



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: October 20, 2003
Report Revision: Rev. O
Manufacturer: Motorola South - ARAD
Product Description: Enhanced Power Pad w/ GPRS: 0.631W GSM800,
0.809W for PCS1900; TDMA: 1:8 duty cycle, GMSK
modulation; Bluetooth: 1mW, Frequency Hopping Spread
Spectrum (FHSS)
FCC ID: **AZ489FT7008**
Device Model: F4421A

Test Period: 9/06/03-9/08/03 & 10/02/03
EME Tech: Ed Church
Responsible Engineer: Deanna Zakharia
(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

10/20/2003

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

Date Approved

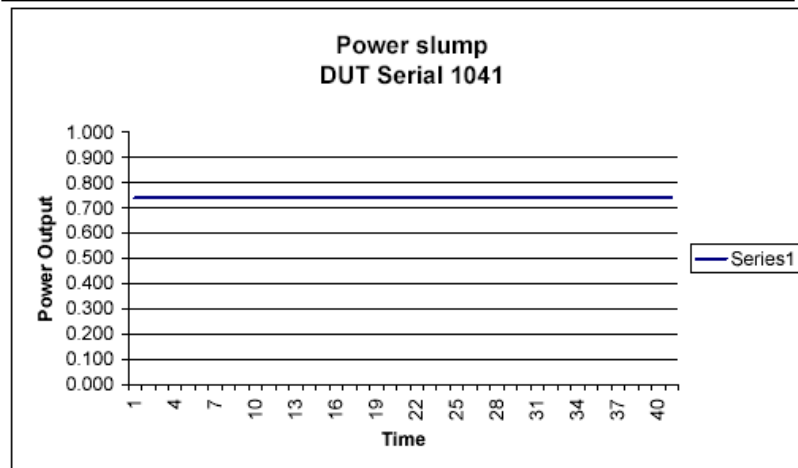
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APPENDIX A

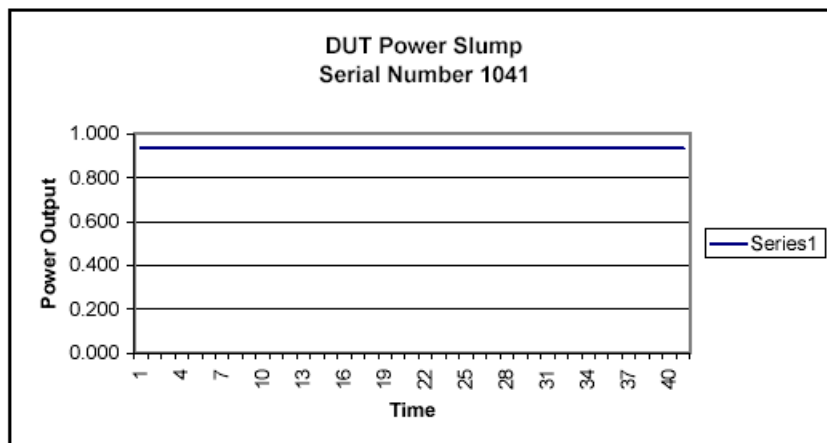
Power Slump Data/Shortened Scan

DUT Power versus time data

Initial Power Measurements GSM800 S/N e24 (1041) g20 IMEI 004400-00-336350-2			GSM800 Power Slump @ 836.6 MHz (Ch. 190)		
Frequency (MHz)	Power (dBm)	Power (W)	Time (min)	Power (dBm)	Power (W)
824.2000	28.726	0.746	0	28.698	0.741
836.6000	28.698	0.741	1	28.697	0.741
848.8000	28.712	0.743	2	28.697	0.741
Power output measured with: HP438A Power Meter, with: HP8482H Power Sensor. Calibration date: 13.10.02 Data recorded via GPIB			3	28.690	0.740
			4	28.699	0.741
			5	28.691	0.740
			6	28.693	0.740
			7	28.692	0.740
			8	28.697	0.741
			9	28.699	0.741
			10	28.691	0.740
			11	28.693	0.740
			12	28.697	0.741
Test Mode: TDMA Maximum duty cycle: 12.5%			13	28.698	0.741
			14	28.694	0.740
			15	28.694	0.740
			16	28.698	0.741
			17	28.692	0.740
			18	28.690	0.740
			19	28.694	0.740
			20	28.700	0.741
			21	28.692	0.740
			22	28.697	0.741
			23	28.690	0.740
			24	28.694	0.740
			25	28.692	0.740
			26	28.698	0.741
			27	28.699	0.741
			28	28.688	0.739
			29	28.699	0.741
			30	28.686	0.739
			31	28.695	0.740
			32	28.691	0.740
			33	28.690	0.740
			34	28.696	0.741
			35	28.696	0.741
			36	28.694	0.740
			37	28.695	0.740
			38	28.690	0.740
			39	28.690	0.740
			40	28.690	0.740



Initial Power Measurements PCM1900 S/N e24 (1041) g20 IMEI 004400-00-336350-2			PCM1900 Power Slump @ 1880.0 MHz (Ch. 661)		
Frequency (MHz)	Power (dBm)	Power (W)	Time (min)	Power (dBm)	Power (W)
1850.2	29.778	0.950	0	29.710	0.935
1880.0	29.710	0.935	1	29.714	0.936
1909.8	29.707	0.935	2	29.715	0.936
			3	29.706	0.935
			4	29.713	0.936
			5	29.704	0.934
			6	29.712	0.936
			7	29.711	0.936
			8	29.704	0.934
			9	29.706	0.935
			10	29.712	0.936
			11	29.712	0.936
			12	29.708	0.935
			13	29.711	0.936
			14	29.713	0.936
			15	29.708	0.935
			16	29.707	0.935
			17	29.709	0.935
			18	29.707	0.935
			19	29.706	0.935
			20	29.713	0.936
			21	29.713	0.936
			22	29.710	0.935
			23	29.709	0.935
			24	29.709	0.935
			25	29.711	0.936
			26	29.709	0.935
			27	29.708	0.935
			28	29.705	0.934
			29	29.706	0.935
			30	29.707	0.935
			31	29.710	0.935
			32	29.712	0.936
			33	29.713	0.936
			34	29.707	0.935
			35	29.708	0.935
			36	29.711	0.936
			37	29.708	0.935
			38	29.709	0.935
			39	29.710	0.935
			40	29.715	0.936



Shortened Scan Results

FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030906-16

MODEL #: F4421A SER #: 1056

TX FREQ: 824.2 MHz

SIM TEMP: 20.5 C

START PWR: .736 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTM6032A

ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

Shortened scan.

Run time 8 minutes

Representative “normal” scan run time was 26 minutes

“Shortened” scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 0.304 mW/g

“Normal” scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 0.298 mW/g

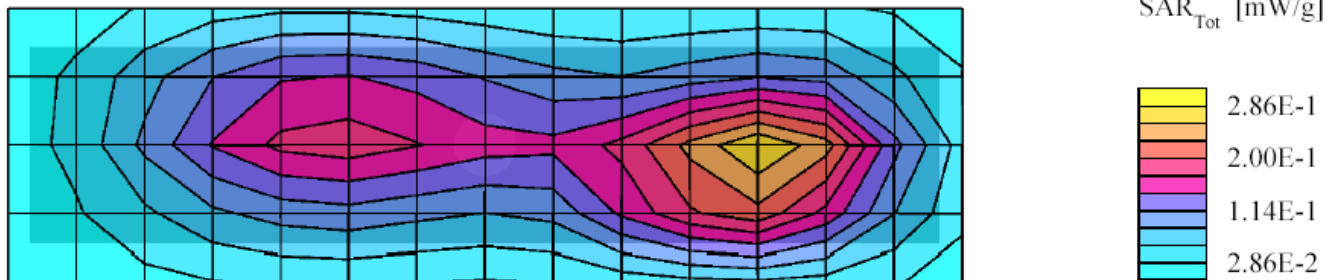
(see section 7.1 run # Ab-R3-030906-15)

DUT w. right side against phantom

Flat Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 5x5x7: SAR (1g): 0.296 mW/g, SAR (10g): 0.183 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 33.0, 166.5, 4.7

Power drift: -0.00 dB



FCC ID: AZ489FT7008; Test Date: 9/08/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030908-04

MODEL #: F4421A SER #: 1041

TX FREQ: 1880 MHz

SIM TEMP: 20.6 C

START PWR: .935 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

Shortened scan.

Run time 7 minutes

Representative “normal” scan run time was 27 minutes

“Shortened” scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 0.660 mW/g

“Normal” scan; max calc. S.A.R. (drift adjusted) w/ 1:8 duty cycle = 0.759 mW/g

(see section 7.1 run # Ab-R3-030907-05)

DUT w/ right side against the phantom

Flat Phantom; Position: (90°,90°);

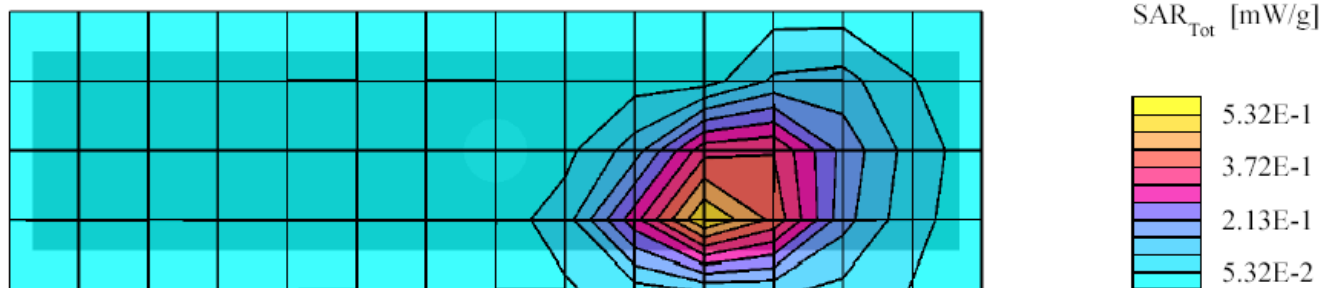
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date: 16/04/03; Crest factor: 8.0;

FCC Body 1879 MHz: $\sigma = 1.56$ mho/m $\epsilon_r = 53.4$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03

Cube 5x5x7: SAR (1g): 0.633 mW/g, SAR (10g): 0.339 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 43.5, 153.0, 4.7

Power Drift: -0.02 dB



APPENDIX B

Data Results

FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030906-03

MODEL #: F4421A SER #: 1041

TX FREQ: 836.6 MHz

SIM TEMP: 20.7 C

START PWR: .741 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTM6032A

ACCESSORIES: CARRY CASE #: FHN6498A

AUDIO ACCESSORIES: NONE

DUT w/ carry case against the phantom

Phantom; Position: (90°,90°);

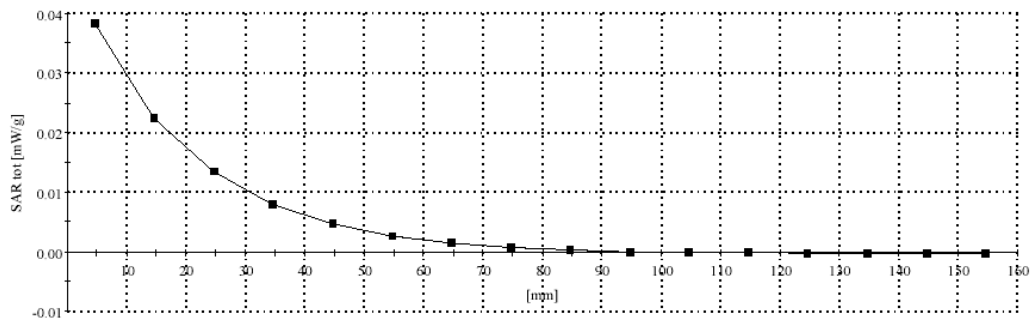
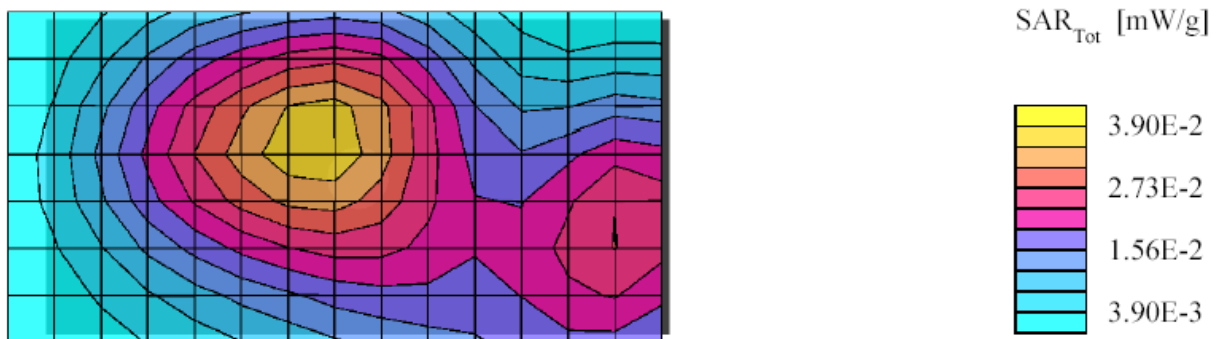
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0;

FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03

Cube 7x7x7: SAR (1g): 0.0384 mW/g, SAR (10g): 0.0287 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 40.5, 100.5, 4.7

Power drift: -0.07 dB



FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

Run #: Ab-R3-030906-08

MODEL #: F4421A SER #: 1041

TX FREQ: 836.6 MHz

SIM TEMP: 20.6 C

START PWR: .741 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

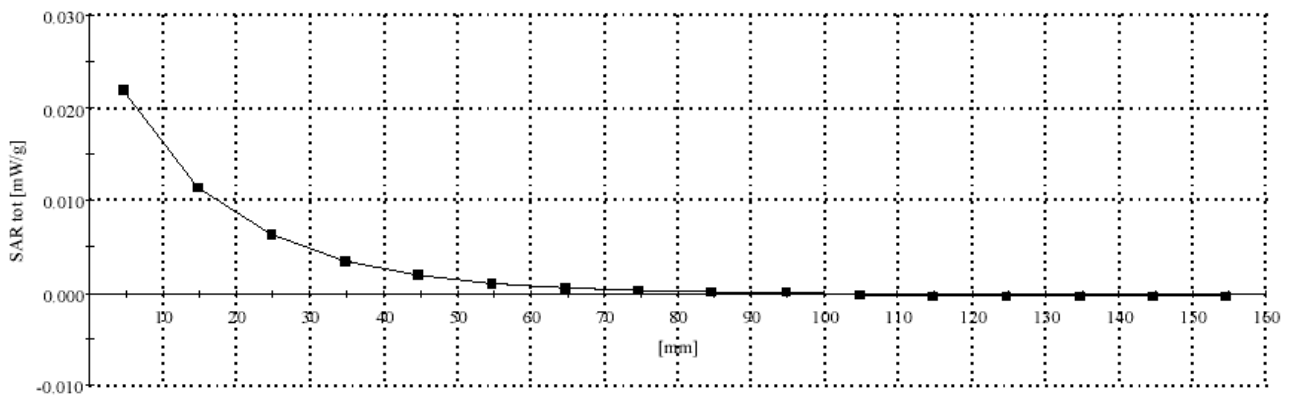
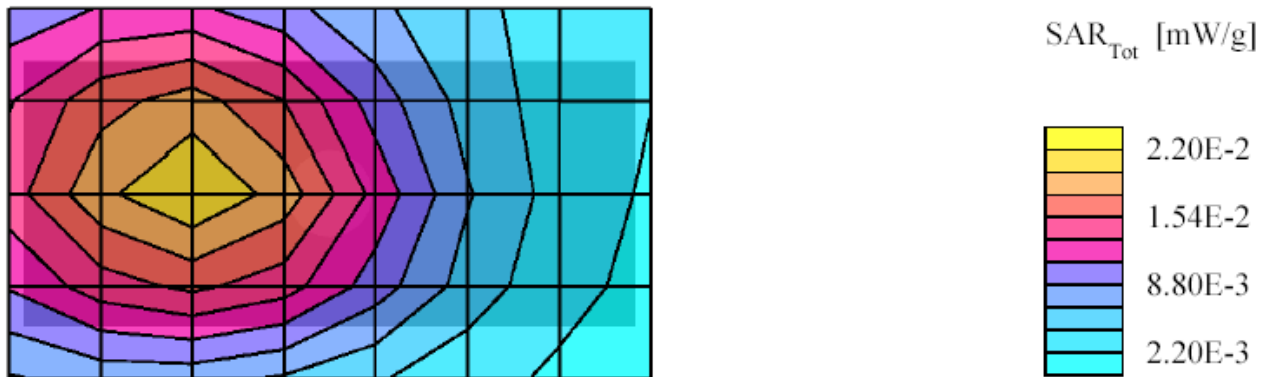
AUDIO ACCESSORIES: NONE

DUT w/ bottom side against the phantom

Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 7x7x7; SAR (1g): 0.0217 mW/g, SAR (10g): 0.0152 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 30.0, 4.7

Power drift: 0.02 dB



FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

Run #: Ab-R3-030906-10

MODEL #: F4421A SER #: 1041

TX FREQ: 836.6 MHz

SIM TEMP: 20.6 C

START PWR: .741 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTM6032A

CARRY ACCESSORIES: NONE

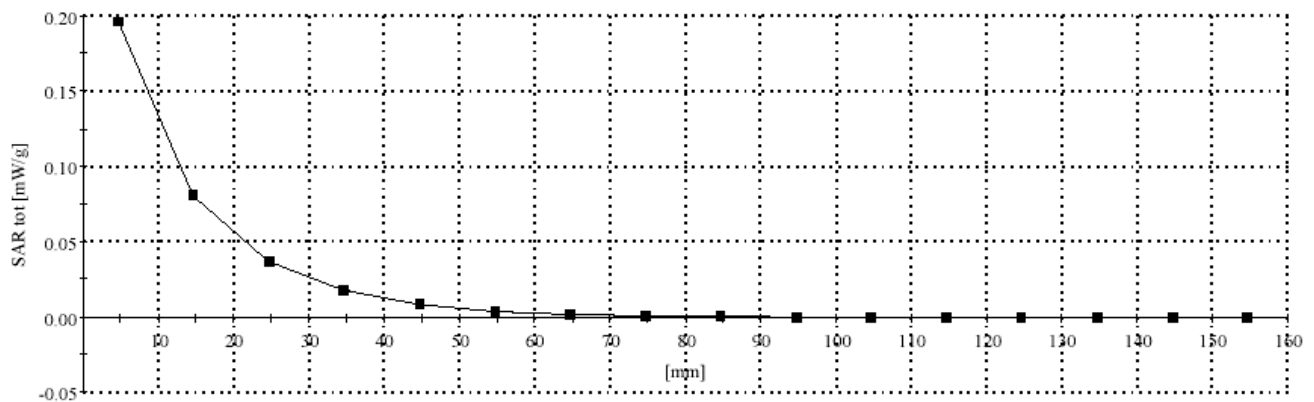
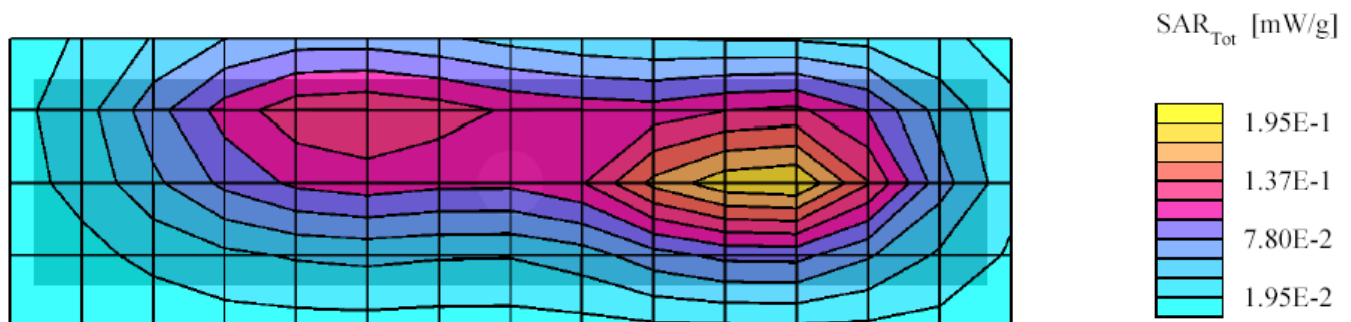
AUDIO ACCESSORIES: NONE

DUT w/ right side against the phantom

Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.194 mW/g, SAR (10g): 0.119 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 28.5, 160.5, 4.7

Power drift: 0.00 dB



FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030906-12

Model #: F4421A SER #: 1041

TX FREQ: 836.6 MHz

SIM TEMP: 20.5 C

START PWR: .741 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTM6032A

CARRY ACCESSORIES: NONE

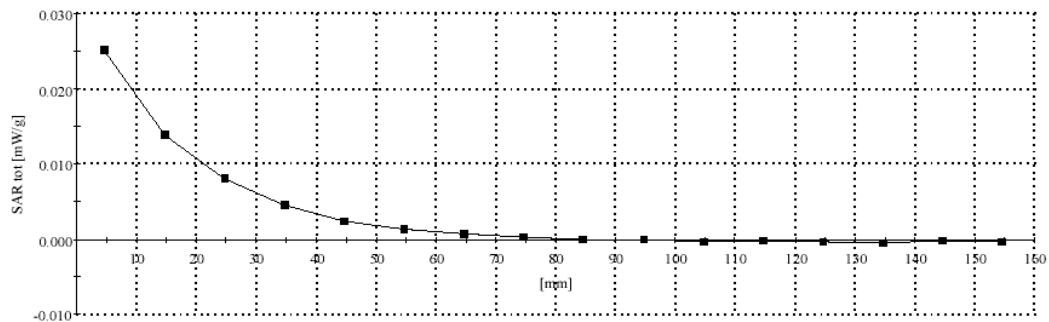
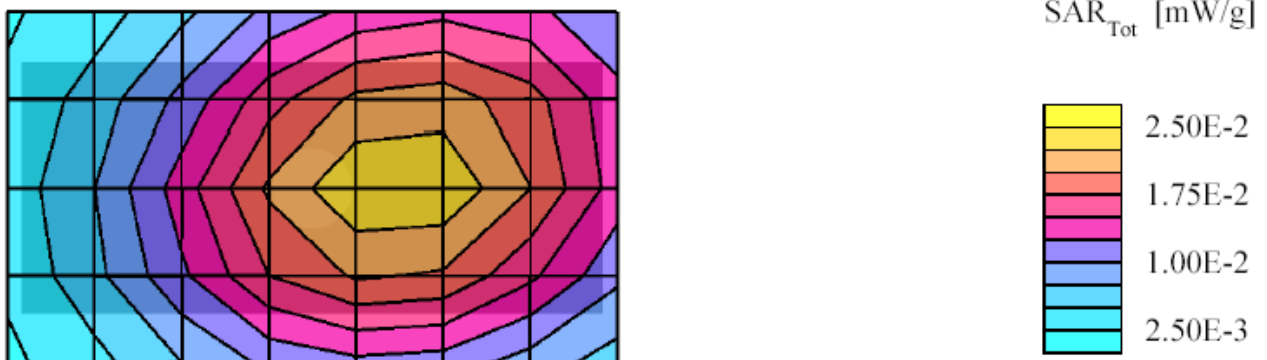
AUDIO ACCESSORIES: NONE

DUT Topside towards the phantom w/ 2.5cm separation

Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.0249 mW/g, SAR (10g): 0.0179 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 30.0, 67.5, 4.7

Power drift: 0.01 dB



FCC ID: AZ489FT7008; Test Date: 9/06/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030906-15

MODEL #: F4421A SER #: 1056

TX FREQ: 824.2 MHz

SIM TEMP: 20.5 C

START PWR: .736 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

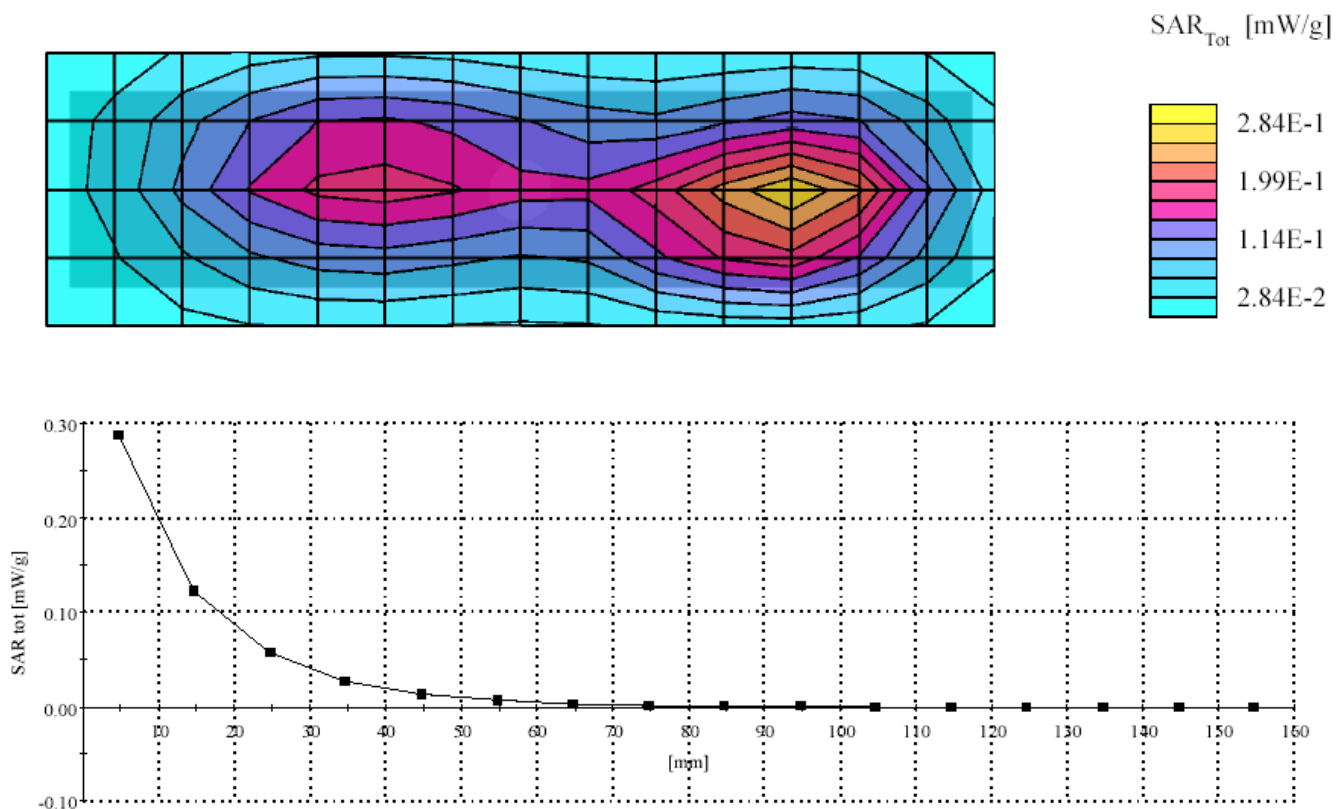
AUDIO ACCESSORIES: NONE

DUT w/ right side against phantom

Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 836: $\sigma = 0.98$ mho/m $\epsilon = 53.0$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 7x7x7; SAR (1g): 0.288 mW/g, SAR (10g): 0.177 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 165.0, 4.7

Power drift: -0.02 dB



FCC ID: AZ489FT7008; Test Date: 10/02/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-031002-03

MODEL #: F4421A SER #: 1041

TX FREQ: 824.2 MHz

SIM TEMP: 21.7 C

START PWR: .746 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

DUT w/ right side against the phantom

BLUETOOTH transmitter ENABLED

Flat Phantom; Position: (90°,90°);

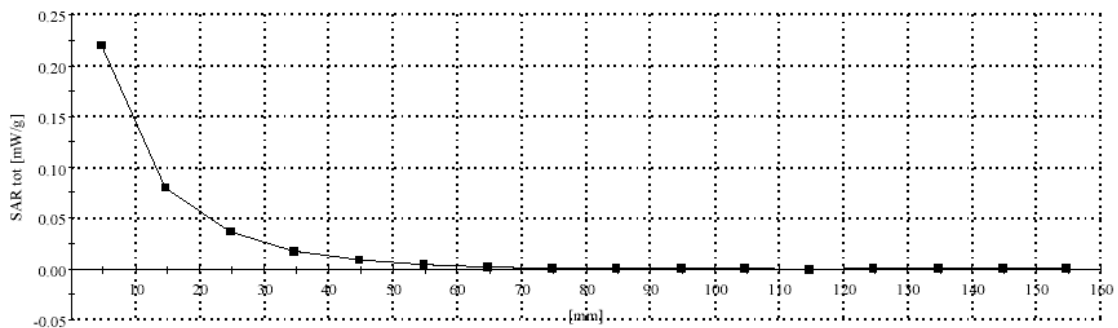
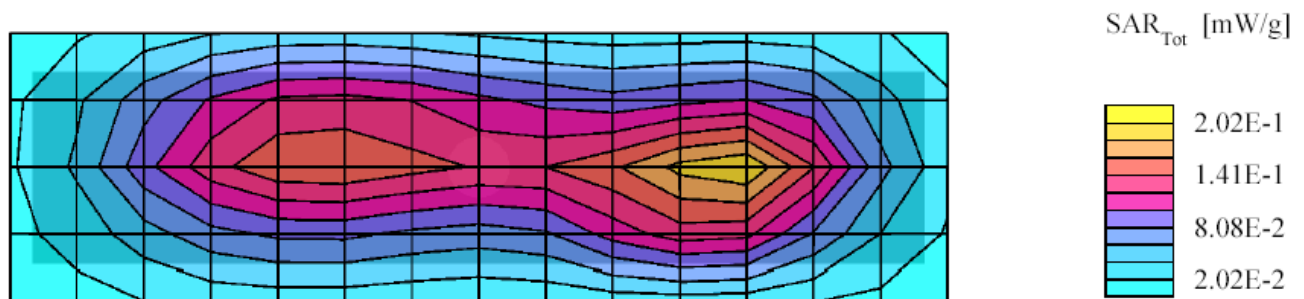
Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(6.80,6.80,6.80); Probe cal date: 16/04/03; Crest factor: 8.0;

FCC Body 836: $\sigma = 0.97$ mho/m $\epsilon_r = 53.2$ $\rho = 1.00$ g/cm³; DAE3 SN: 374 DAE CAL DATE: 02-19-03

Cube 7x7x7: SAR (1g): 0.216 mW/g, SAR (10g): 0.128 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 31.5, 160.5, 4.7

Power drift: -0.06 dB



FCC ID: AZ489FT7008; Test Date: 9/07/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030907-02

MODEL #: F4421A SER #: 1041

TX FREQ: 1880 MHz

SIM TEMP: 21.3 C

START PWR: .935 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: FHN6498A

AUDIO ACCESSORIES: NONE

DUT w/ carry case against the phantom

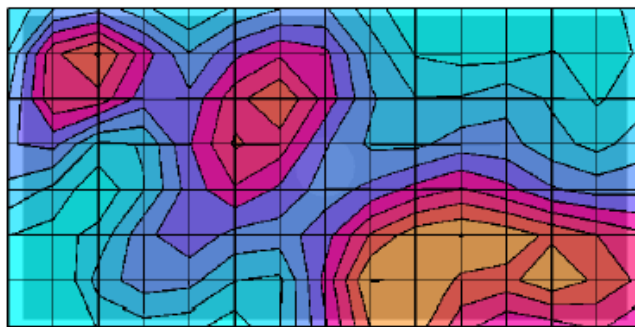
Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date:

16/04/03; Crest factor: 8.0; FCC Body 1879 MHz: $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 51.1$ $\rho = 1.00 \text{ g/cm}^3$; DAE3 SN: 374 DAE CAL

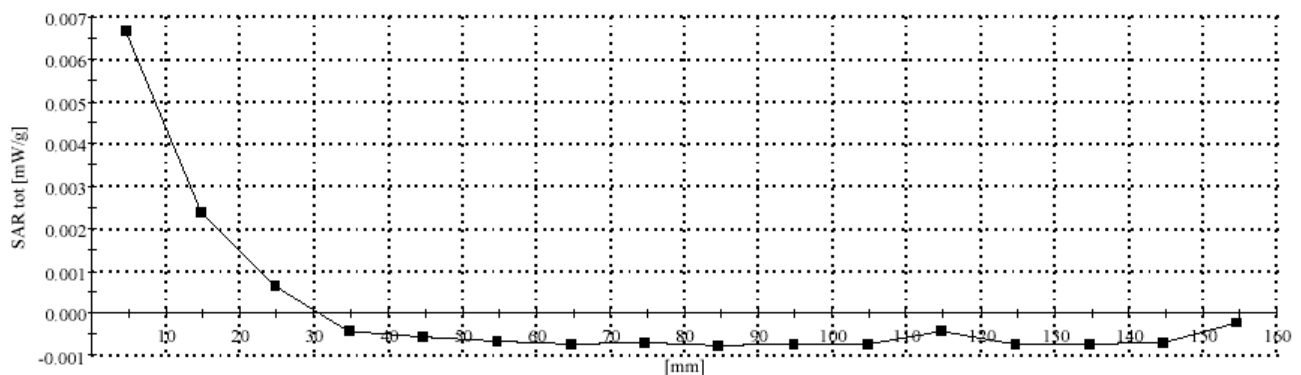
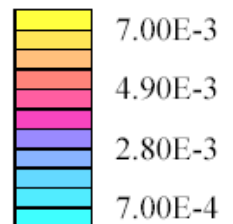
DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.0068 mW/g, SAR (10g): 0.0040 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 93.0, 126.0, 4.7

Power drift: 0.18 dB



SAR_{Tot} [mW/g]



FCC ID: AZ489FT7008; Test Date: 9/07/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030907-03

MODEL #: F4421A SER #: 1041

TX FREQ: 1880 MHz

SIM TEMP: 21.3 C

START PWR: .935 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

DUT w/ bottom side against the phantom

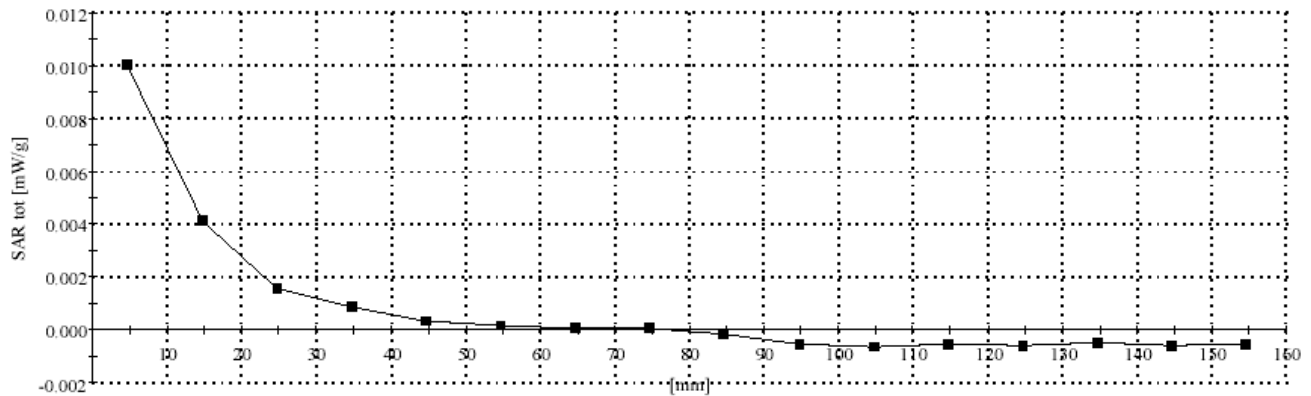
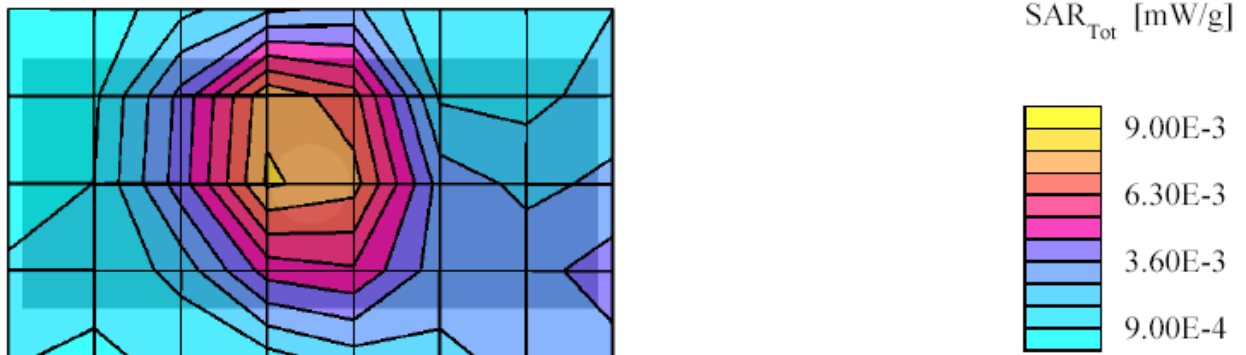
Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date:

16/04/03; Crest factor: 8.0; FCC Body 1879 MHz: $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 51.1$ $\rho = 1.00 \text{ g/cm}^3$; DAE3 SN: 374 DAE CAL

DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.0100 mW/g, SAR (10g): 0.0059 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 24.0, 49.5, 4.7

Power drift: 0.20dB



FCC ID: AZ489FT7008; Test Date: 9/07/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030907-05

MODEL #: F4421A SER #: 1041

TX FREQ: 1880 MHz

SIM TEMP: 21.3 C

START PWR: .935 W

ANTENNA KIT #: FIXED

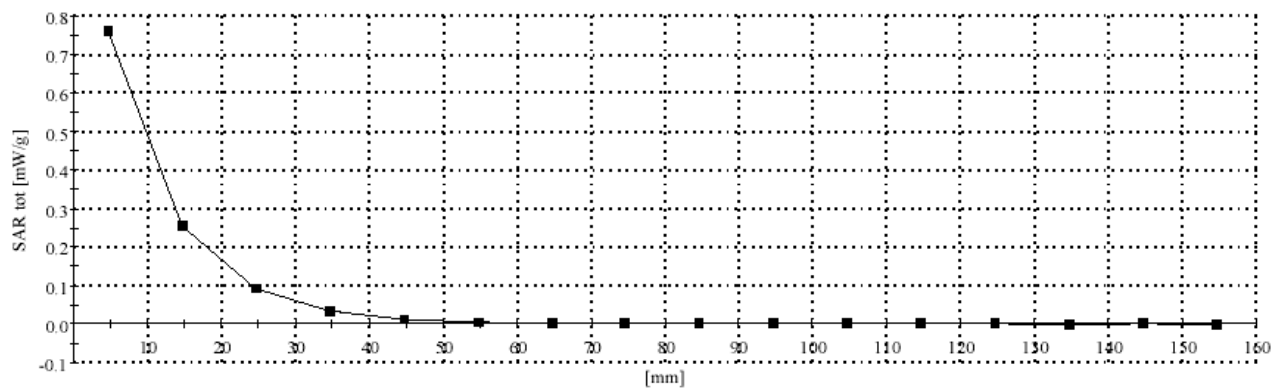
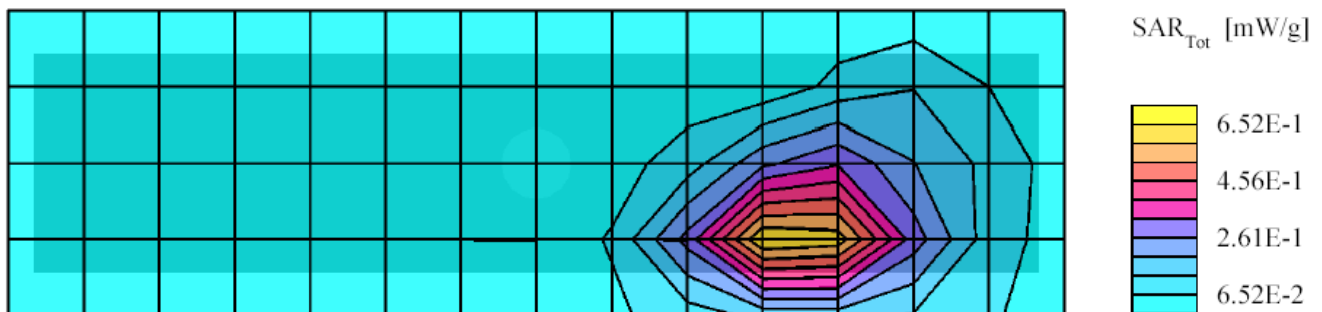
BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

DUT w/ right side against the phantom

Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date: 16/04/03; Crest factor: 8.0; FCC Body 1879 MHz: $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 51.1$ $\rho = 1.00 \text{ g/cm}^3$; DAE3 SN: 374 DAE CAL DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.731 mW/g, SAR (10g): 0.378 mW/g * Max outside, (Worst-case extrapolation) Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 46.5, 156.0, 4.7
Power drift: 0.03 dB



FCC ID: AZ489FT7008; Test Date: 9/07/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030907-08

MODEL #: F4421A SER #: 1041

TX FREQ: 1880 MHz

SIM TEMP: 21.0 C

START PWR: .935 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTM6032A

CARRY ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

DUT with topside 2.5cm separation from phantom

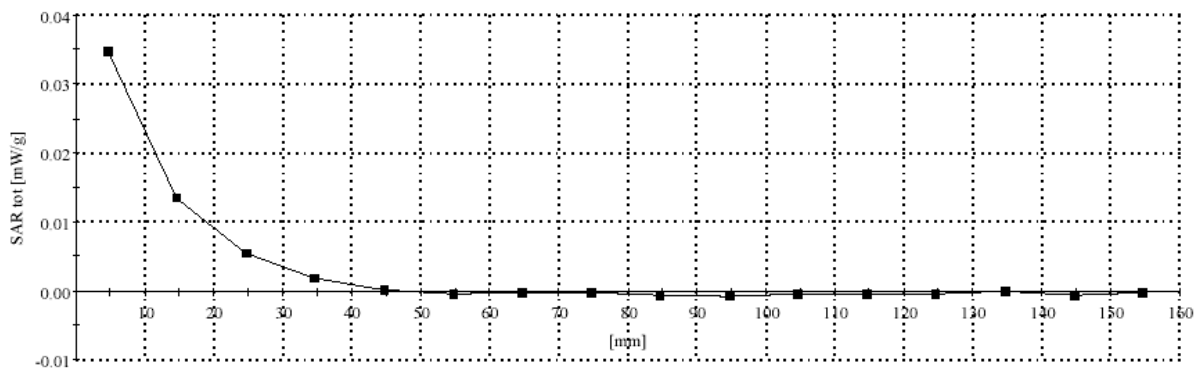
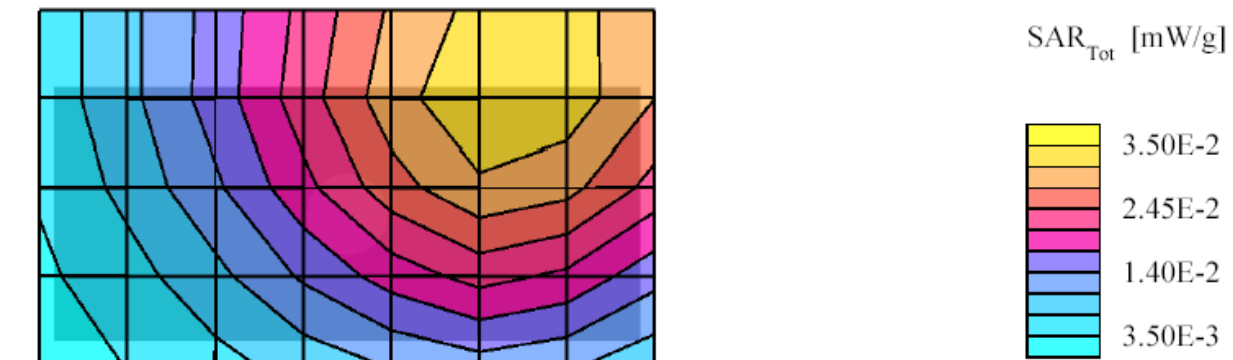
Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date:

16/04/03; Crest factor: 8.0; FCC Body 1879 MHz: $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 51.1$ $\rho = 1.00 \text{ g/cm}^3$; DAE3 SN: 374 DAE CAL

DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.0348 mW/g, SAR (10g): 0.0224 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 12.0, 81.0, 4.7

Power drift: -0.19 dB



FCC ID: AZ489FT7008; Test Date: 9/07/03

Motorola CGISS EME Laboratory

RUN #: Ab-R3-030907-09

MODEL #: F4421A SER #: 1041

TX FREQ: 1850.2 MHz

SIM TEMP: 21.0 C

START PWR: .950 W

ANTENNA KIT #: FIXED

BATTERY KIT #: FTN6032A

CARRY ACCESSORIES: NONE

AUDIO ACCESSORIES: NONE

DUT w/ right side against the phantom

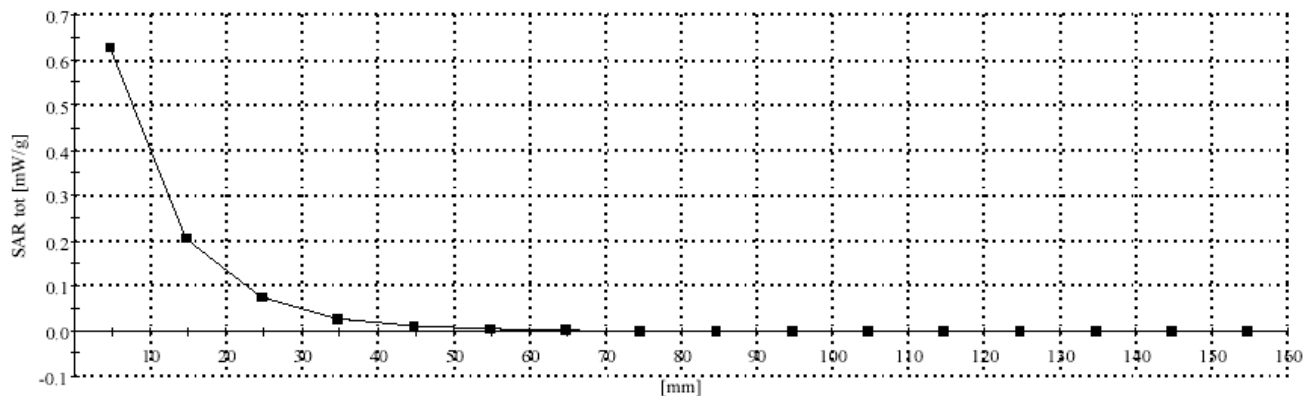
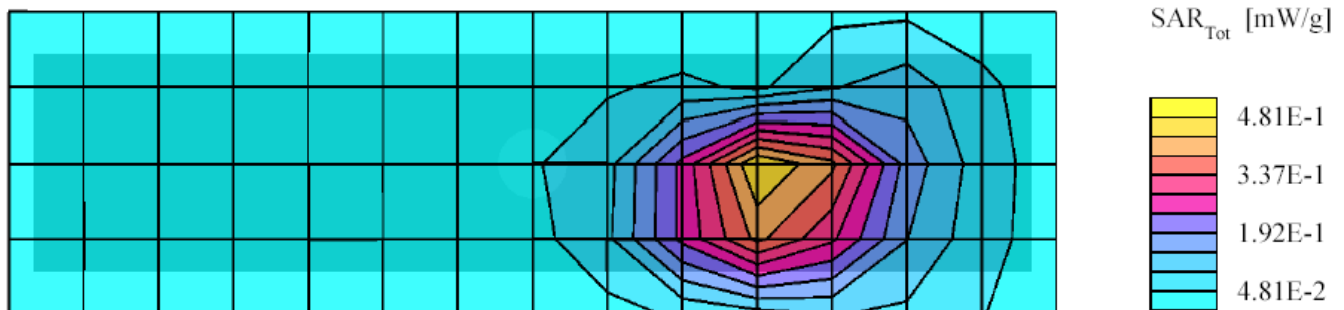
Phantom; Position: (90°,90°); Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Probe cal date:

16/04/03; Crest factor: 8.0; FCC Body 1879 MHz: $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 51.1$ $\eta = 1.00 \text{ g/cm}^3$; DAE3 SN: 374 DAE CAL

DATE: 02-19-03 Cube 7x7x7: SAR (1g): 0.607 mW/g, SAR (10g): 0.313 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 34.5, 153.0, 4.7

Power drift: -0.05 dB



APPENDIX C

Dipole System Performance Check Results

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

SPEAG 835 MHz Dipole D835V2; SN-427; Test Date: 9/6/04

Motorola CGISS EME Lab

Run #: Sys Perf-R3-030906-01

TX Freq: 835 MHz

Sim Tissue Temp: 20.7 (Celsius)

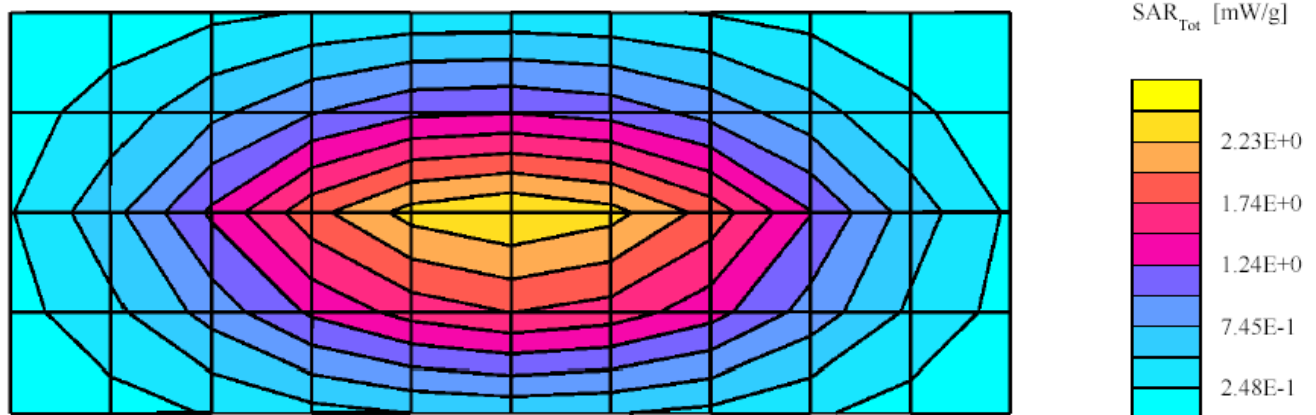
Start Power; 250mW

Target at 1W is 11.09 W/g (1g) 7.14 W/g (10g)

SAR calculated is 10.09 W/g, Percent from target (including drift) for 1g is - 9.05 %

SAR calculated is 6.59 W/g, Percent from target (including drift) for 10g is - 7.70 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(6.80,6.80,6.80); Crest factor: 1.0;
FCC Body 835: $\sigma = 0.98$ mho/m $\epsilon_r = 53.0$ $\rho = 1.00$ g/cm³; DAE3: SN:374 DAE Cal Date: 02/19/03 Cubes (2): Peak: 3.82 mW/g
 ± 0.04 dB, SAR (1g): 2.51 mW/g ± 0.04 dB, SAR (10g): 1.64 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth:
12.9 (12.0, 14.2) [mm]
Power drift: -0.02 dB



SPEAG 1900 MHz Dipole D1900V2; SN-521; Test Date: 9/7/03

Motorola CGISS EME Lab

Run #: Sys Perf-R3-030907-01

TX Freq: 1900 MHz

Sim Tissue Temp: 21.3 (Celsius)

Start Power; 250mW

Target at 1W is 38.77 W/g (1g) 20.21 W/g (10g)

SAR calculated is 38.77 W/g, Percent from target (including drift) for 1g is 0 %

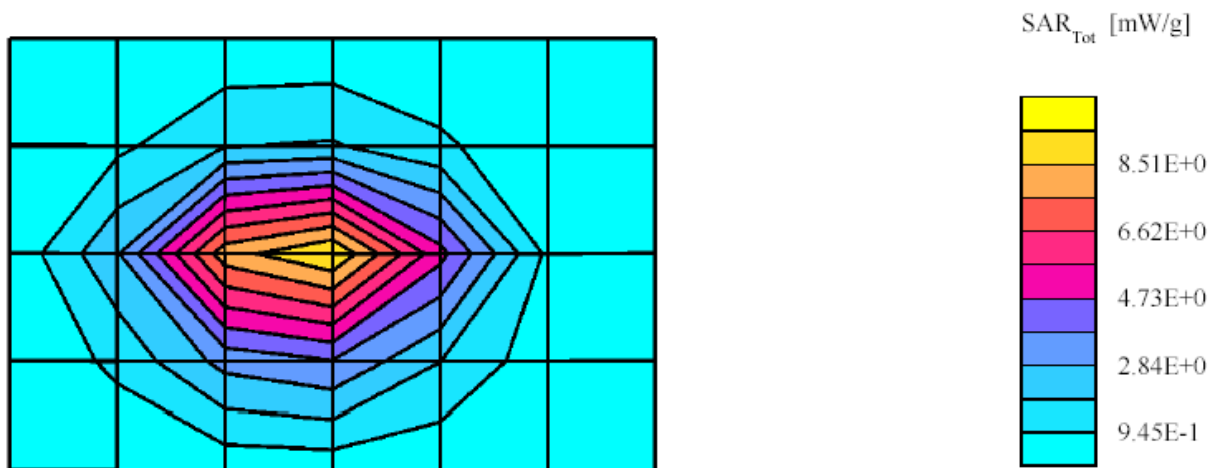
SAR calculated is 20.01 W/g, Percent from target (including drift) for 10g is - 1.01 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(5.10,5.10,5.10); Crest factor: 1.0;

FCC Body 1900MHz: $\sigma = 1.59$ mho/m $\epsilon_r = 51.1$ $\rho = 1.00$ g/cm³; DAE3: SN:374 DAE Cal Date: 02/19/03

Cubes (2): Peak: 17.9 mW/g ± 0.03 dB, SAR (1g): 9.67 mW/g ± 0.03 dB, SAR (10g): 4.99 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 8.5 (8.1, 9.4) [mm]

Power drift: -0.01 dB



SPEAG 1900 MHz Dipole D1900V2; SN-521; Test Date: 9/8/03

Motorola CGISS EME Lab

Run #: Sys Perf-R3-030908-01

TX Freq: 1900 MHz

Sim Tissue Temp: 21.3 (Celsius)

Start Power: 250mW

Target at 1W is 38.77 W/g (1g) 20.21 W/g (10g)

SAR calculated is 39.39 W/g, Percent from target (including drift) for 1g is +1.60 %

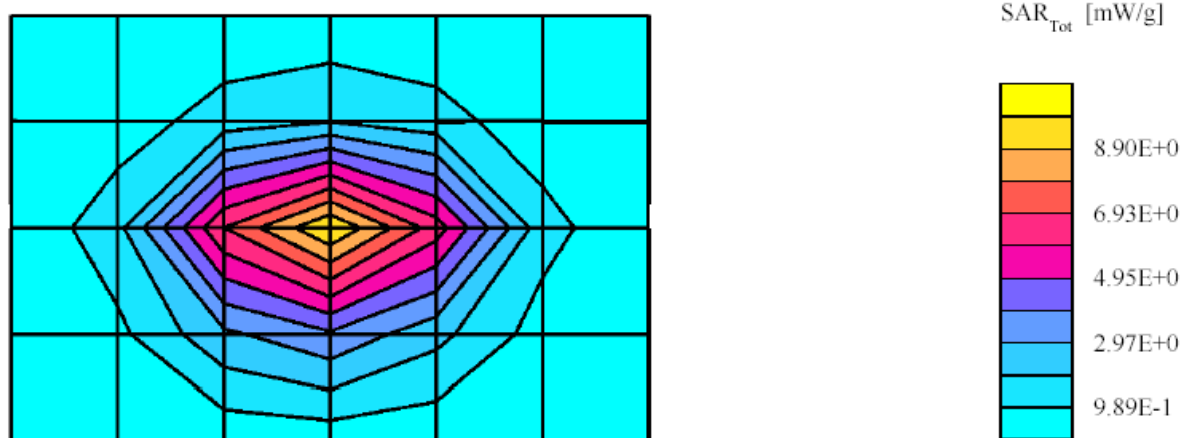
SAR calculated is 20.26 W/g, Percent from target (including drift) for 10g is +0.24 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(5.10,5.10,5.10); Crest factor: 1.0;

FCC Body 1900MHz: $\sigma = 1.59$ mho/m $\epsilon_r = 53.4$ $\rho = 1.00$ g/cm³; DAE3: SN:374 DAE Cal Date: 02/19/03

Cubes (2): Peak: 18.1 mW/g ± 0.02 dB, SAR (1g): 9.78 mW/g ± 0.03 dB, SAR (10g): 5.03 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 8.6 (8.1, 9.6) [mm]

Power drift: -0.03 dB



SPEAG 835 MHz Dipole D835V2; SN-427; Test Date: 10/02/03

Motorola CGISS EME Lab

Run #: Sys Perf-R3-031002-02

TX Freq: 835 MHz

Sim Tissue Temp: 21.7 (Celsius)

Start Power; 250mW

Target at 1W is 11.09 mW/g (1g) 7.14 mW/g (10g)

SAR calculated is 10.69 mW/g, Percent from target (including drift) for 1g is - 3.61 %

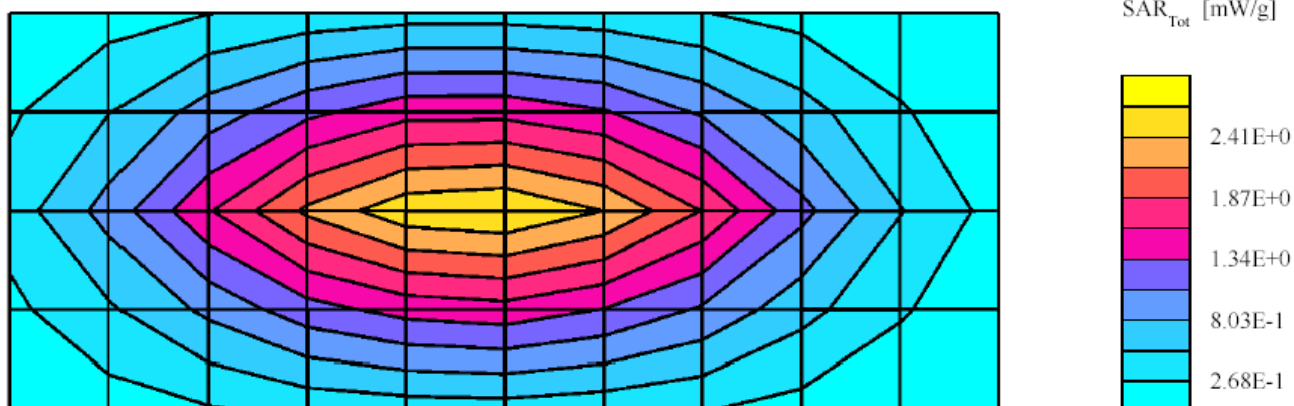
SAR calculated is 6.91 mW/g, Percent from target (including drift) for 10g is - 3.20 %

Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ;Probe Cal Date: 16/04/03ConvF(6.80,6.80,6.80); Crest factor: 1.0;

FCC Body 835: $\sigma = 0.97$ mho/m $\epsilon = 53.2$ $\rho = 1.00$ g/cm³; DAE3: SN:374 DAE Cal Date: 02/19/03

Cubes (2): Peak: 4.08 mW/g ± 0.02 dB, SAR (1g): 2.66 mW/g ± 0.03 dB, SAR (10g): 1.72 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 12.8 (11.7, 14.2) [mm]

Power drift: -0.02 dB



SYSTEM VALIDATION

Date:	<u>11/20/2002</u>	Frequency (MHz):	<u>835</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>IEEE Head</u>
Robot System:	<u>R1</u>	Ambient Temp.(°C):	<u>22.4</u>
Probe Serial #:	<u>ET3DV6-1545</u>	Tissue Temp.(°C):	<u>20.9</u>
DAE Serial #:	<u>363</u>		

Tissue Characteristics

Permittivity:	<u>41.6</u>	Phantom Type/SN:	<u>SAMTP1209</u>
Conductivity:	<u>0.97</u>	Distance (mm):	<u>15 (tissue/dipole cnt)</u>

Reference Source:	<u>D835V2</u>	(Dipole)
Reference SN:	<u>427</u>	

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

Target SAR Value: 9.5 mW/g, 6.2 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 2.62 mW/g, 1.68 mW/g (10g avg.)
Power Drift: 0.04 dB

Measured SAR Value: 10.38 mW/g, 6.66 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 9.30 % (1g ave)
7.39 % (10g ave)

Test performed by: S. Whalen Initial: SW

SPEAG Dipole 835MHz. Test Date:11/20/02

Run #: Sys Perf-R1-021120-06

Phantom #: SAMTP1209

Model #: D835V2

SN: 427

Robot: CGISS-1

Tester: S. Whalen

TX Freq: 835 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 250mW

DAE3: SN363-V1

DAE Cal Date: 05/23/02

- Comments-

Target at 1W is 9.5 mW/g (including drift) (1g)

SAR calculated is 10.38 mW/g. Percent from target (including drift) for 1g is 9.30%

SAM; Flat

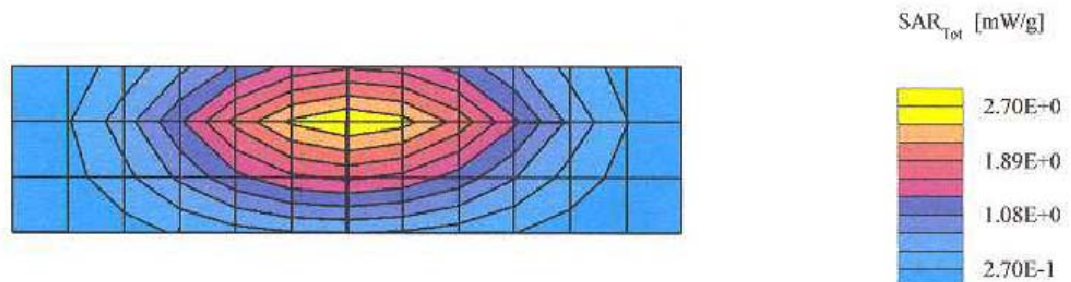
Probe: ET3DV6R(cal date 5-21-02) - SN1545;Probe Cal Date: 21/05/02ConvF(6.20,6.20,6.20); Crest factor: 1.0; IEEE Head_835

MHz: $\sigma = 0.94 \text{ mho/m}$ $\epsilon_r = 41.9$ $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak: 4.11 mW/g $\pm 0.06 \text{ dB}$, SAR (1g): 2.62 mW/g $\pm 0.07 \text{ dB}$, SAR (10g): 1.68 mW/g $\pm 0.07 \text{ dB}$, (Worst-case extrapolation)

Penetration depth: 12.0 (11.1, 13.2) [mm]

Powerdrift: 0.04 dB



Motorola CGISS EME Lab

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>11/20/2002</u>	Frequency (MHz):	<u>835MHz</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>FCC Body</u>
Robot System:	<u>CGISS R1</u>	Ambient Temp.(°C):	<u>22.1</u>
Probe Serial #:	<u>ET3DV6-1545</u>	Tissue Temp.(°C):	<u>20.6</u>
DAE Serial #:	<u>363</u>		

Tissue Characteristics

Permittivity:	<u>53.3</u>	Phantom Type/SN:	<u>80302002A</u>
Conductivity:	<u>1.01</u>	Distance (mm):	<u>15 (tissue/dipole cnt)</u>

Reference Source:	<u>D835V2</u>	(Dipole)
Reference SN:	<u>427</u>	

Power to Dipole: 250 mW

Measured SAR Value:	<u>2.78</u> mW/g,	<u>1.79</u> mW/g (10g avg.)
Power Drift:	<u>0.01</u> dB	

New Target/Measured

SAR Value:	<u>11.09</u> mW/g,	<u>7.14</u> mW/g (10g avg.)
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(normalized to 1.0 W, including drift)

Test performed by: S.Whalen Initial: SW

SPEAG Dipole 835MHz. Test Date:11/20/02

Run #: Sys Perf-R1-021120-02

Phantom #: 80302002A / S8

Model #: D835V2

SN: 427

Robot: CGISS-1

Tester: S. Whalen

TX Freq: 835 MHz

Sim Tissue Temp: 20.6 (Celsius)

Start Power: 250mW

DAE3: SN363-V1

DAE Cal Date: 05/23/02

- Comments-

New Target at 1W is mW/g (including drift) (1g)

Flat Phantom; Device

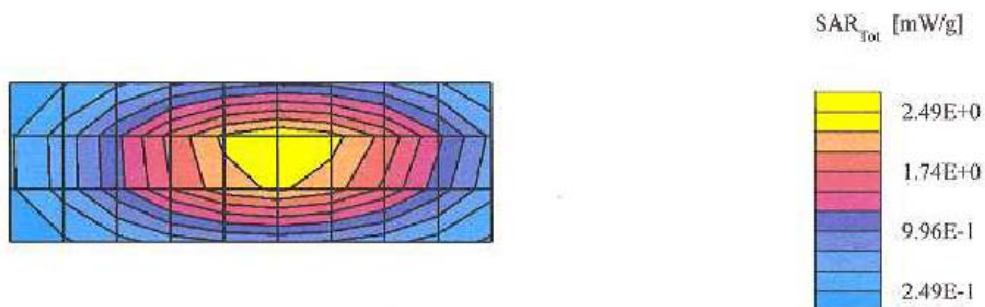
Probe: ET3DV6R(cal date 5-21-02) - SN1545;Probe Cal Date: 21/05/02ConvF(6.00,6.00,6.00); Crest factor: 1.0; FCC Body_835

MHz: $\sigma = 1.01 \text{ mho/m}$ $\epsilon_r = 53.3$ $\rho = 1.00 \text{ g/cm}^3$

Cubes (2): Peak: 4.31 mW/g $\pm 0.06 \text{ dB}$, SAR (1g): 2.78 mW/g $\pm 0.07 \text{ dB}$, SAR (10g): 1.79 mW/g $\pm 0.07 \text{ dB}$, (Worst-case extrapolation)

Penetration depth: 12.5 (11.4, 13.9) [mm]

Powerdrift: 0.01 dB



Motorola CGISS EME Lab

SYSTEM VALIDATION

Date:	<u>09/04/2003</u>	Frequency (MHz):	<u>1900</u>
Lab Location:	<u>CGISS</u>	Mixture Type:	<u>1900-IEEE Head</u>
Robot System:	<u>CGISS-3</u>	Ambient Temp.(°C):	<u>23.1</u>
Probe Serial #:	<u>1393</u>	Tissue Temp.(°C):	<u>20.9</u>
DAE Serial #:	<u>DAE3V1 SN374</u>		

Tissue Characteristics	Phantom Type/SN:	<u>VAL30242005B</u>	
Permittivity:	<u>38.2</u>	Distance (mm):	<u>10</u>
Conductivity:	<u>1.46</u>		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 521

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

Target SAR Value: 39.7 mW/g, 20.5 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 10.05 mW/g, 5.47 mW/g (10g avg.)
Power Drift: -0.01 dB

Measured SAR Value: 42.10 mW/g, 21.93 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Percent Difference From Target (must be within System Uncertainty):
+ 6.04 % (1g avg)
+ 6.98 % (10g avg)

Test performed by: Dave Hopper

Initial: 

SPEAG DIPOLE D1900V2; Test date:09/04/03

Run #: Sys Val-R3-0300904-03

Phantom #: VAL30242005B/S9

Model #: D1900V2

SN: 521

Robot: CGISS-3

Tester: Dave Hopper

TX Freq: 1900 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 250mW

DAE3: SN:374

DAE Cal Date: 02/19/03

- Comments-

IEEE Target at 1W is 39.7 mW/g and 20.5 mW/g (10g avg.)

SAR calculated 1g is 42.10 mW/g percent from target (including drift) +6.04 %

SAR Calculated 10g is 21.93 mW/g Percent from target (including drift) is +6.98 %

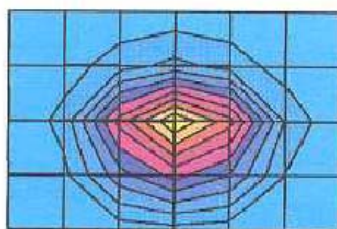
Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.50,5.50,5.50); Crest factor: 1.0; Head

Glycol 1900 MHz: $\sigma = 1.46$ mho/m $\epsilon_r = 38.2$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 19.4 mW/g ± 0.01 dB, SAR (1g): 10.5 mW/g ± 0.02 dB, SAR (10g): 5.47 mW/g ± 0.04 dB, (Worst-case extrapolation)

Penetration depth: 8.0 (7.8, 8.6) [mm]

Powerdrift: -0.01 dB



SAR_{Tot} [mW/g]



Motorola CGISS EME Lab

SYSTEM PERFORMANCE CHECK TARGET SAR

Date: 09/04/2003
Lab Location: CGISS
Robot System: CGISS-3
Probe Serial #: 1393
DAE Serial #: DAE3V1 SN374

Frequency (MHz): 1900
Mixture Type: 1900-FCC Body
Ambient Temp.(°C): 23.1
Tissue Temp.(°C): 20.9

Tissue Characteristics
Permittivity: 50.9
Conductivity: 1.57

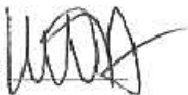
Phantom Type/SN: 40302002B/S9
Distance (mm): 10

Reference Source: Dipole (Dipole)
Reference SN: 521
Power to Dipole: 250 mW

Measured SAR Value: 9.67 mW/g, 5.04 mW/g (10g avg.)
Power Drift: -0.01 dB

New Target/Measured
SAR Value: 38.77 mW/g, 20.21 mW/g (10g avg.)
(Normalized to 1.0 W,
with drift compensation)

Test performed by: Dave Hopper

Initial: 

SPEAG DIPOLE D1900V2; Test date:09/04/03

Run #: Sys Perf-R3-0300904-04

Phantom #: 40302002B/S9

Model #: D1900V2

SN:521

Robot: CGISS-3

Tester: Dave Hopper

TX Freq: 1900 MHz

Sim Tissue Temp: 20.9 (Celsius)

Start Power: 250mW

DAE3: SN:374

DAE Cal Date: 02/19/03

- Comments-

Body New Targets are as follows:

SAR calculated 1g is 38.77 mW/g

SAR Calculated 10g is 20.21 mW/g

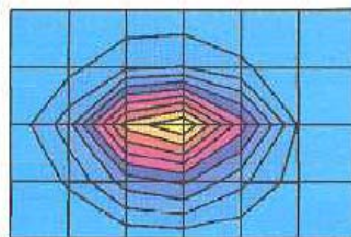
Flat; Probe: ET3DV6 - SN1393 (Cal Date 16 April 2003) ; ConvF(5.10,5.10,5.10); Crest factor: 1.0; FCC

Body 1900MHz: $\sigma = 1.57$ mho/m $\epsilon_r = 50.9$ $\rho = 1.00$ g/cm³

Cubes (2): Peak: 17.7 mW/g ± 0.04 dB, SAR (1g): 9.67 mW/g ± 0.01 dB, SAR (10g): 5.04 mW/g ± 0.04 dB, (Worst-case extrapolation)

Penetration depth: 8.5 (8.1, 9.4) [mm]

Powerdrift: -0.01 dB



SAR_{tot} [mW/g]



9.47E-1

Motorola CGISS EME Lab