MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*
914 WEST PATAPSCO AVENUE BALTIMORE, MARYLAND 21230-3432 PHONE (410) 354-3300 FAX (410) 354-3313

December 1, 2002

Novatel Wireless Technologies
Suite 200, 6715 - 8th Street NE
Calgary, AB T2E-7H7

Reference: Merlin G301 PCMCIA Card
FCC ID: NBZNRM-MG301

Dear Mr. Owen Thistle:

Enclosed is the EMC SAR Evaluation Report for the Novatel Wireless Technologies Merlin G301 PCMCIA Card. The Merlin G301 PCMCIA Card was tested in accordance with the measurement procedures specified in FCC OET 65 Supplement C:01-01 and shown to be capable to be in compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC OET 65 Supplement C:01-01.

Thank you for using the testing services of MET Laboratories. If you have any questions regarding these results or if MET can be of further assistance to you, please feel free to contact me. We appreciate your business and look forward to working with you again soon.

Kindest Regards,
MET LABORATORIES, INC.

Marianne Bosley

Marianne T. Bosley
EMC Administrator

Enclosures: (\Novatel Wireless\EMC12352-FCCSAR.rpt)

DOCTEM-23 Jan 02

Dosimetric Assessment

Test Report

for the

Novatel Wireless Technologies
Merlin G301 PCMCIA Card

Tested and Evaluated
In Accordance With
FCC OET 65 Supplement C:01-01

MET REPORT: EMC12352B-SAR

March 7, 2003

PREPARED FOR:

Novatel Wireless Technologies
Suite 200, 6715-8th Street NE
Calgary, AB, T2E-7H7

PREPARED BY:

MET Laboratories, Inc.
914 West Patapsco Avenue
Baltimore, Maryland 21230-3432

Dosimetric Assessment
TEST REPORT

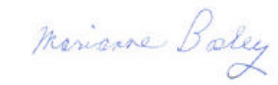
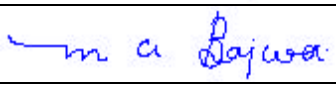
for the

Novatel Wireless Technologies
Merlin G301 PCMCIA Card

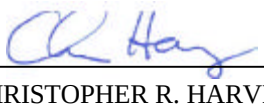
Tested and Evaluated
In Accordance With
FCC OET Supplement C: 01-01

Prepared for

Novatel Wireless Technologies
Suite 200, 6715-8th Street NE
Calgary, AB, T2E-7H7

Report Prepared By	Marianne T. Bosley EMC ADMINISTRATOR	
Report Reviewed By	Asad Bajwa TEST ENGINEER	
Final Review By	CHRISTOPHER R. HARVEY EMC LAB DIRECTOR	

Engineering Statement: The measurements shown in this report were made in accordance with the procedures specified in Supplement C to OET Bulletin 65 of the Federal Communications Commission (FCC) Guidelines [FCC 2001] for uncontrolled exposure. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment evaluated is capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE Std. C95.1-1992.



CHRISTOPHER R. HARVEY
EMC LAB DIRECTOR

SAR EVALUATION
CERTIFICATE OF COMPLIANCE

FCC ID: NBZNRM-MG301
APPLICANT: Novatel Wireless Technologies

APPLICANT NAME AND ADDRESS:
Novatel Wireless
Suite 200, 6715-8th St NE
Calgary AB, T2E 7H7

DATE OF TEST: **November 25, 2002**
TEST LOCATION: MET LABORATORIES INC.
914 West Patapsco Avenue
Baltimore, Maryland 21230

EUT:	GSM/GPRS PCS 1900 PCMCIA Card		
Date of Receipt:	June 14, 2002		
Device Category:	Part 24 Licensed Portable Transmitter		
RF exposure environment:	Uncontrolled		
RF exposure category:	Portable		
Power supply:	Powered by Host Laptop		
Antenna:	Detachable (Not operational without Antenna)		
Production/prototype:	Identical Prototype		
Measured Standards:	PCS 1900		
Modulation:	GMSK		
Crest Factor:	GSM = 8		
TX Range:	GSM PCS 1900 1850.2 MHz - 1909.8 MHz		
RX Range:	GSM PCS 1900 1930.2 MHz - 1989.8 MHz		
Used TX Channels:	Low: ch.512	Center: ch. 661	High: ch. 810
Maximum RF Power Output:	0.923 W (Conducted) GSM PCS1900 (29.65 dBm)		
Maximum SAR Measurement (Averaged over 1g):	0.628 W/kg PCS Body		

This wireless portable device has been tested in accordance with the measurement procedures specified in FCC/OET Bulletin 65 Supplement C (2001) and IEEE Std. 1528-200X (July 2001), and has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE Std. C95.1 - 1992.

I attest to the accuracy of this data. All reported measurements were performed by me, or were made under my supervision, and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

I also certify that no party to this application has been denied the FCC benefits pursuant to Section 5.301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

Chris Harvey
Director, EMC Laboratory

Quick Links

OBJECTIVE

The Merlin G301 PCMCIA Card is a Type II PC card GSM/GPRS (Global System for Mobil communications/General Packet Radio System) wireless modem from Novatel Wireless Technologies that operates in the 900 MHz (GSM), 1800 MHz (DCS) and 1900 MHz (PCS) bands.

The objective of the procedure was to perform a dosimetric assessment one of the PCMCIA cards in the GSM PCS 1900 standard. The measurements have been carried out with the dosimetric assessment system "SARA2", and were made according to the Supplement C to OET Bulletin 65 of the Federal Communications Commission (FCC) Guidelines [FCC 2001] for evaluating compliance of mobile and portable devices with FCC limits for human exposure in the general population to radio frequency emissions.

INTRODUCTION

In the United States, the most recent FCC RF exposure criteria is documented in the publication OET 65 Supplement C Edition 01-01 [FCC 2001], which sets limits for human exposure to radio frequency electromagnetic fields in the frequency range 3kHz to 300GHz.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. (c) 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT).

SAR DEFINITION

Specific absorption rate (SAR) is the biological relevant parameter describing the effects of electromagnetic fields in the frequency range of interest. It is a measure of the power absorbed per unit mass and may be spatially averaged over the total mass of an exposed body or its parts.

In mathematical terms Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy absorbed by (dissipated in) an incremental mass contained in a volume element of a given density. It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body as given below**.** The SAR is calculated from the r.m.s. electric field strength E inside the human body, the conductivity σ and the mass density ρ of the biological tissue:

$$SAR = \frac{|E|^2 \sigma}{\rho}$$

SAR is expressed in units of Watts per Kilogram (W/kg)

σ = Conductivity of the tissue-simulant material (S/m)

ρ= Mass density of the tissue-simulant material (kg/m3)

E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

SUMMARY FOR SAR TEST REPORT

EUT	GSM/GPRS PCS 1900 PCMCIA Card
FCC ID	NBZNRM-MG301
Date of receipt	June 14, 2002
Date of Test	November 25, 2002
RF Exposure Category	Uncontrolled
Measured Standard	PCS 1900
Measurement done by	Asad Bajwa

Maximum Results Found during SAR Evaluation

The equipment is deemed to fulfill the requirements if the measured values are less than or equal to the limit.

Head Configuration

Phantom Configuration	Test Position	Channel	Power (dBm)	Frequency (GHz)	Max. 1g SAR (W/kg)
NA	NA	NA	NA	NA	NA

Table 1:

Body Worn Configuration

Test Configurations	Power (dBm)	Channel	Frequency (GHz)	Max. 1g SAR (W/kg)
Antenna Horizontal to PCMCIA Card and parallel to Phantom with headset	**29.65**	**661**	**1.88**	**0.628**

Table 2: the Max SAR value for Body Testing (The power mentioned above is the conducted power)

DESCRIPTION OF TESTED DEVICE

FCC ID	NBZNRM-MG301
Modes of Operation	PCS 1900
Modulation Mode(s)	GSM(GMSK)
Duty Cycle(s) (=1/ Crest Factor)	Crest Factor=8
Transmitter Frequency Range	1850.2-1909.8 MHz

Picture of Phone

Description of the Antenna

Detachable Antenna (not operational without Antenna)

Battery Options

The Card is powered by the Host laptop.

EUT PICTURES

EUT Top

EUT Bottom

EUT Front

EUT Back

EUT with Antenna

Antenna & headset

TEST CONDITIONS

Environment

Test Environment	Dedicated test area
Ambient temperature	24°C ± 1 °C
Tissue simulating liquid temperature	24.2°C ± 0.5 °C
Shielded Chamber	Anechoic material strategically positioned to minimize room reflections
Ambient Noise	Very low

Table 3: Summary of Test Environment conditions

Test Signal, Frequencies and Output Power

1. The measurements are first performed at the middle channel of the operating band of the EUT. If the SAR value of the middle channel for each test configuration (Left, Right, Cheek, Tilt, Extended, Retracted) is at least 3 dB below the SAR limit, testing at the high and low channels is optional for such test configurations.
2. The EUT was set to maximum power level running with 2 time slots during all the tests. Power output was measured before and after each test.
3. T The EUT was equipped with a special firmware, which allowed controlling the transmitter from its keypad.
   During SAR testing, the EUT (PCMCIA CARD) was operated and controlled by a Rhode & Schwartz CMU 200 Base Station Simulator.
   During SAR testing, the EUT (PCMCIA CARD) was operated and controlled by an Agilent Base station HP 8924 E (with HP 83236B PCS Interface).
   Other

Host Laptops

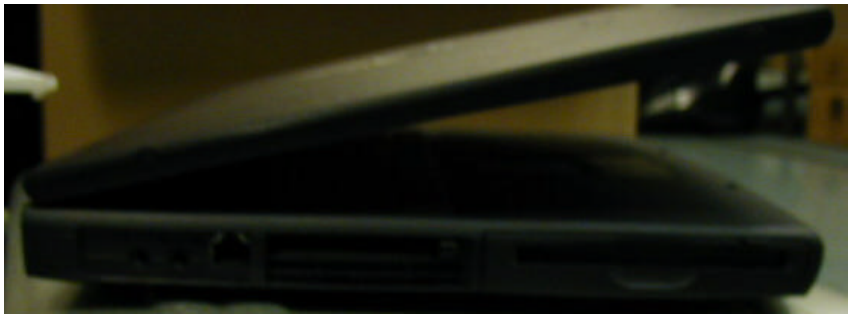
Following 3 host Laptops were used to verify the SAR compliance to FCC limits.

1		**Dell** INSPIRON 5000 No of PCMCIA Slots=2
2		**Toshiba** TECRA8100 SYSTEM UNIT MODEL NO. 810C-16CF2 NO OF PCMCIA SLOTS=2
3		**Dell** INSPIRON 2600 MODEL NO: PP04L NO OF PCMCIA SLOTS=1

Table 4. Host laptops Description

Dell

Toshiba



Dell

TEST DETAILS

Tissue Recipes

The following recipes are provided in percentage by weight.

1900 MHz, Body: 41% De-Ionized Water
0.2% Salt
58.8% Sugar

Material Parameters

Simulant	Freq [MHz]	Room Temp [C]	Liquid Temp [C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
Body	1900	23.3	23.5	ε_r	53.3	55.1	3.38	± 5%
				σ	1.52	1.48	-2.6	± 5%

Table 5: Parameters of the tissue simulating liquid, 1900MHz /Body

NOTES:

1 Parameters were measured before and after testing. These values reflect both measurements.

System Validation

Following equipment is used for the system validation:

Signal Generator (Agilent E4432B)
RF Amplifier (Mini Circuits ZHL-42.)
Dual Directional Coupler (HP 778D)
The HP 8564E Spectrum Analyzer (used for RF power measurement)
Cables, Attenuate and Adapters

The recommended (IEEE Std 1528) set-up was used:

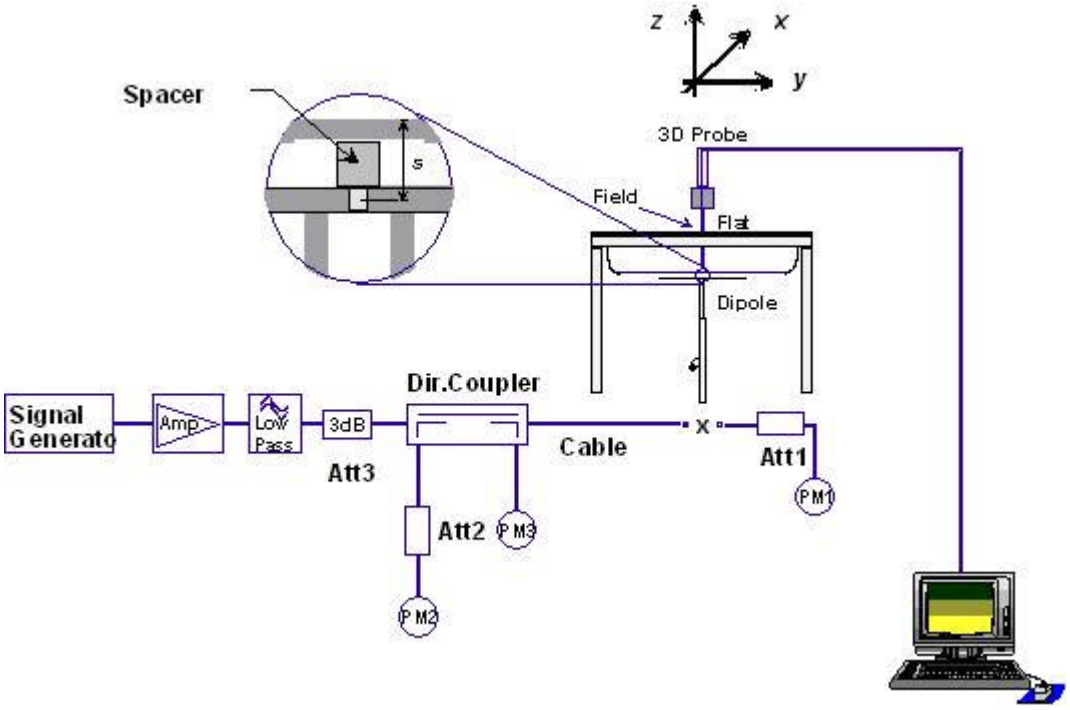
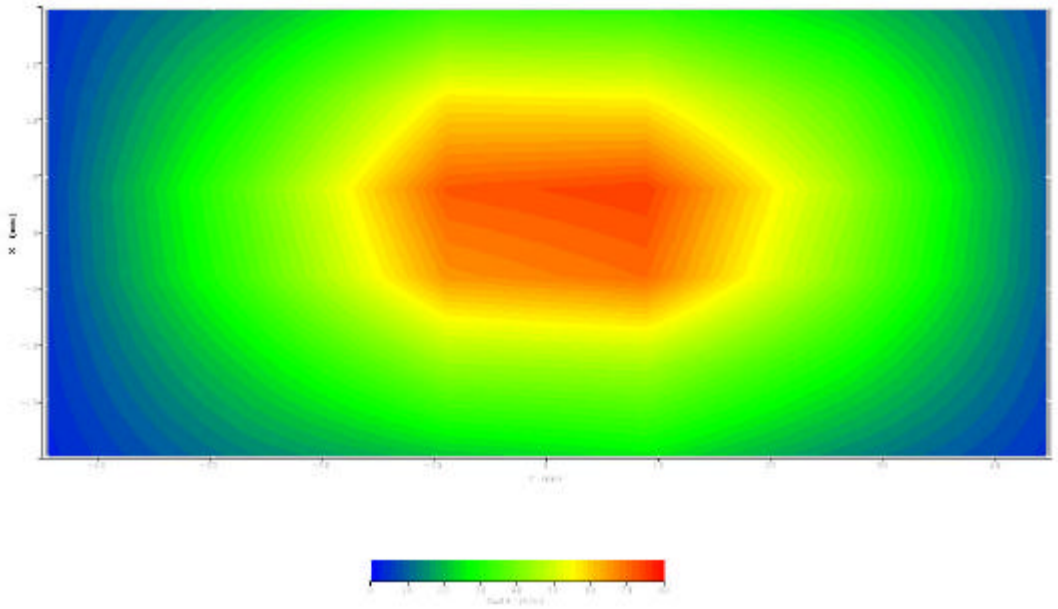


Figure 13. Performance Check Setup Diagram

Performance Checking

Test Position:	Flat Phantom
Test Date:	November 25, 2002
Antenna Position:	Balanced Dipole
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 53.4; $\mathbf{s}$ = 1.47
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid Temp.	23.7C
CH	NA
SAR Drift	<2%
SAR (1g):	36.073



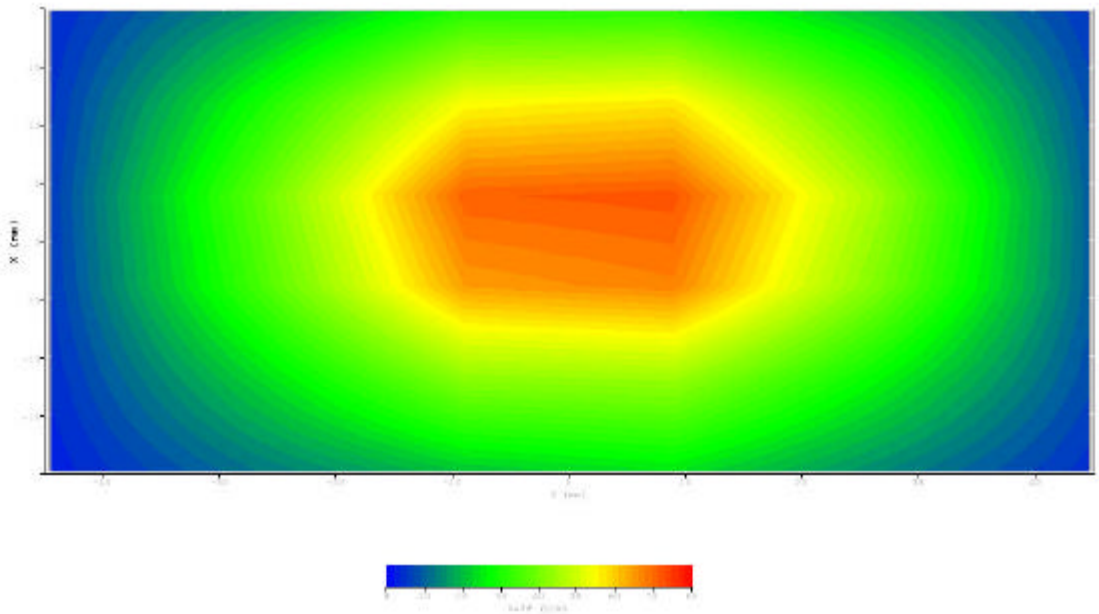
Validation Measurement - 1800 MHz in Body tissue

Simulant	Freq [MHz]	Room Temp [C]	Liquid Temp [C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
Body	1800	23.3	23.5	ε_r	53.3	53.4	0.20	± 5%
				σ	1.52	1.47	-3.29	± 5%
				1g SAR	38.1	36.073	-5.32	± 10%

Table 6. System Validation Results

NOTE:
RF Forward power = 0.26W
Validation was done within 100MHz of test frequency

Test Position:	Flat Phantom
Test Date:	November 26, 2002
Antenna Position:	Balanced Dipole
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.2; $\mathbf{s}$ = 1.48
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid Temp.	24.1C
CH	NA
SAR Drift	<2%
SAR (1g):	36.256



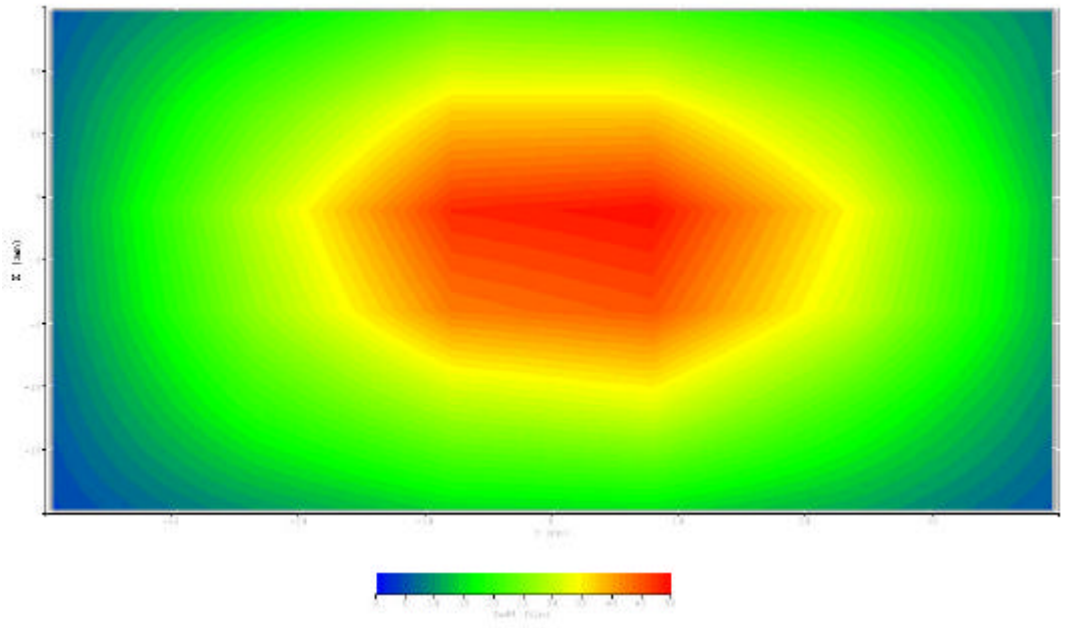
Validation Measurement - 1800 MHz in Body tissue

Simulant	Freq [MHz]	Room Temp [C]	Liquid Temp [C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
Body	1800	23.6	23.8	ε_r	53.3	54.2	1.69	± 5%
				σ	1.52	1.48	-2.63	± 5%
				1g SAR	38.1	36.256	-4.84	± 10%

Table 7. System Validation Results

NOTE:
RF Forward power = 0.26W
Validation was done within 100MHz of test frequency

Test Position:	Flat Phantom
Test Date:	November 27, 2002
Antenna Position:	Balanced Dipole
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.5; $\mathbf{s}$ = 1.46
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid Temp.	23.8C
CH	NA
SAR Drift	<2%
SAR (1g):	36.149



Validation Measurement - 1800 MHz in Body tissue

Simulant	Freq [MHz]	Room Temp [C]	Liquid Temp [C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
Body	1800	23.5	23.7	ε_r	53.3	54.5	2.25	± 5%
				σ	1.52	1.46	-3.90	± 5%
				1g SAR	38.1	36.149	-5.12	± 10%

Table 8. System Validation Results

NOTE:
RF Forward power = 0.26W
Validation was done within 100MHz of test frequency

SAR Results Summary

MEASUREMENT RESULTS Laptop1

	Description	Power dBm	Channel	Frequency (GHz)	Max. 1g SAR (W/kg)	2nd spot (W/kg)
1	Antenna Vertical to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.147	0.063
2	Same as above with Handset	29.65	661	1.88	0.133	0.052
3	Antenna Horizontal to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.561	0.211
4	Same as above with Handset	29.65	661	1.88	0.628	0.203
5	Antenna vertical to PCMCIA Card and Perpendicular to Phantom	29.65	661	1.88	0.302	None
6	Same as above with Handset	29.65	661	1.88	0.282	None

Table 9. Measured Body SAR results for Dell (Inspiron 5000)

NOTES:

1 The measurements are first performed at the middle channel of the operating band of the EUT. If the SAR value of the middle channel for each test configuration (Left, Right, Cheek, Tilt, Extended, Retracted) is at least 3 dB below the SAR limit, testing at the high and low channels is optional for such test configurations.

2 The test data reported are the worst-case SAR values with the antenna-head position set in a typical configuration.

3 All modes of operation are investigated and worst cases are reported.

4	Multiple Hot Spots	None	T SAR was less than 2 dB of the highest peak	T Reported
5	Battery Type	Standard	Extended	Both
6	Power Measured	T Conducted	EIRP	ERP
7	SAR Measurement System	SARA2		
8	SAR Configuration	Head	T Body	

9 Before the measurements, the test site ambient conditions were checked performing SAR measurements with the EUT powered off.

10 This laptop had 2 PCMCIA slots, the bottom one gave higher SAR values. The data provided above reflects the SAR values for the bottom slot only.

SAR test was done with 1 time Slot, the data provided should be scaled by a factor of 2 for 2 time slots (Max 2Slots.for this EUT)

MEASUREMENT RESULTS Laptop2

	Description	Power dBm	Channel	Frequency (GHz)	Max. 1g SAR (W/kg)	2nd spot (W/kg)
1	Antenna Vertical to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.299	0.098
2	Same as above with Handset	29.65	661	1.88	0.231	0.084
3	Antenna Horizontal to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.383	0.104
4	Same as above with Handset	29.65	661	1.88	0.369	0.112
5	Antenna vertical to PCMCIA Card and Perpendicular to Phantom	29.65	661	1.88	0.094	None
6	Same as above with Handset	29.65	661	1.88	0.103	None

Table 10. Measured Body SAR results for Toshiba Tecra 8100

NOTES:

1 The measurements are first performed at the middle channel of the operating band of the EUT. If the SAR value of the middle channel for each test configuration (Left, Right, Cheek, Tilt, Extended, Retracted) is at least 3 dB below the SAR limit, testing at the high and low channels is optional for such test configurations.

2 The test data reported are the worst-case SAR values with the antenna-head position set in a typical configuration.

3 All modes of operation are investigated and worst cases are reported.

4	Multiple Hot Spots	None	T SAR was less than 2 dB of the highest peak	T Reported
5	Battery Type	Standard	Extended	Both
6	Power Measured	T Conducted	EIRP	ERP
7	SAR Measurement System	SARA2		
8	SAR Configuration	Head	T Body	

9 Before the measurements, the test site ambient conditions were checked performing SAR measurements with the EUT powered off.

10 This laptop had 2 PCMCIA slots, the bottom one gave higher SAR values. The data provided above reflects the SAR values for the bottom slot only.

SAR test was done with 1 time Slot, the data provided should be scaled by a factor of 2 for 2 time slots (Max 2Slots.for this EUT)

MEASUREMENT RESULTS Laptop3

	Description	Power dBm	Channel	Frequency (GHz)	Max. 1g SAR (W/kg)	2nd spot (W/kg)
1	Antenna Vertical to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.296	0.102
2	Same as above with Handset	29.65	661	1.88	0.255	0.098
3	Antenna Horizontal to PCMCIA Card and parallel to Phantom	29.65	661	1.88	0.237	0.087
4	Same as above with Handset	29.65	661	1.88	0.242	0.092
5	Antenna vertical to PCMCIA Card and Perpendicular to Phantom	29.65	661	1.88	0.068	None
6	Same as above with Handset	29.65	661	1.88	0.072	None

Table 11. Measured Body SAR results for Dell Laptop

NOTES:

1 The measurements are first performed at the middle channel of the operating band of the EUT. If the SAR value of the middle channel for each test configuration (Left, Right, Cheek, Tilt, Extended, Retracted) is at least 3 dB below the SAR limit, testing at the high and low channels is optional for such test configurations.

2 The test data reported are the worst-case SAR values with the antenna-head position set in a typical configuration.

3 All modes of operation are investigated and worst cases are reported.

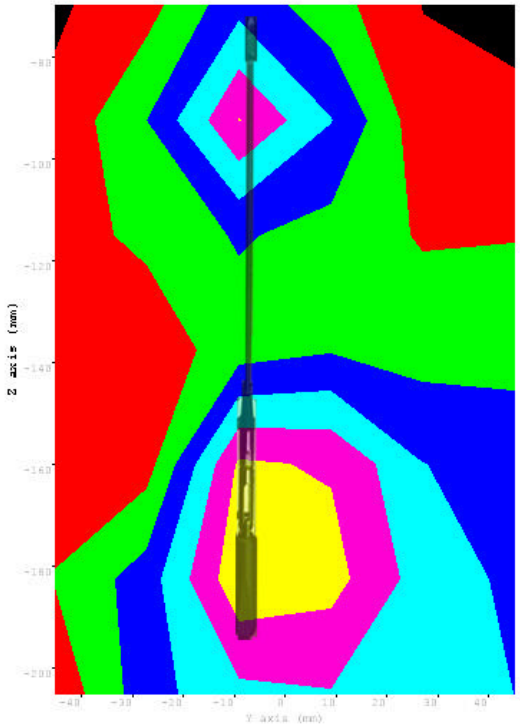
4	Multiple Hot Spots	None	T SAR was less than 2 dB of the highest peak	T Reported
5	Battery Type	Standard	Extended	Both
6	Power Measured	T Conducted	EIRP	ERP
7	SAR Measurement System	SARA2		
8	SAR Configuration	Head	T Body	

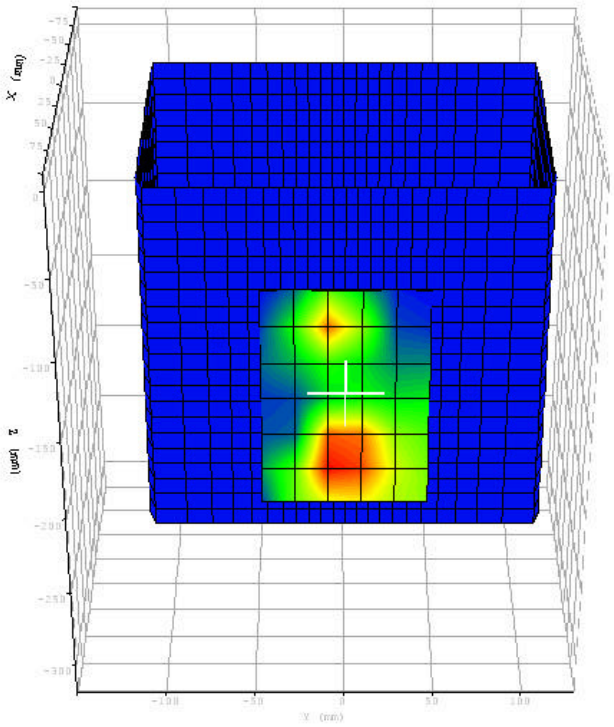
9 Before the measurements, the test site ambient conditions were checked performing SAR measurements with the EUT powered off.

SAR test was done with 1 time Slot, the data provided should be scaled by a factor of 2 for 2 time slots (Max 2Slots.for this EUT)

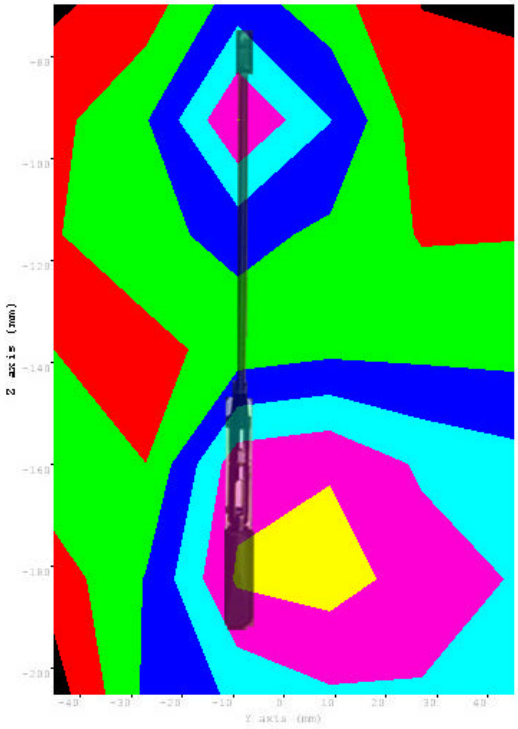
SAR DISTRIBUTIONS (AREA SCANS)

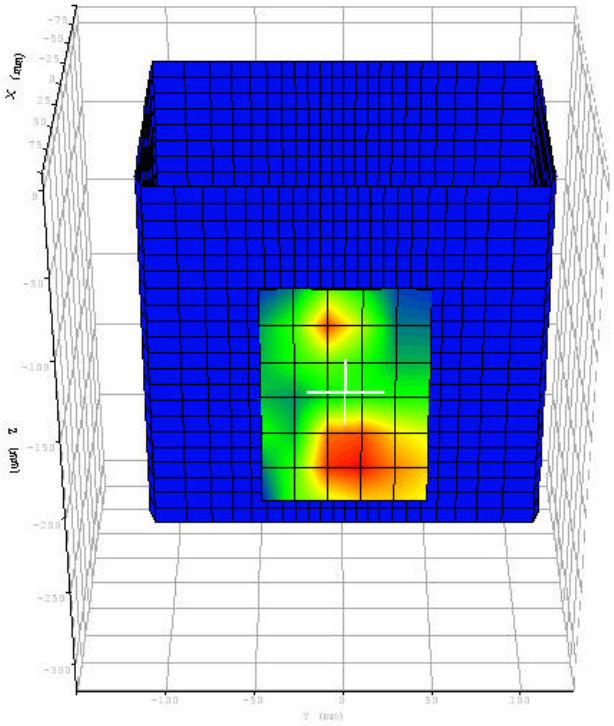
Test Position:	Laptop1, Configuration 1 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.147



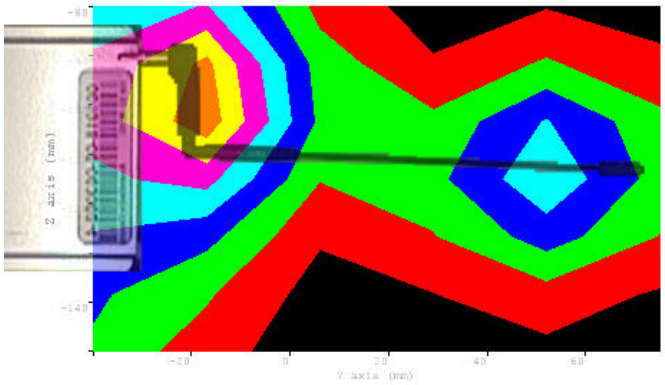


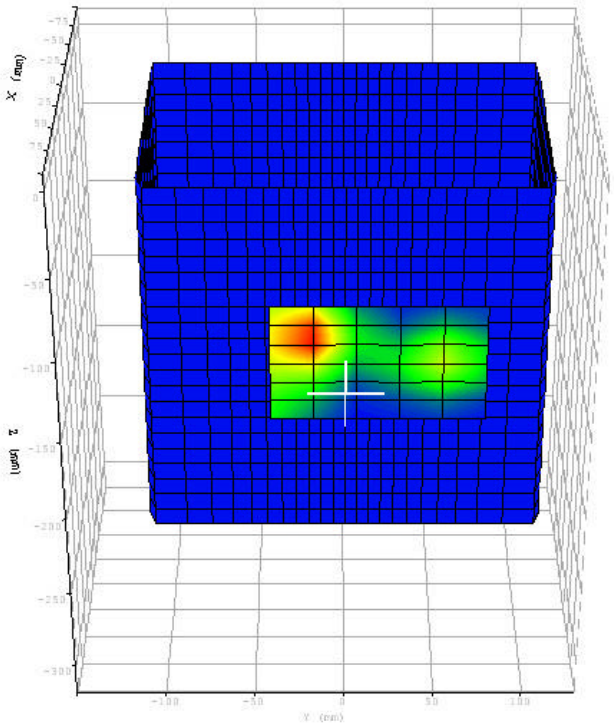
Test Position:	Laptop1, Configuration 2 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.133



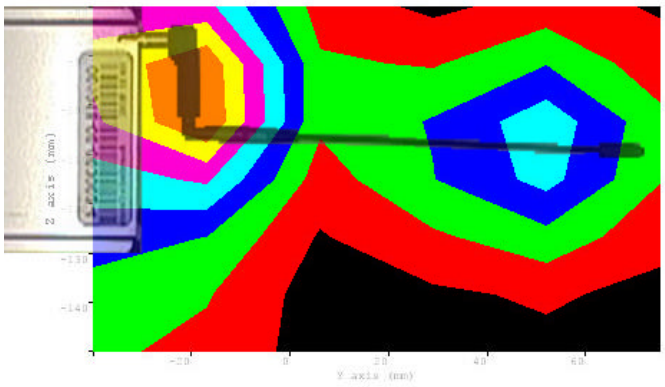


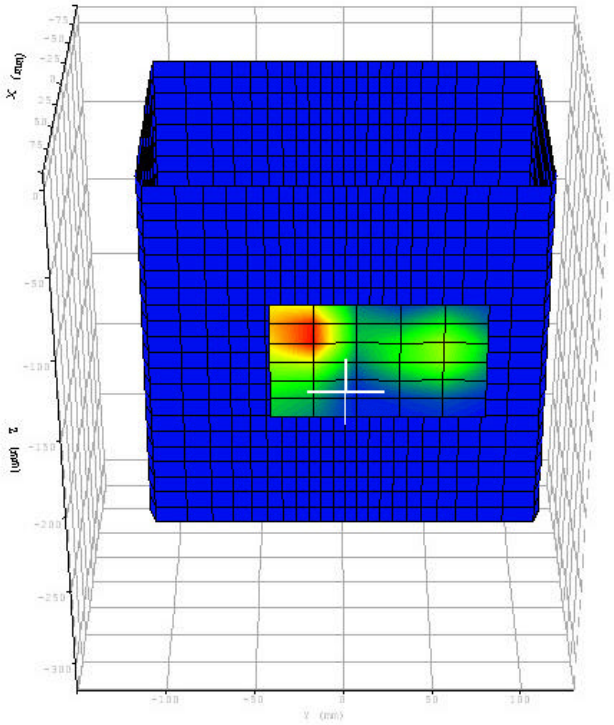
Test Position:	Laptop1, Configuration 3 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.561



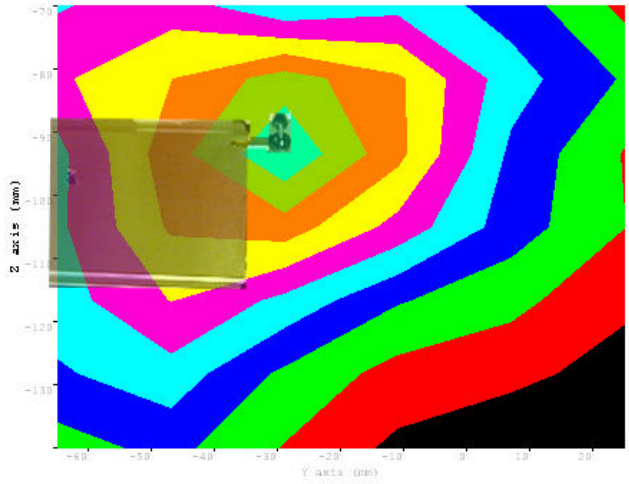


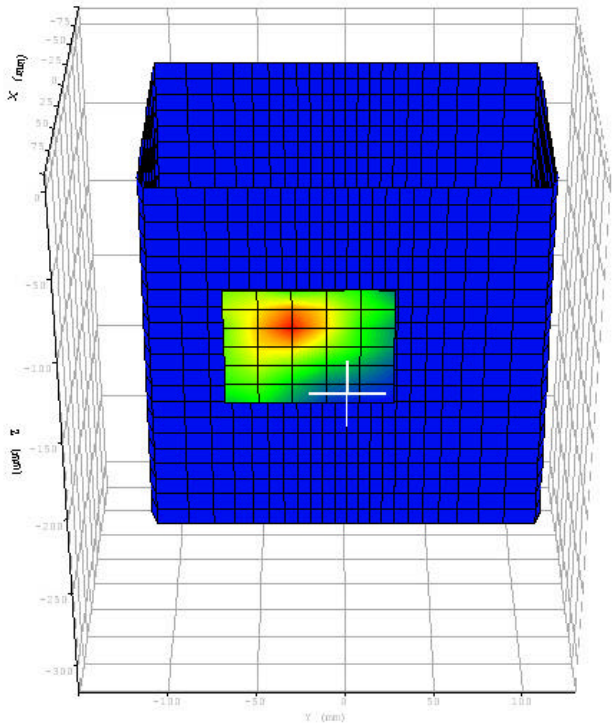
Test Position:	Laptop1, Configuration 4 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\boldsymbol{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.628



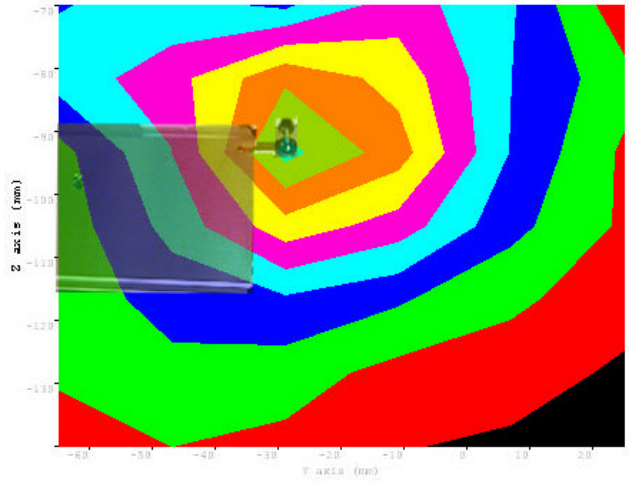


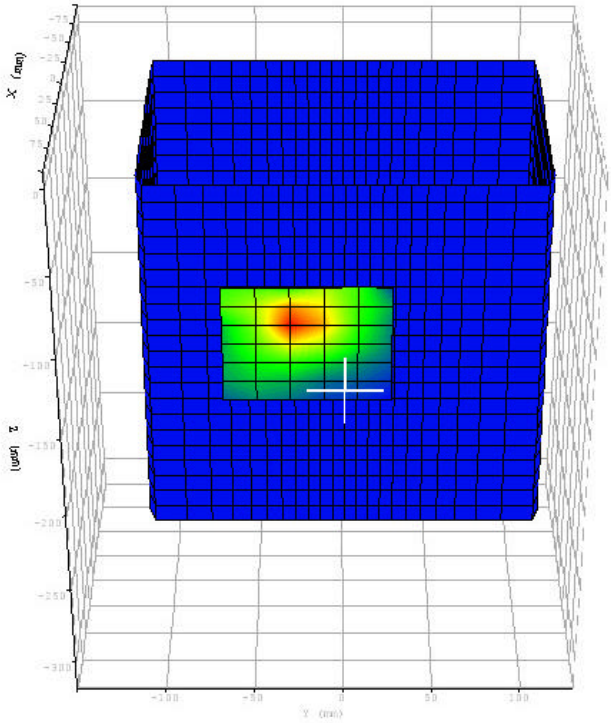
Test Position:	Laptop1, Configuration 5 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.302



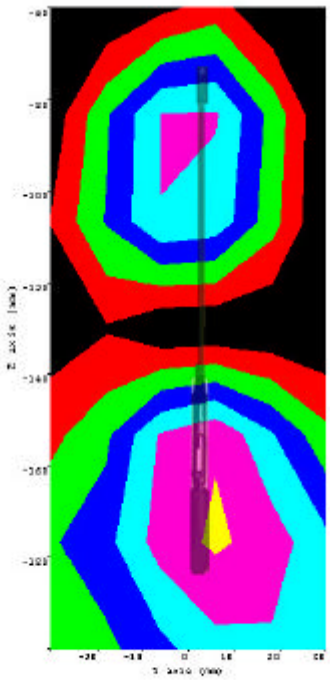


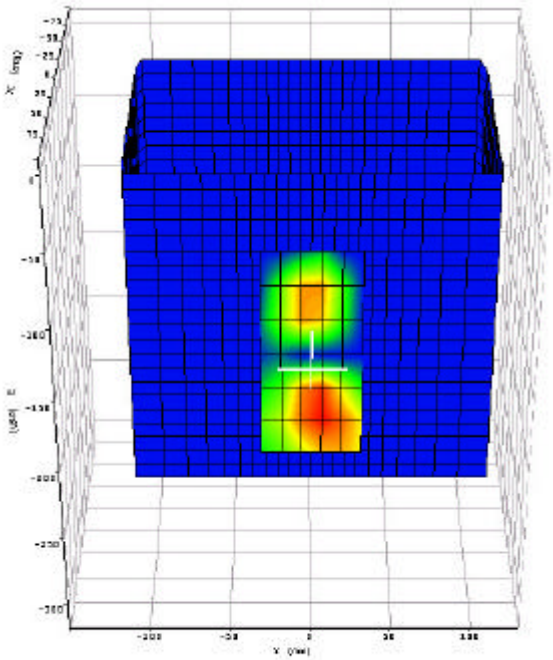
Test Position:	Laptop1, Configuration 6 Per Table 9
Test Date:	November 25, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.1; **s** = 1.48
Pre Test Room Temp.	23.3C
Post Test Room Temp.	23.6C
Pre Test Simulant Liquid Temp.	23.5C
Post Test Simulant Liquid	23.7C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.282



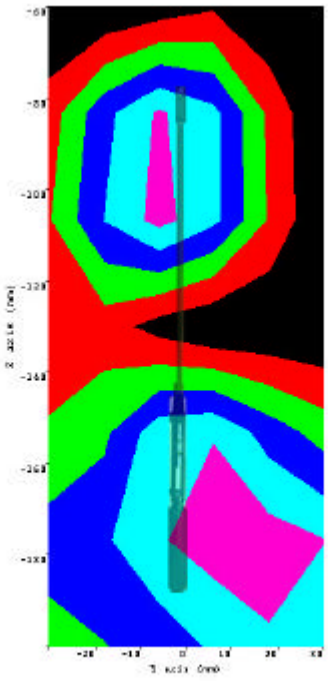


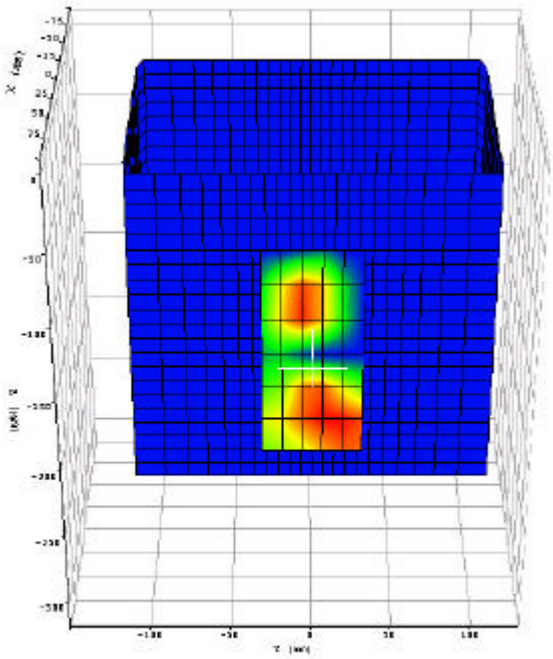
Test Position:	Laptop2, Configuration 1 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\boldsymbol{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.299



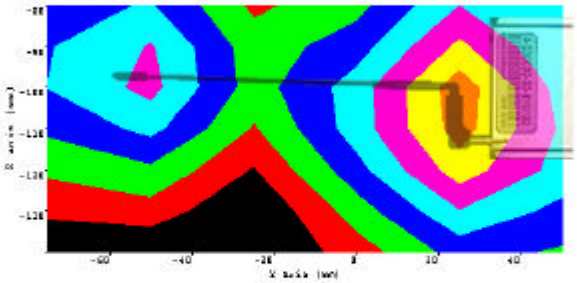


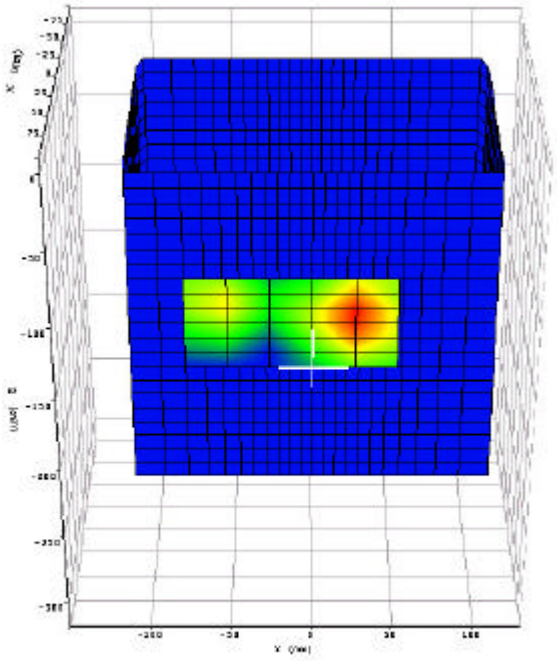
Test Position:	Laptop2, Configuration 2 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.231



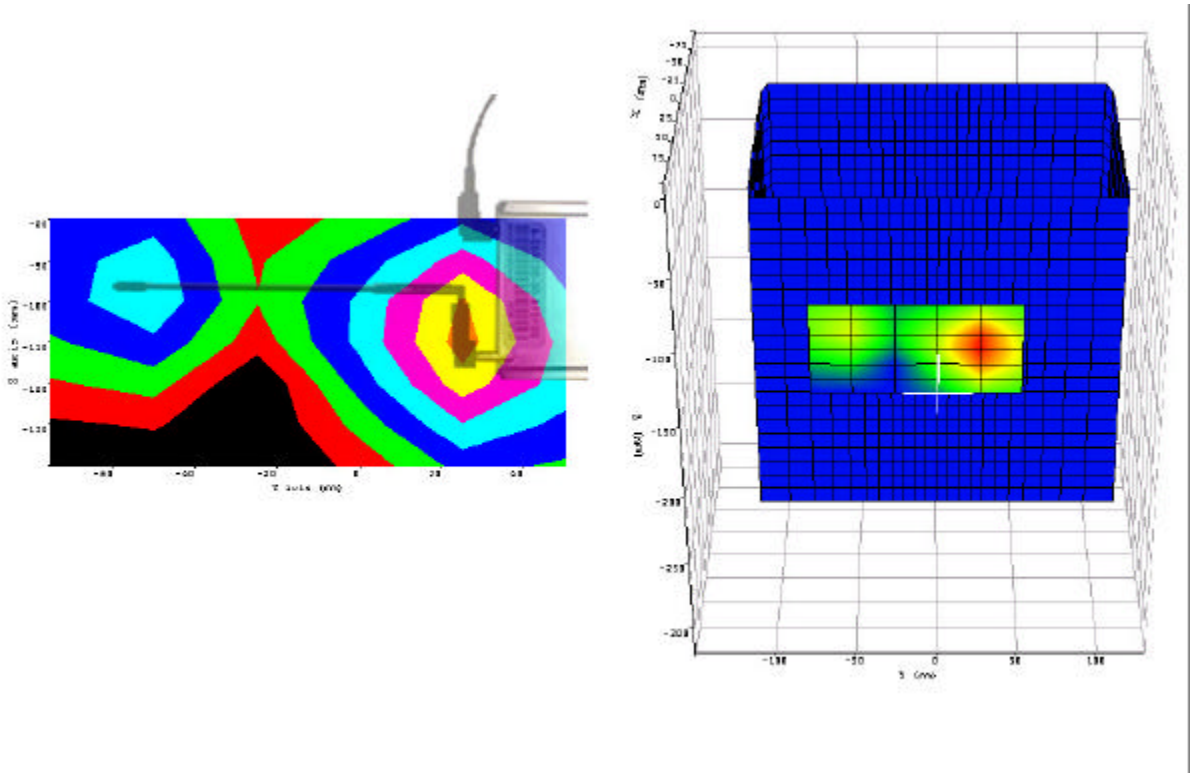


Test Position:	Laptop2, Configuration 3 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.383

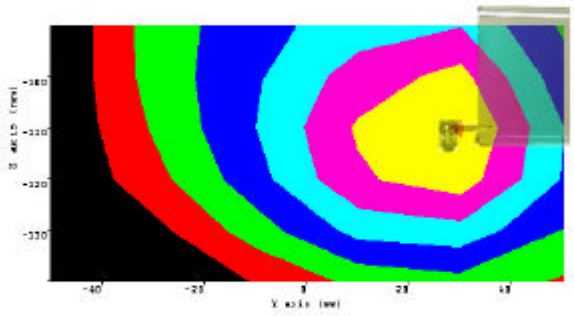


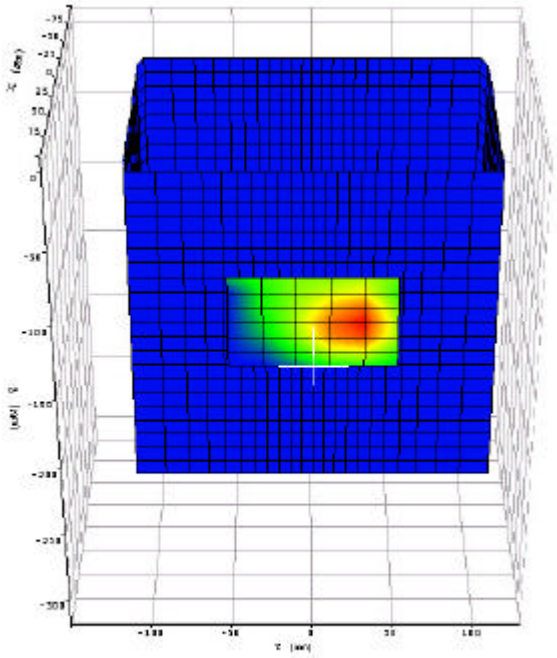


Test Position:	Laptop2, Configuration 4 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\boldsymbol{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.369

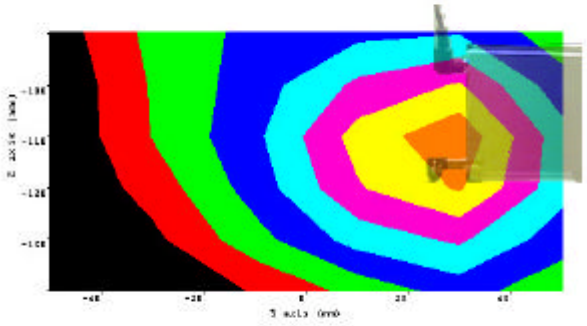


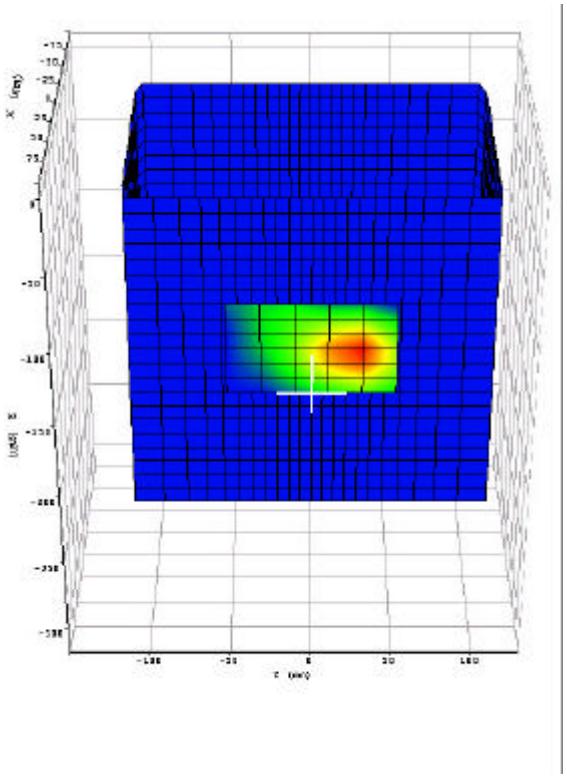
Test Position:	Laptop2, Configuration 5 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.094



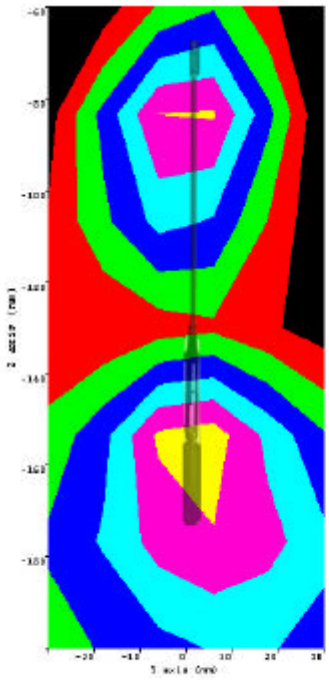


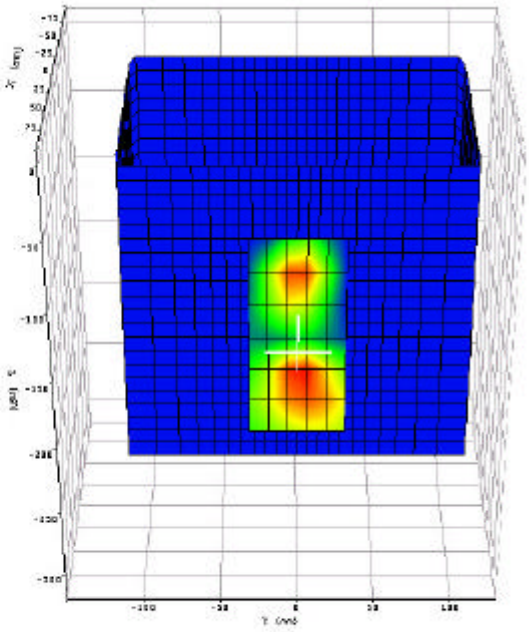
Test Position:	Laptop2, Configuration 6 Per Table 10
Test Date:	November 26, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 54.9; **s** = 1.49
Pre Test Room Temp.	23.6C
Post Test Room Temp.	23.8C
Pre Test Simulant Liquid Temp.	23.8C
Post Test Simulant Liquid	24.1C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.103



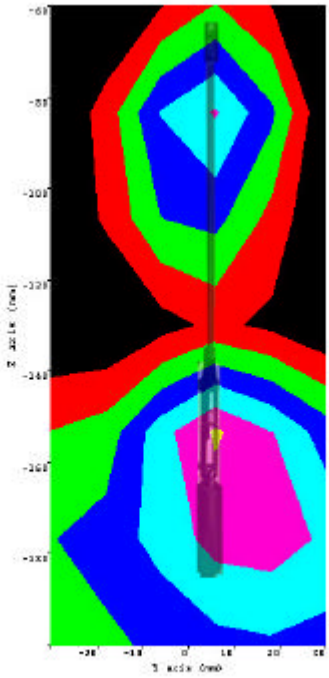


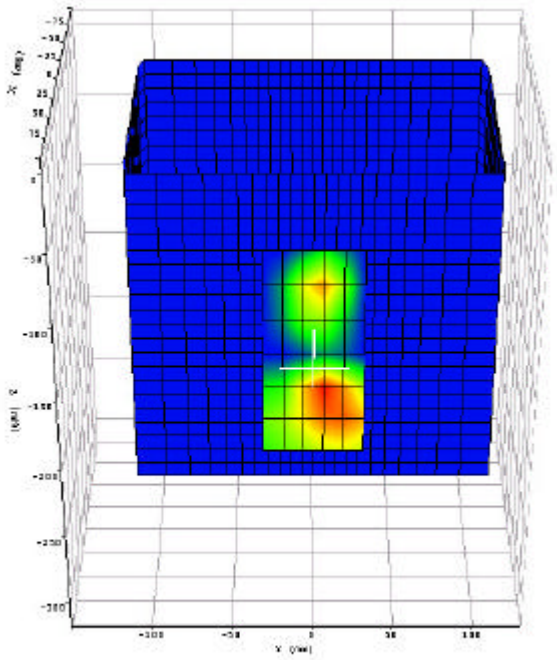
Test Position:	Laptop3, Configuration 1 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.296



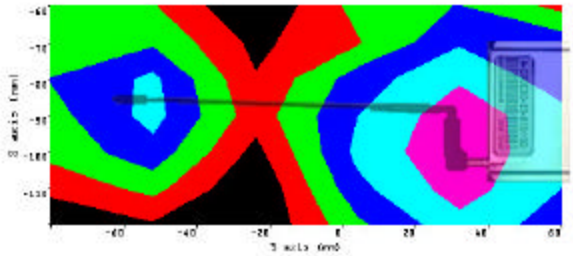


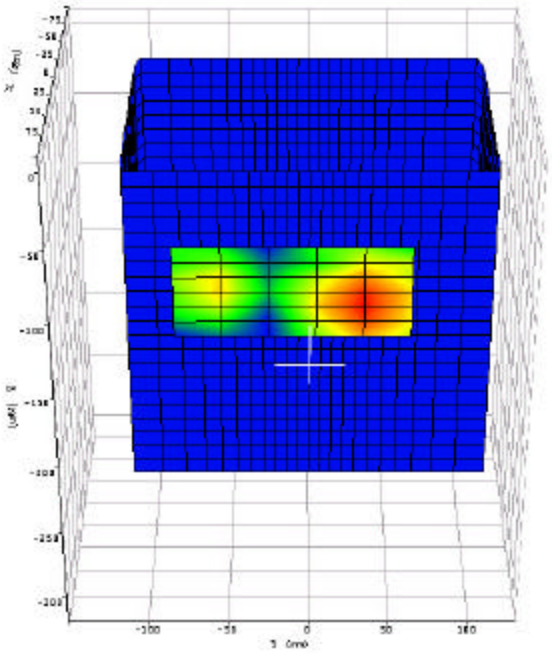
Test Position:	Laptop3, Configuration 2 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.255



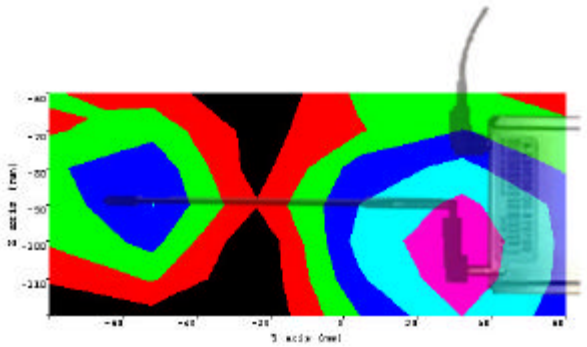


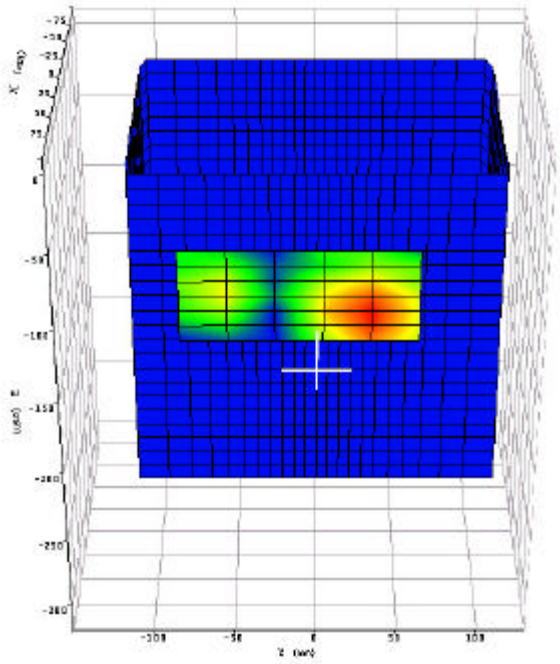
Test Position:	Laptop3, Configuration 3 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.237



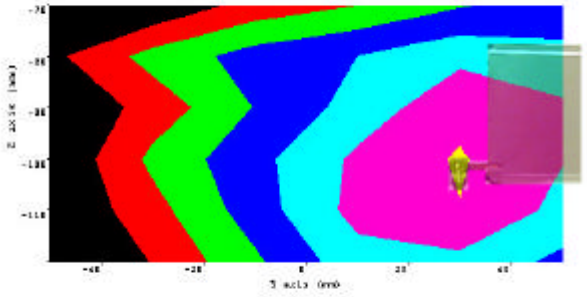


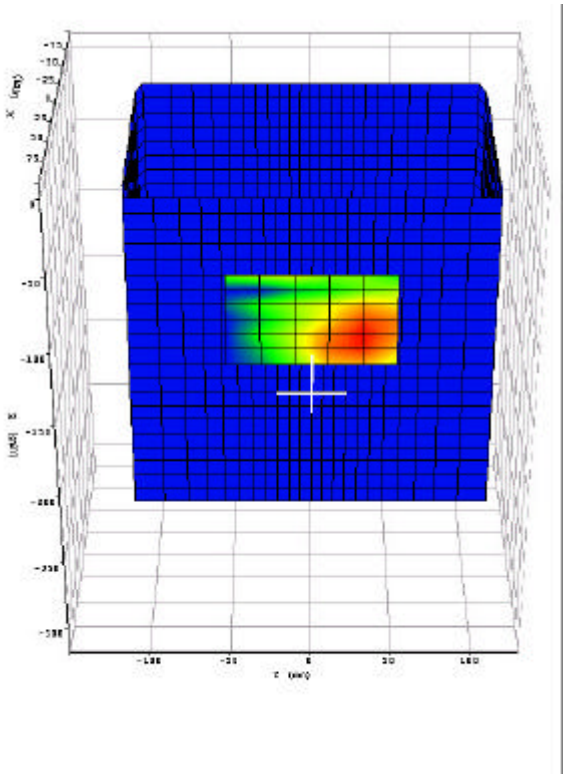
Test Position:	Laptop3, Configuration 4 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.242



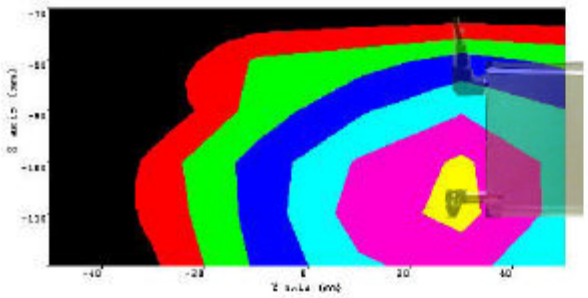


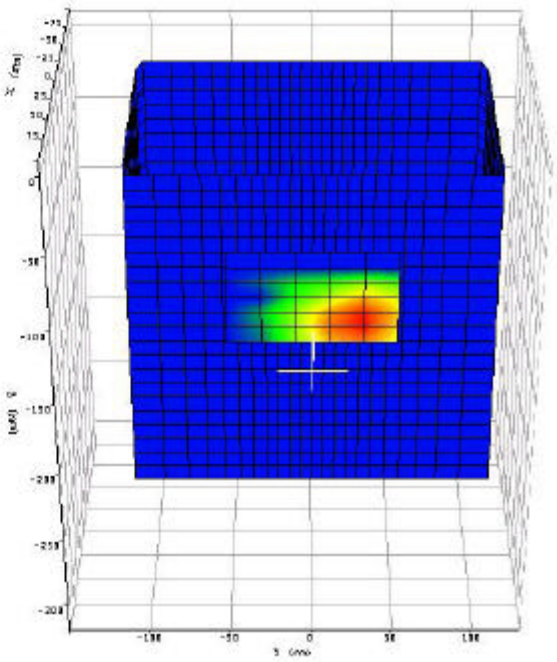
Test Position:	Laptop3, Configuration 5 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.068





Test Position:	Laptop3, Configuration 6 Per Table 11
Test Date:	November 27, 2002
Antenna Position:	Attached
Probe:	IXP-050/SN 0122 – SARf (0.713,0.713,0.713) Probe Cal Date 10/10/2002
Med. Parameters:	Body: $\mathbf{e}_r$ = 55.2; **s** = 1.475
Pre Test Room Temp.	23.5C
Post Test Room Temp.	23.5C
Pre Test Simulant Liquid Temp.	23.7C
Post Test Simulant Liquid	23.81C
CH 661;	Crest Factor=8
SAR Drift	<2%
SAR (1g) W/Kg	0.072





Setup Pictures

