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1. Photographs of Test Setup



Fig.1 Photograph of the SAR measurement System

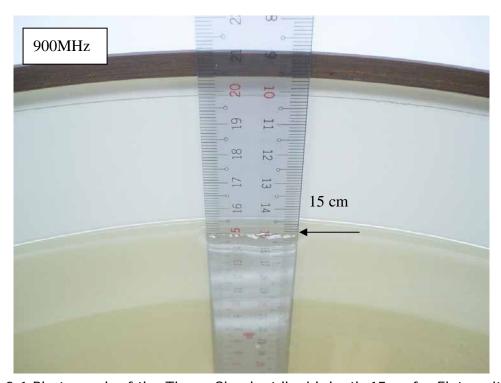


Fig.2.1 Photograph of the Tissue Simulant liquid depth 15cm for Flat position

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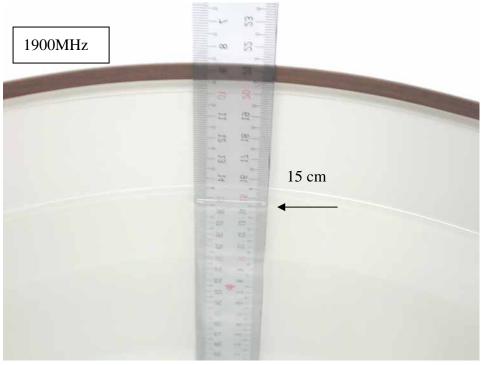


Fig.2.2 Photograph of the Tissue Simulant liquid depth 15cm for Flat position

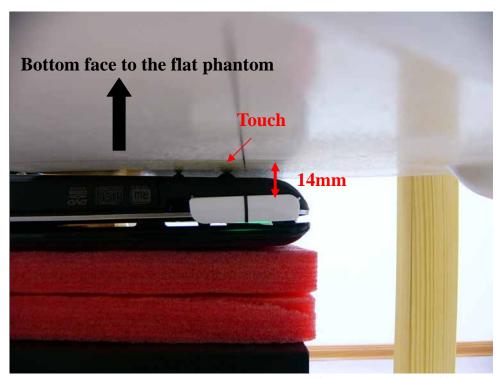


Fig.3.1 Photo of the Bottom face of the notebook is paralleled with flat phantom, and Antenna of EUT is the same too. (HP-DV6216)

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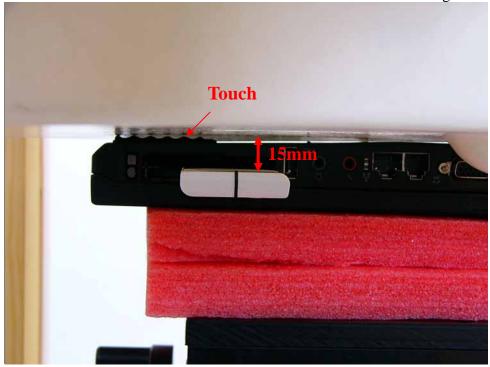


Fig. 3.2 Photo of the Bottom face of the notebook is paralleled with flat phantom, and Antenna of EUT is the same too. (IBM-T60)



Fig. 3.3 Photo of the Bottom face of the notebook is paralleled with flat phantom, and Antenna of EUT is the same too. (IBM-T43)

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Fig.4.1 Photo of the Bottom face of the notebook is paralleled with flat Phantom, and Antenna of EUT is vertical. (HP-6216)



Fig.4.2 Photo of the Bottom face of the notebook is paralleled with flat Phantom, and Antenna of EUT is vertical. (IBM-T60)

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Fig.4.3 Photo of the Bottom face of the notebook is paralleled with flat Phantom, and Antenna of EUT is vertical. (IBM-T43)



Fig. 5.1 Photo is the right side of the Notebook of EUT is vertical with flat phantom and spacing between EUT and Phantom- in contact 15mm. (HP-6216)

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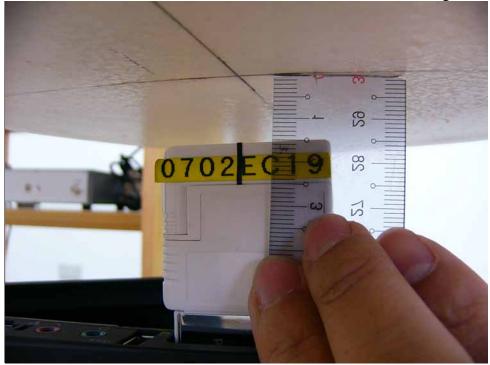


Fig. 5.2 Photo is the left side of the Notebook of EUT is vertical with flat phantom and spacing between EUT and Phantom- in contact 15mm.(IBM-T60)

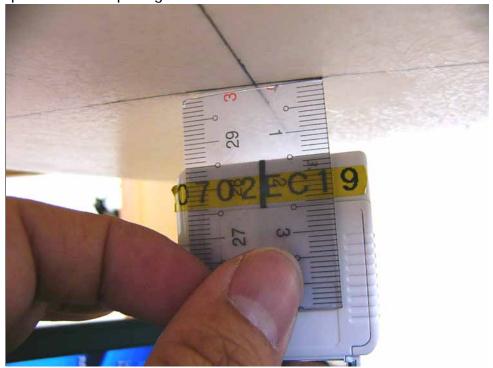


Fig. 5.3 Photo is the left side of the Notebook of EUT is vertical with flat phantom and spacing between EUT and Phantom- in contact 15mm.(IBM-T43)

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Fig.6.1 Photo is the right side of the Notebook of EUT is vertical with Flat phantom and spacing between EUT and Phantom- in contact 15mm.(HP-6216)

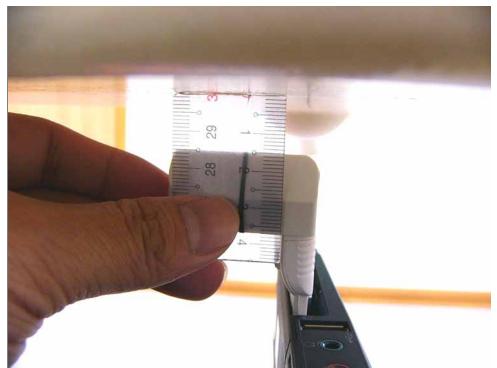


Fig. 6.2 Photo is the left side of the Notebook of EUT is vertical with Flat phantom and spacing between EUT and Phantom- in contact 15mm.(IBM-T60)

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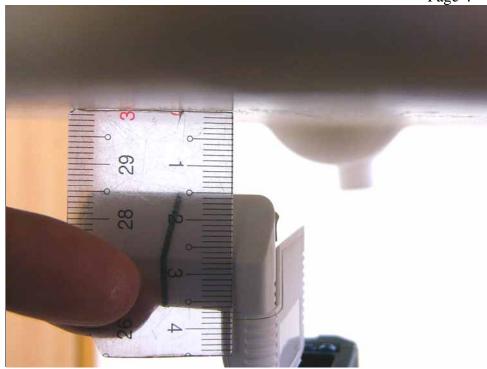


Fig. 6.3 Photo is the left side of the Notebook of EUT is vertical with Flat phantom and spacing between EUT and Phantom- in contact 15mm.(IBM-T43)

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2. Photographs of the EUT

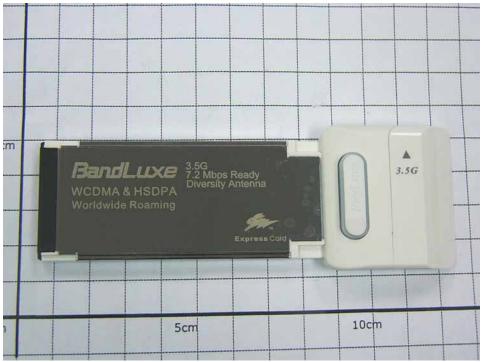


Fig.7 Front view of EUT



Fig.8 Back view of EUT

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3. Photographs of the Accessories of EUT



Fig.9 Front view of Express to USB adapter



Fig.10 Back view of Express to USB adapter

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Fig.11 Express to USB adapter with EUT

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Fig.12 Photograph is express card slot (only one slot) with HP-DV6216 $\,$ (Antenna of EUT is parallel)

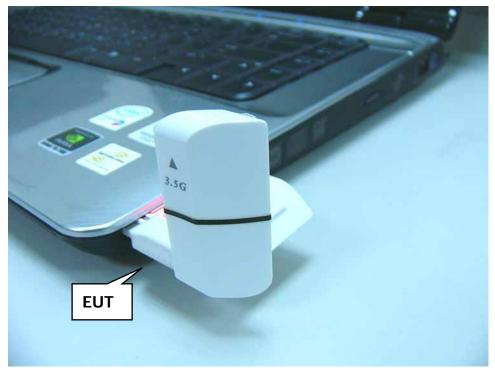


Fig.13 Photograph is express card slot with HP-DV6216 (Antenna of EUT is vertical)

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Fig.14 Photograph is express card slot with IBM-T60 (Antenna of EUT is parallel)

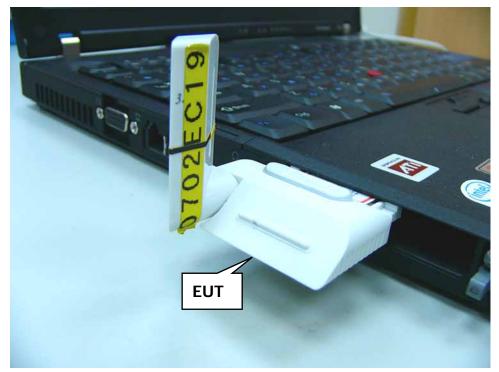


Fig.15 Photograph is express card slot with IBM-T60 (Antenna of EUT is vertical)

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Fig.16 Photograph is express card slot with IBM-T43 (Antenna of EUT is parallel)



Fig.17 Photograph is express card slot with IBM-T43 (Antenna of EUT is vertical)

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4. DAE & Probe Calibration certificate

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





Schweizerischer Kalibrierdienst Service suisse d'étalonnage C Servizio svizzero di taratura

Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Company of the		Certificate No:	DAE4-679_Mar06
CALIBRATION C	ERTIFICATE		
Object	DAE4 - SD 000 D	04 BA - SN: 679	Parties and the control of the contr
Calibration procedure(s)	QA CAL-06.v12 Calibration proces	dure for the data acquisition elect	ronics (DAE)
Calibration date:	March 21, 2006		
Condition of the calibrated item	In Tolerance		
	d in the closed laboratory	obability are given on the following pages and a facility: environment temperature (22 ± 3)°C Cal Date (Calibrated by, Certificate No.)	
Fluke Process Calibrator Type 702	SN: 6295803	7-Oct-05 (Sintrel, No.E-050073)	Oct-06
Secondary Standards Calibrator Box V1.1	ID# SE UMS 006 AB 1002	Check Date (in house) 29-Jun-05 (SPEAG, in house check)	Scheduled Check In house check Jun-06
	Name	Function	Signature
Calibrated by:	Daniel Steinacher	Technician	Purie Steracho
Approved by:	Fin Bomholt	R&D Director	Boulolt

Certificate No: DAE4-679_Mar06

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Schweizerischer Kalibrierdienst S Service suisse d'étalonnage C Servizio svizzero di taratura S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

SGS (Auden)

Certificate No: EX3-3526_Aug06

Accreditation No.: SCS 108

Object	EX3DV3 - SN:3	526	
Calibration procedure(s)		and QA CAL-14.v3 edure for dosimetric E-field probes	
Calibration date:	August 25, 2006	3	
Condition of the calibrated item	In Tolerance		
All calibrations have been condu	cted in the closed laborat	ory facility: environment temperature (22 ± 3)°C and	d humidity < 70%.
Calibration Equipment used (M&	TE critical for calibration)	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
alibration Equipment used (M& rimary Standards ower meter E4419B	TE critical for calibration) ID # GB41293874	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07
alibration Equipment used (M& rimary Standards ower meter E4419B ower sensor E4412A	ID # GB41293874 MY41495277	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07
alibration Equipment used (M& rimary Standards ower meter E4419B ower sensor E4412A ower sensor E4412A	ID # GB41293874 MY41495277 MY41498087	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07 Apr-07
alibration Equipment used (M& rimary Standards ower meter E4419B ower sensor E4412A ower sensor E4412A eference 3 dB Attenuator	ID # GB41293874 MY41495277	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c)	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07
alibration Equipment used (M& rimary Standards ower meter E4419B ower sensor E4412A ower sensor E4412A eference 3 dB Attenuator eference 20 dB Attenuator eference 30 dB Attenuator	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b)	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 251-00558)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Apr-07
rimary Standards ower meter E4419B ower sensor E4412A tower sensor E4412A teference 3 dB Attenuator teference 20 dB Attenuator teference 30 dB Attenuator teference 30 dB Attenuator teference Probe ES3DV2	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b)	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 251-00558) 10-Aug-06 (METAS, No. 217-00593)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Apr-07 Aug-07 Aug-07
Calibration Equipment used (M& Primary Standards Dower meter E4419B Dower sensor E4412A Dower sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID #	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 251-00558) 10-Aug-06 (METAS, No. 217-00593) 2-Jan-06 (SPEAG, No. ES3-3013_Jan06) 21-Jun-06 (SPEAG, No. DAE4-654_Jun06) Check Date (in house)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-07 Jun-07 Scheduled Check
rimary Standards rower meter E4419B rower sensor E4412A rower sensor E4412A reference 3 dB Attenuator reference 30 dB Attenuator reference Probe ES3DV2 reference Probe ES3DV2 reference Standards reference HP 8648C	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID # US3642U01700	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00598) 10-Aug-06 (METAS, No. 217-00593) 2-Jan-06 (SPEAG, No. ES3-3013_Jan06) 21-Jun-06 (SPEAG, No. DAE4-654_Jun06) Check Date (in house) 4-Aug-99 (SPEAG, in house check Nov-05)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Aug-07 Jun-07 Scheduled Check In house check: Nov-07
rimary Standards rower meter E4419B rower sensor E4412A rower sensor E4412A reference 3 dB Attenuator reference 30 dB Attenuator reference Probe ES3DV2 reference Probe ES3DV2 reference Standards reference HP 8648C	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID #	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 251-00558) 10-Aug-06 (METAS, No. 217-00593) 2-Jan-06 (SPEAG, No. ES3-3013_Jan06) 21-Jun-06 (SPEAG, No. DAE4-654_Jun06) Check Date (in house)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-07 Jun-07 Scheduled Check
calibration Equipment used (M& trimary Standards flower meter E4419B flower sensor E4412A flower sensor E4412A teference 3 dB Attenuator teference 20 dB Attenuator teference 30 dB Attenuator teference Probe ES3DV2 iAE4	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID # US3642U01700	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00598) 10-Aug-06 (METAS, No. 217-00593) 2-Jan-06 (SPEAG, No. ES3-3013_Jan06) 21-Jun-06 (SPEAG, No. DAE4-654_Jun06) Check Date (in house) 4-Aug-99 (SPEAG, in house check Nov-05)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Aug-07 Jun-07 Scheduled Check In house check: Nov-07
Calibration Equipment used (M&	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID # US3642U01700 US37390585	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 271-00592) 4-Apr-06 (METAS, No. 217-00598) 10-Aug-06 (METAS, No. 217-00593) 2-Jan-06 (SPEAG, No. ES3-3013_Jan06) 21-Jun-06 (SPEAG, No. DAE4-654_Jun06) Check Date (in house) 4-Aug-99 (SPEAG, in house check Nov-05) 18-Oct-01 (SPEAG, in house check Nov-05)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Apr-07 Aug-07 Jun-07 Scheduled Check In house check: Nov-07 In house check: Nov 06

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Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage

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Accreditation No.: SCS 108

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL tissue simulating liquid
NORMx,y,z sensitivity in free space
ConF sensitivity in TSL / NORMx,y,z
DCP diode compression point
Polarization φ φ rotation around probe axis

Polarization 9 9 rotation around an axis that is in the plane normal to probe axis (at

measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 9 = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This
 linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of
 the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

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EX3DV3 SN:3526

August 25, 2006

Probe EX3DV3

SN:3526

Manufactured: Last calibrated:

Recalibrated:

March 19, 2004

May 24, 2004

August 25, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

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EX3DV3 SN:3526 August 25, 2006

DASY - Parameters of Probe: EX3DV3 SN:3526

Sensitivity in Free Space ^A	Diode Compression ^B

NormX	0.92 ± 10.1%	μV/(V/m) ⁻	DCP X	95 mV
NormY	0.87 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	92 mV
NormZ	0.85 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	94 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 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	2.1	0.9
SAR _{be} [%]	With Correction Algorithm	0.1	0.1

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Cente	er to Phantom Surface Distance	3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	1.5	0.8
SAR _{be} [%]	With Correction Algorithm	0.1	0.6

Sensor Offset

Probe Tip to Sensor Center 1 mm

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 The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

^B Numerical linearization parameter: uncertainty not required.

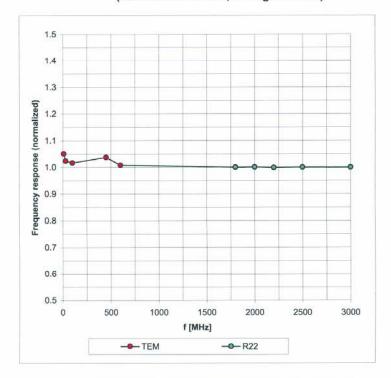
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EX3DV3 SN:3526

August 25, 2006

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



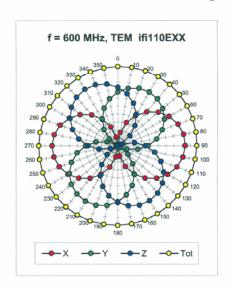
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

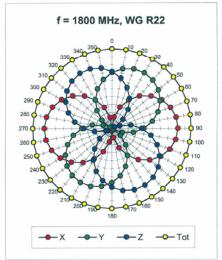
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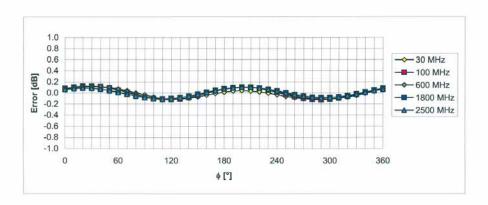
EX3DV3 SN:3526

August 25, 2006

Receiving Pattern (ϕ), ϑ = 0°







Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

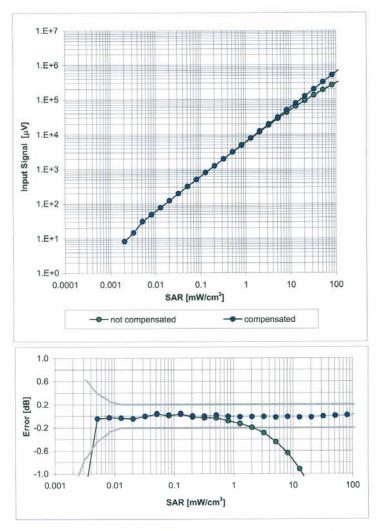
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EX3DV3 SN:3526

August 25, 2006

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)



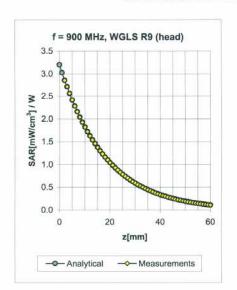
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

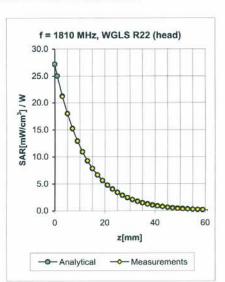
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EX3DV3 SN:3526

August 25, 2006

Conversion Factor Assessment





f [MHz]	Validity [MHz] ^C	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.21	0.90	11.72	± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.11	1.33	9.61	± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.11	1.33	9.32	± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.42	0.80	8.29	± 11.8% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.21	0.89	11.63	± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.19	1.32	9.64	± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.15	1.55	9.26	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.40	0.52	8.30	± 11.8% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.45	1.85	3.17	± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.25	1.85	2.66	± 13.1% (k=2)

 $^{^{\}rm C}$ The validity of \pm 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

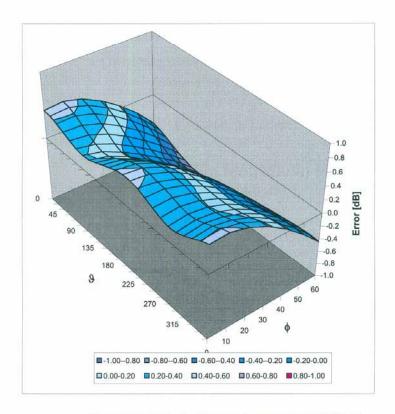
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EX3DV3 SN:3526

August 25, 2006

Deviation from Isotropy in HSL

Error (φ, θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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5. Uncertainty Analysis

$\begin{array}{c} {\rm DASY4~Uncertainty~Budget} \\ {\rm According~to~IEEE~P1528~[1]} \end{array}$

	Uncertainty	Prob.	Div.	(c_i)	(c_i)	Std. Unc.	Std. Unc.	(v_i)
Error Description	value	Dist.		1g	10g	(1g)	(10g)	v_{eff}
Measurement System	100000100000000000000000000000000000000					(0)	()	- 3 3
Probe Calibration	±4.8 %	N	1	1	1	±4.8 %	±4.8 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	$\pm 1.9 \%$	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	$\pm 3.9 \%$	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	$\pm 4.7 \%$	R	$\sqrt{3}$	1	1	$\pm 2.7 \%$	$\pm 2.7 \%$	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Readout Electronics	±1.0 %	N	1	1	1	±1.0 %	±1.0 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	$\pm 1.5 \%$	$\pm 1.5 \%$	∞
RF Ambient Conditions	±3.0 %	R	$\sqrt{3}$	1	1	$\pm 1.7 \%$	$\pm 1.7 \%$	∞
Probe Positioner	$\pm 0.4 \%$	R	$\sqrt{3}$	1	1	$\pm 0.2 \%$	$\pm 0.2 \%$	∞
Probe Positioning	$\pm 2.9 \%$	R	$\sqrt{3}$	1	1	$\pm 1.7 \%$	±1.7 %	∞
Max. SAR Eval.	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Test Sample Related								
Device Positioning	$\pm 2.9 \%$	N	1	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	875
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	$\pm 2.9 \%$	$\pm 2.9 \%$	∞
Phantom and Setup								
Phantom Uncertainty	±4.0 %	R	$\sqrt{3}$	1	1	$\pm 2.3 \%$	$\pm 2.3 \%$	∞
Liquid Conductivity (target)	±5.0 %	R	$\sqrt{3}$	0.64	0.43	$\pm 1.8 \%$	$\pm 1.2 \%$	∞
Liquid Conductivity (meas.)	$\pm 2.5 \%$	N	1	0.64	0.43	$\pm 1.6 \%$	±1.1 %	∞
Liquid Permittivity (target)	±5.0 %	R	$\sqrt{3}$	0.6	0.49	±1.7%	$\pm 1.4 \%$	∞
Liquid Permittivity (meas.)	$\pm 2.5 \%$	N	1	0.6	0.49	$\pm 1.5\%$	$\pm 1.2\%$	∞
Combined Std. Uncertainty						$\pm 10.3 \%$	±10.0 %	331
Expanded STD Uncertain	ty	-				$\pm 20.6\%$	$\pm 20.1\%$	

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6. Phantom Description

Schmid & Partner Engineering AG

S e a P

Zeughausstrasse 43, 8004 Zurich, Switzerland Phone +41 1 245 9700, Fax +41 1 245 9779 info@speag.com, http://www.speag.com

Certificate of Conformity / First Article Inspection

Item	SAM Twin Phantom V4.0	
Type No	QD 000 P40 C	
Series No	TP-1150 and higher	
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich Switzerland	

Tests

The series production process used allows the limitation to test of first articles.

Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff.
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz – 6 GHz: Relative permittivity < 5, Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid.	< 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below	Prototypes, Sample testing

- Standards
 [1] CENELEC EN 50361
 [2] IEEE Std 1528-2003
 [3] IEC 62209 Part I
 [4] FCC OET Bulletin 65, FCC OET Bulletin 65, Supplement C, Edition 01-01
- The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity
Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

07.07.2005

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Signature / Stamp

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7. System Validation from Original equipment supplier

DASY4 Validation Report for Body TSL

Date/Time: 12.02.2007 14:24:23

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:178

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: MSL900;

Medium parameters used: f = 900 MHz; $\sigma = 1.04 \text{ mho/m}$; $\varepsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: ET3DV6 - SN1507 (HF); ConvF(5.8, 5.8, 5.8); Calibrated: 19.10.2006

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

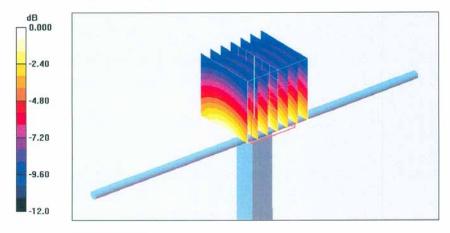
Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 55.9 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 3.80 W/kg

SAR(1 g) = 2.69 mW/g; SAR(10 g) = 1.76 mW/g

Maximum value of SAR (measured) = 2.92 mW/g



0 dB = 2.92 mW/g

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DASY4 Validation Report for Body TSL

Date/Time: 21.03.2006 12:56:12

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U10;

Medium parameters used: f = 1900 MHz; $\sigma = 1.54 \text{ mho/m}$; $\varepsilon_r = 54.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507 (HF); ConvF(4.3, 4.3, 4.3); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA;;
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

Pin = 250 mW; d = 10 mm 2/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (interpolated) = 12.1 mW/g

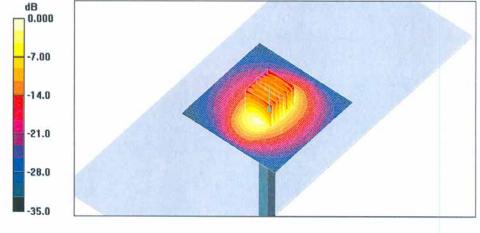
Pin = 250 mW; d = 10 mm 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.5 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.5 mW/g

Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8 mW/g