Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client

CALIBRATION CERTIFICATE

Object(s)	DAE3 - SN:558
Calibration procedure(s)	QA CAL-06.v2 Calibration procedure for the data acquisition unit (DAE)
Calibration date:	March 07, 2003
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Technician	
Approved by:	Fin Bomholt	R&D Director	

Date Issued: March 07, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

1. DC Voltage Measurement

DA - Converter Values from DAE

High Range:	1LSB =	6.1µV ,	full range =	400 mV
Low Range:	1LSB =	61nV ,	full range =	4 mV

Software Set-up: Calibration time: 3 sec Measuring time: 3 sec

Setup	X	Y	Z
High Range	405.010098	404.9037428	405.0817835
Low Range	3.972	3.95185	3.96828
Connector Position	86 °		

High Range	Input	Reading in µV	% Error
Channel X + Input	200mV	200000	0.00
	20mV	20003.4	0.02
Channel X - Input	20mV	-19993	-0.04
Channel Y + Input	200mV	200001	0.00
	20mV	20002.7	0.01
Channel Y - Input	20mV	-19993	-0.04
Channel Z + Input	200mV	200000	0.00
	20mV	20000.8	0.00
Channel Z - Input	20mV	-19997.7	-0.01

Low Range	Input	Reading in µV	% Error
Channel X + Input	2mV	2000.2	0.01
	0.2mV	200.04	0.02
Channel X - Input	0.2mV	-200.81	0.41
Channel Y + Input	2mV	2000.1	0.00
	0.2mV	199.47	-0.27
Channel Y - Input	0.2mV	-201.01	0.50
Channel Z + Input	2mV	1999.9	0.00
	0.2mV	198.68	-0.66
Channel Z - Input	0.2mV	-201.1	0.55

2. Common mode sensitivity

Software Set-up
Calibration time: 3 sec, Measuring time: 3 sec
High/Low Range

in µV	Common mode Input Voltage	High Range Reading	Low Range Reading
Channel X	200mV	-1.0284	-1.5716
	- 200mV	3.9204	1.3725
Channel Y	200mV	6.7686	5.874
	- 200mV	-6.8145	-8.0898
Channel Z	200mV	2.1943	2.766
	- 200mV	-2.52	-4.6218

3. Channel separation

Software Set-up
Calibration time: 3 sec, Measuring time: 3 sec
High Range

in µV	Input Voltage	Channel X	Channel Y	Channel Z
Channel X	200mV	-	0.88082	0.19177
Channel Y	200mV	0.049124	-	0.25676
Channel Z	200mV	-2.1226	-0.89508	-

4. AD-Converter Values with inputs shorted

in LSB	Low Range	High Range
Channel X	16492	16236
Channel Y	16307	15690
Channel Z	16461	16033

5. Input Offset Measurement

Measured after 15 min warm-up time of the Data Acquisition Electronic.
Every Measurement is preceded by a calibration cycle.

Software set-up:

Calibration time:	3 sec
Measuring time:	3 sec
Number of measurements:	100, Low Range

Input 10MΩ

in µV	Average	min. Offset	max. Offset	Std. Deviation
Channel X	-0.52	-1.64	0.60	0.43
Channel Y	-2.05	-3.65	0.06	0.51
Channel Z	-0.34	-2.05	0.43	0.37

Input shorted

in µV	Average	min. Offset	max. Offset	Std. Deviation
Channel X	0.04	-0.84	1.09	0.41
Channel Y	-0.77	-2.08	0.17	0.40
Channel Z	-1.01	-1.68	-0.38	0.24

6. Input Offset Current

in fA	Input Offset Current
Channel X	< 25
Channel Y	< 25
Channel Z	< 25

7. Input Resistance

	Calibrating	Measuring
Channel X	200 kΩ	200 MΩ
Channel Y	200 kΩ	200 MΩ
Channel Z	200 kΩ	200 MΩ

8. Low Battery Alarm Voltage

in V	Alarm Level
Supply (+ Vcc)	7.66 V
Supply (- Vcc)	-7.53 V

9. Power Consumption

in mA	Switched off	Stand by	Transmitting
Supply (+ Vcc)	0.000	5.83	14.1
Supply (- Vcc)	-0.011	-7.86	-9.13

10. Functional test

Touch async pulse 1	ok
Touch async pulse 2	ok
Touch status bit 1	ok
Touch status bit 2	ok
Remote power off	ok
Remote analog Power control	ok
Modification Status	B – C

Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client C&C (Auden)

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1762
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	March 31, 2003
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (In house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	Mar-02	Mar-03
Power sensor HP 8481A	MY41092180	18-Sep-02	Sep-03
Power meter EPM E4419B	GB41293874	13-Sep-02	Sep-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 2, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Schmid & Partner Engineering AG

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Probe ET3DV6

SN:1762

Manufactured: January 20, 2003
Last calibration: March 31, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1762

Sensitivity in Free Space

NormX	**1.90**	$\mu V/(V/m)^2$
NormY	**1.78**	$\mu V/(V/m)^2$
NormZ	**1.82**	$\mu V/(V/m)^2$

Diode Compression

DCP X	**96**	mV
DCP Y	**96**	mV
DCP Z	**96**	mV

Sensitivity in Tissue Simulating Liquid

Head **900 MHz** ε_r **= 41.5 ± 5%** σ **= 0.97 ± 5% mho/m**
Head **835 MHz** ε_r **= 41.5 ± 5%** σ **= 0.90 ± 5% mho/m**

ConvF X	**6.7** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.7** ± 9.5% (k=2)	Alpha	**0.67**
ConvF Z	**6.7** ± 9.5% (k=2)	Depth	**1.74**

Head **1800 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**
Head **1900 MHz** ε_r **= 40.0 ± 5%** σ **= 1.40 ± 5% mho/m**

ConvF X	**5.4** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.4** ± 9.5% (k=2)	Alpha	**0.50**
ConvF Z	**5.4** ± 9.5% (k=2)	Depth	**2.63**

Boundary Effect

Head **900 MHz** **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	8.8	4.5
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

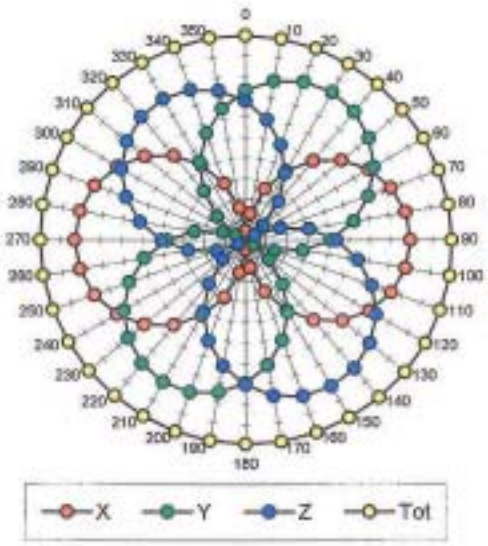
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	13.8	9.3
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

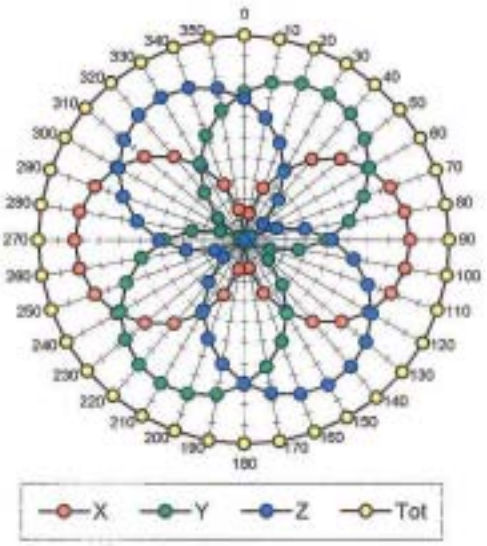
Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.4 ± 0.2**	mm

Receiving Pattern (ϕ), θ = 0°

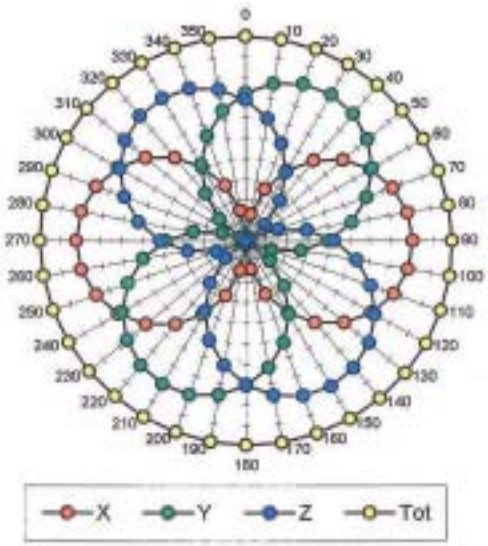
f = 30 MHz, TEM cell ifi110



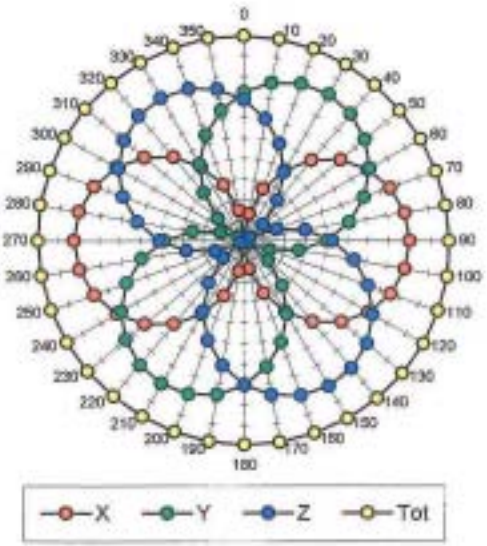
f = 100 MHz, TEM cell ifi110

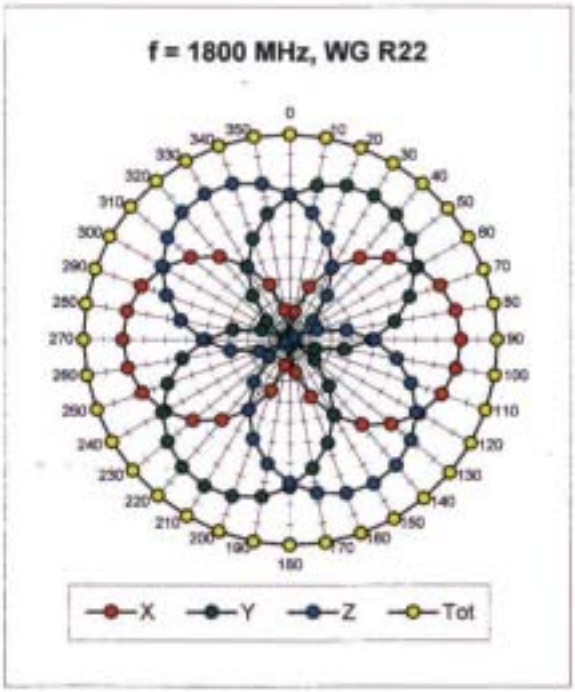


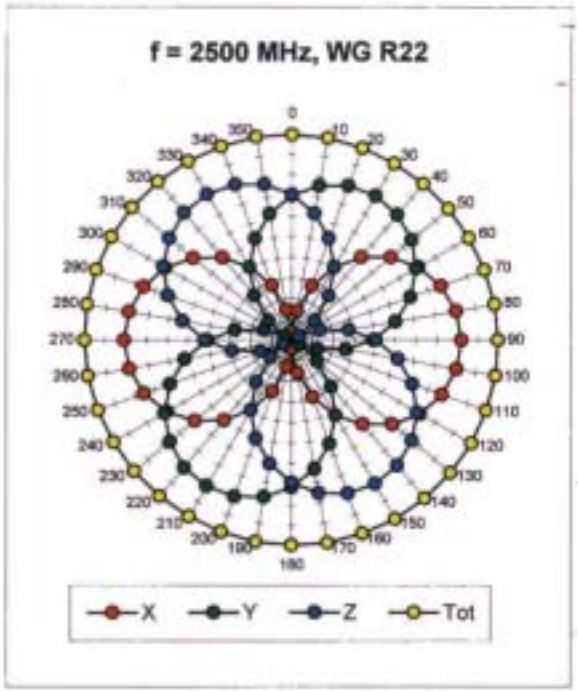
f = 300 MHz, TEM cell ifi110



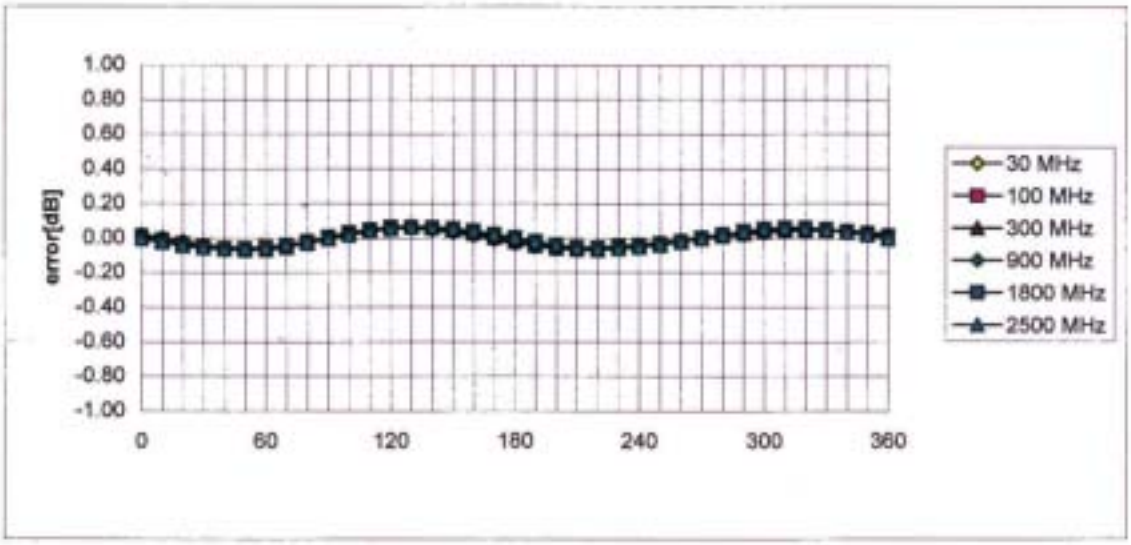
f = 900 MHz, TEM cell ifi110





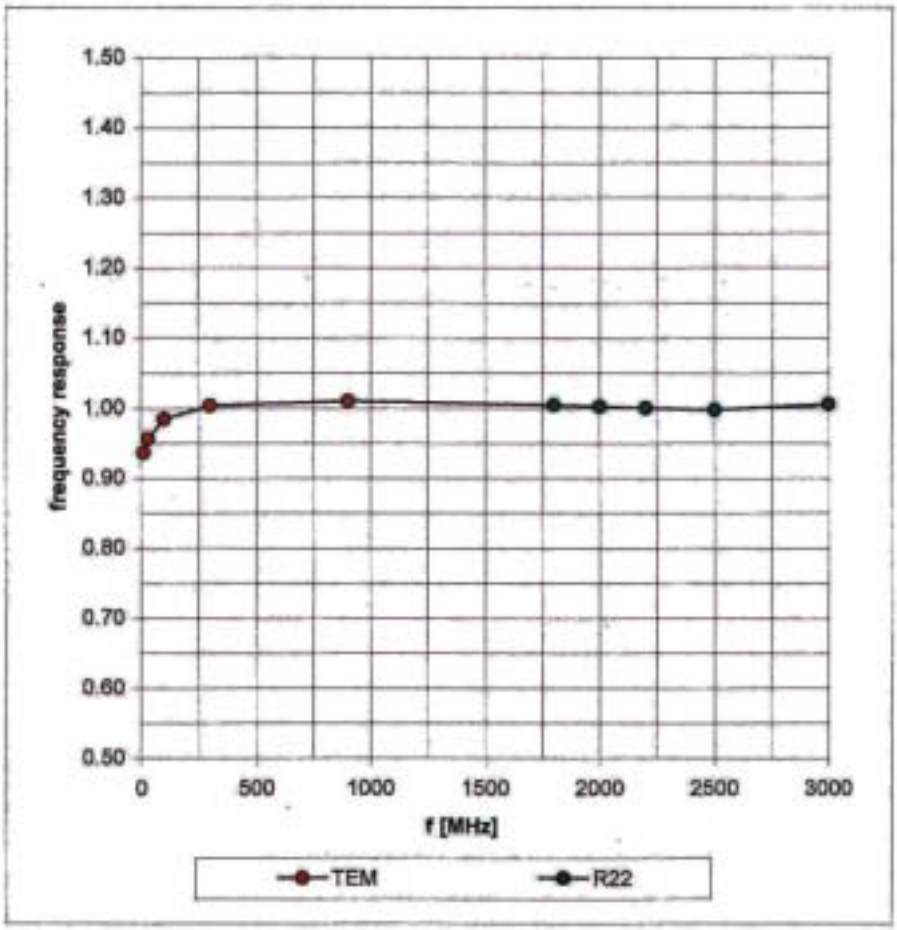


Isotropy Error (ϕ), θ = 0°



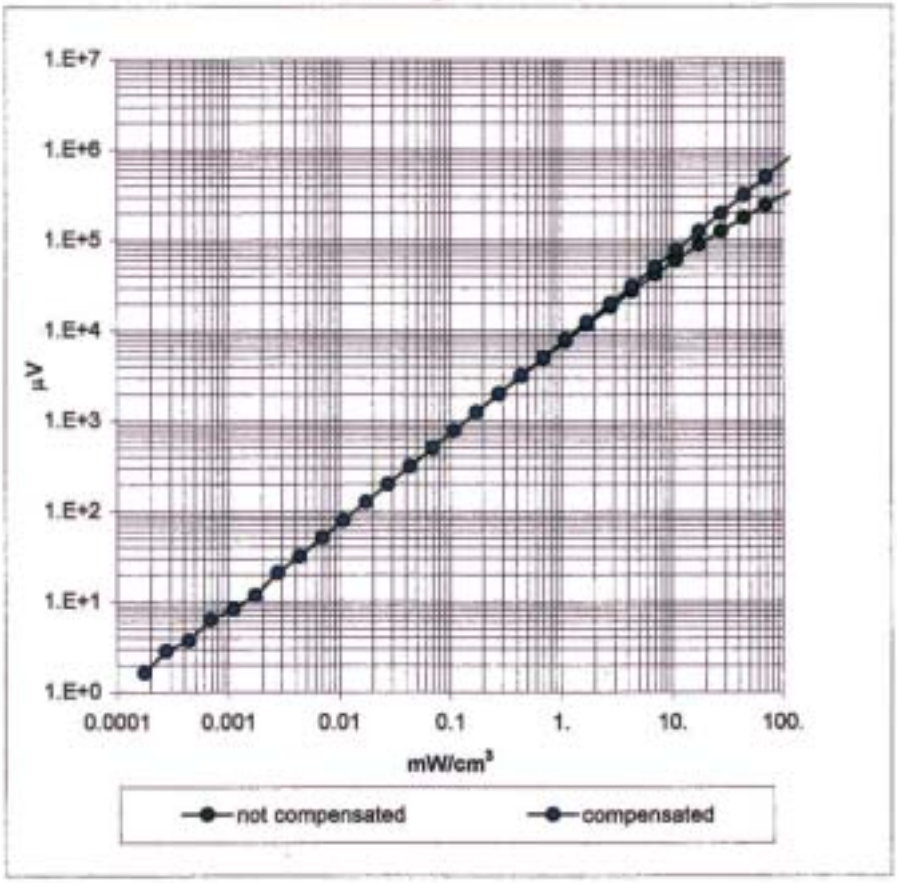
Frequency Response of E-Field

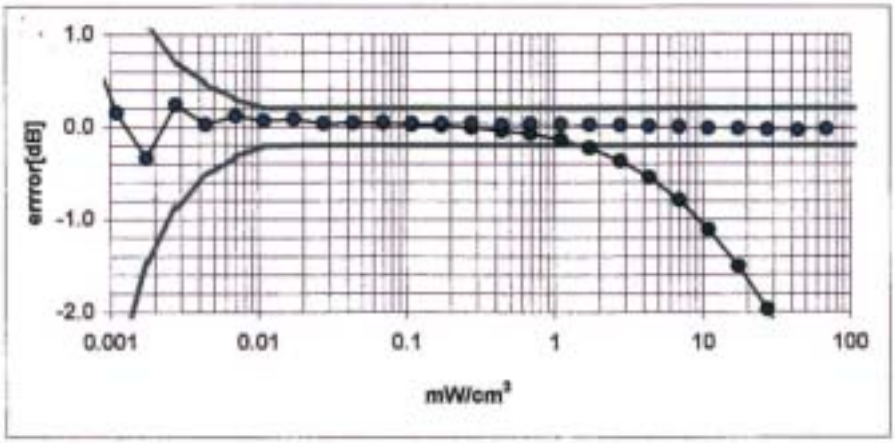
(TEM-Cell:ifi110, Waveguide R22)



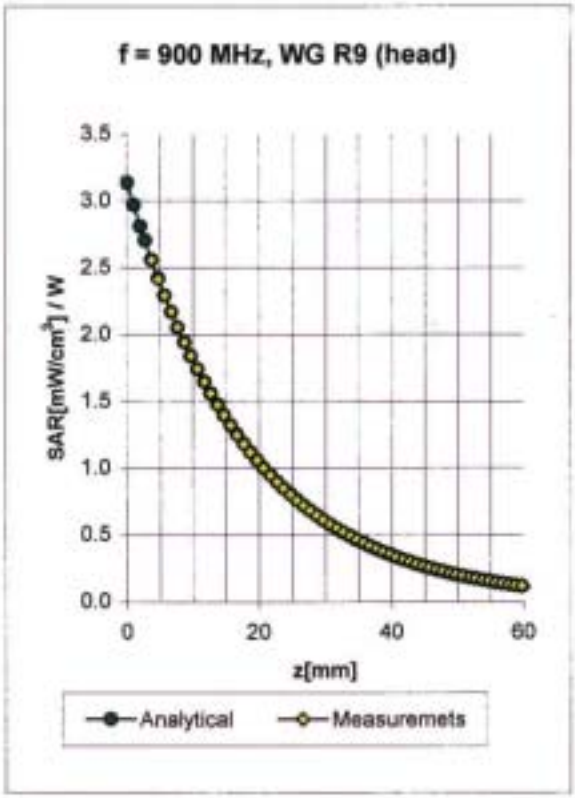
Dynamic Range f(SAR_{brain})

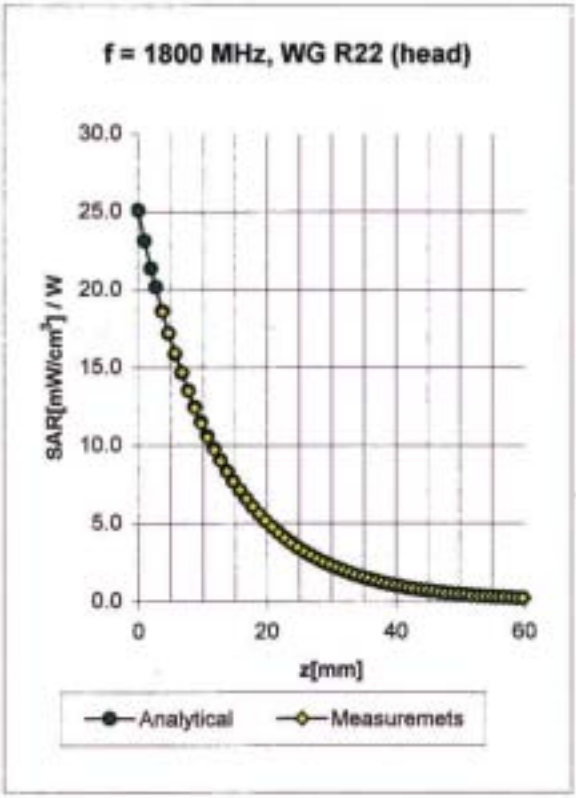
(Waveguide R22)





Conversion Factor Assessment

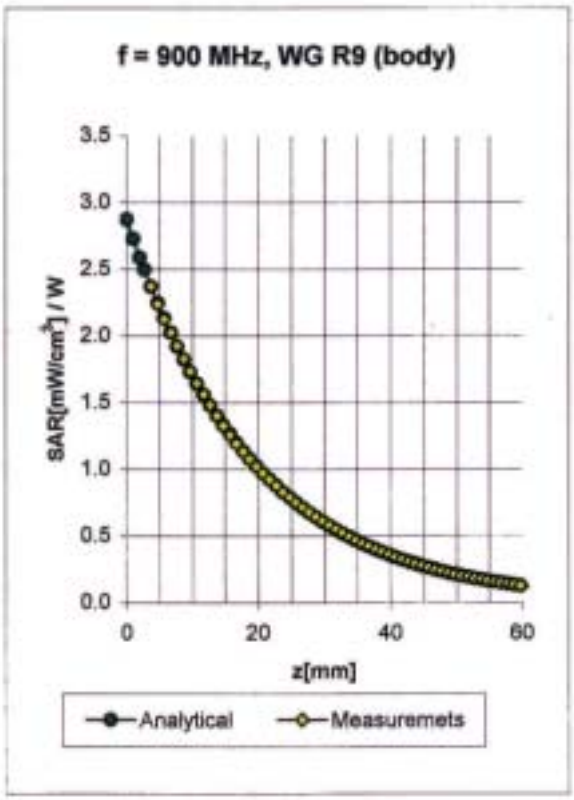


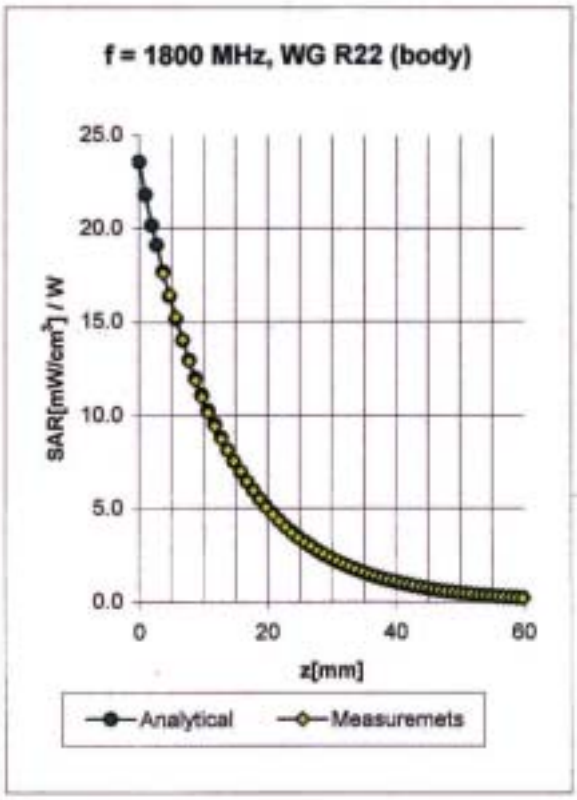


Head	**900 MHz**		ε_r = **41.5 ± 5%**	σ = **0.97 ± 5% mho/m**
Head	**835 MHz**		ε_r = **41.5 ± 5%**	σ = **0.90 ± 5% mho/m**
	ConvF X	**6.7** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**6.7** ± 9.5% (k=2)		Alpha **0.67**
	ConvF Z	**6.7** ± 9.5% (k=2)		Depth **1.74**

Head	**1800 MHz**		ε_r = **40.0 ± 5%**	σ = **1.40 ± 5% mho/m**
Head	**1900 MHz**		ε_r = **40.0 ± 5%**	σ = **1.40 ± 5% mho/m**
	ConvF X	**5.4** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**5.4** ± 9.5% (k=2)		Alpha **0.50**
	ConvF Z	**5.4** ± 9.5% (k=2)		Depth **2.63**

Conversion Factor Assessment

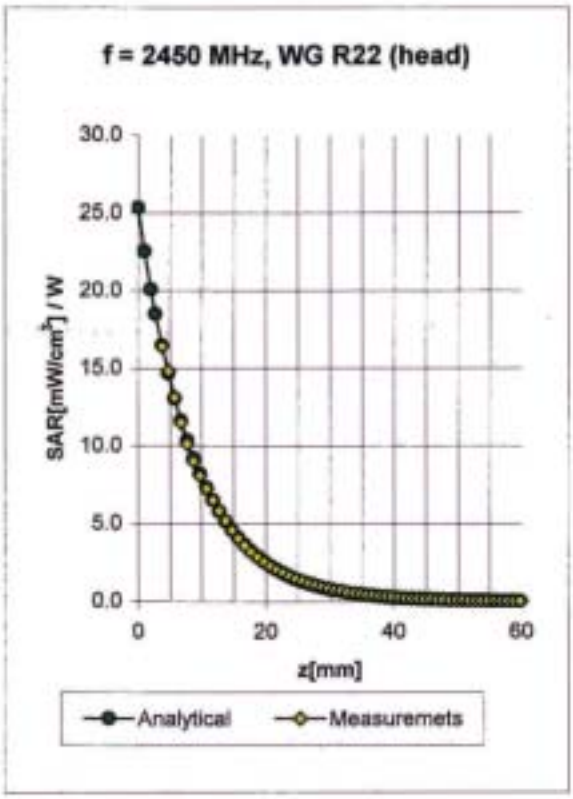


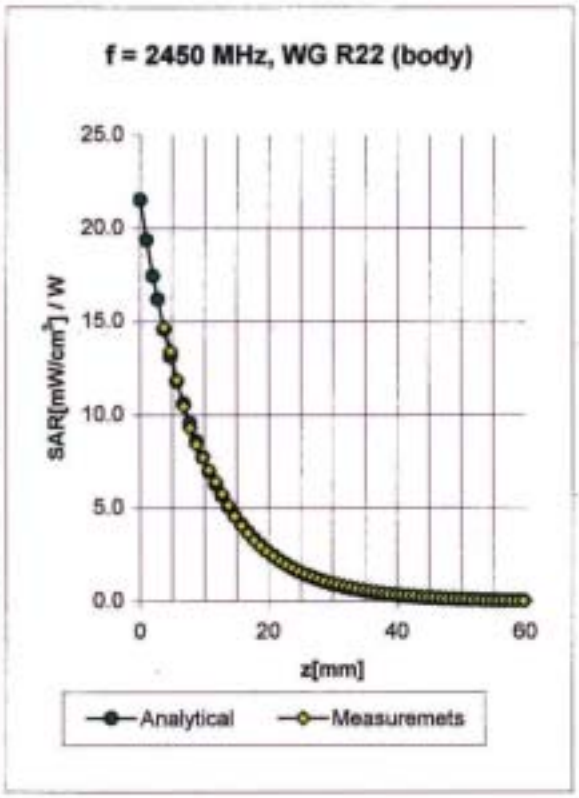


Body	**900 MHz**		ε_r = **55.0 ± 5%**	σ = **1.05 ± 5% mho/m**
Body	**835 MHz**		ε_r = **55.2 ± 5%**	σ = **0.97 ± 5% mho/m**
	ConvF X	**6.5** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**6.5** ± 9.5% (k=2)		Alpha **0.43**
	ConvF Z	**6.5** ± 9.5% (k=2)		Depth **2.34**

Body	**1800 MHz**		ε_r = **53.3 ± 5%**	σ = **1.52 ± 5% mho/m**
Body	**1900 MHz**		ε_r = **53.3 ± 5%**	σ = **1.52 ± 5% mho/m**
	ConvF X	**5.0** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**5.0** ± 9.5% (k=2)		Alpha **0.57**
	ConvF Z	**5.0** ± 9.5% (k=2)		Depth **2.65**

Conversion Factor Assessment





Head	**2450**	**MHz**	ε_r = **39.2 ± 5%**	σ = **1.80 ± 5% mho/m**

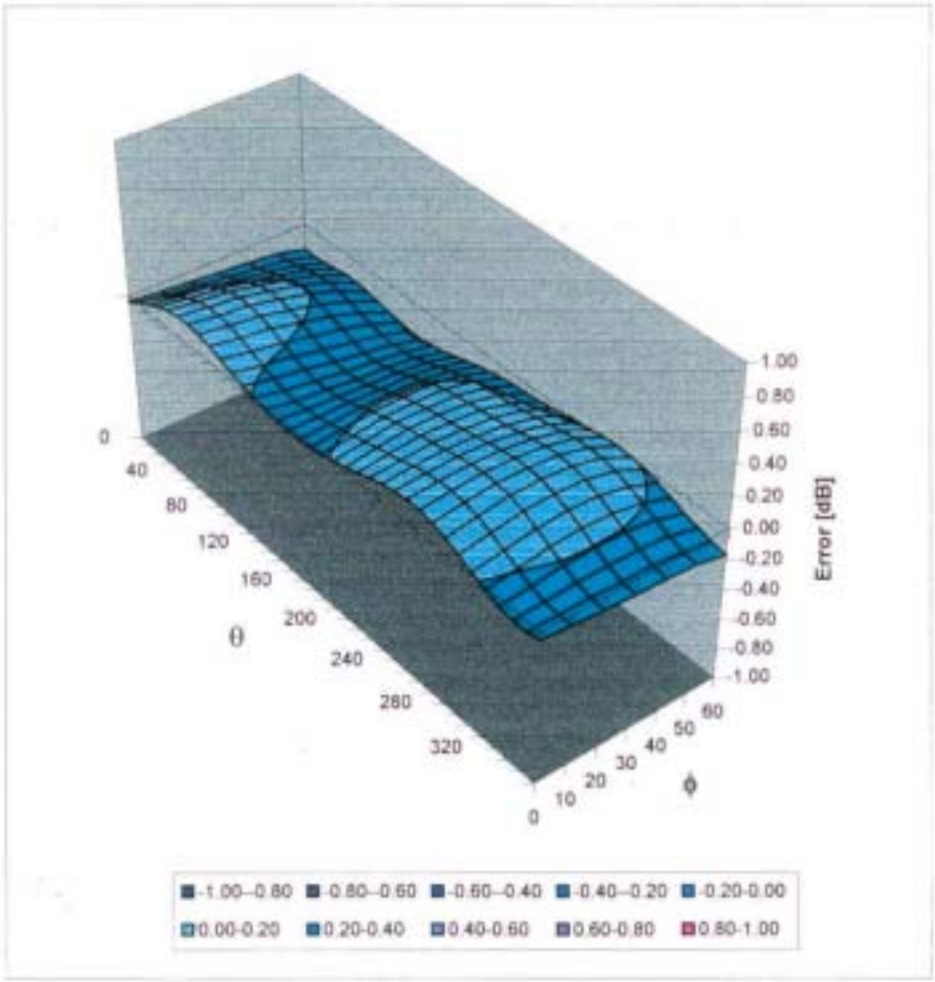
ConvF X	**5.1** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**5.1** ± 8.9% (k=2)	Alpha	**1.32**
ConvF Z	**5.1** ± 8.9% (k=2)	Depth	**1.61**

Body	**2450**	**MHz**	ε_r = **52.7 ± 5%**	σ = **1.95 ± 5% mho/m**

ConvF X	**4.6** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.6** ± 8.9% (k=2)	Alpha	**1.39**
ConvF Z	**4.6** ± 8.9% (k=2)	Depth	**1.60**

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz



Calibration Laboratory of
Schmid & Partner
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Zeughausstrasse 43, 8004 Zurich, Switzerland

Client C&C (Auden)

CALIBRATION CERTIFICATE

Object(s)	D2450V2 - SN:728
Calibration procedure(s)	QA CAL-05.v2 Calibration procedure for dipole validation kits
Calibration date:	March 5, 2003
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 2, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Schmid & Partner Engineering AG

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DASY

Dipole Validation Kit

Type: D2450V2

Serial: 728

Manufactured: January 9, 2003
Calibrated: March 5, 2003

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 2450 MHz:

Relative Dielectricity	**37.4**	± 5%
Conductivity	**1.88 mho/m**	± 5%

The DASY4 System with a dosimetric E-field probe ES3DV2 (SN:3013, Conversion factor 4.8 at 2450 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm 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 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2. SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ES3DV2 SN:3013 and applying the advanced extrapolation are:

averaged over 1 cm^3 (1 g) of tissue:	**54.8 mW/g** ± 16.8 % (k=2)[1]
averaged over 10 cm^3 (10 g) of tissue:	**24.2 mW/g** ± 16.2 % (k=2)[1]

[1] validation uncertainty

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:	**1.153 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 2450 MHz:	Re{Z} = **53.7 Ω**
	Im {Z} = **3.8 Ω**
Return Loss at 2450 MHz	**-25.9 dB**

4. 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.

5. 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.

Small end caps have been added to the dipole arms in order to improve matching when loaded according to the position as explained in Section 1. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

6. Power Test

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Date/Time: 03/05/03 12:24:05

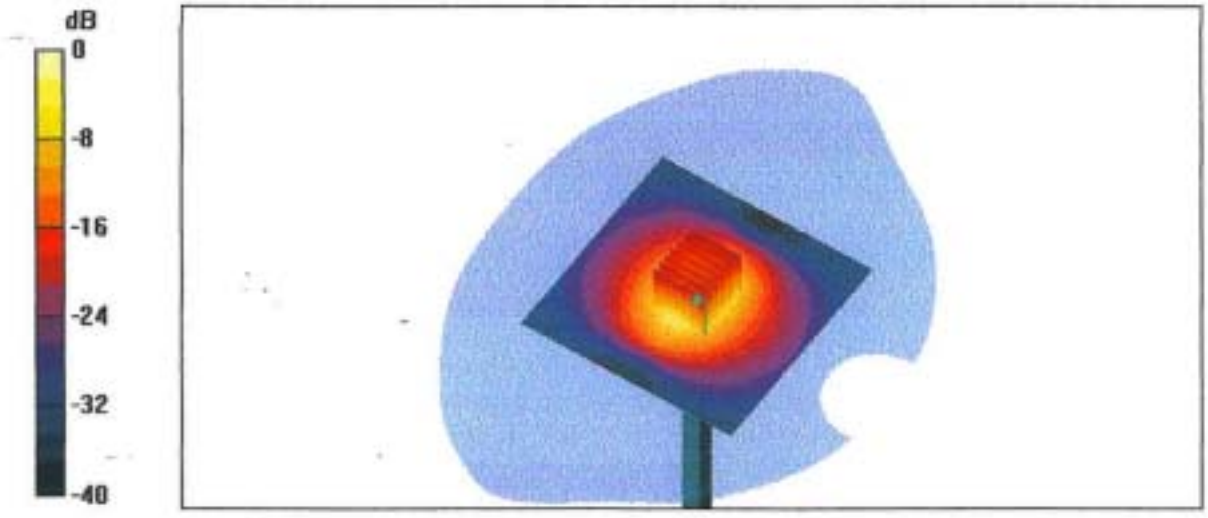
Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN728_SN3013_HSL2450_050303.da4

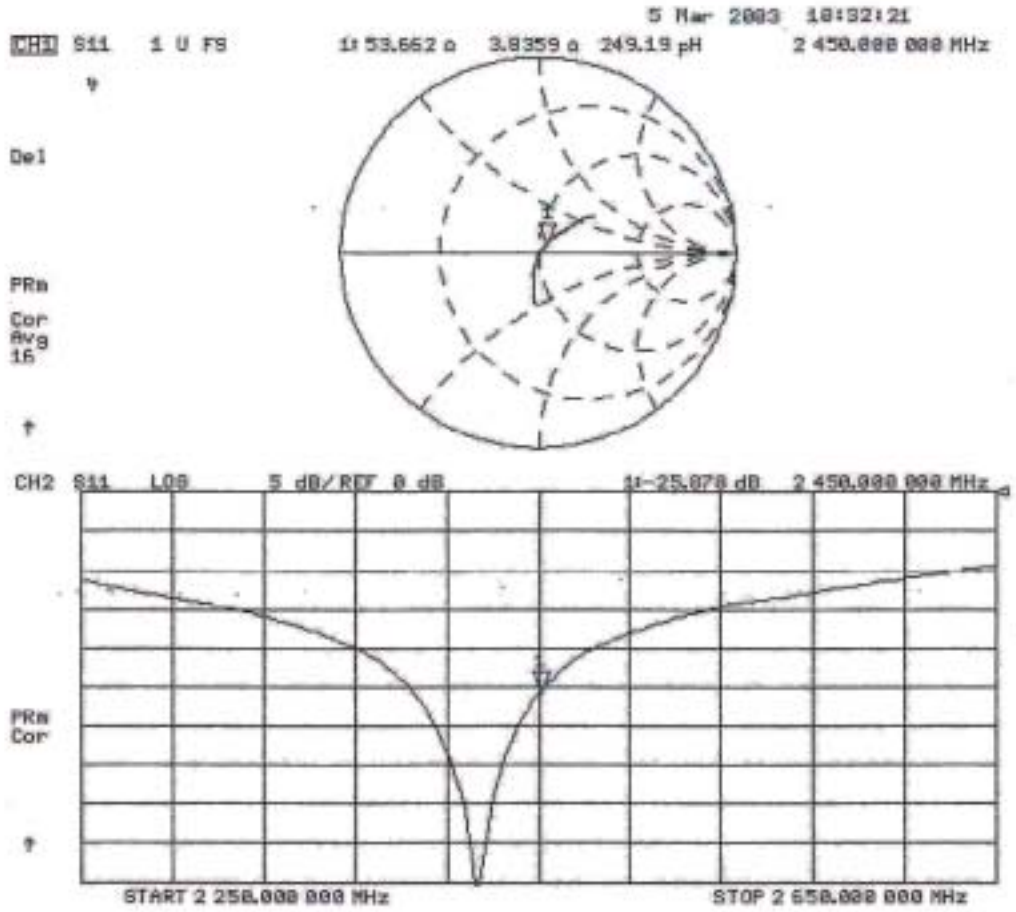
DUT: Dipole 2450 MHz; Serial: D2450V2 - SN728
Program: Dipole Calibration

Communication System: CW-2450; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL 2450 MHz; (σ = 1.88 mho/m, ε_r = 37.4, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV2 - SN3013; ConvF(4.8, 4.8, 4.8); Calibrated: 1/19/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 25; Postprocessing SW: SEMCAD, V1.6 Build 105

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.6 V/m
Peak SAR = *30.6 W/kg*
SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.04 mW/g
Power Drift = 0.02 dB




5 Mar 2003 10:32:21
CH1 S11 1 U FS
1: 53.662 Ω 3.8359 Ω 249.19 pH
2 450.000 000 MHz
Del
PRm
Cor
Avg
16
CH2 S11 LOG 5 dB/ REF 0 dB
1: -25.078 dB 2 450.000 000 MHz
PRm
Cor
START 2 250.000 000 MHz
STOP 2 650.000 000 MHz

728

Head

Date/Time: 05/20/03 10:33:16

Test Laboratory: The name of your organization
File Name: D2450V2 SN 728_13.9mW.da4

D2450V2 SN 728_13.9mW

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:728
Program: System Perfoermance Check at 2450MHz
Ambient Temperature:26.3deg C Liquid Temperature:24.5deg C

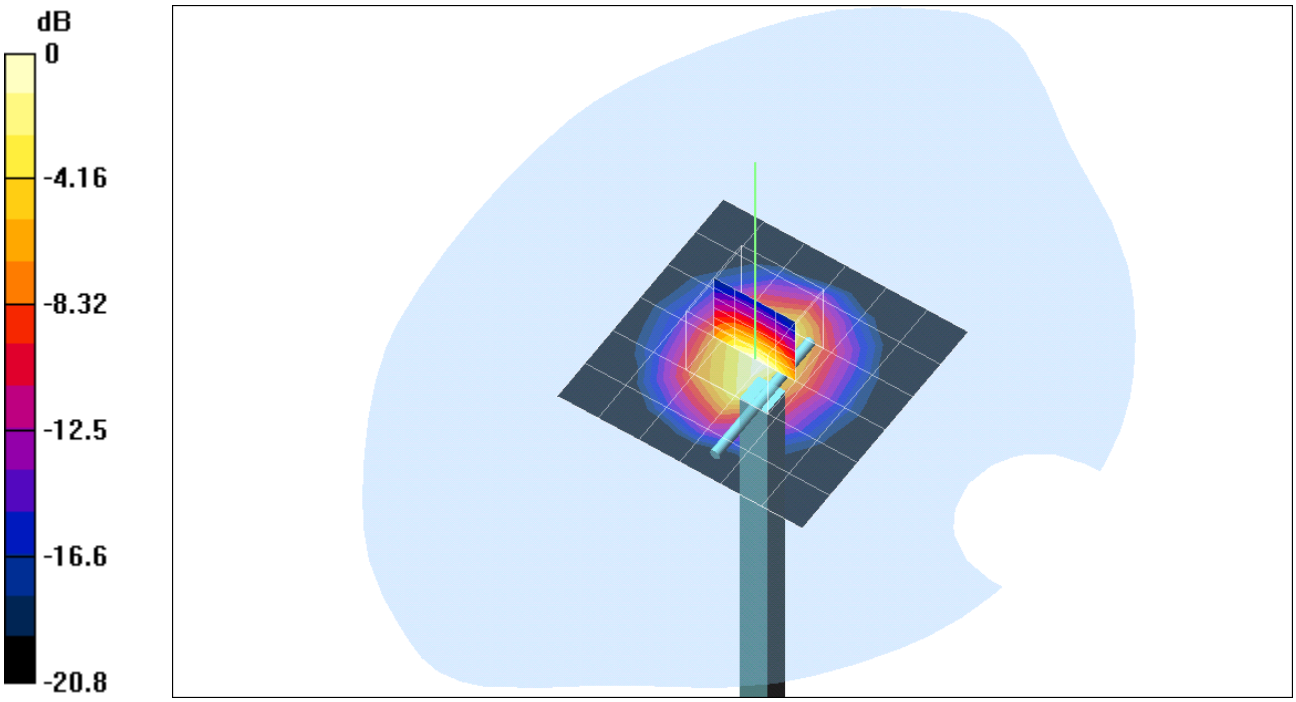
Communication System: CW2450; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 (σ = 1.7818 mho/m, ε_r = 39.71, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(5.1, 5.1, 5.1); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

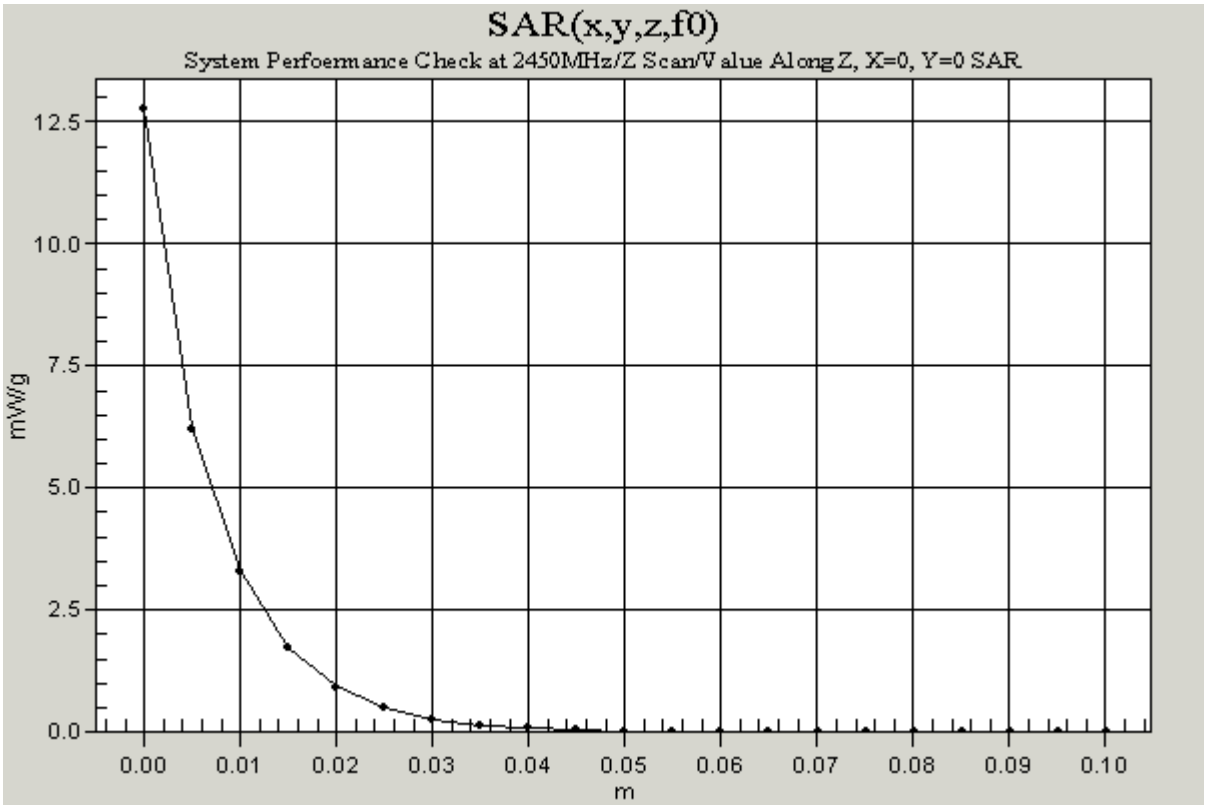
Pin=250mW,d=10mm/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 96.4 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 14.6 mW/g

Pin=250mW,d=10mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.44 mW/g
Reference Value = 96.4 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 15.4 mW/g

Pin=250mW,d=10mm/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 96.4 V/m
Power Drift = 0.009 dB
Maximum value of SAR = 12.8 mW/g


dB
0
-4.16
-8.32
-12.5
-16.6
-20.8

0 dB = 15.4mW/g


SAR(x,y,z,f0)
System Perfoermance Check at 2450MHz/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
12.5
10.0
7.5
5.0
2.5
0.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
m

Test Laboratory: The name of your organization
File Name: D2450V2 SN 728_13.8mW.da4

D2450V2 SN 728_13.8mW

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:728
Program: System Performance Check at 2450MHz
Ambient Temperature:26deg C Liquid Temperature:24.3deg C

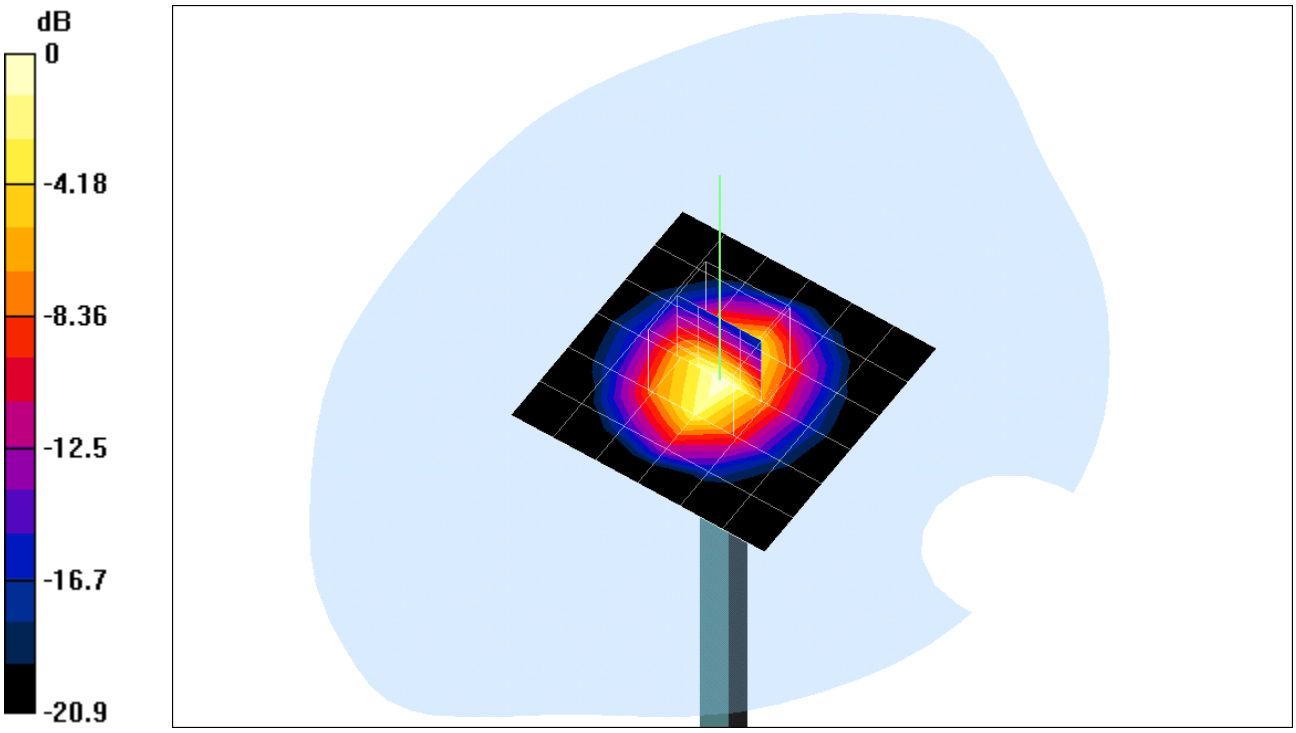
Communication System: CW2450; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 (σ = 1.79 mho/m, ε_r = 39.69, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(5.1, 5.1, 5.1); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

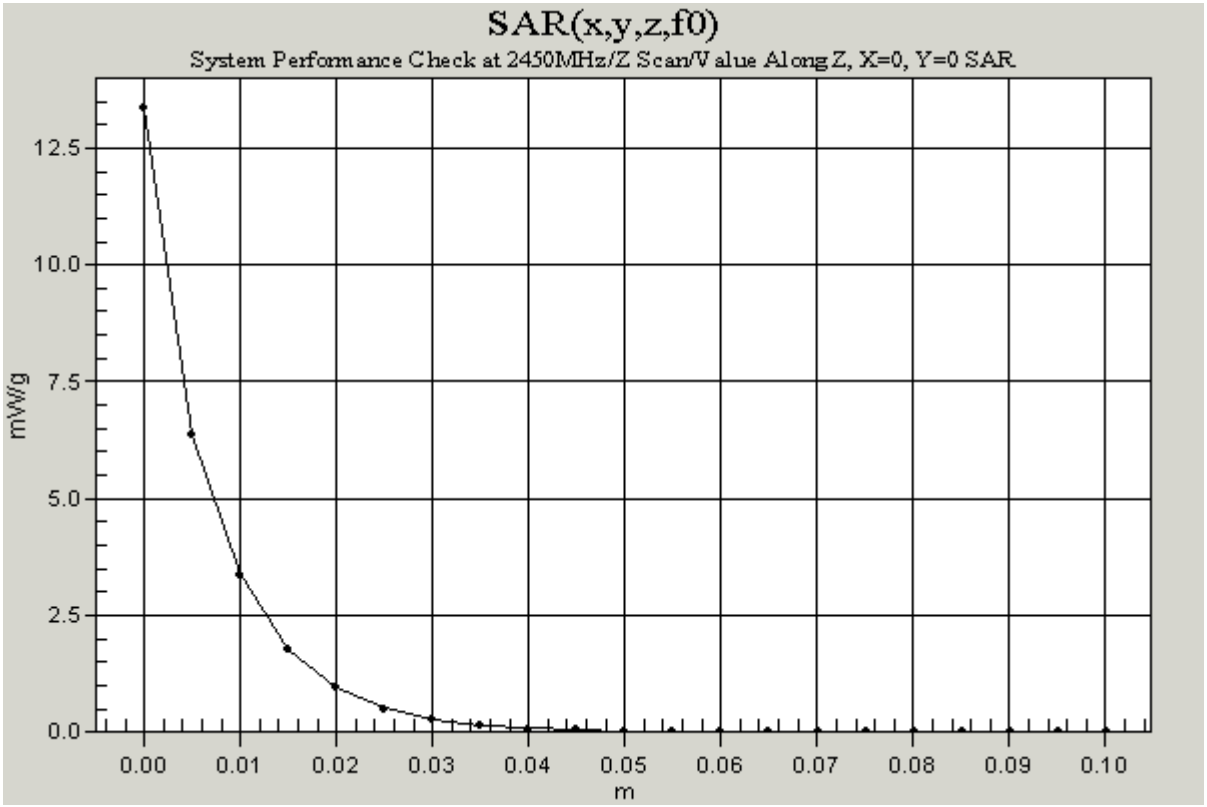
Pin=250mW,d=10mm/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 98.5 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 15.1 mW/g

Pin=250mW,d=10mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.38 mW/g
Reference Value = 98.5 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 15.4 mW/g

Pin=250mW,d=10mm/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 98.5 V/m
Power Drift = -0.1 dB
Maximum value of SAR = 13.4 mW/g


dB
0
-4.18
-8.36
-12.5
-16.7
-20.9

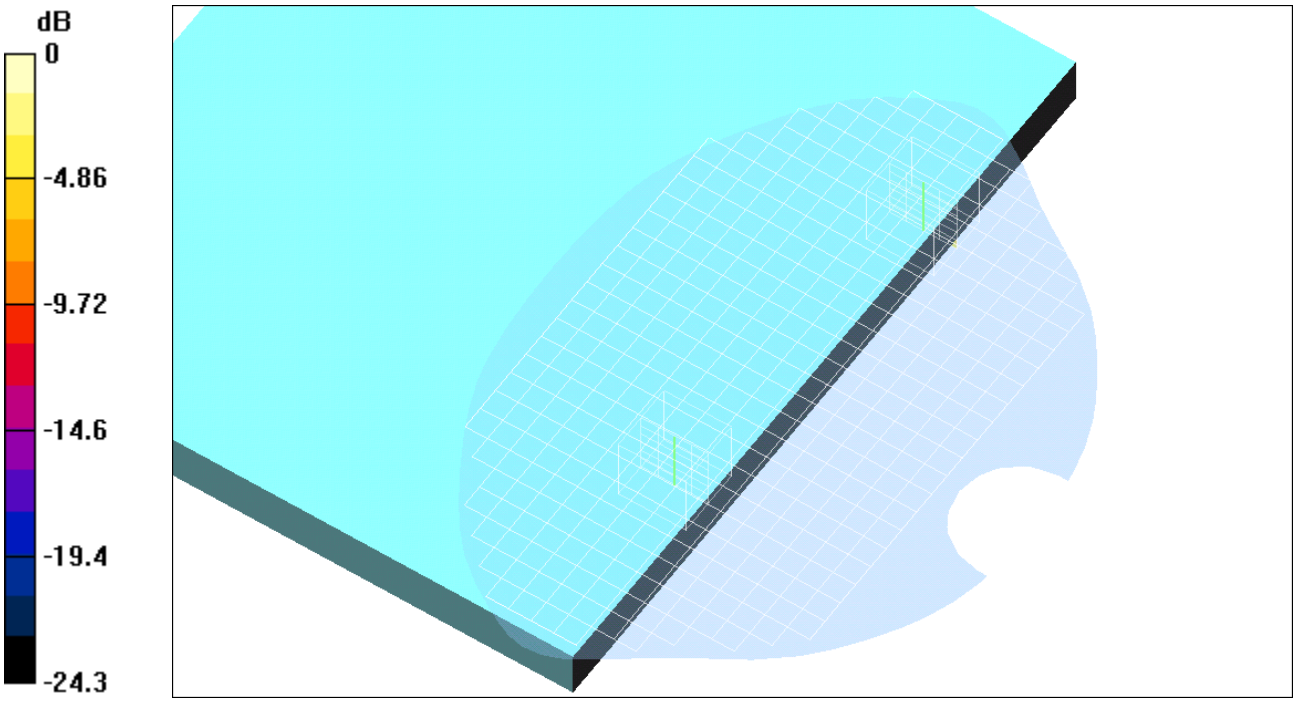
0 dB = 15.4mW/g


SAR(x,y,z,f0)
System Performance Check at 2450MHz/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
12.5
10.0
7.5
5.0
2.5
0.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
m

Date/Time: 05/23/03 13:31:41

Test Laboratory: C&C
File Name: Antenna 1-05-21_0.0438mW.da4

EUT Setup Configuration 1



0 dB = 0.0402mW/g

Date/Time: 05/23/03 13:31:41

Test Laboratory: C&C .
File Name: Antenna 1-Low Channel_0.0438mW.da4

Antenna 1-Low Channel_0.0438mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

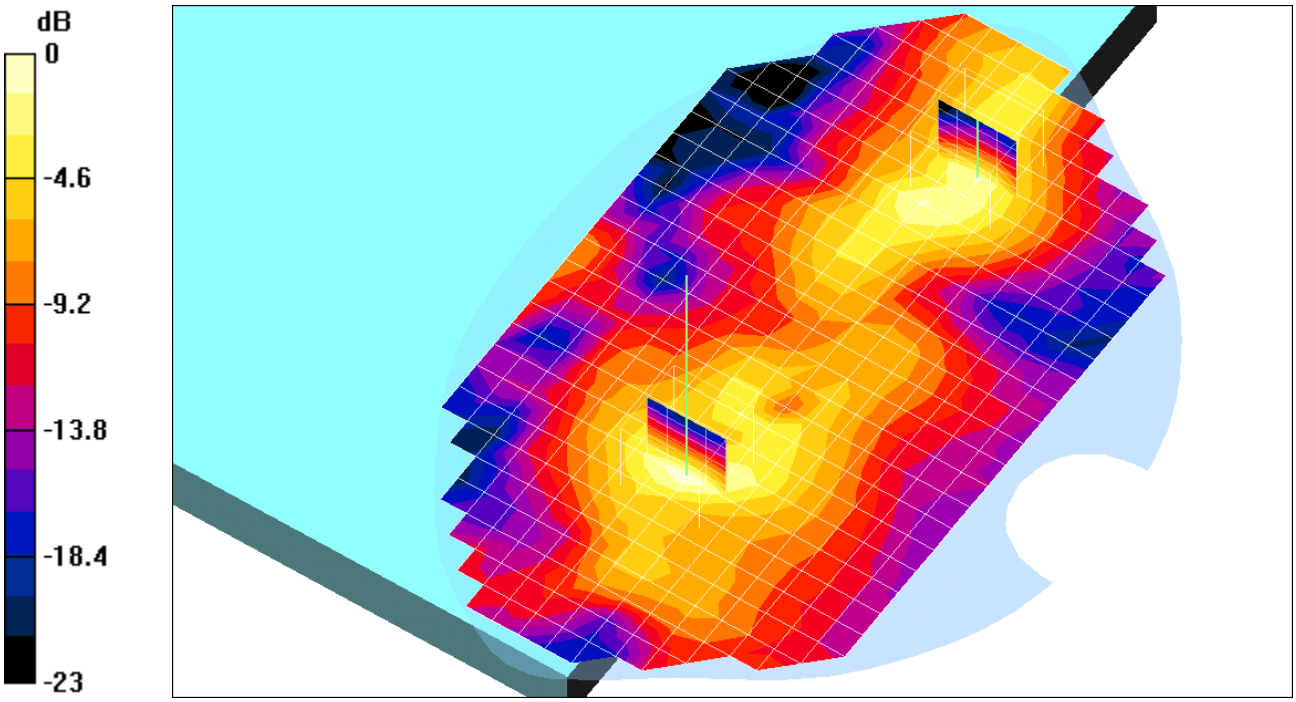
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 1-Low Channel(Main port)/Area Scan (17x29x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.77 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0512 mW/g

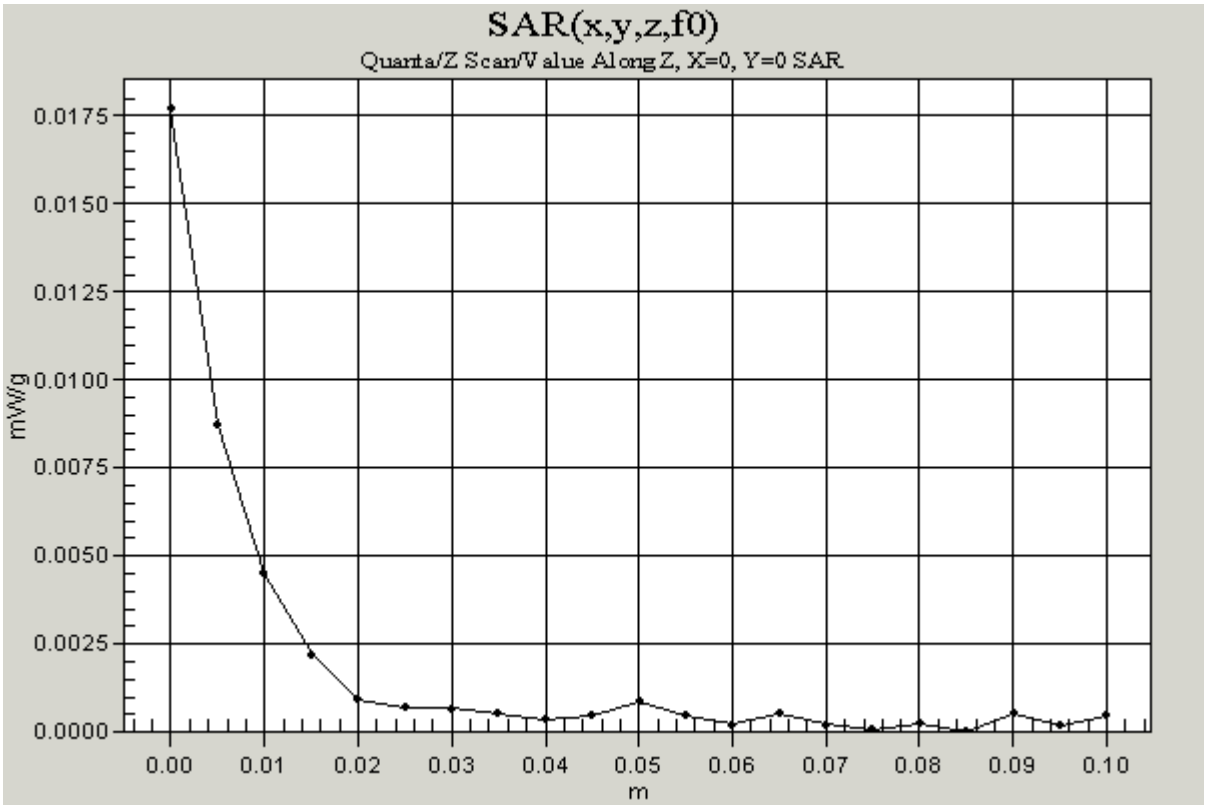
Antenna 1-Low Channel(Main port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.107 W/kg
SAR(1 g) = 0.0438 mW/g; SAR(10 g) = 0.0198 mW/g
Reference Value = 2.77 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.054 mW/g

Antenna 1-Low Channel(Main port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0799 W/kg
SAR(1 g) = 0.0367 mW/g; SAR(10 g) = 0.0187 mW/g
Reference Value = 2.77 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0402 mW/g

Antenna 1-Low Channel(Main port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.77 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0177 mW/g


dB
0
-4.6
-9.2
-13.8
-18.4
-23

0 dB = 0.054mW/g


SAR(x,y,z,f0)
Quanta/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
m

Date/Time: 05/23/03 13:31:41

Test Laboratory: C&C
File Name: Antenna 1-Mid Channel_0.044mW.da4

Antenna 1-Mid Channel_0.044mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

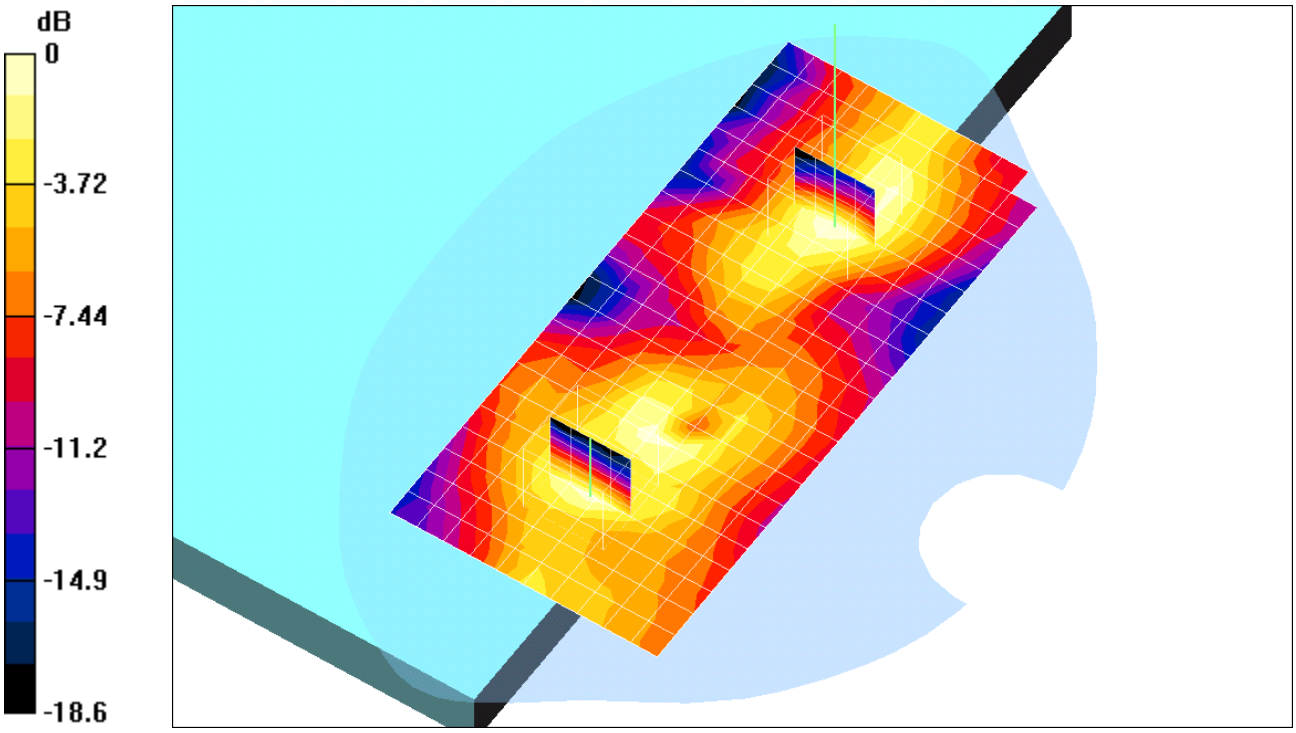
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 1-Mid Channel(Main port)/Area Scan (11x23x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 3.03 V/m
Power Drift = -0.09 dB
Maximum value of SAR = 0.0475 mW/g

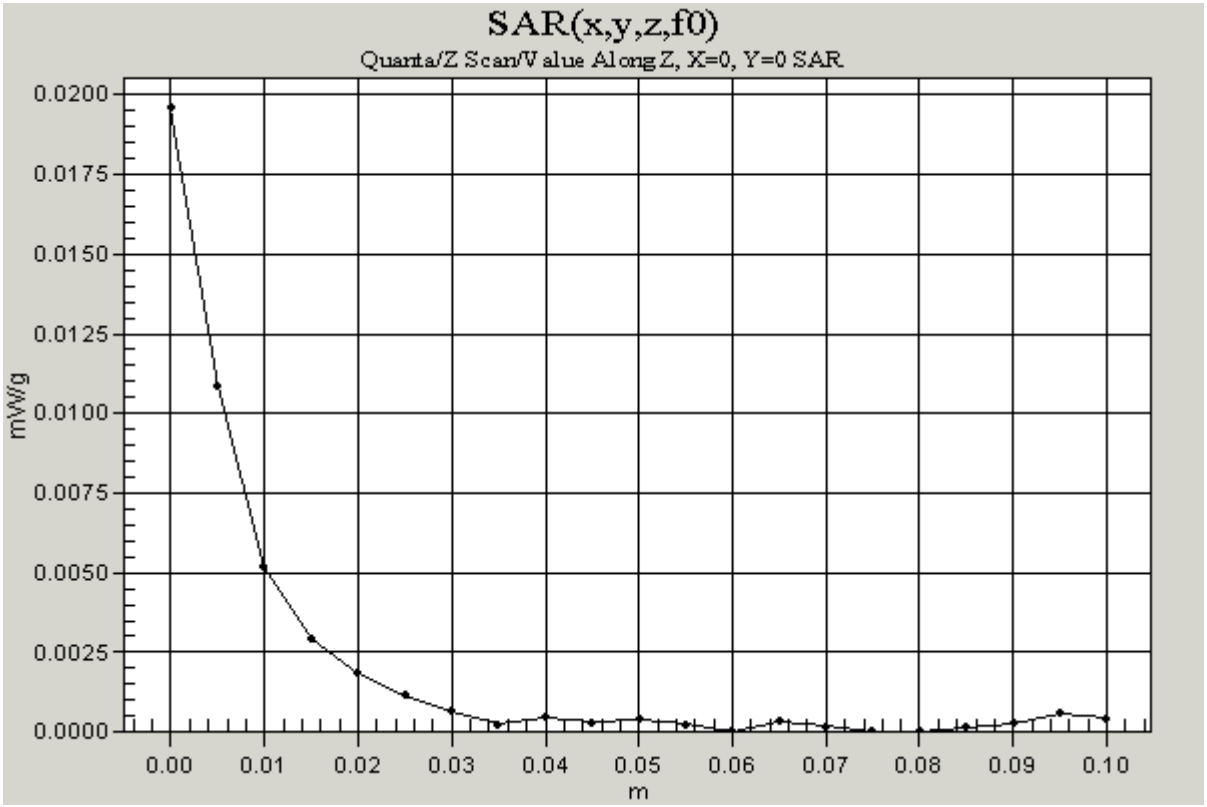
Antenna 1-Mid Channel(Main port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0957 W/kg
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.0218 mW/g
Reference Value = 3.03 V/m
Power Drift = -0.09 dB
Maximum value of SAR = 0.0482 mW/g

Antenna 1-Mid Channel(Main port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0811 W/kg
SAR(1 g) = 0.0369 mW/g; SAR(10 g) = 0.0182 mW/g
Reference Value = 3.03 V/m
Power Drift = -0.09 dB
Maximum value of SAR = 0.0441 mW/g

Antenna 1-Mid Channel(Main port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 3.03 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0196 mW/g



0 dB = 0.0482mW/g



Test Laboratory: C&C .
File Name: Antenna 1-Low Channel_0.0352mW.da4

Antenna 1-Low Channel_0.0352mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

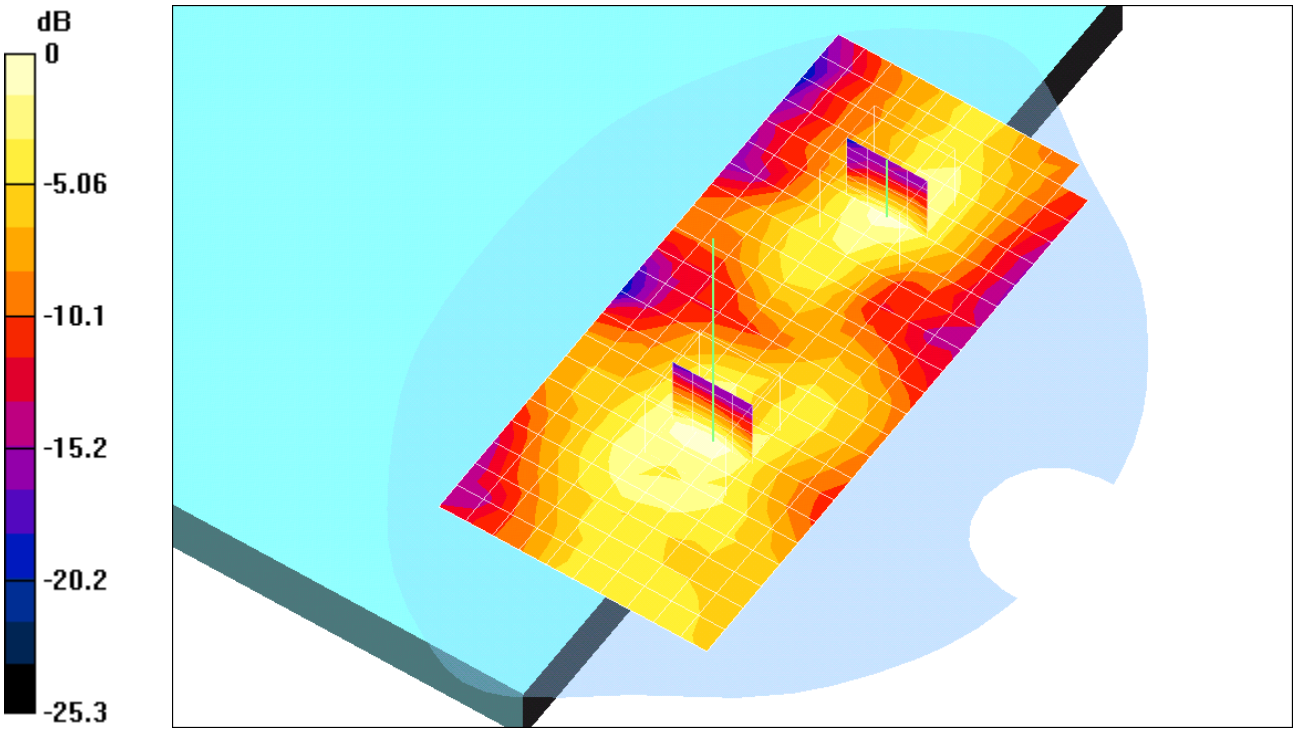
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna -High Channel(Main port)/Area Scan (11x23x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.45 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0378 mW/g

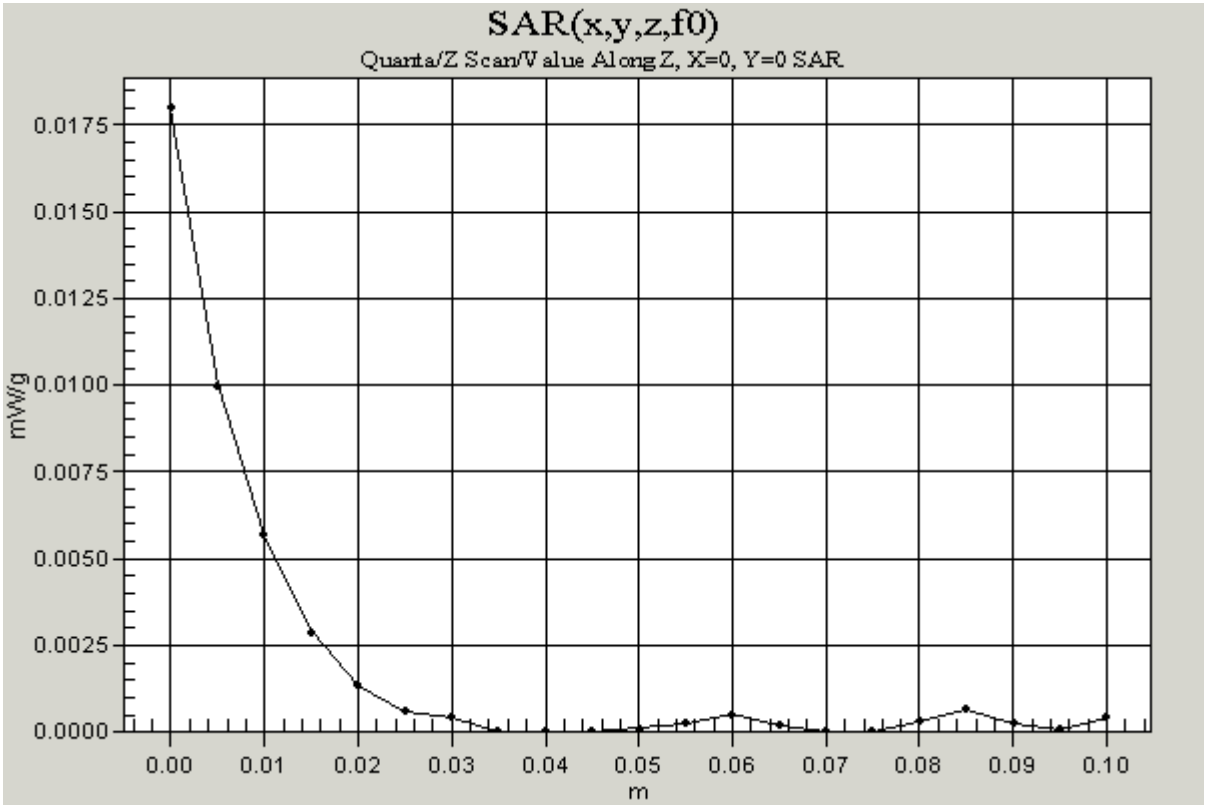
Antenna -High Channel(Main port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0725 W/kg
SAR(1 g) = 0.0352 mW/g; SAR(10 g) = 0.017 mW/g
Reference Value = 2.45 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0388 mW/g

Antenna -High Channel(Main port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0696 W/kg
SAR(1 g) = 0.0306 mW/g; SAR(10 g) = 0.0148 mW/g
Reference Value = 2.45 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.033 mW/g

Antenna -High Channel(Main port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.45 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.018 mW/g



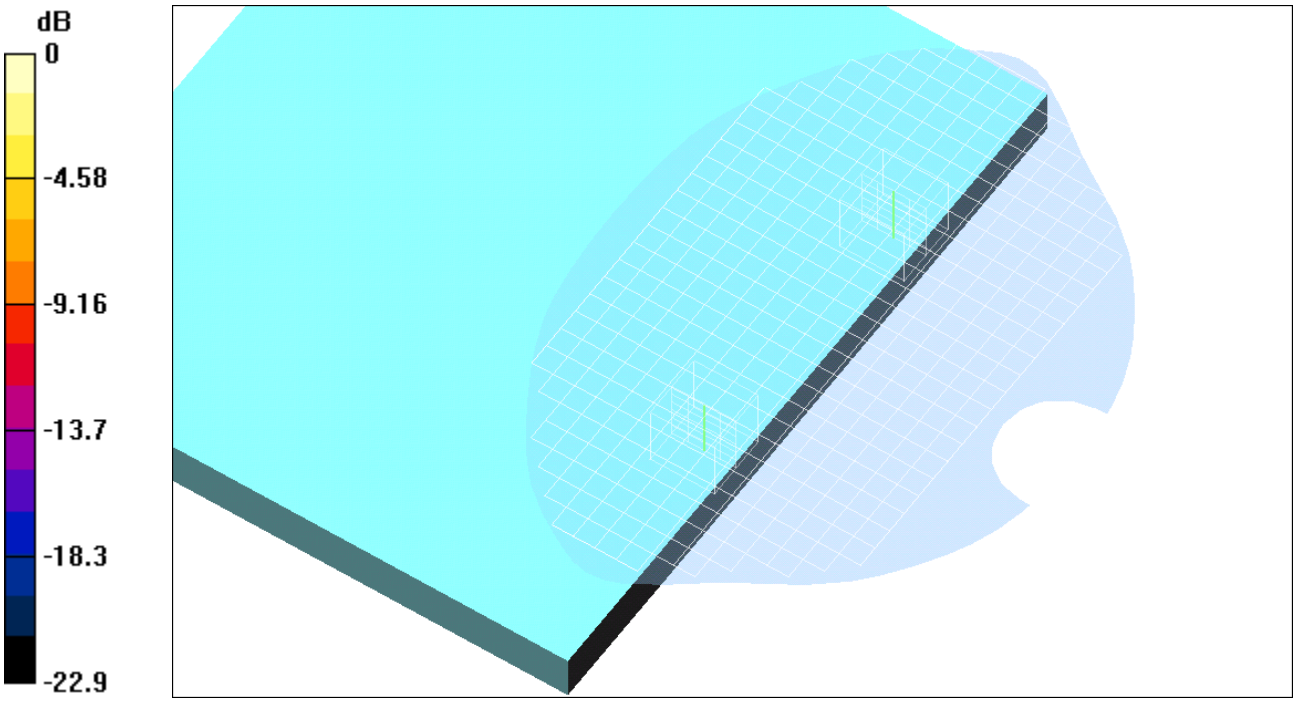
0 dB = 0.0388mW/g



Date/Time: 05/22/03 21:28:18

Test Laboratory: The name of your organization
File Name: Antenna 2-05-21_0.0319mW.da4

EUT Setup Configuration 2



0 dB = 0.0354mW/g

Date/Time: 05/22/03 21:28:18

Test Laboratory: C&C
File Name: Antenna 2-Low Channel_0.0319mW.da4

Antenna 2-Low Channel_0.0319mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

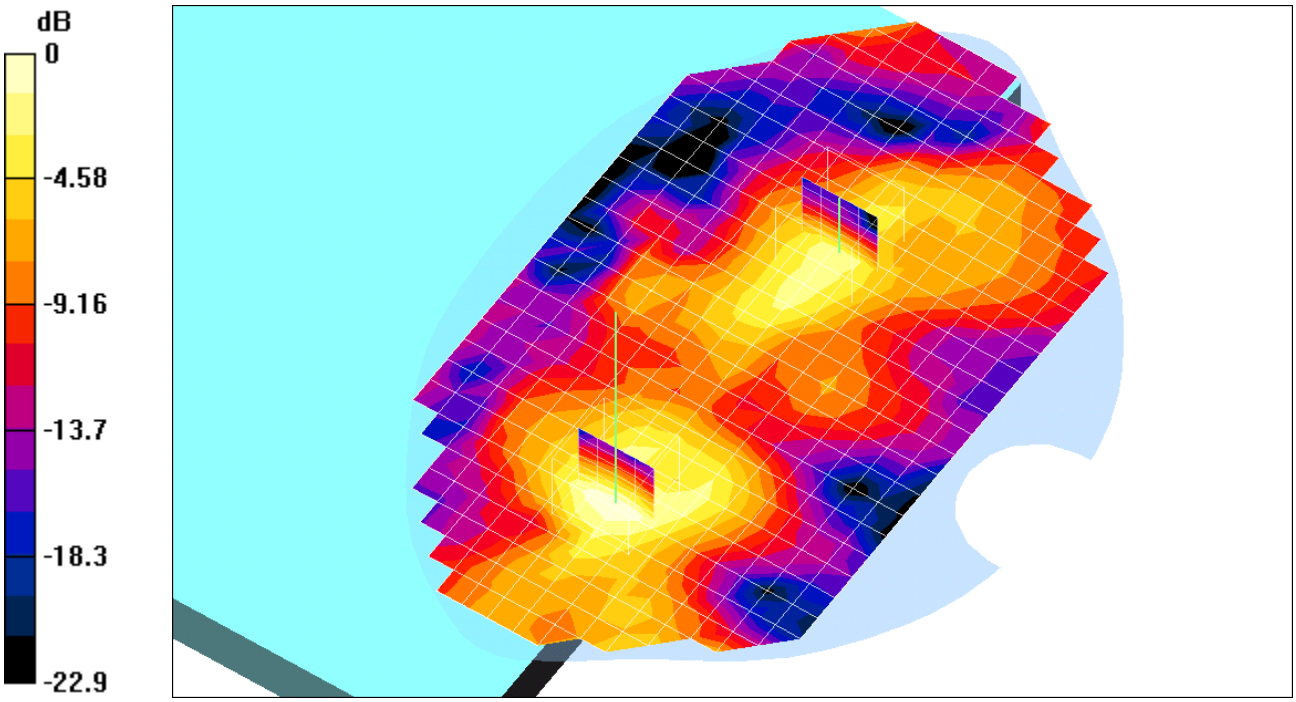
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 2-Low Channel(AUX port)/Area Scan (17x29x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 1.6 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0345 mW/g

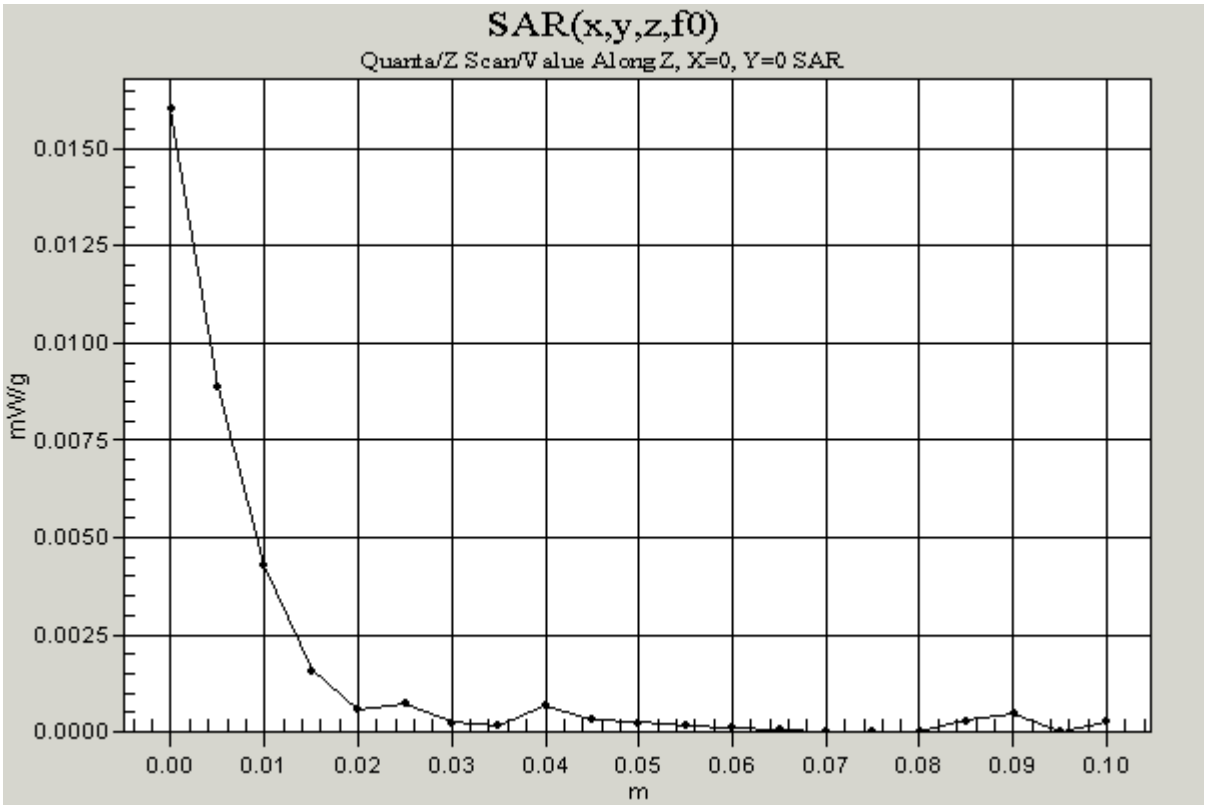
Antenna 2-Low Channel(AUX port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0621 W/kg
SAR(1 g) = 0.0319 mW/g; SAR(10 g) = 0.0165 mW/g
Reference Value = 1.6 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0354 mW/g

Antenna 2-Low Channel(AUX port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0465 W/kg
SAR(1 g) = 0.0212 mW/g; SAR(10 g) = 0.0108 mW/g
Reference Value = 1.6 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.023 mW/g

Antenna 2-Low Channel(AUX port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 1.6 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.016 mW/g



0 dB = 0.0354mW/g



Date/Time: 05/22/03 21:28:18

Test Laboratory: C&C
File Name: Antenna 2-Mid Channel_0.032mW.da4

Antenna 2-Mid Channel_0.032mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

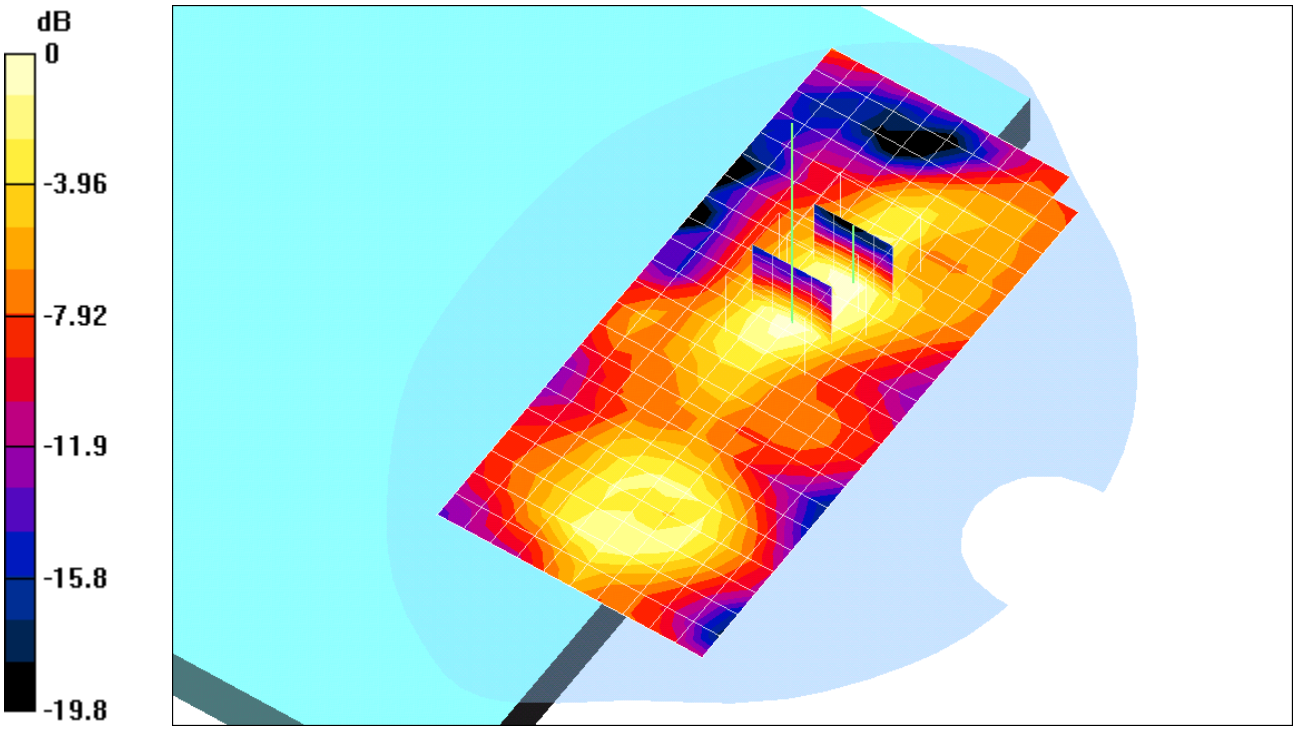
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 2-Mid Channel(AUX port)/Area Scan (11x23x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.03 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0313 mW/g

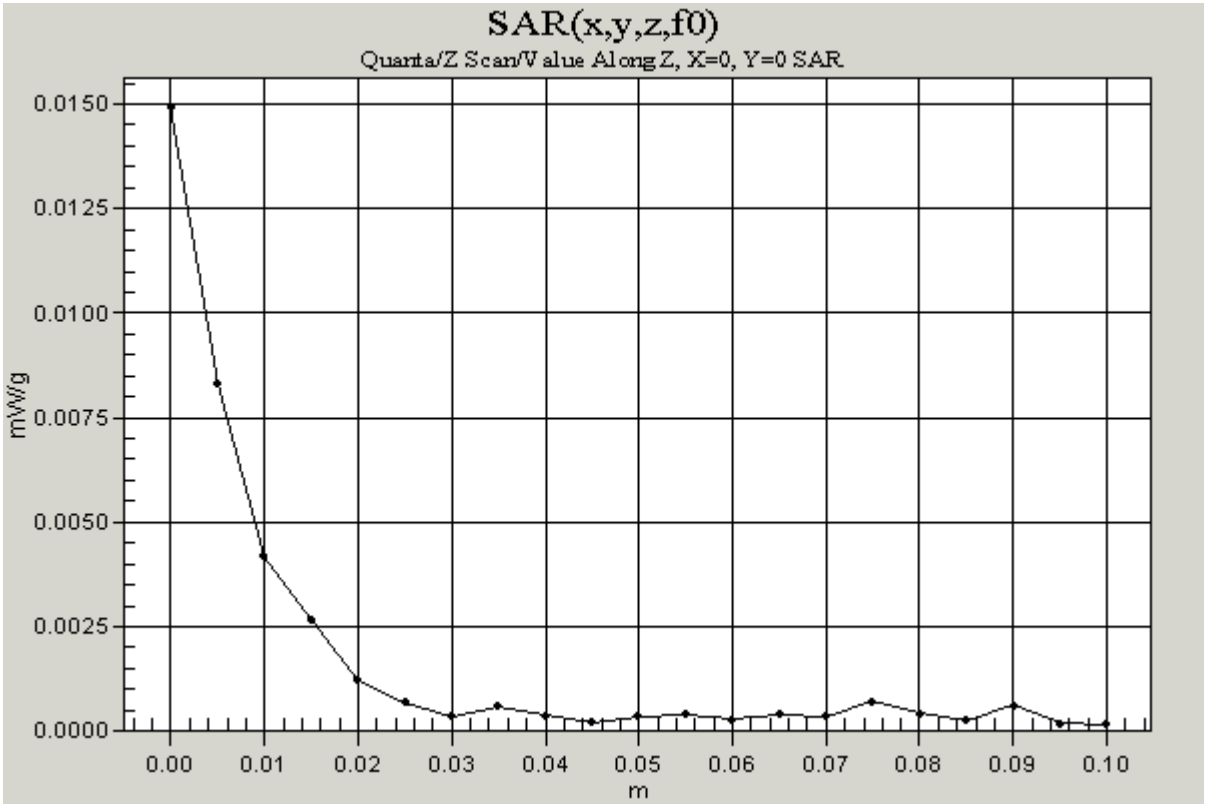
Antenna 2-Mid Channel(AUX port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0684 W/kg
SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.016 mW/g
Reference Value = 2.03 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0349 mW/g

Antenna 2-Mid Channel(AUX port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0626 W/kg
SAR(1 g) = 0.0293 mW/g; SAR(10 g) = 0.015 mW/g
Reference Value = 2.03 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0328 mW/g

Antenna 2-Mid Channel(AUX port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.03 V/m
Power Drift = 0.1 dB
Maximum value of SAR = 0.0149 mW/g



0 dB = 0.0349mW/g



Date/Time: 05/22/03 21:28:18

Test Laboratory: C&C
File Name: Antenna 2-High Channel_0.029mW.da4

Antenna 2-High Channel_0.029mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.95551 mho/m, ε_r = 52.9568, ρ = 1000 kg/m^3)
Phantom section: Flat Section

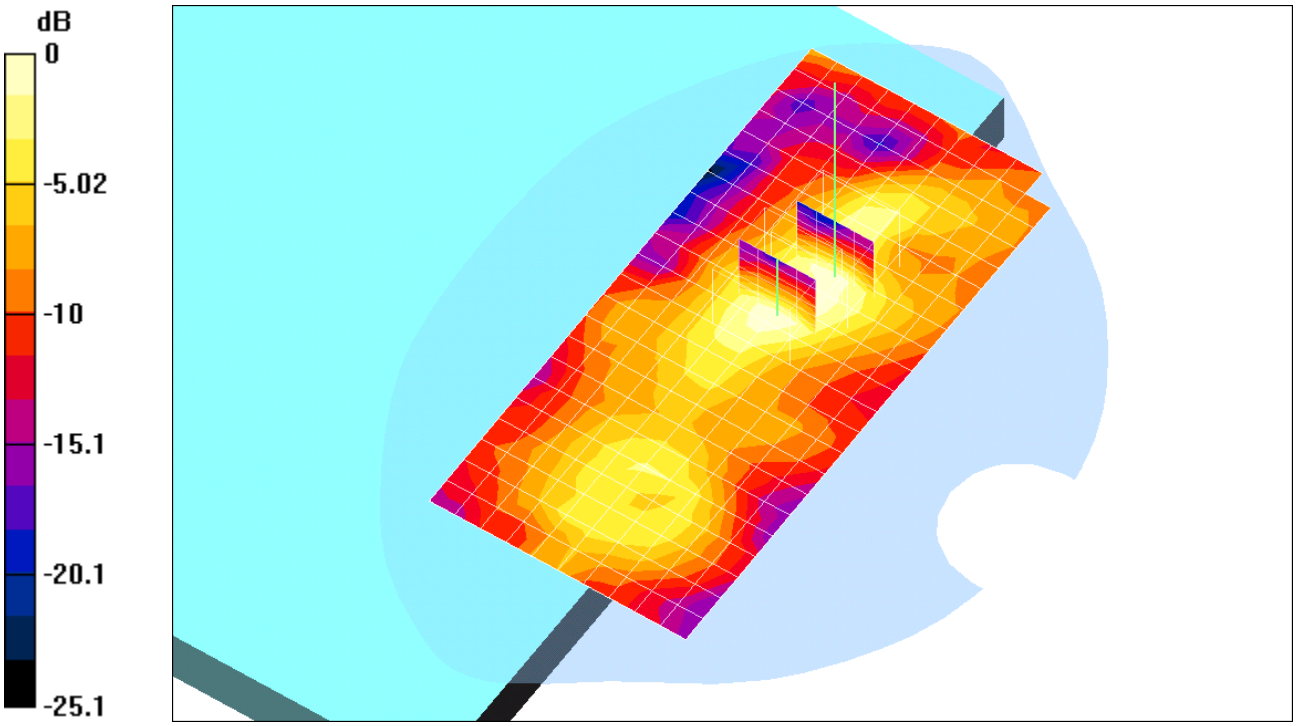
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 2- High Channel(AUX port)/Area Scan (11x23x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.04 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.0298 mW/g

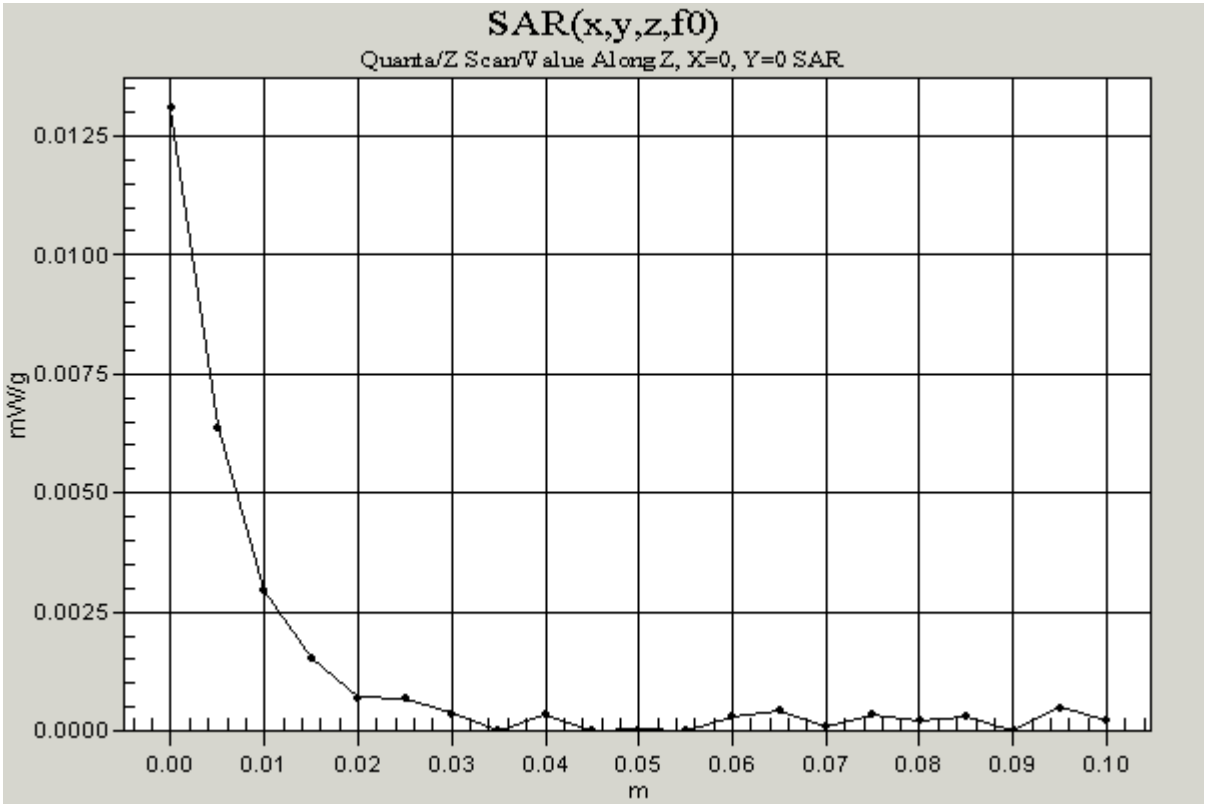
Antenna 2- High Channel(AUX port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0633 W/kg
SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.0146 mW/g
Reference Value = 2.04 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.0326 mW/g

Antenna 2- High Channel(AUX port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0663 W/kg
SAR(1 g) = 0.0297 mW/g; SAR(10 g) = 0.0147 mW/g
Reference Value = 2.04 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.0338 mW/g

Antenna 2- High Channel(AUX port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.04 V/m
Power Drift = -0.2 dB
Maximum value of SAR = 0.0131 mW/g



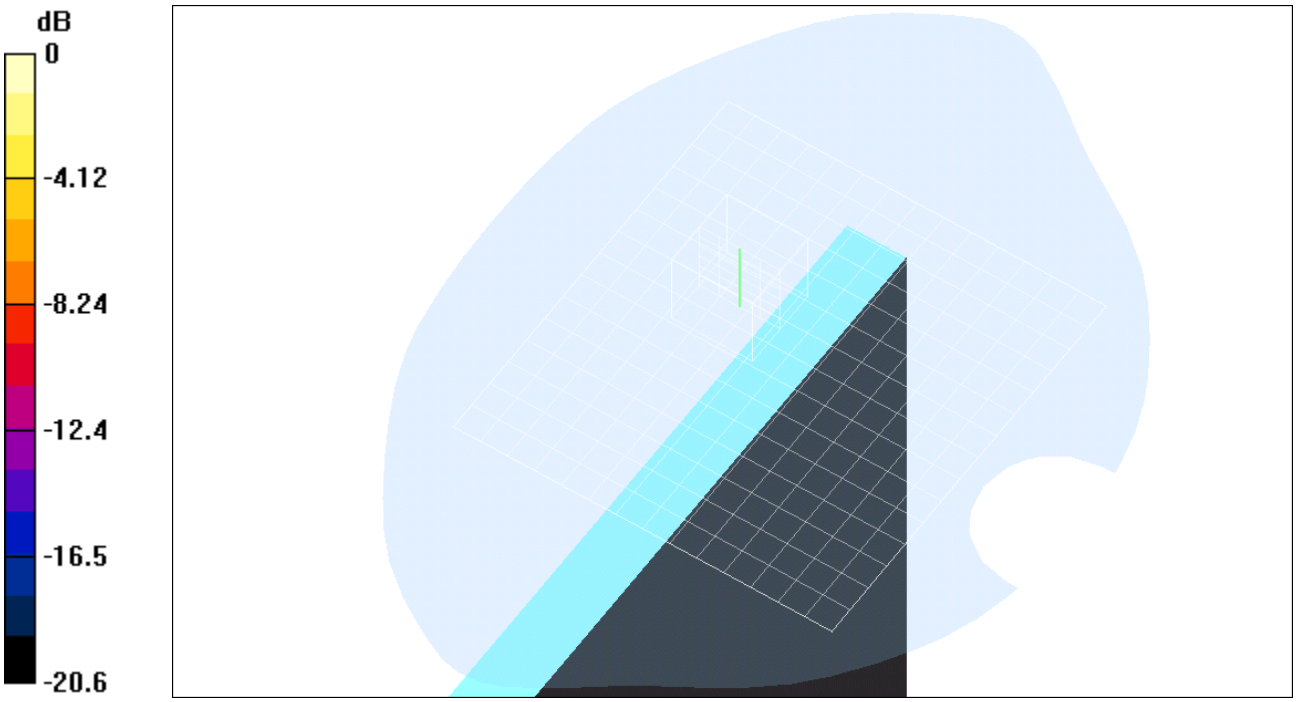
0 dB = 0.0338mW/g



Date/Time: 05/21/03 22:01:29

Test Laboratory: The name of your organization
File Name: Antenna 1(15mm)-05-20_0.0738.da4

EUT Setup Configuration 3



0 dB = 0.0776mW/g

Date/Time: 05/21/03 22:01:29

Test Laboratory: C&C
File Name: Antenna 1(15mm)-Low Channel_0.0738mW.da4

Antenna 1(15mm)-Low Channel_0.0738mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

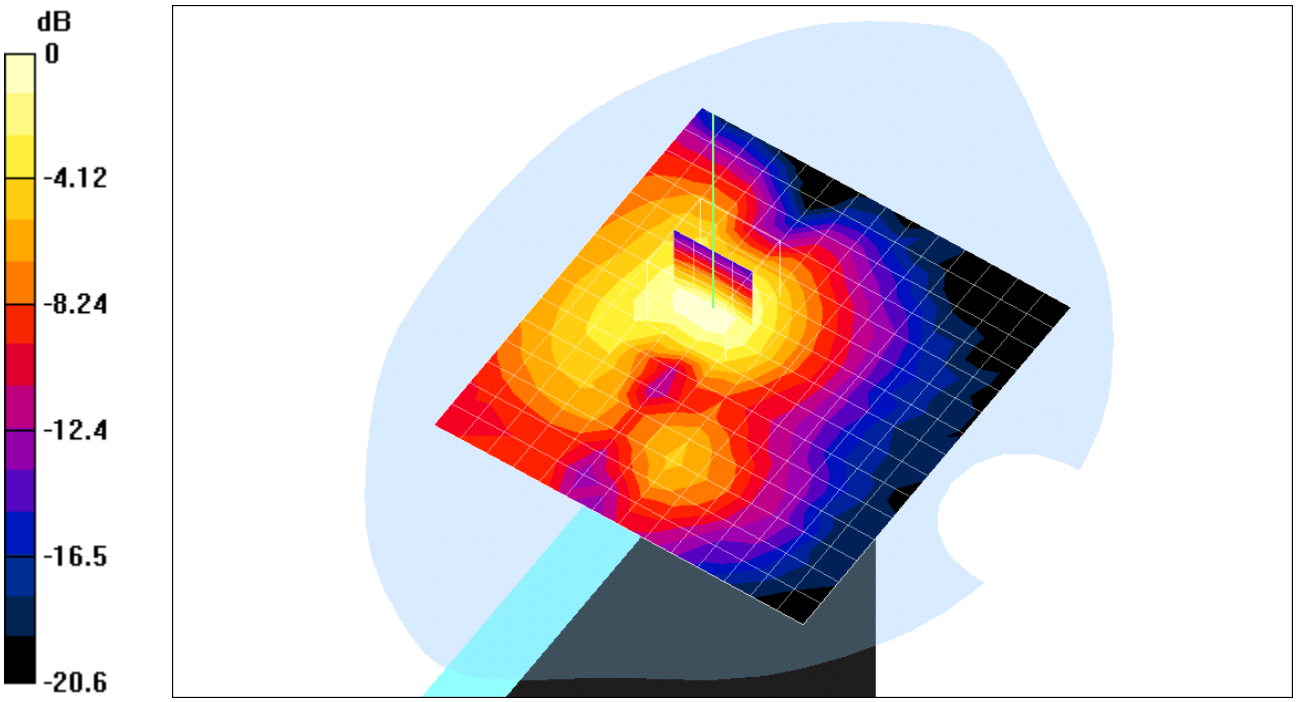
Communication System:DSSS; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

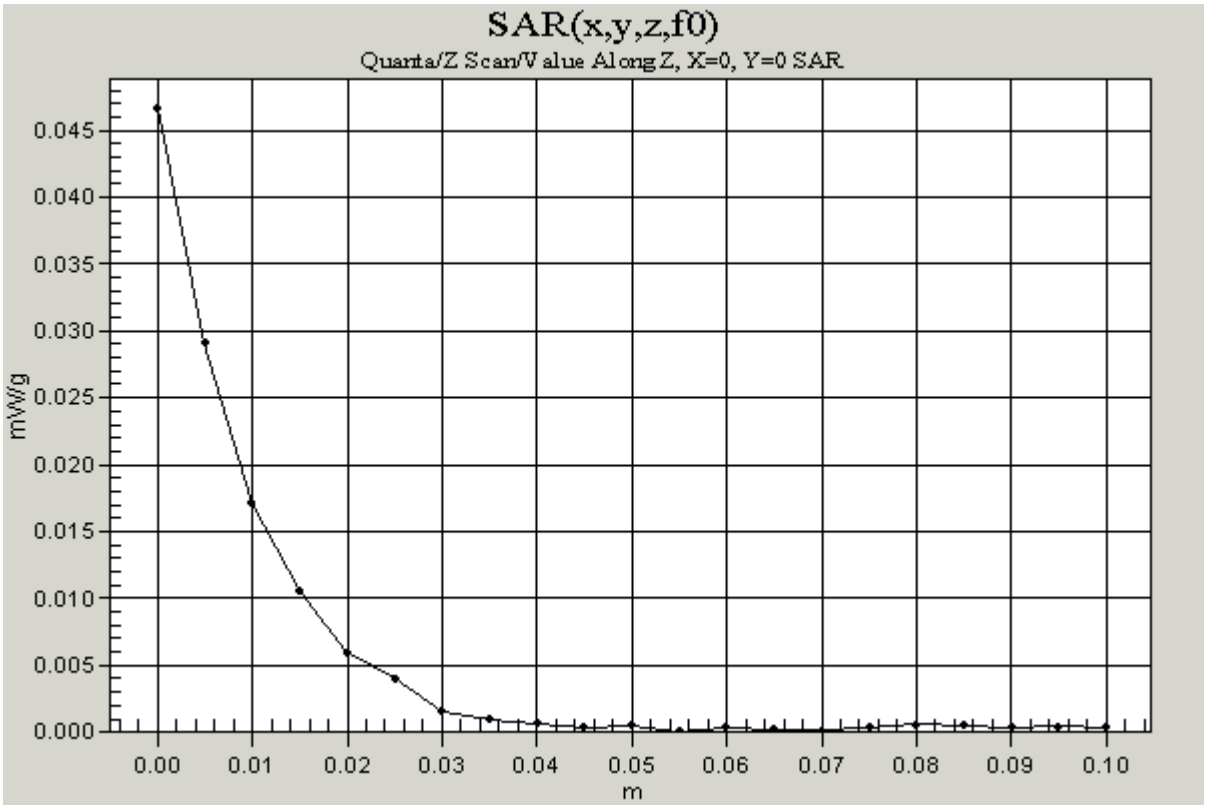
Antenna 1-Low Channel(Main port)/Area Scan (15x16x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 3.71 V/m
Power Drift = 0.009 dB
Maximum value of SAR = 0.0728 mW/g

Antenna 1-Low Channel(Main port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.146 W/kg
SAR(1 g) = 0.0738 mW/g; SAR(10 g) = 0.0403 mW/g
Reference Value = 3.71 V/m
Power Drift = 0.009 dB
Maximum value of SAR = 0.0776 mW/g

Antenna 1-Low Channel(Main port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 3.71 V/m
Power Drift = 0.005 dB
Maximum value of SAR = 0.0466 mW/g



0 dB = 0.0776mW/g



Date/Time: 05/21/03 22:01:29

Test Laboratory: C&C
File Name: Antenna 1(15mm)-Mid Channel_0.077mW.da4

Antenna 1(15mm)-Mid Channel_0.077mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

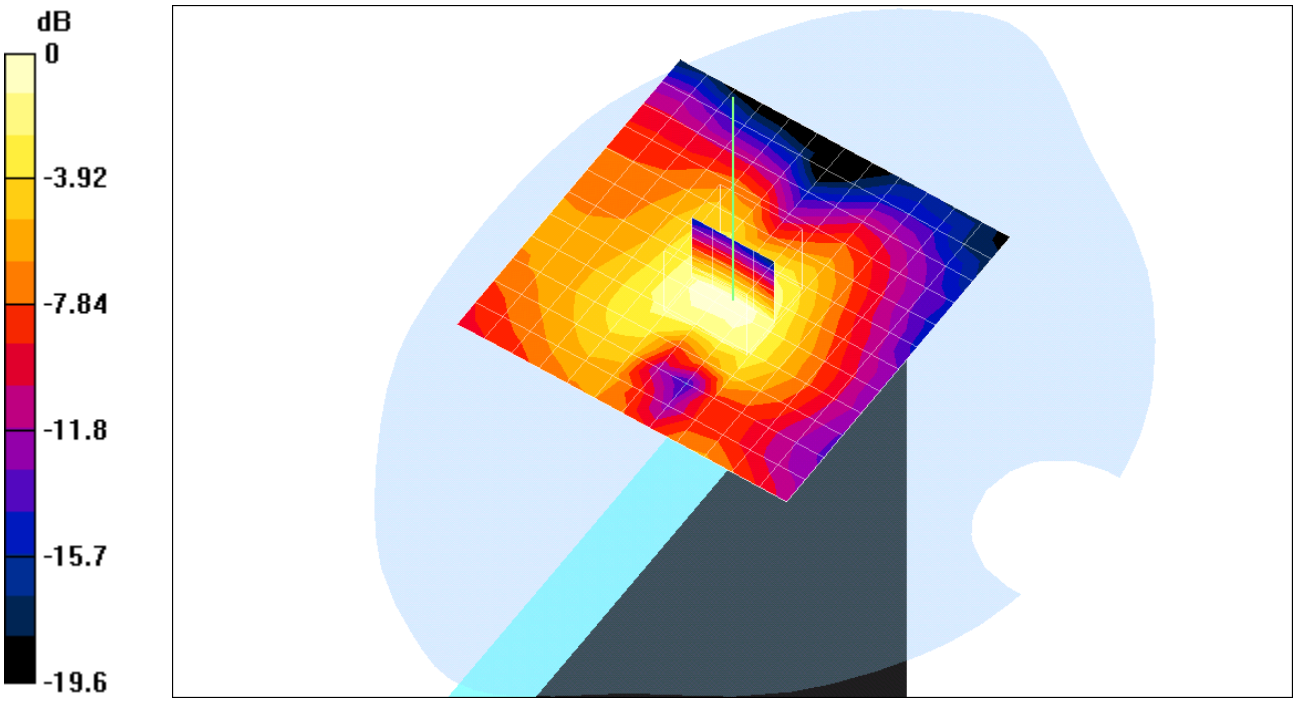
Communication System: DSSS; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

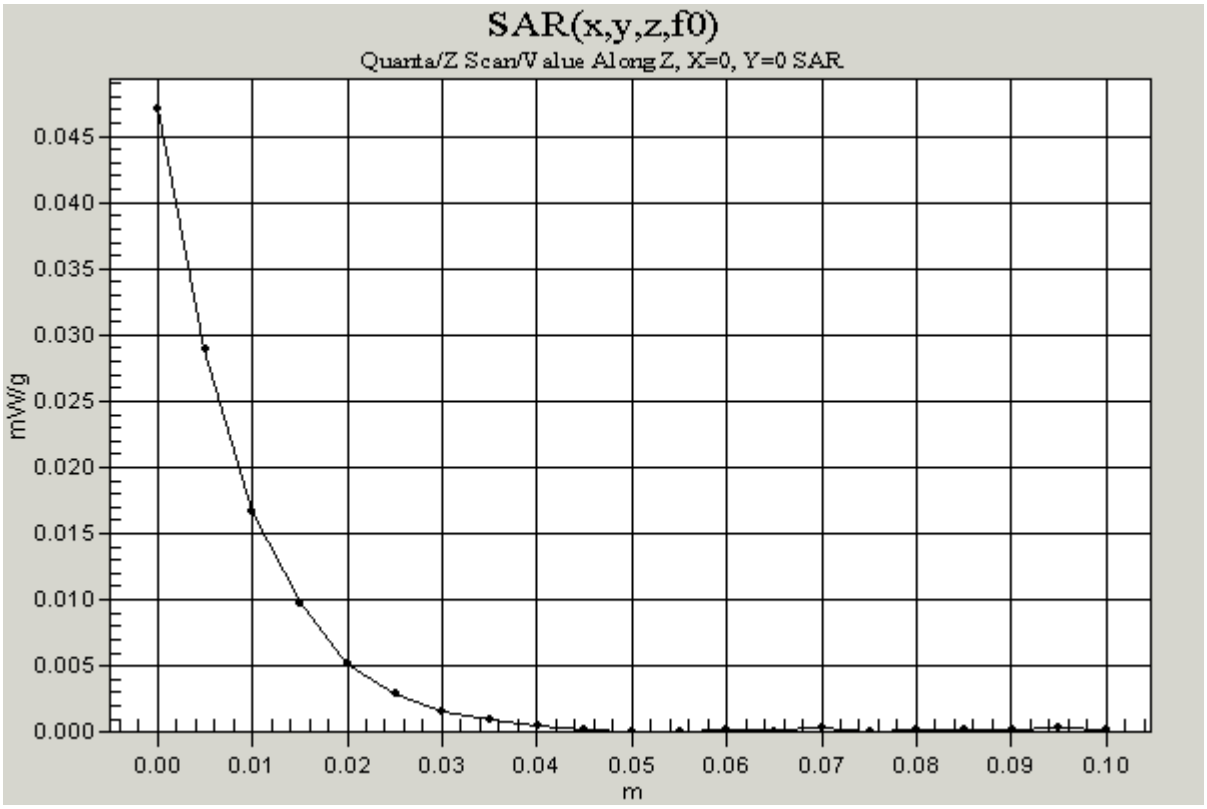
Antenna 1- Mid Channel/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 3.9 V/m
Power Drift = 0.08 dB
Maximum value of SAR = 0.0744 mW/g

Antenna 1- Mid Channel/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.077 mW/g; SAR(10 g) = 0.0419 mW/g
Reference Value = 3.9 V/m
Power Drift = 0.08 dB
Maximum value of SAR = 0.081 mW/g

Antenna 1- Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 3.9 V/m
Power Drift = -0.06 dB
Maximum value of SAR = 0.0471 mW/g


dB
0
-3.92
-7.84
-11.8
-15.7
-19.6

0 dB = 0.081mW/g


SAR(x,y,z,f0)
Quanta/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
m

Date/Time: 05/21/03 22:01:29

Test Laboratory: C&C
File Name: Antenna 1(15mm)-High Channel_0.0882mW.da4

Antenna 1(15mm)-High Channel_0.0882mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

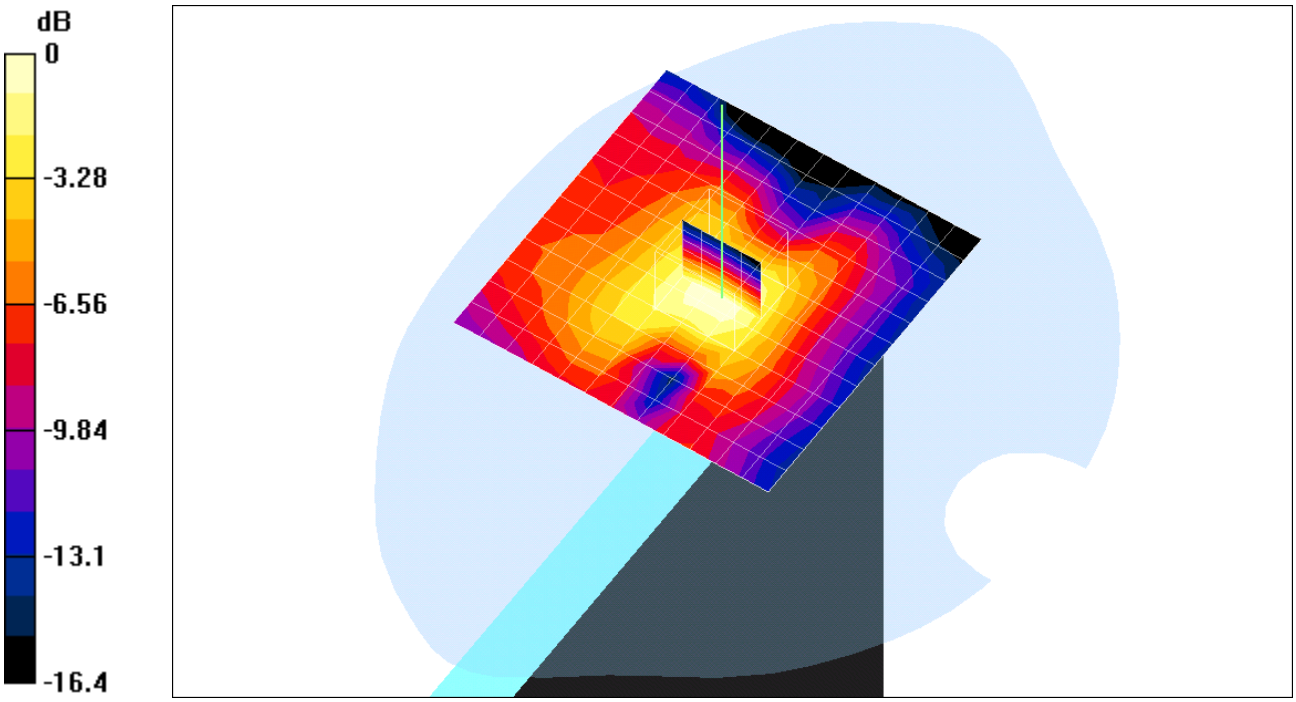
Communication System: DSSS; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

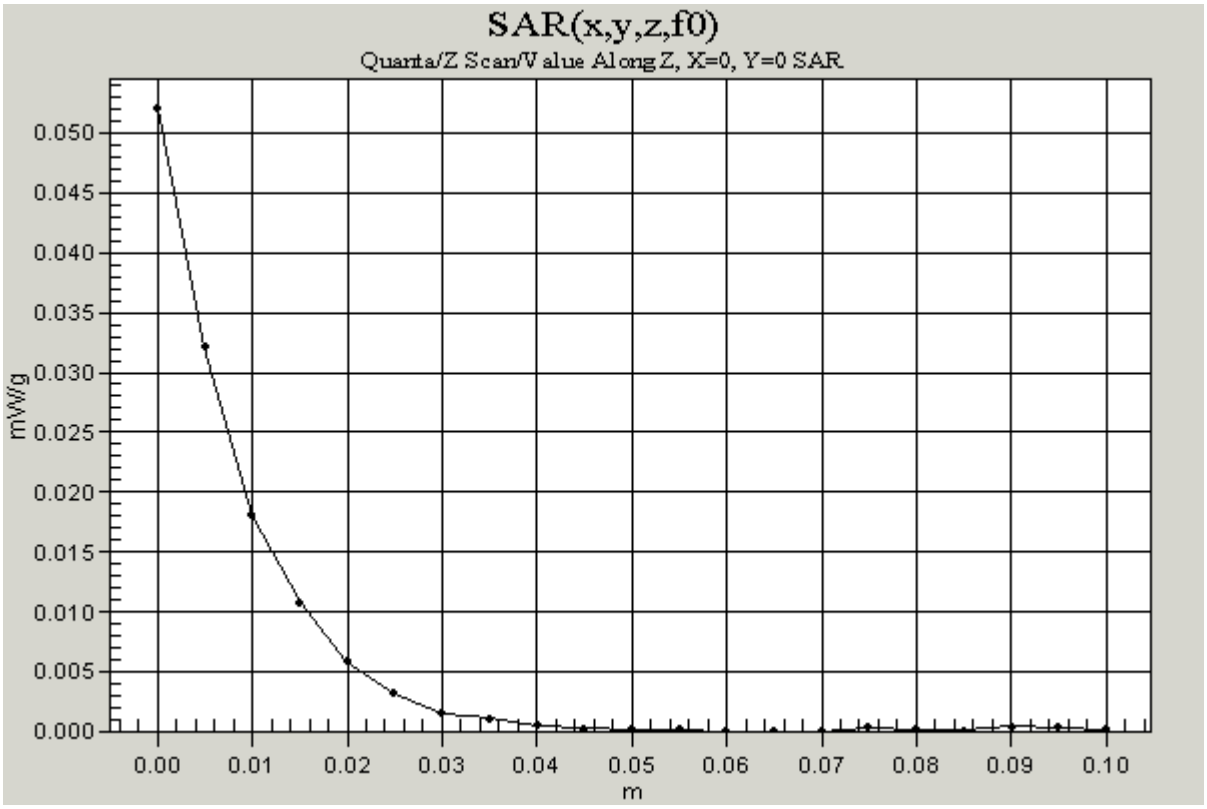
Antenna- High Channel/Area Scan (13x13x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 3.95 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.0847 mW/g

Antenna -High Channel/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.0882 mW/g; SAR(10 g) = 0.0477 mW/g
Reference Value = 3.95 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.0926 mW/g

Antenna -High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 3.95 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.052 mW/g



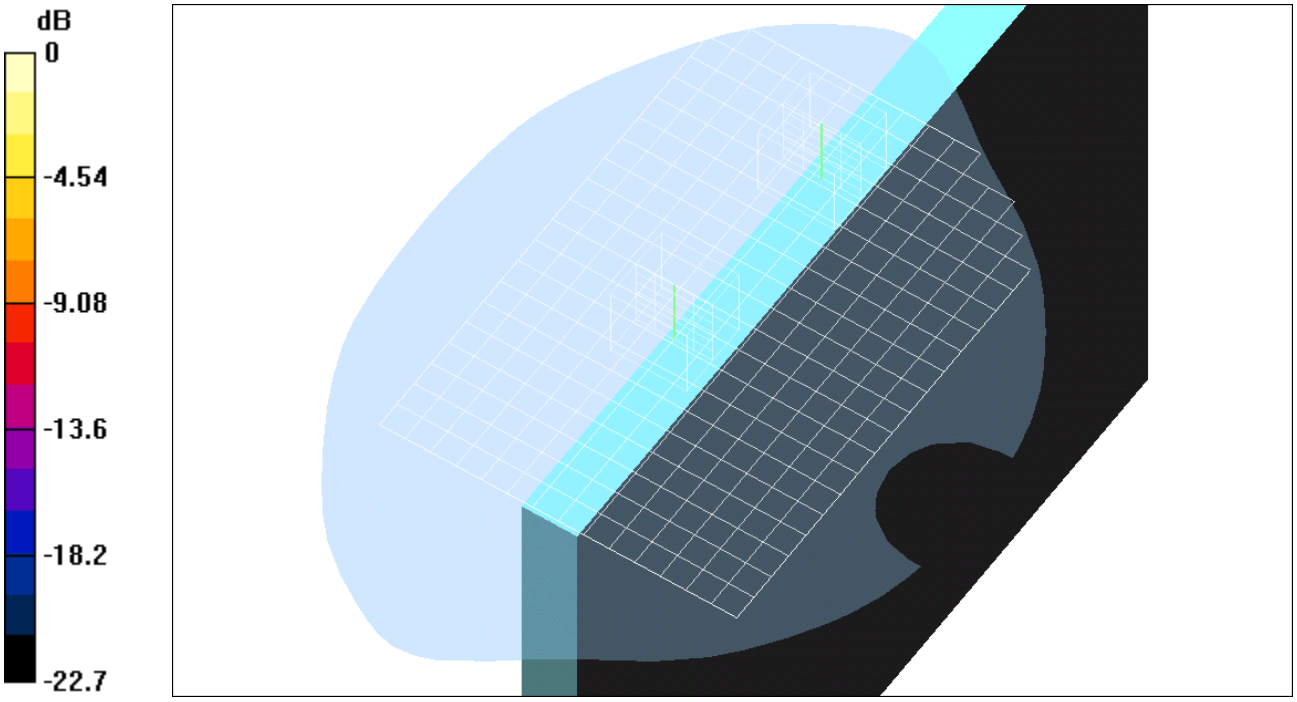
0 dB = 0.0926mW/g



Date/Time: 05/21/03 03:32:57

Test Laboratory: The name of your organization
File Name: Antenna 2(15mm)-05-20_0.0316.da4

EUT Setup Configuration 4



0 dB = 0.034mW/g

Date/Time: 05/21/03 03:32:57

Test Laboratory: C&C
File Name: Antenna 2(15mm)-Low Channel_0.0316mW.da4

Antenna 2(15mm)-Low Channel_0.0316mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

Communication System: DSSS; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

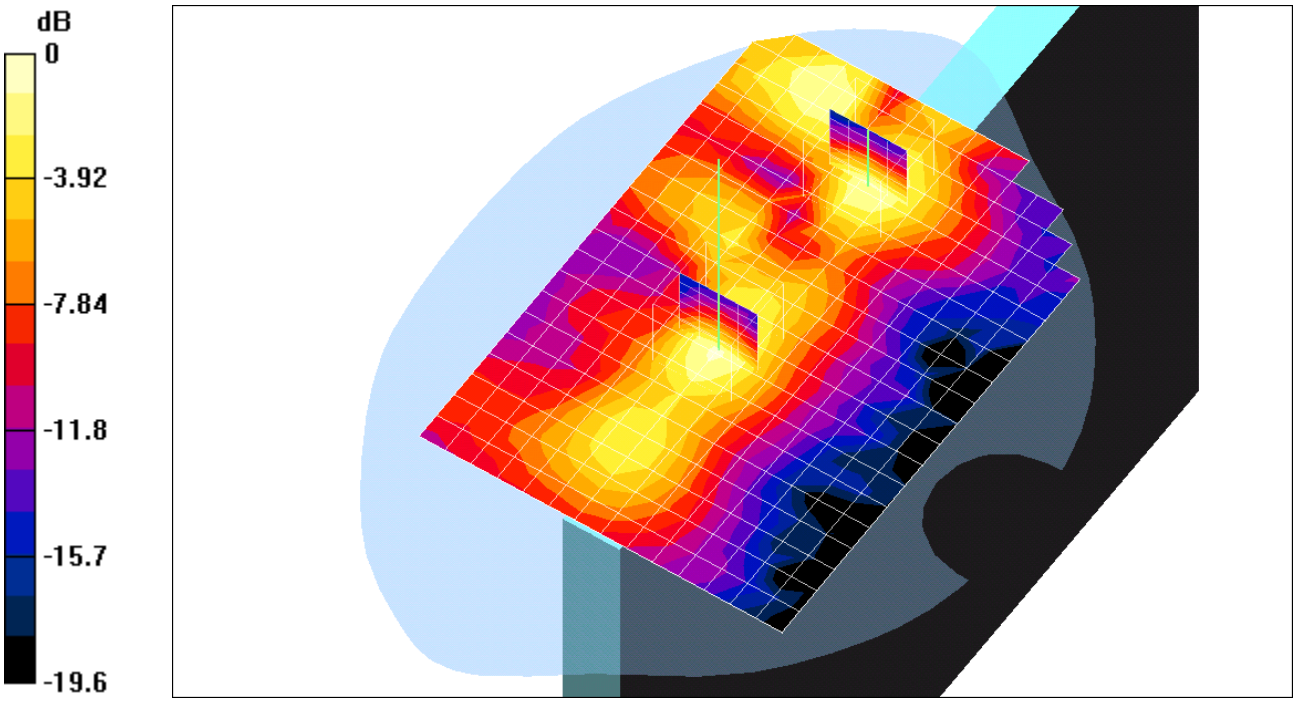
DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 2-Low Channel(Aux port)/Area Scan (15x21x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 3.27 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.0281 mW/g

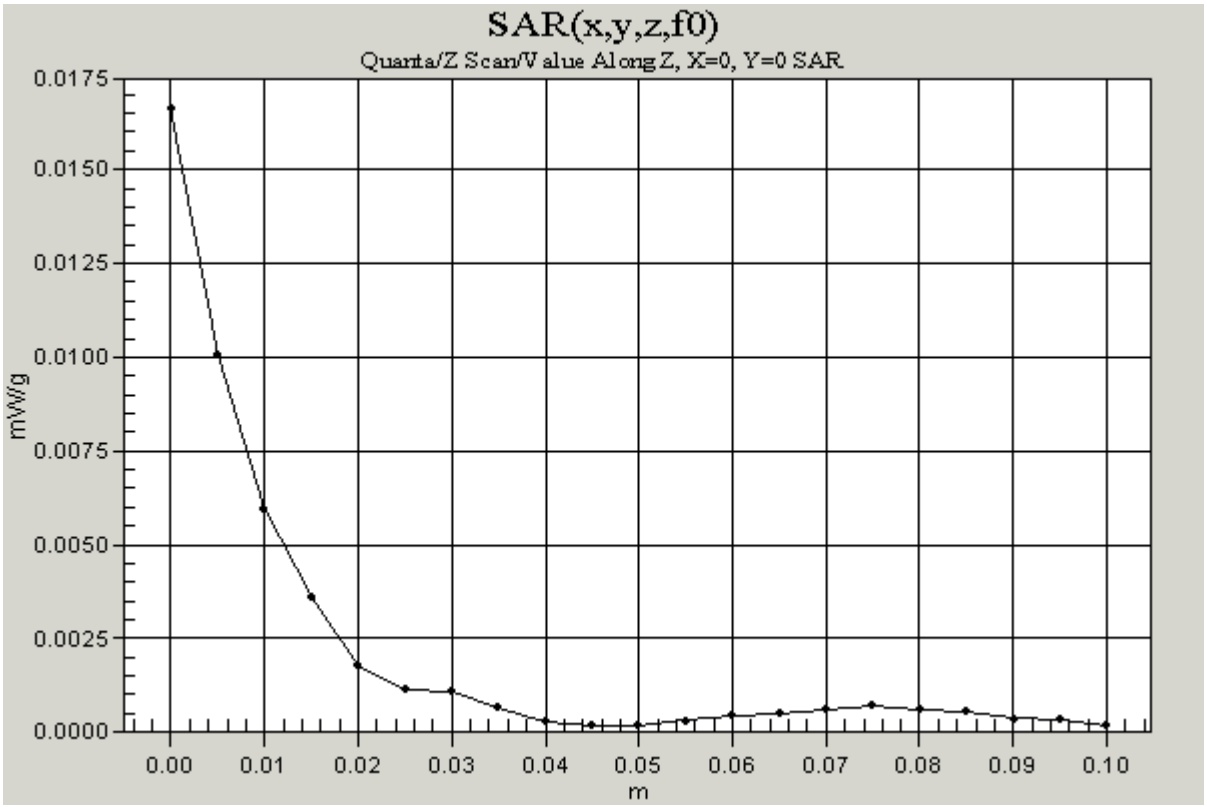
Antenna 2-Low Channel(Aux port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0549 W/kg
SAR(1 g) = 0.0273 mW/g; SAR(10 g) = 0.0146 mW/g
Reference Value = 3.27 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.0281 mW/g

Antenna 2-Low Channel(Aux port)/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0629 W/kg
SAR(1 g) = 0.0316 mW/g; SAR(10 g) = 0.0168 mW/g
Reference Value = 3.27 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.034 mW/g

Antenna 2-Low Channel(Aux port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 3.27 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.0166 mW/g


dB
0
-3.92
-7.84
-11.8
-15.7
-19.6

0 dB = 0.034mW/g


SAR(x,y,z,f0)
Quanta/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
m

Date/Time: 05/21/03 03:32:57

Test Laboratory: C&C
File Name: Antenna 2(15mm)-Mid Channel_0.0414mW.da4

Antenna 2(15mm)-Mid Channel_0.0414mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

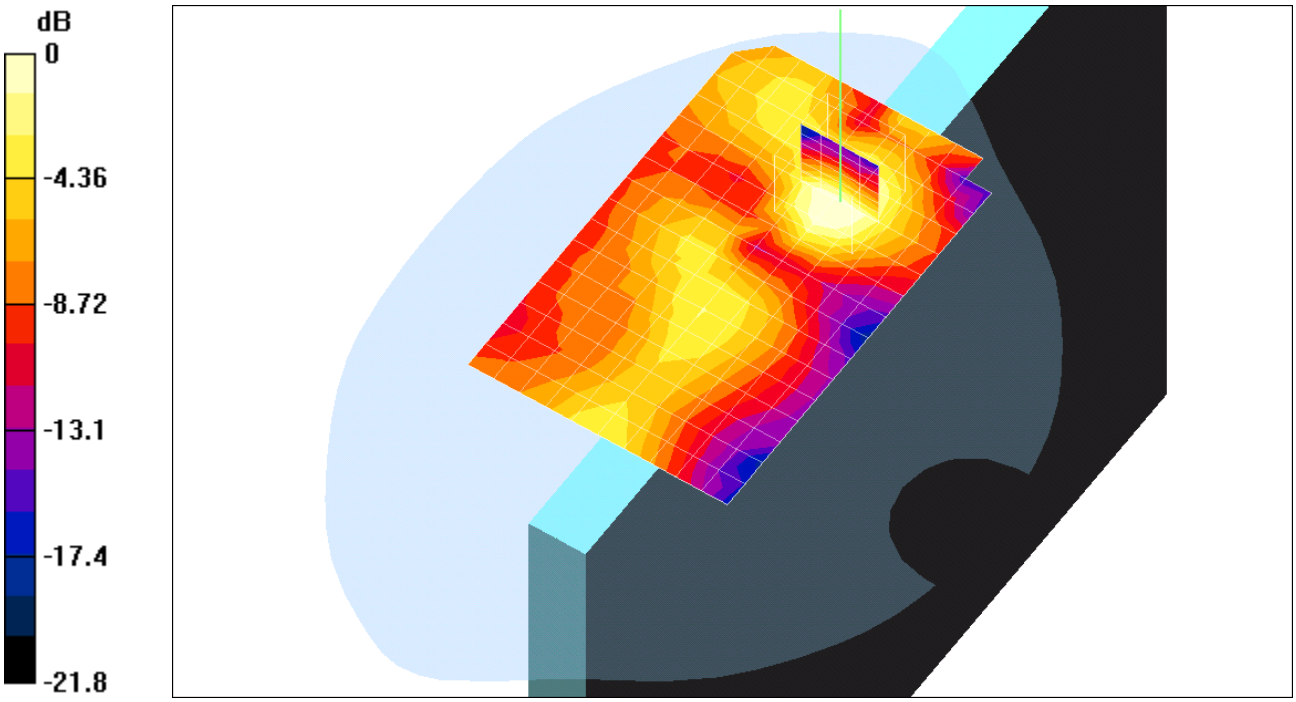
Communication System: DSSS; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

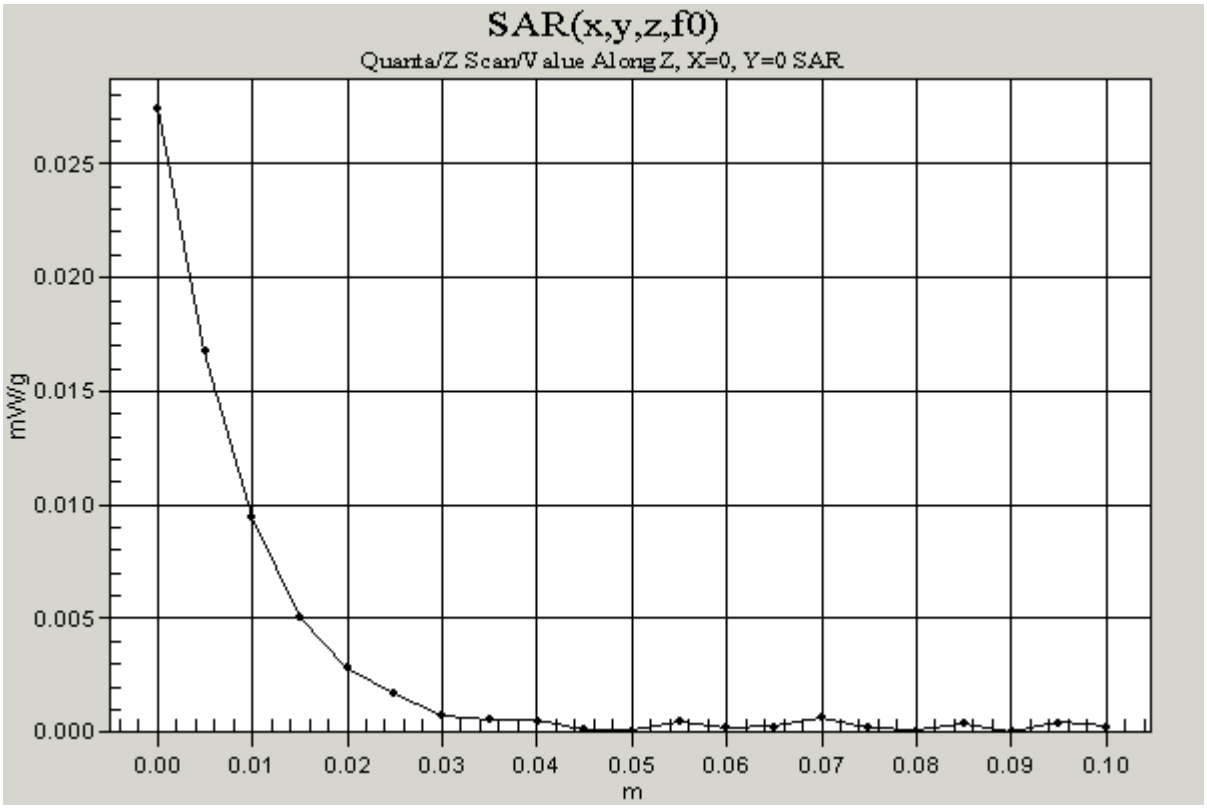
Antenna 2 -Mid Channel(Aux Port)/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.59 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.0514 mW/g

Antenna 2 -Mid Channel(Aux Port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0829 W/kg
SAR(1 g) = 0.0414 mW/g; SAR(10 g) = 0.0213 mW/g
Reference Value = 2.59 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.0438 mW/g

Antenna 2 -Mid Channel(Aux Port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.59 V/m
Power Drift = 0.2 dB
Maximum value of SAR = 0.0275 mW/g



0 dB = 0.0438mW/g



Date/Time: 05/21/03 03:32:57

Test Laboratory: C&C
File Name: Antenna 2(15mm)-High Channel_0.0396mW.da4

Antenna 2(15mm)-High Channel_0.0396mW

DUT: Notebbok with 802.11b WLAN; Model: ZW1L; FCC ID:HFSZW1LWM3B2100
Program: Quanta Test(Notebook with Intel PRO/Wireless 2100 LAN 3B MiniPCI Adapter)

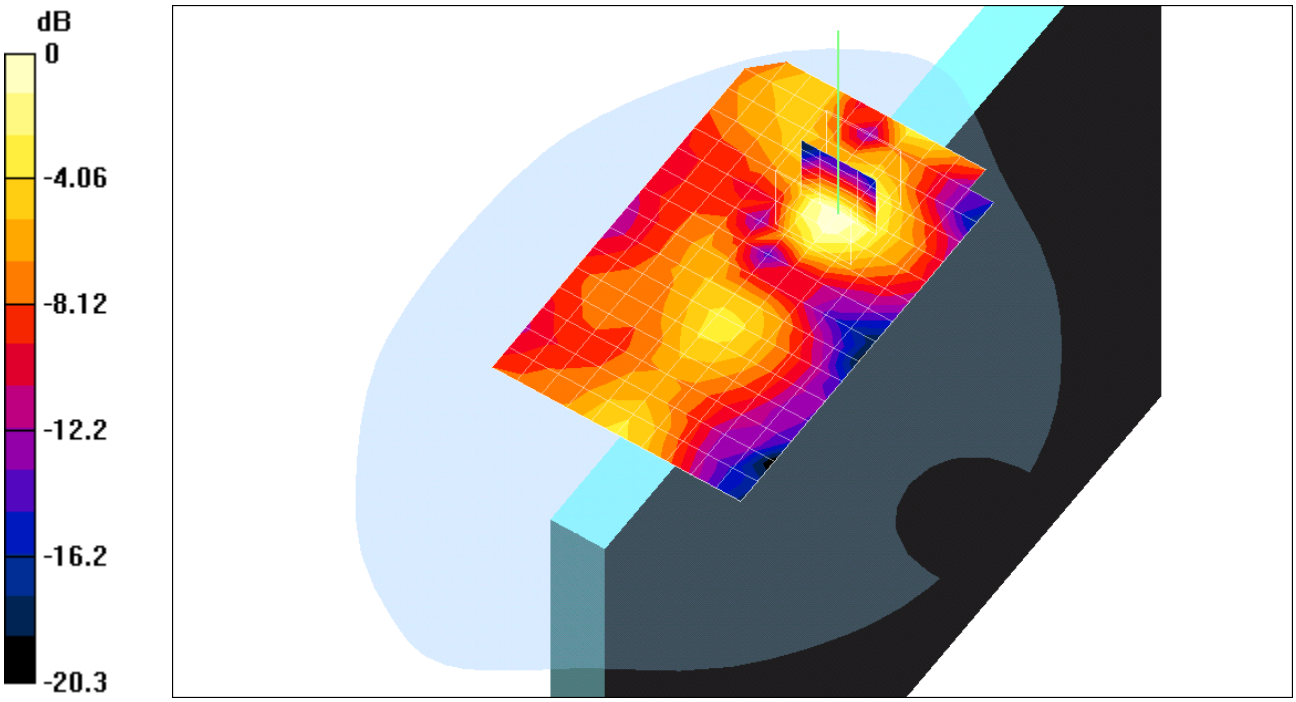
Communication System: DSSS; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: BSL2450 (σ = 1.94942 mho/m, ε_r = 52.9, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1762; ConvF(4.6, 4.6, 4.6); Calibrated: 3/31/2003
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 3/7/2003
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1271
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Antenna 2 -High Channel(Aux Port)/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 2.38 V/m
Power Drift = 0.09 dB
Maximum value of SAR = 0.0427 mW/g

Antenna 2 -High Channel(Aux Port)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Peak SAR (extrapolated) = 0.0799 W/kg
SAR(1 g) = 0.0396 mW/g; SAR(10 g) = 0.0202 mW/g
Reference Value = 2.38 V/m
Power Drift = 0.09 dB
Maximum value of SAR = 0.0418 mW/g

Antenna 2 -High Channel(Aux Port)/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Reference Value = 2.38 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.025 mW/g



0 dB = 0.0418mW/g