcp _i
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	
	- Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

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If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot c f / d c p_i$$

With V_i = compensated signal of channel i (i = x, y, z)

U_i = input signal of channel i (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$

With V_i = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)²] for E-field Probes

$ConvF$ = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \dots) / (\dots \cdot 1000)$$

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with **SAR** = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ρ = equivalent tissue density in g/cm³

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with **P_{pwe}** = equivalent power density of a plane wave in mW/cm²

E_{tot} = total electric field strength in V/m

H_{tot} = total magnetic field strength in A/m

3.6. System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulates, 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 check results (dielectric parameters and SAR values) are given in the table 12 and table 13.

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system ($\pm 10\%$).

System check is performed regularly on all frequency bands where tests are performed with the DASYS system.

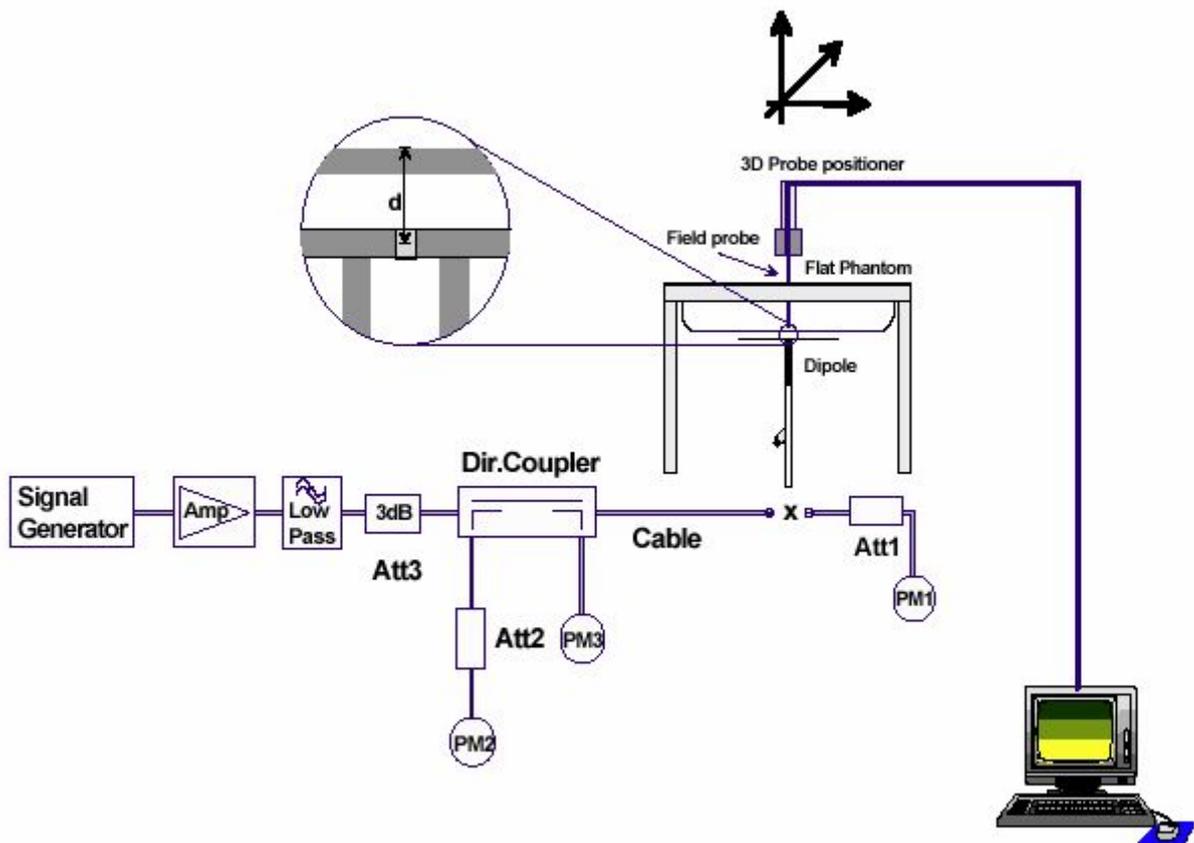


Figure 6 System Check Set-up

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Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 2 years ago but more than 1 year ago were confirmed in maintaining return loss (< - 20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB Publication 450824:

Dipole D835V2 SN: 4d092				
Head				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
1/14/2010	-30.3	1.3%	51.2	0.5Ω
1/13/2011	-29.9		51.7	
Body				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
1/14/2010	-25.6	0.4%	47.6	0.2Ω
1/13/2011	-25.7		47.4	

Dipole D1900V2 SN: 5d018				
Head				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/15/2010	-29.7	2.7%	52.1	1.9Ω
6/14/2011	-28.9		54.0	
Body				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
6/15/2010	-27.6	4.3 %	47.4	1.3Ω
6/14/2011	-26.4		48.7	

Dipole D2450V2 SN: 712				
Head				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2/19/2010	-27.1	4.4%	54.2	1.4Ω
2/18/2011	-25.9		55.6	
Body				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2/19/2010	-25.7	3.1%	50.1	1.7Ω
2/18/2011	-26.5		51.8	

3.7. Equivalent Tissues

The liquid is consisted of water, salt, Glycol, Sugar, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The table 6 and table 7 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

Table 6: Composition of the Head Tissue Equivalent Matter

MIXTURE%	FREQUENCY(Brain) 835MHz
Water	41.45
Sugar	56
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz $\epsilon=41.5$ $\sigma=0.9$

MIXTURE%	FREQUENCY(Brain) 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz $\epsilon=40.0$ $\sigma=1.40$

MIXTURE%	FREQUENCY(Brain) 2450MHz
Water	62.7
Glycol	36.8
Salt	0.5
Dielectric Parameters Target Value	f=2450MHz $\epsilon=39.20$ $\sigma=1.80$

Table 7: Composition of the Body Tissue Equivalent Matter

MIXTURE%	FREQUENCY(Body) 835MHz
Water	52.5
Sugar	45
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz $\epsilon=55.2$ $\sigma=0.97$

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MIXTURE%	FREQUENCY (Body) 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz $\epsilon=53.3$ $\sigma=1.52$

MIXTURE%	FREQUENCY(Body) 2450MHz
Water	73.2
Glycol	26.7
Salt	0.1
Dielectric Parameters Target Value	f=2450MHz $\epsilon=52.70$ $\sigma=1.95$

4. Laboratory Environment

Table 8: The Ambient Conditions during Test

Temperature	Min. = 20°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

5. Characteristics of the Test

5.1. Applicable Limit Regulations

IEEE Std C95.1, 1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 kHz to 300 GHz.

5.2. Applicable Measurement Standards

IEEE Std 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.

SUPPLEMENT C Edition 01-01 to OET BULLETIN 65 Edition 97-01 June 2001 including DA 02-1438, published June 2002: Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions.

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

KDB 941225 D06 Hot Spot SAR v01 SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

6. Conducted Output Power Measurement

6.1. Summary

The DUT is tested using an E5515C communications tester as controller unit to set test channels and maximum output power to the DUT, as well as for measuring the conducted power.

Conducted output power was measured using an integrated RF connector and attached RF cable.

This result contains conducted output power for the EUT.

6.2. Conducted Power Results

Table 9: Conducted Power Measurement Results

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 192	Channel 251		Channel 128	Channel 192	Channel 251
GSM		32.76	32.72	32.57	-9.03dB	23.73	23.69	23.54
GPRS (GMSK)	1Txslot	32.76	32.71	32.57	-9.03dB	23.73	23.68	23.54
	2Txslots	30.13	30.17	30.13	-6.02dB	24.11	24.15	24.11
EGPRS (GMSK)	1Txslot	32.8	32.77	32.62	-9.03dB	23.77	23.74	23.59
	2Txslots	30.14	30.15	30.11	-6.02dB	24.12	24.13	24.09
EGPRS (8PSK)	1Txslot	27.46	27.55	27.54	-9.03dB	18.43	18.52	18.51
	2Txslots	27.43	27.52	27.51	-6.02dB	21.41	21.5	21.49
GSM 1900		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GSM		29.83	30.07	29.92	-9.03dB	20.8	21.04	20.89
GPRS (GMSK)	1Txslot	29.79	30.05	29.92	-9.03dB	20.76	21.02	20.89
	2Txslots	28.81	28.98	28.82	-6.02dB	22.79	22.96	22.8
EGPRS (GMSK)	1Txslot	29.82	30.05	29.91	-9.03dB	20.79	21.02	20.88
	2Txslots	28.76	28.95	28.82	-6.02dB	22.74	22.93	22.8
EGPRS (8PSK)	1Txslot	26.58	26.73	26.63	-9.03dB	17.55	17.7	17.6
	2Txslots	26.45	26.69	26.56	-6.02dB	20.43	20.67	20.54

Note:

1) Division Factors

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

1Txslot = 1 transmit time slot out of 8 time slots

=> conducted power divided by (8/1) => -9.03 dB

2Txslots = 2 transmit time slots out of 8 time slots

=> conducted power divided by (8/2) => -6.02 dB

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WCDMA Band II	Conducted Power (dBm)		
	Channel 9262	Channel 9400	Channel 9538
12.2kbps RMC	22.25	22.45	22.43
64kbps RMC	22.23	22.29	22.41
144kbps RMC	22.27	22.43	22.47
384kbps RMC	22.32	22.49	22.48
WCDMA Band II HSDPA	Conducted Power (dBm)		
	Channel 9262	Channel 9400	Channel 9538
Sub - Test 1	22.31	22.33	22.37
Sub - Test 2	21.89	21.96	21.83
Sub - Test 3	21.53	21.58	21.74
Sub - Test 4	21.36	21.45	21.63
WCDMA Band V	Conducted Power (dBm)		
	Channel 4132	Channel 4183	Channel 4233
12.2kbps RMC	23.21	23.24	23.32
64kbps RMC	23.21	23.27	23.31
144kbps RMC	23.15	23.25	23.33
384kbps RMC	23.19	23.09	23.34
WCDMA Band V HSDPA	Conducted Power (dBm)		
	Channel 4132	Channel 4183	Channel 4233
Sub - Test 1	23.02	23.05	23.09
Sub - Test 2	22.72	22.67	22.71
Sub - Test 3	22.23	22.06	22.25
Sub - Test 4	22.21	22.08	22.19

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7. Test Results

7.1. Dielectric Performance

Table 10: Dielectric Performance of Head Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp °C
		ϵ_r	σ (s/m)	
835MHz (head)	Target value ± 5% window	41.50 39.43 — 43.58	0.90 0.86 — 0.95	/
	Measurement value 2011-7-19	43.03	0.90	21.7
1900MHz (head)	Target value ±5% window	40.00 38.00 — 42.00	1.40 1.33 — 1.47	/
	Measurement value 2011-7-19	39.81	1.39	21.8
2450MHz (head)	Target value ±5% window	39.20 37.24 — 41.16	1.80 1.71 — 1.89	/
	Measurement value 2011-7-21	39.51	1.83	21.8

Table 11: Dielectric Performance of Body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp °C
		ϵ_r	σ (s/m)	
835MHz (body)	Target value ±5% window	55.20 52.44 — 57.96	0.97 0.92 — 1.02	/
	Measurement value 2011-7-20	55.71	1.01	21.7
1900MHz (body)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-7-20	51.47	1.55	21.8
2450MHz (body)	Target value ±5% window	52.70 50.07 — 55.34	1.95 1.85 — 2.05	/
	Measurement value 2011-7-21	51.73	1.97	21.9

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7.2. System Check Results

Table 12: System Check for Head Tissue Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	ϵ_r	σ (s/m)	°C
835MHz	Recommended result ±10% window	1.56 1.40 — 1.72	2.39 2.15 — 2.63	41.2	0.89	/
	Measurement value 2011-7-19	1.58	2.40	43.03	0.90	21.7
1900MHz	Recommended result ±10% window	5.22 4.70 — 5.74	10 9.00 — 11.00	39.5	1.44	/
	Measurement value 2011-7-19	5.30	10.33	39.81	1.39	21.8
2450 MHz	Recommended result ±10% window	6.24 5.62 — 6.86	13.3 11.97—14.63	38.7	1.77	/
	Measurement value 2011-7-21	6.52	14.06	39.51	1.83	21.8

Note: 1. The graph results see ANNEX B.

2. Recommended Values used derive from the calibration certificate and 250 mW is used as feeding power to the calibrated dipole.

Table 13: System Check for Body Tissue Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	ϵ_r	σ (s/m)	°C
835MHz	Recommended result ±10% window	1.63 1.47 — 1.79	2.49 2.24 — 2.74	54.6	0.98	/
	Measurement value 2011-7-20	1.64	2.54	55.71	1.01	21.7
1900 MHz	Recommended result ±10% window	5.52 4.97 — 6.07	10.3 9.27 — 11.33	53.5	1.54	/
	Measurement value 2011-7-20	5.36	10.20	51.47	1.55	21.8
2450 MHz	Recommended result ±10% window	5.97 5.37 — 6.57	13 11.7—14.3	51.8	2.01	/
	Measurement value 2011-7-21	6.48	14.01	51.73	1.97	21.9

Note: 1. The graph results see ANNEX B.

2. Target Values used derive from the calibration certificate and 250 mW is used as feeding power to the Calibrated dipole.

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7.3. Summary of Measurement Results

7.3.1. GSM 850 (GPRS/EGPRS)

Table 14: SAR Values [GSM 850 (GPRS/EGPRS)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	± 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test Position of Head (Battery SN: GAGB421XC15P6394)					
Left hand, Touch Cheek	Middle/192	0.465	0.671	-0.089	Figure 13
Left hand, Tilt 15 Degree	Middle/192	0.230	0.307	0.158	Figure 14
Right hand, Touch Cheek	High/251	0.581	0.794	-0.154	Figure 15
	Middle/192	0.627	0.852	-0.017	Figure 16
	Low/128	0.407	0.552	0.186	Figure 17
Right hand, Tilt 15 Degree	Middle/192	0.299	0.397	0.160	Figure 18
Worst Case Position of Head with Battery (SN: BAAAC09XJ4931366)					
Right hand, Touch Cheek	Middle/192	0.639	0.863	-0.018	Figure 19
Test position of Body (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side (GSM/1Txslot)	High/251	0.668(max.cube)	0.947(max.cube)	0.057	Figure 20
	Middle/192	0.781(max.cube)	1.100(max.cube)	-0.148	Figure 21
	Low/128	0.669(max.cube)	0.942(max.cube)	-0.008	Figure 22
Back Side (2Txslots)	High/251	0.785(max.cube)	1.110(max.cube)	-0.135	Figure 23
	Middle/192	0.827(max.cube)	1.180(max.cube)	-0.174	Figure 24
	Low/128	0.730	1.030	-0.149	Figure 25
Front Side(2Txslots)	Middle/192	0.513	0.695	0.036	Figure 26
Left Edge(2Txslots)	Middle/192	0.285	0.419	-0.020	Figure 27
Right Edge(2Txslots)	Middle/192	0.425	0.611	-0.095	Figure 28
Top Edge(2Txslots)	N/A	N/A	N/A	N/A	N/A
Bottom Edge(2Txslots)	Middle/192	0.098	0.153	-0.029	Figure 29
Worst Case Position of Body with Earphone (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side (GSM)	Middle/192	0.472(max.cube)	0.795(max.cube)	-0.140	Figure 30
Worst Case Position of Body with EGPRS (Battery SN: GAGB421XC15P6394, GSMK, Distance 10mm)					
Back Side (2Txslots)	Middle/192	0.828(max.cube)	1.170(max.cube)	-0.022	Figure 31
Worst Case Position of Body with Battery (SN: BAAAC09XJ4931366, Distance 10mm)					
Back Side (2Txslots)	Middle/192	0.845(max.cube)	1.190(max.cube)	-0.172	Figure 32

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Upper and lower frequencies were measured at the worst position.

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3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ($< 0.8\text{W/kg}$), testing at the high and low channels is optional.
4. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm(see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Top Edge with 1 cm separation distance is excluded from SAR evaluation.
5. When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.
6. The (max.cube) labeling indicates that during the grid scanning an additional peak was found which was within 2.0dB of the highest peak. The value of the highest cube is given in the table above.

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7.3.2. GSM 1900 (GPRS/EGPRS)

Table 15: SAR Values [GSM 1900(GPRS/EGPRS)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	± 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test Position of Head (Battery SN: GAGB421XC15P6394)					
Left hand, Touch Cheek	High/810	0.316(max.cube)	0.589(max.cube)	-0.020	Figure 33
	Middle/661	0.296	0.558	0.092	Figure 34
	Low/512	0.329	0.639	-0.011	Figure 35
Left hand, Tilt 15 Degree	Middle/661	0.070	0.112	0.121	Figure 36
Right hand, Touch Cheek	Middle/661	0.314	0.542	-0.039	Figure 37
Right hand, Tilt 15 Degree	Middle/661	0.059	0.097	0.002	Figure 38
Worst Case Position of Head with Battery (SN: BAAAC09XJ4931366)					
Left hand, Touch Cheek	Low/512	0.341(max.cube)	0.656(max.cube)	0.034	Figure 39
Test position of Body (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side (GSM/1Txslot)	Middle/661	0.239	0.407	-0.007	Figure 40
Back Side (2Txslots)	High/810	0.424	0.716	-0.080	Figure 41
	Middle/661	0.375	0.636	0.096	Figure 42
	Low/512	0.378	0.655	-0.030	Figure 43
Front Side(2Txslots)	Middle/661	0.318	0.532	-0.116	Figure 44
Left Edge(2Txslots)	Middle/661	0.089	0.150	0.056	Figure 45
Right Edge(2Txslots)	Middle/661	0.101	0.170	0.191	Figure 46
Top Edge(2Txslots)	N/A	N/A	N/A	N/A	N/A
Bottom Edge(2Txslots)	Middle/661	0.026	0.042	-0.045	Figure 47
Worst Case Position of Body with Earphone (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side (GSM)	High/810	0.269	0.450	0.188	Figure 48
Worst Case Position of Body with EGPRS (Battery SN: GAGB421XC15P6394, GMSK, Distance 10mm)					
Back Side (2Txslots)	High/810	0.423	0.710	0.082	Figure 49
Worst Case Position of Body with Battery (SN: BAAAC09XJ4931366, Distance 10mm)					
Back Side (2Txslots)	High/810	0.419	0.706	0.042	Figure 50

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Upper and lower frequencies were measured at the worst position.

3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.

4. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm(see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Top Edge with 1 cm separation distance is excluded from SAR evaluation.

5. When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

6. The (max.cube) labeling indicates that during the grid scanning an additional peak was found which was within 2.0dB of the highest peak. The value of the highest cube is given in the table above.

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7.3.3. WCDMA Band II (WCDMA/HSDPA)

Table 16: SAR Values [WCDMA Band II (WCDMA/HSDPA)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	± 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test Position of Head (Battery SN: GAGB421XC15P6394)					
Left Hand, Touch Cheek	High/9538	0.550(max.cube)	1.020(max.cube)	0.073	Figure 51
	Middle/9400	0.543(max.cube)	1.010(max.cube)	-0.003	Figure 52
	Low/9262	0.665(max.cube)	1.240(max.cube)	0.128	Figure 53
Left Hand, Tilt 15 Degree	Middle/9400	0.180	0.283	0.160	Figure 54
Right Hand, Touch Cheek	High/9538	0.624	1.060	-0.077	Figure 55
	Middle/9400	0.622	1.080	-0.018	Figure 56
	Low/9262	0.728(max.cube)	1.240(max.cube)	-0.065	Figure 57
Right Hand, Tilt 15 Degree	Middle/9400	0.111	0.183	-0.011	Figure 58
Worst Case Position of Head with Battery (SN: BAAAC09XJ4931366)					
Right Hand, Touch Cheek	Low/9262	0.742(max.cube)	1.270(max.cube)	-0.102	Figure 59
Test Position of Body (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/9538	0.477	0.787	0.153	Figure 60
	Middle/9400	0.461	0.788	0.041	Figure 61
	Low/9262	0.534	0.923	0.022	Figure 62
Front Side	Middle/9400	0.337	0.553	-0.003	Figure 63
Left Edge	Middle/9400	0.107	0.181	0.025	Figure 64
Right Edge	Middle/9400	0.121	0.203	0.044	Figure 65
Top Edge	N/A	N/A	N/A	N/A	N/A
Bottom Edge	Middle/9400	0.311	0.540	0.021	Figure 66
Worst Case Position of Body with Earphone (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	Low/9262	0.528	0.916	0.010	Figure 67
Worst Case Position of Body with HSDPA (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	Low/9262	0.543	0.931	0.146	Figure 68
Worst Case Position of Body with Battery (SN: BAAAC09XJ4931366, Distance 10mm)					
Back Side	Low/9262	0.539	0.931	0.151	Figure 69

Note: 1.The value with blue color is the maximum SAR Value of each test band.

2. Upper and lower frequencies were measured at the worst position.

3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.

4. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm(see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Top Edge with 1 cm separation distance is excluded from SAR evaluation.

5 The (max.cube) labeling indicates that during the grid scanning an additional peak was found which was within 2.0dB of the highest peak. The value of the highest cube is given in the table above.

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7.3.4. WCDMA Band V (WCDMA/HSDPA)

Table 17: SAR Values [WCDMA Band V (WCDMA/HSDPA)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	± 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1 g Average		
Test Position of Head (Battery SN: GAGB421XC15P6394)					
Left Hand, Touch Cheek	Middle/4183	0.335	0.486	-0.159	Figure 70
Left Hand, Tilt 15 Degree	Middle/4183	0.168	0.224	0.033	Figure 71
Right Hand, Touch Cheek	High/4233	0.682	0.920	0.042	Figure 72
	Middle/4183	0.541	0.730	0.025	Figure 73
	Low/4132	0.414	0.557	0.113	Figure 74
Right Hand, Tilt 15 Degree	Middle/4183	0.255	0.339	0.092	Figure 75
Worst Case Position of Head with Battery (SN: BAAAC09XJ4931366)					
Right Hand, Touch Cheek	High/4233	0.687	0.929	-0.104	Figure 76
Test Position of Body (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/4233	0.879(max.cube)	1.260(max.cube)	-0.026	Figure 77
	Middle/4183	0.686(max.cube)	0.972(max.cube)	-0.131	Figure 78
	Low/4132	0.555(max.cube)	0.784(max.cube)	-0.009	Figure 79
Front Side	Middle/4183	0.435	0.589	0.014	Figure 80
Left Edge	Middle/4183	0.251	0.368	0.011	Figure 81
Right Edge	Middle/4183	0.325	0.467	-0.098	Figure 82
Top Edge	N/A	N/A	N/A	N/A	N/A
Bottom Edge	Middle/4183	0.074	0.115	0.051	Figure 83
Worst Case Position of Body with Earphone (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/4233	0.590(max.cube)	0.812(max.cube)	0.028	Figure 84
Worst Case Position of Body with HSDPA (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/4233	0.881(max.cube)	1.250(max.cube)	-0.083	Figure 85
Worst Case Position of Body with Battery (SN: BAAAC09XJ4931366, Distance 10mm)					
Back Side	High/4233	0.875(max.cube)	1.260(max.cube)	-0.022	Figure 86

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Upper and lower frequencies were measured at the worst position.

3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.

4. WWAN antenna is located at bottom edge; antenna-to-top edge distance is more than 2.5 cm(see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Top Edge with 1 cm separation distance is excluded from SAR evaluation.

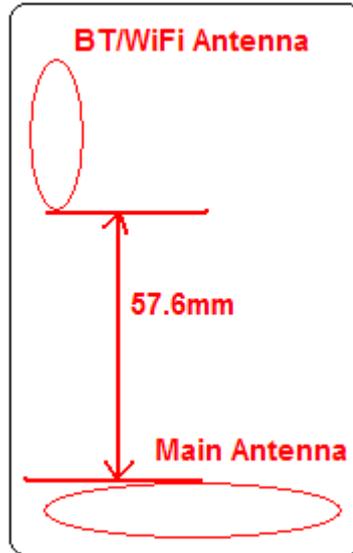
5 The (max.cube) labeling indicates that during the grid scanning an additional peak was found which was within 2.0dB of the highest peak. The value of the highest cube is given in the table above.

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7.3.5. Bluetooth/WiFi Function

According to KDB 648474 D01 v01r05, the distance between BT/WIFI antenna and GSM/WCDMA antenna is >5cm. The location of the antennas inside mobile phone is shown in Annex I:



The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz
Average Conducted Output Power(dBm)	6.27	6.15	8.06

The output power of WIFI antenna is as following:

Mode	Channel	Data rate (Mbps)	AV Power (dBm)
11b	1	1	14.25
		2	14.26
		5.5	14.23
		11	14.19
	6	1	14.49
		2	14.53
		5.5	14.45
		11	14.43
	11	1	14.79
		2	14.77
		5.5	14.78
		11	14.75
11g	1	6	9.29
		9	9.26

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		12	9.34	
		18	9.31	
		24	9.27	
		36	9.24	
		48	9.25	
		54	9.21	
	6	6	9.67	
		9	9.62	
		12	9.64	
		18	9.57	
		24	9.51	
		36	9.63	
		48	9.54	
	11	54	9.57	
		6	10.09	
		9	10.11	
		12	10.08	
		18	10.13	
		24	10.07	
		36	10.06	
	11n HT20	1	48	10.1
			54	10.13
			6.5	5.11
			13	5.09
19.5			5.03	
26			5.07	
39			5.03	
52			4.98	
6		58.5	5.01	
		65	5.06	
		6.5	5.37	
		13	5.35	
		19.5	5.38	
		26	5.31	

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		39	5.29
		52	5.27
		58.5	5.29
		65	5.31
	11	6.5	6.23
		13	6.27
		19.5	6.24
		26	6.28
		39	6.31
		52	6.25
		58.5	6.27
		65	6.24

Note: 1. KDB 248227-SAR is not required for 802.11g/n channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.

Output Power Thresholds for Unlicensed Transmitters

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW
Device output power should be rounded to the nearest mW to compare with values specified in this table.				

Stand-alone SAR

According to the output power measurement result and the distance between BT/WIFI antenna and GSM/WCDMA antenna we can draw the conclusion that:

WIFI antenna is >5cm from other antenna, stand-alone SAR are required for WIFI, because the output power of WIFI transmitter is $\geq 2P_{Ref}=13.8\text{dBm}$

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Table 18: SAR Values (802.11b)

Limit of SAR (W/kg)		10 g Average	1g Average	Power Drift (dB)	Graph Results
		2.0	1.6	± 0.21	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift (dB)	
		10 g Average	1g Average		
Test position of Head (Battery SN: GAGB421XC15P6394)					
Left hand, Touch cheek	Middle/6	0.053	0.101	-0.029	Figure 87
Left hand, Tilt 15 Degree	Middle/6	0.057	0.107	-0.135	Figure 88
Right hand, Touch cheek	Middle/6	0.058	0.106	-0.015	Figure 89
Right hand, Tilt 15 Degree	High/11	0.064	0.124	0.069	Figure 90
	Middle/6	0.064	0.123	-0.000	Figure 91
	Low/1	0.058	0.111	0.082	Figure 92
Worst Case Position of Head with Battery (SN: BAAAC09XJ4931366)					
Right hand, Tilt 15 Degree	High/11	0.061	0.121	0.129	Figure 93
Test Position of Body (Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/11	0.060	0.110	0.057	Figure 94
	Middle/6	0.048	0.087	0.009	Figure 95
	Low/1	0.050	0.090	0.084	Figure 96
Front Side	Middle/6	0.028	0.049	0.015	Figure 97
Left Edge	N/A	N/A	N/A	N/A	N/A
Right Edge	Middle/6	0.038	0.080	-0.037	Figure 98
Top Edge	Middle/6	0.035	0.065	-0.159	Figure 99
Bottom Edge	N/A	N/A	N/A	N/A	N/A
Worst case position of Body with Earphone(Battery SN: GAGB421XC15P6394, Distance 10mm)					
Back Side	High/11	0.051	0.093	0.052	Figure 100
Worst Case Position of Body with Battery (SN: BAAAC09XJ4931366, Distance 10mm)					
Back Side	High/11	0.057	0.107	0.025	Figure 101

Note: 1. The value with blue color is the maximum SAR Value of each test band.

2. Upper and lower frequencies were measured at the worst position.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.
4. WLAN antenna is located at Right edge; antenna-to-bottom/Left edge distance is more than 2.5 cm(see ANNEX I). Based upon KDB941225 D06, when the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested. Bottom/Left Edge with 1 cm separation distance is excluded from SAR evaluation.
5. KDB 248227-SAR is not required for 802.11g/n channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.

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BT antenna is >5cm from GSM/WCDMA antenna, stand-alone SAR are not required for BT, because the output power of BT transmitter is $\leq 2P_{Ref}=13.8\text{dBm}$.

BT antenna is <2.5cm from WIFI antenna. stand-alone SAR are not required for BT, because $SAR_{MAX,WIFI} \leq 1.2\text{W/Kg}$.

Simultaneous SAR

About BT and GSM/WCDMA Antenna, stand-alone SAR are not required for BT, so Simultaneous SAR are not required for BT and GSM/WCDMA Antenna.

About BT and WIFI Antenna, because BT antenna is <2.5cm from WIFI Antenna, $SAR_{MAX,WIFI} \leq 1.2\text{W/Kg}$, so Simultaneous SAR are not required for BT and WIFI Antenna.

About WIFI and GSM/WCDMA Antenna,

SAR1g(W/kg) Test Position	GSM850	GSM1900	WCDMA Band II	WCDMA Band V	WIFI (802.11b)	MAX. ΣSAR_{1g}
Left hand, Touch cheek	0.671	0.656	1.240	0.486	0.101	1.341
Left hand, Tilt 15 Degree	0.307	0.112	0.283	0.224	0.107	0.414
Right hand, Touch cheek	0.863	0.542	1.270	0.929	0.106	1.376
Right hand, Tilt 15 Degree	0.397	0.097	0.183	0.339	0.124	0.521
Body, Back Side	1.190	0.716	0.931	1.270	0.110	1.380
Body, Front Side	0.695	0.532	0.553	0.589	0.049	0.744
Body, Left Edge	0.419	0.150	0.181	0.368	N/A	0.419
Body, Right Edge	0.611	0.170	0.203	0.467	0.080	0.691
Body, Top Edge	N/A	N/A	N/A	N/A	0.065	0.065
Body, Bottom Edge	0.153	0.042	0.540	0.115	N/A	0.540

Note: 1.The value with blue color is the maximum ΣSAR_{1g} Value.

2. MAX. $\Sigma SAR_{1g} = \text{Unlicensed } SAR_{MAX} + \text{licensed } SAR_{MAX}$

WIFI antenna is >5cm from GSM/WCDMA Antenna. (GSM/WCDMA Antenna SAR_{MAX})1.270+ (WIFI antenna SAR_{MAX})0.110=1.380<1.6, So the Simultaneous SAR are not required for WIFI and GSM/WCDMA antenna.

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8. Measurement Uncertainty

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c _i	Standard uncertainty u _i (%)	Degree of freedom V _{eff} or V _i
1	System repetivity	A	0.5	N	1	1	0.5	9
Measurement system								
2	-probe calibration	B	5.9	N	1	1	5.9	∞
3	-axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	$\sqrt{0.5}$	1.9	∞
4	- Hemispherical isotropy of the probe	B	9.4	R	$\sqrt{3}$	$\sqrt{0.5}$	3.9	∞
6	-boundary effect	B	1.9	R	$\sqrt{3}$	1	1.1	∞
7	-probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
8	- System detection limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
9	-readout Electronics	B	1.0	N	1	1	1.0	∞
10	-response time	B	0	R	$\sqrt{3}$	1	0	∞
11	-integration time	B	4.32	R	$\sqrt{3}$	1	2.5	∞
12	-noise	B	0	R	$\sqrt{3}$	1	0	∞
13	-RF Ambient Conditions	B	3	R	$\sqrt{3}$	1	1.73	∞
14	-Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
15	-Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
16	-Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Test sample Related								
17	-Test Sample Positioning	A	2.9	N	1	1	4.92	71
18	-Device Holder Uncertainty	A	4.1	N	1	1	4.1	5
19	-Output Power Variation - SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
Physical parameter								
20	-phantom	B	4.0	R	$\sqrt{3}$	1	2.3	∞

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21	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.64	1.8	∞
22	-liquid conductivity (measurement uncertainty)	B	0.77	N	1	0.64	0.493	9
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
24	-liquid permittivity (measurement uncertainty)	B	0.29	N	1	0.6	0.174	9
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					11.36	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2	22.72		

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9. Main Test Instruments

Table 19: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 13, 2010	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 12, 2011	One year
04	Power sensor	Agilent N8481H	MY50350004	September 26, 2010	One year
05	Signal Generator	HP 8341B	2730A00804	September 13, 2010	One year
06	Amplifier	IXA-020	0401	No Calibration Requested	
07	BTS	E5515C	MY48360988	December 3, 2010	One year
08	E-field Probe	EX3DV4	3677	November 24, 2010	One year
09	DAE	DAE4	871	November 18, 2010	One year
10	Validation Kit 835MHz	D835V2	4d092	January 14, 2010	Two years
11	Validation Kit 1900MHz	D1900V2	5d018	June 15, 2010	Two years
12	Validation Kit 2450MHz	D2450V2	712	February 19, 2010	Two years

*****END OF REPORT BODY*****

ANNEX A: Test Layout



Picture 1: Specific Absorption Rate Test Layout



Picture 2: Liquid depth in the flat Phantom (835MHz, 15.4cm depth)



Picture 3: Liquid depth in the head Phantom (835MHz, 15.3cm depth)



Picture 4: Liquid depth in the flat Phantom (1900 MHz, 15.2cm depth)



Picture 5: liquid depth in the head Phantom (1900 MHz, 15.3cm depth)



Picture 6: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)



Picture 7: Liquid depth in the head Phantom (2450 MHz, 15.4cm depth)

ANNEX B: System Check Results

System Performance Check at 835 MHz Head TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d092

Date/Time: 7/19/2011 9:40:13 AM

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.90$ mho/m; $\epsilon_r = 43.03$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.7 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=15mm, Pin=250mW/Area Scan (101x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.56 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.1 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 3.54 W/kg

SAR(1 g) = 2.40 mW/g; SAR(10 g) = 1.58 mW/g

Maximum value of SAR (measured) = 2.63 mW/g

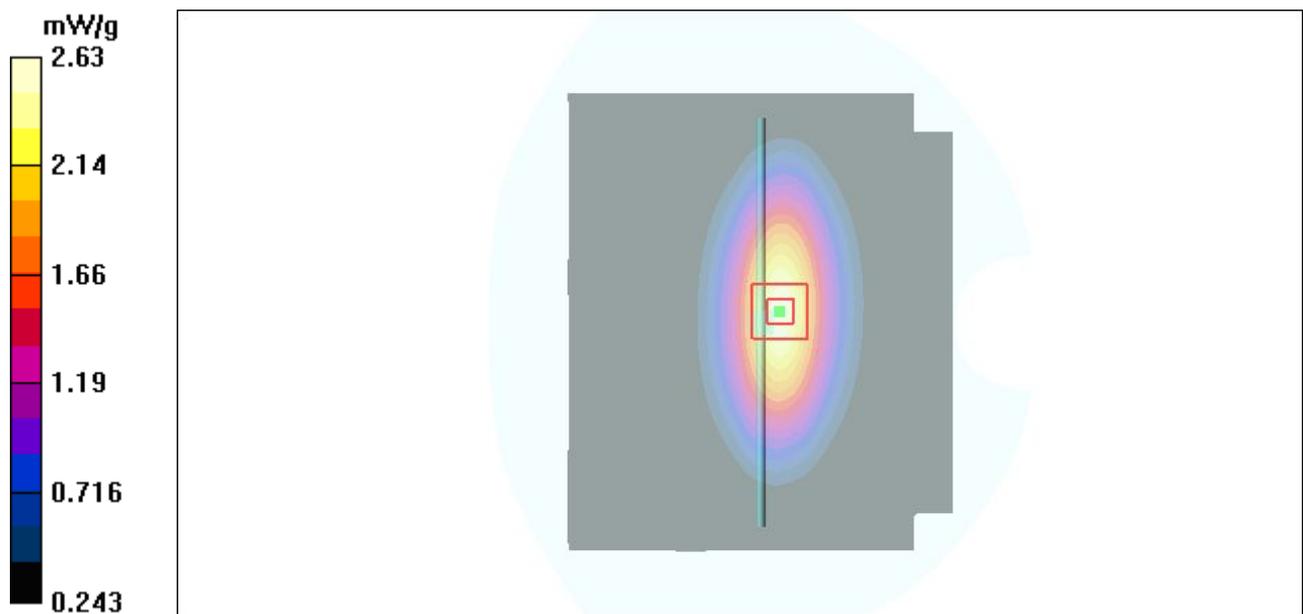


Figure 7 System Performance Check 835MHz 250mW

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System Performance Check at 835 MHz Body TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d092

Date/Time: 7/20/2011 3:50:20 AM

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.71$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.7 °C

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=15mm, Pin=250mW/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.72 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 50.9 V/m; Power Drift = 0.023 dB

Peak SAR (extrapolated) = 3.63 W/kg

SAR(1 g) = 2.54 mW/g; SAR(10 g) = 1.64 mW/g

Maximum value of SAR (measured) = 2.72 mW/g

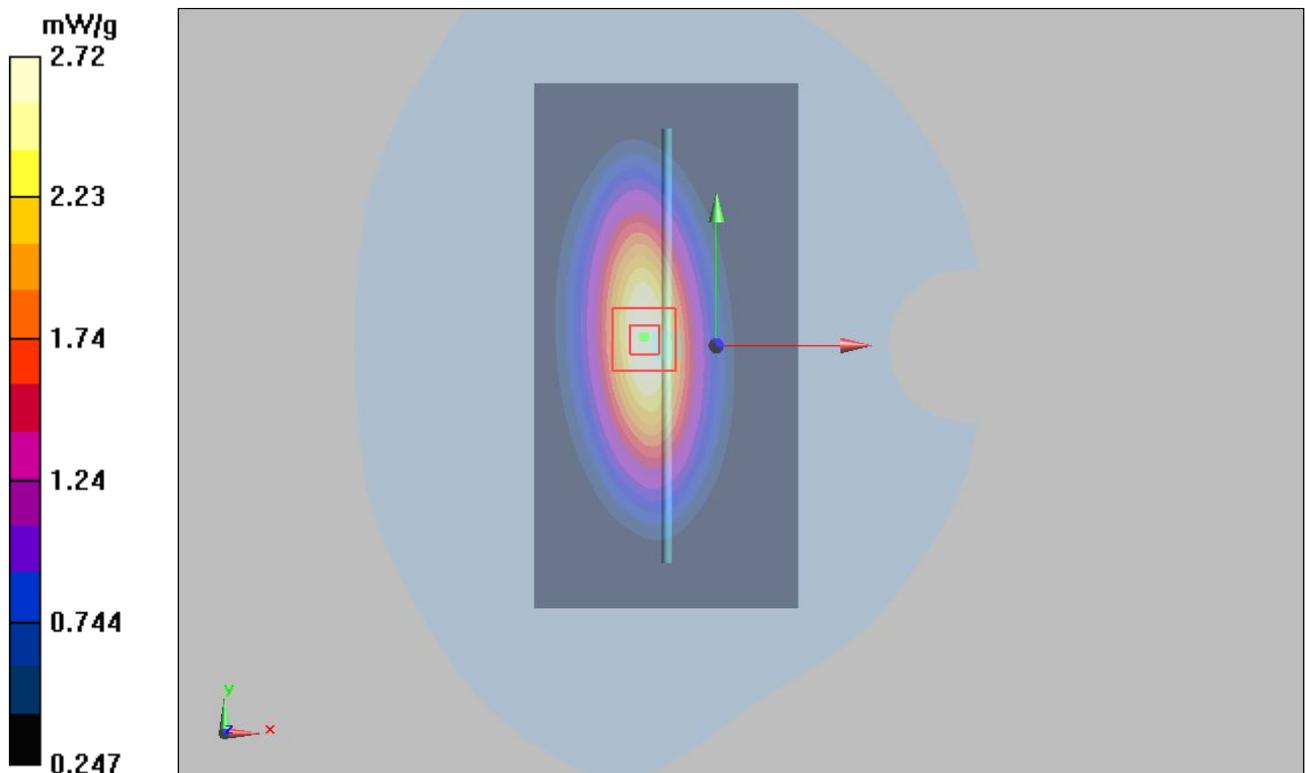


Figure 8 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz Head TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d018

Date/Time: 7/19/2011 8:12:34 AM

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.39$ mho/m; $\epsilon_r = 39.81$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.7 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 81.0 V/m; Power Drift = -0.068 dB

Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 10.33 mW/g; SAR(10 g) = 5.30 mW/g

Maximum value of SAR (measured) = 11.53 mW/g

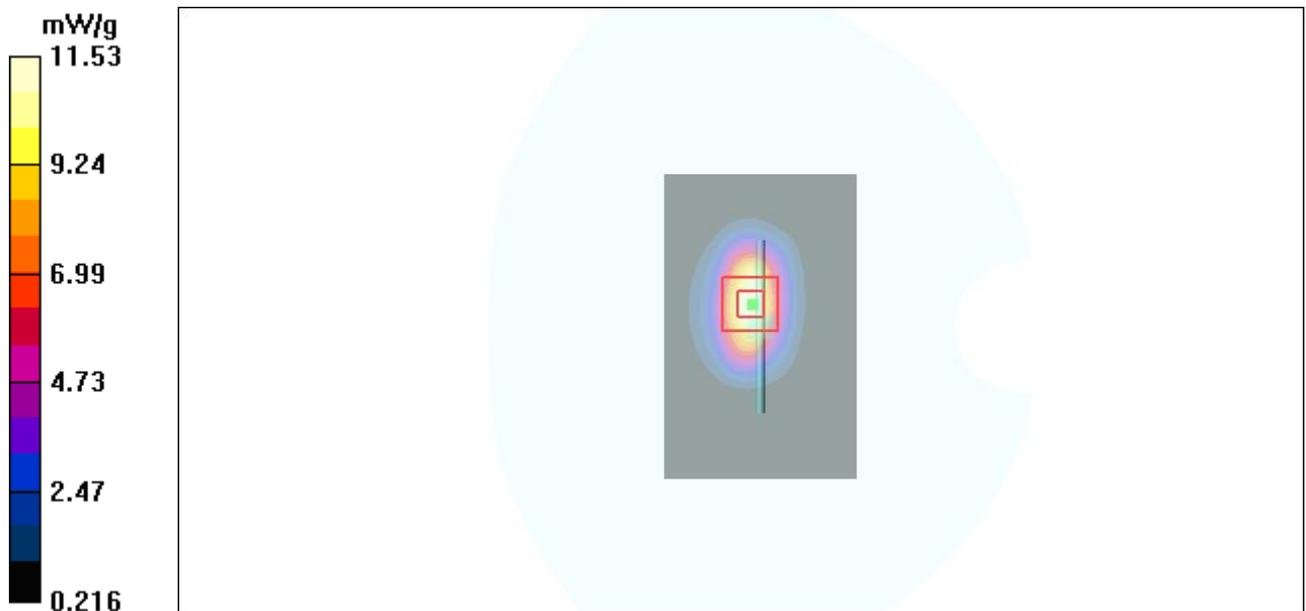


Figure 9 System Performance Check 1900MHz 250mW

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System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d018

Date/Time: 7/20/2011 2:12:19 AM

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.47$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 11.9 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 80.8 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 10.20 mW/g; SAR(10 g) = 5.36 mW/g

Maximum value of SAR (measured) = 11.05 mW/g

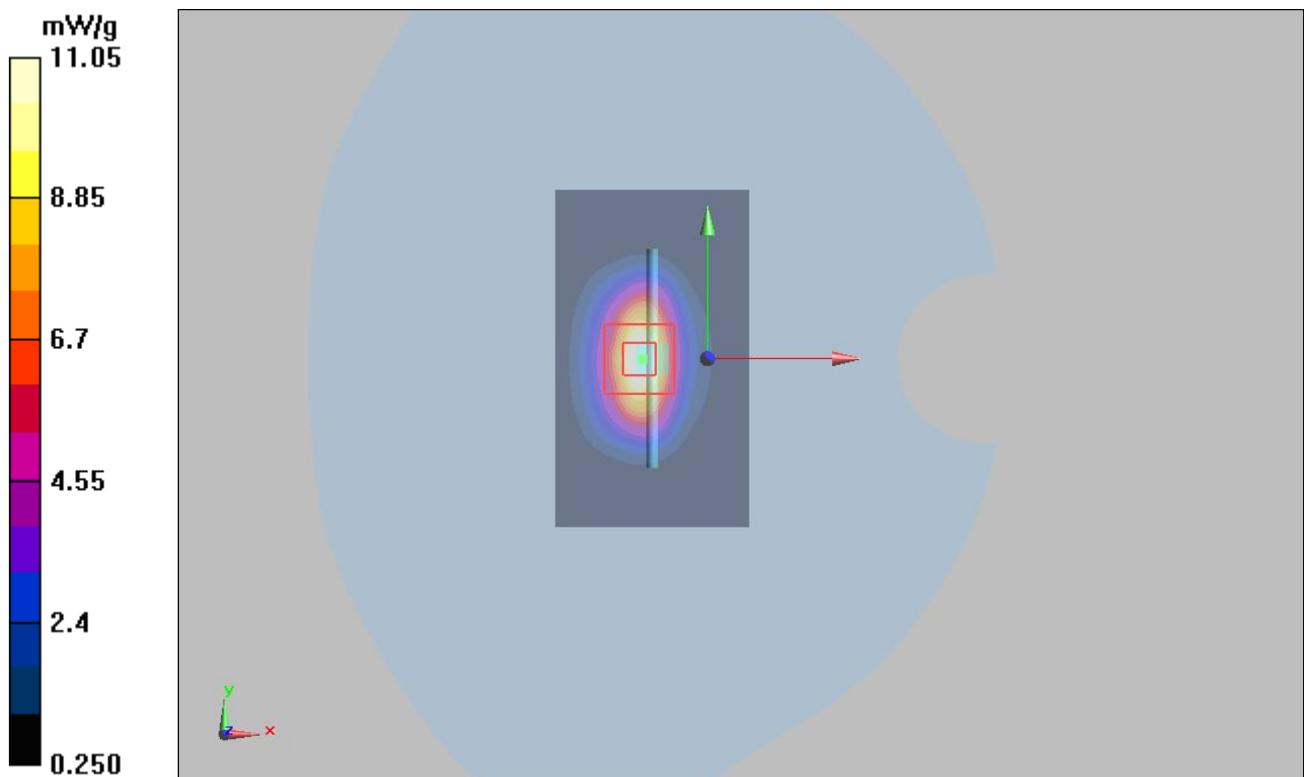


Figure 10 System Performance Check 1900MHz 250mW

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System Performance Check at 2450 MHz Head TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 712

Date/Time: 7/21/2011 9:01:36 AM

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 39.51$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.32, 7.32, 7.32); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 21.4 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 67.0 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 28.0 W/kg

SAR(1 g) = 14.06 mW/g; SAR(10 g) = 6.52 mW/g

Maximum value of SAR (measured) = 15.68 mW/g

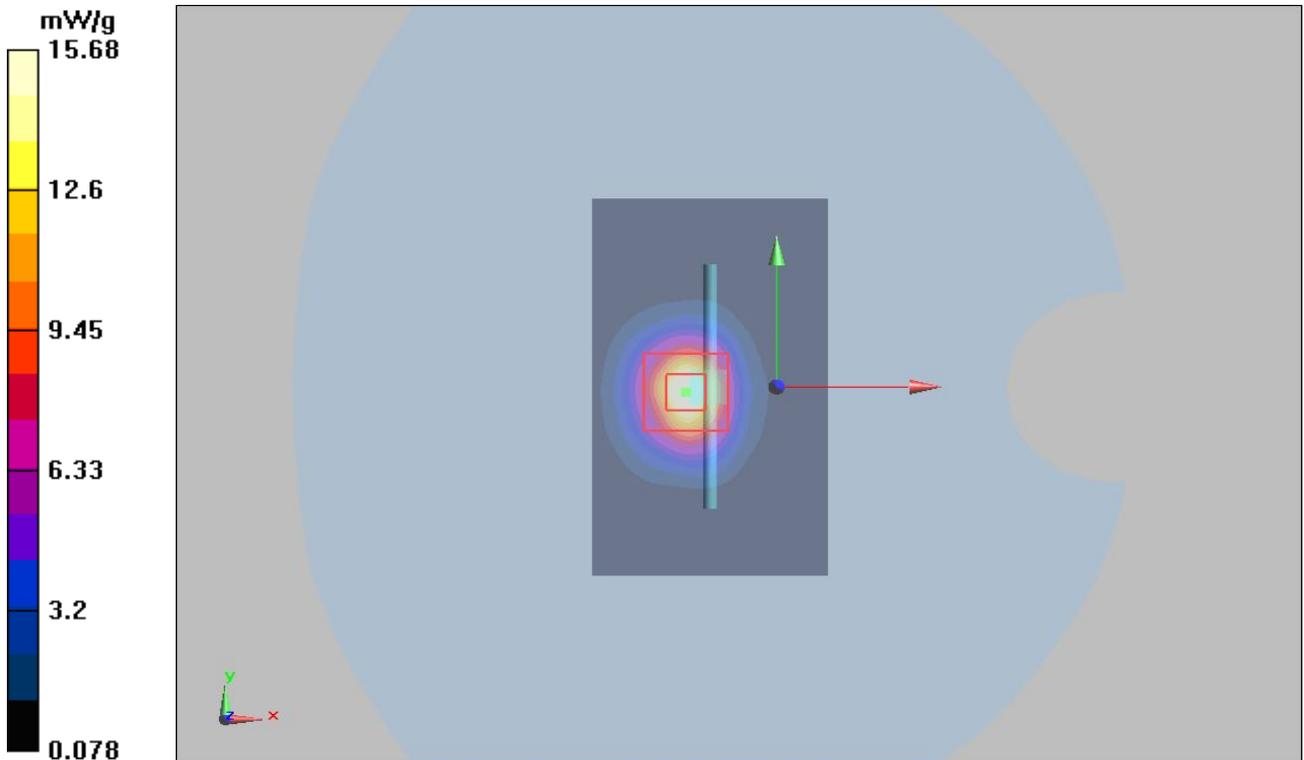


Figure 11 System Performance Check 2450MHz 250mW

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System Performance Check at 2450 MHz Body TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 712

Date/Time: 7/21/2011 7:38:36 AM

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 51.73$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.9 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.46, 7.46, 7.46); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM;

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

d=10mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 21.5 mW/g

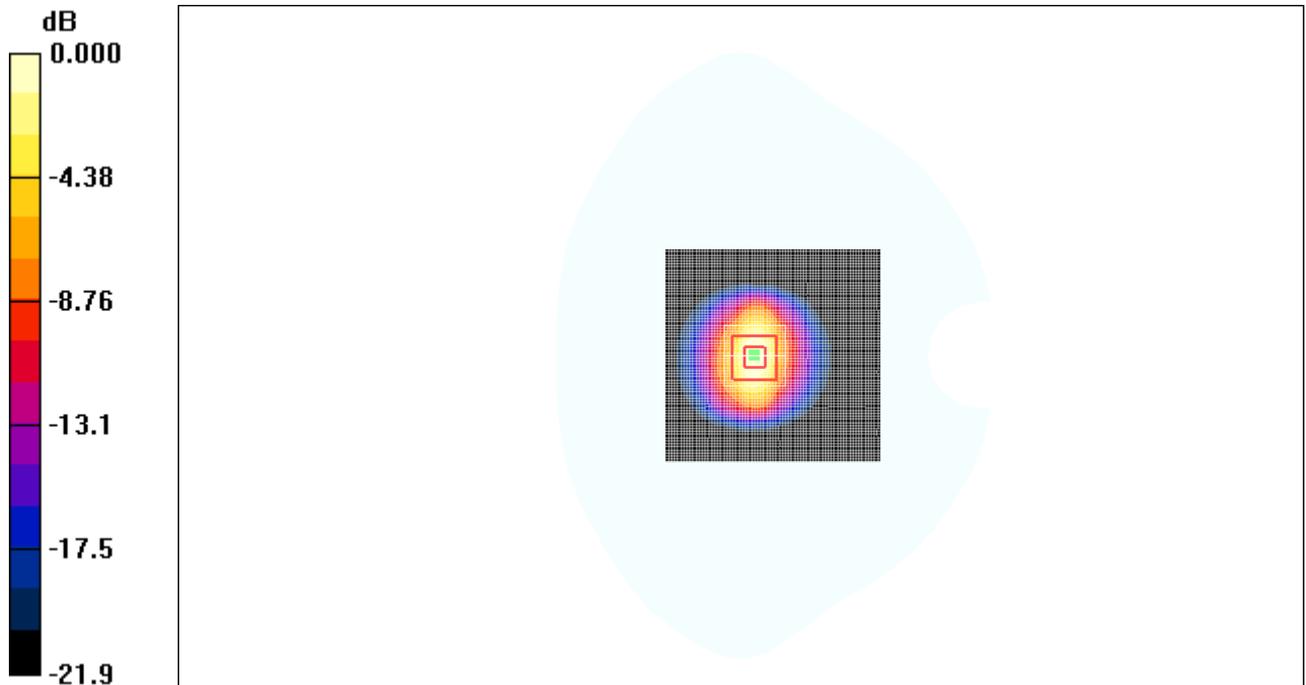
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 71.0 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 14.01 mW/g; SAR(10 g) = 6.48 mW/g

Maximum value of SAR (measured) = 19.82 mW/g



0 dB = 19.82mW/g

Figure 12 System Performance Check 2450MHz 250mW

ANNEX C: Graph Results

GSM 850 Left Cheek Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 10:27:18 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 43.3$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.725 mW/g

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

Reference Value = 8.43 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.671 mW/g; SAR(10 g) = 0.465 mW/g

Maximum value of SAR (measured) = 0.709 mW/g

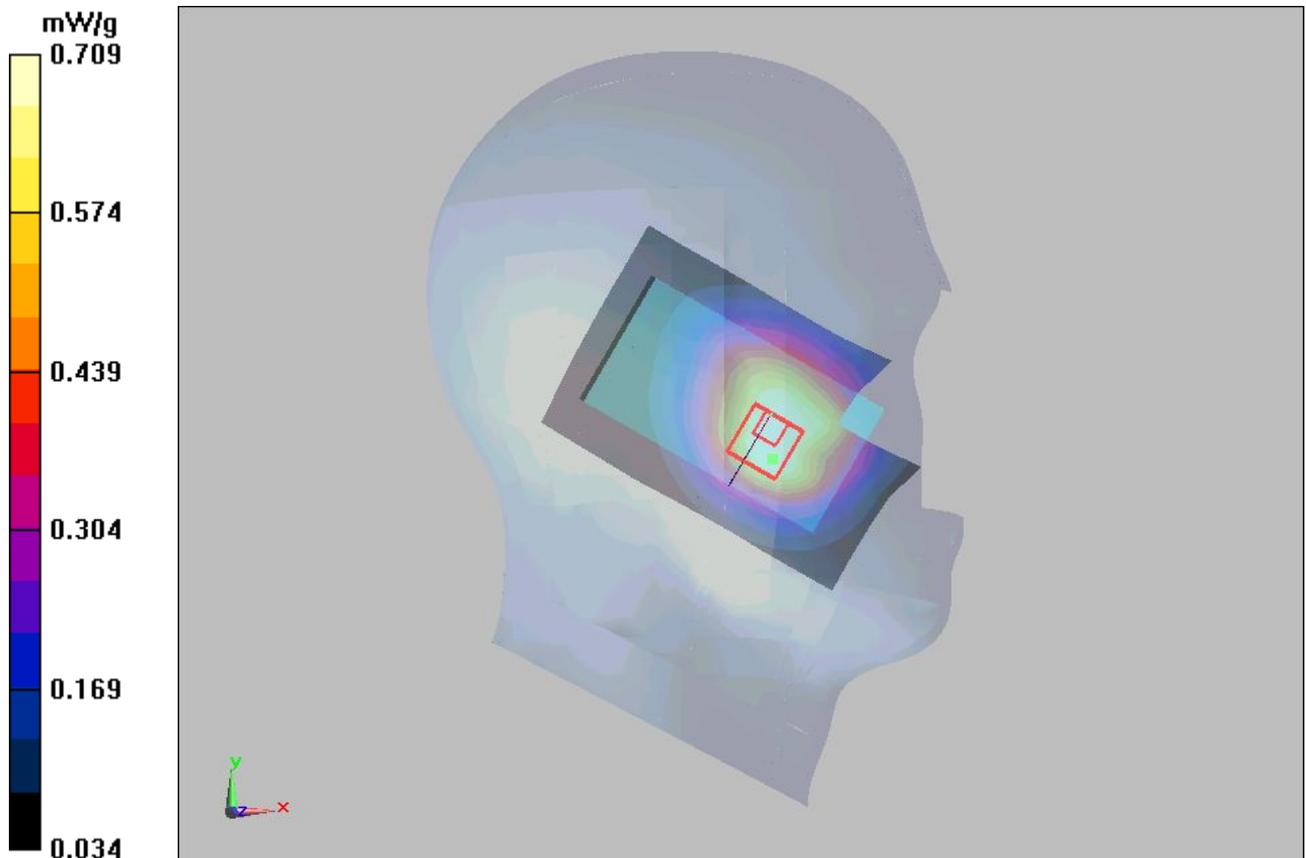


Figure 13 Left Hand Touch Cheek GSM 850 Channel 192 (SN: GAGB421XC15P6394)

GSM 850 Left Tilt Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 11:15:16 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 43.3$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.326 mW/g

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

Reference Value = 11.8 V/m; Power Drift = 0.158 dB

Peak SAR (extrapolated) = 0.377 W/kg

SAR(1 g) = 0.307 mW/g; SAR(10 g) = 0.230 mW/g

Maximum value of SAR (measured) = 0.322 mW/g

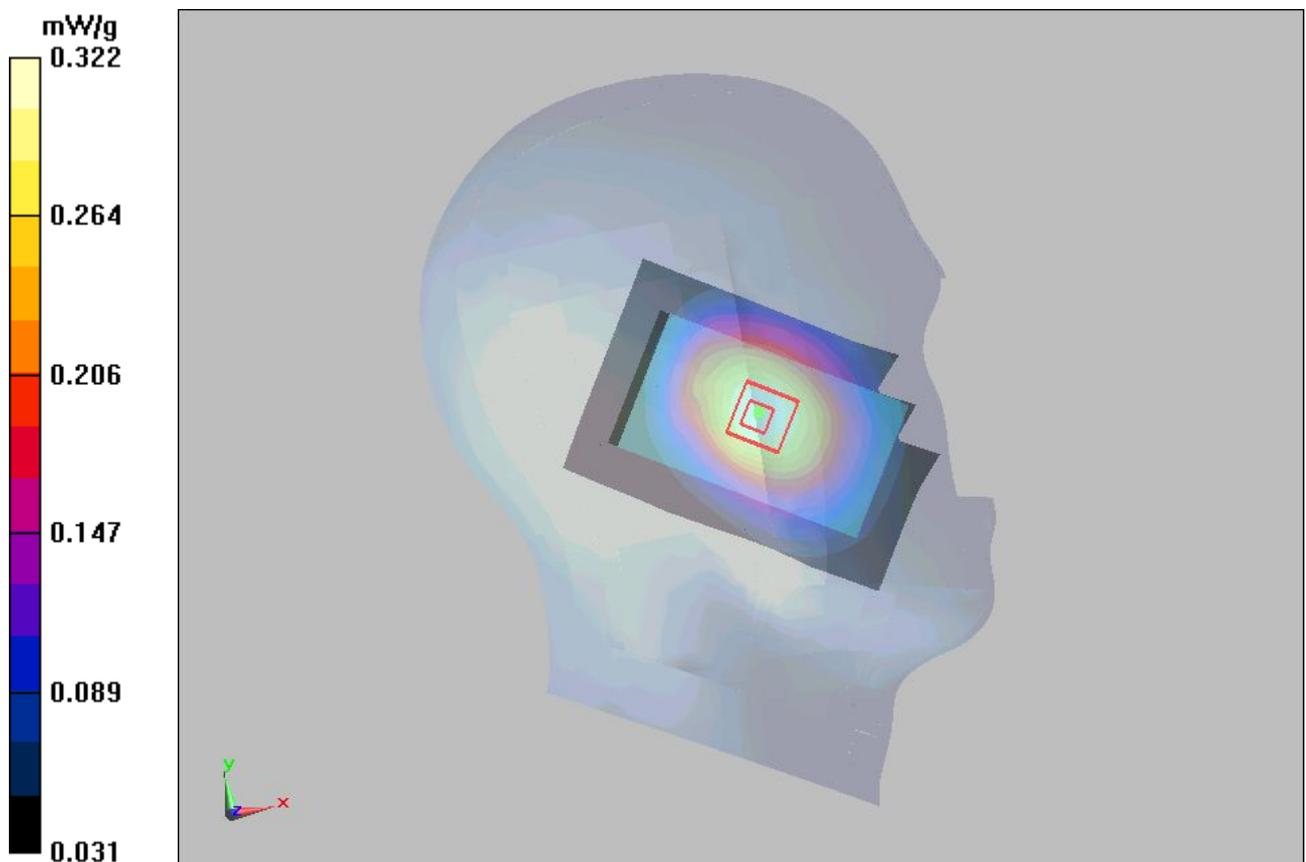


Figure 14 Left Hand Tilt 15° GSM 850 Channel 190 (SN: GAGB421XC15P6394)

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GSM 850 Right Cheek High (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 11:51:21 PM

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 849$ MHz; $\sigma = 0.893$ mho/m; $\epsilon_r = 43.1$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.821 mW/g

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

Reference Value = 7.4 V/m; Power Drift = -0.154 dB

Peak SAR (extrapolated) = 0.969 W/kg

SAR(1 g) = 0.794 mW/g; SAR(10 g) = 0.581 mW/g

Maximum value of SAR (measured) = 0.846 mW/g

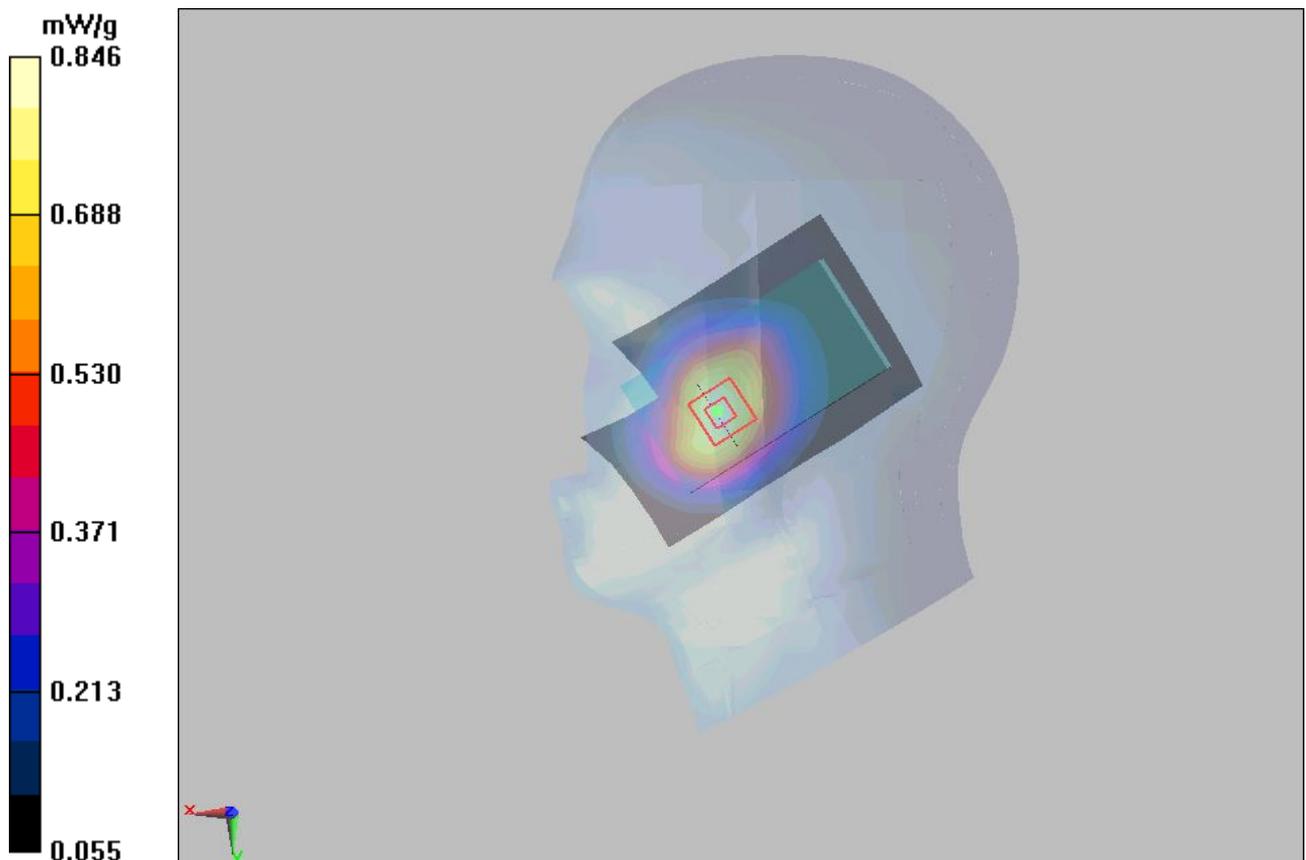


Figure 15 Right Hand Touch Cheek GSM 850 Channel 251 (SN: GAGB421XC15P6394)

GSM 850 Right Cheek Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 11:36:00 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 43.3$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.874 mW/g

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

Reference Value = 8.28 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.852 mW/g; SAR(10 g) = 0.627 mW/g

Maximum value of SAR (measured) = 0.907 mW/g

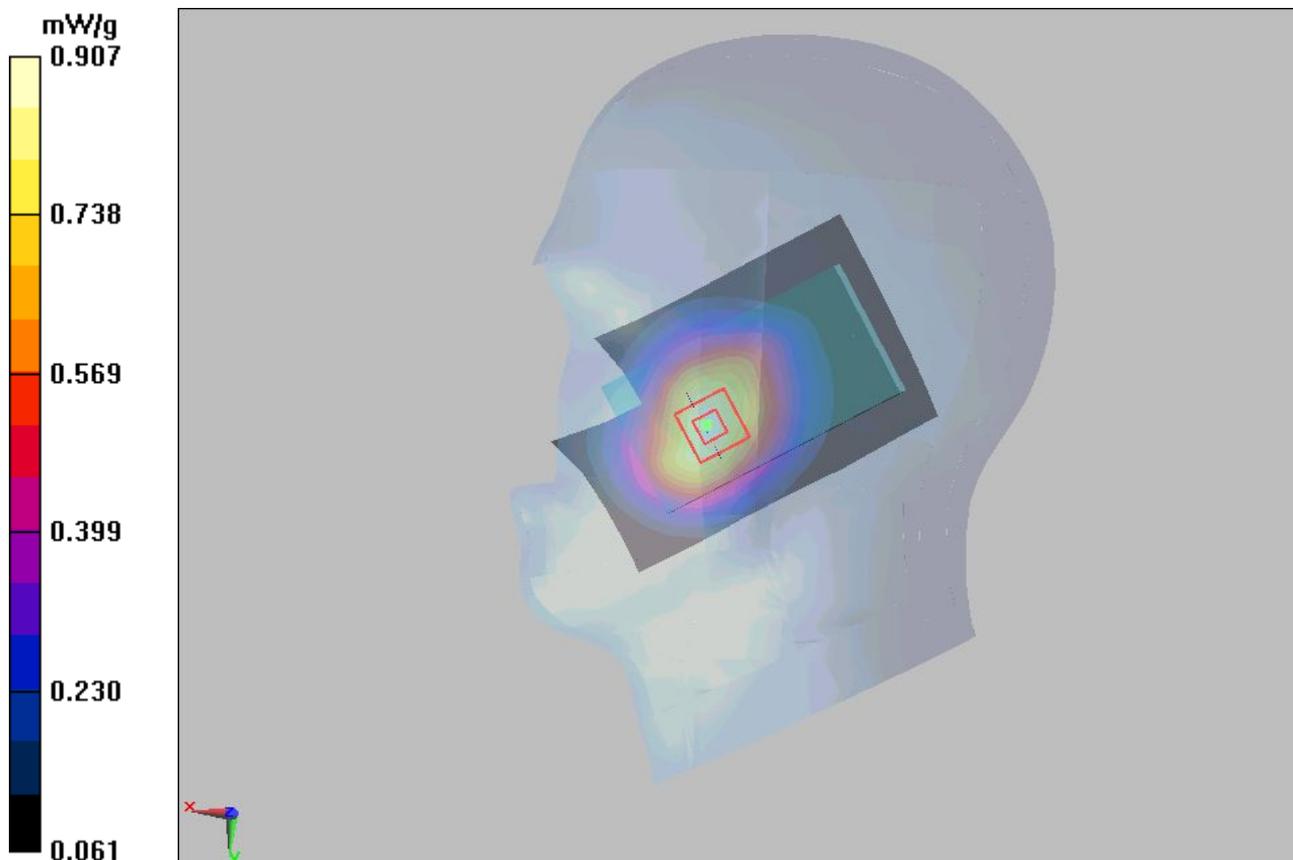


Figure 16 Right Hand Touch Cheek GSM 850 Channel 192 (SN: GAGB421XC15P6394)

GSM 850 Right Cheek Low (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 6:42:21 PM

Communication System: GSM850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.875$ mho/m; $\epsilon_r = 43.5$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.566 mW/g

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

Reference Value = 5.99 V/m; Power Drift = 0.186 dB

Peak SAR (extrapolated) = 0.675 W/kg

SAR(1 g) = 0.552 mW/g; SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.588 mW/g

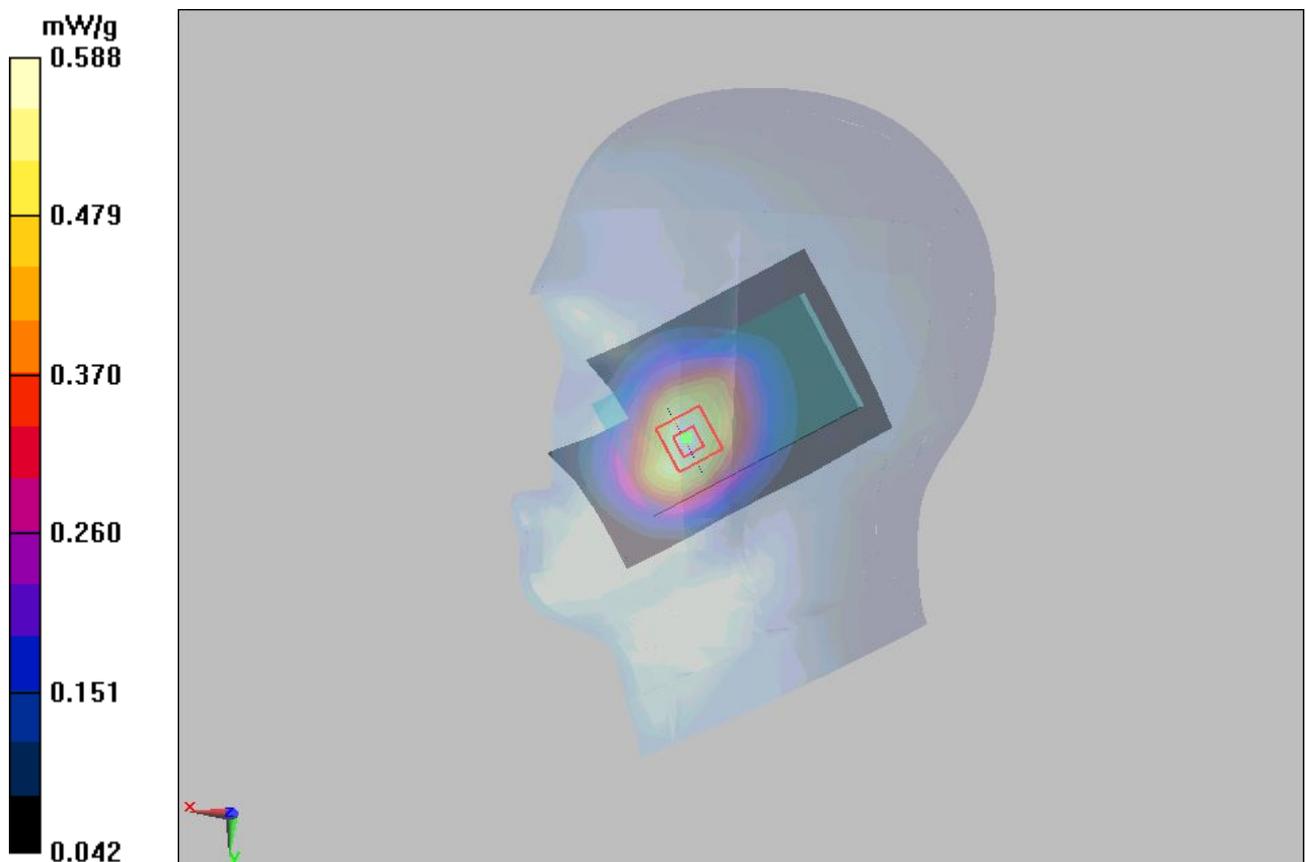


Figure 17 Right Hand Touch Cheek GSM 850 Channel 128 (SN: GAGB421XC15P6394)

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GSM 850 Right Tilt Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 5:11:10 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 43.3$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 12.2 V/m; Power Drift = 0.160 dB

Peak SAR (extrapolated) = 0.486 W/kg

SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.299 mW/g

Maximum value of SAR (measured) = 0.417 mW/g

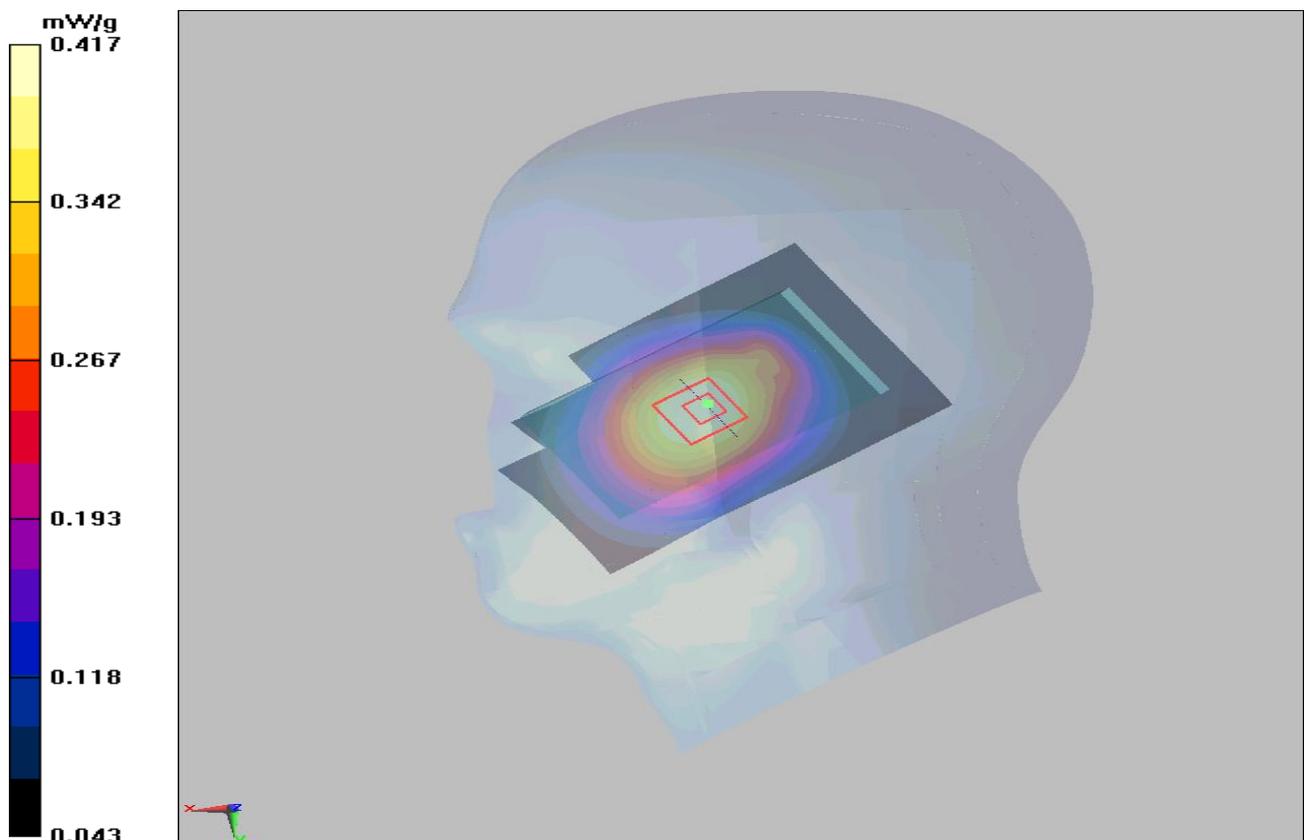


Figure 18 Right Hand Tilt 15° GSM 850 Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 Right Cheek Middle (SN: BAAAC09XJ4931366)

Date/Time: 7/19/2011 11:04:43 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.882$ mho/m; $\epsilon_r = 43.3$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(9.5, 9.5, 9.5); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.890 mW/g

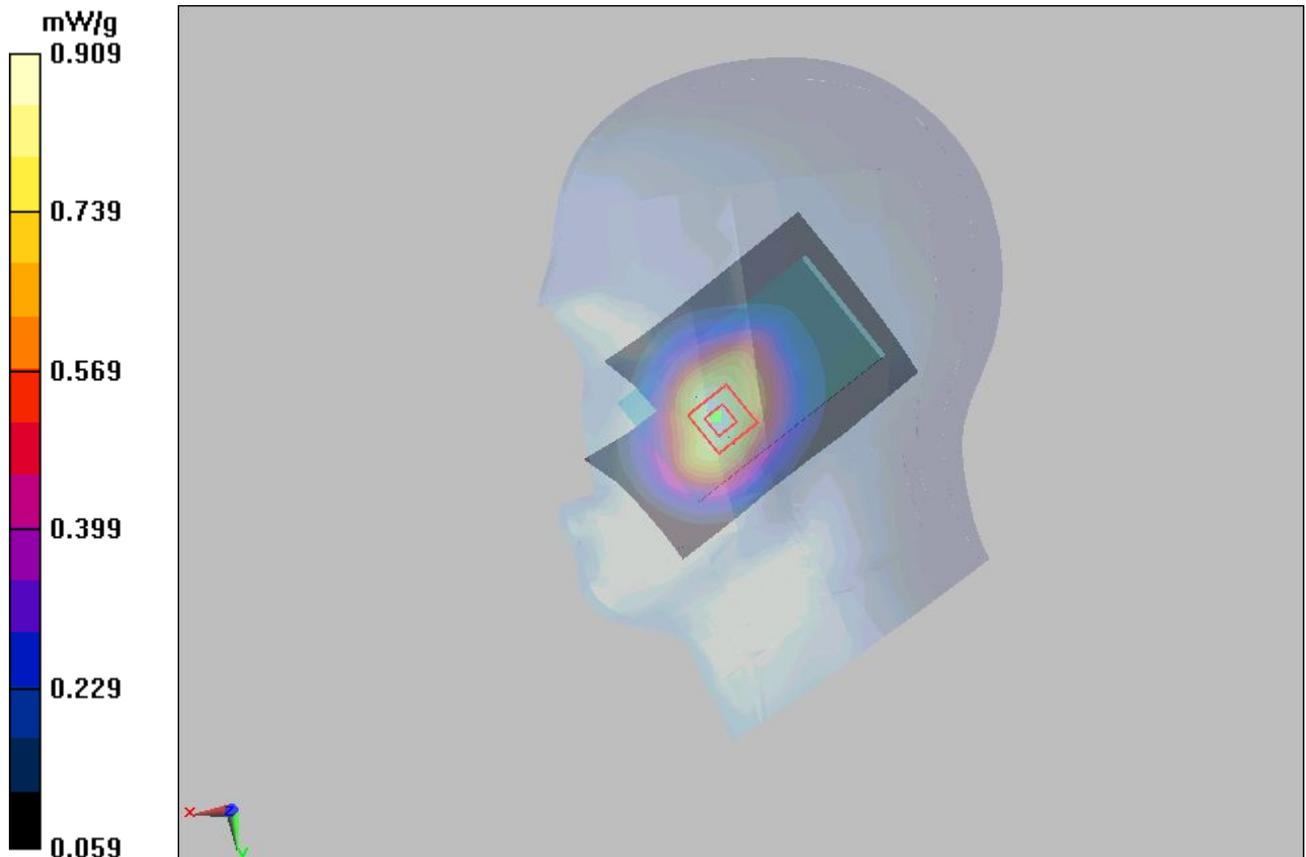
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.14 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.863 mW/g; SAR(10 g) = 0.639 mW/g

Maximum value of SAR (measured) = 0.909 mW/g



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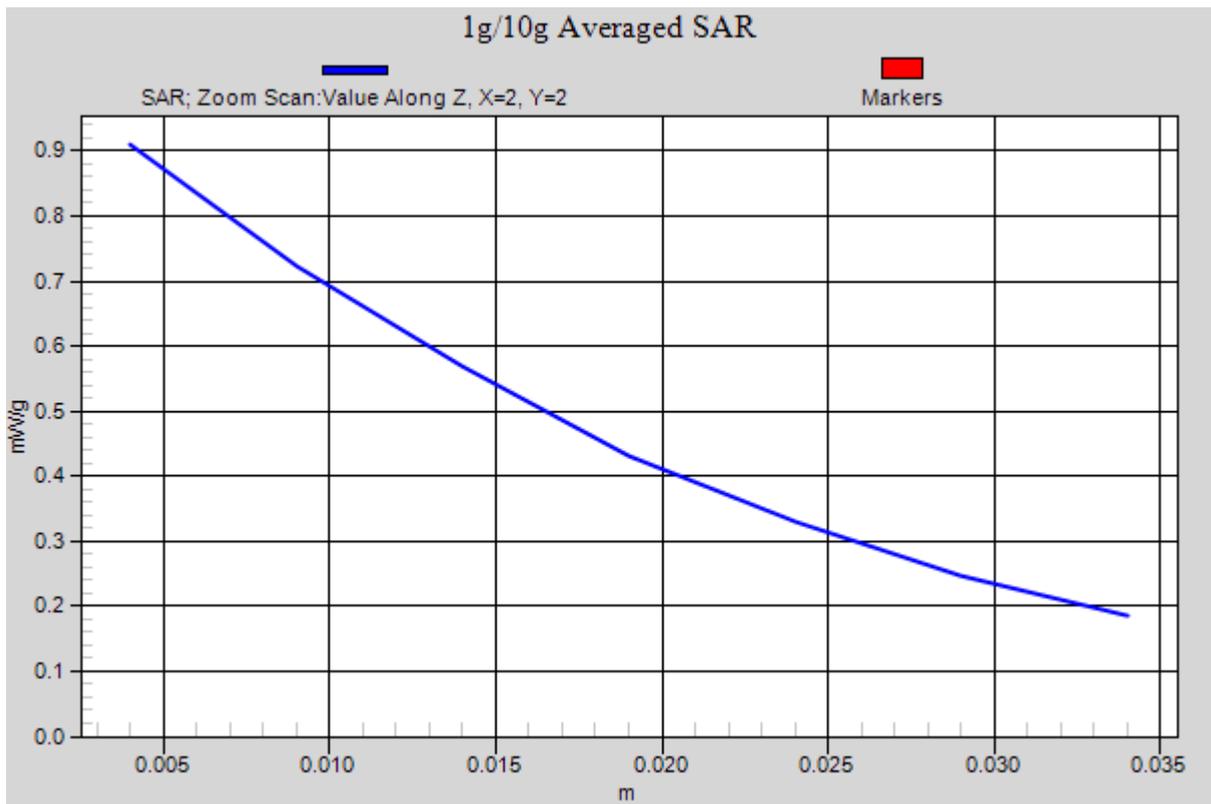


Figure 19 Right Hand Touch Cheek GSM 850 Channel 192 (SN: BAAAC09XJ4931366)

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GSM 850 GPRS (1Txslot) Back Side High (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 1:58:28 PM

Communication System: GSM850 + GPRS(1Up); Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.970 mW/g

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

Reference Value = 28.7 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.947 mW/g; SAR(10 g) = 0.668 mW/g

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

Back Side High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.7 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.883 mW/g; SAR(10 g) = 0.592 mW/g

Maximum value of SAR (measured) = 1.01 mW/g

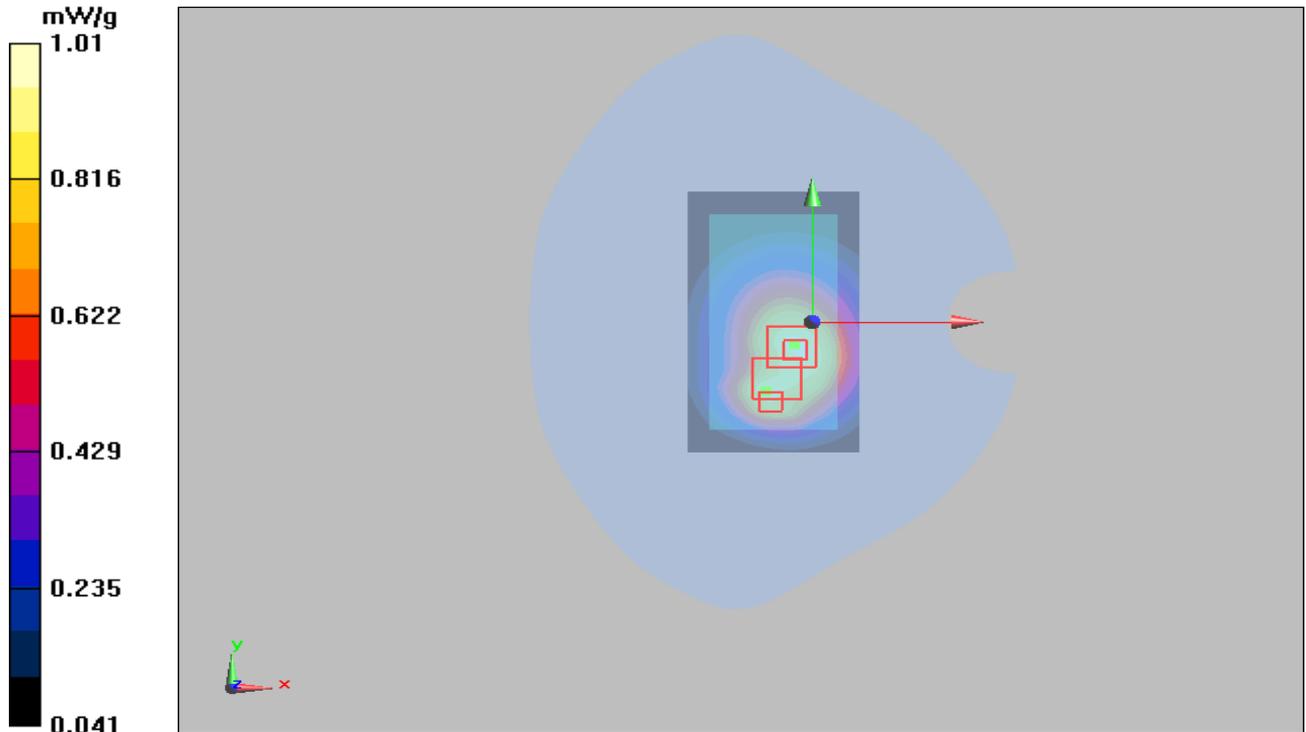


Figure 20 Body, Back Side, GSM 850 GPRS (1Txslot) Channel 251 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (1Txslot) Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 10:20:42 PM

Communication System: GSM850 + GPRS(1Up); Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.19 mW/g

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

Reference Value = 33.5 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 1.62 W/kg

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.692 mW/g

Maximum value of SAR (measured) = 1.14 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.5 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.781 mW/g

Maximum value of SAR (measured) = 1.16 mW/g

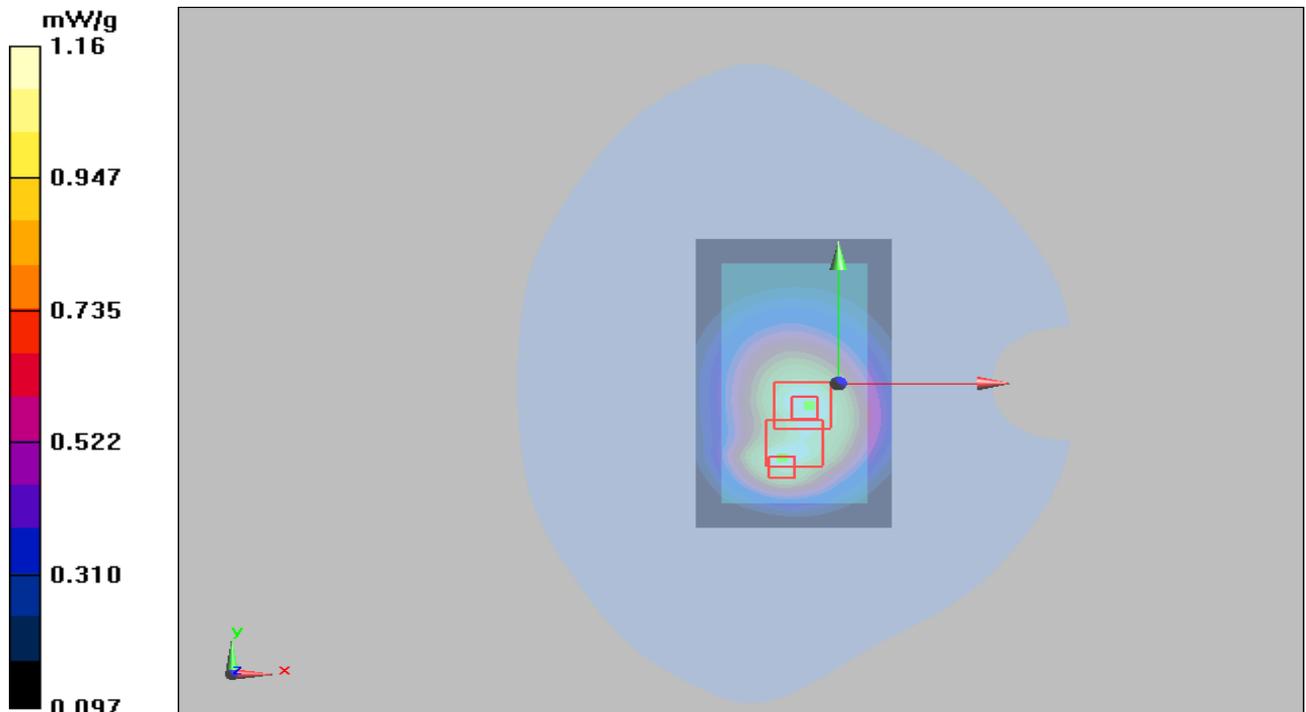


Figure 21 Body, Back Side, GSM 850 GPRS (1Txslot) Channel 192 (SN: GAGB421XC15P6394)

GSM 850 GPRS (1Txslot) Back Side Low (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 2:19:42 PM

Communication System: GSM850 + GPRS(1Up); Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.978$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5°C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 28.9 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.942 mW/g; SAR(10 g) = 0.669 mW/g

Maximum value of SAR (measured) = 0.982 mW/g

Back Side Low/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.9 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.590 mW/g

Maximum value of SAR (measured) = 1 mW/g

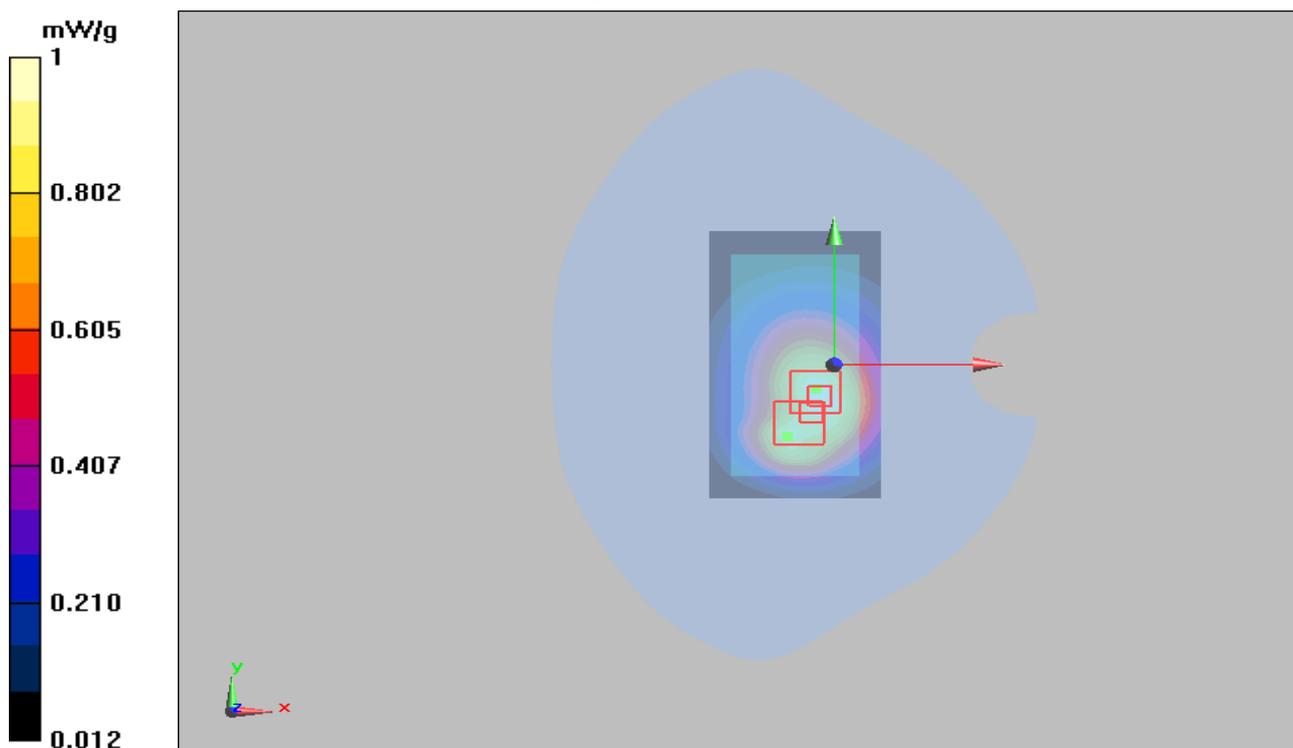


Figure 22 Body, Back Side, GSM 850 GPRS (1Txslot) Channel 128 (SN: GAGB421XC15P6394)

GSM 850 GPRS (2Txslots) Back Side High (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 12:07:42 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 848.8 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 849$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.16 mW/g

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

Reference Value = 31.8 V/m; Power Drift = -0.135 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.785 mW/g

Maximum value of SAR (measured) = 1.18 mW/g

Back Side High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.8 V/m; Power Drift = -0.135 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.697 mW/g

Maximum value of SAR (measured) = 1.16 mW/g

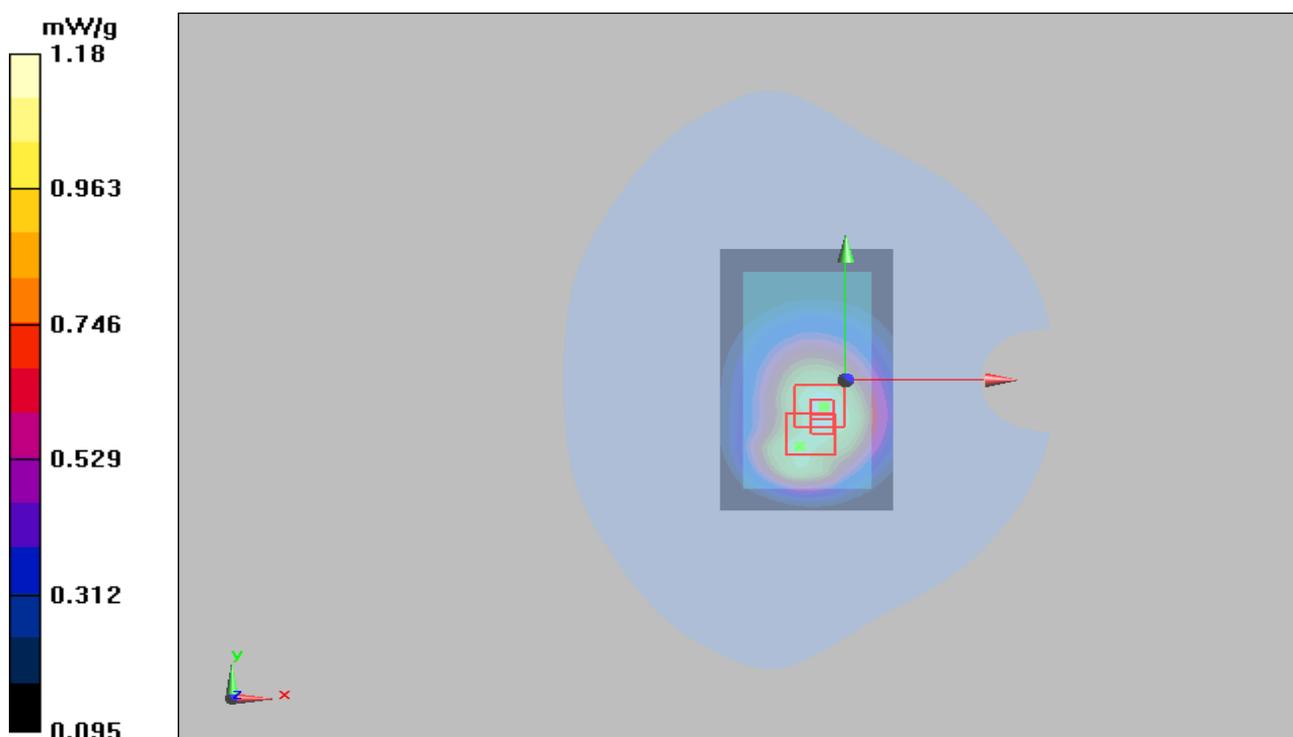


Figure 23 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 251 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (2Txslots) Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 10:49:42 AM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.25 mW/g

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

Reference Value = 32.3 V/m; Power Drift = -0.174 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.827 mW/g

Maximum value of SAR (measured) = 1.25 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.3 V/m; Power Drift = -0.174 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.705 mW/g

Maximum value of SAR (measured) = 1.17 mW/g

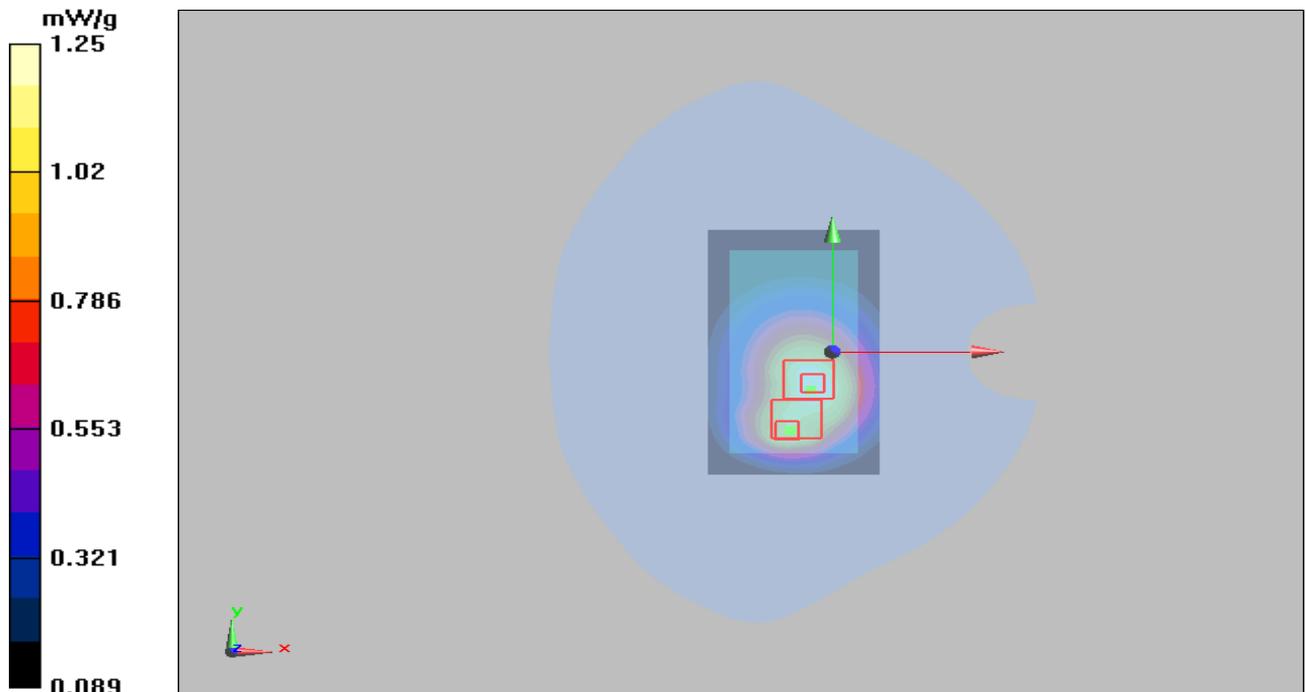


Figure 24 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (2Txslots) Back Side Low (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 12:49:48 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 824.2 MHz; Duty Cycle: 1:4.15

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.978$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.12 mW/g

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

Reference Value = 31.3 V/m; Power Drift = -0.149 dB

Peak SAR (extrapolated) = 1.4 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.730 mW/g

Maximum value of SAR (measured) = 1.09 mW/g

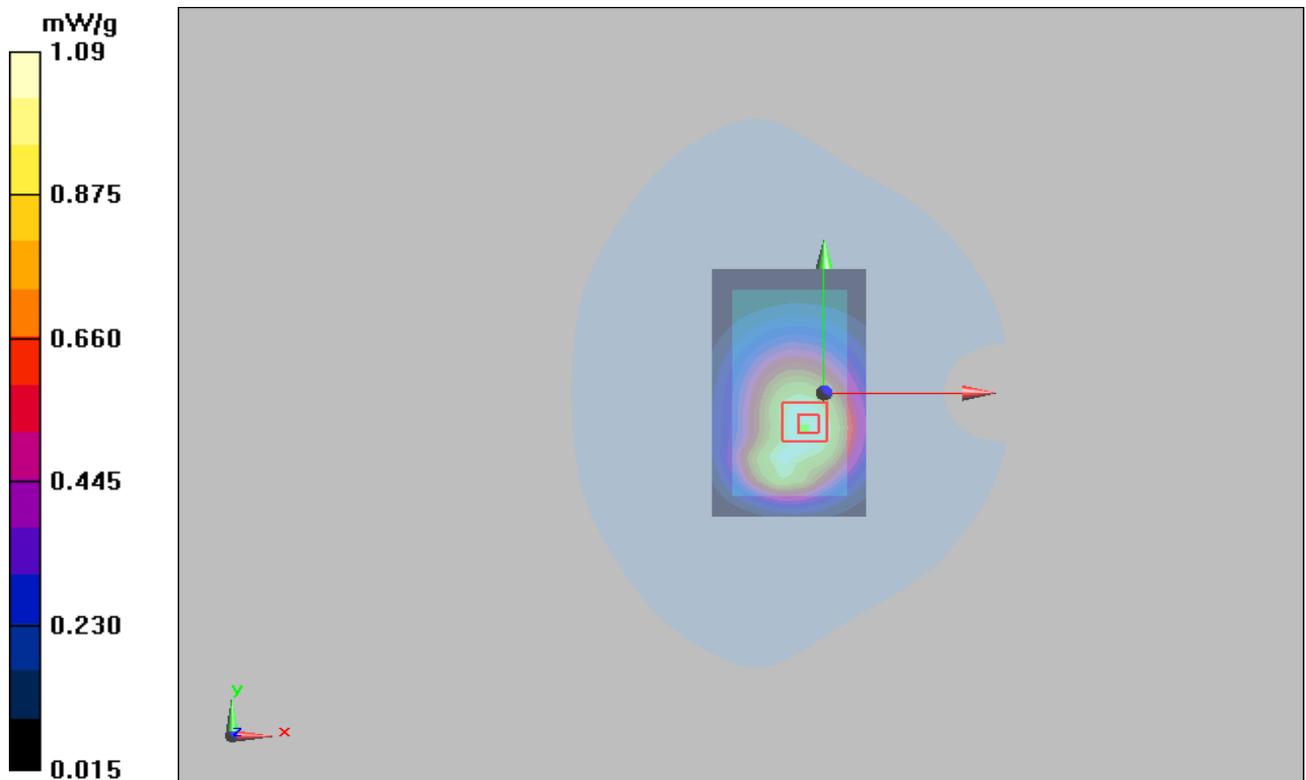


Figure 25 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 128 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (2Txslots) Front Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 1:18:11 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Front Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.734 mW/g

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

Reference Value = 25.5 V/m; Power Drift = 0.036 dB

Peak SAR (extrapolated) = 0.941 W/kg

SAR(1 g) = 0.695 mW/g; SAR(10 g) = 0.513 mW/g

Maximum value of SAR (measured) = 0.737 mW/g

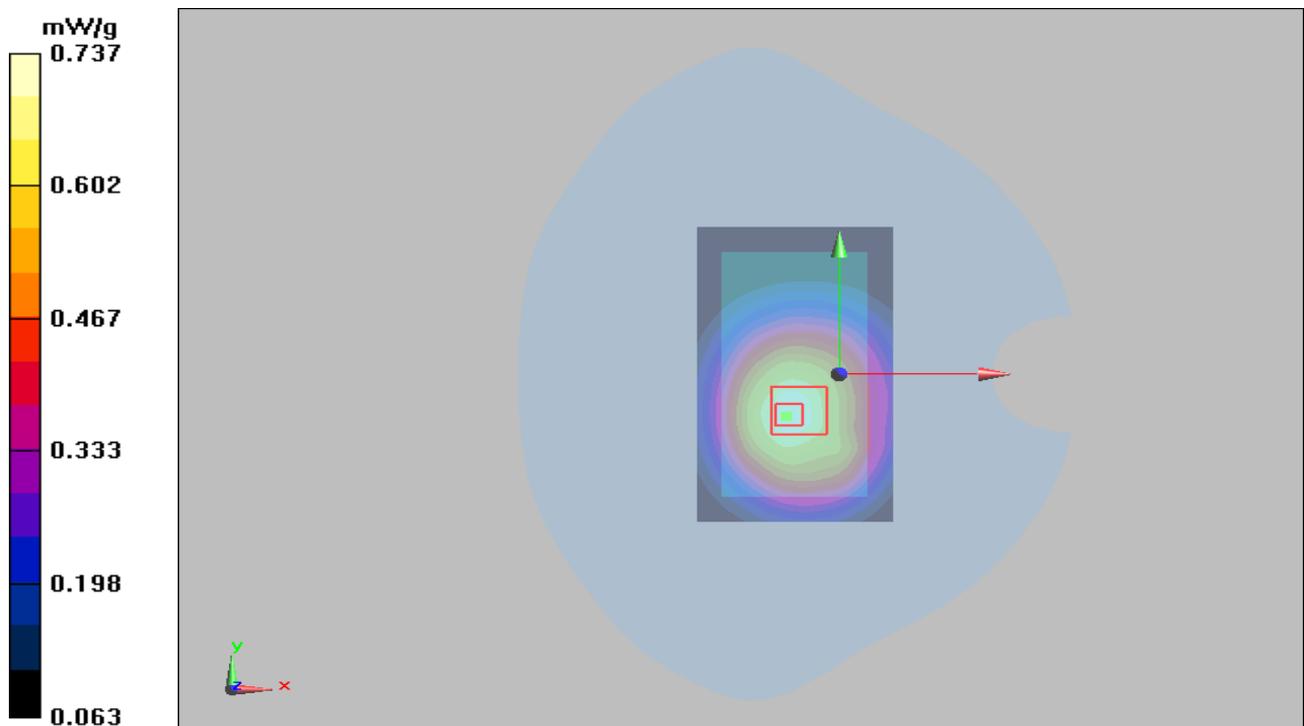


Figure 26 Body, Front Side, GSM 850 GPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

GSM 850 GPRS (2Txslots) Left Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 7:47:27 AM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5°C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Left Edge Middle/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.453 mW/g

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

Reference Value = 21.2 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.591 W/kg

SAR(1 g) = 0.419 mW/g; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.450 mW/g

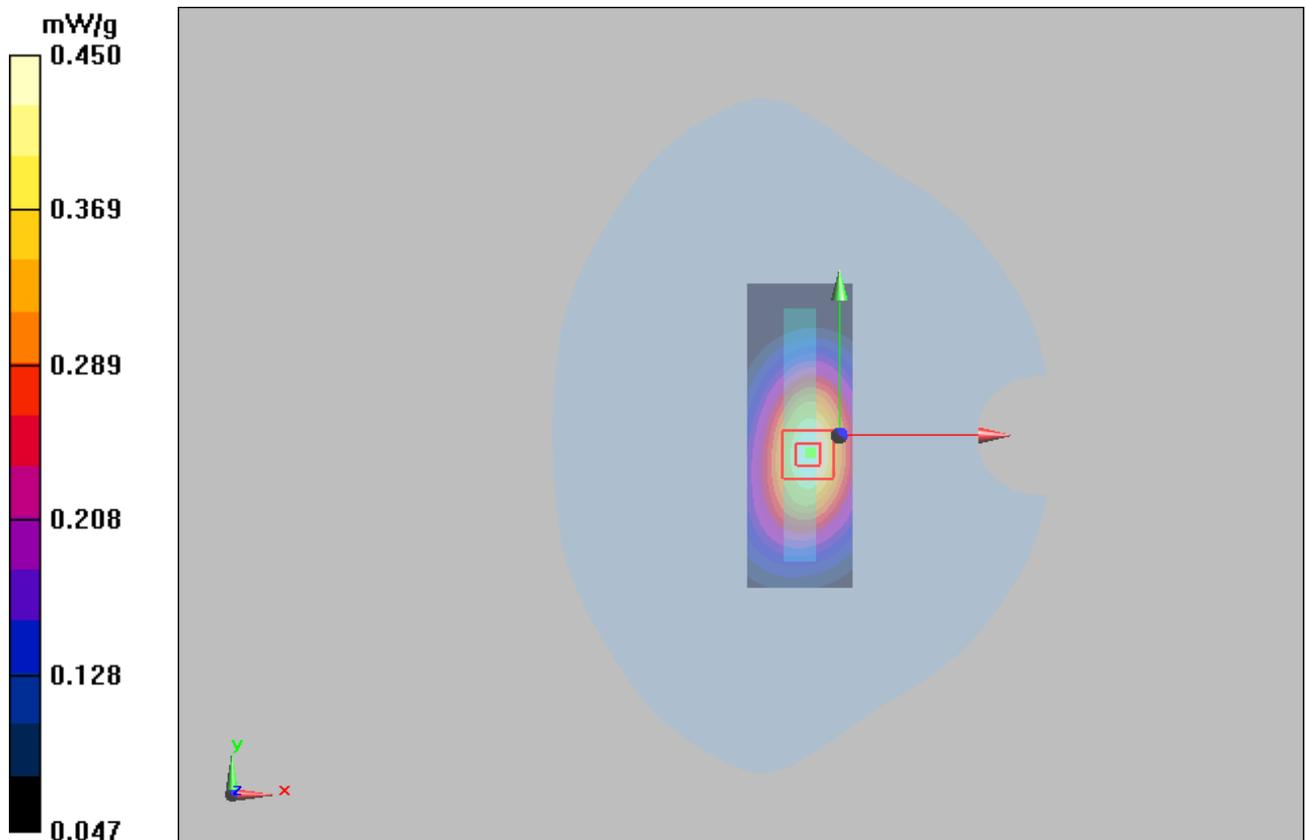


Figure 27 Body, Left Edge, GSM 850 GPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

GSM 850 GPRS (2Txslots) Right Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 8:03:50 AM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Right Edge Middle/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.644 mW/g

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

Reference Value = 24.6 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.837 W/kg

SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.425 mW/g

Maximum value of SAR (measured) = 0.651 mW/g

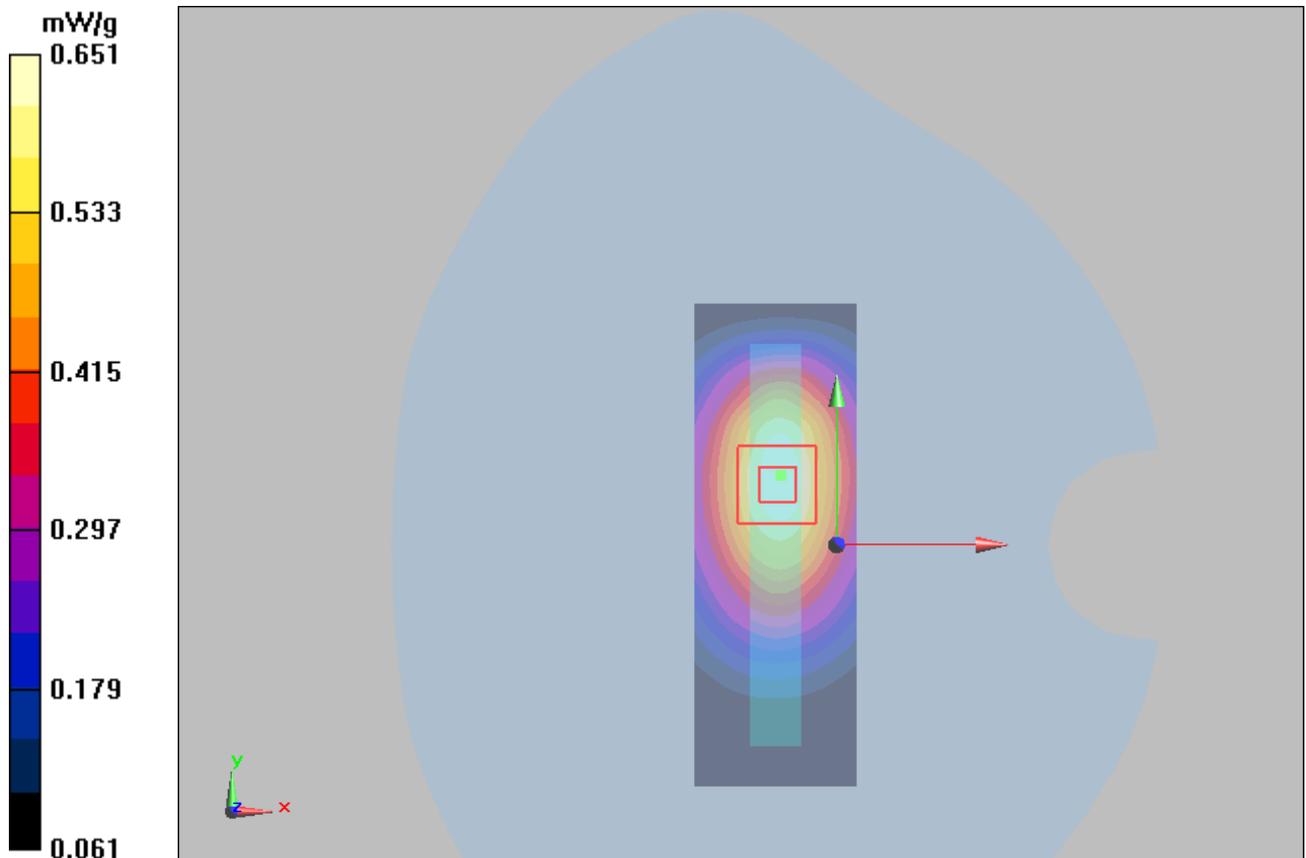


Figure 28 Body, Right Edge, GSM 850 GPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (2Txslots) Bottom Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 9:17:44 AM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Bottom Edge Middle/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.183 mW/g

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

Reference Value = 12.6 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 0.237 W/kg

SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.098 mW/g

Maximum value of SAR (measured) = 0.166 mW/g

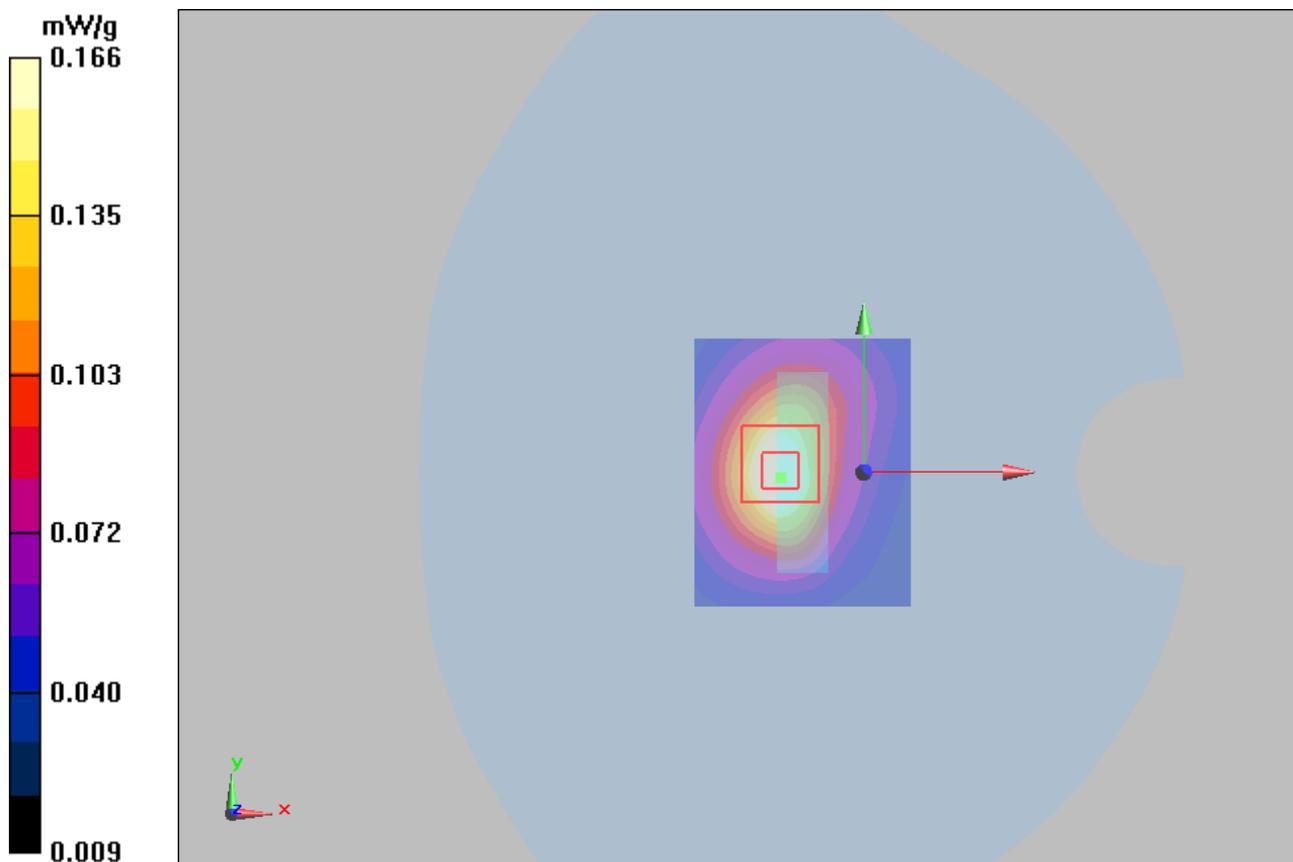


Figure 29 Body, Bottom Edge, GSM 850 GPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 with Earphone Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 2:46:01 PM

Communication System: GSM850; Frequency: 837 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.829 mW/g

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

Reference Value = 24.4 V/m; Power Drift = -0.140 dB

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.795 mW/g; SAR(10 g) = 0.472 mW/g

Maximum value of SAR (measured) = 0.870 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.4 V/m; Power Drift = -0.140 dB

Peak SAR (extrapolated) = 0.868 W/kg

SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.456 mW/g

Maximum value of SAR (measured) = 0.671 mW/g

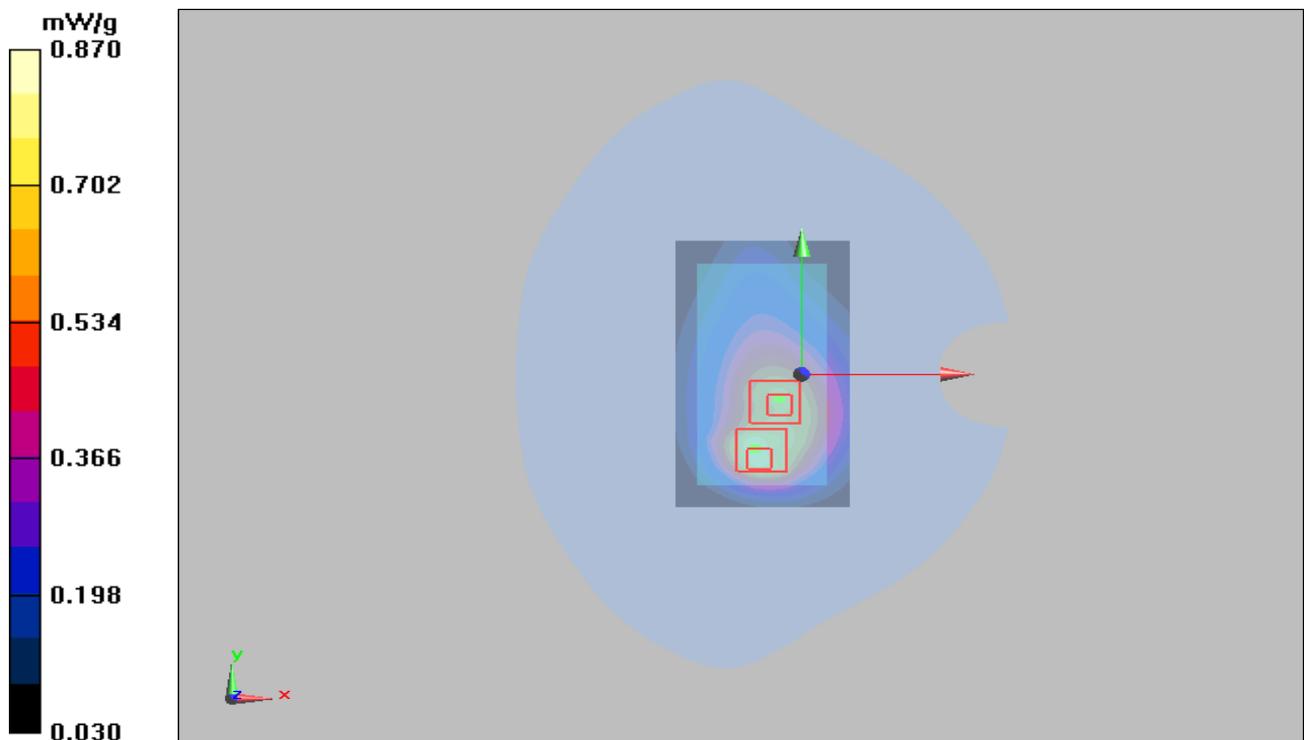


Figure 30 Body with Earphone, Back Side, GSM 850 Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 EGPRS (2Txslots) Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 1:36:30 PM

Communication System: GSM850 +EGPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.21 mW/g

Back Side Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.2 V/m; Power Drift = -0.022 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.731 mW/g

Maximum value of SAR (measured) = 1.23 mW/g

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

Reference Value = 32.2 V/m; Power Drift = -0.022 dB

Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.828 mW/g

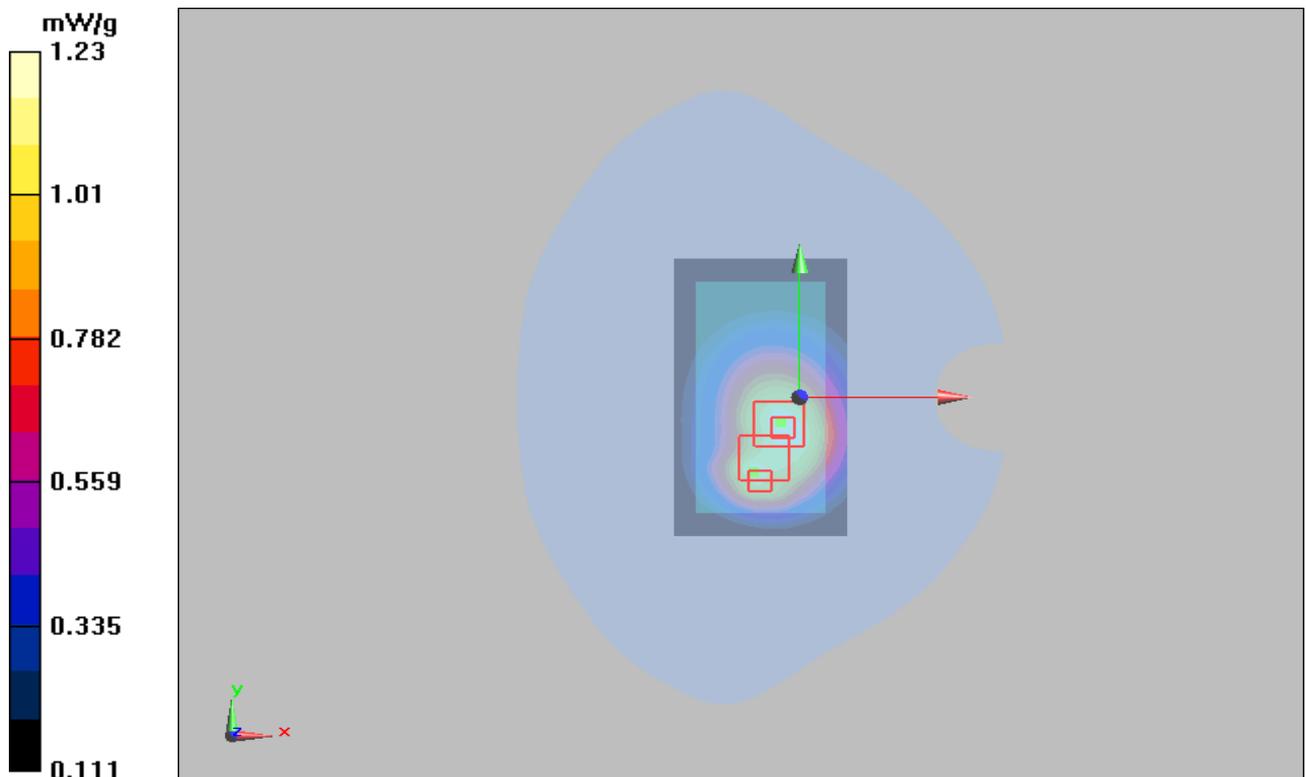


Figure 31 Body, Back Side, GSM 850 EGPRS (2Txslots) Channel 192 (SN: GAGB421XC15P6394)

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GSM 850 GPRS (2Txslots) Back Side Middle (SN: BAAAC09XJ4931366)

Date/Time: 7/20/2011 3:24:42 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 837 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 837$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.25 mW/g

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

Reference Value = 32.5 V/m; Power Drift = -0.172 dB

Peak SAR (extrapolated) = 1.62 W/kg

SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.845 mW/g

Maximum value of SAR (measured) = 1.26 mW/g

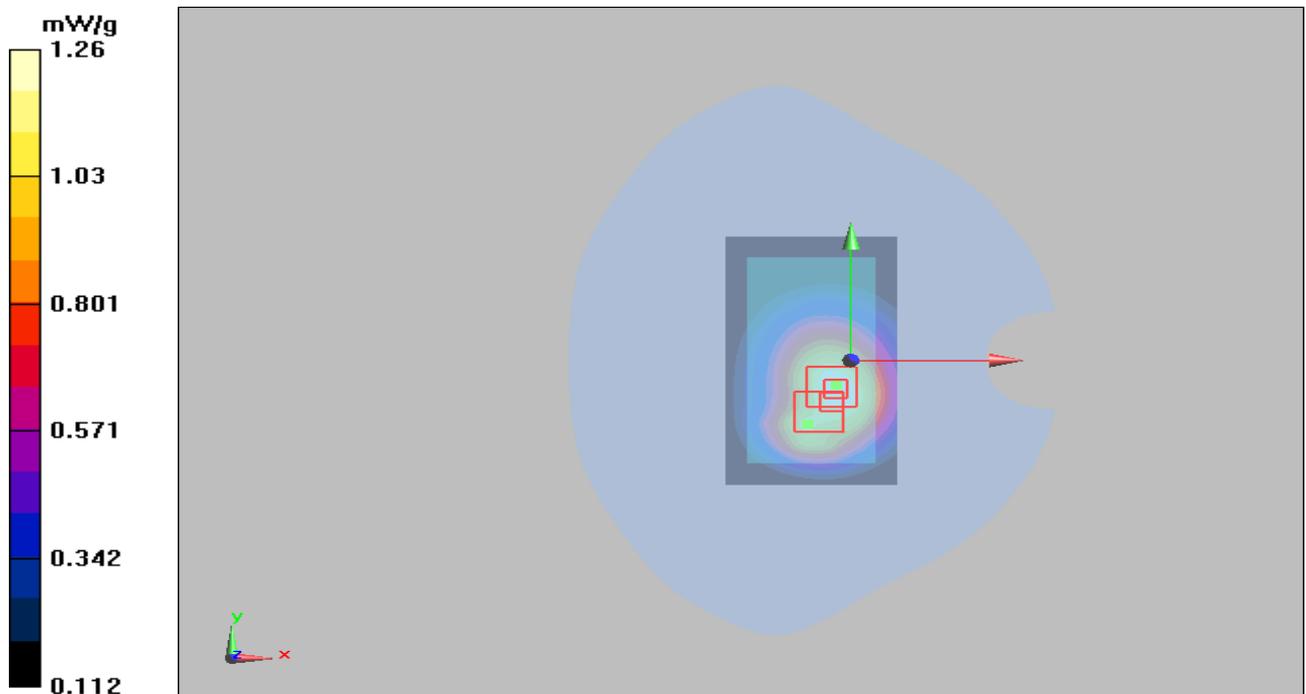
Back Side Middle/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.5 V/m; Power Drift = -0.172 dB

Peak SAR (extrapolated) = 1.64 W/kg

SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.750 mW/g

Maximum value of SAR (measured) = 1.24 mW/g



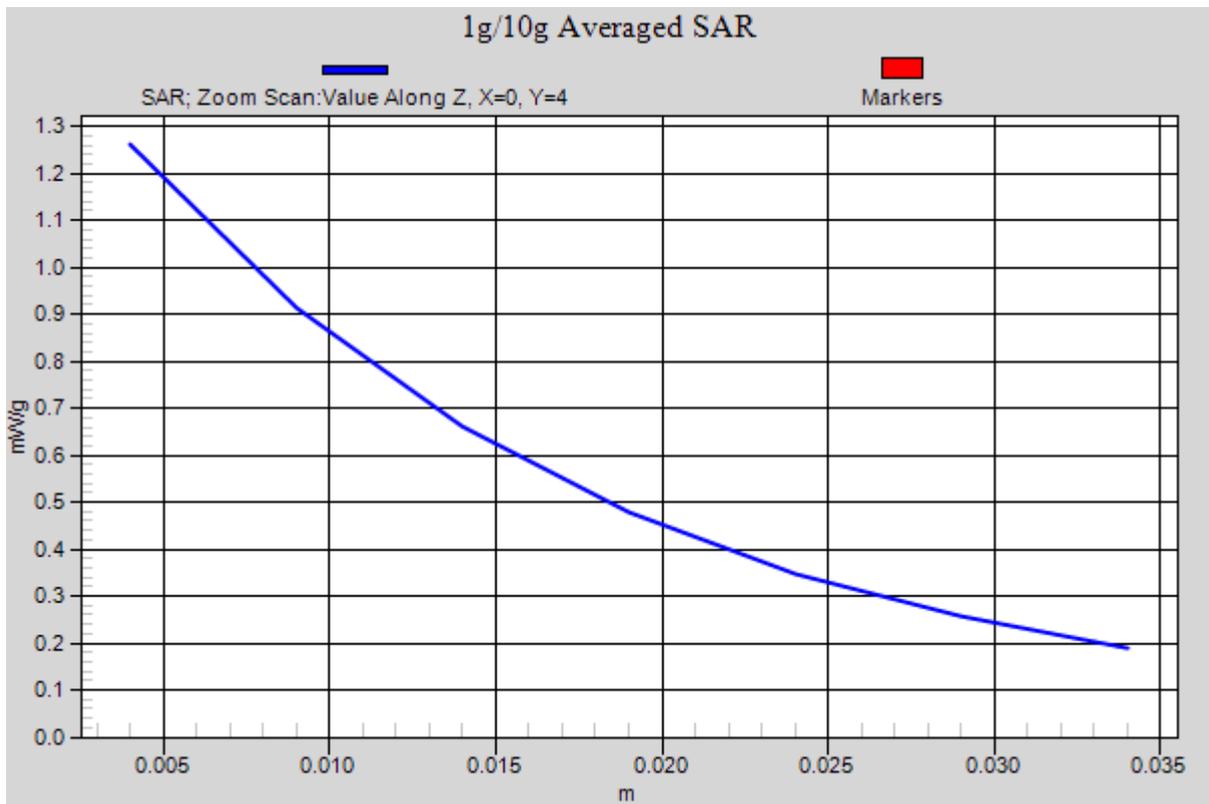
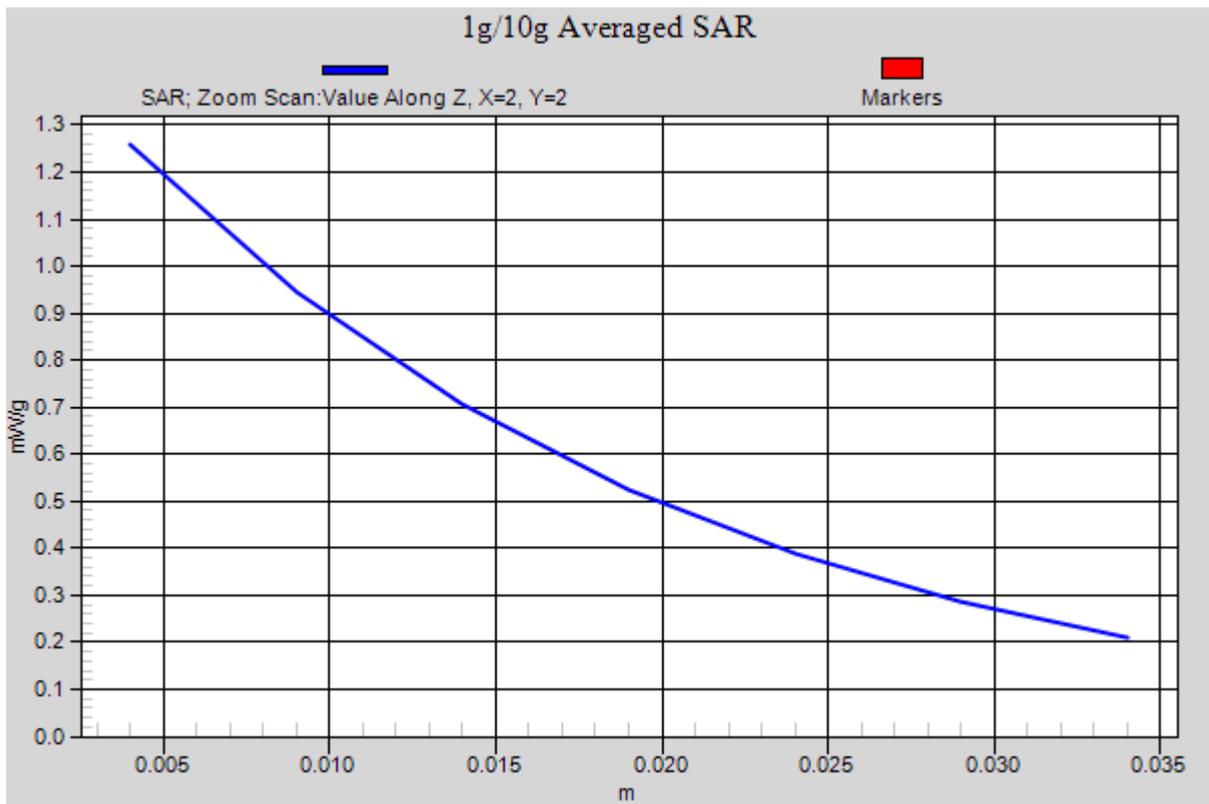


Figure 32 Body, Back Side, GSM 850 GPRS (2Txslots) Channel 192 (SN: BAAAC09XJ4931366)

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GSM 1900 Left Cheek High (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 9:14:43 PM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.666 mW/g

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

Reference Value = 5.41 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 1.1 W/kg

SAR(1 g) = 0.589 mW/g; SAR(10 g) = 0.316 mW/g

Maximum value of SAR (measured) = 0.636 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.41 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.745 W/kg

SAR(1 g) = 0.489 mW/g; SAR(10 g) = 0.306 mW/g

Maximum value of SAR (measured) = 0.538 mW/g

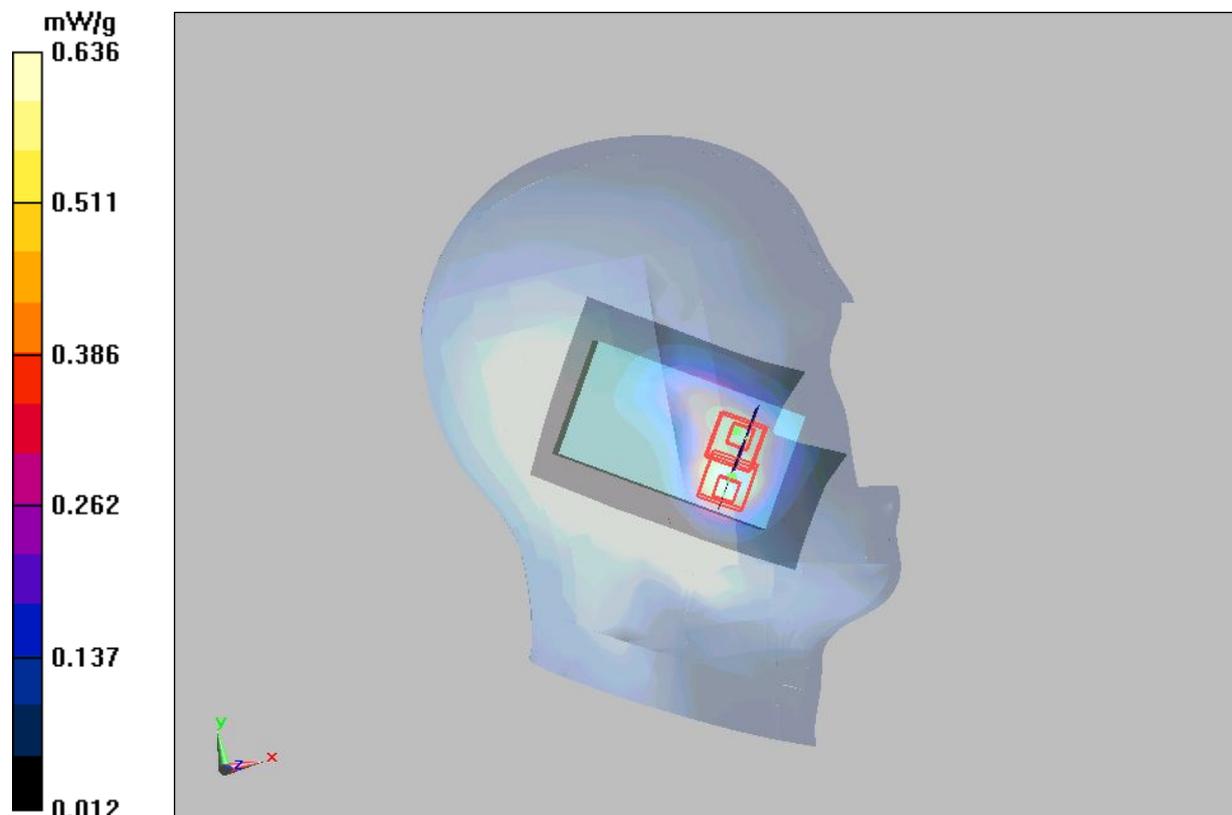


Figure 33 Left Hand Touch Cheek GSM 1900 Channel 810 (SN: GAGB421XC15P6394)

GSM 1900 Left Cheek Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 8:58:51 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.636 mW/g

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

Reference Value = 5.19 V/m; Power Drift = 0.092 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.558 mW/g; SAR(10 g) = 0.296 mW/g

Maximum value of SAR (measured) = 0.599 mW/g

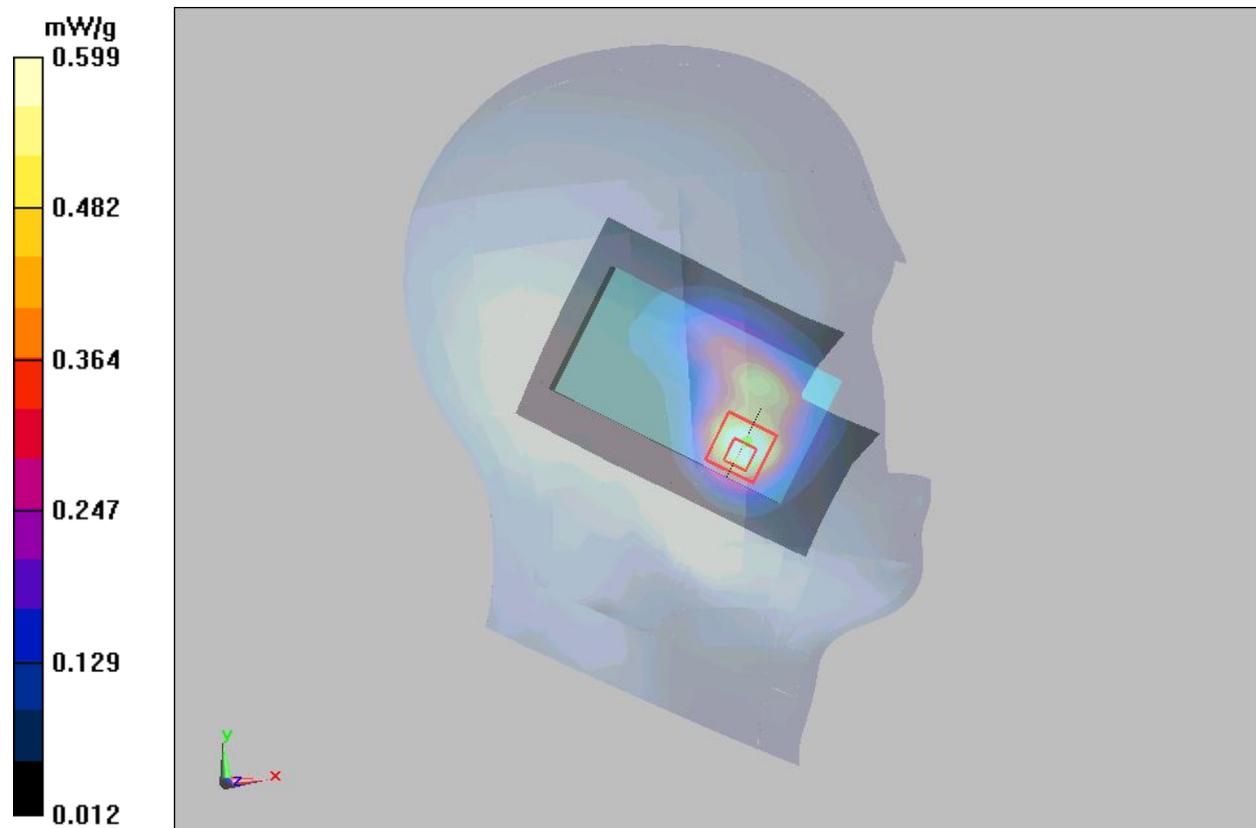


Figure 34 Left Hand Touch Cheek GSM 1900 Channel 661 (SN: GAGB421XC15P6394)

GSM 1900 Left Cheek Low (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 9:36:47 PM

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.717 mW/g

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

Reference Value = 5.91 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.329 mW/g

Maximum value of SAR (measured) = 0.695 mW/g

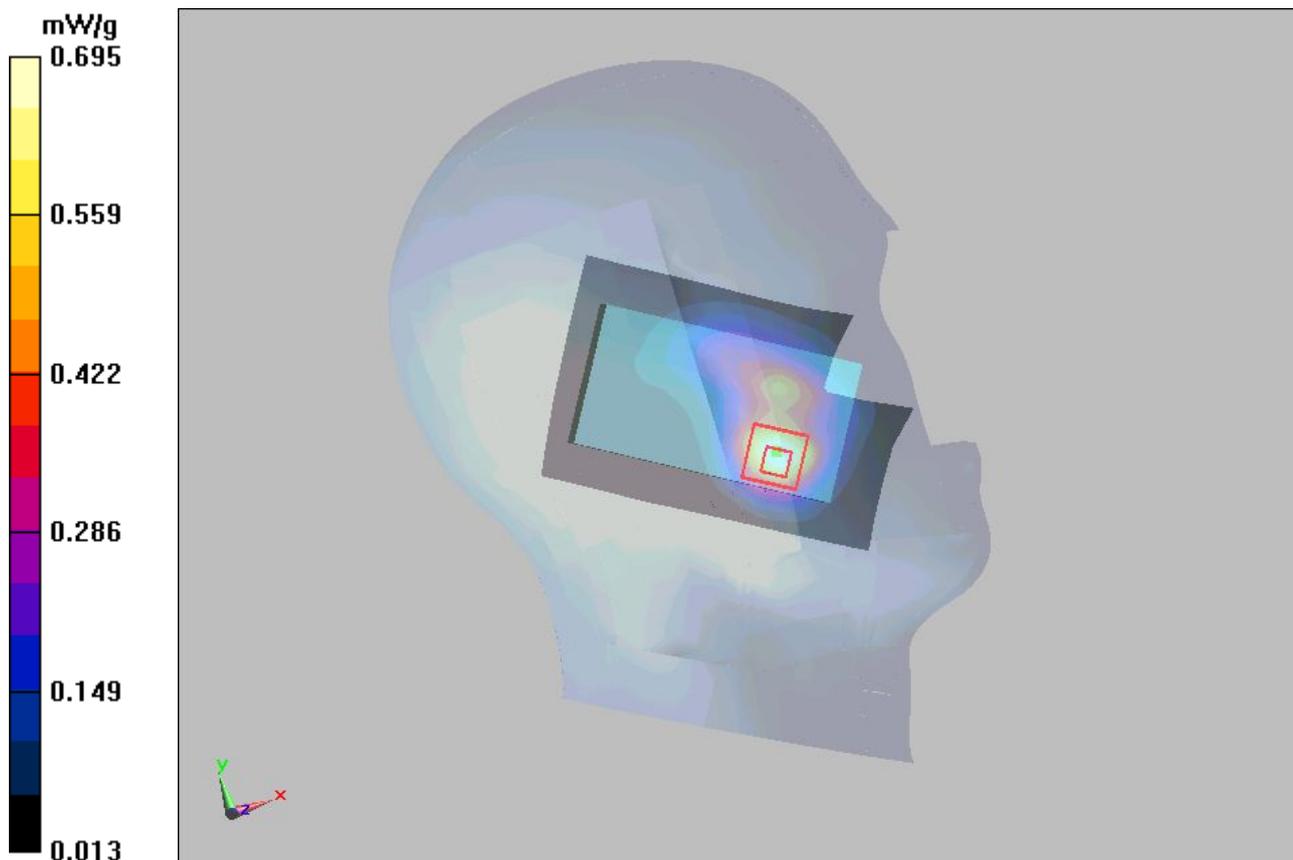


Figure 35 Left Hand Touch Cheek GSM 1900 Channel 512 (SN: GAGB421XC15P6394)

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GSM 1900 Left Tilt Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 9:52:58 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.119 mW/g

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

Reference Value = 7.83 V/m; Power Drift = 0.121 dB

Peak SAR (extrapolated) = 0.170 W/kg

SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.070 mW/g

Maximum value of SAR (measured) = 0.117 mW/g

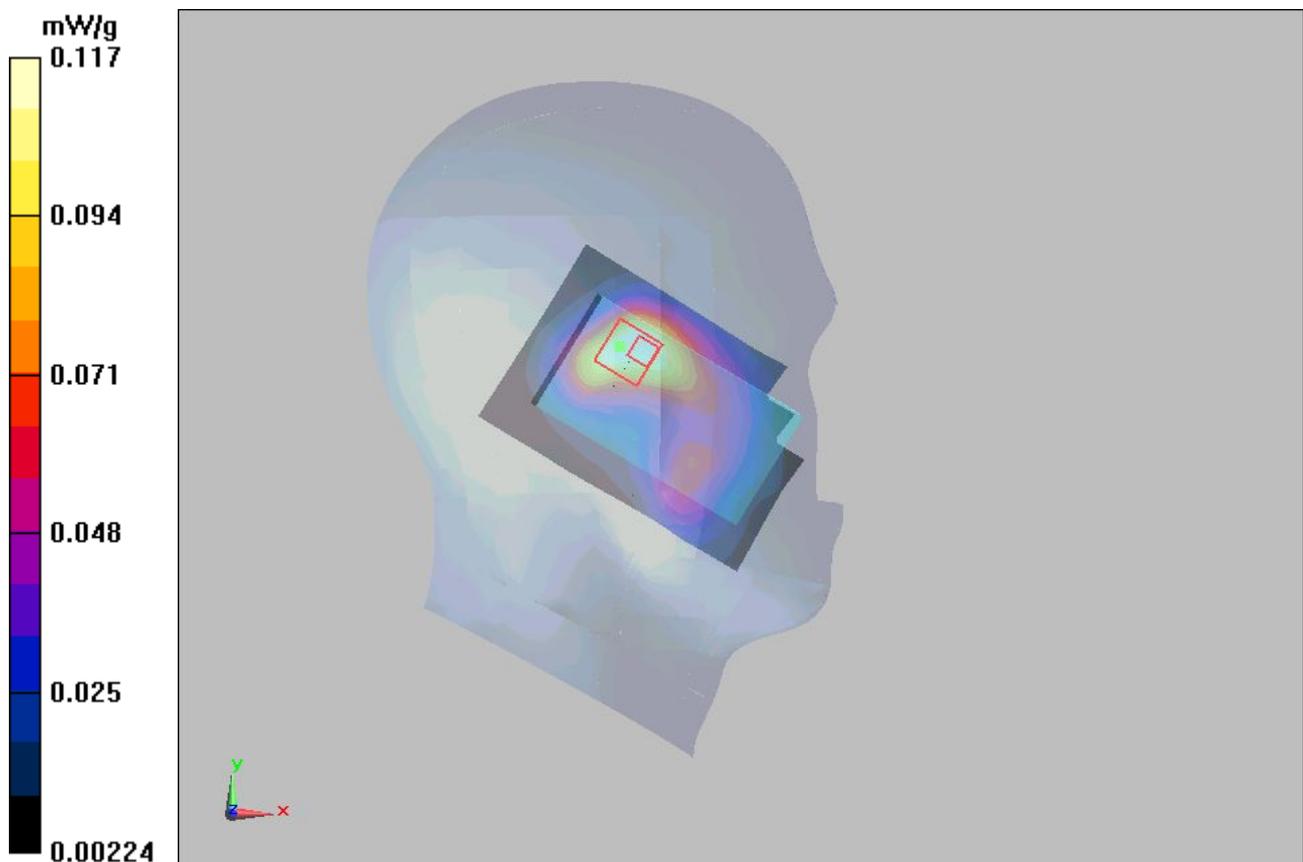


Figure 36 Left Hand Tilt 15° GSM 1900 Channel 661 (SN: GAGB421XC15P6394)

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GSM 1900 Right Cheek Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 7:40:08 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.626 mW/g

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

Reference Value = 6.53 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 0.850 W/kg

SAR(1 g) = 0.542 mW/g; SAR(10 g) = 0.314 mW/g

Maximum value of SAR (measured) = 0.617 mW/g

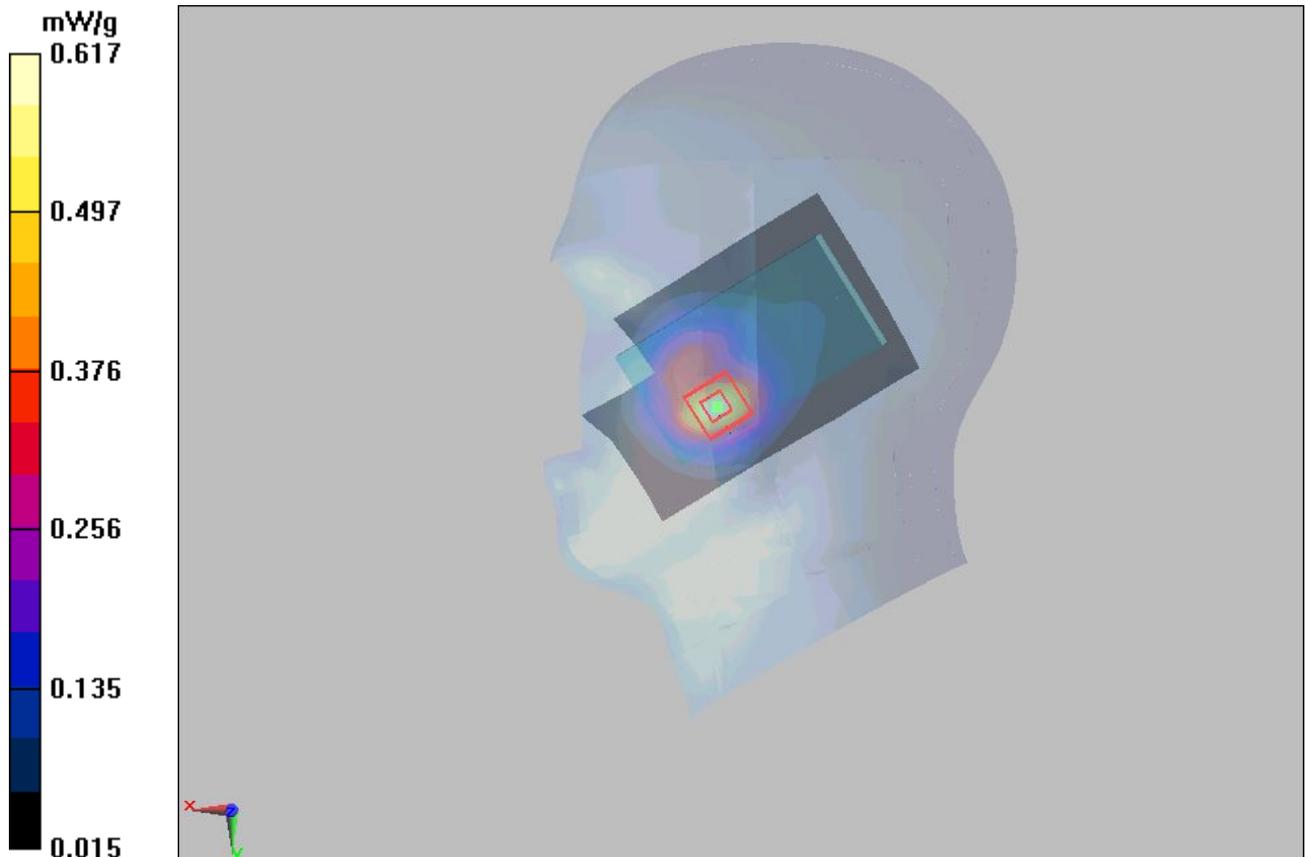


Figure 37 Right Hand Touch Cheek GSM 1900 Channel 661 (SN: GAGB421XC15P6394)

GSM 1900 Right Tilt Middle (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 8:41:07 PM

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Tilt Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.113 mW/g

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

Reference Value = 7.71 V/m; Power Drift = 0.002 dB

Peak SAR (extrapolated) = 0.153 W/kg

SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.059 mW/g

Maximum value of SAR (measured) = 0.102 mW/g

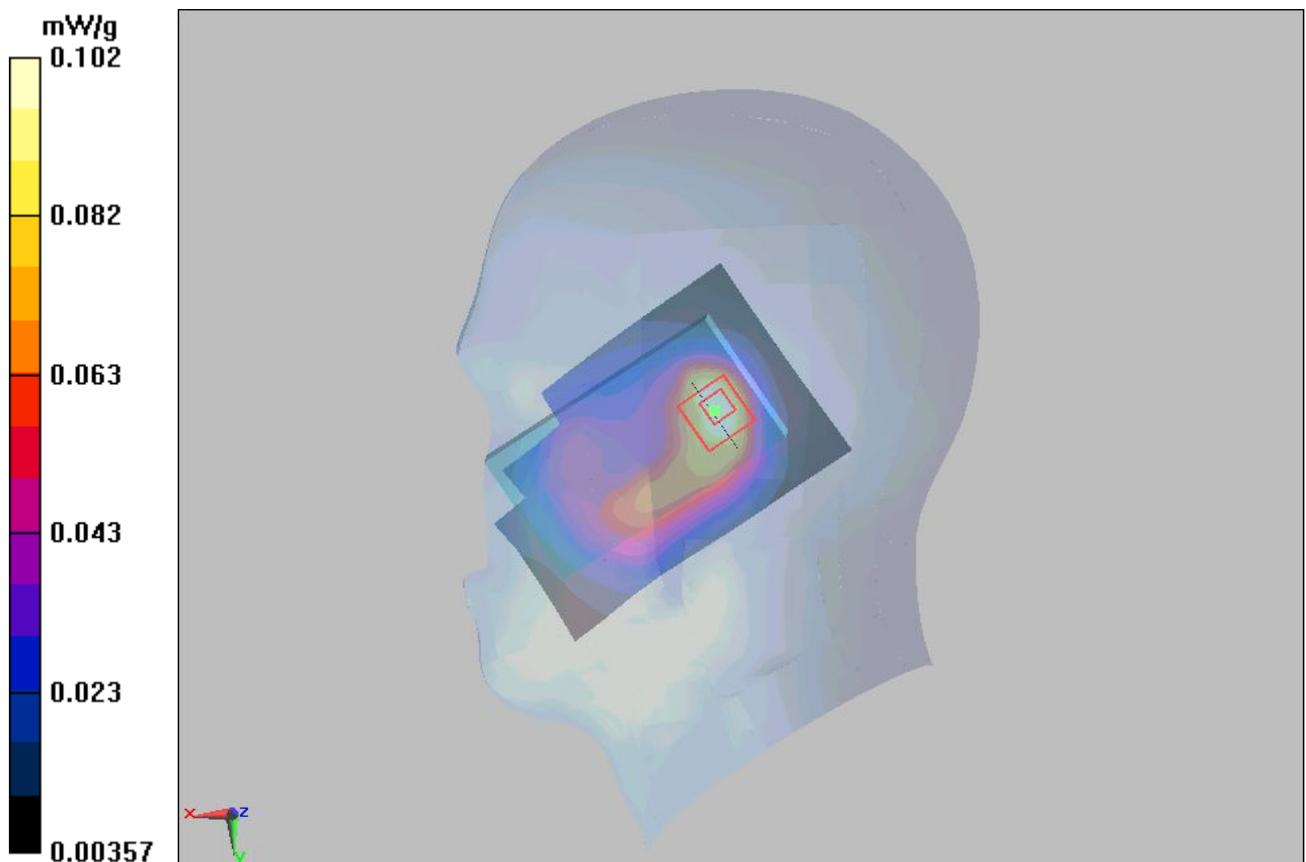


Figure 38 Right Hand Tilt 15° GSM 1900 Channel 661 (SN: GAGB421XC15P6394)

GSM 1900 Left Cheek Low (SN: BAAAC09XJ4931366)

Date/Time: 7/19/2011 4:35:32 PM

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.35$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.741 mW/g

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

Reference Value = 6.08 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.656 mW/g; SAR(10 g) = 0.341 mW/g

Maximum value of SAR (measured) = 0.731 mW/g

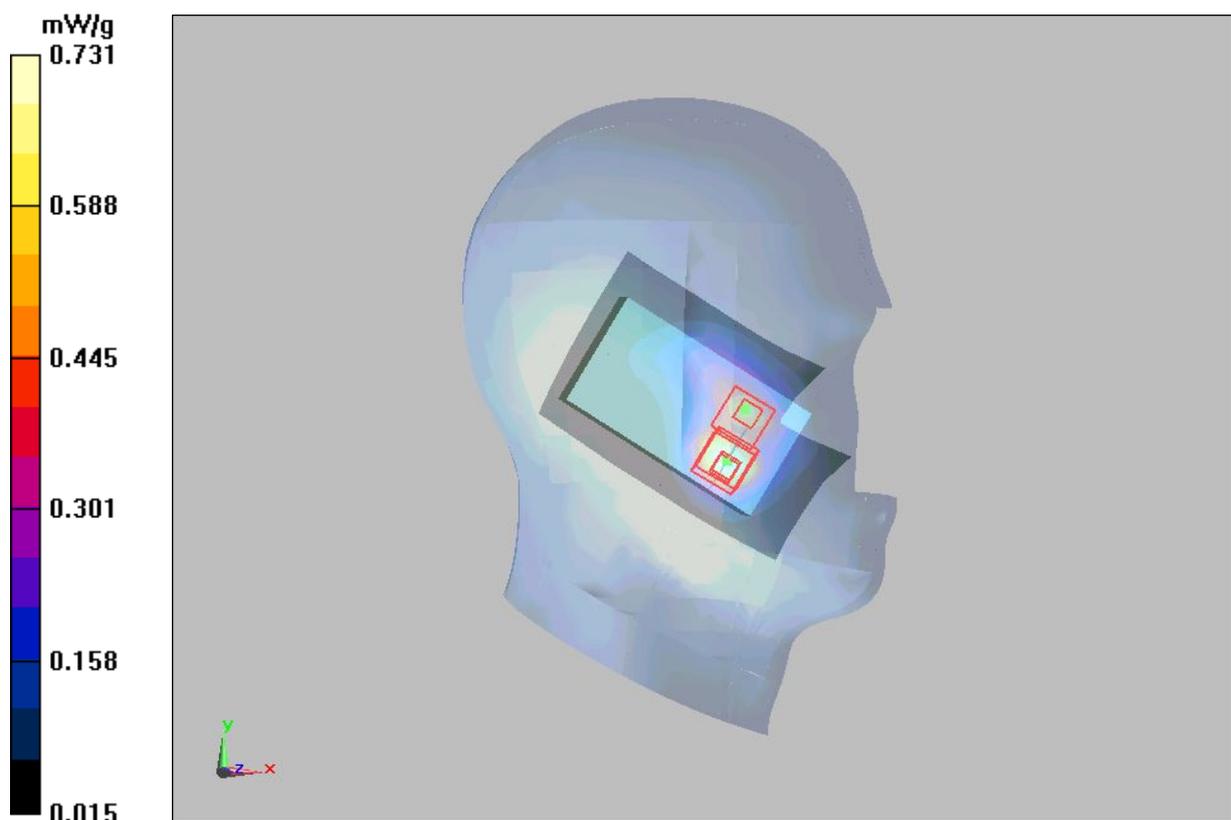
Cheek Low/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.08 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.737 W/kg

SAR(1 g) = 0.484 mW/g; SAR(10 g) = 0.302 mW/g

Maximum value of SAR (measured) = 0.525 mW/g



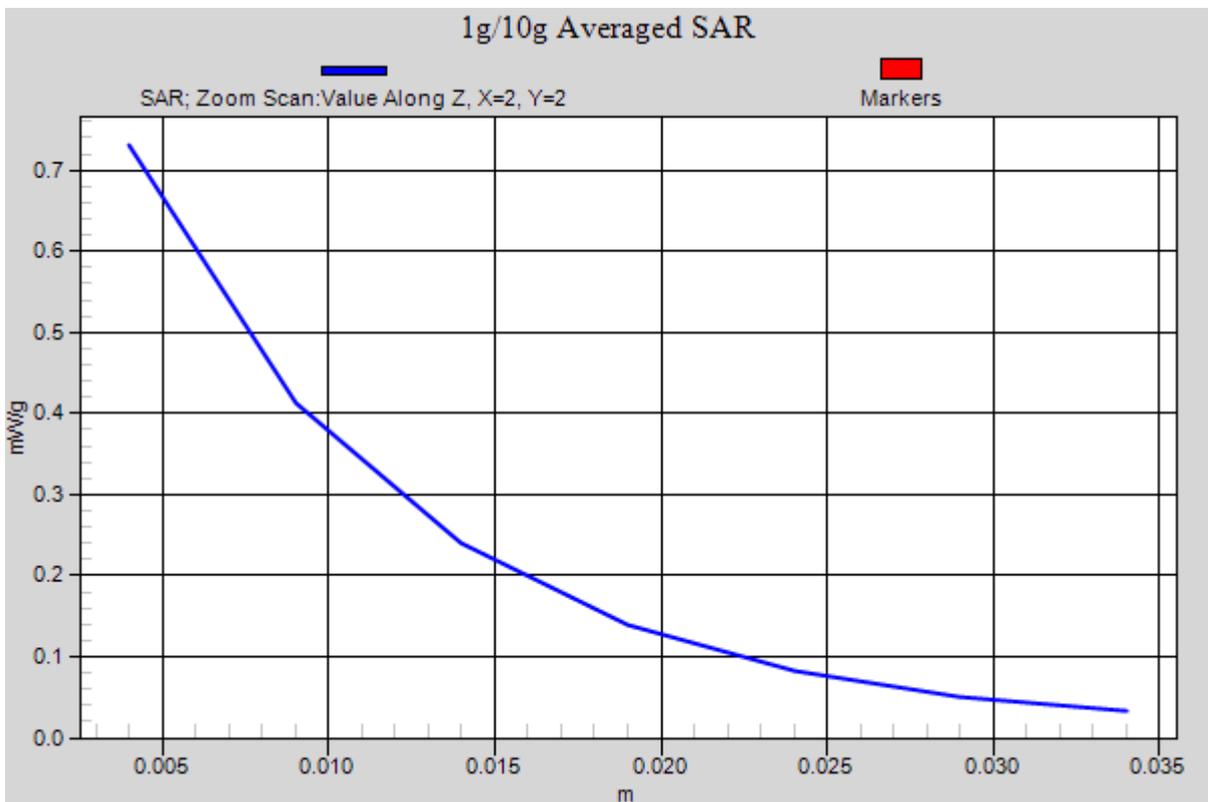
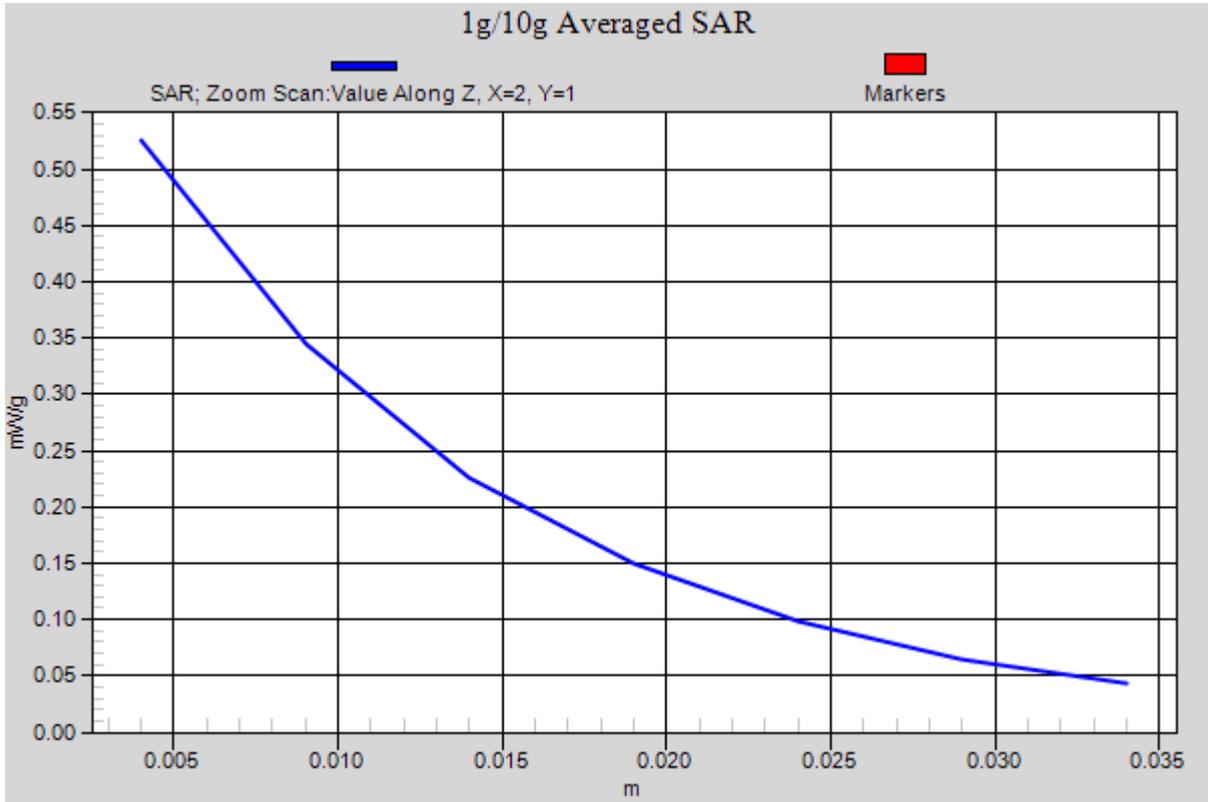


Figure 39 Left Hand Touch Cheek GSM 1900 Channel 512 (SN: BAAAC09XJ4931366)

GSM 1900 GPRS (1Txslot) Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 10:16:38 AM

Communication System: PCS 1900+GPRS(1Up); Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5°C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.471 mW/g

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

Reference Value = 8.37 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 0.705 W/kg

SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.239 mW/g

Maximum value of SAR (measured) = 0.445 mW/g

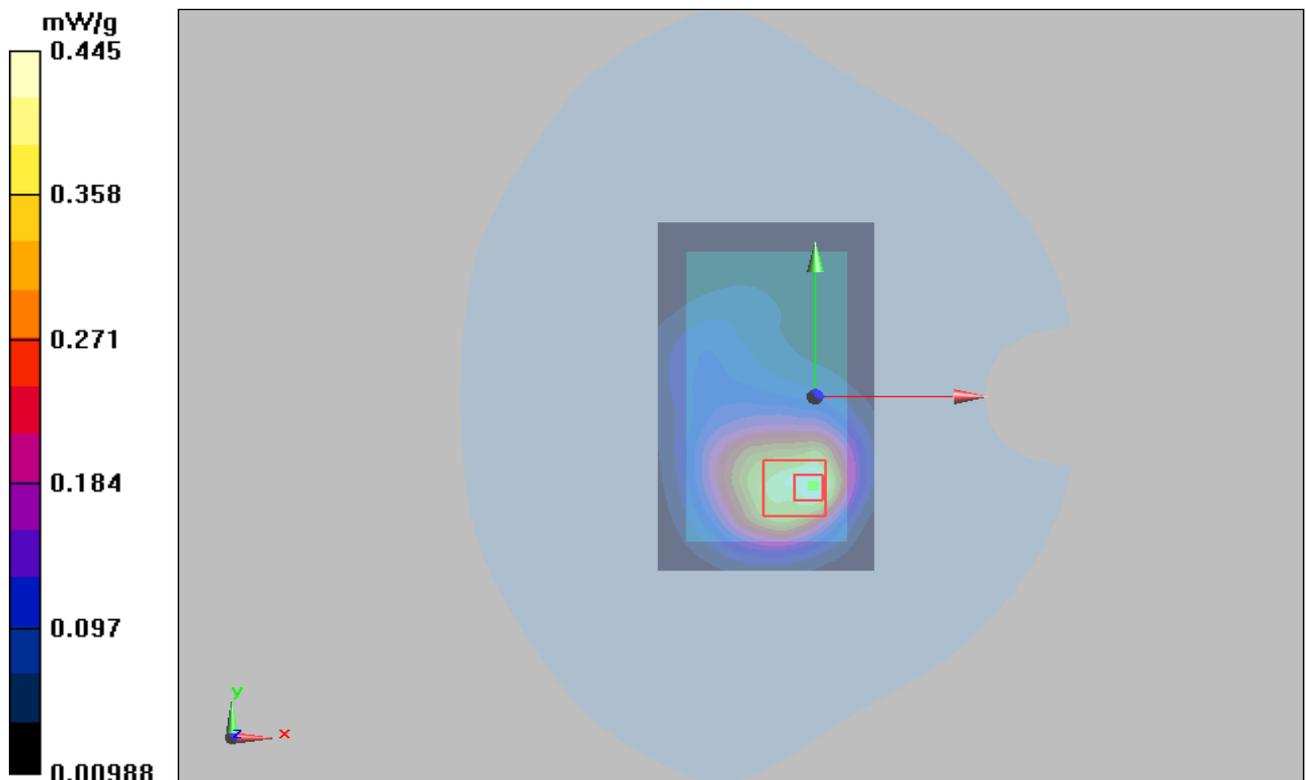


Figure 40 Body, Back Side, GSM 1900 GPRS (1Txslot) Channel 661 (SN: GAGB421XC15P6394)

GSM 1900 GPRS (2Txslots) Back Side High (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 5:04:51 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5°C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.829 mW/g

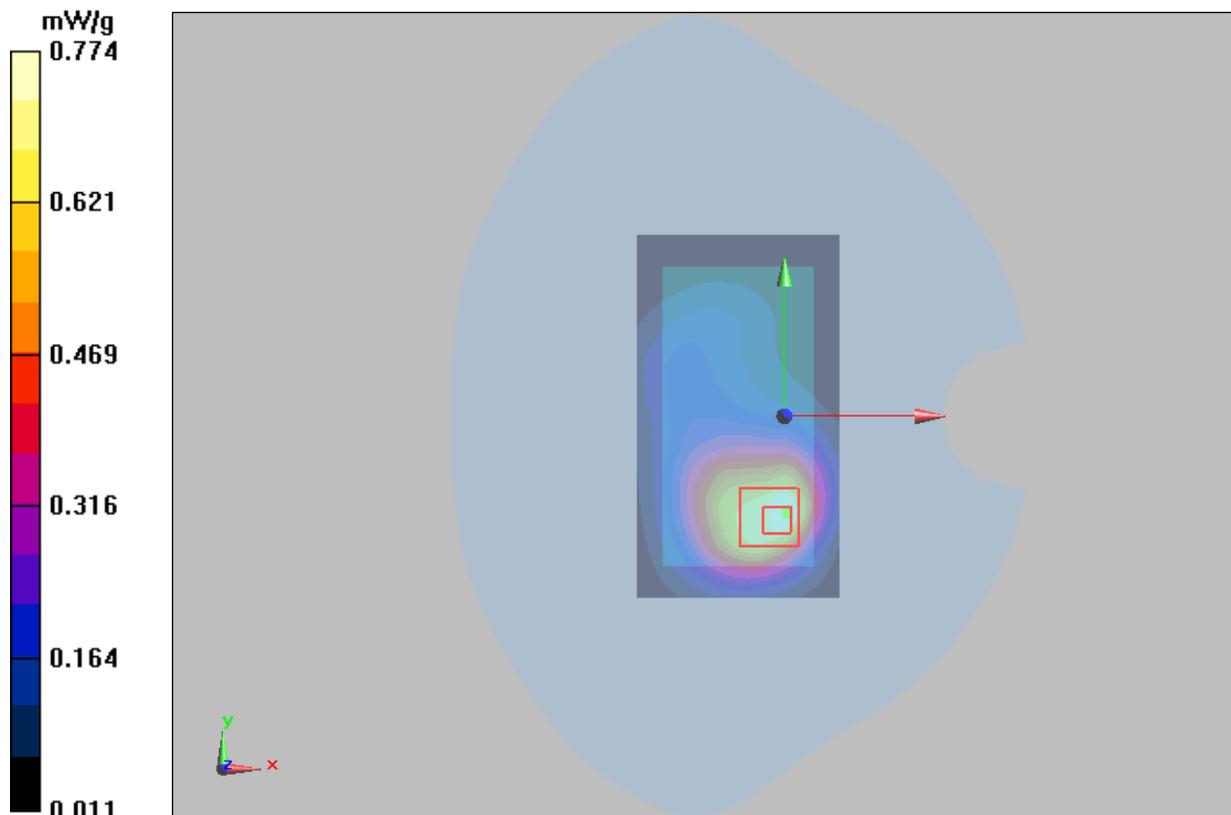
Back Side High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.3 V/m; Power Drift = -0.080 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.716 mW/g; SAR(10 g) = 0.424 mW/g

Maximum value of SAR (measured) = 0.774 mW/g



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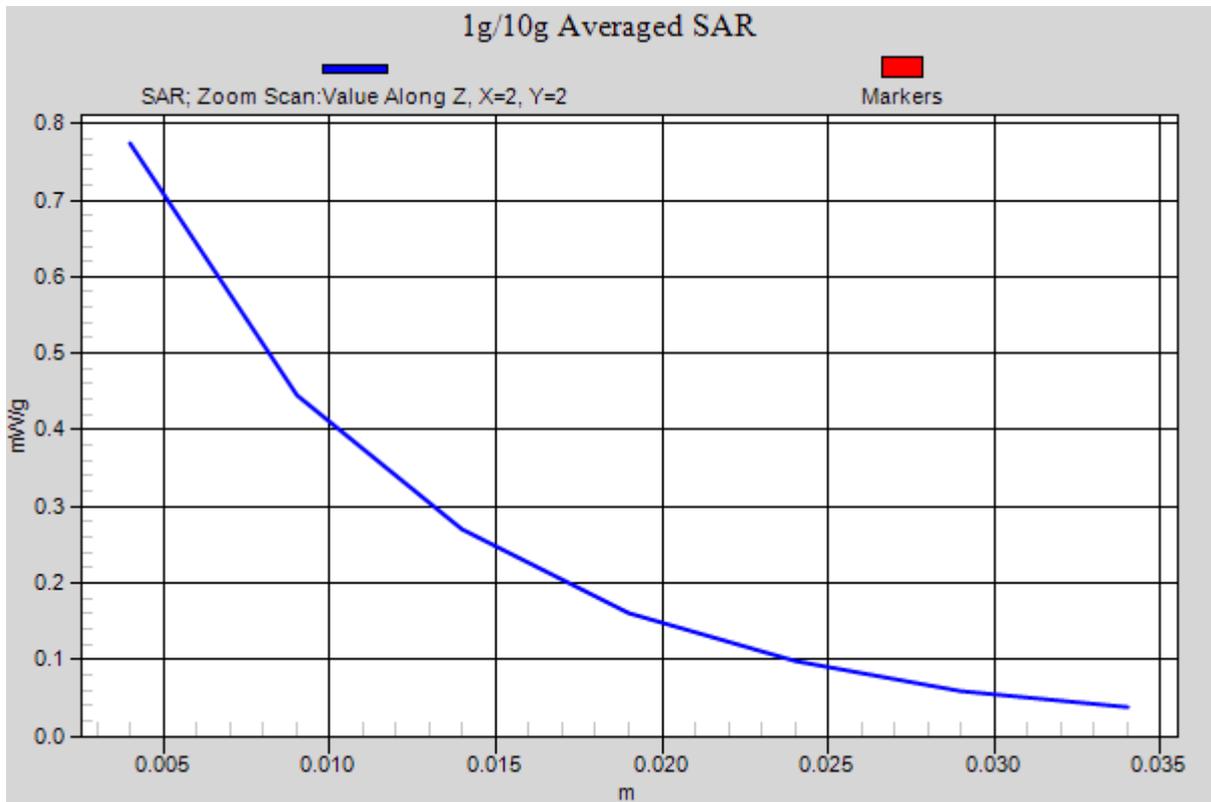


Figure 41 Body, Back Side, GSM 1900 GPRS (2Txslots) Channel 810 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Back Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 10:34:26 AM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.722 mW/g

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

Reference Value = 10.4 V/m; Power Drift = 0.096 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.375 mW/g

Maximum value of SAR (measured) = 0.701 mW/g

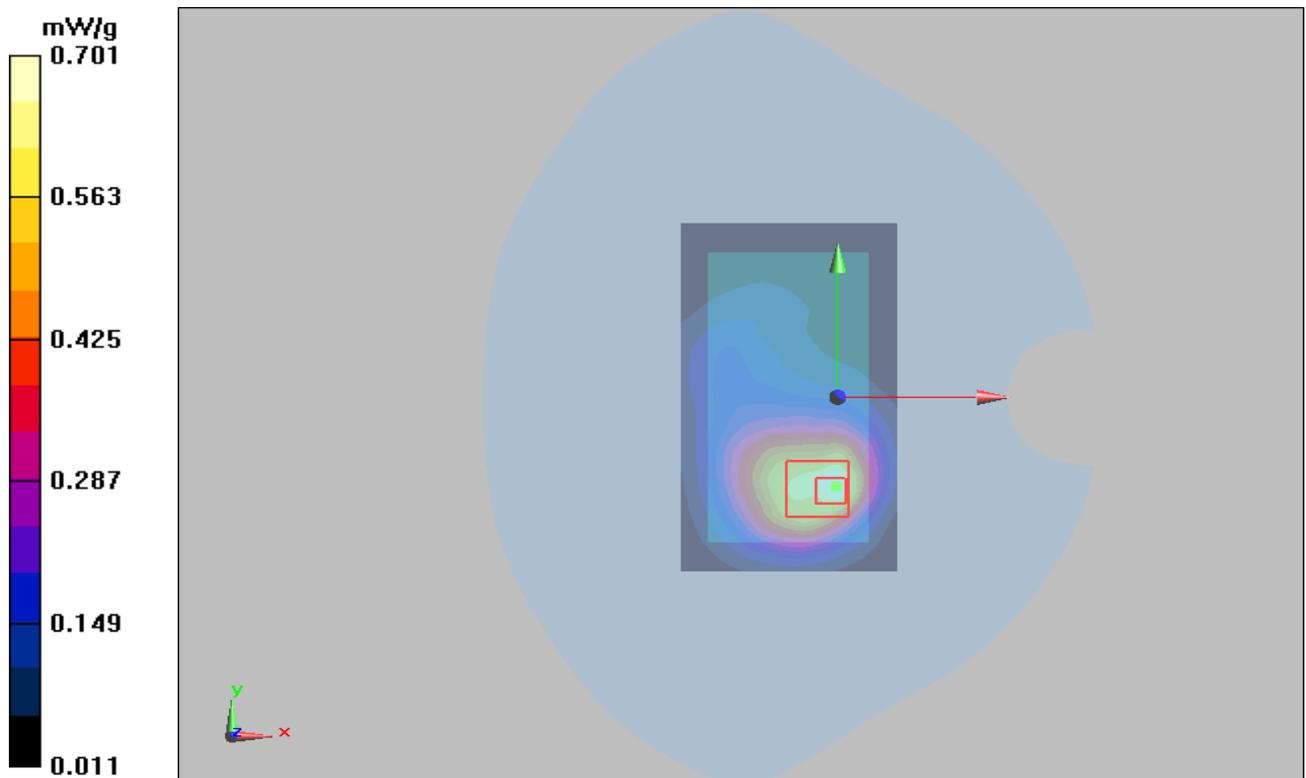


Figure 42 Body, Back Side, GSM 1900 GPRS (2Txslots) Channel 661 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Back Side Low (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 5:18:45 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1850.2 MHz; Duty Cycle: 1:4.15

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.781 mW/g

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

Reference Value = 8.81 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.655 mW/g; SAR(10 g) = 0.378 mW/g

Maximum value of SAR (measured) = 0.727 mW/g

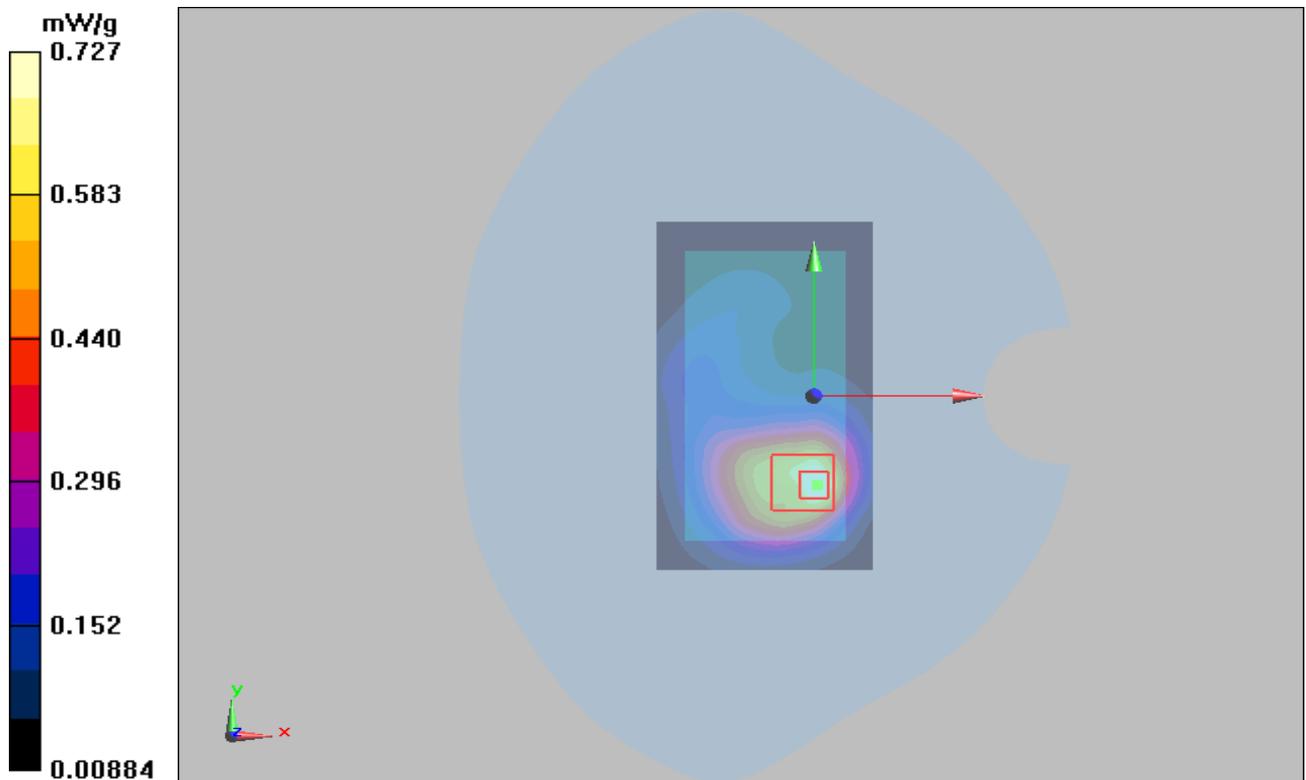


Figure 43 Body, Back Side, GSM 1900 GPRS (2Txslots) Channel 512 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Front Side Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 7:38:21 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Front Side Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.584 mW/g

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

Reference Value = 11.1 V/m; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 0.899 W/kg

SAR(1 g) = 0.532 mW/g; SAR(10 g) = 0.318 mW/g

Maximum value of SAR (measured) = 0.561 mW/g

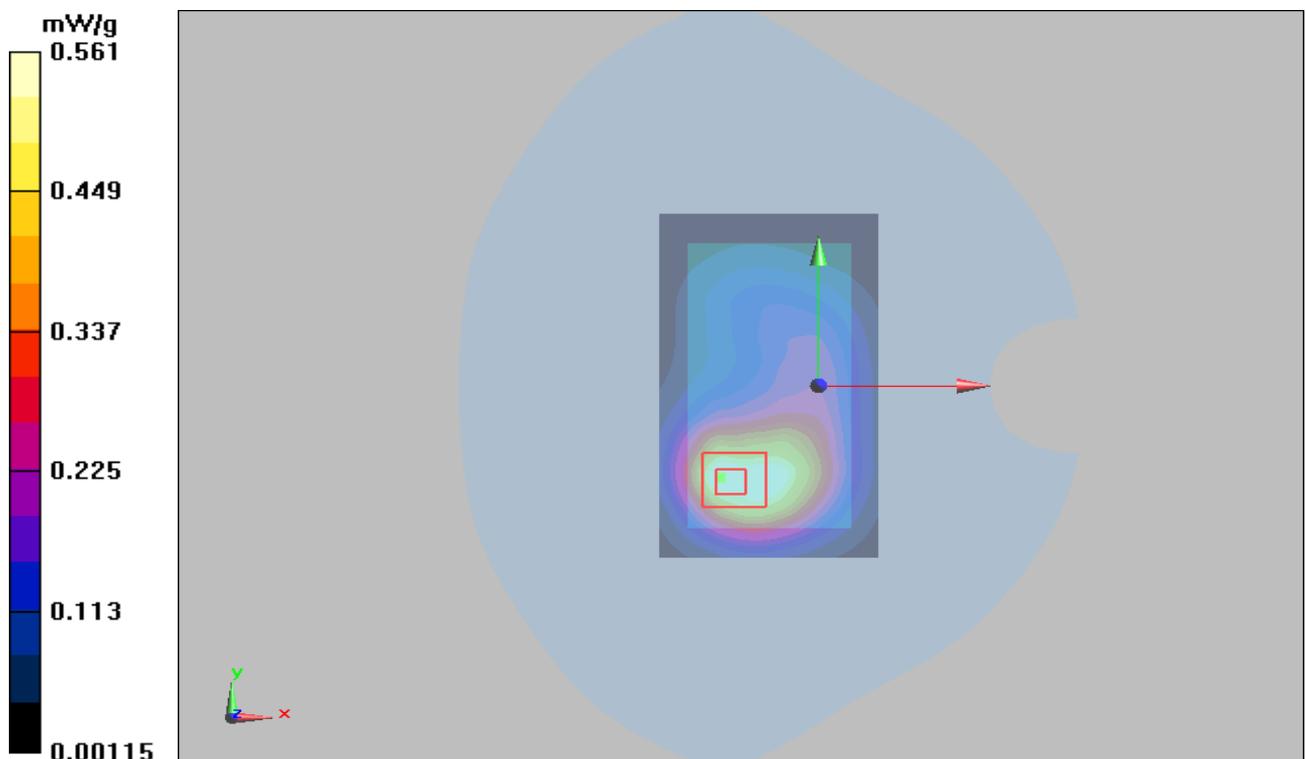


Figure 44 Body, Front Side, GSM 1900 GPRS (2Txslots) Channel 661 (SN: GAGB421XC15P6394)

GSM 1900 GPRS (2Txslots) Left Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 7:54:58 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Left Edge Middle/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.195 mW/g

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

Reference Value = 9.76 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.150 mW/g; SAR(10 g) = 0.089 mW/g

Maximum value of SAR (measured) = 0.160 mW/g

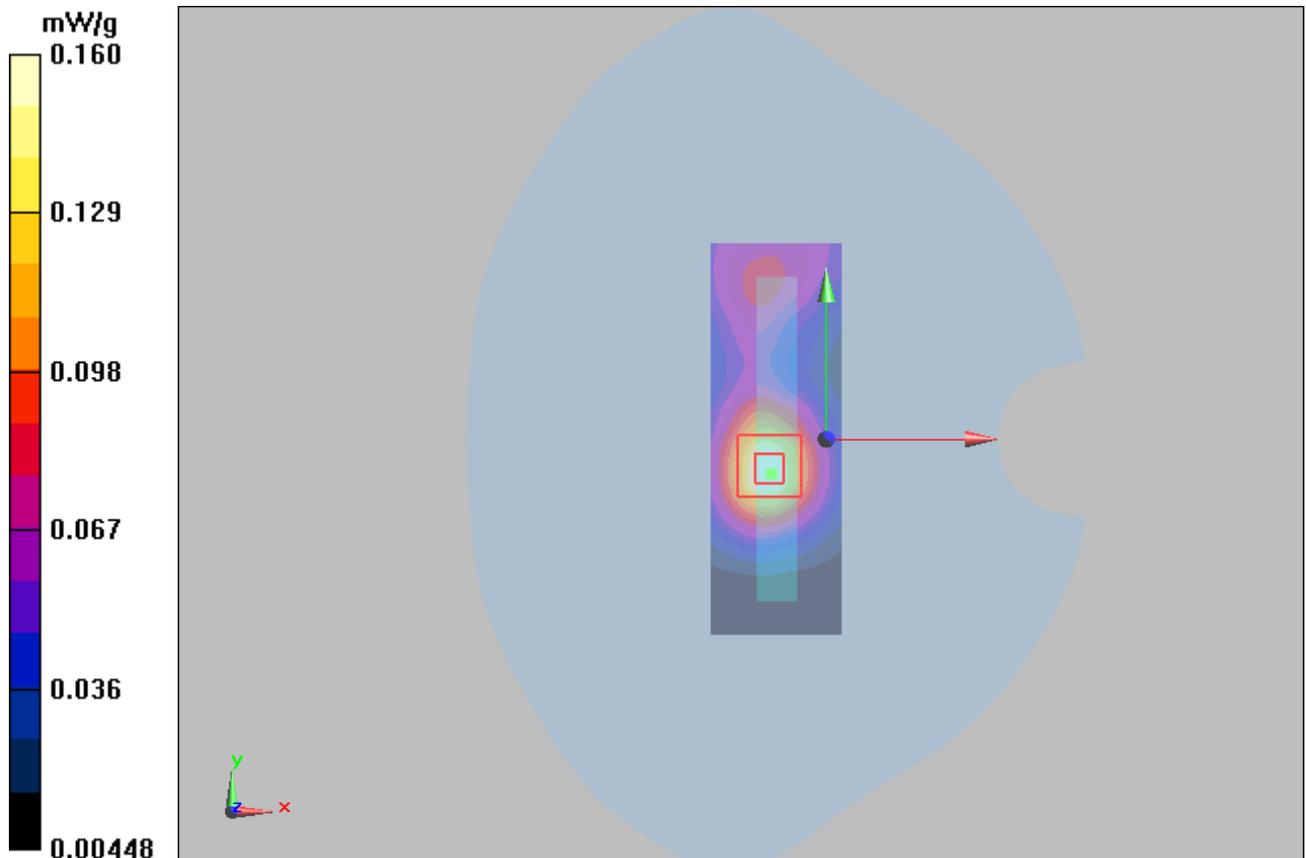


Figure 45 Body, Left Edge, GSM 1900 GPRS (2Txslots) Channel 661 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Right Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 8:41:24 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Right Edge Middle/Area Scan (31x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.189 mW/g

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

Reference Value = 10.2 V/m; Power Drift = 0.191 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.101 mW/g

Maximum value of SAR (measured) = 0.186 mW/g

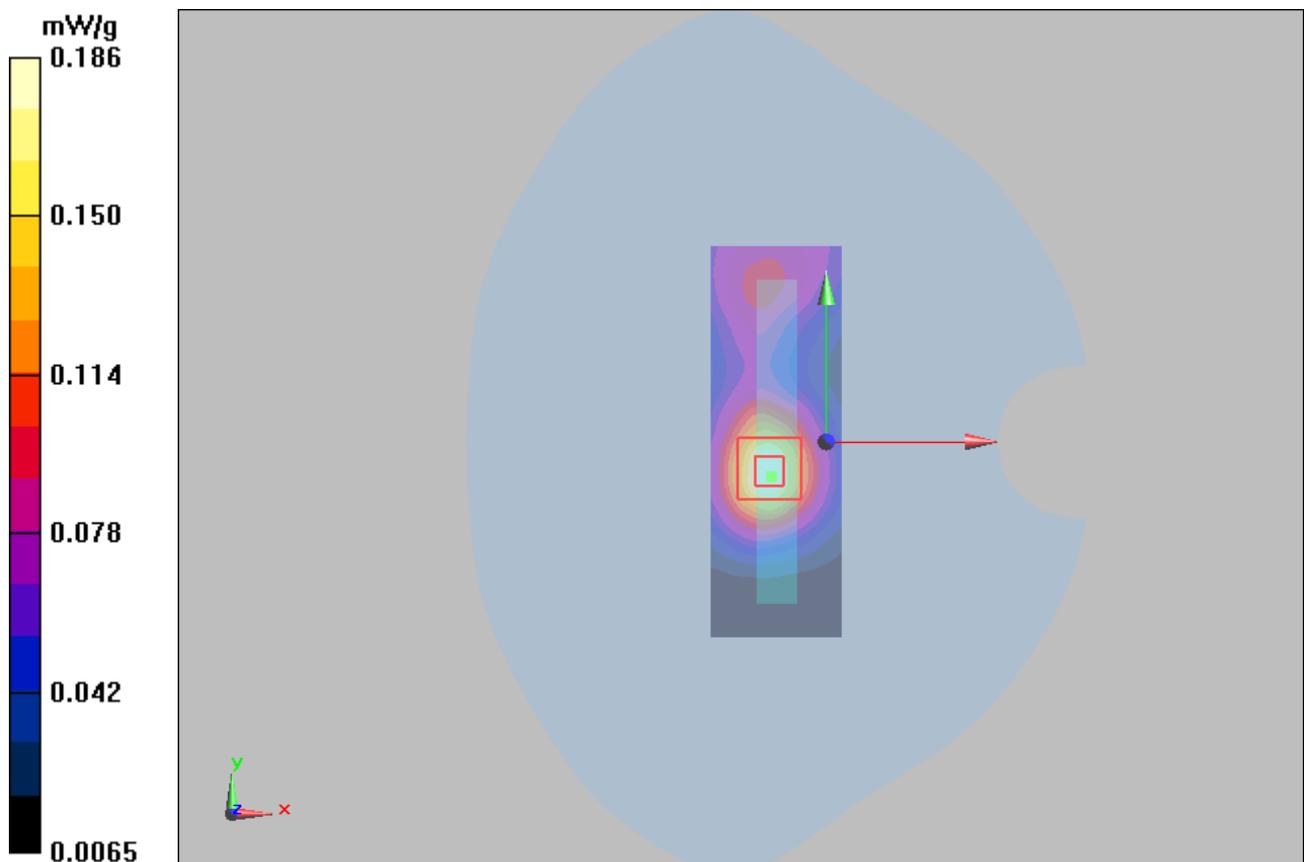


Figure 46 Body, Right Edge, GSM 1900 GPRS (2Txslots) Channel 661 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Bottom Edge Middle (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 8:56:49 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.6$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Bottom Edge Middle/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.047 mW/g

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

Reference Value = 5.49 V/m; Power Drift = -0.045 dB

Peak SAR (extrapolated) = 0.067 W/kg

SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.026 mW/g

Maximum value of SAR (measured) = 0.045 mW/g

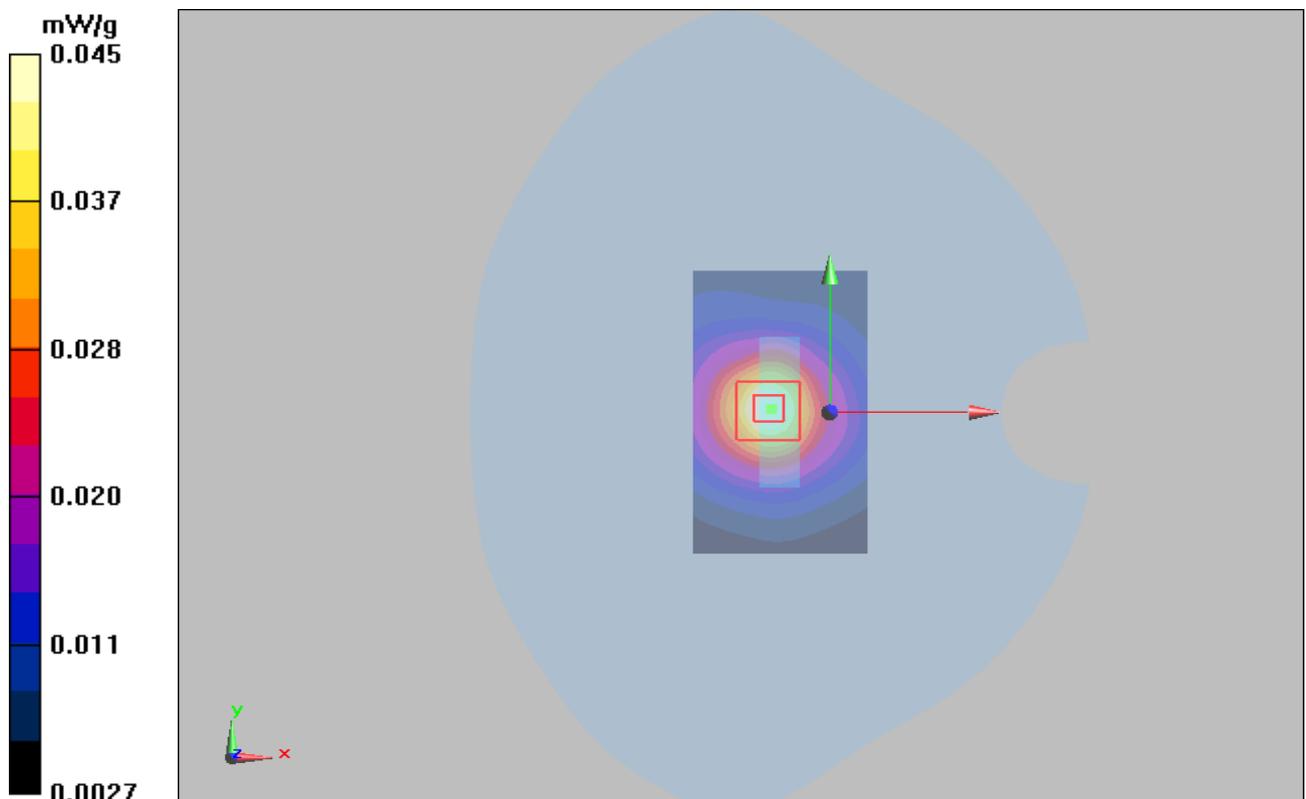


Figure 47 Body, Bottom Edge, GSM 1900 GPRS (2Txslots) Channel 661 (SN:GAGB421XC15P6394)

GSM 1900 with Earphone Back Side High (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 7:20:57 PM

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.500 mW/g

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

Reference Value = 9.16 V/m; Power Drift = 0.188 dB

Peak SAR (extrapolated) = 0.782 W/kg

SAR(1 g) = 0.450 mW/g; SAR(10 g) = 0.269 mW/g

Maximum value of SAR (measured) = 0.489 mW/g

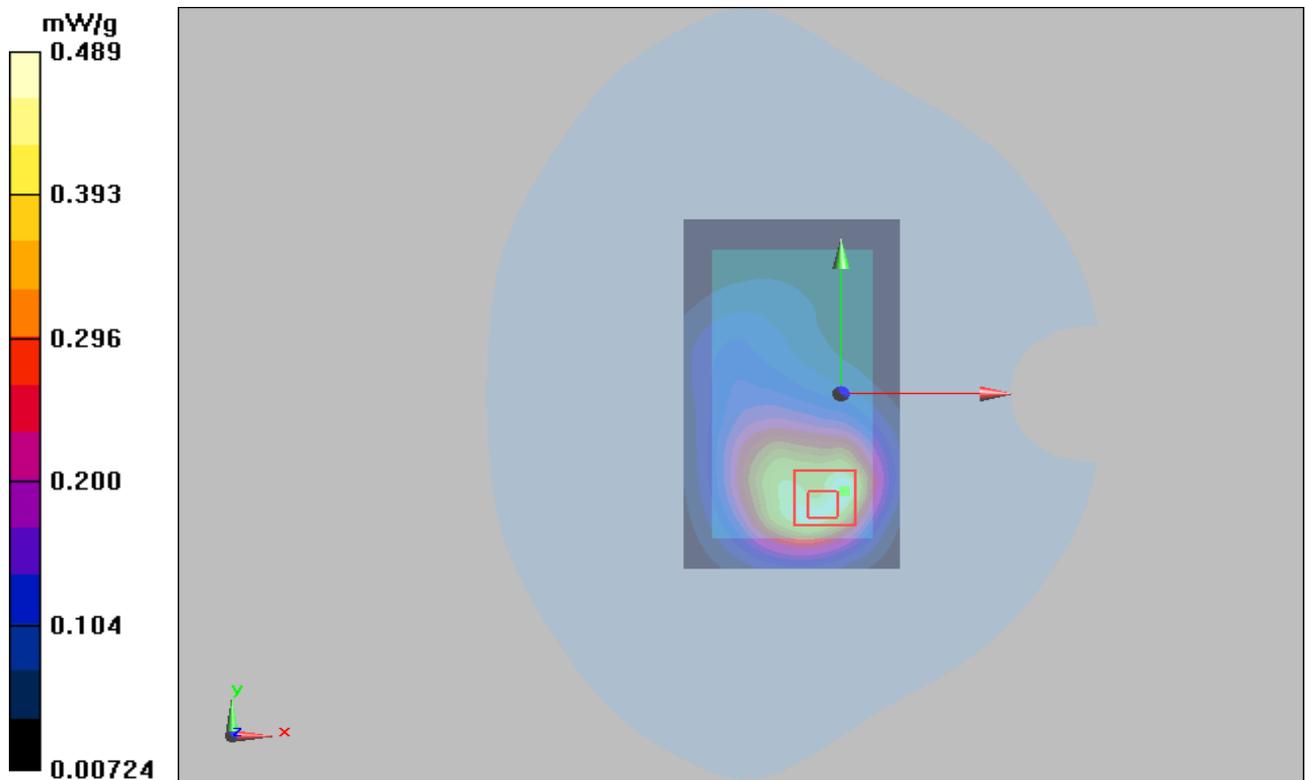


Figure 48 Body with Earphone, Back Side, GSM 1900 Channel 810 (SN: GAGB421XC15P6394)

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GSM 1900 EGPRS (2Txslots) Back Side High (SN: GAGB421XC15P6394)

Date/Time: 7/20/2011 5:33:19 PM

Communication System: PCS 1900+EGPRS(2Up); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.818 mW/g

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

Reference Value = 11.1 V/m; Power Drift = 0.082 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.710 mW/g; SAR(10 g) = 0.423 mW/g

Maximum value of SAR (measured) = 0.763 mW/g

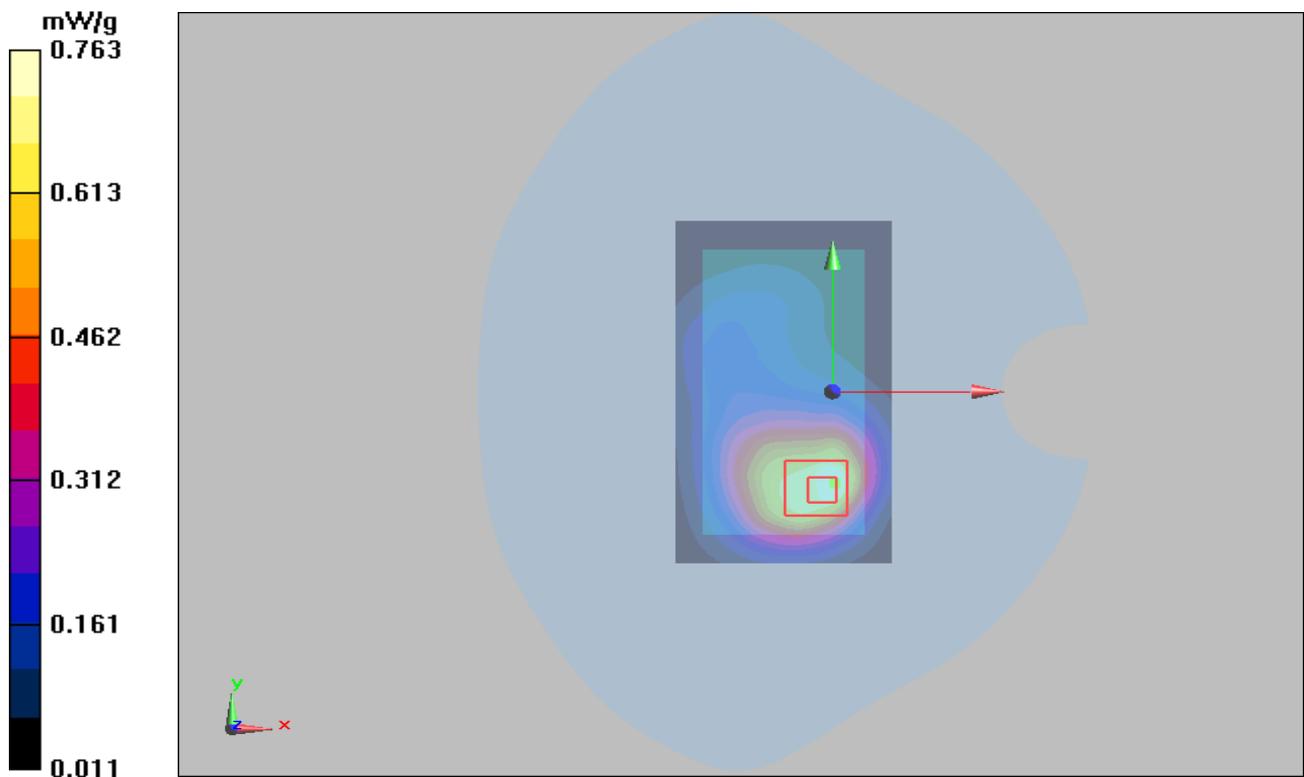


Figure 49 Body, Back Side, GSM 1900 EGPRS (2Txslots) Channel 810 (SN: GAGB421XC15P6394)

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GSM 1900 GPRS (2Txslots) Back Side High (SN: BAAAC09XJ4931366)

Date/Time: 7/20/2011 5:53:15 PM

Communication System: PCS 1900+GPRS(2Up); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.77, 7.77, 7.77); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Back Side High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.809 mW/g

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

Reference Value = 11.3 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.706 mW/g; SAR(10 g) = 0.419 mW/g

Maximum value of SAR (measured) = 0.757 mW/g

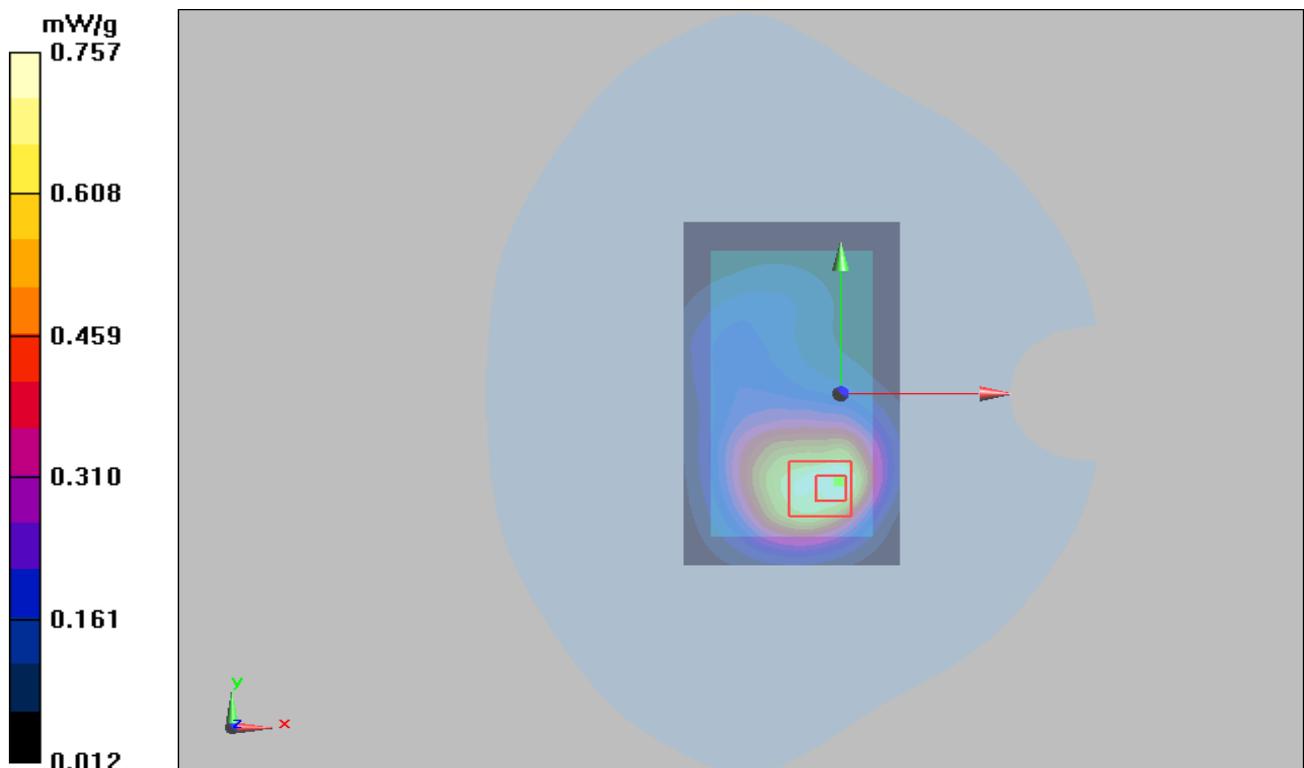


Figure 50 Body, Back Side, GSM 1900 GPRS (2Txslots) Channel 810 (SN: BAAAC09XJ4931366)

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WCDMA Band II Left Cheek High (SN: GAGB421XC15P6394)

Date/Time: 7/19/2011 3:59:05 PM

Communication System: WCDMA Band II; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3 °C Liquid Temperature: 21.5 °C

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3677; ConvF(7.94, 7.94, 7.94); Calibrated: 11/24/2010

Electronics: DAE4 Sn871; Calibrated: 11/18/2010

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Cheek High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.19 mW/g

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

Reference Value = 8.59 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 1.85 W/kg

SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.550 mW/g

Maximum value of SAR (measured) = 1.09 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.59 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 1.3 W/kg

SAR(1 g) = 0.864 mW/g; SAR(10 g) = 0.545 mW/g

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

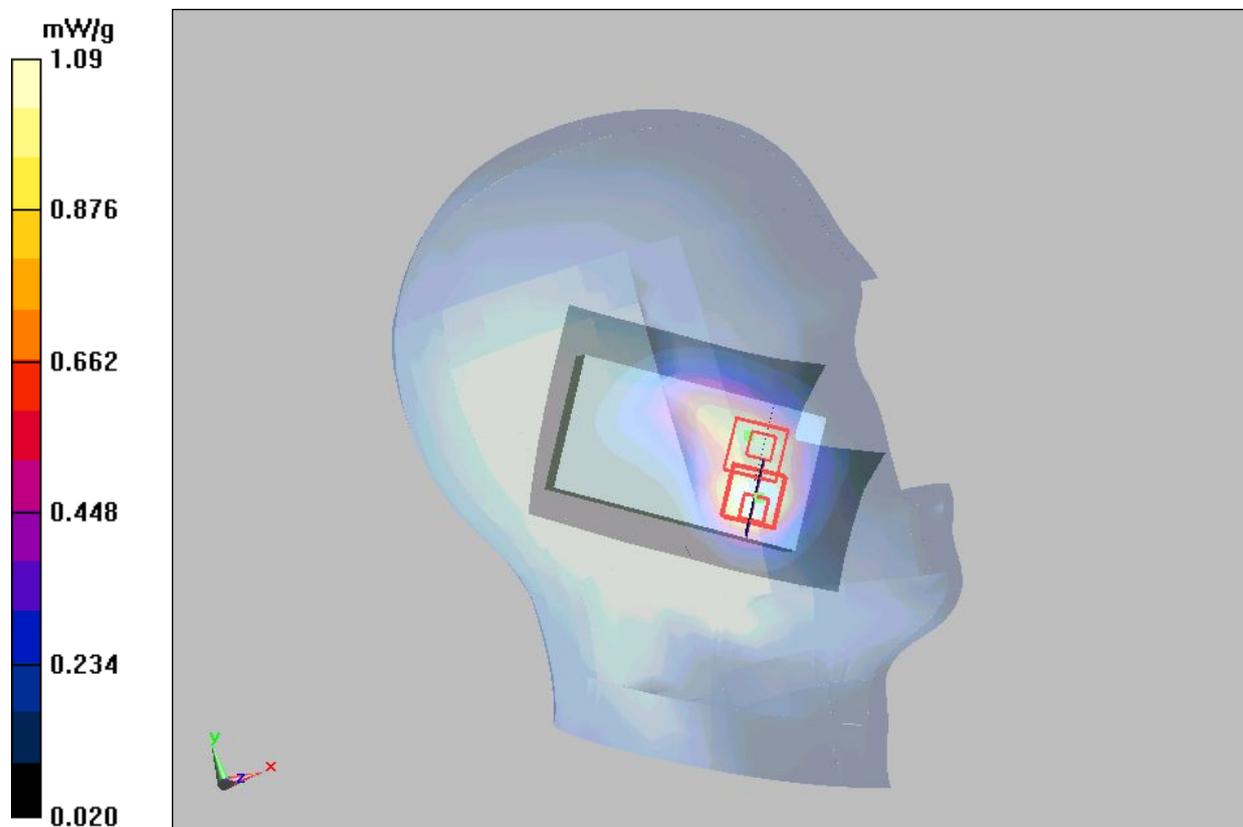


Figure 51 Left Hand Touch Cheek WCDMA Band II Channel 9538 (SN: GAGB421XC15P6394)