



**MOTOROLA**



**CGISS EME Test Laboratory**

8000 West Sunrise Blvd  
Fort Lauderdale, FL. 33322

S.A.R. EME Compliance Test Report  
Part 2 of 3

<b>Attention:</b>	FCC
<b>Date of Report:</b>	March 17, 2004
<b>Report Revision:</b>	Rev. A
<b>Manufacturer:</b>	Motorola South – ARAD Israel
<b>Product Description:</b>	Enhanced Power Pad w/ GPRS: 0.631W GSM800, 0.809W for PCS1900; TDMA: 1:8 duty cycle, GMSK modulation; Bluetooth: 1mW, Frequency Hopping Spread Spectrum (FHSS)
<b>FCC ID:</b>	<b>AZ489FT7008</b>
<b>Device Model:</b>	F4421A

<b>Test Period:</b>	3/10/04-3/15/04
<b>EME Tech:</b>	Clint Miller
<b>Responsible Engineer:</b>	Kim Uong (Lead EME Engineer)
<b>Author:</b>	Michael Sailsman (Global EME Regulatory Affairs Liaison)

**Note: Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report.**

Signature on File

3/17/04

\_\_\_\_\_  
Ken Enger  
Senior Resource Manager, Laboratory Director, CGISS EME Lab

\_\_\_\_\_  
Date Approved

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## **APPENDIX A**

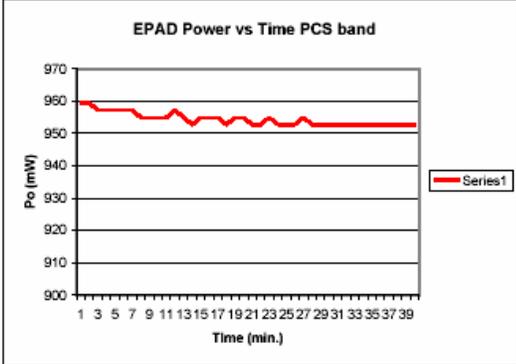
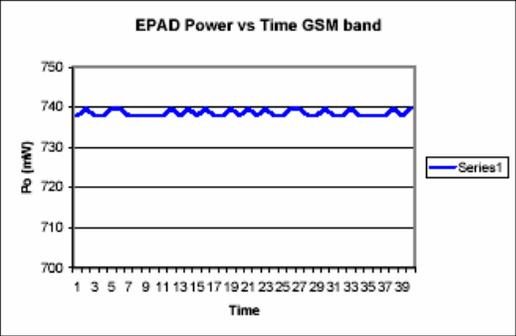
### **Power Slump Data/Shortened Scan**

## DUT Power versus time data

Power Limits				
<b>GSM850</b>				
Power (dBm)	Power (W)			
28.57	28.79	0.719	0.757	
<b>PCS1900</b>				
Power (dBm)	Power (W)			
29.65	29.87	0.922	0.971	

Power output measured with:  
 -HP433A Power Meter, with-HP8482H Power Sensor.  
 -Serial #: 3048u01791  
 - Next Calibration date: 12.31.2004

Time	PNT3521372						PNT3521372					
	GSM850			PCS1900			GSM850			PCS1900		
	Frequency (MHz)			Frequency MHz			Frequency (MHz)			Frequency MHz		
	824.2	836.6	848.8	1850.2	1880.0	1909.8	824.2	836.6	848.8	1850.2	1880.0	1909.8
	Power (dBm)			Power (dBm)			Power (mW)			Power (mW)		
1	28.67	28.68	28.69	29.84	29.82	29.79	736	738	740	964	959	953
2	28.67	28.69	28.69	29.84	29.82	29.79	736	740	740	964	959	953
3	28.67	28.68	28.69	29.84	29.81	29.8	736	738	740	964	957	955
4		28.68			29.81			738			957	
5		28.69			29.81			740			957	
6		28.69			29.81			740			957	
7		28.68			29.81			738			957	
8		28.68			29.8			738			955	
9		28.68			29.8			738			955	
10		28.68			29.8			738			955	
11		28.68			29.8			738			955	
12		28.69			29.81			740			957	
13		28.68			29.8			738			955	
14		28.69			29.79			740			953	
15		28.68			29.8			738			955	
16		28.69			29.8			740			955	
17		28.68			29.8			738			955	
18		28.68			29.79			738			953	
19		28.69			29.8			740			955	
20		28.68			29.8			738			955	
21		28.69			29.79			740			953	
22		28.68			29.79			738			953	
23		28.69			29.8			740			955	
24		28.68			29.79			738			953	
25		28.68			29.79			738			953	
26		28.69			29.79			740			953	
27		28.69			29.8			740			955	
28		28.68			29.79			738			953	
29		28.68			29.79			738			953	
30		28.69			29.79			740			953	
31		28.68			29.79			738			953	
32		28.68			29.79			738			953	
33		28.69			29.79			740			953	
34		28.68			29.79			738			953	
35		28.68			29.79			738			953	
36		28.68			29.79			738			953	
37		28.68			29.79			738			953	
38		28.69			29.79			740			953	
39		28.68			29.79			738			953	
40		28.69			29.79			740			953	



## Shortened Scan Results

**FCC ID: AZ489FT7008; Test Date: 3/15/04**

**Motorola CGISS EME Laboratory**

Run #: KU-R2-040315-02

Model#: F4421A SN#: PNT3521372

Tx Freq: 1850.2 MHz

Sim tissue temp: 20.0C

Start power: 0.964 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

### Shortened scan.

**Run time 7 minutes**

**Representative "normal" scan run time was 25 minutes**

**"Shortened" scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 1.05 mW/g**

**"Normal" scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 1.07 mW/g**

**(see section 7.1 run # KU-R2-040315-05)**

### DUT w/ right side against phantom

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(4.60,4.60,4.60); Probe cal date:

28/08/03; Crest factor: 8.0; FCC BODY 1880 MHz:  $\sigma = 1.59$  mho/m  $\epsilon_r = 53.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal

Date: (11/20/03) Cube 5x5x7: SAR (1g): 1.04 mW/g, SAR (10g): 0.520 mW/g, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 1.04 mW/g, SAR (10g): 0.520 mW/g

Power drift: -0.02 dB



**APPENDIX B**  
**Data Results**

**FCC ID: AZ489FT7008; Test Date: 3/12/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040312-06

Model#: F4421A SN#: PNT3521372

Tx Freq: 1880 MHz

Sim tissue temp: 20.7 C

Start power: 0.959 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

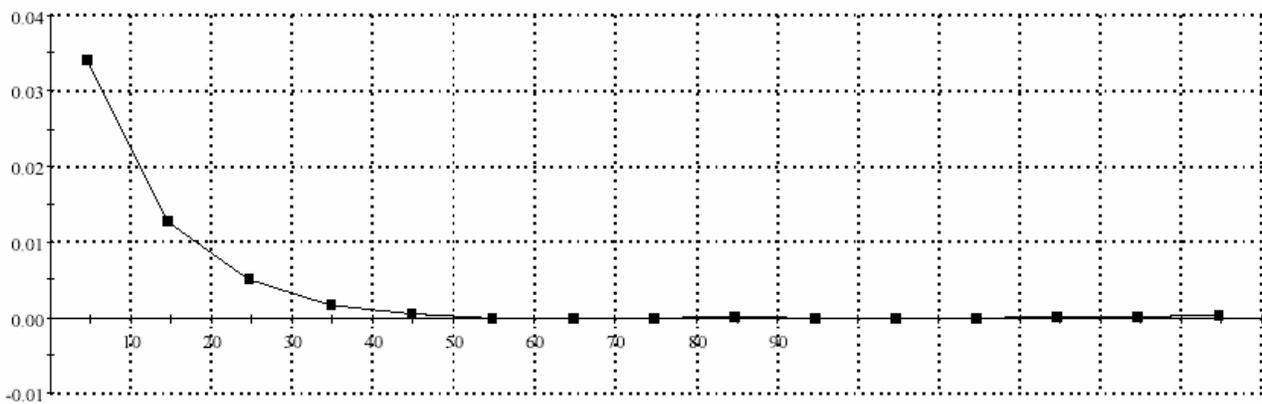
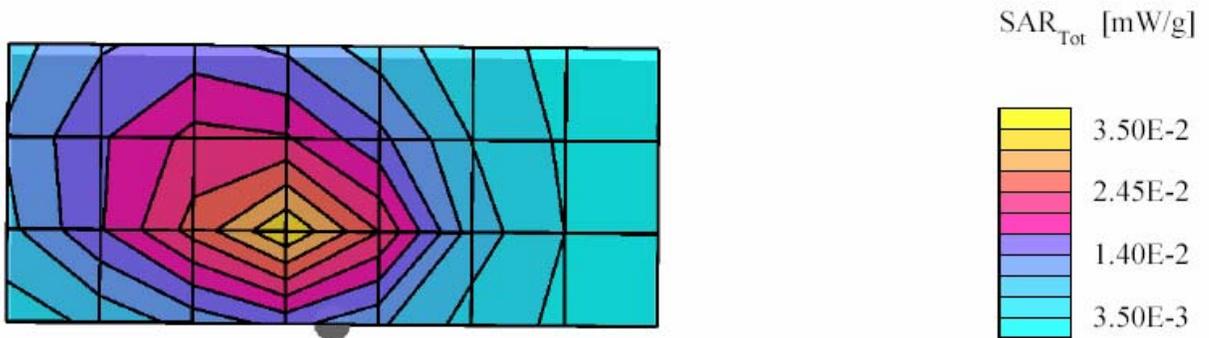
Audio Accessory: None

**DUT w/ Bottom of unit against phantom**

Flat Phantom; Position: (90°,90°);Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(4.60,4.60,4.60); Probe cal date: 28/08/03; Crest factor: 8.0;FCC BODY 1880 MHz:  $\sigma = 1.59$  mho/m  $\epsilon_r = 53.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)Cube 7x7x7: SAR (1g): 0.0336 mW/g, SAR (10g): 0.0194 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 45.0, 4.7

Power drift: 0.02 dB



**FCC ID: AZ489FT7008; Test Date: 3/10/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040310-13

Model#: F4421A SN#: PNT3521372

Tx Freq: 1880 MHz

Sim tissue temp: 19.4 C

Start power: 0.959 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

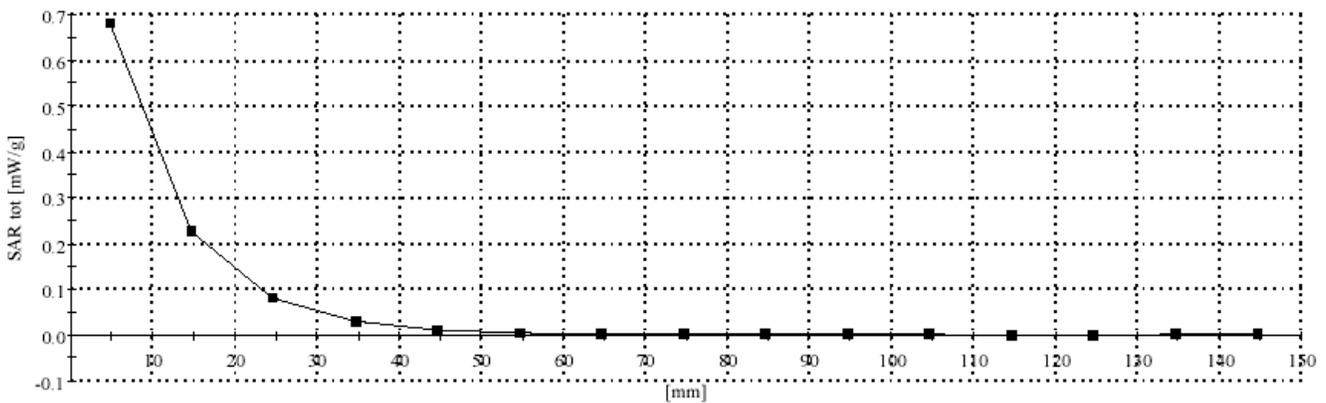
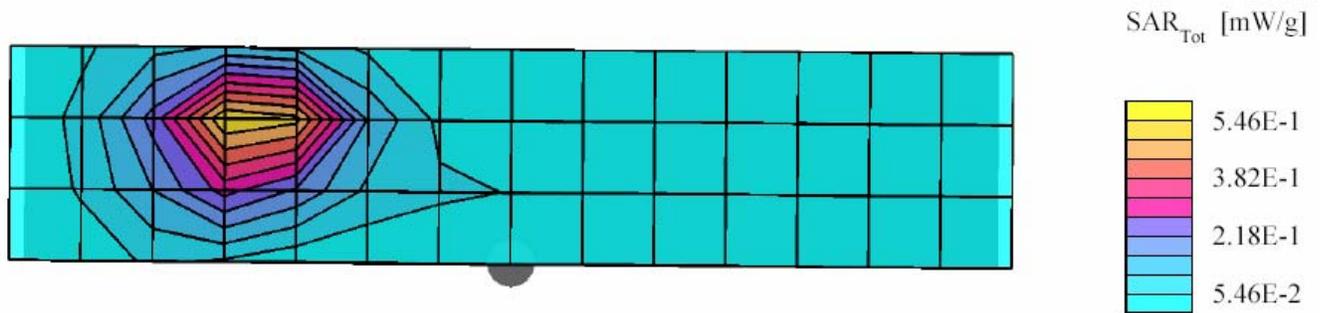
Audio Accessory: None

**DUT w/ Right side of unit flush against phantom**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(4.60,4.60,4.60); Probe cal date: 28/08/03; Crest factor: 8.0; FCC BODY 1880 MHz:  $\sigma = 1.59$  mho/m  $\epsilon_r = 55.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03) Cube 7x7x7: SAR (1g): 0.643 mW/g, SAR (10g): 0.320 mW/g \* Max outside, (Worst-case extrapolation) Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 13.5, 51.0, 4.7

Power drift: -0.22 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.



**FCC ID: AZ489FT7008; Test Date: 3/12/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040312-09

Model#: F4421A SN#: PNT3521372

Tx Freq: 1880 MHz

Sim tissue temp: 20.1 C

Start power: 0.959 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

**DUT w/ Top of unit facing phantom at 2.5 cm**

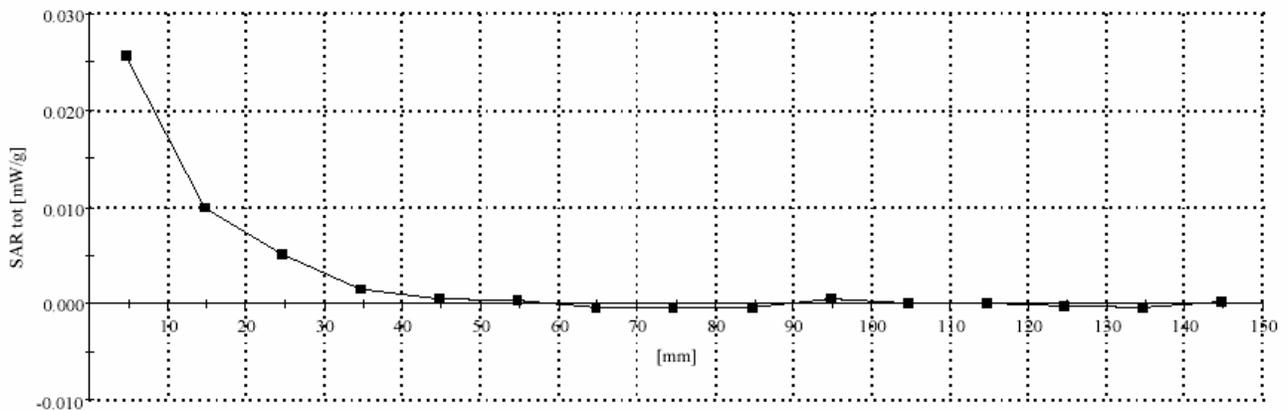
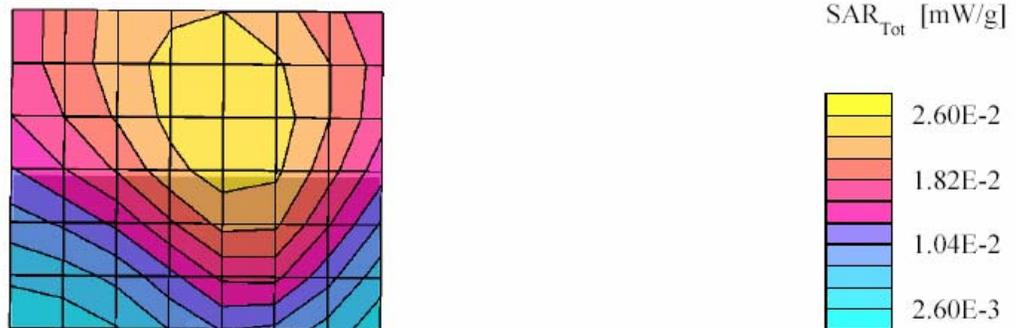
Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(4.60,4.60,4.60); Probe cal date:

28/08/03; Crest factor: 8.0; FCC BODY 1880 MHz:  $\sigma = 1.59$  mho/m  $\epsilon_r = 53.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal

Date: (11/20/03) Cube 7x7x7: SAR (1g): 0.0262 mW/g, SAR (10g): 0.0171 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 63.0, 4.7

Power drift: 0.17 dB



**FCC ID: AZ489FT7008; Test Date: 3/15/04**

**Motorola CGISS EME Laboratory**

Run #: KU-R2-040315-05

Model#: F4421A SN#: PNT3521372

Tx Freq: 1850.2 MHz

Sim tissue temp: 19.8C

Start power: 0.964 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

**DUT Right side of unit against phantom**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(4.60,4.60,4.60); Probe cal date:

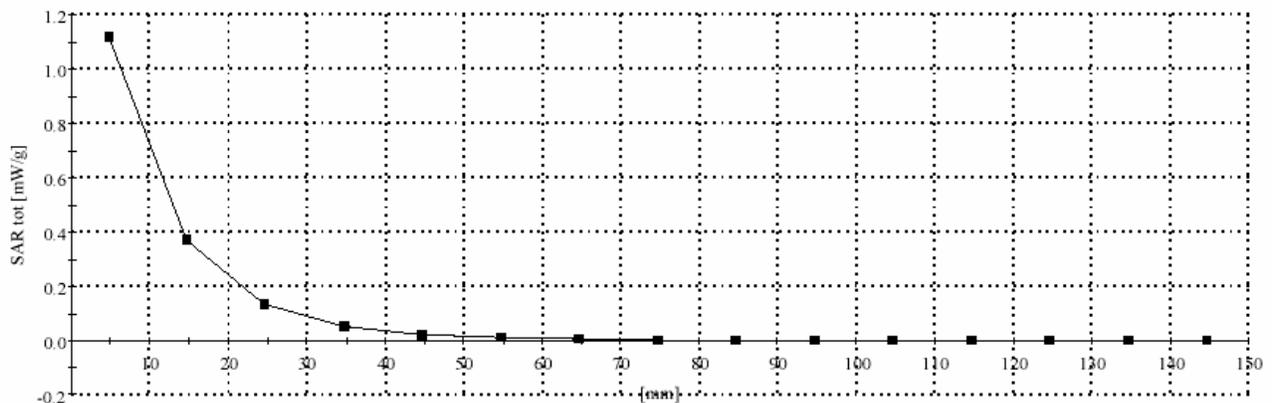
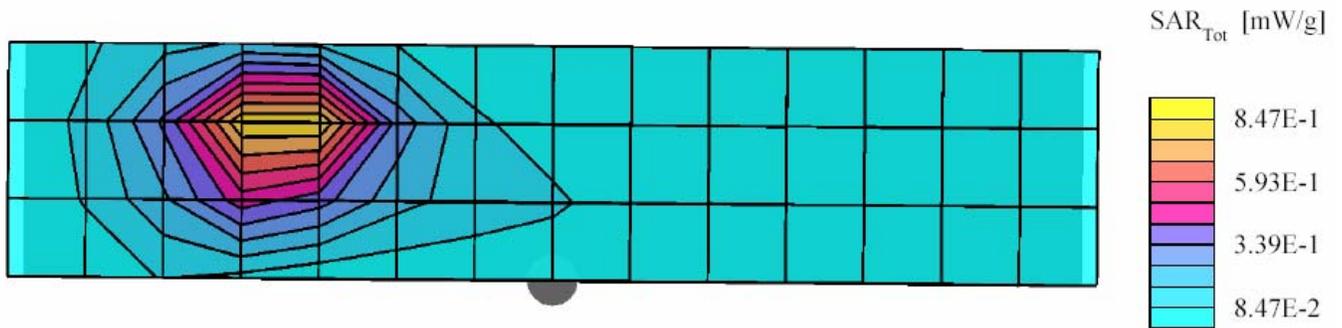
28/08/03; Crest factor: 8.0; FCC BODY 1880 MHz:  $\sigma = 1.59 \text{ mho/m}$   $\epsilon_r = 53.3$   $\rho = 1.00 \text{ g/cm}^3$ ; DAE: DAE3V1SN406 Cal

Date: (11/20/03) Cube 7x7x7: SAR (1g): 1.06 mW/g, SAR (10g): 0.526 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 13.5, 52.5, 4.7

Power drift: 0.05 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.



**FCC ID: AZ489FT7008; Test Date: 3/11/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040311-02

Model#: F4421A SN#: PNT3521372

Tx Freq: 836.6 MHz

Sim tissue temp: 20.5 C

Start power: 0.738 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: FHN6498A

Audio Accessory: None

**DUT w/ carry accessory against the phantom**

Flat Phantom; Position: (90°,90°);

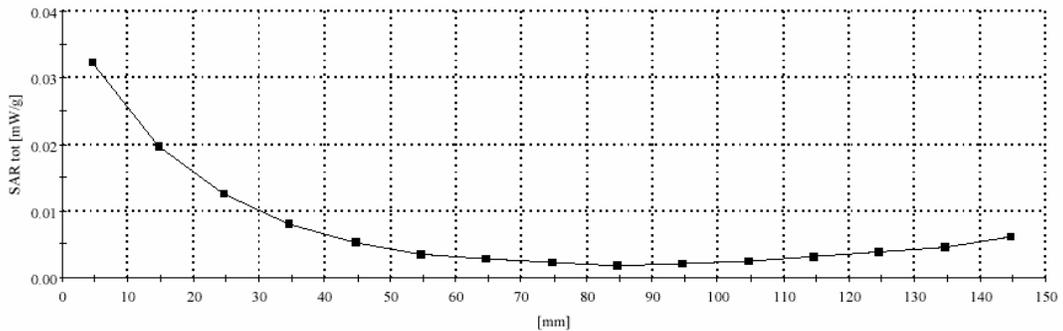
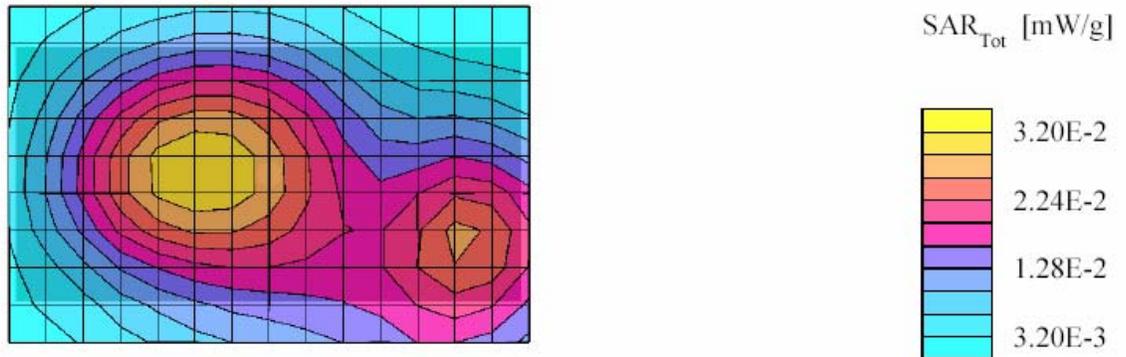
Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Probe cal date: 28/08/03; Crest factor: 8.0;

FCC Body 836:  $\sigma = 0.97$  mho/m  $\epsilon = 53.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cube 7x7x7: SAR (1g): 0.0322 mW/g, SAR (10g): 0.0246 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 66.0, 79.5, 4.7

Power drift: 0.19 dB



**FCC ID: AZ489FT7008; Test Date: 3/11/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040311-05

Model#: F4421A SN#: PNT3521372

Tx Freq: 836.6 MHz

Sim tissue temp: 20.1 C

Start power: 0.738 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

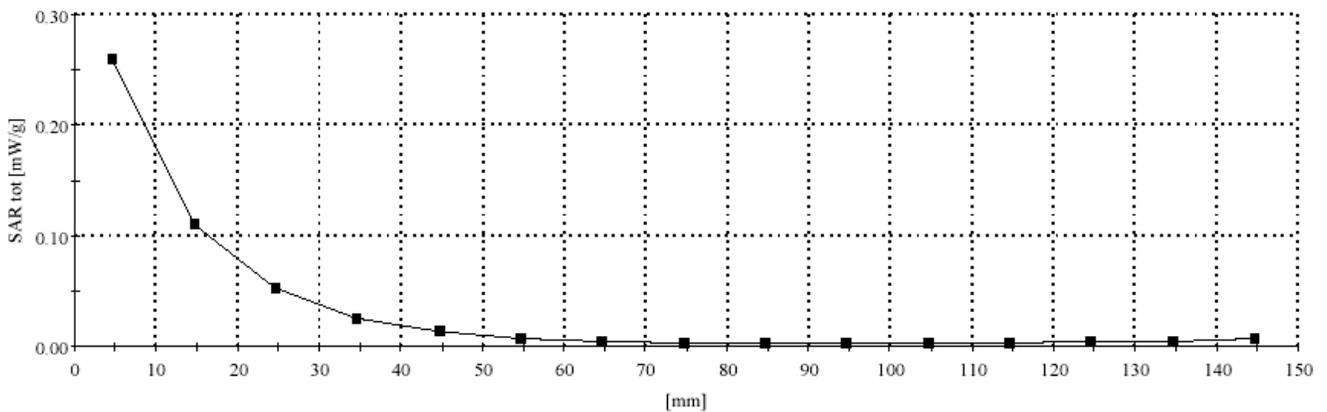
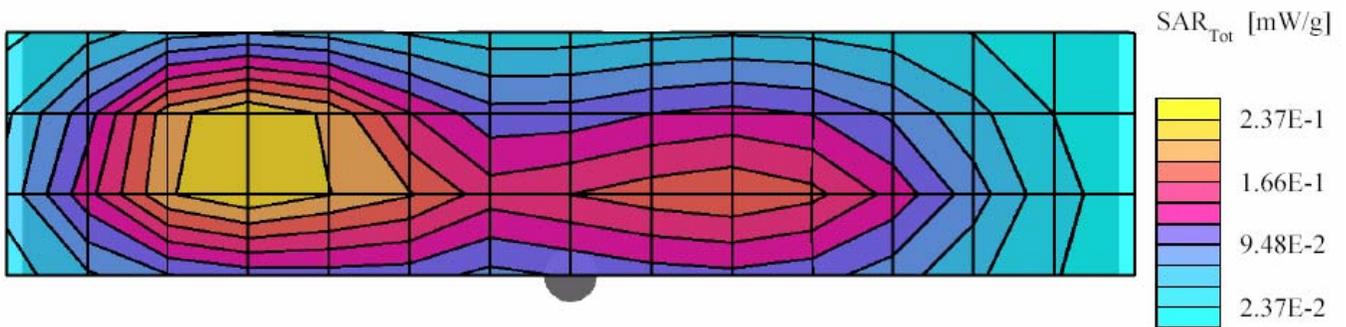
**DUT w/ right side against the phantom**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Probe cal date: 28/08/03; Crest factor: 8.0; FCC Body 836:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date:

(11/20/03) Cube 7x7x7: SAR (1g): 0.260 mW/g, SAR (10g): 0.164 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 43.5, 4.7

Power drift: 0.00 dB



**FCC ID: AZ489FT7008; Test Date: 3/11/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040311-07

Model#: F4421A SN#: PNT3521372

Tx Freq: 836.6 MHz

Sim tissue temp: 19.9 C

Start power: 0.738 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

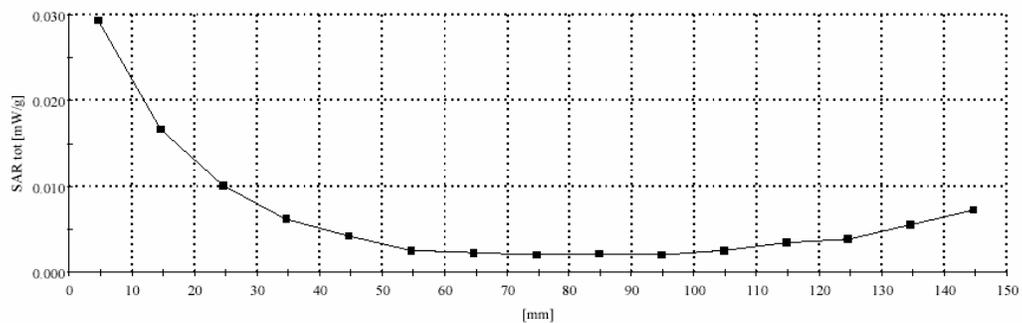
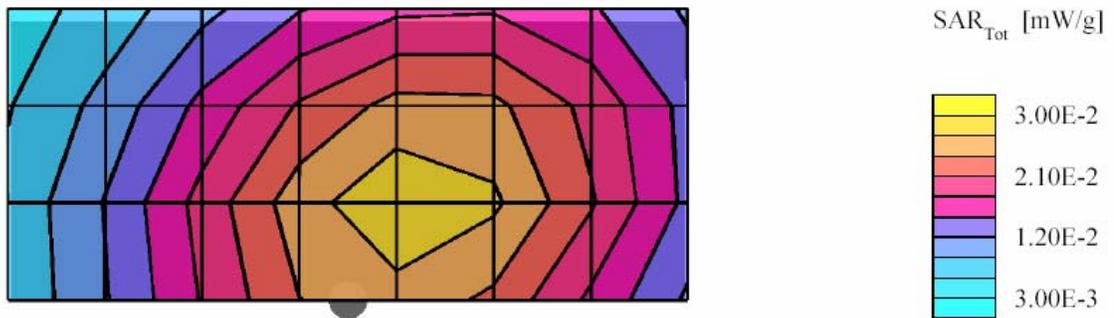
**DUT w/ Unit top at 2.5 cm parallel to phantom**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Probe cal date: 28/08/03; Crest factor: 8.0; FCC Body 836:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date:

(11/20/03) Cube 7x7x7: SAR (1g): 0.0296 mW/g, SAR (10g): 0.0216 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 61.5, 4.7

Power drift: 0.03 dB



**FCC ID: AZ489FT7008; Test Date: 3/12/04**

**Motorola CGISS EME Laboratory**

Run #: KU-R2-040312-02

Model#: F4421A SN#: PNT3521372

Tx Freq: 824.2 MHz

Sim tissue temp: 19.9C

Start power: 0.736 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

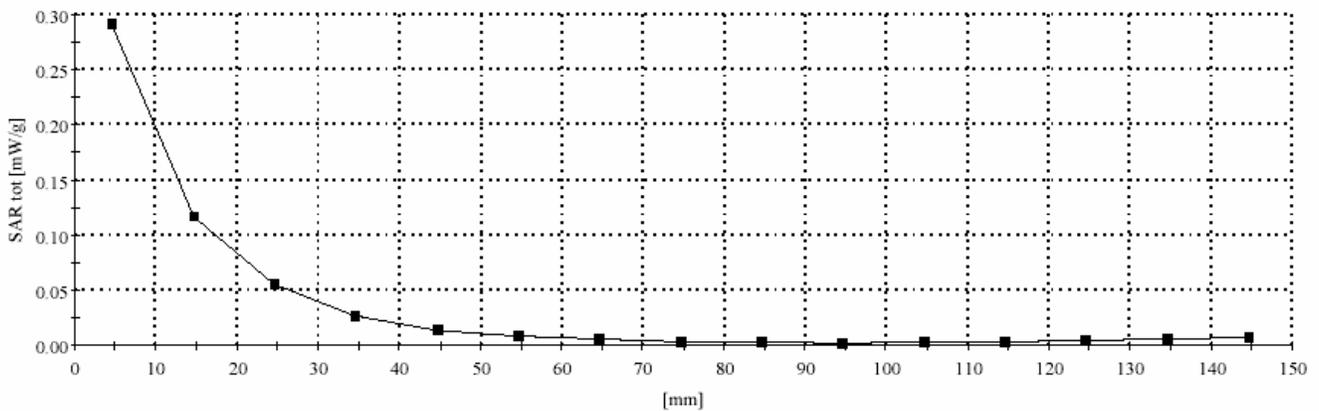
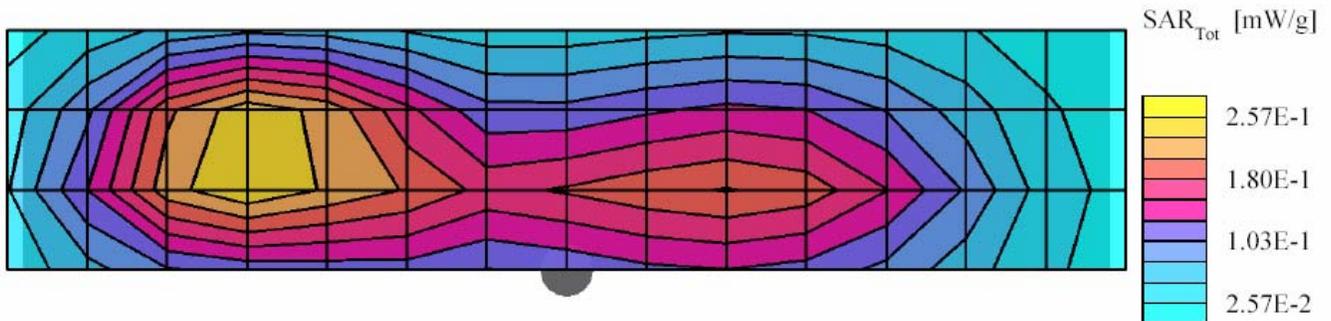
**DUT w/ Right side of unit against phantom**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Probe cal date: 28/08/03; Crest factor: 8.0; FCC Body 836:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.2$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date:

(11/20/03) Cube 7x7x7: SAR (1g): 0.288 mW/g, SAR (10g): 0.177 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 45.0, 4.7

Power drift: 0.01 dB



**FCC ID: AZ489FT7008; Test Date: 3/12/04**

**Motorola CGISS EME Laboratory**

Run #: CM-R2-040312-04

Model#: F4421A SN#: PNT3521372

Tx Freq: 824.2 MHz

Sim tissue temp: 19.5 C

Start power: 0.736 W

Ant #: Fixed (internal)

Battery #: FTN6032B

Carry Accessory: None

Audio Accessory: None

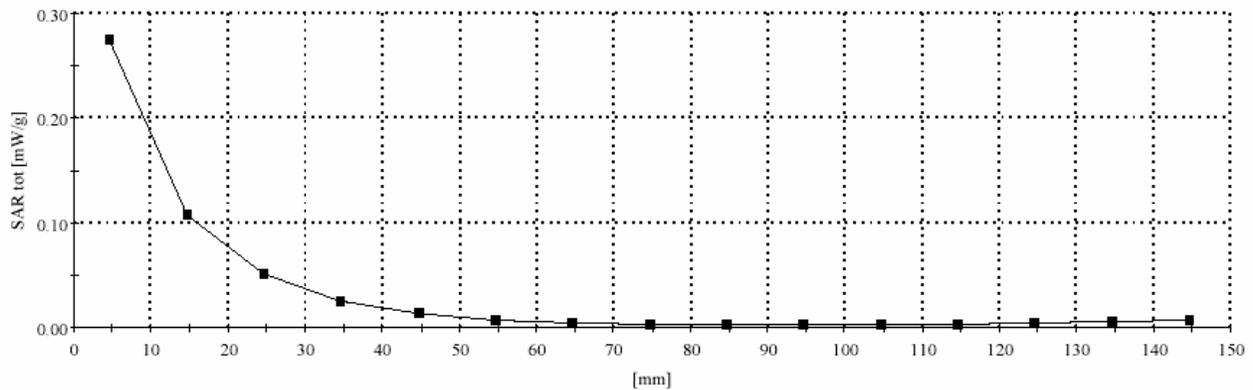
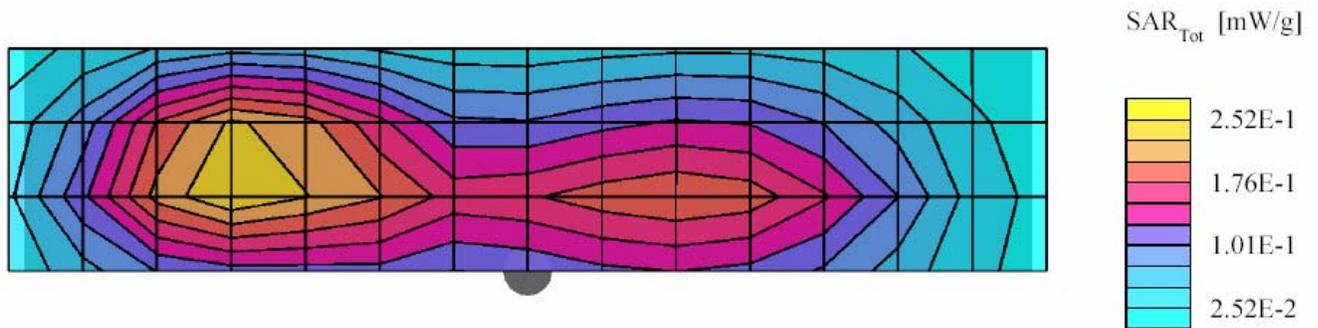
**DUT w/ Right side of unit against phantom; Bluetooth TX enabled**

Flat Phantom; Position: (90°,90°); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Probe cal date: 28/08/03; Crest factor: 8.0; FCC Body 836:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.2$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date:

(11/20/03) Cube 7x7x7: SAR (1g): 0.275 mW/g, SAR (10g): 0.171 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 24.0, 46.5, 4.7

Power drift: -0.09 dB



## **APPENDIX C**

### **Dipole System Performance Check Results**

Dipole validations 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 1800 MHz Dipole D1800V2; SN-278; Test Date: 3/10/04**

**Motorola CGISS EME Lab**

Run #: Sys Perf-R2-040310-07

TX Freq: 1800 MHz

Sim Tissue Temp: 20.3 C

Start Power: 250mW

**Target:**

36.69 mW/g for 1g SAR, 19.61 mW/g for 10g SAR +/- 10% from system performance target 9/4/03.

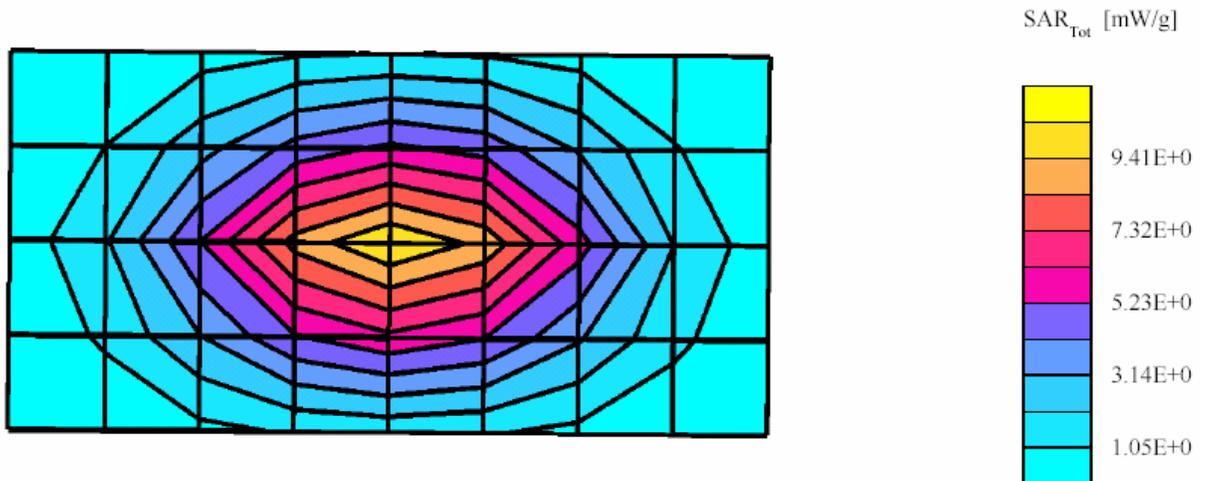
SAR calculated 1g is 39.05 mW/g percent from target (including drift) is +6.43%

SAR Calculated 10g is 20.54 mW/g Percent from target (including drift) is +4.73%

Flat (2); Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003);Probe Cal Date: 28/08/03ConvF(4.60,4.60,4.60); Crest factor: 1.0; FCC BODY 1800MHz:  $\sigma = 1.50$  mho/m  $\epsilon_r = 55.2$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cubes (2): Peak: 17.9 mW/g  $\pm$  0.09 dB, SAR (1g): 9.83 mW/g  $\pm$  0.06 dB, SAR (10g): 5.17 mW/g  $\pm$  0.05 dB, (Worst-case extrapolation) Penetration depth: 9.0 (8.4, 10.2) [mm]

Power drift: 0.03 dB



**SPEAG 835 MHz Dipole D835V2; SN-427; Test Date: 3/11/04**

**Motorola CGISS EME Lab**

Run #: Sys Perf-R2-040311-01

TX Freq: 835 MHz

Sim Tissue Temp: 20.9 C

Start Power: 250mW

Target:

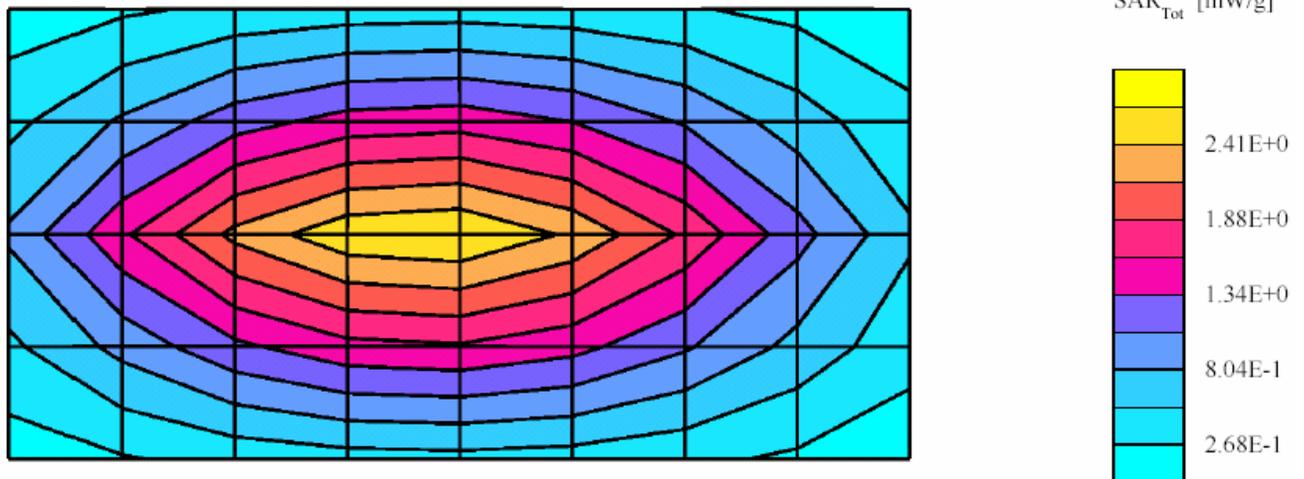
SAR calculated 1g is 10.54mW/g; SAR Calculated 10g is 6.82mW/g

Flat; Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003);Probe Cal Date: 28/08/03ConvF(5.90,5.90,5.90); Crest factor: 1.0;

FCC Body 835:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cubes (2): Peak: 4.03 mW/g  $\pm 0.03$  dB, SAR (1g): 2.63 mW/g  $\pm 0.04$  dB, SAR (10g): 1.70 mW/g  $\pm 0.04$  dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.8, 14.2) [mm]

Power drift: -0.01 dB



**SPEAG 835 MHz Dipole D835V2; SN-427; Test Date: 3/12/04**

**Motorola CGISS EME Lab**

Run #: Sys Perf-R2-040312-01

TX Freq: 835 MHz

Sim Tissue Temp: 20.0 C

Start Power: 250mW

**Target:**

10.54 mW/g for 1g SAR, 6.82 mW/g for 10g SAR +/- 10% from system performance target 3/11/04.

SAR calculated 1g is 10.42 mW/g percent from target (including drift) is -1.10%

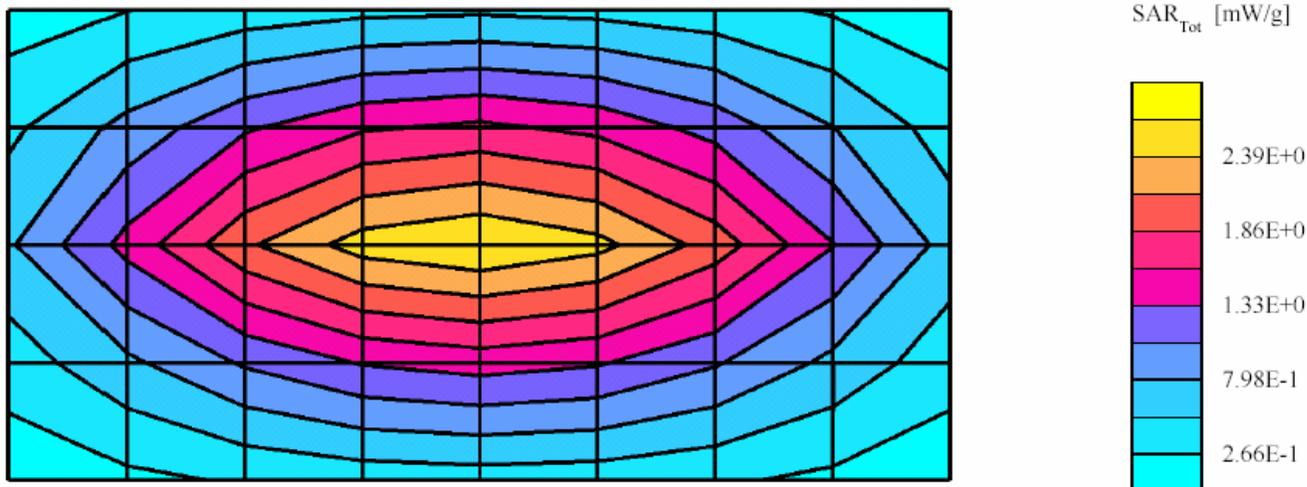
SAR Calculated 10g is 6.78 mW/g Percent from target (including drift) is -0.65%

Flat; Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003);Probe Cal Date: 28/08/03ConvF(5.90,5.90,5.90); Crest factor: 1.0;

FCC Body 835:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.2$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cubes (2): Peak: 4.00 mW/g  $\pm$  0.03 dB, SAR (1g): 2.60 mW/g  $\pm$  0.04 dB, SAR (10g): 1.69 mW/g  $\pm$  0.04 dB, (Worst-case extrapolation) Penetration depth: 12.7 (11.7, 14.0) [mm]

Power drift: -0.01 dB



**SPEAG 1800MHz Dipole D1800V2; SN-278; Test Date: 3/12/04**

**Motorola CGISS EME Lab**

Run #: Sys Perf-R2-040312-04

TX Freq: 1800 MHz

Sim Tissue Temp: 20.9 C

Start Power: 250mW

**Target:**

36.69 mW/g for 1g SAR, 19.61 mW/g for 10g SAR +/- 10% from system performance target 9/4/03.

SAR calculated 1g is 39.20 mW/g percent from target (including drift) is +6.84%

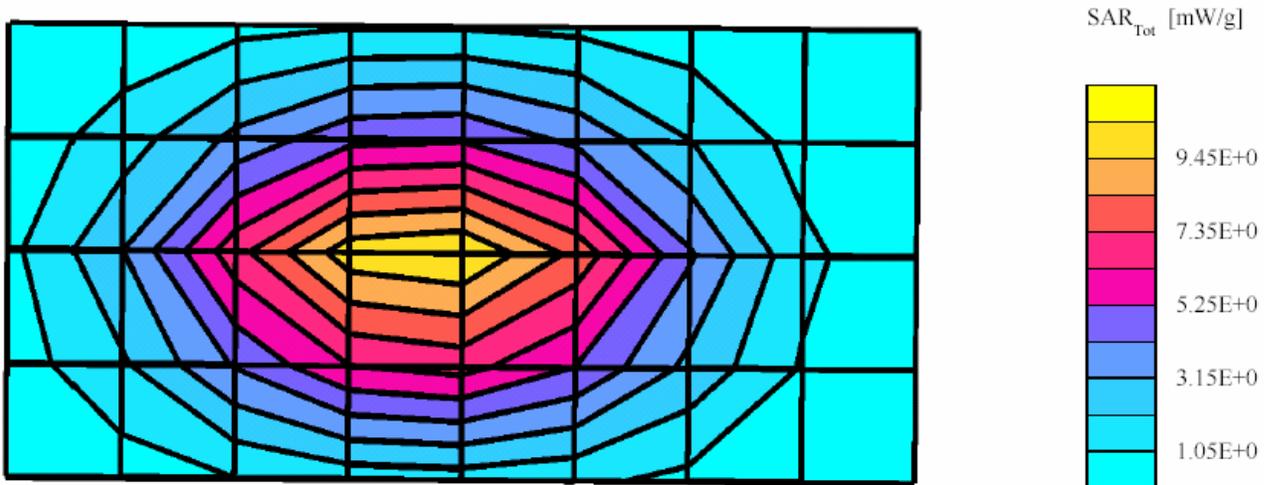
SAR Calculated 10g is 20.60 mW/g Percent from target (including drift) is +5.05%

Flat ; Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003);Probe Cal Date: 28/08/03ConvF(4.60,4.60,4.60); Crest factor: 1.0;

FCC BODY 1800MHz:  $\sigma = 1.50$  mho/m  $\epsilon_r = 53.7$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cubes (2): Peak: 17.8 mW/g  $\pm 0.04$  dB, SAR (1g): 9.80 mW/g  $\pm 0.04$  dB, SAR (10g): 5.15 mW/g  $\pm 0.04$  dB, (Worst-case extrapolation) Penetration depth: 9.0 (8.4, 10.0) [mm]

Power drift: -0.00 dB



**SPEAG 1800MHz Dipole D1800V2; SN-278; Test Date: 3/15/04**

**Motorola CGISS EME Lab**

Run #: Sys Perf-R2-040315-01

TX Freq: 1800 MHz

Sim Tissue Temp: 20.2 C

Start Power: 250mW

**Target:**

36.69 mW/g for 1g SAR, 19.61 mW/g for 10g SAR +/- 10% from system performance target 9/4/03.

SAR calculated 1g is 38.16 mW/g percent from target (including drift) is +4%

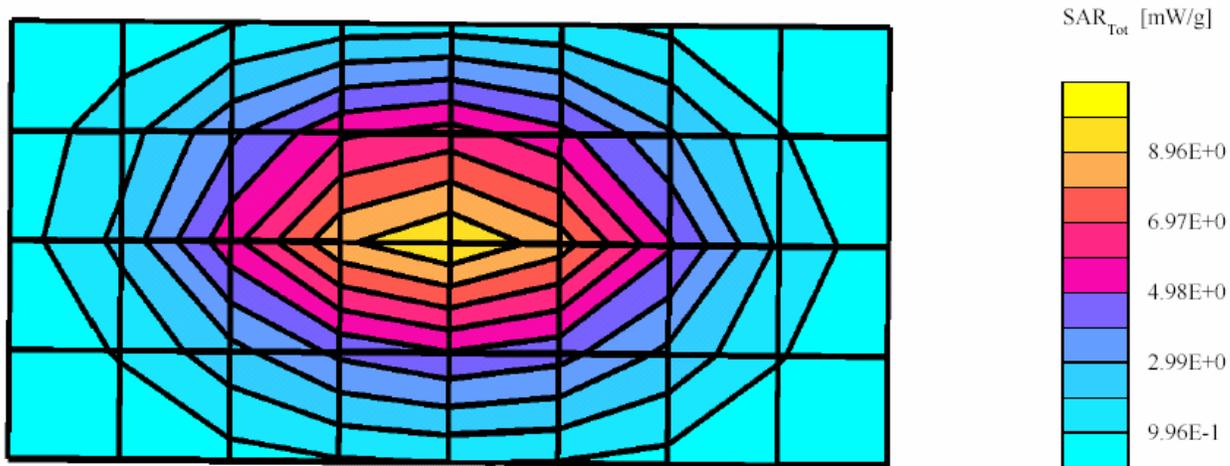
SAR Calculated 10g is 20.08 mW/g Percent from target (including drift) is +2.4%

Flat; Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003);Probe Cal Date: 28/08/03ConvF(4.60,4.60,4.60); Crest factor: 1.0;

FCC BODY 1800MHz:  $\sigma = 1.51$  mho/m  $\epsilon_r = 53.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 Cal Date: (11/20/03)

Cubes (2): Peak: 17.5 mW/g  $\pm 0.06$  dB, SAR (1g): 9.54 mW/g  $\pm 0.05$  dB, SAR (10g): 5.02 mW/g  $\pm 0.05$  dB, (Worst-case extrapolation) Penetration depth: 8.8 (8.2, 9.9) [mm]

Power drift: -0.00 dB



**SYSTEM VALIDATION**

Date: 11/20/2002 Frequency (MHz): 835  
Lab Location: CGISS Mixture Type: IEEE Head  
Robot System: R1 Ambient Temp.(°C): 22.4  
Probe Serial #: ET3DV6-1545 Tissue Temp.(°C): 20.9  
DAE Serial #: 363

Tissue Characteristics

Permittivity: 41.6 Phantom Type/SN: SAMTP1209  
Conductivity: 0.97 Distance (mm): 15 (tissue/dipole cnt)

Reference Source: D835V2 (Dipole)  
Reference SN: 427

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

Target SAR Value: 9.5 mW/g, 6.2 mW/g (10g avg.)  
(normalized to 1.0 W)

Measured SAR Value: 2.62 mW/g, 1.68 mW/g (10g avg.)  
Power Drift: 0.04 dB

Measured SAR Value: 10.38 mW/g, 6.66 mW/g (10g avg.)  
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 9.30 % (1g ave)  
7.39 % (10g ave)

Test performed by: S.Whalen Initial: SLW

# SPEAG Dipole 835MHz. Test Date:11/20/02

Run #: Sys Perf-R1-021120-06 Phantom #: SAMTPI209  
Model #: D835V2 SN: 427  
Robot: CGISS-1 Tester: S. Whalen  
TX Freq: 835 MHz Sim Tissue Temp: 20.9 (Celsius)  
Start Power: 250mW  
DAE3: SN363-VI DAE Cal Date: 05/23/02  
- Comments-  
Target at 1W is 9.5 mW/g (including drift) (1g)

SAR calculated is 10.38 mW/g, Percent from target (including drift) for 1g is 9.30%

SAM: Flat

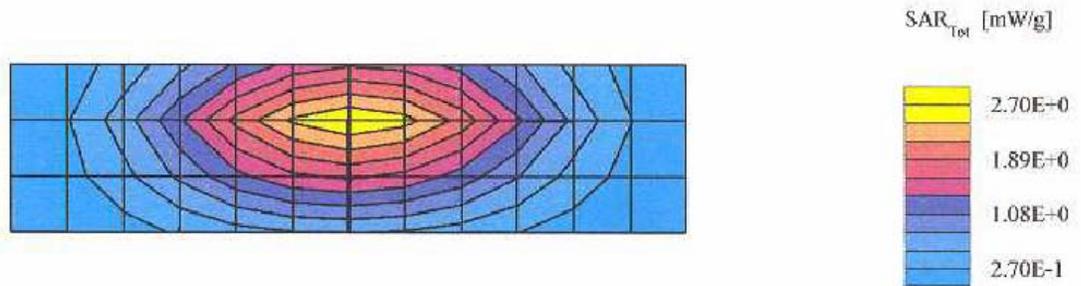
Probe: ET3DV6R(cal date 5-21-02) - SN1545;Probe Cal Date: 21/05/02ConvF(6.20,6.20,6.20); Crest factor: 1.0; IEEE Head\_835

MHz:  $\sigma = 0.94$  mho/m  $\epsilon_r = 41.9$   $\rho = 1.00$  g/cm<sup>3</sup>

Cubes (2): Peak: 4.11 mW/g  $\pm 0.06$  dB, SAR (1g): 2.62 mW/g  $\pm 0.07$  dB, SAR (10g): 1.68 mW/g  $\pm 0.07$  dB, (Worst-case extrapolation)

Penetration depth: 12.0 (11.1, 13.2) [mm]

Powerdrift: 0.04 dB



Motorola CGISS EME Lab

**SYSTEM PERFORMANCE CHECK TARGET SAR**

Date: 11/20/2002 Frequency (MHz): 835MHz  
Lab Location: CGISS Mixture Type: FCC Body  
Robot System: CGISS R1 Ambient Temp.(°C): 22.1  
Probe Serial #: ET3DV6-1545 Tissue Temp.(°C): 20.6  
DAE Serial #: 363

Tissue Characteristics

Permittivity: 53.3 Phantom Type/SN: 80302002A  
Conductivity: 1.01 Distance (mm): 15 (tissue/dipole cnt)

Reference Source: D835V2 (Dipole)  
Reference SN: 427

Power to Dipole: 250 mW

Measured SAR Value: 2.78 mW/g, 1.79 mW/g (10g avg.)  
Power Drift: 0.01 dB

New Target/Measured  
SAR Value: 11.09 mW/g, 7.14 mW/g (10g avg.)  
(normalized to 1.0 W, including drift)

Test performed by: S.Whalen Initial: SW

# SPEAG Dipole 835MHz. Test Date:11/20/02

Run #: Sys Perf-R1-021120-02      Phantom #: 80302002A / S8  
Model #: D835V2      SN: 427  
Robot: CGISS-1      Tester: S. Whalen  
TX Freq: 835 MHz      Sim Tissue Temp: 20.6 (Celsius)  
Start Power: 250mW  
DAE3: SN363-V1      DAE Cal Date: 05/23/02

## - Comments-

New Target at 1W is mW/g (including drift) (1g)

## Flat Phantom; Device

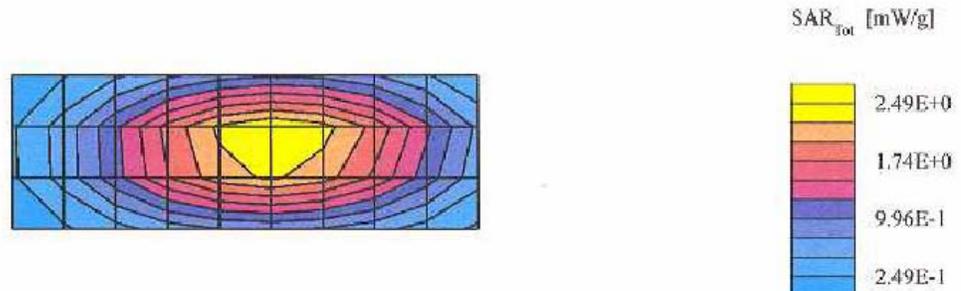
Probe: ET3DV6R(cal date 5-21-02) - SN1545;Probe Cal Date: 21/05/02ConvF(6.00,6.00,6.00); Crest factor: 1.0; FCC Body\_835

MHz:  $\sigma = 1.01 \text{ mho/m}$   $\epsilon_r = 53.3$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak: 4.31 mW/g  $\pm 0.06 \text{ dB}$ , SAR (1g): 2.78 mW/g  $\pm 0.07 \text{ dB}$ , SAR (10g): 1.79 mW/g  $\pm 0.07 \text{ dB}$ , (Worst-case extrapolation)

Penetration depth: 12.5 (11.4, 13.9) [mm]

Powerdrift: 0.01 dB



Motorola CGISS EME Lab

**SYSTEM PERFORMANCE CHECK TARGET SAR**

Date: 3/11/2004 Frequency (MHz): 835  
Lab Location: CGISS Mixture Type: FCC-Body  
Robot System: 2 Ambient Temp.(°C): 21.6  
Probe Serial #: 1545 Tissue Temp.(°C): 20.9  
DAE Serial #: 406

Tissue Characteristics  
Permittivity: 53 Phantom Type/SN: 80302002AS8  
Conductivity: 0.97 Distance (mm): 15 (tissue/dipole cnt)

Reference Source: D835V2 (Dipole)  
Reference SN: 427

Power to Dipole: 250 mW

Measured SAR Value: 2.63 mW/g, 1.7 mW/g (10g avg.)  
Power Drift: -0.01 dB

New Target/Measured  
SAR Value: 10.54 mW/g, 6.82 mW/g (10g avg.)  
(normalized to 1.0 W, including drift)

Test performed by: C. Miller Initial: (Signature)

03/11/04

## Dipole D835V2 SN427; Test date:03/11/04

Run #: Sys Perf-R2-040311-01

Phantom #: 80302002A/S8

Model #: D835V2 SN: 427

Robot: CGISS-2

DAE3: SN: 406 (11/20/03) Tester: C. Miller

TX Freq: 835 MHz

Sim Tissue Temp: 20.9 C

Start Power: 250mW

Target:

SAR calculated 1g is 10.54 mW/g

SAR Calculated 10g is 6.82 mW/g

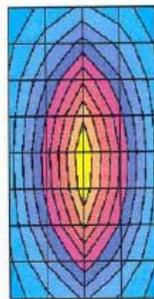
Flat; Probe: ET3DV6R - SN1545(cal Date 28 Aug 2003); ConvF(5.90,5.90,5.90); Crest factor: 1.0; FCC

Body 835:  $\sigma = 0.97$  mho/m  $\epsilon_r = 53.0$   $\rho = 1.00$  g/cm<sup>3</sup>

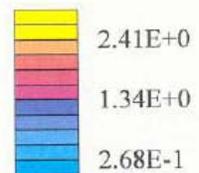
Cubes (2): Peak: 4.03 mW/g  $\pm 0.03$  dB, SAR (1g): 2.63 mW/g  $\pm 0.04$  dB, SAR (10g): 1.70 mW/g  $\pm 0.04$  dB, (Worst-case extrapolation)

Penetration depth: 12.9 (11.8, 14.2) [mm]

Powerdrift: -0.01 dB



SAR<sub>Tot</sub> [mW/g]



Motorola CGISS EME Lab

**SYSTEM PERFORMANCE CHECK TARGET SAR**

Date: 09/04/2003 Frequency (MHz): 1800  
Lab Location: CGISS Mixture Type: 1800-FCC Body  
Robot System: CGISS-3 Ambient Temp.(°C): 23.2  
Probe Serial #: 1393 Tissue Temp.(°C): 20.9  
DAE Serial #: DAE3V1 SN374

Tissue Characteristics Phantom Type/SN: 40302002B/S9  
Permittivity: 51.2 Distance (mm): 10  
Conductivity: 1.47

Reference Source: Dipole (Dipole)  
Reference SN: 278  
Power to Dipole: 250 mW

Measured SAR Value: 9.13 mW/g, 4.88 mW/g (10g avg.)  
Power Drift: -0.02 dB

New Target/Measured SAR Value: 36.69 mW/g, 19.61 mW/g (10g avg.)  
(Normalized to 1.0 W, with drift compensation)

Test performed by: Dave Hopper

Initial: WDH

JF 2/18/02

09/04/03

## SPEAG DIPOLE D1800V2; Test date:09/04/03

Run #: Sys Perf-R3-0300904-02  
Model #: D1800V2  
Robot: CGISS-3  
TX Freq: 1800 MHz  
Start Power: 250mW  
DAE3: SN:374

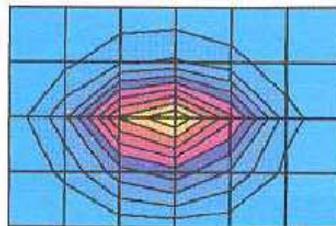
Phantom #: 40302002B/S9  
SN:278  
Tester: Dave Hopper  
Sim Tissue Temp: 20.9 (Celsius)  
DAE Cal Date: 02/19/03

- Comments-

Body New Targets are as follows:

SAR calculated 1g is 36.69 mW/g  
SAR Calculated 10g is 19.61 mW/g

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003); ConvF(5.10,5.10,5.10); Crest factor: 1.0; FCC  
Body 1800MHz:  $\sigma = 1.47$  mho/m  $\epsilon_r = 51.2$   $\rho = 1.00$  g/cm<sup>3</sup>  
Cubes (2): Peak: 16.3 mW/g  $\pm 0.01$  dB, SAR (1g): 9.13 mW/g  $\pm 0.03$  dB, SAR (10g): 4.88 mW/g  $\pm 0.04$  dB, (Worst-case extrapolation)  
Penetration depth: 9.0 (8.5, 10.0) [mm]  
Powerdrift: -0.02 dB



SAR<sub>Tot</sub> [mW/g]



**SYSTEM VALIDATION**

Date: 09/04/2003 Frequency (MHz): 1800  
Lab Location: CGISS Mixture Type: 1800-IEEE Head  
Robot System: CGISS-3 Ambient Temp.(°C): 23.0  
Probe Serial #: 1393 Tissue Temp.(°C): 20.9  
DAE Serial #: DAE3V1 SN374

Tissue Characteristics Phantom Type/SN: VAL30242005B  
Permittivity: 38.3 Distance (mm): 10  
Conductivity: 1.38

Reference Source: Dipole (Dipole/Handset)  
Reference SN: 278

Power to Dipole: 250 mW  
Power Output (radio): \_\_\_\_\_ mW

Target SAR Value: 38.1 mW/g, 19.8 mW/g (10g avg.)  
(normalized to 1.0 W)

Measured SAR Value: 9.30 mW/g, 4.93 mW/g (10g avg.)  
Power Drift: -0.14 dB

Measured SAR Value: 38.42 mW/g, 20.37 mW/g (10g avg.)  
(normalized to 1.0 W,  
with drift compensation)

Percent Difference From Target (must be within System Uncertainty): +0.84 % (1g avg.)  
+2.86 % (10g avg.)

Test performed by: Dave Hopper

Initial: 

JF 2/14/02

09/04/03

## SPEAG DIPOLE D1800V2; Test date:09/04/03

Run #: Sys Val-R3-0300904-01

Phantom #: VAL30242005B/S9

Model #: D1800V2

SN:278

Robot: CGISS-3

Tester: Dave Hopper

TX Freq: 1800 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 250mW

DAE3: SN:374

DAE Cal Date: 02/19/03

### - Comments-

IEEE Target at 1W is 38.1 mW/g and 19.8 mW/g (10g avg.)

SAR calculated 1g is 38.42 mW/g percent from target (including drift) +0.84 %

SAR Calculated 10g is 20.37 mW/g Percent from target (including drift) is +2.86%

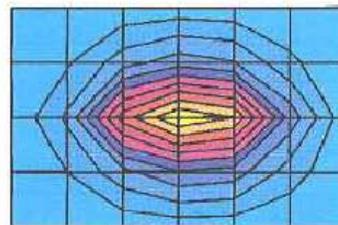
Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.50,5.50,5.50); Crest factor: 1.0; Head

Glycol 1800 MHz:  $\sigma = 1.38$  mho/m  $\epsilon_r = 38.3$   $\rho = 1.00$  g/cm<sup>3</sup>

Cubes (2): Peak: 16.8 mW/g  $\pm 0.01$  dB, SAR (1g): 9.30 mW/g  $\pm 0.03$  dB, SAR (10g): 4.93 mW/g  $\pm 0.03$  dB, (Worst-case extrapolation)

Penetration depth: 8.5 (8.2, 9.1) [mm]

Powerdrift: -0.14 dB



SAR<sub>tot</sub> [mW/g]

