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CNAS
TESTING
No. L2264

OET 65

TEST REPORT

Product Name	HUAWEI ASCEND X; HSPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; HUAWEI U9000; U9000;
Model	HUAWEI U9000-81/U9000-81
FCC ID	QISU9000-81
IC	6369A-U900081
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	HUAWEI ASCEND X; HSPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; HUAWEI U9000; U9000;	**Model**	HUAWEI U9000-81/U9000-81
FCC ID	QISU9000-81		
IC	6369A-U900081		
Report No.	RZA1103-0403SAR		
Client	Huawei Technologies Co., Ltd.		
Manufacturer	Huawei Technologies Co., Ltd.		
Reference Standard(s)	**RSS-102 Issue 4 March 2010:** Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands). **IEEE Std C95.1, 1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 kHz to 300 GHz. **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.		
Conclusion	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. General Judgment: **Pass** (Stamp) **Date of issue: March 31st, 2011**		
Comment	The test result only responds to the measured sample.		

Approved by _Yang Weizhong_   **Revised by** _Ling Minbao_   **Performed by** _Zhang Xianjin_

TABLE OF CONTENT

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

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Yang Weizhong
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company:	Huawei Technologies Co., Ltd.
Address:	Bantian, Longgang District
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
Fax:	0755-28780808

1.5. Information of EUT

General Information

Device Type:	Portable Device
Exposure Category:	Uncontrolled Environment / General Population
Product Name:	HUAWEI ASCEND X; HSPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; HUAWEI U9000; U9000;
IMEI:	356161040006660
Hardware Version:	PR2.32
Software Version:	U9000V100R001C00B207SP22
Antenna Type:	Internal Antenna

Device Operating Configurations:			
Supporting Mode(s):	GSM 850/GSM 1900; (tested) WCDMA Band II/WCDMA Band IV/WCDMA Band V; (tested) WiFi; (tested) GSM 900/GSM 1800/WCDMA Band I/Bluetooth;		
Test Modulation:	(GSM)GMSK; (WCDMA)QPSK		
Device Class:	A		
HSDPA UE Category:	10		
HSUPA UE Category:	6		
GPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
EGPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
DTM Multislot Class(11):	Max Number of Timeslots in Uplink	3	
	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 IV	1712.4 ~ 1752.6	2112.4 ~ 2152.6
	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 IV: 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 - 190 - 251 (GSM 850) (tested) 512 - 661 - 810 (GSM 1900) (tested) 9262 - 9400 - 9538 (WCDMA Band II) (tested) 1312 - 1413 - 1513 (WCDMA Band IV) (tested) 4132 - 4183 - 4233 (WCDMA Band V) (tested) 1 - 6 - 11 (802.11b) (tested)

Auxiliary Equipment Details

AE1:Battery

Model:	HHB4Z1
Manufacturer:	Huawei Technologies Co., Ltd.
S/N:	YJCB107Hl0202648

Equipment Under Test (EUT) is a model of HUAWEI ASCEND X; HSPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; HUAWEI U9000; U9000; 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. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video, MMS service, GPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

It is class A device, it can operate in Dual transfer Mode (DTM) can transmit simultaneously using both circuit switched (CS) and packet switched (PS) connections according to the DTM multislot class. 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 IV and WCDMA Band V in this report.

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 and Conducted Power of each tested Mode

Head Configuration

Mode	Channel	Position	SAR$_{1g}$ (W/kg)
GSM 850 DTM	High/251	Left, Cheek	**1.050**
GSM 1900 DTM	High/810	Right, Cheek	**0.623**
WCDMA Band II	Low/9262	Right, Cheek	**0.594**
WCDMA Band IV	Middle/1413	Right, Cheek	**0.669**
WCDMA Band V	Middle/4183	Left, Cheek	**0.609**

Body Worn Configuration

Mode	Channel	Separation distance	SAR$_{1g}$ (W/kg)
GSM 850 DTM	High/251	15mm	**1.125**
GSM 1900 DTM	High/810	15mm	**0.435**

WCDMA Band II	Low/9262	15mm	**0.577**
WCDMA Band IV	Middle/1413	15mm	**1.170**
WCDMA Band V	Middle/4183	15mm	**0.667**

Maximum Power

Band		Max Conducted Power (dBm)	Max Average Power (dBm)
GSM 850	GSM	32.45	23.42
	GPRS(GMSK),2 -slots	29.98	23.96
	EGPRS(GMSK),1 -slot	32.46	23.43
GSM 1900	GSM	29.43	20.40
	GPRS(GMSK),4 -slots	24.04	21.03
	EGPRS(GMSK),4 -slots	23.87	20.86
WCDMA Band II		23.05	/
WCDMA Band IV		23.75	/
WCDMA Band V		23.18	/

Note: The detail Power refers to Table 10 (Power Measurement Results).

1.7. Test Date

The test is performed from March 24, 2011 to March 30, 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, 190 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 1312, 1413 and 1513 in the case of WCDMA Band IV, 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 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5; the EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5. the DTM class is 11 for this EUT, it has at most 3 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 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.

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	3
3	5
4	6

EGPRS (8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	5
4	6

EGPRS (GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	5
4	6

GSM 1900

GPRS (GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	5
4	6

EGPRS (8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	5
4	6

EGPRS (GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	5
4	6

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. Results for all applicable physical channel configuration (DPCCH, $DPDCH_n$ and spreading codes) 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

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

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

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($\beta c,\beta d$), and HS-DPCCH power offset parameters($\triangle$ACK, $\triangle$NACK, $\triangle$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: $\triangle_{ACK}$, $\triangle_{NACK}$ and $\triangle_{CQI}$= 8 $\Leftrightarrow$ $A_{hs} = \beta_{hs}/\beta_c$=30/15 $\Leftrightarrow$ β_{hs}=30/15*β_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, $\triangle_{ACK}$ and $\triangle_{NACK}$= 8 ($A_{hs=}$30/15) with β_{hs}=30/15*β_c,and $\triangle_{CQI}$= 7 ($A_{hs=}$24/15) with β_{hs}=24/15*β_c.

Note3: CM=1 forβ_c/β_d =12/15, β_{hs}/β_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 $\beta_c\beta_d$ 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 β_c=11/15 and β_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

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

2.5. HSUPA Test Configuration

Body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit.   Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.[40]

Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests.[41]   The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA should be configured according to the β values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of 3 G device.

Table 4: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}[1]	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM [2] (dB)	MPR (dB)	AG[4] Index	E-TFCI
1	11/15[3]	15/15[3]	64	11/15[3]	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} 47/15 β_{ed2} 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15[4]	15/15[4]	64	15/15[4]	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, $\Delta NACK$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 *\beta_c$.

Note 2: CM = 1 for βc/βd =12/15, β_{hs}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-
DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.

Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.

Note 6: βed can not be set directly; it is set by Absolute Grant Value.

Table 5: HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI (ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	11484	5.76
	4	4	10		20000	2.00
7 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.

UE Categories 1 to 6 supports QPSK only.   UE Category 7 supports QPSK and 16QAM. (TS25.306-7.3.0)

2.6. 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.

802.11b/g operating modes are tested independently according to the service requirements in each frequency band.802.11b/g modes are tested on channels1,6,11;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 6.

Table 6: "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 11to 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"

2.7. Test Positions

2.7.1. 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".

2.7.2. 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. The distance between the device and the phantom was kept 15mm.

3. SAR Measurements System Configuration

3.1. SAR Measurement Set-up

The DASY4 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 DASY4 measurement server.
- The DASY4 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
- DASY4 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.
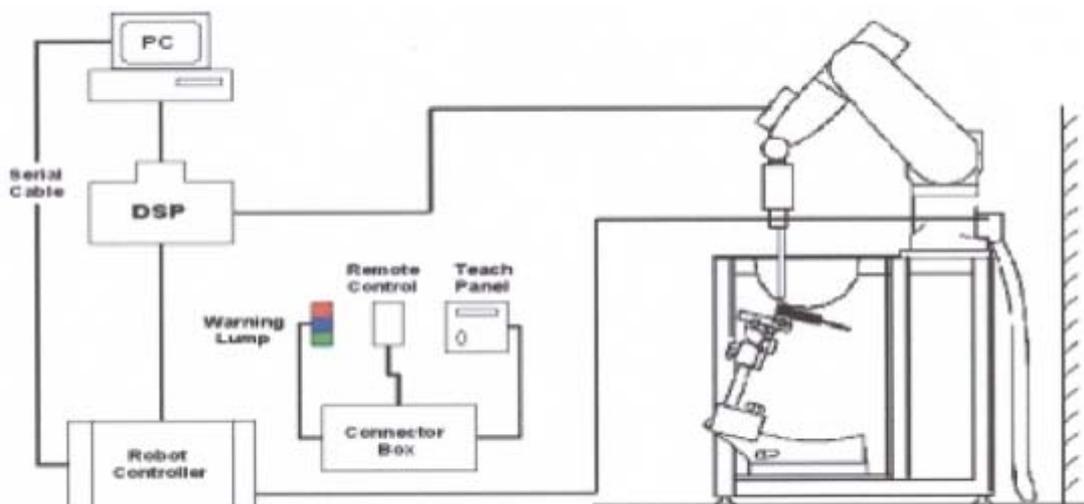- System validation dipoles allowing to validate the proper functioning of the system.

Figure 1 SAR Lab Test Measurement Set-up

3.2. DASY4 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)

Figure 2.EX3DV4 E-field Probe

Directivity   ± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)

Dynamic Range   10 µW/g to > 100 mW/g Linearity:

                      ± 0.2dB (noise: typically < 1 µW/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 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 ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

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

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

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

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

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

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 die rent 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)   Aailable   Special

Figure 5 Generic Twin Phantom

3.4. Scanning Procedure

The DASY4 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 DASY4 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

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 DASY4 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 DASY4 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	Normi, 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 DASY4 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.

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:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

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.

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

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

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

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

  ▪ = equivalent tissue density in g/cm^3

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/cm^2

  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 13 and table 14.

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

System check is performed regularly on all frequency bands where tests are performed with the DASY4 system.
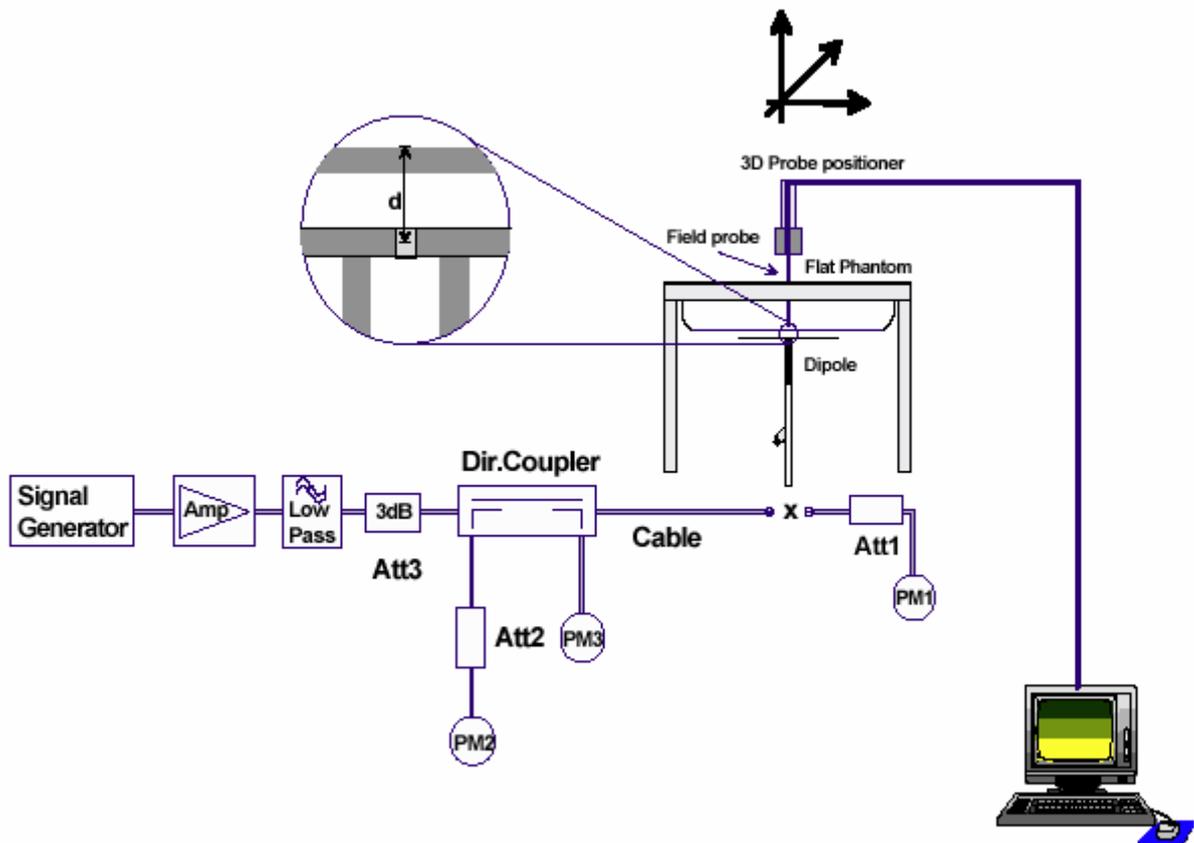
Figure 6 System Check Set-up

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 7 and table 8 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

Table 7: 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 ε=41.5 σ=0.9

MIXTURE%	FREQUENCY(Brain) 1750MHz
Water	55.24
Glycol	44.45
Salt	0.31
Dielectric Parameters Target Value	f=1750MHz ε=40.1 σ=1.37

MIXTURE%	FREQUENCY(Brain) 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

MIXTURE%	FREQUENCY(Brain) 2450MHz
Water	62.7
Glycol	36.8
Salt	0.5
Dielectric Parameters Target Value	f=2450MHz ε=39.20 σ=1.80

Table 8: 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 ε=55.2 σ=0.97

MIXTURE%	FREQUENCY(Body) 1750MHz
Water	69.91
Glycol	29.97
Salt	0.12
Dielectric Parameters Target Value	f=1750MHz ε=53.4 σ=1.49

MIXTURE%	FREQUENCY (Body) 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52

MIXTURE%	FREQUENCY(Body) 2450MHz
Water	73.2
Glycol	26.7
Salt	0.1
Dielectric Parameters Target Value	f=2450MHz ε=52.70 σ=1.95

4. Laboratory Environment

Table 9: 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

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

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.

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 10: Conducted Power Measurement Results

GSM 850			Conducted Power(dBm)				Average power(dBm)		
			Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GSM	Before		32.45	32.38	32.21	-9.03dB	23.42	23.35	23.18
	After		32.44	32.39	32.23	-9.03dB	23.41	23.36	23.20
GPRS (GMSK)	1TXslot	Before	32.37	32.37	32.18	-9.03dB	23.34	23.34	23.15
		After	32.36	32.36	32.17	-9.03dB	23.33	23.33	23.14
	2Txslots	Before	29.97	29.46	29.38	-6.02dB	23.95	23.44	23.36
		After	29.98	29.44	29.36	-6.02dB	23.96	23.42	23.34
	3Txslots	Before	26.95	26.98	27.01	-4.26dB	22.69	22.72	22.75
		After	26.93	26.97	27.02	-4.26dB	22.67	22.71	22.76
	4Txslots	Before	26.02	26.04	26.07	-3.01dB	23.01	23.03	23.06
		After	26.03	26.05	26.06	-3.01dB	23.02	23.04	23.05
EGPRS (GMSK)	1TXslot	Before	32.28	32.38	32.46	-9.03dB	23.25	23.35	23.43
		After	32.26	32.37	32.44	-9.03dB	23.23	23.34	23.41
	2Txslots	Before	29.10	29.37	29.37	-6.02dB	23.08	23.35	23.35
	3Txslots	Before	26.99	26.93	27.03	-4.26dB	22.73	22.67	22.77
	4Txslots	Before	26.05	26.08	26.05	-3.01dB	23.04	23.07	23.04
EGPRS (8PSK)	1TXslot	Before	26.07	26.05	26.08	-9.03dB	17.04	17.02	17.05
	2Txslots	Before	23.07	23.04	23.08	-6.02dB	17.05	17.02	17.06
	3Txslots	Before	21.56	21.41	21.64	-4.26dB	17.30	17.15	17.38
	4Txslots	Before	20.61	20.37	20.31	-3.01dB	17.60	17.36	17.30
GSM 1900			Conducted Power(dBm)				Average power(dBm)		
			Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GSM	Before		29.41	29.43	29.39	-9.03dB	20.38	20.40	20.36
	After		29.40	29.42	29.37	-9.03dB	20.37	20.39	20.34
GPRS	1TXslot	Before	29.38	29.40	29.36	-9.03dB	20.35	20.37	20.33

(GMSK)		After	29.37	29.40	29.37	-9.03dB	20.34	20.37	20.34
	2Txslots	Before	26.98	26.95	26.97	-6.02dB	20.96	20.93	20.95
		After	26.96	26.93	26.96	-6.02dB	20.94	20.91	20.94
	3Txslots	Before	25.17	25.13	25.16	-4.26dB	20.91	20.87	20.90
		After	25.18	25.15	25.17	-4.26dB	20.92	20.89	20.91
	4Txslots	Before	24.01	24.03	24.02	-3.01dB	21.00	21.02	21.01
		After	24.02	24.04	24.01	-3.01dB	21.01	21.03	21.00
EGPRS (GMSK)	1TXslot	Before	29.13	29.12	29.11	-9.03dB	20.10	20.09	20.08
		After	29.12	29.11	29.10	-9.03dB	20.09	20.08	20.07
	2Txslots	Before	26.79	26.76	26.8	-6.02dB	20.77	20.74	20.78
	3Txslots	Before	25.01	25.10	25.07	-4.26dB	20.75	20.84	20.81
	4Txslots	Before	23.67	23.87	23.75	-3.01dB	20.66	20.86	20.74
EGPRS (8PSK)	1TXslot	Before	25.95	25.89	25.93	-9.03dB	16.92	16.86	16.90
	2Txslots	Before	23.09	23.08	23.09	-6.02dB	17.07	17.06	17.07
	3Txslots	Before	21.23	21.27	21.25	-4.26dB	16.97	17.01	16.99
	4Txslots	Before	19.98	19.97	19.95	-3.01dB	16.97	16.96	16.94

Note:

1) Division Factors

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

   1 TX- slot = 1 transmit time slot out of 8 time slots

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

   2 TX- slots = 2 transmit time slots out of 8 time slots

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

WCDMA Band II			Conducted Power(dBm)		
			Channel 9262	Channel 9400	Channel 9538
RMC	12.2kbps	Before	22.99	23.01	23.05
		After	22.96	23.00	23.03
	64kbps	Before	22.95	22.93	22.95
	144kbps	Before	22.91	22.98	22.99
	384kbps	Before	22.94	22.96	22.97
HSDPA	Sub-Test 1	Before	22.57	22.34	22.65
		After	22.56	22.33	22.64
	Sub-Test 2	Before	22.48	22.26	22.68
	Sub-Test 3	Before	22.01	21.97	22.18
	Sub-Test 4	Before	21.98	22.01	22.09
HSUPA	Sub-Test 1	Before	21.47	22.43	22.53
	Sub-Test 2	Before	21.06	21.06	21.09
	Sub-Test 3	Before	21.24	21.31	21.28
	Sub-Test 4	Before	21.35	21.38	21.57
	Sub-Test 5	Before	21.96	21.87	22.01

			After	21.94	21.86	22.02
WCDMA Band IV				**Conducted Power(dBm)**		
				Channel 1312	Channel 1413	Channel 1513
RMC	12.2kbps		Before	23.75	23.36	23.51
			After	23.73	23.37	23.52
	64kbps		Before	23.65	23.36	23.49
	144kbps		Before	23.63	23.35	23.47
	384kbps		Before	23.68	23.32	23.43
HSDPA	Sub-Test 1		Before	22.45	22.03	22.44
			After	22.45	22.03	22.44
	Sub-Test 2		Before	22.38	22.35	22.35
	Sub-Test 3		Before	22.01	22.03	22.01
	Sub-Test 4		Before	21.87	22.75	22.07
HSUPA	Sub-Test 1		Before	21.76	21.69	21.74
	Sub-Test 2		Before	20.88	20.45	20.51
	Sub-Test 3		Before	21.01	21.06	21.03
	Sub-Test 4		Before	21.35	21.45	21.43
	Sub-Test 5		Before	21.43	21.52	21.48
			After	21.44	21.51	21.47
WCDMA Band V				**Conducted Power(dBm)**		
				Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps		Before	22.97	23.18	22.93
			After	22.96	23.16	22.92
	64kbps		Before	22.98	23.15	22.91
	144kbps		Before	22.95	23.17	22.89
	384kbps		Before	22.92	23.14	22.89
HSDPA	Sub-Test 1		Before	22.57	22.15	22.56
			After	22.56	22.13	22.55
	Sub-Test 2		Before	22.50	22.47	22.47
	Sub-Test 3		Before	22.13	22.15	22.13
	Sub-Test 4		Before	21.99	22.87	22.19
HSUPA	Sub-Test 1		Before	21.88	21.81	21.86
	Sub-Test 2		Before	21.00	20.57	20.63
	Sub-Test 3		Before	21.13	21.18	21.15
	Sub-Test 4		Before	21.47	21.57	21.55
	Sub-Test 5		Before	21.55	21.64	21.60
			After	21.53	21.63	21.61

7. Test Results

7.1. Dielectric Performance

Table 11: Dielectric Performance of Head Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp
		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 2011-3-24	41.76	0.90	21.8
1750MHz **(head)**	Target value ±5% window	40.1 38.10 — 42.11	1.37 1.30 — 1.44	/
	Measurement value 2011-3-25	40.09	1.38	21.6
1900MHz **(head)**	Target value ±5% window	40.00 38.00 — 42.00	1.40 1.33 — 1.47	/
	Measurement value 2011-3-25	39.98	1.41	21.9
2450MHz **(head)**	Target value ±5% window	39.20 37.24 — 41.16	1.80 1.71 — 1.89	/
	Measurement value 2011-2-29	39.10	1.81	21.7

Table 12: Dielectric Performance of Body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp
		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 2011-3-25	56.25	0.99	21.9
1750MHz **(body)**	Target value ±5% window	53.40 50.73 — 56.07	1.49 1.42 — 1.56	/
	Measurement value 2011-3-26	52.35	1.48	21.9
1900MHz **(body)**	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-3-27	53.18	1.53	21.7
2450MHz **(body)**	Target value ±5% window	52.70 50.07 — 55.34	1.95 1.85 — 2.05	/
	Measurement value 2011-2-29	51.19	1.94	21.8

7.2. System Check Results

Table 13: System Check for Head Tissue Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	**1g**	**ε_r**	**σ(s/m)**	**℃**
835MHz	Recommended result ±10% window	1.56 1.40 — 1.72	2.39 2.15 — 2.63	41.2	0.89	/
	Measurement value 2011-3-24	1.6	2.42	41.76	0.90	21.8
1750MHz	Recommended value ±10% window	4.74 4.27 — 5.21	8.86 7.97 — 9.75	39.8	1.33	/
	Measurement value 2011-3-25	4.58	8.79	40.09	1.38	21.6
1900MHz	Recommended result ±10% window	5.22 4.70 — 5.74	10 9.00 — 11.00	39.5	1.44	/
	Measurement value 2011-3-25	5.34	10.3	39.98	1.41	21.9
2450 MHz	Recommended result ±10% window	6.24 5.62 — 6.86	13.3 11.97—14.63	38.7	1.77	/
	Measurement value 2011-2-29	6.50	14.05	39.10	1.81	21.7

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 14: System Check for Body Tissue Simulating Liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters		Temp
		10g	1g	ε_r	σ(s/m)	℃
835MHz	Recommended result ±10% window	1.63 1.47 — 1.79	2.49 2.24 — 2.74	54.6	0.98	/
	Measurement value 2011-3-25	1.65	2.52	56.25	0.99	21.9
1750MHz	Recommended value ±10% window	5.11 4.60 — 5.62	9.37 8.43 — 10.31	54.1	1.43	/
	Measurement value 2011-3-26	4.90	9.24	52.35	1.48	21.9
1900 MHz	Recommended result ±10% window	5.52 4.97 — 6.07	10.3 9.27 — 11.33	53.5	1.54	/
	Measurement value 2011-3-27	5.34	10.18	53.18	1.53	21.7
2450 MHz	Recommended result ±10% window	5.97 5.37 — 6.57	13 11.7—14.3	51.8	2.01	/
	Measurement value 2011-2-29	6.46	14.00	51.19	1.94	21.8

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.

7.3. Summary of Measurement Results

7.3.1. GSM 850 (GPRS/EGPRS/DTM)

Table 15: 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	$\pm$ 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift	
		10 g Average	1 g Average	(dB)	
Test Position of Head (CS Mode)					
Left hand, Touch Cheek	High/251	0.398	0.525	-0.131	Figure 15
	Middle/190	0.337	0.445	-0.003	Figure 16
	Low/128	0.295	0.391	0.019	Figure 17
Left hand, Tilt 15 Degree	Middle/190	0.191	0.243	0.002	Figure 18
Right hand, Touch Cheek	Middle/190	0.285	0.378	0.078	Figure 19
Right hand, Tilt 15 Degree	Middle/190	0.197	0.251	0.071	Figure 20
Test Position of Head with GPRS (2Txslots)					
Left hand, Touch Cheek	High/251	0.385	0.525	-0.179	Figure 21
	Middle/190	0.329	0.435	-0.062	Figure 22
	Low/128	0.284	0.384	0.060	Figure 23
Left hand, Tilt 15 Degree	Middle/190	0.173	0.219	0.022	Figure 24
Right hand, Touch Cheek	Middle/190	0.274	0.365	-0.186	Figure 25
Right hand, Tilt 15 Degree	Middle/190	0.198(max.cube)	0.251(max.cube)	0.009	Figure 26
Test position of Body (Distance 15mm)					
Towards Ground (GSM)	High/251	0.440	0.583	0.005	Figure 27
	Middle/190	0.421	0.555	-0.114	Figure 28
	Low/128	0.390	0.514	-0.071	Figure 29
Towards Ground (2Txslots)	High/251	0.393	0.542	-0.067	Figure 30
	Middle/190	0.371	0.490	-0.145	Figure 31
	Low/128	0.354	0.474	-0.086	Figure 32
Towards Ground (3Txslots)	Middle/190	0.327(max.cube)	0.435(max.cube)	-0.050	Figure 33
Towards Ground (4Txslots)	Middle/190	0.294	0.385	-0.094	Figure 34
Towards Phantom (GSM)	Middle/190	0.283	0.373	0.037	Figure 35
Towards Phantom (2Txslots)	Middle/190	0.278(max.cube)	0.366(max.cube)	-0.153	Figure 36
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Ground (GSM)	High/251	0.395	0.530	0.040	Figure 37
Worst Case Position of Body with EGPRS (GMSK, Distance 15mm)					
Towards Ground (1Txslot)	High/251	0.434	0.575	0.052	Figure 38

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. 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.

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.

Table 16: SAR Values (GSM 850 with DTM Mode)

Limit of SAR		CS	2-slots GPRS	Combined SAR Values CS+GPRS
Different Test Position	Channel	1 g Average	1 g Average	1 g Average
Test Position of Head				
Left Hand, Touch Cheek	High/251	0.525	0.525	1.050
	Middle/190	0.445	0.435	0.880
	Low/128	0.391	0.384	0.775
Left Hand, Tilt 15 Degree	Middle/190	0.243	0.219	0.462
Right Hand, Touch Cheek	Middle/190	0.378	0.365	0.743
Right Hand, Tilt 15 Degree	Middle/190	0.251	0.251	0.502
Test Position of Body (Distance 15mm)				
Towards Ground	High/251	0.583	0.542	1.125
	Middle/190	0.555	0.490	1.045
	Low/128	0.514	0.474	0.988
Towards Phantom	Middle/190	0.373	0.366	0.739

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

2. SAR values of DTM mode are the sum of CS mode and GPRS mode.

Table 17: Extrapolated SAR Values of highest measured SAR [GSM 850 (GPRS/EGPRS)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures	1g Average Limit 1.6 W/kg
		Measurement Result		MAX Power(dBm)	Extrapolated Result (W/kg)
GSM					
Towards Ground (GSM)	High/251	32.23	0.583	33	0.696
GPRS					
Towards Ground (2Txslots)	High/251	29.38	0.542	30	0.625
EGPRS(GMSK)					
Towards Ground (1Txslot)	High/251	32.46	0.575	33	0.651

7.3.2. GSM 1900 (GPRS/EGPRS/DTM)

Table 18: 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 (CS Mode)					
Left hand, Touch cheek	Middle/661	0.105(max.cube)	0.161(max.cube)	-0.071	Figure 39
Left hand, Tilt 15 Degree	Middle/661	0.071	0.109	-0.066	Figure 40
Right hand, Touch cheek	High/810	0.173(max.cube)	0.270(max.cube)	-0.119	Figure 41
	Middle/661	0.153	0.237	0.030	Figure 42
	Low/512	0.136	0.209	0.072	Figure 43
Right hand, Tilt 15 Degree	Middle/661	0.084	0.129	-0.136	Figure 44
Test Position of Head with GPRS (2Txslots)					
Left hand, Touch cheek	Middle/661	0.107(max.cube)	0.160(max.cube)	-0.042	Figure 45
Left hand, Tilt 15 Degree	Middle/661	0.069	0.106	0.096	Figure 46
Right hand, Touch cheek	High/810	0.214	0.353	-0.135	Figure 47
	Middle/661	0.176	0.285	0.090	Figure 48
	Low/512	0.176	0.275	0.146	Figure 49
Right hand, Tilt 15 Degree	Middle/661	0.080	0.124	-0.015	Figure 50
Test position of Body (Distance 15mm)					
Towards Ground (GSM)	High/810	0.140(max.cube)	0.237(max.cube)	-0.053	Figure 51
	Middle/661	0.133	0.227	-0.047	Figure 52
	Low/512	0.111	0.183	0.080	Figure 53
Towards Ground (2Txslots)	High/810	0.118	0.198	-0.111	Figure 54
	Middle/661	0.117	0.201	-0.052	Figure 55
	Low/512	0.107	0.182	0.106	Figure 56
Towards Ground (3Txslots)	Middle/661	0.111	0.189	-0.002	Figure 57
Towards Ground (4Txslots)	Middle/661	0.096(max.cube)	0.177(max.cube)	-0.089	Figure 58
Towards Phantom (GSM)	Middle/661	0.102(max.cube)	0.166(max.cube)	-0.009	Figure 59
Towards Phantom (2Txslots)	Middle/661	0.093(max.cube)	0.149(max.cube)	-0.014	Figure 60
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Ground (GSM)	High/810	0.145	0.247	-0.154	Figure 61
Worst Case Position of Body with EGPRS (GMSK, Distance 15mm)					
Towards Ground (1Txslot)	High/810	0.125(max.cube)	0.216(max.cube)	0.053	Figure 62

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. 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.

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.

Table 19: SAR Values (GSM 1900 with DTM Mode)

Limit of SAR		CS	2-slots GPRS	Combined SAR Values CS+GPRS
Different Test Position	Channel	1 g Average	1 g Average	1 g Average
Test Position of Head				
Left Hand, Touch Cheek	Middle/661	0.161	0.160	0.321
Left Hand, Tilt 15 Degree	Middle/661	0.109	0.106	0.215
Right Hand, Touch Cheek	High/810	0.270	0.353	0.623
	Middle/661	0.237	0.285	0.522
	Low/512	0.209	0.275	0.484
Right Hand, Tilt 15 Degree	Middle/661	0.129	0.124	0.253
Test Position of Body (Distance 15mm)				
Towards Ground	High/810	0.237	0.198	0.435
	Middle/661	0.227	0.201	0.428
	Low/512	0.183	0.182	0.365
Towards Phantom	Middle/661	0.166	0.149	0.315

Table 20: Extrapolated SAR Values of highest measured SAR [GSM 1900 (GPRS/EGPRS)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg Extrapolated Result (W/kg)
		Measurement Result			
GSM					
Right hand, Touch cheek	High/810	29.39	0.353	31	0.511
GPRS					
Towards Ground (2Txslots)	Middle/661	26.95	0.201	28	0.256
EGPRS (GMSK)					
Towards Ground (1Txslot)	High/810	29.11	0.216	31	0.334

7.3.3.   WCDMA Band II (WCDMA/HSDPA/HSUPA)

Table 21: SAR Values [WCDMA Band II (WCDMA/HSDPA/HSUPA)]

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**	
		10 g Average	**1 g Average**	**(dB)**	
Test Position of Head					
Left Hand, Touch Cheek	Middle/9400	0.323(max.cube)	0.501(max.cube)	-0.005	Figure 63
Left Hand, Tilt 15 Degree	Middle/9400	0.164	0.250	0.026	Figure 64
Right Hand, Touch Cheek	High/9538	0.335(max.cube)	0.523(max.cube)	-0.077	Figure 65
	Middle/9400	0.359(max.cube)	0.564(max.cube)	-0.030	Figure 66
	Low/9262	0.385	0.594	-0.063	Figure 67
Right Hand, Tilt 15 Degree	Middle/9400	0.178	0.275	0.059	Figure 68
Test Position of Body (Distance 15mm)					
Towards Ground	High/9538	0.246	0.413	-0.055	Figure 69
	Middle/9400	0.264	0.441	-0.066	Figure 70
	Low/9262	0.329	0.557	-0.101	Figure 71
Towards Phantom	Middle/9400	0.237(max.cube)	0.380(max.cube)	-0.062	Figure 72
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Ground	Low/9262	0.334	0.577	0.040	Figure 73
Worst Case Position of Body with HSDPA (Distance 15mm)					
Towards Ground	Low/9262	0.297	0.504	-0.017	Figure 74
Worst Case Position of Body with HSUPA (Distance 15mm)					
Towards Ground	Low/9262	0.287	0.486	-0.197	Figure 75

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. 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.

Table 22: Extrapolated SAR Values of highest measured SAR [WCDMA Band II (WCDMA/HSDPA/HSUPA)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg Extrapolated Result (W/kg)
		Measurement Result			
Right Hand, Touch Cheek	Low/9262	22.99	0.594	24	0.750

7.3.4. WCDMA Band IV (WCDMA/HSDPA/HSUPA)

Table 23: SAR Values [WCDMA Band II (WCDMA/HSDPA/HSUPA)]

Limit of SAR		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	$\pm$ 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift	
		10 g Average	1 g Average	(dB)	
Test Position of Head					
Left Hand, Touch Cheek	Middle/1413	0.314(max.cube)	0.436(max.cube)	-0.113	Figure 76
Left Hand, Tilt 15 Degree	Middle/1413	0.218	0.330	-0.072	Figure 77
Right Hand, Touch Cheek	High/1513	0.420	0.635	-0.053	Figure 78
	Middle/1413	0.446	0.669	-0.019	Figure 79
	Low/1312	0.407	0.611	-0.002	Figure 80
Right Hand, Tilt 15 Degree	Middle/1413	0.241	0.352	0.077	Figure 81
Test Position of Body (Distance 15mm)					
Towards Ground	High/1513	0.535	0.942	0.011	Figure 82
	Middle/1413	0.650	1.160	-0.165	Figure 83
	Low/1312	0.638	1.140	-0.008	Figure 84
Towards Phantom	Middle/1413	0.320(max.cube)	0.515(max.cube)	-0.016	Figure 85
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Ground	Middle/1413	0.649	1.170	0.068	Figure 86
Worst Case Position of Body with HSDPA (Distance 15mm)					
Towards Ground	Middle/1413	0.586	1.050	0.107	Figure 87
Worst Case Position of Body with HSUPA (Distance 15mm)					
Towards Ground	Middle/1413	0.506	0.902	-0.068	Figure 88

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. 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.

Table 24: Extrapolated SAR Values of highest measured SAR [WCDMA Band IV (WCDMA/HSDPA/HSUPA)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures	1g Average Limit 1.6 W/kg
		Measurement Result		MAX Power(dBm)	Extrapolated Result (W/kg)
Towards Ground	Middle/1413	23.37	1.170	24.5	1.518

7.3.5. WCDMA Band V (WCDMA/HSDPA/HSUPA)

Table 25: SAR Values [WCDMA Band V (WCDMA/HSDPA/HSUPA)]

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					
Left Hand, Touch Cheek	High/4233	0.343	0.458	-0.013	Figure 89
	Middle/4183	0.461	0.609	-0.099	Figure 90
	Low/4132	0.332	0.440	-0.055	Figure 91
Left Hand, Tilt 15 Degree	Middle/4183	0.272(max.cube)	0.344(max.cube)	-0.011	Figure 92
Right Hand, Touch Cheek	Middle/4183	0.391	0.511	0.020	Figure 93
Right Hand, Tilt 15 Degree	Middle/4183	0.268	0.345	0.166	Figure 94
Test Position of Body (Distance 15mm)					
Towards Ground	High/4233	0.385	0.508	-0.102	Figure 95
	Middle/4183	0.507	0.667	0.022	Figure 96
	Low/4132	0.418	0.549	0.077	Figure 97
Towards Phantom	Middle/4183	0.391	0.513	-0.088	Figure 98
Worst Case Position of Body with Earphone (Distance 15mm)					
Towards Ground	Middle/4183	0.459	0.617	0.112	Figure 99
Worst Case Position of Body with HSDPA (Distance 15mm)					
Towards Ground	Middle/4183	0.450	0.593	-0.084	Figure 100
Worst Case Position of Body with HSUPA (Distance 15mm)					
Towards Ground	Middle/4183	0.416	0.550	0.073	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. 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.

Table 26: Extrapolated SAR Values of highest measured SAR [WCDMA Band V (WCDMA/HSDPA/HSUPA)]

Different Test Position	Channel	Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
		Measurement Result			Extrapolated Result (W/kg)
Towards Ground	Middle/4183	23.18	0.667	24	0.806

7.3.6. Bluetooth/WiFi Function

The distance between BT/WIFI antenna and GSM/WCDMA antenna is ＞5cm. The location of the antennas inside mobile phone is shown in Annex K:

The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz
Peak Conducted Output Power(dBm)	-0.13	-0.24	-0.49

The output power of WIFI antenna is as following:

Mode	Channel	Data rate (Mbps)		AV Power (dBm)	PK Power (dBm)
11b	1	1	Before	14.15	16.6
			After	14.13	16.61
		2	Before	14.17	16.65
		5.5	Before	14.48	16.75
		11	Before	14.35	16.71
	6	1	Before	17.03	19.02
			After	17.02	19.01
		2	Before	17.07	19.05
		5.5	Before	17.87	19.03
		11	Before	17.47	19.06
	11	1	Before	16.75	18.64
			After	16.74	18.63
		2	Before	16.8	18.67
		5.5	Before	17.58	18.64
		11	Before	17.16	18.71
11g	1	6	Before	8.2	16.88
		9	Before	8.35	17.1
		12	Before	8.58	16.86
		18	Before	8.42	17.26
		24	Before	8.38	16.9
		36	Before	8.46	17.01
		48	Before	8.6	17.04
		54	Before	8.37	17.21
	6	6	Before	9.53	18.17
		9	Before	9.53	18.08
		12	Before	9.55	18.11
		18	Before	9.51	18.08
		24	Before	9.54	18.01
		36	Before	9.51	18.04
		48	Before	9.45	18.01

		54	Before	9.41	17.83
	11	6	Before	9.83	17.78
		9	Before	9.68	17.72
		12	Before	9.73	17.86
		18	Before	9.74	17.81
		24	Before	9.78	17.87
		36	Before	9.72	18.07
		48	Before	9.63	17.73
		54	Before	9.57	17.76
11n HT20	1	6.5	Before	7.9	17.0
		13	Before	7.7	16.9
		19.5	Before	7.8	16.9
		26	Before	7.9	16.8
		39	Before	7.7	16.7
		52	Before	7.8	16.9
		58.5	Before	7.9	16.9
		65	Before	7.8	16.9
	6	6.5	Before	8.1	17.2
		13	Before	8.1	17.1
		19.5	Before	8.1	17.1
		26	Before	8.1	17.1
		39	Before	8.0	17.1
		52	Before	8.0	17.0
		58.5	Before	8.0	17.1
		65	Before	8.1	17.0
	11	6.5	Before	9.1	17.6
		13	Before	9.2	17.6
		19.5	Before	9.1	17.5
		26	Before	9.1	17.4
		39	Before	8.9	17.7
		52	Before	8.9	17.7
		58.5	Before	9.0	17.8
		65	Before	8.9	17.3

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:

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

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

Table 27: SAR Values (802.11b)

Limit of SAR (W/kg)		10 g Average	1 g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	$\pm$ 0.21 dB	
Different Test Position	Channel	Measurement Result(W/kg)		Power Drift	
		10 g Average	1g Average	(dB)	
Test position of Head (802.11b)					
Left hand, Touch cheek	High/11	0.101	0.241	-0.095	Figure 102
	Middle/6	0.253	0.585	-0.037	Figure 103
	Low/1	0.156	0.360	0.052	Figure 104
Left hand, Tilt 15 Degree	Middle/6	0.153	0.373	-0.043	Figure 105
Right hand, Touch cheek	Middle/6	0.138	0.271	0.063	Figure 106
Right hand, Tilt 15 Degree	Middle/6	0.112	0.214	-0.063	Figure 107
Test position of Body (802.11b Distance 15mm)					
Towards Ground	Middle/6	0.021	0.042	-0.094	Figure 108
Towards Phantom	High/11	0.025	0.047	-0.013	Figure 109
	Middle/6	0.030	0.057	0.019	Figure 110
	Low/1	0.022	0.042	-0.076	Figure 111
Worst case position of Body with Earphone (802.11b Distance 15mm)					
Towards Phantom	Middle/6	0.032	0.061	-0.087	Figure 112

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. 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.

Simultaneous SAR

About WIFI and BT Antenna, because WIFI antenna is ＜2.5cm from BT Antenna, the SAR value of WIFI is <1.2W/kg, so Simultaneous SAR are not required for WIFI and BT Antenna.

About GSM/WCDMA and BT Antenna, because GSM/WCDMA antenna is >5cm from BT Antenna, stand-alone SAR are not required for BT, so Simultaneous SAR are not required for GSM/WCDMA and BT Antenna.

About GSM/WCDMA and WIFI Antenna, because GSM/WCDMA antenna is >5cm from WIFI Antenna, $SAR_{MAX.GSM/WCDMA}$+ $SAR_{MAX.WIFI}$= 1.17 W/kg +0.042 W/kg =1.212W/kg <1.6 W/kg, so Simultaneous SAR are not required for GSM/WCDMA and WIFI Antenna.

About DTM and BT/WiFi can't simultaneous transmit.

8. Measurement Uncertainty

No.	source	Type	Uncertainty Value (%)	Probability Distribution	k	c_i	Standard ncertainty $u_i^{'}$ (%)	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	∞

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	

9. Main Test Instruments

Table 28: 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 1750MHz	D1750V2	1033	May 17, 2010	Two years
12	Validation Kit 1900MHz	D1900V2	5d018	June 15, 2010	Two years
13	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
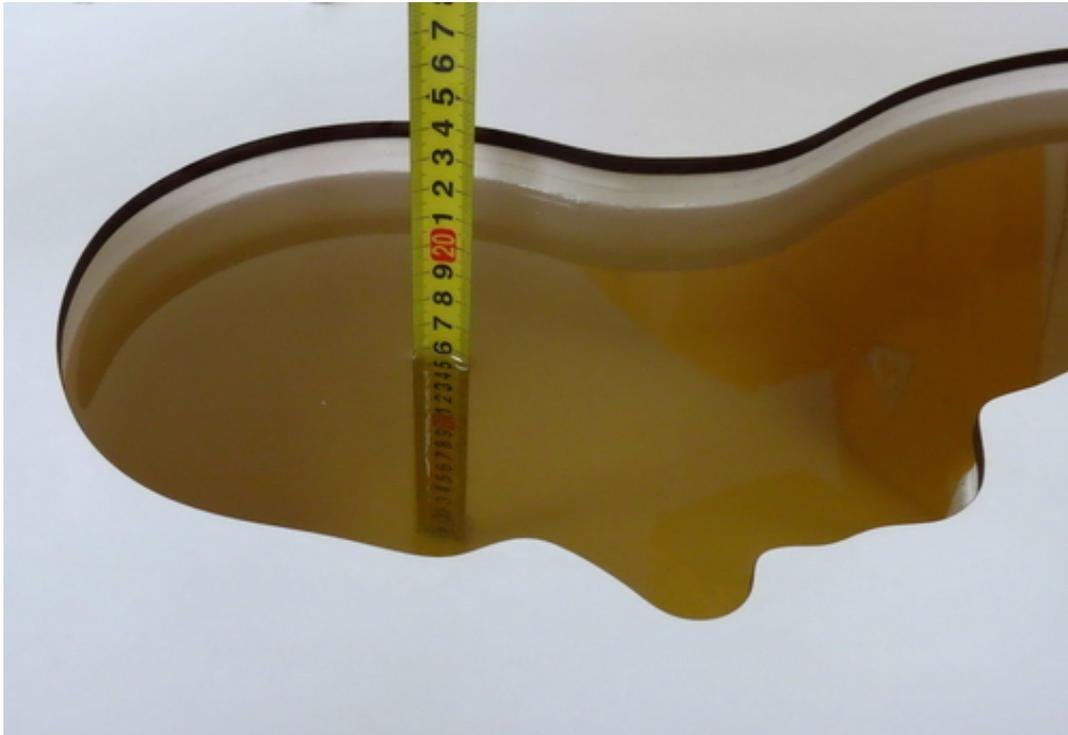
Picture 2: Liquid depth in the head Phantom (835MHz, 15.3cm depth)
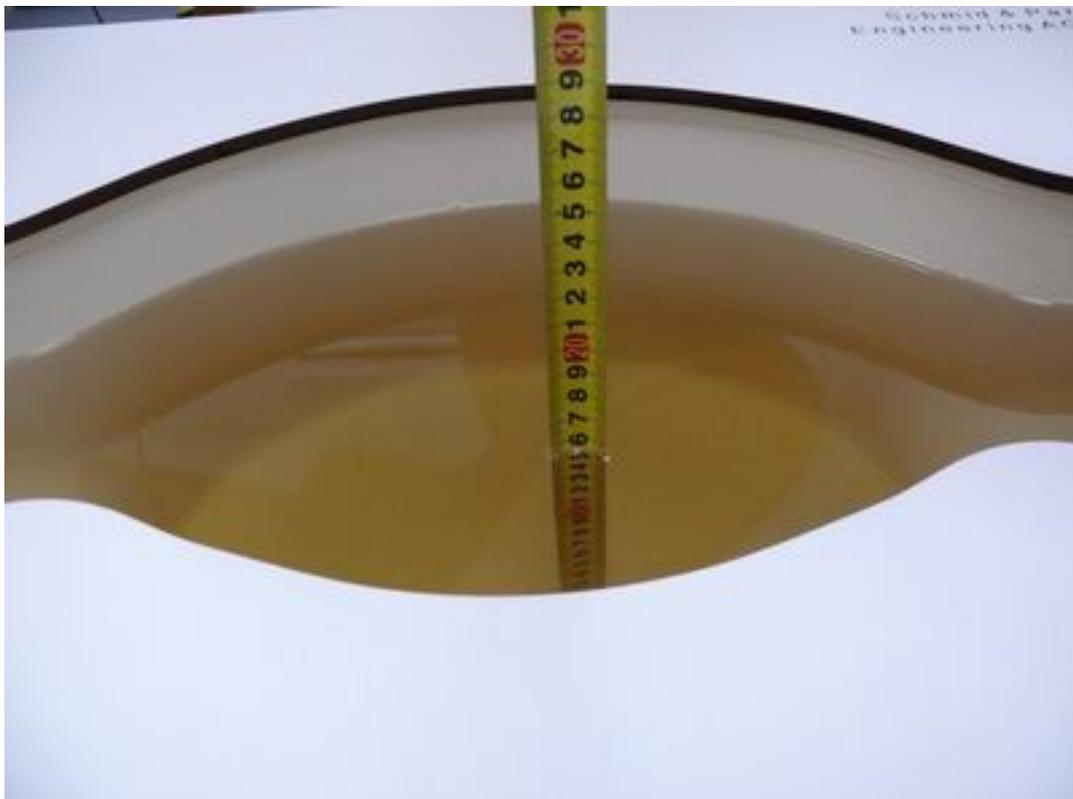
Picture 3: Liquid depth in the flat Phantom (835MHz, 15.4cm depth)

Picture 4: liquid depth in the head Phantom (1750 MHz, 15.2cm depth)
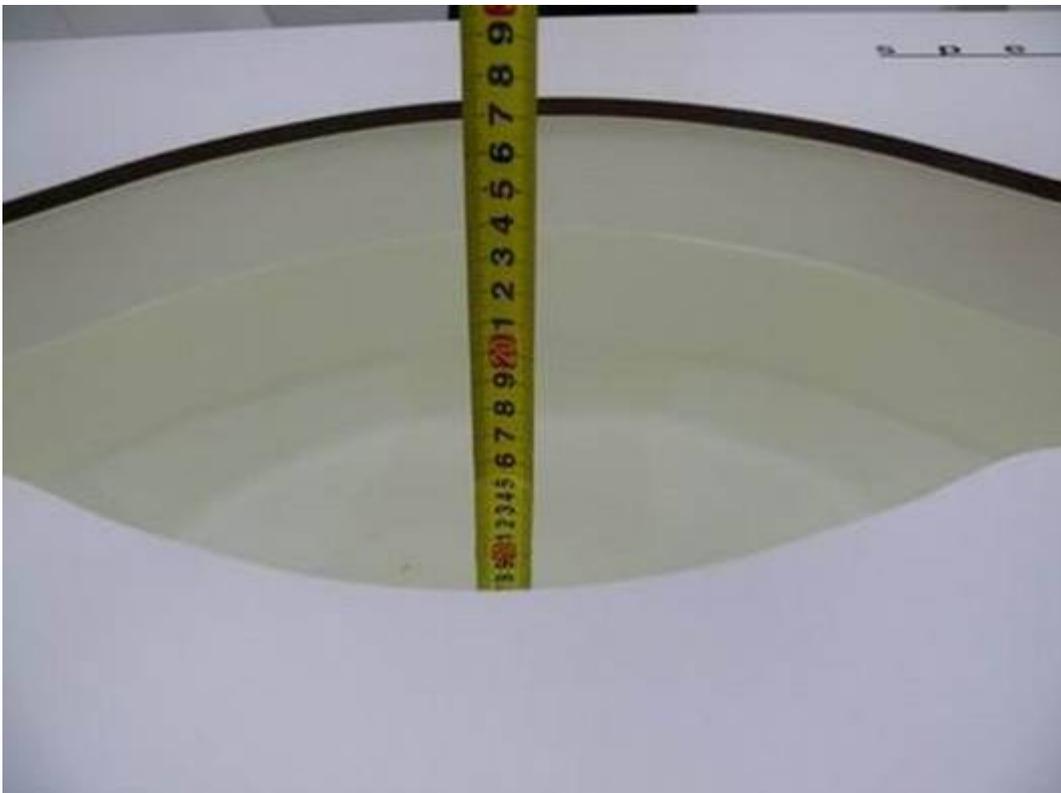
Picture 5: Liquid depth in the Flat Phantom (1750 MHz, 15.3cm depth)

Picture 6: liquid depth in the head Phantom (1900 MHz, 15.3cm depth)
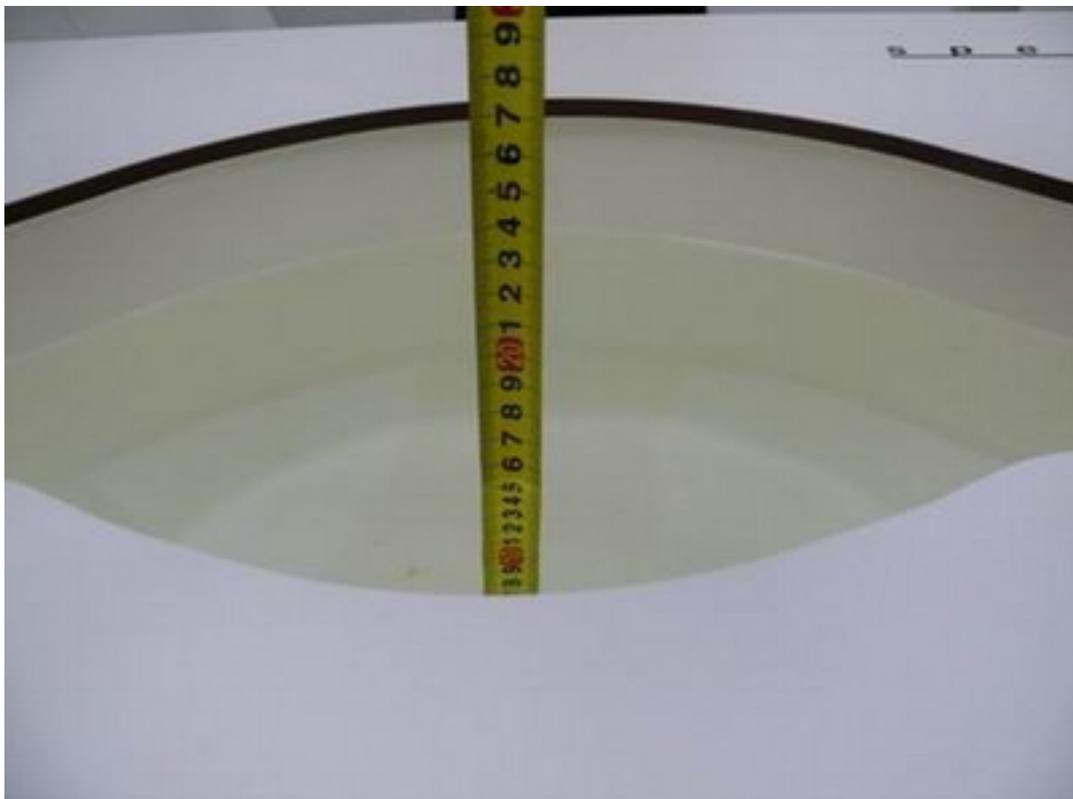
Picture 7: Liquid depth in the flat Phantom (1900 MHz, 15.2cm depth)

Picture 8: Liquid depth in the head Phantom (2450 MHz, 15.4cm depth)
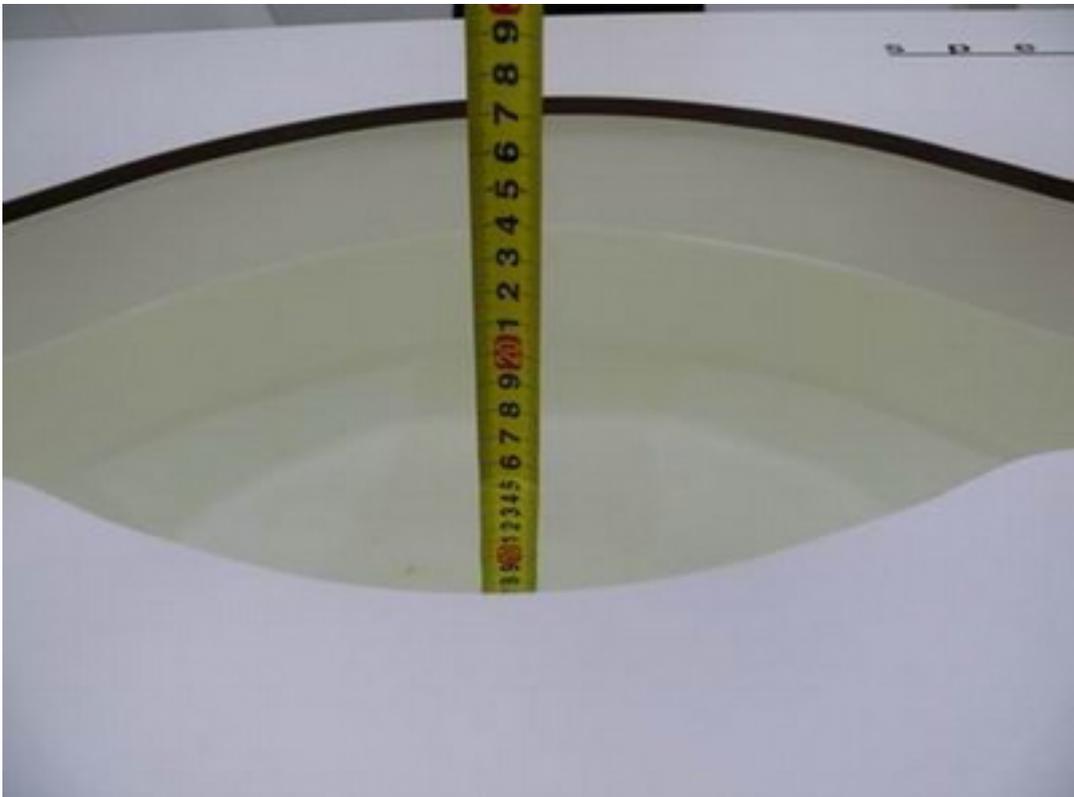
Picture 9: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)

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: 3/24/2011 10:14:13 PM

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

Medium parameters used: f = 835 MHz; σ = 0.90 mho/m; ε_r = 41.76; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.8℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 2.42 mW/g; SAR(10 g) = 1.6 mW/g

Maximum value of SAR (measured) = 2.61 mW/g
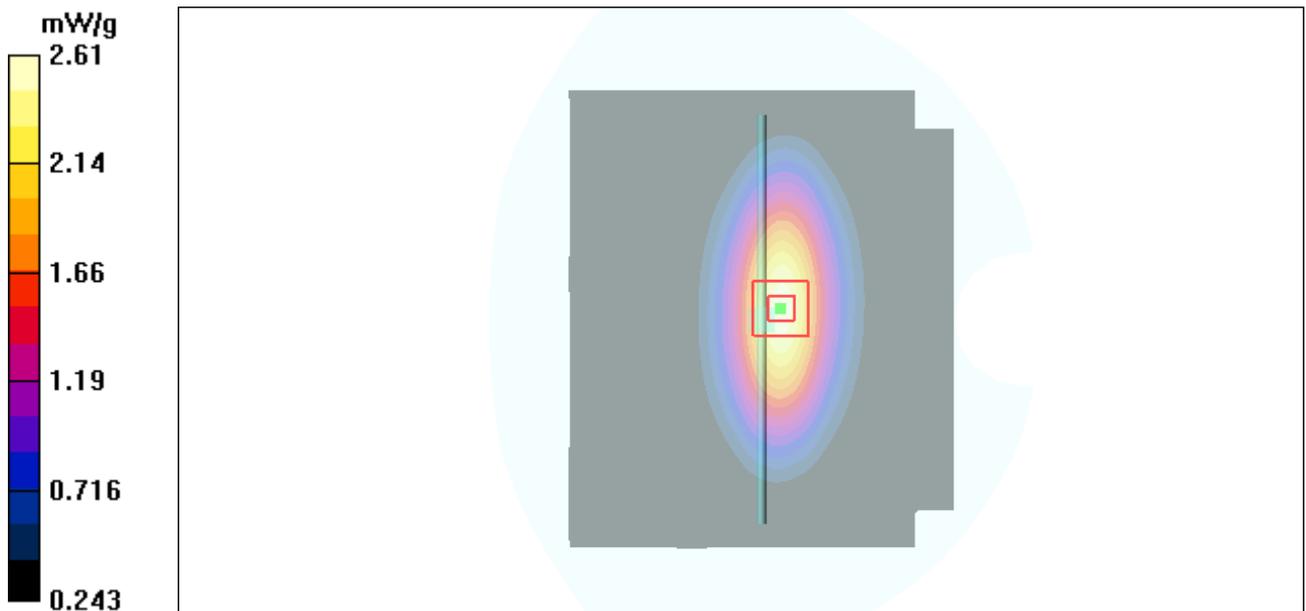
Figure 7 System Performance Check 835MHz 250mW

System Performance Check at 835 MHz Body TSL

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

Date/Time: 3/25/2011 6:04:20 PM

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

Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; $ε_r$ = 56.25; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.9℃

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.73 mW/g
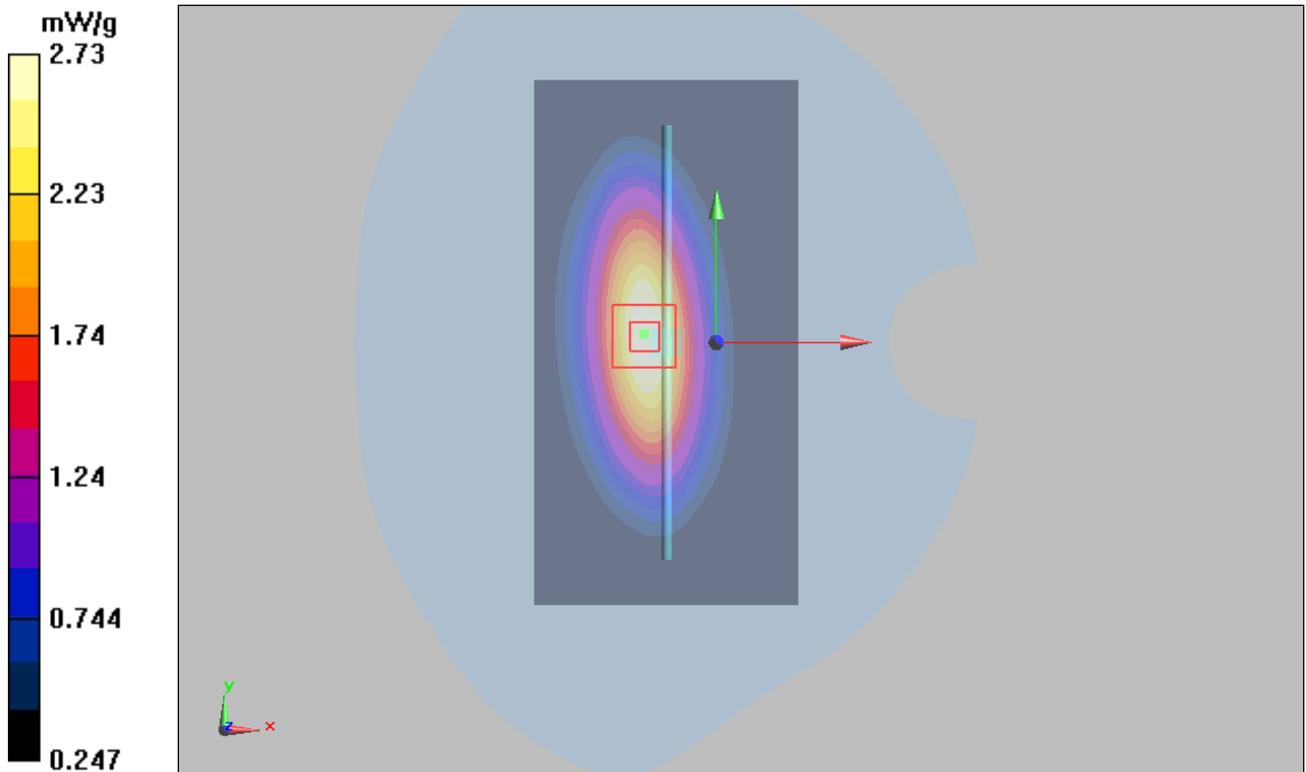
Figure 8 System Performance Check 835MHz 250mW

System Performance Check at 1750 MHz Head TSL

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1033

Date/Time: 3/25/2011 4:50:30 AM

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.38 mho/m; $ε_r$ = 40.09; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.6℃

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 9.96 mW/g

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

Reference Value = 78.7 V/m; Power Drift = 0.084 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 8.79 mW/g; SAR(10 g) = 4.58 mW/g

Maximum value of SAR (measured) = 9.83 mW/g
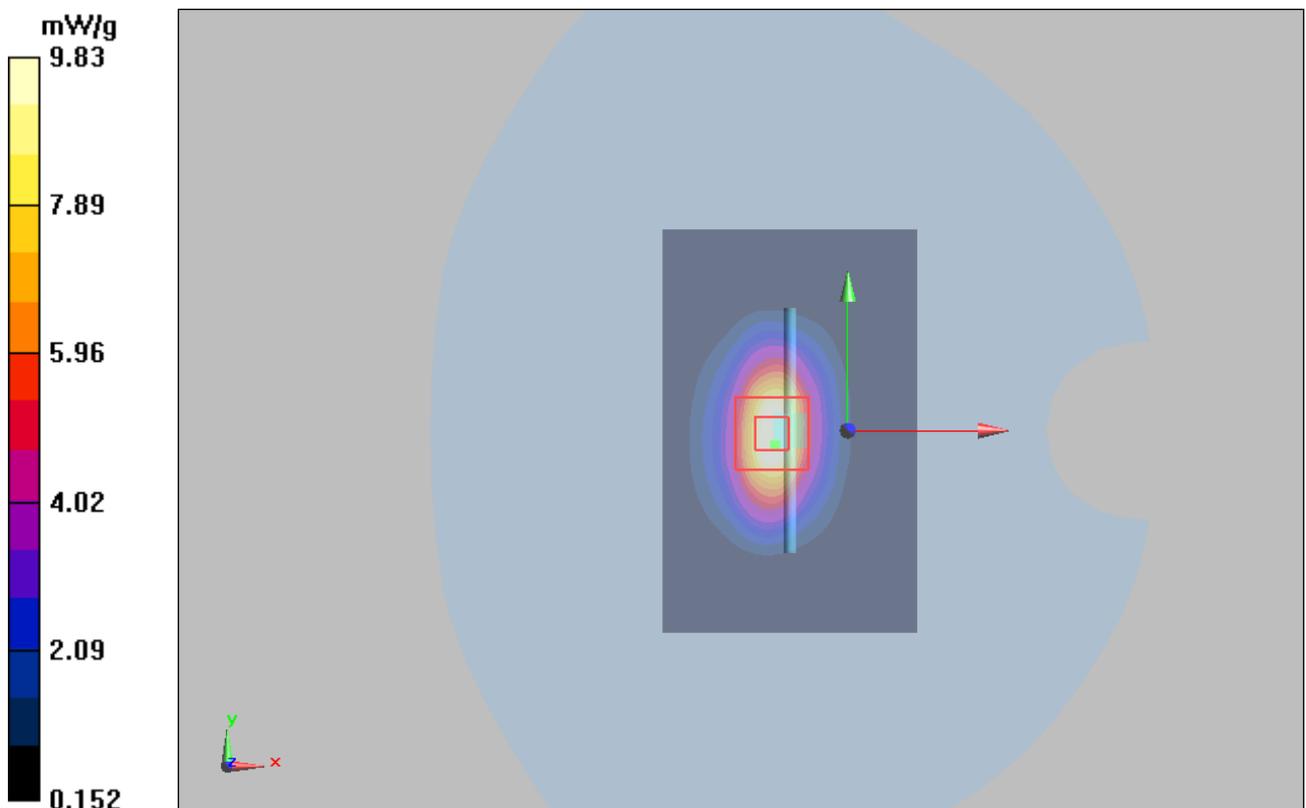
Figure 9 System Performance Check 1750MHz 250mW

System Performance Check at 1750 MHz Body TSL
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1033
Date/Time: 3/26/2011 2:50:55 AM

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.48 mho/m; $ε_r$ = 52.35; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.9℃

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 10.6 mW/g

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

Reference Value = 77.7 V/m; Power Drift = 0.097 dB

Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 9.24 mW/g; SAR(10 g) = 4.9 mW/g

Maximum value of SAR (measured) = 10.3 mW/g
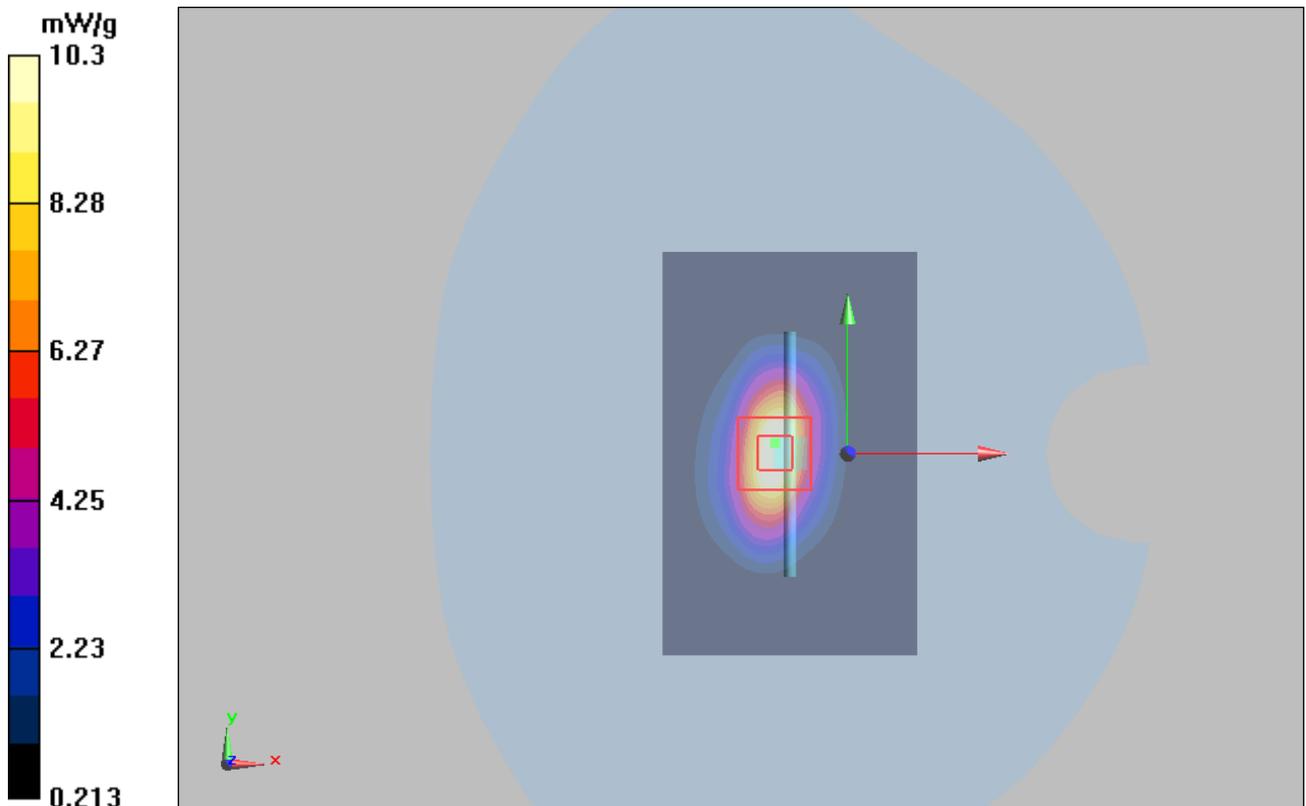
Figure 10 System Performance Check 1750MHz 250mW

System Performance Check at 1900 MHz Head TSL

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

Date/Time: 3/25/2011 5:01:34 PM

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

Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 39.98; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.9℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 10.3 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 11.5 mW/g
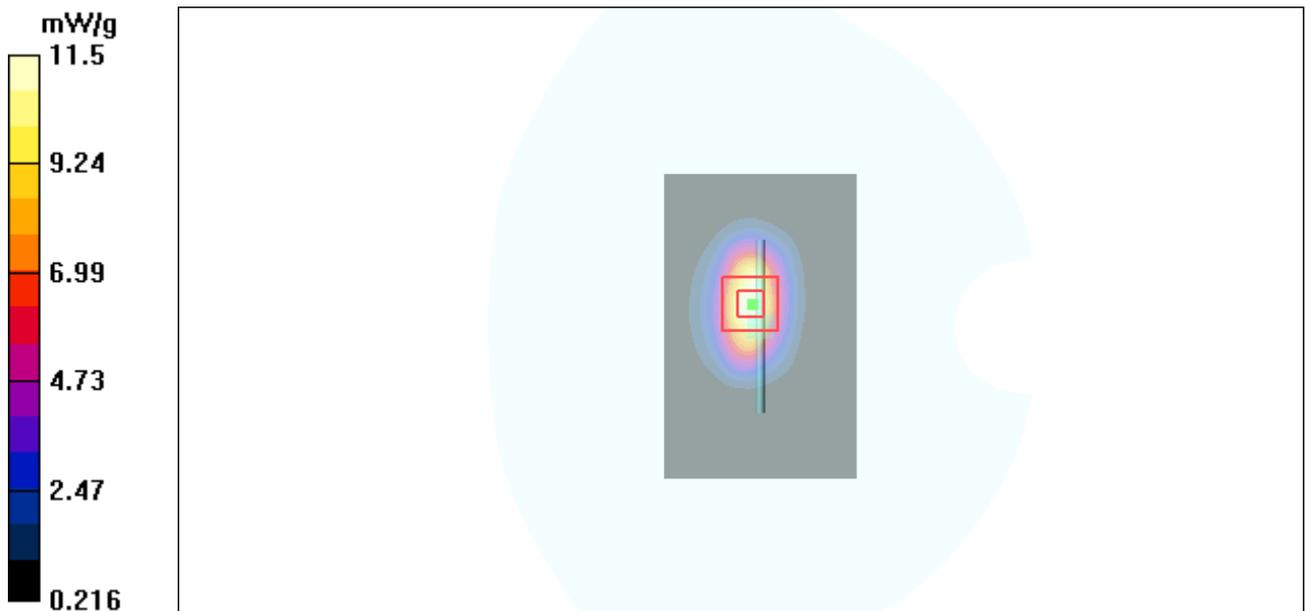
Figure 11 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz Body TSL

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

Date/Time: 3/27/2011 4:04:19 AM

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

Medium parameters used: f = 1900 MHz; σ = 1.53 mho/m; ε_r = 53.18; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.7℃

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 10.18 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 11 mW/g
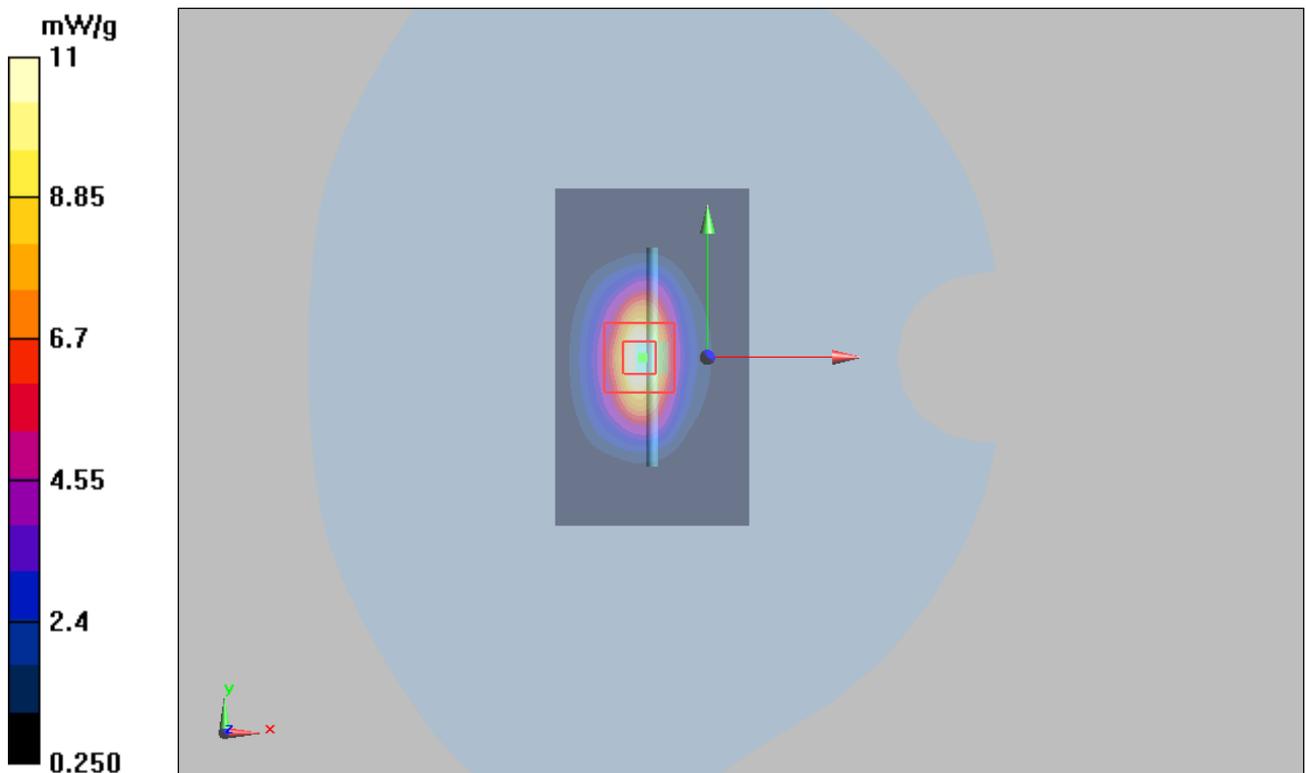
Figure 12 System Performance Check 1900MHz 250mW

System Performance Check at 2450 MHz Head TSL

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

Date/Time: 3/29/2011 8:32:36 PM

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

Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 39.10; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.7℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 14.05 mW/g; SAR(10 g) = 6.5 mW/g

Maximum value of SAR (measured) = 15.7 mW/g
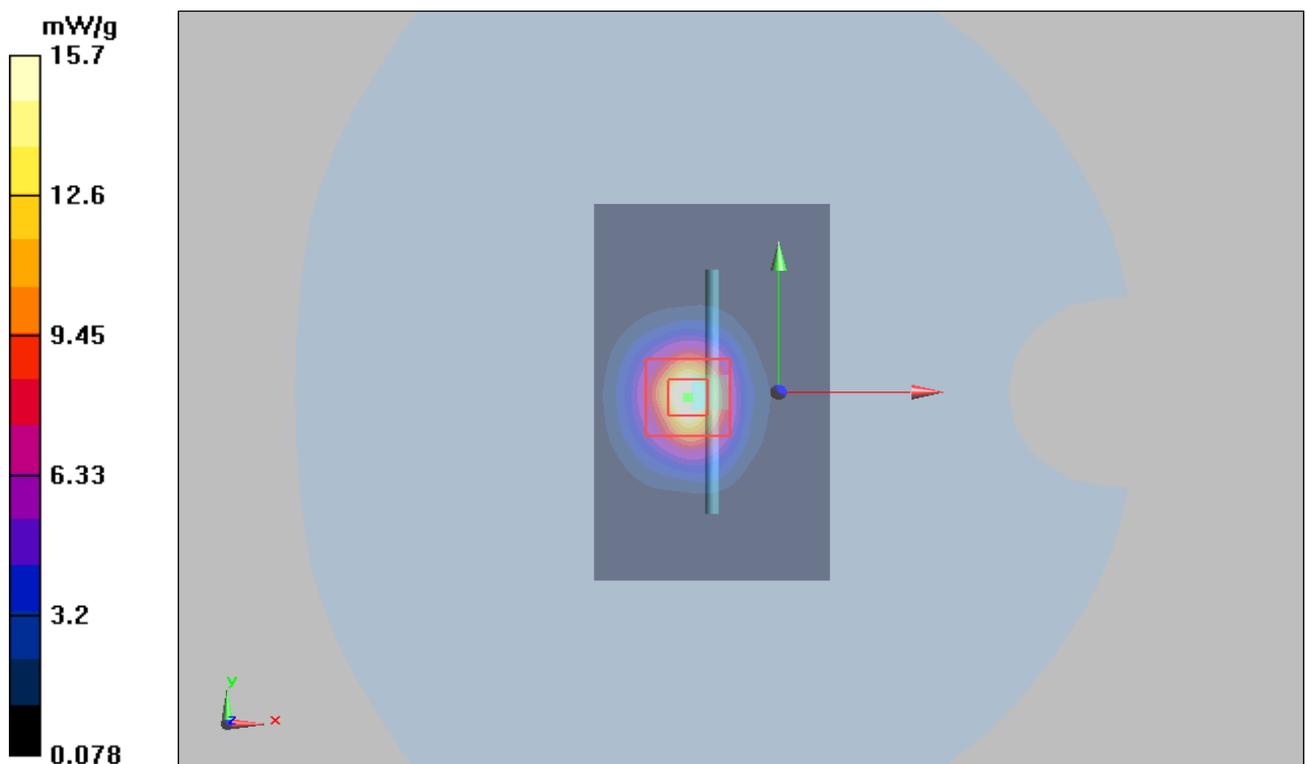
Figure 13 System Performance Check 2450MHz 250mW

System Performance Check at 2450 MHz Body TSL

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

Date/Time: 3/29/2011 7:10:36 PM

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

Medium parameters used: f = 2450 MHz; σ = 1.94 mho/m; ε_r = 51.19; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.8℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

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) = 14.0 mW/g; SAR(10 g) = 6.46 mW/g

Maximum value of SAR (measured) = 19.8 mW/g
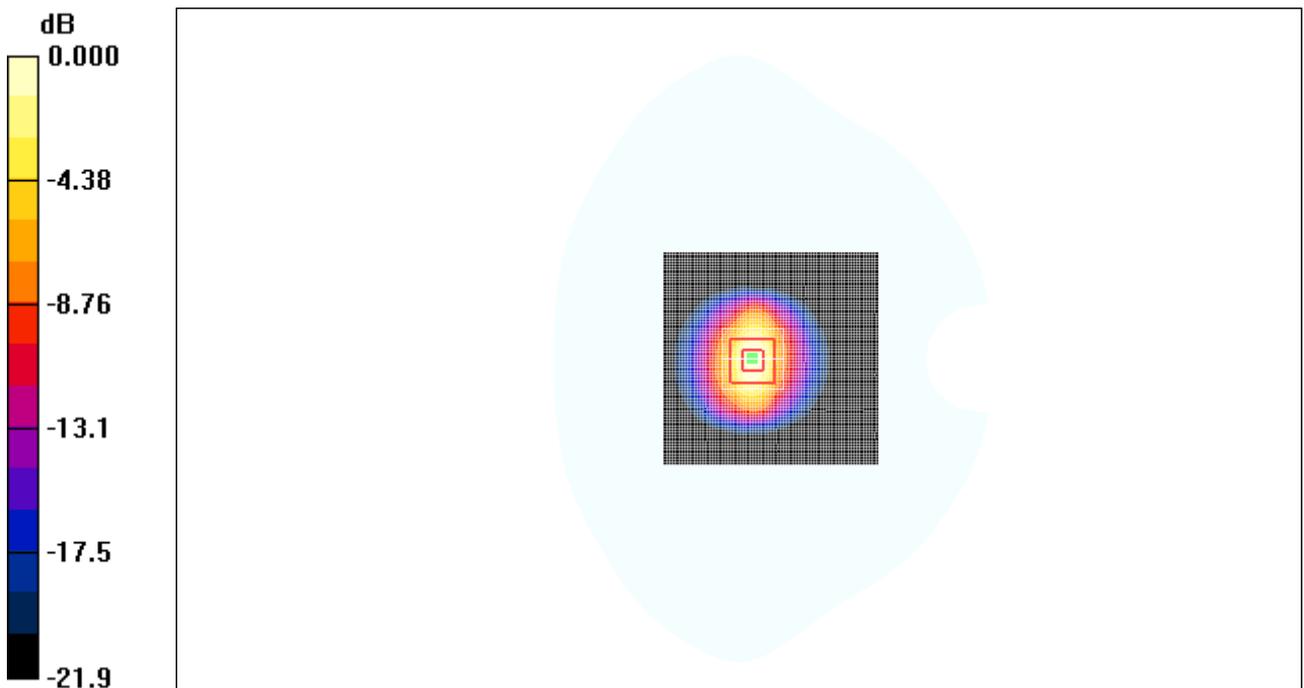
0 dB = 19.8mW/g

Figure 14 System Performance Check 2450MHz 250mW

ANNEX C: Graph Results

GSM 850 Left Cheek High

Date/Time: 3/25/2011 10:30:51 AM

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 849 MHz; σ = 0.915 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.549 mW/g

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

Reference Value = 8.33 V/m; Power Drift = -0.131 dB

Peak SAR (extrapolated) = 0.675 W/kg

SAR(1 g) = 0.525 mW/g; SAR(10 g) = 0.398 mW/g

Maximum value of SAR (measured) = 0.549 mW/g
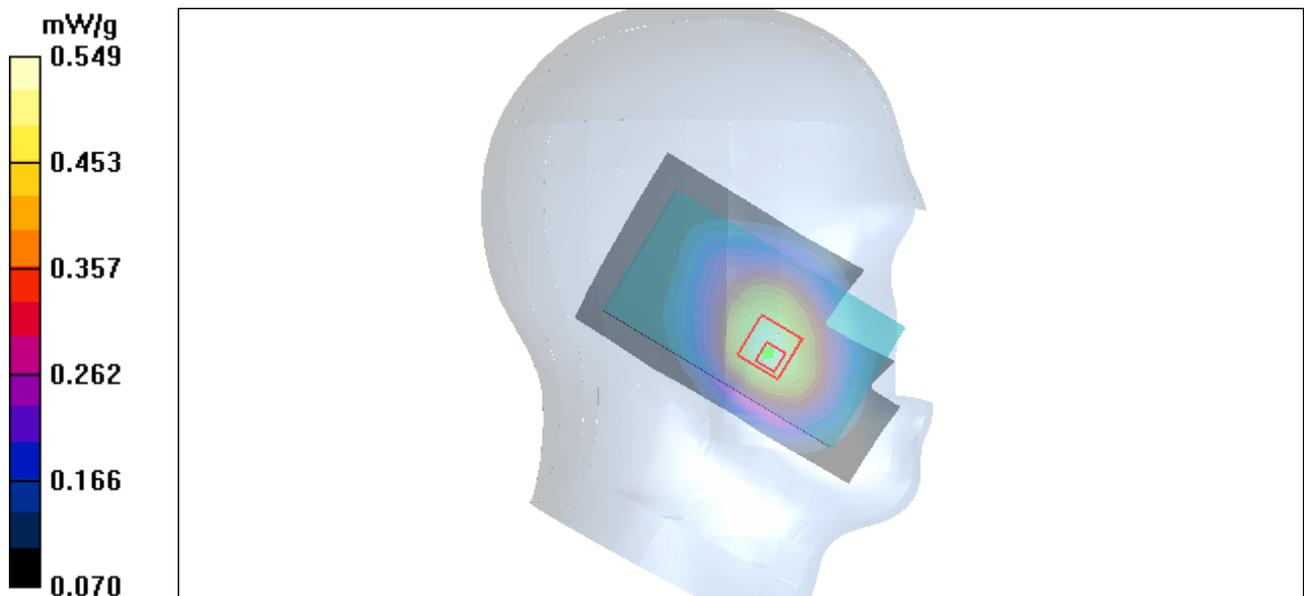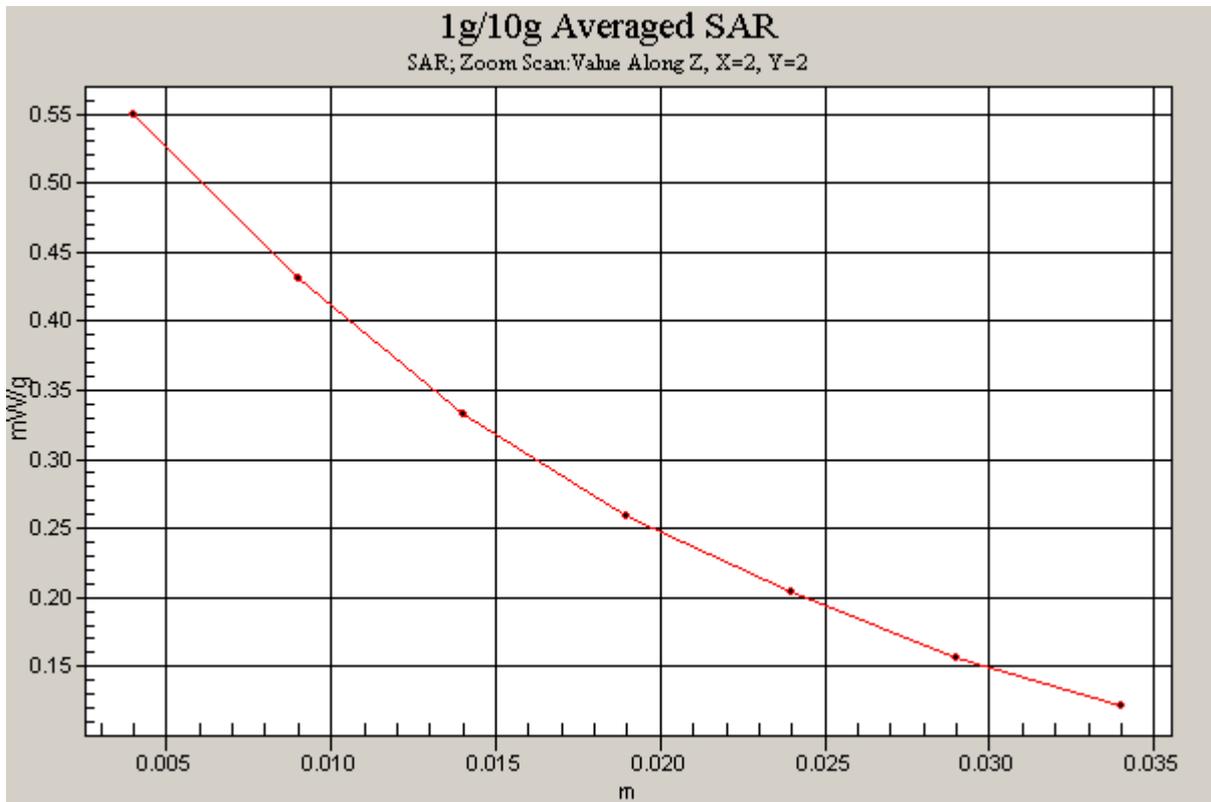
Figure 15 Left Hand Touch Cheek GSM 850 Channel 251

GSM 850 Left Cheek Middle

Date/Time: 3/25/2011 10:15:27 AM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.478 mW/g

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

Reference Value = 8.05 V/m; Power Drift = -0.003 dB

Peak SAR (extrapolated) = 0.551 W/kg

SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.337 mW/g

Maximum value of SAR (measured) = 0.474 mW/g
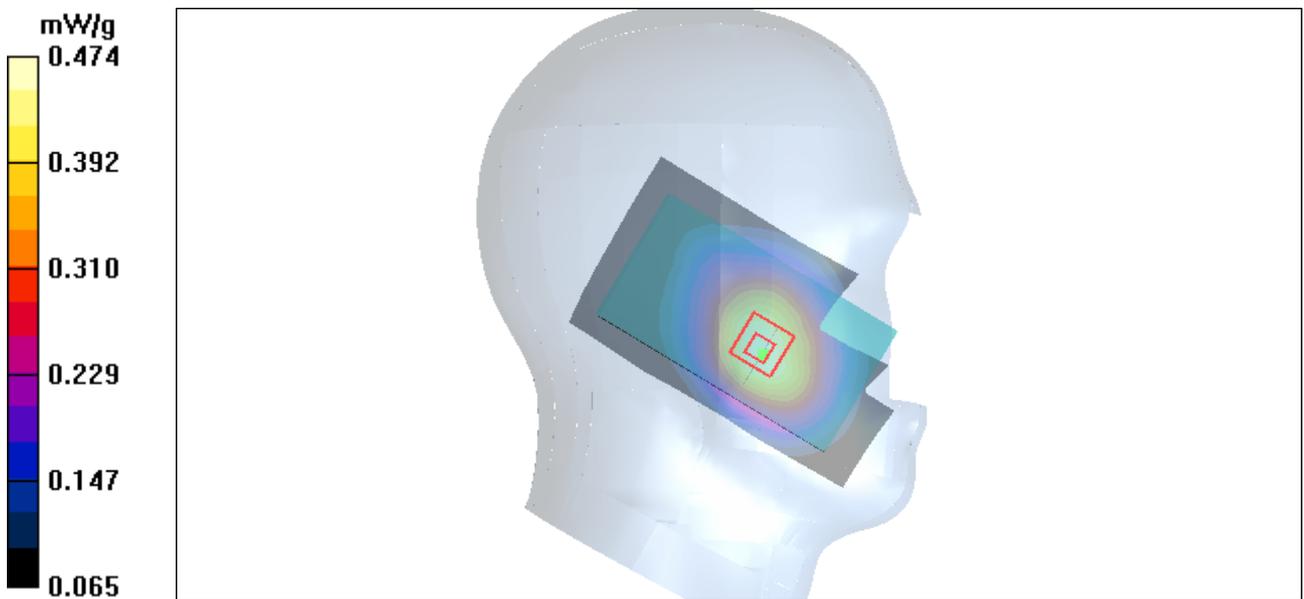
Figure 16 Left Hand Touch Cheek GSM 850 Channel 190

GSM 850 Left Cheek Low

Date/Time: 3/25/2011 10:45:46 AM

Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.894 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.414 mW/g

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

Reference Value = 7.31 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 0.485 W/kg

SAR(1 g) = 0.391 mW/g; SAR(10 g) = 0.295 mW/g

Maximum value of SAR (measured) = 0.412 mW/g
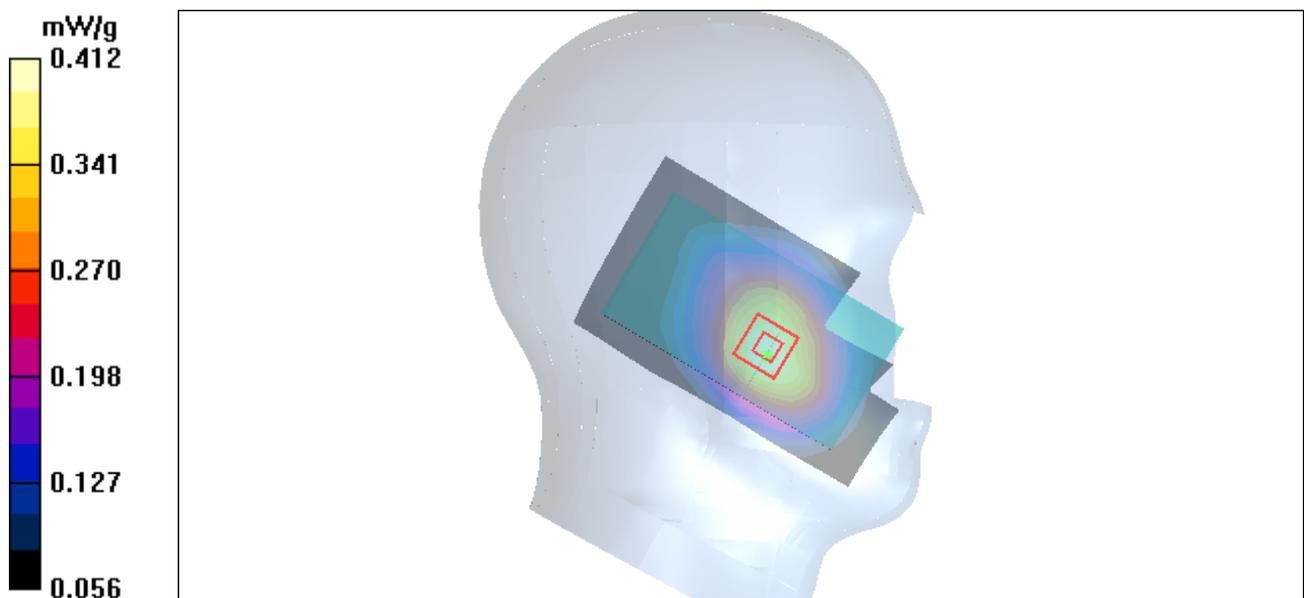
Figure 17 Left Hand Touch Cheek GSM 850 Channel 128

GSM 850 Left Tilt Middle

Date/Time: 3/25/2011 11:04:48 AM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.259 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 = 0.002 dB

Peak SAR (extrapolated) = 0.280 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.191 mW/g

Maximum value of SAR (measured) = 0.256 mW/g
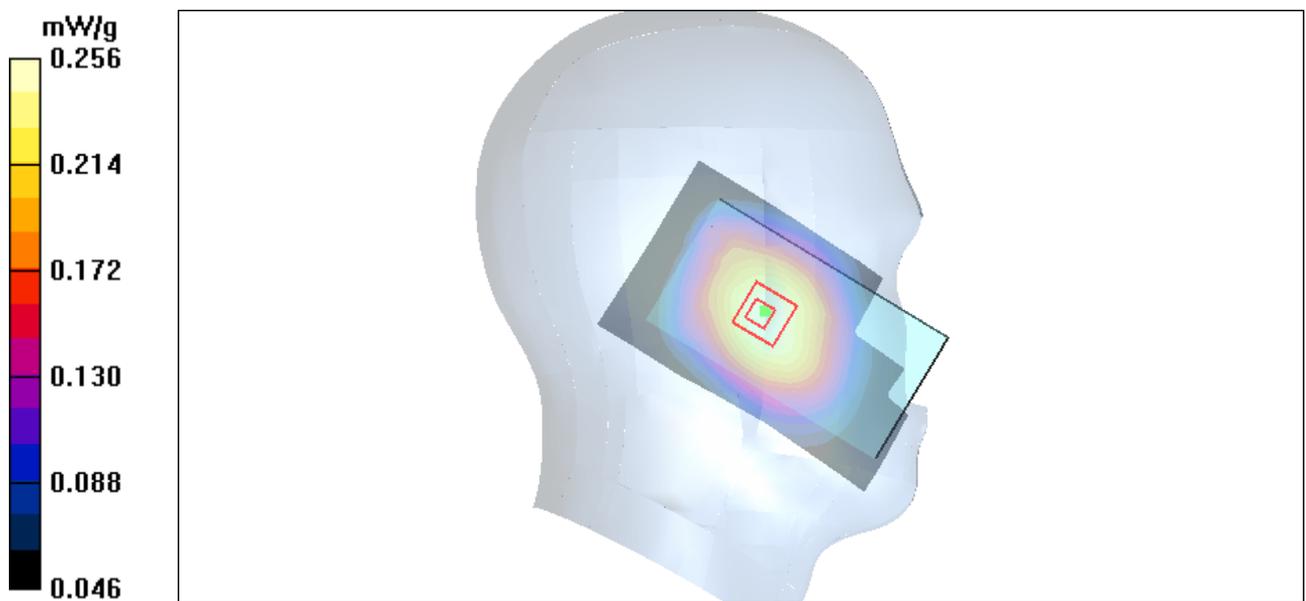
Figure 18 Left Hand Tilt 15° GSM 850 Channel 190

GSM 850 Right Cheek Middle

Date/Time: 3/25/2011 9:44:36 AM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.372 mW/g

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

Reference Value = 7.62 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 0.457 W/kg

SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.399 mW/g
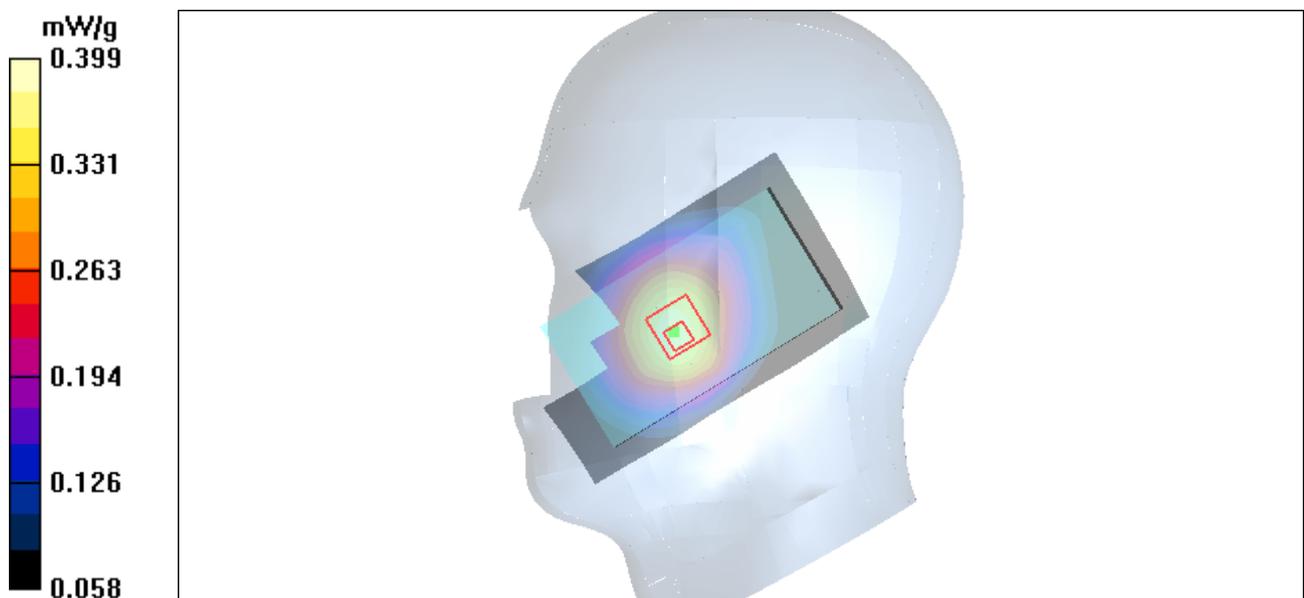
Figure 19 Right Hand Touch Cheek GSM 850 Channel 190

GSM 850 Right Tilt Middle

Date/Time: 3/25/2011 9:59:20 AM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; $ε_r$ = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.262 mW/g

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

Reference Value = 11.7 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 0.295 W/kg

SAR(1 g) = 0.251 mW/g; SAR(10 g) = 0.197 mW/g

Maximum value of SAR (measured) = 0.260 mW/g
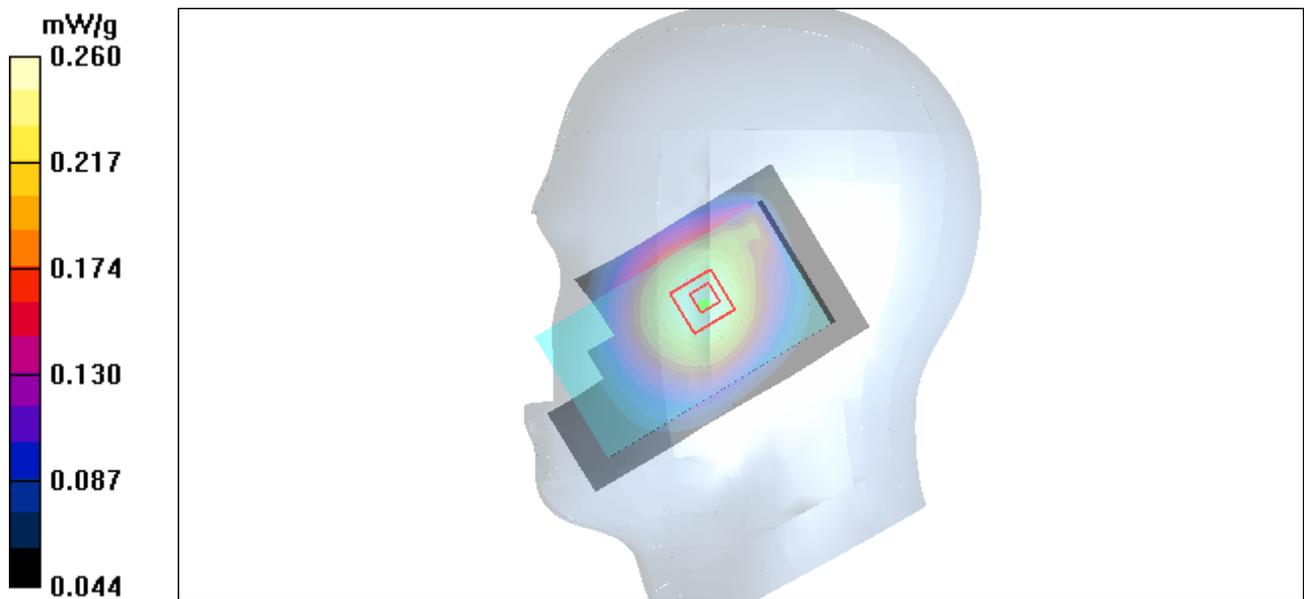
Figure 20 Right Hand Tilt 15° GSM 850 Channel 190

GSM 850 GPRS (2Txslots) Left Cheek High

Date/Time: 3/25/2011 12:04:04 PM

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

Medium parameters used: f = 849 MHz; σ = 0.915 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.556 mW/g

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

Reference Value = 8.86 V/m; Power Drift = -0.179 dB

Peak SAR (extrapolated) = 0.670 W/kg

SAR(1 g) = 0.525 mW/g; SAR(10 g) = 0.385 mW/g

Maximum value of SAR (measured) = 0.560 mW/g
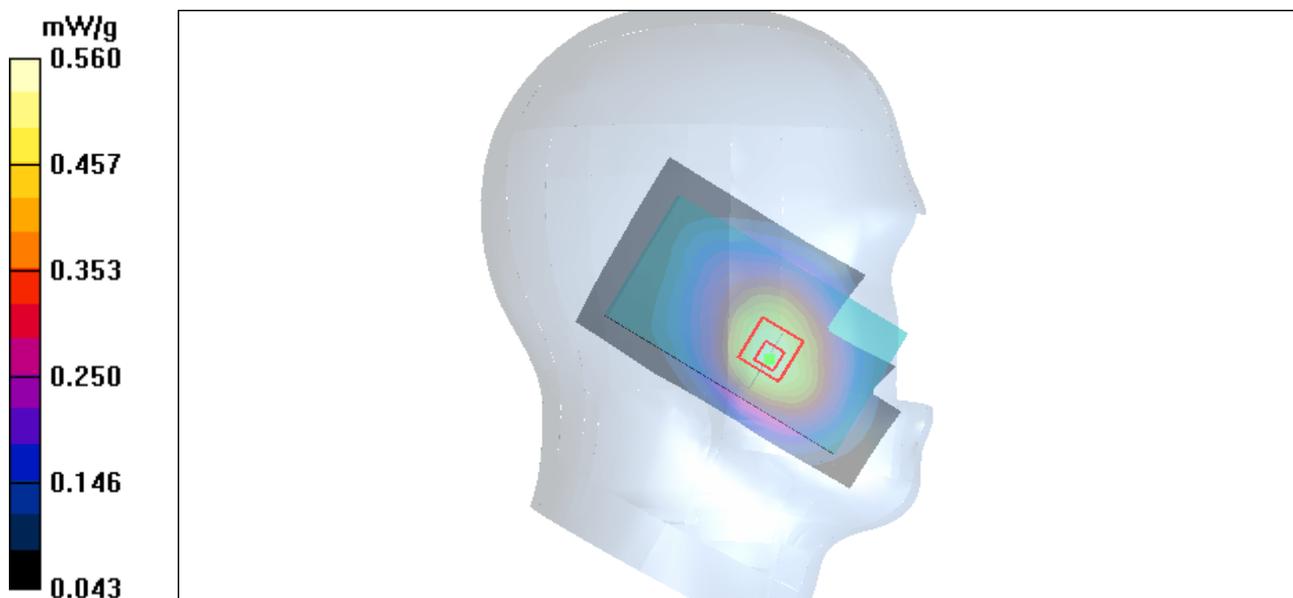
Figure 21 Left Hand Touch Cheek GSM 850 GPRS (2Txslots) Channel 251

GSM 850 GPRS (2Txslots) Left Cheek Middle

Date/Time: 3/25/2011 11:28:06 AM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.462 mW/g

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

Reference Value = 8.11 V/m; Power Drift = -0.062 dB

Peak SAR (extrapolated) = 0.532 W/kg

SAR(1 g) = 0.435 mW/g; SAR(10 g) = 0.329 mW/g

Maximum value of SAR (measured) = 0.457 mW/g
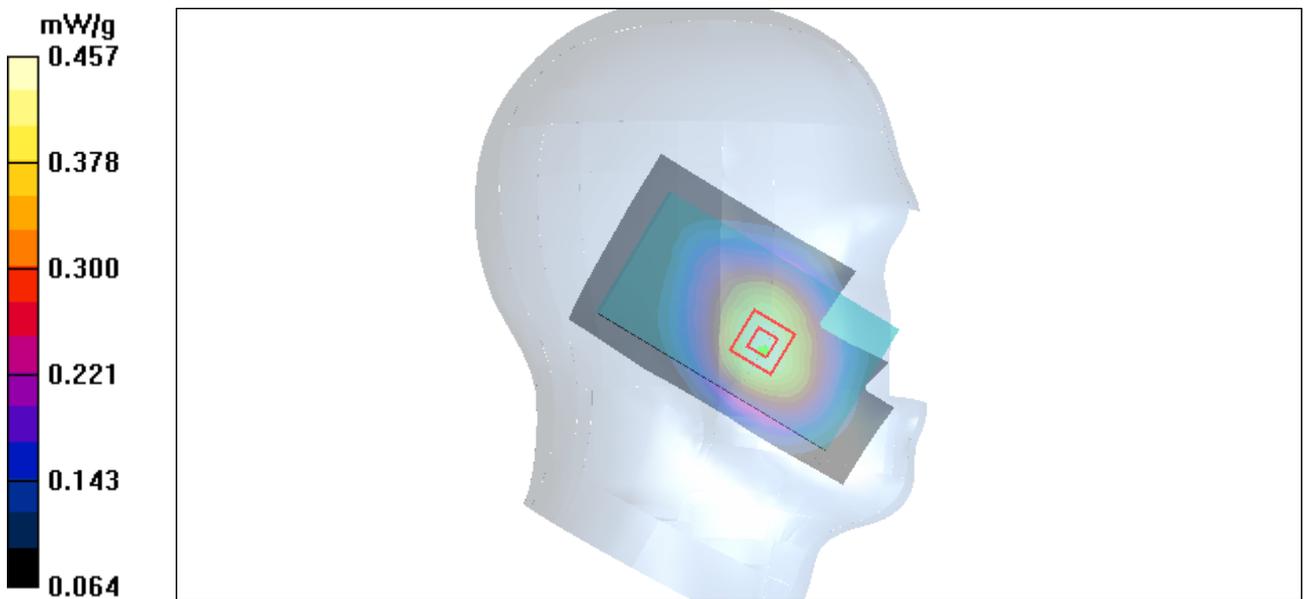
Figure 22 Left Hand Touch Cheek GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (2Txslots) Left Cheek Low

Date/Time: 3/25/2011 12:18:56 PM

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

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.894 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.412 mW/g

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

Reference Value = 7.57 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 0.502 W/kg

SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.284 mW/g

Maximum value of SAR (measured) = 0.401 mW/g
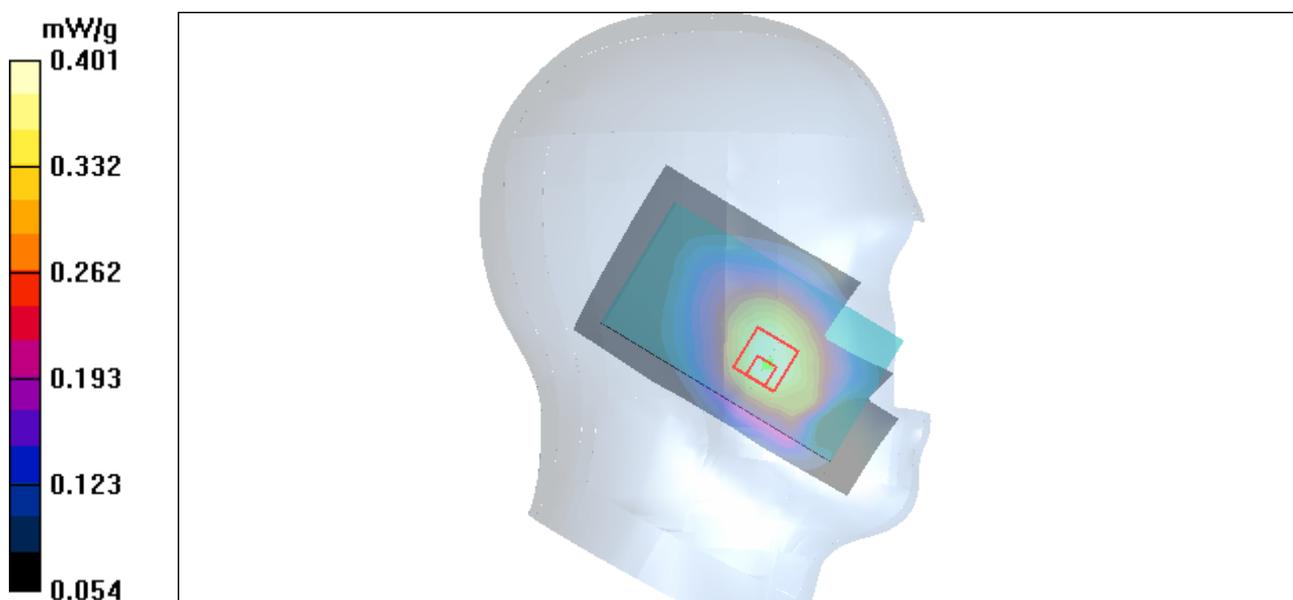
Figure 23 Left Hand Touch Cheek GSM 850 GPRS (2Txslots) Channel 128

GSM 850 GPRS (2Txslots) Left Tilt Middle

Date/Time: 3/25/2011 12:43:11 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.249 mW/g

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

Reference Value = 11.2 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 0.253 W/kg

SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.173 mW/g

Maximum value of SAR (measured) = 0.232 mW/g
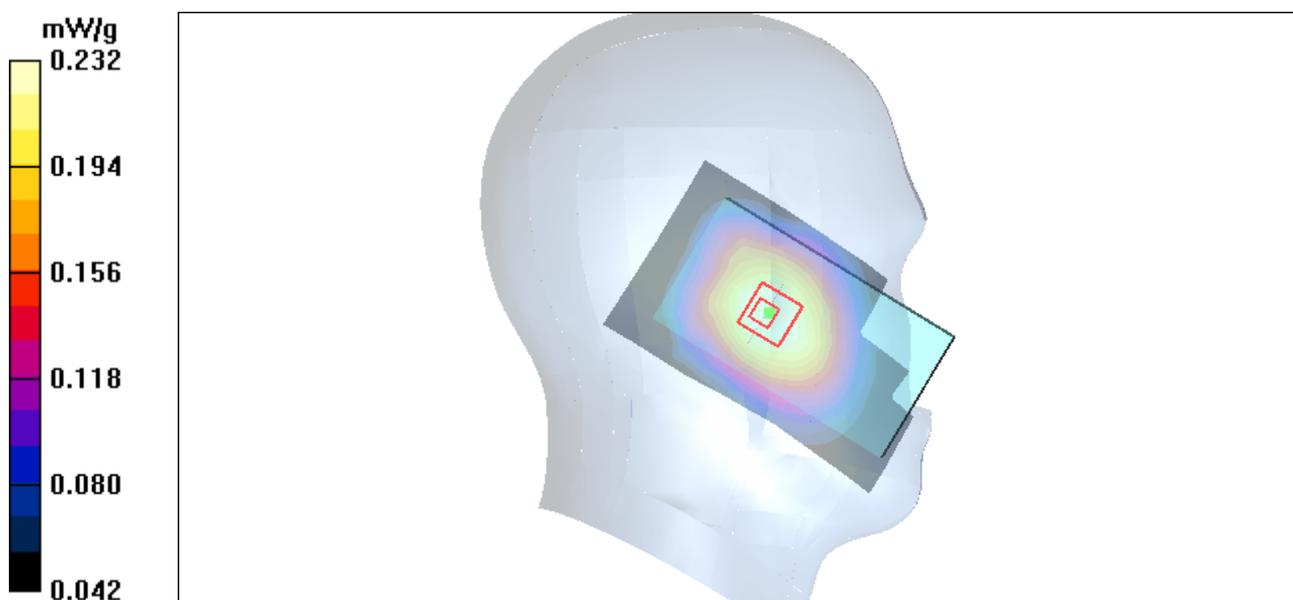
Figure 24 Left Hand Tilt 15° GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (2Txslots) Right Cheek Middle

Date/Time: 3/25/2011 1:03:30 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.383 mW/g

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

Reference Value = 8.87 V/m; Power Drift = -0.186 dB

Peak SAR (extrapolated) = 0.449 W/kg

SAR(1 g) = 0.365 mW/g; SAR(10 g) = 0.274 mW/g

Maximum value of SAR (measured) = 0.381 mW/g
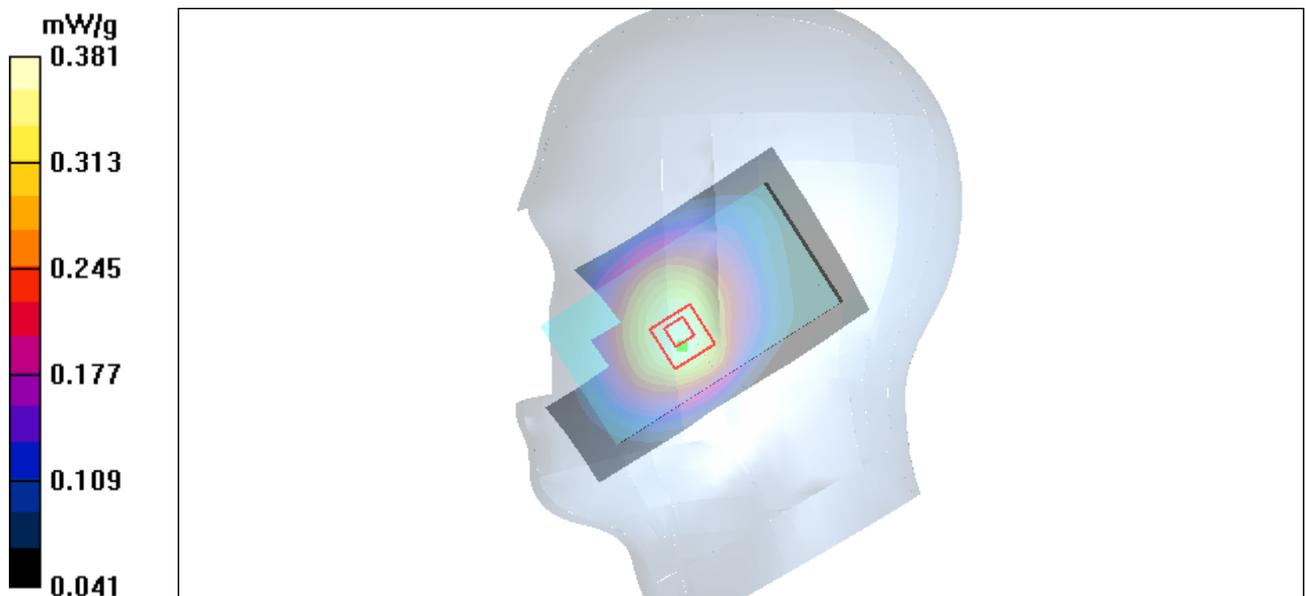
Figure 25 Right Hand Touch Cheek GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (2Txslots) Right Tilt Middle

Date/Time: 3/25/2011 1:18:16 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.264 mW/g

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

Reference Value = 12.7 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.299 W/kg

SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.130 mW/g

Maximum value of SAR (measured) = 0.210 mW/g

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

Reference Value = 12.7 V/m; Power Drift = 0.009 dB

Peak SAR (extrapolated) = 0.293 W/kg

SAR(1 g) = 0.251 mW/g; SAR(10 g) = 0.198 mW/g

Maximum value of SAR (measured) = 0.260 mW/g
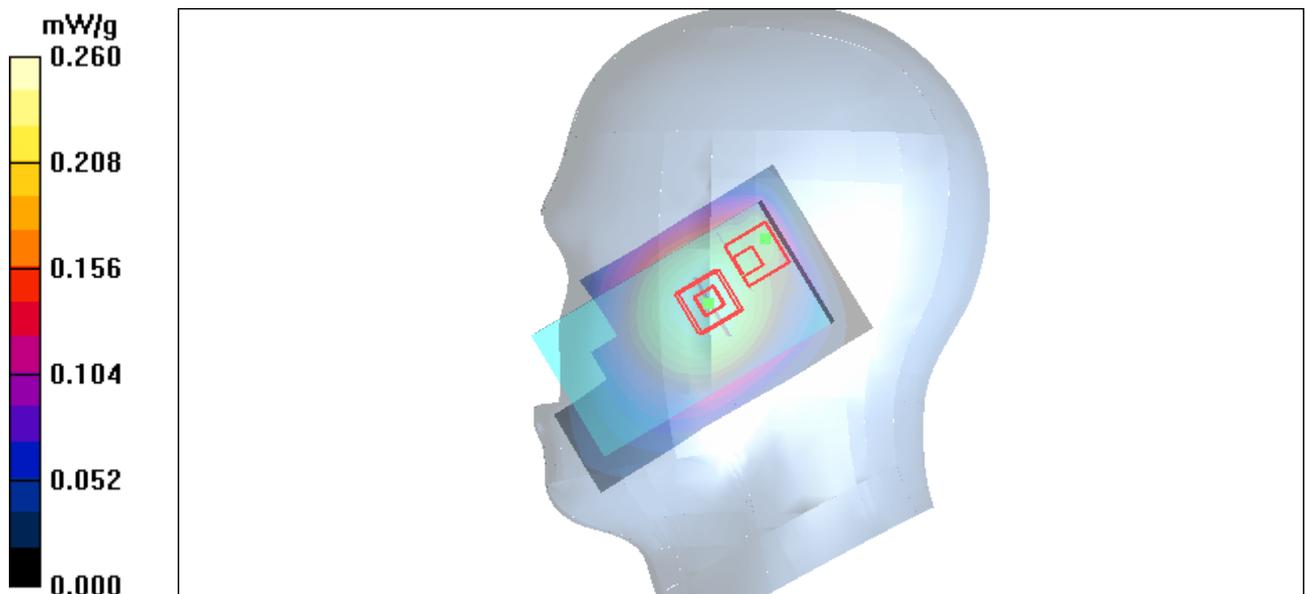
Figure 26 Right Hand Tilt 15° GSM 850 GPRS (2Txslots) Channel 190

GSM 850 Towards Ground High

Date/Time: 3/25/2011 7:17:41 PM

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; $ε_r$ = 56.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.619 mW/g

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

Reference Value = 9.62 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 0.701 W/kg

SAR(1 g) = 0.583 mW/g; SAR(10 g) = 0.440 mW/g

Maximum value of SAR (measured) = 0.616 mW/g
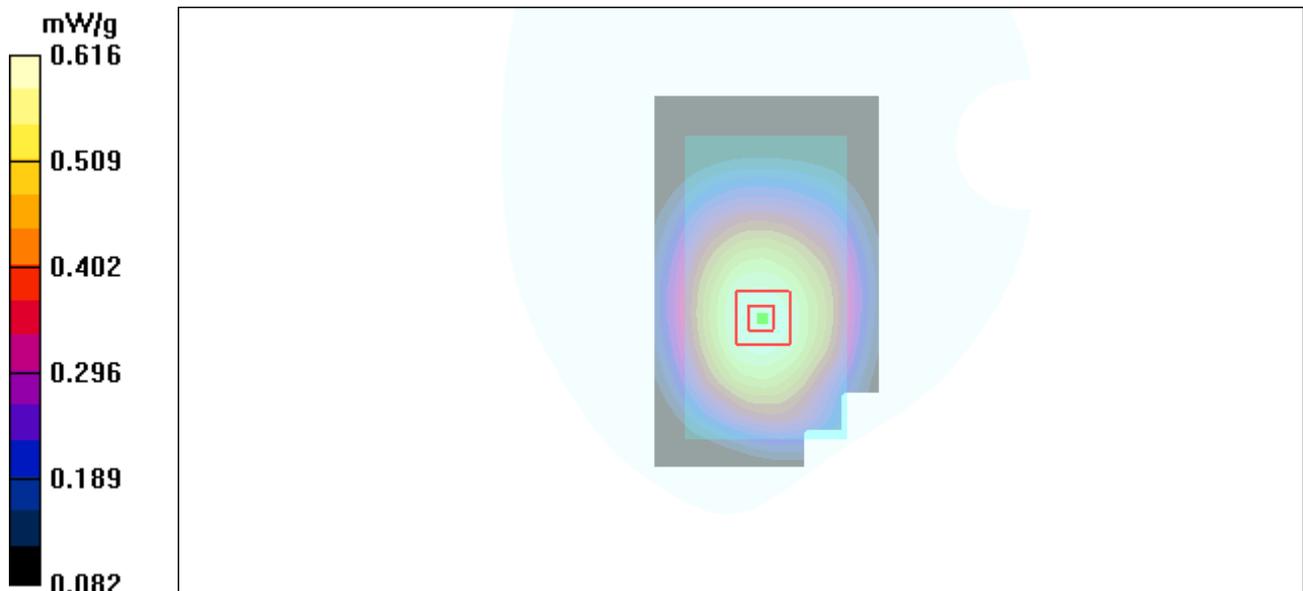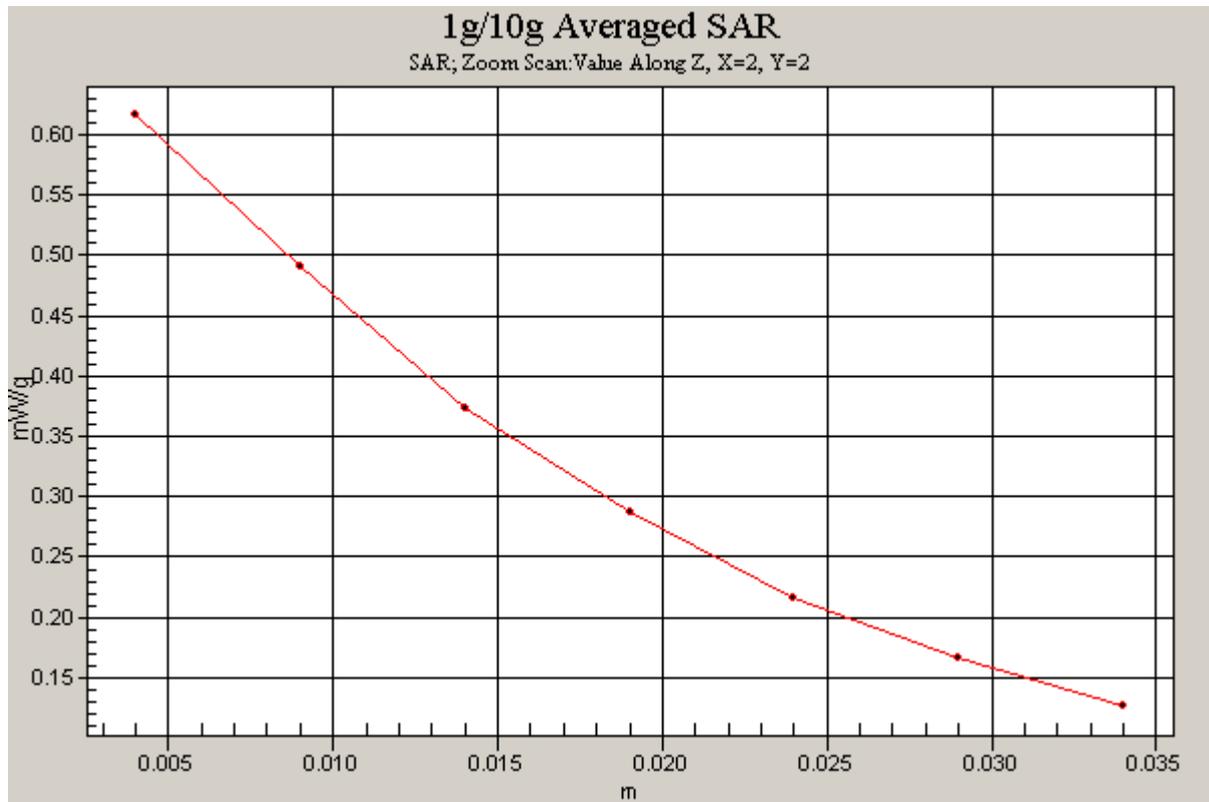
Figure 27 Body, Towards Ground, GSM 850 Channel 251

GSM 850 Towards Ground Middle

Date/Time: 3/25/2011 7:01:23 PM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.585 mW/g

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

Reference Value = 9.42 V/m; Power Drift = -0.114 dB

Peak SAR (extrapolated) = 0.668 W/kg

SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.421 mW/g

Maximum value of SAR (measured) = 0.586 mW/g
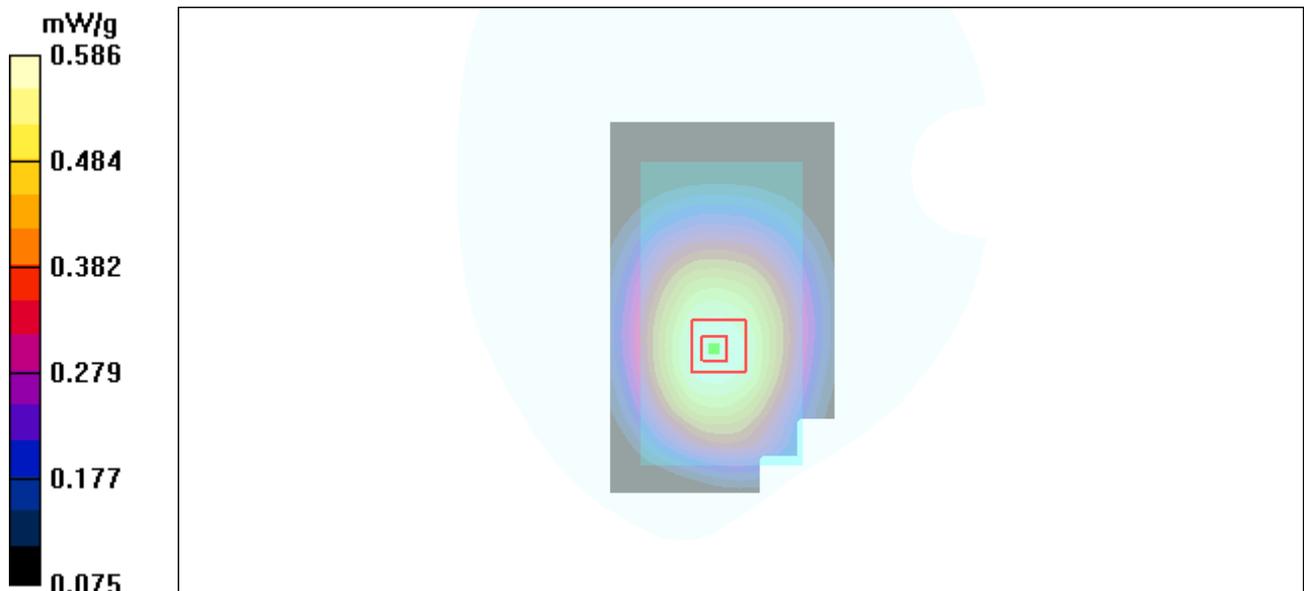
Figure 28 Body, Towards Ground, GSM 850 Channel 190

GSM 850 Towards Ground Low

Date/Time: 3/25/2011 7:30:51 PM

Communication System: GSM 850; Frequency: 824.2 MHz;Duty Cycle: 1:8.3

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.985 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 8.94 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 0.616 W/kg

SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.390 mW/g

Maximum value of SAR (measured) = 0.541 mW/g
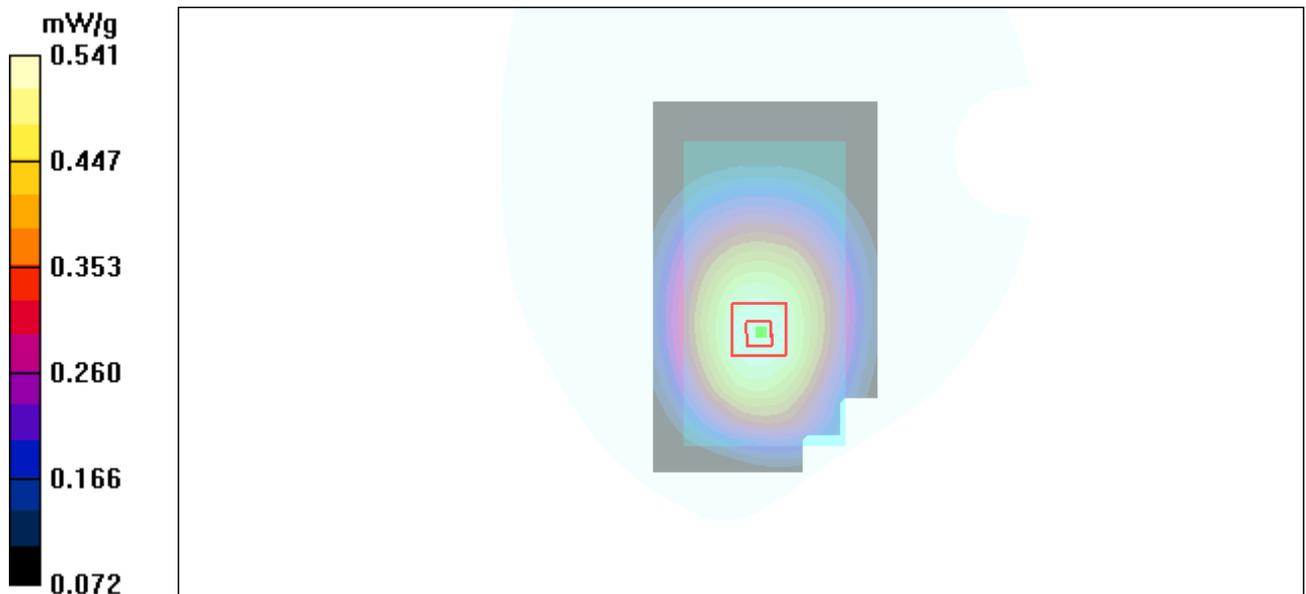
Figure 29 Body, Towards Ground, GSM 850 Channel 128

GSM 850 GPRS (2Txslots) Towards Ground High

Date/Time: 3/25/2011 8:00:28 PM

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

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.537 mW/g

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

Reference Value = 9.01 V/m; Power Drift = -0.067 dB

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.542 mW/g; SAR(10 g) = 0.393 mW/g

Maximum value of SAR (measured) = 0.578 mW/g
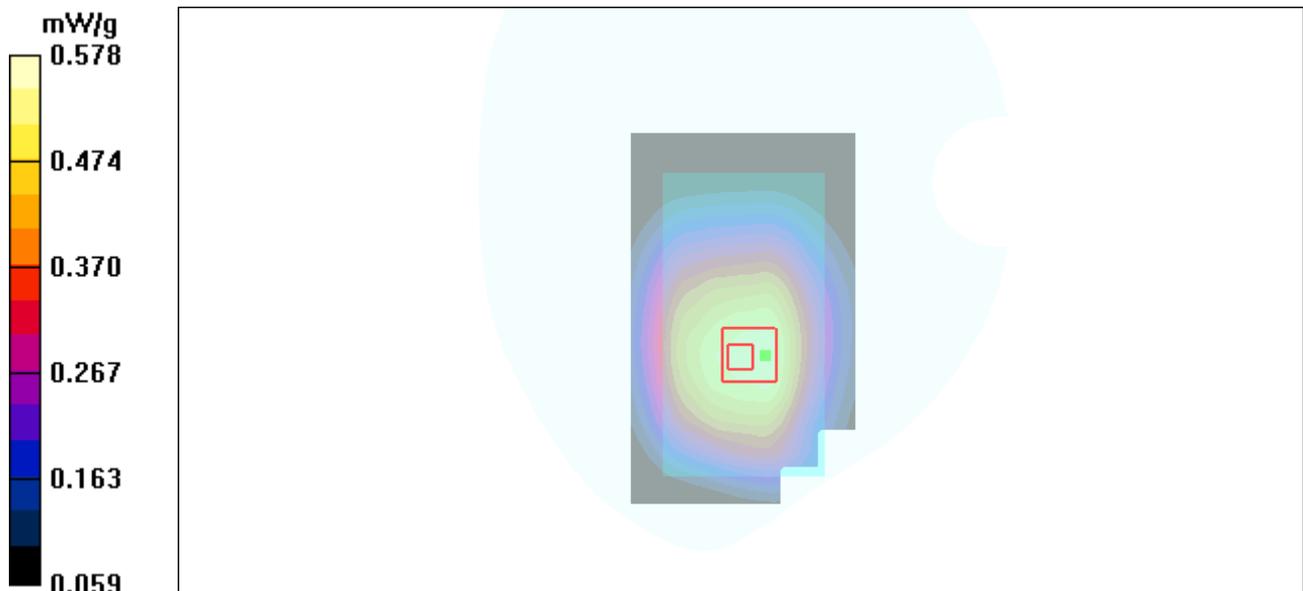
Figure 30 Body, Towards Ground, GSM 850 GPRS (2Txslots) Channel 251

GSM 850 GPRS (2Txslots) Towards Ground Middle

Date/Time: 3/25/2011 7:46:44 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.512 mW/g

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

Reference Value = 8.90 V/m; Power Drift = -0.145 dB

Peak SAR (extrapolated) = 0.589 W/kg

SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.511 mW/g
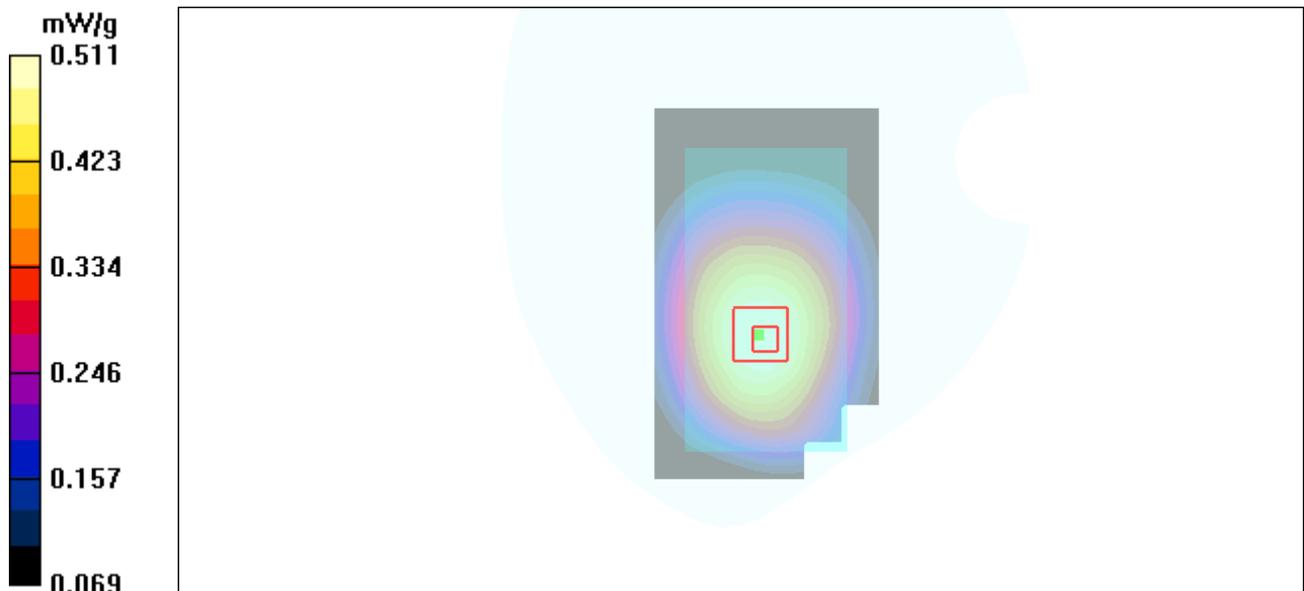
Figure 31 Body, Towards Ground, GSM 850 GPRS (2Txslots) Channel 190

GSM 850 GPRS (2Txslots) Towards Ground Low

Date/Time: 3/25/2011 8:14:38 PM

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

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.985 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.474 mW/g

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

Reference Value = 8.81 V/m; Power Drift = -0.086 dB

Peak SAR (extrapolated) = 0.573 W/kg

SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.354 mW/g

Maximum value of SAR (measured) = 0.510 mW/g
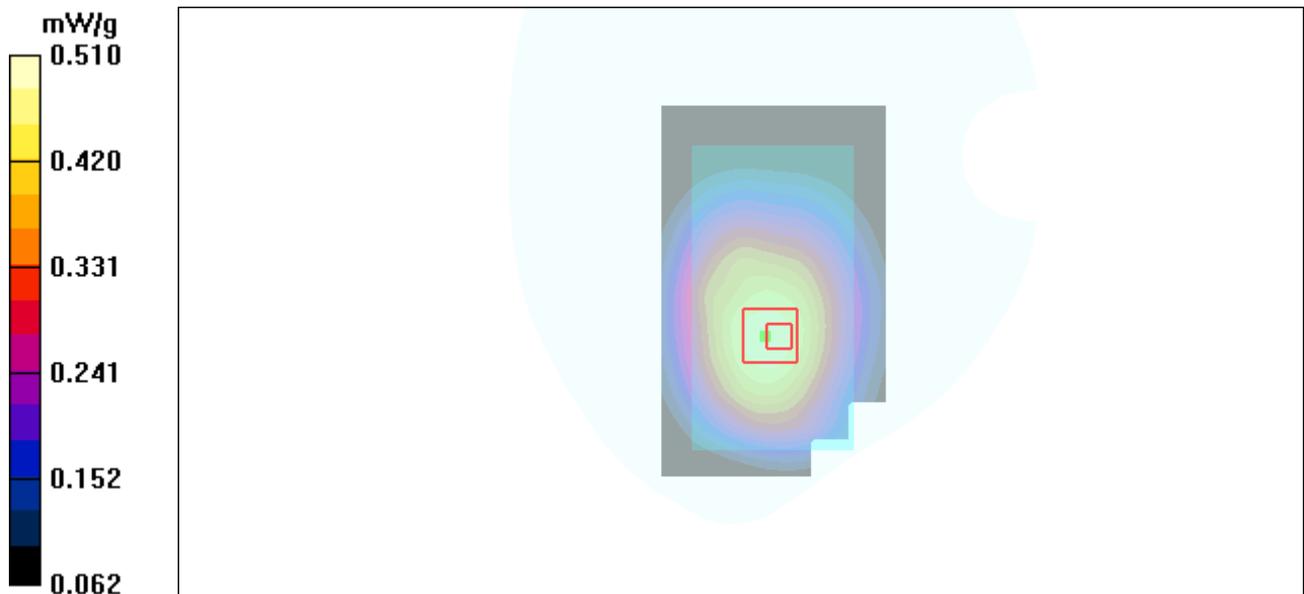
Figure 32 Body, Towards Ground, GSM 850 GPRS (2Txslots) Channel 128

GSM 850 GPRS (3Txslots) Towards Ground Middle

Date/Time: 3/25/2011 8:28:24 PM

Communication System: GSM850 + GPRS(3Up); Frequency: 836.6 MHz;Duty Cycle: 1:2.767

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.494 mW/g

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

Reference Value = 8.26 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 0.492 W/kg

SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.284 mW/g

Maximum value of SAR (measured) = 0.431 mW/g

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

Reference Value = 8.26 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 0.761 W/kg

SAR(1 g) = 0.435 mW/g; SAR(10 g) = 0.327 mW/g

Maximum value of SAR (measured) = 0.449 mW/g
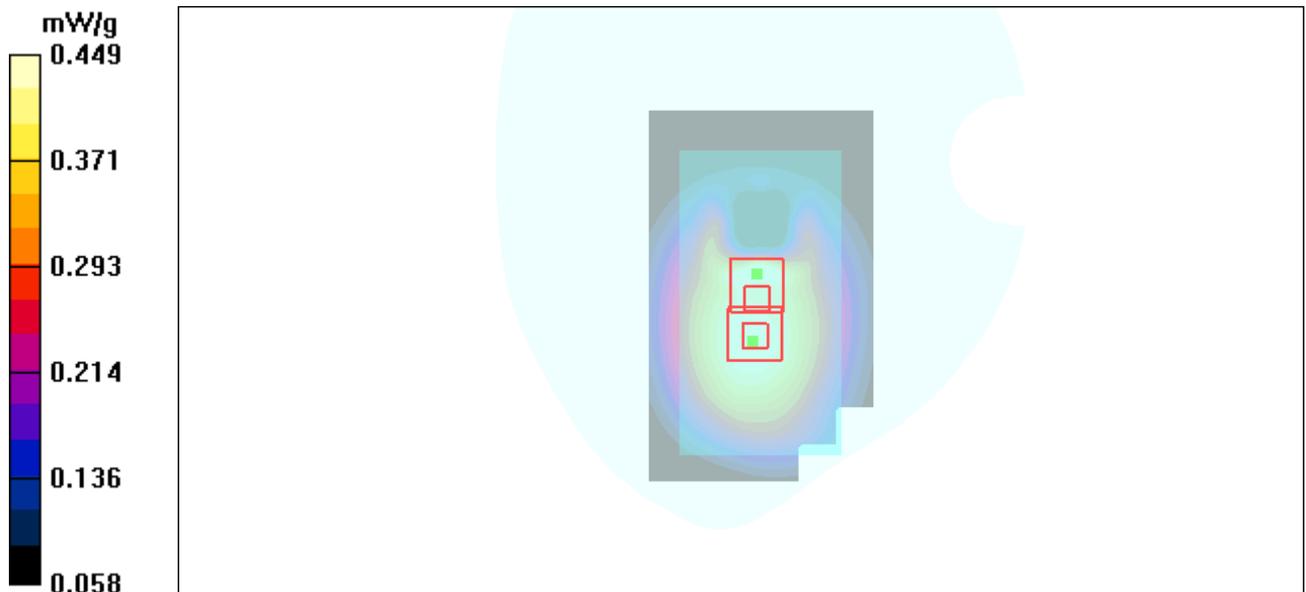
Figure 33 Body, Towards Ground, GSM 850 GPRS (3Txslots) Channel 190

GSM 850 GPRS (4Txslots) Towards Ground Middle

Date/Time: 3/25/2011 8:47:57 PM

Communication System: GSM850 + GPRS(4Up); Frequency: 836.6 MHz;Duty Cycle: 1:2.075

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.410 mW/g

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

Reference Value = 7.96 V/m; Power Drift = -0.094 dB

Peak SAR (extrapolated) = 0.462 W/kg

SAR(1 g) = 0.385 mW/g; SAR(10 g) = 0.294 mW/g

Maximum value of SAR (measured) = 0.403 mW/g
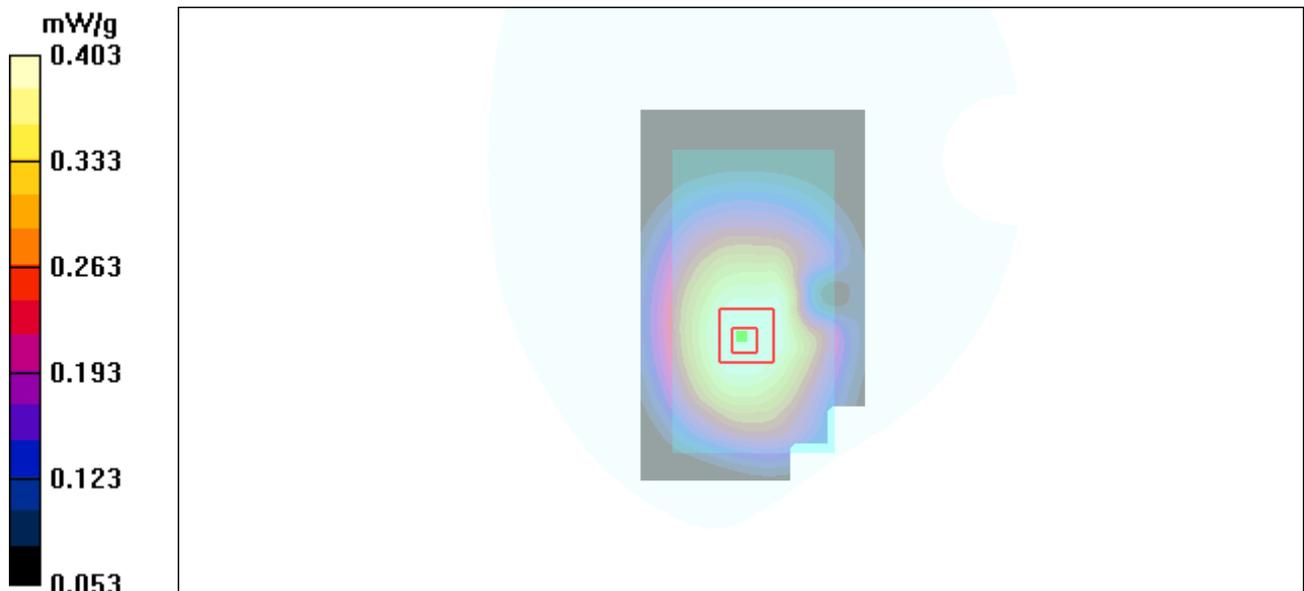
Figure 34 Body, Towards Ground, GSM 850 GPRS (4Txslots) Channel 190

GSM 850 Towards Phantom Middle

Date/Time: 3/25/2011 9:06:20 PM

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 8.64 V/m; Power Drift = 0.037 dB

Peak SAR (extrapolated) = 0.447 W/kg

SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.283 mW/g

Maximum value of SAR (measured) = 0.392 mW/g
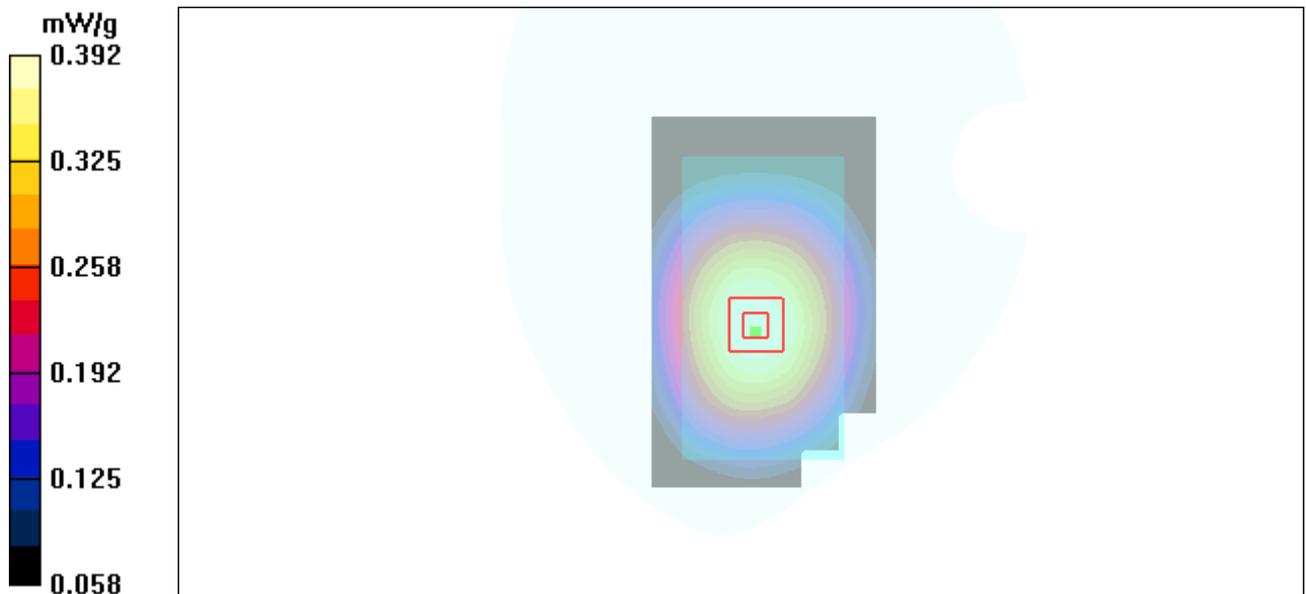
Figure 35 Body, Towards Phantom, GSM 850 Channel 190

GSM 850 GPRS (2Txslots) Towards Phantom Middle

Date/Time: 3/25/2011 9:20:48 PM

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.15

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; $ε_r$ = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.388 mW/g

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

Reference Value = 8.67 V/m; Power Drift = -0.153 dB

Peak SAR (extrapolated) = 0.441 W/kg

SAR(1 g) = 0.366 mW/g; SAR(10 g) = 0.278 mW/g

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

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

Reference Value = 8.67 V/m; Power Drift = -0.153 dB

Peak SAR (extrapolated) = 0.445 W/kg

SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.244 mW/g

Maximum value of SAR (measured) = 0.381 mW/g
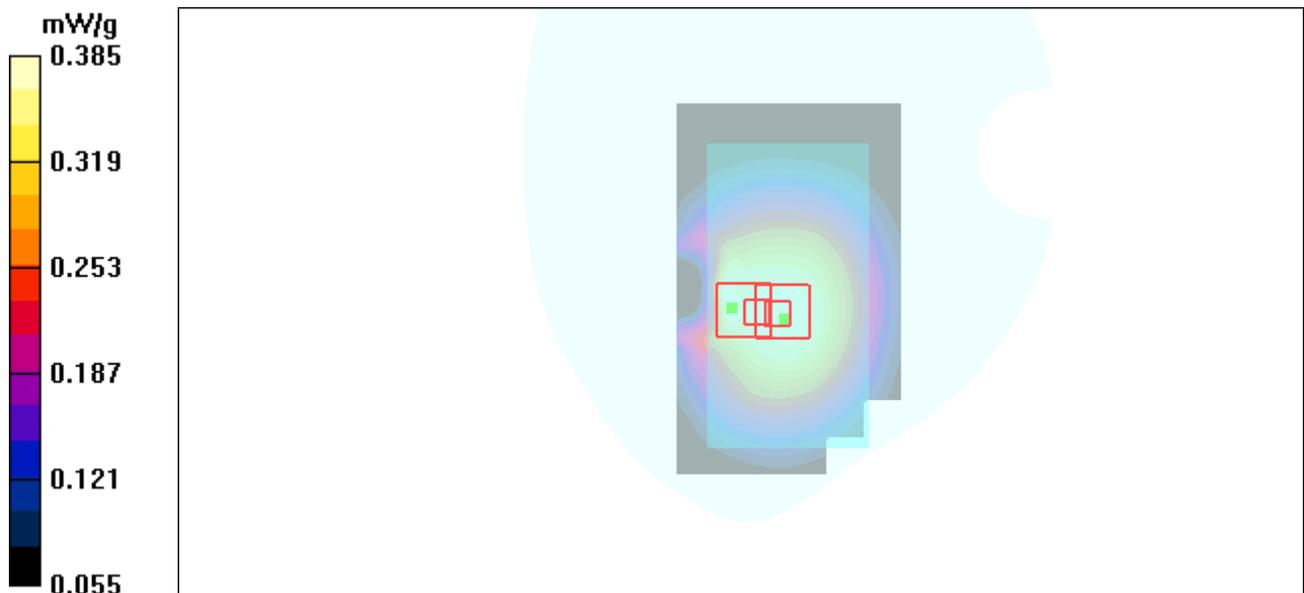
Figure 36 Body, Towards Phantom, GSM 850 GPRS (2Txslots) Channel 190

GSM 850 with Earphone Towards Ground High

Date/Time: 3/25/2011 9:42:07 PM

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.560 mW/g

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

Reference Value = 6.72 V/m; Power Drift = 0.040 dB

Peak SAR (extrapolated) = 0.668 W/kg

SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.395 mW/g

Maximum value of SAR (measured) = 0.565 mW/g
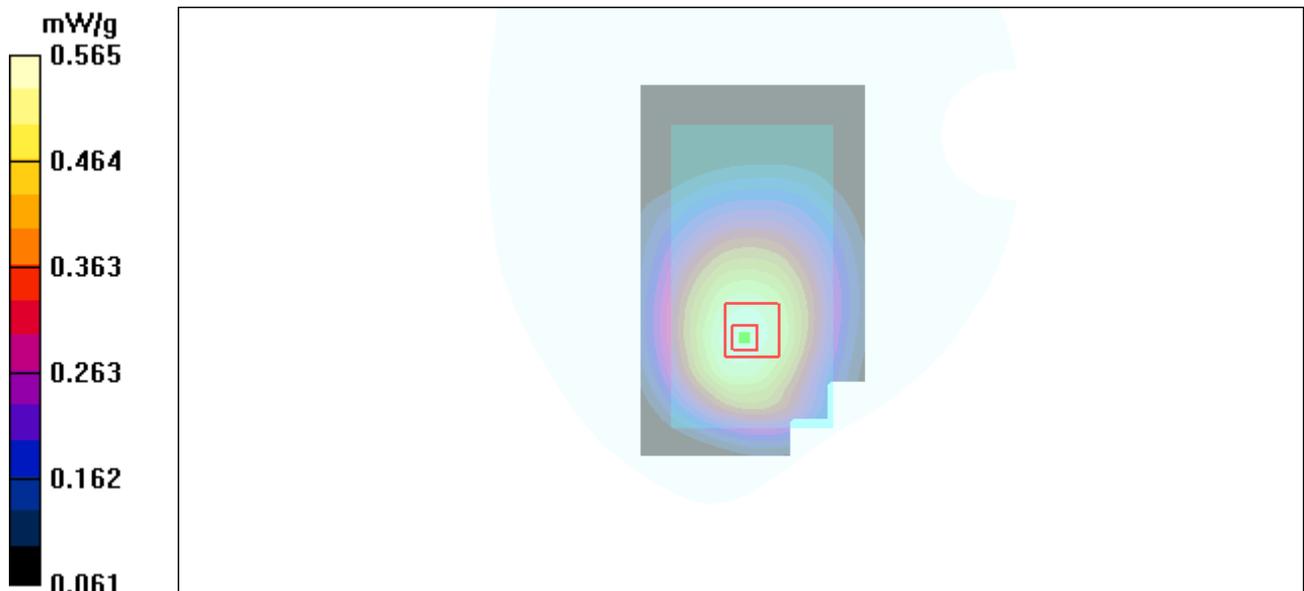
Figure 37 Body with Earphone, Towards Ground, GSM 850 Channel 251

GSM 850 EGPRS (1Txslot) Towards Ground High

Date/Time: 3/25/2011 10:00:04 PM

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

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.629 mW/g

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

Reference Value = 9.67 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 0.693 W/kg

SAR(1 g) = 0.575 mW/g; SAR(10 g) = 0.434 mW/g

Maximum value of SAR (measured) = 0.609 mW/g
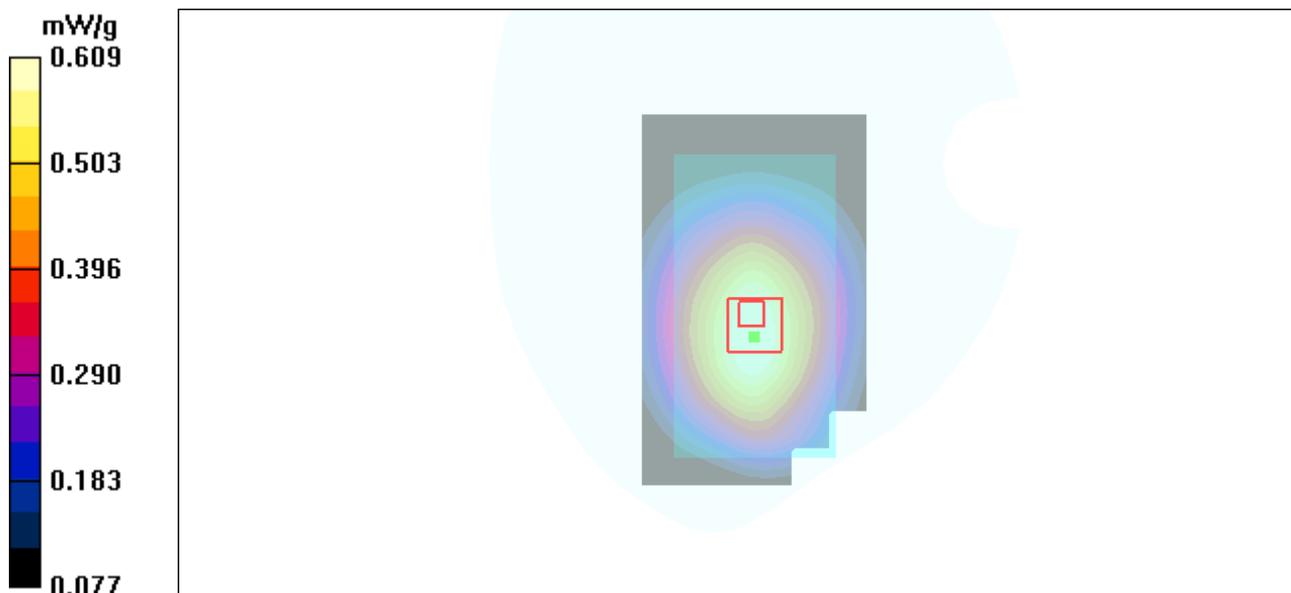
Figure 38 Body, Towards Ground, GSM 850 EGPRS (1Txslot) Channel 251

GSM 1900 Left Cheek Middle

Date/Time: 3/26/2011 3:25:41 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.177 mW/g

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

Reference Value = 3.41 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 0.207 W/kg

SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.109 mW/g

Maximum value of SAR (measured) = 0.174 mW/g

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

Reference Value = 3.41 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 0.226 W/kg

SAR(1 g) = 0.161 mW/g; SAR(10 g) = 0.105 mW/g

Maximum value of SAR (measured) = 0.183 mW/g
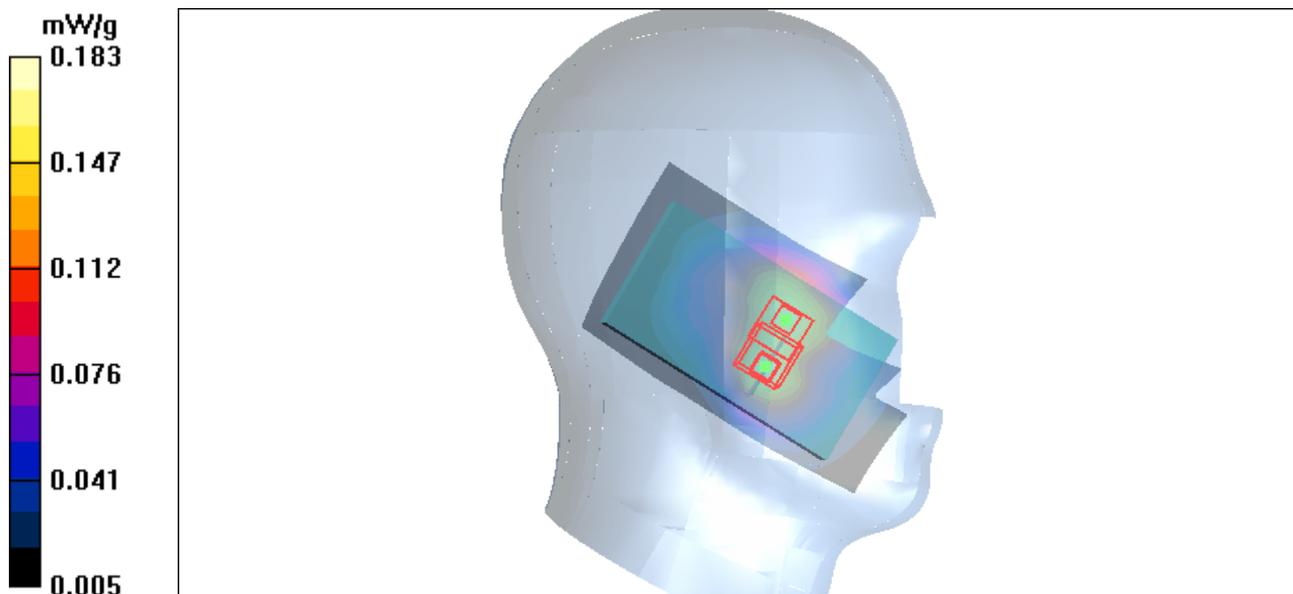
Figure 39 Left Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Left Tilt Middle

Date/Time: 3/26/2011 3:49:54 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 6.47 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.146 W/kg

SAR(1 g) = 0.109 mW/g; SAR(10 g) = 0.071 mW/g

Maximum value of SAR (measured) = 0.120 mW/g
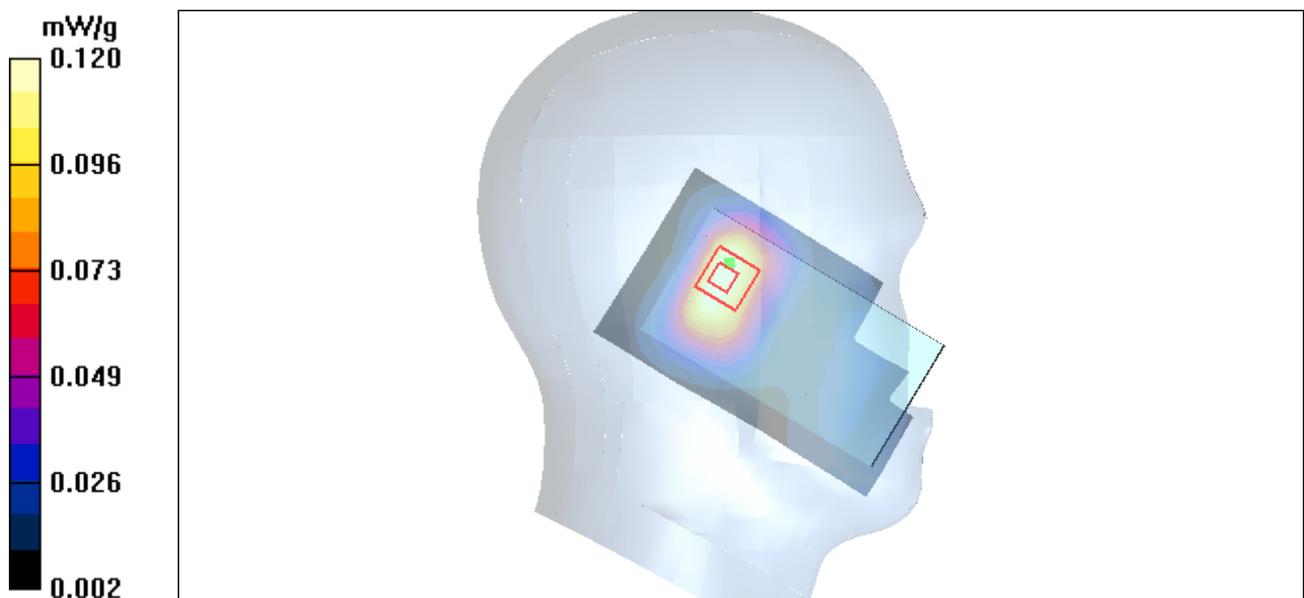
Figure 40 Left Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 Right Cheek High

Date/Time: 3/26/2011 4:22:00 AM

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

Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; $ε_r$ = 40; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.300 mW/g

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

Reference Value = 4.20 V/m; Power Drift = -0.119 dB

Peak SAR (extrapolated) = 0.304 W/kg

SAR(1 g) = 0.207 mW/g; SAR(10 g) = 0.133 mW/g

Maximum value of SAR (measured) = 0.256 mW/g

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

Reference Value = 4.20 V/m; Power Drift = -0.119 dB

Peak SAR (extrapolated) = 0.364 W/kg

SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.173 mW/g

Maximum value of SAR (measured) = 0.299 mW/g
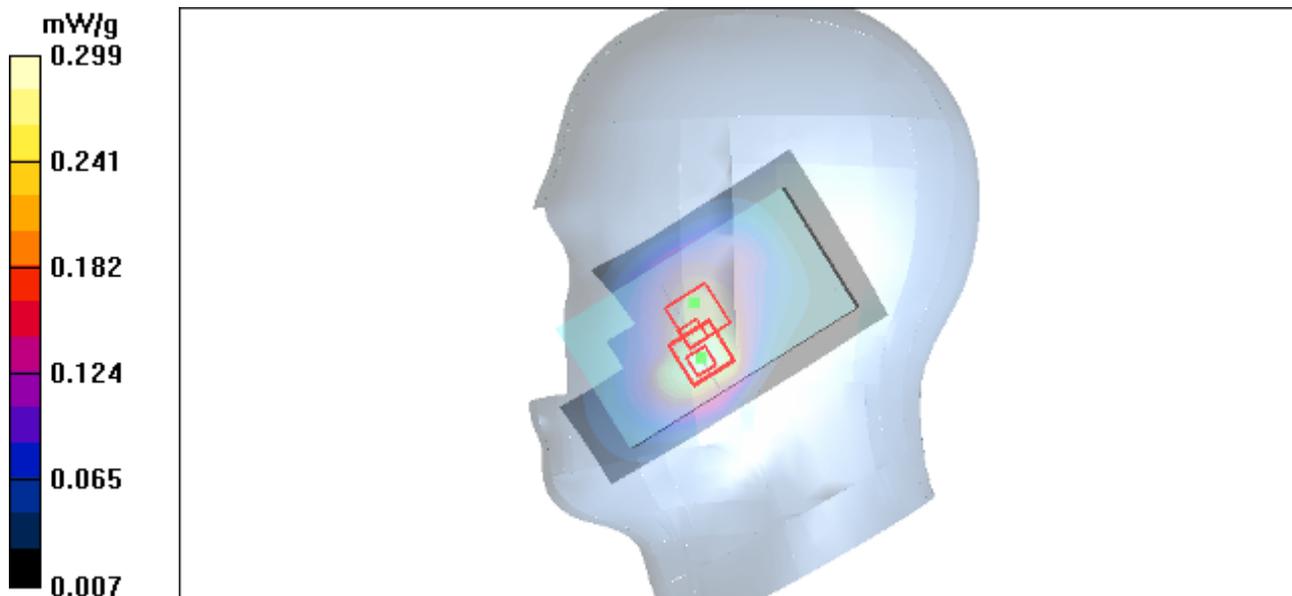
Figure 41 Right Hand Touch Cheek GSM 1900 Channel 810

GSM 1900 Right Cheek Middle

Date/Time: 3/26/2011 4:07:48 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.262 mW/g

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

Reference Value = 3.99 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 0.313 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.153 mW/g

Maximum value of SAR (measured) = 0.262 mW/g
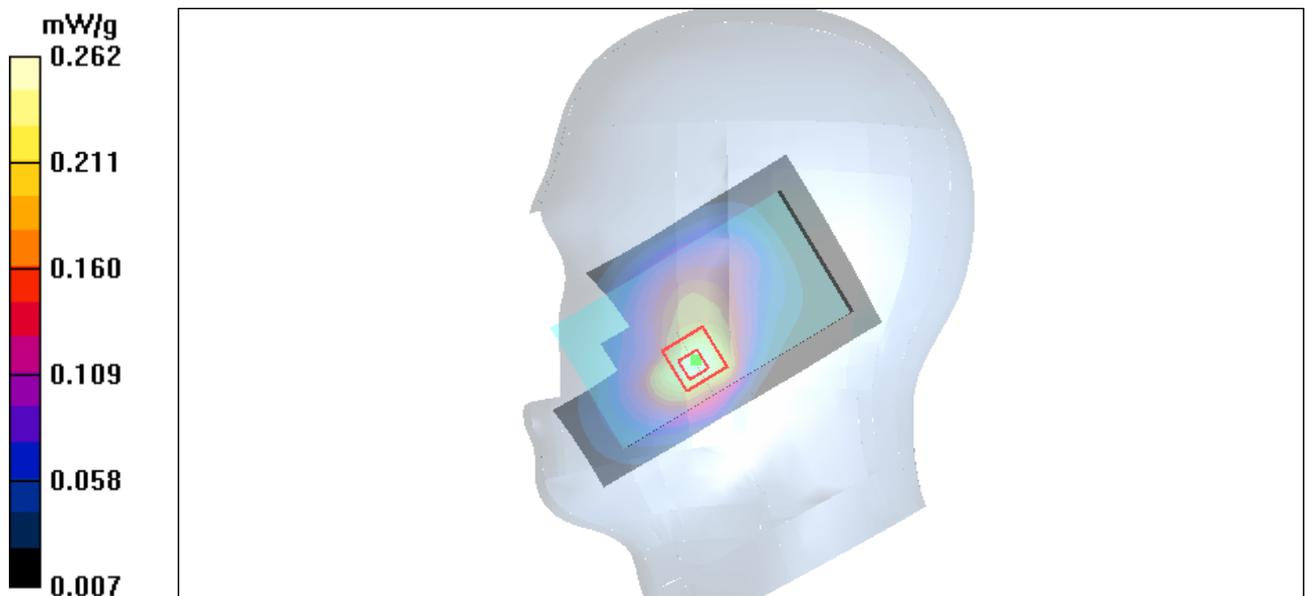
Figure 42 Right Hand Touch Cheek GSM 1900 Channel 661

GSM 1900 Right Cheek Low

Date/Time: 3/26/2011 4:42:47 AM

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

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.38 mho/m; $ε_r$ = 40.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.228 mW/g

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

Reference Value = 3.75 V/m; Power Drift = 0.072 dB

Peak SAR (extrapolated) = 0.277 W/kg

SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.136 mW/g

Maximum value of SAR (measured) = 0.230 mW/g
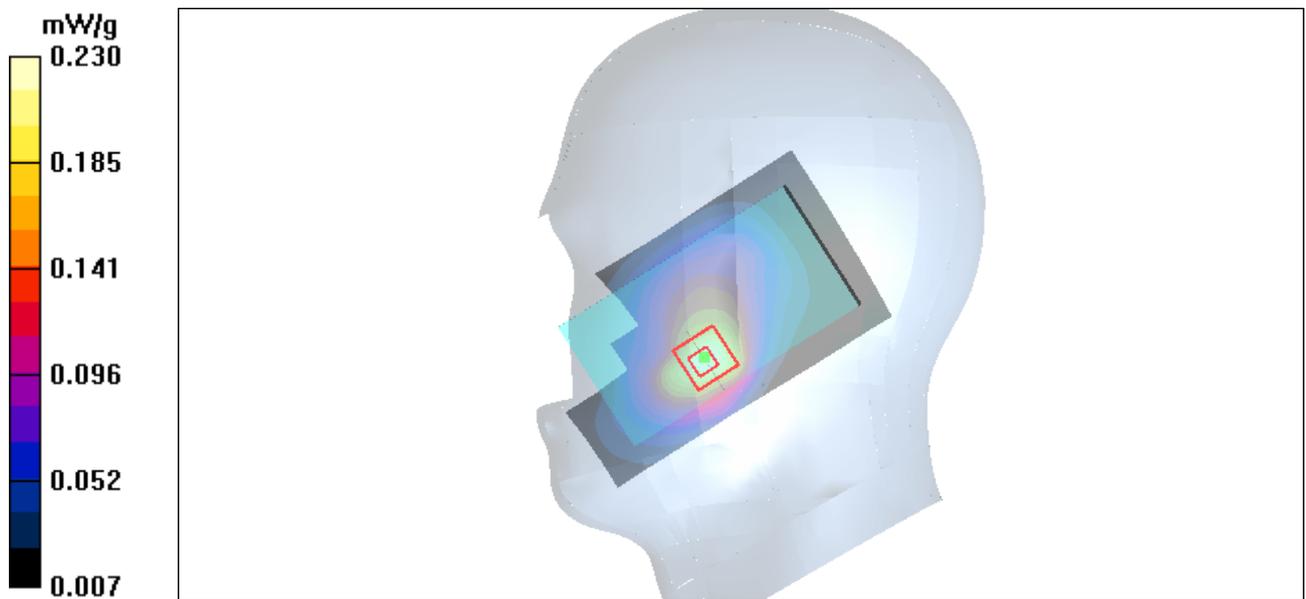
Figure 43 Right Hand Touch Cheek GSM 1900 Channel 512

GSM 1900 Right Tilt Middle

Date/Time: 3/26/2011 4:59:40 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.149 mW/g

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

Reference Value = 7.66 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 0.172 W/kg

SAR(1 g) = 0.129 mW/g; SAR(10 g) = 0.084 mW/g

Maximum value of SAR (measured) = 0.140 mW/g
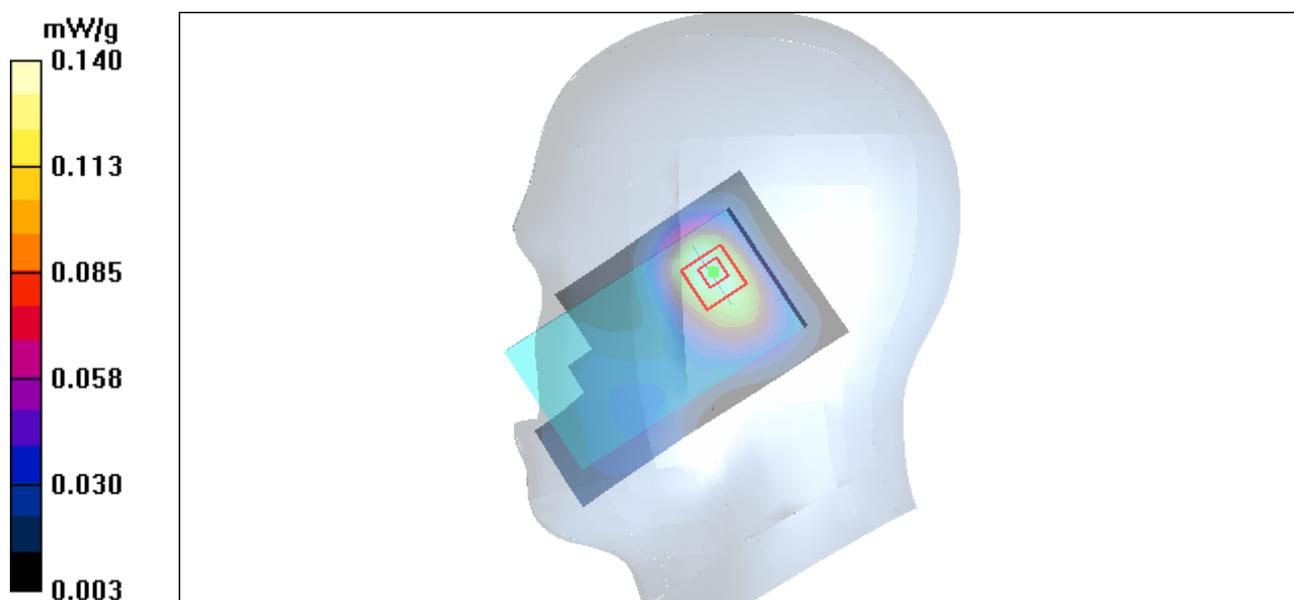
Figure 44 Right Hand Tilt 15° GSM 1900 Channel 661

GSM 1900 GPRS (2Txslots) Left Cheek Middle

Date/Time: 3/26/2011 1:06:39 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.180 mW/g

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

Reference Value = 3.48 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 0.214 W/kg

SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 0.177 mW/g

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

Reference Value = 3.48 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.108 mW/g

Maximum value of SAR (measured) = 0.171 mW/g
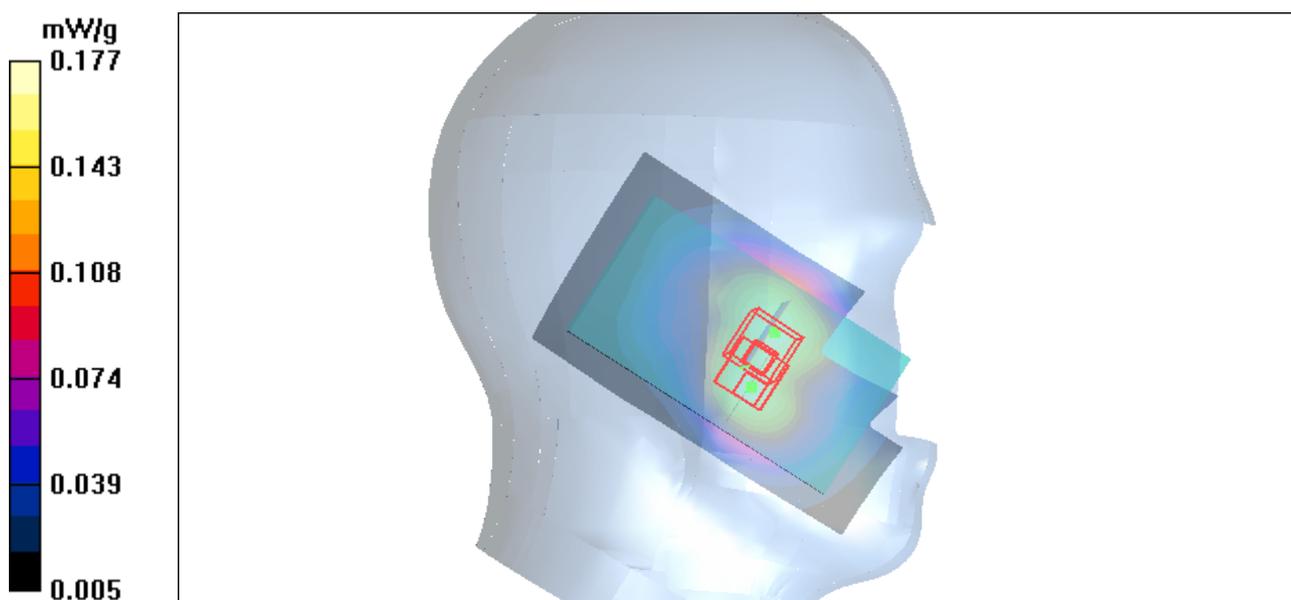
Figure 45 Left Hand Touch Cheek GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Left Tilt Middle

Date/Time: 3/26/2011 1:28:32 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.121 mW/g

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

Reference Value = 6.01 V/m; Power Drift = 0.096 dB

Peak SAR (extrapolated) = 0.140 W/kg

SAR(1 g) = 0.106 mW/g; SAR(10 g) = 0.069 mW/g

Maximum value of SAR (measured) = 0.113 mW/g
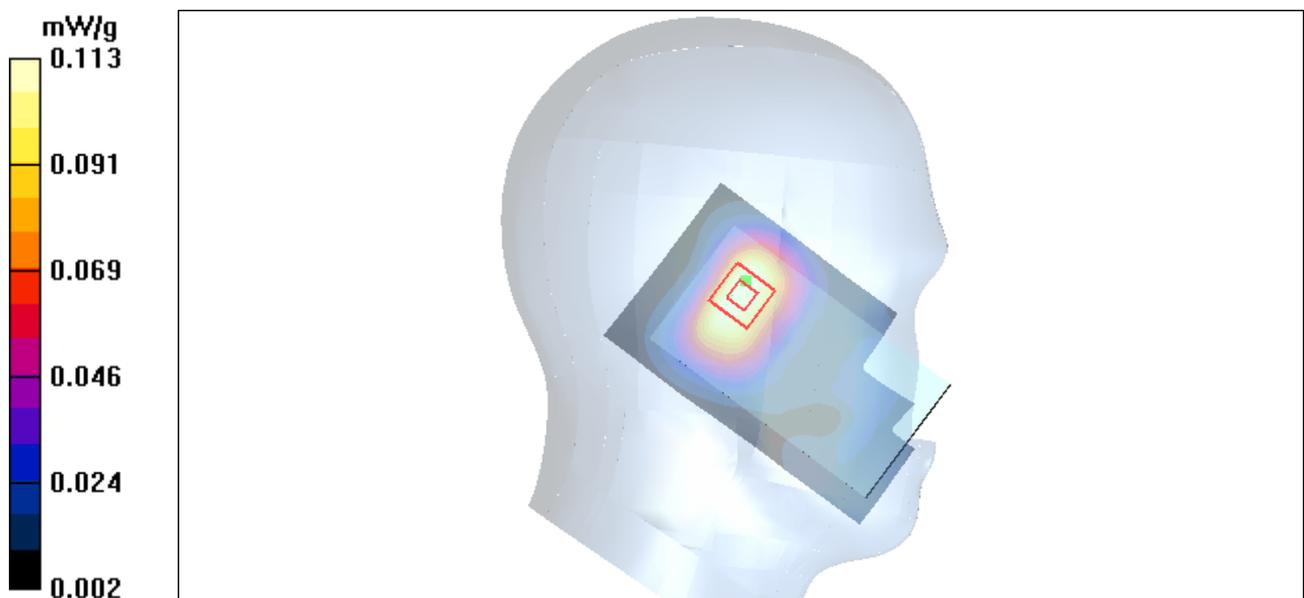
Figure 46 Left Hand Tilt 15° GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Right Cheek High

Date/Time: 3/26/2011 12:04:40 AM

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

Medium parameters used: f = 1910 MHz; σ = 1.43 mho/m; ε_r = 40; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.394 mW/g

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

Reference Value = 3.71 V/m; Power Drift = -0.135 dB

Peak SAR (extrapolated) = 0.724 W/kg

SAR(1 g) = 0.353 mW/g; SAR(10 g) = 0.214 mW/g

Maximum value of SAR (measured) = 0.384 mW/g
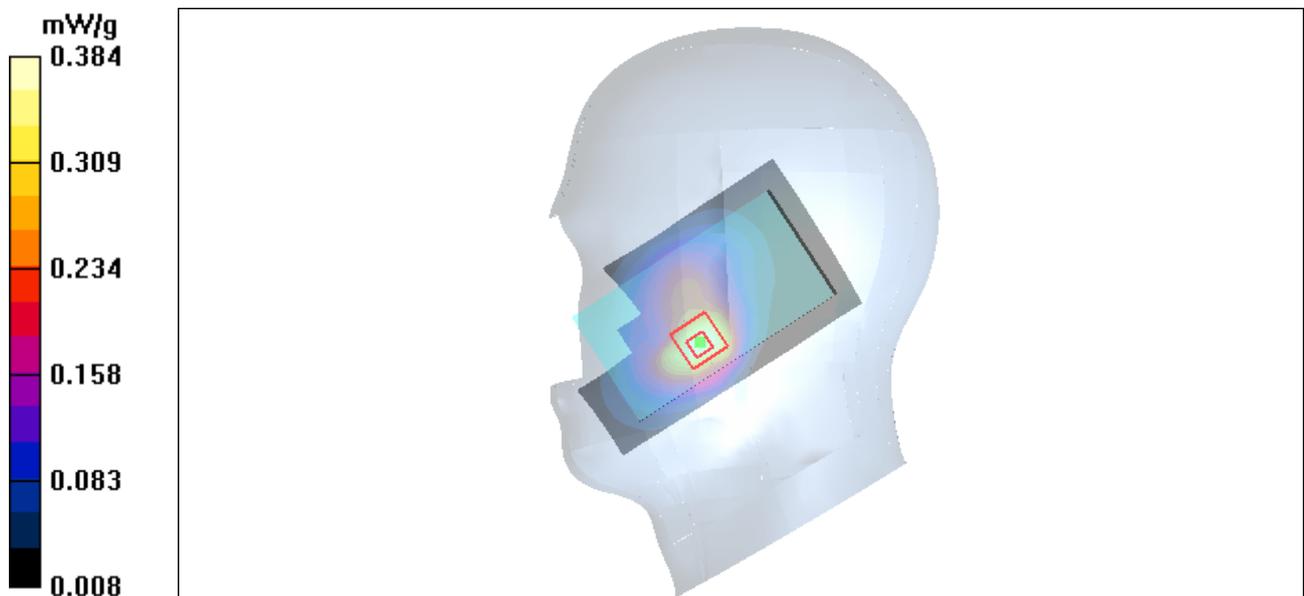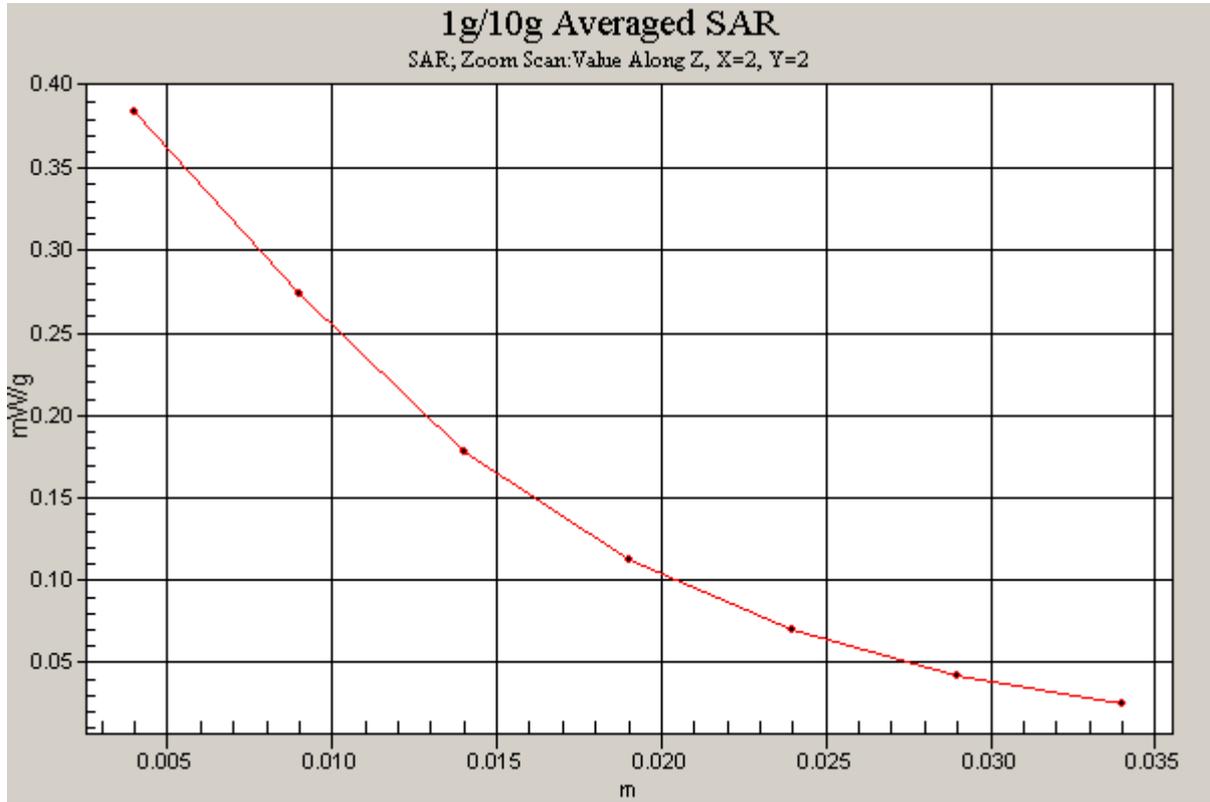
Figure 47 Right Hand Touch Cheek GSM 1900 GPRS (2Txslots) Channel 810

GSM 1900 GPRS (2Txslots) Right Cheek Middle

Date/Time: 3/25/2011 7:50:26 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.312 mW/g

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

Reference Value = 3.13 V/m; Power Drift = 0.090 dB

Peak SAR (extrapolated) = 0.389 W/kg

SAR(1 g) = 0.285 mW/g; SAR(10 g) = 0.176 mW/g

Maximum value of SAR (measured) = 0.316 mW/g
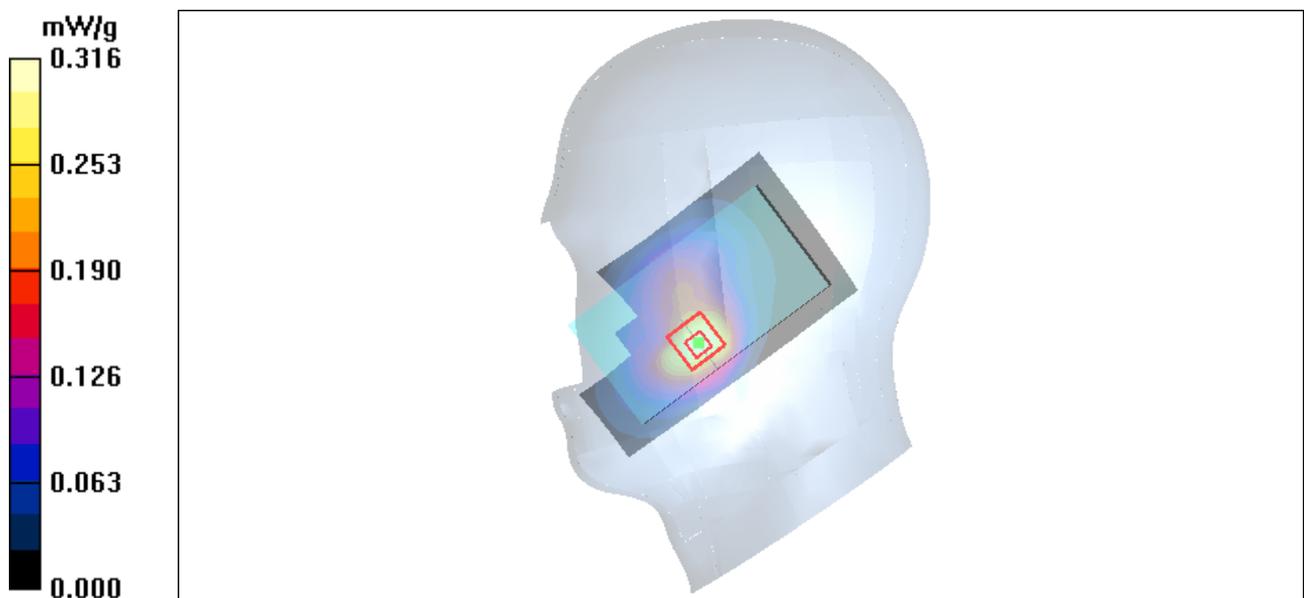
Figure 48 Right Hand Touch Cheek GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Right Cheek Low

Date/Time: 3/26/2011 12:18:36 AM

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

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.38 mho/m; $ε_r$ = 40.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.310 mW/g

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

Reference Value = 3.33 V/m; Power Drift = 0.146 dB

Peak SAR (extrapolated) = 0.361 W/kg

SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.176 mW/g

Maximum value of SAR (measured) = 0.308 mW/g
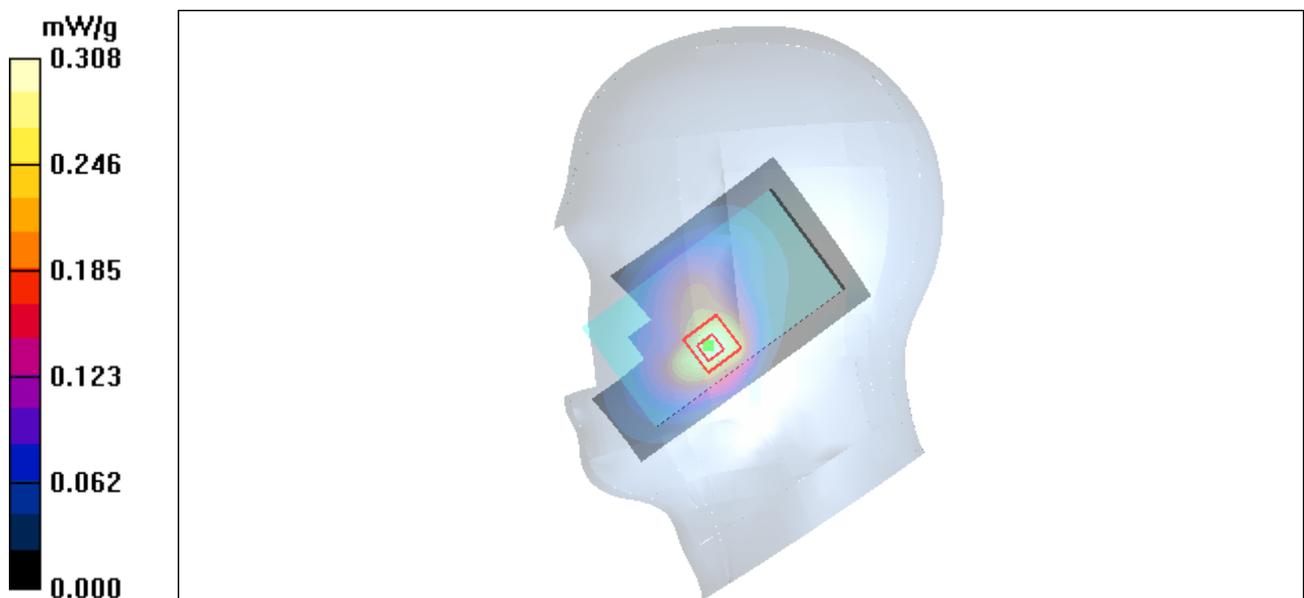
Figure 49 Right Hand Touch Cheek GSM 1900 GPRS (2Txslots) Channel 512

GSM 1900 GPRS (2Txslots) Right Tilt Middle

Date/Time: 3/26/2011 12:33:19 AM

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

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.144 mW/g

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

Reference Value = 7.99 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 0.164 W/kg

SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.080 mW/g

Maximum value of SAR (measured) = 0.133 mW/g
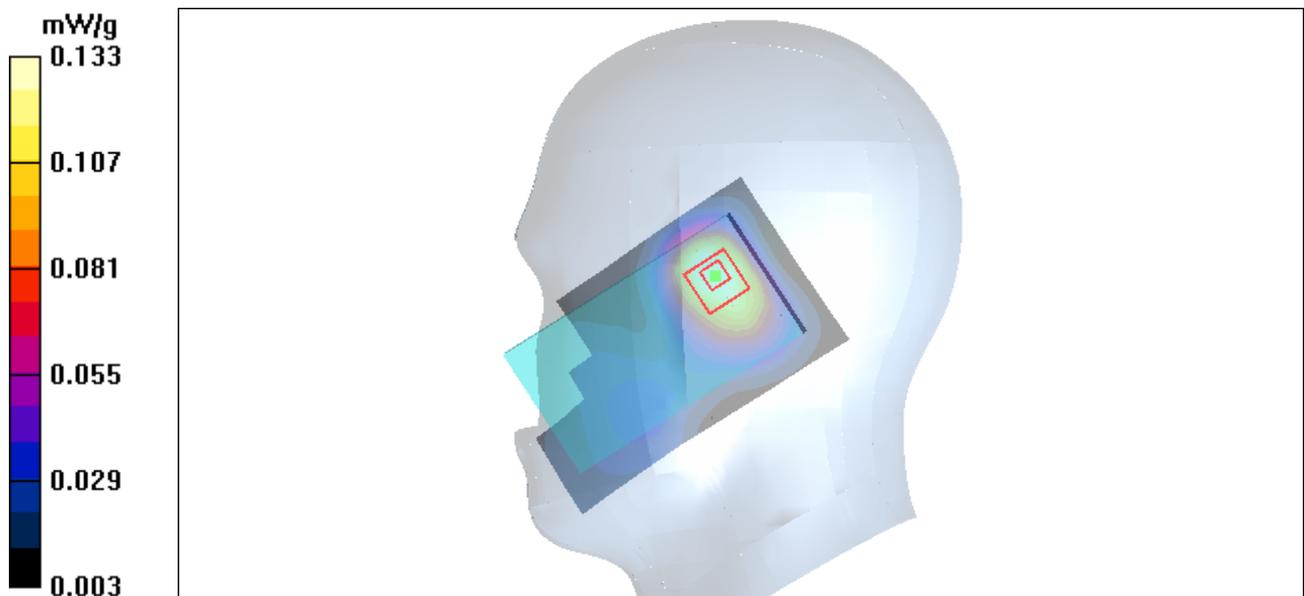
Figure 50 Right Hand Tilt 15° GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 Towards Ground High

Date/Time: 3/27/2011 4:18:32 PM

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

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.275 mW/g

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

Reference Value = 7.40 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 0.429 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.140 mW/g

Maximum value of SAR (measured) = 0.253 mW/g

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

Reference Value = 7.40 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 0.391 W/kg

SAR(1 g) = 0.211 mW/g; SAR(10 g) = 0.120 mW/g

Maximum value of SAR (measured) = 0.238 mW/g
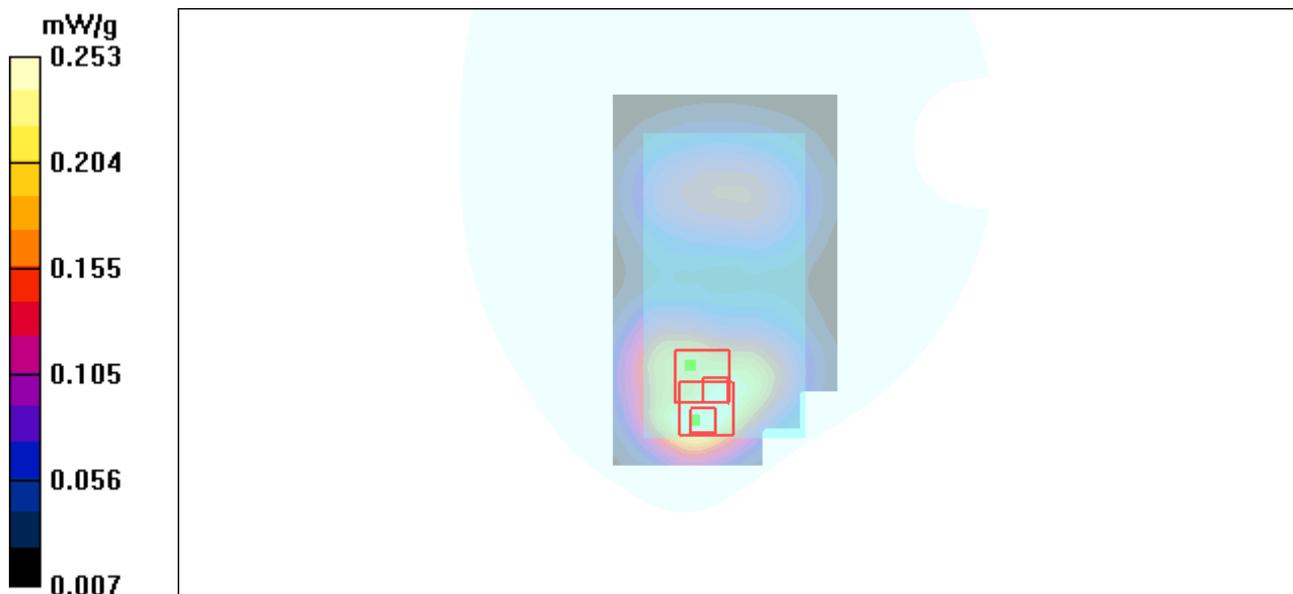
Figure 51 Body, Towards Ground, GSM 1900 Channel 810

GSM 1900 Towards Ground Middle

Date/Time: 3/27/2011 1:44:54 PM

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃　　　Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.265 mW/g

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

Reference Value = 7.30 V/m; Power Drift = -0.047 dB

Peak SAR (extrapolated) = 0.410 W/kg

SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.133 mW/g

Maximum value of SAR (measured) = 0.241 mW/g
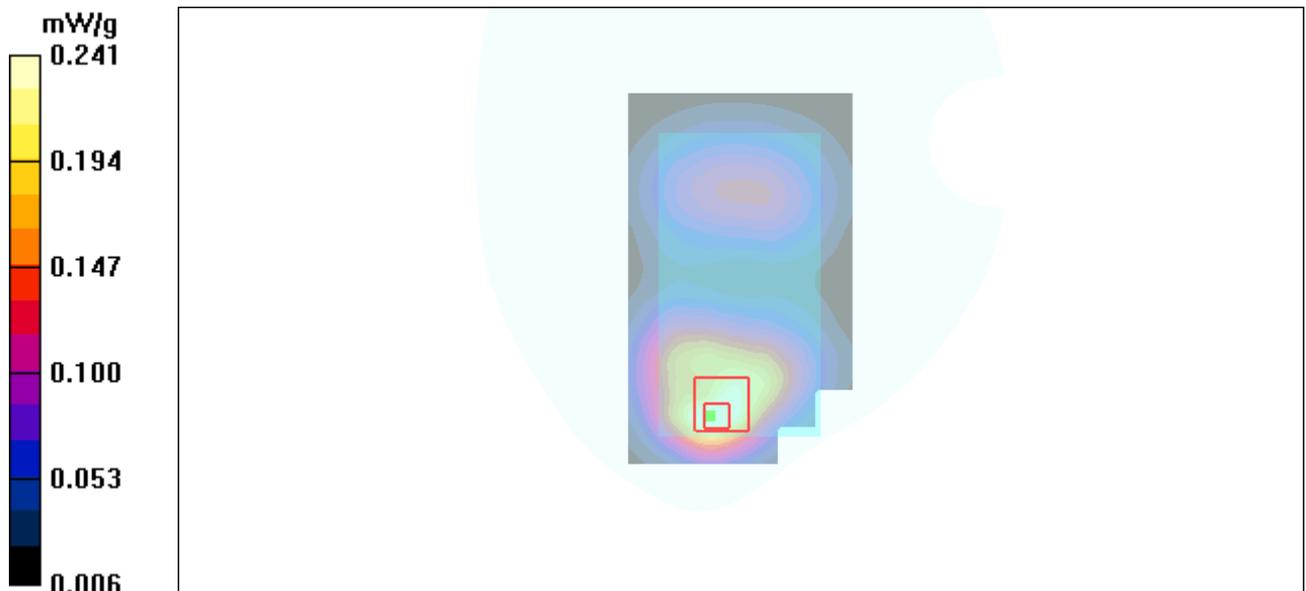
Figure 52 Body, Towards Ground, GSM 1900 Channel 661

GSM 1900 Towards Ground Low

Date/Time: 3/27/2011 4:39:12 PM

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

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.211 mW/g

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

Reference Value = 5.71 V/m; Power Drift = 0.080 dB

Peak SAR (extrapolated) = 0.315 W/kg

SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.111 mW/g

Maximum value of SAR (measured) = 0.195 mW/g
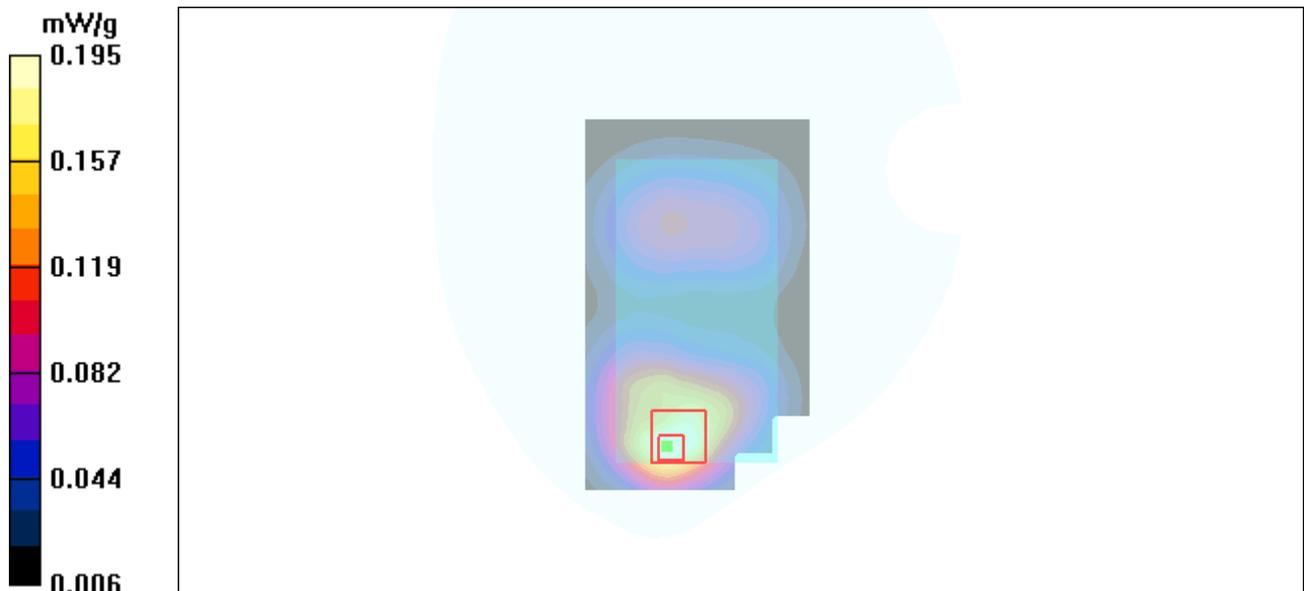
Figure 53 Body, Towards Ground, GSM 1900 Channel 661

GSM 1900 GPRS (2Txslots) Towards Ground High

Date/Time: 3/27/2011 5:26:54 PM

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

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.232 mW/g

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

Reference Value = 6.63 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.355 W/kg

SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.118 mW/g

Maximum value of SAR (measured) = 0.213 mW/g
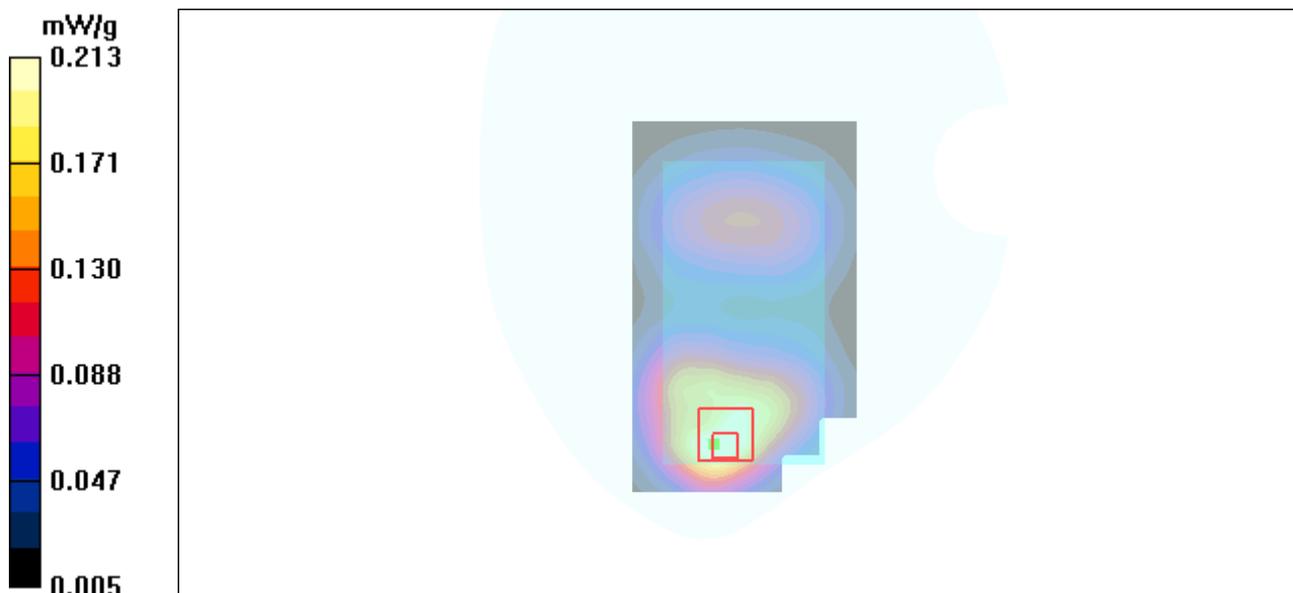
Figure 54 Body, Towards Ground, GSM 1900 GPRS (2Txslots) Channel 810

GSM 1900 GPRS (2Txslots) Towards Ground Middle

Date/Time: 3/27/2011 2:00:07 PM

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.229 mW/g

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

Reference Value = 6.63 V/m; Power Drift = -0.052 dB

Peak SAR (extrapolated) = 0.362 W/kg

SAR(1 g) = 0.201 mW/g; SAR(10 g) = 0.117 mW/g

Maximum value of SAR (measured) = 0.213 mW/g
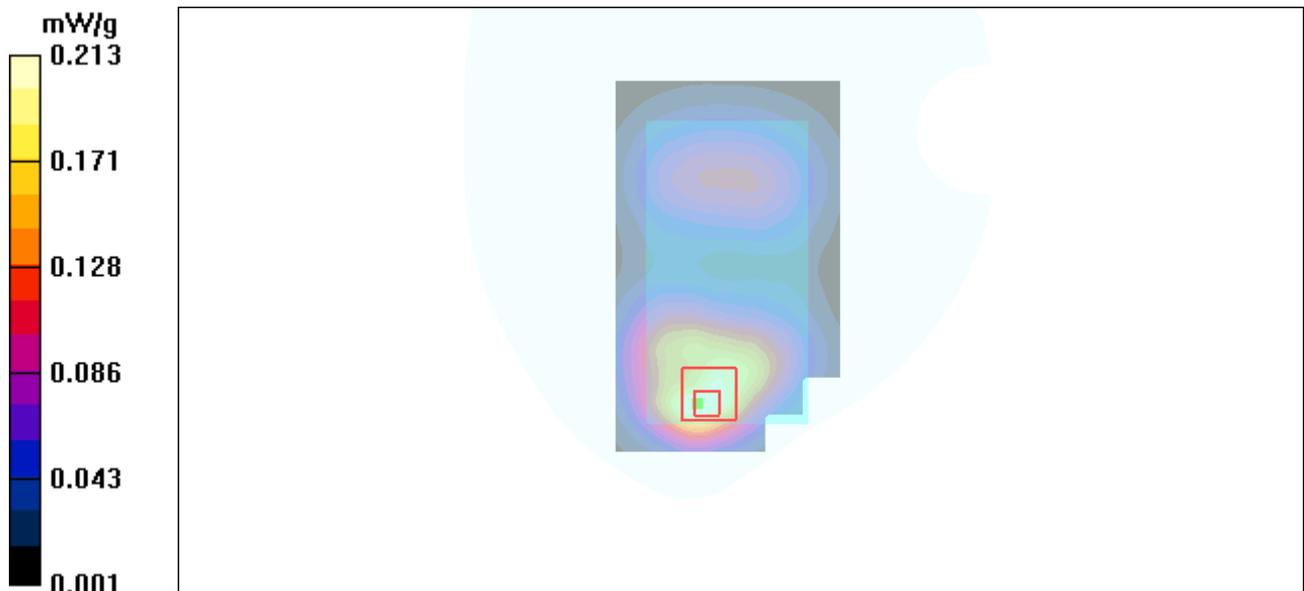
Figure 55 Body, Towards Ground, GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Towards Ground Low

Date/Time: 3/27/2011 5:12:44 PM

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

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; $ε_r$ = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.209 mW/g

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

Reference Value = 5.69 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 0.310 W/kg

SAR(1 g) = 0.182 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 0.195 mW/g
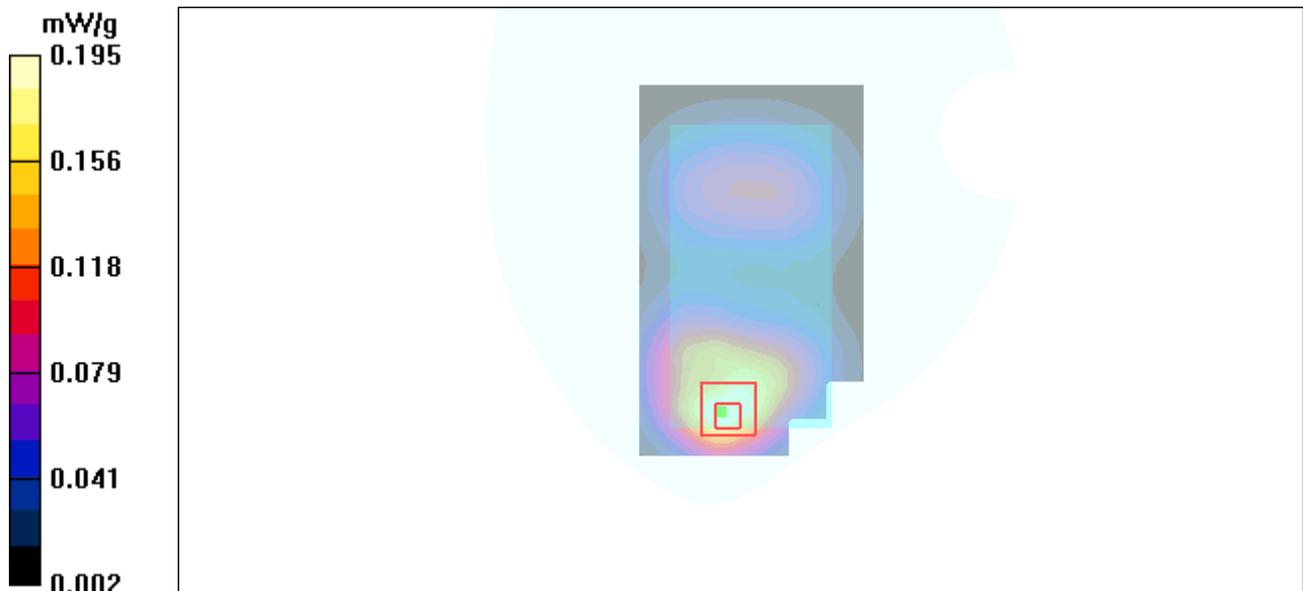
Figure 56 Body, Towards Ground, GSM 1900 GPRS (2Txslots) Channel 512

GSM 1900 GPRS (3Txslots) Towards Ground Middle

Date/Time: 3/27/2011 2:14:04 PM

Communication System: PCS 1900+GPRS(3Up); Frequency: 1880 MHz;Duty Cycle: 1:2.767

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.219 mW/g

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

Reference Value = 6.32 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 0.338 W/kg

SAR(1 g) = 0.189 mW/g; SAR(10 g) = 0.111 mW/g

Maximum value of SAR (measured) = 0.200 mW/g
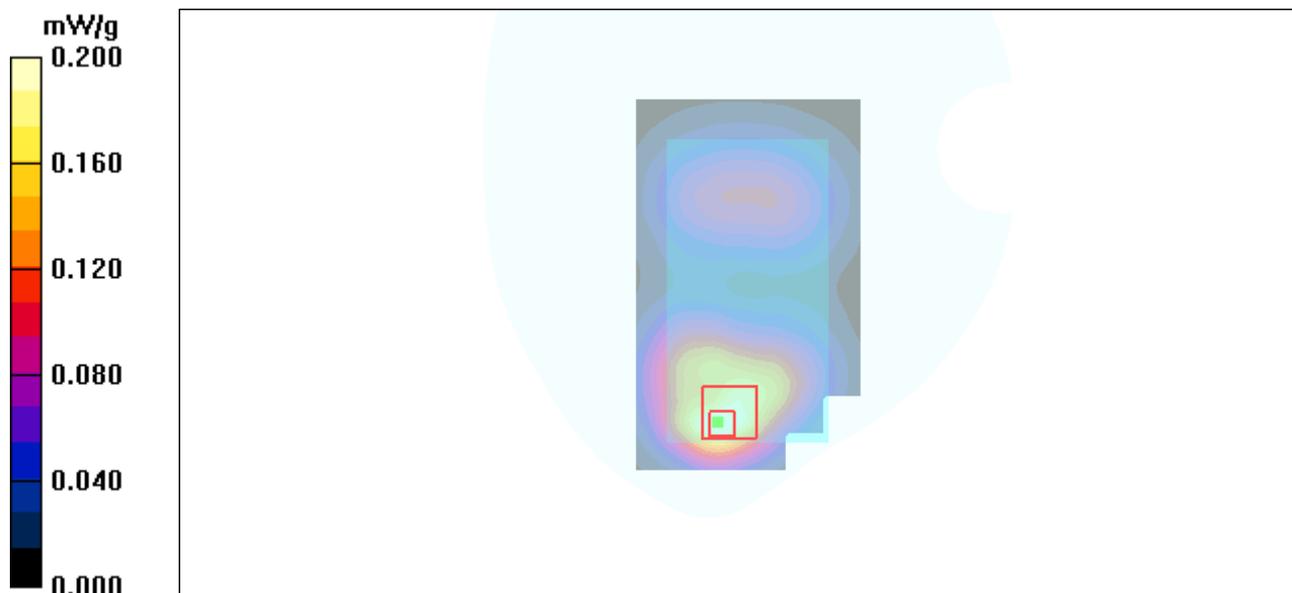
Figure 57 Body, Towards Ground, GSM 1900 GPRS (3Txslots) Channel 661

GSM 1900 GPRS (4Txslots) Towards Ground Middle

Date/Time: 3/27/2011 2:28:55 PM

Communication System: PCS 1900+GPRS(4Up); Frequency: 1880 MHz;Duty Cycle: 1:2.075

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 6.07 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.324 W/kg

SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.096 mW/g

Maximum value of SAR (measured) = 0.186 mW/g

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

Reference Value = 6.07 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.289 W/kg

SAR(1 g) = 0.157 mW/g; SAR(10 g) = 0.092 mW/g

Maximum value of SAR (measured) = 0.178 mW/g
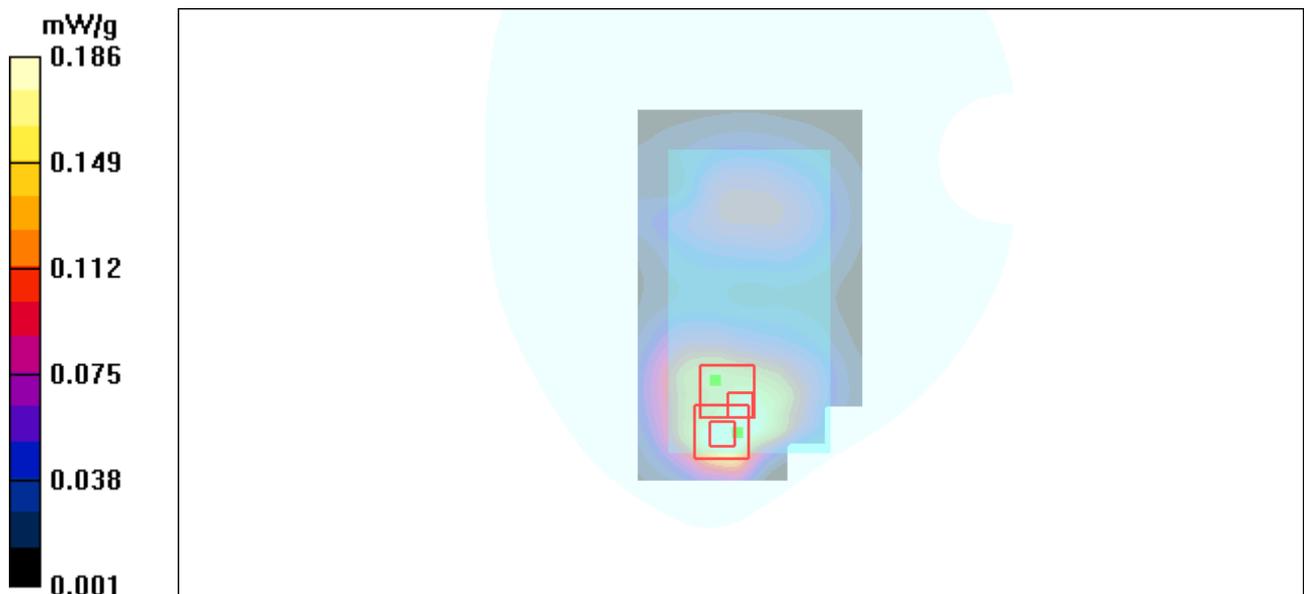
Figure 58 Body, Towards Ground, GSM 1900 GPRS (4Txslots) Channel 661

GSM 1900 Towards Phantom Middle

Date/Time: 3/27/2011 3:11:57 PM

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; $ε_r$ = 53.2; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.182 mW/g

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

Reference Value = 6.68 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 0.298 W/kg

SAR(1 g) = 0.166 mW/g; SAR(10 g) = 0.102 mW/g

Maximum value of SAR (measured) = 0.174 mW/g

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

Reference Value = 6.68 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 0.232 W/kg

SAR(1 g) = 0.140 mW/g; SAR(10 g) = 0.090 mW/g

Maximum value of SAR (measured) = 0.148 mW/g
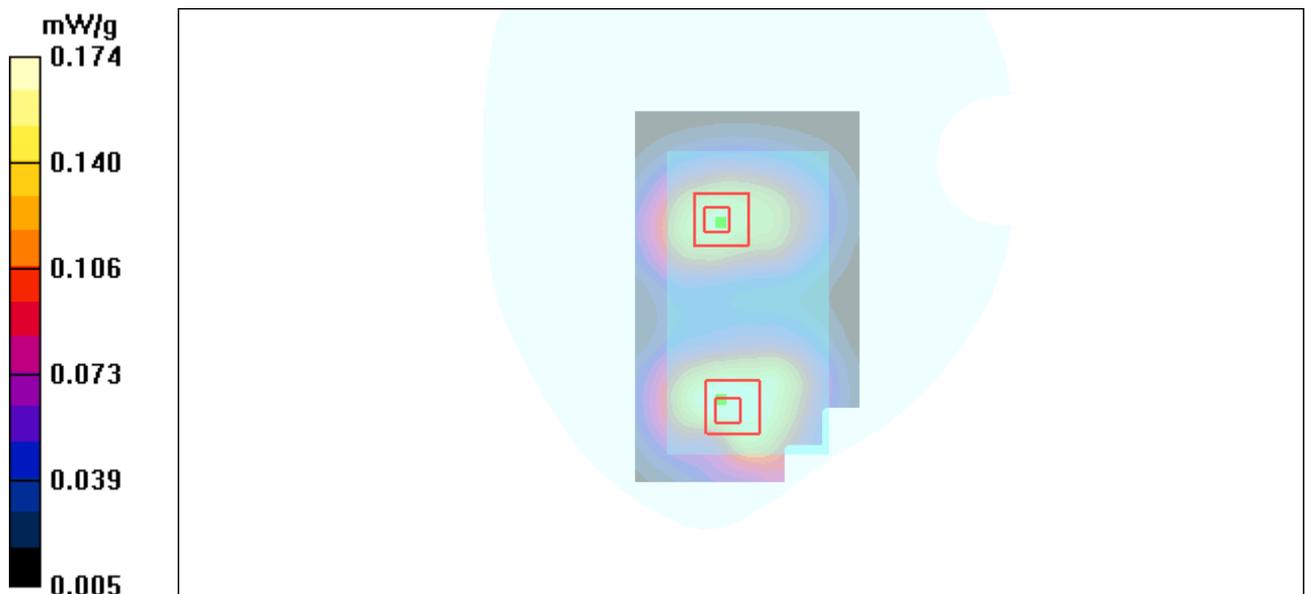
Figure 59 Body, Towards Phantom, GSM 1900 Channel 661

GSM 1900 GPRS (2Txslots) Towards Phantom Middle

Date/Time: 3/27/2011 3:32:58 PM

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.157 mW/g

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

Reference Value = 6.34 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.263 W/kg

SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.093 mW/g

Maximum value of SAR (measured) = 0.157 mW/g

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

Reference Value = 6.34 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.210 W/kg

SAR(1 g) = 0.127 mW/g; SAR(10 g) = 0.081 mW/g

Maximum value of SAR (measured) = 0.134 mW/g
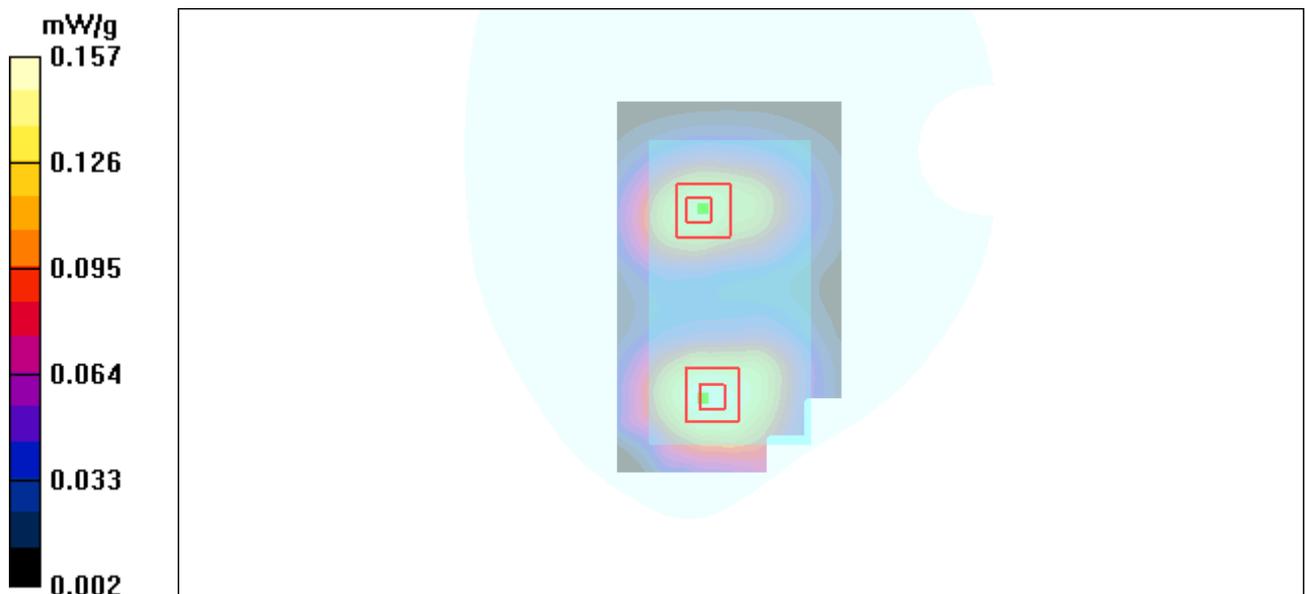
Figure 60 Body, Towards Phantom, GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 with Earphone Towards Ground High

Date/Time: 3/27/2011 6:40:59 PM

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

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.275 mW/g

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

Reference Value = 6.05 V/m; Power Drift = -0.154 dB

Peak SAR (extrapolated) = 0.456 W/kg

SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.145 mW/g

Maximum value of SAR (measured) = 0.262 mW/g
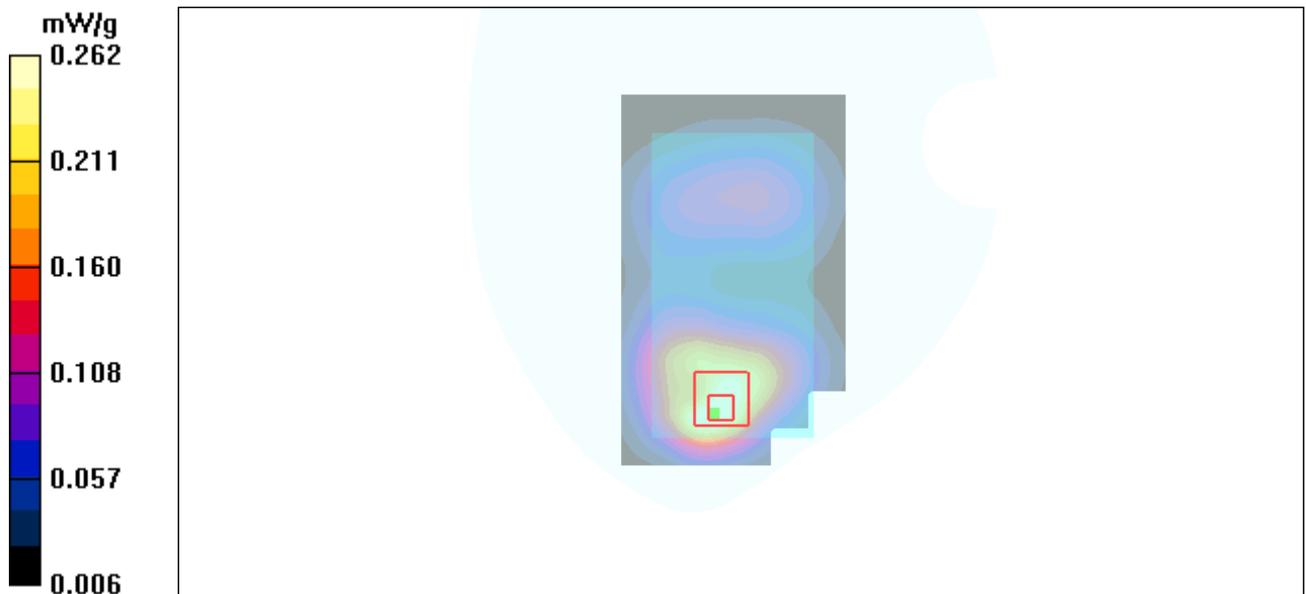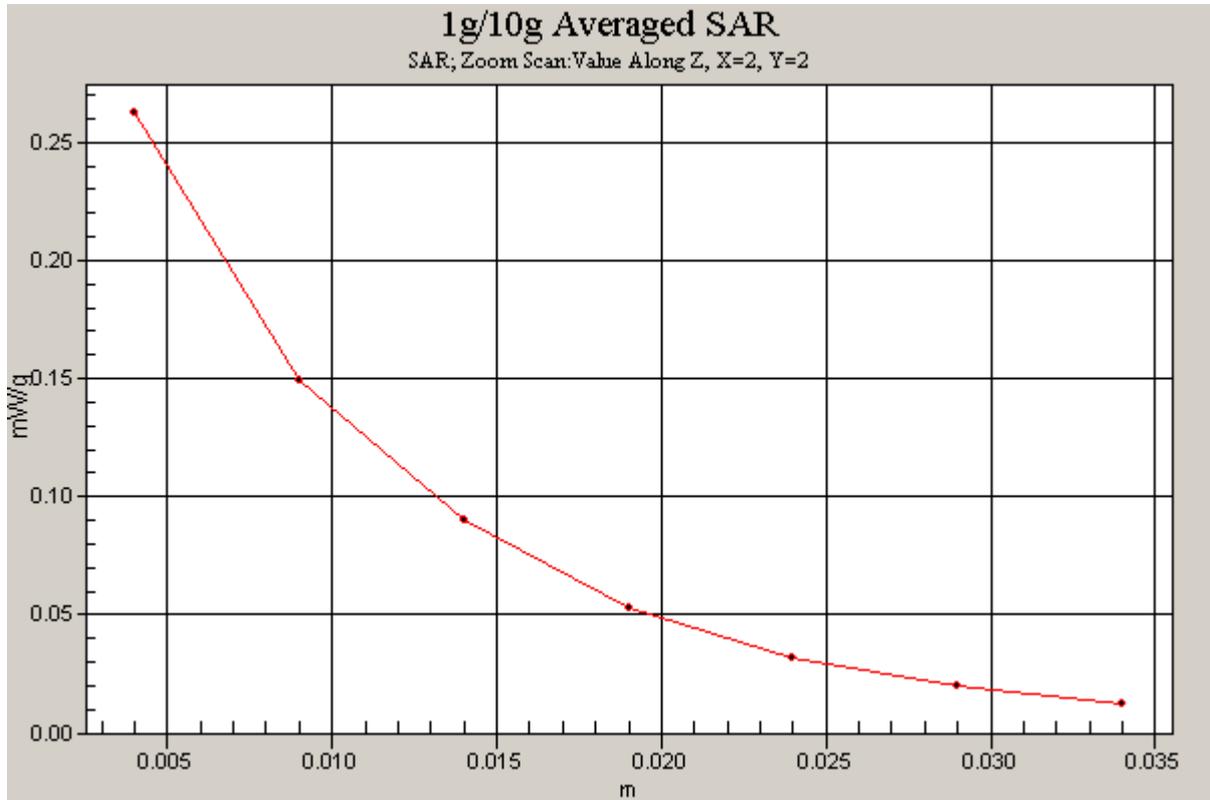
Figure 61 Body with Earphone, Towards Ground, GSM 1900 Channel 810

GSM 1900 EGPRS (1Txslot) Towards Ground High

Date/Time: 3/25/2011 5:43:37 PM

Communication System: PCS 1900+EGPRS(1Up); Frequency: 1909.8 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.232 mW/g

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

Reference Value = 6.90 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 0.403 W/kg

SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.125 mW/g

Maximum value of SAR (measured) = 0.234 mW/g

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

Reference Value = 6.90 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 0.323 W/kg

SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.108 mW/g

Maximum value of SAR (measured) = 0.210 mW/g
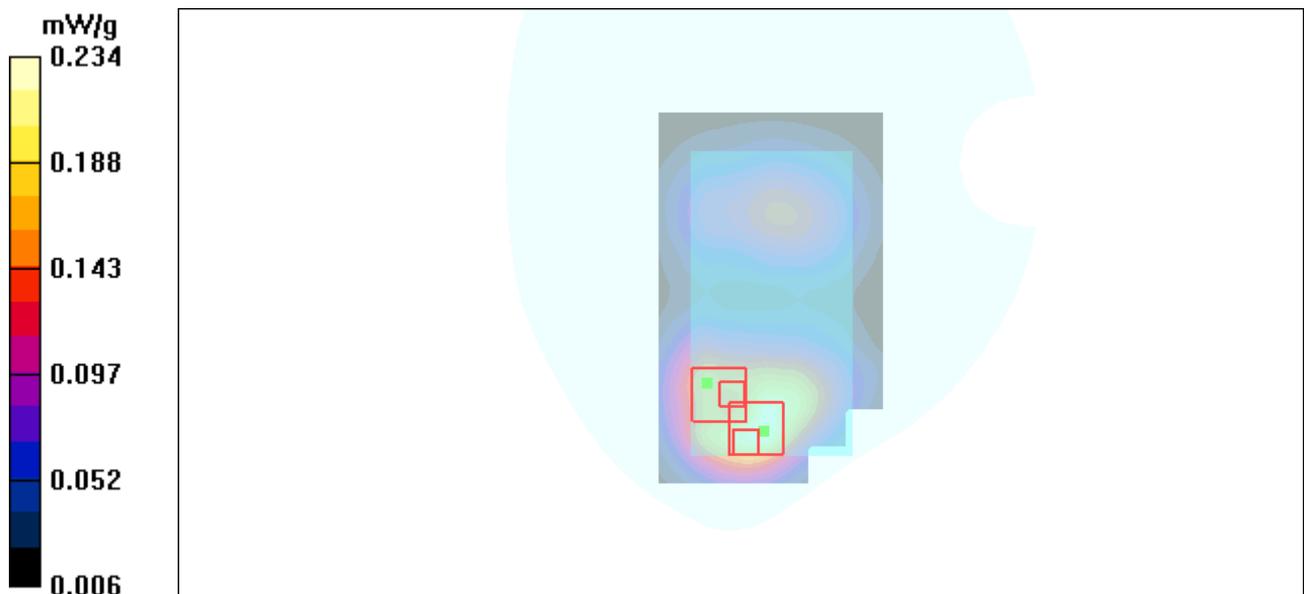
Figure 62 Body, Towards Ground, GSM 1900 EGPRS (1Txslot) Channel 810

WCDMA Band II Left Cheek Middle

Date/Time: 3/26/2011 11:10:10 AM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.563 mW/g

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

Reference Value = 5.01 V/m; Power Drift = -0.005 dB

Peak SAR (extrapolated) = 0.577 W/kg

SAR(1 g) = 0.457 mW/g; SAR(10 g) = 0.312 mW/g

Maximum value of SAR (measured) = 0.516 mW/g

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

Reference Value = 5.01 V/m; Power Drift = -0.005 dB

Peak SAR (extrapolated) = 0.672 W/kg

SAR(1 g) = 0.501 mW/g; SAR(10 g) = 0.323 mW/g

Maximum value of SAR (measured) = 0.550 mW/g
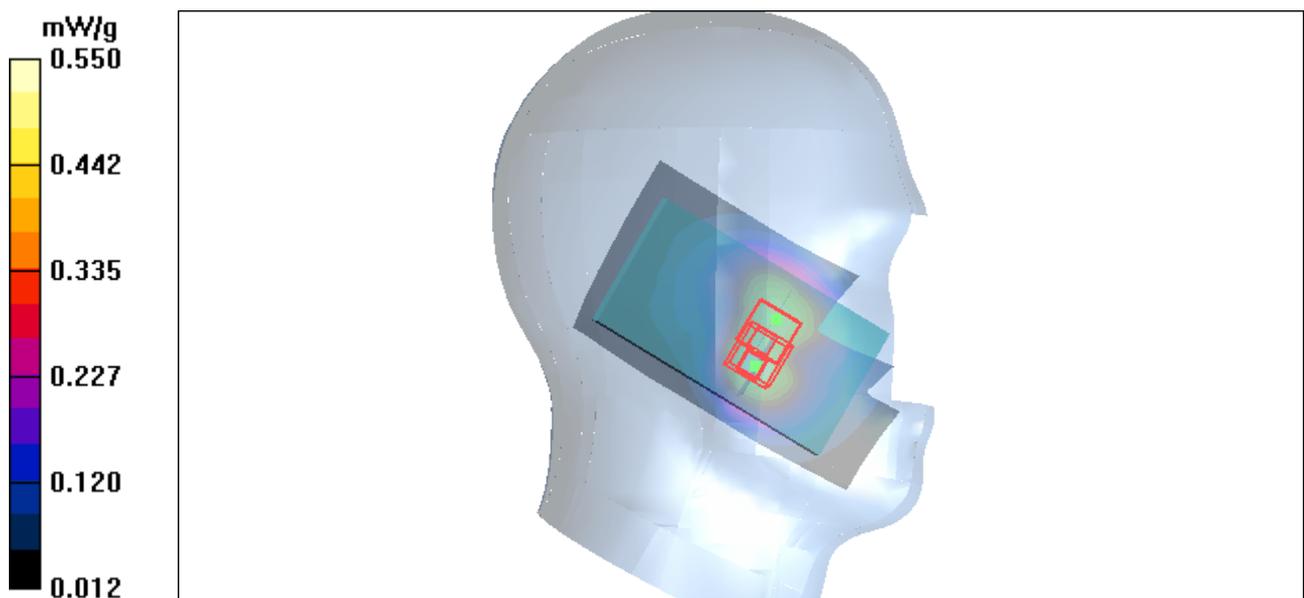
Figure 63 Left Hand Touch Cheek WCDMA Band II Channel 9400

WCDMA Band II Left Tilt Middle

Date/Time: 3/26/2011 11:33:21 AM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.294 mW/g

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

Reference Value = 9.99 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.328 W/kg

SAR(1 g) = 0.250 mW/g; SAR(10 g) = 0.164 mW/g

Maximum value of SAR (measured) = 0.267 mW/g
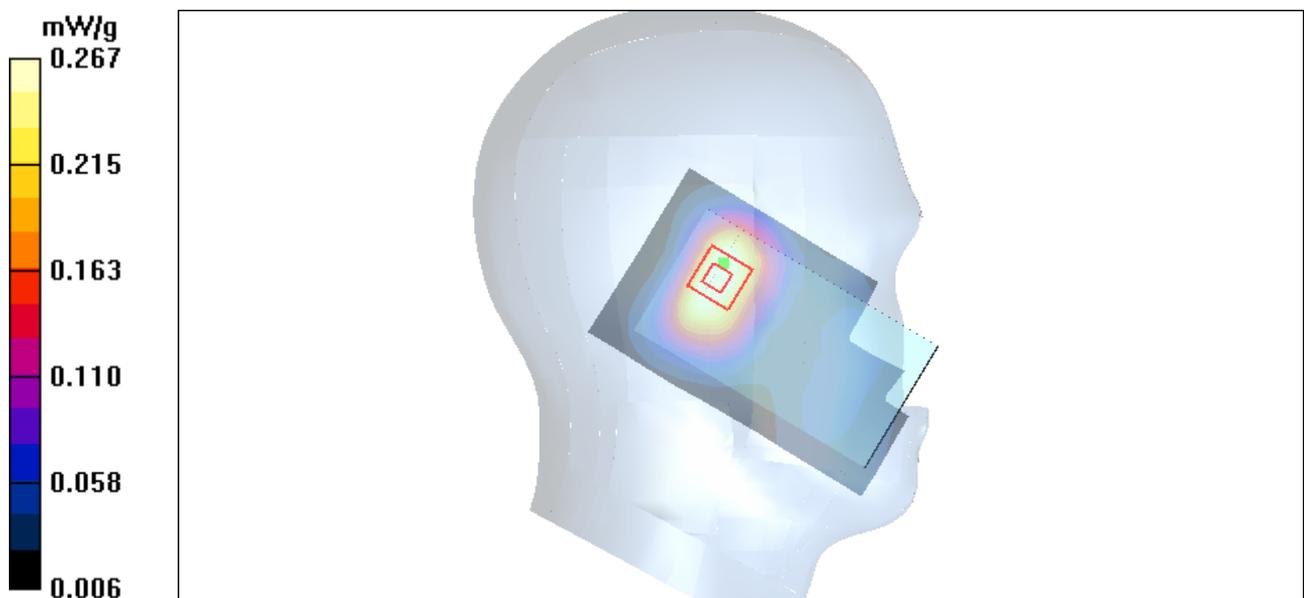
Figure 64 Left Hand Tilt 15° WCDMA Band II Channel 9400

WCDMA Band II Right Cheek High

Date/Time: 3/26/2011 12:11:29 PM

Communication System: WCDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1908 MHz; σ = 1.43 mho/m; $ε_r$ = 39.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.579 mW/g

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

Reference Value = 5.45 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 0.578 W/kg

SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.262 mW/g

Maximum value of SAR (measured) = 0.496 mW/g

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

Reference Value = 5.45 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 0.702 W/kg

SAR(1 g) = 0.523 mW/g; SAR(10 g) = 0.335 mW/g

Maximum value of SAR (measured) = 0.574 mW/g
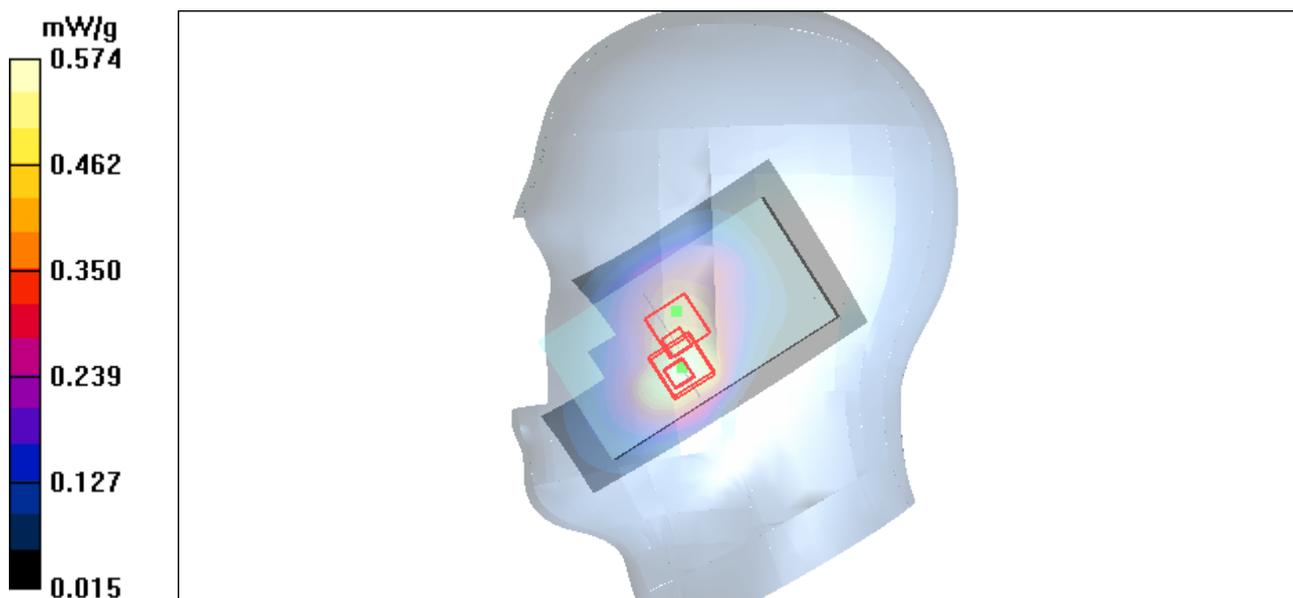
Figure 65 Right Hand Touch Cheek WCDMA Band II Channel 9538

WCDMA Band II Right Cheek Middle

Date/Time: 3/26/2011 10:33:16 AM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.625 mW/g

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

Reference Value = 4.43 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.620 W/kg

SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.283 mW/g

Maximum value of SAR (measured) = 0.541 mW/g

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

Reference Value = 4.43 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.756 W/kg

SAR(1 g) = 0.564 mW/g; SAR(10 g) = 0.359 mW/g

Maximum value of SAR (measured) = 0.626 mW/g
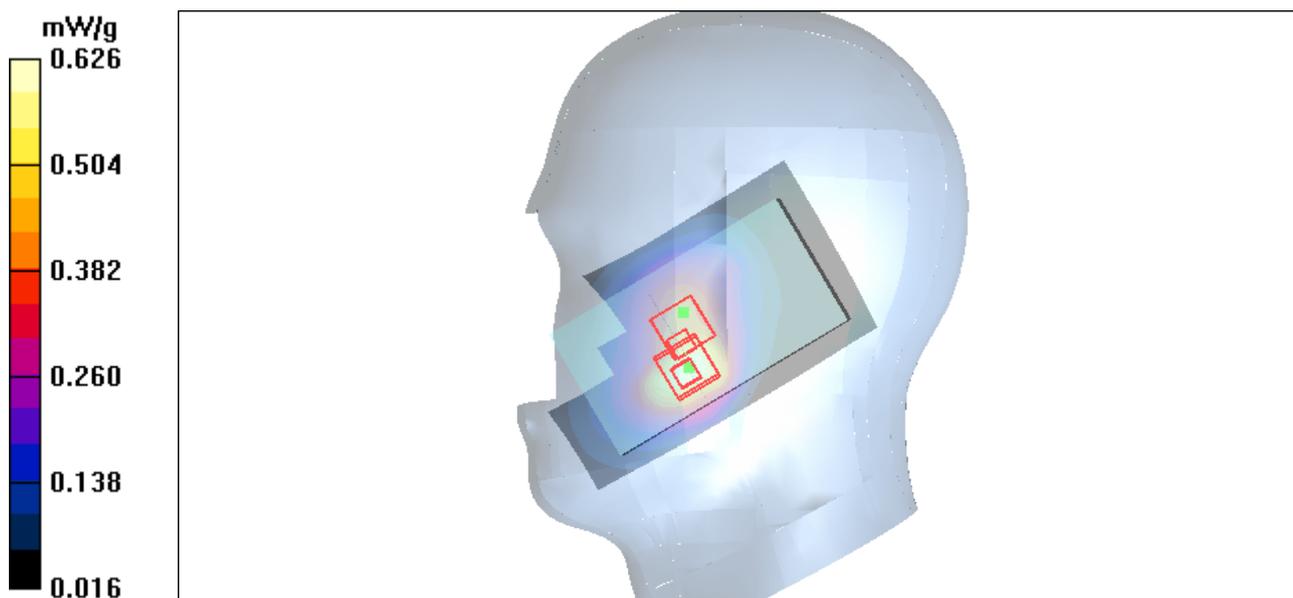
Figure 66 Right Hand Touch Cheek WCDMA Band II Channel 9400

WCDMA Band II Right Cheek Low

Date/Time: 3/26/2011 12:32:02 PM

Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.38 mho/m; ε_r = 40.2; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.667 mW/g

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

Reference Value = 6.13 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 0.776 W/kg

SAR(1 g) = 0.594 mW/g; SAR(10 g) = 0.385 mW/g

Maximum value of SAR (measured) = 0.653 mW/g
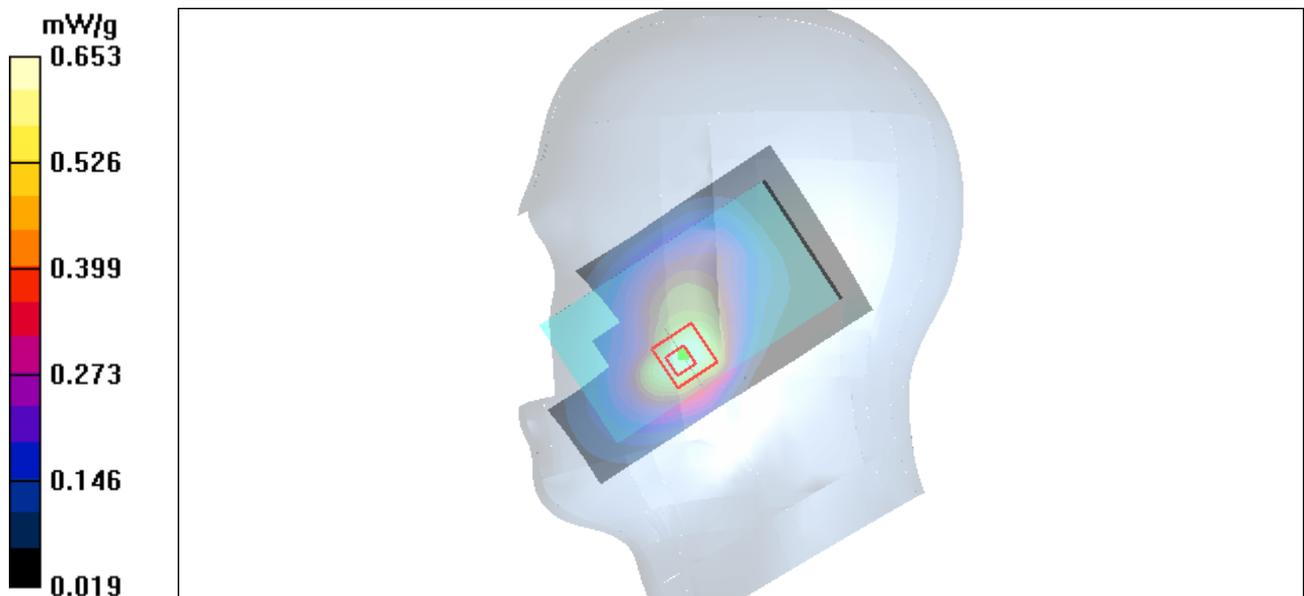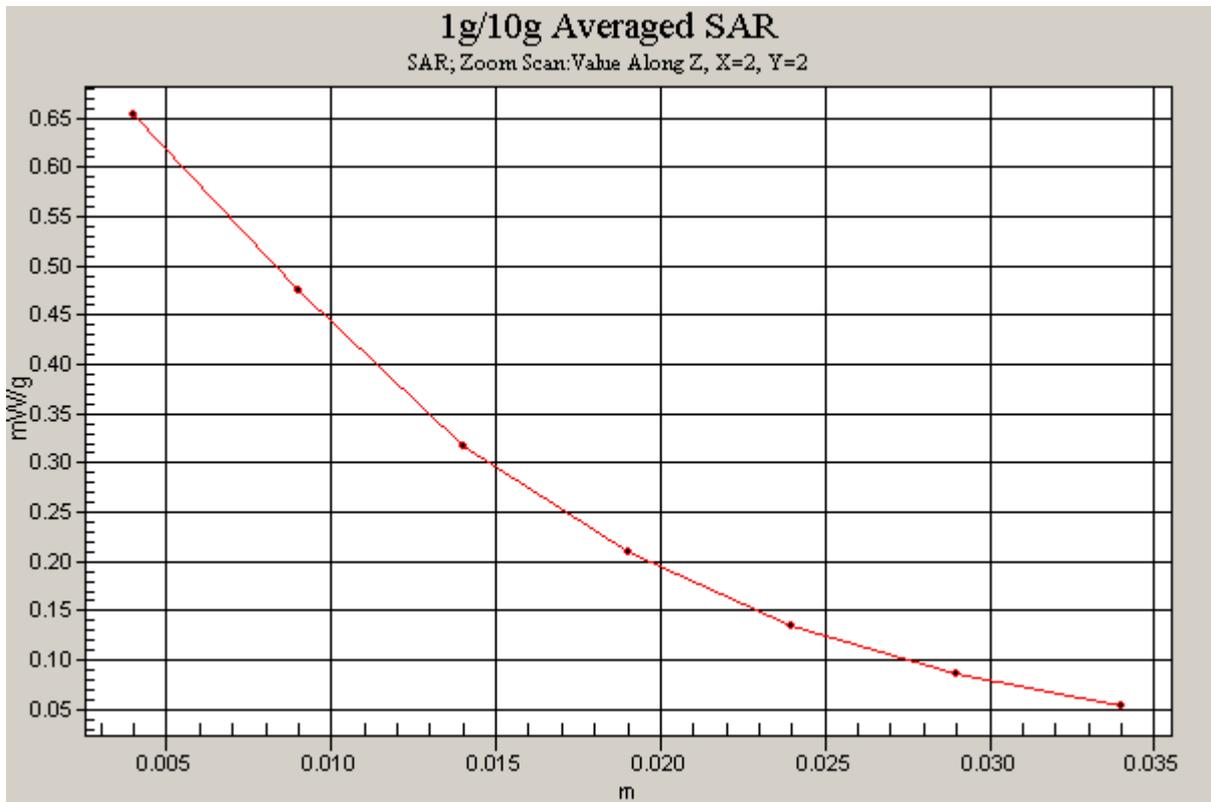
Figure 67 Right Hand Touch Cheek WCDMA Band II Channel 9262

WCDMA Band II Right Tilt Middle

Date/Time: 3/24/2011 10:53:55 PM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.39 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.311 mW/g

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

Reference Value = 9.70 V/m; Power Drift = 0.059 dB

Peak SAR (extrapolated) = 0.368 W/kg

SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.178 mW/g

Maximum value of SAR (measured) = 0.297 mW/g
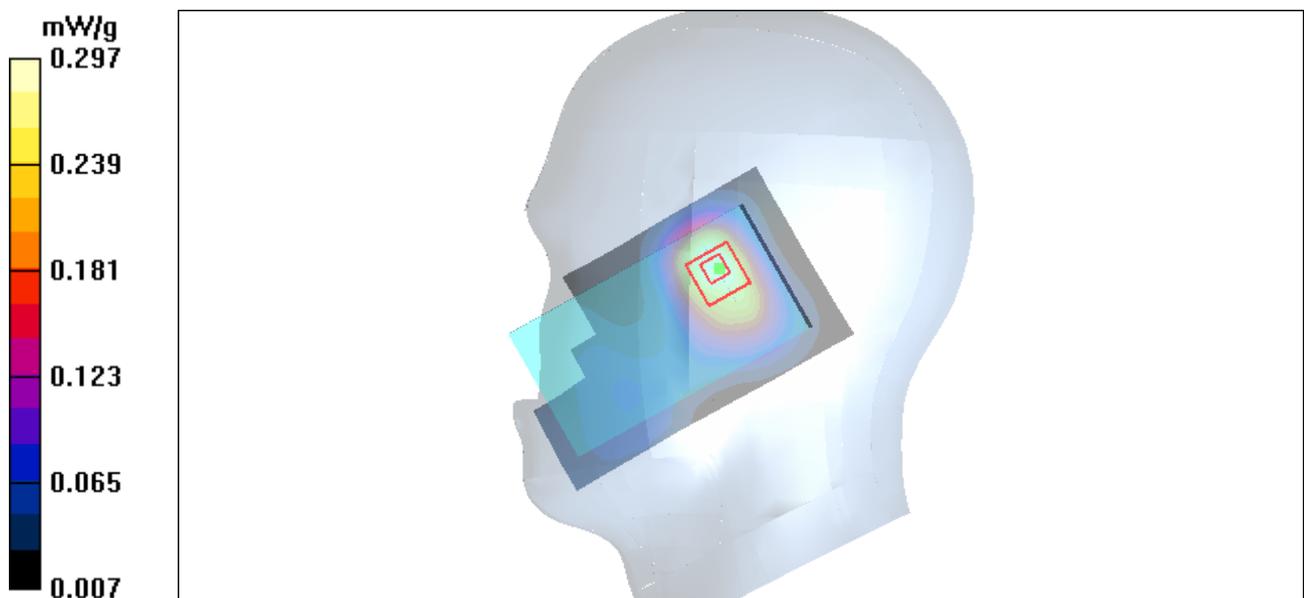
Figure 68 Right Hand Tilt 15° WCDMA Band II Channel 9400

WCDMA Band II Towards Ground High

Date/Time: 3/27/2011 9:06:54 AM

Communication System: WCDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1908 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.481 mW/g

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

Reference Value = 9.80 V/m; Power Drift = -0.055 dB

Peak SAR (extrapolated) = 0.749 W/kg

SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.246 mW/g

Maximum value of SAR (measured) = 0.441 mW/g
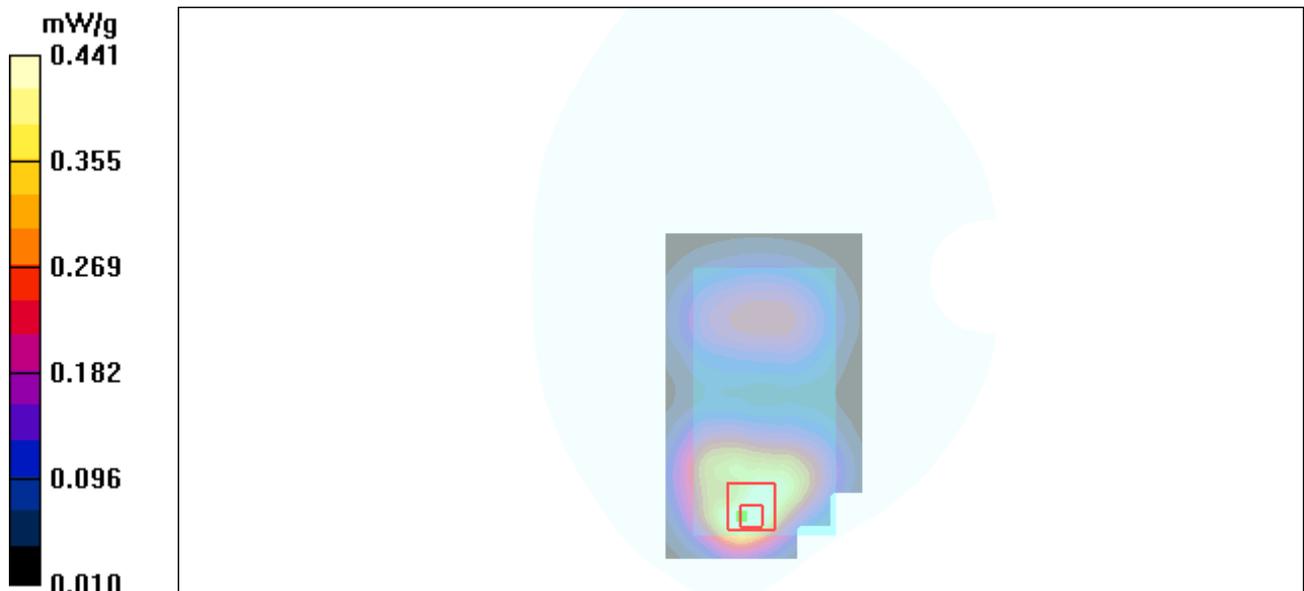
Figure 69 Body, Towards Ground, WCDMA Band II Channel 9538

WCDMA Band II Towards Ground Middle

Date/Time: 3/27/2011 7:59:51 AM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.508 mW/g

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

Reference Value = 9.76 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.783 W/kg

SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.264 mW/g

Maximum value of SAR (measured) = 0.468 mW/g
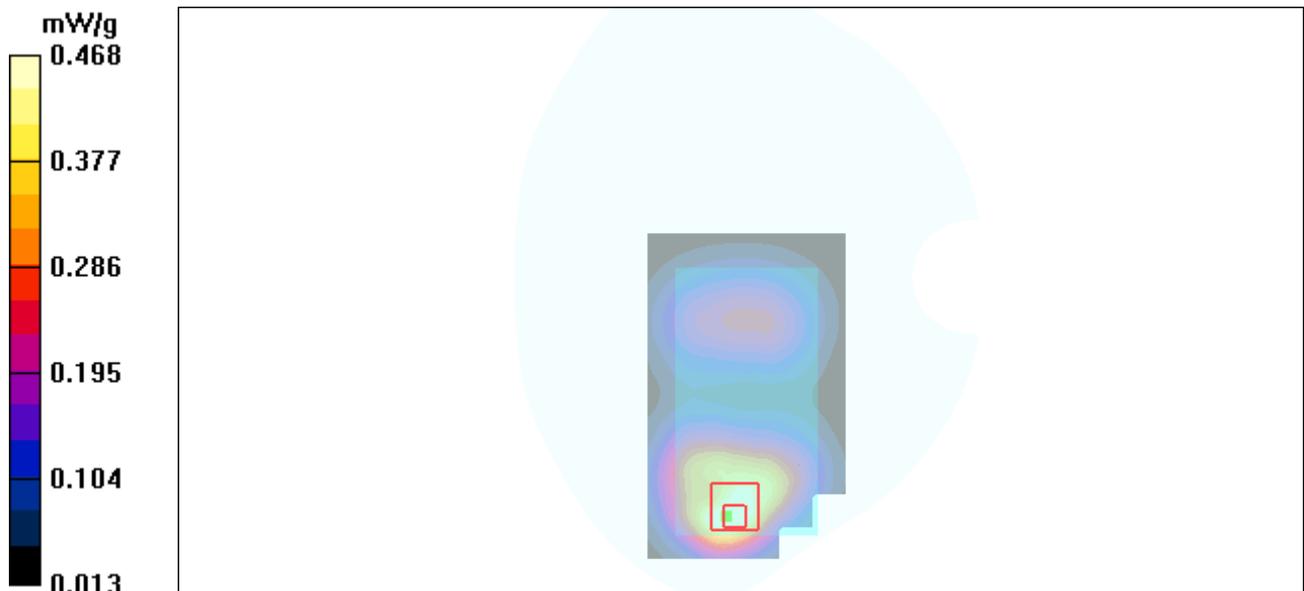
Figure 70 Body, Towards Ground, WCDMA Band II Channel 9400

WCDMA Band II Towards Ground Low

Date/Time: 3/27/2011 9:21:14 AM

Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.48 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.638 mW/g

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

Reference Value = 10.4 V/m; Power Drift = -0.101 dB

Peak SAR (extrapolated) = 0.982 W/kg

SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.329 mW/g

Maximum value of SAR (measured) = 0.589 mW/g
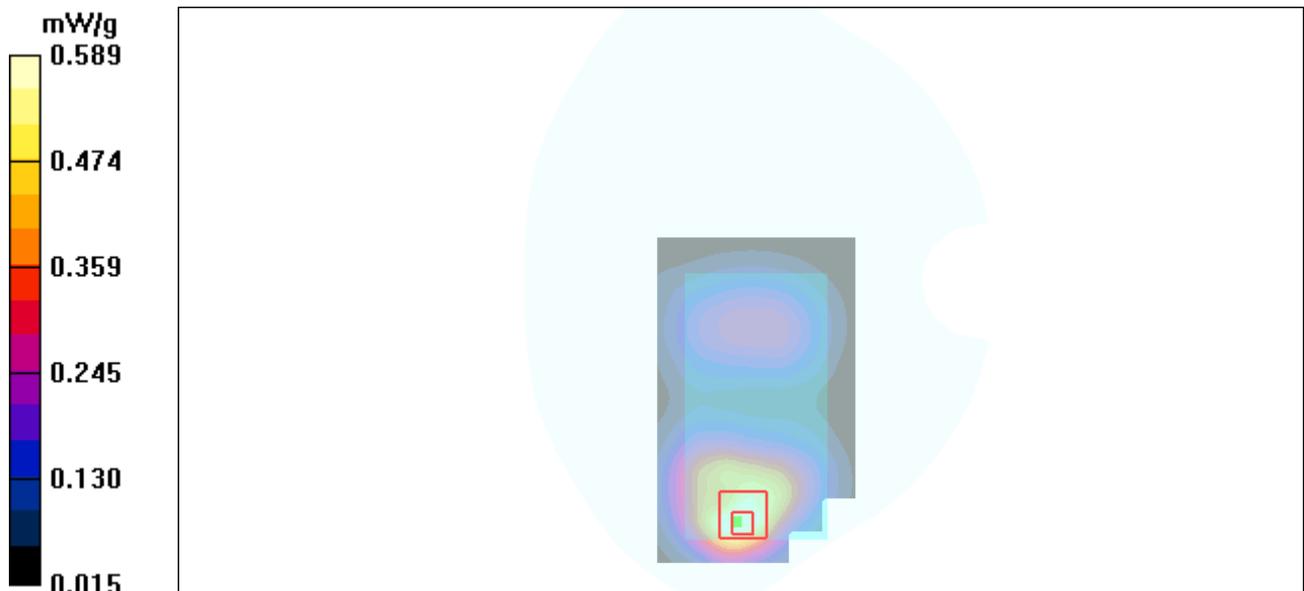
Figure 71 Body, Towards Ground, WCDMA Band II Channel 9262

WCDMA Band II Towards Phantom Middle

Date/Time: 3/27/2011 7:35:21 AM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.408 mW/g

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

Reference Value = 9.44 V/m; Power Drift = -0.062 dB

Peak SAR (extrapolated) = 0.467 W/kg

SAR(1 g) = 0.286 mW/g; SAR(10 g) = 0.184 mW/g

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

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

Reference Value = 9.44 V/m; Power Drift = -0.062 dB

Peak SAR (extrapolated) = 0.662 W/kg

SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.237 mW/g

Maximum value of SAR (measured) = 0.404 mW/g
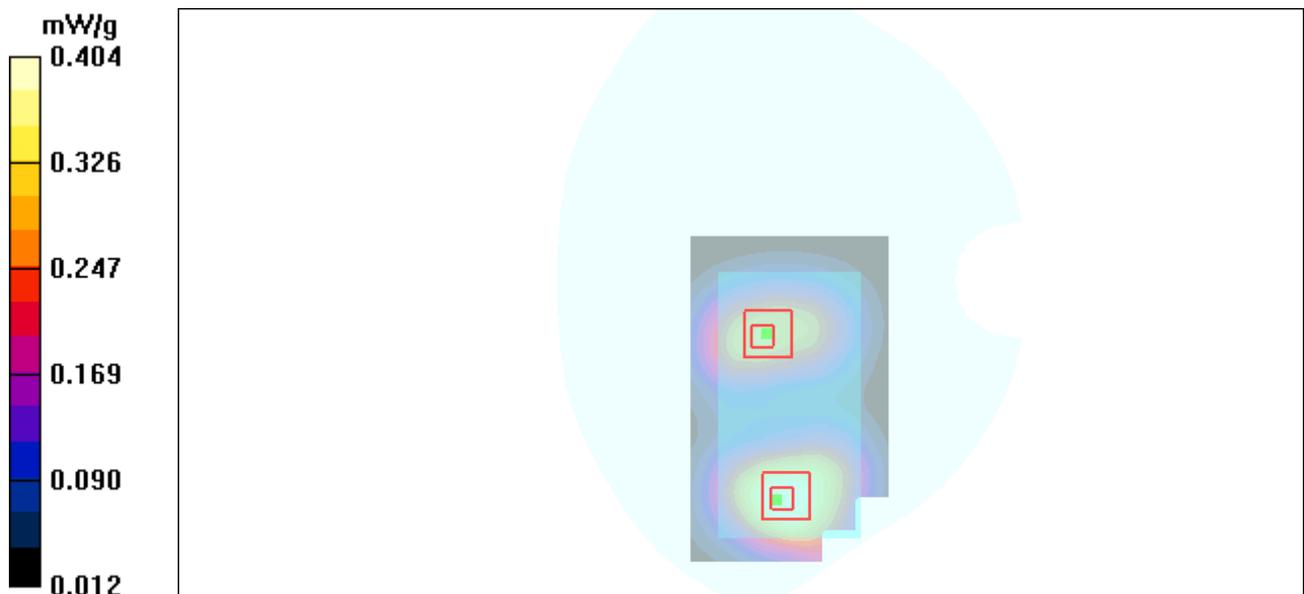
Figure 72 Body, Towards Phantom, WCDMA Band II Channel 9400

WCDMA Band II with Earphone Towards Ground Low

Date/Time: 3/27/2011 5:36:09 AM

Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.48 mho/m; $ε_r$ = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.673 mW/g

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

Reference Value = 7.70 V/m; Power Drift = 0.040 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.334 mW/g

Maximum value of SAR (measured) = 0.610 mW/g
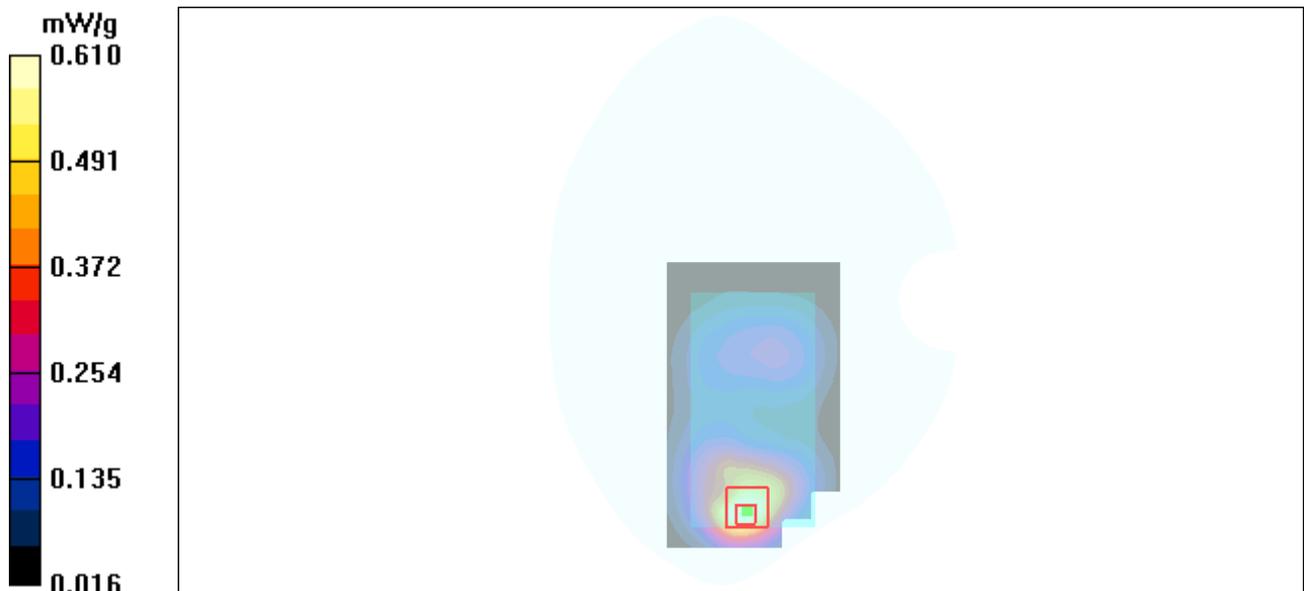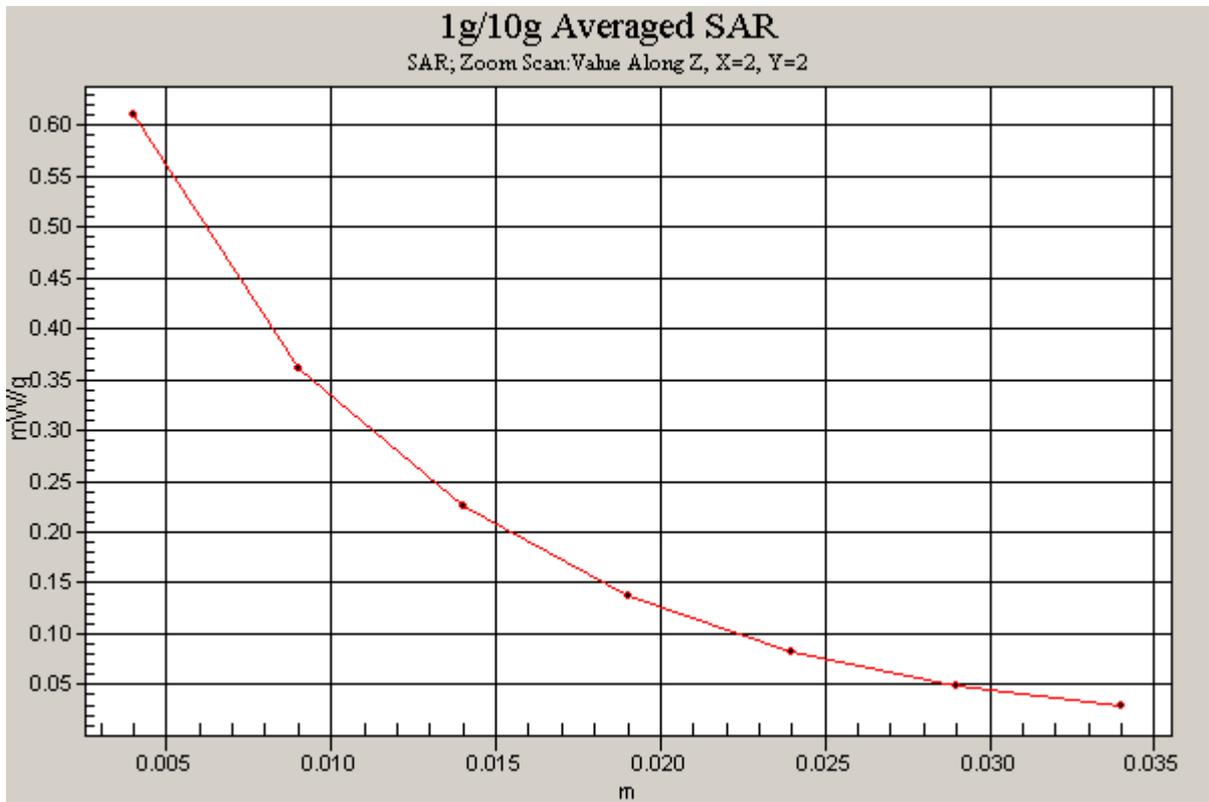
Figure 73 Body with Earphone, Towards Ground, WCDMA Band II Channel 9262

WCDMA Band II HSDPA Towards Ground Low

Date/Time: 3/27/2011 5:53:55 AM

Communication System: WCDMA Band II+HSDPA; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.48 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.580 mW/g

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

Reference Value = 9.41 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.888 W/kg

SAR(1 g) = 0.504 mW/g; SAR(10 g) = 0.297 mW/g

Maximum value of SAR (measured) = 0.535 mW/g
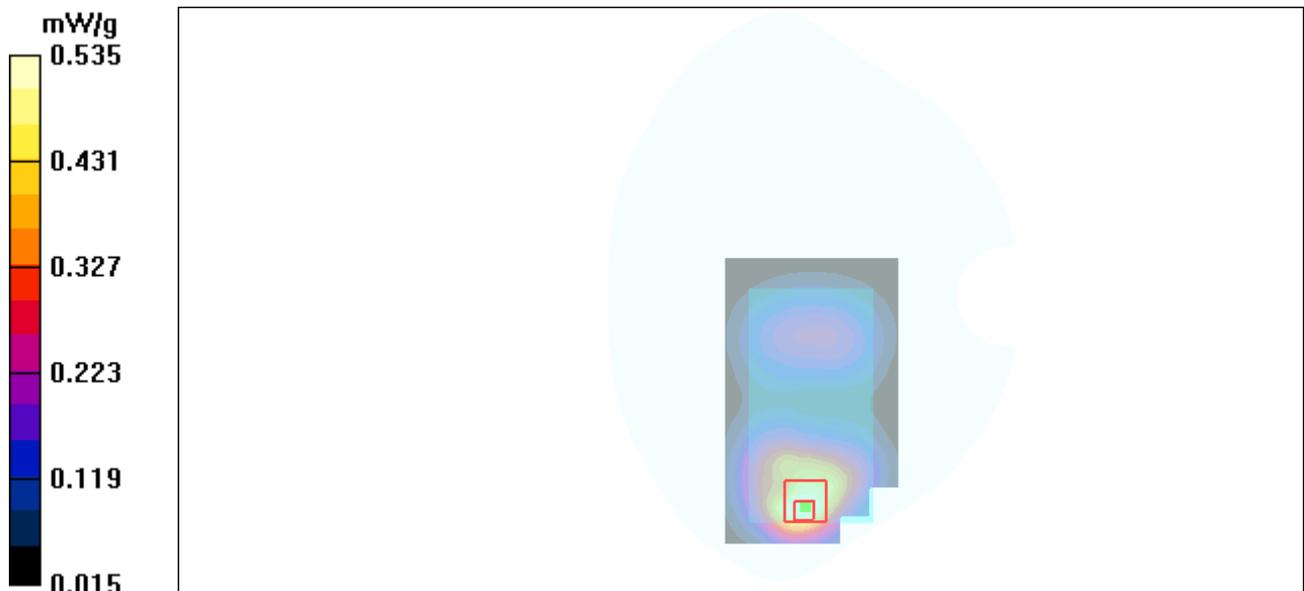
Figure 74 Body, Towards Ground, WCDMA Band II HSDPA Channel 9262

WCDMA Band II HSUPA Towards Ground Low

Date/Time: 3/27/2011 6:12:06 AM

Communication System: WCDMA Band II+HSUPA; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.48 mho/m; $ε_r$ = 53.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.572 mW/g

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

Reference Value = 9.47 V/m; Power Drift = -0.197 dB

Peak SAR (extrapolated) = 0.856 W/kg

SAR(1 g) = 0.486 mW/g; SAR(10 g) = 0.287 mW/g

Maximum value of SAR (measured) = 0.515 mW/g
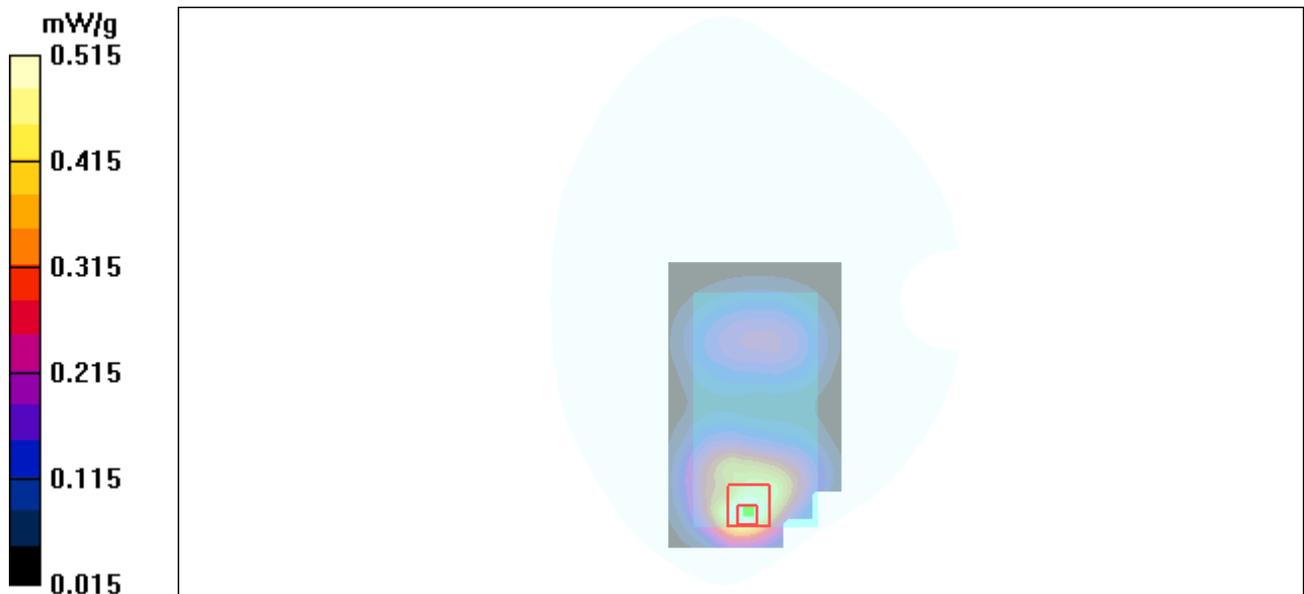
Figure 75 Body, Towards Ground, WCDMA Band II HSUPA Channel 9262

WCDMA Band IV Left Cheek Middle

Date/Time: 3/25/2011 5:27:36 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.36 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.470 mW/g

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

Reference Value = 6.47 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 0.521 W/kg

SAR(1 g) = 0.418 mW/g; SAR(10 g) = 0.298 mW/g

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

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

Reference Value = 6.47 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 0.529 W/kg

SAR(1 g) = 0.436 mW/g; SAR(10 g) = 0.314 mW/g

Maximum value of SAR (measured) = 0.466 mW/g
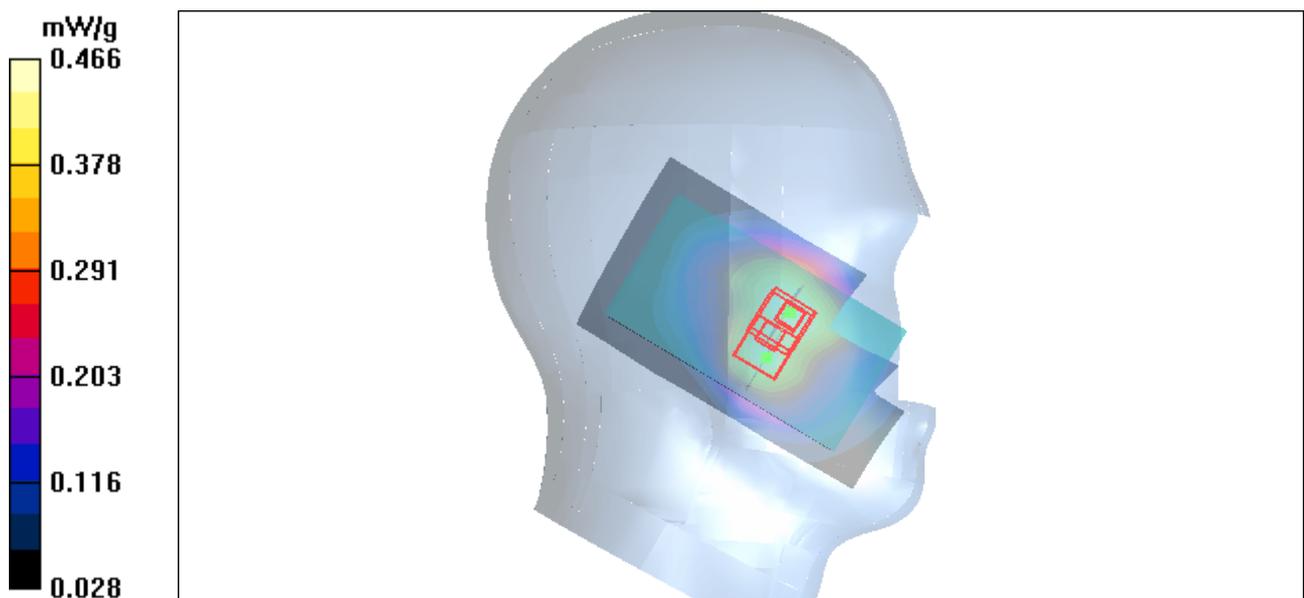
Figure 76 Left Hand Touch Cheek WCDMA Band IV Channel 1413

WCDMA Band IV Left Tilt Middle

Date/Time: 3/25/2011 5:49:01 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.36 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 12.0 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 0.426 W/kg

SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.218 mW/g

Maximum value of SAR (measured) = 0.354 mW/g
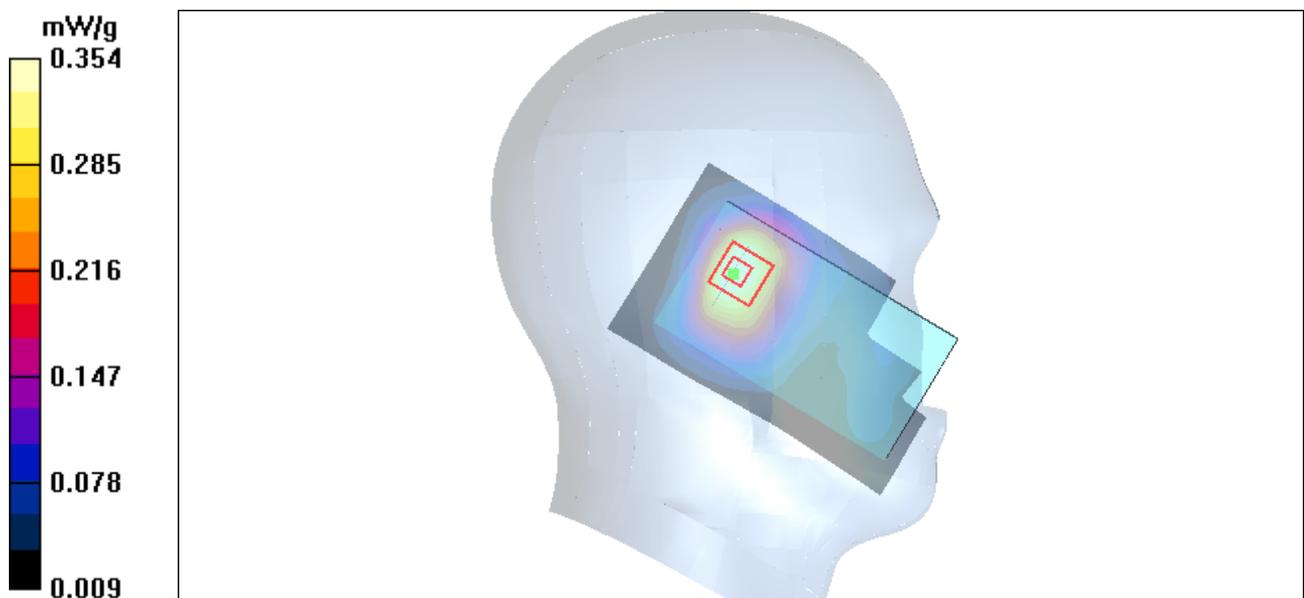
Figure 77 Left Hand Tilt 15° WCDMA Band IV Channel 1413

WCDMA Band IV Right Cheek High

Date/Time: 3/25/2011 6:22:09 AM

Communication System: WCDMA Band IV; Frequency: 1752.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1752.6 MHz; σ = 1.39 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.702 mW/g

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

Reference Value = 6.77 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 0.822 W/kg

SAR(1 g) = 0.635 mW/g; SAR(10 g) = 0.420 mW/g

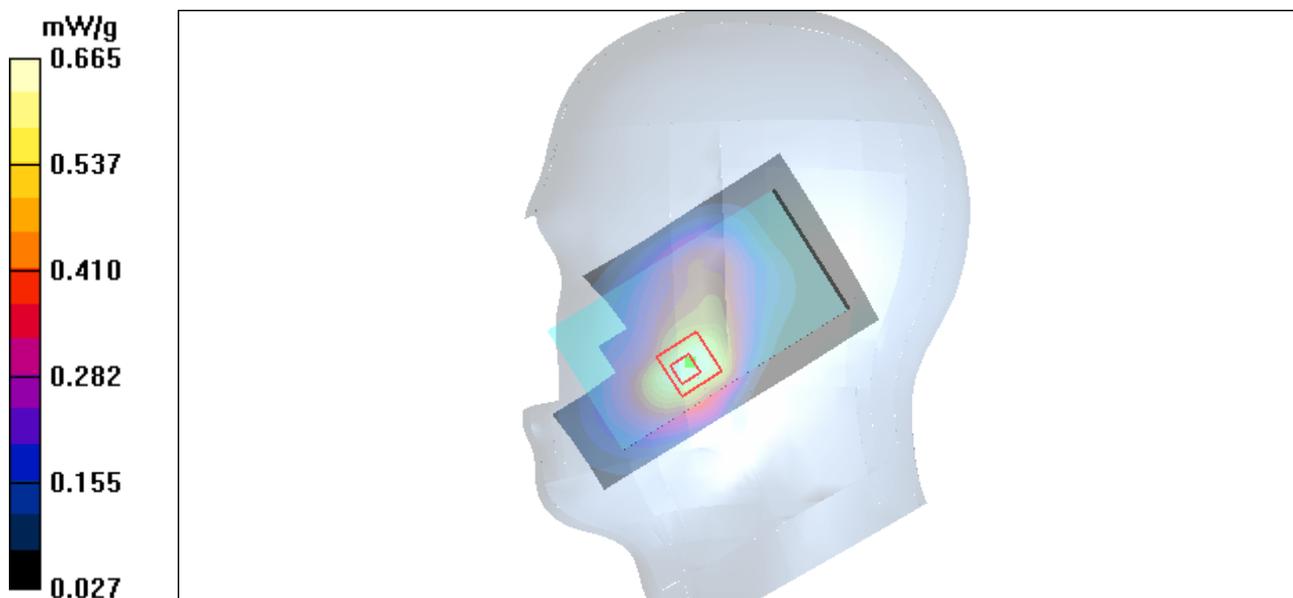Maximum value of SAR (measured) = 0.688 mW/g
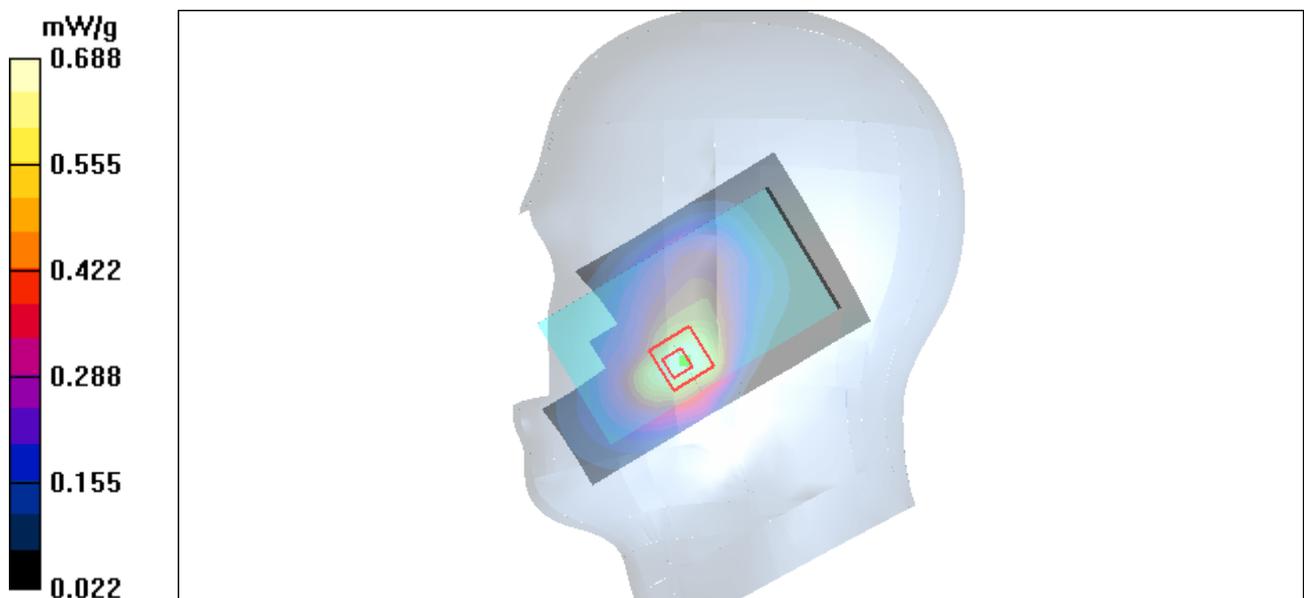
Figure 78 Right Hand Touch Cheek WCDMA Band IV Channel 1513

WCDMA Band IV Right Cheek Middle

Date/Time: 3/25/2011 6:07:06 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.36 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.733 mW/g

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

Reference Value = 7.01 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 0.859 W/kg

SAR(1 g) = 0.669 mW/g; SAR(10 g) = 0.446 mW/g

Maximum value of SAR (measured) = 0.727 mW/g
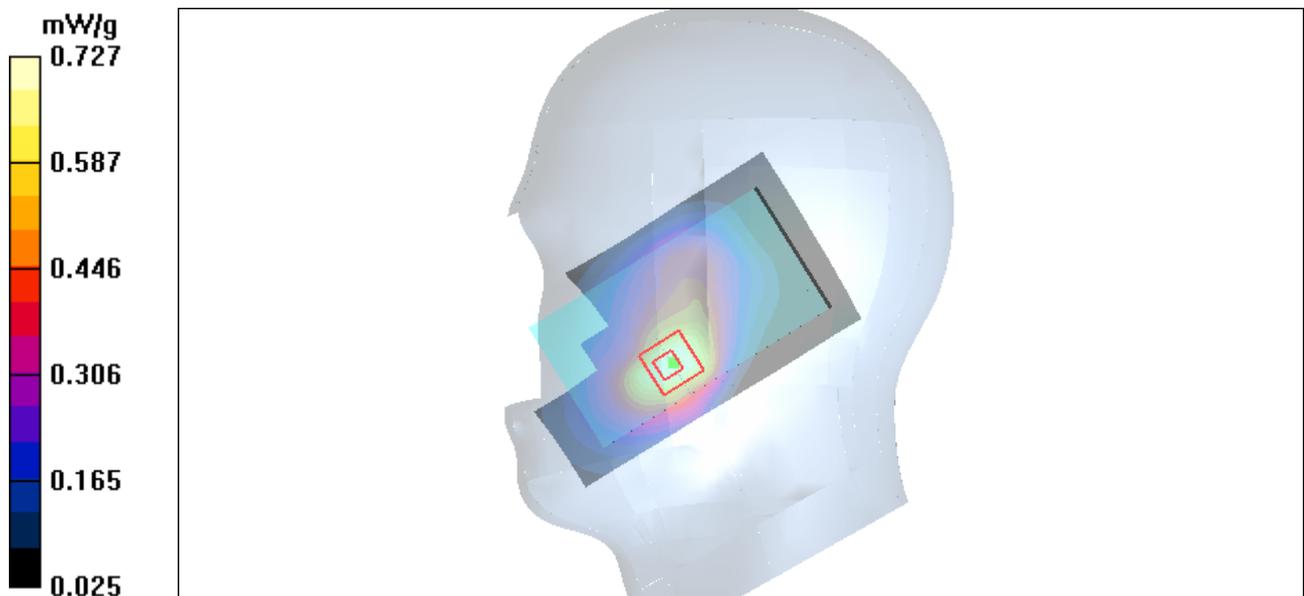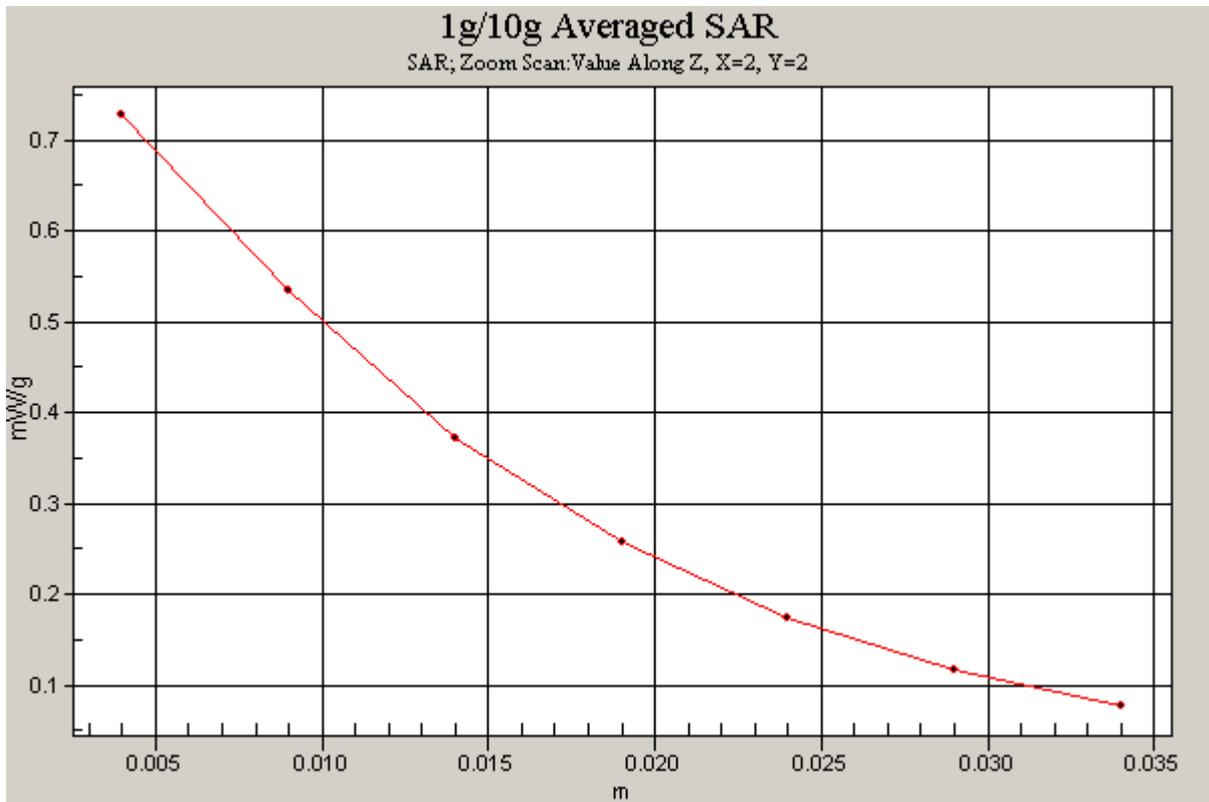
Figure 79 Right Hand Touch Cheek WCDMA Band IV Channel 1413

WCDMA Band IV Right Cheek Low

Date/Time: 3/25/2011 6:36:56 AM

Communication System: WCDMA Band IV; Frequency: 1712.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.35 mho/m; ε_r = 40.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.669 mW/g

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

Reference Value = 6.70 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 0.780 W/kg

SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.665 mW/g

Figure 80 Right Hand Touch Cheek WCDMA Band IV Channel 1312

WCDMA Band IV Right Tilt Middle

Date/Time: 3/25/2011 6:52:11 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.36 mho/m; $ε_r$ = 40.1; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.22, 8.22, 8.22); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.396 mW/g

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

Reference Value = 13.5 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 0.445 W/kg

SAR(1 g) = 0.352 mW/g; SAR(10 g) = 0.241 mW/g

Maximum value of SAR (measured) = 0.376 mW/g
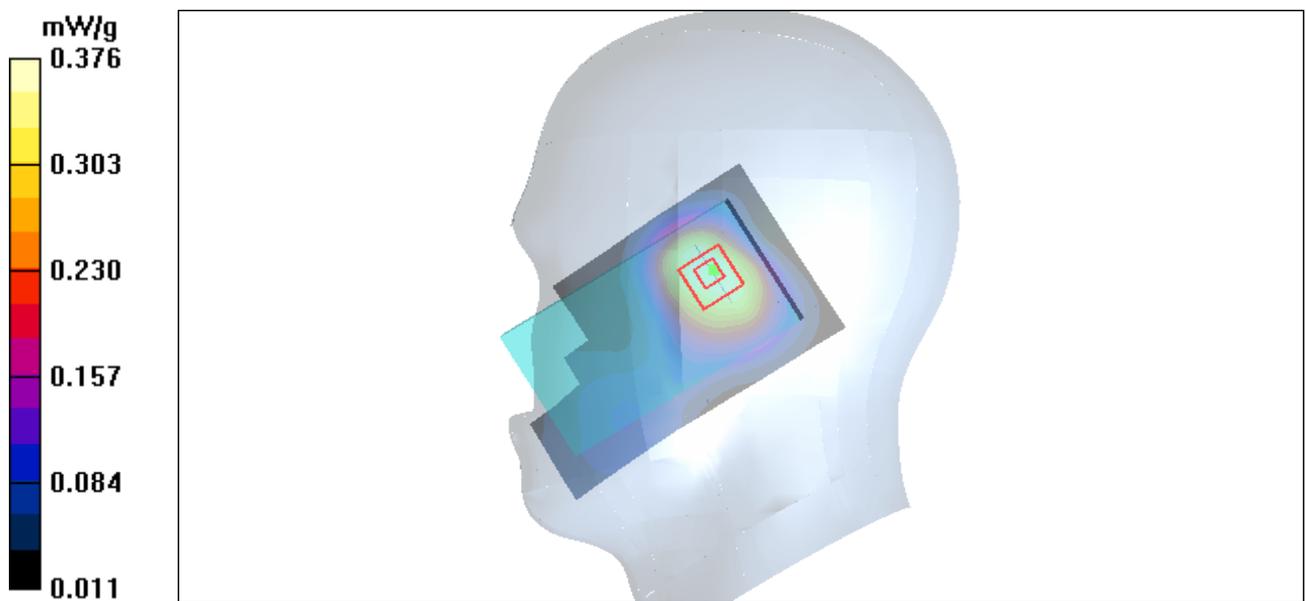
Figure 81 Right Hand Tilt 15° WCDMA Band IV Channel 1413

WCDMA Band IV Towards Ground High

Date/Time: 3/26/2011 3:26:23 AM

Communication System: WCDMA Band IV; Frequency: 1752.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1752.6 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.5 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.942 mW/g; SAR(10 g) = 0.535 mW/g
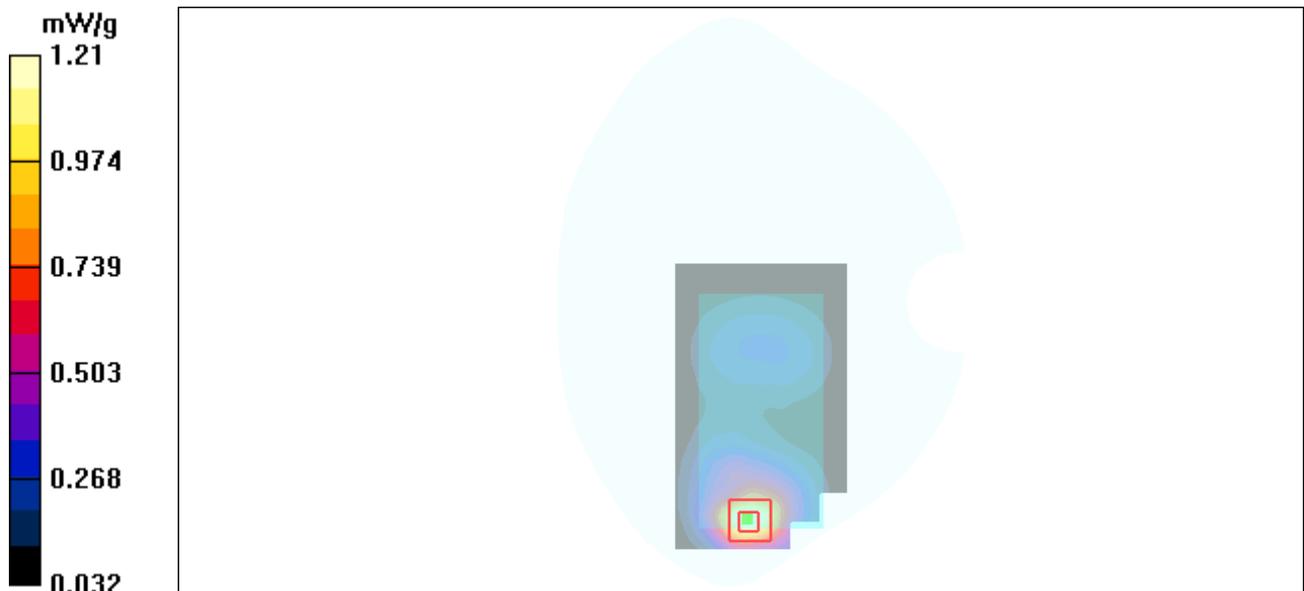
Maximum value of SAR (measured) = 1.00 mW/g
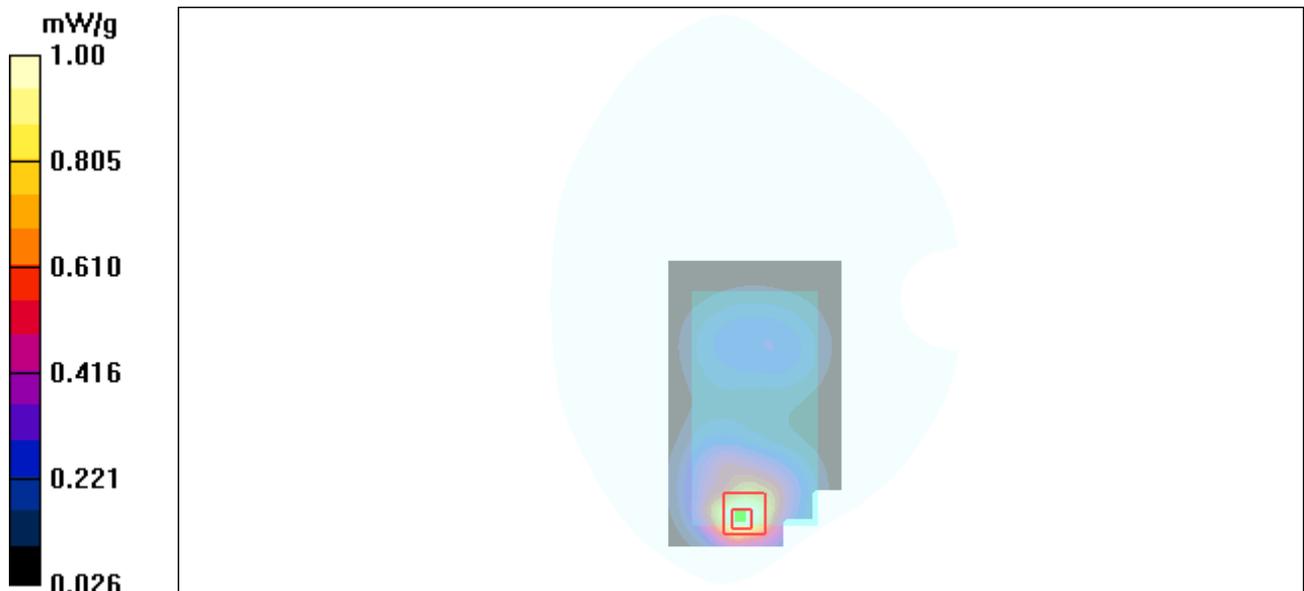
Figure 82 Body, Towards Ground, WCDMA Band IV Channel 1513

WCDMA Band IV Towards Ground Middle

Date/Time: 3/26/2011 3:12:24 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.46 mho/m; $ε_r$ = 52.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.28 mW/g

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

Reference Value = 11.3 V/m; Power Drift = -0.165 dB

Peak SAR (extrapolated) = 1.92 W/kg

SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.650 mW/g

Maximum value of SAR (measured) = 1.24 mW/g
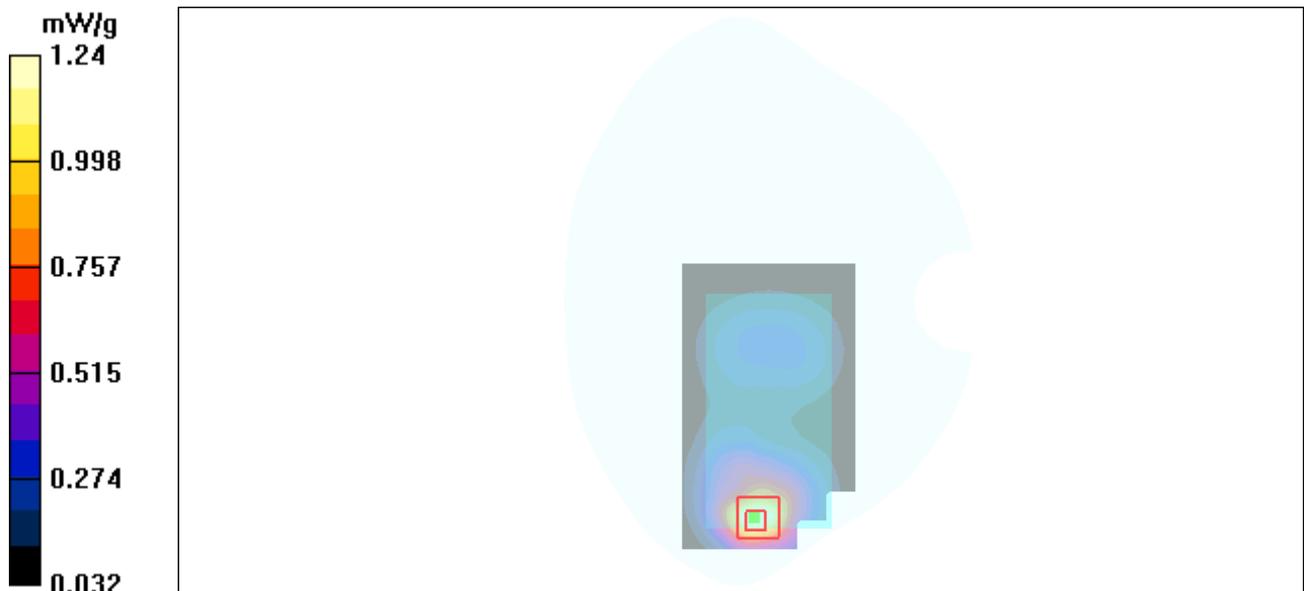
Figure 83 Body, Towards Ground, WCDMA Band IV Channel 1413

WCDMA Band IV Towards Ground Low

Date/Time: 3/26/2011 3:40:51 AM

Communication System: WCDMA Band IV; Frequency: 1712.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.44 mho/m; $ε_r$ = 52.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.27 mW/g

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

Reference Value = 10.5 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.638 mW/g

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

Figure 84 Body, Towards Ground, WCDMA Band IV Channel 1312

WCDMA Band IV Towards Phantom Middle

Date/Time: 3/26/2011 4:04:05 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.46 mho/m; $ε_r$ = 52.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.565 mW/g

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

Reference Value = 11.1 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 0.826 W/kg

SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.320 mW/g

Maximum value of SAR (measured) = 0.556 mW/g

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

Reference Value = 11.1 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 0.518 W/kg

SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.241 mW/g

Maximum value of SAR (measured) = 0.381 mW/g
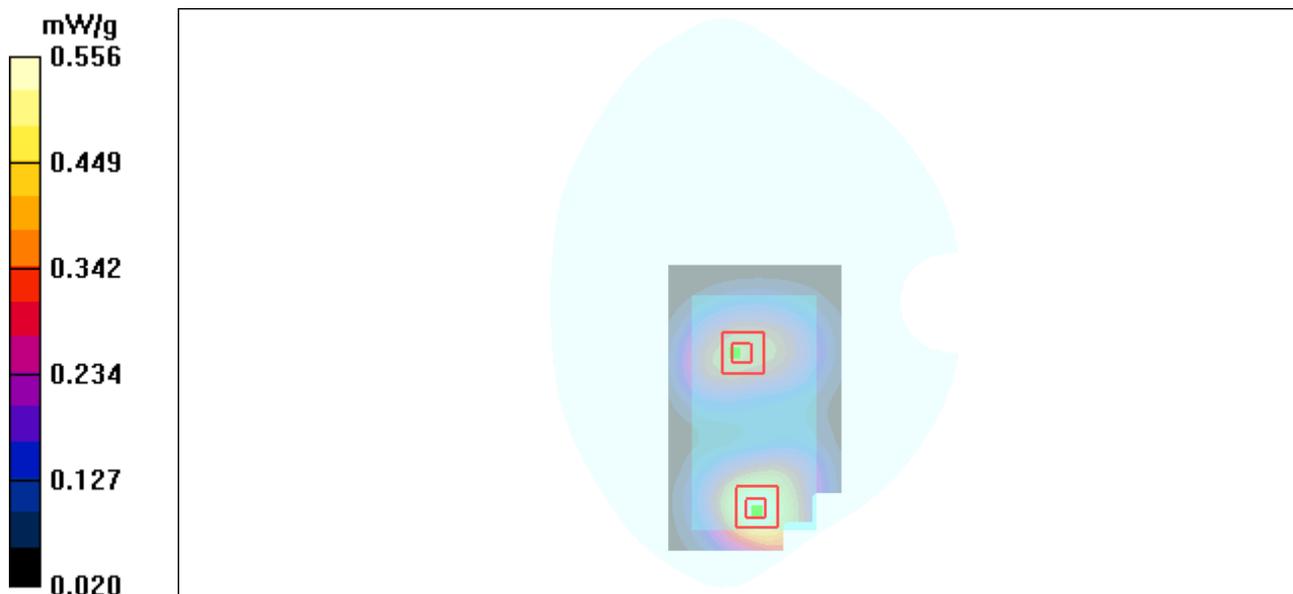
Figure 85 Body, Towards Phantom, WCDMA Band IV Channel 1413

WCDMA Band IV with Earphone Towards Ground Middle

Date/Time: 3/26/2011 4:30:07 AM

Communication System: WCDMA Band IV; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.46 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.30 mW/g

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

Reference Value = 9.79 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 1.95 W/kg

SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.649 mW/g

Maximum value of SAR (measured) = 1.25 mW/g
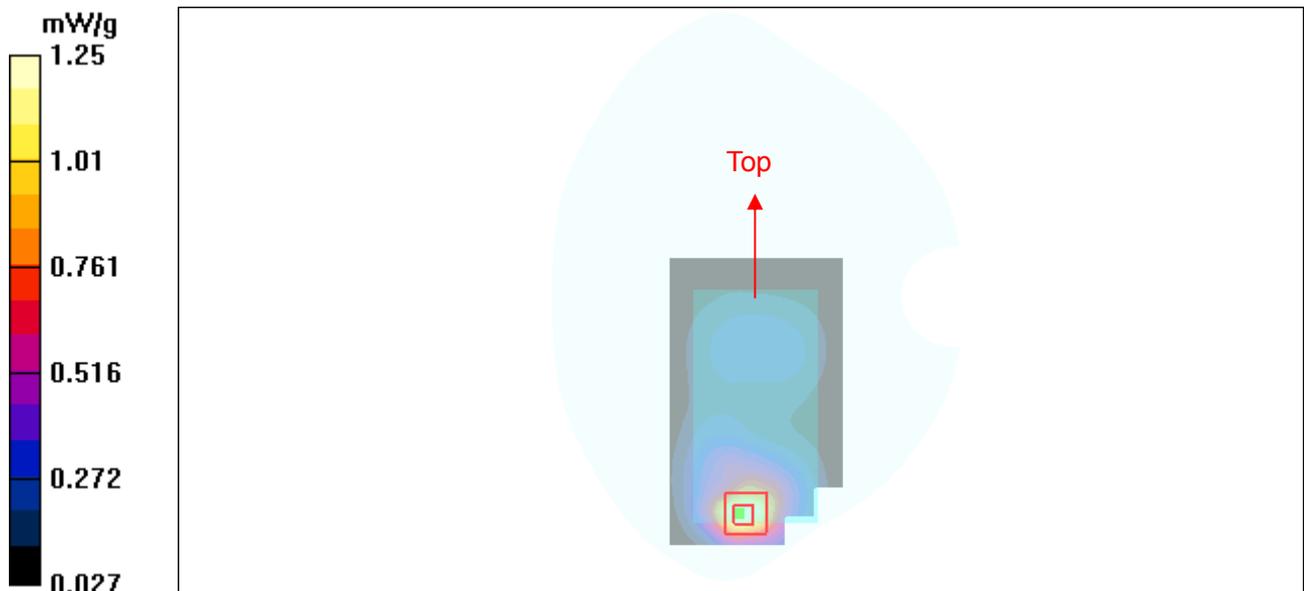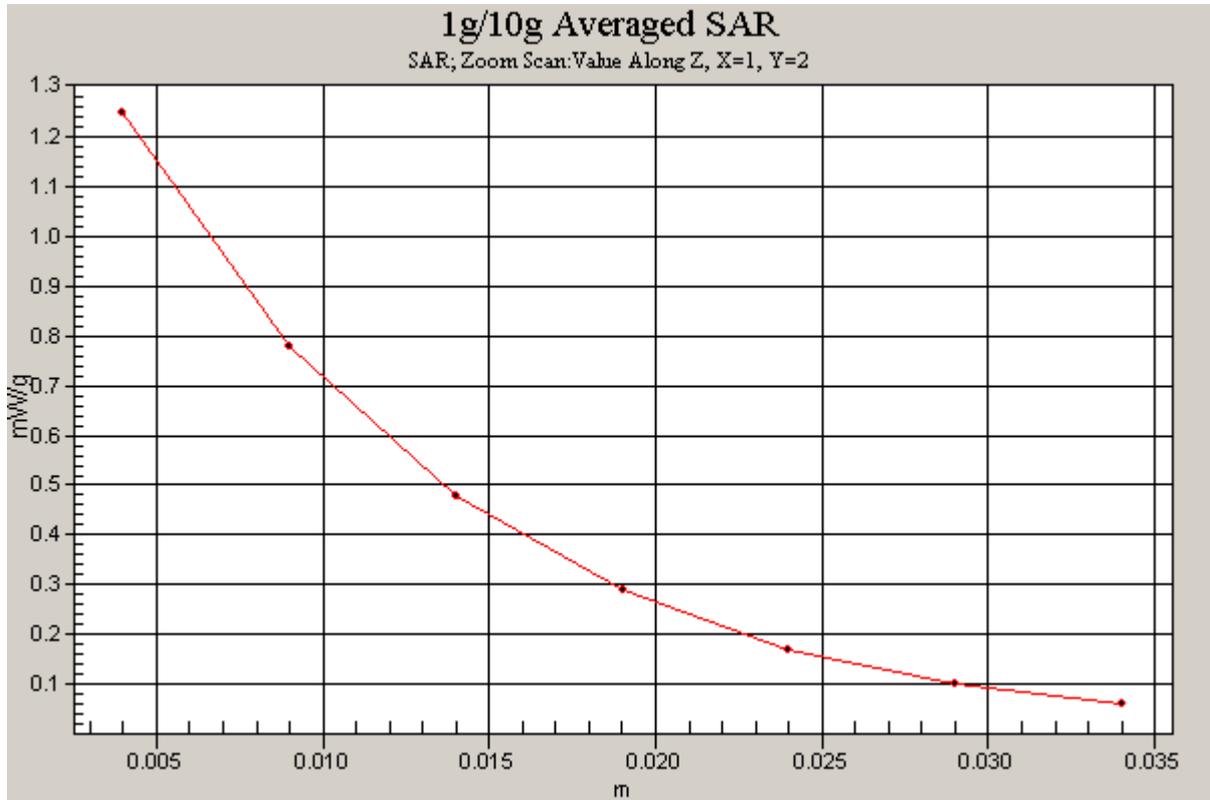
Figure 86 Body with Earphone, Towards Ground, WCDMA Band IV Channel 1413

WCDMA Band IV HSDPA Towards Ground Middle

Date/Time: 3/26/2011 4:46:28 AM

Communication System: WCDMA Band IV+HSDPA; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.46 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.9 V/m; Power Drift = 0.107 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.586 mW/g

Maximum value of SAR (measured) = 1.14 mW/g
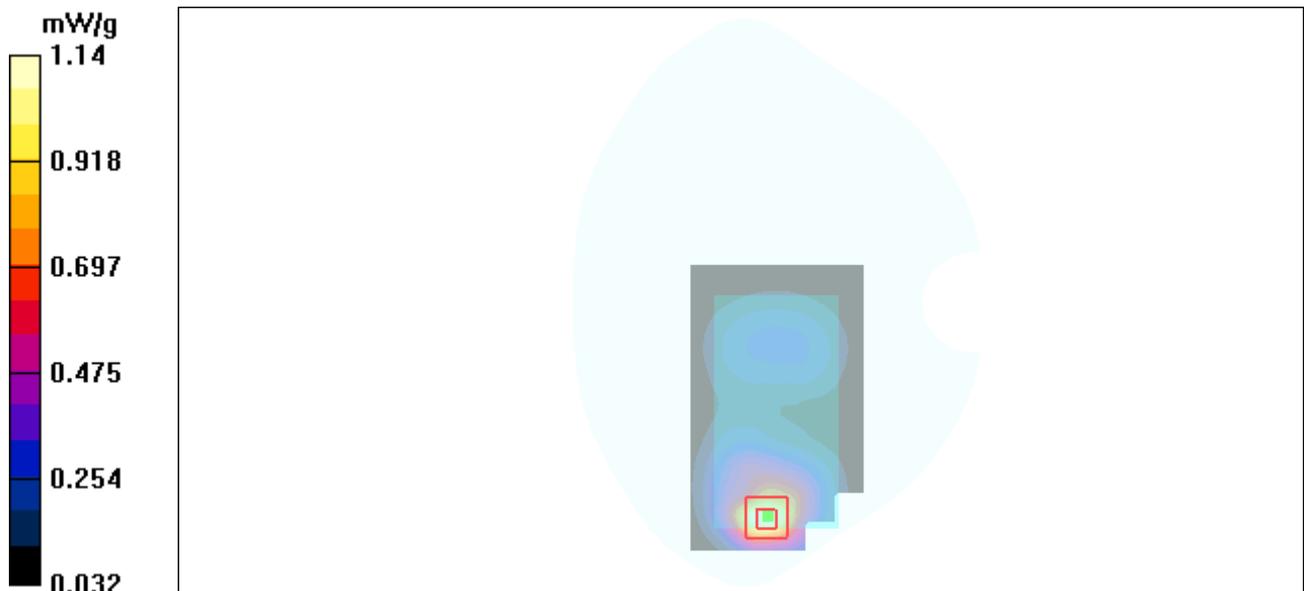
Figure 87 Body, Towards Ground, WCDMA Band IV HSDPA Channel 1413

WCDMA Band IV HSUPA Towards Ground Middle

Date/Time: 3/26/2011 5:02:06 AM

Communication System: WCDMA Band IV+HSUPA; Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.46 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

Probe: EX3DV4 - SN3677; ConvF(8.02, 8.02, 8.02); Calibrated: 11/24/2010

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.2 V/m; Power Drift = -0.068 dB

Peak SAR (extrapolated) = 1.50 W/kg

SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.506 mW/g

Maximum value of SAR (measured) = 0.962 mW/g
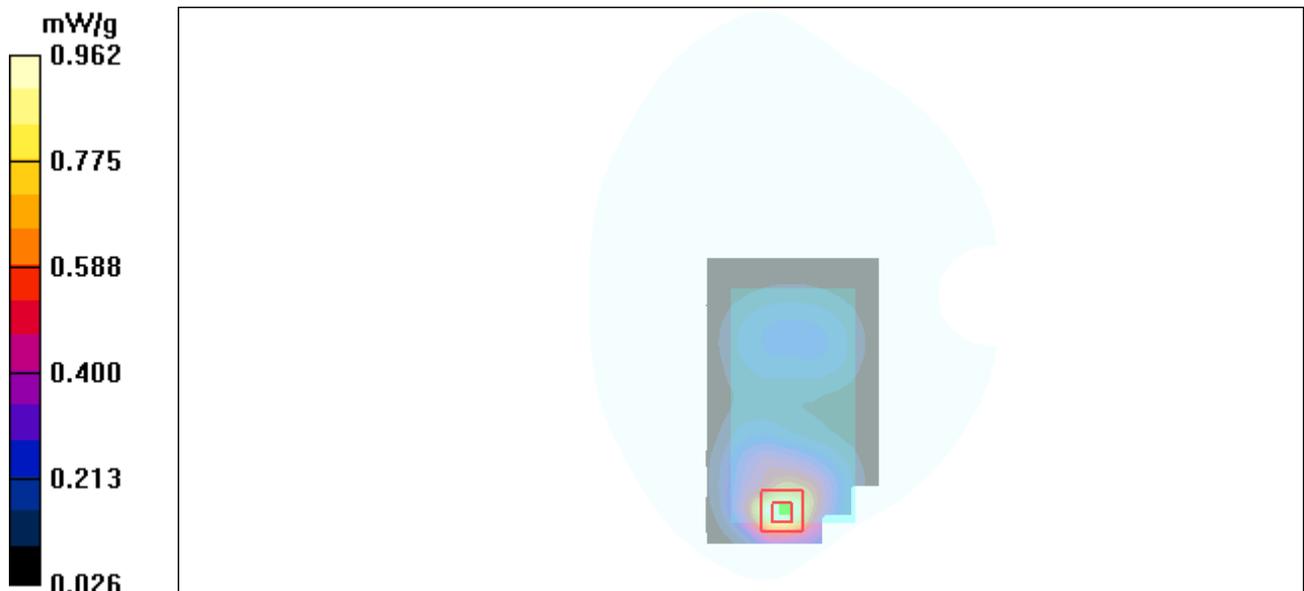
Figure 88 Body, Towards Ground, WCDMA Band IV HSUPA Channel 1413

WCDMA Band V Left Cheek High

Date/Time: 3/25/2011 2:52:11 AM

Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 0.914 mho/m; ε_r = 41.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.481 mW/g

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

Reference Value = 7.62 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 0.578 W/kg

SAR(1 g) = 0.458 mW/g; SAR(10 g) = 0.343 mW/g

Maximum value of SAR (measured) = 0.488 mW/g
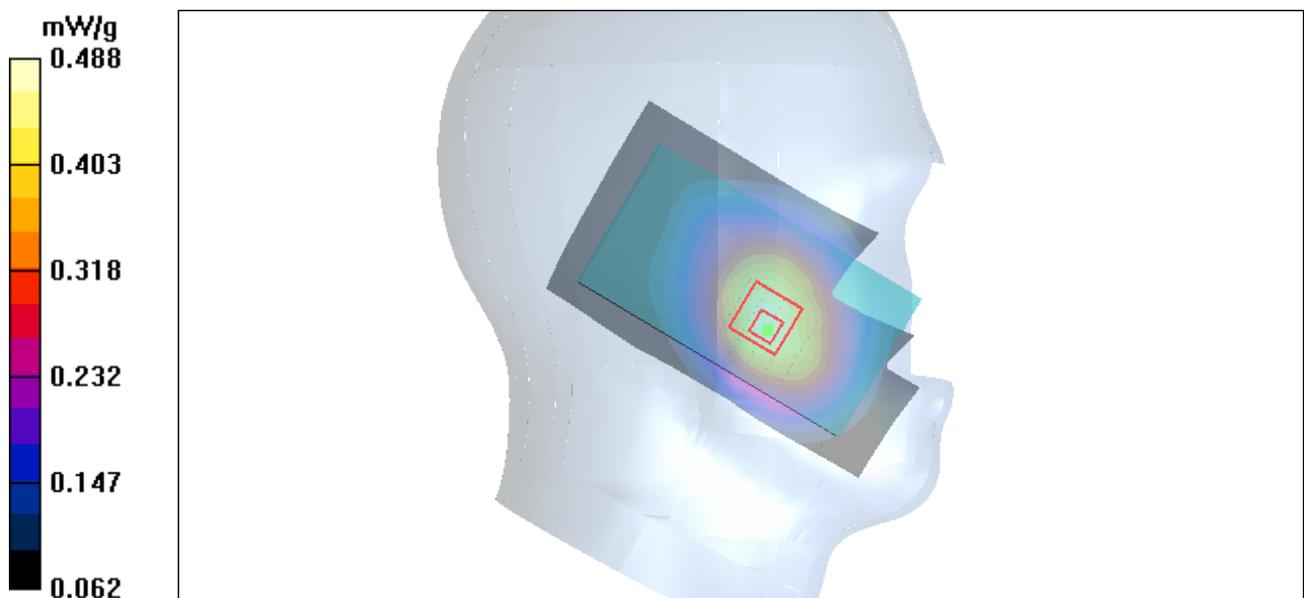
Figure 89 Left Hand Touch Cheek WCDMA Band V Channel 4233

WCDMA Band V Left Cheek Middle

Date/Time: 3/25/2011 1:00:11 AM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.650 mW/g

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

Reference Value = 8.72 V/m; Power Drift = -0.099 dB

Peak SAR (extrapolated) = 0.767 W/kg

SAR(1 g) = 0.609 mW/g; SAR(10 g) = 0.461 mW/g

Maximum value of SAR (measured) = 0.645 mW/g
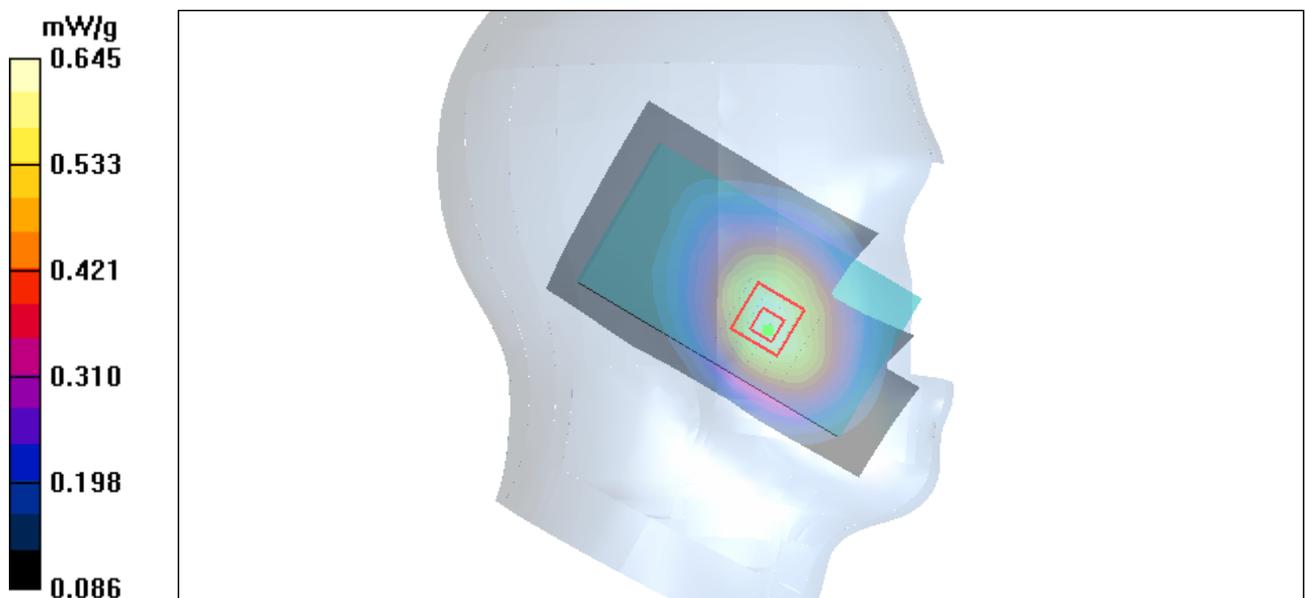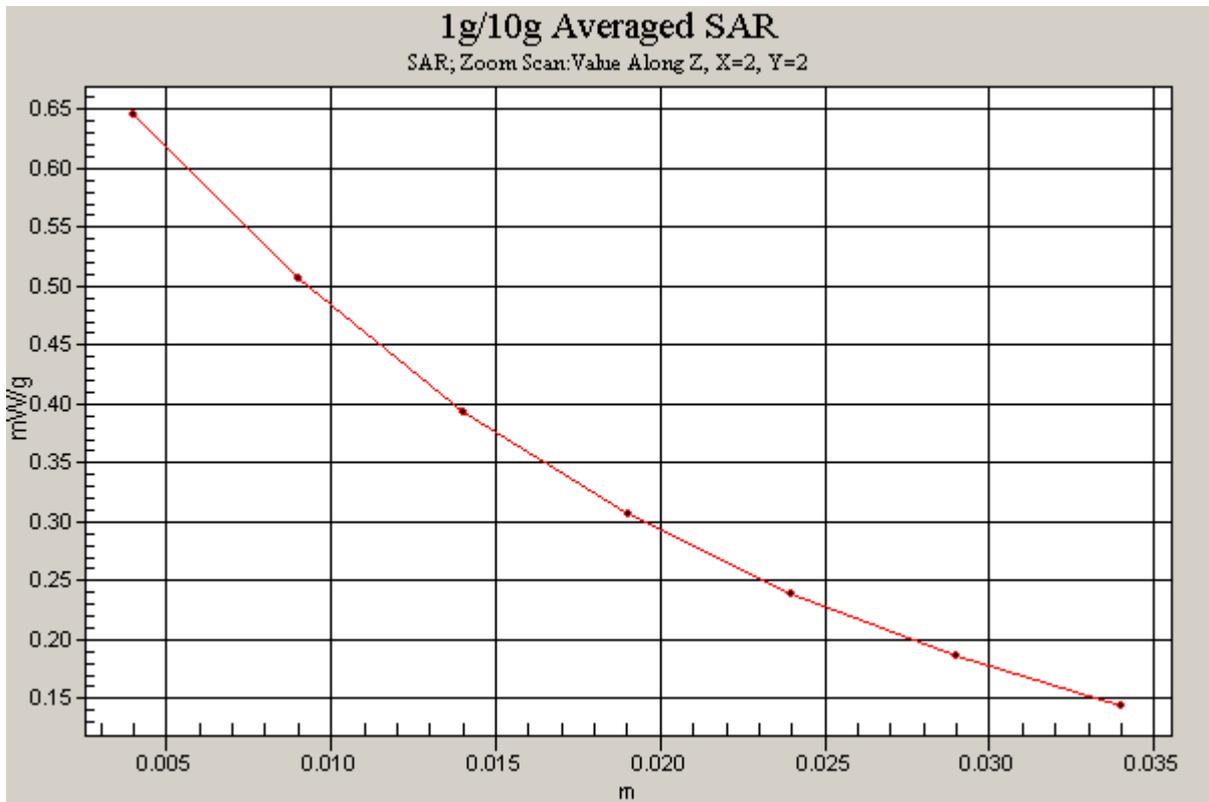
Figure 90 Left Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Left Cheek Low

Date/Time: 3/25/2011 2:37:10 AM

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.895 mho/m; $ε_r$ = 41.8; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.462 mW/g

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

Reference Value = 8.26 V/m; Power Drift = -0.055 dB

Peak SAR (extrapolated) = 0.549 W/kg

SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.332 mW/g

Maximum value of SAR (measured) = 0.469 mW/g
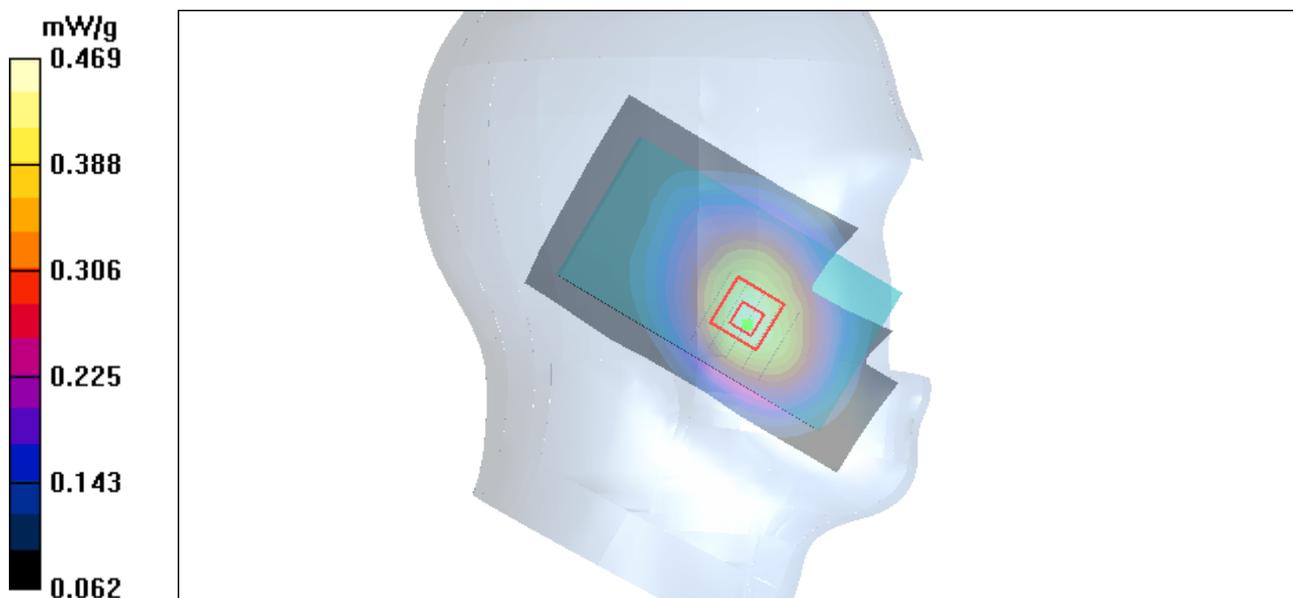
Figure 91 Left Hand Touch Cheek WCDMA Band V Channel 4132

WCDMA Band V Left Tilt Middle

Date/Time: 3/25/2011 1:15:34 AM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; $ε_r$ = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃　　　Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.371 mW/g

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

Reference Value = 13.2 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.401 W/kg

SAR(1 g) = 0.308 mW/g; SAR(10 g) = 0.212 mW/g

Maximum value of SAR (measured) = 0.349 mW/g

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

Reference Value = 13.2 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.414 W/kg

SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.272 mW/g

Maximum value of SAR (measured) = 0.359 mW/g
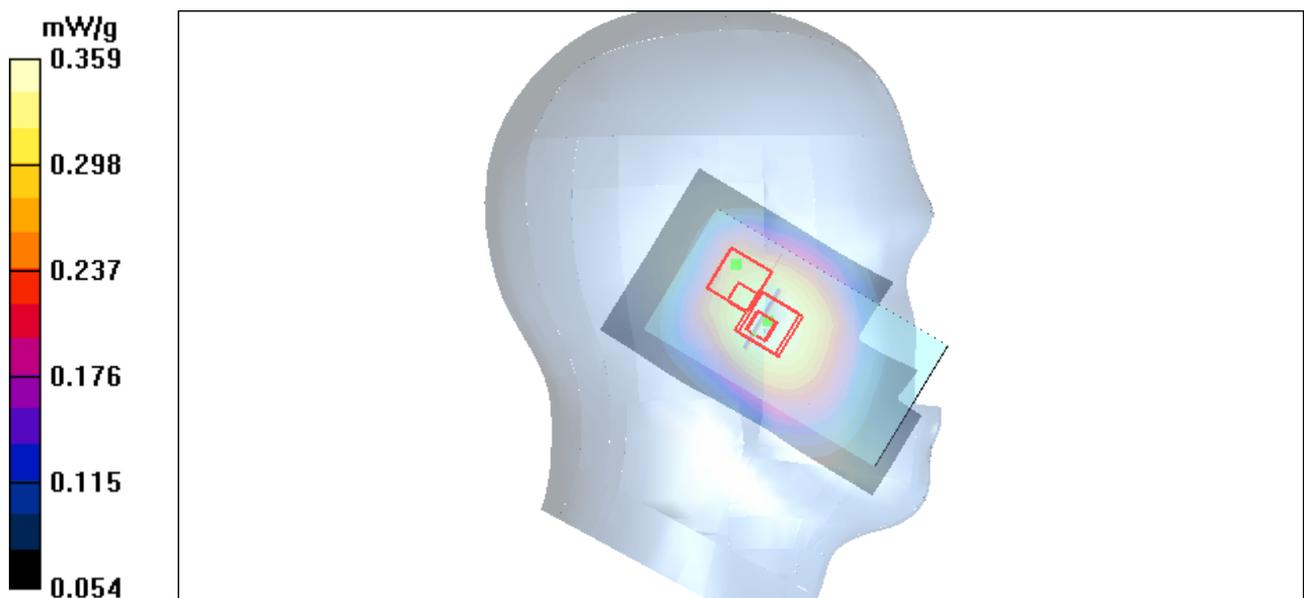
Figure 92 Left Hand Tilt 15° WCDMA Band V Channel 4183

WCDMA Band V Right Cheek Middle

Date/Time: 3/25/2011 1:41:39 AM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.537 mW/g

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

Reference Value = 9.09 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.626 W/kg

SAR(1 g) = 0.511 mW/g; SAR(10 g) = 0.391 mW/g

Maximum value of SAR (measured) = 0.534 mW/g
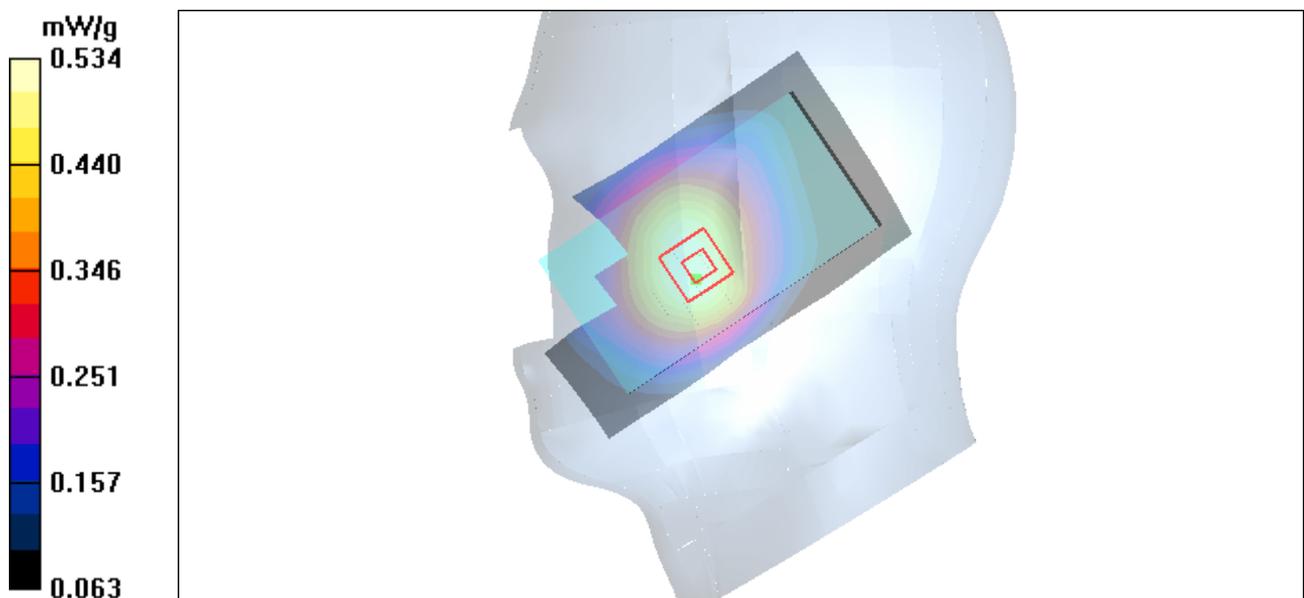
Figure 93 Right Hand Touch Cheek WCDMA Band V Channel 4183

WCDMA Band V Right Tilt Middle

Date/Time: 3/25/2011 2:19:23 AM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.905 mho/m; $ε_r$ = 41.7; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.363 mW/g

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

Reference Value = 13.8 V/m; Power Drift = 0.166 dB

Peak SAR (extrapolated) = 0.406 W/kg

SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.268 mW/g

Maximum value of SAR (measured) = 0.362 mW/g
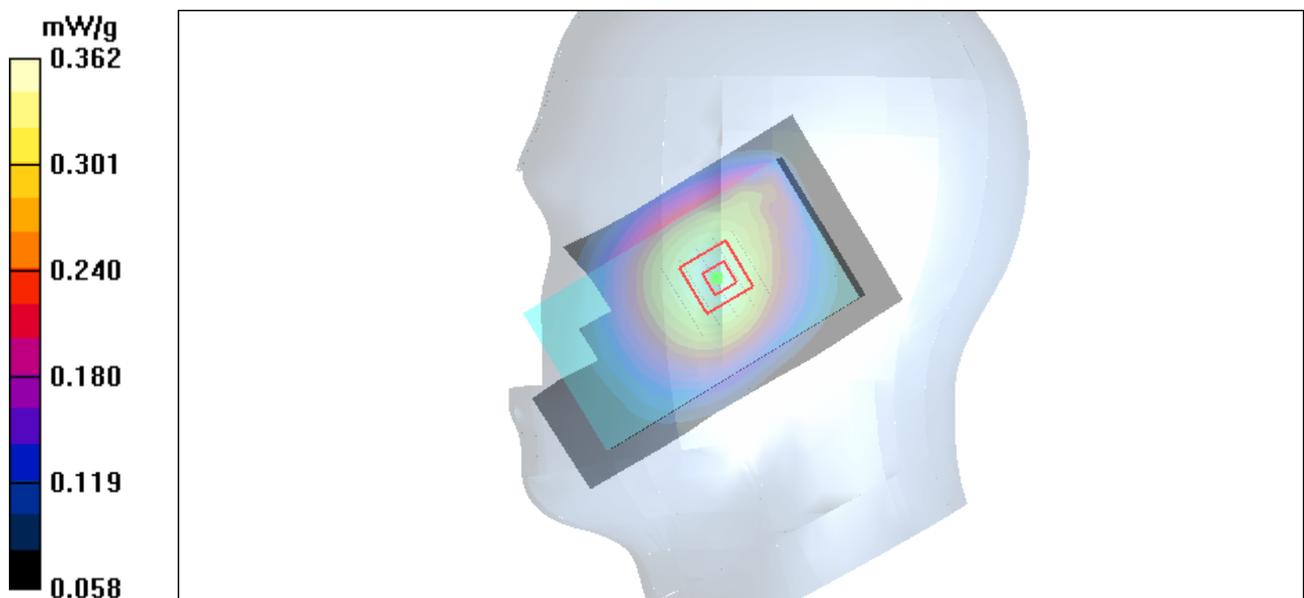
Figure 94 Right Hand Tilt 15° WCDMA Band V Channel 4183

WCDMA Band V Towards Ground High

Date/Time: 3/25/2011 10:29:01 PM

Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 1.01 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.536 mW/g

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

Reference Value = 9.30 V/m; Power Drift = -0.102 dB

Peak SAR (extrapolated) = 0.613 W/kg

SAR(1 g) = 0.508 mW/g; SAR(10 g) = 0.385 mW/g

Maximum value of SAR (measured) = 0.536 mW/g
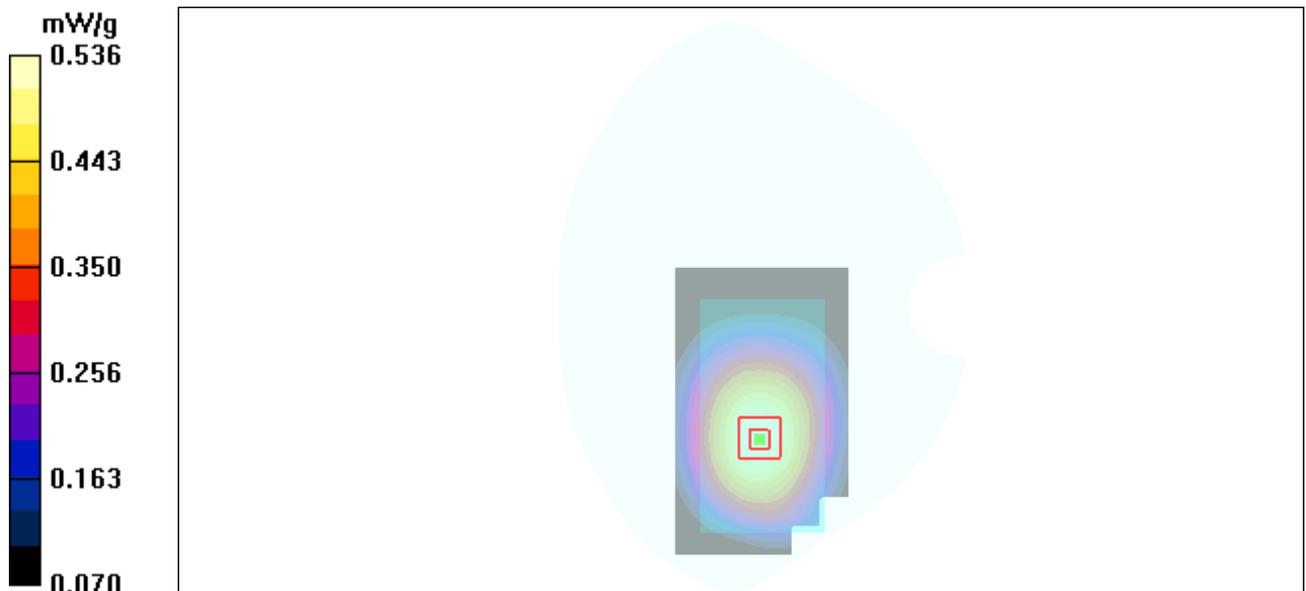
Figure 95 Body, Towards Ground, WCDMA Band V Channel 4233

WCDMA Band V Towards Ground Middle

Date/Time: 3/25/2011 10:15:18 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃　　　　Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.707 mW/g

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

Reference Value = 10.6 V/m; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 0.801 W/kg

SAR(1 g) = 0.667 mW/g; SAR(10 g) = 0.507 mW/g

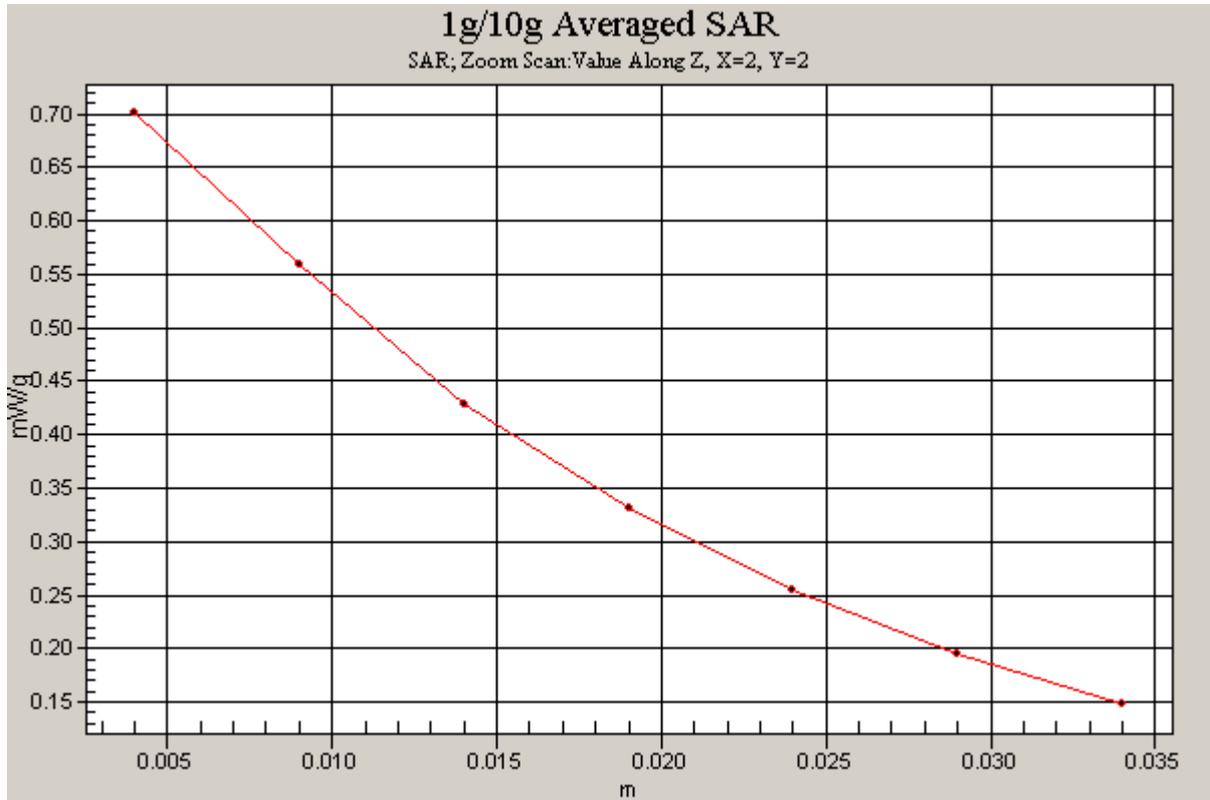Maximum value of SAR (measured) = 0.701 mW/g
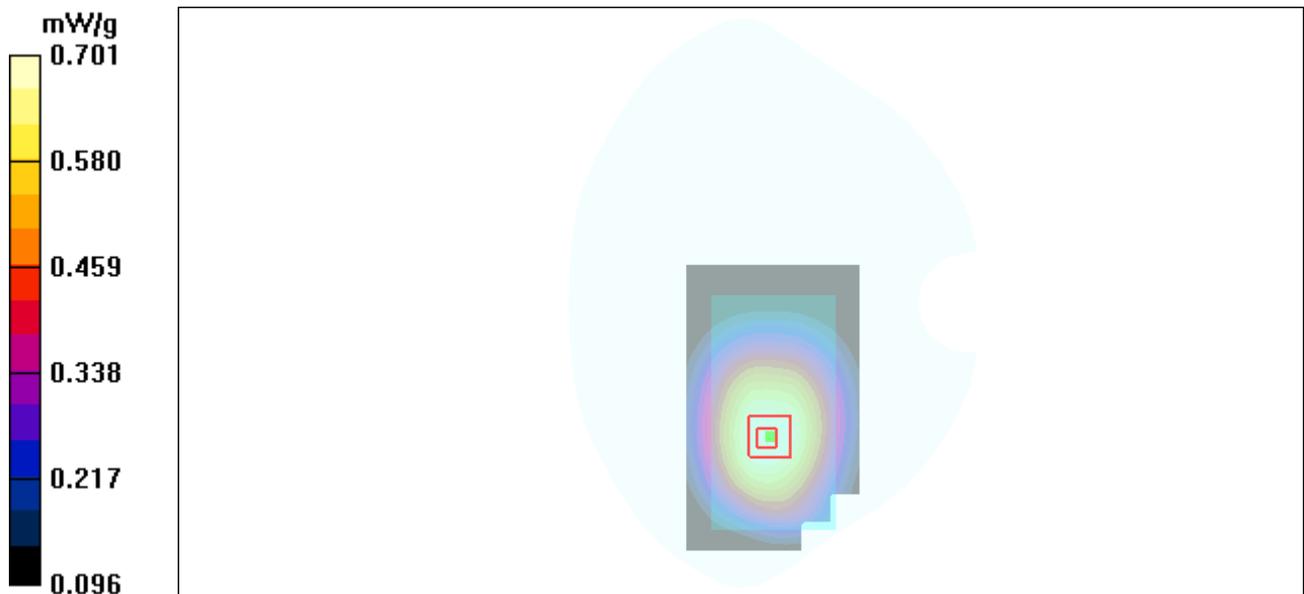
Figure 96 Body, Towards Ground, WCDMA Band V Channel 4183

WCDMA Band V Towards Ground Low

Date/Time: 3/25/2011 10:42:17 PM

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.987 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.578 mW/g

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

Reference Value = 9.46 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 0.669 W/kg

SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.418 mW/g
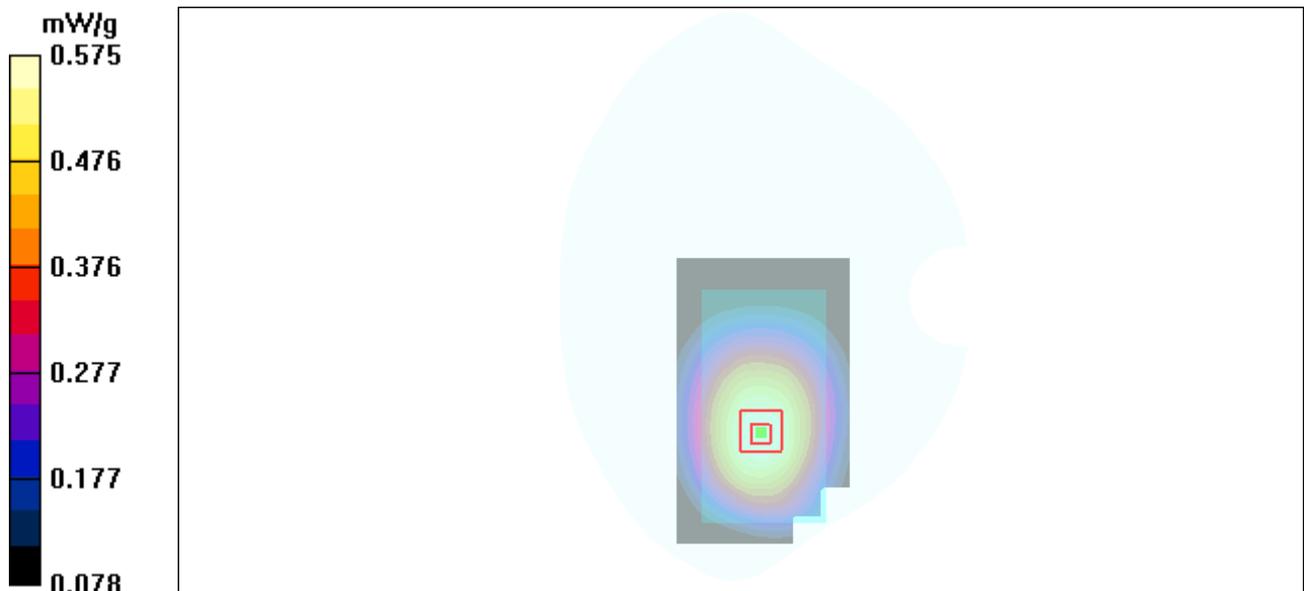
Maximum value of SAR (measured) = 0.575 mW/g

Figure 97 Body, Towards Ground, WCDMA Band V Channel 4132

WCDMA Band V Towards Phantom Middle

Date/Time: 3/25/2011 11:24:28 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.542 mW/g

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

Reference Value = 9.10 V/m; Power Drift = -0.088 dB

Peak SAR (extrapolated) = 0.619 W/kg

SAR(1 g) = 0.513 mW/g; SAR(10 g) = 0.391 mW/g

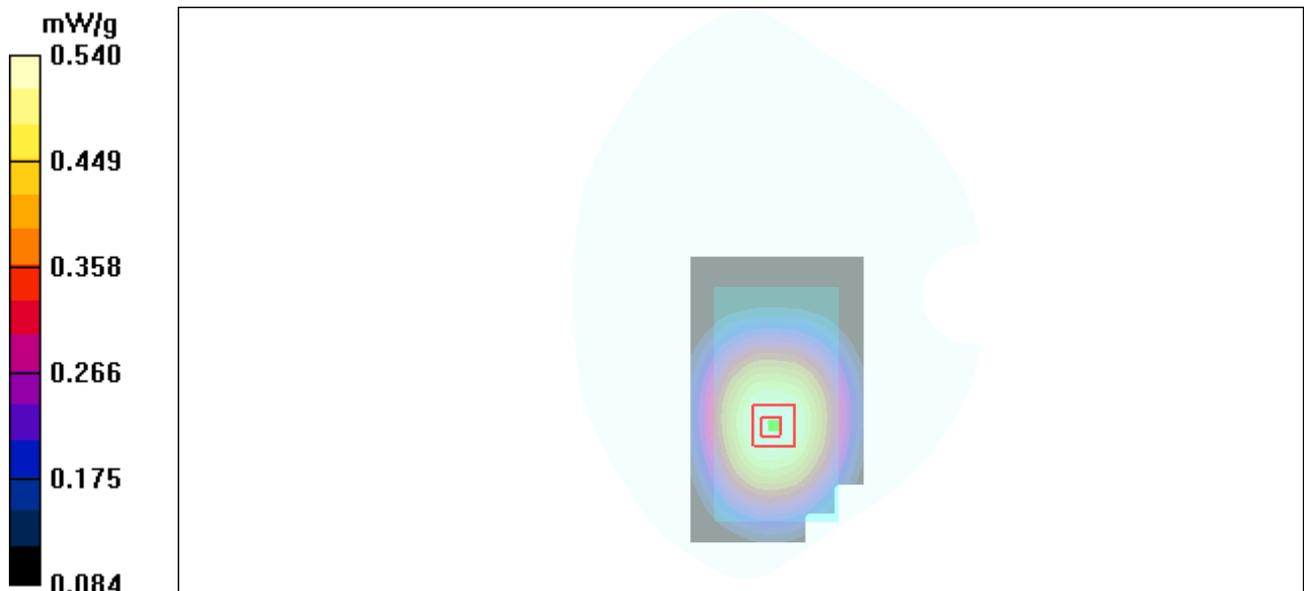Maximum value of SAR (measured) = 0.540 mW/g

Figure 98 Body, Towards Phantom, WCDMA Band V Channel 4183

WCDMA Band V with Earphone Towards Ground Middle

Date/Time: 3/25/2011 10:56:35 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 7.09 V/m; Power Drift = 0.112 dB

Peak SAR (extrapolated) = 0.763 W/kg

SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.459 mW/g

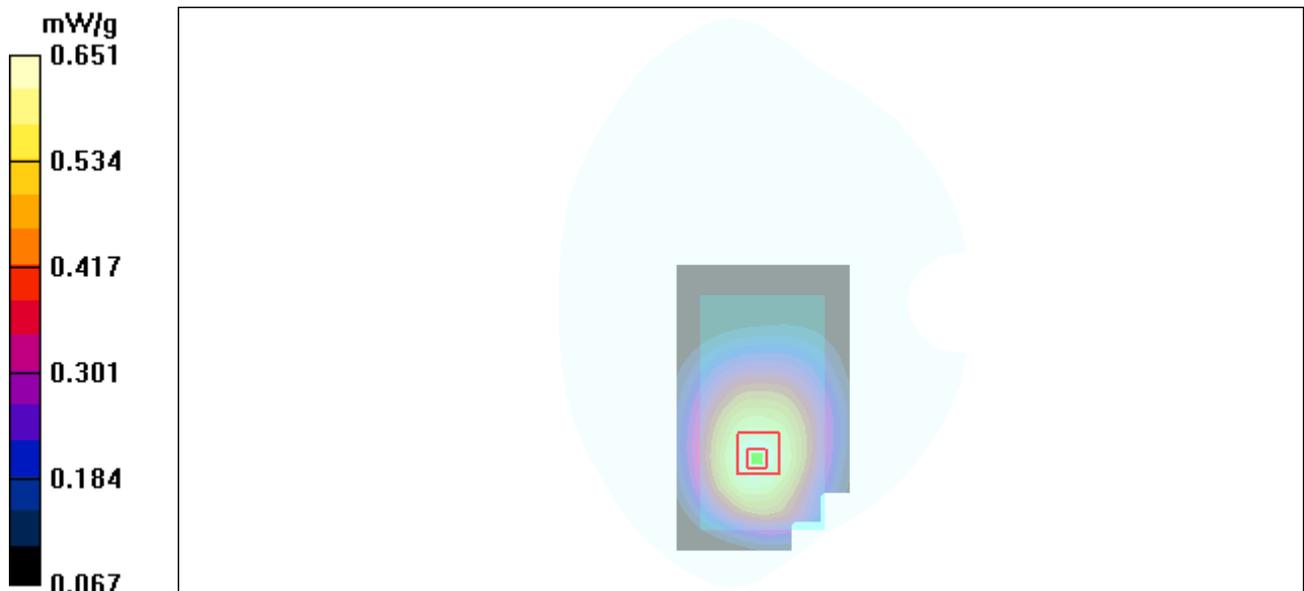Maximum value of SAR (measured) = 0.651 mW/g

Figure 99 Body with Earphone, Towards Ground, WCDMA Band V Channel 4183

WCDMA Band V HSDPA Towards Ground Middle

Date/Time: 3/26/2011 1:57:48 AM

Communication System: WCDMA Band V+HSDPA; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; $ε_r$ = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.633 mW/g

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

Reference Value = 10.2 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.716 W/kg

SAR(1 g) = 0.593 mW/g; SAR(10 g) = 0.450 mW/g
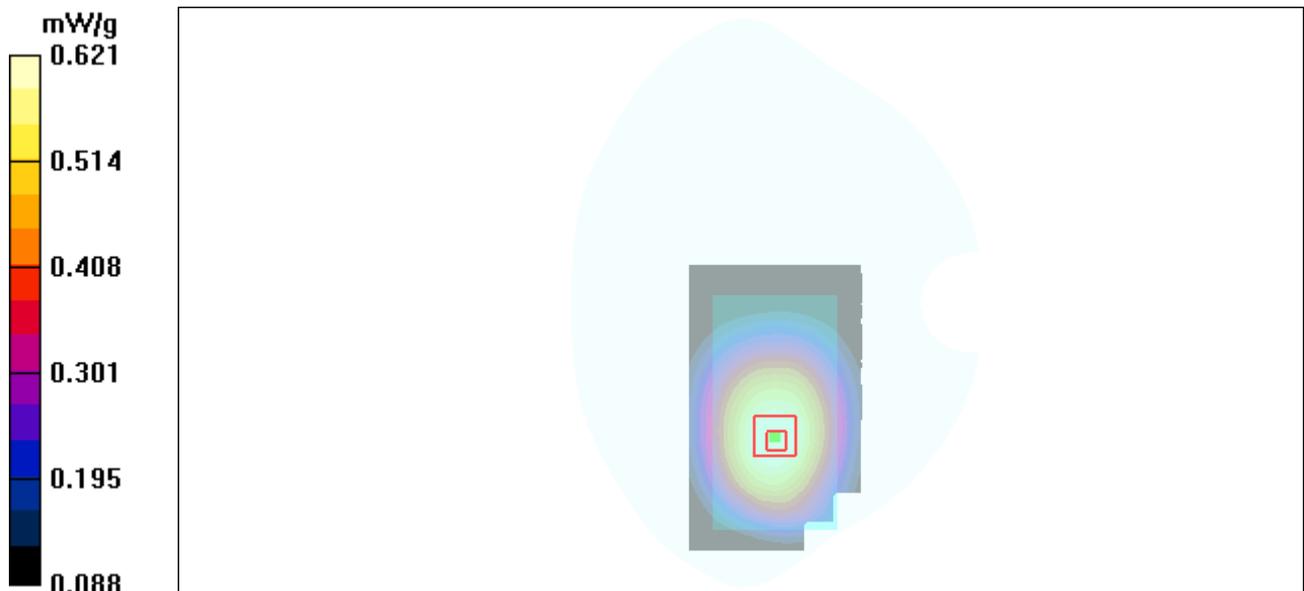
Maximum value of SAR (measured) = 0.621 mW/g

Figure 100 Body, Towards Ground, WCDMA Band V HSDPA Channel 4183

WCDMA Band V HSUPA Towards Ground Middle

Date/Time: 3/26/2011 2:32:45 AM

Communication System: WCDMA Band V+HSUPA; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.497 mW/g

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

Reference Value = 9.68 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 0.663 W/kg

SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.416 mW/g
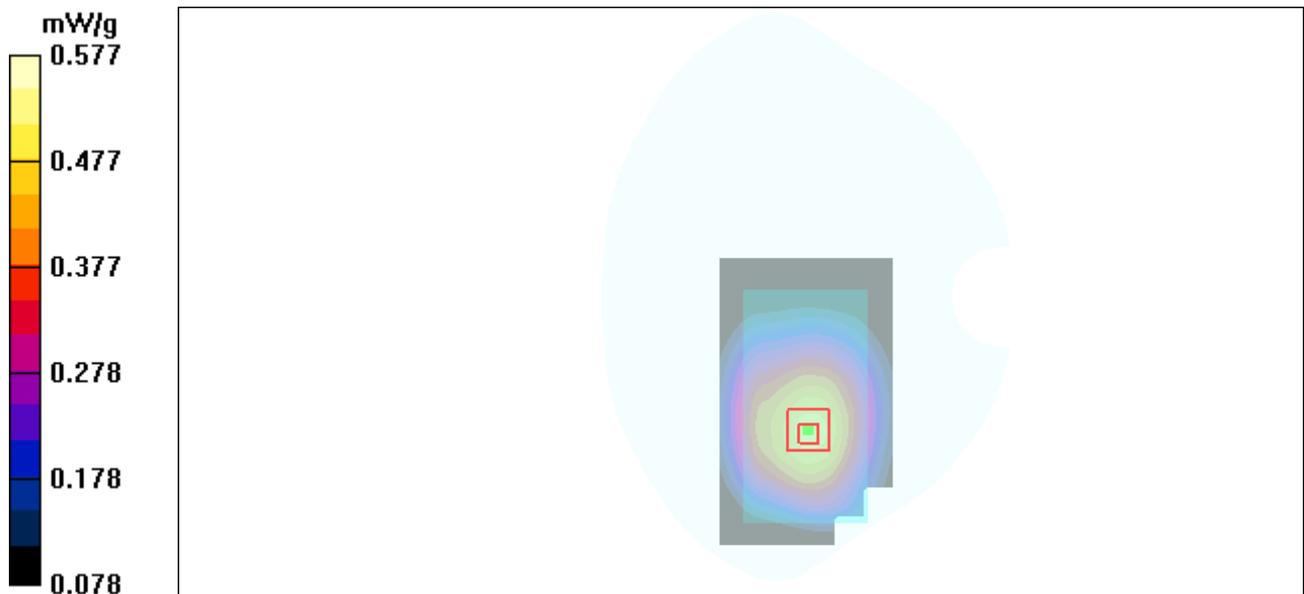
Maximum value of SAR (measured) = 0.577 mW/g

Figure 101 Body, Towards Ground, WCDMA Band V HSUPA Channel 4183

802.11b Left Cheek High

Date/Time: 3/30/2011 2:34:00 PM

Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.83 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.275 mW/g

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

Reference Value = 6.13 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 0.789 W/kg

SAR(1 g) = 0.241 mW/g; SAR(10 g) = 0.101 mW/g
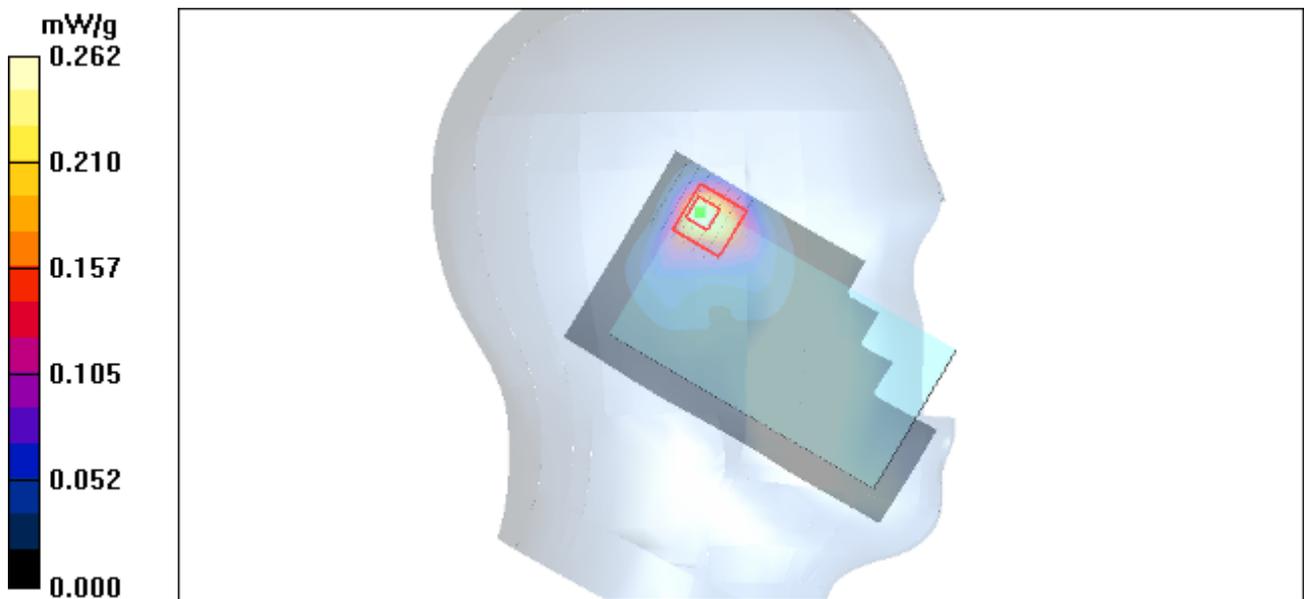
Maximum value of SAR (measured) = 0.262 mW/g

Figure 102 Left Hand Touch Cheek 802.11b Channel 11

802.11b Left Cheek Middle

Date/Time: 3/29/2011 10:07:17 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.8 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

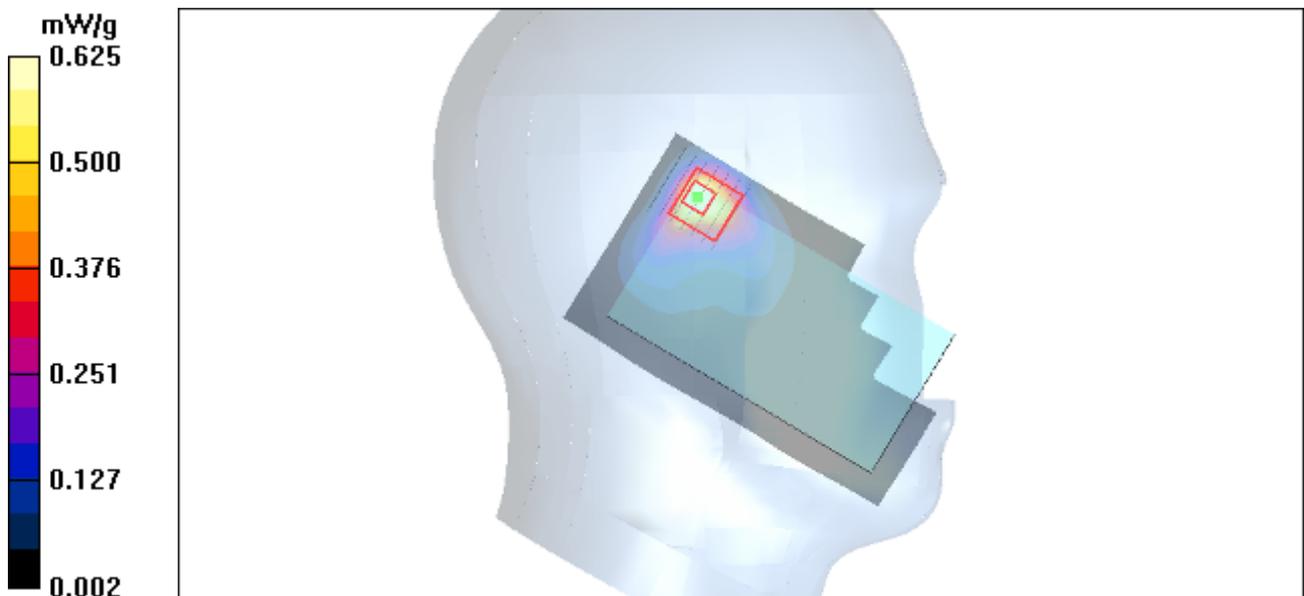Maximum value of SAR (interpolated) = 0.731 mW/g

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

Reference Value = 10.4 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 1.99 W/kg

SAR(1 g) = 0.585 mW/g; SAR(10 g) = 0.253 mW/g
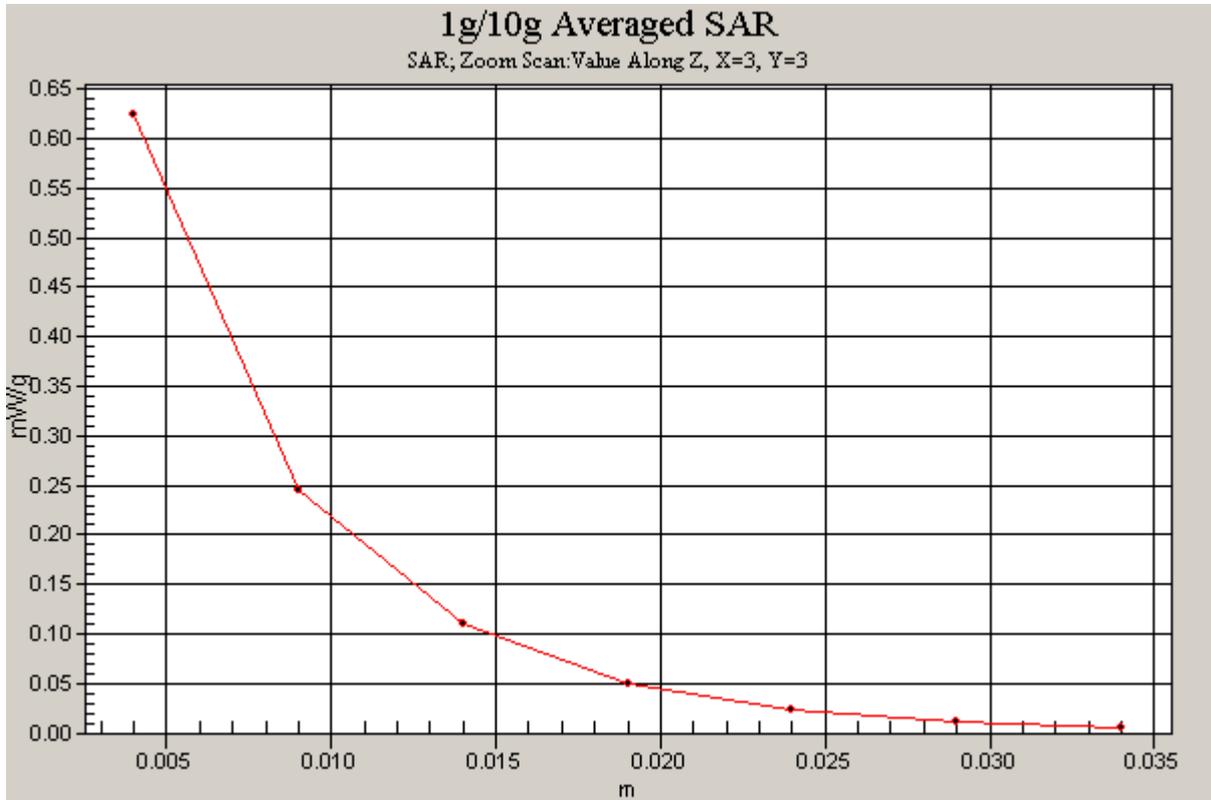
Maximum value of SAR (measured) = 0.625 mW/g

Figure 103 Left Hand Touch Cheek 802.11b Channel 6

802.11b Left Cheek Low

Date/Time: 3/30/2011 3:15:33 PM

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.77 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.432 mW/g

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

Reference Value = 7.65 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.360 mW/g; SAR(10 g) = 0.156 mW/g
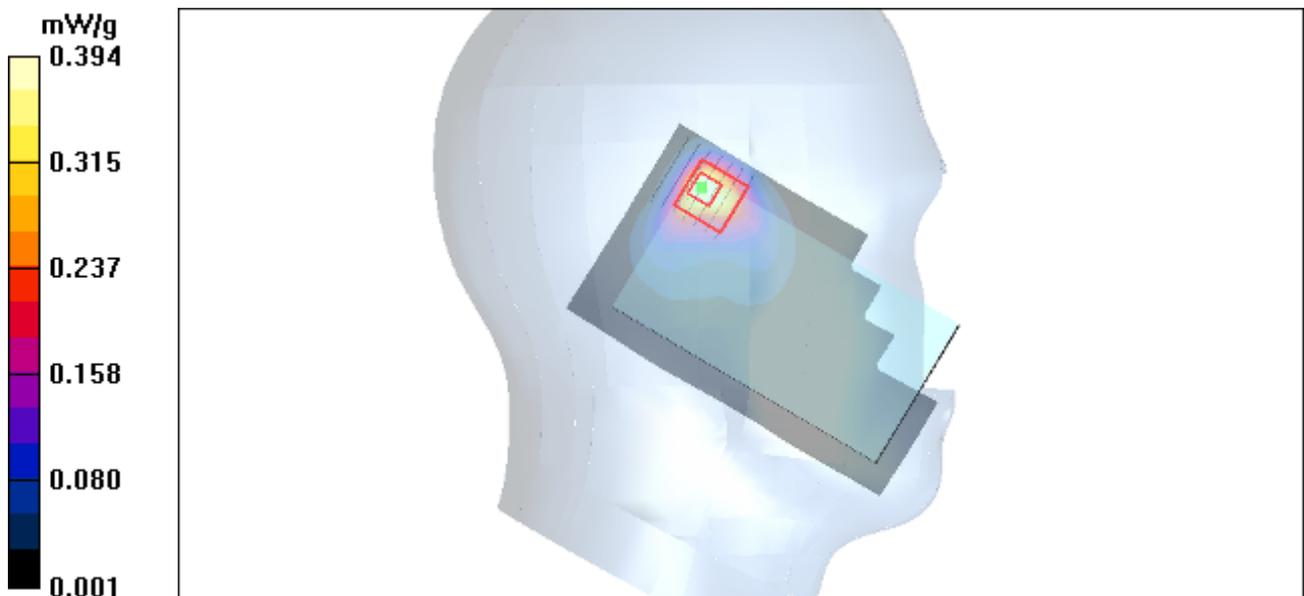
Maximum value of SAR (measured) = 0.394 mW/g

Figure 104 Left Hand Touch Cheek 802.11b Channel 1

802.11b Left Tilt Middle

Date/Time: 3/29/2011 11:12:18 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.8 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.2 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.153 mW/g
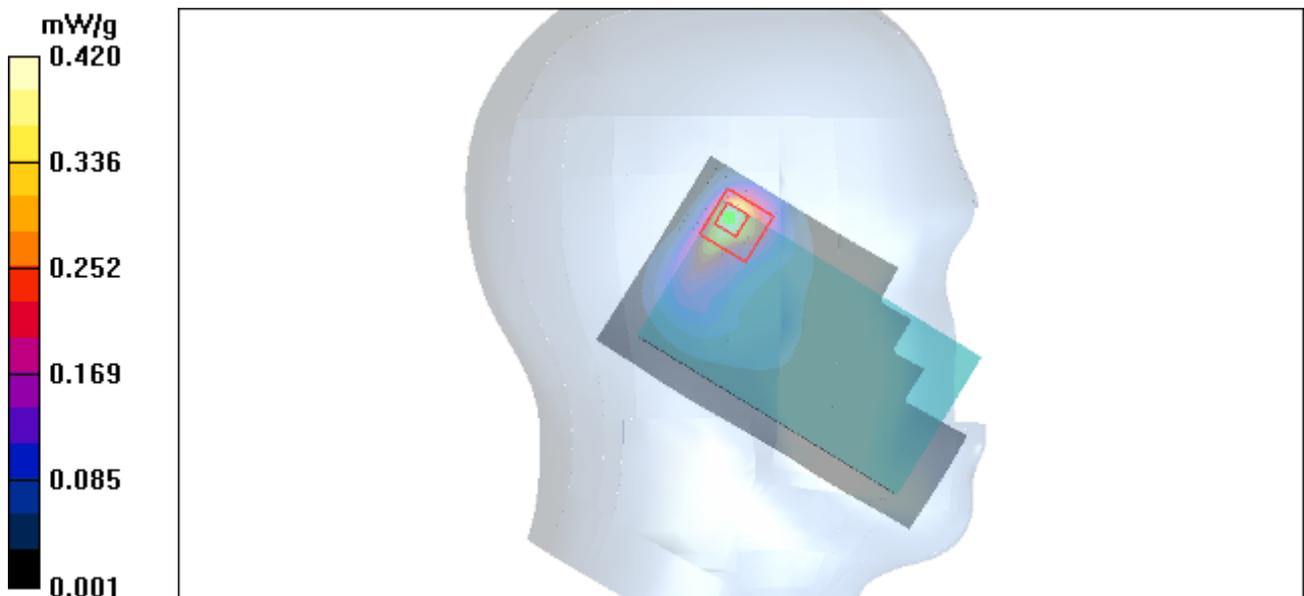
Maximum value of SAR (measured) = 0.420 mW/g

Figure 105 Left Hand Tilt 15° 802.11b Channel 6

802.11b Right Cheek Middle

Date/Time: 3/29/2011 10:28:16 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.8 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Cheek Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.308 mW/g

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

Reference Value = 11.7 V/m; Power Drift = 0.063 dB

Peak SAR (extrapolated) = 0.642 W/kg

SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.138 mW/g

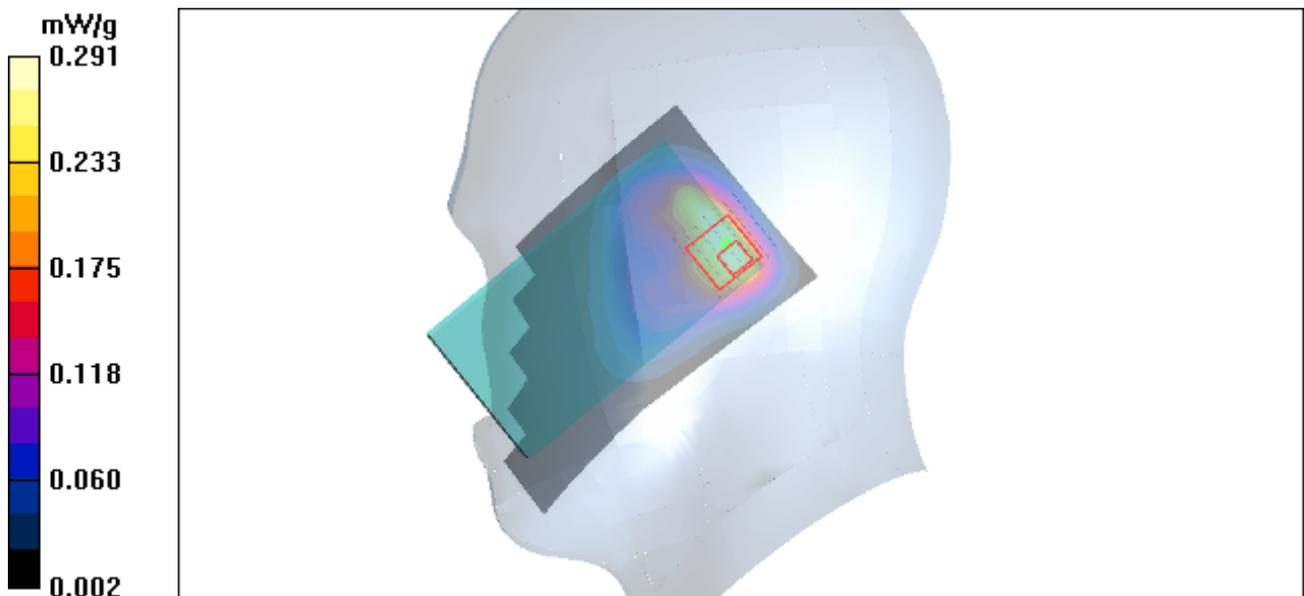Maximum value of SAR (measured) = 0.291 mW/g

Figure 106 Right Hand Touch Cheek 802.11b Channel 6

802.11b Right Tilt Middle

Date/Time: 3/29/2011 10:48:39 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.8 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.243 mW/g

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

Reference Value = 11.4 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 0.426 W/kg

SAR(1 g) = 0.214 mW/g; SAR(10 g) = 0.112 mW/g
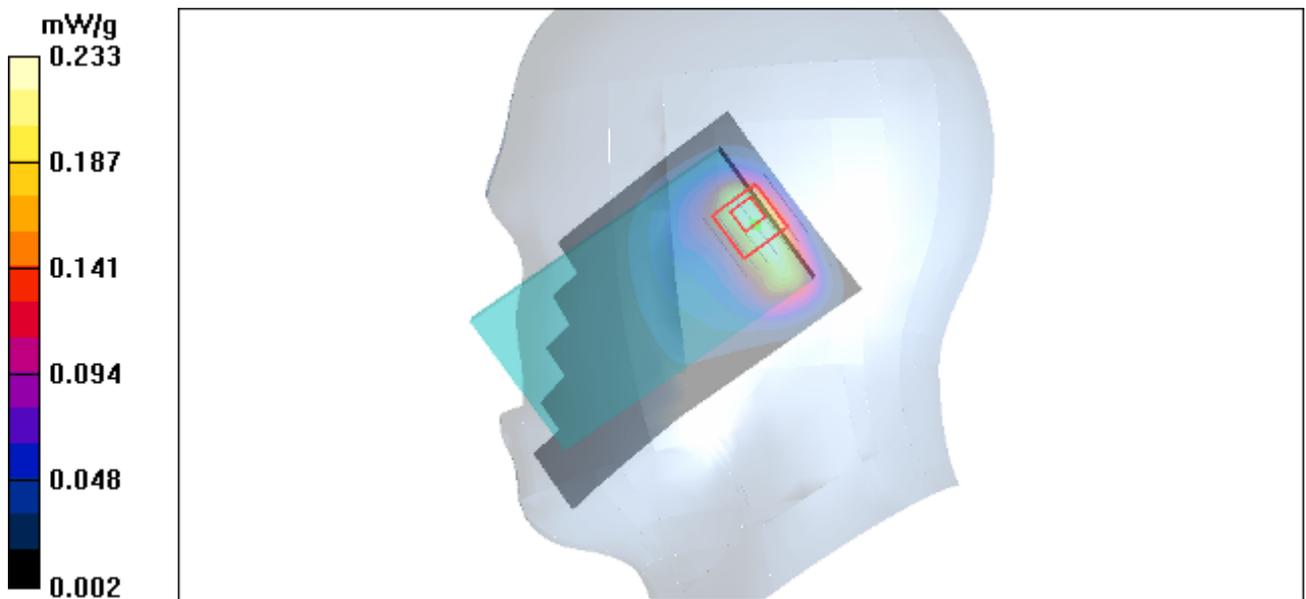
Maximum value of SAR (measured) = 0.233 mW/g

Figure 107 Right Hand Tilt 15° 802.11b Channel 6

802.11b Towards Ground Middle

Date/Time: 3/30/2011 3:56:08 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.93 mho/m; $ε_r$ = 51.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Ground Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.044 mW/g

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

Reference Value = 3.40 V/m; Power Drift = -0.094 dB

Peak SAR (extrapolated) = 0.096 W/kg

SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.021 mW/g

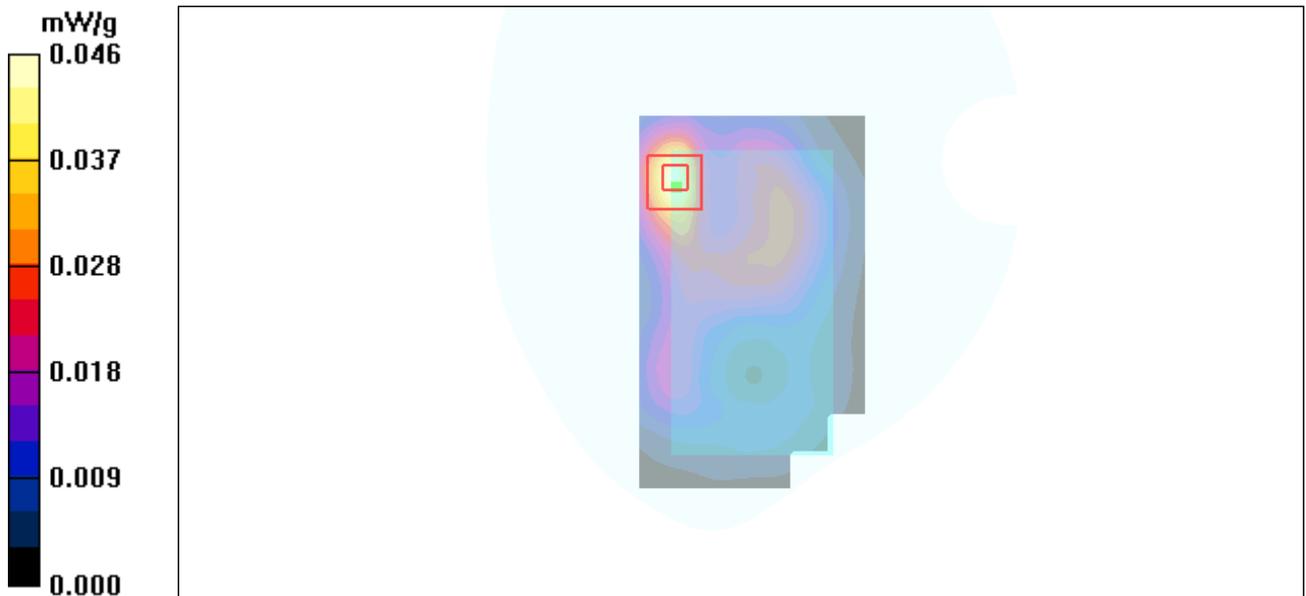Maximum value of SAR (measured) = 0.046 mW/g

Figure 108 Body, Towards Ground, 802.11b Channel 6

802.11b Towards Phantom High

Date/Time: 3/30/2011 4:51:31 PM

Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.96 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom High/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.051 mW/g

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

Reference Value = 4.08 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 0.108 W/kg

SAR(1 g) = 0.047 mW/g; SAR(10 g) = 0.025 mW/g

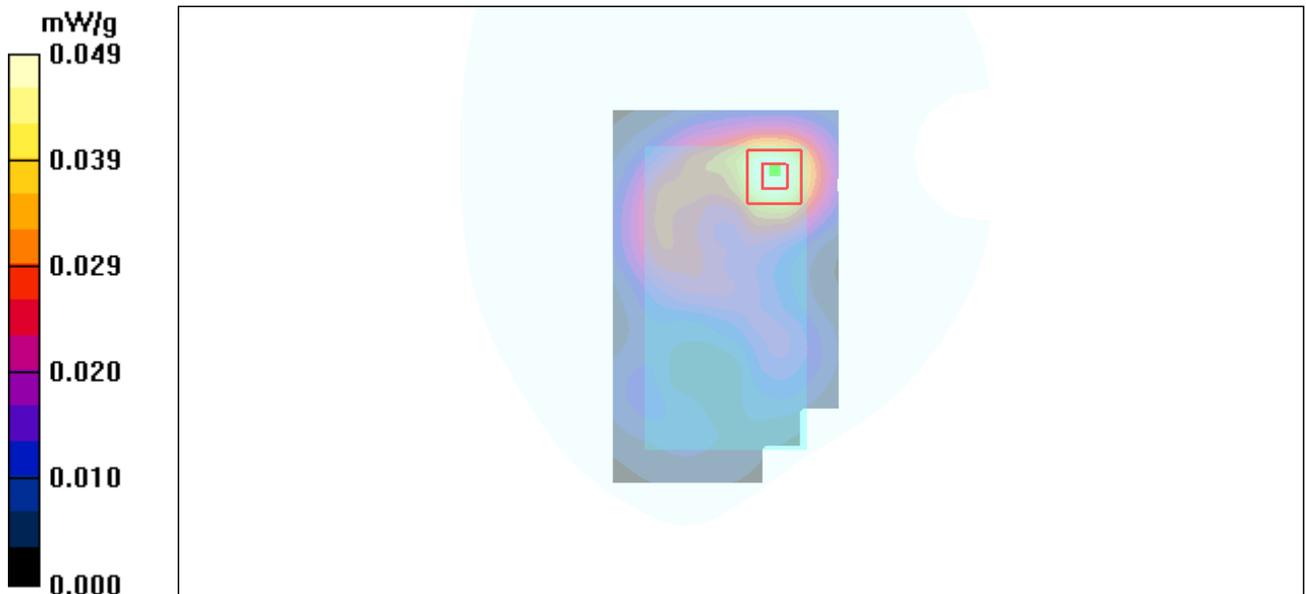Maximum value of SAR (measured) = 0.049 mW/g

Figure 109 Body, Towards Phantom, 802.11b Channel 11

802.11b Towards Phantom Middle

Date/Time: 3/30/2011 12:00:53 AM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.93 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.061 mW/g

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

Reference Value = 4.19 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 0.127 W/kg

SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.030 mW/g

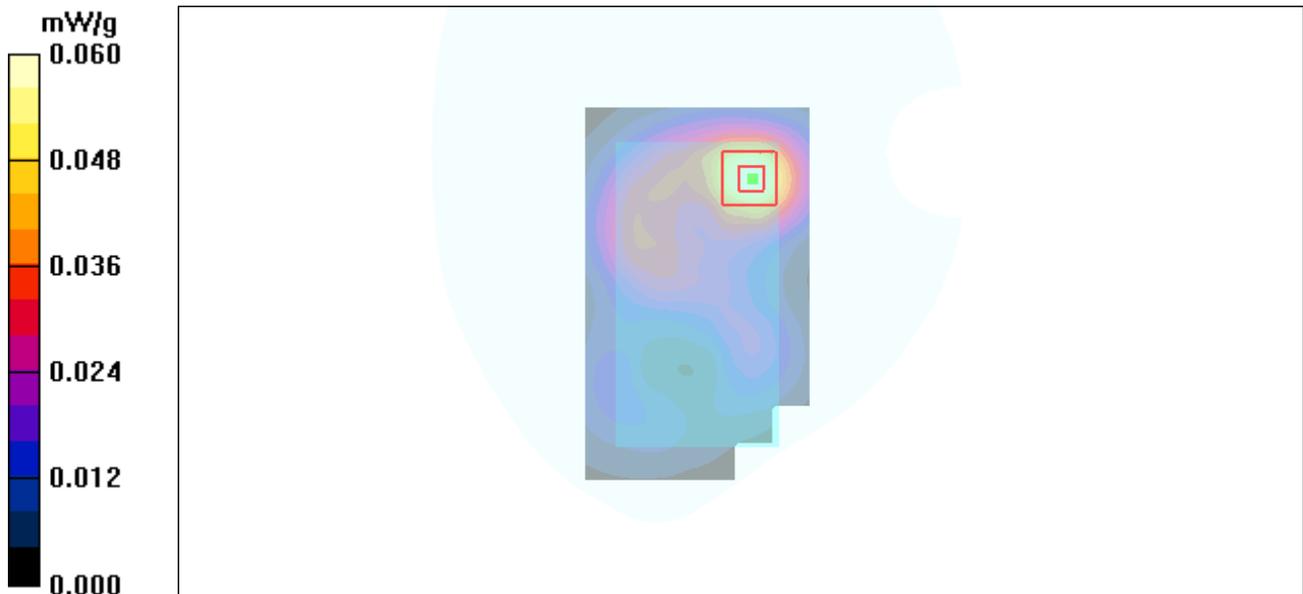Maximum value of SAR (measured) = 0.060 mW/g

Figure 110 Body, Towards Phantom, 802.11b Channel 6

802.11b Towards Phantom Low

Date/Time: 3/30/2011 5:15:44 PM

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.89 mho/m; $ε_r$ = 51.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Low/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.042 mW/g

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

Reference Value = 3.67 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 0.095 W/kg

SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.022 mW/g

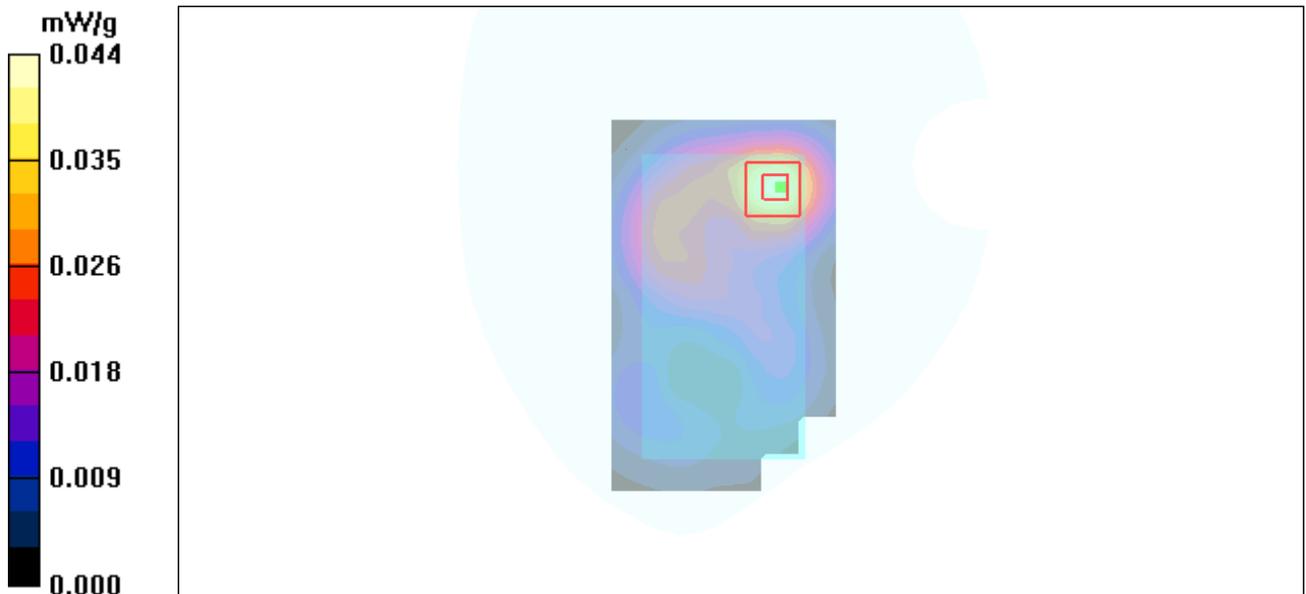Maximum value of SAR (measured) = 0.044 mW/g

Figure 111 Body, Towards Phantom, 802.11b Channel 1

802.11b with Earphone Towards Phantom Middle

Date/Time: 3/30/2011 5:47:04 PM

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.93 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY4 Configuration:

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

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

Phantom: SAM000 T01; Type: SAM V4.0; Serial: TP-1246

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Towards Phantom Middle/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

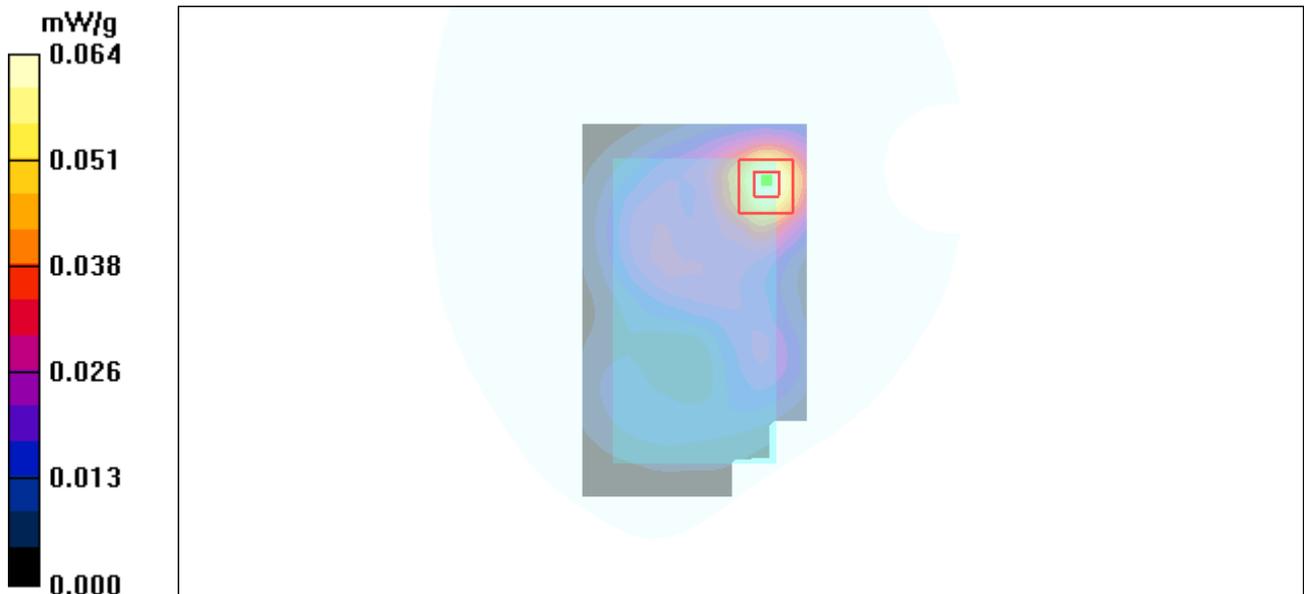Maximum value of SAR (interpolated) = 0.066 mW/g

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

Reference Value = 3.47 V/m; Power Drift = -0.087 dB

Peak SAR (extrapolated) = 0.140 W/kg

SAR(1 g) = 0.061 mW/g; SAR(10 g) = 0.032 mW/g

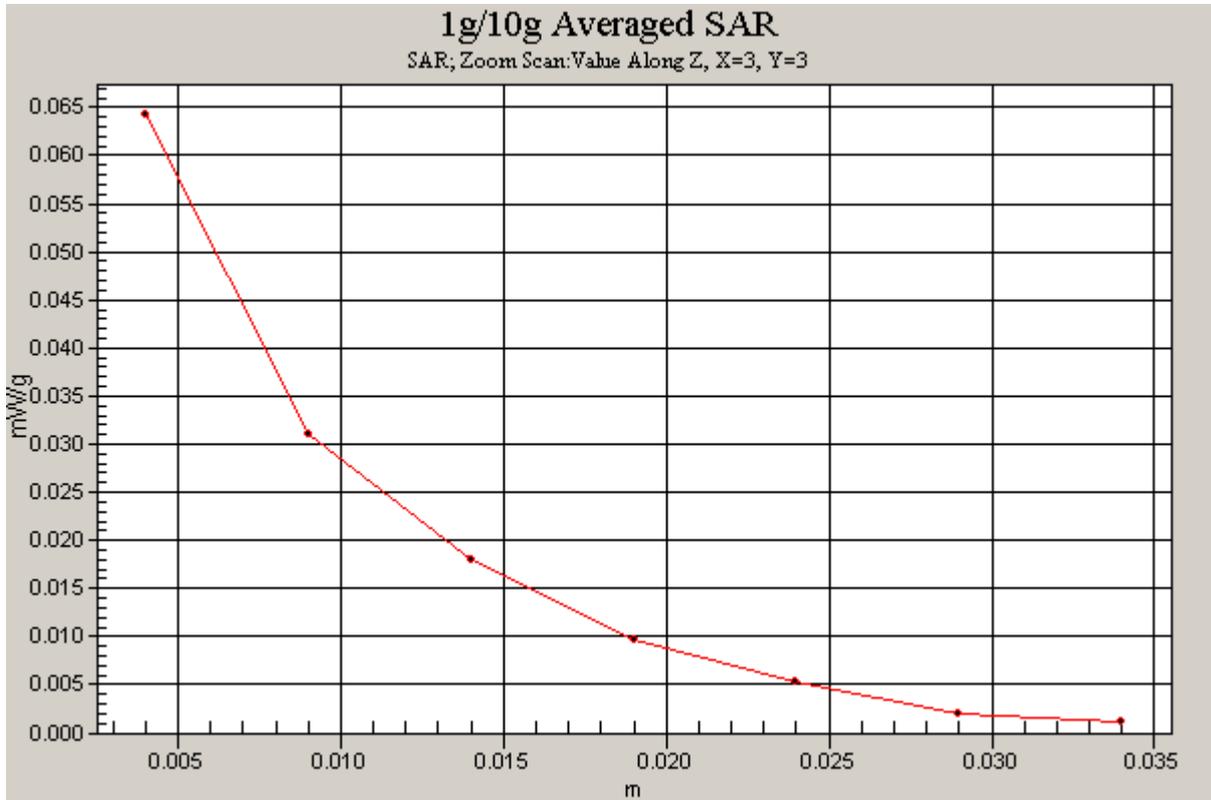Maximum value of SAR (measured) = 0.064 mW/g

Figure 112 Body with earphone, Towards Phantom, 802.11b Channel 6

ANNEX D: Probe Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

ilac-MRA

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client   **TA-SH (Auden)**   Certificate No: **EX3-3677_Nov10**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3677
Calibration procedure(s)	QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	November 24, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: November 25, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3677_Nov10   Page 1 of 11

Calibration Laboratory of

Schmid & Partner
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z*: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

EX3DV4 SN:3677

November 24, 2010

Probe EX3DV4

SN:3677

Manufactured: September 9, 2008
Last calibrated: September 23, 2009
Recalibrated: November 24, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: EX3-3677_Nov10

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EX3DV4 SN:3677

November 24, 2010

DASY/EASY - Parameters of Probe: EX3DV4 SN:3677

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	0.41	0.47	0.39	± 10.1%
DCP $(mV)^B$	96.8	98.9	98.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	143.2	± 2.4 %
			Y	0.00	0.00	1.00	140.9	
			Z	0.00	0.00	1.00	135.8	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).

^{B} Numerical linearization parameter: uncertainty not required.

^{E} Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value

EX3DV4 SN:3677

November 24, 2010

DASY/EASY - Parameters of Probe: EX3DV4 SN:3677

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	43.5 ± 5%	0.87 ± 5%	10.04	10.04	10.04	0.09	1.00 ± 13.3%
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	9.50	9.50	9.50	0.72	0.64 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	8.22	8.22	8.22	0.72	0.59 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.94	7.94	7.94	0.81	0.57 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	7.32	7.32	7.32	0.47	0.75 ± 11.0%

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.