



**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>      | September 23, 2003                                                |
| <b>Report Revision:</b>     | Rev. B                                                            |
| <b>Manufacturer:</b>        | Motorola                                                          |
| <b>Product Description:</b> | Portable 438-470 MHz 1-4W<br>with and with out display and keypad |
| <b>FCC ID:</b>              | <b>ABZ99FT4056</b>                                                |
| <b>Device Model:</b>        | AAH65RDC9AA1AN/ AAH65RDH9AA1AN                                    |
| <br><b>Test Period:</b>     | <br>8/26/03-9/7/03                                                |
| <b>EME Tech:</b>            | Ed Church                                                         |
| <b>EME Engineer:</b>        | Kim Uong<br>Lead EME Engineer                                     |
| <br><b>Author:</b>          | <br>Michael Sailsman<br>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

9/24/03

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

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

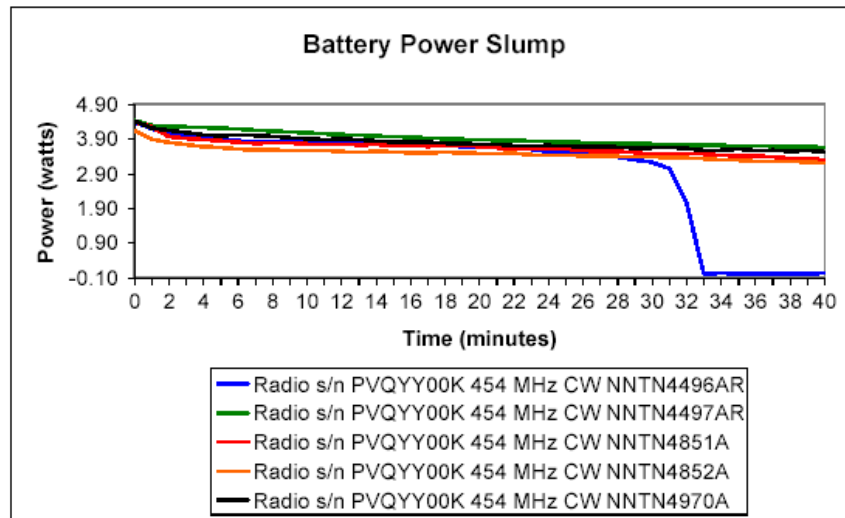
**Note: This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.**

## **APPENDIX A**

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

## DUT Power versus time data

|               | Radio s/n     | Radio s/n     | Radio s/n     | Radio s/n     | Radio s/n     |
|---------------|---------------|---------------|---------------|---------------|---------------|
|               | PVQYY00K      | PVQYY00K      | PVQYY00K      | PVQYY00K      | PVQYY00K      |
| Frequency     | 454 MHz       | 454 MHz       | 454 MHz       | 454 MHz       | 454 MHz       |
| Mode          | CW            | CW            | CW            | CW            | CW            |
| Battery       | NNTN4496AR    | NNTN4497AR    | NNTN4851A     | NNTN4852A     | NNTN4970A     |
| Time( Minute) | Power (watts) | Power (watts) | Power (watts) | Power (watts) | Power (watts) |
| 0             | 4.40          | 4.44          | 4.40          | 4.15          | 4.43          |
| 1             | 4.21          | 4.30          | 4.26          | 3.90          | 4.22          |
| 2             | 4.04          | 4.27          | 3.97          | 3.81          | 4.16          |
| 3             | 3.97          | 4.26          | 3.93          | 3.75          | 4.10          |
| 4             | 3.91          | 4.24          | 3.89          | 3.69          | 4.02          |
| 5             | 3.89          | 4.22          | 3.86          | 3.66          | 4.00          |
| 6             | 3.86          | 4.20          | 3.81          | 3.61          | 4.02          |
| 7             | 3.83          | 4.17          | 3.78          | 3.60          | 4.01          |
| 8             | 3.84          | 4.14          | 3.80          | 3.59          | 3.99          |
| 9             | 3.84          | 4.11          | 3.80          | 3.57          | 3.94          |
| 10            | 3.82          | 4.09          | 3.76          | 3.57          | 3.91          |
| 11            | 3.82          | 4.06          | 3.76          | 3.58          | 3.89          |
| 12            | 3.82          | 4.04          | 3.75          | 3.54          | 3.91          |
| 13            | 3.78          | 4.02          | 3.74          | 3.53          | 3.89          |
| 14            | 3.77          | 4.00          | 3.74          | 3.55          | 3.85          |
| 15            | 3.76          | 3.98          | 3.72          | 3.54          | 3.82          |
| 16            | 3.74          | 3.96          | 3.73          | 3.51          | 3.83          |
| 17            | 3.74          | 3.94          | 3.70          | 3.51          | 3.82          |
| 18            | 3.75          | 3.92          | 3.72          | 3.53          | 3.79          |
| 19            | 3.69          | 3.90          | 3.71          | 3.51          | 3.78          |
| 20            | 3.69          | 3.88          | 3.70          | 3.49          | 3.76          |
| 21            | 3.67          | 3.88          | 3.66          | 3.50          | 3.75          |
| 22            | 3.63          | 3.86          | 3.65          | 3.50          | 3.71          |
| 23            | 3.61          | 3.85          | 3.63          | 3.45          | 3.71          |
| 24            | 3.53          | 3.84          | 3.63          | 3.44          | 3.72          |
| 25            | 3.54          | 3.82          | 3.62          | 3.45          | 3.71          |
| 26            | 3.49          | 3.81          | 3.57          | 3.41          | 3.69          |
| 27            | 3.44          | 3.80          | 3.55          | 3.43          | 3.69          |
| 28            | 3.39          | 3.78          | 3.55          | 3.41          | 3.67          |
| 29            | 3.31          | 3.77          | 3.52          | 3.39          | 3.65          |
| 30            | 3.24          | 3.76          | 3.47          | 3.40          | 3.65          |
| 31            | 3.05          | 3.75          | 3.50          | 3.37          | 3.67          |
| 32            | 2.06          | 3.74          | 3.48          | 3.36          | 3.64          |
| 33            | 0.01          | 3.73          | 3.48          | 3.34          | 3.58          |
| 34            | 0.05          | 3.72          | 3.44          | 3.31          | 3.59          |
| 35            | 0.01          | 3.71          | 3.43          | 3.30          | 3.62          |
| 36            | 0.02          | 3.70          | 3.42          | 3.26          | 3.58          |
| 37            | 0.02          | 3.70          | 3.39          | 3.26          | 3.58          |
| 38            | 0.02          | 3.69          | 3.35          | 3.26          | 3.56          |
| 39            | 0.01          | 3.68          | 3.34          | 3.25          | 3.58          |
| 40            | 0.04          | 3.67          | 3.30          | 3.21          | 3.53          |



## Shortened Scan Results

**FCC ID: ABZ99FT4056; Test Date: 9/02/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030902-11

MODEL #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.0

Start power : 4.43 W

Antenna position: NAE6522A

Battery kit: NNTN4497AR

Carry Accessories: NONE

Audio/data accessories: NONE

**Shortened scan reflect highest S.A.R. producing configuration at the face.**

**Run time 7 minutes**

**Representative “normal” scan run time was 25 minutes**

**“Shortened” scan; max calc. S.A.R. (drift adjusted) w/ 50% duty cycle = 4.14 mW/g**

**“Normal” scan; max. calc. S.A.R. (drift adjusted) w/ 50% duty cycle = 4.12mW/g**

**(see section 7.1 run # KU-R2-030902-02)**

**DUT front w/ 2.5cm separation distance**

**Note: this shortened scan represents the Highest results at the face**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

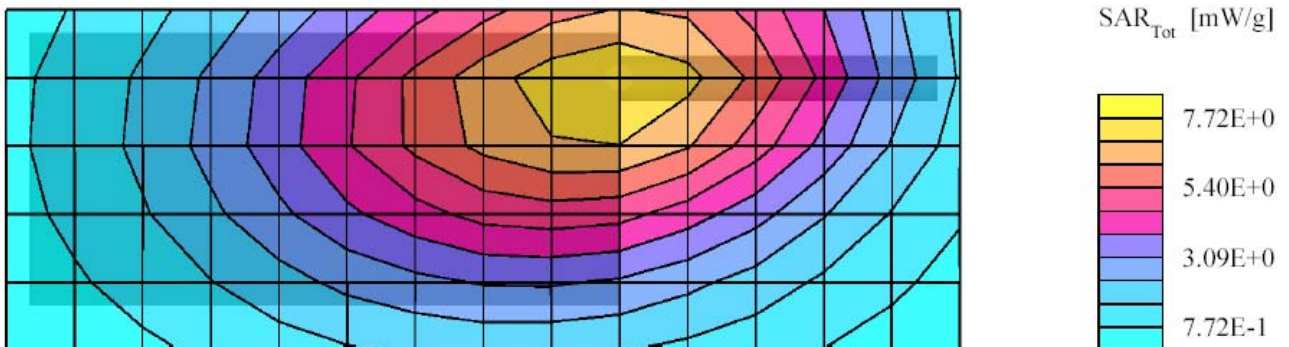
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

IEEE Head 454 MHz:  $\sigma = 0.88$  mho/m  $\epsilon_r = 45.1$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 5x5x7: SAR (1g): 7.49 mW/g, SAR (10g): 5.45 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 16.5, 133.5, 4.7

Power drift: -0.27 dB



**FCC ID: ABZ99FT4056; Test Date: 9/05/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030905-17

MODEL #: AAH65RDH9AA1AN S/N: PVSYY020

Tx freq: 438

Simulated tissue temp: 20.5

Start power: 4.61 W

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: None

**Shortened scan reflect highest S.A.R. producing configuration at the body.**

**Run time 6 minutes**

**Representative “normal” scan run time was 25 minutes**

**“Shortened” scan; max calc. S.A.R. (drift adjusted) w/ 50% duty cycle = 7.25 mW/g**

**“Normal” scan; max. calc. S.A.R. (drift adjusted) w/ 50% duty cycle = 7.35 mW/g**

**(see section 7.1 run # EC-R2-030905-15)**

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

Flat Phantom; Flat Abdomen (1) Section; Position: (90°,90°);

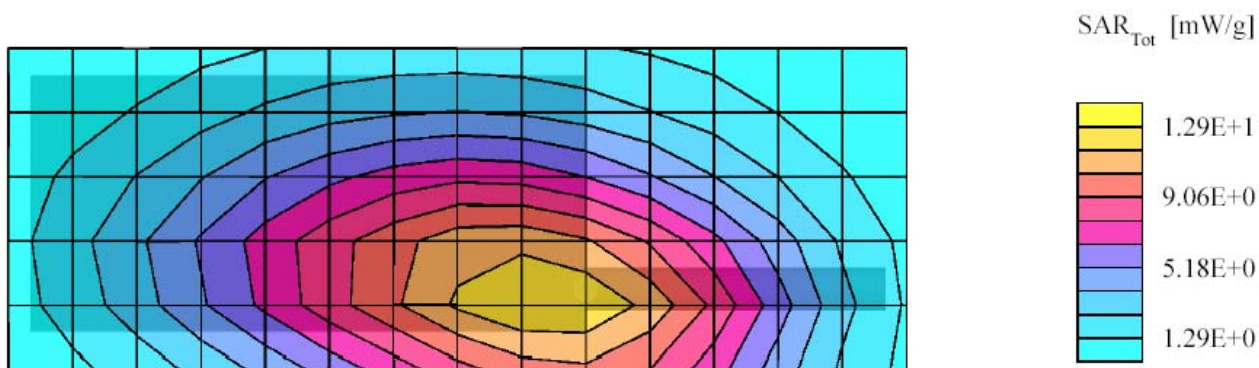
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.90$  mho/m  $\epsilon_r = 54.9$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 5x5x7: SAR (1g): 13.2 mW/g, SAR (10g): 9.54 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 60.0, 126.0, 4.7

Power drift: -0.41 dB



## **APPENDIX B**

### **Data Results**

**FCC ID: ABZ99FT4056; Test Date: 8/28/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030828-8

MODEL #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 19.9

Start power : 4.46 W

Antenna position: NAE6483A

Battery kit: NNTN4970A

Carry Accessories: HLN8255B

Audio/data accessories: HMN9030A

**DUT w/ belt clip against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

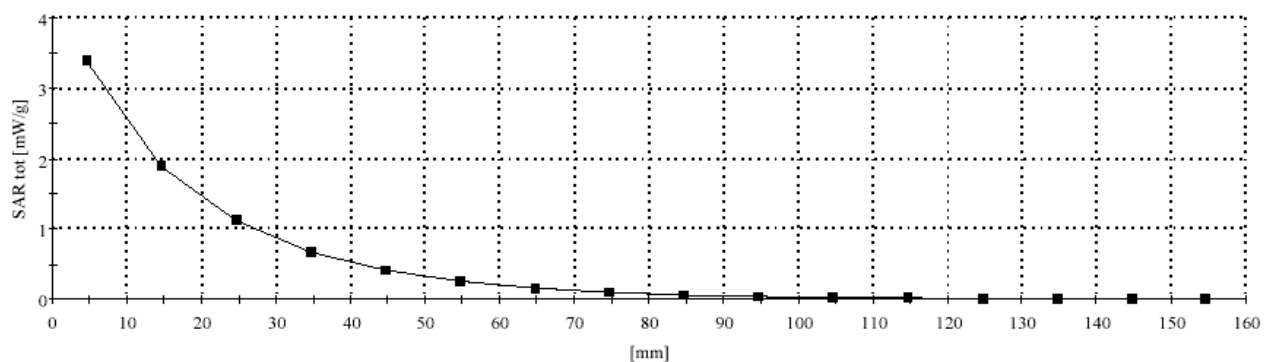
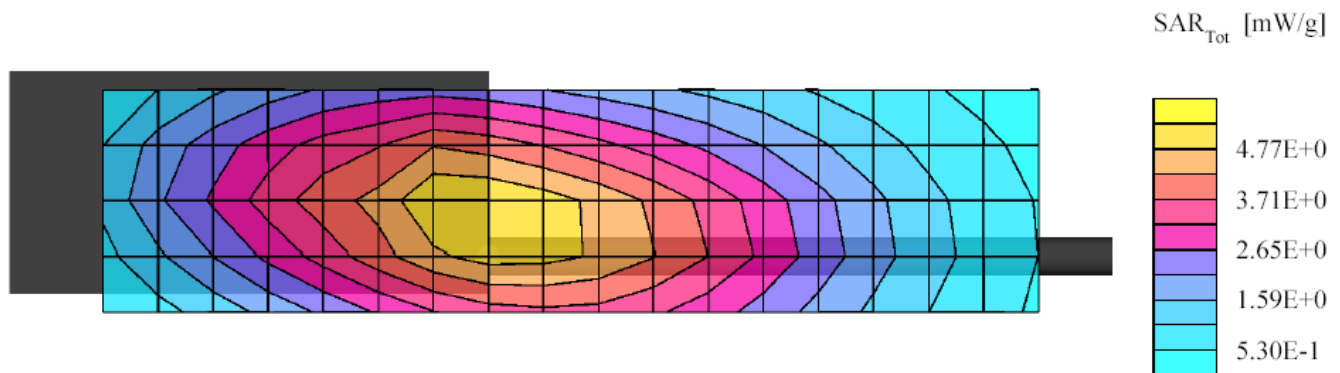
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.91$  mho/m  $\epsilon = 55.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 5x5x7: SAR (1g): 5.08 mW/g, SAR (10g): 3.69 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 97.5, 4.7

Power drift: -0.53dB



**FCC ID: ABZ99FT4056; Test Date: 8/28/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030828-14

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 19.6

Start power : 4.54 W

Antenna position: NAE6483A

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: HMN9030A

**DUT w/ chest pack against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

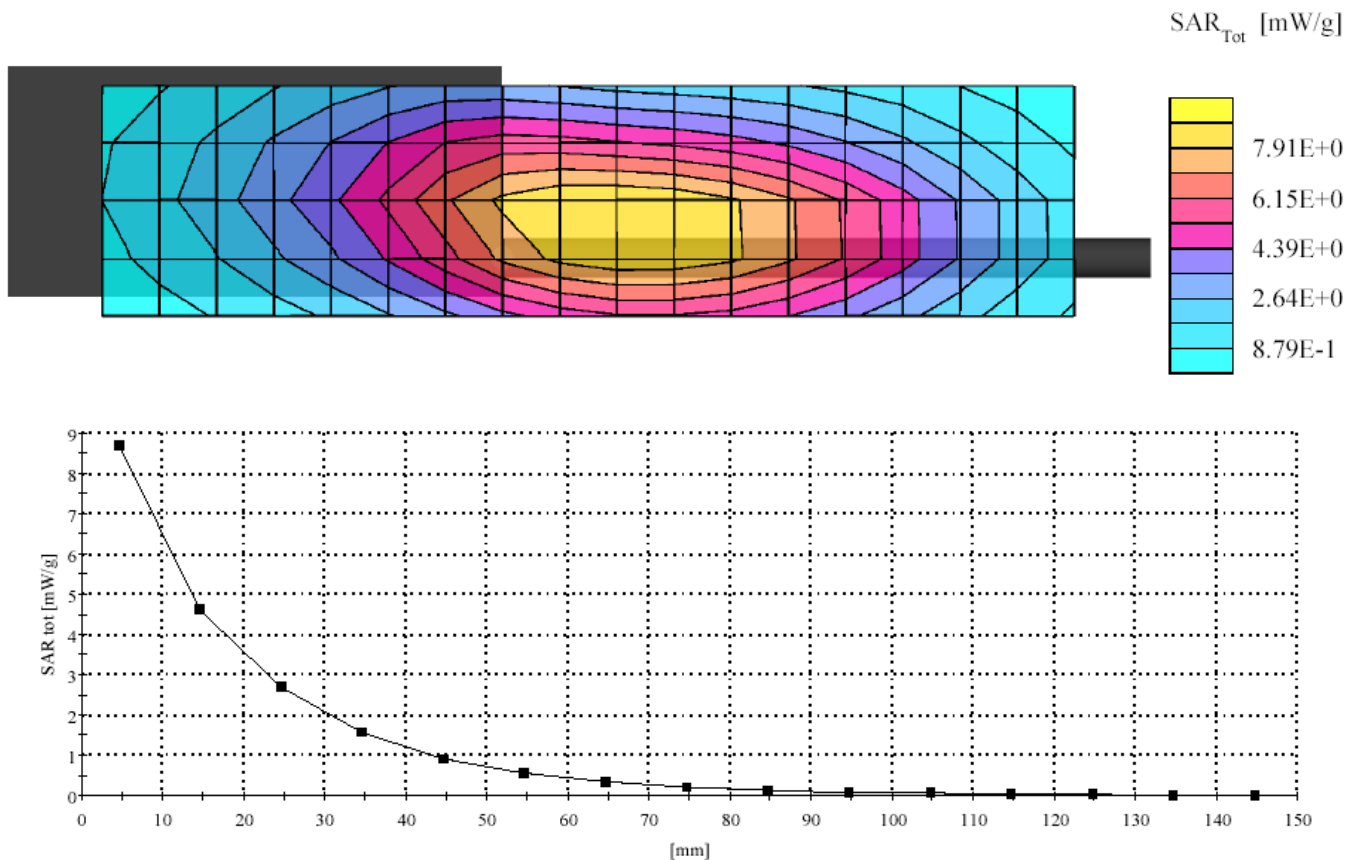
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.91$  mho/m  $\epsilon_r = 55.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 5x5x7: SAR (1g): 8.82 mW/g, SAR (10g): 6.26 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 36.0, 136.5, 4.7

Power drift: -0.65 dB



**FCC ID: ABZ99FT4056; Test Date: 8/29/03**

**Motorola CGISS EME Laboratory**

RUN #: KU-R2-030829-04

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.3

Start power: 4.46 W

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: HLN8255B

Audio/data accessories: HMN9030A

**DUT w/ belt clip against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

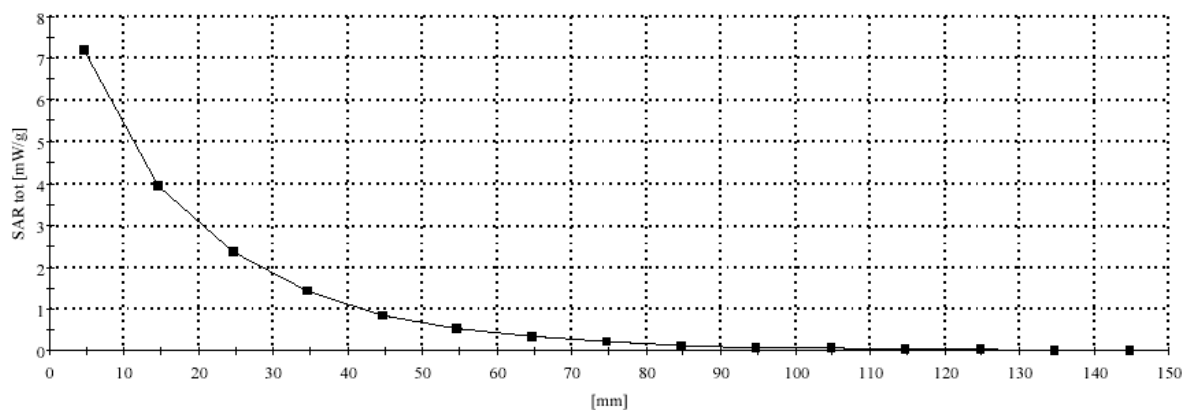
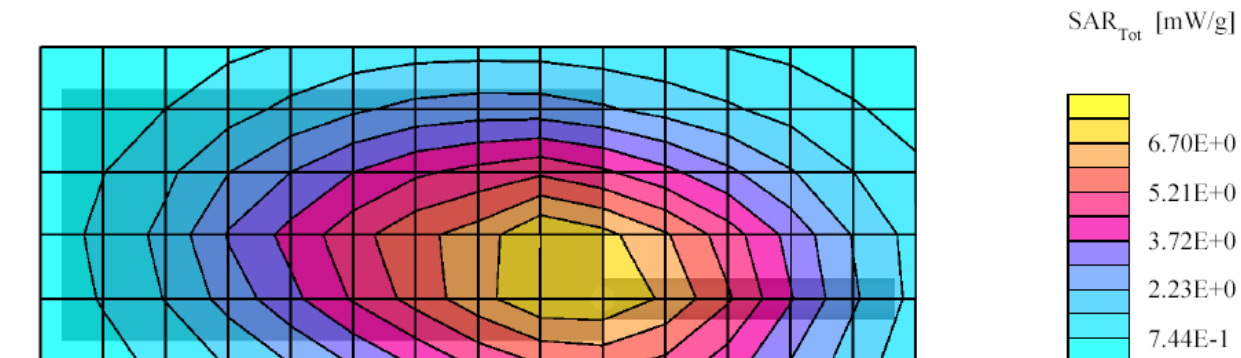
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.91$  mho/m  $\epsilon_r = 55.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 7.34 mW/g, SAR (10g): 5.27 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 52.5, 124.5, 4.7

Power drift: -0.77 dB



**FCC ID: ABZ99FT4056; Test Date: 8/29/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030829-13

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 19.6

Start power : 4.55 W

Antenna position: NAE6522A,

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: HMN9030A

**DUT w/ chest pack against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

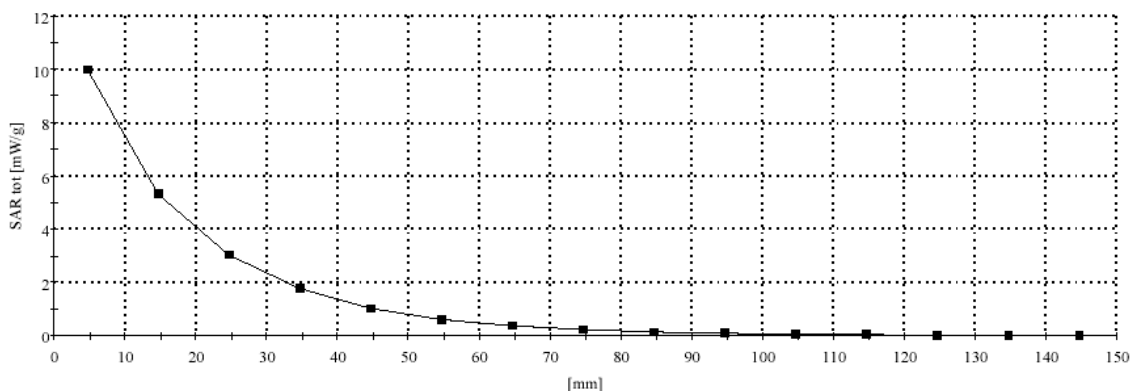
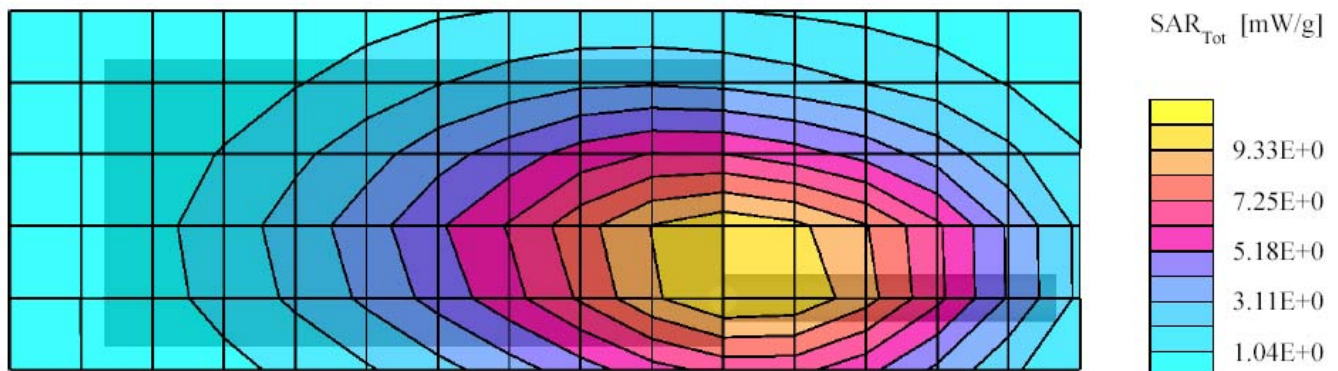
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.91$  mho/m  $\epsilon_r = 55.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 10.3 mW/g, SAR (10g): 7.26 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 54.0, 154.5, 4.7

Power drift: -0.86 dB



**FCC ID: ABZ99FT4056; Test Date: 9/03/03**

**Motorola CGISS EME Laboratory**

RUN #: KU-R2-030903-04

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.8

Start power : 4.38

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: BDN6706B, 0180358B38

**DUT w/ chest pack against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

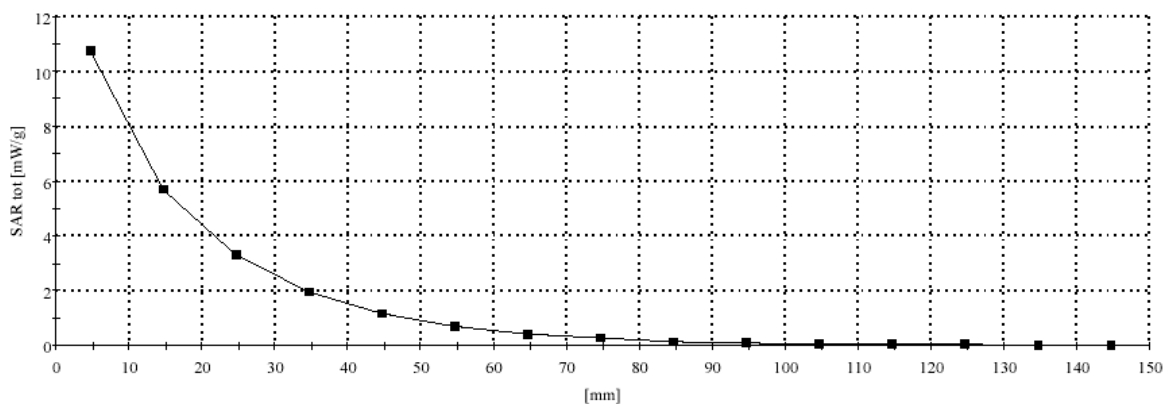
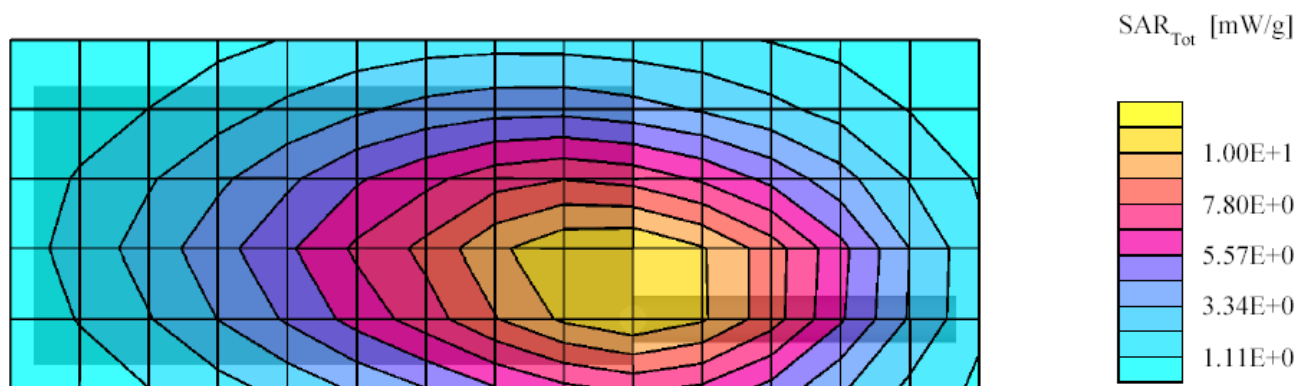
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.92$  mho/m  $\epsilon_r = 55.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 11.1 mW/g, SAR (10g): 7.86 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 51.0, 133.5, 4.7

Power drift: -0.79 dB



**FCC ID: ABZ99FT4056; Test Date: 9/03/03**

**Motorola CGISS EME Laboratory**

RUN #: KU-R2-030903-05

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.5

Start power : 4.44 W

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: None

**DUT w/ carry case against the flat phantom**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

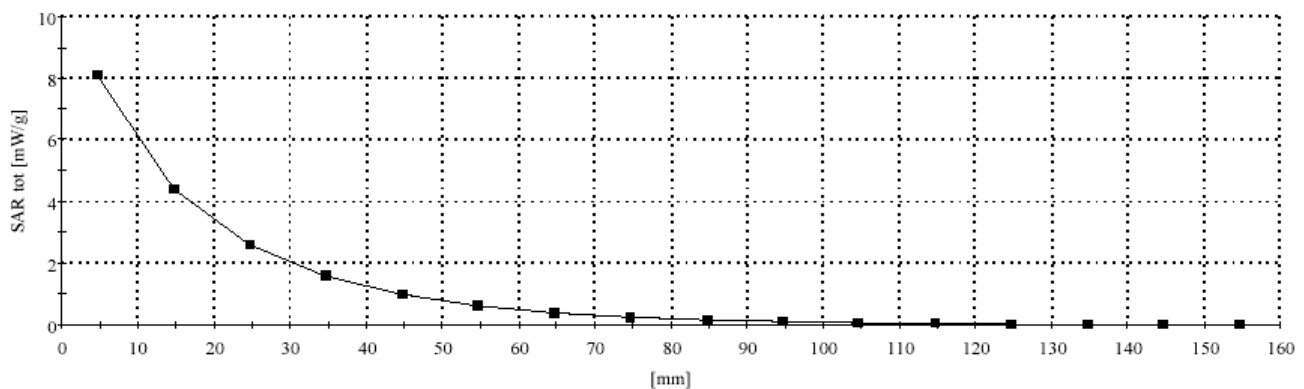
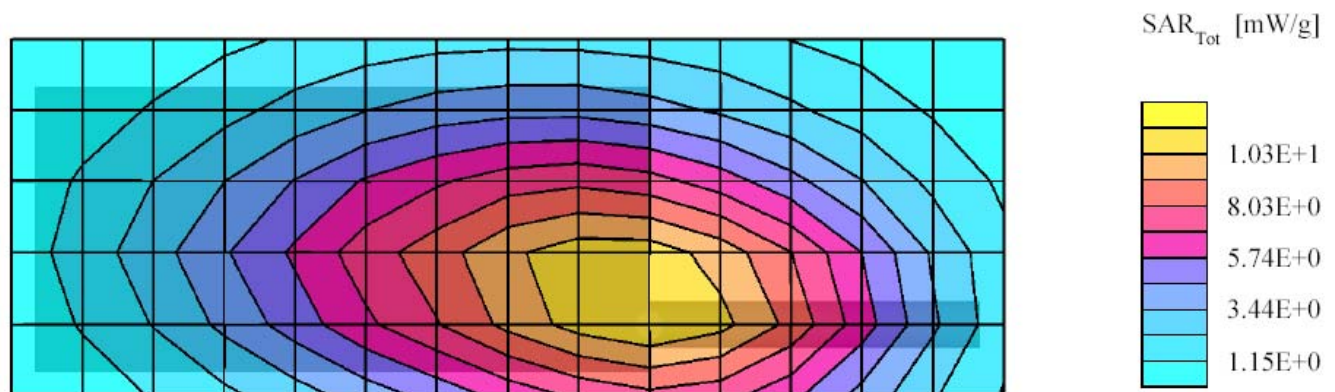
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.92$  mho/m  $\epsilon_r = 55.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 11.0 mW/g, SAR (10g): 7.84 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 54.0, 132.0, 4.7

Power Drift: -0.96dB



**FCC ID: ABZ99FT4056; Test Date: 9/04/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030904-25

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.4

Start power : 4.44 W

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: None

Audio/data accessories: BDN6706B. PTT Switch #: 0180358B38

**DUT front towards phantom w/ 2.5 cm separation.**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

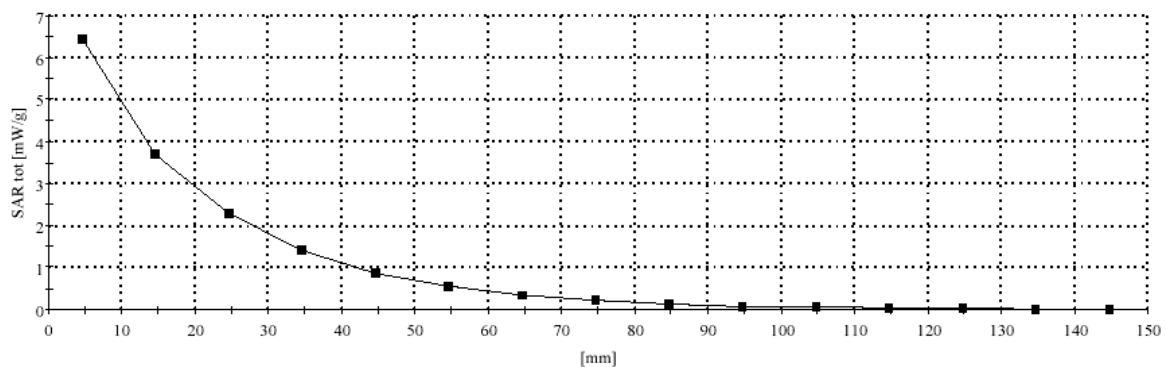
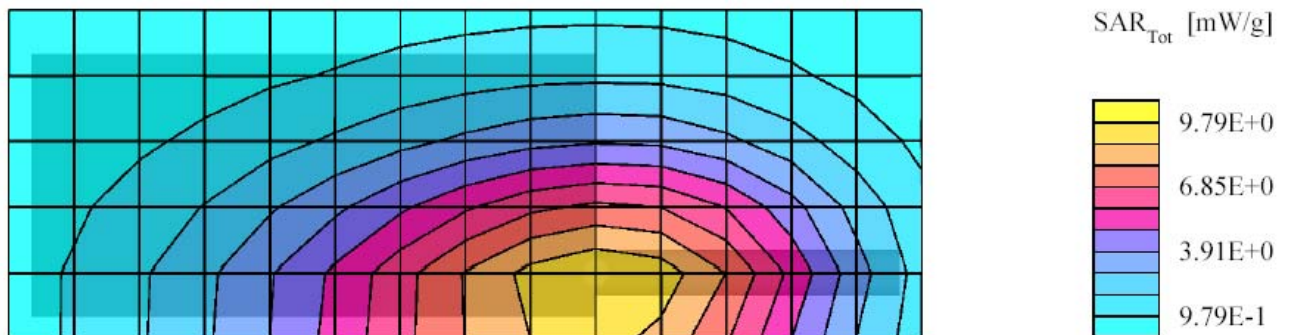
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.91$  mho/m  $\epsilon = 55.8$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 9.49 mW/g, SAR (10g): 6.87 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 66.0, 136.5, 4.7

Power drift: -0.76 dB



**FCC ID: ABZ99FT4056; Test Date: 8/30/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030830-09

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 19.7

Start power : 4.45 W

Antenna position: NAE6483A

Battery kit: NNTN4970A

Antenna Adapter #: 5886627Z01

Carry Accessories: NONE

Audio/data accessories: NONE

**DUT front towards phantom w/ 2.5 cm separation**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

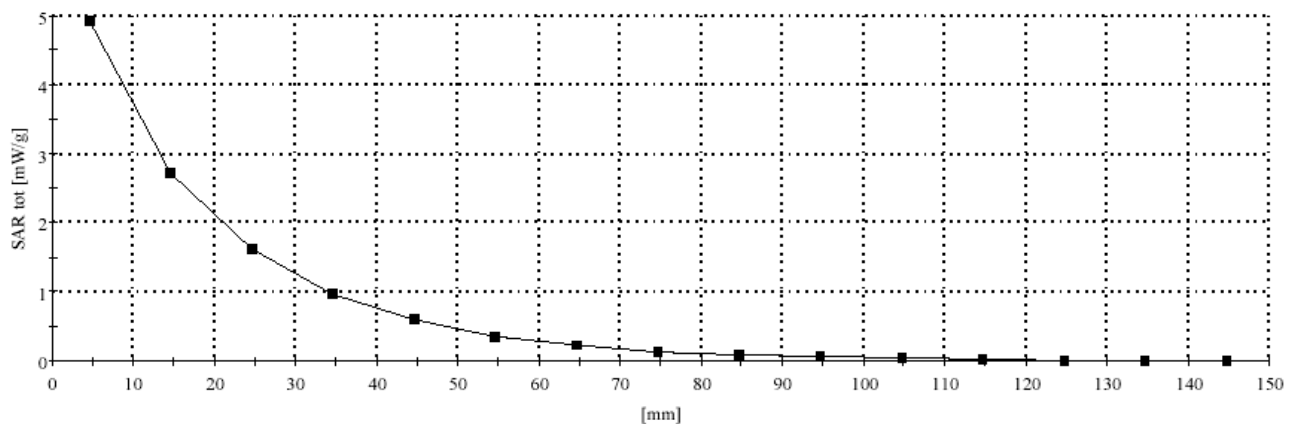
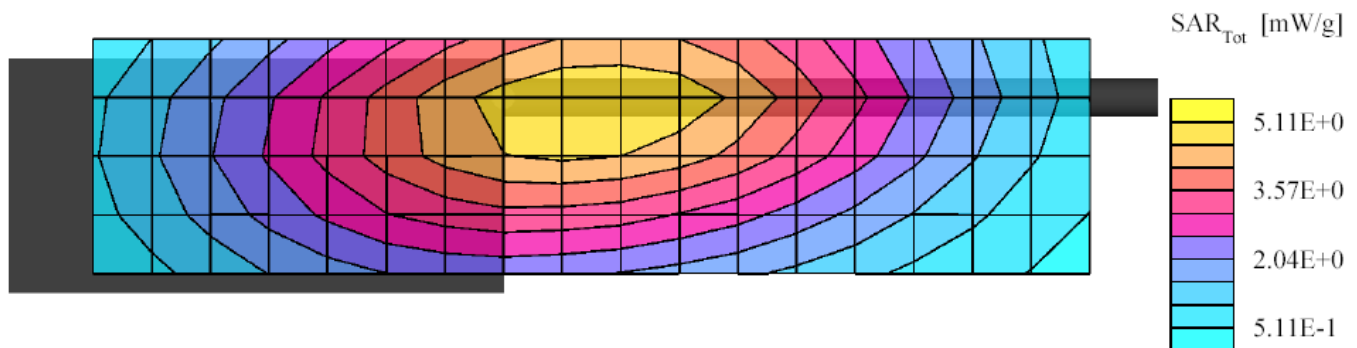
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

IEEE Head 454 MHz:  $\sigma = 0.89$  mho/m  $\epsilon = 45.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 5x5x7: SAR (1g): 4.94 mW/g, SAR (10g): 3.61 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 16.5, 126.0, 4.7

Power Drift: -0.47 dB



**FCC ID: ABZ99FT4056; Test Date: 9/02/03**

**Motorola CGISS EME Laboratory**

RUN #: KU-R2-030902-02

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 21.0

Start power : 4.45 W

Antenna position: NAE6522A

Battery kit: NNTN4497AR

Carry Accessories: NONE

Audio/data accessories: NONE

**DUT front towards phantom w/ 2.5 cm separation**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

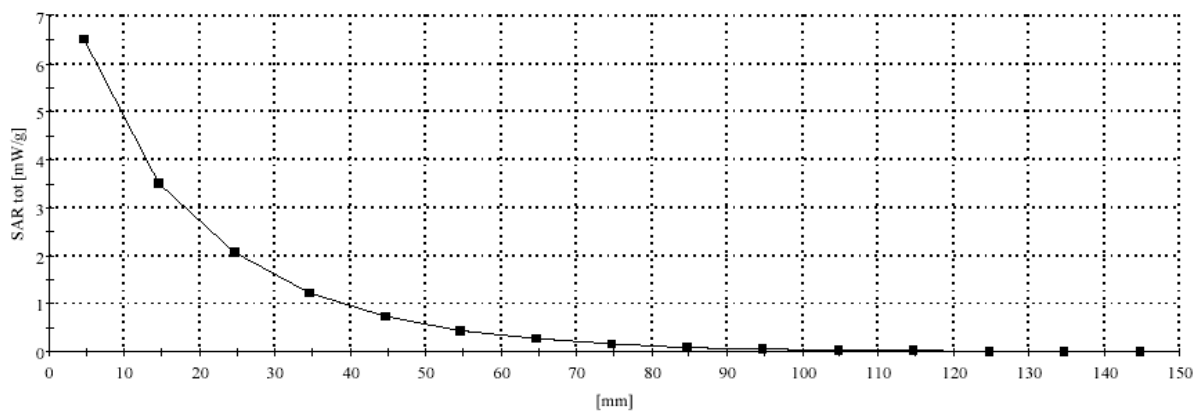
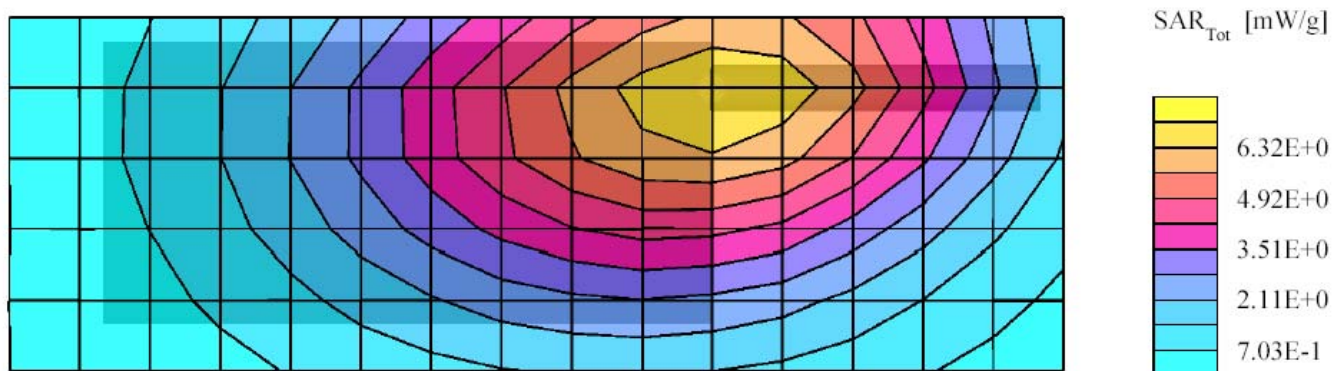
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

IEEE Head 454 MHz:  $\sigma = 0.88$  mho/m  $\epsilon_r = 45.1$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 6.72 mW/g, SAR (10g): 4.85 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 15.0, 153.0, 4.7

Power Drift: -0.74 dB



**FCC ID: ABZ99FT4056; Test Date: 9/02/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030902-09

Model #: AAH65RDC9AA1AN S/N: PVQYY00K

Tx freq: 438

Simulated tissue temp: 20.0

Start power : 4.45 W

Antenna position: NAE6522A

Battery kit: NNTN4497AR

Carry Accessories: NONE

Audio/data accessories: RMN4055A

**DUT front towards phantom w/ 2.5 cm separation**

Flat Phantom; Flat Abdomen (2) Section; Position: (90°,90°);

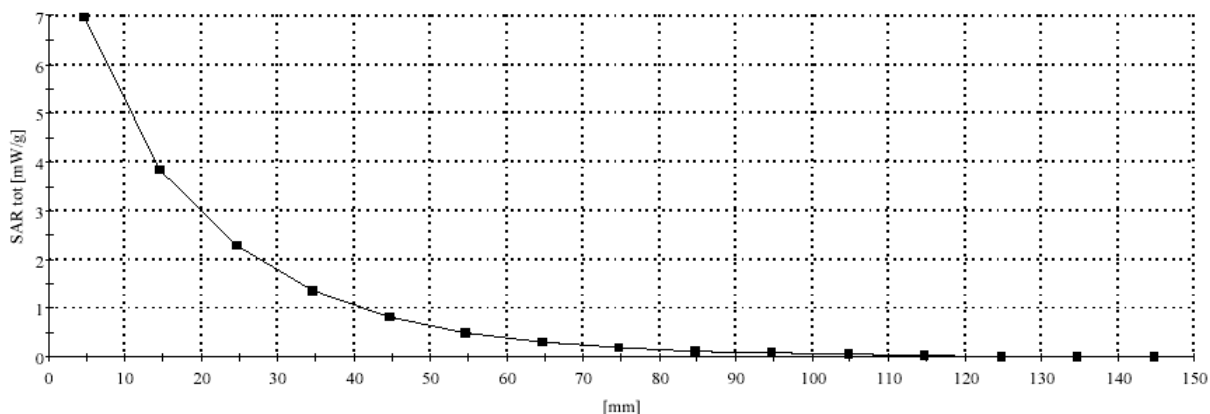
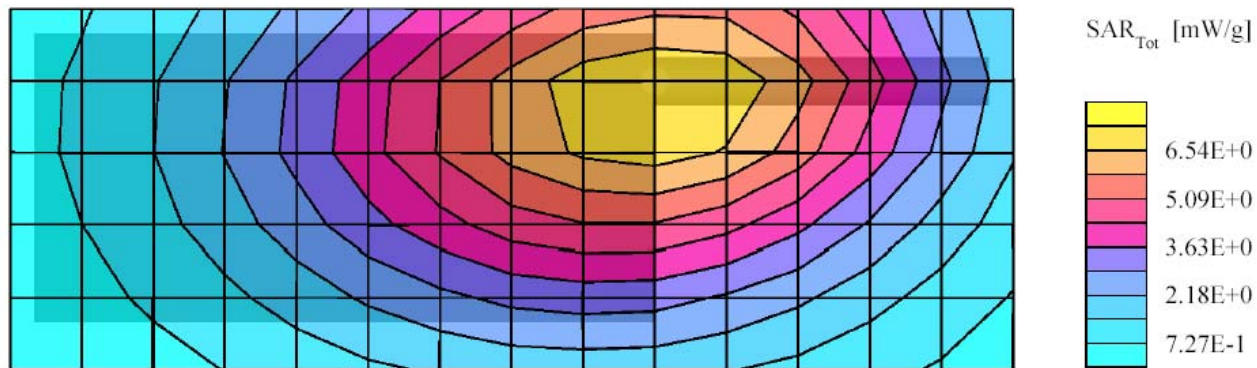
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

IEEE Head 454 MHz:  $\sigma = 0.88$  mho/m  $\epsilon_r = 45.1$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 7.10 mW/g, SAR (10g): 5.17 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 19.5, 136.5, 4.7

Power Drift: -0.49 dB



**FCC ID: ABZ99FT4056; Test Date: 9/05/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030905-15

Model #: AAH65RDH9AA1AN S/N: PVSYY020

Tx freq: 438

Simulated tissue temp: 20.5

Start power : 4.59 W

Antenna position: NAE6522A

Battery kit: NNTN4970A

Carry Accessories: RLN4570A

Audio/data accessories: None

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

Flat Phantom; Flat Abdomen (1) Section; Position: (90°,90°);

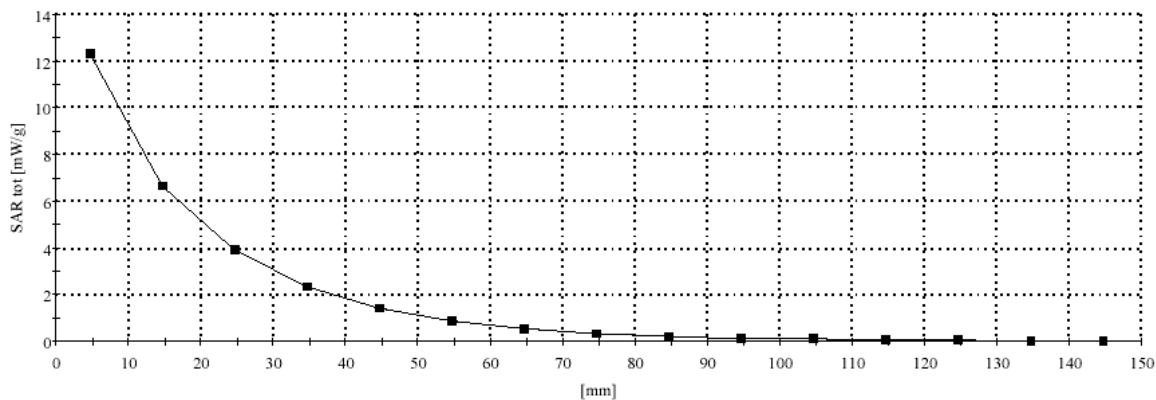
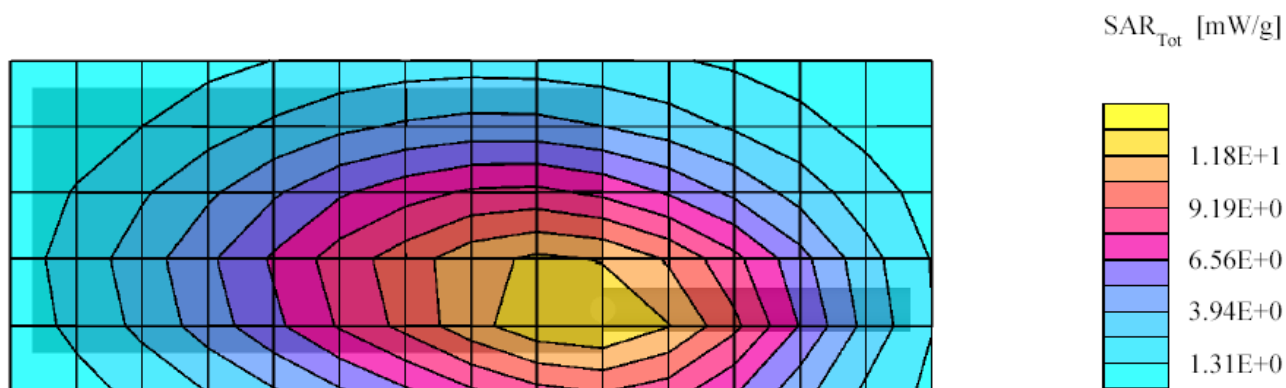
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

FCC Body 454:  $\sigma = 0.90$  mho/m  $\epsilon_r = 54.9$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 12.6 mW/g, SAR (10g): 9.03 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 57.0, 130.5, 4.7

Power Drift: -0.66 dB



**FCC ID: ABZ99FT4056; Test Date: 9/07/03**

**Motorola CGISS EME Laboratory**

RUN #: EC-R2-030907-02

Model #: AAH65RDH9AA1AN S/N: PVSYY020

Tx freq: 438

Simulated tissue temp: 21.4

Start power : 4.60 W

Antenna position: NAE6522A

Battery kit: NNTN4497AR

Carry Accessories: NONE

Audio/data accessories: None

**DUT front towards the phantom separated 2.5cm**

Flat Phantom; Flat Abdomen (1) Section; Position: (90°,90°);

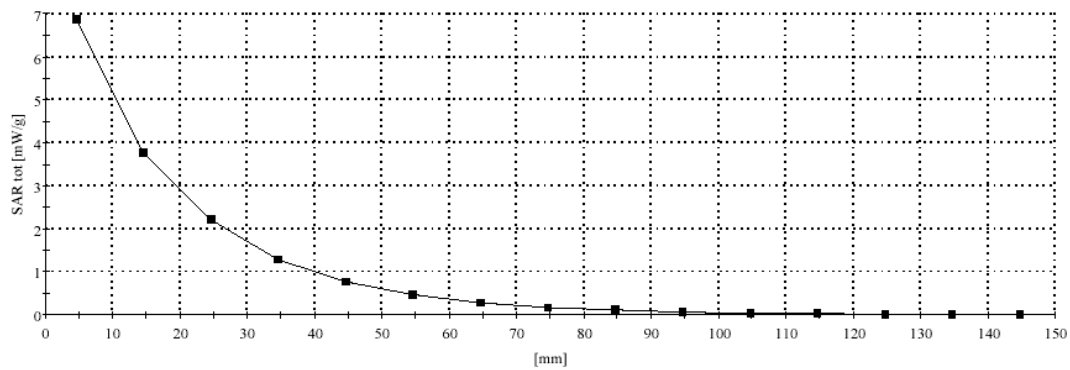
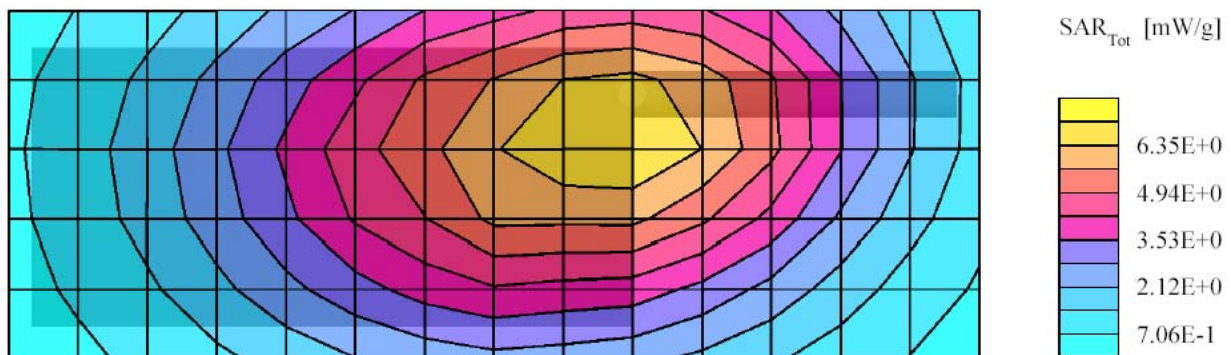
Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Probe cal date: 26/02/03; Crest factor: 1.0;

IEEE Head 454 MHz:  $\sigma = 0.91$  mho/m  $\epsilon_r = 45.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cube 7x7x7: SAR (1g): 6.88 mW/g, SAR (10g): 4.99 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 27.0, 129.0, 4.7

Power Drift: -0.51 dB



## **APPENDIX C**

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

Dipole validations at the head from SPEAG are provided herein. 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 450 MHz Dipole D450V2; SN-1002; Test Date: 8/27/03**

**Motorola CGISS EME Lab**

Run #: SYS Perf R2-030827-01

TX Freq: 450 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

Target: 4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

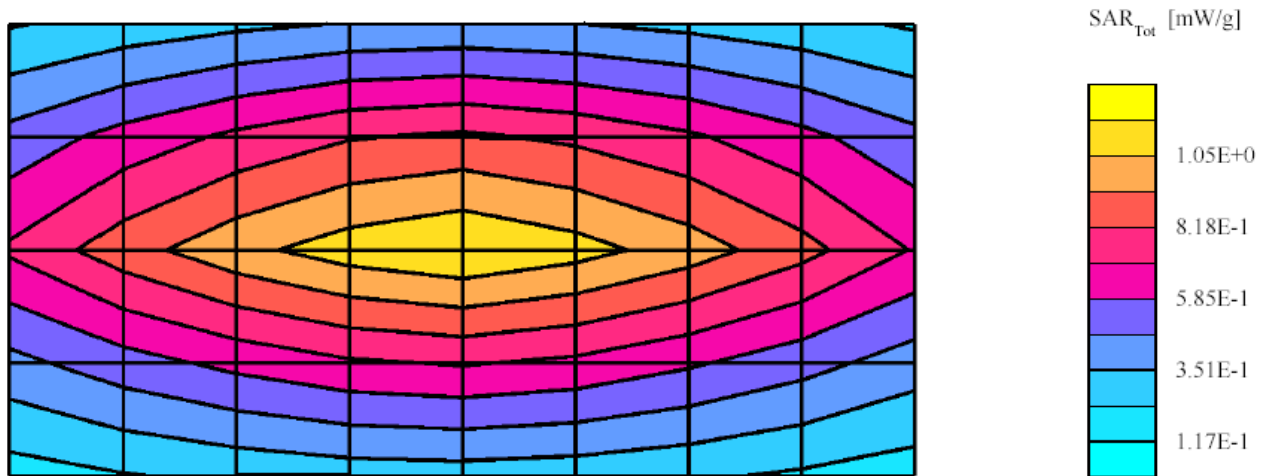
SAR calculated 1g is 4.66mW/g percent from target (including drift) is 3.19%

SAR Calculated 10g is 3.09mW/g Percent from target (including drift) is 3.36 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003);Probe Cal Date: 26/02/03ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.91$  mho/m  $\epsilon_r = 55.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.77 mW/g  $\pm 0.05$  dB, SAR (1g): 1.15 mW/g  $\pm 0.03$  dB, SAR (10g): 0.762 mW/g  $\pm 0.03$  dB, (Worst-case extrapolation) Penetration depth: 12.8 (11.4, 14.6) [mm]

Power drift: -0.06 dB



## **SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 8/28/03**

### **Motorola CGISS EME Lab**

Run #: SYS Perf R2-030828-01

TX Freq: 450 MHz

Tx Freq: 450 MHz

Simulated tissue temp: 20.7 C

Start power: 250 mW

#### **Target:**

4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

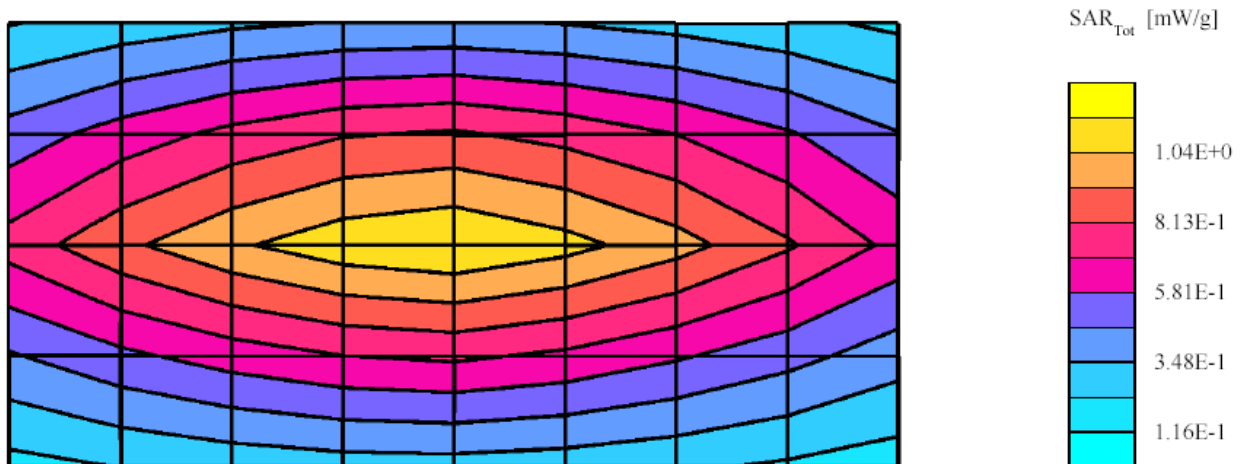
SAR calculated 1g is 4.61 mW/g percent from target (including drift) is 2.00 %

SAR Calculated 10g is 3.06 mW/g Percent from target (including drift) is 2.44 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.91$  mho/m  $\epsilon_r = 55.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.78 mW/g  $\pm$  0.01 dB, SAR (1g): 1.15 mW/g  $\pm$  0.01 dB, SAR (10g): 0.764 mW/g  $\pm$  0.01 dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.4, 14.8) [mm]

Power drift: -0.01 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 8/29/03**

**Motorola CGISS EME Lab**

Run #: Sys Perf R2-030829-01

Tx Freq: 450MHz

Simulated tissue temp: 20.6 C

Start power: 250mW

**Target:**

4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

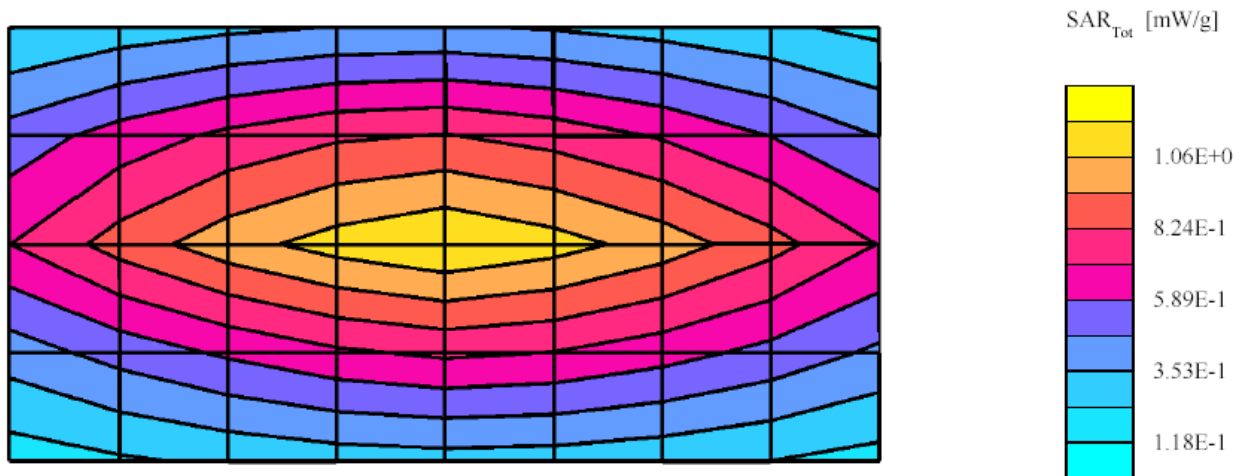
SAR calculated 1g is 4.67 mW/g percent from target (including drift) is 3.37 %

SAR Calculated 10g is 3.11 mW/g Percent from target (including drift) is 3.86 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.91 \text{ mho/m}$   $\epsilon_r = 55.7$   $\rho = 1.00 \text{ g/cm}^3$ ; DAE: DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.79 mW/g  $\pm 0.02 \text{ dB}$ , SAR (1g): 1.16 mW/g  $\pm 0.02 \text{ dB}$ , SAR (10g): 0.771 mW/g  $\pm 0.01 \text{ dB}$ , (Worst-case extrapolation) Penetration depth: 12.9 (11.5, 14.8) [mm]

Power drift: -0.03 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 8/30/03**

**Motorola CGISS EME Lab**

Run #: Sys Perf R2-030830-01

Tx Freq: 450MHz

Simulated tissue temp: 19.7 C

Start power: 250mW

**Target:**

4.70 mW/g for 1g SAR, 3.11 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

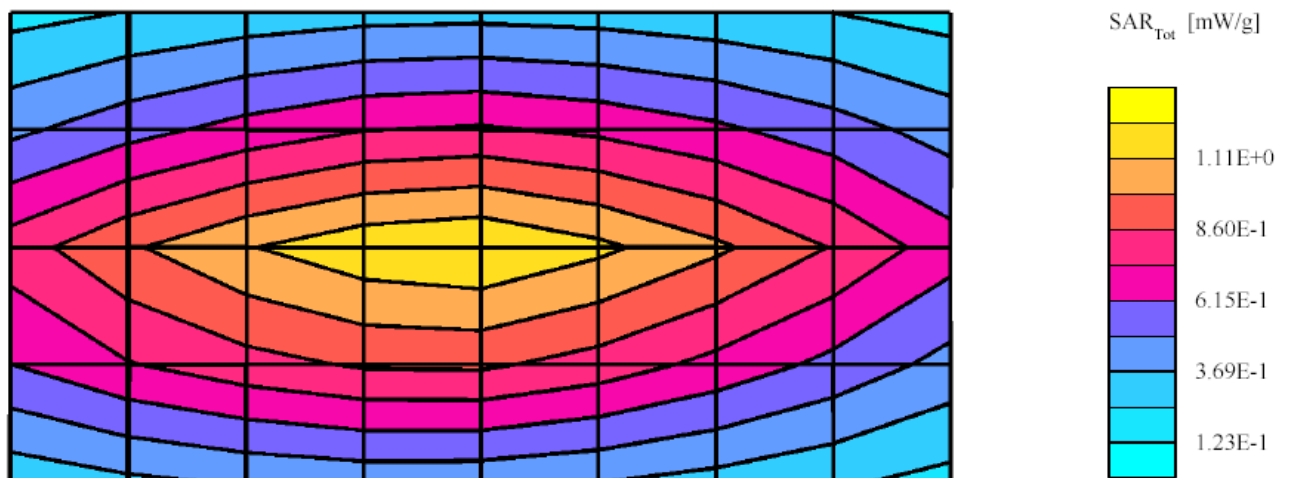
SAR calculated 1g is 4.95 mW/g percent from target (including drift) is 5.41 %

SAR Calculated 10g is 3.24 mW/g Percent from target (including drift) is 4.25 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; IEEE Head 450 MHz:  $\sigma = 0.89$  mho/m  $\epsilon_r = 45.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.91 mW/g  $\pm$  0.02 dB, SAR (1g): 1.23 mW/g  $\pm$  0.00 dB, SAR (10g): 0.805 mW/g  $\pm$  0.01 dB, (Worst-case extrapolation) Penetration depth: 12.4 (11.1, 14.2) [mm]

Power drift: -0.03 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 9/02/03**

**Motorola CGISS EME Lab**

Run #: Sys Perf R2-030902-01

Tx Freq: 450MHz

Simulated tissue temp: 21.0 C

Start power: 250mW

**Target:**

4.70 mW/g for 1g SAR, 3.11 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

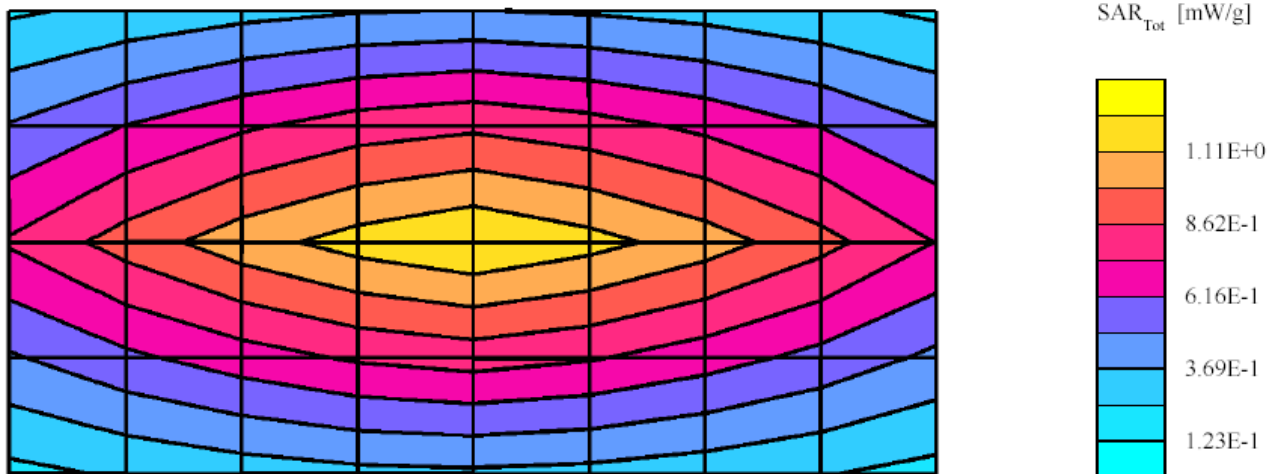
SAR calculated 1g is 4.91 mW/g percent from target (including drift) is 4.41 %

SAR Calculated 10g is 3.20 mW/g Percent from target (including drift) is 3.02 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; IEEE Head 450 MHz:  $\sigma = 0.88$  mho/m  $\epsilon_r = 45.2$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE: DAE3V1SN406 (11/11/02

Cubes (2): Peak: 1.90 mW/g  $\pm$  0.01 dB, SAR (1g): 1.21 mW/g  $\pm$  0.01 dB, SAR (10g): 0.790 mW/g  $\pm$  0.01 dB, (Worst-case extrapolation) Penetration depth: 12.3 (11.0, 14.0) [mm]

Power drift: -0.06 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 9/03/03**

**Motorola CGISS EME Lab**

Run #: SYS Perf R2-030903-01

Tx Freq: 450MHz

Simulated tissue temp: 21.3C

Start power: 250mW

**Target:**

4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

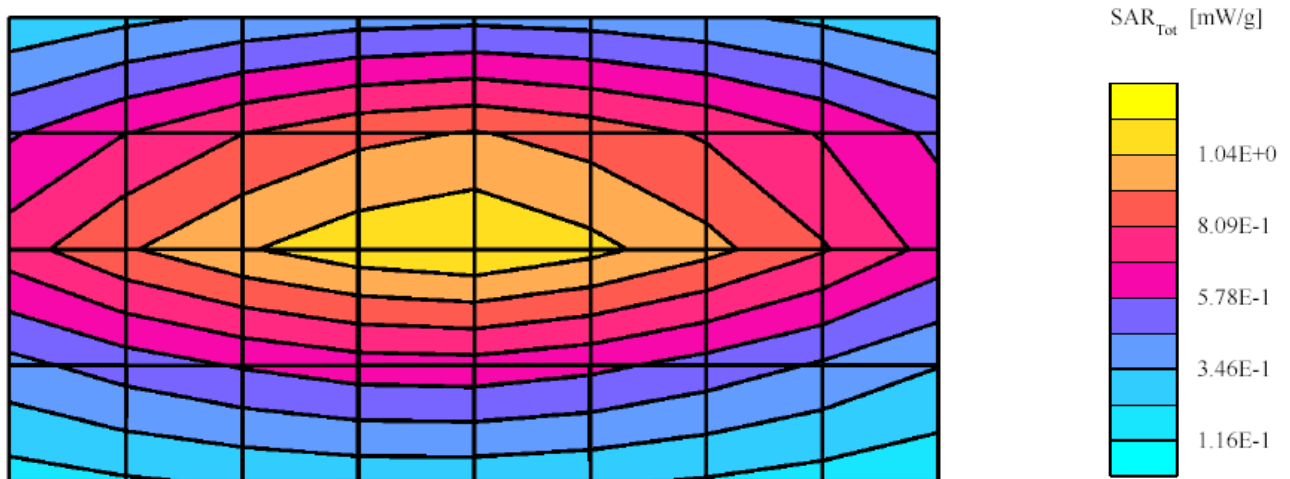
SAR calculated 1g is 4.79 mW/g percent from target (including drift) is 5.95 %

SAR Calculated 10g is 3.15 mW/g Percent from target (including drift) is 5.41 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.92$  mho/m  $\epsilon_r = 55.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.81 mW/g  $\pm 0.02$  dB, SAR (1g): 1.17 mW/g  $\pm 0.02$  dB, SAR (10g): 0.775 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.4, 14.7) [mm]

Power drift: -0.10 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 9/04/03**

**Motorola CGISS EME Lab**

Run #: Sys Perf R2-030904-01

Tx Freq: 450MHz

Simulated tissue temp: 20.7 C

Start power: 250mW

**Target:**

4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

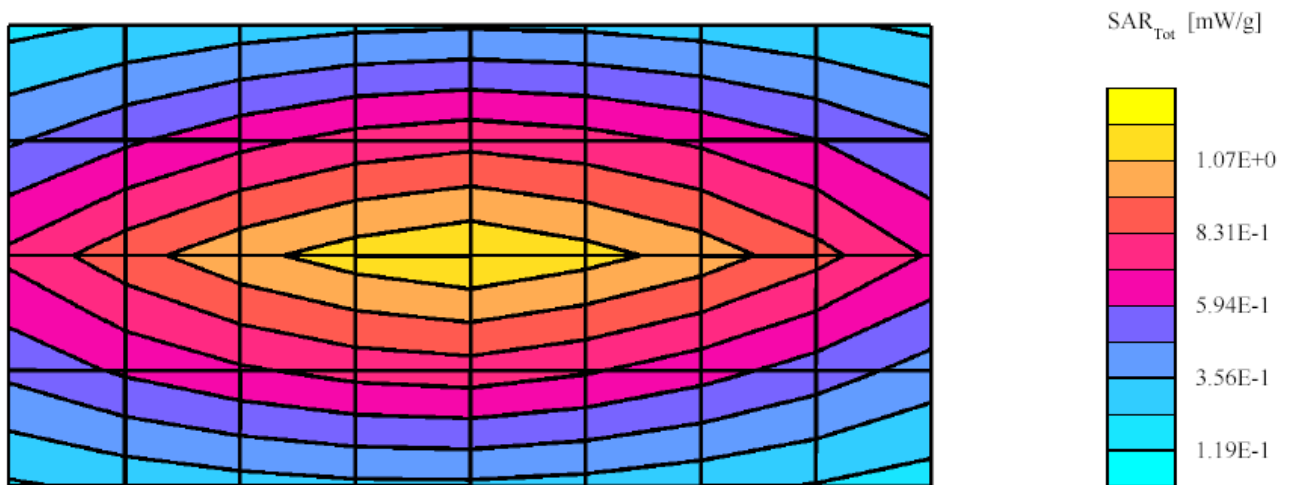
SAR calculated 1g is 4.68 mW/g percent from target (including drift) is 3.54%

SAR Calculated 10g is 3.08 mW/g Percent from target (including drift) is 3.01%

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.91 \text{ mho/m}$   $\epsilon_r = 55.8$   $\rho = 1.00 \text{ g/cm}^3$ ; DAE3V1SN406 (11/11/02)

Cubes (2): Peak:  $1.80 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (1g):  $1.17 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $0.772 \text{ mW/g} \pm 0.02 \text{ dB}$ , (Worst-case extrapolation) Penetration depth: 12.9 (11.5, 14.6) [mm]

Power drift: 0.00 dB



**SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 9/05/03**

**Motorola CGISS EME Lab**

Run #: Sys Perf R2-030905-01

Tx Freq: 450MHz

Simulated tissue temp: 20.5 C

Start power: 250mW

**Target:**

4.52 mW/g for 1g SAR, 2.99 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

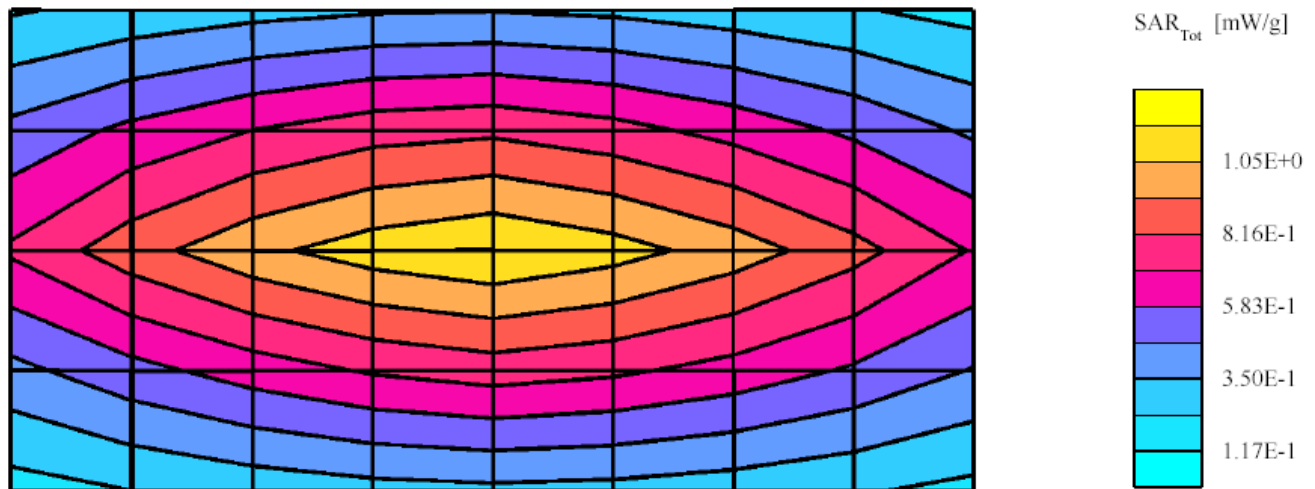
SAR calculated 1g is 4.62 mW/g percent from target (including drift) is 2.24%

SAR Calculated 10g is 3.05 mW/g Percent from target (including drift) is 2.14%

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.90$  mho/m  $\epsilon_r = 54.9$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.77 mW/g  $\pm 0.02$  dB, SAR (1g): 1.15 mW/g  $\pm 0.02$  dB, SAR (10g): 0.760 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.5, 14.8) [mm]

Power drift: -0.02 dB



## SPEAG 450 MHz Dipole D450V2; SN-1002; Test Date: 9/07/03

### Motorola CGISS EME Lab

Run #: Sys Perf R2-030907-01

Tx Freq: 450MHz

Simulated tissue temp: 21.4 C

Start power: 250mW

#### Target:

4.70 mW/g for 1g SAR, 3.11 mW/g for 10g SAR, +/- 10% from system performance target 1/16/03.

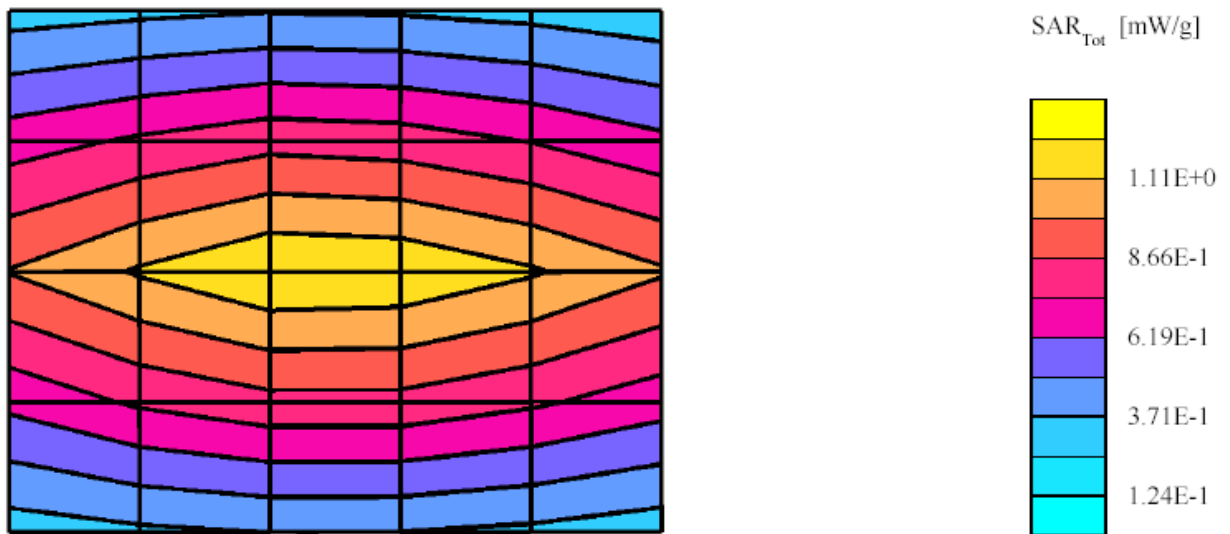
SAR calculated 1g is 4.97 mW/g percent from target (including drift) is + 5.65 %

SAR Calculated 10g is 3.23 mW/g Percent from target (including drift) is + 3.98 %

Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); Probe Cal Date: 26/02/03 ConvF(7.50,7.50,7.50); Crest factor: 1.0; IEEE Head 450 MHz:  $\sigma = 0.90$  mho/m  $\epsilon_r = 45.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3V1SN406 (11/11/02)

Cubes (2): Peak: 1.92 mW/g  $\pm$  0.01 dB, SAR (1g): 1.23 mW/g  $\pm$  0.01 dB, SAR (10g): 0.801 mW/g  $\pm$  0.02 dB, (Worst-case extrapolation) Penetration depth: 12.2 (11.0, 13.9) [mm]

Power drift: -0.04 dB



### SYSTEM PERFORMANCE CHECK TARGET SAR

|                 |                    |                    |                           |
|-----------------|--------------------|--------------------|---------------------------|
| Date:           | <u>1/16/2003</u>   | Frequency (MHz):   | <u>450</u>                |
| Lab Location:   | <u>CGISS</u>       | Mixture Type:      | <u>FCC Body</u>           |
| Robot System:   | <u>CGISS 3</u>     | Ambient Temp.(°C): | <u>22.6, (Humid: 45%)</u> |
| Probe Serial #: | <u>ET3DV6-1393</u> | Tissue Temp.(°C):  | <u>21.5</u>               |
| DAE Serial #:   | <u>406</u>         |                    |                           |

#### Tissue Characteristics

|               |             |                  |                               |
|---------------|-------------|------------------|-------------------------------|
| Permittivity: | <u>55.4</u> | Phantom Type/SN: | <u>80302002C/S7</u>           |
| Conductivity: | <u>0.92</u> | Distance (mm):   | <u>15 (tissue/dipole cnt)</u> |

|                   |               |          |
|-------------------|---------------|----------|
| Reference Source: | <u>D450V2</u> | (Dipole) |
| Reference SN:     | <u>1002</u>   |          |

Power to Dipole: 250 mW

|                     |                   |                              |
|---------------------|-------------------|------------------------------|
| Measured SAR Value: | <u>1.13 mW/g,</u> | <u>0.748 mW/g (10g avg.)</u> |
| Power Drift:        | <u>0 dB</u>       |                              |

#### New Target/Measured

|            |                   |                             |
|------------|-------------------|-----------------------------|
| SAR Value: | <u>4.52 mW/g,</u> | <u>2.99 mW/g (10g avg.)</u> |
|------------|-------------------|-----------------------------|

(normalized to 1.0 W, including drift)

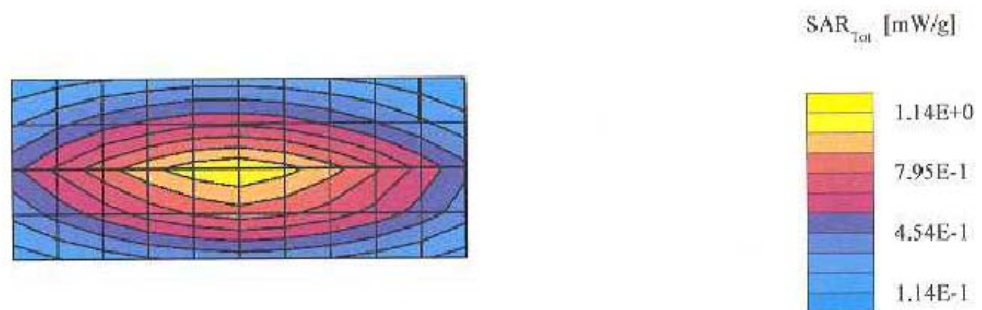
Test performed by: J. Fortier Initial: 

## Dipole D450V2 SN1002; Test date:01/16/03

Run #: Sys Val\_R3\_030116-07 Phantom #:80302002C/S7  
Model #: D450V2 SN: 1002  
Robot: CGISS-3 Tester: J. Fortier  
TX Freq: 450 MHz Sim Tissue Temp: 21.5 (Celsius)  
Start Power: 250mW  
DAE3: SN:406 DAE Cal Date: 11/11/02

### - Comments-

Target at 1W is 4.52 mW/g (1g), 2.99 mW/g (10g)  
Flat; Probe: ET3DV6 - SN1393 SPEAG; ConvF(8.20,8.20,8.20); Crest factor: 1.0; FCC Body 450:  $\sigma = 0.92 \text{ mho/m}$   $\epsilon_r = 55.4$   $\rho = 1.00 \text{ g/cm}^3$   
Cubes (2): Peak: 1.74 mW/g  $\pm 0.06 \text{ dB}$ , SAR (1g): 1.13 mW/g  $\pm 0.06 \text{ dB}$ , SAR (10g): 0.748 mW/g  $\pm 0.06 \text{ dB}$ , (Worst-case extrapolation)  
Penetration depth: 13.1 (11.6, 14.9) [mm]  
Powerdrift: -0.00 dB



Motorola CGISS EME Lab

### SYSTEM VALIDATION

Date: 1/16/2003 Frequency (MHz): 450  
Lab Location: CGISS Mixture Type: IEEE Head  
Robot System: CGISS 3 Ambient Temp.(°C): 22.6, (Humid: 46.4%)  
Probe Serial #: ET3DV6-1393 Tissue Temp.(°C): 21.2  
DAE Serial #: 406

#### Tissue Characteristics

Permittivity: 43.3 Phantom Type/SN: 80302002B/S6  
Conductivity: 0.87 Distance (mm): 15 (tissue/dipole cnt)

Reference Source: D450V2 (Dipole)  
Reference SN: 1002

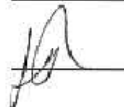
Power to Dipole: 250 mW  
Power Output (radio):          mW

Target SAR Value: 4.9 mW/g, 3.3 mW/g (10g avg.)  
(normalized to 1.0 W)

Measured SAR Value: 1.17 mW/g, 0.774 mW/g (10g avg.)  
Power Drift: -0.02 dB

Measured SAR Value: 4.70 mW/g, 3.11 mW/g (10g avg.)  
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 4.05 % (1g ave)  
5.75 % (10g ave)

Test performed by: J. Fortier Initial: 

### SYSTEM PERFORMANCE CHECK TARGET SAR

|                 |                    |                    |                             |
|-----------------|--------------------|--------------------|-----------------------------|
| Date:           | <u>1/16/2003</u>   | Frequency (MHz):   | <u>450</u>                  |
| Lab Location:   | <u>CGISS</u>       | Mixture Type:      | <u>IEEE Head</u>            |
| Robot System:   | <u>CGISS 3</u>     | Ambient Temp.(°C): | <u>22.6, (Humid: 46.4%)</u> |
| Probe Serial #: | <u>ET3DV6-1393</u> | Tissue Temp.(°C):  | <u>21.2</u>                 |
| DAE Serial #:   | <u>406</u>         |                    |                             |

#### Tissue Characteristics

|               |             |                  |                               |
|---------------|-------------|------------------|-------------------------------|
| Permittivity: | <u>43.3</u> | Phantom Type/SN: | <u>80302002B/S6</u>           |
| Conductivity: | <u>0.87</u> | Distance (mm):   | <u>15 (tissue/dipole cnt)</u> |

|                   |               |          |
|-------------------|---------------|----------|
| Reference Source: | <u>D450V2</u> | (Dipole) |
| Reference SN:     | <u>1002</u>   |          |

Power to Dipole: 250 mW

|                     |                   |                              |
|---------------------|-------------------|------------------------------|
| Measured SAR Value: | <u>1.17 mW/g,</u> | <u>0.774 mW/g (10g avg.)</u> |
| Power Drift:        | <u>-0.02 dB</u>   |                              |

#### New Target/Measured

|            |                   |                             |
|------------|-------------------|-----------------------------|
| SAR Value: | <u>4.70 mW/g,</u> | <u>3.11 mW/g (10g avg.)</u> |
|------------|-------------------|-----------------------------|

(normalized to 1.0 W, including drift)

Test performed by: J. Fortier Initial: 

## Dipole D450V2 SN1002; Test date:01/16/03

Run #: Sys Val R3\_030116-04

Phantom #:80302002B/S6

Model #: D450V2

SN: 1002

Robot: CGISS-3

Tester: J. Fortier

TX Freq: 450 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power: 250mW

DAE3: SN:406

DAE Cal Date: 11/11/02

### - Comments-

Target at 1W is 4.9 mW/g (1g)

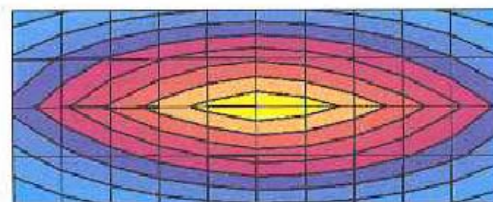
SAR calculated is 4.7 mW/g. Percent from IEEE-1528 target (including drift) for 1g is 4.0%

Flat; Probe: ET3DV6 - SN1393 SPEAG; ConvF(8.00,8.00,8.00); Crest factor: 1.0; IEEE Head 450 MHz:  $\sigma = 0.87$  mho/m  $\epsilon_r = 43.3$   $\rho = 1.00$  g/cm<sup>3</sup>

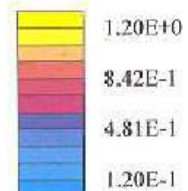
Cubes (2): Peak: 1.81 mW/g  $\pm 0.05$  dB, SAR (1g): 1.17 mW/g  $\pm 0.05$  dB, SAR (10g): 0.774 mW/g  $\pm 0.06$  dB, (Worst-case extrapolation)

Penetration depth: 12.8 (11.4, 14.5) [mm]

Powerdrift: -0.02 dB



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



Motorola CGISS EME Lab