Report No.: RZA1011-1756SAR01R1

TESTING
No. L2264

OET 65

TEST REPORT

Product Name	HIC
Model	EC W820
FCC ID	QISEC-W820
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	HIC	**Model**	EC W820
FCC ID	QISEC-W820		
Report No.	RZA1011-1756SAR01R1		
Client	Huawei Technologies Co., Ltd.		
Manufacturer	Huawei Technologies Co., Ltd.		
Reference Standard(s)	**IEEE Std C95.1, 1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. **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 Radio frequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radio frequency Emissions. **KDB 248227 D01 SAR meas for a b g V01R02:** SAR Measurement Procedures for 802.11a/b/g Transmitters. **KDB 616217 D03 SAR Supp Note and Netbook Laptop V01:** SAR Evaluation Considerations for Laptop/Notebook/Netbook and Tablet Computers-Supplement to KDB 61217 **KDB 448474 D01 Mobile Portable RF Exposure V04:** Mobile and Portable Device RF exposure Procedures and Equipment Authorization Policies.		
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: December 20th, 2010**		
Comment	The test result only responds to the measured sample.		

Approved by 杨伟中 Yang Weizhong

Revised by 凌敏宝 Ling Minbao

Performed by 刘军 Liu Jun

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.

1.2. Testing Laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
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
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		
Name of EUT:	HIC		
IMEI or SN:	/		
Hardware Version:	SH631A-MB-P1.0		
Software Version:	20782.1.4.14.SP_0207-1		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Supporting Mode(s):	GSM 850/GSM 1900; (tested)		
	WCDMA Band II/WCDMA Band V; (tested)		
	GSM 900/GSM 1800/ WCDMA Band I;		
	WiFi; (tested)		
	Bluetooth;		
Test Modulation:	(GSM)GMSK; (WCDMA) QPSK		
Device Class:	B		
HSDPA UE Category:	8		
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
Operating Frequency Range(s):	Mode	Tx (MHz)	Rx (MHz)
	GSM 850	824.2 ~ 848.8	869.2 ~ 893.8
	GSM 1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8
	WCDMA Band II	1852.4 ~ 1907.6	1932.4 ~ 1987.6.
	WCDMA Band V	826.4 ~ 846.6	871.4 ~ 891.6
Power Class:	GSM 850: 4, tested with power level 5		
	GSM 1900: 1, tested with power level 0		
	WCDMA Band II: 3, tested with power control all up bits		
	WCDMA Band V: 3, tested with power control all up bits		
Test Channel: (Low - Middle - High)	128 -190 - 251 (GSM 850) (tested) 512 - 661 - 810 (GSM 1900) (tested) 9262 - 9400 - 9538 (WCDMA Band II) (tested) 4132 - 4183 - 4233 (WCDMA Band V) (tested)		

Equipment Under Test (EUT) is a HIC. EUT is production unit. The detail about Mobile phone and Lithium Battery is in chapter 1.5 in this report. SAR is tested for the EUT respectively for GSM 850, GSM 1900, WCDMA Band II and WCDMA Band V. The EUT has a GSM/WCDMA antenna that is used for Tx/Rx, and the other is BT/WiFi antenna that can be used for Tx/Rx.

The sample undergoing test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum SAR_{1g} Values and Power of each tested band

Body Worn Configuration

Mode	Channel	Position	SAR_{1g} (W/kg)
1 slot GPRS 850	High/251	Top side	**0.852**
2 slots EGPRS 1900	Middle/661	Top side	**1.330**
WCDMA Band II	Low/9262	Top side	**1.170**
WCDMA Band V	High/4233	Top side	**1.280**

Maximum Power

Mode		Max Conducted Power (dBm)	Max Average Power (dBm)
GSM 850	GPRS,1 time-slot	32.72	23.69
	EGPRS, 2 time-slots	29.71	23.69
GSM 1900	GPRS,4 time-slots	24.61	21.60
	EGPRS, 3 time-slots	25.68	21.42
WCDMA Band II		22.37	/
WCDMA Band V		22.52	/

1.7. Test Date

The test is performed from November 27, 2010 to December 20, 2010.

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 Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 in the case of GSM 850, allocated to 512, 661 and 810 in the case of GSM 1900, allocated to 9262, 9400 and 9538 respectively in the case of WCDMA Band II, allocated 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

For the body 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. The EUT is commanded to operate at maximum transmitting power.
The tests in the band of GSM 850 and GSM 1900 are only performed in the mode of GPRS and EGPRS. 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.

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.

GSM 850 GPRS（GMSK）:

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	4.8
4	6

GSM 850 EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	4
4	4.8

GPRS（GMSK）:

GSM 850 EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	3
3	4.8
4	6

GSM 1900 GPRS（GMSK）

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.2
3	4.0
4	5.2

GSM 1900 EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1.8
3	3
4	3.8

GSM 1900 EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.2
3	4.0
4	5.2

2.3. WCDMA Test Configuration

As the SAR body tests for WCDMA Band II and WCDMA band V, we established the radio link through call processing. The maximum output power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration:

1) 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to all “all ‘1’s”
2) Test loop Mode 1

For the output power, the configurations for the DPCCH and $DPDCH_1$ are as followed (EUT do not support the $DPDCH_{2-n}$)

Table 1: The configurations for the DPCCH and $DPDCH_1$

	Channel Bit Rate(kbps)	Channel Symbol Rate(ksps)	Spreading Factor	Spreading Code Number	Bits/Slot
DPCCH	15	15	256	0	10
$DPDCH_1$	15	15	256	64	10
	30	30	128	32	20
	60	60	64	16	40
	120	120	32	8	80
	240	240	16	4	160
	480	480	8	2	320
	960	960	4	1	640

SAR is tested with 12.2kps RMC and not required for other spreading codes (64,144, and 384 kbps RMC) and multiple $DPDCH_n$, because the maximum output power for each of these other configurations<0.25dB higher than 12.2kbps RMC and the multiple $DPDCH_n$ is not applicable for the EUT.

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(βc,βd), and HS-DPCCH power offset parameters(△ACK, △NACK, △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 2: 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 ⇔ $A_{hs} = \beta_{hs}/\beta_c$=30/15 ⇔ 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=}$30/15) with β_{hs}=30/15*$\beta_{c,}$and $\triangle_{CQI}$= 7 ($A_{hs=}$24/15) with β_{hs}=24/15*$\beta_{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 3: 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 4: 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 5: 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}, ΔNACK and Δ_{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 6: 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 8.

Table 7: “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. Position of Module

According to KDB 447498 D01 Mobile Portable RF Exposure V04 SAR is required for both back and edge with the most conservative exposure condition, the EUT is tested at the following 5 test positions:

- Test Position 1: The back side of the EUT towards the bottom of the flat phantom. (ANNEX J Picture 6)

- Test Position 2: The bottom side of the EUT towards the bottom of the flat phantom. (ANNEX J Picture 7)
  SAR is not reuired for GSM/WCDMA antenna and wifi antenna; this is not the most conservative antenna - to - user distance at edge mode. According to KDB 447498 4)ii)(2)-SAR is required only the edge with the most conservative exposure conditions,No SAR (Please see ANNEX I Picture 5)

- Test Position 3: The top side of the EUT towards the bottom of the flat phantom. (ANNEX J Picture 8)
  SAR is reuired for GSM/WCDMA antenna and wifi antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX I Picture 5)

- Test Position 4: The left side of the EUT towards the bottom of the flat phantom. (ANNEX J Picture 9)
  SAR is reuired for GSM/WCDMA antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX I Picture 5)
  SAR is not reuired for wifi antenna; this is not the most conservative antenna - to - user distance at edge mode. According to KDB 447498 4)ii)(2)-SAR is required only the edge with the most conservative exposure conditions,No SAR (Please see ANNEX I Picture 5)

- Test Position 5: The right side of the EUT towards the bottom of the flat phantom. T (ANNEX J Picture 10)
  SAR is reuired for wifi antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX I Picture 5)
  SAR is not reuired for GSM/WCDMA antenna. This is not the most conservative antenna - to - user distance at edge mode. According to KDB 447498 4)ii)(2)-SAR is required only the edge with the most conservative exposure conditions,No SAR (Please see ANNEX I Picture 5)

3. SAR Measurements System Configuration

3.1. SAR Measurement Set-up

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

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

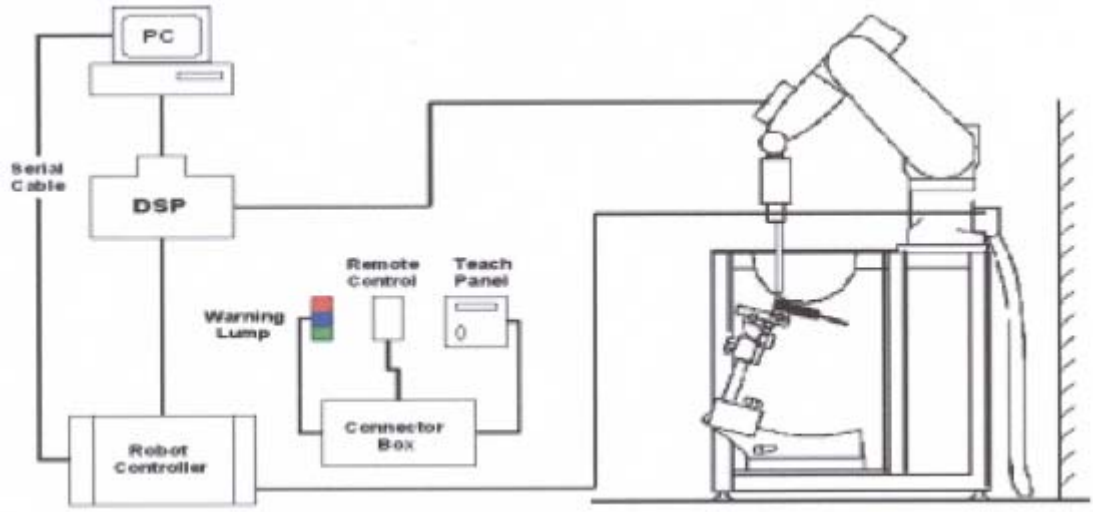


Figure 1. SAR Lab Test Measurement Set-up

3.2. DASY5 E-field Probe System

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

3.2.1. EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 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 2.EX3DV4 E-field Probe

Figure 3. EX3DV4 E-field probe

3.2.2. E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 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

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.) It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI4 and SAM v6.0 Phantoms.

Material: POM, Acrylic glass, Foam

3.3.2. Phantom

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528-2003, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of wireless portable device usage as well as body mounted usage at the flat phantom region. A cover prevents 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 with the robot.

Shell Thickness 2 ±0.2 mm
Filling Volume Approx. 30 liters
Dimensions 190×600×400 mm (H×L×W)

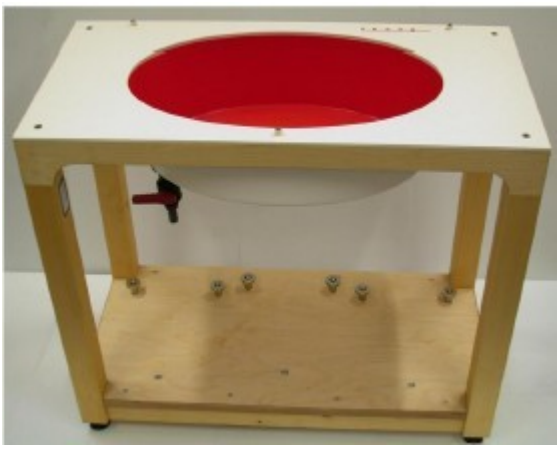


Figure 4.ELI4 Phantom

3.4. Scanning Procedure

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

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- Area Scan

  The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot.Before starting the area scan a grid

spacing of 10 mm x 10 mm is set. During the scan the distance of the probe to the phantom remains unchanged.
After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

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

- Spatial Peak Detection
  The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses.The DASY5 system allows evaluations that combine measured data and robot positions, such as:
  • maximum search
  • extrapolation
  • boundary correction
  • peak search for averaged SAR
  During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.
  Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space.
  They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 7x7x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10g cubes.
- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube 7x7x7 scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

3.5. Data Storage and Evaluation

3.5.1. Data Storage

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

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

3.5.2. Data Evaluation by SEMCAD

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

Probe parameters:	- Sensitivity	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 DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

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

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

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

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

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

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

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

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

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

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

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

$ConvF$ = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

ρ = equivalent tissue density in g/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.

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm^2

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

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

3.6. System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants 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 simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the table 13.

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 DASY5 system.

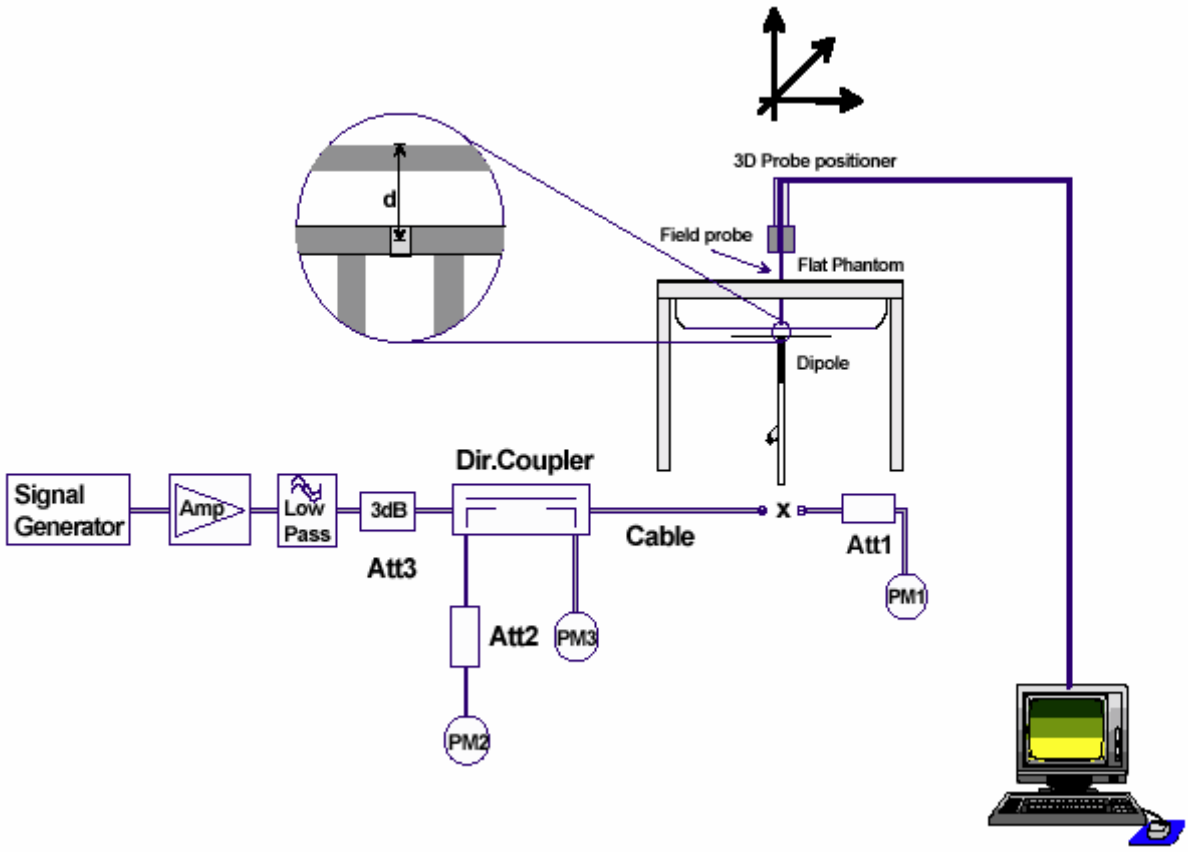


Figure 5. System Check Set-up

3.7. Equivalent Tissues

The liquid is consisted of water, sugar, salt, Glycol monobutyl, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The Table 8 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by OET 65.

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) 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 Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

5.2. Applicable Measurement Standards

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 Radio frequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radio frequency Emissions.

KDB 248227 D01 SAR meas for a b g V01R02: SAR Measurement Procedures for 802.11a/b/g Transmitters.

KDB 616217 D03 SAR Supp Note and Netbook Laptop V01: SAR Evaluation Considerations for Laptop/Notebook/Netbook and Tablet Computers-Supplement to KDB 61217

KDB 448474 D01 Mobile Portable RF Exposure V04: Mobile and Portable Device RF exposure Procedures and Equipment Authorization Policies.

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
GPRS (GMSK)	1TXslot	Before	32.71	32.69	32.72	-9.03dB	**23.68**	**23.66**	**23.69**
		After	32.70	32.67	32.70	-9.03dB	23.67	23.64	23.67
	2TXslots	Before	29.3	29.31	29.33	-6.02dB	23.28	23.29	23.31
		After	29.28	29.30	29.32	-6.02dB	23.26	23.28	23.3
	3TXslots	Before	27.31	27.30	27.35	-4.26dB	23.05	23.04	23.09
		After	27.30	27.29	27.34	-4.26dB	23.04	23.03	23.08
	4TXslots	Before	26.57	26.54	26.61	-3.01dB	23.56	23.53	23.6
		After	26.56	26.53	26.60	-3.01dB	23.55	23.52	23.59
EGPRS (GMSK)	1TXslot	Before	32.42	32.41	32.43	-9.03dB	23.39	23.38	23.4
		After	32.41	32.40	32.42	-9.03dB	23.38	23.37	23.39
	2TXslots	Before	29.68	29.56	29.71	-6.02dB	**23.66**	**23.54**	**23.69**
		After	29.66	29.55	29.70	-6.02dB	23.64	23.53	23.68
	3TXslots	Before	27.43	27.51	27.32	-4.26dB	23.17	23.25	23.06
		After	27.42	27.50	27.31	-4.26dB	23.16	23.24	23.05
	4TXslots	Before	26.23	26.31	26.34	-3.01dB	23.22	23.3	23.33
		After	26.22	26.30	26.33	-3.01dB	23.21	23.29	23.32
EGPRS (8PSK)	1TXslot	Before	27.21	27.20	27.23	-9.03dB	18.18	18.17	18.2
		After	27.20	27.18	27.21	-9.03dB	18.17	18.15	18.18
	2TXslots	Before	24.35	24.37	24.38	-6.02dB	18.33	18.35	18.36
		After	24.34	24.35	24.37	-6.02dB	18.32	18.33	18.35
	3TXslots	Before	23.56	23.51	23.55	-4.26dB	19.3	19.25	19.29
		After	23.54	23.50	23.54	-4.26dB	19.28	19.24	19.28
	4TXslots	Before	22.71	22.74	22.74	-3.01dB	**19.7**	**19.73**	**19.73**
		After	22.70	22.73	22.72	-3.01dB	19.69	19.72	19.71

GSM 1900			Conducted Power(dBm)				Average power(dBm)		
			Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GPRS (GMSK)	1TXslot	Before	30.1	30.12	29.97	-9.03dB	21.07	21.09	20.94
		After	30.09	30.11	29.95	-9.03dB	21.06	21.08	20.92
	2TXslots	Before	27.21	27.34	27.20	-6.02dB	21.19	21.32	21.18
		After	27.20	27.33	7.18	-6.02dB	21.18	21.31	1.16
	3TXslots	Before	25.42	25.51	25.37	-4.26dB	21.16	21.25	21.11
		After	25.41	25.50	25.36	-4.26dB	21.15	21.24	21.1
	4TXslots	Before	24.48	24.61	24.31	-3.01dB	**21.47**	**21.6**	**21.3**
		After	24.47	24.60	24.30	-3.01dB	21.46	21.59	21.29
EGPRS (GMSK)	1TXslot	Before	29.87	29.88	29.86	-9.03dB	20.84	20.85	20.83
		After	29.86	29.87	29.85	-9.03dB	20.83	20.84	20.82
	2TXslots	Before	27.34	27.54	27.46	-6.02dB	21.32	21.52	21.44
		After	27.32	27.53	27.45	-6.02dB	21.3	21.51	21.43
	3TXslots	Before	25.62	25.68	25.60	-4.26dB	**21.36**	**21.42**	**21.34**
		After	25.61	25.67	25.58	-4.26dB	21.35	21.41	21.32
	4TXslots	Before	24.35	24.39	24.32	-3.01dB	21.34	21.38	21.31
		After	24.34	24.38	24.31	-3.01dB	21.33	21.37	21.3
EGPRS (8PSK)	1TXslot	Before	26.51	26.55	26.46	-9.03dB	17.48	17.52	17.43
		After	26.50	26.53	26.45	-9.03dB	17.47	17.5	17.42
	2TXslots	Before	24.52	24.56	24.51	-6.02dB	18.5	18.54	18.49
		After	24.51	24.55	24.50	-6.02dB	18.49	18.53	18.48
	3TXslots	Before	23.82	23.87	23.73	-4.26dB	**19.56**	**19.61**	**19.47**
		After	23.80	23.86	23.72	-4.26dB	19.54	19.6	19.46
	4TXslots	Before	22.48	22.49	22.42	-3.01dB	19.47	19.48	19.41
		After	22.47	22.48	22.40	-3.01dB	19.46	19.47	19.39

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

3TX- slots = 3 transmit time slots out of 8 time slots

=> conducted power divided by (8/3) => -4.26 dB

4 TX- slots = 4 transmit time slots out of 8 time slots

=> conducted power divided by (8/4) => -3.01 dB

2) Average power numbers

The maximum power numbers are marks in bold.

WCDMA Band II			Conducted Power(dBm)		
			Channel 9262	Channel 9400	Channel 9538
RMC	12.2kbps	Before	22.34	21.85	22.36
		After	22.33	21.83	22.35
	64kbps	Before	22.31	21.82	22.32
		After	22.3	21.81	22.31
	144kbps	Before	22.29	21.82	22.3
		After	22.28	21.81	22.29
	384kbps	Before	22.27	21.79	22.28
		After	22.25	21.78	22.27
HSDPA	Sub-Test 1	Before	22.25	21.83	22.37
		After	22.24	21.82	22.36
	Sub-Test 2	Before	22.12	21.82	22.24
		After	22.11	21.81	22.23
	Sub-Test 3	Before	21.76	21.51	21.9
		After	21.75	21.5	21.89
	Sub-Test 4	Before	21.68	21.41	21.82
		After	21.66	21.4	21.81
HSUPA	Sub-Test 1	Before	21.13	21.14	21.31
		After	21.12	21.13	21.3
	Sub-Test 2	Before	19.78	19.39	19.75
		After	19.76	19.38	19.73
	Sub-Test 3	Before	20.39	20.17	20.44
		After	20.38	20.15	20.43
	Sub-Test 4	Before	19.88	19.41	20.04
		After	19.86	19.4	20.03
	Sub-Test 5	Before	21.15	21.16	21.37
		After	21.14	21.15	21.36
WCDMA Band V			Conducted Power(dBm)		
			Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps	Before	22.5	22.51	22.51
		After	22.48	22.52	22.5
	64kbps	Before	22.47	22.5	22.47
		After	22.46	22.47	22.46
	144kbps	Before	22.45	22.46	22.43
		After	22.43	22.43	22.42
	384kbps	Before	22.43	22.42	22.41
		After	22.42	22.4	22.4
HSDPA	Sub-Test 1	Before	22.46	22.49	22.39

		After	22.45	22.47	22.38
	Sub-Test 2	Before	22.25	22.39	22.24
		After	22.24	22.38	22.23
	Sub-Test 3	Before	21.73	21.82	21.72
		After	21.72	21.81	21.71
	Sub-Test 4	Before	21.71	21.74	21.67
		After	21.70	21.73	21.66
HSUPA	Sub-Test 1	Before	21.30	21.33	21.06
		After	21.31	21.32	21.05
	Sub-Test 2	Before	19.48	19.51	19.37
		After	19.47	19.50	19.36
	Sub-Test 3	Before	20.55	20.46	20.12
		After	20.54	20.45	20.11
	Sub-Test 4	Before	19.51	19.57	19.35
		After	19.50	19.56	19.34
	Sub-Test 5	Before	21.35	21.37	21.14
		After	21.34	21.36	21.13

7. Test Results

7.1. Dielectric Performance

Table 11: 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 2010-11-27	56.24	0.96	21.5
	Measurement value 2010-12-20	56.62	0.96	21.7
1900MHz (body)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2010-12-3	52.98	1.52	21.5
	Measurement value 2010-12-20	52.97	1.53	21.5
2450MHz (body)	Target value ±10% window	52.70 50.07 — 55.34	1.95 1.85 — 2.05	/
	Measurement value 2010-12-4	51.83	1.92	21.9
	Measurement value 2010-12-20	51.82	1.92	21.8

7.2. System Check

Table 12: 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 2010-11-27	1.68	2.56	56.24	0.96	21.5
	Measurement value 2010-12-20	1.65	2.52	56.62	0.96	21.7
1900 MHz	Recommended result ±10% window	5.52 4.97 — 6.07	10.3 9.27 — 11.33	53.5	1.54	/
	Measurement value 2010-12-3	5.50	10.28	52.98	1.52	21.5
	Measurement value 2010-12-20	5.20	9.82	52.97	1.53	21.5
2450MHz	Recommended value ±10% window	5.97 5.37 — 6.57	13 11.7 — 14.3	51.8	2.01	/
	Measurement value 2010-12-4	6.06	14.00	51.83	1.92	21.9
	Measurement value 2010-12-20	6.16	14.00	51.82	1.92	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)

Table 13: SAR Values [GSM 850 (GPRS/EGPRS)]

Limit of SAR			10 g Average	1g Average	Power Drift	Graph Results
			2.0 W/kg	1.6 W/kg	± 0.21 dB	
Test Case Of Body			Measurement Result (W/kg)		Power Drift (dB)	
Test Position	Timeslots	Channel	10 g Average	1 g Average		
Test Position 1	1 timeslot	Middle/190	0.498	0.708	-0.082	Figure 12
	2 timeslots	Middle/190	0.488	0.683	-0.080	Figure 13
	3 timeslots	Middle/190	0.410	0.629	0.106	Figure 14
	4 timeslots	Middle/190	0.446	0.616	-0.070	Figure 15
Test Position 3	1 timeslot	High/251	0.415	0.850	-0.055	Figure 16
		Middle/190	0.353	0.762	-0.030	Figure 17
		Low/128	0.381	0.763	-0.013	Figure 18
Test Position 4	1 timeslot	Middle/190	0.209	0.321	-0.017	Figure 19
Worst Case Position of GPRS with EGPRS (GMSK)						
Test Position 3	1 timeslot	High/251	0.414	0.846	-0.040	Figure 20
Worst case position of GPRS with Earphone						
Test Position 3	1 timeslot	High/251	0.416	0.852	-0.055	Figure 21

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

2. 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 (< 0.8W/kg) lower than the SAR limit, testing at the high and low channels is optional.
3. Upper and lower frequencies were measured at the worst case.
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.

Table 14: Extrapolated SAR Values of highest measured SAR [GSM 850 (GPRS/EGPRS)]

Test Case Of Body			Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
Test Position	Timeslots	Channel	Measurement Result			Extrapolated Result (W/kg)
GPRS						
Test Position 3	1 timeslot	High/251	32.72	0.852	33	0.909
EGPRS (GMSK)						
Test Position 3	1 timeslot	High/251	32.43	0.846	33	0.965

7.3.2. GSM 1900 (GPRS/EGPRS)

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

Limit of SAR			10 g Average	1g Average	Power Drift	Graph Results
			2.0 W/kg	1.6 W/kg	±0.21 dB	
Test Case Of Body			Measurement Result (W/kg)		Power Drift (dB)	
Test Position	Timeslots	Channel	10 g Average	1 g Average		
Test Position 1	1 timeslot	Middle/661	0.361	0.681	0.162	Figure 22
	2 timeslots	High/810	0.399	0.776	-0.024	Figure 23
		Middle/661	0.514	0.98	0.018	Figure 24
		Low/512	0.464	0.859	0.079	Figure 25
	3 timeslots	High/810	0.357	0.694	0.052	Figure 26
		Middle/661	0.437	0.845	0.000	Figure 27
		Low/512	0.382	0.714	0.050	Figure 28
	4 timeslots	High/810	0.365	0.706	0.060	Figure 29
		Middle/661	0.434	0.841	0.005	Figure 30
		Low/512	0.373	0.69	0.080	Figure 31
Test Position 3	2 timeslots	High/810	0.498	1.110	0.128	Figure 32
		Middle/661	0.581	1.290	-0.065	Figure 33
		Low/512	0.482	0.996	-0.025	Figure 34
Test Position 4	2 timeslots	Middle/661	0.140	0.256	0.008	Figure 35
Worst Case Position of GPRS with EGPRS (GMSK)						
Test Position 3	2 timeslots	Middle/661	0.593	1.330	-0.191	Figure 36
Worst case position of EGPRS with Earphone						
Test Position 3	2 timeslots	Middle/661	0.506	1.120	-0.035	Figure 37

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

2. 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 (< 0.8W/kg) lower than the SAR limit, testing at the high and low channels is optional.
3. Upper and lower frequencies were measured at the worst case.
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.

Table 16: Extrapolated SAR Values of highest measured SAR [GSM 1900 (GPRS/EGPRS)]

Test Case Of Body			Conducted Power(dBm)	1g Average (W/kg)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg Extrapolated Result (W/kg)
Test Position	Timeslots	Channel	Measurement Result			
GPRS						
Test Position 3	2 timeslots	Middle/661	27.34	1.290	28	1.502
EGPRS (GMSK)						
Test Position 3	2 timeslots	Middle/661	27.54	1.330	28	1.479

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

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

Limit of SAR		10 g Average	1g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	±0.21 dB	
Test Case Of Body		Measurement Result (W/kg)		Power Drift (dB)	
Test Position	Channel	10 g Average	1 g Average		
Test Position 1	Middle/9400	0.319	0.615	0.018	Figure 38
Test Position 3	High/9538	0.460	1.020	-0.023	Figure 39
	Middle/9400	0.371	0.823	0.181	Figure 40
	Low/9262	0.508	1.100	0.004	Figure 41
Test Position 4	Middle/9400	0.089	0.162	0.107	Figure 42
Worst Case Position of RMC with HSDPA					
Test Position 3	Low/9262	0.513	1.110	-0.061	Figure 43
Worst Case Position of RMC with HSUPA					
Test Position 3	Low/9262	0.321	0.679	0.078	Figure 44
Worst case position of RMC with Earphone					
Test Position 3	Low/9262	0.543	1.170	0.000	Figure 45

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

2. 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 (< 0.8W/kg) lower than the SAR limit, testing at the high and low channels is optional.
3. Upper and lower frequencies were measured at the worst case.

Table 18: Extrapolated SAR Values of Highest Measured SAR [WCDMA Band II (WCDMA/HSDPA/HSUPA)]

Test Case Of Body		Conducted Power(dBm)	1g Average (W/kg)	Tune-up Procedures MAX Power (dBm)	1g Average Limit 1.6 W/kg Extrapolated Result (W/kg)
Test Position	Channel	Measurement Result			
Test Position 3	Low/9262	21.83	1.170	23	1.532

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

Table 19: SAR Values [WCDMA Band V (WCDMA/HSDPA/HSUPA)]

Limit of SAR		10 g Average	1g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	±0.21 dB	
Test Case Of Body		Measurement Result (W/kg)		Power Drift (dB)	
Test Position	Channel	10 g Average	1 g Average		
Test Position 1	Middle/4183	0.472	0.662	-0.006	Figure 46
Test Position 3	High/4233	0.625	1.280	0.044	Figure 47
	Middle/4183	0.532	1.070	-0.028	Figure 48
	Low/4132	0.619	1.250	0.069	Figure 49
Test Position 4	Middle/4183	0.336	0.514	-0.035	Figure 50
Worst Case Position of RMC with HSDPA					
Test Position 3	High/4233	0.623	1.270	0.034	Figure 51
Worst Case Position of RMC with HSUPA					
Test Position 3	High/4233	0.373	0.693	0.106	Figure 52
Worst case position of RMC with Earphone					
Test Position 3	High/4233	0.508	1.030	0.018	Figure 53

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

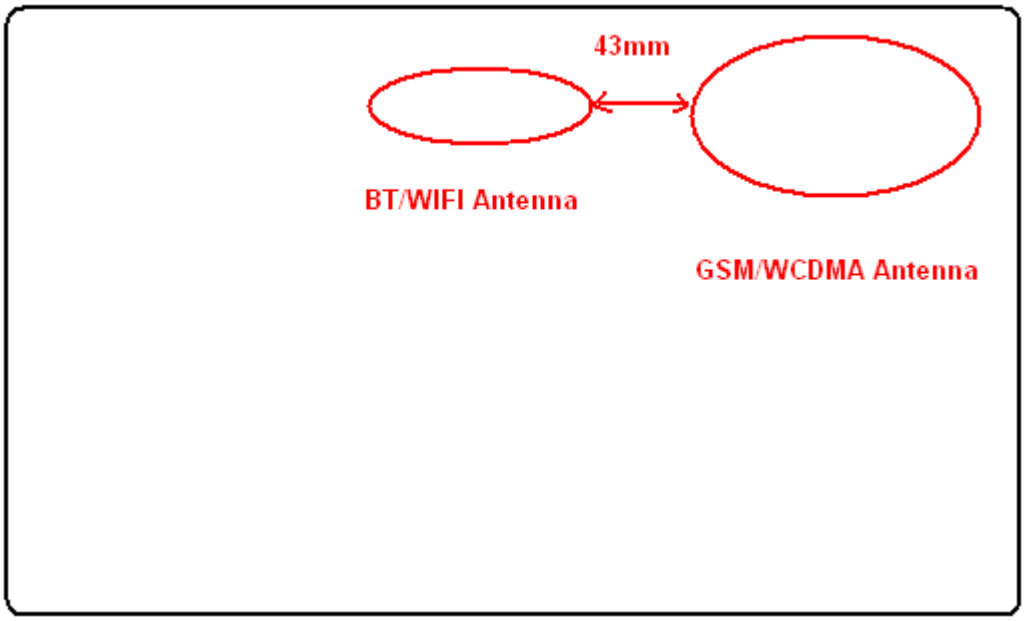
2. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB (< 0.8W/kg) lower than the SAR limit, testing at the high and low channels is optional.
3. Upper and lower frequencies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

Table 20: Extrapolated SAR Values of Highest Measured SAR [WCDMA Band V (WCDMA/HSDPA/HSUPA)]

Test Case Of Body		Conducted Power(dBm)	1g Average (W/kg)	Tune-up Procedures MAX Power (dBm)	1g Average Limit 1.6 W/kg
Test Position	Channel	Measurement Result			Extrapolated Result (W/kg)
RMC					
Test Position 3	High/4233	22.51	1.280	23	1.433

7.3.5. BT/WIFI Function

The distance between BT/WIFI antenna and main antenna is ＜5cm. The location of the antennas in the back side is shown below:



The output power of BT antenna is as following:

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz
GFSK Test result (dBm)	-0.61	-0.29	0.25
EDR2M-4_DQPSK Test result (dBm)	-0.78	-0.46	0.03
EDR3M-8DPSK Test result (dBm)	-0.93	-0.68	-0.15

The output power of WIFI antenna is as following:

Mode	Channel	Data rate (Mbps)		Conducted Power (dBm)
11b	1	1	Before	15.60
			After	15.58
		2	Before	15.70
			After	15.65
		5.5	Before	15.70
			After	15.69
		11	Before	15.76
			After	15.75
	6	1	Before	15.5
			After	15.48
		2	Before	15.6
			After	15.57
		5.5	Before	15.65
			After	15.63

		11	Before	15.72
			After	15.70
	11	1	Before	15.68
			After	15.67
		2	Before	15.61
			After	15.60
		5.5	Before	15.62
			After	15.61
		11	Before	15.69
			After	15.68
11g	1	6	Before	12.83
			After	12.82
		9	Before	12.75
			After	12.74
		12	Before	12.86
			After	12.85
		18	Before	12.66
			After	12.65
		24	Before	12.69
			After	12.67
		36	Before	12.75
			After	12.73
		48	Before	12.78
			After	12.77
		54	Before	12.85
			After	1284
	6	6	Before	13.45
			After	13.44
		9	Before	12.86
			After	12.85
		12	Before	12.81
			After	12.80
		18	Before	12.80
			After	12.78
		24	Before	12.86
			After	12.85
		36	Before	12.83
			After	12.82
		48	Before	12.80
			After	12.79
		54	Before	12.86
			After	12.85
	11	6	Before	13.24
			After	13.23

		9	Before	12.82
			After	12.81
		12	Before	12.88
			After	12.86
		18	Before	12.78
			After	12.76
		24	Before	12.79
			After	12.78
		36	Before	12.67
			After	12.66
		48	Before	12.71
			After	12.70
		54	Before	12.87
			After	12.84

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:

BT: stand-alone SAR are not required for BT, because the output power of BT transmitter is＜60/f(GHz) mW

WIFI: stand-alone SAR are required for wifi, because the output power of WIFI is ＞60/f (GHz) mW.

Table 21: SAR Values (802.11b)

Limit of SAR		10 g Average	1g Average	Power Drift	Graph Results
		2.0 W/kg	1.6 W/kg	±0.21 dB	
Test Case Of Body (Distance 15mm)		Measurement Result(W/kg)		Power Drift (dB)	
Different Test Position	Channel	10 g Average	1 g Average		
Test Position 1	Middle/2437	0.161	0.339	-0.090	Figure 54
Test Position 3	High/2462	0.289	0.671	0.089	Figure 55
	Middle/2437	0.290	0.675	0.059	Figure 56
	Low/2412	0.303	0.709	0.046	Figure 57
Test Position 5	Middle/2437	0.035	0.070	0.028	Figure 58
Worst case position of Body with Earphone					
Test Position 3	Low/2412	0.275	0.662	-0.138	Figure 59

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

2. 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 (< 0.8W/kg) lower than the SAR limit, testing at the high and low channels is optional.
3. Upper and lower frequencies were measured at the worst case.
4. SAR is not required for 802.11g channels when the maximum average output power is less than ¼ dB higher than measured on the corresponding 802.11b channels.

Simultaneous transmit

WIFI can't transmit simultaneously with GSM /WCDMA.

The output power of BT transmitter is〈60/f(GHz) mW, Which stand-alone SAR is not required. Thus, Simultaneous transmition SAR evaluation is not required for BT and GSM/WCDMA.

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	2.9	5
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	5.0	N	1	0.64	3.2	∞
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
24	-liquid permittivity (measurement uncertainty)	B	5.0	N	1	0.6	3.0	∞
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					12.0	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N		k=2	24.0	

9. Main Test Instruments

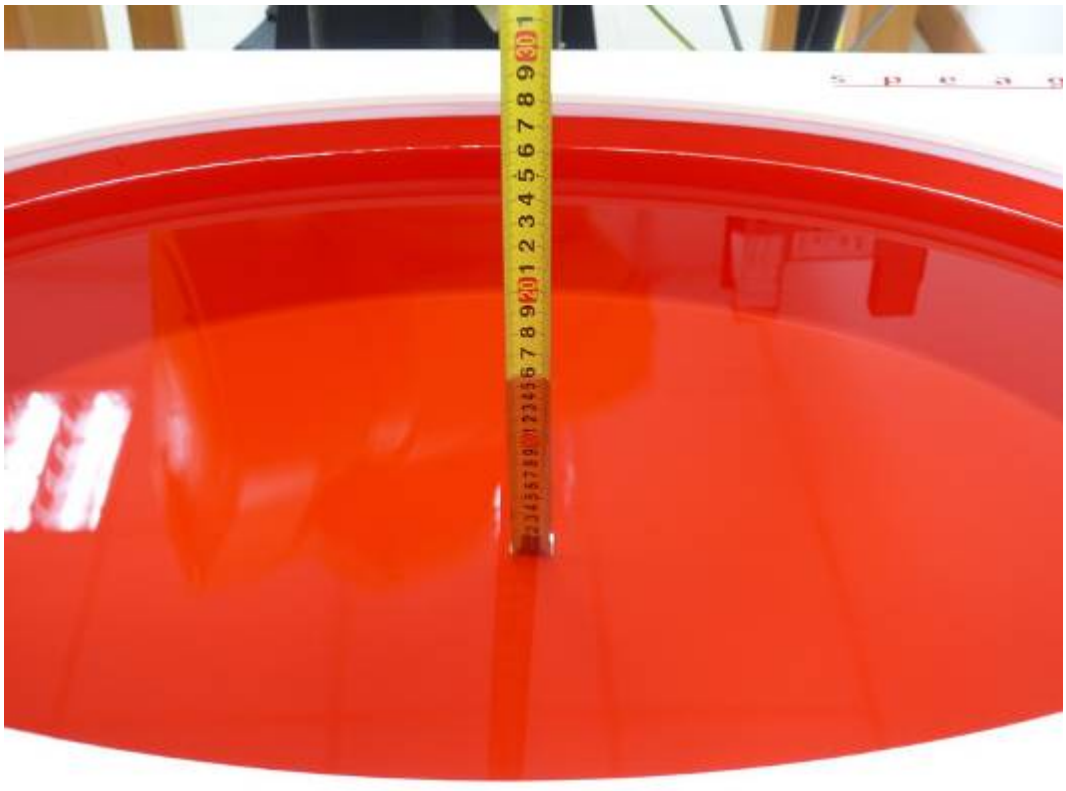
Table 22: List of Main Instruments

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 13, 2010	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	3661	December 30, 2009	One year
09	E-field Probe	EX3DV4	3677	November 24, 2010	One year
10	DAE	DAE4	679	June 18, 2010	One year
11	Validation Kit 835MHz	D835V2	4d092	January 14, 2010	One year
12	Validation Kit 1900MHz	D1900V2	5d018	June 15, 2010	One year
13	Validation Kit 2450MHz	D2450V2	712	February 19, 2010	One year

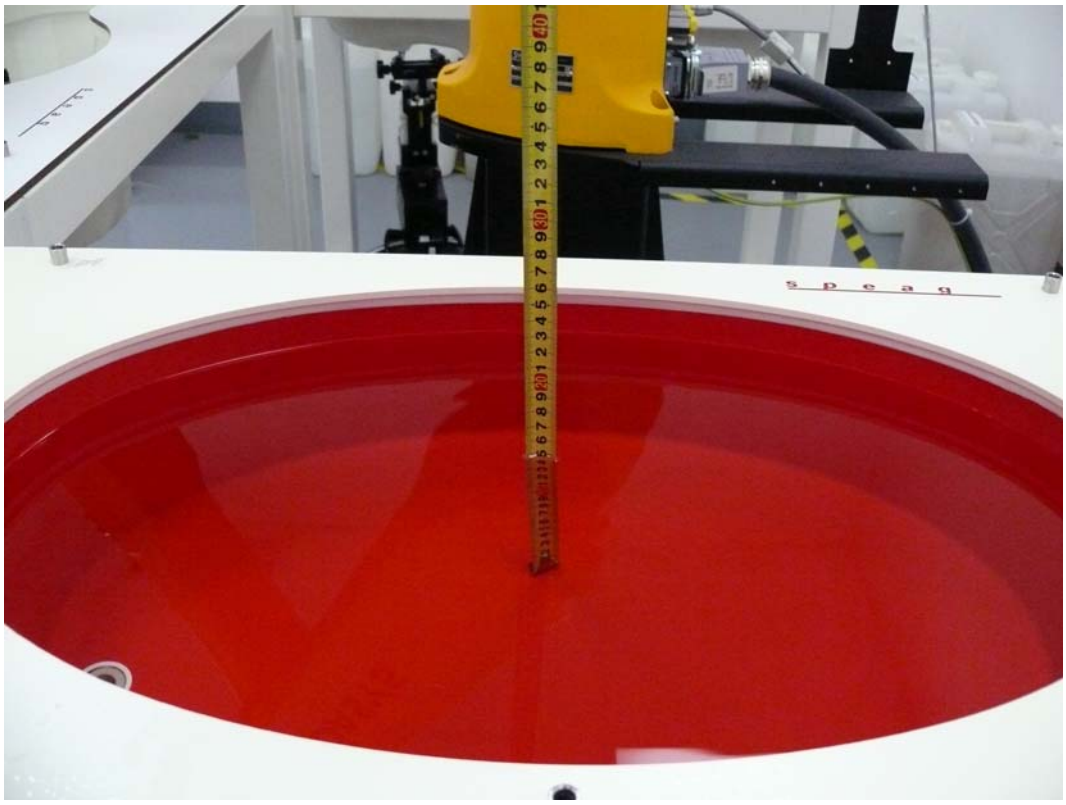
*****END OF REPORT BODY*****

ANNEX A: Test Layout

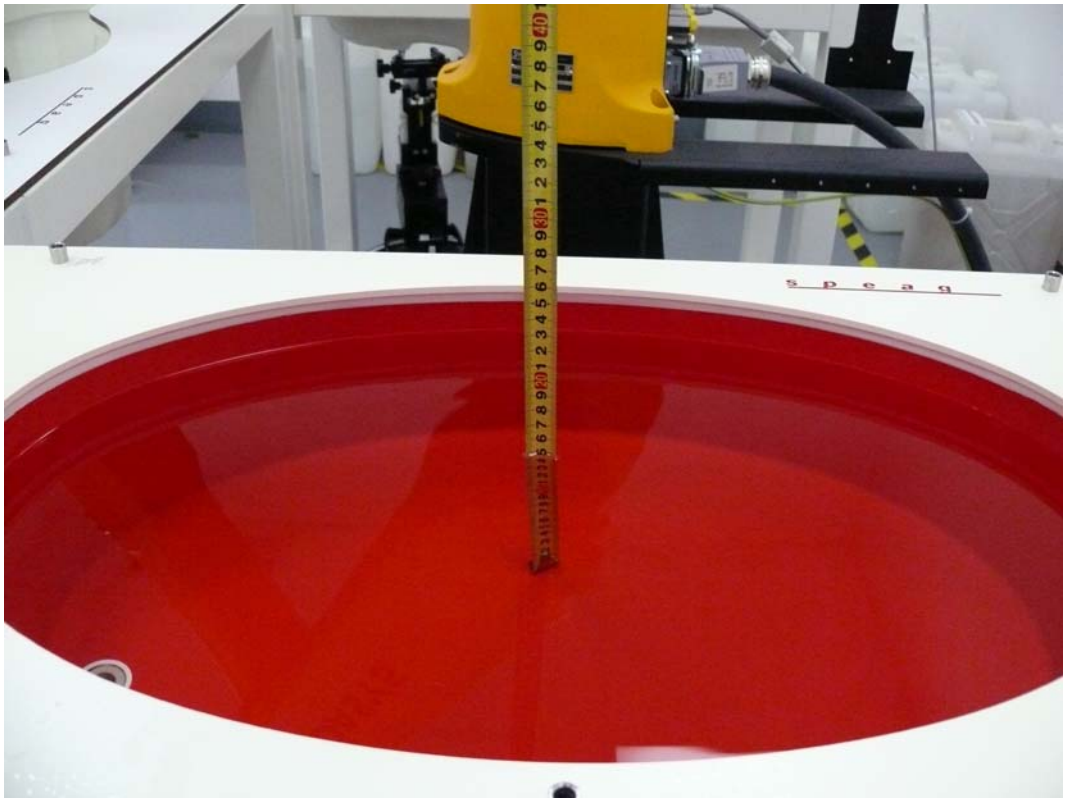
Picture 1: Specific Absorption Rate Test Layout



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



Picture 3: Liquid depth in the Flat Phantom (1900 MHz, 15.2cm depth)



Picture 4: Liquid depth in the flat Phantom (2450 MHz, 15.3cm depth)

ANNEX B: System Check Results

System Performance Check at 835 MHz

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

Date/Time: 11/27/2010 8:05:20 AM

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

Medium parameters used: f = 835 MHz; σ = 0.96 mho/m; ε_r = 56.24; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

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

Maximum value of SAR (interpolated) = 2.77 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) = 3.68 W/kg

SAR(1 g) = 2.56 mW/g; SAR(10 g) = 1.68 mW/g

Maximum value of SAR (measured) = 2.77 mW/g

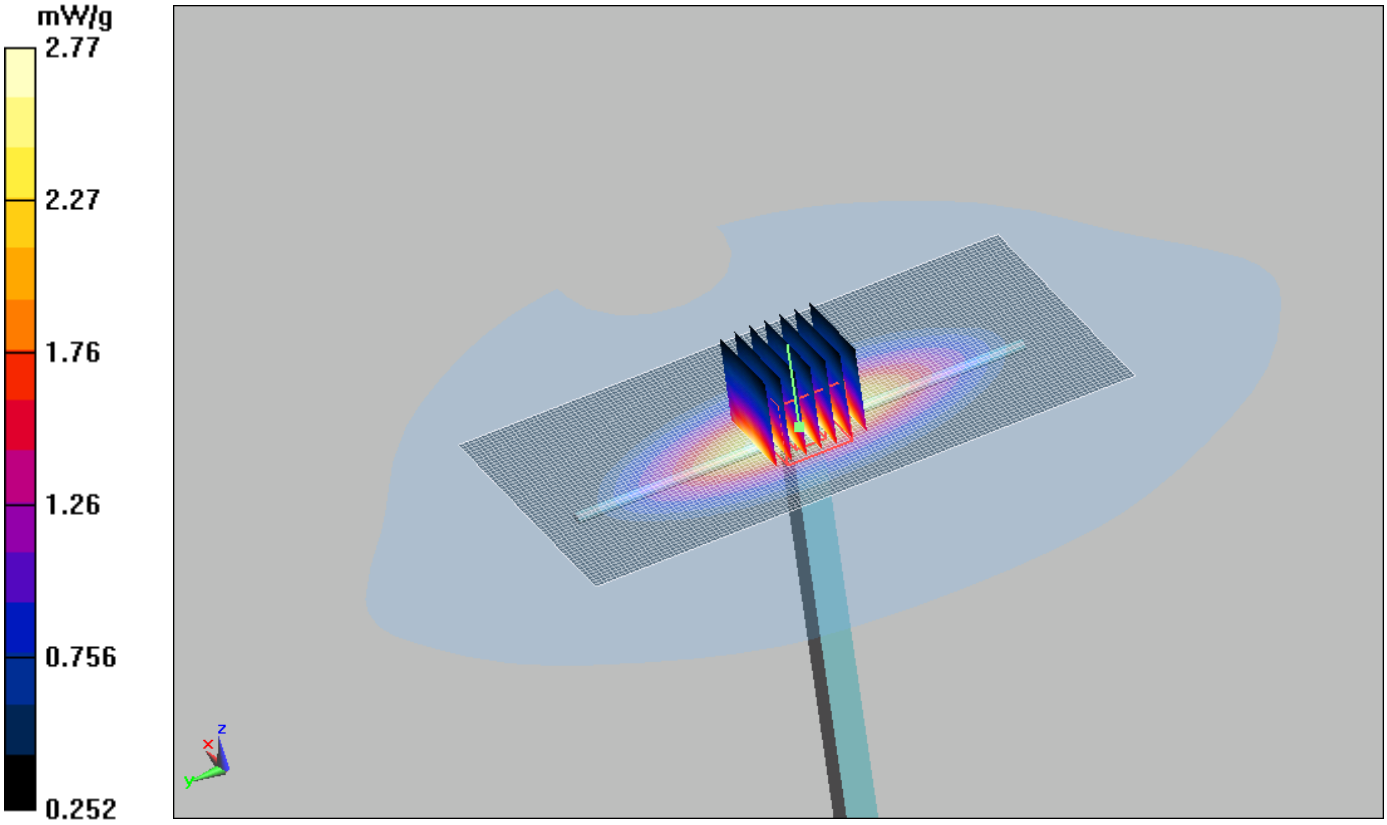


Figure 6 System Performance Check 835MHz 250mW

System Performance Check at 835 MHz

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

Date/Time: 12/20/2010 9:03:20 AM

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

Medium parameters used: f = 835 MHz; σ = 0.96 mho/m; ε_r = 56.62; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.7℃

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

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

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

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

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

Peak SAR (extrapolated) = 3.63 W/kg

SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.73 mW/g

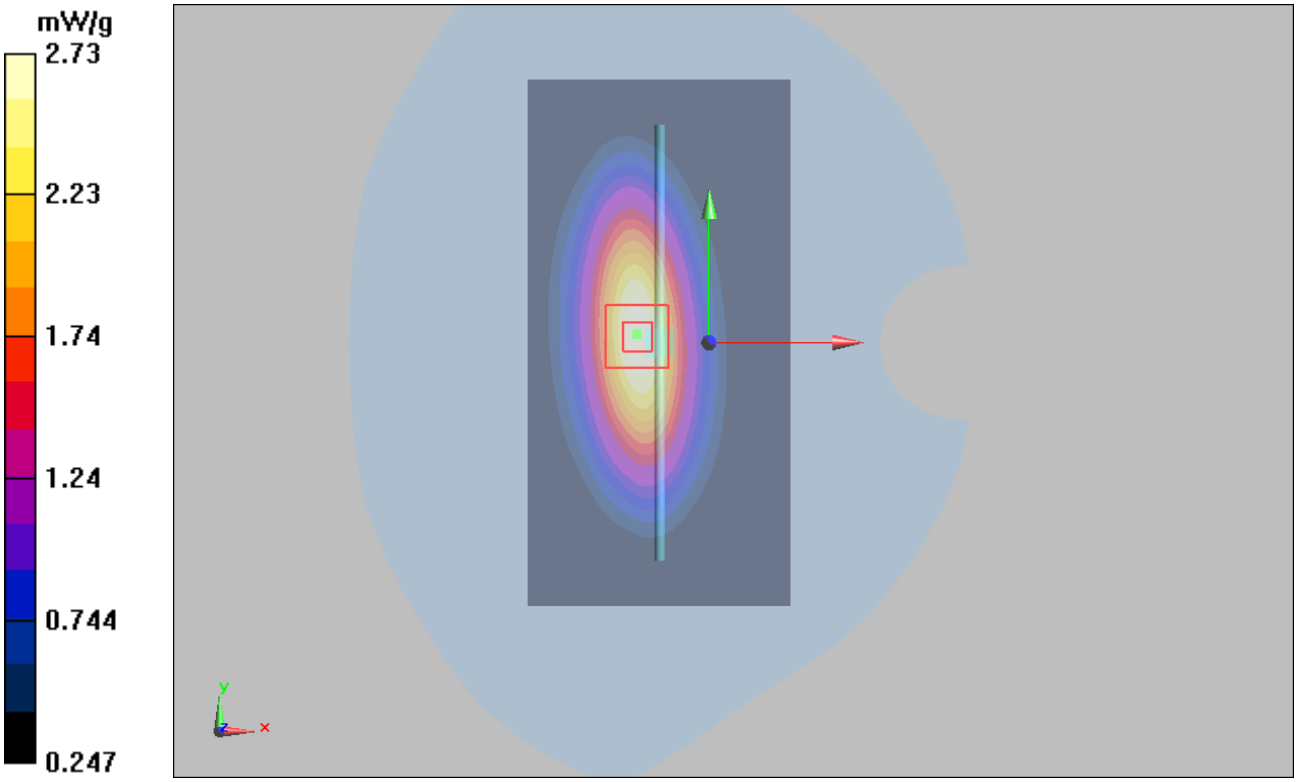


Figure 7 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz

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

Date/Time: 12/3/2010 7:50:19 AM

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

Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 52.98; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

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

Maximum value of SAR (interpolated) = 12.5 mW/g

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

Reference Value = 75.9 V/m; Power Drift = 0.051 dB

Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 10.28 mW/g; SAR(10 g) = 5.50 mW/g

Maximum value of SAR (measured) = 11 mW/g

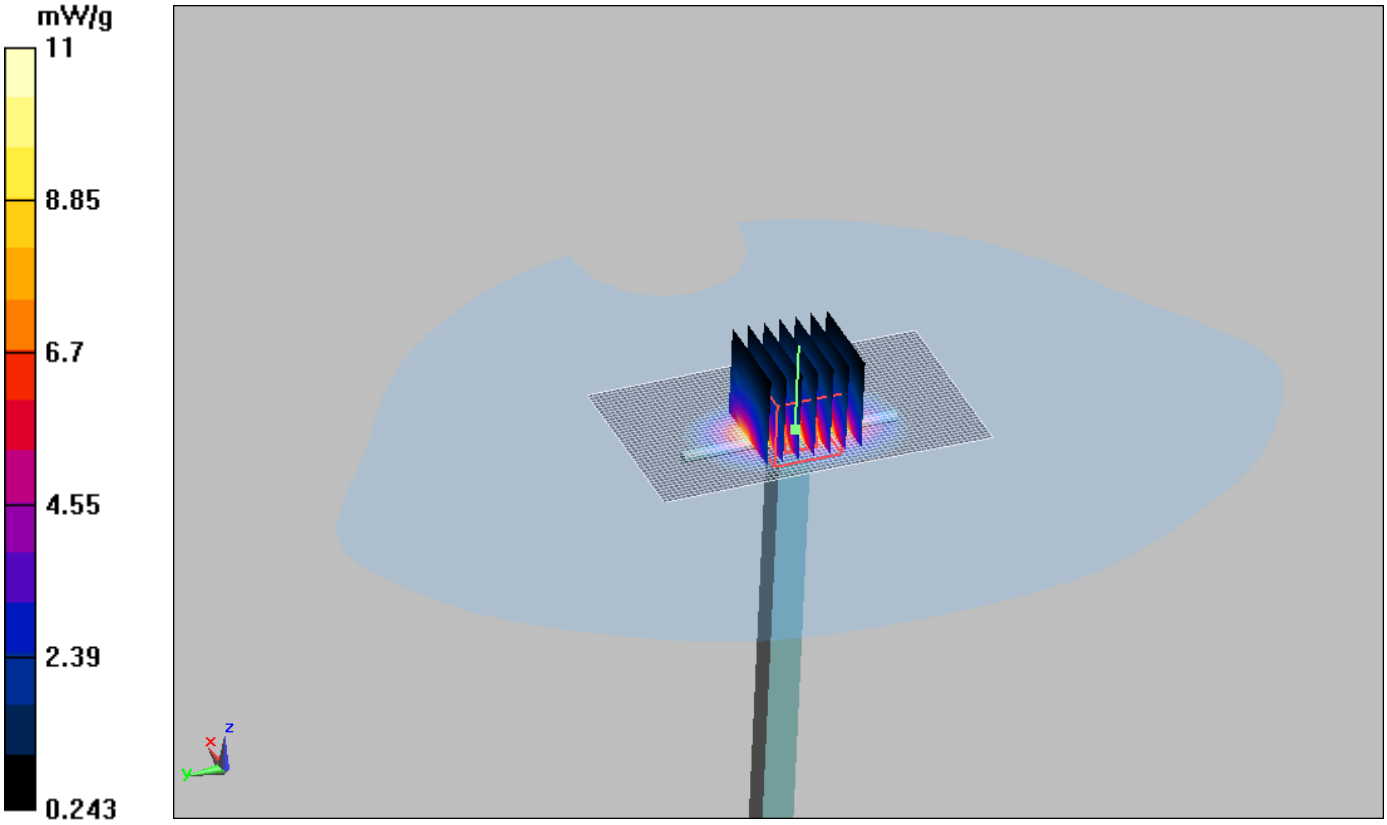


Figure 8 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz

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

Date/Time: 12/20/2010 7:30:19 AM

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

Medium parameters used: f = 1900 MHz; σ = 1.53mho/m; ε_r = 52.97 ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

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

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

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

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

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 9.82 mW/g; SAR(10 g) = 5.2 mW/g

Maximum value of SAR (measured) = 11 mW/g

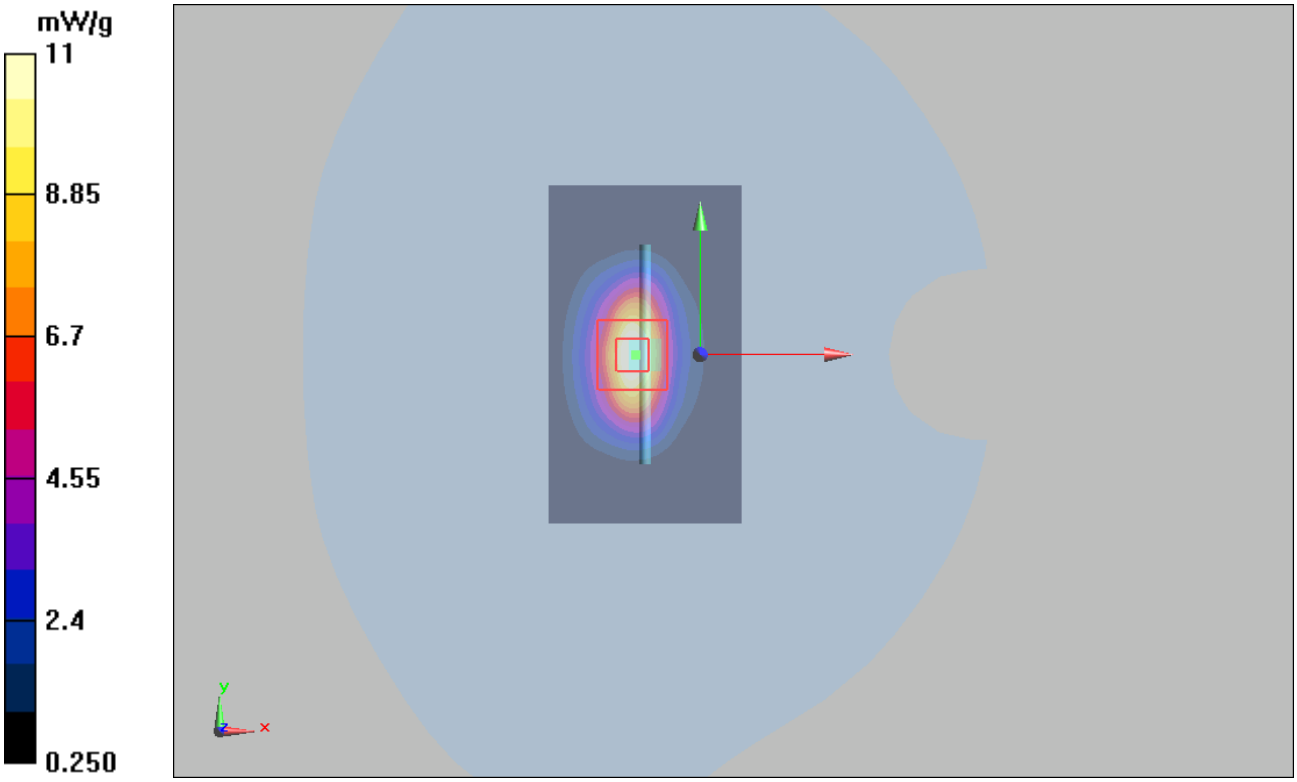


Figure 9 System Performance Check 1900MHz 250mW

System Performance Check at 2450 MHz

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

Date/Time: 12/4/2010 8:23:36 AM

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

Medium parameters used: f = 2450 MHz; σ = 1.92 mho/m; ε_r = 51.83; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.9℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

d=10mm, Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

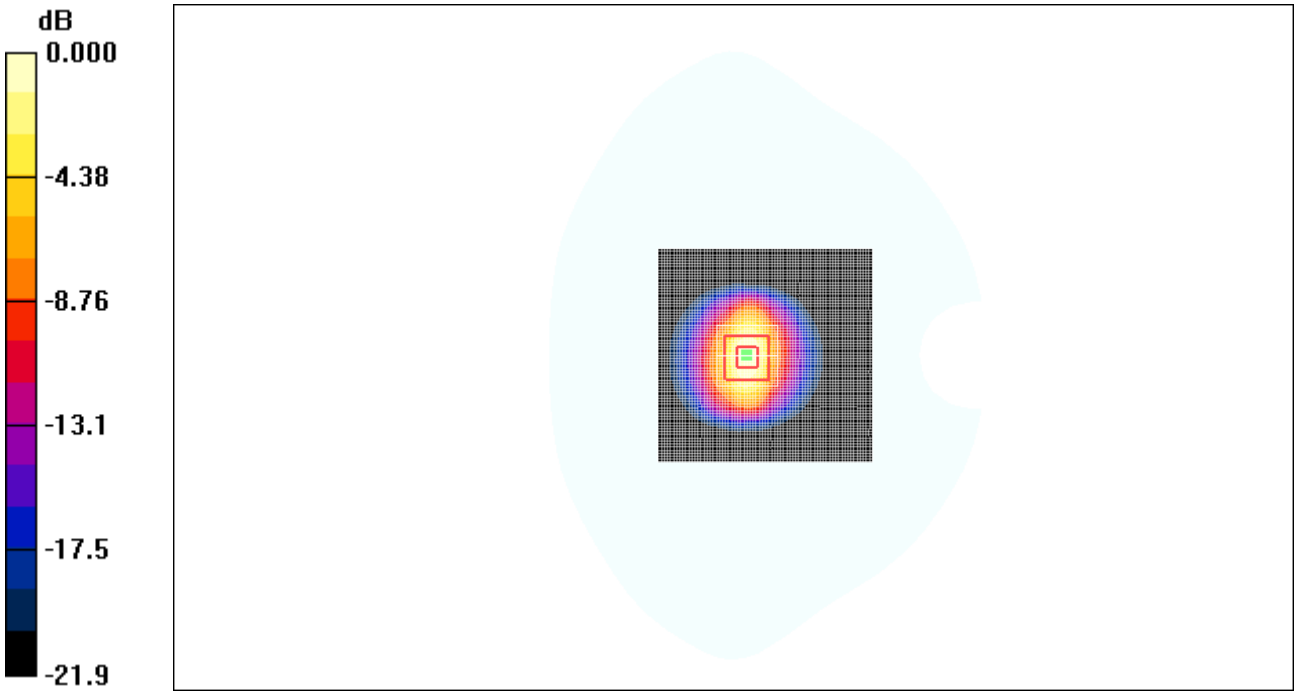
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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) = 6.06 mW/g

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



0 dB = 19.8mW/g

Figure 10 System Performance Check 2450MHz 250mW

System Performance Check at 2450 MHz

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

Date/Time: 12/20/2010 1:37:36 PM

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

Medium parameters used: f = 2450 MHz; σ = 1.92 mho/m; εr = 51.82 ρ = 1000 kg/m3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.8℃

Phantom section: Flat Section

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

d=10mm, Pin=250mW/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

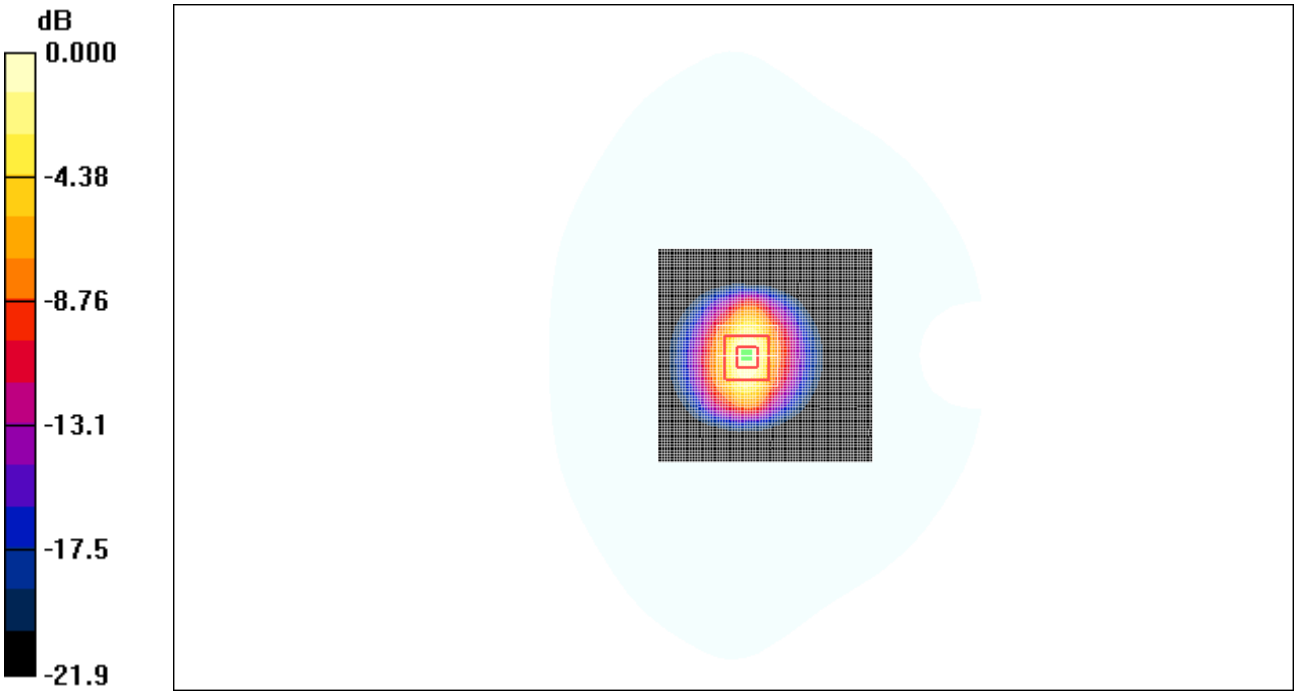
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 14 mW/g; SAR(10 g) = 6.16 mW/g

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



0 dB = 19.8mW/g

Figure 11 System Performance Check 2450MHz 250mW

ANNEX C: Graph Results

GSM 850 GPRS (1Up) Test Position 1 Middle

Date/Time: 11/27/2010 12:11:48 PM
Communication System: GSM850 + GPRS(1Up); Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.780 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.7 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.708 mW/g; SAR(10 g) = 0.498 mW/g
Maximum value of SAR (measured) = 0.785 mW/g

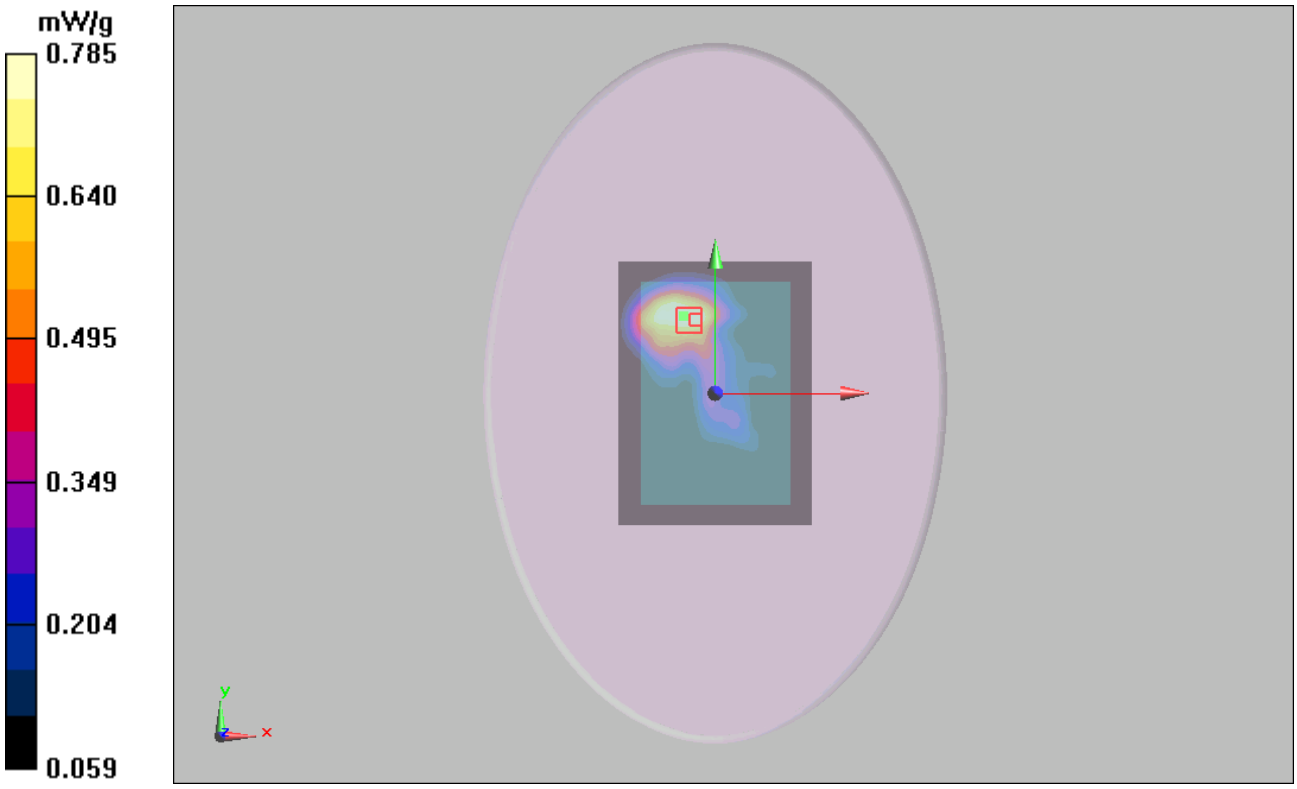


Figure 12 GSM 850 GPRS (1Up) Test Position 1 Channel 190

GSM 850 GPRS (2Up) Test Position 1 Middle

Date/Time: 11/27/2010 11:30:42 AM

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

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.961 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.943 W/kg

SAR(1 g) = 0.683 mW/g; SAR(10 g) = 0.488 mW/g

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

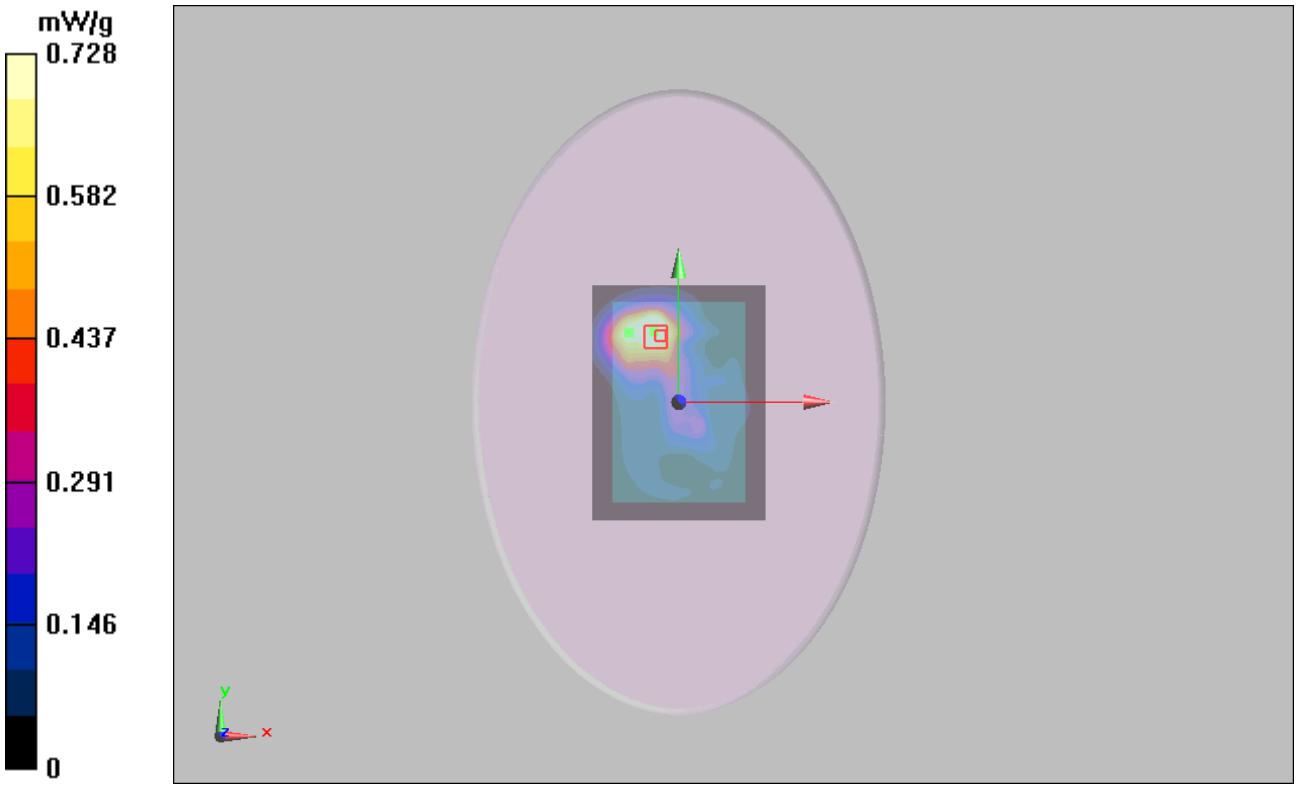


Figure 13 GSM 850 GPRS (2Up) Test Position 1 Channel 190

GSM 850 GPRS (3Up) Test Position 1 Middle

Date/Time: 11/27/2010 10:04:46 AM

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

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.786 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.6 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 0.974 W/kg

SAR(1 g) = 0.629 mW/g; SAR(10 g) = 0.410 mW/g

Maximum value of SAR (measured) = 0.800 mW/g

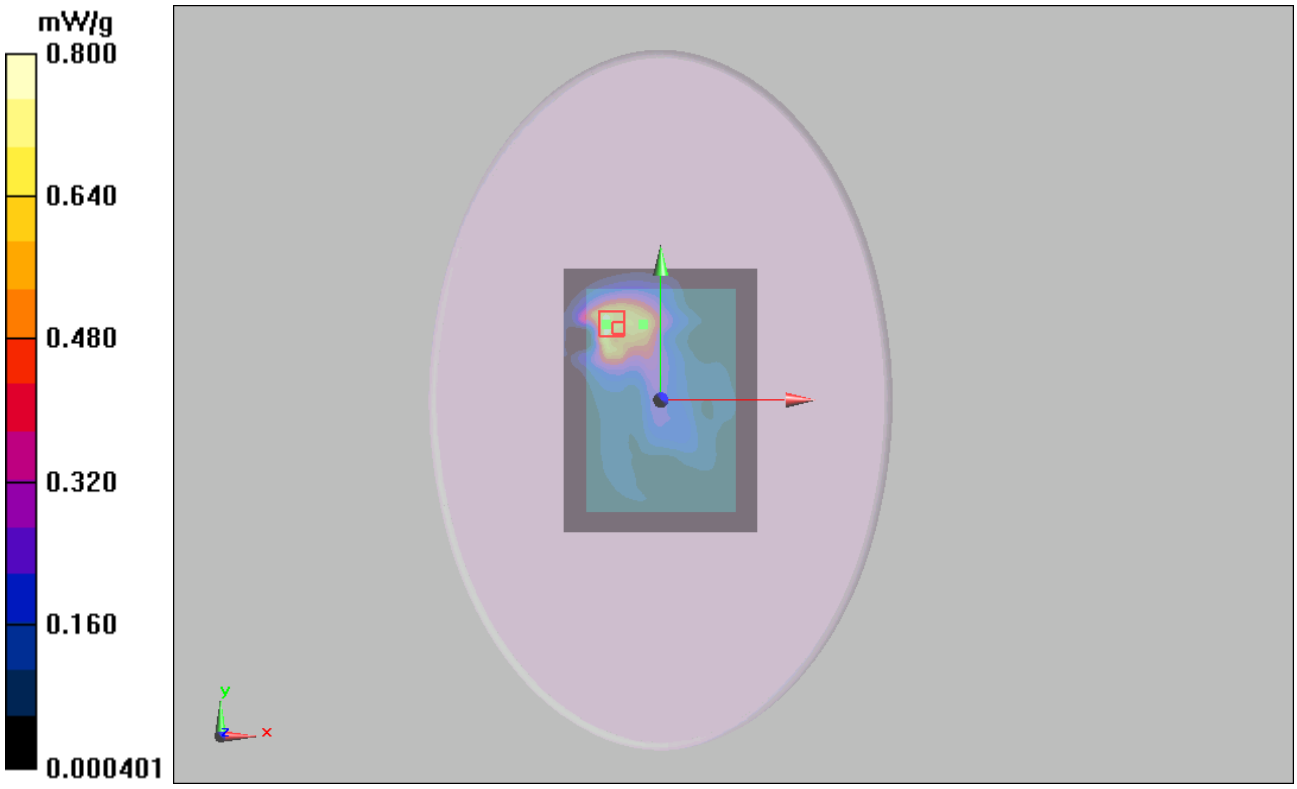


Figure 14 GSM 850 GPRS (3Up) Test Position 1 Channel 190

GSM 850 GPRS (4Up) Test Position 1 Middle

Date/Time: 11/27/2010 9:25:30 AM

Communication System: GSM 850+GPRS(4Up); Frequency: 836.6 MHz;Duty Cycle: 1:2.075

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.825 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.6 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.918 W/kg

SAR(1 g) = 0.616 mW/g; SAR(10 g) = 0.446 mW/g

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

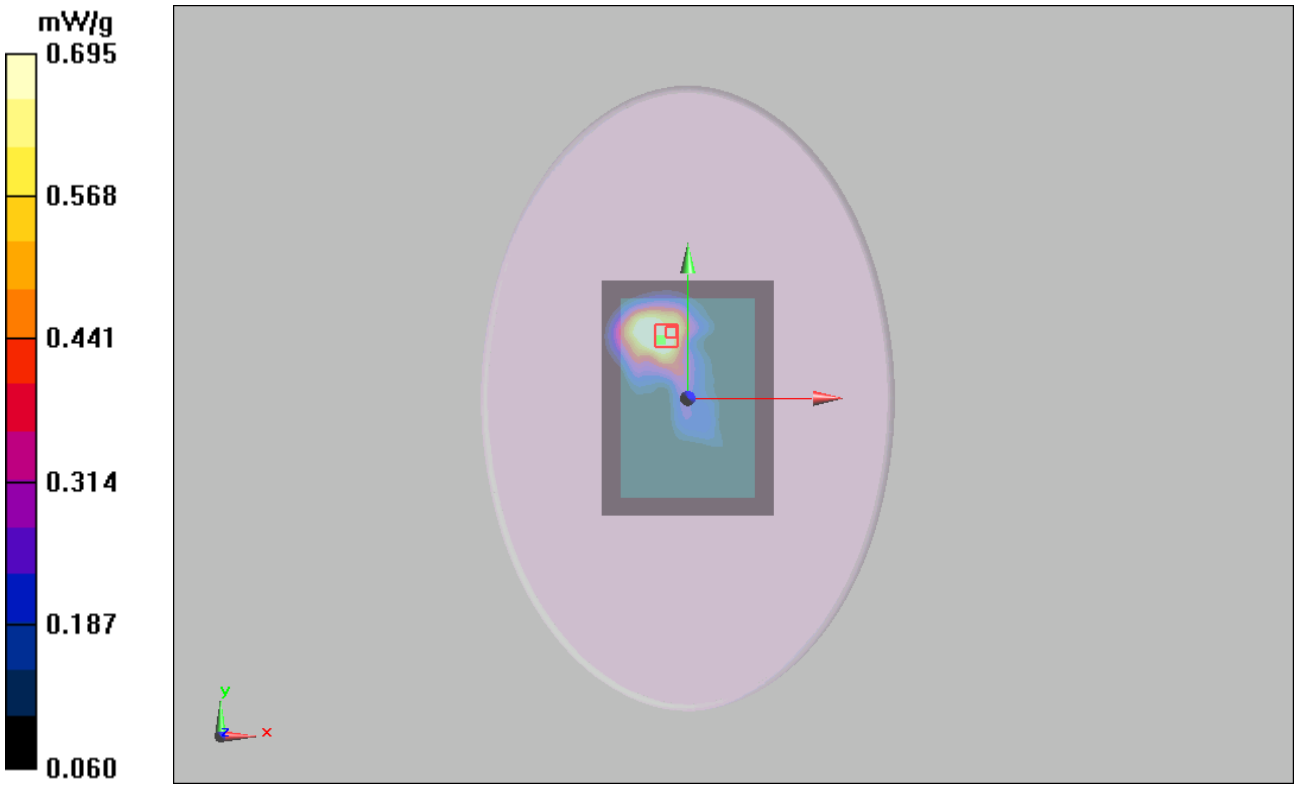


Figure 15 GSM 850 GPRS (4Up) Test Position 1 Channel 190

GSM 850 GPRS (1Up) Test Position 3 High

Date/Time: 11/27/2010 1:47:04 PM

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

Medium parameters used: f = 849 MHz; σ = 0.975 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.998 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.5 V/m; Power Drift = -0.055 dB

Peak SAR (extrapolated) = 1.86 W/kg

SAR(1 g) = 0.850 mW/g; SAR(10 g) = 0.415 mW/g

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

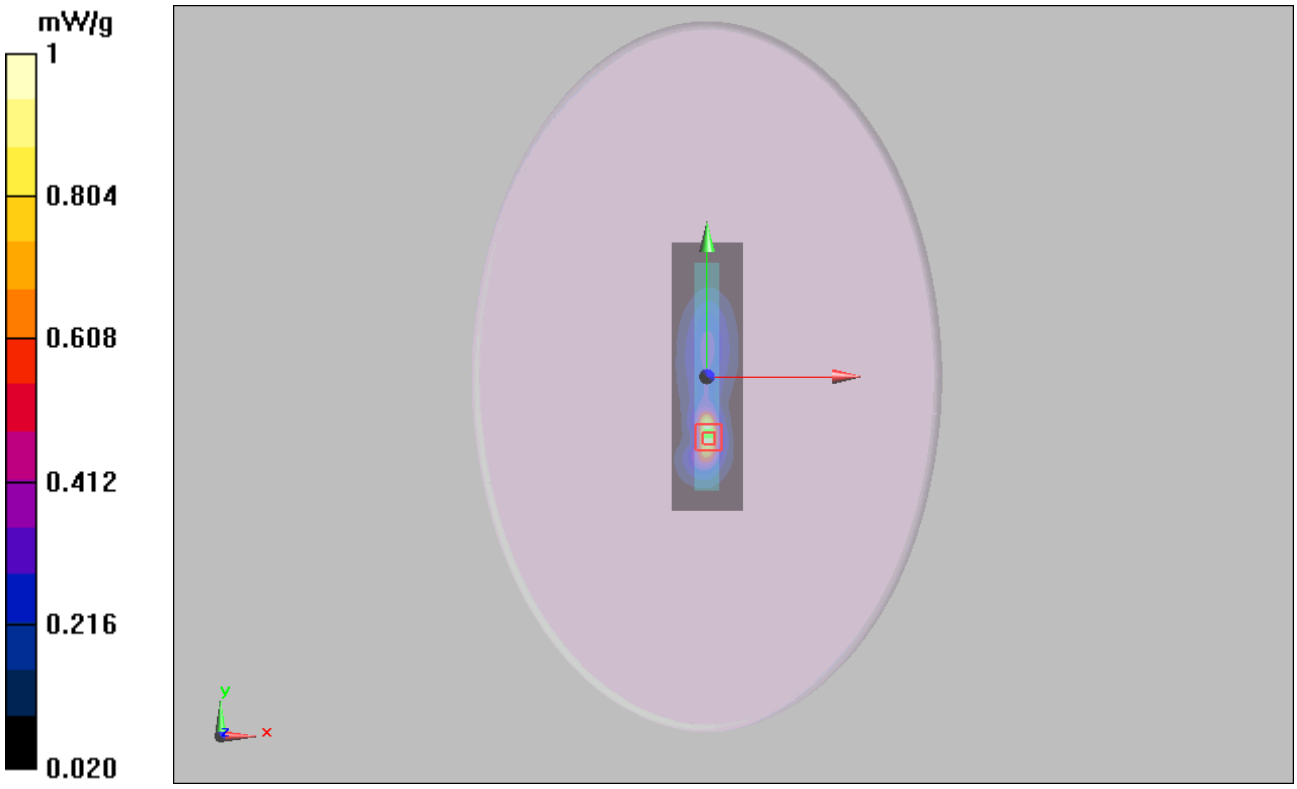


Figure 16 GSM 850 GPRS (1Up) Test Position 3 Channel 251

GSM 850 GPRS (1Up) Test Position 3 Middle

Date/Time: 11/27/2010 12:53:21 PM

Communication System: GSM850 + GPRS(1Up); Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Middle/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.724 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.762 mW/g; SAR(10 g) = 0.353 mW/g

Maximum value of SAR (measured) = 0.908 mW/g

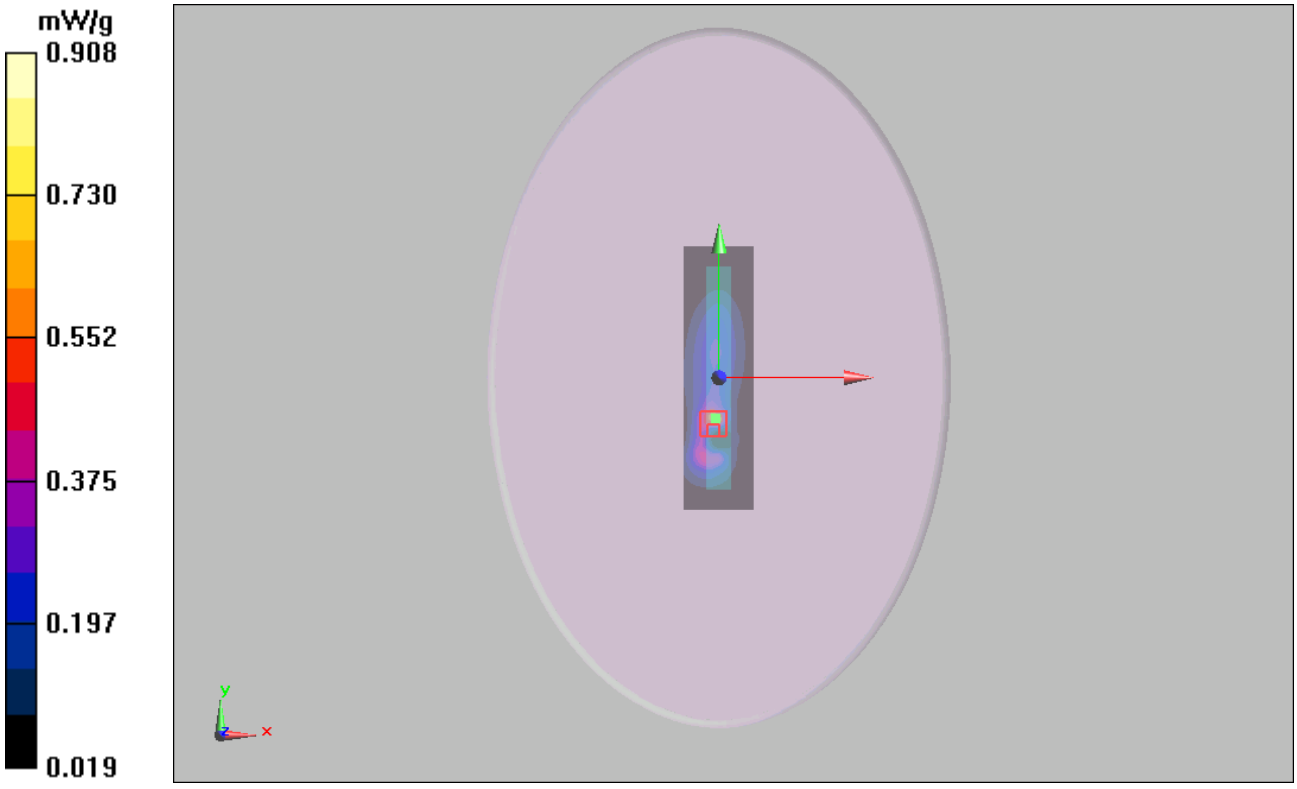


Figure 17 GSM 850 GPRS (1Up) Test Position 3 Channel 190

GSM 850 GPRS (1Up) Test Position 3 Low

Date/Time: 11/27/2010 2:14:11 PM
Communication System: GSM850 + GPRS(1Up); Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.963 mho/m; ε_r = 56.7; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.901 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = -0.013 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.763 mW/g; SAR(10 g) = 0.381 mW/g
Maximum value of SAR (measured) = 0.889 mW/g

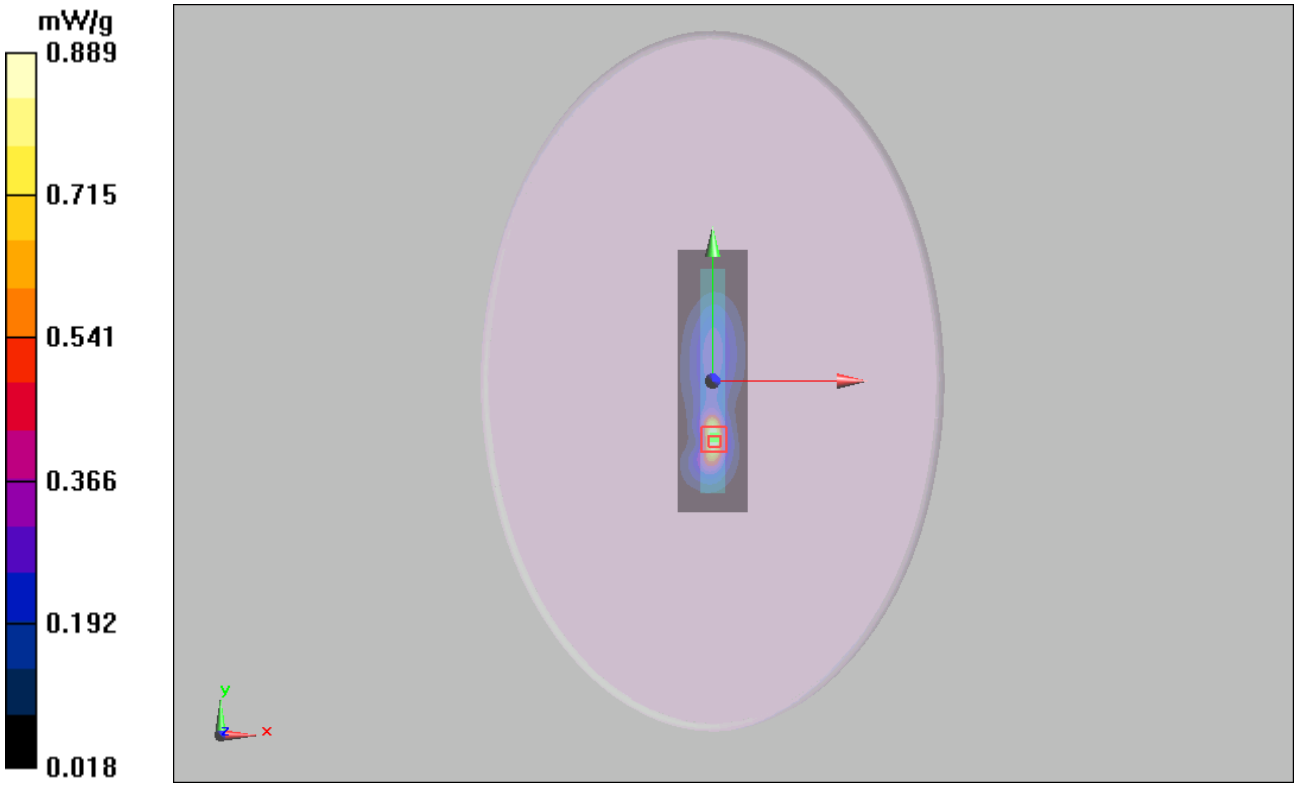


Figure 18 GSM 850 GPRS (1Up) Test Position 3 Channel 128

GSM 850 GPRS (1Up) Test Position 4 Middle

Date/Time: 11/27/2010 3:07:54 PM

Communication System: GSM850 + GPRS(1Up); Frequency: 836.6 MHz;Duty Cycle: 1:8.3

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 4 Middle/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.386 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.5 V/m; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 0.500 W/kg

SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.209 mW/g

Maximum value of SAR (measured) = 0.347 mW/g

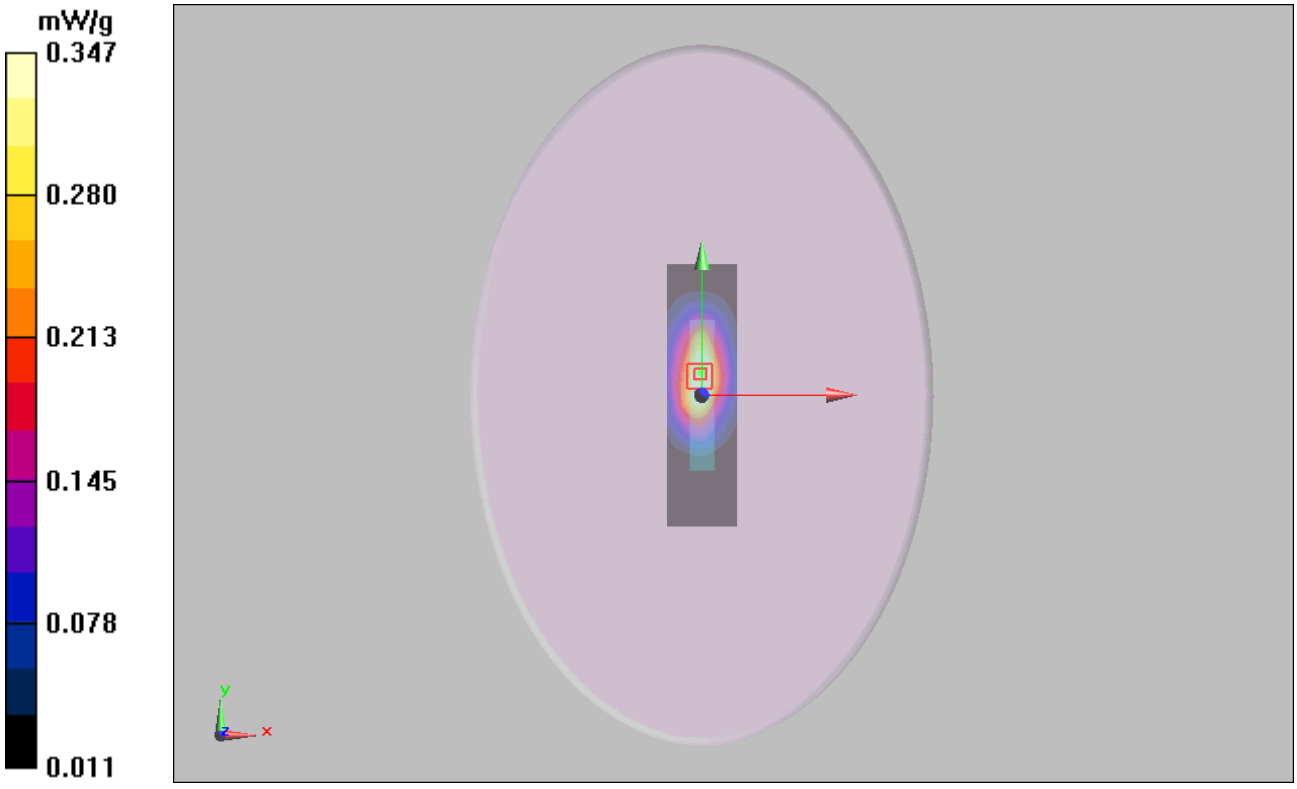


Figure 19 GSM 850 GPRS (1Up) Test Position 4 Channel 190

GSM 850 EGPRS (1Up) Test Position 3 High

Date/Time: 11/27/2010 2:40:58 PM
Communication System: GSM850 + EGPRS(1Up); Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 849 MHz; σ = 0.975 mho/m; ε_r = 56.4; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.971 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 0.846 mW/g; SAR(10 g) = 0.414 mW/g
Maximum value of SAR (measured) = 0.994 mW/g

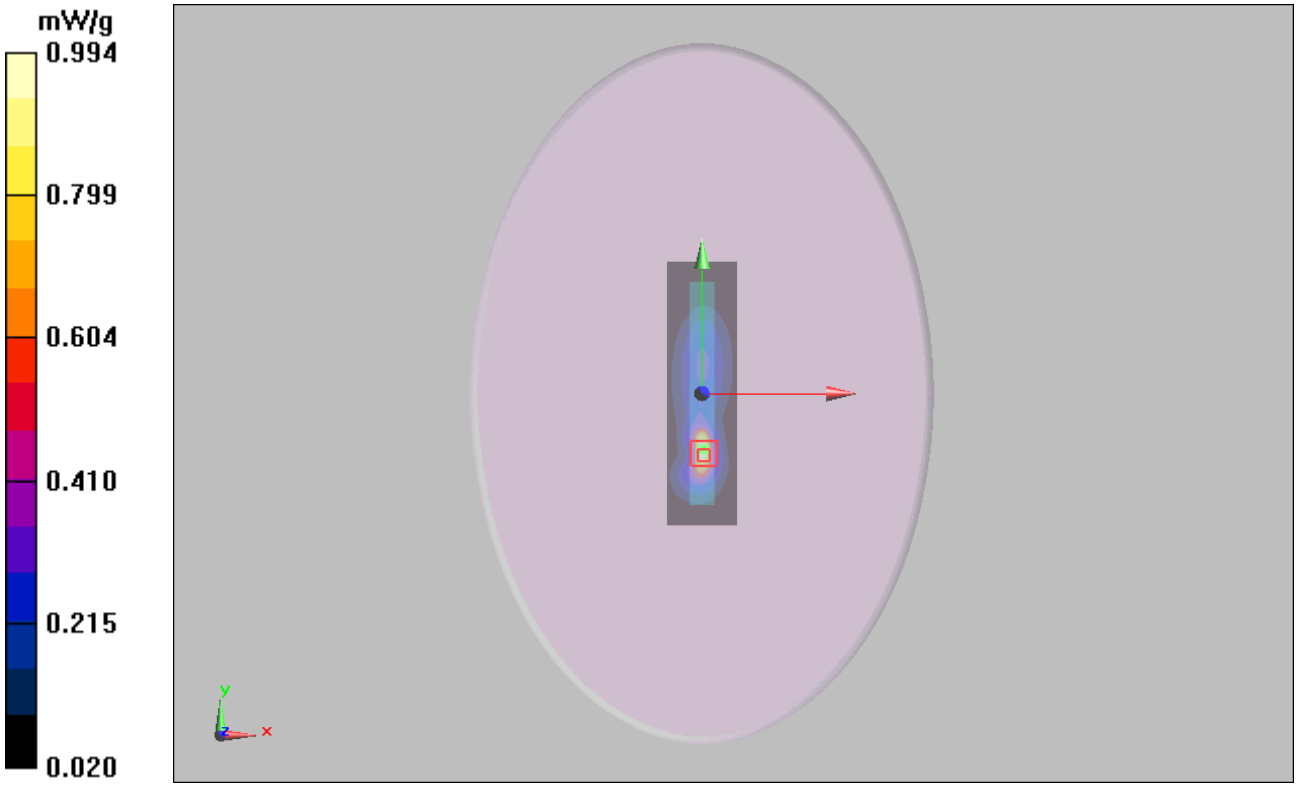


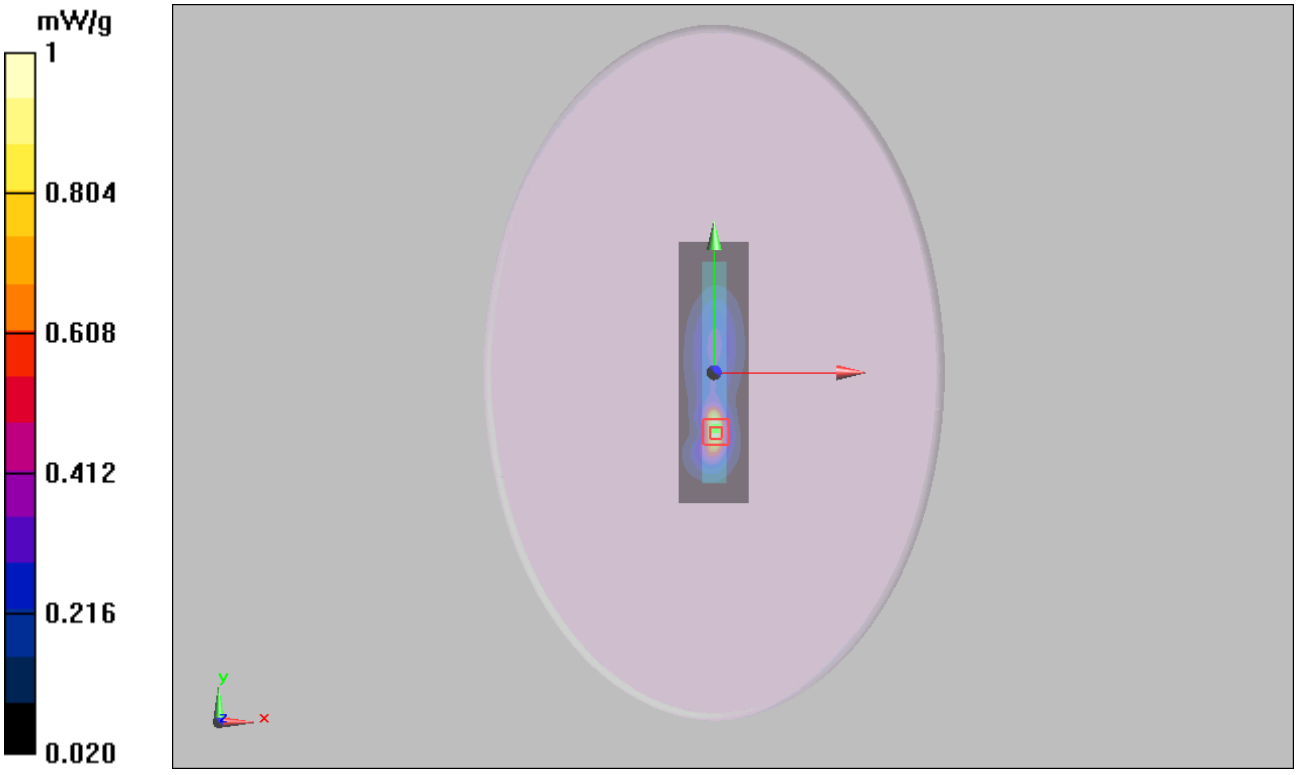
Figure 20 GSM 850 EGPRS (1Up) Test Position 3 Channel 251

GSM 850 with Earphone GPRS (1Up) Test Position 3 High

Date/Time: 12/20/2010 1:47:04 PM
Communication System: GSM850 + GPRS(1Up); Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 849 MHz; σ = 0.978 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3677; ConvF(10.33, 10.33, 10.33); Calibrated: 11/24/2010
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.5 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.86 W/kg
SAR(1 g) = 0.852 mW/g; SAR(10 g) = 0.416 mW/g
Maximum value of SAR (measured) = 1 mW/g



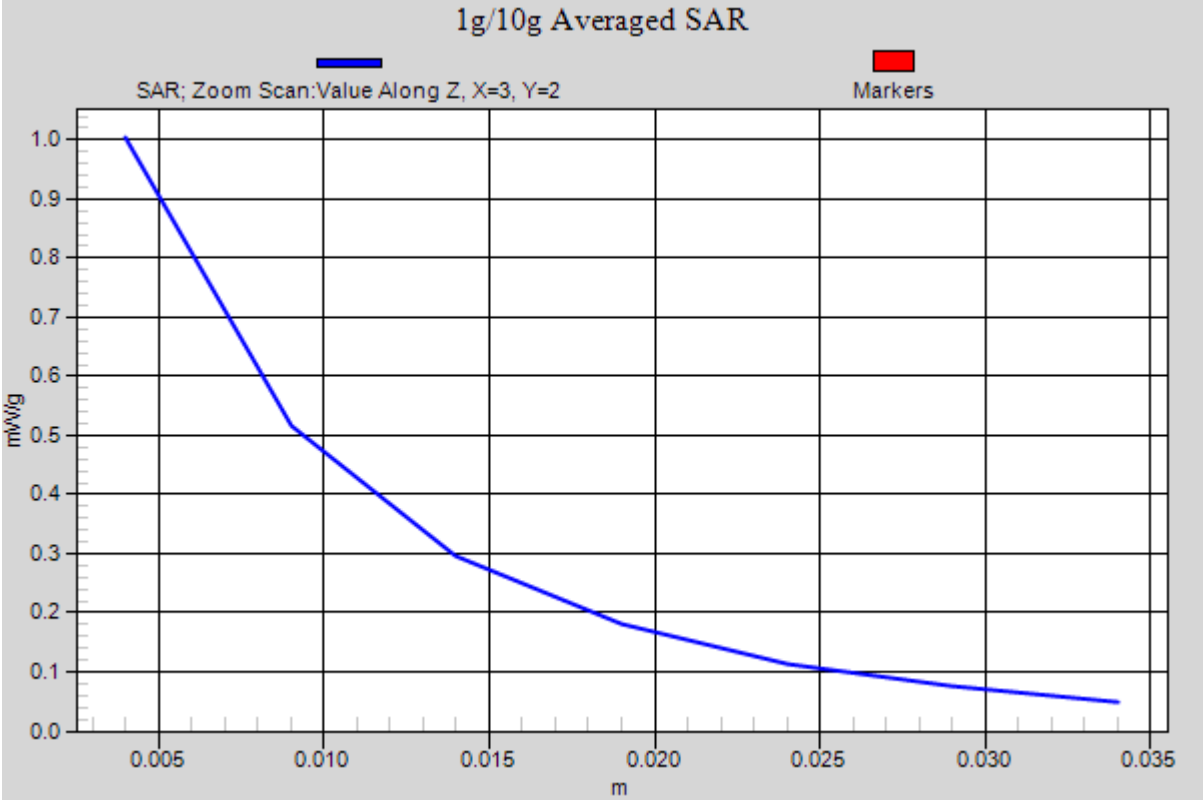


Figure 21 Body with Earphone, GSM 850 GPRS (1Up) Test Position 3 Channel 251

GSM 1900 GPRS (1Up) Test Position 1 Middle

Date/Time: 12/3/2010 5:49:28 PM
Communication System: PCS 1900+GPRS(1Up); Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.786 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.01 V/m; Power Drift = 0.162 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 0.777 mW/g

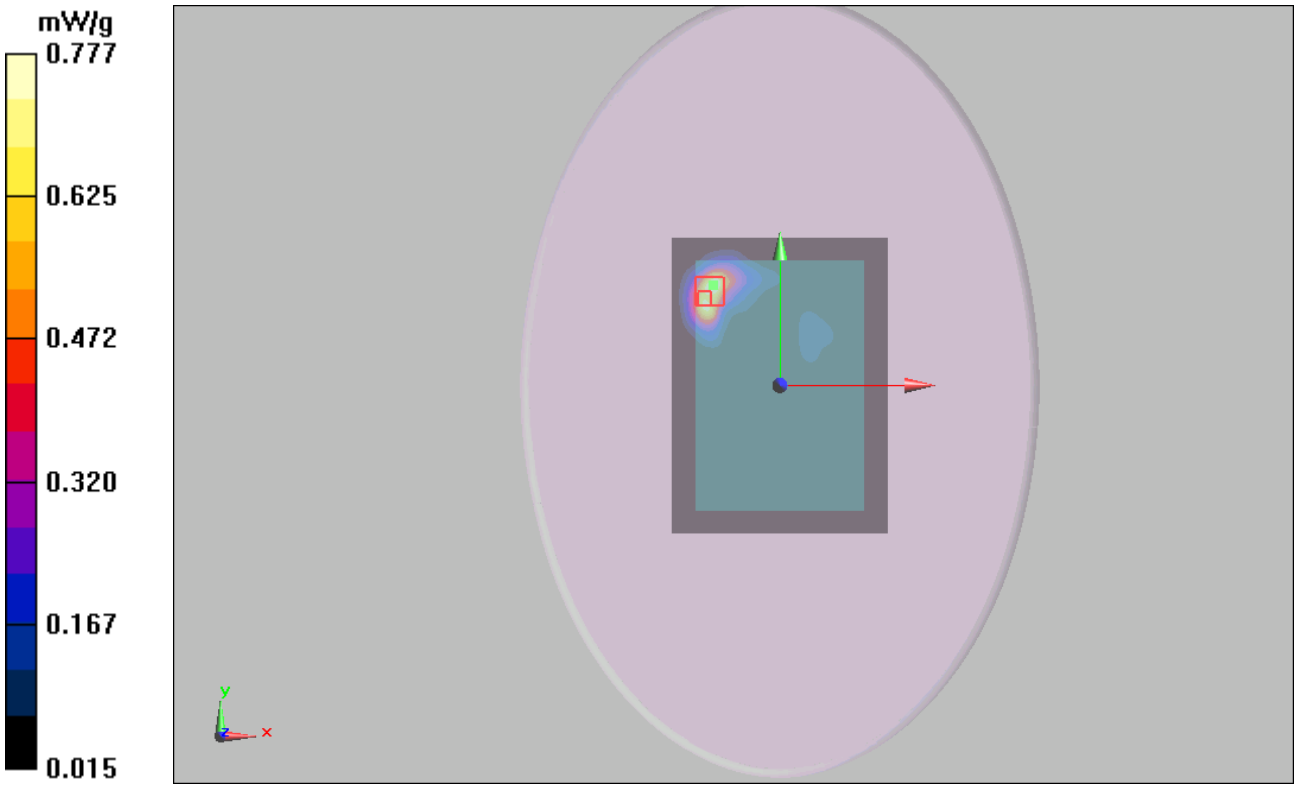


Figure 22 GSM 1900 GPRS (1Up) Test Position 1 Channel 661

GSM 1900 GPRS (2Up) Test Position 1 High

Date/Time: 12/3/2010 5:11:23 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; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 High/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.891 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.8 V/m; Power Drift = -0.024 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (measured) = 0.812 mW/g

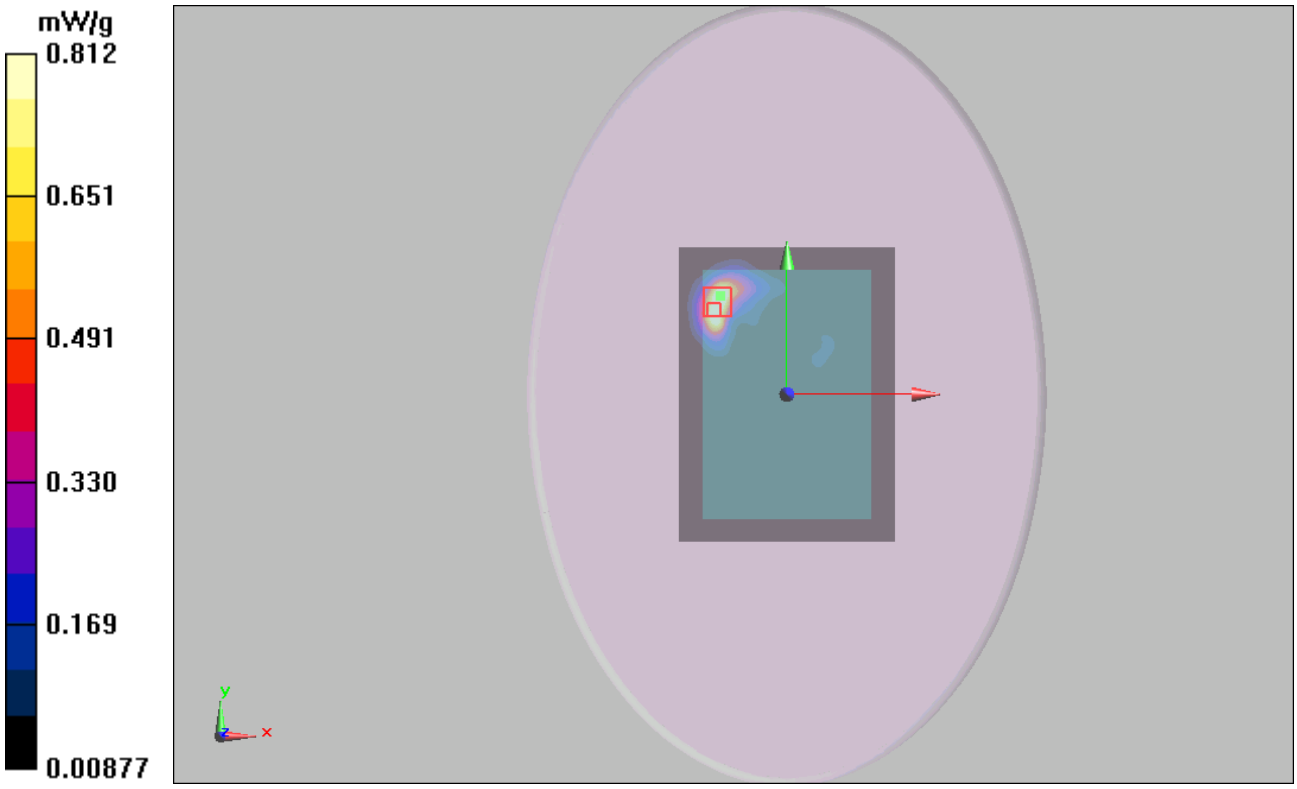


Figure 23 GSM 1900 GPRS (2Up) Test Position 1 Channel 810

GSM 1900 GPRS (2Up) Test Position 1 Middle

Date/Time: 12/3/2010 6:27:33 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.17 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.88 V/m; Power Drift = 0.018 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 0.980 mW/g; SAR(10 g) = 0.514 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

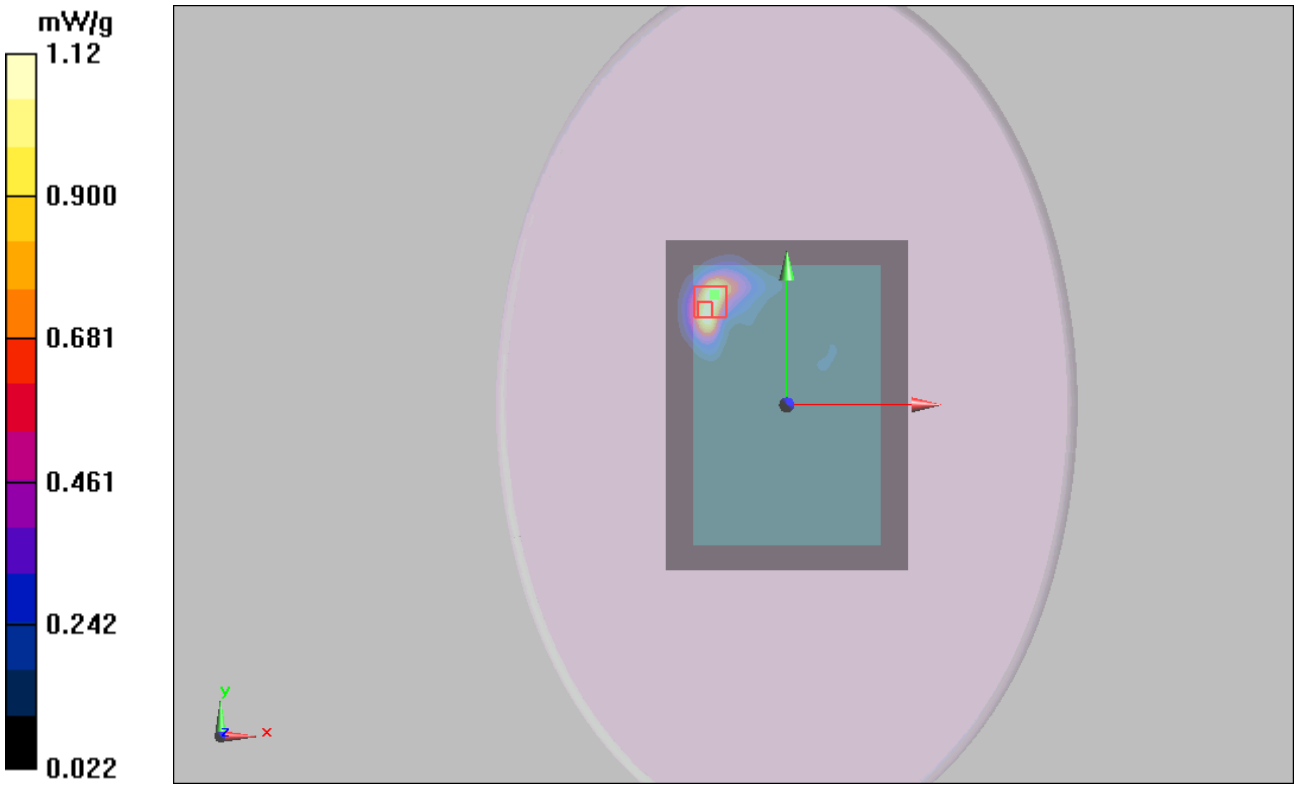


Figure 24 GSM 1900 GPRS (2Up) Test Position 1 Channel 661

GSM 1900 GPRS (2Up) Test Position 1 Low

Date/Time: 12/3/2010 3:34:36 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 = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Low/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.06 mW/g

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3 V/m; Power Drift = 0.079 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.859 mW/g; SAR(10 g) = 0.464 mW/g
Maximum value of SAR (measured) = 0.957 mW/g

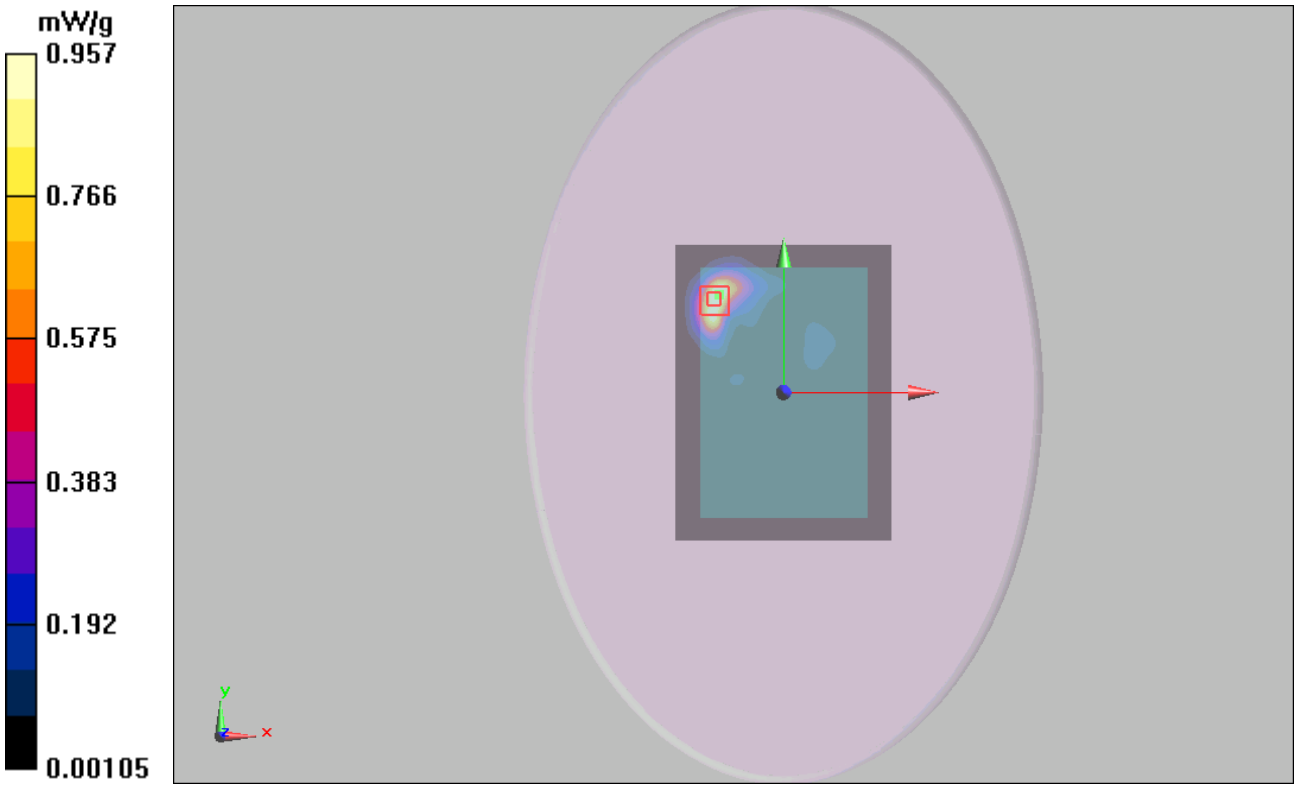


Figure 25 GSM 1900 GPRS (2Up) Test Position 1 Channel 512

GSM 1900 GPRS (3Up) Test Position 1 High

Date/Time: 12/3/2010 1:36:52 PM
Communication System: PCS 1900+GPRS(3Up); Frequency: 1909.8 MHz;Duty Cycle: 1:2.767
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 High/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.784 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.64 V/m; Power Drift = 0.052 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.799 mW/g

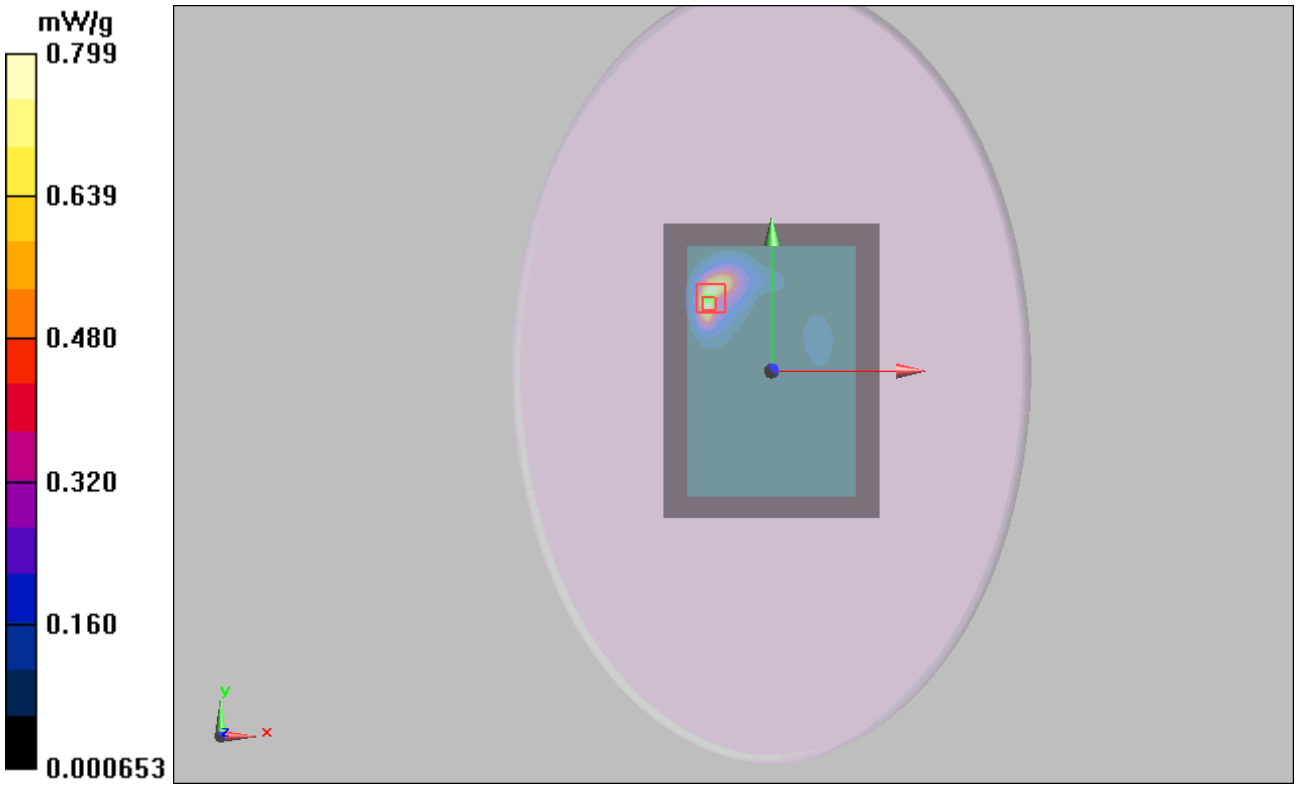


Figure 26 GSM 1900 GPRS (3Up) Test Position 1 Channel 810

GSM 1900 GPRS (3Up) Test Position 1 Middle

Date/Time: 12/3/2010 4:18:06 PM
Communication System: PCS 1900+GPRS(3Up); Frequency: 1880 MHz;Duty Cycle: 1:2.767
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.971 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.98 V/m; Power Drift = 0.000 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.845 mW/g; SAR(10 g) = 0.437 mW/g
Maximum value of SAR (measured) = 0.987 mW/g

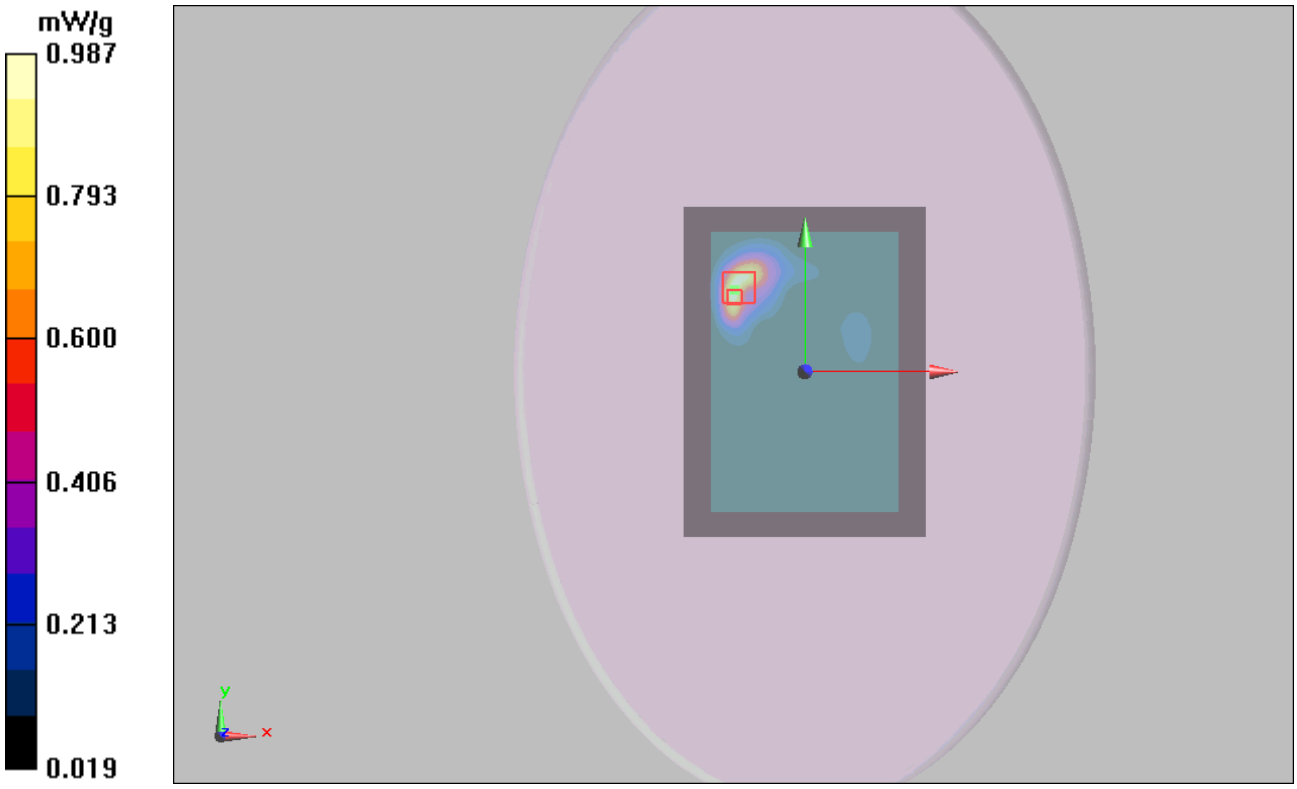


Figure 27 GSM 1900 GPRS (3Up) Test Position 1 Channel 661

GSM 1900 GPRS (3Up) Test Position 1 Low

Date/Time: 12/3/2010 12:58:48 PM
Communication System: PCS 1900+GPRS(3Up); Frequency: 1850.2 MHz;Duty Cycle: 1:2.767
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Low/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.826 mW/g

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.86 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.3 W/kg
SAR(1 g) = 0.714 mW/g; SAR(10 g) = 0.382 mW/g
Maximum value of SAR (measured) = 0.817 mW/g

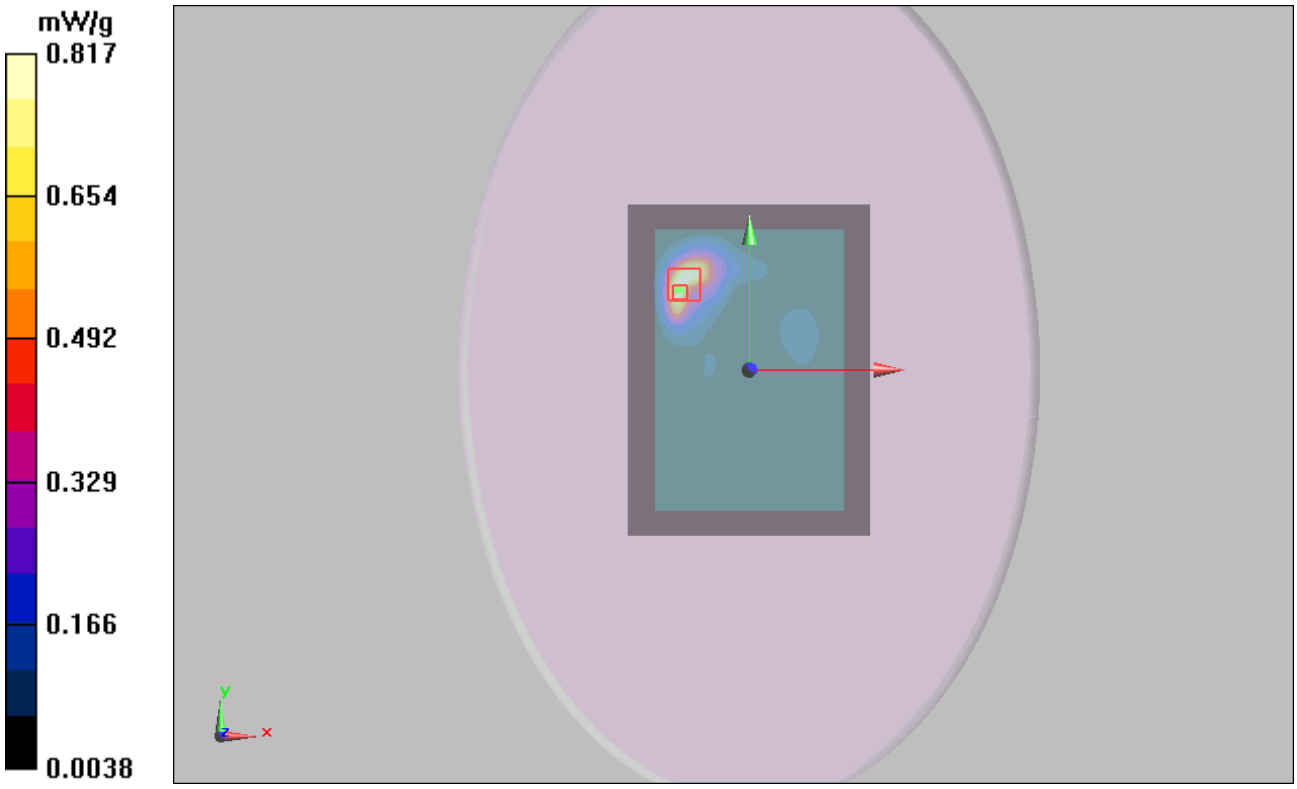


Figure 28 GSM 1900 GPRS (3Up) Test Position 1 Channel 512

GSM 1900 GPRS (4Up) Test Position 1 High

Date/Time: 12/3/2010 11:35:16 AM
Communication System: PCS 1900+GPRS(4Up); Frequency: 1909.8 MHz;Duty Cycle: 1:2.075
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 High/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.809 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.65 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.706 mW/g; SAR(10 g) = 0.365 mW/g
Maximum value of SAR (measured) = 0.822 mW/g

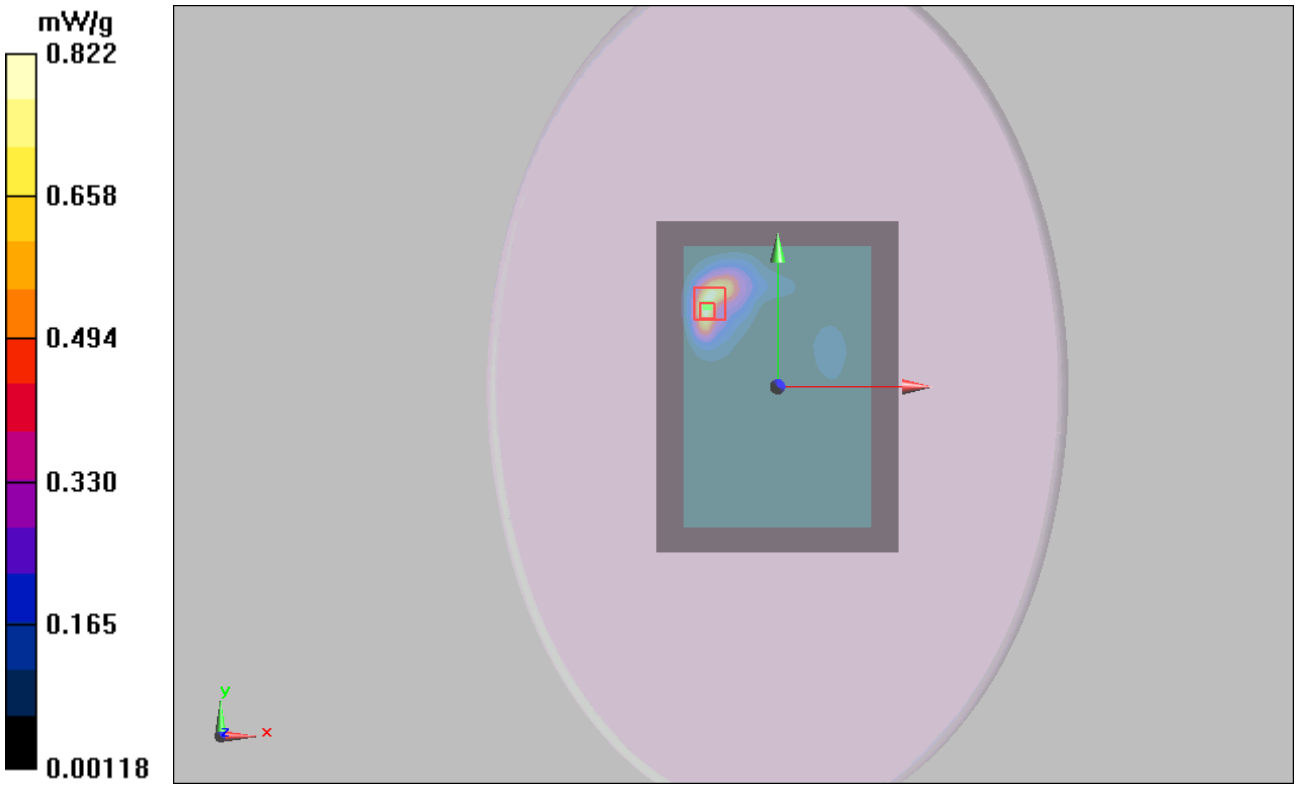


Figure 29 GSM 1900 GPRS (4Up) Test Position 1 Channel 810

GSM 1900 GPRS (4Up) Test Position 1 Middle

Date/Time: 12/3/2010 12:13:37 PM
Communication System: PCS 1900+GPRS(4Up); Frequency: 1880 MHz;Duty Cycle: 1:2.075
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.952 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.98 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 0.961 mW/g

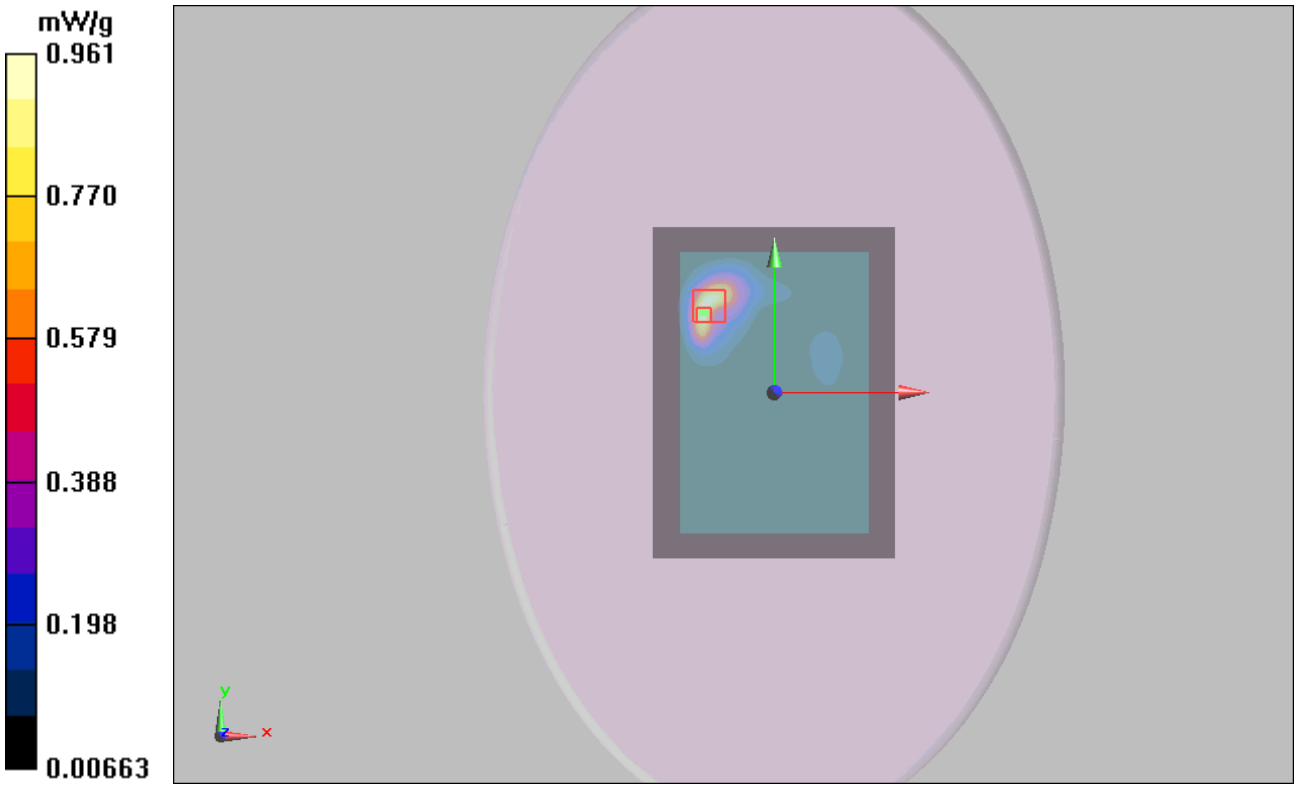


Figure 30 GSM 1900 GPRS (4Up) Test Position 1 Channel 661

GSM 1900 GPRS (4Up) Test Position 1 Low

Date/Time: 12/3/2010 10:06:56 AM
Communication System: PCS 1900+GPRS(4Up); Frequency: 1850.2 MHz;Duty Cycle: 1:2.075
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Low/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.794 mW/g

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.71 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.690 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.797 mW/g

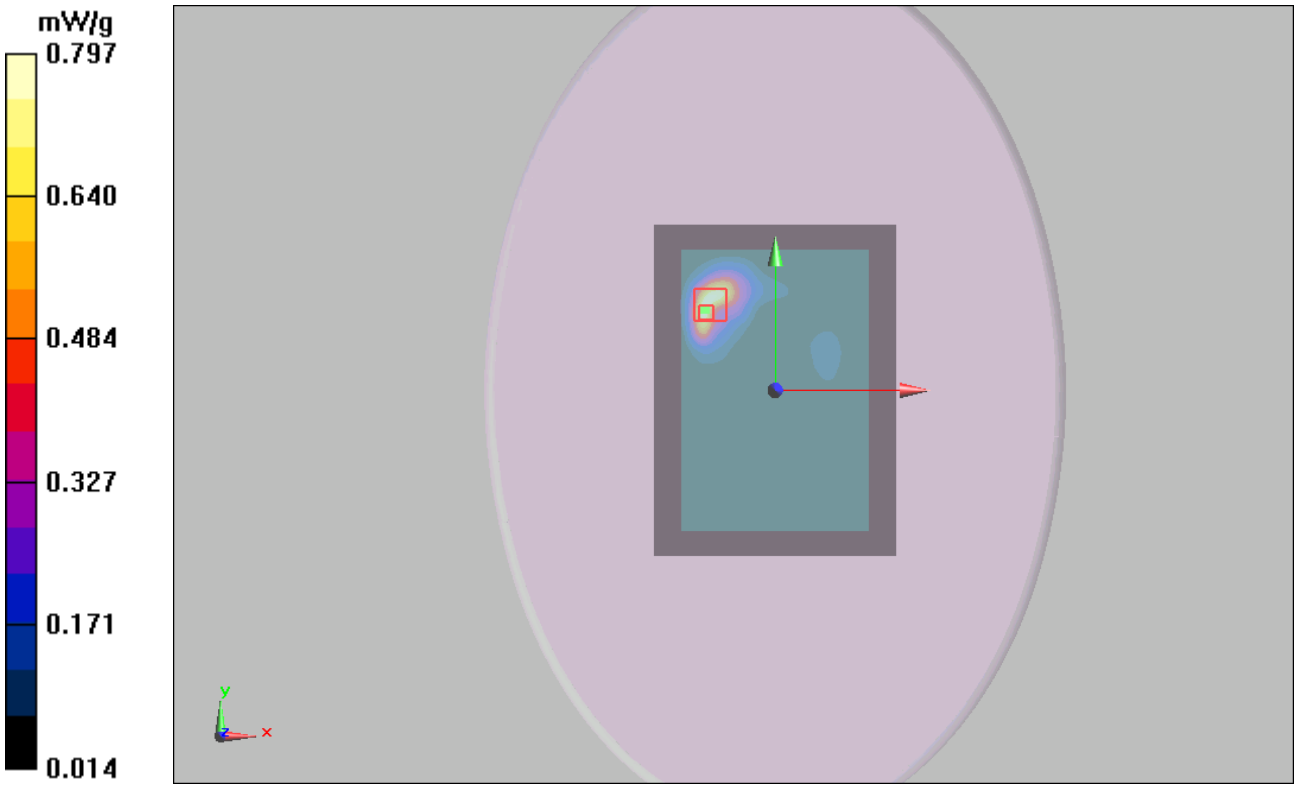


Figure 31 GSM 1900 GPRS (4Up) Test Position 1 Channel 512

GSM 1900 GPRS (2Up) Test Position 3 High

Date/Time: 12/3/2010 9:28:23 AM
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; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.23 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.47 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 2.56 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.498 mW/g
Maximum value of SAR (measured) = 1.3 mW/g

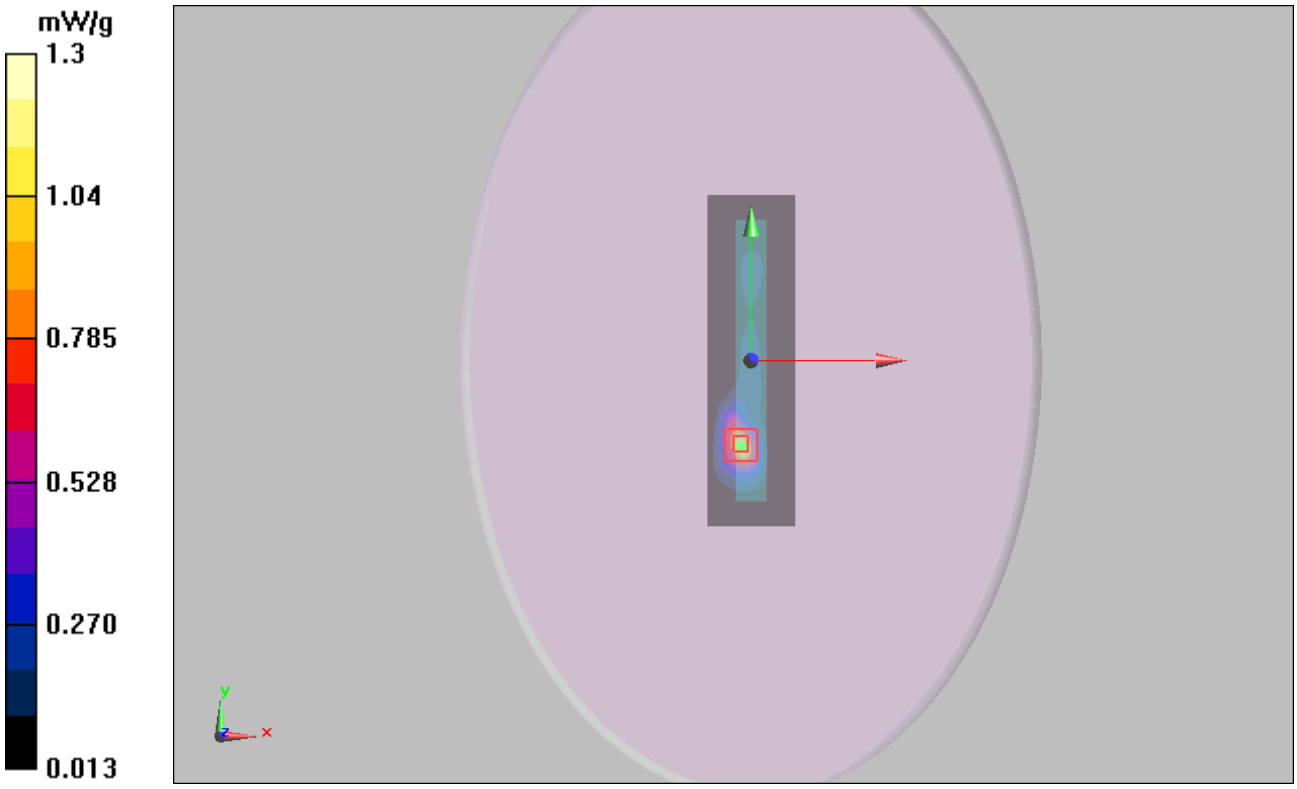


Figure 32 GSM 1900 GPRS (2Up) Test Position 3 Channel 810

GSM 1900 GPRS (2Up) Test Position 3 Middle

Date/Time: 12/3/2010 10:50:38 AM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Middle/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.47 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.581 mW/g
Maximum value of SAR (measured) = 1.51 mW/g

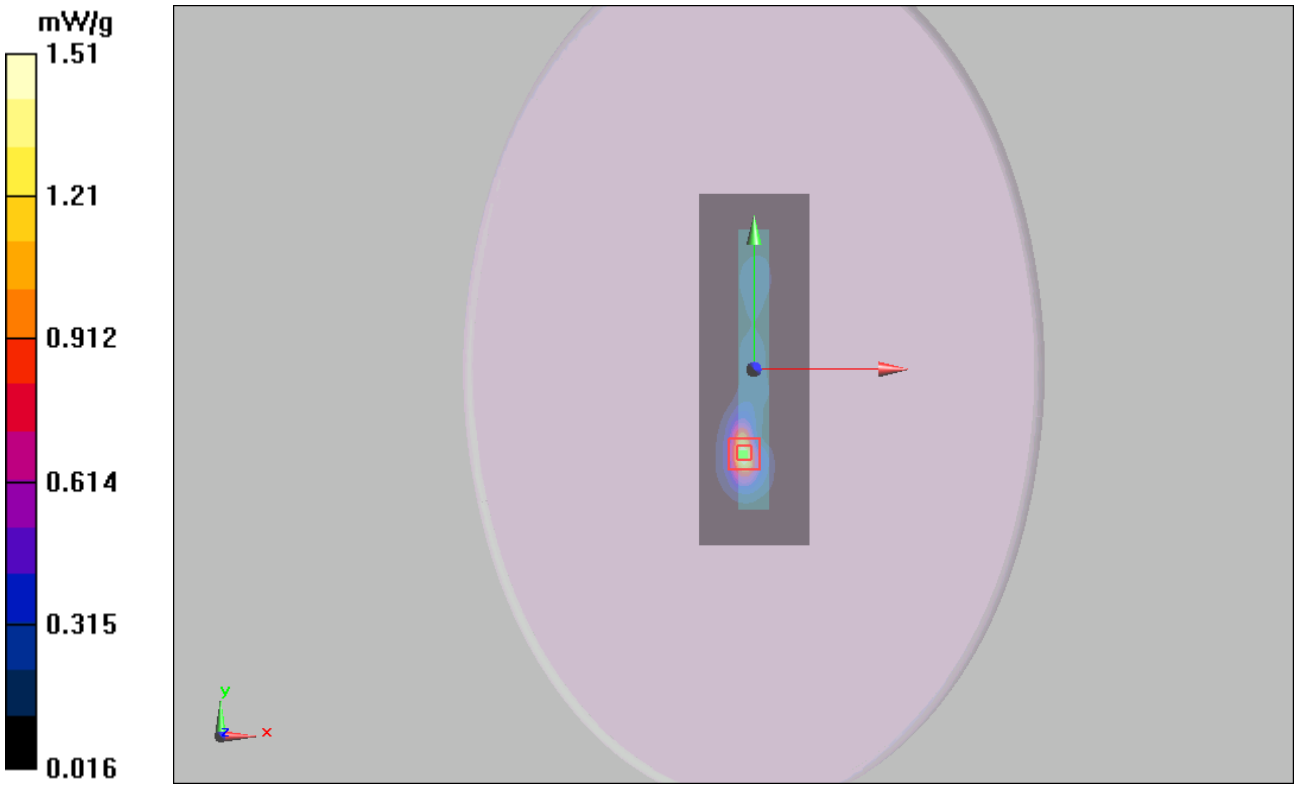


Figure 33 GSM 1900 GPRS (2Up) Test Position 3 Channel 661

GSM 1900 GPRS (2Up) Test Position 3 Low

Date/Time: 12/3/2010 9:49:31 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 = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.25 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 2.54 W/kg
SAR(1 g) = 0.996 mW/g; SAR(10 g) = 0.482 mW/g
Maximum value of SAR (measured) = 1.25 mW/g

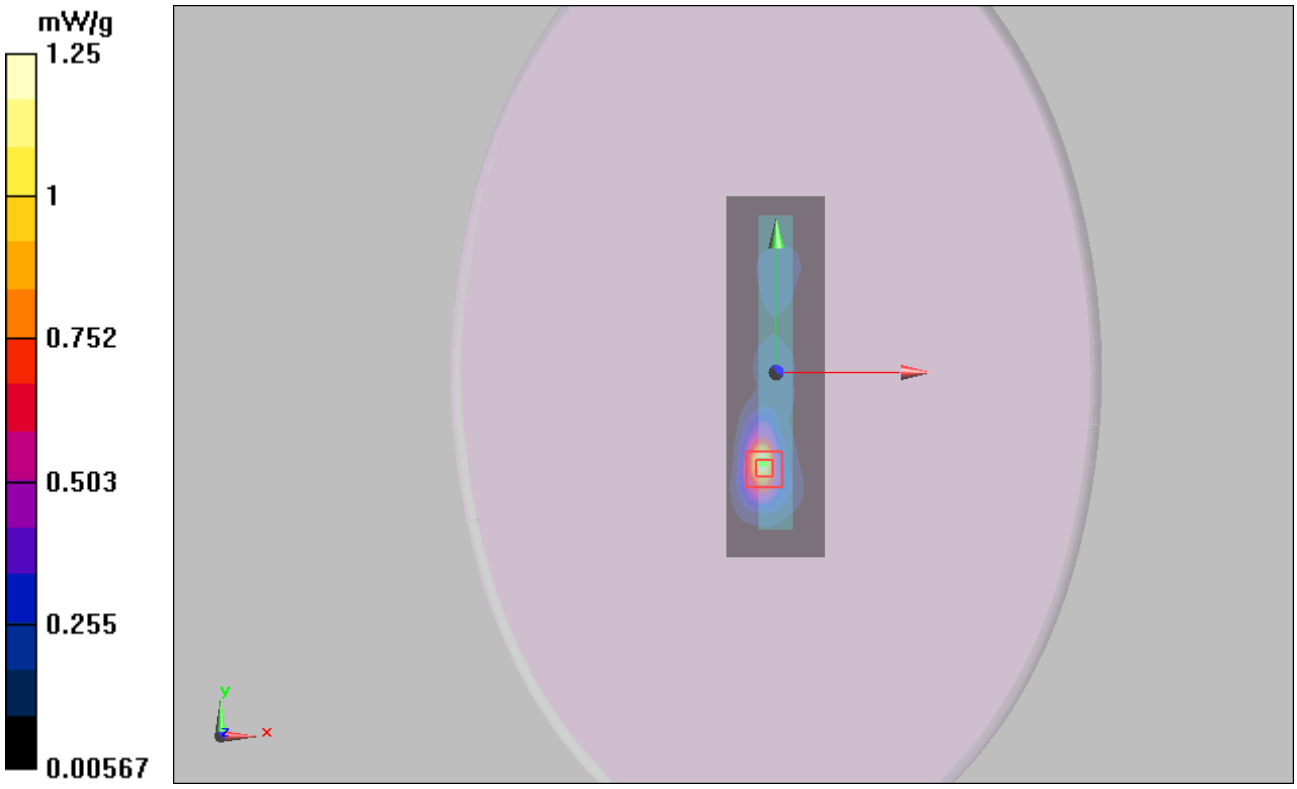


Figure 34 GSM 1900 GPRS (2Up) Test Position 3 Channel 512

GSM 1900 GPRS (2Up) Test Position 4 Middle

Date/Time: 12/3/2010 7:33:24 PM
Communication System: PCS 1900+GPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 4 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.280 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.34 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.450 W/kg
SAR(1 g) = 0.256 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.289 mW/g

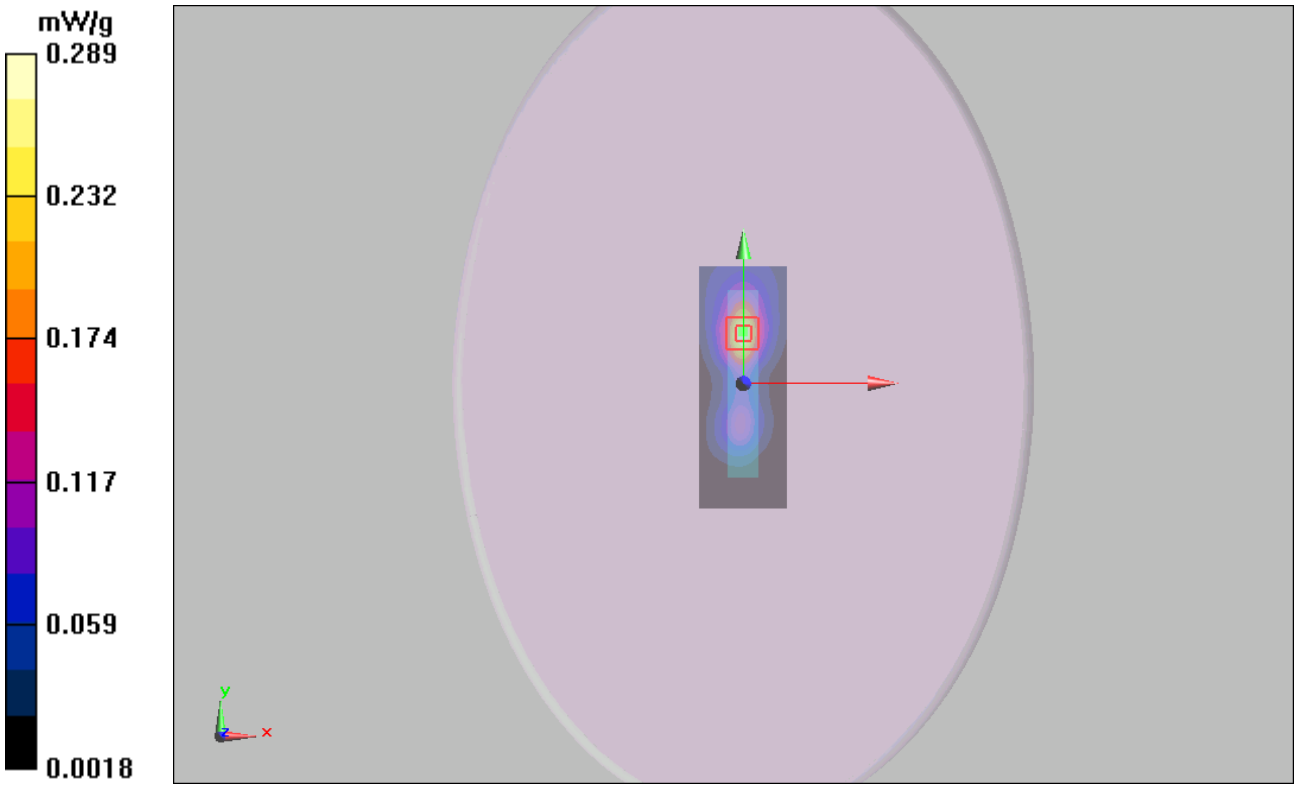


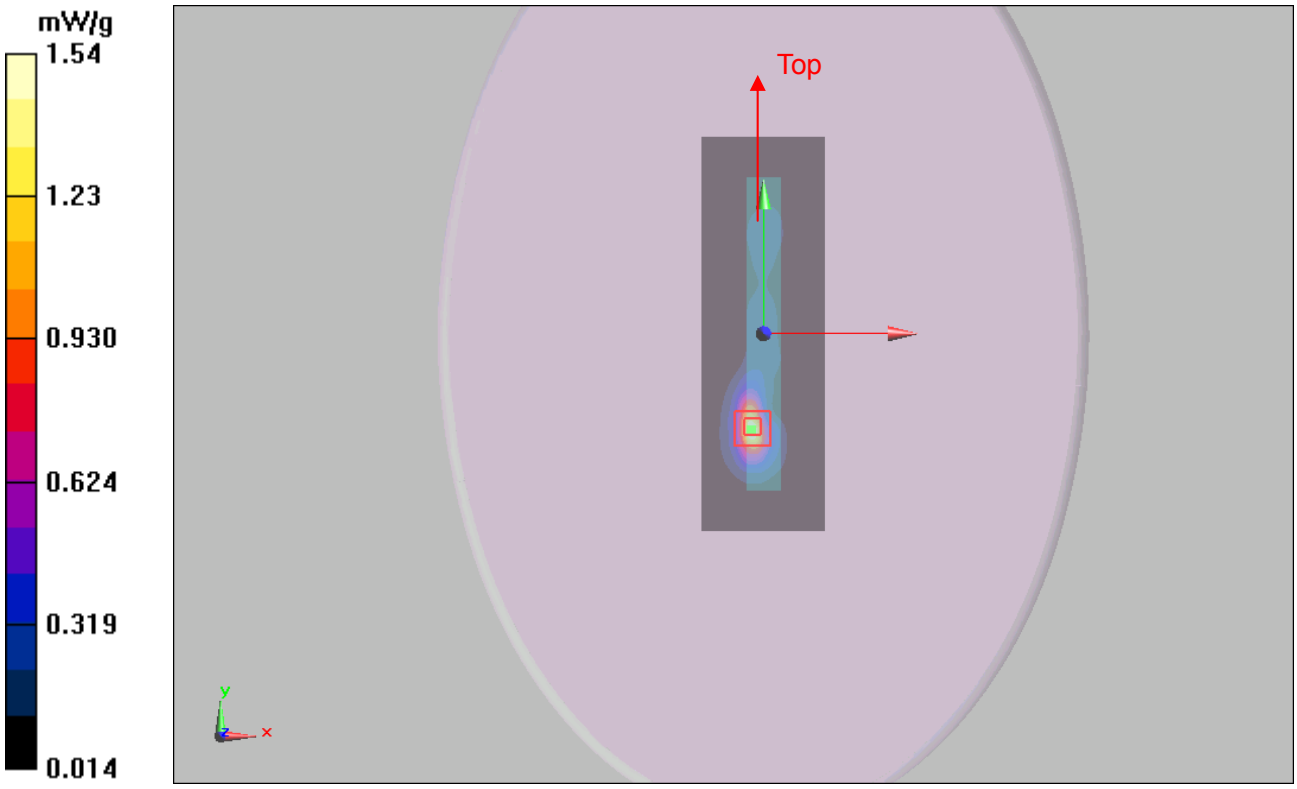
Figure 35 GSM 1900 GPRS (2Up) Test Position 4 Channel 661

GSM 1900 EGPRS (2Up) Test Position 3 Middle

Date/Time: 12/3/2010 1:17:36 PM
Communication System: PCS 1900+EGPRS(2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Middle/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.5 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 2.99 W/kg
SAR(1 g) = 1.33 mW/g; SAR(10 g) = 0.593 mW/g
Maximum value of SAR (measured) = 1.54 mW/g



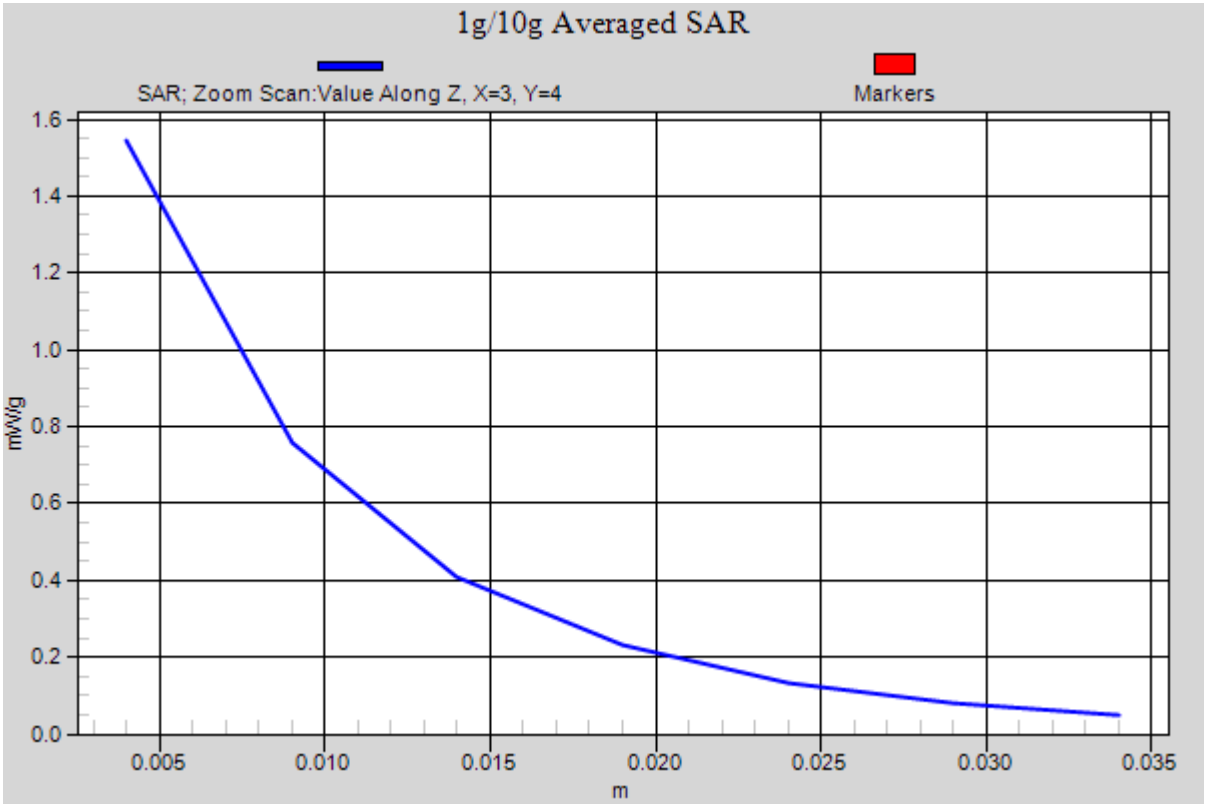


Figure 36 GSM 1900 EGPRS (2Up) Test Position 3 Channel 661

GSM 1900 with Earphone GPRS (2Up) Test Position 3 Middle

Date/Time: 12/20/2010 12:19:51 PM

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

Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Middle/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.15 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = -0.035 dB

Peak SAR (extrapolated) = 2.41 W/kg

SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.506 mW/g

Maximum value of SAR (measured) = 1.31 mW/g

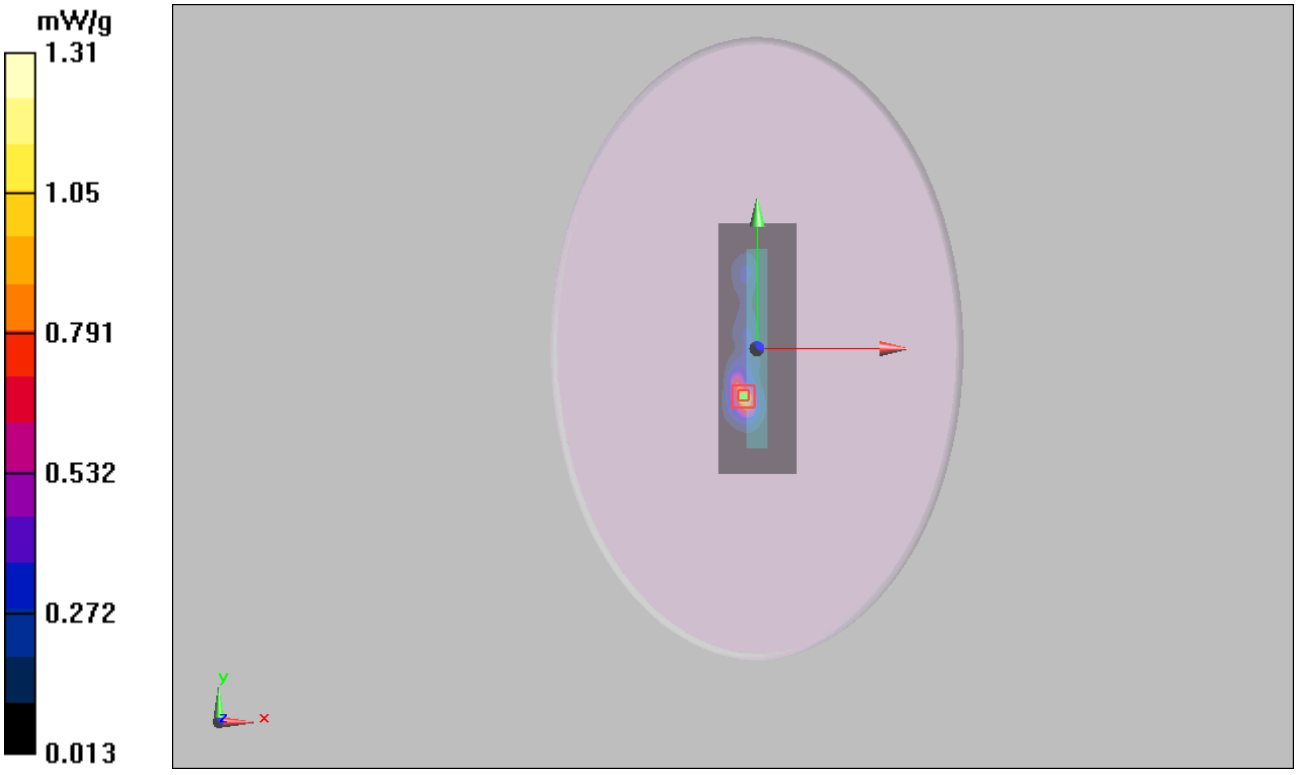


Figure 37 Body with Earphone, GSM 1900 GPRS (2Up) Test Position 3 Channel 661

WCDMA Band II Test Position 1 Middle

Date/Time: 12/3/2010 4:00:38 PM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.676 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.37 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.615 mW/g; SAR(10 g) = 0.319 mW/g

Maximum value of SAR (measured) = 0.710 mW/g

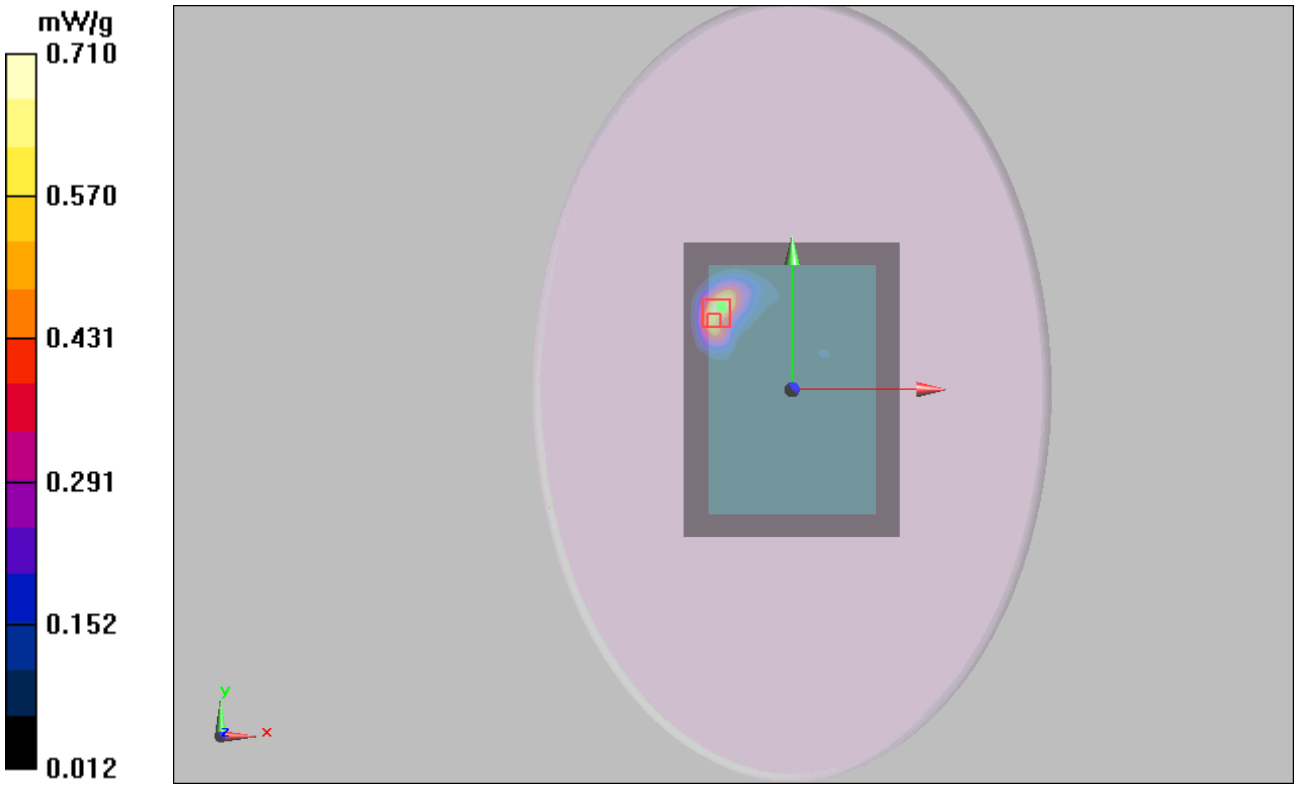


Figure 38 WCDMA Band II Test Position 1 Channel 9400

WCDMA Band II Test Position 3 High

Date/Time: 12/3/2010 10:17:48 PM

Communication System: WCDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1908 MHz; σ = 1.53 mho/m; ε_r = 53; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.15 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.5 V/m; Power Drift = -0.023 dB

Peak SAR (extrapolated) = 2.31 W/kg

SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.460 mW/g

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

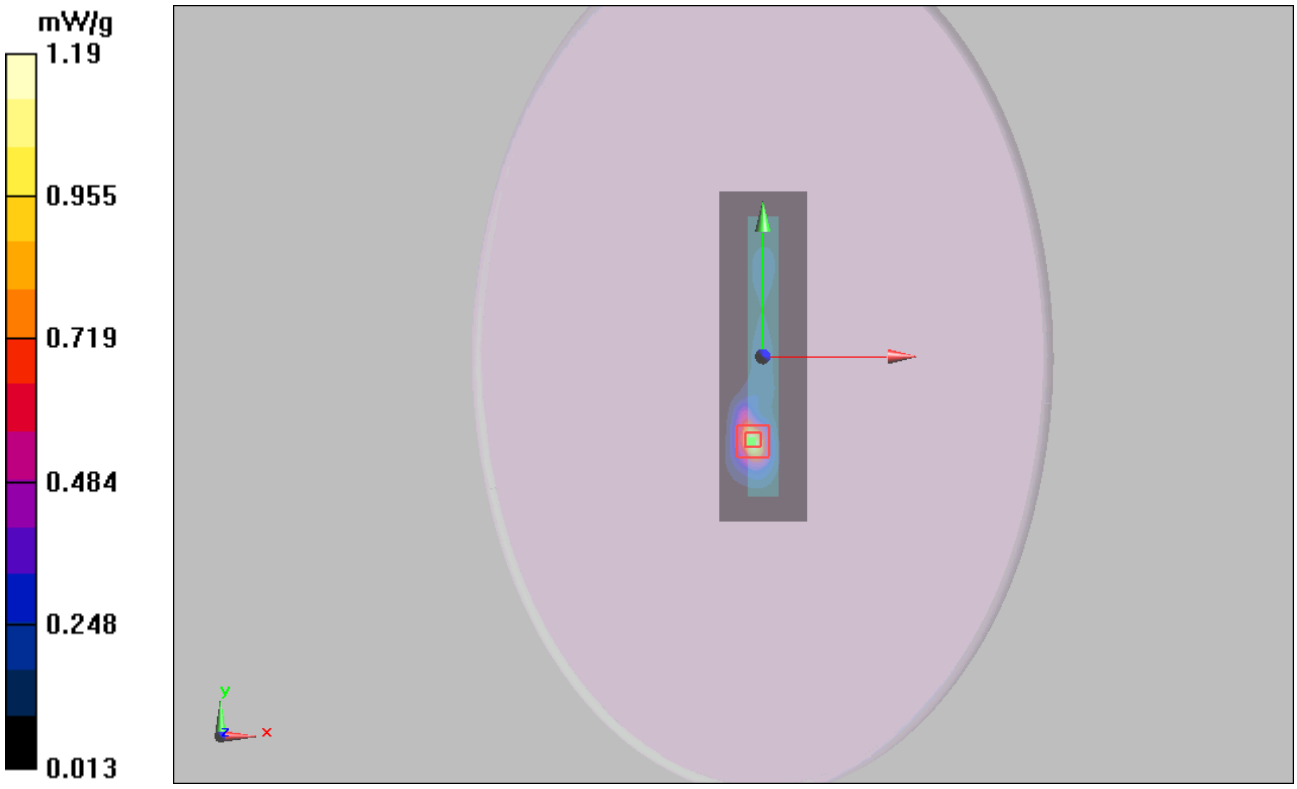


Figure 39 WCDMA Band II Test Position 3 Channel 9538

WCDMA Band II Test Position 3 Middle

Date/Time: 12/3/2010 8:02:06 PM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Middle/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.911 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.82 V/m; Power Drift = 0.181 dB

Peak SAR (extrapolated) = 1.86 W/kg

SAR(1 g) = 0.823 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.961 mW/g

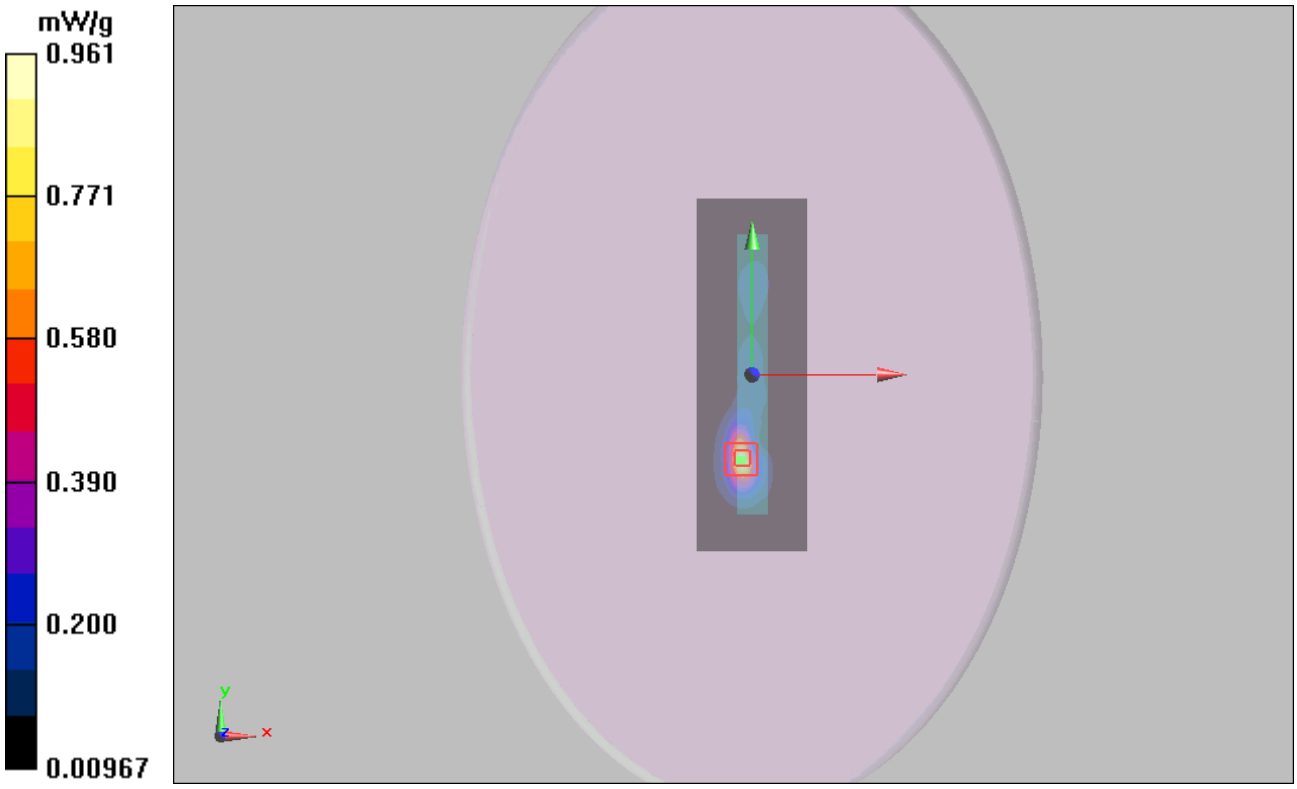


Figure 40 WCDMA Band II Test Position 3 Channel 9400

WCDMA Band II Test Position 3 Low

Date/Time: 12/3/2010 8:30:58 PM

Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.3 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.1 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 2.33 W/kg

SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.508 mW/g

Maximum value of SAR (measured) = 1.29 mW/g

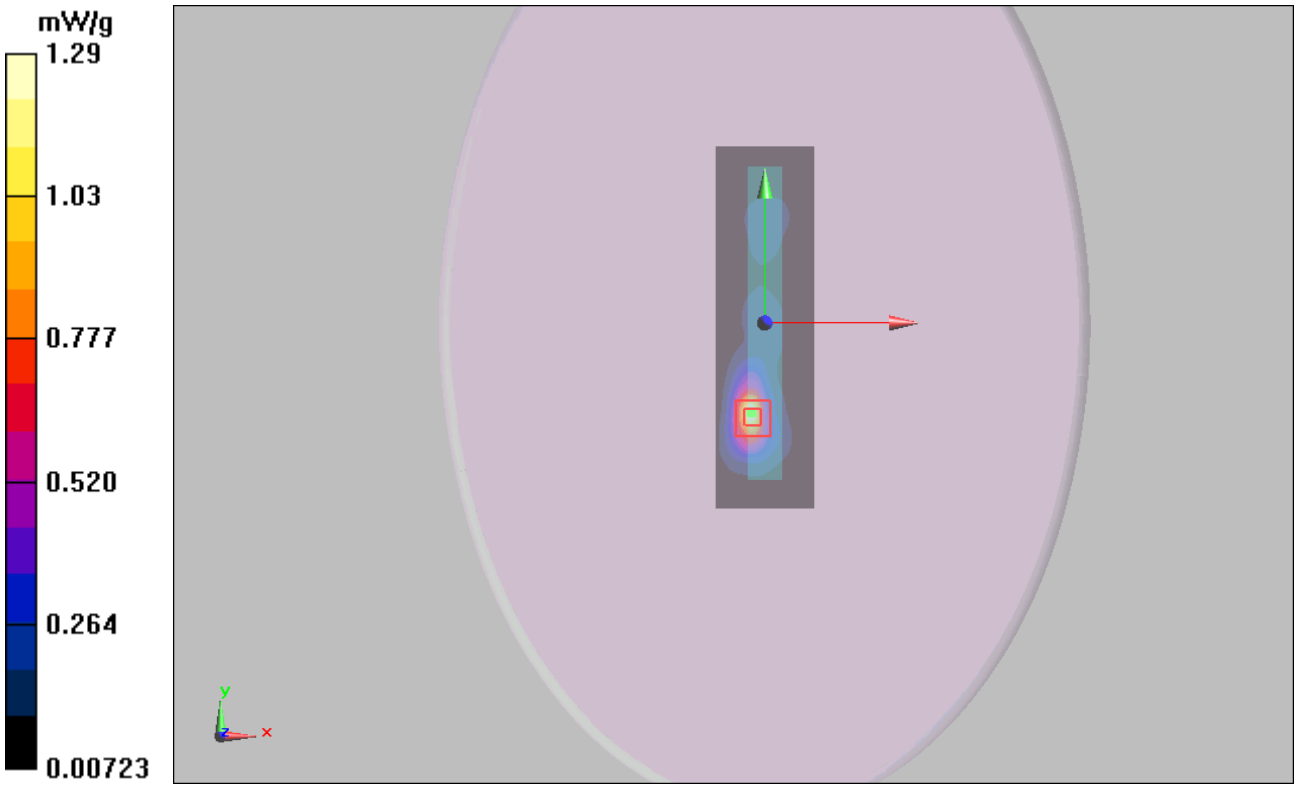


Figure 41 WCDMA Band II Test Position 3 Channel 9262

WCDMA Band II Test Position 4 Middle

Date/Time: 12/3/2010 11:09:41 PM

Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 4 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.184 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.02 V/m; Power Drift = 0.107 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.162 mW/g; SAR(10 g) = 0.089 mW/g

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

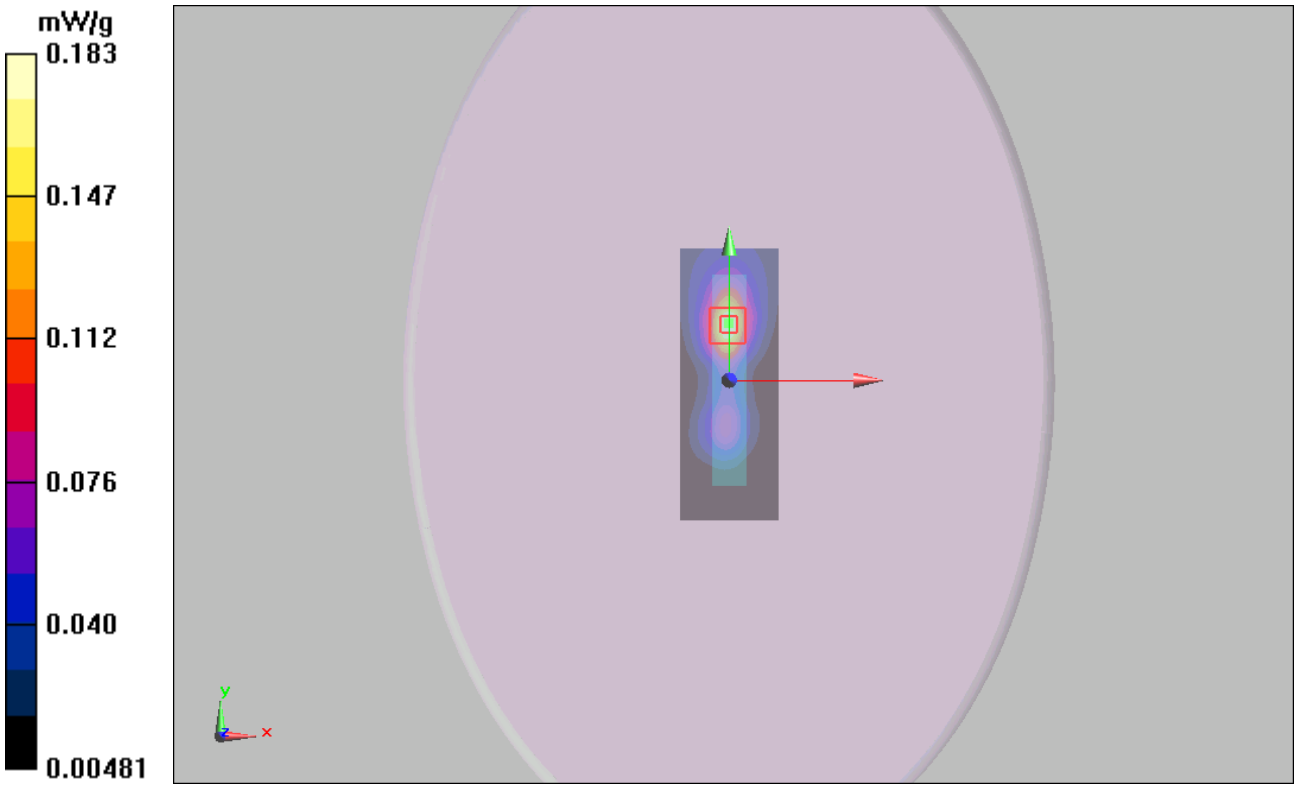


Figure 42 WCDMA Band II Test Position 4 Channel 9400

WCDMA Band II HSDPA Test Position 3 Low

Date/Time: 12/3/2010 4:48:17 PM

Communication System: WCDMA Band II+HSDPA; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.15 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.7 V/m; Power Drift = -0.061 dB

Peak SAR (extrapolated) = 2.34 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.513 mW/g

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

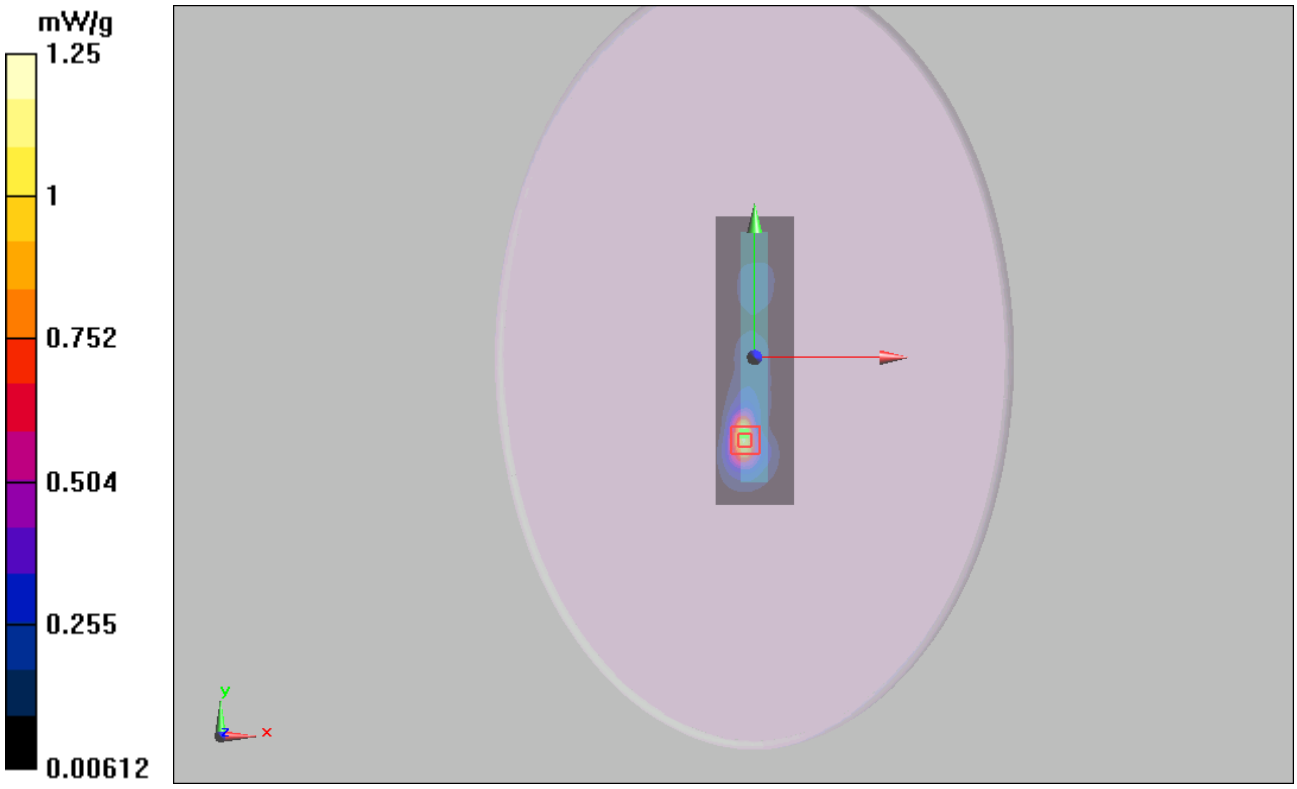


Figure 43 WCDMA Band II HSDPA Test Position 3 Channel 9262

WCDMA Band II HSUPA Test Position 3 Low

Date/Time: 12/3/2010 9:08:53 AM

Communication System: WCDMA Band II+HSUPA; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(7.60, 7.60, 7.60); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.827 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.17 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 1.4 W/kg

SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.321 mW/g

Maximum value of SAR (measured) = 0.807 mW/g

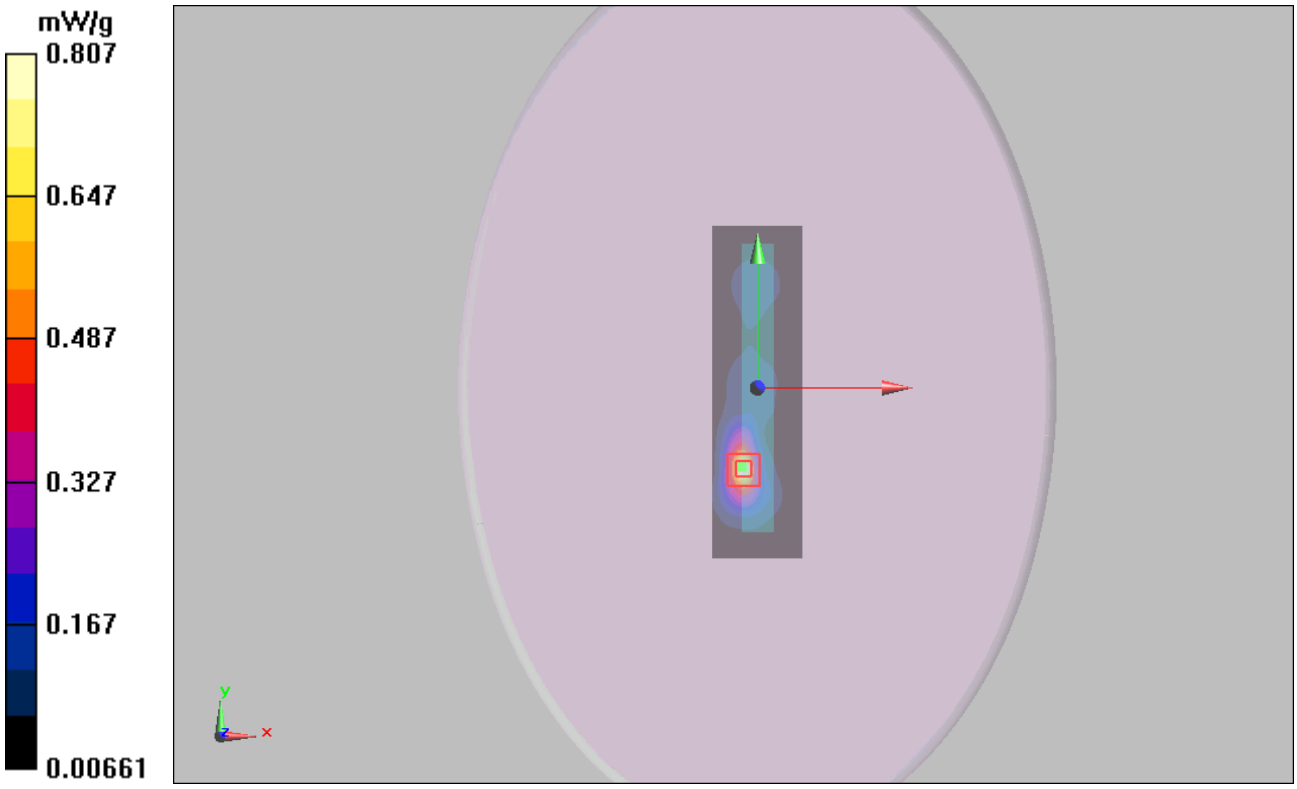


Figure 44 WCDMA Band II HSUPA Test Position 3 Channel 9262

WCDMA Band II with Earphone Test Position 3 Low

Date/Time: 12/20/2010 11:14:43 AM

Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Low/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.38 mW/g

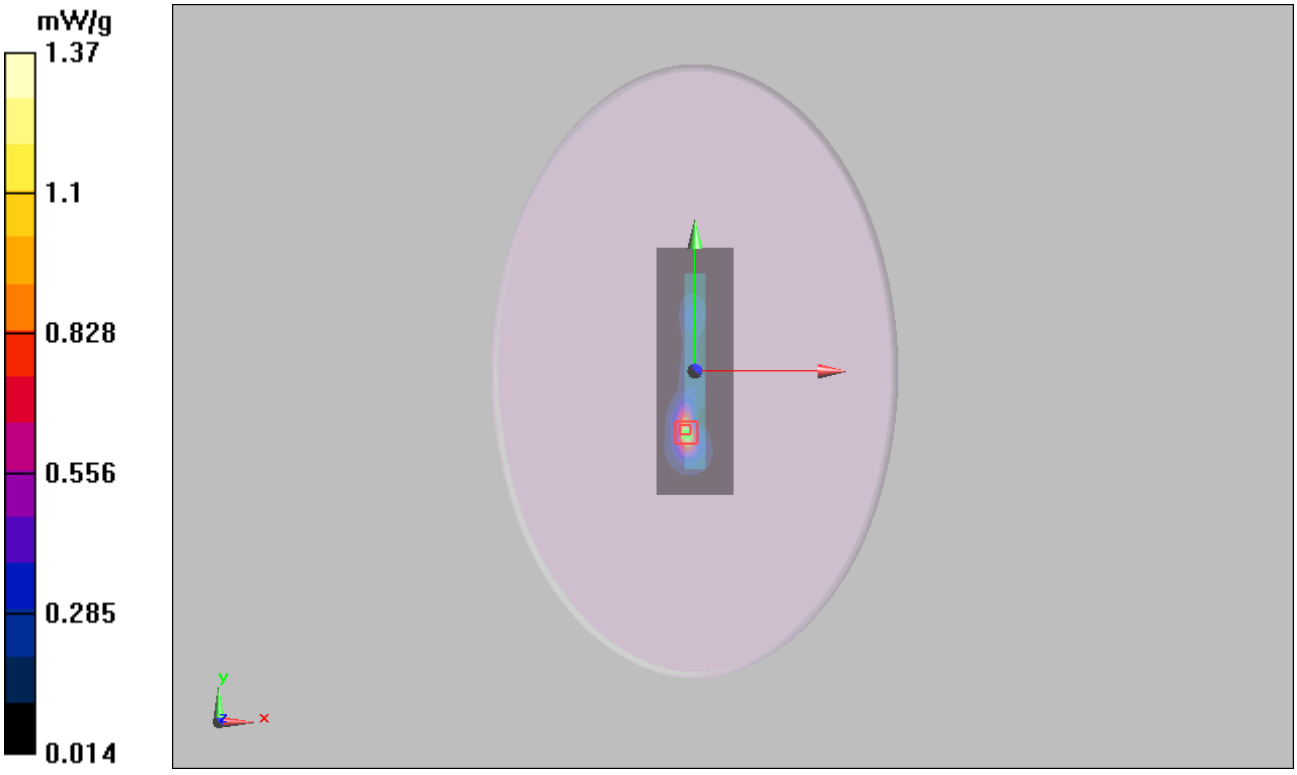
Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 2.44 W/kg

SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.543 mW/g

Maximum value of SAR (measured) = 1.37 mW/g



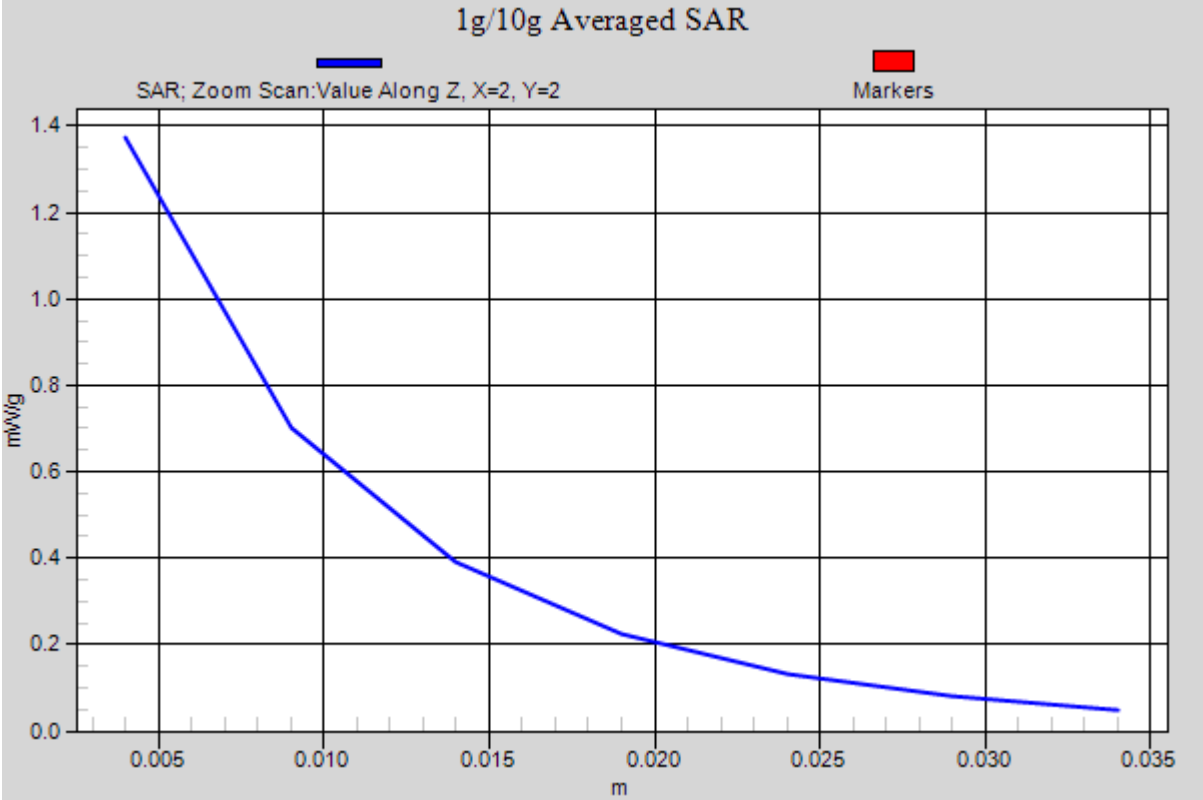


Figure 45 body with Earphone, WCDMA Band II Test Position 3 Channel 9262

WCDMA Band V Test Position 1 Middle

Date/Time: 11/27/2010 5:37:18 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.746 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.7 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 0.932 W/kg

SAR(1 g) = 0.662 mW/g; SAR(10 g) = 0.472 mW/g

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

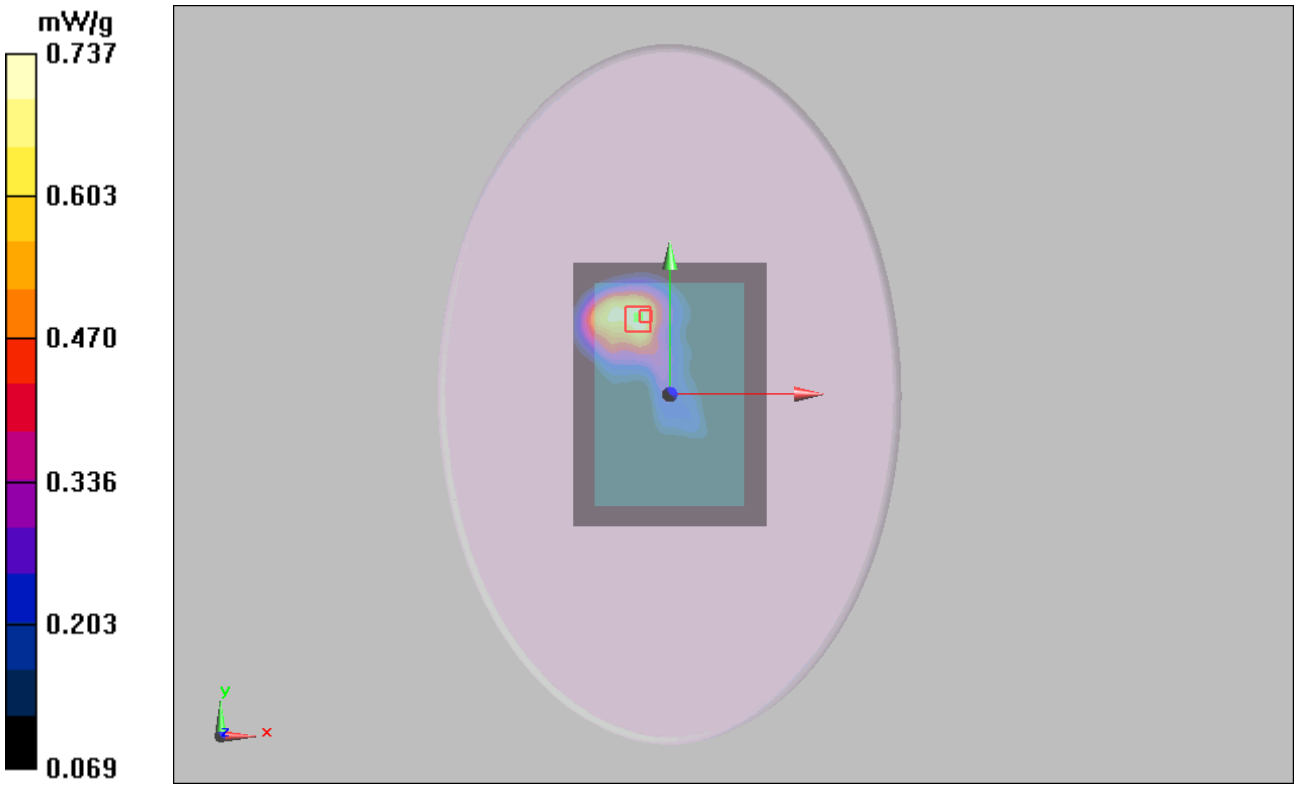


Figure 46 WCDMA Band V Test Position 1 Channel 4183

WCDMA Band V Test Position 3 High

Date/Time: 11/27/2010 8:56:50 PM

Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 0.973 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.55 mW/g

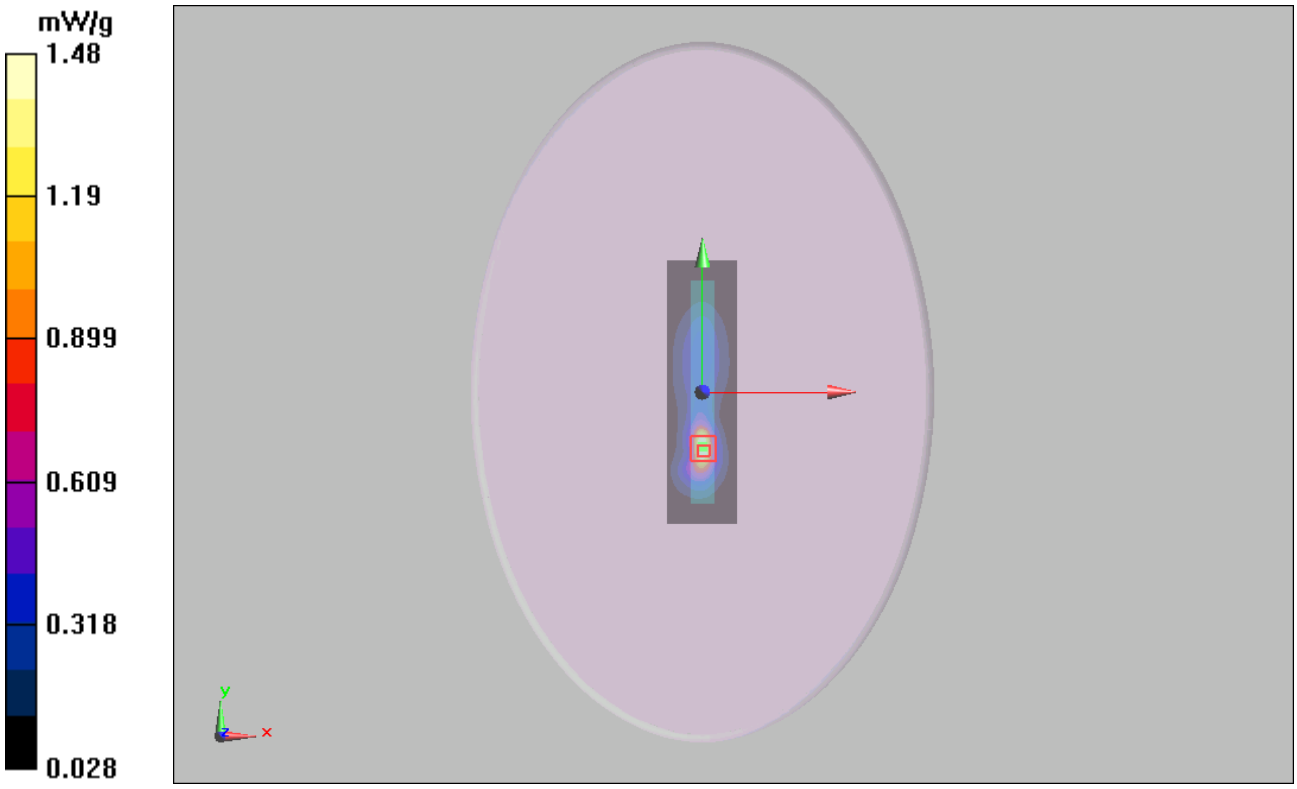
Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19 V/m; Power Drift = 0.044 dB

Peak SAR (extrapolated) = 2.8 W/kg

SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.625 mW/g

Maximum value of SAR (measured) = 1.48 mW/g



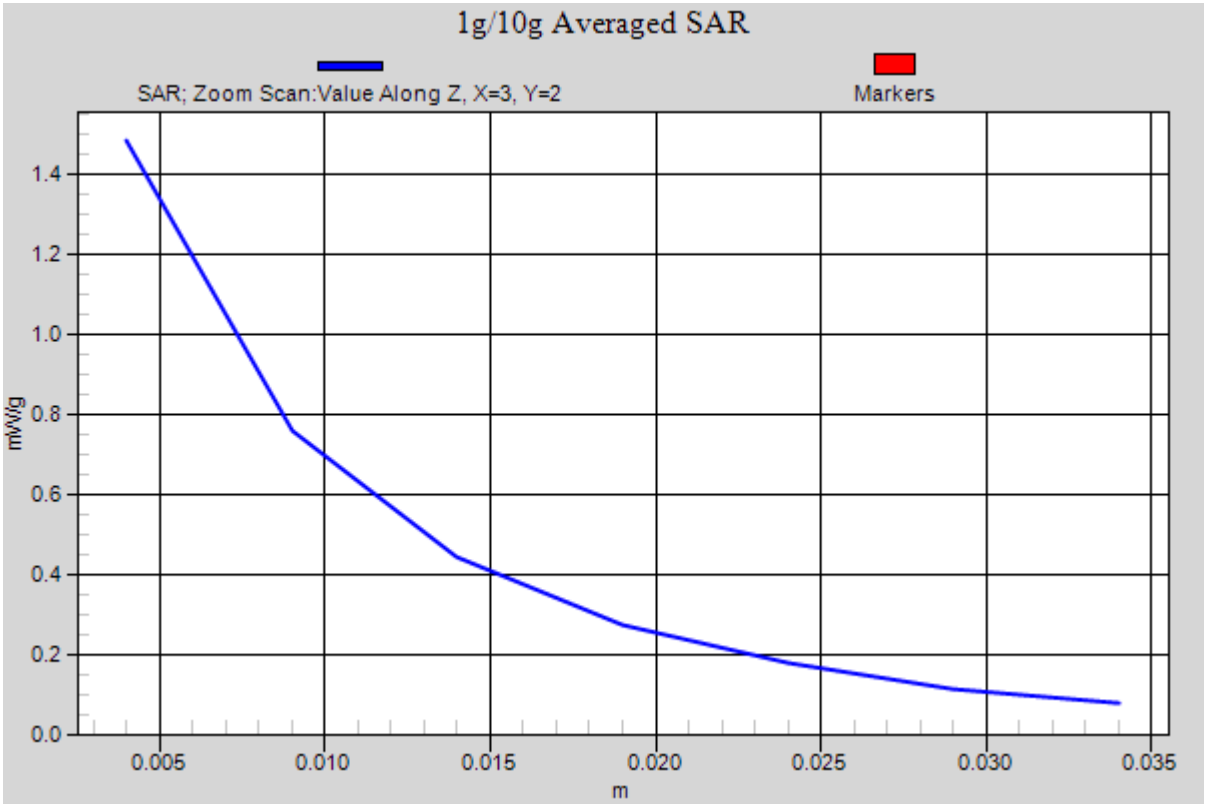


Figure 47 WCDMA Band V Test Position 3 Channel 4233

WCDMA Band V Test Position 3 Middle

Date/Time: 11/27/2010 8:02:49 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Middle/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.4 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20 V/m; Power Drift = -0.028 dB

Peak SAR (extrapolated) = 2.2 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.532 mW/g

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

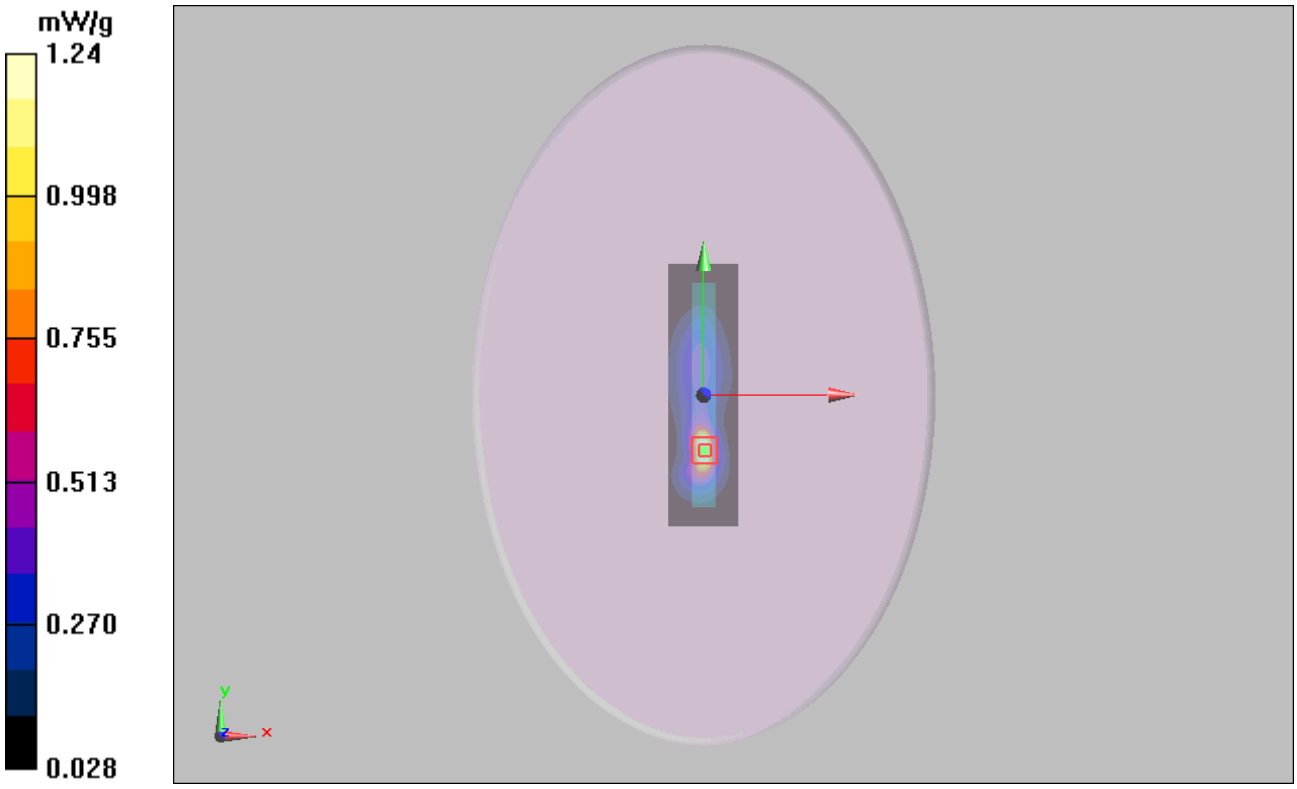


Figure 48 WCDMA Band V Test Position 3 Channel 4183

WCDMA Band V Test Position 3 Low

Date/Time: 11/27/2010 9:22:04 PM

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.962 mho/m; ε_r = 56.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 Low/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.48 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20 V/m; Power Drift = 0.069 dB

Peak SAR (extrapolated) = 2.7 W/kg

SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.619 mW/g

Maximum value of SAR (measured) = 1.45 mW/g

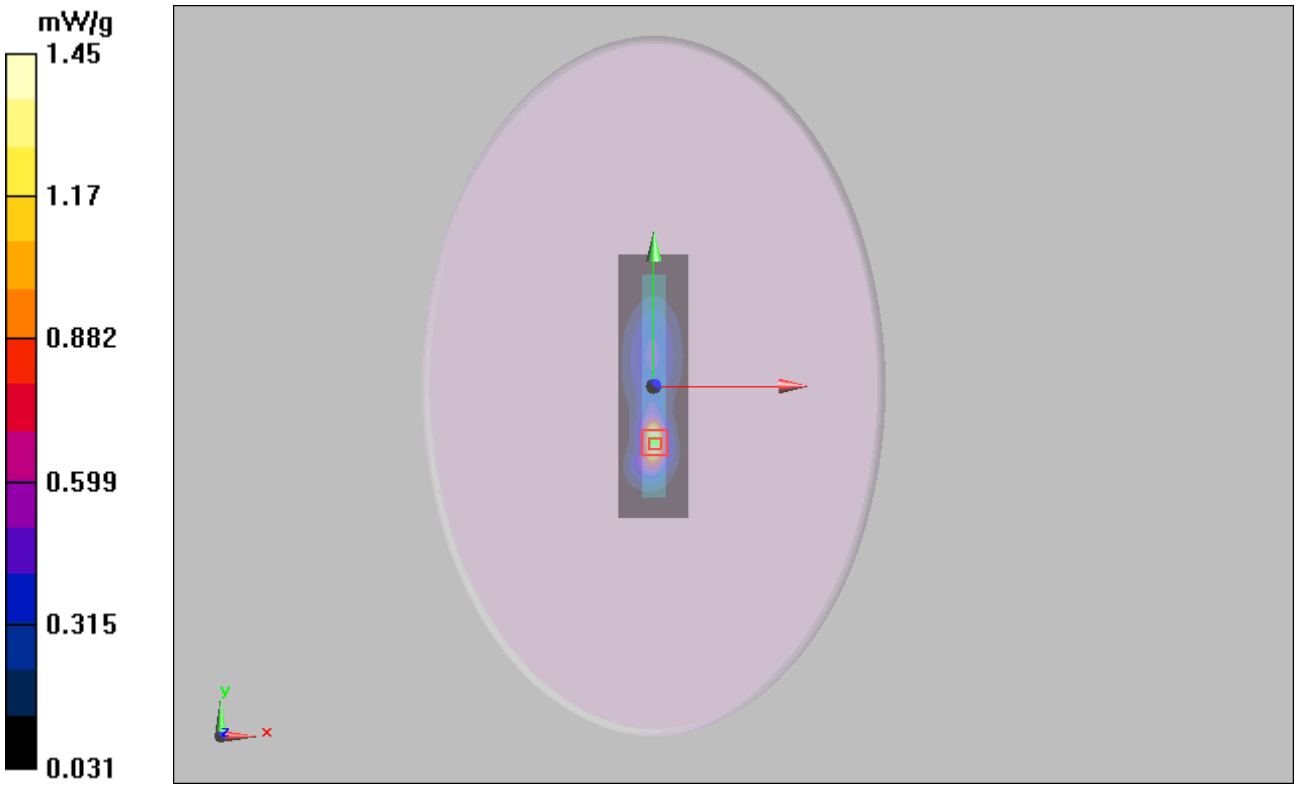


Figure 49 WCDMA Band V Test Position 3 Channel 4132

WCDMA Band V Test Position 4 Middle

Date/Time: 11/27/2010 8:30:03 PM

Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.965 mho/m; ε_r = 56.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 4 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.548 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23 V/m; Power Drift = -0.035 dB

Peak SAR (extrapolated) = 0.779 W/kg

SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.336 mW/g

Maximum value of SAR (measured) = 0.558 mW/g

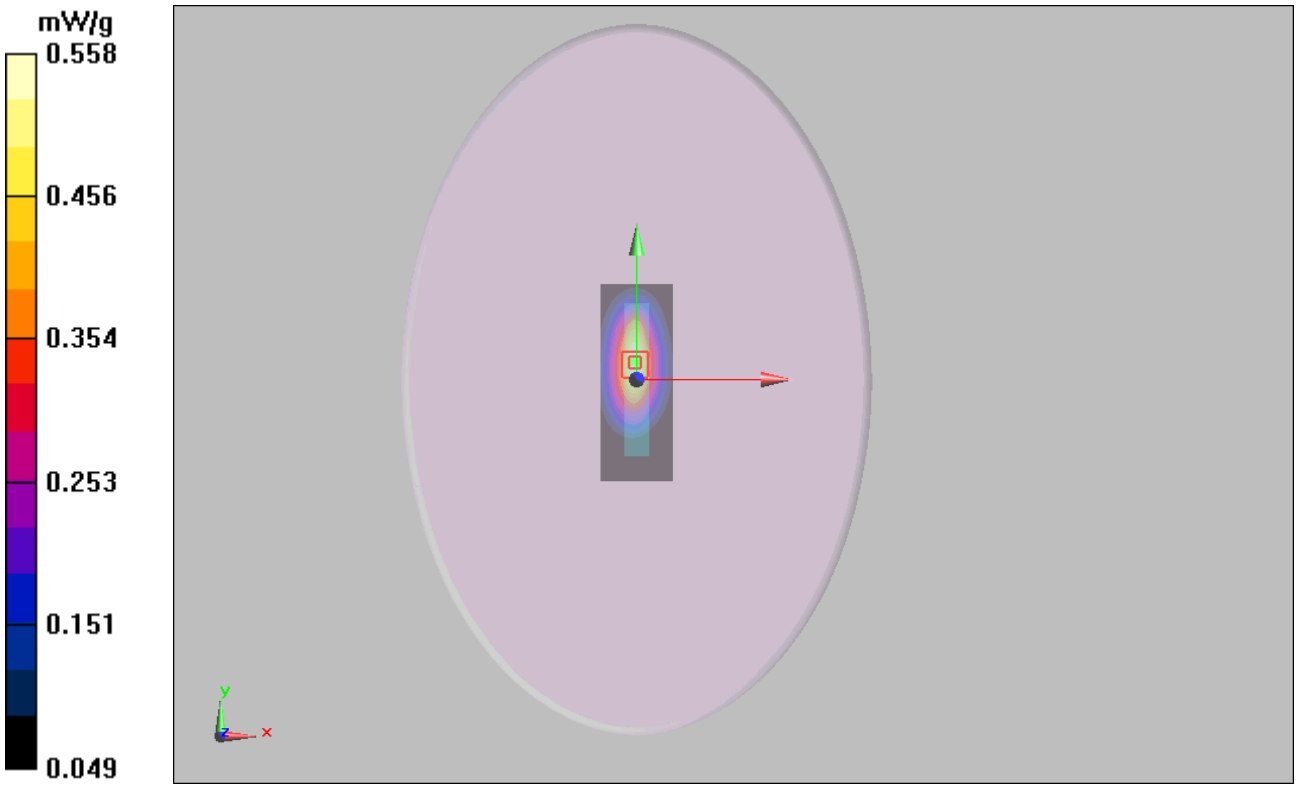


Figure 50 WCDMA Band V Test Position 4 Channel 4183

WCDMA Band V HSDPA Test Position 3 High

Date/Time: 11/27/2010 9:49:31 PM

Communication System: WCDMA Band V+HSDPA; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 0.973 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.54 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 2.77 W/kg

SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.623 mW/g

Maximum value of SAR (measured) = 1.47 mW/g

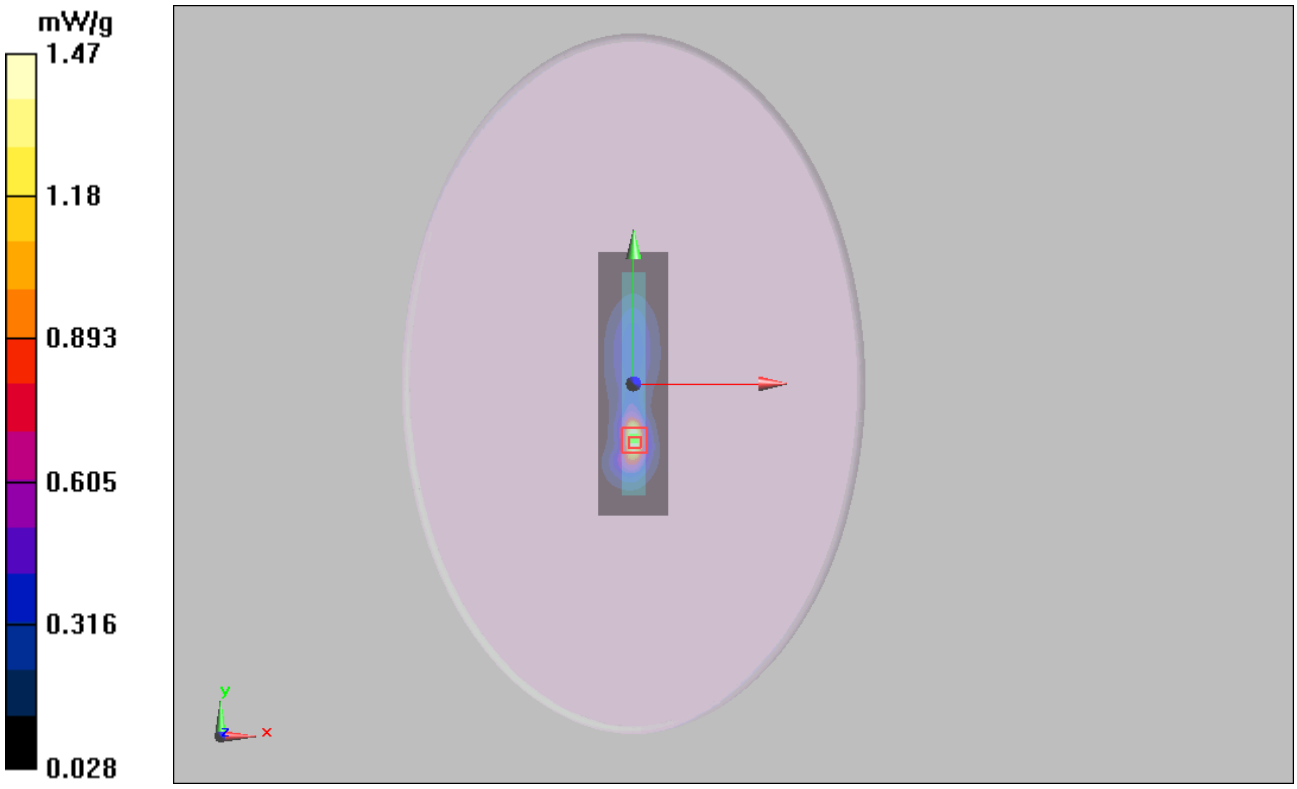


Figure 51 WCDMA Band V HSDPA Test Position 3 Channel 4233

WCDMA Band V HSUPA Test Position 3 High

Date/Time: 11/27/2010 10:15:44 PM

Communication System: WCDMA Band V+HSUPA; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 0.973 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

Probe: EX3DV4 - SN3661; ConvF(9.24, 9.24, 9.24); Calibrated: 12/30/2009

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.789 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.7 V/m; Power Drift = 0.106 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.693 mW/g; SAR(10 g) = 0.373 mW/g

Maximum value of SAR (measured) = 0.787 mW/g

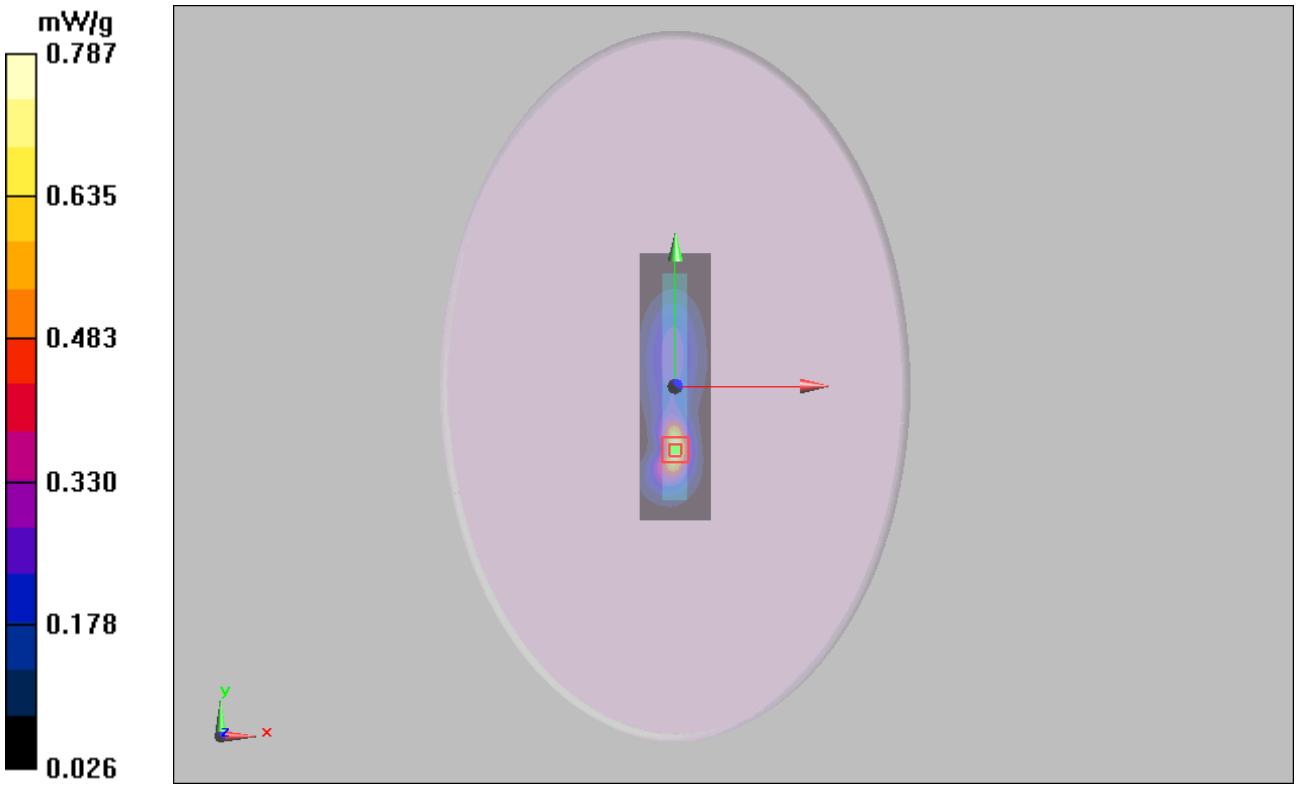


Figure 52 WCDMA Band V HSUPA Test Position 3 Channel 4233

WCDMA Band V with Earphone Test Position 3 High

Date/Time: 12/20/2010 10:23:10 AM

Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 847 MHz; σ = 0.973 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃

DASY5 Configuration:

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

Electronics: DAE4 Sn679; Calibrated: 6/18/2010

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 3 High/Area Scan (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.11 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.9 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 2.09 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.508 mW/g

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

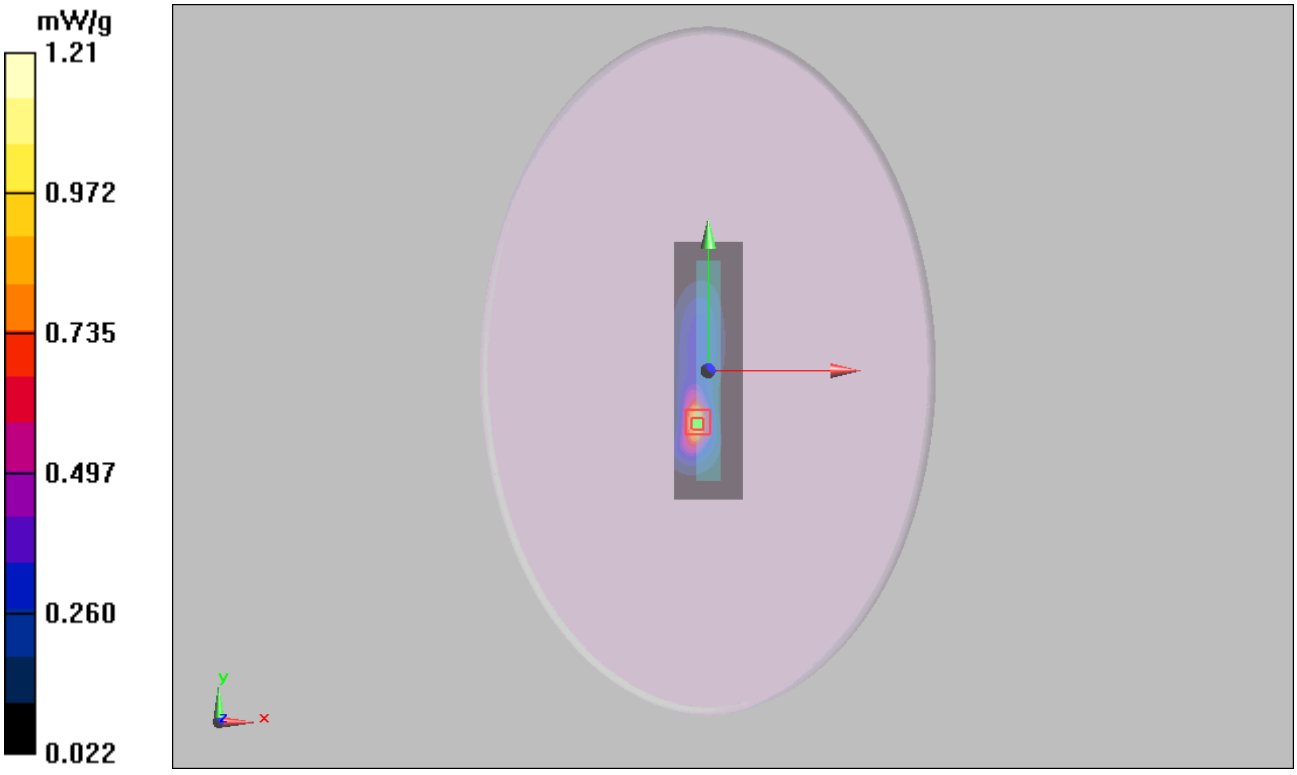


Figure 53 body with Earphone, WCDMA Band V Test Position 3 Channel 4233

802.11b Test Position 1 Middle

Date/Time: 12/4/2010 9:53:45 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.91 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 1 Middle/Area Scan (111x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.371 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.23 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.731 W/kg
SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.161 mW/g
Maximum value of SAR (measured) = 0.393 mW/g

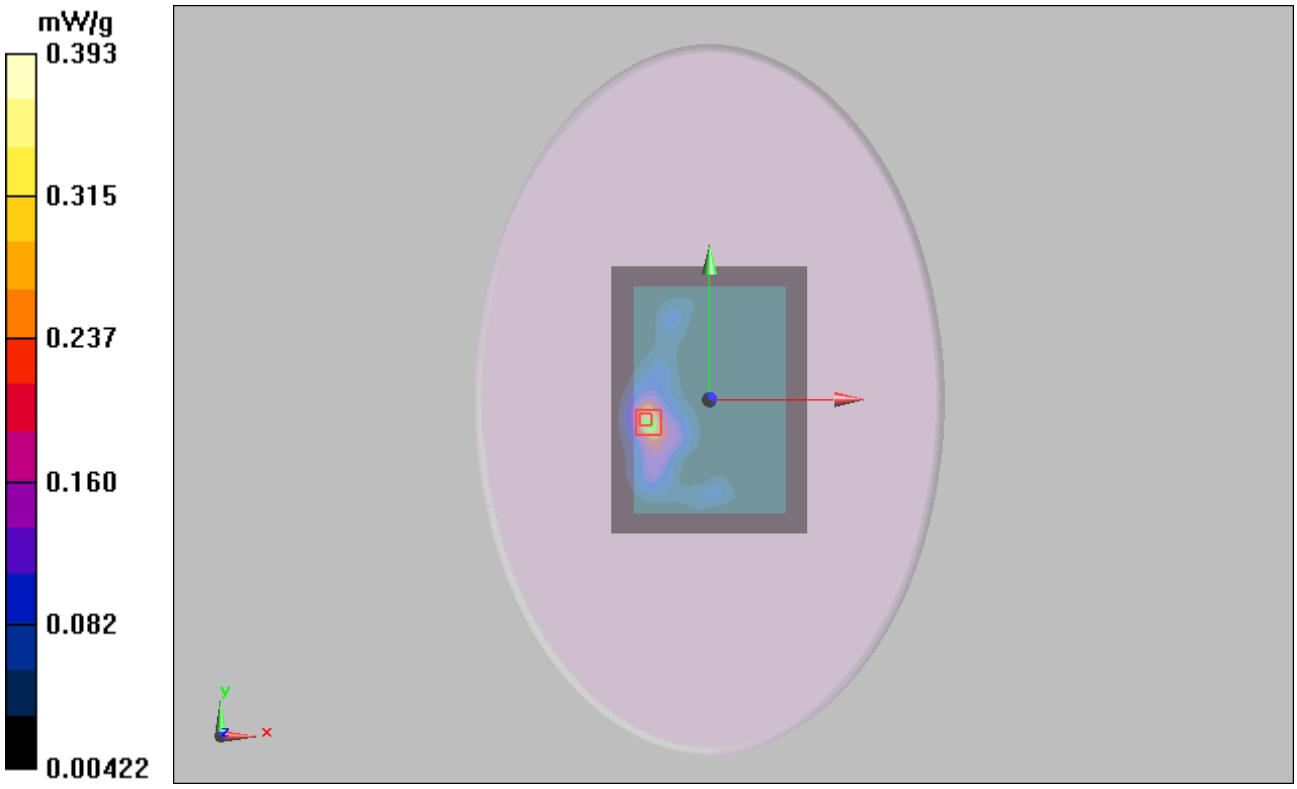


Figure 54 802.11b Test Position 1 Channel 6

802.11b Test Position 3 High

Date/Time: 12/4/2010 2:22:30 PM
Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2462 MHz; σ = 1.94 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 High/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.716 mW/g

Test Position 3 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.56 V/m; Power Drift = 0.089 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.671 mW/g; SAR(10 g) = 0.289 mW/g
Maximum value of SAR (measured) = 0.796 mW/g

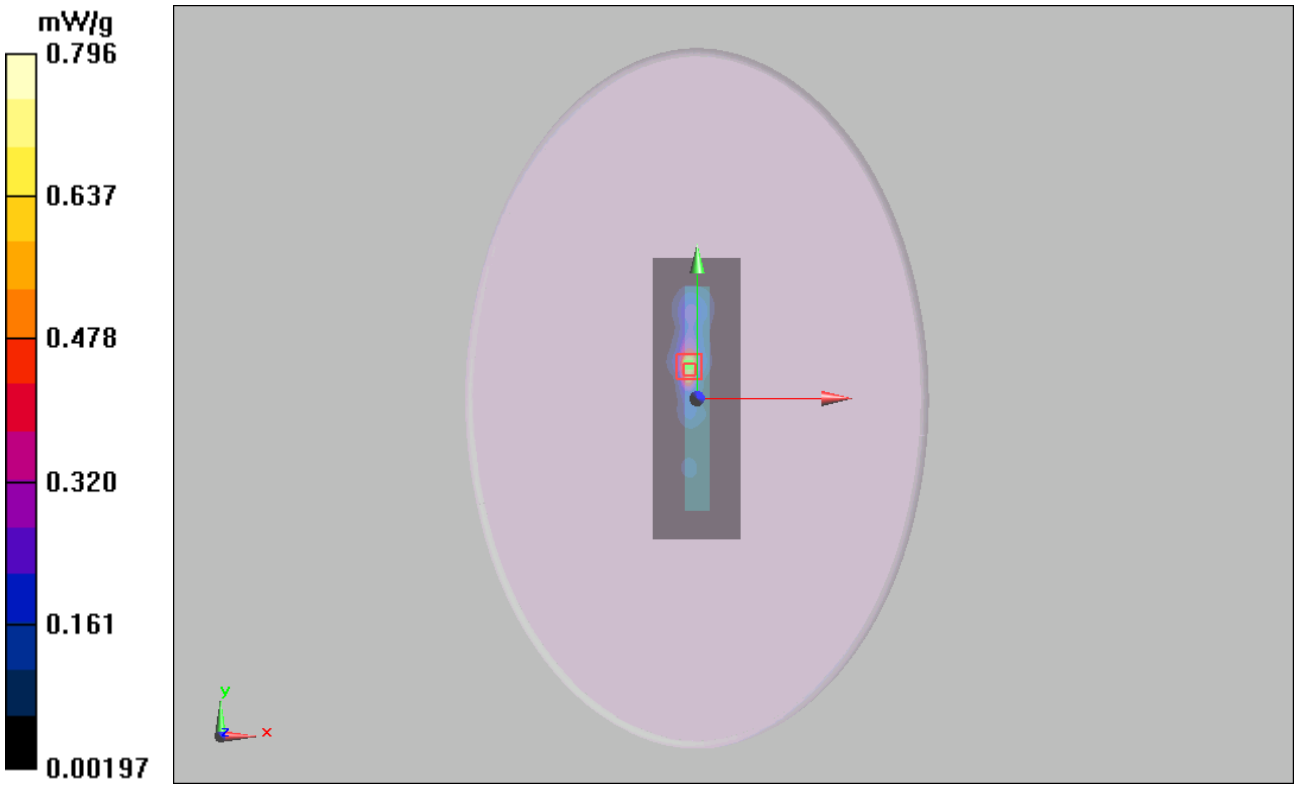


Figure 55 802.11b Test Position 3 Channel 11

802.11b Test Position 3 Middle

Date/Time: 12/4/2010 1:49:36 PM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.91 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Middle/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.706 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.15 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.675 mW/g; SAR(10 g) = 0.290 mW/g
Maximum value of SAR (measured) = 0.807 mW/g

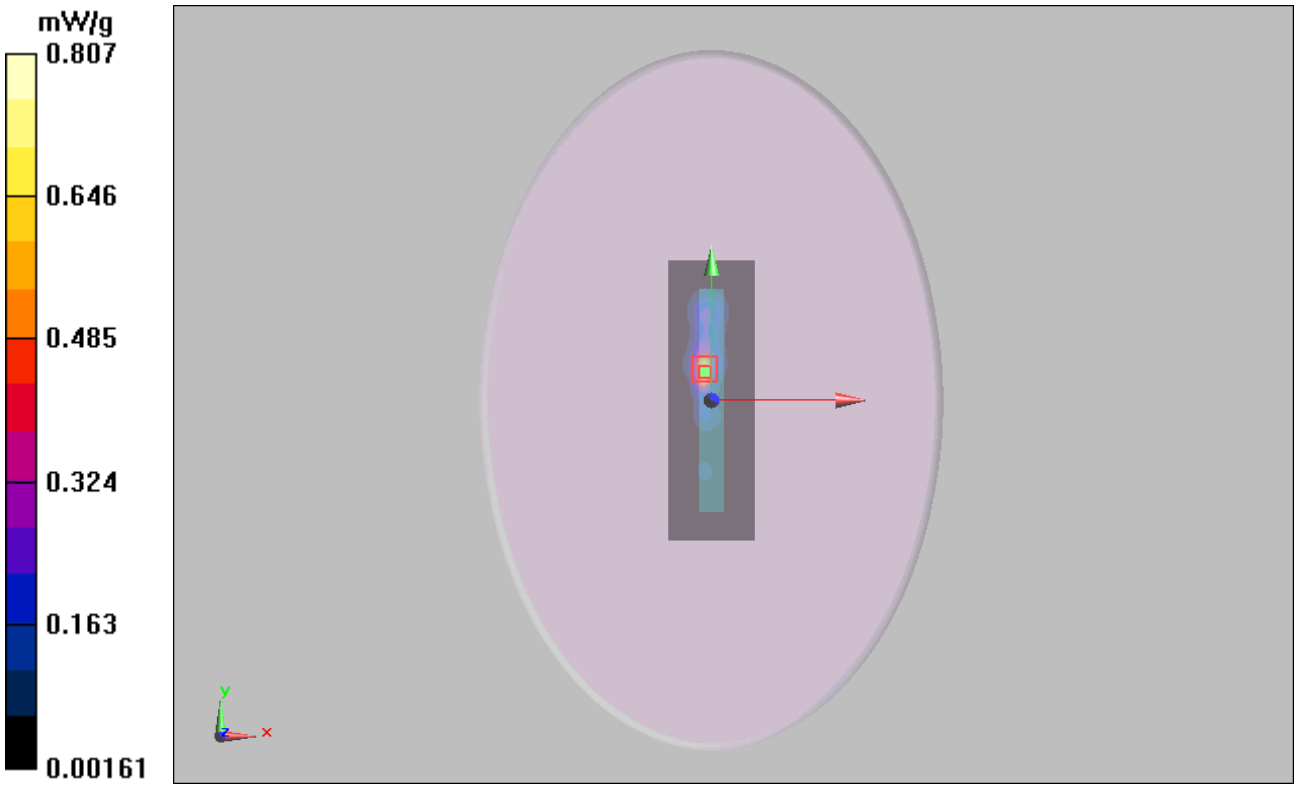


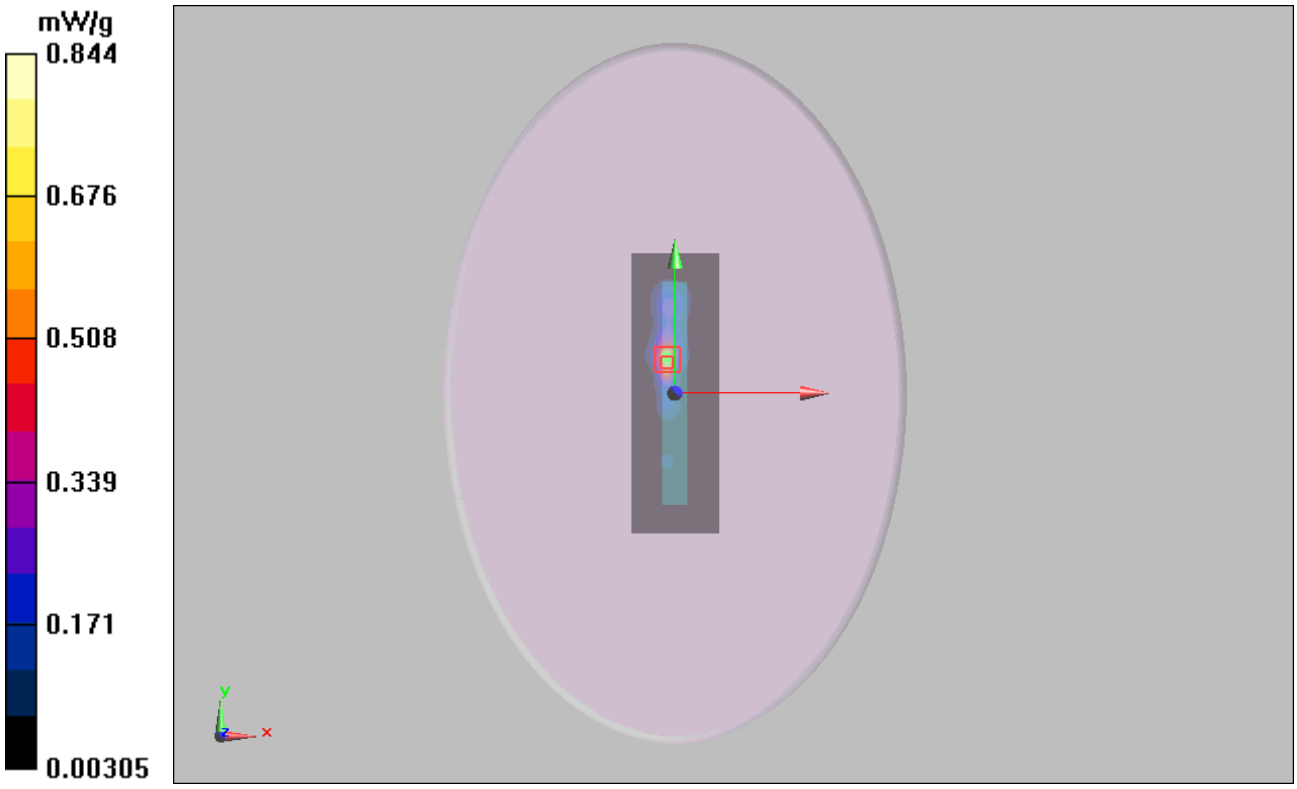
Figure 56 802.11b Test Position 3 Channel 6

802.11b Test Position 3 Low

Date/Time: 12/4/2010 1:18:37 PM
Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.88 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Low/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.777 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.81 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.709 mW/g; SAR(10 g) = 0.303 mW/g
Maximum value of SAR (measured) = 0.844 mW/g



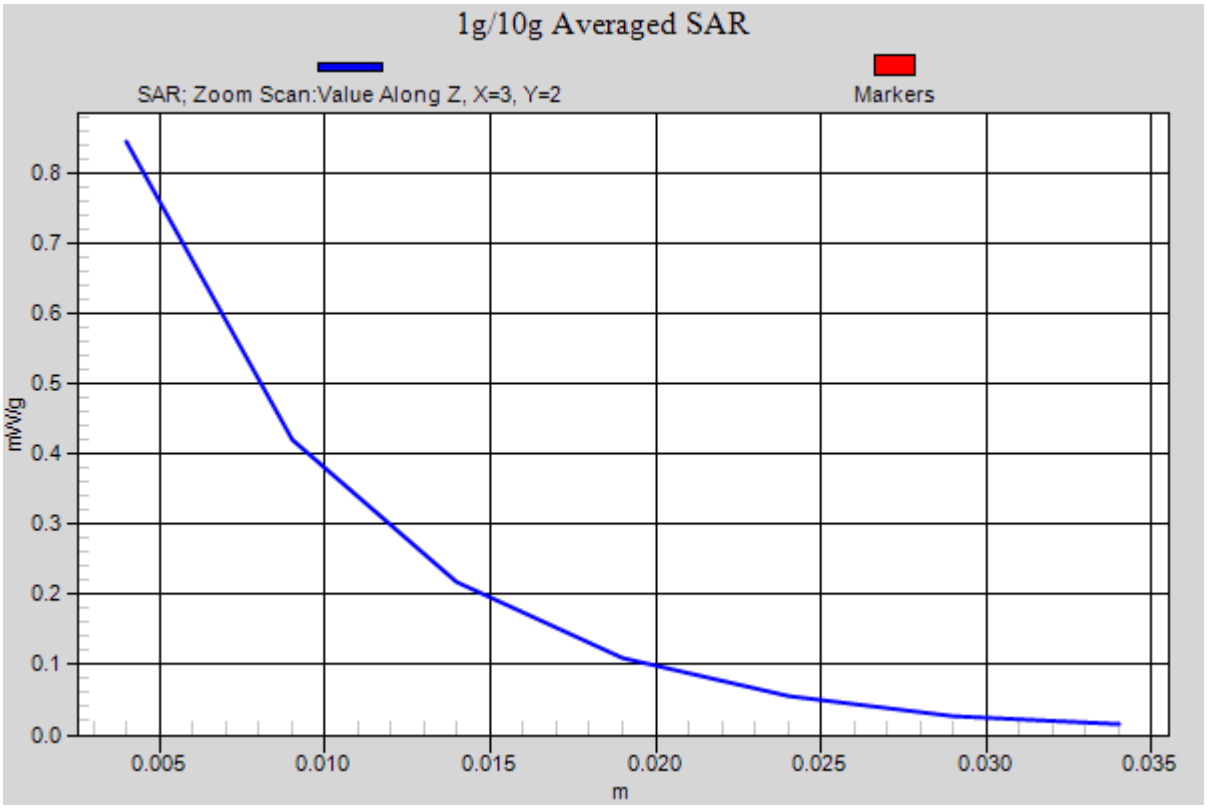


Figure 57 802.11b Test Position 3 Channel 1

802.11b Test Position 5 Middle

Date/Time: 12/4/2010 10:34:00 AM
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.91 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3661; ConvF(7.34, 7.34, 7.34); Calibrated: 12/30/2009
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 5 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.074 mW/g

Test Position 5 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.63 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 0.139 W/kg
SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.035 mW/g
Maximum value of SAR (measured) = 0.080 mW/g

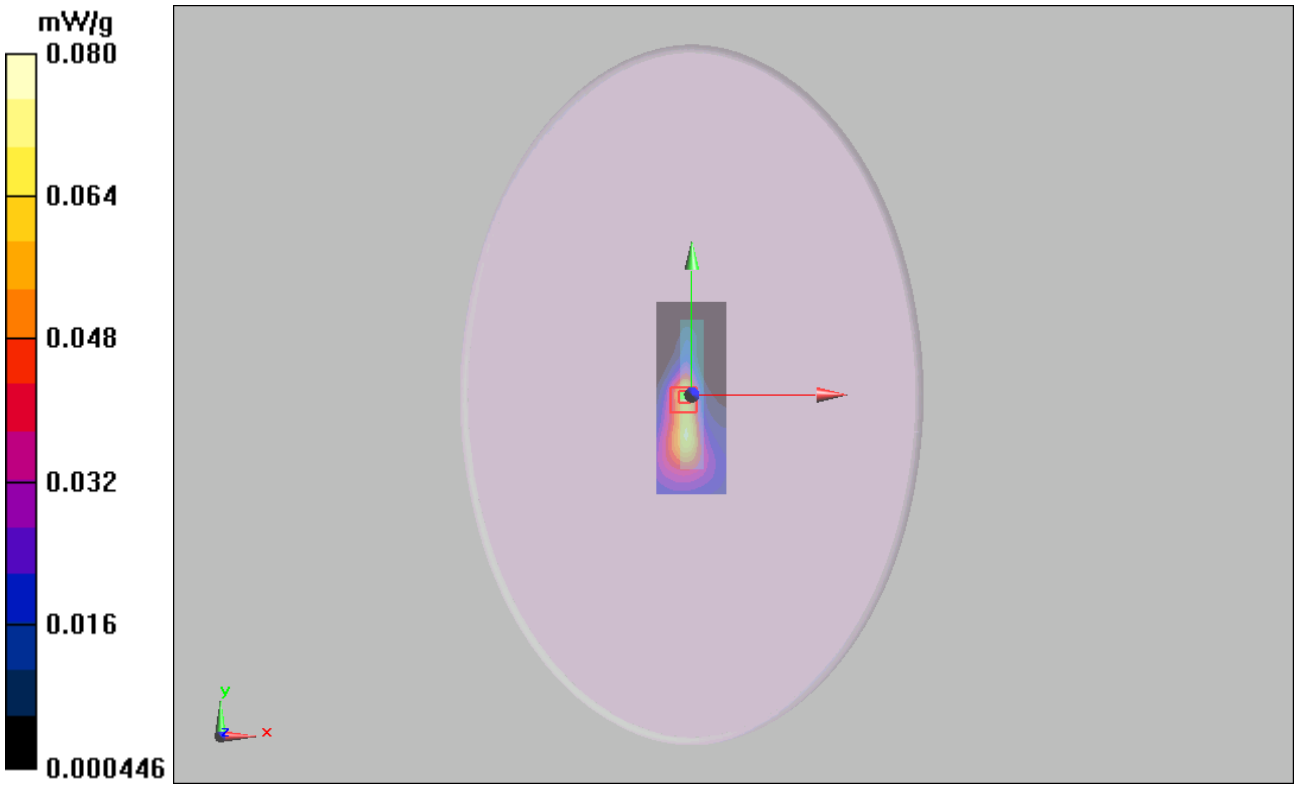


Figure 58 802.11b Test Position 5 Channel 6

802.11b with Earphone Test Position 3 Low

Date/Time: 12/20/2010 2:57:01 PM
Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2412 MHz; σ = 1.88 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Ambient Temperature:22.3 ℃ Liqiud Temperature: 21.5℃
DASY5 Configuration:
Probe: EX3DV4 – SN3677; ConvF(7.46, 7.46, 7.46); Calibrated: 11/24/2010
Electronics: DAE4 Sn679; Calibrated: 6/18/2010
Phantom: ELI 4.0; Type: QDOVA001BA;
Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

Test Position 3 Low/Area Scan (51x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.645 mW/g

Test Position 3 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.96 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.662 mW/g; SAR(10 g) = 0.275 mW/g
Maximum value of SAR (measured) = 0.785 mW/g

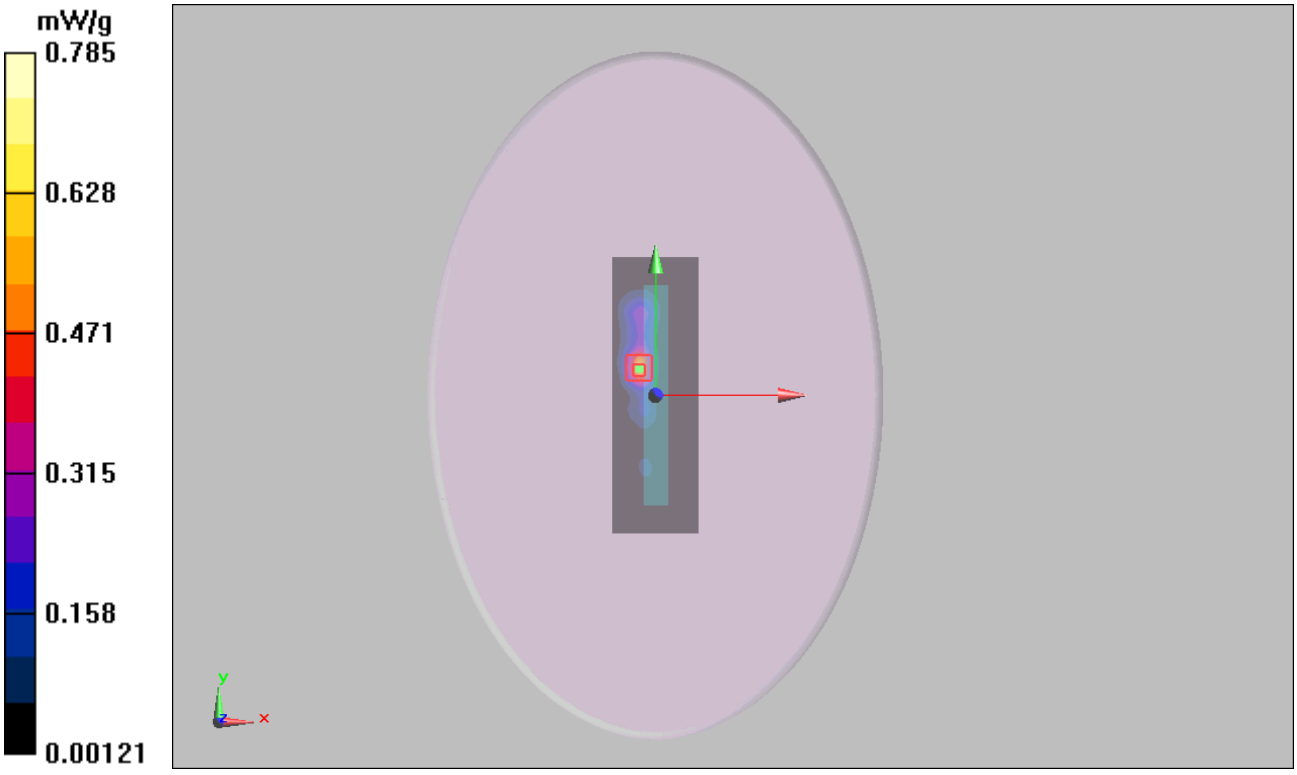


Figure 59 body with Earphone, 802.11b Test Position 3 Channel 1

ANNEX D: Probe Calibration Certificate (SN:3661)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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 **Auden**

Certificate No: **EX3-3661_Dec09**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3661

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: December 30, 2009

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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41496087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

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-09)	In house check: Oct10

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: December 30, 2009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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

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., ϑ = 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 ϑ = 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.

Probe EX3DV4

SN:3661

Manufactured: October 20, 2008
Calibrated: December 30, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3661 December 30, 2009

DASY - Parameters of Probe: EX3DV4 SN:3661

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.46	0.52	0.48	± 10.1%
DCP (mV)[B]	89.4	91.4	90.5	

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	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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:3661 December 30, 2009

DASY - Parameters of Probe: EX3DV4 SN:3661

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)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	9.34	9.34	9.34	0.69	0.64 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	9.06	9.06	9.06	0.72	0.64 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	8.19	8.19	8.19	0.59	0.63 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.77	7.77	7.77	0.83	0.56 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	7.22	7.22	7.22	0.35	0.83 ± 11.0%
5200	± 50 / ± 100	36.0 ± 5%	4.66 ± 5%	5.01	5.01	5.01	0.45	1.75 ± 13.1%
5500	± 50 / ± 100	35.6 ± 5%	4.96 ± 5%	4.38	4.38	4.38	0.48	1.75 ± 13.1%
5800	± 50 / ± 100	35.3 ± 5%	5.27 ± 5%	4.26	4.26	4.26	0.45	1.75 ± 13.1%

[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.

EX3DV4 SN:3661 December 30, 2009

DASY - Parameters of Probe: EX3DV4 SN:3661

Calibration Parameter Determined in Body Tissue Simulating Media

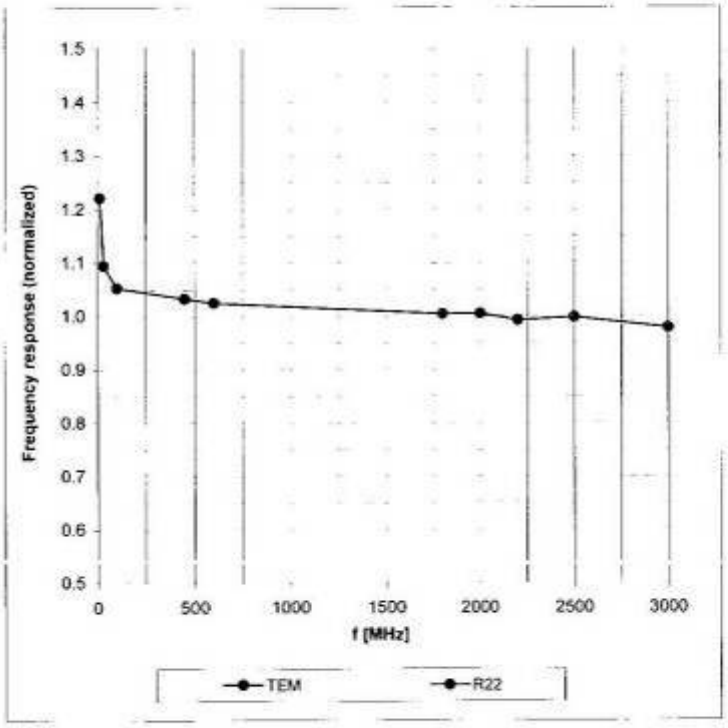
f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	9.24	9.24	9.24	0.54	0.73 ± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	8.97	8.97	8.97	0.53	0.72 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	7.93	7.93	7.93	0.67	0.65 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.60	7.60	7.60	0.60	0.69 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	7.34	7.34	7.34	0.26	1.12 ± 11.0%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	4.59	4.59	4.59	0.46	1.75 ± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	4.11	4.11	4.11	0.46	1.75 ± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	4.12	4.12	4.12	0.48	1.75 ± 13.1%

[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.

EX3DV4 SN:3661 December 30, 2009

Frequency Response of E-Field

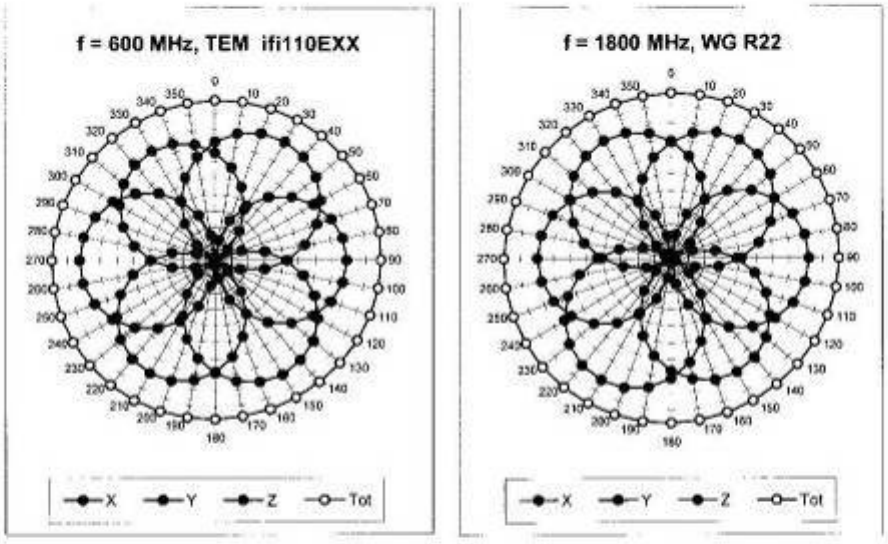
(TEM-Cell:ifi110 EXX, Waveguide: R22)

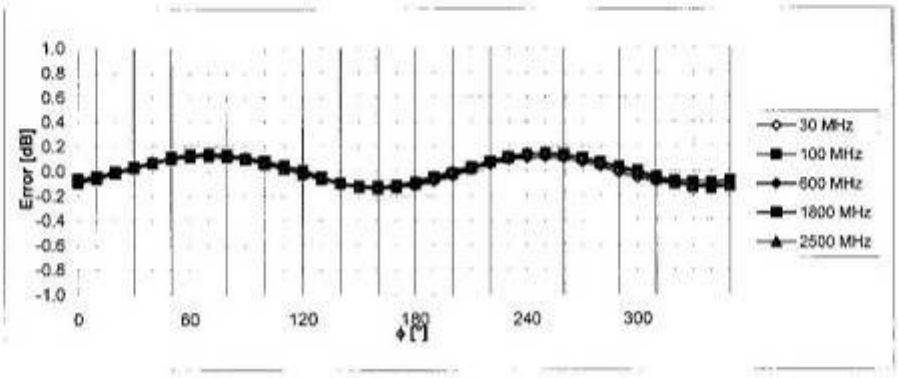


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4 SN:3661 December 30, 2009

Receiving Pattern (ϕ), ϑ = 0°



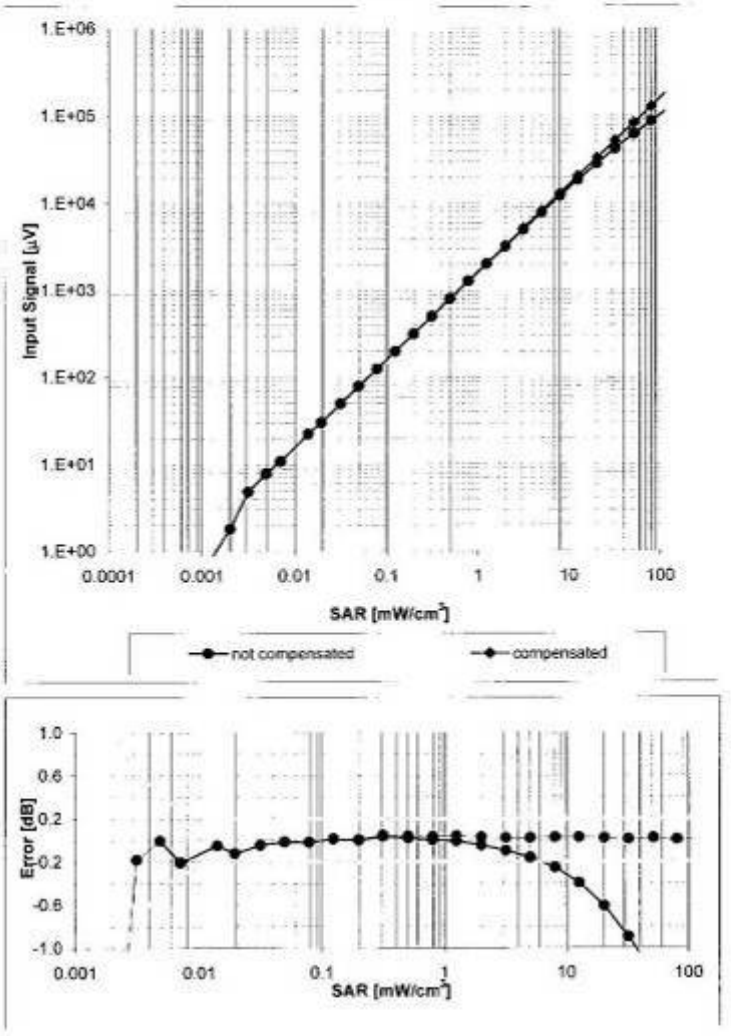


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4 SN:3661 December 30, 2009

Dynamic Range f(SAR_{head})

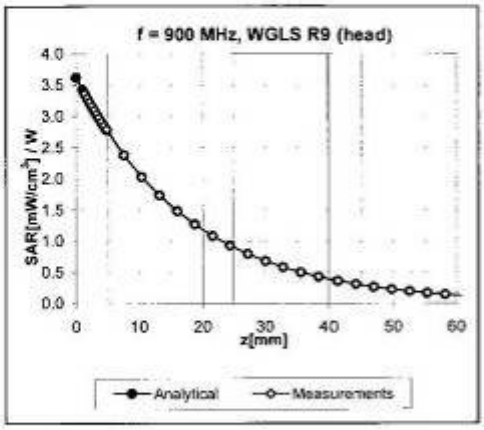
(Waveguide R22, f = 1800 MHz)

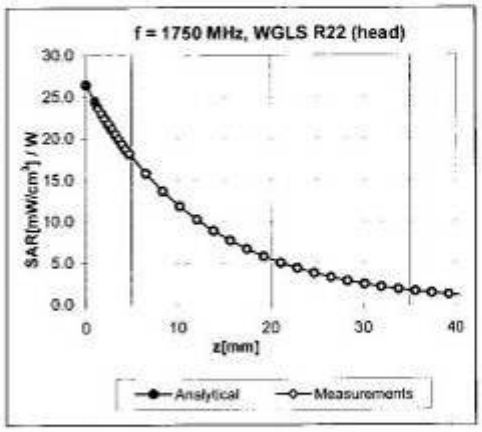


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

EX3DV4 SN:3661 December 30, 2009

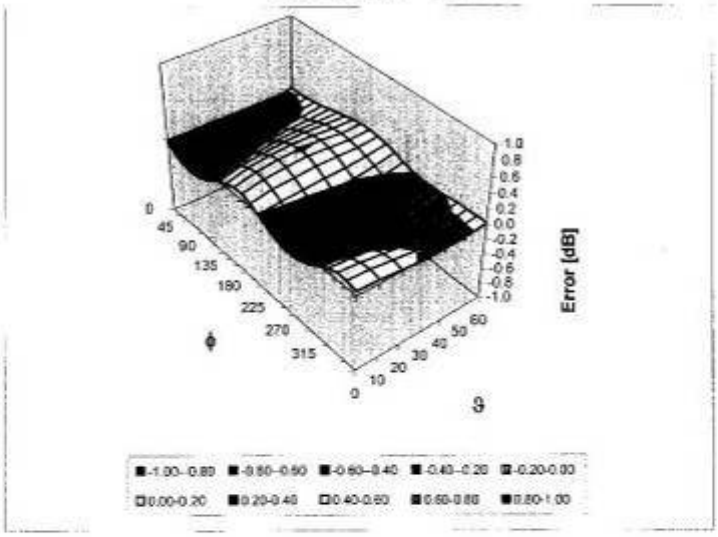
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

ANNEX E: Probe Calibration Certificate(SN:3677)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 108**
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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., ϑ = 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 ϑ = 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.

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!)

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 (μV/(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 recatangular distribution and is expressed for the square of the field value.