



**MOTOROLA**



**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:** June 19, 2003  
**Report Revision:** Rev. 0  
**Manufacturer:** Motorola  
**Product Description:** 1:6, 2:6, 81:120 TDM; 64 QAM, 16  
QAM & QPSK Modulation; 0.6 W  
Pulse average  
**FCC ID:** **AZ489FT5824**  
**Device Model:** H63XAN6RR4AN

**Test Period:** 5/23/03-6/17/03  
**EME Tech:** Clint Miller/Ed Church  
**EME Eng.:** Stephen Whalen (Sr. EME Eng.)  
**Author:** 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

6/19/03

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

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

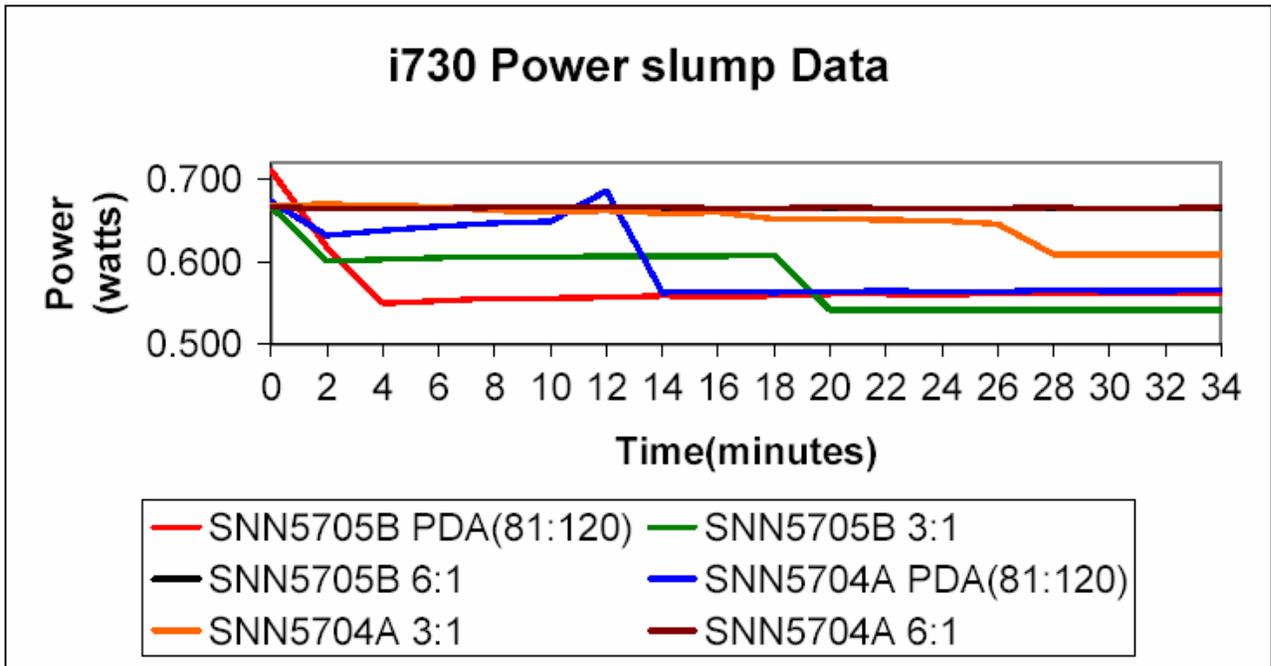
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## **APPENDIX A**

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

### DUT Power versus time data

Radio s/n	S/N 002					
Battery	SNN5705B	SNN5705B	SNN5705B	SNN5704A	SNN5704A	SNN5704A
Mode	PDA(81:120)	3:1	6:1	PDA(81:120)	3:1	6:1
Frequency(MHz)	813.5125	813.5125	813.5125	813.5125	813.5125	813.5125
Time (minutes)	Power (watts)					
0	0.711	0.667	0.667	0.673	0.668	0.667
2	0.618	0.601	0.664	0.632	0.670	0.664
4	0.550	0.603	0.665	0.638	0.668	0.665
6	0.553	0.605	0.665	0.643	0.667	0.665
8	0.556	0.606	0.665	0.647	0.662	0.666
10	0.556	0.606	0.665	0.649	0.661	0.666
12	0.557	0.607	0.665	0.686	0.662	0.666
14	0.559	0.607	0.665	0.563	0.659	0.666
16	0.558	0.607	0.665	0.564	0.660	0.665
18	0.559	0.608	0.664	0.563	0.652	0.665
20	0.561	0.542	0.664	0.564	0.652	0.666
22	0.561	0.542	0.664	0.565	0.651	0.665
24	0.560	0.542	0.665	0.564	0.650	0.665
26	0.562	0.542	0.664	0.564	0.646	0.665
28	0.562	0.542	0.665	0.566	0.609	0.666
30	0.561	0.542	0.664	0.565	0.609	0.664
32	0.562	0.542	0.664	0.565	0.609	0.665
34	0.563	0.542	0.664	0.566	0.609	0.666



## Shortened Scan Results

**FCC ID: AZ489FT5824; Test Date: 6/10/03**

**Motorola CGISS EME Laboratory**

Run #: Lear-R1-030610-04

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.3 (Celsius)

Start Power: .714 W Normal scan (29min)

Start Power: .716 W Short scan (6min)

Antenna: IN

Battery Kit: SNN5704A

Carry Accessories: None

Attached Accessories: None

**This shortened scan reflects the highest S.A.R. producing configuration; Run time 6 minutes.**

**Representative “normal” scan run time was 29 minutes**

**“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 0.94 mW/g; 10-g Avg. = 0.62mW/g**

**“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.19 mW/g; 10-g Avg. = 0.76 mW/g**

**(see section 7.1 run # SW-Lear-R1-030610-04)**

**DUT in Cheek touch position against the phantom**

SAM Phantom; Left Hand Section; Position: (90°,59°);

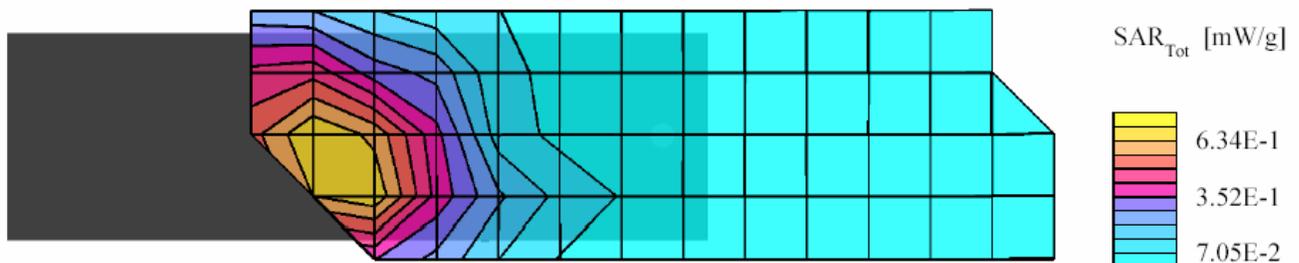
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.5$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.919 mW/g, SAR (10g): 0.601 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 37.5, 19.5, 4.7

Power drift: -0.10 dB



**FCC ID: AZ489FT5824; Test Date: 6/10/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030608-04  
Model #: H63XAN6RR4AN SN: 364ADJ0002  
TX Freq: 824.9875 MHz  
Sim Tissue Temp: 21.1 (Celsius)  
Start Power: .639 W Normal scan (27min)  
Start Power: .630 W Short scan (8min)

Antenna: in  
Battery Kit: SNN5705B  
Carry Accessories: Belt Clip #: NNTN4682A  
Attached Accessory: None

**This shortened scan reflects the highest S.A.R. producing configuration; Run time 8 minutes.**

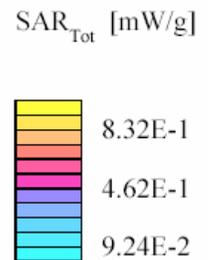
**Representative “normal” scan run time was 29 minutes**

**“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.05 mW/g; 10-g Avg. = 0.75 mW/g**

**“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.15 mW/g; 10-g Avg. = 0.81 mW/g  
(see section 7.1 run # CM-Ab-R1-030604-16)**

**DUT w/ carry case against phantom**

Flat Phantom; Device Section; Position: (90°,90°);  
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF (6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 1.5; FCC  
Body\_813 MHz:  $\sigma = 0.94$  mho/m  $\epsilon_r = 53.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003  
Cube 5x5x7: SAR (1g): 0.946 mW/g, SAR (10g): 0.672 mW/g, (Worst-case extrapolation)  
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 70.5, 4.7  
Power drift: 0.05dB



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

FCC ID: AZ489FT5824; Test Date: 6/10/03

**Motorola CGISS EME Laboratory**

Run #: Lear-R1-030610-04

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: .714 W

Antenna: IN

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Left Hand Section; Position: (90°,59°);

Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

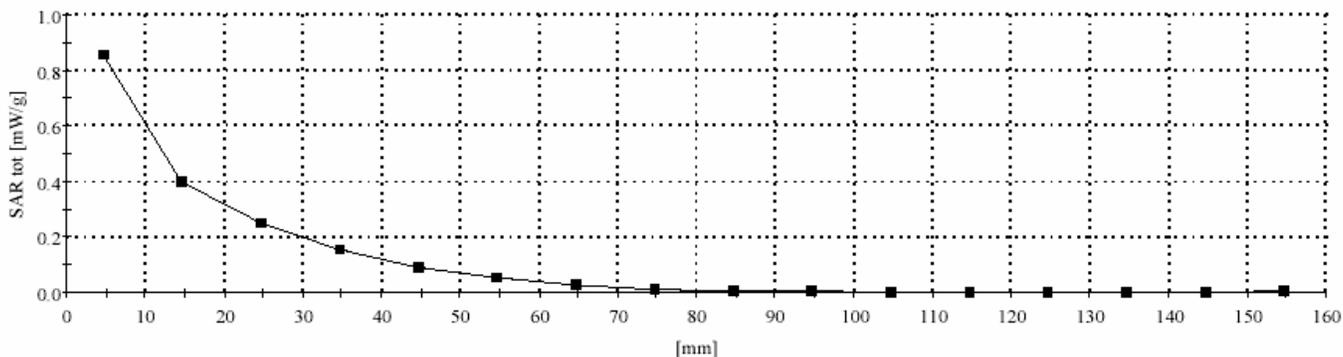
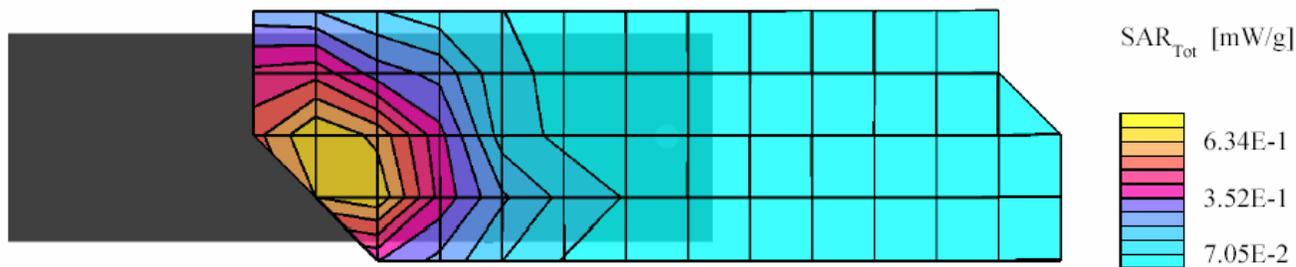
Head 813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.5$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.955 mW/g, SAR (10g): 0.613 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 37.5, 19.5, 4.7

Power drift: -0.94dB

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: AZ489FT5824; Test Date: 5/27/03

**Motorola CGISS EME Laboratory**

Run #: LEAR-R1-030527-08

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 806.0125 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: .688 W

Test time: 29 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Left Hand Section; Position: (90°,59°);

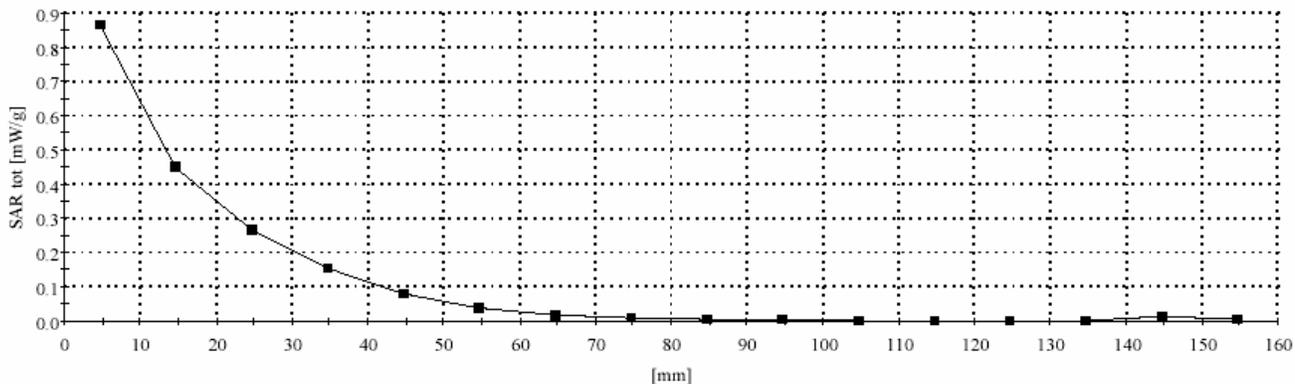
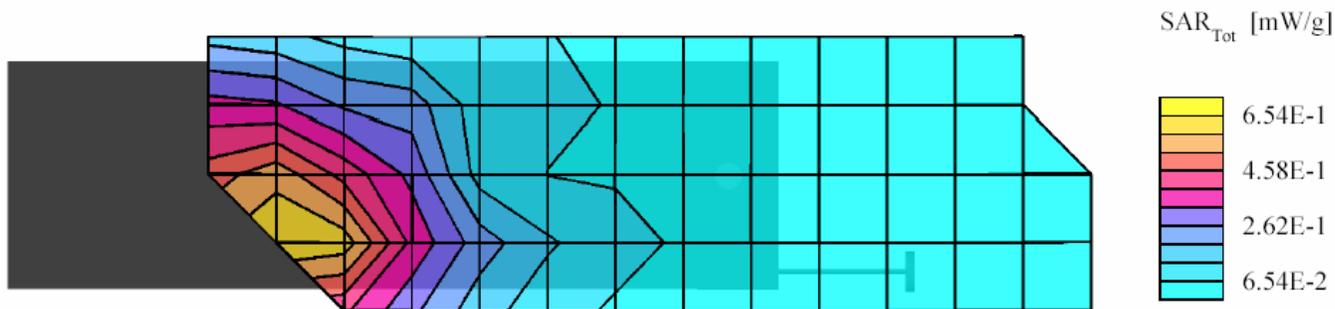
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF (6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.789 mW/g, SAR (10g): 0.536 mW/g, (Worst-case extrapolation)

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

Power drift: -0.46dB



**FCC ID: AZ489FT5824; Test Date: 5/27/03**

**Motorola CGISS EME Laboratory**

Run #: REAR-R1-030527-12

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power: .706 W

Test time: 29 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Right Hand Section; Position: (90°,301°);

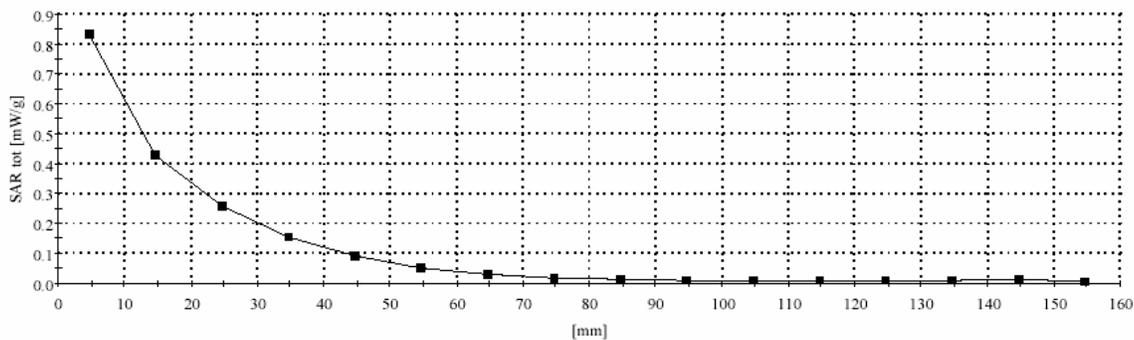
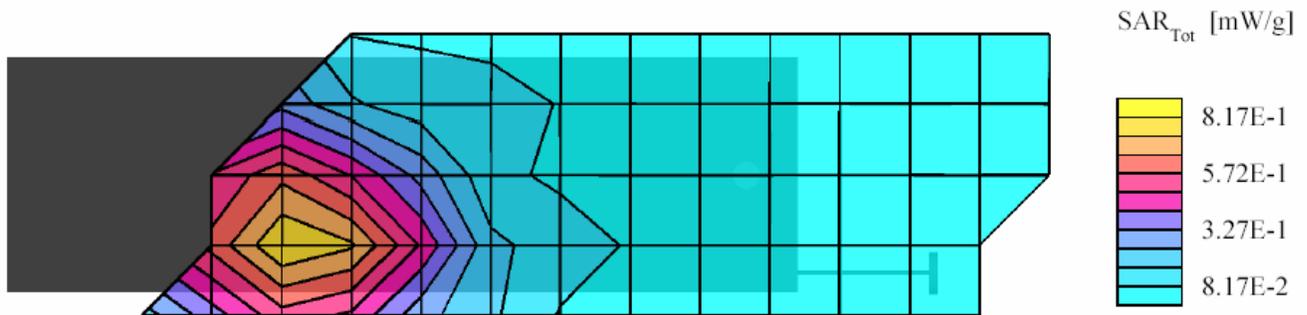
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.849 mW/g, SAR (10g): 0.563 mW/g, (Worst-case extrapolation)

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

Power drift: -0.29dB



**FCC ID: AZ489FT5824; Test Date: 5/27/03**

**Motorola CGISS EME Laboratory**

Run #: REAR-R1-030528-05

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 824.9875 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power: .670 W

Time: 29 min.

Antenna: in

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Right Hand Section; Position: (90°,301°);

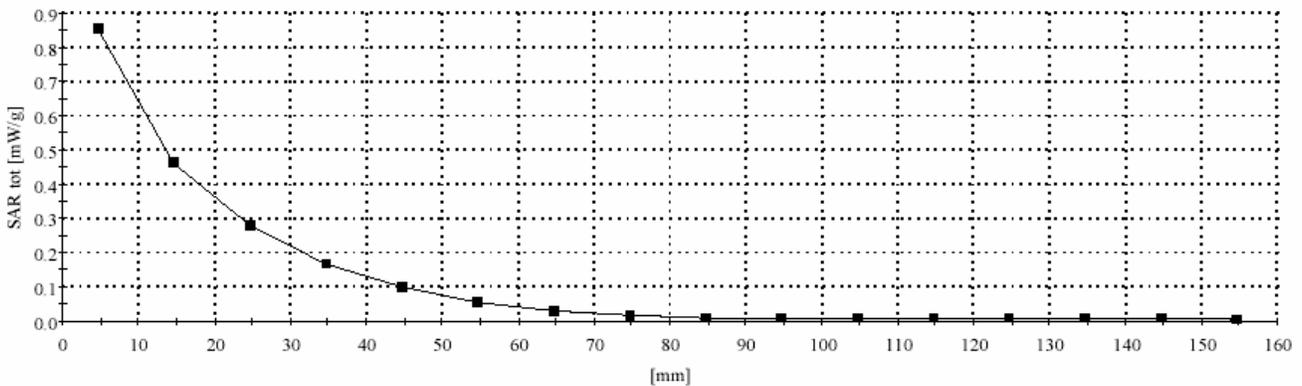
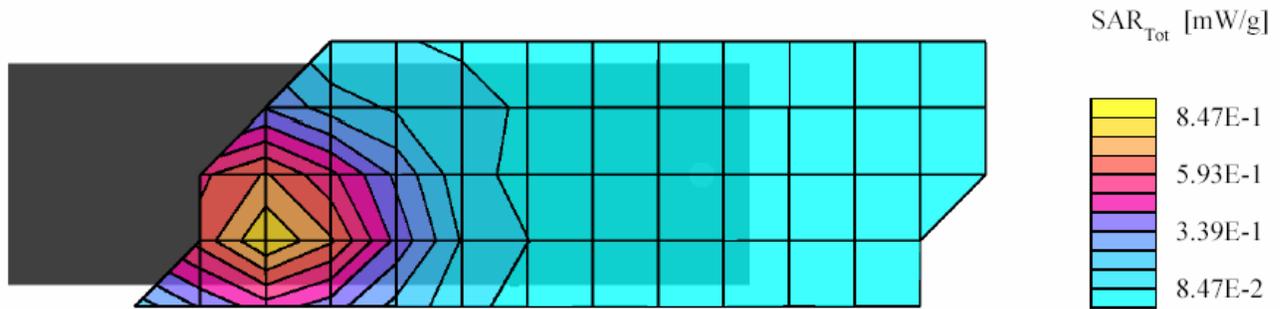
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF (6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.866 mW/g, SAR (10g): 0.596 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 18.0, 4.7

Power Drift: 0.33dB



**FCC ID: AZ489FT5824; Test Date: 6/01/03**

**Motorola CGISS EME Laboratory**

Run #: Face-R1-030601-03

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: .685 W

Time: 27 min.

Antenna: in

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT Front (display side flip open) facing phantom with flip open at 2.5 cm.**

SAM Phantom; Flat Section; Position: (90°,90°);

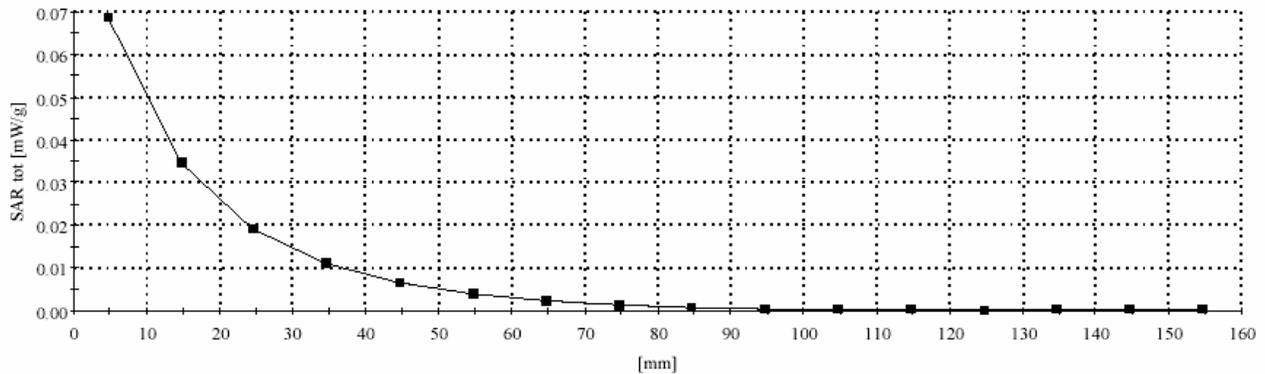
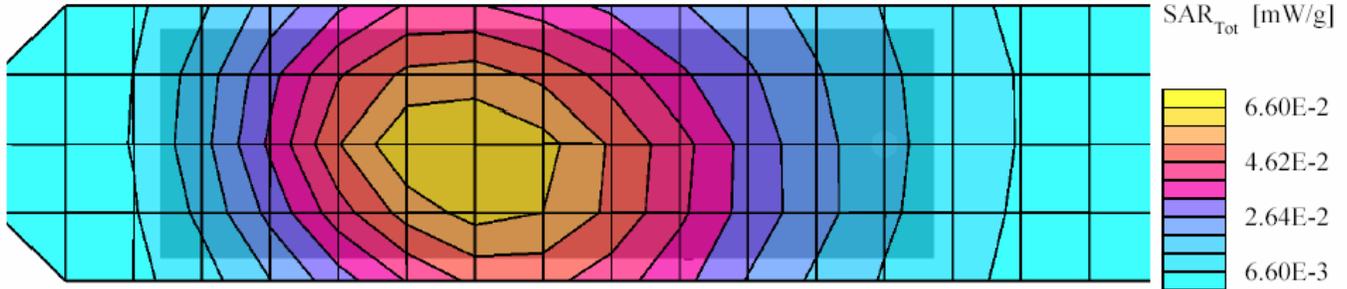
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 6.0; IEEE

Head\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.0661 mW/g, SAR (10g): 0.0473 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 97.5, 4.7

Power drift: -0.13dB



**FCC ID: AZ489FT5824; Test Date: 6/01/03**

**Motorola CGISS EME Laboratory**

Run #: Face-R1-030601-07

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: .688 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT Front (display side flip closed) facing phantom with flip closed at 2.5 cm.**

SAM Phantom; Flat Section; Position: (90°,90°);

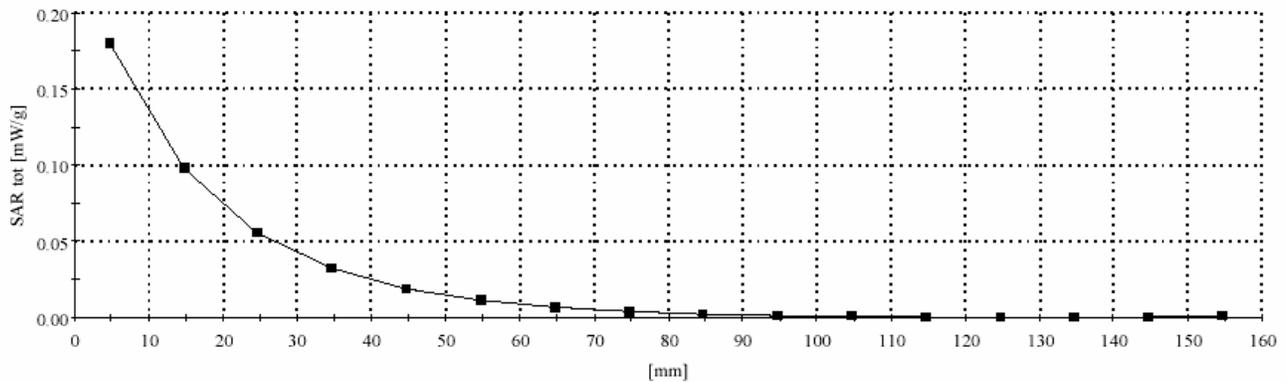
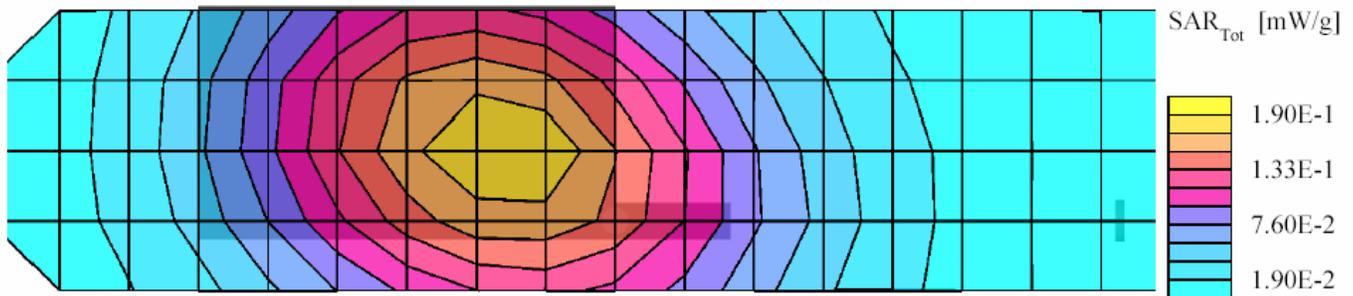
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 6.0; IEEE

Head\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 43.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.184 mW/g, SAR (10g): 0.133 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 115.5, 4.7

Power drift: -0.16dB



**FCC ID: AZ489FT5824; Test Date: 5/28/03**

**Motorola CGISS EME Laboratory**

Run #: LEAR-R1-030528-08

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 900.98125 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power: .736 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Left Hand Section; Position: (90°,59°);

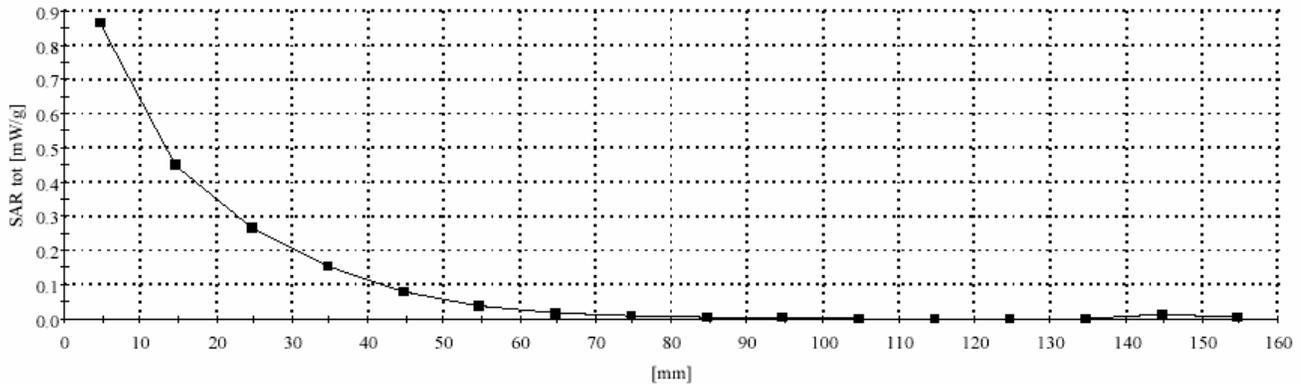
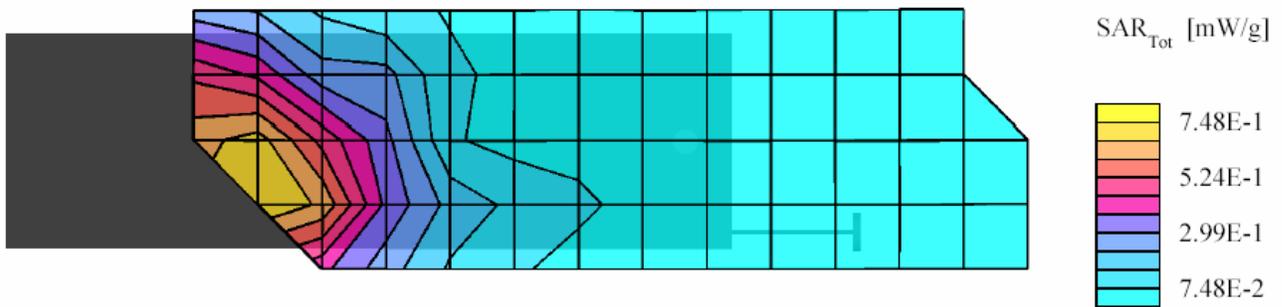
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.885 mW/g, SAR (10g): 0.608 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 19.5, 4.7

Power drift: -0.48dB



**FCC ID: AZ489FT5824; Test Date: 5/28/03**

**Motorola CGISS EME Laboratory**

Run #: LEAR-R1-030528-16

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 901.98125 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: .745 W

Time: 29 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Left Hand Section; Position: (90°,59°);

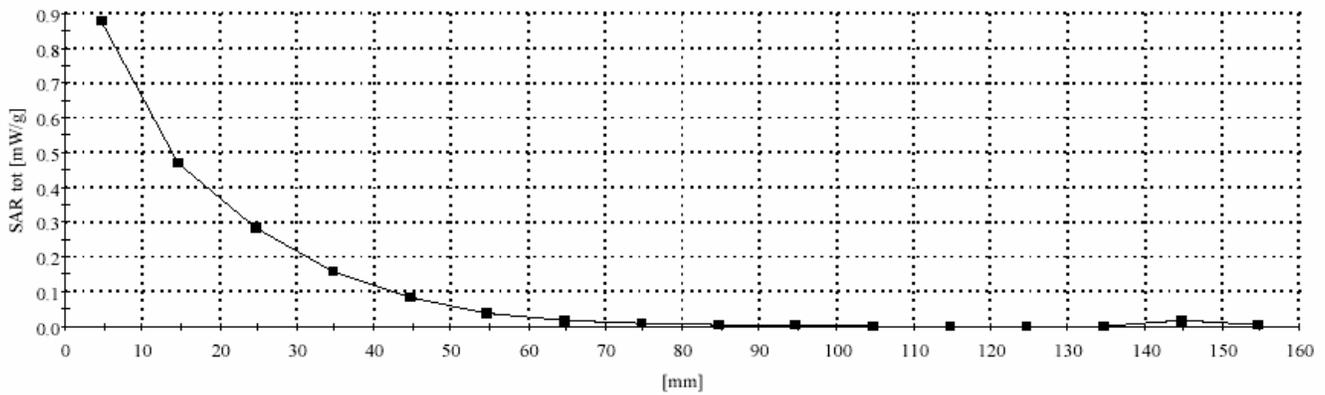
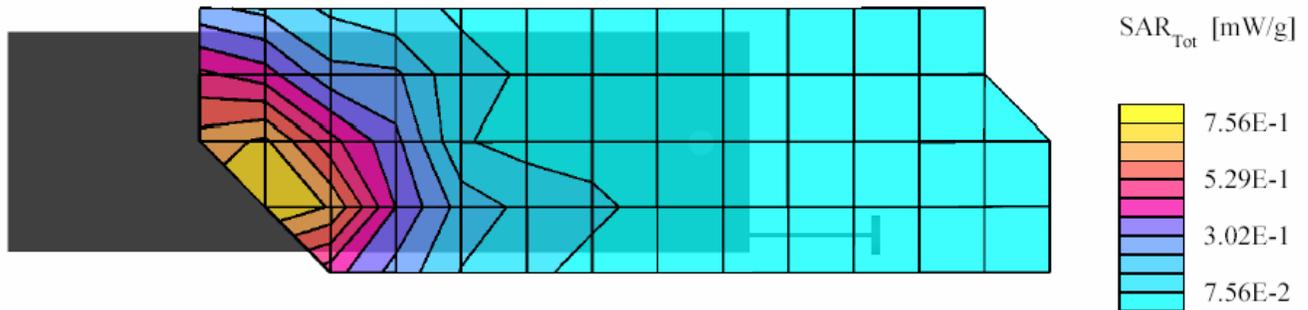
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.880 mW/g, SAR (10g): 0.619 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 16.5, 4.7

Power drift: 0.23dB



**FCC ID: AZ489FT5824; Test Date: 5/28/03**

**Motorola CGISS EME Laboratory**

Run #: LEAR-R1-030528-17

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 900.98125 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: .727 W

Time: 29 min.

Antenna: in

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Right Hand Section; Position: (90°,301°);

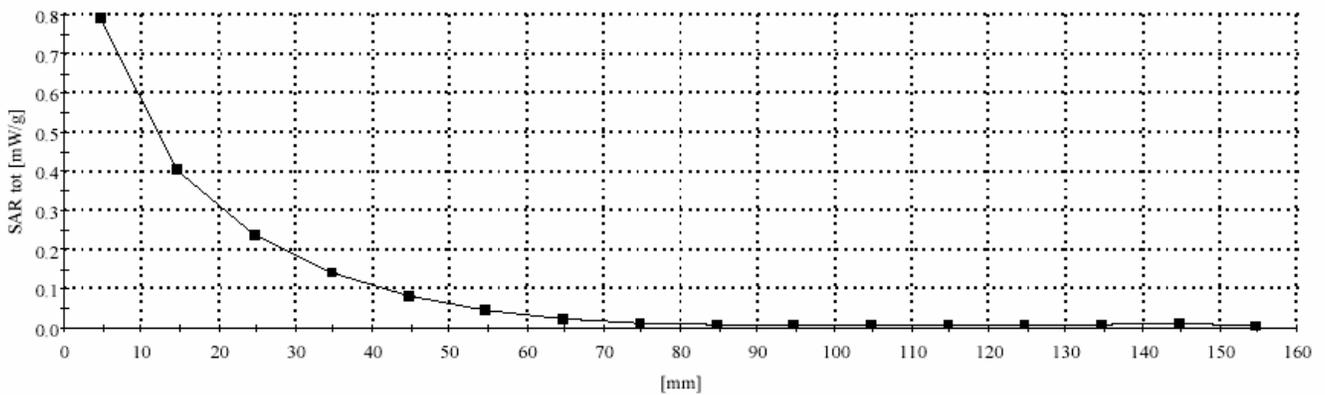
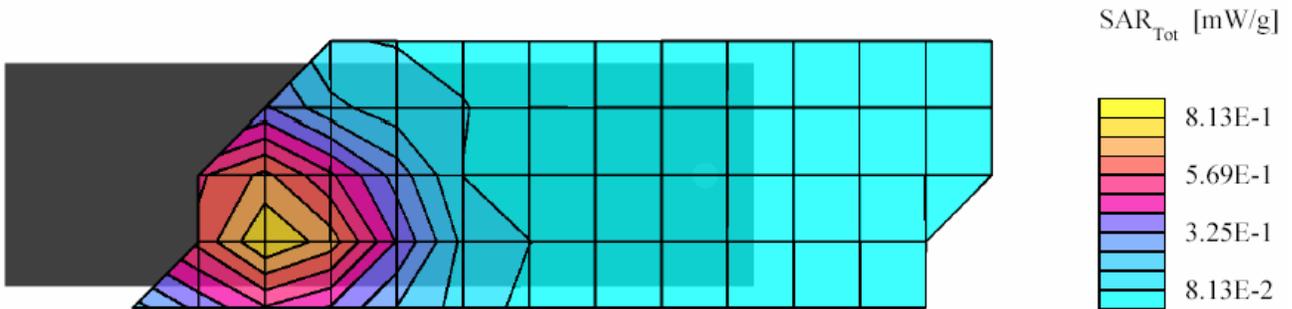
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.0$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.810 mW/g, SAR (10g): 0.543 mW/g \* Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 18.0, 4.7

Power drift: 0.14dB



**FCC ID: AZ489FT5824; Test Date: 5/2903**

**Motorola CGISS EME Laboratory**

Run #: REAR-R1-030529-08

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 901.98125 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power: .740 W

Time: 29 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT in cheek touch position against the phantom**

SAM Phantom; Right Hand Section; Position: (90°,301°);

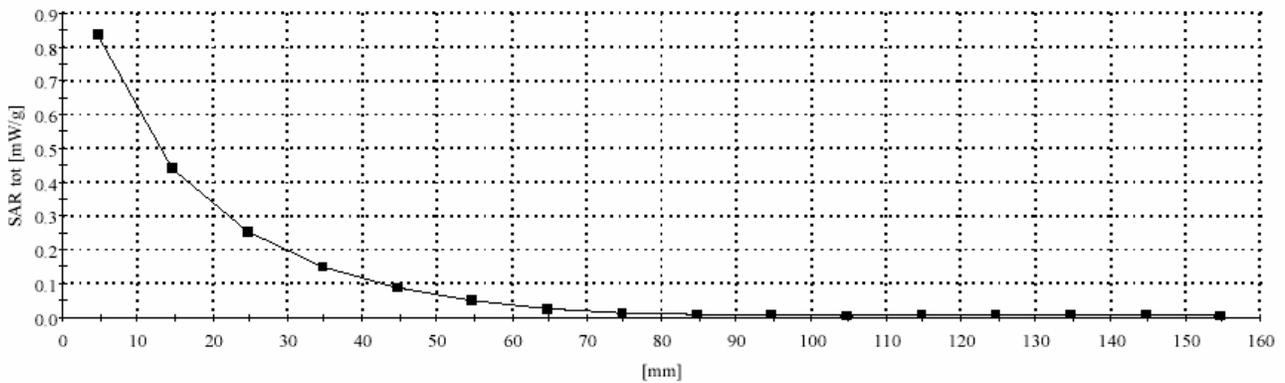
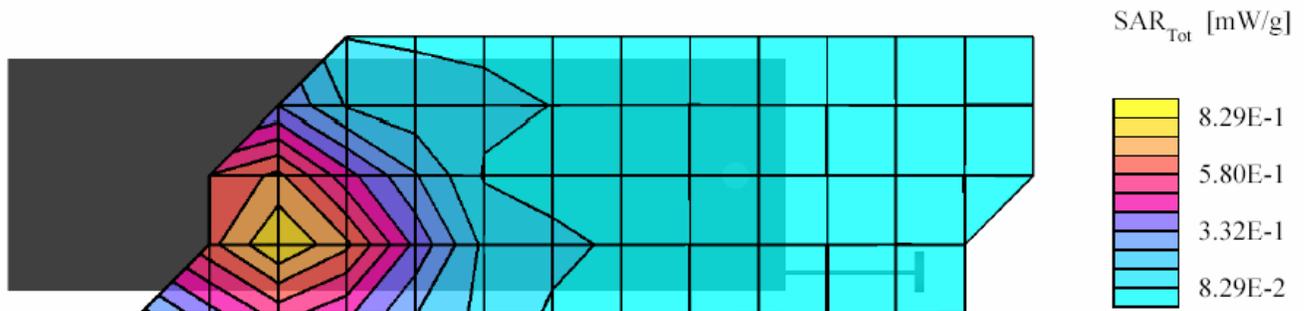
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 3.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.5$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.845 mW/g, SAR (10g): 0.585 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 18.0, 4.7

Power drift: 0.48dB



**FCC ID: AZ489FT5824; Test Date: 5/30/03**

**Motorola CGISS EME Laboratory**

Run #: Face-R1-030530-03

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 900.98125 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power: .730 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessory: NONE

**DUT Front (display side flip open) facing phantom with flip open at 2.5 cm.**

SAM Phantom; Flat Section; Position: (90°,90°);

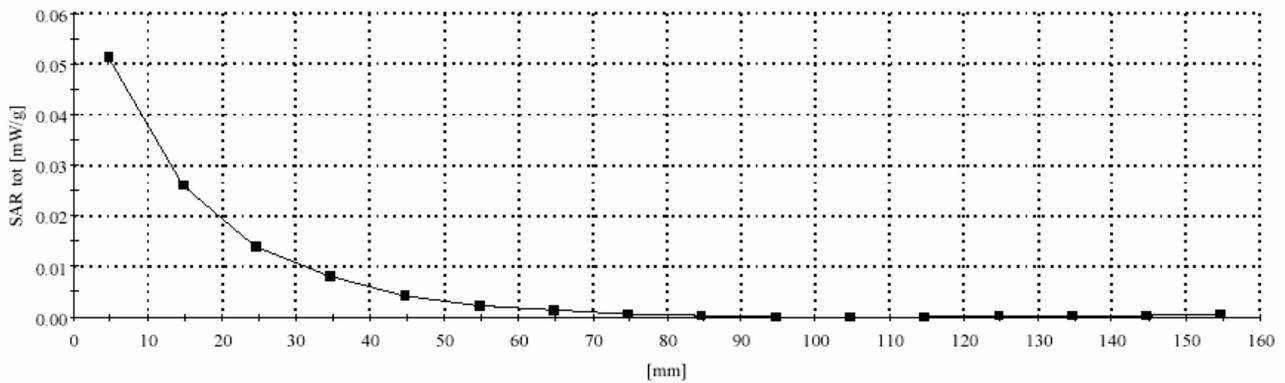
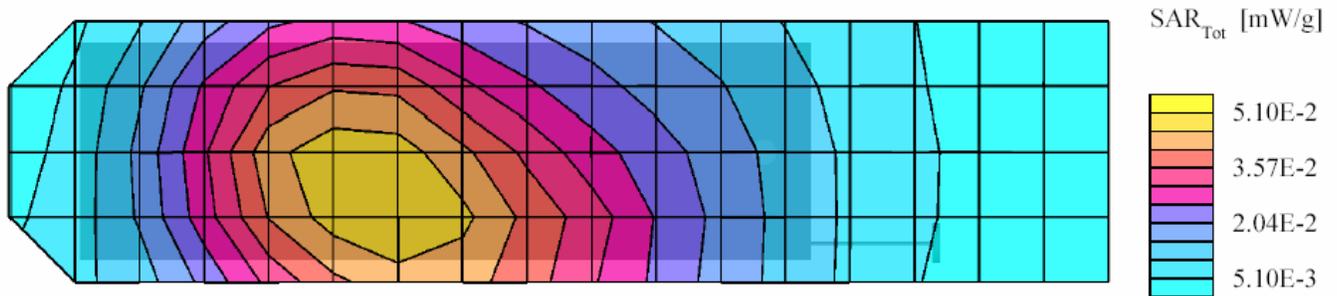
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 6.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.6$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.0537 mW/g, SAR (10g): 0.0375 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 40.5, 87.0, 4.7

Power drift: 0.61dB



**FCC ID: AZ489FT5824; Test Date: 5/30/03**

**Motorola CGISS EME Laboratory**

Run #: Face-R1-030530-07

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 900.98125 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power: .679 W

Time: 27 min.

Antenna: in

Battery Kit: SNN5704A

Carry Accessories: NONE

Attached Accessories: NONE

**DUT front (display side flip closed) facing phantom with flip closed at 2.5 cm.**

SAM Phantom; Flat Section; Position: (90°,90°);

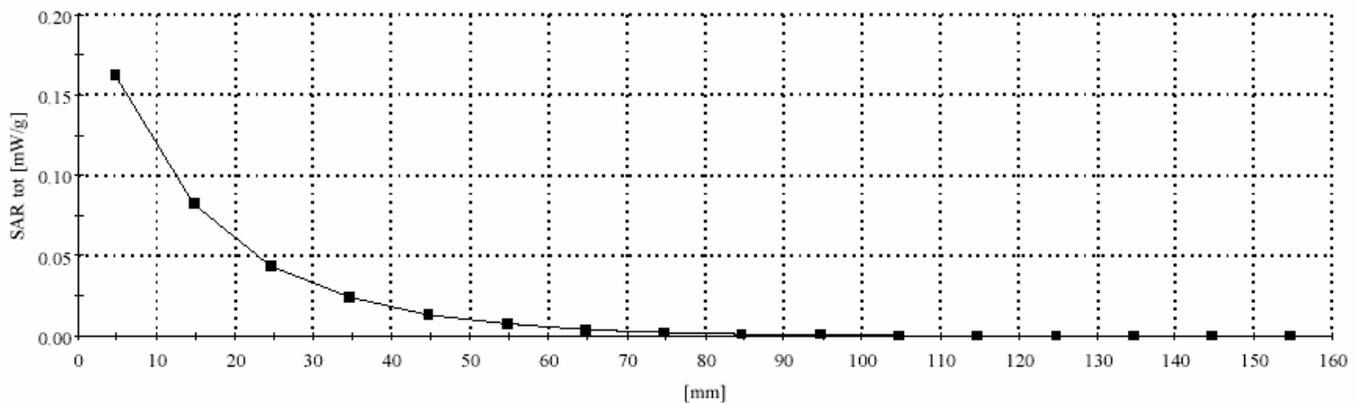
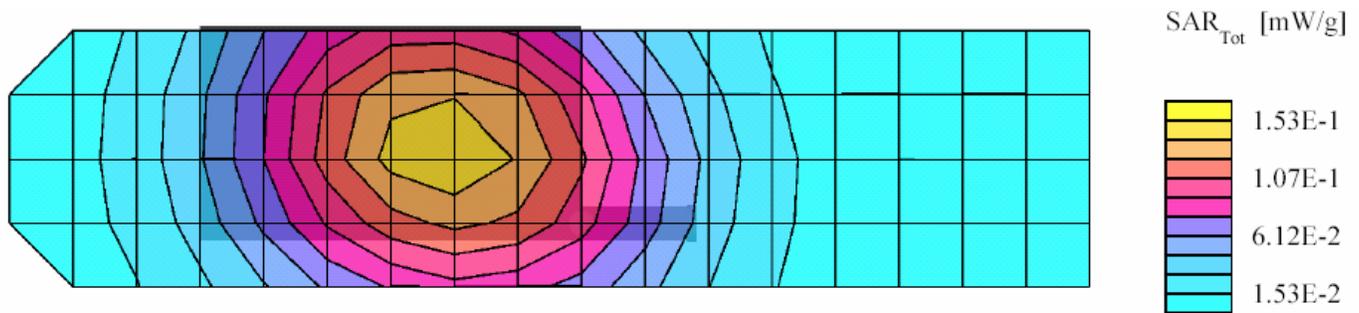
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.60,6.60,6.60); Probe cal date: 15/05/03; Crest factor: 6.0; IEEE

Head 900 MHz :  $\sigma = 1.01$  mho/m  $\epsilon_r = 42.6$   $\rho = 1.00$  g/cm<sup>3</sup>

Cube 7x7x7: SAR (1g): 0.162 mW/g, SAR (10g): 0.114 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 102.0, 4.7

Powerdrift: 0.46 dB



**FCC ID: AZ489FT5824; Test Date: 6/02/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030602-03

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.5 (Celsius)

Start Power: .641 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5705B

Carry Accessories: NNTN4682A

Attached Accessory: NKN6544B

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

Flat Phantom; Device Section; Position: (90°,90°);

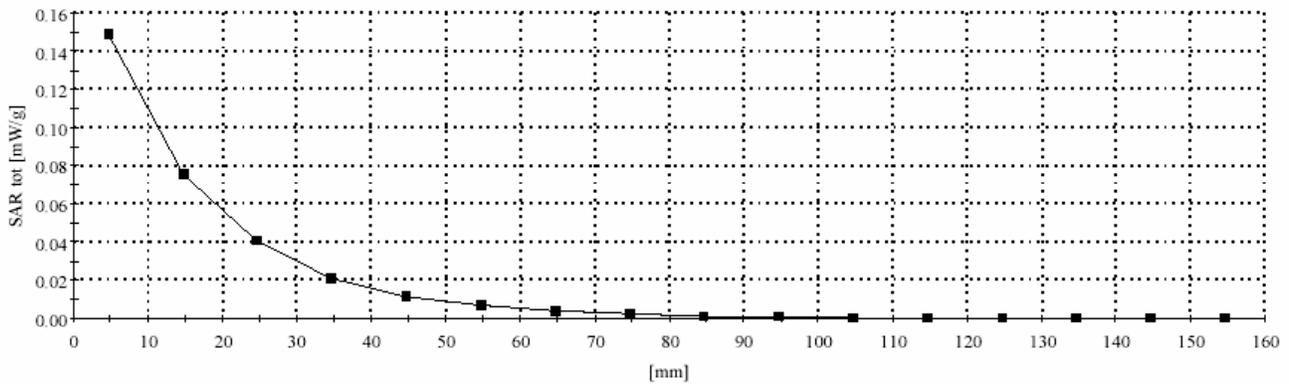
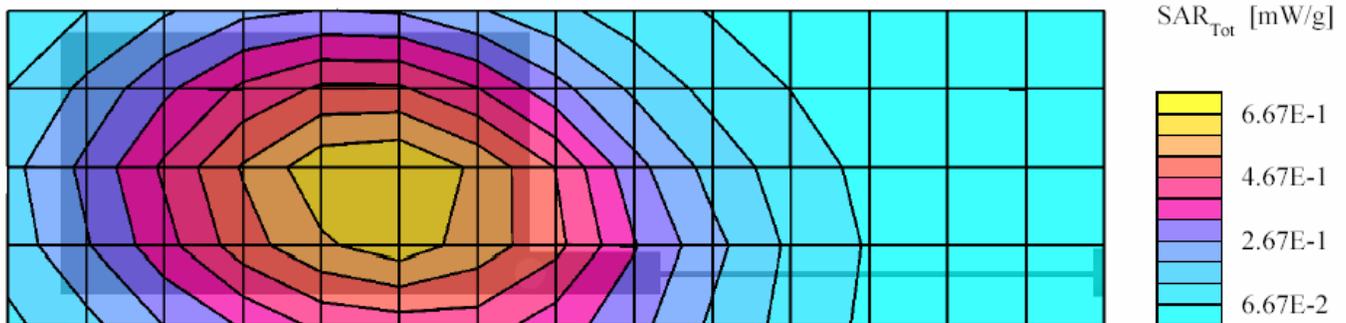
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 1.5; FCC

Body\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 53.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.653 mW/g, SAR (10g): 0.456 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 34.5, 72.0, 4.7

Power drift: 0.16dB



**FCC ID: AZ489FT5824; Test Date: 6/02/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030602-07

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.5 (Celsius)

Start Power: .639 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5705B

Carry Accessories: NNTN4682A

Attached Accessory: NONE

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

Flat Phantom; Device Section; Position: (90°,90°);

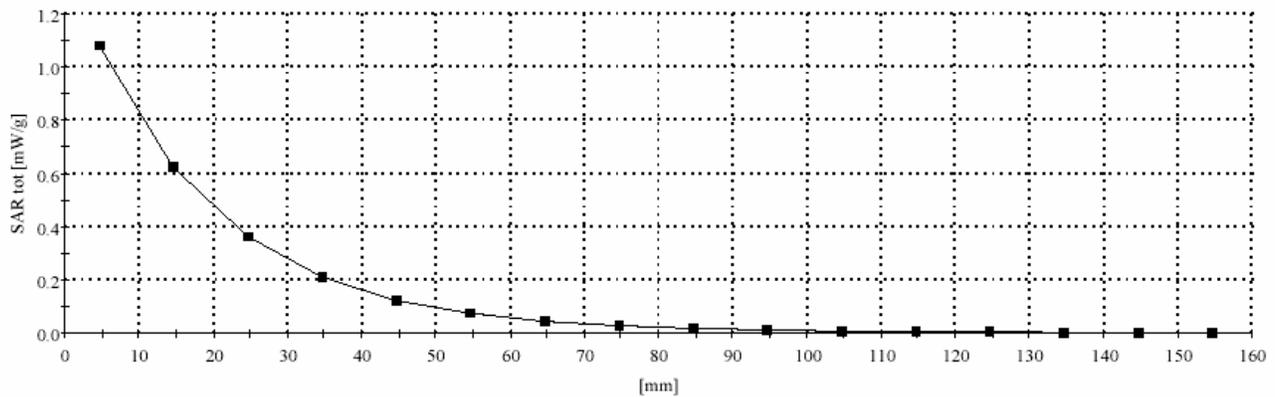
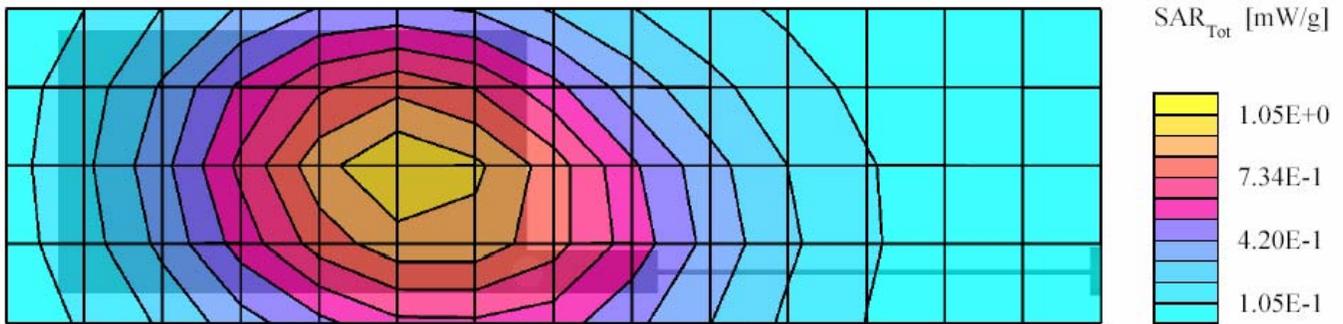
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 1.5; FCC

Body\_813 MHz:  $\sigma = 0.93$  mho/m  $\epsilon_r = 53.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 1.03 mW/g, SAR (10g): 0.731 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 76.5, 4.7

Power drift: 0.02dB



**FCC ID: AZ489FT5824; Test Date: 6/02/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030604-03

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 813.5125 MHz

Sim Tissue Temp: 21.5 (Celsius)

Start Power: .711 W

Time: 27 min.

Antenna: out

Battery Kit: SNN5705B

Carry Accessories: NNTN4682A

Attached Accessory: SYN8390B

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

Flat Phantom; Device Section; Position: (90°,90°);

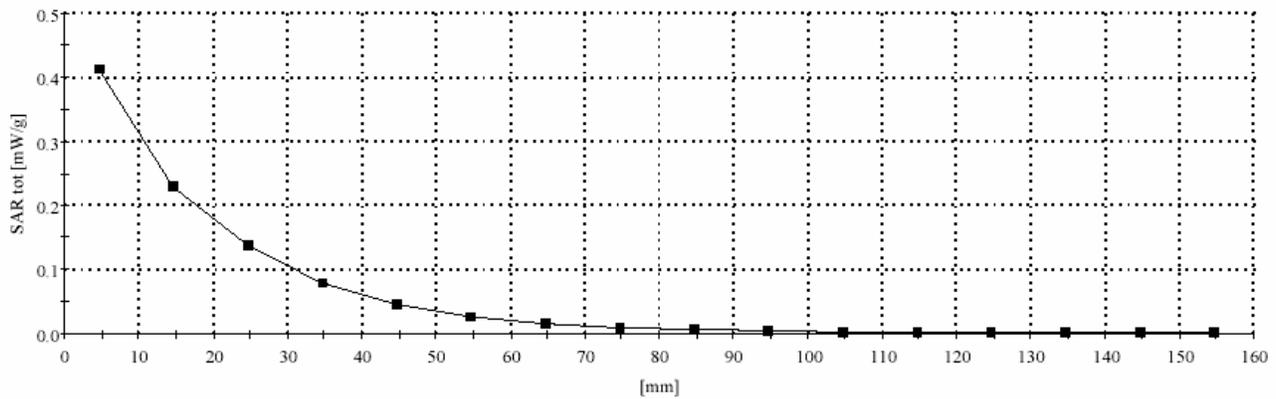
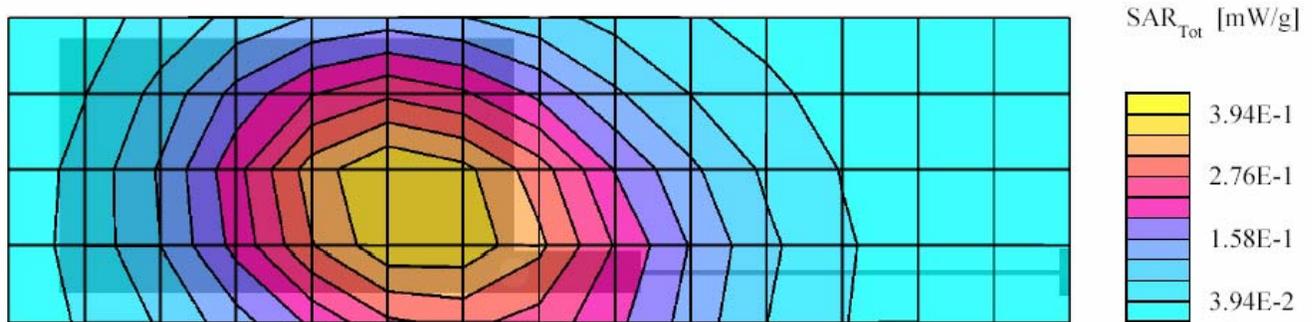
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 3.0; FCC

Body\_813 MHz:  $\sigma = 0.94$  mho/m  $\epsilon_r = 53.5$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.403 mW/g, SAR (10g): 0.291 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 36.0, 78.0, 4.7

Power drift: -0.39dB



**FCC ID: AZ489FT5824; Test Date: 6/04/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030604-16

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 824.9875 MHz

Sim Tissue Temp: 21.6 (Celsius)

Start Power: .639 W

Time: 27 min.

Antenna: in

Battery Kit: SNN5705B

Carry Accessory: NNTN4682A

Attached Accessory: NONE

Flat Phantom; Device Section; Position: (90°,90°);

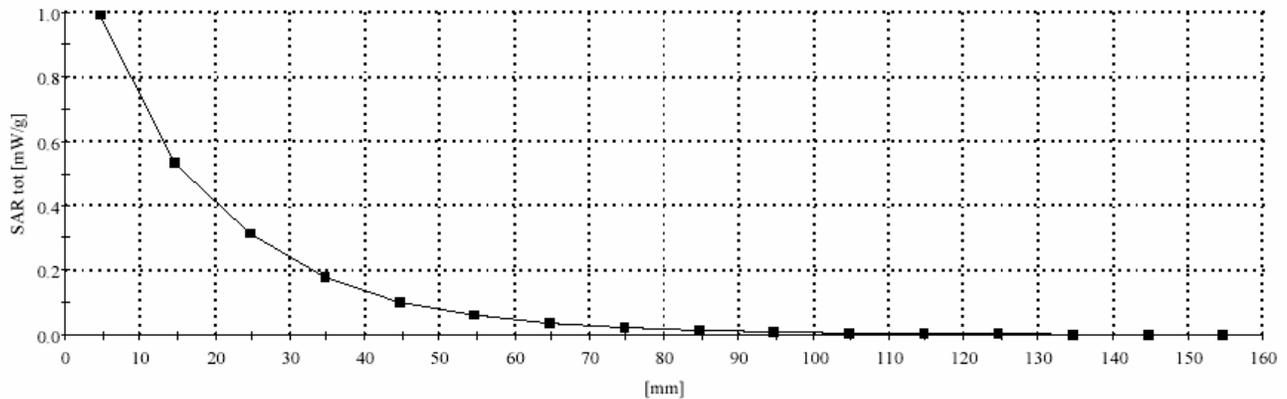
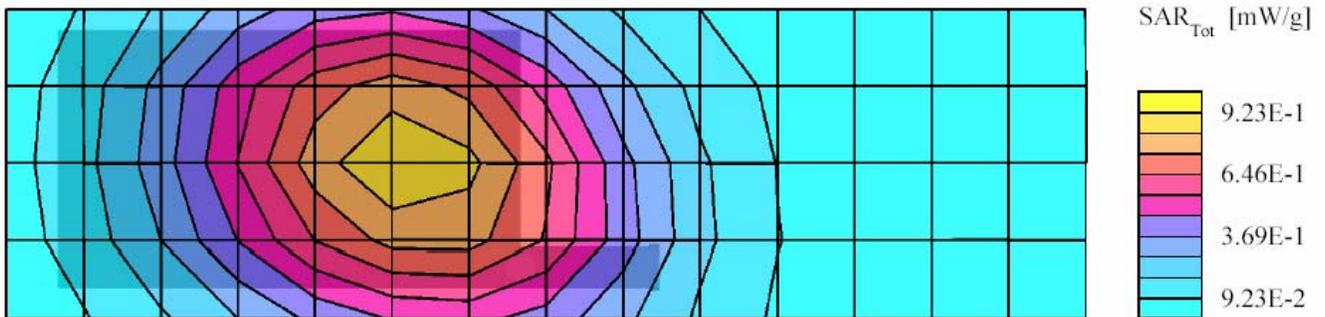
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 1.5; FCC

Body\_813 MHz:  $\sigma = 0.94$  mho/m  $\epsilon_r = 53.5$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 1.05 mW/g, SAR (10g): 0.741 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 78.0, 4.7

Power drift: 0.25dB



**FCC ID: AZ489FT5824; Test Date: 6/05/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030605-05

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 824.9875 MHz

Sim Tissue Temp: 21.7 (Celsius)

Start Power: .630 W

Time: 25 min.

Antenna: in

Battery Kit: SNN5705B

Carry Accessory: NONE

Attached Accessory: NONE

**DUT Back (battery side) facing phantom at 2.5 cm.**

Flat Phantom; Device Section; Position: (90°,90°);

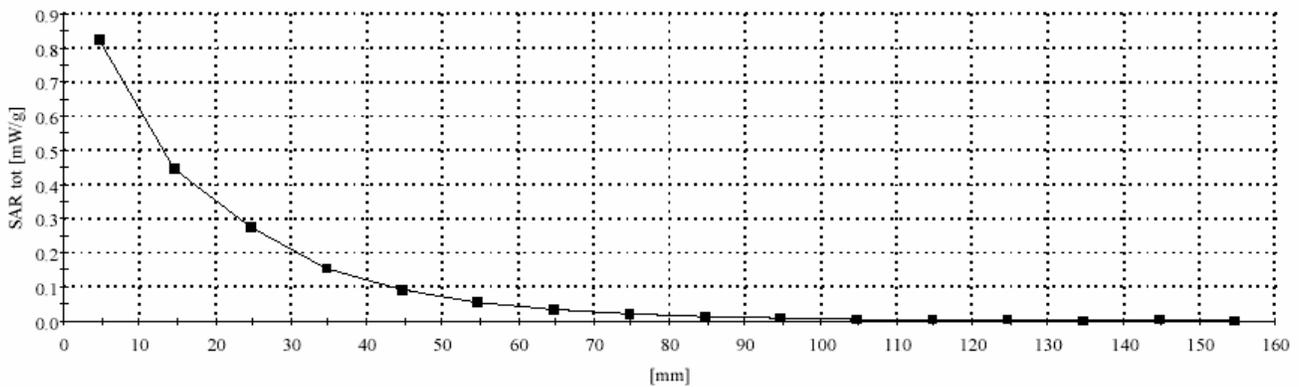
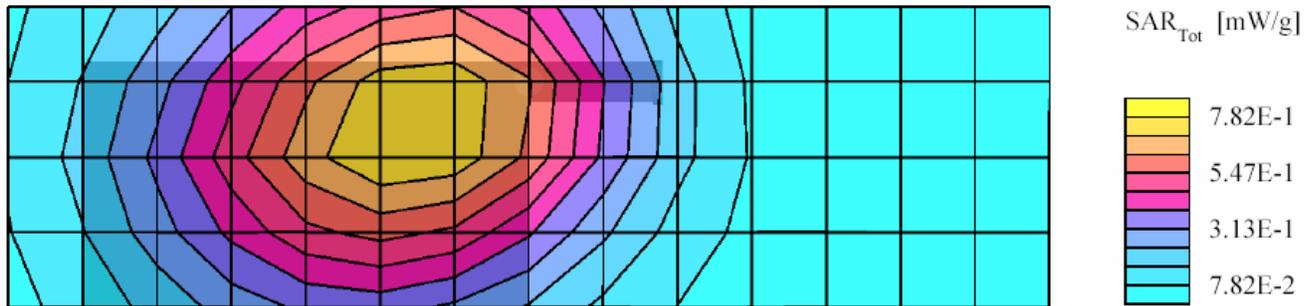
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 1.5; FCC

Body\_813 MHz:  $\sigma = 0.94$  mho/m  $\epsilon_r = 53.3$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.900 mW/g, SAR (10g): 0.642 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 24.0, 81.0, 4.7

Power drift: 0.23dB



**FCC ID: AZ489FT5824; Test Date: 6/06/03**

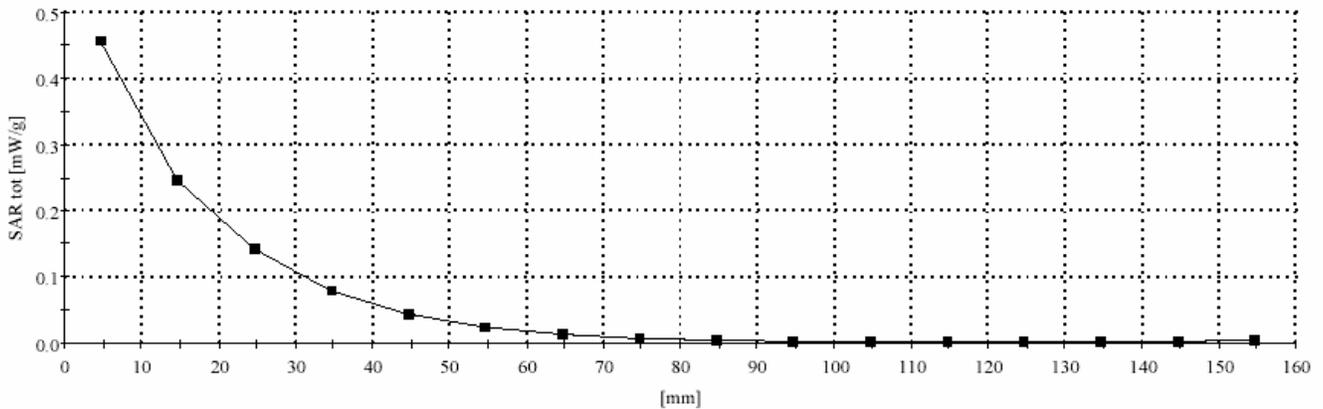
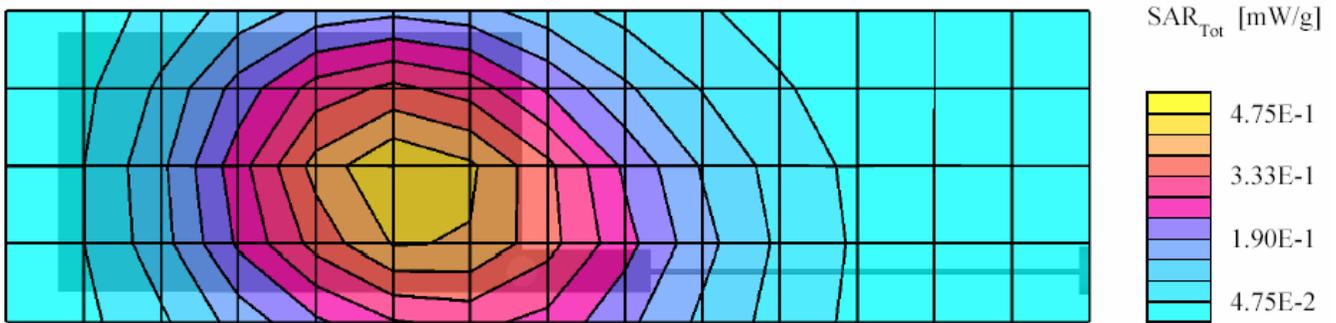
**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030606-06  
Model #: H63XAN6RR4AN SN: 364ADJ0002  
TX Freq: 900.98125 MHz  
Sim Tissue Temp: 21.0 (Celsius)  
Start Power: .740 W  
Time: 27 min.

Antenna: out  
Battery Kit: SNN5705B  
Carry Accessory: NNTN4682A  
Attached Accessory: SYN8390B

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

Flat Phantom; Device Section; Position: (90°,90°);  
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 3.0; FCC  
Body\_899 MHz:  $\sigma = 1.03$  mho/m  $\epsilon_r = 52.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003  
Cube 7x7x7: SAR (1g): 0.480 mW/g, SAR (10g): 0.339 mW/g, (Worst-case extrapolation)  
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 34.5, 78.0, 4.7  
Power drift: 0.12dB



**FCC ID: AZ489FT5824; Test Date: 6/06/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030606-11

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 901.98125 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power: .757 W

Time: 27 min.

Antenna: in

Battery Kit: SNN5705B

Carry Accessory: NNTN4682A

Attached Accessory: SYN8390B

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

Flat Phantom; Device Section; Position: (90°,90°);

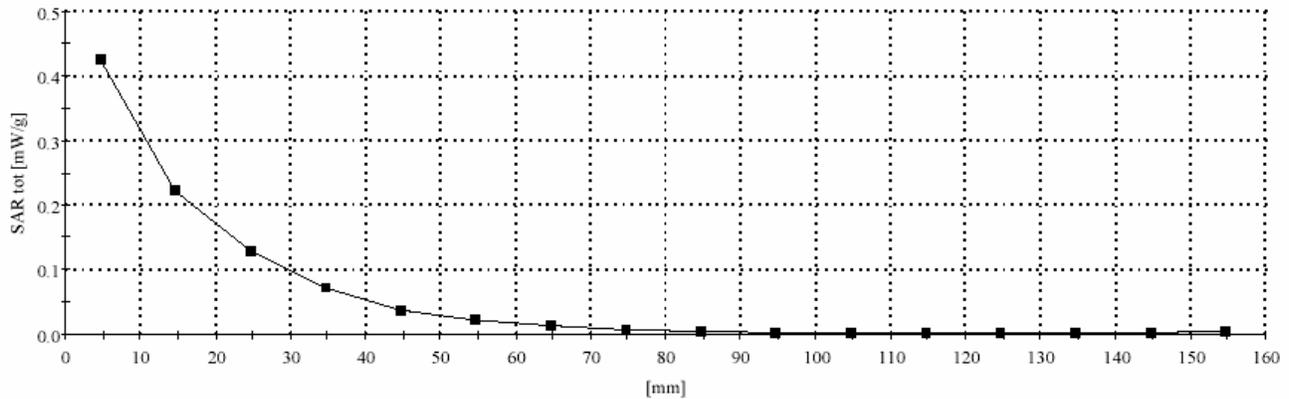
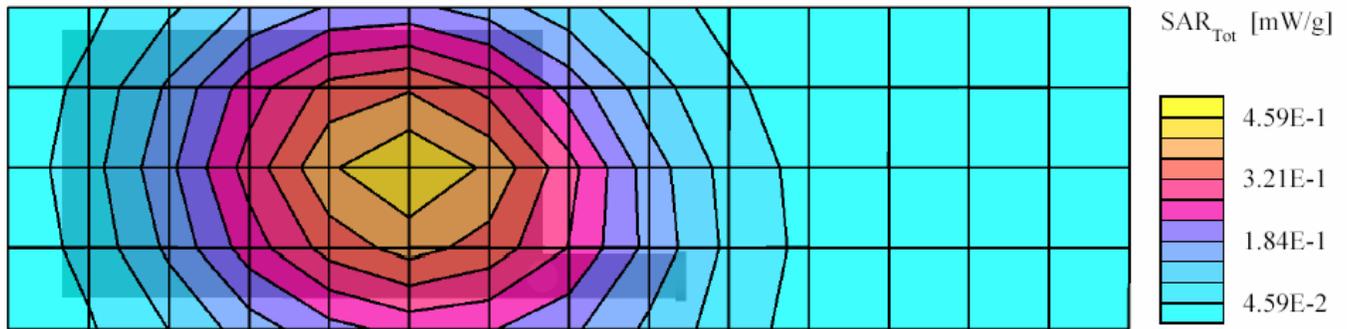
Probe: ET3DV6 - SN1384 (Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 3.0; FCC

Body\_899 MHz:  $\sigma = 1.03$  mho/m  $\epsilon_r = 52.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.475 mW/g, SAR (10g): 0.332 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 75.0, 4.7

Power drift: -0.11dB



**FCC ID: AZ489FT5824; Test Date: 6/06/03**

**Motorola CGISS EME Laboratory**

Run #: Ab-R1-030606-14

Model #: H63XAN6RR4AN SN: 364ADJ0002

TX Freq: 901.98125 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: .757 W

Time: 27 min.

Antenna: in

Battery Kit: SNN5705B

Carry Accessory: None

Attached Accessory: SYN8390B

**DUT Back (battery side) facing phantom at 2.5 cm**

Flat Phantom; Device Section; Position: (90°,90°);

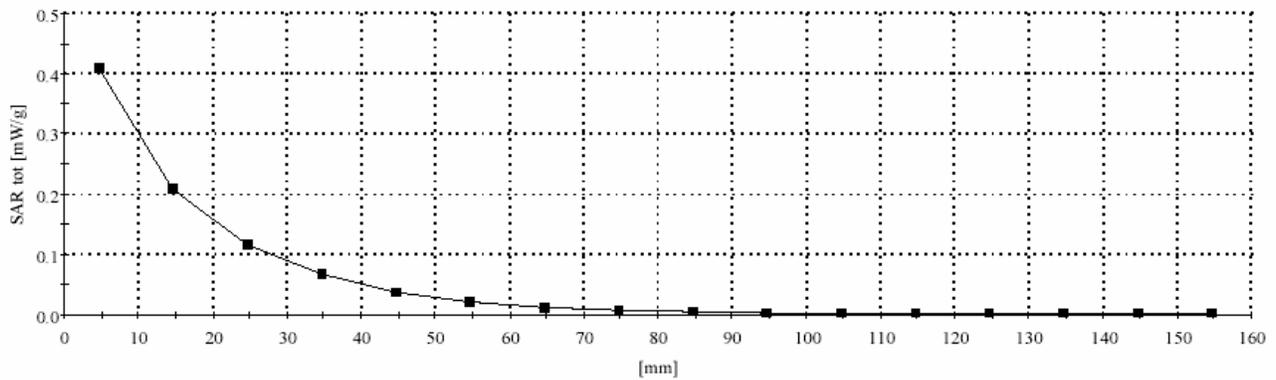
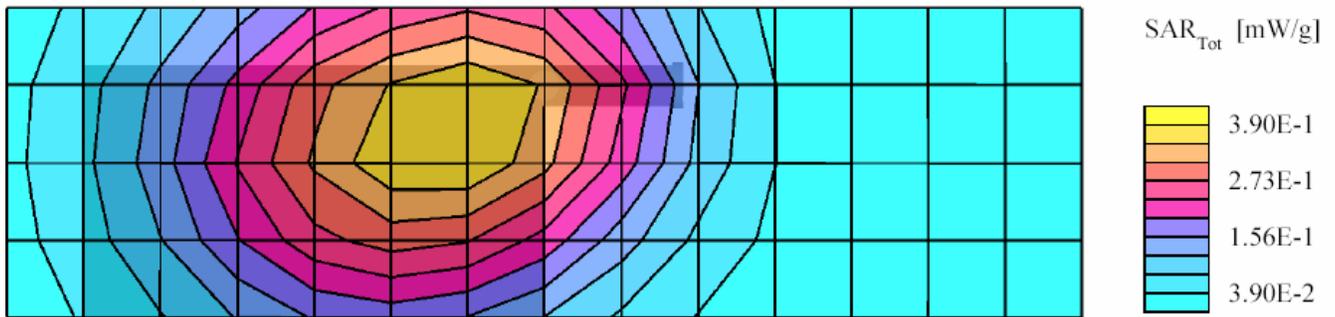
Probe: ET3DV6 - SN1384(Cal Date 05-15-2003); ConvF(6.50,6.50,6.50); Probe cal date: 15/05/03; Crest factor: 3.0; FCC

Body\_899 MHz:  $\sigma = 1.03$  mho/m  $\epsilon_r = 52.4$   $\rho = 1.00$  g/cm<sup>3</sup>; DAE3: 363V1 DAE Cal Date: 05/13/2003

Cube 7x7x7: SAR (1g): 0.410 mW/g, SAR (10g): 0.291 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 24.0, 87.0, 4.7

Power drift: 0.10dB



**APPENDIX C**  
**Dipole System Performance Check Results**

# SPEAG Dipole 900MHz. Test Date:05/23/03

## Motorola CGISS EME Lab

Run #: Sys Perf\_R1\_030523-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.91 mW/g (1g avg). Percent from target (including drift) is 2.18%

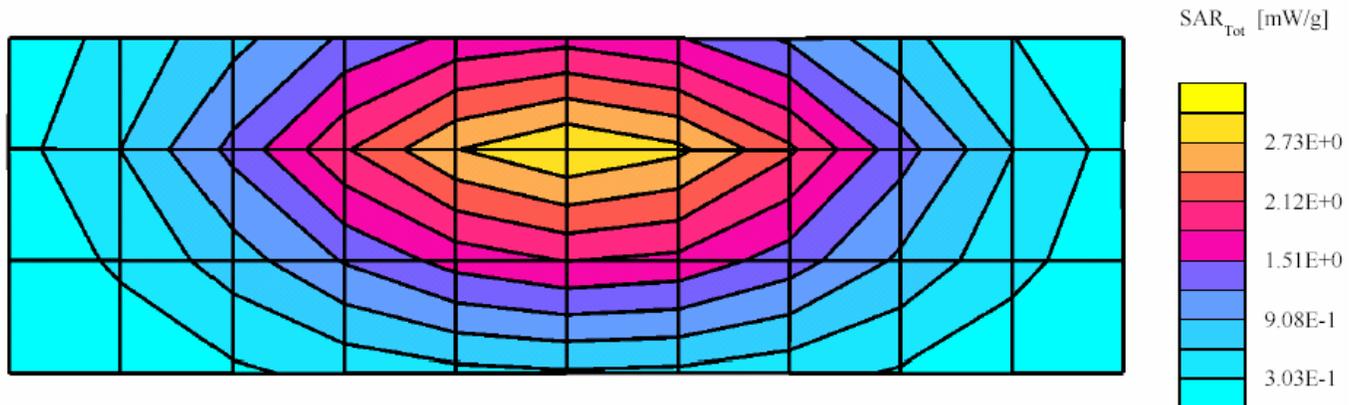
SAR calculated at 1W is 7.46 mW/g (10g avg). Percent from target (including drift) is 2.70%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.3$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 4.82 mW/g  $\pm 0.03$  dB, SAR (1g): 3.02 mW/g  $\pm 0.04$  dB, SAR (10g): 1.89 mW/g  $\pm 0.03$  dB, (Worst-case extrapolation)Penetration depth: 11.3 (10.5, 12.5) [mm]

Powerdrift: 0.06 dB



# SPEAG Dipole 900MHz. Test Date:05/27/03

## Motorola CGISS EME Lab

Run #: Sys Perf\_R1\_030527-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.86 mW/g (1g avg). Percent from target (including drift) is 1.69%

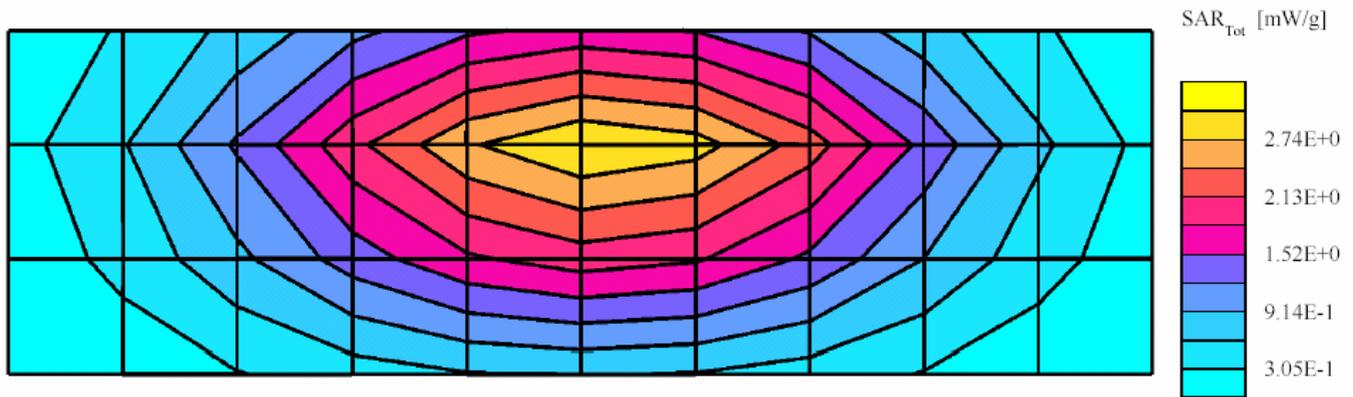
SAR calculated at 1W is 7.44 mW/g (10g avg). Percent from target (including drift) is 2.47%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.1$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 5.03 mW/g  $\pm 0.04$  dB, SAR (1g): 3.14 mW/g  $\pm 0.03$  dB, SAR (10g): 1.97 mW/g  $\pm 0.03$  dB, (Worst-case extrapolation)Penetration depth: 11.4 (10.5, 12.6) [mm]

Powerdrift: 0.25 dB



# SPEAG Dipole 900MHz. Test Date:05/28/03

## Motorola CGISS EME Lab

Run #: Sys Perf\_R1\_030528-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.3 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.80 mW/g (1g avg). Percent from target (including drift) is 1.17%

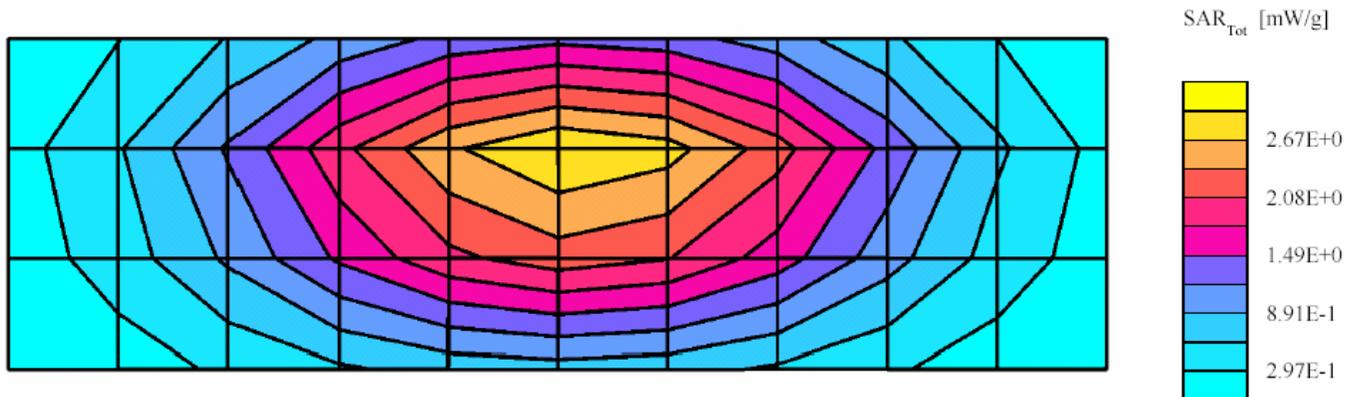
SAR calculated at 1W is 7.35 mW/g (10g avg). Percent from target (including drift) is 1.30%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.0$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 5.07 mW/g  $\pm 0.03$  dB, SAR (1g): 3.16 mW/g  $\pm 0.02$  dB, SAR (10g): 1.97 mW/g  $\pm 0.01$  dB, (Worst-case extrapolation)Penetration depth: 11.3 (10.5, 12.5) [mm]

Powerdrift: 0.30 dB



# SPEAG Dipole 900MHz. Test Date:05/29/03

## Motorola CGISS EME Lab

Run #: Sys Perf\_R1\_030529-01

TX Freq: 900 MHz Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.79 mW/g (1g avg). Percent from target (including drift) is 1.14%

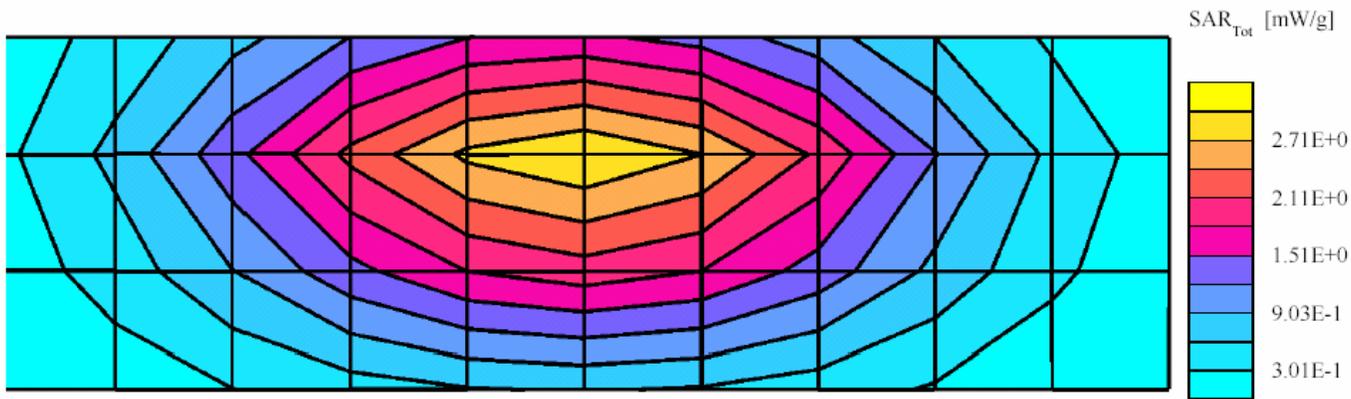
SAR calculated at 1W is 7.40 mW/g (10g avg). Percent from target (including drift) is 2.00%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.5$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 4.80 mW/g  $\pm 0.05$  dB, SAR (1g): 3.01 mW/g  $\pm 0.04$  dB, SAR (10g): 1.89 mW/g  $\pm 0.03$  dB, (Worst-case extrapolation)Penetration depth: 11.5 (10.7, 12.6) [mm]

Powerdrift: 0.09 dB



# SPEAG Dipole 900MHz. Test Date:05/30/03

## Motorola CGISS EME Lab

Run #: Sys Perf\_R1\_030530-01

TX Freq: 900 MHz Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.69 mW/g (1g avg). Percent from target (including drift) is 0.28%

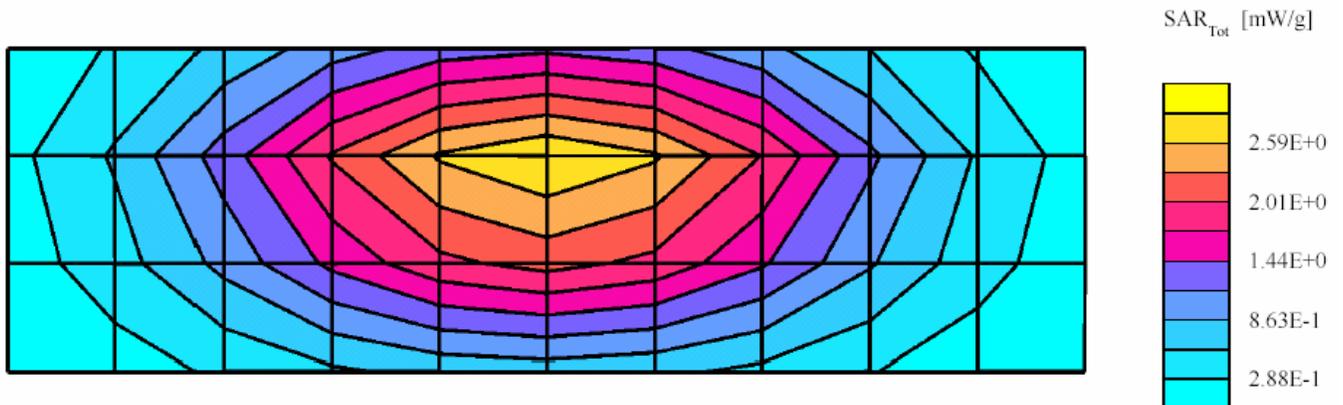
SAR calculated at 1W is 7.30 mW/g (10g avg). Percent from target (including drift) is 0.59%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.6$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak:  $4.67\text{ mW/g} \pm 0.05\text{ dB}$ , SAR (1g):  $2.93\text{ mW/g} \pm 0.03\text{ dB}$ , SAR (10g):  $1.83\text{ mW/g} \pm 0.02\text{ dB}$ , (Worst-case extrapolation)Penetration depth: 11.5 (10.7, 12.6) [mm]

Powerdrift: 0.01 dB



# SPEAG Dipole 900MHz. Test Date:06/01/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030601-01 Phantom #: SAMTP1208

TX Freq: 900 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.76 mW/g (1g avg). Percent from target (including drift) is 0.84 %

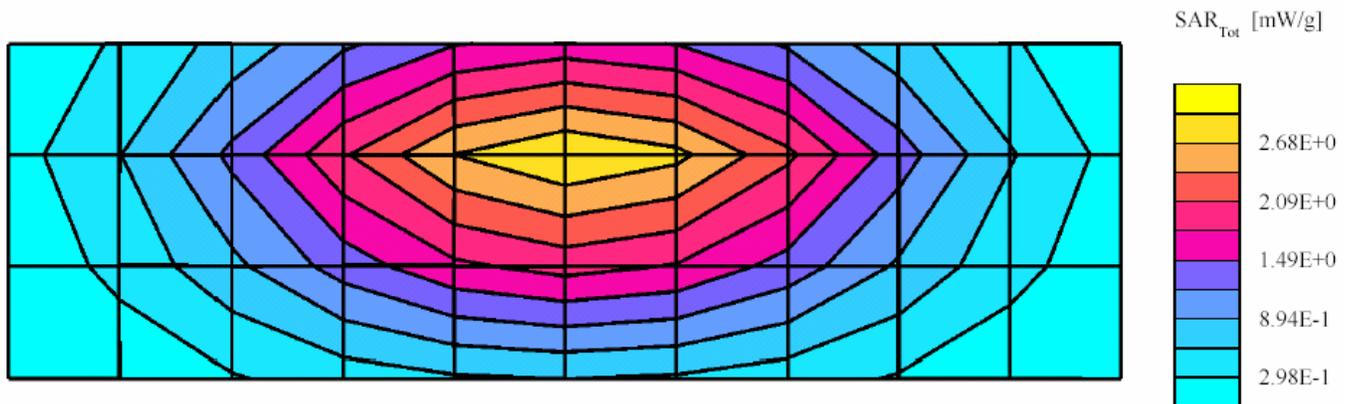
SAR calculated at 1W is 7.39 mW/g (10g avg). Percent from target (including drift) is 1.77 %

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 1.01\text{mho/m}$   $\epsilon_r = 42.4$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 4.73 mW/g  $\pm 0.03$  dB, SAR (1g): 2.96 mW/g  $\pm 0.03$  dB, SAR (10g): 1.86 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation)Penetration depth: 11.4 (10.6, 12.5) [mm]

Powerdrift: 0.03 dB



# SPEAG Dipole 900MHz. Test Date:06/02/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030602-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.5 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 10.93 mW/g (1g avg). Percent from target (including drift) is 8.80%

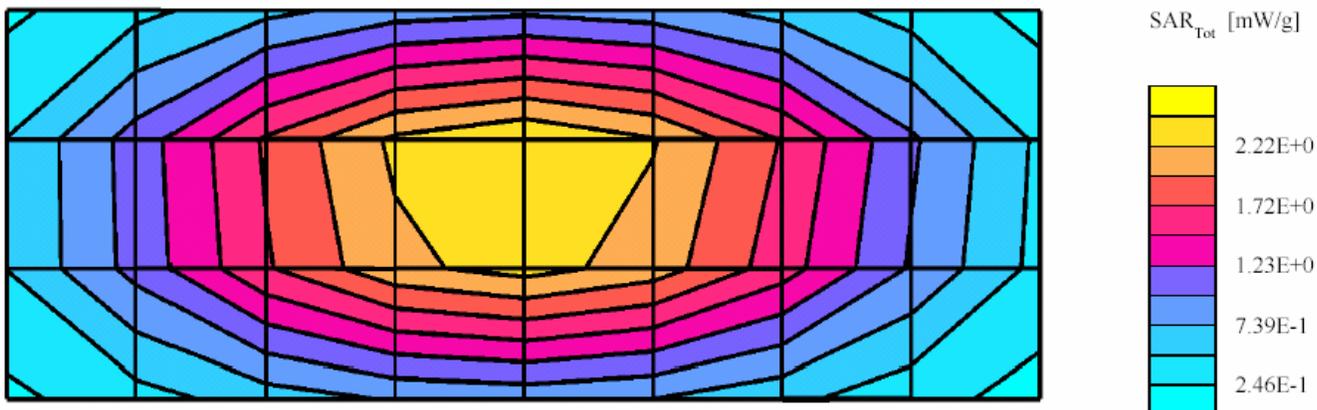
SAR calculated at 1W is 6.94 mW/g (10g avg). Percent from target (including drift) is 8.39%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body\_900 MHz:  $\sigma = 1.02\text{mho/m}$   $\epsilon_r = 52.4$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak: 4.29 mW/g  $\pm 0.02 \text{ dB}$ , SAR (1g): 2.74 mW/g  $\pm 0.02 \text{ dB}$ , SAR (10g): 1.74 mW/g  $\pm 0.02 \text{ dB}$ , (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.4) [mm]

Powerdrift: 0.01 dB



# SPEAG Dipole 900MHz. Test Date:06/03/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030603-01

TX Freq: 900 MHz Sim Tissue Temp: 21.3 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.19 mW/g (1g avg). Percent from target (including drift) is 6.69%

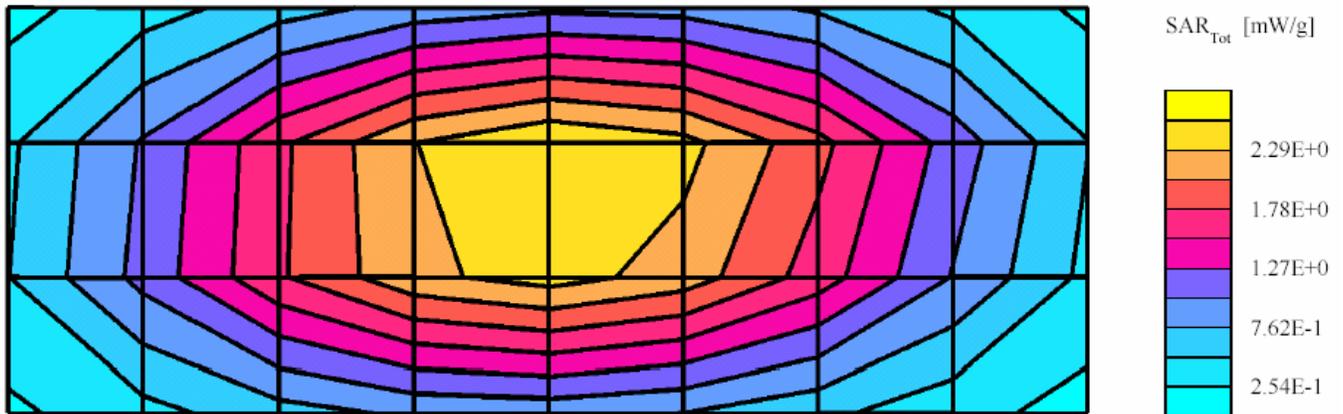
SAR calculated at 1W is 7.13 mW/g (10g avg). Percent from target (including drift) is 5.97%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.03\text{mho/m}$   $\epsilon_r = 52.5$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak:  $4.41 \text{ mW/g} \pm 0.05 \text{ dB}$ , SAR (1g):  $2.81 \text{ mW/g} \pm 0.03 \text{ dB}$ , SAR (10g):  $1.79 \text{ mW/g} \pm 0.03 \text{ dB}$ , (Worst-case extrapolation)Penetration depth: 12.0 (11.0, 13.4) [mm]

Powerdrift: 0.02 dB



# SPEAG Dipole 900MHz. Test Date:06/04/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030604-01

TX Freq: 900 MHz Sim Tissue Temp: 21.5 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.29 mW/g (1g avg). Percent from target (including drift) is 5.82%

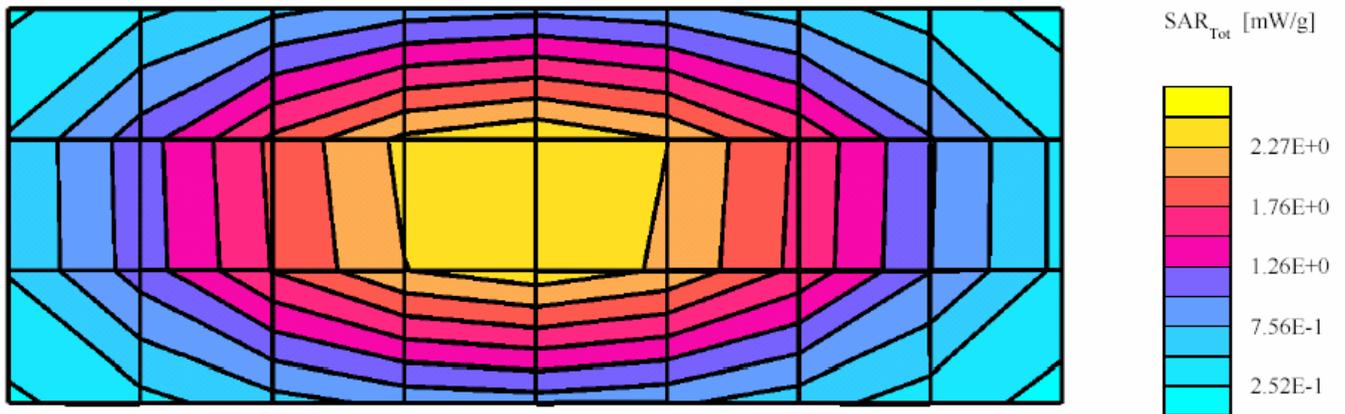
SAR calculated at 1W is 7.19 mW/g (10g avg). Percent from target (including drift) is 5.10%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.03\text{mho/m}$   $\epsilon_r = 52.6$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak:  $4.40\text{ mW/g} \pm 0.04\text{ dB}$ , SAR (1g):  $2.81\text{ mW/g} \pm 0.04\text{ dB}$ , SAR (10g):  $1.79\text{ mW/g} \pm 0.04\text{ dB}$ , (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.4) [mm]

Powerdrift: -0.02 dB



# SPEAG Dipole 900MHz. Test Date:06/05/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030605-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.6 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 10.99 mW/g (1g avg). Percent from target (including drift) is 8.38 %

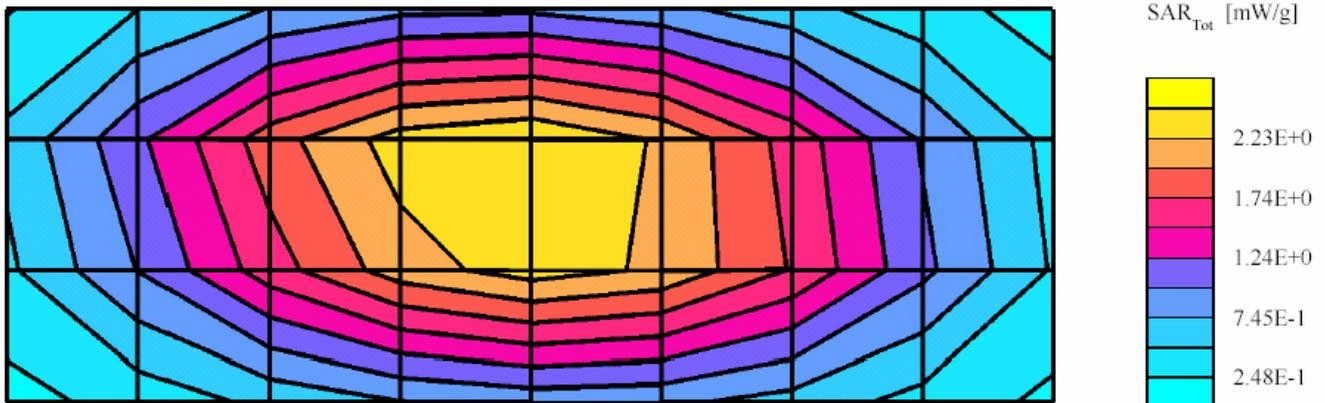
SAR calculated at 1W is 6.98 mW/g (10g avg). Percent from target (including drift) is 7.97%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.03\text{mho/m}$   $\epsilon_r = 52.4$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 4.30 mW/g  $\pm 0.04$  dB, SAR (1g): 2.74 mW/g  $\pm 0.03$  dB, SAR (10g): 1.74 mW/g  $\pm 0.04$  dB, (Worst-case extrapolation)Penetration depth: 12.1 (11.0, 13.4) [mm]

Powerdrift: -0.01 dB



# SPEAG Dipole 900MHz. Test Date:06/06/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030606-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.04 mW/g (1g avg). Percent from target (including drift) is 7.92 %

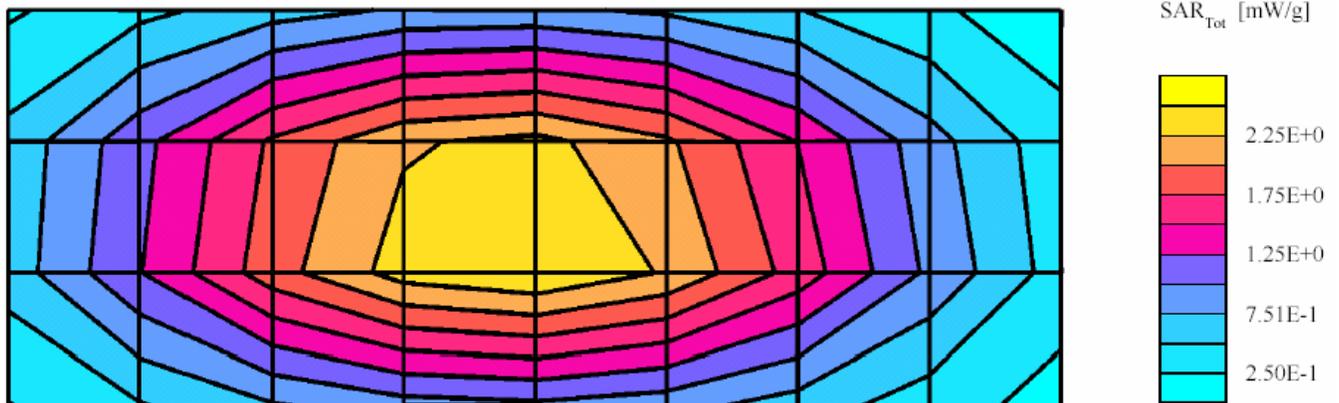
SAR calculated at 1W is 7.04 mW/g (10g avg). Percent from target (including drift) is 7.12%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.03\text{mho/m}$   $\epsilon_r = 52.4$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak:  $4.33\text{ mW/g} \pm 0.04\text{ dB}$ , SAR (1g):  $2.76\text{ mW/g} \pm 0.04\text{ dB}$ , SAR (10g):  $1.76\text{ mW/g} \pm 0.04\text{ dB}$ , (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.4) [mm]

Powerdrift: 0.00 dB



# SPEAG Dipole 900MHz. Test Date:06/08/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030608-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.06 mW/g (1g avg). Percent from target (including drift) is - 7.74%

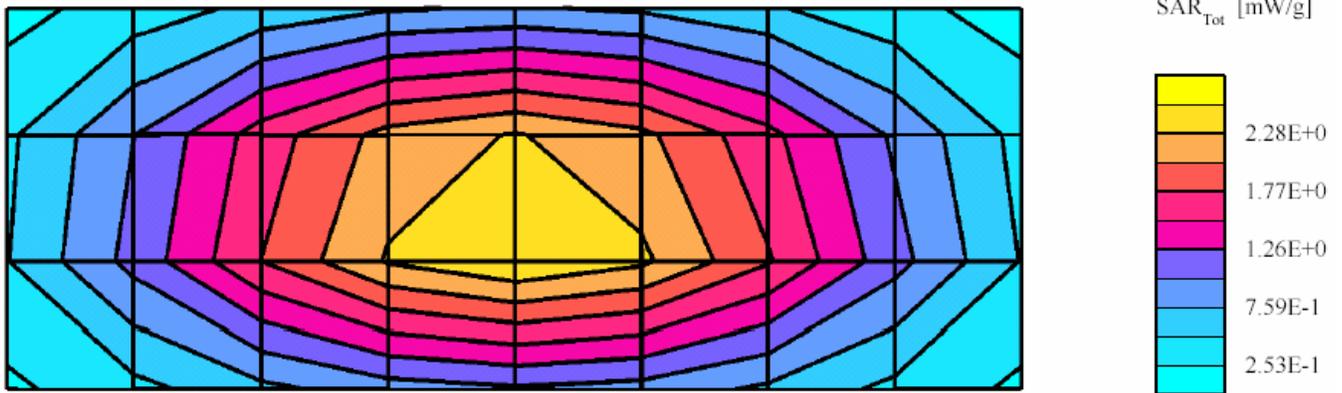
SAR calculated at 1W is 7.06 mW/g (10g avg). Percent from target (including drift) is - 6.80%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.03\text{mho/m}$   $\epsilon_r = 52.5$   $\rho = 1.00\text{ g/cm}^3$

Cubes (2): Peak: 4.30 mW/g  $\pm 0.03\text{ dB}$ , SAR (1g): 2.74 mW/g  $\pm 0.03\text{ dB}$ , SAR (10g): 1.75 mW/g  $\pm 0.04\text{ dB}$ , (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.5) [mm]

Powerdrift: -0.04 dB



# SPEAG Dipole 900MHz. Test Date:06/10/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030610-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.60 mW/g (1g avg). Percent from target (including drift) is 3.26%

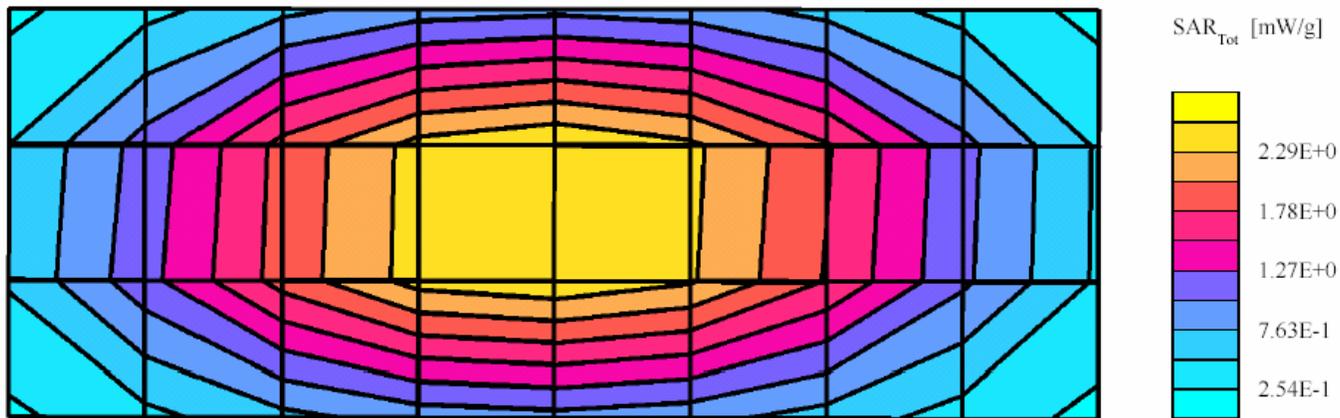
SAR calculated at 1W is 7.35 mW/g (10g avg). Percent from target (including drift) is 3.05%

Flat Phantom;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor:

1.0; FCC Body 900 MHz:  $\sigma = 1.04\text{mho/m}$   $\epsilon_r = 52.3$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak:  $4.75 \text{ mW/g} \pm 0.03 \text{ dB}$ , SAR (1g):  $2.92 \text{ mW/g} \pm 0.01 \text{ dB}$ , SAR (10g):  $1.85 \text{ mW/g} \pm 0.03 \text{ dB}$ , (Worst-case extrapolation)Penetration depth: 11.9 (10.8, 13.4) [mm]

Powerdrift: 0.03 dB



# SPEAG Dipole 900MHz. Test Date:06/10/03

## Motorola CGISS EME Lab

Run #: Sys Perf-R1-030610-03

TX Freq: 900 MHz

Sim Tissue Temp: 21.3 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.66 mW/g (1g avg, including drift)

SAR target at 1W is 7.26 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.06 mW/g (1g avg). Percent from target (including drift) is 5.11%

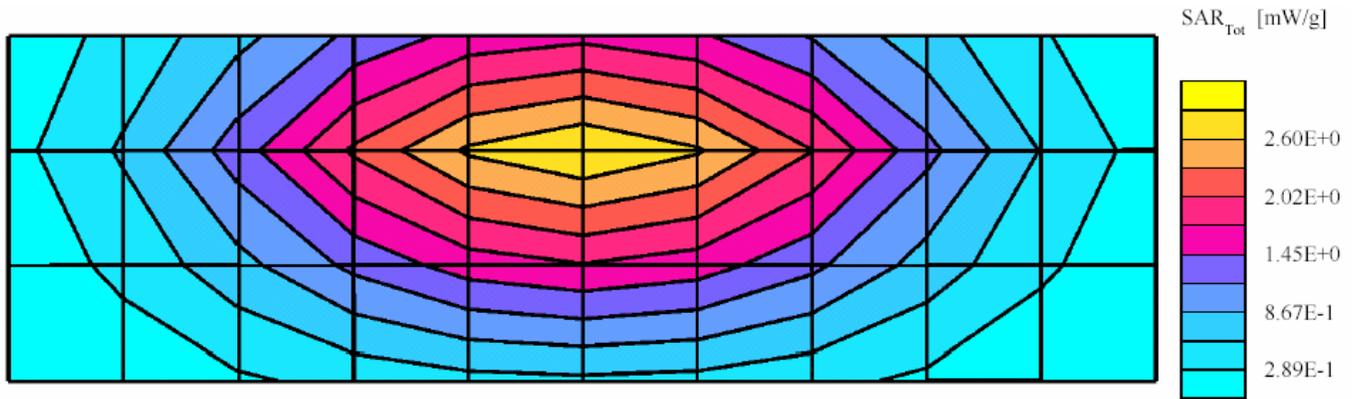
SAR calculated at 1W is 6.95 mW/g (10g avg). Percent from target (including drift) is 4.29%

SAM;Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.60,6.60,6.60); Crest factor: 1.0;

IEEE Head 900 MHz :  $\sigma = 0.99\text{mho/m}$   $\epsilon_r = 42.4$   $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak: 4.69 mW/g  $\pm 0.06$  dB, SAR (1g): 2.93 mW/g  $\pm 0.06$  dB, SAR (10g): 1.84 mW/g  $\pm 0.06$  dB, (Worst-case extrapolation)Penetration depth: 11.4 (10.5, 12.5) [mm]

Powerdrift: 0.25 dB



# SPEAG Dipole 900MHz. Test Date:06/17/03

Run #: Sys Perf-R1-030617-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.99 mW/g (1g avg, including drift)

SAR target at 1W is 7.58 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.12 mW/g (1g avg). Percent from target (including drift) is 7.23%

SAR calculated at 1W is 7.11 mW/g (10g avg). Percent from target (including drift) is 6.19%

Flat Phantom;

Probe: ET3DV6 - SN1384(Cal Date 05-15-2003);Probe Cal Date: 15/05/03ConvF(6.50,6.50,6.50); Crest factor: 1.0; FCC

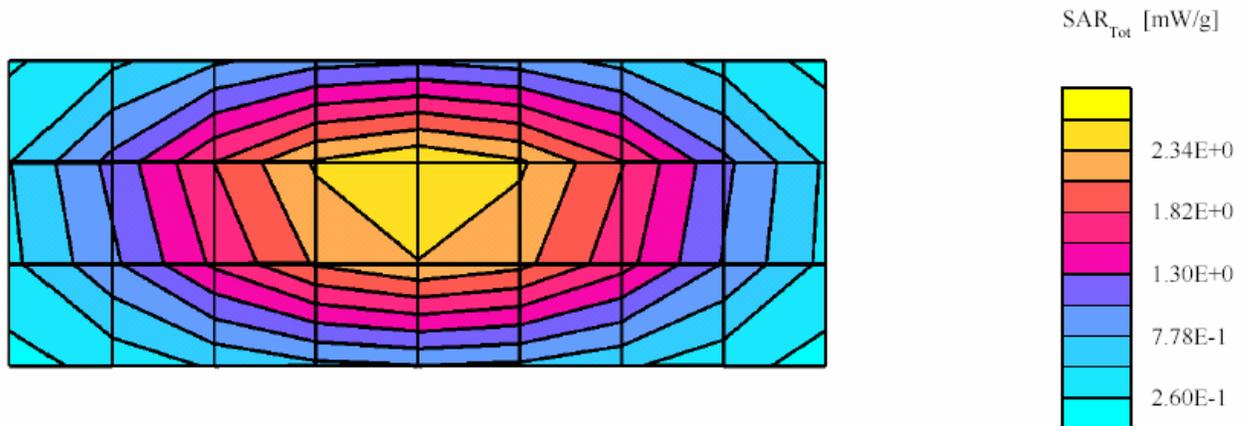
Body 900 MHz:  $\sigma = 1.05$

mho/m  $\epsilon_r = 53.7$   $\rho = 1.00$  g/cm<sup>3</sup>

Cubes (2): Peak: 4.38 mW/g  $\pm$  0.04 dB, SAR (1g): 2.80 mW/g  $\pm$  0.04 dB, SAR (10g): 1.79 mW/g  $\pm$  0.03 dB, (Worst-case extrapolation)

Penetration depth: 12.2 (11.2, 13.6) [mm]

Powerdrift: 0.03 dB



**SYSTEM PERFORMANCE CHECK TARGET SAR**

Date: 05/22/03 Frequency (MHz): 900  
Lab Location: CGISS Mixture Type: 900-FCC Body  
Robot System: CGISS-2 Ambient Temp.(°C): 20.9  
Probe Serial #: 1547 Tissue Temp.(°C): 21.0  
DAE Serial #: DAE3V1 SN401

Tissue Characteristics Phantom Type/SN: 80302002A/S8  
Permittivity: 53.9 Distance (mm): 15  
Conductivity: 1.07

Reference Source: Dipole (Dipole/Handset)  
Reference SN: 084

Power to Dipole: 250 mW

Measured SAR Value: 2.99 mW/g, 1.89 mW/g (10g avg.)  
Power Drift: -0.01 dB

New Target/Measured  
SAR Value: 11.99 mW/g, 7.58 mW/g (10g avg.)  
(normalized to 1.0 W,  
with drift compensation)

Test performed by: Kim Uong Initial: KU

# Dipole D900V2 SN084; Test Date: 05/22/03

Run #: 0305022-06

Phantom #:80302002A/S8

Model#: SPEAG dipole D900V2 SN084

Robot#: CGISS-2

DAE: DAE3V1 SN374 (2/11/02)

Tester: Kim Uong

Tx Freq:900MHz

Simulated tissue temp: 21.0C, Ambient :20.9C

Start power: 250mW

Target:

11.8mW/g for 1g-SAR, 7.52mW/g for 10g-SAR, +/-12% from SPEAG Dipole certificate 2/11/02

Flat Phantom; Section;

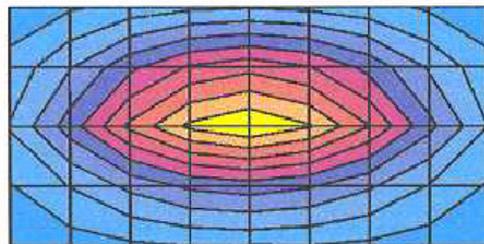
Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002); ConvF(6.20,6.20,6.20); Probe cal date: 28/09/02; Crest

factor: 1.0; FCC Body 900:  $\sigma = 1.07$  mho/m  $\epsilon_r = 53.9$   $\rho = 1.00$  g/cm<sup>3</sup>

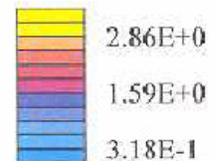
Cubes (2): SAR (1g): 2.99 mW/g  $\pm$  0.03 dB, SAR (10g): 1.89 mW/g  $\pm$  0.03 dB, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 60.0, 4.0

Powerdrift: -0.01 dB



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



Motorola CGISS EME Lab

**SYSTEM PERFORMANCE CHECK TARGET SAR**

Date: 05/05/03 Frequency (MHz): 900  
Lab Location: CGISS Mixture Type: 900-IEEE Head  
Robot System: CGISS-2 Ambient Temp.(°C): 22.4  
Probe Serial #: 1547 Tissue Temp.(°C): 20.3  
DAE Serial #: DAE3V1 SN401

Tissue Characteristics Phantom Type/SN: SAMTP1209  
Permittivity: 40.5 Distance (mm): 15  
Conductivity: 0.98

Reference Source: Dipole (Dipole/Handset)  
Reference SN: 084

Power to Dipole: 250 mW

Measured SAR Value: 2.97 mW/g, 1.85 mW/g (10g avg.)  
Power Drift: 0.08 dB

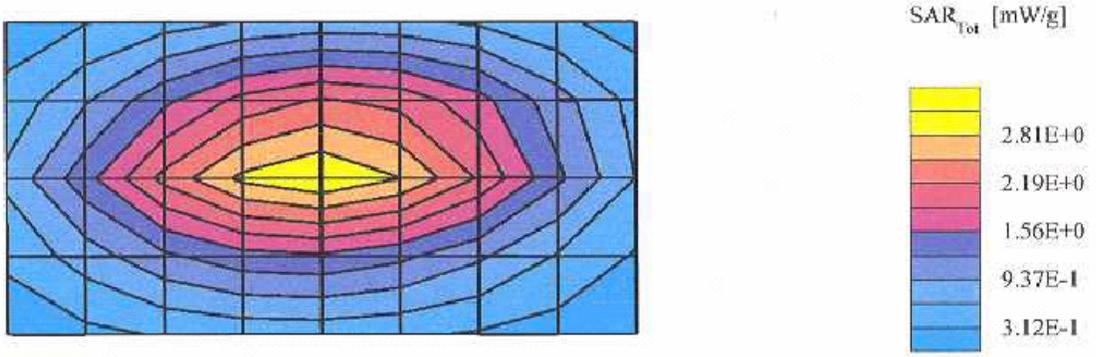
New Target/Measured  
SAR Value: 11.66 mW/g, 7.26 mW/g (10g avg.)  
(normalized to 1.0 W,  
with drift compensation)

Test performed by: Kim Uong Initial: 

Dipole D900V2 SN084; Test date:05/05/03

Run #: 030505-01 Phantom #:SAMTP1209  
Model#: SPEAG dipole D900V2 SN084  
Robot#: CGISS-2 DAE: DAE3V1 SN401 (8/26/02) Tester: Kim Uong  
Tx Freq:900MHz Simulated tissue temp: 20.3C  
Start power: 250mW

Target:  
11.2mW/g for 1g-SAR, 7.12mW/g for 10g-SAR, +/-12% from SPEAG Dipole certificate 2/11/02  
11.66mW/g for 1g-SAR, 7.26mW/g for 10g-SAR, +/-10% from system performance target 05/05/03.  
SAM; Probe: ET3DV6 - SN1547 (Cal Date 09-28-2002); ConvP(6.50,6.50,6.50); Crest factor: 1.0; IEEE HEAD 900MHz:  $\sigma = 0.98$  mho/m  $\epsilon_r = 40.5$   $\rho = 1.00$  g/cm<sup>3</sup>  
Cubes (2): Peak: 4.85 mW/g  $\pm 0.02$  dB, SAR (1g): 2.97 mW/g  $\pm 0.02$  dB, SAR (10g): 1.85 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation)  
Penetration depth: 11.1 (9.9, 12.7) [mm]  
Powerdrift: 0.08 dB



**APPENDIX D**  
**Calibration Certificates**

Client **Motorola CGISS**

CALIBRATION CERTIFICATE																															
Object(s)	ET3DV6 - SN:1384																														
Calibration procedure(s)	QA.CAL-01.v2 Calibration procedure for dosimetric E-field probes																														
Calibration date:	May 15, 2003																														
Condition of the calibrated item	In Tolerance (according to the specific calibration document)																														
<p>This calibration statement documents traceability of M&amp;TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity &lt; 75%.</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Model Type</th> <th>ID #</th> <th>Cal Date (Calibrated by, Certificate No.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>RF generator HP 8684C</td> <td>US3642U01700</td> <td>4-Aug-99 (SPEAG, in house check Aug-02)</td> <td>In house check: Aug-05</td> </tr> <tr> <td>Power sensor E4412A</td> <td>MY41495277</td> <td>2-Apr-03 (METAS, No 252-0250)</td> <td>Apr-04</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>MY41092180</td> <td>18-Sep-02 (Agilent, No. 20020918)</td> <td>Sep-03</td> </tr> <tr> <td>Power meter EPM E4419B</td> <td>GB41293874</td> <td>2-Apr-03 (METAS, No 252-0250)</td> <td>Apr-04</td> </tr> <tr> <td>Network Analyzer HP 8753E</td> <td>US38432426</td> <td>3-May-00 (Agilent, No. 8702K064602)</td> <td>In house check: May 03</td> </tr> <tr> <td>Fluke Process Calibrator Type 702</td> <td>SN: 6295803</td> <td>3-Sep-01 (ELCAL, No.2360)</td> <td>Sep-03</td> </tr> </tbody> </table>				Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration	RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05	Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04	Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	Sep-03	Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04	Network Analyzer HP 8753E	US38432426	3-May-00 (Agilent, No. 8702K064602)	In house check: May 03	Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01 (ELCAL, No.2360)	Sep-03
Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration																												
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05																												
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04																												
Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	Sep-03																												
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04																												
Network Analyzer HP 8753E	US38432426	3-May-00 (Agilent, No. 8702K064602)	In house check: May 03																												
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01 (ELCAL, No.2360)	Sep-03																												
Calibrated by:	Name Nico Vetterli	Function Technician	Signature 																												
Approved by:	Name Katja Pokornic	Function Laboratory Director	Signature 																												
Date issued: May 15, 2003																															
<p>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 &amp; Partner Engineering AG is completed.</p>																															

# Probe ET3DV6

**SN:1384**

Manufactured:	August 16, 1999
Last calibration:	May 21, 2002
Recalibrated:	May 15, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

## DASY - Parameters of Probe: ET3DV6 SN:1384

### Sensitivity in Free Space

NormX	1.76 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	1.72 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.89 $\mu\text{V}/(\text{V}/\text{m})^2$

### Diode Compression

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

### Sensitivity in Tissue Simulating Liquid

Head                      900 MHz                       $\epsilon_r = 41.5 \pm 5\%$                        $\sigma = 0.97 \pm 5\%$  mho/m

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1 528-200X

ConvF X	6.6 $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	6.6 $\pm 9.5\%$ (k=2)	Alpha <b>0.45</b>
ConvF Z	6.6 $\pm 9.5\%$ (k=2)	Depth <b>2.42</b>

Head                      1800 MHz                       $\epsilon_r = 40.0 \pm 5\%$                        $\sigma = 1.40 \pm 5\%$  mho/m

Valid for f=1710-1910 MHz with Head Tissue Simulating Liquid according to EN 50361, P1 528-200X

ConvF X	5.4 $\pm 9.5\%$ (k=2)	Boundary effect:
ConvF Y	5.4 $\pm 9.5\%$ (k=2)	Alpha <b>0.55</b>
ConvF Z	5.4 $\pm 9.5\%$ (k=2)	Depth <b>2.56</b>

### Boundary Effect

Head                      900 MHz                      Typical SAR gradient: 5 % per mm

Probe Tip to Boundary		1 mm	2 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	11.4	6.3
SAR <sub>be</sub> [%]	With Correction Algorithm	0.4	0.7

Head                      1800 MHz                      Typical SAR gradient: 10 % per mm

Probe Tip to Boundary		1 mm	2 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	14.7	9.5
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.0

### Sensor Offset

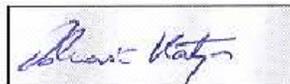
Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.5 $\pm$ 0.2	mm

## Additional Conversion Factors for Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1384
Place of Assessment:	Zurich
Date of Assessment:	May 19, 2003
Probe Calibration Date:	May 15, 2003

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:



**Dosimetric E-Field Probe ET3DV6 SN:1384**Conversion factor ( $\pm$  standard deviation)

150 MHz	ConvF	8.2 $\pm$ 8%	$\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (body tissue)
236 MHz	ConvF	8.1 $\pm$ 8%	$\epsilon_r = 59.8$ $\sigma = 0.87$ mho/m (body tissue)
300 MHz	ConvF	7.9 $\pm$ 8%	$\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (body tissue)
350 MHz	ConvF	7.9 $\pm$ 8%	$\epsilon_r = 57.7$ $\sigma = 0.93$ mho/m (body tissue)
450 MHz	ConvF	7.6 $\pm$ 8%	$\epsilon_r = 56.7$ $\sigma = 0.94$ mho/m (body tissue)
784 MHz	ConvF	6.6 $\pm$ 8%	$\epsilon_r = 55.4$ $\sigma = 0.97$ mho/m (body tissue)
1450 MHz	ConvF	5.5 $\pm$ 8%	$\epsilon_r = 54.0$ $\sigma = 1.30$ mho/m (body tissue)

**Dosimetric E-Field Probe ET3DV6 SN:1384**Conversion factor ( $\pm$  standard deviation)

150 MHz	ConvF	9.1 $\pm$ 8%	$\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue)
236 MHz	ConvF	8.3 $\pm$ 8%	$\epsilon_r = 48.3$ $\sigma = 0.82$ mho/m (head tissue)
300 MHz	ConvF	7.8 $\pm$ 8%	$\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue)
350 MHz	ConvF	7.8 $\pm$ 8%	$\epsilon_r = 44.7$ $\sigma = 0.87$ mho/m (head tissue)
400 MHz	ConvF	7.5 $\pm$ 8%	$\epsilon_r = 44.4$ $\sigma = 0.87$ mho/m (head tissue - CENELEC)
450 MHz	ConvF	7.5 $\pm$ 8%	$\epsilon_r = 43.5$ $\sigma = 0.87$ mho/m (head tissue)
784 MHz	ConvF	6.8 $\pm$ 8%	$\epsilon_r = 41.8$ $\sigma = 0.90$ mho/m (head tissue)

# 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

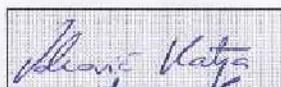
Calibration Interval:

24 months

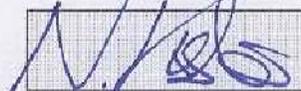
Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

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:



Approved by:



## 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	<b>41.1</b>	$\pm 5\%$
Conductivity	<b>0.95 mho/m</b>	$\pm 5\%$

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  $\pm 3\%$ . 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 <sup>3</sup> (1 g) of tissue:	<b>11.2 mW/g</b>
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	<b>7.12 mW/g</b>

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:	<b>1.389 ns</b>	(one direction)
Transmission factor:	<b>0.997</b>	(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:	$\text{Re}\{Z\} = 52.1 \Omega$
	$\text{Im}\{Z\} = -4.3 \Omega$
Return Loss at 900 MHz	<b>-26.5 dB</b>

### **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	<b>54.8</b>	$\pm 5\%$
Conductivity	<b>1.03 mho/m</b>	$\pm 5\%$

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  $\pm 3\%$ . 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 <sup>3</sup> (1 g) of tissue:	<b>11.8 mW/g</b>
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	<b>7.52 mW/g</b>

## **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:	<b>Re{Z} = 47.6 Ω</b>
	<b>Im {Z} = -6.0 Ω</b>
Return Loss at 900 MHz	<b>-23.6 dB</b>

## **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**

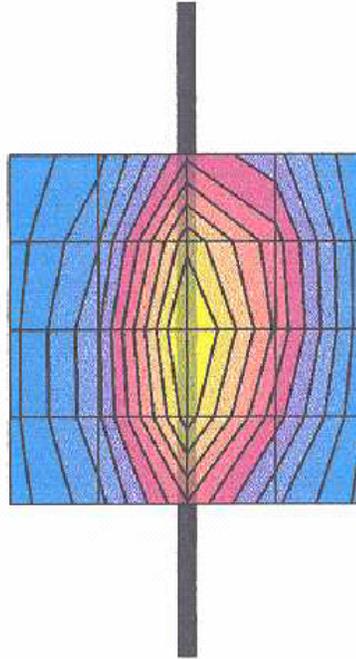
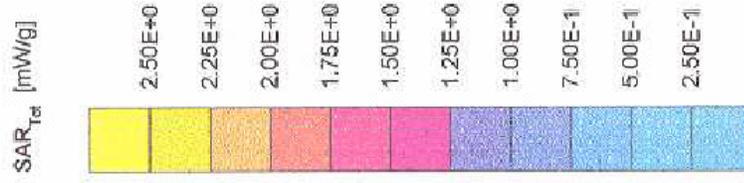
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

## **9. Power Test**

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

### Validation Dipole D900V2 SN:084, d = 15 mm

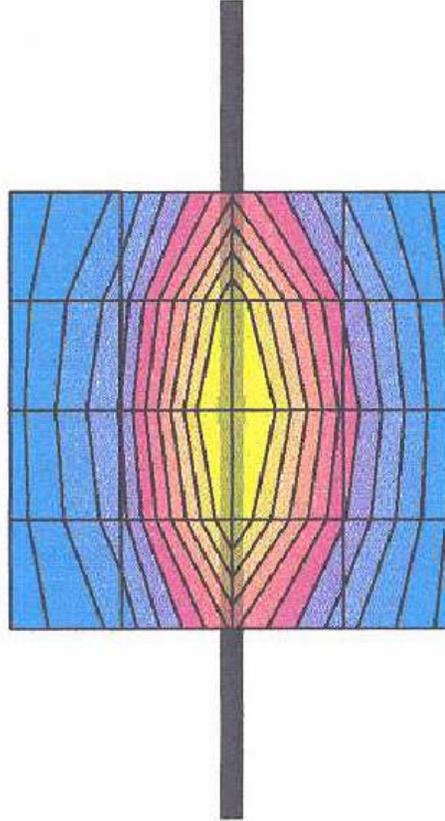
Frequency: 900 MHz; Antenna Input Power: 250 [mW]  
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0  
Probe: ET3DV6 - SN1507; ConvF(6.50 6.50 6.50) at 900 MHz; IEEE1528 900 MHz;  $\sigma = 0.95$  mho/m  $\epsilon_r = 41.1$   $\rho = 1.00$  g/cm<sup>3</sup>  
Cubes (2): Peak: 4.54 mW/g  $\pm 0.03$  dB, SAR (1g): 2.81 mW/g  $\pm 0.02$  dB, SAR (10g): 1.78 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation)  
Penetration depth: 11.5 (10.3, 13.2) [mm]  
Powerdrift: -0.01 dB



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;  $\sigma = 1.03$  mho/m  $\epsilon_r = 54.8$   $\rho = 1.00$  g/cm<sup>3</sup>  
Cubes (2); Peak: 4.72 mW/g  $\pm 0.02$  dB, SAR (1g): 2.95 mW/g  $\pm 0.01$  dB, SAR (10g): 1.88 mW/g  $\pm 0.00$  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: AZ489FT5824. 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**  
**Front View**



**Photo 2.**  
**Model NNTN4682A**  
**Back View**



**Photo 3.**  
**Model NNTN4682A**  
**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:

<b>Carry Case Models</b>	<b>Tested ?</b>	<b>Separation distances between DUT antenna and phantom surface. (mm)</b>	<b>Comments</b>
NNTN4682A	Yes	34-41	NA

<b>Audio Acc. Models</b>	<b>Tested ?</b>	<b>Separation distances between DUT antenna and phantom surface. (mm)</b>	<b>Comments</b>
SYN7875C	Yes	NA	NA
SYN8390B	Yes	NA	NA
SYN8146C	Yes	NA	NA
NTN8513B	Yes	NA	NA
NTN8496A	Yes	NA	NA
NNTN4033A	Yes	NA	NA
NSN6066A	Yes	NA	NA
NNTN4620A	No	NA	Same as model SYN8390B

<b>DATA cable/other attachments Models</b>	<b>Tested ?</b>	<b>Separation distances between DUT antenna and phantom surface. (mm)</b>	<b>Comments</b>
NKN6544B	Yes	NA	NA
NKN6540A	Yes	NA	NA
NNTN4007A	Yes	NA	NA
NNTN4049A	Yes	NA	NA
NNTN4877A	Yes	NA	NA
SYN0547A	Yes	NA	NA

<b>Other attachments Models</b>	<b>Tested ?</b>	<b>Separation distances between DUT antenna and phantom surface. (mm)</b>	<b>Comments</b>
NNTN4766A	Yes	NA	NA
NNTN4767A	Yes	NA	NA