TEST REPORT

Equipment Under Test	:	Bluetooth Serial Adapter
Model No.	:	Promi SD202
Applicant	:	Initium Co., Ltd.
Address of Applicant	:	#901, Kins Tower, 25-1 Jungjadong, Bundanggu, Sungnam City, Kyuggi, Korea
FCC ID		QOCPROMISD202A
Date of Receipt	:	2006-04-15
Date of Test(s)	:	2006-04-19
Date of Issue	:	2006-05-09

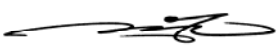
Standards:

FCC OET Bulletin 65 supplement C,

ANSI/IEEE C95.1, C95.3

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

Tested by	**:**	**Elvin Lee**		**2006-05-09**
Approved by	**:**	**Albert Lim**		**2006-05-09**

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APPENDIX

A. DASY4 SAR Report
B. Uncertainty Analysis
C. Photographs of EUT & EUT's Test Setup
D. Calibration certificate

1. General Information

1.1 Testing Laboratory

SGS Testing Korea Co., Ltd.
Wireless Div. 2FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040
Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371
Homepage : www.sgstesting.co.kr

1.2 Details of Applicant

Applicant	: Initium Co., Ltd.
Address	#901, Kins Tower, 25-1 Jungjadong, Bundanggu, Sungnam City, Kyuggi, Korea
Contact Person	: Young-Sam Kim
Phone No.	: 82-31-782-3232
Fax No.	: 82-31-782-3230

1.3 Version of Report

Version Number	Date
00	2006-04-24
01	2006-05-09

1.4 Description of EUT(s)

EUT Type	Bluetooth Serial Adapter
Model	Promi SD202
Serial Number	-
Hardware Version	V1.0
Software Version	V1.0
Mode of Operation	Continuous RF
Maximum RF Conducted Power	18.09 dBm(FHSS)
Tx Frequency Range	2402 ~ 2480 MHz
Rx Frequency Range	2402 ~ 2480 MHz
Traffic Channel	1 ch/40 ch/79 ch
Antenna Type / Gain	Helical Antenna / 2 dBi
Power Supply Type	DC 5 V AC adapter

1.5 Test Environment

Ambient temperature	: 22.3 ° C
Tissue Simulating Liquid	: 22.3 ° C
Relative Humidity	: 55 %

1.6 Operation Configuration

The device was controlled by using the test program in the notebook PC. The device was communicated with notebook PC. Measurements were performed on the lowest, middle and highest channels of the operating band. The EUT was set to maximum power level during all tests. Power supply used for the DC 5 V AC adapter.

The DASY4 system measures power drift during SAR testing by comparing e-field in the same location at the beginning and at the end of measurement.

1.7 EVALUATION PROCEDURES

- Power Reference Measurement Procedures

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 4 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 2.7 mm for an ET3DV6 probe type).

- The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. The generation of a high-resolution mesh within the measured volume
4. The interpolation of all measured values from the measurement grid to the high-resolution grid
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip.

During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.8 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (Speag Dasy 4 professional system). A Model ET3DV6 1782 E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant. The DASY4 system for performing compliance tests consists of the following items:

•A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).

•A dosimeter probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating

liquid. The probe is equipped with an optical surface detector system.

•A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

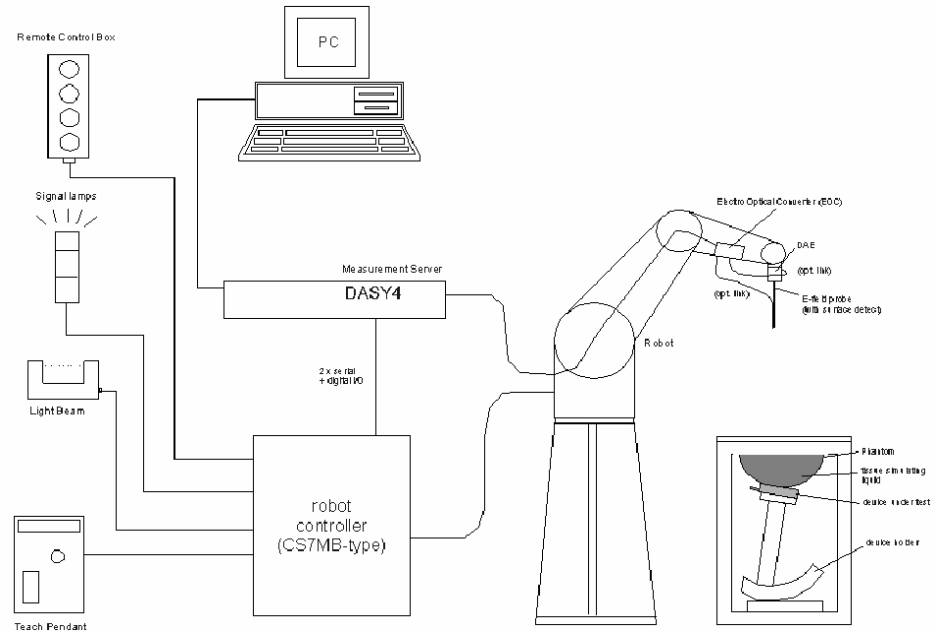


Fig a. The microwave circuit arrangement used for SAR system verification

• The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.

• The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.

• A probe alignment unit which improves the (absolute) accuracy of the probe positioning.

• A computer operating Windows 2000 or Windows XP.

• DASY4 software.

• Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.

• The SAM twin phantom enabling testing left-hand and right-hand usage.

• The device holder for handheld mobile phones.

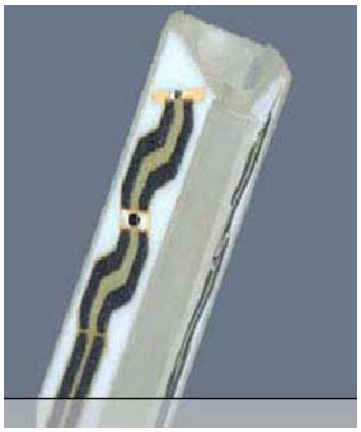
• Tissue simulating liquid mixed according to the given recipes.

• Validation dipole kits allowing to validate the proper functioning of the system.

1.9 System Components

ET3DV6 E-Field Probe

Construction	**:**	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. glycol).
Calibration	**:**	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency	**:**	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity	**:**	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range	**:**	5 µW/g to >100 mW/g; Linearity: ±0.2 dB
Srfce. Detect	**:**	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions	**:**	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	:	General dosimetry up to 3 GHz Compliance tests of mobile phone



ET3DV6 E-Field Probe

NOTE:

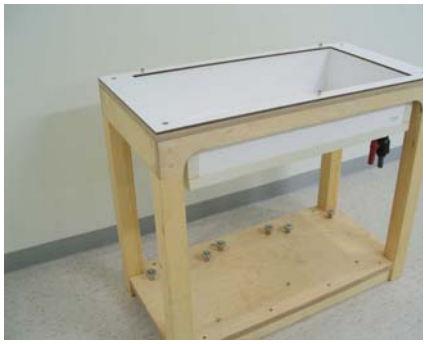
1. The Probe parameters have been calibrated by the SPEAG. Please reference “APPENDIX D” for the Calibration Certification Report.

FLAT PHANTOM V4.3L

Construction: The shell corresponds to the specifications of phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. The FLATPHANTOM V4.3L is a phantom for dosimetric evaluations of body mounted usage and system performance check for the frequency up to 3 GHz.

Shell Thickness: 6.0 ± 0.2 mm

Filling Volume: Approx. 54 liters



PHANTOM V4.3L

DEVICE HOLDER

Construction In combination with the Twin SAM PhantomV4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Device Holder

1.10 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 2450MHz. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 22.3 °C, the relative humidity was in the range 55% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

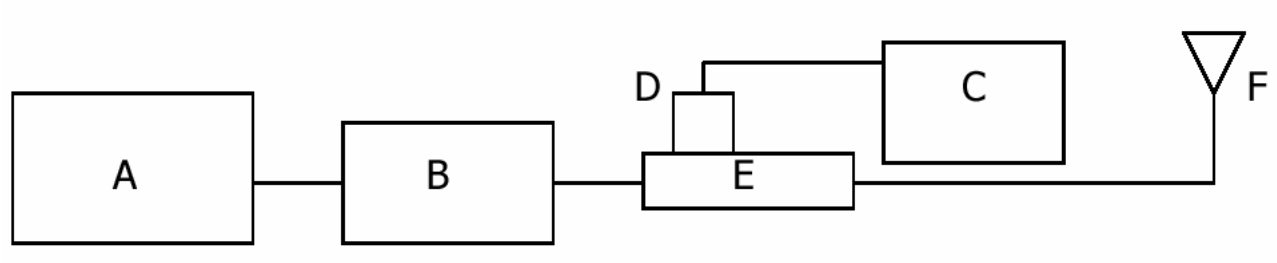


Fig b. The microwave circuit arrangement used for SAR system verification

A. Agilent Model E4421B Signal Generator
B. EMPOWER Model 2001-BBS3Q7ECK Amplifier
C. Agilent Model E4419B Power Meter
D. Agilent Model 9300H Power Sensor
E. Agilent Model 777D Dual directional coupling
F. Reference dipole Antenna

Photo of the dipole Antenna

System Validation Results

Validation Kit	Tissue	Target SAR 1 g (1 W)	Measured SAR 1 g (1 W)	Deviation (%)	Date	Liquid Temp. (°C)
D2450V2 S/N: 734	2450 MHz Brain	52.4 W/kg	**52.8 W/kg**	**0.7**	Apr. 19, 2006	22.3

Table 1. Results system validation

1.11 Tissue Simultaneous Fluid for the Frequency Band

The dielectric properties for this simultaneous fluid were measured by using the Agilent Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Agilent E5070B Network Analyzer(300 kHz-3000 MHz) by using a procedure detailed in Section V.

f (MHz)	Tissue type	Dielectric Parameters	Limits / Measured			
			Measured, 2006-04-19	Recommended Limits	Deviation (%)	Simulated Tissue Temp(℃)
2450	Body	**Permittivity**	52.57	52.7	-0.25	22.3
		Conductivity	1.97	1.95	0.01	22.3
2450	Head	**Permittivity**	38.12	39.2	-2.83	22.3
		Conductivity	1.82	1.80	0.01	22.3

The composition of the brain tissue simulating liquid

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	**Frequency (MHz)**									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Salt: 99^{+}% Pure Sodium Chloride Sugar: 98^{+}% Pure Sucrose

Water: De-ionized, 16 MΩ^{+} resistivity HEC: Hydroxyethyl Cellulose

DGBE: 99^{+}% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]

Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

1.12 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (‘‘SAR’’) in Section 4.2 of ‘‘IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,’’ ANSI/IEEE C95.3–2003, Copyright 2003 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in ‘‘Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,’’ NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have

been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube). Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .4)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Partial Body	1.60 m W/g	8.00 m W/g
Whole Body	0.08 m W/g	0.40 m W/g
Partial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table .4 RF exposure limits

2. Instruments List

Manufacturer	Device	Type	Serial Number	Due date of Calibration
Stäubli	Robot	RX90BL	F03/5W05A1/A/01	N/A
Schmid& Partner Engineering AG	Dosimetric E-Field Probe	ET3DV6	1782	April 28, 2006
Schmid& Partner Engineering AG	2450 MHz System Validation Dipole	D2450V2	734	August 23, 2006
Schmid& Partner Engineering AG	Data acquisition Electronics	DAE3	567	September 21, 2006
Schmid& Partner Engineering AG	Software	DASY 4 V4.5	-	N/A
Schmid& Partner Engineering AG	Phantom	Plat Phantom V4.3L	1003	N/A
Agilent	Network Analyzer	E5070B	MY42100282	May 20, 2006
Agilent	Dielectric Probe Kit	85070D	2184	N/A
Agilent	Dual Direction Coupler	777D	50128	December 8, 2006
Agilent	Power Meter	E4419B	GB43311126 GB43311125	December 8, 2006
Agilent	Power Sensor	E9300H	MY41495307 MY41495308 MY41495314	December 8, 2006

3.Summary of Results

Ambient Temperature (°C)	22.3
Liquid Temperature (°C)	22.3
Date	Apr. 19, 2006

Bluetooth Serial Adapter Body SAR

EUT Position	Traffic Channel		Conducted Power(dBm)		1 g SAR	Result
	Frequency (MHz)	Channel	Before	After		
Horizontal	2441	40	17.56	17.55	**0.517**	Complied
Vertical			17.56	17.55	0.015	Complied
Horizontal	2402	1	17.57	17.49	0.381	Complied
Horizontal	2480	79	18.08	18.08	0.341	Complied

Appendix

List

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Appendix B	Uncertainty Analysis	
Appendix C	DASY4 Report (Plots of the SAR Measurements)	- 2450 MHz Validation Test - Bluetooth Serial Adapter SAR Test
Appendix D	Calibration Certificate	- PROBE - DAE - DIPOLE

Appendix A

EUT Photographs

Front View of EUT

Rear View of EUT

Right View of EUT

Left View of EUT

Top View of EUT

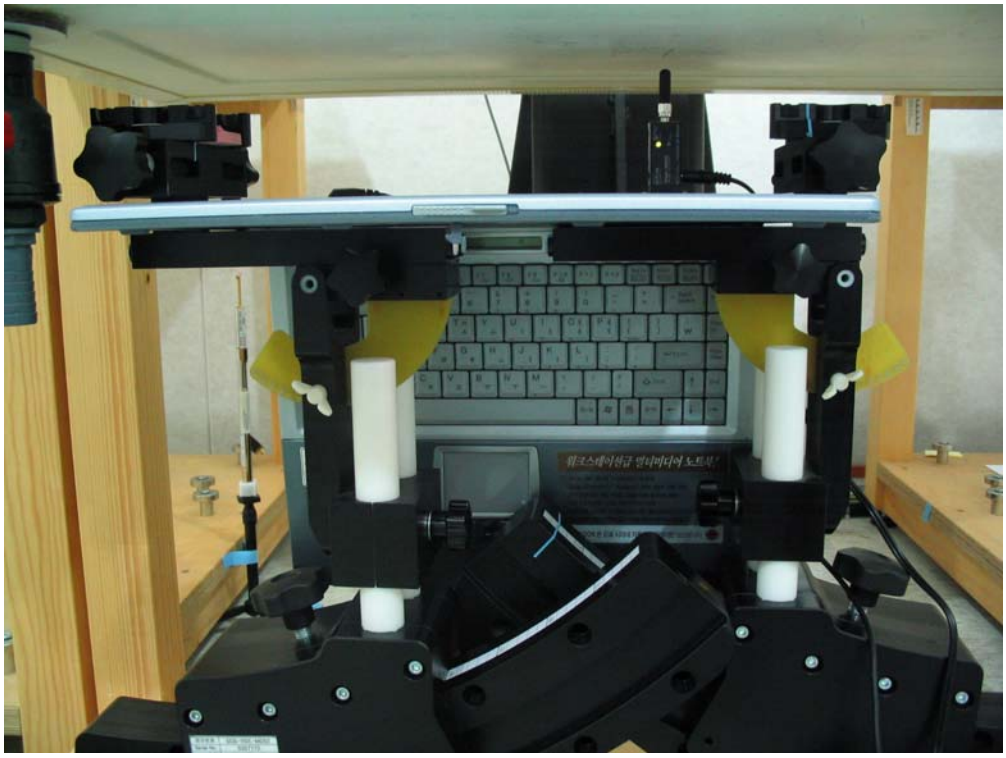
Bottom View of EUT

Test Setup Photographs

Photograph of Tissue Simulant Fluid liquid depth 15 cm

Horizontal Position

Vertical Position



Appendix B

Uncertainty Analysis

Uncertainty of SAR equipments for measurement

Items	Uncertainty value %	Probability Distribution	Divisor	ci 1 1g	Standard unc (1g)	vi or Veff
Measurement System						
Probe calibration	4.8	normal	1	1	4.8%	∞
Axial isotropy	4.7	rectangular	√ 3	$(1-c_p)^{1/2}$	1.9%	∞
Hemispherical isotropy	9.6	rectangular	√ 3	$(c_p)^{1/2}$	3.9%	∞
Boundary effects	1.0	rectangular	√ 3	1	0.6%	∞
Linearity	4.7	rectangular	√ 3	1	2.7%	∞
System Detection limits	1.0	rectangular	√ 3	1	0.6%	∞
Readout Electronics	1.0	normal	1	1	1.0%	∞
Response time	0.8	rectangular	√ 3	1	0.5%	∞
Integration time	2.6	rectangular	√ 3	1	1.5%	∞
RF Ambient Conditions	3.0	rectangular	√ 3	1	1.7%	∞
Mech. constrains of robot	0.4	rectangular	√ 3	1	0.2%	∞
Probe positioning	2.9	rectangular	√ 3	1	1.7%	∞
Extrap. and integration	1.0	rectangular	√ 3	1	0.6%	∞

Uncertainty of measurements

Test Sample Related						
Device positioning	2.9	normal	1	1	2.9%	145
Device holder uncertainty	3.6	normal	1	1	3.6%	5
Power drift	5.0	rectangular	√ 3	1	2.9%	∞
Phantom and Setup						
Phantom uncertainty	4.0	rectangular	√ 3	1	2.3%	∞
Liquid conductivity(target)	5.0	rectangular	√ 3	0.64	1.8%	∞
Liquid conductivity(meas.)	5.0	normal	1	0.64	3.2%	∞
Liquid permittivity(target)	5.0	rectangular	√ 3	0.6	1.7%	∞
Liquid permittivity(meas.)	5.0	normal	1	0.6	3.0%	∞

Uncertainty of SAR system

Combined Standard Uncertainty				10.6%	
Expanded Standard Uncertainty(k=2)				20.6%	

Appendix C

Test Plot - DASY4 Report

2450 MHz Validation Test

Date/Time: 2006-04-19 4:10:33

Test Laboratory: SGS Testing Korea

Validation Test

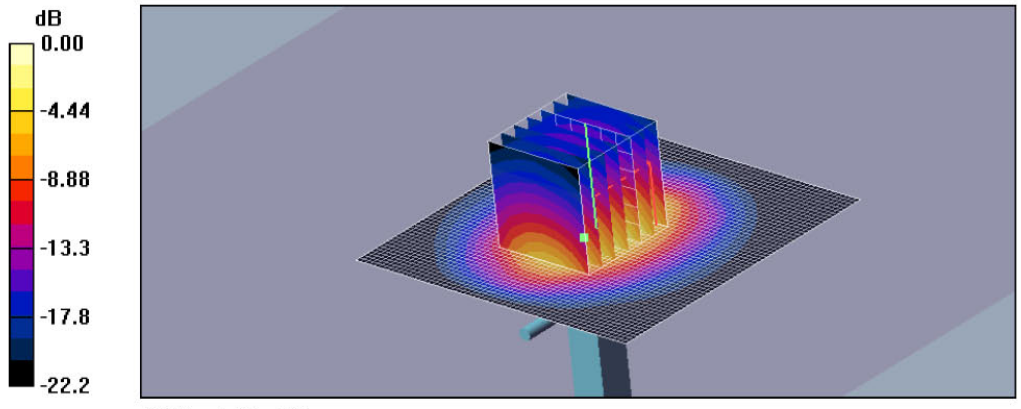
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:735

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450 Medium parameters used: f = 2450 MHz; σ = 1.82 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.36, 4.36, 4.36); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2005-09-21
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1300
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Validation_2450/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 16.1 mW/g

Validation_2450/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.7 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.12 mW/g
Maximum value of SAR (measured) = 14.9 mW/g



0 dB = 14.9mW/g

2.4 GHz SAR Test

Date/Time: 2006-04-19 10:14:44

Test Laboratory: SGS Testing Korea

Promi SD202_Front_Low CH

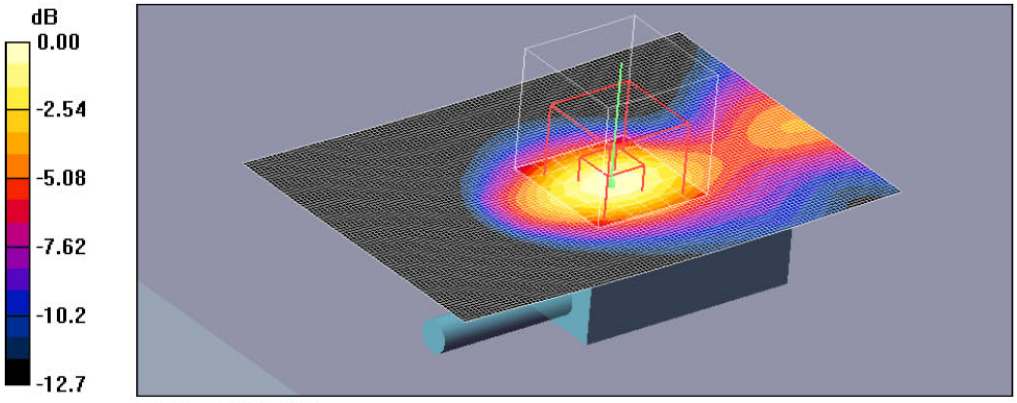
DUT: Promi SD202; Type: Bluetooth-Serial; Serial:

Communication System: Bluetooth; Frequency: 2402 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2402 MHz; σ = 1.9 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2005-09-21
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1300
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Horizontal_LowCH/Area Scan (121x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.430 mW/g

Horizontal_LowCH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.5 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 0.838 W/kg
SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.192 mW/g
Maximum value of SAR (measured) = 0.422 mW/g



0 dB = 0.422mW/g

Date/Time: 2006-04-19 8:13:49

Test Laboratory: SGS Testing Korea

Promi SD202_Front_MID

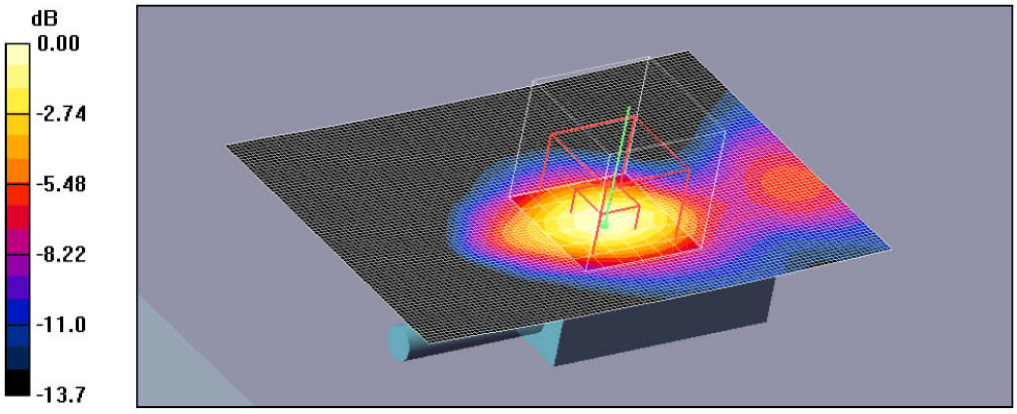
DUT: Promi SD202; Type: Bluetooth-Serial; Serial:

Communication System: Bluetooth; Frequency: 2441 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2441 MHz; σ = 1.95 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2005-09-21
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1300
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Horizontal/Area Scan (121x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.592 mW/g

Horizontal/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.56 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.517 mW/g; SAR(10 g) = 0.246 mW/g
Maximum value of SAR (measured) = 0.575 mW/g



0 dB = 0.575mW/g

Date/Time: 2006-04-19 10:48:24

Test Laboratory: SGS Testing Korea

Promi SD202_Front_High CH

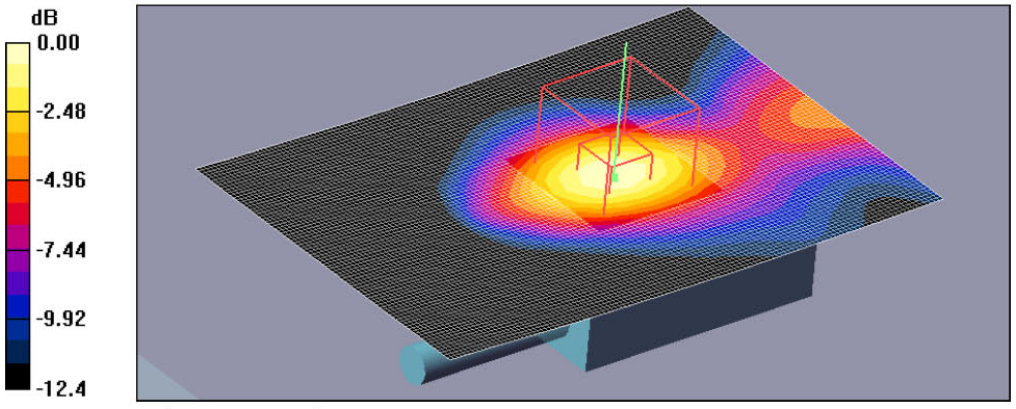
DUT: Promi SD202; Type: Bluetooth-Serial; Serial:

Communication System: Bluetooth; Frequency: 2480 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2480 MHz; σ = 2.01 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2005-09-21
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1300
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Horizontal HighCH/Area Scan (121x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.376 mW/g

Horizontal HighCH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.769 W/kg
SAR(1 g) = 0.341 mW/g; SAR(10 g) = 0.167 mW/g
Maximum value of SAR (measured) = 0.375 mW/g



0 dB = 0.375mW/g

Date/Time: 2006-04-19 9:19:48

Test Laboratory: SGS Testing Korea

Promi SD202_Vertical_MID

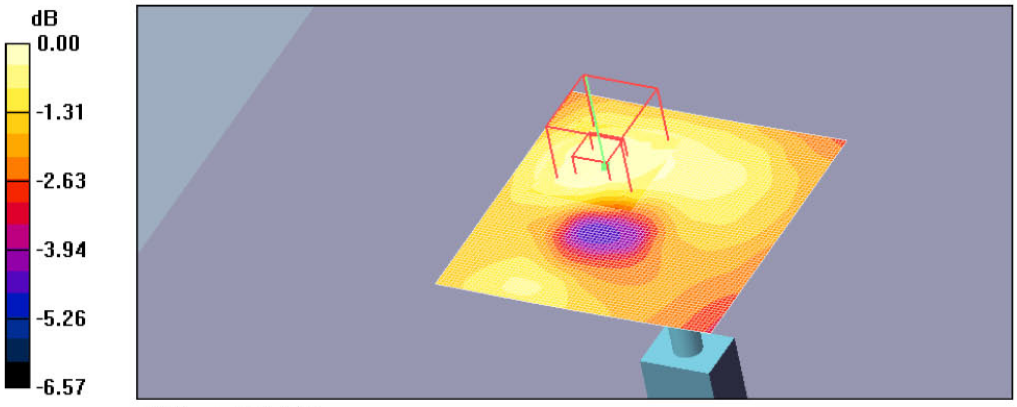
DUT: Promi SD202; Type: Bluetooth-Serial; Serial:

Communication System: Bluetooth; Frequency: 2441 MHz;Duty Cycle: 1:1
Medium: M2450 Medium parameters used: f = 2441 MHz; σ = 1.95 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(4.22, 4.22, 4.22); Calibrated: 2004-04-28
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2005-09-21
- Phantom: Flat Phantom 4.3; Type: Flat Phantom 4.3; Serial: 1300
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Vertical/Area Scan (81x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.016 mW/g

Vertical/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.30 V/m; Power Drift = -0.158 dB
Peak SAR (extrapolated) = 0.028 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.016mW/g

Appendix D

Calibration Certificate

- **PROBE**

- **DAE**

- **2450 MHz DIPOLE**

- PROBE Calibration Certificate

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

Client **SGS KES (Dymstec)**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1782
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	April 28, 2004
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	US37292783	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05

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

Date issued: April 28, 2004

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.

Probe ET3DV6

SN:1782

Manufactured:	April 15, 2003
Last calibrated:	July 28, 2003
Recalibrated:	April 28, 2004

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1782 April 28, 2004

DASY - Parameters of Probe: ET3DV6 SN:1782

Sensitivity in Free Space

Diode Compression[A]

NormX	2.03 μV/(V/m)^2	DCP X	94	mV
NormY	1.72 μV/(V/m)^2	DCP Y	94	mV
NormZ	1.89 μV/(V/m)^2	DCP Z	94	mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Plese see Page 7.

Boundary Effect

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

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	8.0	4.0
SAR_{be} [%]	With Correction Algorithm	0.0	0.1

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

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	12.7	8.5
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

Probe Tip to Sensor Center	2.7 mm
Optical Surface Detection	**in tolerance**

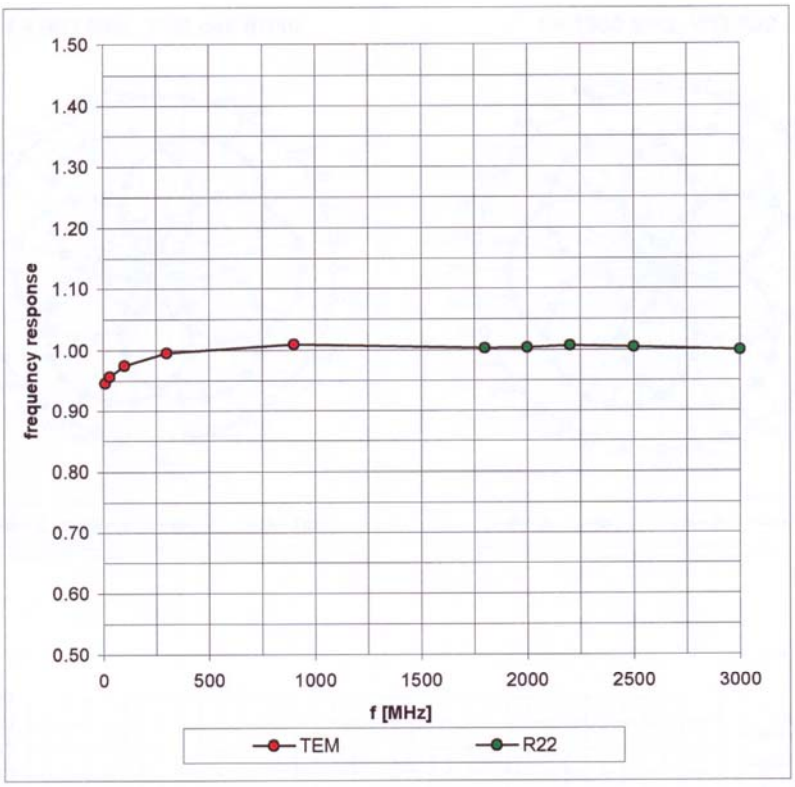
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] numerical linearization parameter: uncertainty not required

ET3DV6 SN:1782 April 28, 2004

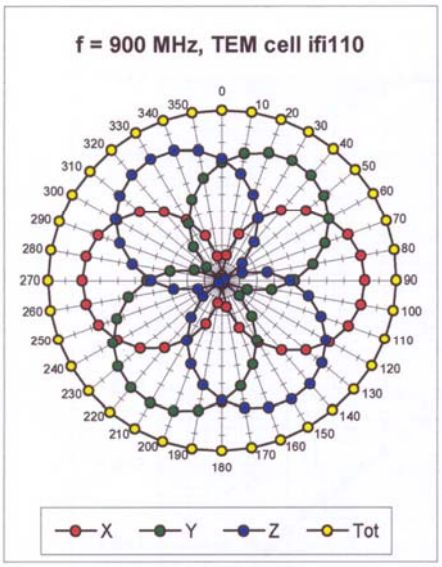
Frequency Response of E-Field

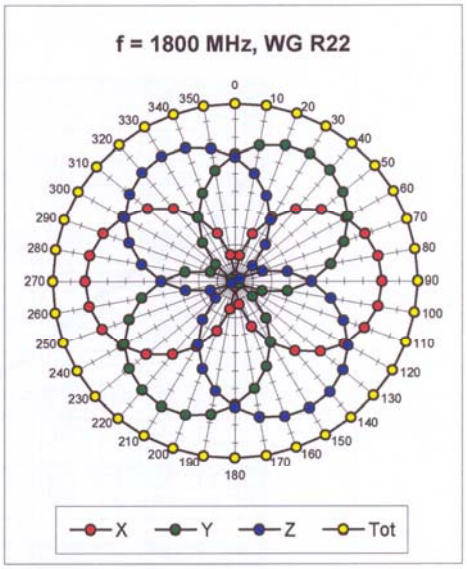
(TEM-Cell:ifi110, Waveguide R22)

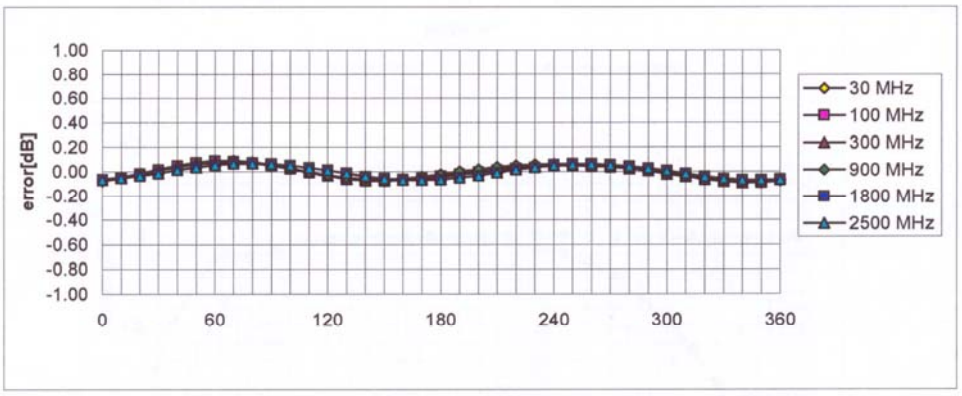


ET3DV6 SN:1782 April 28, 2004

Receiving Pattern (ϕ) , θ = 0°





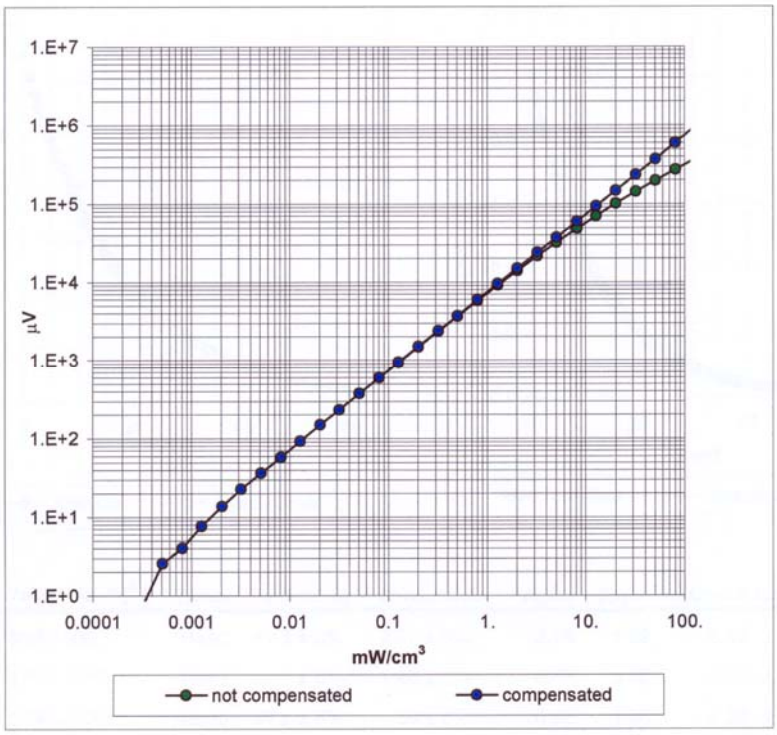


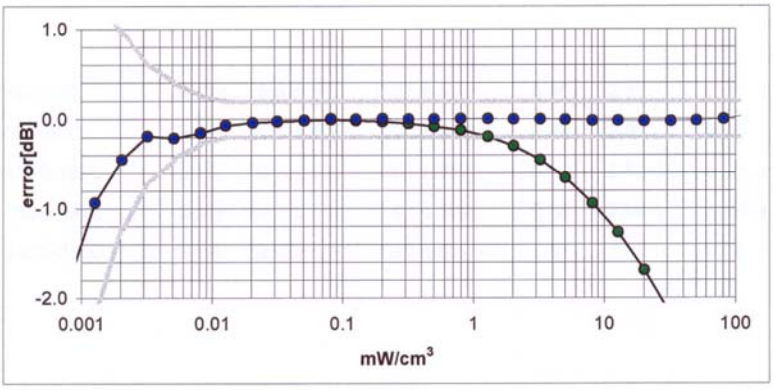
Axial Isotropy Error < ± 0.2 dB

ET3DV6 SN:1782 April 28, 2004

Dynamic Range f(SAR_{head})

(Waveguide R22)

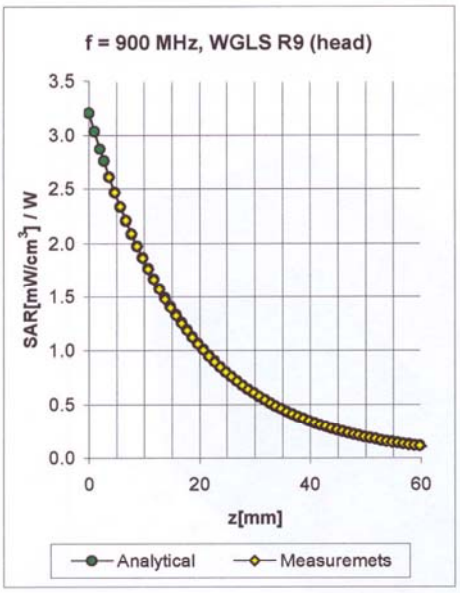


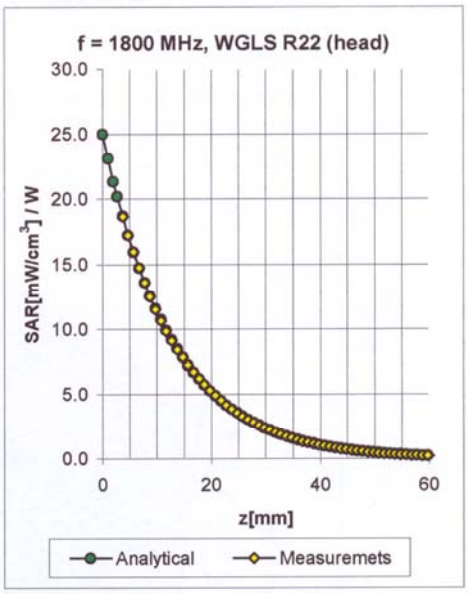


Probe Linearity < ± 0.2 dB

ET3DV6 SN:1782 April 28, 2004

Conversion Factor Assessment





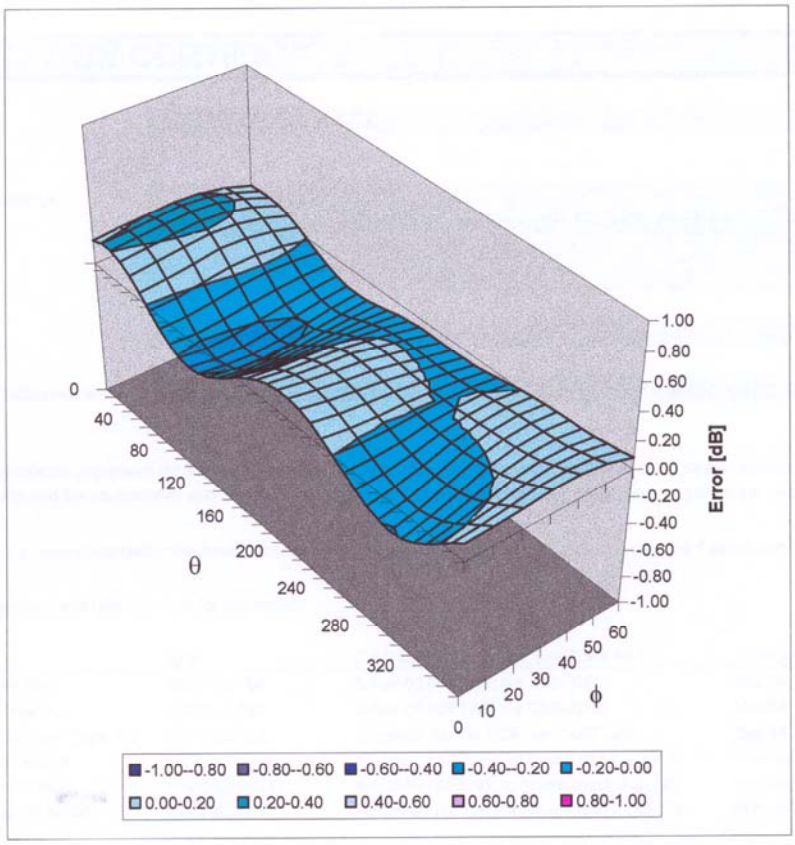
f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.76	1.59	6.45 ± 11.3% (k=2)
1800	1710-1910	Head	40.0 ± 5%	1.40 ± 5%	0.47	2.62	5.07 ± 11.7% (k=2)
2450	2400-2500	Head	39.2 ± 5%	1.80 ± 5%	0.89	1.98	4.36 ± 9.7% (k=2)
835	785-885	Body	55.2 ± 5%	0.97 ± 5%	0.46	2.19	6.14 ± 9.7% (k=2)
900	850-950	Body	55.0 ± 5%	1.05 ± 5%	0.44	2.31	5.93 ± 9.7% (k=2)
1800	1710-1890	Body	53.3 ± 5%	1.52 ± 5%	0.52	2.80	4.55 ± 10.9% (k=2)
1900	1805-1995	Body	53.3 ± 5%	1.52 ± 5%	0.56	2.86	4.40 ± 11.1% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	1.01	1.71	4.22 ± 9.7% (k=2)

[B] The total standard uncertainty is calculated as root-sum-square of standard uncertainty of the Conversion Factor at calibration frequency and the standard uncertainty for the indicated frequency band.

ET3DV6 SN:1782 April 28, 2004

Deviation from Isotropy in HSL

Error (θ,ϕ), f = 900 MHz



Spherical Isotropy Error < ± 0.4 dB