



MOTOROLA



CGISS EME Test Laboratory

8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

S.A.R. EME Compliance Test Report

Part 2 of 3

Date of Report: March 25, 2004
Report Revision: Rev. O
Manufacturer: Motorola
Product Description: XTS5000 UHF R2; 450-520MHz, 1-5 watts nominal; 6 line display;
512 channel
FCC ID: **AZ489FT4864**
Device Model: H18SDH9PW7AN

Test Period: 2/23/04-3/15/04

EME Tech: Clint Miller

Responsible Eng: Jim Fortier (Elect. Principle Staff 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

3/25/04

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

Date Approved

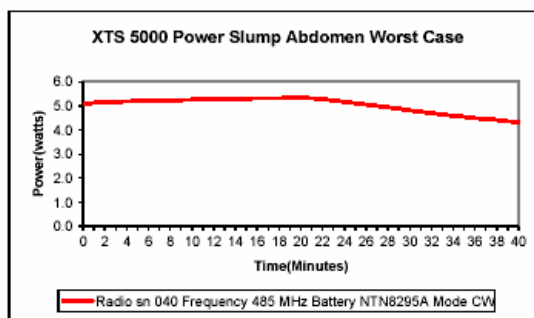
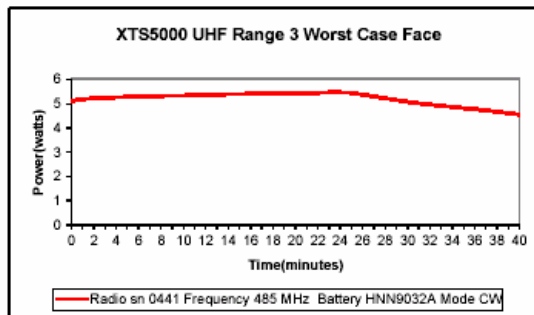
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APPENDIX A

Power Slump Data/Shortened Scan

DUT Power versus time data

Radio sn 040		Radio sn 0441	
Frequency 485 MHz		Frequency 485 MHz	
Battery NTN8295A		Battery HNN9032A	
Mode CW		Mode CW	
Time(minutes)	Power(watts)	Time(minutes)	Power(watts)
0	5.1	0	5.103
1	5.1	1	5.184
2	5.2	2	5.219
3	5.2	3	5.243
4	5.2	4	5.26
5	5.2	5	5.275
6	5.2	6	5.288
7	5.2	7	5.302
8	5.2	8	5.315
9	5.3	9	5.327
10	5.3	10	5.338
11	5.3	11	5.35
12	5.3	12	5.361
13	5.3	13	5.373
14	5.3	14	5.383
15	5.3	15	5.393
16	5.3	16	5.402
17	5.3	17	5.413
18	5.3	18	5.421
19	5.3	19	5.429
20	5.3	20	5.425
21	5.3	21	5.436
22	5.3	22	5.444
23	5.2	23	5.457
24	5.2	24	5.464
25	5.1	25	5.436
26	5.1	26	5.364
27	5.0	27	5.29
28	4.9	28	5.216
29	4.9	29	5.144
30	4.8	30	5.078
31	4.8	31	5.016
32	4.7	32	4.961
33	4.7	33	4.912
34	4.6	34	4.865
35	4.5	35	4.812
36	4.5	36	4.765
37	4.5	37	4.717
38	4.4	38	4.666
39	4.4	39	4.612
40	4.3	40	4.554



Shortened Scan Results

FCC ID: AZ489FT4864; Test Date: 3/10/04

Motorola CGISS EME Laboratory

Run #: JF-040310-08

MODEL #: H18SDH9PW7AN SER #: 40

TX FREQ: 471.025 MHz

SIM TEMP: 19.7 C

START PWR: 5.17 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: NTN8266B

AUDIO ACCESSORIES: NTN1663A w/ NKN6512A & BDN6676D

Shortened scan reflect highest S.A.R. producing configuration; Run time 7min. 45 sec..

Representative “normal” scan run time was 25 minutes

“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 7.34mW/g; 10-g Avg. = 4.98mW/g

“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 6.99mW/g; 10-g Avg. = 4.77mW/g

(see section 7.1 run # JF-040226-02)

DUT with carry accessory against the phantom

Flat Phantom; Position: (90°,90°);

Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

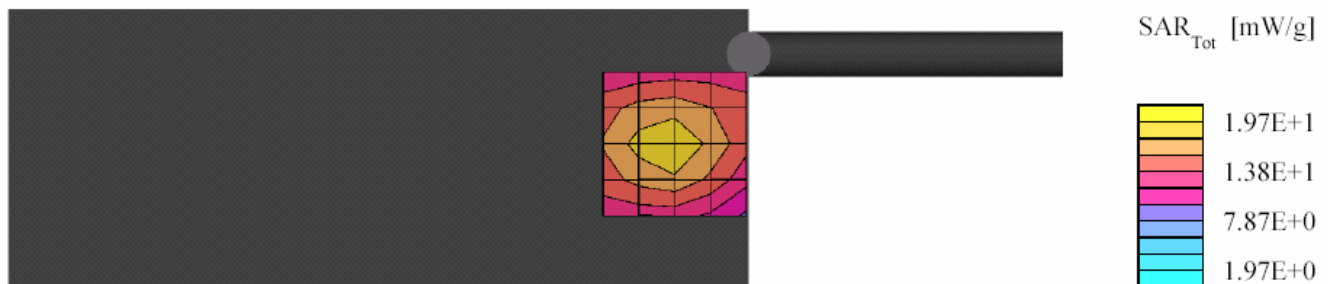
FCC Body 485: $\sigma = 0.94$ mho/m $\epsilon = 55.2$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 5x5x7: SAR (1g): 12.9 mW/g, SAR (10g): 8.85 mW/g * Max outside, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 12.9 mW/g, SAR (10g): 8.85 mW/g * Max outside

Power Drift: 0.04 dB

Note: “Max outside” has been identified by SPEAG as an unresolved intermittent occurrence with the DASY 3 application even when the entire peak area is captured.



APPENDIX B

Data Results

FCC ID: AZ489FT4864; Test Date: 2/24/04

Motorola CGISS EME Laboratory

Run #: JF-040224-03

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 495.025 MHz

SIM TEMP: 20.8 C

START PWR: 5.30 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: Belt Clip: NTN8266B

AUDIO ACCESSORIES: NMN6191C

DUT with carry accessory against phantom

Phantom; Position: (90°,90°);

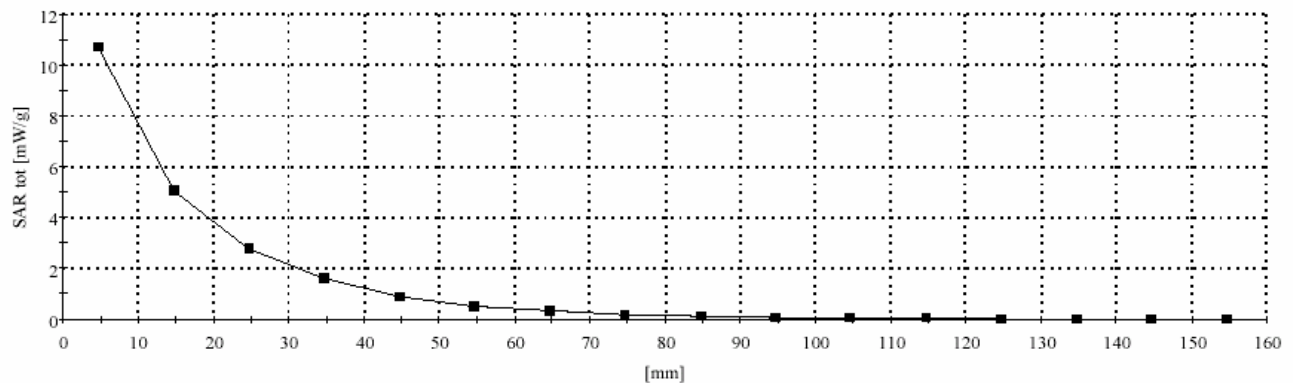
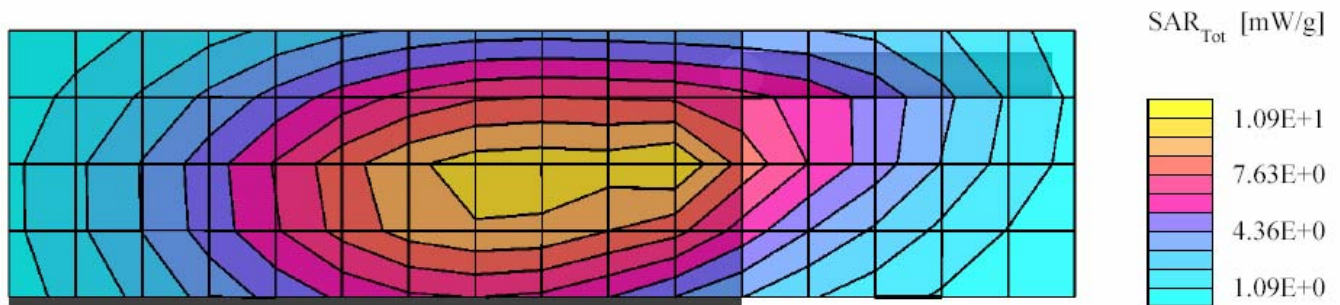
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.97$ mho/m $\epsilon = 56.1$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 10.7 mW/g, SAR (10g): 7.27 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 147.0, 4.7

Power Drift: -0.29 dB



FCC ID: AZ489FT4864; Test Date: 2/26/04

Motorola CGISS EME Laboratory

Run #: JF-040226-05

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 495.025 MHz

SIM TEMP: 20.1 C

START PWR: 5.25 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8297A

CARRY ACCESSORIES: NTN8266B

AUDIO ACCESSORIES: RSM: NMN6191C

DUT with carry accessory against the phantom

Phantom; Position: (90°,90°);

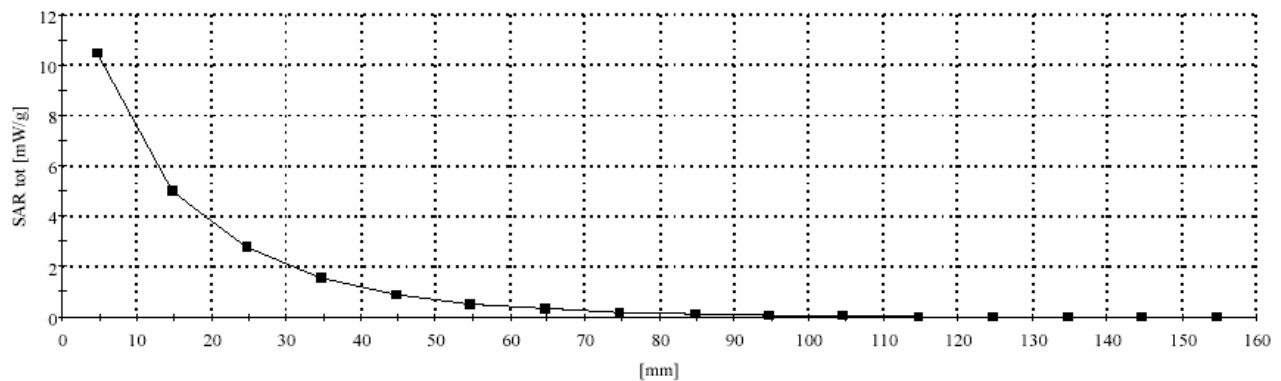
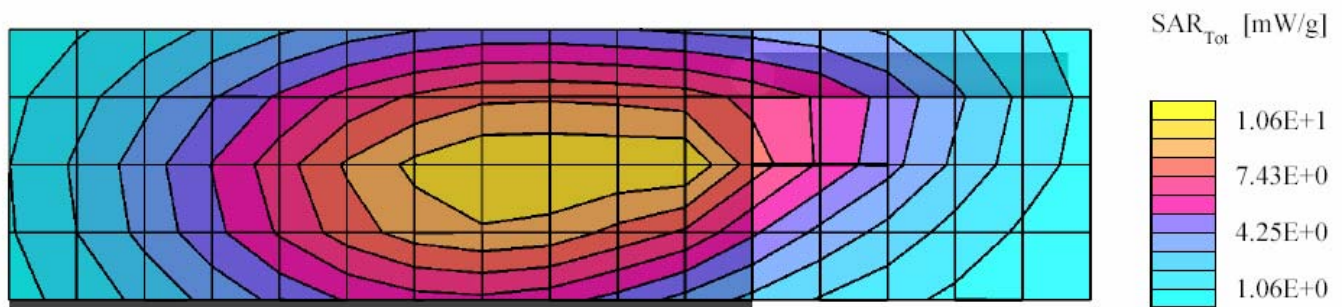
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.98$ mho/m $\epsilon = 56.1$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 10.7 mW/g, SAR (10g): 7.30 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 144.0, 4.7

Power Drift: -0.33 dB



FCC ID: AZ489FT4864; Test Date: 2/26/04

Motorola CGISS EME Laboratory

Run #: JF-040226-08

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 495.025 MHz

SIM TEMP: 20.1 C

START PWR: 5.24 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8297A

CARRY ACCESSORIES: NTN8725A w/NTN8383A

AUDIO ACCESSORIES: RSM: NMN6191C

DUT with carry accessory against the phantom

Phantom;; Position: (90°,90°);

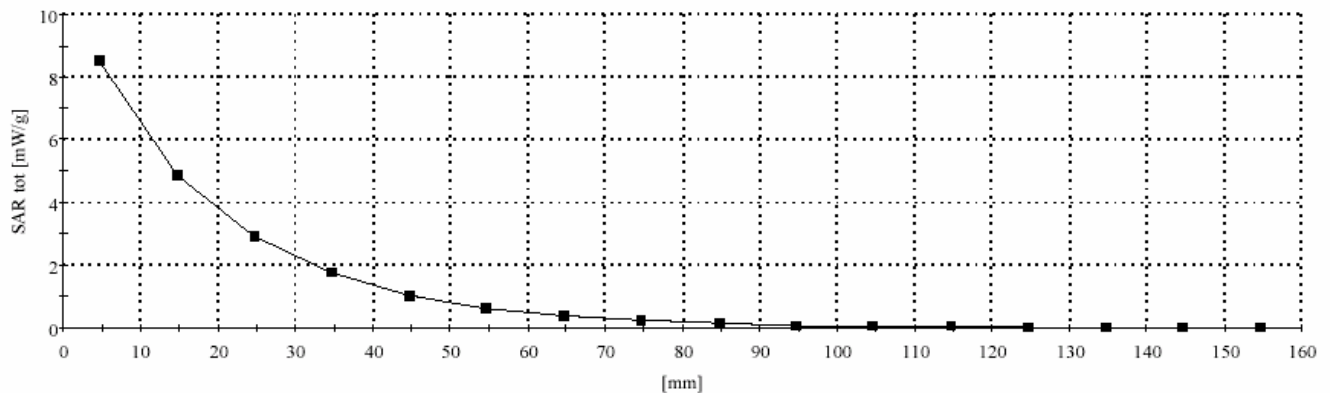
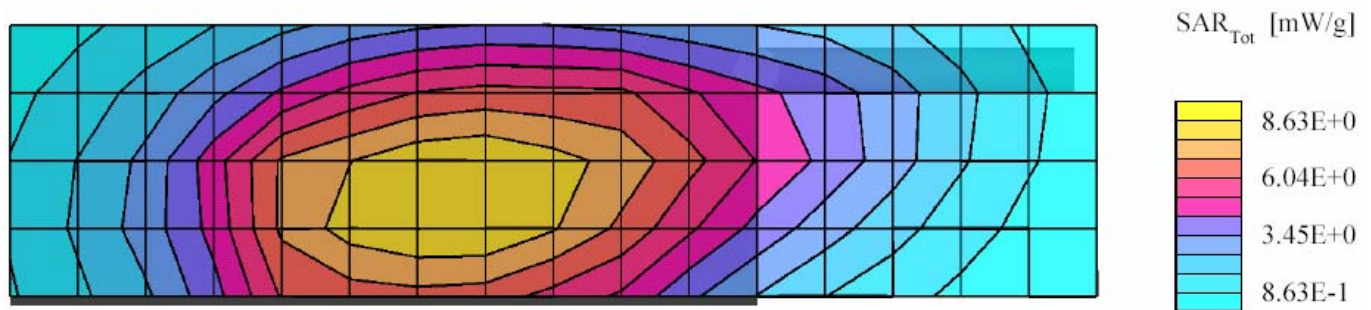
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.98$ mho/m $\epsilon = 56.1$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 8.60 mW/g, SAR (10g): 6.35 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 37.5, 100.5, 4.7

Power drift: -0.44 dB



FCC ID: AZ489FT4864; Test Date: 3/01/04

Motorola CGISS EME Laboratory

Run #: JF-040301-09

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 495.025 MHz

SIM TEMP: 19.5 C

START PWR: 5.26 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8297A

CARRY ACCESSORIES: NTN8266B

AUDIO ACCESSORIES: NTN1624A w/BDN6676D

DUT with carry accessory against the phantom

Phantom; Position: (90°,90°);

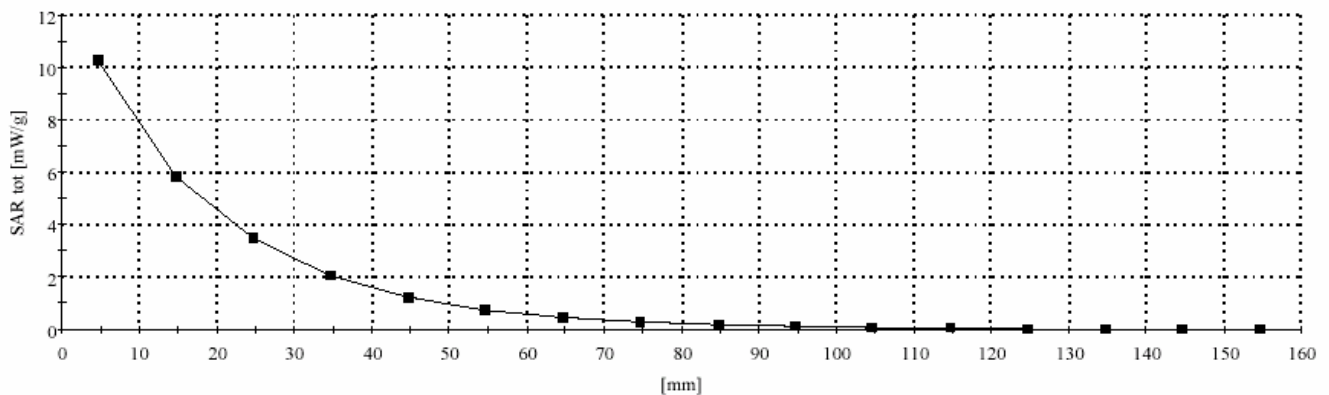
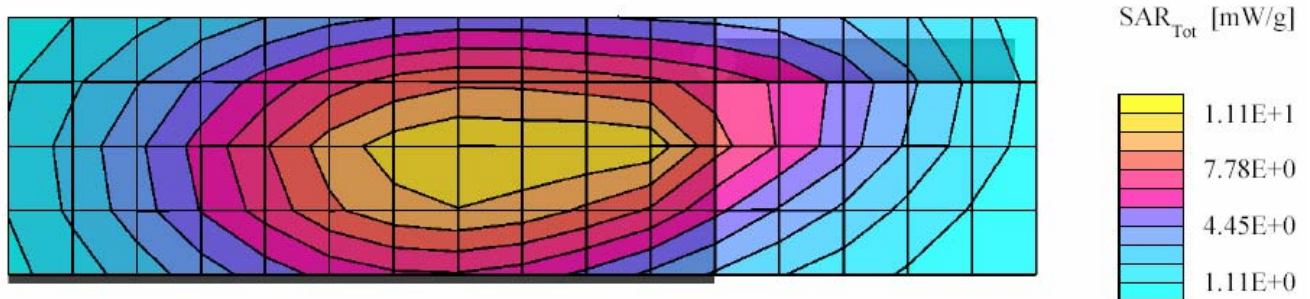
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.97$ mho/m $\epsilon = 55.5$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 10.8 mW/g, SAR (10g): 7.96 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 106.5, 4.7

Power Drift: -0.51 dB



FCC ID: AZ489FT4864; Test Date: 3/10/04

Motorola CGISS EME Laboratory

Run #: JF-040310-05

MODEL #: H18SDH9PW7AN SER #: 40

TX FREQ: 471.025 MHz

SIM TEMP: 19.8 C

START PWR: 5.16 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: NTN8266B

AUDIO ACCESSORIES: NTN1663A w/ NKN6512A& BDN6676D

DUT with carry accessory against the phantom

Phantom; Position: (90°,90°);

Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

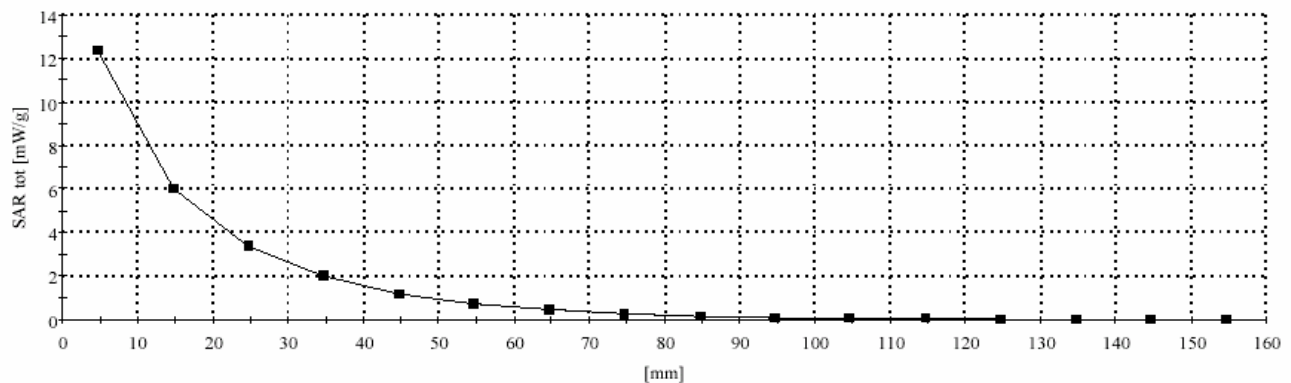
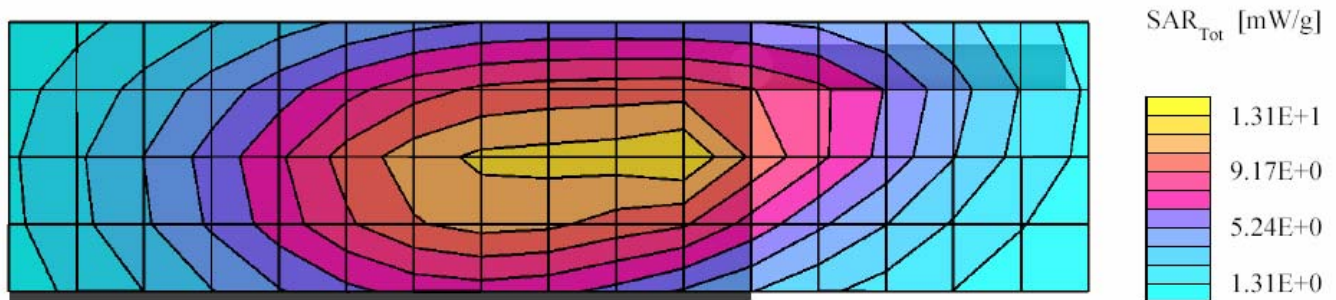
FCC Body 485: $\sigma = 0.94$ mho/m $\epsilon = 55.2$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 13.3 mW/g, SAR (10g): 9.03 mW/g * Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 147.0, 4.7

Power Drift: -0.31 dB

Note: "Max outside" has been identified by SPEAG as an unresolved intermittent occurrence with the DASY 3 application even when the entire peak area is captured.



FCC ID: AZ489FT4864; Test Date: 3/8/04

Motorola CGISS EME Laboratory

Run #: JF-040308-03

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 471.025 MHz

SIM TEMP: 19.4 C

START PWR: 5.22 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: None

AUDIO ACCESSORIES: NTN1663A w/ NKN6512A &BDN6676D

DUT with back 2.5 cm from phantom

Flat Phantom; Position: (90°,90°);

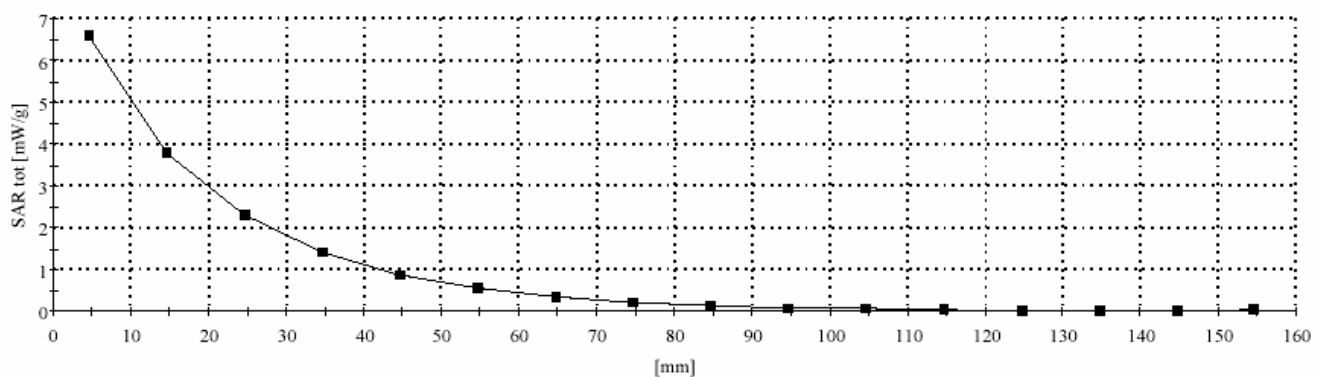
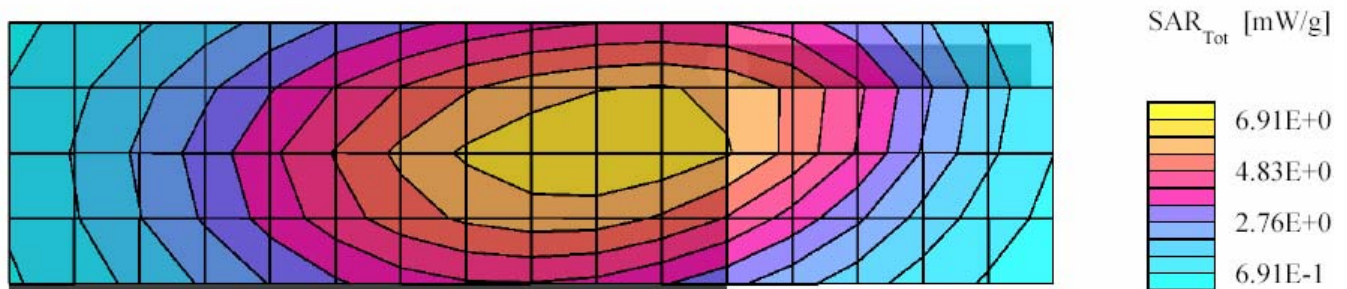
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.95$ mho/m $\epsilon = 55.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 7.08 mW/g, SAR (10g): 5.26 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 138.0, 4.7

Power drift: -0.15 dB



FCC ID: AZ489FT4864; Test Date: 3/8/04

Motorola CGISS EME Laboratory

Run #: JF-040308-05

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 485.025 MHz

SIM TEMP: 19.0 C

START PWR: 5.22 W

ANTENNA KIT #: NAE6549A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: PSM belt clip

AUDIO ACCESSORIES: PSM: NMN6250A

DUT with carry accessory against the phantom

Flat Phantom; Position: (90°,90°);

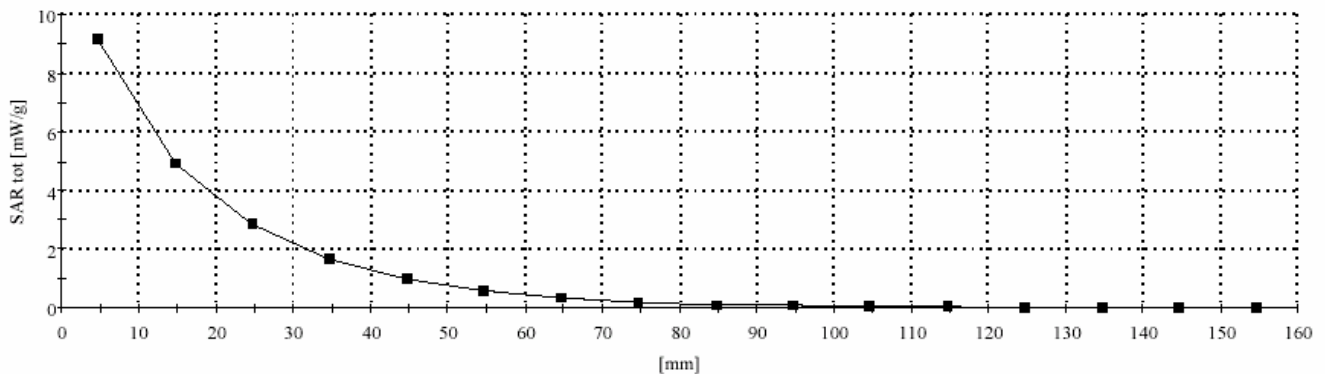
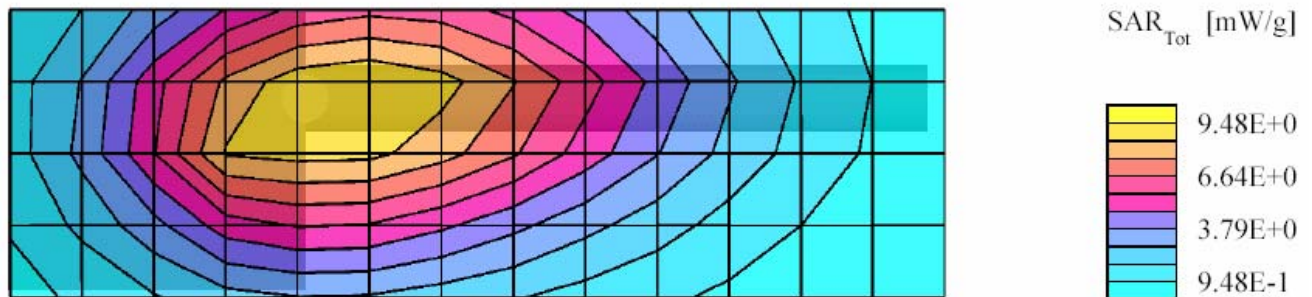
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.95$ mho/m $\epsilon = 55.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 9.73 mW/g, SAR (10g): 6.94 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 19.5, 72.0, 4.7

Power Drift: -0.27 dB



FCC ID: AZ489FT4864; Test Date: 3/10/04

Motorola CGISS EME Laboratory

Run #: JF-040310-03

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 450.025 MHz

SIM TEMP: 20.3 C

START PWR: 5.23 W

ANTENNA KIT #: NAE6547A

BATTERY KIT #: NTN8295A

CARRY ACCESSORIES: PSM belt clip

AUDIO ACCESSORIES: PSM: NMN6250A

DUT with carry accessory against the phantom

Phantom; Position: (90°,90°);

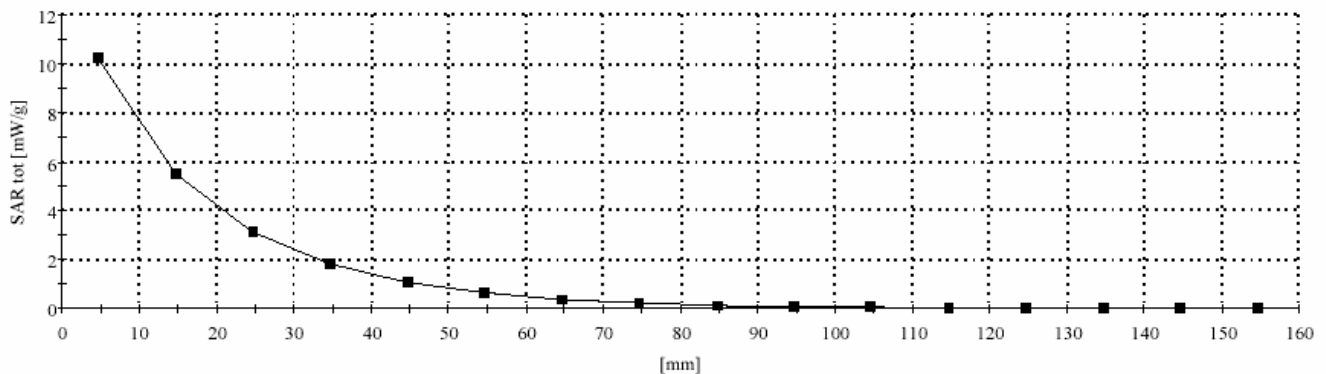
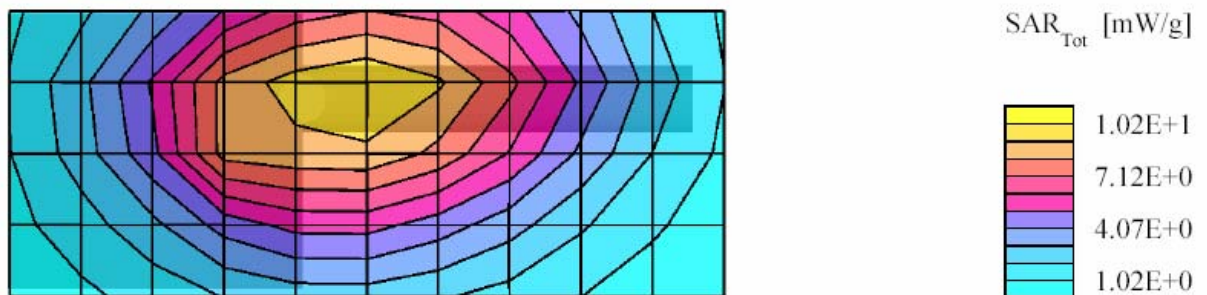
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.00,8.00,8.00); Probe cal date: 16/04/03; Crest factor: 1.0;

FCC Body 485: $\sigma = 0.94$ mho/m $\epsilon = 55.2$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 10.2 mW/g, SAR (10g): 7.26 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 16.5, 75.0, 4.7

Power drift: -0.02 dB



FCC ID: AZ489FT4864; Test Date: 3/11/04

Motorola CGISS EME Laboratory

Run #: JF-040311-09

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 485.025 MHz

SIM TEMP: 20.0 C

START PWR: 5.23 W

ANTENNA KIT #: NAE6549A

BATTERY KIT #: HNN9032A

CARRY ACCESSORIES: None

AUDIO ACCESSORIES: None

DUT with front separated 2.5cm from the phantom

Flat Phantom; Position: (90°,90°);

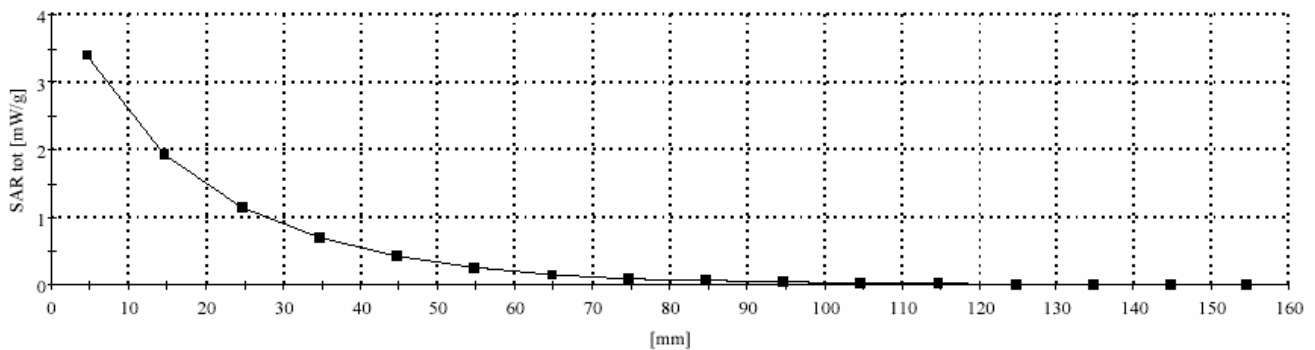
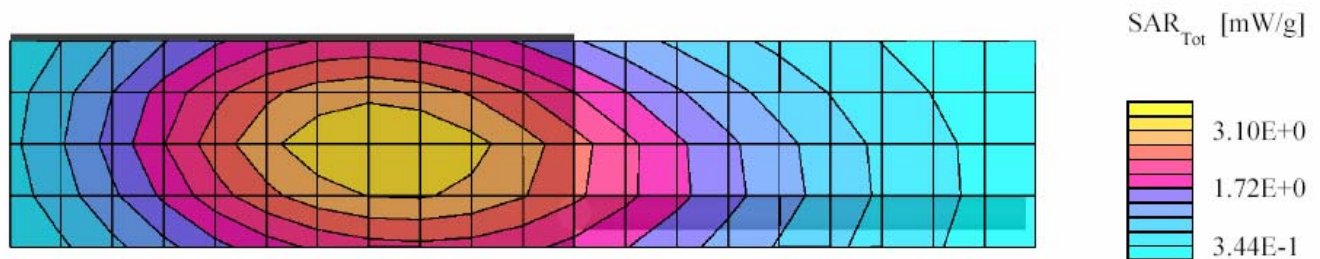
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.10,8.10,8.10); Probe cal date: 16/04/03; Crest factor: 1.0;

IEEE Head 485: $\sigma = 0.91$ mho/m $\epsilon = 44.1$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 3.39 mW/g, SAR (10g): 2.52 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 111.0, 4.7

Power drift: -0.20 dB



FCC ID: AZ489FT4864; Test Date: 3/15/04

Motorola CGISS EME Laboratory

Run #: CM-040315-08

MODEL #: H18SDH9PW7AN SER #: 441

TX FREQ: 471.0250 MHz

SIM TEMP: 19.9 C

START PWR: 5.20 W

ANTENNA KIT #: NAE6548A

BATTERY KIT #: HNN9032A

CARRY ACCESSORIES: None

AUDIO ACCESSORIES: None

DUT with front separated 2.5cm from the phantom

Flat Phantom; Position: (90°,90°);

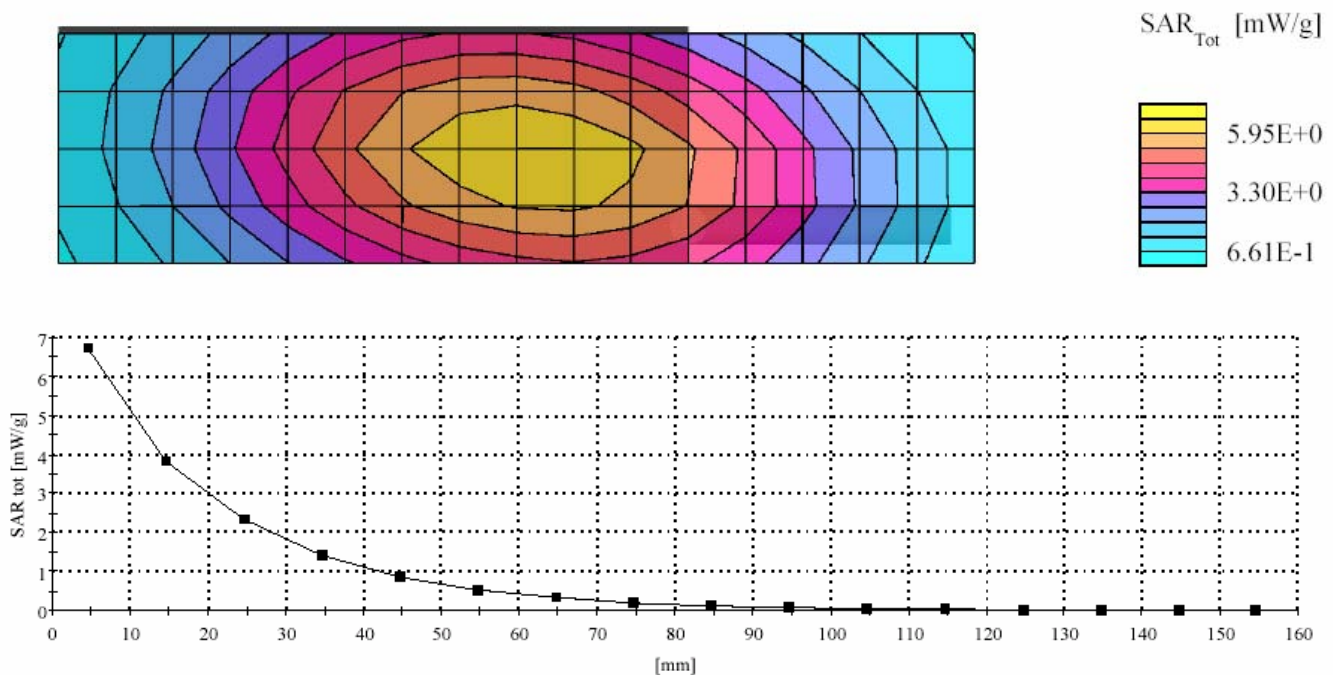
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(8.10,8.10,8.10); Probe cal date: 16/04/03; Crest factor: 1.0;

IEEE Head 485: $\sigma = 0.88$ mho/m $\epsilon = 43.6$ $\rho = 1.00$ g/cm³; DAE3 SN: 401 DAE CAL DATE: 08-21-03

Cube 7x7x7: SAR (1g): 6.71 mW/g, SAR (10g): 5.00 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 124.5, 4.7

Power drift: 0.08 dB



APPENDIX C

Dipole System Performance Check Results

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

SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 2/23/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040223-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

SAR calculated at 1W is 4.65 mW/g (1g avg). Percent from target (including drift) is 0.88 %

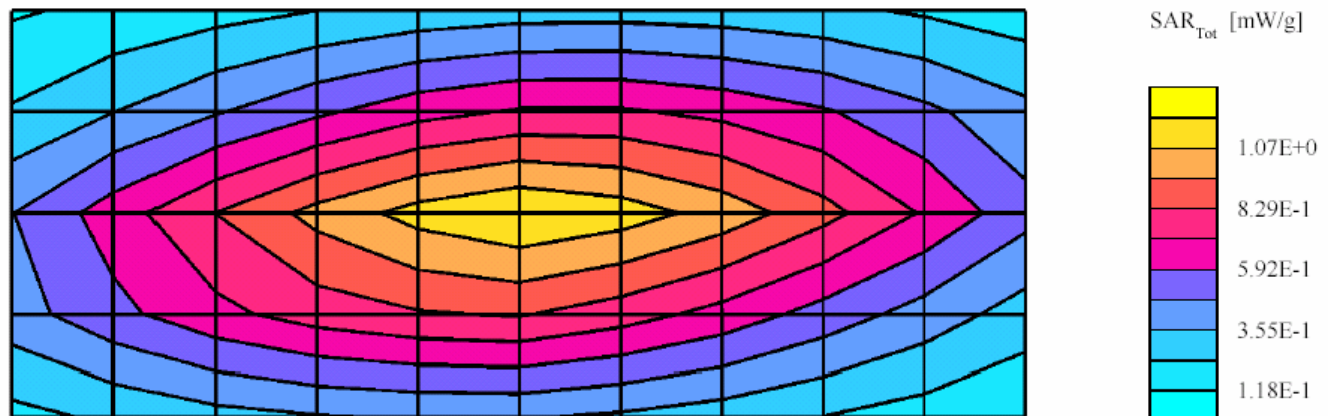
SAR calculated at 1W is 3.08 mW/g (10g avg). Percent from target (including drift) is 0.75 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0;

FCC Body 450: $\sigma = 0.94$ mho/m $\epsilon = 56.5$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.78 mW/g ± 0.03 dB, SAR (1g): 1.16 mW/g ± 0.03 dB, SAR (10g): 0.769 mW/g ± 0.04 dB, (Worst-case extrapolation)Penetration depth: 13.0 (11.7, 14.7) [mm]

Power drift: -0.01 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 2/24/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040224-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.8 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

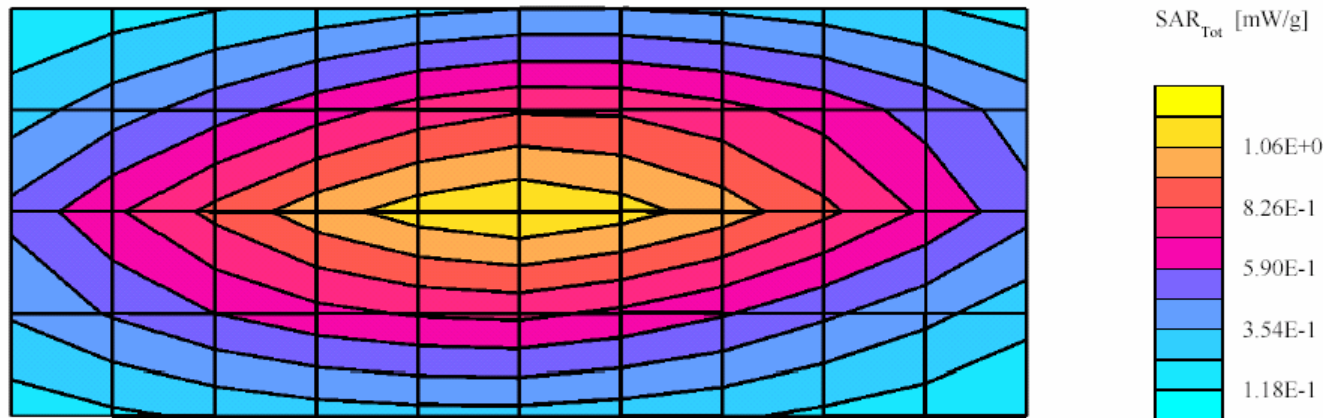
SAR calculated at 1W is 4.64 mW/g (1g avg). Percent from target (including drift) is 0.65 %

SAR calculated at 1W is 3.07 mW/g (10g avg). Percent from target (including drift) is 0.39 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0;
FCC Body 450: $\sigma = 0.94$ mho/m $\epsilon = 56.5$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.78 mW/g $\pm$ 0.02 dB, SAR (1g): 1.16 mW/g $\pm$ 0.03 dB, SAR (10g): 0.768 mW/g $\pm$ 0.03 dB, (Worst-case extrapolation)Penetration depth: 13.1 (11.7, 14.7) [mm]

Power drift: -0.00 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 2/26/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040226-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

SAR calculated at 1W is 4.73 mW/g (1g avg). Percent from target (including drift) is 2.62 %

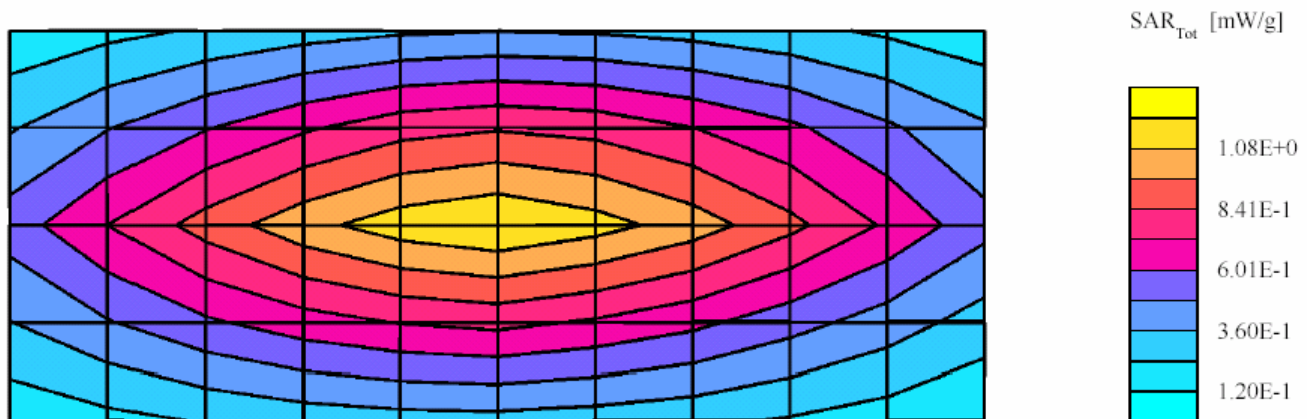
SAR calculated at 1W is 3.14 mW/g (10g avg). Percent from target (including drift) is 2.59 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0;

FCC Body 450: $\sigma = 0.95$ mho/m $\epsilon = 56.5$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.82 mW/g $\pm$ 0.02 dB, SAR (1g): 1.18 mW/g $\pm$ 0.03 dB, SAR (10g): 0.783 mW/g $\pm$ 0.03 dB, (Worst-case extrapolation)Penetration depth: 13.0 (11.7, 14.7) [mm]

Power drift: -0.01 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 2/27/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040227-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

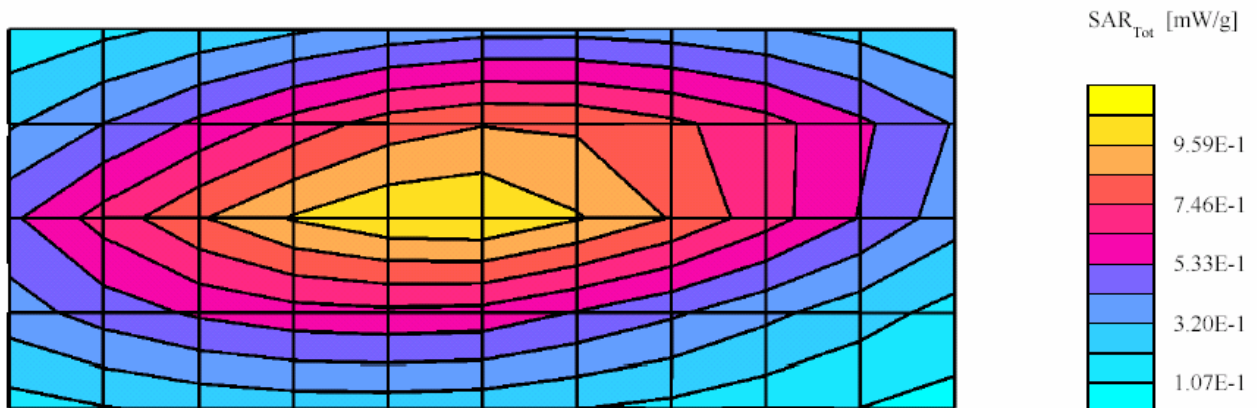
SAR calculated at 1W is 4.28 mW/g (1g avg). Percent from target (including drift) is -7.16 %

SAR calculated at 1W is 2.85 mW/g (10g avg). Percent from target (including drift) is -6.93 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0;
FCC Body 450: $\sigma = 0.94$ mho/m $\epsilon = 56.6$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.64 mW/g ± 0.04 dB, SAR (1g): 1.07 mW/g ± 0.04 dB, SAR (10g): 0.712 mW/g ± 0.04 dB, (Worst-case extrapolation)Penetration depth: 13.1 (11.8, 14.7) [mm]

Power drift: -0.00 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/01/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040301-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power; 250mW

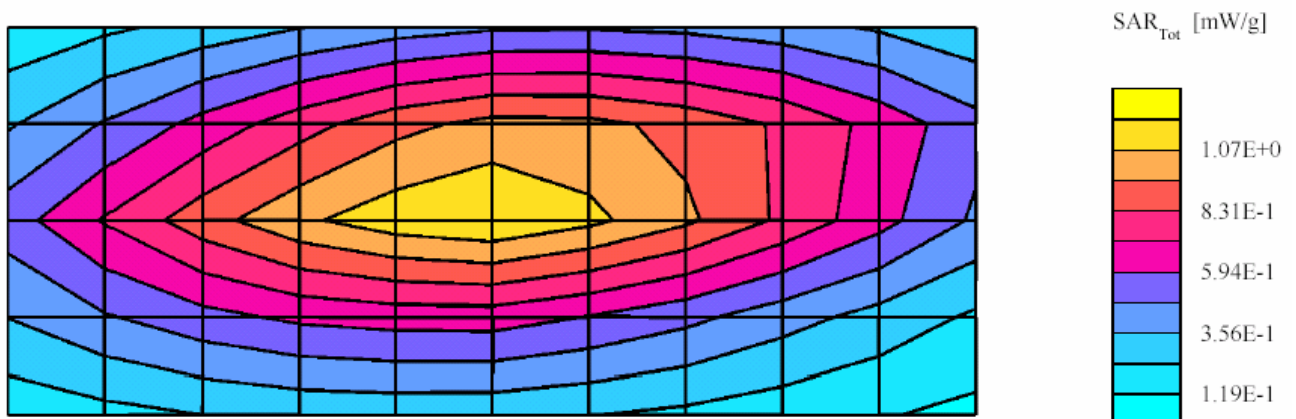
SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

SAR calculated at 1W is 4.82 mW/g (1g avg). Percent from target (including drift) is 4.60 %

SAR calculated at 1W is 3.21 mW/g (10g avg). Percent from target (including drift) is 5.06 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.94$ mho/m $\epsilon = 55.4$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003 Cubes (2): Peak: 1.84 mW/g ± 0.02 dB, SAR (1g): 1.20 mW/g ± 0.03 dB, SAR (10g): 0.800 mW/g ± 0.03 dB, (Worst-case extrapolation) Penetration depth: 13.1 (11.8, 14.8) [mm] Power drift: -0.02 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/02/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040302-01

TX Freq: 450 MHz

Sim Tissue Temp: 19.7 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

SAR calculated at 1W is 4.69 mW/g (1g avg). Percent from target (including drift) is 1.75 %

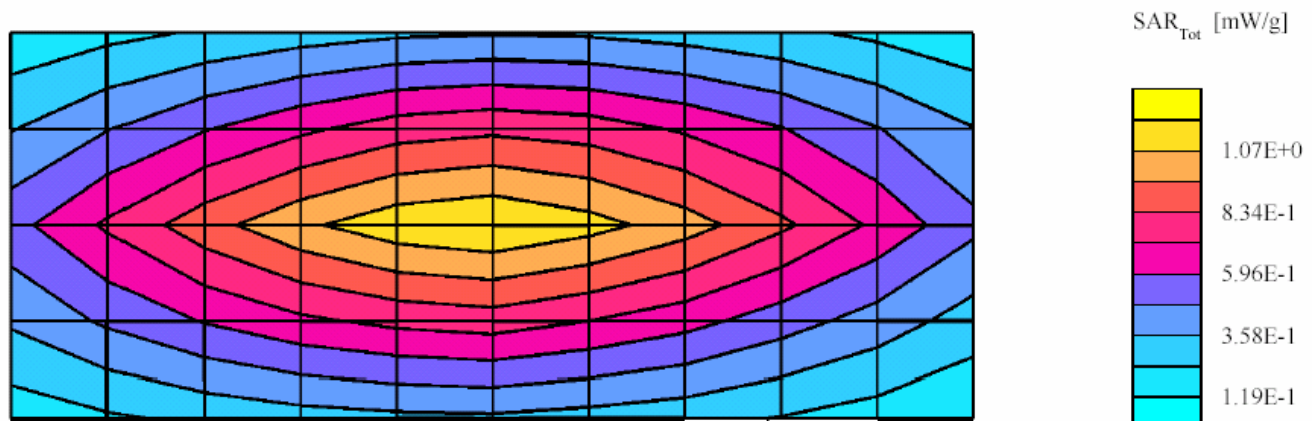
SAR calculated at 1W is 3.13 mW/g (10g avg). Percent from target (including drift) is 2.33 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0;

FCC Body 450: $\sigma = 0.93$ mho/m $\epsilon = 55.3$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.79 mW/g $\pm$ 0.02 dB, SAR (1g): 1.17 mW/g $\pm$ 0.02 dB, SAR (10g): 0.781 mW/g $\pm$ 0.02 dB, (Worst-case extrapolation) Penetration depth: 13.2 (11.8, 14.9) [mm]

Power drift: -0.01 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/03/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040303-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.8 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

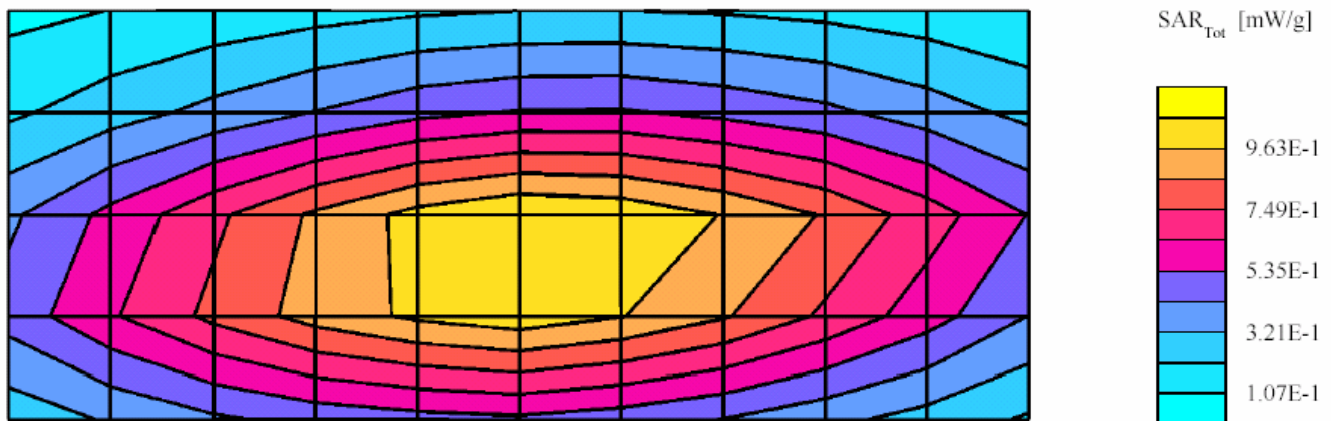
SAR calculated at 1W is 4.66 mW/g (1g avg). Percent from target (including drift) is 1.12 %

SAR calculated at 1W is 3.09 mW/g (10g avg). Percent from target (including drift) is 1.12 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.94\text{mho/m}$ $\epsilon = 55.2$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.76 mW/g ± 0.03 dB, SAR (1g): 1.16 mW/g ± 0.03 dB, SAR (10g): 0.770 mW/g ± 0.03 dB, (Worst-case extrapolation)Penetration depth: 13.1 (11.8, 14.7) [mm]

Power drift: -0.02 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/04/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040304-01

TX Freq: 450 MHz

Sim Tissue Temp: 19.8 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

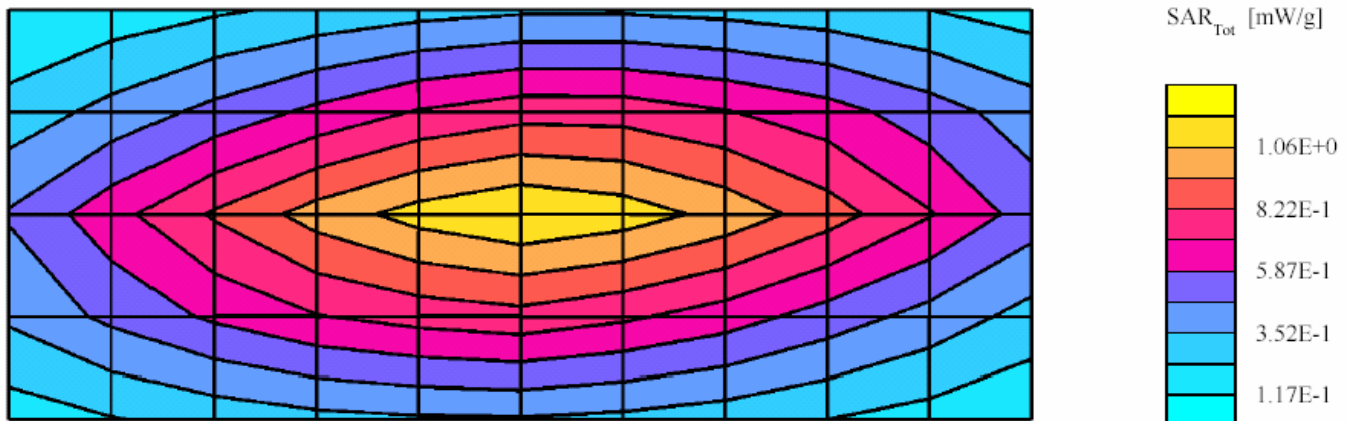
SAR calculated at 1W is 4.64 mW/g (1g avg). Percent from target (including drift) is 0.71 %

SAR calculated at 1W is 3.09 mW/g (10g avg). Percent from target (including drift) is 1.06 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.92$ mho/m $\epsilon = 54.9$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.75 mW/g $\pm$ 0.03 dB, SAR (1g): 1.15 mW/g $\pm$ 0.03 dB, SAR (10g): 0.766 mW/g $\pm$ 0.03 dB, (Worst-case extrapolation) Penetration depth: 13.2 (11.8, 14.9) [mm]

Power drift: -0.04 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/05/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040305-01

TX Freq: 450 MHz

Sim Tissue Temp: 19.7 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

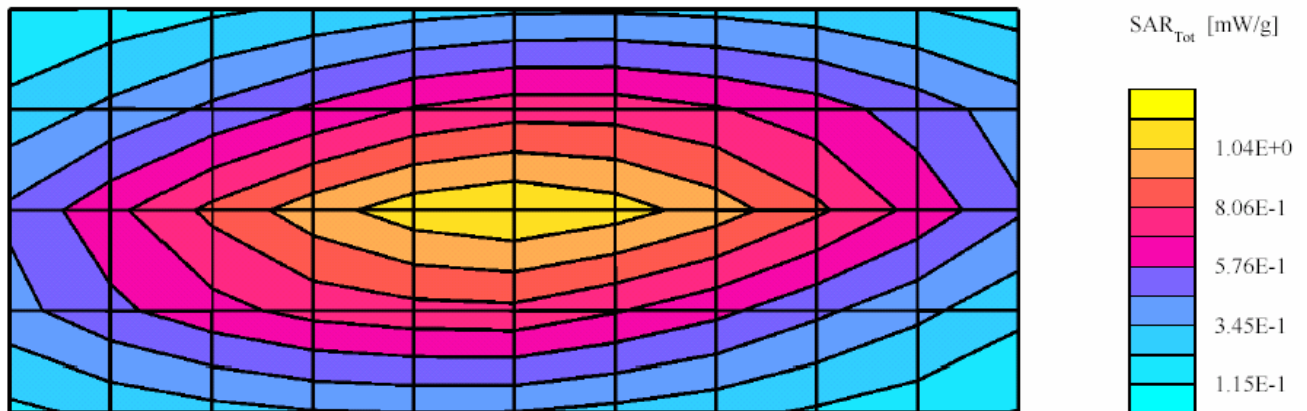
SAR calculated at 1W is 4.52 mW/g (1g avg). Percent from target (including drift) is -1.95 %

SAR calculated at 1W is 3.02 mW/g (10g avg). Percent from target (including drift) is -1.44 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.91\text{mho/m}$ $\epsilon = 56.2$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.72 mW/g ± 0.04 dB, SAR (1g): 1.13 mW/g ± 0.04 dB, SAR (10g): 0.754 mW/g ± 0.03 dB, (Worst-case extrapolation) Penetration depth: 13.3 (11.9, 15.0) [mm]

Power drift: -0.00 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/08/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040308-01

TX Freq: 450 MHz

Sim Tissue Temp: 19.4 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

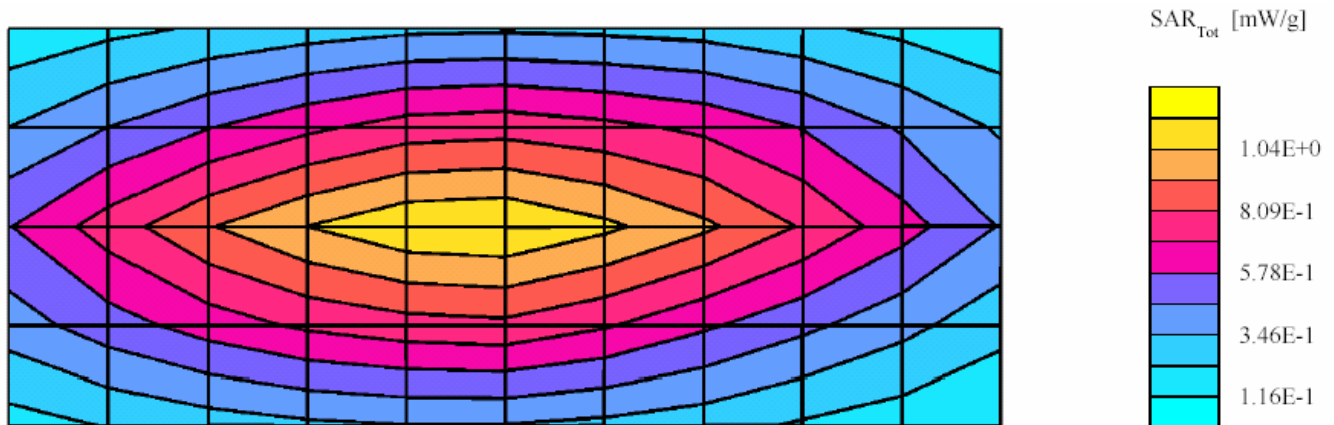
SAR calculated at 1W is 4.57 mW/g (1g avg). Percent from target (including drift) is -0.86 %

SAR calculated at 1W is 3.07 mW/g (10g avg). Percent from target (including drift) is 0.23 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.91\text{mho/m}$ $\epsilon = 55.7$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.74 mW/g $\pm 0.04\text{ dB}$, SAR (1g): 1.14 mW/g $\pm 0.04\text{ dB}$, SAR (10g): 0.765 mW/g $\pm 0.04\text{ dB}$, (Worst-case extrapolation) Penetration depth: 13.3 (11.9, 15.1) [mm]

Power drift: -0.01 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/10/04

Motorola CGISS EME Lab

Run #: Sys Perf-Bd-040310-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.61 mW/g (1g avg, including drift)

SAR target at 1W is 3.06 mW/g (10g avg, including drift)

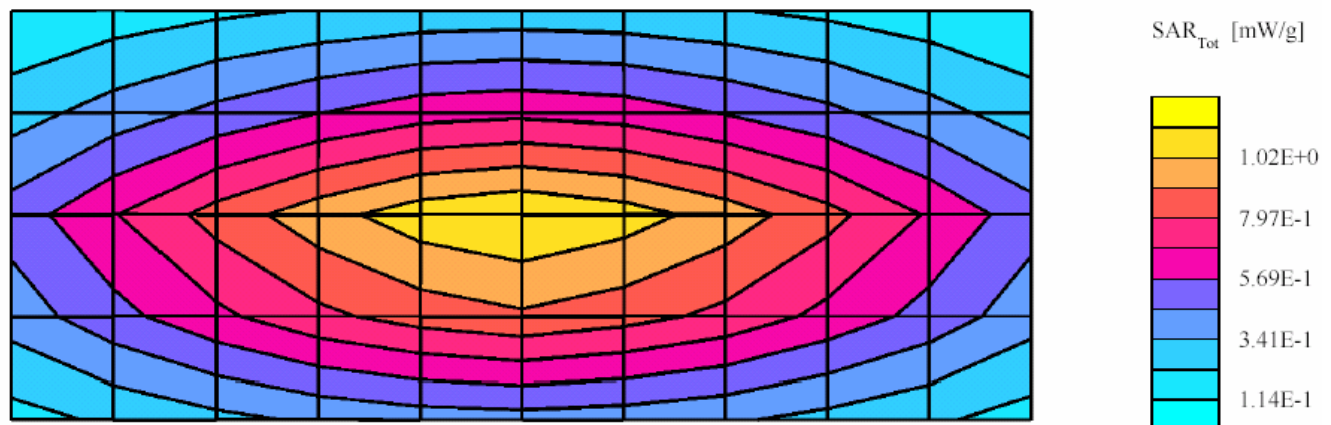
SAR calculated at 1W is 4.57 mW/g (1g avg). Percent from target (including drift) is -0.86 %

SAR calculated at 1W is 3.05 mW/g (10g avg). Percent from target (including drift) is - 0.29 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.00,8.00,8.00); Crest factor: 1.0; FCC Body 450: $\sigma = 0.91$ mho/m $\epsilon = 55.8$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.73 mW/g ± 0.04 dB, SAR (1g): 1.14 mW/g ± 0.04 dB, SAR (10g): 0.761 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 13.4 (12.0, 15.1) [mm]

Power drift: -0.01 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/11/04

Motorola CGISS EME Lab

Run #: Sys Perf-Hd-040311-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.3 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.85 mW/g (1g avg, including drift)

SAR target at 1W is 3.15 mW/g (10g avg, including drift)

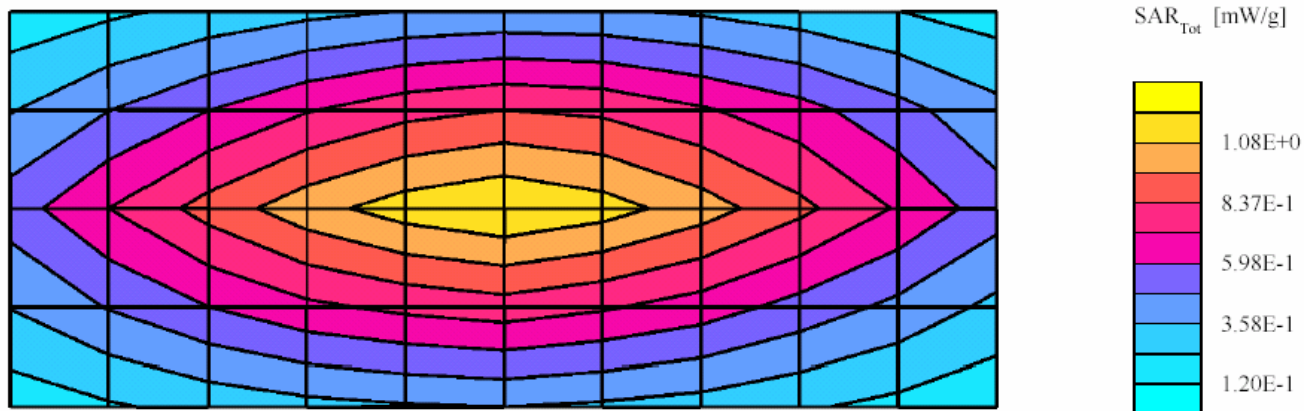
SAR calculated at 1W is 4.70 mW/g (1g avg). Percent from target (including drift) is -3.06 %

SAR calculated at 1W is 3.12 mW/g (10g avg). Percent from target (including drift) is - 0.88 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.10,8.10,8.10); Crest factor: 1.0; IEEE Head 450: $\sigma = 0.88$ mho/m $\epsilon = 44.8$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.80 mW/g ± 0.04 dB, SAR (1g): 1.17 mW/g ± 0.04 dB, SAR (10g): 0.777 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 12.8 (11.7, 14.3) [mm]

Power drift: -0.02 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/12/04

Motorola CGISS EME Lab

Run #: Sys Perf-Hd-040312-01

TX Freq: 450 MHz

Sim Tissue Temp: 20.3 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.85 mW/g (1g avg, including drift)

SAR target at 1W is 3.15 mW/g (10g avg, including drift)

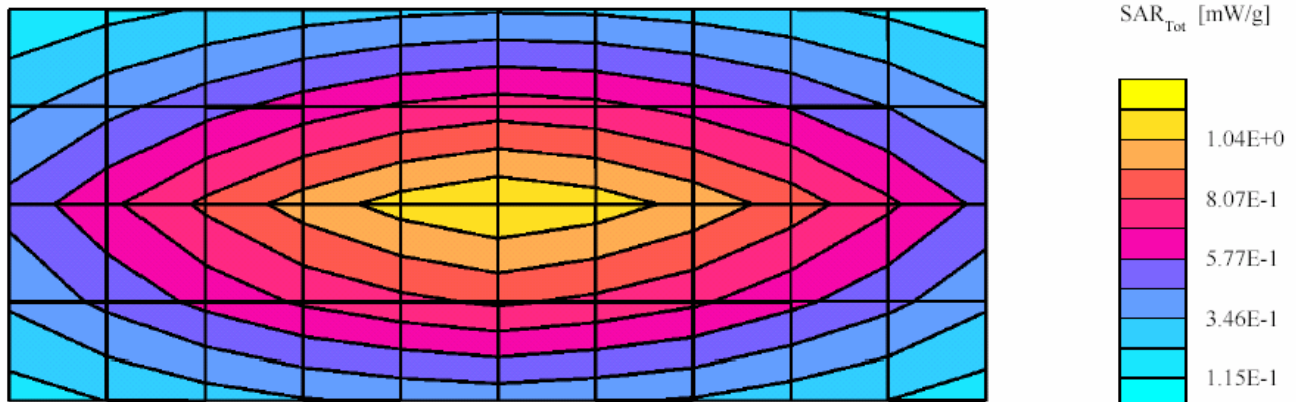
SAR calculated at 1W is 4.58 mW/g (1g avg). Percent from target (including drift) is -5.5 %

SAR calculated at 1W is 3.03 mW/g (10g avg). Percent from target (including drift) is -3.9 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.10,8.10,8.10); Crest factor: 1.0; IEEE Head 450: $\sigma = 0.87$ mho/m $\epsilon = 44.8$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.74 mW/g $\pm$ 0.02 dB, SAR (1g): 1.14 mW/g $\pm$ 0.03 dB, SAR (10g): 0.753 mW/g $\pm$ 0.03 dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.7, 14.4) [mm]

Power drift: -0.02 dB



SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 3/15/04

Motorola CGISS EME Lab

Run #: Sys Perf-Hd-040315-01

TX Freq: 450 MHz

Sim Tissue Temp: 19.9 (Celsius)

Start Power; 250mW

SAR target at 1W is 4.85 mW/g (1g avg, including drift)

SAR target at 1W is 3.15 mW/g (10g avg, including drift)

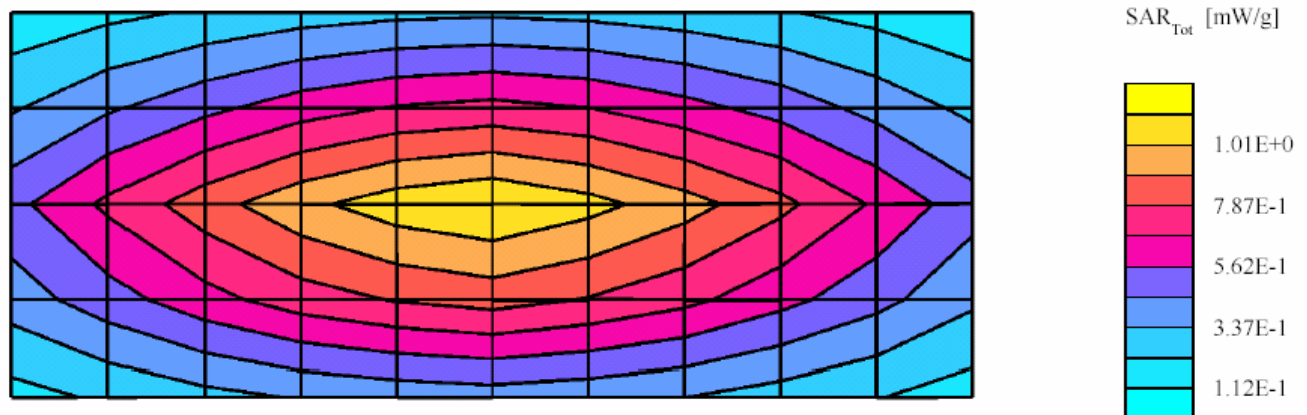
SAR calculated at 1W is 4.58 mW/g (1g avg). Percent from target (including drift) is -8 %

SAR calculated at 1W is 3.03 mW/g (10g avg). Percent from target (including drift) is - 6.3 %

Flat Phantom; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(8.10,8.10,8.10); Crest factor: 1.0; IEEE Head 450: $\sigma = 0.86$ mho/m $\sigma = 44.3$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 1.69 mW/g ± 0.05 dB, SAR (1g): 1.11 mW/g ± 0.04 dB, SAR (10g): 0.734 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 12.9 (11.7, 14.4) [mm]

Power drift: -0.02 dB



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>01/15/2004</u>	Frequency (MHz):	<u>450</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>450-FCC Body</u>
Robot System:	<u>CGISS-2</u>	Ambient Temp.(°C):	<u>22.5</u>
Probe Serial #:	<u>1383</u>	Tissue Temp.(°C):	<u>20.8</u>
DAE Serial #:	<u>DAE3V1 SN406</u>		

Tissue Characteristics	Phantom Type/SN:	<u>80602002C/S7</u>	
Permittivity:	<u>55.8</u>	Distance (mm):	<u>15</u>
Conductivity:	<u>0.92</u>		

Reference Source:	<u>Dipole</u> (Dipole)
Reference SN:	<u>1001</u>
Power to Dipole:	<u>250</u> mW

Measured SAR Value:	<u>1.14</u> mW/g (1g avg.), <u>0.756</u> mW/g (10g avg.)
Power Drift:	<u>-0.05</u> dB

New Target/Measured SAR Value:	<u>4.61</u> mW/g (1g avg.), <u>3.06</u> mW/g (10g avg.)
(Normalized to 1.0 W, with drift compensation)	

Test performed by: Kim Uong

Initial: 

01/15/04

Dipole D450V2 SN1001; Test date:01/15/04

Run #: Sys Perf-R2-040115-01

Phantom #: 80302002C-S7

Model #: D450V2 SN: 1001

Robot: CGISS-2

DAE3: SN: 406 (11/20/03)

Tester: K. Uong

TX Freq: 450 MHz

Sim Tissue Temp: 20.8 C

Start Power: 250mW

Target:

System performance target: 4.61 mW/g for 1g SAR, 3.06 mW/g for 10g SAR.

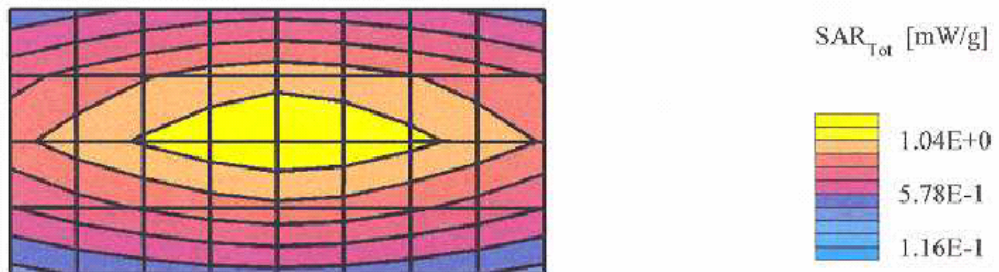
Flat (2); Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Crest factor: 1.0;

FCC Body 450: $\sigma = 0.92$ mho/m $\epsilon_r = 55.8$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 1.77 mW/g ± 0.00 dB, SAR (1g): 1.14 mW/g ± 0.01 dB, SAR (10g): 0.756 mW/g ± 0.01 dB, (Worst-case extrapolation)

Penetration depth: 12.8 (11.5, 14.6) [mm]

Powerdrift: -0.05 dB



Motorola CGISS EME Lab

SYSTEM VALIDATION

Date:	<u>01/15/2004</u>	Frequency (MHz):	<u>450</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>450-IEEE Head</u>
Robot System:	<u>CGISS-2</u>	Ambient Temp.(°C):	<u>21.7</u>
Probe Serial #:	<u>1383</u>	Tissue Temp.(°C):	<u>20.8</u>
DAE Serial #:	<u>DAE3V1 SN406</u>		

Tissue Characteristics	Phantom Type/SN:	<u>80302002B/S6</u>	
Permittivity:	<u>44.0</u>	Distance (mm):	<u>15</u>
Conductivity:	<u>0.88</u>		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 1001

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

Target SAR Value: 4.90 mW/g (1g avg.), 3.30 mW/g (10g avg.)
(Normalized to 1.0 W)

Measured SAR Value: 1.21 mW/g (1g avg.), 0.785 mW/g (10g avg.)
Power Drift: -0.01 dB

Measured SAR Value: 4.85 mW/g (1g avg.), 3.15 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Percent Difference From Target (must be within System Uncertainty): 1.0 % (1g avg)
4.6 % (10g avg)

Test performed by: Kim Uong

Initial: 

JF 2/14/02

01/15/04

Dipole D450V2 SN1001; Test date:01/15/04

Run #: Sys Perf-R2-040114-03

Phantom #: 80302002B/S6

Model #: D450V2 SN: 1001

Robot: CGISS-2

DAE3: SN: 406 (11/20/03)

Tester: K. Uong

TX Freq: 450 MHz

Sim Tissue Temp: 20.8 C

Start Power: 250mW

Target:

4.90 mW/g for 1g SAR, 3.30 mW/g for 10g SAR +/- 10% from IEEE-P1528.

SAR calculated 1g is 4.85 mW/g percent from target (including drift) is 1.0 %

SAR Calculated 10g is 3.15 mW/g Percent from target (including drift) is 4.6 %

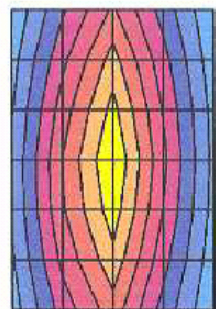
Flat; Probe: ET3DV6 - SN1383 (Cal Date 26 February 2003); ConvF(7.50,7.50,7.50); Crest factor: 1.0; IEEE

Head 450 MHz: $\sigma = 0.88$ mho/m $\epsilon_r = 44.0$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 1.90 mW/g ± 0.02 dB, SAR (1g): 1.21 mW/g ± 0.01 dB, SAR (10g): 0.785 mW/g ± 0.01 dB, (Worst-case extrapolation)

Penetration depth: 12.2 (10.9, 13.9) [mm]

Powerdrift: -0.01 dB



SAR_{Tot} [mW/g]



Motorola CGISS EME Lab