MOTOROLA

Certificate Number: 1449-01

CGISS EME Test Laboratory
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S.A.R. EME Compliance Test Report
Part 1 of 2

Date of Report:	October 12, 2004
Report Revision:	Rev. O
Manufacturer:	Motorola
Product Description:	iDEN i740**;** 1:6, 1:3, 81:120, 1:12 TDMA; 64 QAM, 16 QAM & QPSK Modulation; 0.6 W Pulse average; GPS capable; MOTOtalk (114:120 8FSK; 0.74W nominal)
FCC ID:	AZ489FT5841
Device Model:	H61XAN6RR4AN
Test Period:	9/13/04 – 9/29/04 & 10/7/04 -10/8/04
Technician:	Clint Miller (EME Technician Electronics II)
Responsible Eng:	Jim Fortier (Elect. Principle Staff Eng.)
Author:	Michael Sailsman (Global EME Regulatory Affairs Liaison)

Signature on file — 10/13/04

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Date Approved

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REVISION HISTORY

Date	Revision	Comments
10/11/04	O	Release of Prototype results

1.0 Introduction

This report details the utilization, test setup, test equipment, and test results of the Specific Absorption Rate (S.A.R.) measurements performed at the CGISS EME Test Lab for model number H61XAN6RR4AN, FCC ID: AZ489FT5841.

The applicable exposure environment is General Population/Uncontrolled.

2.0 Reference Standards and Guidelines

This product is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J
- IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques"
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Terminal frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2003
- ANATEL, Brazil Regulatory Authority, Resolution No. 303 of July 2, 2002 "Regulation of the limitation of exposure to electrical, magnetic, and electromagnetic fields in the radio frequency range between 9KHz and 300 GHz." and “Attachment to resolution # 303 from July 2, 2002”

3.0 Description of Test Sample

(Horizontal and vertical reference lines intersecting at the acoustic output are marked on the DUT)

FCC ID: AZ489FT5841 is a digital multi-service data capable device that employs time division multiplexing transmission technology with a duty cycle ranging from 16.67% to 33.33% using M16-QAM modulation for voice or circuit data transmission. There is a Split 1:3 mode that operates using a 16.67% transmission duty cycle. Two 7.5ms pulses occur during the six time slots within the 90-msec frame format. This mode is available in both the 806-825MHz and 896-902MHz bands in the telephone interconnect mode only. Packet data transmission is supported up to a maximum duty cycle of 67.5% using quad QPSK modulation. MOTOtalk transmission is also supported and employs a frequency hopping digital spread spectrum format operating in the 900 MHZ ISM band. MOTOtalk has a transmission duty cycle of 114:120 using 8 FSK modulation. MOTOtalk operates only in PTT mode in front of the face or at the abdomen with the applicable offered audio accessories.
This device will be marketed to and used by the general population. This device may be used while held against the head in voice mode, in front of the face in PTT mode, and against the body in voice, PTT and data modes.
FCC ID: AZ489FT5841 is capable of operating in the 806-825 MHz and 896-902MHz bands. Packet data transmission is not available while transmitting in the 896-902 MHz band. MOTOtalk operates in the 902-928MHz band. The rated power is 0.60 watts pulsed averaged in 806-825MHz and 896-902MHz bands and 0.743 watts in the MOTOtalk band. The maximum output is 0.64 watts pulsed average and 0.763 watts respectively as defined by the upper limit of the production line final test station.

FCC ID: AZ489FT5841 is offered with the following options and accessories:

Antenna	**Description**
8585081F01	806 – 941 MHz ½ wave retractable antenna; 9.9cm Worst case antenna gain –1.3 dBd @ 813MHz, 0.86dBd @ 896 MHz

Batteries

SNN5705C	Hi performance 750mAh Lithium Ion battery
SNN5704C	5-mm 700mAh Lithium Ion battery
SNN5683A	High capacity Li Ion cell EZX 4MM battery pack
SNN5685A	High capacity Li Ion Cell EZX 6MM battery pack Universal Label
NNTN4655A	Max capacity 1450 mAh
NNTN4767A	Battery cover
NNTN5404A	Battery cover

Body-worn Accessories

NNTN4682A	Holster
NNTN4747A	Belt clip

Applicable Audio accessories

SYN8390B	Privacy Earpiece and Mic
NNTN4033A	Privacy earpiece and Mic w/ PTT
NSN6066A	Remote speaker Mic
NNTN4620A	Silver Earbud
SYN8146C	Lightweight over the ear headset w/boom Mic
SYN7875C	Hearing Aid Neck loop
NTN8496A	Lightweight Headset w/mic
NTN8513B	Lightweight Headband
NNTN5004A	PTT headset (Over-the-ear)
NNTN5005A	PTT headset (Over the head)
NNTN5006A	PTT headset (Ear bud)
NNTN5330A	Ear Bud Audio Accessory
NNTN5211A	KTL Surveillance Kit

Other applicable options:

NKN6560A	RS232 Data Cable
NKN6559A	USB Data Cable
NNTN5405A	USB Data cable w/charging
NNTN5406A	RS232 Data cable w/charging
NKN6546A	Palm Pilot III/iV adaptor
NKN6547A	Palm Pilot V adaptor

3.1 Test Signal

Test Mode	X	Call Simulator		Simulator	

Test Signal mode:

Transmission Mode:

CW	
Native Transmission	**X**
TDMA	**X**
Other	

3.2 Test Output Power

A table of the characteristic power slump versus time is provided in Appendix A for all tested batteries.

4.0 Description of Test Equipment

4.1 Descriptions of S.A.R. Measurement System

The laboratory utilizes a Dosimetric Assessment System (DASY3™) S.A.R. measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The test system consists of a Stäubli RX90L robot with ET3DV6 and EX3DV3 E-Field probes. Please reference the SPEAG user manual and application notes for detailed probe, robot, and S.A.R. computational procedures.

The S.A.R. measurements were conducted with probe model/serial number ET3DV6/SN1383. The system performance check was conducted daily and within 24 hours prior to testing. DASY output files of the system performance test results and the probe/dipole calibration certificates are included in appendices C and D respectively. The table below summarizes the system performance check results normalized to 1W.

Probe Serial #	Tissue Type	Probe Cal Date	Dipole Kit / Serial #	System Perf. 1-g S.A.R. Result when normalized to 1W (mW/g)	Reference 1-g S.A.R @ 1W (mW/g)	Test Date(s)
1383	FCC Body	2/25/04	D900V2/084	12.09 +/- 0.32	11.75 +/- 10%	9/13/04 – 9/17/04 4 test days
1383	IEEE Head	2/25/04	D900V2/084	12.045 +/- 0.165	11.15 +/- 10%	9/20/04 – 10/08/04 7 test days

Note: System performance results reflects the median performance +/- ½ of the test date(s) performance ranges

The DASY3™ system is operated per the instructions in the DASY3™ Users Manual. The complete manual is available directly from SPEAG™. All measurement equipment used to assess S.A.R. EME compliance was calibrated according to 17025 A2LA guidelines.

4.2 Description of Phantom

4.2.1 Flat Phantom

A rectangular shaped box made of high density polyethylene (HDPE) material. The phantom is mounted on a wooden supporting structure that has a loss tangent of < 0.05. The structure has a 68.58 cm x 20.32 cm opening at its center to allow positioning the DUT to the phantom's surface. The flat phantom dimensions used for S.A.R. performance assessment are L = 80cm, W = 30cm, H = 20cm, Surface Thickness = 0.2cm.

4.2.2 SAM Phantom

A SAM TP1234 phantom supplied by SPEAG was used to assess S.A.R. performance at the head.

4.3 Simulated Tissue Properties

4.3.1 Type of Simulated Tissue

The simulated tissue used is compliant to that specified in FCC Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01) and IEEE 1528, 2003 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques"

Simulated Tissue	Body Position
FCC Body	Torso
IEEE Head	Head/Face

4.3.2 Simulated Tissue Composition

% of listed ingredients	900MHz		835MHz	
	Head	Body	Head	Body
Sugar	56.50	44.90	NA	NA
DGBE (Glycol)	NA	NA	NA	NA
Diacetin	NA	NA	NA	NA
De ionized -Water	40.95	53.06	NA	NA
Salt	1.45	0.94	NA	NA
HEC	1	1	NA	NA

Bact.	0.1	0.1	NA	NA

Characterization of simulated tissue materials and ambient conditions:
Simulated tissue prepared for S.A.R. measurements is measured daily and within 24 hours prior to actual S.A.R. testing to verify that the tissue is within 5% of target parameters at the center of the transmit band. This measurement is done using the Agilent (HP) probe kit model 85070C and a HP8753D Network Analyzer.

Target tissue parameters

FCC Body				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
900	55.0	52.6-53.7	1.05	1.04-1.06
915	55.0	52.4-53.6	1.06	1.06-1.08
813	55.3	53.5-54.6	0.97	0.95-0.96
899	55.0	52.6-53.7	1.05	1.04-1.06

IEEE Head				
Frequency (MHz)	Di-electric Constant Target	Di-electric Constant Meas. (Range)	Conductivity Target S/m	Conductivity Meas. (Range) S/m
900	41.5	40.6-41.5	0.97	1.01-1.01
915	41.5	40.5-41.0	1.00	1.02-1.02
813	41.6	41.7-42.4	0.90	0.93-0.93
899	41.5	40.6-41.5	0.97	1.01-1.01

4.4 Test conditions

The EME Laboratory ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Simulated tissue temperature is measured prior to each scan to insure it is within +/- 2^{o}C of the temperature at which the dielectric properties were determined. The liquid depth in the phantom used for measurements was 15cm +/- 0.5cm. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored. The table below presents the range and average environmental conditions during the S.A.R. tests reported herein:

	Target	Measured
Ambient Temperature	20 - 25 ˚C	Range: 20.6-23.1˚C Avg. 22.03˚C
Relative Humidity	30 - 70 %	Range: 46.6-62.00% Avg. 51.48%
Tissue Temperature	NA	Range: 19.2-21.1˚C Avg. 20.14˚C

The EME Lab RF environment uses a Spectrum Analyzer to monitor for extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the S.A.R scans are repeated. However, the lab environment is sufficiently protected such that no S.A.R. impacting interference has been experienced to date.

5.0 Probe Scan Procedures

The E-field probe first scans a coarse grid over a large area inside the phantom in order to locate the interpolated maximum S.A.R. distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position as reference for the cube evaluations.

5.1 Shortened scan rationale

APPENDIX A presents relevant shortened S.A.R. cube scan to assess the validity of the calculated results presented herein. The results of the shortened cube scans demonstrate that the scaling methodology used to determine the calculated S.A.R. results presented herein are valid.

5.2 Device test positions

Reference Figure 1 for the device orientation and position which exhibited the highest S.A.R. performance.

5.2.1 Body

The DUT was positioned such that the carry case was centered against the flat phantom with and without the applicable accessory attachments. The DUT was positioned with its’ front, and back separated 2.5cm from the flat phantom.

5.2.2 Head

The DUT was placed in the cheek touch and 15° tilt positions at the left and right ears of the SAM phantom

5.2.3 Face

The DUT was placed with 2.5cm separation from the flat area of the SAM phantom.

5.3 Description of Test Procedure

All options and accessories listed in section 3.0 were considered in order to develop the S.A.R. test plan for this product. S.A.R. measurements were performed using a flat phantom with applicable tissue simulant to assess performance at the body and a SAM phantom with applicable tissue simulant to assess performance at the side of the head and in front of the face using the applicable transmission modes.

Note that a coarse-to-cube approximation methodology was utilized to determine the worst-case S.A.R. performance configuration for each applicable body location. The test configurations that produced the highest S.A.R. results for each body position using the coarse-to-cube approximation methodology were assessed using the full DASY3™ coarse and 5x5x7 cube scans.

The coarse-to-cube approximation is determined using a Motorola derived and SPEAG accepted software tool to predict a mass average S.A.R. value based on measured coarse scans. Note also that this software tool is part of the latest proposal by Motorola for inclusion into the IEC 62209 part II standard.

Assessments at the head (800MHz band) **[Page 20-21 of 27; Table 1]**

The DUT was assessed at the TX center frequency of the band, with the flip open, in cheek touch position at the left ear of the SAM phantom, with the antenna retracted and extended, using battery model SNN5705C, in the 1:3 transmission mode. The remaining batteries were assessed using the worst case configuration from above.

The DUT was assessed at the TX center frequency of the band, with the flip open, in the 15˚ tilt position at the left ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from above, in 1:3 transmission mode.

The DUT was assessed at the TX band edges, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed using the worst case frequency and battery from the left ear assessment, with the flip open, in cheek touch and 15˚ tilt positions at the right ear of the SAM phantom, with the antenna retracted and extended, in the 1:3 transmission mode.

The DUT was assessed at the TX band edges, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the center frequency of the band, with the antenna retracted, with the flip open and closed, in the 1:6 transmission mode, with 2.5cm separation distance from the flat area of the SAM phantom (face assessment), using the worst case battery from above. An assessment was performed with the antenna extended using the worst case configuration from above. Band edge assessment was done using the worst case configuration from above.

Assessments at the head (900MHz band) **[Page 22-23 of 27; Table 2]**

The DUT was assessed at the TX center frequency of the band, with the flip open, in cheek touch position at the left ear of the SAM phantom, with the antenna retracted and extended, using battery model SNN5705C, in the 1:3 transmission mode. The remaining batteries were assessed using the

worst case configuration from above.
The DUT was assessed at the TX center frequency of the band, with the flip open, in the 15˚ tilt position at the left ear of the Sam phantom, with the antenna retracted and extended, using the worst case battery from above, in 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed using the worst case frequency and battery from the left ear assessment, with the flip open, in cheek touch and 15˚ tilt positions at the right ear of the SAM phantom, with the antenna retracted and extended, in the 1:3 transmission mode.
The DUT was assessed at the TX band edges, in 1:3 transmission mode, using the test configuration from above that produced the highest S.A.R results.

The DUT was assessed at the center frequency of the band, with the antenna retracted, with the flip open and closed, in the 1:6 transmission mode, with 2.5cm separation distance from the flat area of the SAM phantom (face assessment), using the worst case battery from above. An assessment was performed with the antenna extended using the worst case configuration from above. Band edge assessment was done using the worst case configuration from above.

Assessments at the Face (MOTOtalk ISM 900MHz band) **[Page 23 of 27; Table 2]**

The DUT was assessed at the TX center frequency of the band, with the antenna retracted and Extended, using battery model SNN5705C, in 114:120 transmission mode. The remaining offered batteries were assessed using the worst case configuration from above.

Assessments at the body (800MHz band) **[Pages 24-25 of 27; Table 3]**

The DUT was assessed at the TX center frequency of the band, using battery model SNN5705C, with each of the offered body worn accessories against the flat phantom, in the 81:120 transmission mode, with the antenna retracted and extended. The remaining offered batteries were assessed using the worst case test configuration from above.
The DUT was assessed against the flat phantom, in the 81:120 transmission modes, with the antenna retracted and extended, using the worst test configuration from above, with each of the offered data cable attachments.
The DUT was assessed against the flat phantom, in the applicable transmission mode, using the worst case test configuration from above, with each of the offered audio accessories.
The DUT was assessed at the edges of the band, in the 81:120 transmission mode, using the over all worst case test configuration at the body from above.

Assessments at the body (900MHz band) **[Page 25 -26 of 27; Table 4]**

The DUT was assessed in the 1:3 transmission mode, across the TX band, with the antenna retracted and extended, using the applicable worst case test configuration from the 800MHz band assessment at the body.

Assessments at the body (MOTOtalk ISM 900MHz band) [Page 26 of 27; Table 4]

The DUT was assessed at the TX center frequency of the band, in the 114:120 transmission mode, with body worn accessory model NNTN4747A against the phantom, using battery model SNN5705C, , and audio accessory NSN6066A. The remaining offered batteries were assessed with the worst case test configuration from above.
The DUT was assessed at the TX band edges using the worst case test configuration from above.

Assessments at the body (@ 2.5cm) [Page 26 of 27; Table 5]

The DUT was assessed in the 81:120 transmission mode, against the phantom with its' back and front housing separated 2.5 cm from the phantom, using the worst case test frequency and offered battery from the 800MHz and 900MHz assessments above.

Shortened scan assessment at the body [APPENDIX A]
A "shortened" scan was performed using the test configuration that produced the highest S.A.R. results overall at the body.

5.4 Test Position Photographs

Figure 1: Highest S.A.R. Test Position (@ body)
DUT with body worn accessory model NNTN4747A against the flat phantom.

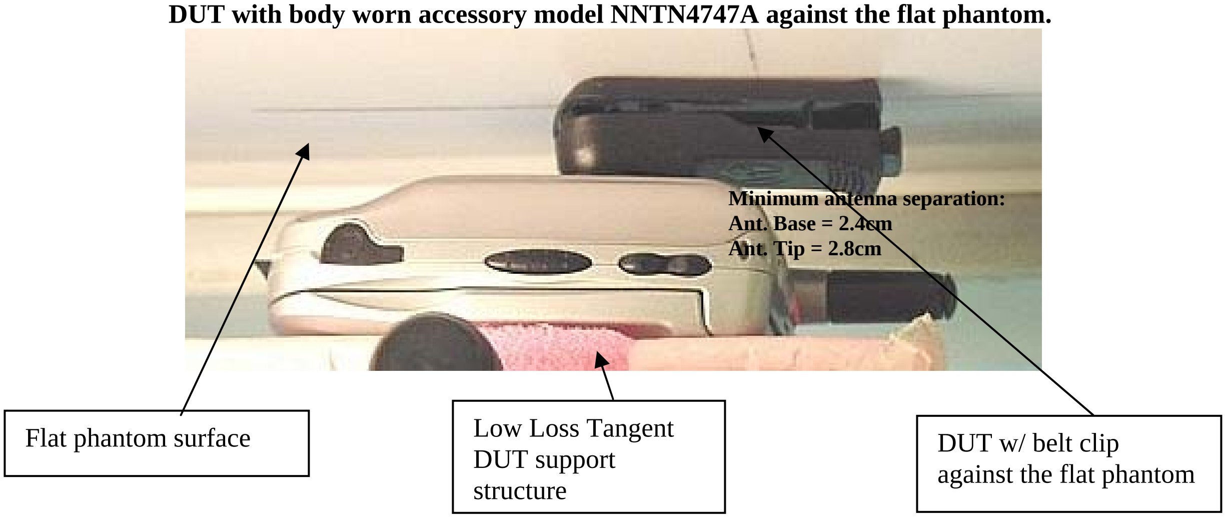


Figure 2. Assessment @ the Left ear
DUT in Cheek touch position (same position used for antenna extended)

Figure 3. Assessment @ the Left ear
DUT in 15° tilt position (same position used for antenna extended)

Figure 4. Assessment @ the Right ear
DUT in Cheek touch position (same position used for antenna extended)

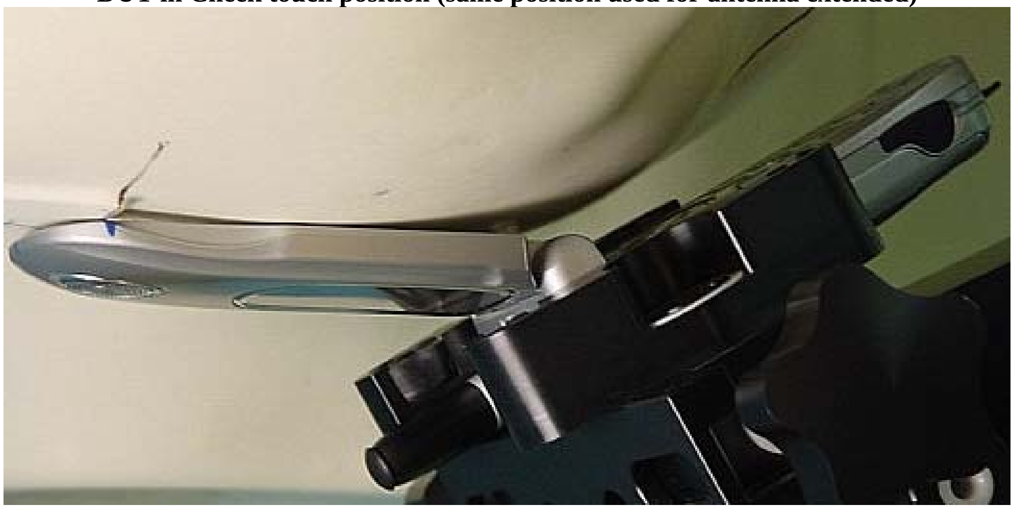


Figure 5. Assessment @ the Right ear
DUT in 15° tilt position (same position used for antenna extended)

Figure 6. Assessment @ the body
DUT with body worn accessory model NNTN4682A against the flat phantom.
(same position used for antenna extended)

Figure 7. Assessment @ the body
DUT front 2.5cm separation distance from flat phantom.
(same position used for antenna extended)

Figure 8. Assessment @ the body
DUT back 2.5cm separation distance from flat phantom.
(same position used for antenna extended)

Figure 9. Assessment @ Face
DUT front 2.5cm separation distance from flat phantom (flip open).

Figure 10. Assessment @ Face
DUT front 2.5cm separation distance from flat phantom (flip closed).
(same position used for antenna extended)

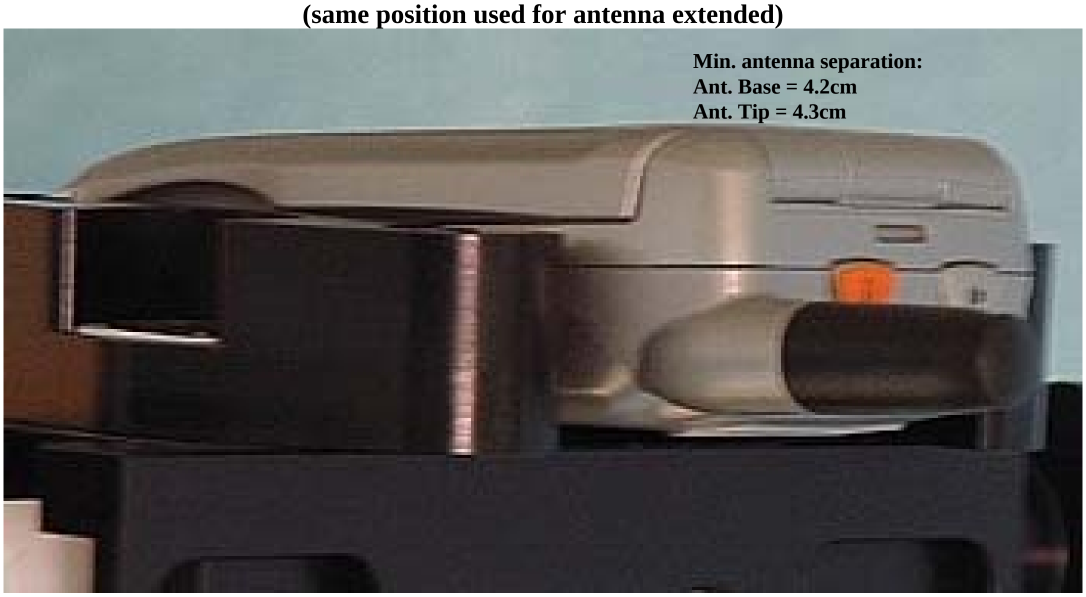


Figure 11: Robot Test System (Flat Phantom)

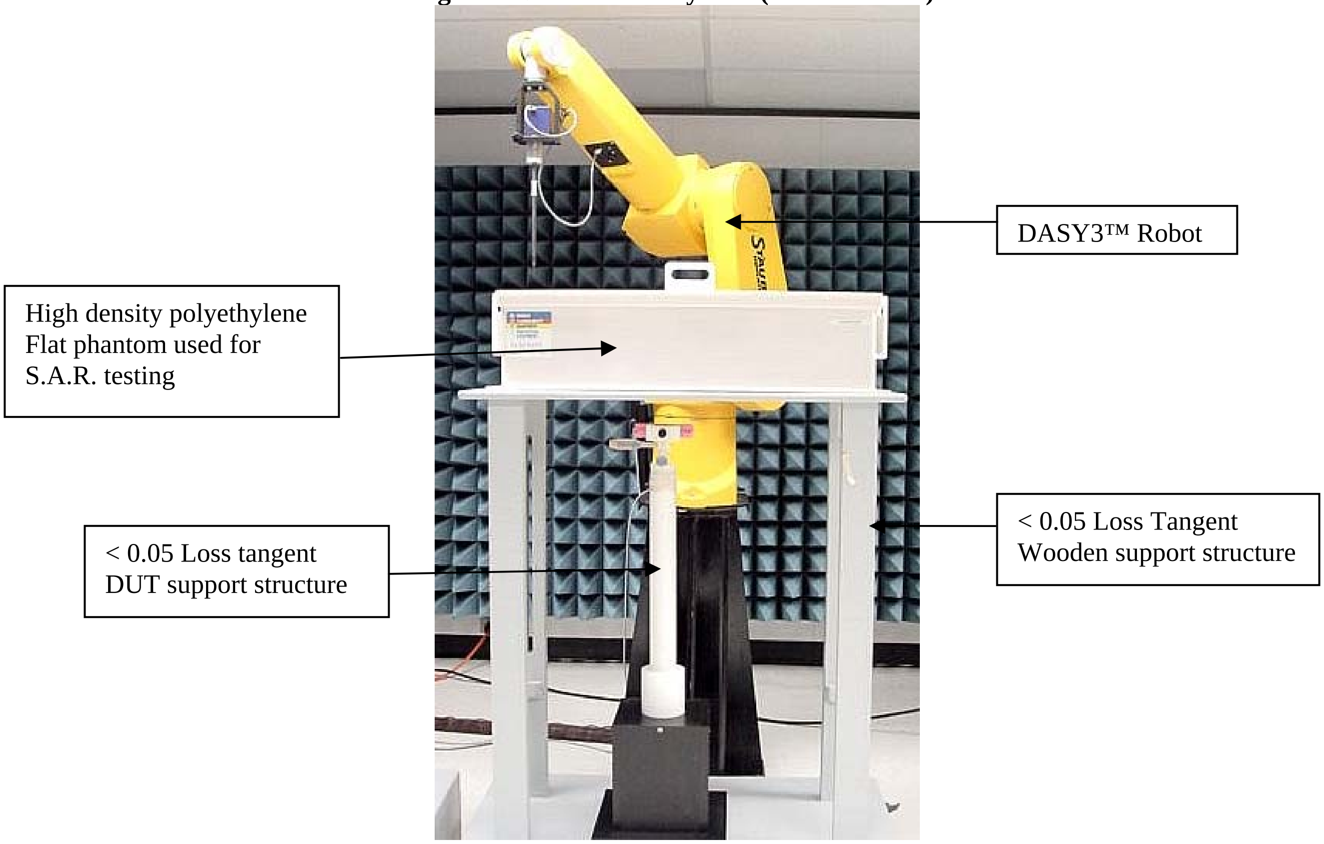
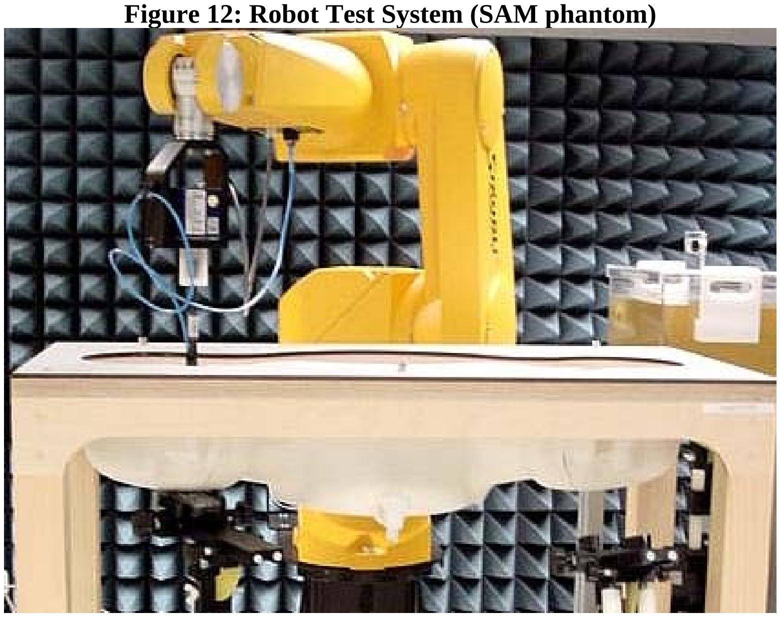


Figure 12: Robot Test System (SAM phantom)



6.0 Measurement Uncertainty

Table 1: Uncertainty Budget for Device Under Test: 75 – 3000 MHz

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	4.8	N	1.00	1	1	4.8	4.8	∞
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	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
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	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
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	3.4	N	1.00	1	1	3.4	3.4	29
Device Holder Uncertainty	E.4.1	3.8	N	1.00	1	1	3.8	3.8	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	6.5	N	1.00	0.64	0.43	4.2	2.8	∞
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	4.0	N	1.00	0.6	0.49	2.4	2.0	∞
Combined Standard Uncertainty			RSS				12	11	601
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				23	22	

Table 2: Uncertainty Budget for System Check: 75 – 3000 MHz

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	4.8	N	1.00	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
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	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
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 Mechanical 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	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 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	6.0	R	1.73	0.64	0.43	2.2	1.5	∞
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	6.0	R	1.73	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty			RSS				9	8	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				17	17	

Notes for Tables 1 and 2
a) Column headings *a*-*k* are given for reference.
b) Tol. - tolerance in influence quantity.
c) Prob. Dist. – Probability distribution
d) N, R - normal, rectangular probability distributions
e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
f) *ci* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
g) *ui* – SAR uncertainty
h) *vi* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

7.0 S.A.R. Test Results

All S.A.R. results obtained by the tests described in Section 5.0 are listed in section 7.1 below. As noted in section 5.3, a coarse-to-cube approximation methodology, which has been accepted by SPEAG, was utilized to ascertain the worst-case test configuration for each body location. The worst case test configurations observed for each body location were then assessed using the full DASY3™ coarse and 5x5x7 cube methodology, and they are presented as bolded results in section 7.1. The associated S.A.R. plots are provided in APPENDIX B.

Appendix A presents shortened S.A.R. cube scans to assess the validity of the calculated results presented herein. Note: The results of the shortened cube scans presented in Appendix A demonstrate that the scaling methodology used to determine the calculated S.A.R. results presented herein are valid.

7.1 S.A.R. results

Note: (Run #s JF-REAR-R3-040917-02, CM-Face-R3-0401008-02, JF-REAR-R3-040917-03, CM-Face-R3-041008-03, CM-Face-R3-041007-02, CM-Ab-R3-040921-10, CM-Ab-R3-040921-09, CM-Ab-R3-040921-08 used full coarse and 5x5x7 cube scans)

Table1

DUT assessment at the head; Cheek Touch, Tilt, band edges and Face; 1:3 mode at head, 1:6 & 114:120 modes at face; 806-825MHz band												
Run Number/ SN	**Antenna Position**	**Freq. (MHz)**	**Battery**	**Test position**	**Carry Case**	**Additional attachments**	**Initial Power (W)**	**S.A.R. Drift (dB)**	**Meas. 1g-S.A.R. (mW/g)**	**Meas. 10g-S.A.R. (mW/g)**	**Max Calc. 1g-S.A.R. (mW/g)**	**Max Calc. 10g-S.A.R. (mW/g)**
Assessment at the left Ear (1:3)												
CM-LEAR-R3-040913-03/364AEN0HFW	In	813.5125	SNN5705C	Cheek Touch	None	None	0.668	-0.27	0.673	0.443	0.72	0.471
CM-LEAR-R3-040913-07/364AEN0HFW	Out	813.5125	SNN5705C	Cheek Touch	None	None	0.671	0.15	0.649	0.428	0.65	0.428
CM-LEAR-R3-040913-09/364AEN0HFW	In	813.5125	SNN5683A	Cheek Touch	None	None	0.674	0.20	0.654	0.436	0.65	0.436
CM-LEAR-R3-040913-10/364AEN0HFW	In	813.5125	SNN5685A	Cheek Touch	None	None	0.676	0.15	0.678	0.450	0.68	0.450
CM-LEAR-R3-040913-11/364AEN0HFW	In	813.5125	NNTN4655A	Cheek Touch	None	None	0.684	0.19	0.668	0.437	0.67	0.437
CM-LEAR-R3-040913-12/364AEN0HFW	In	813.5125	SNN5705C	15° tilt	None	None	0.672	0.00	0.202	0.135	0.20	0.135
CM-LEAR-R3-040913-13/364AEN0HFW	Out	813.5125	SNN5705C	15° tilt	None	None	0.680	0.04	0.192	0.131	0.19	0.131
Band edge assessment at the Left ear with worst case configuration from above (1:3)												
JF-LEAR-R3-040914-03/364AEN0HFW	In	806.0125	SNN5705C	Cheek Touch	None	None	0.670	0.08	0.644	0.440	0.64	0.440
JF-LEAR-R3-040914-04/364AEN0HFW	Out	824.9875	SNN5705C	Cheek Touch	None	None	0.670	0.26	0.638	0.436	0.64	0.436

Table 1 (continued)

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
Assessment at the right Ear (1:3)												
CM-REAR-R3-040914-17/364AEN0HFW	In	813.5125	SNN5705C	Cheek Touch	None	None	0.670	-0.33	0.739	0.514	0.80	0.56
*CM-REAR-R3-040914-16/364AEN0HFW	Out	813.5125	SNN5705C	Cheek Touch	None	None	0.668	0.03	0.806	0.561	0.81	0.56
CM-REAR-R3-040914-18/364AEN0HFW	In	813.5125	SNN5705C	15º tilt	None	None	0.669	0.06	0.150	0.107	0.15	0.11
CM-REAR-R3-040914-19/364AEN0HFW	Out	813.5125	SNN5705C	15º tilt	None	None	0.678	-0.03	0.138	0.097	0.14	0.10
Band edge assessment at the Right ear with worst case configuration from above (1:3)												
JF-REAR-R3-040915-02/364AEN0HFW	In	806.0125	SNN5705C	Cheek Touch	None	None	0.670	-0.25	0.536	0.369	0.57	0.39
JF-REAR-R3-040915-03/364AEN0HFW	Out	806.0125	SNN5705C	Cheek Touch	None	None	0.670	0.26	0.746	0.511	0.75	0.51
JF-REAR-R3-040915-04/364AEN0HFW	In	824.9875	SNN5705C	Cheek Touch	None	None	0.670	0.02	0.415	0.289	0.42	0.29
JF-REAR-R3-040915-05/364AEN0HFW	Out	824.9875	SNN5705C	Cheek Touch	None	None	0.668	0.20	0.768	0.529	0.77	0.53
***Assessment with the worst case test configuration at the head using the full DASY coarse and 5x5x7 cube scan measurements.**												
JF-REAR-R3-040917-02/364AEN0HFW	Out	813.5125	SNN5705C	Cheek Touch	None	None	0.671	0.42	0.677	0.473	**0.68**	0.47
Assessment at the Face (1:6)												
CM-Face-R3-040915-16/364AEN0HFW	In	813.5125	SNN5705C	front 2.5cm Flip open	None	None	0.663	-0.09	0.041	0.030	0.02	0.02
CM-Face-R3-040915-17/364AEN0HFW	In	813.5125	SNN5705C	front 2.5cm Flip closed	None	None	0.667	0.03	0.154	0.111	0.08	0.06
CM-Face-R3-040915-18/364AEN0HFW	Out	813.5125	SNN5705C	front 2.5cm Flip closed	None	None	0.675	-0.03	0.163	0.118	0.08	0.06
*CM-Face-R3-040915-19/364AEN0HFW	Out	806.0125	SNN5705C	front 2.5cm Flip closed	None	None	0.678	-0.02	0.175	0.126	0.09	0.06
CM-Face-R3-040915-20/364AEN0HFW	Out	824.9875	SNN5705C	front 2.5cm Flip closed	None	None	0.679	-0.01	0.154	0.112	0.08	0.06
***Assessment with the worst case test configuration at the face in 1:6 mode using the full DASY coarse and 5x5x7 cube scan measurements.**												
CM-Face-R3-041008-02/364AEN0HFW	Out	806.0125	SNN5705C	front 2.5cm Flip closed	None	None	0.679	0.05	0.170	0.124	**0.09**	0.06

Table 2

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
DUT assessment at the head; Cheek Touch, Tilt, and edges and Face; 1:3 mode at head, 1:6 & 114:120 mode at face; 896-902MHz band												
Assessment at the left Ear (1:3)												
CM-LEAR-R3-040914-05/364AEN0HFW	In	898.49375	SNN5705C	Cheek Touch	None	None	0.675	0.14	0.268	0.183	0.27	0.18
CM-LEAR-R3-040914-06/364AEN0HFW	Out	898.49375	SNN5705C	Cheek Touch	None	None	0.686	0.18	0.721	0.486	0.72	0.49
CM-LEAR-R3-040914-07/364AEN0HFW	Out	898.49375	SNN5704C	Cheek Touch	None	None	0.670	0.05	0.723	0.487	0.72	0.49
CM-LEAR-R3-040914-08/364AEN0HFW	Out	898.49375	SNN5683A	Cheek Touch	None	None	0.692	0.17	0.687	0.463	0.69	0.46
CM-LEAR-R3-040914-09/364AEN0HFW	Out	898.49375	SNN5685A	Cheek Touch	None	None	0.705	0.15	0.697	0.470	0.70	0.47
CM-LEAR-R3-040914-10/364AEN0HFW	Out	898.49375	NNTN4655A	Cheek Touch	None	None	0.690	0.15	0.651	0.440	0.65	0.44
CM-LEAR-R3-040914-12/364AEN0HFW	In	898.49375	SNN5704C	15º tilt	None	None	0.682	-0.11	0.080	0.055	0.08	0.06
CM-LEAR-R3-040914-13/364AEN0HFW	Out	898.49375	SNN5704C	15º tilt	None	None	0.683	-0.02	0.163	0.112	0.16	0.11
Band edge assessment at the Left ear (1:3)												
CM-LEAR-R3-040914-14/364AEN0HFW	Out	896.01875	SNN5704C	Cheek Touch	None	None	0.687	-0.17	0.704	0.480	0.73	0.50
CM-LEAR-R3-040914-15/364AEN0HFW	Out	901.98125	SNN5704C	Cheek Touch	None	None	0.688	0.23	0.722	0.494	0.72	0.49
Assessment at the Right Ear (1:3)												
JF-REAR-R3-040915-07/364AEN0HFW	In	898.49375	SNN5704C	Cheek Touch	None	None	0.675	-0.23	0.235	0.162	0.25	0.17
JF-REAR-R3-040915-08/364AEN0HFW	Out	898.49375	SNN5704C	Cheek Touch	None	None	0.670	0.24	0.770	0.525	0.77	0.53
CM-REAR-R3-040915-11/364AEN0HFW	In	898.49375	SNN5704C	15º tilt	None	None	0.670	0.08	0.030	0.021	0.03	0.02
CM-REAR-R3-040915-10/364AEN0HFW	Out	898.49375	SNN5704C	15º tilt	None	None	0.675	-0.24	0.150	0.106	0.16	0.11
Band edge assessment at the Right ear with worst case configuration from above (1:3)												
CM-REAR-R3-040915-12/364AEN0HFW	In	896.01875	SNN5704C	Cheek Touch	None	None	0.680	0.01	0.366	0.254	0.37	0.25
*CM-REAR-R3-040915-13/364AEN0HFW	Out	896.01875	SNN5704C	Cheek Touch	None	None	0.682	0.05	0.869	0.587	0.87	0.59

Table 2 (continued)

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
Band edge assessment at the Right ear with worst case configuration from above 1:3 (continued)												
CM-REAR-R3-040915-14/364AEN0HFW	In	901.98125	SNN5704C	Cheek Touch	None	None	0.667	-0.17	0.276	0.191	0.29	0.20
CM-REAR-R3-040915-15/364AEN0HFW	Out	901.98125	SNN5704C	Cheek Touch	None	None	0.683	0.17	0.820	0.554	0.82	0.55
***Assessment with the worst case test configuration at the head using the full DASY coarse and 5x5x7 cube scan measurements.**												
JF-REAR-R3-040917-03/364AEN0HFW	Out	896.01875	SNN5704C	Cheek Touch	None	None	0.670	-0.03	0.622	0.433	**0.63**	0.44
Assessment at the Face (1:6)												
CM-Face-R3-040915-21/364AEN0HFW	In	898.49375	SNN5704C	DUT front 2.5cm Flip open	None	None	0.666	0.16	0.025	0.018	0.01	0.01
JF-Face-R3-040916-02/364AEN0HFW	In	898.49375	SNN5704C	DUT front 2.5cm Flip closed	None	None	0.666	0.02	0.092	0.065	0.05	0.03
JF-Face-R3-040916-03/364AEN0HFW	Out	898.49375	SNN5704C	DUT front 2.5cm Flip closed	None	None	0.663	0.03	0.145	0.104	0.07	0.05
*JF-Face-R3-040916-04/364AEN0HFW	Out	896.01875	SNN5704C	DUT front 2.5cm Flip closed	None	None	0.665	0.04	0.148	0.105	0.07	0.05
JF-Face-R3-040916-05/364AEN0HFW	Out	901.98125	SNN5704C	DUT front 2.5cm Flip closed	None	None	0.660	-0.04	0.144	0.103	0.07	0.05
***Assessment with the worst case test configuration at the face in 1:6 mode using the full DASY coarse and 5x5x7 cube scan measurements.**												
CM-Face-R3-041008-03/364AEN0HFW	Out	896.01875	SNN5704C	front 2.5cm Flip closed	None	None	0.668	0.04	0.149	0.106	**0.08**	0.05
Assessment at the face 114:120 MOTOtalk mode (PTT)												
CM-Face-R3-040916-06/364AEN0HFW	In	915.5250	SNN5705C	DUT front 2.5cm	None	None	0.822	-0.21	0.404	0.289	0.21	0.15
CM-Face-R3-040916-07/364AEN0HFW	Out	915.5250	SNN5705C	DUT front 2.5cm	None	None	0.840	0.25	0.976	0.699	0.49	0.35
CM-Face-R3-040916-09/364AEN0HFW	Out	915.5250	SNN5704C	DUT front 2.5cm	None	None	0.809	0.17	0.950	0.680	0.48	0.34
CM-Face-R3-040916-10/364AEN0HFW	Out	915.5250	SNN5683A	DUT front 2.5cm	None	None	0.810	0.16	0.954	0.683	0.48	0.34
CM-Face-R3-040916-11/364AEN0HFW	Out	915.5250	SNN5685A	DUT front 2.5cm	None	None	0.805	0.22	0.985	0.705	0.49	0.35
CM-Face-R3-040916-12/364AEN0HFW	Out	915.5250	NNTN4655A	DUT front 2.5cm	None	None	0.826	0.25	0.939	0.671	0.47	0.34
*CM-Face-R3-040916-13/364AEN0HFW	Out	902.5250	SNN5705C	DUT front 2.5cm	None	None	0.845	0.30	1.188	0.849	0.59	0.42
CM-Face-R3-040916-14/364AEN0HFW	Out	927.4750	SNN5705C	DUT front 2.5cm	None	None	0.815	0.26	0.907	0.647	0.45	0.32
***Assessment with the worst case test configuration at the face in 114:120 mode using the full DASY coarse and 5x5x7 cube scan measurements.**												
CM-Face-R3-041007-02/364AEN0HFW	Out	902.5250	SNN5705C	DUT front 2.5cm	None	None	0.821	-2.250	0.669	0.473	0.56	0.40

Table 3

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
DUT assessment at the body; against phantom, band edges, and 2.5cm separation; 81:120, 1:3 modes; 806-825MHz band												
Assessment of offered battery and offered body worn accessory (81:120 mode)												
CM-Ab-R3-040917-06/364AEN0HFW	In	813.5125	SNN5705C	Against phantom	NNTN4682A	None	0.674	0.04	0.992	0.699	0.99	0.70
CM-Ab-R3-040917-07/364AEN0HFW	Out	813.5125	SNN5705C	Against phantom	NNTN4682A	None	0.675	-0.32	0.992	0.709	1.07	0.76
CM-Ab-R3-040917-08/364AEN0HFW	In	813.5125	SNN5705C	Against phantom	NNTN4747A	None	0.672	-0.01	1.013	0.720	1.02	0.72
CM-Ab-R3-040917-09/364AEN0HFW	Out	813.5125	SNN5705C	Against phantom	NNTN4747A	None	0.680	-0.40	1.100	0.790	1.21	0.87
CM-Ab-R3-040917-10/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	None	0.679	-0.72	1.032	0.738	1.22	0.87
CM-Ab-R3-040917-11/364AEN0HFW	Out	813.5125	SNN5683A	Against phantom	NNTN4747A	None	0.681	-0.64	1.023	0.731	1.19	0.85
CM-Ab-R3-040917-12/364AEN0HFW	Out	813.5125	SNN5685A	Against phantom	NNTN4747A	None	0.675	-0.32	1.120	0.795	1.21	0.86
CM-Ab-R3-040917-13/364AEN0HFW	Out	813.5125	NNTN4655A	Against phantom	NNTN4747A	None	0.672	-0.08	0.942	0.667	0.96	0.68
CM-Ab-R3-040917-14/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6559A	0.677	-0.57	0.488	0.346	0.56	0.40
CM-Ab-R3-040917-15/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NKN6560A RS232	0.676	-0.69	0.738	0.525	0.87	0.62
Assessment of audio accessories (81:120)												
CM-Ab-R3-040917-16/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN4620A	0.680	0.05	0.358	0.253	0.36	0.25
CM-Ab-R3-040917-17/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN8390B	0.667	-0.02	0.312	0.220	0.31	0.22
CM-Ab-R3-040917-18/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.670	0.04	0.484	0.346	0.48	0.35
JF-Ab-R3-040920-02/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NTN8496A	0.670	0.04	0.348	0.249	0.35	0.25
JF-Ab-R3-040920-03/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN4033A	0.670	0.05	0.442	0.316	0.44	0.32
JF-Ab-R3-040920-04/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NTN8513B	0.670	0.09	0.347	0.248	0.35	0.25
CM-Ab-R3-040920-10/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	SYN7875C	0.666	0.10	0.476	0.338	0.48	0.34
CM-Ab-R3-040920-11/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NSN6066A	0.664	-0.03	0.203	0.146	0.10	0.07
JF-Ab-R3-040920-05/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5004A	0.671	0.10	0.421	0.302	0.42	0.30
JF-Ab-R3-040920-06/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5005A	0.670	0.06	0.424	0.301	0.42	0.30
JF-Ab-R3-040920-07/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5006A	0.669	0.06	0.363	0.260	0.36	0.26

Table 3 (continued)

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
JF-Ab-R3-040920-09/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5211A	0.670	-0.01	0.378	0.268	0.38	0.27
JF-Ab-R3-040920-08/364AEN0HFW	Out	813.5125	SNN5704C	Against phantom	NNTN4747A	NNTN5330A	0.670	-0.02	0.343	0.245	0.35	0.25
Band edge assessment at the body w/ worst case configuration from above (81:120)												
CM-Ab-R3-040920-12/364AEN0HFW	Out	806.0125	SNN5704C	Against phantom	NNTN4747A	None	0.671	-0.68	1.056	0.758	1.24	0.89
CM-Ab-R3-040920-13/364AEN0HFW	Out	824.9875	SNN5704C	Against phantom	NNTN4747A	None	0.677	-0.62	1.191	0.836	1.37	0.96
*JF-Ab-R3-040929-02/364AEN0HFW (Shortened scan)	Out	824.9875	SNN5704C	Against phantom	NNTN4747A	None	0.675	-0.46	1.240	0.887	1.38	0.99
***Assessment with the worst case test configuration at the body in 81:120 mode using the full DASY coarse and 5x5x7 cube scan measurements.**												
CM-Ab-R3-040921-10/364AEN0HFW	Out	824.9875	SNN5704C	Against phantom	NNTN4747A	None	0.669	-1.16	1.020	0.725	1.33	0.95

Table 4

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
DUT assessment at the body; across the band, with worst case test configuration from 800MHz band assessment; 1:3 & 114:120 mode; 896-902MHz band												
Assessment with worst case configuration from 800MHz assessment												
CM-Ab-R3-040920-15/364AEN0HFW	In	898.49375	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.680	-0.38	0.240	0.169	0.26	0.18
*CM-Ab-R3-040920-14/364AEN0HFW	Out	898.49375	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.672	0.06	0.482	0.337	0.48	0.34
CM-Ab-R3-040920-16/364AEN0HFW	In	896.01875	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.690	0.03	0.258	0.182	0.23	0.18
CM-Ab-R3-040920-17/364AEN0HFW	Out	896.01875	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.688	0.07	0.451	0.316	0.45	0.32
CM-Ab-R3-040920-18/364AEN0HFW	In	901.98125	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.664	-0.02	0.244	0.171	0.25	0.17
CM-Ab-R3-040920-19/364AEN0HFW	Out	901.98125	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.684	0.04	0.404	0.285	0.40	0.29
***Assessment with the worst case test configuration at the body in 1:3 mode using the full DASY coarse and 5x5x7 cube scan measurements**												
CM-Ab-R3-040921-09/364AEN0HFW	Out	898.49375	SNN5704C	Against phantom	NNTN4747A	SYN8146C	0.671	-0.43	0.394	0.281	**0.44**	0.31
Assessment in 114:120 MOTOtalk mode with offered RSM audio accessory												
CM-Ab-R3-040920-20/364AEN0HFW	In	915.5250	SNN5705C	Against phantom	NNTN4747A	NSN6066A	0.832	-0.25	0.583	0.411	0.31	0.22
CM-Ab-R3-040920-21/364AEN0HFW	Out	915.5250	SNN5705C	Against phantom	NNTN4747A	NSN6066A	0.810	0.17	1.449	1.009	0.72	0.50
CM-Ab-R3-040920-22/364AEN0HFW	Out	915.5250	SNN5704C	Against phantom	NNTN4747A	NSN6066A	0.841	0.15	1.272	0.893	0.64	0.45
JF-Ab-R3-040921-02/364AEN0HFW	Out	915.5250	SNN5683A	Against phantom	NNTN4747A	NSN6066A	0.830	0.23	1.405	0.987	0.70	0.49

Table 4 (continued)

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
JF-Ab-R3-040921-03/364AEN0HFW	Out	915.5250	SNN5685A	Against phantom	NNTN4747A	NSN6066A	0.820	-0.15	1.397	0.973	0.72	0.50
JF-Ab-R3-040921-04/364AEN0HFW	Out	902.5250	SNN5705C	Against phantom	NNTN4747A	NSN6066A	0.820	0.01	1.367	0.961	0.68	0.48
*JF-Ab-R3-040921-05/364AEN0HFW	Out	927.4750	SNN5705C	Against phantom	NNTN4747A	NSN6066A	0.815	0.38	1.473	1.036	0.74	0.52
***Assessment with the worst case test configuration at the body in 114:120 MOTOtalk mode using the full DASY coarse and 5x5x7 cube scan measurements.**												
CM-Ab-R3-040921-08/364AEN0HFW	Out	927.4750	SNN5705C	Against phantom	NNTN4747A	NSN6066A	0.805	-2.22	1.370	0.866	**1.14**	0.72

Table 5

Run Number/ SN	Antenna Position	Freq. (MHz)	Battery	Test position	Carry Case	Additional attachments	Initial Power (W)	S.A.R. Drift (dB)	Meas. 1g-S.A.R. (mW/g)	Meas. 10g-S.A.R. (mW/g)	Max Calc. 1g-S.A.R. (mW/g)	Max Calc. 10g-S.A.R. (mW/g)
Assessment at 2.5cm using the worst case frequency and offered battery from both 800Mhz and 900Mhz assessments												
CM-Ab-R3-040921-11/364AEN0HFW	Out	824.9875	SNN5705C	DUT Back 2.5cm	None	None	0.672	-0.76	1.014	0.723	1.21	0.86
CM-Ab-R3-040921-13/364AEN0HFW	Out	824.9875	SNN5705C	DUT Front 2.5cm	None	None	0.673	-0.84	0.681	0.488	0.83	0.59

7.2 Peak S.A.R. location

Refer to APPENDIX B for detailed S.A.R. scan distributions.

7.3 Highest S.A.R. results calculation methodology

The calculated maximum 1-gram and 10-gram averaged S.A.R. results reported herein for the full DASY ™ coarse and 5x5x7 cube measurements are determined by scaling the measured S.A.R. to account for power leveling variations and power slump. For this device the Maximum Calculated 1-gram and 10-gram averaged peak S.A.R. is calculated using the following formula:

Max. Calc. 1-g Avg. SAR = ((S.A.R. meas. / (10^(Pdrift/10)))*(Pmax/Pint))* DC%
P_{max} = Maximum Power (W)
P_{int} = Initial Power (W)
Pdrift = DASY drift results (dB)
$SAR_{meas.}$ = Measured 1 gram averaged peak S.A.R. (mW/g)
DC % = Transmission mode duty cycle in % where applicable

Note that the use of the above formula should consider the relationship between the initial power, max power, and drift. Also, a 50% duty cycle is applied for PTT operation.

8.0 Conclusion

The highest Operational Maximum Calculated 1-gram and 10-gram average S.A.R. values found for FCC ID: AZ489FT5841 model H61XAN6RR4AN.

At the Body: **1-g Avg. = 1.38 mW/g; 10-g Avg. = 0.99 mW/g**
At the Face: **1-g Avg. = 0.56 mW/g; 10-g Avg. = 0.40 mW/g**
At the Head: **1-g Avg. = 0.68 mW/g; 10-g Avg. = 0.47 mW/g**

These test results clearly demonstrate compliance with FCC General Population/Uncontrolled RF Exposure limits of **1.6 mW/g** per the requirements of 47 CFR 2.1093(d).

MOTOROLA

ACCREDITED

Certificate Number: 1449-01

CGISS EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

S.A.R. EME Compliance Test Report
Part 2 of 2

Date of Report:	October 11, 2004
Report Revision:	Rev. O
Manufacturer:	Motorola
Product Description:	iDEN i740**;** 1:6, 1:3, 81:120, 1:12 TDMA; 64 QAM, 16 QAM & QPSK Modulation; 0.6 W Pulse average; GPS capable; MOTOtalk (114:120 8FSK; 0.74W nominal)
FCC ID:	AZ489FT5841
Device Model:	H61XAN6RR4AN
Test Period:	9/13/04 – 9/29/04 & 10/7/04 -10/8/04
Technician:	Clint Miller (EME Technician Electronics II)
Responsible Eng:	Jim Fortier (Elect. Principle Staff Eng.)
Author:	Michael Sailsman (Global EME Regulatory Affairs Liaison)

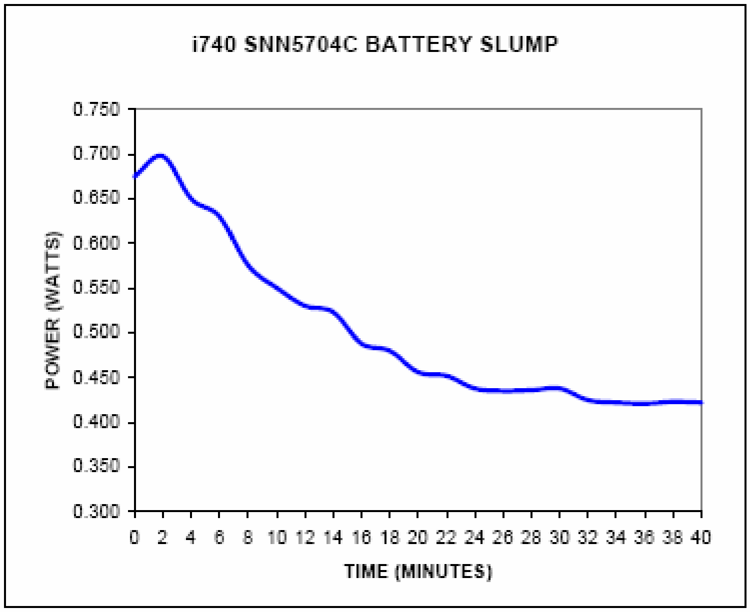
Signature on file	10/13/04
Ken Enger Senior Resource Manager, Laboratory Director, CGISS EME Lab	Date Approved

APPENDIX A

Power Slump Data/Shortened Scan

DUT Power versus time data

BATTERY MODE TIME	SNN5704C pda
0	0.675
2	0.698
4	0.650
6	0.630
8	0.575
10	0.550
12	0.530
14	0.523
16	0.488
18	0.480
20	0.456
22	0.452
24	0.438
26	0.435
28	0.436
30	0.438
32	0.425
34	0.422
36	0.421
38	0.423
40	0.422



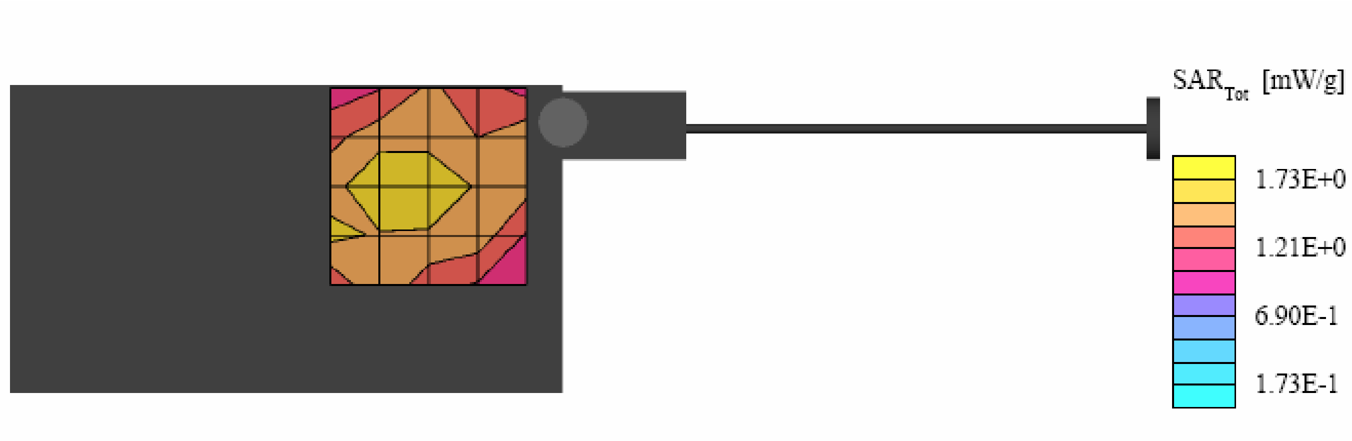
Shortened Scan Results

FCC ID: AZ489FT5841; Test Date: 9/29/04
Motorola CGISS EME Laboratory
Run #: JF-Ab-R3-040929-02
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 824.9875 MHz
Sim Tissue Temp: 20.0 (Celsius)
Start Power: 0.675 W

Antenna: Out
Battery Kit: SNN5704C
Carry Acc: NNTN4747A
Audio/Data Acc.: NONE

Shortened scan reflect highest S.A.R. producing configuration; Run time 8.5minutes.
Representative "normal" scan run time was 20 minutes
"Shortened" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.38mW/g; 10-g Avg. = 0.99mW/g
"Normal" scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.33mW/g; 10-g Avg. = 0.95mW/g
(see section 7.1 run # CM-Ab-R3-040921-10)

DUT w/ belt clip against the phantom
Flat Phantom; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC Body 813: σ = 0.95 mho/m εr = 54.6 ρ = 1.00 g/cm3; DAE3: 401V1 DAE Cal Date: 8/25/2004
Cube 5x5x7: SAR (1g): 1.24 mW/g, SAR (10g): 0.887 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 1.24 mW/g, SAR (10g): 0.887 mW/g
Power drift: -0.46 dB

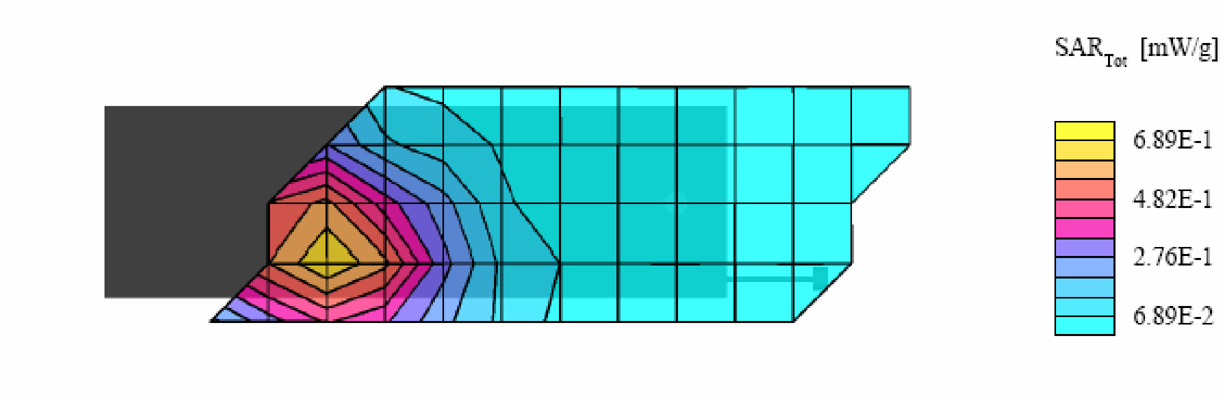


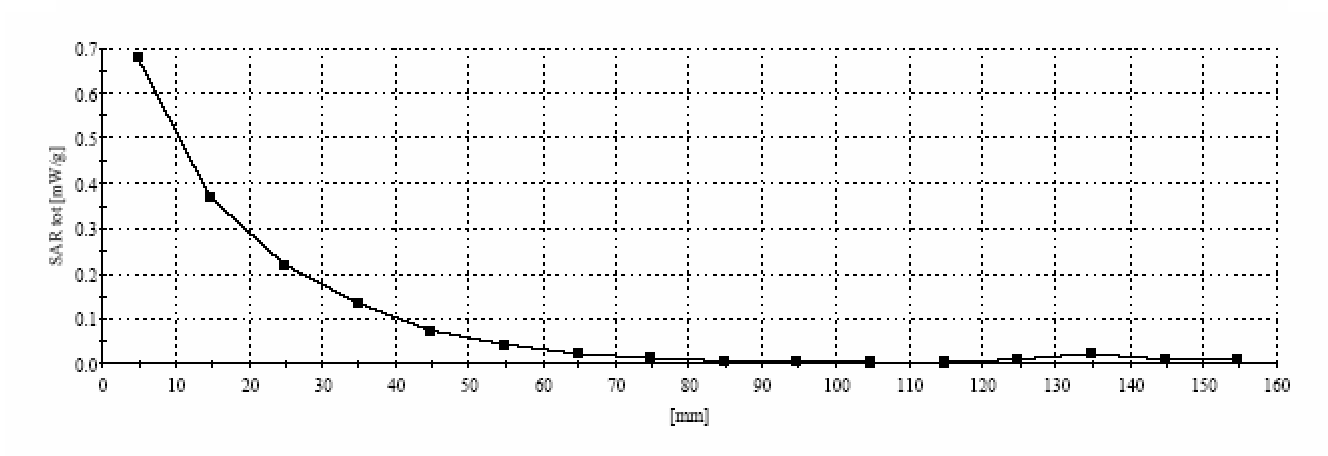
APPENDIX B
Data Results

FCC ID: AZ489FT5841; Test Date: 9/17/04
Motorola CGISS EME Laboratory
Run #: JF-REAR-R3-040917-02
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 813.5125 MHz
Sim Tissue Temp: 20.9 (Celsius)
Start Power: 0.671 W

Antenna: Out
Battery Kit: SNN5705C
Carry Acc: NONE
Audio/Data Acc.: NONE

DUT at Left ear in cheek touch position
SAM - Expanded (new) Phantom; Right Hand Section; Position: (90°,301°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 3.0; IEEE Head 813 MHz: σ = 0.93 mho/m εr = 42.0 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 0.677 mW/g, SAR (10g): 0.473 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 43.5, 18.0, 4.7
Power Drift: 0.46 dB

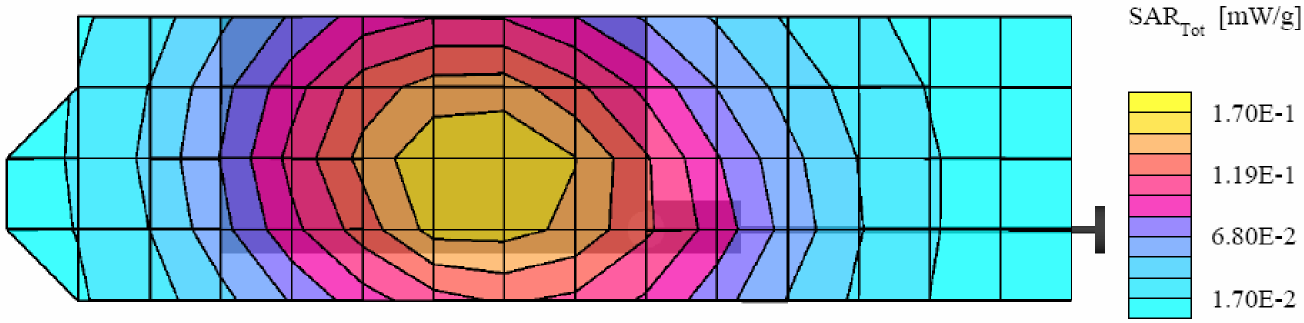


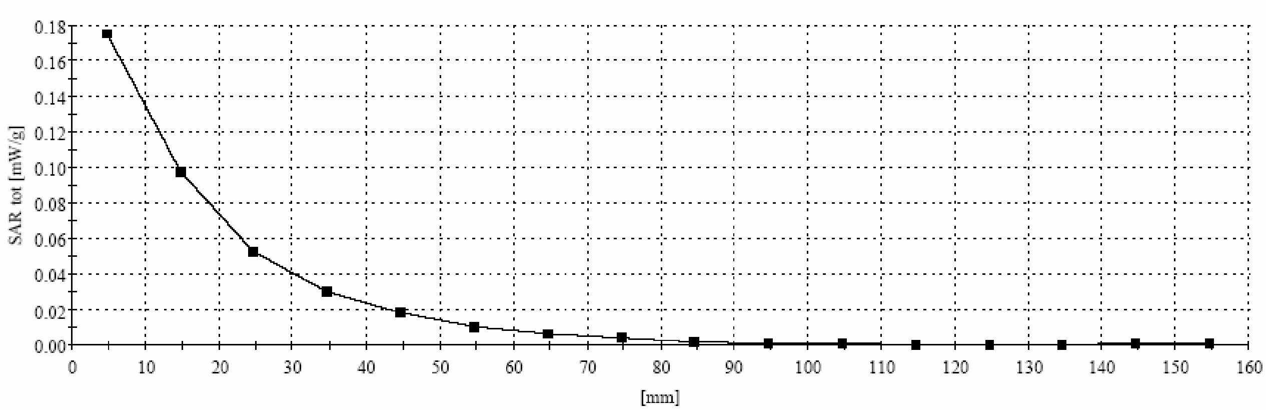


FCC ID: AZ489FT5841; Test Date: 10/08/04
Motorola CGISS EME Laboratory
Run #: CM-Face-R3-041008-02
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 806.0125 MHz
Sim Tissue Temp: 21.1 (Celsius)
Start Power: 0.679 W

Antenna: Out
Battery Kit: SNN5705C
Carry Acc: NONE
Audio/Data Acc.: NONE

DUT front separated 2.5cm from phantom; flip closed
SAM - Expanded (new) Phantom; Flat Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE Head 813 MHz: σ = 0.93 mho/m εr = 42.3 ρ = 1.00 g/cm3; DAE3: 401V1 DAE Cal Date: 8/25/2004
Cube 5x5x7: SAR (1g): 0.170 mW/g, SAR (10g): 0.124 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 34.5, 97.5, 4.7
Power drift: 0.05 dB

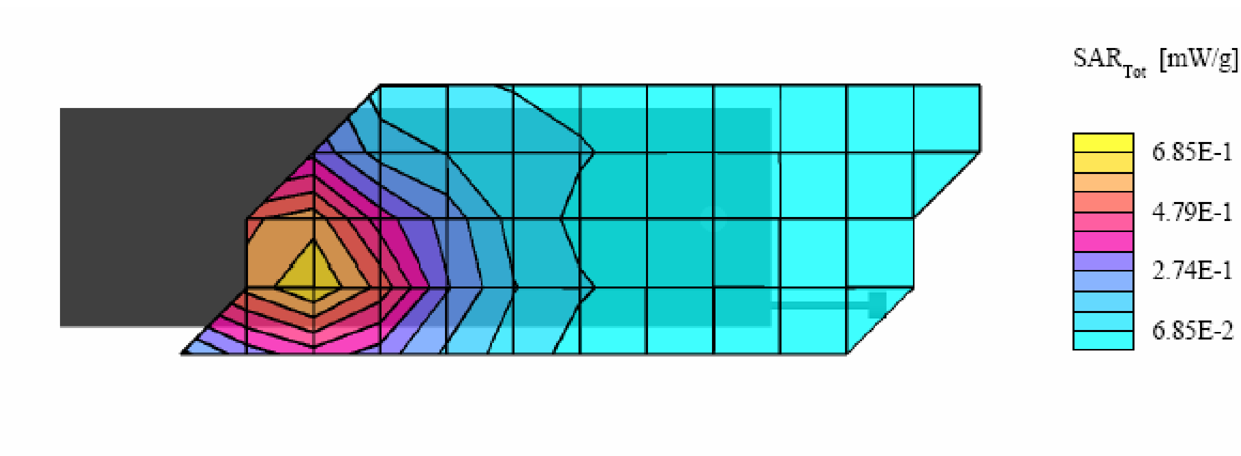


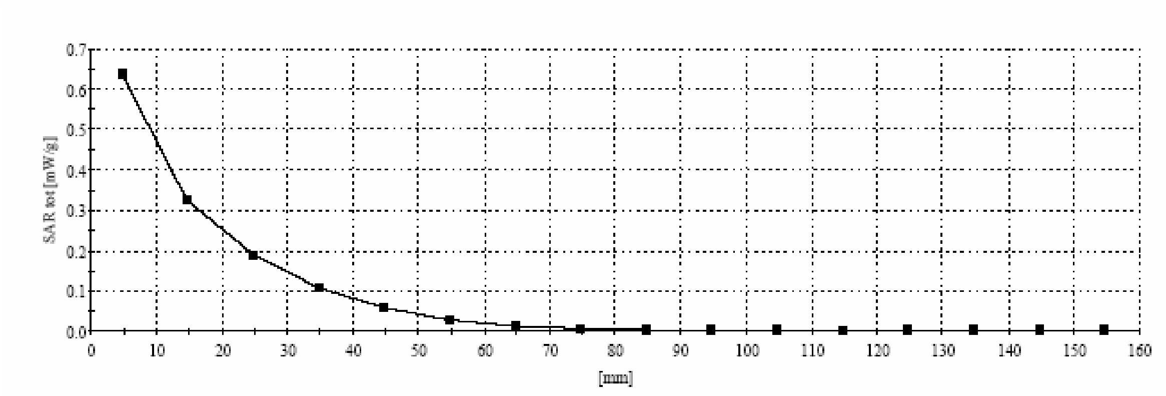


FCC ID: AZ489FT5841; Test Date: 9/17/04
Motorola CGISS EME Laboratory
Run #: JF-REAR-R3-040917-03
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 896.01875 MHz
Sim Tissue Temp: 20.9 (Celsius)
Start Power: 0.670 W

Antenna: In
Battery Kit: SNN5704C
Carry Acc: NONE
Audio/Data Acc.: NONE

DUT at right ear in cheek touch position
SAM - Expanded (new) Phantom; Right Hand Section; Position: (90°,301°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 3.0; IEEE Head 899 MHz: σ = 1.01 mho/m εr = 41.0 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 0.622 mW/g, SAR (10g): 0.433 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 42.0, 19.5, 4.7
Power drift: -0.03 dB

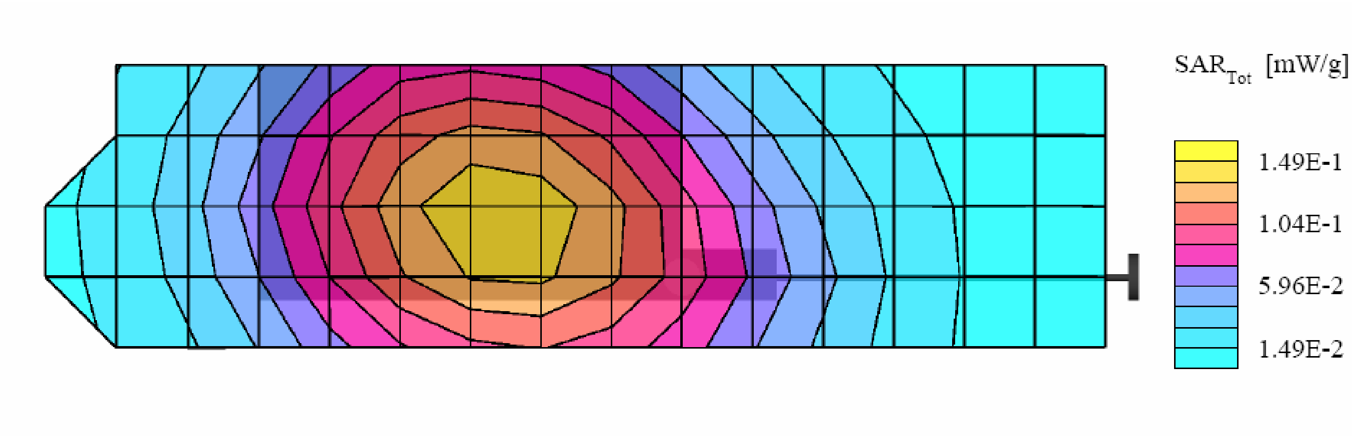


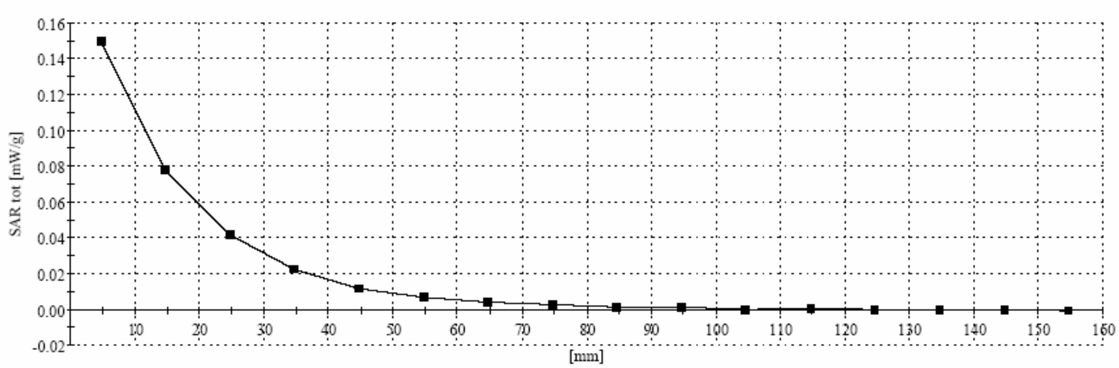


FCC ID: AZ489FT5841; Test Date: 10/08/04
Motorola CGISS EME Laboratory
Run #: CM-Face-R3-041008-03
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 896.01875 MHz
Sim Tissue Temp: 21.1 (Celsius)
Start Power: 0.668 W

Antenna: Out
Battery Kit: SNN5704C
Carry Acc: NONE
Audio/Data Acc.: NONE

DUT front separated 2.5cm from phantom; flip closed
SAM - Expanded (new) Phantom; Flat Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE Head 899 MHz: σ = 1.00 mho/m εr = 41.2 ρ = 1.00 g/cm3; DAE3: 401V1 DAE Cal Date: 8/25/2004
Cube 5x5x7: SAR (1g): 0.149 mW/g, SAR (10g): 0.106 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 94.5, 4.7
Power drift: 0.04 dB



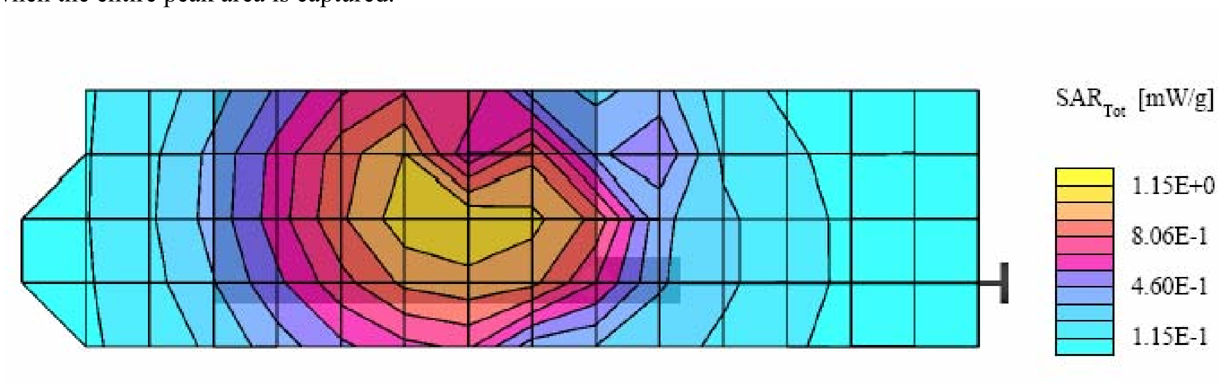


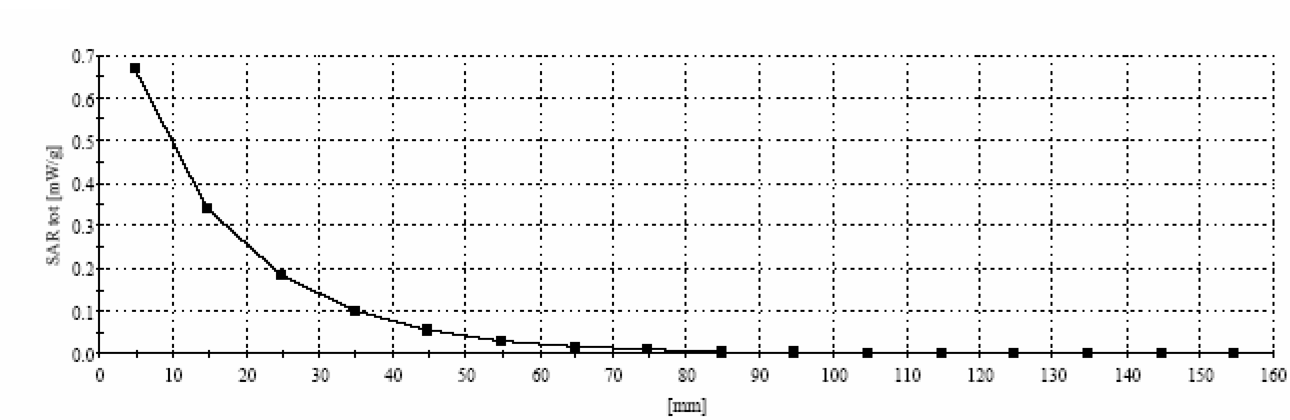
FCC ID: AZ489FT5841; Test Date: 10/07/04
Motorola CGISS EME Laboratory

Run #: CM-Face-R3-041007-02
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 902.5250 MHz
Sim Tissue Temp: 20.7 (Celsius)
Start Power: 0.821 W

Antenna: In
Battery Kit: SNN5705C
Carry Acc: NONE
Audio/Data Acc.: NONE

DUT front 2.5cm from phantom w/ flip closed
SAM - Expanded (new) Phantom; Flat Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 1.1; IEEE Head 915 MHz: σ = 1.02 mho/m εr = 41.0 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 0.669 mW/g, SAR (10g): 0.473 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 103.5,
Power drift: -2.25dB
Note: "Max outside" has been identified by SPEAG as an unresolved intermittent occurrence with the DASY 3 application even when the entire peak area is captured.

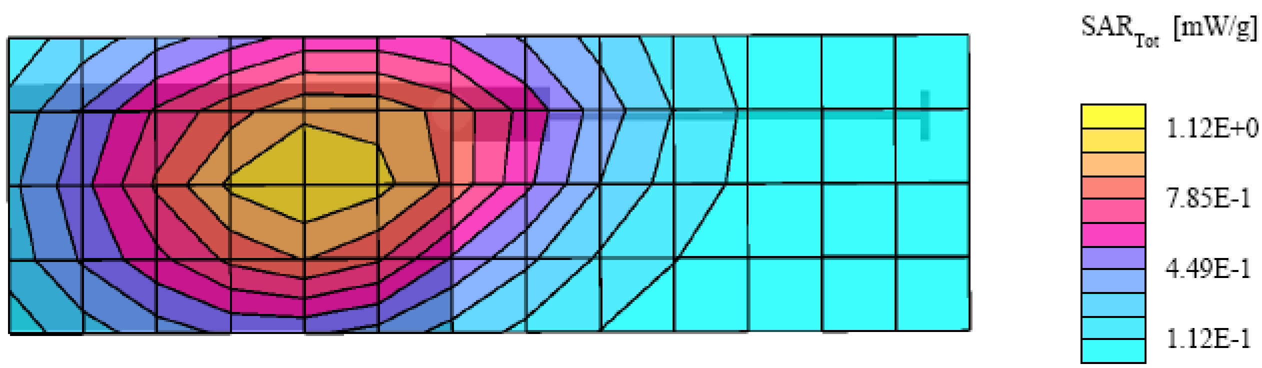


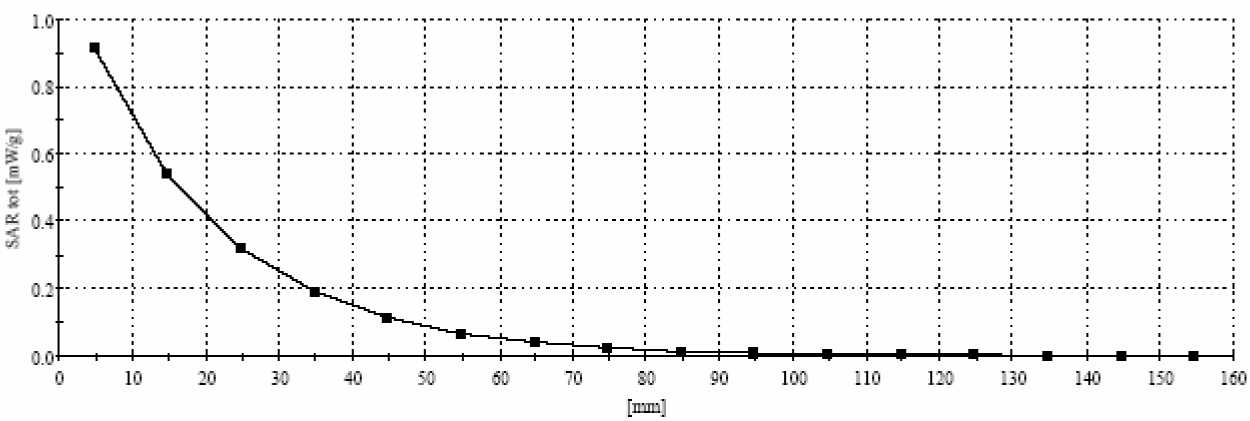


FCC ID: AZ489FT5841; Test Date: 9/21/04
Motorola CGISS EME Laboratory
Run #: CM-Ab-R3-040921-10
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 824.9875 MHz
Sim Tissue Temp: 19.4 (Celsius)
Start Power: 0.669 W

Antenna: In
Battery Kit: SNN5704C
Carry Acc: NNTN4747A
Audio/Data Acc.: NONE

DUT w/ body worn accessory against the phantom
Flat Phantom; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC Body 813: σ = 0.96 mho/m εr = 53.7 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.725 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 61.5, 4.7
Power drift: -1.16 dB

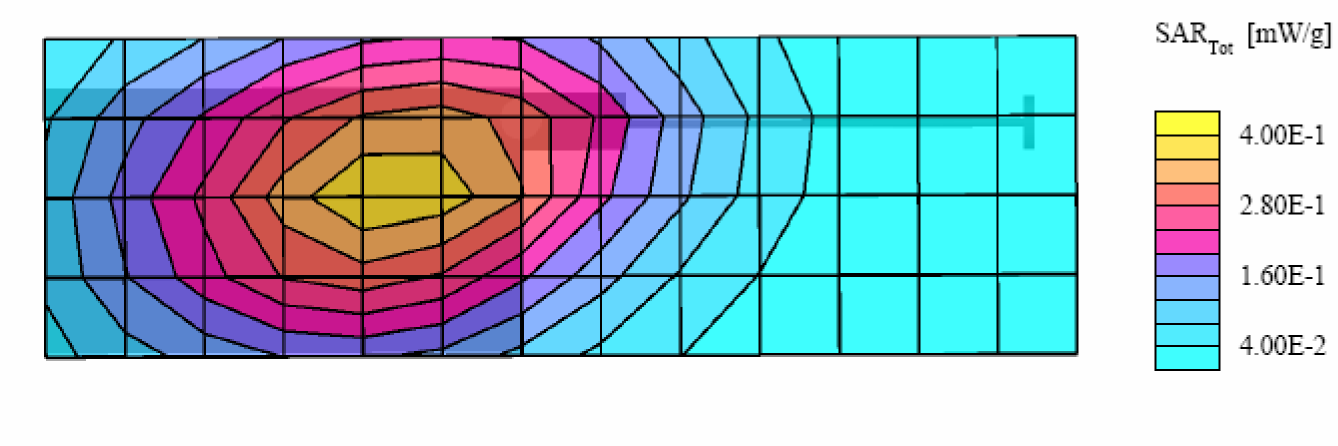


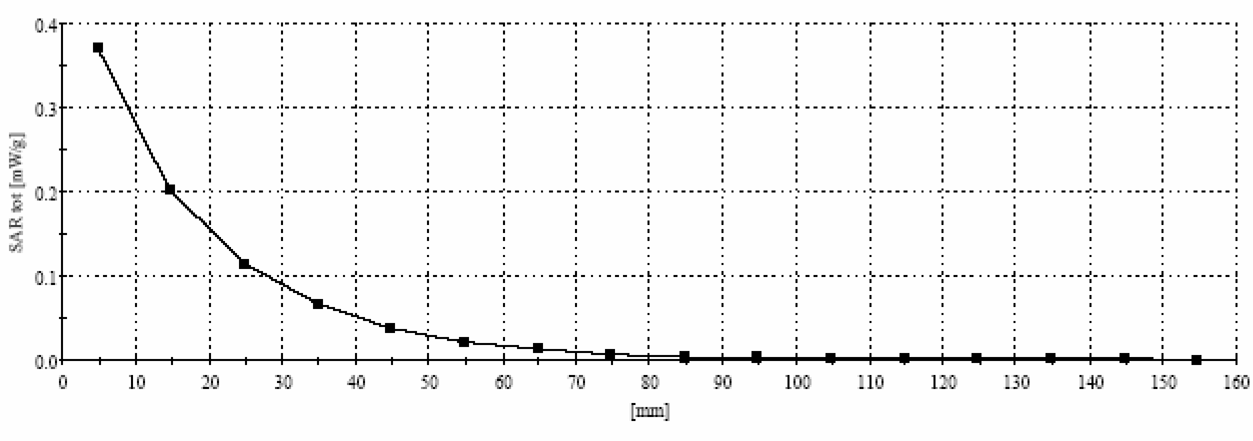


FCC ID: AZ489FT5841; Test Date: 9/21/04
Motorola CGISS EME Laboratory
Run #: CM-Ab-R3-040921-09
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 898.49375 MHz
Sim Tissue Temp: 19.4 (Celsius)
Start Power: 0.671 W

Antenna: Out
Battery Kit: SNN5704C
Carry Acc: NNTN4747A
Audio/Data Acc.: SYN8146C

DUT w/ body worn accessory against the phantom
Flat Phantom; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 3.0; FCC
Body 899: σ = 1.06 mho/m εr = 52.8 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 0.394 mW/g, SAR (10g): 0.281 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 64.5, 4.7
Power drift: -0.43 dB

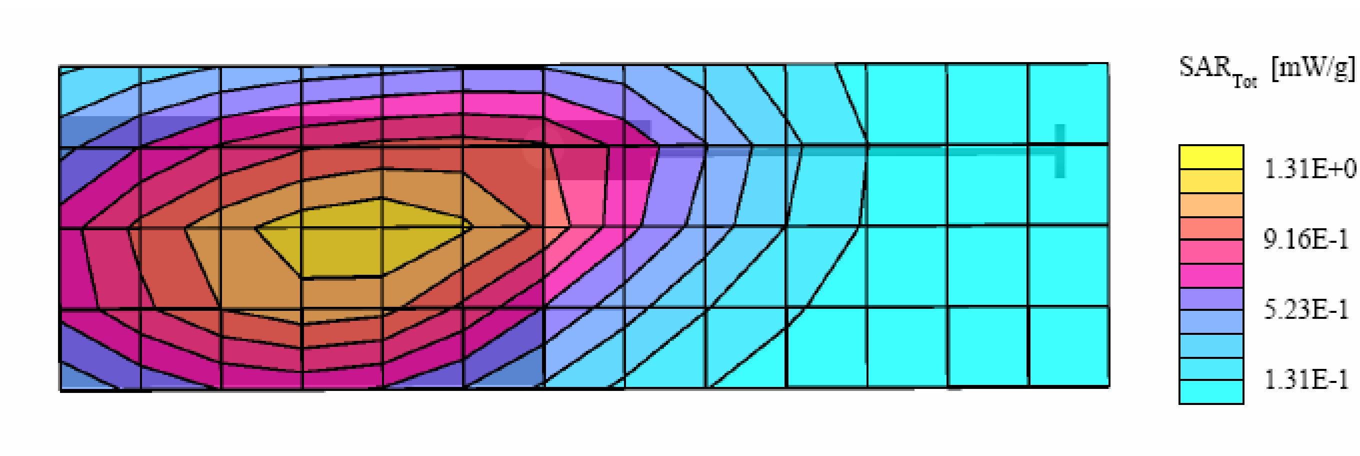


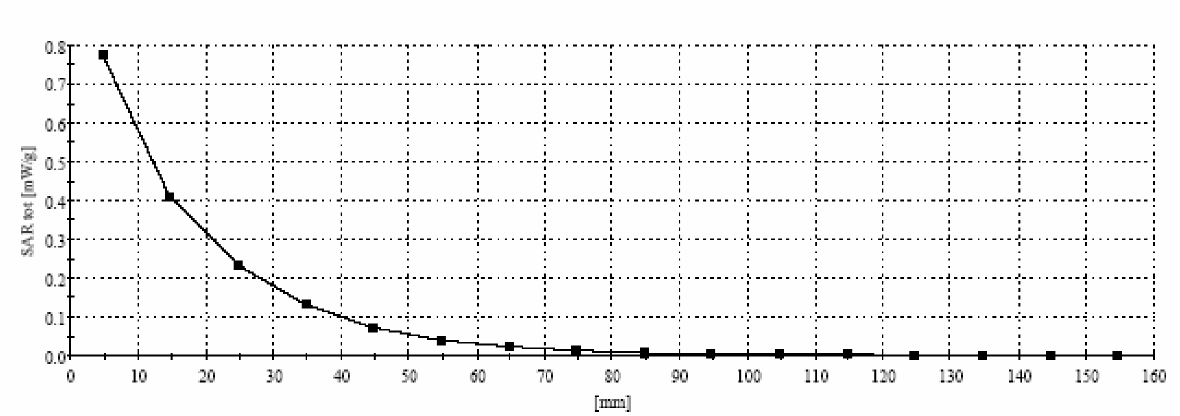


FCC ID: AZ489FT5841; Test Date: 9/21/04
Motorola CGISS EME Laboratory
Run #: CM-Ab-R3-040921-08
Model #: H61XAN6RR4AN/NUF3970A00 SN: 364AEN0HFW
TX Freq: 927.4750 MHz
Sim Tissue Temp: 19.5 (Celsius)
Start Power: 0.805 W

Antenna: Out
Battery Kit: SNN5705C
Carry: NNTN4747A
Audio/Data Acc.: NSN6066A

DUT w/ body worn accessory against the phantom
Flat Phantom; Position: (90°,90°);
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.1; FCC Body 915: σ = 1.08 mho/m εr = 52.6 ρ = 1.00 g/cm3; DAE3: 406V1 DAE Cal Date: 11/20/2003
Cube 5x5x7: SAR (1g): 1.37 mW/g, SAR (10g): 0.866 mW/g * Max outside, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 57.0, 4.7
Power drift: -2.22 dB
Note: "Max outside" has been identified by SPEAG as an unresolved intermittent occurrence with the DASY 3 application even when the entire peak area is captured.





APPENDIX C

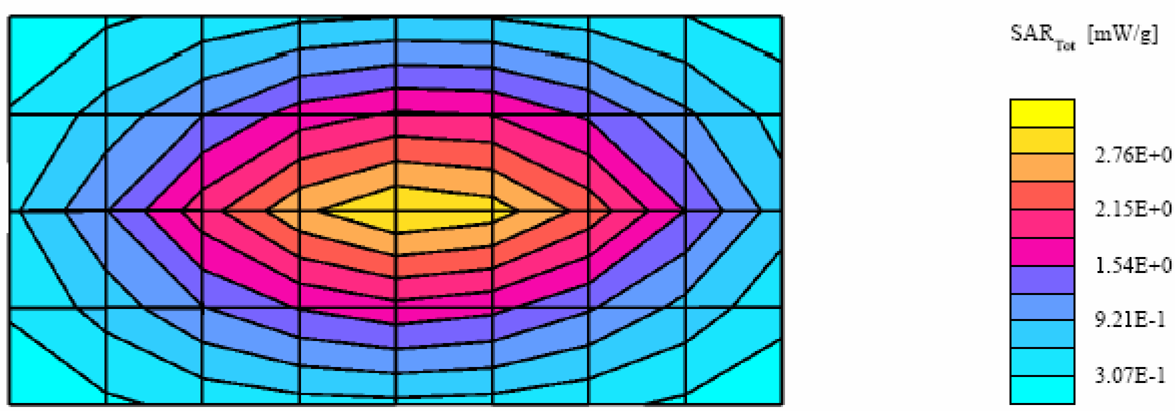
Dipole System Performance Check Results

Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The CGISS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the CGISS EME system performance validation are provided in this appendix.

SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/13/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040913-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.9 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.16 mW/g (1g avg). Percent from target (including drift) is + 9 %
SAR calculated at 1W is 7.59 mW/g (10g avg). Percent from target (including drift) is + 8 %

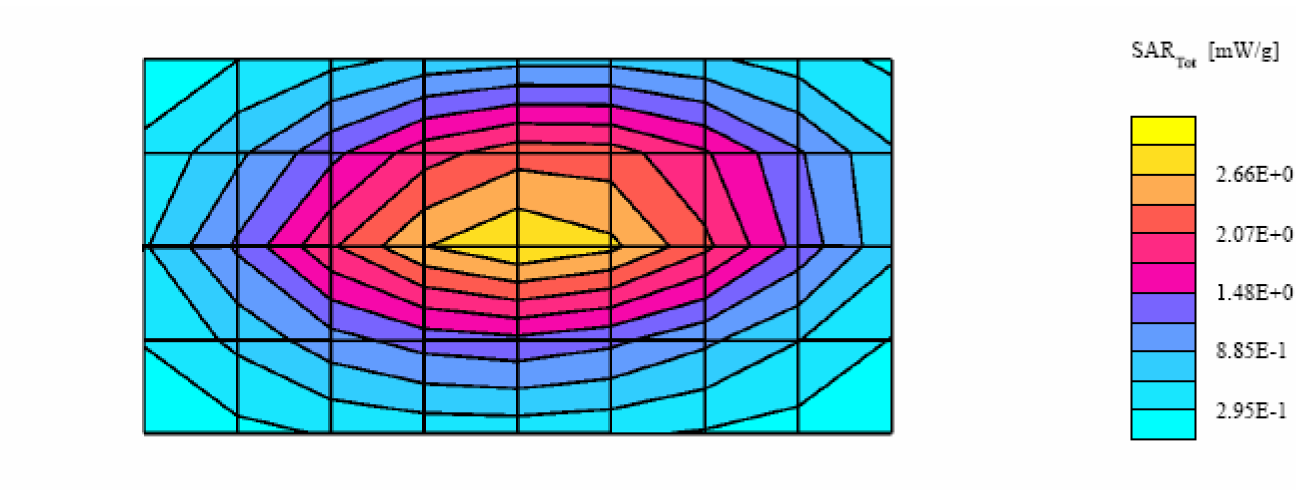
SAM - Expanded; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.01mho/m ε_r = 41.5 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.89 mW/g ± 0.00 dB, SAR (1g): 3.06 mW/g ± 0.01 dB, SAR (10g): 1.91 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.4) [mm]
Power drift: 0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/14/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040914-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.5 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.21 mW/g (1g avg). Percent from target (including drift) is + 9 %
SAR calculated at 1W is 7.62 mW/g (10g avg). Percent from target (including drift) is + 9 %

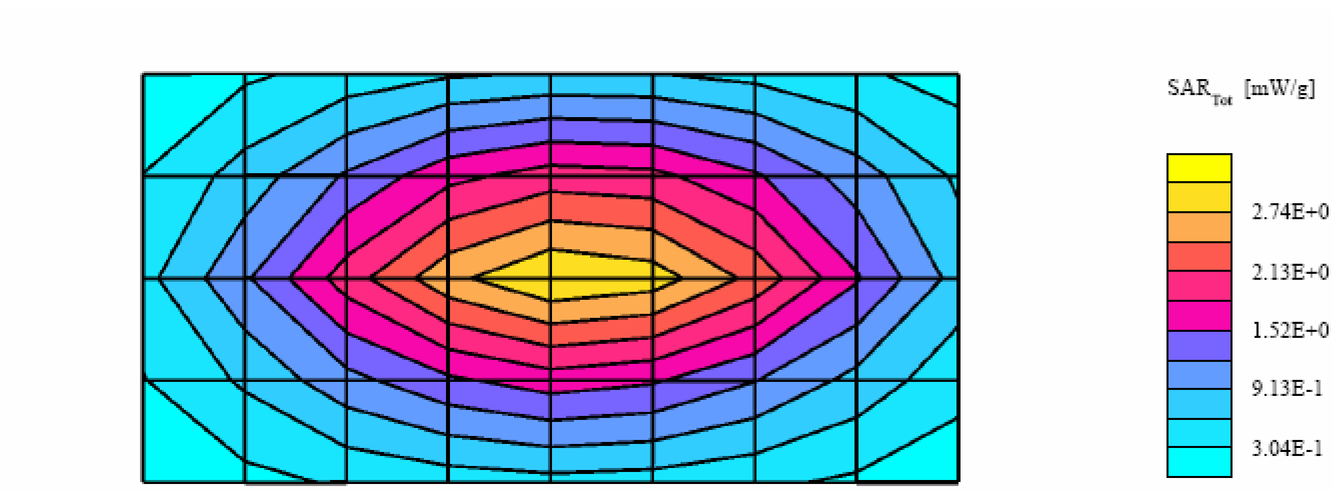
SAM - Expanded ;Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.01mho/m ε_r = 40.9 ρ = 1.00 g/cm^3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.90 mW/g ± 0.02 dB, SAR (1g): 3.06 mW/g ± 0.02 dB, SAR (10g): 1.91 mW/g ± 0.03 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.3) [mm]
Power drift: 0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/15/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040915-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.5 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.18 mW/g (1g avg). Percent from target (including drift) is + 9 %
SAR calculated at 1W is 7.64 mW/g (10g avg). Percent from target (including drift) is + 9 %

SAM - Expanded; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.01mho/m ε_r = 40.8 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.91 mW/g ± 0.05 dB, SAR (1g): 3.06 mW/g ± 0.05 dB, SAR (10g): 1.92 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.4) [mm]
Power drift: 0.02 dB

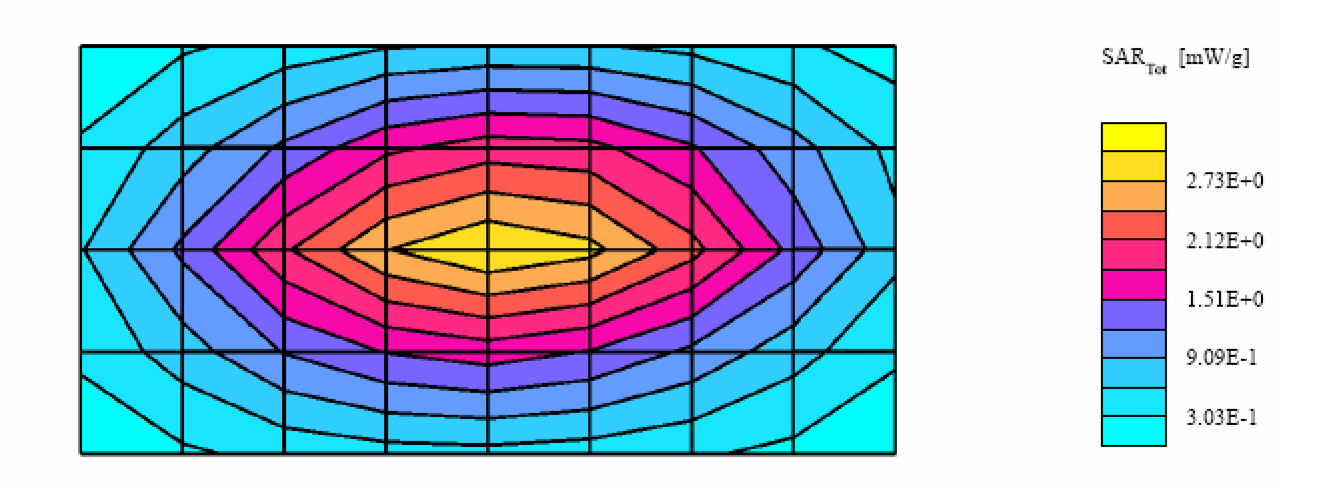


SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/16/04
Motorola CGISS EME Lab

Run #: Sys Perf-R3-040916-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.2 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 11.88 mW/g (1g avg). Percent from target (including drift) is + 6.53 %
SAR calculated at 1W is 7.47 mW/g (10g avg). Percent from target (including drift) is + 6.99 %

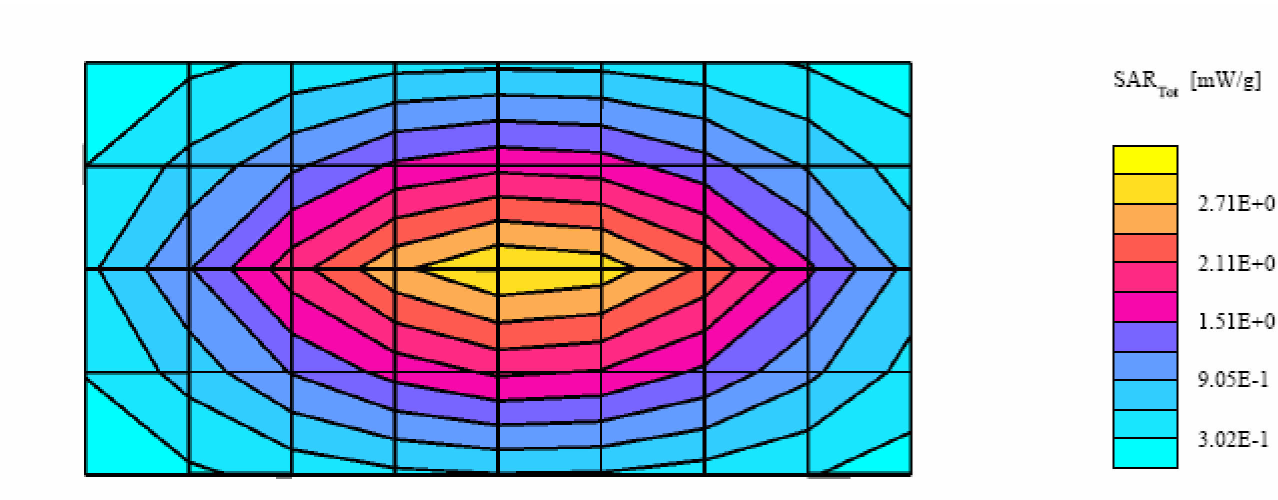
SAM - Expanded; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.01mho/m ε_r = 40.6 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.78 mW/g ± 0.06 dB, SAR (1g): 2.99 mW/g ± 0.05 dB, SAR (10g): 1.88 mW/g ± 0.03 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.6, 12.4) [mm]
Power drift: 0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/17/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040917-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.9 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.05 mW/g (1g avg). Percent from target (including drift) is + 8.03 %
SAR calculated at 1W is 7.58 mW/g (10g avg). Percent from target (including drift) is + 8.65 %

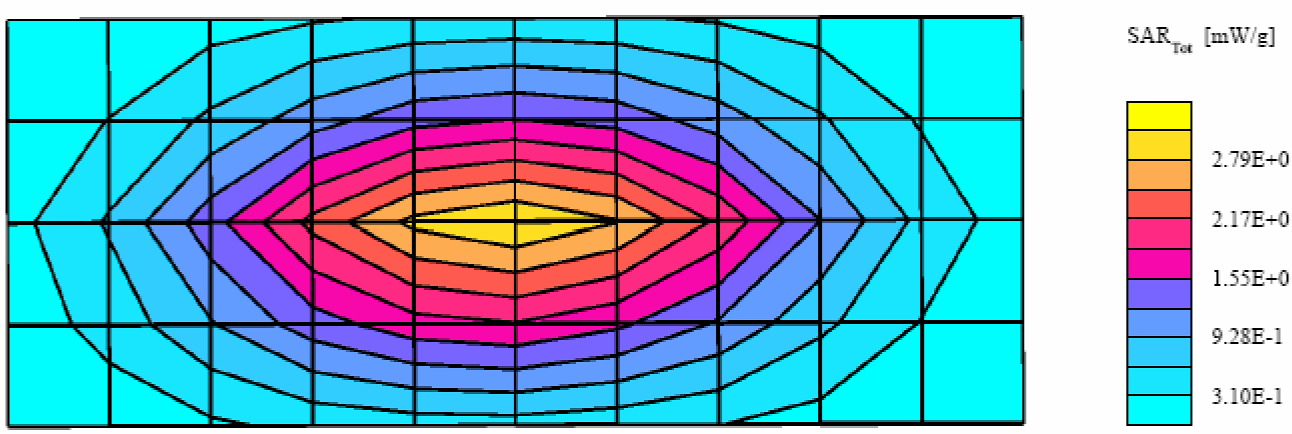
SAM - Expanded; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.01mho/m ε_r = 41.0 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.76 mW/g ± 0.02 dB, SAR (1g): 2.97 mW/g ± 0.01 dB, SAR (10g): 1.87 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.4) [mm]
Power drift: -0.06 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/20/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040920-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.5 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.75 mW/g (1g avg, including drift)
SAR target at 1W is 7.47 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.20 mW/g (1g avg). Percent from target (including drift) is + 3.83 %
SAR calculated at 1W is 7.72 mW/g (10g avg). Percent from target (including drift) is + 3.35 %

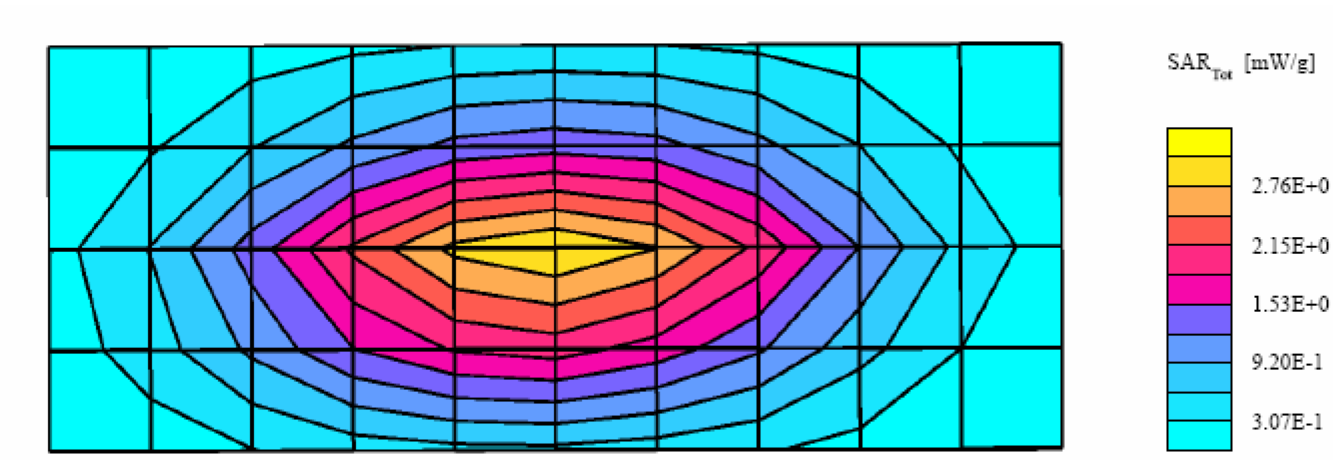
Flat Phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: σ = 1.05 mho/m ε_r = 52.8 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.81 mW/g ± 0.03 dB, SAR (1g): 3.05 mW/g ± 0.01 dB, SAR (10g): 1.93 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.0 (11.0, 13.3) [mm]
Power drift: 0.00 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/21/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040921-01
TX Freq: 900 MHz
Sim Tissue Temp: 19.8 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.75 mW/g (1g avg, including drift)
SAR target at 1W is 7.47 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.41 mW/g (1g avg). Percent from target (including drift) is + 5.62 %
SAR calculated at 1W is 7.83 mW/g (10g avg). Percent from target (including drift) is + 4.78 %

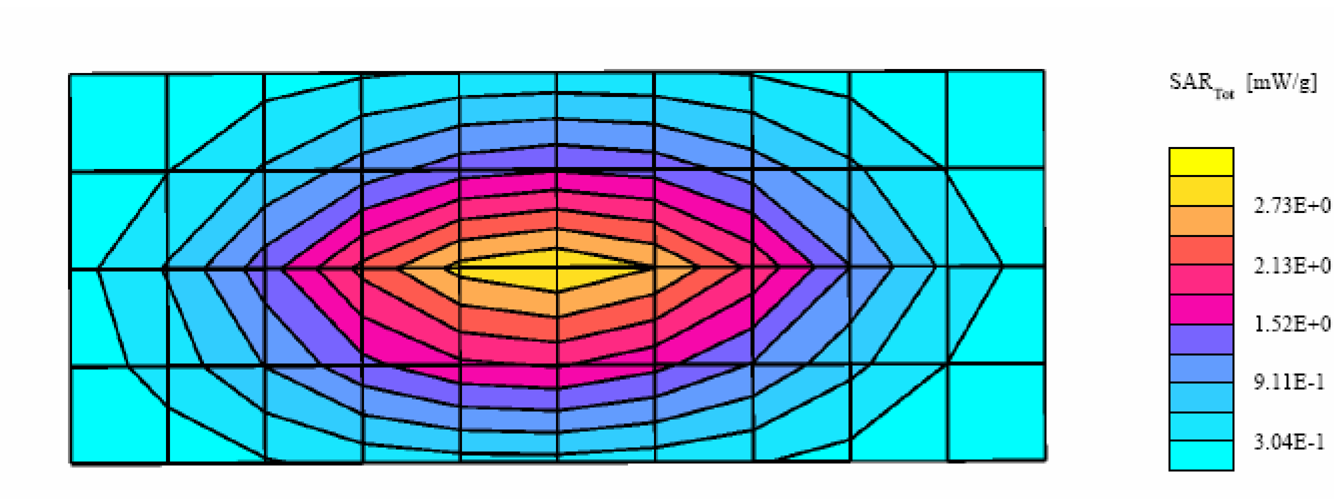
Flat Phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: σ = 1.06 mho/m ε_r = 52.7 ρ = 1.00 g/cm3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.81 mW/g ± 0.01 dB, SAR (1g): 3.06 mW/g ± 0.00 dB, SAR (10g): 1.93 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 12.0 (11.0, 13.3) [mm]
Power drift: -0.06 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/22/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-040922-01
TX Freq: 900 MHz
Sim Tissue Temp: 19.7 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.75 mW/g (1g avg, including drift)
SAR target at 1W is 7.47 mW/g (10g avg, including drift)
SAR calculated at 1W is 12.00 mW/g (1g avg). Percent from target (including drift) is + 5.62 %
SAR calculated at 1W is 7.60 mW/g (10g avg). Percent from target (including drift) is + 4.78 %

Flat Phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: σ = 1.05 mho/m ε_r = 52.6 ρ = 1.00 g/cm^3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.73 mW/g ± 0.00 dB, SAR (1g): 3.00 mW/g ± 0.01 dB, SAR (10g): 1.90 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 12.0 (11.0, 13.3) [mm]
Power drift: 0.00 dB

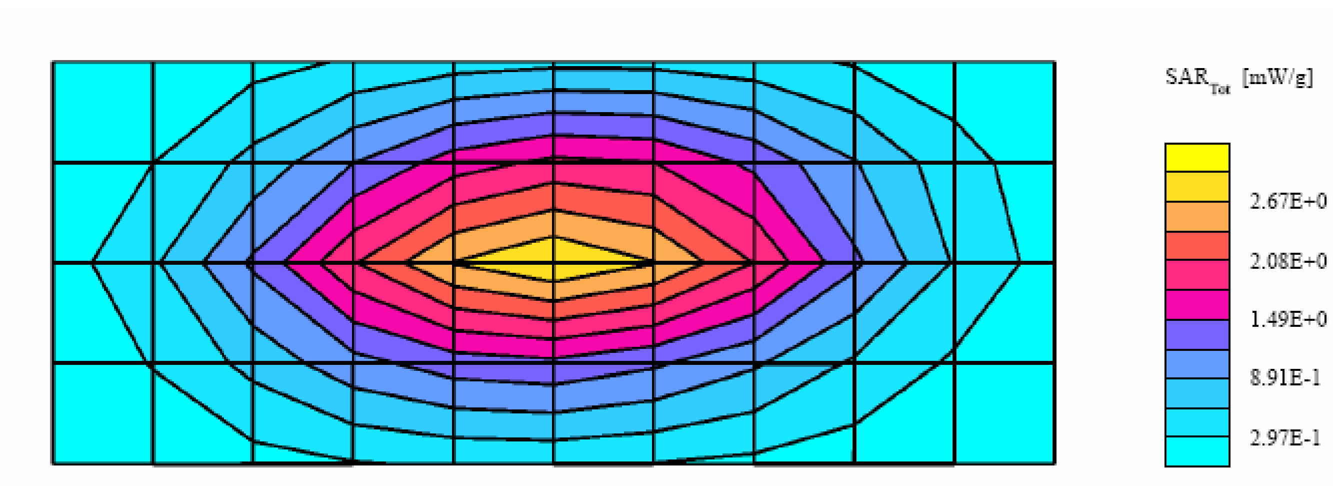


SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 9/29/04
Motorola CGISS EME Lab

Run #: Sys Perf-R3-040929-01
TX Freq: 900 MHz
Sim Tissue Temp: 21.0 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.75 mW/g (1g avg, including drift)
SAR target at 1W is 7.47 mW/g (10g avg, including drift)
SAR calculated at 1W is 11.77 mW/g (1g avg). Percent from target (including drift) is 0.21 %
SAR calculated at 1W is 7.43 mW/g (10g avg). Percent from target (including drift) is -0.48 %

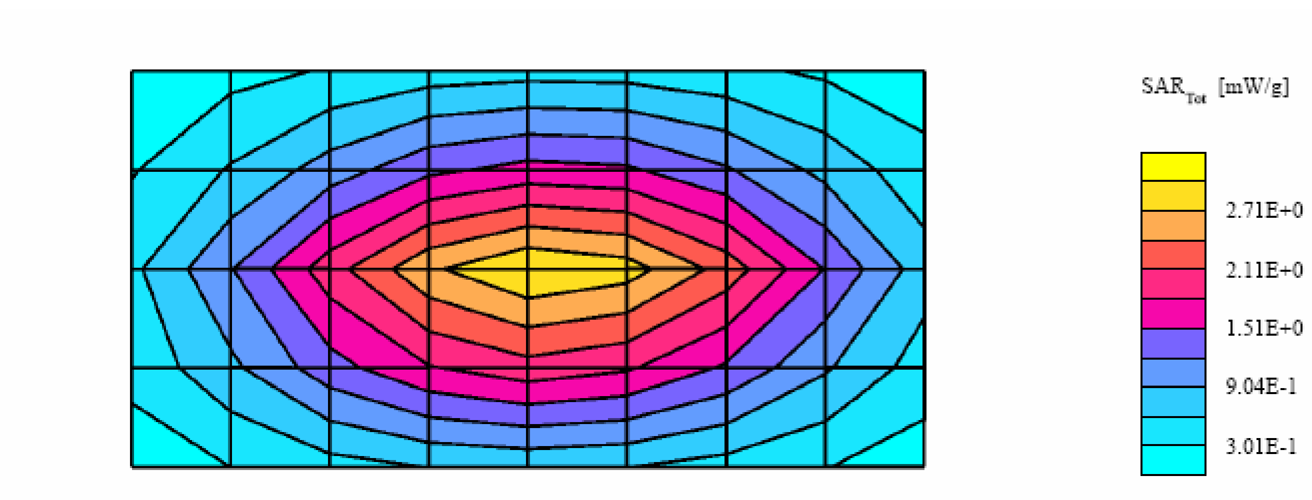
Flat Phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: σ = 1.04 mho/m ε_r = 53.7 ρ = 1.00 g/cm3; DAE3: 401 DAE Cal Date: 8/25/2004
Cubes (2): Peak: 4.62 mW/g ± 0.02 dB, SAR (1g): 2.93 mW/g ± 0.01 dB, SAR (10g): 1.85 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.0 (11.0, 13.4) [mm]
Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 10/07/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-041007-01
TX Freq: 900 MHz
Sim Tissue Temp: 20.7 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 11.99 mW/g (1g avg). Percent from target (including drift) is 7.51 %
SAR calculated at 1W is 7.54 mW/g (10g avg). Percent from target (including drift) is 7.98 %

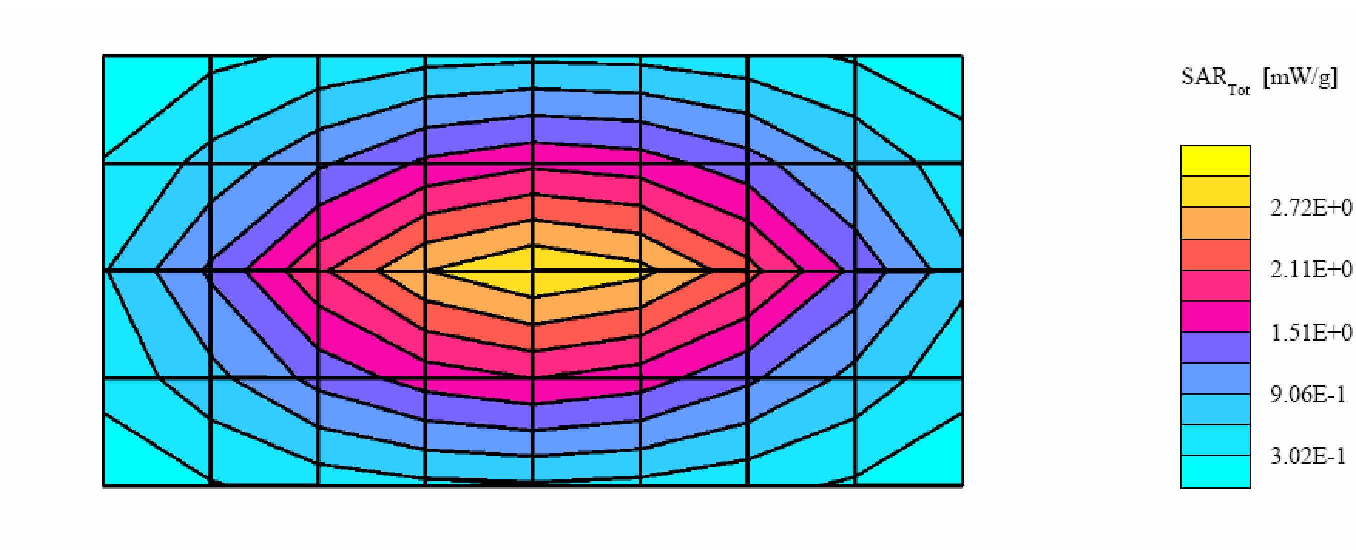
SAM Expanded; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.00 mho/m ε_r = 41.1 ρ = 1.00 g/cm^3; DAE3: 406 DAE Cal Date: 11/20/2003
Cubes (2): Peak: 4.76 mW/g ± 0.01 dB, SAR (1g): 2.99 mW/g ± 0.00 dB, SAR (10g): 1.88 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.5, 12.4) [mm]
Power drift: -0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 10/08/04
Motorola CGISS EME Lab
Run #: Sys Perf-R3-041008-01
TX Freq: 900 MHz
Sim Tissue Temp: 21.1 (Celsius)
Start Power; 250mW

SAR target at 1W is 11.15 mW/g (1g avg, including drift)
SAR target at 1W is 6.98 mW/g (10g avg, including drift)
SAR calculated at 1W is 11.93 mW/g (1g avg). Percent from target (including drift) is 7.04 %
SAR calculated at 1W is 7.47 mW/g (10g avg). Percent from target (including drift) is 7.08 %

SAM - Expanded (new); Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.00 mho/m ε_r = 41.1 ρ = 1.00 g/cm^3; DAE3: 401 DAE Cal Date: 8/25/2004
Cubes (2): Peak: 4.75 mW/g ± 0.00 dB, SAR (1g): 2.97 mW/g ± 0.01 dB, SAR (10g): 1.86 mW/g ± 0.01 dB, (Worst-case extrapolation)Penetration depth: 11.3 (10.5, 12.4) [mm]
Power drift: -0.02 dB



SYSTEM VALIDATION

Date:	12/16/2003	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE Head
Robot System:	CGISS-3	Ambient Temp.(°C):	22.8
Probe Serial #:	ET3DV6-1393	Tissue Temp.(°C):	20.9
DAE Serial #:	406		

Tissue Characteristics

Permitivity:	41.5	Phantom Type/SN:	SAMTP1208
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)

Reference Source: 900V2 (Dipole)
Reference SN: 85

Power to Dipole: 250 mW
Power Output (radio NA mW

Target SAR Value: 10.8 mW/g, 6.9 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 3 mW/g, 1.88 mW/g (10g avg.)
Power Drift: 0 dB

Measured SAR Value: 12.00 mW/g, 7.52 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 11.11 % (1g ave)
8.99 % (10g ave)

Test performed by: Edward R. Church Initial: E. C.

Motorola Internal Use Only Sys. Valid. Form: 021024

SPEAG DIPOLE D900V2; Test date:12/16/03

Run #: Sys Val-R3-031216-03
Model #: D900V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power; 250mW
DAE3: SN: 406

Phantom #:SAMTP1208
SN: 085
Tester: E. Church
Sim Tissue Temp; 20.9 (Celsius)

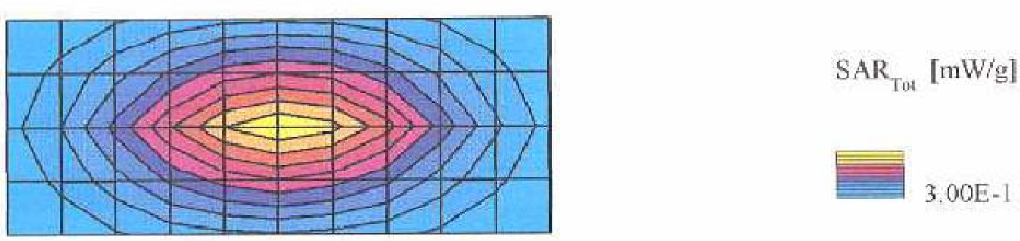
DAE Cal Date: 11/20/03

- Comments-

IEEE 1528 Target at 1W is 10.04 mW/g (1g) and 6.9 mW/g (10g avg.)

SAR calculated 1g is 11.96 mW/g percet from target (including drift) + 10.74 %
SAR Calculated 10g is 7.52 mW/g Percent from target (including drift) is + 8.99 %

SAM; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(7.00,7.00,7.00); Crest factor: 1.0; IEEE Head 900 MHz: σ = 1.00 mho/m ε_r = 41.5 ρ = 1.00 g/cm³
Cubes (2): Peak: 4.78 mW/g ± 0.04 dB, SAR (1g): 3.00 mW/g ± 0.04 dB, SAR (10g): 1.88 mW/g ± 0.05 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.5, 12.3) [mm]
Powerdrift: 0.00 dB



SYSTEM VALIDATION

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE-Head
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1383	Tissue Temp.(°C):	21
DAE Serial #:	406		

Tissue Characteristics

Permitivity:	41.2	Phantom Type/SN:	SAMTP1022
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)

Reference Source:	D900V2	(Dipole)
Reference SN:	84	

Power to Dipole: 250 mW
Power Output (radio): n/a mW

Target SAR Value: 10.8 mW/g, 6.9 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 2.78 mW/g, 1.74 mW/g (10g avg.)
Power Drift: -0.01 dB

Measured SAR Value: 11.15 mW/g, 6.98 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 3.20 % (1g ave)
1.10 % (10g ave)

Test performed by: C. Miller Initial: [signature]

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE - Head
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1383	Tissue Temp.(°C):	21
DAE Serial #:	401		

Tissue Characteristics

Permitivity:	41.2	Phantom Type/SN:	SAMTP1022
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)

Reference Source: D900V2 (Dipole)
Reference SN: 84

Power to Dipole: 250 mW

Measured SAR Value: 2.78 mW/g, 1.74 mW/g (10g avg.)
Power Drift: -0.01 dB

New Target/Measured
SAR Value: 11.15 mW/g, 6.98 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Test performed by: C. Miller Initial: [signature]

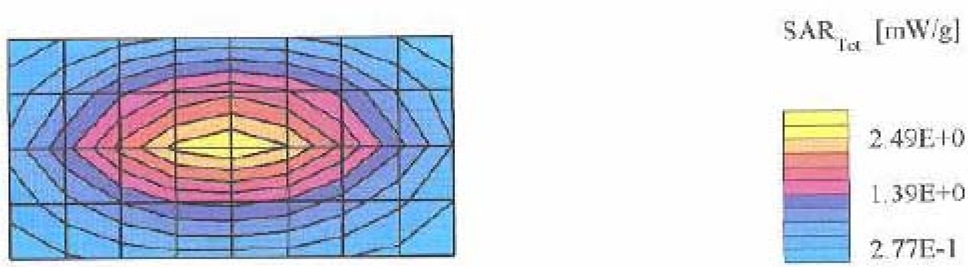
SPEAG DIPOLE D900V2; Test date:04/14/04

Run #: Sys Perf-040414-08
Model #: D900 V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power, 250 mW
DAE3: 401
- Comments-

Phantom #: SAMTP1022
SN: 084
Tester: C. Miller
900 MHz Sim Tissue Temp: 21.0 (Celsius)

DAE Cal Date: 08/21/2003

SAR calculated at 1W is 11.15 mW/g (1g avg).
SAR calculated at 1W is 6.98 mW/g (10g avg).
SAM; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900: σ = 1.00 mho/m ε_r = 41.2 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.44 mW/g ± 0.01 dB, SAR (1g): 2.78 mW/g ± 0.02 dB, SAR (10g): 1.74 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.4, 12.4) [mm]
Powerdrift: -0.01 dB



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	FCC Body
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1545	Tissue Temp.(°C):	20.5
DAE Serial #:	406		

Tissue Characteristics

Permitivity:	53.3	Phantom Type/SN:	80302002A/S8
Conductivity:	1.05	Distance (mm):	15 (tissue/dipole cnt)

Reference Source: D900V2 (Dipole)
Reference SN: 84

Power to Dipole: 250 mW

Measured SAR Value: 2.91 mW/g, 1.85 mW/g (10g avg.)
Power Drift: -0.04 dB

New Target/Measured
SAR Value: 11.75 mW/g, 7.47 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Test performed by: C. Miller Initial: CM

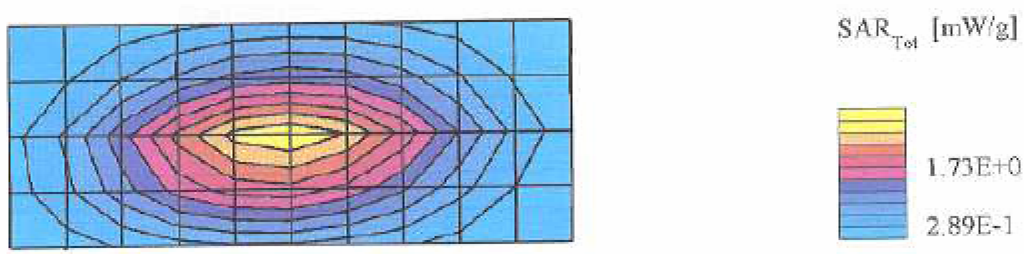
SPEAG DIPOLE D900V2; Test date:04/14/04

Run #: Sys Perf-040414-09
Model #: D900 V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power; 250 mW
DAE3: 401
- Comments-

Phantom #: 80302002A/S8
SN: 084
Tester: C. Miller
900 MHz Sim Tissue Temp: 20.5 (Celsius)

DAE Cal Date: 08/21/2003

SAR calculated at 1W is 11.75 mW/g (1g avg).
SAR calculated at 1W is 7.47 mW/g (10g avg).
Flat; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: σ = 1.05 mho/m ε_r = 53.3 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.56 mW/g ± 0.03 dB, SAR (1g): 2.91 mW/g ± 0.03 dB, SAR (10g): 1.85 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 12.0 (11.1, 13.3) [mm]
Powerdrift: -0.04 dB



APPENDIX D

Probe/Dipole Calibration Certificates

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1383
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	February 25, 2004
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Reference 20 dB Attenuator	SN: 5086 (20b)	3-Apr-03 (METAS, No. 251-0340)	Apr-04
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: February 25, 2004

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

ET3DV6 SN:1383 February 25, 2004

DASY - Parameters of Probe: ET3DV6 SN:1383

Sensitivity in Free Space

NormX	1.88	$\mu V/(V/m)^2$
NormY	1.63	$\mu V/(V/m)^2$
NormZ	1.71	$\mu V/(V/m)^2$

Diode Compression[A]

DCP X	92	mV
DCP Y	92	mV
DCP Z	92	mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Plese see Page 7.

Boundary Effect

Head 900 MHz Typical SAR gradient: 5 % per mm

Sensor Cener to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	9.9	5.0
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

Head 1800 MHz Typical SAR gradient: 10 % per mm

Sensor to Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	13.6	8.8
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm
Optical Surface Detection	**very low, but repeatable**

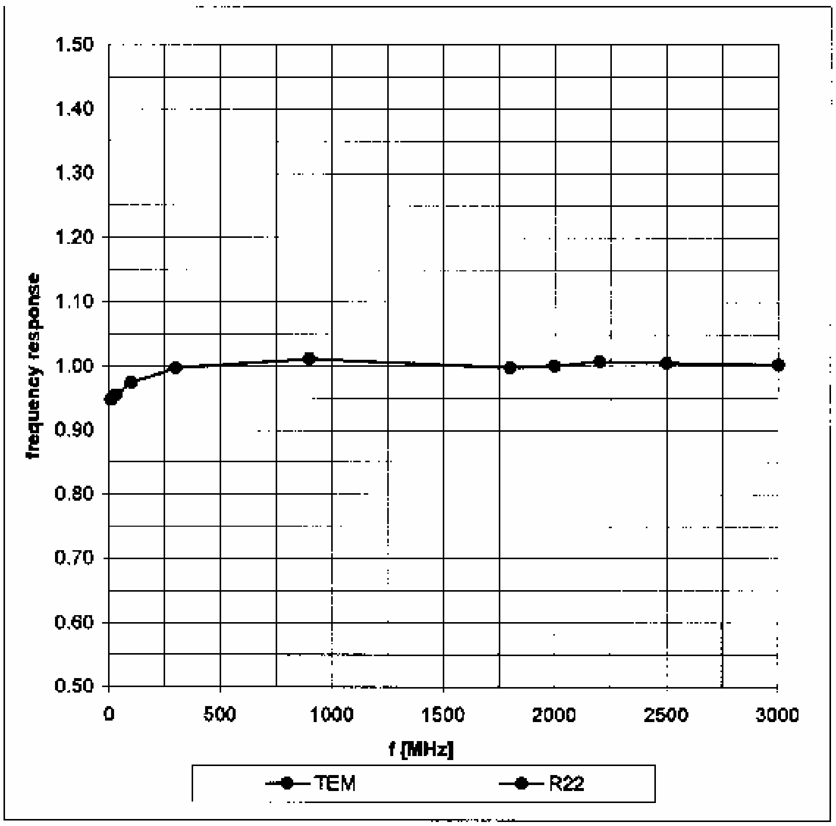
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] numerical linearization parameter: uncertainty not required

ET3DV6 SN:1383 February 25, 2004

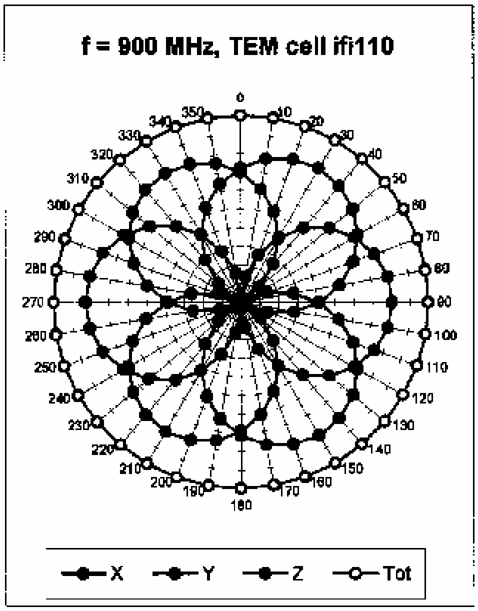
Frequency Response of E-Field

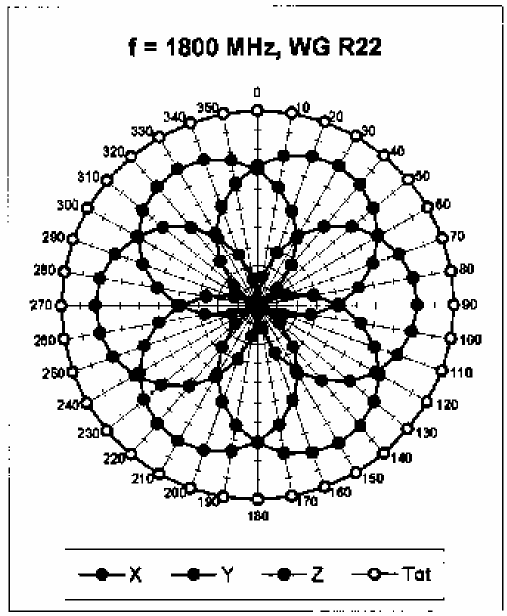
(TEM-Cell:ifi110, Waveguide R22)

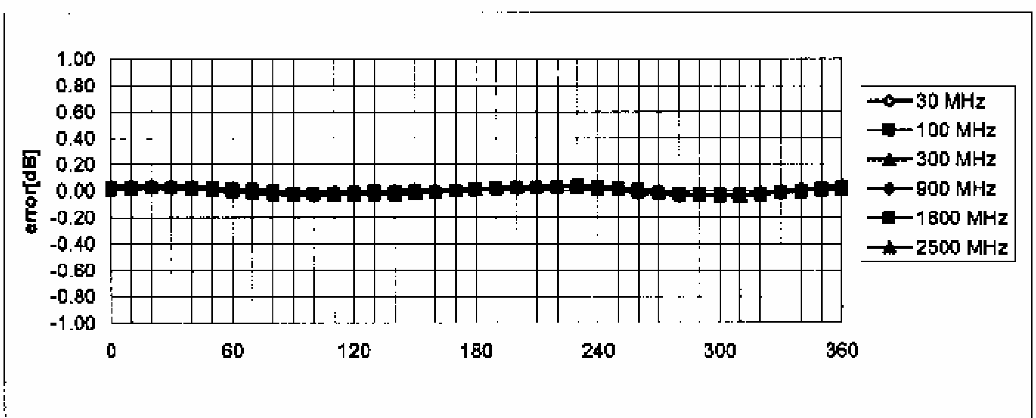


ET3DV6 SN:1383 **February 25, 2004**

Receiving Pattern (ϕ), θ = 0°





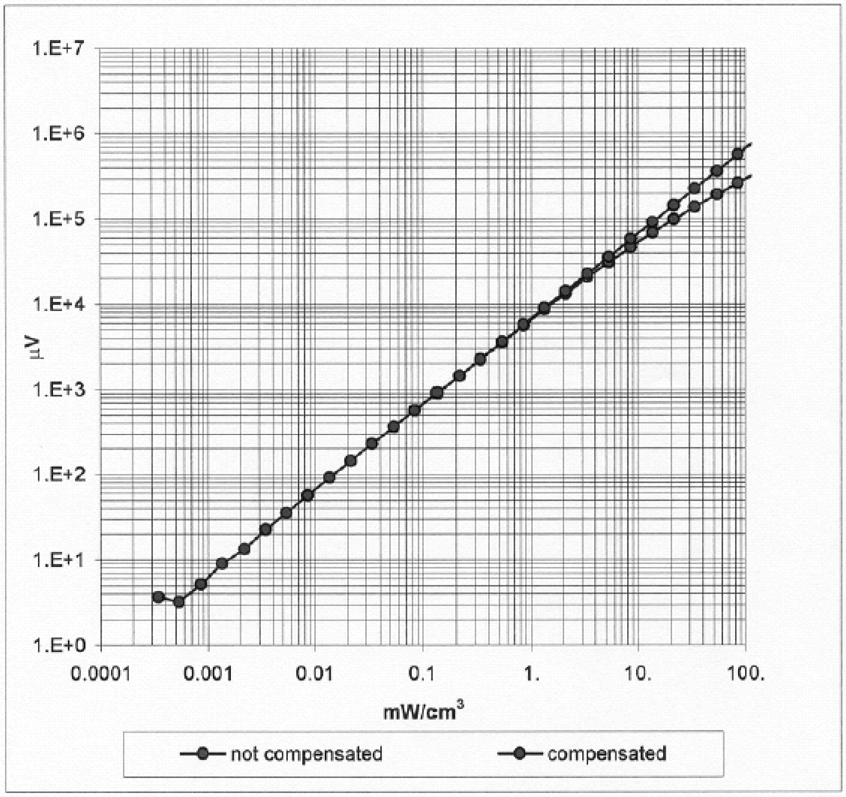


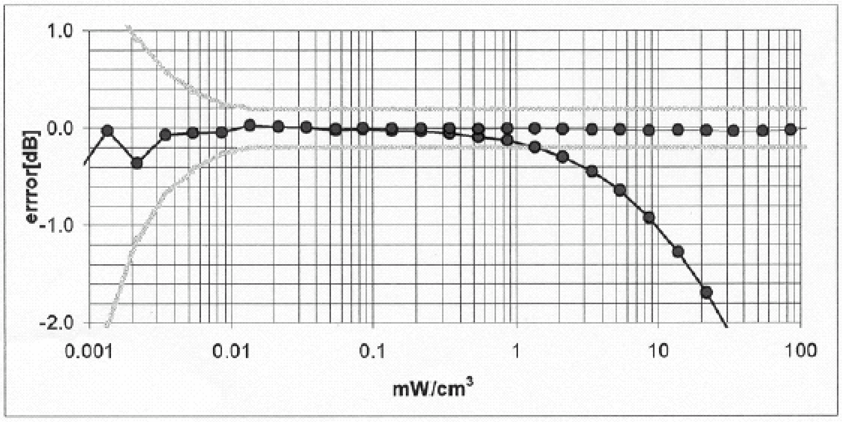
Axial Isotropy Error < ± 0.2 dB

ET3DV6 SN:1383 February 25, 2004

Dynamic Range f(SAR_{head})

(Waveguide R22)

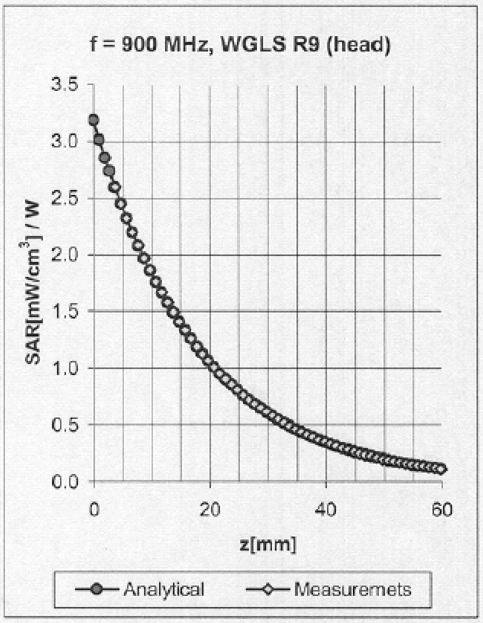


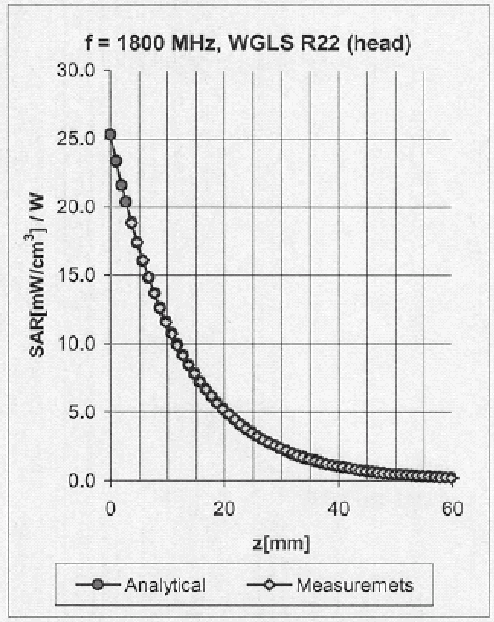


Probe Linearity < ± 0.2 dB

ET3DV6 SN:1383 February 25, 2004

Conversion Factor Assessment





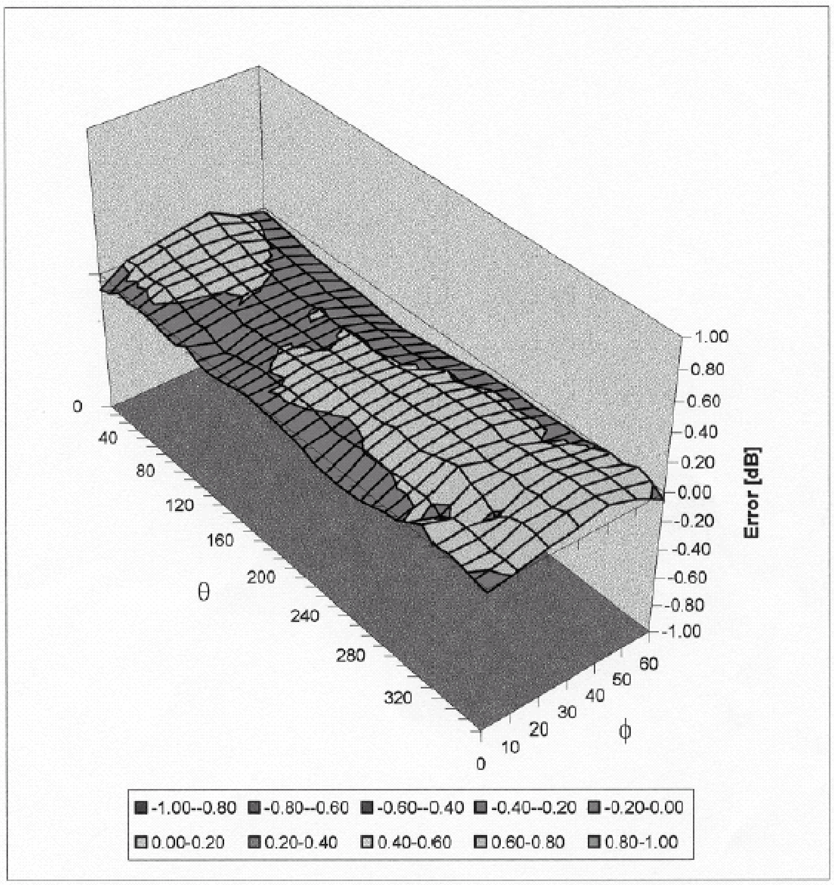
f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.72	1.77	6.30	± 9.5% (k=2)
1450	1400-1500	Head	40.5 ± 5%	1.20 ± 5%	0.55	2.40	5.72	± 9.5% (k=2)
1800	1710-1910	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.38	5.14	± 9.5% (k=2)
2450	2400-2500	Head	39.2 ± 5%	1.80 ± 5%	1.18	1.72	4.76	± 9.5% (k=2)
900	800-1000	Body	55.0 ± 5%	1.05 ± 5%	0.51	2.27	5.82	± 9.5% (k=2)
1450	1400-1500	Body	54.0 ± 5%	1.30 ± 5%	0.53	2.58	5.27	± 9.5% (k=2)
1800	1710-1910	Body	53.3 ± 5%	1.52 ± 5%	0.62	2.67	4.55	± 9.5% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	1.91	1.23	4.41	± 9.5% (k=2)

[B] The stated uncertainty of calibration was assessed according to P1528.

ET3DV6 SN:1383 February 25, 2004

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz



Spherical Isotropy Error < ± 0.4 dB

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Calibration Certificate

900 MHz System Validation Dipole

Type:	D900V2
Serial Number:	084
Place of Calibration:	Zurich
Date of Calibration:	February 11, 2002
Calibration Interval:	24 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by: *Blerim Katja* [signature]

Approved by: [signature]

1. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with head simulating solution of the following electrical parameters at 900 MHz:

Relative Dielectricity	**41.1**	± 5%
Conductivity	**0.95 mho/m**	± 5%

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.5) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from dipole center to the solution surface. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 1. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**11.2 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**7.12 mW/g**

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well.

3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	**1.389 ns**	(one direction)
Transmission factor:	**0.997**	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 900 MHz:	Re{Z} = **52.1 Ω**
	Im {Z} = **-4.3 Ω**
Return Loss at 900 MHz	**-26.5 dB**

4. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with body simulating solution of the following electrical parameters at 900 MHz:

Relative Dielectricity	**54.8**	± 5%
Conductivity	**1.03 mho/m**	± 5%

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.2) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from dipole center to the solution surface. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

5. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 4. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**11.8 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**7.52 mW/g**

6. Dipole Impedance and Return Loss

The dipole was positioned at the flat phantom sections according to section 4 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 900 MHz:	Re{Z} = **47.6 Ω**
	Im {Z} = **-6.0 Ω**
Return Loss at 900 MHz	**-23.6 dB**

7. Handling

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

8. Design

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

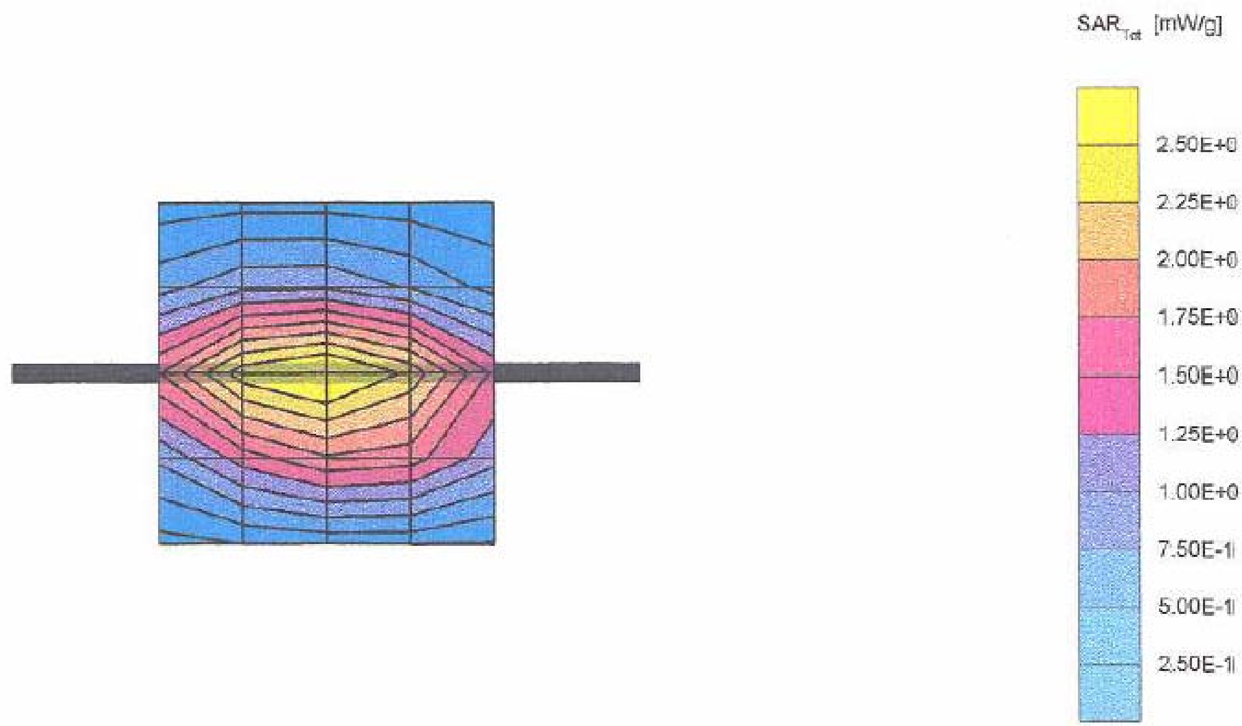
9. Power Test

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

02/11/02

Validation Dipole D900V2 SN:084, d = 15 mm

Frequency: 900 MHz; Antenna Input Power: 250 [mW]
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0
Probe: ET3DV6 - SN1507; ConvF(6.50,6.50,6.50) at 900 MHz; IEEE1528 900 MHz; σ = 0.95 mho/m ε_r = 41.1 ρ = 1.00 g/cm³
Cubes (2): Peak: 4.54 mW/g ± 0.03 dB, SAR (1g): 2.81 mW/g ± 0.02 dB, SAR (10g): 1.78 mW/g ± 0.02 dB, (Worst-case extrapolation)
Penetration depth: 11.5 (10.3, 13.2) [mm]
Powerdrift: -0.01 dB

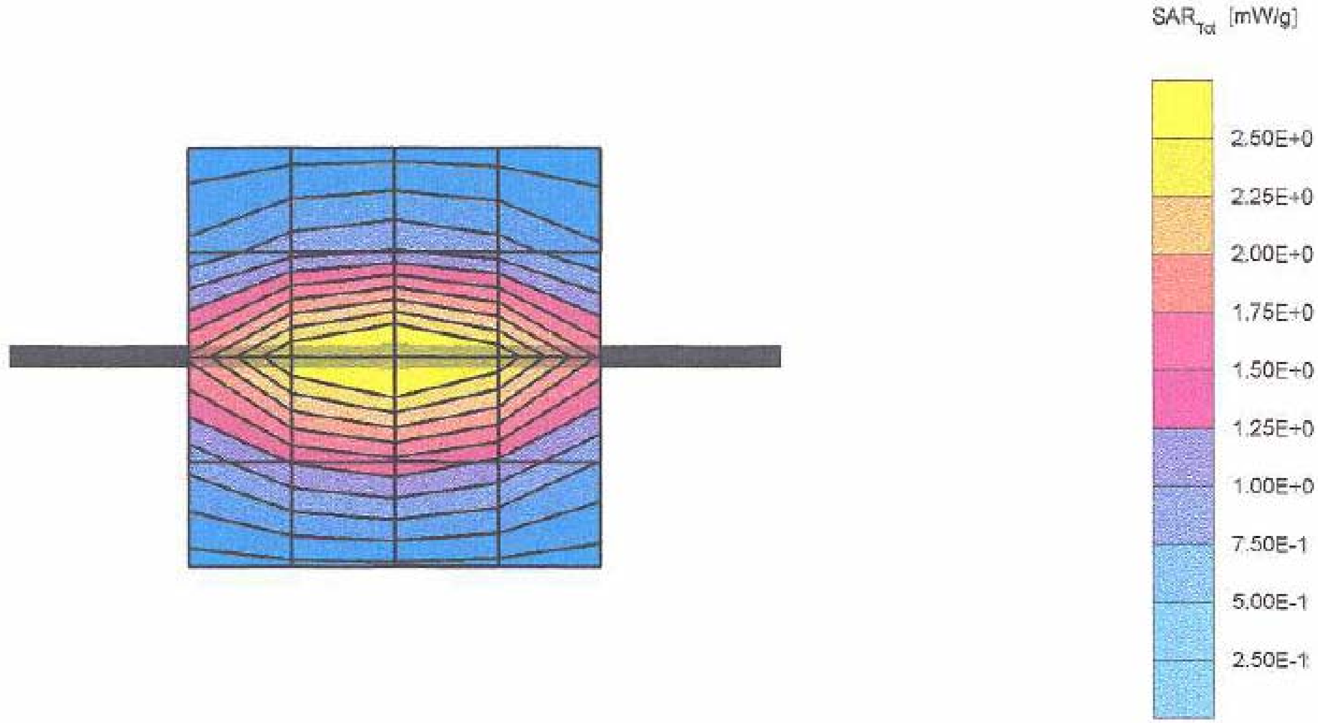


Schmid & Partner Engineering AG, Zurich, Switzerland

02/11/02

Validation Dipole D900V2 SN:084, d = 15 mm

Frequency: 900 MHz; Antenna Input Power: 250 [mW]
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0
Probe: ET3DV6 - SN1507; ConvF(6.20,6.20,6.20) at 900 MHz; Muscle 900 MHz: σ = 1.03 mho/m ε_r = 54.8 ρ = 1.00 g/cm³
Cubes (2): Peak: 4.72 mW/g ± 0.02 dB, SAR (1g): 2.95 mW/g ± 0.01 dB, SAR (10g): 1.88 mW/g ± 0.00 dB, (Worst-case extrapolation)
Penetration depth: 12.0 (10.7, 13.7) [mm]
Powerdrift: -0.01 dB



Schmid & Partner Engineering AG, Zurich, Switzerland

APPENDIX E

Illustration of Body-Worn Accessories

The purpose of this appendix is to illustrate the body-worn carry accessories for FCC ID: AZ489FT5841. The sample that was used in the following photos represents the product used to obtain the results presented herein and was used in this section to demonstrate the different body-worn accessories.

Photo 1.
Model NNTN4682A
Back View

Photo 2.
Model NNTN4682A
Side View

Photo 3.
Model NNTN4747A
Back View

Photo 4.
Model NNTN4747A
Side View

Appendix F
Accessories and options test status and separation distances

The following table summarizes the test status and separation distance provided by each of the body-worn accessories:

Carry Case Models	Tested ?	Min. Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN4682A	Yes	34-36	NA
NNTN4747A	Yes	24-25	NA

Audio Acc. Models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN4620A	Yes	NA	NA
SYN8146C	Yes	NA	NA
SYN7875C	Yes	NA	NA
NTN8496A	Yes	NA	NA
NTN8513B	Yes	NA	NA
SYN8390B	Yes	NA	NA
NNTN4033A	Yes	NA	NA
NSN6066A	Yes	NA	NA
NNTN5004A	Yes	NA	NA
NNTN5005A	Yes	NA	NA
NNTN5006A	Yes	NA	NA
NNTN5330A	Yes	NA	NA
NNTN5211A	Yes	NA	NA

Data cable Models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NKN6560A	Yes	NA	NA
NKN6559A	Yes	NA	NA
NNTN5405A	Yes	NA	Similar to NKN6559A
NNTN5406A	Yes	NA	Similar to NKN6560A

Other attachment models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN4767A	Yes	NA	Battery cover tested with applicable battery model
NNTN5404A	Yes	NA	Battery cover tested with applicable battery model