Certificate Number: 1449-02

ELECTROMAGNETIC EXPOSURE (EME) TESTING LABORATORY

8000 West Sunrise Blvd.
Fort-Lauderdale, Florida

S.A.R. TEST REPORT

FCC ID: AZ489FT4845
[PMUE1701A]

August 31, 2001 Rev .A

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REVISION HISTORY

Date	Revision	Comments
11 May 2001	O	Original release
August 31, 2001	A	Revised subsequent to FCC correspondence reference number 20052 to include: (1) Additional SAR data at the abdomen . (2) Replaced SAR data at the face with data measured using IEEE simulated head tissue. (3) Revised max power to 5.2 Watts consistent with factory upper limit.

1.0 Introduction

This report details the test setup, test equipment, and test results of the Specific Absorption Rate (SAR) measurement performed at CGISS EME laboratory for the Two-way Portable Radio Product, model number PMUE1701A (FCC ID: AZ489FT4845). Initial testing was conducted from May 7, 2001 through May 10, 2001 prior to June 30, 2001 release of the Revised Supplement C to OET Bulletin 65. Additional testing was conducted from July 30, 2001 through August 3, 2001 to fulfill FCC additional requirements.

The applicable exposure environment is Occupational/Controlled.

The test results included herein represent the highest SAR levels applicable to this product and clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8.0 W/kg per the requirements of 47 CFR 2.1093(d).

2.0 Reference Standards and Guidelines

This product is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 1999 (applicable to wireless phones only)]

3.0 Description of Test Sample

PMUE1701A with NAE6483A 16cm antenna.

PMUE1701A with PMAE4006A 9cm antenna.

The Portable radio, model number PMUE1701A is a handheld transceiver which operates as a traditional simplex 2-way radio. It will be marketed to and used by employees solely for work - related operations, such as public safety agencies, e.g. police, fire and emergency medical. User training is the responsibility of these agencies, who can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two - way radios.

The intended use positions are "at the face" with the microphone 1 to 2 inches from the mouth or "at the waist or abdomen" secured to the user's belt. When operated at the waist or abdomen, the audio and push-to-talk functions are routed to a remote accessory which connects to the side of the radio. The transmit duty cycle, 50% maximum for this type of device, is controlled by the user via the push – to - talk button.

This device transmits in the 450-527 MHz band with 16 channels. The maximum conducted power, as defined by the production line final test station upper limit, is 5.2 watts.

The sample unit tested for this report is an identical pilot to intended production units.

The Portable radio product will be offered with various antennas, and accessories, listed below. (Refer to appendix D for a complete illustration of Body - worn accessories.)

Antenna:

PMAE4003A	¼ wave 9cm helical, non-retractable, freq. range 430-470MHz,
PMAE4006A	¼ wave 9cm helical, non-retractable, freq. range 465-495MHz,
PMAE4007A	¼ wave 9cm helical, non-retractable, freq. range 490-527MHz,
PMAE4008A	¼ wave 13cm whip, non-retractable, freq. range 470-530MHz,
NAE6483A	¼ wave 16cm whip, non-retractable, freq. range 403-520MHz,

Battery:

JMNN4024A	AFAT Li-ion ultra high capacity
JMNN4023A	AA Li-ion high capacity

Body-worn accessories:

JMZN4019A	Soft leather case with swivel belt clip
PMLN4421B	Soft leather case with swivel belt clip
JMZN4023A	Plastic carry holder with swivel belt clip

Audio/push-to-talk: Representative sample of the audio accessories
JMMN4067A Yaesu Remote Speaker Microphone

Some of the accessories listed in this report may not be available when the product is initially launched to the Market.

3.1 Test Signal

Test Signal Source:

Test Mode [ ] Base Station [ ] Simulator [ ] Native Transmission Mode [X]

Signal Modulation:

CW	X
TDMA	
Other	

3.2 Test Output Power

The conducted output power was measured across the transmit band using a HP power meter model E4419B for the HP power meter.

4.0 Description of Test Equipment

4.1 Descriptions of SAR Measurement System

The laboratory utilizes a Dosimetric Assessment System (DASY™) SAR measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The SAR measurements were conducted with the ET3DV6 serial number 1547 and ET3DV6 serial number 1383 probes. The system performance tests were completed at the beginning and end of the SAR tests conducted May 7,2001 through May 10, 2001, and daily or within 24 hours of the SAR tests conducted July 30, 2001 through August 3, 2001. Copy of the probe calibration certificates are included in appendix C, and the DASY output files of all the system performance test results are included in appendix B. The table below summarizes the average and range of all system performance checks.

Probe Serial #	Probe Cal Date	Dipole Kit / Serial #	System Perf. Result when normalized to 1W (mW/g)	Reference SAR @ 1W (mW/g)
ET3DV6-1547	11/14/00	450-002	4.99 ±2.45%	5.16 ±10%
ET3DV6-1383	5/23/01	450-002	4.69	5.16 ±10%
ET3DV6-1383	5/23/01	450-001	4.83 ±0.62%	5.24 ±10%

The DASY™ system is operated per the instructions in the DASY™ Users Manual. The entire manual is available directly from SPEAG™.

4.2 Description of Phantom

4.2.1 Flat Phantom:

A rectangular shaped box made of Plexi-glass and mounted on a supporting non-metallic structure that has an opening at the center for positioning the device.

Flat Body Phantom

Length	60.9 cm
Width	37.1 cm
Bottom Shell Thickness (mm)	0.3 cm

Flat Face Phantom

Length	40.5 cm
Width	23.6 cm
Bottom Shell Thickness	0.2 cm

4.3 Simulated Tissue Properties:

The simulated Head tissue used is compliant to that specified in FCC Supplement C (Edition 01 - 01) to OET Bulletin 65 (Edition 97 - 01). Testing at the abdomen was started before the release of FCC Supplement C (Edition 01 - 01) and therefore traditional Motorola Muscle tissue was used.

4.3.1 Type of Simulated Tissue:

Simulated Tissue	Body Position
Muscle	Abdomen
Head	Face

4.3.2 Simulated Tissue Composition:

	Tissue Composition	
	Muscle	**Head**
Di-Water	52.00 %	38.56 %
Sugar	44.9 %	56.32 %
Salt	2.00 %	3.95 %
HEC	1.00 %	0.98 %
Dowicil75	0.10 %	0.19 %

Note: HEC (HYDROXYETHYL CELLULOSE) is a gelling agent and Dowicil 75 is anti bacterial compound.

Characterization of Simulated tissue materials and ambient conditions:

Simulated tissue prepared for SAR measurements is measured routinely to verify tissue is within ±5% of target parameters at the center of the transmit band. These measurements were done by the HP probe kit model 85070C, and by filling a coaxial slotted line with the tissue and probing the amplitude and phase changes versus distance in the simulated tissue. A Hewlett Packard HP8753D Network Analyzer is used to perform the measurements.

Target tissue parameters for 488MHz.

	488MHz	
	Muscle	**Head**
Di-electric Constant	57.41	43.3
Conductivity – S/m	1.01	0.87

4.4 Test Conditions:

The EME Laboratory ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation.

The EME Lab RF environment is monitored with a Spectrum Analyzer to preclude extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the SAR scans are repeated however the lab environment is sufficiently protected that no SAR impacting interference has ever been experienced.

5.0 Description of Test Procedure

All antennas, batteries, and accessories listed in section 3.0 were included in the SAR test plan in order to determine the highest SAR levels. The measured SAR results are scaled to 5.2 watts to account for power slump during the scan. This scaling is described in section 7.4; engineering judgment and SAR test experience indicate that SAR is sufficiently linear with transmit power output to warrant this approach which is conservative in itself. The radio was always placed in continuous transmit mode (100% duty cycle) for the duration of the scan and each SAR scan was initiated with a fully charged battery.

5.0.1 Abdomen

At the abdomen each combination of antenna, battery, and body-worn accessory was tested at low, mid, and high frequencies of the radio transmit band to the extent that those frequencies are valid for the particular antenna. Each antenna was also tested at its approximately specified center and band end frequencies using the combination of battery and carry case that resulted in the highest SAR. This data is summarized in Table 7.1.

All abdomen tests were conducted with an audio/push - to - talk accessory connected to the radio.

5.0.2 Face

At the face each combination of antenna, and battery was tested at low, mid, and high frequencies of the radio transmit band to the extent that those frequencies are valid for the particular antenna. Each antenna was also tested at its approximately specified center and band end frequencies using the combination of battery that resulted in the highest SAR. This data is summarized in Table 7.2.

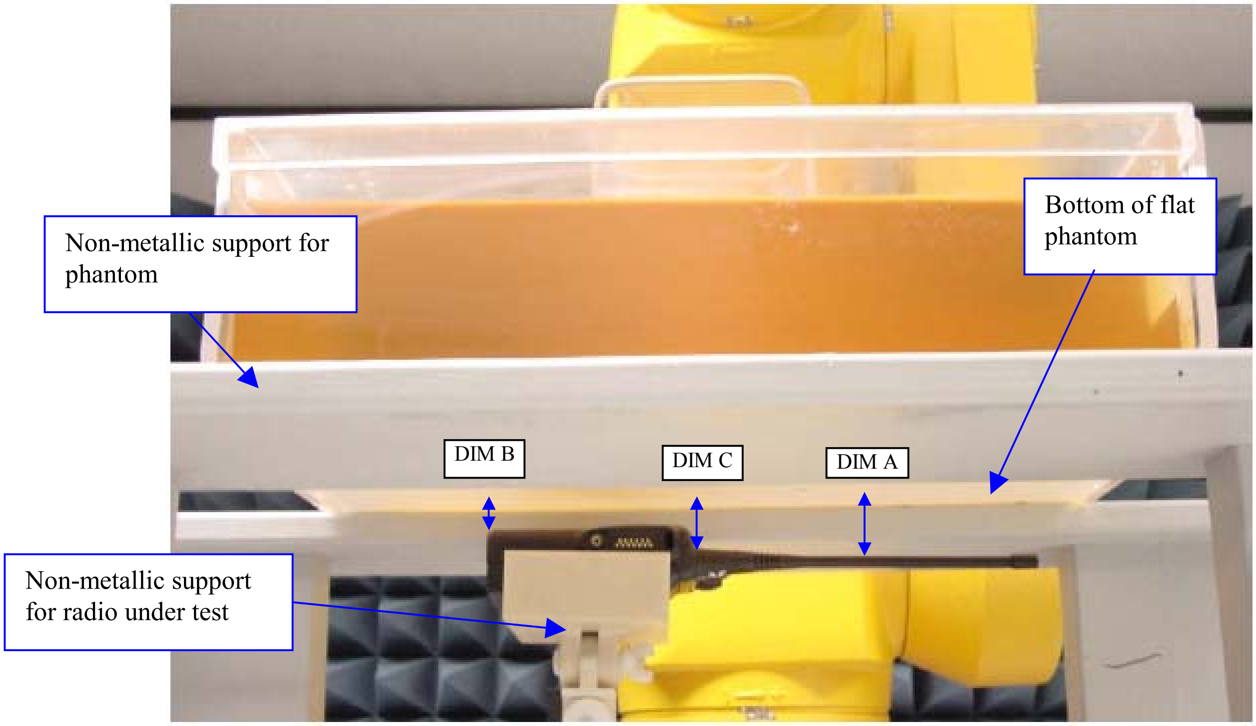
5.1 Device Test Positions

Abdomen - The test sample is positioned in a body - worn accessory and positioned under a flat phantom with the back of the body - worn accessory adjacent and parallel to the phantom. An audio/push-to-talk accessory and cable was connected to the radio.
For the 2.5cm test the test sample is positioned under the flat phantom and parallel to the phantom with the base of antenna spaced 2.5cm from the phantom surface.

Face - The test sample is positioned under a flat phantom with radio housing parallel to the phantom with the radio's microphone spaced 2.5cm from the bottom of the phantom surface.

Reference figures 1 and 2 for portable radio antenna orientation and distances relative to phantoms. Figure 3 provides an overall perspective of the phantom and support structure

Figure 1: Facial Position



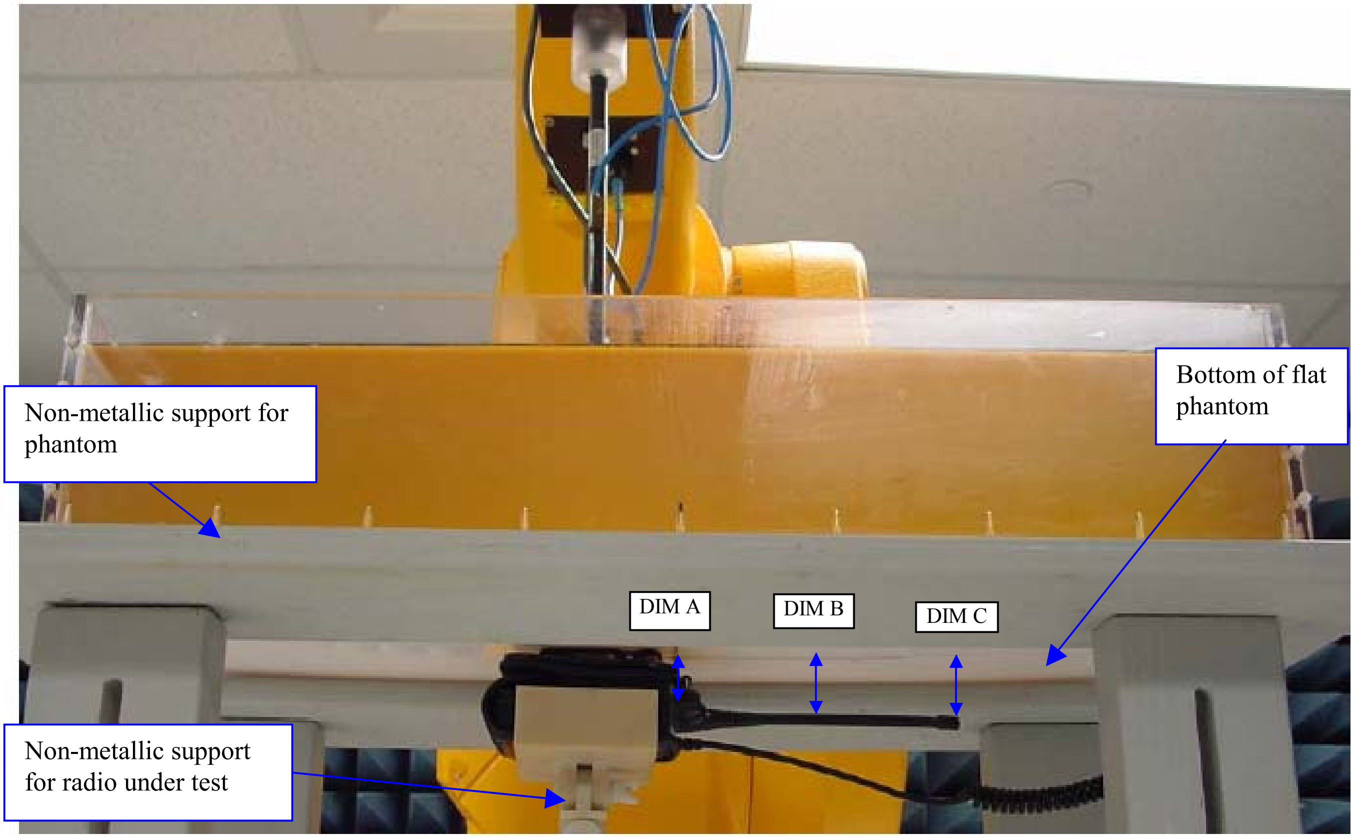
DIM A = Distance from center of antenna surface to phantom = 39mm

DIM B = Closest distance between bottom of radio to phantom = 25mm

DIM C = Closest distance between base of antenna to phantom = 35mm

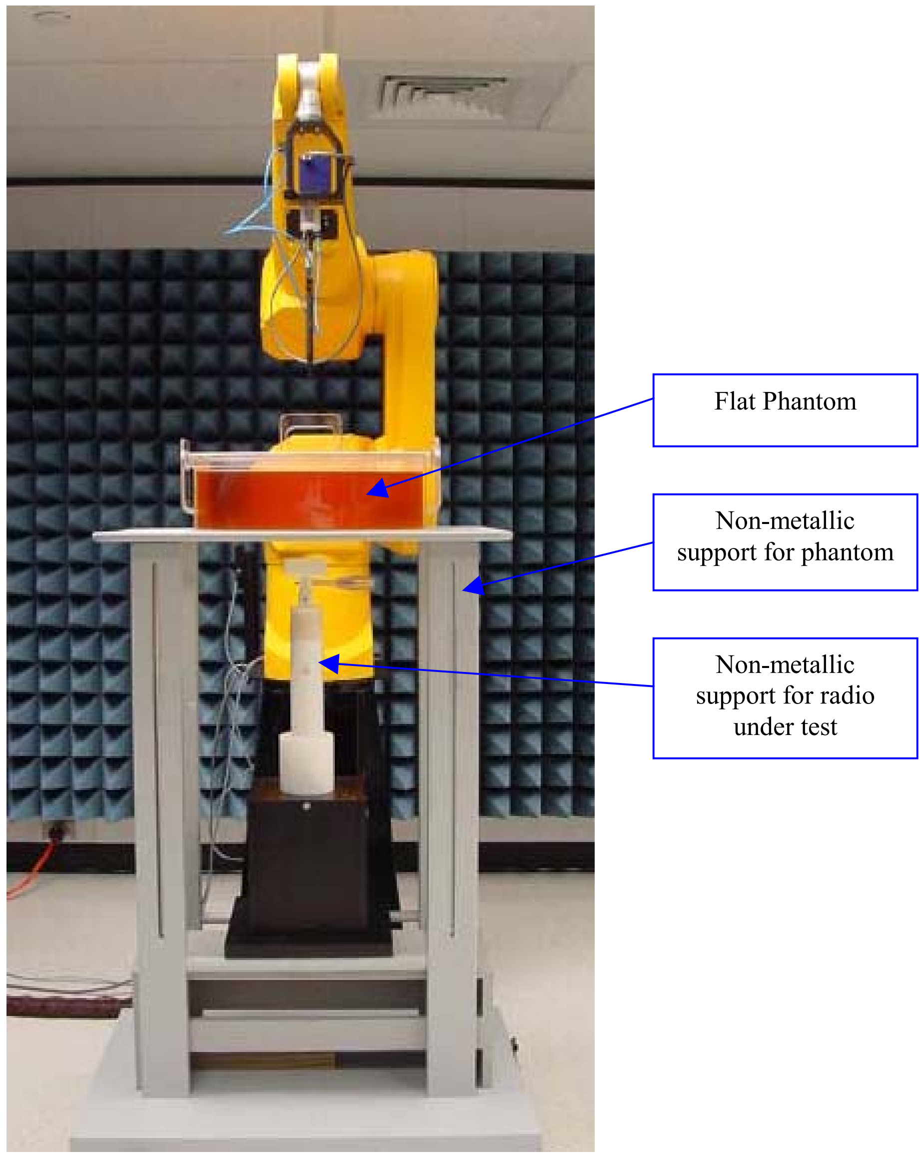
Note: Radio is positioned with microphone 2.5cm from flat phantom.

Figure 2: Abdominal Position



		JMZN4019A (as shown above)	JMZN4023A	PMLN4021B
Dim A =	Distance from surface of antenna base to phantom surface =	27mm	30mm	34mm
Dim B =	Distance from surface of antenna center to phantom surface =	30mm	49mm	45mm
Dim C =	Distance from antenna surface tip to phantom =	30mm	62mm	55mm

Figure 3: Robot Test System



5.2 Probe Scan Procedures

The E-field probe is first scanned in a coarse grid over a large area inside the phantom in order to locate the interpolated maximum SAR distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position for reference for the cube evaluations.

6.0 Measurement Uncertainty:

The table below list the uncertainty estimate of the possible errors that are associated with the measurement system.

Uncertainty Description	Standard Uncertainty
Probe Uncertainty	
- Axial Isotropy	±2.4 %
- Spherical Isotropy	±4.8 %
- Spatial Resolution	±0.5 %
- Linearity Error	±2.7 %
- Calibration Error	±8 %
Evaluation Uncertainty	
- Data Acquisition Error	±0.60 %
- ELF and RF Disturbances	±0.25 %
- Conductivity Assessment	±5 %
Spatial Peak SAR Evaluation Uncertainty	
- Extrapolation and boundary effects	±3%
- Probe positioning	±1 %
- Integration and cube orientation	±3 %
- Cube shape inaccuracies	±1.2 %
- Device positioning	±1.0 %

The Total Measurement Uncertainty is ± 12.1 %. The Expanded Measurement Uncertainty is ± 24.2 % (k=2)

7.0 SAR Test Results:

All SAR results yielded by the tests described in Section 5.0 are listed in the tables below for each body position. The DASY™ measurement system's output files for bolded data indicated in tables below are provided in appendix A.

7.1 SAR results at the abdomen:

Antenna	Freq.	Battery	Carry Acc	Audio Acc	Init. Power (W)	End Power (W)	Measured SAR (100% duty cycle)	Max Cal SAR (50% duty cycle)
PMAE4003A	450	JMNN4023A	JMZN4019A	JMMN4067A	4.2	3.03	**4.80**	**4.12**
PMAE4003A	450	JMNN4024A	JMZN4019A	JMMN4067A	4.12	3.54	1.83	1.34
PMAE4003A	465	JMNN4023A	JMZN4019A	JMMN4067A	4.6	3.73	3.79	2.64
PMAE4003A	450	JMNN4023A	JMZN4023A	JMMN4067A	4.20	3.03	**5.11**	**4.38**
PMAE4003A	450	JMNN4024A	JMZN4023A	JMMN4067A	4.17	3.57	2.11	1.54
PMAE4003A	465	JMNN4023A	JMZN4023A	JMMN4067A	4.55	3.75	3.17	2.20
PMAE4003A	450	JMNN4023A	PMLN4021B	JMMN4067A	4.20	3.03	**4.68**	**4.02**
PMAE4003A	450	JMNN4024A	PMLN4021B	JMMN4067A	4.16	3.68	1.99	1.41
PMAE4006A	488	JMNN4023A	JMZN4019A	JMMN4067A	4.65	3.23	2.66	2.14
PMAE4006A	488	JMNN4024A	JMZN4019A	JMMN4067A	4.31	3.18	2.00	1.64
PMAE4006A	465	JMNN4023A	JMZN4019A	JMMN4067A	4.67	3.67	2.96	2.10
PMAE4006A	495	JMNN4023A	JMZN4019A	JMMN4067A	4.83	3.57	**4.30**	**3.13**
PMAE4006A	488	JMNN4023A	JMZN4023A	JMMN4067A	4.70	3.39	2.97	2.28
PMAE4006A	488	JMNN4024A	JMZN4023A	JMMN4067A	4.70	3.36	2.33	1.80
PMAE4006A	465	JMNN4023A	JMZN4023A	JMMN4067A	4.67	3.74	2.56	1.78
PMAE4006A	495	JMNN4023A	JMZN4023A	JMMN4067A	4.65	3.52	**3.80**	**2.81**
PMAE4006A	488	JMNN4023A	PMLN4021B	JMMN4067A	4.73	3.54	**1.91**	**1.40**
PMAE4006A	488	JMNN4024A	PMLN4021B	JMMN4067A	4.56	3.30	1.38	1.09
PMAE4007A	525	JMNN4023A	JMZN4019A	JMMN4067A	4.5	3.15	**6.25**	**5.16**
PMAE4007A	525	JMNN4024A	JMZN4019A	JMMN4067A	4.42	3.12	4.51	3.76
PMAE4007A	495	JMNN4023A	JMZN4019A	JMMN4067A	4.60	3.40	1.97	1.51
PMAE4007A	508	JMNN4023A	JMZN4019A	JMMN4067A	4.52	3.38	2.88	2.22
PMAE4007A	525	JMNN4023A	JMZN4023A	JMMN4067A	4.50	3.22	**4.05**	**3.27**
PMAE4007A	525	JMNN4024A	JMZN4023A	JMMN4067A	4.56	3.41	3.98	3.03

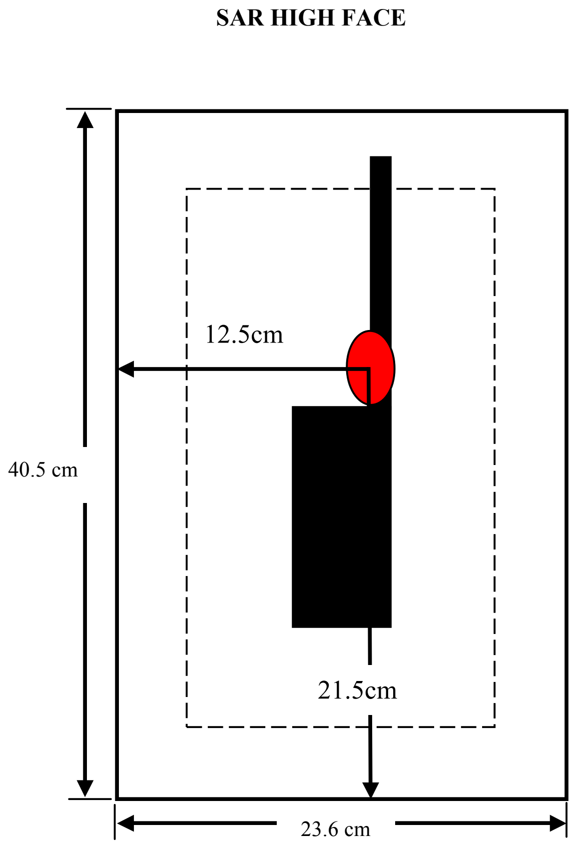
Antenna	Freq.	Battery	Carry Acc	Audio Acc	Init. Power (W)	End Power (W)	Measured SAR (100% duty cycle)	Max Cal SAR (50% duty cycle)
PMAE4007A	525	JMNN4023A	PMLN4021B	JMMN4067A	4.36	3.39	**4.37**	**3.35**
PMAE4007A	525	JMNN4024A	PMLN4021B	JMMN4067A	4.46	3.32	3.15	2.47
PMAE4008A	488	JMNN4023A	JMZN4019A	JMMN4067A	4.59	3.58	1.85	1.34
PMAE4008A	488	JMNN4024A	JMZN4019A	JMMN4067A	4.50	3.39	1.67	1.28
PMAE4008A	525	JMNN4023A	JMZN4019A	JMMN4067A	4.60	3.41	**4.06**	**3.10**
PMAE4008A	525	JMNN4024A	JMZN4019A	JMMN4067A	4.50	3.42	3.19	2.43
PMAE4008A	470	JMNN4023A	JMZN4019A	JMMN4067A	4.57	3.55	2.33	1.71
PMAE4008A	488	JMNN4023A	JMZN4023A	JMMN4067A	4.7	3.36	1.61	1.25
PMAE4008A	488	JMNN4024A	JMZN4023A	JMMN4067A	4.65	3.41	1.36	1.04
PMAE4008A	525	JMNN4023A	JMZN4023A	JMMN4067A	4.5	3.22	**3.46**	**2.79**
PMAE4008A	525	JMNN4024A	JMZN4023A	JMMN4067A	4.48	3.67	2.77	1.96
PMAE4008A	488	JMNN4023A	PMLN4021B	JMMN4067A	4.67	3.43	1.44	1.09
PMAE4008A	488	JMNN4024A	PMLN4021B	JMMN4067A	4.58	3.35	1.16	0.90
PMAE4008A	525	JMNN4023A	PMLN4021B	JMMN4067A	4.46	3.28	**3.17**	**2.51**
PMAE4008A	525	JMNN4024A	PMLN4021B	JMMN4067A	4.43	3.19	2.48	2.02
NAE6483A	450	JMNN4023A	JMZN4019A	JMMN4067A	4.30	3.77	6.02	4.15
NAE6483A	450	JMNN4024A	JMZN4019A	JMMN4067A	4.30	3.77	4.09	2.82
NAE6483A	488	JMNN4023A	JMZN4019A	JMMN4067A	4.56	3.60	**7.28**	**5.26**
NAE6483A	488	JMNN4024A	JMZN4019A	JMMN4067A	4.56	3.60	4.13	2.98
NAE6483A	520	JMNN4023A	JMZN4019A	JMMN4067A	4.68	3.41	2.21	1.69
NAE6483A	450	JMNN4023A	JMZN4023A	JMMN4067A	4.20	2.95	**4.33**	**3.82**
NAE6483A	450	JMNN4024A	JMZN4023A	JMMN4067A	4.30	3.80	2.64	1.81
NAE6483A	488	JMNN4023A	JMZN4023A	JMMN4067A	4.80	3.60	3.98	2.87
NAE6483A	488	JMNN4024A	JMZN4023A	JMMN4067A	4.70	3.48	3.09	2.31
NAE6483A	450	JMNN4023A	PMLN4021B	JMMN4067A	4.23	3.75	3.80	2.63
NAE6483A	450	JMNN4024A	PMLN4021B	JMMN4067A	4.25	3.70	2.38	1.67
NAE6483A	488	JMNN4023A	PMLN4021B	JMMN4067A	4.69	3.50	**3.79**	**2.82**
NAE6483A	488	JMNN4024A	PMLN4021B	JMMN4067A	4.61	4.25	3.07	1.88
PMAE4003A	450	JMNN4023A	2.5cm		4.20	3.03	5.00	4.29

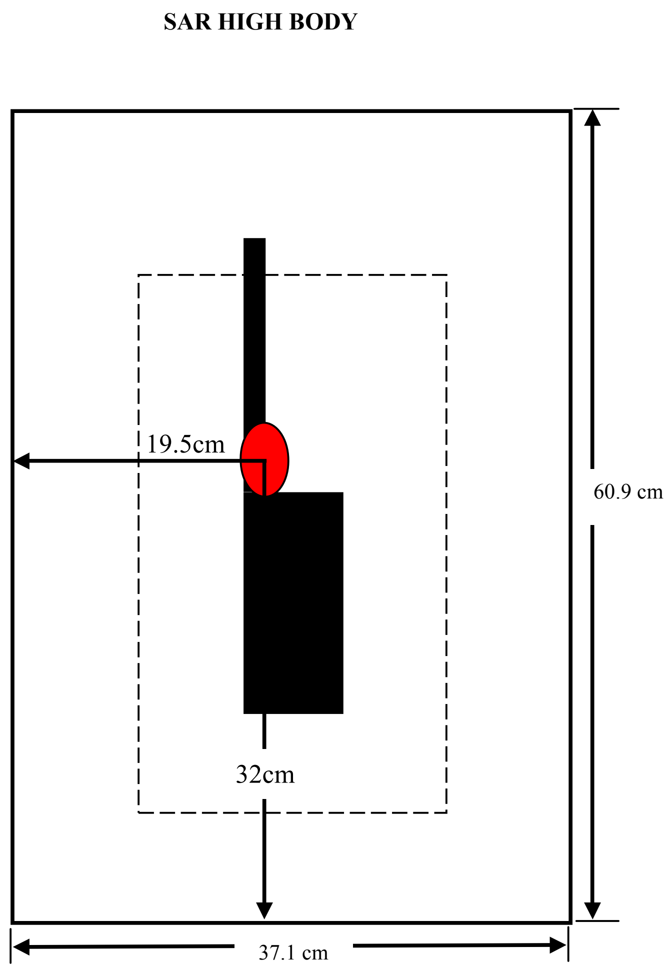
7.2 SAR results at the face:

Antenna	Freq.	Battery	Carry Acc	Audio Acc	Init. Power (W)	End Power (W)	Measured SAR (100% duty cycle)	Max Cal SAR (50% duty cycle)
PMAE4003A	450	JMNN4024A	NONE	NONE	4.20	3.48	3.19	2.38
PMAE4003A	450	JMNN4023A	NONE	NONE	4.30	3.51	**3.82**	**2.83**
PMAE4003A	465	JMNN4023A	NONE	NONE	4.60	3.52	3.73	2.76
PMAE4006A	488	JMNN4024A	NONE	NONE	4.50	3.45	1.78	1.34
PMAE4006A	488	JMNN4023A	NONE	NONE	4.60	3.50	2.15	1.60
PMAE4006A	465	JMNN4023A	NONE	NONE	4.70	3.78	2.16	1.49
PMAE4006A	495	JMNN4023A	NONE	NONE	4.68	3.36	**2.55**	**1.97**
PMAE4007A	525	JMNN4024A	NONE	NONE	4.45	3.51	4.06	3.01
PMAE4007A	525	JMNN4023A	NONE	NONE	4.56	3.26	**4.21**	**3.36**
PMAE4007A	495	JMNN4023A	NONE	NONE	4.80	3.63	1.26	0.96
PMAE4007A	508	JMNN4023A	NONE	NONE	4.70	3.26	1.84	1.47
PMAE4008A	525	JMNN4024A	NONE	NONE	4.45	3.24	2.72	2.18
PMAE4008A	525	JMNN4023A	NONE	NONE	4.53	3.25	**2.76**	**2.21**
PMAE4008A	488	JMNN4024A	NONE	NONE	4.45	3.24	1.44	1.16
PMAE4008A	488	JMNN4023A	NONE	NONE	4.60	3.46	1.54	1.16
PMAE4008A	470	JMNN4023A	NONE	NONE	4.70	3.70	1.95	1.37
NAE6483A	450	JMNN4024A	NONE	NONE	4.20	3.66	4.11	2.92
NAE6483A	450	JMNN4023A	NONE	NONE	4.25	3.59	4.94	3.58
NAE6483A	488	JMNN4024A	NONE	NONE	4.16	3.32	**4.64**	**3.63**
NAE6483A	488	JMNN4023A	NONE	NONE	4.70	3.44	4.70	3.55
NAE6483A	520	JMNN4024A	NONE	NONE	4.20	3.21	1.57	1.27
NAE6483A	520	JMNN4023A	NONE	NONE	4.56	3.10	1.29	1.08

7.3 Peak SAR location

The following figures illustrate the peak SAR location relative to the flat phantom and the test sample for the abdomen and face scans which resulted in the highest SAR. Refer to Appendix A for the detailed SAR scan distributions.





7.4 Maximum Calculated SAR

The calculated maximum 1-gram averaged SAR value is determined by scaling up the measured SAR to adjust for (1) imperfect power leveling and power slump during the SAR scan below the maximum power and (2) duty cycle differences between test mode and normal operation. Therefore the Maximum Calculated 1-gram averaged peak SAR becomes:

$$\text{Maximum Calculated 1-gram Average Peak SAR} = \frac{P_{max}}{P_{end}} \times (D1 \times D2) \times SAR_{meas.}$$

Abdomen

$$\text{Maximum Calculated 1-gram Average Peak SAR} = \frac{5.20W}{3.60W} \times (1x0.5) \times 7.28mW/g = 5.26mW/g$$

Face

$$\text{Maximum Calculated 1-gram Average Peak SAR} = \frac{5.20W}{3.32W} \times (1x0.5) \times 4.64mW/g = 3.63mW/g$$

P_{max} = Maximum Power (Factory upper limit)
P_{end} = Lowest measured power at end of SAR
$SAR_{meas.}$ = Measured 1 gram averaged peak SAR

D1 = the transmission mode duty cycle, i.e., the ratio of the service mode and the tested mode.

D2 = the Push To Talk duty cycle.
For two-way radio (dispatch) = 0.5,

8.0 Conclusion

The highest Operational Maximum Calculated 1-gram average SAR values found for the portable radio model number PMUE1701A were:

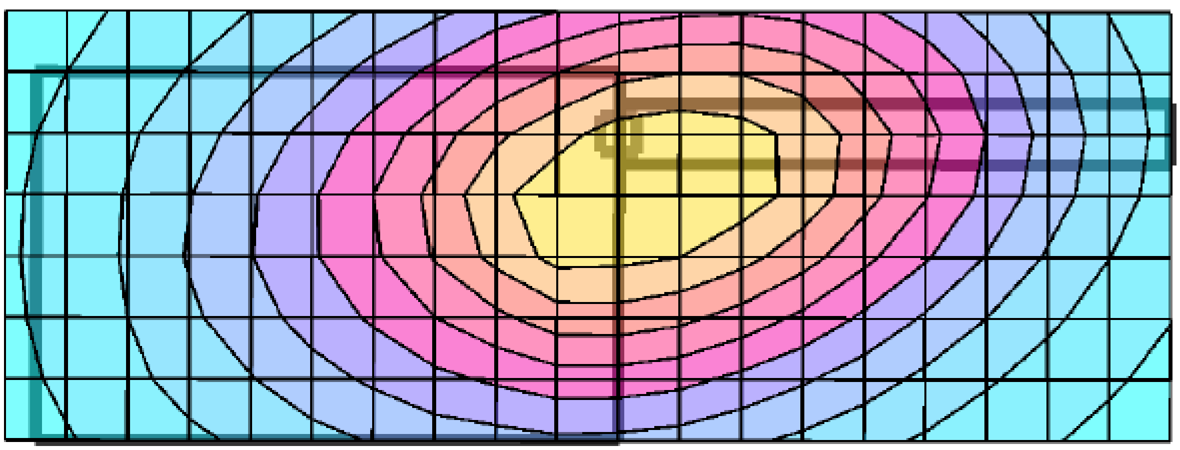
At the abdomen: 5.26 mW/g
At the face: 3.63 mW/g

These test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8.0 W/kg per the requirements of 47 CFR 2.1093(d).

Appendix A: Data Results

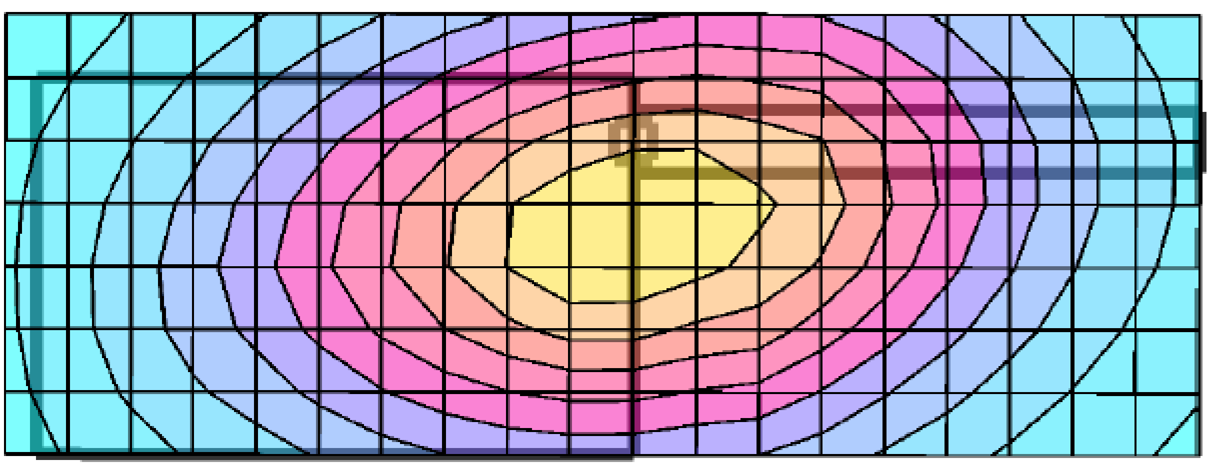
Ab_Minnow 9cm Helical; Test Date: 05/08/01

Run # 01050805
Model # PMUE1701A SN 004TBG0252
TX freq. 450 MHz Antenna PMAE4003A
Battery, JMNN4023A Carry case soft leather JMZN4019A
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m _r = 57.1 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.80 mW/g, SAR (10g): 3.56 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 28.0, 105.0, 4.0



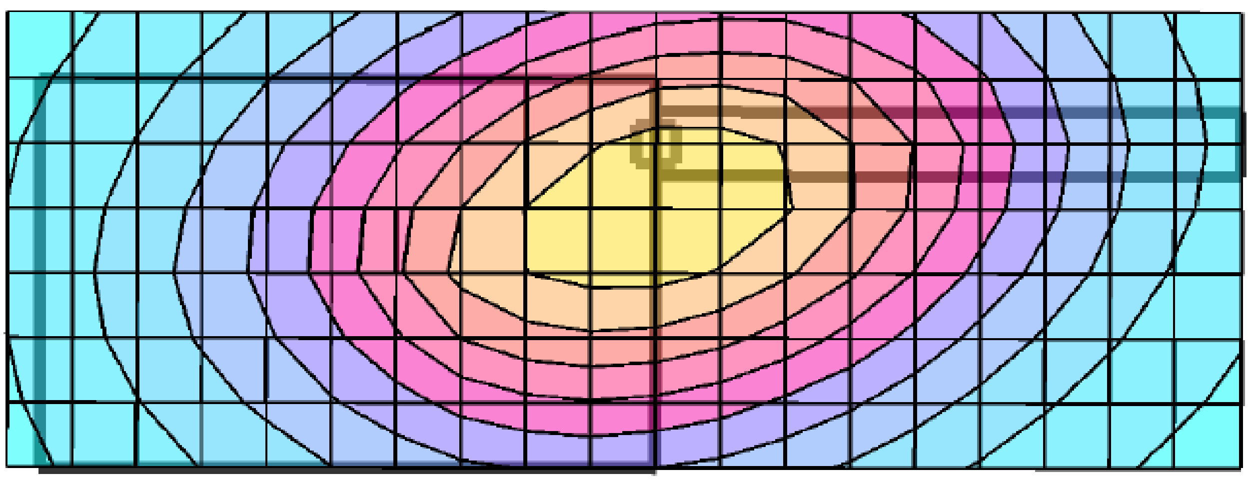
Ab_Minnow 9cm Helical; Test Date: 05/07/01

Run # 01050705
Model # PMUE1701A SN 004TBG0252
TX freq. 450 MHz Antenna PMAE4003A
Battery, JMNN4023A Carry case JMZN4023A
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m _r = 57.1 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 5.11 mW/g, SAR (10g): 3.76 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 35.0, 97.0, 4.0



Ab_Minnow 9cm Helical; Test Date: 05/08/01

Run # 01050806
Model # PMUE1701A SN 004TBG0252
TX freq. 450 MHz Antenna PMAE4003A
Battery, JMNN4023A Carry case soft leather JMZN4421B
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m _r = 57.1 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.68 mW/g, SAR (10g): 3.48 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 29.0, 101.0, 4.0



Ab_Minnow 9cm Helical; Test Date: 08/03/01

Run: 01080309

Simulant Temp (C): 19.3 Initial Power (W):4.83 End Power (W):3.57

Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 495

Antenna:PMAE4006A Battery: JMNN4023A

Carry Acc: JMZN4019A Audio Acc: JMMN4067A

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

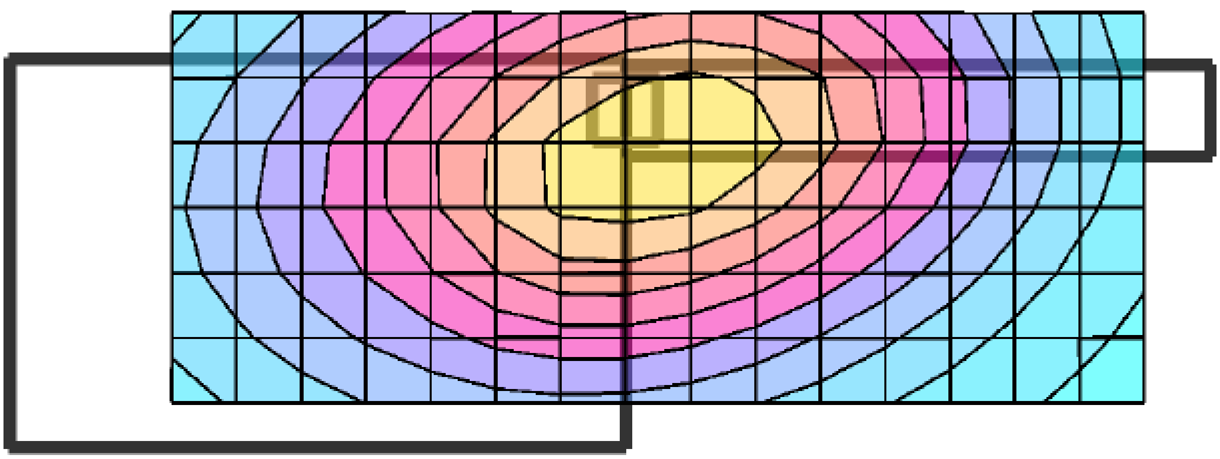
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;

Muscle_488MHz: _ =

0.99 mho/m $_r$ = 57.0 _ = 1.07 g/cm3

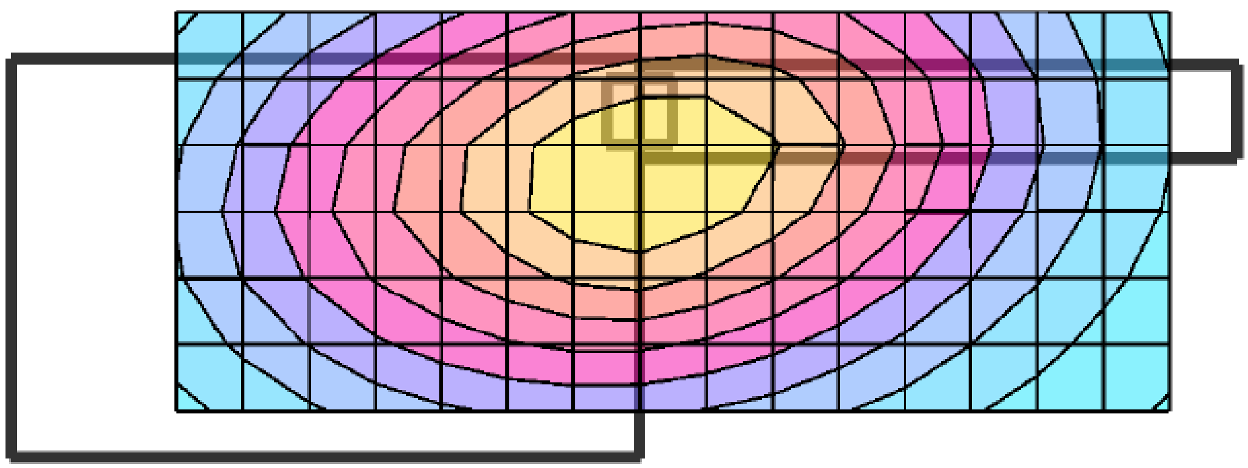
Cube 5x5x7: SAR (1g): 4.30 mW/g, SAR (10g): 3.07 mW/g, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 20.0, 78.0, 4.0



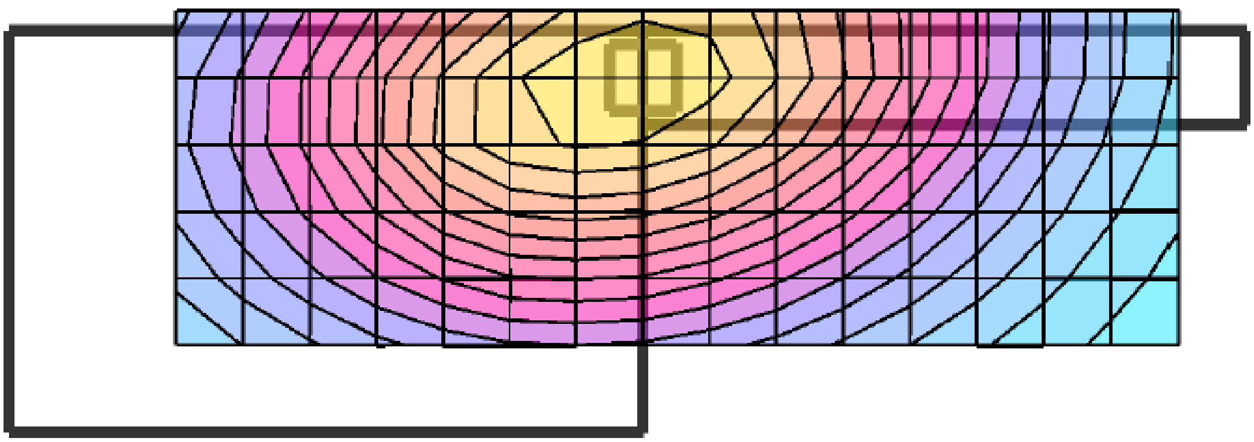
Ab_Minnow 9cm Helical; Test Date: 08/03/01

Run: 01080308
Simulant Temp (C): 19.3 Initial Power (W):4.65 End Power (W):3.52
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 495
Antenna:PMAE4006A Battery: JMNN4023A
Carry Acc: JMZN4023A Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (90°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.99 mho/m _r = 57.0 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 3.80 mW/g, SAR (10g): 2.71 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 25.0, 70.0, 4.0



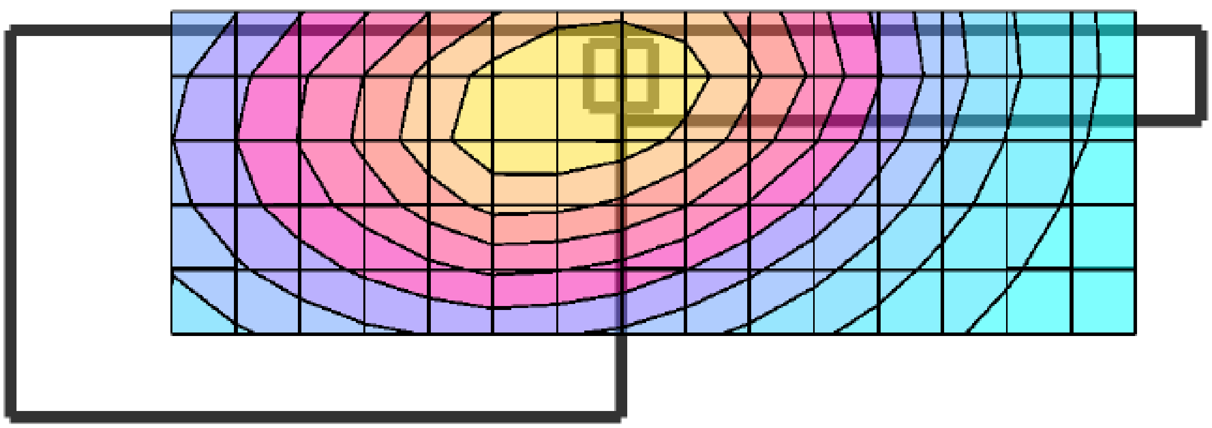
Ab_Minnow 9cm Helical; Test Date: 08/01/01

Run: 010080106
Simulant Temp (C): 21.3 Initial Power (W):4.73 End Power (W):3.54
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 488
Antenna: PMAE4006A Battery: JMNN4023A
Carry Acc: PMLN4021B Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0; Muscle_450 MHz: _
= 0.98 mho/m _r = 58.4 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 1.91 mW/g, SAR (10g): 1.38 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 10.0, 68.0, 4.3



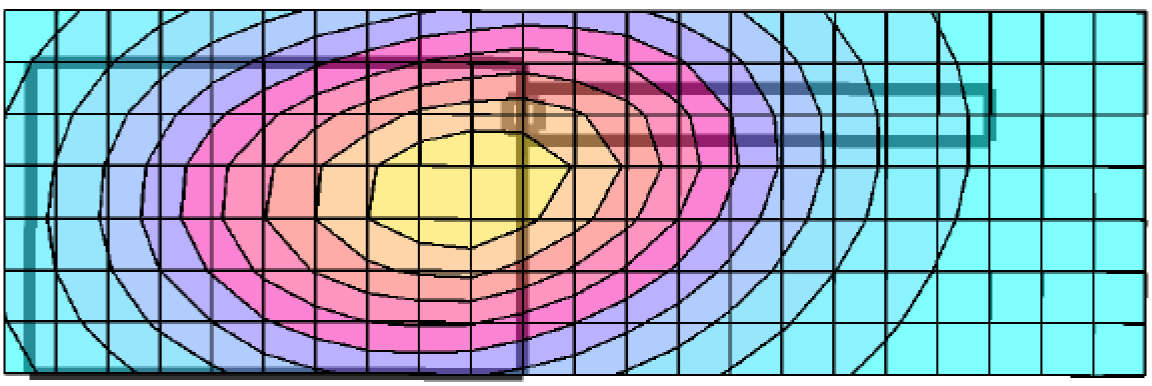
Ab_Minnow 9cm Helical; Test Date: 08/01/01

Run: 01073118
Simulant Temp (C): 21.3 Initial Power (W):4.50 End Power (W):3.15
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 525
Antenna: PMAE4007A Battery: JMNN4023A
Carry Acc: JMZN4019A Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0; Muscle_488 MHz: _
= 0.99 mho/m _r = 57.3 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 6.25 mW/g, SAR (10g): 4.47 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 13.0, 64.0, 4.3



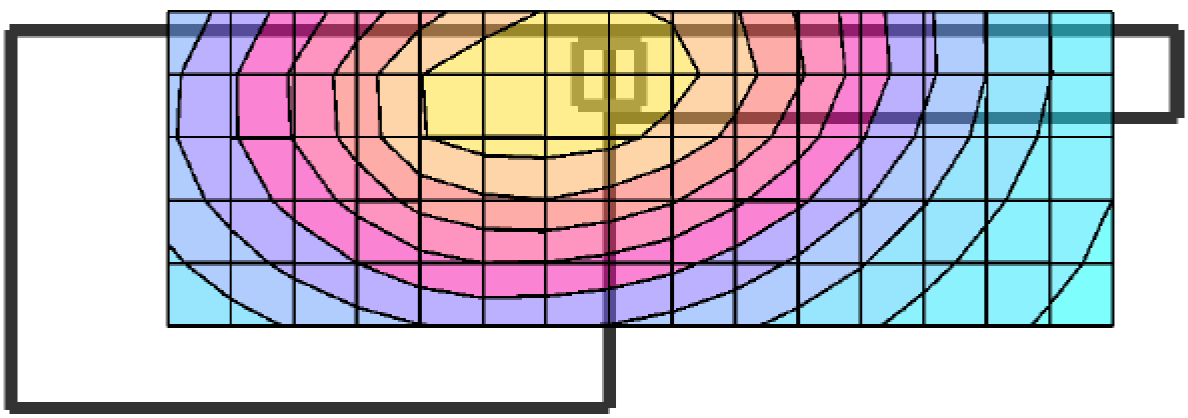
Ab_Minnow 9cm Helical; Test Date: 05/08/01

Run # 01050802
Model # PMUE1701A SN 004TBG0252
TX freq. 525 MHz Antenna PMAE4007A
Battery, JMNN4023A Carry case JMZN4023A
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m _r = 57.1 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.05 mW/g, SAR (10g): 2.89 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 35.0, 88.0, 4.0



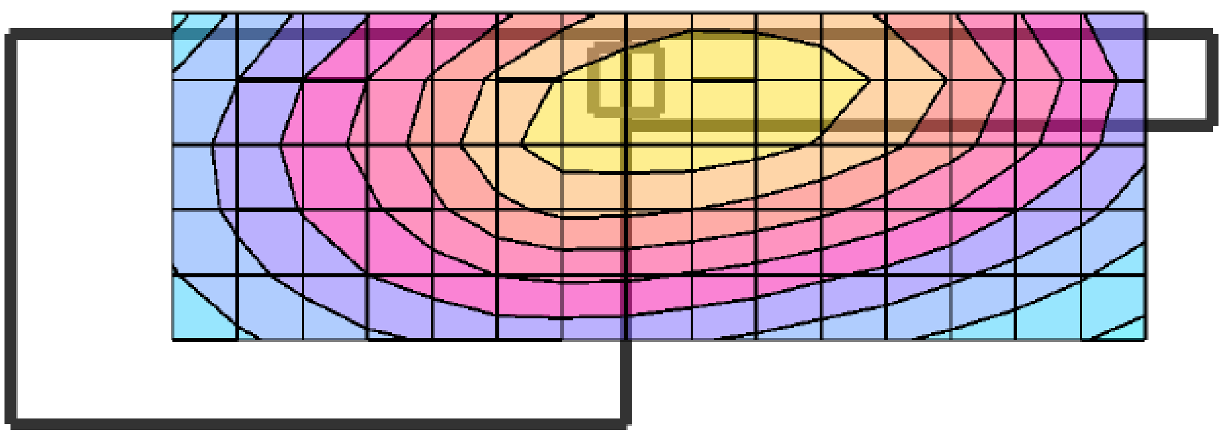
Ab_Minnow 9cm Helical; Test Date: 08/01/01

Run: 010080109A
Simulant Temp (C): 21.3 Initial Power (W):4.36 End Power (W):3.39
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 525
Antenna: PMAE4007A Battery: JMNN4023A
Carry Acc: PMLN4021B Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0; Muscle_450 MHz: _
= 0.98 mho/m _r = 58.4 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.37 mW/g, SAR (10g): 3.14 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 11.0, 63.0, 4.3



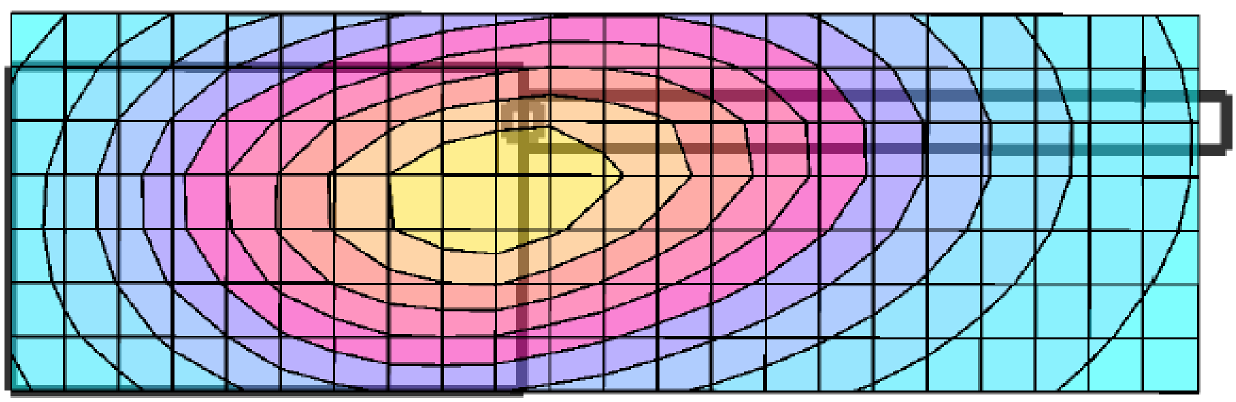
Ab_Minnow 13.5cm whip; Test Date: 08/02/01

Run: 01080202
Simulant Temp (C):19.0 Initial Power (W):4.6 End Power (W):3.41
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 525
Antenna: PMAE4008A Battery: JMNN4023A
Carry Acc: JMZN4019A Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0;
Muscle_488MHz: _
= 1.01 mho/m _r = 57.9 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.06 mW/g, SAR (10g): 2.90 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 13.0, 80.0, 4.3



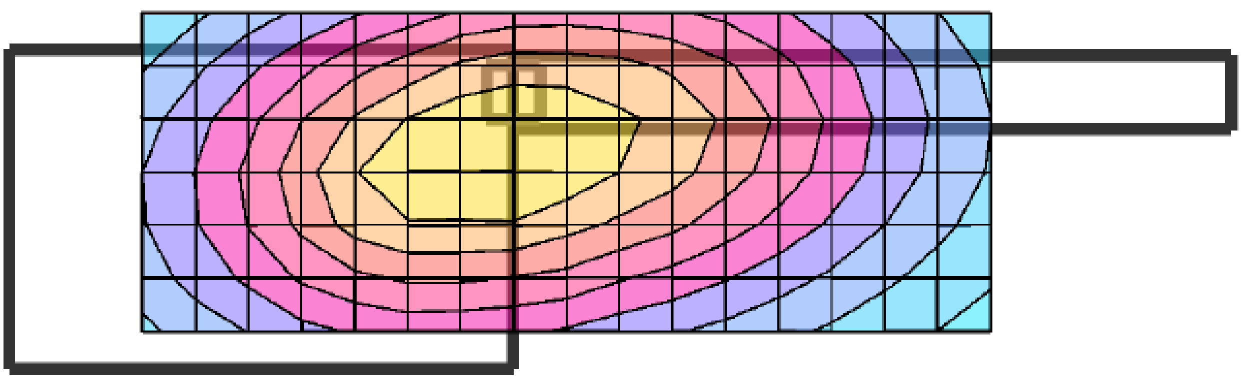
Ab_Minnow 13.5cm whip; Test Date: 05/08/01

Run # 01050801
Model # PMUE1701A SN 004TBG0252
TX freq. 525 MHz Antenna PMAE4008A
Battery, JMNN4023A Carry case JMZN4023A
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m $_r$ = 57.1 _ = 1.07 g/cm^3
Cube 5x5x7: SAR (1g): 3.46 mW/g, SAR (10g): 2.47 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 34.0, 88.0, 4.0



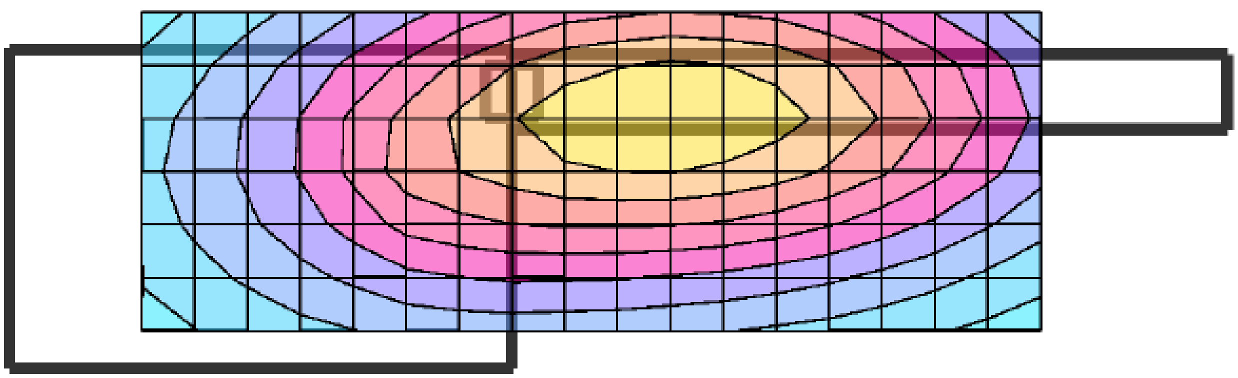
Ab_Minnow 13.5cm whip; Test Date: 08/02/01

Run: 01080212A
Simulant Temp (C): 18.9 Initial Power (W) 4.46 End Power (W): 3.28
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 525
Antenna:PMAE4008A Battery: JMNN4023A
Carry Acc: PMLN4021B Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0;
Muscle_488MHz: _
= 1.01 mho/m _r = 57.9 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 3.17 mW/g, SAR (10g): 2.29 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 26.0, 73.0, 4.3



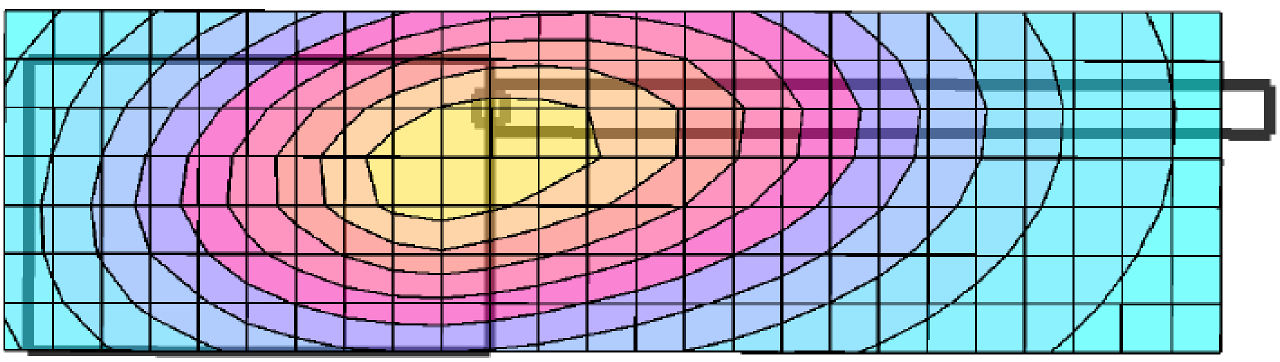
Ab_Minnow 16.5cm whip; Test Date: 08/03/01

Run: 01080305
Simulant Temp (C): 19.3 Initial Power (W): 4.74 End Power (W): 3.60
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 488
Antenna:NAE6483A Battery: JMNN4023A
Carry Acc: JMZN4019A Audio Acc: JMMN4067
Flat Phantom Phantom; Flat_L Section; Position: (90°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.99 mho/m _r = 57.0 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 7.28 mW/g, SAR (10g): 5.20 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 20.0, 100.0, 4.0



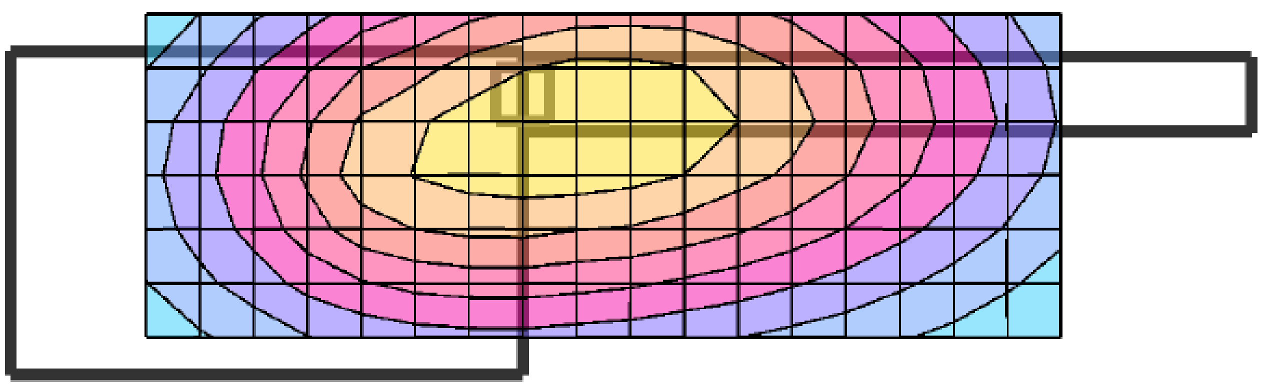
Ab_Minnow 16.5cm whip; Test Date: 05/08/01

Run # 01050803
Model # PMUE1701A SN 004TBG0252
TX freq. 450 MHz Antenna NAE6483AR
Battery, JMNN4023A Carry case JMZN4023A
Audio, Remote Speaker Mic. JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (270°,90°);
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Probe cal date: 11/00; Crest factor: 1.0;
Muscle_488MHz: _ =
0.98 mho/m _r = 57.1 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.33 mW/g, SAR (10g): 3.21 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 31.0, 92.0, 4.0



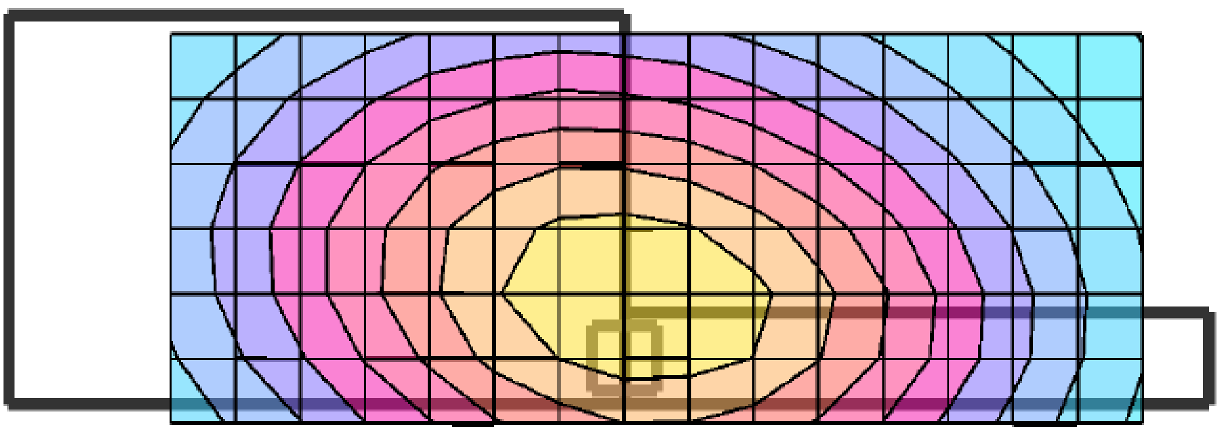
Ab_Minnow 16.5cm whip; Test Date: 08/03/01

Run: 01080216
Simulant Temp (C): 18.9 Initial Power (W) 4.69 End Power (W): 3.50
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 488
Antenna:NAE6483A Battery: JMNN4023A
Carry Acc: PMLN4021B Audio Acc: JMMN4067A
Flat Phantom Phantom; Flat_L Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Probe cal date: 05/23/01; Crest factor: 1.0;
Muscle_488MHz: _
= 1.01 mho/m _r = 57.9 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 3.79 mW/g, SAR (10g): 2.77 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 21.0, 80.0, 4.3



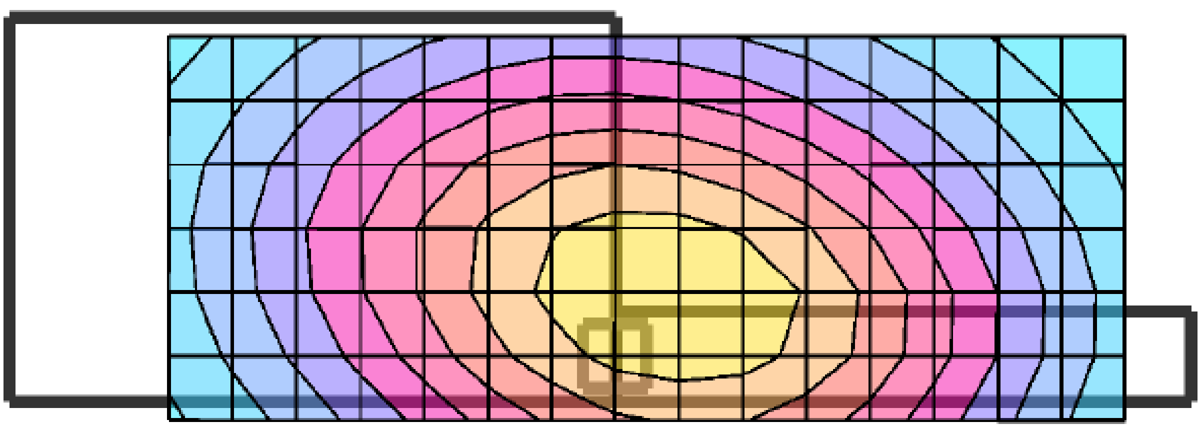
Face_Minnow 9cm Helical; Test Date: 07/30/01

Run: 01073006
Simulant Temp (C): 20.4 Initial Power (W): 4.30 End Power (W): 3.51
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 450
Antenna: PMAE4003A Battery: JMNN4023A
Accessories: NONE
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.52,7.52,7.52); Probe cal date: 05/23/01; Crest factor: 1.0; IEEE
Head_488MHz: _ = 0.90 mho/m _r = 43.0 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 3.82 mW/g, SAR (10g): 2.76 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 41.0, 71.0, 4.3



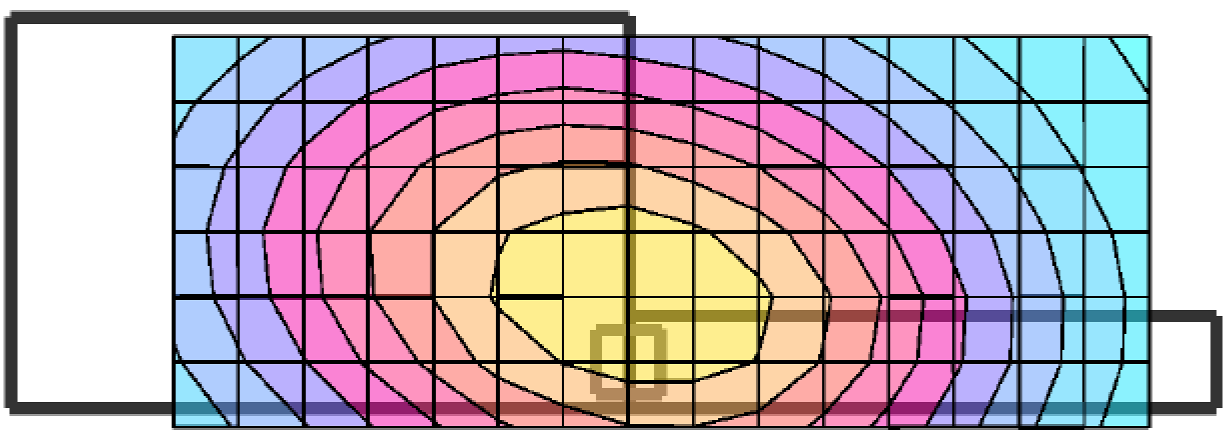
Face_Minnow 9cm Helical; Test Date: 07/30/01

Run: 01073004
Simulant Temp (C): 20.6 Initial Power (W): 4.7 End Power (W): 3.36
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 495
Antenna: PMAE4006A Battery: JMNN4023A
Accessories: NONE
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.52,7.52,7.52); Probe cal date: 05/23/01; Crest factor: 1.0; IEEE
Head_488MHz: _ = 0.90 mho/m _r = 43.0 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.55 mW/g, SAR (10g): 1.84 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 41.0, 77.0, 4.3



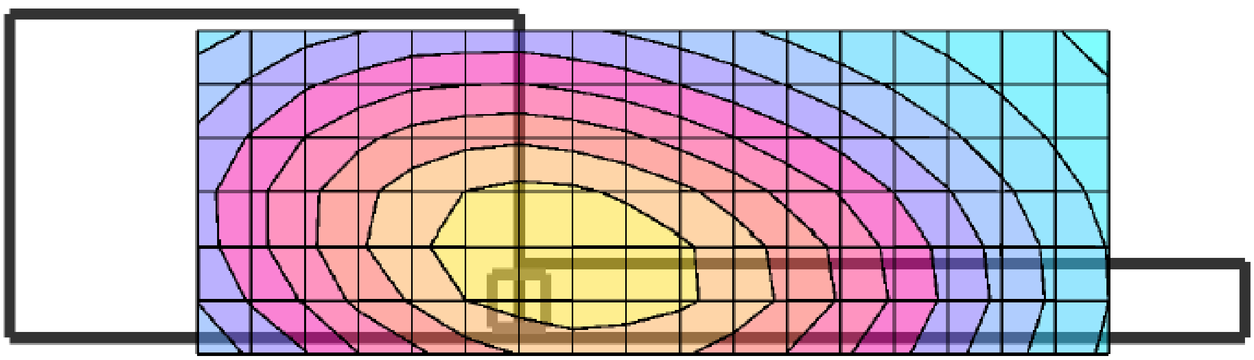
Face_Minnow 9cm Helical; Test Date: 07/30/01

Run: 01073009
Simulant Temp (C): 20.7 Initial Power (W): 4.56 End Power (W):3.26
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) :525
Antenna: PMAE4007A Battery: JMNN4023A
Accessories: NONE
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.52,7.52,7.52); Probe cal date: 05/23/01; Crest factor: 1.0; IEEE Head_488MHz: _ = 0.90 mho/m _r = 43.0 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.21 mW/g, SAR (10g): 3.03 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 39.0, 71.0, 4.3



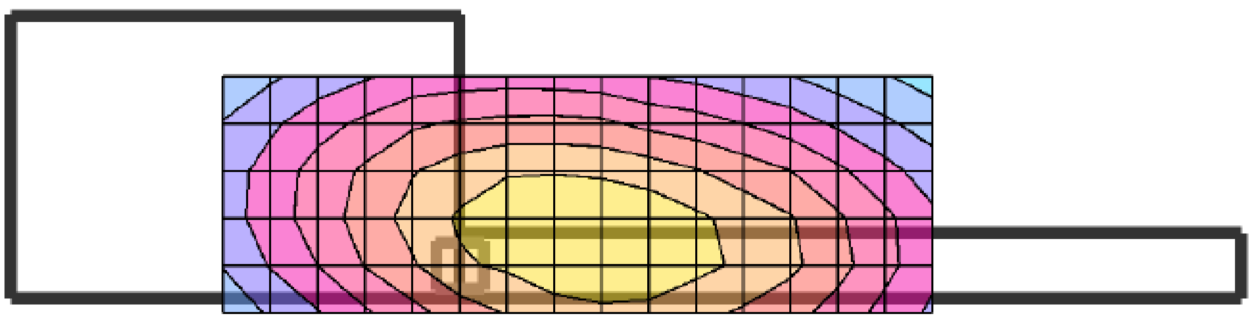
Face_Minnow 13.5cm whip; Test Date: 07/31/01

Run: 01073105
Simulant Temp (C): 21.0 Initial Power (W): 4.53 End Power (W): 3.25
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 525
Antenna: PMAE4008A Battery: JMNN4023A
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.52,7.52,7.52); Probe cal date: 05/23/01; Crest factor: 1.0; IEEE
Head_488MHz: _ = 0.84 mho/m _r = 41.3 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.76 mW/g, SAR (10g): 2.00 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 42.0, 69.0, 4.3



Face_Minnow 16.5cm whip; Test Date: 07/31/01

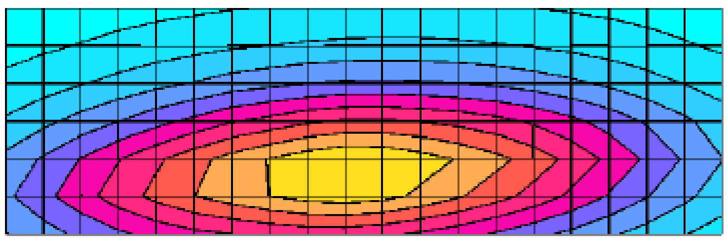
Run: 01073109
Simulant Temp (C): 21.2 Initial Power (W): 4.16 End Power (W): 3.32
Model #:PMUE1701A SN: 004TBG0252 Tx Freq (MHz) : 488
Antenna: NAE6483A Battery: JMNN4024A
Flat Phantom Phantom; Flat_H Section; Position: (90°,90°);
Probe: ET3DV6 - SN1383; ConvF(7.52,7.52,7.52); Probe cal date: 05/23/01; Crest factor: 1.0; IEEE
Head_488MHz: _ = 0.84 mho/m _r = 41.3 _ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 4.64 mW/g, SAR (10g): 3.36 mW/g, (Worst-case extrapolation)
Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0; Max at 34.0, 75.0, 4.3



Appendix B: Dipole System Performance Check Results

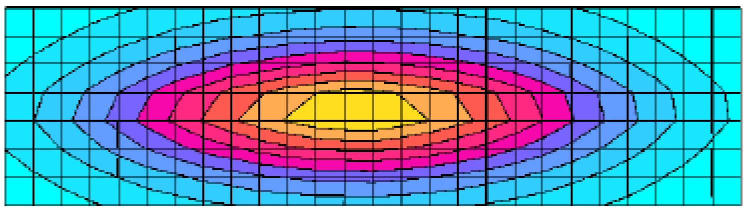
450 CGISS Dipole 002;Test Date:05/07/01

450MHz Dipole Validation, Input Power 0.5W, Target SAR : 5.16mW/g @ 1W
Flat Phantom; Section;
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95);
Crest factor: 1.0; Muscle_450 MHz: σ = 0.99 mho/m er = 56.9 ρ = 1.07 g/cm 3
Cube 5x5x7: SAR (1g): 2.51 mW/g, (Worst-case extrapolation)
Powerdrift: -0.08 dB



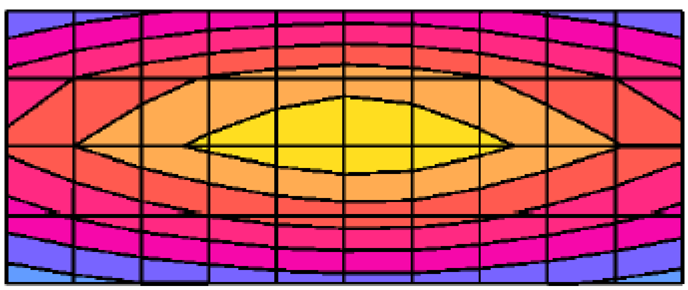
450 CGISS Dipole 002; Test Date:05/10/01

450MHz Dipole Validation, Input Power 0.5W, Target SAR : 5.16mW/g @ 1W;
Flat Phantom;
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Crest factor: 1.0; Muscle_450 MHz: ó = 0.99 mho/m år = 56.9 ñ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.51 mW/g, SAR (10g): 1.68 mW/g, (Worst-case extrapolation), Peak: 3.96 mW/g,
Penetration depth: 13.1 (10.8, 16.0) [mm]
Powerdrift: -0.02 dB



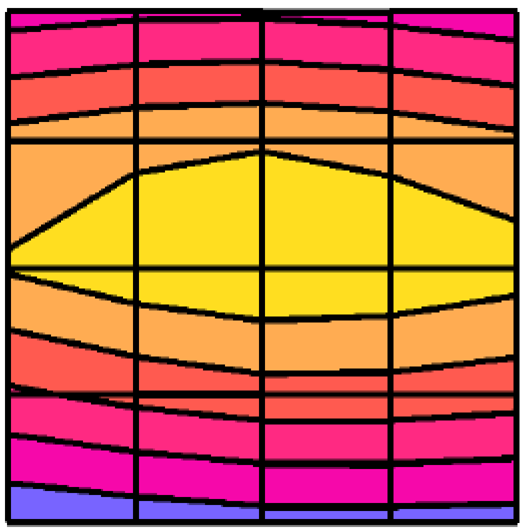
450 MFRL Dipole 001; Test Date:07/30/01

450MHz Dipole Validation, Input Power 0.5W
Target SAR : 5.24 mW/g @ 1W
tissue temp:21.3C,
Flat Phantom; Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Crest factor: 1.0; Muscle_450MHz: _ = 0.98 mho/m _r = 58.9 _ = 1.07
g/cm3
Cube 5x5x7: Peak: 3.84 mW/g, SAR (1g): 2.44 mW/g, SAR (10g): 1.61 mW/g, (Worst-case extrapolation)
Penetration depth: 12.5 (10.8, 14.7) [mm]
Powerdrift: 0.02 dB



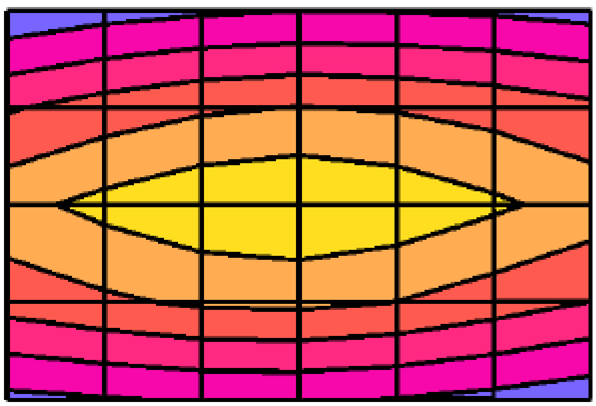
450 MFRL Dipole 001; Test Date:07/31/01

450-001 Dipole Validation, Input Power 0.5W, Target SAR : 5.24mW/g @ 1W;
Flat Phantom;
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Crest factor: 1.0; Muscle_450MHz: ó = 0.97 mho/m år = 58.4 ñ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.41 mW/g, SAR (10g): 1.59 mW/g, (Worst-case extrapolation), Peak: 3.76 mW/g,
Penetration depth: 12.5 (10.9, 14.6) [mm]
Powerdrift: 0.02 dB



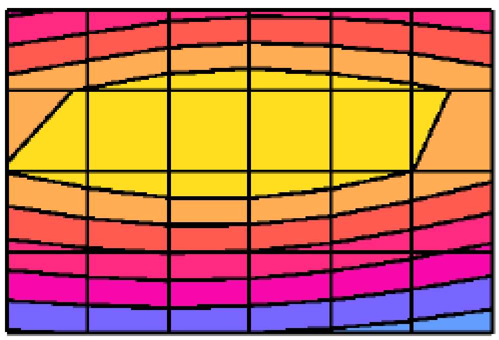
450 CGISS Dipole 002; Test Date:08/01/01

Target 5.16mW/g when normalized to 1W
Input power : 0.5W
Flat Phantom;
Probe: ET3DV6 - SN1383; ConvF(7.30,7.30,7.30); Crest factor: 1.0; Muscle_450 MHz: ó = 0.95 mho/m år = 58.9 ñ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.35 mW/g, SAR (10g): 1.55 mW/g, (Worst-case extrapolation), Peak: 3.69 mW/g,
Penetration depth: 12.4 (10.8, 14.7) [mm]
Powerdrift: 0.01 dB



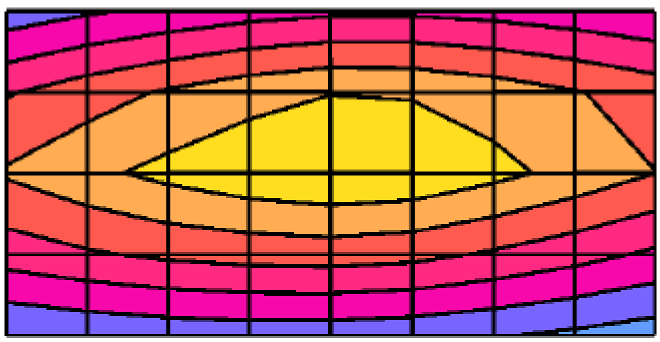
450 CGISS Dipole 002; Test Date:08/02/01

Target 5.16mW/g when normalized to 1W
Input power : 0.5W
Flat Phantom;
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Crest factor: 1.0; Muscle_450 MHz: ó = 0.98 mho/m år = 58.4 ñ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.51 mW/g, SAR (10g): 1.65 mW/g, (Worst-case extrapolation), Peak: 3.99 mW/g,
Penetration depth: 12.3 (10.5, 14.8) [mm]
Powerdrift: -0.05 dB



450 CGISS Dipole 002; Test Date:08/03/01

Target 5.16mW/g when normalized to 1W
Input power : 0.5W
Flat Phantom;
Probe: ET3DV6 - SN1547; ConvF(6.95,6.95,6.95); Crest factor: 1.0; Muscle_450MHz: ó = 0.96 mho/m år = 57.5 ñ = 1.07 g/cm3
Cube 5x5x7: SAR (1g): 2.44 mW/g, SAR (10g): 1.61 mW/g, (Worst-case extrapolation), Peak: 3.88 mW/g,
Penetration depth: 12.4 (10.5, 14.8) [mm]
Powerdrift: 0.01 dB



Appendix C: Measurement Probe Calibration Certificate

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:	**1547**
Place of Calibration:	**Zurich**
Date of Calibration:	**Nov. 14, 2000**
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:	Nikolosk, Neviana
Approved by:	[signature]

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:	1547
Place of Assessment:	Zurich
Date of Assessment:	Nov. 16, 2000
Probe Calibration Due Date:	Nov. 14, 2001

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:1547

Conversion factor (± standard deviation)

Frequency		Value	Tissue parameters
150 MHz	ConvF	8.26 ± 8%	$\varepsilon_r = 70.0$ $\sigma = 0.75$ mho/m (muscle tissue)
450 MHz	ConvF	6.95 ± 8%	$\varepsilon_r = 58.0$ $\sigma = 1.0$ mho/m (muscle tissue)
784 MHz	ConvF	6.39 ± 8%	$\varepsilon_r = 52.79$ $\sigma = 1.09$ mho/m (muscle tissue)
835 MHz	ConvF	6.30 ± 8%	$\varepsilon_r = 52.0$ $\sigma = 1.10$ mho/m (muscle tissue)
925 MHz	ConvF	6.16 ± 8%	$\varepsilon_r = 52.0$ $\sigma = 1.20$ mho/m (muscle tissue)
1500 MHz	ConvF	5.45 ± 8%	$\varepsilon_r = 52.74$ $\sigma = 1.35$ mho/m (muscle tissue)
1900 MHz	ConvF	5.00 ± 8%	$\varepsilon_r = 50.16$ $\sigma = 1.83$ mho/m (muscle tissue)
2450 MHz	ConvF	4.41 ± 8%	$\varepsilon_r = 47.11$ $\sigma = 2.56$ mho/m (muscle tissue)

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:	**1383**
Place of Calibration:	**Zurich**
Date of Calibration.	**May 23, 2001**
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	Nikolos E. Neviana
Approved by	[signature]

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:	1383
Place of Assessment:	Zurich
Date of Assessment:	May 28, 2001
Probe Calibration Date:	May 23, 2001

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:

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Dosimetric E-Field Probe ET3DV6 SN:1383

Conversion factor (± standard deviation)

400 MHz	ConvF	**7.64 ± 8%**	ε_r = 44.4 σ = 0.87 mho/m (CENELEC head tissue)
835 MHz	ConvF	**6.54 ± 8%**	ε_r = 42.5 σ = 0.98 mho/m (CENELEC head tissue)
900 MHz	ConvF	**6.41 ± 8%**	ε_r = 42.3 σ = 0.99 mho/m (CENELEC head tissue)
350 MHz	ConvF	**7.76 ± 8%**	ε_r = 44.7 σ = 0.87 mho/m (IEEE head tissue)
450 MHz	ConvF	**7.52 ± 8%**	ε_r = 43.5 σ = 0.87mho/m (IEEE head tissue)
835 MHz	ConvF	**6.53 ± 8%**	ε_r = 41.5 σ = 0.90 mho/m (IEEE head tissue)
925 MHz	ConvF	**6.37 ± 8%**	ε_r = 41.45 σ = 0.98 mho/m (IEEE head tissue)
1500 MHz	ConvF	**6.04 ± 8%**	ε_r = 40.43 σ = 1.23 mho/m (IEEE head tissue)
1900 MHz	ConvF	**5.41 ± 8%**	ε_r = 40.0 σ = 1.40 mho/m (IEEE head tissue)
2450 MHz	ConvF	**5.18 ± 8%**	**ε_r = 39.2** **σ = 1.8 mho/m** **(IEEE head tissue)**
2450 MHz	ConvF	**5.40 ± 8%**	ε_r = 37.2 σ = 2.09 mho/m (H1800 at 2450 MHz)

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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:	**1383**
Place of Assessment:	**Zurich**
Date of Assessment:	**June 25, 2001**
Probe Calibration Date:	**May 23, 2001**

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: [signature]

Dosimetric E-Field Probe ET3DV6 SN:1383

Conversion factor (± standard deviation)

35 MHz	ConvF	**8.68 ± 15%**	**ε_r = 78.0** **σ = 0.65 mho/m** (muscle tissue)
75 MHz	ConvF	**8.69 ± 10%**	**ε_r = 70.0** **σ = 0.70 mho/m** (muscle tissue)
150 MHz	ConvF	**8.62 ± 8%**	ε_r = 70.00 σ = 0.75 mho/m (muscle tissue)
450 MHz	ConvF	**7.30 ± 8%**	ε_r = 58.0 σ = 1.00 mho/m (muscle tissue)
835 MHz	ConvF	**6.46 ± 8%**	ε_r = 52.0 σ = 1.10 mho/m (muscle tissue)
925 MHz	ConvF	**6.27 ± 8%**	ε_r = 52.0 σ = 1.20 mho/m (muscle tissue)
1500 MHz	ConvF	**6.13 ± 8%**	**ε_r = 41.2** **σ = 1.48 mho/m** (muscle tissue)
1920 MHz	ConvF	**5.21 ± 8%**	ε_r = 51.5 σ = 1.95 mho/m (muscle tissue)

Appendix D: Illustrations of Body-worn Accessories

Body-worn Accessories for Professional Series Radios

The purpose of this appendix is to illustrate the body-worn carry accessories for Professional Series Radios. The radio that is used in the following photos is of the Professional Series type and was used solely to demonstrate the different body-worn carry accessories. There are three types of body-worn carry cases 1) Plastic carry holder with swivel belt clip 2) Soft leather case with swivel belt clip 3) Soft leather case with swivel belt clip

1) Photos 1, 2 and 3 illustrate the JMZN4023A plastic carry holder with a swivel belt clip.

Photo 1
Front

Photo 2
Side view

Photo 3
Rear

Metallic
support

2) Photos 4, 5 and 6 illustrate the JMZN4421B soft leather carry holder with a swivel belt clip.

Photo 4
Front view

Photo 5
Side view

Photo 6
Rear view

Metallic
support

3) Photos 7, 8 and 9 illustrate the JMZN4019A soft leather carry holder with a swivel belt clip

Photo 7
Front view

Photo 8
Side view

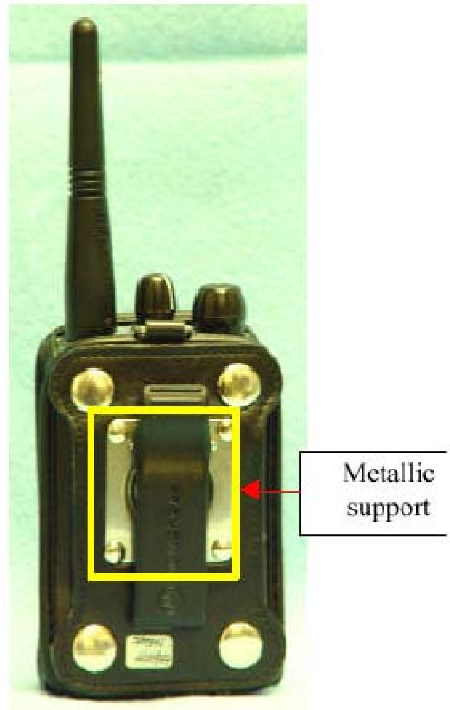

Photo 9
Rear view