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Exhibit 11: SAR Test Report

FCC ID: AZ489FT5815

Date of Report:	24 September 2001
Laboratory:	Motorola Personal Communications Sector Product Safety Laboratory 2001 N. Division Room: AS228 Harvard, Illinois 60033
Party Responsible:	Steven Hauswirth Staff Engineer 847 523-0545
Statement of Compliance:	Motorola declares under its sole responsibility that portable transceiver FCC ID AZ489FT5815 to which this declaration relates, is in conformity with the appropriate RF exposure standards, recommendations and guidelines. It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

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The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Motorola encourages all feedback, both positive and negative, on this test report.

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1. Introduction

Motorola, Inc. has performed measurements of the maximum potential exposure to the user of Portable Radio FCC ID AZ489FT5815. The Specific Absorption Rate (SAR) of this product was measured. The portable radio was tested in accordance with the latest available test guidelines. The SAR values found for the portable radio (FCC ID AZ489FT5815) are below the maximum recommended levels of 1.6 W/kg.

2. Description of the Device Under Test

Antenna description

Type	Retractable	
Location	Right Side	
Dimensions	Length	85mm
	Width at Base	5mm
Configuration	Helix	

Device description

FCC ID Number	AZ489FT5815			
Serial number	919ABL5CTY			
Mode(s) of Operation	Two-way (Dispatch)	PSTN (Phone Mode)	Data-Mode	PSTN (Phone Mode)
Modulation Mode(s)	TDMA 16QAM	TDMA 16QAM	TDMA 64QAM	TDMA 16QAM
Maximum Output Power Setting	28.5dBm	28.5dBm	28.5dBm	28.5dBm
Duty Cycle	1/6	1/3	81/120	1/3
Transmitting Frequency Range(s)	806.0125-824.9875MHz	806.0125-824.9875MHz	806.0125-824.9875MHz	896.01875-901.9875MHz

3. Test Results

The Portable Radio FCC ID AZ489FT5815 has three modes of operation (Two-way, Phone and Data). The Two-way and Phone modes can both be used in a cheek/touch configuration. Since both modes have the same peak power and the phone mode has the higher of the two duty cycles (thus the higher time average power), only the phone mode will be tested for the cheek/touch configuration. The Two-way, Phone and Data modes can all be used in a body-worn configuration at 800MHz. Since all the modes have the same peak power and the data mode has the highest of all the duty cycles (thus the highest time average power), only the data mode will be tested for the 800MHz body-worn configuration. Since the data mode is not supported by the network at 900MHz, phone mode will be used for 900MHz body-worn configuration.

3.1 800MHz Phone Mode Test Results

The SAR results shown in tables 1 through 5 are maximum SAR values averaged over 1 gram of phantom tissue for Head Adjacent SAR measurements. Also shown are the measured conducted output powers.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The radio was then placed in the SAR measurement system with a fully charged battery.

Per Supplement C 01-01, the SAR was measured at the middle channel for each test configuration (left, right, extended and retracted) and if it was at least 2.0 dB lower than the SAR limit (after accounting for SAR drift), testing at the high and low channels was not performed. The tissue stimulant depth was verified to be 15.0cm ±0.5cm at the center of the ear.

The Portable Radio FCC ID AZ489FT5815 has four battery options:
SNN5705B - A 750mAH battery
SNN5706A - A 1050mAH battery
SNN5716A – A 1300mAH battery
SNN5717B – A 450mAH battery

The battery with the highest capacity is the SNN5716A. This battery was used to do most of the SAR testing. The channels that resulted in the highest SAR values for the antenna retracted and extended were repeated using the other batteries. The SAR results are shown in tables 2 through 4.

The Portable Radio FCC ID AZ489FT5815 also has optional face plates that change the style & color of the front of the radio (see attached picture in appendix 6). The face plate with the highest metal content (the silver face plate) was attached to the Portable Radio and was measured in the Head Adjacent configuration. The SAR results are shown in table #5.

A full data set output of two test conditions with the highest SAR values from the Dasy™ measurement system is included as appendix 2. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.3dBm	1.01	-0.30	1.01	-0.19			0.89	-0.50
	813.5125MHz	28.4dBm	0.98	-0.28	1.05	-0.47	0.87	-0.33	1.07	-0.36
	824.9875MHz	28.3dBm	**1.01**	**-0.37**	1.11	-0.36			1.06	-0.28

Table 1: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5716A attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.2dBm								
	813.5125MHz	28.4dBm								
	824.9875MHz	28.3dBm	1.06	-0.15	1.19	-0.08				

Table 2: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5706A attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.3dBm								
	813.5125MHz	28.3dBm								
	824.9875MHz	28.2dBm	1.04	-0.19	**1.24**	**-0.03**				

Table 3: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5705B attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.2dBm								
	813.5125MHz	28.3dBm								
	824.9875MHz	28.2dBm	1.07	-0.04	1.12	-0.05				

Table 4: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.3dBm								
	813.5125MHz	28.4dBm								
	824.9875MHz	28.3dBm	0.95	-0.34	1.07	-0.25	0.86	-0.19	0.95	-0.36

Table 5: SAR measurement results for the portable radio FCC ID AZ489FT5815 with silver faceplate and Battery SNN5716A attached, at highest possible output power. Measured against the head.

3.2 Push-to-Talk/Dispatch Mode Test Results

The SAR results shown in table #6 are maximum SAR values averaged over 1 gram of phantom tissue for the Push-to-Talk/Dispatch Mode SAR measurements. Also shown are the measured conducted output powers.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The radio was then placed in the SAR measurement system with a fully charged battery. The radio was placed with the front of the device positioned at 2.5 cm from a flat phantom, as per Supplement C 01-01.

A full data set output of two test conditions with the highest SAR values from the Dasy™ measurement system is included as appendix 3. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

			Two-Way (Push-to-Talk)			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Two-Way	**806.0125MHz**	28.3dBm	0.103	-0.08	**0.107**	**-0.22**
	813.5125MHz	28.3dBm	**0.103**	**-0.31**	0.104	-0.15
	824.9875MHz	28.3dBm	0.097	-0.10	0.103	-0.20

Table 6: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5716A attached, at highest possible output power. Radio positioned 2.5cm below the flat phantom.

3.3 Data Mode Test Results

The SAR results shown in tables 7 through 11 are maximum SAR values averaged over 1 gram of phantom tissue for Body-worn SAR measurements. Also shown are the measured conducted output powers. The issue stimulant depth was verified to be 15.0cm ±0.5cm. The flat phantom used is 41cm(long) x 23cm(wide) x 21.2cm(tall). The bottom of this flat phantom is 2mm thick. The body of this radio is 13.5cm(long) x 5cm(wide).

The Portable Radio FCC ID AZ489FT5815 has two body worn options:
NTN9804A – A leather carry case with open keypad
NTN9805A – A leather carry case with plastic window over keypad

Both leather carry cases have the same metal component (a metal clip in the belt clip) and dictate the same spacing to the body. Leather carry case NTN9804A was used for the body-worn testing. The portable radio was tested with a headset connected to the device for all body-worn SAR measurements.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The radio was then placed in the SAR measurement system with a fully charged battery.

The Portable Radio FCC ID AZ489FT5815 has four battery options:
SNN5705B - A 750mAH battery
SNN5706A - A 1050mAH battery
SNN5716A – A 1300mAH battery
SNN5717B – A 450mAH battery

The battery with the highest capacity is the SNN5716A. This battery was used to do most of the SAR testing. The channels that resulted in the highest SAR values for the antenna retracted and extended were repeated using the other batteries. The SAR results are shown in tables 8 through 10

The portable radio has a data port located at the bottom of the unit. Various cables can be used to attach the portable radio to USB ports, a dash mount holder, Palm Pilot PDAs or a keyboard for character entries. All these cables utilize the same type of connector to attach to the data port. Table 11 shows the SAR results when a data cable is attached to the bottom of the device. Just the channels that resulted in the highest SAR values for the body-worn configuration with the antenna retracted and extended were measured.

A full data set output of two test conditions with the highest SAR values from the Dasy™ measurement system is included as appendix 4. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Data Mode	**806.0125MHz**	28.2dBm	0.36	-0.20	0.26	-0.11
	813.5125MHz	28.4dBm	0.36	-0.24	0.27	-0.38
	824.9875MHz	28.4dBm	0.34	-0.39	0.27	-0.37

Table 7: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5716A attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Data Mode	806.0125MHz	28.2dBm				
	813.5125MHz	28.4dBm	0.39	-0.49	0.31	-0.10
	824.9875MHz	28.4dBm				

Table 8: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5706A attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Data Mode	806.0125MHz	27.9dBm				
	813.5125MHz	28.3dBm	0.46	-0.23	0.36	-0.4
	824.9875MHz	28.3dBm				

Table 9: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5705B attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Data Mode	806.0125MHz	28.3dBm				
	813.5125MHz	28.4dBm	**0.50**	**-0.49**	**0.41**	**-0.35**
	824.9875MHz	28.3dBm				

Table 10: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Data Mode	806.0125MHz	28.2dBm				
	813.5125MHz	28.4dBm	0.30	-0.49	0.20	-0.38
	824.9875MHz	28.4dBm				

Table 11: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B and a data cable attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

3.4 900MHz Phone Mode Head Adjacent Test Results

The SAR results shown in tables 12 through 16 are maximum SAR values averaged over 1 gram of phantom tissue for Head Adjacent SAR measurements. Also shown are the measured conducted output powers. The issue stimulant depth was verified to be 15.0cm ±0.5cm at the center of the ear.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The radio was then placed in the SAR measurement system with a fully charged battery.

Per Supplement C 01-01, the SAR was measured at the middle channel for each test configuration (left, right, extended and retracted) and if it was at least 2.0 dB lower than the SAR limit (after accounting for SAR drift), testing at the high and low channels was not performed.

The Portable Radio FCC ID AZ489FT5815 has four battery options:
SNN5705B - A 750mAH battery
SNN5706A - A 1050mAH battery
SNN5716A – A 1300mAH battery
SNN5717B – A 450mAH battery

The battery with the highest capacity is the SNN5716A. This battery was used to do most of the SAR testing. The channels that resulted in the highest SAR values for the antenna retracted and extended were repeated using the other batteries. The SAR results are shown in tables 13 through 15.

The Portable Radio FCC ID AZ489FT5815 also has optional face plates that change the style & color of the front of the radio (see attached picture in appendix 6). The face plate with the highest metal content (the silver face plate) was attached to the Portable Radio and was measured in the Head Adjacent configuration. The SAR results are shown in table #16.

A full data set output of two test conditions with the highest SAR values from the Dasy™ measurement system is included as appendix 5. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz PSTN	**896.01875MHz**	28.3dBm			**1.20**	**-0.27**			1.03	0.00
	898.49375MHz	28.3dBm	0.285	-0.23	1.13	-0.21	0.31	0.04	1.04	-0.35
	901.9875MHz	28.3dBm			1.10	-0.14			1.00	-0.21

Table 12: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5716A attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
			Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz PSTN	**896.01875MHz**	28.3dBm			1.13	-0.36				
	898.49375MHz	28.3dBm	**0.31**	**-0.1**						
	901.9875MHz	28.3dBm								

Table 13: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5706A attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
		Conducted Output Power (dBm)	Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)		SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz PSTN	896.01875MHz	28.3dBm			1.14	-0.26				
	898.49375MHz	28.3dBm	0.29	-0.17						
	901.9875MHz	28.3dBm								

Table 14: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5705A attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
		Conducted Output Power (dBm)	Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)		SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz PSTN	896.01875MHz	28.3dBm			1.11	-0.48				
	898.49375MHz	28.3dBm	0.28	-0.35						
	901.9875MHz	28.3dBm								

Table 15: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B attached, at highest possible output power. Measured against the head.

			Left Head				Right Head			
		Conducted Output Power (dBm)	Antenna Extended		Antenna Retracted		Antenna Extended		Antenna Retracted	
Description	*f* (MHz)		SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz PSTN	896.01875MHz	28.3dBm			0.99	-0.16			1.05	-0.20
	898.49375MHz	28.3dBm	0.28	-0.20			0.32	-0.18		
	901.9875MHz	28.3dBm								

Table 16: SAR measurement results for the portable radio FCC ID AZ489FT5815 with silver faceplate and Battery SNN5716A attached, at highest possible output power. Measured against the head.

3.5 Phone Mode Body Worn Test Results

The SAR results shown in table 17 and 18 are maximum SAR values averaged over 1 gram of phantom tissue for Body-worn SAR measurements using the Phone Mode. Also shown are the measured conducted output powers. The issue stimulant depth was verified to be 15.0cm ±0.5cm. The flat phantom used is 41cm(long) x 23cm(wide) x 21.2cm(tall). The bottom of this flat phantom is 2mm thick. The body of this radio is 13.5cm(long) x 5cm(wide).

The Portable Radio FCC ID AZ489FT5815 has two body worn options:
NTN9804A – A leather carry case with open keypad
NTN9805A – A leather carry case with plastic window over keypad

Both leather carry cases have the same metal component (a metal clip in the belt clip) and dictate the same spacing to the body. Leather carry case NTN9804A was used for the body-worn testing. The portable radio was tested with a headset connected to the device for all body-worn SAR measurements.

The test sample was operated in a test mode that allows control of the transmitter without the need to place actual phone calls. For the purposes of this test the unit is commanded to test mode and manually set to the proper channel, transmitter power level and transmit mode of operation. The radio was then placed in the SAR measurement system with a fully charged battery.

The Portable Radio FCC ID AZ489FT5815 has four battery options:
SNN5705B - A 750mAH battery
SNN5706A - A 1050mAH battery
SNN5716A – A 1300mAH battery
SNN5717B – A 450mAH battery

The battery used for these SAR measurements is the SNN5717B. This battery was found to yield the highest SAR in the data mode body-worn testing. A full data set output of two test conditions with the highest SAR values from the Dasy™ measurement system is included as appendix 4. The test conditions included are indicated as bold numbers in the following table. All other test conditions measured lower SAR values than those included. The 800MHz phone mode body-worn data is supplied only to determine the highest body-worn SAR number when using the phone mode for the required CTIA SAR disclosure box. The highest 800MHz body-worn SAR occurs when using data mode as shown in table 10.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
900MHz Phone Mode	**896.01875MHz**	28.3dBm	0.231	-0.26	0.256	-0.31
	898.49375MHz	28.4dBm	**0.263**	**-0.21**	**0.267**	**-0.35**
	901.9875MHz	28.3dBm	0.243	-0.25	0.249	-0.11

Table 17: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

			Body Worn			
			Antenna Extended		Antenna Retracted	
Description	*f* (MHz)	Conducted Output Power (dBm)	SAR, 1g (W/kg)	Drift (dB)	SAR, 1g (W/kg)	Drift (dB)
800MHz Phone Mode	**806.0125MHz**	28.2dBm				
	813.5125MHz	28.3dBm	0.207	-0.44	0.156	-0.11
	824.9875MHz	28.2dBm				

Table 18: SAR measurement results for the portable radio FCC ID AZ489FT5815 with Battery SNN5717B attached, at highest possible output power. Measured inside the leather carry case against the flat phantom.

4. Test Equipment Used

4.1 Dosimetric System Equipment Used

The Motorola Personal Communications Sector Product Safety Laboratory utilizes a Dosimetric Assessment System (Dasy3™) SAR measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The overall RSS uncertainty of the measurement system is ±12.0% (K=1) with an expanded measurement uncertainty of ±24%

Description	Serial Number	Cal Due Date
DASY3 DAE V1	SN411	1/15/2002
E-Field Probe ETDV6	SN1522	5/11/2002
Dipole Validation Kit, DV800V2	SN68	8/01/2003

4.2 Additional Equipment Used for System Accuracy Verification

Description	Serial Number	Cal Due Date
Signal Generator HP8648C	3847A04832	1/18/2003
Power Meter E4419B	GB39511088	1/19/2002
Power Sensor 8481A	US39210917	1/24/2002

5. 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 HP85070 Dielectric Probe Kit. These values are shown in the table below. The mass density, ρ, used by the dosimetric system is also given. Recommended limits for maximum permittivity, minimum conductivity and maximum mass density are also shown. These come from the Federal Communication Commission, OET Bulletin 65 Supplement C 01-01. The recommended dielectric parameters of the tissue simulant for the exact center frequency of the transmitting band of this portable radio were calculated using linear interpolation from the data points given in Supplement C 01-01. It is seen that the measured parameters are satisfactory for compliance testing. The issue stimulant depth was verified to be 15.0cm ±0.5cm at the center of the ear. The stimulant temperature was measured at the beginning and end of each day. The values measured at the start of each day are shown in the table below. The ambient temperature was also measured throughout the day. The ambient temperature measurements and the tissue stimulant temperature measurements always found the temperature ±2.0 °C from the temperature measured in the morning.

f (MHz)	Tissue type	Limits / Measured	Dielectric Parameters			Simulant Temperature °C
			e_r	s (S/m)	r (g/cm^3)	
813.51	**Head**	**Measured, 08/15/01**	41.9	0.9	1	22.3
		Recommended Limits	41.4	0.9	1	20-26
813.51	**Head**	**Measured, 08/17/01**	41.4	0.91	1	22.4
		Recommended Limits	41.4	0.9	1	20-26
813.51	**Head**	**Measured, 08/22/01**	41.3	0.9	1	22.6
		Recommended Limits	41.4	0.9	1	20-26
813.51	**Body**	**Measured, 08/21/01**	55.4	0.98	1	22.1
		Recommended Limits	55.1	0.97	1	20-26
900	**Head**	**Measured, 08/22/01**	40.5	0.96	1	22.6
		Recommended Limits	41.5	0.97	1	20-26
900	**Body**	**Measured, 09/18/01**	54.0	1.04	1	22.5
		Recommended Limits	55.0	1.05	1	20-26

6. System Accuracy Verification

A system accuracy verification of the DASY3 was performed using the measurement equipment listed in Section 4. The test was conducted on the same days as the measurement of the DUT. Recommended limits for maximum permittivity, minimum conductivity are shown in the table below. These come from the Federal Communication Commission, OET Bulletin 65 Supplement C 01-01. The obtained results from the system accuracy verification are displayed in the table below. The distributions of SAR compare well with those of the reference measurements (see Appendix 1).. The issue stimulant depth was verified to be 15.0cm ±0.5cm.

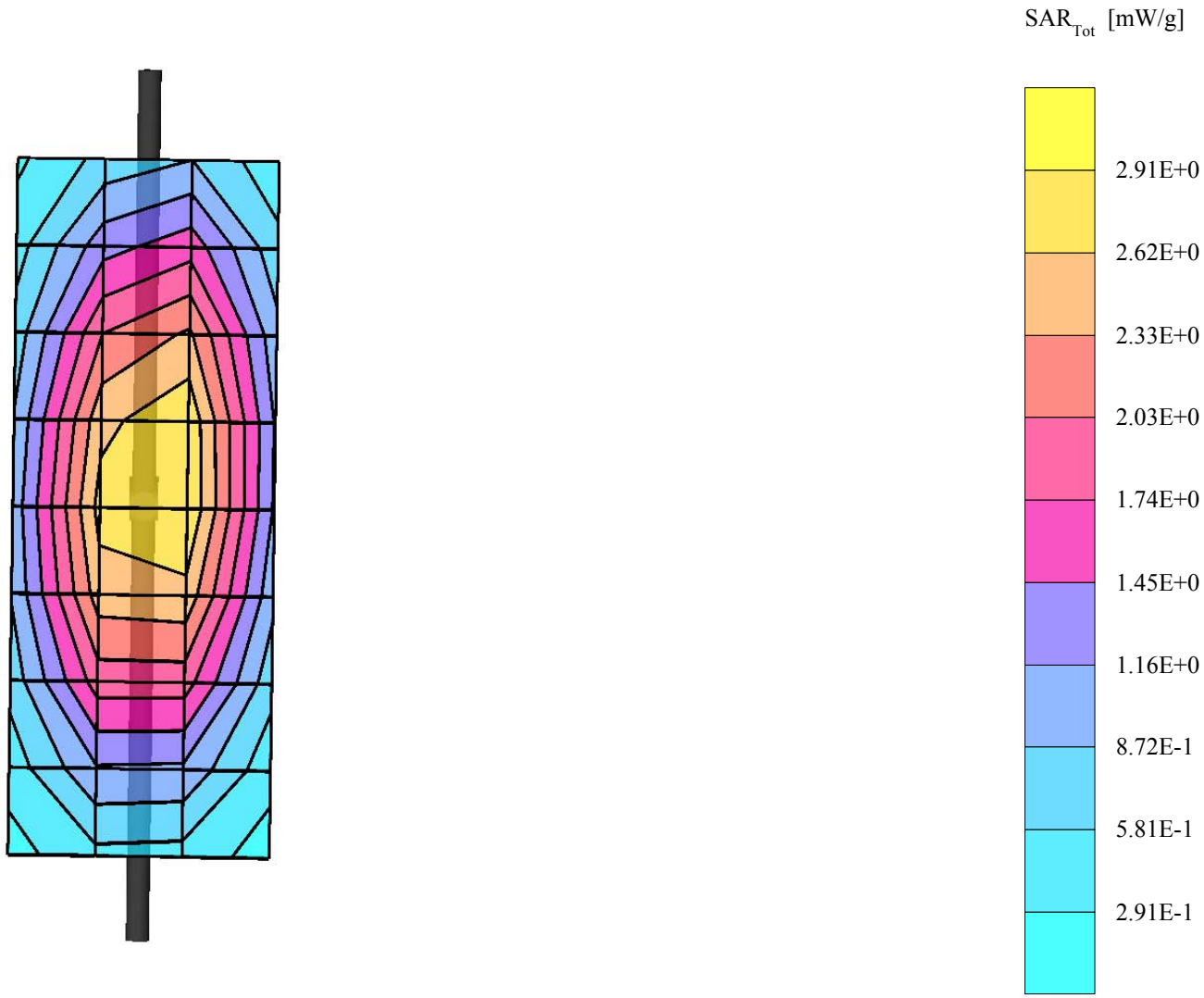
f (MHz)	Description	SAR (W/kg), 1gram	Dielectric Parameters e_r	s (S/m)	Temp (°C)
900	**Measured, 08/14/01**	11.39	40.3	0.96	22.4
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/15/01**	11.71	40.8	0.97	22.3
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/16/01**	11.71	40.8	0.97	22.4
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/17/01**	11.67	40.6	0.96	22.4
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/20/01**	11.77	40.2	0.96	22
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/21/01**	12.1	40.6	0.97	22.1
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/22/01**	12.02	40.5	0.97	22.6
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 08/23/01**	11.78	39.7	0.95	22.8
	Recommended Limits	11.88	41.5	0.97	N/A
900	**Measured, 09/18/01**	12.41	41.0	0.98	23.3
	Recommended Limits	11.88	41.5	0.97	N/A

Appendix 1

SAR distribution comparison for the system accuracy verification

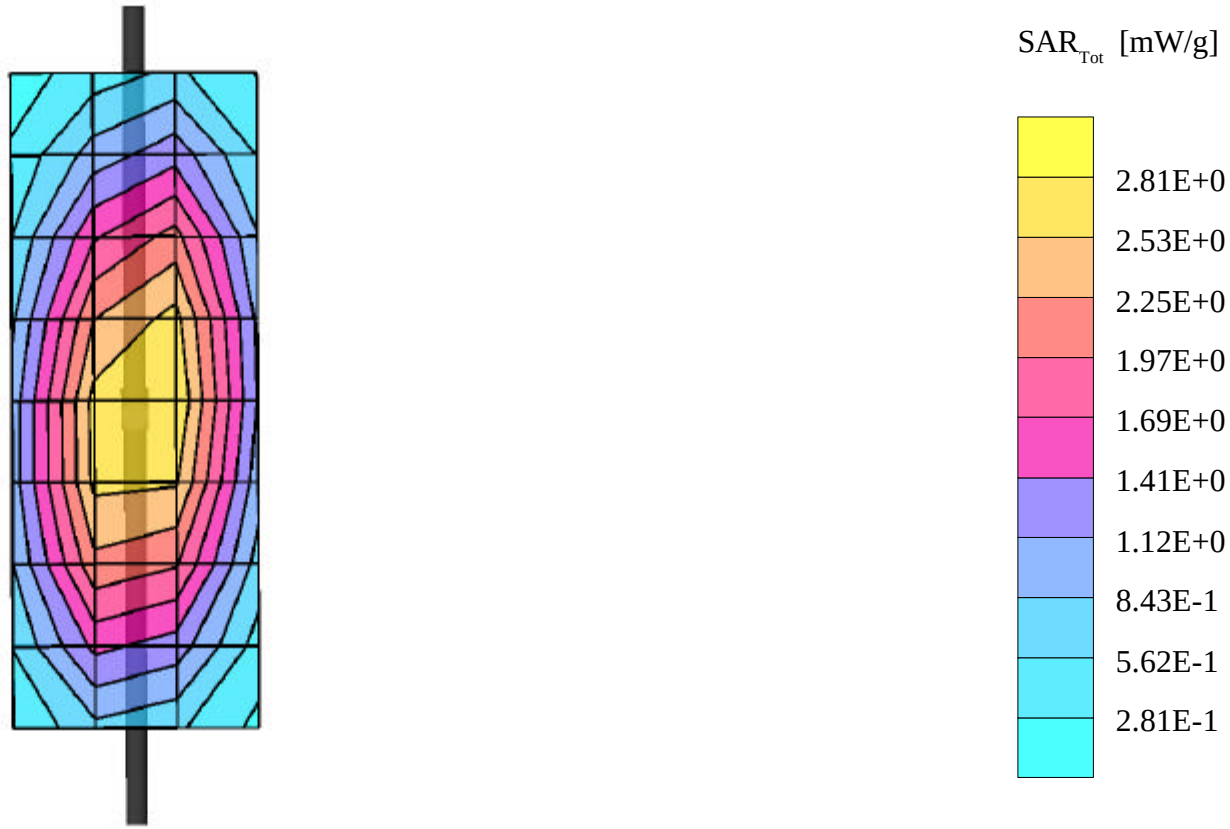
Dipole 900

900 MHz Dipole Validation / Dipole Sn# 68 / Forward Power = 253mW / Simulant Temp at time of measurement 23.3°C
Robot 1 Amy Twin Phantom 2.3; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.98 mho/m ε_r = 41.0 ρ = 1.00 g/cm^3
Cubes (2): Peak: 5.11 mW/g ± 0.14 dB, SAR (1g): 3.14 mW/g ± 0.13 dB, SAR (10g): 1.96 mW/g ± 0.12 dB, (Worst-case extrapolation)
Penetration depth: 11.3 (10.1, 12.8) [mm]
Powerdrift: -0.01 dB



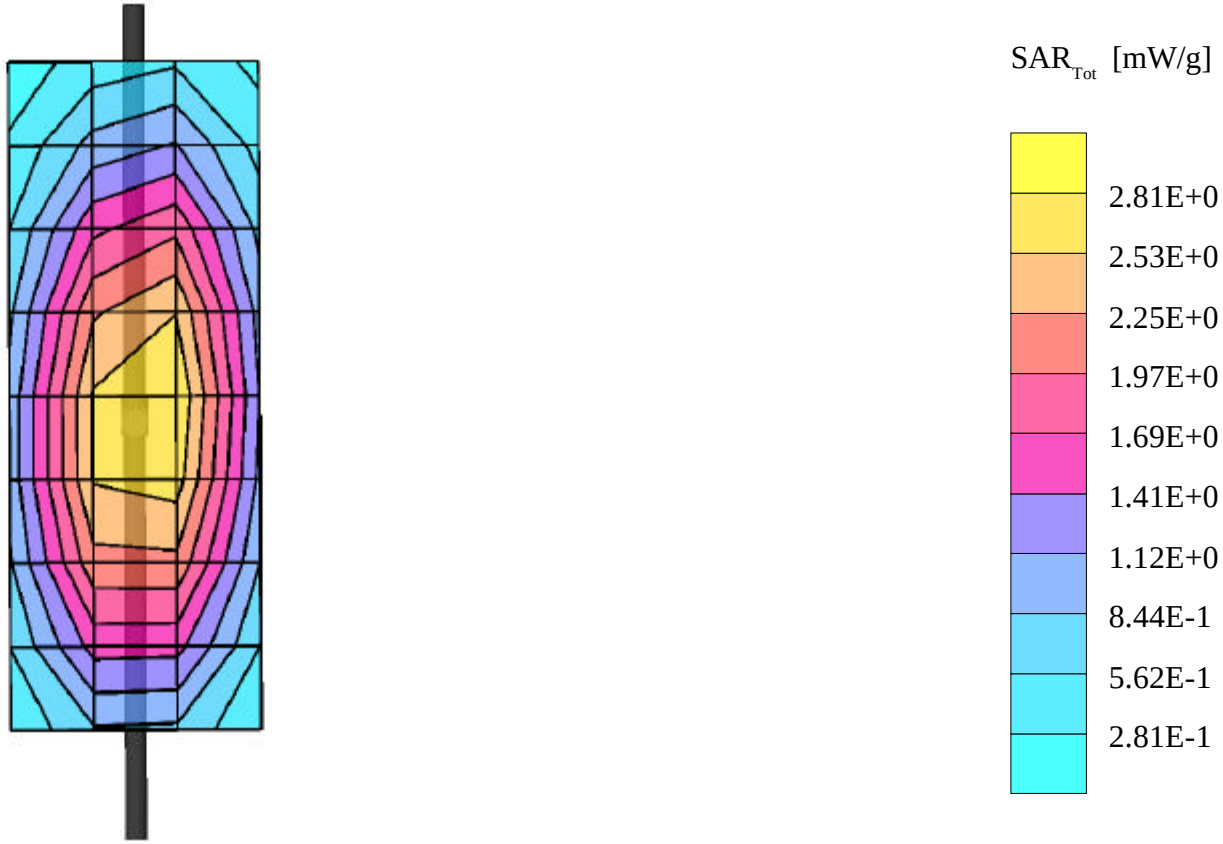
Dipole 900

900 MHz Dipole Validation / Dipole Sn#68 / Forward Power = 253mW / Simulant Temp at time of measurement 22.6°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.97 mho/m ε_r = 40.5 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.97 mW/g ± 0.18 dB, SAR (1g): 3.04 mW/g ± 0.17 dB, SAR (10g): 1.90 mW/g ± 0.16 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.1, 12.8) [mm]
Powerdrift: 0.04 dB



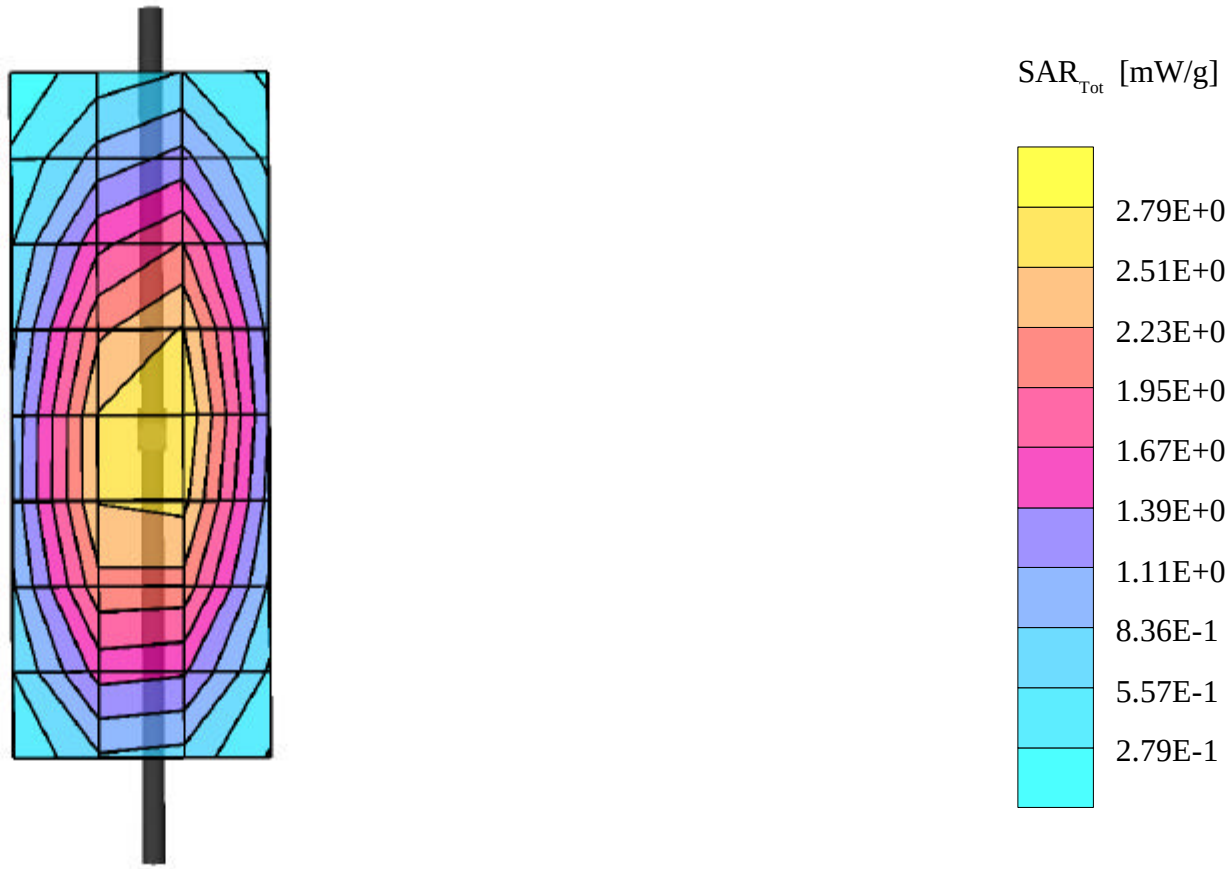
Dipole 900

900MHz Dipole Validation / Dipole Sn#68 / Forward Power = 252mW/ Simulant Temp at time of measurement 22.1°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.97 mho/m ε_r = 40.6 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.98 mW/g ± 0.22 dB, SAR (1g): 3.05 mW/g ± 0.22 dB, SAR (10g): 1.91 mW/g ± 0.22 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.0, 12.8) [mm]
Powerdrift: -0.00 dB



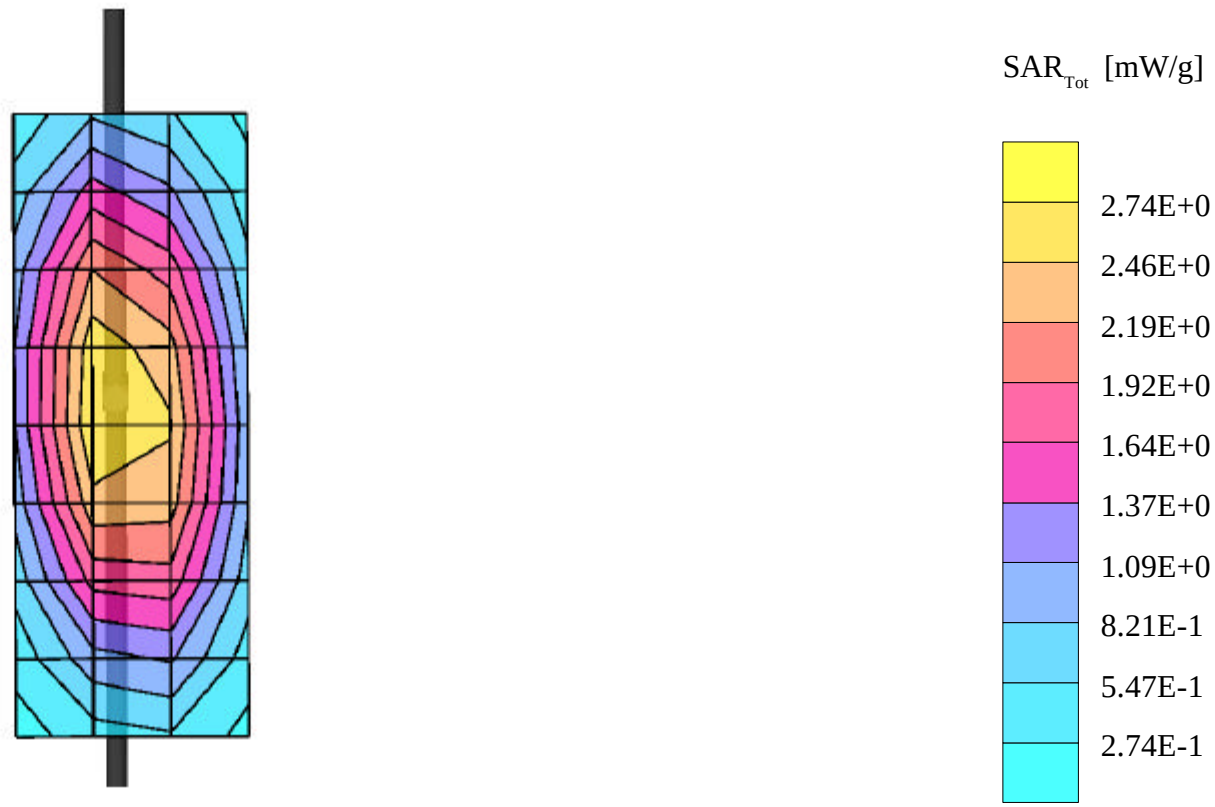
Dipole 900

90MHz Dipole Validation / Dipole Sn#68 / Forward Power = 254mW / Simulant Temp at time of measurement 22.0°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.96 mho/m ε_r = 40.2 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.89 mW/g ± 0.18 dB, SAR (1g): 2.99 mW/g ± 0.19 dB, SAR (10g): 1.86 mW/g ± 0.19 dB, (Worst-case extrapolation)
Penetration depth: 11.1 (9.9, 12.7) [mm]
Powerdrift: -0.03 dB



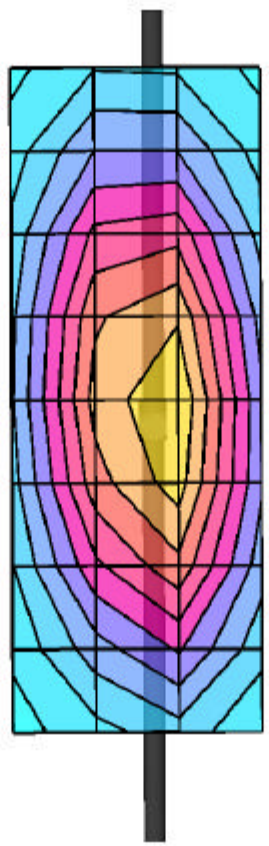
Dipole 900

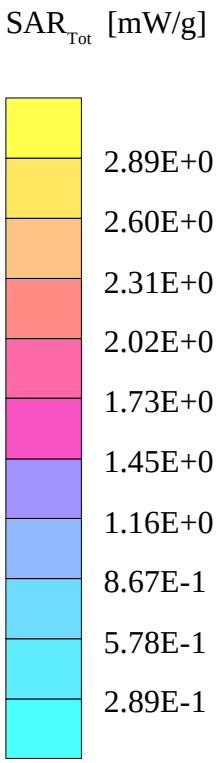
900 MHz Dipole Validation / Dipole Sn#68 / Forward Power = 252mW / Simulant Temp at time of measurement 22.4°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.96 mho/m ε_r = 40.6 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.79 mW/g ± 0.18 dB, SAR (1g): 2.94 mW/g ± 0.18 dB, SAR (10g): 1.84 mW/g ± 0.17 dB, (Worst-case extrapolation)
Penetration depth: 11.4 (10.2, 13.0) [mm]
Powerdrift: 0.01 dB



Dipole 900

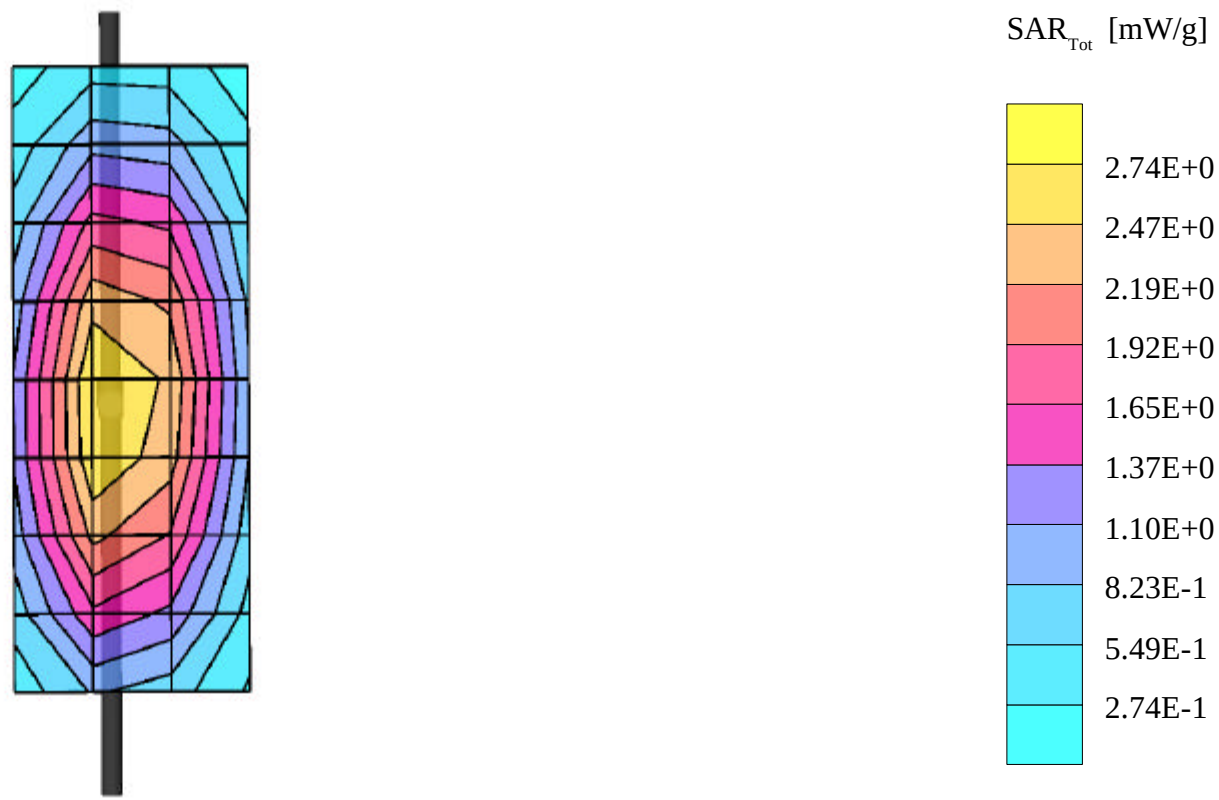
900 MHz Dipole Validation / Dipole Sn#68 / Forward Power = 252mW / Simulant Temp at time of measurement 22.4°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.97 mho/m ε_r = 40.8 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.78 mW/g ± 0.13 dB, SAR (1g): 2.95 mW/g ± 0.13 dB, SAR (10g): 1.85 mW/g ± 0.12 dB, (Worst-case extrapolation)
Penetration depth: 11.4 (10.3, 13.0) [mm]
Powerdrift: -0.02 dB





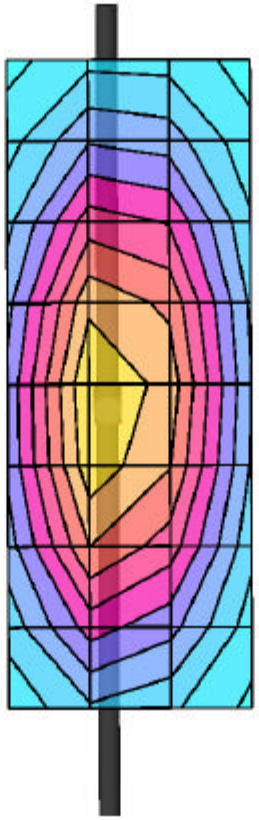
Dipole 900

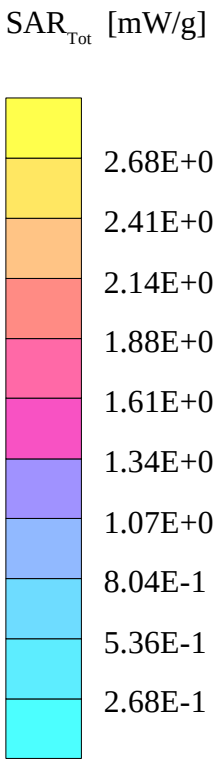
900MHz Dipole Validation / Dipole Sn# 68 / Forward Power = 251mW / Simulant Temp at time of measurement 22.3°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.97 mho/m ε_r = 40.8 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.79 mW/g ± 0.18 dB, SAR (1g): 2.94 mW/g ± 0.19 dB, SAR (10g): 1.84 mW/g ± 0.19 dB, (Worst-case extrapolation)
Penetration depth: 11.3 (10.1, 12.9) [mm]
Powerdrift: 0.01 dB



Dipole 900

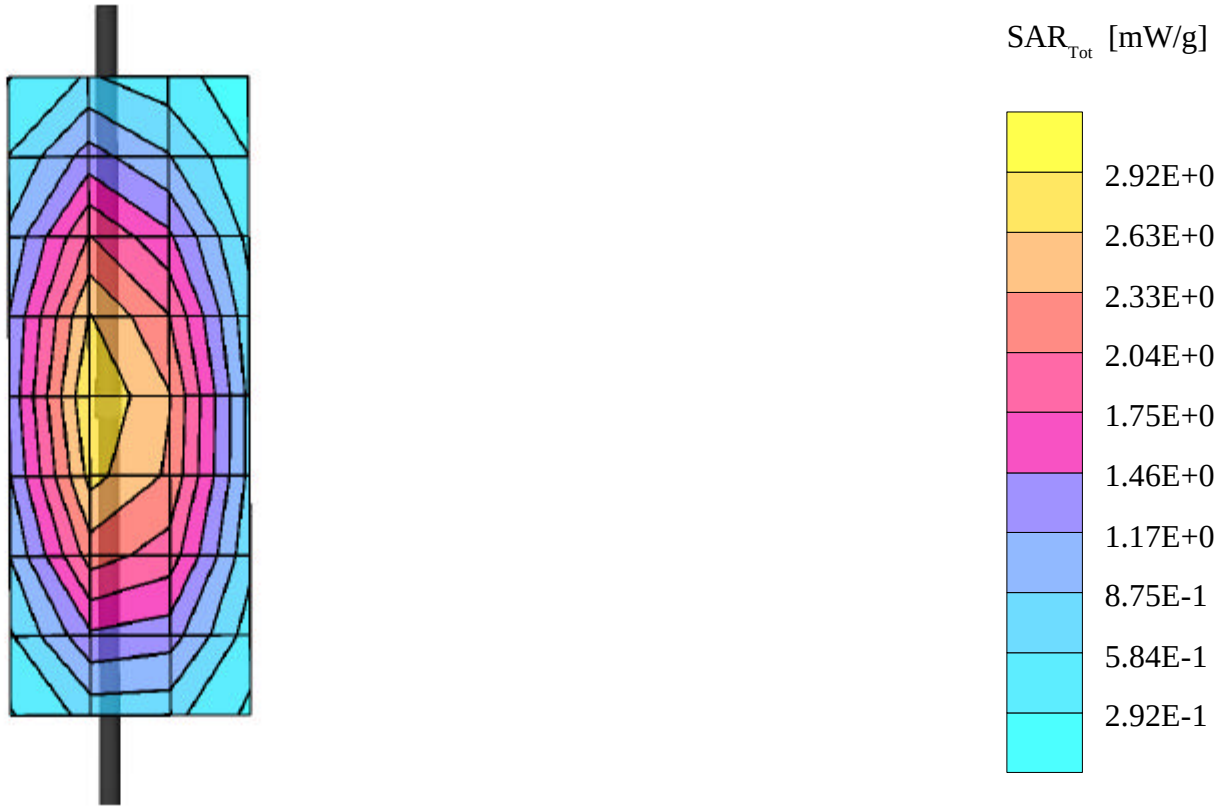
900MHz Dipole Validation / Dipole Sn#68 / Forward Power = 252mW / Simulant Temp at time of measurement =22.4°C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.96 mho/m ε_r = 40.3 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.61 mW/g ± 0.28 dB, SAR (1g): 2.87 mW/g ± 0.24 dB, SAR (10g): 1.81 mW/g ± 0.23 dB, (Worst-case extrapolation)
Penetration depth: 11.6 (10.6, 13.0) [mm]
Powerdrift: 0.05 dB





Dipole 900

900MHz Dipole Validation / Dipole Sn#68 / Forward Power = 253mW / Simulant Temp at time of measurement 22.8C
Robot 1 Amy Twin ; Section 1
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 1.0; Head 900 MHz: σ = 0.95 mho/m ε_r = 39.7 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.88 mW/g ± 0.19 dB, SAR (1g): 2.98 mW/g ± 0.17 dB, SAR (10g): 1.86 mW/g ± 0.17 dB, (Worst-case extrapolation)
Penetration depth: 11.3 (10.1, 12.9) [mm]
Powerdrift: 0.08 dB

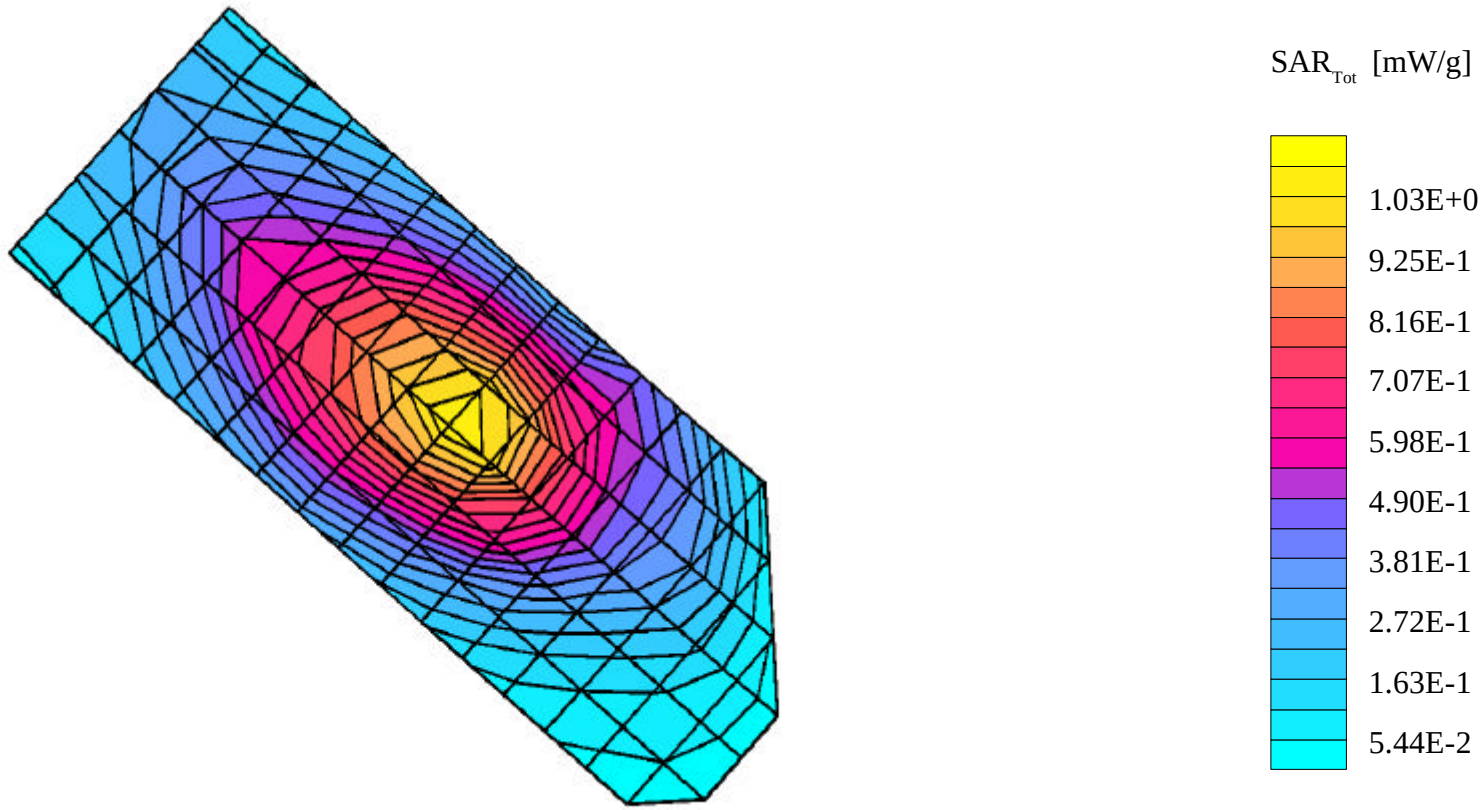


Appendix 2

SAR distribution plots for 800MHz Phantom Head Adjacent Use

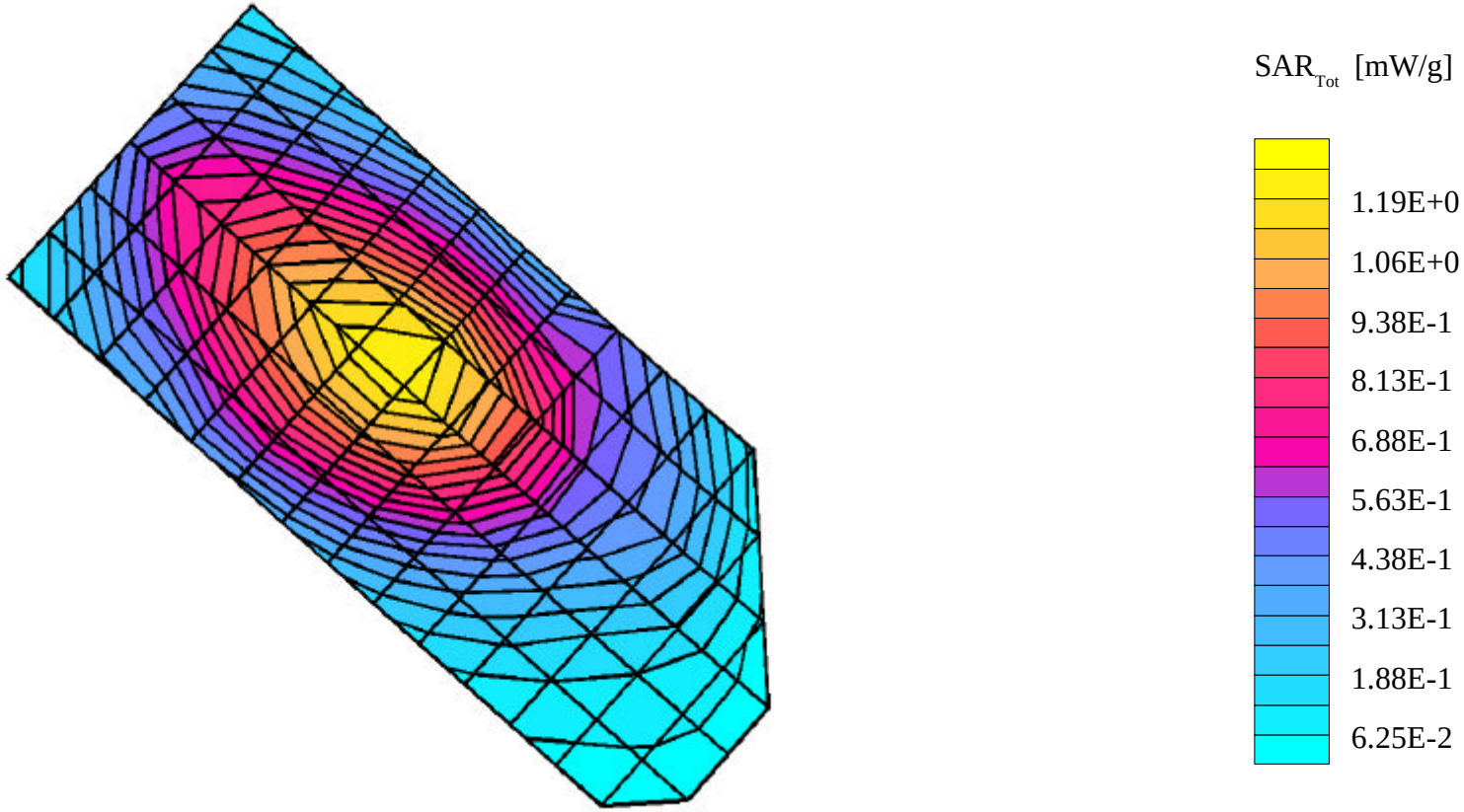
s/n 919ABL5CTY

Ch# F6 / Antenna Position:Extended / Type of Modulation:800MHz Phone Mode / Battery Model #:SNN5716A
Robot 1 Left Head (Barney) Phantom; Left Head Section; Position: (80°,180°); Frequency: 825 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.40,6.40,6.40); Crest factor: 3.0; Head 835 MHz: σ = 0.90 mho/m ε_r = 41.9 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.01 mW/g, SAR (10g): 0.692 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 16.2 (15.0, 17.7) [mm]
Powerdrift: -0.37 dB



s/n 919ABL5CTY

Ch# F6 / Antenna Position:Retracted / Type of Modulation:800MHz Phone Mode / Battery Model #:SNN5705B
Robot 1 Left Head (Barney) Phantom; Left Head Section; Position: (80°,180°); Frequency: 825 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.40,6.40,6.40); Crest factor: 3.0; Head 835 MHz: σ = 0.90 mho/m ε_r = 41.3 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.24 mW/g, SAR (10g): 0.856 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 16.2 (13.9, 18.8) [mm]
Powerdrift: -0.03 dB



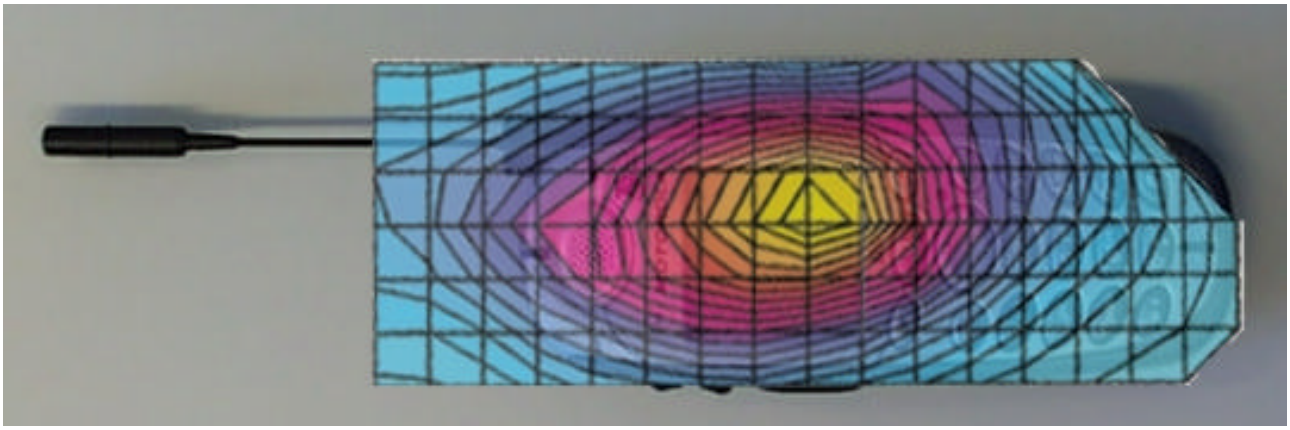


Figure 1. Typical 800MHz Phone Mode Antenna Extended Head Adjacent
Contour Plot Overlaid on Face of the Phone

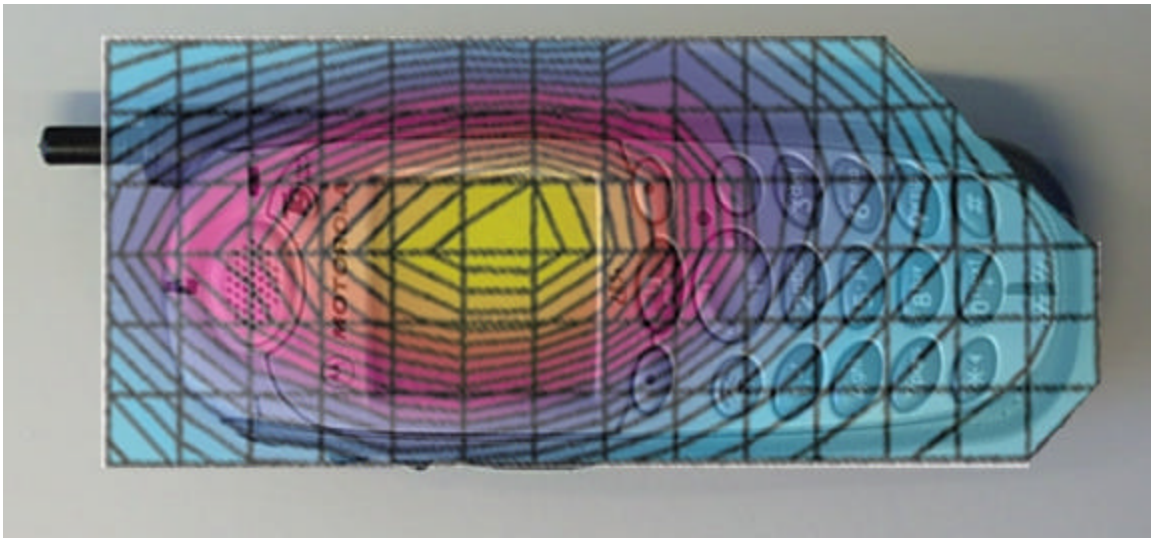


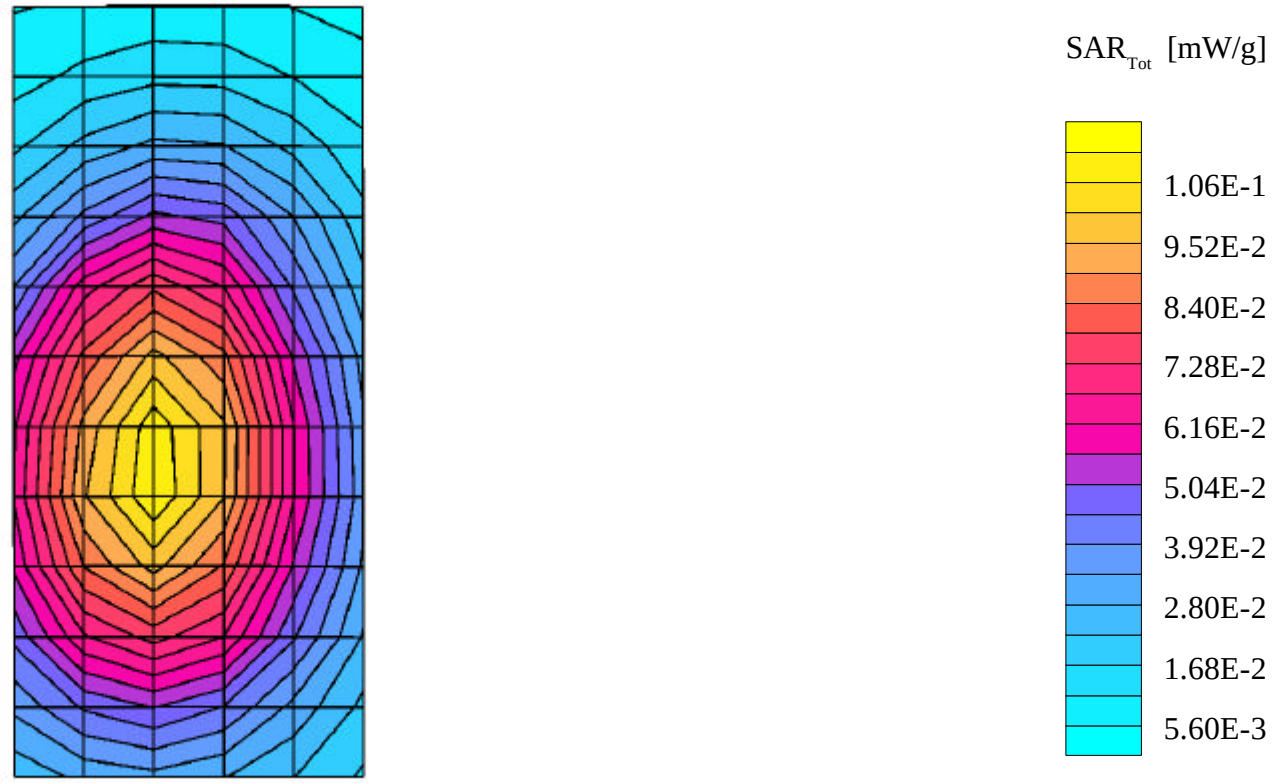
Figure 2. Typical 800MHz Phone Mode Antenna Retracted Head Adjacent
Contour Plot Overlaid on Face of the Phone

Appendix 3

SAR distribution plots for Two-Way (Push-to-Talk) Mode

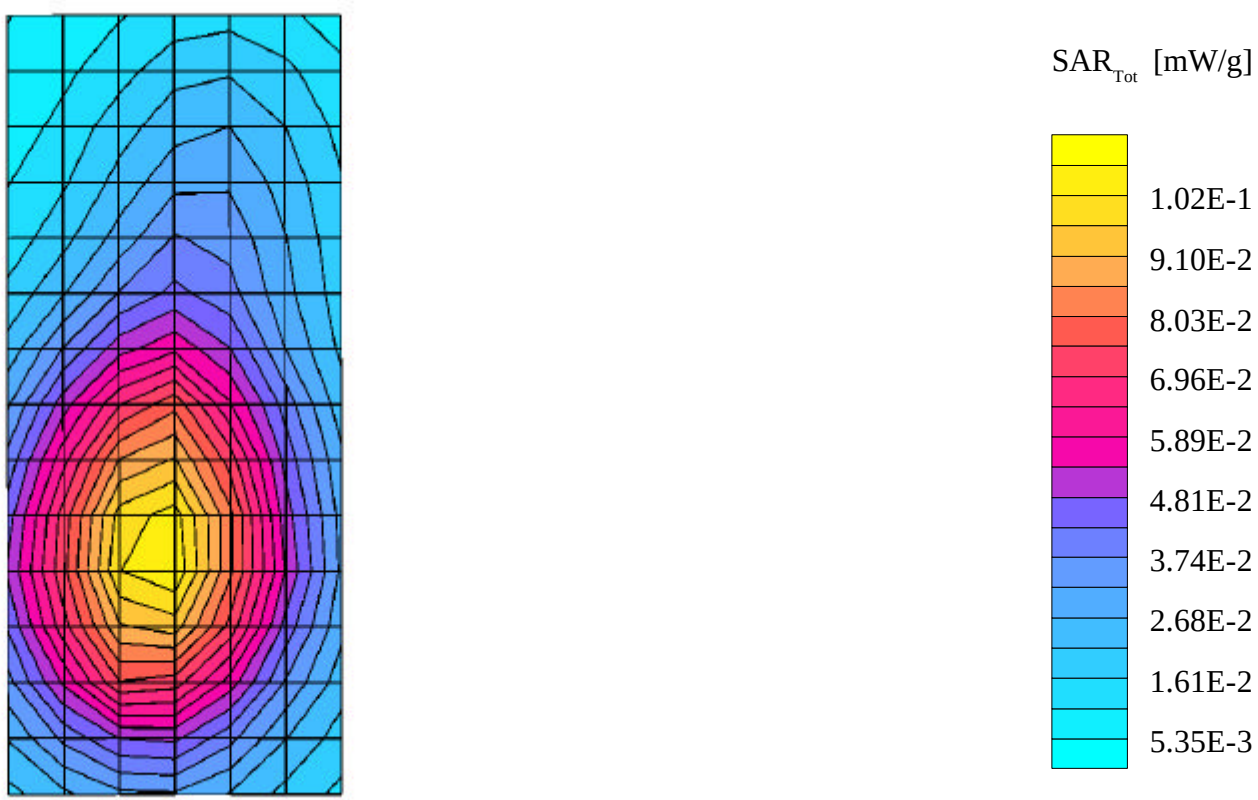
s/n 919ABL5CTY

Ch# F1 / Antenna Position: Retracted / Type of Modulation: Dispatch Mode / Battery Model #: SNN5716A
Robot 1 Amy Twin Phantom; Section 1 Section; Position: (0°,0°); Frequency: 806 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.40,6.40,6.40); Crest factor: 6.0; Head 835 MHz: σ = 0.91 mho/m ε_r = 41.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.107 mW/g, SAR (10g): 0.0770 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.7 (14.7, 18.6) [mm]
Powerdrift: -0.22 dB



s/n 919ABL5CTY

Ch# F3 / Antenna Position: Extended / Type of Modulation: Dispatch Mode / Battery Model #: SNN5716A
Robot 1 Amy Twin Phantom; Section 1 Section; Position: (0°,0°); Frequency: 814 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.40,6.40,6.40); Crest factor: 6.0; Head 835 MHz: σ = 0.91 mho/m ε_r = 41.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.103 mW/g, SAR (10g): 0.0746 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.6 (14.8, 18.5) [mm]
Powerdrift: -0.31 dB



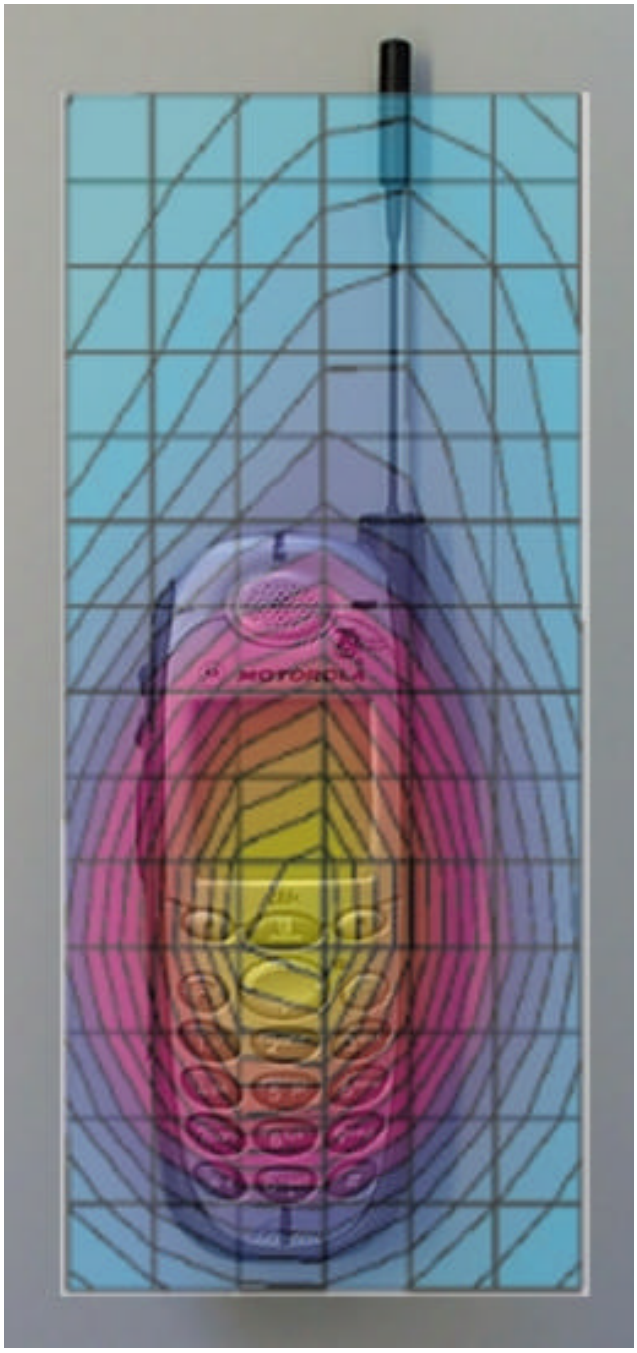


Figure 3. Typical Push-to-Talk Mode with the Antenna Extended Contour Plot Overlaid on Face of the Phone

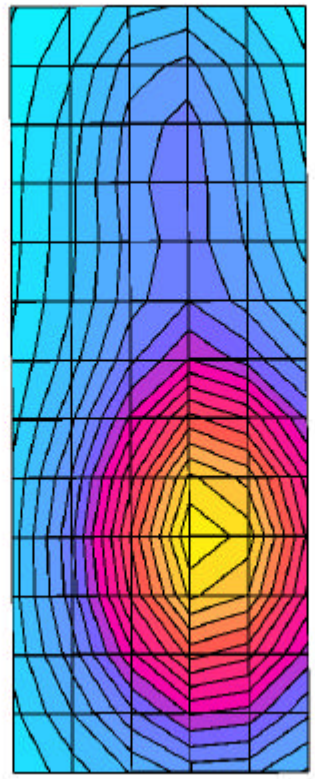
Figure 4. Typical Push-to-Talk Mode with the Antenna Retracted Plot Overlaid on Face of the Phone

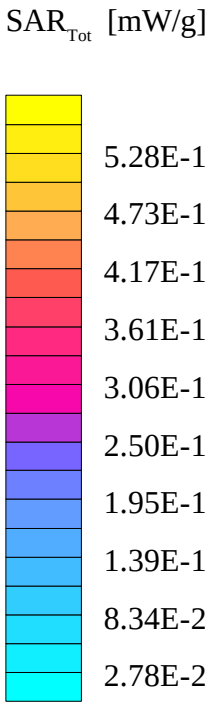
Appendix 4

SAR distribution plots for 800MHz Body Worn Configuration

s/n 919ABL5CTY

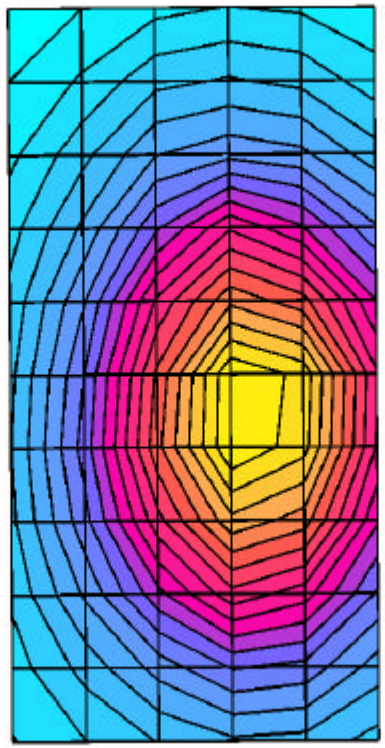
Ch# F3 / Antenna Position: Extended / Type of Modulation:Datamode
Battery Model #: SNN5717B / Carry Case: NTN9804A
Robot 1 Amy Twin Phantom; Section2 Section; Position: (0°,0°); Frequency: 814 MHz
Probe: ET3DV6 - SN1522 BODY - iDEN (Sugarwater); ConvF(6.20,6.20,6.20); Crest factor: 1.5; Body 835 MHz (iDEN): σ = 0.98 mho/m ε_r = 55.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.502 mW/g, SAR (10g): 0.358 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 17.0 (13.6, 20.9) [mm]
Powerdrift: -0.49 dB

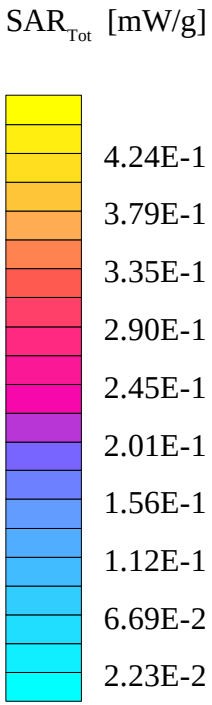




s/n 919ABL5CTY

Ch# F3 / Antenna Position: Retracted / Type of Modulation:Datamode
Battery Model #: SNN5717B / Carry case: NTN9804A
Robot 1 Amy Twin Phantom; Section2 Section; Position: (0°,0°); Frequency: 814 MHz
Probe: ET3DV6 - SN1522 BODY - iDEN (Sugarwater); ConvF(6.20,6.20,6.20); Crest factor: 1.5; Body 835 MHz (iDEN): σ = 0.98 mho/m ε_r = 55.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.406 mW/g, SAR (10g): 0.291 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 16.8 (15.5, 18.3) [mm]
Powerdrift: -0.35 dB





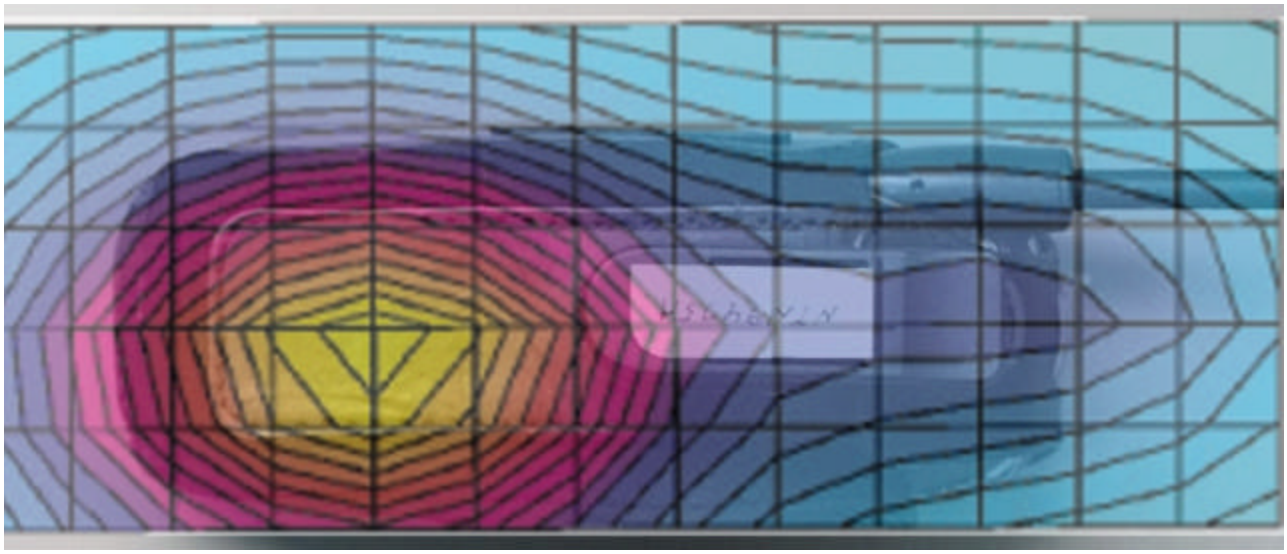


Figure 5. Typical Antenna Extended Body Worn Contour Overlaid on the Back of the Phone with Leather carry case

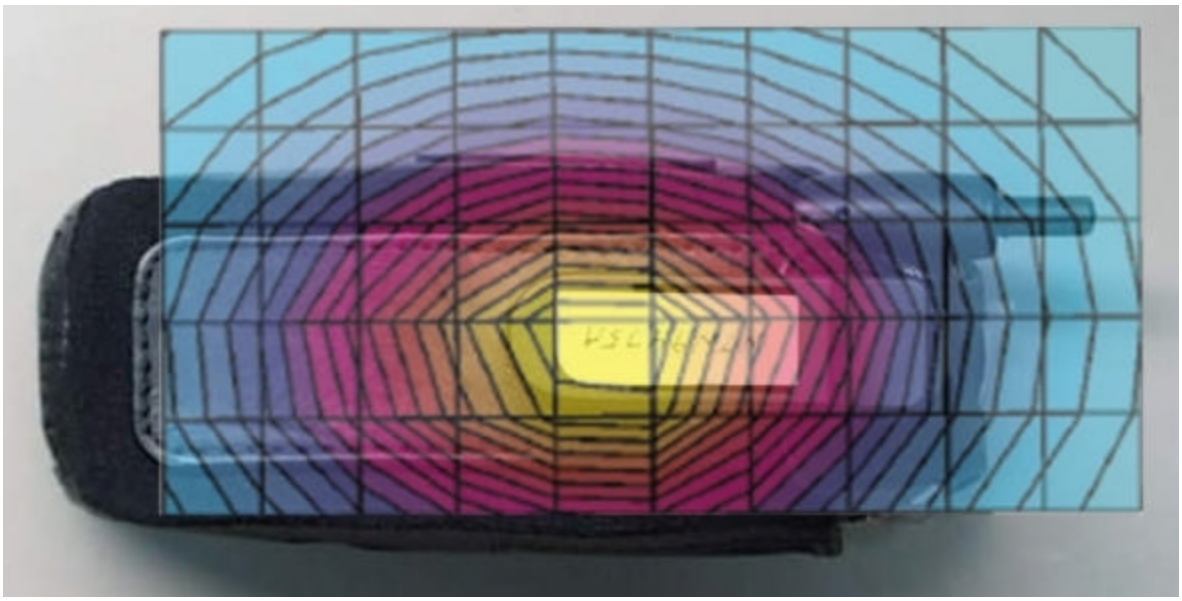


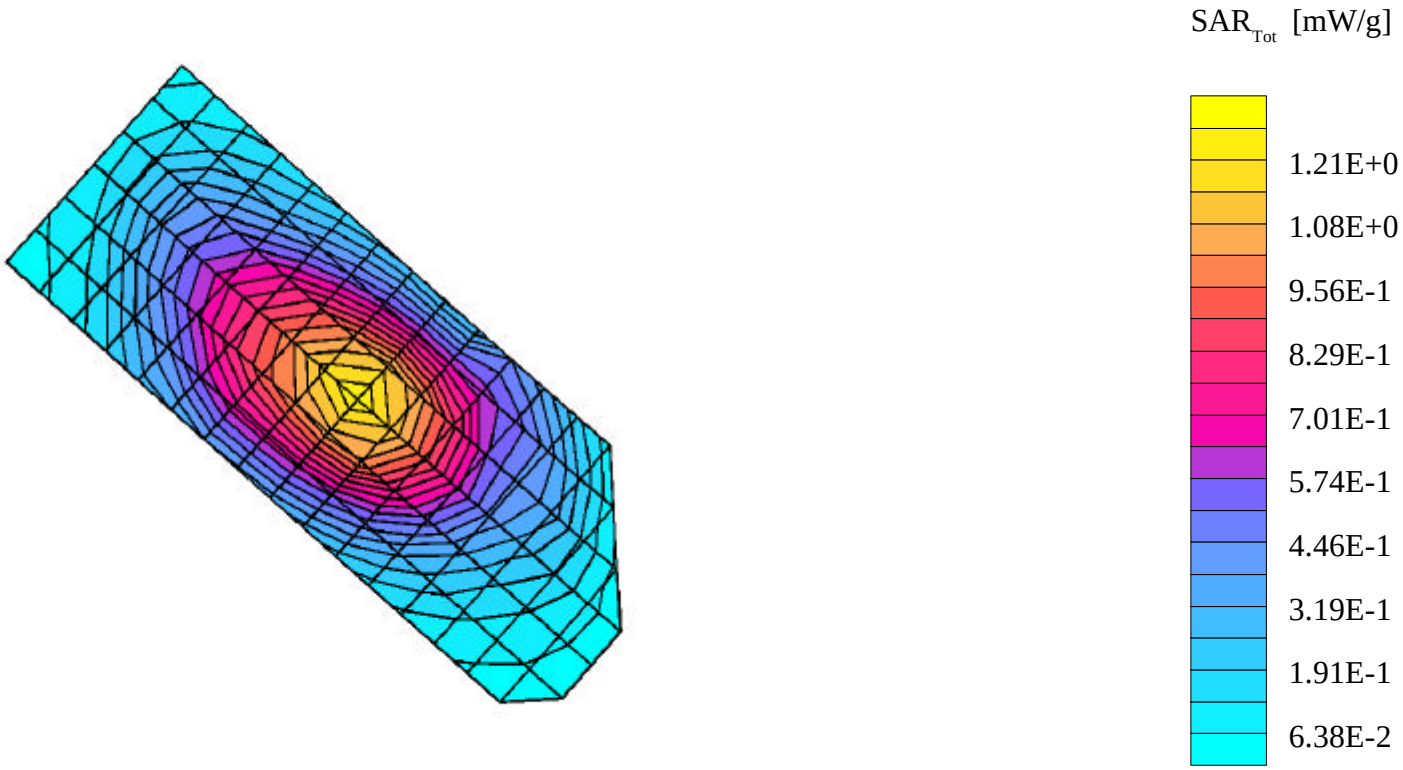
Figure 6. Typical Antenna Extended Body Worn Contour Overlaid on the Back of the Phone with Leather carry case

Appendix 5

SAR distribution plots for 900MHz Phantom Head Adjacent Use

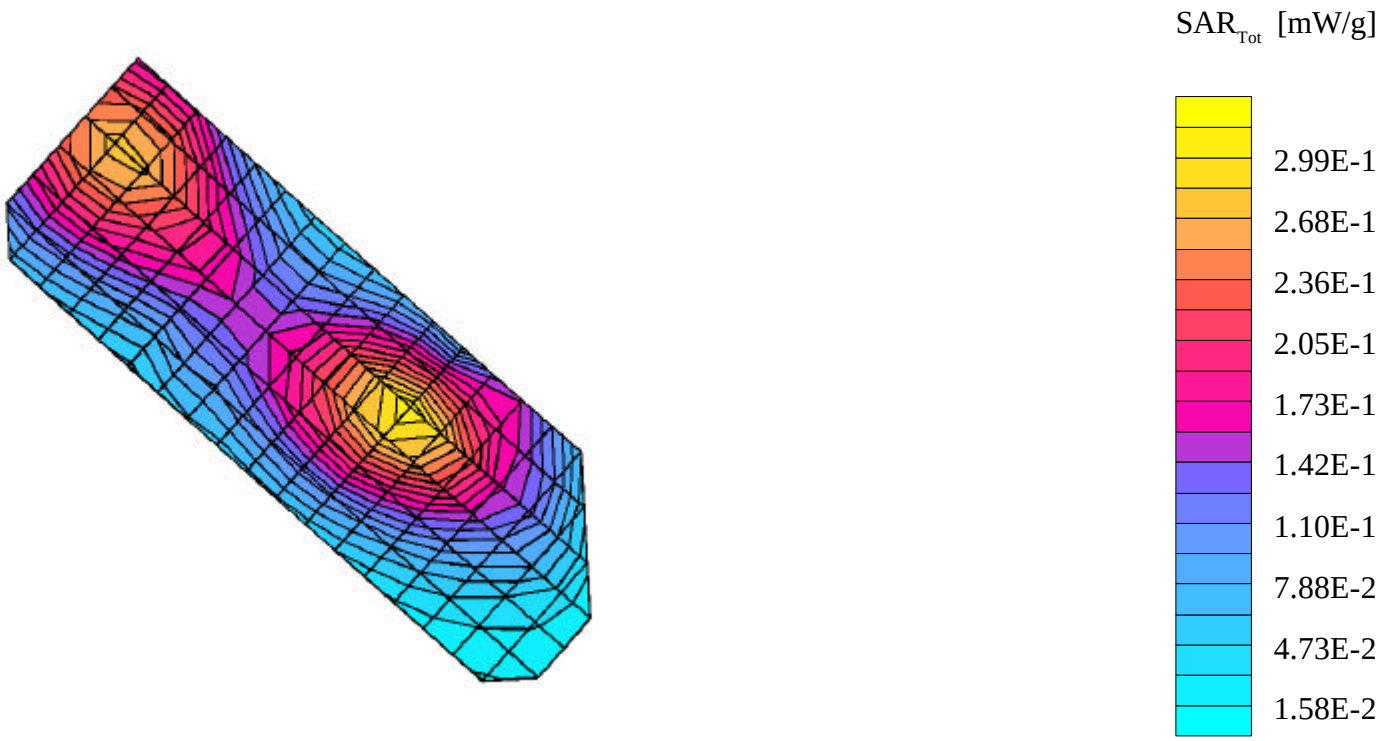
s/n 919ABL5CTY

Ch# F7 / Antenna Position:Retracted / Type of Modulation:900MHz Phone Mode / Battery Model #:SNN5716A
Robot 1 Left Head (Barney) Phantom; Left Head Section; Position: (80°,180°); Frequency: 896 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 3.0; Head 900 MHz: σ = 0.97 mho/m ε_r = 41.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 1.20 mW/g, SAR (10g): 0.816 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 15.4 (13.9, 17.1) [mm]
Powerdrift: -0.27 dB



s/n 919ABL5CTY

Ch# F6 / Antenna Position: EXTENDED / Type of Modulation: 900MHz Phone Mode
Battery Model #: SNN5706A
Robot 1 Left Head (Barney) Phantom; Left Head Section; Position: (80°,180°); Frequency: 898 MHz
Probe: ET3DV6 - SN1522 HEAD - iDEN (Sugar water); ConvF(6.31,6.31,6.31); Crest factor: 3.0; Head 900 MHz: σ = 0.96 mho/m ε_r = 42.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.311 mW/g, SAR (10g): 0206 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0
Penetration depth: 15.2 (13.5, 17.0) [mm]
Powerdrift: -0.10 dB



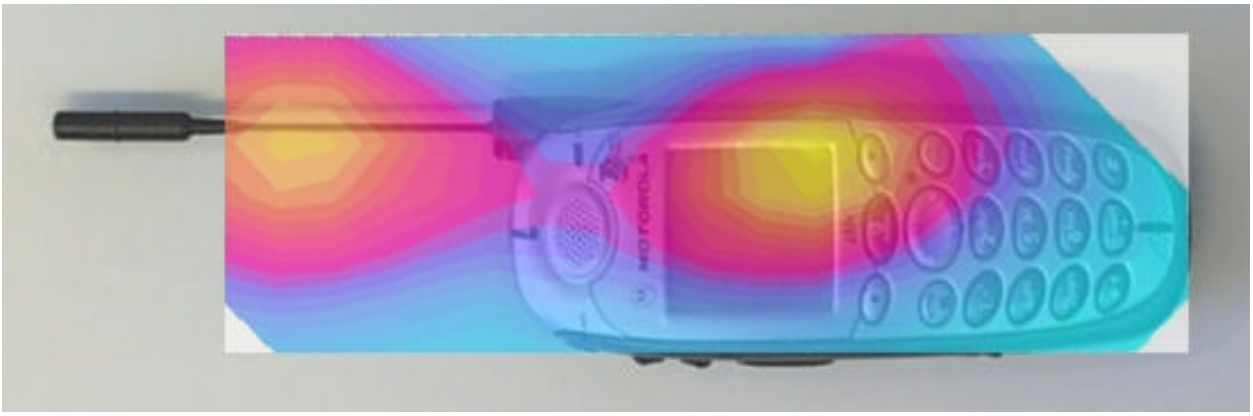


Figure 7. Typical 900MHz Phone Mode Antenna Extended Head Adjacent Contour Plot Overlaid on Face of the Phone

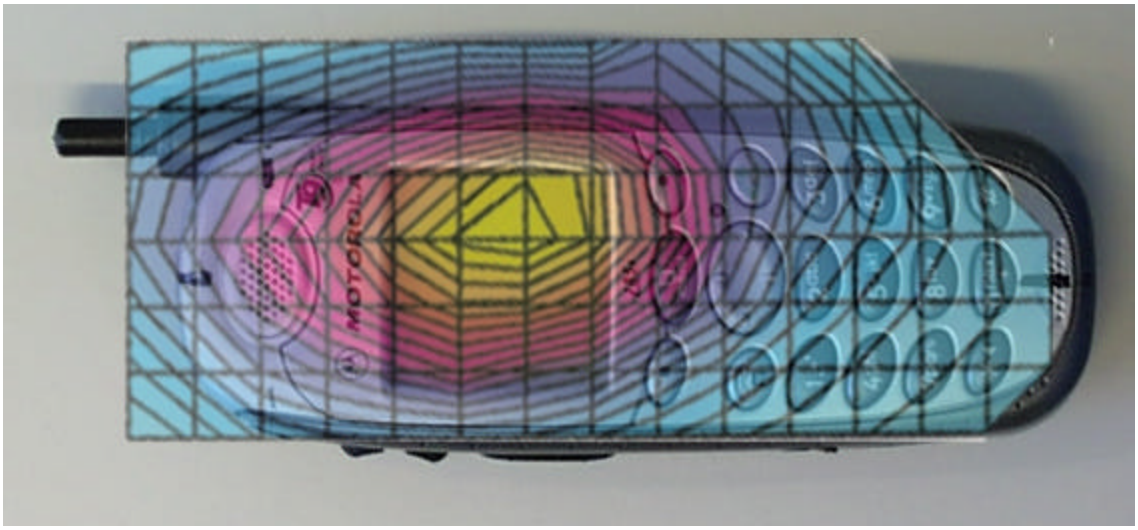


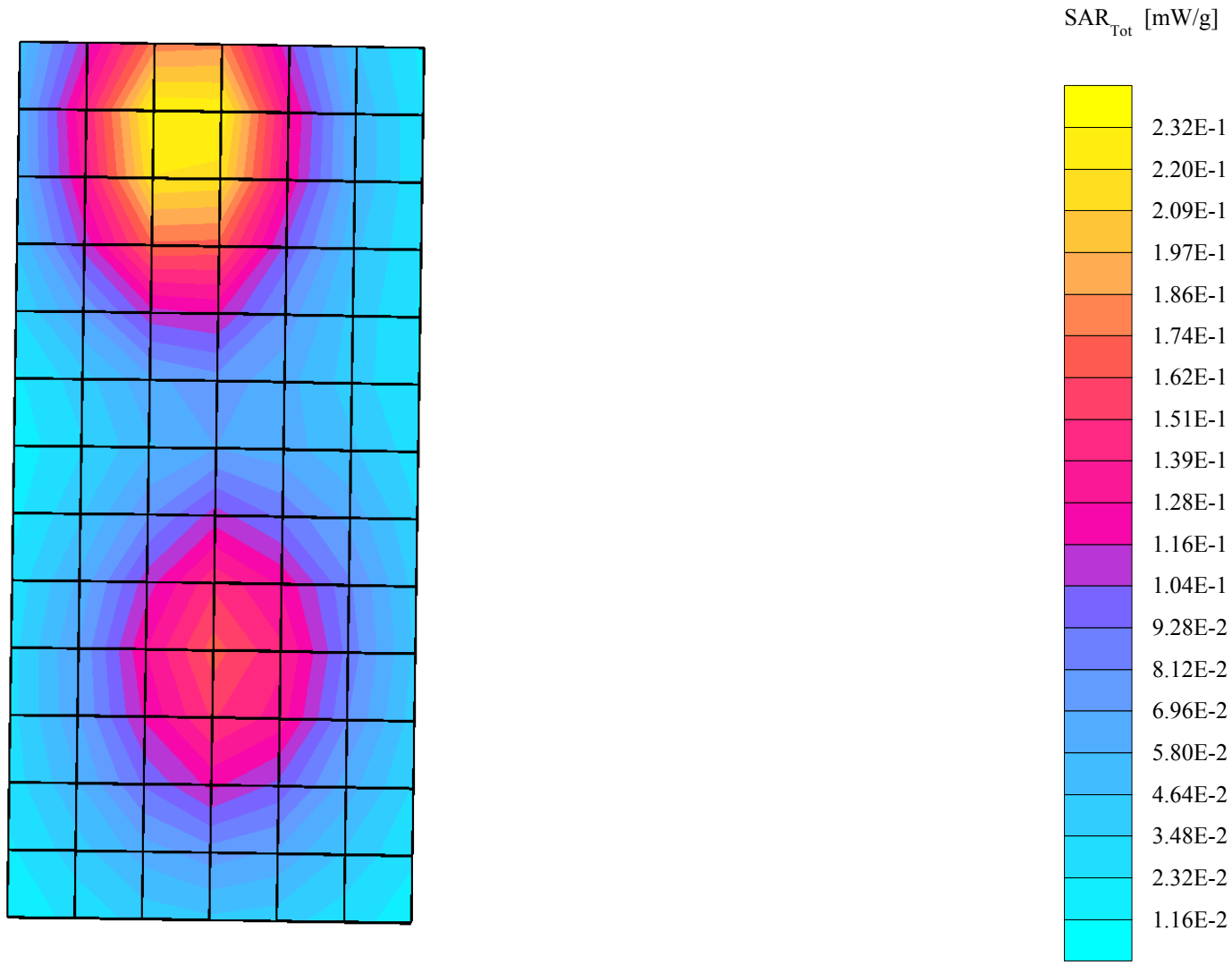
Figure 8. Typical 900MHz Phone Mode Antenna Retracted Head Adjacent Contour Plot Overlaid on Face of the Phone

Appendix 6

SAR distribution plots for 900MHz Body Worn Configuration

s/n 919ABL5CTY

Ch# F7 / Antenna Position:Extended / Type of Modulation: 900 MHz Phone Mode / Battery Model #: SNN5717A
Robot 1 Amy Twin Phantom 2.3 Phantom; Section2 Section; Position: (0°,0°); Frequency: 896 MHz
Probe: ET3DV6 - SN1522 BODY - iDEN (Sugarwater); ConvF(6.09,6.09,6.09); Crest factor: 3.0; Body 900 MHz (iDEN): σ = 1.04 mho/m ε_r = 54.0 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.231 mW/g, SAR (10g): 0.157 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Penetration depth: 14.2 (12.8, 16.0) [mm]
Powerdrift: -0.26 dB



s/n 919ABL5CTY

Ch# F7 / Antenna Position:Retracted / Type of Modulation:900 MHz Phone Mode / Battery Model #: SNN5717A

Robot 1 Amy Twin Phantom 2.3 Phantom; Section2 Section; Position: (0°,0°); Frequency: 896 MHz

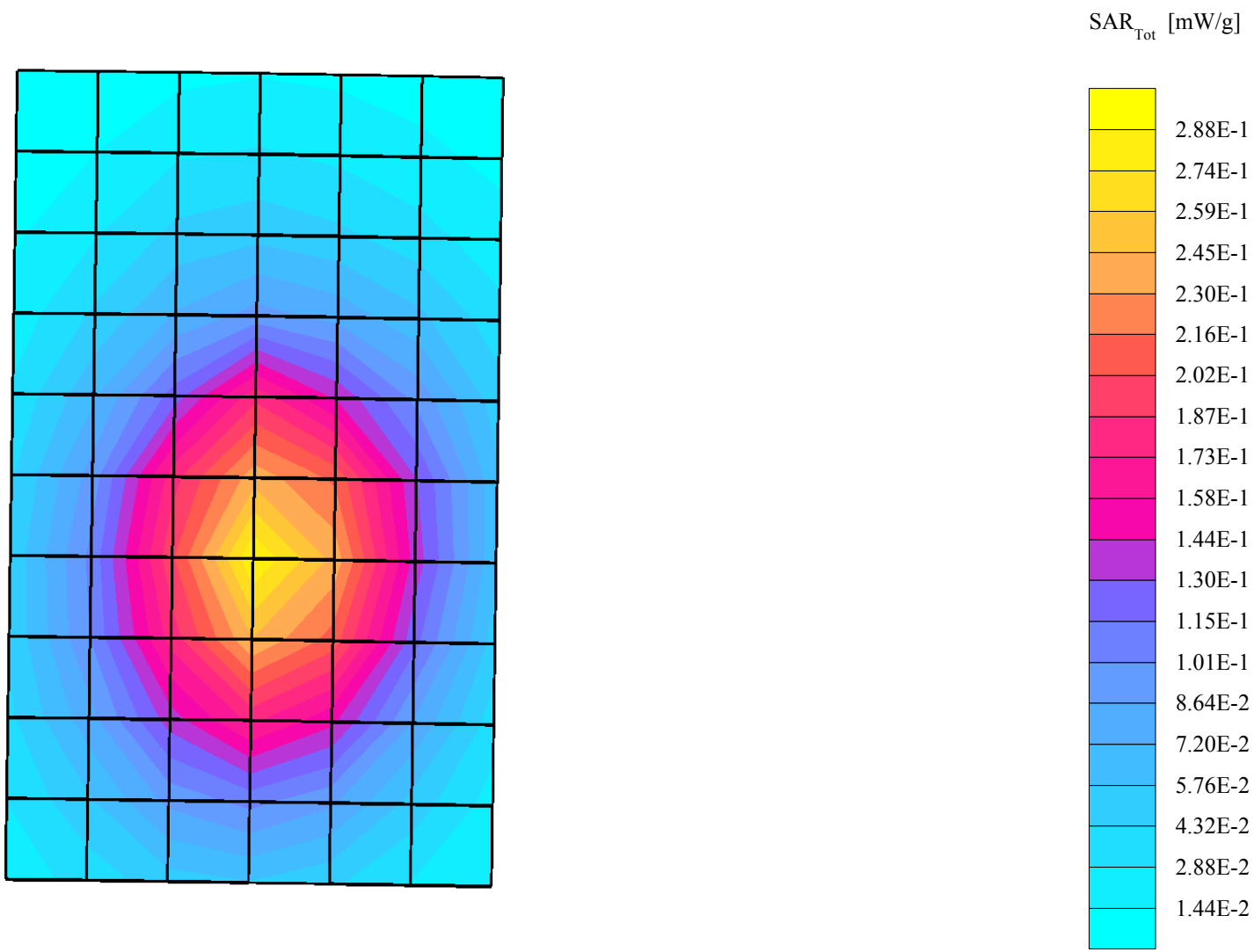
Probe: ET3DV6 - SN1522 BODY - iDEN (Sugarwater); ConvF(6.09,6.09,6.09); Crest factor: 3.0; Body 900 MHz (iDEN): σ = 1.04 mho/m ε_r = 54.0 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 0.256 mW/g, SAR (10g): 0.178 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Penetration depth: 15.4 (13.6, 17.5) [mm]

Powerdrift: -0.31 dB



Appendix 7

Photographs of the device under test

Figure 8. Front of Phone
With Antenna Extended

Figure 9. Front of Phone
With Antenna Retracted

Figure 10. Side of Radio
With Antenna Extended

Figure 11. Side of Radio
With Antenna Retracted

Figure 12. Leather Carry Case NTN9805A

Figure 13. Leather Carry Case NTN9804A

Figure 14. Front of Radio with Silver Faceplate Attached

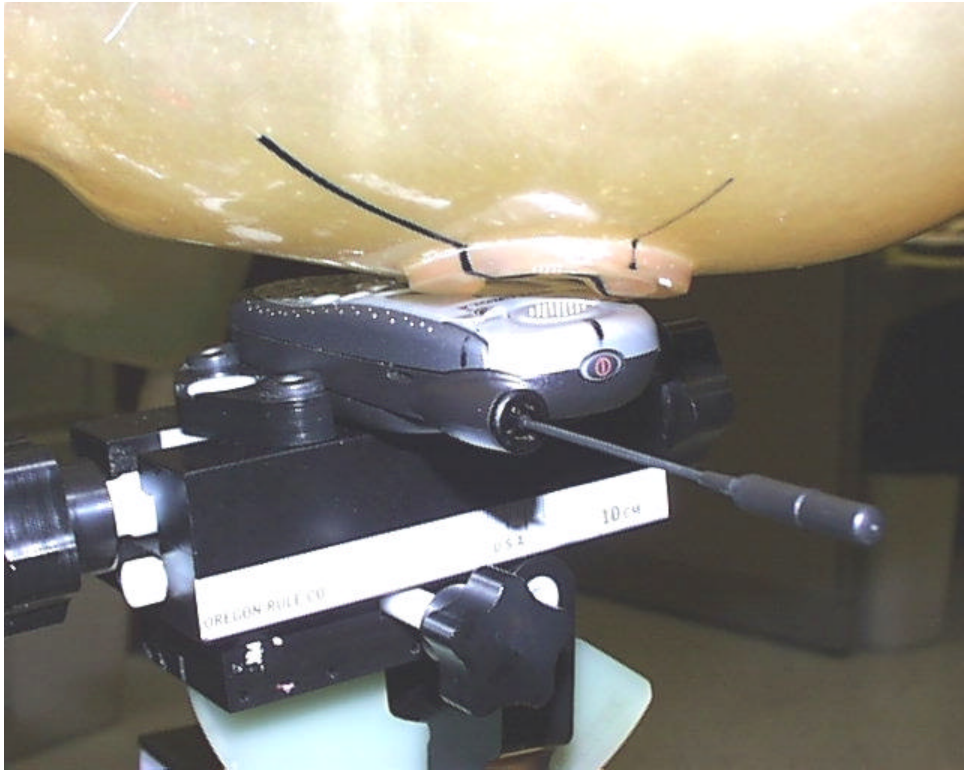


Figure 15. Head Adjacent Position with Antenna Extended (Seen from Back of Head)

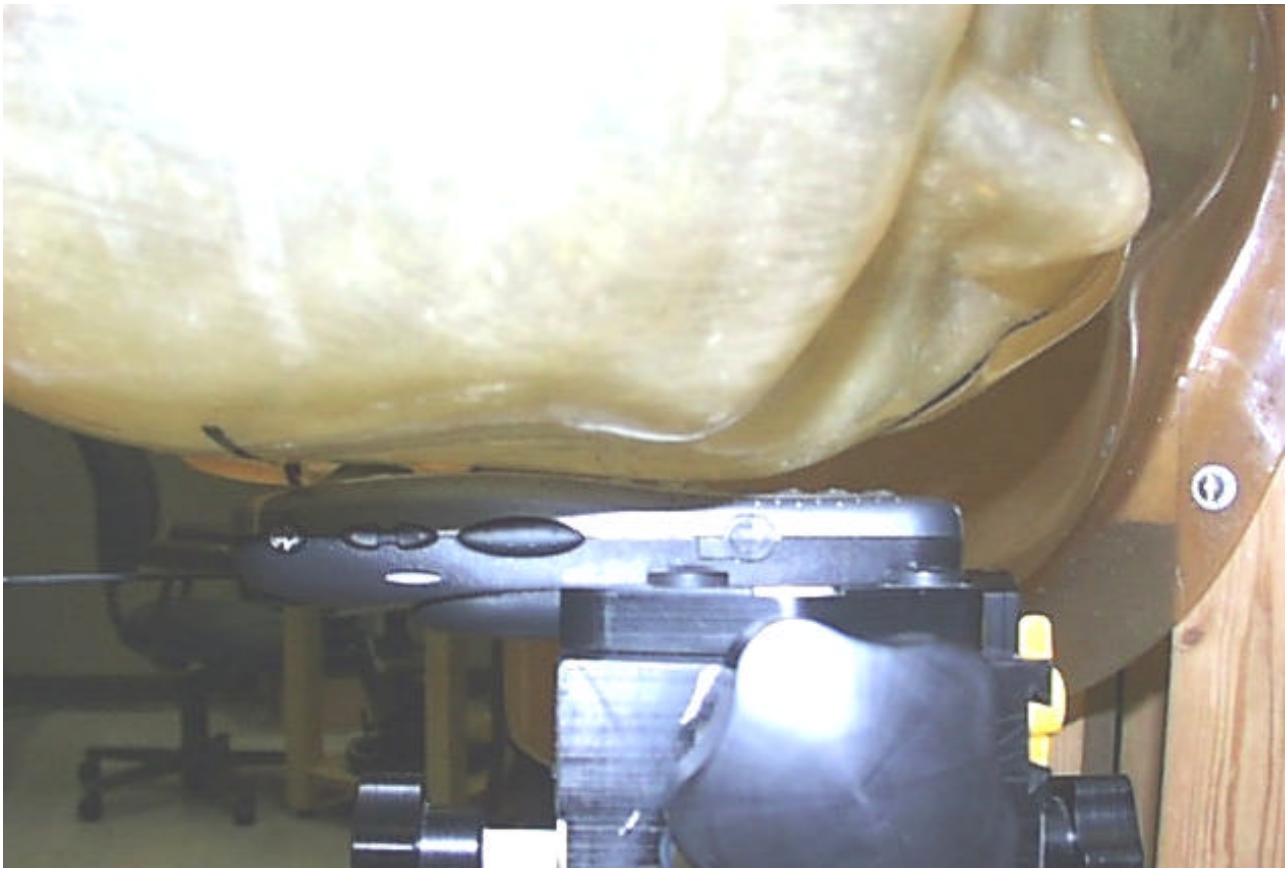


Figure 16. Head Adjacent Position with Antenna Extended (Seen from Top of Head)

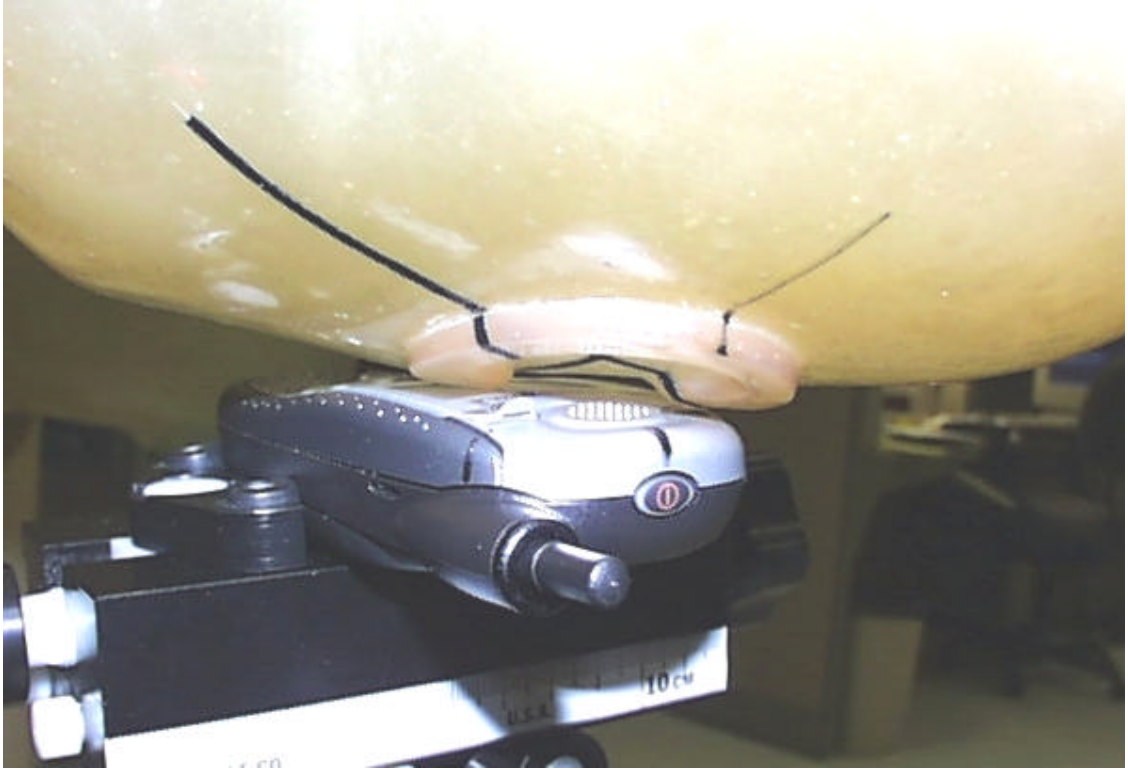


Figure 17. Head Adjacent Position with Antenna Retracted (Seen from back of Head)

Figure 18. Head Adjacent Position with Antenna Retracted (Seen from Top of Head)

Figure 19. Body-Worn Position with Headset and Data Cable Attached (Seen from Side)

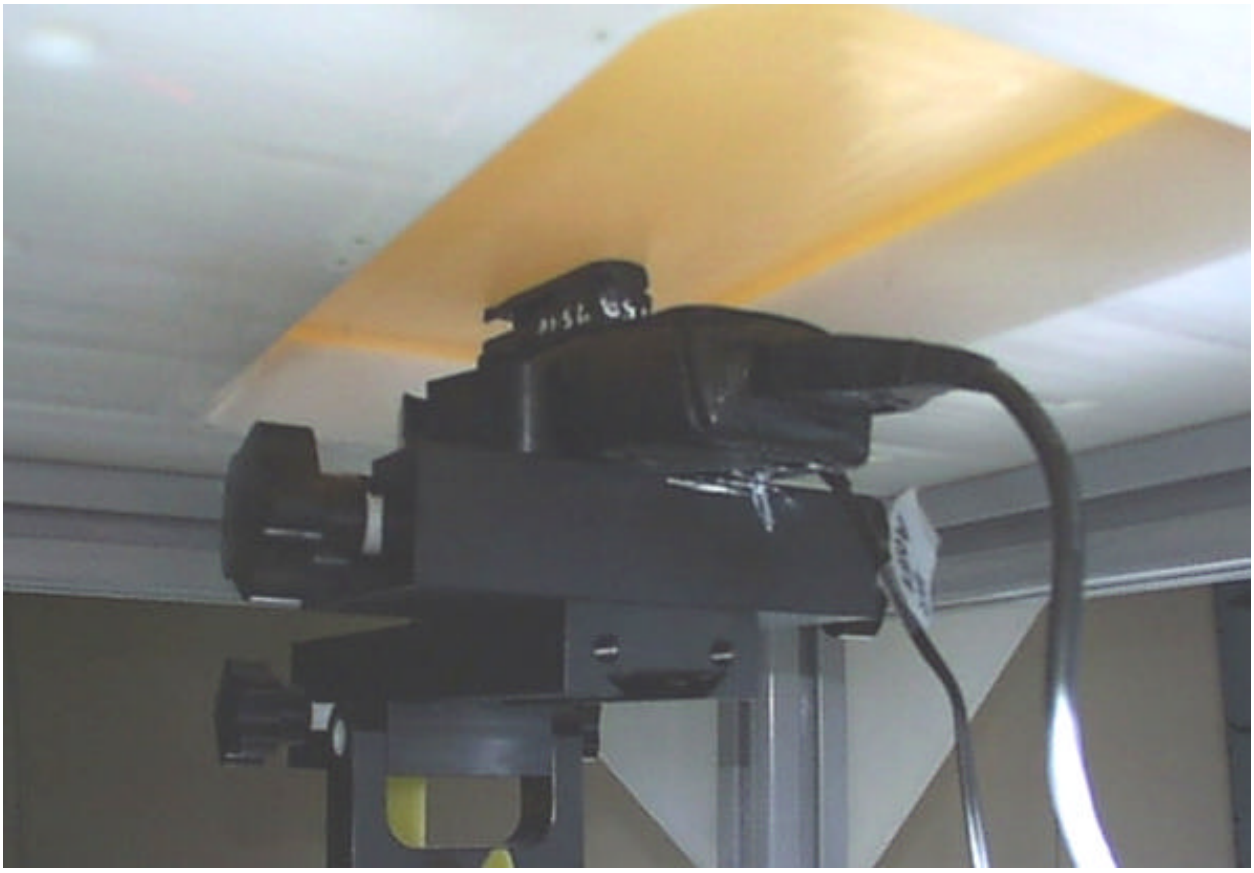


Figure 20. Body-Worn Position with Headset and Data Cable Attached (Seen from Bottom)

Figure 21. Spacing Dictated By Leather Carry Case with Antenna Extended

Figure 22. Spacing Dictated By Leather Carry Case with Antenna Retracted