



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: May 20, 2004
Report Revision: Rev. O
Manufacturer: Motorola
Product Description: 1:6, 1:3, 81:120, 1:12 TDM; 64 QAM, 16 QAM & QPSK
Modulation; 0.6 W Pulse average
FCC ID: AZ489FT5824
Device Model: H63XAN6RR4AN/NUF3898A

Test Period: 4/29/04 - 5/17/04

Technician: Clint Miller (EME Technician Electronics II)

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

5/20/04

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

Date Approved

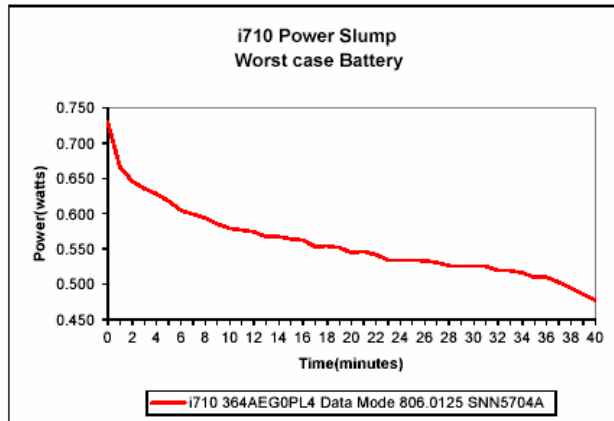
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APPENDIX A

Power Slump Data/Shortened Scan

DUT Power versus time data

	i710
	364AEG0PL4
	Data Mode
	806.0125
	SNN5704A
Time (minutes)	Power(watts)
0	0.730
1	0.667
2	0.646
3	0.636
4	0.628
5	0.618
6	0.605
7	0.599
8	0.594
9	0.585
10	0.579
11	0.577
12	0.574
13	0.567
14	0.567
15	0.564
16	0.563
17	0.553
18	0.554
19	0.552
20	0.545
21	0.546
22	0.542
23	0.534
24	0.534
25	0.534
26	0.533
27	0.531
28	0.526
29	0.525
30	0.526
31	0.525
32	0.520
33	0.519
34	0.516
35	0.510
36	0.510
37	0.503
38	0.494
39	0.486
40	0.477



Shortened Scan Results

FCC ID: AZ489FT5824; Test Date: 5/17/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040517-01-JF

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPL4

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 0.725 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NONE

Shortened scan reflect highest S.A.R. producing configuration; Run time 9.5 minutes.

Representative “normal” scan run time was 26 minutes

“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.37mW/g; 10-g Avg. = 1.01mW/g

“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.36mW/g; 10-g Avg. = 1.01mW/g

(see section 7.1 run # R3-040516-05-CM)

DUT with carry case against phantom

Flat Phantom; Position: (90°,90°);

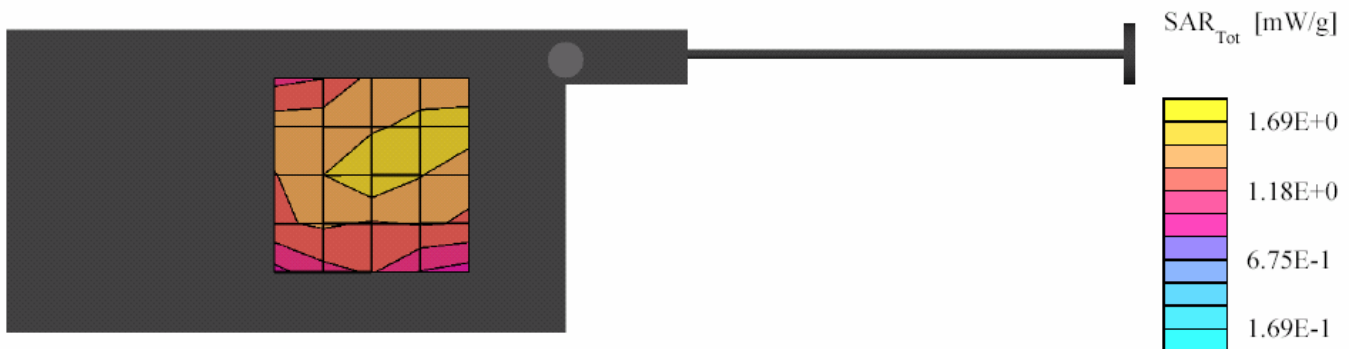
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 53.5$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 5x5x7: SAR (1g): 1.18 mW/g, SAR (10g): 0.866 mW/g, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 1.18 mW/g, SAR (10g): 0.866 mW/g

Power Drift: -0.65 dB



APPENDIX B

Data Results

FCC ID: AZ489FT5824; Test Date: 5/3/04

Motorola CGISS EME Laboratory

Run #: REAR-R3-040503-07-JF

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.3 (Celsius)

Start Power: 0.710 W

Antenna: Out

Battery Kit: SNN5704A

Carry Case: NONE

Audio/Data Acc.: NONE

DUT at right ear in cheek touch position

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

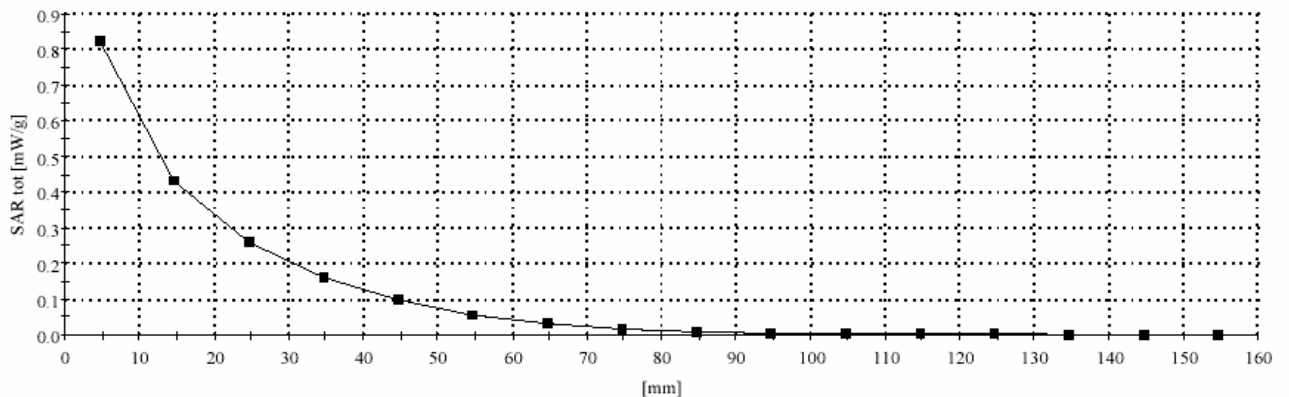
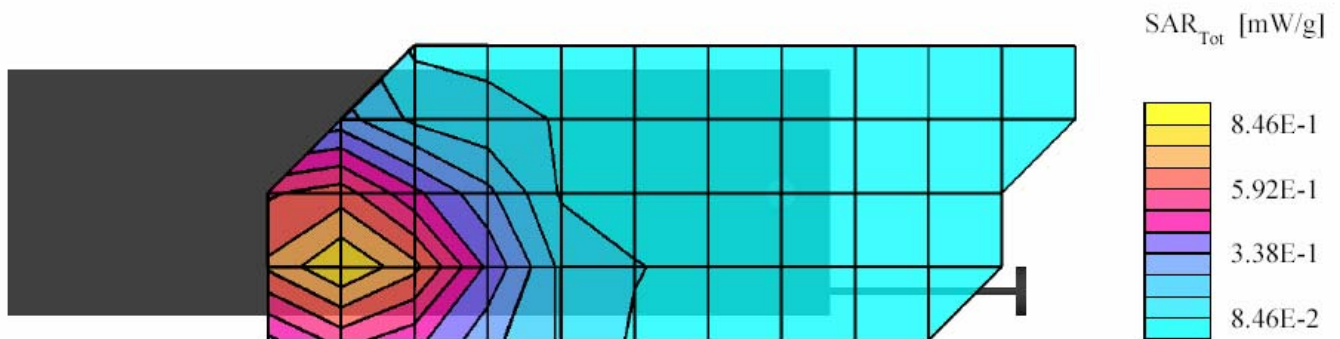
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 3.0; IEEE

Head 813 MHz: $\sigma = 0.93$ mho/m $\epsilon = 43.6$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.865 mW/g, SAR (10g): 0.584 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 13.5, 16.5, 4.7

Power Drift: -0.64 dB



FCC ID: AZ489FT5824; Test Date: 5/5/04

Motorola CGISS EME Laboratory

Run #: Face-R3-040505-04-JF

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power: 0.728 W

Antenna: In

Battery Kit: SNN5704A

Carry case: NONE

Audio/Data Acc.: NONE

DUT front towards phantom w/ 2.5 cm separation (Flip Closed)

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

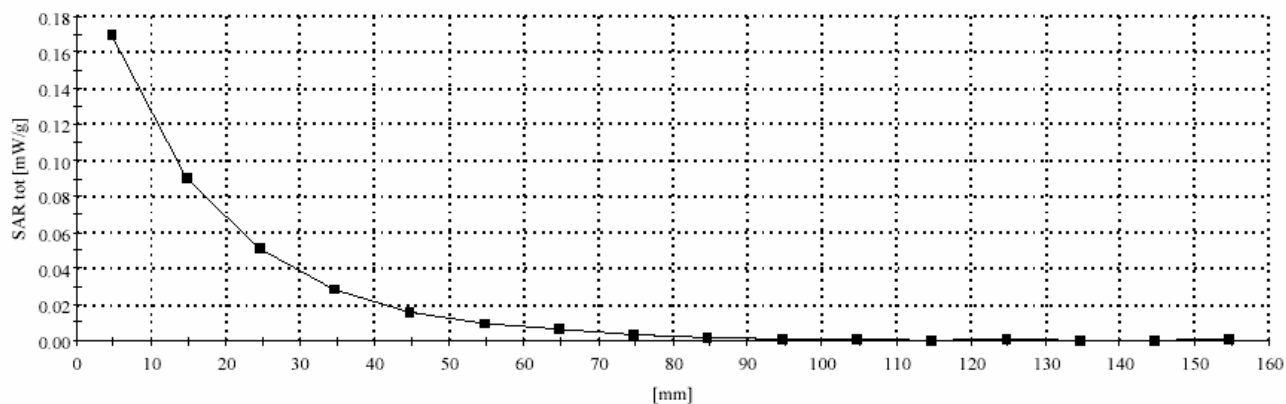
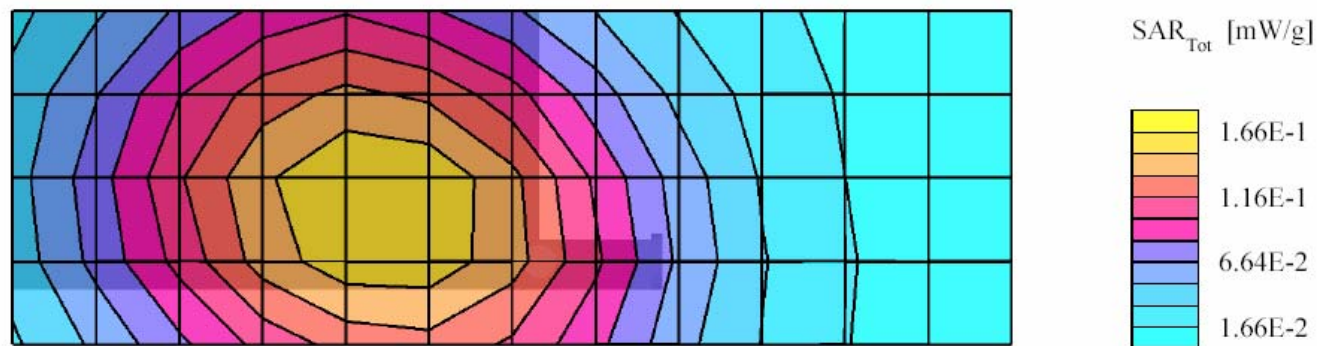
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE

Head 813 MHz: $\sigma = 0.93$ mho/m $\epsilon = 43.4$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.170 mW/g, SAR (10g): 0.122 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 36.0, 67.5, 4.7

Power drift: 0.04 dB



FCC ID: AZ489FT5824; Test Date: 5/10/04

Motorola CGISS EME Laboratory

Run #: REAR-R3-040510-05-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 896.01875 MHz

Sim Tissue Temp: 20.1 (Celsius)

Start Power: 0.725 W

Antenna: Out

Battery Kit: SNN5704A

Carry Case: NONE

Audio/Data Acc.: NONE

DUT at right ear in Cheek Touch position

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

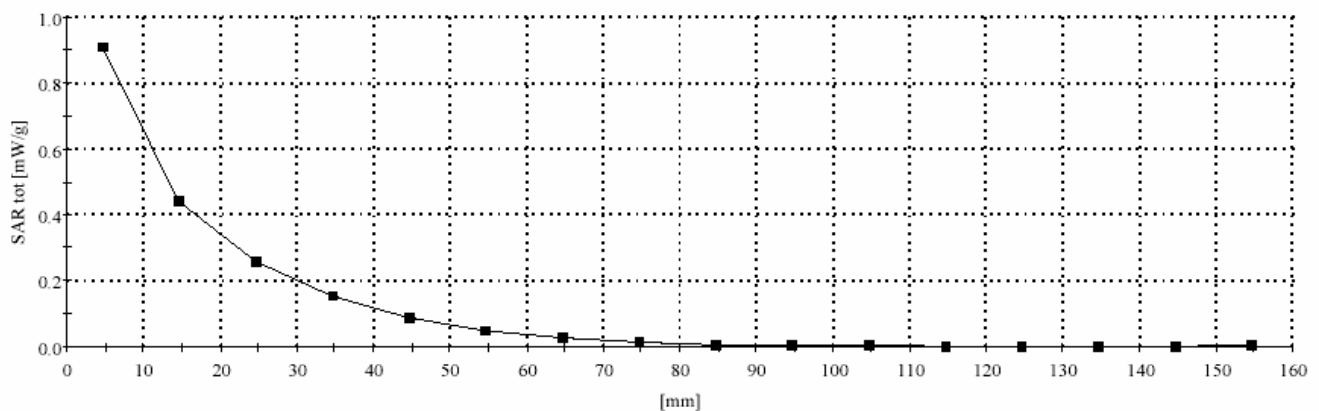
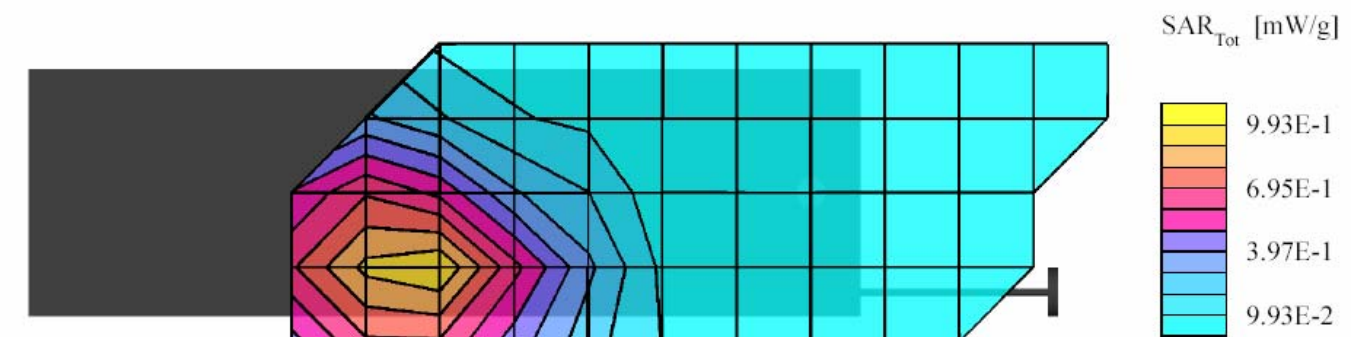
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 3.0; IEEE

Head 899: $\sigma = 1.01$ mho/m $\epsilon = 42.1$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.924 mW/g, SAR (10g): 0.615 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 25.5, 12.0, 4.7

Power drift: -0.94 dB



FCC ID: AZ489FT5824; Test Date: 5/11/04

Motorola CGISS EME Laboratory

Run #: Face-R3-040511-04-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 899.66875 MHz

Sim Tissue Temp: 21.1 (Celsius)

Start Power: 0.727 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NONE

Audio/Data Acc.: NONE

DUT front towards phantom w/ 2.5 cm separation distance (Flip closed)

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

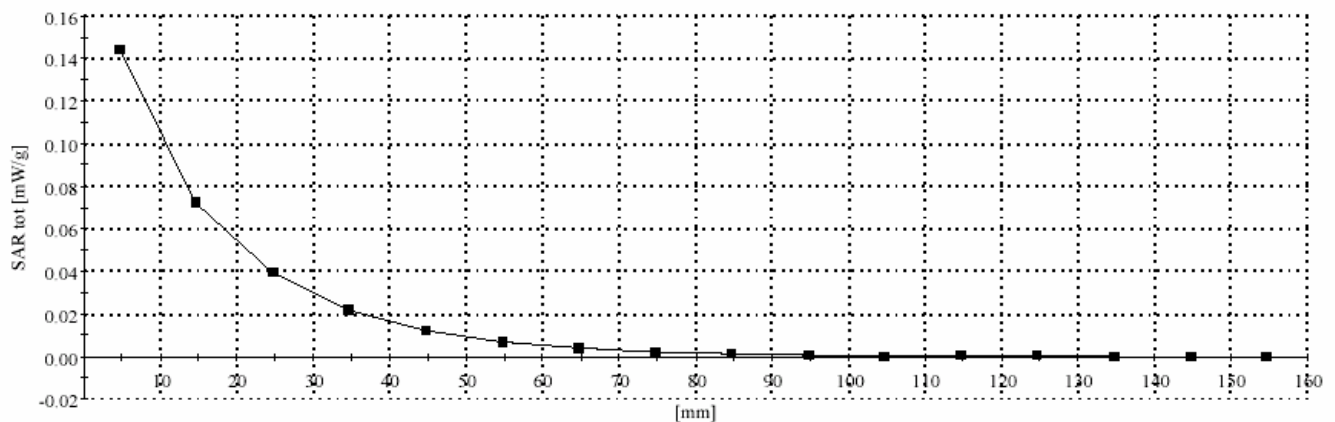
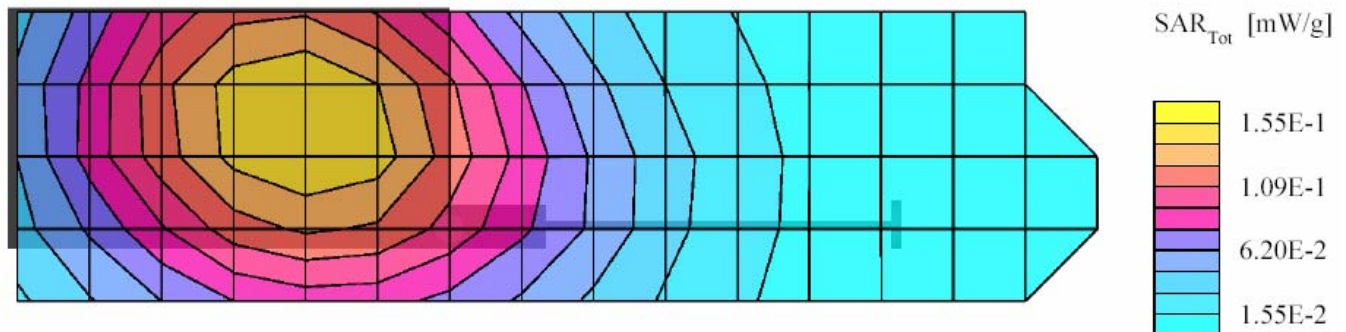
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE

Head 899: $\sigma = 1.01$ mho/m $\epsilon = 42.3$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.153 mW/g, SAR (10g): 0.108 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 60.0, 4.7

Power Drift: -0.29 dB



FCC ID: AZ489FT5824; Test Date: 5/11/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040511-06-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power: 0.728 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NONE

DUT with carry case against the phantom

Flat Phantom; Position: (90°,90°);

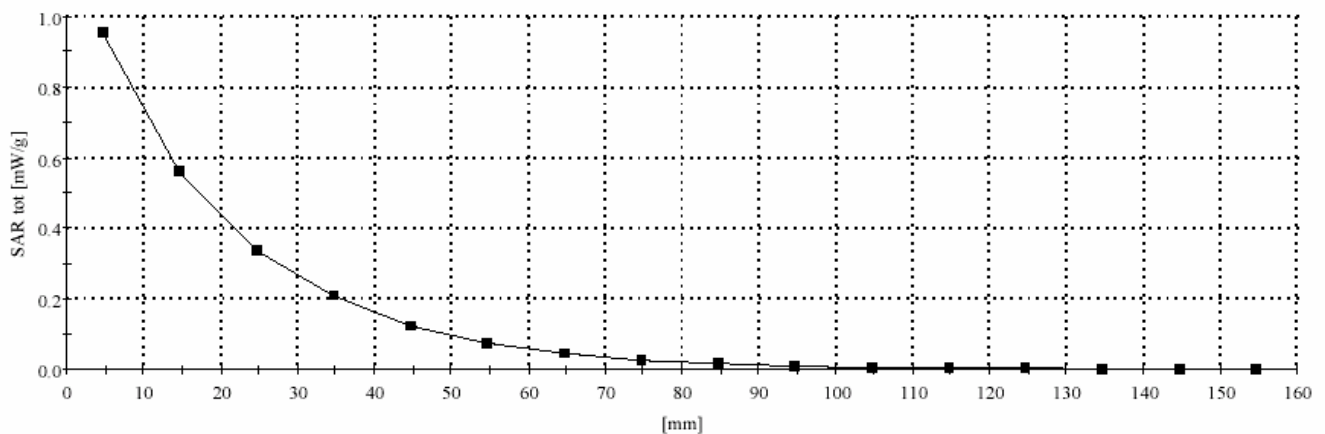
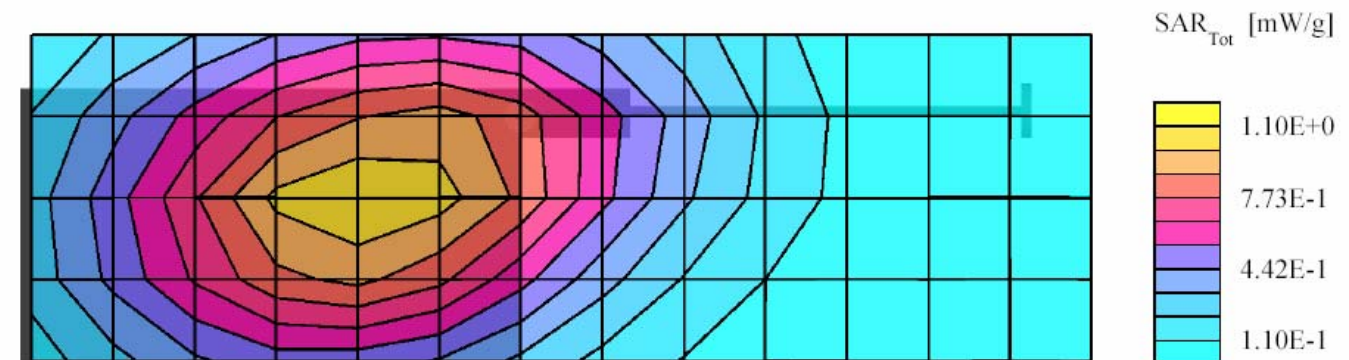
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 53.9$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.747 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 58.5, 4.7

Power drift: -0.72 dB



FCC ID: AZ489FT5824; Test Date: 5/12/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040512-07-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power: 0.728 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NKN6559A

DUT w/ carry case against the phantom

Flat Phantom; Position: (90°,90°);

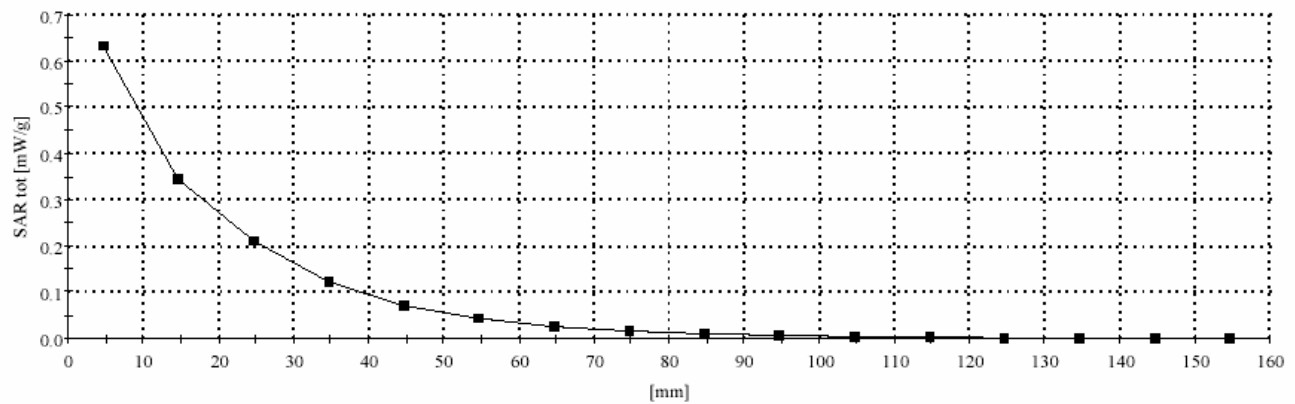
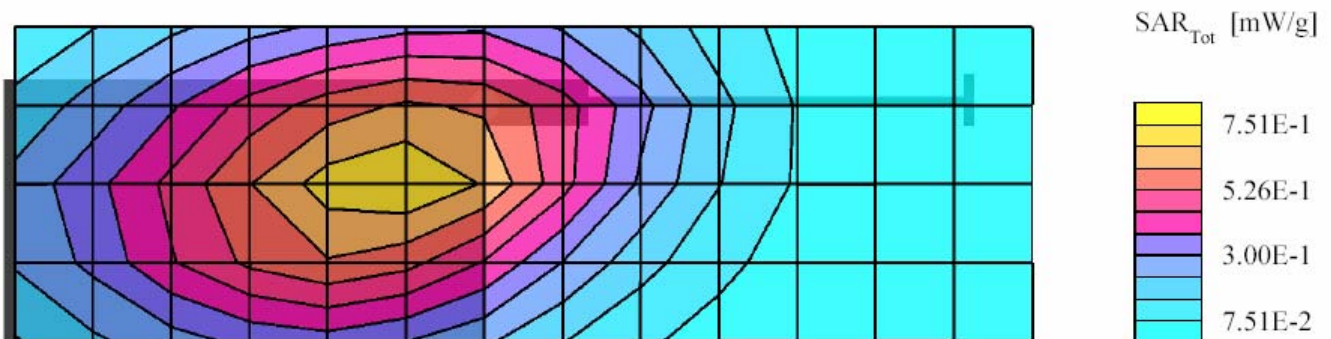
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 54.0$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.677 mW/g, SAR (10g): 0.488 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 19.5, 42.0, 4.7

Power Drift: -0.87 dB



FCC ID: AZ489FT5824; Test Date: 5/16/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040516-05-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPL4

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 0.705 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NONE

DUT carry case against the phantom

Flat Phantom; Position: (90°,90°);

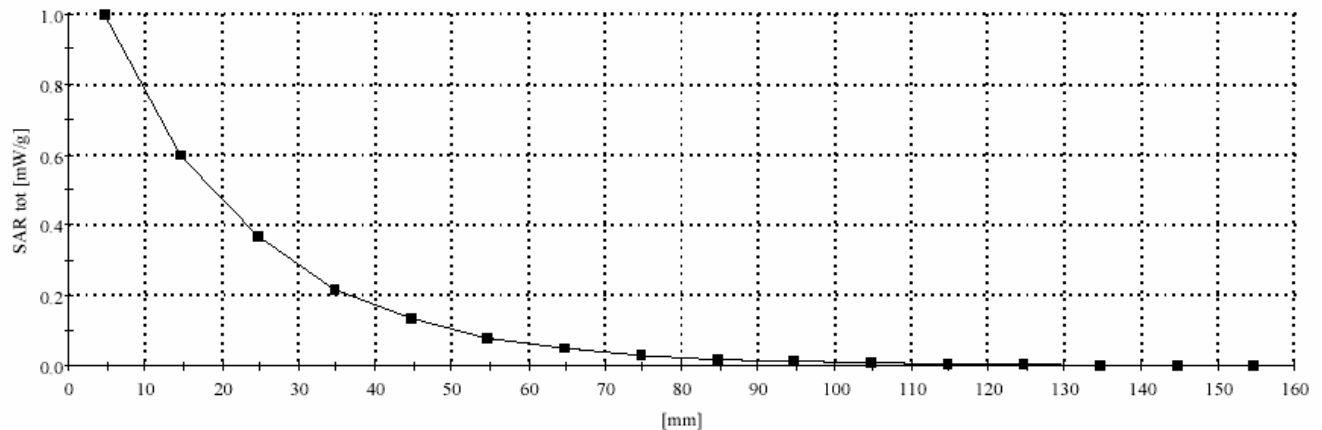
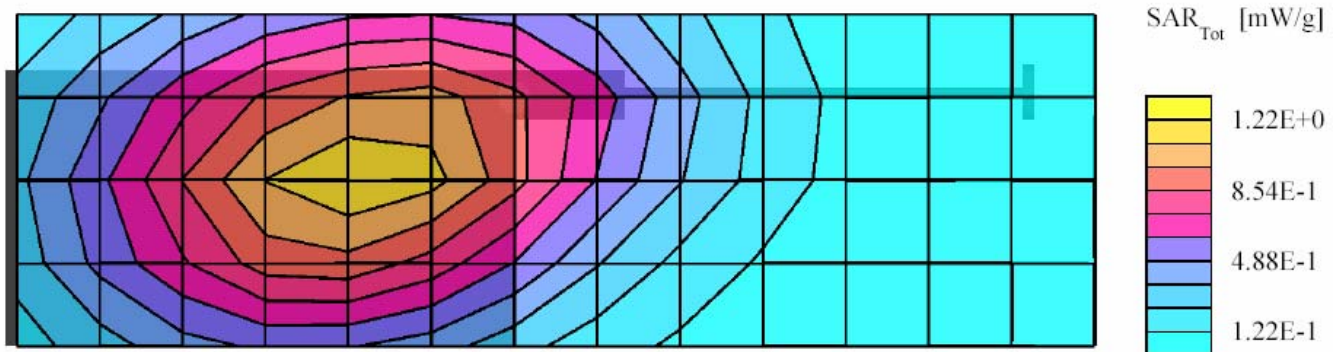
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 53.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 1.07 mW/g, SAR (10g): 0.791 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 63.0, 4.7

Power Drift: -1.05 dB



FCC ID: AZ489FT5824; Test Date: 5/13/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040513-06-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power: 0.730 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NNTN4033A

DUT carry case against the phantom

Flat Phantom; Position: (90°,90°);

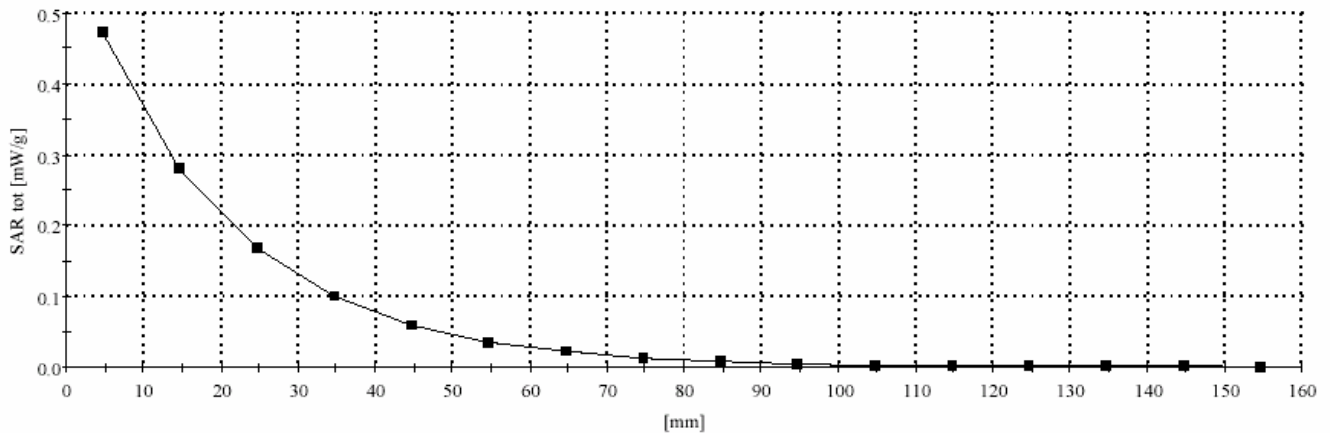
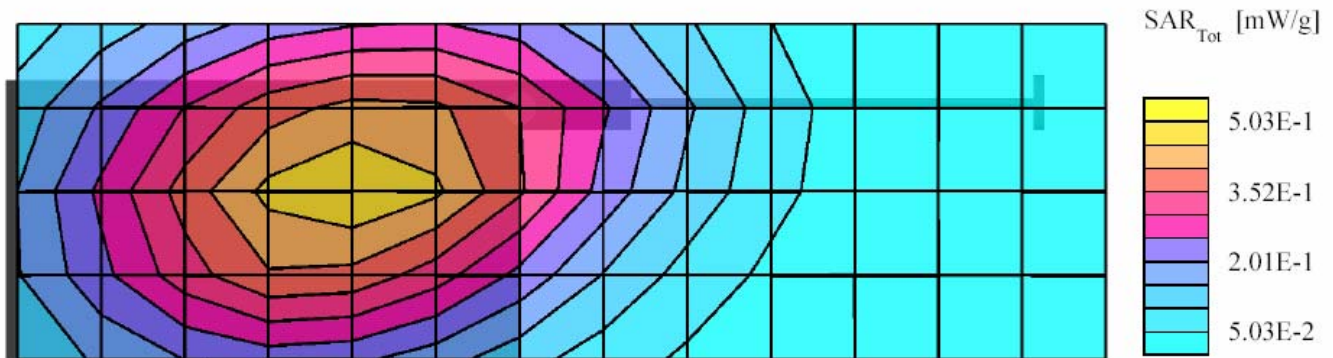
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 3.0; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 53.2$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.501 mW/g, SAR (10g): 0.362 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 60.0, 4.7

Power Drift: -0.27 dB



FCC ID: AZ489FT5824; Test Date: 5/15/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040515-07-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 901.98125 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power: 0.727 W

Antenna: Out

Battery Kit: SNN5704A

Carry: NNTN4747A belt clip

Audio/Data Acc.: NNTN4033A

DUT carry case against the phantom

Flat Phantom; Position: (90°,90°);

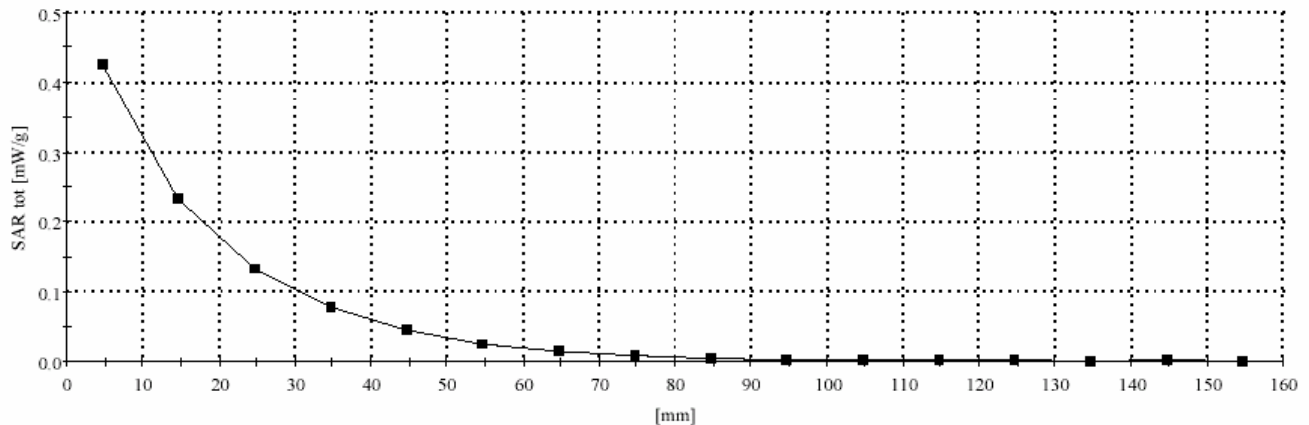
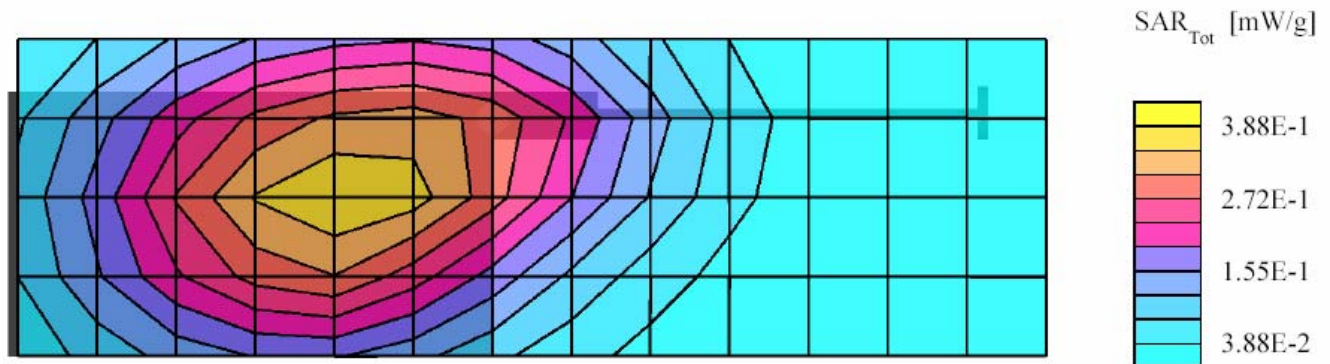
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 3.0; FCC

Body 899 MHz: $\sigma = 1.03$ mho/m $\epsilon = 53.0$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.456 mW/g, SAR (10g): 0.327 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 64.5, 4.7

Power Drift: -1.15 dB



FCC ID: AZ489FT5824; Test Date: 5/15/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040515-09-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.4 (Celsius)

Start Power: 0.712 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NONE

Audio/Data Acc.: NONE

DUT back housing towards the phantom with 2.5cm separation (Flip closed)

Flat Phantom; Position: (90°,90°);

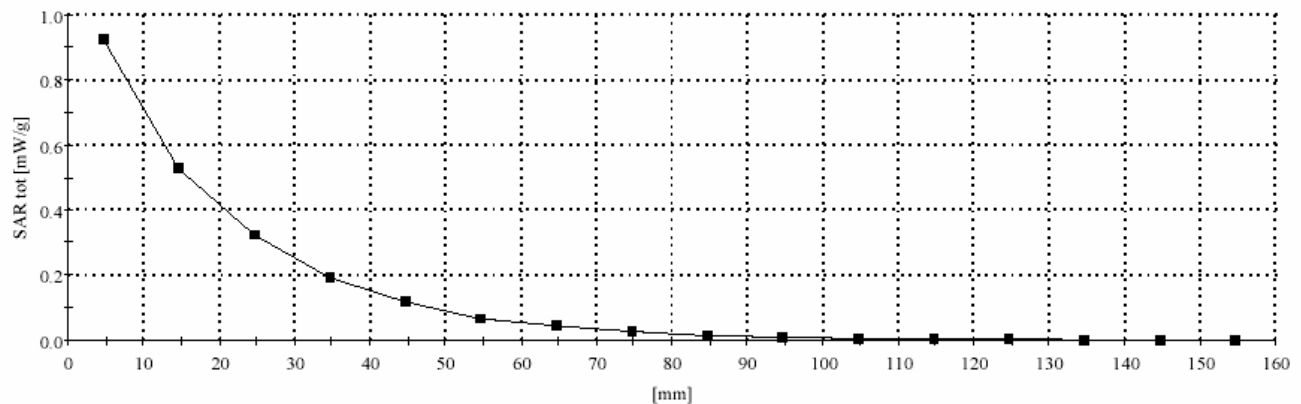
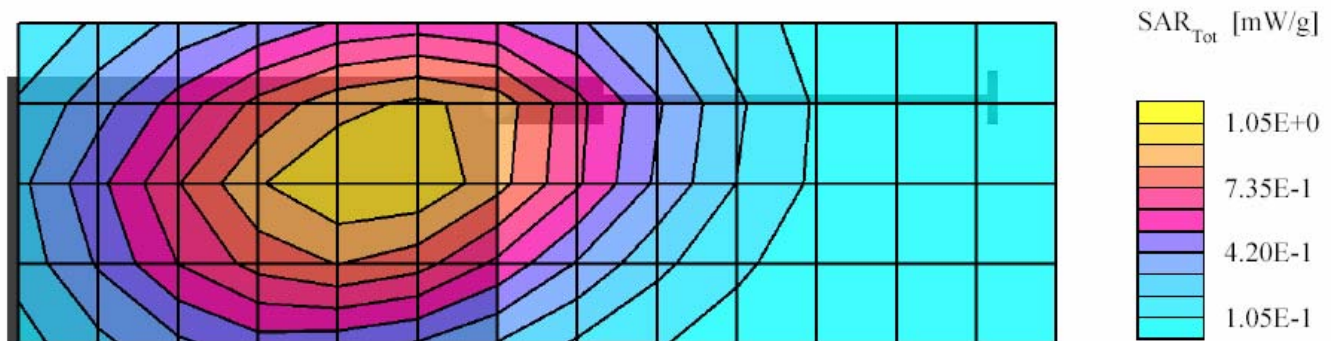
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.94$ mho/m $\epsilon = 53.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.979 mW/g, SAR (10g): 0.716 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 27.0, 69.0, 4.7

Power Drift: -1.04 dB



FCC ID: AZ489FT5824; Test Date: 5/16/04

Motorola CGISS EME Laboratory

Run #: Ab-R3-040516-05-CM

Model #: H63XAN6RR4AN / NUF3898A SN: 364AEGQPLS

TX Freq: 806.0125 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 0.705 W

Antenna: Out

Battery Kit: SNN5704A

Carry case: NNTN4747A belt clip

Audio/Data Acc.: NONE

DUT with carry case against the phantom

Flat Phantom; Position: (90°,90°);

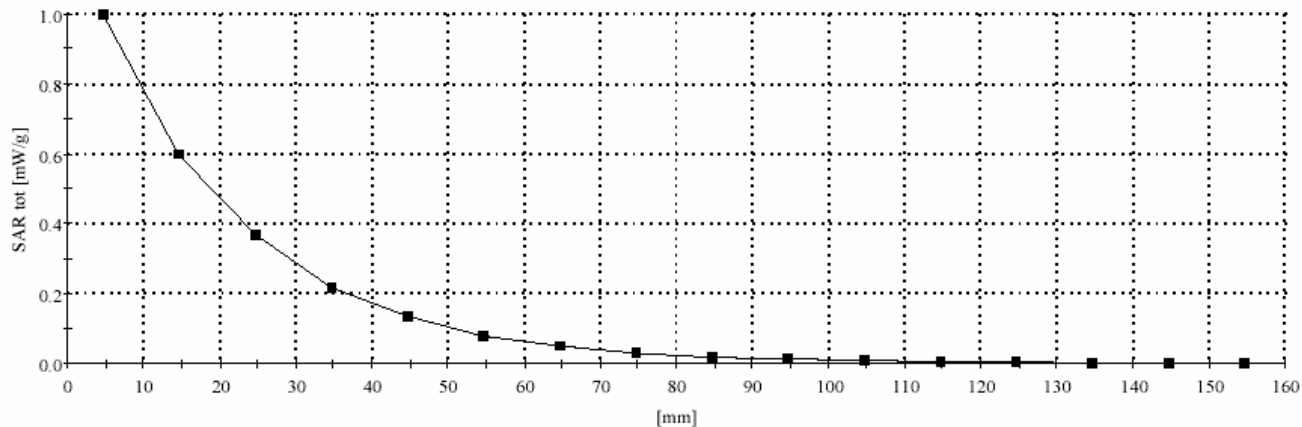
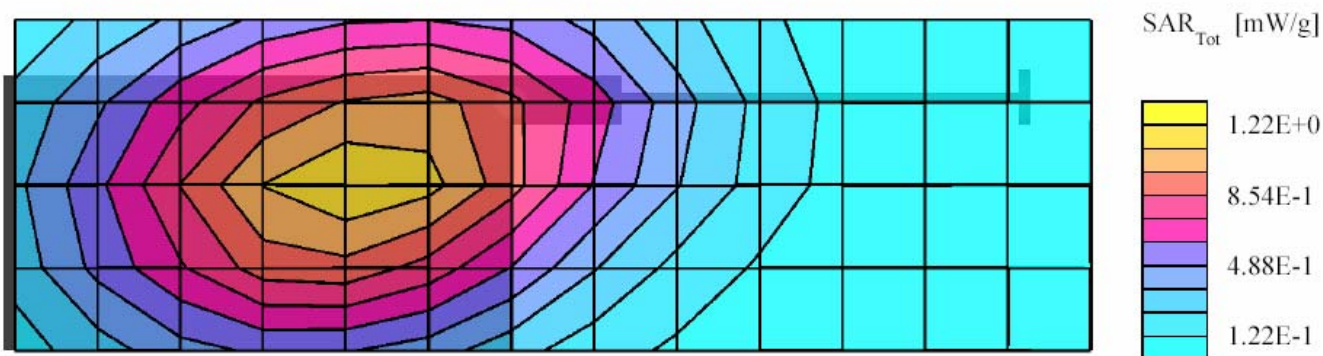
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 53.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 1.07 mW/g, SAR (10g): 0.791 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 63.0, 4.7

Power Drift: -1.05 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 900 MHz Dipole; Model D900V2, SN 085; Test Date: 4/29/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040429-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.2 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

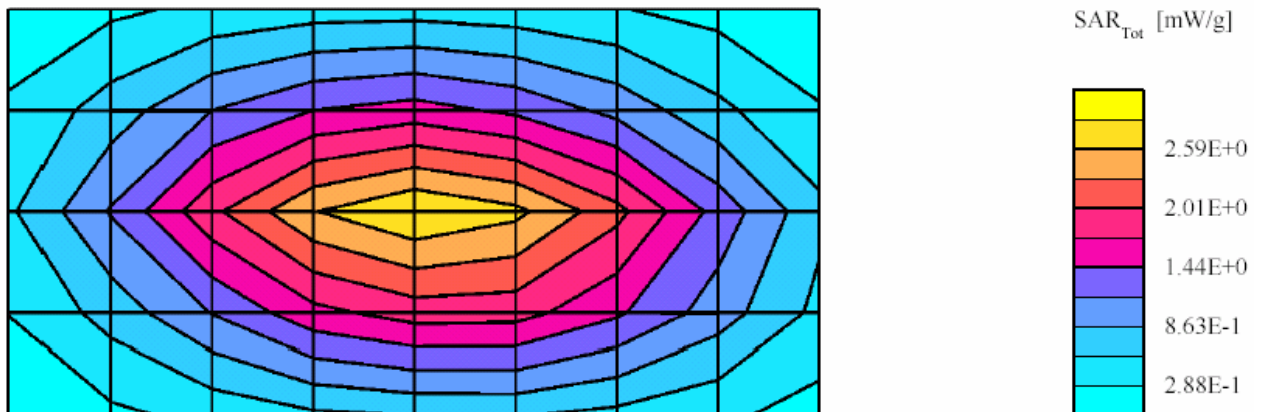
SAR calculated at 1W is 11.39 mW/g (1g avg). Percent from target (including drift) is - 5.12 %

SAR calculated at 1W is 7.14 mW/g (10g avg). Percent from target (including drift) is - 5.10 %

SAM; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0;
IEEE Head 900 MHz: $\sigma = 1.01$ mho/m $\epsilon = 42.2$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.55 mW/g $\pm$ 0.01 dB, SAR (1g): 2.84 mW/g $\pm$ 0.01 dB, SAR (10g): 1.78 mW/g $\pm$ 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.4, 12.4) [mm]

Power drift: -0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 4/30/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040430-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.28 mW/g (1g avg). Percent from target (including drift) is - 6.0 %

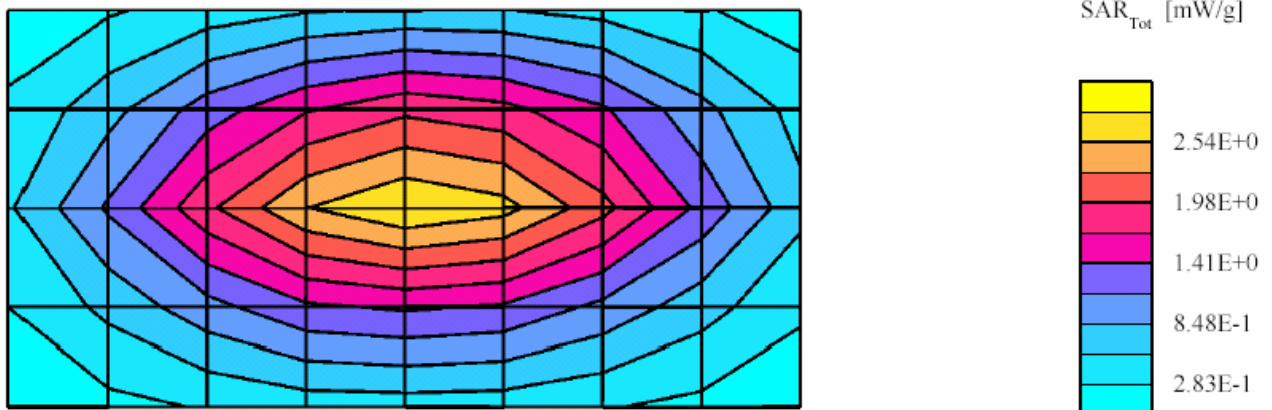
SAR calculated at 1W is 7.05 mW/g (10g avg). Percent from target (including drift) is - 6.2 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900 MHz: $\sigma = 1.01$ mho/m $\epsilon = 42.4$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.49 mW/g $\pm$ 0.01 dB, SAR (1g): 2.80 mW/g $\pm$ 0.01 dB, SAR (10g): 1.75 mW/g $\pm$ 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.4, 12.4) [mm]

Power drift: -0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/3/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040503-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 1184 mW/g (1g avg). Percent from target (including drift) is - 1.32 %

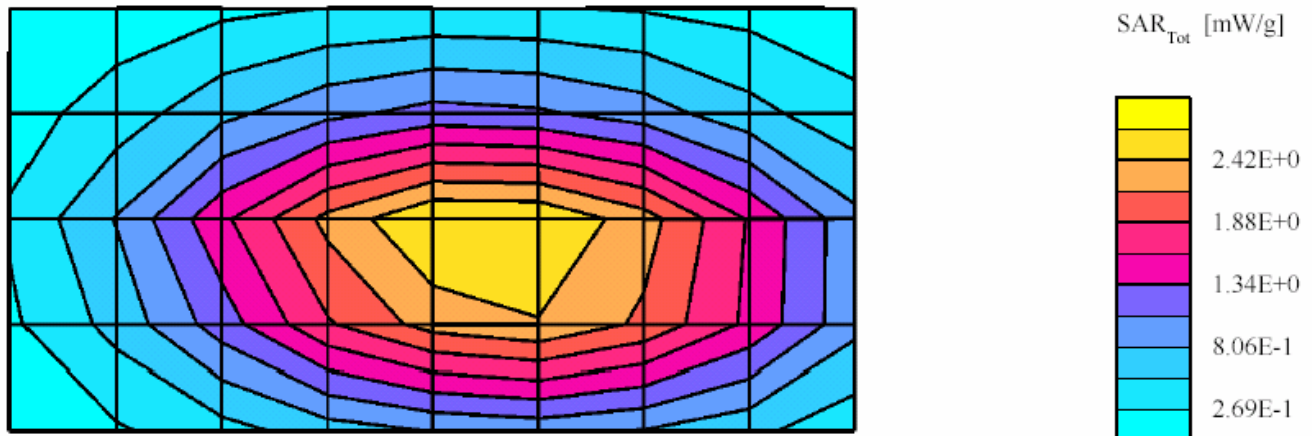
SAR calculated at 1W is 7.37 mW/g (10g avg). Percent from target (including drift) is - 1.98 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900: $\sigma = 1.01$ mho/m $\epsilon = 42.7$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.73 mW/g ± 0.02 dB, SAR (1g): 2.94 mW/g ± 0.01 dB, SAR (10g): 1.83 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.3, 12.5) [mm]

Power drift: -0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/5/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040505-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.72 mW/g (1g avg). Percent from target (including drift) is - 2.33 %

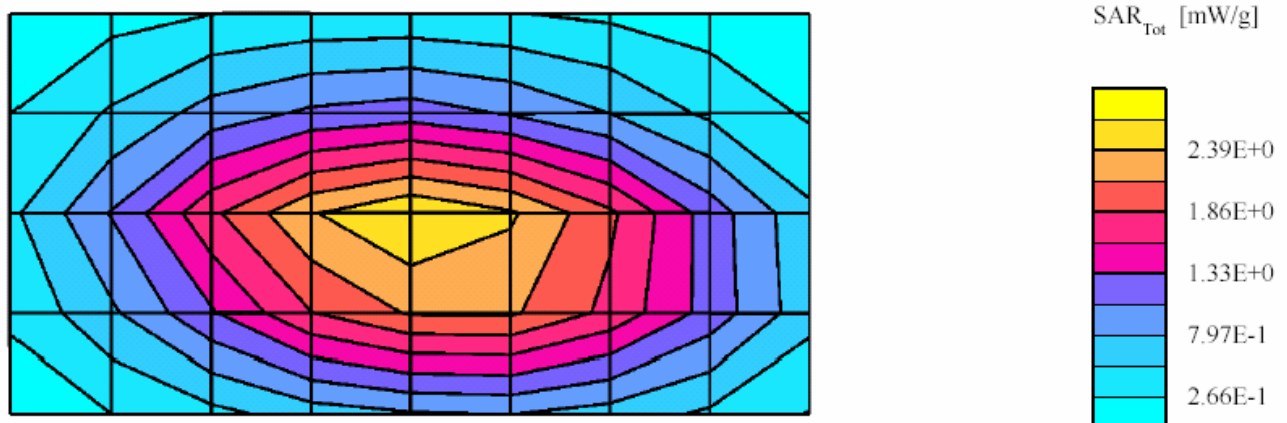
SAR calculated at 1W is 7.27 mW/g (10g avg). Percent from target (including drift) is - 2.34 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900: $\sigma = 1.01$ mho/m $\epsilon = 42.4$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.64 mW/g ± 0.01 dB, SAR (1g): 2.87 mW/g ± 0.02 dB, SAR (10g): 1.78 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.3 (10.4, 12.5) [mm]

Power drift: -0.09 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/6/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040506-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.33 mW/g (1g avg). Percent from target (including drift) is - 5.57 %

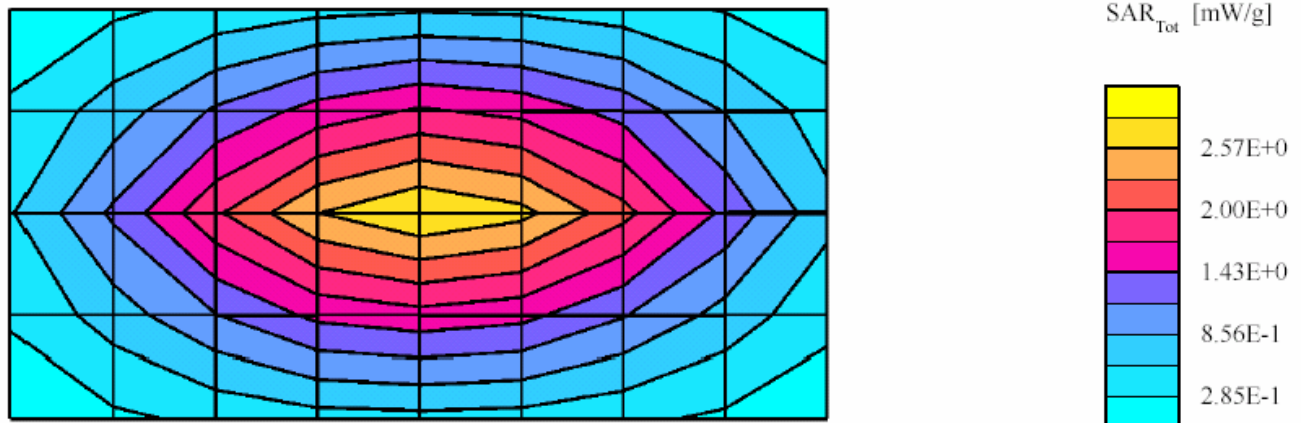
SAR calculated at 1W is 7.07 mW/g (10g avg). Percent from target (including drift) is - 5.95 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900 MHz: $\sigma = 1.01\text{mho/m}$ $\epsilon = 42.3$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.52 mW/g ± 0.00 dB, SAR (1g): 2.82 mW/g ± 0.00 dB, SAR (10g): 1.76 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.4) [mm]

Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/7/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040507-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.49 mW/g (1g avg). Percent from target (including drift) is - 4.2 %

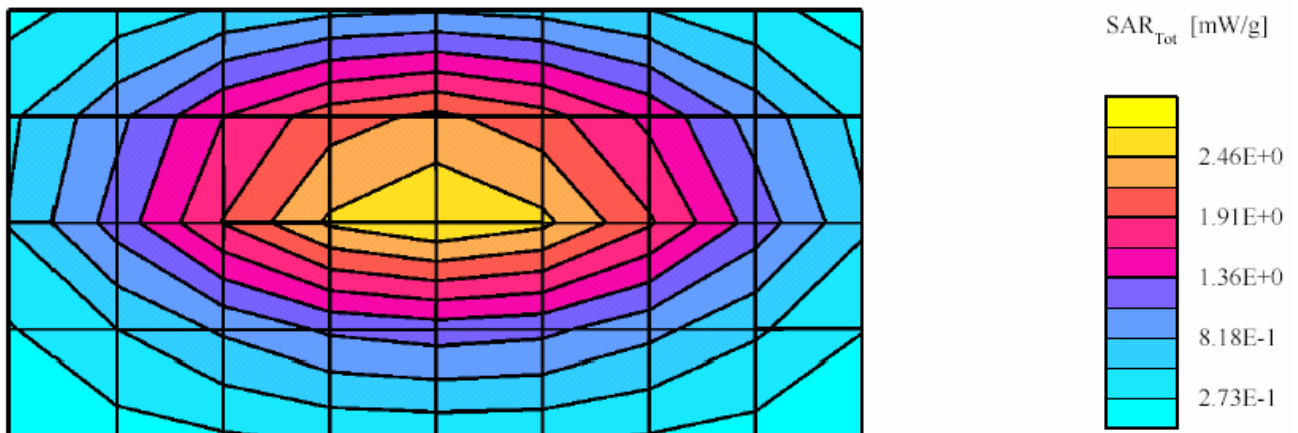
SAR calculated at 1W is 7.19 mW/g (10g avg). Percent from target (including drift) is - 4.3 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900 MHz: $\sigma = 1.01\text{mho/m}$ $\epsilon = 42.2$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.59 mW/g $\pm 0.00\text{ dB}$, SAR (1g): 2.86 mW/g $\pm 0.00\text{ dB}$, SAR (10g): 1.79 mW/g $\pm 0.01\text{ dB}$, (Worst-case extrapolation) Penetration depth: 11.2 (10.4, 12.4) [mm]

Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/10/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040510-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.37 mW/g (1g avg). Percent from target (including drift) is - 5.23 %

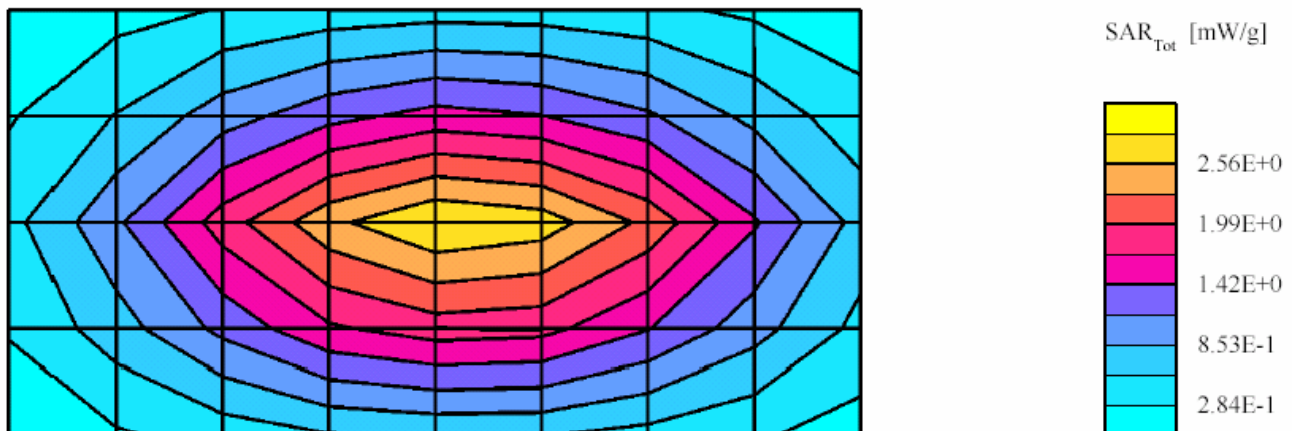
SAR calculated at 1W is 7.11 mW/g (10g avg). Percent from target (including drift) is - 5.42 %

SAM - Expanded; Flat Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30);

Crest factor: 1.0; IEEE Head 900 MHz: $\sigma = 1.01\text{mho/m}$ $\epsilon = 42.1$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: $4.56\text{ mW/g} \pm 0.02\text{ dB}$, SAR (1g): $2.83\text{ mW/g} \pm 0.01\text{ dB}$, SAR (10g): $1.77\text{ mW/g} \pm 0.01\text{ dB}$, (Worst-case extrapolation) Penetration depth: 11.2 (10.3, 12.4) [mm]

Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/11/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040511-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 12.00 mW/g (1g avg, including drift)

SAR target at 1W is 7.52 mW/g (10g avg, including drift)

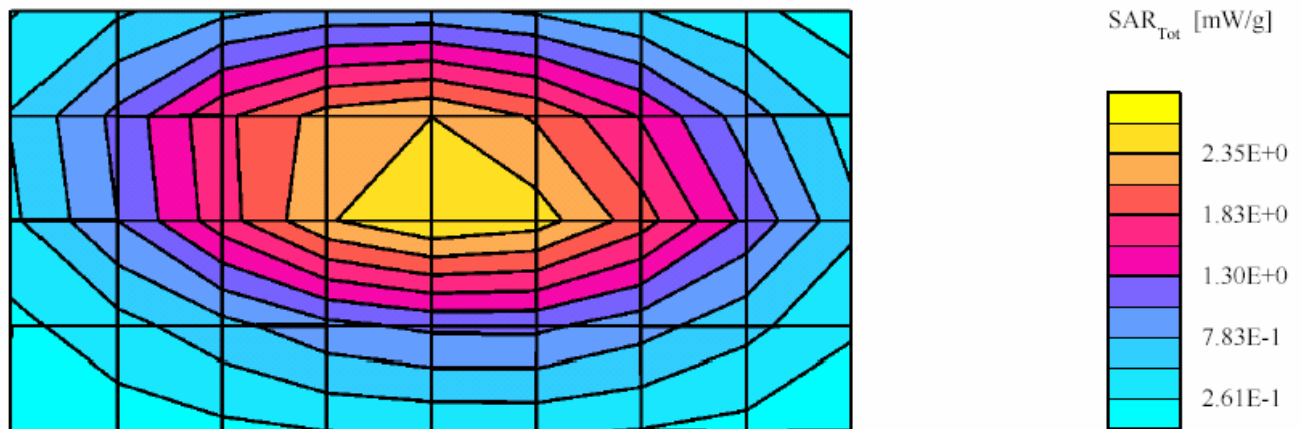
SAR calculated at 1W is 11.29 mW/g (1g avg). Percent from target (including drift) is - 5.88 %

SAR calculated at 1W is 7.06 mW/g (10g avg). Percent from target (including drift) is - 6.07 %

SAM Phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE Head 900 MHz: $\sigma = 1.01\text{mho/m}$ $\epsilon = 42.3$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.54 mW/g ± 0.01 dB, SAR (1g): 2.83 mW/g ± 0.01 dB, SAR (10g): 1.77 mW/g ± 0.01 dB, (Worst-case extrapolation)Penetration depth: 11.2 (10.4, 12.4) [mm]

Power drift: 0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/12/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040512-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.17 mW/g (1g avg, including drift)

SAR target at 1W is 7.00 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.24 mW/g (1g avg). Percent from target (including drift) is 0.60 %

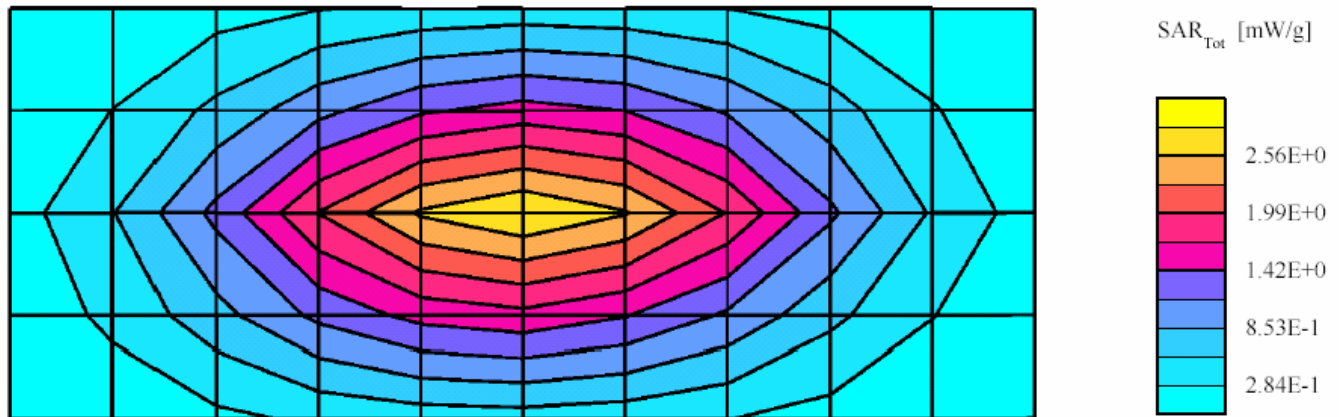
SAR calculated at 1W is 7.13 mW/g (10g avg). Percent from target (including drift) is 0.27 %

Flat phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor:

1.0; FCC Body 900MHz: $\sigma = 1.02$ mho/m $\epsilon = 53.1$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.37 mW/g $\pm$ 0.01 dB, SAR (1g): 2.79 mW/g $\pm$ 0.01 dB, SAR (10g): 1.77 mW/g $\pm$ 0.01 dB, (Worst-case extrapolation)Penetration depth: 12.2 (11.2, 13.5) [mm]

Power drift: -0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/13/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040513-01

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.17 mW/g (1g avg, including drift)

SAR target at 1W is 7.00 mW/g (10g avg, including drift)

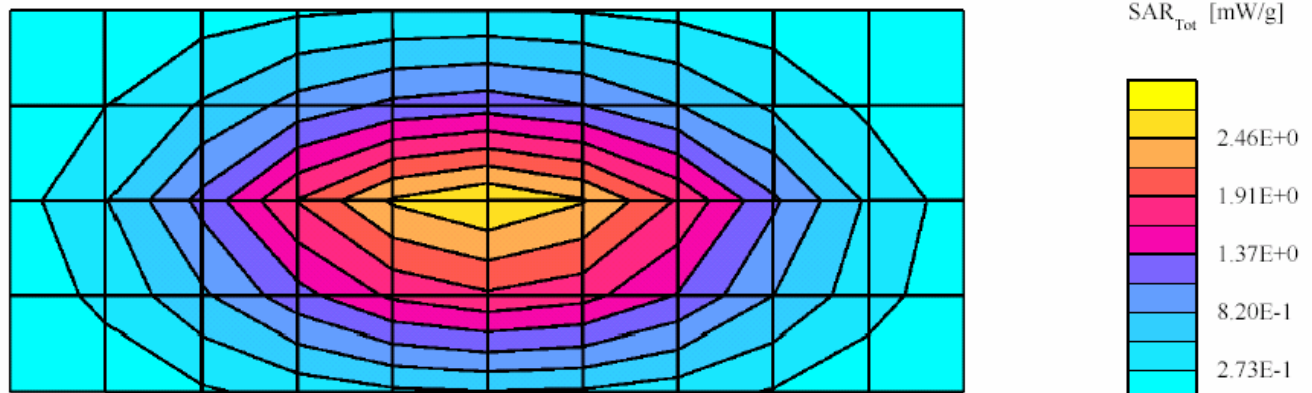
SAR calculated at 1W is 11.03 mW/g (1g avg). Percent from target (including drift) is - 1.29 %

SAR calculated at 1W is 7.02 mW/g (10g avg). Percent from target (including drift) is - 1.32 %

Flat phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: $\sigma = 1.03$ mho/m $\epsilon = 52.4$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.31 mW/g ± 0.00 dB, SAR (1g): 2.75 mW/g ± 0.01 dB, SAR (10g): 1.75 mW/g ± 0.01 dB, (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.5) [mm]

Power drift: -0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/14/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040514-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.7 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.17 mW/g (1g avg, including drift)

SAR target at 1W is 7.00 mW/g (10g avg, including drift)

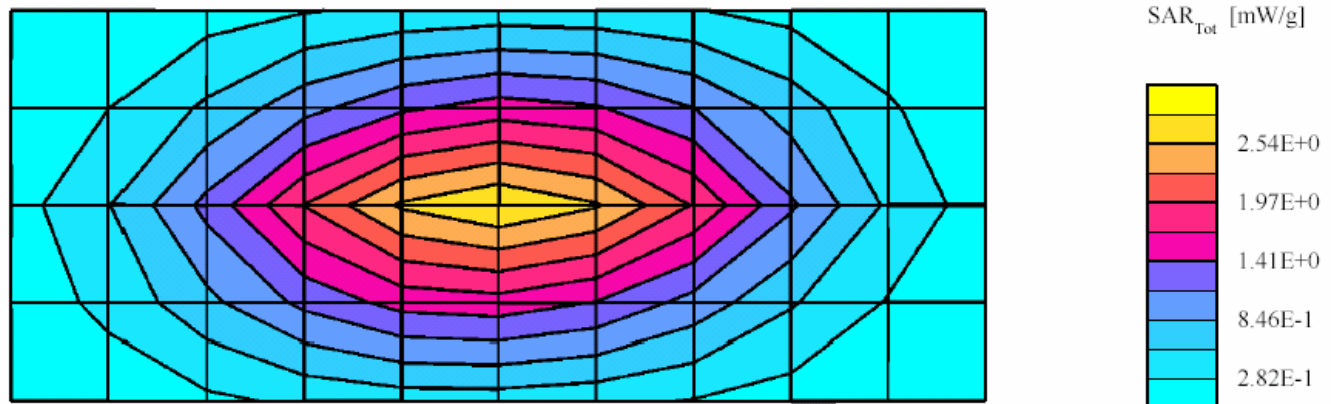
SAR calculated at 1W is 11.09 mW/g (1g avg). Percent from target (including drift) is - 0.74 %

SAR calculated at 1W is 7.04 mW/g (10g avg). Percent from target (including drift) is - 0.98 %

Flat phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: $\sigma = 1.02$ mho/m $\epsilon = 52.5$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.30 mW/g $\pm$ 0.01 dB, SAR (1g): 2.74 mW/g $\pm$ 0.01 dB, SAR (10g): 1.74 mW/g $\pm$ 0.02 dB, (Worst-case extrapolation) Penetration depth: 12.1 (11.1, 13.5) [mm]

Power drift: -0.05 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/15/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040515-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.17 mW/g (1g avg, including drift)

SAR target at 1W is 7.00 mW/g (10g avg, including drift)

SAR calculated at 1W is 11.60 mW/g (1g avg). Percent from target (including drift) is + 3.84 %

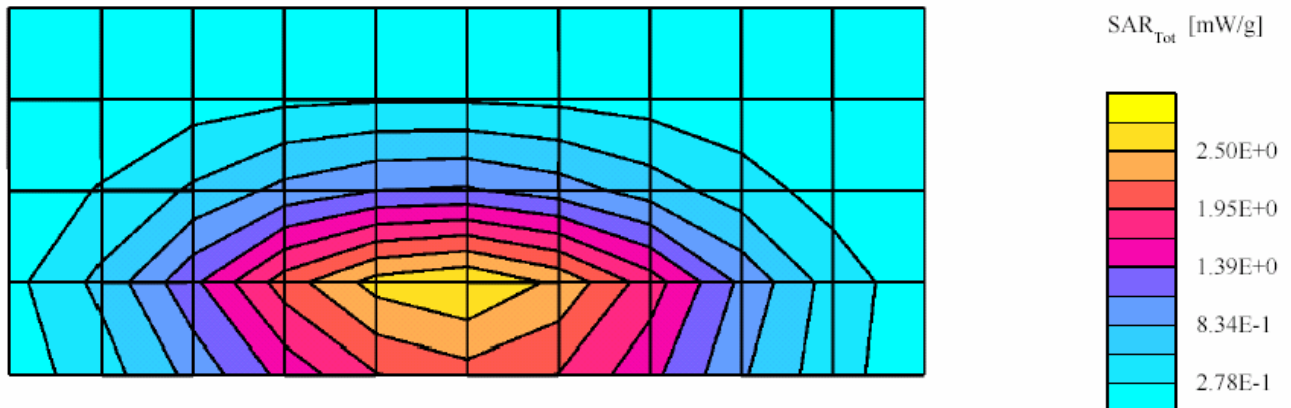
SAR calculated at 1W is 7.34 mW/g (10g avg). Percent from target (including drift) is + 3.24 %

Flat phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor:

1.0; FCC Body 900MHz: $\sigma = 1.03 \text{ mho/m}$ $\epsilon = 52.9$ $\rho = 1.00 \text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.49 mW/g $\pm 0.01 \text{ dB}$, SAR (1g): 2.86 mW/g $\pm 0.01 \text{ dB}$, SAR (10g): 1.81 mW/g $\pm 0.01 \text{ dB}$, (Worst-case extrapolation)Penetration depth: 12.1 (11.1, 13.5) [mm]

Power drift: -0.06 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/16/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040516-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power; 250mW

SAR target at 1W is 11.17 mW/g (1g avg, including drift)

SAR target at 1W is 7.11 mW/g (10g avg, including drift)

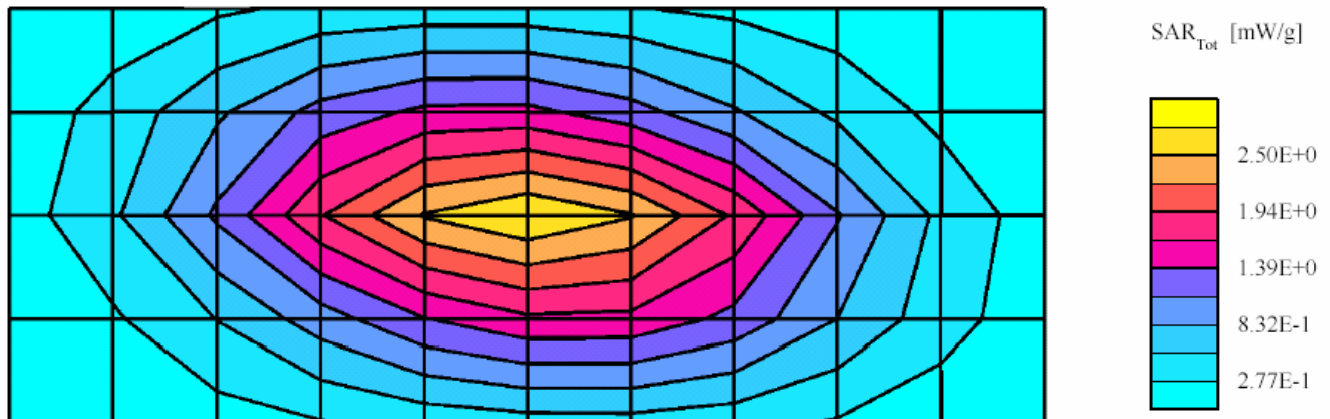
SAR calculated at 1W is 10.88 mW/g (1g avg). Percent from target (including drift) is -2.60 %

SAR calculated at 1W is 6.92 mW/g (10g avg). Percent from target (including drift) is -2.67 %

Flat phantom; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004);Probe Cal Date: 25/2/04ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: $\sigma = 1.03\text{mho/m}$ $\epsilon = 52.8$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.26 mW/g ± 0.01 dB, SAR (1g): 2.72 mW/g ± 0.01 dB, SAR (10g): 1.73 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.1 (11.1, 13.5) [mm]

Power drift: -0.00 dB



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

Run #: Sys Val-R3-031216-03

Model #: D900V2

Robot: CGISS-3

TX Freq: 900 MHz

Start Power: 250mW

DAE3: SN: 406

Phantom #:SAMTP1208

SN: 085

Tester: E. Church

Sim Tissue Temp: 20.9 (Celsius)

DAE Cal Date: 11/20/03

- Comments-

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

SAR calculated 1g is 11.96 mW/g percent from target (including drift) + 10.74 %

SAR Calculated 10g is 7.52 mW/g Percent from target (including drift) is + 8.99 %

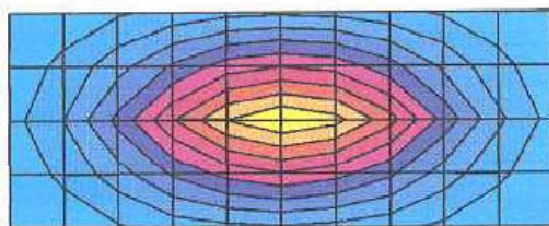
SAM; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(7.00,7.00,7.00); Crest factor: 1.0; IEEE

Head 900 MHz: $\sigma = 1.00$ mho/m $\epsilon_r = 41.5$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 4.78 mW/g ± 0.04 dB, SAR (1g): 3.00 mW/g ± 0.04 dB, SAR (10g): 1.88 mW/g ± 0.05 dB, (Worst-case extrapolation)

Penetration depth: 11.2 (10.5, 12.3) [mm]

Powerdrift: 0.00 dB



SAR_{Tot} [mW/g]



3.00E-1

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>12/16/2003</u>	Frequency (MHz):	<u>900</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>FCC Body</u>
Robot System:	<u>CGISS-3</u>	Ambient Temp.(°C):	<u>22.7</u>
Probe Serial #:	<u>ET3DV6-1393</u>	Tissue Temp.(°C):	<u>21</u>
DAE Serial #:	<u>406</u>		

Tissue Characteristics

Permittivity:	<u>52.6</u>	Phantom Type/SN:	<u>80302002A-S8</u>
Conductivity:	<u>1.03</u>	Distance (mm):	<u>15 (tissue/dipole cnt)</u>

Reference Source:	<u>900</u>	(Dipole)
Reference SN:	<u>85</u>	

Power to Dipole: 250 mW

Measured SAR Value:	<u>2.78</u> mW/g,	<u>1.77</u> mW/g (10g avg.)
Power Drift:	<u>-0.02</u> dB	

New Target/Measured

SAR Value:	<u>11.17</u> mW/g,	<u>7.11</u> mW/g (10g avg.)
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(normalized to 1.0 W, including drift)

Test performed by: Edward R. Church Initial: ERC

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

Run #: Sys Perf-R3-031216-06

Phantom #: 80302002A-S8

Model #: D900V2

SN: 085

Robot: CGISS-3

Tester: E. Church

TX Freq: 900 MHz

Sim Tissue Temp: 21.0 (Celsius)

Start Power: 250mW

DAE3: SN: 406

DAE Cal Date: 11/20/03

- Comments-

New Target at 1W is calc SAR values 11.17 mW/g (1g) and 7.11 mW/g (10g avg.)

SAR calculated 1g is 11.17 mW/g percent from target (including drift) 0 %

SAR Calculated 10g is 7.11 mW/g Percent from target (including drift) is 0 %

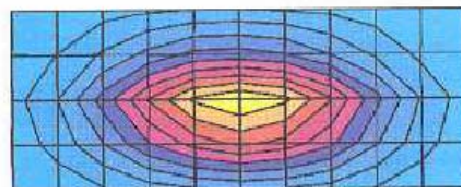
Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Crest factor: 1.0; FCC

Body 900MHz: $\sigma = 1.03$ mho/m $\epsilon_r = 52.6$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 4.34 mW/g ± 0.03 dB, SAR (1g): 2.78 mW/g ± 0.03 dB, SAR (10g): 1.77 mW/g ± 0.03 dB, (Worst-case extrapolation)

Penetration depth: 12.1 (11.2, 13.3) [mm]

Powerdrift: -0.02 dB



SAR_{Tot} [mW/g]



APPENDIX D

Probe/Dipole Calibration Certificates

Client **Motorola CGISS**

CALIBRATION CERTIFICATE			
Object(s)	ET3DVB - SN 1383		
Calibration procedure(s)	QA CAL-01-v2 Calibration procedure for dosimetric E-field probes		
Calibration date:	February 25, 2004		
Condition of the calibrated item	In Tolerance (according to the specific calibration document)		
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.			
Calibration Equipment used (M&TE critical for calibration)			
Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Reference 20 dB Attenuator	SN: 5086 (20b)	3-Apr-03 (METAS, No. 251-0340)	Apr-04
Fuke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05
Calibrated by:	Name Oliver Kettner	Function Technician	Signature 
Approved by:	Name Ralph Pokorski	Function Laboratory Director	Signature 
Date issued: February 25, 2004			
This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.			

DASY - Parameters of Probe: ET3DV6 SN:1383**Sensitivity in Free Space****Diode Compression^A**

NormX	1.88 $\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	92	mV
NormY	1.63 $\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	92	mV
NormZ	1.71 $\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	92	mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 7.

Boundary Effect

Head 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{pe} [%]	Without Correction Algorithm	9.9	5.0
SAR _{pe} [%]	With Correction Algorithm	0.1	0.3

Head 1800 MHz Typical SAR gradient: 10 % per mm

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

Sensor Offset

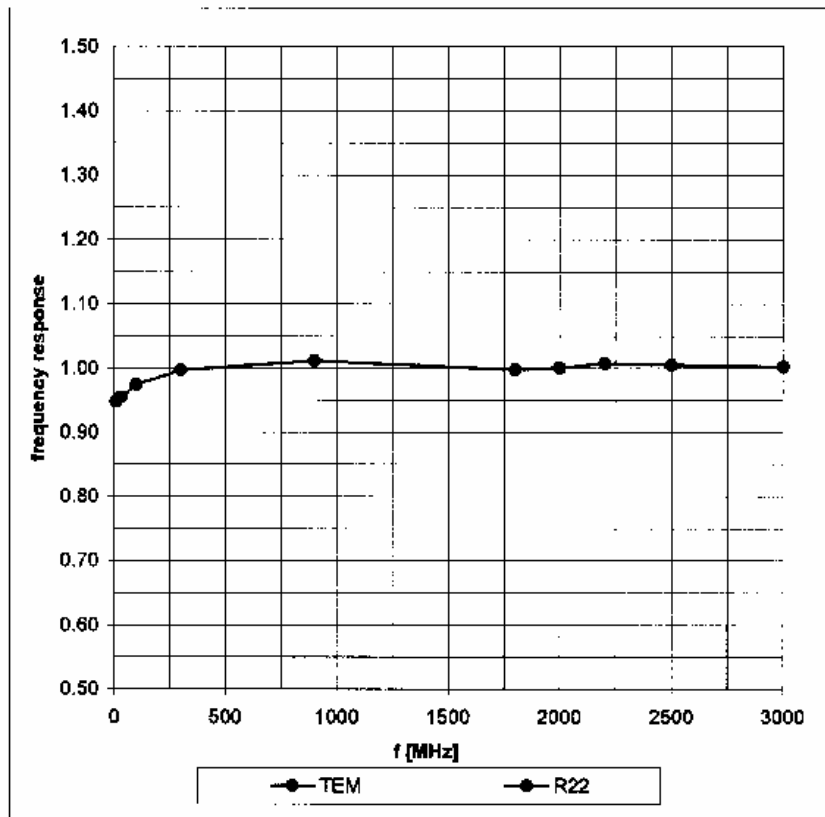
Probe Tip to Sensor Center	2.7 mm
Optical Surface Detection	very low, but repeatable

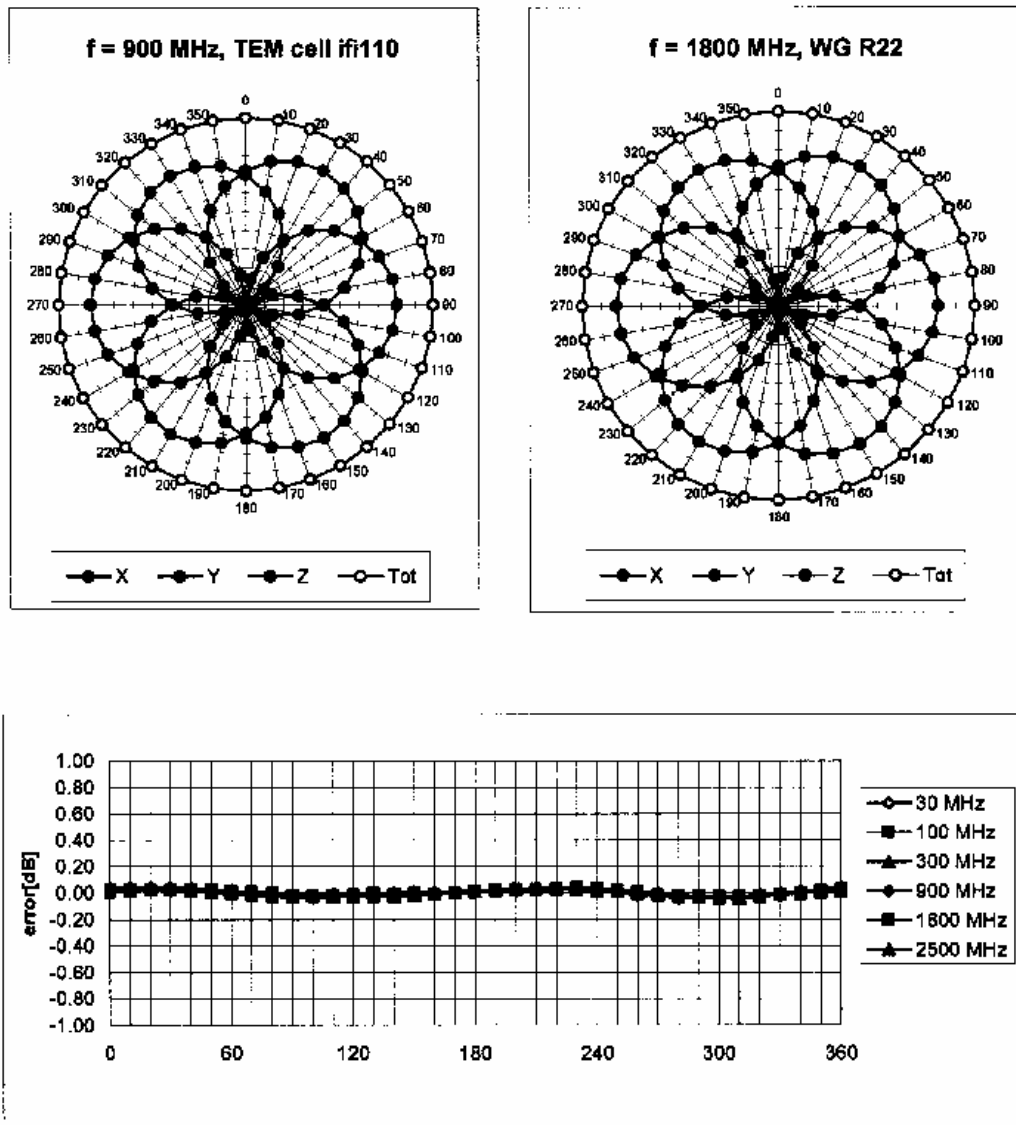
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A numerical linearization parameter: uncertainty not required

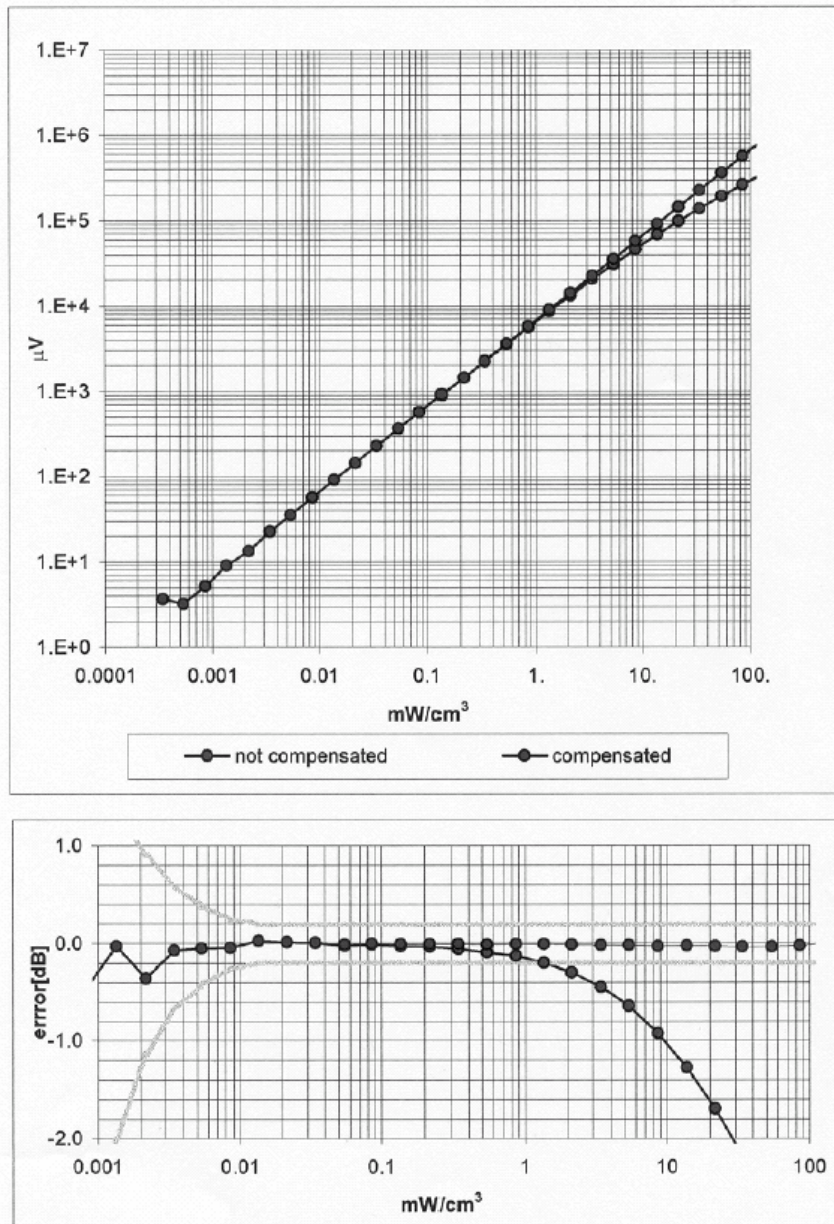
Frequency Response of E-Field

(TEM-Cell:ifi110, Waveguide R22)



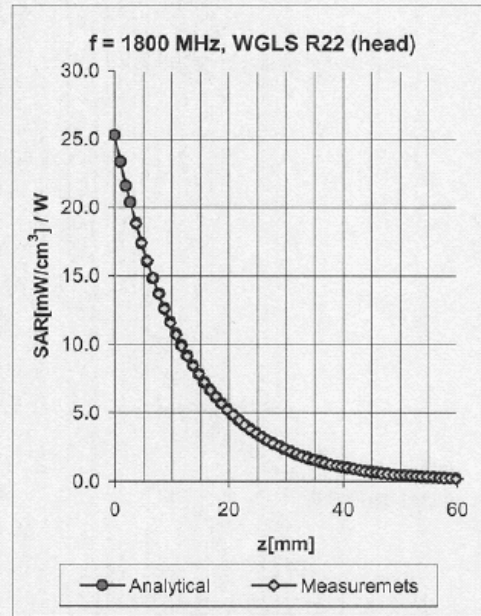
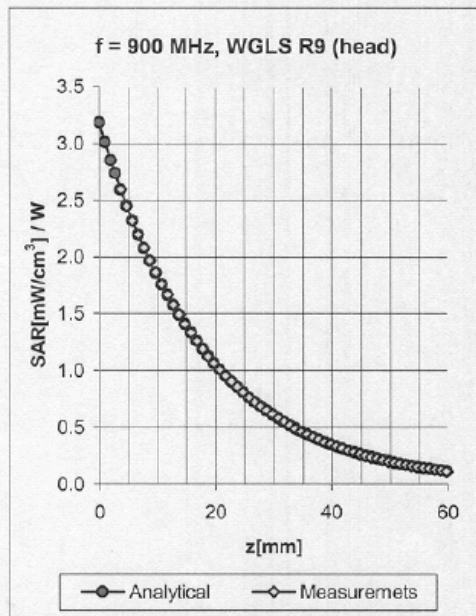
Receiving Pattern (ϕ) , $\theta = 0^\circ$ **Axial Isotropy Error < ± 0.2 dB**

Dynamic Range f(SAR_{head}) (Waveguide R22)



Probe Linearity < ± 0.2 dB

Conversion Factor Assessment

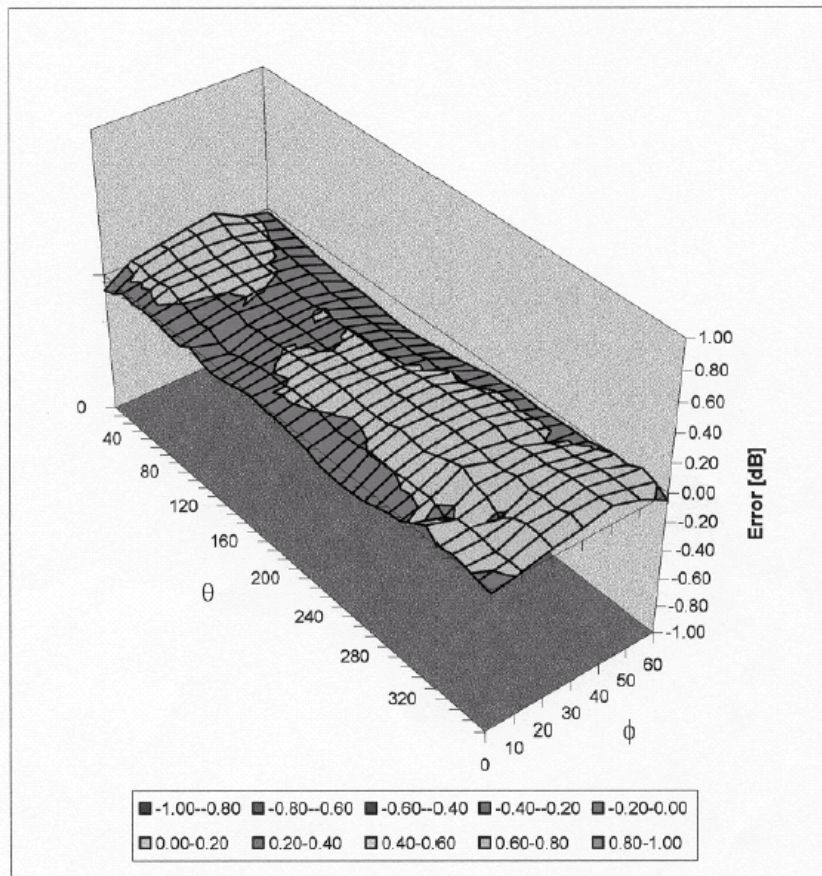


f [MHz]	Validity [MHz] ^B	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.72	1.77	6.30	± 9.5% (k=2)
1450	1400-1500	Head	40.5 ± 5%	1.20 ± 5%	0.55	2.40	5.72	± 9.5% (k=2)
1800	1710-1910	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.38	5.14	± 9.5% (k=2)
2450	2400-2500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

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

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



Spherical Isotropy Error < ± 0.4 dB

Schmid & Partner Engineering AG

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

Calibration Certificate

900 MHz System Validation Dipole

Type:

D900V2

Serial Number:

085

Place of Calibration:

Zurich

Date of Calibration:

August 27, 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:

D. Vetter

Approved by:

Thomas Klatzer

1. Measurement Conditions

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

Relative Dielectricity	41.7	± 5%
Conductivity	0.97 mho/m	± 5%

The DASY System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.5 at 900 MHz) was used for the measurements.

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

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.

The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2.1. SAR Measurement with DASY3 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the worst-case extrapolation are:

averaged over 1 cm ³ (1 g) of tissue:	11.0 mW/g
averaged over 10 cm ³ (10 g) of tissue:	6.92 mW/g

2.2 SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over 1 cm ³ (1 g) of tissue:	10.3 mW/g
averaged over 10 cm ³ (10 g) of tissue:	6.64 mW/g

3. Dipole Impedance and Return Loss

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

Electrical delay:	1.389 ns	(one direction)
Transmission factor:	0.991	(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:	$\text{Re}\{Z\} = \mathbf{50.1\ \Omega}$
	$\text{Im}\{Z\} = \mathbf{-3.9\ \Omega}$
Return Loss at 900 MHz	-28.3 dB

4. 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.

5. 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.

6. Power Test

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

08/27/02

Validation Dipole D900V2 SN:085, 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) at 900 MHz; IEEE 1528 900 MHz: $\sigma = 0.97$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³
Cubes (2): Peak: 4.34 mW/g ± 0.01 dB, SAR (1g): 2.74 mW/g ± 0.01 dB, SAR (10g): 1.73 mW/g ± 0.02 dB, (Worst-case extrapolation)
Penetration depth: 11.6 (10.8, 12.8) [mm]
Powerdrift: -0.00 dB

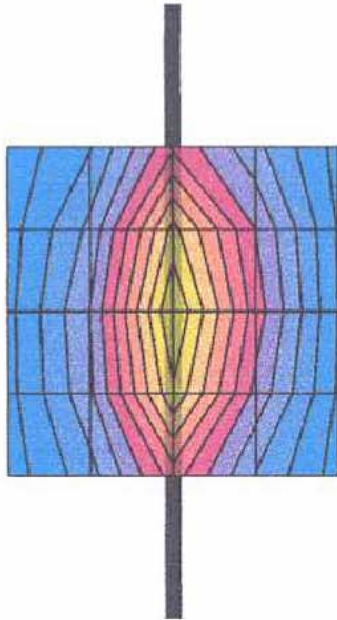
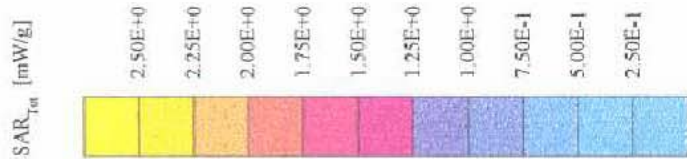


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08/27/02

Validation Dipole D900V2 SN:085, 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, IEEE 1528 900 MHz: $\sigma = 0.97$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³
Cubes (2), Peak: 3.85 mW/g ± 0.01 dB, SAR (1g): 2.57 mW/g ± 0.01 dB, SAR (10g): 1.66 mW/g ± 0.02 dB, (Advanced extrapolation)
Penetration depth: 12.6 (12.4, 12.9) [mm]
Powerdrift: -0.00 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 NNTN5726A
Back View



Photo 2.
Model NNTN5726A
Side View



Photo 3.
Model NNTN4747A
Back View



Photo 4.
Model NNTN4747A
Front View

Appendix F

Accessories and options test status and separation distances

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

Carry Case Models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN4747A	Yes	25-26	NA
NNTN5726A	Yes	35-37	NA

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

Data cables Models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NKN6560A	Yes	NA	NA
NKN6559A	Yes	NA	NA