



OET 65

TEST REPORT

Product Name	HUAWEI MediaPad
Model	S7-302u
FCC ID	QISS7-302U
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

TA Technology (Shanghai) Co., Ltd.
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GENERAL SUMMARY

Product Name	HUAWEI MediaPad	Model	S7-302u
FCC ID	QISS7-302U		
Report No.	RZA1109-1638SAR01R1		
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 Radiofrequency 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 Radiofrequency Electromagnetic Fields Additional Information for Evaluation Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions. RSS-102 Issue 4 March 2010: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) KDB 447498 D01 Mobile Portable RF Exposure v04: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies KDB 941225 D01 SAR test for 3G devices v02: SAR Measurement Procedures for 3G Devices -CDMA 2000/Ev-Do -WCDMA/HSDPA/HSPA- Tracking Number 396910		
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 8th, 2011		
Comment	The test result only responds to the measured sample.		

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Modified History

REV	DESCRIPTION	ISSUED DATE	REMARK
Rev. 1.0	Initial Test Report Release	2011-11-21	Lingminbao
Rev 1.1	1. P10: add a table to show extrapolated SAR values at 10mm distance of all worst case conditions with maximum power.	2011-12-01	Lingminbao
Rev 1.2	1. P22&27: Add the explanation for the reasoning of 16 degree tilting angle.	2011-12-05	Lingminbao
Rev 1.3	1. P164:Update the picture of antenna schemes	2011-12-08	Lingminbao

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1. General Information

1.1. Notes of the Test Report

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

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

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

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

1.2. Testing Laboratory

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1.3. Applicant Information

Company: Huawei Technologies Co., Ltd.
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1.4. Manufacturer Information

Company: Huawei Technologies Co., Ltd.
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1.5. Information of EUT

General Information

Device Type:	Portable Device		
Exposure Category:	Uncontrolled Environment / General Population		
State of Sample:	Prototype Unit		
Product Name:	HUAWEI MediaPad		
IMEI:	004401720089537		
Hardware Version:	HIDS7PMA		
Software Version:	S7-302u V100R001C002		
Antenna Type:	Internal Antenna		
Device Operating Configurations :			
Supporting Mode(s):	GSM 850/GSM 1900/WCDMA Band II/WCDMA Band V; (tested) WiFi (802.11b/g/n HT20); (untested) Bluetooth; (untested)		
Test Modulation:	(GSM)GMSK; (WCDMA)QPSK		
Device Class:	C		
HSDPA UE Category:	10		
HSUPA UE Category:	6		
GPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
EGPRS Multislot Class(12):	Max Number of Timeslots in Uplink	4	
	Max Number of Timeslots in Downlink	4	
	Max Total Timeslot	5	
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)

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Auxiliary Equipment Details

AE:Battery

Model: HB3G1H

Manufacturer: /

S/N: /

Equipment Under Test (EUT) is a model of HUAWEI MediaPad with Proximity Sensor. The device has an internal antenna for GSM/WCDMA Tx/Rx, and the other is BT/WiFi antenna that can be used for Tx/Rx. It has Personal Wireless Routers (hot spots) function. The detail about MediaPad and Lithium Battery is in chapter 1.5 in this report. SAR is tested for GSM 850, GSM 1900, WCDMA Band II and WCDMA Band V. GSM mode is supported from protocol aspect, but voice calls of the product aren't supported from function aspect.

This device is capable of multiple display orientations supporting both portrait and landscape position.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. The Maximum SAR_{1g} Values

Body SAR Configuration

Mode	Channel	Position	Separation distance	SAR _{1g} (W/kg)
1Txslot EGPRS 850	Low/128	Left Edge	0mm	0.881
2Txslots EGPRS 1900	High/810	Back Side	0mm	1.360
WCDMA Band II	High/9538	Back Side	0mm	1.350
WCDMA Band V	Low/4132	Left Edge	0mm	0.985

Mode	Channel	Position	Separation distance	SAR _{1g} (W/kg)
3Txslots GPRS 850	Middle/190	Back Side	10mm	0.781
3Txslots GPRS 1900	Middle/661	Back Side	10mm	0.764
WCDMA Band II	High/9538	Back Side	10mm	1.130
WCDMA Band V	Middle/4183	Back Side	10mm	0.463

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Extrapolated SAR Values of the highest measured SAR (0mm)

Mode	Test Position	Channel	Measured MAX SAR _{1g} (W/kg)	Conducted Power(dBm)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
						Extrapolated Result (W/kg)
1Txslot GPRS850	Test Position 2	Low/128	0.878	28.5	28.7	0.919
1Txslot EGPRS850	Test Position 2	Low/128	0.881	28.5	28.7	0.923
2Txslots GPRS1900	Test Position 6	High/810	1.330	20.2	20.5	1.425
2Txslots EGPRS1900	Test Position 6	High/810	1.360	20.2	20.5	1.457
WCDMA Band II	Test Position 6	High/9538	1.350	14.2	14.7	1.515
WCDMA Band II+HSDPA	Test Position 6	High/9538	1.030	13.3	14.0	1.210
WCDMA Band II+HSUPA	Test Position 6	High/9538	0.926	12.2	14.0	1.402
WCDMA Band V	Test Position 2	Low/4132	0.985	19.1	19.7	1.131

Extrapolated SAR Values of the highest measured SAR (10mm)

Mode	Test Position	Channel	Measured MAX SAR _{1g} (W/kg)	Conducted Power(dBm)	Tune-up procedures MAX Power(dBm)	1g Average Limit 1.6 W/kg
						Extrapolated Result (W/kg)
3Txslot GPRS850	Test Position 1	Middle/190	0.781	29.5	29.6	0.799
3Txslots GPRS1900	Test Position 1	Middle/661	0.764	25.7	27.2	1.079
WCDMA Band II	Test Position 1	High/9538	1.130	22.4	23.7	1.524
WCDMA Band V	Test Position 1	Middle/4183	0.463	22.6	23.7	0.596

1.7. Test Date

The first test is performed from September 24, 2011 to September 26, 2011.

The second test is performed from October 28, 2011 to October 29, 2011.

The third test is performed on November 9, 2011.

2. Operational Conditions during Test

2.1. General Description of Test Procedures

A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radiofrequency Channel Number (ARFCN) is allocated to 128, 190 and 251 in the case of GSM 850, to 512, 661 and 810 in the case of GSM 1900, allocated to 9262, 9400 and 9538 respectively in the case of WCDMA Band II, to 4132, 4183 and 4233 in the case of WCDMA Band V. The EUT is commanded to operate at maximum transmitting power.

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

The bottom of the tablet has a little bit of a contour. The antennas are located at locations where the contour on the bottom of the tablet may result in less conservative SAR test results than in actual use situations. In order to identify the SAR value in actual use situations, additional SAR measurement with the antenna location direct against the bottom of phantom is required.

2.2. GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. Using E5515C the power lever is set to “5” in SAR of GSM 850, set to “0” in SAR of GSM 1900. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5; the EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5.

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

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

GSM 850

GPRS (GMSK) :

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5
3	3.7
4	5.8

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EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	0.8
3	1.9
4	2.9

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.5
3	3.7
4	5.8

GSM 1900

GPRS (GMSK) :

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.9
3	3.8
4	5.6

EGPRS(8PSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	1.5
3	2.6
4	3.4

EGPRS(GMSK):

Number of timeslots in uplink assignment	reduction of maximum output power, (dB)
1	0
2	2.9
3	3.8
4	5.6

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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 DPDCH₁ are as followed (EUT do not support the DPDCH_{2-n})

Table 1: The configurations for the DPCCH and DPDCH₁

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

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

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

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

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

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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

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

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

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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 6: Maximum Output Powers with HS-DPCCH and E-DCH for test

Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-5.2	+21	+2.7/-4.2
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-5.2	+21	+2.7/-4.2

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Table 7: Sub-Test 5 Setup for Release 6 HSUPA

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	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 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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Table 8: HSUPA UE category

E-DCH category	Maximum number of E-DCH codes transmitted per transport block	Minimum spreading factor	Support for 10 and 2 ms TTI EDCH	Maximum number of bits of an E-DCH transport block transmitted within a 10 ms E-DCH TTI	Maximum number of bits of an E-DCH transport block transmitted within a 2 ms E-DCH TTI
Category 1	1	SF4	10 ms TTI only	7110	-
Category 2	2	SF4	10 ms and 2 ms TTI	14484	2798
Category 3	2	SF4	10 ms TTI only	14484	-
Category 4	2	SF2	10 ms and 2 ms TTI	20000	5772
Category 5	2	SF2	10 ms TTI only	20000	-
Category 6	4	SF2	10 ms and 2 ms TTI	20000	11484
Category 7	4	SF2	10ms and 2 ms TTI	20000	22996
Category 8	4	SF2	2 ms TTI	-	11484
Category 9	4	SF2	2 ms TTI	-	22996

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

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The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2B of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA	Rel6 HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	15/15
	β_{ec}	209/225	12/15	30/15	2/15	24/15
	β_c/β_d	11/15	6/15	15/9	2/15	15/15
	β_{hs}	22/15	12/15	30/15	4/15	30/15
	β_{ed}	1309/225	94/75	47/15 47/15	56/75	134/15
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	$A_{hs} = \beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11			E-TFCI 11	
		E-TFCI PO 4			E-TFCI PO 4	
		E-TFCI 67			E-TFCI 67	
		E-TFCI PO 18			E-TFCI PO 18	
		E-TFCI 71			E-TFCI 71	
	E-TFCI PO 23	E-TFCI PO 23	E-TFCI 11	E-TFCI 75		
	E-TFCI 75	E-TFCI PO 4	E-TFCI PO 26	E-TFCI 81		
	E-TFCI PO 26	E-TFCI 92	E-TFCI PO 18	E-TFCI PO 27		
	E-TFCI 81					
	E-TFCI PO 27					

2.6. Proximity Sensor Operational Theory for Power Back off

There is only one sensor (proximity) built in this EUT. Due to SAR requirement for protection of the human body, this proximity sensor pad be designed close to WWAN antenna. When users are not close to sense area, the output power of module follows the regulation of 3GPP/ETSI. When users approach the EUT within 11mm, sensor IC will trigger power back off to meet SAR requirement.

Please note that even without users touching the tablet, proximity sensor is activated and power back off activated while users approach the sensor pad. Of course, it works if users touch the sensor pad as well. We use only one sensor IC, sensor pads are for sensing area coverage.

The proximity sensor is only used for power reduction in 2/3G antenna. It can cover the back side and the left edge of EUT. When users approach the back side and the left edge of EUT within 11mm, the power of 2G/3G antenna will be reduced. It is not activated for others edge. Please refer to below for sensor activation/de-activation information (Detail refer to ANNEX H Picture 4):

Since the back -off sensor activation distance for back side is 11mm, a conservative distance of 10mm is tested for the back side. To test SAR with full power of back side at 10mm , the device sensor detection mechanism would normally be active and therefore had to be disabled via manufacturer test software. The device was placed in maximum power transmit mode with a base station simulator. The back side of device was then positioned under the tissue equivalent liquid-filled flat phantom at a distance of 10mm with the sensor deactivated (via manufacturer test software) and tested at maximum power. Since the back -off sensor activation distance for back side (Tilted 16 degree angle) is 16mm more than 11mm, the a conservative distance of 10mm is tested for the back side.

Since the back-off sensor activation distance for left edge is 11mm, a conservative distance of 10mm is tested for the left edge. To test SAR with full power of left edge at 10mm , the device sensor detection mechanism would normally be active and therefore had to be disabled via manufacturer test software. The device was placed in maximum power transmit mode with a base station simulator. The left edge of device was then positioned under the tissue equivalent liquid-filled flat phantom at a distance of 10mm with the sensor deactivated (via manufacturer test software) and tested at maximum power.

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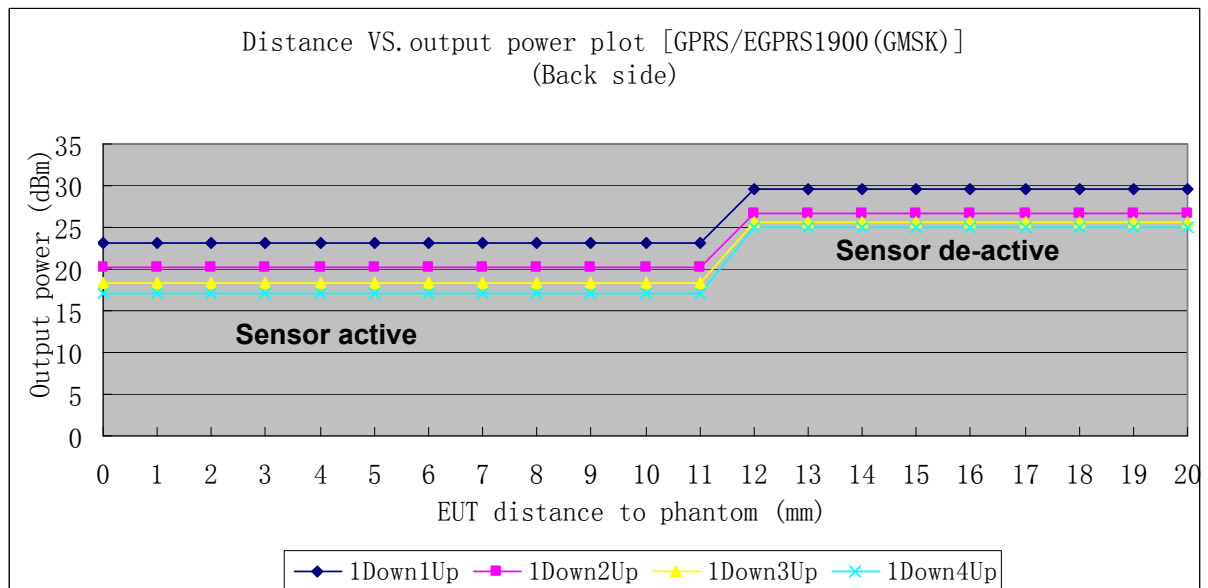
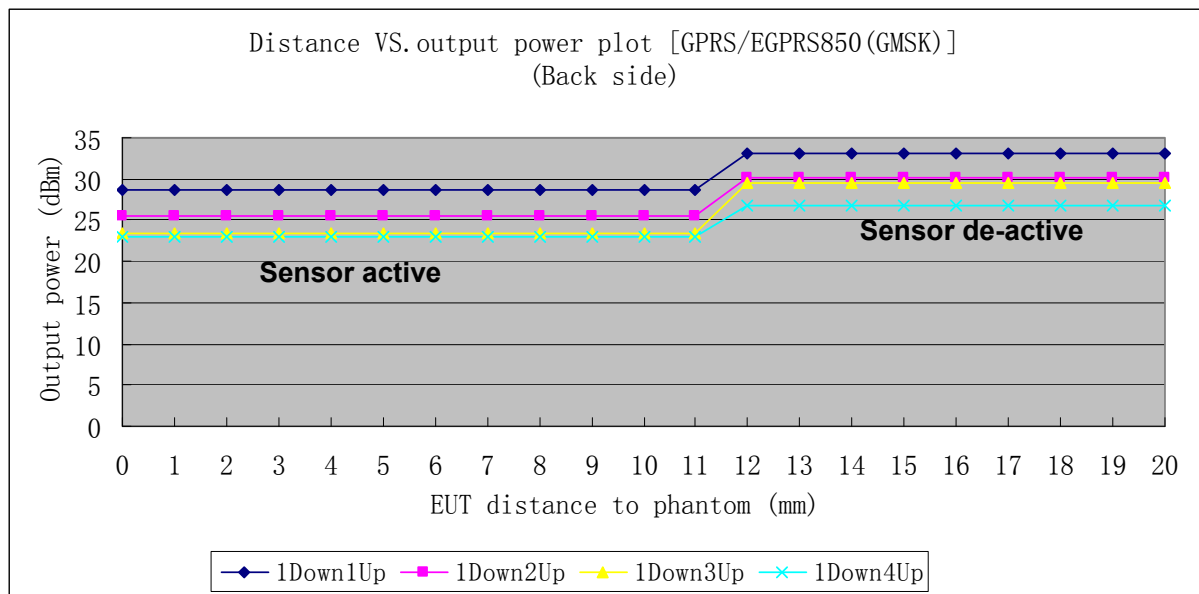
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Back side of Mini-Tablet (0 degree angle) Distance from the user in 2/3G antenna

Distance in mm	0--8	9	10	11	12	13	14
Condition of Sensor in the back side of the device	on	on	on	on	off	off	off

Note: 1. The distance from the camera of the EUT to the bottom of the Phantom is 10mm

The plots show the relationship between the output power (dBm) and the EUT distance to phantom.

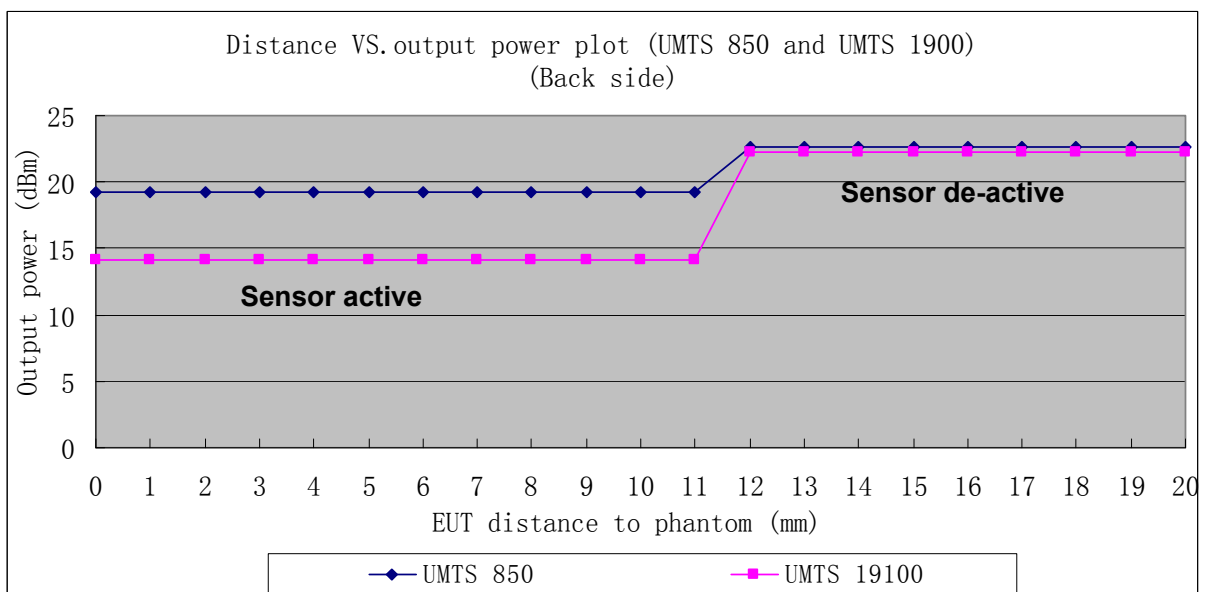
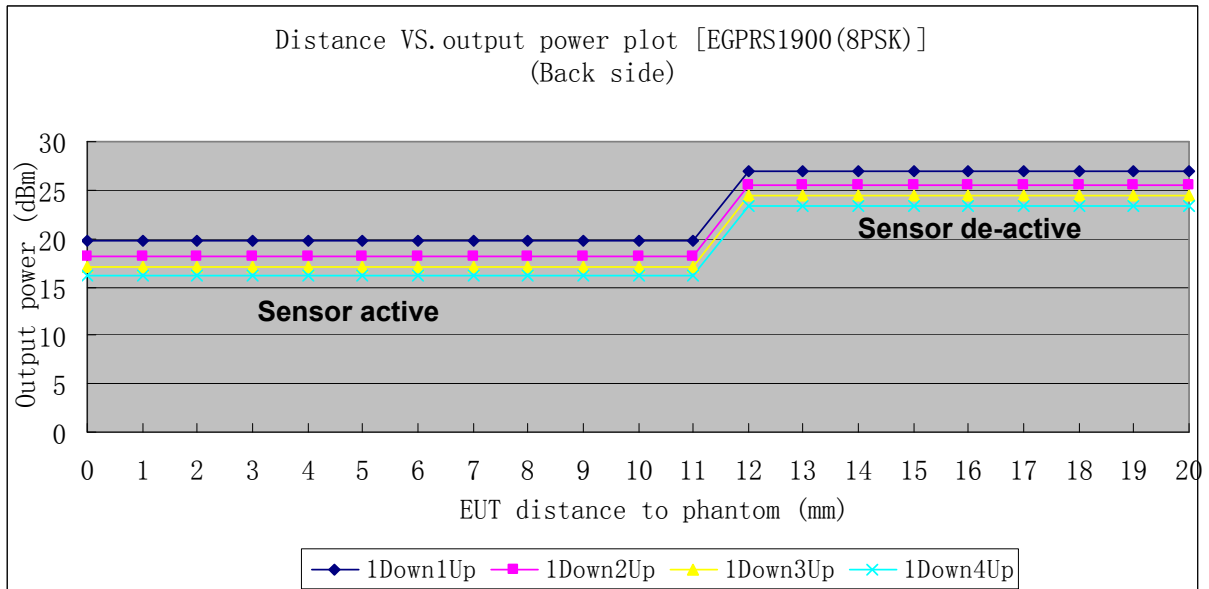
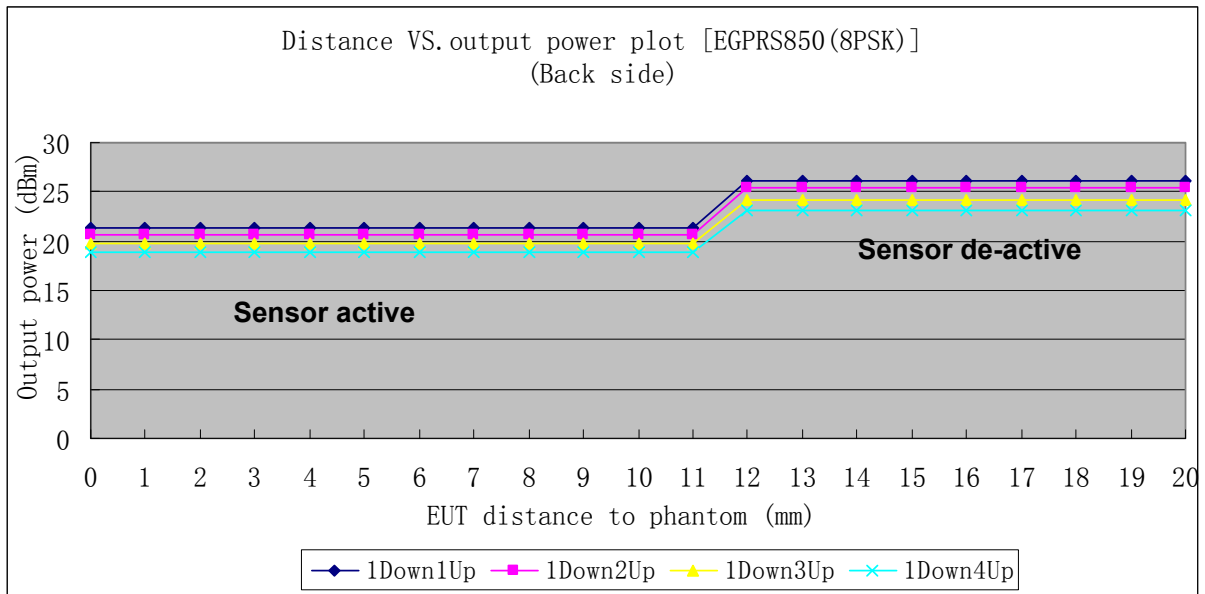


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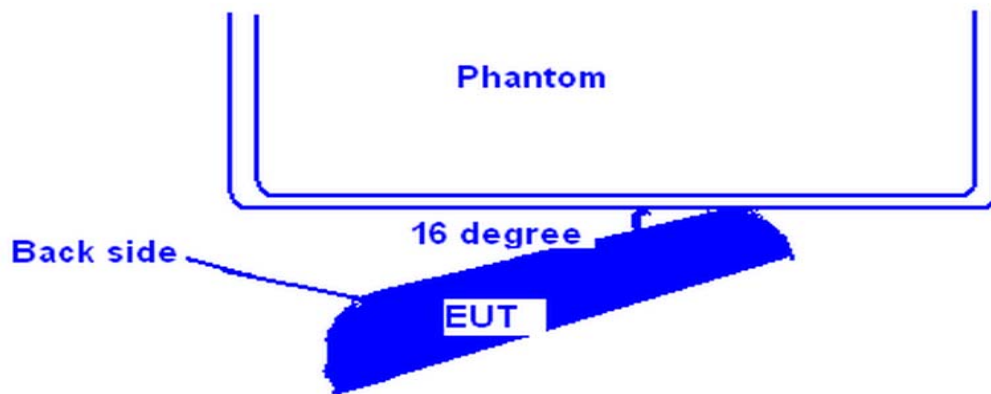
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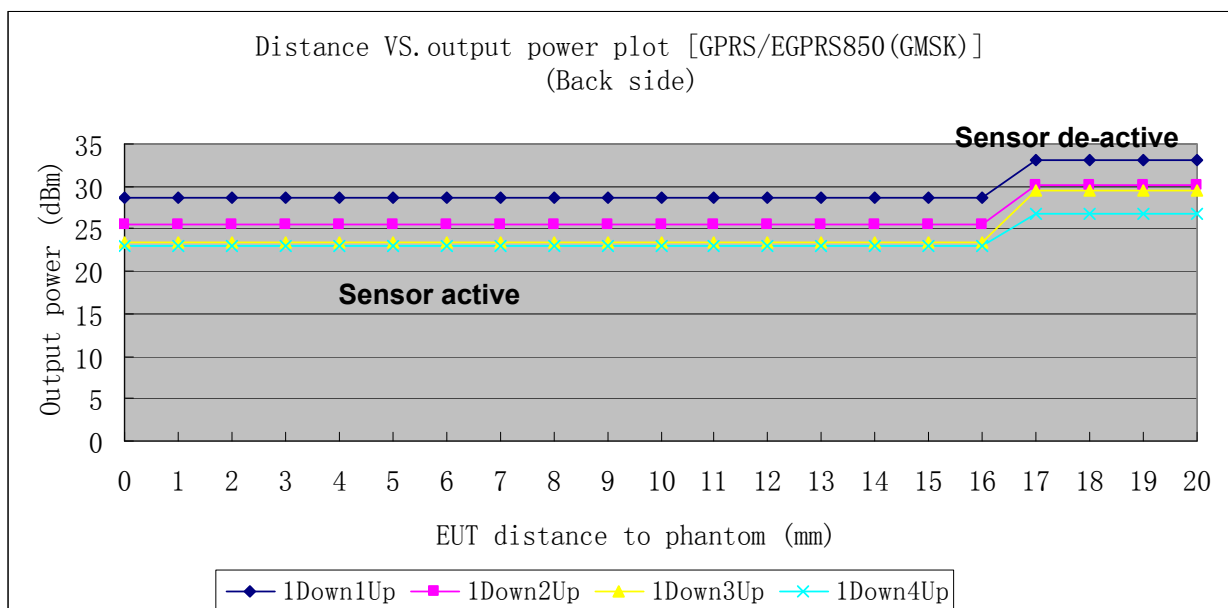
Back side of Mini-Tablet (tilted 16 degree angle) Distance from the user in 2/3G antenna

Distance in mm	0--13	14	15	16	17	18	19
Condition of Sensor in the back side of the device	on	on	on	on	off	off	off



According to the suggestion of FCC KDB, the tablet has a camera stick up on the rear side next to the 2G3G antenna, to address the status consistent with actual use conditions, SAR will be tested in tip of the tablet. Based on the contour of the back side a 16 degree angle provides the smallest distance between antenna and phantom. Therefore we tested SAR at 16 degree tilting angle to simulate this scenario.

The plots show the relationship between the output power (dBm) and the EUT distance to phantom.

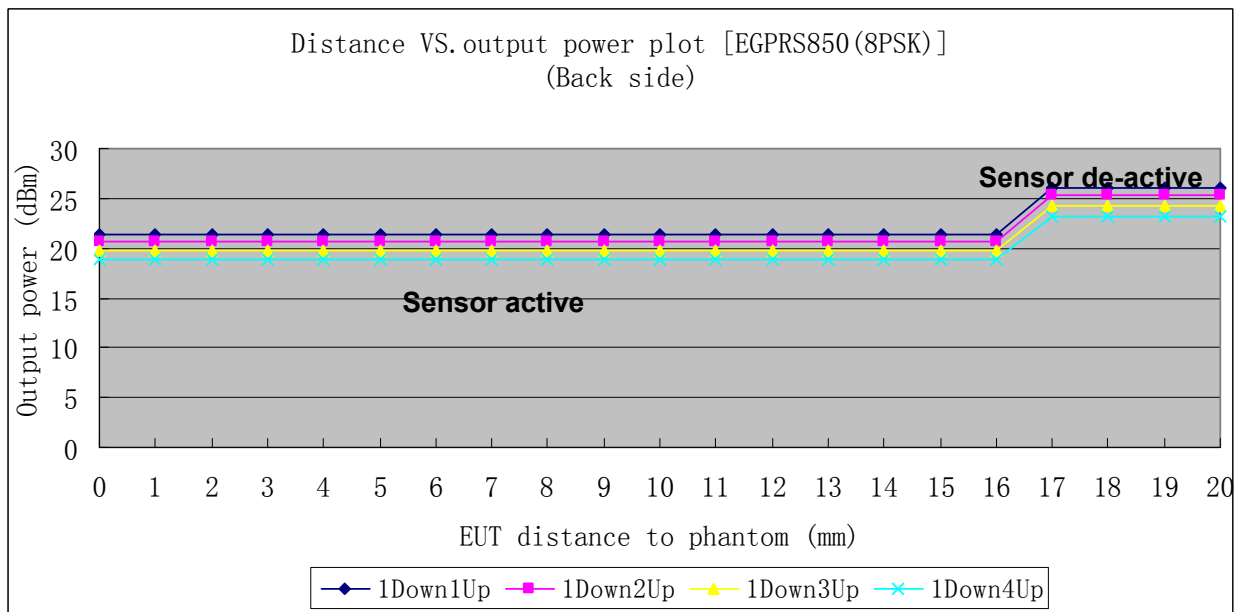
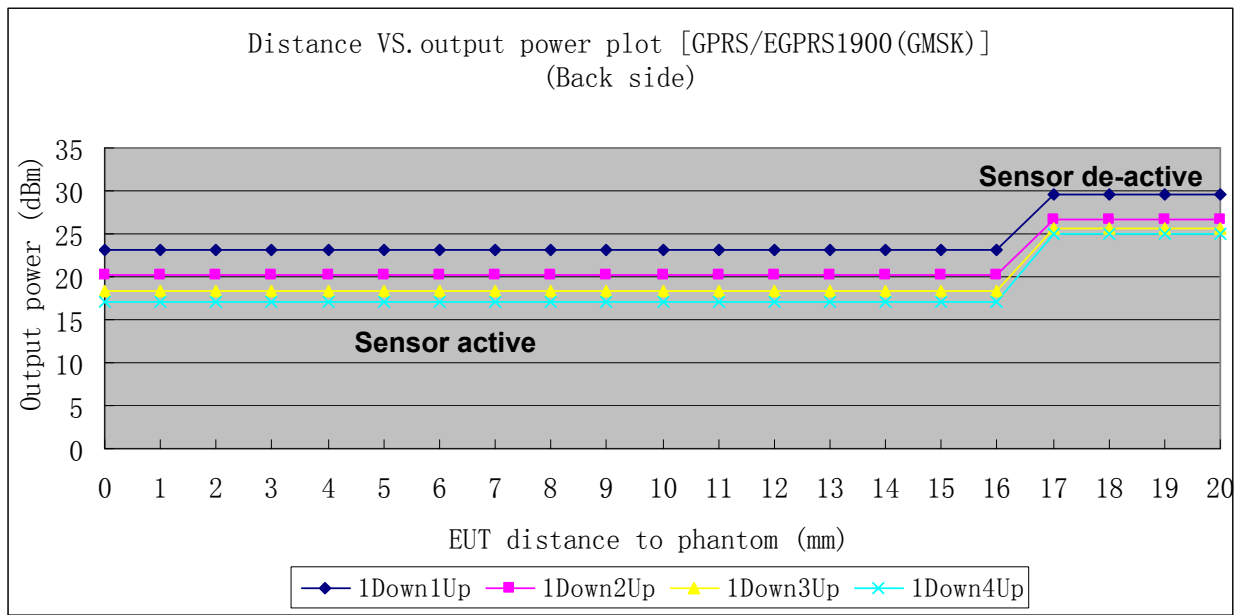


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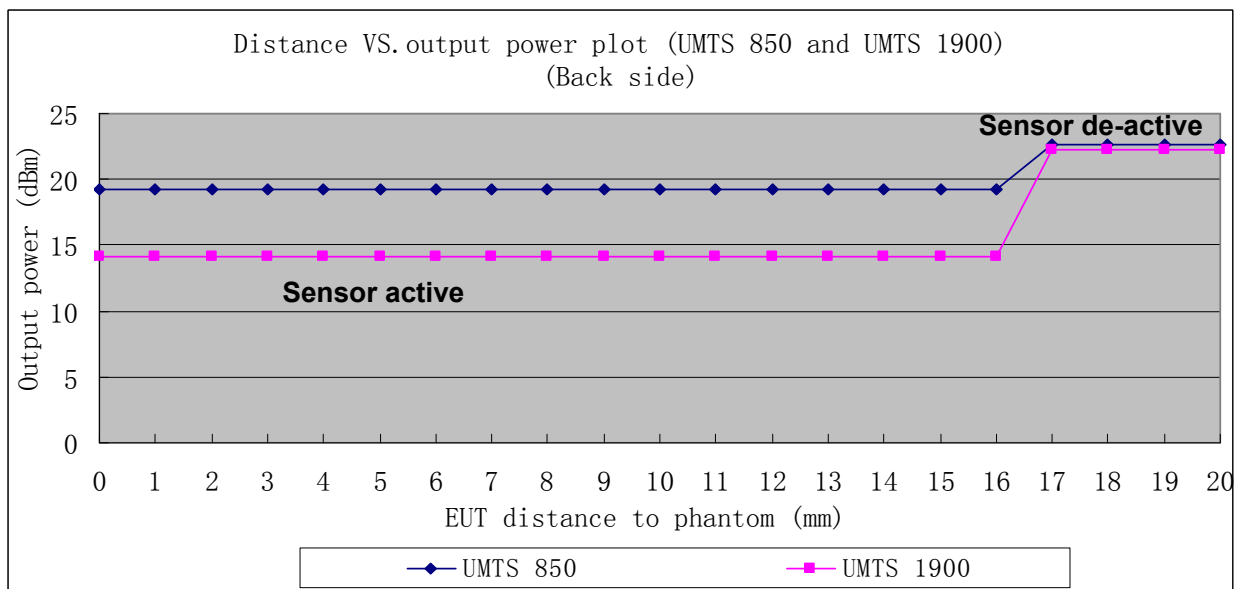
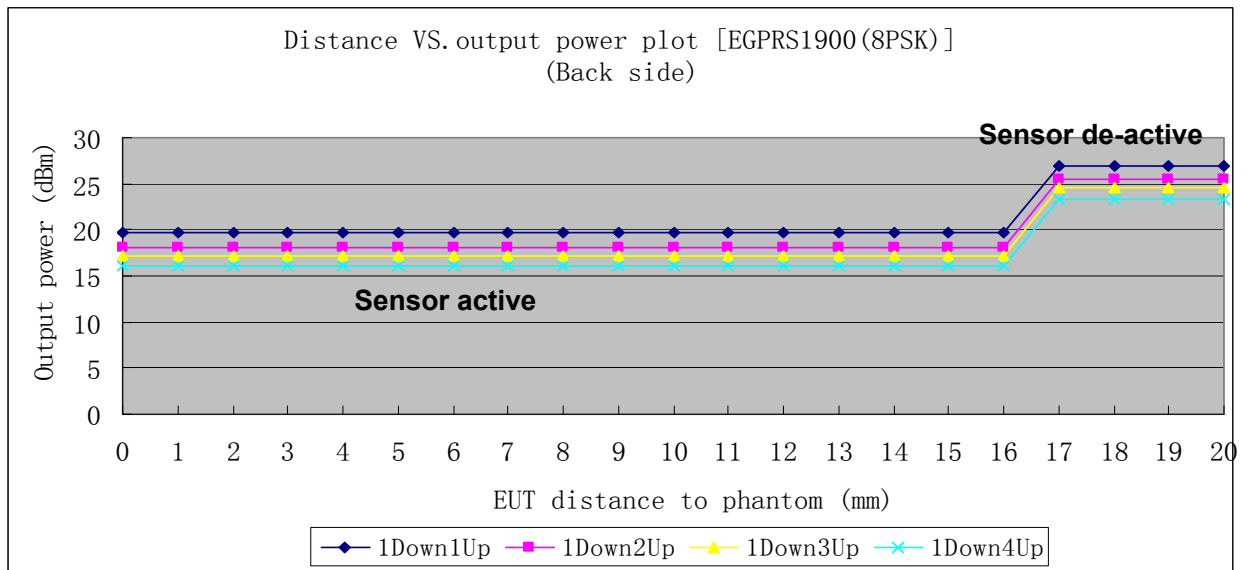


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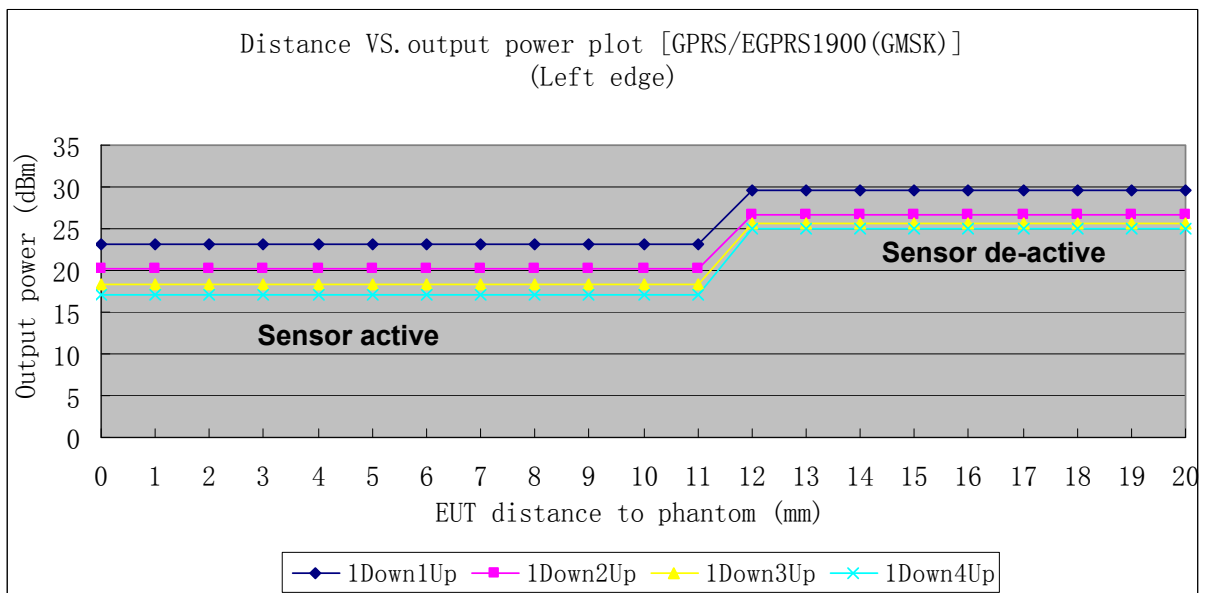
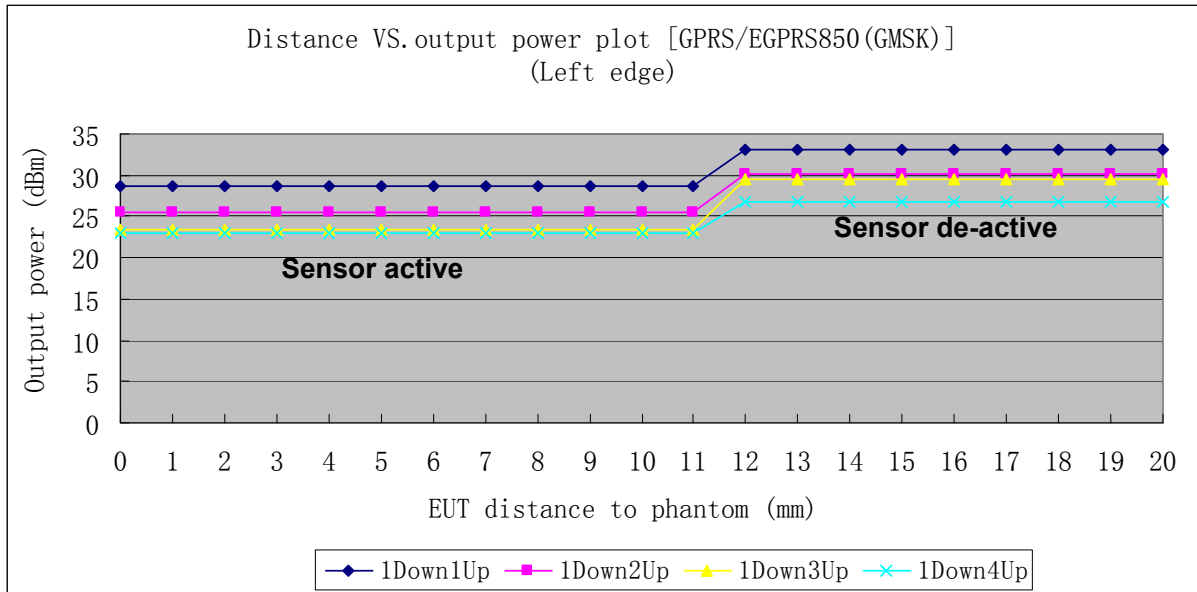
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Left edge of Mini-Tablet (0 degree angle) Distance from the user in 2/3G antenna

Distance in mm	0--8	9	10	11	12	13	14
Condition of Sensor in the left edge of the device	on	on	on	on	off	off	off

The plots show the relationship between the output power (dBm) and the EUT distance to phantom.

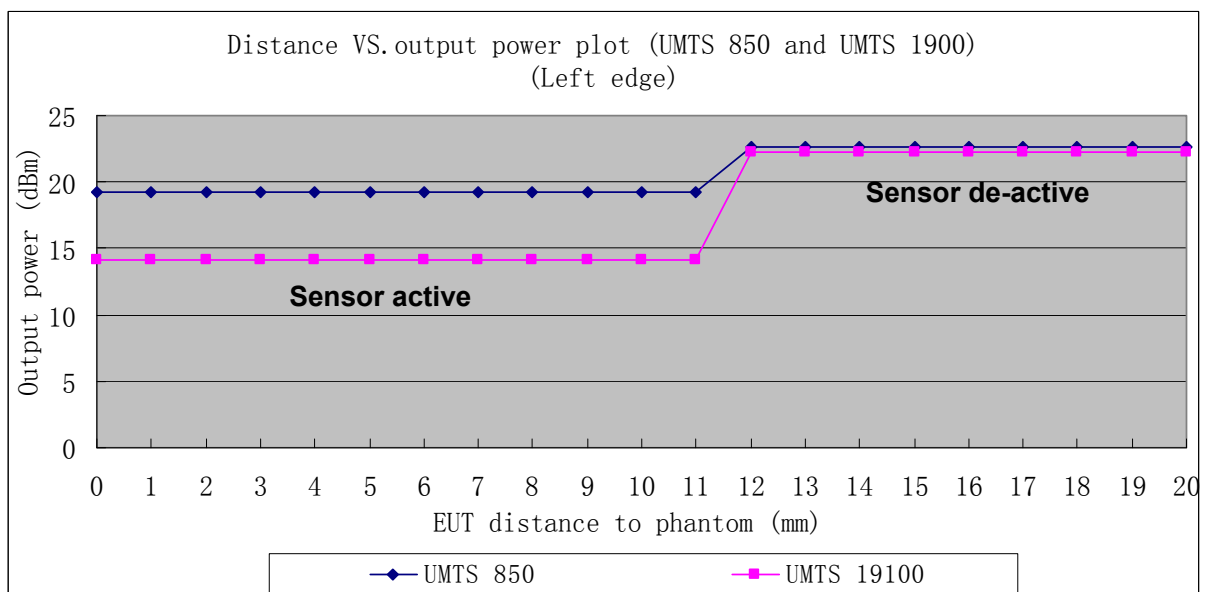
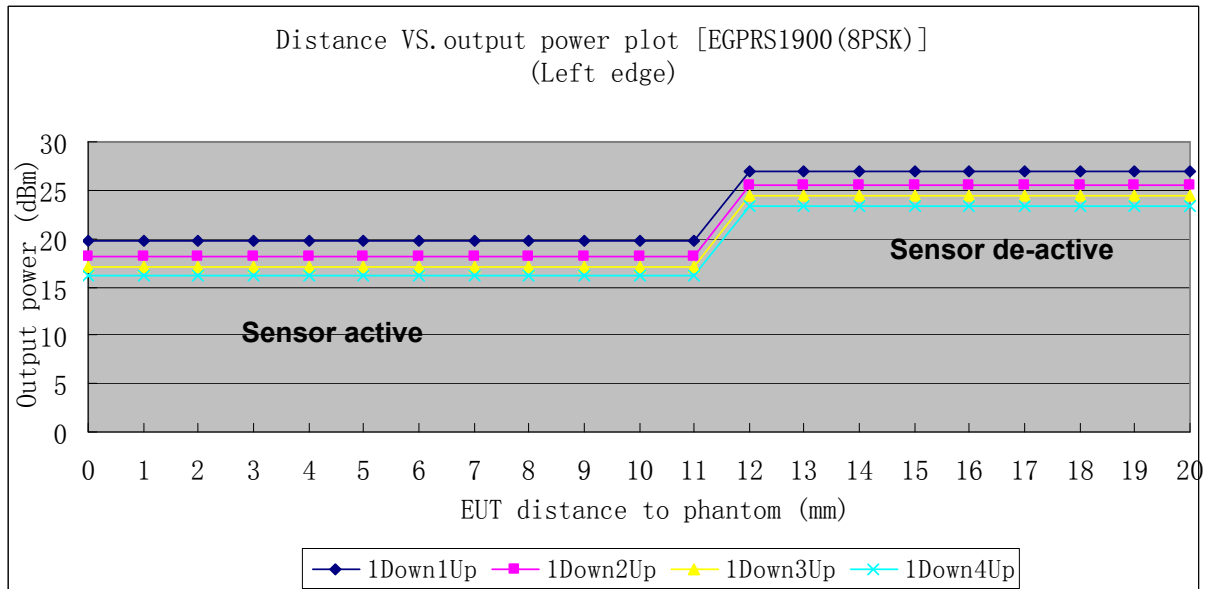
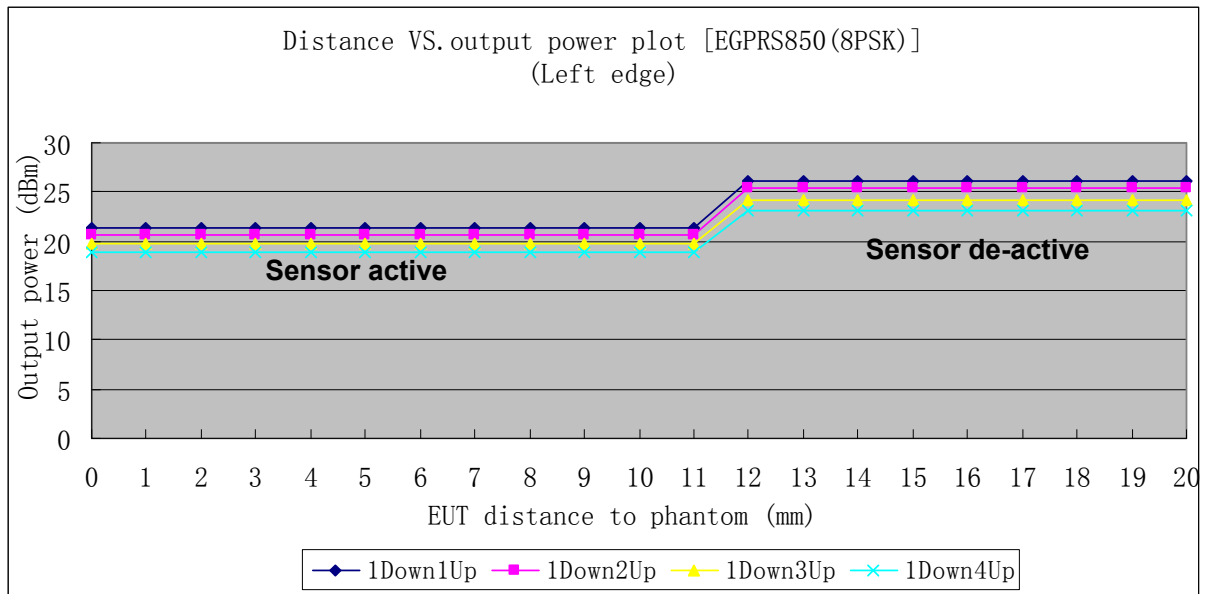


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2.7. Test Positions

For tablets with a display and overall diagonal dimension 22 cm > 20 cm, the SAR procedures in KDB 447498 should be used. The tablet procedures required by KDB447498 generally do not require separate hotspot mode testing.

According to KDB 447498 D01 4)b)i) the bottom face (back of the device) is required to be tested touching the flat phantom. Per KDB 447498 4) b) ii) (1), SAR testing applies for the tablet edges with antennas located within 5cm of each tablet edge closest to the user. According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition.

- Test Position 1: The back side of the EUT is parallel to the bottom of the flat phantom. (ANNEX H Picture 5)
SAR is required for GSM/WCDMA antenna, Per KDB 447498 D01 4)b)i) the bottom face (back of the device) is required to be tested touching the flat phantom. (Please see ANNEX H Picture 4)
- Test Position 2: The left side of the EUT towards the bottom of the flat phantom. (ANNEX H Picture 6)
SAR is required for GSM/WCDMA antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX H Picture 4)
- Test Position 3: The right side of the EUT towards the bottom of the flat phantom. (ANNEX H Picture 7)
SAR is not required 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 H Picture 4)
- Test Position 4: The top side of the EUT towards the bottom of the flat phantom. (ANNEX H Picture 8)
SAR is not required 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 H Picture 4)
- Test Position 5: The bottom side of the EUT towards the bottom of the flat phantom. (ANNEX H Picture 9)
SAR is required for GSM/WCDMA antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX H Picture 4)
- Test Position 6: The back side of the EUT is tilted 16 degree angle with the bottom of the flat phantom, and the antenna location direct against the bottom of the flat phantom. (ANNEX H Picture 10)
(According to the suggestion of FCC KDB, the tablet has a camera stick up on the rear side next to

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the 2G3G antenna, to address the status consistent with actual use conditions, SAR will be tested in tip of the tablet. Based on the contour of the back side a 16 degree angle provides the smallest distance between antenna and phantom. Therefore we tested SAR at 16 degree tilting angle to simulate this scenario.)

SAR is required for GSM/WCDMA antenna, since it is the most conservative exposure conditions of the edge. (Please see ANNEX H Picture 4)

3. SAR Measurements System Configuration

3.1. SAR Measurement Set-up

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

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

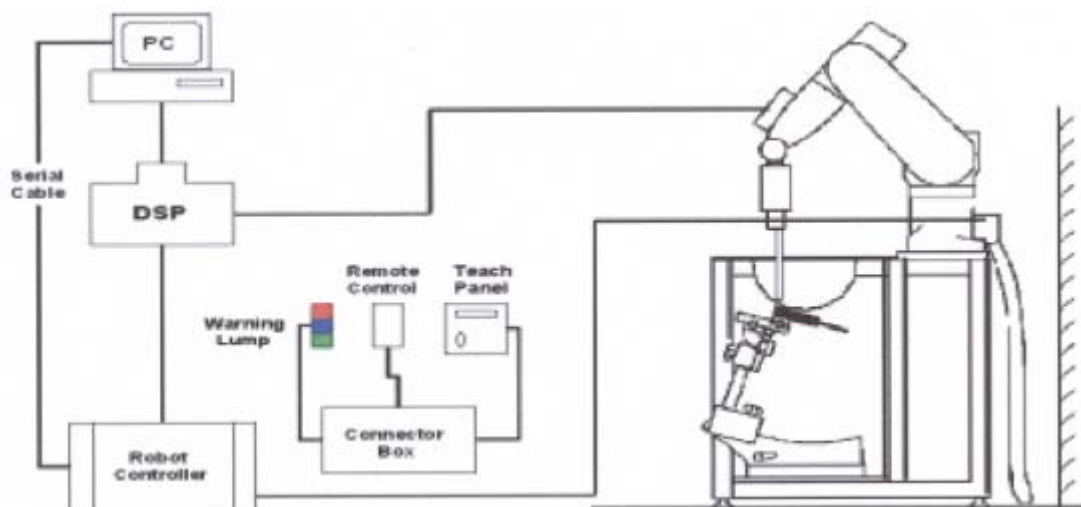


Figure 1 SAR Lab Test Measurement Set-up

3.2. DASY5 E-field Probe System

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

3.2.1. EX3DV4 Probe Specification

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



Figure 2. EX3DV4 E-field Probe



Figure 3. EX3DV4 E-field probe

3.2.2. E-field Probe Calibration

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

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

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

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

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

Or

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

3.3. Other Test Equipment

3.3.1. Device Holder for Transmitters

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

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

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



Figure 4 Device Holder

3.3.2. Phantom

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue-simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

Shell Thickness	2±0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	190×600×0 mm (H x L x W)



Figure 5.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°.)

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- Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot. Before starting the area scan a grid spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged.

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

- Zoom Scan

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

- Spatial Peak Detection

The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses. The 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.

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

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

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

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

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

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

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

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

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

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

$ConvF$ = sensitivity enhancement in solution

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

f = carrier frequency [GHz]

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

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

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

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

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

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

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

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

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

ρ = equivalent tissue density in g/cm³

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

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

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

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

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

3.6. System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulates, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the table 14.

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

System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.

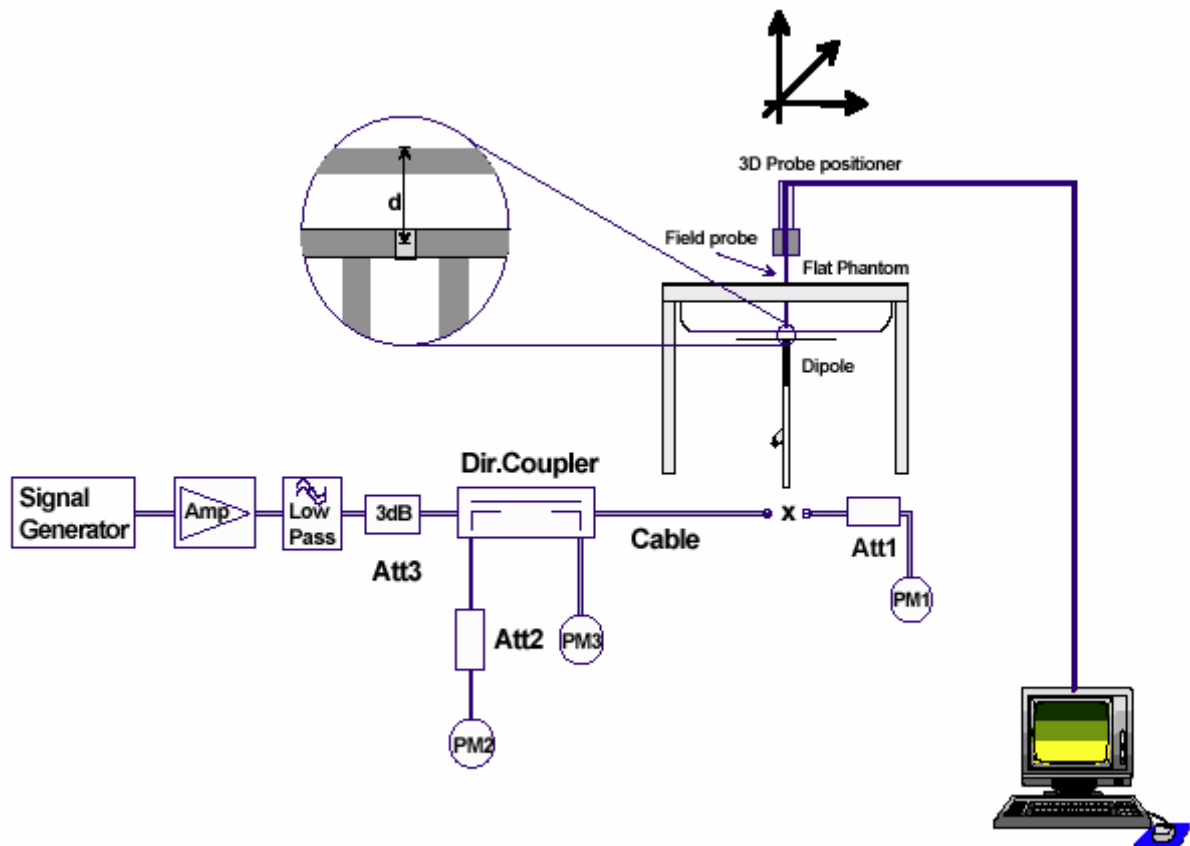


Figure 6 System Check Set-up

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3.7. Equivalent Tissues

The liquid is consisted of water, salt, Glycol, Sugar, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The table 9 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

Table 9: Composition of the Body Tissue Equivalent Matter

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

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

4. Laboratory Environment

Table 10: The Ambient Conditions during Test

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

5. Characteristics of the Test

5.1. Applicable Limit Regulations

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

5.2. Applicable Measurement Standards

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

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

KDB 447498 D01 Mobile Portable RF Exposure v04: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies

KDB 941225 D01 SAR test for 3G devices v02: SAR Measurement Procedures for 3G Devices -CDMA 2000/Ev-Do -WCDMA/HSDPA/HSPA-

KDB 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01: 3GPP R6 HSPA and R7 HSPA+ SAR Guidance

KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE v01: Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE

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

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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. Proximity sensor is not activated, Conducted Power Results

Table 11: Proximity sensor is not activated, Conducted Power Measurement Results

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GPRS (GMSK)	1Txslot	33.1	33.2	33.1	-9.03dB	24.07	24.17	24.07
	2Txslots	30.5	30.2	30.3	-6.02dB	24.48	24.18	24.28
	3Txslots	29.5	29.5	29.2	-4.26dB	25.24	25.24	24.94
	4Txslots	27.4	26.7	27.1	-3.01dB	24.39	23.69	24.09
EGPRS (GMSK)	1Txslot	33.1	33.2	33.1	-9.03dB	24.07	24.17	24.07
	2Txslots	30.5	30.2	30.3	-6.02dB	24.48	24.18	24.28
	3Txslots	29.5	29.5	29.2	-4.26dB	25.24	25.24	24.94
	4Txslots	27.4	26.7	27.1	-3.01dB	24.39	23.69	24.09
EGPRS (8PSK)	1Txslot	26.2	26.1	26.3	-9.03dB	17.17	17.07	17.27
	2Txslots	25.5	25.4	25.5	-6.02dB	19.48	19.38	19.48
	3Txslots	24.3	24.2	24.4	-4.26dB	20.04	19.94	20.14
	4Txslots	23.2	23.2	23.4	-3.01dB	20.19	20.19	20.39
GSM 1900		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GPRS (GMSK)	1Txslot	29.2	29.5	29.2	-9.03dB	20.17	20.47	20.17
	2Txslots	26.5	26.7	26.7	-6.02dB	20.48	20.68	20.68
	3Txslots	25.6	25.7	26.6	-4.26dB	21.34	21.44	22.34
	4Txslots	23.57	23.66	23.72	-3.01dB	20.56	20.65	20.71
EGPRS (GMSK)	1Txslot	29.2	29.5	29.2	-9.03dB	20.17	20.47	20.17
	2Txslots	26.5	26.7	26.7	-6.02dB	20.48	20.68	20.68

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	3Txslots	25.6	25.7	26.6	-4.26dB	21.34	21.44	22.34
	4Txslots	23.57	23.66	23.72	-3.01dB	20.56	20.65	20.71
EGPRS (8PSK)	1Txslot	27	27	26.9	-9.03dB	17.97	17.97	17.87
	2Txslots	25.5	25.5	25.4	-6.02dB	19.48	19.48	19.38
	3Txslots	24.4	24.5	24.4	-4.26dB	20.14	20.24	20.14
	4Txslots	23.57	23.66	23.72	-3.01dB	20.56	20.65	20.71

Note:

1) GSM mode is supported from protocol aspect, but voice calls of the product aren't supported from function aspect..

2) Division Factors

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

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

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

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

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

3Txslots = 3 transmit time slots out of 8 time slots

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

4Txslots = 4 transmit time slots out of 8 time slots

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

3) 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 RMC	22.3	22.3	22.4
	64kbps RMC	22.2	22	22.1
	144kbps RMC	21.9	22.1	22.3
	384kbps RMC	22.3	22.1	22
HSDPA	Sub - Test 1	21.7	21.6	21.8
	Sub - Test 2	21.5	21.4	21.2
	Sub - Test 3	21.5	21.4	21.3
	Sub - Test 4	20.7	20.5	20.5
HSUPA	Sub Test - 1	20.3	20.5	20.7
	Sub Test - 2	19.8	19.7	19.6
	Sub Test - 3	18.5	18.7	18.7
	Sub Test - 4	20.5	19.6	20.2
	Sub Test - 5	19.6	19.6	19.7

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WCDMA Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	22.5	22.6	22.5
	64kbps RMC	22.3	22.4	22.2
	144kbps RMC	22.2	22.5	22.1
	384kbps RMC	22.3	22.4	21.9
HSDPA	Sub - Test 1	21.9	21.7	21.7
	Sub - Test 2	21.7	21.5	21.50
	Sub - Test 3	21.9	21.5	21.5
	Sub - Test 4	20.7	20.6	20.5
HSUPA	Sub Test - 1	20.4	20.6	20.2
	Sub Test - 2	19.5	19.5	19.6
	Sub Test - 3	19.2	19.1	19.3
	Sub Test - 4	20.1	20.5	20.6
	Sub Test - 5	20.3	20.3	20.2

MPR results

WCDMA Band II		Conducted Power (dBm)			
		Channel 9262	Channel 9400	Channel 9538	MPR
HSUPA	Sub Test - 1	20.3	20.5	20.7	2
	Sub Test - 2	19.8	19.7	19.6	2.7
	Sub Test - 3	18.5	18.7	18.7	3.4
	Sub Test - 4	20.5	19.6	20.2	2.3
	Sub Test - 5	19.6	19.6	19.7	2.7
WCDMA Band V		Conducted Power (dBm)			
		Channel 4132	Channel 4183	Channel 4233	MPR
HSUPA	Sub Test - 1	20.4	20.6	20.2	2.1
	Sub Test - 2	19.5	19.5	19.6	2.5
	Sub Test - 3	19.2	19.1	19.3	3
	Sub Test - 4	20.1	20.5	20.6	2.2
	Sub Test - 5	20.3	20.3	20.2	2.2

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6.3. Proximity sensor is activated, Conducted Power Results

Power Reduction Design Specification

Mode	Power Reduction (1DN 4UP)	Power Reduction (1DN 3UP)	Power Reduction (1DN 2UP)	Power Reduction (1DN 1UP)
850 GPRS/EGPRS	-4.7	-5.7	-5.0	-4.6
1900 GPRS/EGPRS	-7.3	-7.3	-7.3	-7.3

Mode	Power Reduction
850 UMTS (RMC,HSDPA/HSUPA)	-3.5
1900 UMTS (RMC,HSDPA/HSUPA)	-8.5

Table 12: Proximity sensor is activated, the Conducted Power Measurement Results

GSM 850		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 128	Channel 190	Channel 251		Channel 128	Channel 190	Channel 251
GPRS (GMSK)	1Txslot	28.5	28.6	28.5	-9.03dB	19.47	19.57	19.47
	2Txslots	25.5	25.5	25.6	-6.02dB	19.48	19.48	19.58
	3Txslots	23.6	23.5	23.6	-4.26dB	19.34	19.24	19.34
	4Txslots	23.2	23	23.5	-3.01dB	20.19	19.99	20.49
EGPRS (GMSK)	1Txslot	28.5	28.6	28.5	-9.03dB	19.47	19.57	19.47
	2Txslots	25.5	25.5	25.6	-6.02dB	19.48	19.48	19.58
	3Txslots	23.6	23.5	23.6	-4.26dB	19.34	19.24	19.34
	4Txslots	23.2	23	23.5	-3.01dB	20.19	19.99	20.49
EGPRS (8PSK)	1Txslot	21.5	21.4	21.6	-9.03dB	12.47	12.37	12.57
	2Txslots	20.5	20.6	20.4	-6.02dB	14.48	14.58	14.38
	3Txslots	19.6	19.8	19.6	-4.26dB	15.34	15.54	15.34
	4Txslots	18.5	18.8	18.5	-3.01dB	15.49	15.79	15.49
GSM 1900		Burst Conducted Power(dBm)				Average power(dBm)		
		Channel 512	Channel 661	Channel 810		Channel 512	Channel 661	Channel 810
GPRS (GMSK)	1Txslot	23.2	23.2	23	-9.03dB	14.17	14.17	13.97
	2Txslots	20	20.3	20.2	-6.02dB	13.98	14.28	14.18
	3Txslots	18.1	18.3	18.3	-4.26dB	13.84	14.04	14.04

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	4Txslots	17.2	17.1	17.2	-3.01dB	14.19	14.09	14.19
EGPRS (GMSK)	1Txslot	23.2	23.2	23	-9.03dB	14.17	14.17	13.97
	2Txslots	20	20.3	20.2	-6.02dB	13.98	14.28	14.18
	3Txslots	18.1	18.3	18.3	-4.26dB	13.84	14.04	14.04
	4Txslots	17.2	17.1	17.2	-3.01dB	14.19	14.09	14.19
EGPRS (8PSK)	1Txslot	19.6	19.7	19.5	-9.03dB	10.57	10.67	10.47
	2Txslots	18.2	18.1	18	-6.02dB	12.18	12.08	11.98
	3Txslots	16.9	17.1	17	-4.26dB	12.64	12.84	12.74
	4Txslots	16	16.1	16.1	-3.01dB	12.99	13.09	13.09

Note:

1) GSM mode is supported from protocol aspect, but voice calls of the product aren't supported from function aspect.

2) Division Factors

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

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

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

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

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

3Txslots = 3 transmit time slots out of 8 time slots

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

4Txslots = 4 transmit time slots out of 8 time slots

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

3) 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 RMC	14	14.1	14.2
	64kbps RMC	14.1	14	14.2
	144kbps RMC	14	14.1	14.2
	384kbps RMC	14.2	14	14.2
HSDPA	Sub - Test 1	13.5	13.2	13.3
	Sub - Test 2	13.1	13.1	13.2
	Sub - Test 3	13.2	13.2	13.1
	Sub - Test 4	12.5	12.1	12.3
HSUPA	Sub Test - 1	12.5	12.3	12.2
	Sub Test - 2	11.3	11.5	11.7

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	Sub Test - 3	11.2	11.3	11.2
	Sub Test - 4	12.3	12.3	12.2
	Sub Test - 5	11.5	11.6	11.6
WCDMA Band V		Conducted Power (dBm)		
		Channel 4132	Channel 4183	Channel 4233
RMC	12.2kbps RMC	19.1	19.2	19.3
	64kbps RMC	19.3	19.2	19.3
	144kbps RMC	19	19.2	19
	384kbps RMC	19	19.2	19.3
HSDPA	Sub - Test 1	18.3	18.3	18.7
	Sub - Test 2	18.3	18.5	18.5
	Sub - Test 3	18.5	18.3	18.1
	Sub - Test 4	18	17.9	18
HSUPA	Sub Test - 1	17.5	17.5	17.4
	Sub Test - 2	17.3	17.5	17.5
	Sub Test - 3	16.5	16.6	16.5
	Sub Test - 4	17.2	17.2	17.3
	Sub Test - 5	17.5	17.3	17.2

MPR results

WCDMA Band II		Conducted Power (dBm)			
		Channel 9262	Channel 9400	Channel 9538	MPR
HSUPA	Sub Test - 1	12.5	12.3	12.2	2
	Sub Test - 2	11.3	11.5	11.7	2.7
	Sub Test - 3	11.2	11.3	11.2	3.4
	Sub Test - 4	12.3	12.3	12.2	2.3
	Sub Test - 5	11.5	11.6	11.6	2.7
WCDMA Band V		Conducted Power (dBm)			
		Channel 4132	Channel 4183	Channel 4233	MPR
HSUPA	Sub Test - 1	17.5	17.5	17.4	2.1
	Sub Test - 2	17.3	17.5	17.5	2.5
	Sub Test - 3	16.5	16.6	16.5	3
	Sub Test - 4	17.2	17.2	17.3	2.2
	Sub Test - 5	17.5	17.3	17.2	2.2

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7. Test Results

7.1. Dielectric Performance

Table 13: Dielectric Performance of Body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp ℃
		ϵ_r	$\sigma(\text{s/m})$	
849MHz (High)	Target value ±5% window	55.16 52.40 — 57.92	0.99 0.94 — 1.04	/
	Measurement value 2011-9-25	54.70	0.97	21.7
837MHz (Middle)	Target value ±5% window	55.19 52.43 — 57.95	0.97 0.92 — 1.02	/
	Measurement value 2011-9-25	54.90	0.956	21.7
	Measurement value 2011-10-29	55.4	1.01	21.8
	Measurement value 2011-11-9	55.42	1.00	21.9
824MHz (Low)	Target value ±5% window	55.24 52.48 — 58.00	0.97 0.92 — 1.02	/
	Measurement value 2011-9-25	55.10	0.946	21.7
1910MHz (High)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-9-24	51.50	1.57	21.8
	Measurement value 2011-10-28	51.53	1.56	21.8
	Measurement value 2011-11-9	51.56	1.55	21.9
1880MHz (Middle)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-9-24	51.70	1.53	21.8
	Measurement value 2011-10-28	51.69	1.52	21.8
	Measurement value 2011-11-9	51.75	1.51	21.9
1850MHz (Low)	Target value ±5% window	53.30 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2011-9-24	51.70	1.51	21.8
	Measurement value 2011-10-28	52.00	1.53	21.8

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	Measurement value 2011-11-9	51.73	1.52	21.9
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7.2. System Check Results

Table 14: System Check for Body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters		Temp	Input Power	Measured SAR _{1g}	1W Normalized SAR _{1g}	1W Target SAR _{1g}	Deviation
		ϵ_r	$\sigma(\text{s/m})$	(°C)	(W)	(W/kg)	(W/kg)	(W/kg)	(%)
835MHz	2011-9-25	54.91	0.96	21.7	0.25	2.54	10.16	9.46	7.40
	2011-10-29	54.81	0.97	21.8	0.25	2.47	9.88		4.44
	2011-11-9	55.10	1.00	21.9	0.25	2.51	10.04		6.13
1900 MHz	2011-9-24	51.55	1.56	21.8	0.25	10.20	40.8	41.7	-2.16
	2011-10-28	51.57	1.55	21.8	0.25	10.22	40.88		-1.97
	2011-11-9	51.60	1.54	21.9	0.25	10.31	41.24		-1.10

Note: 1. The graph results see ANNEX B.

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7.3. Summary of Measurement Results

7.3.1. GSM 850 (GPRS/EGPRS)

Table 15: SAR Values [GSM 850 (GPRS/EGPRS)]

Limit of SAR				10 g Average	1 g Average	Power Drift	Graph Results
				2.0 W/kg	1.6 W/kg	± 0.21 dB	
Test Case Of Body				Measurement Result(W/kg)		Power Drift (dB)	
Test Position	Timeslots	Channel	Conducted Power(dBm)	10 g Average	1 g Average		
Test Position of GPRS(Proximity sensor is activated, Distance 0mm)							
Test Position 1	1Txslot	Middle/190	28.6	0.301	0.645	0.061	Figure 13
	2Txslots	Middle/190	25.5	0.254	0.539	-0.098	Figure 14
	3Txslots	Middle/190	23.5	0.221	0.471	0.058	Figure 15
	4Txslots	Middle/190	23	0.237	0.507	-0.113	Figure 16
Test Position 2	1Txslot	High/251	28.5	0.330	0.698	0.021	Figure 17
		Middle/190	28.6	0.387	0.813	0.098	Figure 18
		Low/128	28.5	0.422	0.878	0.152	Figure 19
Test Position 6	1Txslot	Middle/190	28.6	0.289	0.746	-0.029	Figure 20
Test Position of GPRS(Proximity sensor is not activated, Distance 0mm)							
Test Position 3	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA
Test Position 5	1Txslot	Middle/190	33.2	0.204	0.362	0.082	Figure 21
Test Position of GPRS(Proximity sensor is not activated, Distance 10mm)							
Test Position 1	1Txslot	Middle/190	33.2	0.306	0.472	0.070	Figure 22
	2Txslots	Middle/190	30.2	0.373	0.579	-0.185	Figure 23
	3Txslots	Middle/190	29.5	0.486	0.781	-0.134	Figure 24
	4Txslots	Middle/190	26.7	0.358	0.591	-0.064	Figure 25
Test Position 2	3Txslots	Middle/190	29.5	0.347	0.555	-0.014	Figure 26
Test Position 3	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA
Worst Case Position of GPRS with EGPRS (Proximity sensor is activated, GMSK, Distance 0mm)							
Test Position 2	1Txslot	Low/128	28.5	0.424	0.881	0.059	Figure 27

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

2. Upper and lower frequencies were measured at the worst position.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ($< 0.8\text{W/kg}$), testing at the high and low channels is optional.
4. When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.
5. NA: According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.
6. The SAR measurement of other position in hotspot mode were covered by corresponding test results of 10mm.
7. The proximity sensor is not activated for test position 5 (bottom edge of the device), so the SAR measurement of test position 5 at the separation distance is not required.

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7.3.2. GSM 1900 (GPRS/EGPRS)

Table 16: SAR Values [GSM 1900(GPRS/EGPRS)]

Limit of SAR				10 g Average	1 g Average	Power Drift	Graph Results
				2.0 W/kg	1.6 W/kg	± 0.21 dB	
Test Case Of Body				Measurement Result(W/kg)		Power Drift (dB)	
Test Position	Timeslots	Channel	Conducted Power(dBm)	10 g Average	1 g Average		
Test position of GPRS (Proximity sensor is activated, Distance 0mm)							
Test Position 1	1Txslot	Middle/661	23.2	0.343	0.757	0.121	Figure 28
	2Txslots	High/810	20.2	0.389	0.873	0.090	Figure 29
		Middle/661	20.3	0.354	0.792	0.141	Figure 30
		Low/512	20	0.332	0.725	0.048	Figure 31
	3Txslots	Middle/661	18.3	0.341	0.756	0.075	Figure 32
	4Txslots	Middle/661	17.1	0.351	0.778	-0.084	Figure 33
Test Position 2	2Txslots	Middle/661	20.3	0.289	0.617	0.029	Figure 34
Test Position 6	2Txslots	High/810	20.2	0.568	1.330	-0.087	Figure 35
		Middle/661	20.3	0.554	1.280	0.048	Figure 36
		Low/512	20	0.554	1.270	-0.093	Figure 37
Test Position of GPRS(Proximity sensor is not activated, Distance 0mm)							
Test Position 3	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA
Test Position 5	2Txslots	Middle/661	26.7	0.278	0.618	0.194	Figure 38
Test Position of GPRS(Proximity sensor is not activated, Distance 10mm)							
Test Position 1	1Txslot	Middle/661	29.5	0.334	0.627	0.068	Figure 39
	2Txslots	Middle/661	26.7	0.342	0.645	-0.063	Figure 40
	3Txslots	Middle/661	25.7	0.407	0.764	-0.069	Figure 41
	4Txslots	Middle/661	23.66	0.329	0.620	-0.137	Figure 42
Test Position 2	3Txslots	Middle/661	25.7	0.306	0.569	-0.015	Figure 43
Test Position 3	NA	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA	NA
Worst Case Position of GPRS with EGPRS (Proximity sensor is activated, GMSK, Distance 0mm)							
Test Position 6	2Txslots	High/810	20.2	0.578	1.360	-0.054	Figure 44

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

2. Upper and lower frequencies were measured at the worst position.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ($< 0.8\text{W/kg}$), testing at the high and low channels is optional.
4. When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.
5. NA: According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.
6. The SAR measurement of other position in hotspot mode were covered by corresponding test results of 10mm.
7. The proximity sensor is not activated for test position 5 (bottom edge of the device), so the SAR measurement of test position 5 at the separation distance is not required.

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Limit of SAR			10 g Average	1 g 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	Conducted Power(dBm)	10 g Average	1 g Average		
Test Position of RMC (Proximity sensor is activated, Distance 0mm)						
Test Position 1	High/9538	14.2	0.436	0.986	0.080	Figure 45
	Middle/9400	14.1	0.392	0.875	0.078	Figure 46
	Low/9262	14	0.273	0.603	0.050	Figure 47
Test Position 2	High/9538	14.2	0.535	1.180	0.043	Figure 48
	Middle/9400	14.1	0.380	0.834	-0.050	Figure 49
	Low/9262	14	0.240	0.524	0.119	Figure 50
Test Position 6	High/9538	14.2	0.580	1.350	-0.087	Figure 51
	Middle/9400	14.1	0.525	1.210	-0.066	Figure 52
	Low/9262	14	0.492	1.120	-0.053	Figure 53
Test Position of RMC (Proximity sensor is not activated, Distance 0mm)						
Test Position 3	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA
Test Position 5	High/9538	22.4	0.511	1.150	0.022	Figure 54
	Middle/9400	22.3	0.426	0.948	0.018	Figure 55
	Low/9262	22.3	0.344	0.760	0.077	Figure 56
Test Position of RMC (Proximity sensor is not activated, Distance 10mm)						
Test Position 1	High/9538	22.4	0.605	1.130	-0.085	Figure 57
	Middle/9400	22.3	0.466	0.871	-0.034	Figure 58
	Low/9262	22.3	0.362	0.676	-0.072	Figure 59
Test Position 2	Middle/9400	22.3	0.341	0.630	-0.070	Figure 60
Test Position 3	NA	NA	NA	NA	NA	NA
Test Position 4	NA	NA	NA	NA	NA	NA
Worst Case Position of RMC with HSDPA (Proximity sensor is activated, Distance 0mm)						
Test Position 6	High/9538	13.3	0.443	1.030	-0.033	Figure 61
Worst Case Position of RMC with HSUPA (Proximity sensor is activated, Distance 0mm)						

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Test Position 6	High/9538	12.2	0.398	0.926	-0.063	Figure 62
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Note: 1. The value with blue color is the maximum SAR Value of each test band.

- Upper and lower frequencies were measured at the worst position.
- The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit ($< 0.8\text{W/kg}$), testing at the high and low channels is optional.
- NA: According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.
- The SAR measurement of other position in hotspot mode were covered by corresponding test results of 10mm.
- The proximity sensor is not activated for test position 5 (bottom edge of the device), so the SAR measurement of test position 5 at the separation distance is not required.

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7.3.4. WCDMA Band V (WCDMA)

Table 18: SAR Values [WCDMA Band V (WCDMA)]

Limit of SAR			10 g Average	1 g 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	Conducted Power(dBm)	10 g Average	1 g Average		
Test Position of RMC (Proximity sensor is activated, Distance 0mm)						
Test Position 1	Middle/4183	19.2	0.271	0.578	-0.006	Figure 63
Test Position 2	High/4233	19.3	0.368	0.812	0.078	Figure 64
	Middle/4183	19.2	0.370	0.818	0.042	Figure 65
	Low/4132	19.1	0.400	0.985	0.089	Figure 66
Test Position 6	Middle/4183	19.2	0.245	0.627	-0.069	Figure 67
Test Position of RMC (Proximity sensor is not activated, Distance 0mm)						
Test Position 3	N/A	N/A	N/A	N/A	N/A	N/A
Test Position 4	N/A	N/A	N/A	N/A	N/A	N/A
Test Position 5	Middle/4183	22.6	0.233	0.434	0.052	Figure 68
Test Position of RMC (Proximity sensor is not activated, Distance 10mm)						
Test Position 1	Middle/4183	22.6	0.304	0.463	-0.084	Figure 69
Test Position 2	Middle/4183	22.6	0.202	0.323	0.116	Figure 70
Test Position 3	N/A	N/A	N/A	N/A	N/A	N/A
Test Position 4	N/A	N/A	N/A	N/A	N/A	N/A

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

- Upper and lower frequencies were measured at the worst position.
- The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.
- NA: According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.
- The SAR measurement of other position in hotspot mode were covered by corresponding test results of 10mm.
- WCDMA mode were tested under RMC 12.2kbps with HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was not required since the average output power of the HSPA (HSDPA/HSUPA) subtests was not more than 0.25 dB higher than the RMC level and the maximum SAR for 12.2kbps RMC was less than 75% (1.2 W/kg) SAR limit.
- The proximity sensor is not activated for test position 5 (bottom edge of the device), so the SAR measurement of test position 5 at the separation distance is not required.

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7.3.5. Bluetooth/WiFi Function

The location of the antennas inside tablet is shown in Annex H:

Stand-alone SAR

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

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)	7.81	8.71	9.79
EDR3M-8DPSK Test result (dBm)	7.79	8.68	9.78

Because the output power of BT transmitter is $\leq 60/f(\text{GHz})$. Stand-alone SAR is not required for BT.

The output power of WIFI antenna is as following:

Mode	Data rate(Mbps)	Average power (dBm)		
		2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	9.51	9.54	10.27
	2	9.36	9.59	10.34
	5.5	9.11	9.49	10.45
	11	9.3	9.5	10.47
802.11g	6	7.2	6.62	7.65
	9	6.38	6.53	7.45
	12	6.25	6.58	7.4
	18	6.16	6.38	8.01
	24	6.36	6.49	8.01
	36	6.37	7.27	8.05
	48	6.89	7.23	7.99
	54	6.72	7.08	8.03
802.11n HT20	6.5	6.3	6.4	7.2
	13	6.1	7.4	7.4
	19.5	6.2	6.5	7.4

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	26	6.2	6.4	8
	39	6.1	7.2	7.9
	52	6.7	7.1	7.9
	58.5	6.7	7	7.9
	65	6.7	7.1	7.9

Because the output power of WIFI transmitter is $\leq 60/f(\text{GHz})$. Stand-alone SAR is not required for WIFI.

Simultaneous Transmission information

Bluetooth and WiFi can't transmit simultaneously since they share the same circuit path and are switched by the radio.

Since the output power of the antenna is $\leq 60/f(\text{GHz})$, BT and WLAN 2.4GHz SAR are not required for both back side and edge exposure conditions.

Simultaneous Transmission Analysis

About BT and GSM/WCDMA Antenna,

SAR1g(W/kg) Test Position	GSM850	GSM1900	WCDMA Band II	WCDMA Band V	BT	MAX. ΣSAR_{1g}
Test Position 1(0mm)	0.645	0.873	0.986	0.578	0	0.986
Test Position 1(10mm)	0.781	0.764	1.130	0.463	0	1.130
Test Position 2(0mm)	0.881	0.617	1.180	0.985	0	1.180
Test Position 2(10mm)	0.555	0.569	0.630	0.323	0	0.630
Test Position 3(0mm)	N/A	N/A	N/A	N/A	0	0
Test Position 4(0mm)	N/A	N/A	N/A	N/A	0	0
Test Position 5(0mm)	0.362	0.618	1.150	0.434	0	1.150
Test Position 6(0mm)	0.746	1.360	1.350	0.627	0	1.360

Note: 1. NA: According to KDB 447498 4)b)ii)(2), for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.

2. Stand alone SAR for BT is not required. Its SAR is considered 0 in the 1-g SAR summing process to determine simultaneous transmission SAR evaluation requirements.

According to KDB 447498 4)b)iii)(1), located < 5 cm from the edge and the sum of the stand-alone 1-g SAR is $<$ the SAR limit for these antennas, so the Simultaneous SAR are not required for BT and GSM/WCDMA Antenna.

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About WI-FI and GSM/WCDMA Antenna

SAR1g(W/kg) Test Position	GSM850	GSM1900	WCDMA Band II	WCDMA Band V	Wifi (2.4GHz)	MAX. Σ SAR _{1g}
Test Position 1(0mm)	0.645	0.873	0.986	0.578	0	0.986
Test Position 1(10mm)	0.781	0.764	1.130	0.463	0	1.130
Test Position 2(0mm)	0.881	0.617	1.180	0.985	0	1.180
Test Position 2(10mm)	0.555	0.569	0.630	0.323	0	0.630
Test Position 3(0mm)	N/A	N/A	N/A	N/A	0	0
Test Position 4(0mm)	N/A	N/A	N/A	N/A	0	0
Test Position 5(0mm)	0.362	0.618	1.150	0.434	0	1.150
Test Position 6(0mm)	0.746	1.360	1.350	0.627	0	1.360

Note: 1. NA: According to KDB 447498 4)b)ii)(2),for each antenna, SAR is only required for the edge with the most conservative exposure condition. So these position are not required for SAR measurement.

2. Stand alone SAR for WI-FI is not required. Its SAR is considered 0 in the 1-g SAR summing process to determine simultaneous transmission SAR evaluation requirements.

According to KDB 447498 4)b)iii)(1), located <5 cm from the edge and the sum of the stand-alone 1-g SAR is <the SAR limit for these antennas, So the Simultaneous SAR are not required for WI-FI and GSM/WCDMA Antenna.

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8. Measurement Uncertainty

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

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21	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.64	1.8	∞
22	-liquid conductivity (measurement uncertainty)	B	2.5	N	1	0.64	1.6	9
23	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
24	-liquid permittivity (measurement uncertainty)	B	2.5	N	1	0.6	1.5	9
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					12.12	
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2		24.24	

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9. Main Test Instruments

Table 19: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 12, 2011	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 12, 2011	One year
04	Power sensor	Agilent N8481H	MY50350004	September 26, 2010	One year
05	Power sensor	Agilent N8481H	MY50350004	September 25, 2011	One year
06	Signal Generator	HP 8341B	2730A00804	September 12, 2011	One year
07	Amplifier	IXA-020	0401	No Calibration Requested	
08	BTS	E5515C	MY48360988	December 3, 2010	One year
09	E-field Probe	EX3DV4	3677	November 24, 2010	One year
10	DAE	DAE4	871	November 18, 2010	One year
11	Validation Kit 835MHz	D835V2	4d020	August 26, 2011	One year
12	Validation Kit 1900MHz	D1900V2	5d060	August 31, 2011	One year

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

ANNEX A: Test Layout

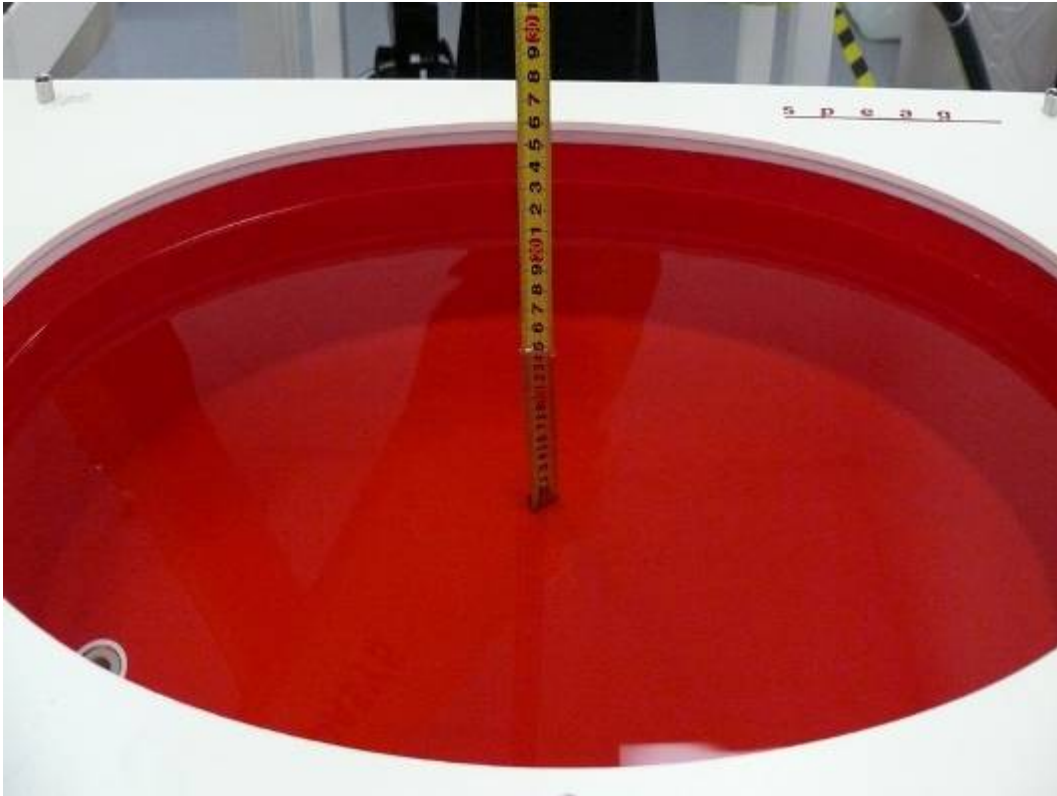


Picture 1: Specific Absorption Rate Test Layout

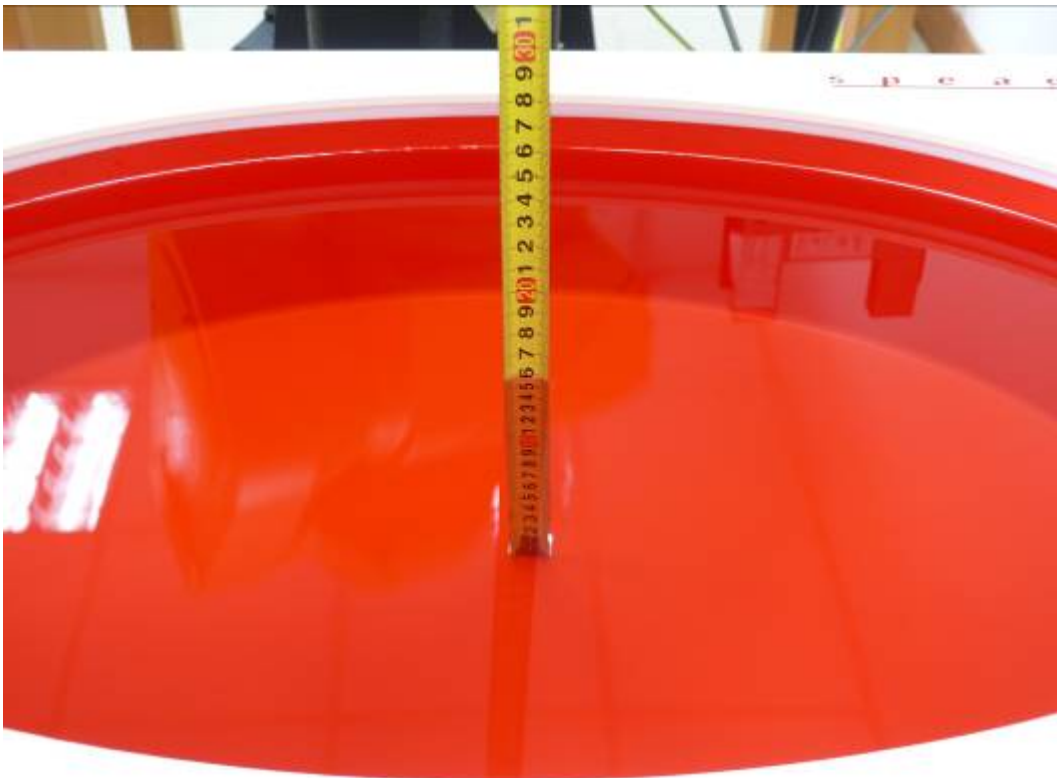
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Picture 2: Liquid depth in the flat Phantom (835MHz, 15.4cm depth)



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

ANNEX B: System Check Results

System Performance Check at 835 MHz Body TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Date/Time: 9/25/2011 11:04:20 PM

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.91$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

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

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

Phantom: 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) = 2.54 mW/g; SAR(10 g) = 1.64 mW/g

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

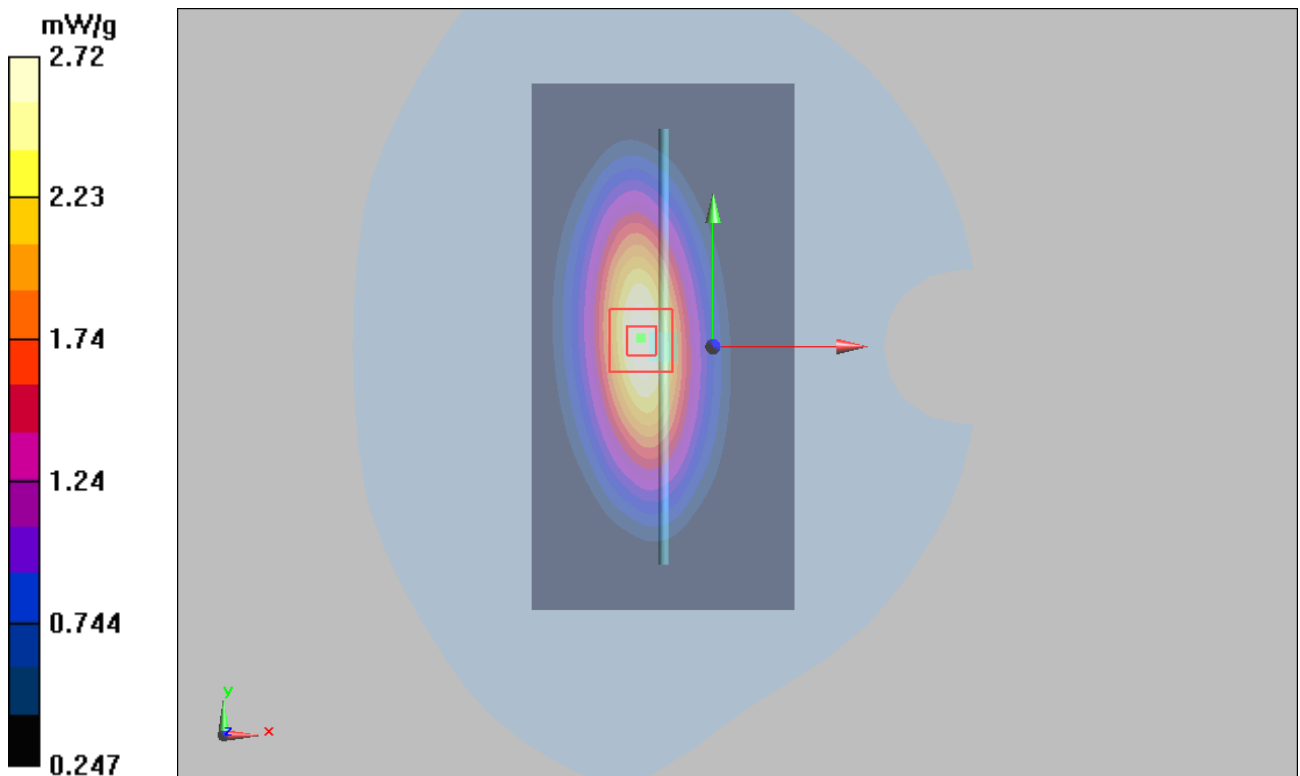


Figure 7 System Performance Check 835MHz 250mW

System Performance Check at 835 MHz Body TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Date/Time: 10/29/2011 12:40:20 PM

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

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.97 \text{ mho/m}$; $\epsilon_r = 54.81$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.3°C

Liquid Temperature: 21.8°C

DASY5 Configuration:

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

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

Phantom: 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 (101x121x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 2.93 mW/g

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

Reference Value = 55.7 V/m ; Power Drift = -0.017 dB

Peak SAR (extrapolated) = 3.59 W/kg

SAR(1 g) = 2.47 mW/g ; SAR(10 g) = 1.58 mW/g

Maximum value of SAR (measured) = 2.92 mW/g

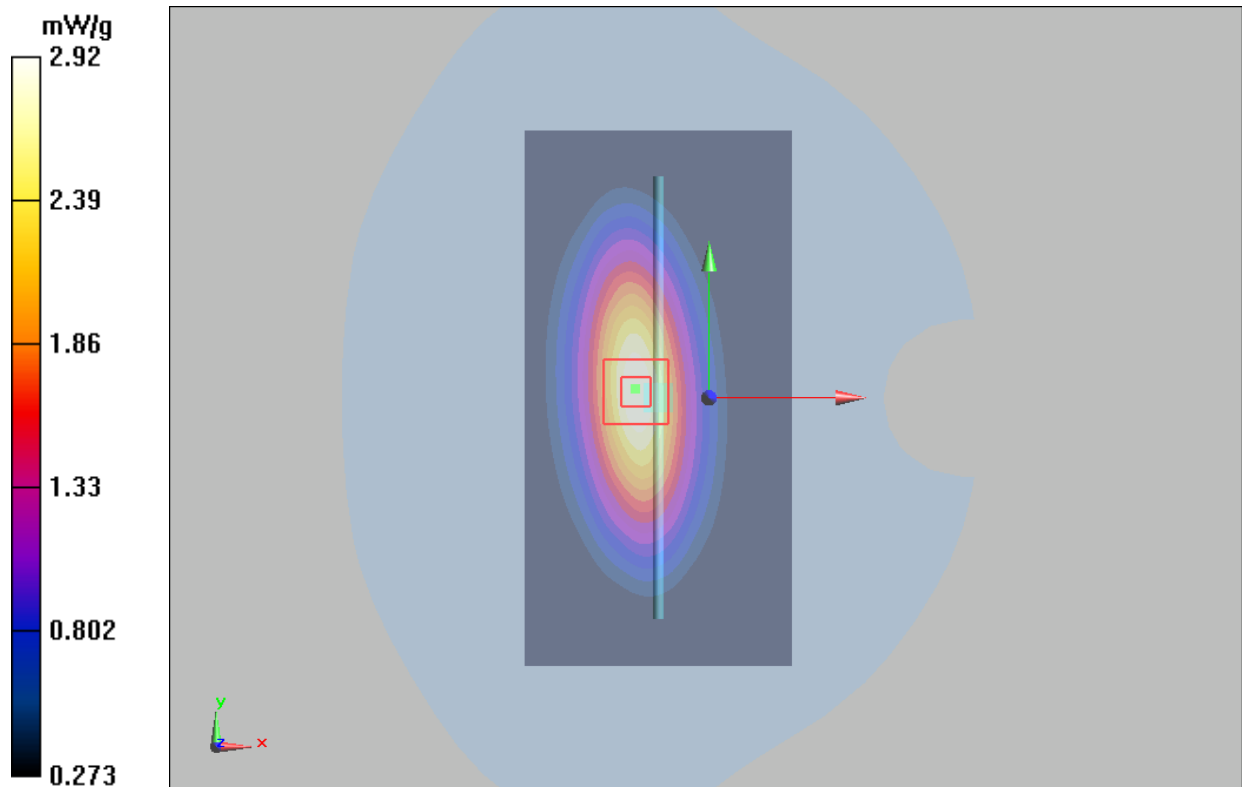


Figure 8 System Performance Check 835MHz 250mW

System Performance Check at 835 MHz Body TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Date/Time: 11/9/2011 3:01:49 PM

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

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1.00 \text{ mho/m}$; $\epsilon_r = 55.10$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.3°C

Liquid Temperature: 21.9°C

DASY5 Configuration:

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

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

Phantom: 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 (101x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.93 mW/g

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

Reference Value = 54.9 V/m ; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 3.62 W/kg

SAR(1 g) = 2.51 mW/g ; SAR(10 g) = 1.60 mW/g

Maximum value of SAR (measured) = 2.90 mW/g

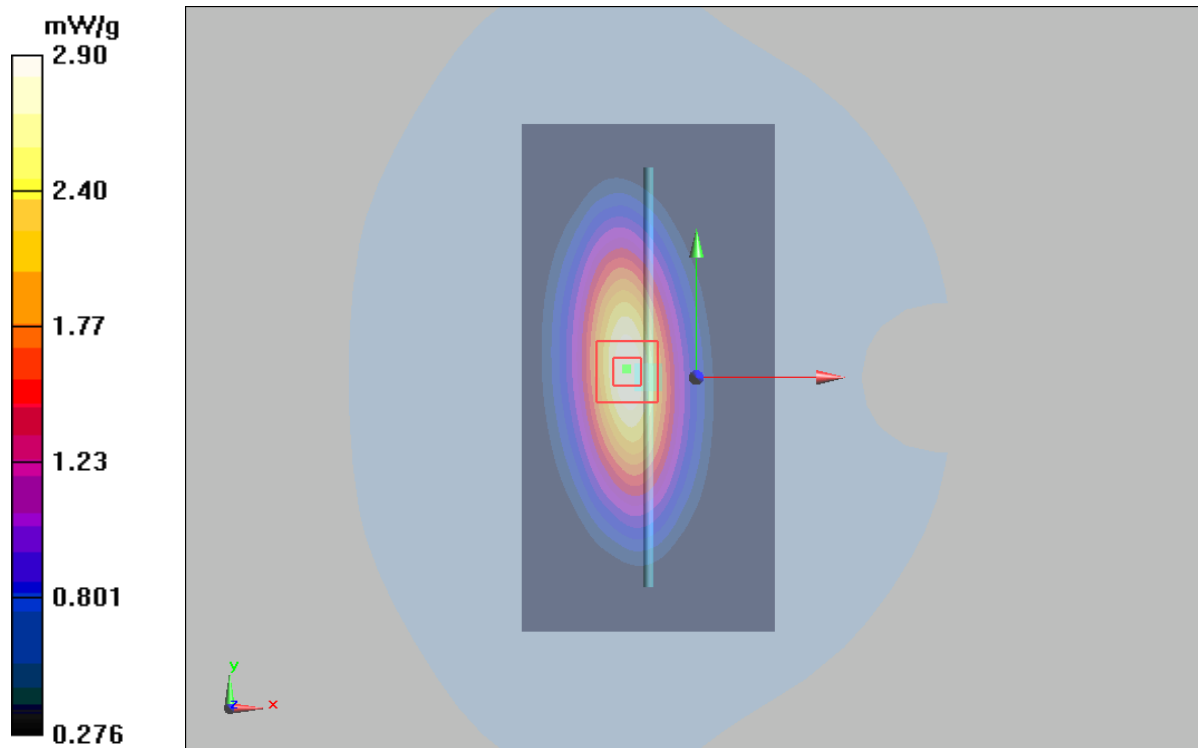


Figure 9 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Date/Time: 9/24/2011 11:50:19 AM

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 51.55$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

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

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

Phantom: 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) = 10.20 mW/g; SAR(10 g) = 5.36 mW/g

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

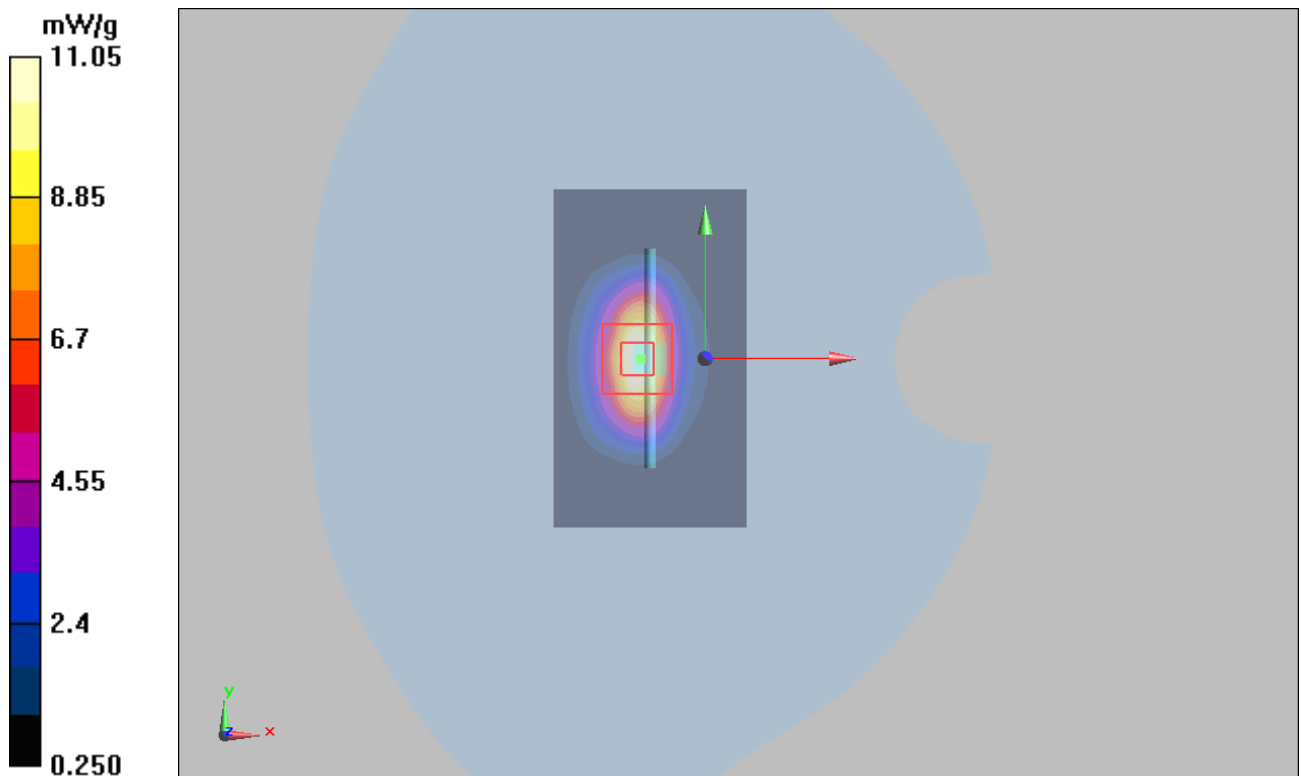


Figure 10 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Date/Time: 10/28/2011 4:20:19 AM

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.57$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

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

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

Phantom: 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) = 10.22 mW/g; SAR(10 g) = 5.40 mW/g

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

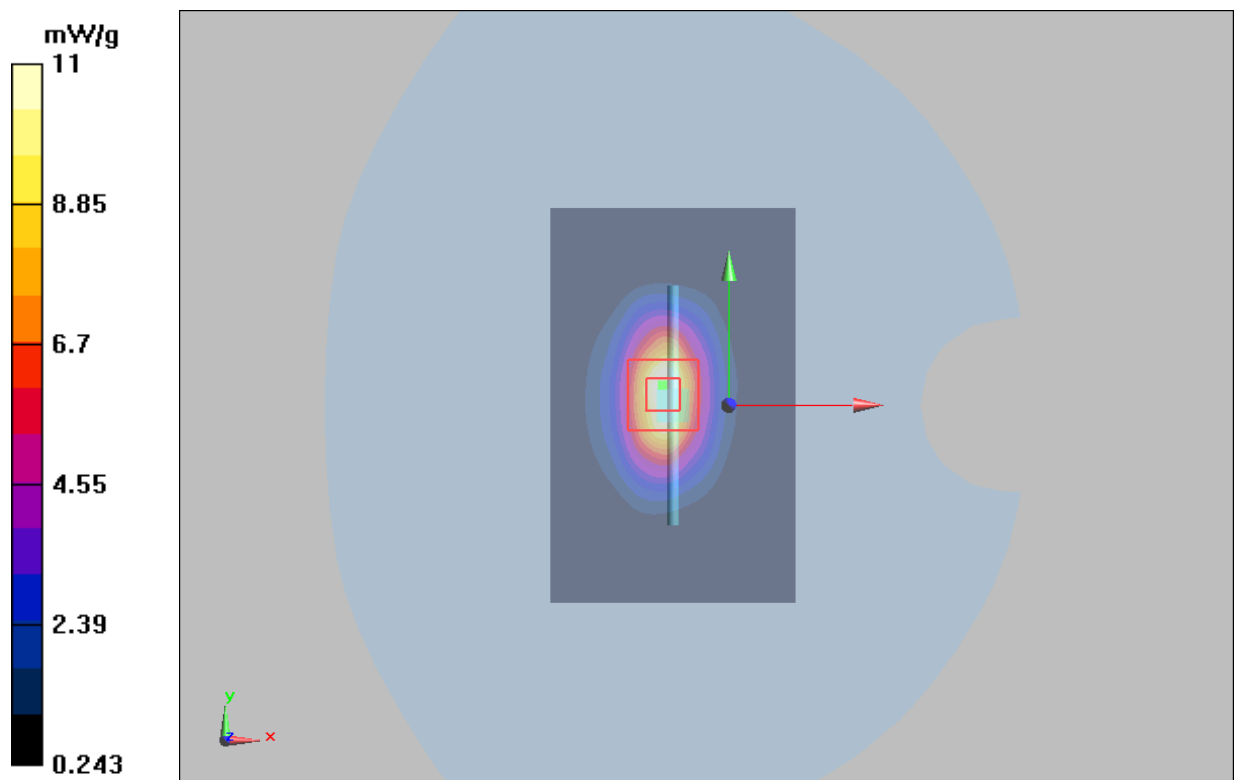


Figure 11 System Performance Check 1900MHz 250mW

System Performance Check at 1900 MHz Body TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Date/Time: 11/9/2011 4:25:19 PM

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.60$; $\rho = 1000$ kg/m³

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

DASY5 Configuration:

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

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

Phantom: 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 = 76.8 V/m; Power Drift = -0.032 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 10.31 mW/g; SAR(10 g) = 5.51 mW/g

Maximum value of SAR (measured) = 11.13 mW/g

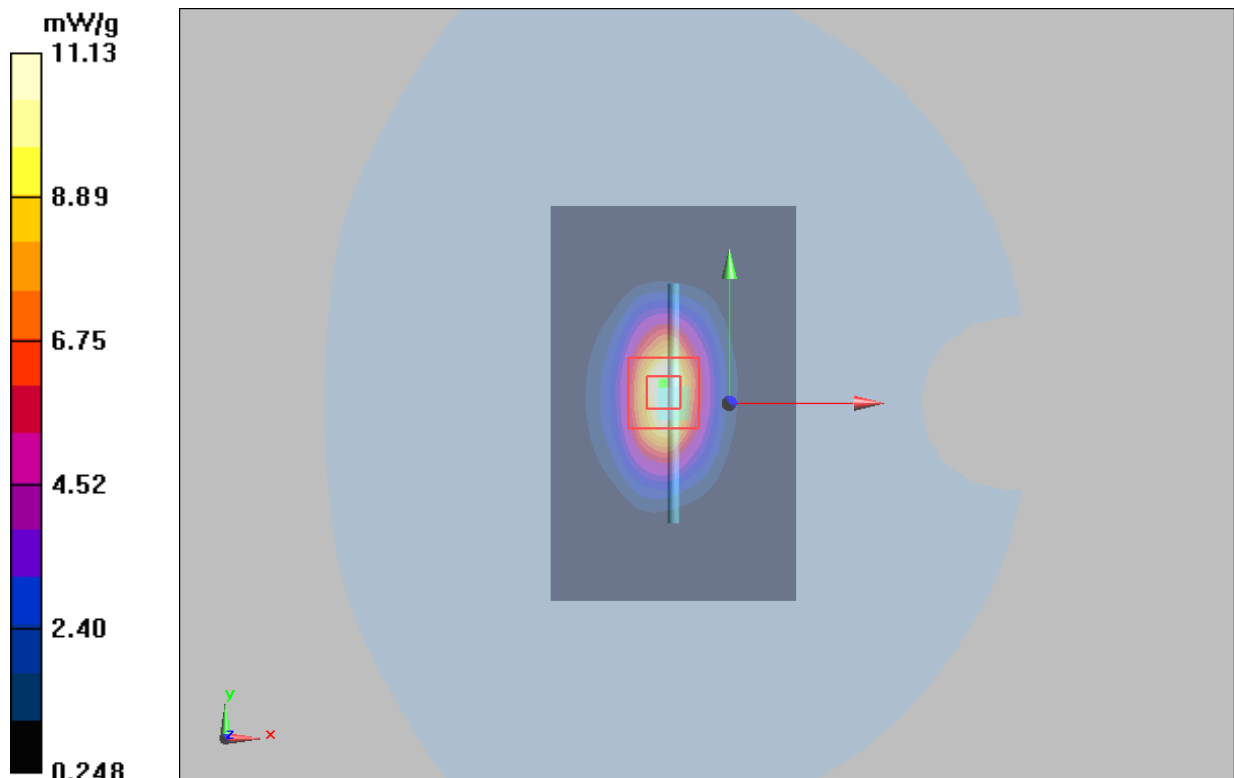


Figure 12 System Performance Check 1900MHz 250mW

ANNEX C: Graph Results

GSM 850 GPRS (1Txslot) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/26/2011 3:15:14 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.652 mW/g

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

Reference Value = 3.31 V/m; Power Drift = 0.061 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.645 mW/g; SAR(10 g) = 0.301 mW/g

Maximum value of SAR (measured) = 0.694 mW/g

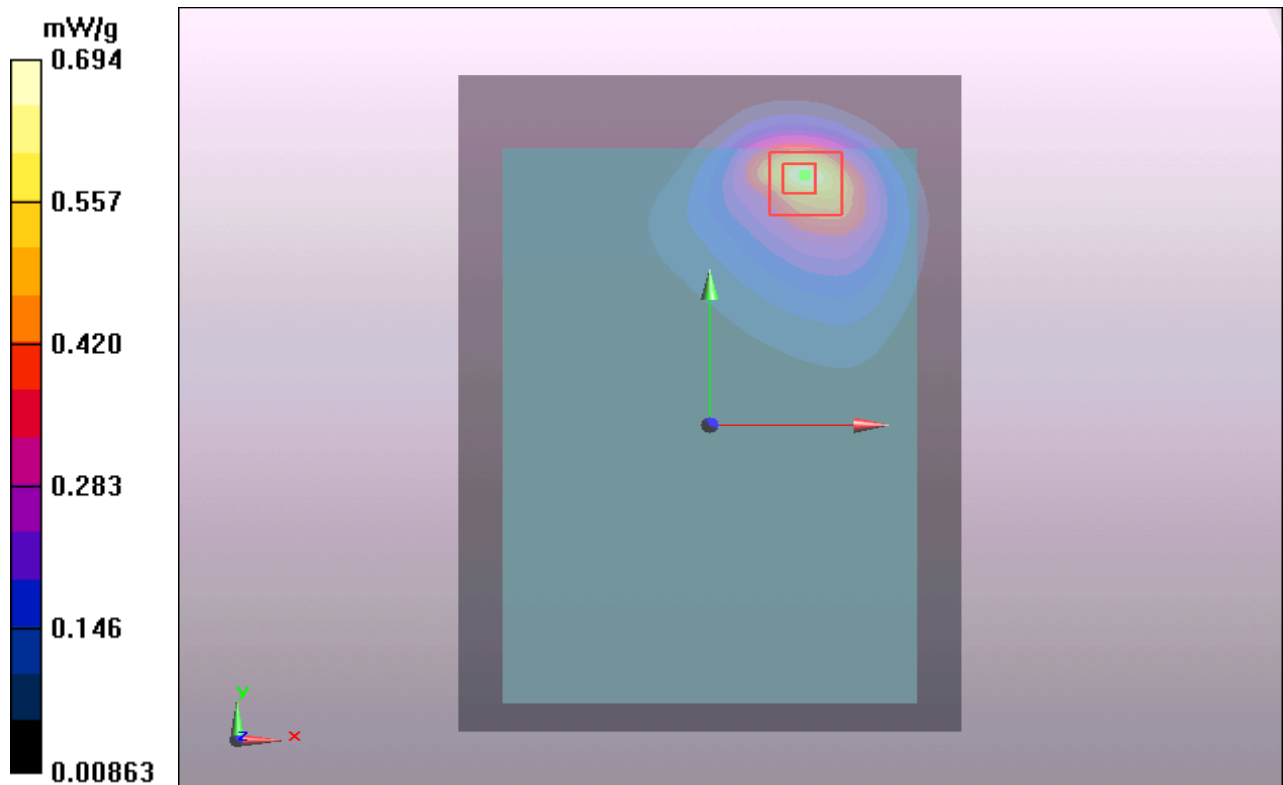


Figure 13 Body, Test Position 1, GSM 850 GPRS (1Txslot) Channel 190

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GSM 850 GPRS (2Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/26/2011 12:24:17 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.553 mW/g

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

Reference Value = 3.23 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 1.52 W/kg

SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.254 mW/g

Maximum value of SAR (measured) = 0.579 mW/g

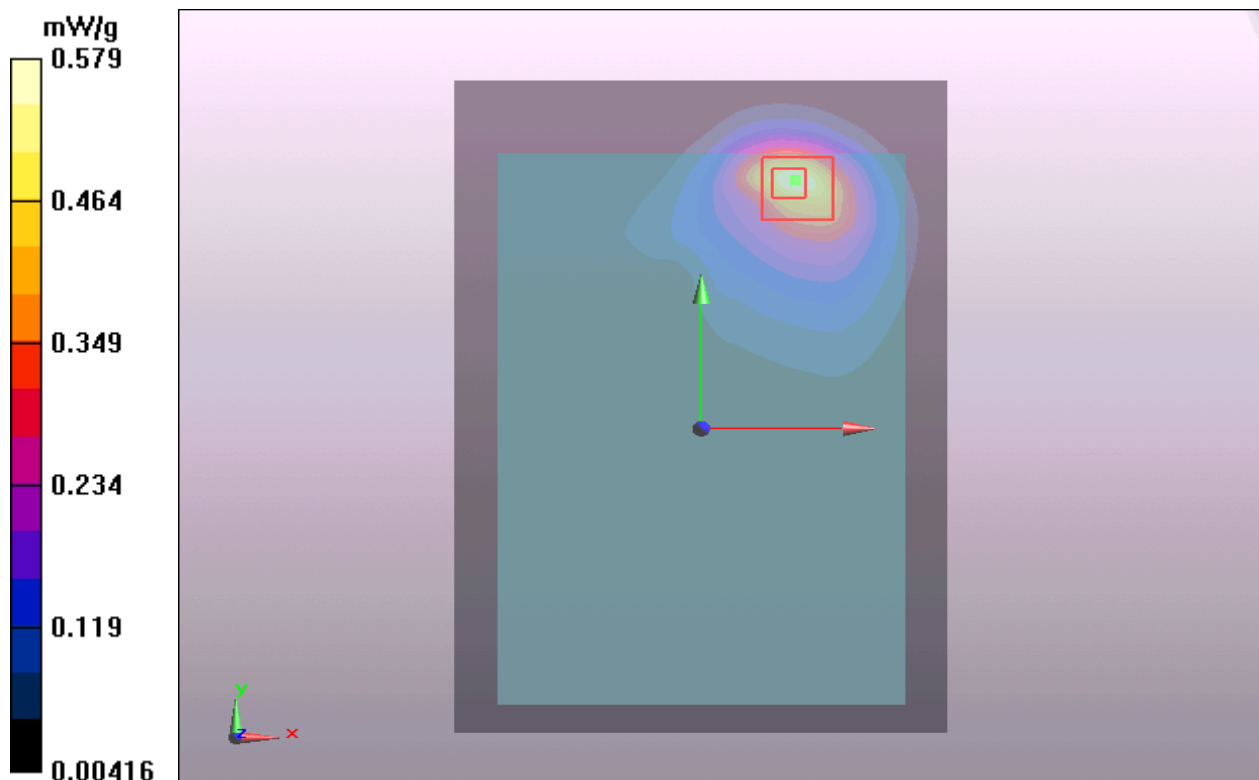


Figure 14 Body, Test Position 1, GSM 850 GPRS (2Txslots) Channel 190

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GSM 850 GPRS (3Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/26/2011 1:05:16 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.485 mW/g

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

Reference Value = 2.99 V/m; Power Drift = 0.058 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.471 mW/g; SAR(10 g) = 0.221 mW/g

Maximum value of SAR (measured) = 0.510 mW/g

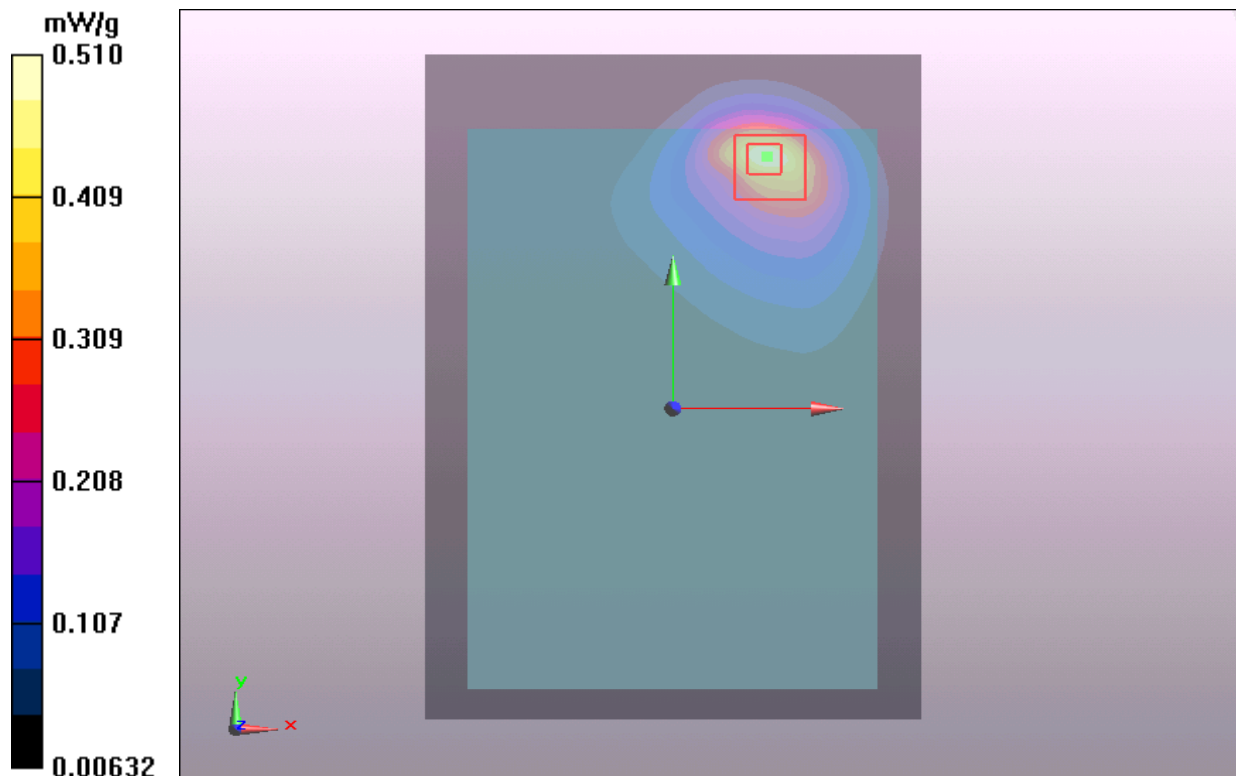


Figure 15 Body, Test Position 1, GSM 850 GPRS (3Txslots) Channel 190

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GSM 850 GPRS (4Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/26/2011 1:41:57 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.519 mW/g

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

Reference Value = 3.14 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.237 mW/g

Maximum value of SAR (measured) = 0.545 mW/g

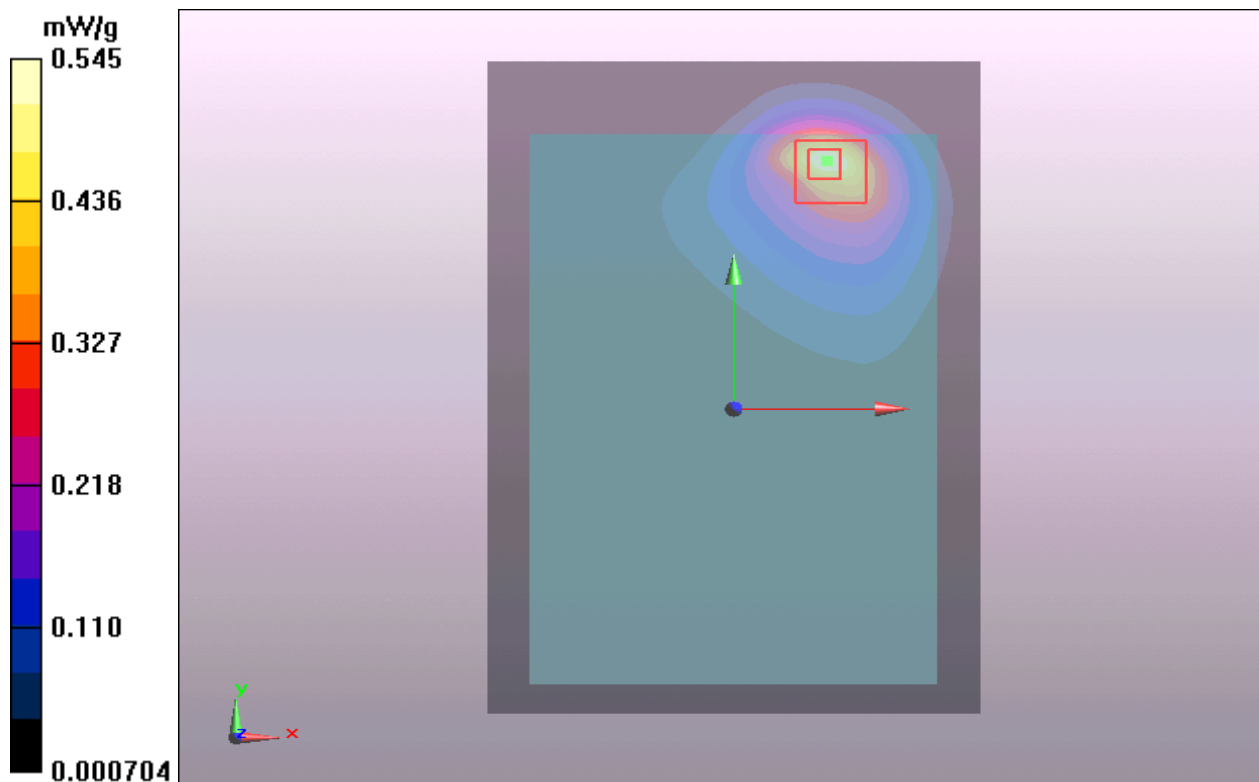


Figure 16 Body, Test Position 1, GSM 850 GPRS (4Txslots) Channel 190

GSM 850 GPRS (1Txslot) Test Position 2 High (Distance 0mm)

Date/Time: 9/26/2011 3:25:28 PM

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

Medium parameters used: $f = 849 \text{ MHz}$; $\sigma = 0.97 \text{ mho/m}$; $\epsilon_r = 54.7$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 High/Area Scan (41x111x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.759 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 16 V/m ; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 2.84 W/kg

SAR(1 g) = 0.698 mW/g ; SAR(10 g) = 0.330 mW/g

Maximum value of SAR (measured) = 0.964 mW/g

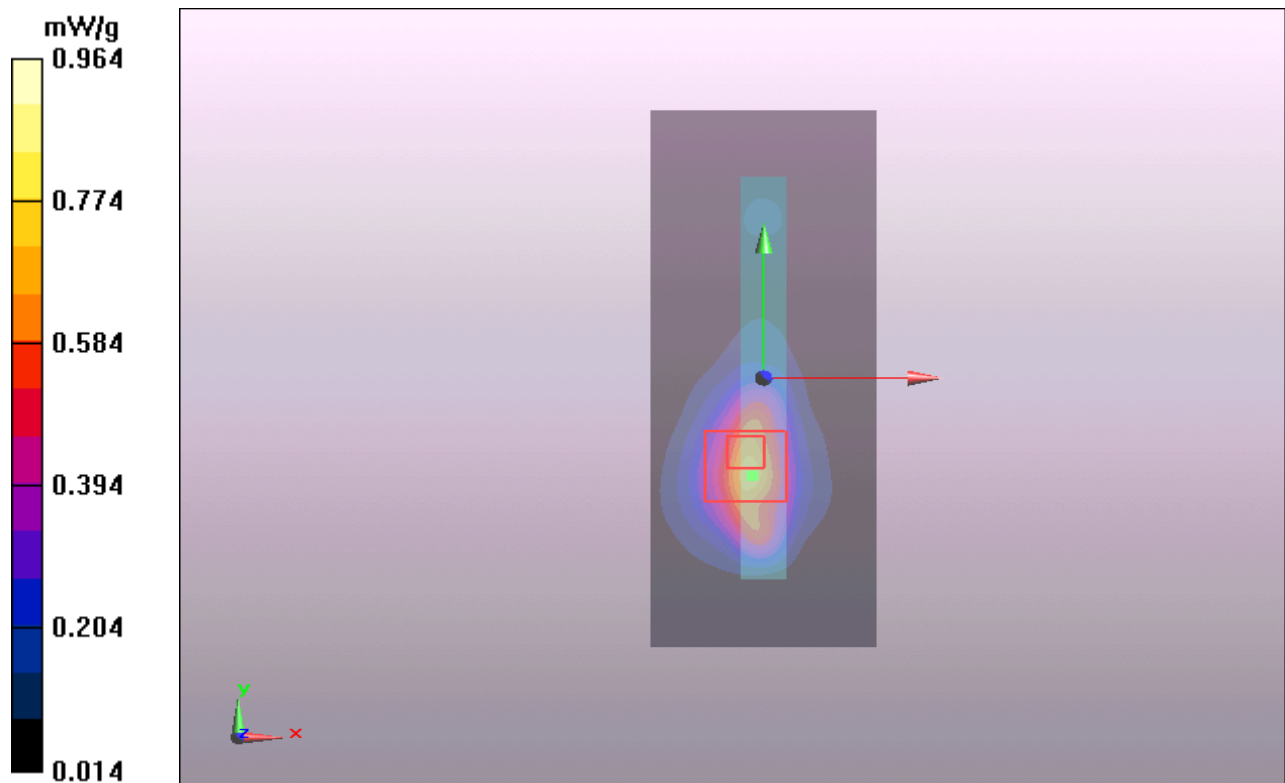


Figure 17 Body, Test Position 2, GSM 850 GPRS (1Txslot) Channel 251

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GSM 850 GPRS (1Txslot) Test Position 2 Middle (Distance 0mm)

Date/Time: 9/26/2011 3:02:36 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.876 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.1 V/m; Power Drift = 0.098 dB

Peak SAR (extrapolated) = 3.23 W/kg

SAR(1 g) = 0.813 mW/g; SAR(10 g) = 0.387 mW/g

Maximum value of SAR (measured) = 1.13 mW/g

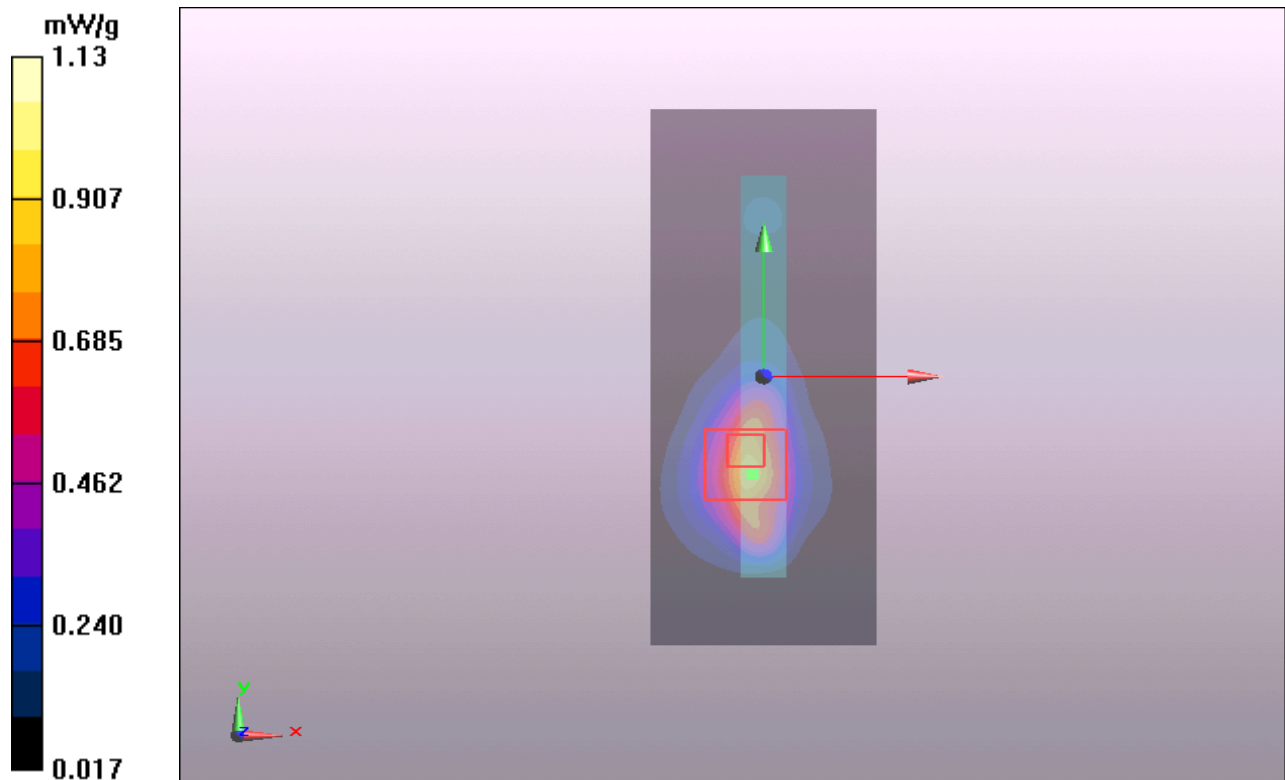


Figure 18 Body, Test Position 2, GSM 850 GPRS (1Txslot) Channel 190

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GSM 850 GPRS (1Txslot) Test Position 2 Low (Distance 0mm)

Date/Time: 9/26/2011 3:48:49 PM

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

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.946$ mho/m; $\epsilon_r = 55.1$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Low/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.966 mW/g

Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.9 V/m; Power Drift = 0.152 dB

Peak SAR (extrapolated) = 4.13 W/kg

SAR(1 g) = 0.878 mW/g; SAR(10 g) = 0.422 mW/g

Maximum value of SAR (measured) = 1.33 mW/g

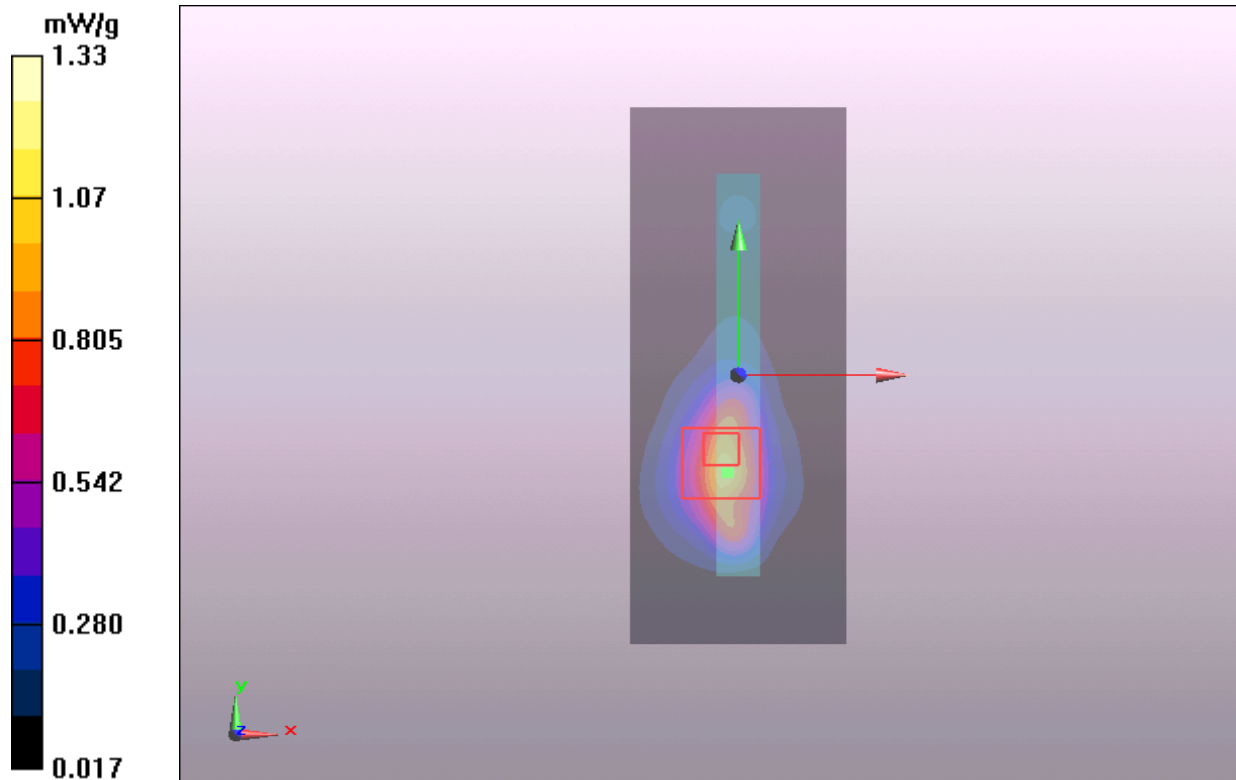


Figure 19 Body, Test Position 2, GSM 850 GPRS (1Txslot) Channel 128

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GSM 850 GPRS (1Txslot) Test Position 6 Middle (Distance 0mm)

Date/Time: 11/9/2011 5:44:25 PM

Communication System: GPRS 1TX; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042

Medium parameters used: $f = 837$ MHz; $\sigma = 1.00$ mho/m; $\epsilon_r = 55.42$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Middle/Area Scan (101x41x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.657 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.48 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 3.34 W/kg

SAR(1 g) = 0.746 mW/g; SAR(10 g) = 0.289 mW/g

Maximum value of SAR (measured) = 0.776 mW/g

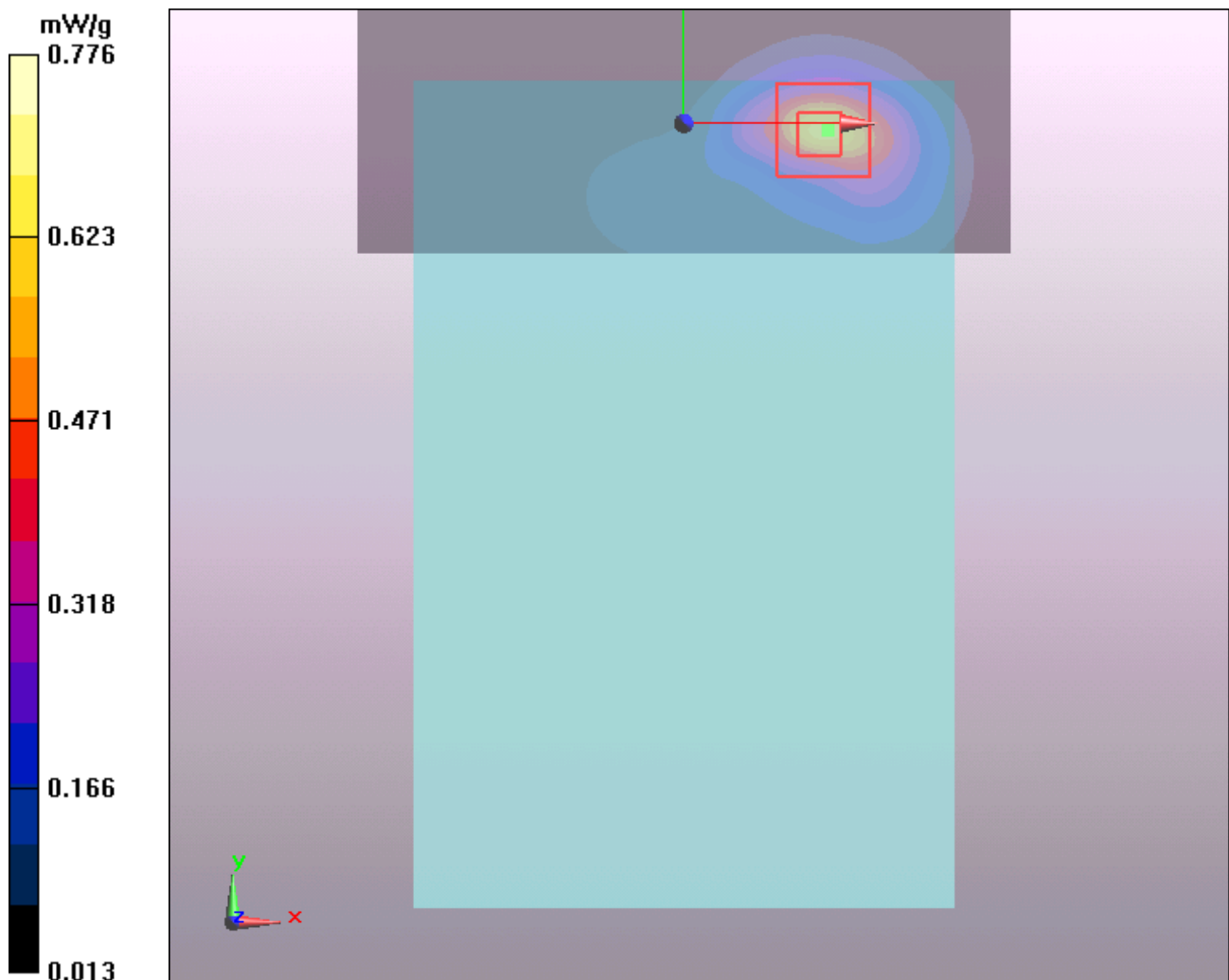


Figure 20 Body, Test Position 6, GSM 850 GPRS (1Txslot) Channel 190

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GSM 850 GPRS (1Txslot) Test Position 5 Middle (Distance 0mm)

Date/Time: 9/26/2011 3:31:10 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (41x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.427 mW/g

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

Reference Value = 11.5 V/m; Power Drift = 0.082 dB

Peak SAR (extrapolated) = 0.688 W/kg

SAR(1 g) = 0.362 mW/g; SAR(10 g) = 0.204 mW/g

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

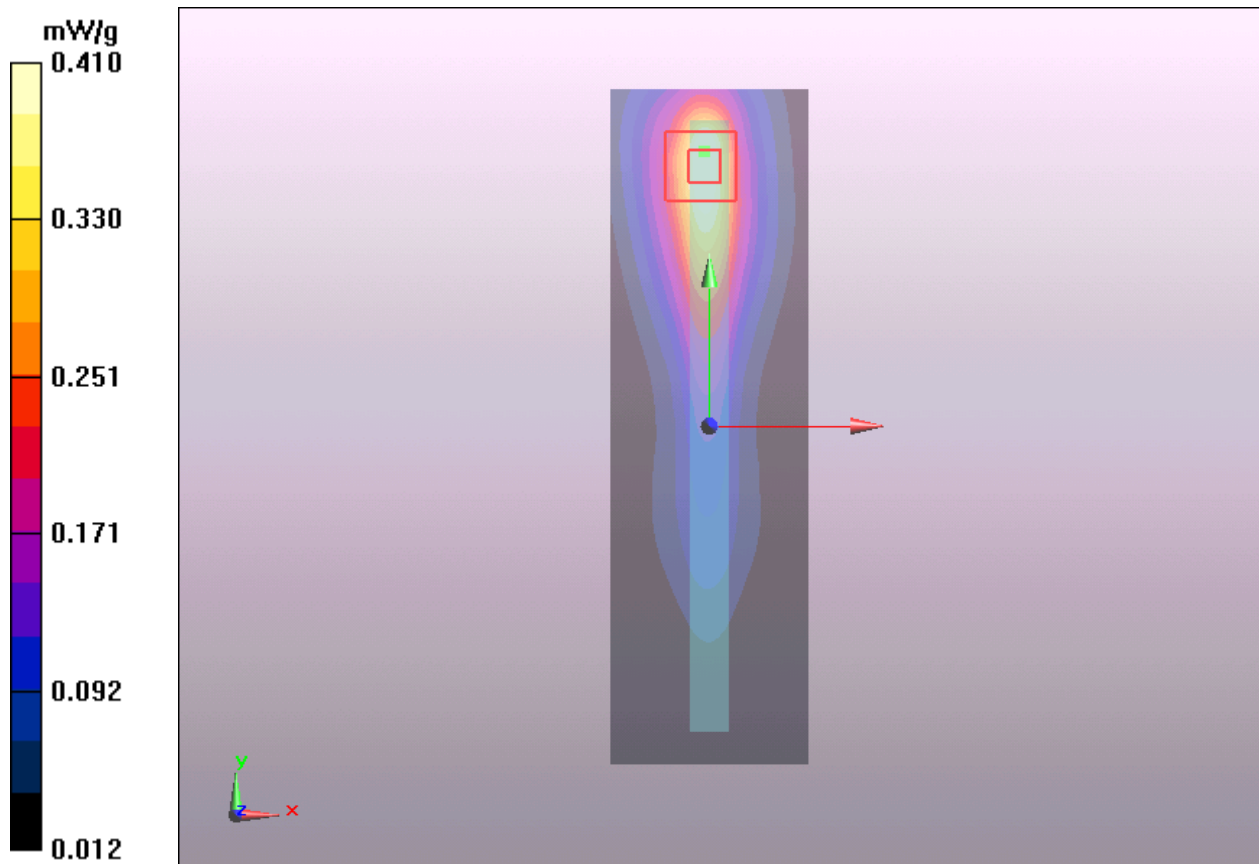


Figure 21 Body, Test Position 5, GSM 850 GPRS (1Txslot) Channel 190

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GSM 850 GPRS (1Txslot) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/29/2011 3:57:52 PM

Communication System: GPRS 1TX; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.6 V/m; Power Drift = 0.070 dB

Peak SAR (extrapolated) = 0.763 W/kg

SAR(1 g) = 0.472 mW/g; SAR(10 g) = 0.306 mW/g

Maximum value of SAR (measured) = 0.528 mW/g

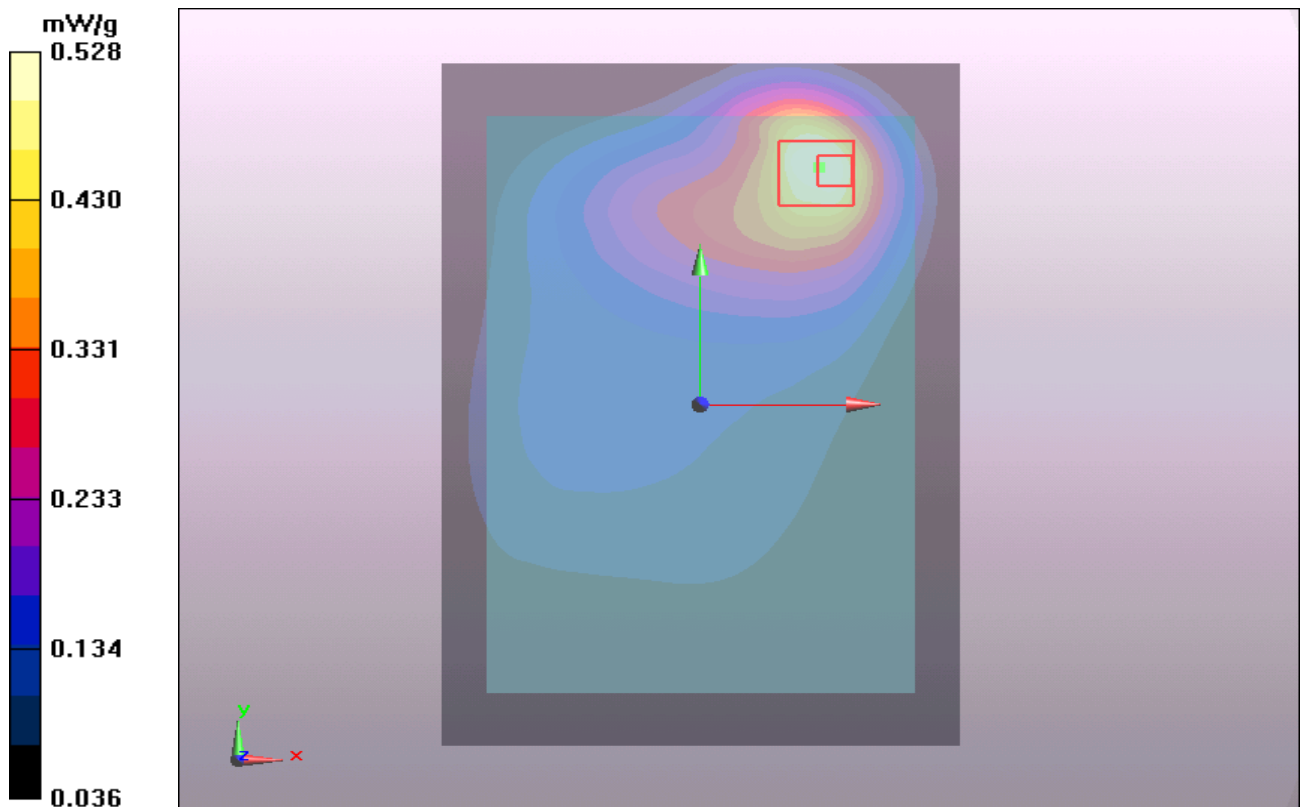


Figure 22 Body, Test Position 1, GSM 850 GPRS (1Txslot) Channel 190

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GSM 850 GPRS (2Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/29/2011 2:04:18 PM

Communication System: GPRS 2TX ; Frequency: 836.6 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.643 mW/g

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

Reference Value = 11.9 V/m; Power Drift = -0.185 dB

Peak SAR (extrapolated) = 0.884 W/kg

SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.373 mW/g

Maximum value of SAR (measured) = 0.632 mW/g

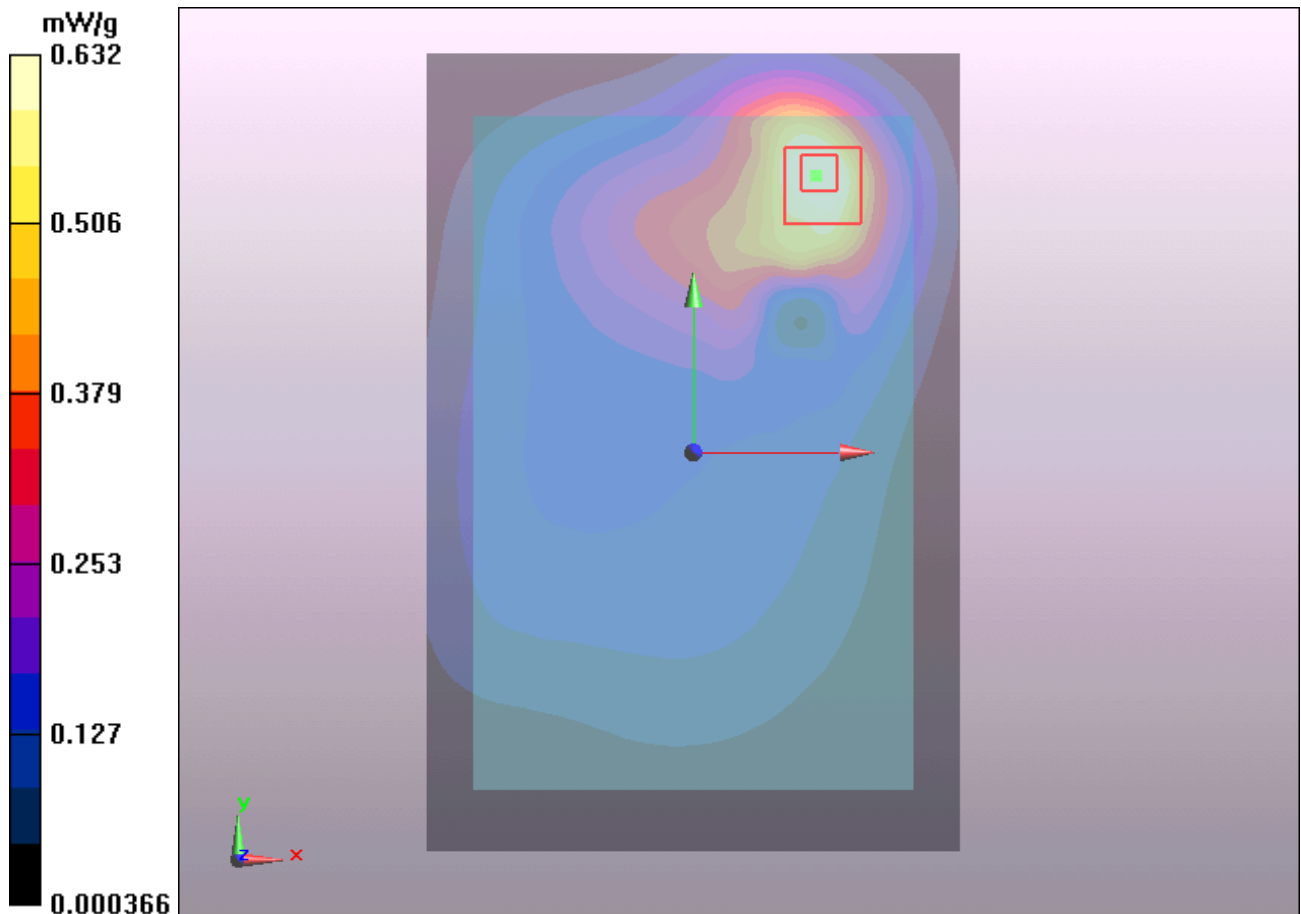


Figure 23 Body, Test Position 1, GSM 850 GPRS (2Txslots) Channel 190

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GSM 850 GPRS (3Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/29/2011 2:42:46 PM

Communication System: GPRS 3TX; Frequency: 836.6 MHz; Duty Cycle: 1:2.76694

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.856 mW/g

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

Reference Value = 13.6 V/m; Power Drift = -0.134 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.781 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.838 mW/g

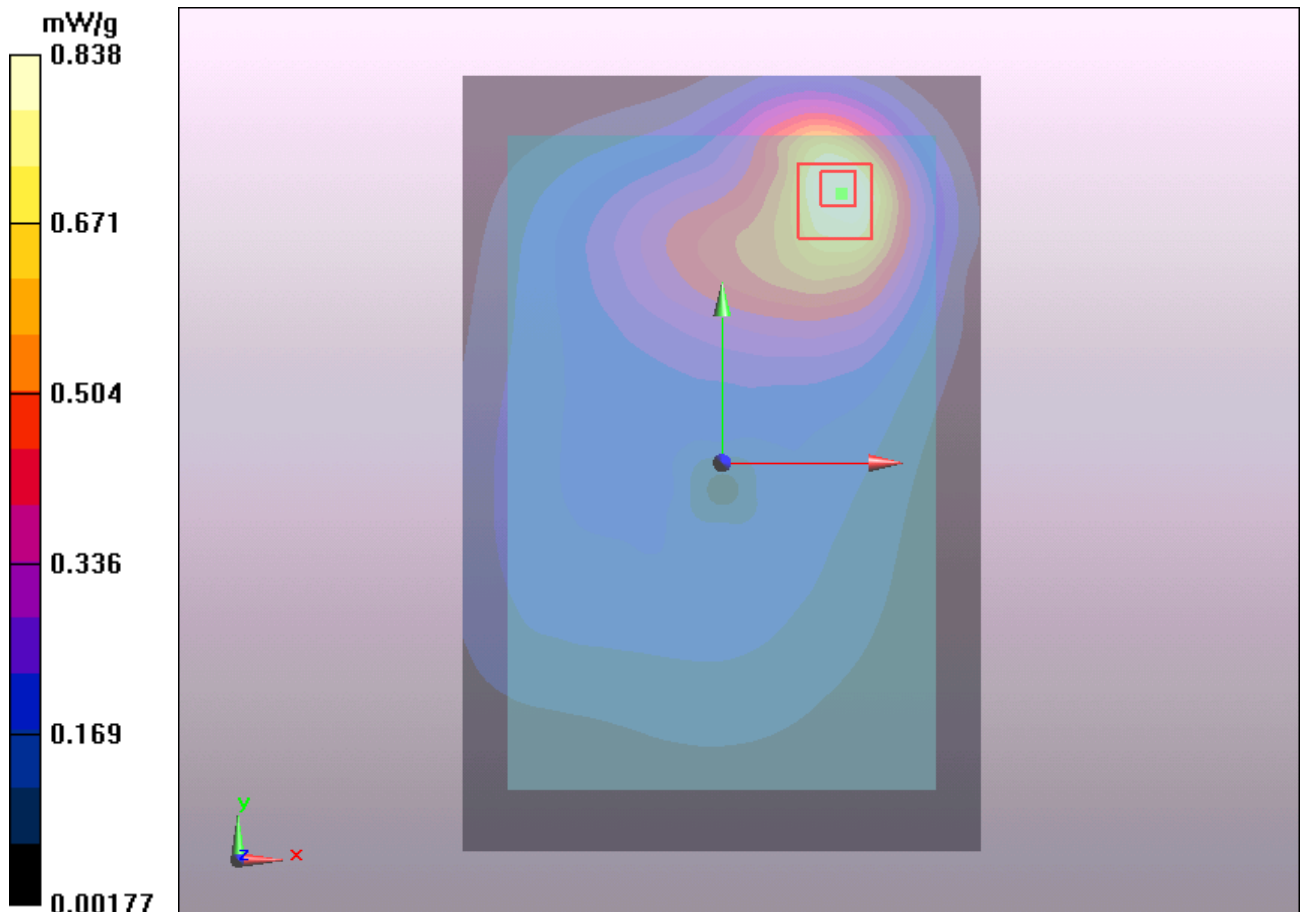


Figure 24 Body, Test Position 1, GSM 850 GPRS (3Txslots) Channel 190

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GSM 850 GPRS (4Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/29/2011 3:20:24 PM

Communication System: GPRS 4TX; Frequency: 836.6 MHz; Duty Cycle: 1:2.07491

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.616 mW/g

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

Reference Value = 11.6 V/m; Power Drift = -0.064 dB

Peak SAR (extrapolated) = 1 W/kg

SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.358 mW/g

Maximum value of SAR (measured) = 0.608 mW/g

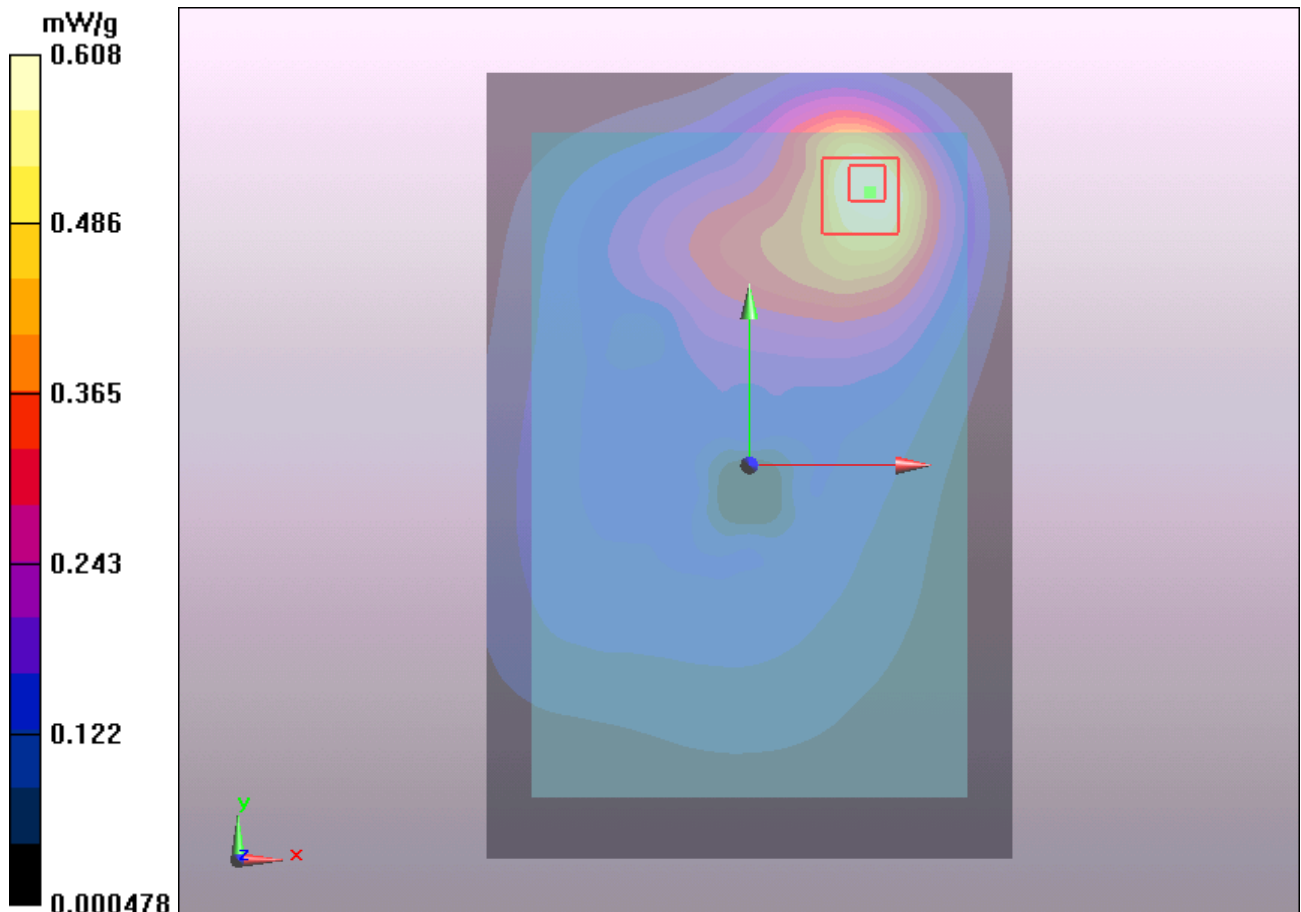


Figure 25 Body, Test Position 1, GSM 850 GPRS (4Txslots) Channel 190

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GSM 850 GPRS (3Txslots) Test Position 2 Middle (Distance 10mm)

Date/Time: 10/29/2011 5:19:59 PM

Communication System: GPRS 3TX; Frequency: 836.6 MHz; Duty Cycle: 1:2.76694

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.596 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.3 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 0.861 W/kg

SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.347 mW/g

Maximum value of SAR (measured) = 0.615 mW/g

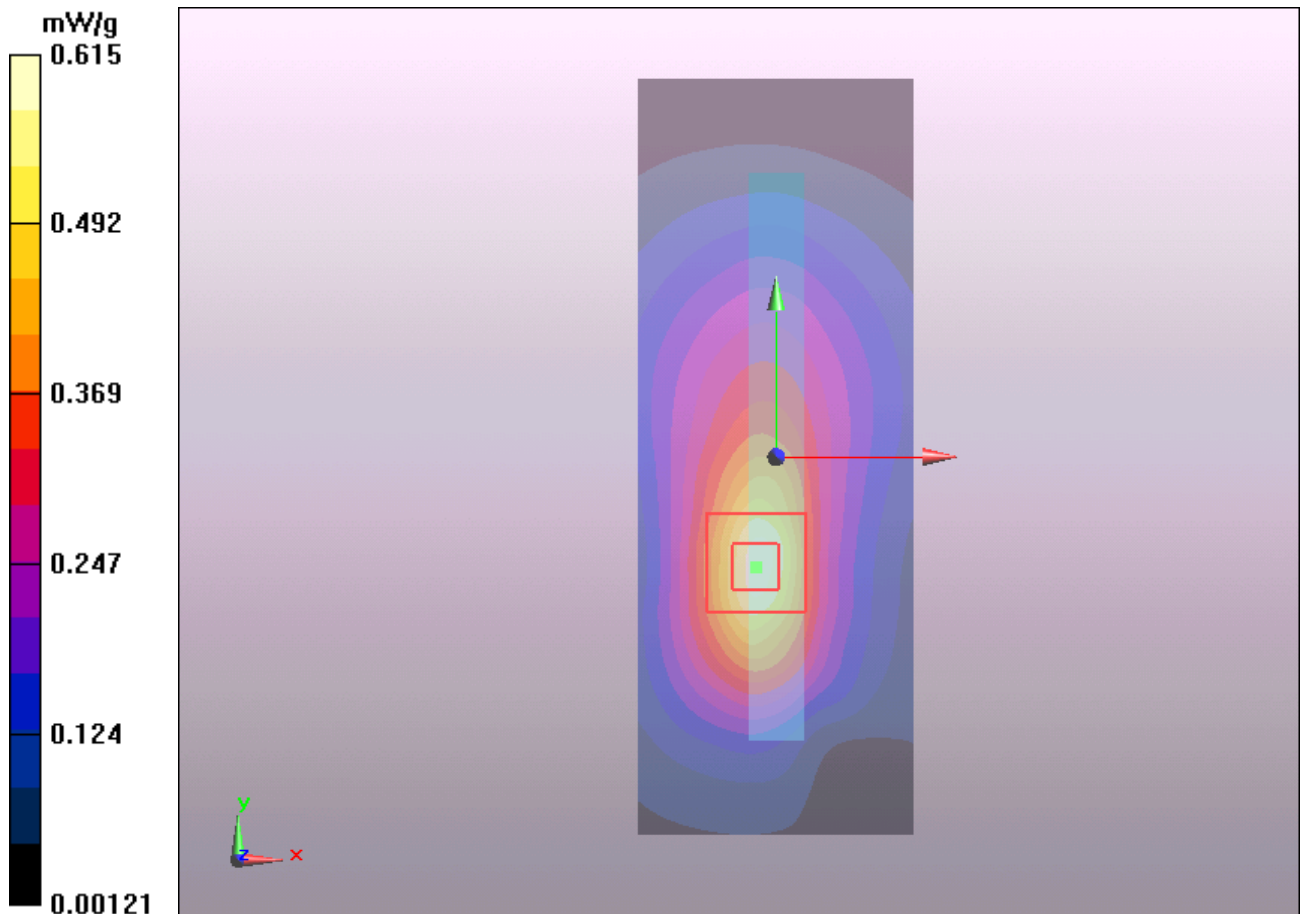


Figure 26 Body, Test Position 2, GSM 850 GPRS (3Txslots) Channel 190

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GSM 850 EGPRS (1Txslot) Test Position 2 Low (Distance 0mm)

Date/Time: 9/26/2011 4:13:49 PM

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

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.946$ mho/m; $\epsilon_r = 55.1$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Low/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.973 mW/g

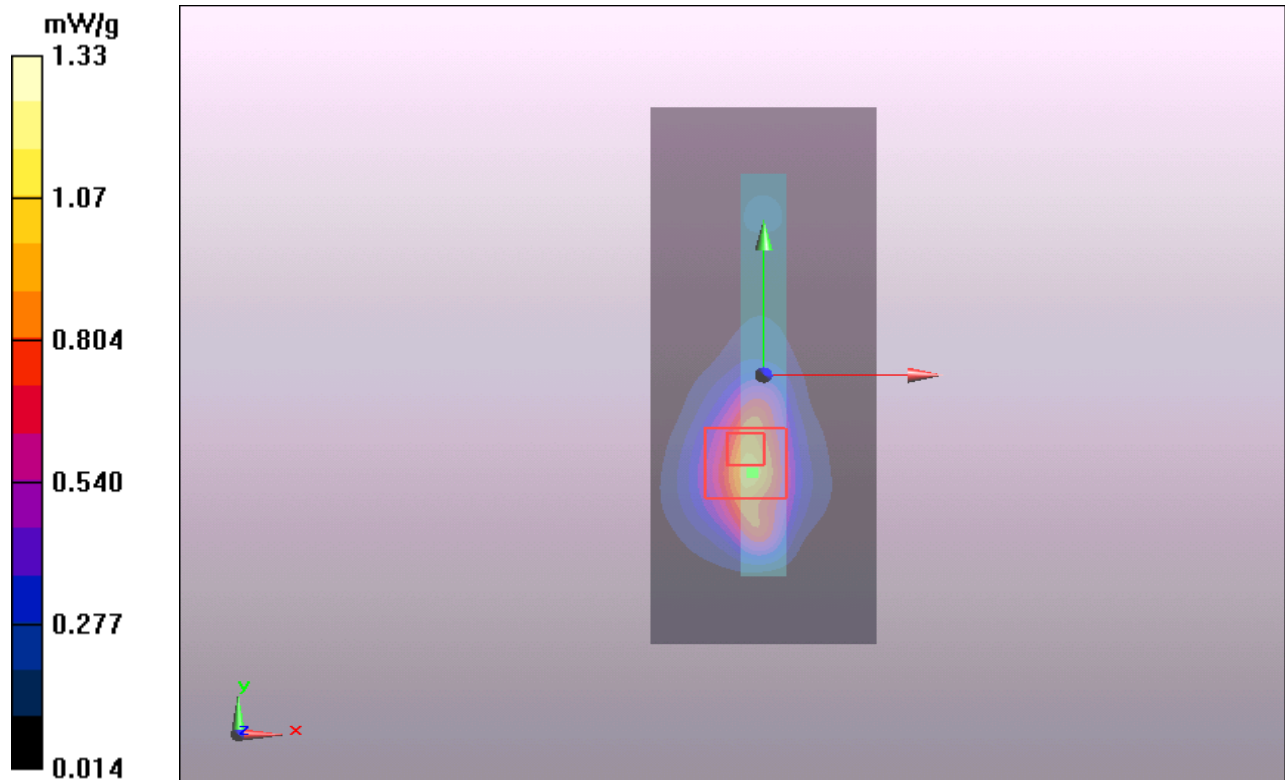
Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.1 V/m; Power Drift = 0.059 dB

Peak SAR (extrapolated) = 4.02 W/kg

SAR(1 g) = 0.881 mW/g; SAR(10 g) = 0.424 mW/g

Maximum value of SAR (measured) = 1.33 mW/g



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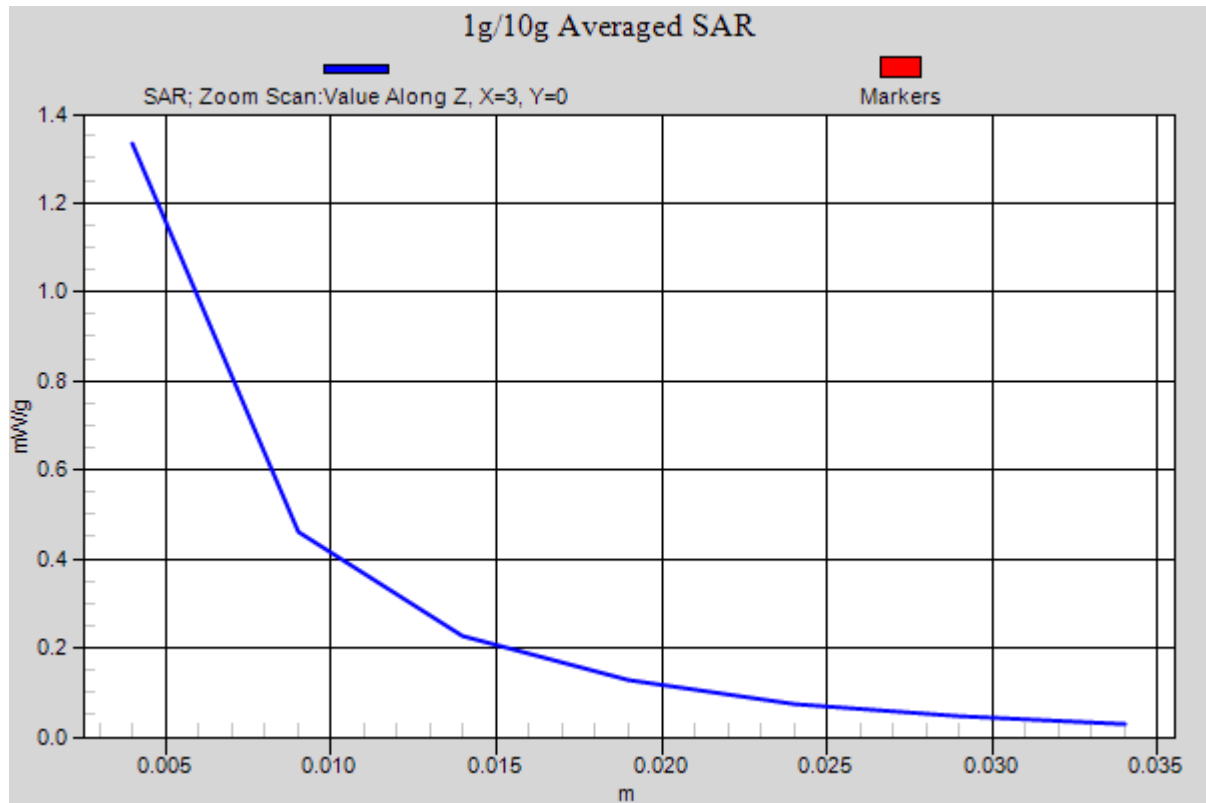


Figure 27 Body, Test Position 2, GSM 850 EGPRS (1Txslot) Channel 128

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GSM 1900 GPRS (1Txslot) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/24/2011 8:57:40 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.843 mW/g

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

Reference Value = 1 V/m; Power Drift = 0.121 dB

Peak SAR (extrapolated) = 1.6 W/kg

SAR(1 g) = 0.757 mW/g; SAR(10 g) = 0.343 mW/g

Maximum value of SAR (measured) = 0.886 mW/g

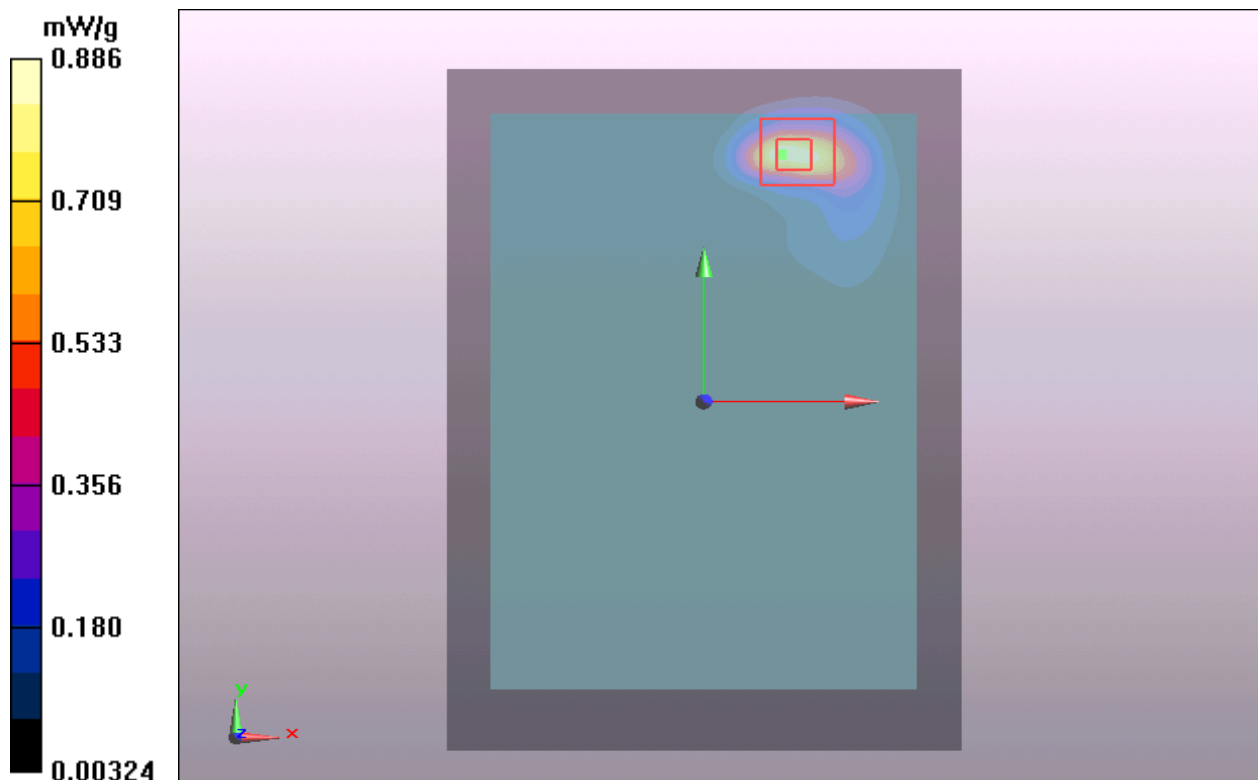


Figure 28 Body, Test Position 1, GSM 1900 GPRS (1Txslot) Channel 661

GSM 1900 GPRS (2Txslots) Test Position 1 High (Distance 0mm)

Date/Time: 9/24/2011 9:15:45 PM

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

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.03 mW/g

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

Reference Value = 1.19 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 1.78 W/kg

SAR(1 g) = 0.873 mW/g; SAR(10 g) = 0.389 mW/g

Maximum value of SAR (measured) = 1.08 mW/g

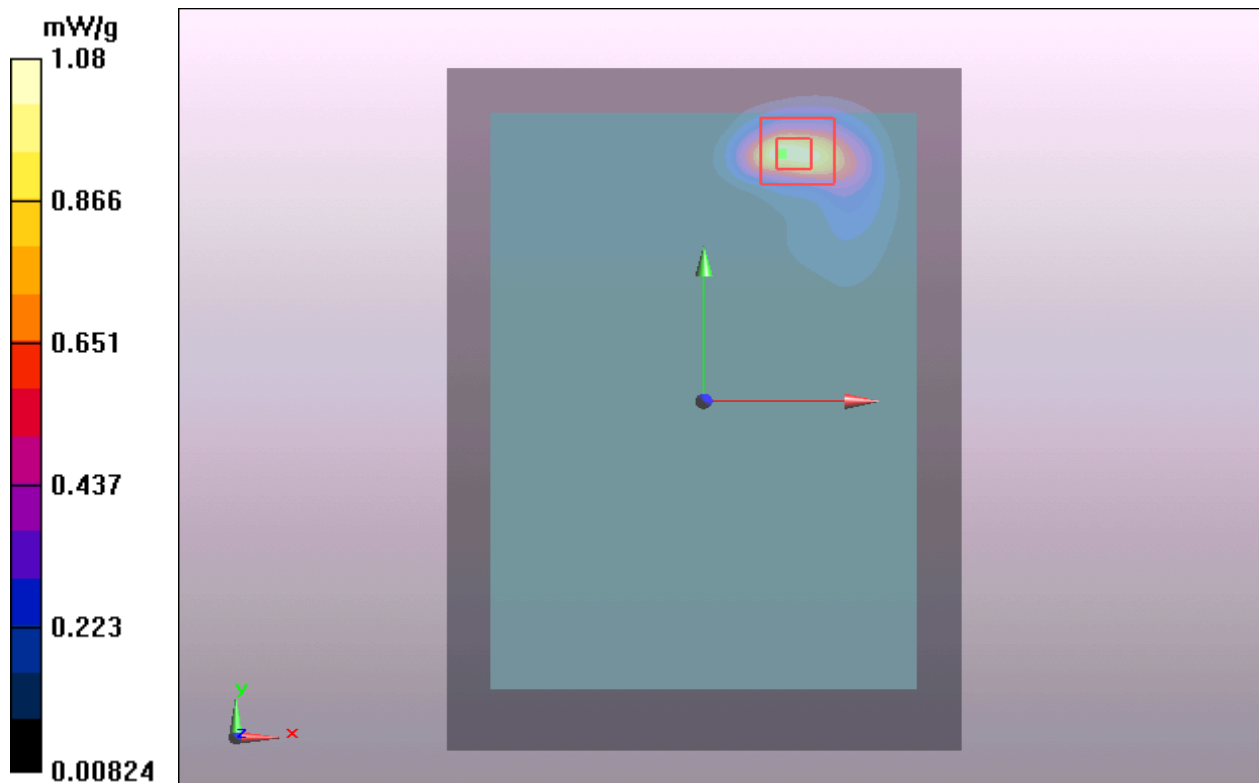


Figure 29 Body, Test Position 1, GSM 1900 GPRS (2Txslots) Channel 810

GSM 1900 GPRS (2Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/24/2011 10:49:30 PM

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

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.906 mW/g

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

Reference Value = 1.39 V/m ; Power Drift = 0.141 dB

Peak SAR (extrapolated) = 1.7 W/kg

SAR(1 g) = 0.792 mW/g ; SAR(10 g) = 0.354 mW/g

Maximum value of SAR (measured) = 0.944 mW/g

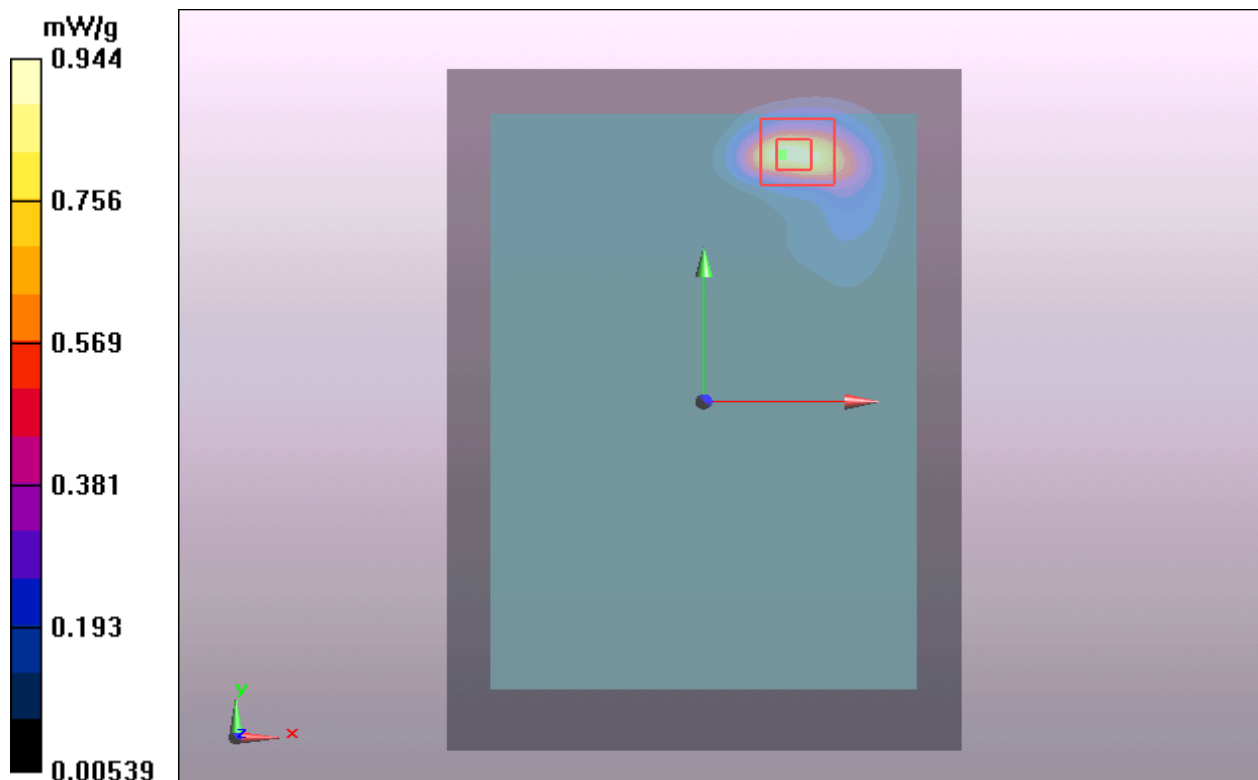


Figure 30 Body, Test Position 1, GSM 1900 GPRS (2Txslots) Channel 661

GSM 1900 GPRS (2Txslots) Test Position 1 Low (Distance 0mm)

Date/Time: 9/24/2011 10:28:38 PM

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

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.867 mW/g

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

Reference Value = 1.3 V/m; Power Drift = 0.048 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.725 mW/g; SAR(10 g) = 0.332 mW/g

Maximum value of SAR (measured) = 0.900 mW/g

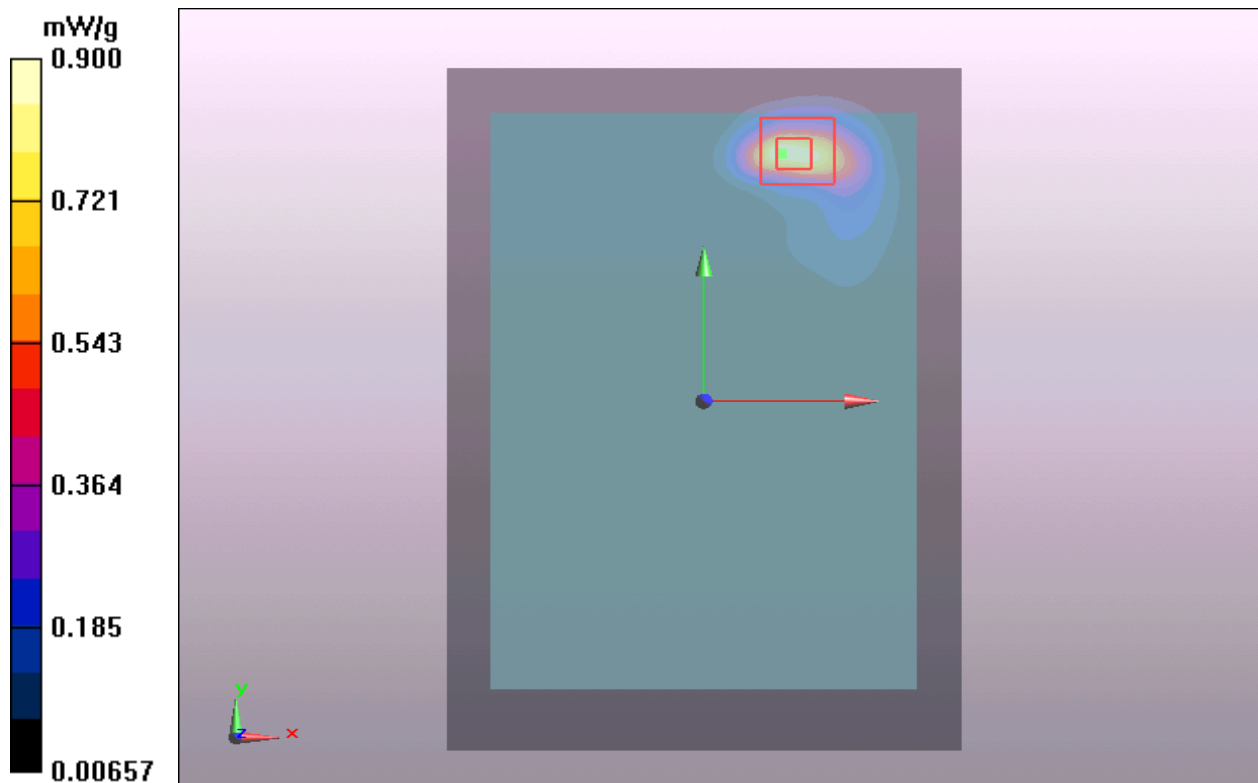


Figure 31 Body, Test Position 1, GSM 1900 GPRS (2Txslots) Channel 512

GSM 1900 GPRS (3Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/24/2011 10:11:57 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.857 mW/g

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

Reference Value = 1.48 V/m; Power Drift = 0.075 dB

Peak SAR (extrapolated) = 1.6 W/kg

SAR(1 g) = 0.756 mW/g; SAR(10 g) = 0.341 mW/g

Maximum value of SAR (measured) = 0.885 mW/g

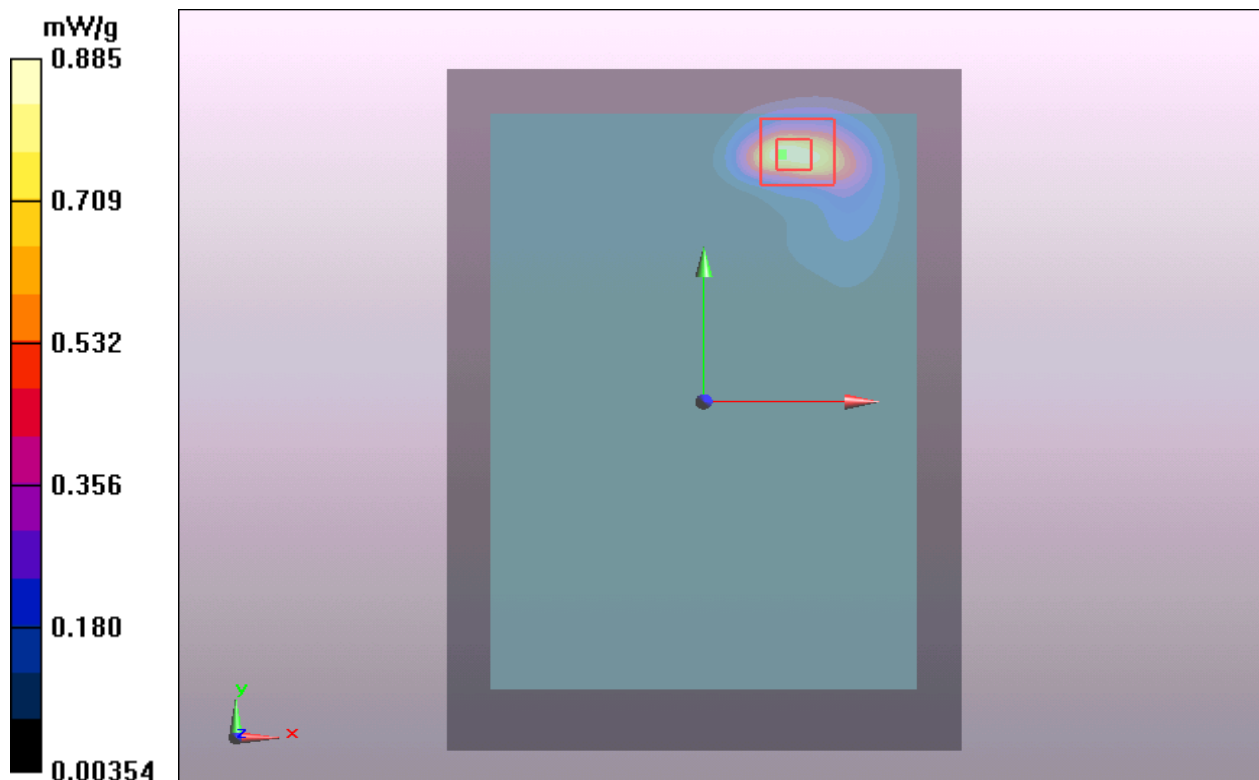


Figure 32 Body, Test Position 1, GSM 1900 GPRS (3Txslots) Channel 661

GSM 1900 GPRS (4Txslots) Test Position 1 Middle (Distance 0mm)

Date/Time: 9/24/2011 9:35:02 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.863 mW/g

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

Reference Value = 1.52 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 1.68 W/kg

SAR(1 g) = 0.778 mW/g; SAR(10 g) = 0.351 mW/g

Maximum value of SAR (measured) = 0.913 mW/g

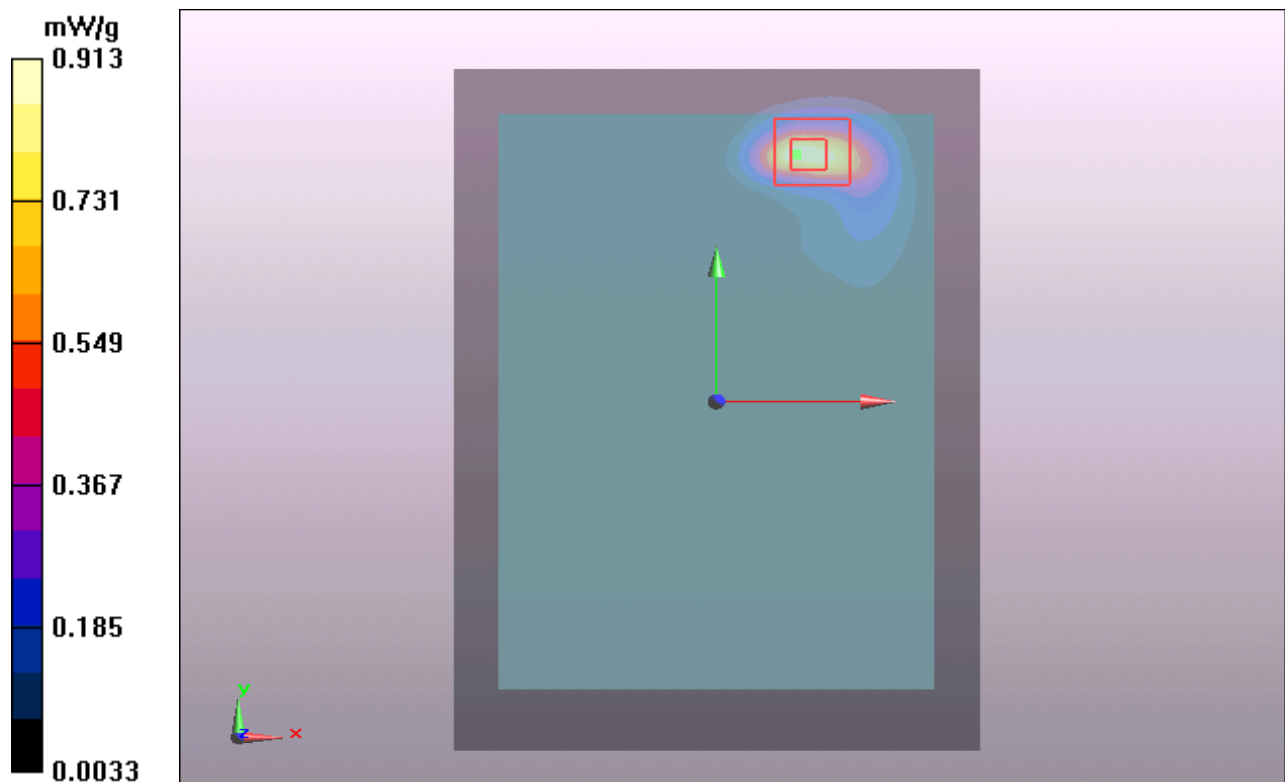


Figure 33 Body, Test Position 1, GSM 1900 GPRS (4Txslots) Channel 661

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GSM 1900 GPRS (2Txslots) Test Position 2 Middle (Distance 0mm)

Date/Time: 9/24/2011 1:15:56 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.837 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.74 V/m; Power Drift = 0.029 dB

Peak SAR (extrapolated) = 1.2 W/kg

SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.289 mW/g

Maximum value of SAR (measured) = 0.706 mW/g

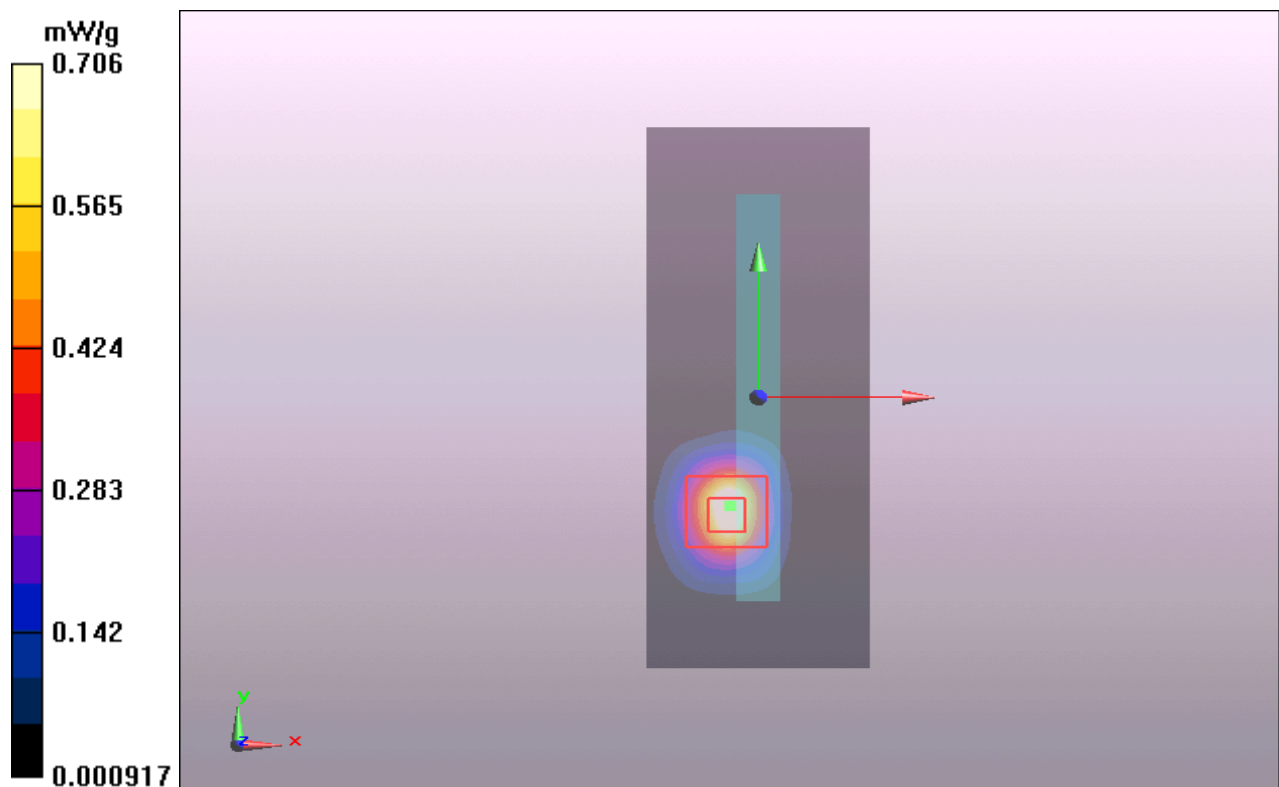


Figure 34 Body, Test Position 2, GSM 1900 GPRS (2Txslots) Channel 661

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GSM 1900 GPRS (2Txslots) Test Position 6 High (Distance 0mm)

Date/Time: 11/10/2011 9:41:22 AM

Communication System: GPRS 2TX ; Frequency: 1909.8 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.56$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 High/Area Scan (101x31x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.62 mW/g

Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.19 V/m; Power Drift = -0.087 dB

Peak SAR (extrapolated) = 2.9 W/kg

SAR(1 g) = 1.33 mW/g; SAR(10 g) = 0.568 mW/g

Maximum value of SAR (measured) = 1.57 mW/g

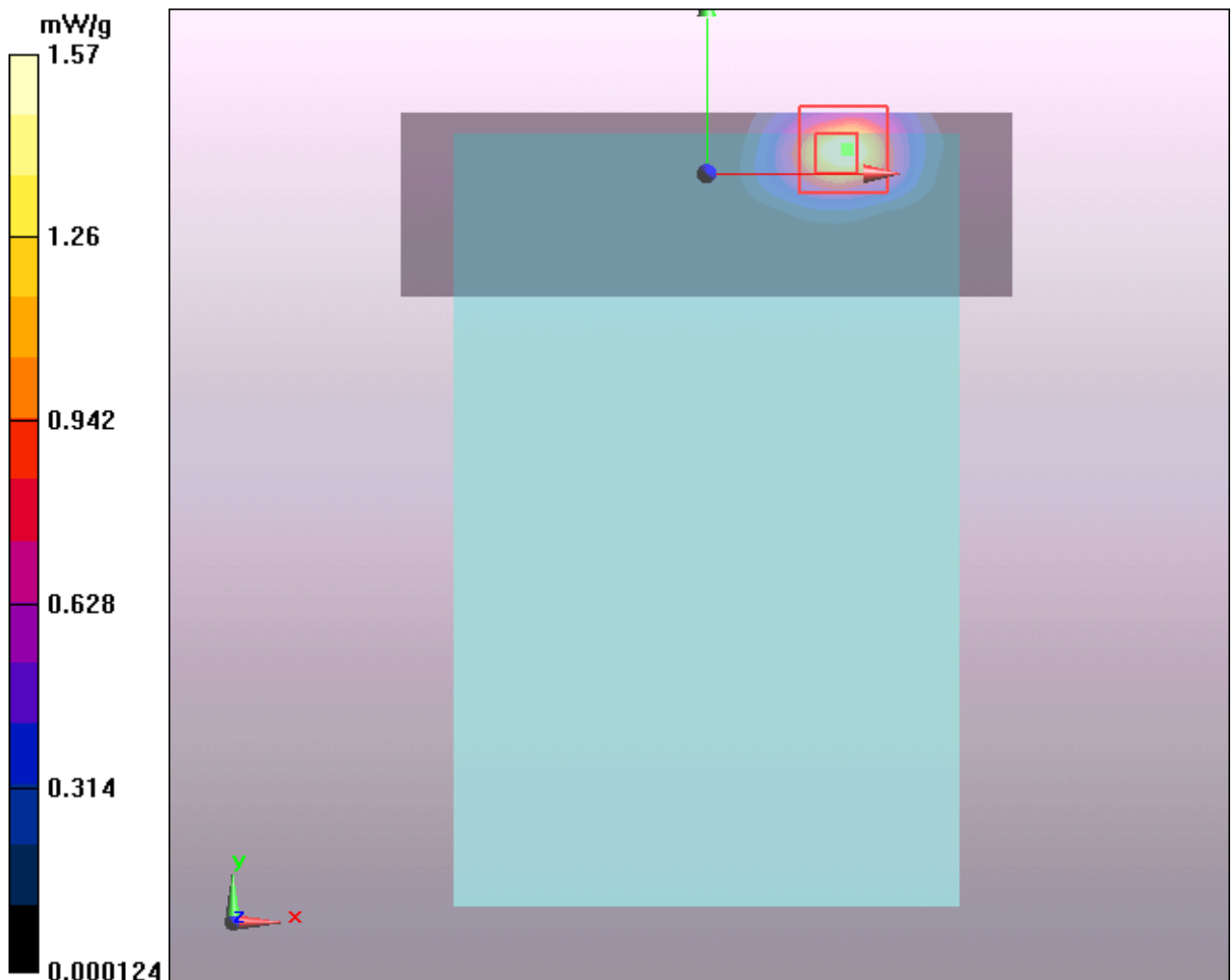


Figure 35 Body, Test Position 6, GSM 1900 GPRS (2Txslots) Channel 810

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GSM 1900 GPRS (2Txslots) Test Position 6 Middle (Distance 0mm)

Date/Time: 11/10/2011 9:19:54 AM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 51.75$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Middle/Area Scan (101x31x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.53 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.23 V/m; Power Drift = 0.048 dB

Peak SAR (extrapolated) = 2.83 W/kg

SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.554 mW/g

Maximum value of SAR (measured) = 1.5 mW/g

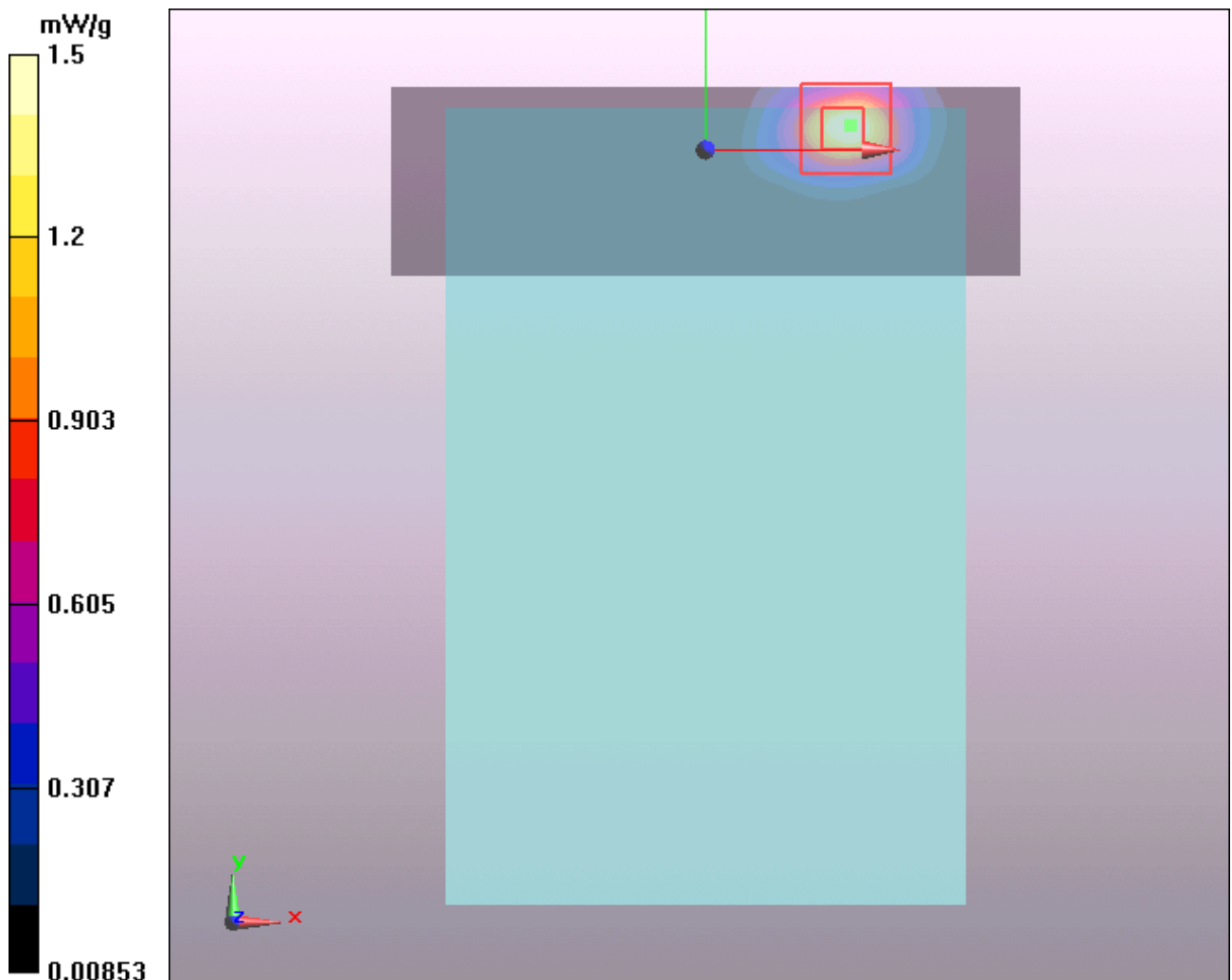


Figure 36 Body, Test Position 6, GSM 1900 GPRS (2Txslots) Channel 661

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GSM 1900 GPRS (2Txslots) Test Position 6 Low (Distance 0mm)

Date/Time: 11/10/2011 10:03:57 AM

Communication System: GPRS 2TX ; Frequency: 1850.2 MHz; Duty Cycle: 1:4.14954

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.73$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Low/Area Scan (101x31x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.56 mW/g

Test Position 6 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.43 V/m; Power Drift = -0.093 dB

Peak SAR (extrapolated) = 2.81 W/kg

SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.554 mW/g

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

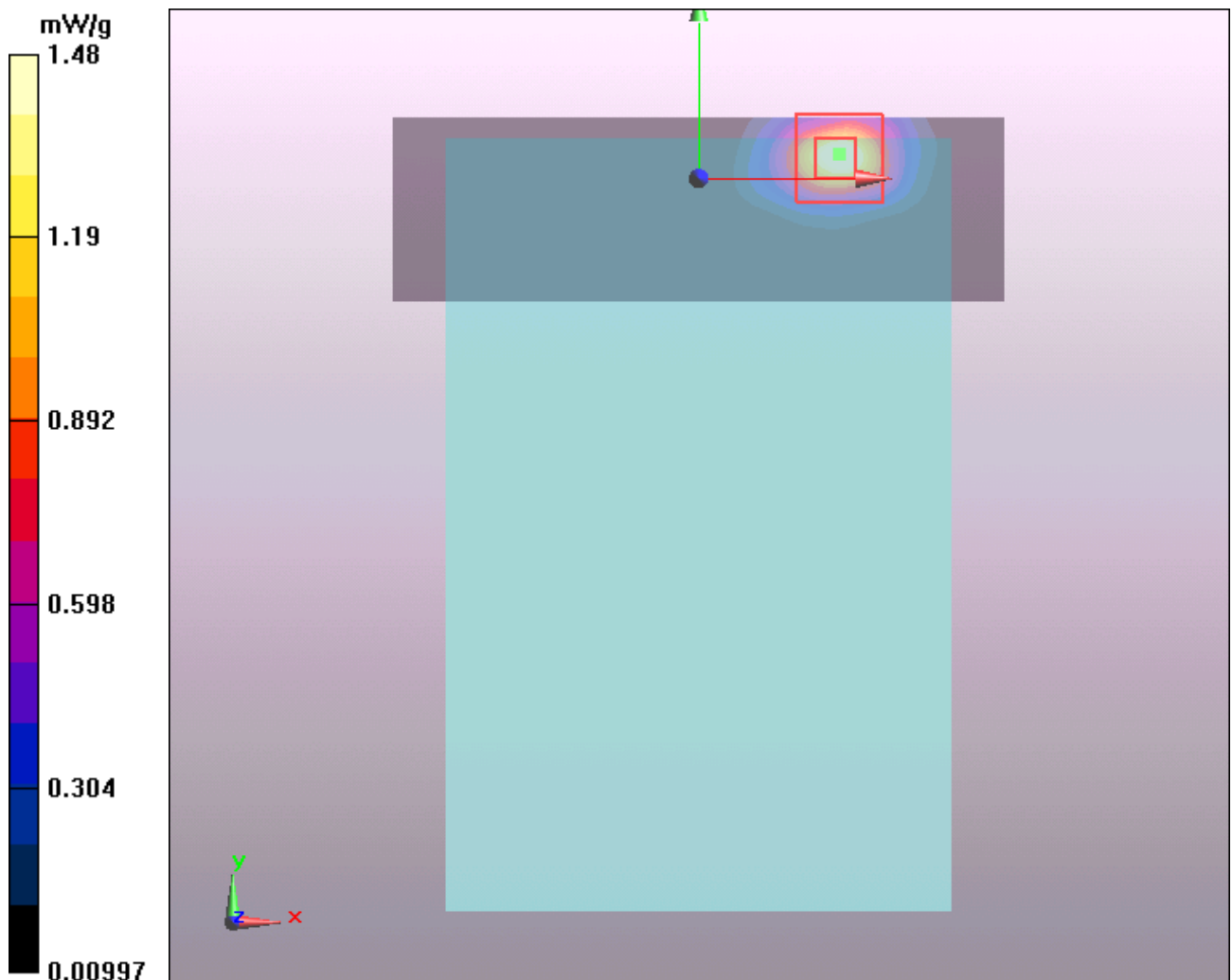


Figure 37 Body, Test Position 6, GSM 1900 GPRS (2Txslots) Channel 512

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GSM 1900 GPRS (2Txslots) Test Position 5 Middle (Distance 0mm)

Date/Time: 9/24/2011 1:30:03 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (41x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.579 mW/g

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

Reference Value = 5.69 V/m; Power Drift = 0.194 dB

Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.278 mW/g

Maximum value of SAR (measured) = 0.699 mW/g

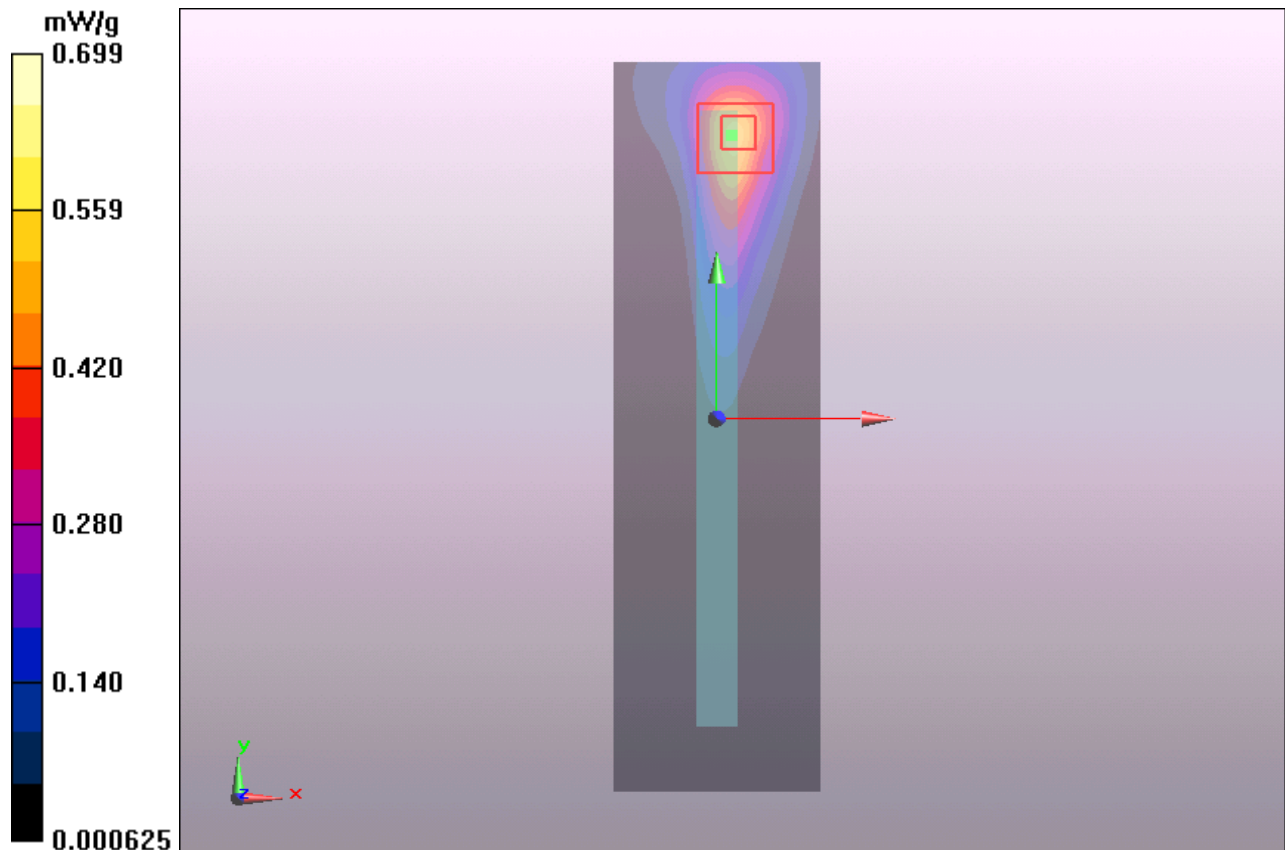


Figure 38 Body, Test Position 5, GSM 1900 GPRS (2Txslots) Channel 661

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GSM 1900 GPRS (1Txslot) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/28/2011 8:57:16 PM

Communication System: GPRS 1TX; Frequency: 1880 MHz; Duty Cycle: 1:8.30042

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.664 mW/g

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

Reference Value = 5.29 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.627 mW/g; SAR(10 g) = 0.334 mW/g

Maximum value of SAR (measured) = 0.698 mW/g

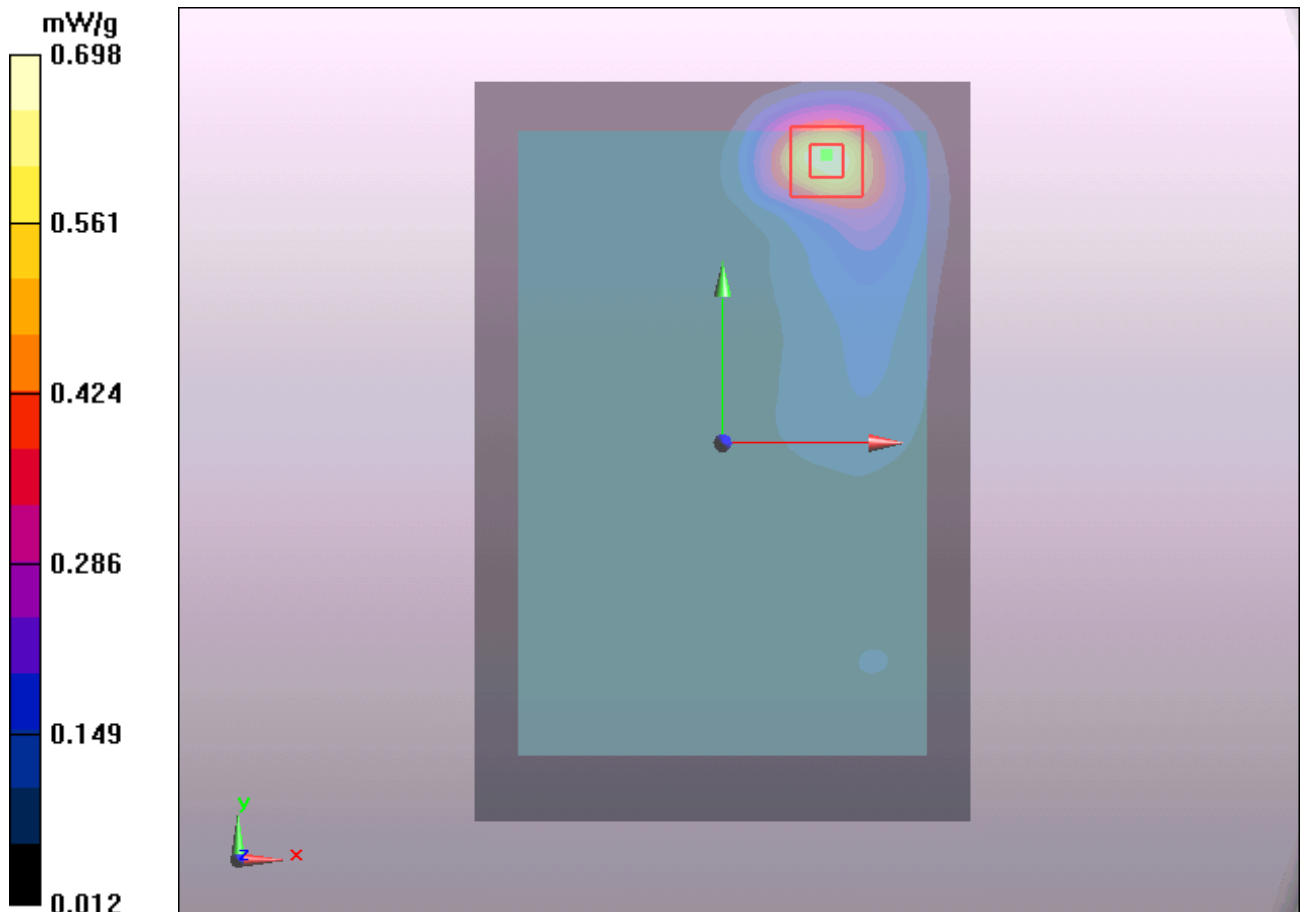


Figure 39 Body, Test Position 1, GSM 1900 GPRS (1Txslot) Channel 661

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GSM 1900 GPRS (2Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/28/2011 5:45:07 AM

Communication System: GPRS 2TX ; Frequency: 1880 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.719 mW/g

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

Reference Value = 5.34 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.645 mW/g; SAR(10 g) = 0.342 mW/g

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

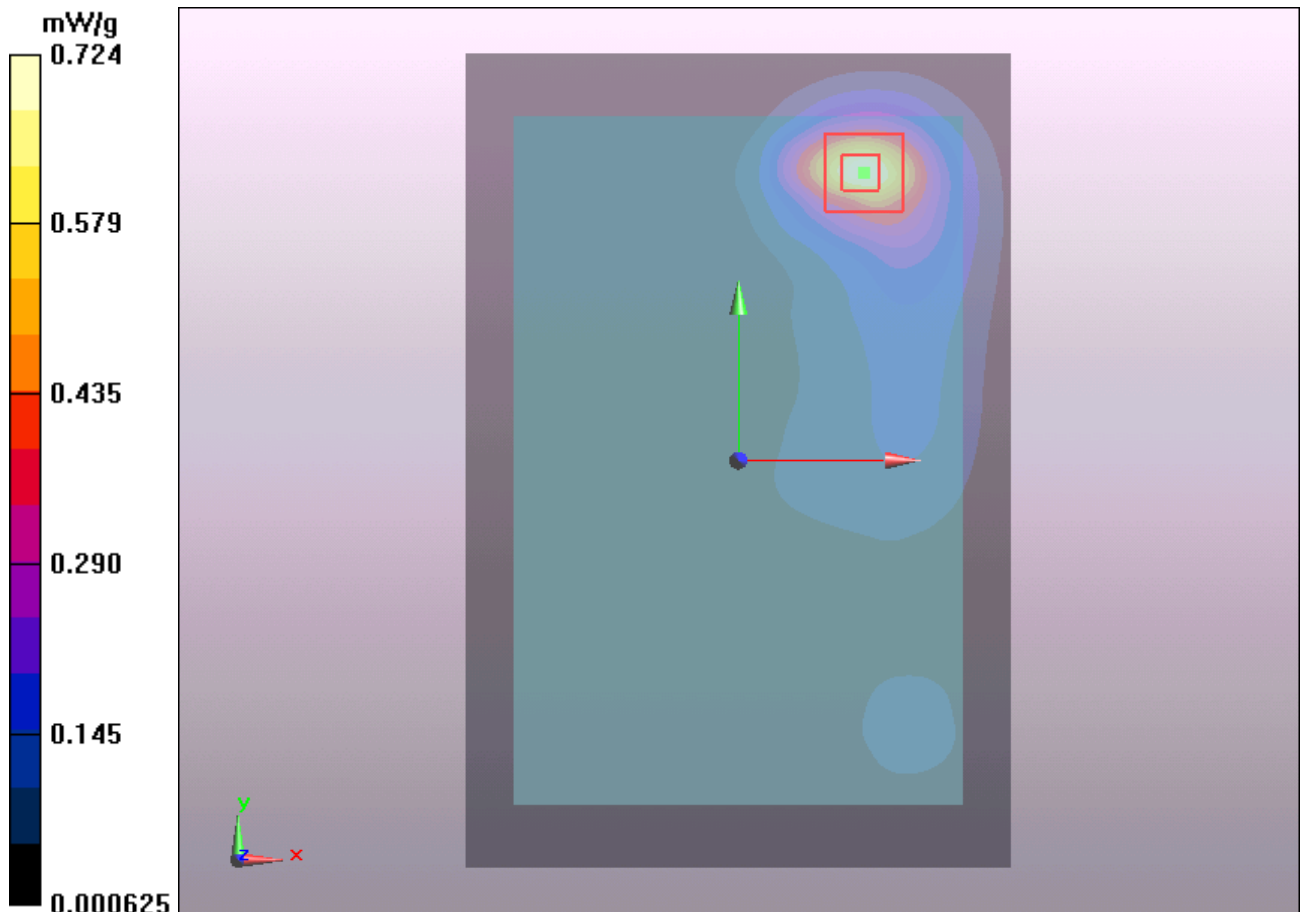


Figure 40 Body, Test Position 1, GSM 1900 GPRS (2Txslots) Channel 661

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GSM 1900 GPRS (3Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/28/2011 9:36:51 PM

Communication System: GPRS 3TX; Frequency: 1880 MHz; Duty Cycle: 1:2.76694

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.835 mW/g

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

Reference Value = 6.27 V/m; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.764 mW/g; SAR(10 g) = 0.407 mW/g

Maximum value of SAR (measured) = 0.843 mW/g

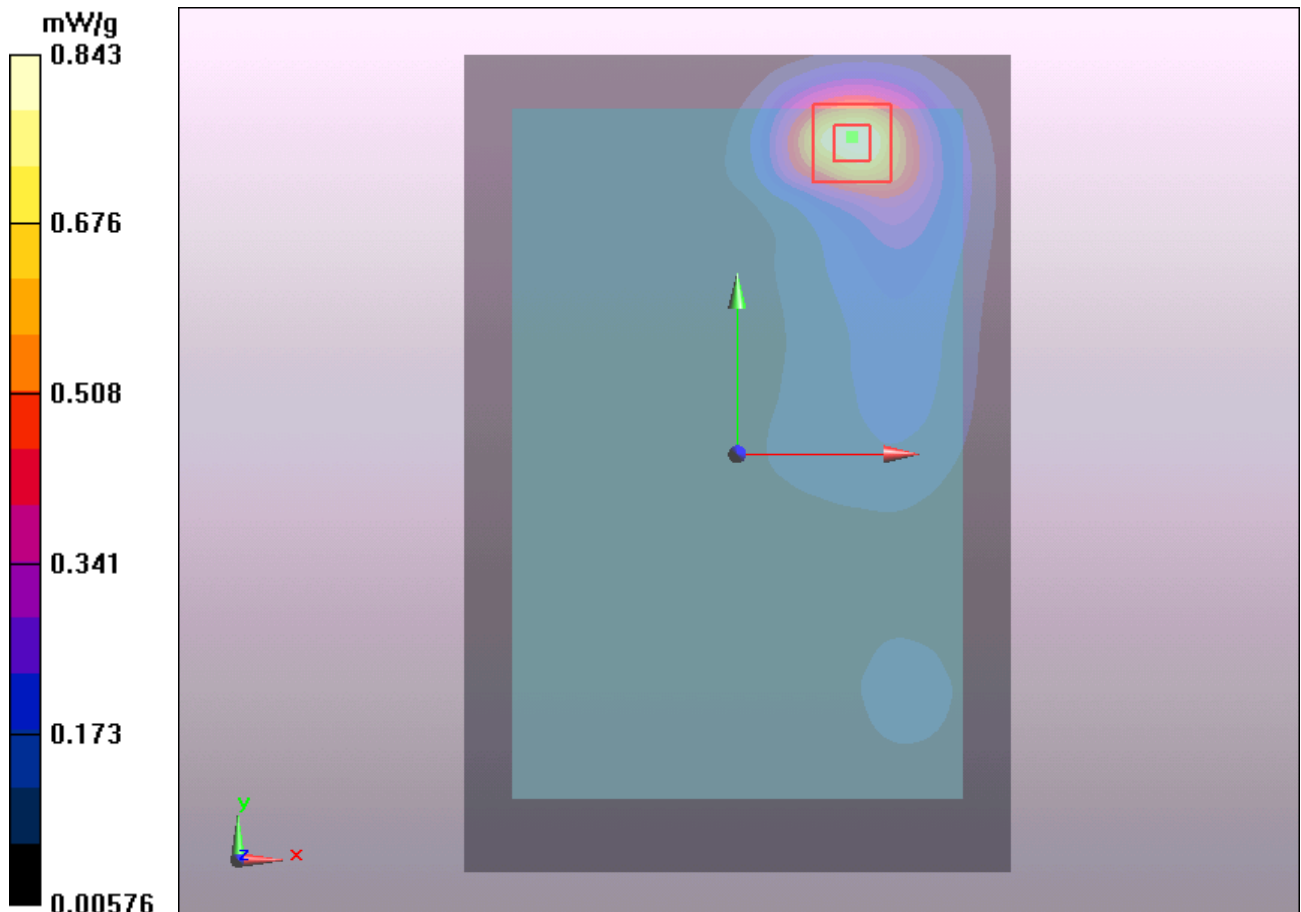


Figure 41 Body, Test Position 1, GSM 1900 GPRS (3Txslots) Channel 661

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GSM 1900 GPRS (4Txslots) Test Position 1 Middle (Distance 10mm)

Date/Time: 10/28/2011 10:16:30 PM

Communication System: GPRS 4TX; Frequency: 1880 MHz; Duty Cycle: 1:2.07491

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): 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 = 5.56 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.620 mW/g; SAR(10 g) = 0.329 mW/g

Maximum value of SAR (measured) = 0.686 mW/g

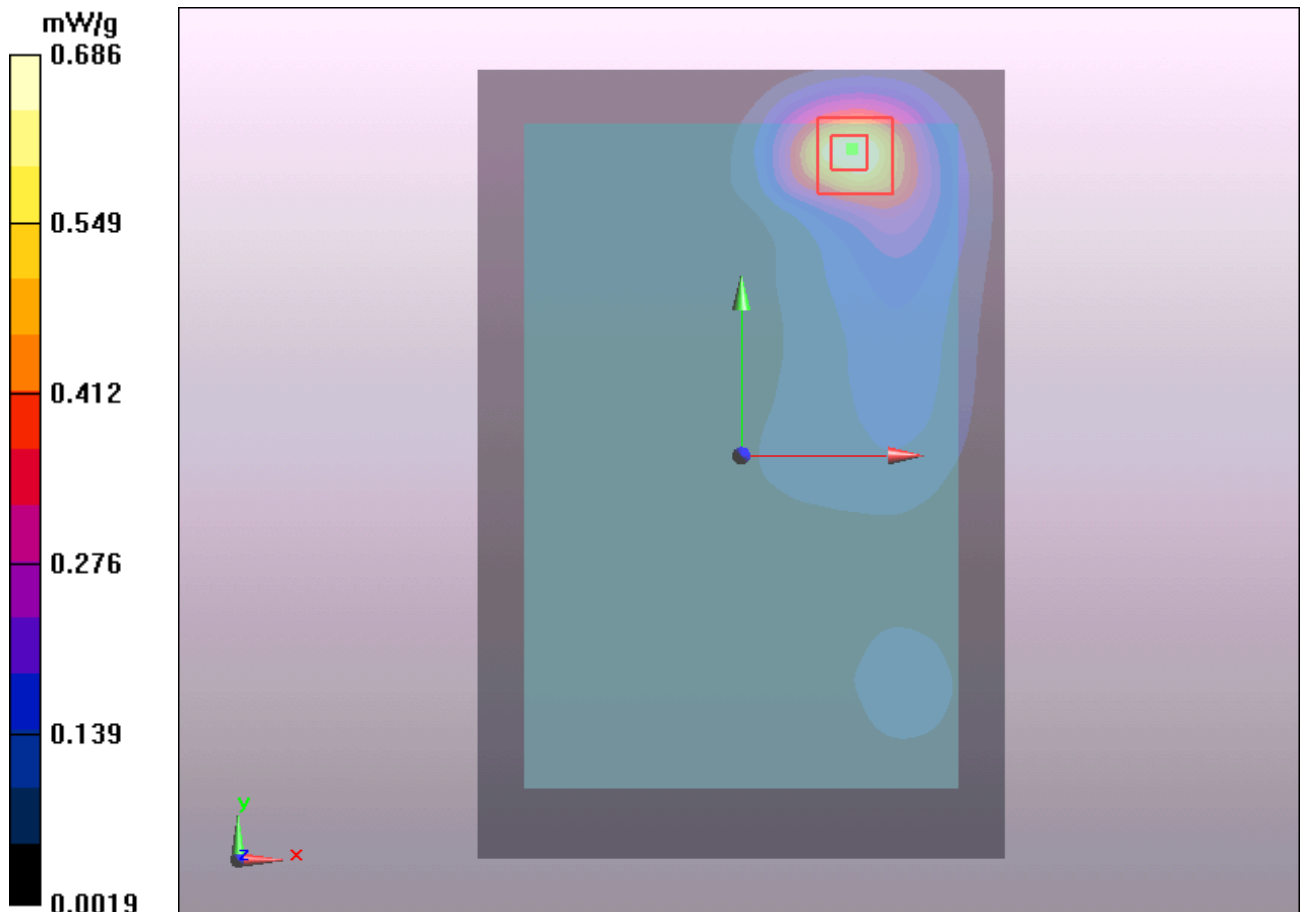


Figure 42 Body, Test Position 1, GSM 1900 GPRS (4Txslots) Channel 661

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GSM 1900 GPRS (3Txslots) Test Position 2 Middle (Distance 10mm)

Date/Time: 10/28/2011 7:17:30 AM

Communication System: GPRS 3TX; Frequency: 1880 MHz; Duty Cycle: 1:2.76694

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.648 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.74 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.569 mW/g; SAR(10 g) = 0.306 mW/g

Maximum value of SAR (measured) = 0.634 mW/g

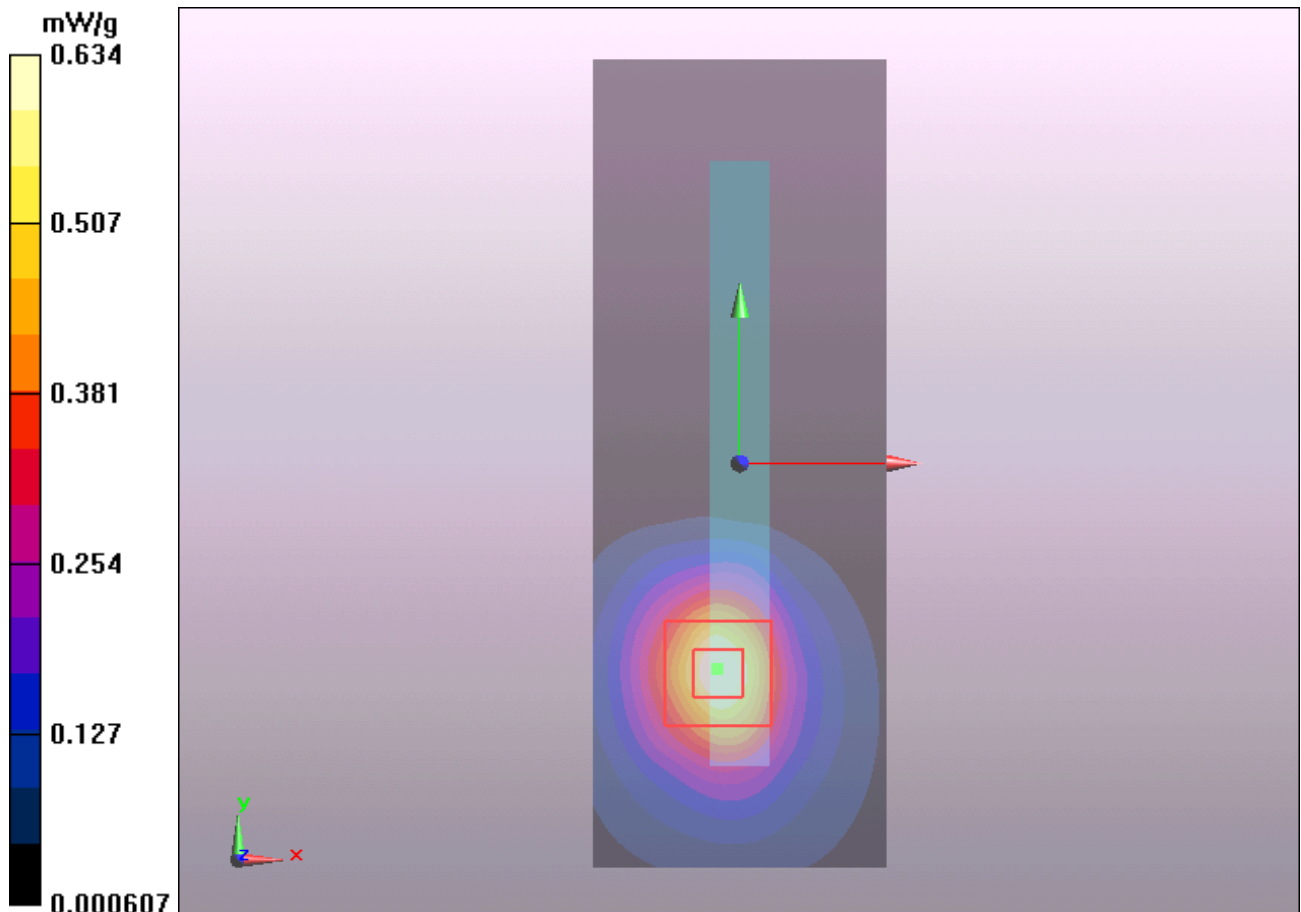


Figure 43 Body, Test Position 2, GSM 1900 GPRS (3Txslots) Channel 661

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GSM 1900 EGPRS (2Txslots) Test Position 6 High (Distance 0mm)

Date/Time: 11/10/2011 10:44:08 AM

Communication System: EGPRS 2TX; Frequency: 1909.8 MHz; Duty Cycle: 1:4.14954

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.56$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 High/Area Scan (101x31x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.63 mW/g

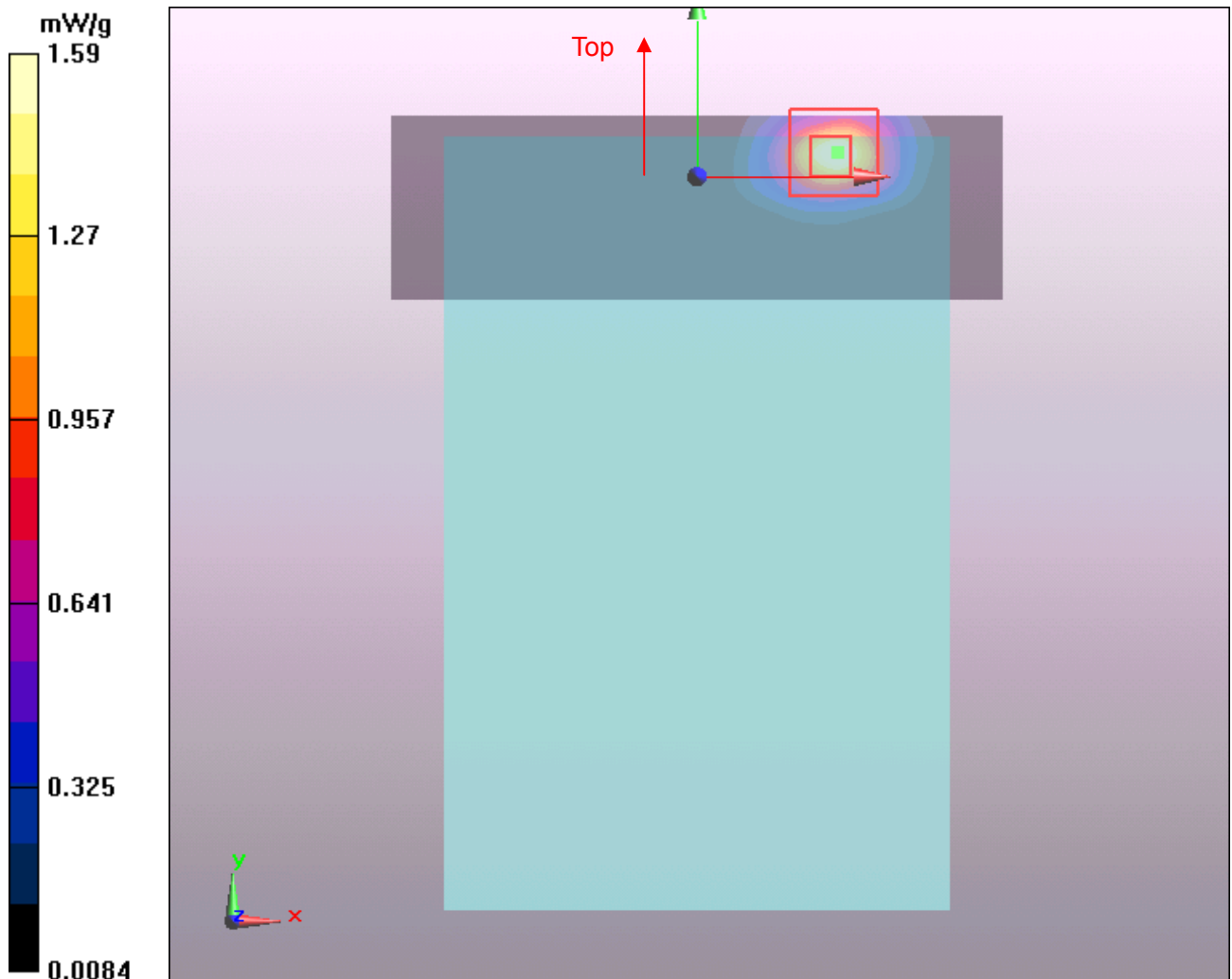
Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.21 V/m; Power Drift = -0.054 dB

Peak SAR (extrapolated) = 3.04 W/kg

SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.578 mW/g

Maximum value of SAR (measured) = 1.59 mW/g



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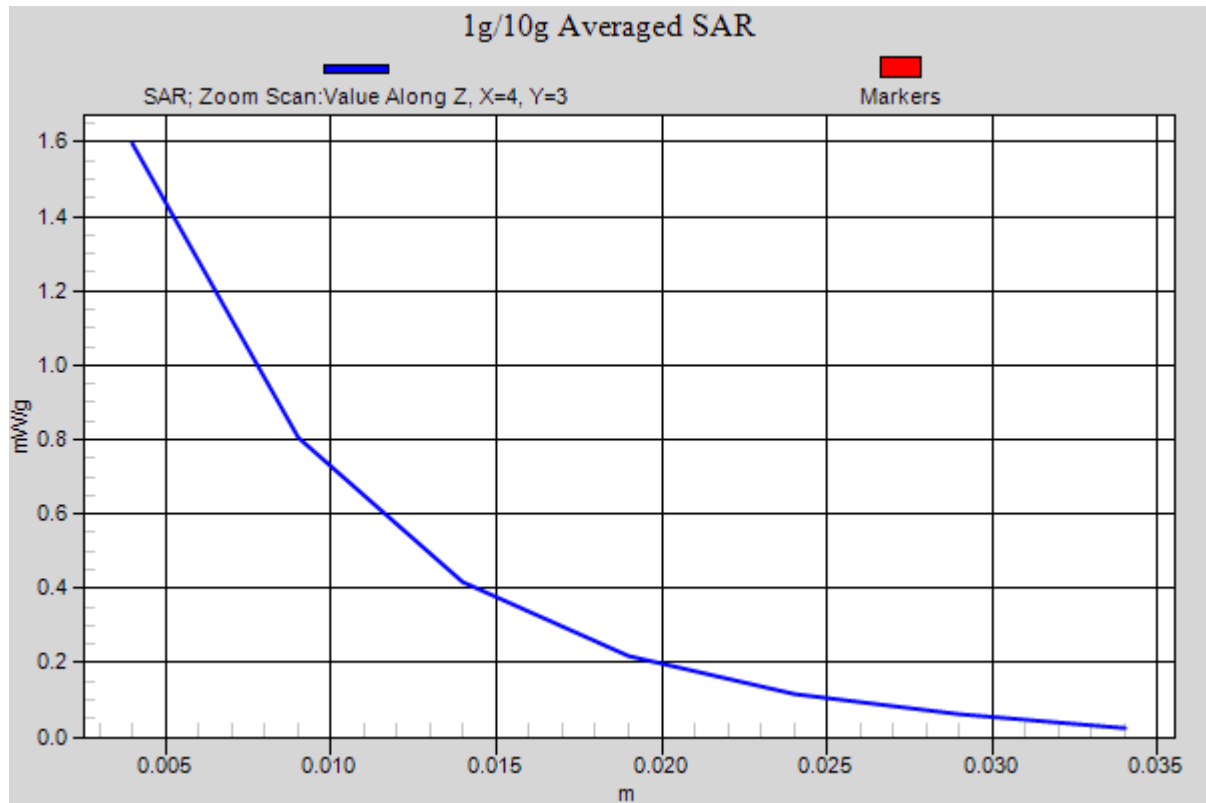


Figure 44 Body, Test Position 6, GSM 1900 EGPRS (2Txslots) Channel 810

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WCDMA Band II Test Position 1 High (Distance 0mm)

Date/Time: 9/24/2011 2:57:14 PM

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

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.07 mW/g

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

Reference Value = 0.584 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 2.15 W/kg

SAR(1 g) = 0.986 mW/g; SAR(10 g) = 0.436 mW/g

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

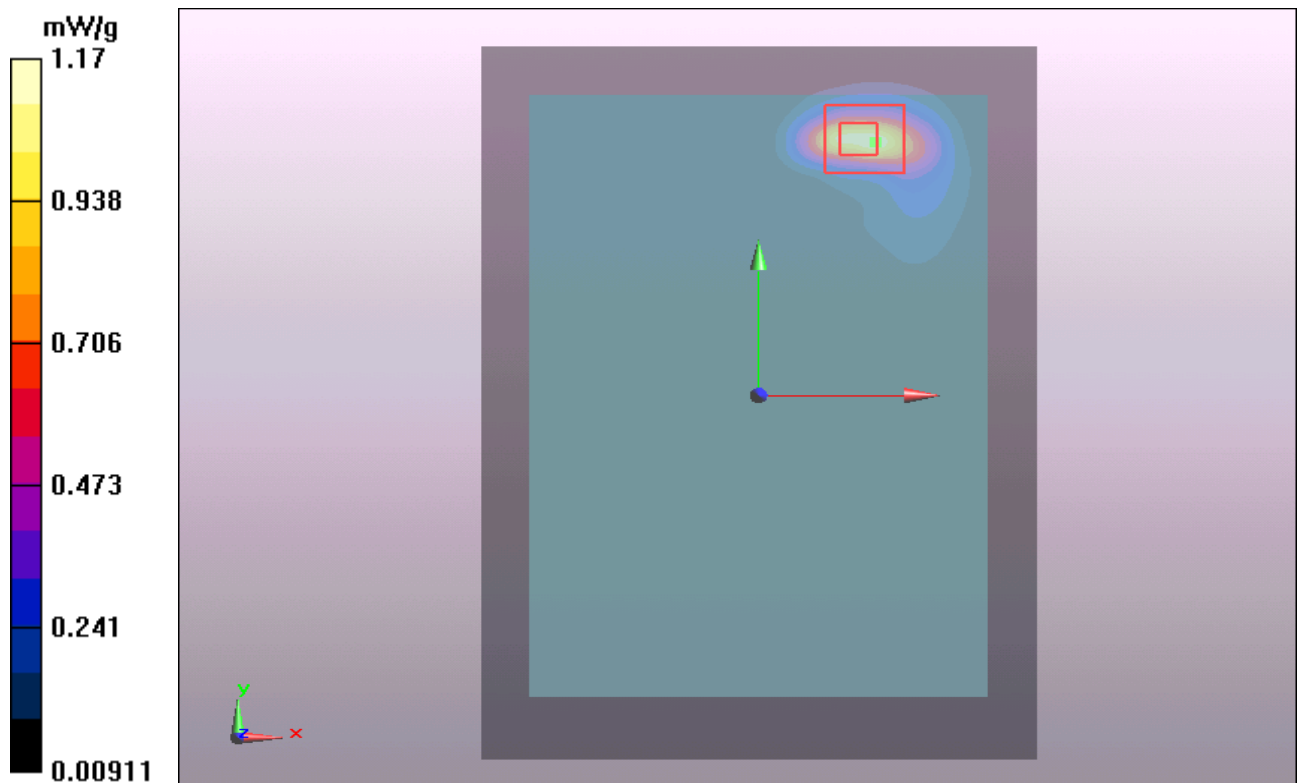


Figure 45 Body, Test Position 1, WCDMA Band II Channel 9538

WCDMA Band II Test Position 1 Middle (Distance 0mm)

Date/Time: 9/24/2011 3:42:32 PM

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

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.7$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

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

Reference Value = 1.25 V/m ; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 1.9 W/kg

SAR(1 g) = 0.875 mW/g ; SAR(10 g) = 0.392 mW/g

Maximum value of SAR (measured) = 1.04 mW/g

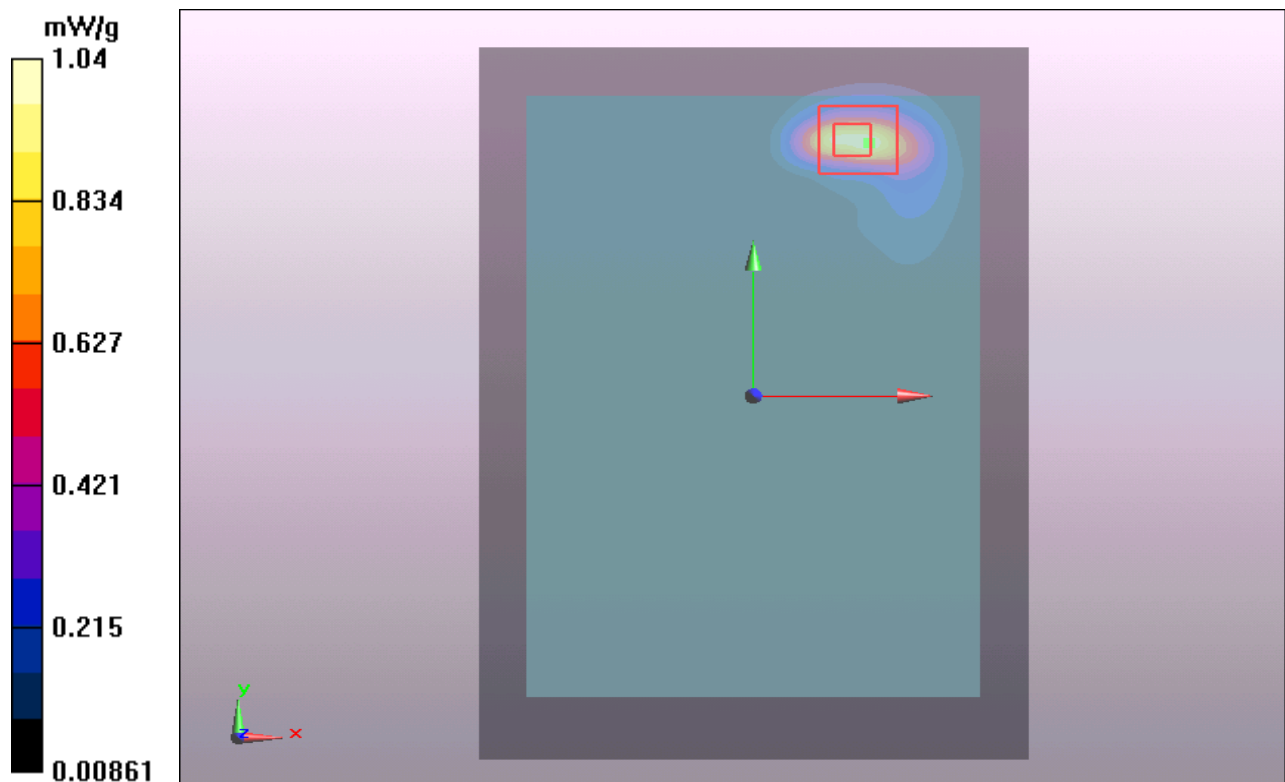


Figure 46 Body, Test Position 1, WCDMA Band II Channel 9400

WCDMA Band II Test Position 1 Low (Distance 0mm)

Date/Time: 9/24/2011 4:19:57 PM

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

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.696 mW/g

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

Reference Value = 0.976 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.3 W/kg

SAR(1 g) = 0.603 mW/g; SAR(10 g) = 0.273 mW/g

Maximum value of SAR (measured) = 0.713 mW/g

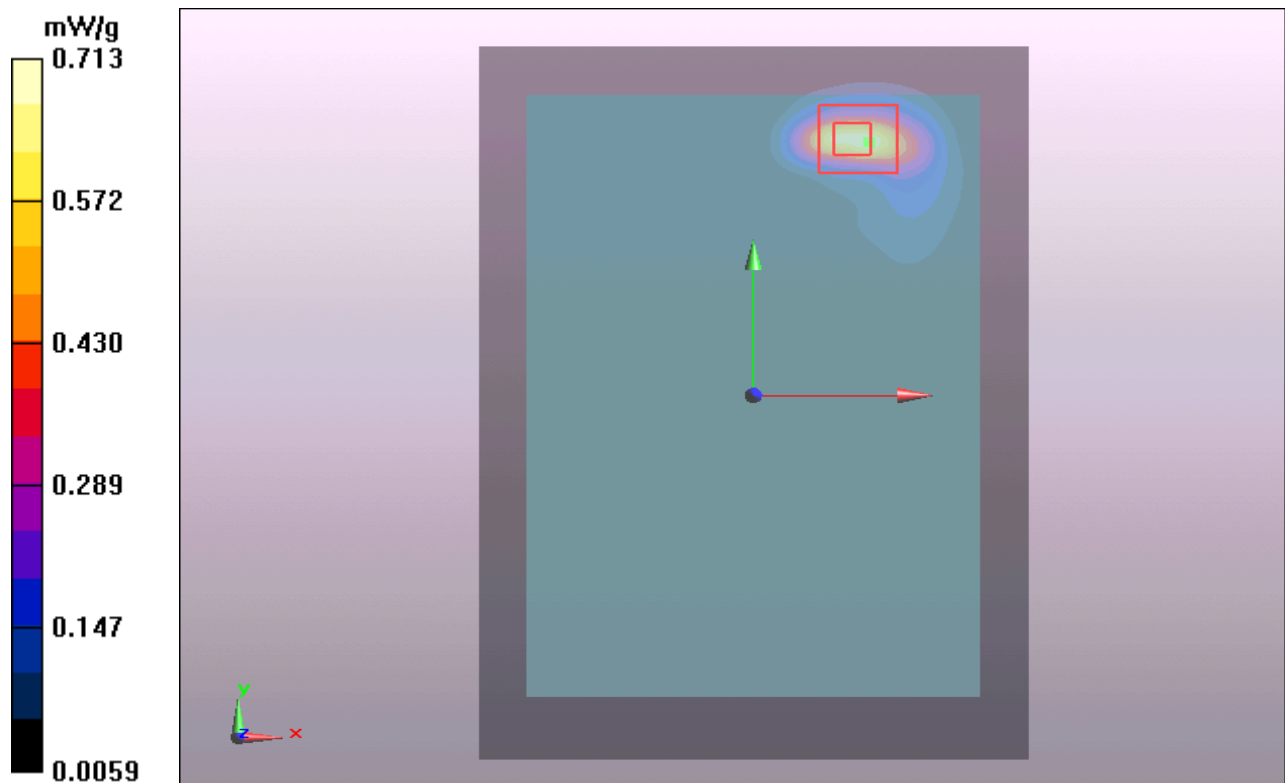


Figure 47 Body, Test Position 1, WCDMA Band II Channel 9262

WCDMA Band II Test Position 2 High (Distance 0mm)

Date/Time: 9/24/2011 5:47:34 PM

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

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.57 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 High/Area Scan (41x111x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.62 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.29 V/m ; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 2.41 W/kg

SAR(1 g) = 1.18 mW/g ; SAR(10 g) = 0.535 mW/g

Maximum value of SAR (measured) = 1.36 mW/g

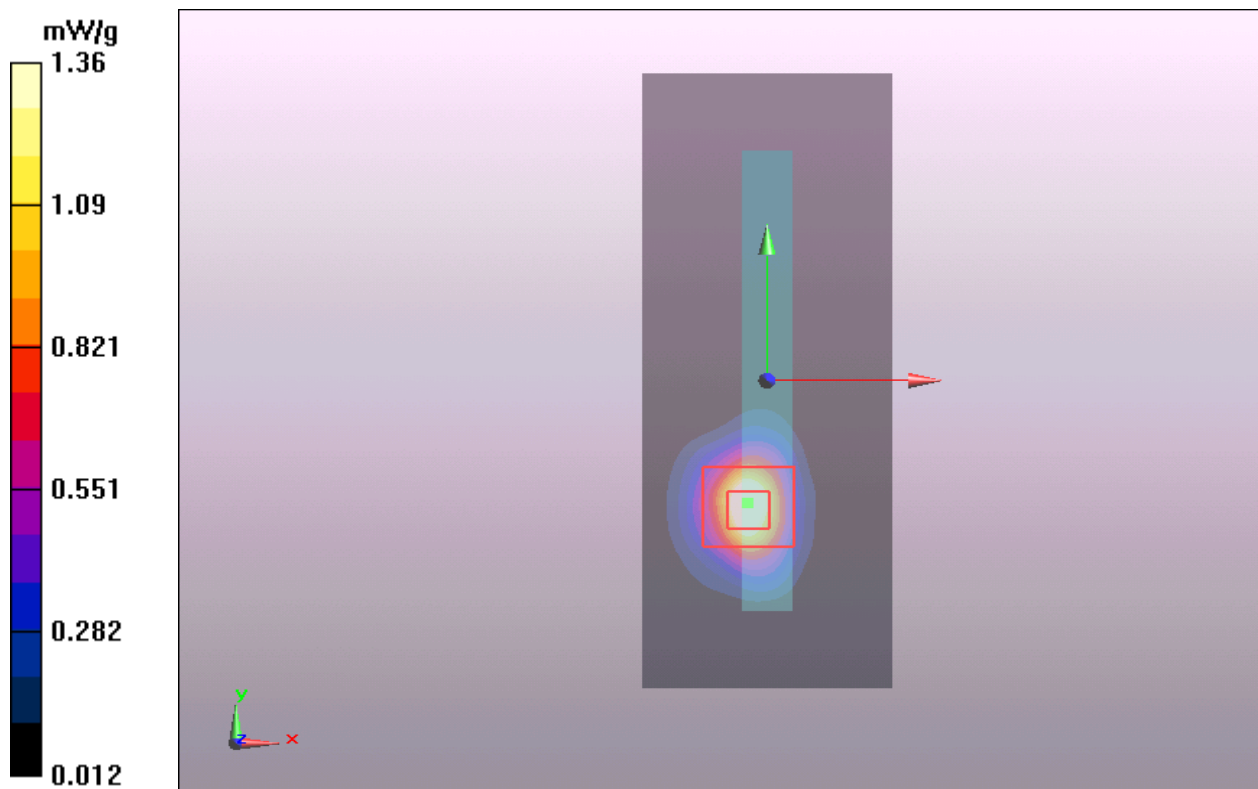


Figure 48 Body, Test Position 2, WCDMA Band II Channel 9538

WCDMA Band II Test Position 2 Middle (Distance 0mm)

Date/Time: 9/24/2011 5:01:44 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.52 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.69 W/kg

SAR(1 g) = 0.834 mW/g; SAR(10 g) = 0.380 mW/g

Maximum value of SAR (measured) = 0.958 mW/g

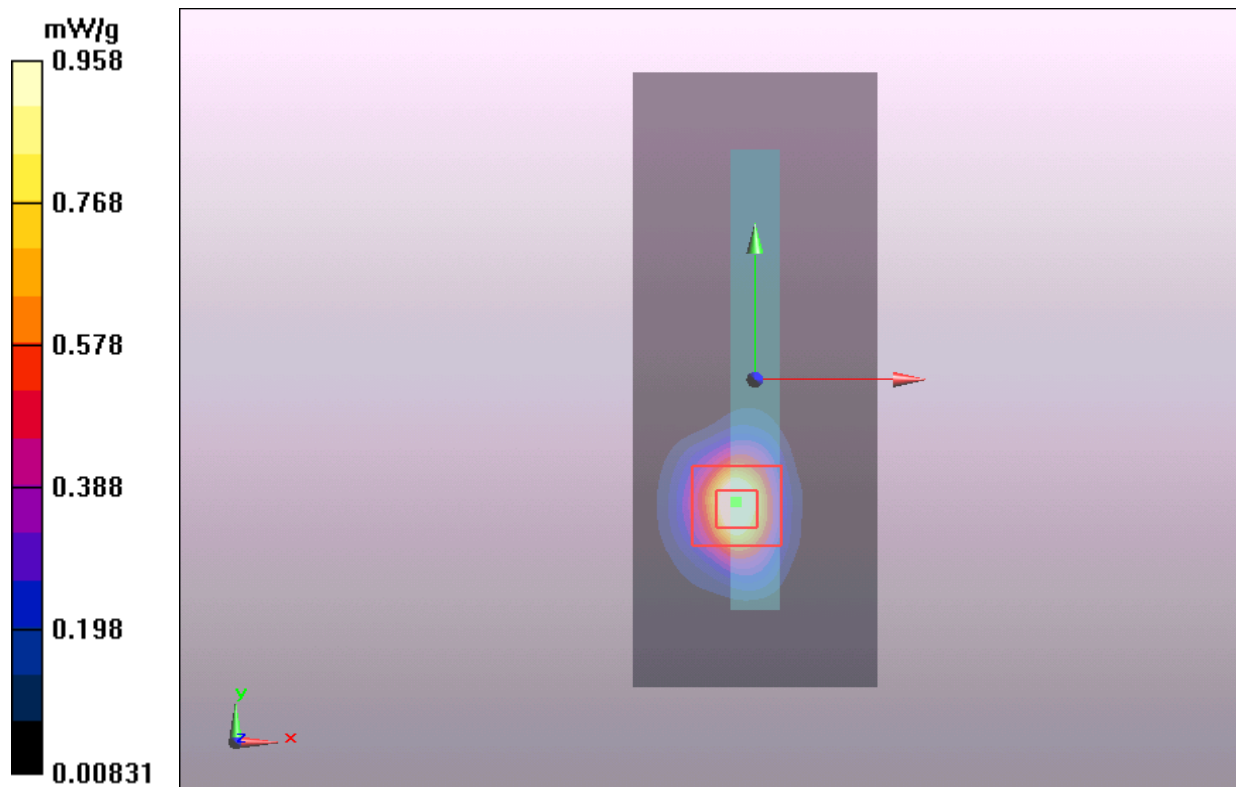


Figure 49 Body, Test Position 2, WCDMA Band II Channel 9400

WCDMA Band II Test Position 2 Low (Distance 0mm)

Date/Time: 9/24/2011 5:24:49 PM

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

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Low/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.03 V/m; Power Drift = 0.119 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.240 mW/g

Maximum value of SAR (measured) = 0.601 mW/g

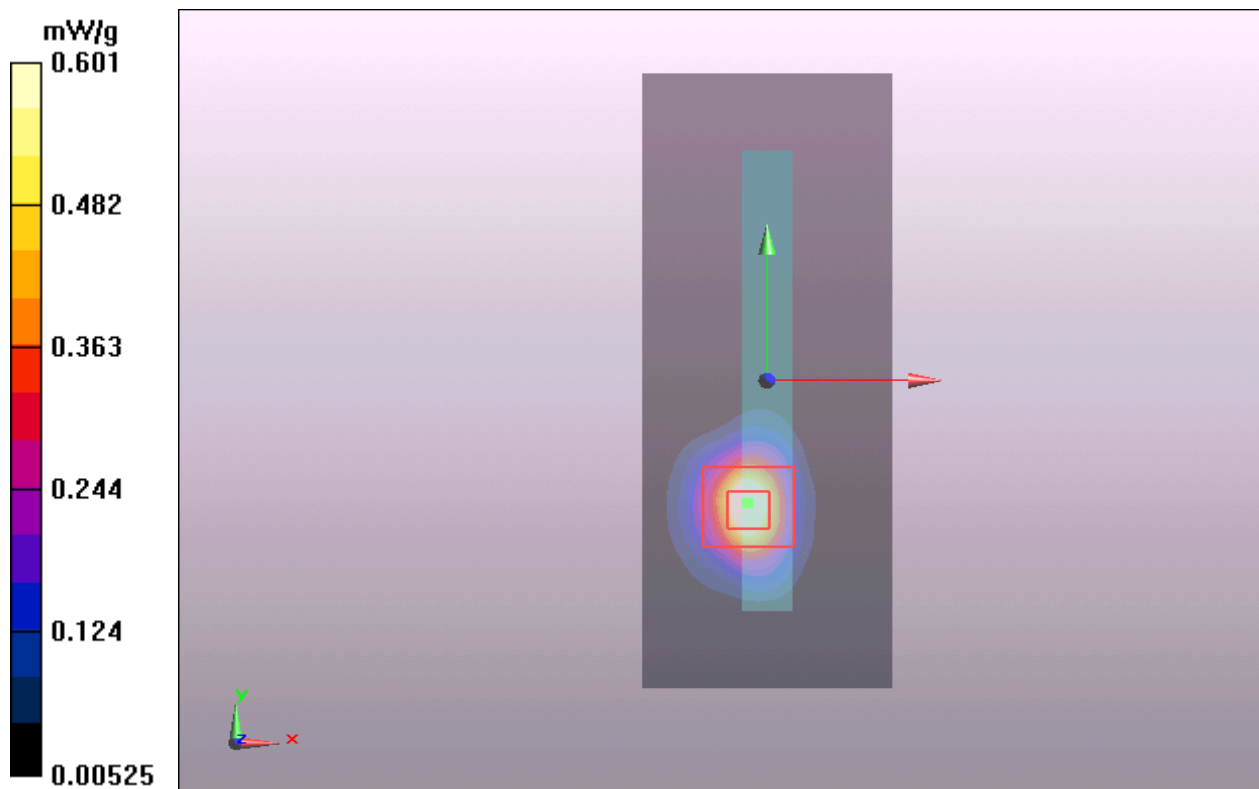


Figure 50 Body, Test Position 2, WCDMA Band II Channel 9262

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WCDMA Band II Test Position 6 High (Distance 0mm)

Date/Time: 11/9/2011 8:47:01 PM

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

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 51.56$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 High/Area Scan (101x41x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.77 mW/g

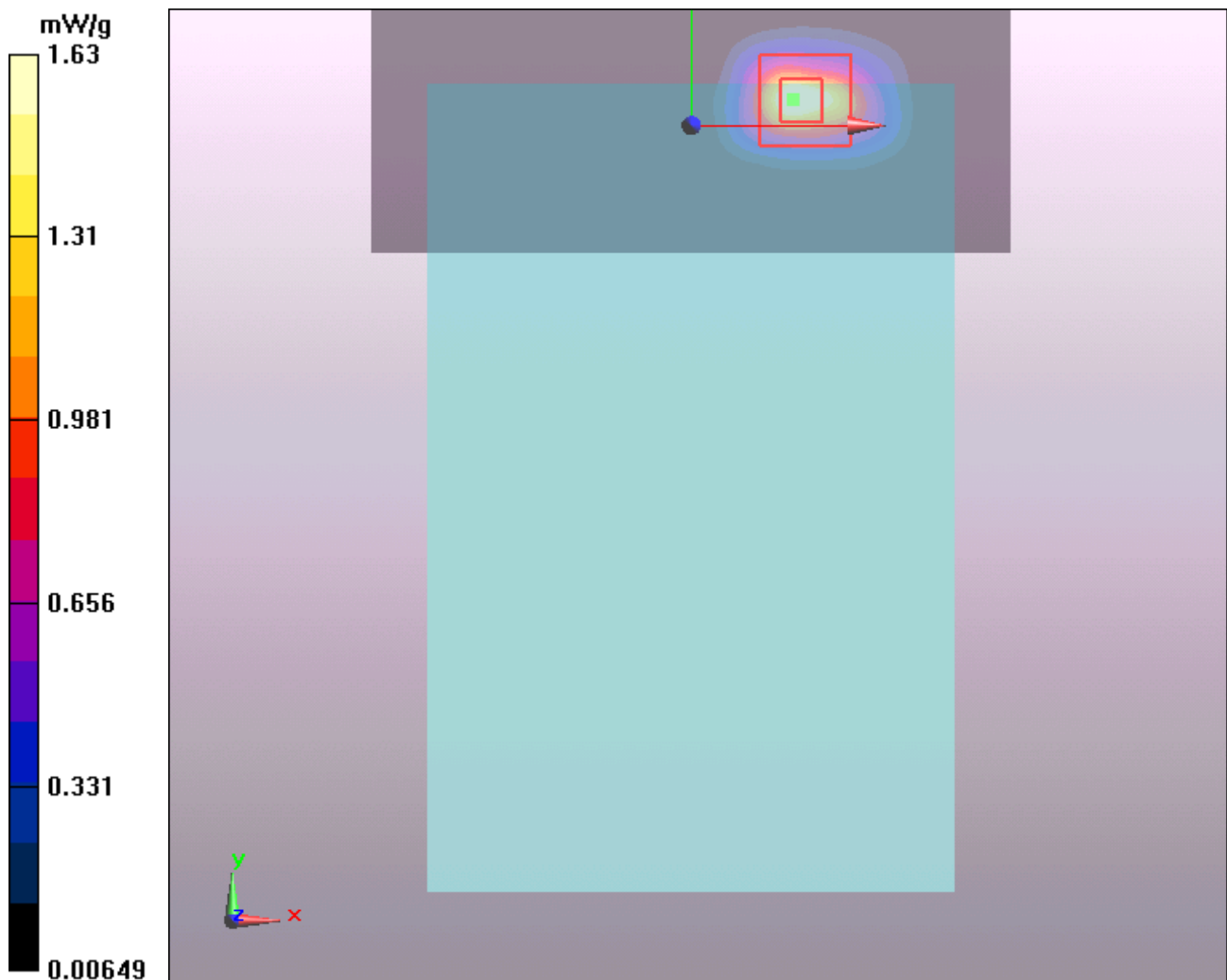
Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.45 V/m ; Power Drift = -0.087 dB

Peak SAR (extrapolated) = 2.96 W/kg

SAR(1 g) = 1.35 mW/g ; SAR(10 g) = 0.580 mW/g

Maximum value of SAR (measured) = 1.63 mW/g



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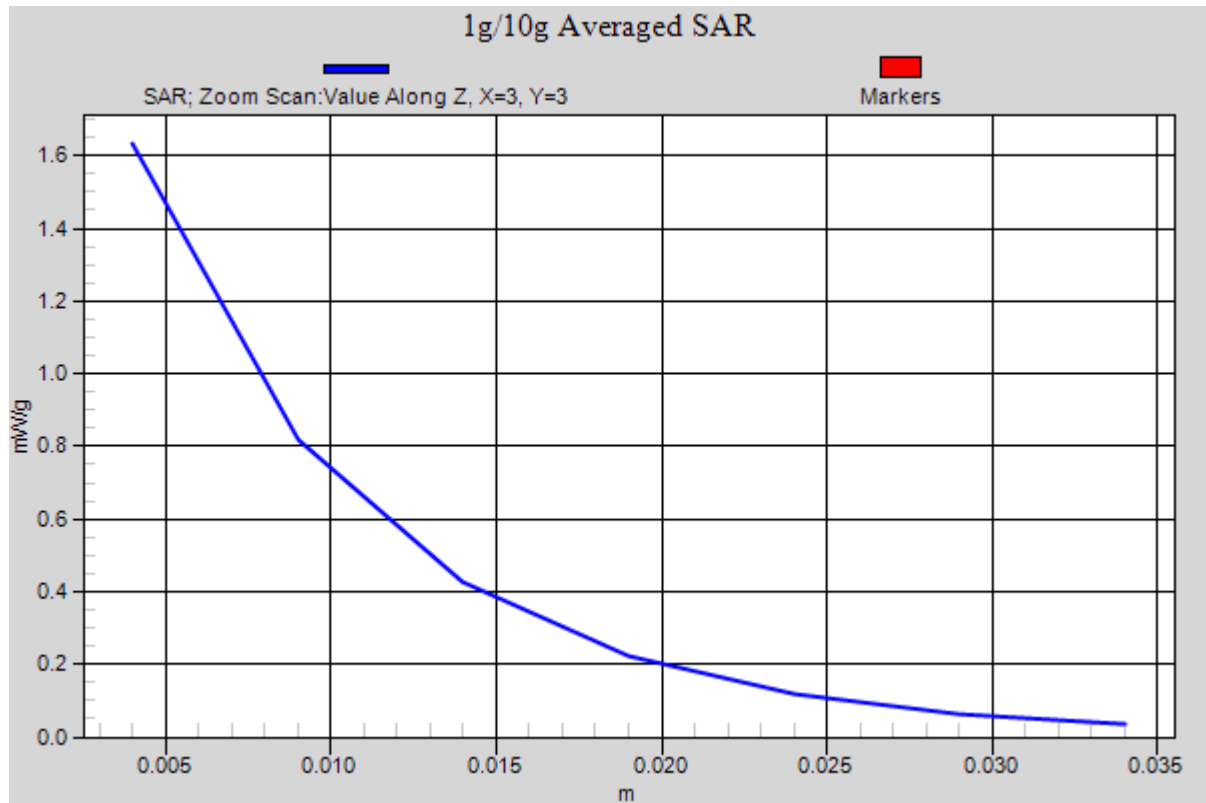


Figure 51 Body, Test Position 6, WCDMA Band II Channel 9538

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WCDMA Band II Test Position 6 Middle (Distance 0mm)

Date/Time: 11/9/2011 7:31:38 PM

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

Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.51 \text{ mho/m}$; $\epsilon_r = 51.75$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Middle/Area Scan (101x41x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.67 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.34 V/m ; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 2.64 W/kg

SAR(1 g) = 1.21 mW/g ; SAR(10 g) = 0.525 mW/g

Maximum value of SAR (measured) = 1.46 mW/g

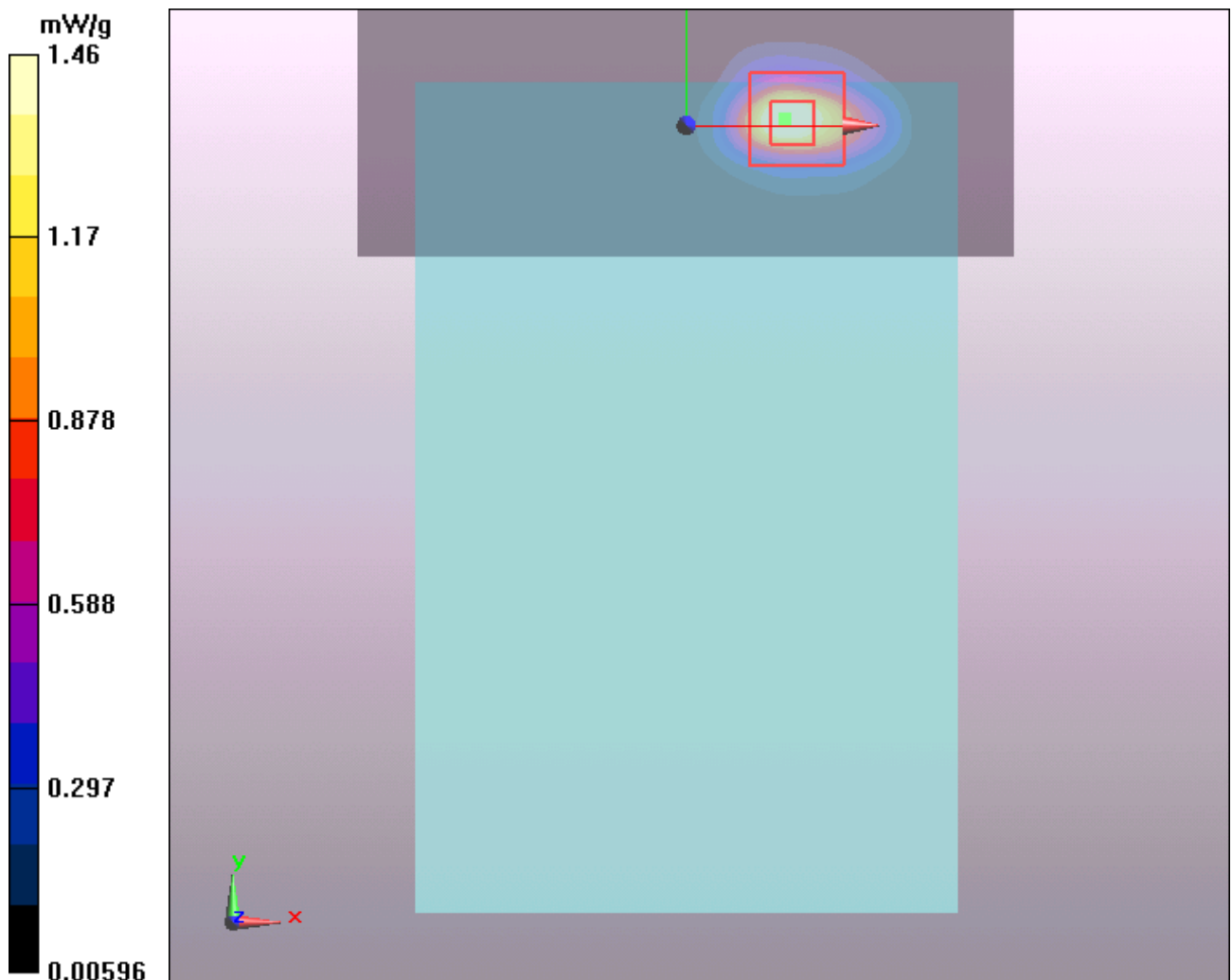


Figure 52 Body, Test Position 6, WCDMA Band II Channel 9400

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WCDMA Band II Test Position 6 Low (Distance 0mm)

Date/Time: 11/9/2011 9:29:15 PM

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

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.73$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Low/Area Scan (61x41x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 6 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.62 V/m; Power Drift = -0.053 dB

Peak SAR (extrapolated) = 2.44 W/kg

SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.492 mW/g

Maximum value of SAR (measured) = 1.33 mW/g

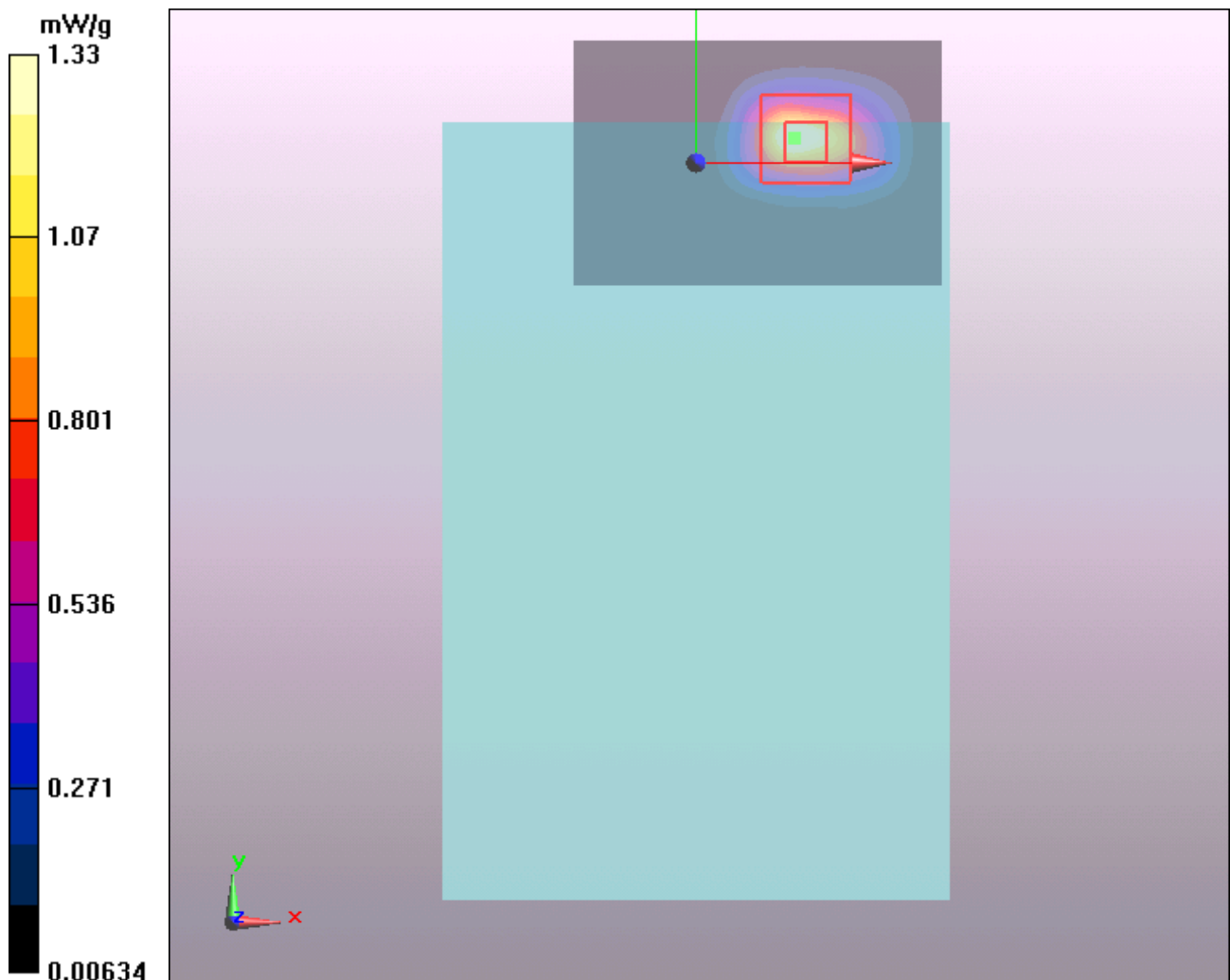


Figure 53 Body, Test Position 6, WCDMA Band II Channel 9262

WCDMA Band II Test Position 5 High (Distance 0mm)

Date/Time: 9/24/2011 6:56:13 PM

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

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.57 \text{ mho/m}$; $\epsilon_r = 51.5$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 5 High/Area Scan (41x141x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Test Position 5 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.94 V/m ; Power Drift = 0.022 dB

Peak SAR (extrapolated) = 3.01 W/kg

SAR(1 g) = 1.15 mW/g ; SAR(10 g) = 0.511 mW/g

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

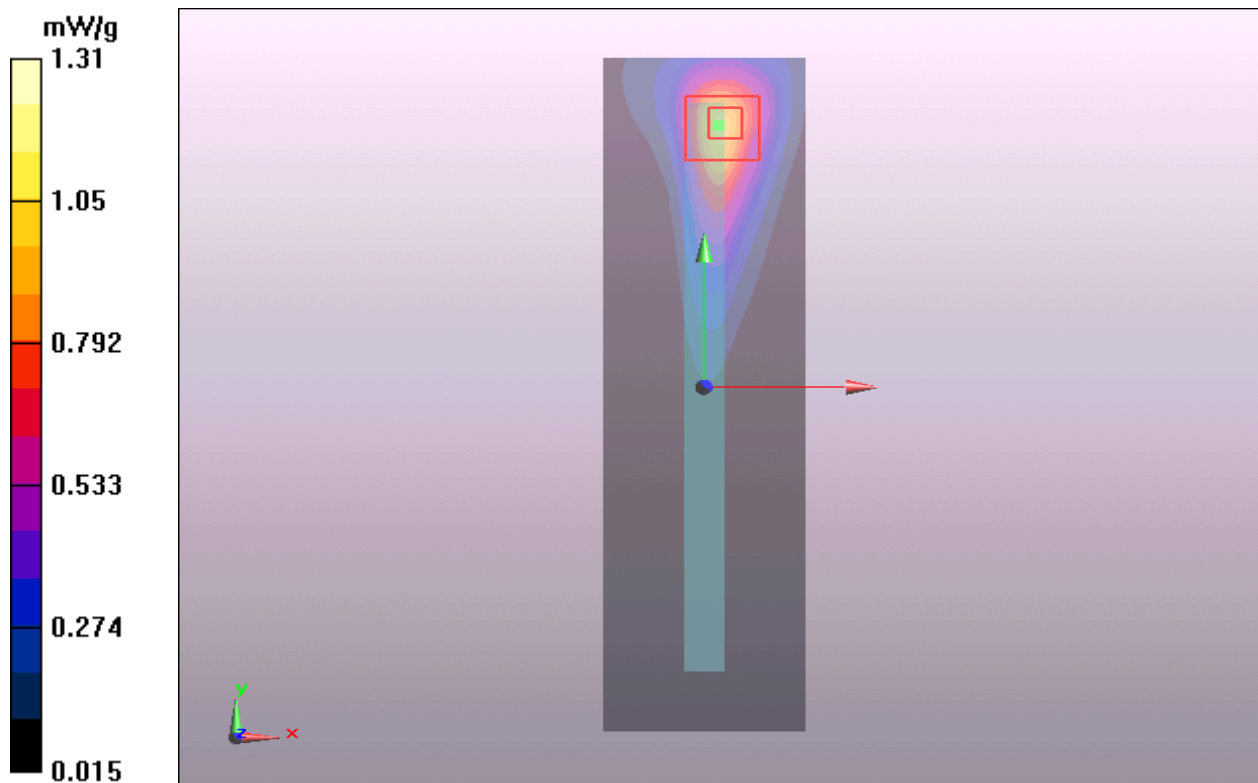


Figure 54 Body, Test Position 5, WCDMA Band II Channel 9538

WCDMA Band II Test Position 5 Middle (Distance 0mm)

Date/Time: 9/24/2011 6:31:01 PM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (41x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.927 mW/g

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

Reference Value = 7.13 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 2.47 W/kg

SAR(1 g) = 0.948 mW/g; SAR(10 g) = 0.426 mW/g

Maximum value of SAR (measured) = 1.08 mW/g

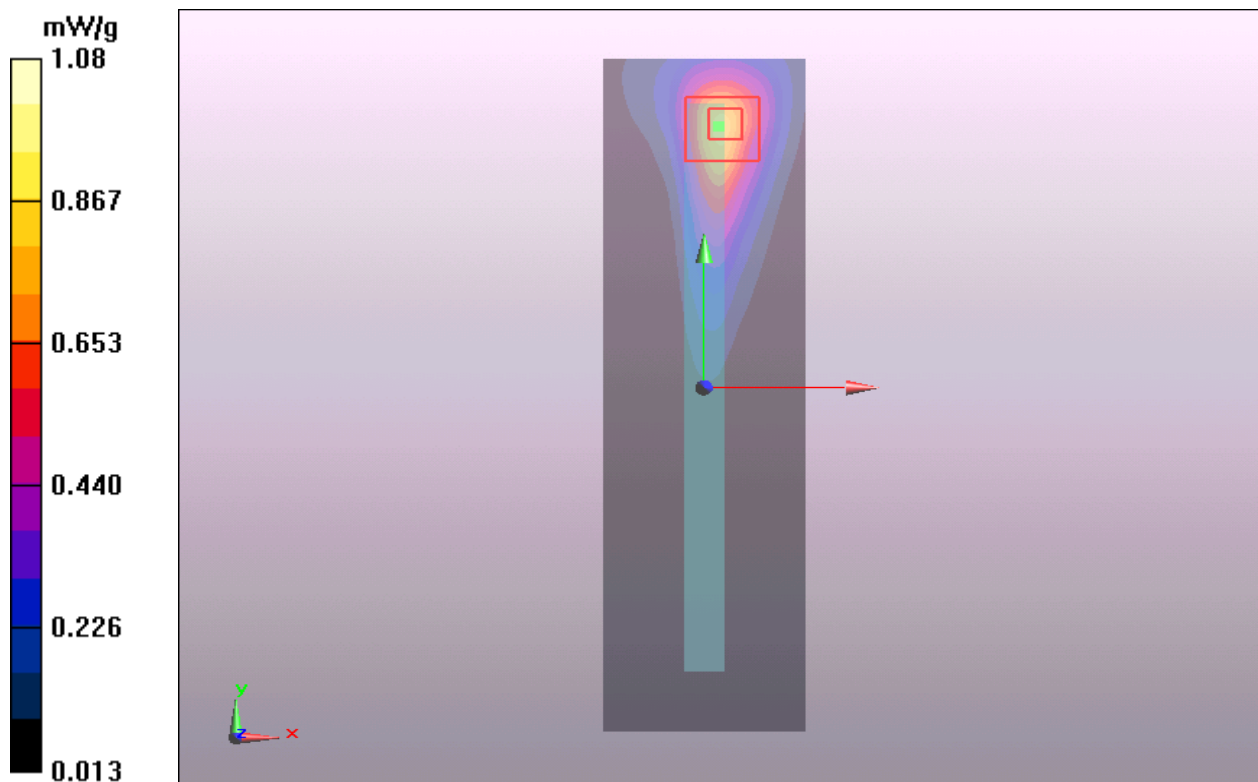


Figure 55 Body, Test Position 5, WCDMA Band II Channel 9400

WCDMA Band II Test Position 5 Low (Distance 0mm)

Date/Time: 9/24/2011 7:20:59 PM

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

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 5 Low/Area Scan (41x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.739 mW/g

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

Reference Value = 6.31 V/m; Power Drift = 0.077 dB

Peak SAR (extrapolated) = 1.98 W/kg

SAR(1 g) = 0.760 mW/g; SAR(10 g) = 0.344 mW/g

Maximum value of SAR (measured) = 0.880 mW/g

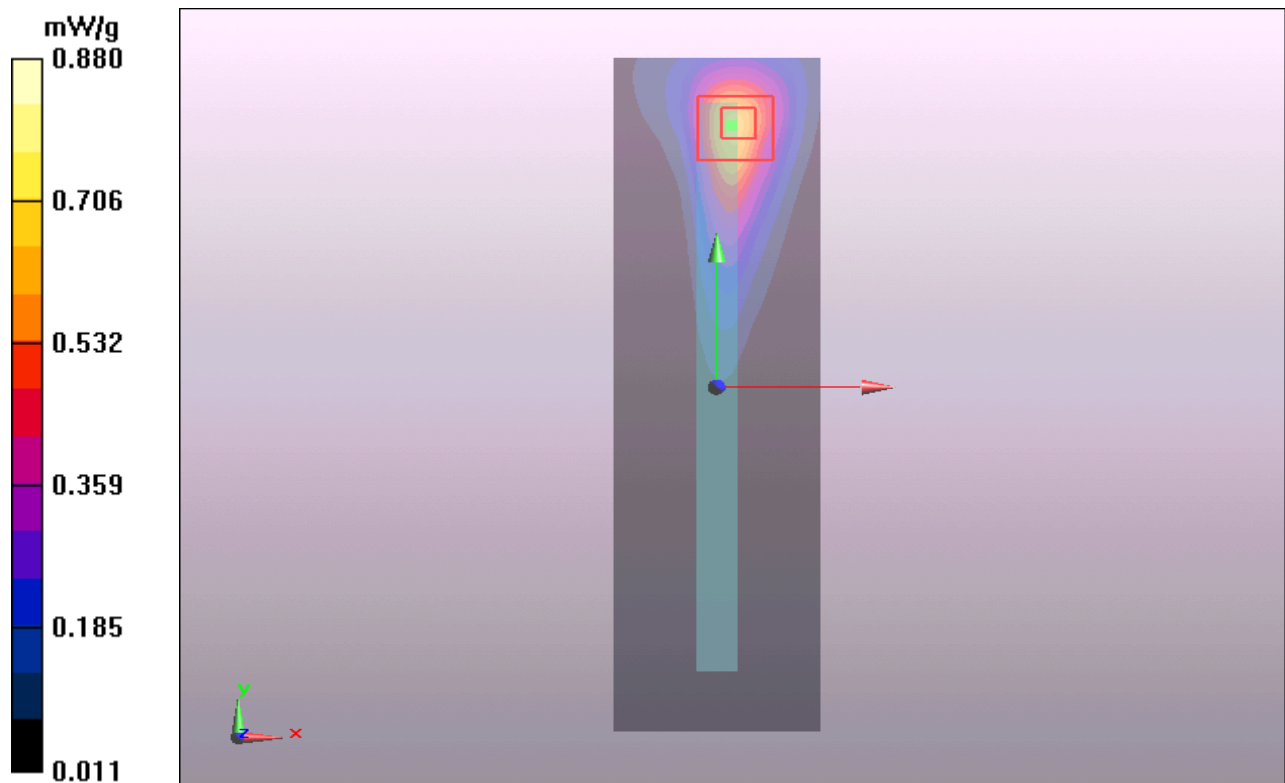


Figure 56 Body, Test Position 5, WCDMA Band II Channel 9262

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WCDMA Band II Test Position 1 High (Distance 10mm)

Date/Time: 10/28/2011 10:52:01 AM

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

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.56 \text{ mho/m}$; $\epsilon_r = 51.53$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.32 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.07 V/m ; Power Drift = -0.085 dB

Peak SAR (extrapolated) = 2.03 W/kg

SAR(1 g) = 1.13 mW/g ; SAR(10 g) = 0.605 mW/g

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

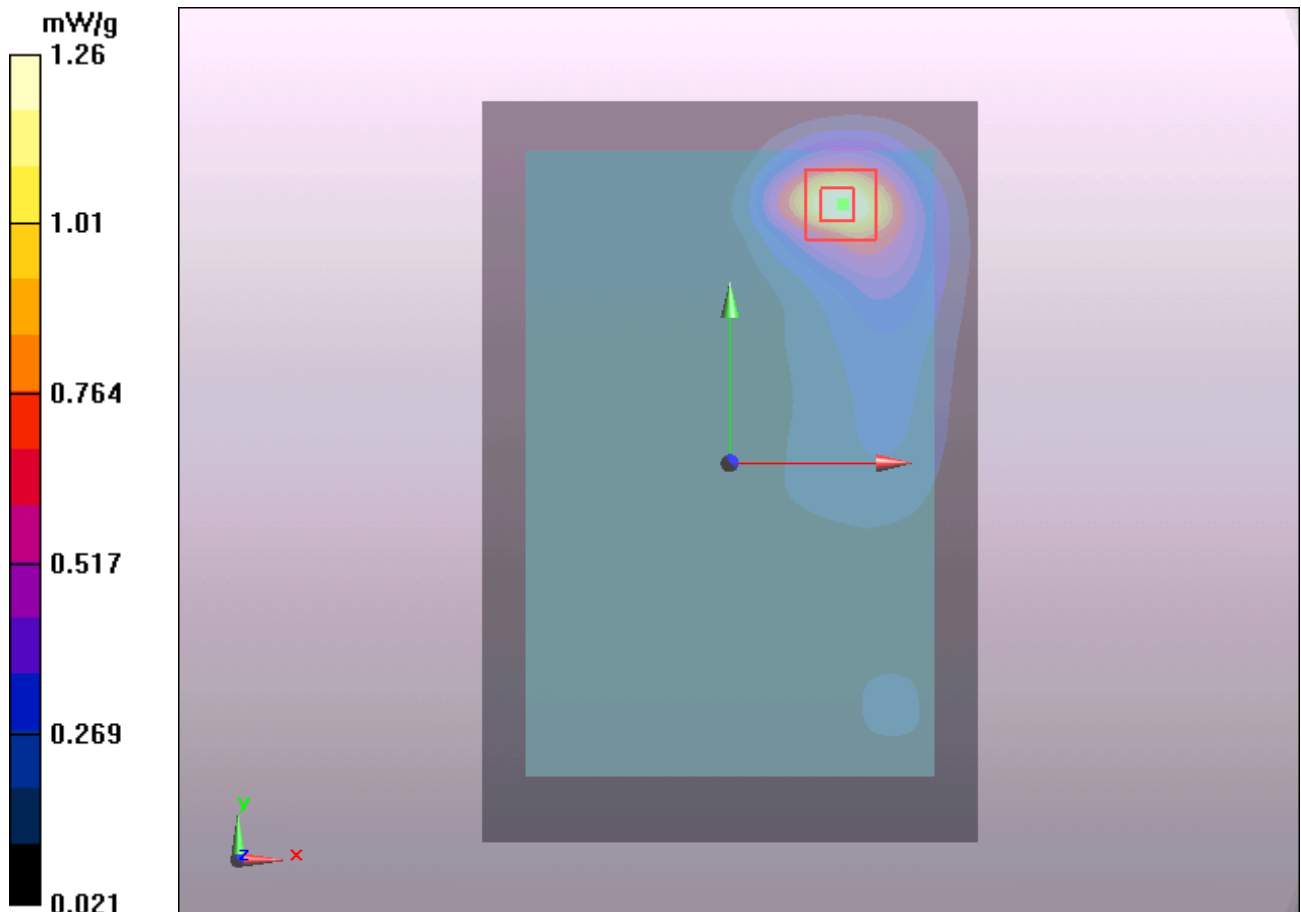


Figure 57 Body, Test Position 1, WCDMA Band II Channel 9538

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WCDMA Band II Test Position 1 Middle (Distance 10mm)

Date/Time: 10/28/2011 10:07:34 AM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.03 mW/g

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

Reference Value = 6.28 V/m; Power Drift = -0.034 dB

Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.871 mW/g; SAR(10 g) = 0.466 mW/g

Maximum value of SAR (measured) = 0.971 mW/g

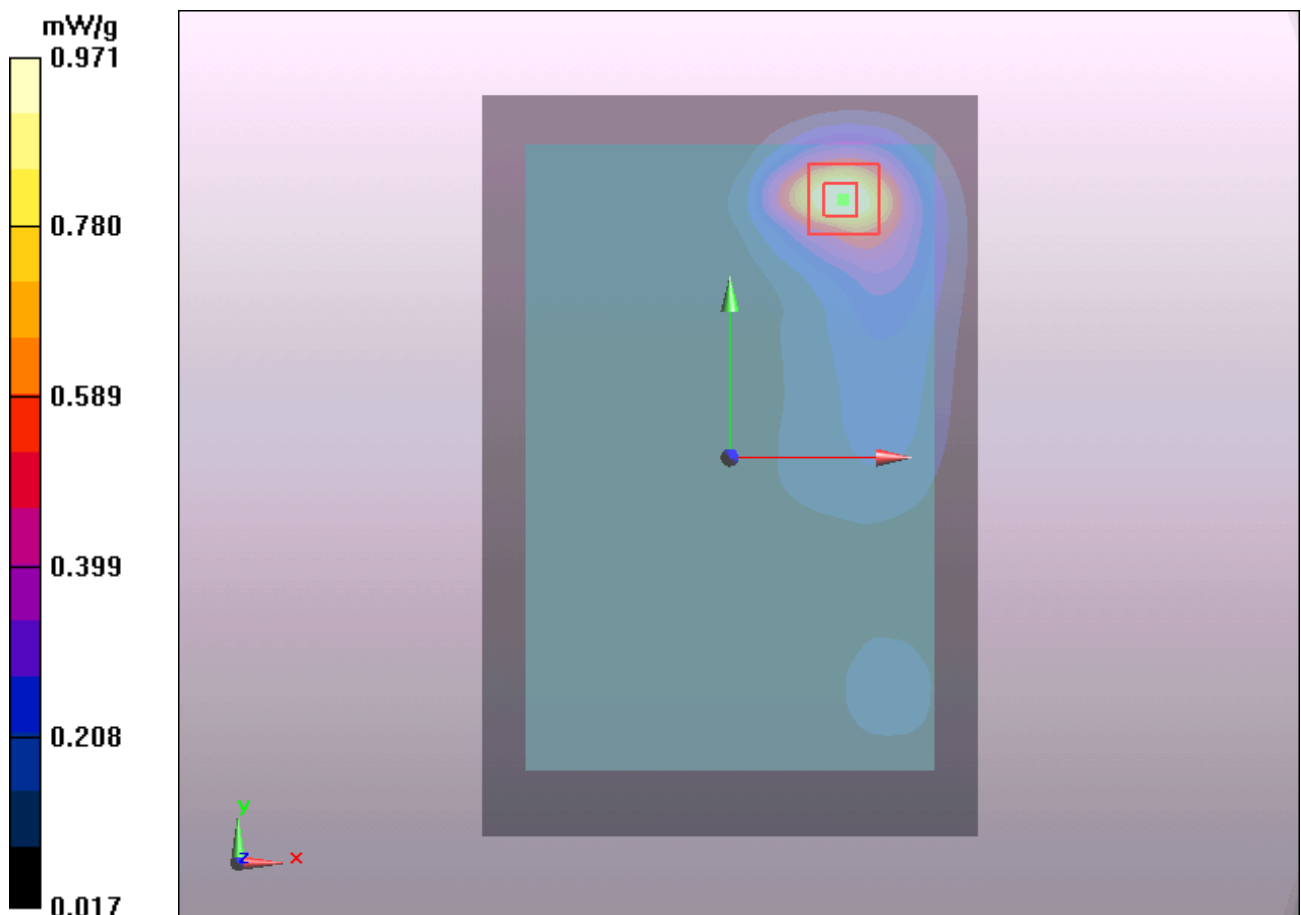


Figure 58 Body, Test Position 1, WCDMA Band II Channel 9400

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WCDMA Band II Test Position 1 Low (Distance 10mm)

Date/Time: 10/28/2011 8:14:14 PM

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

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.00$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.773 mW/g

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

Reference Value = 5.38 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 1.2 W/kg

SAR(1 g) = 0.676 mW/g; SAR(10 g) = 0.362 mW/g

Maximum value of SAR (measured) = 0.752 mW/g

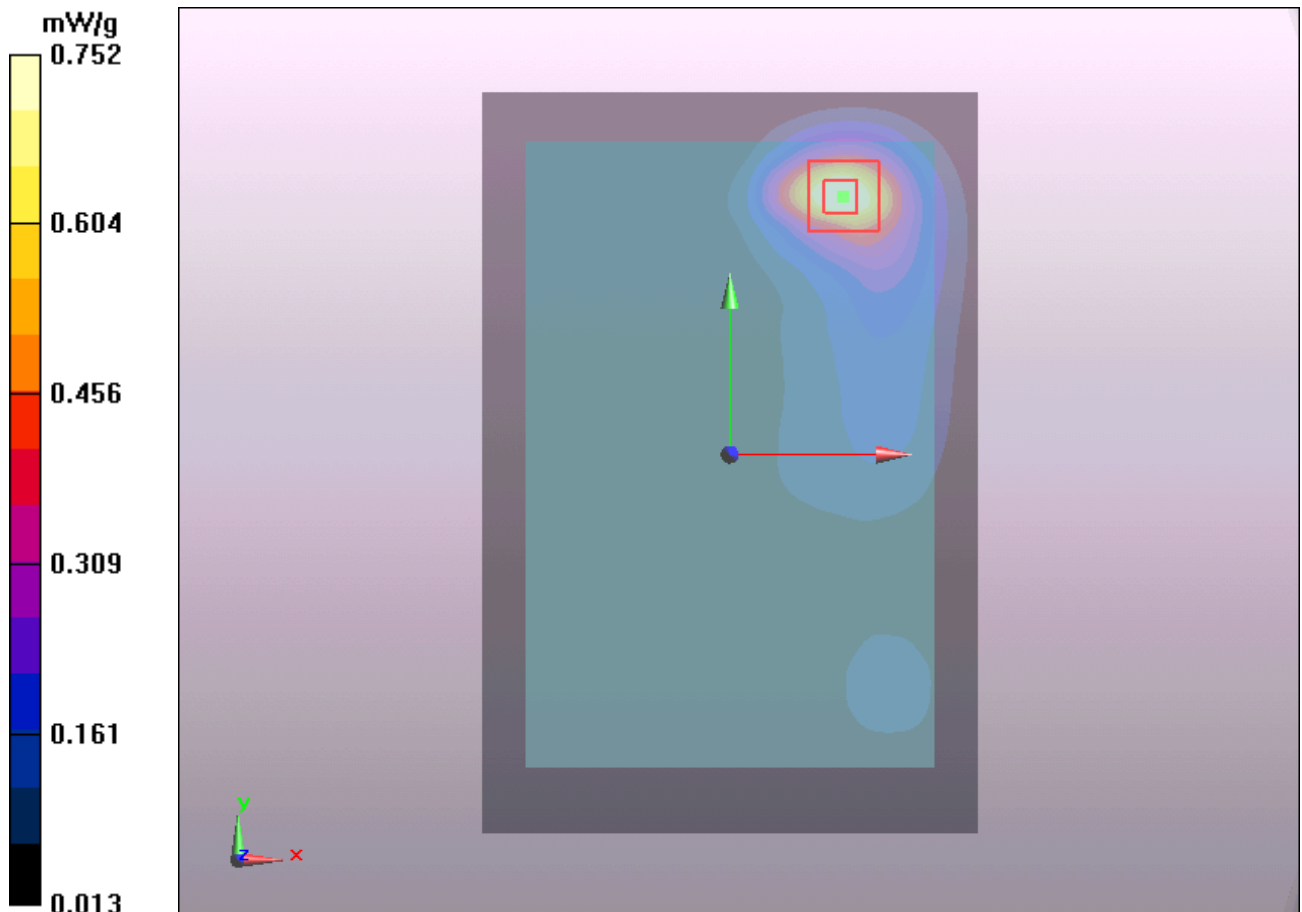


Figure 59 Body, Test Position 1, WCDMA Band II Channel 9262

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WCDMA Band II Test Position 2 Middle (Distance 10mm)

Date/Time: 10/28/2011 9:40:19 AM

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 51.69$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.52 V/m; Power Drift = -0.070 dB

Peak SAR (extrapolated) = 1.1 W/kg

SAR(1 g) = 0.630 mW/g; SAR(10 g) = 0.341 mW/g

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

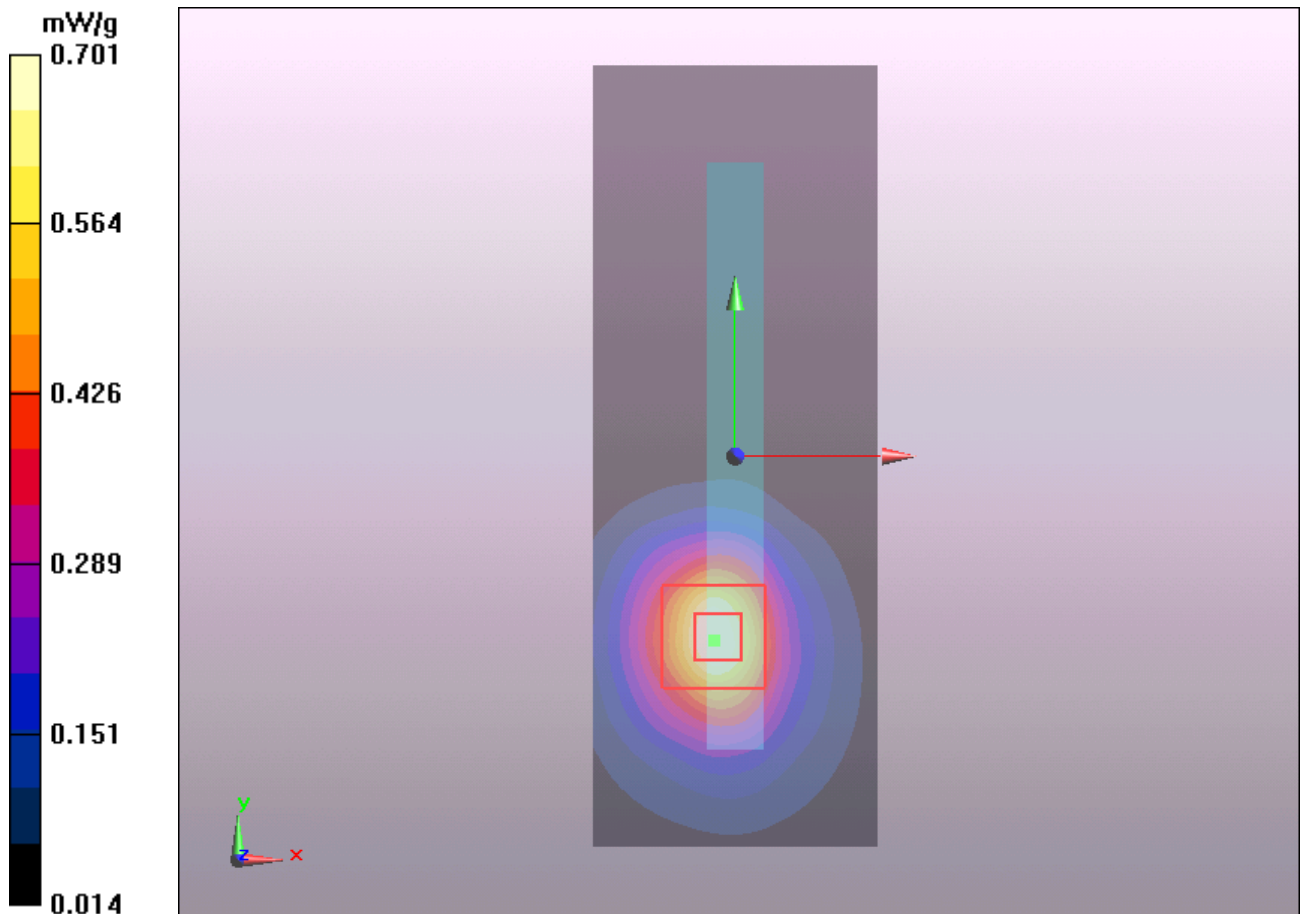


Figure 60 Body, Test Position 2, WCDMA Band II Channel 9400

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WCDMA Band II HSDPA Test Position 6 High (Distance 0mm)

Date/Time: 11/9/2011 11:00:16 PM

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

Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 51.56$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 High/Area Scan (61x41x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.79 V/m ; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 2.24 W/kg

SAR(1 g) = 1.03 mW/g ; SAR(10 g) = 0.443 mW/g

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

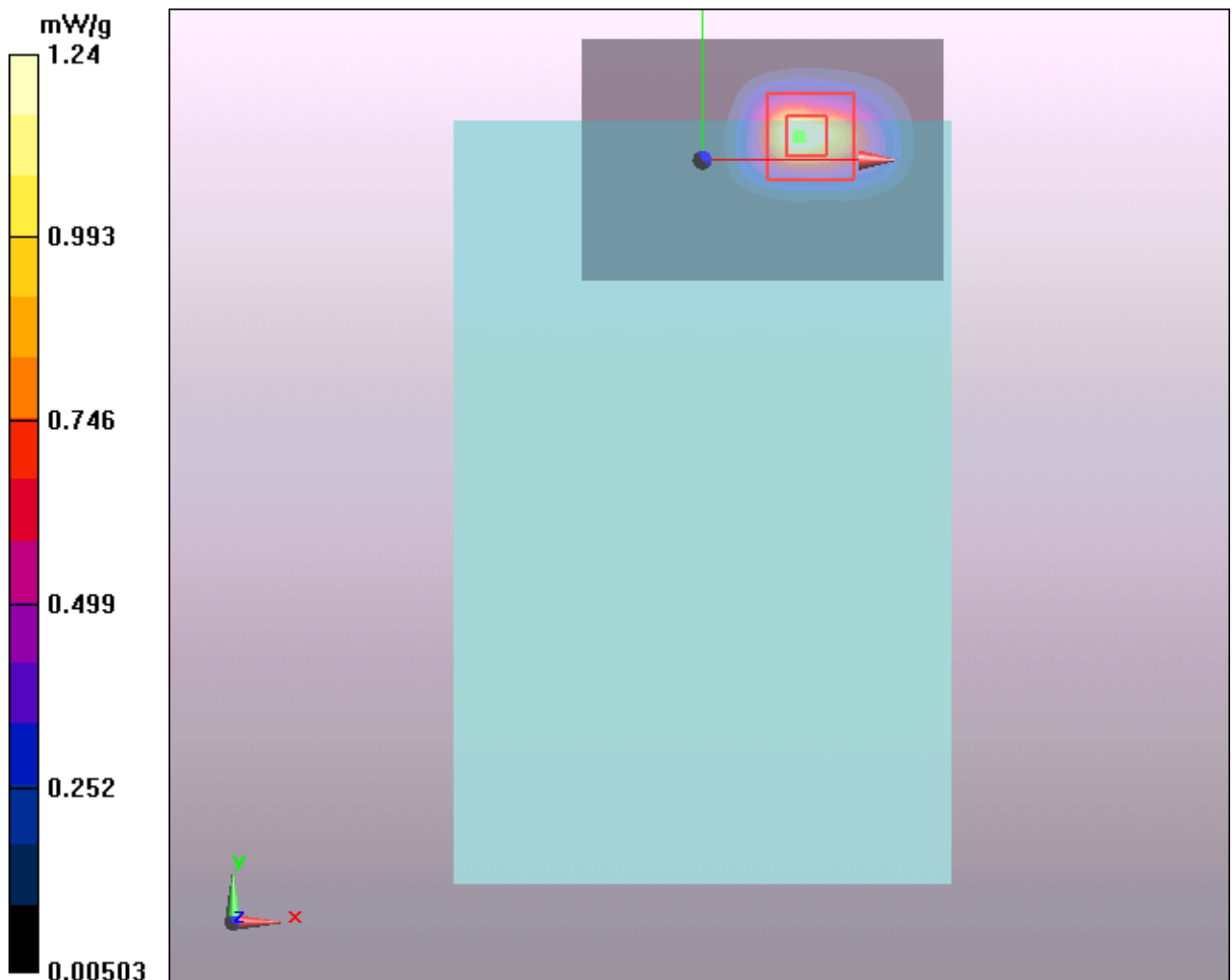


Figure 61 Body, Test Position 6, WCDMA Band II HSDPA Channel 9538

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WCDMA Band II HSUPA Test Position 6 High (Distance 0mm)

Date/Time: 11/9/2011 10:36:55 PM

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

Medium parameters used: $f = 1908$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.56$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 High/Area Scan (61x41x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

Test Position 6 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.53 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 0.926 mW/g; SAR(10 g) = 0.398 mW/g

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

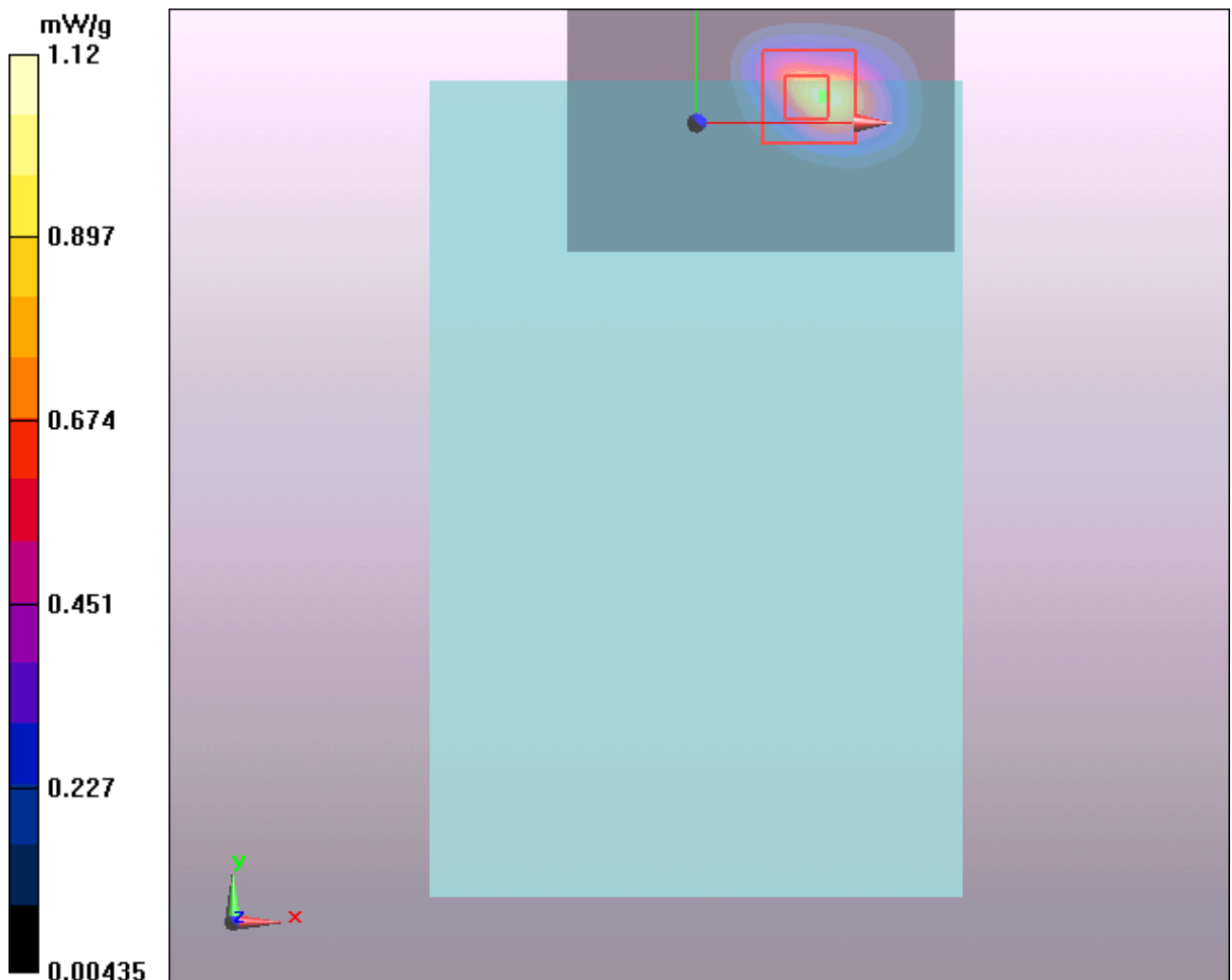


Figure 62 Body, Test Position 6, WCDMA Band II HSUPA Channel 9538

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WCDMA Band V Test Position 1 Middle (Distance 0mm)

Date/Time: 9/26/2011 2:21:24 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.603 mW/g

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

Reference Value = 3.32 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 1.68 W/kg

SAR(1 g) = 0.578 mW/g; SAR(10 g) = 0.271 mW/g

Maximum value of SAR (measured) = 0.622 mW/g

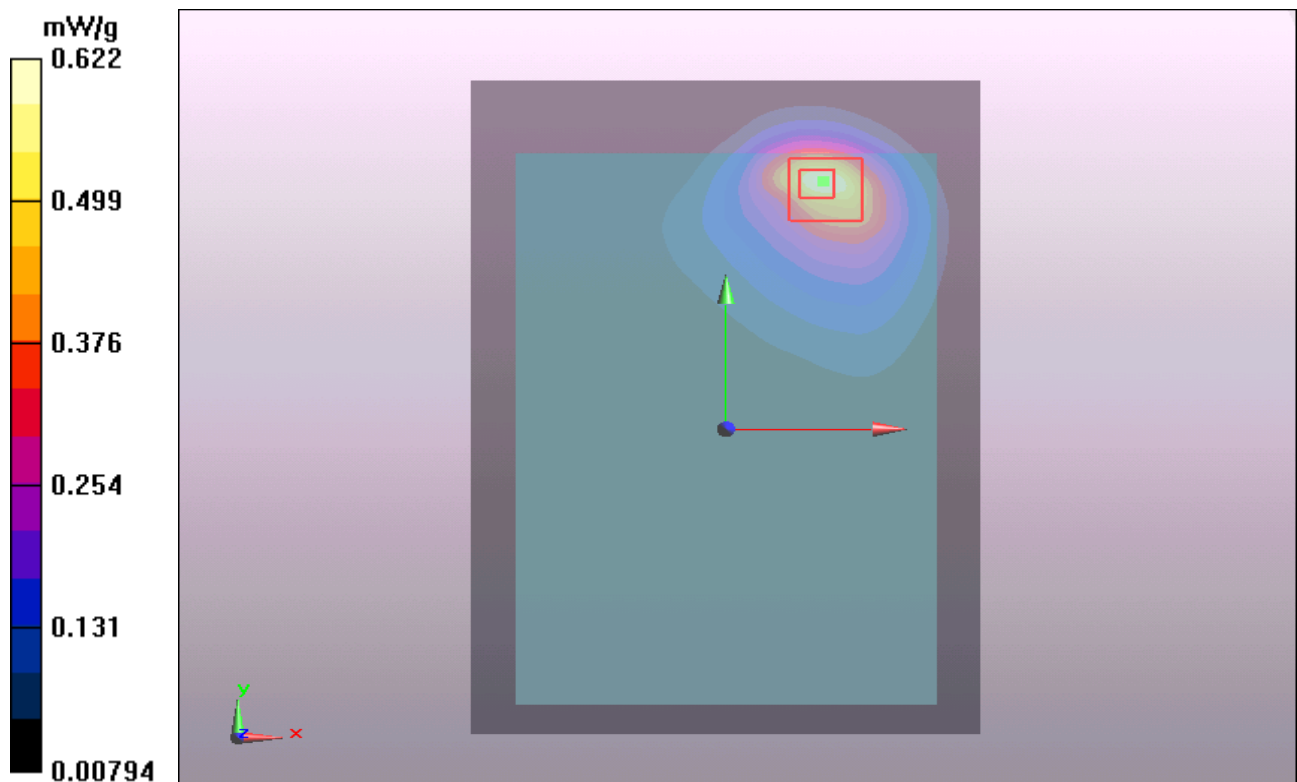


Figure 63 Body, Test Position 1, WCDMA Band V Channel 4183

WCDMA Band V Test Position 2 High (Distance 0mm)

Date/Time: 9/26/2011 10:18:08 AM

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

Medium parameters used: $f = 847 \text{ MHz}$; $\sigma = 0.968 \text{ mho/m}$; $\epsilon_r = 54.8$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 High/Area Scan (41x111x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.819 mW/g

Test Position 2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.8 V/m ; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 4 W/kg

SAR(1 g) = 0.812 mW/g ; SAR(10 g) = 0.368 mW/g

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

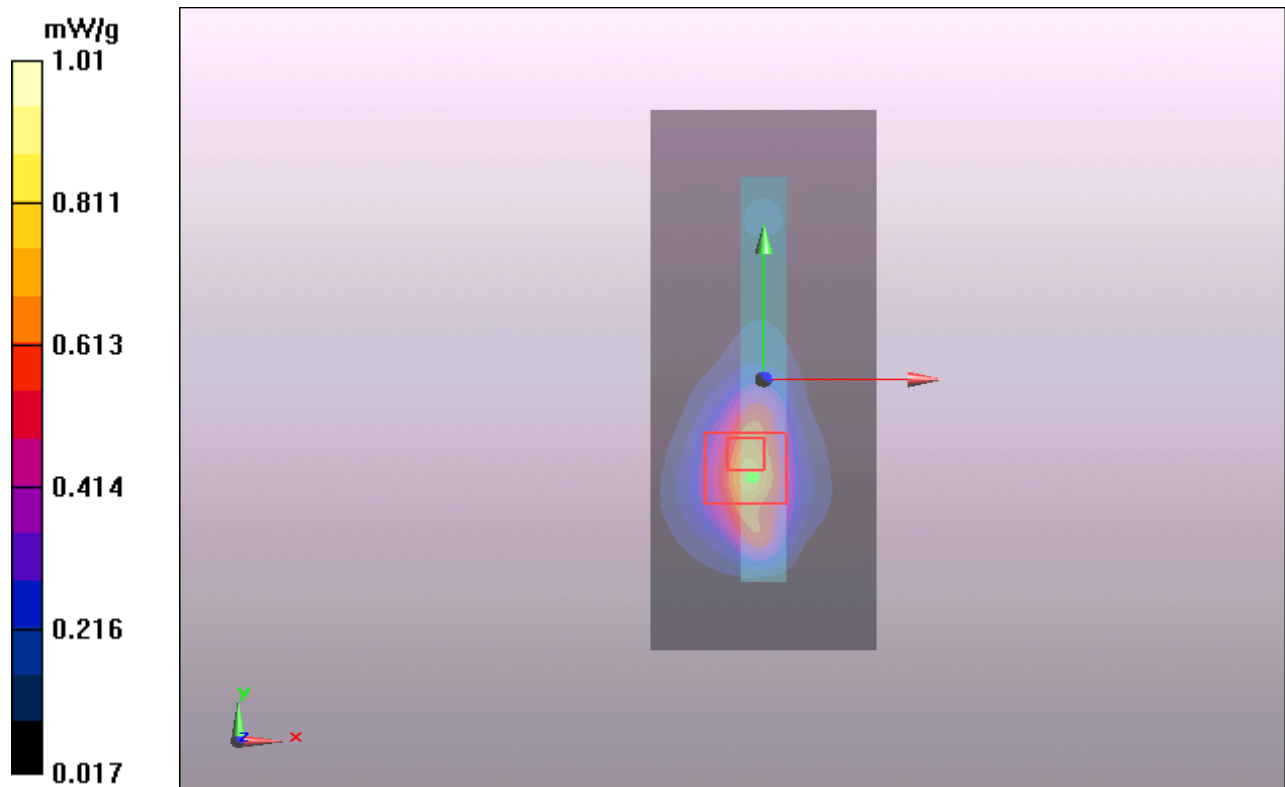


Figure 64 Body, Test Position 2, WCDMA Band V Channel 4233

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WCDMA Band V Test Position 2 Middle (Distance 0mm)

Date/Time: 9/26/2011 9:52:35 AM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.2 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 4.13 W/kg

SAR(1 g) = 0.818 mW/g; SAR(10 g) = 0.370 mW/g

Maximum value of SAR (measured) = 1.02 mW/g

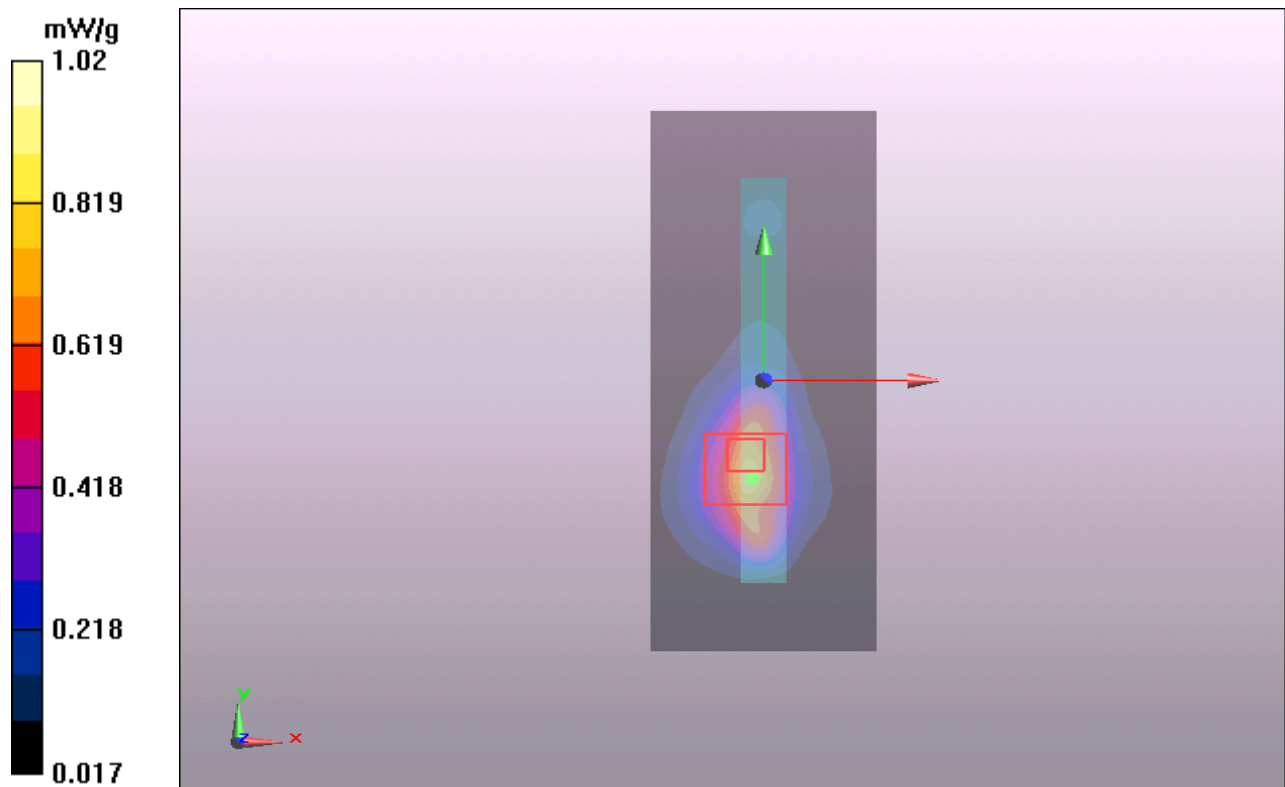


Figure 65 Body, Test Position 2, WCDMA Band V Channel 4183

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WCDMA Band V Test Position 2 Low (Distance 0mm)

Date/Time: 9/26/2011 10:40:57 AM

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

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.947$ mho/m; $\epsilon_r = 55.1$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Low/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.905 mW/g

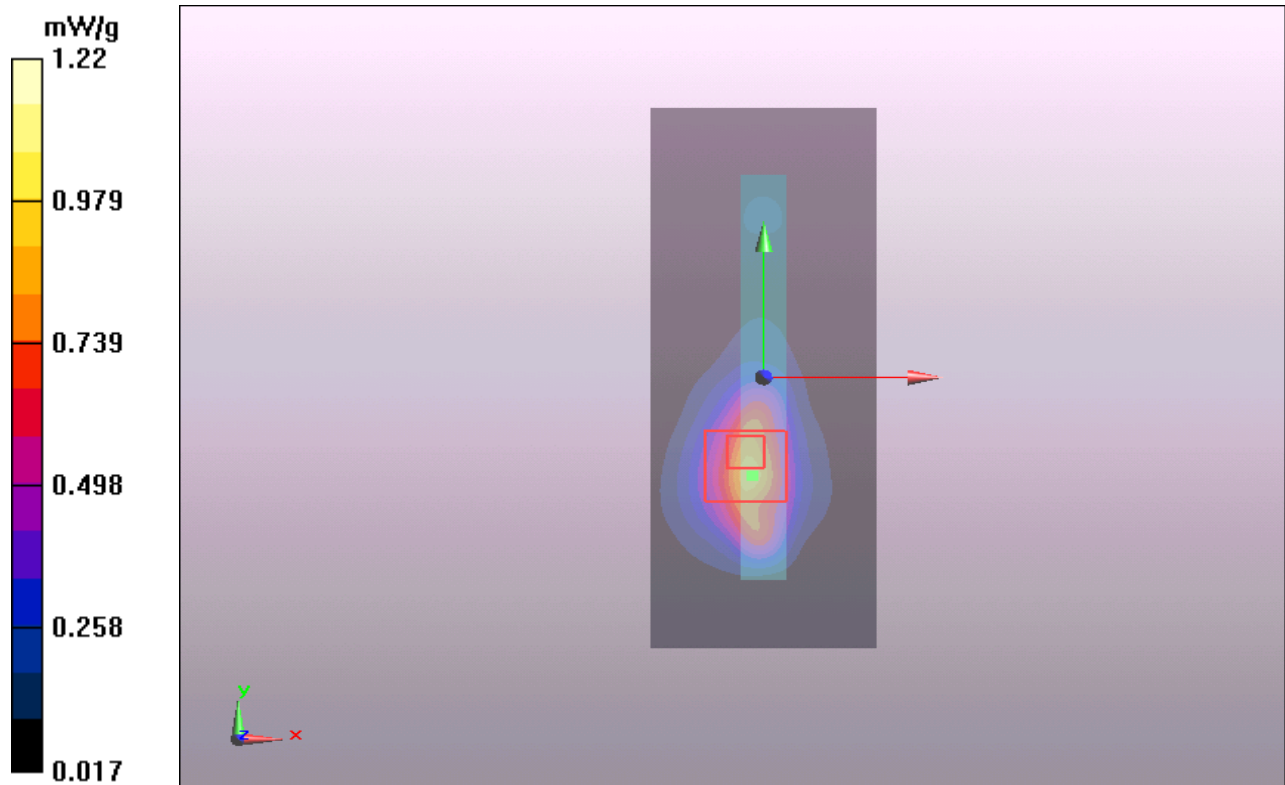
Test Position 2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18 V/m; Power Drift = 0.089 dB

Peak SAR (extrapolated) = 4.98 W/kg

SAR(1 g) = 0.985 mW/g; SAR(10 g) = 0.400 mW/g

Maximum value of SAR (measured) = 1.22 mW/g



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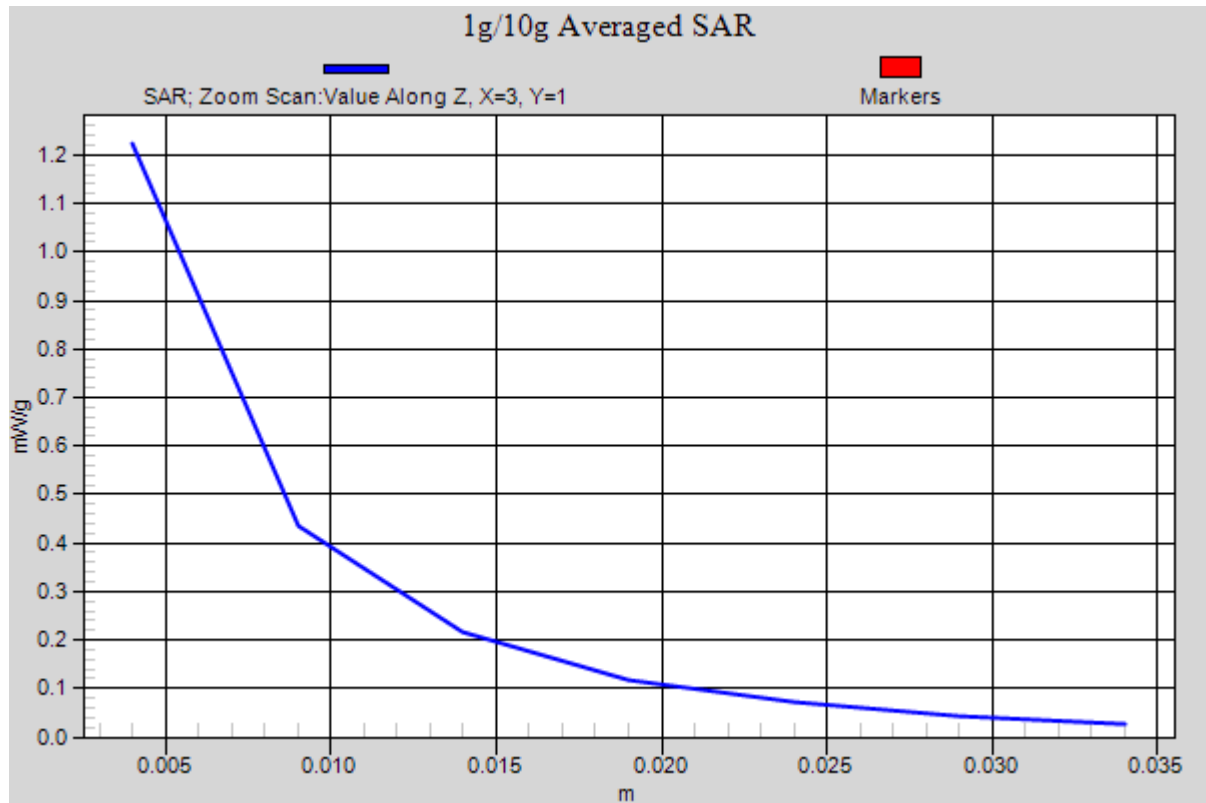


Figure 66 Body, Test Position 2, WCDMA Band V Channel 4132

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WCDMA Band V Test Position 6 Middle (Distance 0mm)

Date/Time: 11/9/2011 6:47:01 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 1.00$ mho/m; $\epsilon_r = 55.42$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 6 Middle/Area Scan (101x41x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.693 mW/g

Test Position 6 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.32 V/m; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 2.53 W/kg

SAR(1 g) = 0.627 mW/g; SAR(10 g) = 0.245 mW/g

Maximum value of SAR (measured) = 0.683 mW/g

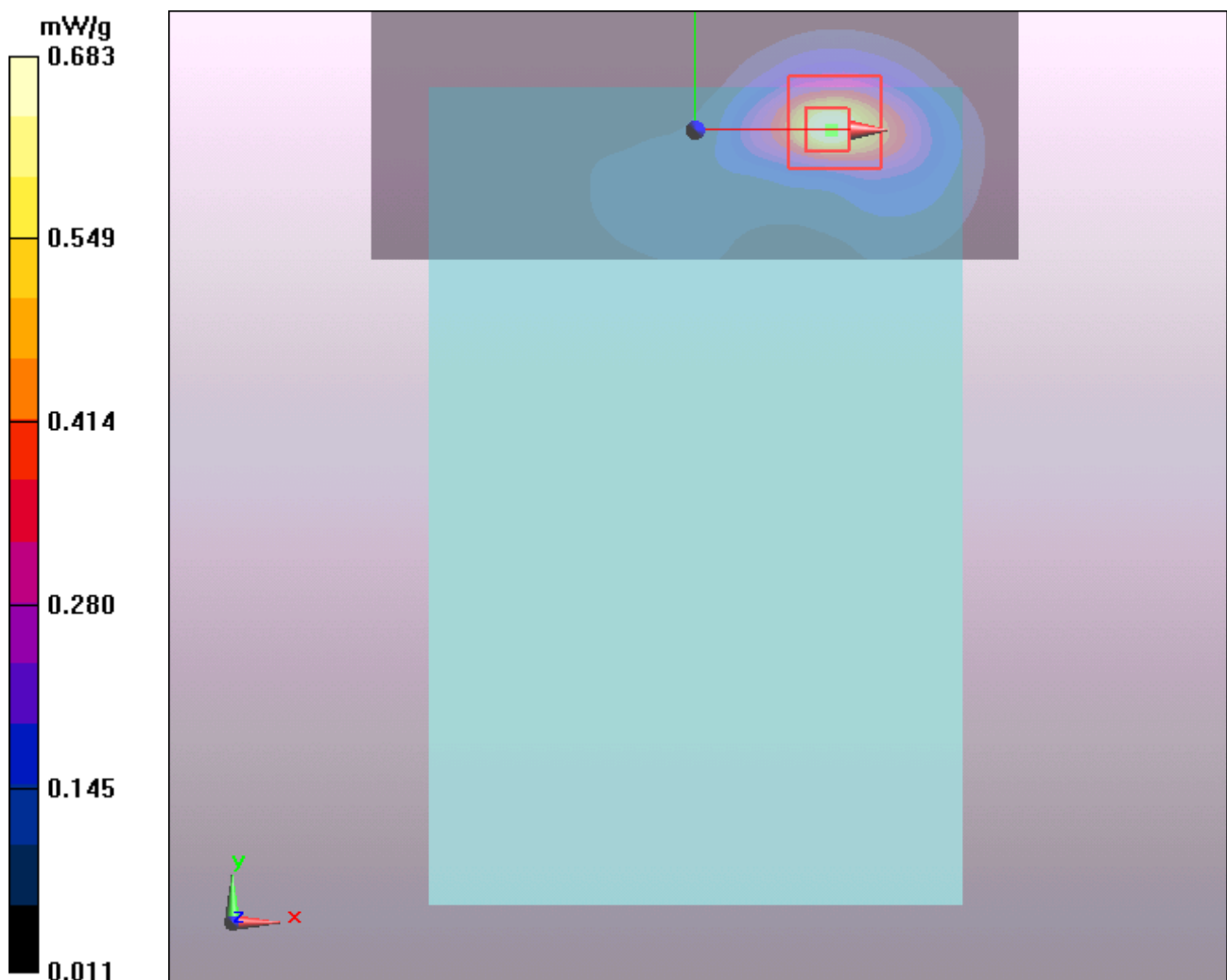


Figure 67 Body, Test Position 6, WCDMA Band V Channel 4183

WCDMA Band V Test Position 5 Middle (Distance 0mm)

Date/Time: 9/26/2011 1:14:08 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (41x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.440 mW/g

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

Reference Value = 15.2 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 0.888 W/kg

SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.233 mW/g

Maximum value of SAR (measured) = 0.486 mW/g

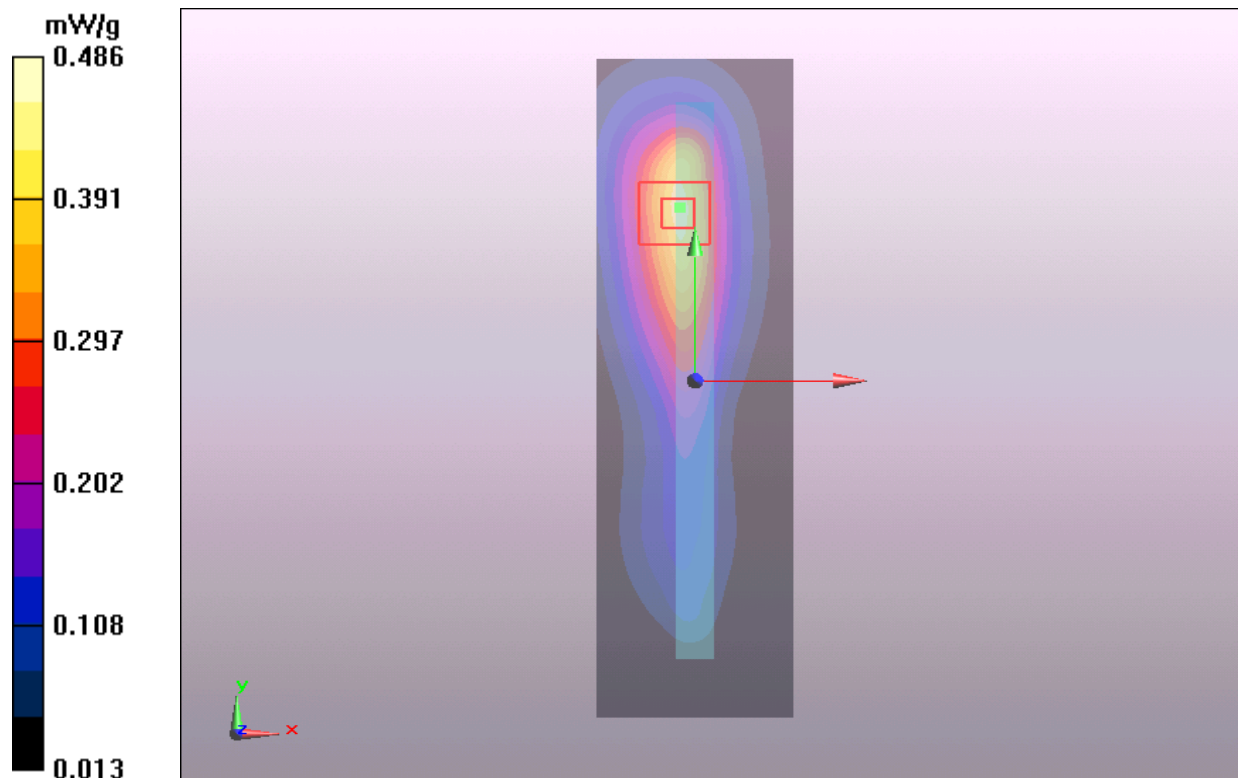


Figure 68 Body, Test Position 5, WCDMA Band V Channel 4183

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WCDMA Band V Test Position 1 Middle (Distance 10mm)

Date/Time: 10/29/2011 8:47:40 PM

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

Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 55.4$; $\rho = 1000 \text{ kg/m}^3$

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: 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 (101x151x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.517 mW/g

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

Reference Value = 11.1 V/m ; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.711 W/kg

SAR(1 g) = 0.463 mW/g ; SAR(10 g) = 0.304 mW/g

Maximum value of SAR (measured) = 0.499 mW/g

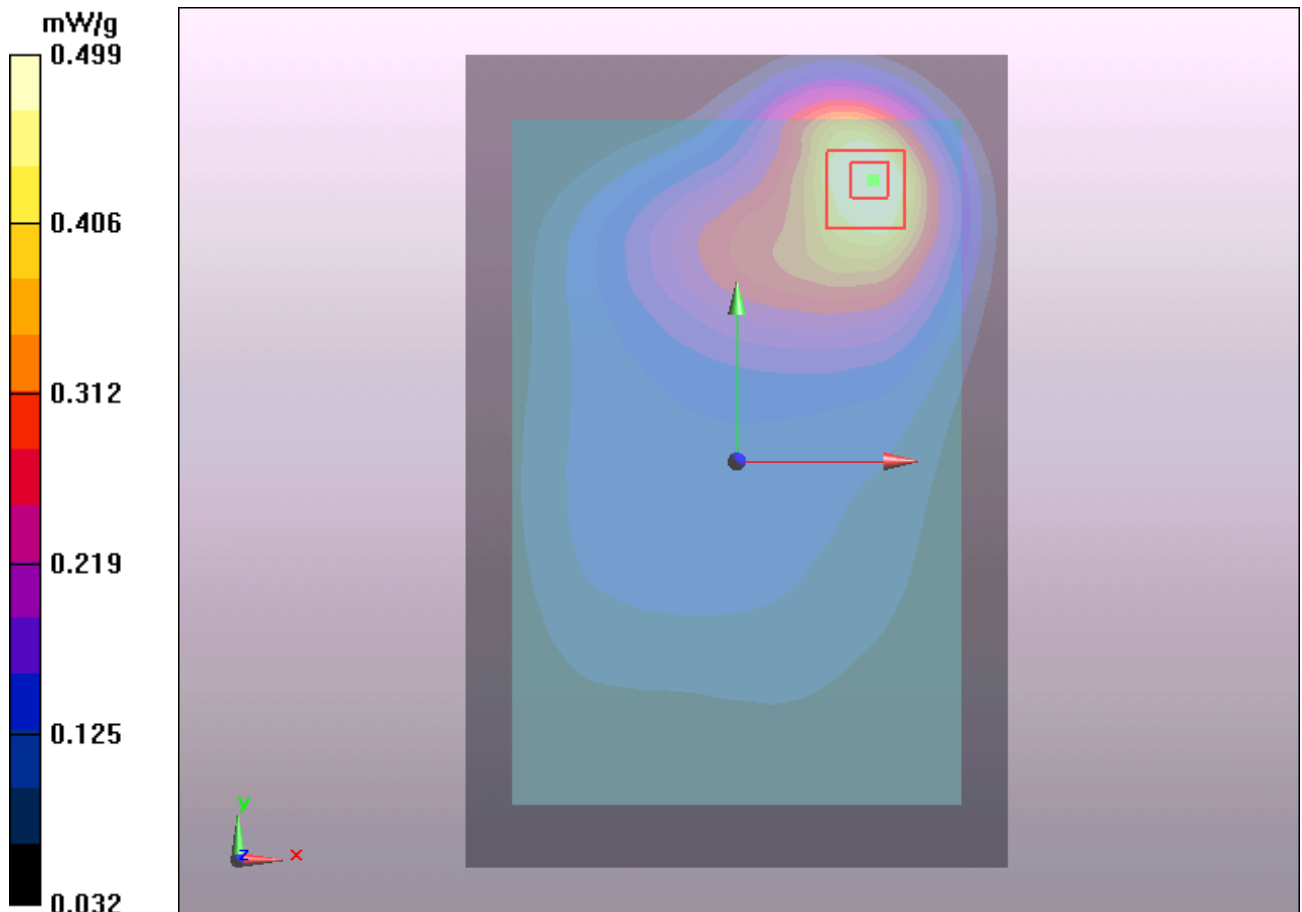


Figure 69 Body, Test Position 1, WCDMA Band V Channel 4183

TA Technology (Shanghai) Co., Ltd.
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WCDMA Band V Test Position 2 Middle (Distance 10mm)

Date/Time: 10/29/2011 10:04:26 PM

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

Medium parameters used: $f = 837$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.4$; $\rho = 1000$ kg/m³

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

Phantom section: Flat Section

DASY5 Configuration:

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

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

Phantom: ELI 4.0; Type: QDOVA001BA;

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

Test Position 2 Middle/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.350 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.2 V/m; Power Drift = 0.116 dB

Peak SAR (extrapolated) = 0.503 W/kg

SAR(1 g) = 0.323 mW/g; SAR(10 g) = 0.202 mW/g

Maximum value of SAR (measured) = 0.356 mW/g

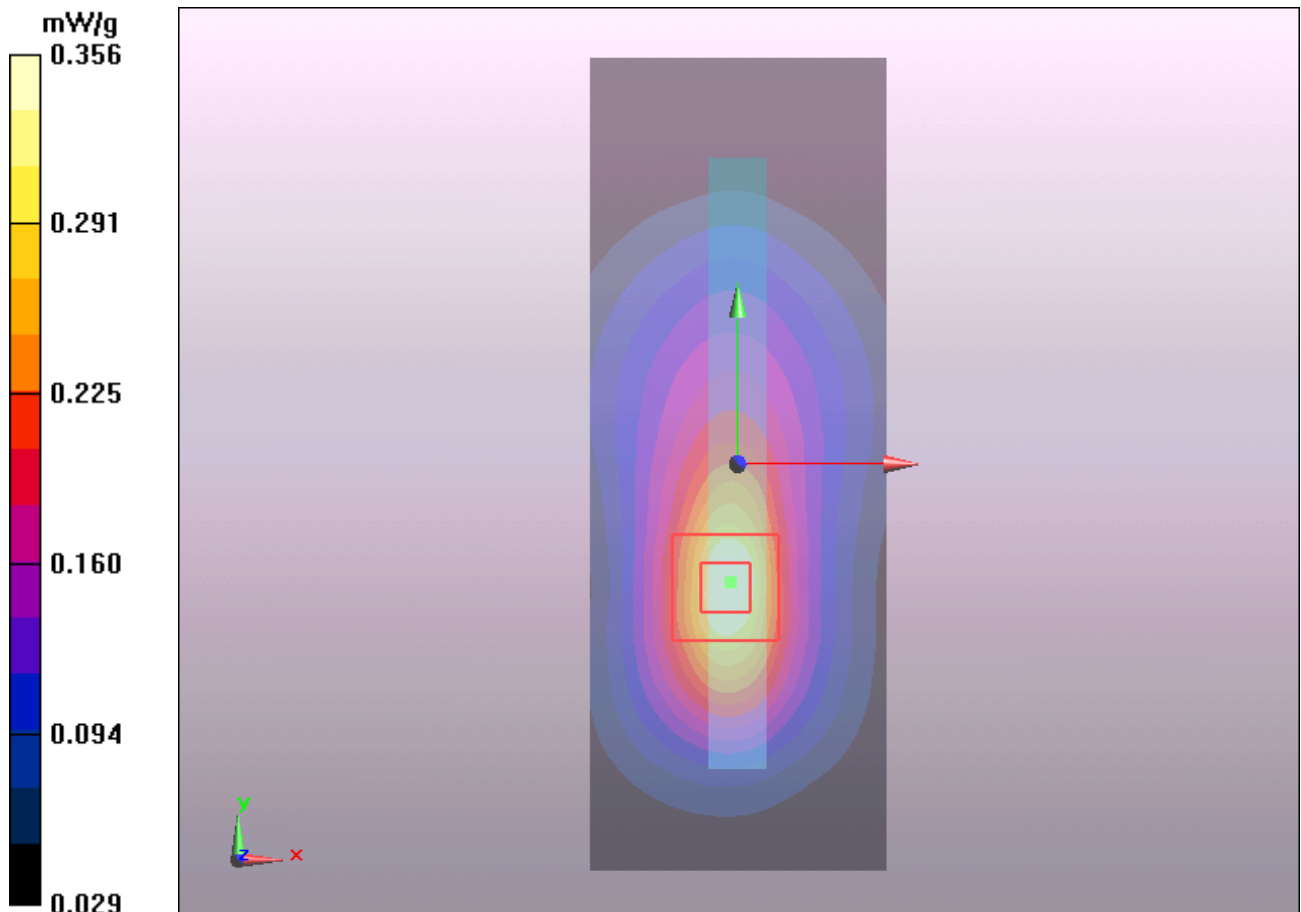


Figure 70 Body, Test Position 2, WCDMA Band V Channel 4183

TA Technology (Shanghai) Co., Ltd.

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ANNEX D: Probe Calibration Certificate

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



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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
D4E4	SN: 660	20-Apr-10 (No. D4E4-660_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

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

Issued: November 25, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3677_Nov10

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TA Technology (Shanghai) Co., Ltd.

Test Report

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Calibration Laboratory of
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Engineering AG
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization ϕ	ϕ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- 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:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,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.
- DCP_{x,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.
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,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 $f \leq 800$ 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 NORM_{x,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.

TA Technology (Shanghai) Co., Ltd.
Test Report

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EX3DV4 SN:3677

November 24, 2010

Probe EX3DV4

SN:3677

Manufactured:	September 9, 2008
Last calibrated:	September 23, 2009
Recalibrated:	November 24, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

TA Technology (Shanghai) Co., Ltd.
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EX3DV4 SN:3677

November 24, 2010

DASY/EASY - Parameters of Probe: EX3DV4 SN:3677

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$) ^A	0.41	0.47	0.39	± 10.1%
DCP (mV) ^B	96.8	98.9	98.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	143.2	± 2.4 %
			Y	0.00	0.00	1.00	140.9	
			Z	0.00	0.00	1.00	135.8	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX, Y, Z do not affect the E²-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.

TA Technology (Shanghai) Co., Ltd.

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EX3DV4 SN:3677

November 24, 2010

DASY/EASY - Parameters of Probe: EX3DV4 SN:3677

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	43.5 ± 5%	0.87 ± 5%	10.04	10.04	10.04	0.09	1.00 ± 13.3%
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	9.50	9.50	9.50	0.72	0.64 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	8.22	8.22	8.22	0.72	0.59 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.94	7.94	7.94	0.81	0.57 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	7.32	7.32	7.32	0.47	0.75 ± 11.0%

^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

TA Technology (Shanghai) Co., Ltd.
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EX3DV4 SN:3677

November 24, 2010

DASY/EASY - Parameters of Probe: EX3DV4 SN:3677

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)
450	± 50 / ± 100	56.7 ± 5%	0.94 ± 5%	10.62	10.62	10.62	0.02	1.00 ± 13.3%
750	± 50 / ± 100	55.5 ± 5%	0.96 ± 5%	10.14	10.14	10.14	0.59	0.72 ± 11.0%
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	10.33	10.33	10.33	0.20	2.06 ± 11.0%
1450	± 50 / ± 100	54.0 ± 5%	1.30 ± 5%	8.47	8.47	8.47	0.99	0.53 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	8.02	8.02	8.02	0.63	0.67 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.77	7.77	7.77	0.69	0.67 ± 11.0%
2100	± 50 / ± 100	53.2 ± 5%	1.62 ± 5%	8.04	8.04	8.04	0.16	1.44 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	7.46	7.46	7.46	0.99	0.49 ± 11.0%
3500	± 50 / ± 100	51.3 ± 5%	3.31 ± 5%	6.61	6.61	6.61	0.28	1.40 ± 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.

TA Technology (Shanghai) Co., Ltd.
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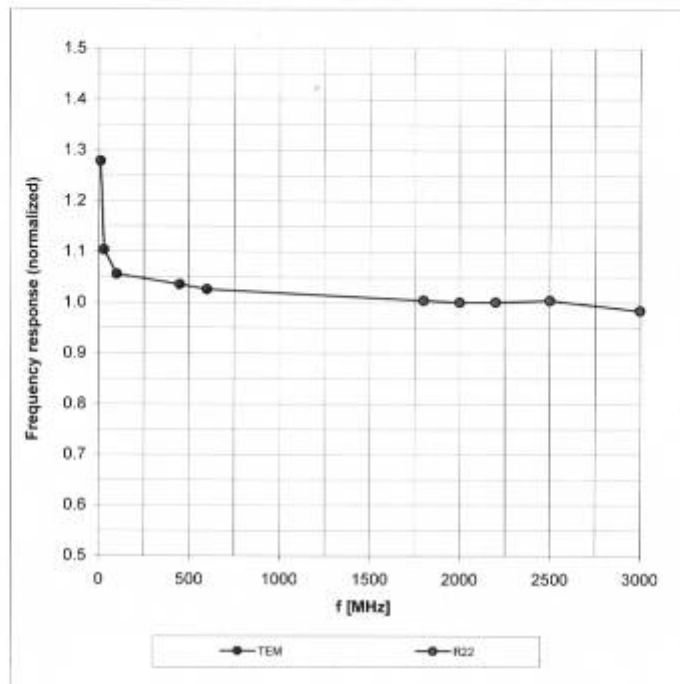
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EX3DV4 SN:3677

November 24, 2010

Frequency Response of E-Field

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



Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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Test Report

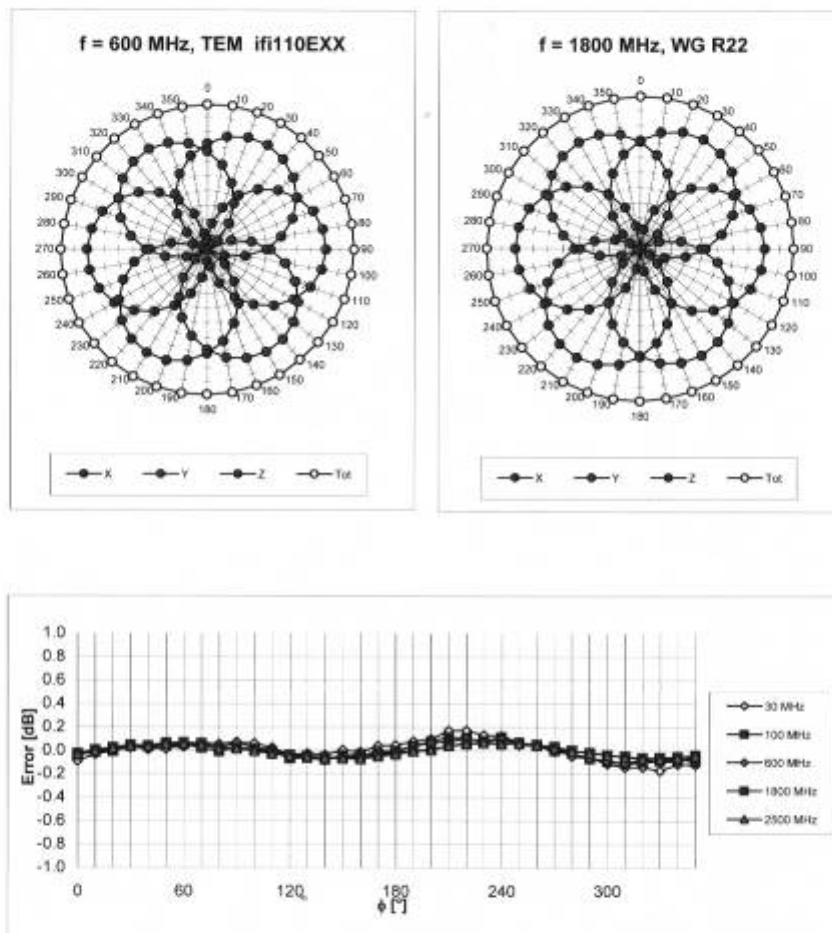
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EX3DV4 SN:3677

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Receiving Pattern (ϕ), $\theta = 0^\circ$



Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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Test Report

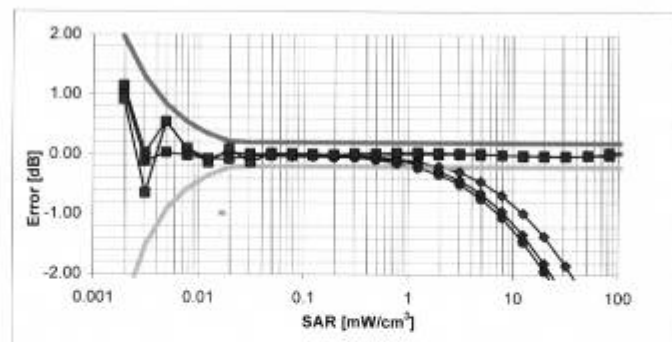
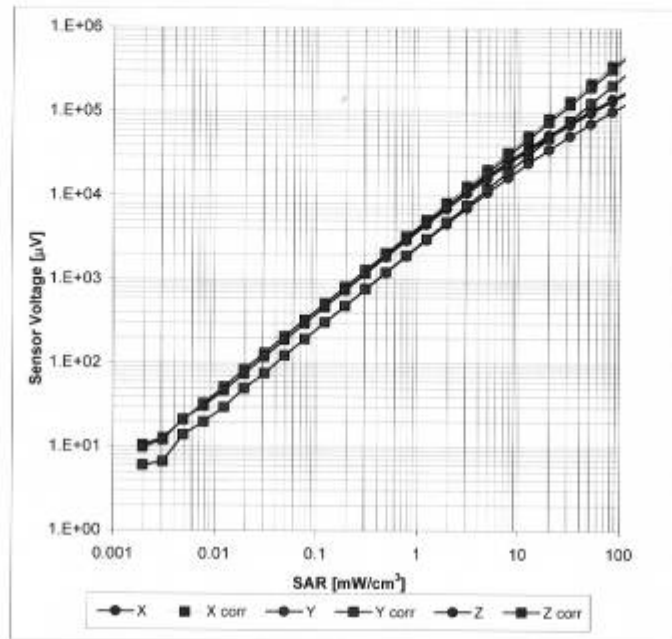
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EX3DV4 SN:3677

November 24, 2010

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f = 900 \text{ MHz}$)

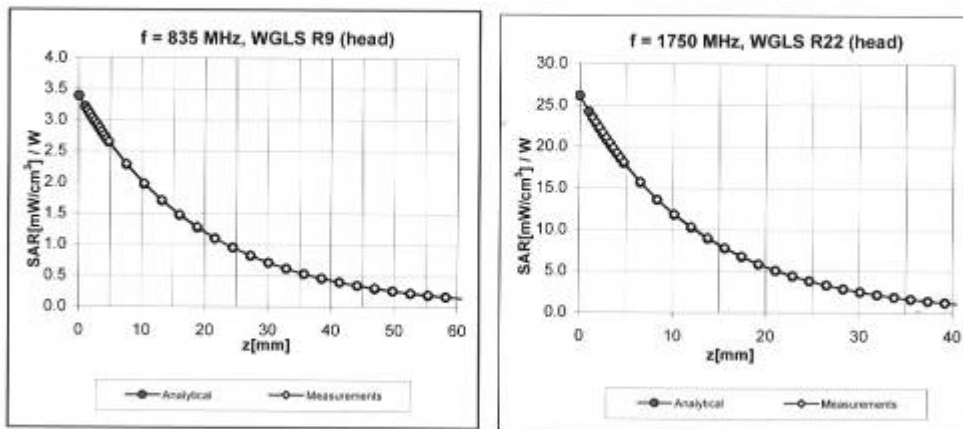


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

EX3DV4 SN:3677

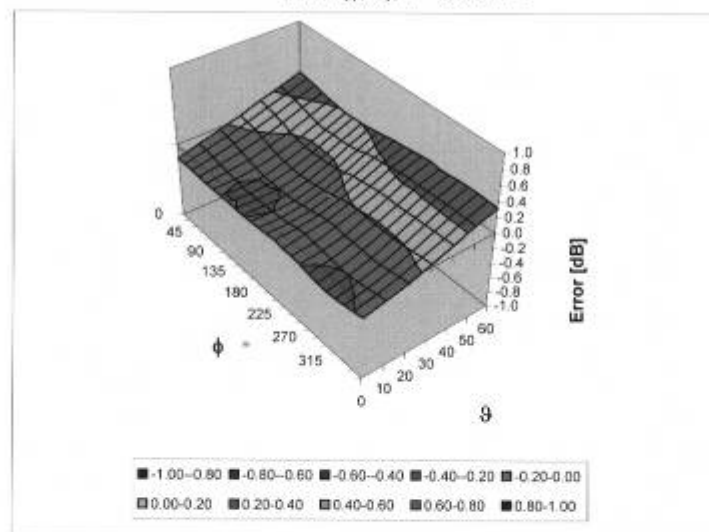
November 24, 2010

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)

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EX3DV4 SN:3677

November 24, 2010

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

TA Technology (Shanghai) Co., Ltd.

Test Report

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ANNEX E: D835V2 Dipole Calibration Certificate

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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **TA-Shanghai (Auden)**

Certificate No: **D835V2-4d020_Aug11**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d020**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **August 26, 2011**

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100006	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature

Issued: August 26, 2011

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D835V2-4d020_Aug11

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TA Technology (Shanghai) Co., Ltd.

Test Report

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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RZA1109-1638SAR01R1

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.1 $\pm$ 6 %	0.89 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.32 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.34 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.11 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.4 $\pm$ 6 %	0.99 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.42 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	9.46 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	6.26 mW / g $\pm$ 16.5 % (k=2)

TA Technology (Shanghai) Co., Ltd.

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω - 3.1 j Ω
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 5.4 j Ω
Return Loss	- 25.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 22, 2004

DASY5 Validation Report for Head TSL

Date: 25.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 41.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/ $P_{in}=250 \text{ mW}$, $d=15\text{mm}$ /Zoom Scan (7x7x7)/Cube 0:

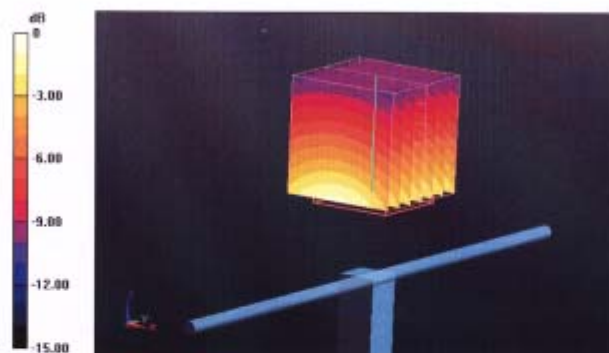
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.930 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.421 W/kg

SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.52 mW/g

Maximum value of SAR (measured) = 2.708 mW/g

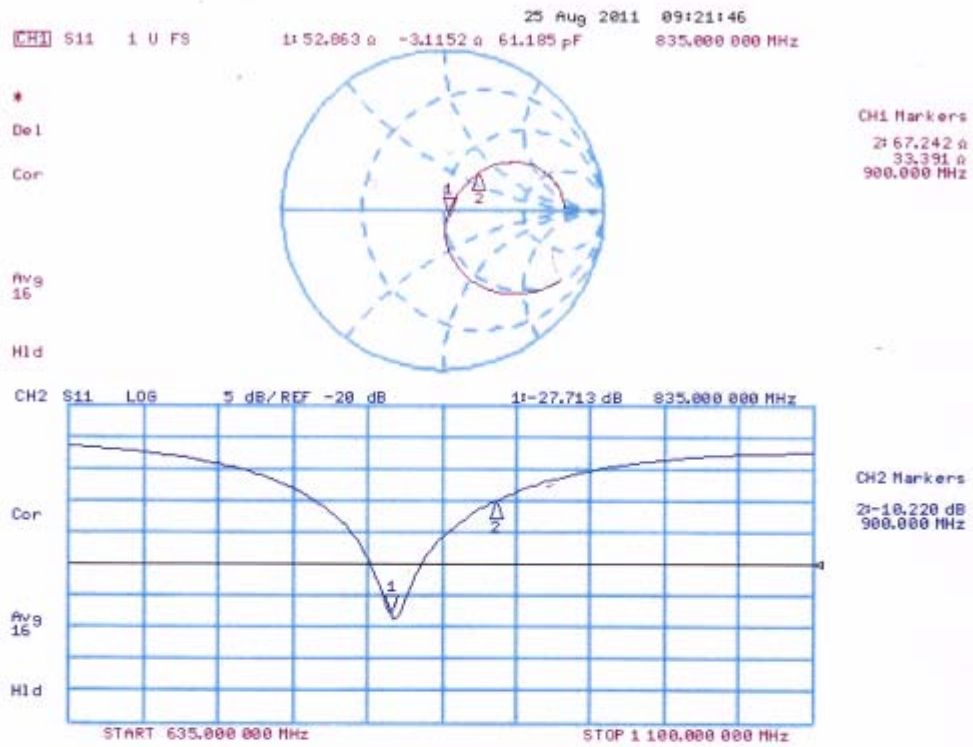


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Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 26.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d020

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.99 \text{ mho/m}$; $\epsilon_r = 53.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

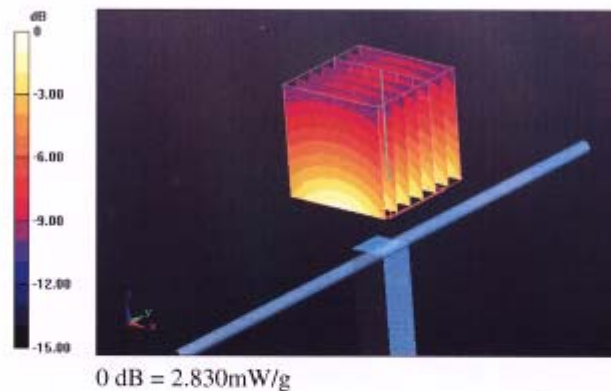
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.406 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.509 W/kg

SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.59 mW/g

Maximum value of SAR (measured) = 2.827 mW/g

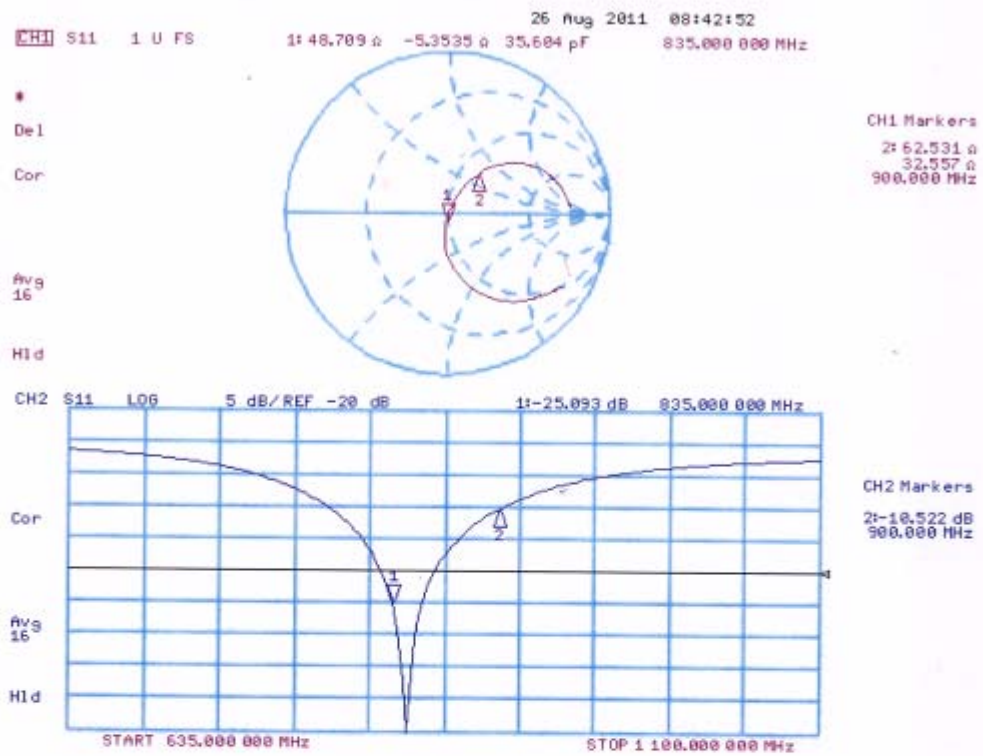


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Impedance Measurement Plot for Body TSL



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ANNEX F: D1900V2 Dipole Calibration Certificate

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



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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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-Shanghai (Auden)**

Certificate No: **D1900V2-5d060_Aug11**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d060**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **August 31, 2011**

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

Calibrated by:	Name Dimce Iliev	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 31, 2011

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

TA Technology (Shanghai) Co., Ltd.

Test Report

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Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



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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
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

TA Technology (Shanghai) Co., Ltd.

Test Report

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.5 $\pm$ 6 %	1.42 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	40.3 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.30 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	21.1 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.9 $\pm$ 6 %	1.57 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	41.7 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.55 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	22.0 mW / g $\pm$ 16.5 % (k=2)

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.6 \Omega + 7.5 j\Omega$
Return Loss	- 22.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.3 \Omega + 7.9 j\Omega$
Return Loss	- 21.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 10, 2004

DASY5 Validation Report for Head TSL

Date: 30.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

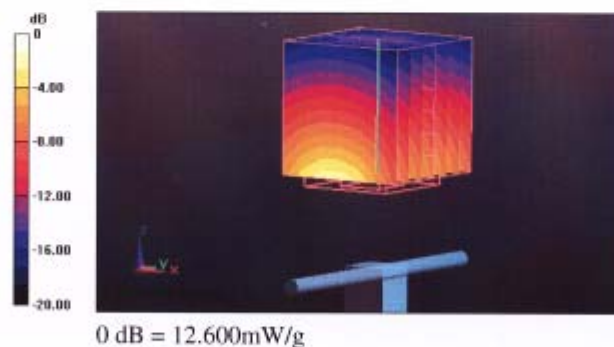
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.636 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 18.535 W/kg

SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.3 mW/g

Maximum value of SAR (measured) = 12.600 mW/g

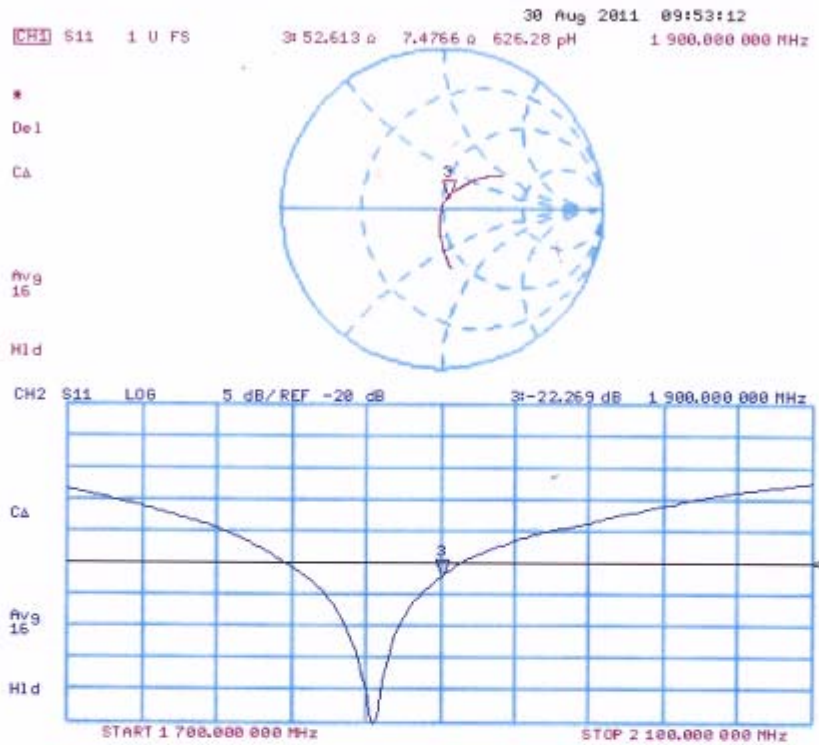


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Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 31.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d060

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 53.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

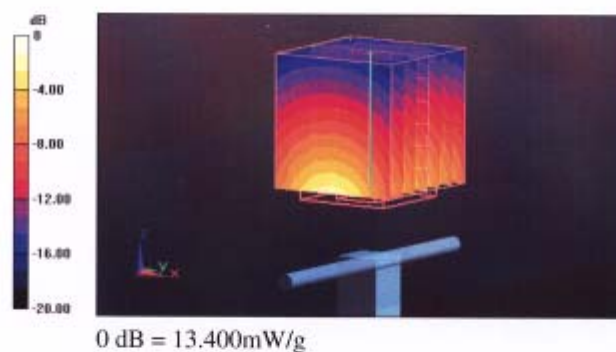
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.435 V/m; Power Drift = -0.0099 dB

Peak SAR (extrapolated) = 18.663 W/kg

SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.55 mW/g

Maximum value of SAR (measured) = 13.397 mW/g

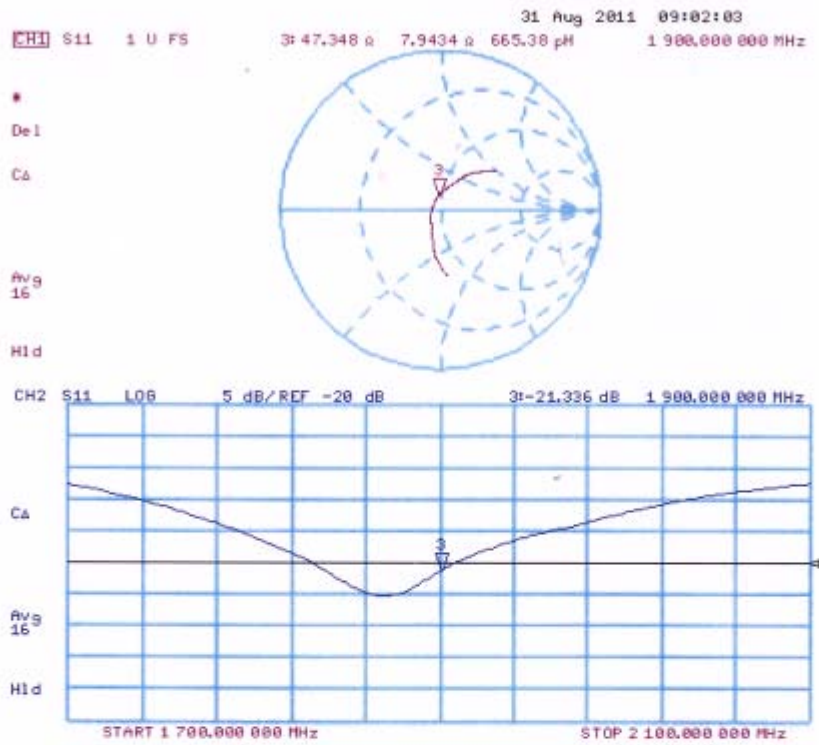


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Impedance Measurement Plot for Body TSL



TA Technology (Shanghai) Co., Ltd.

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ANNEX G: DAE4 Calibration Certificate

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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **TA - SH (Auden)**

Certificate No: **DAE4-871_Nov10**

CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BJ - SN: 871**

Calibration procedure(s) **QA CAL-06.v22**
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: **November 18, 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
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1004	07-Jun-10 (in house check)	In house check: Jun-11

Calibrated by:	Name Andrea Guntli	Function Technician	Signature
Approved by:	Name Fin Bornholt	Function R&D Director	Signature

Issued: November 18, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

TA Technology (Shanghai) Co., Ltd.

Test Report

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



S Schweizerischer Kalibrierdienst
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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

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

Methods Applied and Interpretation of Parameters

- **DC Voltage Measurement:** Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- **Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - **DC Voltage Measurement Linearity:** Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - **Common mode sensitivity:** Influence of a positive or negative common mode voltage on the differential measurement.
 - **Channel separation:** Influence of a voltage on the neighbor channels not subject to an input voltage.
 - **AD Converter Values with inputs shorted:** Values on the internal AD converter corresponding to zero input voltage
 - **Input Offset Measurement:** Output voltage and statistical results over a large number of zero voltage measurements.
 - **Input Offset Current:** Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - **Input resistance:** Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - **Low Battery Alarm Voltage:** Typical value for information. Below this voltage, a battery alarm signal is generated.
 - **Power consumption:** Typical value for information. Supply currents in various operating modes.

TA Technology (Shanghai) Co., Ltd.

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DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

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

Calibration Factors	X	Y	Z
High Range	404.757 $\pm$ 0.1% (k=2)	404.740 $\pm$ 0.1% (k=2)	405.181 $\pm$ 0.1% (k=2)
Low Range	3.98219 $\pm$ 0.7% (k=2)	3.93489 $\pm$ 0.7% (k=2)	3.96831 $\pm$ 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	90.0 $^{\circ}$ $\pm$ 1 $^{\circ}$
---	------------------------------------

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Appendix

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200001.2	-1.56	-0.00
Channel X + Input	20000.71	0.71	0.00
Channel X - Input	-19997.87	1.63	-0.01
Channel Y + Input	199994.3	1.99	0.00
Channel Y + Input	19998.92	-1.08	-0.01
Channel Y - Input	-20000.26	-0.76	0.00
Channel Z + Input	200009.2	-1.04	-0.00
Channel Z + Input	19998.70	-1.10	-0.01
Channel Z - Input	-20000.16	-0.76	0.00

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	2000.1	0.16	0.01
Channel X + Input	199.58	-0.52	-0.26
Channel X - Input	-200.79	-0.89	0.45
Channel Y + Input	1999.9	-0.03	-0.00
Channel Y + Input	199.45	-0.55	-0.27
Channel Y - Input	-200.31	-0.41	0.21
Channel Z + Input	2000.1	0.33	0.02
Channel Z + Input	199.13	-0.77	-0.38
Channel Z - Input	-201.47	-1.37	0.69

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	14.25	12.86
	- 200	-12.68	-14.21
Channel Y	200	-10.04	-10.39
	- 200	9.20	9.17
Channel Z	200	-0.85	-1.40
	- 200	-0.34	-0.31

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	2.85	0.69
Channel Y	200	2.41	-	2.73
Channel Z	200	2.54	0.73	-

TA Technology (Shanghai) Co., Ltd.

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4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15920	15517
Channel Y	16171	16732
Channel Z	15803	16474

5. Input Offset Measurement

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

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	0.03	-2.35	0.86	0.43
Channel Y	-0.50	-1.49	-0.49	0.38
Channel Z	-0.92	-2.21	0.14	0.44

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (k Ω m)	Measuring (M Ω m)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

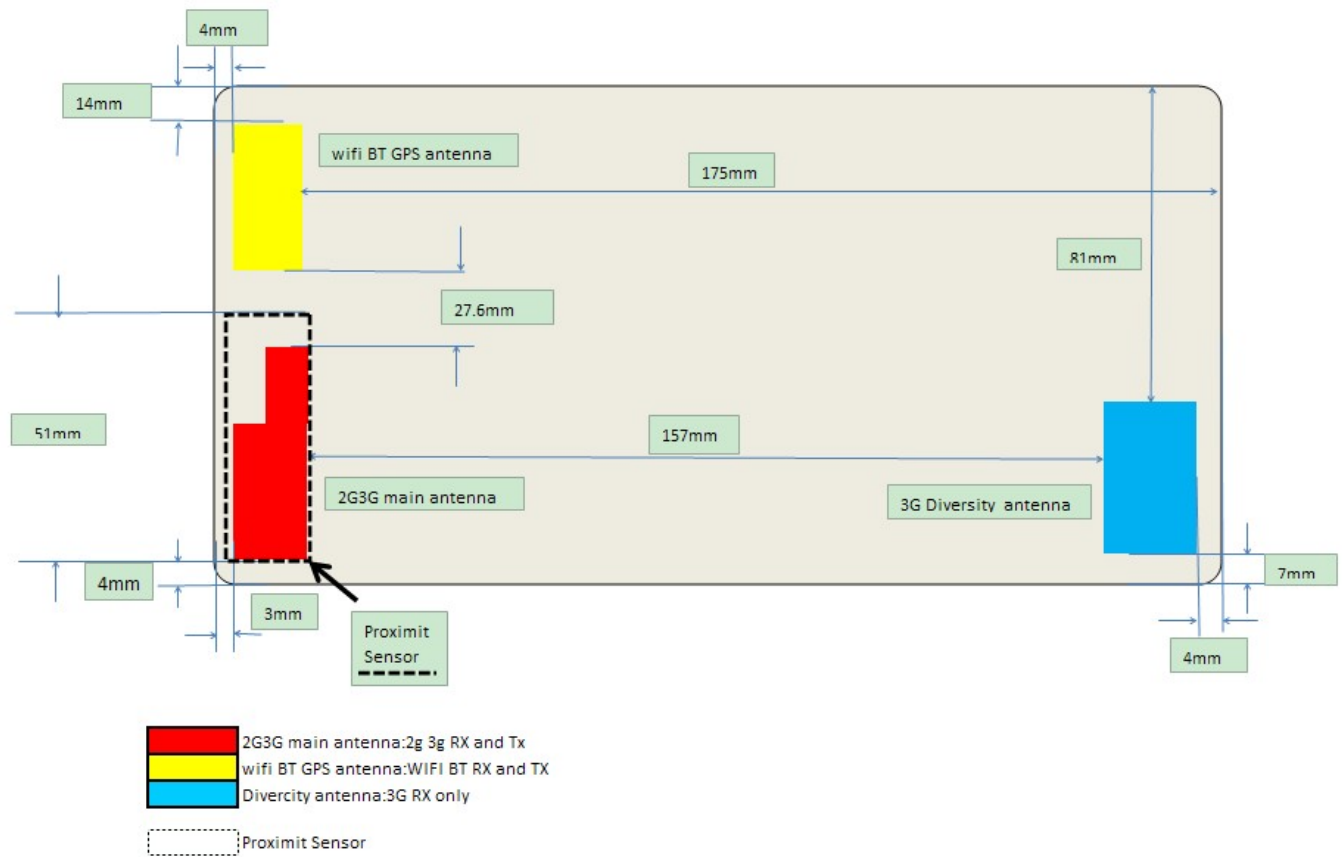
9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

ANNEX H: The EUT Appearances and Test Configuration



a: Front side



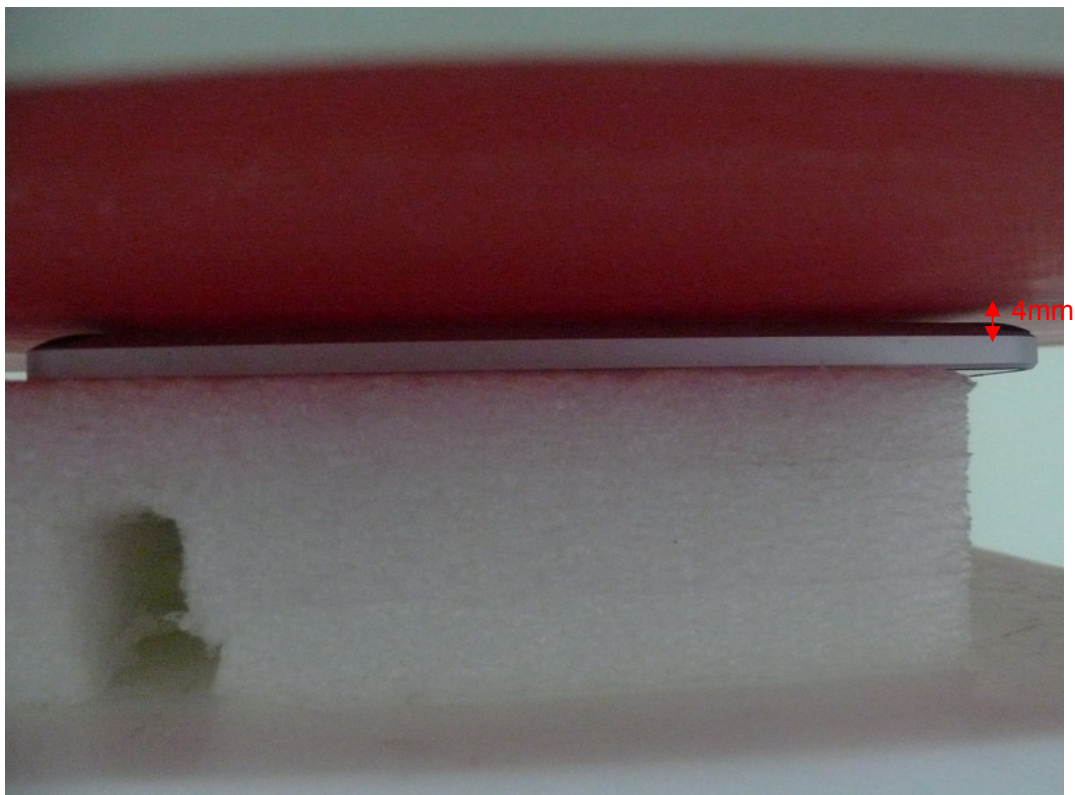
b: Antenna schemes

Picture 4: Constituents of EUT

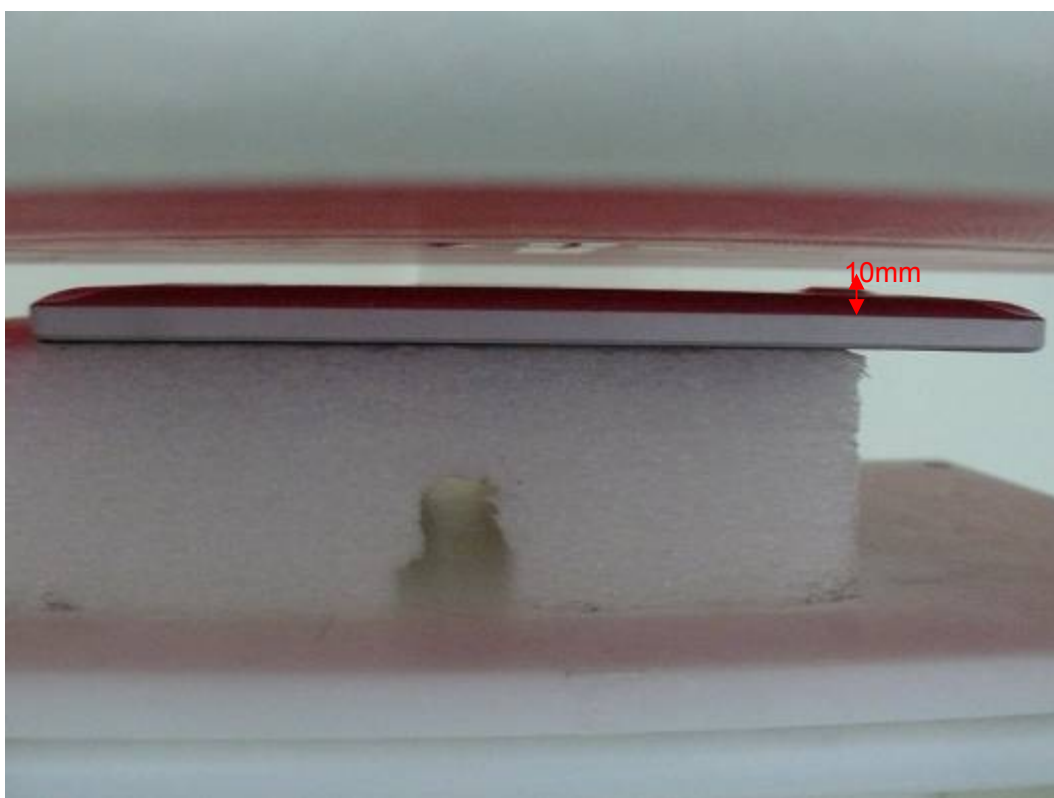
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The distance from the back side of the EUT to the bottom of the Phantom is 0mm
The distance from the antenna of the EUT to the bottom of the Phantom is 4mm



The distance from the camera of the EUT to the bottom of the Phantom is 10mm

Picture 5: Test Position 1

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The distance from the left side of the EUT to the bottom of the Phantom is 0mm



The distance from the left side of the EUT to the bottom of the Phantom is 10mm

Picture 6: Test Position 2

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The distance from the right side of the EUT to the bottom of the Phantom is 0mm

Picture 7: Test Position 3

(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)

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The distance from the top side of the EUT to the bottom of the Phantom is 0mm

Picture 8: Test Position 4

(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)

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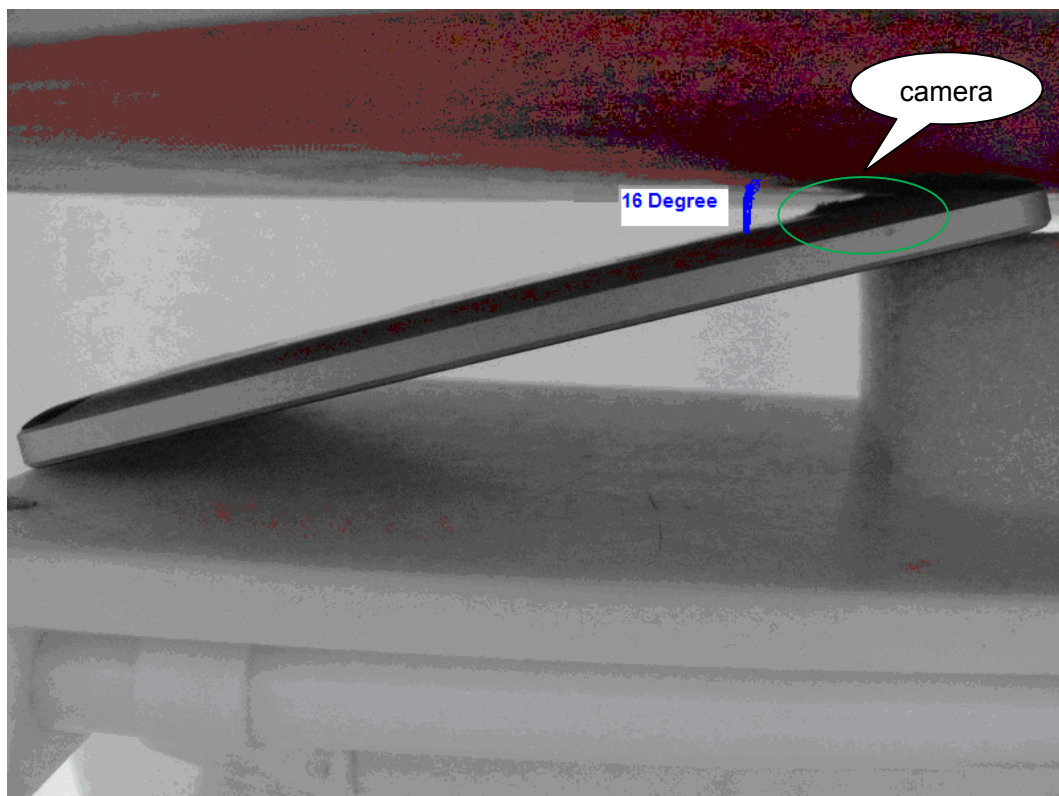
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The distance from the bottom side of the EUT to the bottom of the Phantom is 0mm

Picture 9: Test Position 5



The distance from the antenna of the EUT to the bottom of the Phantom is 0mm

Picture 10: Test Position 6