



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, 11, 2004
Report Revision: Rev. O
Manufacturer: Motorola
Product Description: iDEN i860; 1:6, 1:3, 81:120, 1:12 TDM; 64 QAM, 16 QAM & QPSK Modulation; 0.6 W Pulse average
FCC ID: AZ489FT5833
Device Model: H73XAN6RR4AN/NUF3754A00

Test Period: 5/24/04-6/3/04
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

6/11/04

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

Date Approved

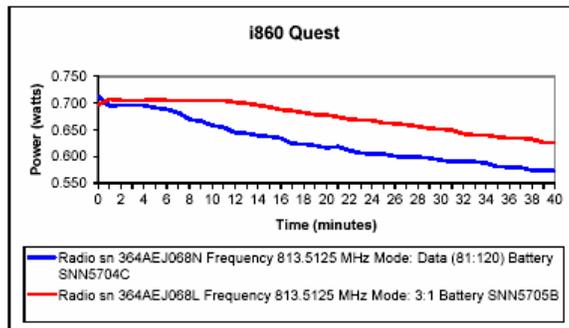
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APPENDIX A

Power Slump Data/Shortened Scan

DUT Power versus time data

Time (minutes)	Radio sn 364AEJ068N	Radio sn 364AEJ068L
	Power (watts)	Power (watts)
0	0.713	0.696
1	0.694	0.707
2	0.696	0.705
3	0.695	0.705
4	0.695	0.705
5	0.691	0.706
6	0.688	0.705
7	0.682	0.705
8	0.669	0.705
9	0.666	0.705
10	0.658	0.705
11	0.654	0.704
12	0.644	0.701
13	0.643	0.699
14	0.639	0.696
15	0.637	0.692
16	0.634	0.687
17	0.624	0.685
18	0.623	0.682
19	0.620	0.678
20	0.616	0.677
21	0.618	0.674
22	0.611	0.669
23	0.606	0.668
24	0.605	0.667
25	0.604	0.662
26	0.600	0.661
27	0.599	0.659
28	0.599	0.656
29	0.597	0.652
30	0.593	0.651
31	0.590	0.649
32	0.590	0.642
33	0.590	0.640
34	0.587	0.640
35	0.581	0.636
36	0.580	0.634
37	0.579	0.634
38	0.574	0.632
39	0.574	0.626
40	0.573	0.625



Shortened Scan Results

FCC ID: AZ489FT5833; Test Date: 6/03/04

Motorola CGISS EME Laboratory

Run #: CM-Ab-R3-040603-07

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068N

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.0 (Celsius)

Start Power: 0.699 W

Antenna: Out

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: None

Shortened scan reflect highest S.A.R. producing configuration; Run time 11minutes.

Representative “normal” scan run time was 26 minutes

“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.46mW/g; 10-g Avg. = 1.05mW/g

“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 1.30mW/g; 10-g Avg. = 0.94mW/g

(see section 7.1 run # JF-Ab-R3-040603-04)

DUT w/ body worn accessory against phantom

Flat Phantom; Position: (90°,90°);

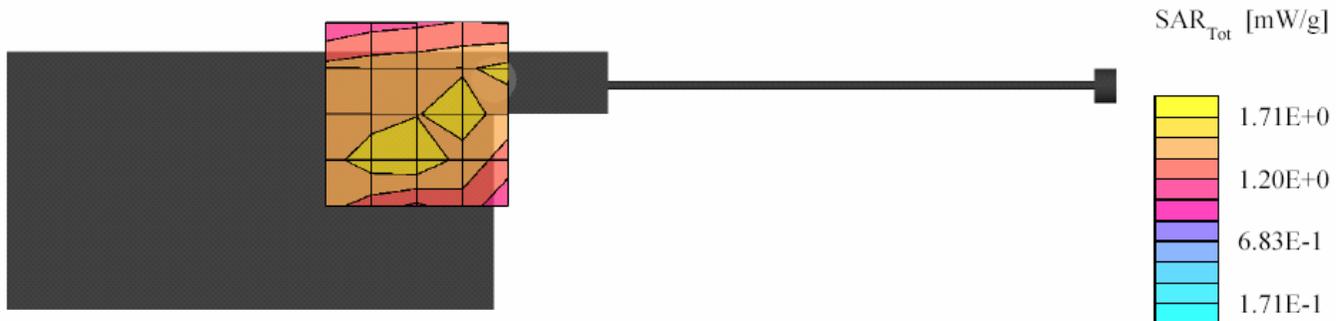
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.94$ mho/m $\epsilon = 55.6$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 5x5x7: SAR (1g): 1.19 mW/g, SAR (10g): 0.865 mW/g, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 1.19 mW/g, SAR (10g): 0.865 mW/g

Power Drift: -0.37 dB



APPENDIX B
Data Results

FCC ID: AZ489FT5833; Test Date: 5/27/04

Motorola CGISS EME Laboratory

Run #: CM-REAR-R3-040527-03

TX Freq: 824.9875 MHz

Sim Tissue Temp: 19.8 (Celsius)

Start Power: 0.734 W

Antenna: In

Battery Kit: SNN5705B/NNTN5530A

Body worn: NONE

Audio/Data Acc.: NONE

DUT at right ear in cheek touch position

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

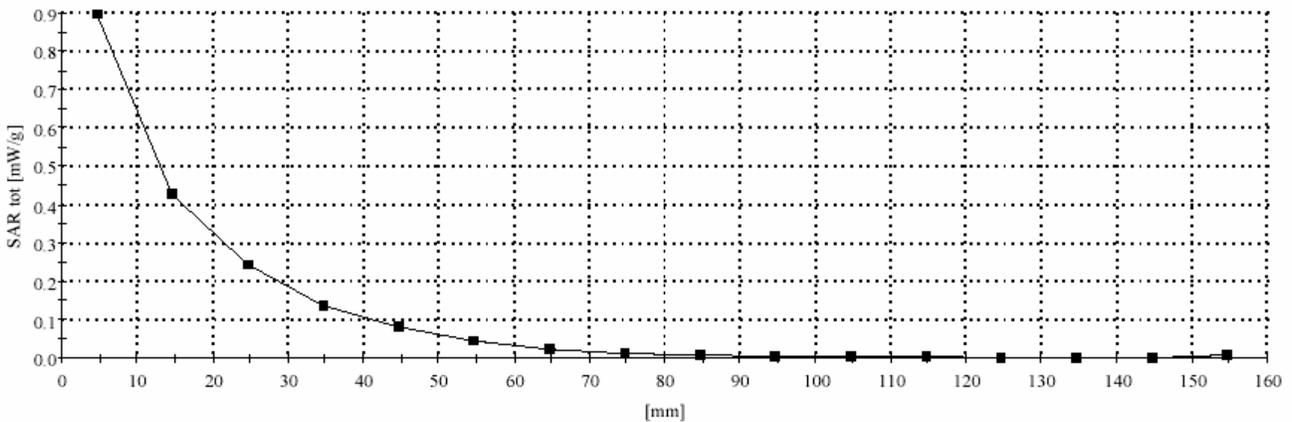
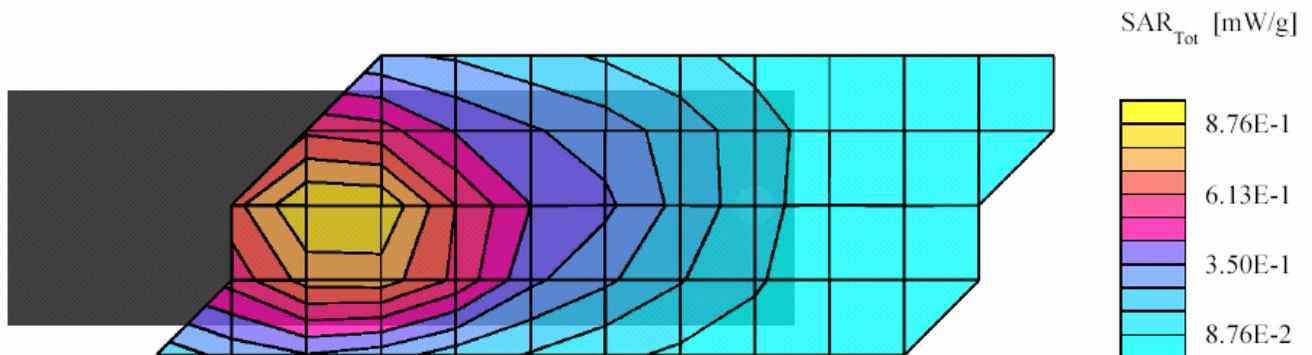
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 3.0; IEEE

Head 813 MHz: $\sigma = 0.93$ mho/m $\epsilon = 41.9$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.900 mW/g, SAR (10g): 0.620 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 37.5, 28.5, 4.7

Power Drift: -0.16 dB



FCC ID: AZ489FT5833; Test Date: 5/28/04

Motorola CGISS EME Laboratory

Run #: CM-Face-R3-040528-08

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 813.5125 MHz

Sim Tissue Temp: 19.3 (Celsius)

Start Power: 0.710 W

Antenna: Out

Battery Kit: SNN5705B/NNTN5530A

Body Worn: NONE

Audio/Data Acc.: NONE

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

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

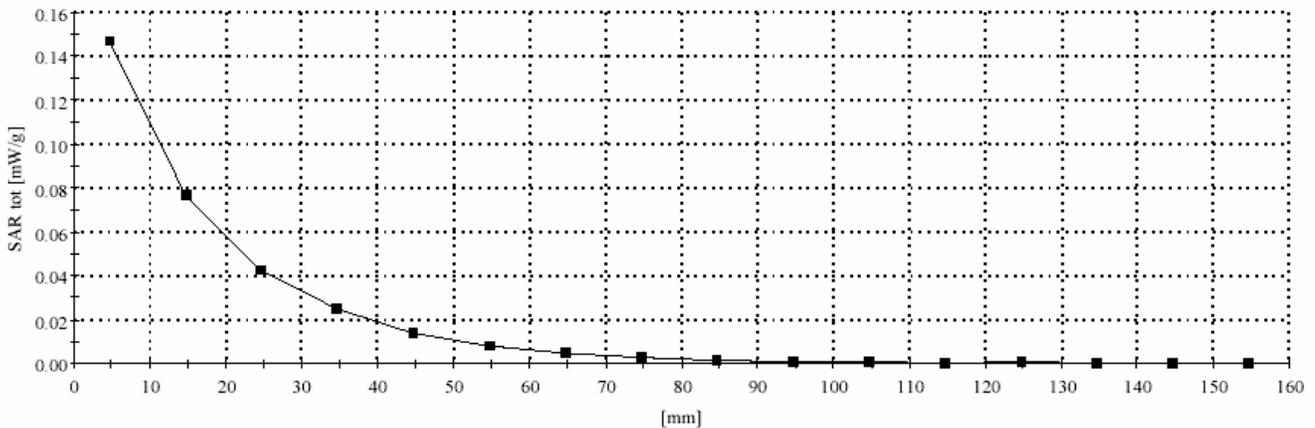
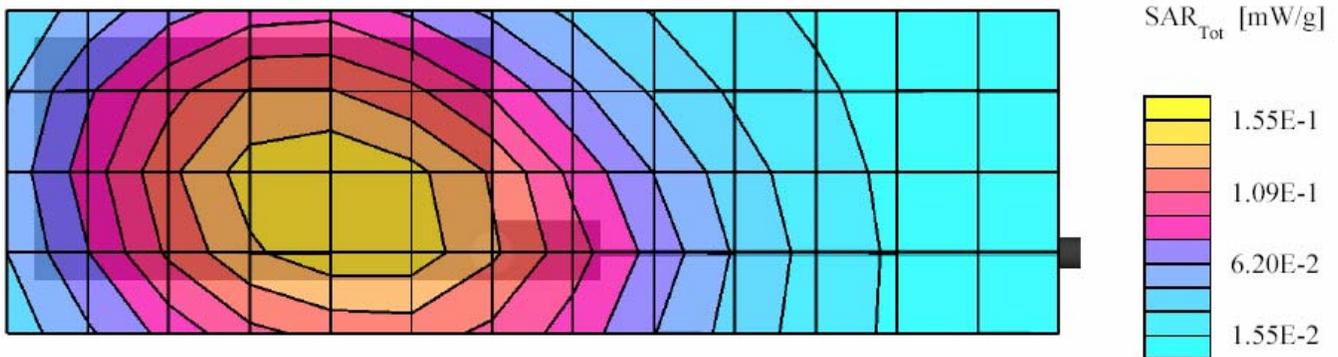
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE

Head 813 MHz: $\sigma = 0.93$ mho/m $\epsilon = 41.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.154 mW/g, SAR (10g): 0.110 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 36.0, 61.5, 4.7

Power drift: -0.32 dB



FCC ID: AZ489FT5833; Test Date: 5/25/04

Motorola CGISS EME Laboratory

Run #: CM-LEAR-R3-040525-11

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 896.01875 MHz

Sim Tissue Temp: 19.5 (Celsius)

Start Power: 0.692 W

Antenna: In

Battery Kit: SNN5704C/NNTN5529A

Body worn: NONE

Audio/Data Acc.: NONE

DUT at left ear in Cheek Touch position

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

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

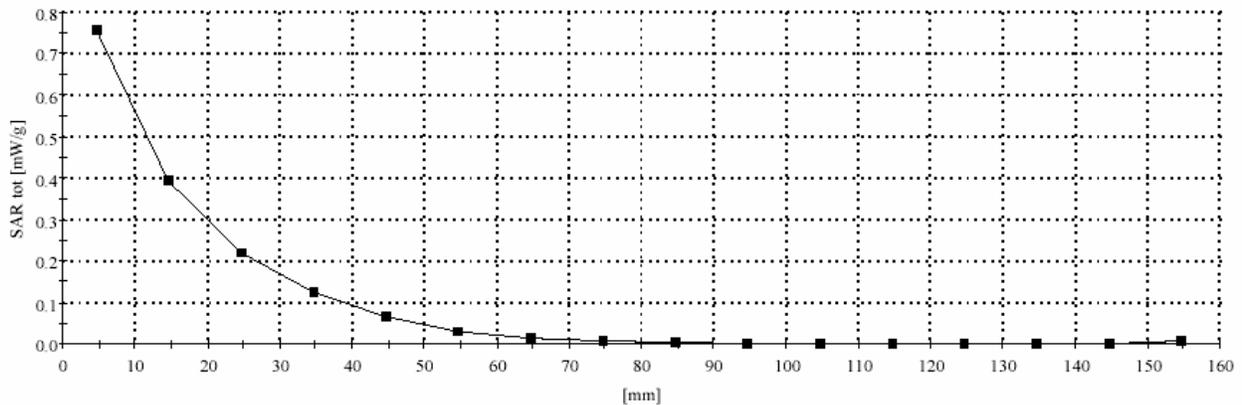
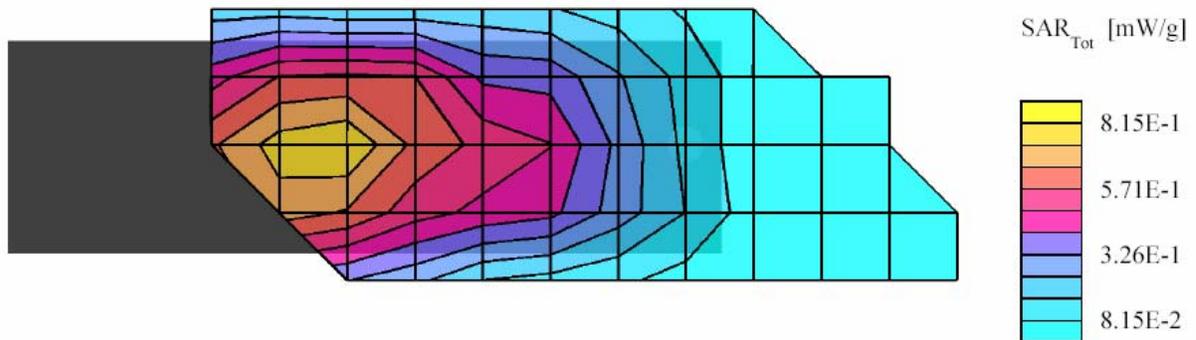
Head 899: $\sigma = 1.01$ mho/m $\epsilon = 40.9$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.784 mW/g, SAR (10g): 0.534 mW/g * Max outside, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 40.5, 27.0, 4.7

Power drift: -0.35 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: AZ489FT5833; Test Date: 5/28/04

Motorola CGISS EME Laboratory

Run #: CM-Face-R3-040528-09

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 899.66875 MHz

Sim Tissue Temp: 19.2 (Celsius)

Start Power: 0.683 W

Antenna: In

Battery Kit: SNN5704C/NNTN5529A

Body worn: NONE

Audio/Data Acc.: NONE

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

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

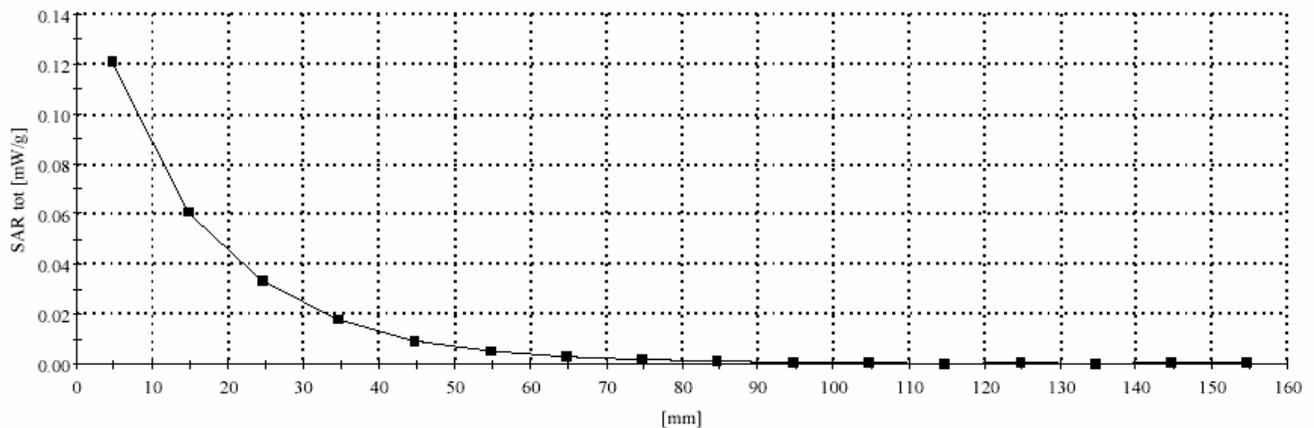
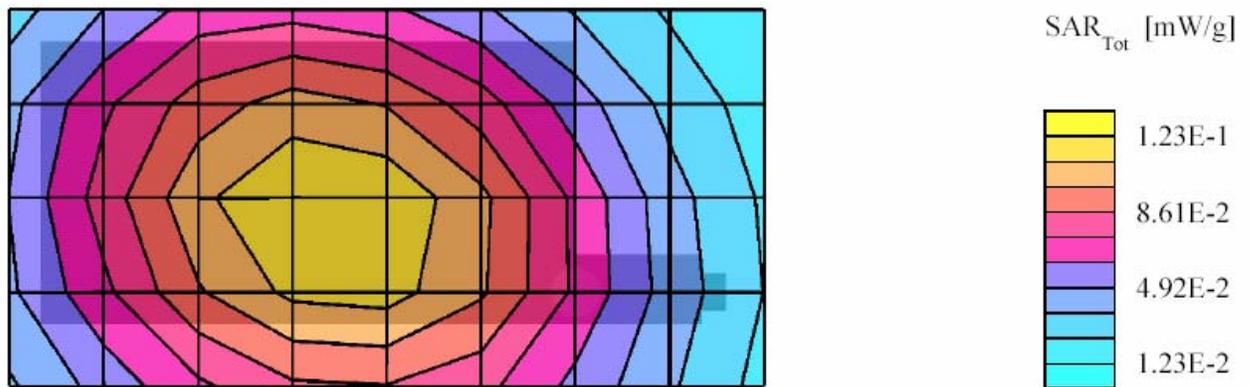
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Probe cal date: 25/2/04; Crest factor: 6.0; IEEE

Head 899: $\sigma = 1.01$ mho/m $\epsilon = 40.5$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.125 mW/g, SAR (10g): 0.0878 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 52.5, 4.7

Power Drift: -0.11 dB



FCC ID: AZ489FT5833; Test Date: 5/29/04

Motorola CGISS EME Laboratory

Run #: CM-Ab-R3-040529-07

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power: 0.700 W

Antenna: OUT

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: NKN6559A

DUT w/ body worn accessory against the phantom

Flat Phantom; Position: (90°,90°);

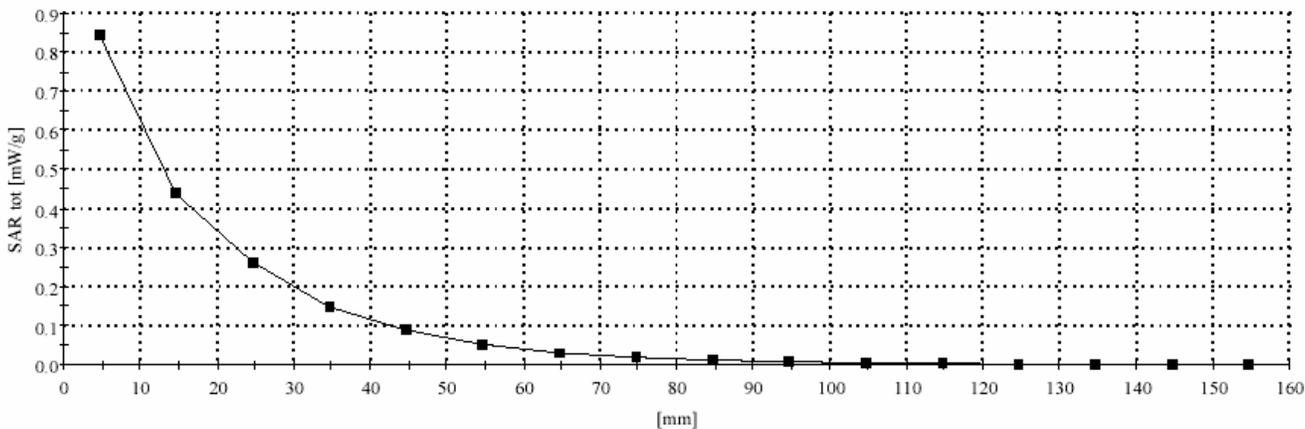
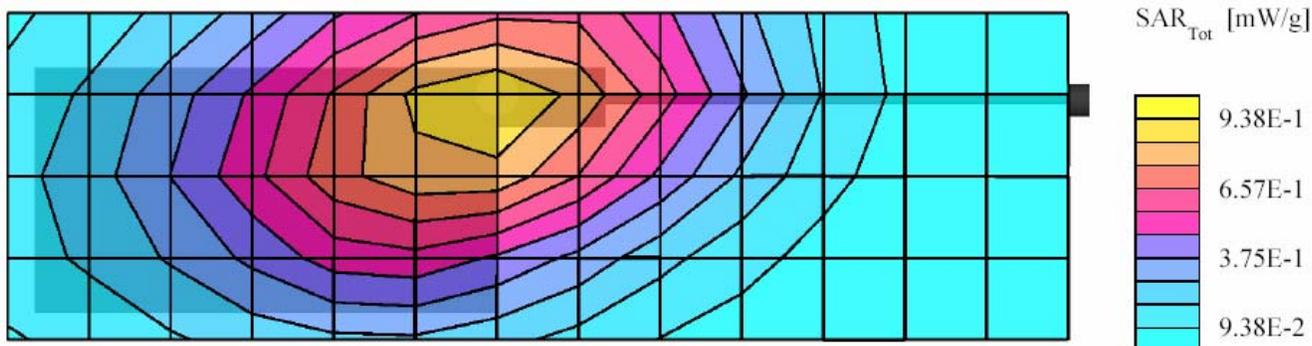
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.94$ mho/m $\epsilon = 55.1$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.864 mW/g, SAR (10g): 0.609 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 18.0, 87.0, 4.7

Power drift: -0.67 dB



FCC ID: AZ489FT5833; Test Date: 6/2/04

Motorola CGISS EME Laboratory

Run #: JF-Ab-R3-040602-04

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 813.5125 MHz

Sim Tissue Temp: 19.1 (Celsius)

Start Power: 0.718 W

Antenna: Out

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: NNTN5330A

DUT w/ body worn accessory against the phantom

Flat Phantom; Position: (90°,90°);

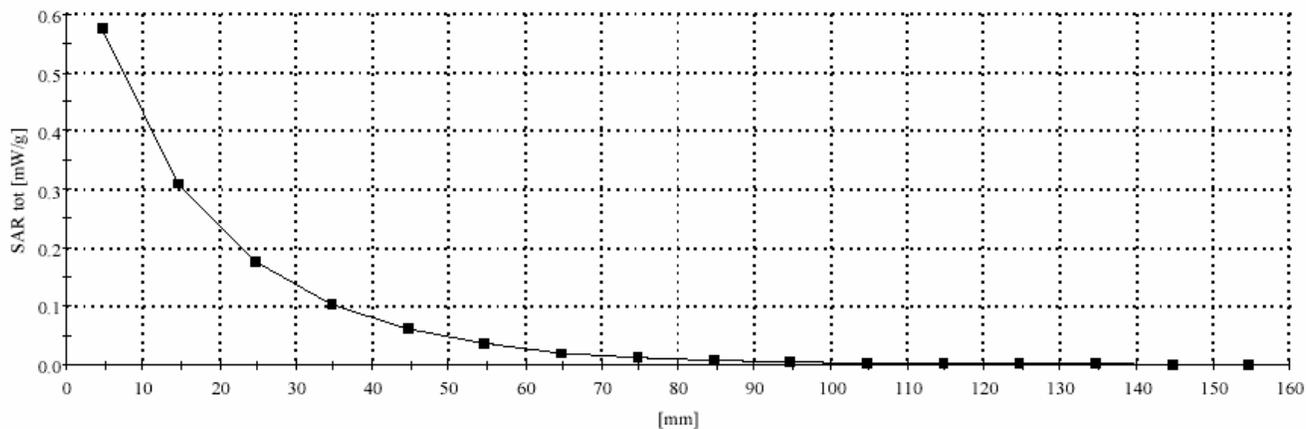
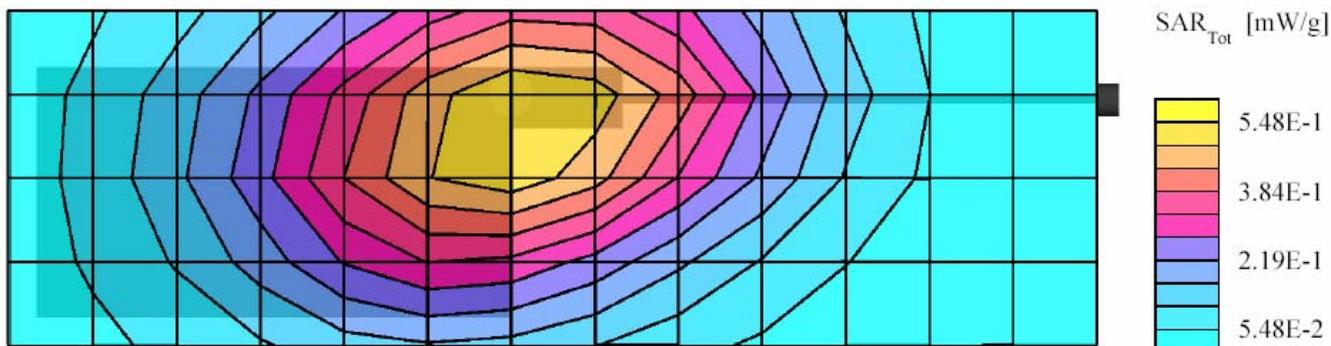
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 3.0; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 54.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.584 mW/g, SAR (10g): 0.406 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 21.0, 91.5, 4.7

Power Drift: -0.01 dB



FCC ID: AZ489FT5833; Test Date: 6/02/04

Motorola CGISS EME Laboratory

Run #: JF-Ab-R3-040602-07

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 806.0125 MHz

Sim Tissue Temp: 19.3 (Celsius)

Start Power: 0.691 W

Antenna: Out

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: None

DUT w/ body worn accessory against the phantom

Flat Phantom; Position: (90°,90°);

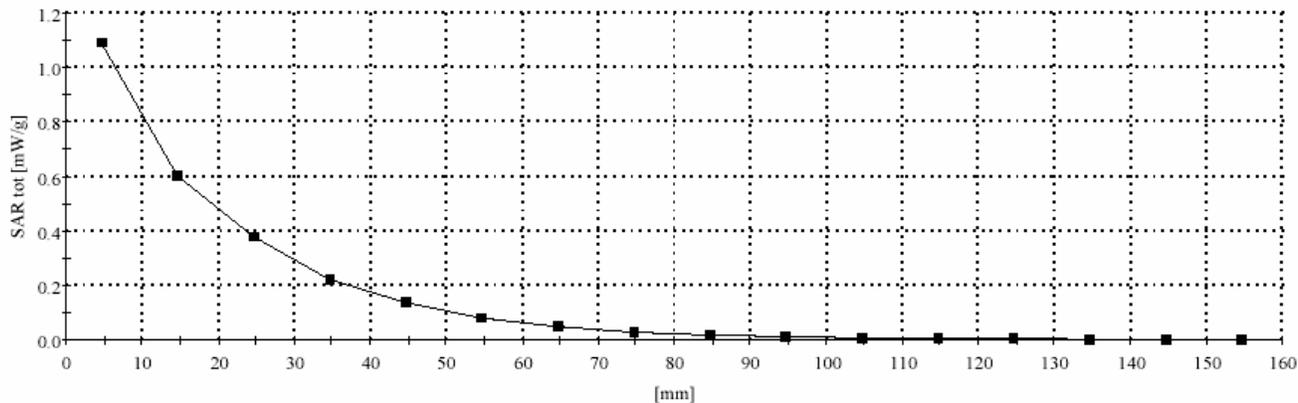
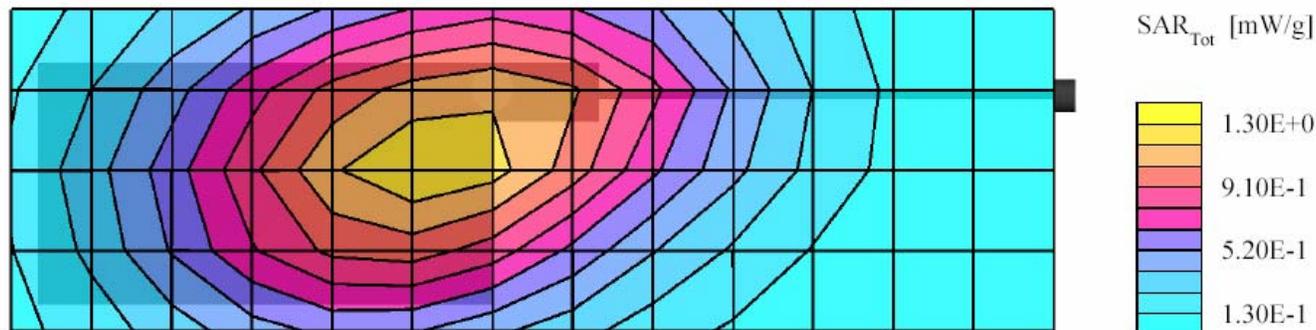
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.93$ mho/m $\epsilon = 54.7$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 1.13 mW/g, SAR (10g): 0.827 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 78.0, 4.7

Power Drift: -0.87 dB



FCC ID: AZ489FT5833; Test Date: 6/02/04

Motorola CGISS EME Laboratory

Run #: CM-Ab-R3-040602-10

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 896.01875 MHz

Sim Tissue Temp: 19.2 (Celsius)

Start Power: 0.692 W

Antenna: In

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: NNTN5330A

DUT w/ body worn accessory against the phantom

Flat Phantom; Position: (90°,90°);

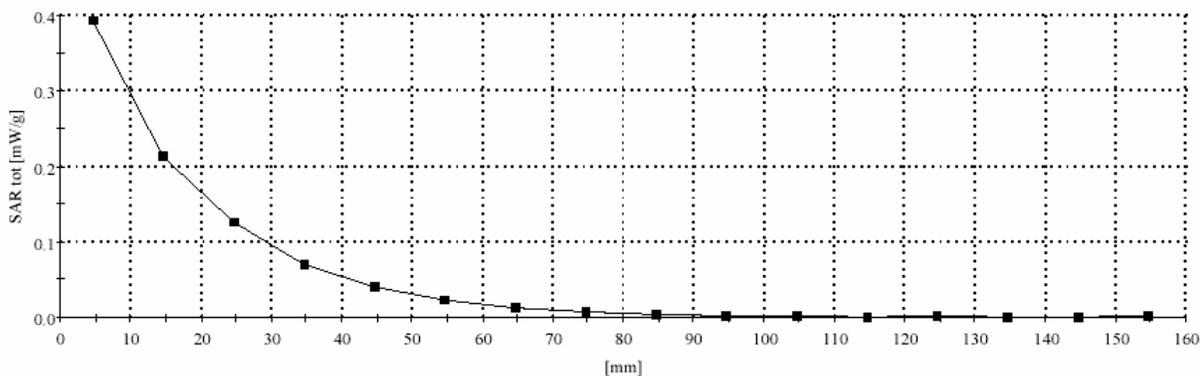
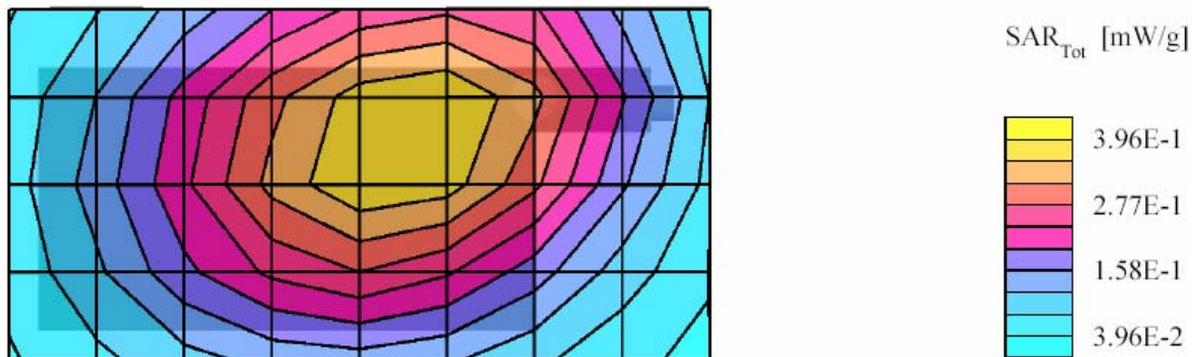
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 3.0; FCC

Body 899 MHz: $\sigma = 1.01$ mho/m $\epsilon = 53.9$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.404 mW/g, SAR (10g): 0.290 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 67.5, 4.7

Power Drift: -0.25 dB



FCC ID: AZ489FT5833; Test Date: 6/03/04

Motorola CGISS EME Laboratory

Run #: JF-Ab-R3-040603-02

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068L

TX Freq: 813.5125 MHz

Sim Tissue Temp: 19.5 (Celsius)

Start Power: 0.698 W

Antenna: Out

Battery Kit: SNN5704C/NNTN5529A

Body worn: None

Audio/Data Acc.: None

DUT w/ back separated 2.5cm from the phantom (Flip closed)

Flat Phantom; Position: (90°,90°);

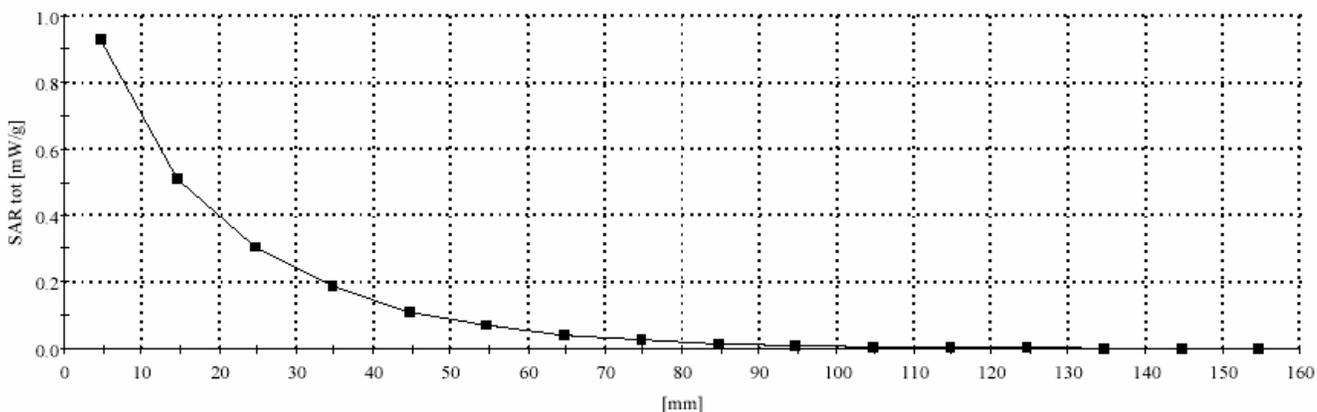
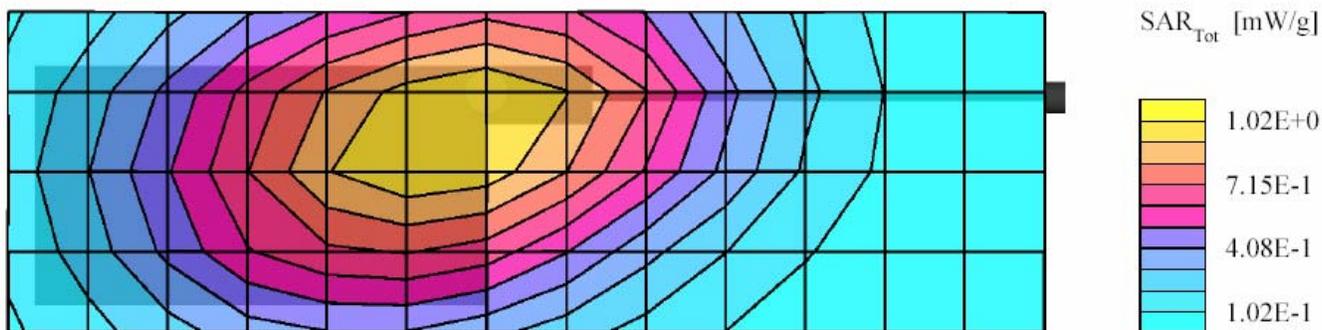
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.94$ mho/m $\epsilon = 55.6$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 0.968 mW/g, SAR (10g): 0.710 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 84.0, 4.7

Power Drift: -0.86 dB



FCC ID: AZ489FT5833; Test Date: 6/03/04

Motorola CGISS EME Laboratory

Run #: JF-Ab-R3-040603-04

Model #: H73XAN6RR4AN / NUF3754A00 SN: 364AEJ068N

TX Freq: 813.5125 MHz

Sim Tissue Temp: 20.1 (Celsius)

Start Power: 0.702 W

Antenna: Out

Battery Kit: SNN5704C/NNTN5529A

Body worn: NNTN4747A

Audio/Data Acc.: None

DUT w/ body worn accessory against the phantom

Flat Phantom; Position: (90°,90°);

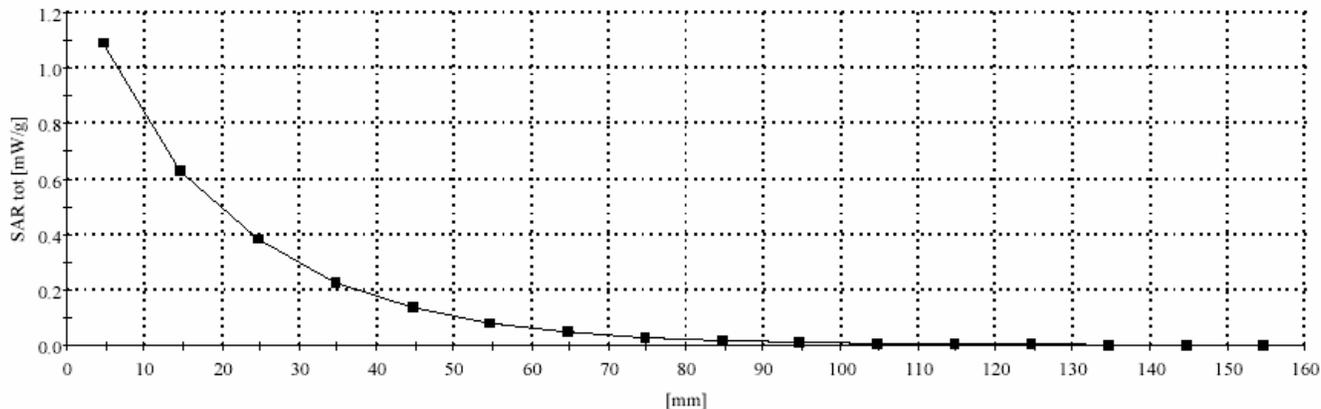
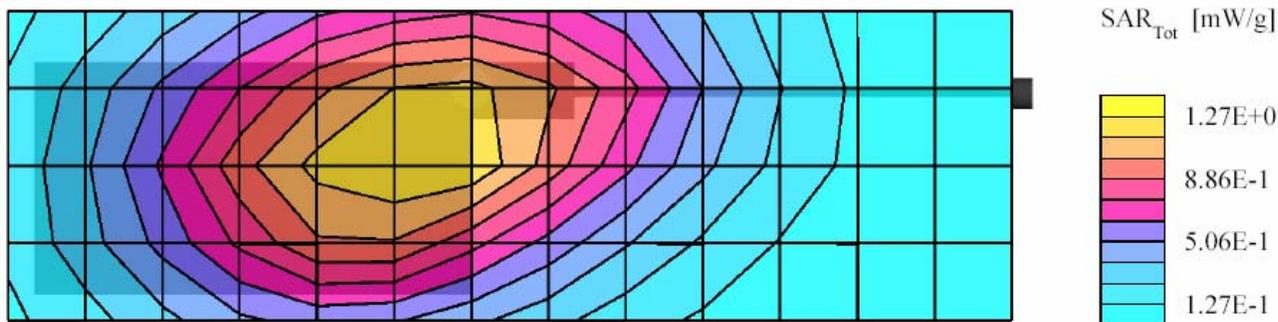
Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Probe cal date: 25/2/04; Crest factor: 1.5; FCC

Body 813: $\sigma = 0.94$ mho/m $\epsilon = 55.6$ $\rho = 1.00$ g/cm³; DAE3: 401V1 DAE Cal Date: 08/21/2003

Cube 7x7x7: SAR (1g): 1.20 mW/g, SAR (10g): 0.867 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 25.5, 85.5, 4.7

Power Drift: -0.84 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: 5/24/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040524-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.3 (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)

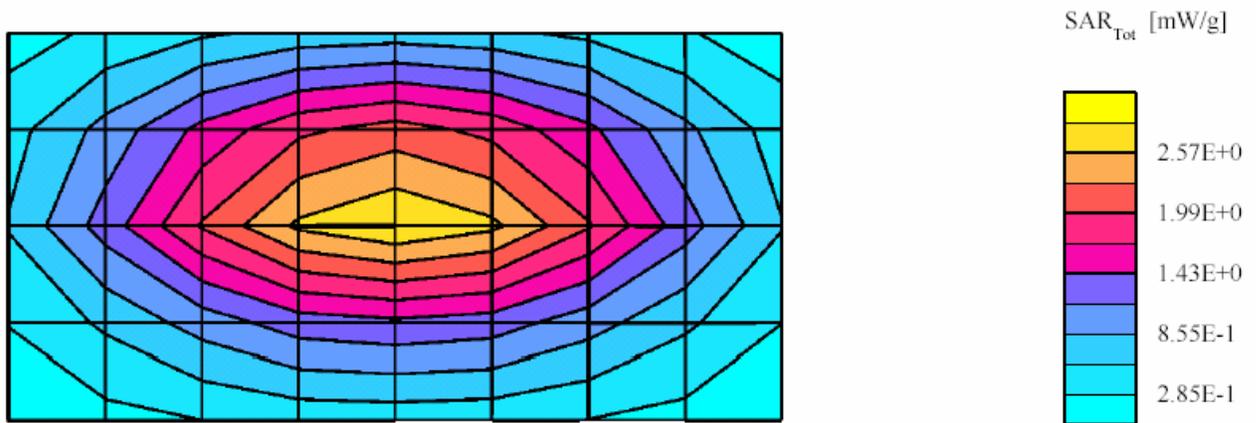
SAR calculated at 1W is 11.56 mW/g (1g avg). Percent from target (including drift) is -3.67 %

SAR calculated at 1W is 7.23 mW/g (10g avg). Percent from target (including drift) is -3.86 %

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 $\epsilon = 40.8$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.68 mW/g ± 0.00 dB, SAR (1g): 2.91 mW/g ± 0.01 dB, SAR (10g): 1.82 mW/g ± 0.01 dB, (Worst-case extrapolation)Penetration depth: 11.1 (10.3, 12.3) [mm]

Power drift: 0.03 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/25/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040525-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.1 (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)

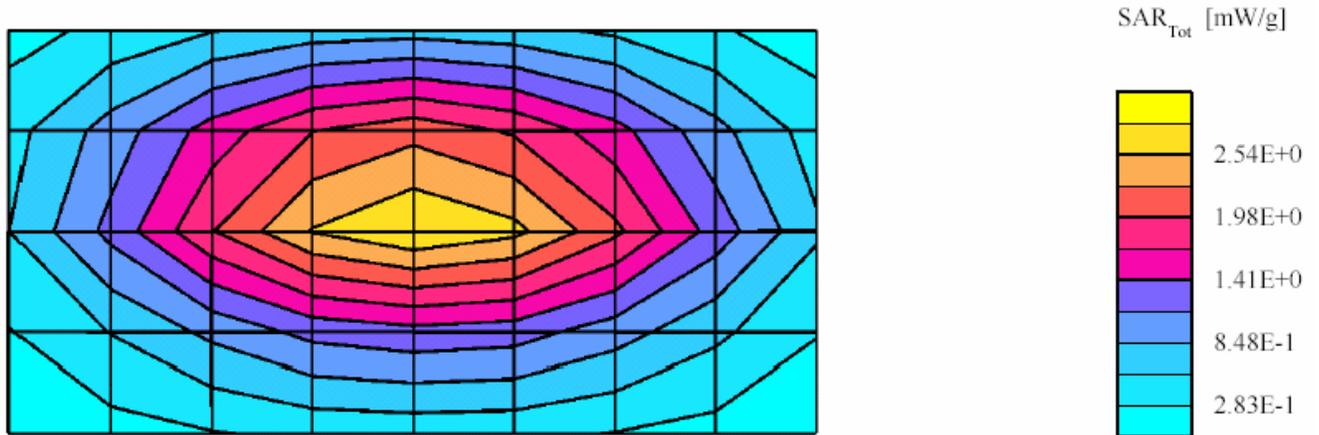
SAR calculated at 1W is 11.61 mW/g (1g avg). Percent from target (including drift) is -3.22 %

SAR calculated at 1W is 7.22 mW/g (10g avg). Percent from target (including drift) is -3.94 %

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 $\epsilon = 40.8$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.69 mW/g ± 0.00 dB, SAR (1g): 2.91 mW/g ± 0.02 dB, SAR (10g): 1.81 mW/g ± 0.02 dB, (Worst-case extrapolation)Penetration depth: 11.1 (10.2, 12.3) [mm]

Power drift: 0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/26/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040526-01

TX Freq: 900 MHz

Sim Tissue Temp: 19.9 (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)

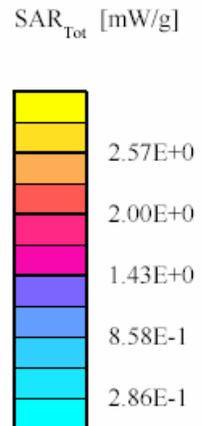
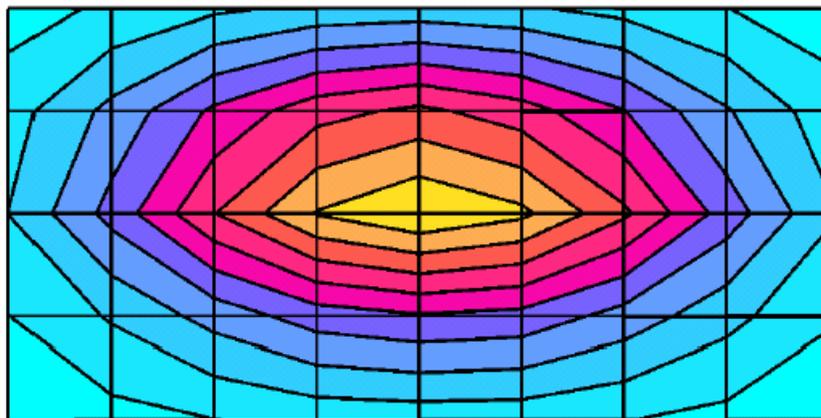
SAR calculated at 1W is 11.57 mW/g (1g avg). Percent from target (including drift) is -3.56 %

SAR calculated at 1W is 7.23 mW/g (10g avg). Percent from target (including drift) is -3.81 %

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 $\epsilon = 40.9$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.62 mW/g \pm 0.01 dB, SAR (1g): 2.88 mW/g \pm 0.01 dB, SAR (10g): 1.80 mW/g \pm 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.1 (10.3, 12.3) [mm]

Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/27/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040527-01

TX Freq: 900 MHz

Sim Tissue Temp: 19.9 (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 11.73 mW/g (1g avg). Percent from target (including drift) is -2.21%

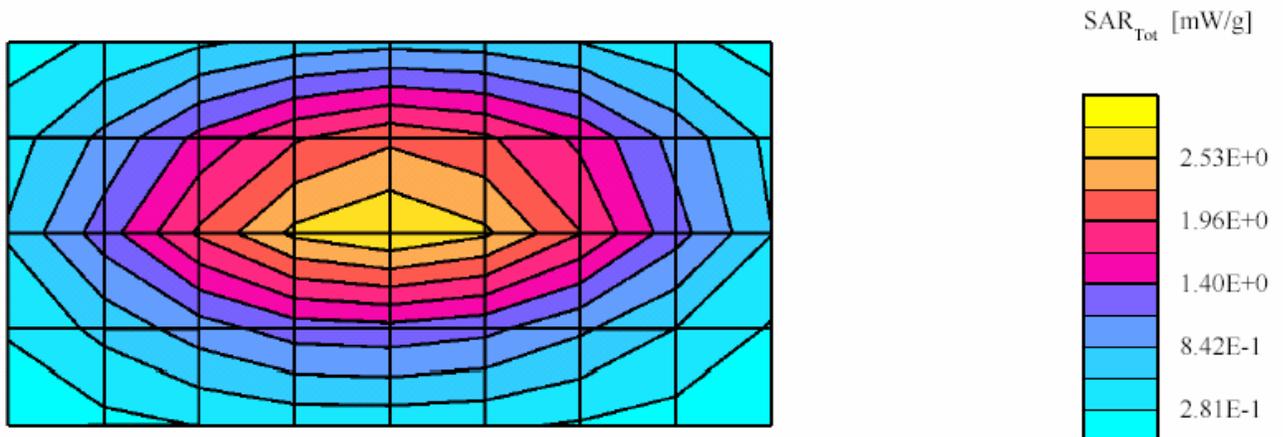
SAR calculated at 1W is 7.32 mW/g (10g avg). Percent from target (including drift) is -2.61%

SAM; FlatProbe: 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 $\epsilon = 40.9$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.68 mW/g ± 0.00 dB, SAR (1g): 2.90 mW/g ± 0.01 dB, SAR (10g): 1.81 mW/g ± 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.1 (10.2, 12.3) [mm]

Power drift: -0.05 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/28/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040528-01

TX Freq: 900 MHz

Sim Tissue Temp: 19.9 (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)

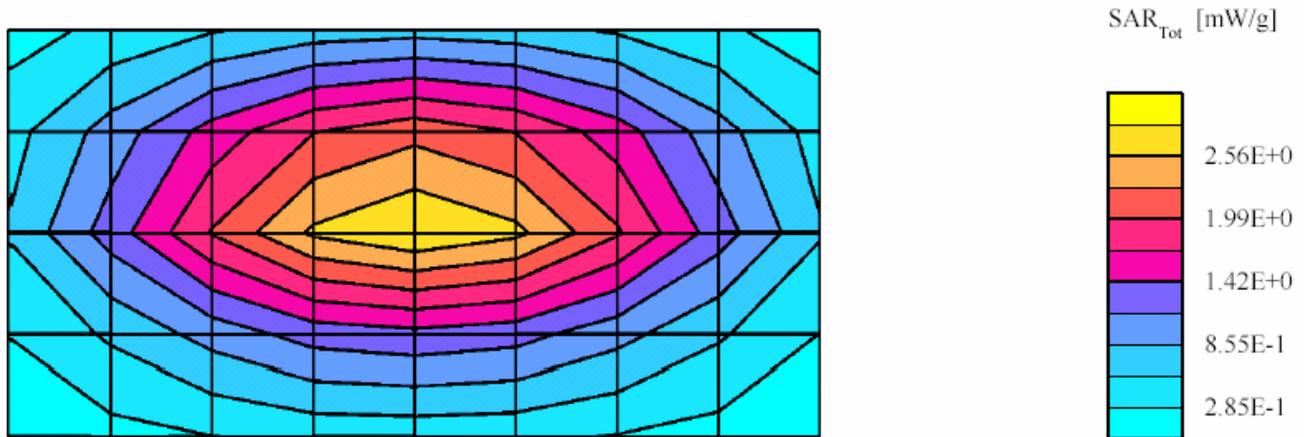
SAR calculated at 1W is 11.65 mW/g (1g avg). Percent from target (including drift) is -2.89%

SAR calculated at 1W is 7.26 mW/g (10g avg). Percent from target (including drift) is -3.41%

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: $\sigma = 1.01\text{mho/m}$ $\epsilon = 40.5$ $\rho = 1.00\text{ g/cm}^3$; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.71 mW/g \pm 0.01 dB, SAR (1g): 2.92 mW/g \pm 0.01 dB, SAR (10g): 1.82 mW/g \pm 0.01 dB, (Worst-case extrapolation) Penetration depth: 11.1 (10.2, 12.3) [mm]

Power drift: 0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 5/29/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040529-01

TX Freq: 900 MHz

Sim Tissue Temp: 20.8 (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)

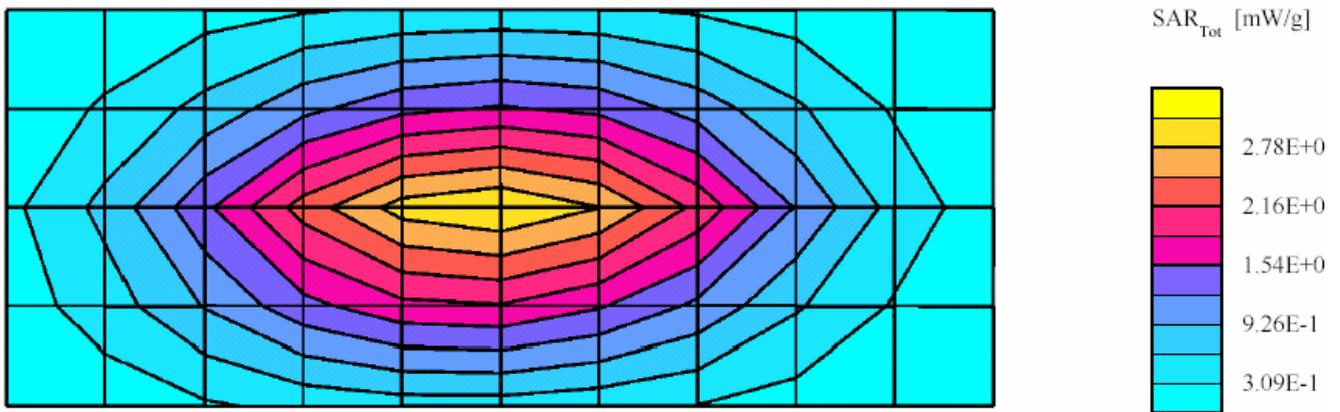
SAR calculated at 1W is 12.23 mW/g (1g avg). Percent from target (including drift) is 9.47 %

SAR calculated at 1W is 7.78 mW/g (10g avg). Percent from target (including drift) is 9.39 %

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 $\epsilon = 54.3$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.77 mW/g \pm 0.01 dB, SAR (1g): 3.05 mW/g \pm 0.01 dB, SAR (10g): 1.94 mW/g \pm 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.3 (11.2, 13.7) [mm]

Power drift: -0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 6/01/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040601-01

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 12.17 mW/g (1g avg). Percent from target (including drift) is 8.97 %

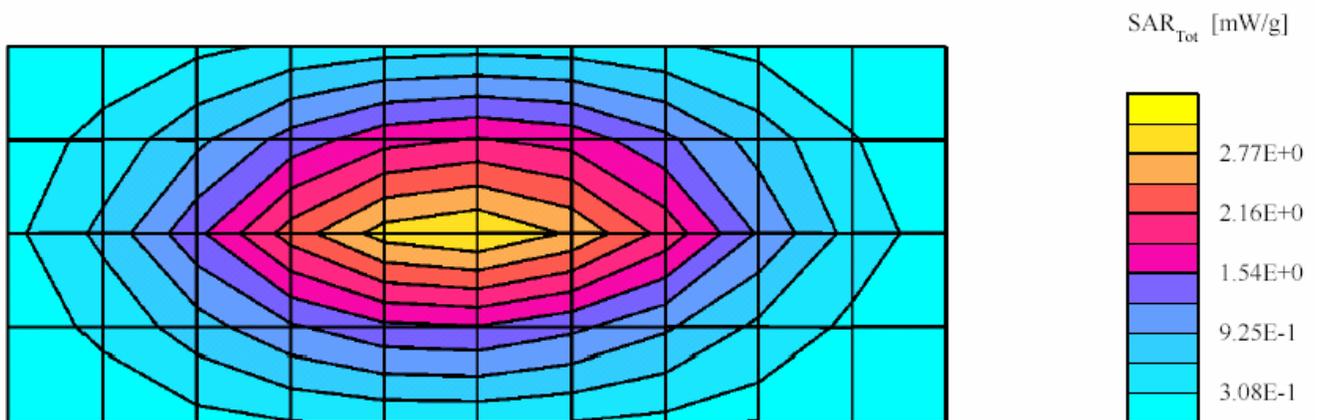
SAR calculated at 1W is 7.74 mW/g (10g avg). Percent from target (including drift) is 8.89 %

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 $\epsilon = 54.4$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.79 mW/g \pm 0.00 dB, SAR (1g): 3.05 mW/g \pm 0.00 dB, SAR (10g): 1.94 mW/g \pm 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.2 (11.1, 13.6) [mm]

Power drift: 0.01 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 6/02/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040602-01

TX Freq: 900 MHz

Sim Tissue Temp: 19.1 (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 11.98 mW/g (1g avg). Percent from target (including drift) is 7.21 %

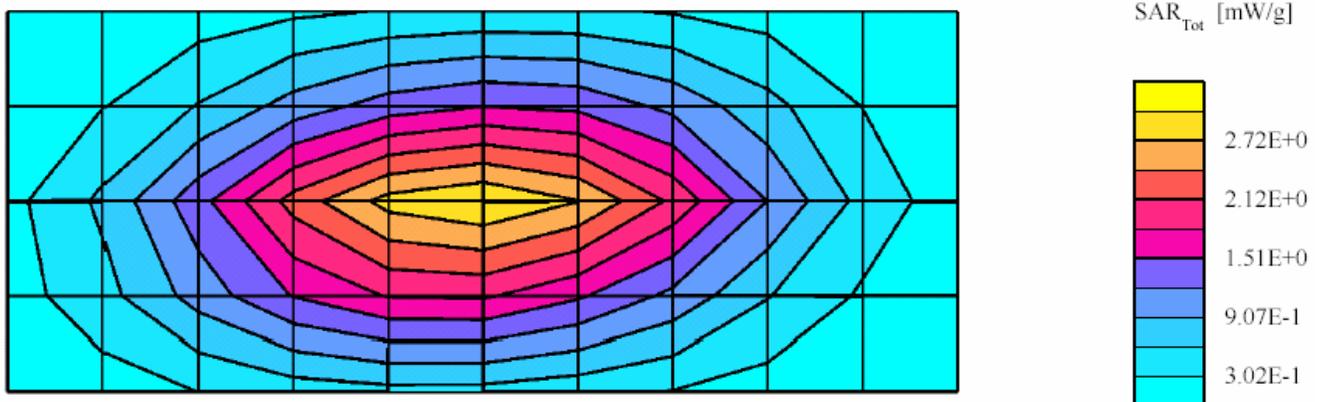
SAR calculated at 1W is 7.64 mW/g (10g avg). Percent from target (including drift) is 7.39 %

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: $\sigma = 1.01$ mho/m $\epsilon = 53.9$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.68 mW/g ± 0.00 dB, SAR (1g): 2.98 mW/g ± 0.00 dB, SAR (10g): 1.90 mW/g ± 0.00 dB, (Worst-case extrapolation) Penetration depth: 12.2 (11.1, 13.6) [mm]

Power drift: -0.02 dB



SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 6/03/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-040603-01

TX Freq: 900 MHz

Sim Tissue Temp: 19.5 (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 12.0 mW/g (1g avg). Percent from target (including drift) is 7.45 %

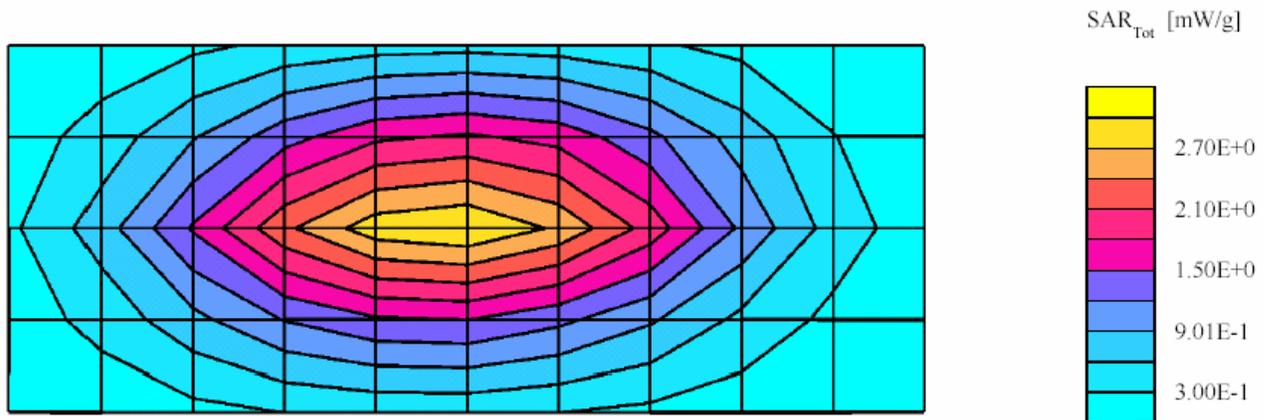
SAR calculated at 1W is 7.61 mW/g (10g avg). Percent from target (including drift) is 7.07 %

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 $\epsilon = 55.0$ $\rho = 1.00$ g/cm³; DAE3: 401 DAE Cal Date: 08/21/2003

Cubes (2): Peak: 4.68 mW/g \pm 0.02 dB, SAR (1g): 2.98 mW/g \pm 0.01 dB, SAR (10g): 1.89 mW/g \pm 0.01 dB, (Worst-case extrapolation) Penetration depth: 12.1 (11.0, 13.5) [mm]

Power drift: -0.03 dB



SYSTEM VALIDATION

Date: 12/16/2003 Frequency (MHz): 900
Lab Location: CGISS Mixture Type: IEEE Head
Robot System: CGISS-3 Ambient Temp.(°C): 22.8
Probe Serial #: ET3DV6-1393 Tissue Temp.(°C): 20.9
DAE Serial #: 406

Tissue Characteristics

Permittivity: 41.5 Phantom Type/SN: SAMTP1208
Conductivity: 1.00 Distance (mm): 15 (tissue/dipole cnt)

Reference Source: 900V2 (Dipole)
Reference SN: 85

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

Target SAR Value: 10.8 mW/g, 6.9 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 3 mW/g, 1.88 mW/g (10g avg.)
Power Drift: 0 dB

Measured SAR Value: 12.00 mW/g, 7.52 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 11.11 % (1g ave)
8.99 % (10g ave)

Test performed by: Edward R. Church Initial: ERC

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

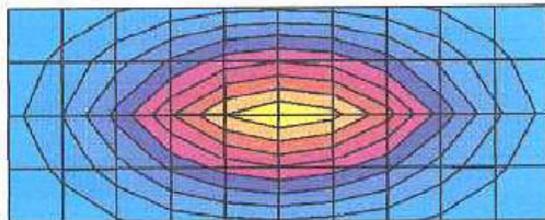
Phantom #:SAMTP1208
SN: 085
Tester: E. Church
Sim Tissue Temp: 20.9 (Celsius)
DAE Cal Date: 11/20/03

- 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]



SYSTEM PERFORMANCE CHECK TARGET SAR

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

Tissue Characteristics

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

Reference Source: 900 (Dipole)

Reference SN: 85

Power to Dipole: 250 mW

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

New Target/Measured

SAR Value: 11.17 mW/g, 7.11 mW/g (10g avg.)
(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
Model #: D900V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power: 250mW
DAE3: SN: 406

Phantom #: 80302002A-S8
SN: 085
Tester: E. Church
Sim Tissue Temp: 21.0 (Celsius)
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 %

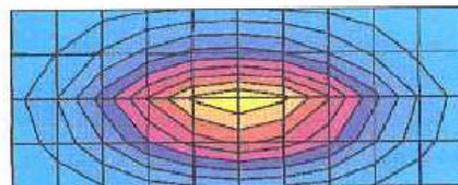
Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Crest factor: 1.0; FCC

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): **ET30V9 - 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 degree 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
Fluke 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: **Oliver Matten** (Technician) 
 Approved by: **Edgar Pokras** (Laboratory Director) 

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 [^]		
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

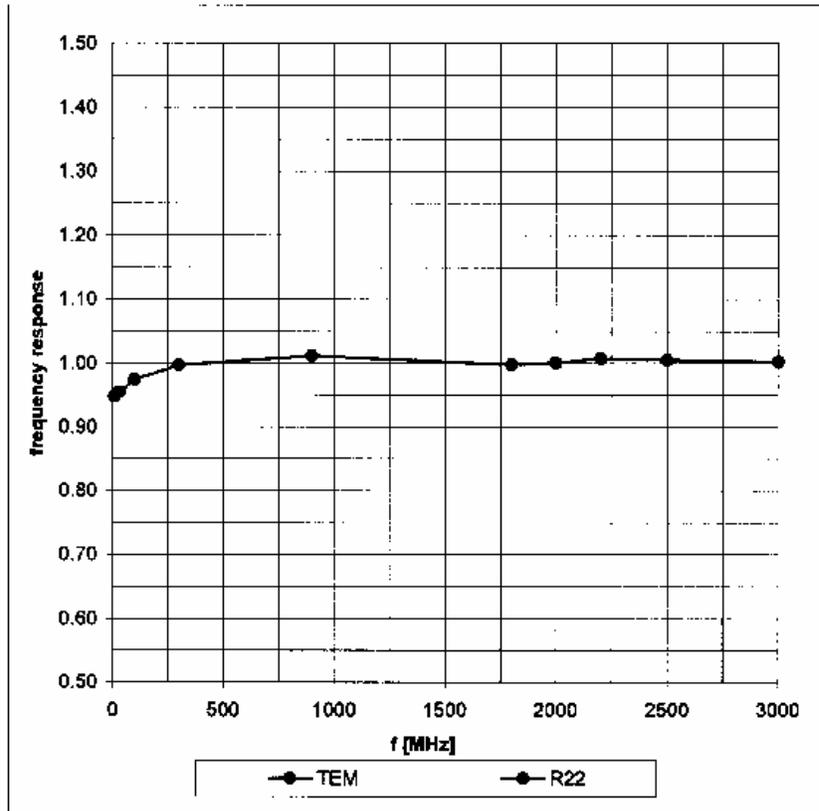
Sensor Offset

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

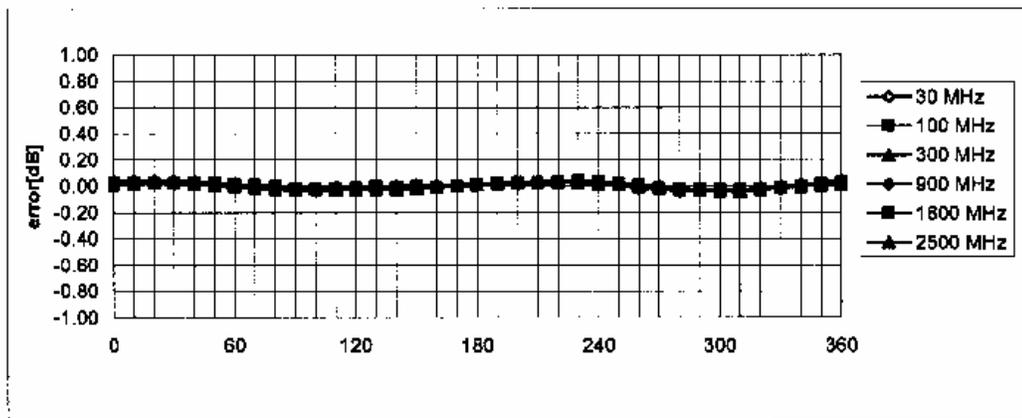
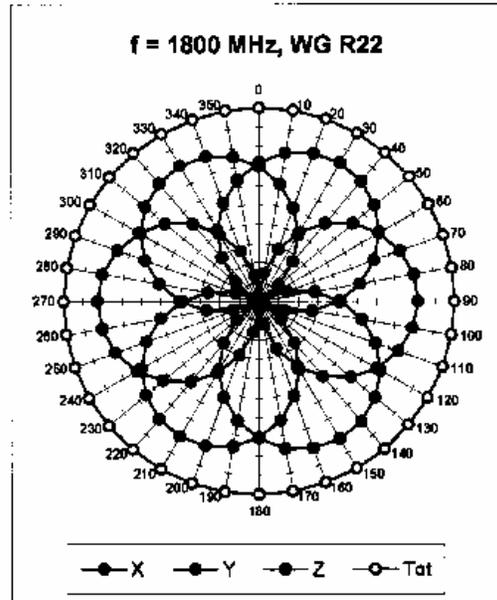
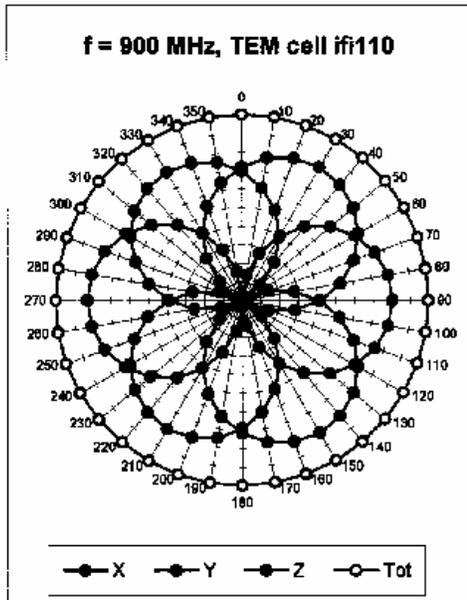
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[^] numerical linearization parameter: uncertainty not required

Frequency Response of E-Field (TEM-Cell:ifi110, Waveguide R22)

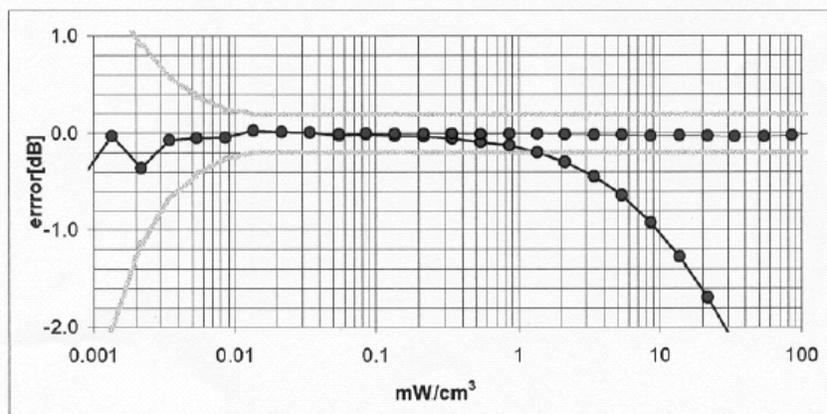
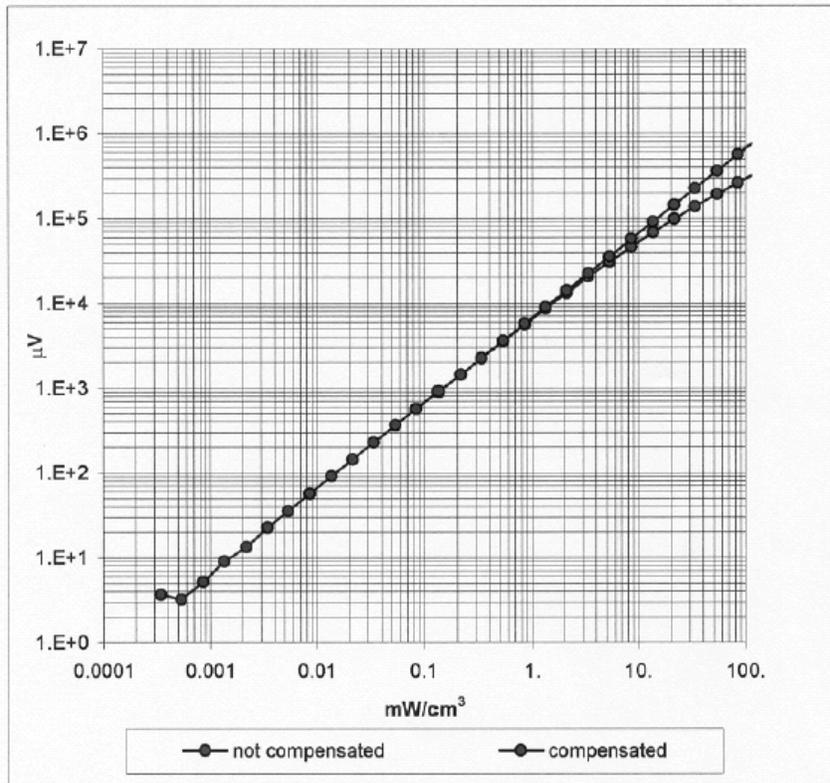


Receiving Pattern (ϕ) , $\theta = 0^\circ$



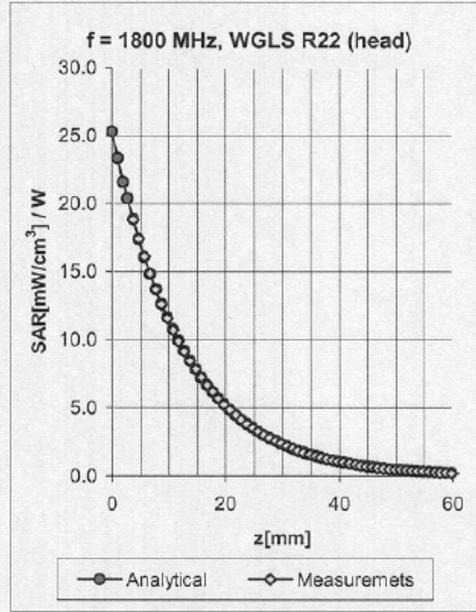
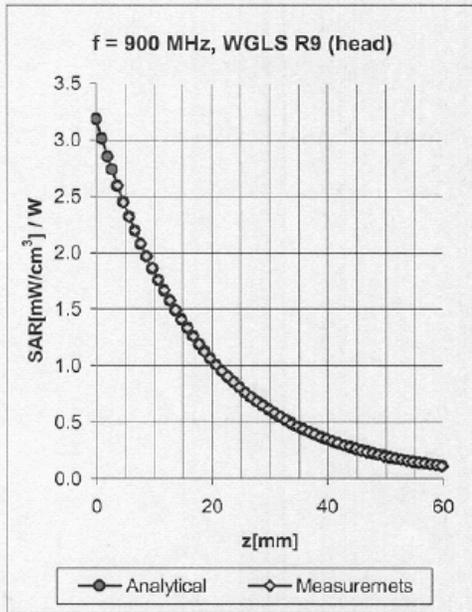
Axial Isotropy Error $< \pm 0.2$ dB

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



Probe Linearity < ± 0.2 dB

Conversion Factor Assessment

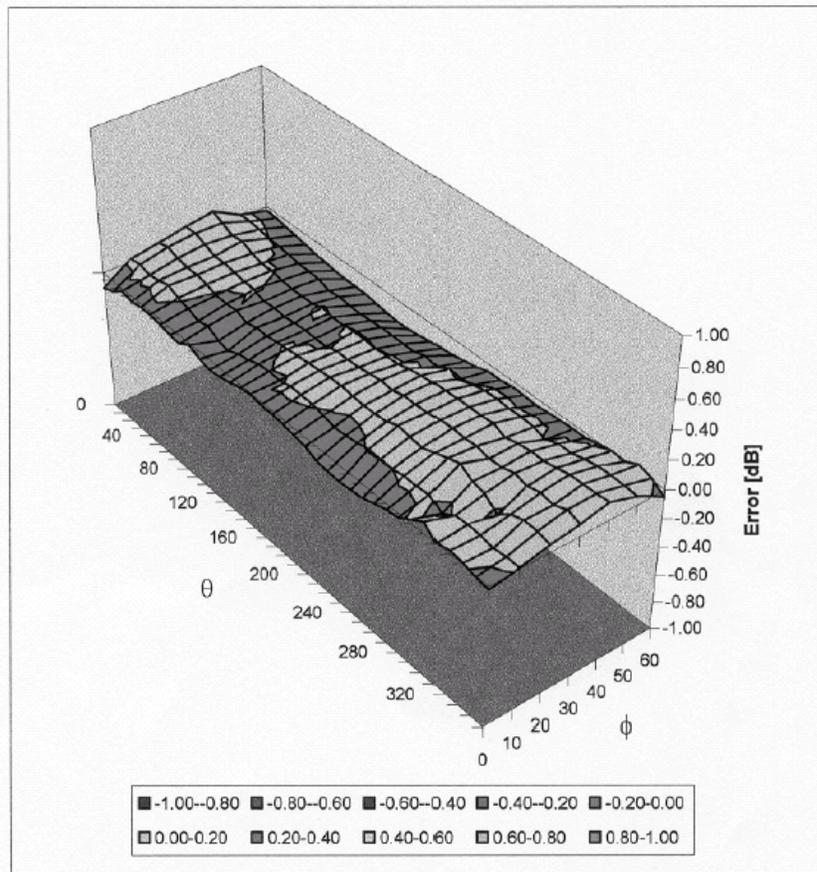


f [MHz]	Validity [MHz] ^B	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.72	1.77	6.30 ± 9.5%	(k=2)
1450	1400-1500	Head	40.5 ± 5%	1.20 ± 5%	0.55	2.40	5.72 ± 9.5%	(k=2)
1800	1710-1910	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.38	5.14 ± 9.5%	(k=2)
2450	2400-2500	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 <math>\lt; \pm 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:

N. Vetterli

Approved by:

Alain Katon

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

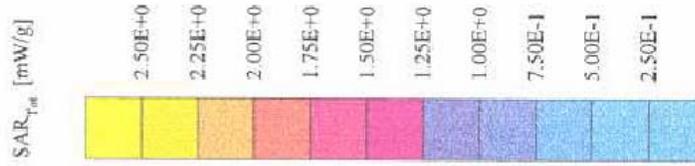
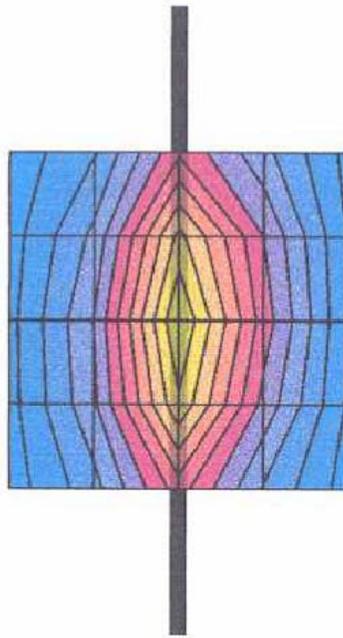
2.2. SAR Measurement with DASY4 System

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

Validation Dipole D900V2 SN:085, d=15 mm

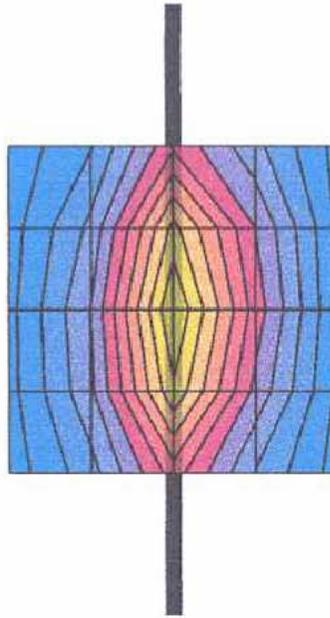
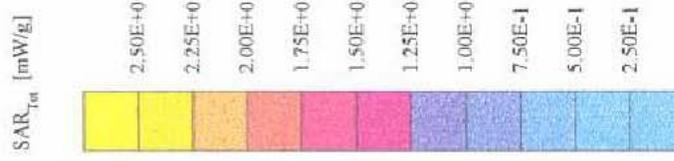
Frequency: 900 MHz, Antenna Input Power: 250 [mW]
SAM Phantom, Flat Section, Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0
Probe: ET3DV6 - SN1507; ConvF(6.50,6.50,6.50) at 900 MHz; IEEE 1528 900 MHz: $\sigma = 0.97$ mho/m $\epsilon_r = 41.7$ $\rho = 1.00$ g/cm³
Cubes (2): Peak: 4.34 mW/g ± 0.01 dB, SAR (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



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 s, $\epsilon = 41.7$ $\rho = 1.00$ g/cm³
Cubes (2), Peak: 3.85 mW/g \pm 0.01 dB, SAR (1g): 2.57 mW/g \pm 0.01 dB, SAR (10g): 1.66 mW/g \pm 0.02 dB, (Advanced extrapolation)
Penetration depth: 12.6 (12.4, 12.9) [mm]
Powerdicht: -0.00 dB



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APPENDIX E
Illustration of Body-Worn Accessories

The purpose of this appendix is to illustrate the body-worn carry accessories for FCC ID: AZ489FT5833. 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 NNTN5003A
Back View



Photo 2.
Model NNTN5003A
Side View



Photo 3.
Model NNTN4747A
Back View



Photo 4.
Model NNTN4747A
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:

Carry Case Models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN4747A	Yes	26-29	NA
NNTN5003A	Yes	33-37	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
NNTN5330A	Yes	NA	NA

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

Other attachment models	Tested ?	Separation distances between DUT antenna and phantom surface. (mm)	Comments
NNTN5529A	Yes	NA	Tested with battery model SNN5704C
NNTN5530A	Yes	NA	Tested with battery model SNN5705B