Portable Cellular Phone SAR Test Report

Tests Requested By:	Motorola Mobility, Inc. 600 N. US Highway 45 Libertyville, IL 60048
Test Report #:	24367-1F Rev C
Date of Report:	27 May, 2011
Date of Test:	10 – 25 Mar, 2011 & 6 Apr, 2011
FCC ID #:	IHDT56MB1
Generic Name:	MAT6-3411A11
Test Laboratory:	Motorola Mobility, Inc. - ADR Test Services Laboratory 600 N. US Highway 45 Libertyville, IL 60048
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Accreditation:

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

2404

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)

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:

Motorola's ISO 17025 accreditation scope does not currently include SAR testing in the 5 GHz band. Therefore, SAR testing performed in this band was performed outside of our ISO 17025 accreditation. The general procedures and guidelines provided within; FCC KDB 248227 D01, FCC KDB 648474 D01, FCC KDB 865664 D01 and IEC 62209-2 were utilized for testing.

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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. The final simultaneous-transmission SAR readings for this phone are 1.53 W/kg for WiFi mobile hotspot 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 $^{W}/_{kg}$)
GSM 1900	**0.64**	**0.73**
Wi-Fi 2.45 GHz	**0.39**	**0.31**

2. Description of the Device Under Test

2.1 Antenna description

1900 MHz Antenna

Type	Internal
Location	Bottom of Transceiver

Bluetooth/Wi-Fi 2 GHz Antenna

Type	Internal
Location	Left-Side Rear of Transceiver

2.2 Device Signaling[1]

Serial Number(s) (Functional Use)	860404000006695 (GSM & 2.4 GHz WiFi SAR testing) 860404000030018 (GSM 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	GSM 900	GSM 1800	GSM 1900	TD-SCDMA Band A	TD-SCDMA Band B	Wi-Fi 802.11b/g /n	Bluetooth
Modulation Mode(s)	GMSK	GMSK	GMSK	QPSK	QPSK	BPSK	GFSK
Maximum Output Power Setting	33.2 dBm	31.0 dBm	31.0 dBm	25.0 dBm	25.0 dBm	20.0 dBm	10 dBm
Duty Cycle	1:8	1:8	1:8	1:7.4	1:7.4	1:1	1:1
Transmitting Frequency Range(s)	880.2 - 914.8 MHz	1710.2 - 1784.8 MHz	1850.2 - 1909.8 MHz	1880.8 - 1919.2 MHz	2010.8 - 2024.2 MHz	2412.0 - 2462.5 MHz	2402.0 - 2483.5 MHz

Mode(s) of Operation	GPRS 900				GPRS 1800				GPRS 1900			
Modulation	GMSK				GMSK				GMSK			
Maximum Output Power Setting (dBm)	33.2	**33.2**	29.0	27.5	31.0	**31.0**	27.0	25.5	**31.0**	26.6	25.0	23.7
Duty Cycle	1:8	**2:8**	3:8	4:8	1:8	**2:8**	3:8	4:8	**1:8**	2:8	3:8	4:8
Transmitting Frequency Range(s)	880.2 - 914.8 MHz				1710.2 - 1784.8 MHz				1850.2 - 1909.8 MHz			

Mode(s) of Operation	EDGE 900				EDGE 1800				EDGE 1900			
Modulation	8PSK				8PSK				8PSK			
Maximum Output Power Setting (dBm)	27.5	**27.5**	25.4	23.0	27.0	**27.0**	24.4	20.7	27.0	**27.0**	24.4	20.7
Duty Cycle	1:8	**2:8**	3:8	4:8	1:8	**2:8**	3:8	4:8	1:8	**2:8**	3:8	4:8
Transmitting Frequency Range(s)	880.2 - 914.8 MHz				1710.2 - 1784.8 MHz				1850.2 - 1909.8 MHz			

Burst-Averaged and Frame Averaged power to determine multislot Class to SAR test.

Mode(s) of Operation	GPRS 1900				EDGE 1900			
Duty Cycle	**1:8**	2:8	3:8	4:8	1:8	2:8	3:8	4:8
Maximum Output Power Setting (dBm)	**31**	26.6	25	23.7	27	27	24.4	20.7
Time Avg Output Power Setting (dBm)	**22**	20.6	20.7	20.7	18	21	20.1	17.7

[1] **Bolded** entries indicate data mode configurations of highest time-average power output per band and data mode type, and thus were utilized for SAR testing in this report.

2.3 Device Conducted Power Measurements

2.3.1 GSM modes

Band	Channel	Conducted power (dBm)	for GSM modes[2]					
		GSM *CS Voice* (1 Slot)	GPRS *PS Data* (2 Slots)	GPRS *PS Data* (3 Slots)	GPRS *PS Data* (4 Slots)	EDGE *PS Data* (2 Slots)	EDGE *PS Data* (3 Slots)	EDGE *PS Data* (4 Slots)
GSM 1900	512	30.95	26.48	25.12	23.85	26.84	24.23	20.67
	661	30.82	26.41	25.25	23.93	26.81	24.47	20.75
	810	31.15	26.80	24.84	23.99	27.06	24.31	20.89

2.3.2 Wi-Fi 802.11 modes

Per "SAR Measurement Procedures for 802.11 a/b/g Transmitters" (FCC KDB pub. 248227), power measurements were performed for 802.11 operational modes. The 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 blue** in the tables below.

Band	Channel	Conducted Power (dBm) for 802.11b Mode Data Rates			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
Wi-Fi 2450 MHz	1	**16.40**	16.92	17.96	18.53
	6	**16.78**	16.72	17.93	18.05
	11	**16.48**	16.40	17.66	17.62

Band	Channel	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	13.75	13.5	13.77	13.67	14.25	14.13	14.15	14.01
	6	13.95	13.83	14.02	14.07	14.27	14.44	14.29	14.36
	11	13.61	13.69	13.69	13.64	14.09	14.03	13.97	14.22

Band	Channel	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	13.1	13.22	13.24	13.58	13.63	13.62	13.57	13.55
	6	13.43	13.46	13.5	13.74	13.91	13.89	13.89	13.93
	11	13.19	13.28	13.39	13.57	13.73	13.64	13.61	13.62

[2] *CS Voice* denotes circuit-switched transmission for voice calling, and *PS Data* denotes packet-switched transmission for data sessions.

2.4 Evaluation of Simultaneous Transmitters

Per "SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas" (FCC KDB pub. 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 GSM transmitter may operate simultaneously with either the Wi-Fi 802.11 transmitter or the Bluetooth transmitter. The separation distance between the Wi-Fi 802.11/Bluetooth antennas and the GSM antenna is 4.32 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 highlighted requirements from FCC KDB pub. 648474, as follows:

1. The highest output conducted power measured for Bluetooth on the device under test is 8.33 mW [≤ 12 mW]
2. The separation distance between the Bluetooth antenna and the main antenna is 4.32 cm [≥ 2.5 cm]

For the transmitters requiring stand-alone SAR testing (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 evaluation 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 worst-case head and body simultaneous SAR summations and separation ratios are presented in the table below.

Evaluations for Simultaneous SAR

Cellular Mode	Wi-Fi Mode	Configuration	GSM Mode 1 g SAR Value (W/kg)	Wi-Fi Mode 1 g SAR Value (W/kg)	Summation 1 g SAR Value (W/kg)	*Simultaneous Measurements Required?*
GSM 1900, CS Voice	Wi-Fi 2450 802.11b, 1 Mbps	LH Cheek	0.35	0.36	0.71	No
GSM 1900, CS Voice	Wi-Fi 2450 802.11b, 1 Mbps	RH Cheek	0.64	0.39	1.03	No
GSM 1900, CS Voice	Wi-Fi 2450 802.11b, 1 Mbps	LH 15 Degree Tilt	0.31	0.14	0.45	No
GSM 1900, CS Voice	Wi-Fi 2450 802.11b, 1 Mbps	RH 15 Degree Tilt	0.28	0.12	0.40	No
GPRS 1900, CS Voice	Wi-Fi 2450 802.11b, 1 Mbps	Body Worn 15mm	0.73	0.16	0.89	No
GPRS 1900, Class 8	Wi-Fi 2450 802.11b, 1 Mbps	Left Edge – Body Worn 10mm	0.10	0.27	0.37	No
GPRS 1900, Class 8	Wi-Fi 2450 802.11b, 1 Mbps	Front Surface – Body Worn 10mm	0.55	0.06	0.61	No
GPRS 1900, Class 8	Wi-Fi 2450 802.11b, 1 Mbps	Back Surface – Body Worn 10mm	1.48	0.31	1.79	Yes

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 evaluation 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 = 112 mm, Y = 80 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	GSM Mode 1 g SAR Value (W/kg)	Wi-Fi Mode 1 g SAR Value (W/kg)	Simultaneous 1 g SAR Value (W/kg)	*Test Plots*	
						Grid	Plot Page
GPRS 1900, Class 8	Wi-Fi 2450 802.11b, 1 Mbps	Body Worn, Mobile Hotspot Mode, Back of Phone 10 mm from Phantom with Battery SNN5879A	1.48	0.257	1.53	**15x11x7**	**A28-A30**

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
DASY4™ DAE V1	719	Mar-22-2010	Mar-22-2011
E-Field Probe ES3DV3	3180	May-20-2010	May-20-2011
DASY4™ DAE V1	656	Jan-20-2011	Jan-20-2012
S.A.M. Phantom used for 1900/2450 MHz	TP-1160		
Dipole Validation Kit, DV1800V2	283TR	Nov-10-2010	Nov-10-2011
Dipole Validation Kit, DV2450V2	788	Nov-11-2010	Nov-11-2011

3.2 Additional Equipment

Description	Serial Number	Cal Date	Cal Due Date
Signal Generator HP8648C	3847A04982	Nov-18-2009	Nov-18-2011
Power Meter E4419B	GB39511082	Apr-24-2009	Apr-24-2011
Power Sensor #1 - E9301A	US39210918	Oct-25-2010	Oct-25-2011
Power Sensor #2 - E9301A	US39210917	Oct-25-2010	Oct-25-2011
Signal Generator HP8648C	3847A04810	Oct-30-2009	Oct-30-2011
Power Meter E4419B	GB39511087	Dec-22-2009	Dec-22-2011
Power Sensor #1 - E9301A	US39211006	Oct-25-2010	Oct-25-2011
Power Sensor #2 - E9301A	US39210934	Oct-25-2010	Oct-25-2011
Signal Generator HP8648C	3429A00286	Nov-23-2009	Nov-23-2011
Power Meter E4419B	US39250622	Dec-22-2009	Dec-22-2011
Power Sensor #1 - E9301A	US39210931	Oct-25-2010	Oct-25-2011
Power Sensor #2 - E9301A	US39210932	Oct-25-2010	Oct-25-2011
Network Analyzer HP8753ES	US39172529	Jun-04-2010	Jun-04-2011
Dielectric Probe Kit HP85070C	US99360070		

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 pub. 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 this criteria.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters		
			ε_r	σ (S/m)	Temp (°C)
1880	Head	**Measured,** Mar-15-2011	38.4	1.45	20.0
		Recommended Limits	40.0 ±5%	1.40 ±5%	18-25
	Body	**Measured,** Mar-15-2011	51.6	1.57	20.0
		Measured, Mar-23-2011	50.9	1.56	19.9
		Measured, Mar-24-2011	51.0	1.57	19.8
		Recommended Limits	53.3 ±5%	1.52 ±5%	18-25
2450	Head	**Measured,** Mar-16-2011	36.0	1.81	20.2
		Recommended Limits	39.2 ±10%	1.80 ±5%	18-25
	Body	**Measured,** Mar-17-2011	51.5	1.95	19.8
		Measured, Mar-25-2011	51.1	2.00	19.8
		Measured, Apr-6-2011	51.1	1.99	20.1
		Recommended Limits	52.7 ±10%	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	835 MHz / 900 MHz Head	835 MHz / 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 Verification

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). The simulated tissue depth was verified to be 15.0 cm ± 0.5 cm.

f (MHz)	Description	SAR (W/kg), 1 gram	Dielectric Parameters		Ambient Temp (°C)	Tissue Temp (°C)
			ε_r	σ (S/m)		
1800	**Measured,** Mar-15-2011	37.4	38.7	1.36	22.3	21.2
	Measured, Mar-23-2011	37.0	39.2	1.36	22.2	20.7
	Measured, Mar-24-2011	37.1	39.0	1.35	22.6	20.9
	Recommended Limits	38.3	40.0 ±5%	1.40 ±5%	18-25	18-25
2450	**Measured,** Mar-16-2011	58.5	36.0	1.81	22.2	20.8
	Measured, Mar-17-2011	58.0	35.6	1.82	22.3	20.8
	Measured, Mar-25-2011	57.5	35.3	1.84	22.2	19.6
	Measured, Apr-6-2011	58.5	37	1.84	21.6	20.4
	Recommended Limits	53.4	39.2 ±10%	1.80 ±5%	18-25	18-25

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

Description	Serial Number	f (MHz)	Conversion Factor	Cal Cert pg #
E-Field Probe ES3DV3	3180	1810	5.03	5 of 11
		2450	4.42	5 of 11

6. Test Results

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 pub. 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 5. 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 SNN5879A - 1930 mAH Battery
Model SNN5877A - 1540 mAH Battery

The battery with the highest capacity is the SNN5879A. This battery was used to test all configurations for SAR evaluation. The phone was placed in the SAR measurement system with a fully charged battery. The configurations that resulted in the highest SAR values were tested using the other battery listed above.

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	3180	1810	5.03	5 of 11
		2450	4.42	5 of 11

Left Head Cheek Position									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	GSM 1900, CS Voice	SNN5879A	512						
			661	20.6	-0.102	0.216	0.22	0.342	0.35
			810						
2450	802.11b, 1 Mbps	SNN5879A	1						
			6	20.4	-0.185	0.168	0.18	0.341	0.36
			11						

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)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	GSM 1900, CS Voice	SNN5879A	512	**20**	**-0.0194**	**0.384**	**0.39**	**0.633**	**0.64**
			661	20	0.0244	0.37	0.37	0.622	0.62
			810	20	-0.00885	0.363	0.36	0.614	0.62
		SNN5877A	512	20.0	0.016	0.376	0.38	0.619	0.62
2450	802.11b, 1 Mbps	SNN5879A	1	**19.9**	**0.0545**	**0.182**	**0.18**	**0.387**	**0.39**
			6	20.2	-0.183	0.172	0.18	0.364	0.38
			11	19.9	0.164	0.107	0.11	0.229	0.23
	802.11b, 5.5 Mbps	SNN5879A	1	19.9	0.13	0.181	0.18	0.384	0.38
			6						
			11						
	802.11b, 11 Mbps	SNN5879A	1	19.8	0.168	0.163	0.16	0.343	0.34
			6						
			11						
	802.11b, 1 Mbps	SNN5877A	1	21.0	0.0525	0.161	0.16	0.337	0.34

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

Left Head 15° Tilt Position									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	GSM 1900, CS Voice	SNN5879A	512						
			661	**20.1**	**0.0415**	**0.178**	**0.18**	**0.307**	**0.31**
			810						
		SNN5877A	661	20.0	0.0963	0.168	0.17	0.288	0.29
2450	802.11b, 1 Mbps	SNN5879A	1						
			6	**20.3**	**0.214**	**0.0701**	**0.07**	**0.14**	**0.14**
			11						
	802.11b, 1 Mbps	SNN5877A	6	20.0	0.0797	0.0624	0.06	0.127	0.13

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

Right Head 15° Tilt Position									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	GSM 1900, CS Voice	SNN5879A	512						
			661	20.0	-0.0343	0.174	0.18	0.279	0.28
			810						
2450	802.11b, 1 Mbps	SNN5879A	1						
			6	20.3	0.0346	0.0643	0.06	0.122	0.12
			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 and 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. 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 15 mm between the device and the flat phantom was used for testing body-worn SAR. The chosen separation distance of 15 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 cellular phone was also tested in data mode operations. For these tests, a separation distance of 25 mm between the device and the flat phantom was used. The device was tested in the worst-case SAR position and channel configuration from the voice-mode body-worn testing.

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	3180	1810	4.71	6 of 11
		2450	4.22	6 of 11

Body-Worn, Front of Phone 15 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GSM 1900, CS Voice**	SNN5879A	512						
			661	20.5	-0.0109	0.15	0.15	0.251	0.25
			810						
2450	**802.11b, 1 Mbps**	SNN5879A	1						
			6	20.3	-0.129	0.0248	0.03	0.0477	0.05
			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 15 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GSM 1900, CS Voice**	SNN5879A	512						
			661	**20.4**	**-0.0134**	**0.418**	**0.42**	**0.728**	**0.73**
			810						
		SNN5877A	512	20.4	-0.0157	0.405	0.41	0.707	0.71
2450	**802.11b, 1 Mbps**	SNN5879A	1	20.2	0.0465	0.0548	0.05	0.102	0.10
			6	20.3	-0.131	0.0754	0.08	0.14	0.14
			11	20.2	0.116	0.075	0.08	0.138	0.14
	802.11b, 5.5 Mbps	SNN5879A	1						
			6	**20.2**	**-0.0487**	**0.0834**	**0.08**	**0.155**	**0.16**
			11						
		SNN5877A	6	21.2	0.0184	0.0709	0.07	0.133	0.13
	802.11b, 11 Mbps	SNN5879A	1						
			6	20.1	0.112	0.0712	0.07	0.134	0.13
			11						

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 Body Worn - 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. Each transmit band was utilized for SAR testing, but only the "mode" within each band that exhibited the highest SAR results from section 6.2 was used.

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 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. 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	3180	1810	4.71	6 of 11
		2450	4.22	6 of 11

Body-Worn, Bottom Edge of Phone 10 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GPRS 1900, Class 8**	SNN5879A	512	19.8	-0.0364	0.545	0.55	1.01	1.02
			661	**20.5**	**-0.0604**	**0.78**	**0.79**	**1.54**	**1.56**
			810	19.9	0.0513	0.717	0.72	1.43	1.43
		SNN5877A	661	19.8	0.00157	0.745	0.75	1.45	1.45

Table 7: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

Body-Worn, Right Edge of Phone 10 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GPRS 1900, Class 8**	SNN5879A	512						
			661	20.4	-0.0010	0.181	0.18	0.304	0.30
			810						

Table 8: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

Body-Worn, Left Edge of Phone 10 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GPRS 1900, Class 8**	SNN5879A	512						
			661	20.0	0.0445	0.0575	0.06	0.10	0.10
			810						
2450	**802.11b, 1 Mbps**	SNN5879A	1						
			6	20.0	0.225	0.14	0.14	0.271	0.27
			11						

Table 9: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

Body-Worn, Front of Phone 10 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GPRS 1900, Class 8**	SNN5879A	512						
			661	19.9	-0.0263	0.298	0.30	0.546	0.55
			810						
2450	**802.11b, 1 Mbps**	SNN5879A	1						
			6	20.0	0.0503	0.0341	0.03	0.0603	0.06
			11						

Table 10: 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 10 mm from Phantom									
f (MHz)	Mode	Battery/ Accessory	Channel	Temp (°C)	Drift (dB)	*10 g SAR value*		*1 g SAR value*	
						Measured (W/kg)	Extrapolated (W/kg)	Measured (W/kg)	Extrapolated (W/kg)
1880	**GPRS 1900, Class 8**	SNN5879A	512	19.8	-0.117	0.571	0.59	1.05	1.08
			661	19.9	-0.0774	0.763	0.78	1.45	1.48
			810	19.8	-0.0416	0.678	0.68	1.27	1.27
2450	**802.11b, 1 Mbps**	SNN5879A	1						
			6	**20.1**	**0.0105**	**0.16**	**0.16**	**0.313**	**0.31**
			11						
		SNN5877A	6	20.1	-0.132	0.13	0.13	0.257	0.26

Table 11: SAR measurement results at the highest possible output power, measured in a body-worn position against the ICNIRP and ANSI SAR Limit.

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 comparison for the system accuracy verification

Date/Time: 3/15/2011 10:40:03 AM

Test Laboratory: MOTOROLA 1800 MHz System Performance Check

Type: D1800V2; Serial: D1800V2 - SN:283tr;
Procedure Notes: 1800 MHz System Performance Check PM1 Power = 200 mW Refl.Pwr PM3 = -28.9dB Sim.Temp@SPC =21.2 Room Temp @ SPC = 22.3
Communication System: CW - Dipole; Frequency: 1800 MHz; Communication System Channel Number: 8; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 1800 MHz; σ = 1.36 mho/m; ε_r = 38.7; ρ = 1000 kg/m^3

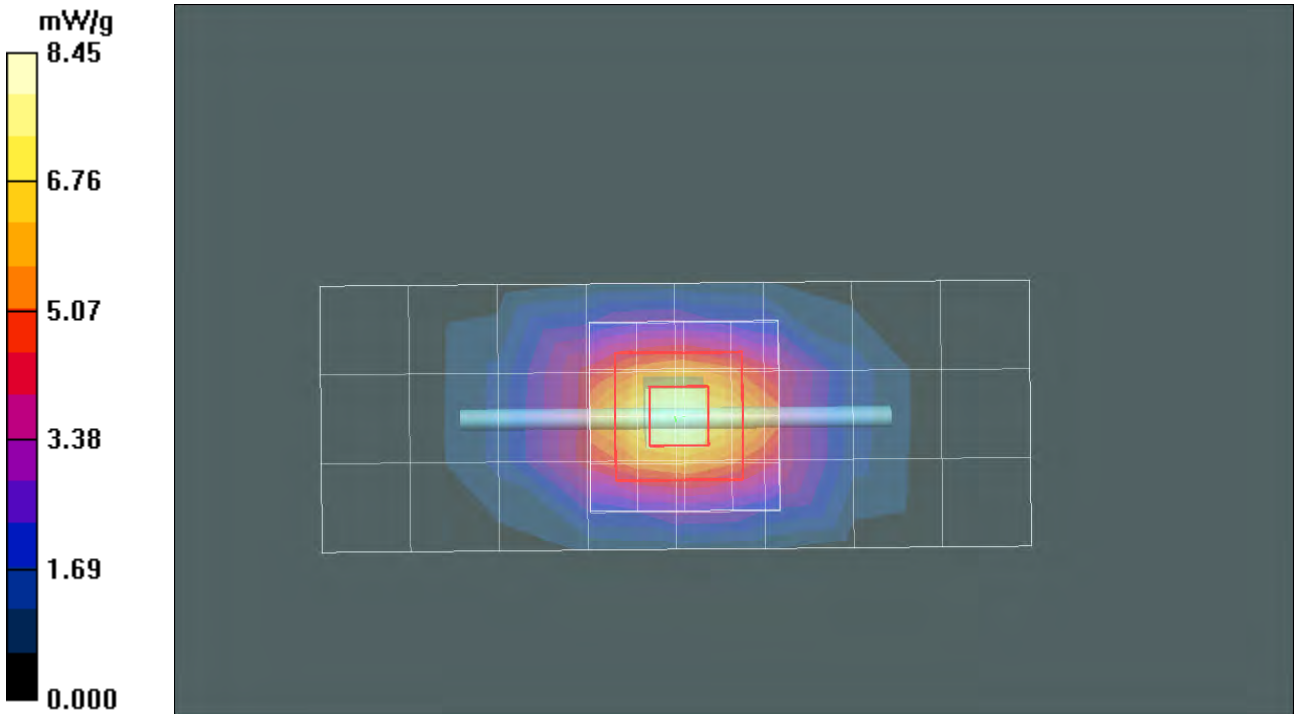
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.06 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 79.2 V/m; Power Drift = 0.073 dB
Peak SAR (extrapolated) = 13.8 W/kg
SAR(1 g) = 7.48 mW/g; SAR(10 g) = 3.92 mW/g
Maximum value of SAR (measured) = 8.39 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.45 mW/g



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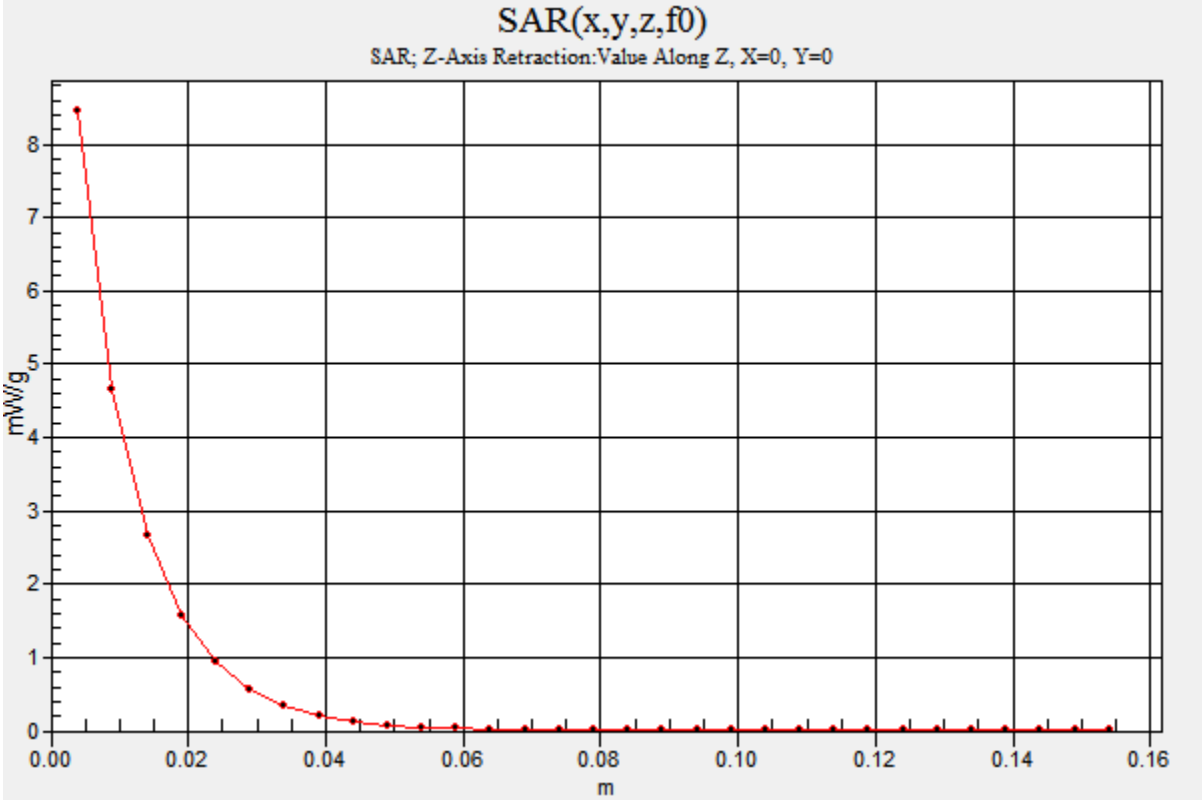

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
8
7
6
5
4
3
2
1
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 3/23/2011 12:59:03 PM

Test Laboratory: MOTOROLA 1800 MHz System Performance Check

Type: D1800V2; Serial: D1800V2 - SN:283tr;
Procedure Notes: 1800 MHz System Performance Check / PM1 Power = 200 mW Refl.Pwr PM3 = -31.8dB Sim.Temp@SPC = 20.7 Room Temp @ SPC =22.2
Communication System: CW - Dipole; Frequency: 1800 MHz; Communication System Channel Number: 8; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 1800 MHz; σ = 1.36 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3

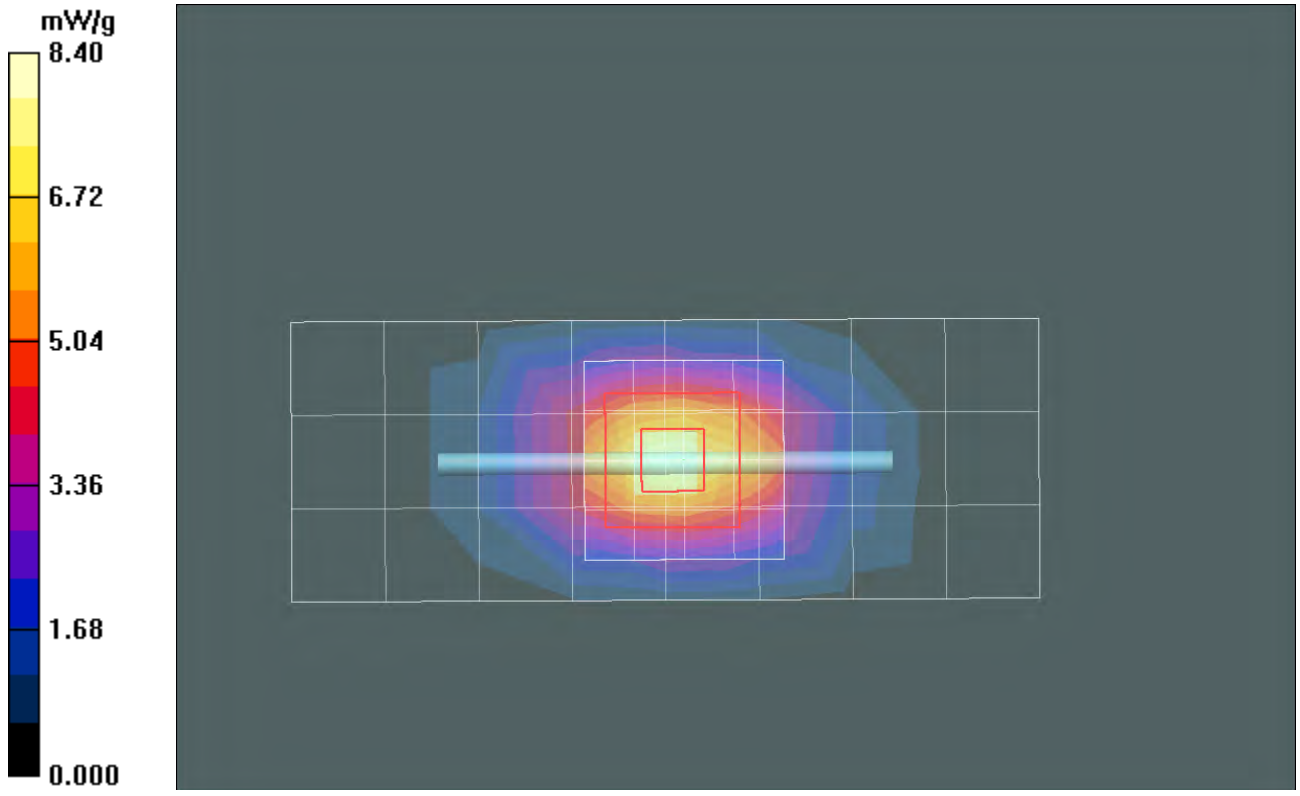
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.15 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 78.7 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 13.7 W/kg
SAR(1 g) = 7.4 mW/g; SAR(10 g) = 3.88 mW/g
Maximum value of SAR (measured) = 8.30 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.40 mW/g



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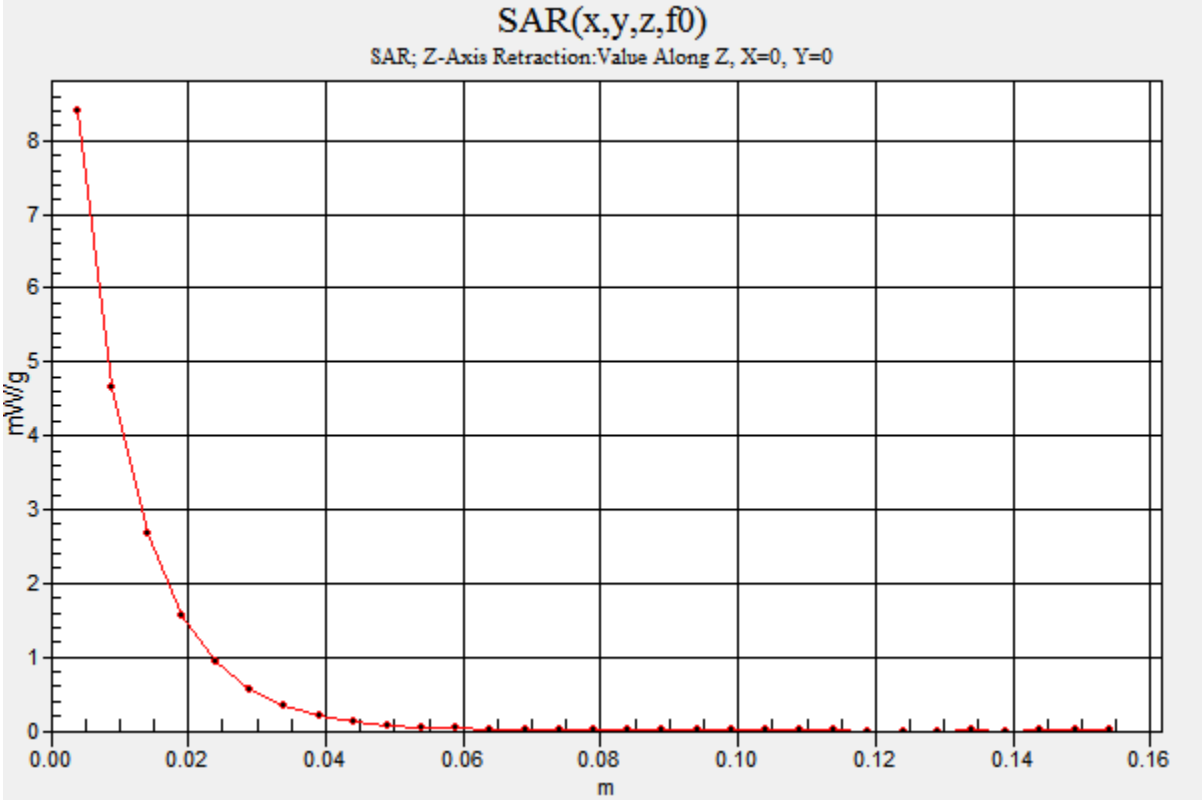

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
8
7
6
5
4
3
2
1
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 3/24/2011 11:36:22 AM

Test Laboratory: MOTOROLA 1800 MHz System Performance Check

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:283tr;
Procedure Notes: 1800 MHz System Performance Check / PM1 Power = 200 mW Refl.Pwr PM3 = -32.1dB Sim.Temp@SPC = 20.9 Room Temp @ SPC = 22.6
Communication System: CW - Dipole; Frequency: 1800 MHz; Communication System Channel Number: 8; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 1800 MHz; σ = 1.35 mho/m; ε_r = 39; ρ = 1000 kg/m^3

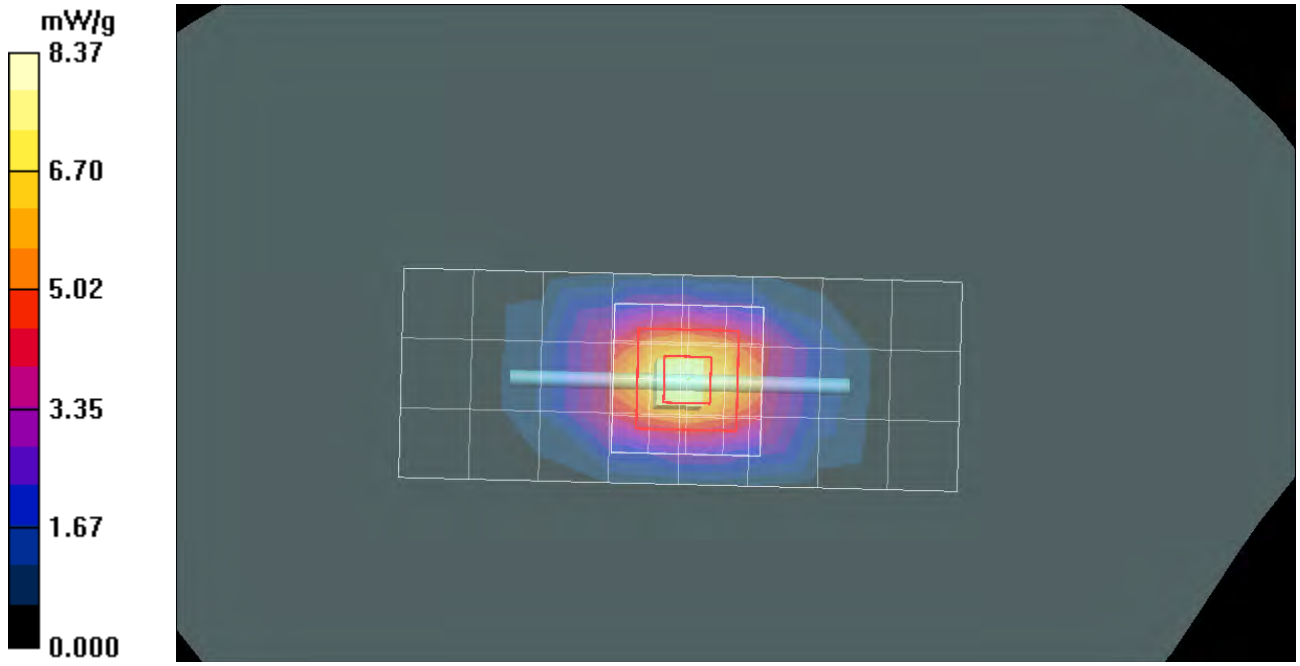
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.13 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 79.2 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 13.7 W/kg
SAR(1 g) = 7.42 mW/g; SAR(10 g) = 3.9 mW/g
Maximum value of SAR (measured) = 8.32 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 8.37 mW/g



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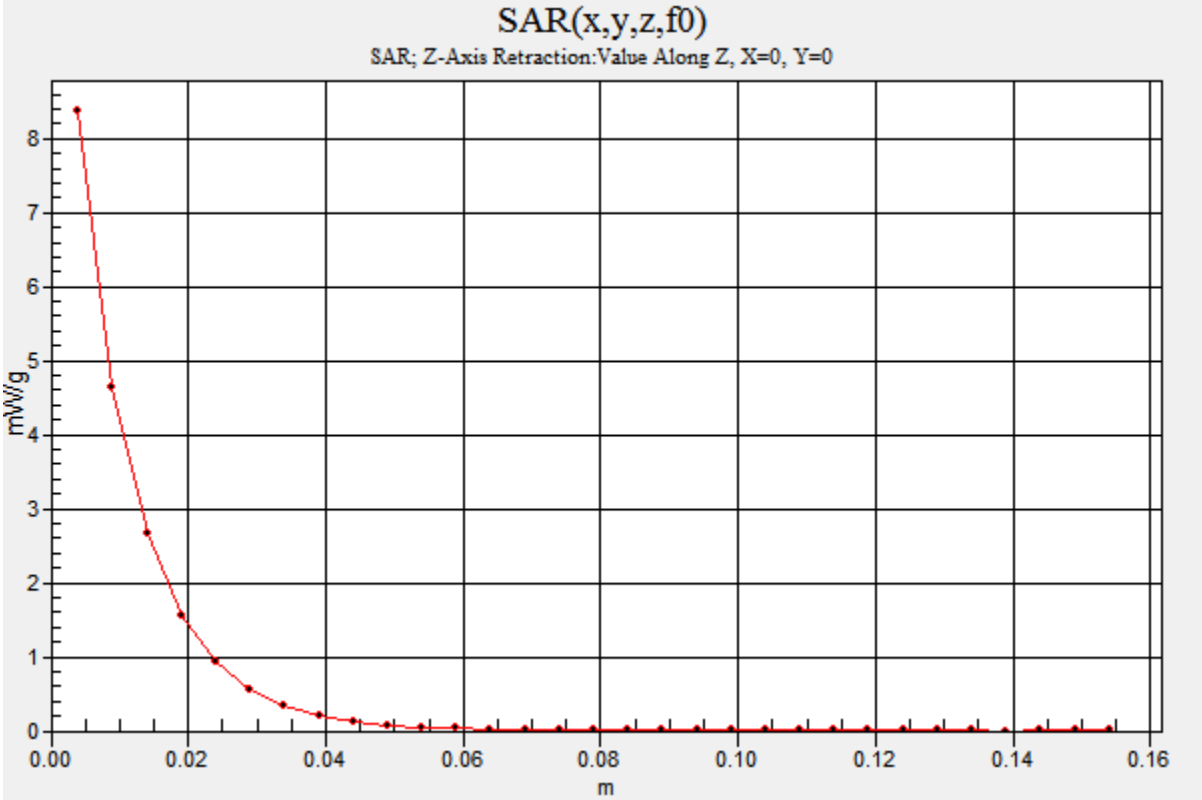

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
8
7
6
5
4
3
2
1
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 3/16/2011 3:04:34 PM

Test Laboratory: MOTOROLA 2450 MHz System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:788;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -25.35dB Sim.Temp@SPC =20.8 Room Temp @ SPC = 22.2
Communication System: CW - Dipole; Frequency: 2450 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 36; ρ = 1000 kg/m^3

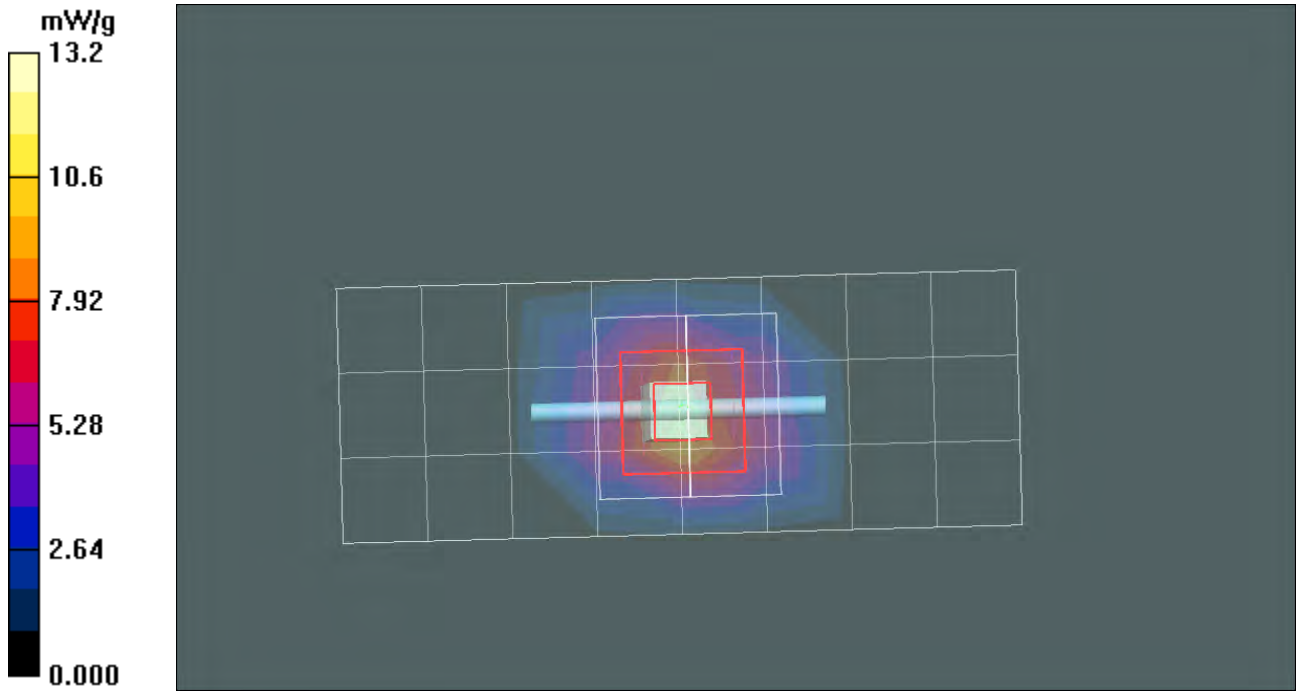
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 9.53 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.0 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 24.6 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



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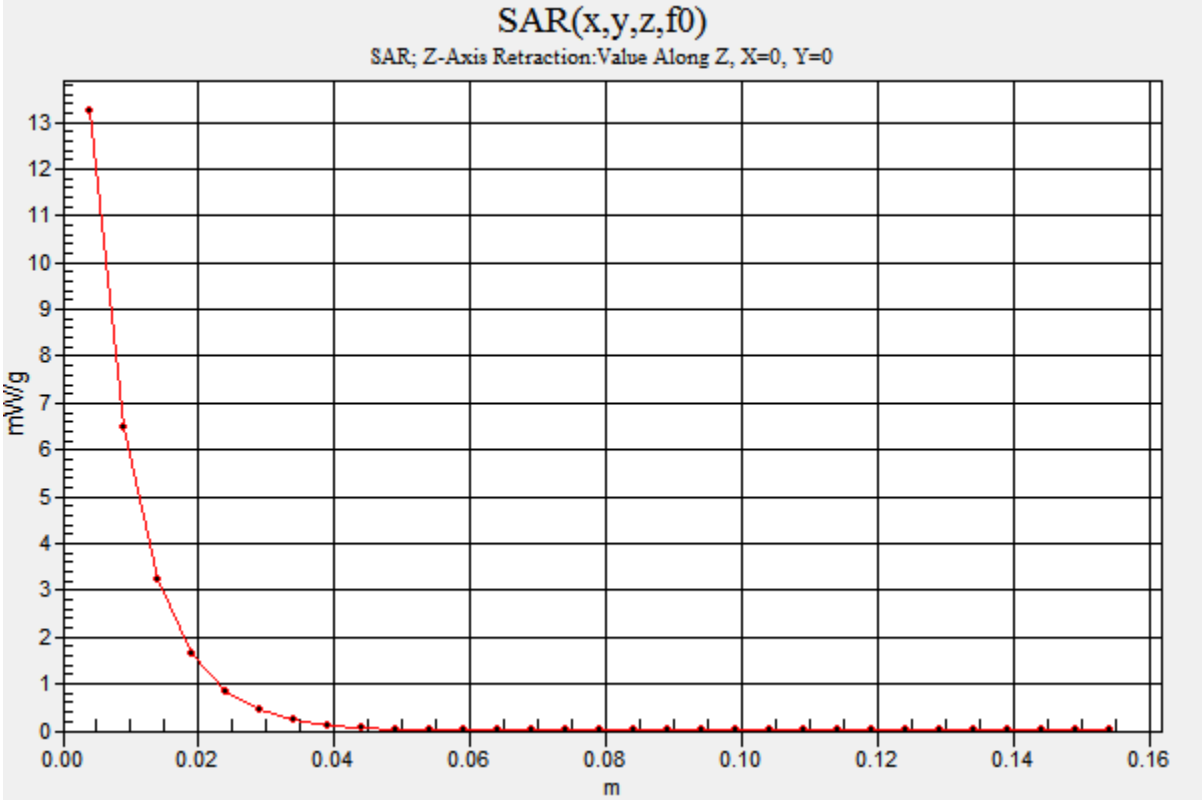

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Test Laboratory: MOTOROLA 2450 MHz System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:788;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -24.17dB Sim.Temp@SPC =20.8 Room Temp @ SPC = 22.3
Communication System: CW - Dipole; Frequency: 2450 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 2450 MHz; σ = 1.82 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3

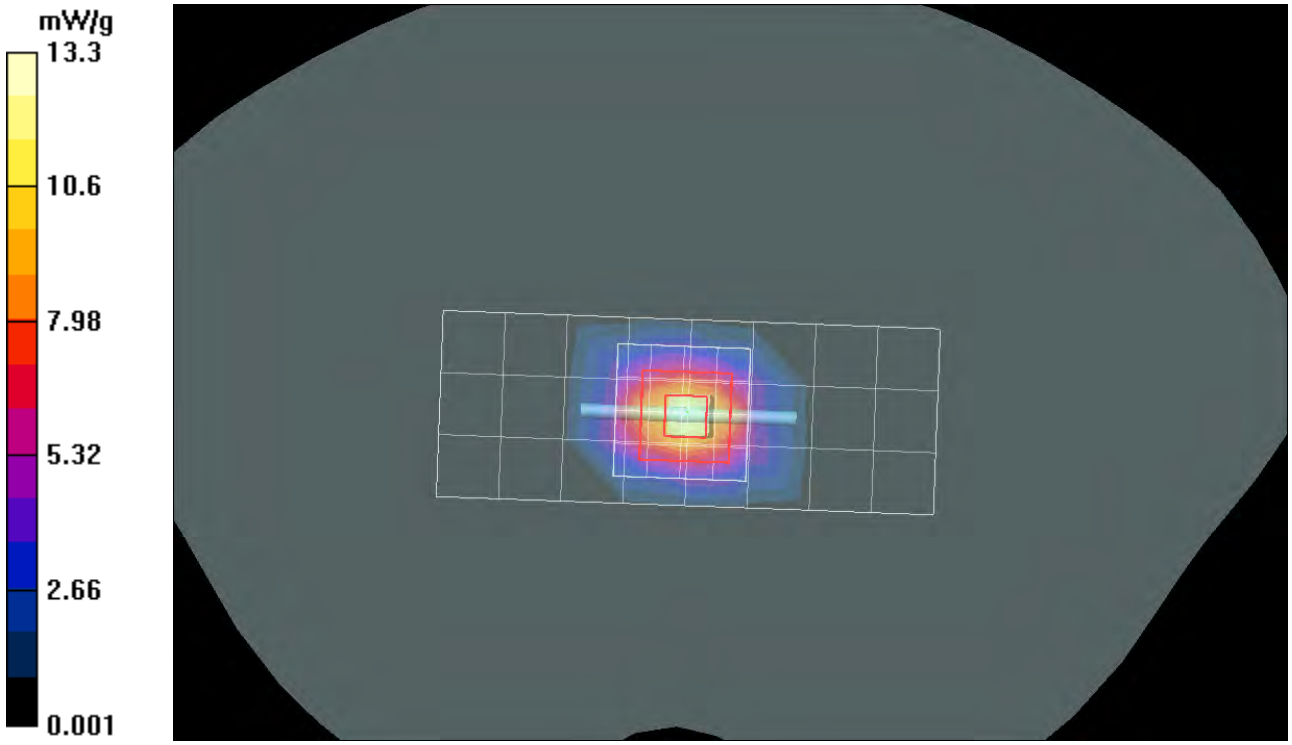
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 9.49 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.0 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 24.8 W/kg
SAR(1 g) = 11.6 mW/g; SAR(10 g) = 5.33 mW/g
Maximum value of SAR (measured) = 13.1 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 13.3 mW/g



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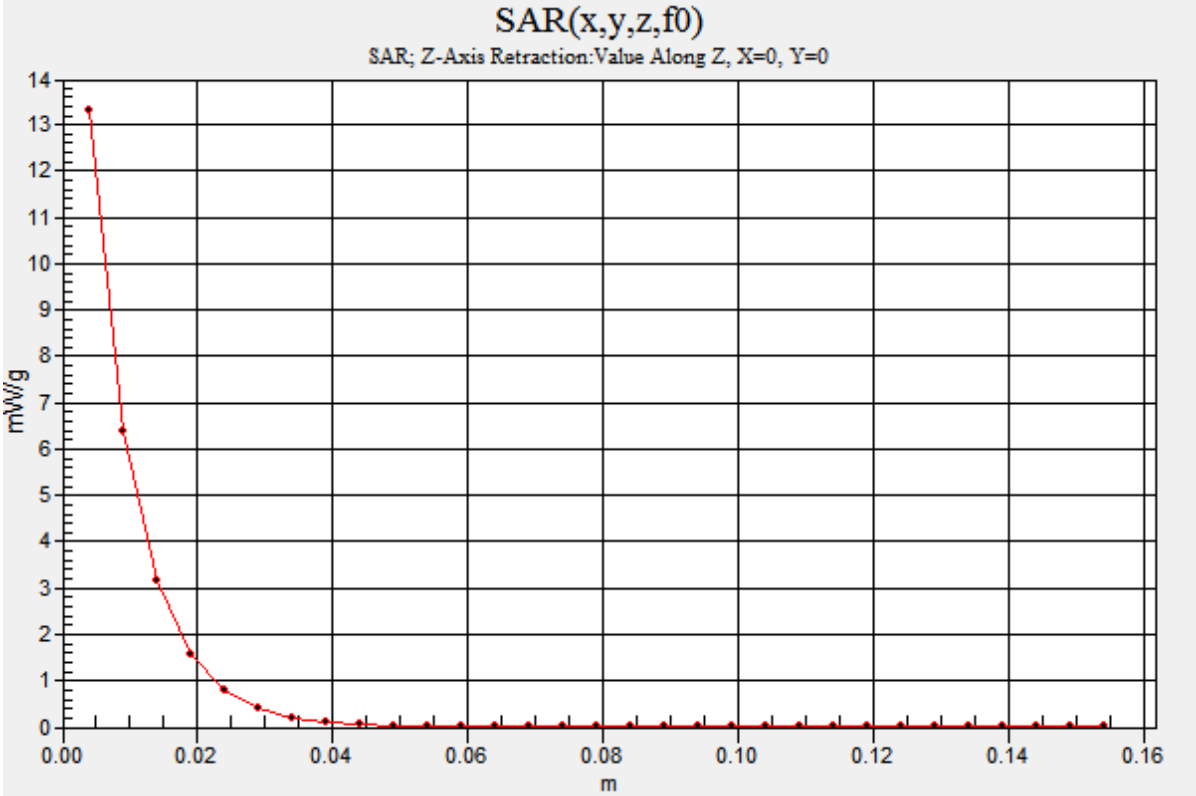

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

Test Laboratory: MOTOROLA 2450 MHz System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:788;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -25.6dB Sim.Temp@SPC = 19.6 Room Temp @ SPC = 22.2
Communication System: CW - Dipole; Frequency: 2450 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: VALIDATION Only; Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 35.3; ρ = 1000 kg/m^3

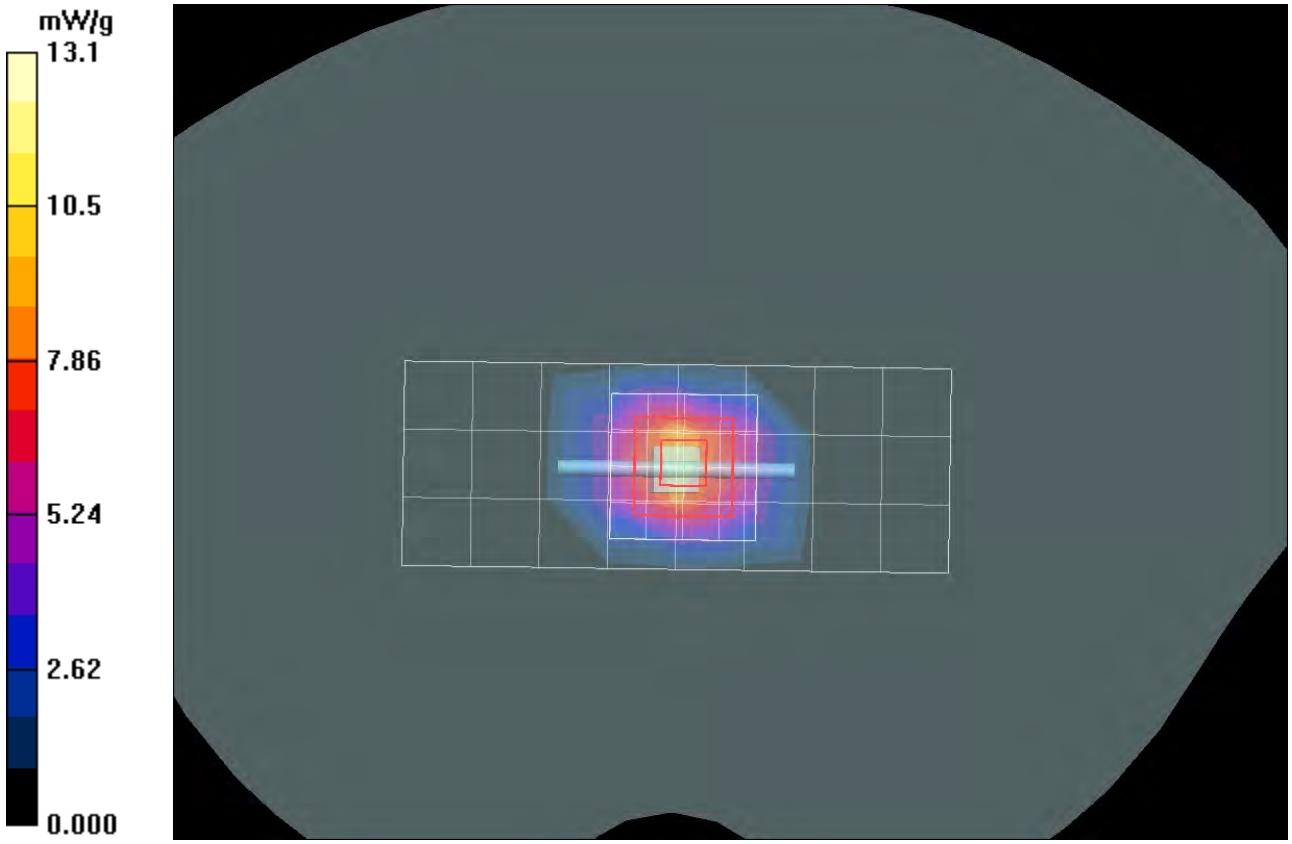
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 9.05 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.6 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 24.7 W/kg
SAR(1 g) = 11.5 mW/g; SAR(10 g) = 5.26 mW/g
Maximum value of SAR (measured) = 13.0 mW/g

Daily SPC Check/Z-Axis Retraction (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 13.1 mW/g



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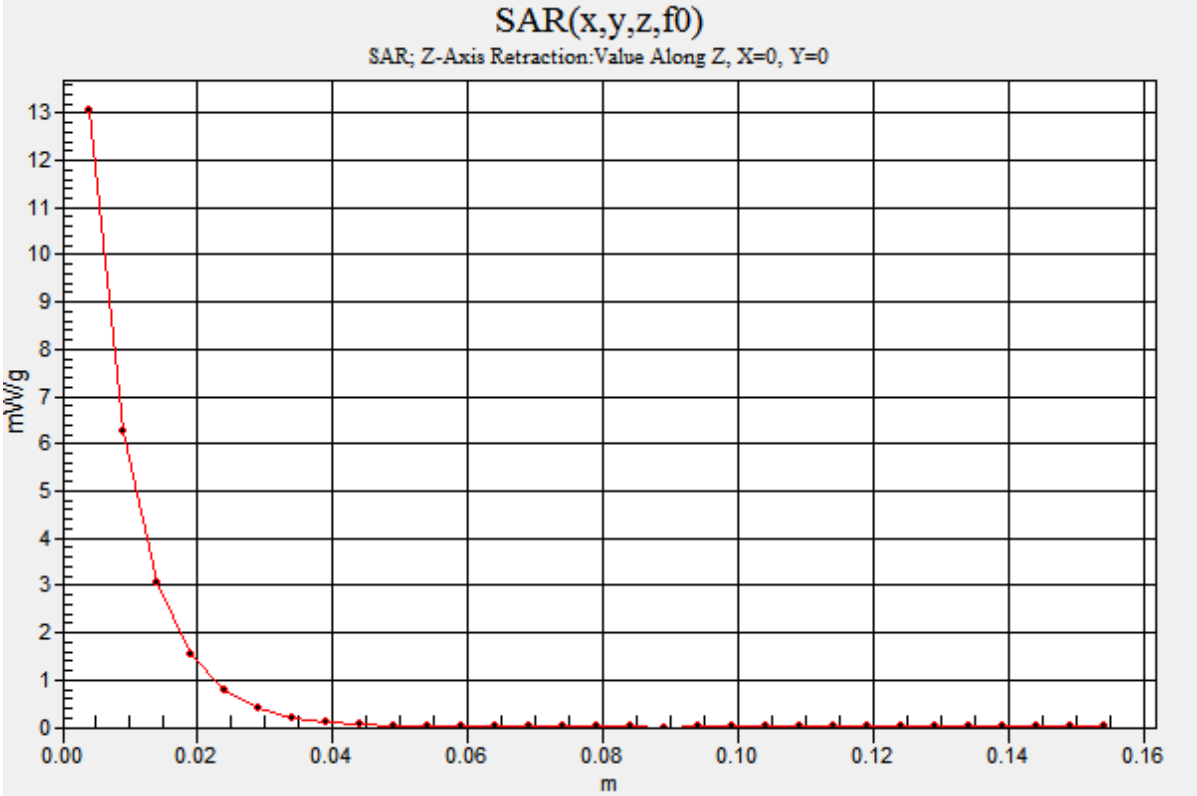

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Date/Time: 4/6/2011 3:44:33 PM

Test Laboratory: MOTOROLA 2450 MHz System Performance Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:788;
Procedure Notes: PM1 Power = 200 mW Refl.Pwr PM3 = -26.2dB Sim.Temp@SPC = 20.4 Room Temp @ SPC =21.6
Communication System: CW - Dipole; Frequency: 2450 MHz; Communication System Channel Number: 11; Duty Cycle: 1:1
Medium: Validation *HEAD Tissue* ; Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 37; ρ = 1000 kg/m^3

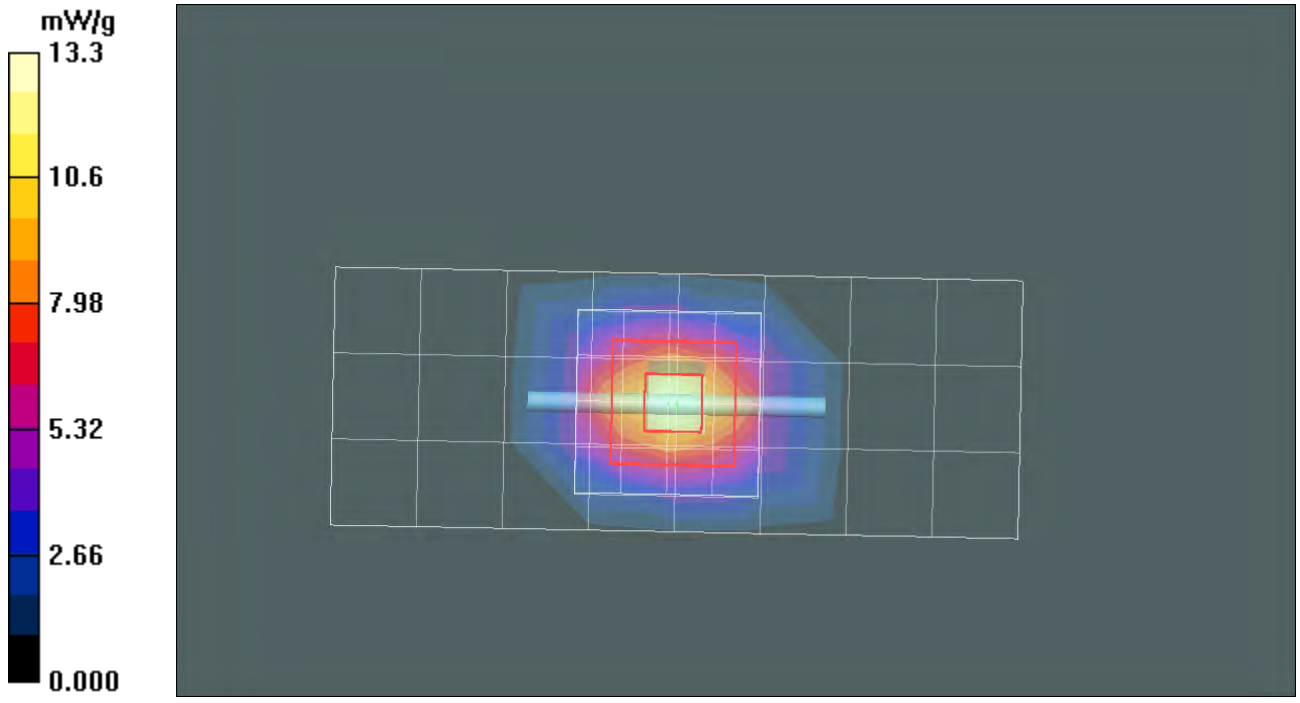
DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn365; Calibrated: 9/8/2010
- 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 (4x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.85 mW/g

Daily SPC Check/0-Degree, 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.0 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 11.7 mW/g; SAR(10 g) = 5.35 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) = 13.3 mW/g..



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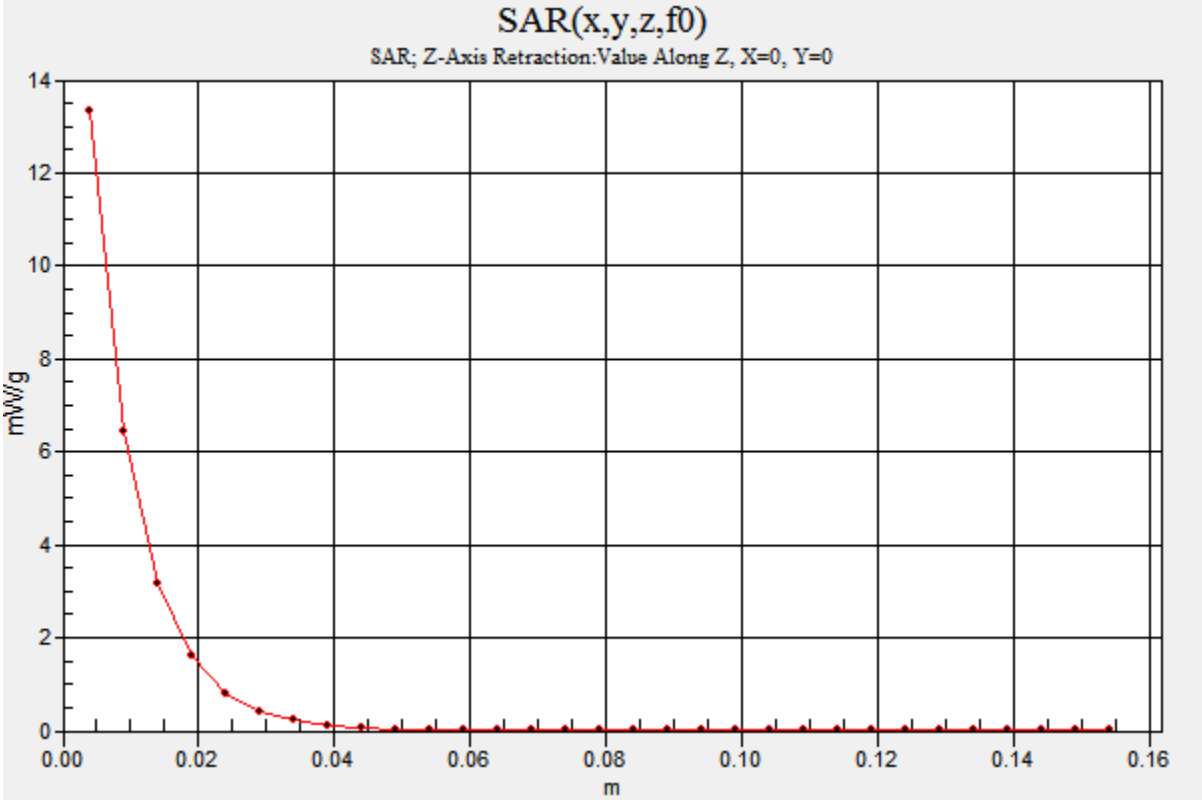

SAR(x,y,z,f0)
SAR; Z-Axis Retraction:Value Along Z, X=0, Y=0
mW/g
14
12
10
8
6
4
2
0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

Appendix 2

SAR distribution plots for Phantom Head Adjacent Use

Test Laboratory: MOTOROLA GSM 1900 MHz - Left Head Cheek Touch

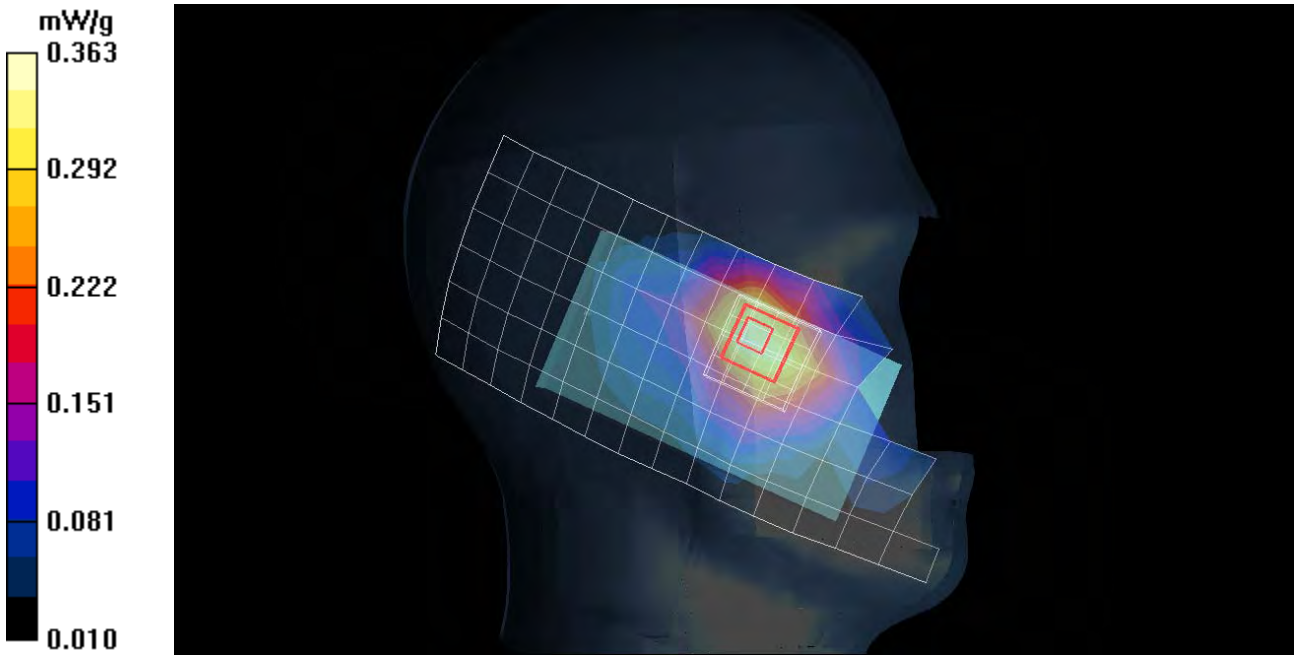
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Cheek
Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.347 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.216 mW/g
Maximum value of SAR (measured) = 0.363 mW/g



Test Laboratory: MOTOROLA GSM 1900 Left Head 15 Degree Tilt

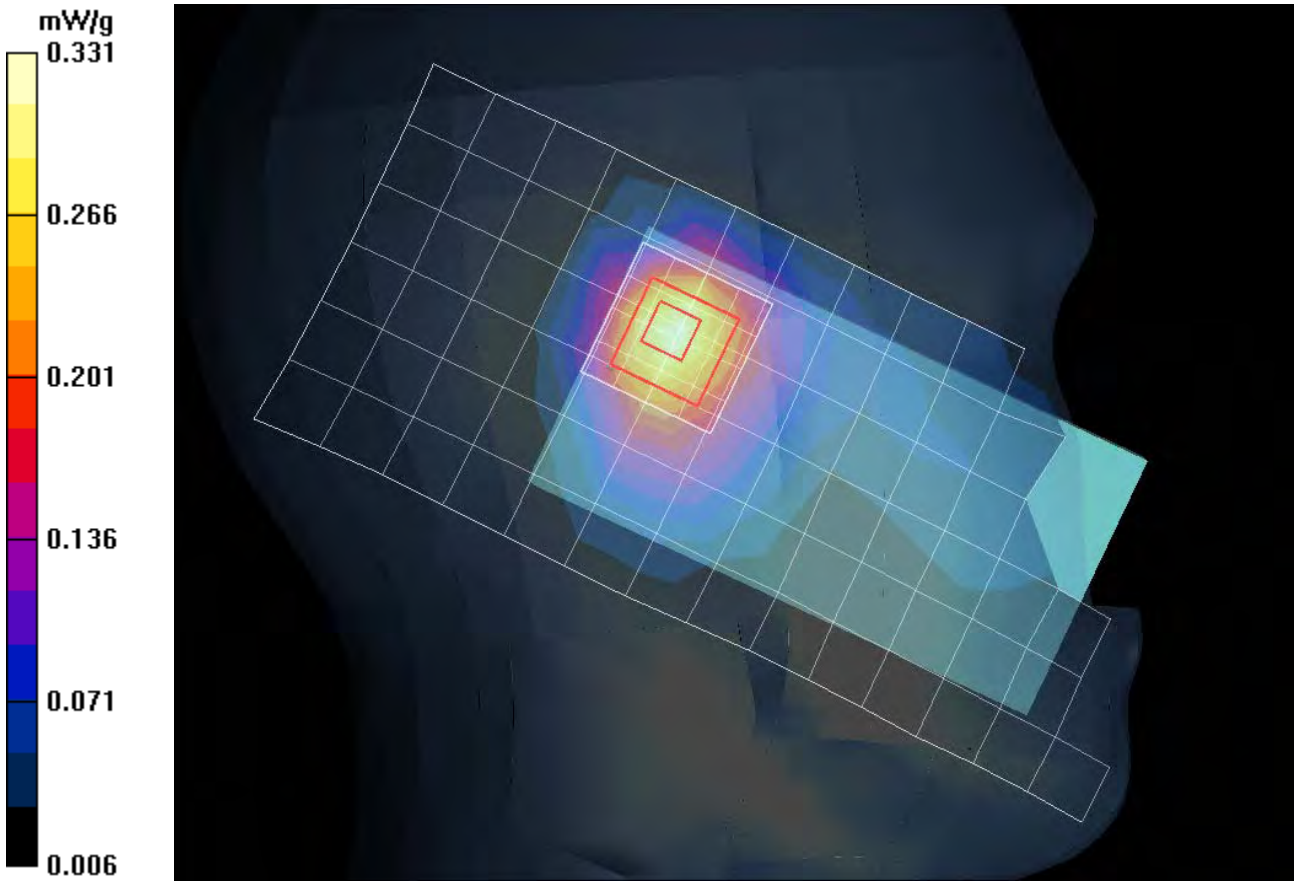
Serial: 860404000006695; FCC ID:IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Rotated Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.331 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.8 V/m; Power Drift = 0.042 dB
Peak SAR (extrapolated) = 0.501 W/kg
SAR(1 g) = 0.307 mW/g; SAR(10 g) = 0.178 mW/g



Test Laboratory: MOTOROLA GSM 1900 Right Head Cheek Touch

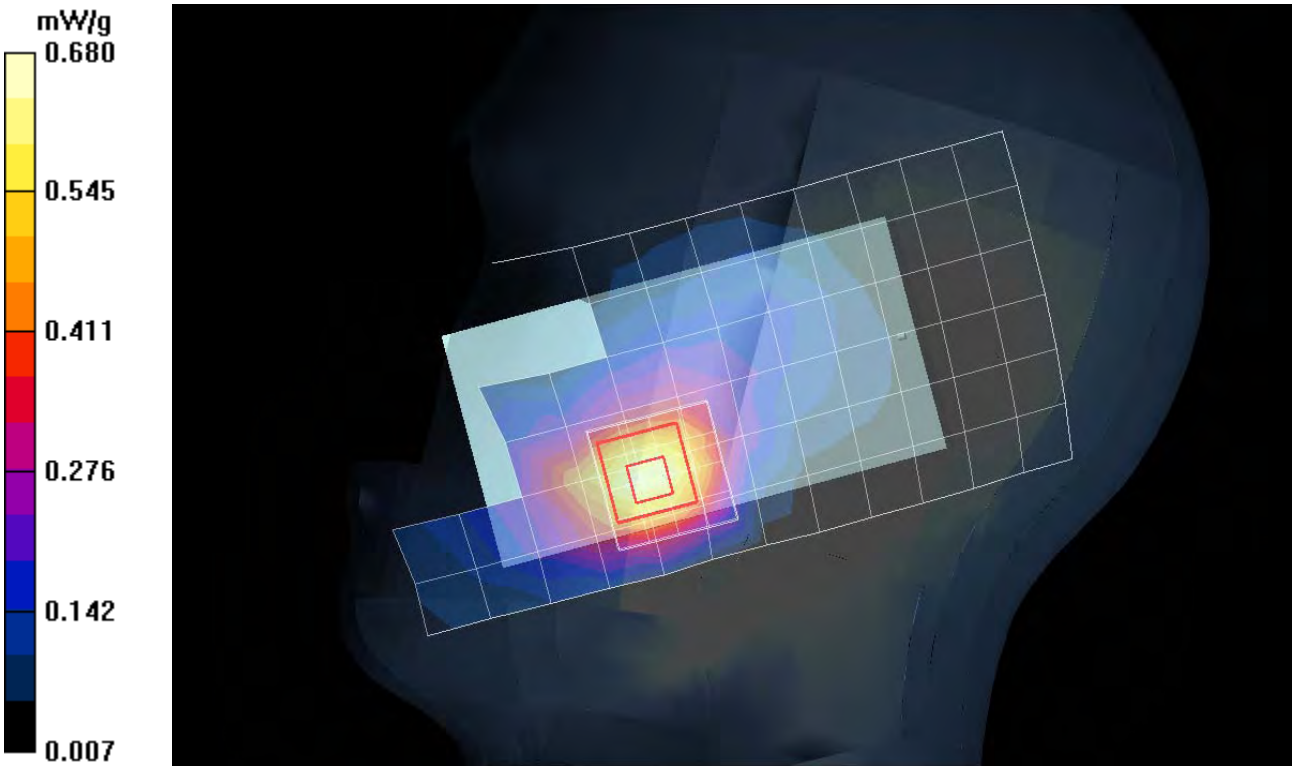
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated):Cheek
Communication System: GSM 1900; Frequency: 1850.2 MHz; Communication System Channel Number: 512; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.647 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.7 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.633 mW/g; SAR(10 g) = 0.384 mW/g
Maximum value of SAR (measured) = 0.680 mW/g



Test Laboratory: MOTOROLA GSM 1900 MHz - Right Head 15 Degree Tilt

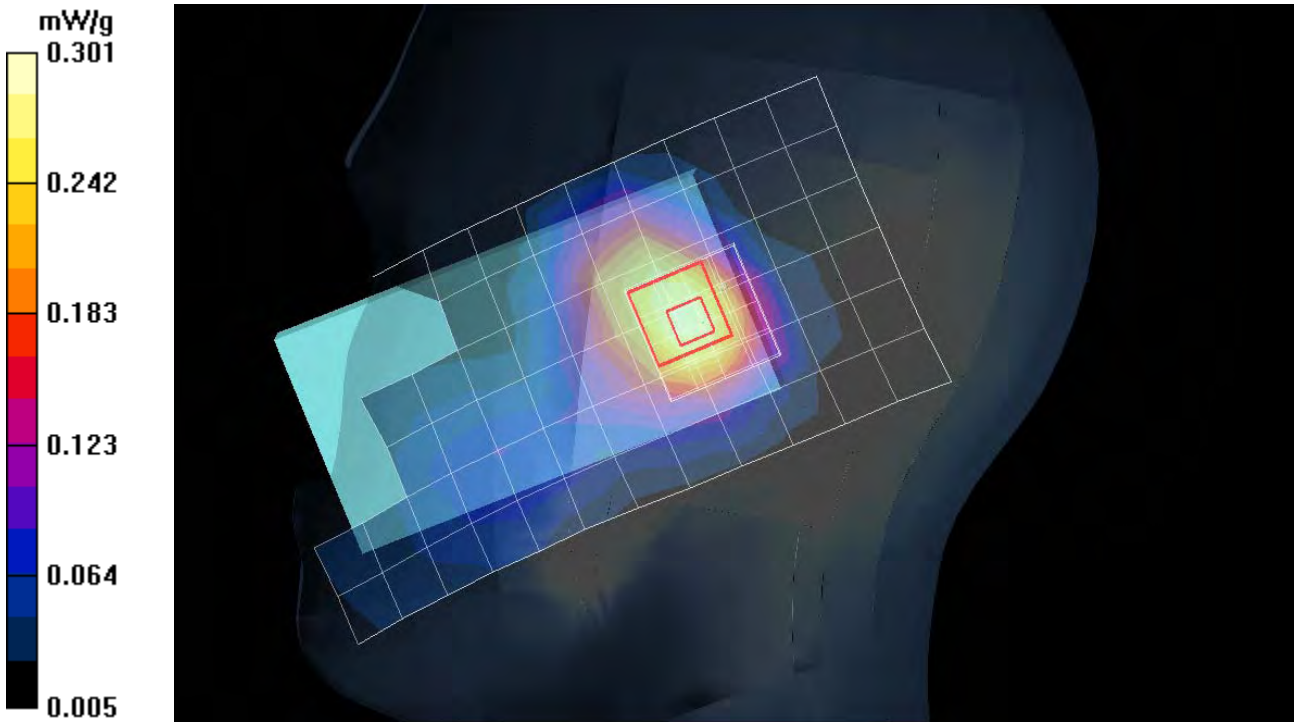
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated):Rotated
Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Head 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(5.03, 5.03, 5.03); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.289 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.4 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 0.437 W/kg
SAR(1 g) = 0.279 mW/g; SAR(10 g) = 0.174 mW/g
Maximum value of SAR (measured) = 0.301 mW/g



Test Laboratory: MOTOROLA WiFi 2450 MHz - Left Head Cheek Touch

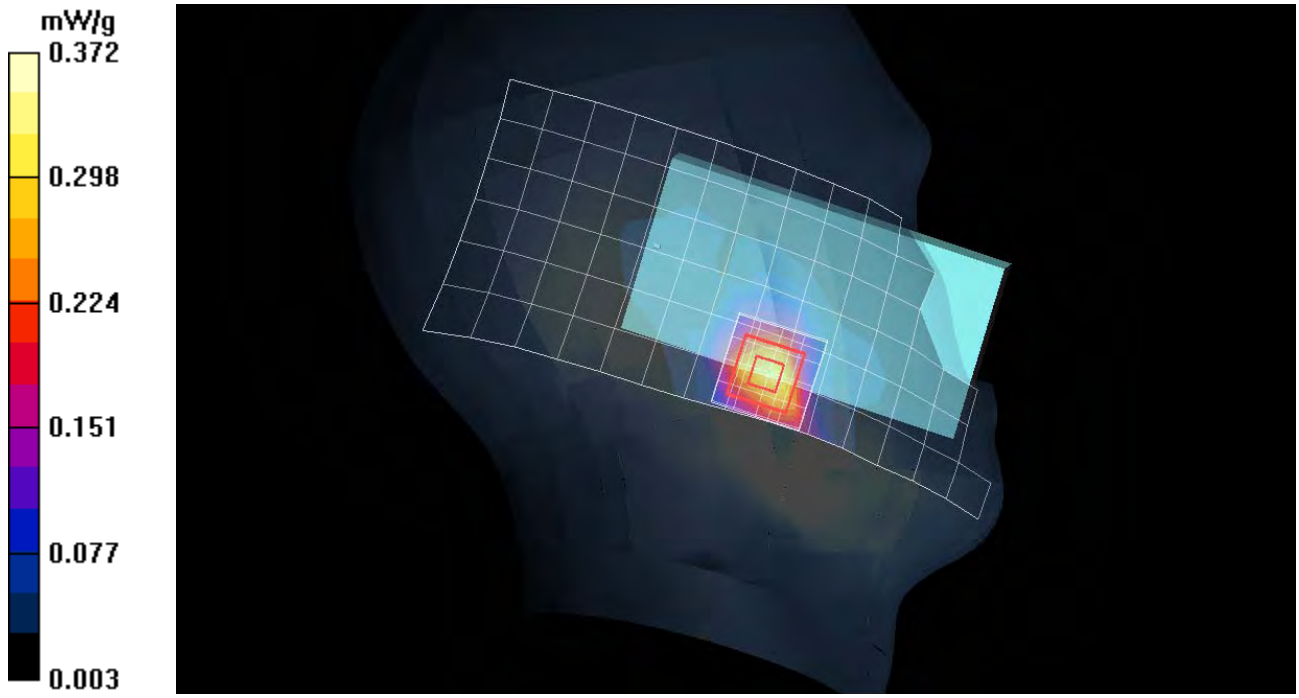
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b I Mbps Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Cheek
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 36; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.331 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.42 V/m; Power Drift = -0.185 dB
Peak SAR (extrapolated) = 0.684 W/kg
SAR(1 g) = 0.341 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.372 mW/g



Test Laboratory: MOTOROLA WiFi 2450MHz Left Head 15 Degree Tilt

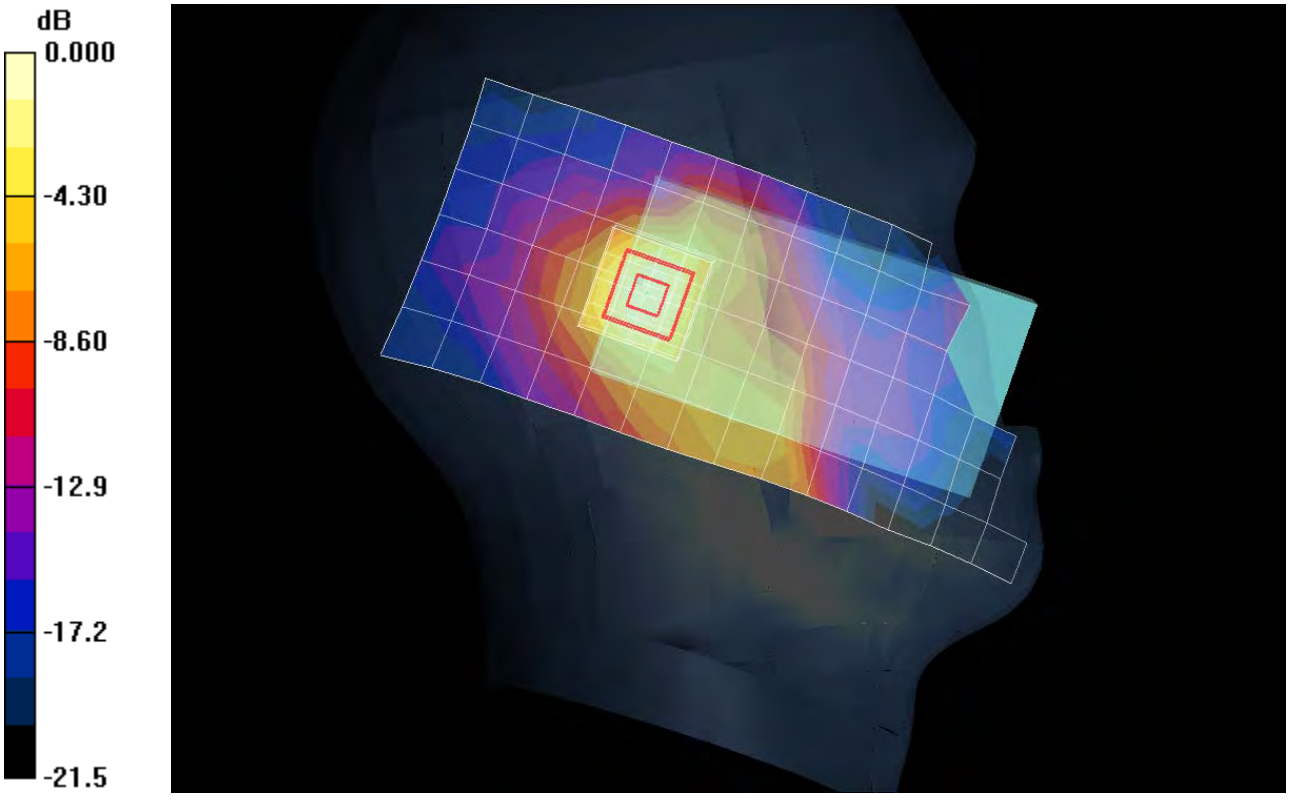
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b 1 Mbps Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Rotated
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 36; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.118 mW/g

Left Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.54 V/m; Power Drift = 0.214 dB
Peak SAR (extrapolated) = 0.264 W/kg
SAR(1 g) = 0.140 mW/g; SAR(10 g) = 0.070 mW/g
Maximum value of SAR (measured) = 0.161 mW/g



0 dB = 0.161mW/g

Test Laboratory: MOTOROLA WiFi 2450 MHz Right Head Cheek

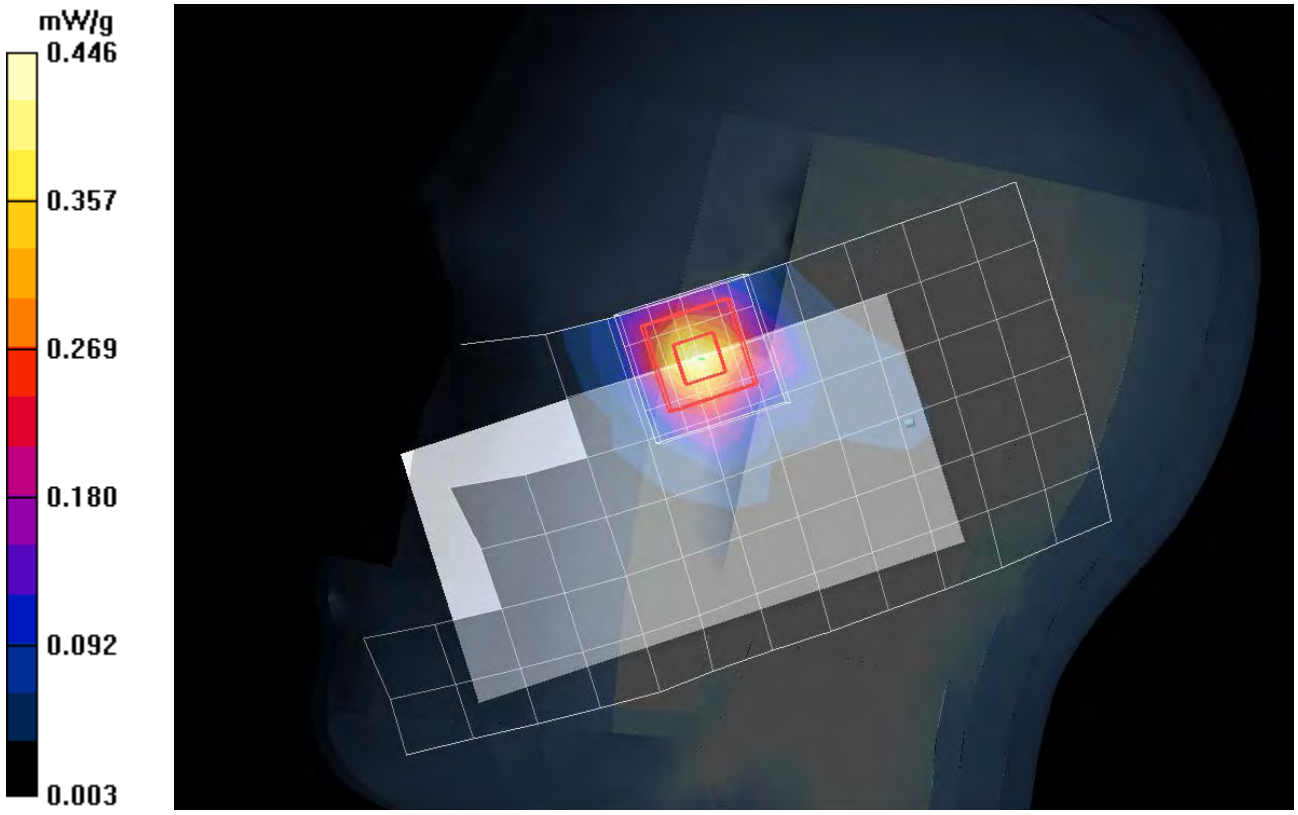
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b 1 Mbps Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Cheek
Communication System: Wi-Fi 2450; Frequency: 2412 MHz; Communication System Channel Number: 1; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 36; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.431 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.24 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.800 W/kg
SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.182 mW/g
Maximum value of SAR (measured) = 0.446 mW/g



Test Laboratory: MOTOROLA WiFi 2450 MHz - Right Head 15 Degree Tilt

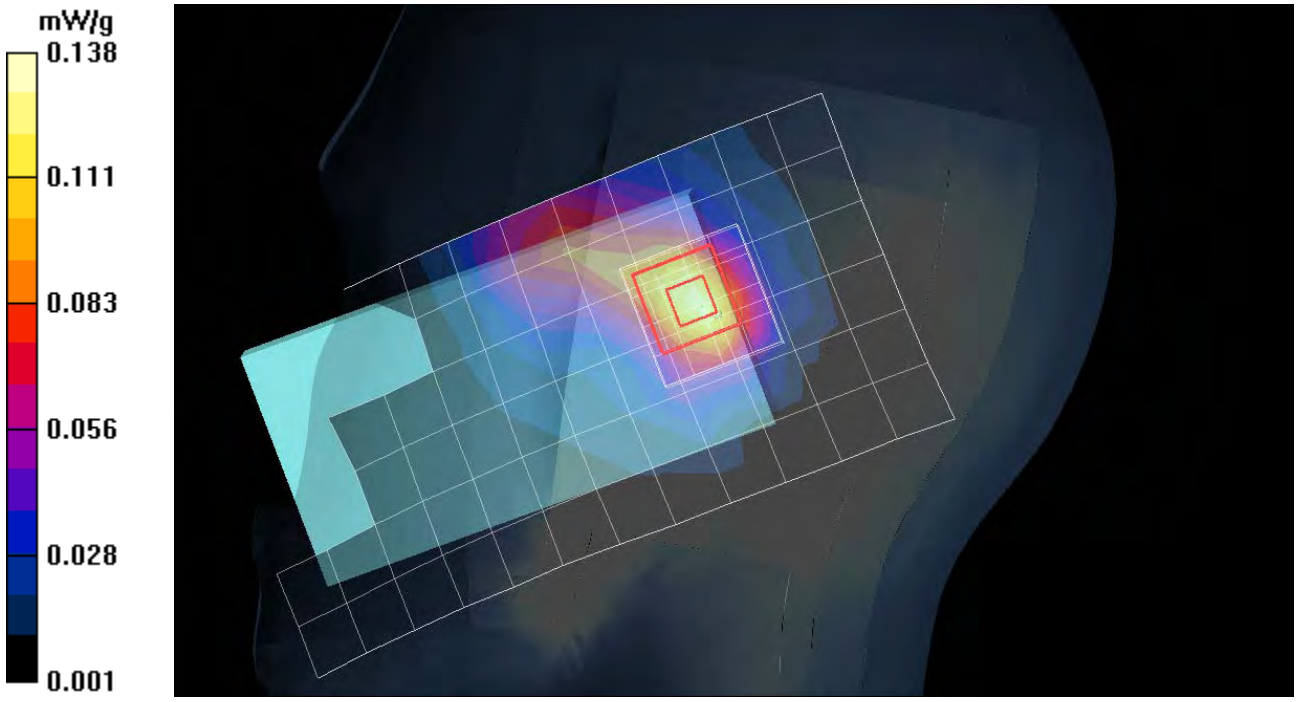
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b I Mbps Battery Model #: SNN5879A DEVICE POSITION (cheek or rotated): Rotated
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Head; Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 36; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.42, 4.42, 4.42); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.119 mW/g

Right Head Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.32 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 0.221 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.064 mW/g
Maximum value of SAR (measured) = 0.138 mW/g



Appendix 3

SAR distribution plots for Body Worn Configuration

Test Laboratory: MOTOROLA GSM 1900 Body Worn

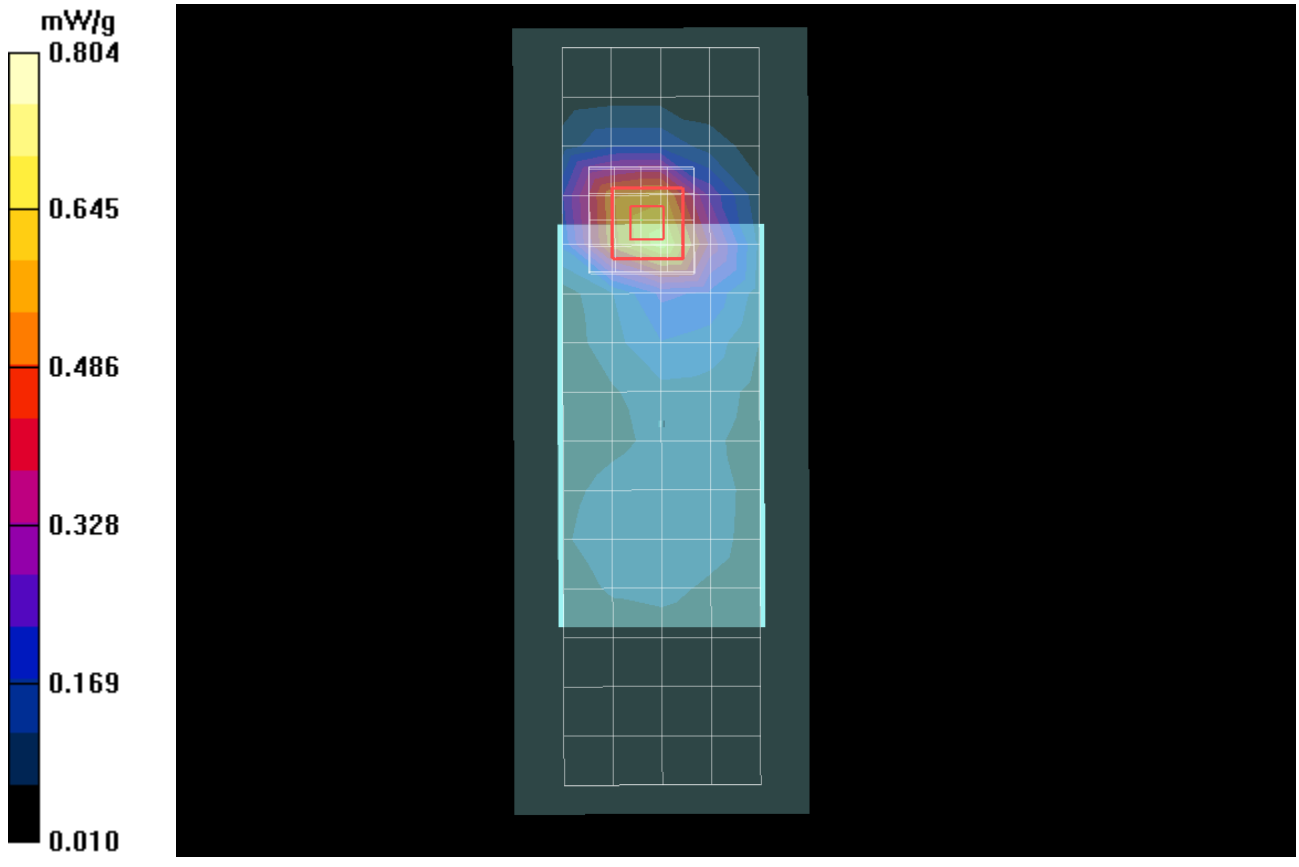
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A TEST Position: Back of Device 15mm away
Communication System: GSM 1900; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51.6; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.681 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 = -0.013 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.728 mW/g; SAR(10 g) = 0.418 mW/g
Maximum value of SAR (measured) = 0.804 mW/g



Test Laboratory: MOTOROLA WiFi 2.45 GHz Body Worn

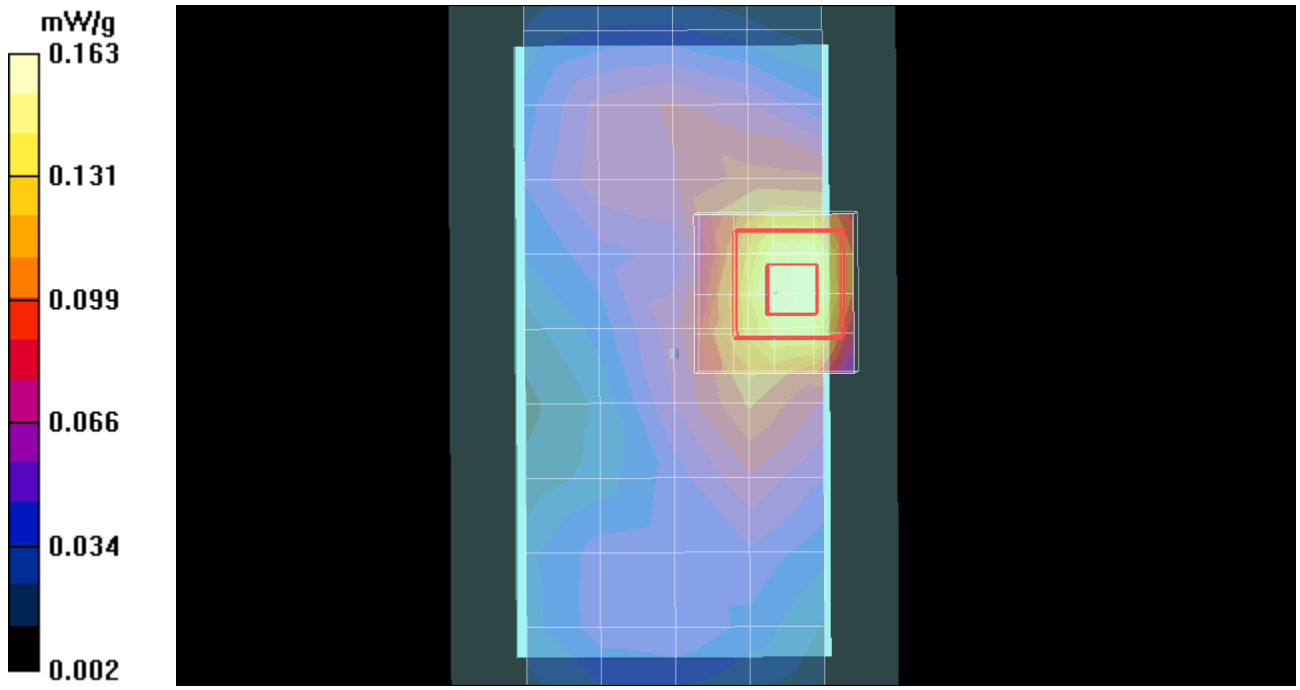
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b, 5.5 Mbps Battery Model #: SNN5879A Accessory Model # = 15mm between Back of Phone and Phantom
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn365; Calibrated: 9/8/2010
- 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) = 0.140 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 = 8.83 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 0.285 W/kg
SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.083 mW/g
Maximum value of SAR (measured) = 0.163 mW/g



Appendix 4

SAR distribution plots for Mobile Hotspot Configuration

Test Laboratory: Motorola GSM 1900 Front Surface WiFi Hotspot Testing

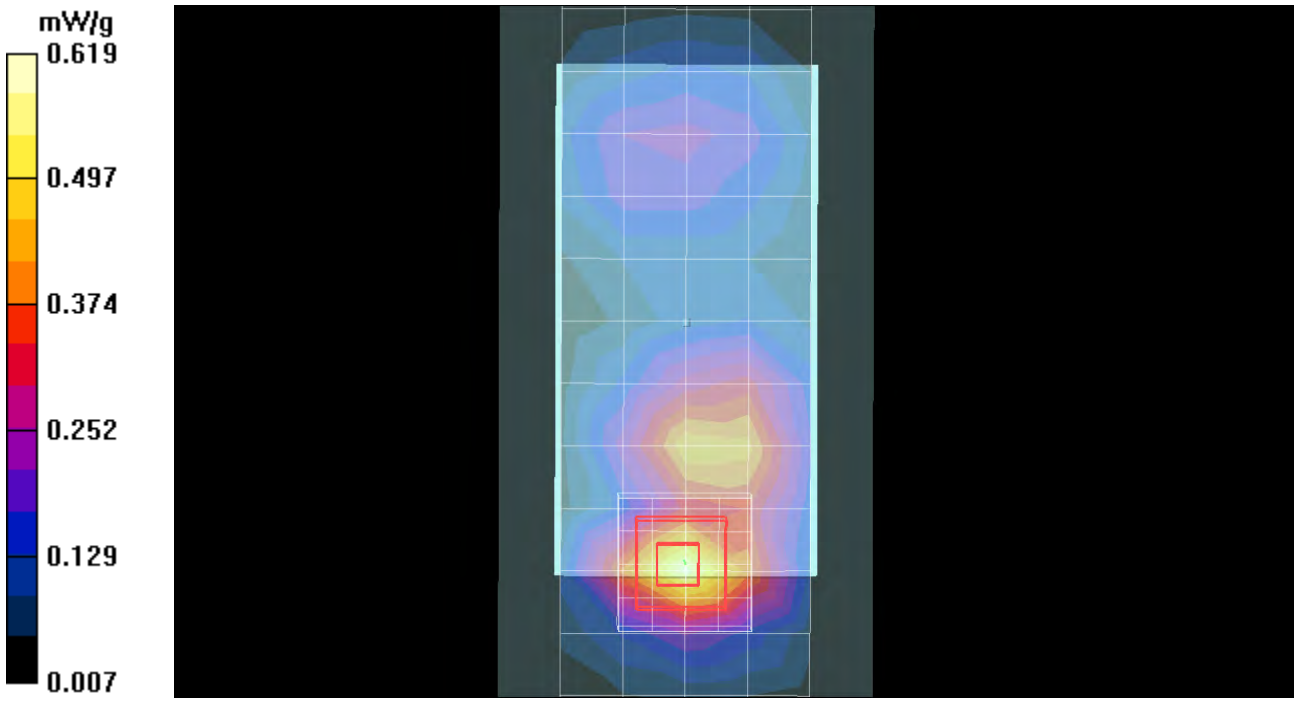
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A TEST Position: Front of Phone 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 0.607 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.913 W/kg
SAR(1 g) = 0.546 mW/g; SAR(10 g) = 0.298 mW/g
Maximum value of SAR (measured) = 0.619 mW/g



Test Laboratory: MOTOROLA GSM 1900 Back Surface WiFi Hotspot Testing

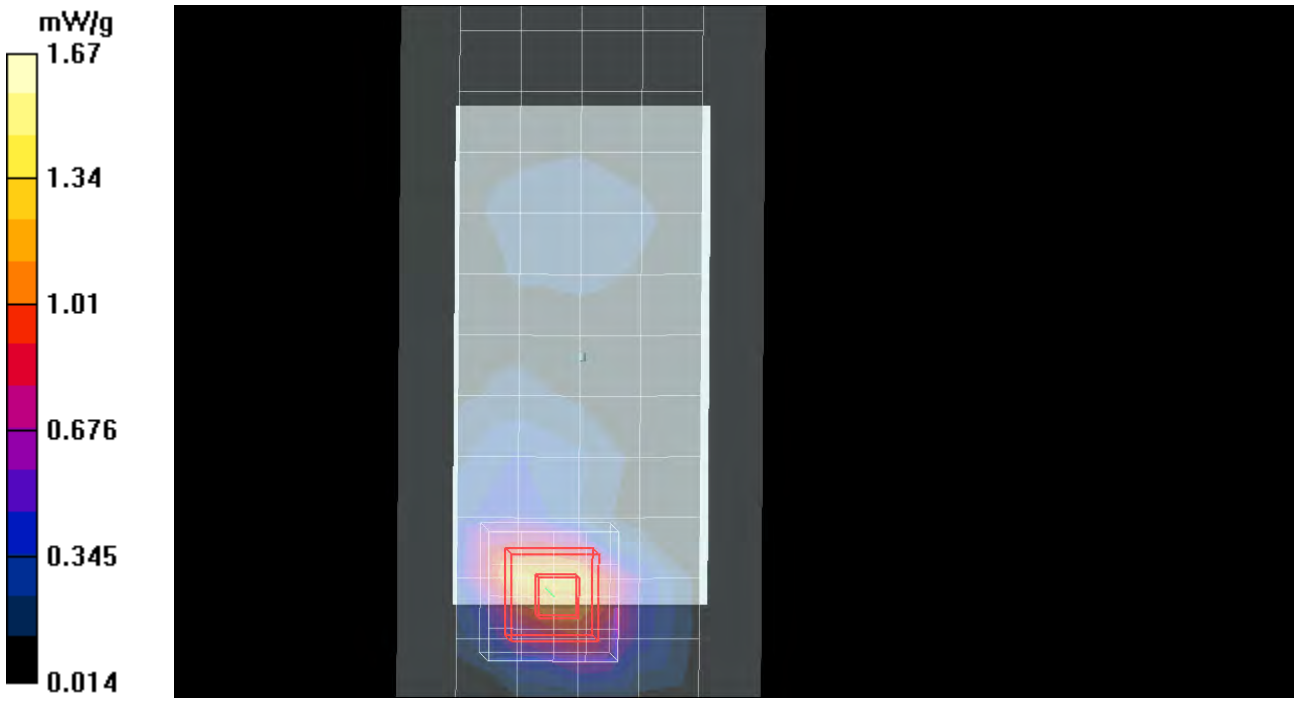
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A TEST Position: Back Surface of Phone 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 1.32 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.4 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 2.60 W/kg
SAR(1 g) = 1.45 mW/g; SAR(10 g) = 0.763 mW/g
Maximum value of SAR (measured) = 1.67 mW/g



Date/Time: 3/23/2011 4:27:40 PM

Test Laboratory: MOTOROLA GSM 1900 Left Edge WiFi Hotspot Testing

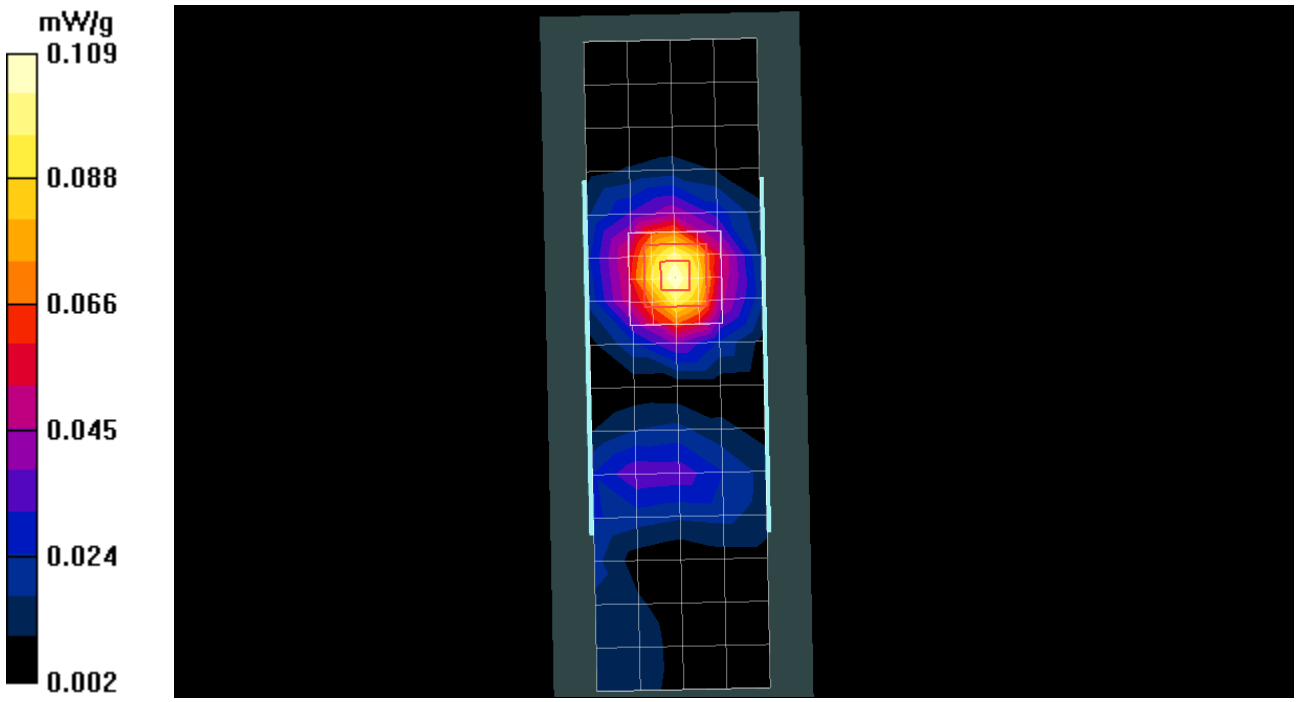
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A Test Position: Left edge of Phone 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 0.101 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.69 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 0.171 W/kg
SAR(1 g) = 0.100 mW/g; SAR(10 g) = 0.057 mW/g
Maximum value of SAR (measured) = 0.109 mW/g



Test Laboratory: MOTOROLA GSM 1900 Right Edge WiFi Hotspot Testing

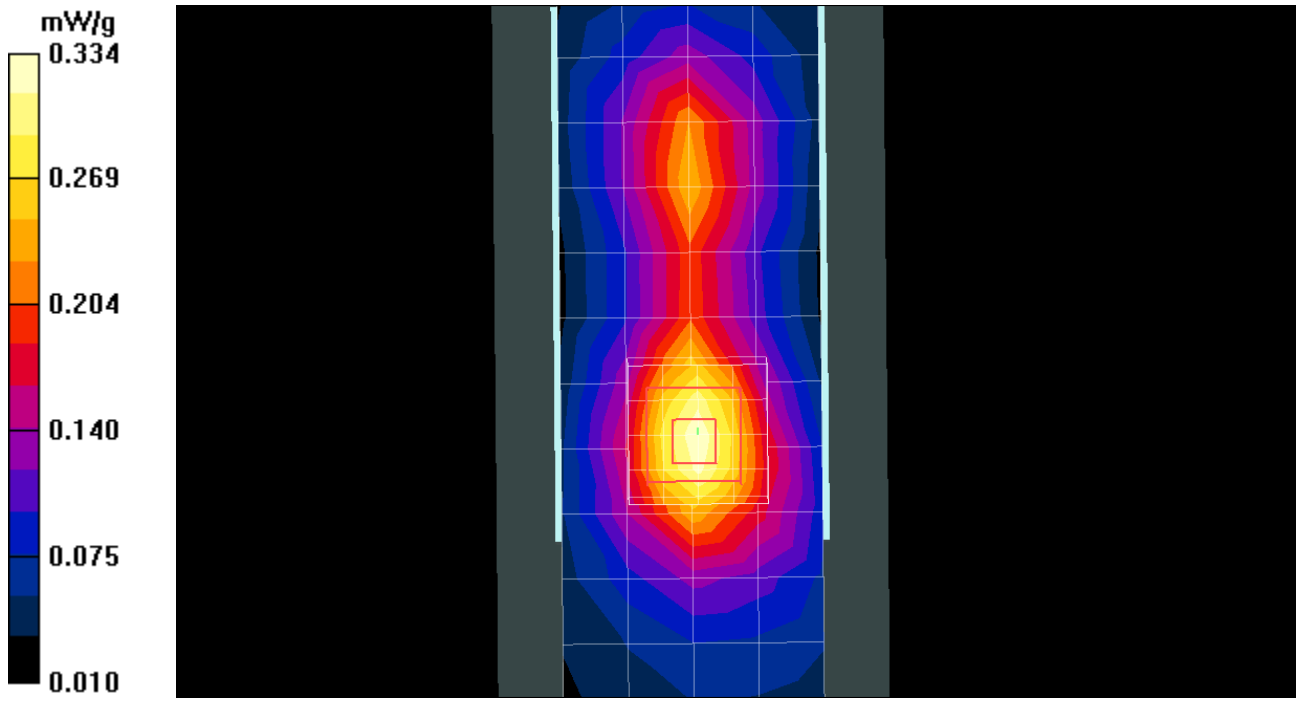
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A Test Position: Right Edge 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 0.333 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.8 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.476 W/kg
SAR(1 g) = 0.304 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 0.334 mW/g



Test Laboratory: MOTOROLA GSM 1900 WiFi HotSpot Testing

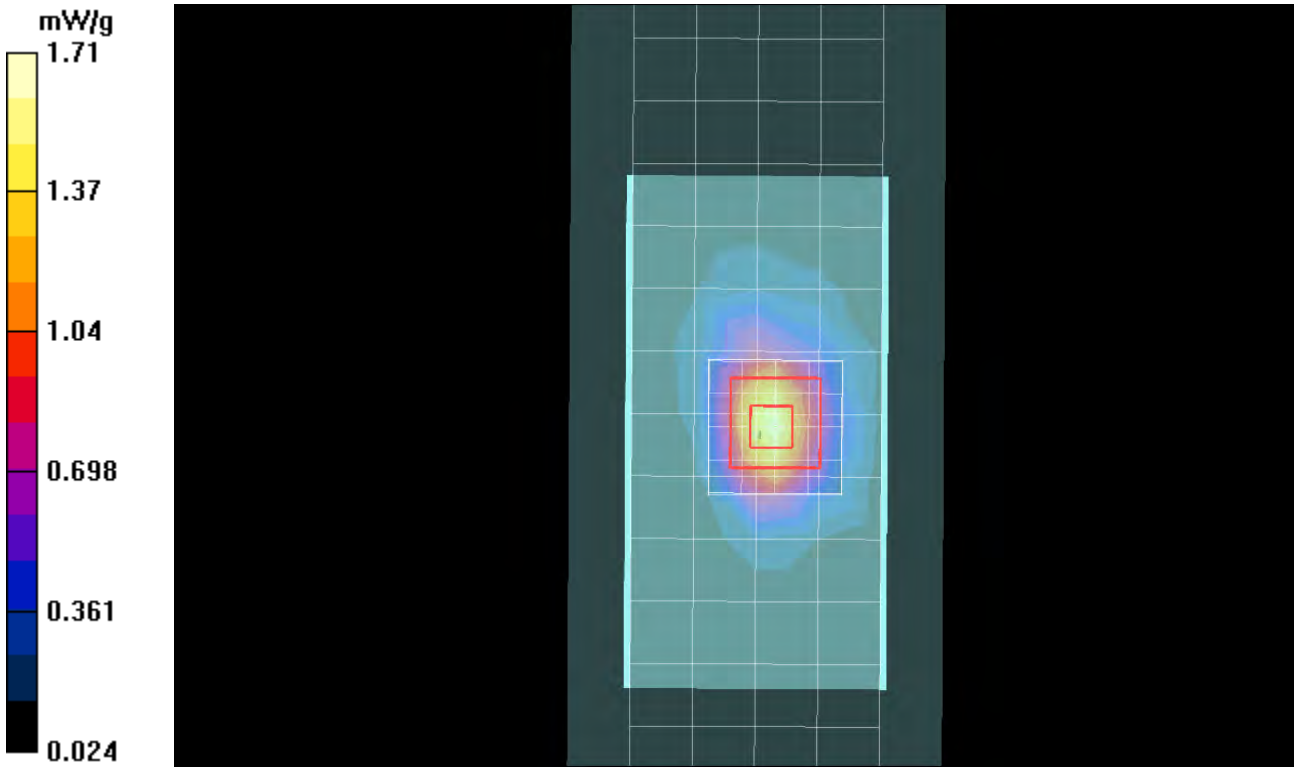
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A TEST Position: Bottom Edge 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 50.9; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 1.55 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.9 V/m; Power Drift = -0.060 dB
Peak SAR (extrapolated) = 2.85 W/kg
SAR(1 g) = 1.54 mW/g; SAR(10 g) = 0.780 mW/g
Maximum value of SAR (measured) = 1.71 mW/g



Test Laboratory: MOTOROLA WiFi 2450 MHz Front Surface WiFi Hotspot Testing

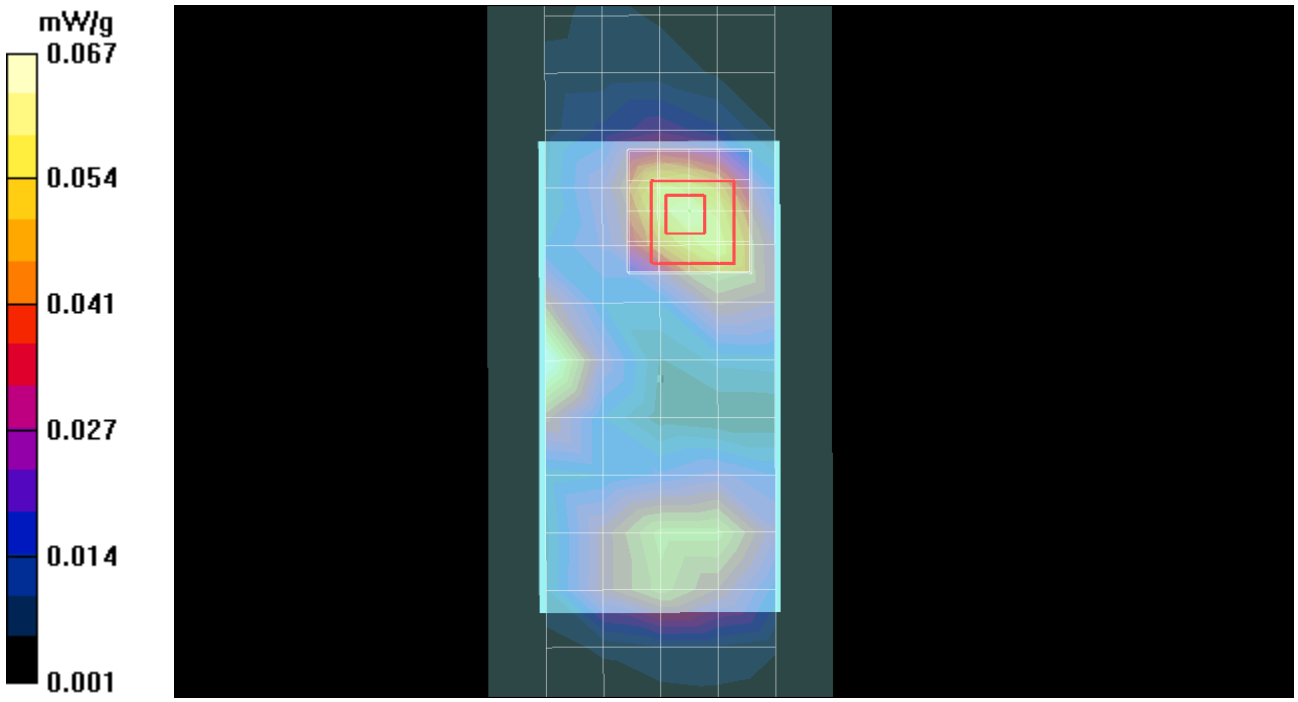
DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b , 1 Mbps Battery Model #: SNN5879A Test Position: Front Surface of Phone 10mm away
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.95 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.071 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.95 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 0.105 W/kg
SAR(1 g) = 0.060 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.067 mW/g



Test Laboratory: MOTOROLA WiFi 2450 MHz WiFi Hotspot Testing

Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b , 1 Mbps Battery Model #: SNN5879A Test Position: Back of DUT 10mm away Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1

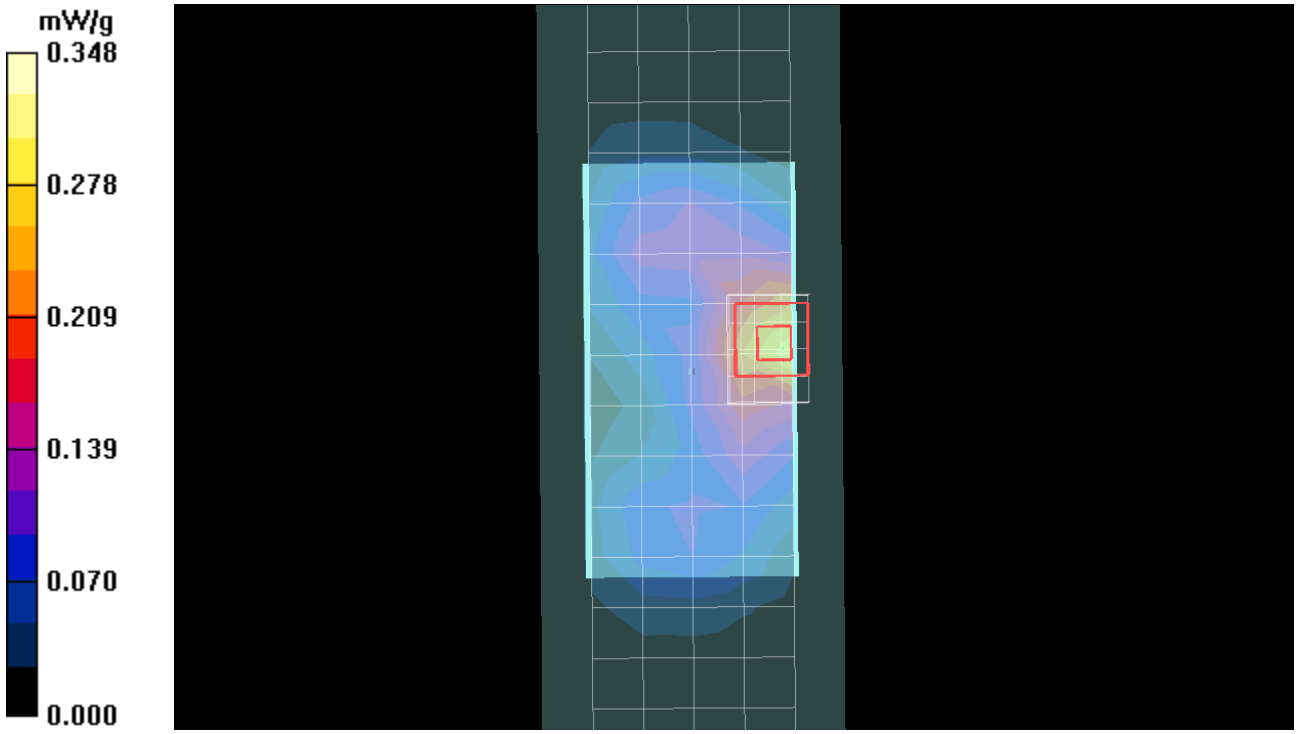
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.95 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.304 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 = 12.8 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.160 mW/g
Maximum value of SAR (measured) = 0.348 mW/g



Test Laboratory: MOTOROLA Wi-Fi 2450 MHz Left Edge WiFi Hotspot Testing

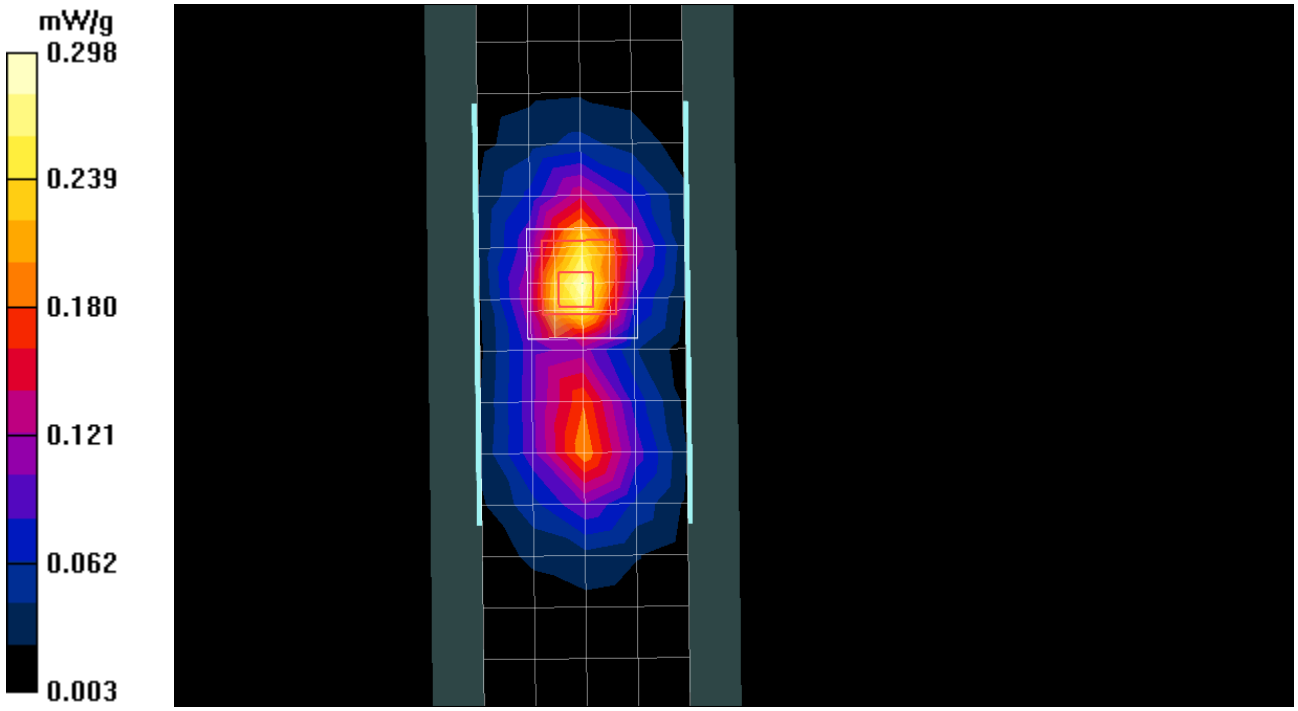
DUT: Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 802.11b , 1 Mbps Battery Model #: SNN5879A Test position: 10mm; Left edge of Phone 10mm
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 51.5; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn719; Calibrated: 3/22/2010
- 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) = 0.281 mW/g

Amy Twin Phone Template/5x5x7 Zoom Scan (<=3GHz) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = 0.225 dB
Peak SAR (extrapolated) = 0.527 W/kg
SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.298 mW/g



Appendix 5

SAR distribution plots for Simultaneous Transmission

Test Laboratory: MOTOROLA GSM 1900 Simultaneous Transmission Test 10mm Body

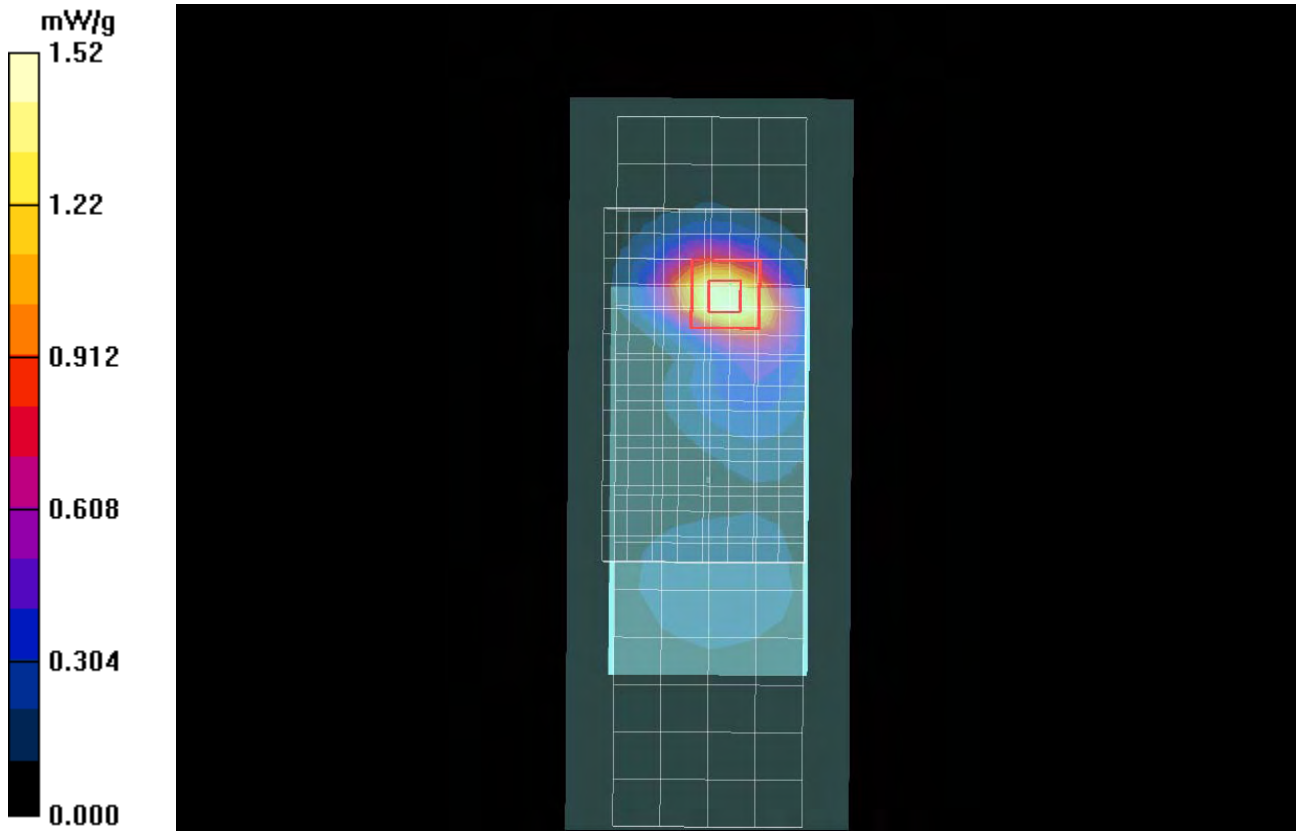
Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Pwr Step: 00 Battery Model #: SNN5879A Test Position: Back of DUT 10mm away
Communication System: GPRS 1900 - Class 8; Frequency: 1880 MHz; Communication System Channel Number: 661; Duty Cycle: 1:8.3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1880 MHz; σ = 1.57 mho/m; ε_r = 51; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 1.48 mW/g

Amy Twin Phone Template/MegaZoom Zoom Scan (<=3GHz) 2 (15x11x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.7 V/m; Power Drift = -0.081 dB
Peak SAR (extrapolated) = 2.49 W/kg
SAR(1 g) = 1.48 mW/g; SAR(10 g) = 0.784 mW/g
Maximum value of SAR (measured) = 1.52 mW/g



Test Laboratory: MOTOROLA WiFi 2450 MHz Body Worn for Simultaneous Transmit

DUT Serial: 860404000006695; FCC ID: IHDT56MB1
Procedure Notes: Battery Model #: SNN5879A Accessory: Back of Phone 10mm away from Phantom Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6; Duty Cycle: 1:1

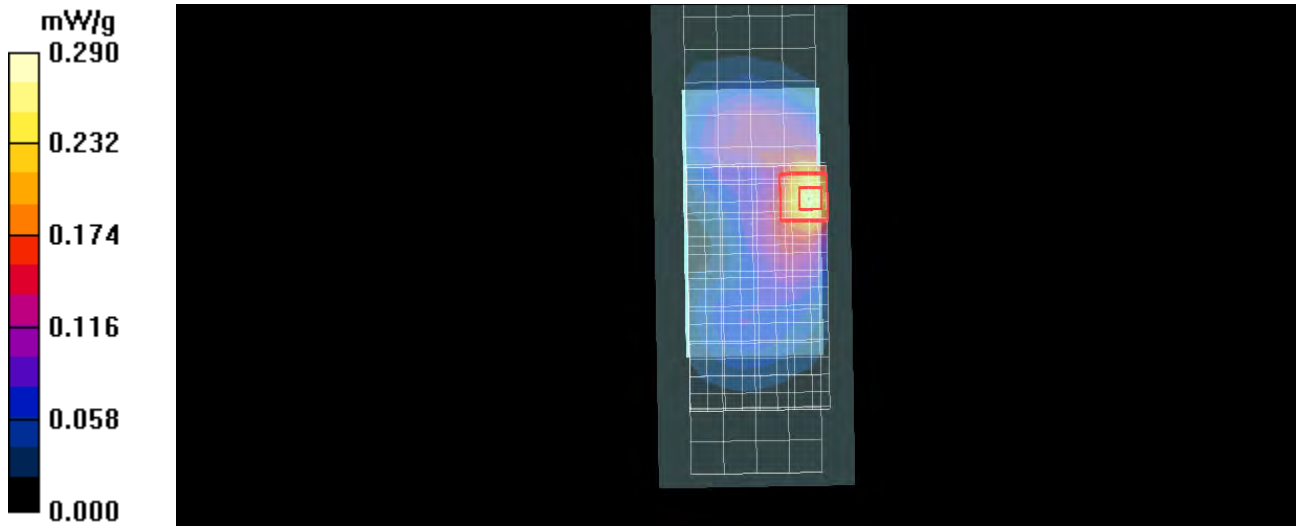
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 2 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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) = 0.260 mW/g

Amy Twin Phone Template/MegaZoom Zoom Scan (<=3GHz) 2 (15x11x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.0 V/m; Power Drift = -0.047 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.131 mW/g
Maximum value of SAR (measured) = 0.290 mW/g



Test Laboratory: MOTOROLA GSM 1900 and WiFi 2450 Simultaneous Measurement Results

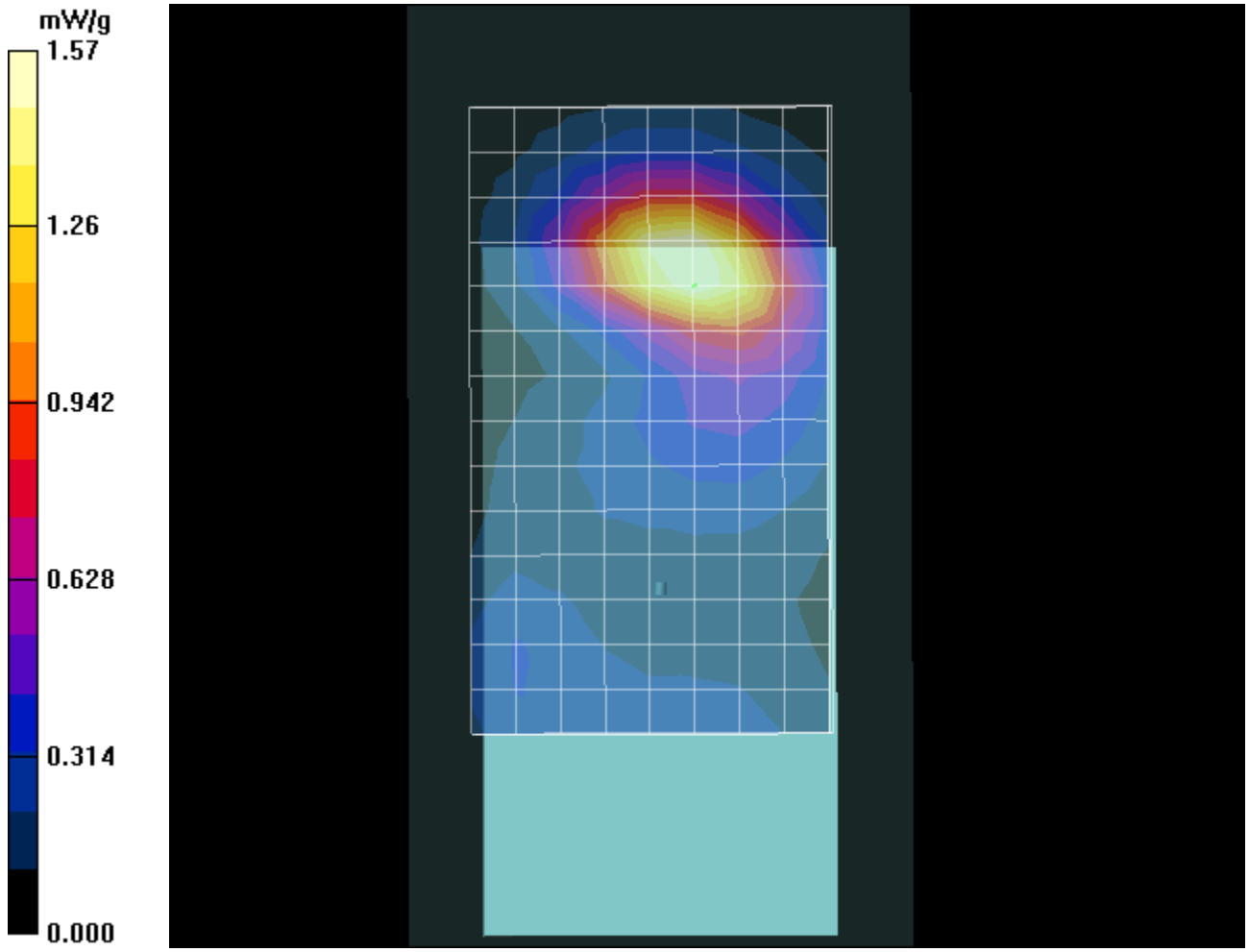
Serial: 860404000006695 & 860404000030018; FCC ID: IHDT56MB1
Procedure Notes: GSM 1900 and 802.11 1mbps Battery Model #: SNN5879A TEST Position: Back of DUT 10mm away;
Communication System: Wi-Fi 2450; Frequency: 2437 MHz; Communication System Channel Number: 6;
DutyCycle: 1:1
Medium: 2450 Glycol Body; Medium parameters used: f = 2450 MHz; σ = 2 mho/m; εr = 51.1; ρ = 1000 kg/m^3
Medium: Regular Glycol Body 1750/1880; Medium parameters used: f = 1800 MHz; σ = 1.57 mho/m; εr = 51; ρ =1000 kg/m^3

DASY4 Configuration:

- Probe: ES3DV3 - SN3180; ConvF(4.22, 4.22, 4.22); Calibrated: 5/20/2010
- Probe: ES3DV3 - SN3180; ConvF(4.71, 4.71, 4.71); Calibrated: 5/20/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 1/20/2011
- 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;

Multi Band Result:

Amy Twin Phone Template/MegaZoom Zoom Scan (<=3GHz) 2 (15x11x7)/Cube 0: Measurement grid:dx=8mm, dy=8mm, dz=5mm
SAR(1 g) = 1.53 mW/g; SAR(10 g) = 0.818 mW/g
Maximum value of SAR (measured) = 1.57 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	5.5	5.5	∞
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	