TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: NTT docomo P-02A

To: OET Bulletin 65 Supplement C: (2001-01)

Test Report Serial No:
RFI/SAR3/RP74300JD09A

Supersedes Test Report Serial No:
RFI/SAR2/RP74300JD09A

This Test Report Is Issued Under The Authority Of Stuart Thomas, General Manager Cellular Services: **pp** 	
Checked By: Scott D'Adamo 	**Report Copy No: PDF01**
Issue Date: 18 December 2008	**Test Dates: 20 November to 24 November 2008**

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1. Customer Information

Company Name:	Panasonic Mobile Communications Development of Europe Ltd
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP United Kingdom

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Description:	Mobile Handset
Brand Name:	NTT Docomo
Model Name or Number:	P-02A
Serial Number:	Sample C18
IMEI Number:	353713020007606
Hardware Version Number:	Rev C++
Software Version Number:	B-WN907D-01.02.002 08-2H_CPF_Cv061350C
Hardware Revision of GSM Module:	Not Stated
Software Revision of GSM Module:	Not Stated
FCC ID Number:	UCE208012A
Country of Manufacture:	Japan
Date of Receipt:	20th November 2008

2.2. Description of EUT

The equipment under test was a Dual mode Cellular Mobile Telephone with PCS, UMTS FDD V and UMTS Release 5 HSDPA capabilities, incorporating Bluetooth and RFID. The Cellular Mobile Telephone operates on PCS/GPRS1900 MHz Band, UMTS/UMTS Release 5 HSDPA 850 MHz Band, Bluetooth 2400 MHz Band and RFID 13.5 MHz Band

2.3. Modifications Incorporated in the EUT

There were no modifications incorporated in the EUT during the duration of the test period.

2.4. Accessories

The following accessories were supplied with the EUT during testing:

Description:	Micro-SD Memory Card
Brand Name:	Panasonic
Connected to Port	Dedicated micro-SD card port

Description:	Battery
Brand Name:	NTT
Model Name or Number:	P19-T1
Serial Number:	None Stated
Cable Length and Type:	Not Applicable
Country of Manufacture:	None Stated
Connected to Port	3 point contact

Description:	Personal Hands-Free Set P01
Brand Name:	NTT docomo
Model Name or Number:	Earphone Set 01
Serial Number:	(Sample P6)
Cable Length and Type:	1.8m / multi-core
Country of Manufacture:	None Stated
Connected to Port	AV Out Port Unique to Manufacturer

2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Communication Test Set
Brand Name:	R&S
Model Name or Number:	CMU200
Serial Number:	101376
Cable Length and Type:	2.0m Utiflex Cable
Connected to Port:	RF (Input/Output) Air Link

2.6. Additional Information Related to Testing

Equipment Category	PCS1900 / UMTS Band V / Bluetooth / RFID		
Type of Unit	Portable Transceiver		
Intended Operating Environment:	Within GSM, UMTS, RFID and Bluetooth Coverage		
Transmitter Maximum Output Power Characteristics:	PCS1900	30 dBm	
	UMTS Band V	24 dBm	
	Bluetooth	2 dBm	
Transmitter Frequency Range:	PCS1900	1850 to 1910 MHz	
	UMTS Band V	826 to 847 MHz	
	Bluetooth	2402 to 2481 MHz	
Transmitter Frequency Allocation of EUT When Under Test:	**Channel Number**	**Channel Description**	**Frequency (MHz)**
	4132	Low	826.4
	4183	Middle	836.6
	4233	High	846.6
	512	Low	1850.2
	660	Middle	1879.8
	810	High	1909.8
Modulation(s):	GMSK(GSM / GPRS): 217 Hz, QPSK(UMTS / HSDPA): 0 Hz		
Modulation Scheme (Crest Factor):	GMSK(GSM): 8.3, GMSK(GPRS):4, QPSK(UMTS FDD / HSDPA):1		
Antenna Type:	Internal		
Antenna Length:	Unknown		
Number of Antenna Positions:	1 Fixed		
Power Supply Requirement:	3.7 V DC		
Battery Type(s):	Li-ion		

3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	OET Bulletin 65 Supplement C: (2001-01)
Title:	Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
Purpose of Test:	To determine whether the equipment met the basic restrictions as defined in OET Bulletin 65 Supplement C: (2001-01) using the SAR averaging method as described in the test specification above.

3.2. Methods and Procedures Reference Documentation

The methods and procedures used were as detailed in:

Federal Communications Commission, “Evaluating compliance with FCC Guidelines for human exposure to radio frequency electromagnetic fields”, OET Bulletin 65 Supplement C, FCC, Washington, D.C, 20554, 2001.

Thomas Schmid, Oliver Egger and Neils Kuster, “Automated E-field scanning system for dosimetric assessments”, IEEE Transaction on microwave theory and techniques,
Vol. 44, pp. 105-113, January 1996.

Neils Kuster, Ralph Kastle and Thomas Schmid, “Dosimetric evaluation of mobile communications equipment with know precision”, IEICE Transactions of communications, Vol. E80-B, No.5, pp. 645-652, May 1997.

KDB 447498 D01 Mobile Portable RF Exposure v03.

KDB 648474 D01 SAR Handsets Multi Xmiter and Ant v01r05.

KDB 941225 D01 SAR test for 3G devices v02.

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

Test was performed as per “KDB 447498 D01 Mobile Portable RF Exposure v03”, “SAR Handsets Multi Xmiter and Ant v01r05” and “KDB 941225 D01 SAR test for 3G devices v02”, according to the handset procedures in IEEE Std 1528-2003, OET Bulletin 65 Supplement C 01-01 and the specific FCC test procedures.

2G SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01). 3G Body SAR test was performed in the middle channel. The top channel was also evaluated using the worst cases configuration from the middle channel as the top channel had the highest output power measured. This configuration was evaluated to prove the overall worst case configuration value consistency.

5. Operation and Configuration of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating mode(s) unless otherwise stated:

- PCS1900 call allocated
- GPRS1900 data allocated
- UMTS FDD V call allocated
- UMTS FDD V - RMC 12.2kbps + HSDPA With Test loop mode 1 and TPC bits configured to all "1's", Sub-test 1
- 2G SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in KDB 648474 and OET Bulletin 65 Supplement C: (2001-01).
- 3G Body SAR test was performed in the middle channel. The top channel was also evaluated using the worst cases configuration from the middle channel as the top channel had the highest output power measured. This configuration was evaluated to prove the overall worst case configuration value consistency.

The reason for choosing this configuration was that it has been defined by the customer as being typical of normal use and likely to be worst case.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration(s) unless otherwise stated:

- Standalone battery powered
- EUT tested in Head and Body-worn configuration. The applied configurations for body-worn orientations where the corresponding edge(s) is closest to the user with the most conservative exposure condition.

Head Configuration

a) The handset was placed in a normal operating position with the centre of the ear-piece aligned with the ear canal on the phantom.

b) With the ear-piece touching the phantom the centre line of the handset was aligned with an imaginary plane (X and Y axis) consisting of three lines connecting both ears and the mouth.

c) For the cheek position the handset was gradually moved towards the cheek until any point of the mouth-piece or keypad touched the cheek.

d) For the tilted position the EUT was positioned as for the cheek position, and then the horizontal angle was increased by fifteen degrees (the phone keypad was moved away from the cheek by fifteen degrees).

e) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimise the drift.

f) The device was keyed to operate continuously in the transmit mode for the duration of the test.

g) The location of the maximum spatial SAR distribution (hot spot) was determined relative to the handset and its antenna.

h) The EUT was transmitting at full power throughout the duration of the test powered by a fully charged battery.

Body Configuration

a) The EUT was placed in a normal operating position where the centre of EUT was aligned with the centre reference point on the flat section of the ‘SAM’ phantom.

b) With the EUT touching the phantom at an imaginary centre line. The EUT was aligned with a marked plane (X and Y axis) consisting of two lines.

c) For the touch-safe position the handset was gradually moved towards the flat section of the ‘SAM’ phantom until any point of the EUT touched the phantom.

d) For position(s) greater then 0mm separation the EUT was positioned as per the touch-safe position, and then the vertical height was decreased/adjusted as required.

e) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimise the drift.

f) The device was keyed to operate continuously in the transmit mode for the duration of the test.

g) The location of the maximum spatial SAR distribution (hot spot) was determined relative to the handset and its antenna.

h) The EUT was transmitting at full power throughout the duration of the test powered by a fully charged battery.

6. Summary of Test Results

Test Name	Specification Reference	Result
Specific Absorption Rate-UMTS FDD V Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS FDD V Body Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS FDD V HSDPA Body Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-PCS1900 Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-PCS1900 Body Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-GPRS1900 Body Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied

SAR Individual Transmitter Evaluation

device, mode	Frequency, (MHz)	P_x (mW)	P_{REF} (mW)	n (cm)	single SAR, W/kg	remarks
WWAN, UMTS	850	724	-	10	0.568	Routine Evaluation
WWAN, GSM	1900	912	-	30	0.489	Routine Evaluation
BT, Bluetooth	2410	2	12	0	:=0	{$P_{BT} \leq 2P_{REF}$} {$d_{UMTS, BT} >$ 5cm} {$d_{gsm,BT} >$ 5cm}

SAR Simultaneous Transmitter Evaluation

(x,y)	d(x,y) cm	L(x,y) cm	$SPLSR_{xy}$	Sim-Tx SAR	remarks
($WWAN_{UMTS}$, BT)	9	n/a	n/a	n/a	{no stand-alone SAR for BT}
($WWAN_{GSM}$, BT)	9	n/a	n/a	n/a	{no stand-alone SAR for BT}

Note(s):

1. *Simultaneous transmission evaluation was not required as the output power for Bluetooth was < (60/f) and the Sum of all antenna < 1.6w/kg.*
2. *Bluetooth transmitter thresholds output power "P_{Ref} = 12 as listed in KDB 648474.*
3. *Px: power level measured by RFI.*
4. *Single SAR value was measured by RFI.*
5. *The "Antenna-to-Antenna distance and Antenna-to-User distance were provided by the customer.*

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG United Kingdom.

7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

7.2. Test Results

7.2.1.Specific Absorption Rate – UMTS FDD V Head Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.446

Environmental Conditions:

Temperature Variation in Lab (°C):	25.0 to 25.0
Temperature Variation in Liquid (°C):	25.0 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Touch Slide Closed Antenna Retracted	Left	4183	0.294	1.600	1.306	-	Complied
Touch Slide Closed Antenna Extended	Left	4183	0.439	1.600	1.161	-	Complied
Touch Slide Open Antenna Retracted	Left	4183	0.364	1.600	1.236	-	Complied
Touch Slide Open Antenna Extended	Left	4183	0.333	1.600	1.267	-	Complied
Tilt Slide Closed Antenna Retracted	Left	4183	0.206	1.600	1.394	-	Complied
Tilt Slide Closed Antenna Extended	Left	4183	0.270	1.600	1.330	-	Complied
Tilt Slide Open Antenna Retracted	Left	4183	0.081	1.600	1.519	-	Complied
Tilt Slide Open Antenna Extended	Left	4183	0.088	1.600	1.512	-	Complied

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Specific Absorption Rate – UMTS FDD V Head Configuration 1g (Continued)

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Touch Slide Closed Antenna Retracted	Right	4183	0.283	1.600	1.317	-	Complied
Touch Slide Closed Antenna Extended	Right	4193	0.446	1.600	1.154	-	Complied
Touch Slide Open Antenna Retracted	Right	4183	0.409	1.600	1.191	-	Complied
Touch Slide Open Antenna Extended	Right	4183	0.362	1.600	1.238	-	Complied
Tilt Slide Closed Antenna Retracted	Right	4183	0.205	1.600	1.395	-	Complied
Tilt Slide Closed Antenna Extended	Right	4183	0.296	1.600	1.304	-	Complied
Tilt Slide Open Antenna Retracted	Right	4183	0.084	1.600	1.516	-	Complied
Tilt Slide Open Antenna Extended	Right	4183	0.099	1.600	1.501	-	Complied

7.2.2.Specific Absorption Rate – UMTS FDD V Body Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.568

Environmental Conditions:

Temperature Variation in Lab (°C):	25.0 to 24.0
Temperature Variation in Liquid (°C):	24.5 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Front of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	4183	0.242	1.600	1.358	1, 2	Complied
Front of EUT Facing Phantom with Slide Closed Antenna Extended	Flat (SAM)	4183	0.260	1.600	1.340	1, 2	Complied
Front of EUT Facing Phantom with Slide Open Antenna Retracted	Flat (SAM)	4183	0.251	1.600	1.349	1, 2	Complied
Front of EUT Facing Phantom with Slide Open Antenna Extended	Flat (SAM)	4183	0.199	1.600	1.401	1, 2	Complied

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Specific Absorption Rate - UMTS FDD V Body Configuration 1g (Continued)

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Rear of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	4183	0.568	1.600	1.032	1, 2	Complied
Rear of EUT Facing Phantom with Slide Closed Antenna Extended	Flat (SAM)	4183	0.527	1.600	1.073	1, 2	Complied
Rear of EUT Facing Phantom with Slide Open Antenna Retracted	Flat (SAM)	4183	0.551	1.600	1.049	1, 2	Complied

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Specific Absorption Rate - UMTS FDD V Body Configuration 1g (Continued)

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Rear of EUT Facing Phantom with Slide Open Antenna Extended	Flat (SAM)	4183	0.496	1.600	1.104	1, 2	Complied
Rear of EUT Facing Phantom with Slide Closed Antenna Retracted With PHF	Flat (SAM)	4183	0.493	1.600	1.107	1, 2	Complied
Rear of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	4233	0.553	1.600	1.047	1, 3	Complied

Note(s):

1. *SAR measurements were performed with the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.*
2. *SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01).*
3. *3G Body SAR test was performed in the middle channel. The top channel was also evaluated using the worst cases configuration from the middle channel as the top channel had the highest output power measured. This configuration was evaluated to prove the overall worst case configuration value consistency.*

7.2.3.Specific Absorption Rate – UMTS – FDD V HSDPA Body Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.536

Environmental Conditions:

Temperature Variation in Lab (°C):	25.0 to 24.0
Temperature Variation in Liquid (°C):	24.5 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Rear of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	4183	0.536	1.600	1.064	1, 2, 3	Complied

Note(s):

1. *SAR measurements were performed with the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.*
2. *RMC12.2kbps + HSDPA Enabled with Test loop mode 1 and TPC bits configured to all "1's", Sub-test 1.*
3. *SAR test was performed using the worst-case configuration for RMC12.2kbps in the middle channel only as the measured levels was < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01).*

7.2.4.Specific Absorption Rate - PCS1900 Head Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.455

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Touch Slide Closed Antenna Retracted	Left	660	0.283	1.600	1.317	1	Complied
Touch Slide Closed Antenna Extended	Left	660	0.316	1.600	1.284	1	Complied
Touch Slide Open Antenna Retracted	Left	660	0.114	1.600	1.486	1	Complied
Touch Slide Open Antenna Extended	Left	660	0.150	1.600	1.450	1	Complied
Tilt Slide Closed Antenna Retracted	Left	660	0.359	1.600	1.241	1	Complied
Tilt Slide Closed Antenna Extended	Left	660	0.351	1.600	1.249	1	Complied
Tilt Slide Open Antenna Retracted	Left	660	0.070	1.600	1.530	1	Complied
Tilt Slide Open Antenna Extended	Left	660	0.078	1.600	1.522	1	Complied

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Specific Absorption Rate - PCS1900 Head Configuration 1g (Continued)

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Touch Slide Closed Antenna Retracted	Right	660	0.361	1.600	1.239	1	Complied
Touch Slide Closed Antenna Extended	Right	660	0.455	1.600	1.145	1	Complied
Touch Slide Open Antenna Retracted	Right	660	0.107	1.600	1.493	1	Complied
Touch Slide Open Antenna Extended	Right	660	0.107	1.600	1.493	1	Complied
Tilt Slide Closed Antenna Retracted	Right	660	0.395	1.600	1.205	1	Complied
Tilt Slide Closed Antenna Extended	Right	660	0.369	1.600	1.231	1	Complied
Tilt Slide Open Antenna Retracted	Right	660	0.075	1.600	1.526	1	Complied
Tilt Slide Open Antenna Extended	Right	660	0.066	1.600	1.534	1	Complied

Note(s):

1. *SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01).*

7.2.5.Specific Absorption Rate - PCS1900 Body Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.144

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Front of EUT Facing Phantom with Slide Open Antenna Retracted	Flat (SAM)	660	0.144	1.600	1.456	1, 2	Complied

Note(s):

1. *SAR measurements were performed with the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.*
2. *SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01).*

7.2.6.Specific Absorption Rate - GPRS1900 Body Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.489

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Front of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	660	0.162	1.600	1.438	1, 2	Complied
Front of EUT Facing Phantom with Slide Closed Antenna Extended	Flat (SAM)	660	0.137	1.600	1.463	1, 2	Complied
Front of EUT Facing Phantom with Slide Open Antenna Retracted	Flat (SAM)	660	0.120	1.600	1.480	1, 2	Complied
Front of EUT Facing Phantom with Slide Open Antenna Extended	Flat (SAM)	660	0.135	1.600	1.465	1, 2	Complied

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Specific Absorption Rate - GPRS1900 Body Configuration 1g (Continued)

EUT Position	Phantom Configuration	Channel Number	Level (W/kg)	Limit (W/kg)	Margin (W/kg)	Note(s)	Result
Rear of EUT Facing Phantom with Slide Closed Antenna Retracted	Flat (SAM)	660	0.480	1.600	1.120	1, 2	Complied
Rear of EUT Facing Phantom with Slide Closed Antenna Extended	Flat (SAM)	660	0.461	1.600	1.139	1, 2	Complied
Rear of EUT Facing Phantom with Slide Open Antenna Retracted	Flat (SAM)	660	0.442	1.600	1.158	1, 2	Complied
Rear of EUT Facing Phantom with Slide Open Antenna Extended	Flat (SAM)	660	0.489	1.600	1.111	1, 2	Complied
Rear of EUT Facing Phantom with Slide Open Antenna Extended With PHF	Flat (SAM)	660	0.339	1.600	1.261	1, 2	Complied

Note(s):

1. *SAR measurements were performed with the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.*
2. *SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit as stated in OET Bulletin 65 Supplement C: (2001-01).*

7.2.7. EIRP/ERP Measurements

Channel Number	Frequency (MHZ)	GSM – TX Power before Test (dBm)	GPRS – TX Power before Test (dBm)	Note
512	1850.2	29.6	27.9	EIRP
660	1879.8	27.7	27.0	EIRP
810	1909.8	28.9	26.2	EIRP

Modes		HSDPA				WCDMA
Sets		1	2	3	4	Voice / RMC12.2kbps
Band	Channel	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]
850	4132	23.7	23.7	23.8	23.7	26.5
	4183	25.1	25.2	25.1	25.6	27.7
	4233	26.6	27.0	26.8	26.4	28.6
ßc		**2**	**12**	**15**	**15**	
ßd		**15**	**15**	**8**	**4**	
ΔACK, ΔNACK, ΔCQI		**8**	**8**	**8**	**8**	

8. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Test Name	Confidence Level	Calculated Uncertainty
Specific Absorption Rate-PCS1900 Head Configuration 1g	95%	18.44%
Specific Absorption Rate- PCS1900 Body Configuration 1g	95%	18.30%
Specific Absorption Rate- GPRS1900 Body Configuration 1g	95%	18.30%
Specific Absorption Rate- UMTS850 Head Configuration 1g	95%	17.91%
Specific Absorption Rate- UMTS850 Body Configuration 1g	95%	17.93%

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

Measurement Uncertainty (Continued)

8.1. Specific Absorption Rate Uncertainty at 1900 MHz Head 1g, PCS Modulation Scheme calculated in accordance with IEC 62209-1 & IEEE 1528

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	11.000	11.000	normal (k=2)	2.0000	1.0000	5.500	5.500	∞
B	Axial Isotropy	0.500	0.500	normal (k=2)	2.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	2.600	2.600	normal (k=2)	2.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.560	0.560	normal (k=2)	2.0000	1.0000	0.280	0.280	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.370	4.370	normal (k=1)	1.0000	0.6400	2.797	2.797	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.450	4.450	normal (k=1)	1.0000	0.6000	2.670	2.670	5
	Combined standard uncertainty			t-distribution			9.41	9.41	>300
	Expanded uncertainty			k = 1.96			18.44	18.44	>300

Measurement Uncertainty (Continued)

8.2. Specific Absorption Rate Uncertainty at 1900 MHz Body 1g, PCS Modulation Scheme calculated in accordance with IEC 62209-1 & IEEE 1528

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	11.000	11.000	normal (k=2)	2.0000	1.0000	5.500	5.500	∞
B	Axial Isotropy	0.500	0.500	normal (k=2)	2.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	2.600	2.600	normal (k=2)	2.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.560	0.560	normal (k=2)	2.0000	1.0000	0.280	0.280	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.170	4.170	normal (k=1)	1.0000	0.6400	2.669	2.669	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.230	4.230	normal (k=1)	1.0000	0.6000	2.538	2.538	5
	Combined standard uncertainty			t-distribution			9.34	9.34	>500
	Expanded uncertainty			k = 1.96			18.30	18.30	>500

Measurement Uncertainty (Continued)

8.3. Specific Absorption Rate Uncertainty at 1900 MHz Body 1g, GPRS Modulation Scheme calculated in accordance with IEC 62209-1 & IEEE 1528

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	11.000	11.000	normal (k=2)	2.0000	1.0000	5.500	5.500	∞
B	Axial Isotropy	0.500	0.500	normal (k=2)	2.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	2.600	2.600	normal (k=2)	2.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.560	0.560	normal (k=2)	2.0000	1.0000	0.280	0.280	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.170	4.170	normal (k=1)	1.0000	0.6400	2.669	2.669	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.230	4.230	normal (k=1)	1.0000	0.6000	2.538	2.538	5
	Combined standard uncertainty			t-distribution			9.34	9.34	>400
	Expanded uncertainty			k = 1.96			18.30	18.30	>400

8.4. Specific Absorption Rate Uncertainty at 850 MHz Head 1g, UMTS Modulation Scheme calculated in accordance with IEC 62209-1 & IEEE 1528

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	11.000	11.000	normal (k=2)	2.0000	1.0000	5.500	5.500	∞
B	Axial Isotropy	0.500	0.500	normal (k=2)	2.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	2.600	2.600	normal (k=2)	2.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.560	0.560	normal (k=2)	2.0000	1.0000	0.280	0.280	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	3.410	3.410	normal (k=1)	1.0000	0.6400	2.182	2.182	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.140	4.140	normal (k=1)	1.0000	0.6000	2.484	2.484	5
	Combined standard uncertainty			t-distribution			9.14	9.14	>500
	Expanded uncertainty			k = 1.96			17.91	17.91	>500

8.5. Specific Absorption Rate Uncertainty at 850 MHz Body 1g, UMTS Modulation Scheme calculated in accordance with IEC 62209-1 & IEEE 1528

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	$c_{i\ (10g)}$	Standard Uncertainty		υ_i or υ_{eff}
							+ u (%)	- u (%)	
B	Probe calibration	11.000	11.000	normal (k=2)	2.0000	1.0000	5.500	5.500	∞
B	Axial Isotropy	0.500	0.500	normal (k=2)	2.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	2.600	2.600	normal (k=2)	2.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.560	0.560	normal (k=2)	2.0000	1.0000	0.280	0.280	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	3.600	3.600	normal (k=1)	1.0000	0.6400	2.304	2.304	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.000	4.000	normal (k=1)	1.0000	0.6000	2.400	2.400	5
	Combined standard uncertainty			t-distribution			9.15	9.15	>500
	Expanded uncertainty			k = 1.96			17.93	17.93	>500

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A034	Narda 20W Termination	Narda	374BNM	8706	Calibrated as part of system	-
A1094	Digital Camera	Sony	MVC - FD81	125805	-	-
A1097	SMA Directional Coupler	MiDISCO	MDC6223-30	None	Calibrated as part of system	-
A1137	3dB Attenuator	Narda	779	04690	Calibrated as part of system	-
A1174	Dielectric Probe Kit	Agilent Technologies	85070C	Us99360072	Calibrated before use	-
A1328	Handset Positioner	Schmid & Partner Engineering AG	Modification	SD 000 H01 DA	-	-
A1182	Handset Positioner	Schmid & Partner Engineering AG	V3.0	None	-	-
A1184	Data Acquisition Electronics	Schmid & Partner Engineering AG	DAE3	394	25 June 2008	12
A1378	Probe	Schmid & Partner Engineering AG	EX3 DV3	3508	24 June 2008	12
A1238	SAM Phantom	Schmid & Partner Engineering AG	SAM b	001	Calibrated before use	-
A1566	SAM Phantom	Schmid & Partner Engineering AG	SAM a	002	Calibrated before use	-
A1237	1900 MHz Dipole Kit	Schmid & Partner Engineering AG	D1900V2	540	11 June 2007	24
A1329	900 MHz Dipole Kit	Schmid & Partner Engineering AG	D900V2	185	18 May 2007	24
A1497	Amplifier	Mini-Circuits	zhl-42w (sma)	e020105	Calibrated as part of system	-
A215	20 dB Attenuator	Narda	766-20	9402	Calibrated as part of system	-
C1144	Cable	Rosenberger MICRO-COAX	FA147AF00 1503030	41842-1	Calibrated as part of system	-
C1145	Cable	Rosenberger MICRO-COAX	FA147AF00 3003030	41843-1	Calibrated as part of system	-
C1146	Cable	Rosenberger MICRO-COAX	FA147AF03 0003030	41752-1	Calibrated as part of system	-
G0528	Robot Power Supply	Schmid & Partner Engineering AG	DASY	None	Calibrated before use	-

Test of: **NTT docomo P-02A**

To: **OET Bulletin 65 Supplement C: (2001-01)**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
G087	PSU	Thurlby Thandar	CPX200	100701	Calibrated before use	-
M010	NRV Power Meter	Rohde & Schwarz	NRV	882 317/065	08 May 2008	12
M1015	Network Analyser	Agilent Technologies	8753ES	US39172406	16 September 2008	12
M1047	Robot Arm	Staubli	RX908 L	F00/SD89A1/A/01	Calibrated before use	-
M1069	Diode Power Sensor	Rohde & Schwarz	NRV-Z2	838824/010	08 May 2008	12
M1129	Power Sensor	Rohde & Schwarz	URY-Z2	890242/16	12 June 2008	12
M136	Temperature/Humidity/Pressure Meter	RS Components	None	None	Internal Calibration	-
L0982	GSM/UMTS Test Set	Rohde & Schwarz	CMU200-100.0008.02	101376	21 October 2008	12
M1140	Radio Communication Analyser	Anritsu	MT8820A	6K0000047	16 March 2006 (Communication use only)	12
A1287	Power head	Rohde & Schwarz	URY-Z4	880 174/12	02 Jan 2008	12
M1270	Temperature/Humidity/Pressure Meter	RS Components	None	None	June 2008 (Internal Calibration)	12
M1093	Communications Test Set	Will tek	4202S	0513018	-	-
C1092	Cable	RS Components	293-334	1087200-33402	Internal Calibration	-
A1531	Antenna	AARONIA AG	7025	02458	-	-
S256	SAR Lab	RFI	Site 56	N/A	Calibrated before use	-

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

A.1.1. Calibration Certificates

This section contains the calibration certificates and data for the Probe(s) and Dipole(s) used, which are not included in the total number of pages for this report.

A1378
Checked by [illegible]

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

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

Accredited by the Swiss Accreditation Service (SAS)
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 RFI

Certificate No: EX3-3508_Jun08

CALIBRATION CERTIFICATE

Object	EX3DV3 - SN:3508
Calibration procedure(s)	QA CAL-01.v6, QA CAL-12.v5 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	June 24, 2008
Condition of the calibrated item	In Tolerance

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 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 660	3-Sep-07 (No. DAE4-660_Sep07)	Sep-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: June 24, 2008

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

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

Accredited by the Swiss Accreditation Service (SAS)
Accreditation No.: SCS 108
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
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ 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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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 E^2-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 $f \leq 800$ 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.

Probe EX3DV3

SN:3508

Manufactured:	December 19, 2003
Last calibrated:	April 20, 2007
Recalibrated:	June 24, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: EX3DV3 SN:3508

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**0.77** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**94** mV
NormY	**0.64** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**93** mV
NormZ	**0.61** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**92** 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		**2.0 mm**	**3.0 mm**
SAR_{be} [%]	Without Correction Algorithm	8.7	5.0
SAR_{be} [%]	With Correction Algorithm	0.4	0.2

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**2.0 mm**	**3.0 mm**
SAR_{be} [%]	Without Correction Algorithm	7.4	4.0
SAR_{be} [%]	With Correction Algorithm	0.6	0.2

Sensor Offset

Probe Tip to Sensor Center	**1.0** mm

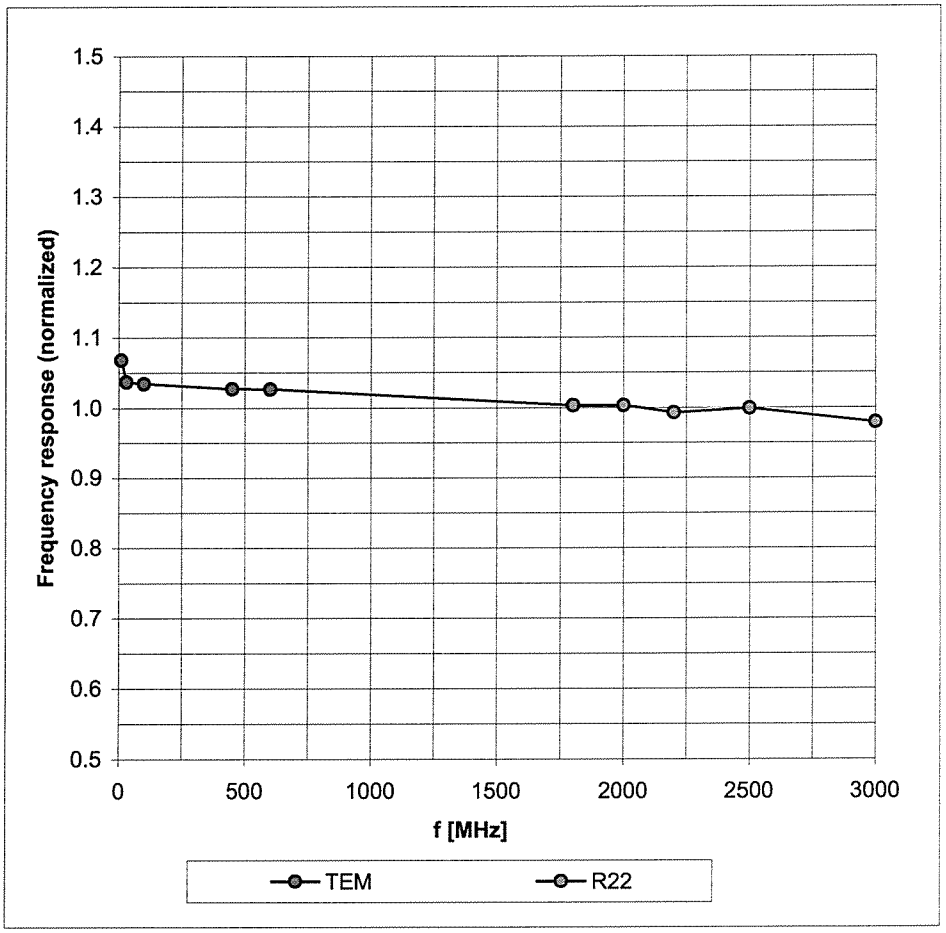
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

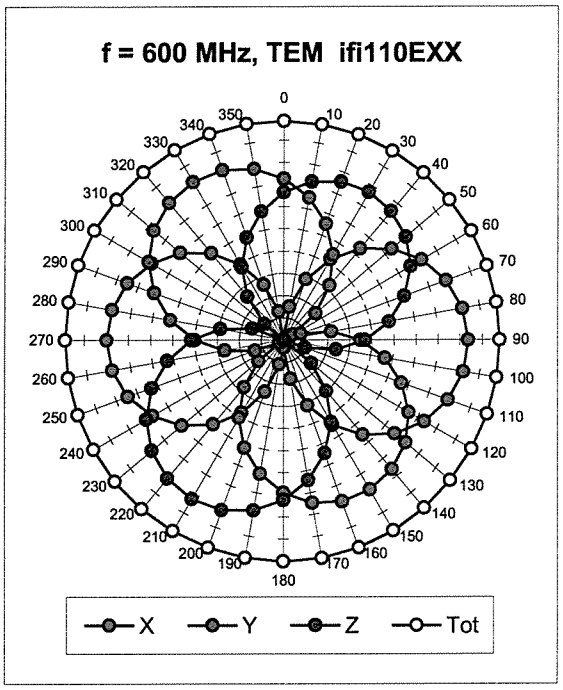
Frequency Response of E-Field

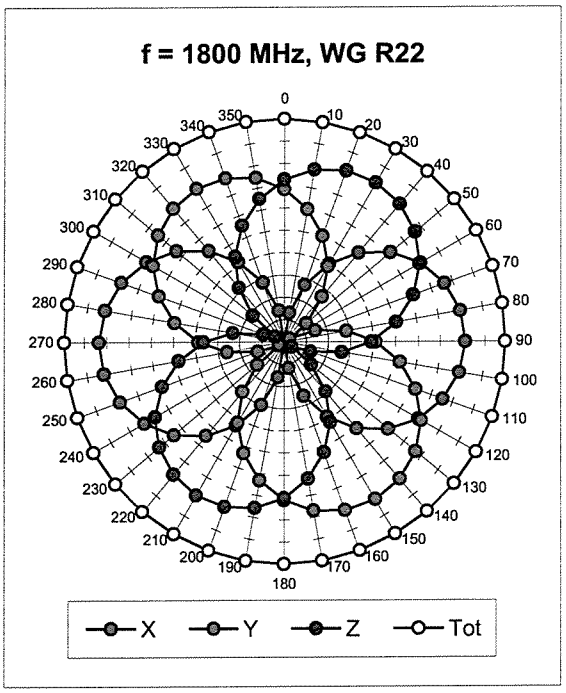
(TEM-Cell:ifi110 EXX, Waveguide: R22)

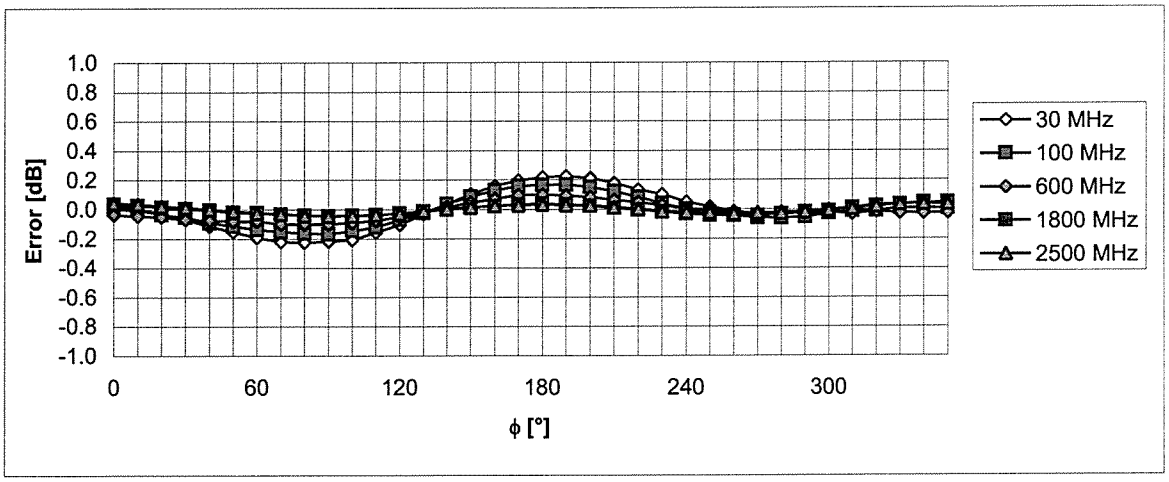


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



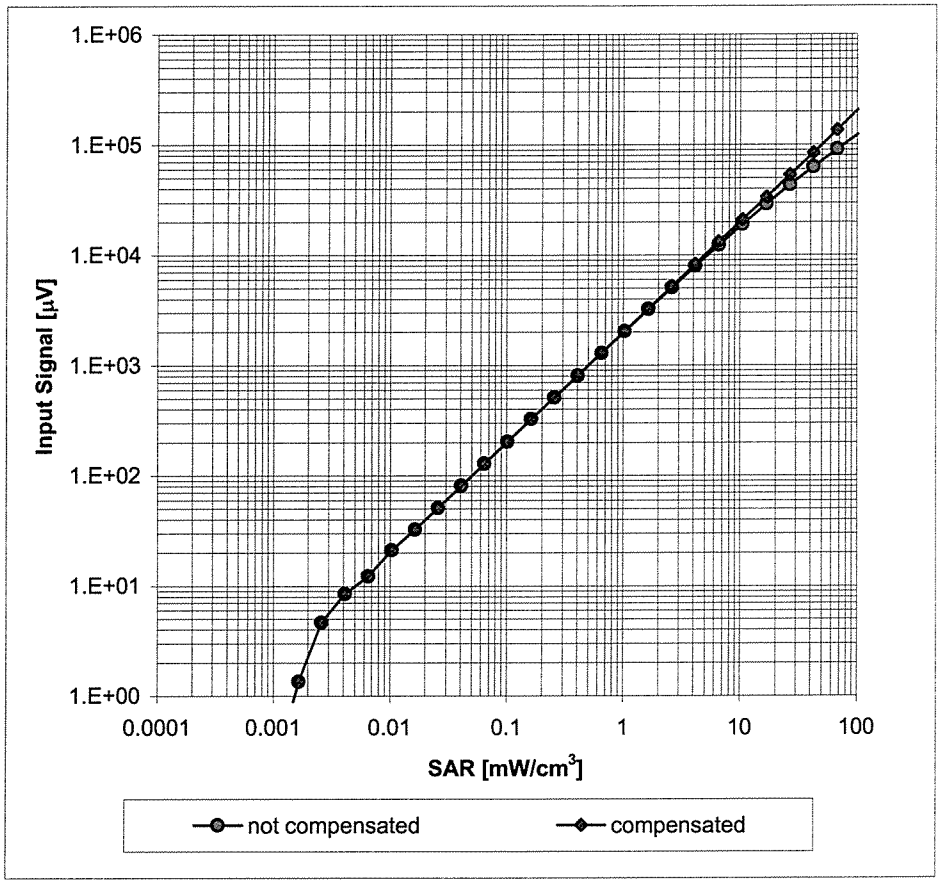


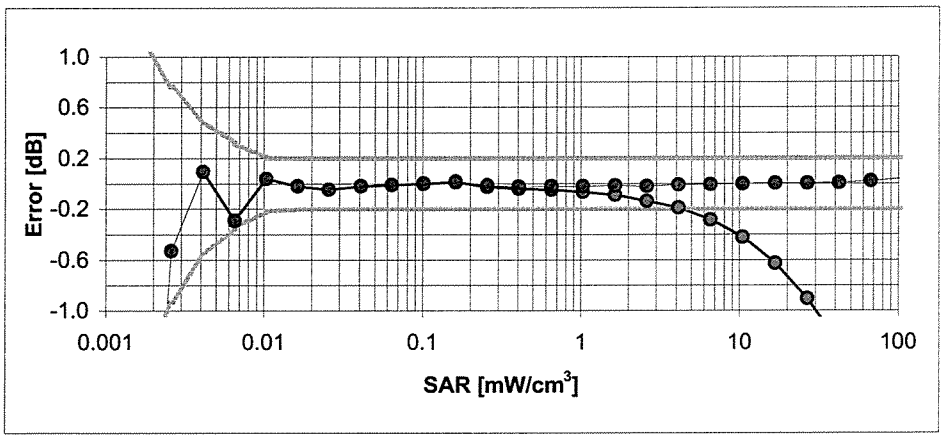


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

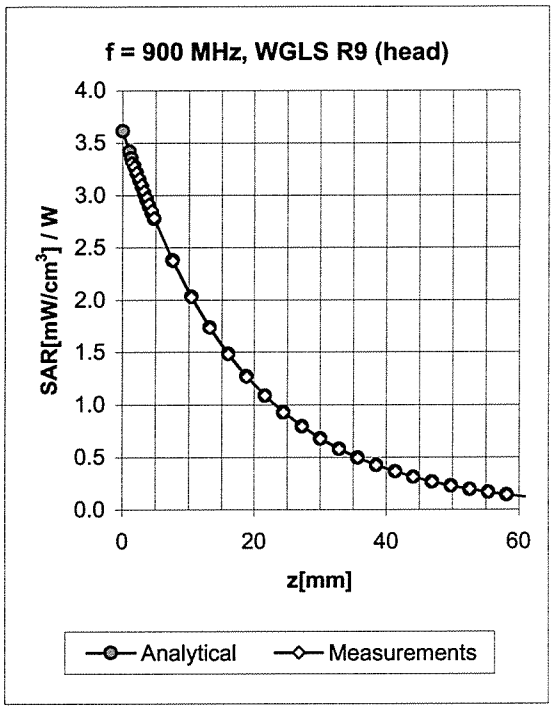
(Waveguide R22, f = 1800 MHz)

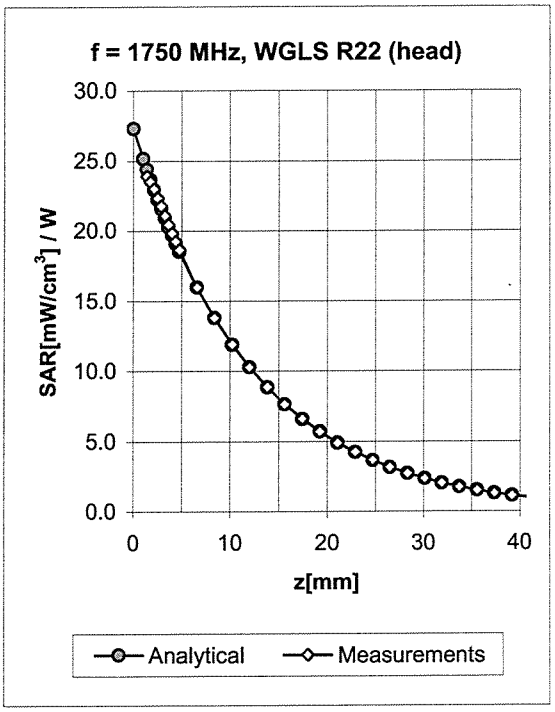




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



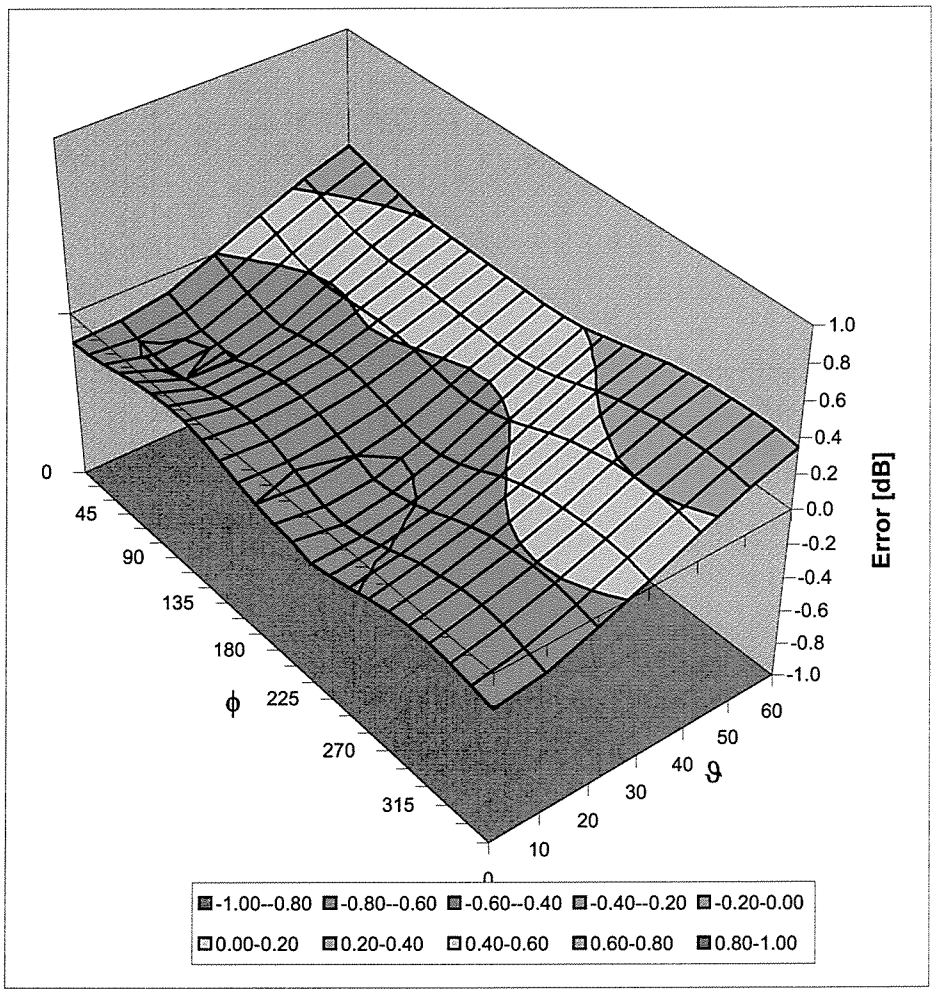


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.37	0.78	10.89 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.68	0.67	10.14 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.76	0.58	9.08 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.66	0.58	8.83 ± 11.0% (k=2)
2150	± 50 / ± 101	Head	39.7 ± 5%	1.53 ± 5%	0.71	0.56	8.61 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.58	0.63	8.02 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.64	0.41	11.73 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.85	0.61	10.21 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.58	0.70	8.80 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.62	0.68	8.29 ± 11.0% (k=2)
2150	± 50 / ± 100	Body	53.0 ± 5%	1.75 ± 5%	0.51	0.78	8.14 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.53	0.76	7.68 ± 11.0% (k=2)

[C] **The validity of ± 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.**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

A1237
20/06/07 NM

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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 RFI

Certificate No: D1900V2-540_Jun07

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 540
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	June 11, 2007
Condition of the calibrated item	In Tolerance

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 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
Reference Probe ES3DV3	SN: 3025	19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07
DAE4	SN 601	30-Jan-07 (SPEAG, No. DAE4-601_Jan07)	Jan-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 14, 2007

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.7 ± 6 %	1.46 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.25 mW / g
SAR normalized	normalized to 1W	37.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**36.1 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.89 mW / g
SAR normalized	normalized to 1W	19.6 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**19.3 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.8 ± 6 %	1.58 mho/m ± 6 %
Body TSL temperature during test	(21.2 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.52 mW / g
SAR normalized	normalized to 1W	38.1 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**38.0 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.14 mW / g
SAR normalized	normalized to 1W	20.6 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**20.7 mW / g ± 16.5 % (k=2)**

[2] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω + 5.1 jΩ
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.7 Ω + 4.8 jΩ
Return Loss	- 25.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

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.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 26, 2001

DASY4 Validation Report for Head TSL

Date/Time: 11.06.2007 10:40:22

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:540

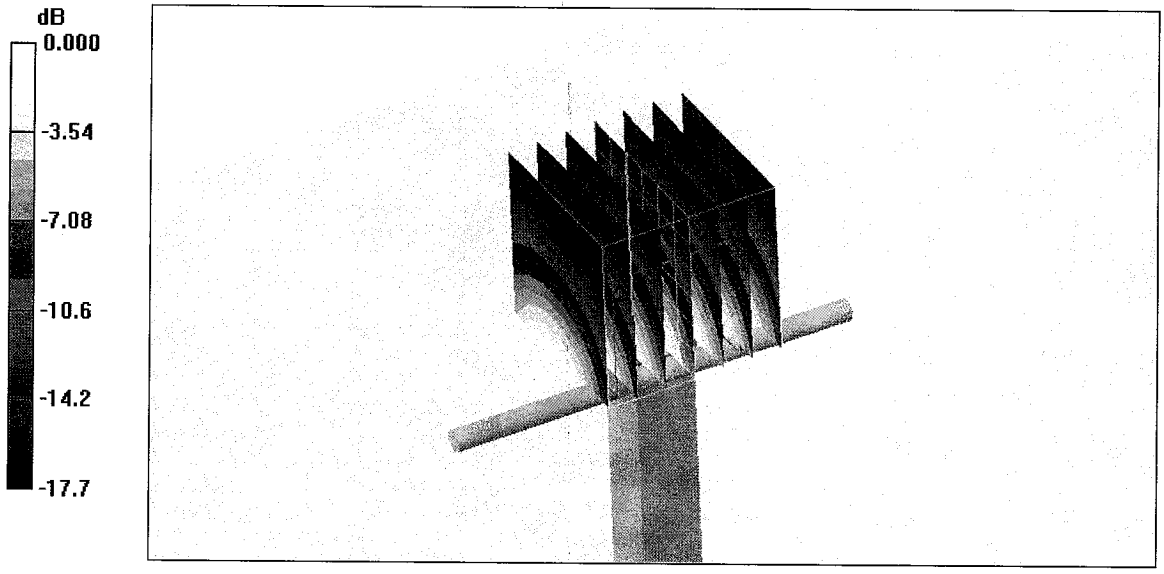
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.46 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.97, 4.97, 4.97); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

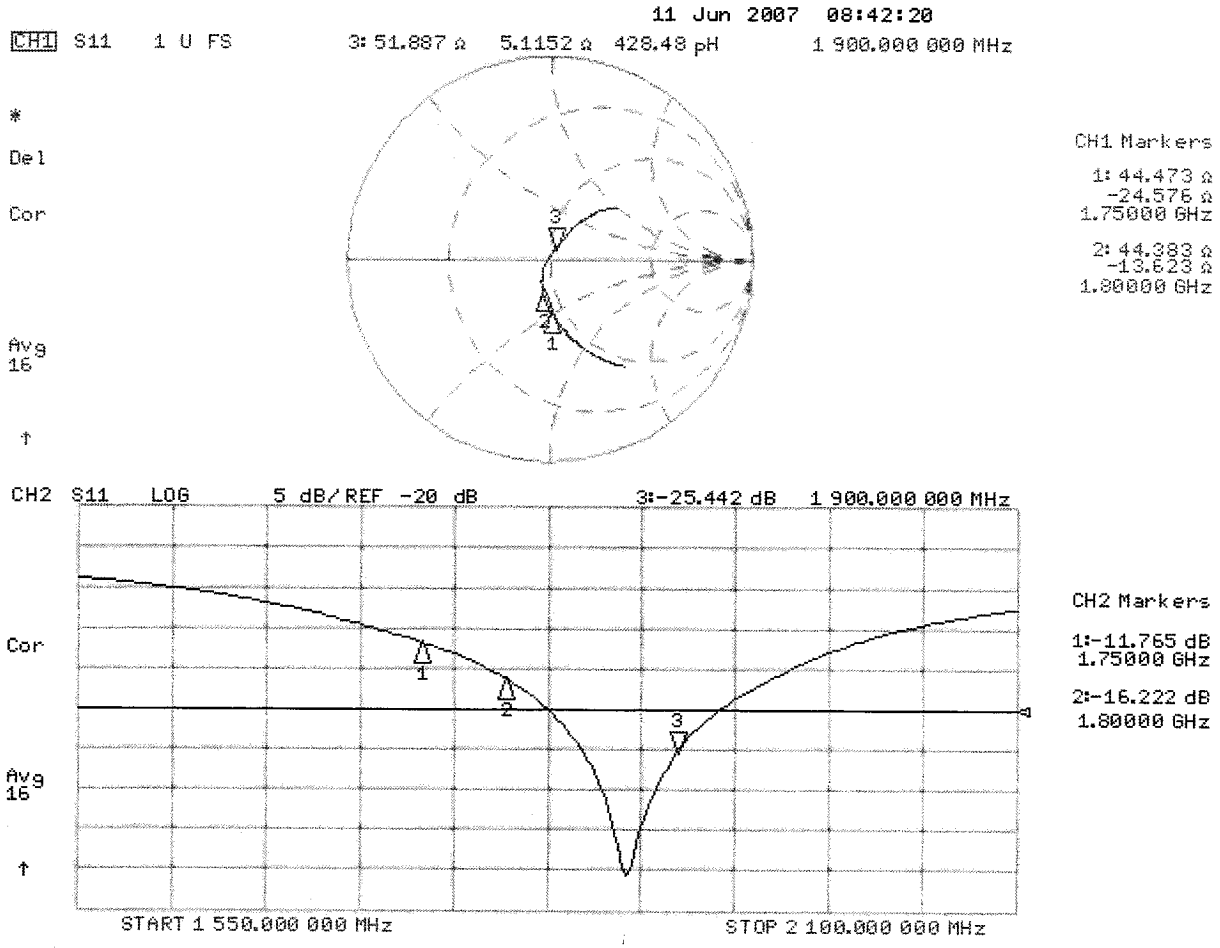
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.9 V/m; Power Drift = 0.054 dB
Peak SAR (extrapolated) = 15.7 W/kg
SAR(1 g) = 9.25 mW/g; SAR(10 g) = 4.89 mW/g
Maximum value of SAR (measured) = 10.2 mW/g



0 dB = 10.2mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 11.06.2007 11:24:00

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:540

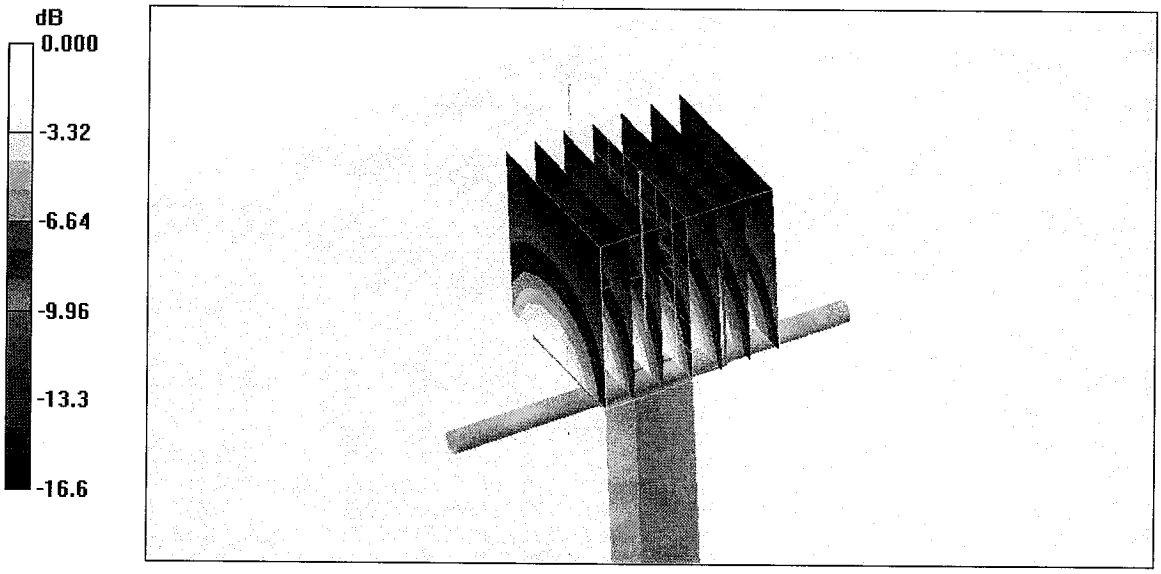
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.59 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.43, 4.43, 4.43); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

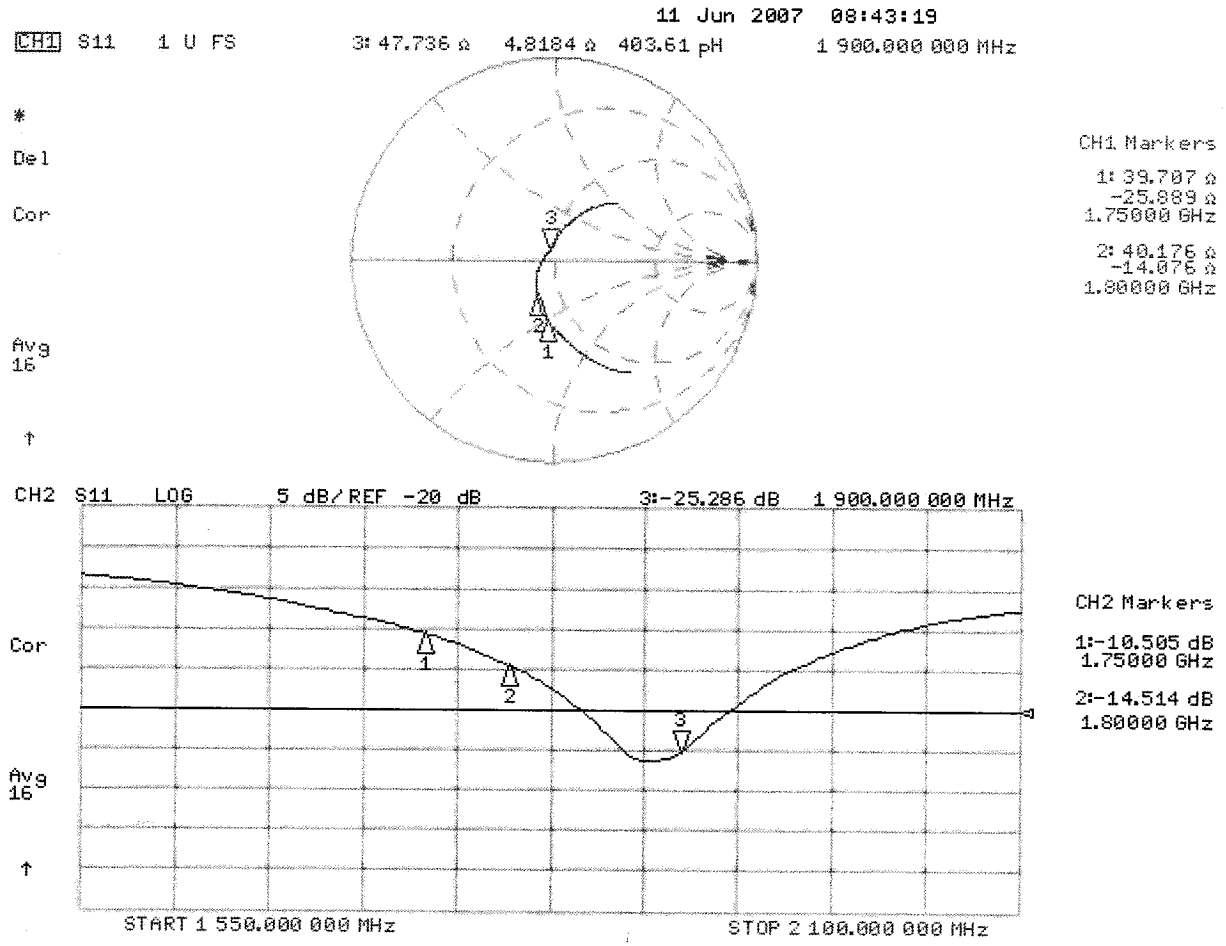
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.9 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 15.8 W/kg
SAR(1 g) = 9.52 mW/g; SAR(10 g) = 5.14 mW/g
Maximum value of SAR (measured) = 10.6 mW/g



0 dB = 10.6mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client RFI

Certificate No. D900V2-185_May07

CALIBRATION CERTIFICATE

Object	D900V2 - SN: 185
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	May 18, 2007
Condition of the calibrated item	In Tolerance

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 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6 (HF)	SN 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
DAE4	SN 601	30-Jan-07 (SPEAG, No. DAE4-601_Jan07)	Jan-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 21, 2007

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.95 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.65 mW / g
SAR normalized	normalized to 1W	10.6 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**10.6 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.71 mW / g
SAR normalized	normalized to 1W	6.84 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.84 mW /g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.0	1.05 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	1.04 mho/m ± 6 %
Body TSL temperature during test	(22.5 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	2.70 mW / g
SAR normalized	normalized to 1W	10.8 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**10.5 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.76 mW / g
SAR normalized	normalized to 1W	7.04 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**6.88 mW /g ± 16.5 % (k=2)**

[2] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.9 Ω - 8.2 jΩ
Return Loss	- 21.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω - 9.2 jΩ
Return Loss	- 20.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.405 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

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.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 27, 2003

DASY4 Validation Report for Head TSL

Date/Time: 14.05.2007 14:01:26

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:185

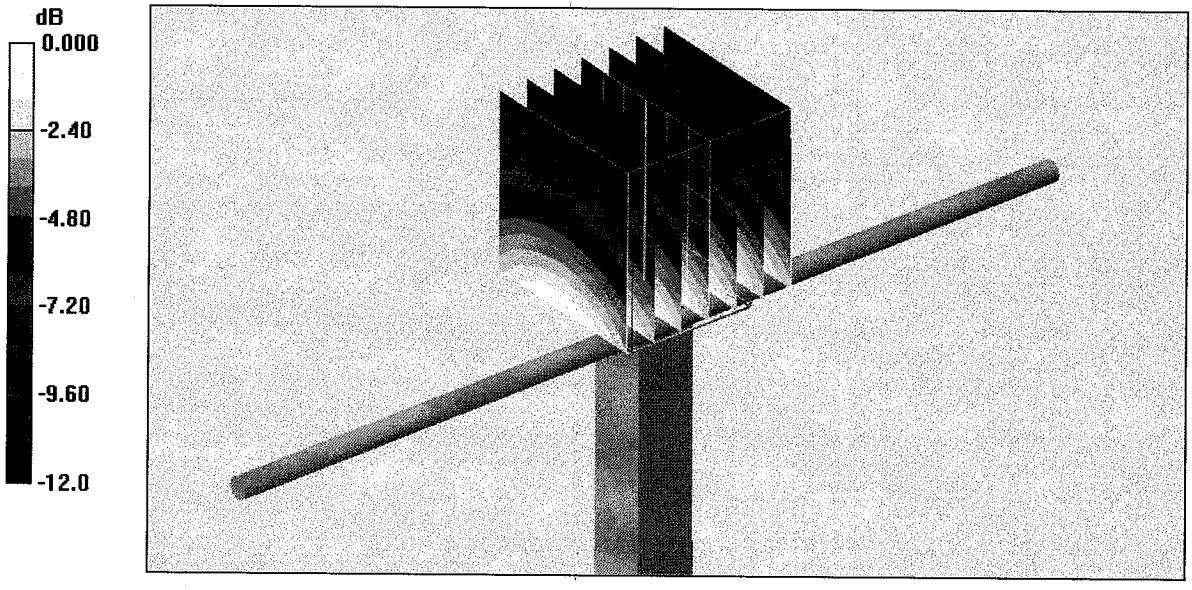
Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 900 MHz; σ = 0.95 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.01, 6.01, 6.01); 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

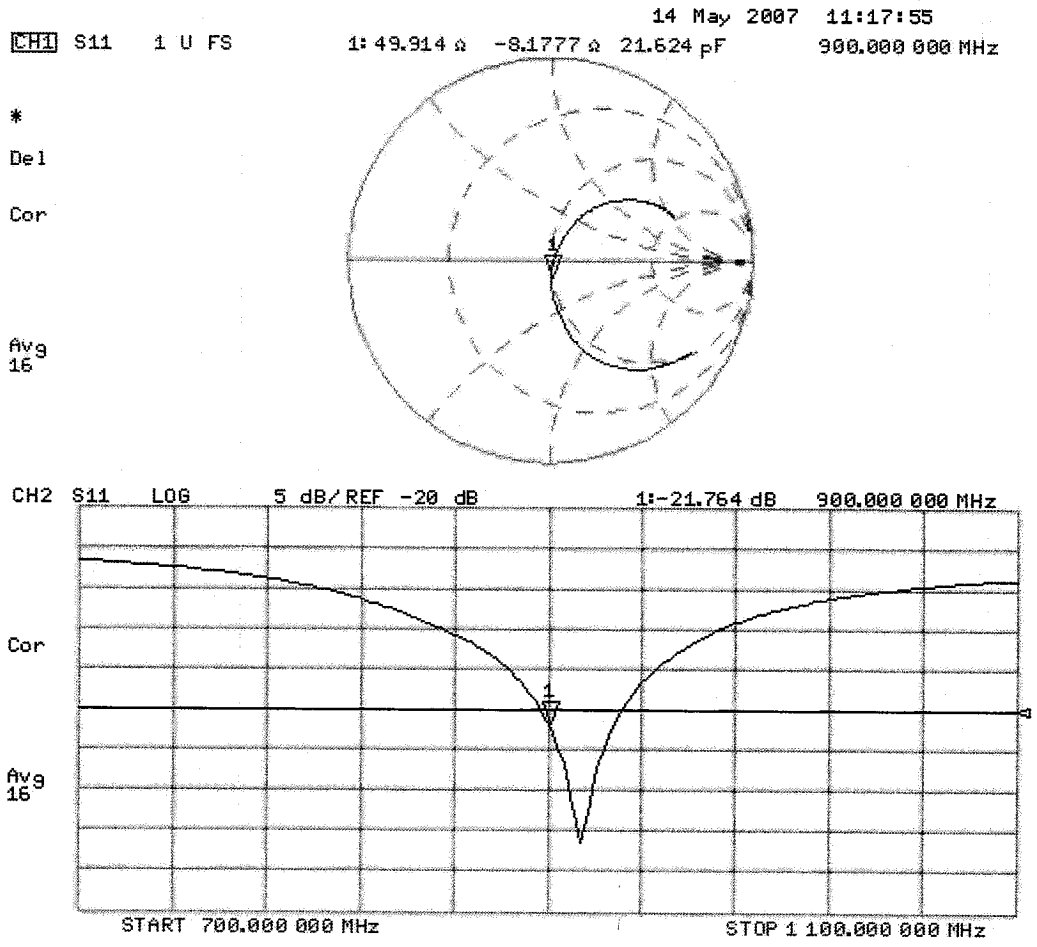
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.5 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 3.92 W/kg
SAR(1 g) = 2.65 mW/g; SAR(10 g) = 1.71 mW/g
Maximum value of SAR (measured) = 2.89 mW/g



0 dB = 2.89mW/g

Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 18.05.2007 15:00:08

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:185

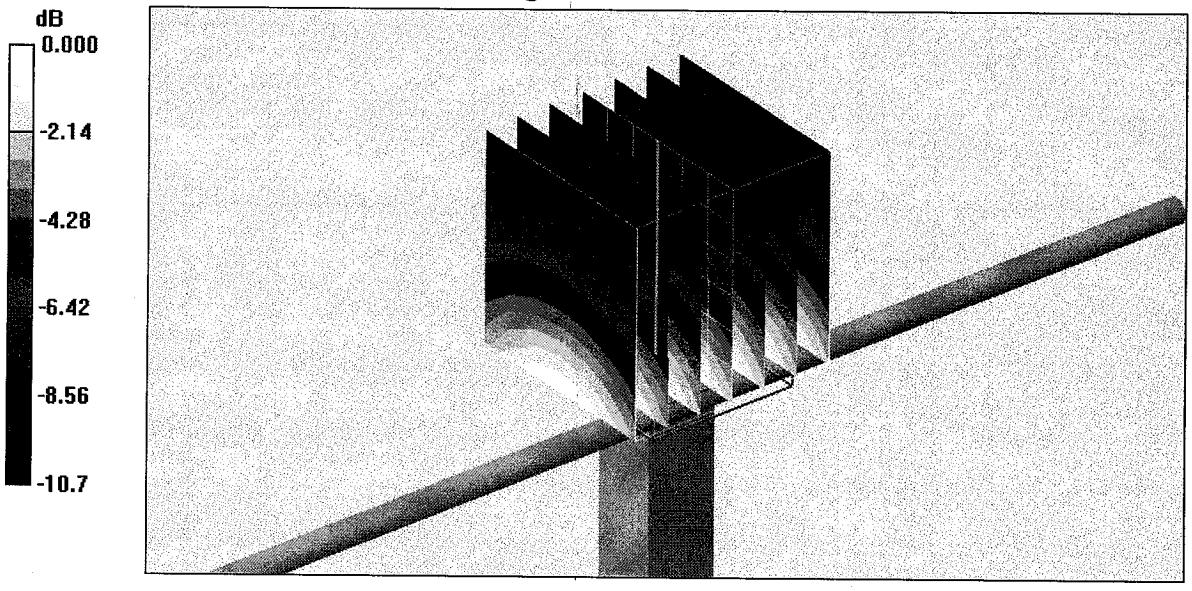
Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1
Medium: MSL900;
Medium parameters used: f = 900 MHz; σ = 1.04 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

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

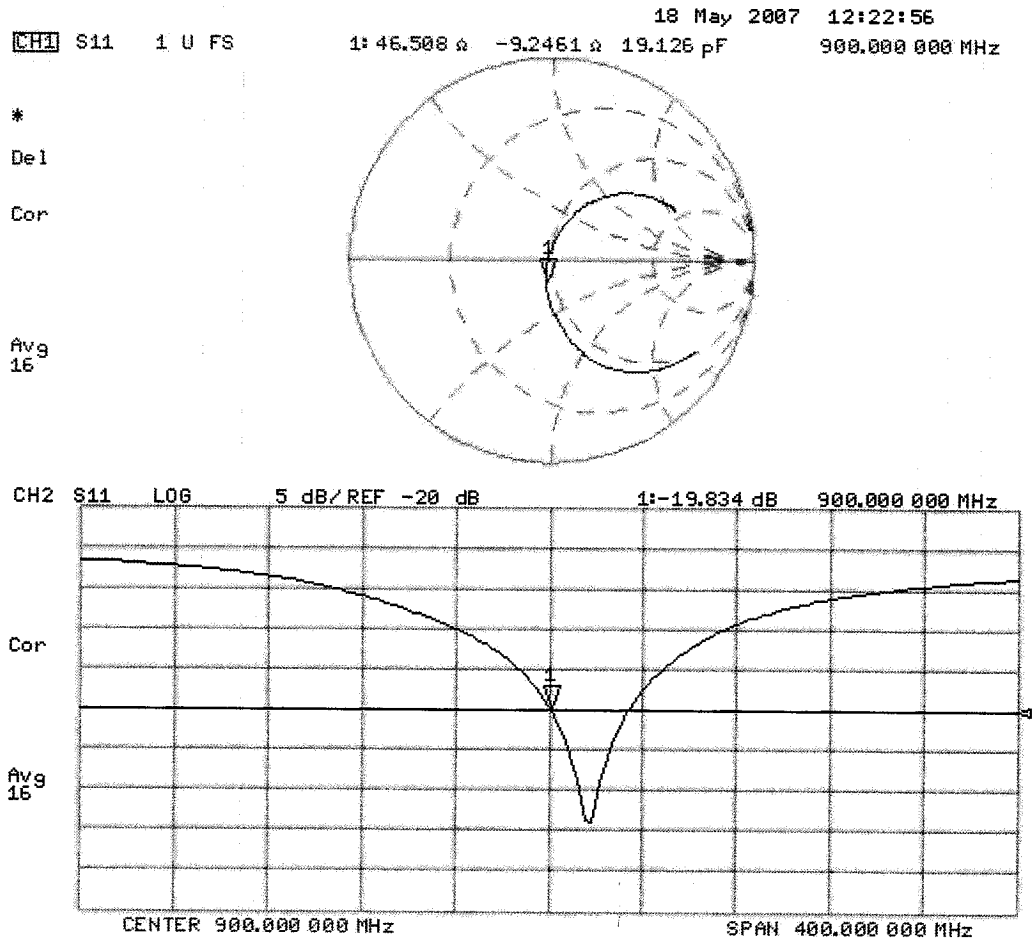
Pin=250mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.8 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 3.82 W/kg
SAR(1 g) = 2.7 mW/g; SAR(10 g) = 1.76 mW/g
Maximum value of SAR (measured) = 2.94 mW/g



0 dB = 2.94mW/g

Impedance Measurement Plot for Body TSL



Appendix 2. Measurement Methods

A.2.1. Evaluation Procedure

The Specific Absorption Rate (SAR) evaluation was performed in the following manner:

a) (i) The evaluation was performed in an applicable area of the phantom depending on the type of device being tested. For devices worn about the ear during normal operation, both the left and right ear positions were evaluated at the centre frequency of the band at maximum power. The side, which produced the greatest SAR, determined which side of the phantom would be used for the entire evaluation. The positioning of the head worn device relative to the phantom was dictated by the test specification identified in section 3.1 of this report.

   (ii) For body worn devices or devices which can be operated within 20 cm of the body, the flat section of the SAM phantom was used were the size of the device(s) is normal. for bigger devices and base station the 2mm Oval phantom is used for evaluation. The type of device being evaluated dictated the distance of the EUT to the outer surface of the phantom flat section.

b) The SAR was determined by a pre-defined procedure within the DASY4 software. The exposed region of the phantom was scanned near the inner surface with a grid spacing of 20mm x 20mm or appropriate resolution.

c) A 5x5x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.

d) If the EUT had any appreciable drift over the course of the evaluation, then the EUT was re-evaluated. Any unusual anomalies over the course of the test also warranted a re-evaluation.

A.2.2. Specific Absorption Rate (SAR) Measurements to OET Bulletin 65 Supplement C: (2001-01)

Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

SAR measurements were performed in accordance with Appendix D of the standard FCC OET Bulletin 65 Supplement C: 2001, against appropriate limits for each measurement position in accordance with the standard.

The test was performed in a shielded enclosure with the temperature controlled to remain between +18.0ºC and +25.0ºC. The tissue equivalent material fluid temperature was controlled to give a maximum variation of ± 2.0ºC

Prior to any SAR measurements on the EUT, system validation and material dielectric property measurements were conducted. In the absence of a detailed procedure within the specification, system validation and material dielectric property measurements were performed in accordance with Appendix C and Appendix D of FCC OET Bulletin 65 Supplement C: 2001.

Following the successful system validation and material dielectric property measurements, a SAR versus time sweep shall be performed within 10 mm of the phantom inner surface. If the EUT power output is stable after three minutes then the measurement probe will perform a coarse surface level scan at each test position in order to ascertain the location of the maximum local SAR level. Once this area had been established, a 5x5x7 cube of 343 points (5 mm spacing in each axis ≈ 27g) will be centred at the area of concern. Extrapolation and interpolation will then be carried out on the 27g of tissue and the highest averaged SAR over a 10g cube determined.

Once the maximum interpolated SAR measurement is complete; the coarse scan is visually assessed to check for secondary peaks within 50% of the maximum SAR level. If there are any further SAR measurements required, extra 5x5x7 cubes shall be centred on each of these extra local SAR maxima.

At the end of each position test case a second time sweep shall be performed to check whether the EUT has remained stable throughout the test.

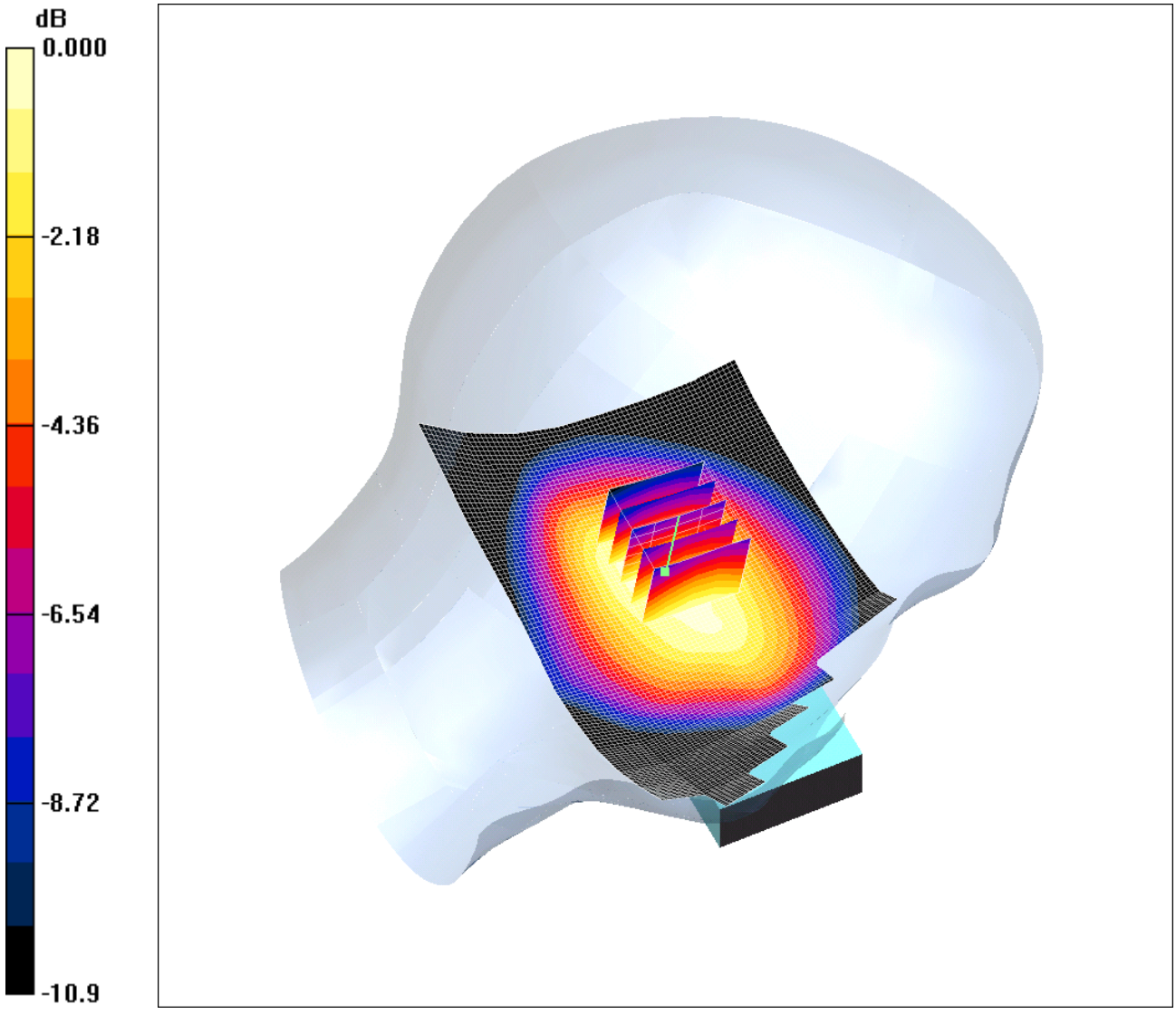
Appendix 3. SAR Distribution Scans

This appendix contains SAR distribution scans which are not included in the total number of pages for this report.

Scan Reference Number	Title
SCN/74300JD09/001	Touch Left EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/002	Touch Left EUT Slide Closed With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/003	Touch Left EUT Slide Open With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/004	Touch Left EUT Slide Open With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/005	Tilt Left EUT Slide Close With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/006	Tilt Left EUT Slide Close With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/007	Tilt Left EUT Slide Open With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/008	Tilt Left EUT Slide Open With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/009	Touch Right EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/010	Touch Right EUT Slide Closed With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/011	Touch Right EUT Slide Open With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/012	Touch Right EUT Slide Open With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/013	Tilt Right EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/014	Tilt Right EUT Slide Closed With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/015	Tilt Right EUT Slide Open With UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/016	Tilt Right EUT Slide Open With UHF Antenna Extended FDD V CH4183
SCN/74300JD09/017	Front of EUT Facing Phantom With Slide Closed UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/018	Front of EUT Facing Phantom With Slide Closed UHF Antenna Extended FDD V CH4183
SCN/74300JD09/019	Front of EUT Facing Phantom With Slide Open UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/020	Front of EUT Facing Phantom With Slide Open UHF Antenna Extended FDD V CH4183
SCN/74300JD09/021	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/022	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Extended FDD V CH4183
SCN/74300JD09/023	Rear of EUT Facing Phantom With Slide Open UHF Antenna Retracted FDD V CH4183
SCN/74300JD09/024	Rear of EUT Facing Phantom With Slide Open UHF Antenna Extended FDD V CH4183
SCN/74300JD09/025	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Retracted FDD V CH4183 RMC 12_2kbps + HSDPA
SCN/74300JD09/026	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Retracted With PHF FDD V CH4183
SCN/74300JD09/027	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Retracted FDD V CH4233

Scan Reference Number	Title
SCN/74300JD09/028	Touch Left EUT Closed With UHF Antenna Retracted PCS CH660
SCN/74300JD09/029	Touch Left EUT Closed With UHF Antenna Extended PCS CH660
SCN/74300JD09/030	Touch Left EUT Open With UHF Antenna Retracted PCS CH660
SCN/74300JD09/031	Touch Left EUT Open With UHF Antenna Extended PCS CH660
SCN/74300JD09/032	Tilt Left EUT Closed With UHF Antenna Retracted PCS CH660
SCN/74300JD09/033	Tilt Left EUT Closed With UHF Antenna Extended PCS CH660
SCN/74300JD09/034	Tilt Left EUT Open With UHF Antenna Retracted PCS CH660
SCN/74300JD09/035	Tilt Left EUT Open With UHF Antenna Extended PCS CH660
SCN/74300JD09/036	Touch Right EUT Closed With UHF Antenna Retracted PCS CH660
SCN/74300JD09/037	Touch Right EUT Closed With UHF Antenna Extended PCS CH660
SCN/74300JD09/038	Touch Right EUT Open With UHF Antenna Retracted PCS CH660
SCN/74300JD09/039	Touch Right EUT Open With UHF Antenna Extended PCS CH660
SCN/74300JD09/040	Tilt Right EUT Closed With UHF Antenna Retracted PCS CH660
SCN/74300JD09/041	Tilt Right EUT Closed With UHF Antenna Extended PCS CH660
SCN/74300JD09/042	Tilt Right EUT Open With UHF Antenna Retracted PCS CH660
SCN/74300JD09/043	Tilt Right EUT Open With UHF Antenna Extended PCS CH660
SCN/74300JD09/044	Front of EUT Facing Phantom With Slide Closed UHF Antenna Retracted PCS CH660
SCN/74300JD09/045	Front of EUT Facing Phantom With Slide Closed UHF Antenna Retracted GPRS CH660
SCN/74300JD09/046	Front of EUT Facing Phantom With Slide Closed UHF Antenna Extended GPRS CH660
SCN/74300JD09/047	Front of EUT Facing Phantom With Slide Open UHF Antenna Retracted GPRS CH660
SCN/74300JD09/048	Front of EUT Facing Phantom With Slide Open UHF Antenna Extended GPRS CH660
SCN/74300JD09/049	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Retracted GPRS CH660
SCN/74300JD09/050	Rear of EUT Facing Phantom With Slide Closed UHF Antenna Extended GPRS CH660
SCN/74300JD09/051	Rear of EUT Facing Phantom With Slide Open UHF Antenna Retracted GPRS CH660
SCN/74300JD09/052	Rear of EUT Facing Phantom With Slide Open UHF Antenna Extended GPRS CH660
SCN/74300JD09/053	Rear of EUT Facing Phantom With Slide Open UHF Antenna Extended With PHF GPRS CH660
SCN/74300JD09/054	System Performance Check 900MHz Head 20 11 08
SCN/74300JD09/055	System Performance Check 900MHz Head 21 11 08
SCN/74300JD09/056	System Performance Check 900MHz Body 22 11 08
SCN/74300JD09/057	System Performance Check 1900MHz Head 23 11 08
SCN/74300JD09/058	System Performance Check 1900MHz Head 24 11 08
SCN/74300JD09/059	System Performance Check 900MHz Body 13 12 08

SCN/74300JD09/001: Touch Left EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

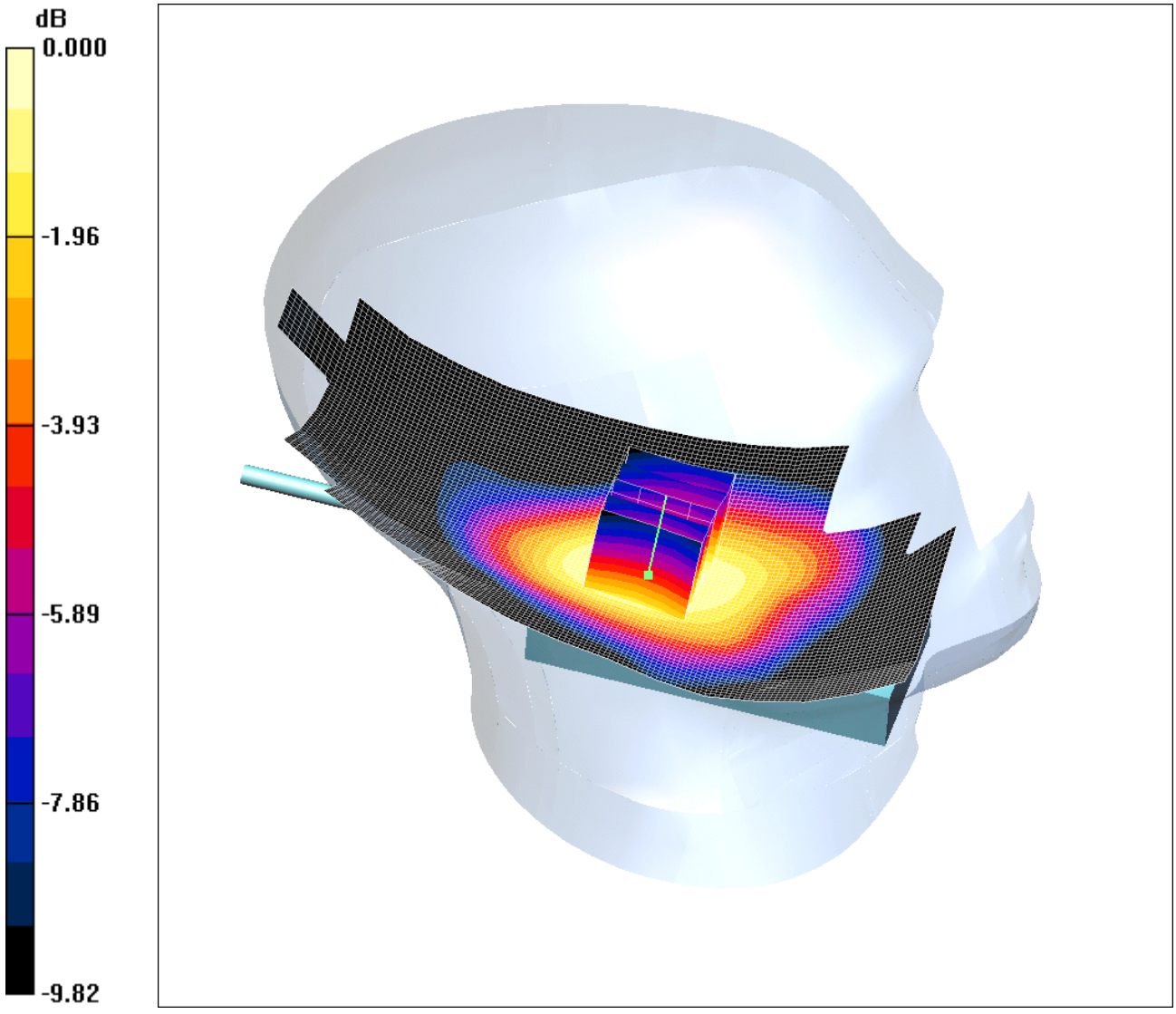


0 dB = 0.312mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Left - Middle/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.312 mW/g
Touch Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = 0.146 dB
Peak SAR (extrapolated) = 0.382 W/kg
SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.215 mW/g
Maximum value of SAR (measured) = 0.312 mW/g

SCN/74300JD09/002: Touch Left EUT Slide Closed With UHF Antenna Extended FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

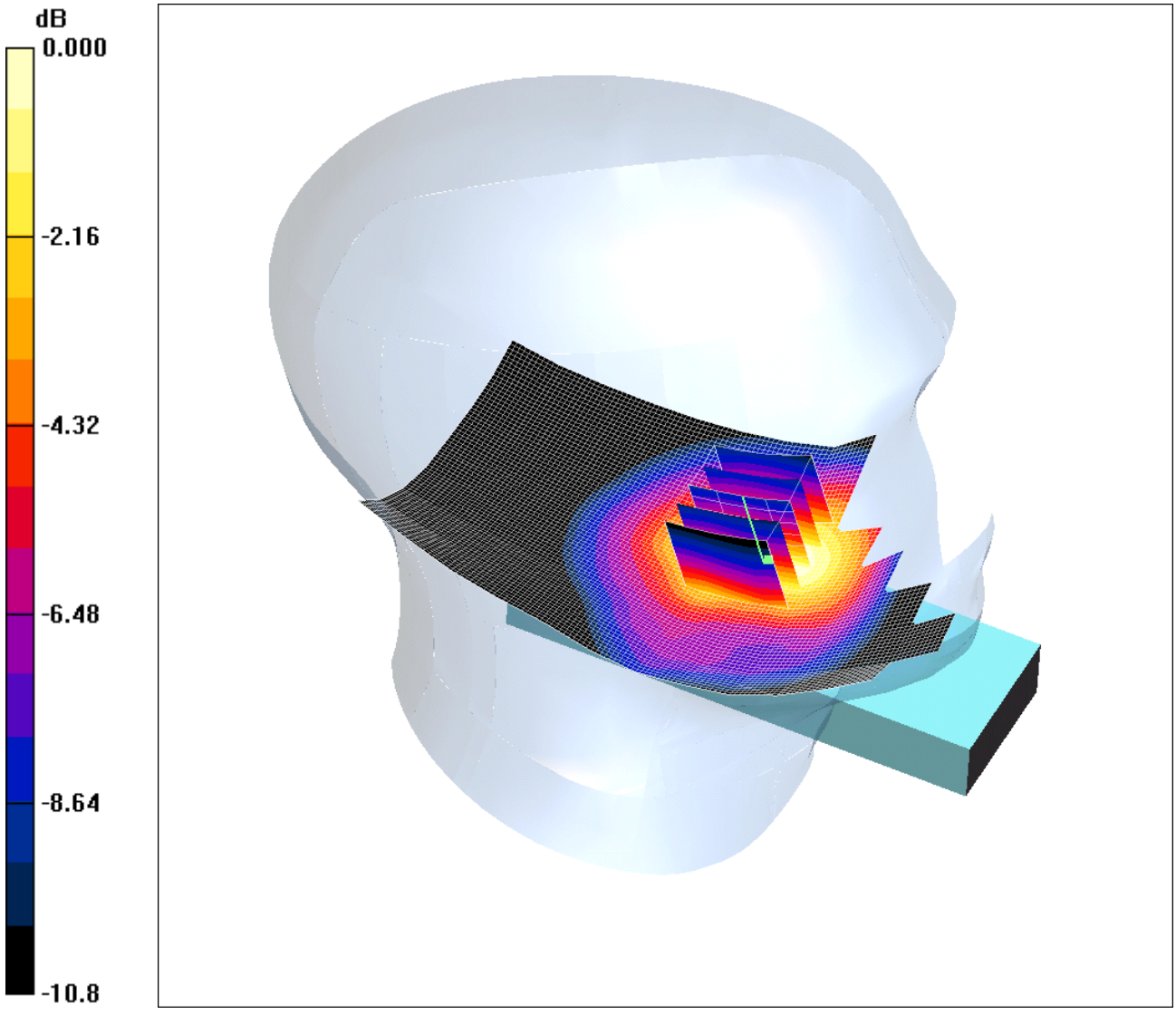


0 dB = 0.465mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Left Antenna Extended- Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.464 mW/g
Touch Left Antenna Extended- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.0 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.319 mW/g
Maximum value of SAR (measured) = 0.465 mW/g

SCN/74300JD09/003: Touch Left EUT Slide Open With UHF Antenna Retracted FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

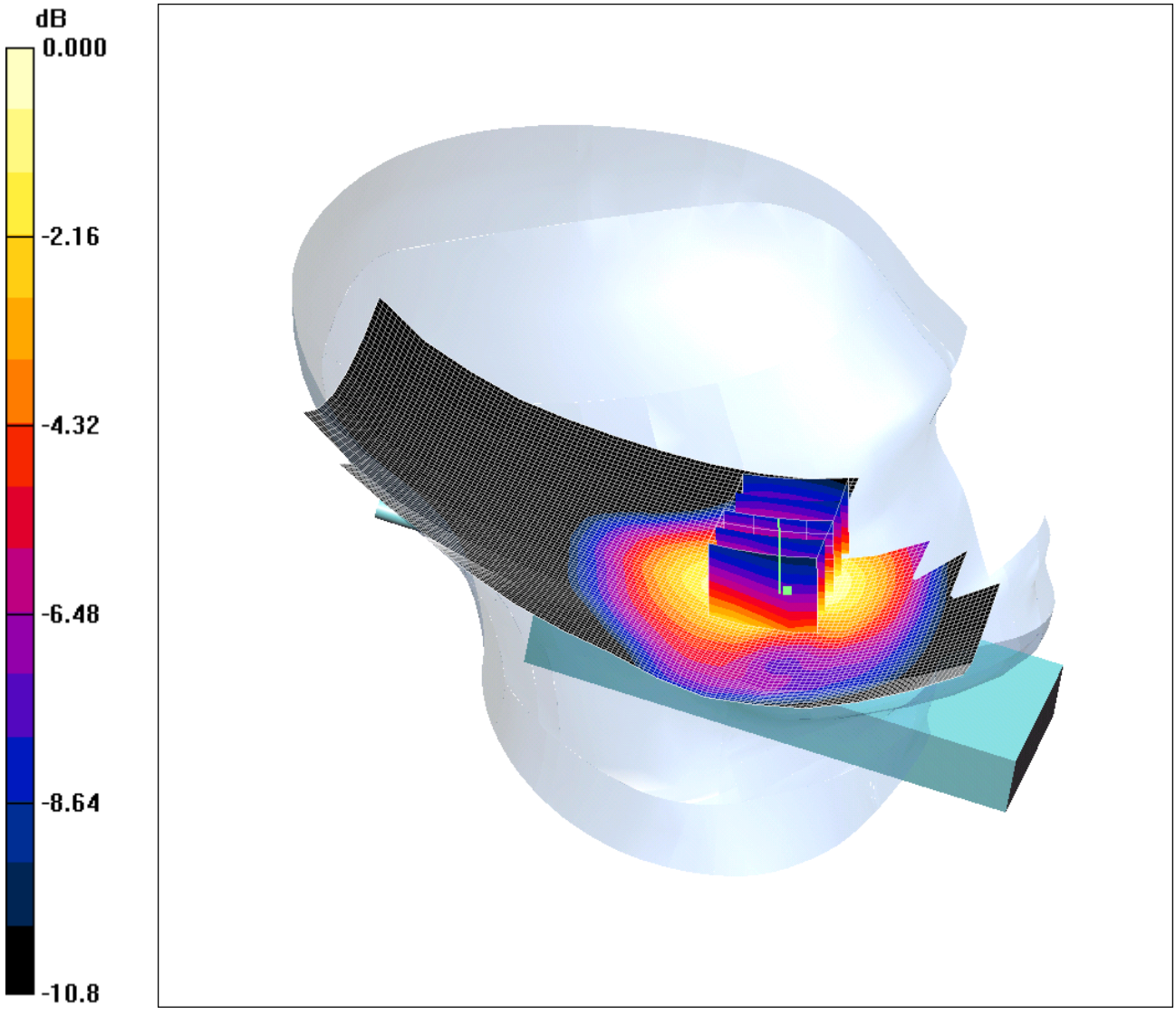


0 dB = 0.391mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Left Antenna Extended- Middle/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.390 mW/g
Touch Left Antenna Extended- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.97 V/m; Power Drift = -0.109 dB
Peak SAR (extrapolated) = 0.534 W/kg
SAR(1 g) = 0.364 mW/g; SAR(10 g) = 0.241 mW/g
Maximum value of SAR (measured) = 0.391 mW/g

SCN/74300JD09/004: Touch Left EUT Slide Open With UHF Antenna Extended FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

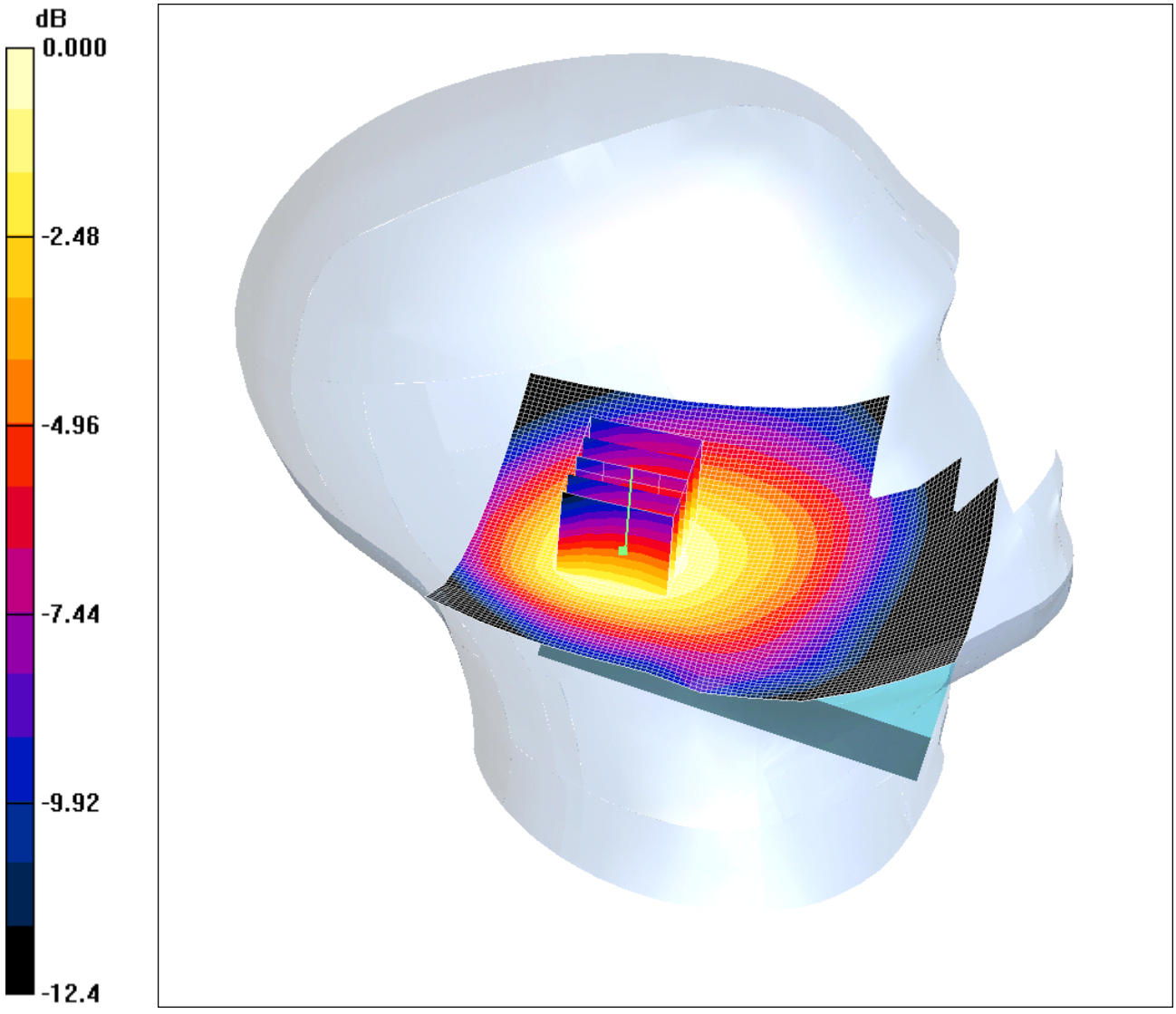


0 dB = 0.354mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Left Antenna Extended- Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.365 mW/g
Touch Left Antenna Extended- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.56 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 0.484 W/kg
SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.225 mW/g
Maximum value of SAR (measured) = 0.354 mW/g

SCN/74300JD09/005: Tilt Left EUT Slide Close With UHF Antenna Retracted FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

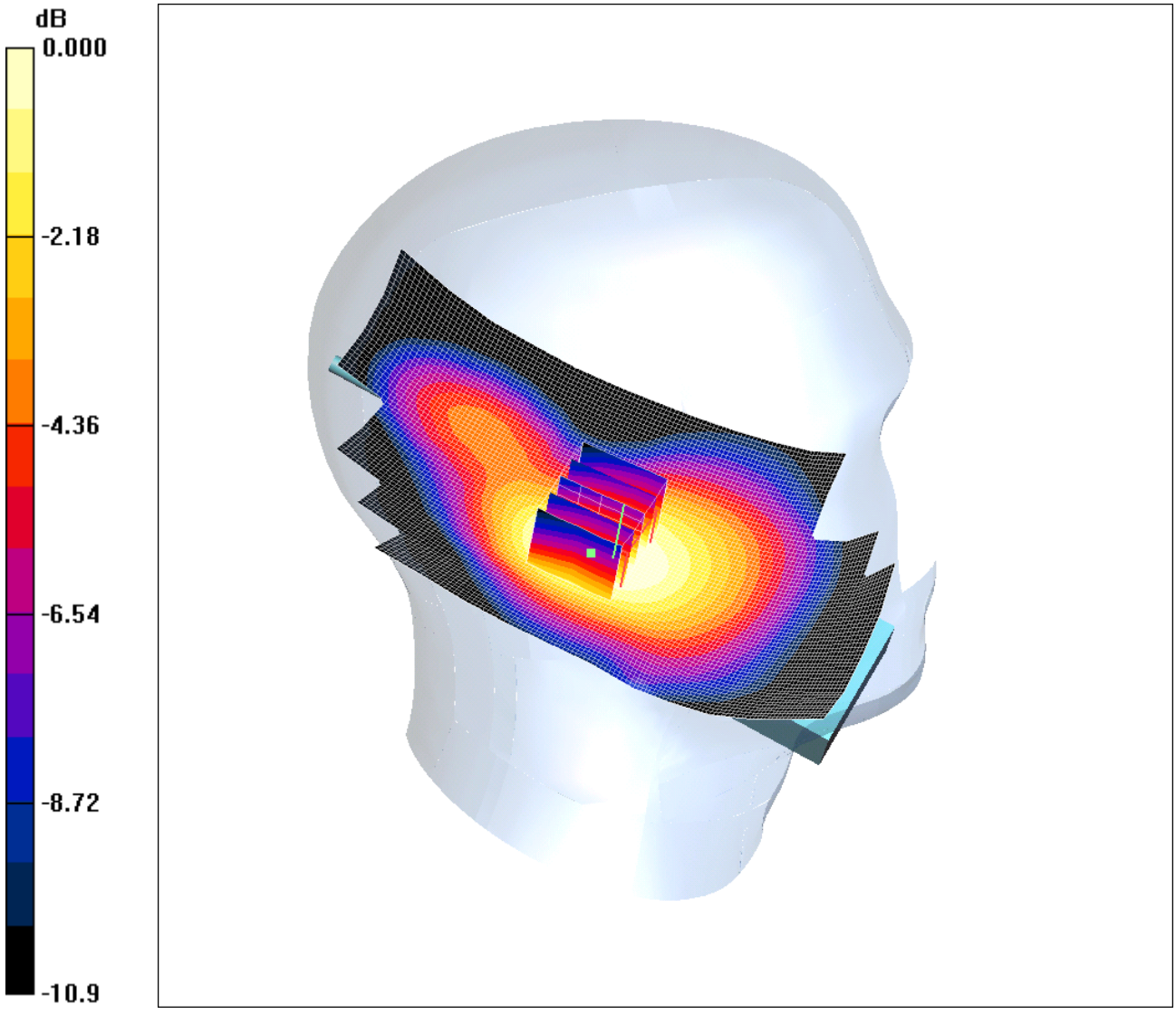


0 dB = 0.219mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Left Antenna Retracted- Middle/Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.217 mW/g
Tilt Left Antenna Retracted- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = 0.038 dB
Peak SAR (extrapolated) = 0.273 W/kg
SAR(1 g) = 0.206 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.219 mW/g

SCN/74300JD09/006: Tilt Left EUT Slide Close With UHF Antenna Extended FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



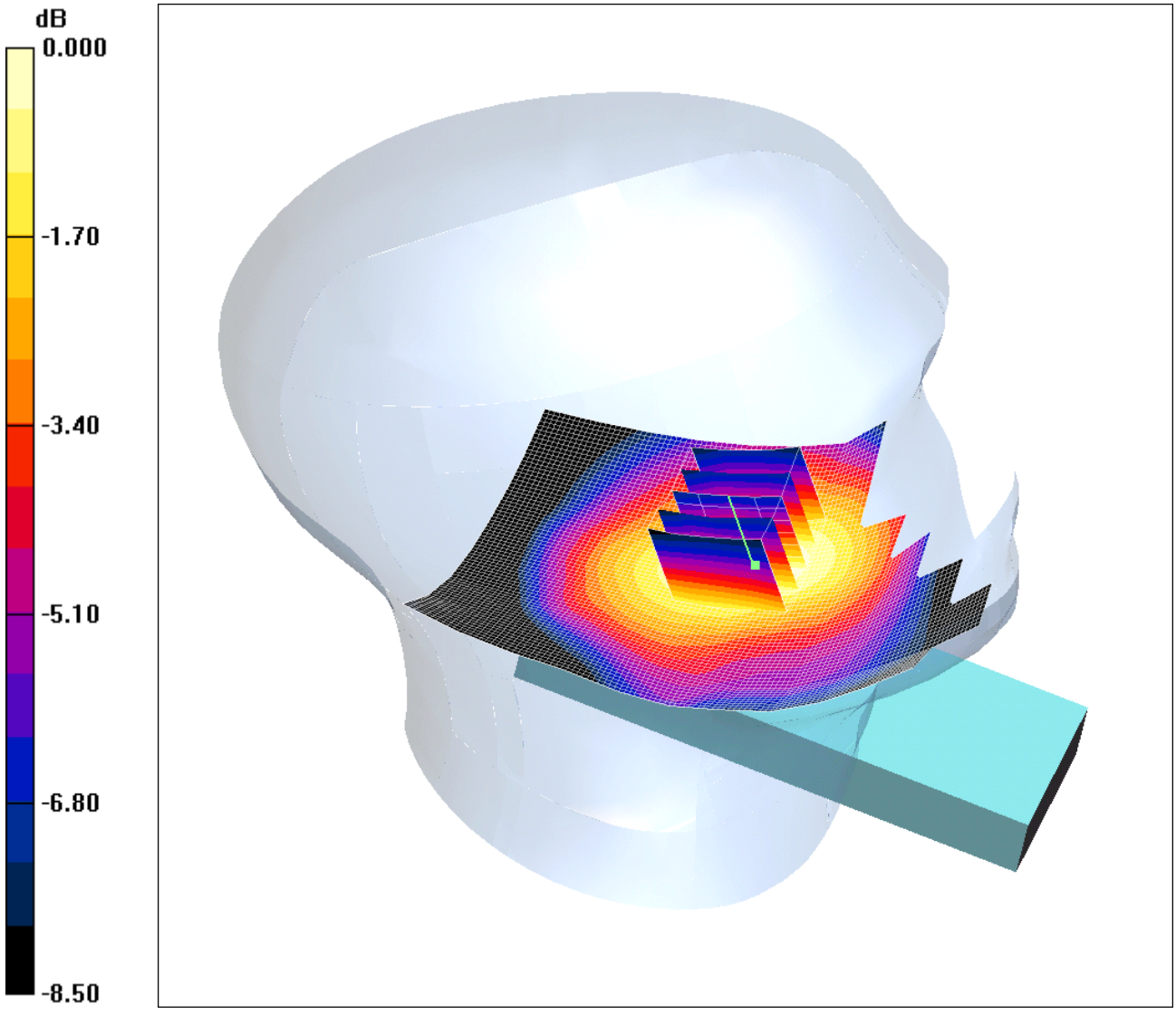
0 dB = 0.281mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Left Antenna Retracted- Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.291 mW/g
Tilt Left Antenna Retracted- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.0 V/m; Power Drift = 0.000 dB
Peak SAR (extrapolated) = 0.352 W/kg
SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.195 mW/g
Maximum value of SAR (measured) = 0.281 mW/g

Test of: NTT docomo P-02A
To: OET Bulletin 65 Supplement C: (2001-01)

SCN/74300JD09/007: Tilt Left EUT Slide Open With UHF Antenna Retracted FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



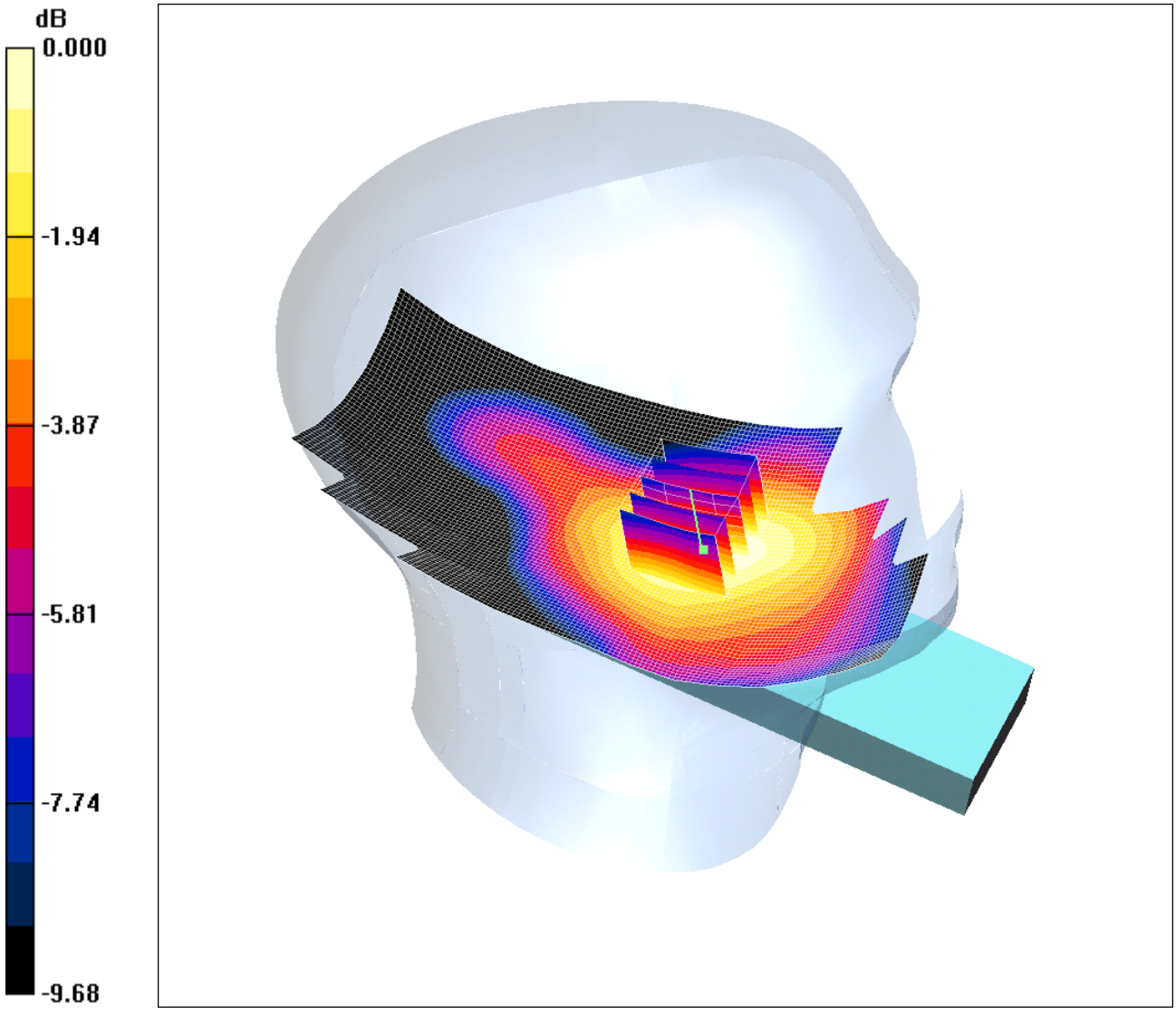
0 dB = 0.086mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Left Antenna Extended- Middle/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.085 mW/g
Tilt Left Antenna Extended- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.01 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.107 W/kg
SAR(1 g) = 0.081 mW/g; SAR(10 g) = 0.059 mW/g
Maximum value of SAR (measured) = 0.086 mW/g

Test of: NTT docomo P-02A
To: OET Bulletin 65 Supplement C: (2001-01)

SCN/74300JD09/008: Tilt Left EUT Slide Open With UHF Antenna Extended FDD V CH4183
Date: 20/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

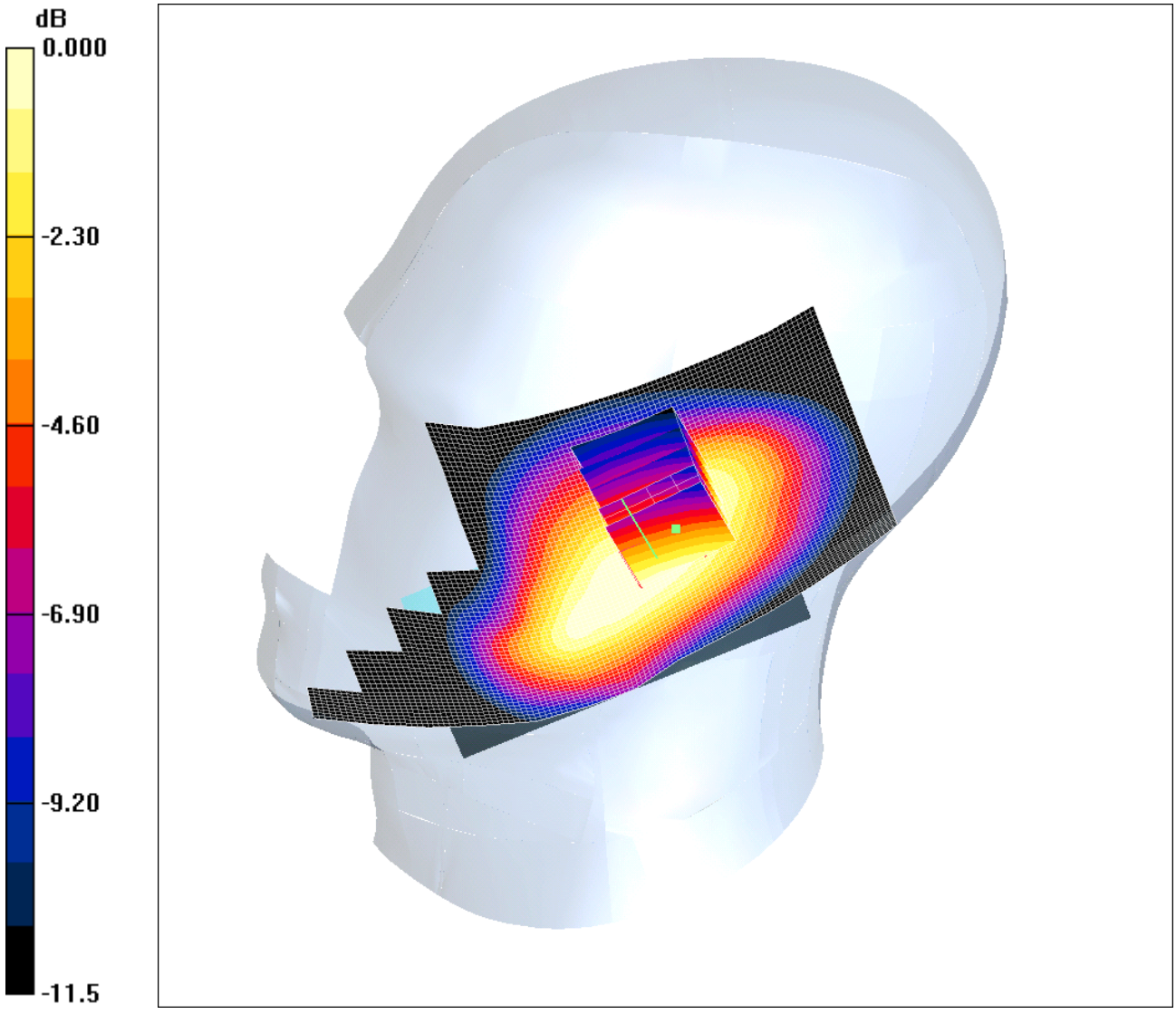


0 dB = 0.093mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Antenna Extended- Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.093 mW/g
Tilt Left Antenna Extended- Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.83 V/m; Power Drift = 0.132 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.064 mW/g
Maximum value of SAR (measured) = 0.093 mW/g

SCN/74300JD09/009: Touch Right EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



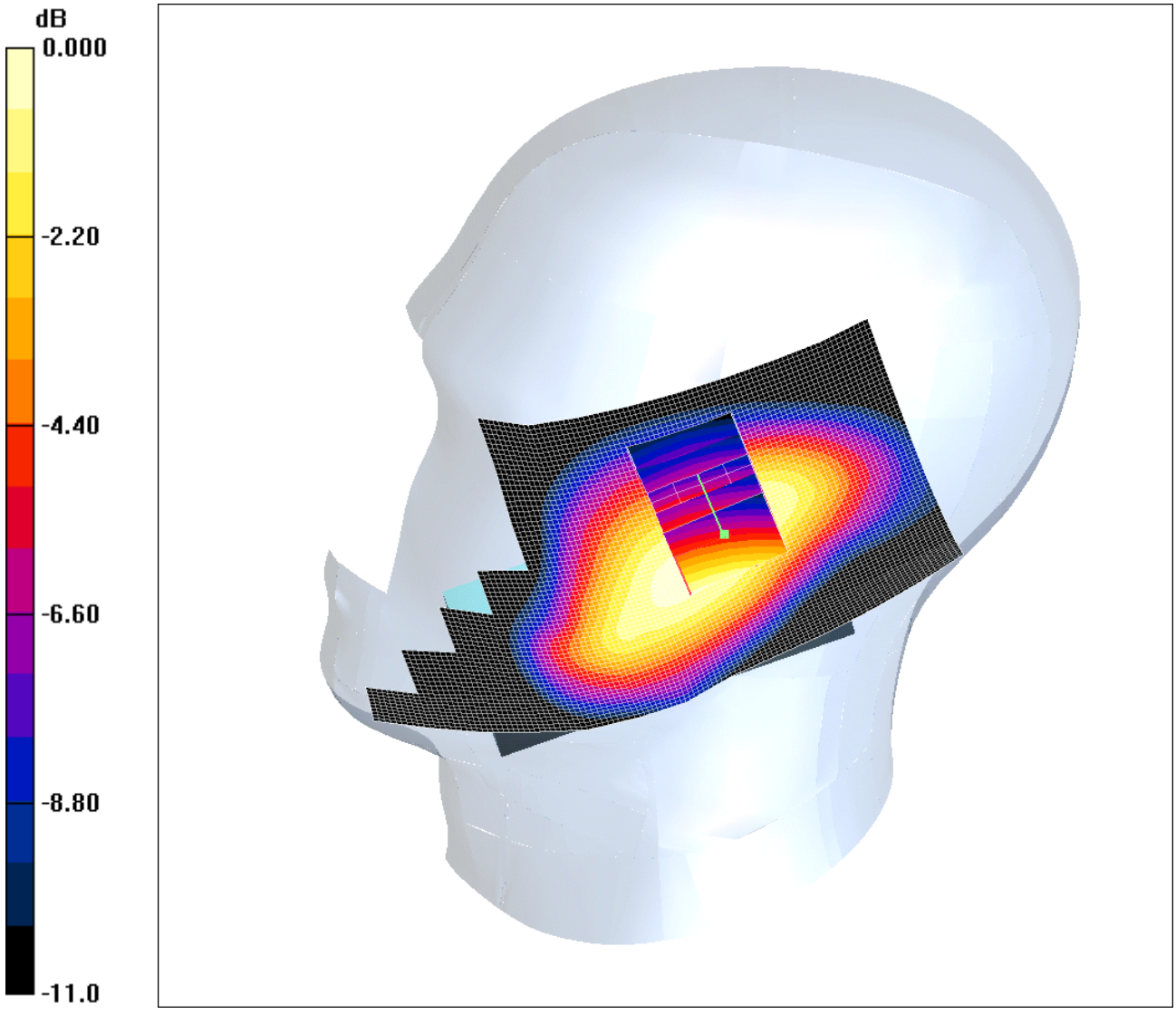
0 dB = 0.298mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Right - Middle/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.300 mW/g
Touch Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.8 V/m; Power Drift = -0.155 dB
Peak SAR (extrapolated) = 0.392 W/kg
SAR(1 g) = 0.283 mW/g; SAR(10 g) = 0.206 mW/g
Maximum value of SAR (measured) = 0.298 mW/g

Test of: NTT docomo P-02A
To: OET Bulletin 65 Supplement C: (2001-01)

SCN/74300JD09/010: Touch Right EUT Slide Closed With UHF Antenna Extended FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

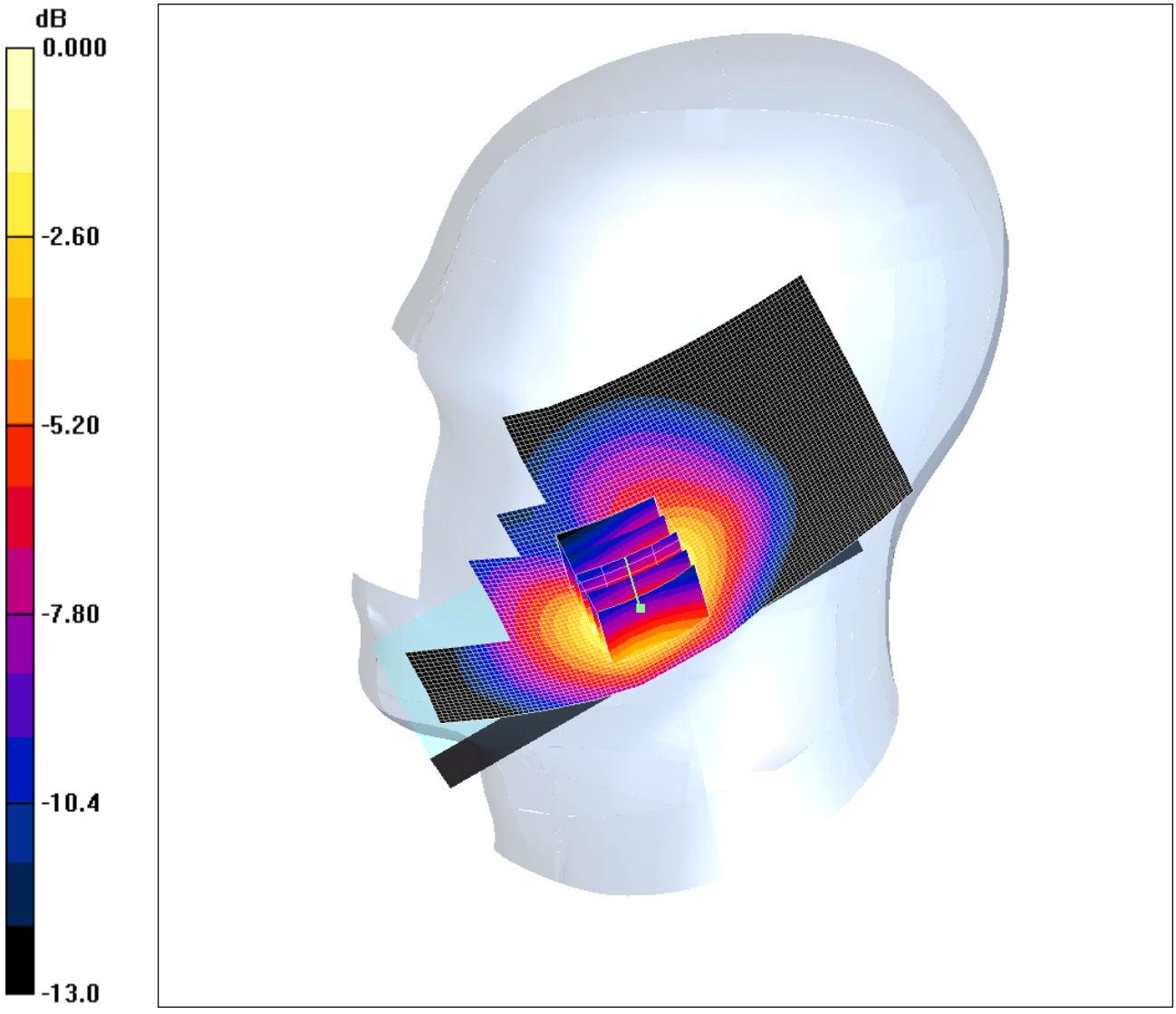


0 dB = 0.475mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Right - Middle/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.479 mW/g
Touch Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.3 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 0.629 W/kg
SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.319 mW/g
Maximum value of SAR (measured) = 0.475 mW/g

SCN/74300JD09/011: Touch Right EUT Slide Open With UHF Antenna Retracted FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606

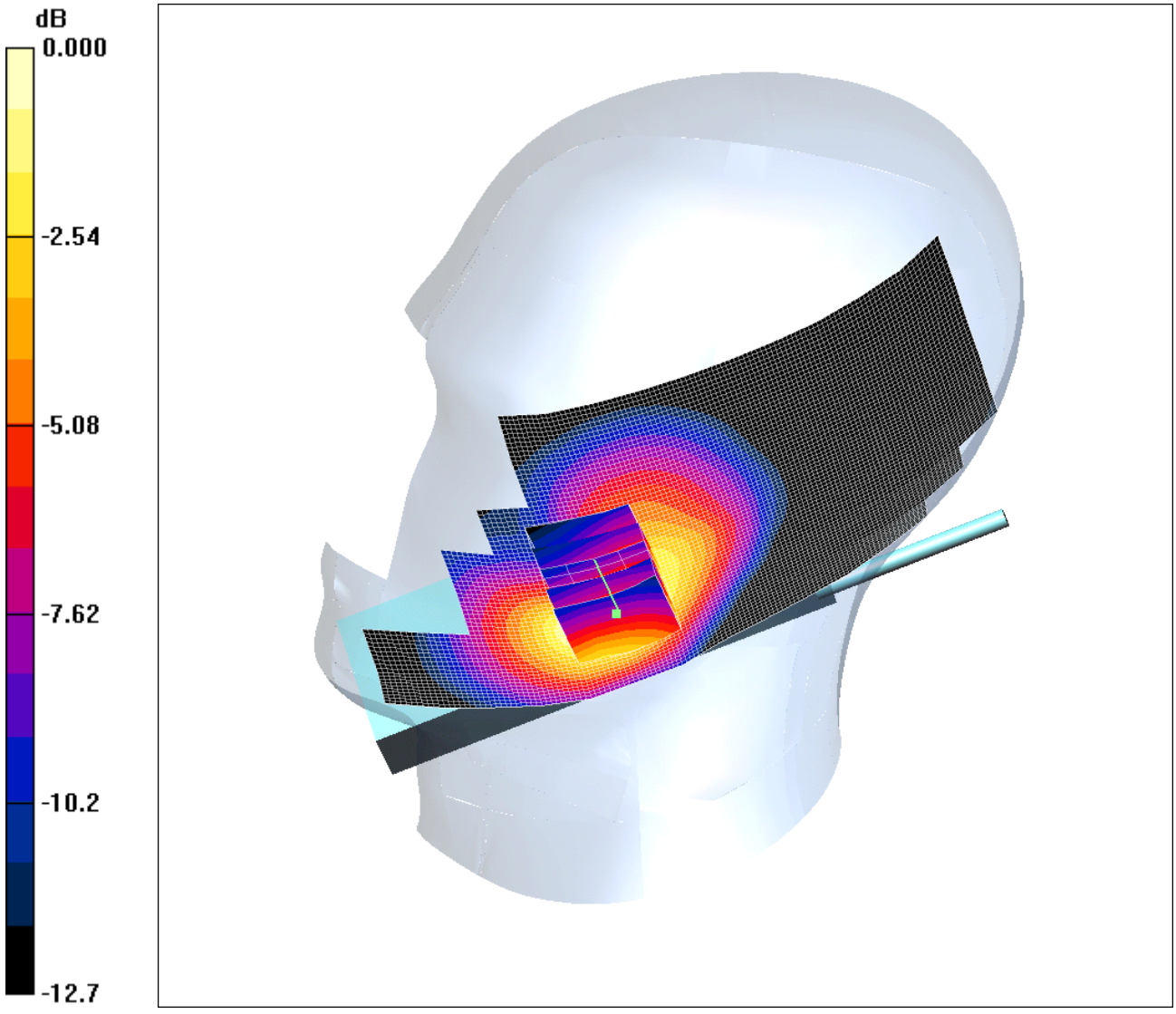


0 dB = 0.441mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Right - Middle/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.435 mW/g
Touch Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.77 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.257 mW/g
Maximum value of SAR (measured) = 0.441 mW/g

SCN/74300JD09/012: Touch Right EUT Slide Open With UHF Antenna Extended FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



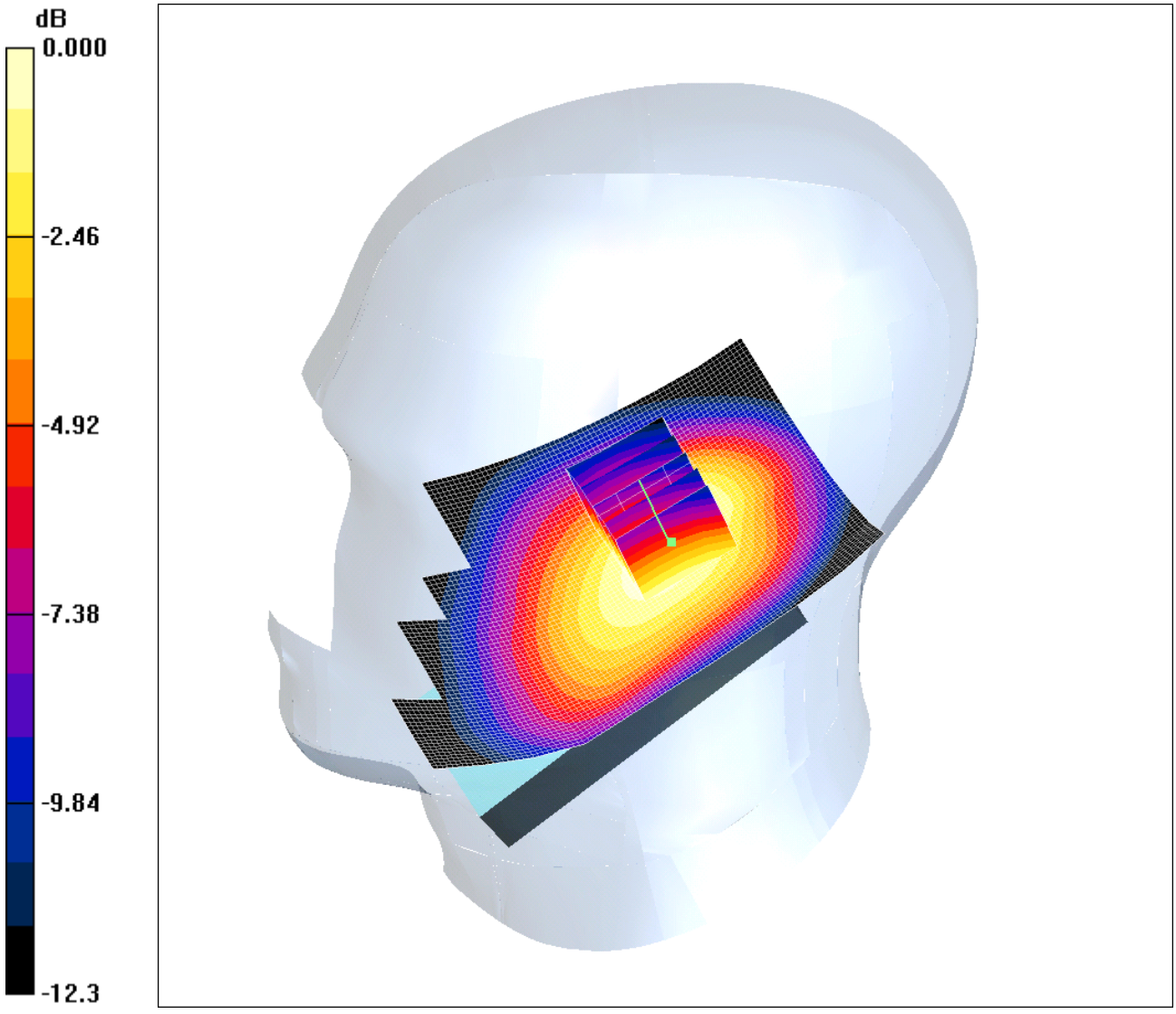
0 dB = 0.387mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Touch Right - Middle/Area Scan (71x161x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.380 mW/g
Touch Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.87 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 0.556 W/kg
SAR(1 g) = 0.362 mW/g; SAR(10 g) = 0.231 mW/g
Maximum value of SAR (measured) = 0.387 mW/g

Test of: NTT docomo P-02A
To: OET Bulletin 65 Supplement C: (2001-01)

SCN/74300JD09/013: Tilt Right EUT Slide Closed With UHF Antenna Retracted FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



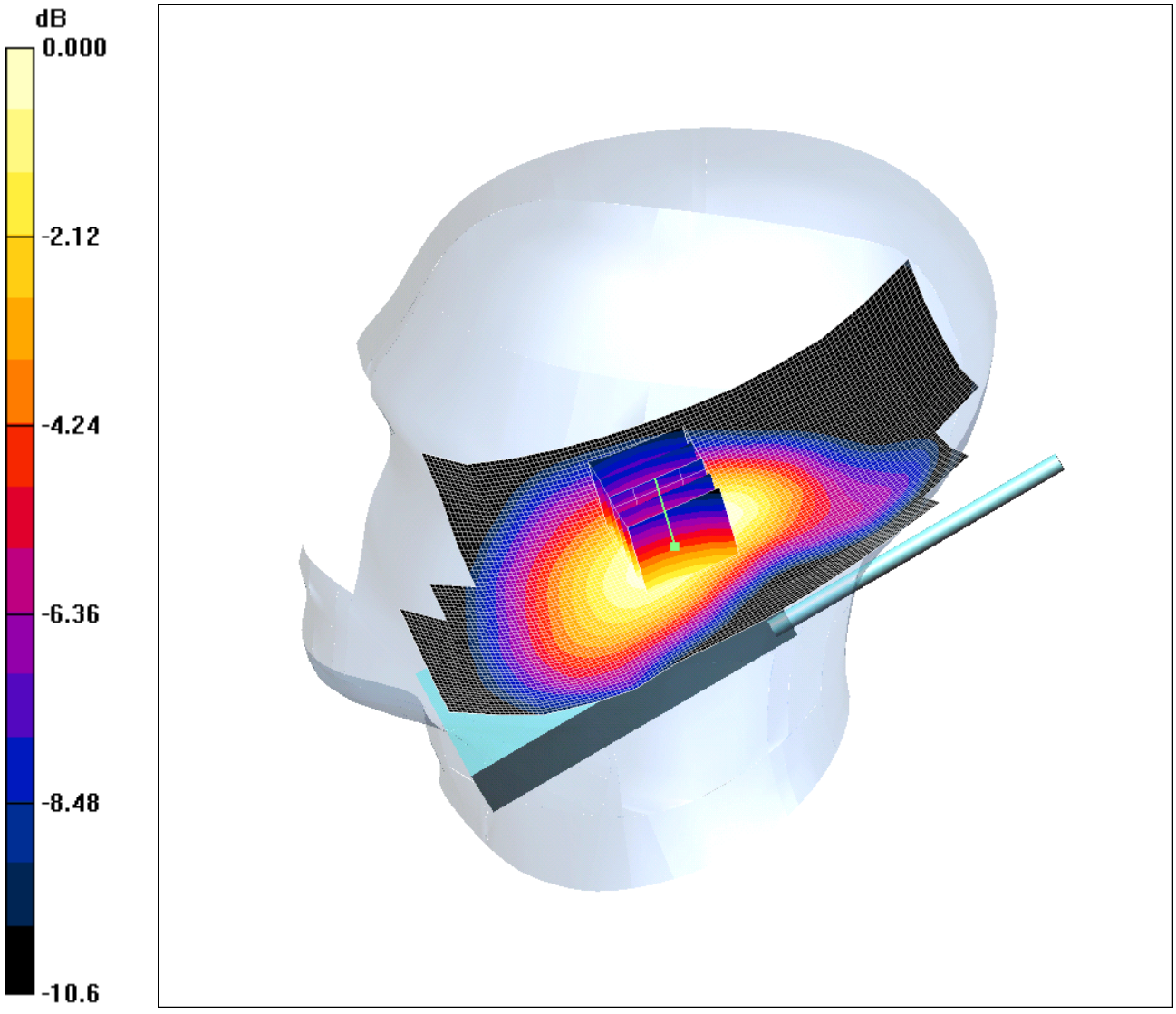
0 dB = 0.219mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Right - Middle/Area Scan (71x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.223 mW/g
Tilt Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.205 mW/g; SAR(10 g) = 0.143 mW/g
Maximum value of SAR (measured) = 0.219 mW/g

Test of: NTT docomo P-02A
To: OET Bulletin 65 Supplement C: (2001-01)

SCN/74300JD09/014: Tilt Right EUT Slide Closed With UHF Antenna Extended FDD V CH4183
Date: 21/11/2008
DUT: Panasonic P-02A; Type: P-02A (Sample C18); Serial: 353713020007606



0 dB = 0.314mW/g

Communication System: UMTS-FDD V CH4183; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.883 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: EX3DV3 - SN3508; ConvF(10.14, 10.14, 10.14); Calibrated: 24/06/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 25/06/2008
- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Tilt Right - Middle/Area Scan (71x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.315 mW/g
Tilt Right - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = 0.110 dB
Peak SAR (extrapolated) = 0.406 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.209 mW/g
Maximum value of SAR (measured) = 0.314 mW/g