Certificate Number: 1449-02

MOTOROLA

ACCREDITED

CGISS EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

S.A.R. EME Compliance Test Report
Part 2 of 2

Attention:	FCC
Date of Report:	May 22, 2003
Report Revision:	Rev. B
Device Manufacturer:	Motorola
Device Description:	HT1250LS 2.5W Portable Transceiver 746-794MHZ
FCC ID:	ABZ99FT5000
Device Model:	PMUF1105A

Test Period:	9/12/02 – 10/03/02
Test Engineer:	Jim Fortier Sr. Staff Engineer
Author:	Michael Sailsman 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 — 5/27/03

Ken Enger
Senior Resource Manager, Product Safety and EME Director

Date Approved

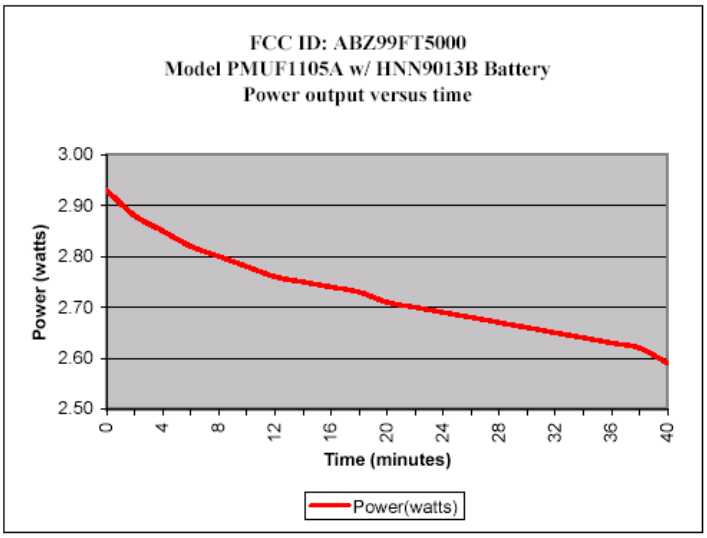
APPENDIX A

Power Slump Data/Shortened Scan

DUT Power versus time data

Start Date and Time:10/14/2002 10:34:09 AM
Stop Date and Time: 10/14/2002 11:14:13 AM

10:34:12 AM	2.93	0
10:36:12 AM	2.88	2
10:38:12 AM	2.85	4
10:40:12 AM	2.82	6
10:42:12 AM	2.8	8
10:44:12 AM	2.78	10
10:46:12 AM	2.76	12
10:48:12 AM	2.75	14
10:50:12 AM	2.74	16
10:52:12 AM	2.73	18
10:54:12 AM	2.71	20
10:56:12 AM	2.7	22
10:58:12 AM	2.69	24
11:00:12 AM	2.68	26
11:02:12 AM	2.67	28
11:04:12 AM	2.66	30
11:06:12 AM	2.65	32
11:08:13 AM	2.64	34
11:10:13 AM	2.63	36
11:12:13 AM	2.62	38
11:14:13 PM	2.59	40



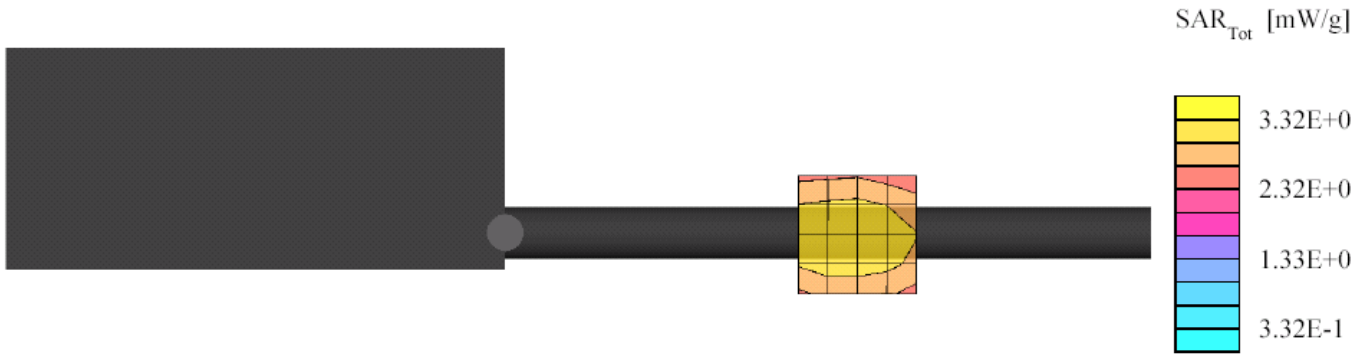
Shortened Scan Results

FCC ID: ABZ99FT5000; Test Date: 10/16/02
Motorola CGISS EME Laboratory
Run #: Face_R3_021016-02
Model #: PMUF1105A SN: 008TCL1865
TX Freq: 776.000 MHz
Sim Tissue Temp: 21.7 (Celsius)
Start Power; 2.90 W End Power: 2.72 W (5x5x7 cube only); 7.5 min

Antenna : NAF5083A
Battery Kit: HNN9012A

Shortened scan reflect highest S.A.R. producing configuration at the face
Run time 7.5 minutes
Representative "normal" scan run time was 29.5 minutes
"Shortened" scan measured S.A.R. w/ 50% duty cycle = 1.195 mW/g
"Normal" scan max. calc. S.A.R. w/ 50% duty cycle = 1.200 mW/g (see section 7.1 run # Face- R3-020920-03-JF)

Face: radio front @ 2.5 cm
Flat Phantom; Flat_abdomen Section; Position: (90°,90°);
Probe: ET3DV6 - SN1393 SPEAG; ConvF(7.20,7.20,7.20); Probe cal date: 3/22/02; Crest factor: 1.0; IEEE HEAD
776MHz: σ = 0.86 mho/m ε = 42.4 ρ= 1.00 g/cm3; DAE Cal. Date 2/8/02
Cube 5x5x7: SAR (1g): 2.39 mW/g, SAR (10g): 1.74 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0; SAR (1g): 2.39 mW/g, SAR (10g): 1.74 mW/g



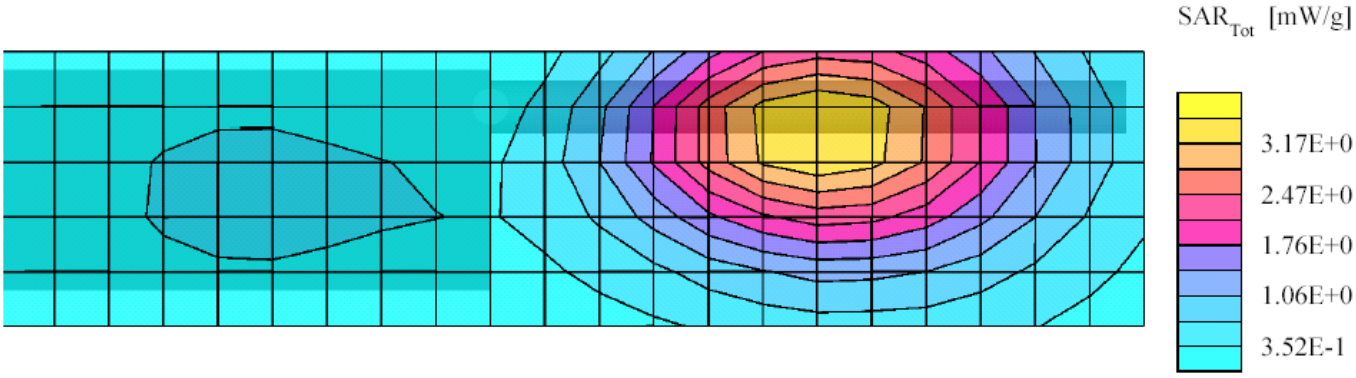
APPENDIX B

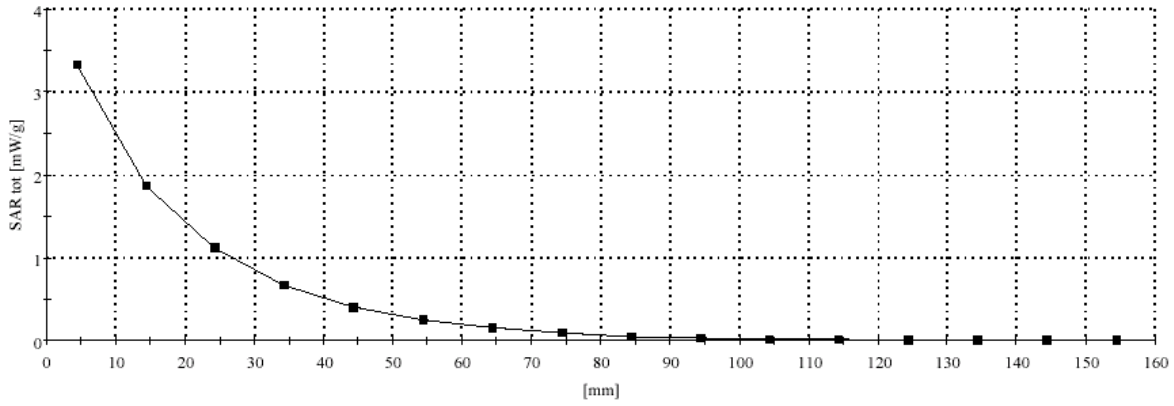
DATA RESULTS

FCC ID: ABZ99FT5000; Test Date: 9/12/02
Motorola CGISS EME Laboratory
Run #: Abd_R3_020912-02
Model #: PMUF1105A SN: 008TCL1865
TX Freq: 776 MHz
Sim Tissue Temp: 20.9 (Celsius)

Antenna : NAF5083A
Battery Kit: HNN9013B
Belt Clip: HLN9714A, RSM: HMN9052E

DUT w/ body-worn accessory against the phantom
Flat Phantom; Flat_abdomen Section; Position: (90°,90°);
Probe: ET3DV6 - SN1393 SPEAG; ConvF(6.90,6.90,6.90); Probe cal date: 3/22/02; Crest factor: 1.0; FCC Body 776: σ = 0.93 mho/m ε= 53.9 ρ = 1.00 g/cm3; DAE Cal Date 2/8/02
Cube 7x7x7: SAR (1g): 3.36 mW/g, SAR (10g): 2.45 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 22.5, 226.5, 4.4

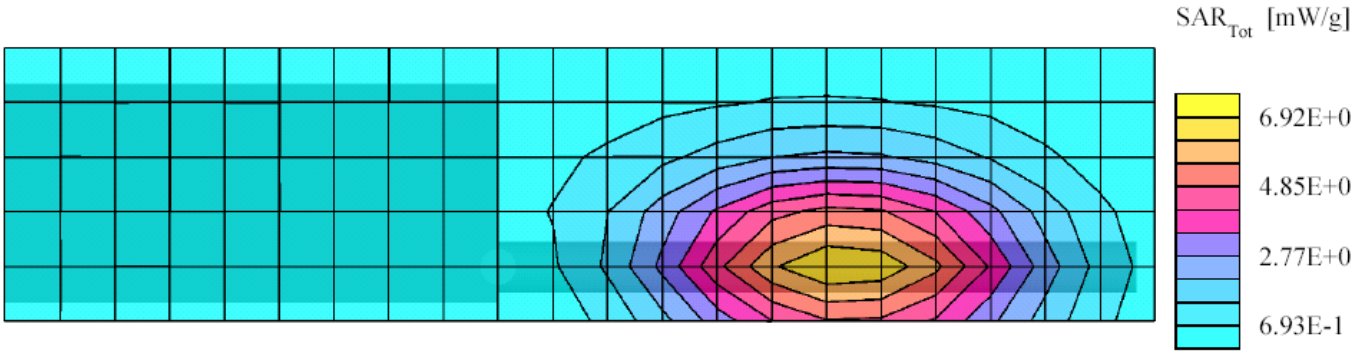


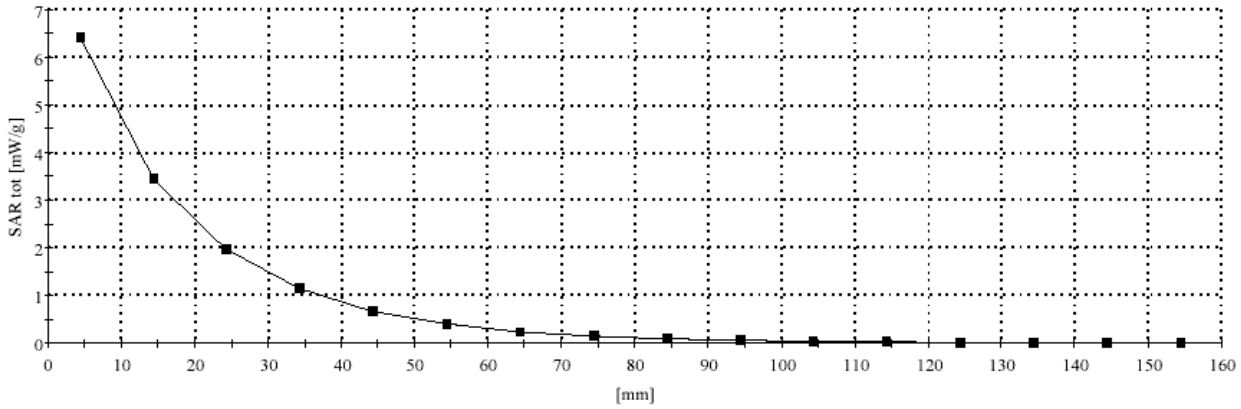


FCC ID: ABZ99FT5000; Test Date: 9/19/02
Motorola CGISS EME Laboratory
Run #: Abd_R3_020919-04
Model #: PMUF1105A SN: 008TCL1865
TX Freq: 776 MHz
Sim Tissue Temp: 21.7 (Celsius)

Antenna : NAF5083A
Battery Kit: HNN9013B
Earbud/PTT/mic: PMLN4418A

DUT front with antenna at 2.5 cm separation
Flat Phantom; Flat_abdomen Section; Position: (90°,90°);
Probe: ET3DV6 - SN1393 SPEAG; ConvF(6.90,6.90,6.90); Probe cal date: 3/22/02; Crest factor: 1.0; FCC Body 776: σ = 0.93 mho/m ε = 53.4 ρ = 1.00 g/cm3 DAE Cal Date 2/8/02
Cube 7x7x7: SAR (1g): 6.42 mW/g, SAR (10g): 4.50 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 61.5, 229.5, 4.4

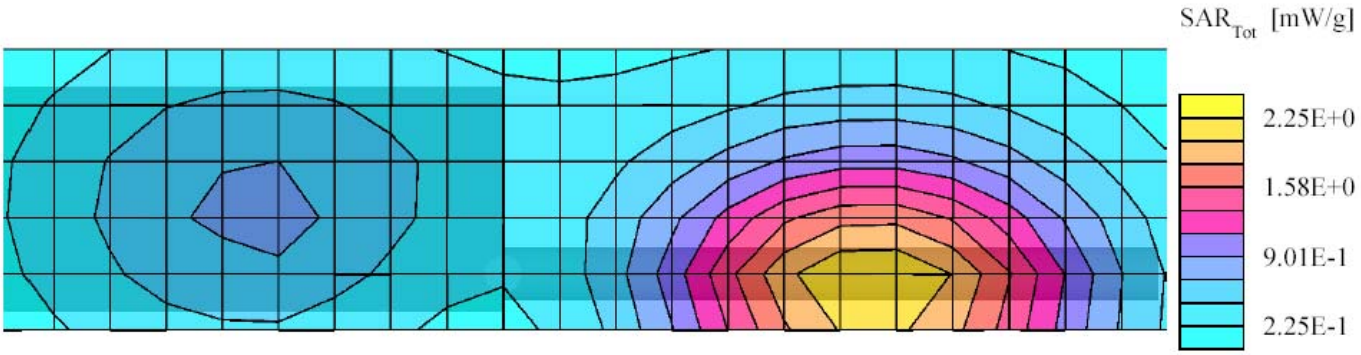


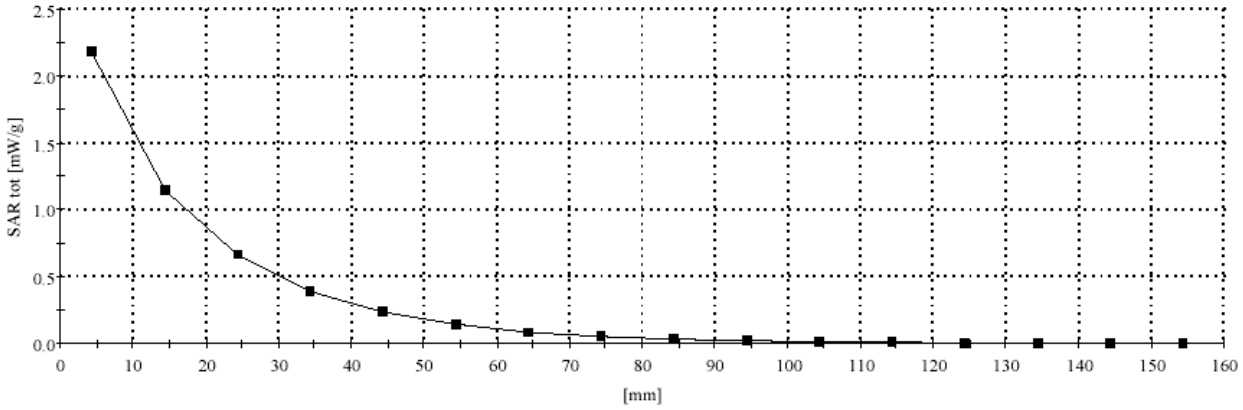


FCC ID: ABZ99FT5000; Test Date: 9/20/02
Motorola CGISS EME Laboratory
Run #: Face_R3_020920-03
Model #: PMUF1105A SN: 008TCL1865
TX Freq: 776 MHz

Antenna : NAF5083A
Battery Kit: HNN9012A

DUT microphone at 2.5 cm separation
Flat Phantom; Flat_abdomen Section; Position: (90°,90°);
Probe: ET3DV6 - SN1393 SPEAG; ConvF(7.20,7.20,7.20); Probe cal date: 3/22/02; Crest factor: 1.0; IEEE HEAD 776MHz: σ = 0.85 mho/m ε = 43.5 ρ = 1.00 g/cm3
Cube 7x7x7: SAR (1g): 2.18 mW/g, SAR (10g): 1.56 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0; Max at 64.5, 232.5, 4.4





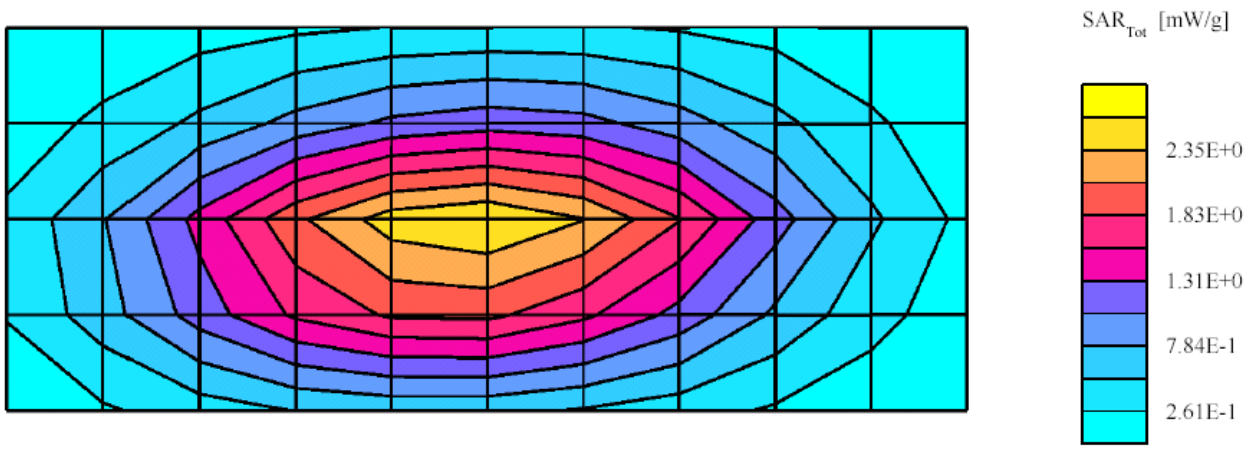
APPENDIX C

Dipole System Performance Check Results

SPEAG Dipole D835V2 - SN 426; Test Date:09/12/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020912-01
Model #: SPEAG D835V2 SN: 426
TX Freq: 835 MHz
Start Power; 250mW

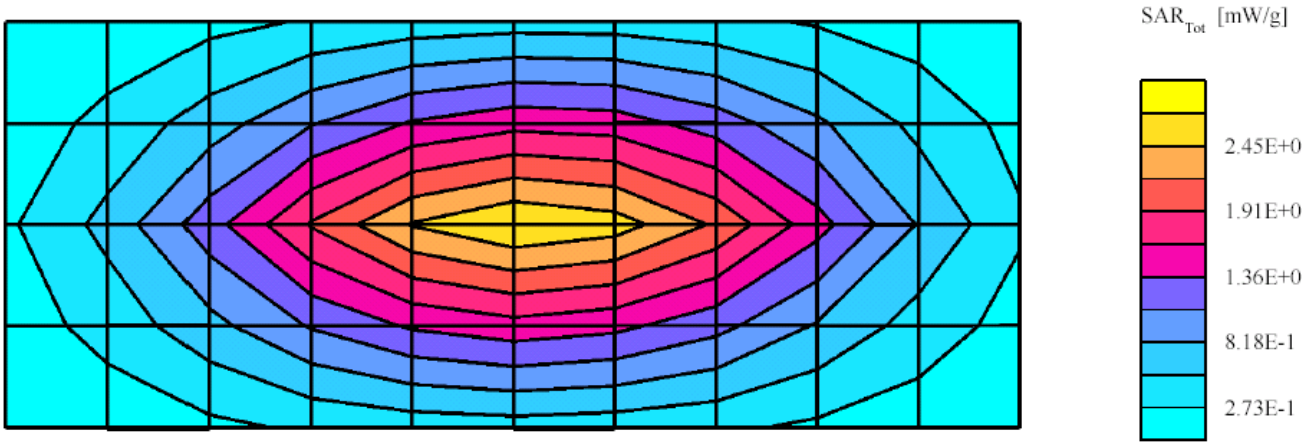
Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.49 mW/g (1g), Percent from target (including drift) for 1g is -1.52 %

Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG;Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 0.99 mho/m ε = 53.2 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.03 mW/g ± 0.03 dB, SAR (1g): 2.61 mW/g ± 0.05 dB, SAR (10g): 1.69 mW/g ± 0.06 dB, (Worst-case extrapolation) Penetration depth: 12.6 (11.4, 14.1) [mm]
Power drift: -0.02 dB



SPEAG Dipole D835V2 - SN 426. Test Date:09/13/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020913-01
TX Freq: 835 MHz
Sim Tissue Temp: 21.1 (Celsius)
Start Power; 250mW

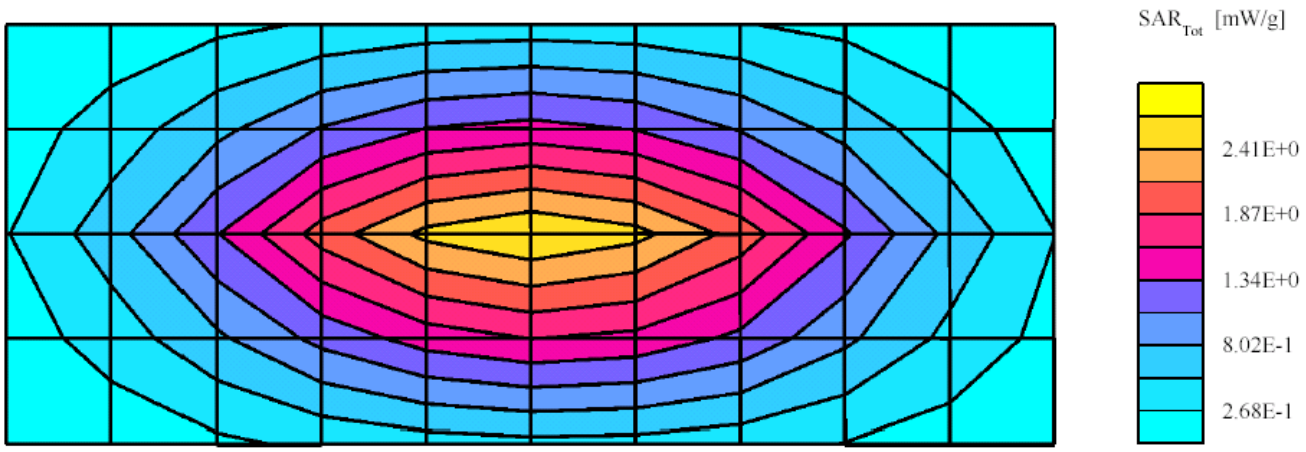
- Comments-
Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.58 mW/g (1g), Percent from target (including drift) for 1g is -0.6 %
Flat;
Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 0.99 mho/m ε = 52.8 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.09 mW/g ± 0.06 dB, SAR (1g): 2.64 mW/g ± 0.06 dB, SAR (10g): 1.70 mW/g ± 0.06 dB, (Worst-case extrapolation) Penetration depth: 12.6 (11.4, 14.1) [mm]
Power drift: -0.01 dB



SPEAG Dipole D835V2 - SN 426; Test Date:09/18/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020918-02
TX Freq: 835 MHz
Sim Tissue Temp: 21.8 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.38 mW/g (1g), Percent from target (including drift) for 1g is -2.5 %

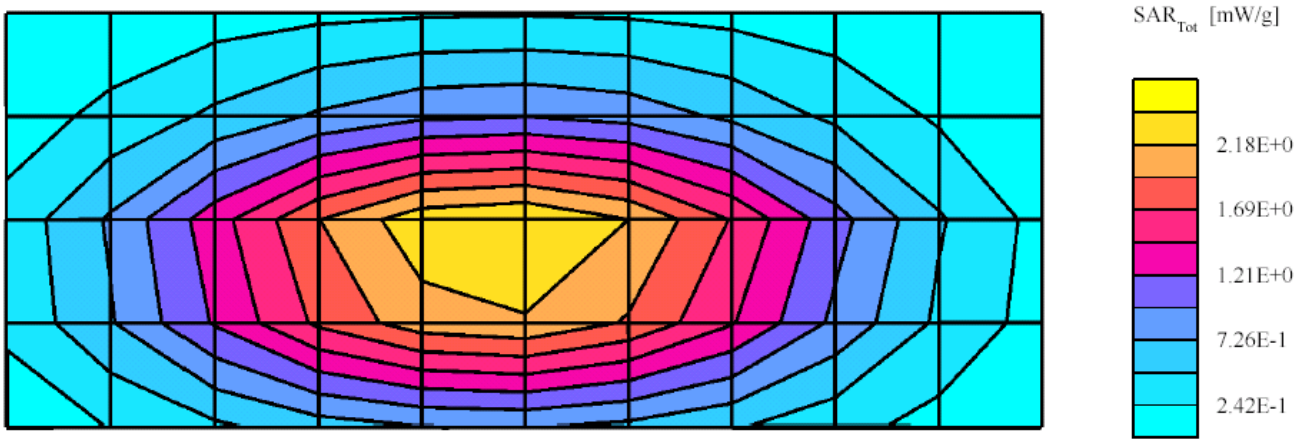
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 0.98 mho/m ε = 52.7 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.03 mW/g ± 0.05 dB, SAR (1g): 2.59 mW/g ± 0.05 dB, SAR (10g): 1.67 mW/g ± 0.06 dB, (Worst-case extrapolation) Penetration depth: 12.5 (11.3, 14.0) [mm]
Power drift: -0.01 dB



SPEAG Dipole D835V2 - SN 426; Test Date:09/19/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020919-01
TX Freq: 835 MHz
Sim Tissue Temp: 214 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.41 mW/g (1g), Percent from target (including drift) for 1g is -2.27 %

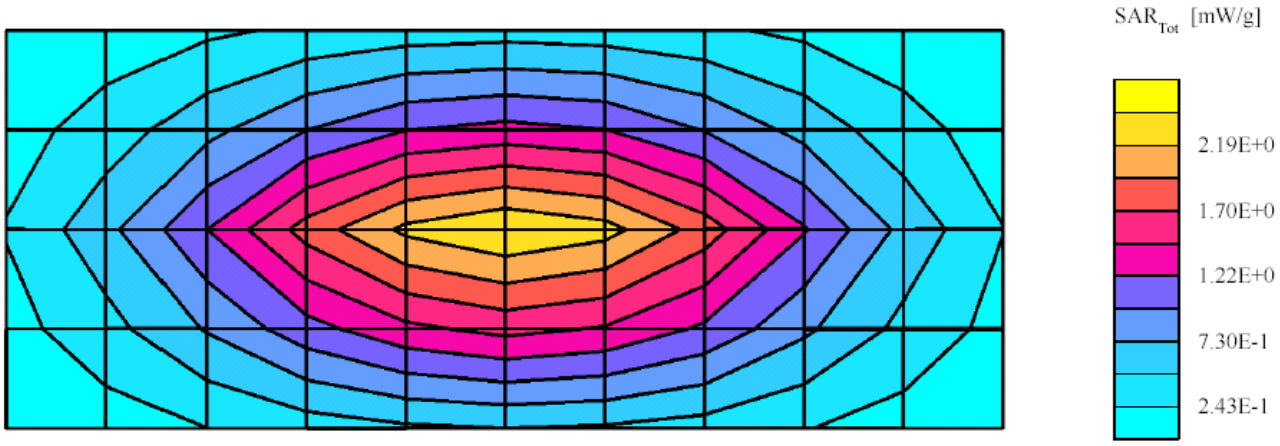
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 0.99 mho/m ε = 52.8 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 3.99 mW/g ± 0.04 dB, SAR (1g): 2.59 mW/g ± 0.04 dB, SAR (10g): 1.68 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 12.7 (11.6, 14.1) [mm]
Power drift: -0.02 dB



SPEAG Dipole D835V2 - SN 426; Test Date:09/20/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020920-01
TX Freq: 835 MHz
Sim Tissue Temp: 21.8 (Celsius)
Start Power; 250mW

Target at 1W is 10.06 mW/g (1g),
SAR calculated is 9.53 mW/g (1g), Percent from target (including drift) for 1g is -5.3 %

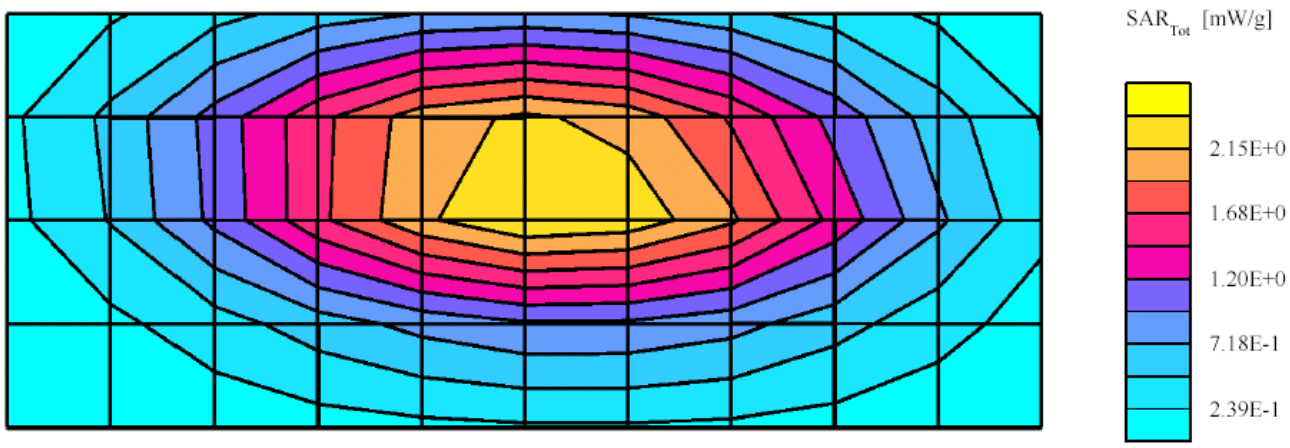
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(7.20,7.20,7.20); Crest factor: 1.0; IEEE HEAD 835MHz: σ = 0.91 mho/m ε = 42.9 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 3.77 mW/g ± 0.03 dB, SAR (1g): 2.36 mW/g ± 0.04 dB, SAR (10g): 1.49 mW/g ± 0.04 dB, (Worst-case extrapolation) Penetration depth: 11.5 (10.5, 13.0) [mm]
Power drift: -0.04 dB



SPEAG Dipole D835V2 - SN 426; Test Date:09/30/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_020930-01
TX Freq: 835 MHz
Sim Tissue Temp: 22.0 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.46 mW/g (1g), Percent from target (including drift) for 1g is -1.75 %

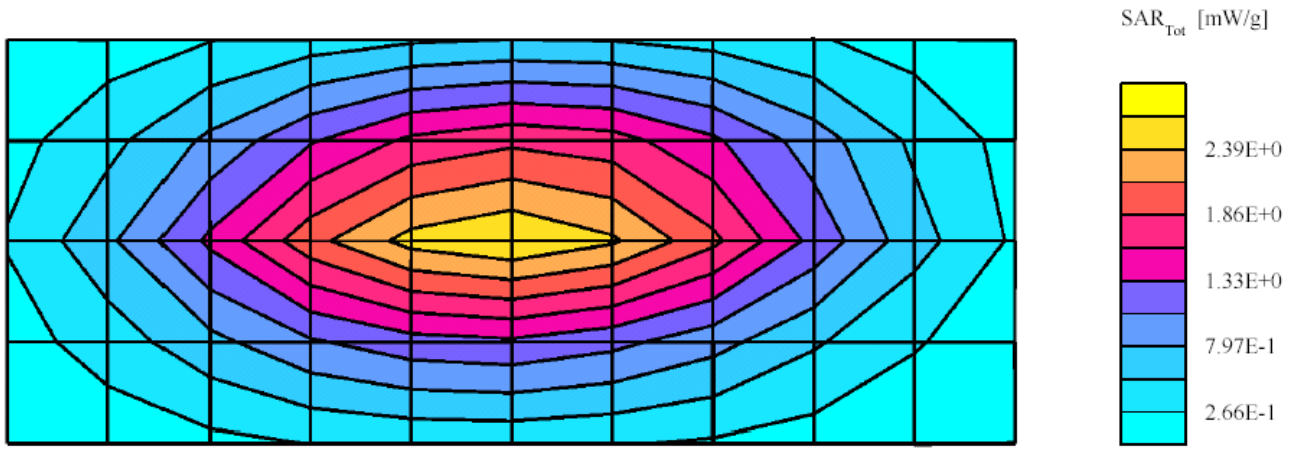
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 1.00 mho/m ε = 52.6 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.05 mW/g ± 0.04 dB, SAR (1g): 2.61 mW/g ± 0.05 dB, SAR (10g): 1.68 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 12.4 (11.3, 13.8) [mm]
Power drift: -0.01 dB



SPEAG Dipole D835V2 - SN 426; Test Date:10/01/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_021001-01
TX Freq: 835 MHz
Sim Tissue Temp: 21.3 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.46 mW/g (1g), Percent from target (including drift) for 1g is -1.75 %

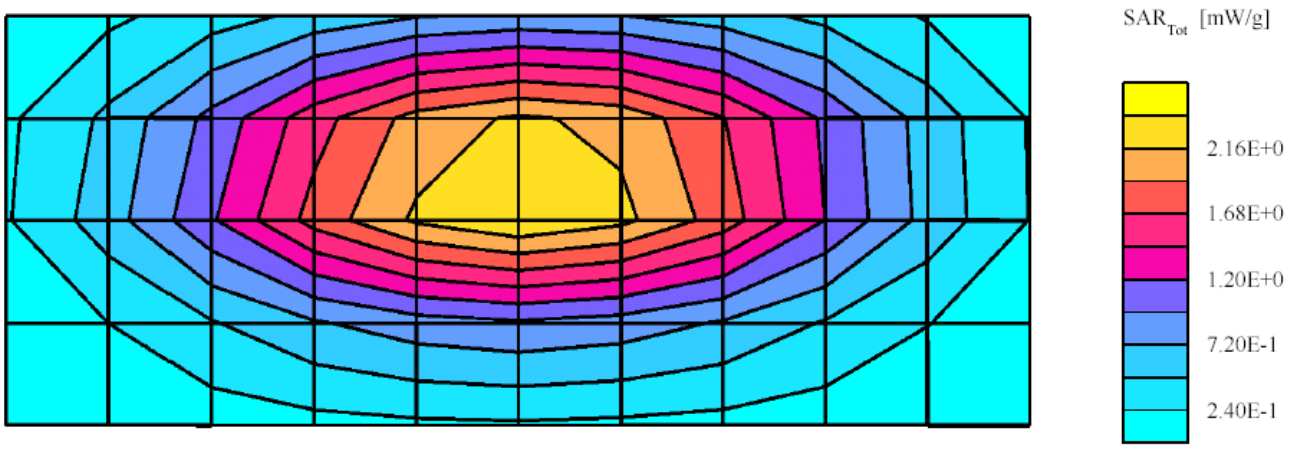
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 1.00 mho/m ε = 52.6 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.06 mW/g ± 0.03 dB, SAR (1g): 2.61 mW/g ± 0.05 dB, SAR (10g): 1.68 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 12.4 (11.3, 13.8) [mm]
Power drift: -0.01 dB



SPEAG Dipole D835V2 - SN 426; Test Date:10/02/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_021002-01
TX Freq: 835 MHz
Sim Tissue Temp: 21.4 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.44 mW/g (1g), Percent from target (including drift) for 1g is -1.97 %

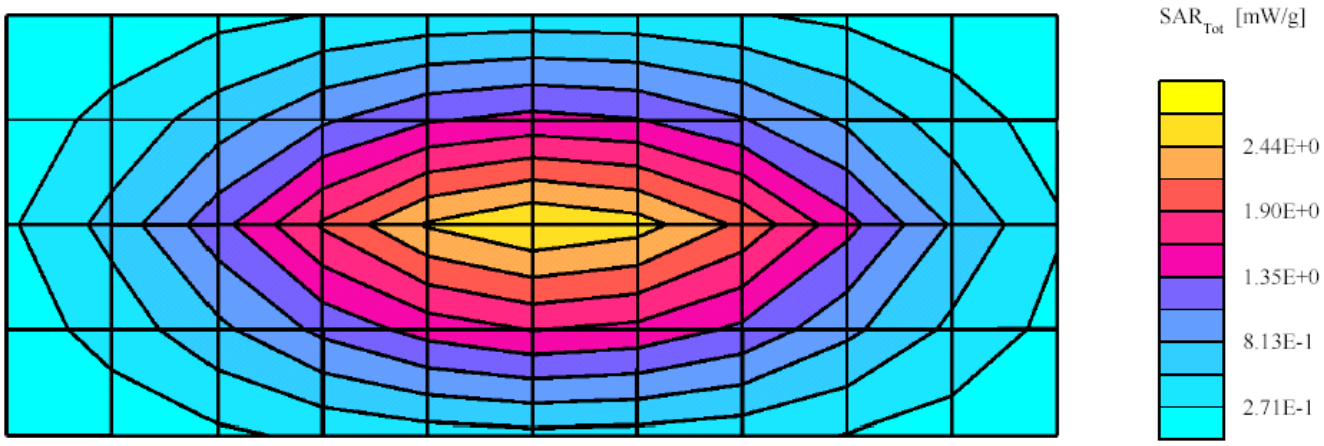
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 1.00 mho/m ε = 52.8 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.05 mW/g ± 0.05 dB, SAR (1g): 2.61 mW/g ± 0.06 dB, SAR (10g): 1.68 mW/g ± 0.06 dB, (Worst-case extrapolation) Penetration depth: 12.4 (11.3, 13.8) [mm]
Power drift: -0.00 dB



SPEAG Dipole D835V2 - SN 426; Test Date:10/03/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_021003-01
TX Freq: 835 MHz
Sim Tissue Temp: 21.3 (Celsius)
Start Power; 250mW

Target at 1W is 10.65 mW/g (1g),
SAR calculated is 10.59 mW/g (1g), Percent from target (including drift) for 1g is -0.5 %

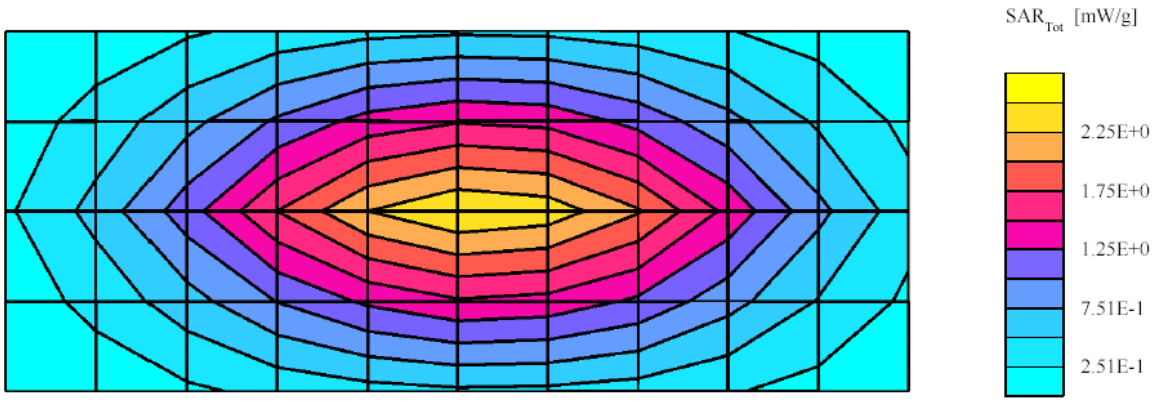
Flat Phantom; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(6.90,6.90,6.90); Crest factor: 1.0; FCC Body 835: σ = 1.01 mho/m ε = 52.5 ρ = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 4.08 mW/g ± 0.03 dB, SAR (1g): 2.63 mW/g ± 0.05 dB, SAR (10g): 1.69 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 12.4 (11.3, 13.9) [mm]
Power drift: -0.03 dB



SPEAG Dipole D835V2 - SN 426; Test Date:10/16/02
Motorola CGISS EME Lab
Run #: Sys Val_R3_021016-01
Model #: SPEAG D835V2 SN: 426
TX Freq: 835 MHz
Sim Tissue Temp: 21.7 (Celsius)
Start Power; 250mW

Target at 1W is 10.4 mW/g (1g),
SAR calculated is 9.78 mW/g (1g), Percent from target (including drift) for 1g is -2.56 %

Flat; Probe: ET3DV6 - SN1393 SPEAG; Probe Cal Date: 3/22/02ConvF(7.20,7.20,7.20); Crest factor: 1.0; IEEE HEAD 835MHz: σ = 0.91 mho/m ε = 41.8 A = 1.00 g/cm3; DAE3: SN:406 DAE Cal Date: 02/08/02
Cubes (2): Peak: 3.84 mW/g ± 0.04 dB, SAR (1g): 2.44 mW/g ± 0.05 dB, SAR (10g): 1.56 mW/g ± 0.05 dB, (Worst-case extrapolation) Penetration depth: 12.0 (10.9, 13.5) [mm]
Power drift: -0.01 dB



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	5/20/02	Frequency (MHz):	835
Lab Location:	CGISS	Mixture Type:	FCC Body
Robot System:	CGISS 2	Ambient Temp.(°C):	21.9
Probe Serial #:	1383	Tissue Temp.(°C):	21.0
DAE Serial #:	374 V2		

Tissue Characteristics		Phantom Type/SN:	ACL40232002B
Permitivity:	53.2	Distance (mm):	15
Conductivity:	0.97		

Reference Source: 835 (Dipole)
Reference SN: 426

Power to Dipole: 250 mW

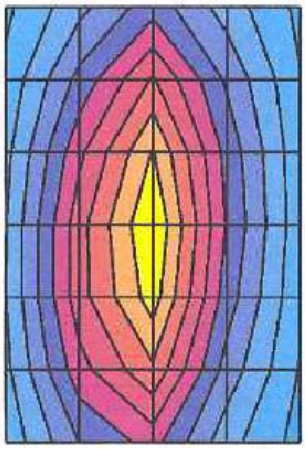
Measured SAR Value: 2.65 mW/g, 1.69 mW/g (10g avg.)
Power Drift: -0.02 dB

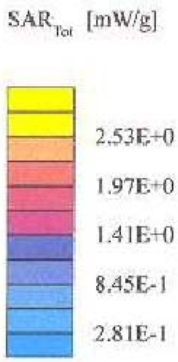
New Target/Measured SAR Value: 10.65 mW/g, 6.79 mW/g (10g avg.)
(normalized to 1.0 W, with drift compensation)

Test performed by: Kim Uong Initial: KU

Dipole D835V2 SN426; Test date:05/20/02

Run #: 02052001 Phantom #ACL40232002B/S11
Model#: SPEAG dipole D835V2 SN426
Robot#: CGISS-2 DAE: DAE3V1 SN374 (2/11/02) Tester: Kim Uong
Tx Freq: 835MHz Simulated tissue temp: 21.0C
Start power: 250mW
Target:
10.5mW/g for 1g-SAR, 6.8mW/g for 10g-SAR, +/-12.1% from SPEAG Dipole certificate 2/11/02
Flat; Probe: ET3DV6 - SN1383; ConvF(6.50,6.50,6.50); Crest factor: 1.0; FCC Body 835: σ = 0.97 mho/m ε_r = 53.2 ρ = 1.00 g/cm^3
Cube 7x7x7: Peak: 4.25 mW/g, SAR (1g): 2.65 mW/g, SAR (10g): 1.69 mW/g, (Worst-case extrapolation)
Penetration depth: 12.1 (10.6, 14.1) [mm]
Powerdrift: -0.02 dB





Motorola CGISS EME Lab

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	__4/19/02__	Frequency (MHz):	__835__
Lab Location:	__CGISS____	Mixture Type:	__IEEE Head_
Robot System:	__CGISS-3___	Ambient Temp.(°C):	__22.0____
Probe Serial #:	__1393_____	Tissue Temp. (°C):	__21.2_____
DAE Serial #:	___406_____		

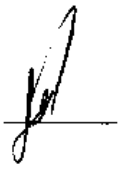
Tissue Characteristics		Phantom Type/SN:	_SAMTP1022__
Permitivity:	____40.3_____	Distance:	__15mm_____
Conductivity:	____0.92_____		

Reference Source: __D835V2___(Dipole)
Reference SN: __426_____

Power to Dipole: ___250_____ mW

Measured SAR Value: __2.51_ mW/g, __1.61_ mW/g (10g avg.)
Power Drift: __0___ dB

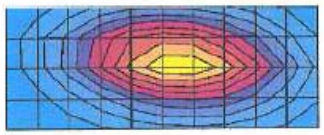
New Target/Measured
SAR Value: __10.04__ mW/g, __6.44__ mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

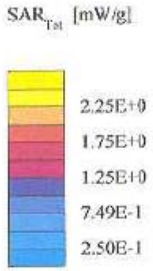
Test performed by: _____Jim Fortier_____ Initial: 

JF 2/18/02

Dipole D835V2 SN426; Test date:04/19/02

Run #: Sys Val_R3_020419-03a
Phantom #:SAMTP1022
Model #: SPEAG D835V2
SN: 426
Robot: CGISS-3
Tester: J. Fortier
TX Freq: 835 MHz
Sim Tissue Temp: 21.8 (Celsius)
Start Power; 250mW
DAE3: SN:406
DAE Cal Date: 02/08/02
- Comments-
IEEE1528 Target at 1W is 9.5 mW/g (1g)
SAR calculated is 10.04 mW/g, Percent from target (including drift) for 1g is +5.7 %
SAM; Probe: ET3DV6 - SN1393 SPEAG; ConvF(7.20,7.20,7.20); Crest factor: 1.0; IEEE HEAD 835MHz: σ = 0.92 mho/m ε_r = 40.3 ρ = 1.00 g/cm^3
Cube 7x7x7: Peak: 3.95 mW/g, SAR (1g): 2.51 mW/g, SAR (10g): 1.61 mW/g, (Worst-case extrapolation)
Penetration depth: 12.0 (11.0, 13.3) [mm]
Powerdrift: 0.00 dB





APPENDIX D

Calibration Certificates

Schmid & Partner
Engineering AG

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

Calibration Certificate

Dosimetric E-Field Probe

Type:	ET3DV6
Serial Number:	1393
Place of Calibration:	Zurich
Date of Calibration:	March 22, 2002
Calibration Interval:	12 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. Vellon
Approved by:	Jelenić Katja

Schmid & Partner
Engineering AG

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

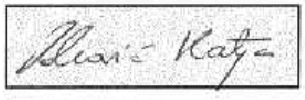
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1393**
Place of Assessment:	**Zurich**
Date of Assessment:	**April 24, 2002**
Probe Calibration Date:	**March 22, 2002**

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

Assessed by:



Dosimetric E-Field Probe ET3DV6 SN:1393

Conversion factor (± standard deviation)

150 MHz	ConvF	**8.9 ± 8%**	**ε_r = 61.9** **σ = 0.80 mho/m** (body tissue)
236 MHz	ConvF	**8.7 ± 8%**	**ε_r = 59.8** **σ = 0.87 mho/m** (body tissue)
300 MHz	ConvF	**8.6 ± 8%**	**ε_r = 58.2** **σ = 0.92 mho/m** (body tissue)
350 MHz	ConvF	**8.5 ± 8%**	**ε_r = 57.7** **σ = 0.93 mho/m** (body tissue)
450 MHz	ConvF	**8.2 ± 8%**	**ε_r = 56.7** **σ = 0.94 mho/m** (body tissue)
784 MHz	ConvF	**7.0 ± 8%**	**ε_r = 55.4** **σ = 0.97 mho/m** (body tissue)
1450 MHz	ConvF	**5.6 ± 8%**	**ε_r = 54.0** **σ = 1.30 mho/m** (body tissue)

Dosimetric E-Field Probe ET3DV6 SN:1393

Conversion factor (± standard deviation)

150 MHz	ConvF	**9.8 ± 8%**	**ε_r = 52.3** **σ = 0.76 mho/m** (head tissue)
236 MHz	ConvF	**8.9 ± 8%**	**ε_r = 48.3** **σ = 0.82 mho/m** (head tissue)
300 MHz	ConvF	**8.4 ± 8%**	**ε_r = 45.3** **σ = 0.87 mho/m** (head tissue)
350 MHz	ConvF	**8.3 ± 8%**	**ε_r = 44.7** **σ = 0.87 mho/m** (head tissue)
400 MHz	ConvF	**8.1 ± 8%**	**ε_r = 44.4** **σ = 0.87 mho/m** (head tissue - CENELEC)
450 MHz	ConvF	**8.0 ± 8%**	**ε_r = 43.5** **σ = 0.87 mho/m** (head tissue)
784 MHz	ConvF	**7.3 ± 8%**	**ε_r = 41.8** **σ = 0.90 mho/m** (head tissue)
835 MHz	ConvF	**7.2 ± 8%**	**ε_r = 41.5** **σ = 0.90 mho/m** (head tissue)
835 MHz	ConvF	**7.2 ± 8%**	**ε_r = 42.5** **σ = 0.98 mho/m** (head tissue - CENELEC)
900 MHz	ConvF	**7.1 ± 8%**	**ε_r = 41.5** **σ = 0.98 mho/m** (head tissue - CENELEC)

Dosimetric E-Field Probe ET3DV6 SN:1393

Conversion factor (± standard deviation)

1450 MHz	ConvF	**6.1 ± 8%**	**ε_r = 40.5** **σ = 1.20 mho/m** (head tissue)
1900 MHz	ConvF	**5.4 ± 8%**	**ε_r = 40.0** **σ = 1.40 mho/m** (head tissue)
2450 MHz	ConvF	**4.6 ± 8%**	**ε_r = 39.2** **σ = 1.80 mho/m** (head tissue)

Schmid & Partner
Engineering AG

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

Calibration Certificate

835 MHz System Validation Dipole

Type:	D835V2
Serial Number:	426
Place of Calibration:	Zurich
Date of Calibration:	February 11, 2002
Calibration Interval:	24 months

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

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:	
Approved by:	

1. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with head simulating solution of the following electrical parameters at 835 MHz:

Relative Dielectricity	**41.9**	± 5%
Conductivity	**0.89 mho/m**	± 5%

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.5) was used for the measurements.

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

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 1. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**10.2 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**6.56 mW/g**

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well.

3. Dipole Impedance and Return Loss

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

Electrical delay:	**1.375 ns**	(one direction)
Transmission factor:	**0.997**	(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 835 MHz:	Re{Z} = **50.3** Ω
	Im {Z} = **-2.1** Ω
Return Loss at 835 MHz	**-33.8 dB**

4. Measurement Conditions

The measurements were performed in the flat section of the SAM twin phantom filled with body simulating solution of the following electrical parameters at 835 MHz:

Relative Dielectricity	**55.4**	± 5%
Conductivity	**0.96 mho/m**	± 5%

The DASY3 System (Software version 3.1d) with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.2) was used for the measurements.

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

The coarse grid with a grid spacing of 20mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

5. SAR Measurement

Standard SAR-measurements were performed with the phantom according to the measurement conditions described in section 4. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**10.5 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**6.80 mW/g**

6. Dipole Impedance and Return Loss

The dipole was positioned at the flat phantom sections according to section 4 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 835 MHz:	Re{Z} = **46.0 Ω**
	Im {Z} = **-4.6 Ω**
Return Loss at 835 MHz	**-24.1 dB**

7. Handling

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

8. Design

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

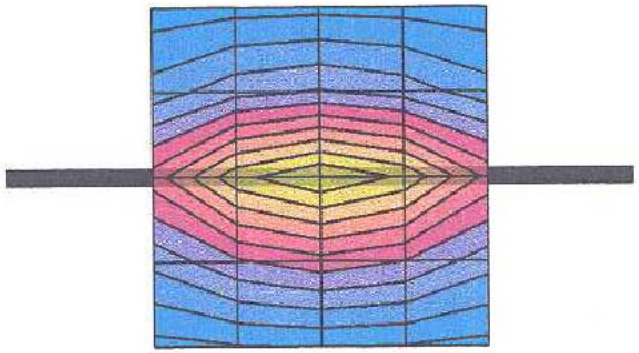
9. Power Test

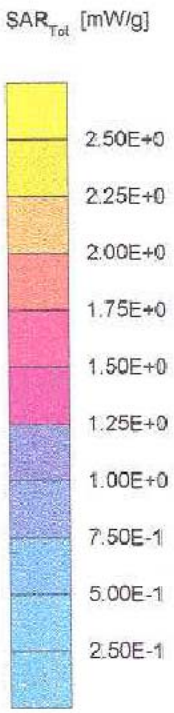
After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

02/11/02

Validation Dipole D835V2 SN:426, d = 15 mm

Frequency: 835 MHz; Antenna Input Power: 250 [mW]
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0
Probe: ET3DV6 - SN1507; ConvF(6.50,6.50,6.50) at 900 MHz; IEEE1528 835 MHz; σ = 0.89 mho/m ε_r = 41.9 ρ = 1.00 g/cm³
Cubes (2): Peak: 4.09 mW/g ± 0.04 dB, SAR (1g): 2.56 mW/g ± 0.03 dB, SAR (10g): 1.64 mW/g ± 0.02 dB, (Worst-case extrapolation)
Penetration depth: 11.9 (10.5, 13.8) [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 assessed body worn carry accessories for FCC ID: ABZ99FT5000. The radio that was used in the following photos represents the device used to obtain the results presented herein.

Photo 1.
Model PMLN4280A
Full Thin Leather
Front View

Photo 2.
Model PMLN4280A
Full Thin Leather
Side view

Photo 3.
Model PMLN4280A
Full Thin Leather
Back view

Photo 4.
Model HLN9690A
Standard Leather case with swivel
Front view

Photo 5.
Model HLN9690A
Standard Leather case with swivel
Side view

Photo 6.
Model HLN9690A
Standard Leather case with swivel
Back view

Photo 7.
Model HLN9701B
Nylon Case
Front view

Photo 8.
Model HLN9701B
Nylon Case
Side view

Photo 9.
Model HLN9701B
Nylon Case
Back view

Photo 10.
Model HLN9677A
Standard case w/ belt loop
Front view

Photo 11.
Model HLN9677A Standard
case w/ belt loop
Side view

Photo 12.
Model HLN9677A
Standard case w/ belt loop
Back view

Photo 13.
Model HLN9714A Belt Clip
Back view

Photo 14.
Model HLN9844A Belt clip
Back view

Appendix F
Accessories and options test status and separation distances

The following table summarizes the body spacing distance provided by each of the body-worn accessories:

Carry Case Model	Tested ?	Separation distance between device and phantom surface. (mm)	Comments
HLN9677A	Tested	36	NA
HLN9690A	Tested	52	NA
HLN9701B	Tested	31	NA
HLN9714A	Tested	23	NA
HLN9844A	Tested	24	NA
RLN4815A	Tested	35	NA
NTN5243A	Tested w/ HLN9677A	NA	NA
PMLN4280A	Tested	29	NA
HLN9952A	Not Tested	30	Plastic case – no metal components. Greater separation distance when used with HLN9714A or HLN9844
HLN9985B	Not Tested	NA	Waterproof carry bag only. No intended radio operation.
PMLN4281A	Not Tested	29	Similar to PMLN4280A. Contain same metallic components
HLN9945A	Not Tested	=>36	Similar to HLN9677A. Contain same metallic components
HLN9689A	Not Tested	=>36	Similar to HLN9946A. Contain same metallic components
HLN9946A	Not Tested	=>36	Similar to HLN9677A. Contain same metallic components
HLN9665A	Not Tested	=>36	Similar to HLN9677A. Contain same metallic components
HLN9652A	Not Tested	=>52	Similar to HLN9677A. Contain same metallic components
HLN9670A	Not Tested	=>52	Similar to HLN9690A. Contain same metallic components
HLN9676A	Not Tested	=>52	Similar to HLN9690A. Contain same metallic components
HLN9694A	Not Tested	=>52	Similar to HLN9690A. Contain same metallic components
HLN9955A	Not Tested	=>52	Similar to HLN9690A. Contain same metallic components
HLN9998A	Not Tested	=>52	Similar to HLN9690A. Contain same metallic components
Audio Acc.	**Tested ?**	**Separation distance between device and**	**Comments**

Model		phantom surface. (mm)	
AARMN4017A	Tested	NA	NA
AARMN4028A	Tested	NA	NA
AARMN4031B	Tested	NA	NA
RMN4054A	Tested with HLN9716B GP300 adapter	NA	NA
RMN4055A	Tested with HLN9716B GP300 adapter	NA	NA
ENMN4013A	Tested	NA	NA
ENMN4010A	Tested	NA	NA
ENMN4015A	Tested	NA	NA
ENMN4016A	Tested	NA	NA
BDN6641A	Tested w/ RMN4044A	NA	NA
BDN6677A	Tested w/ RMN4045A	NA	NA
ENLN4135A	Tested w/ ENMN4011A	NA	NA
ENMN4011A	Tested With ENLN4135A	NA	NA
ENMN4012A	Tested	NA	NA
ENMN4014A	Tested	NA	NA
HLN9716B	Tested w/ HMN9725D GP300 adapter	NA	NA
HLN9717A	Tested w/ NTN1722A/1723A/ 1724A	NA	NA
HMN9052D	Tested	NA	NA
HMN9053D	Tested w/ WADN4190B	NA	NA
NTN1722A	Tested	NA	NA
NTN1723A	Tested	NA	NA
NTN1724A	Tested	NA	NA
PMLN4418A	Tested	NA	NA
RKN4097A	Tested w/ RMN4051A/ 4052A/4053A	NA	NA
RLN4922A	Tested w/ ENMN4014A	NA	NA
AARMN4018B	Tested	NA	NA
AARMN4019A	Tested	NA	NA
AARMN4020A	Tested	NA	NA
AARMN4022A	Tested	NA	NA
RMN4044A	Tested w/ 0180358B38 & BDN6641A	NA	NA
RMN4045A	Tested w/ 0180300E83 & BDN6677A	NA	NA
RMN4048A	Tested	NA	NA

RMN4051A	Tested With RKN4097A	NA	NA
RMN4052A	Tested With RKN4097A	NA	NA
RMN4053A	Tested w/ RKN4097A	NA	NA
WADN4190B	Tested w/ HMN9053D	NA	NA
HKN9055A	Not Tested	NA	Remote Speaker Mic. Replacement cable
0180358B38	Tested w/ RMN4044A	NA	NA
0180300E83	Tested w/ RMN4045A	NA	NA
NTN8370A	Not Tested	NA	Similar to WADN4190A Receive only ear piece.
NTN8371A	Not Tested	NA	Similar to WADN4190A Receive only ear piece
ENMN4017A	Not Tested	NA	Similar to ENMN4014A (different color)
BDN6678A	Not Tested	NA	Similar to BDN6677A (different color)
RLN4885A	Not Tested	NA	Similar to WADN4190B (Receive only ear piece)
AARMN4021A	Not tested	NA	Similar to AARMN4028A
RLN4941A	Not Tested	NA	Similar to WADN4190B (Receive only ear piece)
AARMN4029A	Not Tested	NA	Similar to AARMN4022A