Portable Cellular Phone SAR Test Report

Tests Requested By:	Motorola Mobility, Inc. 600 N. US Highway 45 Libertyville, IL 60048
Test Report #:	24727-1F Rev. A
Date of Report:	Oct 28, 2011, revised on Nov 07, 2011
Date of Test:	Sep 21, 2011 to Oct 28, 2011
FCC ID #:	IHDP56MB2
Generic Name:	M0B80
Test Laboratory:	Motorola Mobility, Inc. - ADR Test Services Laboratory 600 N. US Highway 45 Libertyville, IL 60048
Report Author:	Ketal Patel RF Engineer

Accreditation:

This laboratory is accredited to ISO/IEC 17025-2005 to perform the following tests:

Tests:	Procedures:
Electromagnetic Specific Absorption Rate	IEC 62209-1 RSS-102 IEEE 1528 - 2003 FCC OET Bulletin 65 (*including Supplement C*) Australian Communications Authority Radio Communications (Electromagnetic Radiation – Human Exposure) Standard 2003 CENELEC EN 50360 ARIB Std. T-56 (2002)

2404

On the following products or types of products:
Wireless Communications Devices (Examples): Two Way Radios; Portable Phones (including Cellular, Licensed Non-Broadcast and PCS); Low Frequency Readers; and Pagers

Statement of Compliance:

Motorola declares under its sole responsibility that the portable cellular telephone model to which this declaration relates, is in conformity with the appropriate General Population/Uncontrolled RF exposure standards, recommendations and guidelines (FCC 47 CFR §2.1093) as well as with CENELEC en50360:2001 and ANSI / IEEE C95.1. It also declares that the product was tested in accordance with IEEE 1528 / CENELEC EN62209-1 (2006), as well as other appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

Table of Contents

Revision History

Revision Version	Date	Notes
Rev. 0	Oct-28-2011	Initial report release.
Rev. A	Nov-07-2011	Various modifications to address TCB inquiries.

1. Introduction

The Motorola Mobility ADR Test Services Laboratory has performed measurements of the maximum potential exposure to the user of the portable cellular phone covered by this test report. The Specific Absorption Rate (SAR) of this product was measured. The portable cellular phone was tested in accordance with [1], [4] and [5]. The SAR values measured for the portable cellular phone are below the maximum recommended levels of 1.6 W/kg in a 1 g average set in [3] and 2.0 W/kg in a 10 g average set in [2].

For ANSI / IEEE C95.1 (1 g), the final stand-alone SAR readings for this phone are given in the table below. For ANSI / IEEE C95.1 (1 g), the final simultaneous-transmission SAR readings for this phone are 1.59 W/kg for head-adjacent use. These measurements were performed using a Dasy4™ v4.7 system manufactured by Schmid & Partner Engineering AG (SPEAG), of Zurich Switzerland.

Transmit Band	Head SAR (1 g $^{W}/_{kg}$)	Body SAR (1 g $^{W}/_{kg}$)	Mobile Hotspot SAR (1 g $^{W}/_{kg}$)
CDMA 800	**1.47**	**0.33**	**1.01**
CDMA 1900	**1.54**	**0.30**	**0.52**
GSM 1900	**0.11**	**0.43**	**n/a**
Wi-Fi 2.45 GHz	**0.28**	**0.05**	**0.47**

2. Description of the Device Under Test

2.1 Antenna description

Main (GSM 1900 MHz) Antenna

Type	Internal	
Location	Bottom of Transceiver	
Dimensions	Width	27.0 mm
	Length	52.0 mm

Main (CDMA 800/1900 MHz) Antenna

Type	Internal	
Location	Top of Transceiver	
Dimensions	Width	26.0 mm
	Length	37.0 mm

Bluetooth/Wi-Fi 2 GHz Antenna

Type	Internal	
Location	Left-Side Rear of Transceiver	
Dimensions	Width	35.0 mm
	Length	6.0 mm

2.2 Device Signaling

Serial Number(s) (Functional Use)	TA2210012N (GSM/CDMA/Wi-Fi 2.4 GHz conducted power measurements, GSM/CDMA/Wi-Fi 2.4 GHz head/body/mobile hotspot SAR testing)
Production Unit or Identical Prototype (47 CFR §2..908)	Identical Prototype
Device Category	Portable (Mobile Station Class B)
RF Exposure Limits	General Population / Uncontrolled

Mode(s) of Operation	Modulation Mode(s)	Maximum Output Power Setting	Duty Cycle	Transmitting Frequency Range(s)
CDMA 800	QPSK	25.0 dBm	1:1	824.70 - 848.31 MHz
CDMA 1900	QPSK	25.0 dBm	1:1	1851.20 - 1908.75 MHz
GSM 1900	GMSK	31.2 dBm	1:8	1850.2 - 1909.8 MHz
Wi-Fi 802.11b/g/n	BPSK	16.64 dBm	1:1	2412.0 - 2462.5 MHz
Bluetooth	GFSK	8.71 dBm	1:1	2402.0 - 2483.5 MHz

GSM Data Functionality	GPRS/ Class 10 (2 uplink timeslots; 4 downlink timeslots; 5 total timeslots per frame). GPRS not supported for Mobile Hotspot via firmware.
	Class B (DTM not supported)

Mode(s) of Operation	GPRS 1900	
Modulation	GMSK	
Maximum Output Power Setting (dBm)	31.2	27.8
Time Average Output Power Setting (dBm)	22.2	21.8
Duty Cycle	1:8	2:8
Transmitting Frequency Range(s)	1850.2 - 1909.8 MHz	

2.3 Device Conducted Power Measurements

2.3.1 CDMA modes

Per the "SAR Measurement Procedures for 3G Devices" released in October, 2007, RC1, RC3 and RC3 (FCH + SCH) CDMA modes, EVDO Rev O, EVDO Rev A were considered. The conducted power measurements (per steps 3, 4 & 10 of section 4.4.5.2 of 3GPP2 C.5.011 / TIA -98-E) for each mode are shown in the table below.

Measured Conducted Power (dBm) for CDMA modes							
		Loopback		Data[1]		EVDO Rev. O	EVDO Rev. A
Band	Channel	RC3 SO55	RC1 SO55	TDSO SO32 + FCH-SCH	TDSO SO32 + SCH	RTAP 153.6k	Subtype 2 RETAP
CDMA 800	1013	**24.99**	25.08	25.01	25.03	25.00	25.01
	384	**24.91**	24.86	24.92	24.93	25.07	24.97
	777	**25.01**	25.00	25.01	25.04	25.08	25.00
CDMA 1900	25	**25.16**	24.99	25.17	25.21	25.19	25.20
	600	**24.94**	24.95	25.00	25.01	24.97	24.95
	1175	**24.93**	24.95	25.00	25.01	24.92	24.88

2.3.2 GSM modes

[1] The DUT system architecture does not support simultaneous voice and data during a single CDMA session to the cellular network. Operation in this mode is for data transmission only.

Band	Channel	Conducted power (dBm) for GSM modes		
		GSM *CS Voice* **(1 Slot)**	**GPRS** *PS Data* **(1 Slots)**	**GPRS** *PS Data* **(2 Slots)**
GSM 1900	512	30.98	31.01	27.87
	661	31.01	30.99	27.79
	810	31.12	31.07	27.76

2.3.3 Wi-Fi 802.11 modes

Per "SAR Measurement Procedures for 802.11 a/b/g Transmitters" (FCC KDB 248227), power measurements were performed for 802.11 operational modes. The average conducted power measurements for each mode are shown in the tables below. SAR testing for 802.11 was performed with the transmitter set to the lowest data rate on the default test channels **highlighted in bold** in the tables below. The head and body positions that resulted in the highest SAR values were further tested on the additional channels and higher data rates **highlighted in pink** in the tables below.

Band	Channel	Average Conducted Power (dBm) for 802.11b Mode Data Rates			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
Wi-Fi 2450 MHz	1	**14.99**	15.23	16.18	**16.39**
	6	**15.28**	15.42	16.52	**16.64**
	11	**14.91**	14.97	16.03	**16.01**

Band	Channel	Average Conducted Power (dBm) for 802.11g Mode Data Rates							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
Wi-Fi 2450 MHz	1	14.54	14.66	14.19	14.21	12.56	12.58	11.25	11.5
	6	14.71	14.89	14.26	14.27	12.91	12.77	11.62	11.58
	11	14.13	14.12	13.66	14.68	12.05	12.06	10.83	10.72

Band	Channel	Average Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 800 ns Guard Interval)							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
Wi-Fi 2450 MHz	1	13.38	14.06	14.24	12.74	12.67	11.47	11.48	10.55
	6	13.7	14.27	14.31	13	13.02	11.56	11.59	10.66
	11	13.02	13.61	13.65	12.25	12.13	10.82	10.79	9.71

Band	Channel	Average Conducted Power (dBm) for 802.11n Mode Data Rates (20 MHz Channel, 400 ns Guard Interval)							
		7.2 Mbps	14.4 Mbps	21.6 Mbps	28.8 Mbps	43.3 Mbps	57.7 Mbps	65 Mbps	72.2 Mbps
Wi-Fi 2450 MHz	1	13.38	14.18	14.19	12.7	12.84	11.29	11.3	10.34
	6	13.68	14.22	14.25	12.85	12.84	11.31	11.29	10.55
	11	13.01	13.56	13.56	12.16	11.9	10.49	10.51	9.63

2.3.4 Power limit reduction for Mobile Hotspot functionality

The DUT utilizes reduced limits for the maximum transmit power when the mobile hotspot functionality is enabled. A table of the reduced limits used for testing is given below. A complete description of this functionality is provided in the "Operational Description" contained within Exhibit 12. The implementation to trigger the reduction in power requires the device to be radiating, which prevents conducted power measurements of this functionality without modification to the unit.

Mode(s) of Operation	CDMA 800			CDMA 1900		
Test Channel	1013	25	600	1175	384	777
Channel Ranges	1013 - 187	25 - 338	339 - 788	789 - 1175	188 - 581	582 - 777
Maximum Output Power Setting (dBm)	25.0	25.0	25.0	25.0	25.0	25.0
Reduced Maximum Output Power Setting (dBm)	21.0	21.0	21.0	21.0	21.0	21.0

3. Test Equipment Used

3.1 Dosimetric System

The Motorola Mobility ADR Test Services Laboratory utilizes a Dosimetric Assessment System (Dasy4™ v4.7) manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. All the SAR measurements are taken within a shielded enclosure. The overall 10 g RSS uncertainty of the measurement system is ±10.8% (K=1) with an expanded uncertainty of ±21.6% (K=2). The overall 1 g RSS uncertainty of the measurement system is ±11.1% (K=1) with an expanded uncertainty of ±22.2% (K=2). The measurement uncertainty budget is given in Appendix 6. Per IEEE 1528, this uncertainty budget is applicable to the SAR range of 0.4 W/kg to 10 W/kg.

The list of calibrated equipment used for the measurements is shown in the following table.

Description	Serial Number	Cal Date	Cal Due Date
E-Field Probe ES3DV3	3191	Apr-07-2011	Apr-07-2012
DASY4™ DAE V1	690	Apr-13-2011	Apr-13-2012
S.A.M. Phantom used for 800/900 MHz	TP-1407		
S.A.M. Phantom used for 1800/1900/2450 MHz	TP-1160		
Dipole Validation Kit, DV835V2	421TR	Apr-04-2011	Apr-04-2013
Dipole Validation Kit, DV1800V2	2d128	Apr-06-2011	Apr-06-2013
Dipole Validation Kit, DV2450V2	789	Apr-06-2011	Apr-06-2013

3.2 Additional Equipment

Description	Serial Number	Cal Date	Cal Due Date
Signal Generator HP8648C	3847U02385	Apr-04-2011	Apr-04-2012
Power Meter E4419B	GB43310686	Feb-18-2011	Feb-18-2013
Power Sensor #1 - E9301A	MY41497905	Feb-18-2011	Feb-18-2012
Power Sensor #2 - E9301A	MY41495336	Feb-18-2011	Feb-18-2012
Network Analyzer E5071B	MY42301800	Mar-14-2011	Mar-14-2012
Dielectric Probe Kit HP85070E	MY44300245		

4. Electrical parameters of the tissue simulating liquid

Prior to conducting SAR measurements, the relative permittivity, ε_r, and the conductivity, σ, of the tissue simulating liquids were measured with a HP85070 Dielectric Probe Kit. These values, along with the temperature of the simulated tissue are shown in the table below. The recommended limits for permittivity and conductivity are also shown. A mass density of $\rho = 1\ ^{g}/_{cm^3}$ was entered into the system in all the cases. It can be seen that the measured parameters are within tolerance of the recommended limits specified in [1] and [5].

E-field probes calibrated at 1810 MHz were used for "1900 MHz" band (1850 MHz - 1910 MHz) SAR measurements. FCC KDB 450824 provides additional requirements on page 3 of 6 for SAR testing that is performed with probe calibration points that are more than 50 MHz removed from the measured bands. The KDB requires; "(2) When nominal tissue dielectric parameters are specified in the probe calibration data, the tissue dielectric parameters measured for routine measurements should be less than the target Er and higher than the target Sigma values to minimize SAR underestimations". The 1900 MHz simulated tissues listed below meet these criteria.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ε_r	σ (S/m)	Temp (°C)
835	**Head**	**Measured, Sep**-22-2011	41.8	0.9	21
		Measured, Sep-30-2011	41.7	0.91	20.9
		Recommended Limits	41.5 ±5%	0.90 ±5%	18-25
	Body	**Measured, Sep**-22-2011	55.8	0.98	20.8
		Measured, Oct-28-2011	54.9	0.98	21.1
		Recommended Limits	55.2 ±5%	0.97 ±5%	18-25
1880	**Head**	**Measured, Sep**-20-2011	39	1.44	20.5
		Measured, Sep-21-2011	39	1.44	20.5
		Measured, Sep-30-2011	38.1	1.45	20.2
		Recommended Limits	40.0 ±5%	1.40 ±5%	18-25
	Body	**Measured, Sep**-21-2011	51	1.59	21.2
		Measured, Sep-29-2011	51.4	1.58	21.2
		Recommended Limits	53.3 ±5%	1.52 ±5%	18-25
2450	**Head**	**Measured, Sep**-28-2011	36.9	1.83	21.1
		Measured, Sep-30-2011	37.6	1.86	21.6
		Recommended Limits	39.2 ±5%	1.80 ±5%	18-25
	Body	**Measured, Sep**-29-2011	53.8	1.9	20.5
		Recommended Limits	52.7 ±5%	1.95 ±5%	18-25

The list of ingredients and the percent composition used for the simulated tissues are indicated in the table below.

Ingredient	782 / 835 / 900 MHz Head	782 / 835 / 900 MHz Body	1800 MHz / 1900 MHz Head	1800 MHz / 1900 MHz Body	2450 MHz Head	2450 MHz Body
Sugar	57	44.9	--	--	--	--
DGBE	--	--	47	30.8	--	30
Diacetin	--	--	--	--	51	--
Water	40.45	53.06	52.62	68.8	48.75	70
Salt	1.45	0.94	0.38	0.4	0.15	--
HEC	1	1	--	--	--	--
Bact.	0.1	0.1	--	--	0.1	--

5. System Accuracy Verifications

A system accuracy verification of the DASY4™ was performed using the measurement equipment listed in Section 3.1. The daily system accuracy verification occurs within the flat section of the SAM phantom.

A SAR measurement was performed to verify the measured SAR was within ±10% from the target SAR indicated in Appendix 7. These frequencies are within ±10% of the compliance test mid-band frequency as required in [1] and [5]. The test was conducted on the same days as the measurement of the DUT. Recommended limits for permittivity and conductivity, specified in [5], are shown in the table below. The obtained results from the system accuracy verification are also displayed in the table below. SAR values are normalized to 1 W forward power delivered to the dipole. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values. The distributions of SAR compare well with those of the reference measurements (see Appendix 1). For frequencies below 3 GHz, the simulated tissue depth was verified to be 15.0 cm ± 0.5 cm. Z-axis scans showing the SAR penetration are also included in Appendix 1.

System Accuracy Verification Measurements for Head SAR Measurements						
f (MHz)	Description	Normalized SAR (W/kg), 1 gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
835	**Measured, Sep**-21-2011	9.3	41.8	0.9	21.5	21
	Measured, Sep-30-2011	9.85	41.7	0.91	21.6	20.9
	Recommended Limits	9.34	41.5 ±5%	0.90 ±5%	18-25	18-25
1800	**Measured, Sep**-20-2011	38.2	39.3	1.36	21.7	20.5
	Measured, Sep-30-2011	39.35	38.4	1.36	21.7	20.2
	Recommended Limits	39.9	40.0 ±5%	1.40 ±5%	18-25	18-25
2450	**Measured, Sep**-28-2011	58.5	36.9	1.83	21.6	21.1
	Measured, Sep-30-2011	56.5	37.6	1.86	21.6	21.6
	Recommended Limits	54.6	39.2 ±5%	1.80 ±5%	18-25	18-25

The following probe conversion factors were used on the E-Field probe(s) used with the system accuracy verification measurements for head SAR measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3191	835	6.15	5 of 11
		1810	5.21	5 of 11
		2450	4.49	5 of 11

System Accuracy Verification Measurements for Body SAR Measurements						
f (MHz)	Description	SAR (W/kg), 1 gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
835	**Measured, Sep**-22-2011	9.65	55.8	0.98	21.7	20.8
	Measured, Oct-28-2011	9.5	54.9	0.98	21.1	21.1
	Recommended Limits	9.76	55.2 ±5%	0.97 ±5%	18-25	18-25
1800	**Measured, Sep**-20-2011	41.25	51.7	1.49	21.6	21.2
	Measured, Sep-29-2011	40.85	51.3	1.5	21.5	21.2
	Recommended Limits	38.8	53.3 ±5%	1.52 ±5%	18-25	18-25
2450	**Measured, Sep**-28-2011	55	53.8	1.9	21.5	20.5
	Recommended Limits	51.2	52.7 ±5%	1.95 ±5%	18-25	18-25

The following probe conversion factors were used on the E-Field probe(s) used with the system accuracy verification measurements for body SAR measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3191	835	6.1	6 of 11
		1810	4.76	6 of 11
		2450	4.11	6 of 11

6. Test Results

For GSM/CDMA modes, the test sample was operated using an actual transmission through a base station simulator.
Wi-Fi testing was conducted using manufacturer test mode software, per guidance given in FCC KDB 248227. The base station simulator or test software was set up for the proper channels, transmitter power levels and transmit modes of operation.

The phone was tested in the configurations stipulated in [1], [4] and [5]. The phone was positioned into these configurations using the device holder supplied with the DASY4™ SAR measurement system The default settings for the "coarse" and "cube" scans were chosen and used for measurements. The grid spacing of the coarse scan was set to 15 mm or less as shown in the SAR plots included in Appendices 2 through 4. Please refer to the DASY4™ manual for additional information on SAR scanning procedures and algorithms used.

The Cellular Phone model covered by this report has the following battery options:
Model SNN5892A - 1785 mAH battery
This battery was used to do all of the SAR testing. The phone was placed in the SAR measurement system with a fully charged battery.

6.1 Head Adjacent Test Results

The SAR results shown in tables 1 through 4 are maximum SAR values averaged over 1 gram of phantom tissue, to demonstrate compliance to [3] and also over 10 grams of phantom tissue, to demonstrate compliance to the [6]. Also shown are the temperature of the simulated tissue after the test, the measured drift and the extrapolated SAR. The exact method of extrapolation is Extrapolated SAR = Measured SAR * $10^{(-drift/10)}$. The SAR reported at the end of the measurement process by the DASY4™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test.

The left head and right head SAR contour distributions are similar. Because of this similarity, the cheek/touch and 15° tilt test conditions with the highest SAR values in each band are indicated as bold numbers in the following tables and are included in Appendix 2. All other test conditions measured lower SAR values than those included in Appendix 2.

The SAR measurements were performed using the SAM phantoms listed in section 3.1. Since the same phantoms and simulated tissue were used for the system accuracy verification and the device SAR measurements, the Z-axis scans included in Appendix 1 are applicable for verification of simulated tissue depth.

The following probe conversion factors were used on the E-Field probe(s) used for head-adjacent measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3191	835	6.15	5 of 11
		1810	5.21	5 of 11
		2450	4.49	5 of 11

Left Head Cheek Position																
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013	20.6	0.00858	24.99		0.455		0.46	0.691		0.69		
			384	20.6	-0.0165	24.91		0.613		0.62	0.944		0.95		
			777	20.6	-0.112	25.01		0.573		0.59	0.862		0.88		
1880	CDMA 1900, RC3 SO55		25												
			600	19.6	0.0153	24.94		0.367		0.37	0.611		0.61		
			1175												
	GSM 1900, CS Voice		512												
			661	**20.1**	**0.0817**	**31.01**		**0.0695**		**0.07**	**0.113**		**0.11**	**5x5x7**	**47**
			810												
2450	802.11b, 1 Mbps		1	20	-0.24	14.99		0.12		0.13	0.244		0.26		
			6	**20.6**	**0.0802**	**15.28**		**0.139**		**0.14**	**0.282**		**0.28**	**5x5x7**	**48**
			11	19.9	0.0979	14.91		0.115		0.12	0.233		0.23		
	802.11b, 11 Mbps		1	19.8	-0.184	16.39		0.11		0.11	0.221		0.23		
			6	20.3	0.0365	16.64		0.137		0.14	0.275		0.28		
			11	19.7	0.122	16.01		0.116		0.12	0.236		0.24		

Table 1: SAR measurement results at the highest possible output power, measured in a head cheek position against the ICNIRP and ANSI SAR Limit.

Right Head Cheek Position															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013	20.8	-0.0311	24.99		0.579		0.58	1.03		1.04		
			384	**20.8**	**-0.181**	**24.91**		**0.788**		**0.82**	**1.4**		**1.46**	**5x5x7**	**49**
			777	20.8	0.019	25.01		0.807		0.81	1.42		1.42		
1880	CDMA 1900, RC3 SO55		**25**	**20.6**	**0.00368**	**25.16**		**0.803**		**0.80**	**1.54**		**1.54**	**5x5x7**	**50**
			600	19.6	-0.0671	24.94		0.629		0.64	1.23		1.25		
			1175	19.8	0.0734	24.93		0.459		0.46	0.904		0.9		
	GSM 1900, CS Voice		512												
			661	19.9	-0.0128	31.01		0.544		0.05	0.0882		0.09		
			810												
2450	802.11b, 1 Mbps		1												
			6	19.9	0.00784	15.28		0.117		0.12	0.216		0.22		
			11												
	802.11b, 11 Mbps		1												
			6	20.2	-0.633	15.28		0.13		0.13	0.244		0.25	**5x5x7**	**51**
			11												

Table 2: SAR measurement results at the highest possible output power, measured in a head cheek position against the ICNIRP and ANSI SAR Limit.

Right Head 15º Tilt Position																
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013	20.8	0.0344	24.99		0.584		0.58	1.01		1.01		
			384	**20.8**	**-0.0624**	**24.91**		**0.831**		**0.84**	**1.45**		**1.47**	**5x5x7**	**52**
			777	20.8	0.108	25.01		0.809		0.81	1.39		1.39		
1880	CDMA 1900, RC3 SO55		**25**	**19.7**	**-0.0964**	**25.16**		**0.665**		**0.68**	**1.33**		**1.36**	**5x5x7**	**53**
			600	19.6	0.011	24.94		0.467		0.47	0.951		0.95		
			1175	19.7	0.127	24.93		0.351		0.35	0.718		0.72		
	GSM 1900, CS Voice		512												
			661	**19.8**	**0.129**	**31.01**		**0.0403**		**0.04**	**0.0669**		**0.07**	**5x5x7**	**54**
			810												
2450	802.11b, 1 Mbps		1												
			6	**20**	**0.0595**	**15.28**		**0.0721**		**0.07**	**0.141**		**0.14**	**5x5x7**	**55**
			11			14.91									

Table 3: SAR measurement results at the highest possible output power, measured in a head tilt position against the ICNIRP and ANSI SAR Limit.

Left Head 15º Tilt Position															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013	20.8	0.00721	24.99		0.458		0.46	0.715		0.72		
			384	20.8	-0.133	24.91		0.637		0.66	1.00		1.03		
			777	20.8	0.144	25.01		0.603		0.6	0.94		0.94		
1880	CDMA 1900, RC3 SO55		25												
			600	19.6	0.0649	24.94		0.333		0.33	0.593		0.59		
			1175												
	GSM 1900, CS Voice		512												
			661	20	0.0725	31.01		0.0386		0.04	0.0699		0.07		
			810												
2450	802.11b, 1 Mbps		1												
			6	20.4	0.00784	15.28		0.117		0.12	0.216		0.22		
			11												

Table 4: SAR measurement results at the highest possible output power, measured in a head tilt position against the ICNIRP and ANSI SAR Limit.

6.2 Body Worn Test Results

The SAR results shown in tables 5 through 6 are maximum SAR values averaged over 1 gram of phantom tissue, to demonstrate compliance to [3] and also over 10 grams of phantom tissue, to demonstrate compliance to [6]. Also shown are the temperature of the simulated tissue after the test, the measured drift and the extrapolated SAR. The exact method of extrapolation is Extrapolated SAR = Measured SAR * $10^{(-drift/10)}$. The SAR reported at the end of the measurement process by the DASY4™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test.

The test conditions that produced the highest SAR values in each band are indicated as bold numbers in the following tables and are included in Appendix 3. All other test conditions measured lower SAR values than those included in Appendix 3.

A "flat" phantom was for the body-worn tests. This "flat" phantom is made out of 1" thick natural High Density Polyethylene with a thickness at the bottom equal to 2.0 mm. It measures 52.7 cm(long) x 26.7 cm(wide) x 21.2 cm(tall).

The simulated tissue depth was verified to be 15.0 cm ± 0.5 cm for frequencies less than 3 GHz, or 10.0 cm ± 0.5 cm for frequencies greater than 3 GHz. The same device holder described in section 6 was used for positioning the phone. Functional accessories were divided into two categories, the ones with metal components and the ones with non-metal components. For non-metallic component accessories, testing was performed on the accessory that displayed the closest proximity to the flat phantom. Each metallic component accessory, if any, was checked for uniqueness of metal component so that each is tested with the device. If multiple accessories shared an identical metal component, only the accessory that dictates the closest spacing to the body was tested. The cellular phone was tested with a headset connected to the device for all body-worn SAR measurements.

There are no body-worn accessories available for this phone at the time of testing thus the device was tested per the Supplement C testing guidelines for devices that do not have body-worn accessories. A separation distance of 25 mm between the device and the flat phantom was used for testing body-worn SAR. The chosen separation distance of 25 mm is utilized in order to support any case or holder accessories offered or to be offered by Motorola for this product. The device was tested with the front and back of the device facing the phantom. Both sides of the device were tested for Body SAR for the purpose of including the SAR evaluation for body-worn accessories that support the device with the front side facing the user.

The following probe conversion factors were used on the E-Field probe(s) used for the body-worn measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3191	835	6.1	6 of 11
		1810	4.76	6 of 11
		2450	4.11	6 of 11

Body-Worn, Front of Phone 25 mm from Phantom																
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013												
			384	20.6	-.00714	24.91		0.205		0.21	0.268		0.27		
			777												
1880	CDMA 1900, RC3 SO55		25												
			600	20.8	-0.0984	24.94		0.0844		0.09	0.129		0.13		
			1175												
	GSM 1900, CS Voice		512												
			661	20.2	-0.0821	31.01		0.0158		0.02	0.0262		0.03		
			810												
2450	802.11b, 1 Mbps		1												
			6	20.8	0.15	15.28		0.0061		0.01	0.0112		0.01		
			11												

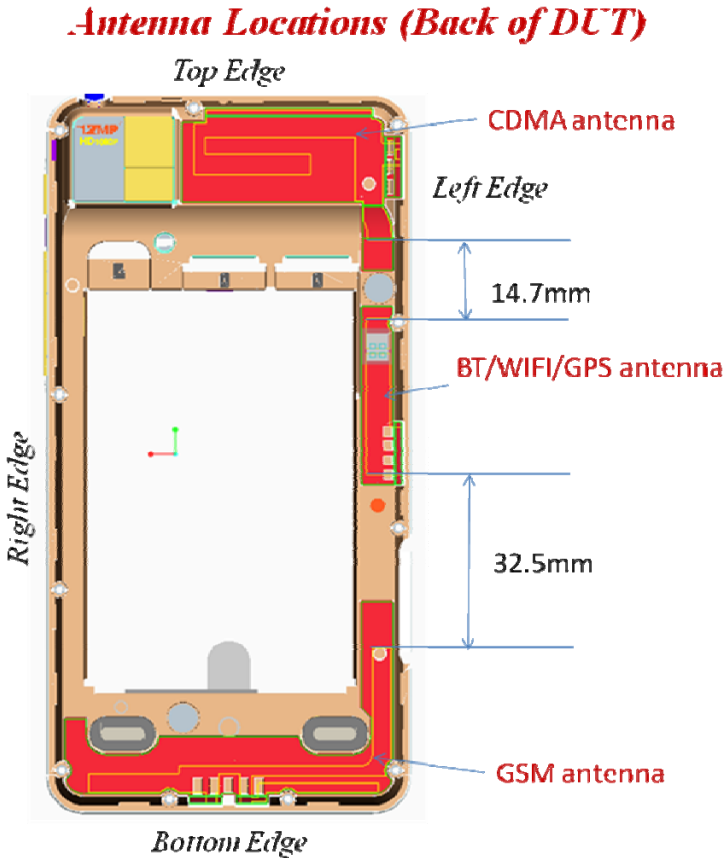
Table 5: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

Body-Worn, Back of Phone 25 mm from Phantom															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013												
			384	**20.6**	**0.0393**	**24.91**		**0.251**		**0.25**	**0.333**		**0.33**	**5x5x7**	**57**
			777												
1880	CDMA 1900, RC3 SO55		25												
			600	**20.8**	**-0.279**	**24.94**		**0.185**		**0.19**	**0.295**		**0.30**	**5x5x7**	**58**
			1175												
	GSM 1900, CS Voice		512												
			661	**20.2**	**-0.0376**	**31.01**		**0.241**		**0.24**	**0.424**		**0.43**	**5x5x7**	**59**
			810												
2450	802.11b, 1 Mbps		1	20.5	-0.0277	14.99		0.0177		0.02	0.0291		0.03		
			6	20.8	-0.138	15.28		0.0247		0.03	0.0406		0.04		
			11	20.5	0.114	14.91		0.0275		0.03	0.0461		0.05		
	802.11b, 11 Mbps		1	19.6	0.113	14.99		0.0251		0.03	0.0414		0.04		
			6	**19.6**	**-0.0578**	**15.28**		**0.028**		**0.03**	**0.0468**		**0.05**	**5x5x7**	**60**
			11	19.6	0.0186	14.91		0.0317		0.03	0.0527		0.05		

Table 6: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

6.3 Mobile Hotspot Test Results

The DUT is capable of functioning as a Wi-Fi to Cellular mobile hotspot. Additional SAR testing was performed according to the interim test guidelines provided at the October 2010 TCB Workshop. Testing was performed with a separation of 1 cm between the DUT and the "flat" phantom. The DUT was positioned for SAR tests with the front and back surfaces facing the phantom, and also with the edges facing the phantom in which the transmitting antenna is < 2.5 cm from the edge.



Mobile Hotspot Edges/Surfaces for SAR testing						
Mode	Top	Bottom	Left	Right	Front	Back
CDMA	YES	NO	YES	YES	YES	YES
Wi-Fi	NO	NO	YES	NO	YES	YES

The SAR results shown in tables 7 through 11 are maximum SAR values averaged over 1 gram of phantom tissue, to demonstrate compliance to [3] and also over 10 grams of phantom tissue, to demonstrate compliance to [6]. Also shown are the temperature of the simulated tissue after the test, the measured drift and the extrapolated SAR. The exact method of extrapolation is Extrapolated SAR = Measured SAR * $10^{(-drift/10)}$. The SAR reported at the end of the measurement process by the DASY4™ measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process. This is the most conservative SAR because it corresponds to the average output power at the beginning of the SAR test. This extrapolation has been done because when the DUT is operating properly it may exhibit a slump in radiated power and SAR over time. This is verified by measuring the SAR drift after the test.

The DUT utilizes a reduced limit for the maximum transmit power when the mobile hotspot functionality is enabled, as described above in 2.3.4. A complete description of this functionality is provided in the "Operational Description" contained within Exhibit 12. GPRS not supported for Mobile Hotspot via firmware.

The test conditions that produced the highest SAR values in each band are indicated as bold numbers in the following tables and are included in Appendix 4. All other test conditions measured lower SAR values than those included in Appendix 4.

A "flat" phantom was for the body-worn tests. This "flat" phantom is made out of 1" thick natural High Density Polyethylene with a thickness at the bottom equal to 2.0 mm. It measures 52.7 cm(long) x 26.7 cm(wide) x 21.2 cm(tall).

The simulated tissue depth was verified to be 15.0 cm ± 0.5 cm for frequencies below 3 GHz, , or 10.0 cm ± 0.5 cm for frequencies greater than 3 GHz. The same device holder described in section 6 was used for positioning the phone.

The following probe conversion factors were used on the E-Field probe(s) used for the body-worn mobile hotspot measurements:

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3191	835	6.1	6 of 11
		1810	4.76	6 of 11
		2450	4.11	6 of 11

Mobile Hotspot, Top Edge of Phone 10 mm from Phantom																
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	**CDMA 800, RC3 SO55**	SNN5892A	1013												
			384	22	-0.264	24.91	4.0	0.0546		0.06	0.0915		0.10		
			777												
1880	**CDMA 1900, RC3 SO55**		25												
			600	19.9	-0.204	24.94	4.0	0.0409		0.04	0.0889		0.09		
			1175												

Table 7: SAR measurement results at the highest possible output power, measured against the ICNIRP and ANSI SAR Limit.

Mobile Hotspot, Left Edge of Phone 10 mm from Phantom															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	**CDMA 800, RC3 SO55**	SNN5892A	1013												
			384	20.9	-0.0636	24.91	4.0	0.0463		0.05	0.0873		0.09		
			777												
1880	**CDMA 1900, RC3 SO55**		25												
			600	20	0.107	24.94	4.0	0.173		0.17	0.377		0.38		
			1175												
2450	**802.11b, 1 Mbps**		1	19.8	-0.0846	14.99		0.138		0.14	0.3		0.31		
			6	19.9	-0.0106	15.28		0.169		0.17	0.377		0.38		
			11	**19.5**	**-0.0684**	**14.91**		**0.205**		**0.21**	**0.462**		**0.47**	**5x5x7**	**62**
	802.11b, 11 Mbps		1	19.6	0.0491	14.99		0.14		0.14	0.307		0.31		
			6	19.6	-0.0544	15.28		0.159		0.16	0.355		0.36		
			11	19.6	-.00846	14.91		0.175		0.18	0.391		0.39		

Table 8: SAR measurement results at the highest possible output power, measured against the ICNIRP and ANSI SAR Limit.

Mobile Hotspot, Right Edge of Phone 10 mm from Phantom																
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013												
			384	20	-0.0483	24.91	4.0	0.0675		0.07	0.127		0.13		
			777												
1880	CDMA 1900, RC3 SO55		25												
			600	20	0.159	24.94	4.0	0.0241		0.02	0.0388		0.04		

Table 9: SAR measurement results at the highest possible output power, measured against the ICNIRP and ANSI SAR Limit.

Mobile Hotspot, Front Edge of Phone 10 mm from Phantom															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013												
			384	**21**	**-0.126**	**24.91**	**4.0**	**0.0657**		**0.07**	**0.134**		**0.14**	**5x5x7**	**63**
			777												
1880	CDMA 1900, RC3 SO55		25												
			600	21.2	0.0496	24.94	4.0	0.0701		0.07	0.135		0.14		
			1175												
2450	802.11b, 1 Mbps		1												
			6	20.6	-.00722	15.28		0.0329		0.03	0.0606		0.06		
			11												

Table 10: SAR measurement results at the highest possible output power, measured against the ICNIRP and ANSI SAR Limit.

Mobile Hotspot, Back Edge of Phone 10 mm from Phantom															
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	DUT Power		10 g SAR value			1 g SAR value			Test Plot	
						Measured (dBm)	Power Reduction (dB)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Corrected (W/kg)	Extrapolated (W/kg)	Grid	Plot Page
835	CDMA 800, RC3 SO55	SNN5892A	1013												
			384	21	0.0486	24.91	4.0	0.0647		0.06	0.0916		0.09		
			777												
1880	CDMA 1900, RC3 SO55		25												
			600	**21.2**	**0.113**	**24.94**	**4.0**	**0.25**		**0.25**	**0.519**		**0.52**	**5x5x7**	**64**
			1175												
2450	802.11b, 1 Mbps		1												
			6	20.5	-0.124	15.28		0.126		0.13	0.231		0.24		
			11												

Table 11: SAR measurement results at the highest possible output power, measured against the ICNIRP and ANSI SAR Limit.

6.4 Description and Evaluation of Simultaneous Transmitters

Per "SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas" (FCC KDB 648474), the necessity of stand-alone and simultaneous SAR testing was evaluated for the licensed and unlicensed transmitters of the device under test.

By device design the CDMA and GSM transmitters may operate simultaneously with either the Wi-Fi 802.11 transmitter or the Bluetooth transmitter. The CDMA cannot operate simultaneously with the GSM transmitter, or vice versa. The separation distance between the Wi-Fi 802.11/Bluetooth antenna and the CDMA antenna is 1.47 cm. The separation distance between the Wi-Fi 802.11/Bluetooth antenna and the GSM antenna is 3.25 cm Pictorial representation of the antenna locations and separation distances are given in Exhibit 7d.

The Bluetooth transmitter of the device under test can be excluded from stand-alone and simultaneous SAR evaluation, per the requirements from FCC KDB 648474, as follows:

1. The highest output conducted power measured for Bluetooth on the device under test is 7.43 mW
2. The separation distance between the Bluetooth antenna and the CDMA antenna is 1.47 cm
3. The separation distance between the Bluetooth antenna and the CDMA antenna is 3.25 cm

Description of Simultaneous Transmit Capabilities				
Transmitter Combinations		Scenario Supported?	Supported for Mobile Hotspot?	Notes
#1	GSM (CS Voice) + GSM (PS Data)	No	No	DUT system architecture does not support simultaneous voice and data (except on CDMA), multiple voice channels, or multiple data channels during a single session on the cellular network.
#2	CDMA (Voice) + CDMA (Data)	No	No	
#3	GSM (CS Voice) + CDMA (Data)	No	No	
#4	CDMA (Voice) + GSM (PS Data)	No	No	
#5	GSM (PS Data) + CDMA (Data)	No	No	
#6	GSM (CS Voice) + CDMA (Voice)	No	No	
#7	GSM (CS Voice) + Wi-Fi	Yes	No	Supported for voice plus background data.
#8	CDMA (Voice) + Wi-Fi	Yes	No	
#9	GSM (PS Data) + Wi-Fi	No	No	Not Supported
#10	CDMA (Data) + Wi-Fi	Yes	Yes	Supported for mobile hotspot operation.

For the transmitters requiring stand-alone SAR testing (CDMA, GSM, and Wi-Fi 802.11), the KDB guidelines direct that if the sum of the 1 g SAR measured for the simultaneously transmitting antennas is less than the SAR limit, SAR measurement for simultaneous transmission is not required. Further, if the SAR-to-peak-location separation ratio for two simultaneously transmitting antennas is less than 0.3 then SAR measurement for simultaneous transmission is likewise not required. Evaluations of the head, body, and mobile hotspot simultaneous SAR summations for the worst-case SAR transmitter configurations are presented in the tables below.

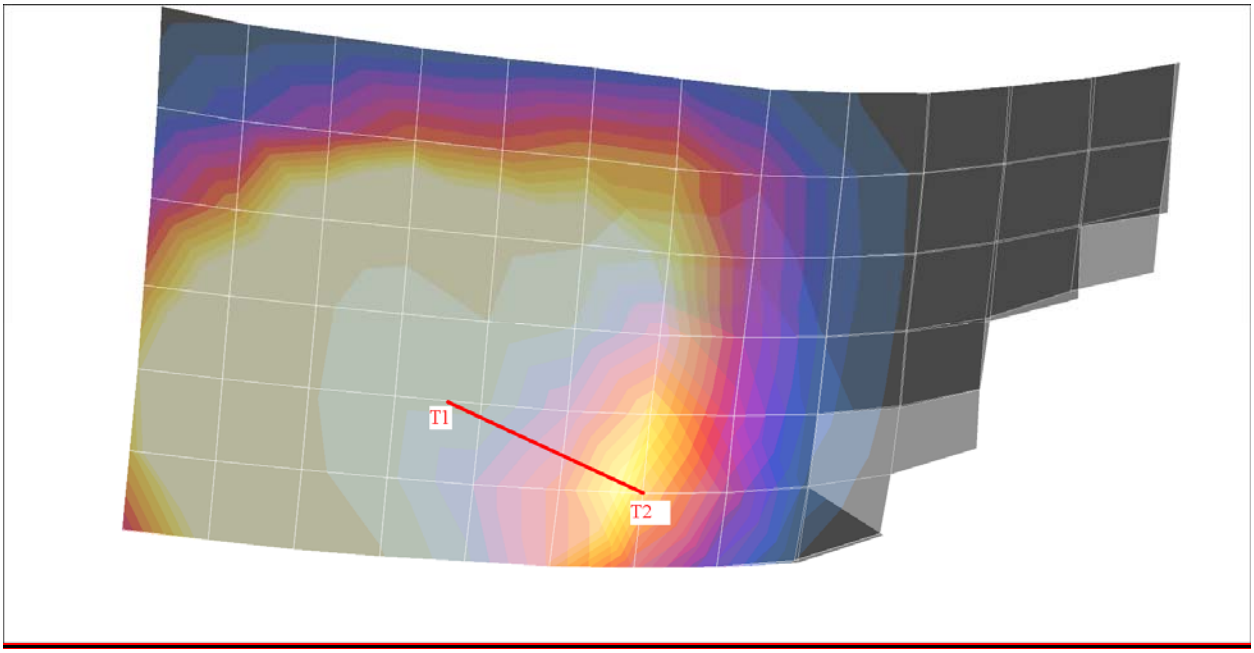
Evaluations for Simultaneous SAR (Head and Body)							
Position	**Transmitter Stand-Alone 1 g SAR Values (W/kg)**				**1 g SAR Summations (W/kg)**		
	CDMA 800	**CDMA 1900**	**GSM 1900**	**Wi-Fi 2450**	**CDMA 800 + Wi-Fi 2450**	**CDMA 1900 + Wi-Fi 2450**	**GSM 1900 + Wi-Fi 2450 +**
Left Head Cheek	0.95	0.61	0.11	0.28	1.23	0.89	0.39
Left Head 15° Tilt	1.03	0.59	0.07	0.22	1.25	0.81	0.29
Right Head Cheek	1.46	1.54	0.09	0.25	>1.60	>1.60	0.34
Right Head 15° Tilt	1.47	1.36	0.07	0.14	>1.60	1.5	0.21
Body Worn, Front of Phone 25 from Phantom	0.27	0.13	0.03	0.01	0.28	0.14	0.04
Body Worn, Back of Phone 25 from Phantom	0.33	0.30	0.43	0.05	0.38	0.35	0.48

Evaluations for Simultaneous SAR (Mobile Hotspot)					
Position	**Transmitter Stand-Alone 1 g SAR Values (W/kg)**			**1 g SAR Summations (W/kg)**	
	CDMA 800	**CDMA 1900**	**Wi-Fi 2450**	**CDMA 800 + Wi-Fi 2450**	**CDMA 1900 + Wi-Fi 2450**
Left Edge of DUT 10 mm from Phantom	0.09	0.38	0.47	0.56	0.85
Front Surface of DUT 10 mm from Phantom	0.14	0.14	0.06	0.20	0.20
Back Surface of DUT 10 mm from Phantom	0.13	0.52	0.24	0.37	0.76

Evaluations for Simultaneous SAR							
Cellular Mode	**Wi-Fi Mode**	**Configuration**	**Cellular Mode 1 g SAR Value (W/kg)**	**Wi-Fi Mode 1 g SAR Value (W/kg)**	**Summation 1 g SAR Value (W/kg)**	**SAR-to-peak-location Separation Ratio[2]**	***Simultaneous Measurements Required?***
CDMA 800, RC3 SO55	Wi-Fi 2450 802.11b, 1 Mbps	Right Cheek with Battery SNN5892A	1.46	0.25	>1.60	0.26	No
CDMA 800, RC3 SO55	Wi-Fi 2450 802.11b, 1 Mbps	Right 15° Tilt with Battery SNN5892A	1.47	0.14	>1.60	1.92	Yes
CDMA 1900, RC3 SO55	Wi-Fi 2450 802.11b, 1 Mbps	Right Cheek with Battery SNN5892A	1.54	0.25	>1.60	0.34	Yes

SPLSR for the CDMA800 and WiFi combination in Right Head Cheek Position:
CDMA 800 Channel 384 Cheek Touch + WiFi Channel 6 Cheek Touch:

The guidelines provided in "SAR for Handsets with Multiple Transmitters" (KDB publication 648474 - D01 v01r03) were utilized for evaluation of the need for simultaneous transmission SAR testing. These guidelines direct that if the SAR-to-peak location separation ratio (SPLSR) for a pair of antennas is < 0.3 then SAR evaluation for simultaneous transmission is not required. Overlaid SAR plots, separation distances between RF peaks[3], and demonstration of these calculations are provided below for each noted case. The distance between SAR peaks was determined via SPEAG Application note TN110209.



Peak SAR location for CDMA(point T1) is (0.0226, -0.354, -0.173)
Peak SAR location for WiFi (pont T2) is (0.0742, -0.315, -0.174)
Peak location spacing = 6.468818 cm
SPLSR = (1.46 + 0.25) / 6.468818 = 0.2643 which has been rounded to 0.26 in the table above.

For the configurations noted as requiring simultaneous SAR evaluation, combined SAR measurements were required to determine the aggregate 1 g SAR. The results of these measurements are given in the table below, with additional SAR plots of the combined measurements provided in Appendix 5.

Additional SAR measurements for simultaneous transmission evaluations were performed for each of the single transmitters using an extended zoom scan. This extended zoom scan was created to encompass the zoom scan volumes that were found previously in each of the stand-alone transmit SAR tests. The outer dimensions of the extended zoom scan were X = 40 mm, Y = 40 mm, Z = 30 mm with a step size of X = 8 mm, Y = 8 mm, and Z = 5 mm.

The location of these extended zoom scans was established by using X, Y grid offsets from the "Grid Reference Point" in DASY4.7. The results were then combined via the DASY4.7 Multi-Band Combiner feature. A comparison can be performed between the stand-alone measurements for each noted transmitter and the measurements provided for simultaneous transmission. The measurements were not performed sequentially and thus may show slightly different results due to a number of reasons including, but not limited to, measurement system performance, slight differences in DUT positioning, or variations in simulated tissue parameters.

Measurements for Simultaneous SAR

Cellular Mode	Wi-Fi Mode	Configuration	CDMA Mode 1 g SAR Value (W/kg)	Wi-Fi Mode 1 g SAR Value (W/kg)	Simultaneous 1 g SAR Value (W/kg)
CDMA 800, RC3 SO55	Wi-Fi 2450 802.11b, 1 Mbps	Right 15° Tilt with Battery SNN5892A	1.39	0.15	1.51
CDMA 1900, RC3 SO55	Wi-Fi 2450 802.11b, 1 Mbps	Right Cheek with Battery SNN5892A	1.56	0.26	1.59

References

[1] CENELEC, en62209-1:2006 “Human Exposure to Radio Frequency Fields From Hand - Held and Body - Mounted Wireless Communication Devices – Human Models, Instrumentation, and Procedures”

[2] CENELEC, en50360:2001 “Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)”.

[3] ANSI / IEEE, C95.1 1992 Edition “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”

[4] FCC OET Bulletin 65 Supplement C 01-01

[5] IEEE 1528 2003 Edition “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”

[6] ICNIRP Guidelines “Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)”

Appendix 1

SAR distribution comparisons for System Accuracy Verifications

System Accuracy Verification Measurements for Head SAR Measurements

Date/Time: 9/21/2011 6:02:44 PM

Test Laboratory: MOTOROLA MOBILITY 835 System Performance Check

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421TR;
Procedure Notes: PM1 Power = 200mW Refl.Pwr PM3 = - 25.76dB Sim.Temp@SPC = 21 Room Temp @ SPC =21.5

Communication System: CW - Dipole; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 835 MHz; σ = 0.9 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3

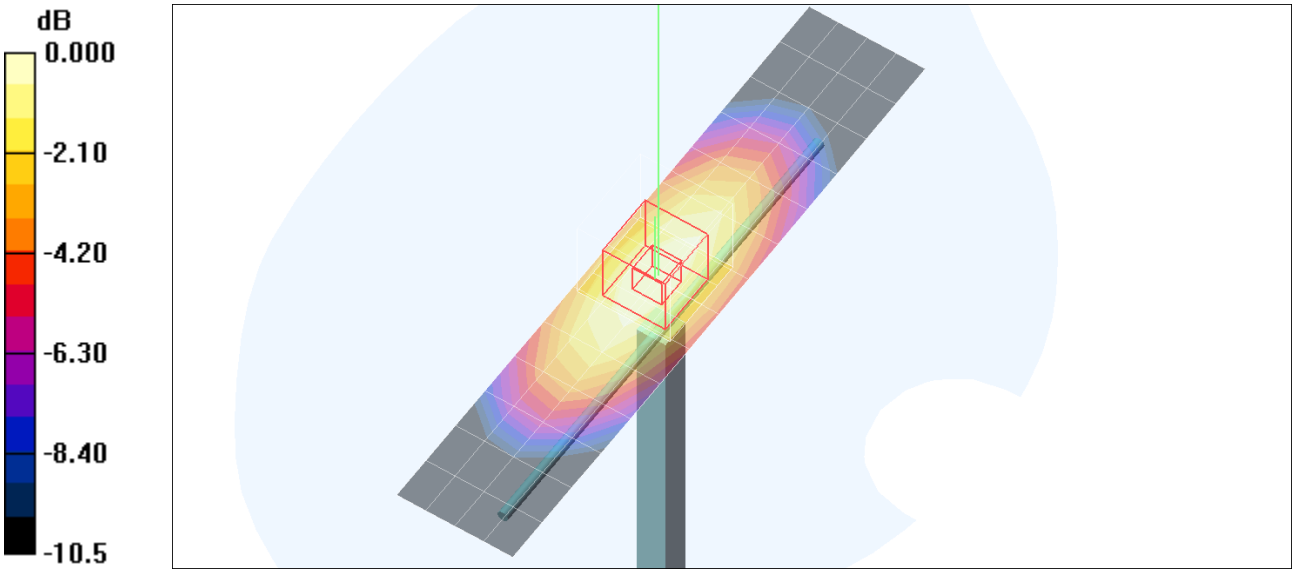
DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.15, 6.15, 6.15); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Sugar SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1407;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

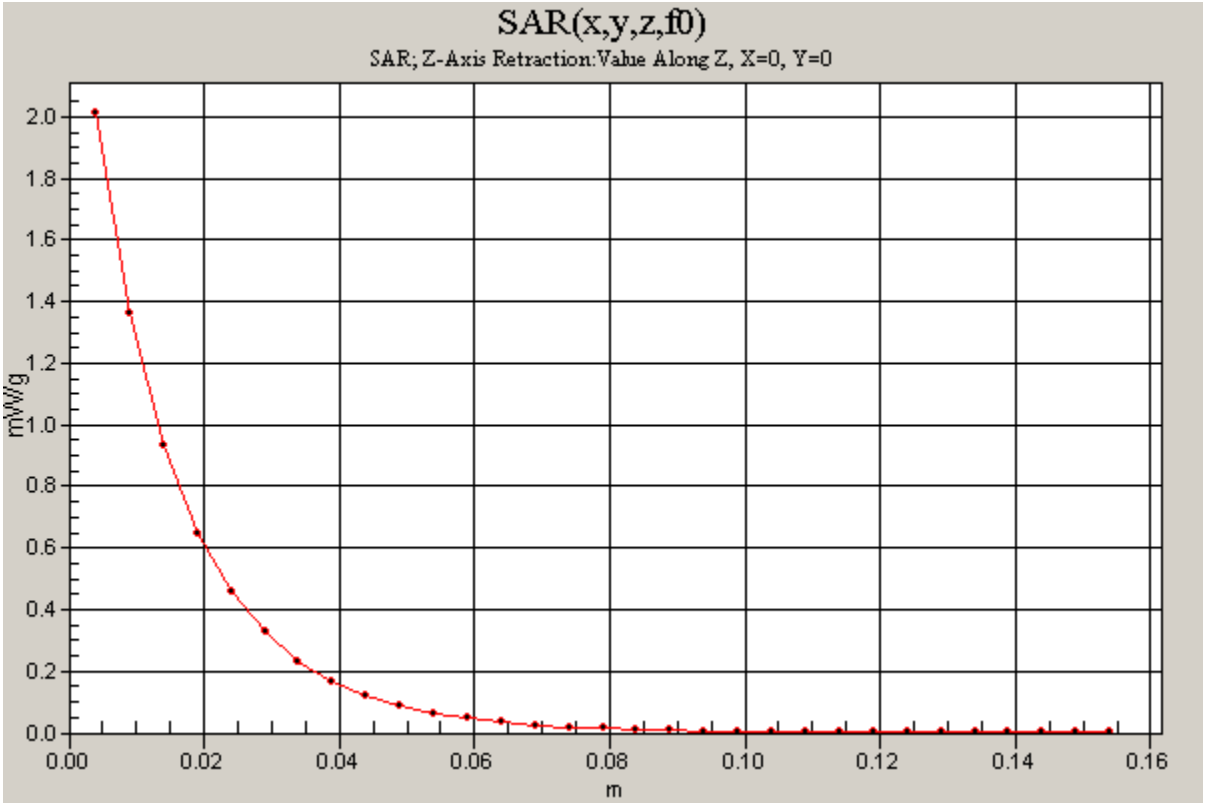
Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 1.99 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.4 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 2.73 W/kg
SAR(1 g) = 1.86 mW/g; SAR(10 g) = 1.22 mW/g
Maximum value of SAR (measured) = 2.01 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm


dB
0.000
-2.10
-4.20
-6.30
-8.40
-10.5

0 dB = 2.01mW/g


SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/30/2011 10:36:56 AM

Test Laboratory: MOTOROLA MOBILITY 835 MHz System
Performance Check

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421tr;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -27.3dB Sim.Temp@SPC = 20.9 Room Temp @ SPC = 21.6

Communication System: CW - Dipole; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

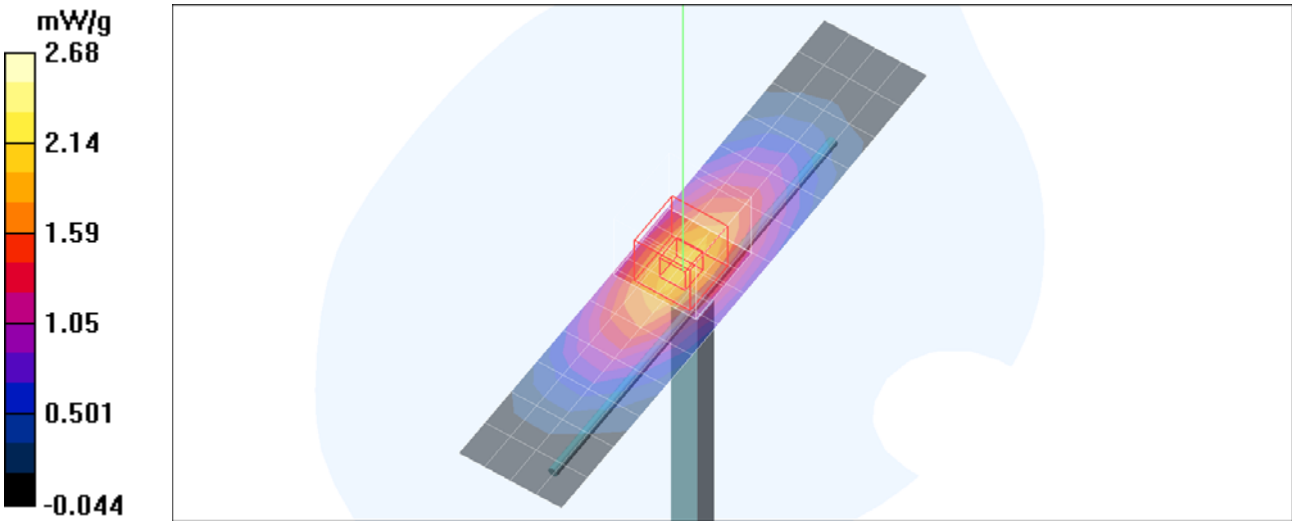
DASY4 Configuration:

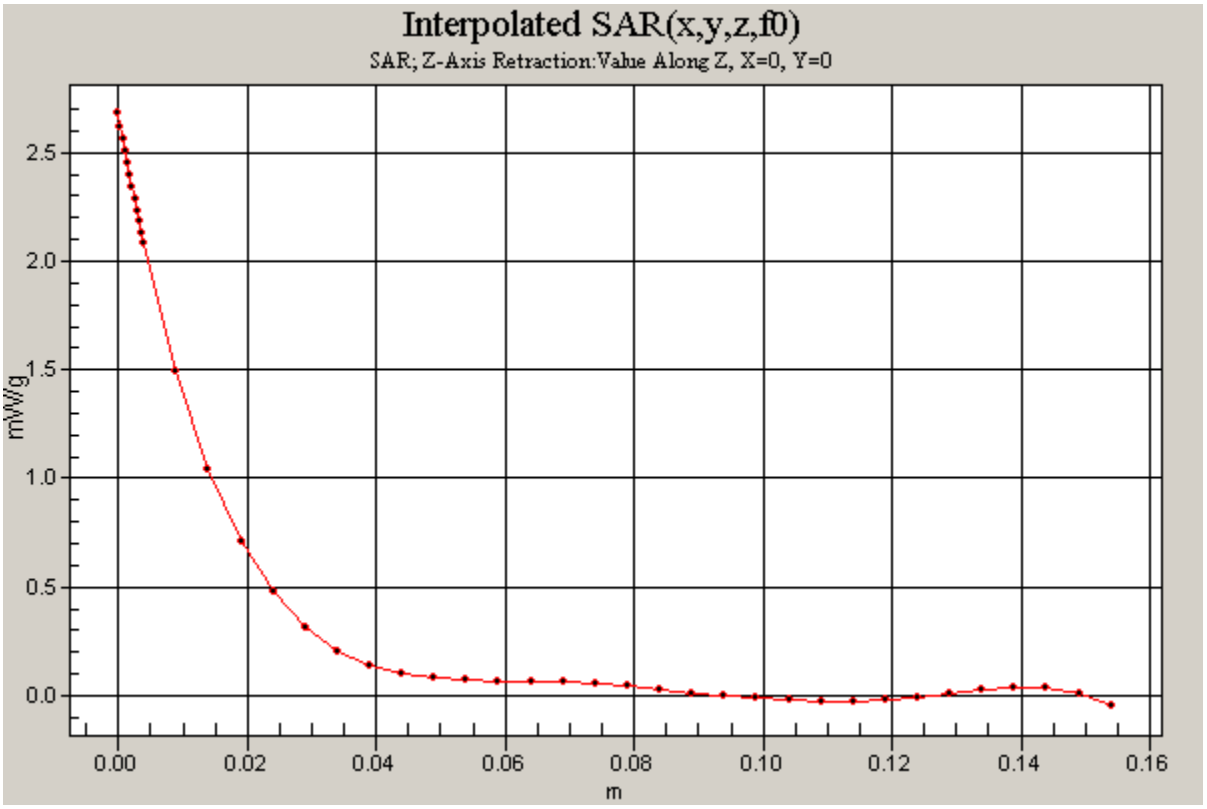
- Probe: ES3DV3 - SN3191; ConvF(6.15, 6.15, 6.15); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Sugar SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1407;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 2.11 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.7 V/m; Power Drift = -0.186 dB
Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 1.97 mW/g; SAR(10 g) = 1.28 mW/g
Maximum value of SAR (measured) = 2.13 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x42): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (interpolated) = 2.68 mW/g


mW/g
2.68
2.14
1.59
1.05
0.501
-0.044


Interpolated SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
2.5
2.0
1.5
1.0
0.5
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 9/20/2011 9:05:06 AM

Test Laboratory: MOTOROLA MOBILITY 1800 System Performance Check

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128;
Procedure Notes: PM1 Power = 200mW Refl.Pwr PM3 = - 23.5dB Sim.Temp@SPC = 20.5 Room Temp @ SPC =21.7

Communication System: CW - Dipole; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 1800 MHz; σ = 1.36 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3

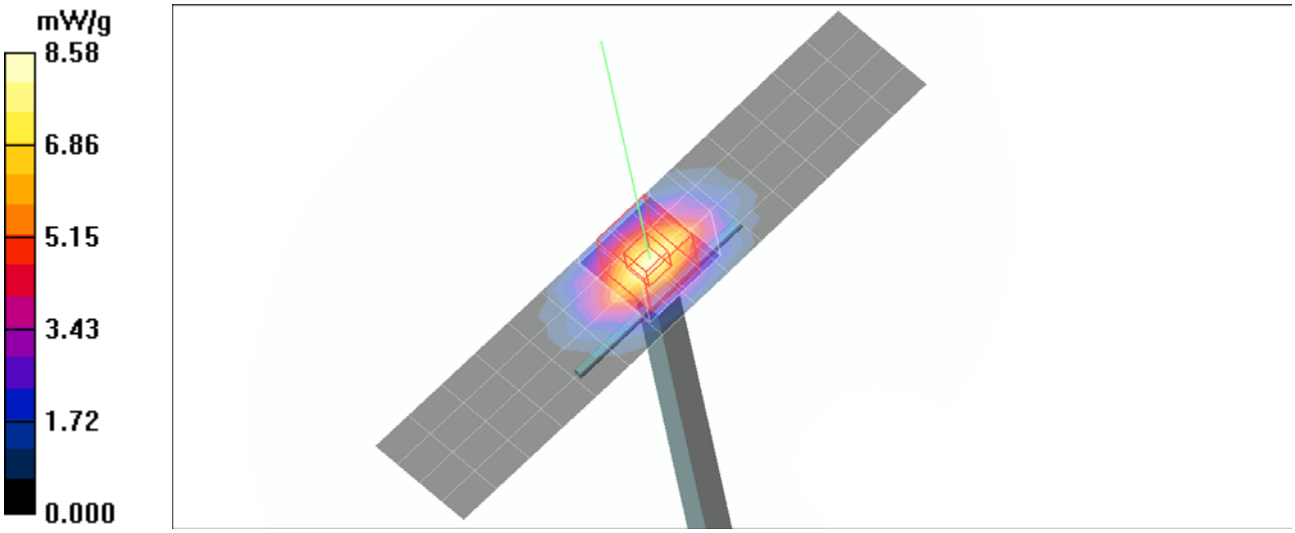
DASY4 Configuration:

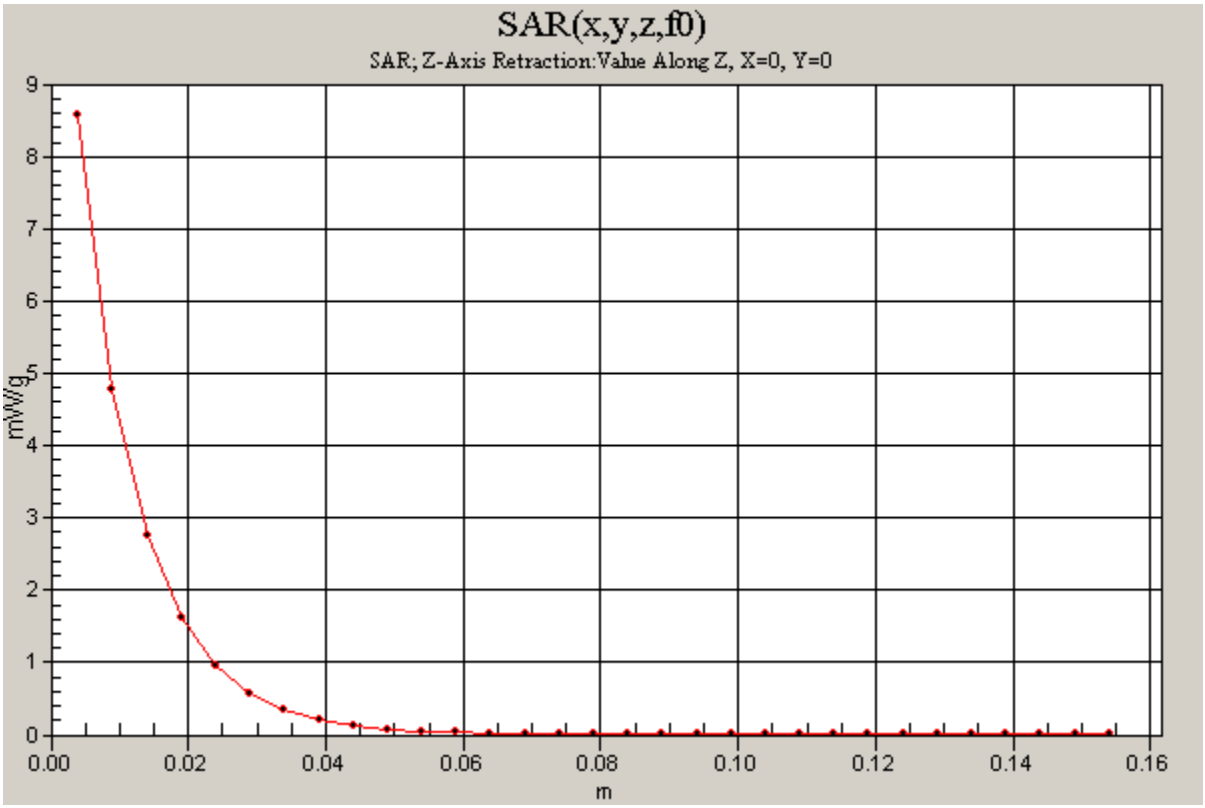
- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 8.43 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 80.5 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 13.9 W/kg
SAR(1 g) = 7.64 mW/g; SAR(10 g) = 4.01 mW/g
Maximum value of SAR (measured) = 8.59 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.58 mW/g


mW/g
8.58
6.86
5.15
3.43
1.72
0.000


SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/30/2011 8:22:57 AM

Test Laboratory: MOTOROLA MOBILITY 1800 System Performance Check

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128;
Procedure Notes: PM1 Power = 200mW Refl.Pwr PM3 = - 24.6dB Sim.Temp@SPC = 20.2 Room Temp @ SPC =21.7

Communication System: CW - Dipole; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 1800 MHz; σ = 1.36 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

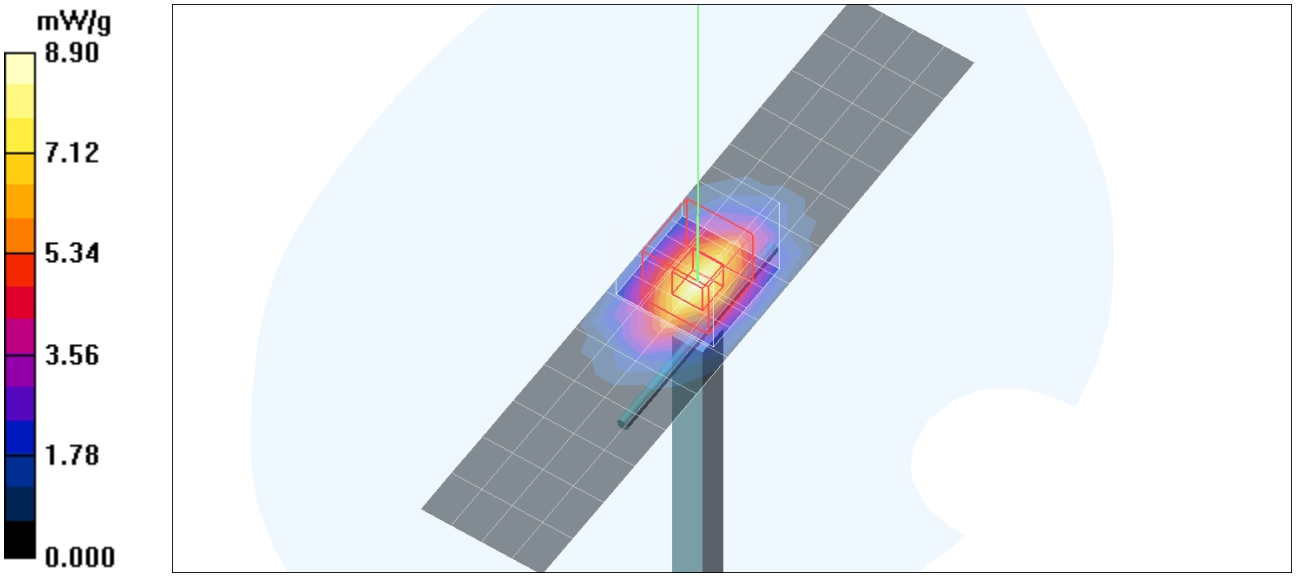
DASY4 Configuration:

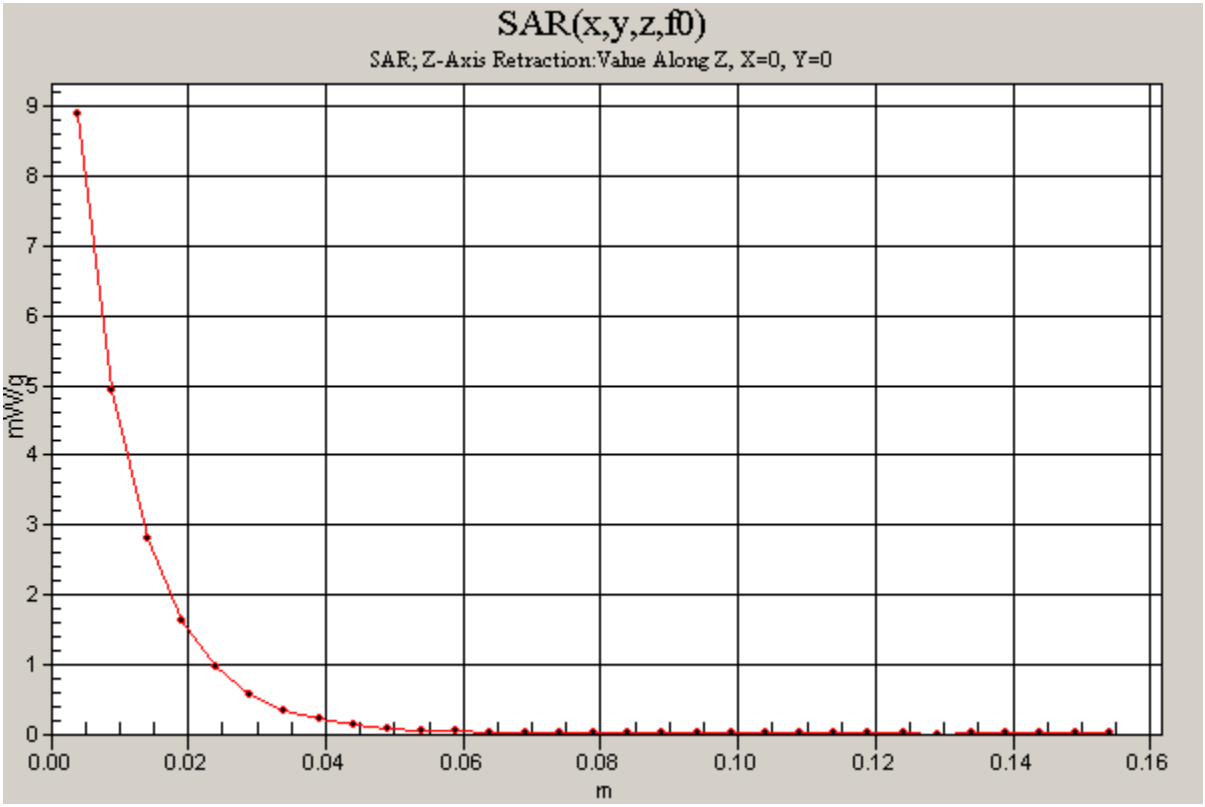
- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 8.79 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 81.3 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 14.4 W/kg
SAR(1 g) = 7.87 mW/g; SAR(10 g) = 4.12 mW/g
Maximum value of SAR (measured) = 8.86 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.90 mW/g


mW/g
8.90
7.12
5.34
3.56
1.78
0.000


SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/28/2011 8:55:59 AM

Test Laboratory: MOTOROLA MOBILITY 2450 System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:789;
Procedure Notes: PM1 Power = 200mW Refl.Pwr PM3 = - 25.4dB Sim.Temp@SPC = 21.1 Room Temp @ SPC =21.6

Communication System: CW - Dipole; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 36.9; ρ = 1000 kg/m^3

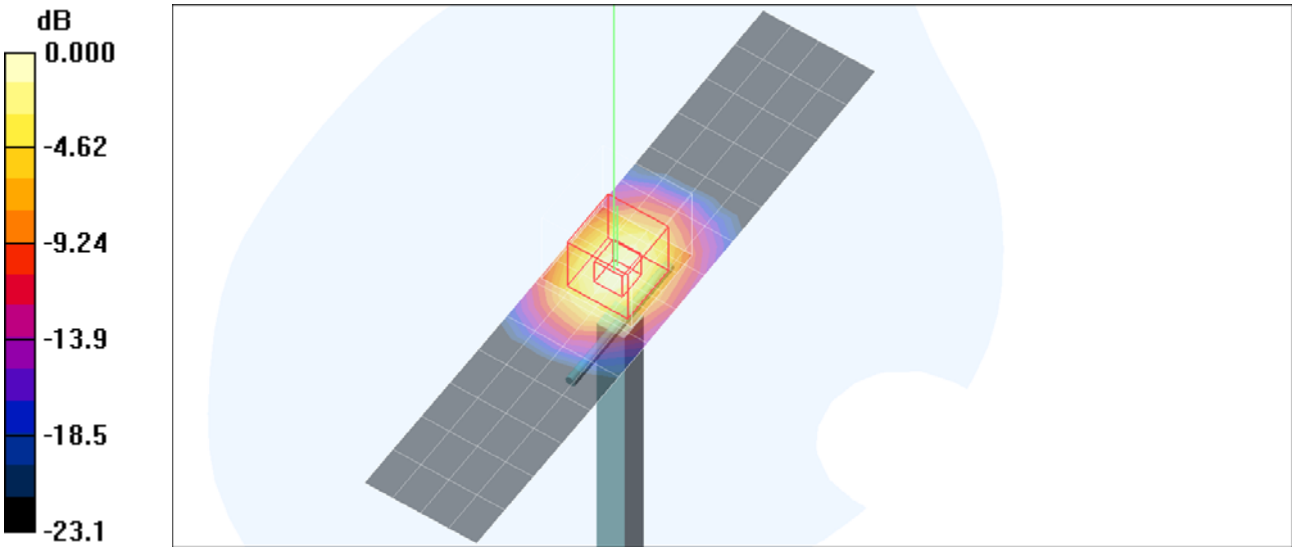
DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

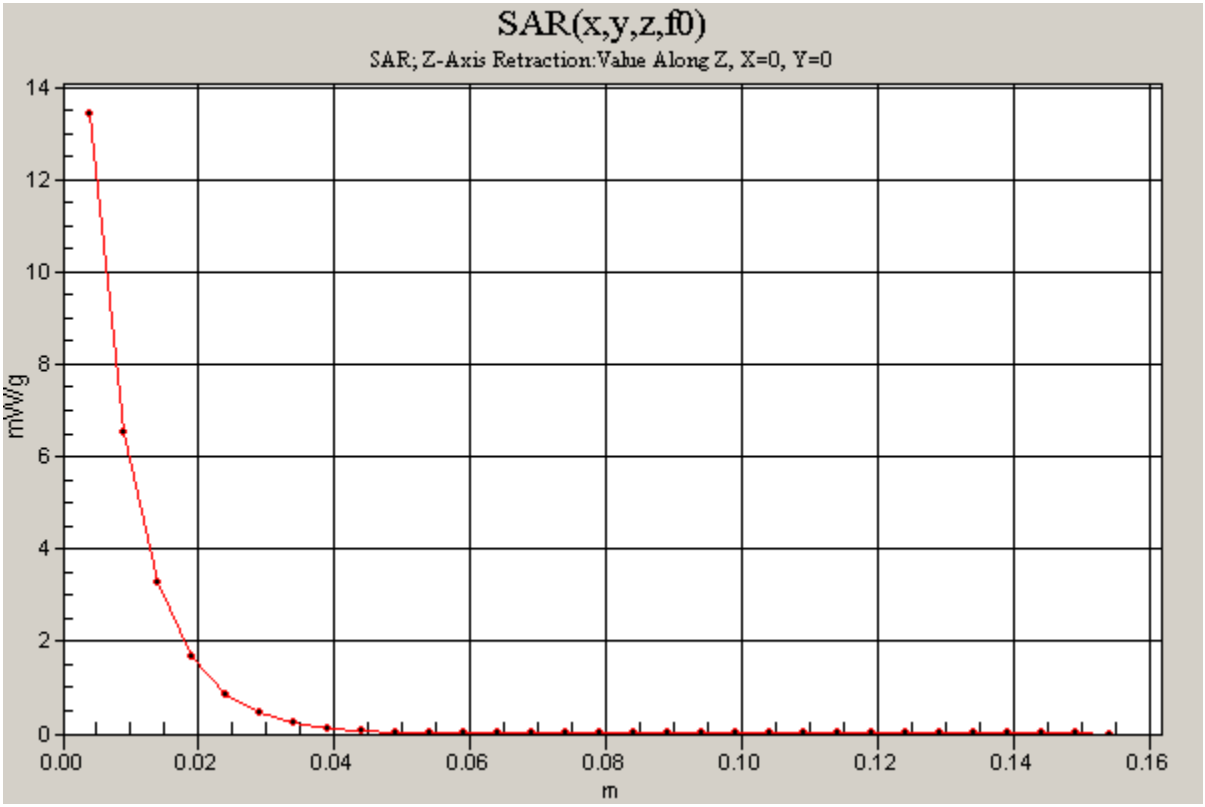
Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 12.5 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.9 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 24.7 W/kg
SAR(1 g) = 11.7 mW/g; SAR(10 g) = 5.37 mW/g
Maximum value of SAR (measured) = 13.2 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 13.4 mW/g


dB
0.000
-4.62
-9.24
-13.9
-18.5
-23.1

0 dB = 13.4mW/g


SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
2
4
6
8
10
12
14
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/30/2011 12:36:02 PM

Test Laboratory: MOTOROLA MOBILITY 2450 System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:789;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -25.7dB Sim.Temp@SPC = 21.6 Room Temp @ SPC = 21.6

Communication System: CW - Dipole; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 37.6; ρ = 1000 kg/m^3

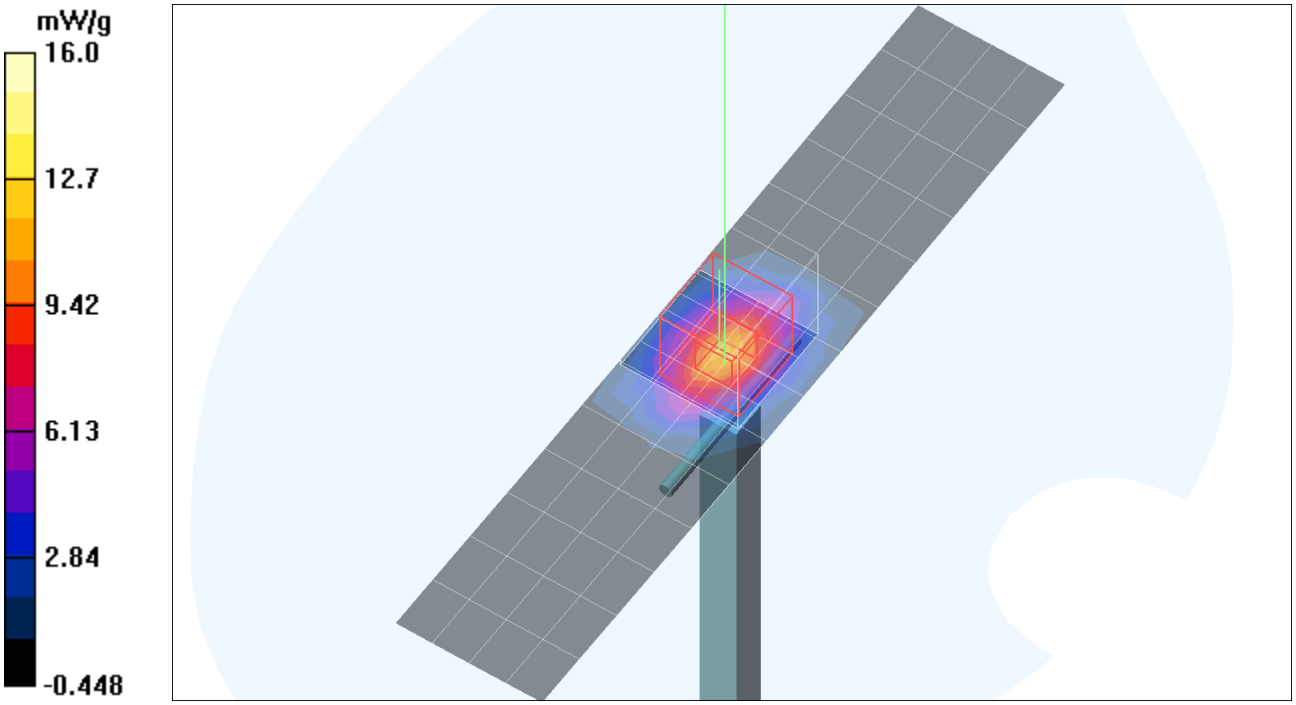
DASY4 Configuration:

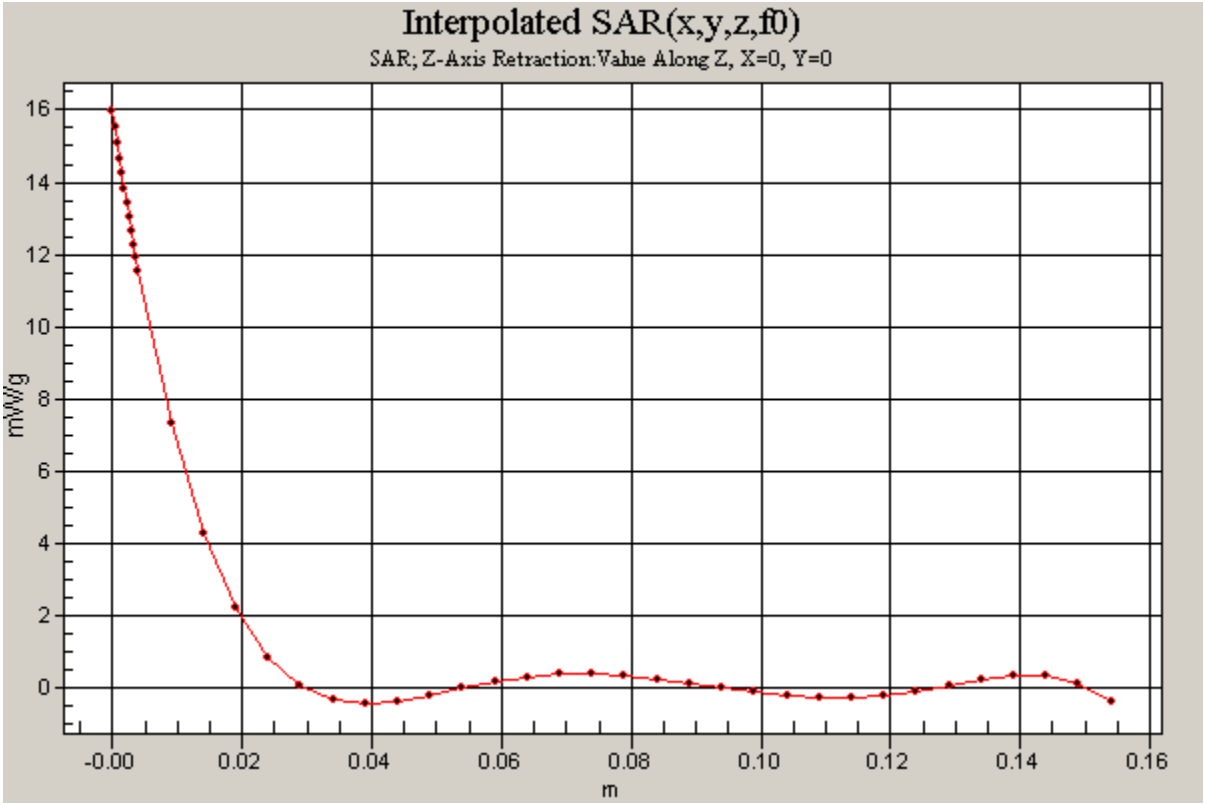
- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (5x15x1): Measurement grid: dx=10mm, dy=15mm
Maximum value of SAR (measured) = 12.6 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 83.2 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 24.1 W/kg
SAR(1 g) = 11.3 mW/g; SAR(10 g) = 5.21 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x42): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (interpolated) = 16.0 mW/g


mW/g
16.0
12.7
9.42
6.13
2.84
-0.448


Interpolated SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
16
14
12
10
8
6
4
2
0
-0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

System Accuracy Verification Measurements for Body SAR Measurements

Date/Time: 9/22/2011 10:57:33 AM

Test Laboratory: MOTOROLA MOBILITY 835 MHz System
Performance Check

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421TR;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = - 27.1dB Sim.Temp@SPC = 20.8 Room Temp @ SPC = 21.7

Communication System: CW - Dipole; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Validation *BODY Tissue* ; Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

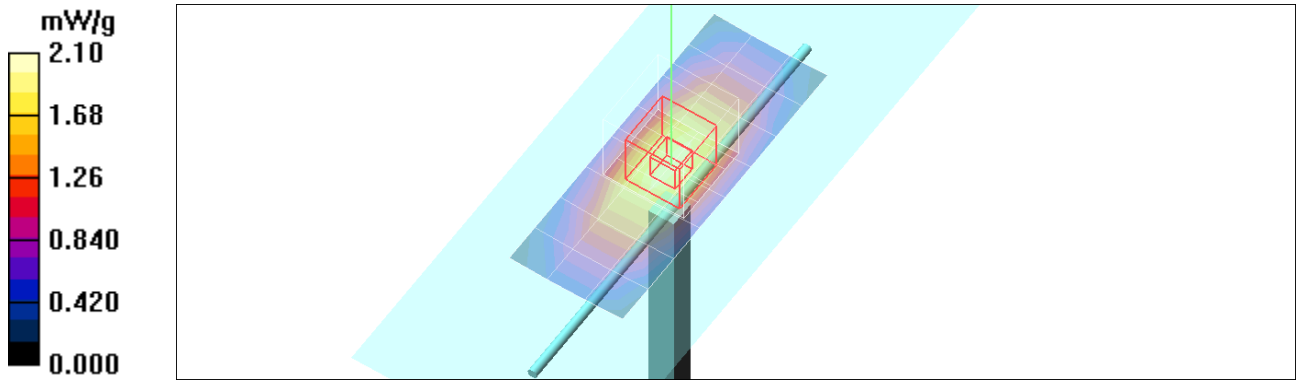
DASY4 Configuration:

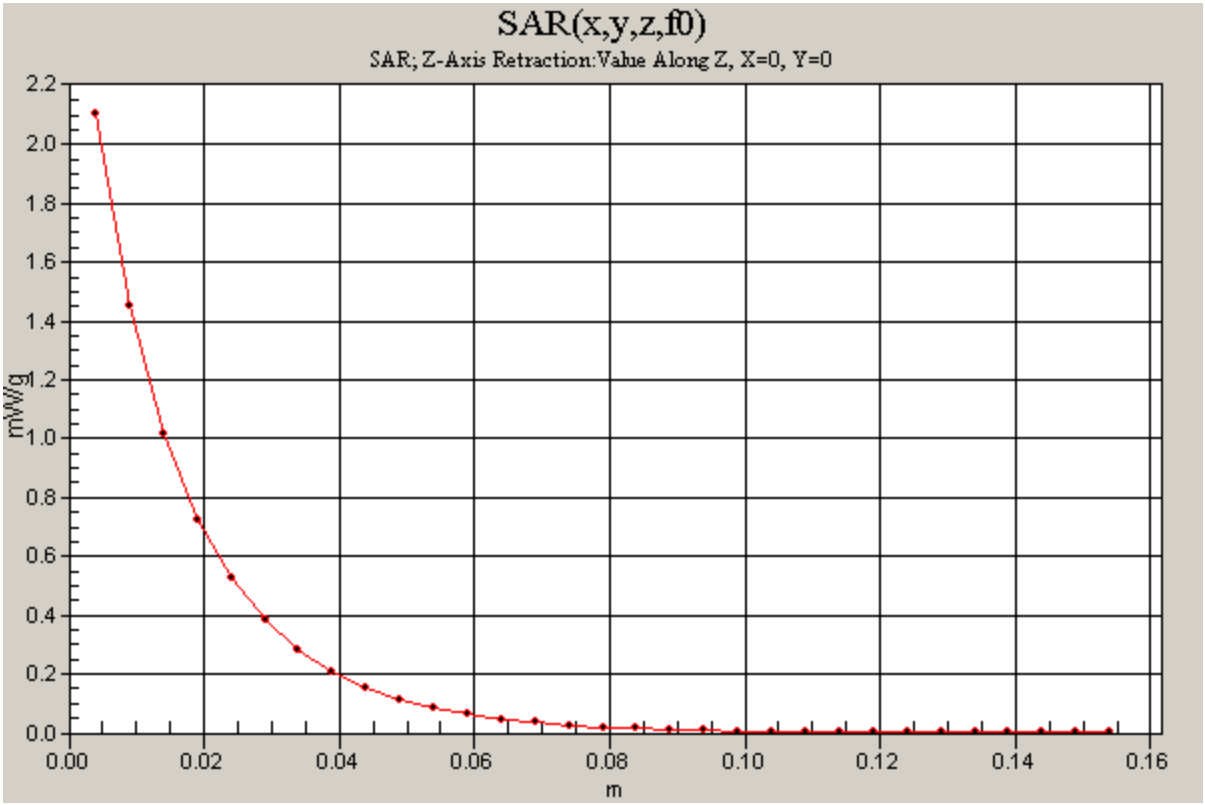
- Probe: ES3DV3 - SN3191; ConvF(6.1, 6.1, 6.1); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 1, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (9x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.79 mW/g

Daily SPC Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 46.7 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 2.81 W/kg
SAR(1 g) = 1.93 mW/g; SAR(10 g) = 1.27 mW/g
Maximum value of SAR (measured) = 2.09 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.10 mW/g




SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 10/28/2011 10:53:10 AM

Test Laboratory: MOTOROLA MOBILITY 835 MHz System
Performance Check

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421tr;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = - 27.3dB Sim.Temp@SPC = 21.1 Room Temp @ SPC = 21.1

Communication System: CW - Dipole; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Validation *BODY Tissue* ; Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3

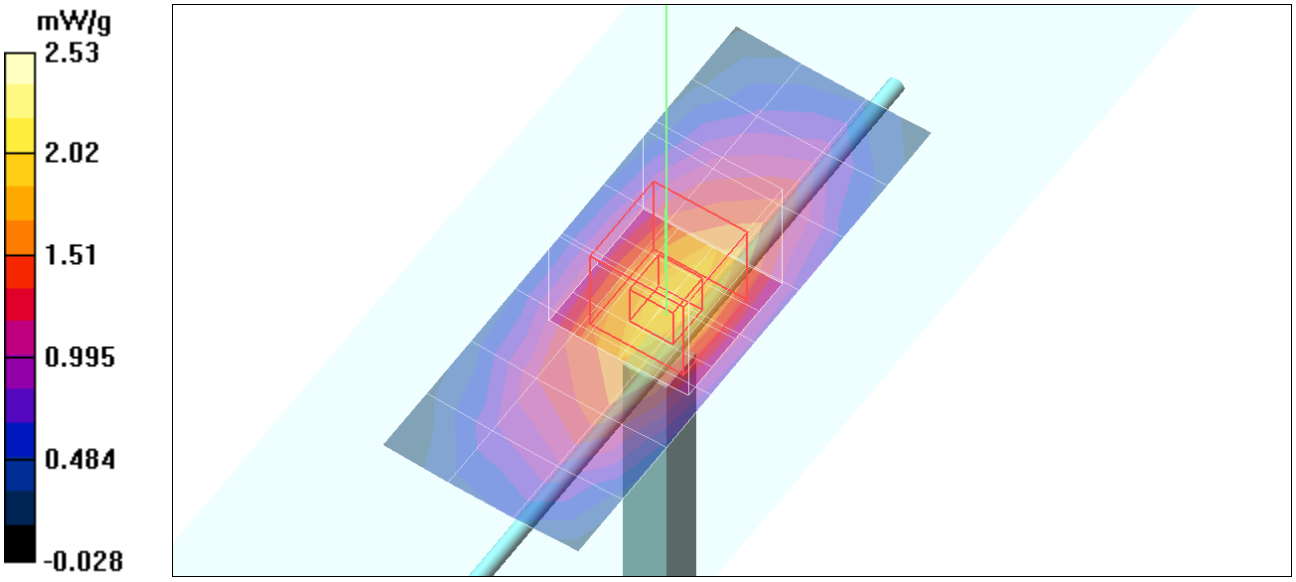
DASY4 Configuration:

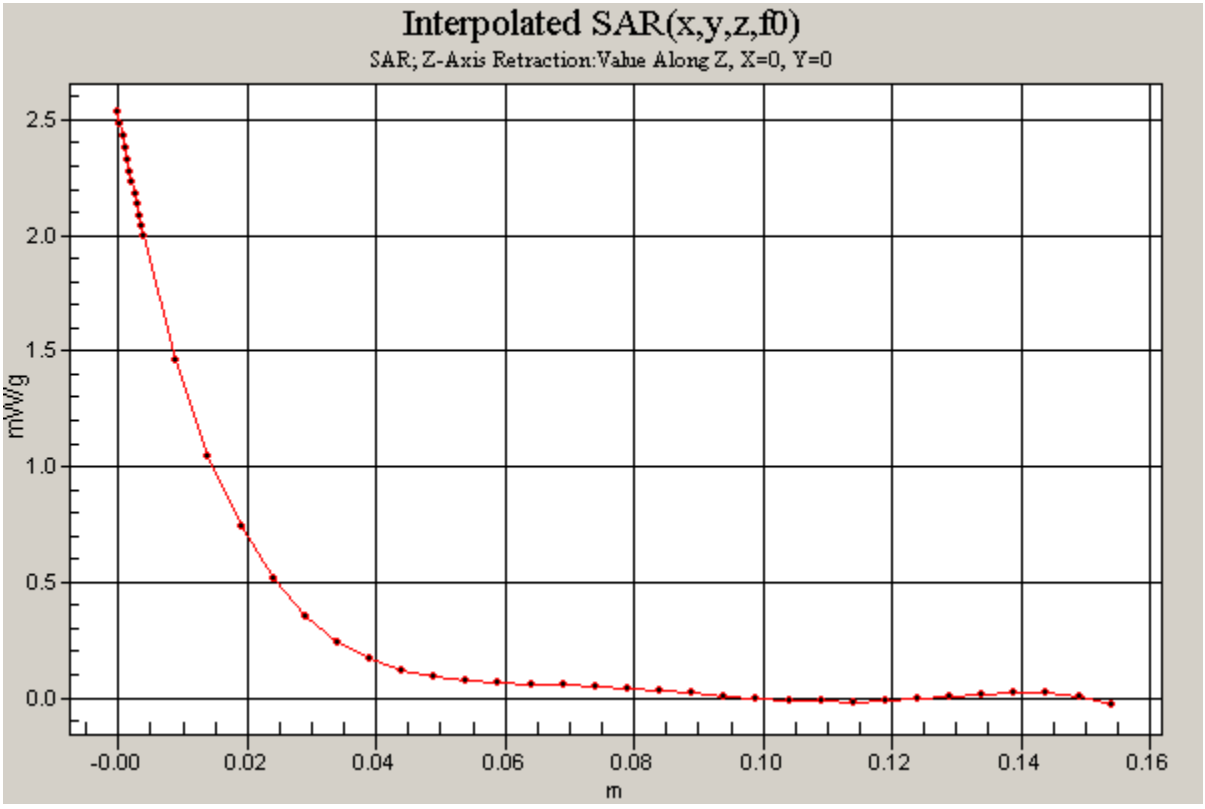
- Probe: ES3DV3 - SN3191; ConvF(6.1, 6.1, 6.1); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (9x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.91 mW/g

Daily SPC Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 46.0 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 2.77 W/kg
SAR(1 g) = 1.9 mW/g; SAR(10 g) = 1.25 mW/g
Maximum value of SAR (measured) = 2.05 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 2.06 mW/g


mW/g
2.53
2.02
1.51
0.995
0.484
-0.028


Interpolated SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
2.5
2.0
1.5
1.0
0.5
0.0
-0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 9/20/2011 8:51:50 PM

Test Laboratory: MOTOROLA MOBILITY 1800 MHz System
Performance Check

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128;
Procedure Notes: Power = 200 mW Refl.Pwr PM3 = --21.46 dB Sim.Temp@SPC = 21.2 Room Temp @ SPC = 21.6

Communication System: CW - Dipole; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: Validation *BODY Tissue* ; Medium parameters used: f = 1800 MHz; σ = 1.5 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3

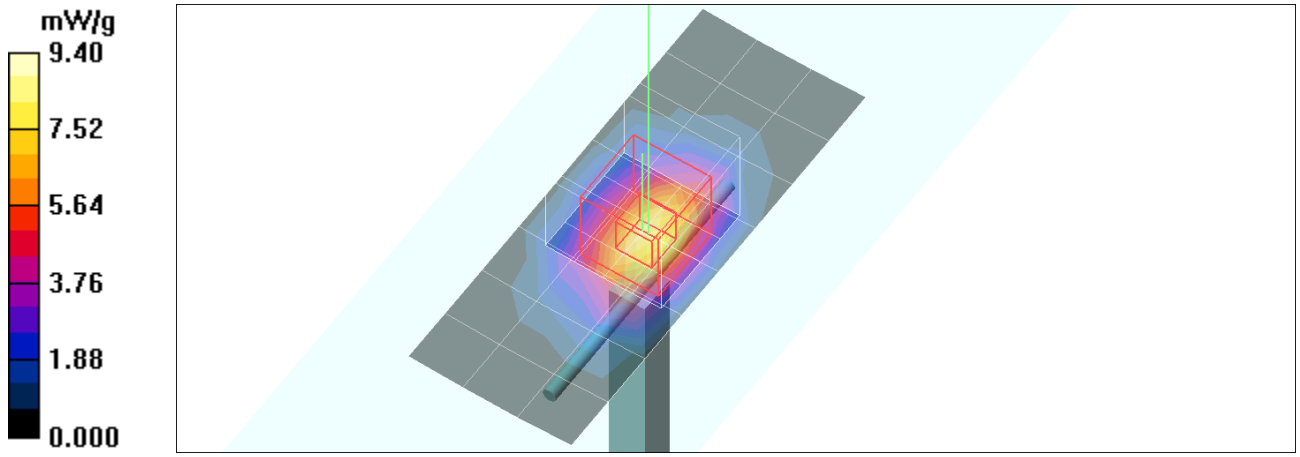
DASY4 Configuration:

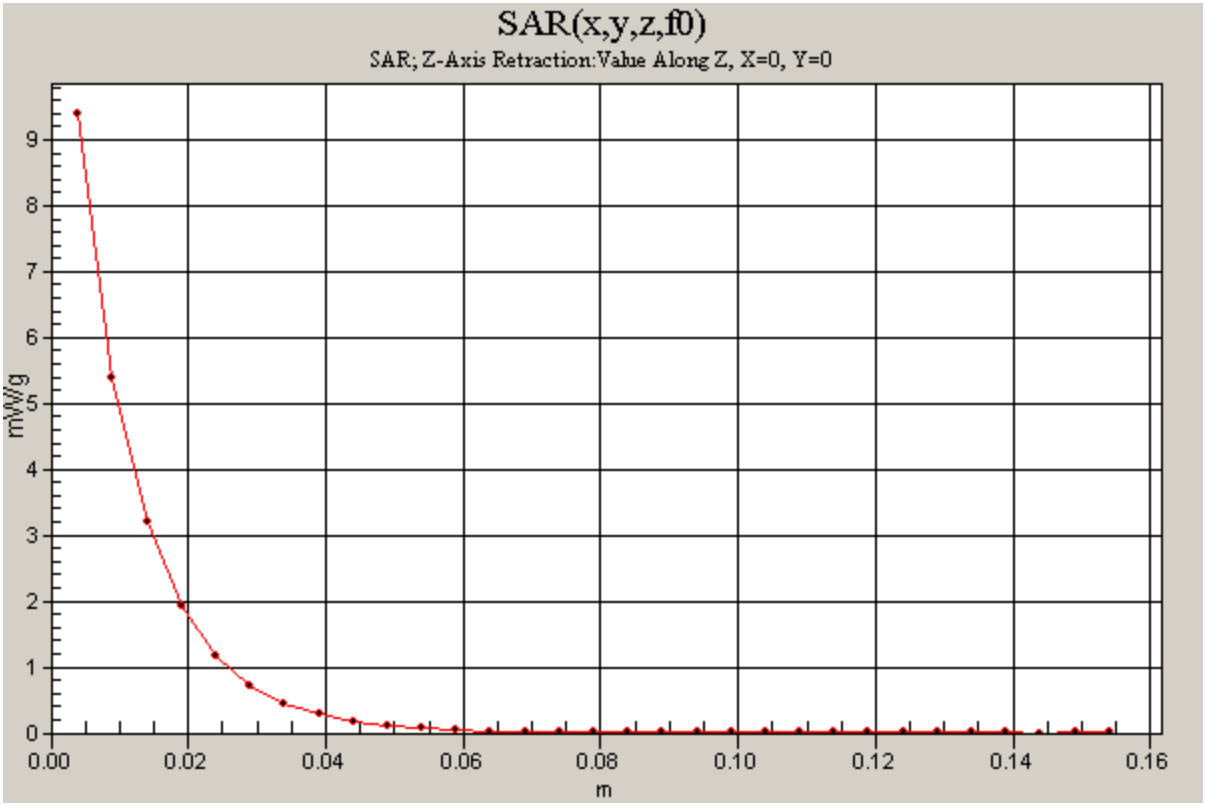
- Probe: ES3DV3 - SN3191; ConvF(4.76, 4.76, 4.76); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (9x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.93 mW/g

Daily SPC Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 78.4 V/m; Power Drift = 0.066 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 8.25 mW/g; SAR(10 g) = 4.34 mW/g
Maximum value of SAR (measured) = 9.18 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 9.40 mW/g




SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/29/2011 5:26:55 PM

Test Laboratory: MOTOROLA MOBILITY 1800 MHz System
Performance Check

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -21.89 dB Sim.Temp@SPC = 21.2 Room Temp @ SPC = 21.5

Communication System: CW - Dipole; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: Validation *BODY Tissue* ; Medium parameters used: f = 1800 MHz; σ = 1.49 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3

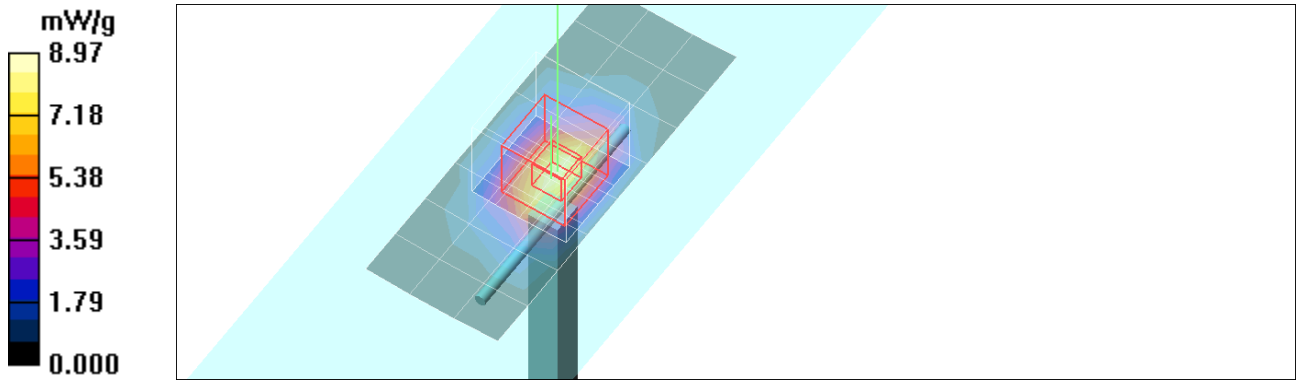
DASY4 Configuration:

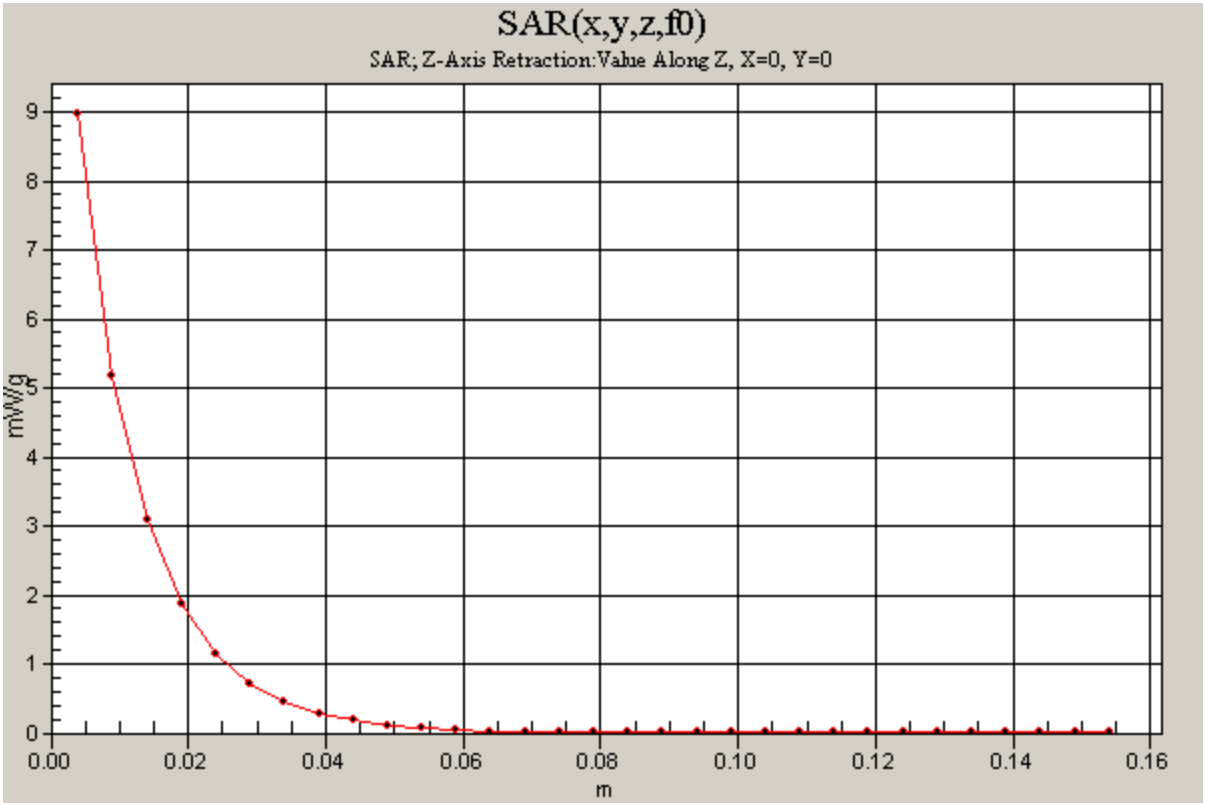
- Probe: ES3DV3 - SN3191; ConvF(4.76, 4.76, 4.76); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (9x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.68 mW/g

Daily SPC Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 76.8 V/m; Power Drift = 0.074 dB
Peak SAR (extrapolated) = 14.7 W/kg
SAR(1 g) = 8.17 mW/g; SAR(10 g) = 4.32 mW/g
Maximum value of SAR (measured) = 9.12 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.97 mW/g




SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Date/Time: 9/28/2011 4:55:04 PM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz System
Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:789;
Procedure Notes: PM1 Power = 200 mW PM2 Refl.Pwr PM3 = -33.9 dB Sim.Temp@SPC = 20.5 Room Temp @ SPC = 21.5

Communication System: CW - Dipole; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: Validation *BODY Tissue* ; Medium parameters used: f = 2450 MHz; σ = 1.9 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3

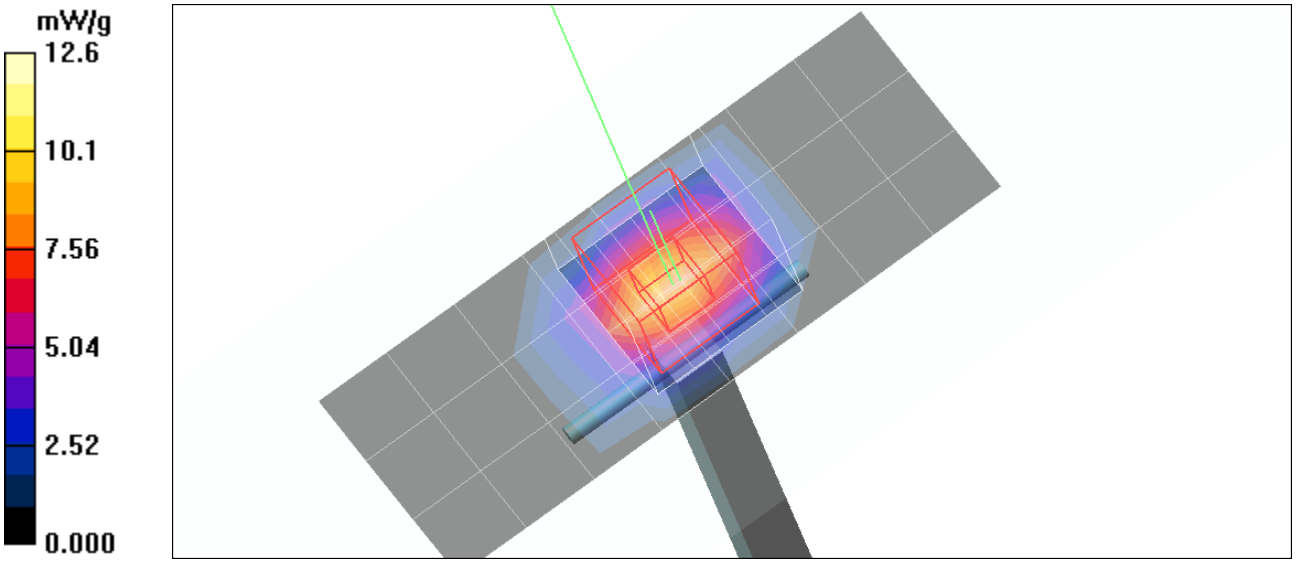
DASY4 Configuration:

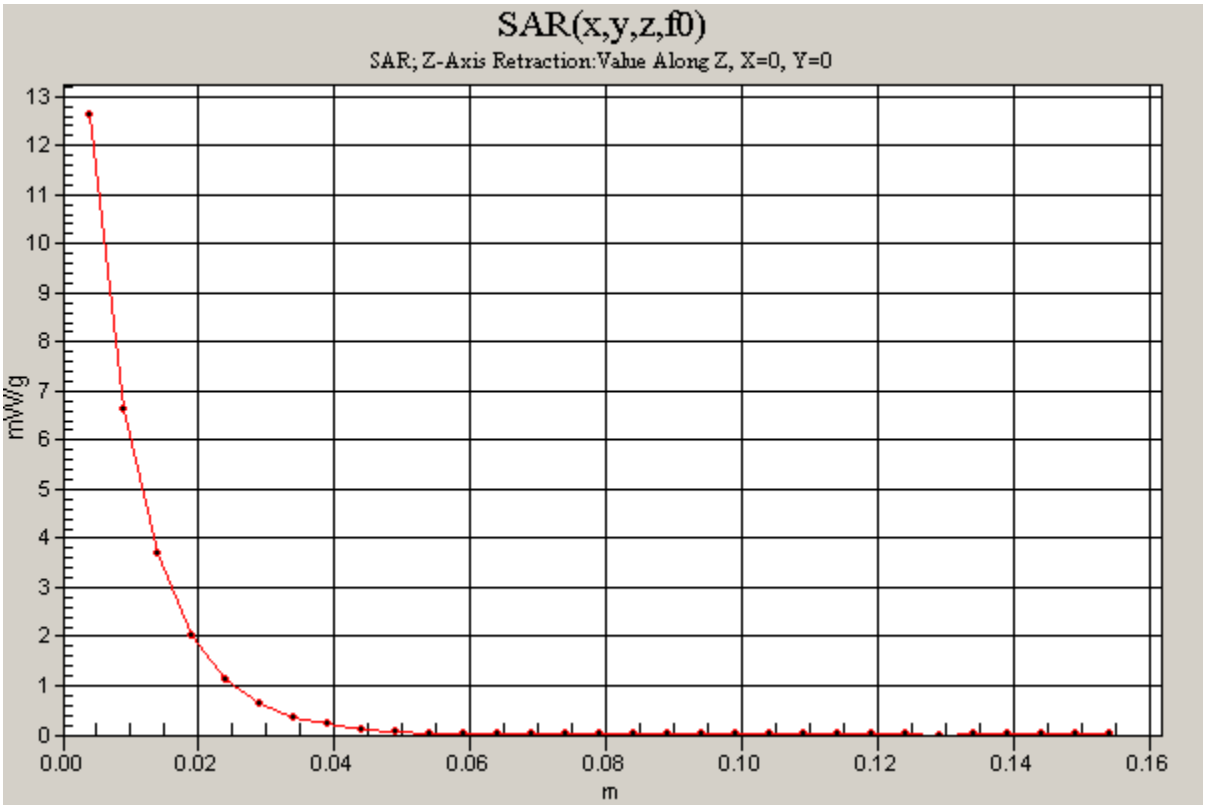
- Probe: ES3DV3 - SN3191; ConvF(4.11, 4.11, 4.11); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 1, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Daily SPC Check/Dipole Area Scan (9x4x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.96 mW/g

Daily SPC Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 81.7 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 22.6 W/kg
SAR(1 g) = 11 mW/g; SAR(10 g) = 5.15 mW/g
Maximum value of SAR (measured) = 12.5 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 12.6 mW/g


mW/g
12.6
10.1
7.56
5.04
2.52
0.000


SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
10
11
12
13
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Appendix 2

SAR distribution plots for Head Adjacent Test Results

Date/Time: 9/20/2011 10:31:46 AM

Test Laboratory: MOTOROLA MOBILITY GSM 1900 Cheek Touch

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: 00; Battery Model #: SNN5892A Test Configuration: Cheek Touch

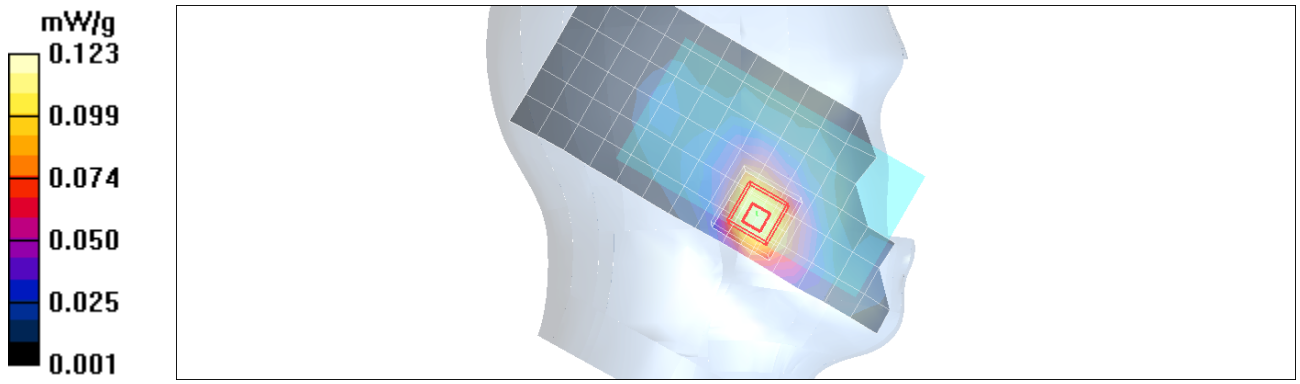
Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 39; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Left Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.111 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.95 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 0.173 W/kg
SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.070 mW/g
Maximum value of SAR (measured) = 0.123 mW/g



Date/Time: 9/28/2011 9:47:07 AM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz WiFi - Cheek Touch

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Wi-Fi 802.11b 1 Mbps Chn 6 Battery Model #: SNN5892A Test Configuration: Cheek Touch

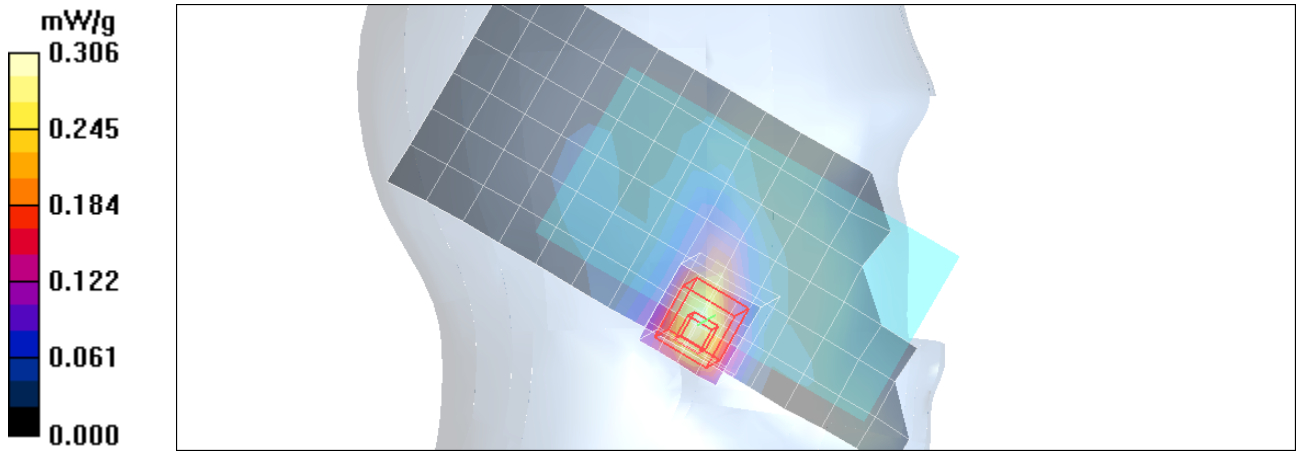
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 36.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Left Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.293 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.30 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.595 W/kg
SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.139 mW/g
Maximum value of SAR (measured) = 0.306 mW/g



Date/Time: 9/22/2011 7:40:47 AM

Test Laboratory: MOTOROLA MOBILITY CDMA 800 Cheek Touch

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: ALL UP; Battery Model #: SNN5892A Test Configuration: Cheek Touch

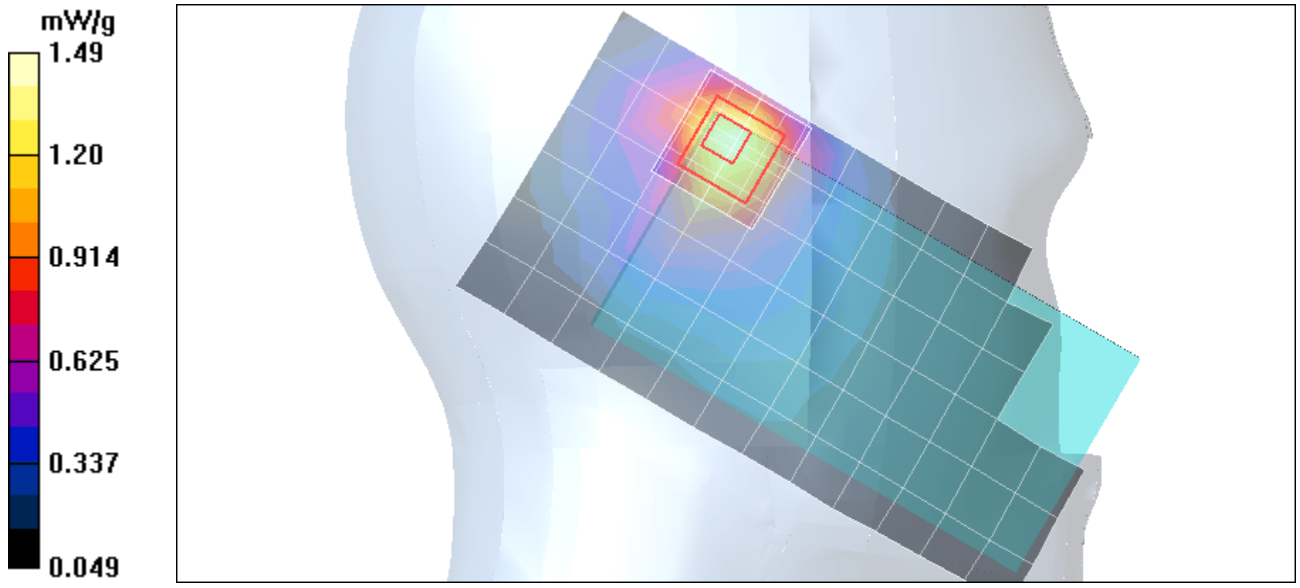
Communication System: CDMA 835; Frequency: 836.52 MHz; Communication System Channel Number: 384; Duty Cycle: 1:1
Medium: Low Freq Head; Medium parameters used: f = 835 MHz; σ = 0.9 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.15, 6.15, 6.15); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Sugar SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1407;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.48 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.0 V/m; Power Drift = -0.181 dB
Peak SAR (extrapolated) = 2.64 W/kg
SAR(1 g) = 1.4 mW/g; SAR(10 g) = 0.788 mW/g
Maximum value of SAR (measured) = 1.49 mW/g



Date/Time: 9/21/2011 7:59:20 AM

Test Laboratory: MOTOROLA MOBILITY CDMA 1900 Cheek Touch

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: All Up Battery Model #: SNN5892A Test Configuration: Cheek Touch

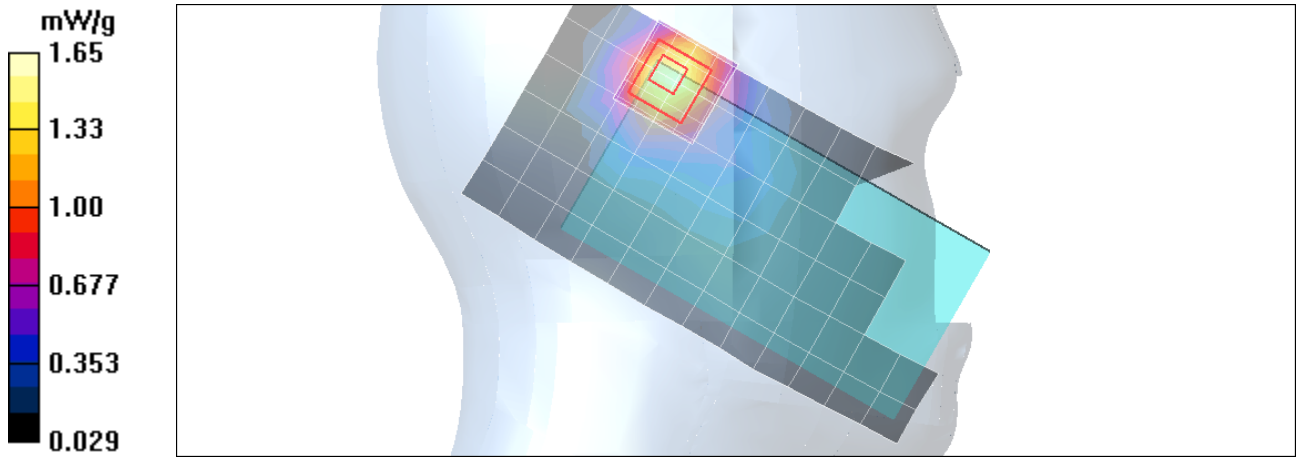
Communication System: CDMA 1900; Frequency: 1851.25 MHz; Communication System Channel Number: 25; Duty Cycle: 1:1
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 39; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.63 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.9 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 3.17 W/kg
SAR(1 g) = 1.54 mW/g; SAR(10 g) = 0.803 mW/g
Maximum value of SAR (measured) = 1.65 mW/g



Date/Time: 9/28/2011 11:36:41 AM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz WiFi - Cheek Touch

DUT: Serial: TA2210012N; FCC ID: IHDP56MB3
Procedure Notes: Wi-Fi 802.11b 11 Mbps Ch6 Battery Model #: SNN5892A Test Configuration: Cheek

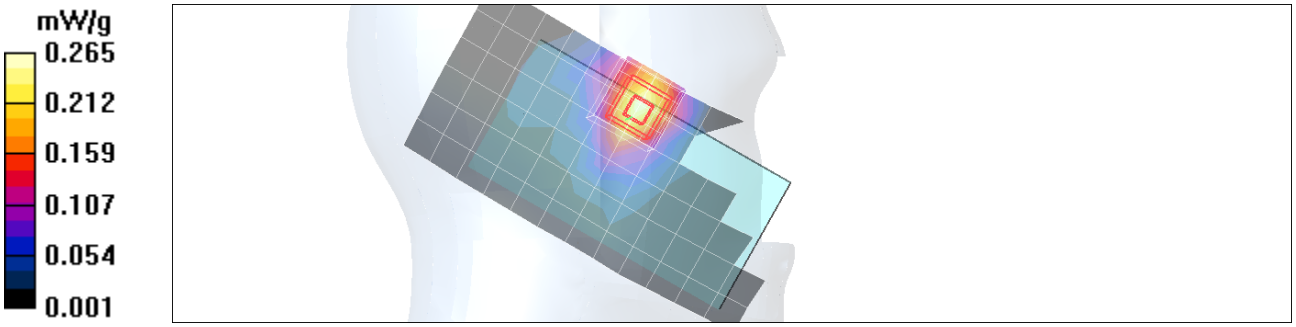
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 36.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.273 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.07 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.471 W/kg
SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.130 mW/g
Maximum value of SAR (measured) = 0.265 mW/g



Date/Time: 9/22/2011 8:51:33 AM

Test Laboratory: MOTOROLA MOBILITY CDMA 800 15 Degree Tilt

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: ALL UP; Battery Model #: SNN5892A Test Configruation: 15 Degree tilt

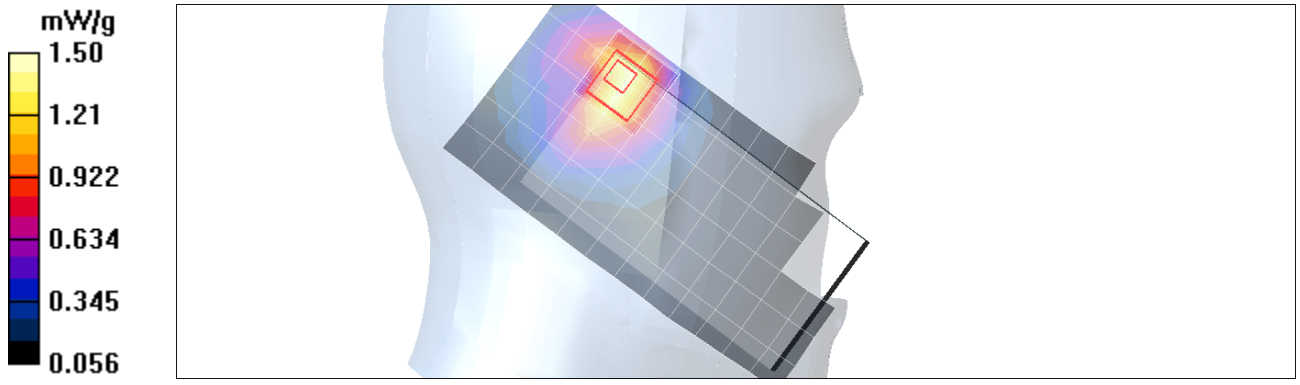
Communication System: CDMA 835; Frequency: 836.52 MHz; Communication System Channel Number: 384; Duty Cycle: 1:1
Medium: Low Freq Head; Medium parameters used: f = 835 MHz; σ = 0.9 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.15, 6.15, 6.15); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Sugar SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1407;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.44 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.9 V/m; Power Drift = -0.062 dB
Peak SAR (extrapolated) = 2.69 W/kg
SAR(1 g) = 1.45 mW/g; SAR(10 g) = 0.831 mW/g
Maximum value of SAR (measured) = 1.50 mW/g



Date/Time: 9/20/2011 6:04:38 PM

Test Laboratory: MOTOROLA MOBILITY CDMA 1900 15 Degree Tilt

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: All Up; Battery Model #: SNN5892A Test Configruation: 15 Degree tilt

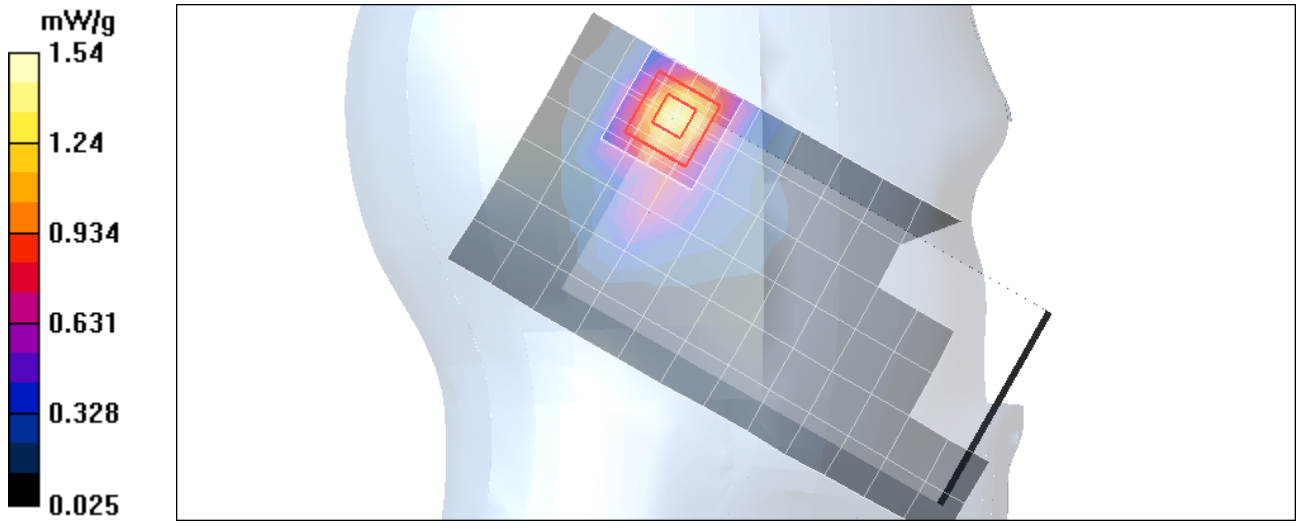
Communication System: CDMA 1900; Frequency: 1851.25 MHz; Communication System Channel Number: 25; Duty Cycle: 1:1
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 39; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.21 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.3 V/m; Power Drift = -0.096 dB
Peak SAR (extrapolated) = 2.72 W/kg
SAR(1 g) = 1.33 mW/g; SAR(10 g) = 0.665 mW/g
Maximum value of SAR (measured) = 1.54 mW/g



Date/Time: 9/20/2011 11:42:22 AM

Test Laboratory: MOTOROLA MOBILITY GSM 1900 15 Degree Tilt

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5892A Test Configruation: 15 Degree tilt

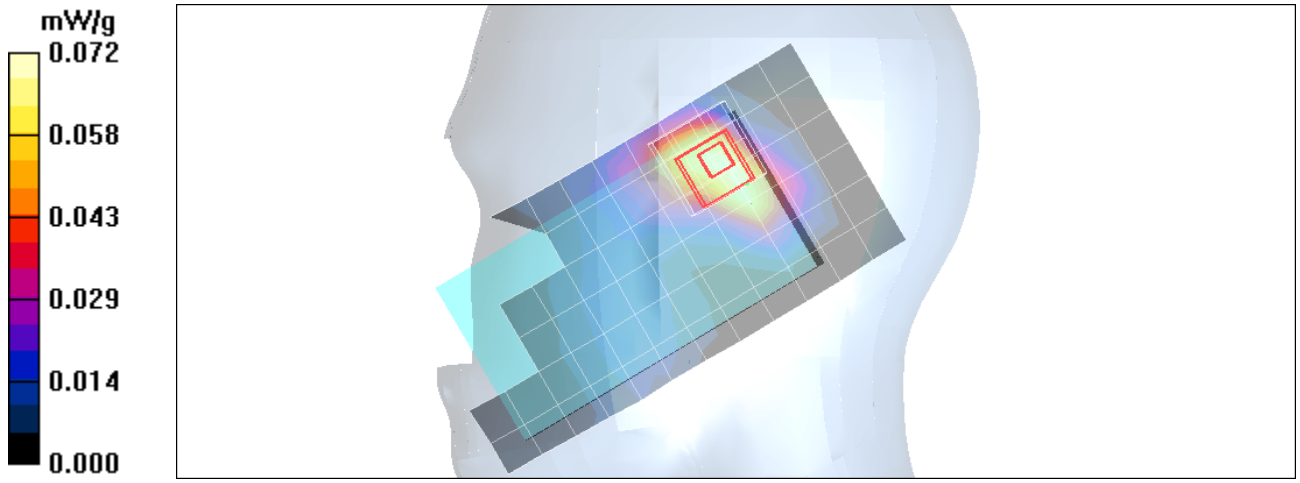
Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.44 mho/m; ε_r = 39; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.071 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.86 V/m; Power Drift = 0.129 dB
Peak SAR (extrapolated) = 0.110 W/kg
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.040 mW/g
Maximum value of SAR (measured) = 0.072 mW/g



Date/Time: 9/28/2011 1:52:16 PM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz WiFi - 15 Degree Tilt

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Wi-Fi 802.11b 1 Mbps Chn 6 Battery Model #: SNN5892A Test Configuration: 15 Degree Tilt

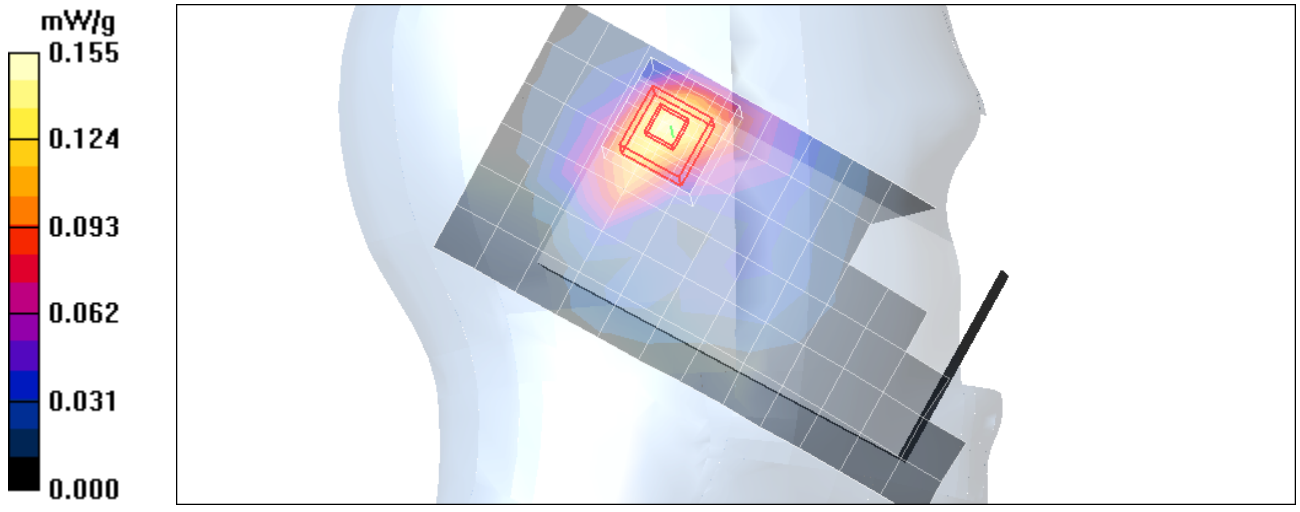
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.83 mho/m; ε_r = 36.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Head Template/Area Scan - Normal (15mm) (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.140 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.26 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 0.277 W/kg
SAR(1 g) = 0.141 mW/g; SAR(10 g) = 0.072 mW/g
Maximum value of SAR (measured) = 0.155 mW/g



Appendix 3

SAR distribution plots for Body Worn Test Results

Date/Time: 9/22/2011 3:32:10 PM

Test Laboratory: MOTOROLA MOBILITY CDMA 800 Body Worn

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step:All Up; Battery Model #: SNN5892A Test Configuration = Back of Phone 25mm

Communication System: CDMA 835; Frequency: 836.52 MHz; Communication System Channel Number: 384; Duty Cycle: 1:1
Medium: Low Freq Body; Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

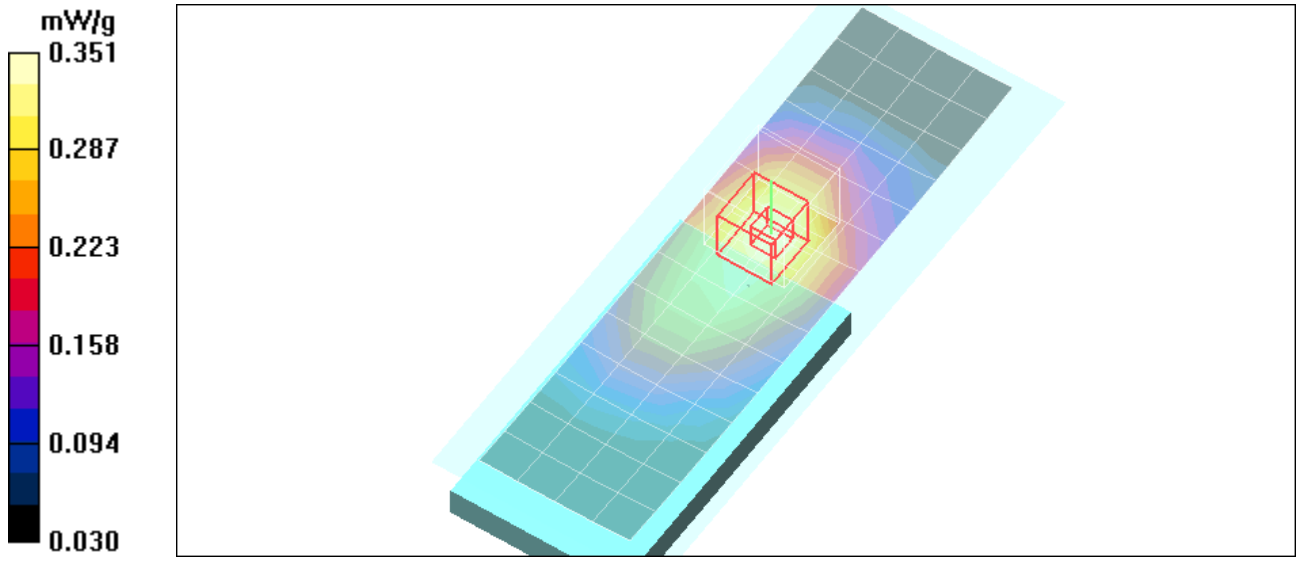
DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.1, 6.1, 6.1); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 1, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (16x7x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.342 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.0 V/m; Power Drift = 0.039 dB
Peak SAR (extrapolated) = 0.414 W/kg
SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.251 mW/g
Maximum value of SAR (measured) = 0.351 mW/g



Date/Time: 9/21/2011 8:28:16 AM

Test Laboratory: MOTOROLA MOBILITY CDMA 1900 Body Worn

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: All Up; Battery Model #: SNN5892A Test Configuration = Back of Phone 25mm

Communication System: CDMA 1900; Frequency: 1880 MHz; Communication System Channel Number: 600; Duty Cycle: 1:1
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.59 mho/m; ε_r = 51; ρ = 1000 kg/m^3

DASY4 Configuration:

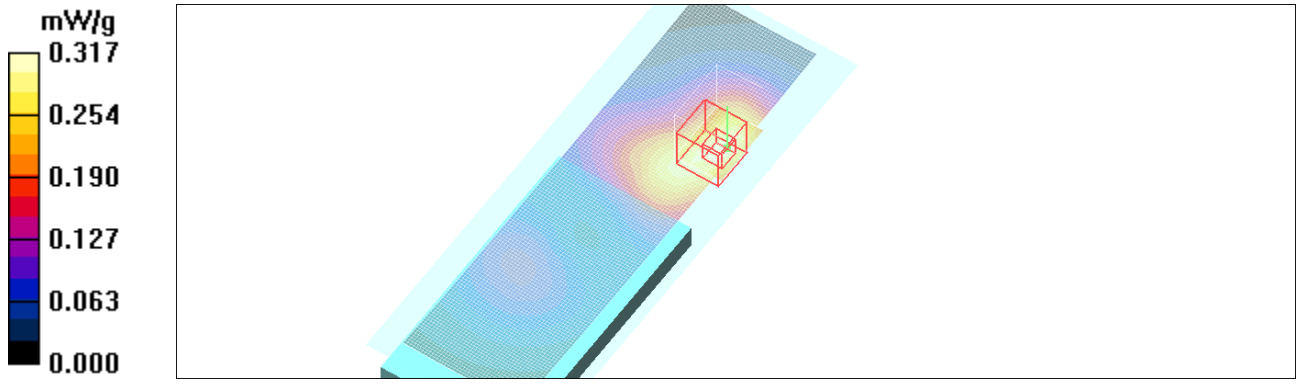
- Probe: ES3DV3 - SN3191; ConvF(4.76, 4.76, 4.76); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (151x61x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.312 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 0.457 W/kg
SAR(1 g) = 0.295 mW/g; SAR(10 g) = 0.185 mW/g

Maximum value of SAR (measured) = 0.317 mW/g



Date/Time: 9/21/2011 10:28:45 AM

Test Laboratory: MOTOROLA MOBILITY GSM 1900 Body Worn

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: All Up; Battery Model #: SNN5892A Test Configuration = Back of Phone 25mm

Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.59 mho/m; ε_r = 51; ρ = 1000 kg/m^3

DASY4 Configuration:

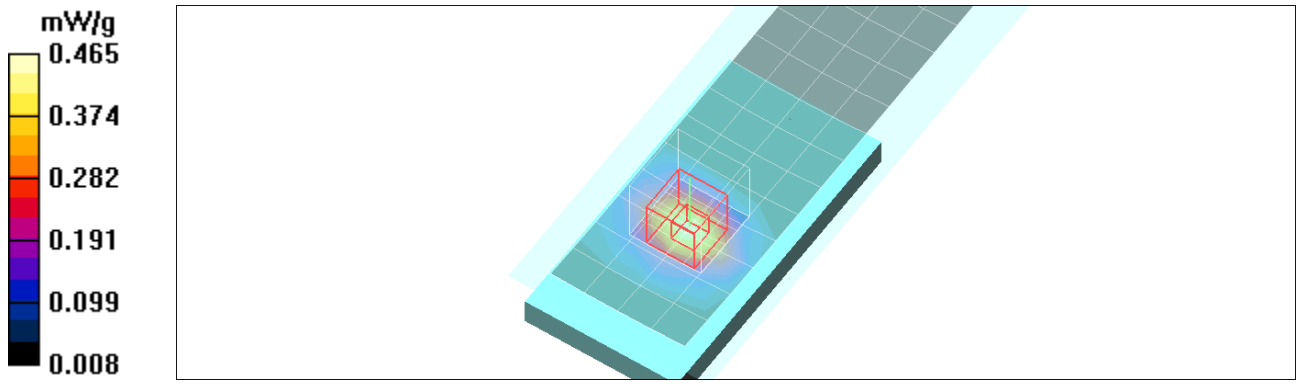
- Probe: ES3DV3 - SN3191; ConvF(4.76, 4.76, 4.76); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (16x7x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.458 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz), - to correct max out (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.424 mW/g; SAR(10 g) = 0.241 mW/g
Maximum value of SAR (measured) = 0.465 mW/g



Date/Time: 9/29/2011 3:49:50 PM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz WiFi - Body Worn

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Wi-Fi 802.11b 11 Chn 11 Mbps; Battery Model #: SNN5892 Test Configuration: Back of Phone 25mm

Communication System: Wi-Fi 2450; Frequency: 2462 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.9 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3

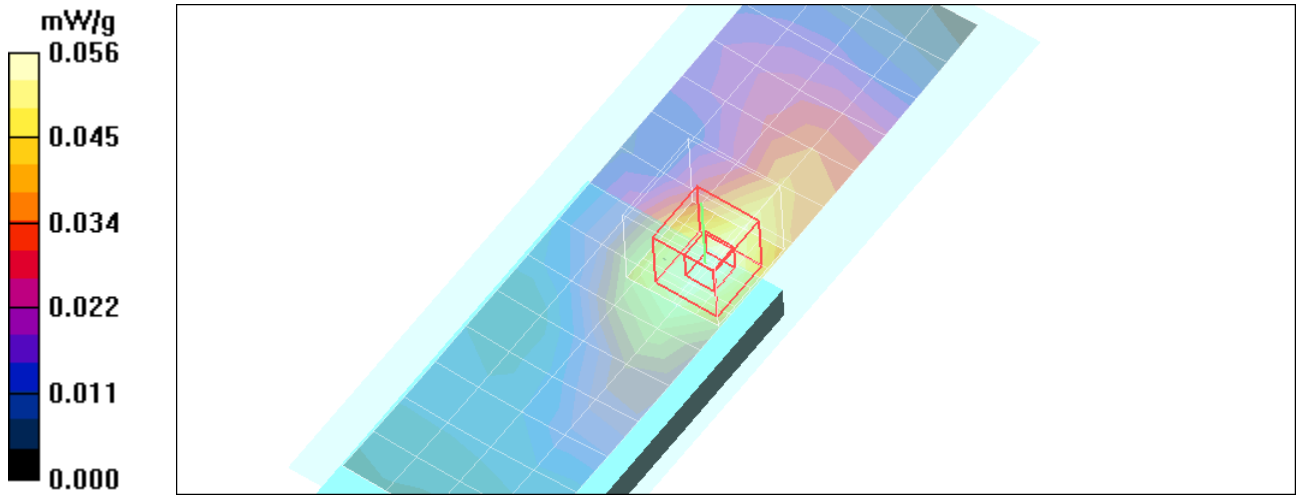
DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.11, 4.11, 4.11); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 1, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (16x7x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.057 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.73 V/m; Power Drift = 0.019 dB
Peak SAR (extrapolated) = 0.092 W/kg
SAR(1 g) = 0.053 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.056 mW/g



Appendix 4

SAR distribution plots for Mobile Hotspot Test Results

Date/Time: 9/29/2011 11:51:10 AM

Test Laboratory: MOTOROLA MOBILITY 2450 MHz WiFi-Mobile Hotspot

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Wi-Fi 802.11b 1 Mbps Chn 11 Battery Model #: SNN5892 Test Configuration: Left Edge 10mm

Communication System: Wi-Fi 2450; Frequency: 2462 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.9 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3

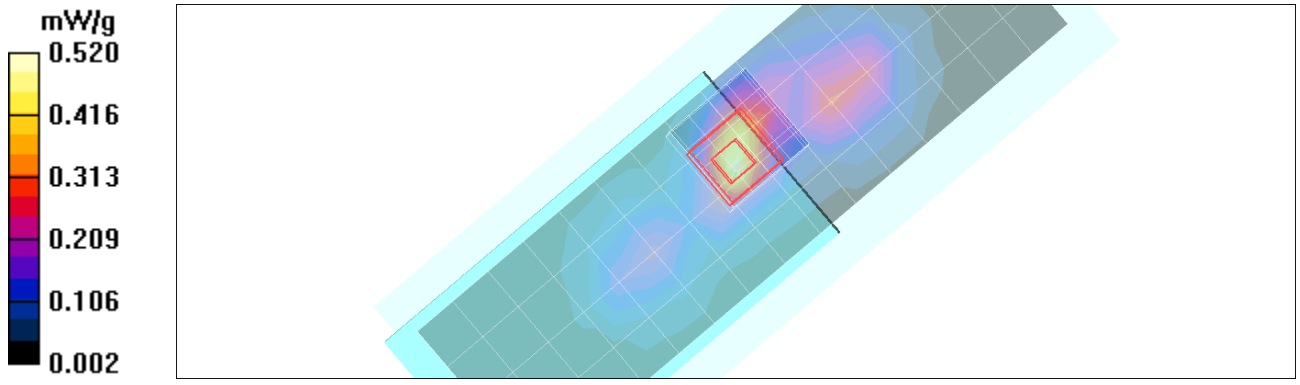
DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(4.11, 4.11, 4.11); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 1, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (16x7x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.358 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.462 mW/g; SAR(10 g) = 0.205 mW/g
Maximum value of SAR (measured) = 0.520 mW/g



Date/Time: 10/28/2011 11:42:10 AM

Test Laboratory: MOTOROLA MOBILITY CDMA 800 Mobile Hotspot

DUT: Serial: TA2210012N; FCC ID: IHDP56MB3
Procedure Notes: Pwr Step: All Up Antenna Position: Fixed Battery Model #: SNN5892A Test Configuration: Body Worn,Front of Phone 10mm from Phantom

Communication System: CDMA 835; Frequency: 836.52 MHz; Communication System Channel umber: 384; Duty Cycle: 1:1
Medium: Low Freq Body; Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.9; ρ = 1000 N
kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3191; ConvF(6.1, 6.1, 6.1); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

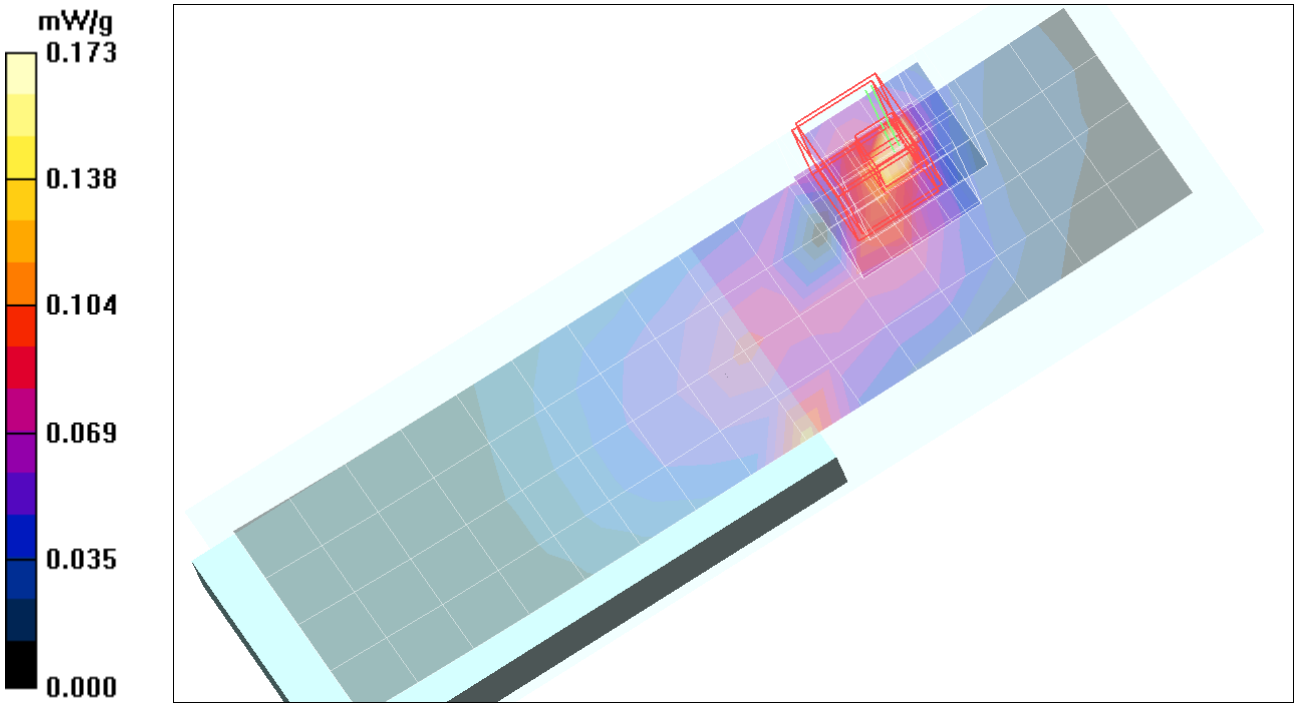
Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (151x61x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.168 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz), - to correct max out (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.86 V/m; Power Drift = -0.126 dB
Peak SAR (extrapolated) = 0.343 W/kg
SAR(1 g) = 0.134 mW/g; SAR(10 g) = 0.066 mW/g

Maximum value of SAR (measured) = 0.259 mW/g



Date/Time: 9/29/2011 6:50:36 PM

Test Laboratory: MOTOROLA MOBILITY CDMA 1900 Mobile Hotspot

DUT: Serial: TA2210012N; FCC ID: IHDP56MB2
Procedure Notes: Pwr Step: All Up; Battery Model #: SNN5892A Test Configuration = Back of Phone 10mm from Phantom

Communication System: CDMA 1900; Frequency: 1880 MHz; Communication System Channel Number: 600; Duty Cycle: 1:1
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.58 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3

DASY4 Configuration:

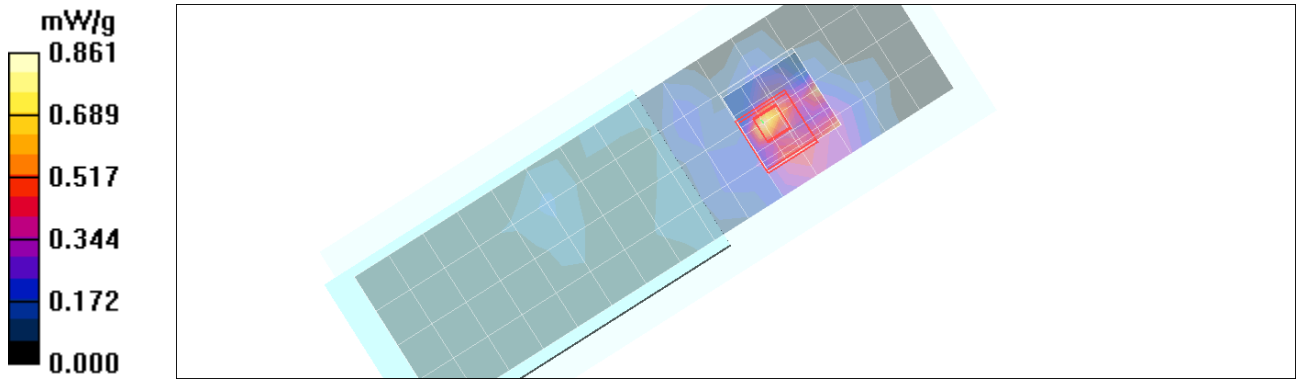
- Probe: ES3DV3 - SN3191; ConvF(4.76, 4.76, 4.76); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Section 2, Amy Twin, Rev3 (3-Feb-10); Type: Amy Twin Flat; Serial: n/a;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Amy Twin Phone Template/Area Scan - Normal Extended Body (15mm) (16x7x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.664 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.113 dB
Peak SAR (extrapolated) = 1.86 W/kg
SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.250 mW/g

Maximum value of SAR (measured) = 0.861 mW/g



Appendix 5

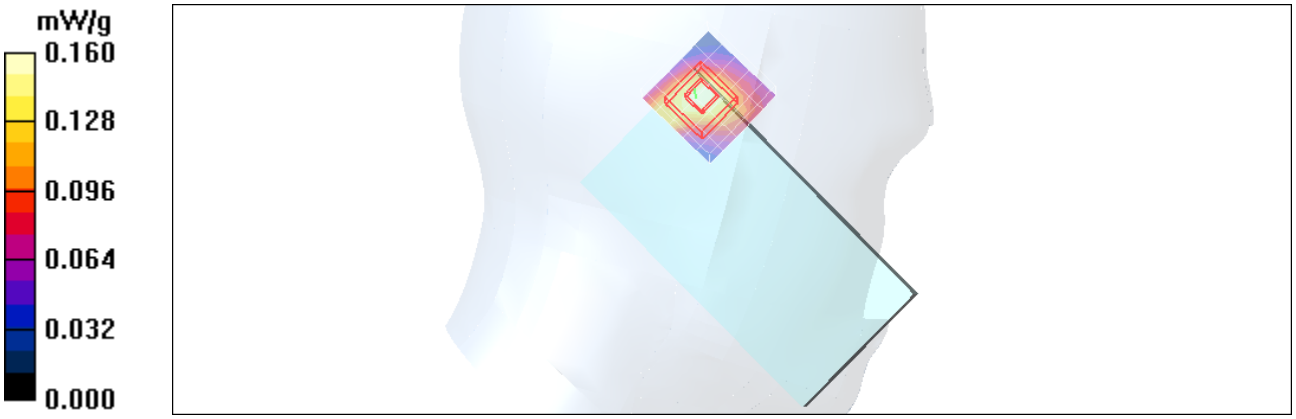
SAR distribution plots for Simultaneous Transmission

CDMA 800 and 2450 MHz WiFi Right Head 15 Degree Tilt Simultaneous Transmit

DASY4 Configuration for Megazoom SAM - Phone Against RIGHT Head Template - Rev.13 (4-Apr-07)/Right Head Template/MegaZoom Zoom Scan (<=3GHz):

Date/Time: 9/30/2011 2:11:15 PM
Test Laboratory: MOTOROLA MOBILITY
DUT: Serial: TA2210012N, FCC ID: IHDP56MB2
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Glycol Head Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 37.6; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

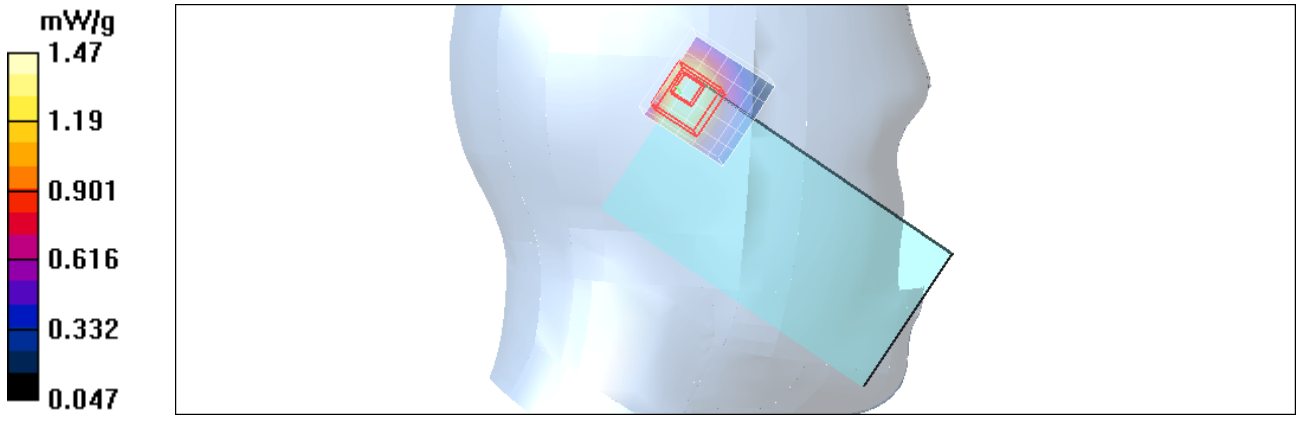
- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160
- Measurement SW: DASY4, V4.7 Build 80



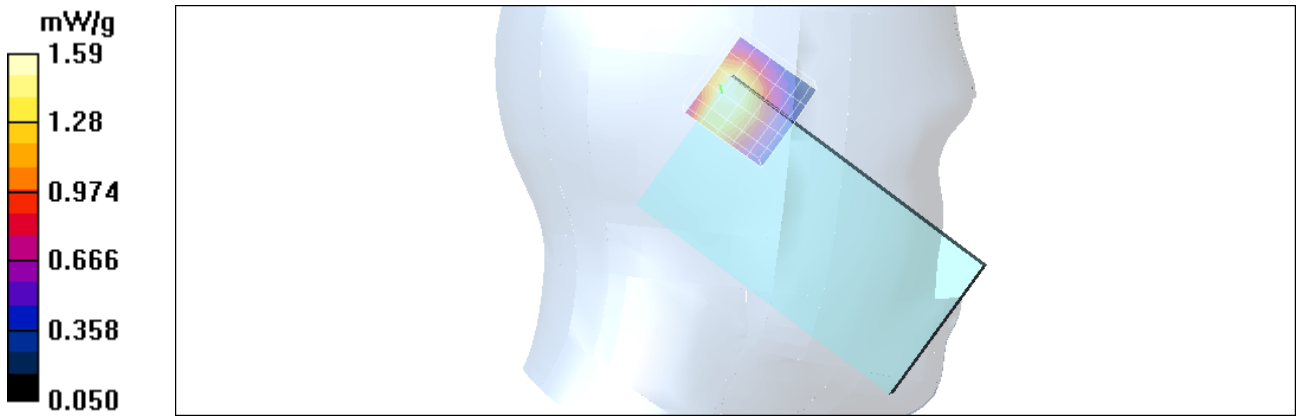
DASY4 Configuration for Megazoom SAM - Phone Against RIGHT Head Template - Rev.13 (4-Apr-07)/Right Head Template/MegaZoom Zoom Scan (<=3GHz):

Date/Time: 9/30/2011 2:49:05 PM
Test Laboratory: MOTOROLA MOBILITY
DUT: Serial: TA2210012N, FCC ID: IHDP56MB2
Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: Low Freq Head Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

- Probe: ES3DV3 - SN3191; ConvF(6.15, 6.15, 6.15); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Sugar SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1407
- Measurement SW: DASY4, V4.7 Build 80



Multi Band Result:
SAR(1 g) = 1.51 mW/g; SAR(10 g) = 0.869 mW/g
Maximum value of SAR (measured) = 1.59 mW/g

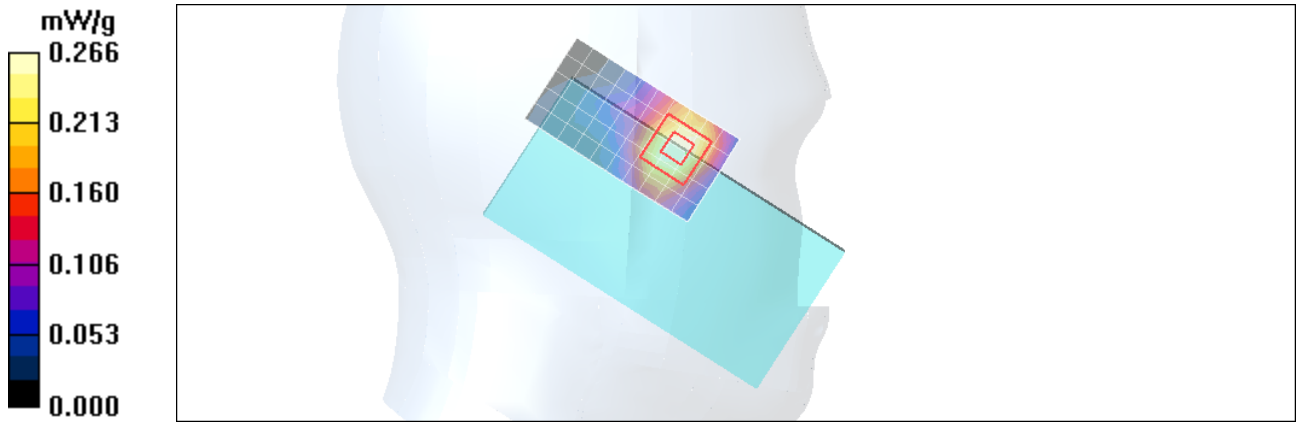


CDMA 1900 and 2450 MHz WiFi Right Head Cheek Simultaneous Transmit

DASY4 Configuration for Megazoom, SAM - Phone Against RIGHT Head Template - Rev.13 (4-Apr-07)/Right Head Template/MegaZoom Zoom Scan (<=3GHz):

Date/Time: 9/30/2011 1:38:57 PM
Test Laboratory: MOTOROLA Mobility
DUT: Serial: TA2210012N, FCC ID: IHDP56MB3
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Glycol Head Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 37.6; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

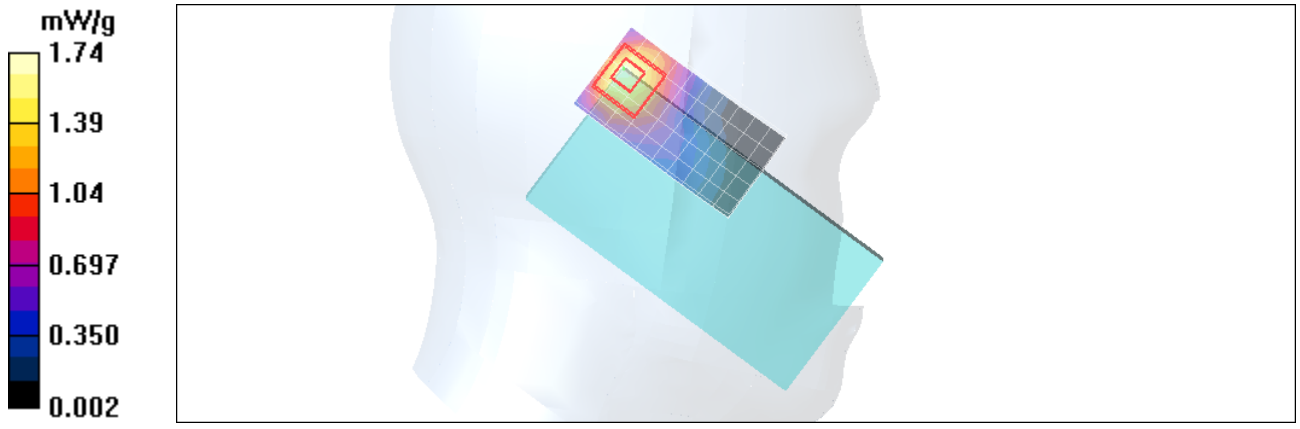
- Probe: ES3DV3 - SN3191; ConvF(4.49, 4.49, 4.49); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160
- Measurement SW: DASY4, V4.7 Build 80



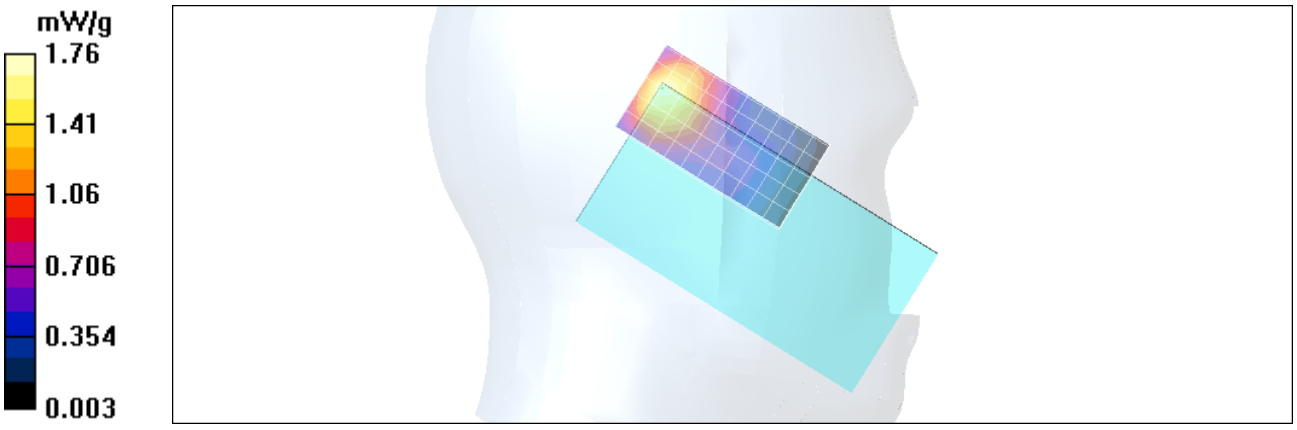
DASY4 Configuration for Megazoom, SAM - Phone Against RIGHT Head Template - Rev.13 (4-Apr-07)/Right Head Template/MegaZoom Zoom Scan (<=3GHz):

Date/Time: 9/30/2011 10:12:05 AM
Test Laboratory: MOTOROLA Mobility
DUT: Serial: TA2210012N, FCC ID: IHDP56MB3
Communication System: CDMA 1900; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: Regular Glycol Head 1750/1880 Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

- Probe: ES3DV3 - SN3191; ConvF(5.21, 5.21, 5.21); Calibrated: 4/7/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 4/13/2011
- Phantom: R11_ Glycol SAM (extended range), Rev.1 (25-Mar-05); Type: SAM v4.0; Serial: TP-1160
- Measurement SW: DASY4, V4.7 Build 80



Multi Band Result:
SAR(1 g) = 1.59 mW/g; SAR(10 g) = 0.836 mW/g
Maximum value of SAR (measured) = 1.76 mW/g



Appendix 6

Measurement Uncertainty Budget

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**IEEE 1528 section**	**Tol. (± %)**	**Prob Dist**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11.1	10.8	411
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				22.2	21.6	

Appendix 7

Probe Calibration Certificate

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
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 **Motorola Beijing**

Certificate No: D835V2-421_Apr11

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 421

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits

Calibration date: April 04, 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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

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	4-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

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 5, 2011

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:

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

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

c) 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:

d) 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.

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 V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 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 ± 0.2) °C	40.6 ± 6 %	0.88 mho/m ± 6 %
Head TSL temperature during test	(21.7 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.31 mW / g
SAR normalized	normalized to 1W	9.24 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.34 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.51 mW / g
SAR normalized	normalized to 1W	6.04 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.10 mW /g ± 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 ± 0.2) °C	54.1 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.49 mW / g
SAR normalized	normalized to 1W	10.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.76 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.63 mW / g
SAR normalized	normalized to 1W	6.52 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.43 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.3 Ω + 0.7 jΩ
Return Loss	- 29.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.0 Ω - 1.0 jΩ
Return Loss	- 36.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.424 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.

Design Modification by End User

The dipole has been modified with Teflon Rings (TR) placed within identified markings close to the end of each dipole arm. Calibration has been performed with TR attached to the dipole.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 24, 2000

DASY5 Validation Report for Head TSL

Date/Time: 04.04.2011 10:09:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421

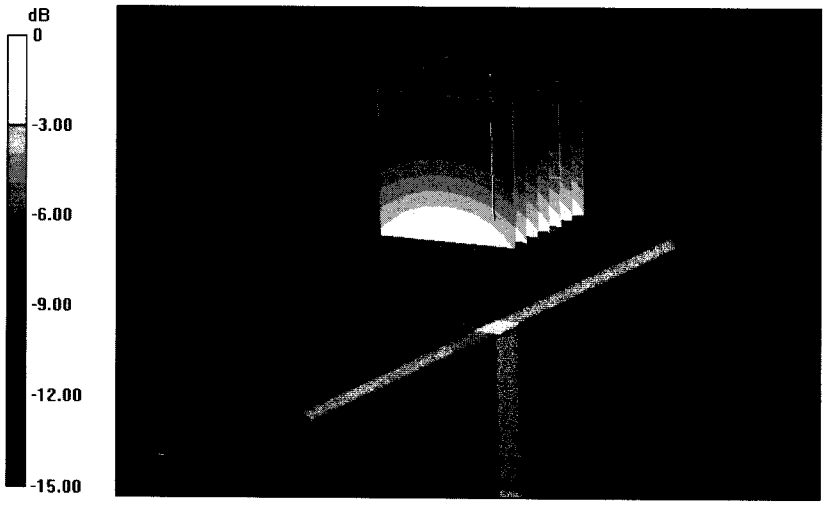
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL900
Medium parameters used: f = 835 MHz; σ = 0.88 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

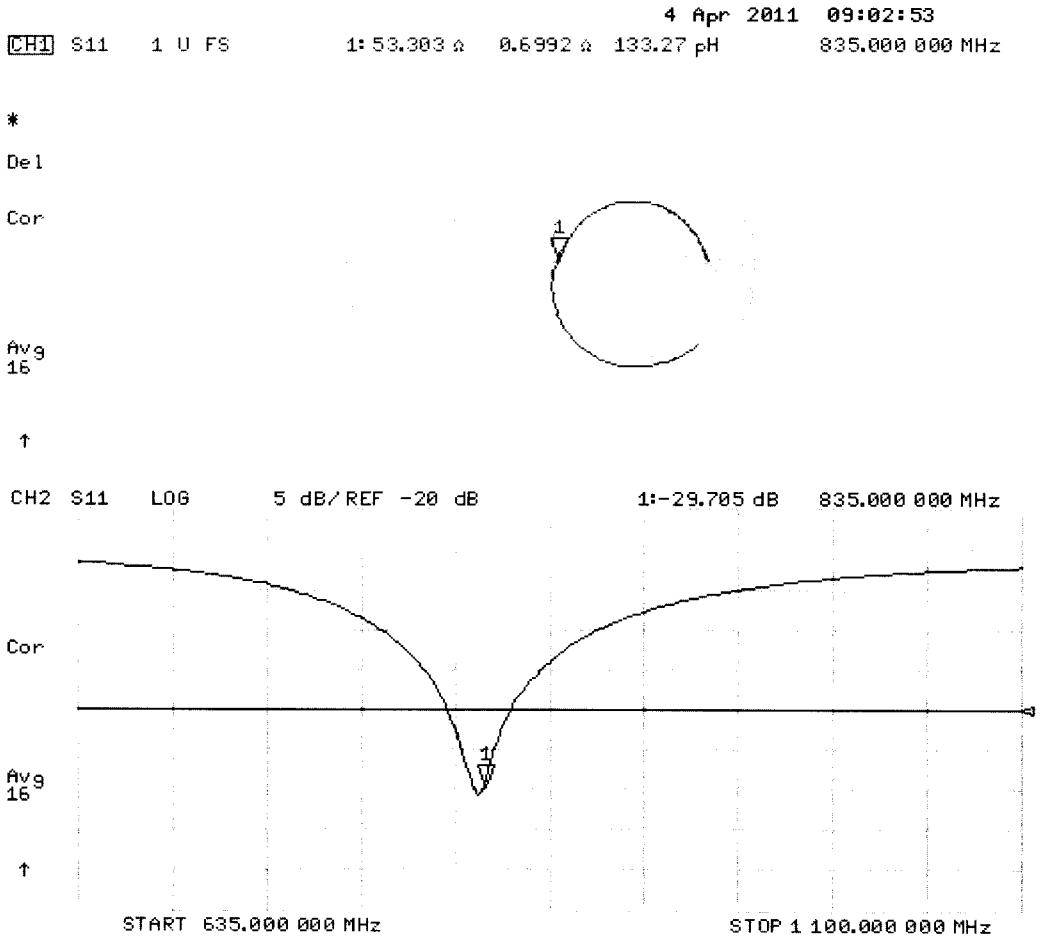
Pin=250 mW /d=15mm/Zoom Scan (7x7x7) /Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.966 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.449 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.699 mW/g



0 dB = 2.700mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 04.04.2011 13:48:48

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:421

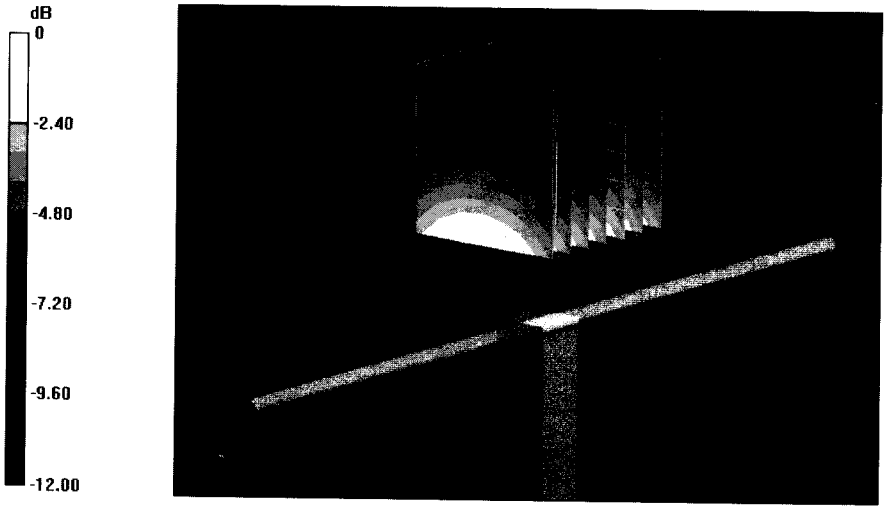
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL900
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

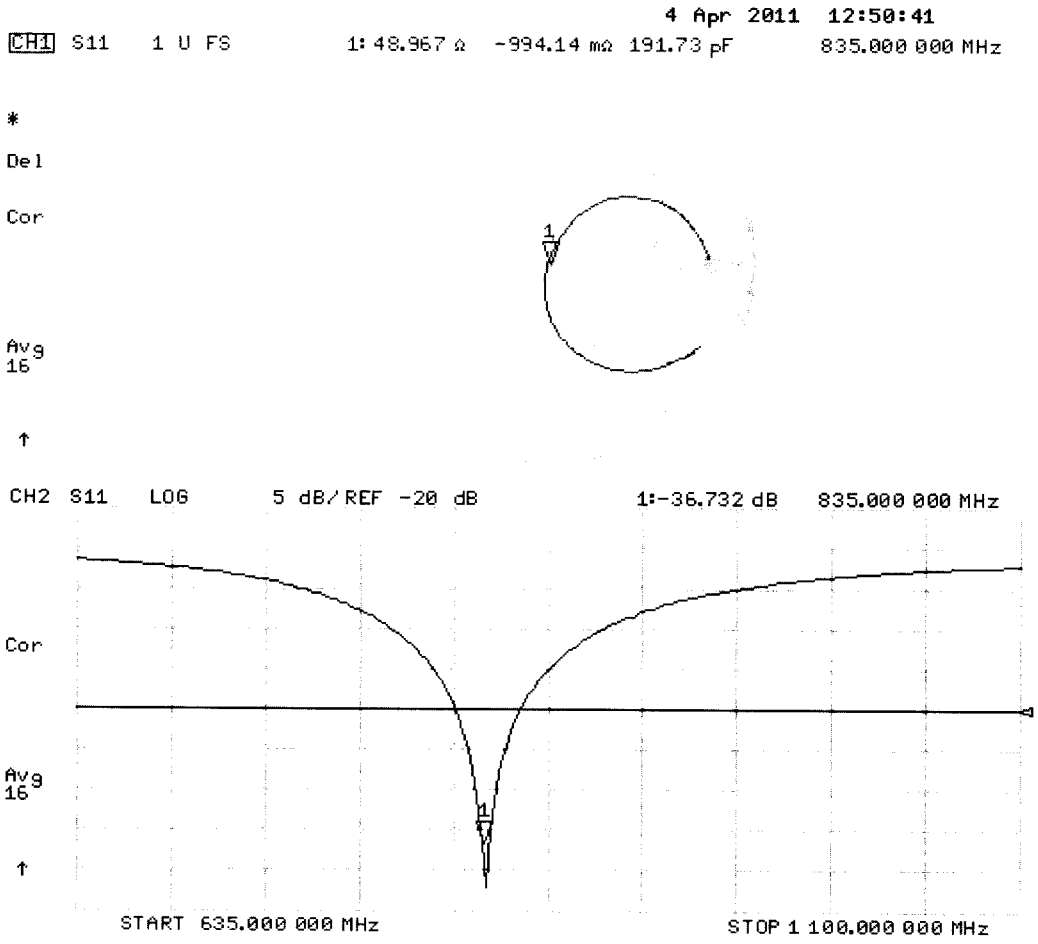
Pin=250 mW /d=15mm/Zoom Scan (7x7x7) /Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.878 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.683 W/kg
SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.63 mW/g
Maximum value of SAR (measured) = 2.902 mW/g



0 dB = 2.900mW/g

Impedance Measurement Plot for Body TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola Beijing**

Certificate No: D1800V2-2d128_Apr11

CALIBRATION CERTIFICATE

Object	D1800V2 - SN: 2d128
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits
Calibration date:	April 6, 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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

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	4-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

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 6, 2011

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

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

c) 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:

d) 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.

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 V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz ± 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 ± 0.2) °C	39.1 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.85 mW / g
SAR normalized	normalized to 1W	39.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**39.9 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.16 mW / g
SAR normalized	normalized to 1W	20.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.8 mW /g ± 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 ± 0.2) °C	51.3 ± 6 %	1.47 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.58 mW / g
SAR normalized	normalized to 1W	38.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**38.8 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.08 mW / g
SAR normalized	normalized to 1W	20.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.6 Ω - 2.7 jΩ
Return Loss	- 30.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7 Ω - 3.3 jΩ
Return Loss	- 23.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.210 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	July 27, 2005

DASY5 Validation Report for Head TSL

Date/Time: 05.04.2011 11:30:22

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128

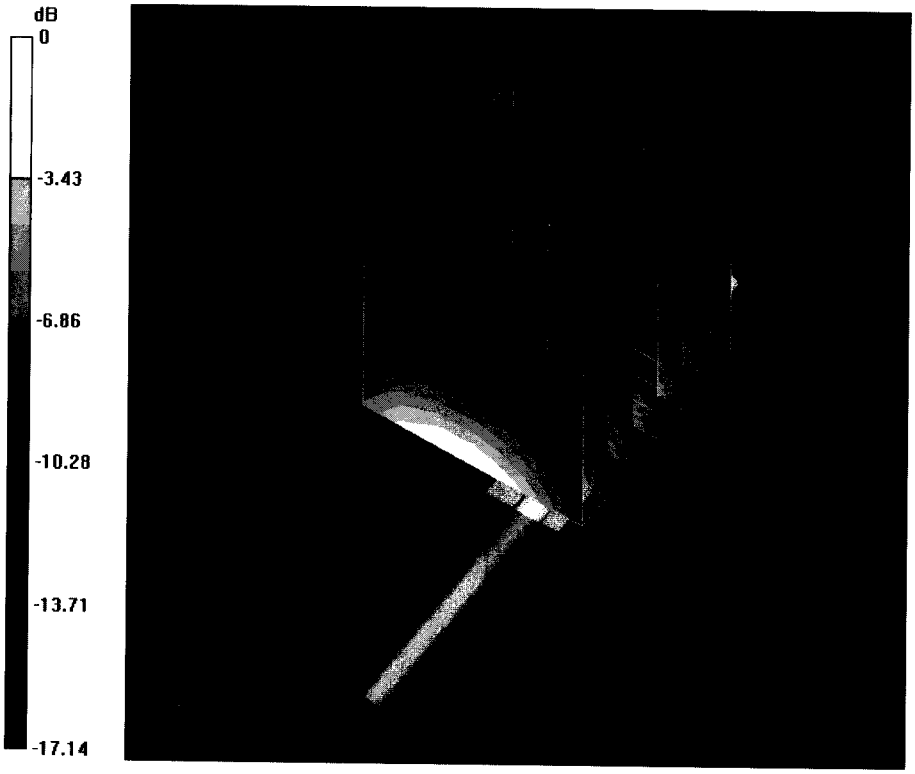
Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: HSL U12 BB
Medium parameters used: f = 1800 MHz; σ = 1.36 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.05, 5.05, 5.05); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

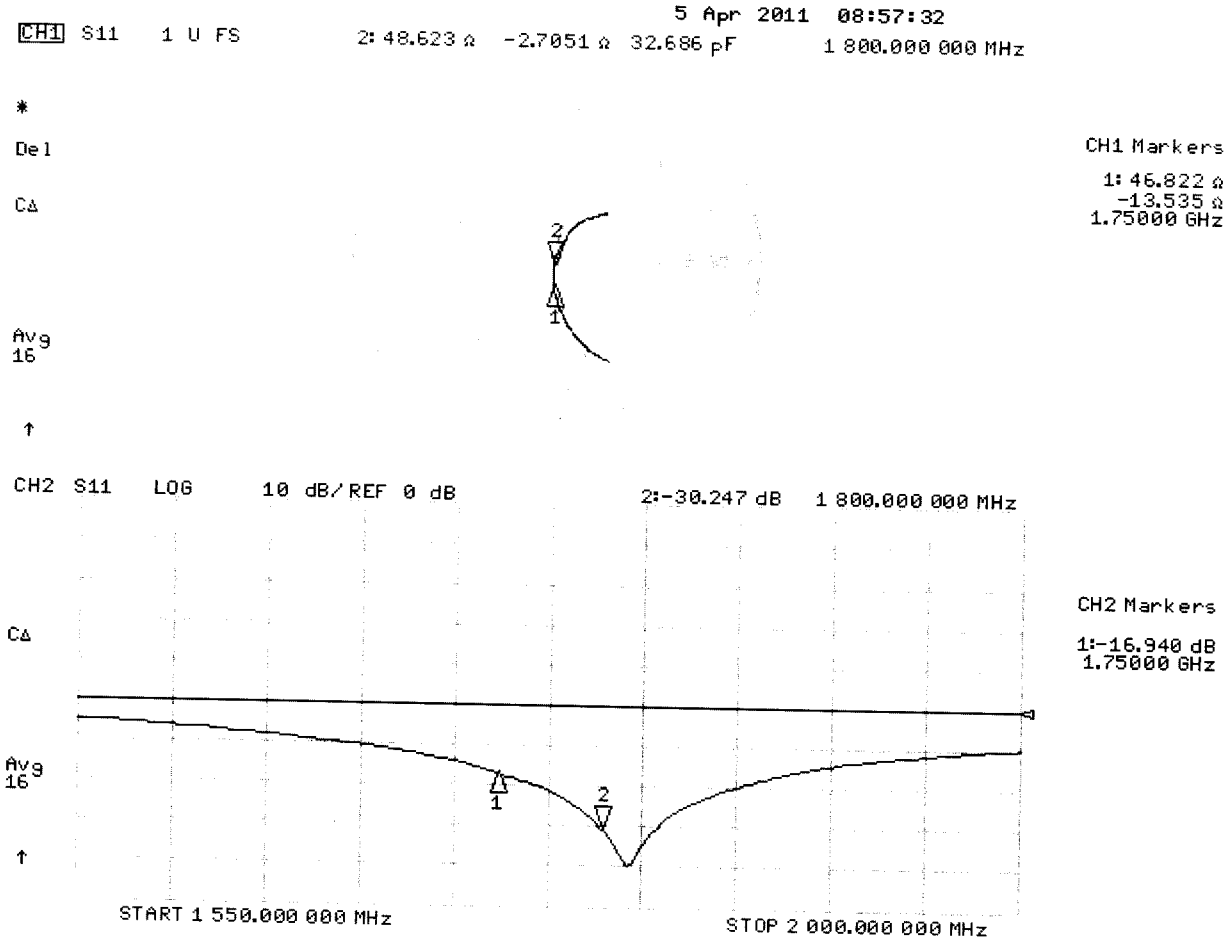
Head / d=10mm, Pin=250 mW / Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.381 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 17.979 W/kg
SAR(1 g) = 9.85 mW/g; SAR(10 g) = 5.16 mW/g
Maximum value of SAR (measured) = 12.263 mW/g



0 dB = 12.260mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 06.04.2011 11:16:27

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d128

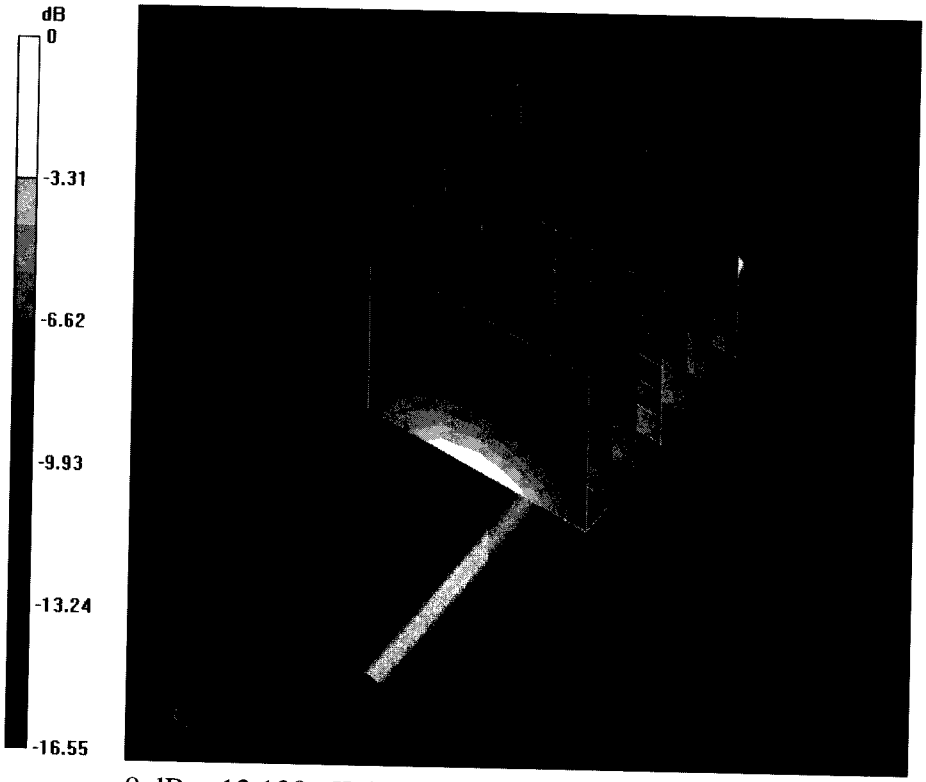
Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: MSL U12 BB
Medium parameters used: f = 1800 MHz; σ = 1.47 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.74, 4.74, 4.74); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

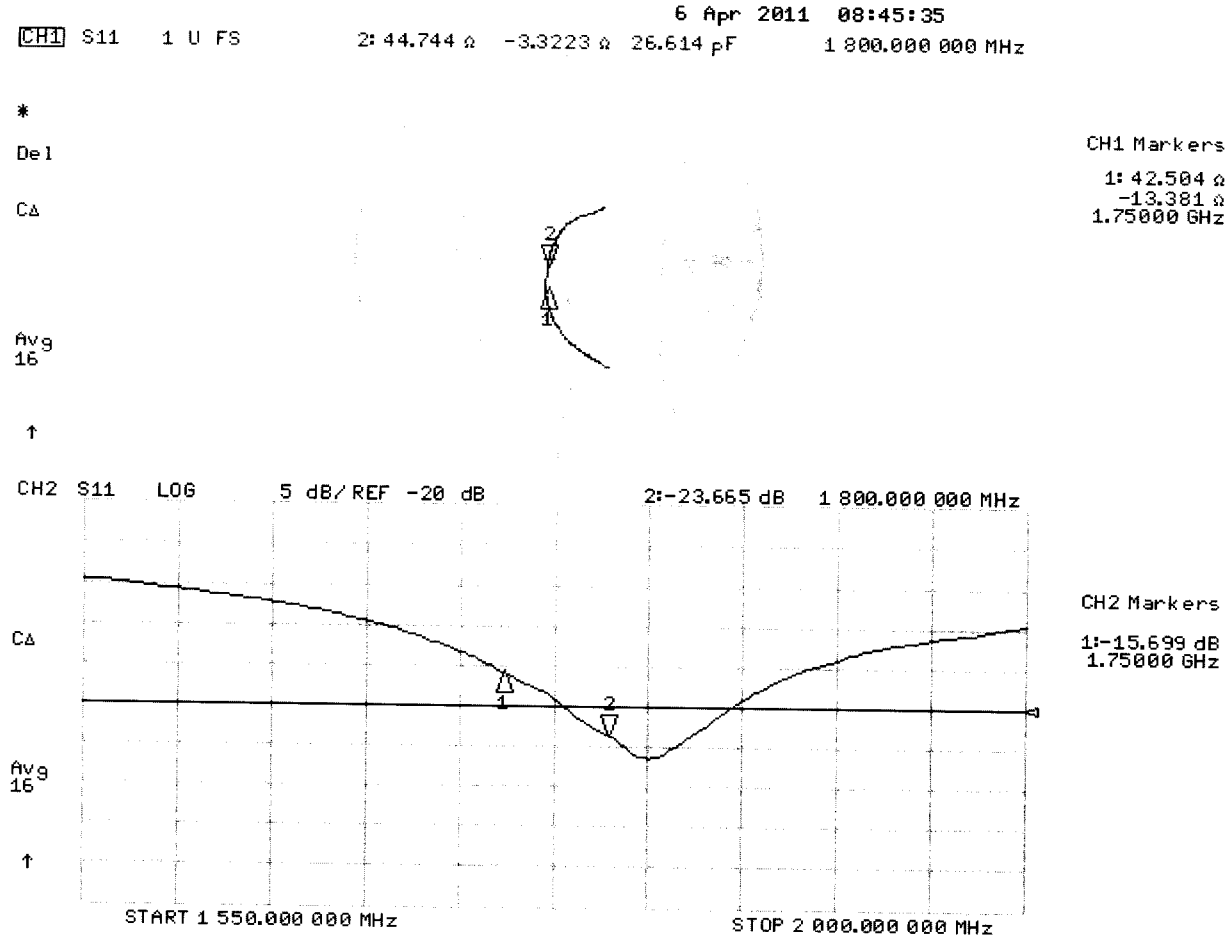
Body / d=10mm, Pin=250 mW / Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.624 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.489 W/kg
SAR(1 g) = 9.58 mW/g; SAR(10 g) = 5.08 mW/g
Maximum value of SAR (measured) = 12.121 mW/g



0 dB = 12.120mW/g

Impedance Measurement Plot for Body TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola Beijing**

Certificate No: D2450V2- 789_Apr11

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 789

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits

Calibration date: April 6, 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: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

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	4-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

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 7, 2011

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) 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:

d) 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.

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 V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.7 ± 6 %	1.72 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 mW / g
SAR normalized	normalized to 1W	53.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**54.6 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.25 mW / g
SAR normalized	normalized to 1W	25.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.1 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.6 ± 6 %	1.91 mho/m ± 6 %
Body TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.8 mW / g
SAR normalized	normalized to 1W	51.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**51.2 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.88 mW / g
SAR normalized	normalized to 1W	23.5 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**23.4 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.4 Ω + 2.5 jΩ
Return Loss	- 25.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.4 Ω + 4.3 jΩ
Return Loss	- 27.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 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	January 24, 2006

DASY5 Validation Report for Head TSL

Date/Time: 05.04.2011 14:50:05

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:789

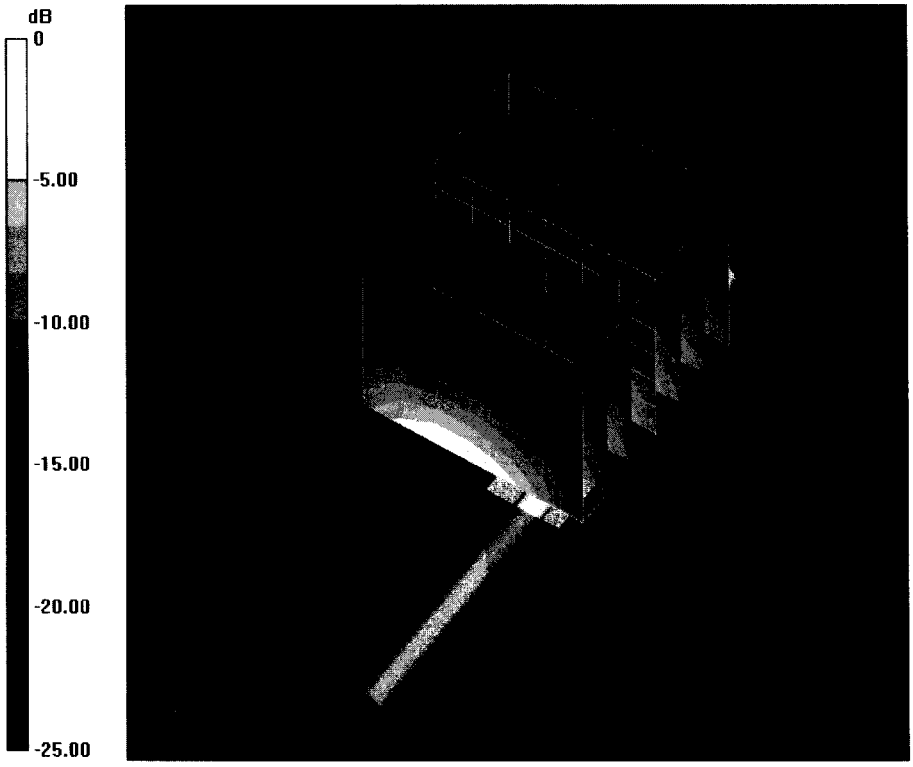
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL U12 BB
Medium parameters used: f = 2450 MHz; σ = 1.74 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

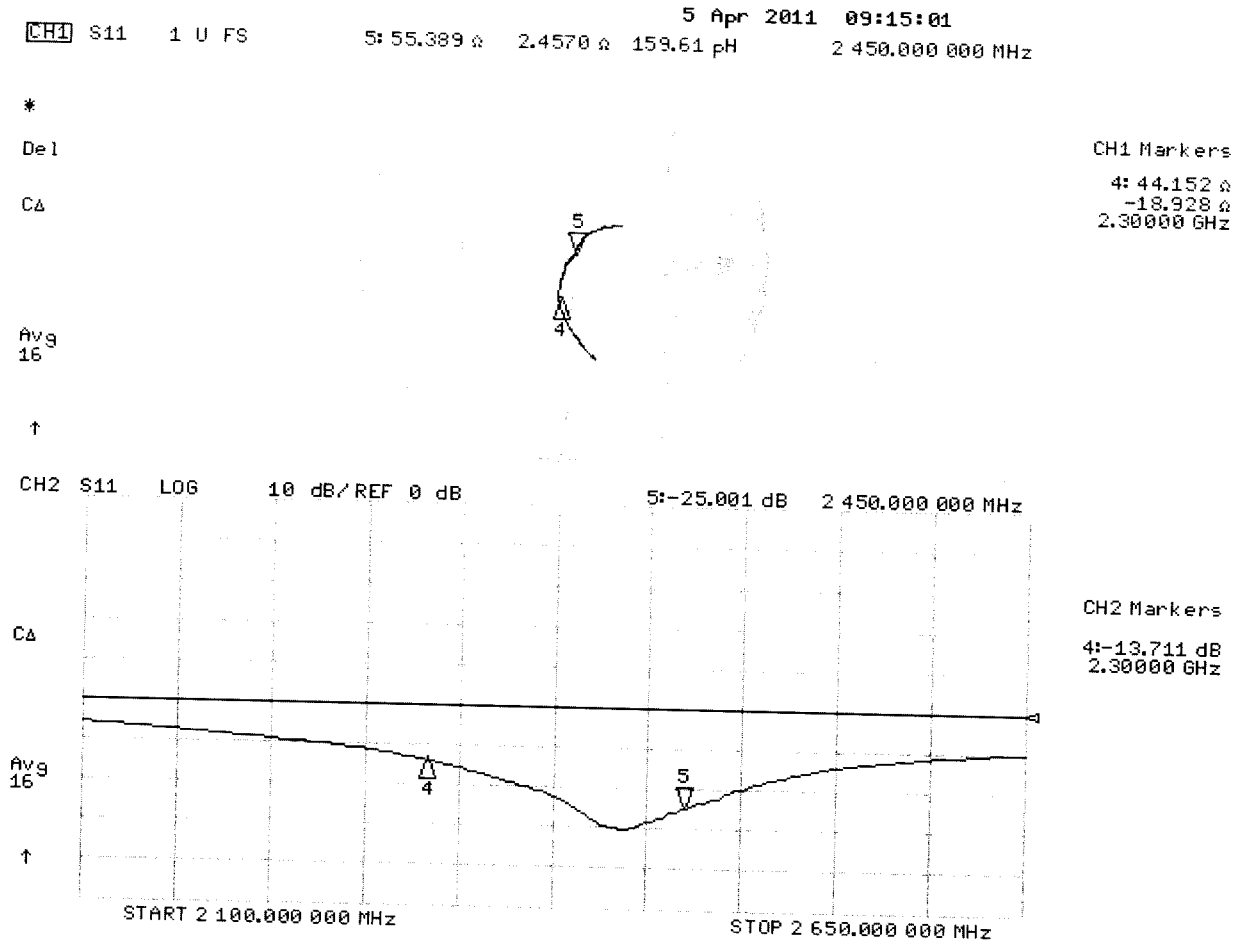
Head / d=10mm, Pin=250 mW / Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.9 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 27.365 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.25 mW/g
Maximum value of SAR (measured) = 17.115 mW/g



0 dB = 17.110mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 06.04.2011 14:57:26

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:789

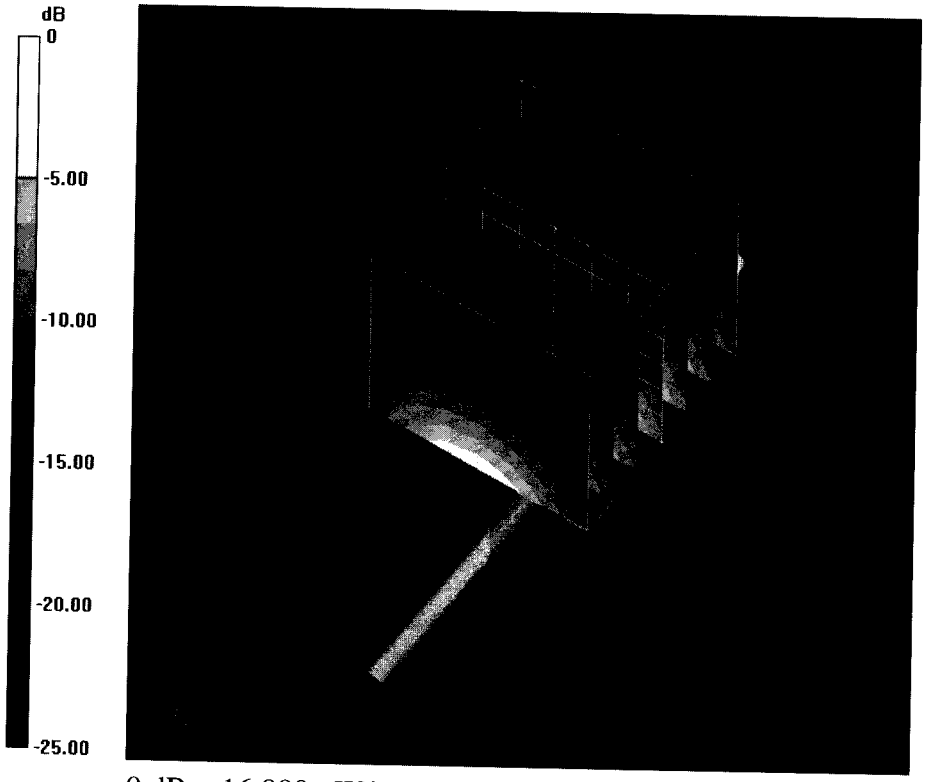
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL U12 BB
Medium parameters used: f = 2450 MHz; σ = 1.91 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

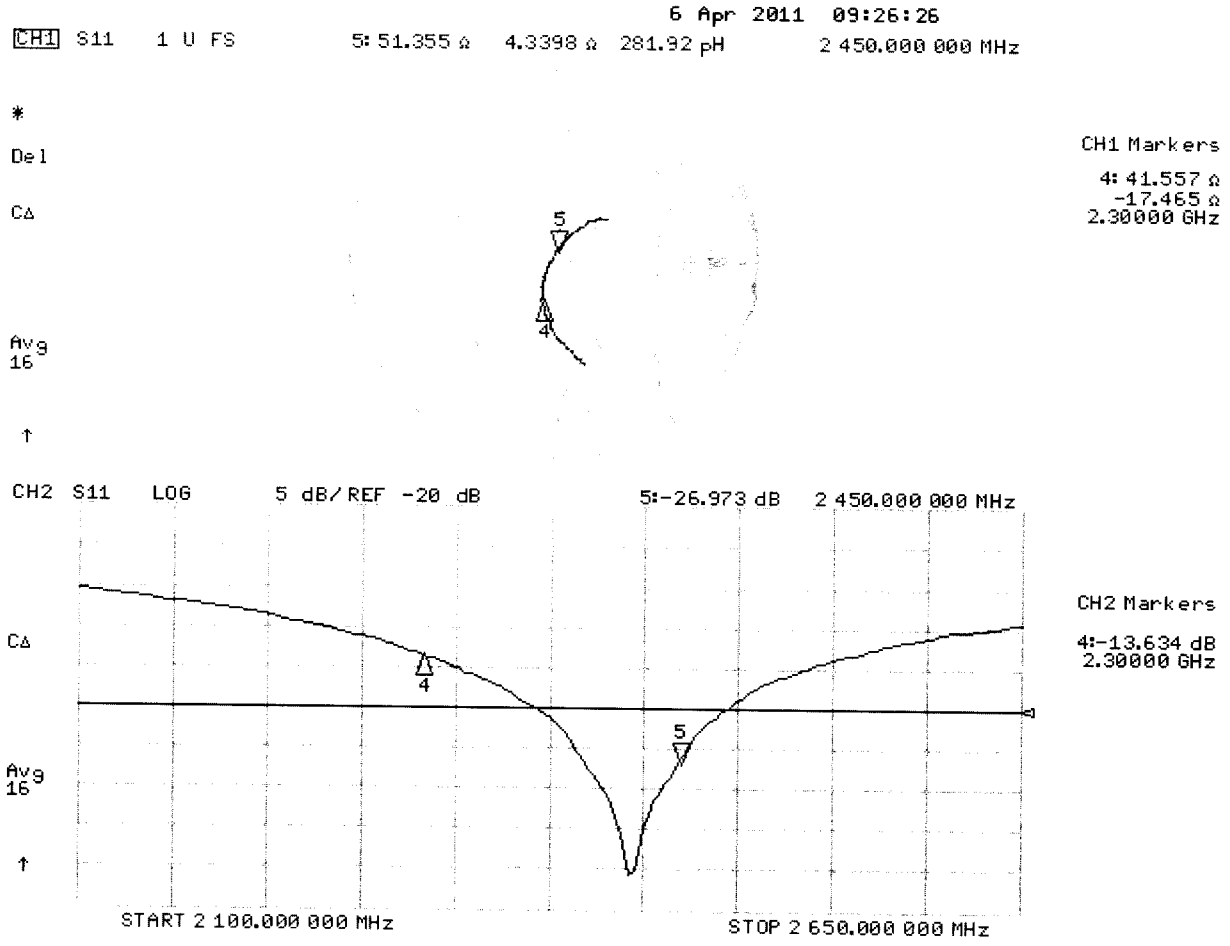
Body / d=10mm, Pin=250 mW / Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.500 V/m; Power Drift = -0.0087 dB
Peak SAR (extrapolated) = 27.135 W/kg
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.88 mW/g
Maximum value of SAR (measured) = 16.801 mW/g



0 dB = 16.800mW/g

Impedance Measurement Plot for Body TSL



Appendix 8

Dipole Characterization Certificate

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Motorola Beijing

Certificate No: ES3-3191_Apr11

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3191

Calibration procedure(s): QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3
Calibration procedure for dosimetric E-field probes

Calibration date: April 7, 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 E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41495277	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	23-Apr-10 (No. DAE4-654_Apr10)	Apr-11
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 14, 2011

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

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

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

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z* are numerical linearization parameters in dB assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media.
- *VR:* VR is the validity range of the calibration related to the average diode voltage or DAE voltage in mV.
- *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 *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3191

Manufactured: June 16, 2008
Calibrated: April 7, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3191

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)[A]	1.31	1.30	1.36	± 10.1 %
DCP (mV)[B]	88.8	97.6	91.4	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	107.9	±2.7 %
			Y	0.00	0.00	1.00	113.8	
			Z	0.00	0.00	1.00	113.6	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3191

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	41.5	0.90	6.15	6.15	6.15	0.99	1.11	± 12.0 %
1810	40.0	1.40	5.21	5.21	5.21	0.75	1.30	± 12.0 %
1950	40.0	1.40	5.01	5.01	5.01	0.86	1.19	± 12.0 %
2450	39.2	1.80	4.49	4.49	4.49	0.70	1.34	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

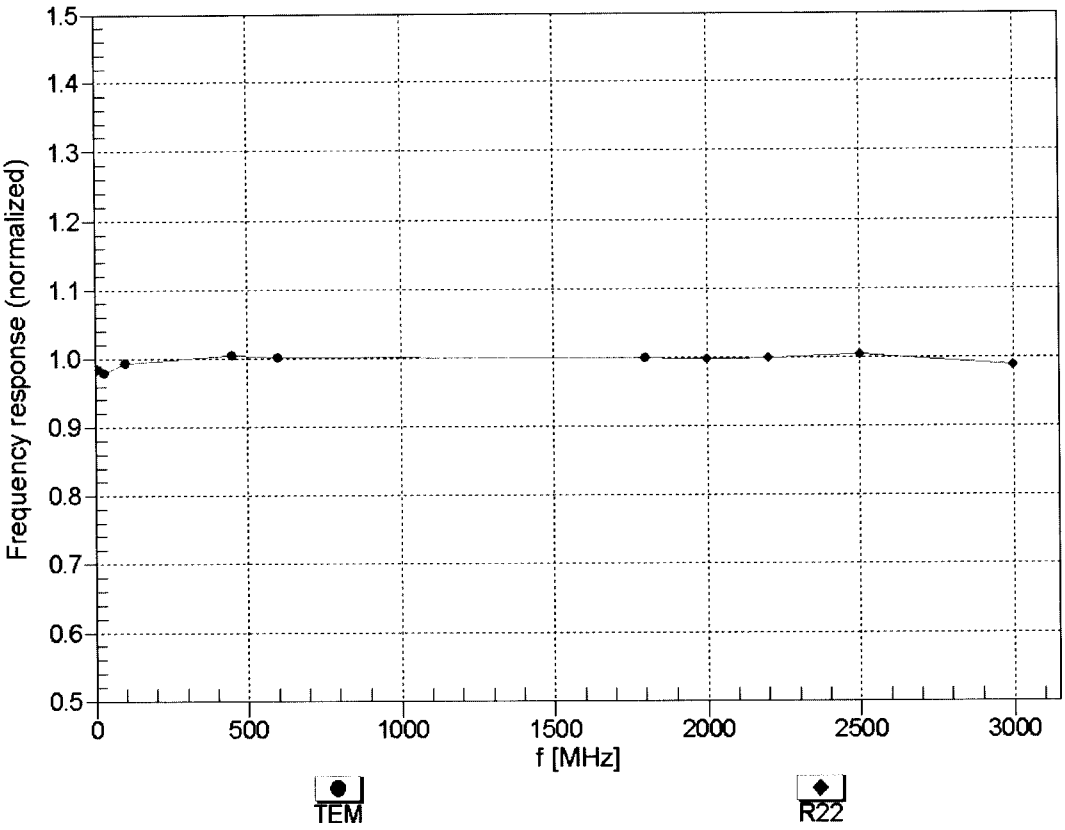
DASY/EASY - Parameters of Probe: ES3DV3- SN:3191

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
835	55.2	0.97	6.10	6.10	6.10	0.99	1.13	± 12.0 %
1810	53.3	1.52	4.76	4.76	4.76	0.86	1.25	± 12.0 %
1950	53.3	1.52	4.69	4.69	4.69	0.81	1.25	± 12.0 %
2450	52.7	1.95	4.11	4.11	4.11	0.88	1.10	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

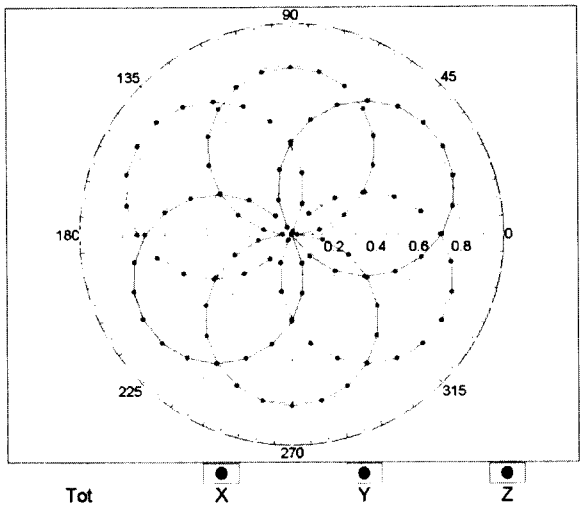
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



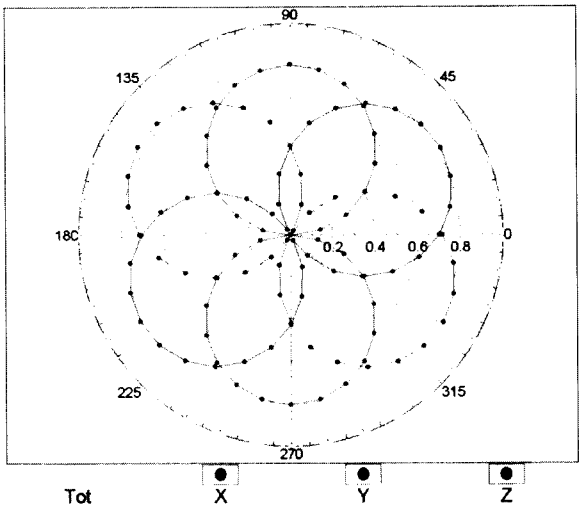
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

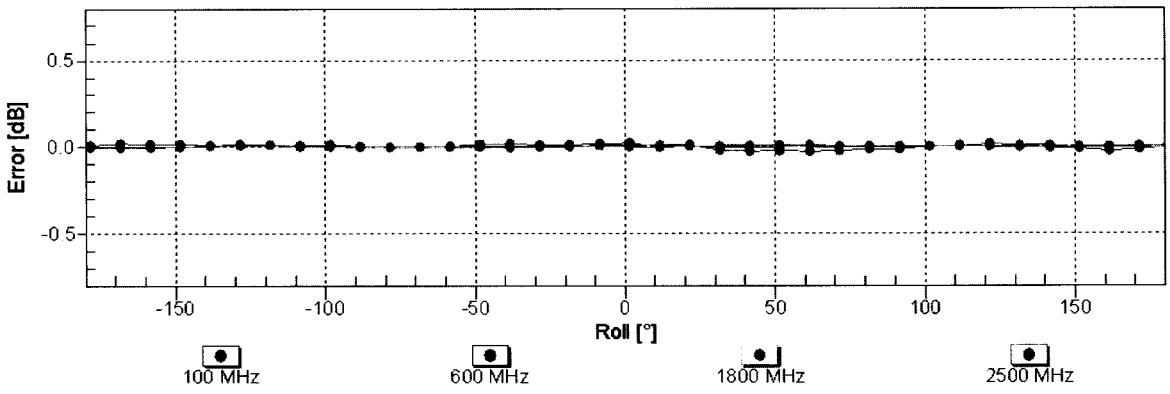
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



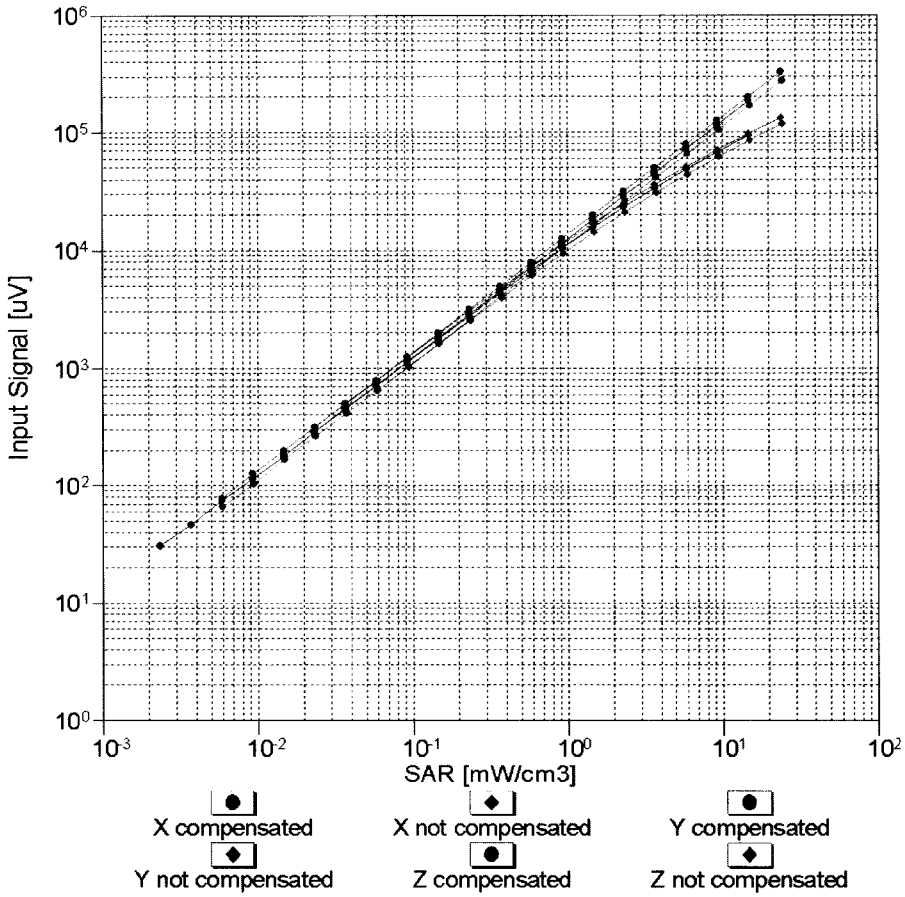
f=1800 MHz,R22

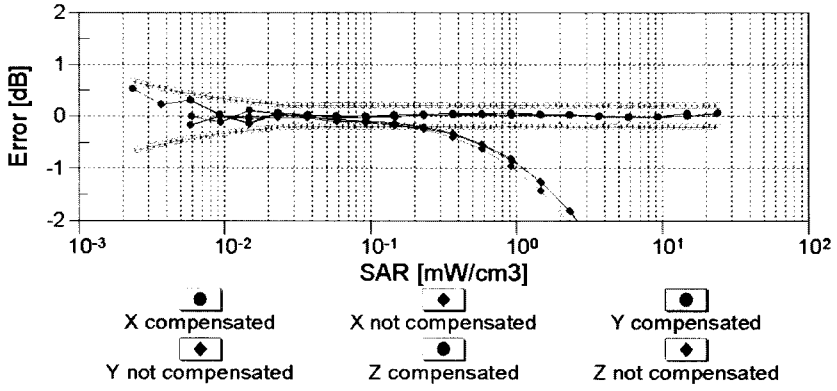




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

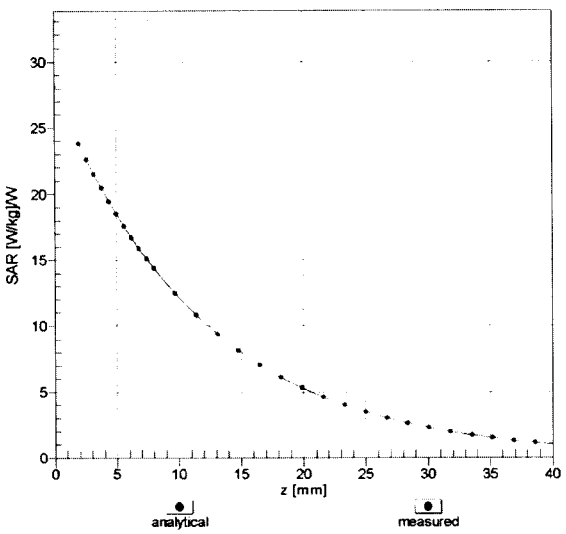




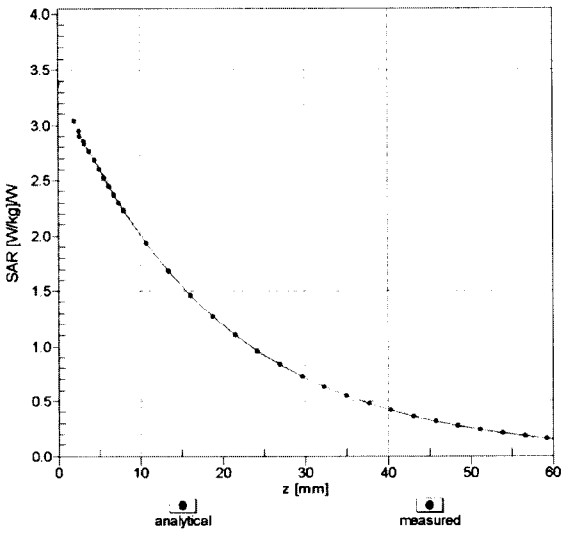
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 1950 MHz,WGLS R22 (H_convF)

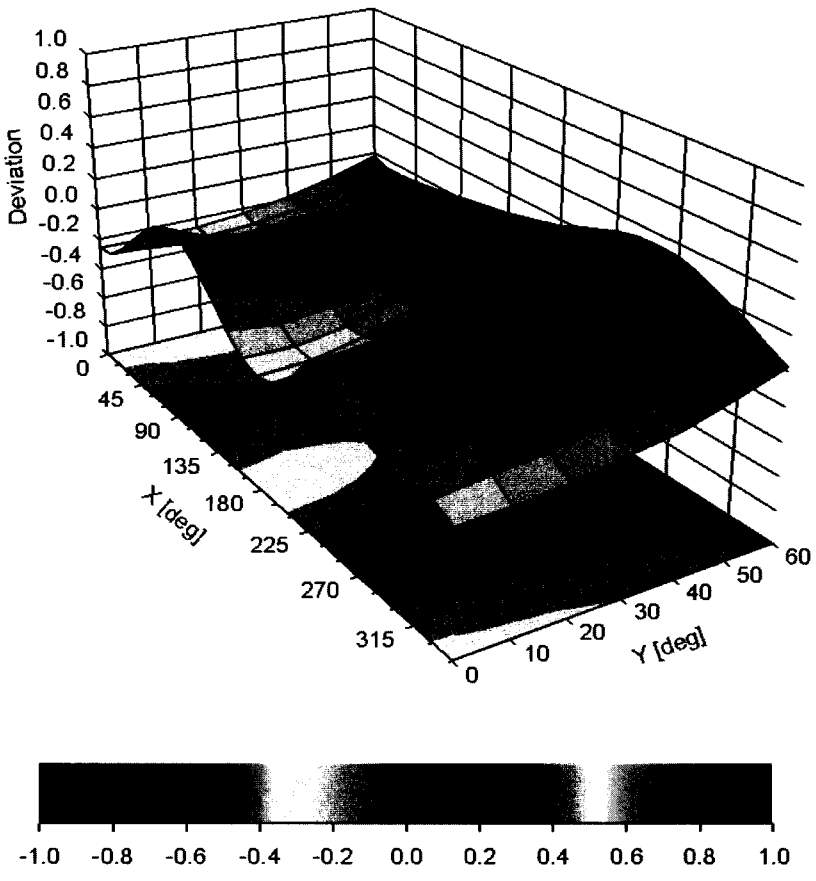


f = 835 MHz,WGLS R9 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3191

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	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

END OF REPORT